**MAXIMUM SIDE FLARE SLOPE** REDUCED TO ACCOMMODATE FULL CURB HEIGHT MAY BE * RAMP SIDEWALK SIDE FLARE*

5' MIN.

5' MIN.

5% - 7% (8.3% MAXIMUM). ** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE

- **LANDING**
- **NON-WALKING** AREA
- **PERMANENT OBSTRUCTION**

SIDEWALK RAMP TYPE R
**ROLLED SIDES**

**DETECTABLE WARNING SURFACE** 24" ACROSS FULL WIDTH (SEE NOTES)

**DETECTABLE WARNING SURFACE**
24" ACROSS FULL WIDTH (SEE NOTES)

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**DETECTABLE WARNING SURFACE**
24" ACROSS FULL WIDTH (SEE NOTES)

**SIDEWALK RAMP TYPE F**
**FLARED SIDES, TWO RAMPS SHOWN**

- **LANDING**
- **FULL CURB HEIGHT MAY BE REDUCED TO ACCOMMODATE MAXIMUM SIDE FLARE SLOPE**

**DETECTABLE WARNING DETAILS**

**SIDEWALK RAMP AND DETECTABLE WARNING DETAILS**
DETECTABLE WARNING DETAILS

SIDEWALK RAMP AND
R-28-J

SECTION A-A

SIDEWALK RAMP TYPE RF
(ROLLED / FLARED SIDES)

Pavement
CURB RAMP OPENING
RAMP RUN
* LANDING

2" MAX.

DETECTABLE WARNING SURFACE
24" ACROSS FULL WIDTH (SEE NOTES)

RAMP SLOPE 5% - 7% (8.3% MAXIMUM) SEE NOTES

1" EXPANSION JOINT
GRADE BREAK

DETECTABLE WARNING SURFACE
24" ACROSS FULL WIDTH (SEE NOTES)

RAMP AND LANDING SLAB THICKNESSES
SHALL BE AS CALLED FOR ON THE PLANS

SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)

Pavement shall end flush with the gutter pan

Watch ramp slope not to exceed maximum rise B

Ramp shall end flush with back of curb

Lane tie and reinforcement as in adjacent curb & gutter
See standard plan R-30-SERIES

SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)

Pavement shall end flush with the gutter pan

Watch ramp slope not to exceed maximum rise B

Ramp shall end flush with back of curb

Lane tie and reinforcement as in adjacent curb & gutter
See standard plan R-30-SERIES

FOR CURB TYPES SEE
STANDARD PLAN R-30-SERIES

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND
DETECTABLE WARNING DETAILS
SIDEWALK RAMP TYPE P
(parallel ramp)
Do not use in areas where ponding may occur

SIDEWALK RAMP TYPE C
(combination ramp)
Detectable warning surface 24" across full width if median width is at least 6'-0". Otherwise no detectable warning is required.

SIDEWALK RAMP TYPE M
(median island)

Detectable warning details:
- Maximum landing slope is 2.0% in each direction of travel. Landing minimum dimensions 5' x 5'. See notes.
- Maximum ramp cross slope is 2.0%, running slope 5% - 7% (8.3% maximum). See notes.
- Michigan Department of Transportation
- Bureau of Development Standard Plan for Sidewalk Ramp and Detectable Warning Details
DETECTABLE WARNING DETAILS

SIDEWALK RAMP AND RAMP
ROLLED CURB
"NON-WALKING" AREA
SIDEWALK RAMP TYPE D
(DEPRESSED CORNER)

USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.

2" MAXIMUM DETECTABLE WARNING BORDER OFFSET MEASURED FROM THE ENDS OF THE RADIUS. SEE NOTES
(RADIAL DETECTABLE WARNING SHOWN)

2" MAXIMUM DETECTABLE WARNING BORDER OFFSET MEASURED FROM THE ENDS OF THE RADIUS. SEE NOTES
(TANGENT DETECTABLE WARNING SHOWN)

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

7-26-2019 R-28-J SHEET 4 OF 7

F.H.W.A. APPROVAL
*The detectable warning surface shall be located so that the edge nearest the rail crossing is 6' minimum and 15' maximum from the centerline of the nearest rail. Do not place detectable warning on railroad crossing material.

Detectable warning at railroad crossing

Detectable warning at flush shoulder or roadway

Michigan Department of Transportation
Bureau of Development Standard Plan for
Sidewalk Ramp and Detectable Warning Details

7-26-2019
LEGEND

- SLOPED SURFACE
- DETECTABLE WARNING
- "NON-WALKING" AREA
- CROSSWALK MARKING
- PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
- ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)

SIDEWALK RAMP PERPENDICULAR TO TANGENT CURB
(SIDEWALK RAMP ORIENTATION)

SIDEWALK RAMP PERPENDICULAR TO RADIAL CURB
(SIDEWALK RAMP ORIENTATION)

5.0% MAX. RUNNING SLOPE BEYOND BOTTOM GRADE BREAK.
SEE SECTION B-B

WHERE EITHER END OF THE BOTTOM GRADE BREAK IS MORE THAN 5' FROM
THE BACK OF CURB, THE DETECTABLE WARNING SHALL BE LOCATED AT THE
BACK OF CURB. (DOME ORIENTATION IS NOT SIGNIFICANT ON RADIUS)

WHERE BOTH ENDS OF THE BOTTOM GRADE BREAK ARE
WITHIN 5' OF THE BACK OF CURB. THE DETECTABLE
WARNING SHALL BE LOCATED ON THE RAMP SURFACE AT
THE BOTTOM GRADE BREAK.

SIDEWALK RAMP LOCATED IN RADIUS (TYPE R SHOWN)
(GRADE BREAK OFFSET GREATER THAN 5')

SIDEWALK RAMP AND LANDING SLAB THICKNESSES
(SIDEWALK RAMP ORIENTATION)

* GRADE BREAK (TYP)
2% (5.0% MAX.) SLOPE BEYOND BOTTOM GRADE BREAK

PRECAST CURB RAMPS SHALL BE PERPENDICULAR TO
THE DIRECTION OF TRAVEL.

TRANSITION ADJACENT GUTTER PAN CROSS
SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.
SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.

SECTION B-B
SIDEWALK RAMP ORIENTATION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL
7-26-2019  R-28-J  SHEET 6 OF 7
NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BRUSHING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPS WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT. IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' X 4'.

CURB RAMPS WITH A RUNNING SLOPE ≤5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.


FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRIORITY OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN 1/2". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMPS. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS, WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATE MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.