Unit 12 Lesson 1: General Construction Updates and Expanded Information

Course Navigation Tips:

- To complete each lesson, you must interact with the audio narration at the top of each section.
- You may drag the toggle on the playback bar to the last 5 seconds and let it play. This will allow the system to note it as complete.
- You are encouraged to complete the entire unit before closing in case your progress is not saved.

You must click on all images before moving on to next Lesson.

02:33

Start Audio Narration

This Lesson will:

- Expand on topics that have already been covered in the training that are often missed or overlooked in the curb ramp inspection process.
- provide updates to topics related to curb ramp inspections.

This Lesson will cover in more detail:

- Curb Ramp Detail Title Block
- Oregon Standard Drawing Effective Date
- Design Exceptions and Crosswalk Closures
- Quality Assurance of Inspection Form Submittals
- Attaching Photos to the Inspection Form
- Oregon Standard Specifications Updates
- Standard Drawing Updates

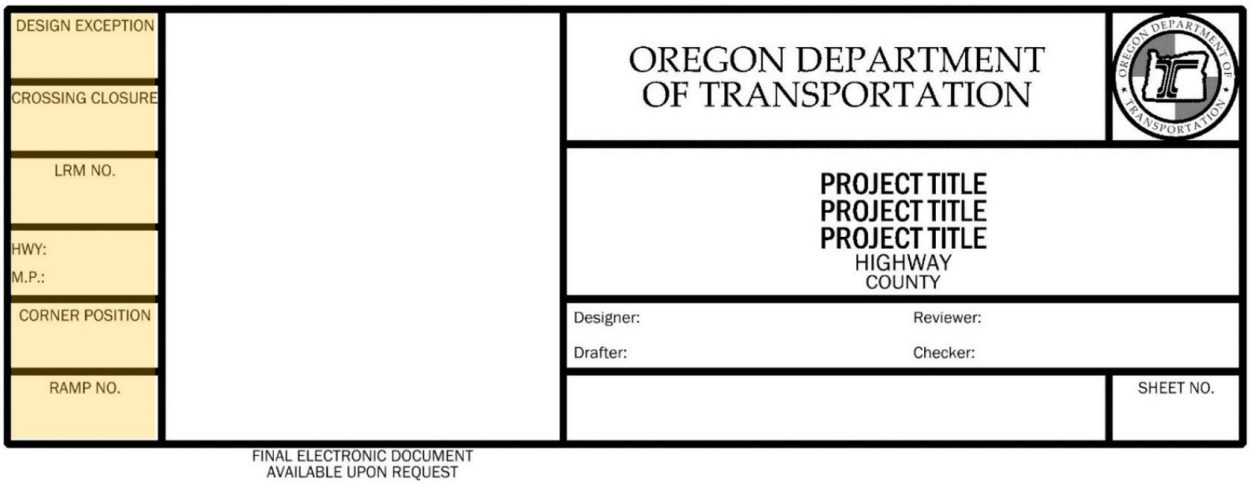
Curb Ramp Detail Sheet Information

In Unit 2 of the course there is discussion related to contract plans. Generally, projects will provide a curb ramp detail sheet showing construction layout for the site in the **"B"** Sheet series of ODOT contract plans. Each curb ramp detail sheet has a standardized title block in the lower right-hand corner of the page. **The title block provides useful information for completing the curb ramp and push button inspection forms.** Review the figure below.

Information includes:

- Design Exception Document Control Number
- Crosswalk Closure Document Number
- Linear Reference Method Number (LRM)
- Highway Number

- Milepoint of the Intersection (MP)
- Corner Position of the Curb Ramp
- Ramp Number of the Curb Ramp

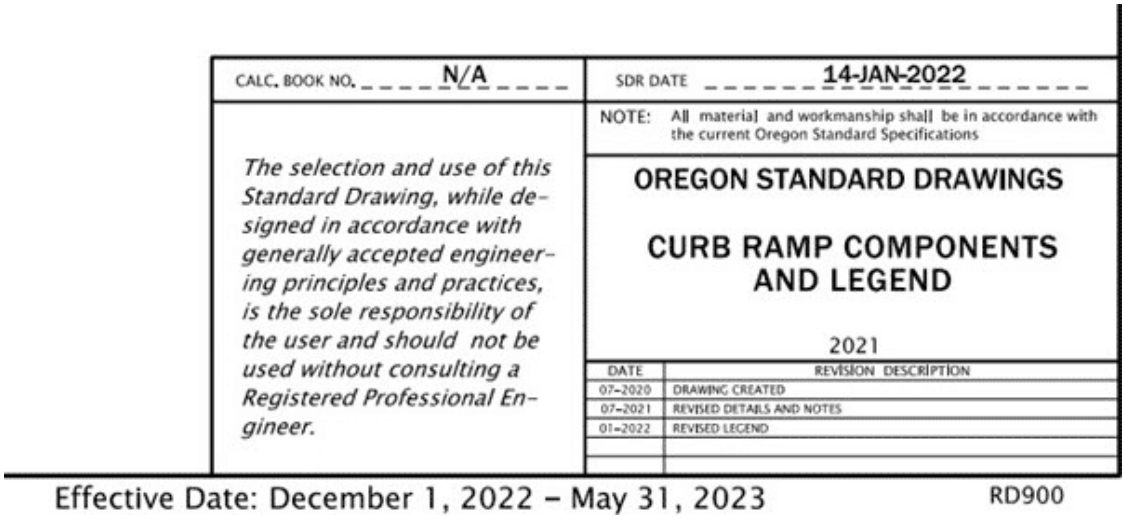


Curb Ramp Detail Sheet Title Block

Oregon Standard Drawing Effective Date

ODOT standards for curb ramps incorporate current guidance from the US Access Board, Federal and State laws. Oregon Standard Drawings undergoes maintenance and improvements every six months.

Project contract documents include the Standard Drawings that are effective at the time of advertisement. During construction, the project incorporates the applicable ODOT standards that were used at the time of advertisement. The effective date for the Oregon Standard Drawing is shown in the bottom right corner of the drawing.



Effective Date on Standard Drawing

02:38

Continue Audio Narration

Design Exceptions and Crosswalk Closures

Design Exception for a Single Curb Ramp System

When a project designs and constructs a single curb ramp system to serve two crosswalks, one for each direction of pedestrian travel, an ADA design exception for a single curb ramp is required. Refer to Standard Drawings RD916 RD922, RD938, RD940. The ADA Design Exception document control number should be listed in the left-hand column of the title block on the curb ramp detail sheet.

Add the design exception control number on the Curb Ramp Inspection Form. Use the ADA Design Exception Search with the control number to look up the approved design exception document. You may also find documents for your project by using a project key number, and highway milepoint ranges using this database which is uploaded with information nightly.

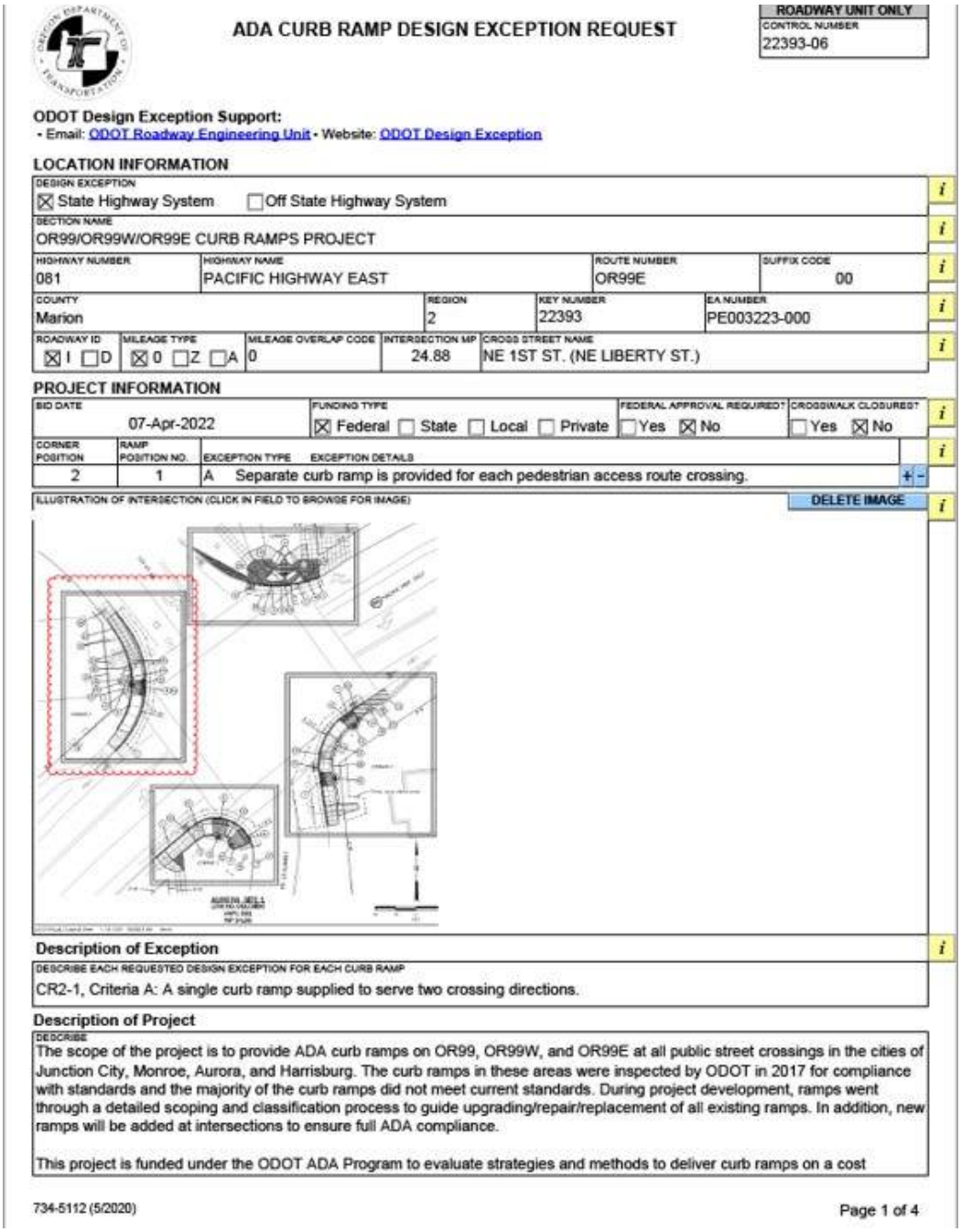
Direct links to ADA Design Exceptions may also be available in FACS-STIP application. FACS-STIP asset data is currently uploaded twice a year, in January and July, so it is possible the document may not be uploaded at the time of inspection.

Searching for Approved ADA Curb Ramp Design Exceptions

Design Exceptions

DESIGN EXCEPTIONS

Find the "Search for Approved ADA Curb Ramp Design Exceptions" on the Design Exception Website with Links to the ADA DE Search



ADA CURB RAMP DESIGN EXCEPTION REQUEST

ROADWAY UNIT ONLY
CONTROL NUMBER
22393-06

ODOT Design Exception Support:
- Email: ODOT Roadway Engineering Unit - Website: ODOT Design Exception

LOCATION INFORMATION

DESIGN EXCEPTION
☒ State Highway System ☐ Off State Highway System

SECTION NAME
OR99/OR99W/OR99E CURB RAMPS PROJECT

HIGHWAY NUMBER	HIGHWAY NAME	ROUTE NUMBER	SUFFIX CODE
081	PACIFIC HIGHWAY EAST	OR99E	00

COUNTY	REGION	KEY NUMBER	EA NUMBER
Marion	2	22393	PE003223-000

ROADWAY ID	MILEAGE TYPE	MILEAGE OVERLAP CODE	INTERSECTION MP	CROSS STREET NAME
☒ I ☐ D	☒ 0 ☐ Z ☐ A	0	24.88	NE 1ST ST. (NE LIBERTY ST.)

PROJECT INFORMATION

BID DATE	FUNDING TYPE	FEDERAL APPROVAL REQUIRED?	CROSSWALK CLOSURE?
07-Apr-2022	☒ Federal ☐ State ☐ Local ☐ Private	☐ Yes ☒ No	☐ Yes ☒ No

CORNER POSITION	RAMP POSITION NO.	EXCEPTION TYPE	EXCEPTION DETAILS
2	1	A	Separate curb ramp is provided for each pedestrian access route crossing.

