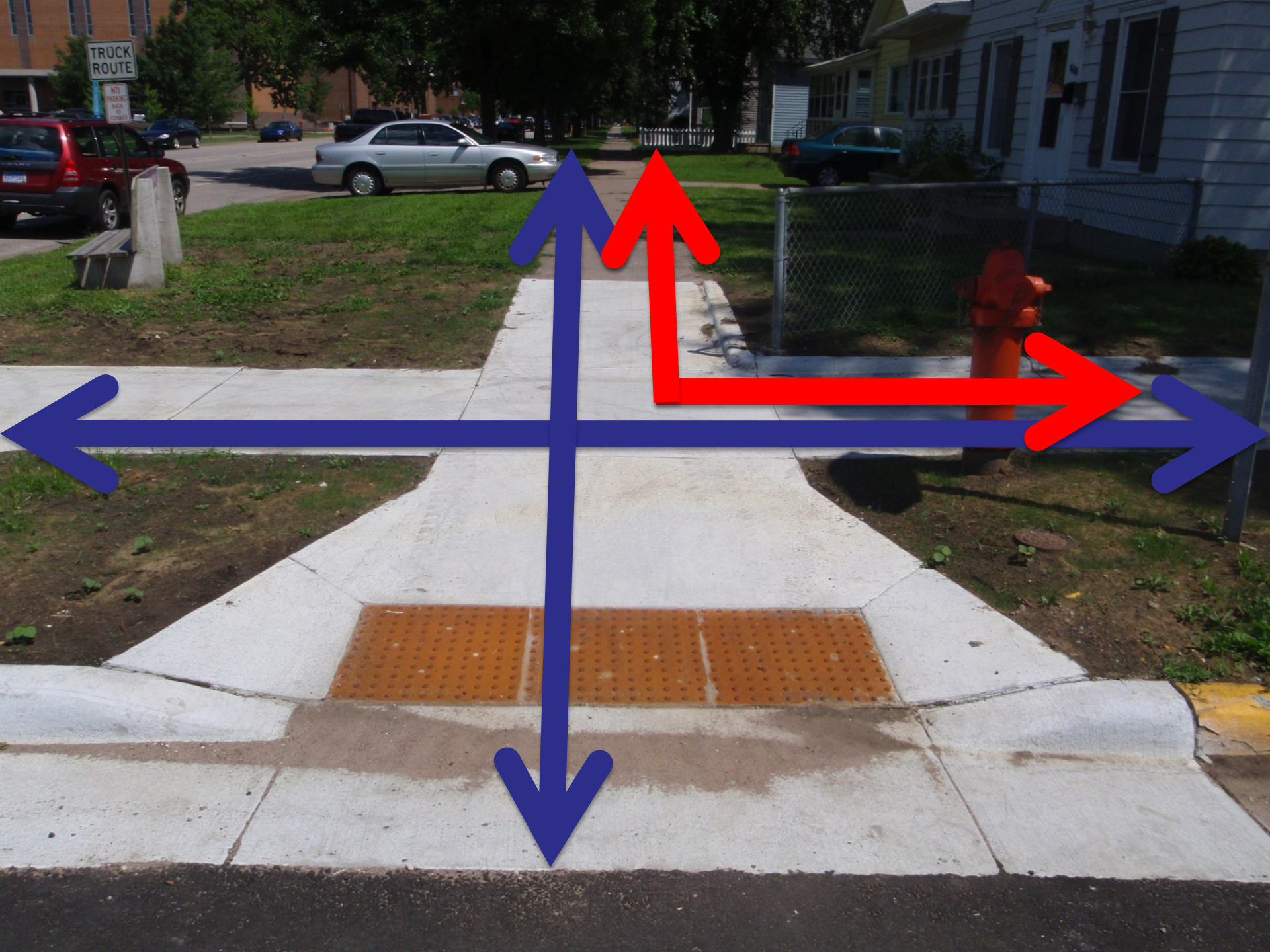
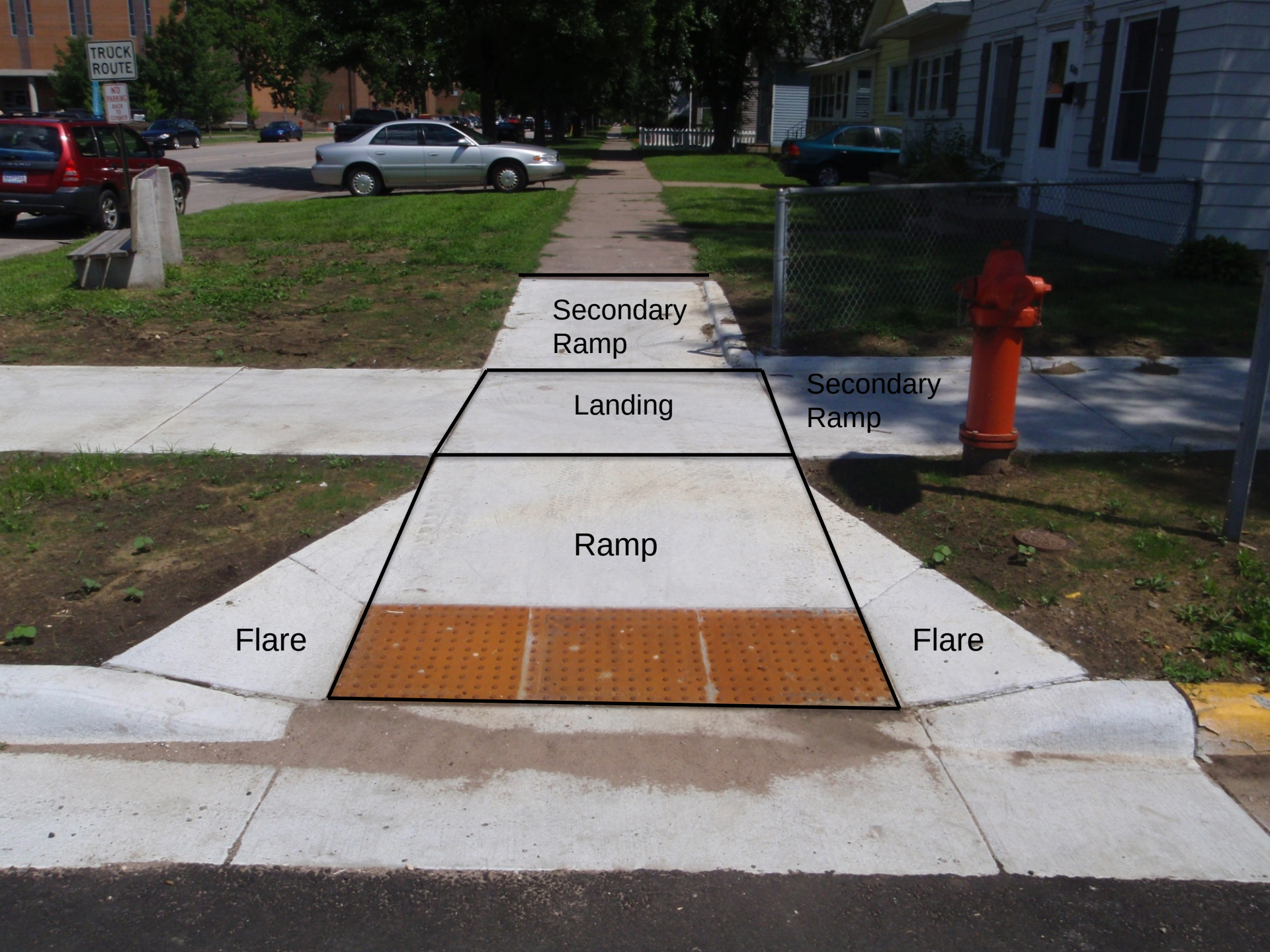
Curb Ramp Basics

