

This plate will be replaced with plate 651.02

STANDARD REQUIREMENTS

- 1) ALL RAMPS ARE REQUIRED TO HAVE A LANDING AREA WITH NO MORE THAN A 2% SLOPE IN ANY DIRECTION. THE LANDING AREA SHALL BE A MINIMUM OF 4' BY 4'. TYPICALLY, THE LANDING AREA SHALL BE LOCATED WHERE A PEDESTRIAN MAKES A TURNING MOVEMENT TO LINE UP WITH THE CURB OPENING. FOR EXAMPLE, THE LANDING AREA SHALL BE LOCATED WHERE 2 BOULEVARD SIDEWALKS JOIN AND CONNECT TO THE RAMP. THE LANDING AREA ON A CURB SIDE SIDEWALK SHALL BE LOCATED AT THE CURB OPENING. IT MAY BE NECESSARY TO HAVE MULTIPLE LANDING AREAS WHEN COMBINING BOULEVARD AND CURBSIDE SIDEWALKS. GRADE CHANGES FROM THE CONNECTING SIDEWALK OR RAMP TO THE LANDING AREA MUST BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.
- 2) ALL RAMPS HAVE A MAXIMUM RUNNING SLOPE OF 8.33% (1" PER FOOT) WITH THE FOLLOWING EXCEPTION: ON BACK OF CURB SIDEWALKS, THE CURB RAMP LENGTH MAY NEED TO BE EXTENDED ACCORDING TO TABLE B TO ACHIEVE THE MAXIMUM SLOPE OF 8.33%. THE CURB RAMP LENGTH WILL BE LIMITED TO A MAXIMUM LENGTH OF 15'.
- 3) ALL SIDEWALKS AND RAMPS HAVE A MAXIMUM CROSS SLOPE OF 2% (1/4" PER FOOT).
- 4) INSTALL PREMANUFACTURED DETECTABLE WARNING PANELS IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS. THE CITY ENGINEER'S OFFICE HAS AN APPROVED LIST OF MANUFACTURES ON FILE. SEE DETAIL A AND TABLE A FOR DETECTABLE WARNING PANEL SIZE AND LOCATION. DETECTABLE WARNING PANELS SHALL BE AN APPROVED RED COLOR EXCEPT IN LOCATIONS WHERE THE ADJOINING CONCRETE SIDEWALK IS RED OR DARK IN COLOR. AT THESE LOCATIONS THE DETECTABLE WARNING PANEL SHALL BE A CONTRASTING COLOR APPROVED BY THE CITY ENGINEER. THE SIDEWALK DEPTH SHALL BE A MINIMUM OF 6" FOR A 2' AREA ADJACENT TO THE DETECTABLE WARNING PANEL.
- 5) OBSTRUCTIONS SUCH AS SIGNAL POLES, LIGHT POLES, TRAFFIC CONTROLLER CABINETS, ETC. CAN NOT BE LOCATED IN THE LANDING AREA OR THE RAMP SLOPE. ALL SIDEWALKS SHALL HAVE A 4' MINIMUM WIDTH FREE OF OBSTRUCTIONS TO ACCOMMODATE PEDESTRIAN TRAVEL.
- 6) DEPENDING ON ADJOINING GRADES AND EXISTING CONDITIONS A CURB WITH A MAXIMUM HEIGHT OF 6" MAY NEED TO BE INSTALLED ON THE BACK OF THE LANDING AREA AND CONNECTING SIDEWALK. THIS CURB MAY ALSO NEED TO BE INSTALLED TO ENSURE STREET DRAINAGE DOES NOT OVERFLOW THE AREA BEHIND THE LANDING AREA AND RAMP.

GENERAL NOTES

- THE CONTRACTOR MUST HAVE AN ELECTRONIC LEVEL ON SITE TO ENSURE THE SPECIFIED SLOPES ARE MAINTAINED.
- CARE SHALL BE TAKEN TO ENSURE THE SURFACE OF THE DETECTABLE WARNING PANEL IS CLEAN AND FREE OF CURING COMPOUND AND CONCRETE RESIDUE.
- SURFACE TEXTURE OF THE RAMP SHALL BE OBTAINED BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.
- JOINTS SHALL BE TOOLED INTO THE CONCRETE ADJACENT TO THE DETECTABLE WARNING PANELS TO ALLEVIATE POSSIBLE CORNER CRACKING (SEE DETAIL A).
- THERE WILL BE NO SEPARATE PAYMENT FOR THE SIDEWALK LANDING AREA OR RAMP. THE SIDEWALK LANDING AREA AND RAMP, INCLUDING THE DETECTABLE WARNING PANEL AREA, SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT FOR THE CORRESPONDING CONCRETE SIDEWALK BID ITEM. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE ADDITIONAL CONCRETE DEPTH ADJACENT TO THE DETECTABLE WARNING PANEL.
- THE DETECTABLE WARNING PANEL SHALL BE MEASURED TO THE NEAREST SQUARE FOOT. PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER SQUARE FOOT FOR THE DETECTABLE WARNING PANELS. PAYMENT SHALL INCLUDE ALL COSTS FOR MATERIALS, LABOR, AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF THE DETECTABLE WARNING PANELS.

