

Special Provisions for the Construction of Concrete Sidewalks, Curb, Curb and Gutter, Alleys and Drive Approaches

The State of Minnesota, Department of Transportation “Standard Specifications for Construction”, 2005 edition, shall govern, except where modified or amended by these Special Provisions.

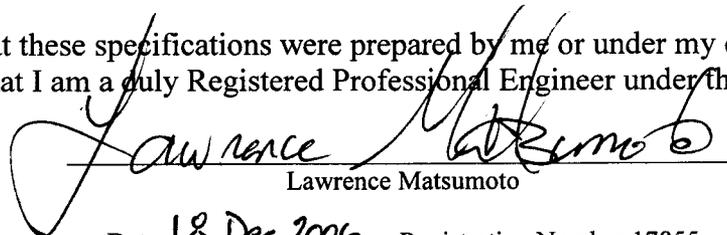
**City of Minneapolis, Department of Public Works
2007 edition**

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I hereby certify that these specifications were prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.


Lawrence Matsumoto

Date 18 Dec 2006 Registration Number 17855

Special Provisions for the Construction of Concrete Sidewalks, Curb, Curb and Gutter, Alleys and Drive Approaches

The State of Minnesota, Department of Transportation “Standard Specifications for Construction”, 2005 edition shall govern except where modified or amended by these special provisions.

These special provisions apply to concrete work performed in the City of Minneapolis right of way in both residential and commercial districts, which includes, but is not limited to: the preparation of the subgrade, the laying and finishing of monolithic concrete sidewalk, concrete curb, curb and gutter, and concrete alleys and drive approaches, as well as concrete protection during early curing.

S.P. 1 Definitions/Order of Precedence

For the purpose of these special provisions the following terms shall have these definitions:

- 1.1 “City” means the City of Minneapolis, Minnesota.
- 1.2 City Engineer means the City Engineer of the City of Minneapolis the Paving Engineer, Sidewalk Inspector, or any other designated representative.
- 1.3 The order of precedence for work performed under these special provisions shall be:
 - a. These special provisions for the Construction of Concrete Sidewalks, Curb, Curb and Gutter, Alleys and Drive Approaches, current edition.
 - b. The State of Minnesota, Department of Transportation “Standard Specifications for Construction”, 2005 edition, shall govern, except where modified or amended by these special provisions.
 - c. The City of Minneapolis Code of Ordinances.

S.P. 2 Mn/DOT 1305 Requirement of Contract Bond

For the purpose of these special provisions Mn/DOT 1305 shall govern, except with the following modifications and amendment(s):

- 2.1 The contractor shall furnish and present in person a bond with good and sufficient surety satisfactory to the City Engineer’s and the City Attorney’s offices, in the penal sum of not less than \$15,000.00 as is required by the ordinance for all persons performing work on the public sidewalks, among other things indemnifying the City against all claims for damages arising by reason of negligence of the contractor in the construction of the sidewalk, or from obstruction of the streets or from any other cause, and guaranteeing to maintain their work free from defects for a period of two (2) years, all as provided in Ordinance 437.30 of the City of Minneapolis passed January 28, 1898, as amended.

S.P. 3 Mn/DOT 1404 Maintenance of Traffic

For the purpose of these special provisions Mn/DOT 1404 shall govern, except with the following modifications and amendment(s):

3.1 Bus Passenger Waiting Shelters

If a bus passenger waiting shelter will be disturbed, the contractor shall notify both the owner of the shelter and the City of Minneapolis Public Works Traffic and Parking Services Division (612) 673-2411.

Two types of bus passenger waiting shelters exist on the right-of-way in Minneapolis. Transtop, Minnesota Inc. (952) 854-1900 owns bus shelters with advertising panels. Bus shelters without advertising are owned by Metro Transit (612) 349-7310.

At least ten days advance notice is required if a shelter is to be moved.

When the sidewalk is to be replaced under a shelter, there should be no expansion joints in the sidewalk under the shelter whenever possible. All Transtop bus shelters and most Metro Transit bus shelters are connected to an electrical service point by buried conduit. The service point may be a City ornamental street light, an Excel Energy service point, or a private third party source. The owner of the shelter will inform the City of the location of this conduit when requested. The cost for repairing or replacing damaged conduit shall be charged to the contractor and/or the property owner.

Minneapolis City Ordinance provides that if a Transtop shelter must be temporarily removed for construction done by any governmental unit or its contractor, then Transtop shall, at its own cost, remove the shelter when requested to do so by the City Engineer. The City may also order Transtop to temporarily remove a shelter for an abutting property owner's construction at the property owner's expense.

3.2 Protection of the work site

The contractor shall erect barricades to protect each job site immediately upon removal of the existing concrete. In a location where section(s) of the public sidewalk have been removed, two barricades will be required, one on each end of each work location. The number and placement of barricades required will be subject to the approval of the City Sidewalk Inspector, and may also be subject to the approval of the City Lane Use Administrator, (612) 673-5755.

3.3 Mid block pedestrian ramps

The Traffic and Parking Services Division, Room 233, City Hall, 350 South Fifth Street, phone (612) 673-2411, and the Sidewalk Inspections office, Room 201, City Hall, 350 South 5th Street, (612) 673-2441, must approve plans for any new construction of a mid-block pedestrian ramp. The plan should show the following items:

- a. The location of the ramp in relation to the address of the requesting party.
- b. The property lines of the requesting party's property should be shown.
- c. The ramp should be designed in accordance with the special provisions.

In addition, the following concerns will be evaluated regarding each ramp request: The proximity of trees, hydrants, or driveways, the type of boulevard, the type of dwelling unit, any impact on the sidewalk, any existing parking restrictions or zones, and the presence of parking meters, electrical conduit, and other infrastructure or obstructions.

The plan shall be accompanied by a written statement by the requesting party describing the nature of the request and a signed statement acknowledging that the placement of the ramp does not grant any exclusive rights to the requesting party for the use of the curb space or the ramp.

The establishment of a Handicap Transfer Zone or Handicap Parking Zone along the curb adjacent to the proposed ramp is not required but may be desirable. Contact the Traffic and Parking Services Division (612)-673-2411, in Room 233, City Hall, for details.

After the City Traffic and Parking Services Division grants its approval, your plans must be submitted to the Public Works Sidewalk Inspections office, Room 201, City Hall, phone (612) 673-2441, for a "Sidewalk Construction Permit". Contractors who have submitted a bond, kept on file with the City of Minneapolis Public Works Sidewalk Inspections office, are eligible to obtain the Sidewalk Construction Permit.

3.3 Drive Approaches, plans

No driveway approach shall be installed without first submitting plans. If a new drive approach is to be installed on a street other than a trunk highway, four (4) copies of the plan, of engineering quality, in a minimum size of 8 ½ inches by 11 inches, and at a scale of 1/32 inch per foot, or 20, 30, or 50 foot per inch, showing complete details of the drive approach and driveway layout, shall first be submitted to the Development Review Coordinator, Minneapolis One Stop, Room 300, 250 South Forth Street, Minneapolis, MN, 55415-1335, (612) 673-2411, for approval. Plans must be submitted three to four weeks in advance of the actual start of construction so that the plans can be reviewed by Zoning and by Public Works staff.

S.P. 4 Mn/DOT 1407 Final Cleanup

For the purpose of these special provisions Mn/DOT 1407 shall govern, except with the following modifications and amendment(s):

- 4.1 Cleanup shall include the clean up of all materials, waste and debris deposited on the sidewalk surface and shall be performed at the end of each working day.

S.P. 5 Mn/DOT 1702 Permits, Licenses, and Taxes

For the purpose of these special provisions Mn/DOT 1702 shall govern, except with the following modifications and amendment(s):

- 5.1 A "Sidewalk Construction Permit" shall be obtained for each and every job done under the required \$15,000.00 Sidewalk Contractor's bond. All permits must be taken out before any demolition or actual construction work begins. Each job will consist of the work done adjacent to a single

property, unless other arrangements are made with the Sidewalk Inspector. Application for the Sidewalk Construction Permit will be filled out by the contractor and presented to the Department of Public Works, Sidewalk Inspections office, Room 201 City Hall, (612) 673-2441.

The City of Minneapolis Ordinance pertaining to Sidewalk Construction Permit fees reads as follows:

437.20. Permit required, fees. No person shall construct any sidewalk, curb, curb and gutter, or other pavement within the public right of way without first obtaining a permit from the city engineer and paying a permit fee of ten (10) percent, based upon the value of the work as established annually by the district sidewalk contractor's accepted bid prices and by the City of Minneapolis unit prices list for such work.

All work within the public right of way must be done by a bonded contractor under the supervision of the City Engineer, who will see that these special provisions are rigidly followed. The contractor must obtain a "\$10,000.00 Sidewalk Contractor's Bond" in order to perform work in the Public Right of Way. The bond shall be held on file at the Department of Public Works, Sidewalk Inspections office. The Sidewalk Inspections office maintains a listing of all contractors who are properly bonded. The list of bonded contractors is available from the City of Minneapolis, Department of Public Works, Sidewalk Inspections office, Room 201 City Hall, Minneapolis, Minnesota, 55415, (612) 673-2441.

The Sidewalk Inspections office, (612) 673-2441, is to be notified at least three days in advance of any construction.

Please make all checks payable to:

CITY OF MINNEAPOLIS FINANCE DEPARTMENT

Sidewalk Construction Permits as issued by the Sidewalk Inspections office will be in the contractor's possession, on site, while the work is being performed.

- 5.2 The City of Minneapolis reserves the right to withhold the issuing of any future permits to any contractor until any current problems are resolved that pertain to any permits currently issued, to the satisfaction of all parties.
- 5.3 The City of Minneapolis permits listed below, but not limited to the following, may be required for any contractor to perform work on any project within the City of Minneapolis right of way:

- a. Sidewalk Construction Permit (612) 673-2441
- b. Street Obstruction Permit (lane use and sidewalk use) (612) 673-5755
- c. Noise Permit (612) 673-5817
- d. Erosion and Sediment Control Permit (612) 673-2738
- e. Utility Connection Permit (612) 673-2541
- f. Right of Way Encroachment Permit (612) 673-3607
- g. Special Boulevard Permit (612) 673-2441
- h. Handicap Transfer Zone Permit (612) 673-2411

The contractor is also responsible for securing all other permits required by other

jurisdictions, including but not limited to the following:

- a. Minnehaha Creek Watershed District
- b. Basset's Creek Watershed District
- c. Mn/DOT
- d. Hennepin County
- e. Metropolitan Council (including light rail corridor permits)
- f. Minneapolis Park Board

S.P. 6 Mn/DOT 1717 Air, Land and Water Pollution

For the purpose of these special provisions Mn/DOT 1717 shall govern, except with the following modifications and amendment(s):

- 6.1 The contractor shall comply with the following requirements for their concrete washout. The contractor shall provide an area for the ready mix truck to wash out and then remove the washout material from the area after use. The following areas are prohibited for washout use:
 - a. City storm water catch basins
 - b. City streets, especially the curb and gutter and other permanent surfaces
 - c. City boulevard areas

S.P. 7 Mn/DOT 1803 Erosion Control

For the purpose of these special provisions Mn/DOT 1803 shall govern, except with the following modifications and amendment(s):

- 7.1 (1803.5E) The contractor shall be responsible to keep the work area, including the sidewalk, boulevard, and street surface clean and free of soil and other debris. Cleanup of debris, including sweeping of the street and sidewalk, shall be accomplished at the end of each working day.

The contractor shall be responsible for erosion control during his work and must comply with all applicable City of Minneapolis and Minnesota Pollution Control Requirements. Contact the City of Minneapolis Public Works Sewer Design Division at (612) 673-2406 for further information.

TITLE 3: AIR POLLUTION AND ENVIRONMENTAL PROTECTION, Chapter 52, EROSION AND SEDIMENT CONTROL FOR LAND DISTURBANCE ACTIVITIES of the Minneapolis Code of Ordinances can be accessed on the City of Minneapolis website at <http://www.ci.minneapolis.mn.us/cityhall/laws/ordinances/> . All activities performed by the contractor must be in compliance with this ordinance, including obtaining an Erosion Control Permit and complying with all erosion control requirements as stated in the ordinance.

S.P. 8 Mn/DOT 2112 Subgrade Preparation

For the purpose of these special provisions Mn/DOT 2112 shall govern, except with the following modifications and amendment(s):

- 8.1 In the event that it is required to provide fill material, select granular fill conforming to Mn/DOT 3149.2B2 shall be used. In no case will river dredge sand be used.
- 8.2 All density measurements shall be made using the ASTM D1557 Modified Proctor method.
- 8.3 In the event that any areaway (any privately owned below grade structure within the public right of way) is uncovered during this work, all areaway improvements, modifications, or any areaway abandonment shall conform to City of Minneapolis Ordinance 95. Please contact City of Minneapolis, Regulatory Services Department, Inspections Division, at (612) 673-2873 for further information.

S.P. 9 Mn/DOT 2301 Concrete Pavement

For the purpose of these special provisions Mn/DOT 2301 shall govern, except with the following modifications and amendment(s):

- 9.1 (2301.2A1) Only Class A aggregate shall be used.

9.1a (2301.2A7b(5) water/cement ratio

maximum water to cement ratio will be 0.43, water/cement ratio exceeding this limit shall be rejected.

- 9.2 (2301.3F) Batching and Mixing

Only plant manufactured ready mix concrete shall be used. The contractor will provide, when requested by the City Engineer, a Certificate of Compliance for all concrete used.

