

ODOT ADA Curb Ramp Inspection Questions

Effective Date: Jan. 2020 – June 2020

Preface

This document was created in an effort to answer questions brought up during the Oregon Department of Transportation's ADA Curb Ramp Inspection Training course (January 2020 – March 2020). Questions were gathered and documented during class and via email. These questions were then answered by members of the ADA Standards Team located in the Technical Leadership Center. This document is intended to serve as supplemental material for the training course to assist in filling gaps within the material and to mitigate confusion. This document is organized by sections (outlined in the Table of Contents) and each section is numbered independently of previous or subsequent sections. This numbering scheme will allow for periodic updates without compromising the overall organization of the document.

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I. Frequently Asked Questions

- (1) **I don't see the standard drawing allowing the option to stack truncated domes. Has the requirement changed?**

Yes, ODOT's practice no longer utilizes stacked truncated domes. Reference ODOT Standard Drawing RD759 which details the placement for truncated domes corresponding to ramps.

- (2) **Are truncated domes required to be placed against the edges of return curbs and at the edge of the back of curb?**

Reference ODOT Standard Drawing RD759, Note 3 and detail "A". A gap of up to 2 inches is allowed on each side of the detectable warning system.

- (3) **How do I meet the maximum 2 inch requirement shown on ODOT Standard Drawing RD759, detail "A", for truncated domes when the ramp is on the radius?**

ODOT has various manufacturing products on the Qualified Products List. Some manufacturers supply radial dome sections and the detectable warning surface can be ordered with radius pieces that are customized for the site condition. Some manufacturer's products will need to be cut and modified for installation to meet the requirements of detail "A". The 2" gap will be verified during inspections.

- (4) **Can the score line at the back of the curb, in front of the truncated dome, be eliminated to prevent spalling of the small gap between the score line and the front of the truncated domes?**

ODOT's standard practice does not include monolithic curb and gutter construction with the curb ramps. When monolithic construction is specified on the contract plans for curb ramps with the adjacent curb, the score line can be eliminated provided the distance from the face of curb to the front of the truncated domes does not exceed the normal curb depth plus the 2 inch gap.

Eliminating the back of curb score line will also help with ensuring a smooth consistent surface to improve compliance.

- (5) **The new inspection form does not provide an option to record the slope differential between the curb running slope and concrete gutter pan?**

The slope differential is no longer measured and therefore does not need to be recorded. The curb ramp should be constructed to match the contract plans and ODOT Standard Drawings.

- (6) **There are two versions of ODOT Standard Drawing RD759 with different values of the curb running slope for directional curbs. One shows less than 5% and the other shows 5% maximum running slope. Which one is correct?**

ODOT Standard Drawing RD759 with an effective date of June 1, 2020 should be used to construct the ramp. A curb running slope 5.0% or higher, for directional curbs, will fail the ramp on the inspection form. The maximum finished curb running slope for directional curbs is 4.9% at inspection.

- (7) **Can curb running slopes for non-directional curbs be constructed at less than 8.3%?**
ODOT has not standardized the curb ramp running slope requirements at this time, and contractors need to follow the detail shown in the plans. The curb ramp inspection form allows for the curb running slope to be constructed at a maximum 8.3% without a design exception. Therefore, the curb running slope will not be accepted when it is constructed at a slope greater than 8.3%, without a design exception.
- (8) **Why do standard drawings / legend show turning spaces at “4.5’ x 4.5’ (4’ x 4’ min. finished surface)”?**
Designers are designing ramps with a 6 inch margin, in each direction, for turn spaces. Ramps should be constructed to meet the dimensions shown on the contract plans. The ramp inspection form will not “fail” the turn space if the minimum finished surface dimensions are met.
- (9) **Why do standard drawings / legend show cross-slopes at “1.5% max (Max. 2.0% finished surface slope)”?**
Designers are designing cross slopes with a 0.5% tolerance to ensure the finish construction does not exceed the American with Disabilities Act Federal Regulation requirements. Ramps should be constructed to meet the slopes shown on the contract plans. The ramp inspection form will not “fail” the ramp cross-slope if the maximum finished surface slopes (2.0%) are met.
- (10) **Why do the standard drawings / legend show the ramp running slope as “7.5% max. (Max. 8.3% finished surface slope)”?**
Designers are targeting a maximum ramp running slope of 7.5% with a 0.8% tolerance to ensure the finish construction does not exceed the American with Disabilities Act Federal Regulation requirements. If during design 7.5% needs to be exceeded, a design exception is requested by the designer. The ramp inspection form will not “fail” the ramp running slope if the maximum finished surface slopes (8.3%) are met.
- (11) **Can the maximum ramp running slope of 8.3% and the maximum cross slope of 2% be exceeded during construction?**
Review the curb ramp details provided in the contract plans for construction requirements. The slopes cannot be exceeded unless a design exception specific to the slopes is listed in the contract plans. If a design exception is listed in the contract plans, specific to the slopes, Technical Bulletin RD19-02(B) allows for values exceeding 8.3% for ramp runs and exceeding 2.0% for cross slopes when constructed. The Technical bulletin values only apply when a design exception is approved by the State Traffic Roadway Engineer and it is listed in the contract plans.
- (12) **Where can I find Technical Bulletin RD19-02(B)?**
The bulletin is being distributed and reviewed during the ADA curb ramp certification. You can find the bulletin at the following link.
https://www.oregon.gov/odot/Engineering/Doc_TechnicalGuidance/RD19-02B.pdf