THE FOLLOWING PERSPECTIVE VIEWS ARE ILLUSTRATIONS OF DIFFERENT TYPES OF INSTALLATIONS INCORPORATING THE MANDATORY REQUIREMENTS.

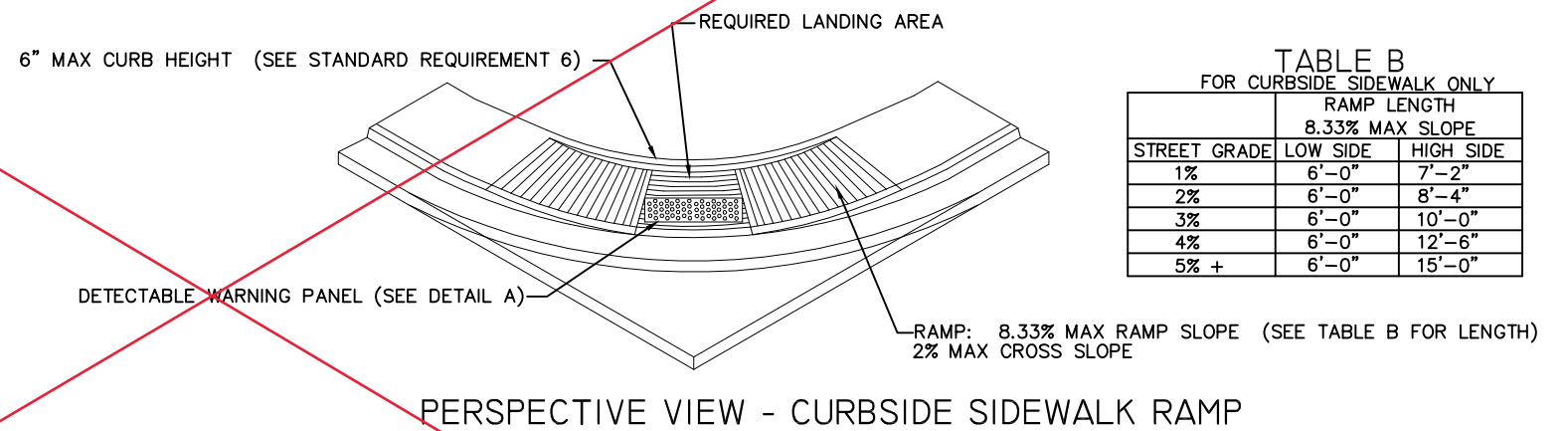
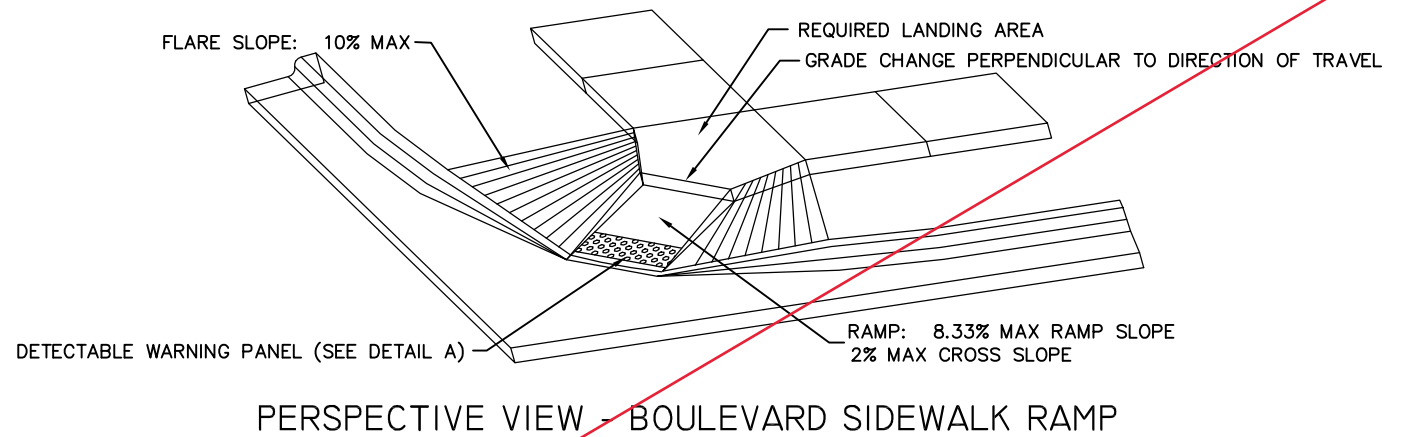