December 15, 2010

Curb Ramp/PROWAG Basics

- Minimum 4′ wide Pedestrian Access Route with a maximum cross slope of 2.0%
- If longitudinal slope exceeds 5.0% landings must be provided on any pedestrian facility
- Maximum ramp slope is 8.3% with a landing at the top of the ramp
- Maximum curb ramp (5-8.3%) length is 15 feet
- Landing dimensions 4′ X 4′ minimum with a maximum of 2.0% slope in all directions
- Blended Transitions are slopes less than 5.0% and do not require a landing UNLESS there is a change in direction
- Slopes and dimensions are absolute! PROWAG does not allow any tolerances for exceeding these maximums!


TRUCK
ROUTE


TRUCK ROUTE
Secondary Ramp
Landing
Secondary Ramp
Ramp
Flare
Flare

Curb Ramp/PROWAG Basics

- Requirements listed in PROWAG are based on slopes, thus curb ramps cannot be simplified to a say ramps should simply be a certain length to be compliant
- A 6" high curb does not necessarily mean that a ramp should be 6 feet long, it depends on whether the area behind the ramp slopes up, down, or is flat from the top of curb
- To determine curb ramp lengths you have to find the elevation difference between the lowest flow line point to the point where the ramp will tie into the existing sidewalk
- Contractor/Inspector/Designer should carry tools to find elevation differences

Curb Ramp Types

- Perpendicular Ramp
- Parallel Ramp
- Combined Perpendicular Ramps
- One Way Directional Ramp
- Depressed Corner
- Fan
- Tiered Ramps