- 9.3 (2301.3K) Joint construction

2301.3K, joint construction, shall be modified to include:

- a. All tooled joints shall have a depth of 1/3 the thickness of the structure.
- b. All 8 inch thick pavements (alley, driveway, street pavement) shall have tooled joints 2 inches deep.
- c. All expansion felt, including expansion felt at 30' intervals in the sidewalk area, shall be placed as shown in the detail drawings on pages 24 and 25, included with these special provisions.
- d. All joints shall be evenly spaced, or as approved by the City Engineer.

- 9.4 (2301.3M) Concrete curing and protection

2301.3M shall be modified to include the following:

- a. Extreme service (winter) curing compounds shall be used after October 1 and shall be the following cures or an approved equal:
 1. Tri Kote (TK) 26 white pigmented
- b. For clear concrete membrane cure, the following are acceptable materials for use:
 1. Euclid Chemical, "Super Diamond Clear VOX"

- 2. Degussa, Mastercure N-Seal-W
- 3. Tri Kote (TK) "Bright Kure and Seal"
- c. (2301.3M(3)) shall state, "Continue curing and protecting the concrete for at least 28 days."
- d. Concreting in cold weather: During cold weather, concrete may be placed when the natural air temperature in the shade is 33 Degrees F. and rising. Concrete shall not be placed on frozen subgrade and/or base and materials containing frost, lumps or crusts of hardened materials. **Concrete to be installed after October 1 will require an approved cold weather concrete plan prior to a Sidewalk Construction Permit being issued, and prior to any concrete being placed.**
- e. For any concrete installed after October 1, the City of Minneapolis reserves the right to require an electronic thermocouple(s) to be installed in the concrete, to record the temperature of the concrete and evaluate the possibility of any damage due to frozen concrete. The placement of the thermocouple(s) shall be at the rate of one thermocouple per 50 cubic yards of concrete and/or one thermocouple per each different type of concrete structures (sidewalk, pavement, curb and gutter, or drive approach). Placement, inspection and testing of thermocouples shall be performed by the City of Minneapolis. All costs for thermocouple work shall be paid for as part of the issuance of the Sidewalk Construction Permit. Failure to maintain concrete temperatures above 32 degrees Fahrenheit during the initial 28 days of curing may result in a determination of failure and rejection of the work.

9.5 (2301.3P2) Thickness Requirements

If the measured thickness of the concrete work is less than that given in the plan, and the deficient thickness is one half (1/2) inch or greater, then the deficient portion of the work shall be considered defective, and shall be removed and replaced. In areas where there is deficient thickness the contractor may elect to saw cut the pavement at the closest contraction or expansion joint for replacement. Upon the direction of the City Engineer, the contractor may be required to provide dowel bars as a part of the concrete replacement work.

9.5a Alley thickness shall be 6 inches for residential alleys and 8 inches for commercial alleys. If the alley thickness is not shown in the plans, or alley is not designated for either residential or commercial use, then the 8 inch alley pavement thickness shall be used.

S.P. 10 Mn/DOT 2461 Structural Concrete

For the purpose of these special provisions Mn/DOT 2461 shall govern, except with the following modifications and amendment(s):

10.1 (2461.3B) Mix Requirement for all concrete used in these special provisions shall be:

<i>Mix</i>	<i>Type of Use</i>	<i>slump range</i>
3A22, ¾-	machine curb placement	1-2 inch
3A32, ¾-	machine placement	2-3 inch
3A42, ¾-	hand placement	3-4 inch

Concrete slumps above the range listed above will be considered unacceptable and rejected.

10.2 (2461.4A4b) Air content

The air content of the concrete mix shall be between 5.0% and 7.0%. Any concrete found with the air content outside of this range will be considered unacceptable and rejected.

10.3 (2461.4D6) Delivery requirements

The time interval for ready mix delivery shall be from point of adding air entraining agent to final discharge is 60 minutes, concrete place after this time shall be considered unacceptable and rejected.

S.P. 11 Mn/DOT 2521 Walks

For the purpose of these special provisions Mn/DOT 2521 shall govern, except with the following modifications and amendment(s):

11.1 (2521.3C1) ADA pedestrian ramps

ADA pedestrian ramps shall adhere to the following ADA requirement: Minnesota Department of Transportation Technical Memorandum No. 03-19-TS-02, dated July 1, 2003 addresses the new American With Disabilities Act (ADA) Requirements for the Use of Truncated Domes/Detectable Warning Systems for Pedestrian Curb Ramps. Pedestrian ramps will be constructed at all sidewalk intersections. See the drawings on page 41, 42, and 43 of this manual for further details. The City Engineer will determine the location of pedestrian ramps. All pedestrian ramps will be constructed using construction methods and materials as specified by the City Engineer.

11.2 Name and date stamp marks

A stamp mark showing the name of the contractor and the full date (month, day, and year) of concrete placement is required. The stamp mark shall be impressed into the sidewalk, curb, curb and gutter, drive approach or alley. The stamp mark shall be made in at least one place in every fifty (50) lineal feet, or at the beginning and the end of the work if a lesser amount is constructed, or, in one place if only one section of concrete is constructed. Each drive approach shall be stamped in at least one place. See the detail drawing on page 25 of this manual. The City Engineer shall approve the style, size of lettering and the manner of stamping.

11.3 Concrete mix for sidewalks

Concrete mix for sidewalks shall be MN/DOT 3A42 ³/₄-, unless other mixes are approved by the City Engineer.

11.4 Cold weather curing

Use of the membrane curing method shall follow S.P. 9, Mn/DOT 2301, Concrete Pavement.

11.5 Concrete work around existing trees

Concrete work around existing trees shall follow these guideline listed below:

Trees are a valuable resource in Minneapolis. As much care as possible must be taken to minimize the negative impact of construction activities to trees.

- a. **TREE ROOTS:** No living trees shall be removed without written permission of the Minneapolis Park and Recreation Board (612) 370-4900, with the exception that any roots of such living trees that interfere with installing the sidewalk on proper grade shall be removed as part of the grading work. The contractor shall remove all roots within the area defined as six and one half (6-1/2) inches below the top of the new finished sidewalk grade, by severing them off cleanly with a sharp axe, or by grinding them off using a root grinding machine. Root removal is subject to inspection and approval by the Park Board Forester.
- b. **TREE RINGS:** When trees exist within the boulevard, or at the back of the sidewalk, tree rings must be installed in the public sidewalk in accordance with the following parameters. See the detail drawing on page 44 of this manual.

TREE SIZE:	small	less than 8" diameter
	medium	8" to 20" in diameter
	large	greater than 20" in diameter

measured at 4.5' above the ground level (MNDOT specification 2572.3 A)

TREE SIZE	DISTANCE FROM SIDEWALK EDGE	RING DEPTH
	measured from the nearest point of the base of the tree to the normal sidewalk edge, at ground level	
small tree	greater than 18" less than 18"	no ring 1' ring
medium tree	greater than 18" 12" to 18" less than 12"	breakout ring 1' ring 1' to 1.5' ring
large tree	greater than 18" 12" to 18" less than 12"	1' ring 1.5' to 2' ring 2' ring

RING DEPTH: The distance measured from the normal sidewalk edge to the point of the ring arc perpendicular to the base of the tree.

All ring depth dimensions assume that the remaining width of the sidewalk will be at least four feet.

RING ARCS: All ring arc lengths will be a minimum of six times the depth of the ring. Maximum ring arc length will be 18' (approximately three typical sidewalk section lengths) for a large tree, or greater, if approved by the Sidewalk Inspector.

BREAKOUT RINGS: Breakout rings will be formed by a tool joint depth of at least one third the thickness of the concrete sidewalk, or at least 1-1/4' in depth for a 3.5" thick sidewalk. Two transverse tool joint cuts will be made in the breakout ring in order to divide the ring into approximately three equal size parts.

S.P. 12 Mn/DOT 2531 Concrete Curbing

For the purpose of these special provisions Mn/DOT 2531 shall govern, except with the following modifications and amendment(s):

- 12.1 Concrete curbing shall conform to the special provisions as shown in the detail drawing in the appendix.
- 12.2 (2531.3G) Concrete curing and protection shall follow S.P. 9, Mn/DOT 2301 Concrete Pavement.

S.P. 13 Mn/DOT 2564 Traffic Signs and Devices

For the purpose of these special provisions Mn/DOT 2564 shall govern, except with the following modifications and amendment(s):

13.1 (2564.3I) Stop boxes, cables, signs, and meter collars

If a contractor finds, when repairing or constructing a public sidewalk, that a "water stop box" is not at the proper grade or that the cap is missing, the contractor shall notify the City of Minneapolis Public Works Water Department at (612) 673-5600 or the City of Minneapolis Public Works Sidewalk Inspections office at (612) 673-2441. All stop boxes must be located and adjusted to grade by the contractor before placement of any concrete within the public right of way.

When sidewalks are to be poured adjacent to the curb, the City of Minneapolis Public Works Traffic and Parking Services Division shall be notified at (612) 673-5750 a minimum of twenty four hours before pouring. The Traffic and Parking Services Division will furnish all parking meter and sign collars. Parking meters, signs, and/or posts damaged or destroyed during construction shall be charged to the contractor at the City's unit cost. The collars shall be placed by the contractor to the original location or as designated by the Traffic and Parking Services Division. All collars shall be placed in a true vertical "plumb" position and flush with the top of the sidewalk. Adequate clearance shall be provided for access to the collar set screws. If the collars are missed, the contractor will be responsible for the cost of installing these collars. See the detail drawing in the appendix to these special provisions for further information.

Whenever street lighting and traffic control conduit or cables or foundations are encountered or suspected of being disturbed, the Traffic and Parking Services Division (612) 673-5750 shall be notified before concrete is poured. The cost for repairs or relocations of traffic facilities caused by the contractor's activities shall be the responsibility of the contractor. The cost for hooding or removal of parking meters and closure of sidewalks and streets shall be charged to the contractor.

Contact the Traffic and Parking Services Division (612) 673-5750 for the cost of and removal or relocation of traffic signs or parking meters, hooding of parking meters, lane closure requirements, sidewalk closure requirements, and street and other right of way closure requirements.

NOTE TO CONTRACTORS: DURING 1975, MULTI-CONDUCTOR CABLE (50, 25, 18, and 12 PAIR CABLE) WAS INSTALLED FOR THE CITY'S COMPUTERIZED TRAFFIC CONTROL SYSTEM. THIS CABLE IS VERY EXPENSIVE, AND IS DIFFICULT TO INSTALL OR REPAIR. FOR LOCATING ALL CABLE AND CONDUIT, ALL CONTRACTORS ARE REQUIRED BY MINNESOTA STATE STATUTE TO CALL GOPHER STATE ONE CALL LOCATING SERVICE (651) 454-0002 AT LEAST 48 HOURS PRIOR TO EXCAVATING.

S.P. 14 Mn/DOT 2575 Turf Establishment

For the purpose of these special provisions Mn/DOT 2575 shall govern, except with the following modifications and amendment(s):

14.1 (2575.3B) Soil Preparation

Soil preparations shall include placement of three (3) inches of Topsoil Borrow "A" (Mn/DOT 3877.2A) and use of salt resistant sod (Mn/DOT 3878.2C).

S.P 15 Mn/DOT 3138 Aggregate for Surface and Base Courses

For the purpose of these special provisions Mn/DOT 3138 shall govern, except with the following amendments(s):

15.1 (3138) Aggregate

The only acceptable aggregate for use under this special provision shall be Class 5, 100% virgin material, unless written approval is granted by the City Engineer allowing the use of other aggregate materials.

TABLES AND DETAIL DRAWINGS

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Copies of the Minnesota Department of Transportation Standard Specifications for Construction can be purchased at:

Manual Sales Office
State of Minnesota, Department of Transportation
395 John Ireland Boulevard
St. Paul, Minnesota 55155-1899
(651) 296-2216

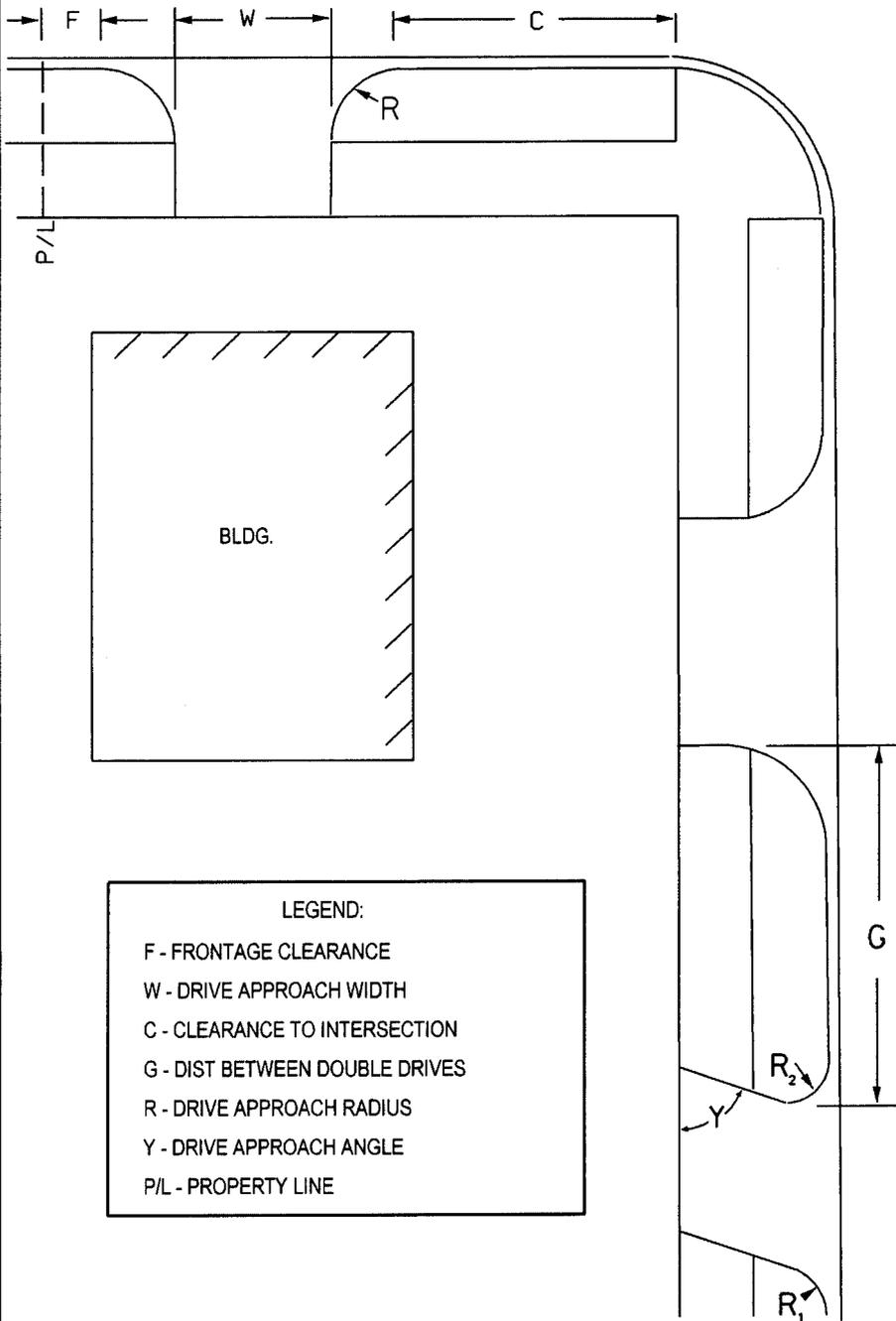
or, it can be found on the internet at:
www.dot.state.mn.us/tecsup