TABLE B
FOR CURBSIDE SIDEWALK ONLY

| STREET GRADE | RAMP LENGTH 8.33% MAX SLOPE | |
|--------------|--------------------------------|-----------|
| | LOW SIDE | HIGH SIDE |
| 1% | 6'-0" | 7'-2" |
| 2% | 6'-0" | 8'-4" |
| 3% | 6'-0" | 10'-0" |
| 4% | 6'-0" | 12'-6" |
| 5% + | 6'-0" | 15'-0" |

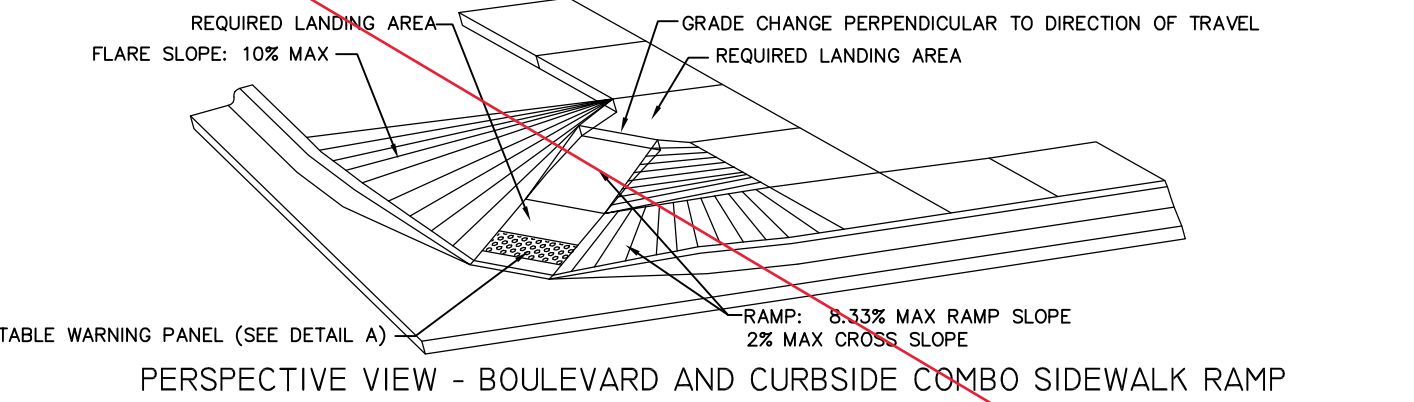
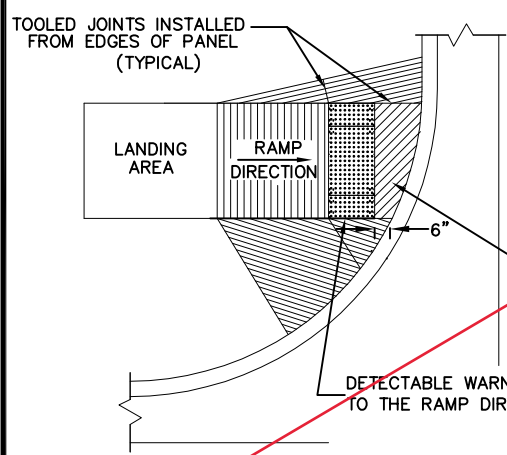


TABLE A

| NEW OR IN PLACE SIDEWALK | RAMP OPENING | DETECTABLE WARNING PANEL DIMENSIONS |
|--------------------------|--------------|-------------------------------------|
| 4' | 4' | 2' x 4' |
| 5' | 4' | 2' x 4' |
| 6'+ | 4' | 2' x 4' |



UNLESS CURB RAMP IS PERPENDICULAR TO THE CURB RADIUS AN AREA OF SPECIAL SHAPING MUST BE PROVIDED AT THE BOTTOM OF THE RAMP.