Perpendicular Ramp

- Ramp is perpendicular to the curb line
- Grade break occurs at the flow line

Parallel Ramp

- Used in narrow sidewalks and tight ROW situations
- Slope of curb should match slope of ramp


MAIN ST

Combined Perpendicular Ramps

- Two perpendicular ramps with a shared landing
- If ramps are directional, the grade break should be at the front of the truncated domes

One Way Directional Ramp

- Grade break occurs at the front edge of the truncated domes
- Ramp does not require a landing if the slope is less than 5.0%


ROAD
WORK
AHEAD
MAIN FLOOR
LEASE SPACE
AVAILABLE
437-7000

Depressed Corner

- Radial Truncated Domes from outside edge of crosswalk to outside edge of crosswalk
- Entire area at 2.0% Max slope with parallel ramps/blended transitions rising out of the depressed corner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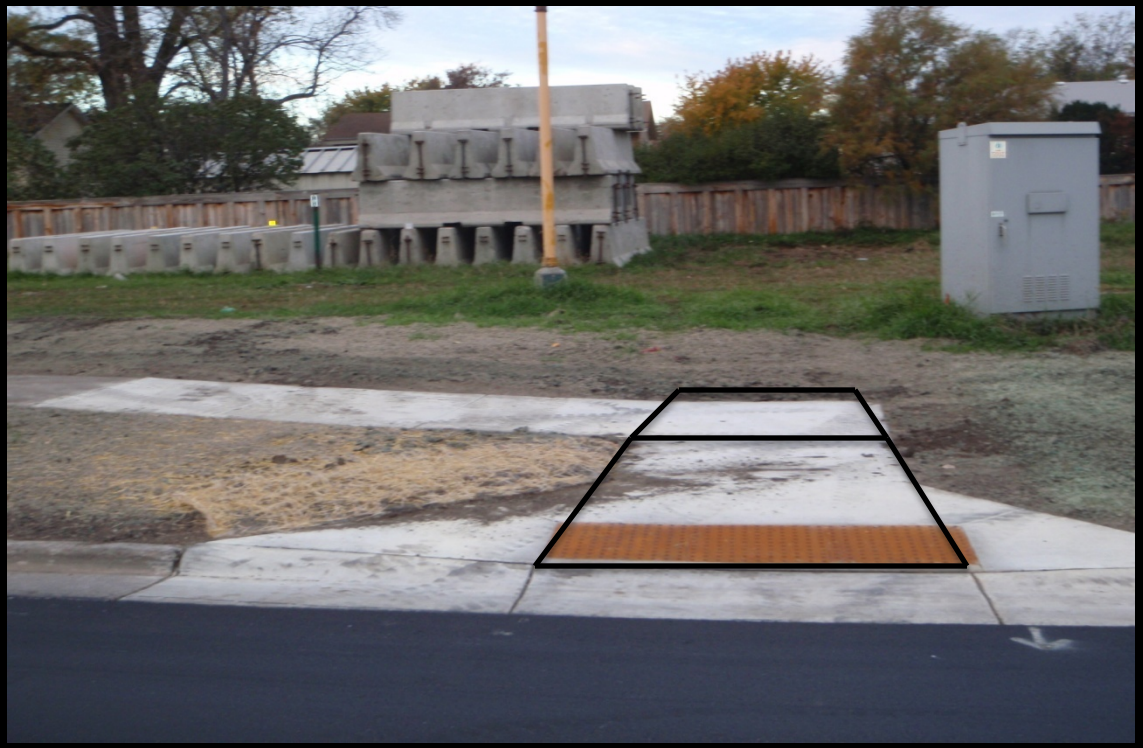
Fan