DRIVE APPROACH DIMENSIONS

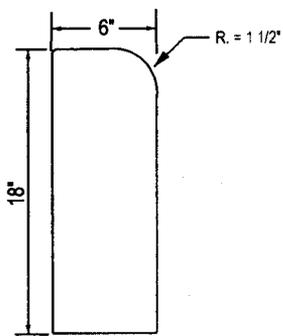
	RESIDENTIAL	COMMERCIAL
DRIVE APPROACH ANGLE (Y)	60-90 DEGREES	60-90 DEGREES
DRIVE APPROACH WIDTH (W)	12' MINIMUM	12' MINIMUM*
DRIVE APPROACH WIDTH (W)	25' MAXIMUM*	25' MAXIMUM*
RADIUS OF CURVATURE OF CURB FOR DRIVE APPROACH (R)	2 ½' MINIMUM 5' MAXIMUM	5' STANDARD*
RADIUS OF CURVATURE (R1) AND (R2)	5' MINIMUM 15' MAXIMUM	5' MINIMUM 30' MAXIMUM
COMMON FRONTAGE CLEARANCE (F)	5' MINIMUM	5' MINIMUM
DISTANCE BETWEEN DOUBLE DRIVE APPROACHES (G)	30' MINIMUM*	30' MINIMUM*
CORNER CLEARANCE AT THE INTERSECTION OF TWO MAJOR STREETS (C)	30' MINIMUM*	30' MINIMUM*
CORNER CLEARANCE AT ALL OTHER INTERSECTIONS (C)	20' MINIMUM*	20' MINIMUM*
CLEARANCE FROM BUS STOP ZONE	40' MINIMUM*	40' MINIMUM*

NOTE: PERIODIC CHANGES IN THE ABOVE DIMENSIONS WILL BE MADE AS NECESSARY TO IMPROVE TRAFFIC AND SAFETY ON THE PUBLIC STREETS AND SIDEWALKS

* or as approved by the City Engineer

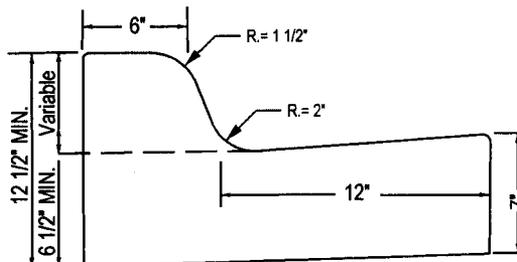


DRIVE APPROACH REFERENCE

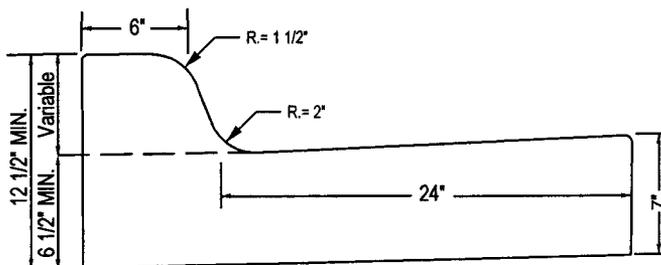


NOTE: THESE DESIGNS TO BE USED TO REPAIR EXISTING CURBS ONLY. ALL NEW CONSTRUCTION SHALL BE B624 UNLESS APPROVED BY THE CITY ENGINEER.

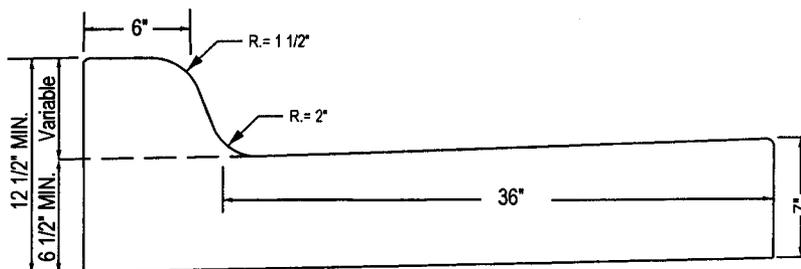
PLAIN CURB



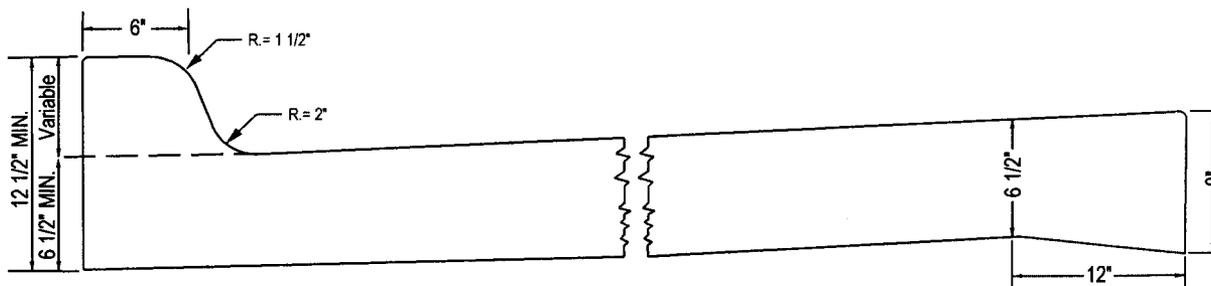
CURB & 1' GUTTER



CURB & 2' GUTTER



CURB & 3' GUTTER

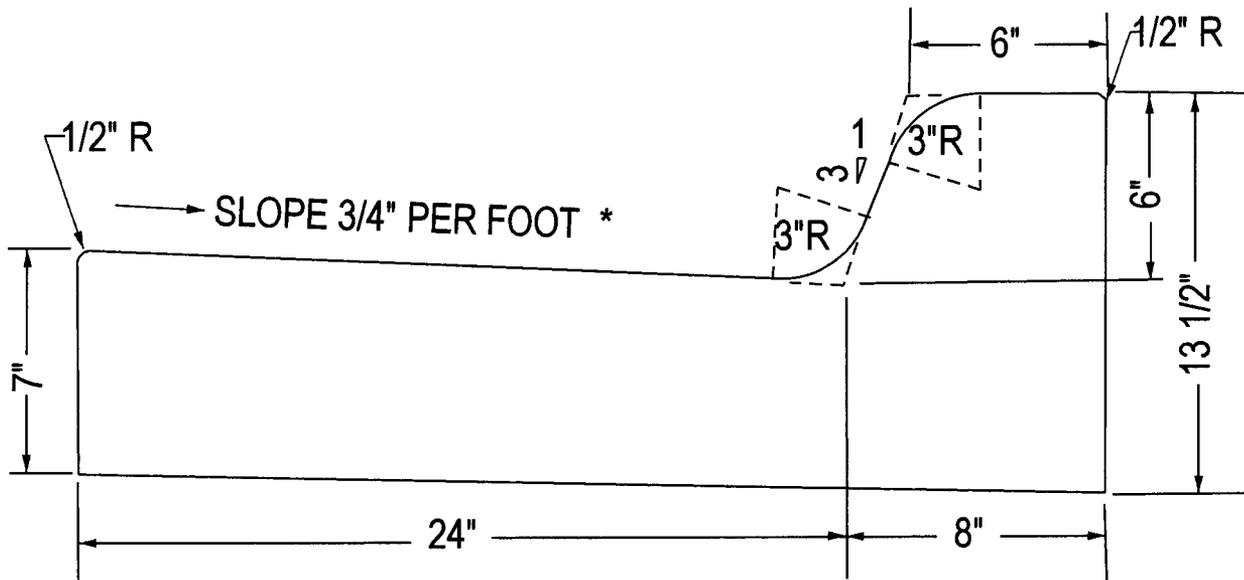


CURB & GUTTER FOR STREET WIDENING

MPLS. CURB & GUTTER CROSS SECTIONS

CROSS SECTION OF STATE HIGHWAY TYPE
B-624 CURB & GUTTER

CURB & GUTTER B-624

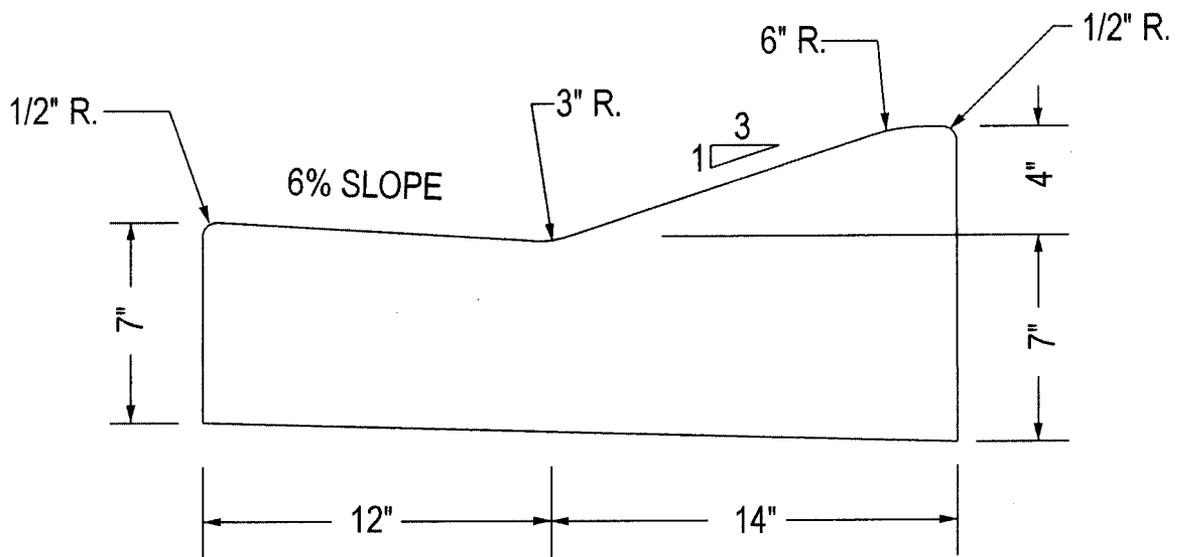


* SLOPE NOT TO EXCEED 1:20 AT CURB RAMPS

B-624 CURB & GUTTER

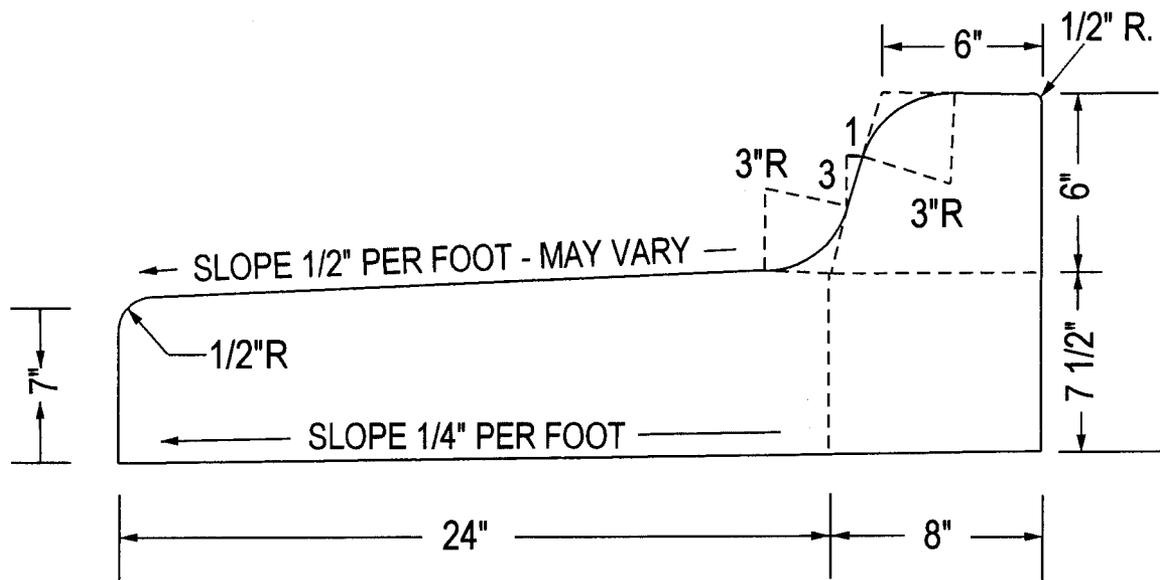
CROSS SECTION OF D-412 MODIFIED
CURB & GUTTER