- (13) **Can a ¼ inch lip be constructed at grade breaks?**
No. Reference ODOT Standard Drawing RD754, note 7 and RD755 Note 6 which states “Surface slopes that meet at grade breaks shall be flush”.
- (14) **Can the bottom of the ramp have a ¼ inch lip, at the intersection of the ramp and gutter line?**
No. Reference ODOT Standard Drawing RD755 section A-A, which references Gutter 0, lip.
- (15) **What is the minimum curb exposure at the center of a radius, when there are two adjacent ramps with either flares or a vertical curb return between them?**
Reference ODOT Standard Drawing RD756, Note 9, which requires a minimum curb exposure of 3 inches.
- (16) **What is the minimum distance of full curb exposure between the ramps in question no. 15?**
Reference ODOT Standard Drawing RD756, option “B” and option “C” which requires a minimum of 12 inches.
- (17) **ODOT Standard Drawing RD756 Option “A” references a buffer strip (see note 7). Note 7 references return curbs may be provided in lieu of flared slope only if protected from traverse travel by landscaping. Can the area be concrete or stamped concrete?**
No. It needs to be non-traversable material that cannot be mistaken as a useable walking surface which include landscaping materials described as softscaping (for example, bark mulch or plantings) or an approved alternative treatment.
- (18) **Can water pool in the concrete gutter pan at the bottom center of the ramp?**
No, the concrete gutter pan should have positive flow, so no water is pooling.
- (19) **Can ramp runs have grade breaks?**
No. Reference ODOT Standard Drawing RD755, note 6 which states “Grade breaks shall not be permitted on the surface of ramp runs and turning spaces”.
- (20) **Is there a detail showing more specific information on transition panels?**
Yes, ODOT Standard Drawing RD722 has been updated to include sidewalk transition panel detail requirements.

II. Inspection Form Errors

- (1) **There is a potential coding error on the parallel ramp inspection form where running slope 1 is also a turn space, and turn spaces should have a construction tolerance of 0.5%. However, a construction tolerance of 0.8% is allowed by the form. The same situation occurs for turn space Slope Y. If these are unintended, they will erroneously pass failing ramps.**

ODOT will address the way the inspection form operates for the shared running slope and turn space needs with design exception criteria in the next release.

- (2) **If the cross slope on the directional curb is under 2%, but the gutter flow slope is less than the directional curb cross slope, does that cross slope fail? The forms indicate that it would.**

ODOT will be addressing the way the inspection form operates for the directional curb in the next release. In the meantime, you can manually override the failure box for the directional curb cross slope.

- (3) **Any flare will fail if they exceed 10% slope (without a design exception). Currently a flare slope exceeding 10% slope won't fail if the "traversable" box is not checked, which is now incorrect – it should fail. Additionally, the coding of the form doesn't seem to work if there is a DE for flare slopes. Per Technical bulletin RD 19-02(B), a construction tolerance of 0.8% above the design exception value is allowed. Per my testing of this there is no tolerance permitted whatsoever. The flare slope fails if the measured slope entered exceeds the DE value entered – the 0.8% construction tolerance is not applied.**

The ODOT standard requires all constructed flares to be less than 10% regardless if the area is traversable or not adjacent to it. ODOT will record the slope measurement as part of the asset information when there is non-traversable material adjacent to the flare. A design exception is required to construct flares greater than 10.0%. Technical Bulletin RD19-02(B) allows for values exceeding 10.0% for flare slopes when constructed with a design exception. ODOT will address the way the inspection form operates for flares and design exceptions in the next release.

III. Ramp Elements

A. Clear Widths

- (1) **Where should the clear width be recorded if one part of the ramp is under 4 ft. but it doesn't adversely impact the pedestrian's path or use of the push button? The example below is an example of the clear width recorded on a ramp where the length is under 4 ft., so it fails the ramp but it doesn't actually restrict a pedestrian's path of travel.**

The comment box is a data field used to record additional information on the curb ramp inspection form. ODOT has a standard syntax and abbreviations for comments. Follow the standard comment syntax for objects located within the curb ramp or proximity limits.



B. Clear Space

- (1) **Can valve covers, manhole covers, etc. be within the 4ft x 4ft clear space in the crossing in front of the ramp?**

Yes, but they must be flush with the surrounding pavement and free of vertical discontinuities (lips less than ¼"). It is best practice to have these out of the pedestrian path of travel and accessible route as they can become slippery for pedestrians. Covers and openings must not have holes or depressions that exceed ½ inch in width in the direction of the pedestrian travel.

C. Turning Spaces & Landings

- (1) **Given that the level placement for measuring finished ramps on landings is only to be placed in the X and Y direction. During the course it was mentioned that a ramp can fail based on a measurement anywhere, does this mean in any direction?**

No. ODOT's level placement and methodology for measuring curb ramps captures the measurements parallel and perpendicular to the pedestrian path of travel on the pedestrian accessible route. The concrete edges and tooled joints are not always parallel or perpendicular to the pedestrian path of travel. If we measure 2.0% x 2.0% passing in the X and Y directions, and then measure the diagonal direction, the mathematical value is 2.8% on a level square area.