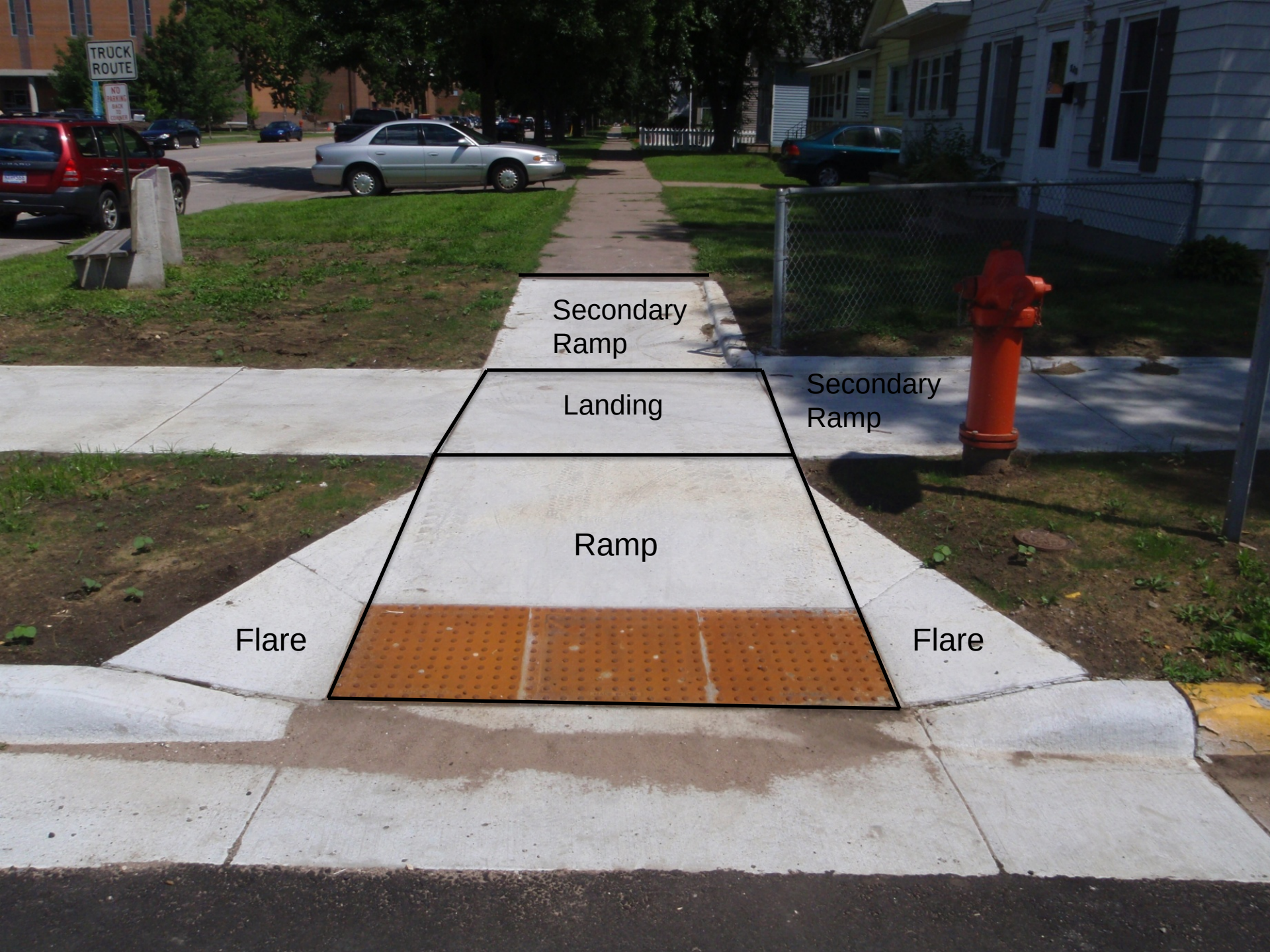
- Sloped ramp through the radial truncated dome area with a landing at the top of the ramp
- Most difficult type of curb ramp to construct correctly
- Requires the use of intermediate forms or screed pipes to properly construct ramps and achieve grade breaks


SPEED
LIMIT
30
Landing
Fan
Secondary
Parallel
Flare

Tiered Ramps

- Used in situations where the initial curb ramp cannot make up the elevation difference so a secondary ramp is needed
- Common with retrofits and areas with tight ROW




TRUCK ROUTE
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Flare

Curb and Gutter at Curb Ramps

- Always maintain flow line and use modified Pedestrian Access Route curb and gutter sections
- Perpendicular and parallel ramps can have a maximum 5% gutter slope because the path of travel is perpendicular to the flow line
- All other ramp types should have a flattened gutter slope
- When constructing ramps that are not perpendicular to the curb and gutter line, the “triangular” concrete piece should be poured with the curb and gutter – Winona Curb
- Pay for all curb and gutter as one predominant type to help eliminate pay items and field measurements

Pavement Adjacent to Curb & Gutter

- Pour curb and gutter against saw cut and then perform a 2″ Mill and Bituminous patch 2 feet wide
- Full depth bituminous removal 2 feet in front of curb and gutter with full depth bituminous patch
- Full depth bituminous removal 2 feet in front of curb and gutter, fill void with concrete up to 2″ below finish grade paid for as concrete walk and then construct 2″ bituminous patch
- For concrete pavement drill and grout dowel bars into concrete pavement and then pour curb and gutter against sawcut


ON/OFF
Calibrate
HOLD
M-D Building Products

Flares/Side Treatments

- When adjacent to pavement, flares should be constructed at a 10% slope

- When adjacent to non-walkable surfaces designers have multiple options….