CURB & GUTTER D-412 M

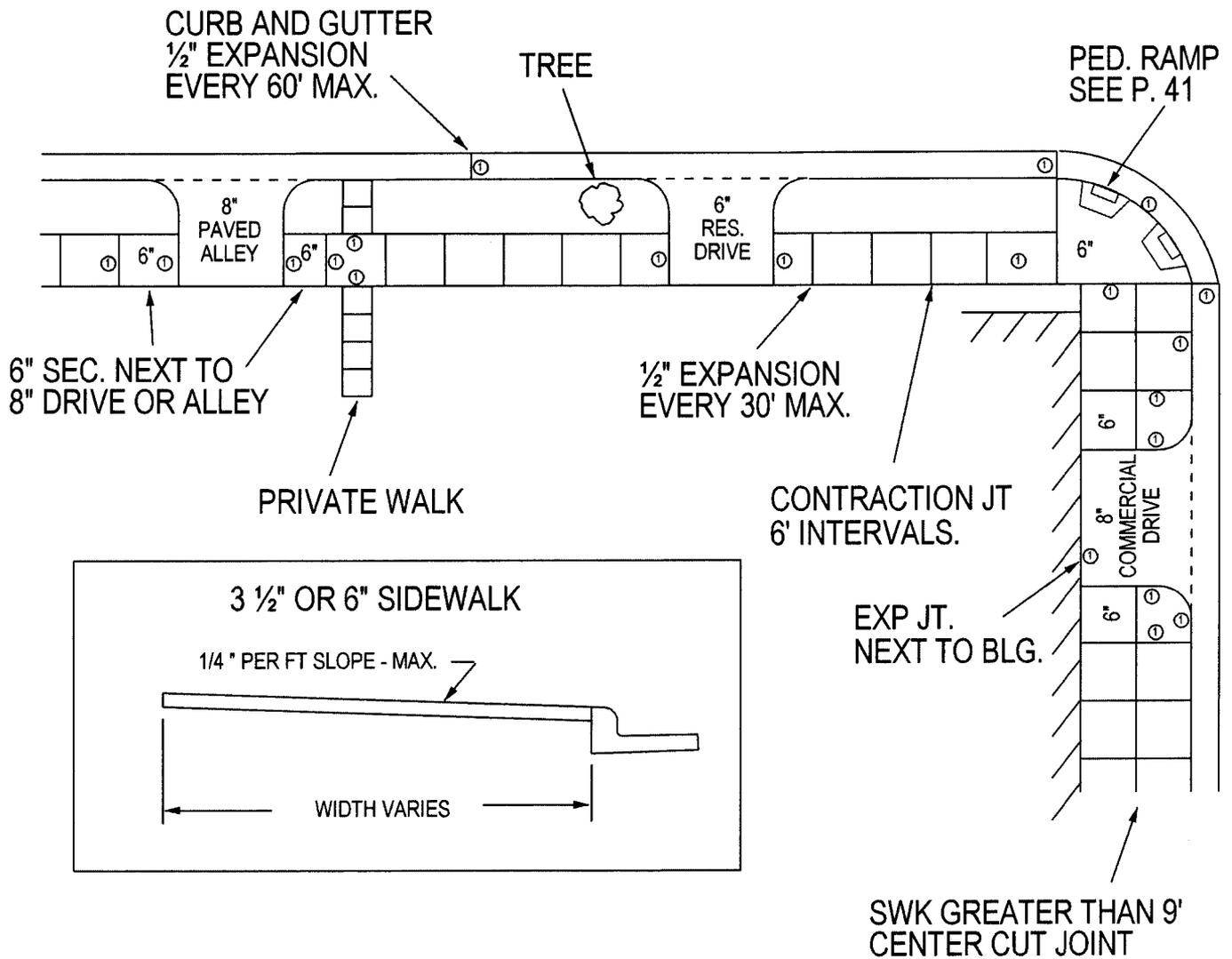


D-412 MODIFIED CURB & GUTTER

CROSS SECTION OF (TIPOUT) B-624 CURB & GUTTER

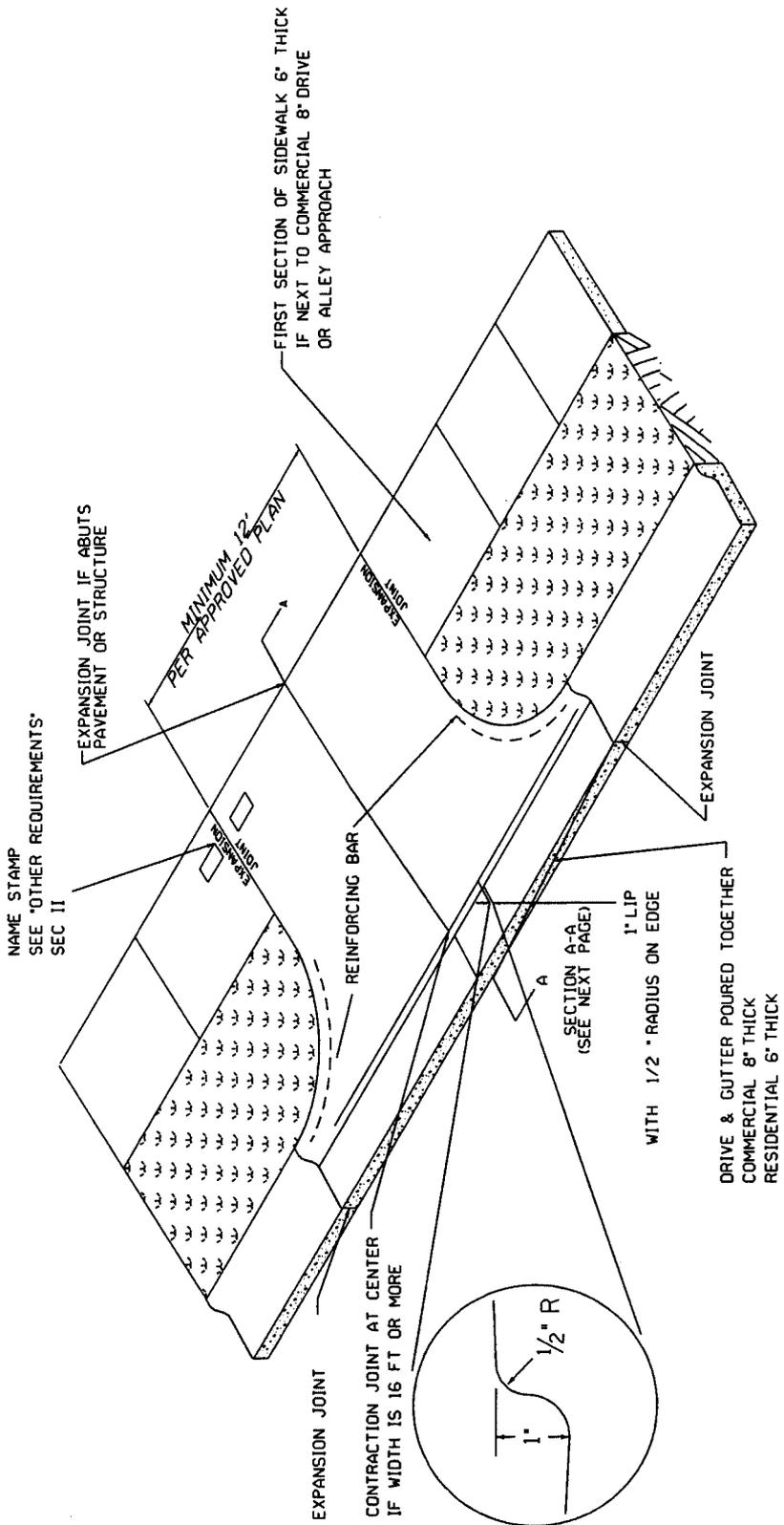


(TIPOUT) B-624 CURB & GUTTER



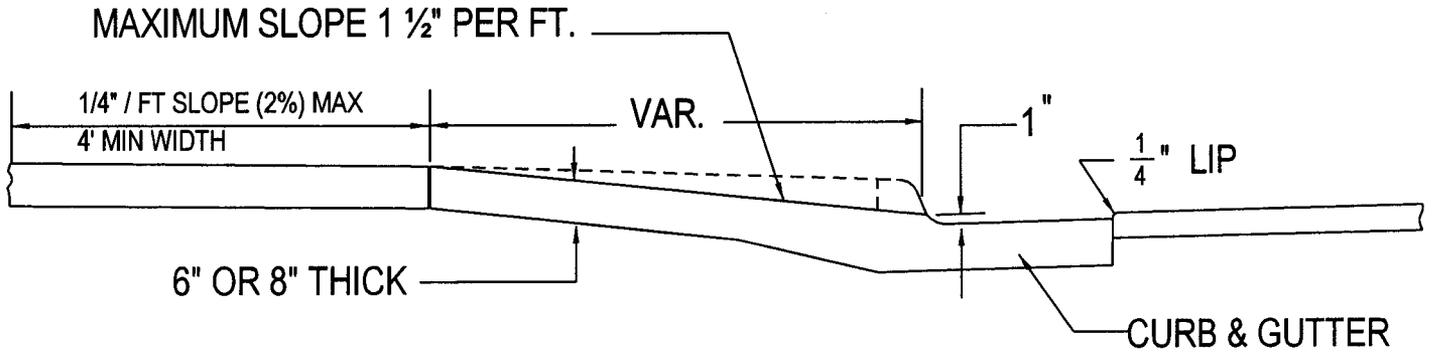
- ① EXPANSION MATERIAL REQUIRED (P. 7)
- FIRST SECTION NEXT TO COMMERCIAL DRIVEWAY OR ALLEY 6" THICK
- 1/2" THICK EXPANSION JOINTS AT 30' INTERVALS (MAXIMUM)
- EXPANSION TO BE USED WHEN SIDEWALK ABUTS BLDG.
- CONTRACTION JOINT TO BE CENTERED ON SIDEWALK WIDER THAN 9'
- CONTRACTION JOINT TO BE PLACED EVERY 6' OR LESS

TYPICAL SIDEWALK AND DRIVEWAY CONSTRUCTION



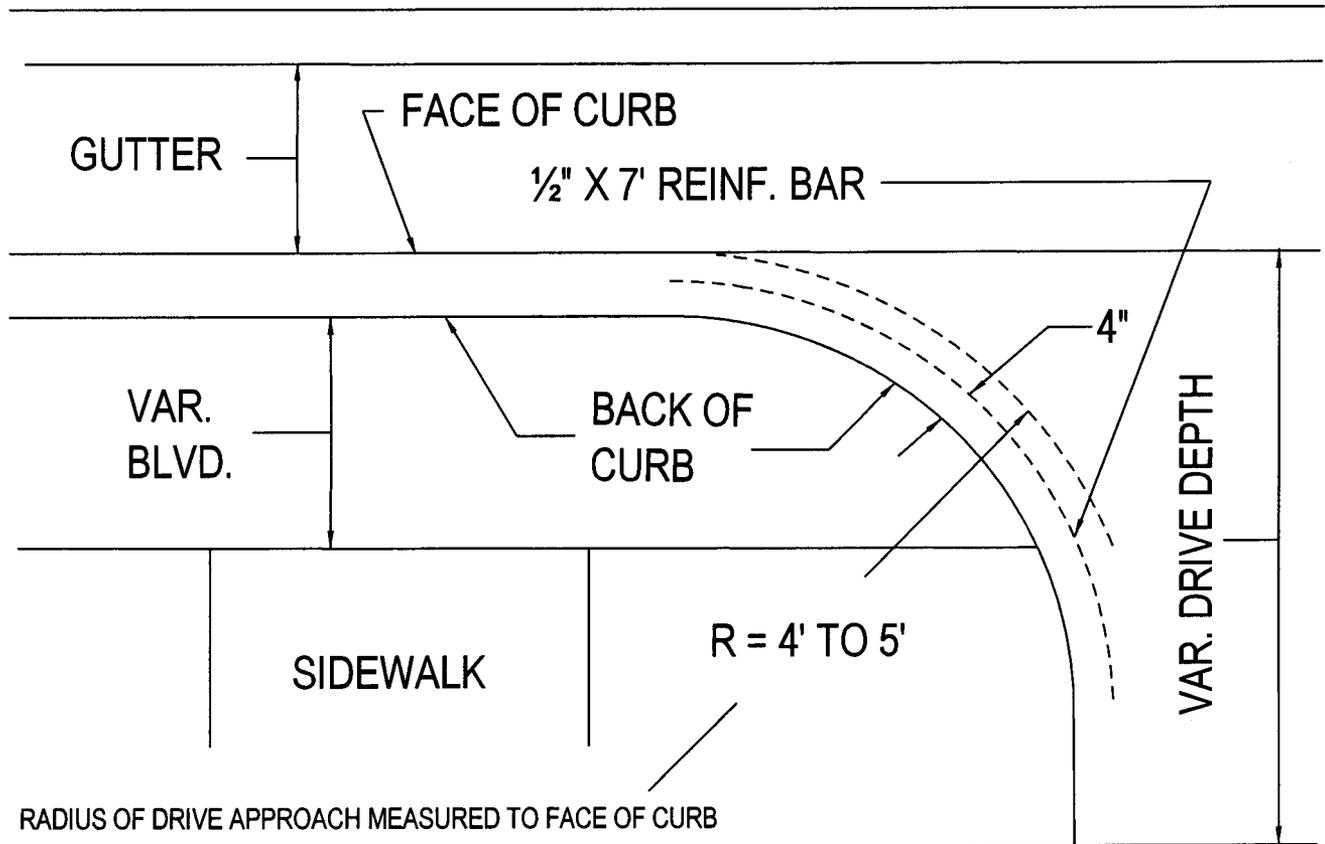
TYPICAL DRIVEWAY DETAIL

TYPICAL DRIVE APPROACH SECTION



NOTE: IF THE MAXIMUM SLOPE WOULD EXCEED 1 1/2" PER FT (12%) DUE TO THE POSITION OF THE EXISTING WALK, THE WALK SHALL BE REMOVED AND REPLACED, FORMING THE SLOPE TO PROVIDE THE REQUIRED MAXIMUM (12%).

