**MAXIMUM TURNING SPACE SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5’ x 5’. SEE NOTES.**

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

**SIDEWALK RAMP TYPE R**

(ROLLED SIDES)

**SIDEWALK RAMP TYPE F**

(FLARED SIDES, TWO RAMPS SHOWN)

**DETECTABLE WARNING DETAILS**

**SIDEWALK RAMP AND DETECTABLE WARNING DETAILS**

**MICHIGAN DEPARTMENT OF TRANSPORTATION**

**BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR**

**PREPARED BY:**

Kirk T. Staudt

**APPROVED BY:**

Randy U. Pestka

**DIRECTOR, BUREAU OF FIELD SERVICES**

**DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT**

**F.H.W.A. APPROVAL**

9-30-2014

**PLAN DATE**

7-1-2014

R-28-I

**SHEET 1 OF 7**
**ADJACENT CURB & GUTTER REINFORCEMENT AS IN SECTION A-A**

- PAVEMENT SHALL END FLUSH WITH THE GUTTER PAN
- RAMP SHALL END FLUSH WITH BACK OF CURB
- RAMP OPENING
- **MAXIMUM TURNING SPACE SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.**

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

**SIDEWALK RAMP TYPE RF**

(ROLLED / FLARED SIDES)

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

**SECTION A-A**

- **TRANSITION ADJACENT GUTTER PAN** CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

**SECTION THROUGH CURB CUT**

(TYPICAL ALL RAMP TYPES)

- DETECTABLE WARNING SURFACE 24" ACROSS FULL WIDTH (SEE Notes)
- DETECTABLE WARNING SURFACE 24" ACROSS FULL WIDTH (SEE Notes)
- 1" EXPANSION JOINT

**MICHIGAN DEPARTMENT OF TRANSPORTATION**

BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

9-30-2014 7-1-2014 R-28-I SHEET 2 OF 7
**MICHIGAN DEPARTMENT OF TRANSPORTATION**

**SHEET**

**PLAN DATE**

**F.H.W.A. APPROVAL**

**BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR**

**SIDEWALK RAMP TYPE M**

**(MEDIAN ISLAND)**

- Maximum turning space slope is 2.0% in each direction of travel. Minimum dimensions 5' x 5'. See notes.
- Maximum ramp cross slope is 2.0%, running slope 5% - 7% (8.3% maximum). See notes.

**SIDEWALK RAMP TYPE P**

**(PARALLEL RAMP)**

DO NOT USE IN AREAS WHERE PONDING MAY OCCUR

**SIDEWALK RAMP TYPE C**

**(COMBINATION RAMP)**

USE 24" deep detectable warnings if median width is at least 6'-0". Otherwise no detectable warning is required.

**SIDEWALK RAMP TYPE M**

**(MEDIAN ISLAND)**

**DETECTABLE WARNING IS REQUIRED.**

**WIDTH IS AT LEAST 6'-0". OTHERWISE NO USE 24" DEEP DETECTABLE WARNINGS IF MEDIAN**

**MEDIAN WIDTH**

**MIN.**

**SEE NOTES**

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

**ROLLED CURB**

**TURNING SPACE**

**"NON-WALKING" AREA**

**24" ACROSS FULL WIDTH DETECTABLE WARNING SURFACE**

**SEE NOTES**

**SIDEWALK RAMP AND DETECTABLE WARNING DETAILS**

**R-28-I**

**SHEET 3 OF 7**
- Maximum turning space slope is 2.0% in each direction of travel. Minimum dimensions 5' x 5'. See notes.
- Maximum ramp cross slope is 2.0%, running slope 5% - 7% (8.3% maximum). See notes.

**Ramp**

- "Non-walking" area
- Rolled curb

Turning space

"Non-walking" area

Turning space

Sidewalk ramp type D (depressed corner)

Use only when independent directional ramps cannot be constructed for each crossing direction

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS

Michigan Department of Transportation
Bureau of Highway Development Standard Plan for
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

DETECTABLE WARNING DETAILS

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT

SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
LEGEND

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

Michigan Department of Transportation

Section B-B

Sidewalk Ramp Orientation

Sidewalk Ramp Located in Radius (Type R Shown)
(Grade Break Less Than 5')

Sidewalk Ramp Perpendicular to Radial Curb (Type F Shown)
(Use with Radial Curb when the Crosswalk and Sidewalk Ramp are not aligned)

Sidewalk Ramp Located in Radius (Type R Shown)
(Grade Break Greater Than 5')

Section B-B

Sidewalk Ramp and Detectable Warning Details

9-30-2014
F.H.W.A. APPROVAL

7-1-2014
PLAN DATE

R-28-I
SHEET
6 OF 7
DOME SECTION  DOME SPACING  DOME ALIGNMENT

DETECTABLE WARNING DETAILS

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 BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED 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.

PROVIDE TURNING SPACES WHERE PEDESTRIAN TURNING MOVEMENTS ARE REQUIRED.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND TURNING SPACES TO NOT LESS THAN 4' x 4'.


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.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE 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 GRADE. 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.

TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0%. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

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 AVOID SHARP CURVATURE AT RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF 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 RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERS BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS, WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURVATURE AT RAMP OPENINGS.

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