- (2) **When measuring turning spaces with an obstruction, such as a pedestrian pole, should the turning space dimensions be reduced by the obstruction? My understanding is that the entire turning space should be measured regardless of the obstruction.**

The entire level area will be measured to capture the overall dimensions of the level area for inventory and asset needs. Vertical obstructions such as pedestrian poles will be noted in the comments section based on the ODOT syntax and abbreviations. A curb ramp will be non-compliant and fail if the obstruction limits the turn space distance below the minimum requirements.

D. Surfacing (Lips, Gaps, Grade Breaks, Joints)

- (1) **Should the measured lip heights be rounded up or down?**

Round up (1/8" lips round down to 0).

- (2) **Is there any guidance on the width of gaps? Will any gap between panels fail a ramp?**

Gaps that are over 1/2" wide will fail a curb ramp. Record any gap over 1/2 an inch. It is currently recorded as a lip and a non-standard comment put in the Curb Ramp Inspection Form's comment field. Standard Specification section 00759.44 states that expansion joints *no wider than 1/2 an inch* will be used for retro-fits where new concrete is butting up to old concrete.

- (3) **Can any more guidance be provided with the requirement for perpendicular grade breaks? For example, we take the longest measurement for the run length of any ramp run, doesn't that mean that the grade break is non-perpendicular? Does this ramp have compliant perpendicular grade breaks?**

Perpendicular grade breaks are shown on the ODOT standard drawings with the curb ramp layouts. Grade breaks at the top and bottom of ramp runs are to be perpendicular to that ramp run.

The photo below is an incomplete perpendicular ramp as constructed, with no landing or turn space at the top. Ramp runs are to be planar in both directions (running slope and cross slope) and should not be curved (creating a wedge) in the photo below. The ramp run 1 position in this photo has a perpendicular grade break at the curb opening.



(4) Where are expansion joints allowed within the proximity limits?

Expansion joints are permitted at the connections between new and old concrete which will be in the proximity limits for inspection. Proximity limits for inspection measurements are generally one panel outside of the new concrete construction for the curb ramp corner. Dummy and contraction joints are permitted in the curb ramp system.

Note, bridges have site specific structural needs, and bridge expansion joints would be exempt based on the structural details and requirements. Bridge expansion joints must still meet ADA standards and level changes must be less than ¼ inch.

E. Turning Spaces

(1) A turn space is constructed at 3.9 feet width (x-direction) and there is flat area beyond the turn space score line. Could the flat area potentially be used to increase the turn space dimension (assuming no other issues are created doing this)?

The level area (turning space/landing) and inspection measurement is independent of the dummy joint or score line. It is preferable for the two things to align to identify the space, but it's not required. Other walking surfaces that can be used and traversed don't have dummy joints or score lines (e.g. unit pavers or other decorative scoring schemes) and would be infeasible to do so.

F. Flares

(1) If the surfacing behind a ramp flare is asphalt paving, is the flare considered traversable?

Yes.

(2) Are flare slopes not measured on the curb as per the training?

Flare slopes are measured on the top of the curb and within the nearest foot of the parallel to the back of curb. ODOT construction practices does not typically call out monolithic construction of curb ramps, so top of curbs and flare panels are inspected because they are typically two separate concrete pours. They should be flush at finish construction.

- (3) **What are the maximum flare slope requirements? During class, I was told that the 10.0% max requirement only applies to *traversable* flares and that if there is a planter strip behind the curb, the flare slope does not have a maximum grade requirement. Does ODOT have any published information to affirm this? RD 755 general note #7 indicates that projects with planter strip may provide curb returns in lieu of flared slope. Does that mean that ramps near planter strips should be designed with curb returns instead of flared slopes on future projects?**

The ODOT standards require a maximum of 10% slope when a flare is provided, regardless if the area is traversable or not adjacent to it. If flares are constructed then 10% is the requirement. Data must still be collected on the inspection form even if non-traversable material is placed next to the flare. This goes into our asset inventory and data information for curb ramps on TransGIS.

ODOT's curb ramp design exception checklist requires a design exception for flares that exceed a 10% slope and does not discern between traversable or non-traversable materials. The curb ramp form will be rejected by the ODOT ADA inspection team without the flare slope information when constructed.

Flares can be constructed with curb ramp next to planter strips/buffer strips. This provides a hard surface and increases the pedestrian circulation area for individuals to stand on.

- (4) **Which flare is flare #1 and flare #2?**

Facing the ramp from the street the flare 1 is to the right and flare 2 is to the left following the same convention as other assets, which is counter clockwise.