DRIVE APPROACH DETAIL



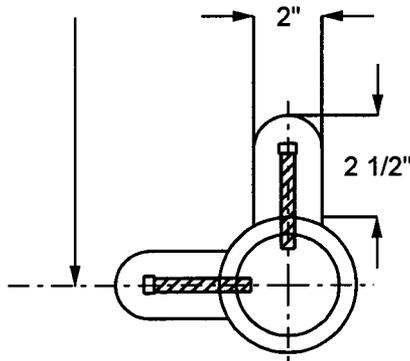
TYPICAL DRIVE APPROACH CONSTRUCTION

TRAFFIC DIRECTION →

FACE OF CURB

24"

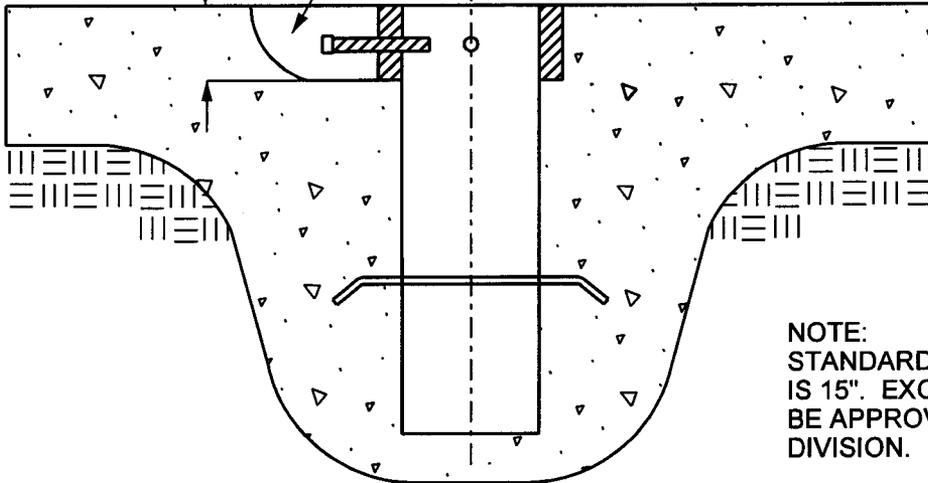
NOTE:
CARE MUST BE TAKEN TO MAKE
SURE SIGN COLLAR IS INSTALLED
IN A TRUE PLUMB POSITION.
NON-PLUMB INSTALLATION WILL
BE CORRECTED BY THE CONTRACTOR
AT NO ADDITIONAL COST TO THE CITY.



SCOOP OUT CONCRETE TO PROVIDE ACCESS
FOR WRENCH TO ADJUST BOLTS.

1 1/2"

TOP OF SIDEWALK



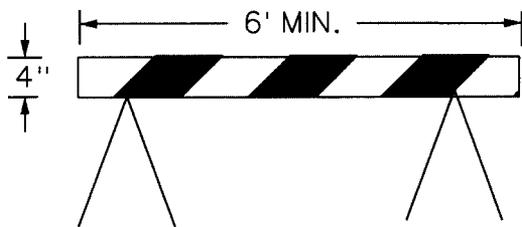
NOTE:
STANDARD COLLAR LENGTH
IS 15". EXCEPTIONS SHALL
BE APPROVED BY TRAFFIC
DIVISION.

SIGN COLLAR REPLACEMENT

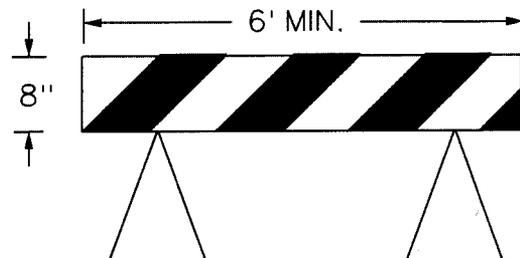
CITY OF MINNEAPOLIS BARRICADE REQUIREMENTS FOR RESIDENTIAL STREETS AND SIDEWALKS

Type of Barricade	Sidewalk	Street
Length of Rail	6 ft. minimum	7 ft. minimum
Width of Rail	4 in. minimum	4 in. minimum
Width of Stripes	4 - 8 inches	4 - 8 inches
Height of Barricade	3 ft. minimum	4 ft. minimum
* Reflectorized	Required	Required

*ALTERNATING ORANGE AND WHITE REFLECTORIZED STRIPES AT 45 DEGREE ANGLE (BOTH SIDES).

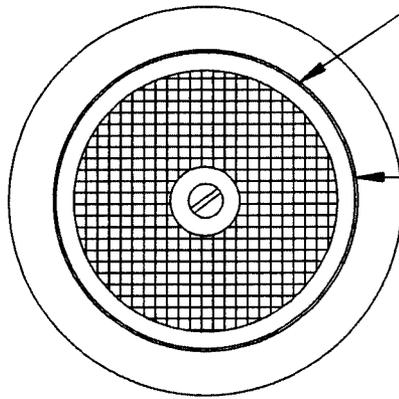


Sidewalk Barricade



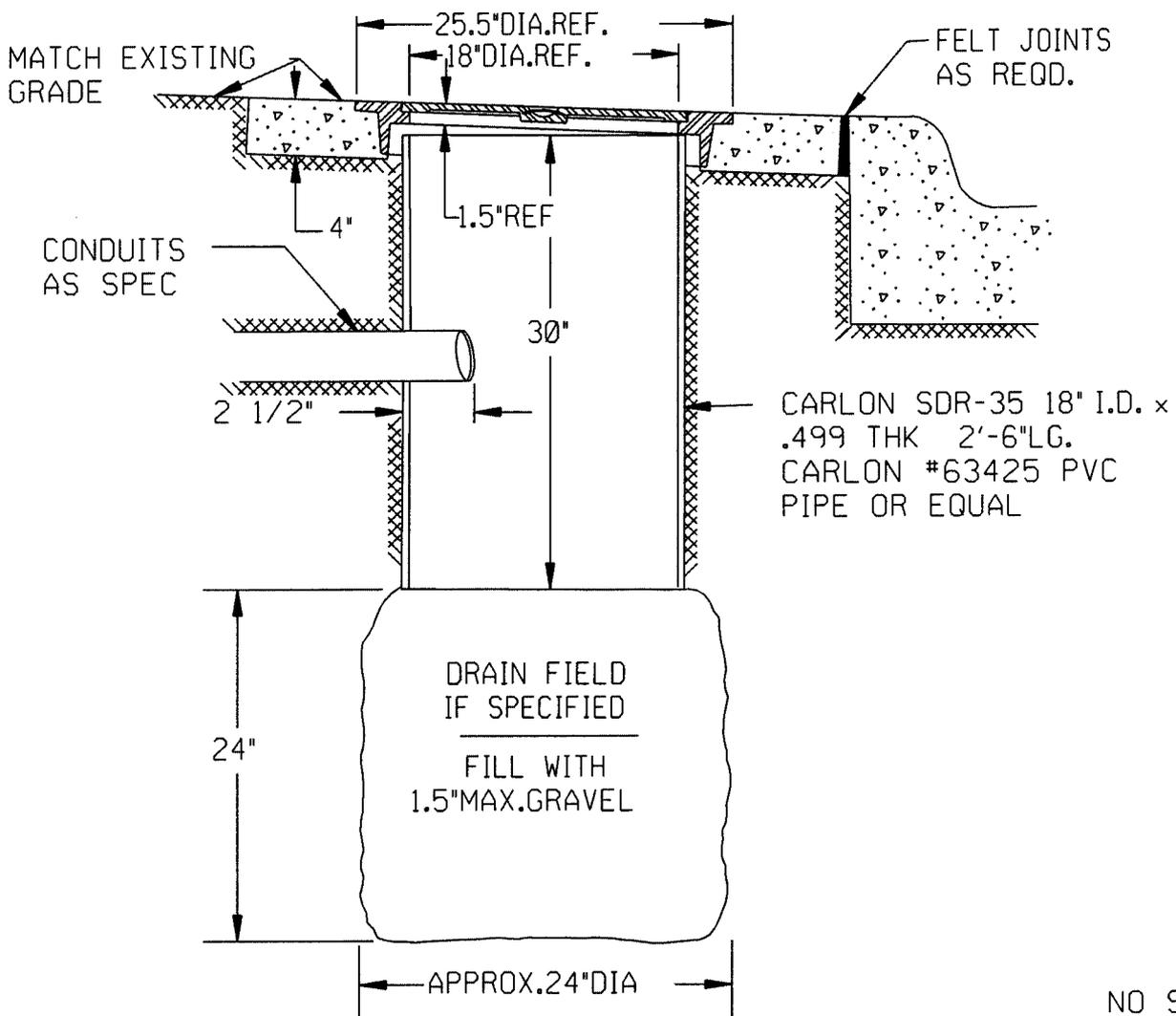
Street Barricade

40" SQ. PAD
OR MATCH
EXISTING
SIDEWALK



RING & COVER FACE
SHALL BE FREE OF
CONCRETE AFTER
FINISHING

RING & COVER
PER MPLS. STD.
PLATE #3776



NO SCALE

REVISED 00-00-99

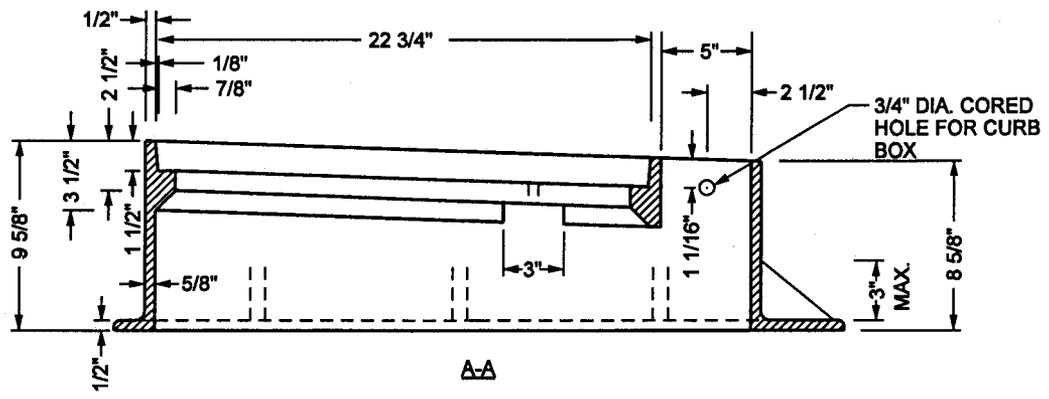
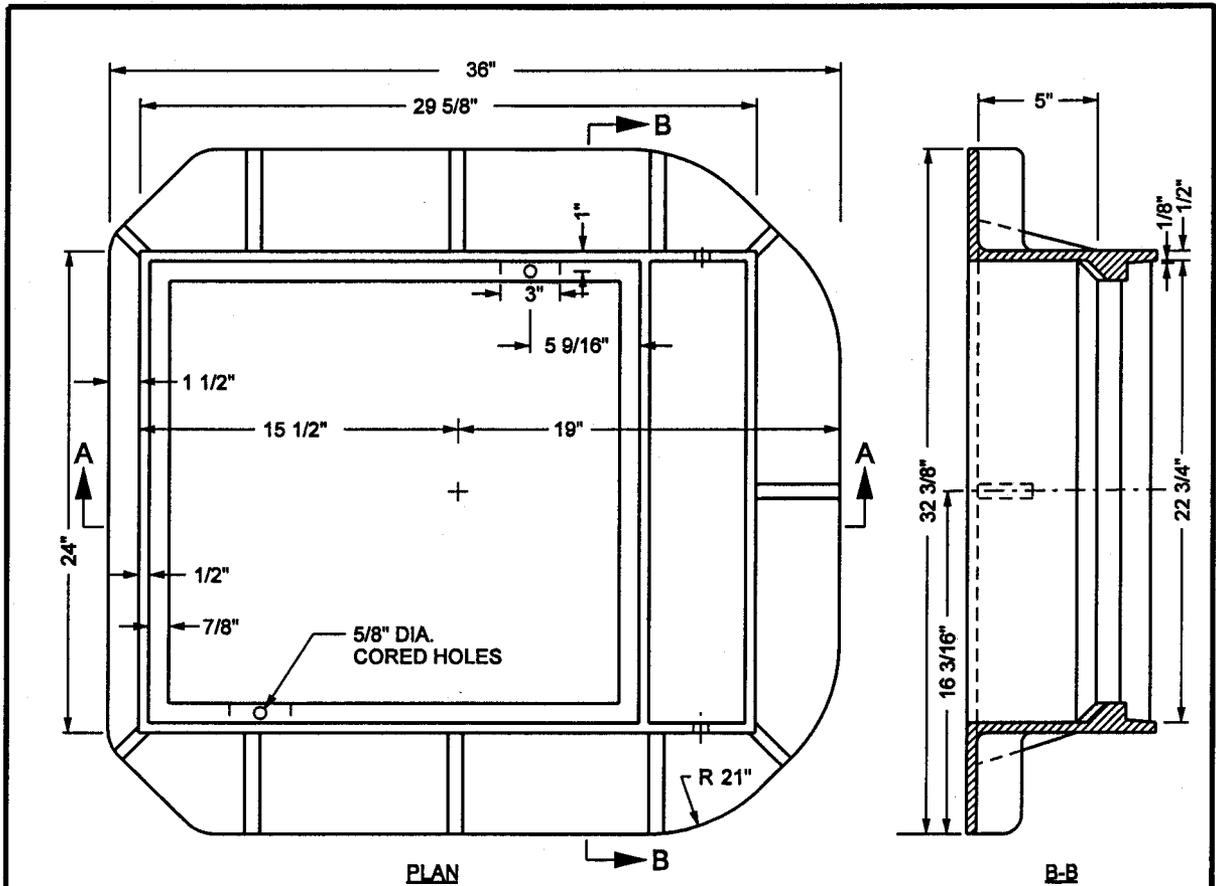
APPROVED
01-28-99

CITY OF MINNEAPOLIS
DEPARTMENT OF PUBLIC WORKS
TRANSPORTATION DIVISION

ELECTRIC HANDHOLE CONST. DETAIL

STANDARD
PLATE
NO.