ILLUSTRATION OF INTERSECTION (CLICK IN FIELD TO BROWSE FOR IMAGE) — DELETE IMAGE

Description of Exception

DESCRIBE EACH REQUESTED DESIGN EXCEPTION FOR EACH CURB RAMP
CR2-1, Criteria A: A single curb ramp supplied to serve two crossing directions.

Description of Project

DESCRIBE
The scope of the project is to provide ADA curb ramps on OR99, OR99W, and OR99E at all public street crossings in the cities of Junction City, Monroe, Aurora, and Harrisburg. The curb ramps in these areas were inspected by ODOT in 2017 for compliance with standards and the majority of the curb ramps did not meet current standards. During project development, ramps went through a detailed scoping and classification process to guide upgrading/repair/replacement of all existing ramps. In addition, new ramps will be added at intersections to ensure full ADA compliance.

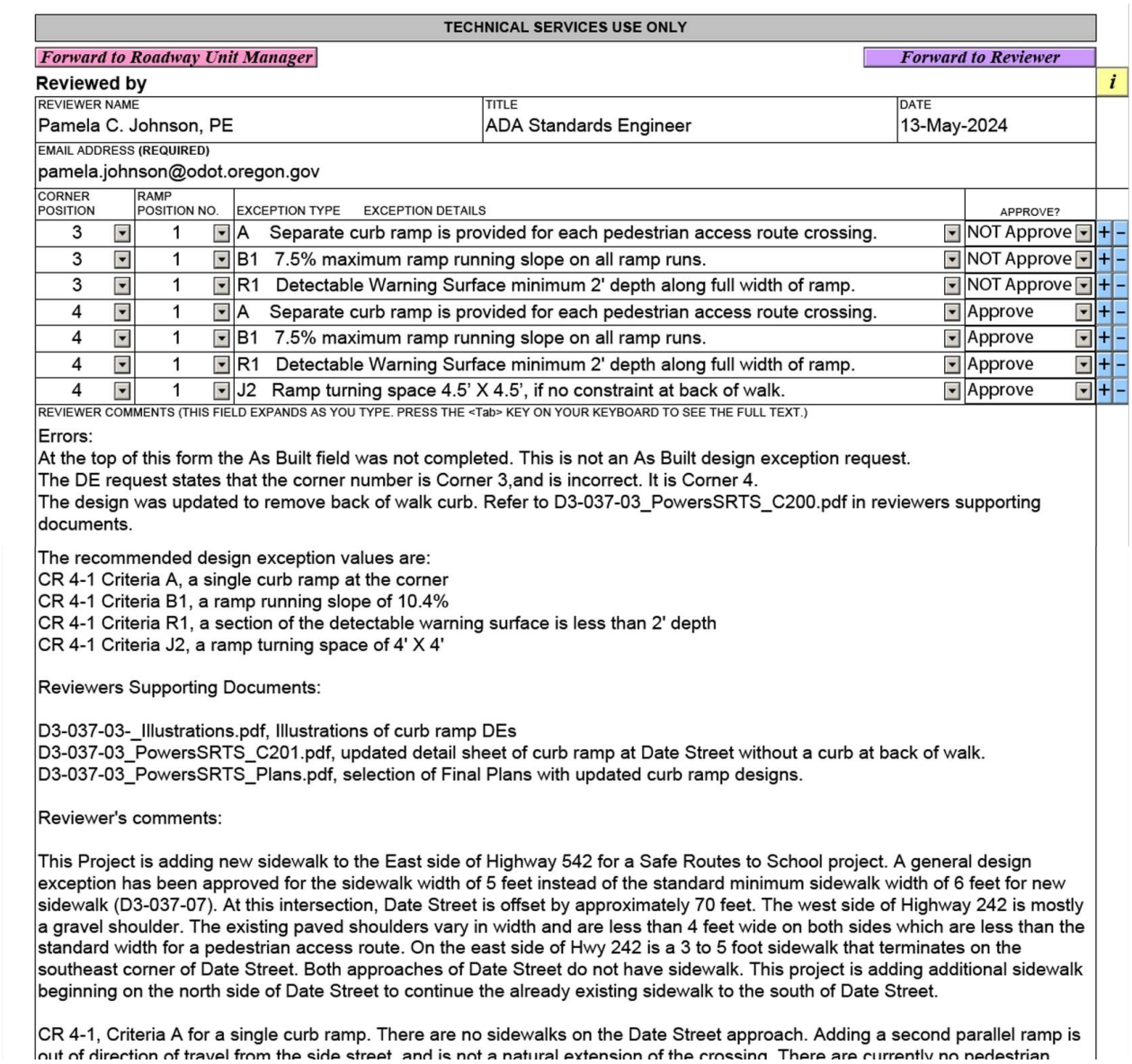
This project is funded under the ODOT ADA Program to evaluate strategies and methods to deliver curb ramps on a cost

734-5112 (5/2020) Page 1 of 4

Example ADA Design Exception Document for a Single Curb Ramp

Once you retrieve the design exception document, review it alongside the construction and curb ramp detail sheets. Note all of the approved design exception components on the curb ramp system that exceed the acceptable passing values on the Curb Ramp Inspection Form.

Note: The approved design exception values may not be the same as what is given in the Description of the Exception section of the form. The approved criteria and values are provided in the Reviewer's Comments towards the end of the ADA Design exception. Verify any required mitigation treatment is incorporated into the curb ramp system when specified in the design exception approval.



TECHNICAL SERVICES USE ONLY

Forward to Roadway Unit Manager *Forward to Reviewer*

Reviewed by

REVIEWER NAME	TITLE	DATE
Pamela C. Johnson, PE	ADA Standards Engineer	13-May-2024

EMAIL ADDRESS **(REQUIRED)**
pamela.johnson@odot.oregon.gov

CORNER POSITION	RAMP POSITION NO.	EXCEPTION TYPE EXCEPTION DETAILS	APPROVE?
3	1	A Separate curb ramp is provided for each pedestrian access route crossing.	NOT Approve
3	1	B1 7.5% maximum ramp running slope on all ramp runs.	NOT Approve
3	1	R1 Detectable Warning Surface minimum 2' depth along full width of ramp.	NOT Approve
4	1	A Separate curb ramp is provided for each pedestrian access route crossing.	Approve
4	1	B1 7.5% maximum ramp running slope on all ramp runs.	Approve
4	1	R1 Detectable Warning Surface minimum 2' depth along full width of ramp.	Approve
4	1	J2 Ramp turning space 4.5' X 4.5', if no constraint at back of walk.	Approve

REVIEWER COMMENTS (THIS FIELD EXPANDS AS YOU TYPE. PRESS THE <Tab> KEY ON YOUR KEYBOARD TO SEE THE FULL TEXT.)

Errors:
At the top of this form the As Built field was not completed. This is not an As Built design exception request.
The DE request states that the corner number is Corner 3,and is incorrect. It is Corner 4.
The design was updated to remove back of walk curb. Refer to D3-037-03_PowersSRTS_C200.pdf in reviewers supporting documents.

The recommended design exception values are:
CR 4-1 Criteria A, a single curb ramp at the corner
CR 4-1 Criteria B1, a ramp running slope of 10.4%
CR 4-1 Criteria R1, a section of the detectable warning surface is less than 2' depth
CR 4-1 Criteria J2, a ramp turning space of 4' X 4'

Reviewers Supporting Documents:

D3-037-03-_Illustrations.pdf, Illustrations of curb ramp DEs
D3-037-03_PowersSRTS_C201.pdf, updated detail sheet of curb ramp at Date Street without a curb at back of walk.
D3-037-03_PowersSRTS_Plans.pdf, selection of Final Plans with updated curb ramp designs.

Reviewer's comments:

This Project is adding new sidewalk to the East side of Highway 542 for a Safe Routes to School project. A general design exception has been approved for the sidewalk width of 5 feet instead of the standard minimum sidewalk width of 6 feet for new sidewalk (D3-037-07). At this intersection, Date Street is offset by approximately 70 feet. The west side of Highway 242 is mostly a gravel shoulder. The existing paved shoulders vary in width and are less than 4 feet wide on both sides which are less than the standard width for a pedestrian access route. On the east side of Hwy 242 is a 3 to 5 foot sidewalk that terminates on the southeast corner of Date Street. Both approaches of Date Street do not have sidewalk. This project is adding additional sidewalk beginning on the north side of Date Street to continue the already existing sidewalk to the south of Date Street.

CR 4-1, Criteria A for a single curb ramp. There are no sidewalks on the Date Street approach. Adding a second parallel ramp is out of direction of travel from the side street, and is not a natural extension of the crossing. There are currently no pedestrian

Example Reviewer's Comments in the ADA Design Exception Form

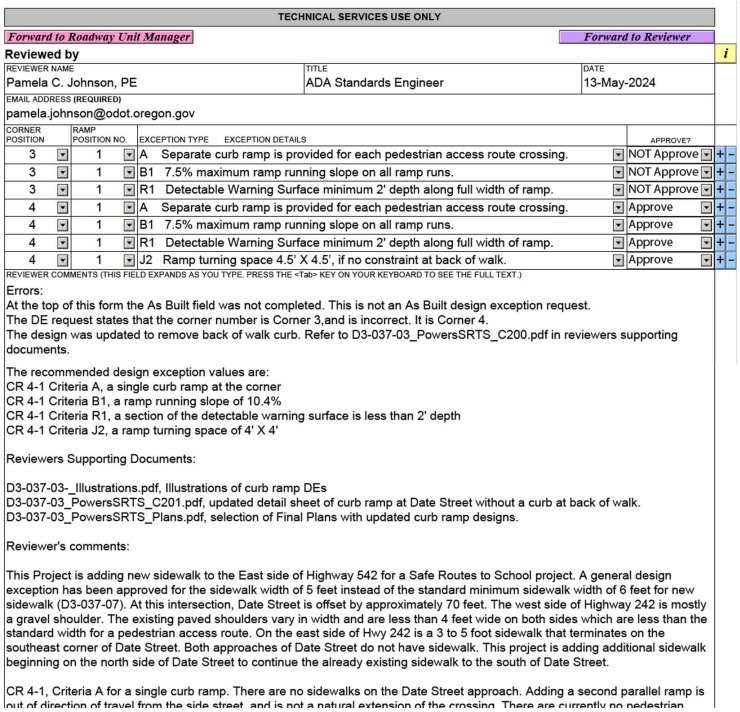
Review technical bulletin RD19-02(B) for acceptance policy and tolerances on curb ramp systems with approved design exceptions. This policy is available on the Roadway Assets & Inspection webpage under the general resources drop down list.

PDF

RD19-02B.pdf
52.7 KB

Knowledge Check

In the ADA Design Exception Approval below, what are the approved design exceptions? Click on the image to enlarge.



TECHNICAL SERVICES USE ONLY

Forward to Roadway Unit Manager *Forward to Reviewer*

Reviewed by

REVIEWER NAME	TITLE	DATE
Pamela C. Johnson, PE	ADA Standards Engineer	13-May-2024

EMAIL ADDRESS (REQUIRED)
pamela.johnson@odot.oregon.gov

CORNER POSITION	RAMP POSITION NO.	EXCEPTION TYPE	EXCEPTION DETAILS	APPROVE?
3	1	A	Separate curb ramp is provided for each pedestrian access route crossing.	NOT Approve
3	1	B1	7.5% maximum ramp running slope on all ramp runs.	NOT Approve
3	1	R1	Detectable Warning Surface minimum 2' depth along full width of ramp.	NOT Approve
4	1	A	Separate curb ramp is provided for each pedestrian access route crossing.	Approve
4	1	B1	7.5% maximum ramp running slope on all ramp runs.	Approve
4	1	R1	Detectable Warning Surface minimum 2' depth along full width of ramp.	Approve
4	1	J2	Ramp turning space 4.5' X 4.5', if no constraint at back of walk.	Approve

REVIEWER COMMENTS (THIS FIELD EXPANDS AS YOU TYPE. PRESS THE <Tab> KEY ON YOUR KEYBOARD TO SEE THE FULL TEXT.)

