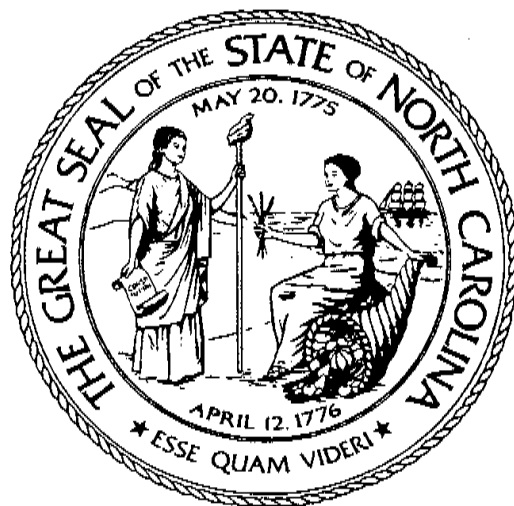




GUIDELINES CURB CUTS AND RAMPS FOR DISABLED PERSONS



**DIVISION OF HIGHWAYS
HIGHWAY DESIGN BRANCH
DESIGN SERVICES UNIT**

**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**



JULY 1995



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INTRODUCTION

These guidelines for curb ramps were developed as part of an overall program of action to remove the restrictive barriers which severely impede the daily movements of physically handicapped and elderly persons. The common curb is probably the most encountered barrier which denies these citizens the mobility to enjoy the privilege and right of a full, active role in society.

The details and guidelines included in this booklet were originally developed as directed by legislation enacted by the 1973 Session of the General Assembly, identified as Ratified House Bill 1296 and codified as G.S. 136-44.14. A copy of this law is included. These guidelines were developed and revised through consultation with representatives of the Governor's Study Committee on Architectural Barriers which was composed of the Governor's Advocacy Council for Persons with Disabilities and The Division of Services for the Blind. The construction details of the ramp included in this booklet were revised in January 1992, to comply with 36CFR Part 1191 Title III of the Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Final Guidelines.

This booklet is intended to be a general guide for curb ramps or curb cut locations only. Many specific locations will involve problems particular to it alone, and therefore some deviation from this guide will be necessary. In these situations, the use of sound judgment, safety, and the recognition of those features which should be retained will produce a satisfactory design.

With the primary purpose of the program kept in mind and a positive approach taken to it, the success will be rewarding to more than one-half million handicapped North Carolinians. Thank you for doing your part.

GUIDELINES ON RESPONSIBILITY

In the case of construction or reconstruction of curbing on any existing or proposed public street, the city, county, or State having jurisdiction shall require complete conformance to this law prior to permitting the encroachment for the construction or prior to acceptance of the street onto its system.

In the case of the reconstruction of curbing, the responsibility for providing the curb cut and ramp and all the work necessary to accomplish this including any removal and replacement of any existing curbs and sidewalks or any other work required to achieve the complete facility shall be upon the party which causes the existing curb to be cut.

In the case of the new construction of the curbing, the responsibility for providing the curb cut and ramp and all the work necessary to accomplish this shall be upon the party causing the curb to be constructed.

Construction of curb cuts and ramps will be required when streets with curb and gutter and sidewalk (either existing or planned) are resurfaced.

CURB RAMPS OR CURB CUTS
FOR HANDICAPPED PERSONS

G.S. 136-44.14

(a) Curbs constructed on each side of any street or road, where curbs and sidewalks are provided and at other major points of pedestrian flow, shall meet the following minimum requirements:

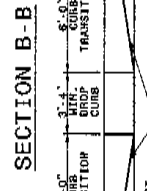
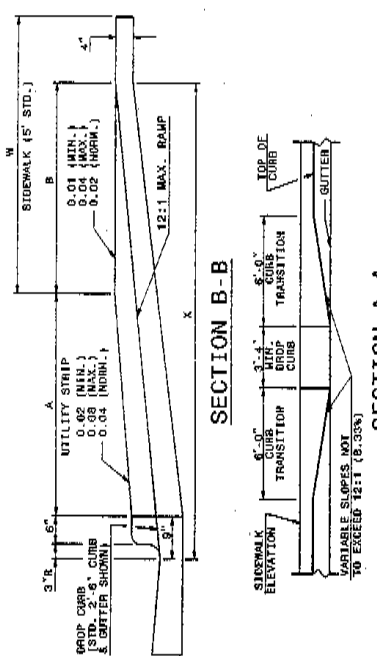
- (1) No less than two curb ramps or curb cuts shall be provided per lineal block, located at intersections.
- (2) In no case, shall the width of a curb ramp or curb cut be less than 40 inches.
- (3) The maximum gradient of such curb ramps or curb cuts shall be eight and thirty-three one-hundredths percent (8.33%) (12 inches slope for every one-inch rise) in relationship to the grade of the street or road.
- (4) One curb ramp or curb cut may be provided under special conditions between each radius point of a street turnout of an intersection, if adequate provisions are made to prevent vehicular traffic from encroaching on the ramp.