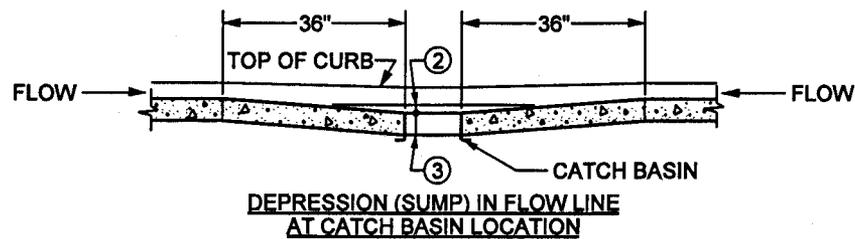
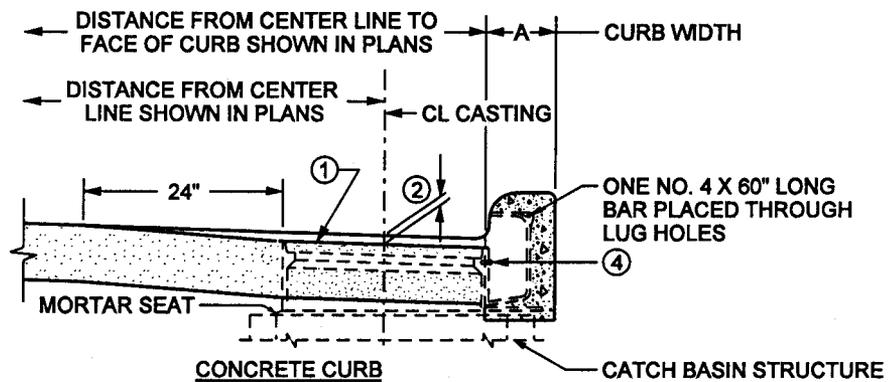
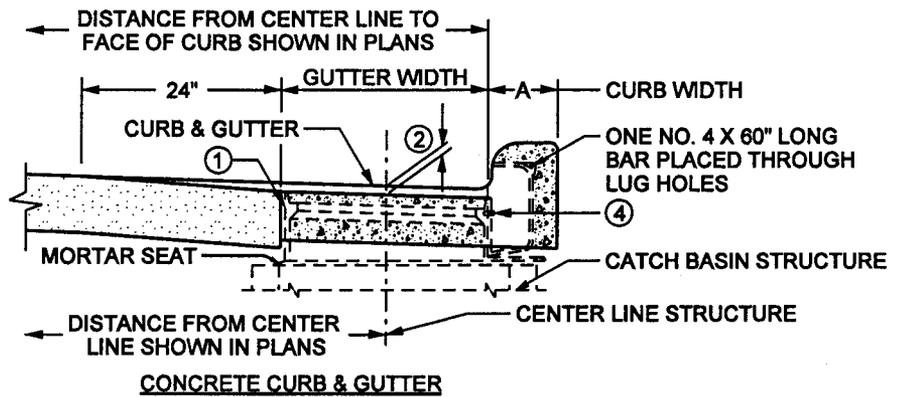
3711



NOTES:
 FOR USE WITH 30" DIA. REINFORCED CONCRETE CATCH BASIN POT.
 MAY ALSO BE USED ON A MANHOLE STRUCTURE WHEN PLACED TO
 CAPTURE GUTTER FLOWS.
 MNDOT FRAME CASTING 806, USE GRATE 816, CURB BOX 824.
 APPROXIMATE WEIGHT = 302 LBS.
 MATERIAL: GRAY IRON ASTM A-48

MNDOT SPEC. REF. 2506
 MNDOT 4125D
 NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		CATCH BASIN CASTING	STANDARD PLATE NO. SEWR-2006
	DRAWN: DCD	DATE: 2/03		
	APPROVED: HRS	DATE: 12/06		



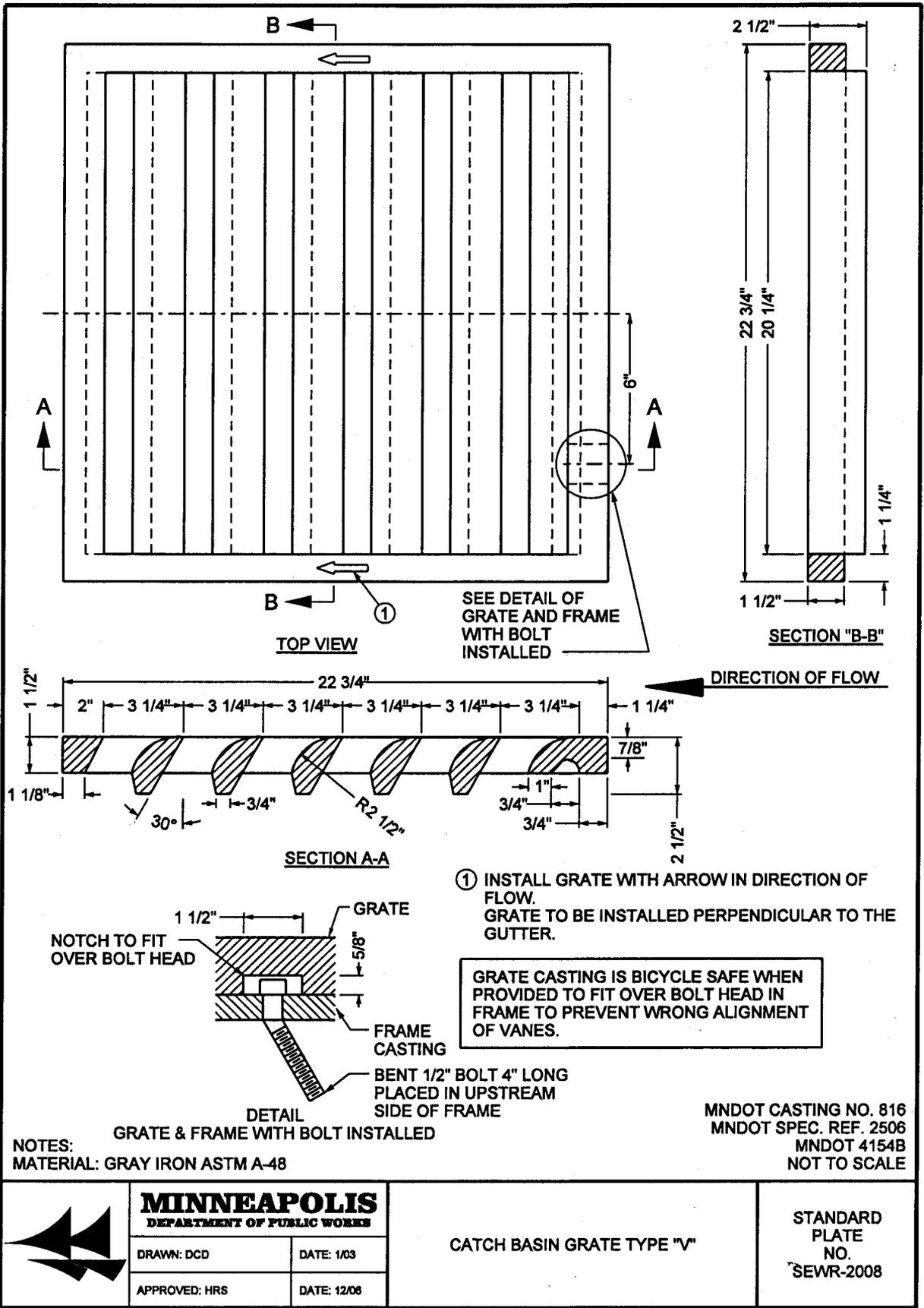
NOTES:

- ① CATCH BASIN CASTING.
- ② ON ALL APPLICATIONS USE 1-1/4" SUMP. SUMP SHALL BE MEASURED AT CENTER OF CASTING.
- ③ SAME THICKNESS AS ADJACENT PAVEMENT OR GUTTER.
- ④ CURB INLET CASTING SHALL BE FASTENED TEMPORARILY TO FRAME CASTING WITH 2 CAP SCREWS, DURING CURB CONSTRUCTION. CAP SCREWS MUST BE REMOVED AFTER CURB HAS HARDENED.

COMPENSATE FOR TILT BY VARYING THE DEPTH OF MORTAR SEAT.
ALL REINFORCEMENT REQUIRED IS INCIDENTAL, WITH NO DIRECT PAYMENT.
ALL REBARS ARE IN ENGLISH DESIGNATIONS.
ALL REBARS ARE GRADE 60

MNDOT SPEC. REF. 2506
MNDOT 7111J
NOT TO SCALE

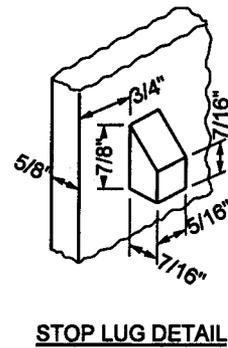
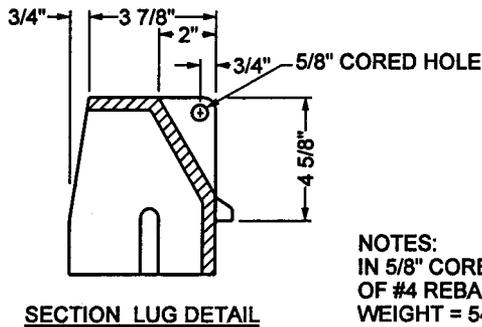
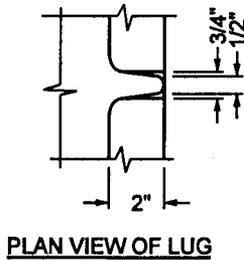
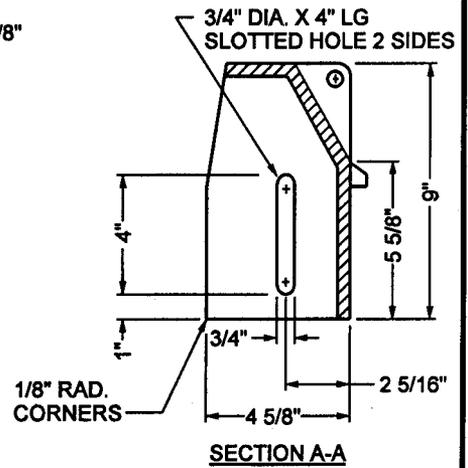
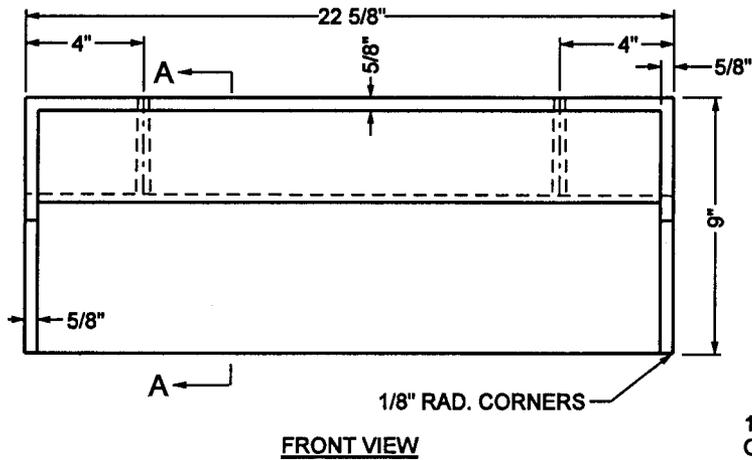
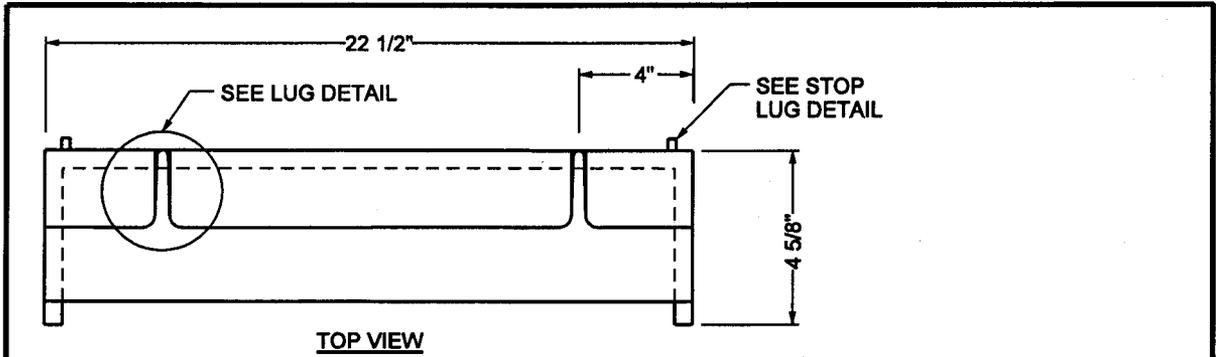
	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		CATCH BASIN INSTALLATION	STANDARD PLATE NO. SEWR-1009
	DRAWN: DCD	DATE: 5/03		
	APPROVED: HRS	DATE: 12/06		