G. Directional Curbs

- (1) **There are two editions of ODOT Standard Drawing RD 759 online with different values of the curb running slope for directional curbs. One shows less than 5% and the other shows 5% maximum running slope. Which one is correct?**

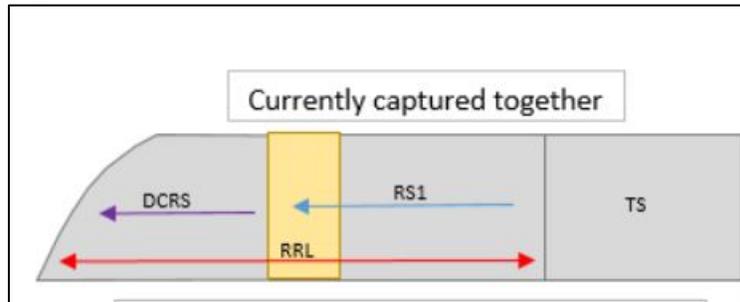
ODOT Standard Drawing RD759 with an effective date of June 1, 2020 should be used to construct the ramp. When the directional curb is present, the curb running slope requirement is less than 5.0%. The maximum curb running slope that will be accepted for directional curbs is 4.9%. When a directional curb is not present, the maximum curb running slope $\leq 8.3\%$.

- (2) **What is the correct criteria for the directional curb running slope $\leq 5.0\%$ or $< 5.0\%$?**

Directional curb running slope shall be $\leq 4.9\%$. ODOT standard drawings and inspection forms are being updated to clarify the requirements.

(3) How is the Ramp Run Length captured when you have a Directional Curb?

The length of the ramp run 1 and the directional curb are one length captured together as shown below by the dimension ramp run length (RRL). The turn space/landing length dimension is captured in the other parts of the form. [TS= turn space, RS1= ramp slope 1, DCRS= directional curb running slope]



H. Detectable Warning Surfaces (DWS)

(1) A photo in the training presentation (below) shows the detectable warning surface cut to fit the curve of the curb, is this an acceptable practice?

No. A continuous section of detectable warning surface that is 2 feet deep in the direction of the pedestrian travel for the entire curb ramp width is required. The placement location of the detectable warning surface is dependent on the curb ramp style and/or on the distance between the grade break to the back of curb (see applicable ODOT standard drawings).

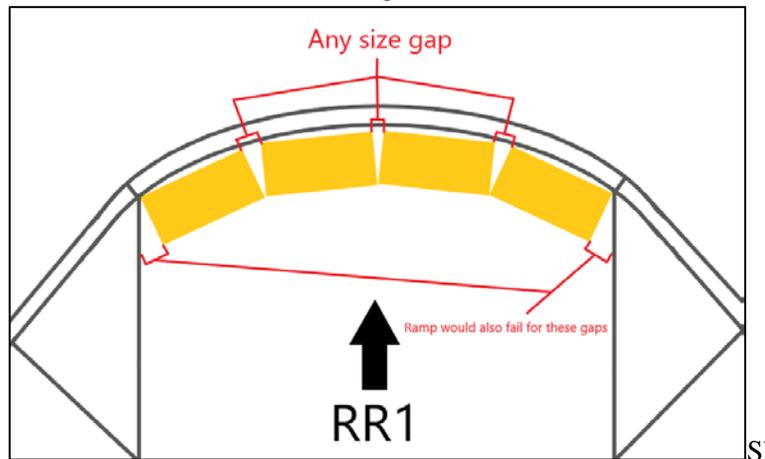


(2) Is it considered an inconsistent ramp run or grade break if the detectable warning surface on a parallel ramp (or a unique design with the turn space against the curb) has a running slope of about 2% and the rest of concrete that makes up the turn space is nearly 0%?

No, this is not considered an inconsistent ramp run or a grade break; this is a surface finish issue. The level area should be checked for visible humps or sags that could create standing water per the standard specifications.

(3) Can detectable warning surfaces be placed along a radius in such a way that creates gaps along the curb but the panels are touching at the back corners?

ODOT Standard Drawing notes indicate “Detectable warning surface shall be placed at the back of curb for a minimum depth of 2ft.” These two feet must be completely filled with the detectable warning surface and maintain the required dome spacing dimensions per the ODOT drawings. Gaps in between panels will not likely maintain the required dome spacing requirements with the gaps shown below, and the detectable warning installation is not full width.



(4) Will a ramp fail if at any place under the DWS panel is over 2 inches from the back of curb on a radial ramp?

There should be no more than 2” gap on the exterior perimeter of the detectable warning surface installation including the front. A corner would have to be on a radius smaller than the typical ODOT radii (15 to 30 feet) in order for the area in front to be more than 2” if installed correctly.

(5) I don’t see the standard drawing allowing the option to stack truncated domes. Has the requirement changed?

Yes. ODOT’s practice no longer utilizes stacked truncated domes. Reference ODOT Standard Drawing RD759 which details the placement for truncated domes corresponding to ramps.

(6) Are truncated domes required to be placed against the edges of return curbs and at the edge of the back of curb?

Reference ODOT Standard Drawing RD759, Note 3 and detail “A”. A gap of up to 2 inches is allowed on each side of the detectable warning system.

(7) How do I meet the minimum 2 inch requirement shown on ODOT Standard Drawing RD759, detail “A”, for truncated domes when the ramp is on the radius?

ODOT has various manufacturing products on the Qualified Products List. Some manufacturers supply radial dome sections and the detectable warning surface can be ordered with radius pieces that are customized for the site condition. Some manufacturer’s products will need to be cut and modified for installation to meet the requirements of detail “A”. The 2” gap will be verified during inspections.