(b) Minimum requirements for curb ramps or curb cuts under subsection (a) shall be met (i) in the initial construction of such curbs, and (ii) whenever such curbs are reconstructed,

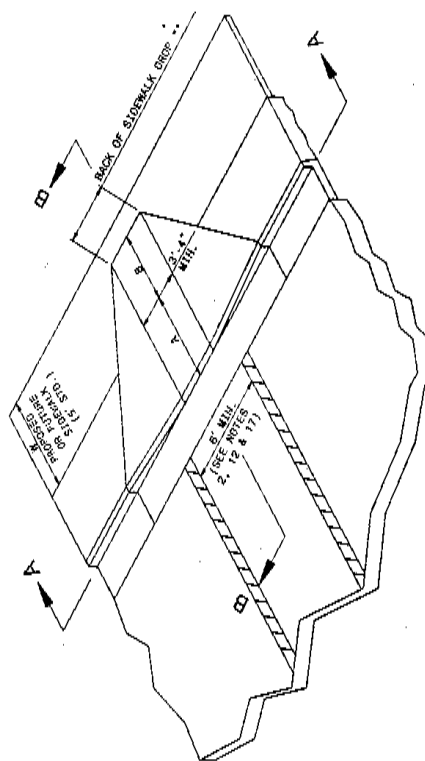
including, but not limited to, reconstruction for maintenance procedures and traffic operations, repair, or correction of utilities.

- (c) The Department of Transportation, Division of Highways, Highway Design Section, is authorized and directed to develop guidelines to implement this Article in consultation with the Governor's Study Committee on Architectural Barriers (or the Committee on Barrier-Free Design of the Governor's Committee on Employment of the Handicapped if the Governor's Study Committee on Architectural Barriers ceases to exist) . All curb ramps or curb cuts constructed or reconstructed in North Carolina shall conform to the guidelines of the Highway Design Section.

- (d) The Department of Transportation, Division of Highways, Highway Design Section, is authorized and directed to provide free copies of this article together with guidelines and standards, to municipal and county governments and public utilities operating within the State. (1973, c.718, ss. 1-4.)