NOTES:
MATERIAL: GRAY IRON ASTM A-48

MNDOT CASTING NO. 816
MNDOT SPEC. REF. 2506
MNDOT 4154B
NOT TO SCALE

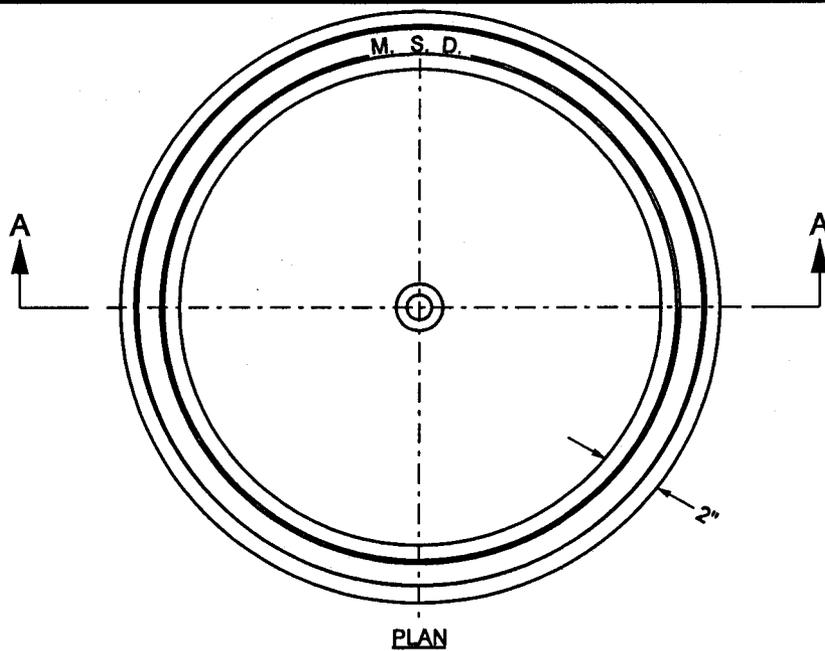
	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		CATCH BASIN GRATE TYPE "V"	STANDARD PLATE NO. SEWR-2008
	DRAWN: DCD	DATE: 1/03		
	APPROVED: HRS	DATE: 12/06		



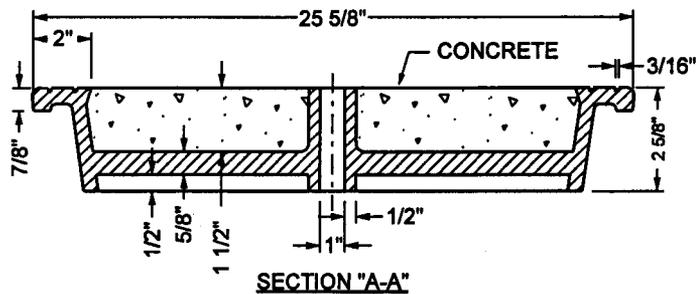
NOTES:
 IN 5/8" CORED HOLE, A 5' PIECE
 OF #4 REBAR (GRADE 60) IS REQUIRED.
 WEIGHT = 54 LBS.
 MATERIAL: GRAY IRON ASTM A-48

MNDOT CURB BOX NO. 824
 MNDOT SPEC. REF. 2506
 MNDOT 4133A
 NOT TO SCALE

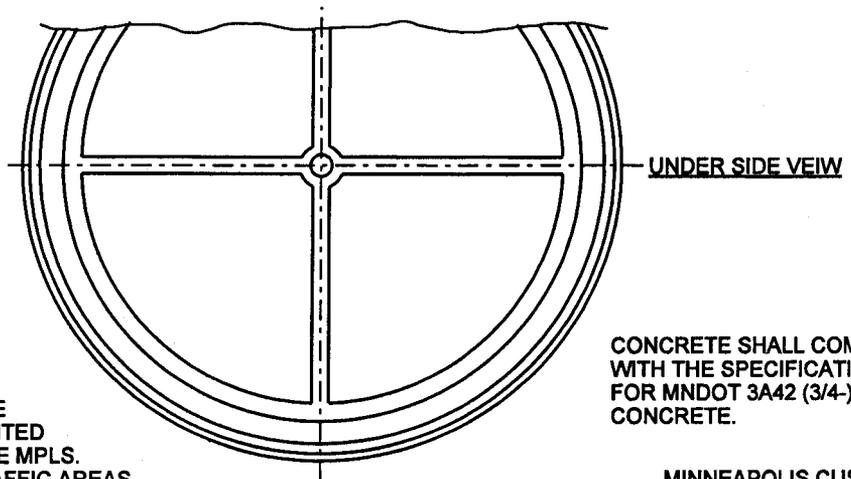
	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		CURB BOX CASTING FOR CATCH BASIN	STANDARD PLATE NO. SEWR-2007
	DRAWN: DCD	DATE: 2/03		
	APPROVED: HRS	DATE: 12/06		



PLAN



SECTION "A-A"

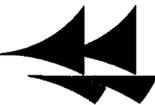


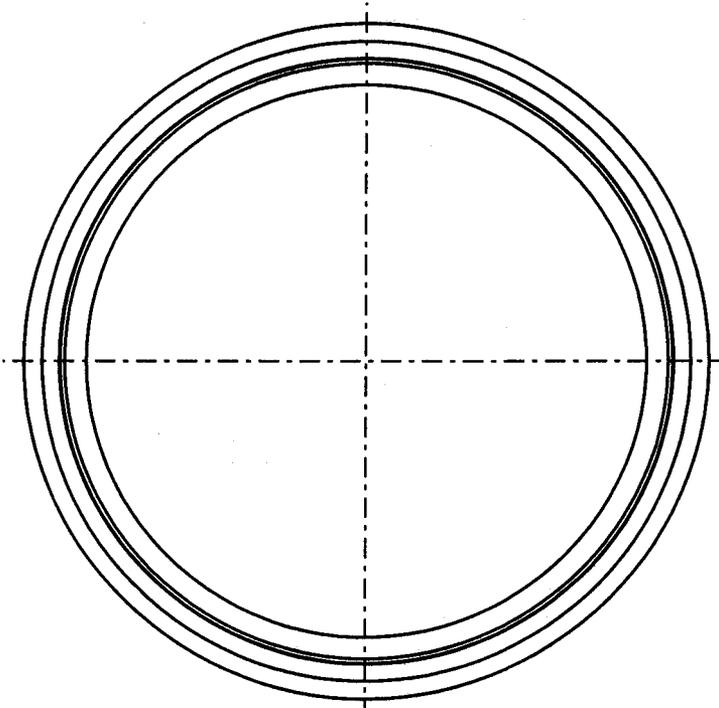
UNDER SIDE VIEW

NOTES:
 NOT FOR USE IN VEHICLE
 TRAFFIC AREAS USE LIMITED
 TO SIDEWALKS ONLY USE MPLS.
 PLATE SEWR-2000 IN TRAFFIC AREAS
 WEIGHT = 122 LBS.
 MATERIAL: GRAY IRON ASTM A-48

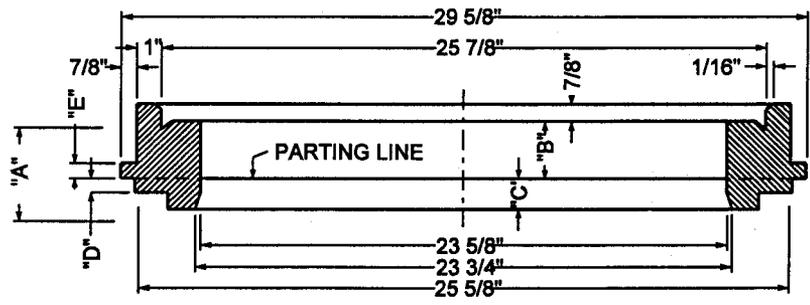
CONCRETE SHALL COMPLY
 WITH THE SPECIFICATIONS
 FOR MNDOT 3A42 (3/4-)
 CONCRETE.

MINNEAPOLIS CUSTOM
 MNDOT SPEC. REF. 2506
 NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		SIDEWALK COVER	STANDARD PLATE NO. SEWR-2002
	DRAWN: JXC	DATE: 11/06		
	APPROVED: HRS	DATE: 12/06		



PLAN



SECTION

WELDING BETWEEN STEEL AND CAST IRON SHALL BE DONE PER MNDOT SPEC. 2471.3 USING NI-55 WELDING RODS AND AS APPROVED BY THE ENGINEER.

MAKE 2" LONG WELDS AT 1'-0" SPACES AROUND CIRCUMFERENCE OR PERIMETER.

ALTERNATE TO WELDING TO CASTINGS, A SPECIALLY FORMULATED EPOXY MAY BE USED AROUND THE TOTAL MATING SURFACE WITH THE APPROVAL OF THE CITY ENGINEER.

MATERIAL: GRAY IRON ASTM A-48

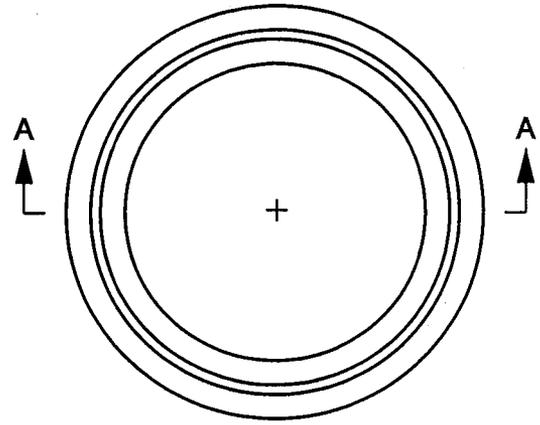
AMOUNT EXTENSION	"A"	"B" (FINISHED)	"C" (FINISHED)	"D"	"E"	WEIGHT
1 1/2"	1 1/8"	1/4"	1 1/4"	3/16"	1/2"	80
2"	1 3/8"	1/2"	1 1/2"	7/16"	3/4"	100
2 1/2"	1 7/8"	1"	1 1/2"	7/16"	3/4"	118
3"	2 3/8"	1 1/2"	1 1/2"	7/16"	3/4"	140
3 1/2"	2 7/8"	2"	1 1/2"	7/16"	3/4"	162
4"	3 3/8"	2 1/2"	1 1/2"	7/16"	3/4"	185

MNDOT SPEC. REF. 2506
MNDOT 4108F
NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		CAST IRON ADJUSTING RING	STANDARD PLATE NO. SEWR-2011
	DRAWN: ZTT APPROVED: HRS	DATE: 1/03 DATE: 12/06		

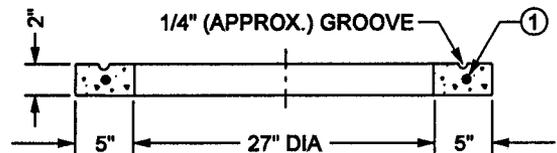
CONCRETE ADJUSTING RING

NOTES:
 ON CONSTRUCTION OF DRAINAGE STRUCTURES,
 THE NUMBER OF ADJUSTING RINGS USED PER
 MANHOLE OR CATCH BASIN SHALL BE LIMITED
 TO PROVIDE A MAXIMUM THICKNESS OF 6"
 INCLUDING MORTAR THICKNESS (A 6" RING IS NOT
 ALLOWED ON NEW CONSTRUCTION). PLASTER
 COAT INTERIOR OF ADJ. RINGS MIN. 1/2" MORTAR MIX
 TYPE N AIR ENTRAINED. FINISHED SMOOTH. CONCRETE
 RINGS MUST BE ENCASED IN MORTAR.



TOP VIEW

① REINFORCING:
 A SINGLE HOOP OF 8 GAGE STEEL WIRE.

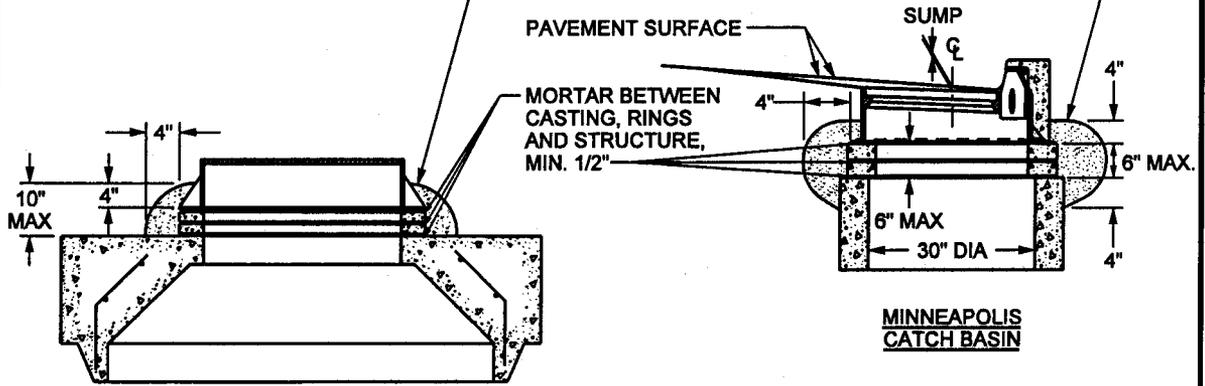


SECTION A-A

INSTALLATION DETAIL

PLASTER COAT INTERIOR OF ADJUSTING
 RINGS MIN. 1/2" MORTAR MIX TYPE N AIR
 ENTRAINED. FINISHED SMOOTH.