Errors:
At the top of this form the As Built field was not completed. This is not an As Built design exception request.
The DE request states that the corner number is Corner 3,and is incorrect. It is Corner 4.
The design was updated to remove back of walk curb. Refer to D3-037-03_PowersSRTS_C200.pdf in reviewers supporting documents.

The recommended design exception values are:
CR 4-1 Criteria A, a single curb ramp at the corner
CR 4-1 Criteria B1, a ramp running slope of 10.4%
CR 4-1 Criteria R1, a section of the detectable warning surface is less than 2' depth
CR 4-1 Criteria J2, a ramp turning space of 4' X 4'

Reviewers Supporting Documents:

D3-037-03-_Illustrations.pdf, Illustrations of curb ramp DEs
D3-037-03_PowersSRTS_C201.pdf, updated detail sheet of curb ramp at Date Street without a curb at back of walk.
D3-037-03_PowersSRTS_Plans.pdf, selection of Final Plans with updated curb ramp designs.

Reviewer's comments:

This Project is adding new sidewalk to the East side of Highway 542 for a Safe Routes to School project. A general design exception has been approved for the sidewalk width of 5 feet instead of the standard minimum sidewalk width of 6 feet for new sidewalk (D3-037-07). At this intersection, Date Street is offset by approximately 70 feet. The west side of Highway 242 is mostly a gravel shoulder. The existing paved shoulders vary in width and are less than 4 feet wide on both sides which are less than the standard width for a pedestrian access route. On the east side of Hwy 242 is a 3 to 5 foot sidewalk that terminates on the southeast corner of Date Street. Both approaches of Date Street do not have sidewalk. This project is adding additional sidewalk beginning on the north side of Date Street to continue the already existing sidewalk to the south of Date Street.

CR 4-1, Criteria A for a single curb ramp. There are no sidewalks on the Date Street approach. Adding a second parallel ramp is out of direction of travel from the side street, and is not a natural extension of the crossing. There are currently no pedestrian

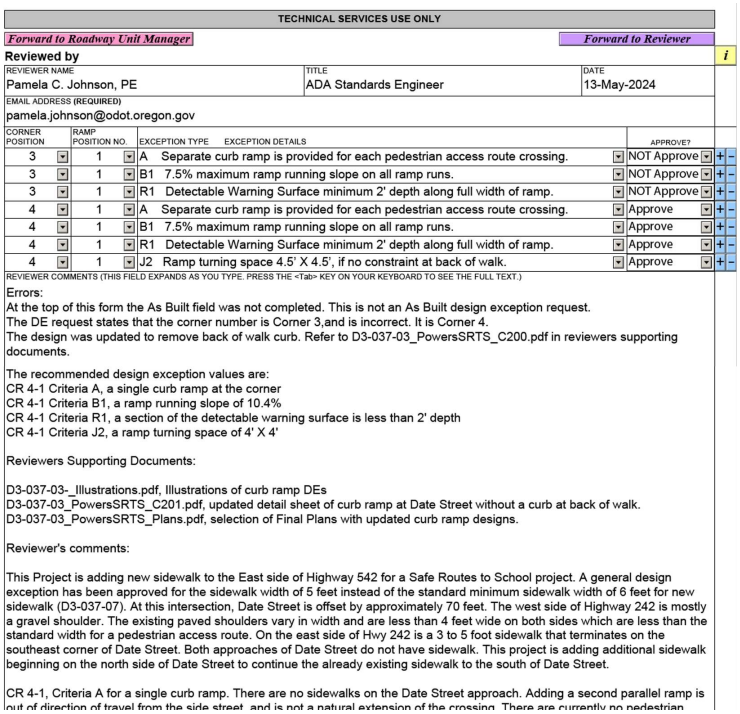
- [ ] CR 3-1 Criteria A, a single curb ramp at the corner
- [ ] CR 4-1 Criteria J2, A ramp turning space less than 4.5×4.5 with no constraint at back of walk.
- [ ] CR 3-1 Criteria R1, Detectable Warning Surface less than 2' in depth
- [ ] CR 3-1 Criteria J2, A ramp turning space less than 4.5×4.5 with no constraint at back of walk.
- [ ] CR 4-1 Criteria B1, a ramp running slope greater than 7.5%
- [ ] CR 4-1 Criteria A, a single curb ramp at the corner
- [ ] CR4-1 Criteria R1, Detectable Warning Surface less than 2' in depth

SUBMIT

▶ 00:09

Continue Audio Narration

In the ADA Design Exception Approval below, what is the approved value for the ramp running slope for CR 4-1? Click on the image to enlarge.



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REVIEWER NAME	TITLE	DATE
Pamela C. Johnson, PE	ADA Standards Engineer	13-May-2024

EMAIL ADDRESS (REQUIRED)
pamela.johnson@odot.oregon.gov

CORNER POSITION	RAMP POSITION NO.	EXCEPTION TYPE	EXCEPTION DETAILS	APPROVE?
3	1	A	Separate curb ramp is provided for each pedestrian access route crossing.	NOT Approve
3	1	B1	7.5% maximum ramp running slope on all ramp runs.	NOT Approve
3	1	R1	Detectable Warning Surface minimum 2' depth along full width of ramp.	NOT Approve
4	1	A	Separate curb ramp is provided for each pedestrian access route crossing.	Approve
4	1	B1	7.5% maximum ramp running slope on all ramp runs.	Approve
4	1	R1	Detectable Warning Surface minimum 2' depth along full width of ramp.	Approve
4	1	J2	Ramp turning space 4.5' X 4.5', if no constraint at back of walk.	Approve

REVIEWER COMMENTS (THIS FIELD EXPANDS AS YOU TYPE. PRESS THE <Tab> KEY ON YOUR KEYBOARD TO SEE THE FULL TEXT.)

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The design was updated to remove back of walk curb. Refer to D3-037-03_PowersSRTS_C200.pdf in reviewers supporting documents.

The recommended design exception values are:
CR 4-1 Criteria A, a single curb ramp at the corner
CR 4-1 Criteria B1, a ramp running slope of 10.4%
CR 4-1 Criteria R1, a section of the detectable warning surface is less than 2' depth
CR 4-1 Criteria J2, a ramp turning space of 4' X 4'

Reviewers Supporting Documents:

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CR 4-1, Criteria A for a single curb ramp. There are no sidewalks on the Date Street approach. Adding a second parallel ramp is out of direction of travel from the side street, and is not a natural extension of the crossing. There are currently no pedestrian

Type your answer here

SUBMIT

02:22

Continue Audio Narration

Crosswalk Closure Relationship with Curb Ramp Systems

In Oregon, every roadway intersection provides crosswalks for pedestrians. If an intersection has sidewalks, the sidewalks must be accessible. To be accessible, the sidewalks at the crosswalk corner must have a curb ramp system to serve each crosswalk. This means that there are usually two curb ramp systems at each corner with sidewalk. ODOT's design standard is to provide a curb ramp system for each crosswalk. Where a crosswalk is formally closed, a curb ramp system for that crosswalk is not provided. **A crosswalk can only be closed by the jurisdictional road authority. For crosswalks on or along the state highway, approved crosswalk closures are documented and stored.**

To retrieve or view Crosswalk Closure Documents, use the ADA Crosswalk Closure layer in FACS-STIP web-based application. Refer to FACS-STIP Unit 4 for directions on how to locate a document number. If you are unable to locate the document, contact your project liaison. The Crosswalk Closure document number is listed in the left-hand column of the title block on the curb ramp detail sheet.

INTEROFFICE MEMO

ENGINEERING & TECHNICAL SERVICES
Traffic-Roadway Section, MS#5
4040 Fairview Industrial Drive SE
Salem, Oregon 97302-1142
Office Phone: (503) 986-3568

TO:

File Code: TRA 07-11-06
LRM 13100I00, MP 8.93
Key No. M22051
Approval No. 2023-029.1

FROM: State Traffic-Roadway Engineer

SUBJECT: Request for Crosswalk Closure
Netarts Highway (OR-131) at Grove Avenue
City of Tillamook

I have reviewed your request to close the eastern crosswalk at the subject intersection as shown in the diagram below. Your request notes that the project is addressing a location under existing conditions where pedestrians cannot complete the crossing because of a driveway in conflict at one or more ramp positions of an intersection. The conflicted ramp positions cannot be remedied by skewing the crosswalk up to 15 degrees or by offsetting the ramp up to 10 feet as described in Technical Bulletin RD21-01(B). Closing this crosswalk addresses equal access to these pedestrian facilities until a future project that makes substantial changes to this location can re-evaluate this closure.

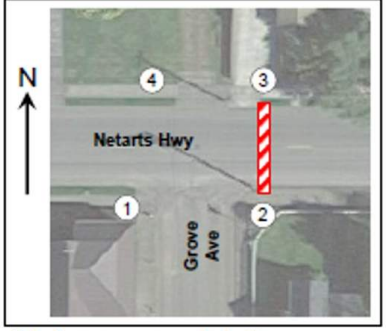
In accordance with Oregon Administrative Rule 734-020-0410, I approve your request with the following conditions:

1. Ensure ADA compliance by following ODOT's ADA-related design standards, design exceptions, and inspection process.
2. Installation shall follow the requirements of Operational Notice MG 100-107.
3. The closure should be implemented by installing the following visual and detectable crosswalk closure treatments:

Crosswalk	Ramp	Approved Closure Treatment	
		Visual	Detectable[1]
Eastern	2.2	Sign OR 22-7 (double sided)	Required
	3.1	None[4]	None[2]

[1] A detectable closure treatment may be a crosswalk closure support (See TM 240), a detectable buffer, railing, or other approved feature.
[2] A detectable crosswalk closure treatment is not needed for this ramp due to the absence of an intersecting street or pedestrian facility which might suggest the presence of a crosswalk to a sight-impaired pedestrian.
[4] The double sided sign on the opposite corner fulfills the requirement for a visual closure treatment for this ramp.