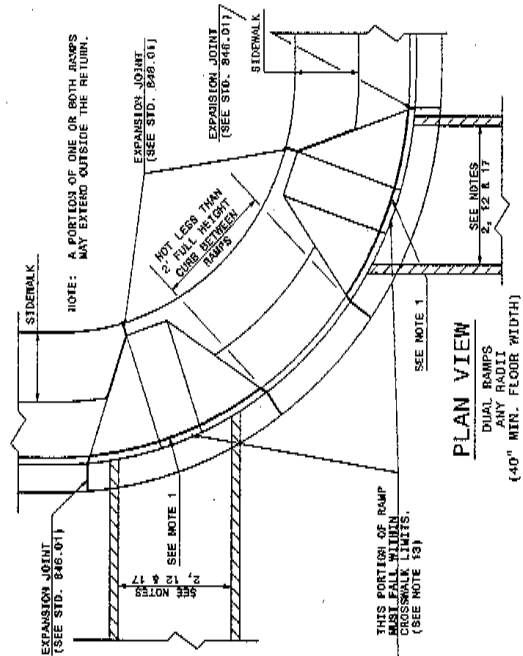
SECTION A-A



ISOMETRIC VIEW

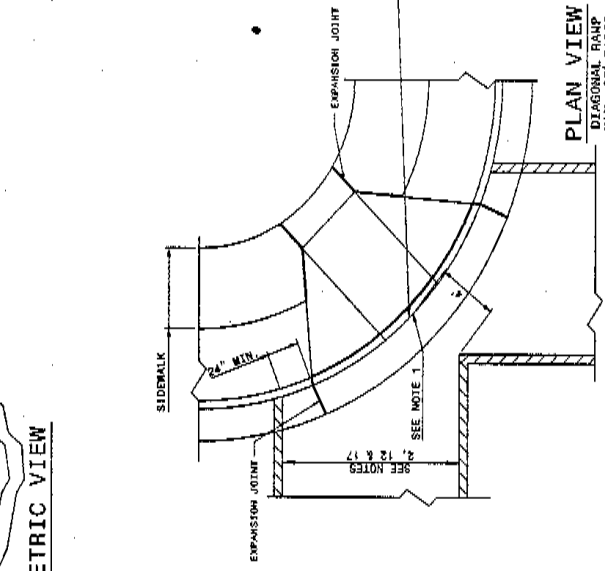
W	A	W/A*9"	X	B
5'	0.0'	5.6'	5.8'	5.0'
5'	0.0'	6.6'	6.8'	6.0'
5'	0.0'	7.6'	7.8'	6.5'
5'	0.0'	8.6'	8.8'	7.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	9.4'	4.1'
5'	4.0'	9.8'	9.6'	3.8'
5'	4.5'	10.3'	9.7'	3.4'
5'	5.0'	10.8'	9.9'	3.1'

B = X - (A/9")
 B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (6.33%) SLOPE.
 * BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
 ** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



PLAN VIEW

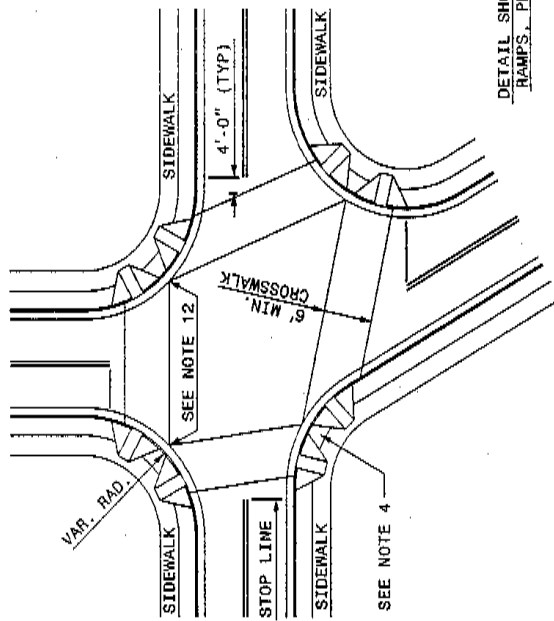
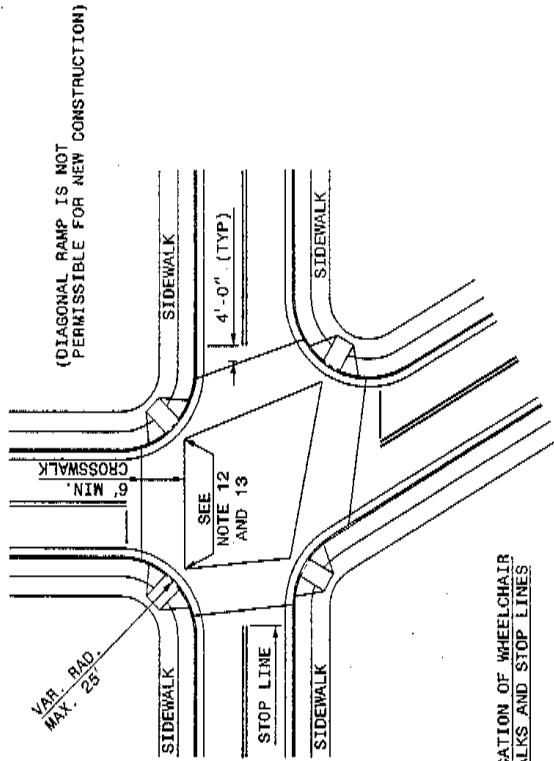
ROADWAY PLAN SYMBOL FOR PROPOSED WHEELCHAIR RAMP
 WCR
 ROADWAY PLAN SYMBOL FOR PROPOSED CURB CUT FOR FUTURE RAMP
 CCFR