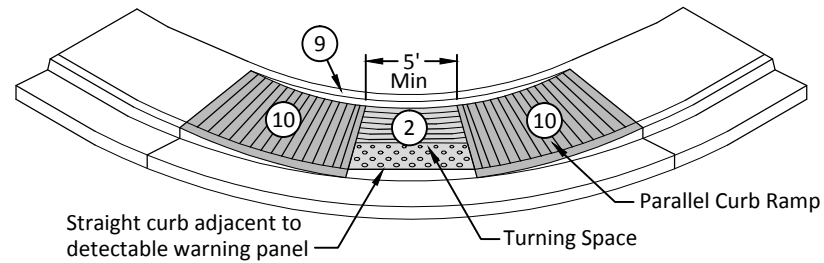
DETECTABLE WARNING PANELS SHALL BE INSTALLED PERPENDICULAR TO THE RAMP DIRECTION. SET 6" BACK FROM CURB.

ISSUED: JANUARY 2005

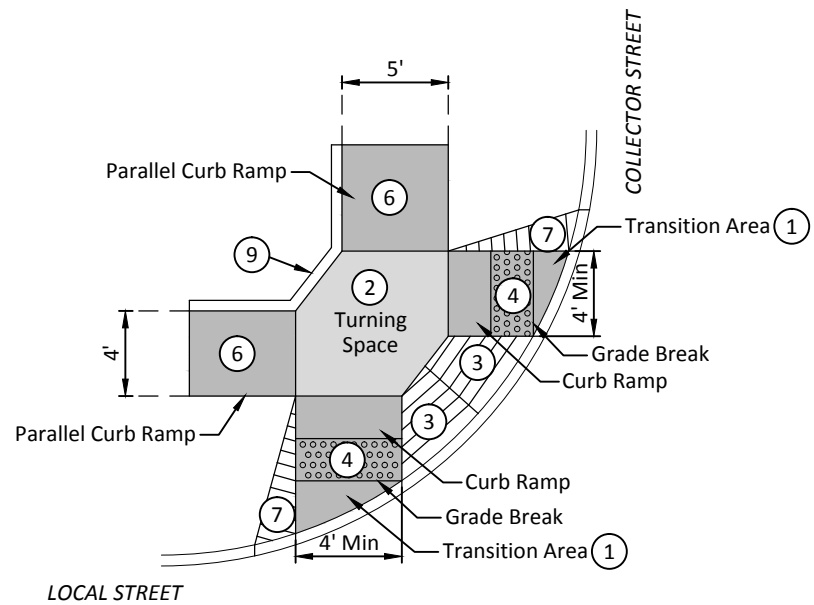
CITY OF SIOUX FALLS
ENGINEERING DIVISION
SIDEWALK RAMPS AND
DETECTABLE WARNING PANELS

| | |
|--|---------------------------|
| SPECIFICATION REFERENCE NO. 651 | PLATE NUMBER 651.02 |
|--|---------------------------|