Crosswalk Closures: Ramp 2.2 to Ramp 3.1

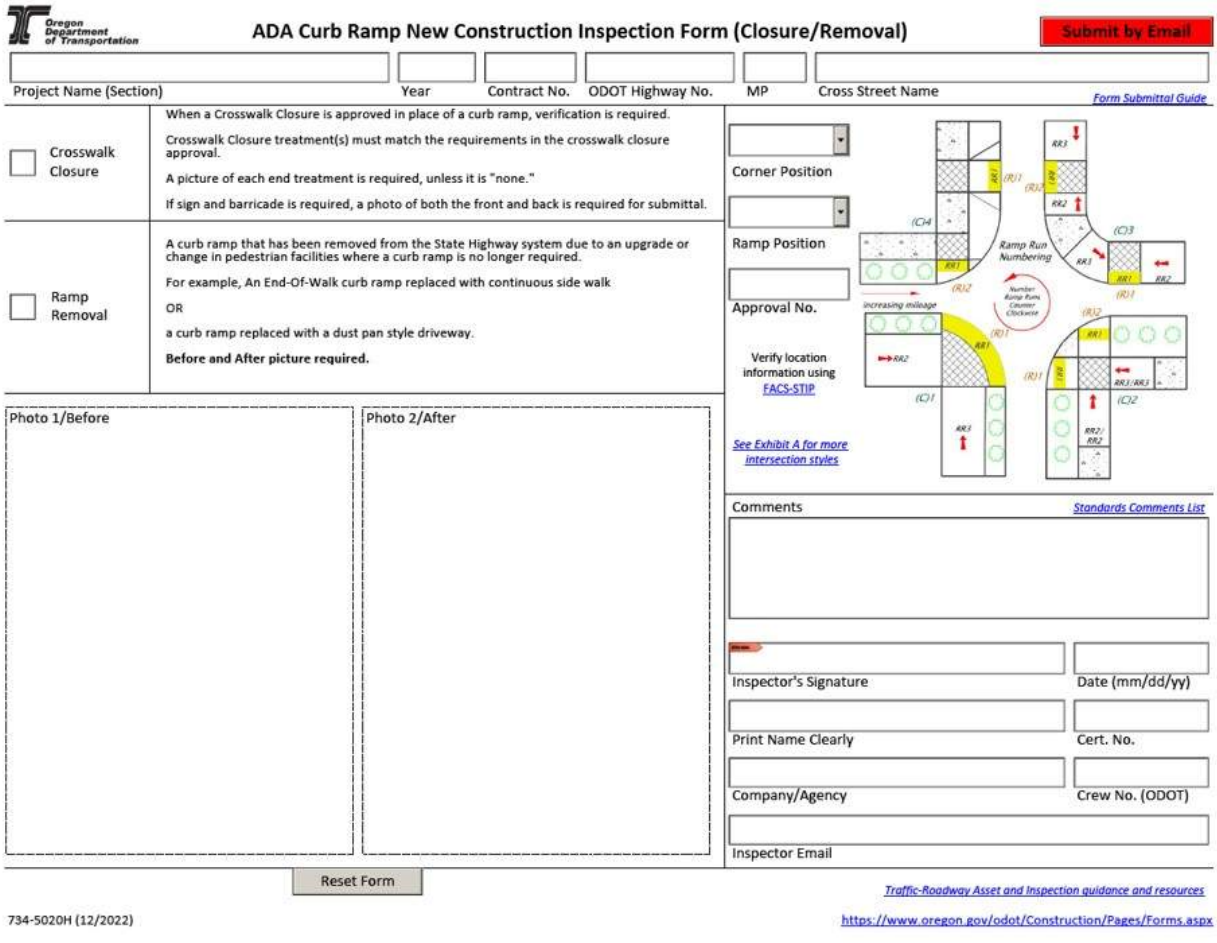


4. The crosswalk closure should be re-evaluated if/when substantial changes are made to the intersection's traffic control devices or pedestrian facilities.
5. At the earliest triggering event, the non-compliant ramp in corner 2 shall be reconstructed in a manner that, to the extent practicable, orients crossing pedestrians across Grove Avenue and not across the Netarts Highway.

Example Crosswalk Closure Approval Document

The Closure document often includes requirements or mitigation for the crosswalk closure such as a barrier, signage or landscaping. Verify that the closure approval requirements have been included in the installation. Local roads will not have a document number but should have other documentation, such as a letter or email approving a crosswalk closure.

Fill out the ADA Curb Ramp New Construction Inspection Form (Closure/Removal) as described in Unit 9 Lesson 10.



Oregon Department of Transportation

ADA Curb Ramp New Construction Inspection Form (Closure/Removal)

Submit by Email

Project Name (Section) | Year | Contract No. | ODOT Highway No. | MP | Cross Street Name

Form Submittal Guide

☐ Crosswalk Closure

When a Crosswalk Closure is approved in place of a curb ramp, verification is required.

Crosswalk Closure treatment(s) must match the requirements in the crosswalk closure approval.

A picture of each end treatment is required, unless it is "none."

If sign and barricade is required, a photo of both the front and back is required for submittal.

☐ Ramp Removal

A curb ramp that has been removed from the State Highway system due to an upgrade or change in pedestrian facilities where a curb ramp is no longer required.

For example, An End-Of-Walk curb ramp replaced with continuous side walk

OR

a curb ramp replaced with a dust pan style driveway.

Before and After picture required.

Corner Position

Ramp Position

Approval No.

Verify location information using FACS-STIP

See Exhibit A for more intersection styles

Photo 1/Before

Photo 2/After

Comments

Standards Comments List

Inspector's Signature | Date (mm/dd/yy)

Print Name Clearly | Cert. No.

Company/Agency | Crew No. (ODOT)

Inspector Email

Reset Form

Traffic-Roadway Asset and Inspection guidance and resources

734-5020H (12/2022)

https://www.oregon.gov/odot/Construction/Pages/Forms.aspx

ADA Curb Ramp New Construction Inspection Form

Q: Are Local Street System Curb ramps in Project Contracts Required to be Inspected?

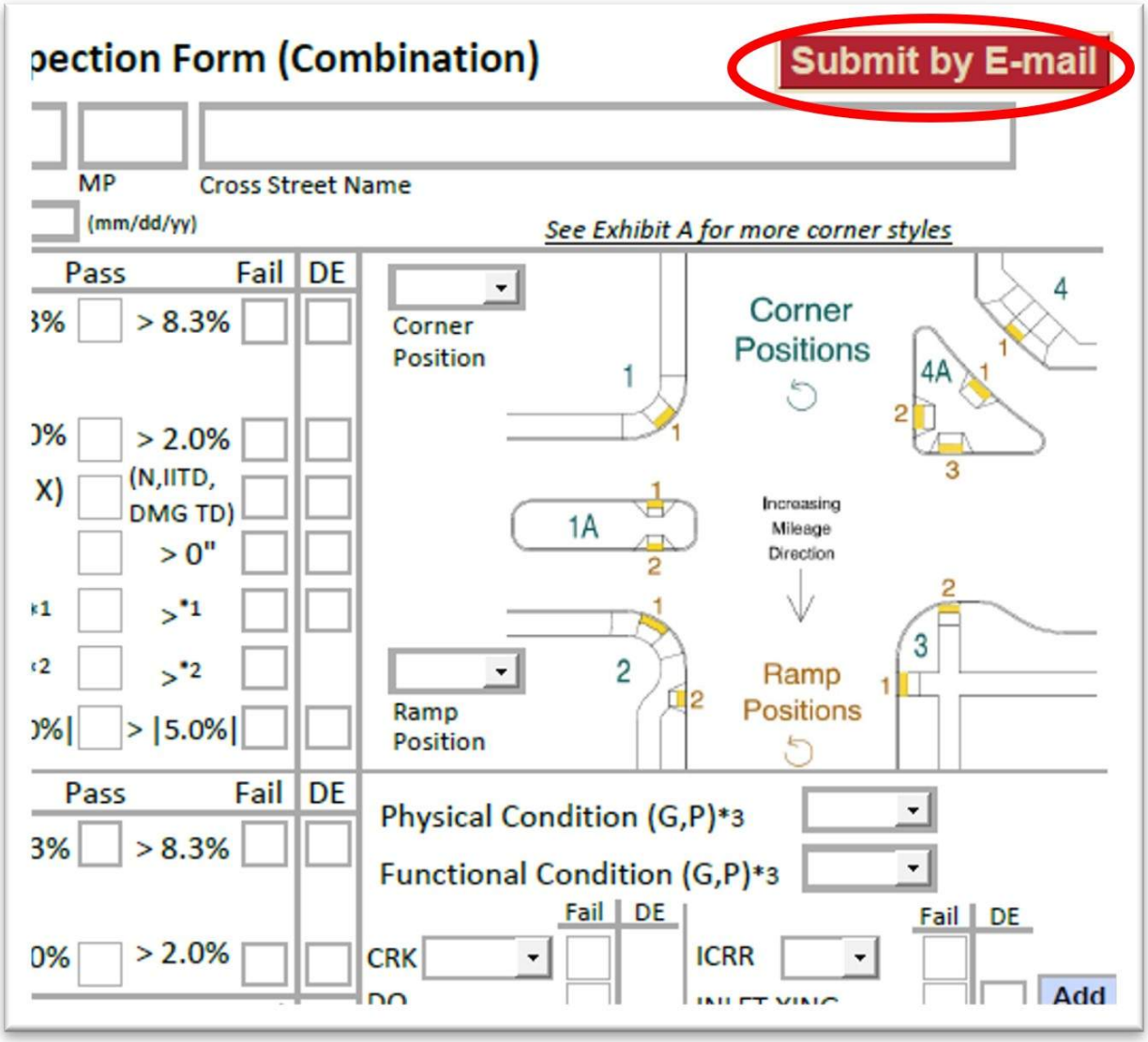
A: Yes, ADA Curb Ramp Inspection Forms are required to be turned in on any ODOT contract even if they are on the local street system. It is the contract process ODOT uses to accept curb ramp construction. It is used for project records, but it is not entered into the ODOT asset data base. Local street curb ramps do not have a Linear Reference Method (LRM) or milepoint associated with them. Provide both the main street and cross street names in the Cross Street Name Box on the top of the inspection form.

03:56

Continue Audio Narration

Inspection Form Submittal Quality Assurance Checklist

Refer to the Inspection Form Submittal Guide available on the website for instructions and Unit 11 of this training. All **forms must be submitted electronically with the "Submit by E-mail" button** on the inspection form to be received by the Roadway Asset Team. **Forms with missing information or errors will be returned for corrections. Only passing curb ramp inspections should be submitted** to the Roadway Asset Team. Failing inspections will require the remediation of failing criteria.



Submit by E-Mail button on the Curb Ramp Inspection Form

Prior to submitting the Curb Ramp Inspection Form, review the form for the following information.

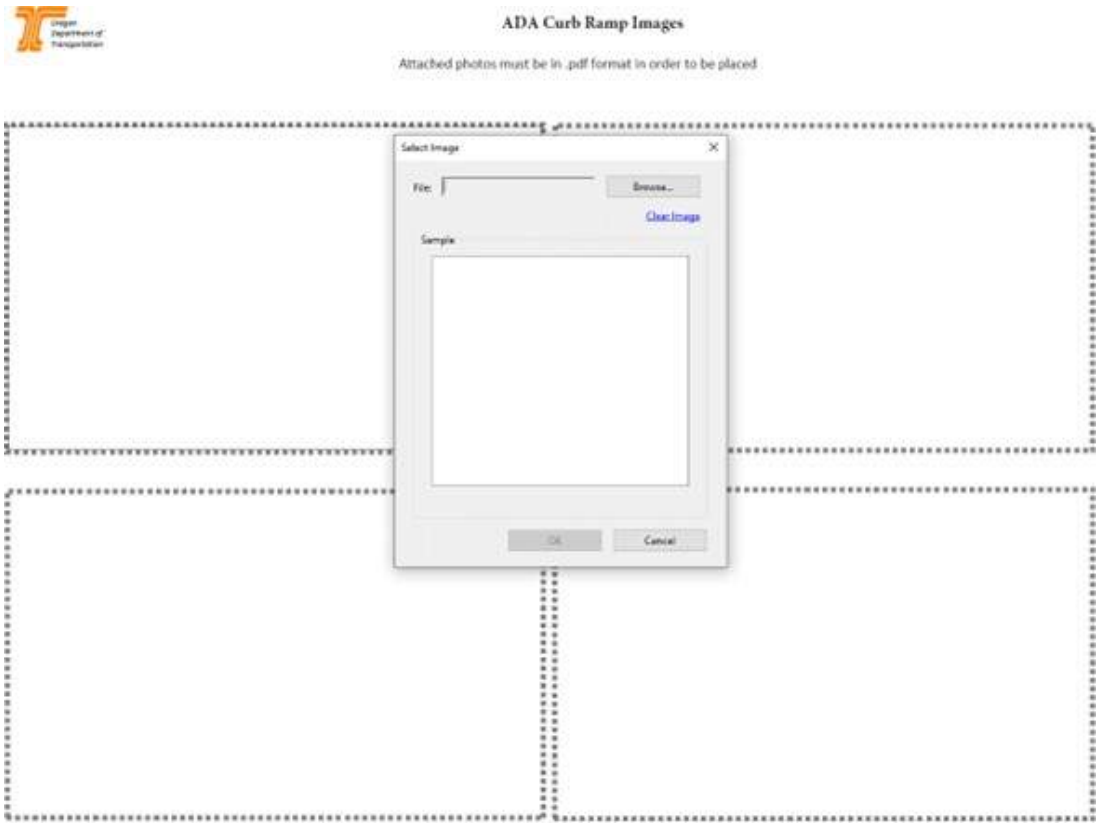
The Quality Assurance Checklist includes the following items:

- ☐ Corner Position is correct.
- ☐ Ramp Position is correct.

- [ ] LRM/Highway Number is Correct.
- [ ] Mile Point is Correct.
- [ ] Street Name matches the street name in FACS-STIP
- [ ] All slopes are passing values.
- [ ] All dimensions are passing values.
- [ ] Functional Condition is GOOD.
- [ ] Calibration and inspection dates match.
- [ ] Comments are entered using Standard Comments.
- [ ] Inspector Name matches the exact spelling used on the ADA Curb Ramp Inspection Certification
- [ ] Certification Number is correct.
- [ ] Photos are included in the Inspection Form.