I. Curbs

- (1) **Does the curb running slope have to match the running slope of ramp run 1?**
 The answer depends on the curb ramp style constructed. Contractors need to follow the curb ramp details provided in the contract plan set. In some configurations, monolithic construction is required to ensure a grade break is not introduced (therefore creating an inconsistent ramp run) and the running slope would need to match the curb running slope.
- (2) **For parallel or some unique design curb ramp types that are built on a radius, if the curb running slope needs to be under 5%, will this be added to the inspection forms?**
 We will need to update inspection forms in accordance with ODOT curb detail requirements which are still under development. Curbs should be constructed in conformance with the curb ramp detail requirements specified in the contract plans.
- (3) **When measuring curb running slope, if any one measurement is greater than 8.3% would it fail?**
 ODOT's practice at this time is to record the average slope of a minimum of three measurements. If the average curb running slope exceeds 8.3% it will fail. Curbs should be constructed in conformance with the curb ramp detail requirements specified in the contract plans.
- (4) **Will a curb running slope that is sloping down from the gutter (“opposite”) fail a ramp?**
 When the curb ramp running slope is opposite of the ramp running slope and it creates a “v channel” it will fail the curb ramp. Water will not drain and pond. If the curb ramp detail is shown on the plan set to build it that way, drainage should have been considered and should be verified prior to construction.
- (5) **Can the concrete score line at the back of curb be eliminated? The sliver of concrete between the score line and the detectable warnings is hard to control and often pops out later.**
 Yes, this would only apply when monolithic construction is specified. The score line/dummy joint can be eliminated as long as the distance between the projected back of curb line and the detectable warnings does not exceed 2 inches (total from front of curb to detectable warnings cannot exceed 8 inches).
- (6) **What is in minimum curb exposure at the center of a radius, when there are two adjacent ramps with either flares or a vertical curb return between them? What is the minimum distance between these ramps?**
 Reference RD 756, Note 9, which requires a minimum curb exposure of 3 inches. RD 756, option “B” and option “C” require a minimum of 12 inches of separation between ramp runs.

J. Signal Poles/Pushbuttons

- (1) **Could the distance between poles measurement fail a ramp if the button is a speech message condition and the distance is less than 10ft?**

The signal pole and push button placement needs to conform to the signal plans which have been approved by the State Traffic Roadway Engineer. Deviations from ODOT standards of practice are documented for signals and its appurtenances differently than curb ramp design exceptions. Acceptance for the construction of the push button is to be rejected if it is not built to the contract plans unless there is an approved change order from the Engineer of Record. The distance of the push buttons will not be recorded on the new construction push button inspection form.

(2) Does the push button need to be exactly parallel with the paired crossing? Can the push button clear space be skewed in relation to the pedestrian pole?

The push button placard, and tactile arrow must be parallel with the paired crossing. This provides direction cues to pedestrians with low vision or who are blind. There is no formal measurement.

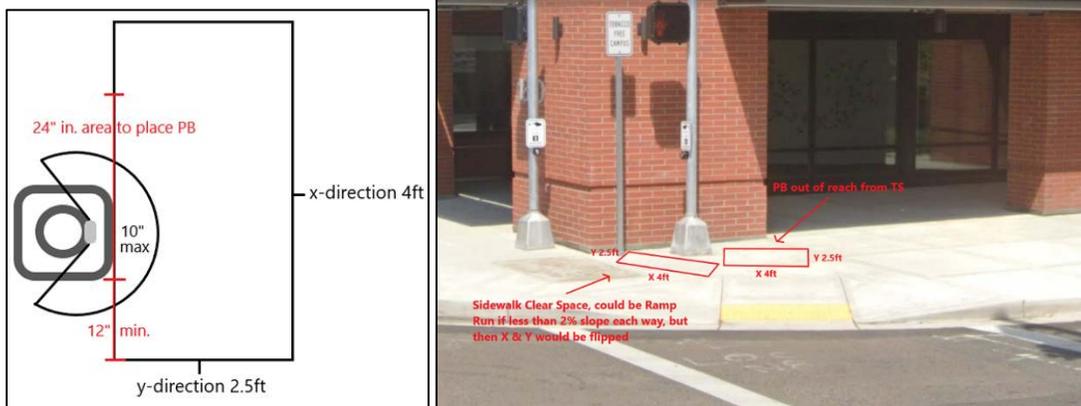
The maximum reach cannot exceed the 0.83 FT maximum distance from any angle, the pedestrian may have to press the button straight out, to the side, or by pushing toward the front of the pole. These are both acceptable.

(3) Is the push button clear space always 2.5ft (or 3ft for Back-In Maneuver) in the X-direction and 4ft in the Y-direction?

No, the X and Y direction flip in some circumstances, depending on the type of surface for a push button installation. A new exhibit is underdevelopment to provide clarity for inspectors. The “Sidewalk” surface type has changed orientation to be consistent with sidewalk inventory data collection. The existing TransGIS inventory layer will be updated to reflect this methodology in the next scheduled update.