Flares/Side Treatments

Construct a 2 foot flare to hold back adjacent ground

Flares/Side Treatments

Construct V curb to hold back adjacent ground

Flares/Side Treatments

Grade adjacent ground to match new walk and curb and gutter

Contract Administration Tools

- Hold Points – Prosecution of Work (1803) in every project
- Curb Ramp Compliance Checklist
- APS Compliance Checklist
- Contractor Accountability

Mn/DOT ADA Compliance Checklist for Curb Ramps

S.P.:_____ **Construction Date:** _____

Intersection: _____ **Quadrant:** _____

1) Ramp's Running Slope: _____ _____ _____ _____

2) Ramps comply with Spec 2521.3: YES NO

3) Ramp's Cross Slope: _____ _____

4) Gutter Flow Line Slope: _____ _____

5) Landing Slopes: _____ _____ _____ _____

6) Landing Dimensions are a minimum 4' X 4': YES NO

7) Landing(s) are located at the top of each ramp: YES NO

8) Truncated domes cover the entire curb opening and are properly oriented: YES NO

9) Gutter line and ramps are draining properly and not holding water(check after rain event): YES NO

10) Are there any vertical discontinuities greater than 1/4"? : YES NO

**11) Ramps are compliant?: YES NO if no, circle one of the following reasons why, explain why the ramp didn't meet compliance, and how the ramp has been improved from the pre-construction condition(attach pages if needed):

A) Surrounding Geography B) Limited Scope of Project C) Contractor Performance D) Other

Printed Name: _____

Signature: _____

Date: _____

**For non-compliant ramps, attach a photograph of the pre-construction facility and documentation of the pre-construction grades.