Attaching Photos to the Inspection Form

Photos are Required on Curb Ramp, Push Button and Closed/Removed Inspection Forms. Photos are helpful to the Roadway Asset Team who are updating, adding the asset to the inventory and/or tying the intersection together. Take at least two photographs of the curb ramp system; One of the entire curb ramp system and one of the entire corner. Up to 4 images can be placed on the inspection form. Click in a blank space and select the photo from your device to be entered. You should see a dialog box as shown.



Click on any Photo Box on the Back of the Inspection Form and the Select Image dialog box will Pop Up to Upload Image

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Note, photos should be taken during the day for visual clarity. Photos taken during the evening or dusk do not provide clear, legible, final construction photos. Curb Ramp construction needs to be fully completed before submitting form and taking photos.

Guidelines for taking photos:

- Curb Ramp Construction must be completed.
- Final Roadway patching/paving must be completed.
- Clean the curb ramp and remove debris. Photo can be taken before or after measurements, as long as the curb ramp is clean.
- Remove construction and inspection equipment.
- Do not include people in photo, or cars with plates.

- Take photo from the street showing the entire curb ramp system.
- Having a Spotter Is highly recommended for safety.

Good Example Photo of Curb Ramp for Inspection Form

Good Example Photo of Curb Ramp for Inspection Form

2024 Standard Specification Updates

The 2024 edition of the Oregon Standard Specifications for Construction is effective for ODOT projects with a bid date on and after Dec. 1, 2023. Review the updates to Standard Specifications. A redline comparison of the 2021 and 2024 version is available on the Standard Specifications website.

Standard Specifications Website.

STANDARD SPECS

Some of the changes related to curb ramp system construction are listed below:

New or modified Sections-

- Red text= Updates to language
- Blue Text= Removal of language
- Green text = moved language

(Some texts and fonts have been modified based on limitations of this training program.)

Review the Redline comparison of the 2021 and 2024 Oregon Standard Specifications below.

00440.13 Field-Mixed Concrete - CGC mixed Work items listed in 00440.14(a) may be field-mixed conventionally, or by volumetric/mobile mixers conforming to ASTM C685. When approved, concrete sidewalks, concrete curb ramps, concrete driveways, and other flat concrete surfaces may be field-mixed using volumetric/mobile mixers conforming to ASTM C685,.

Request approval prior to placement. For all other CGC applications, submit written request to the Engineer for approval to use volumetric/mobile mixers conforming to ASTM C685 at least 21 Days prior to placement.

00540.50 Bridge Deck Roadway and Sidewalk Finish:

(d) Deck Sidewalk and Curb Ramp **Finish** - Finish concrete surfaces on pedestrian facilities including but not limited to sidewalks, curb ramps and pedestrian structures that contain a Pedestrian Access Route (as defined in 00759.02) according to 00759.50.

~~After the deck sidewalk surface has been struck off with a strike board, float it with a wooden or cork float. Use an edging tool on edges and at expansion joints. Remove edging tool marks prior to final finishing. Apply a light broom texture to the surface.~~

00540.03 Required Submittals for Deck Sidewalk and Curb Ramps - Material ordered or Work done before the Engineer reviews and returns the documents shall be at the Contractor's risk.

Submit the following:

(a) ADA Certification for Contractors - For all supervisory personnel who directly supervise the curb ramp Work, submit the names, telephone numbers, and copies of the ODOT ADA Certification for Contractors at least 10 Calendar Days before the preplacement conference.

(b) Working Drawings - Submit Working Drawings for curb ramp Work at least 10 Calendar Days before the construction of the curb ramp Work according to 00759.03(c).

(c) Corrective Action Plan - Unless otherwise approved, notify the Engineer before performing corrective action on curb ramps. Include temporary pedestrian access routes necessary to complete the corrective action Work.

At least 21 Calendar Days before concrete pedestrian structure Work is scheduled to begin, submit a corrective action plan. Include the plan items according to 00759.03(d). The Engineer will review the corrective action plan(s) and provide a response to the Contractor within 5 Days after receiving the plan. Do not begin concrete pedestrian structure Work until the corrective action plan is approved by the Engineer.

00540.30 ~~Quality Control~~ **Personnel** Qualifications - In addition to the certified technicians required in 02001.50 provide and designate an individual to be present at the placement site at all times during concrete placements for projects with more than 100 cubic yards of structural concrete and for all High Performance Concrete, and who is authorized and responsible for acceptance and rejection of Materials.

~~00540.31 ADA Certified Personnel -~~ Provide onsite supervisory personnel that are ODOT ADA Certified during construction of the curb ramps.

00759.03 Required Submittals --~~Do not begin any curb ramp Work before the plan for completing the Work has been approved~~. Material ordered or Work ~~done~~ performed before the Engineer reviews and returns the documents ~~will~~ shall be at the Contractor's risk.

~~Before the preplacement conference, s~~Submit the following:

(a) ADA Certification for Contractors - For all supervisory personnel who directly supervise the curb ramp Work, submit the names, telephone numbers, and copies of the ODOT ADA Certification for Contractors at least 10 Calendar Days before the preplacement conference.

(b) Curb Ramp Work Plan - Do not begin any curb ramp Work before the plan for completing the Work has been approved. At least 21 Calendar Days before the curb ramp Work is scheduled to begin, submit a plan for accomplishing all phases, including but not limited to the following (also see 00180.41):

- Surface preparation
- Compliance with Working Drawings and details submitted under 00759.03(c~~a~~)~~2~~
- Compliance with current Standard Drawings and Plans
- Waste handling and disposal

(c~~a~~) Working Drawings - At least 10 Calendar Days before the ~~preplacement conference~~ construction of a grouping of one or more curb ramp location(s), not to exceed 32 ramps unless otherwise approved under 00180.41, submit ~~six copies of~~ unstamped Working Drawings according to 00150.35 ~~for all curb ramp Work~~. Include field verification of each ramp ~~location~~ site, and all dimensions, slopes and grades necessary to demonstrate compliance with the Standard Drawings and Plans. Marked up Supplemental Drawings, if field verified, may be submitted as Working Drawings. Notify the Engineer of any deficiencies or non-compliance with the Standard Drawings or

Plans. The Engineer will provide additional or modified Plans as needed. Do not begin Work at a curb ramp until submittals for that curb ramp have been received, reviewed, and accepted in writing by the Engineer.

After submittal of the unstamped Working Drawings, according to 00150.35 a site visit may be requested by the Contractor or Engineer. The site visit will include a review of any field markings and discuss the submitted unstamped Working Drawings. The Engineer will provide additional or modified information, as needed.

Include the following in the Working Drawings:

- Verification of elevations, slopes, grades and dimensions necessary to demonstrate compliance with the Standard Drawings and Supplemental Drawings.
- Verification of potential utility conflicts or other street furnishings that may require relocation or adjustment.
- Identification of infeasibilities or constructability issues with the Standard Drawings and supplemental drawings.

~~(c) ADA Certification for Contractors - For all supervisory personnel who directly supervise the curb ramp Work, submit the names, telephone numbers, and copies of the ODOT ADA Certification for Contractors at least 10 Calendar Days before the preconstruction conference.~~

(d) Corrective Action Plan - Unless otherwise approved, notify the Engineer before performing corrective action. Include TPAR necessary to complete corrective action work.

At least 21 Calendar Days before concrete Structures Work is scheduled to begin, submit a corrective action plan. The corrective action plan shall address procedures to correct deficient Structures through minor corrective action or replacement according to 00759.55(a), and include:

- List of minor corrective actions that will be used to correct deficiencies, according to 00759.50 and 00759.55.
- Procedures for performing corrective action.
- Proposed concrete grinding Equipment and method of grinding.

- Proposed concrete repair Material used for resurfacing ground concrete surfaces according to Section 02015.
- Construction activities, Equipment and staging necessary to complete corrective action Work.

The Engineer will review the corrective action plan(s) and provide a response to the Contractor within 5 Days after receiving the plan. Do not begin concrete structure work until the corrective action plan is approved by the Engineer.

00759.04 Preplacement Conference - Before beginning any curb ramp Work, meet with the Contractor's ODOT ADA Certified supervisory personnel and any quality control ~~manager~~personnel if applicable, any curb ramp Subcontractors' supervisory personnel, and the Engineer at a mutually agreed upon time.

If the Contractor's personnel change, or if the Contractor proposes a significant revision to the plan for accomplishing the curb ramp Work, the Engineer may require additional preplacement conferences. If the Contractor's schedule of work identifies multiple groups of curb ramp construction, as allowed by 00180.41, additional preplacement conferences may be required for each ramp group, at a mutually agreed upon time before Work begins.

All supervisory personnel who have an active ODOT ADA Certification for Contractors and directly supervise the curb ramp Work are required to attend the preplacement conference.

Labor

00759.30~~1~~ Personnel Qualifications - Use supervisory personnel who have an active ODOT ADA Certification for Contractors to directly supervise the curb ramp Work. Provide onsite supervisory personnel that are ODOT ADA Certified during construction of the curb ramps.

00759.50 Surface Finishing:

(a) General - Remove forms, if any, from Structures after the concrete has taken its initial set and while the concrete is still green. Repair minor defects with mortar containing one part portland cement and two parts sSand. Do not plaster exposed surfaces.

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.

Install truncated domes as shown. Place according to the manufacturer's recommendation. Install abutting truncated dome panels with no more than 1/4 inch spacing. Install anchors along cut edges of truncated dome panels according to manufacturer's recommendations.

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

~~Submit a corrective action plan for each non-compliant Structure after receiving notice of non- compliance from the Engineer. Perform correction of defects according to 00759.55.~~

(b) Curbs, Islands, and Stairs - While the concrete is still green, finish the exposed surfaces as required to produce a smooth surface and uniform texture.

(c) Driveways, Walks, and Surfacings - Prevent segregation of the concrete during placement. Strike-off the concrete to the grade shown, and float the surface smooth. After the water sheen disappears, edge the joints and remove edging tool marks prior to final finishing. Lightly cross- broom the surface to a uniform texture. Do not trowel joints or edges after brooming surface.~~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.~~

~~On all curb ramps and accessible route islands, install truncated domes as shown. Place according to the manufacturer's recommendation.~~

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

The 24-inch smart level will be used to measure driveway and sidewalk cross slopes on the pedestrian access route.

(d) Curb Ramps - Prevent segregation of the concrete during placement. Strike-off the concrete to the grade shown and float the surface smooth. After the water sheen disappears, edge the joints, and remove edging tool marks prior to final finishing. Lightly cross-broom the surface to a uniform texture. Do not trowel joints or edges after brooming surface.

03:15

Continue Audio Narration

Standard Drawing Updates

Oregon Standard Drawing RD936 is one of the newer additions to curb the ramp Roadway drawing series RD900, and effective December 1, 2021. It is an additional drawing showing combination curb ramp style configurations that are used more frequently. Review the Oregon Standard Drawing RD936 to become familiar with the requirements for construction for the two new geometric configurations.