For a surface type “Turn Space”, “Paved Shoulder” the clear space X-direction is the long (4ft) side and the Y-direction is the short (2.5ft) side.

It is opposite for a surface type of “Ramp Run”, “Back-In Maneuver” and “Sidewalk. Where the X-direction is the short (2.5ft) side and the Y-direction the long (4ft) side for “Ramp Run” and “Sidewalk” surfaces. “Back-In Maneuver” surfaces requires the X-direction to be 3.0 feet on the short side.



- (4) **There has been some discrepancy on whether push button height should be between 3' and 4' or 3.5' and 4'. Which is correct?**

For new construction, the passing height criteria is between 3.5' to 4.0' for push button height. That 3.0' height was for inventory purposes in determining functional condition or ODOT's asset.

- (5) **For push buttons why is ramp run an acceptable surface type? Wouldn't this be too sloped?**

A design exception might be in place and approved for the curb ramp. For most cases, this will not be the new construction practice.

K. Transition Panels

- (1) **Is there a detail showing more specific information on transition panels?**

Yes, RD 722 has been updated to include transition panel details.

- (2) **If the standard drawing (RD722) has to be used, is there any tolerance for the $x1\%=x2\%$?**

ODOT has not established a tolerance at this time. It is recommended that you use the rules of rounding to the nearest percent to establish a nominal value.

L. Ramp Runs

- (1) **Does the inconsistent ramp run comment apply if in one panel, the running Slope increases in increments of $\leq 1.5\%$ every 2ft?**

Grade changes at two foot in intervals on one panel is indicative of a curvilinear construction (hump or sag) and should be recorded as inconsistent ramp run as it is not a planar surface.

- (2) **Where is the specification located for the maximum allowed grade break of 1.5% on a ramp run?**

The grade break differential is a rule of thumb to note humps or sags in the concrete construction. The ODOT standard specification for concrete structure construction is listed here:

RD 00759.50 Paragraph A:

"The top and face of Structures shall be true and straight, free from humps, sags, or other irregularities. The surface shall not vary more than 1/4 inch from the edge of 12 foot long straightedge laid on the top or face of the Structure, except in curves. Furnish the straightedge and operate it as directed. Unless otherwise shown or directed, tool edges to 1/4 inch radius."

RD 00759.50 Paragraph C:

"Finish concrete surfaces to smooth and uniform texture by troweling, floating and cross brooming. Lightly groove or mark surfaces into squares or other shapes to match markings on similar existing surfaces in the vicinity, as directed."

“In addition, finish concrete surfaces of sidewalk ramps to be within the established Slopes and dimensions allowed by the Standard Drawings and Plans. Repair or remove and replace sidewalk ramps not meeting the Standard Drawings and Plans at no additional cost to the Agency.”

- (3) The training suggests that the constructed ramp slope cannot exceed the slope that is shown on the plans. How does this reconcile with the inspection form that allows 8.3%?**

A ramp will pass inspection if it falls under the maximum value (i.e. design of 7.5% inspected at 8.1%, or design of 6.5% inspected at 8.1%). The curb ramp system is complex in geometry, and you should aim to construct the design value as the components are linked together and can potentially cause a problem somewhere else. You should not see designs with slopes values above 7.5% without a design exception approved per ODOT policy & standards. With a design exception approval, the DE box on the form is needed to evaluate passing inspection criteria. This is the same for other curb ramp slope components.

- (4) If you have a ramp run that abuts against a panel that has an opposing slope grade (reverse grade), would this fail a ramp?**

ODOT’s practice requires a 5 foot separation between parallel curb ramps styles and driveways. The running slope cannot not exceed the grade of the road. A design exception is required if the the space is not provided.

- (5) Can the maximum ramp running slope of 8.3% and the maximum cross slope of 2% be exceeded during construction?**

If a design exception specific to the slopes is not listed in the contract plans, the slopes cannot be exceeded. If a design exception is listed in the contract plans, specific to the slopes, Technical Bulletin RD19-02(B) allows for additional values beyond the maximum slopes to be constructed. The Technical bulletin values only apply when a design exception is listed in the contract plans and is approved by the State Traffic Roadway Engineer.

M. Gutter

- (1) How will we measure the road cross slope outside the gutter pan for ramp retro-fits?**

The measurement will be taken perpendicular to the curb (parallel with the counter slope) for consistency. Unmarked crossing will make it impossible to determine the exact path of travel of a pedestrian. It is presumed mobility devices in most cases will approach the entrance perpendicular to the grade break at the curb.



- (2) **The training conveys that the counter slope on the asphalt patching in front of the gutter should match the existing asphalt slope, or not exceed 5%. There is some lingering confusion about this – does it have to match the existing slope or can it be different (up to 5%).**

Projects where construction only encompasses curb ramps retrofits and remediation, pavement reconstruction is limited to the surrounding area of the curb ramp in most cases. In that circumstance, the adjacent surface slope for the pedestrian access route/street crossing cannot reduce existing accessibility performance. The road cross slope of the highway street crossing (counter slope adjacent to the gutter pan) is to be no steeper than 5%, except when existing conditions already exceed that requirement. When the existing pavement (counter slope adjacent to the gutter pan) exceeds 5% prior to construction, in no case shall the slope in the path of travel exceed the existing slope conditions. Refer to the HDM, current bulletins and design manuals for guidance on construction projects requirements.

