NOTES:
1/2" [13] EXPANSION JOINTS ARE SHOWN AS DARK SOLID LINES FOR VISUAL PURPOSES.
BOND BREAKER IS SHOWN AS DARK DASHED LINES FOR VISUAL PURPOSES.

1/4" [6] TYP.
4" OR 6" [102 OR 152]
2 1/2" [64] CRUSHED AGGREGATE COURSE
NOTE:
CRUSHED AGGREGATE COURSE OMITTED FOR CLARITY.

SECTION A-A

SECTION B-B

* THE MAXIMUM CONSTRUCTED CROSS SLOPE OF THE SIDEWALK IS 2% (1:50).
** THIS DEPTH IS STANDARD IN NEW CONSTRUCTION. ALTERNATIONS TO EXISTING FACILITIES MAY RESULT IN A LARGER DEPTH, WHICH WILL REQUIRE A GREATER RAMP LENGTH.

NOTE:
SEE DTL. DWG. NO. 609-05 FOR CURB & GUTTER DETAILS.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING
REFERENCE DWG. NO. STANDARD SPEC.
608-05 608-05

CONCRETE SIDEWALK

 Montana Department of Transportation
CURB RAMPS

**CURB RAMP TYPES**

**GENERAL NOTES:**

1. Use curb ramps in the following order of preference:
   - A. Perpendicular curb ramp
   - B. Combined (parallel/perpendicular) curb ramp
   - C. Parallel curb ramp

2. Existing conditions such as RW, sidewalk width, and type of sidewalk (curb-light or buffer area) usually determine the type of curb ramps to use.

3. A single curb ramp or blended transition corners serving two street crossing directions are not allowed in new construction and not recommended when altering existing facilities.

4. When altering existing facilities meet new construction requirements for curb ramps to the maximum extent feasible. Document with an ADA statement of technical infeasibility form when ADA standards cannot be achieved.

5. If possible, do not place drainage structures in conflict with curb ramps. Location of curb ramps takes precedence over location of drainage structures except where existing drainage structures are being utilized. If a drainage structure must be placed in the pedestrian access route, an ADA compliant grate, having slot openings 1/2" [13] or less in one direction, must be used.

6. Pedestrian access points at crosswalks are to be wholly contained within the crosswalk lines.

7. For additional information consult: Draft Public Rights-of-Way Accessibility Guidelines (PROWAG)

**CONSTRUCTION REQUIREMENTS:**

1. Obtain a surface texture on the ramp by coarse brooming, transverse to the ramp slope.

2. Take care during construction to assure uniform ramp grades, free of sags and sharp grade changes.

**UNITS:**

- Units shown in brackets [ ] are metric and are in millimeters (mm). Unless other units are shown.
CONSTRUCTION REQUIREMENTS:

1. The desirable width of the curb ramp (dimension "W" above) is 5 feet [1524] or wider. The minimum width ("W") is 4 feet [1219].

2. The desirable length of the landing at the top of the curb ramp (dimension "L" above) is 5 feet [1524]. The minimum length "L" is 4 feet [1220]. If the landing is constrained at the back of the sidewalk, the minimum length "L" is 5 feet [1524]. The landing width is equal to the ramp width.

3. The desirable running slope for the curb ramp is between 5% (1:20) and 7.1% (1:14). The maximum constructed curb ramp slope is 8.3% (1:12).

4. The desirable slope for the flared side of the curb ramp is 8.3% (1:12) or flatter. The maximum constructed flared side slope is 10% (1:10).

5. The desirable cross slope of the sidewalk, ramp, or landing is 1.5% (1:66.7) or less. The maximum constructed cross slope of the sidewalk, ramp, or landing is 2% (1:50).

6. The running slope of the sidewalk is equal to the street grade or flatter.

7. Provide detectable warning devices on the bottom 2 feet [610] of each ramp as shown above. See detailed drawing number 608-40 for detectable warning devices details.

8. Where existing site development conditions prohibit the strict and full compliance of all ADA criteria, provide accessibility to the maximum extent feasible. Document with an ADA statement of technical infeasibility form when ADA standards can't be achieved.

GENERAL NOTES:

1. Where the right-of-way will not accommodate a perpendicular curb ramp and landing, consider using a combined (parallel/perpendicular) curb ramp. Combined (parallel/perpendicular) curb ramps are to meet the criteria for both the parallel and perpendicular curb ramps. (See detailed drawing number 608-30 and this drawing.)

2. There is no tolerance for exceeding maximum standards.

3. The cost of retaining walls is included in the unit price bid for concrete sidewalks.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING

REFERENCE

STANDARD SPEC.

SECTION 608

608-25

PERPENDICULAR CURB RAMPS

MDT® MONTANA DEPARTMENT OF TRANSPORTATION
GENERAL NOTES:
1. THE COST OF RETAINING WALLS IS INCLUDED IN THE UNIT PRICE BID FOR CONCRETE SIDEWALK.
2. THERE IS NO TOLERANCE FOR EXCEEDING MAXIMUM STANDARDS.