PDF

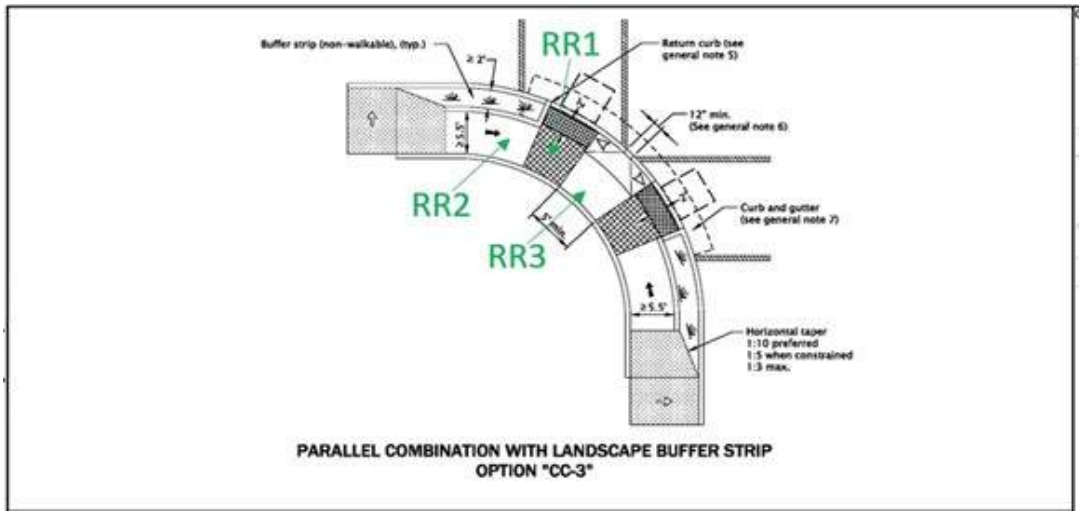
RD936.pdf

269.3 KB

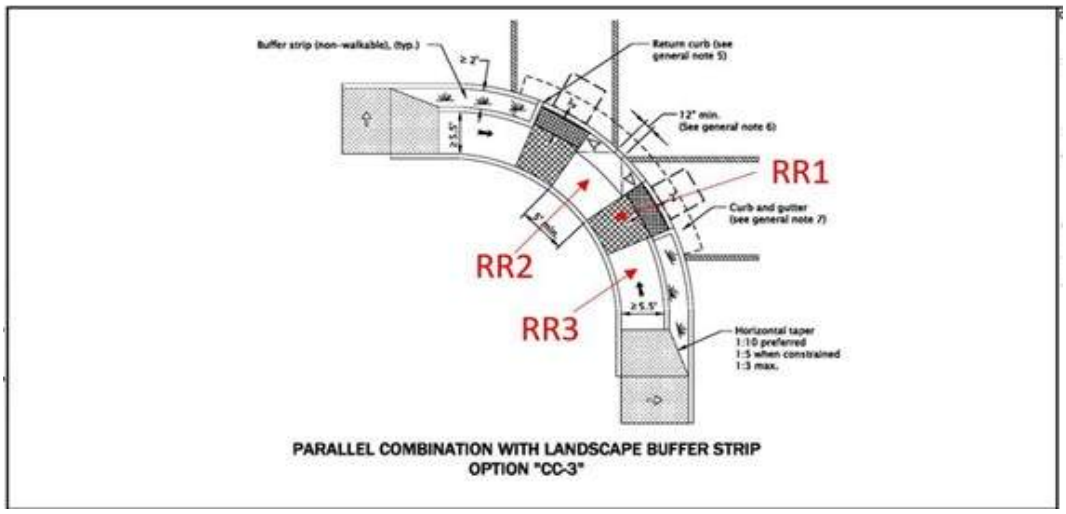
RD936 Parallel Combination with Landscape Buffer Strip Option CC-3

This style of combination curb ramp sets the curb ramp openings closer together at the intersection by sharing a ramp run. The slope of the panel between the two curb ramps is not specified. Ramp Run 3 of one curb ramp is also Ramp Run 2 of the second curb ramp. The curb ramps on this corner would be recorded on the Combination Curb Ramps (Form 734-5020B) whereby ramp run 3 for one ramp is ramp run 2 of the other.

Ensure that there is at least 5.0 feet of linear separation between the two-level areas used for turning. For this case, the minimum separation distance (X direction) is at the back of walk.



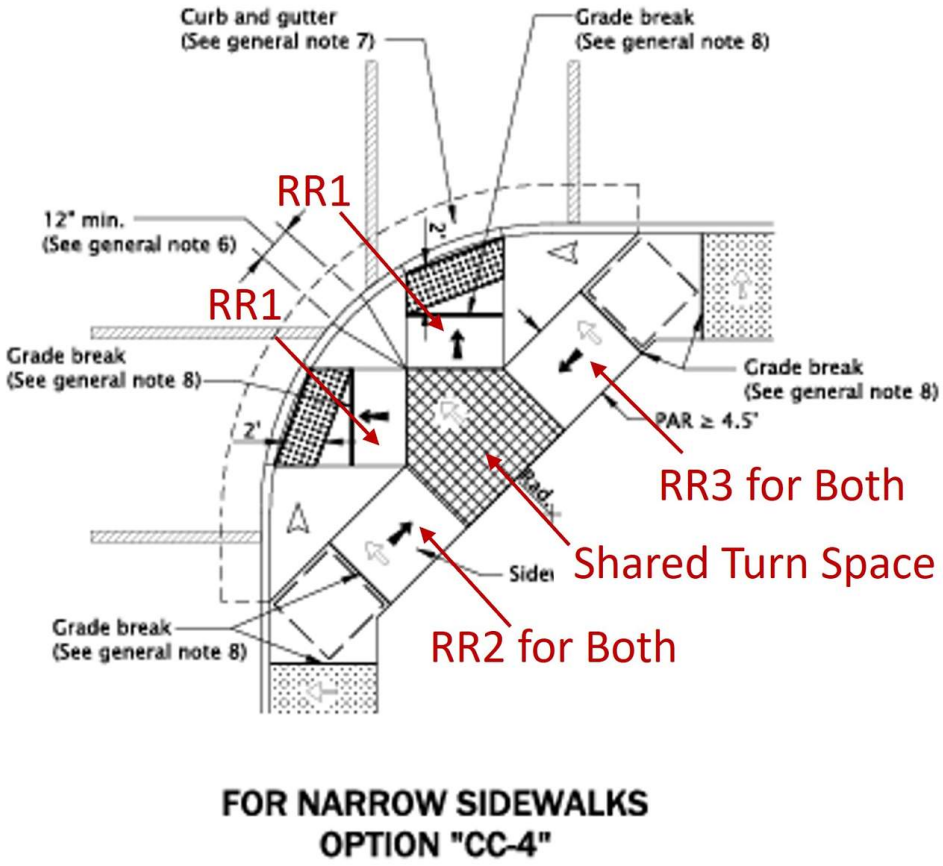
Option CC-3 Curb Ramp 1 Ramp Run Numbering



Option CC-3 Curb Ramp 2 Ramp Run Numbering

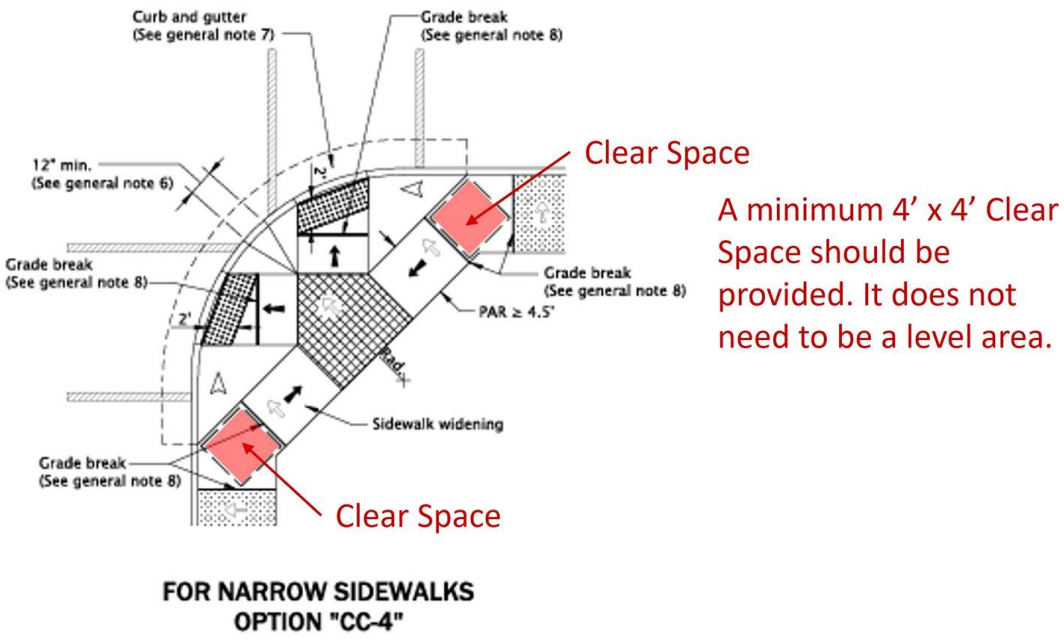
RD936 For Narrow Sidewalks Option CC-4

This style of combination curb ramp looks very similar to the curb ramp option “PR-3” on Oregon Standard Drawing RD912. This option is used when the pedestrian access route must traverse steeper grades and at least one adjacent surface to the level area exceeds 4.9%. When either side yields a running slope measurement exceeding 4.9%, ramp run 2 and ramp run 3 must be recorded on the combination curb ramp form. When the level area is visibly tabled; both ramp runs are to be measured and recorded on the combination curb ramp inspection form.



Shared Ramp Runs 2 and 3 on Combination Curb Ramp Design CC-4

Refer to the image below. Note the areas denoted as a clear space adjacent to the sidewalk along the street. There is no expectation that the clear space adjacent to ramp run 2 and ramp run 3 on Oregon Standard Drawing RD936 is level. This area is a clear space that is a planer area to ensure that a wheeled pedestrian device has sufficient space to execute a turn unobstructed and free from grade breaks. This ensures all wheels (typically four) maintain contact with the surface as the turn is executed. The space should meet the requirements of a sidewalk of having a grade equal or less than the slope of the adjacent road. Measure the space at the top of the ramp run to ensure there is a minimum 4-foot by 4-foot clear space provided. Also check the other direction from the approaching sidewalk.



Clear Space Requirement on Curb Ramp Design Option CC-4. Wherever a turning movement is required to continue on the pedestrian access route, 4-foot X 4-foot clear space should be provided.

Review all figures and advance audio to the end before moving on. A lesson quiz is on the next screen.

CONTINUE

Unit 12 Lesson 2: Top Curb Ramp System Failures

You must click on all images before moving on to next Lesson.

04:16

Start Audio Narration

Top Curb Ramp System Failures

This Lesson describes common failures and errors found at constructed curb ramp systems and addresses a few frequently asked questions.

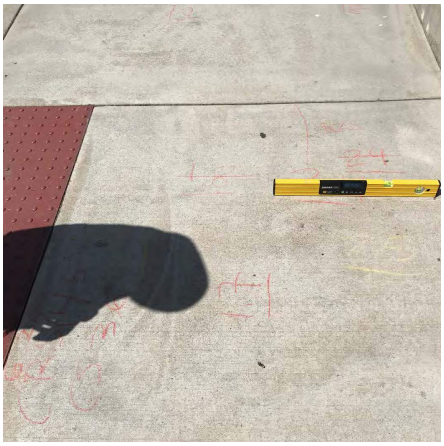
Click on each image to zoom in.

1. Finishing and Workmanship

Finishing and workmanship is not a failure in itself, but it can create other issues that would fail a curb ramp system.

F/W issues Photo 1:
A newly constructed parallel ramp with a ramp run 3 that is crumbling at the curb.

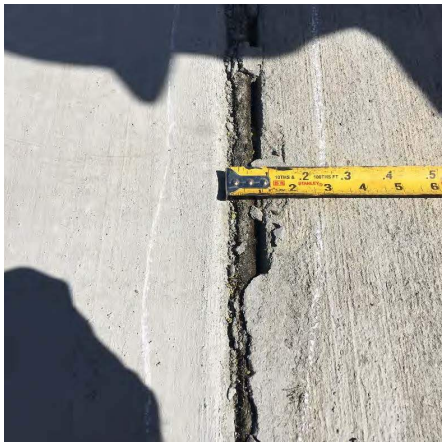
F/W issues Photo 2-1:
A newly constructed parallel ramp with isolated slope issues on the turn space.



F/W issues Photo 2-2:
A close up of "F/W issues Photo 2-1" showing an isolated area on the turn space where slopes are over the maximum of 2.0%.
.

F/W issues Photo 3:
A photo of a joint creating a lip issue between new and existing concrete. Lips within the curb ramp system result in failure.

F/W issues Photo 4:
Cracking that is not the result of concrete curing and creates barriers to access will result in failure.



F/W issue Photo 5:
A joint between new and existing concrete that results in a gap. Gaps greater than ½-inch on expansion joints result in failure.