- (3) **Will water pooling in front of or on the ramp fail that ramp?**

There is currently no box on the inspection form to account for water pooling on/in front of curb ramps. Ramps should prevent the accumulation of standing water. Ramps should be rejected for standing water on or in front of them. Hydraulic considerations should be incorporated into the design and therefore is in the contract.

- (4) **At a Signalized/Uncontrolled intersection gutter flow slope could be 5.0%, how does this affect transitioning up into the cross slope 1 field? Do you follow the 0.5% per foot guidance?**

ODOT's practice is to warp cross slope changes at 0.5% when necessary for the site. The cross slope measurement and recorded should not be affected. Record and capture the cross slope 1 measurement at the top of the ramp run. Levels are placed and measurements are observed down the ramp run to ensure the constructed ramp run does not exceed 5.0% finished cross slope on the surface of the ramp run when warping is necessary.

N. Crossings

- (1) **Inlets are not allowed in front of ramp openings. Does ODOT allow inlets elsewhere between the crosswalk stripes?**

ODOT does not permit inlets within the pedestrian access route without an approved design exception. The pedestrian access route is presumed to be the same width of the curb ramp opening/throat. Inlets within the pedestrian access route must have an accessible grate that is approved and installed for the curb ramp.

- (2) **Does the painted stop-bar for vehicles have to be behind the ramp crossing? Is this a striping comment (STR) and constitute a ramp failure?**

No this is not a curb ramp failure, but the striping needs to be noted for non-conformance with ODOT standards and corrective measures will need to be determined. The ODOT Traffic Line Manual states that the curb ramp should be located in front of the painted stop bar. The ODOT Traffic Line Manual indicates *“In sections with sidewalk, the stop bar should be placed 2 to 3 feet back from the throat of the ADA ramp (see Figure 150-B)”*.

- (3) **Does faded striping warrant a striping (STR) comment and fail a ramp? If it does, how worn away must it be?**

No, faded striping does not fail a curb ramp. The STR comment denotes when the 4'x4' clear space requirement at marked crossings is not met.

O. Intersection Control Types

- (1) **If a ramp crosses a non-signalized commercial driveway and there is no stop or yield sign for vehicles exiting the property, does the inspector assume the intersection control type for the ramps crossing the driveway as being Stop/Yield?**

Yes, as it is presumed that the driver must stop and yield to the main street before entering it.

P. Obstructions

- (1) **Is lawn or other landscaped surface considered a back of ramp obstruction (BORO)? For example, a turn space with a Y-length of 4 feet, with lawn sloping up behind the turn space at a 4:1 slope, but flush where it meets the back of turn space. Does this ramp fail?**

No, the BORO is generally a vertical obstruction such as a curb, pole, wall, or tree. General sidewalk construction requires a flush foot level area at the back of walk for ODOT sidewalks and is shown in most plans on the typical section. The back of the turn space should be constructed in that same fashion for curb ramps as well if there is not a vertical curb at the back of the level area.

Q. Measurement

- (1) **What is the minimum area you can measure a slope on?**

Any location where you can fit a 6" level that is permitted in the ODOT specification. You are only allowed to use a 6" level on surfaces where a 2 foot level does not fit. If you overlap from the truncated domes onto the smaller section of concrete generally you should have the same slope.

The current ODOT specification in RD 00759.50(d) states:

"The 6 inch smart level will be used to measure curb running slope. The 6 inch smart level will be used to measure slopes on portions of the curb ramp, gutter pan, or adjacent surfaces that cannot accommodate a 24 inch smart level. All other curb ramp locations will use a 24 inch smart level to measure slopes."

- (2) **Are inspectors required to measure slopes no closer than 6 inches from the edge of any panel?**

No, the ramp slopes should be in compliance when the SmartTool level is placed anywhere on the panel. The wording 'six inches from the edge' (from the last previous training in 2015) applied when an inspector is measuring the cross slope on a perpendicular or combination ramp style. This is still the case.

In these scenarios the cross slope that the inspector will record on the form is taken in the top six inches of the ramp, closest to the turn space, *if* the cross slope from that point down to the curb is less than or equal to the gutter flow slope. If the cross slope *anywhere* on ramp run 1 is over the

value of the gutter flow slope, then *that* is the number that will be recorded as the cross slope for ramp run 1.

See question 4 in the Gutter Section of this document.

IV. Blended Transitions

(1) Does a blended transition element pass when it equals 5% or less than 5% only?

Blended transition elements must have a running slope 1 that is less than 5.0%. The inspection form will only accept values up to 4.9% as passing when entered, if the running slope 1 exceeds 4.9% the ramp is not a Blended Transition Curb Ramp Style. The inspector will need to use a different inspection form. The standard drawings and inspection forms scheduled for the next release are being updated to clarify any inconsistencies.

V. Combination Curb Ramps

VI. Accessible Route Islands

A. Raised Medians

B. Cut-Through Islands

VII. End-Of-Walk Ramps

- (1) **Is a landing space required if the grade of the ramp is >5.0% or only when a turn is required once off the ramp?**

When the running slope of the ramp run is greater than 5.0%, a level area (landing) is required at the bottom of the ramp run to rest. When a turning maneuver is required to continue on the path of travel, a level area (turning space) is required at the bottom.