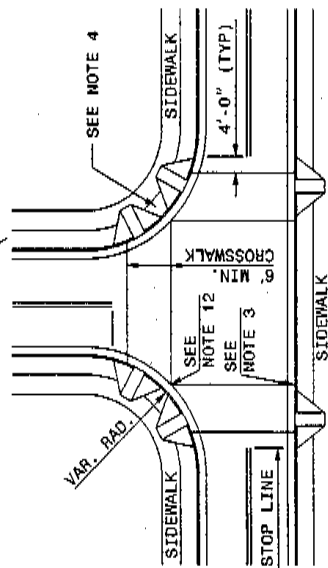
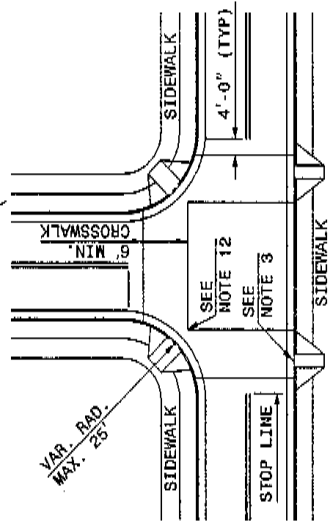
PLAN VIEW

[NOT PERMISSIBLE FOR NEW CONSTRUCTION]

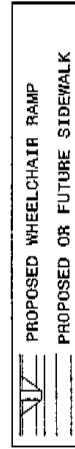
WHEELCHAIR RAMP CURB CUT



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMP, PEDESTRIAN CROSSWALKS AND STOP LINES



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMP, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS



ALLOWABLE LOCATIONS

..... DUAL RAMP RADIUS
 ANY DIAGONAL RAMP RADIUS
 MAX. 25'
 (DIAGONAL RAMP IS NOT PERMISSIBLE FOR NEW CONSTRUCTION)

WHEELCHAIR RAMP CURB CUT

WHEELCHAIR RAMP

CURB CUT

NOTES:

1. THE WALKING SURFACE SHALL BE SLIP RESISTANT AND A CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILITIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1, 1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH TITLE III OF THE ADA BECOMING EFFECTIVE JANUARY 26, 1992. THE ADA REQUIREMENTS FOR DETECTABLE WARNINGS ARE SUSPENDED EFFECTIVE MAY 12, 1994.

4. WHEELCHAIR RAMPS SHALL BE PROVIDED AT LOCATIONS S SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. WHEELCHAIR RAMPS SHALL BE LOCATED AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED NOT LESS THAN 2 FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS. DUAL RAMPS SHOULD BE PLACED AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. ALL 4" CONCRETE USED FOR CONSTRUCTION OF WHEELCHAIR RAMPS WILL BE PAID FOR AS CONCRETE WHEELCHAIR RAMPS. (SQ. YDS.)
6. ALL DEPRESSED CURBS AT WHEELCHAIR RAMPS WILL BE PAID FOR AS THE TYPE CURB AND GUTTER USED ADJACENT TO DEPRESSED CURB. (LN. FT.)

7. SUCH PRICES AND PAYMENTS WILL BE CONSIDERED FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO SATISFACTORILY COMPLETE THE WORK.
8. NO SLOPE ON THE WHEELCHAIR RAMP SHALL EXCEED 1"/1' (12:1) IN RELATIONSHIP TO THE GRADE OF THE STREET.
9. THE WIDTH OF THE WHEELCHAIR RAMP SHALL BE 40" (3'- 4") OR GREATER FOR DUAL RAMPS AND 60" (5'- 0") OR GREATER FOR DIAGONAL RAMPS.
10. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
11. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
12. THE INSIDE PEDESTRIAN CROSSWALK LINES SHALL BE SET NO CLOSER IN THE INTERSECTION THAN WOULD BE ESTABLISHED BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
13. THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SHALL BE COORDINATED SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. DIAGONAL RAMPS WITH FLARED SIDES SHALL BE PLACED SO 24" OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
14. THE MINIMUM WIDTH OF THE PEDESTRIAN CROSSWALK SHALL BE 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
15. STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
16. PARKING SHALL BE ELIMINATED A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK .
17. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD. ALL PAVEMENT MARKINGS SHALL BE DONE BY OTHERS.



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