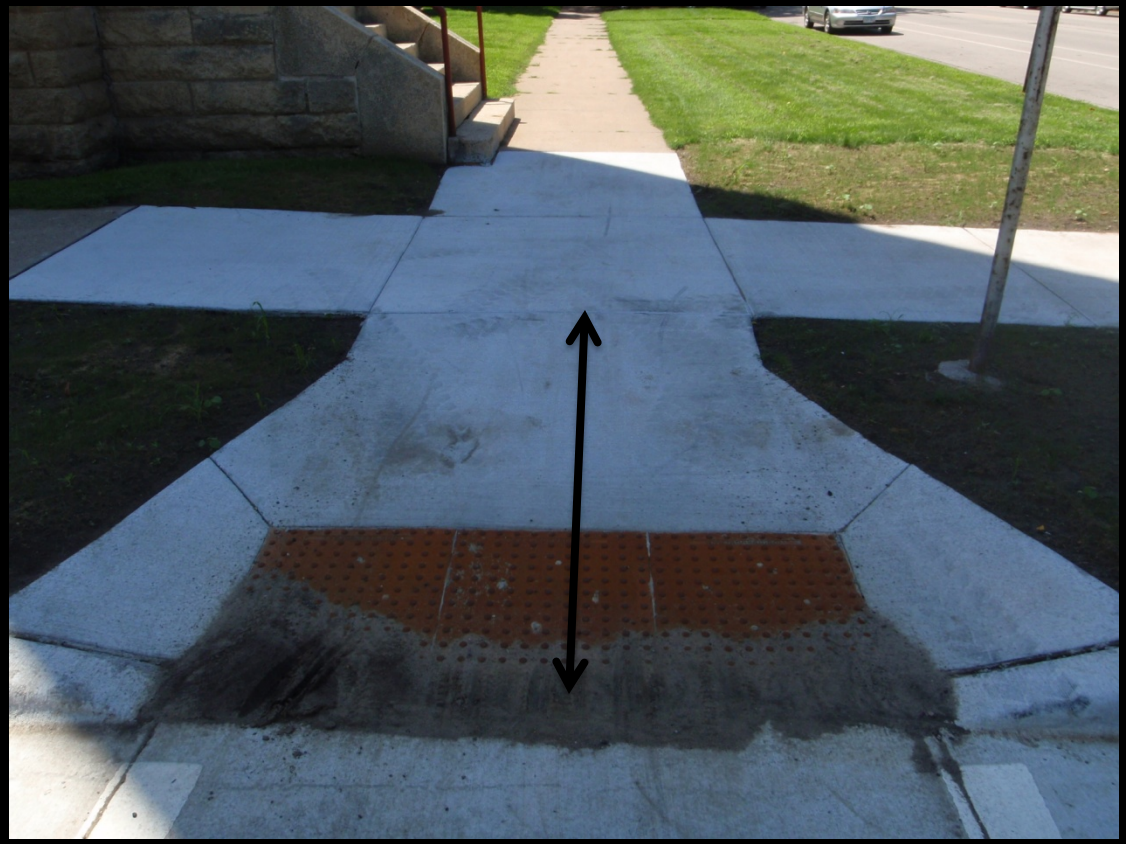
ADA Compliance Checklist

- We've tried to simplify compliance to ten items

1) Ramp Running Slope – Less than or equal to 8.3%
2) Ramp meets Spec 2521.3
3) Ramp Cross Slope – Less than or equal to 2.0%
4) Gutter Flow Line Slope – If the gutter flow line slope is greater than 2.0%, than the ramp cross slope will also exceed
5) Landing Slope – Cannot exceed 2.0% in any direction
6) Landing Dimensions – 4 feet by 4 feet minimum
7) Landing Location – At the top of the ramp and/or change in PAR direction
8) Truncated Domes - Properly oriented and cover entire curb opening
9) Proper Drainage – Not holding water, especially in PAR
10) Vertical Discontinuities – None greater than ¼"

Ramp Running Slope

- Running slope shall be less than or equal to 8.3%



Comply with Spec 2521.3

- "The surface shall not vary more than 3/16 inch from a 10 foot straight edge."

- "All joints and edge of walk shall be rounded with a ¼" radius edging tool."

  "Contraction joints shall extend to at least 30 percent of walk thickness and shall be approximately 1/8" wide."

- "Joints shall be constructed parallel or at right angles to walk centerline where possible." (construct joints at grade breaks)

Bad Joint Construction

Ramp Cross Slope

- Cross slope shall be less than or equal to 2.0%

Gutter Flow Line Slope

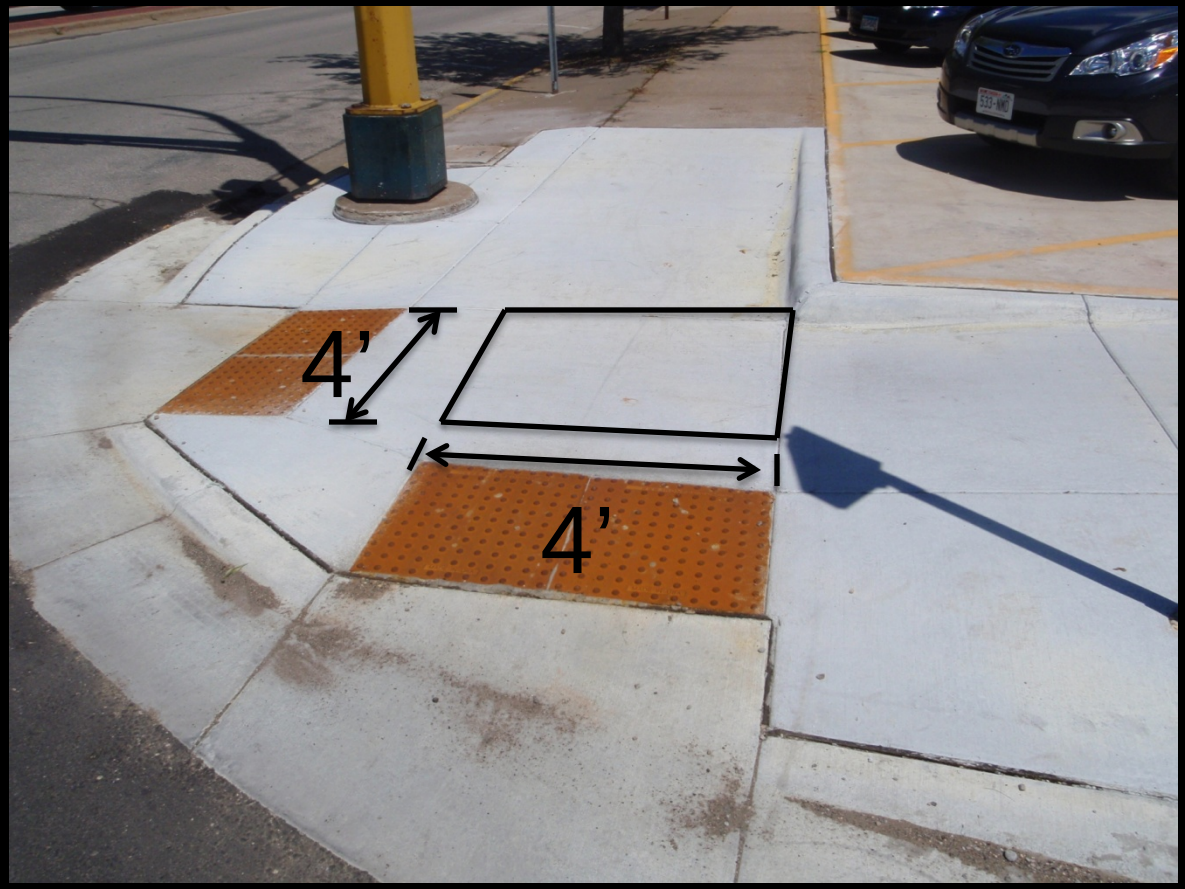
- If the gutter flow line profile exceeds 2.0% in front of the ramps, the cross slope of the ramp will exceed 2.0% until it can be warped to a flatter cross slope

Landing Slopes

- The slope of the landing must be less than or equal to 2.0% in all directions

Landing Dimensions

- Landings must be 4 feet by 4 feet minimum



Landing Placement

- Landings must be located at the top of all ramps and where the PAR changes directions.