CONSTRUCTION REQUIREMENTS

1. THE DESIRABLE LENGTH OF THE LANDING (DIMENSION "L" ABOVE) IS 5 FEET (1524). THE MINIMUM LANDING LENGTH IS 4 FEET (1219).
3. THE DESIRABLE SLOPE FOR THE CURB RAMPS IS 5% (1:20) TO 7.1% (1:14). THE MAXIMUM CONSTRUCTED CURB RAMP SLOPE IS 8.3% (1:12).
4. THE DESIRABLE CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 3.5% (1:28.6) OR LESS. THE MAXIMUM CONSTRUCTED CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 2% (1:50).
5. PROVIDE DETECTABLE WARNING DEVICES AT THE BACK OF CURB ON EACH LANDING AS SHOWN ABOVE. SEE DETAILED DRAWING NUMBER 608-40 FOR DETECTABLE WARNING DEVICES DETAILS.
6. WHERE EXISTING SITE DEVELOPMENT CONDITIONS PROHIBIT THE STRICT AND FULL COMPLIANCE OF ALL ADA CRITERIA, PROVIDE ACCESSIBILITY TO THE MAXIMUM EXTENT FEASIBLE AND DOCUMENT WITH AN ADA STATEMENT OF TECHNICAL INFEASIBILITY FORM WHEN ADA STANDARDS CAN'T BE ACHIEVED.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

REFERENCE: DWG. NO. 608-30
STANDARD SPEC. 608
SECTION 408

MDT* MONTANA DEPARTMENT OF TRANSPORTATION
**Perpendicular Curb Ramp**

- **SECTION A-A**
  - 4" (102) Retaining Wall
  - Flow Line
  - TOP BACK OF CURB

- **SECTION B-B**
  - Flow Line
  - TOP BACK OF CURB

**Combined (Parallel) / Perpendicular Curb Ramp**

- **SECTION C-C**
  - Flow Line
  - ADA LANDING CURB

**SECTION D-D**

- Flow Line
  - ADA LANDING CURB

**SECTION E-E**

- Flow Line
  - ADA LANDING CURB

**Requirements for New Construction and Alterations to Existing Facilities**

1. The desirable width of the curb ramp (dimension "W") above is 5 feet (1.524 m) or wider. The minimum width (W) is 4 feet (1.219 m). The landing width is equal to the ramp width.

2. The desirable length of the landing at the top of the curb ramp (dimension "L") above is 5 feet (1.524 m) or longer. The landing should be constructed in integral concrete fillet. The landing length is constrained at the back of sidewalk. The minimum landing length is 5 feet (1.524 m).

3. The desirable slope for the curb ramp is between 5% (1:20) and 7.1% (1:14). The maximum constructed curb ramp slope is 8.3% (1:12). The maximum constructed flared side slope is 10% (1:10).

4. The desirable slope for the flared side of the curb ramp is 8.3% (1:12) or flatter. The maximum constructed flared side slope is 10% (1:10).

5. The desirable cross slope of the sidewalk, ramp, or landing is 5% (1:20) or less. The maximum constructed cross slope of the sidewalk, ramp, or landing is 2% (1:50).

6. Provide detectable warning devices on the bottom 2 feet (609 mm) of each ramp. At the back of curb or curb side landings as shown. See detailed drawing number 609-05 for detectable warning devices details.

7. Where existing site development conditions prevent the sides and full compliance of all ADA criteria, provide accessibility to the maximum extent feasible. Include with ADA statement of technical equivalency form when ADA standards can't be achieved.

**General Notes**

- Where the height of the ramp will not accommodate a perpendicular curb ramp and landing meeting these requirements, consider using a combined (parallel) / perpendicular curb ramp design.

**Detailed Drawing**

- Reference: Dwg. No. 608-35

**Curb Ramp Options for Private Approach or Side Streets with Curb Returns But Without Sidewalk**

- Units shown in brackets [ ] and inches are in millimeters (mm) unless other units are shown.

- There is no tolerance for exceeding maximum standards.
CONSTRUCTION REQUIREMENTS:

1. Install detectable warning devices that extend the full width of the ramp, 2 feet (610) in depth.
2. Install the detectable warning devices adjacent to the back of curb unless otherwise shown in the plans.
3. Embed the detectable warning devices directly into the concrete, so the top of the base plate is flush with the concrete and the domes protrude above the adjacent concrete surface.
4. Use cast iron detectable warning devices from the department's qualified products list (QPL).
5. Ensure a uniform grade on the detectable warning devices free of sags and irregular edges.
6. Use detectable warning devices that visually contrast with adjacent walkway surfaces.
7. Ensure the alignment and pattern of the domes is continued across any joints between detectable warning devices base plate.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING

REFERENCE
STANDARD SPEC.
SECTION 608
DETECTABLE WARNING DEVICES

MONTANA DEPARTMENT OF TRANSPORTATION