- (2) **The standard drawings for an End-of-Walk Ramp Style shows the X-slope of the bottom turn space opposite from the picture depicted on the End-of-Walk Curb Ramp Inspection Form. Which one is correct?**

The inspection form is correct for the end of walk style curb ramp with the Y direction along the ramp run and the X direction with the cross slope of the sidewalk. For inventory data collection, this ramp style is most often midblock or at a bridge end. This is in alignment with the sidewalk asset methodology where the cross slope is X value and the Y value is the path of travel slope.

The standard drawings will be revised to reduce confusion; the X dimension was used initially to show a variable length rather than a fixed dimension.

- (3) **Can End-of-Walks have a landing at the top of the ramp?**

ODOT's standard is a level area (landing) at the bottom of the ramp. Parallel curb ramps have a running slope 1 that is in-line with the direction of sidewalk travel and ramps down to a level turning space where the pedestrian can change directions and continue down the roadway. Site specific constraints may require designs which include a landing at the top of the ramp run 1 and site specific situations would need to be evaluated on a case by case basis; however a 4.0ft x 4.0ft clear space at the bottom would still be needed.

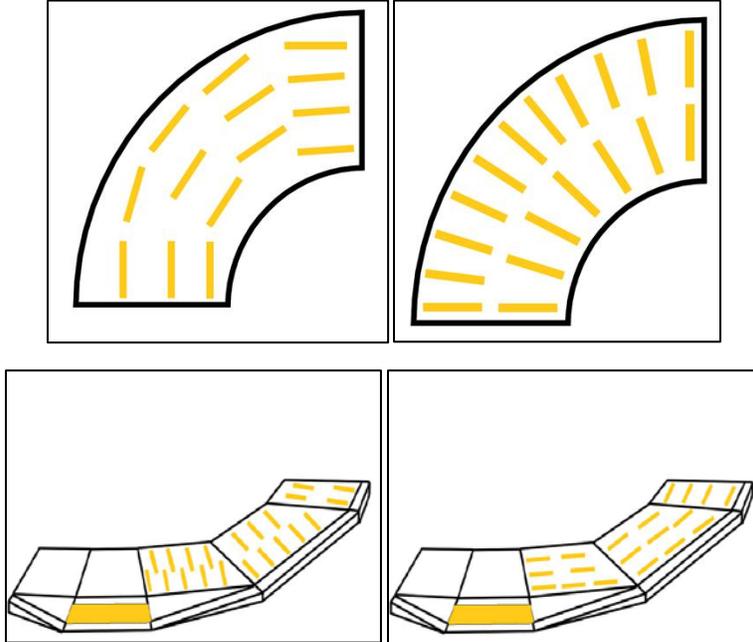
- (4) **Do we inspect the tapered concrete section of End-of-Walk ramps for lips or anything?**

Look for vertical discontinuities any place where two different surfaces types meet and along the pedestrian facility which is constructed of Portland Cement Concrete (taper or not). The asphalt constructed portion is a part of the roadway shoulder facility and shall be inspected in accordance with typical roadbed techniques and methodology.

VIII. Parallel Ramps

- (1) **How do you *consistently* measure ramp runs that are on a radius or have multiple angled panels?**

Ramp runs will be measured as close to possible parallel to the curb for the running slope and perpendicular to the curb for cross slope.



- (2) **Does the 5ft area in between two parallel ramps or ramp and driveway need to be less than or equal to road slope, or just under 5% Running Slope?**

The section between two parallel ramps needs to be less than or equal to the grade of the road.

IX. Perpendicular Ramps

X. Unique Design Ramps

XI. Curb Ramp Inspection Forms

- (1) **How do you know what highway to put when your intersection is at a location where two highways intersect?**

The lower highway number is always used as it is considered the primary highway facility.

- (2) **The new inspection form does not provide an option to record the slope differential between the curb running slope and concrete gutter pan?**

The slope differential is no longer measured and therefore does not need to be recorded. The curb ramp should be constructed to match the contract plans and standard drawings.

- (3) **Is there going to be a new comment added to the Standard Comments List to denote when an expansion joint is found within the ramp limits?**

ODOT will consider adding as a standard comment.

XII. Push Button Inspection Forms

- (1) Does an inspector need to fill out a Push Button Inspection Form for every ramp at a signalized intersection?**

A push button inspection form is only required at curb ramp locations with push buttons installed. A separate push button form is used for each crossing even when the push buttons are installed on the same pedestal or signal pole.

- (2) Should the Push Button Inspection Form have more pictures of Clear Space types so there's more consistency with recording the data?**

Exhibit C is under development which is a new exhibit to help clarify pushbutton surface types.

XIII. Additional Resources

(1) Where can I find Technical Bulletin RD19-02(B)?

The bulletin is being distributed and reviewed during the ADA curb ramp certification. You can find the bulletin at the following link:

https://www.oregon.gov/ODOT/Engineering/Doc_TechnicalGuidance/RD19-02B.pdf