Truncated Domes

- Truncated Domes cover entire curb opening (0” curb height), and are properly oriented

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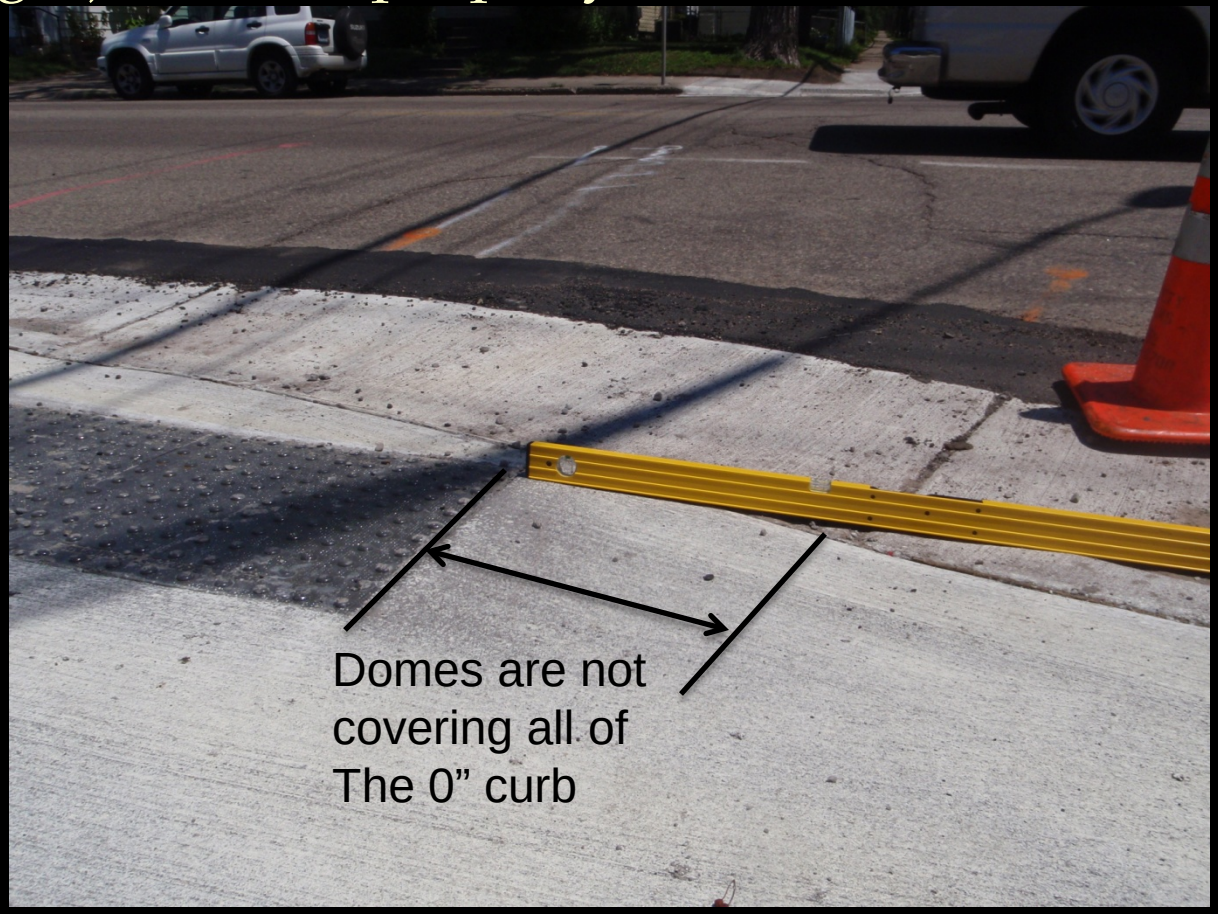


Drainage

- Gutter line and ramps are draining properly/not holding water

Vertical Discontinuities

- No vertical discontinuities greater than ¼”
- Discontinuities between ¼” and ½” must be beveled at a 1:2 slope

Truncated Dome Directionality

- We have overdone dome directionality
- Directionality only works in certain circumstances
- Purpose of domes is to inform the user that they are at the edge of the roadway
- Directionality should be done when it works
- Directionality does not usually work with APS