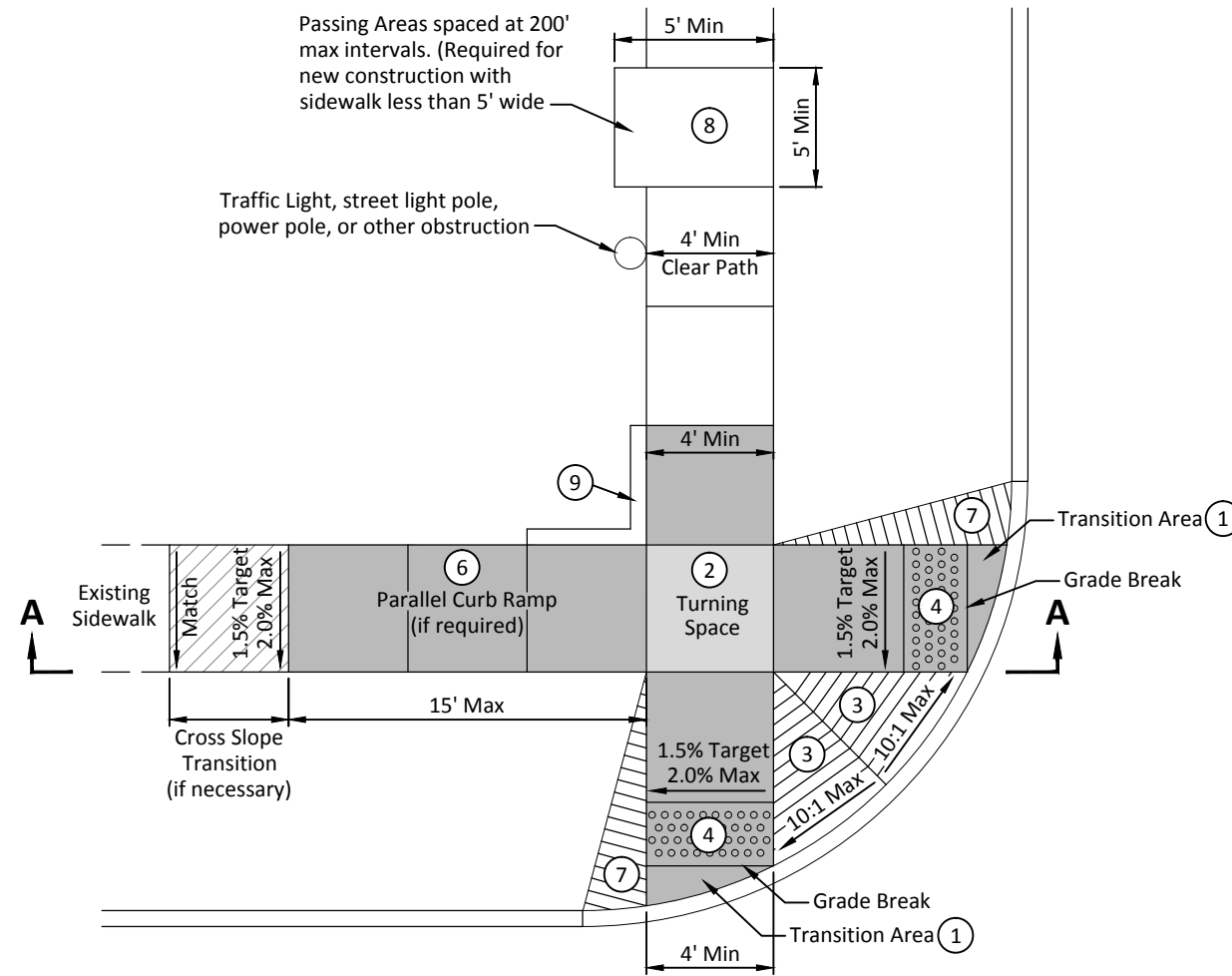
PARALLEL CURB RAMP EXAMPLE



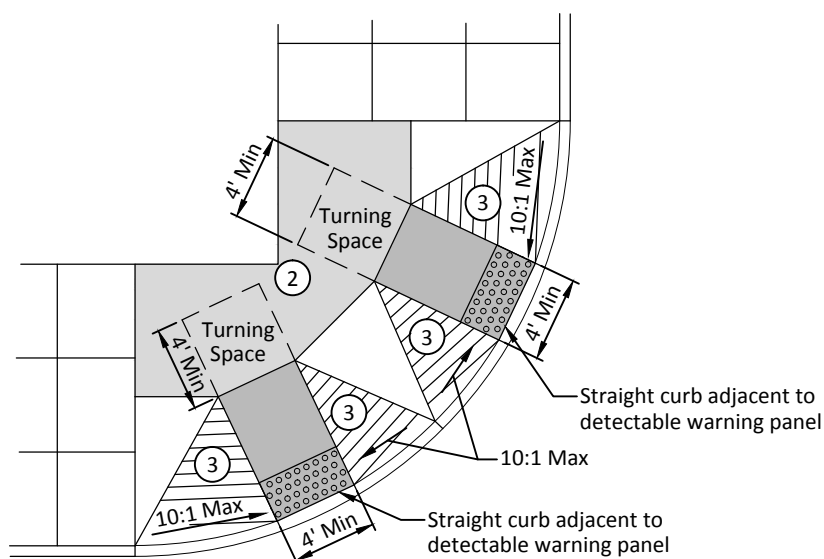
DIRECTIONAL SIDEWALK RAMP EXAMPLE (Typical of a local/collector intersection with a 20' radius)