2. Drop Offs

Sharp elevation changes within the curb ramp proximity limits will be considered a drop off and constitute failure. In general, these are:

- 9-inches or greater for drop offs parallel to pedestrian travel.
- 6-inches or greater for vertical discontinuities perpendicular to pedestrian travel.

Note: Additional drop off information is in Standard Drawings RD910, RD930 and RD940 (Note 8).

Drop Off Photo 1:
Vertical discontinuities within curb ramp proximity limits will result in failure.

Drop Off photo 2:
Curb Ramp designs that use return curb creating a triangle piece between the two ramp positions requires a non-walkable surface to be installed.

Drop Off Photo 3:
Curb Ramp designs that include a buffer strip must use a non-walkable surface. Concrete, stamped/colored concrete, or pavers will result in failure.

3. Flare Slopes

Flare slopes are measured relative to zero and are a common cause of failure.

Flare Photo 1:
A flare being measured with a flare slope of 14.1%. The maximum allowable flare slope is 10.0%.

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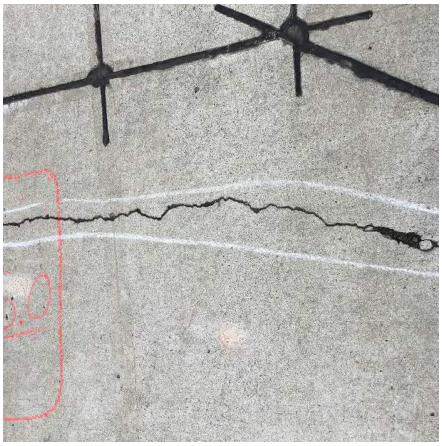
4. Utilities/junction boxes within the Ramp Runs

Utilities/Junction boxes can cause Curb Ramp failure when not installed properly. Sloping, lips, and cracking issues are commonly seen when inspecting.

U/J Box Photo 1:
Utility/Junction boxes. It is discouraged to place utility boxes and covers within the truncated domes. Placing an additional row of partial truncated domes are not a solution to the missing portions. A solution is to use liquid applied detectible warning surface.



U/J Box Photo 2:
A large crack that formed in the ramp run as a result of an improperly placed signal box. Large cracking in the curb ramp system is a cause for failure.

U/J Box photo 3:
Lips are not allowed anywhere within the curb ramp system. Improperly placed boxes can cause failure creating lip issues.

5. Inlets within the Ramp Limits

Inlets or drainage grates creates gaps that are not allowed within the pedestrian access route.

An accessible grate is required, and design exception is required for installation.

Inlets Photo 1:
Inlet within the pedestrian access route at the ramp opening causing failure.

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6. Manholes within the Ramp Limits

Manholes must be set flush. The lid must comply with the component slope requirements where installed. Minor height difference can cause non-compliant slopes or create lip issues.

Manholes photo 1:
Manhole covers can create inconsistencies in slopes, humps or dips. The resulting slope of this installation is 2.8% and the maximum allowable cross slope is 2.0%.

04:15

Continue Audio Narration

7. Transition panels

Transition panels are used when connecting new work to existing sidewalk. The transition segment connection cannot make the pedestrian accessible route slopes and dimensions worse

than it was prior to construction.

Transition Panels Photo 2- 1:
A perpendicular style ramp that has a transition panel that is being used to make up grade.

Transition Panel Photo 2-2:
A close up of "Transition Panel Photo 2-1" showing Ramp Run 2 (the level to the left) having a slope of 0.8% and the transition panel (the level to the right) having a slope of 18.1%.
Transition panels should not be used to make up grade when connecting with existing sidewalk.

8. Asphalt Patching

Asphalt patching is inspected for lips and that it does not create slopes above the existing grades that are being matched.

Asphalt Patching 1:
A newly constructed curb ramp with non-compliant asphalt patching.

Asphalt Patching 2:
A look at the slope of the asphalt patch from "Asphalt Patching 1-1" where the slope is opposite of existing at 8.9% resulting in a non-compliant asphalt patch.

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Asphalt Patching 3:
A look at a lip created from the Asphalt patching of the ramp in "Asphalt Patching 1-1." Lips from improper asphalt patching jobs will result in failure.

Asphalt Patching 4:
A newly constructed ramp with slope and lip issues.
The slope matching into the ramp is 11.7% and the lip is 0.25-inch both constituting a failure.

9. Alterations to Existing Conditions Cannot Be Made Less Accessible.

The connection between new and old construction cannot be worse than the existing condition. In the example below, the asphalt patching into the new curb ramp was far steeper than the original configuration and thus less accessible to transition a person to the roadway.

Examples of a non-accessible connections to the road.

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10. Dimensions

Length and width issues are common during curb ramp inspection. They often occur with clear width where the minimum is 4.0 feet (Cut Through minimum is 5.0 feet) and Turn Space dimensions.

Dimensions Photo 1-1:

Dimension Photo 1-2:

Dimension Photo 2-2:

A ramp with a back of ramp obstruction and a length that is short of meeting the turn space requirement of 5.0 feet.

A close up of the measurement of "Dimension Photo 1-1" showing that it is 0.4 feet too short to meet the turn space requirement of 5.0 feet when there is a back of ramp obstruction.

Dimensions Photo 2-1:
A newly constructed parallel ramp that is non-compliant due to the turn space width.

A close up of the measurement of "Dimension Photo 2-1" showing that the width of the turn space is 3.9 feet. The turn space width requirement is 4.0 feet minimum.

Dimension Photo 3-1:
This photo shows that there is a clear width issue between the signal pole and back of walk.

Dimension Photo 3-2:
A close up of the measurement of "Dimension Photo 3-1" showing that the clear width is 3.6 feet. The minimum clear width requirement is 4.0 feet (5.0 feet on a Cut Through).

11. Clear Width

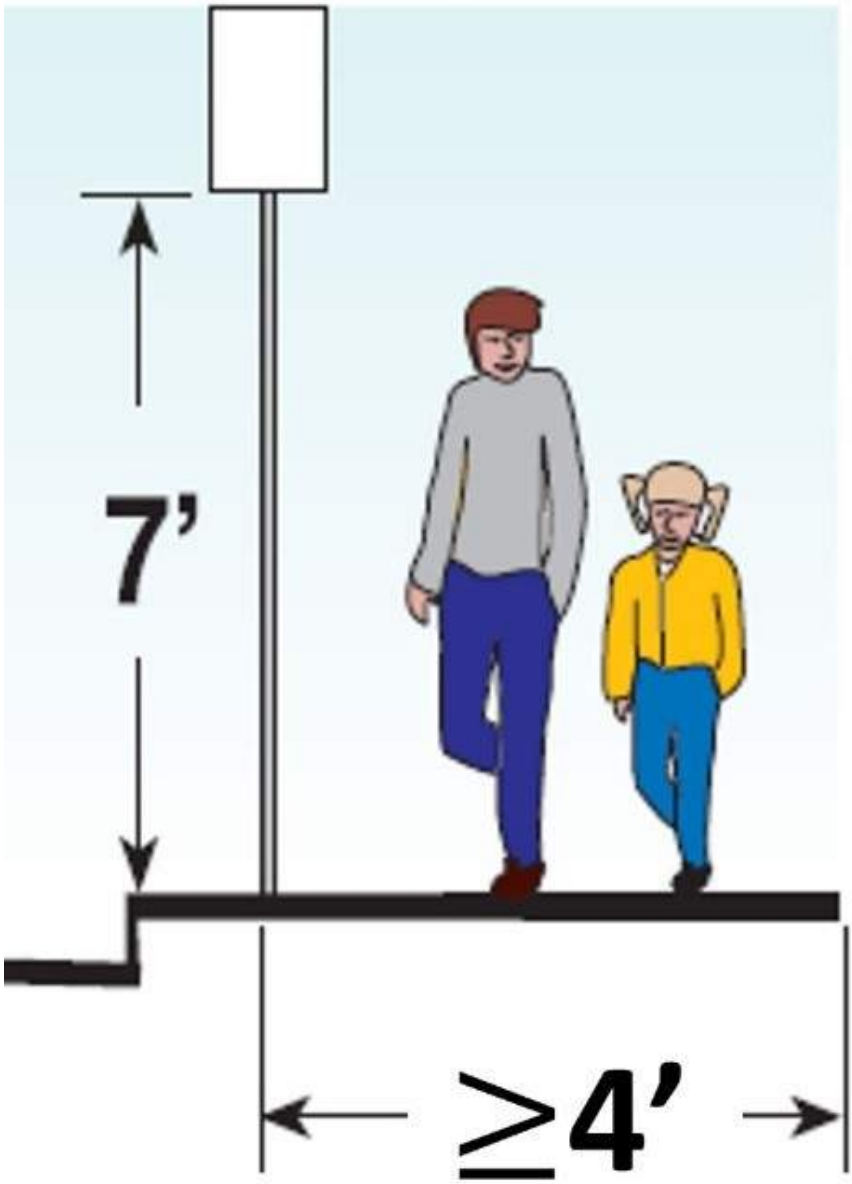
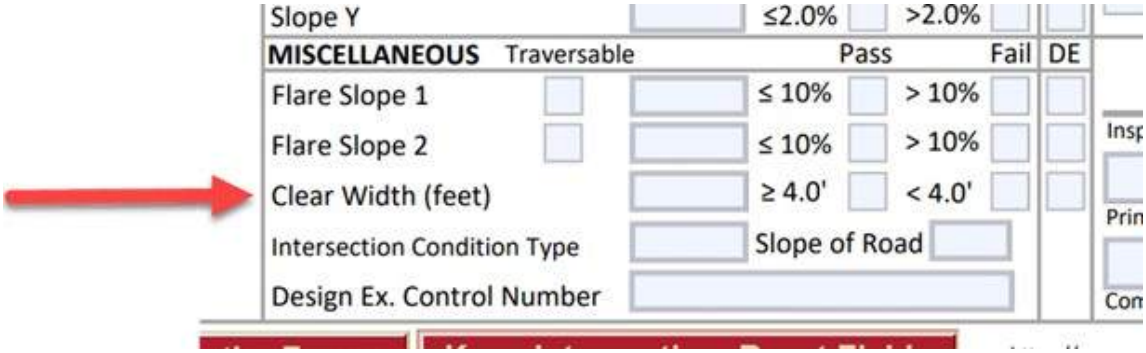


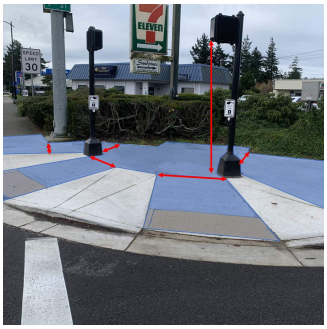
Illustration of Clear Widths.

The clear width of a walkway is the narrowest width found within the walkway that is fully accessible for pedestrians. Surfaces with cross slopes exceeding 2.0 %, vertical obstructions or vertical discontinuities are not fully accessible and are not included in the clear width.



Clear Width box in the Curb Ramp Inspection Form

The clear width measurement for a curb ramp inspection is the minimum width within the pedestrian access route in the curb ramp system. This measurement also takes into account any obstructions or overhangs below 7 ft. Note, **the clear width measurement entered on the curb ramp inspection form can never be larger than the smallest turn space dimension** (in many cases the smallest turn space dimension is the clear width in either the X or Y direction).



Pedestrian Access Route in a Curb Ramp System. Find the Minimum Clear Width of the Pedestrian Route. Also Check that Overhanging Objects are at Least 7 Feet High.