Directional Ramps

- Grade Breaks shall be perpendicular to the direction of travel

Unique Situations

Unique Situations

Poor Placement

Poor Placement

Poor Placement

Poor Placement

MINNESOTA DEPARTMENT OF TRANSPORTATION

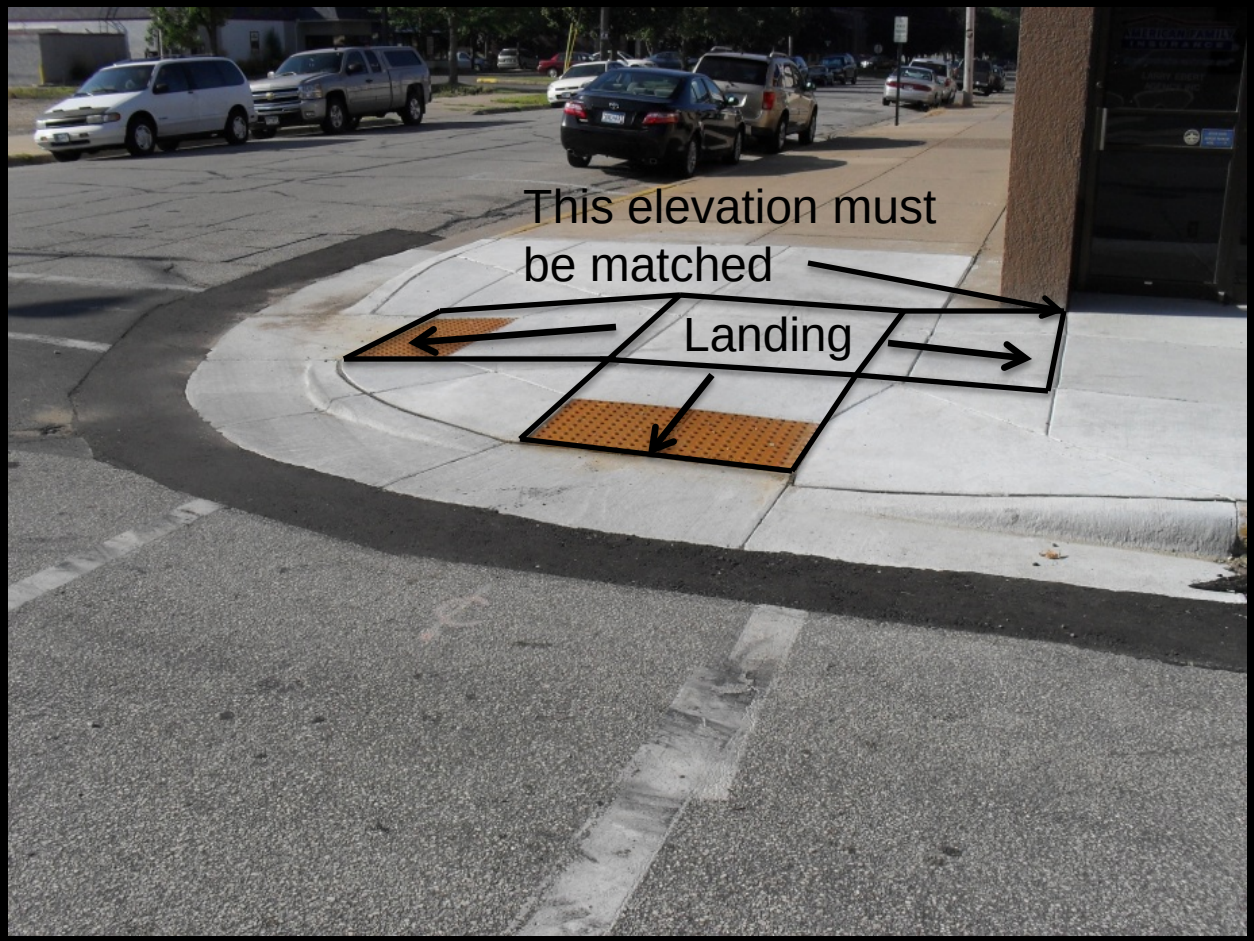
Good Placement

Good Placement

Good Placement

Maximum Extent Feasible

- Buildings, Doorways, Excessive Roadway Profile Grade



Compliance with APS

Bad Examples

- Push button orientation is backwards

Bad Examples

- No landing at push button

Bad Examples

- Replace old handhole covers with round steel covers

Bad Examples

- Curb box caused excessive running slope

Bad Examples

- Dome edge cannot be more than 5’ from the back of curb/edge of roadway

Bad Examples

- 4’ wide PAR at 2% cross slope is not maintained

Bad Examples

- No gaps in domes

Bad Examples

- Excessive curb slope…Does not match slope of ramp

Bad Examples

- Poorly finished concrete surface…"waves"