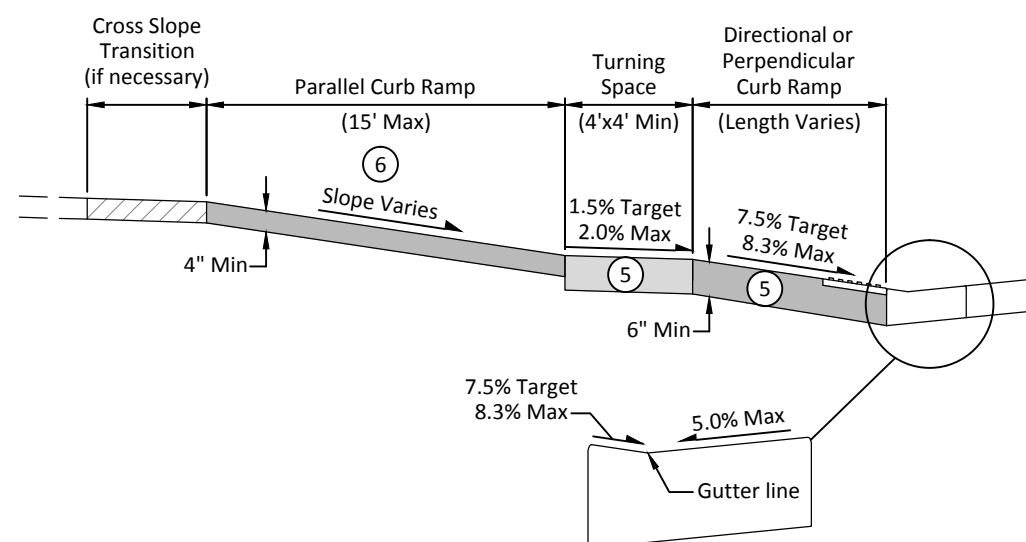
DIRECTIONAL SIDEWALK RAMP EXAMPLE



PERPENDICULAR CURB RAMP EXAMPLE



SECTION A-A



NOTES:

1. Transition from the the 2% maximum cross slope on the ramp and the pedestrian street crossing grade in this area. The maximum cross slope on the pedestrian street crossing (including the fillet or curb and gutter) is 2% on stop or yield controlled legs and 5% on uncontrolled or signalized legs.
2. Minimum 4 feet by 4 feet. Target cross slope of 1.5% with a maximum cross slope of 2.0% in any direction. Where the turning space is confined at the back of sidewalk (example: 6" curb or building), the turning space shall be 4 foot by 5 foot minimum. The 5 foot dimension shall be in the direction of the ramp run. The grade change between the turning space and the curb ramp must be perpendicular to the direction of travel.
3. Areas where the pedestrian circulation path crosses a curb ramp are considered flare sides. The maximum slope of the flare sides is 10%. Full curb height may not be able to be reestablished on flare slopes but as much curb height as possible should be reestablished.
4. Provide a minimum 2 foot width of detectable warning surfaces in the direction of pedestrian travel across the full width of the curb ramp or turning space, exclusive of curbs or flares. Orient domes in the direction of pedestrian travel unless otherwise stated in plans.
5. The concrete in the turning space, curb ramp, and flare slope areas shall be a minimum thickness of 6 inches.
6. If normal sidewalk elevation cannot be achieved with the perpendicular ramp between the street and turning space due to limited ramp length, provide a parallel ramp to make up the elevation difference between the turning space and the standard sidewalk. This parallel ramp shall not exceed 8.3% slope. However, the length of the ramp is not required to exceed 15 feet, regardless of slope. The minimum sidewalk thickness for the parallel ramp in this area is 4 inches.
7. Install a 2 foot taper when additional sidewalk will not be located adjacent to the curb ramp.
8. To accommodate the passing area requirement, sidewalks must be a minimum of 5 foot wide through the driveway approach. See plate 651.01 for additional information.
9. Depending on the conditions, a curb up to 6 inches high may need to be installed on the back of the turning space or adjoining sidewalk.
10. The slope of curb ramp and adjacent curb is designed at 7.5% or less but shall not be steeper than 8.3% unless otherwise specified in the plans. The curb ramp is not required to exceed 15 feet, regardless of slope. The cross slope target is 1.5% with a maximum cross slope of 2.0%.

GENERAL NOTES:

The turning space, curb ramp, and detectable warning panel area will be paid for at the contact unit price for the corresponding concrete sidewalk bid item.

The detectable warning panel shall be measured and paid for to the nearest square foot. Payment shall include all costs for materials, labor, and equipment necessary for the installation of the detectable warning panels.
Revised: October 2016



CITY OF SIOUX FALLS
ENGINEERING DIVISION
ACCESSIBLE CURB RAMPS

SPECIFICATION
REFERENCE
NO. 650

PLATE
NUMBER
651.02