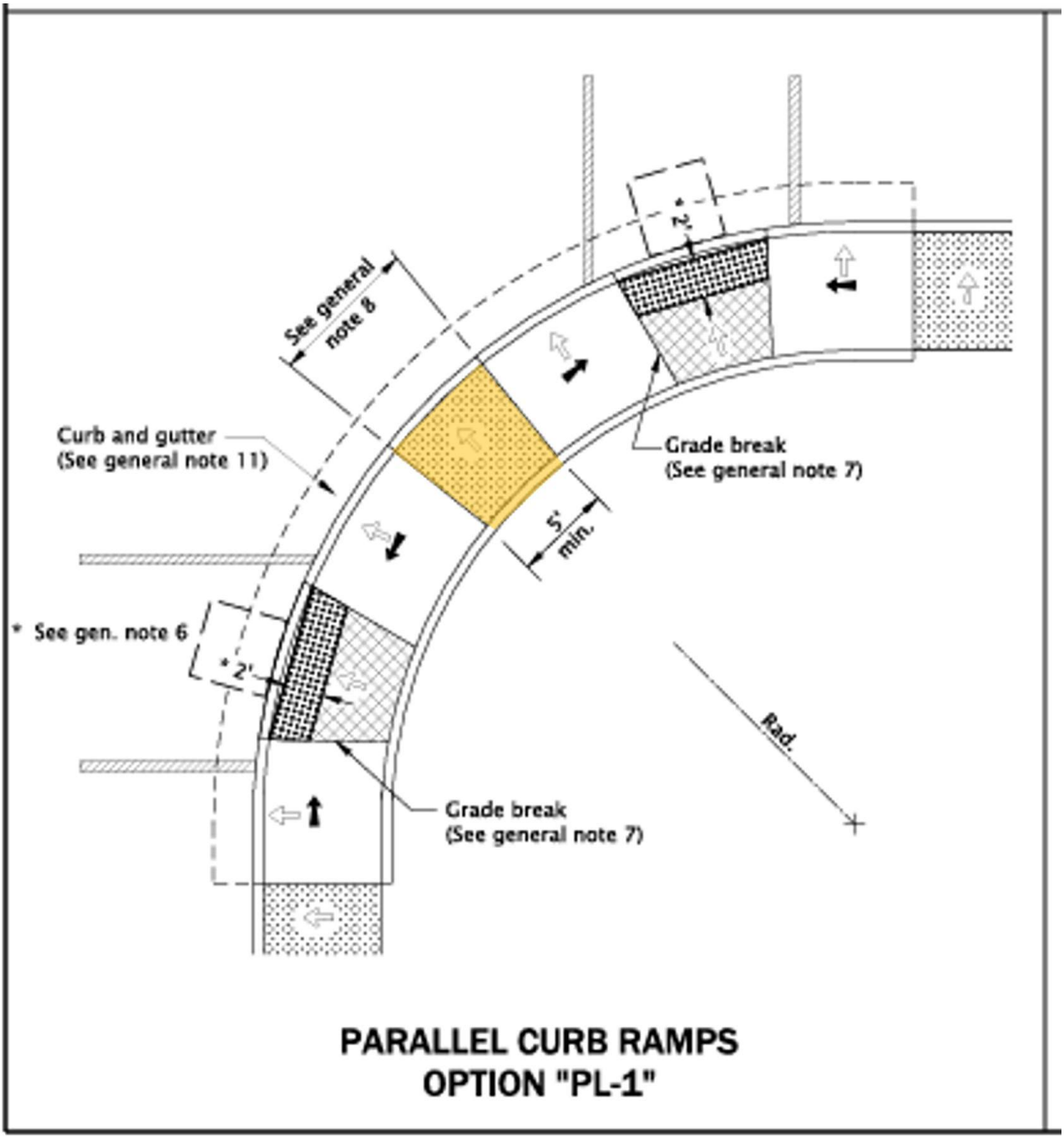
Pedestrian Access Route in a Curb Ramp System. Find the Minimum Clear Width of the Curb Ramp System.

05:45

Continue Audio Narration

12. 5.0 Feet Between Ramp Runs

Successive ramp runs of opposing grades as shown in the Oregon Standard Drawing RD920, are required to be separated by at least 5.0 feet of sidewalk. See figure below.



From Standard Drawing RD920, 5 Foot Minimum Between Curb Ramps

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The sidewalk panel(s) are a part of the pedestrian access route and must adhere to the sidewalk requirements. The sidewalk in between must be equal to or less than the profile grade of the road and maintain a less than or equal to 2.0% cross slope as shown in RD720. One of the reasons the separation is provided is to prevent wheeled pedestrian devices from being

obstructed by the peak created by the two adjacent ramp runs. Vertical clearance of some power assisted mobility devices may be as little as ¾ to 1 inch.

The sidewalk is inspected but only the length of the sidewalk is recorded in the comments section of the Curb Ramp Inspection Form if it does not meet the requirement.

5.0 feet Between Ramp Runs Photo 1-1: Two combination style ramps that do not meet the 5.0' between ramp runs requirement.

5.0 feet Between Ramp Runs Photo 1-2: A close up of the measurement "5.0 feet Between Ramp Runs Photo 1-2" showing that the length is 3.0 feet. Measurement for 5.0 feet between ramp runs is taken at the back of walk.

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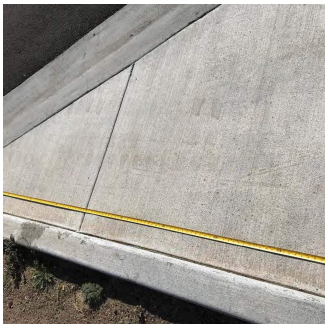
5.0 feet Between Ramp Runs Photo 2-1:
The 5.0 feet requirement is also applicable when a driveway flare meets a ramp run. Note that the red line is where the ramp run was determined to end due to the slopes.

5.0 feet Between Ramp Runs Photo 2-2:
A close up of the measurement for "5.0 feet Between Ramp Runs Photo 2-1" showing the measurement of 2.7 feet between the ramp run and the driveway flare.

13. Truncated Dome Installation

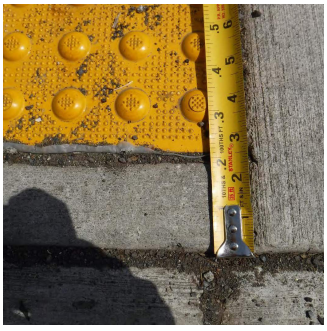
Truncated Domes Photo 1-1:



Truncated Domes Photo 1-2:

Stacked truncated domes and incorrect placement of truncated domes. Stacked truncated domes are no longer ODOT practice with the installation of new curb ramps and will result in failure.

Incorrect placement of truncated domes. This is the same curb ramp shown in Truncated Domes Photo 1-1. This image shows that the longest length of the directional curb is 12.0 feet. Truncated domes are required to be along the back of curb when the longest length between the back of curb and the bottom grade break is greater than 5.0 feet. See RD 905 for acceptable truncated dome placement for ramps with directional curb.



Truncated Domes Photo 3:
The leading edge of truncated domes are required to be placed

Truncated Domes Photo 4:
Truncated domes are required to be within 2.0 inches on both

within 2.0 inches of the back of curb. See RD902: Note 3 for details.	**sides of the ramp run. Gaps larger than 2.0 inches will result in failure. See RD905: Note 3 for details.**

Truncated Domes Photo 5:
Truncated domes placed on median islands are required to have at least 2.0 feet of space between them and needs to be full width (less than 2 inches on the side). When a median island has a width less than 6 feet in the X direction, there should be no truncated domes. See RD906 for details.

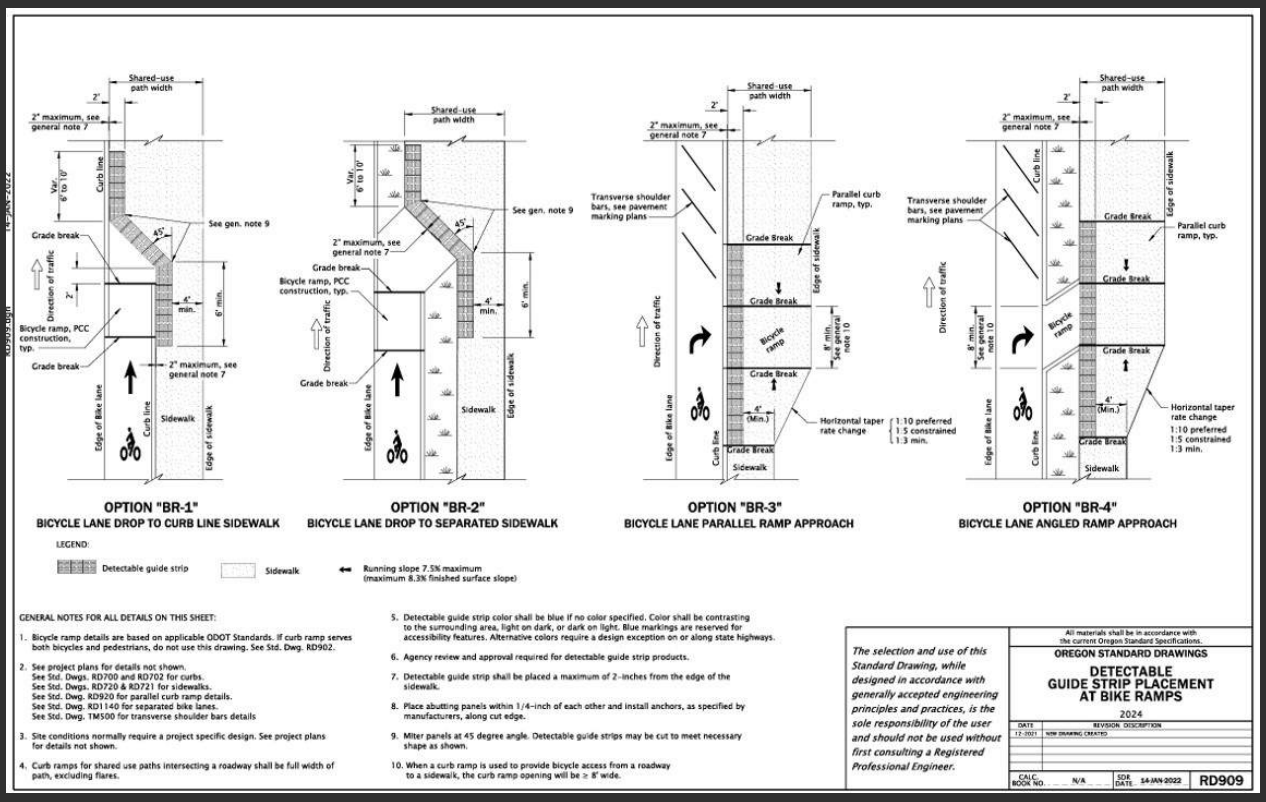
Truncated Domes Photo 6:
Truncated domes placed in the turn space of a parallel style ramp are required to meet the turn space slope requirements. The level in the photo shows a running slope of 2.3% which results in a failure.

Detectable Warning Surface Question

Q: Do the truncated domes on the detectable warning surface panels have to be oriented in the path of pedestrian travel?

A: NO. The truncated domes texture are provided to draw attention underfoot when stepped on. The individual domes on the panels are not required to be in line with the direction of pedestrian travel in the UNITED STATES. The flat top and bevel of the domes allow for all users to travel over the panels in any direction. The individual dome spacing requirement must be adhered to.

There are new emerging practices for guiding pedestrians along a path with detectable guide strips as shown on RD909 where the direction of the bars are crucial and important.



RD909 Detectable Guide Strip Placement at Bike Ramps

14. Curb running slope

Curb running slope is the only measurement that is recorded as an average.

Curb Running Slope Photo 1:
A newly constructed curb that had an average of 10.6% for the curb running slope. The maximum allowable curb running slope is 8.3%. Follow plans, designs are typically less for curb running slope. and on directional curb can't be more than 4.9%.

Average Curb Running Slope

Curb running slope is measured using a 6-inch smart level. The level is placed perpendicular to the curb line. A measurement every 2 feet along the width of the curb ramp opening is generally enough measurements. This value is recorded using an average which consists of adding each measured value together and dividing by the total number of measurements taken.

$$A = \frac{M_1 + M_2 + \cdots + M_f}{T}$$

A = Average (%)

$M_{\#}$= Each slope measurement (%)

M_f= Final slope measurement (%)

T= Total number of measurements taken (#)

Average Formula

For example, if you have three measurements with slopes consisting of 4.0%, 5.0%, and 4.2%. The average is the sum of all the three slopes measured and divided by three. In this example, your answer will be 4.4% and recorded on the form.

If you have a wider curb ramp and you take four measurements, you will add all of the four slope values together for the total sum and divide by four.

Review all figures and advance audio to the end before moving on.
The quiz is on the next screen.

After you have completed the quiz, close your window and the next Unit will become available in Workday Learning.