CONCRETE COLLAR TO ENCASE
 CASTING AND ADJUSTING RINGS.
 USE CONCRETE CURB AND GUTTER
 MIX OR MORTAR MIX FOR COLLAR
 (MNDOT SPEC. 2506.2B)

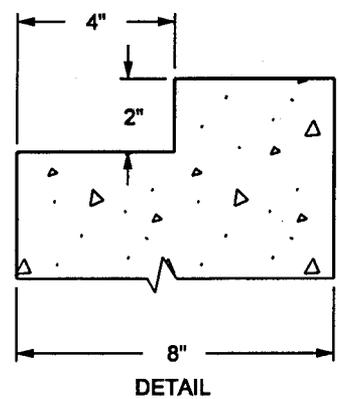
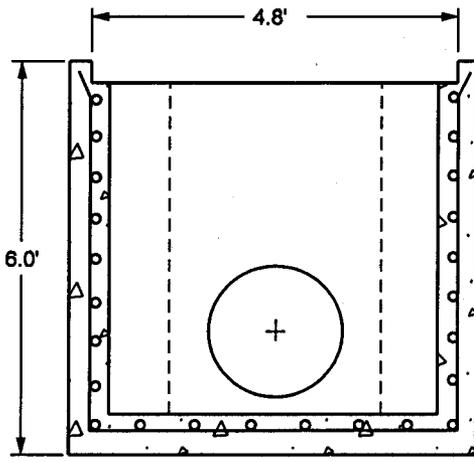
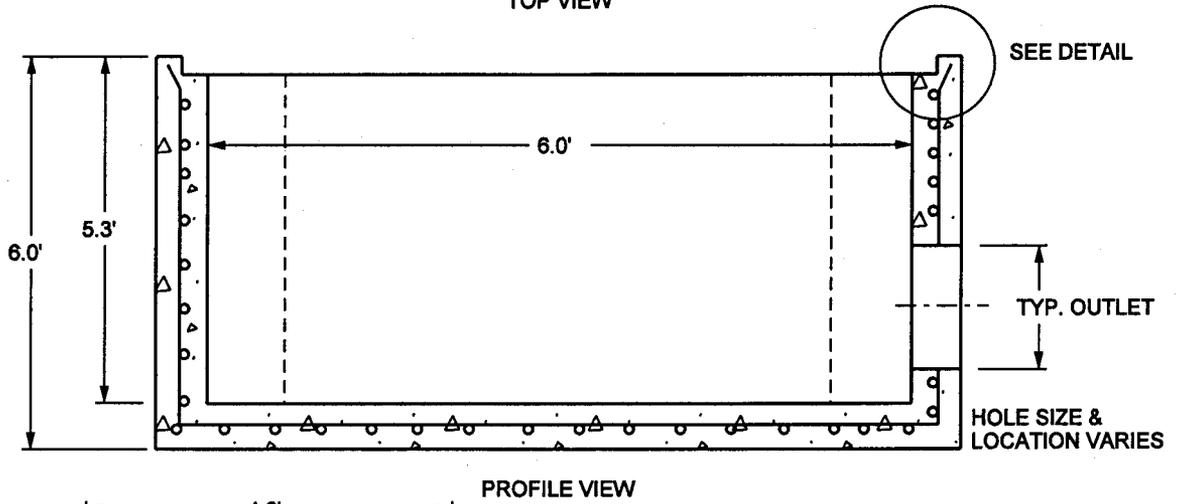
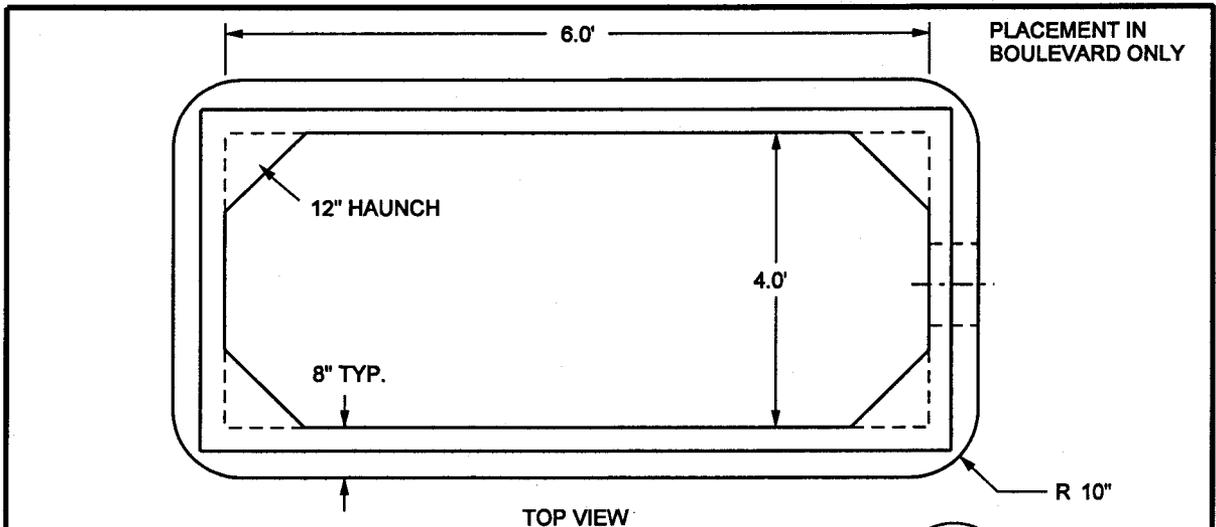


MINNEAPOLIS SHORT CONE SECTION

**MINNEAPOLIS
 CATCH BASIN**

MINNEAPOLIS CUSTOM
 MNDOT SPEC. REF. 2506, 4026A
 CONCRETE ADJUSTING RINGS ONLY
 NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		CONCRETE ADJUSTING RINGS	STANDARD PLATE NO. SEWR-1011
	DRAWN: DCD	DATE: 5/03		
	APPROVED: HRS	DATE: 12/06		



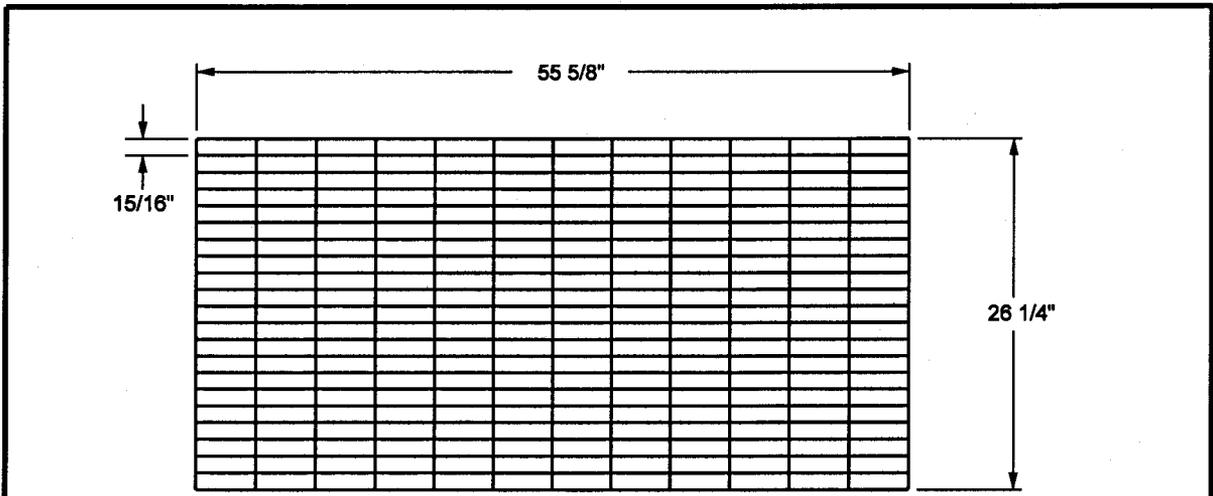
PRECAST REINFORCED
CONCRETE STRUCTURE

SINGLE LINE STEEL
WIRE FABRIC HAVING
AN AREA NOT LESS
THAN 0.12 SQ. IN. / FT.
OF HEIGHT

ESTIMATED WEIGHT = 19,512 LBS.

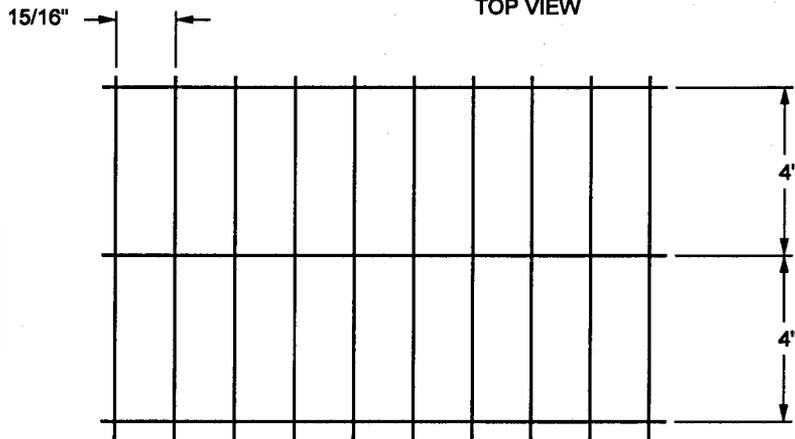
MINNEAPOLIS CUSTOM
MNDOT SPEC. REF. 2411, 3238
NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		"JAKE" GRATE BOX	STANDARD PLATE NO. SEWR-1012
	DRAWN: DCD	DATE: 2/03		
	APPROVED: HRS	DATE: 12/06		



PANEL SECTION
(3 PANELS = 1 SET)
TOP VIEW

NOTE:
PANEL DIMENSIONS ARE NOMINAL



GRATING DETAIL

CLOSE MESH TYPE W - 15 - 4
2" x 3/16" BEARING BARS
EST. Wt. = 18.14 lbs. / sq. ft.

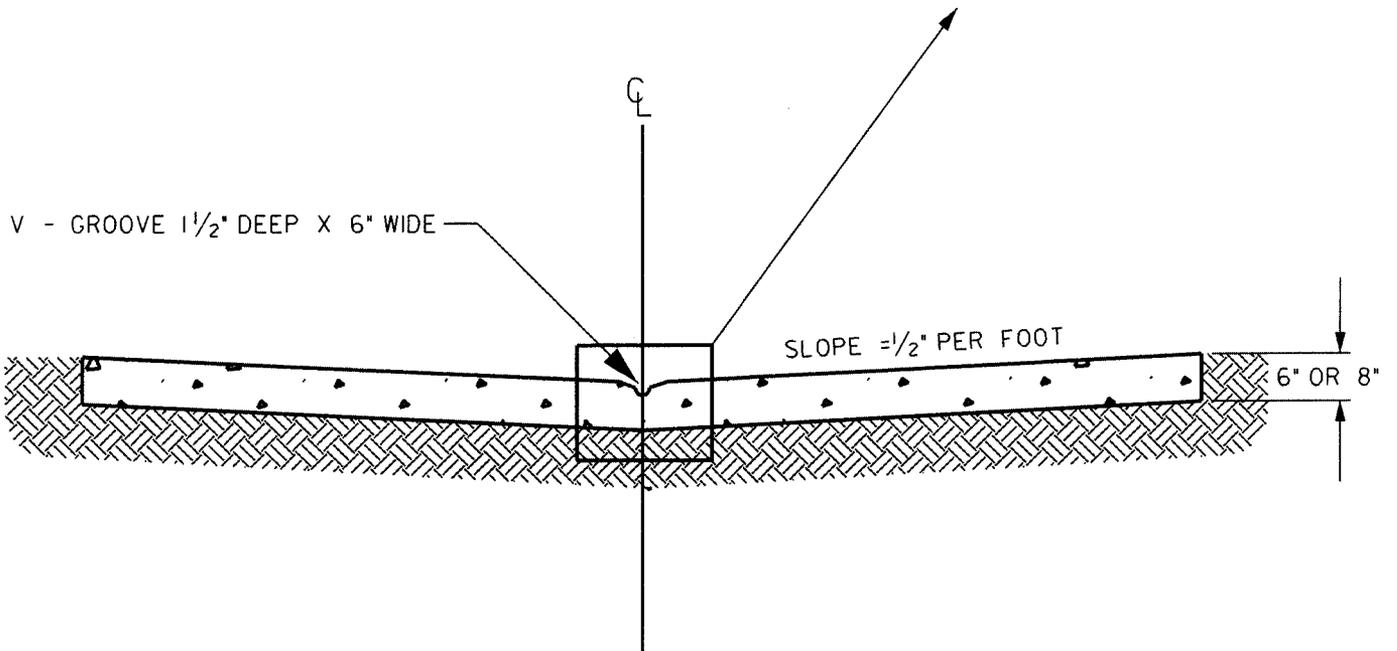
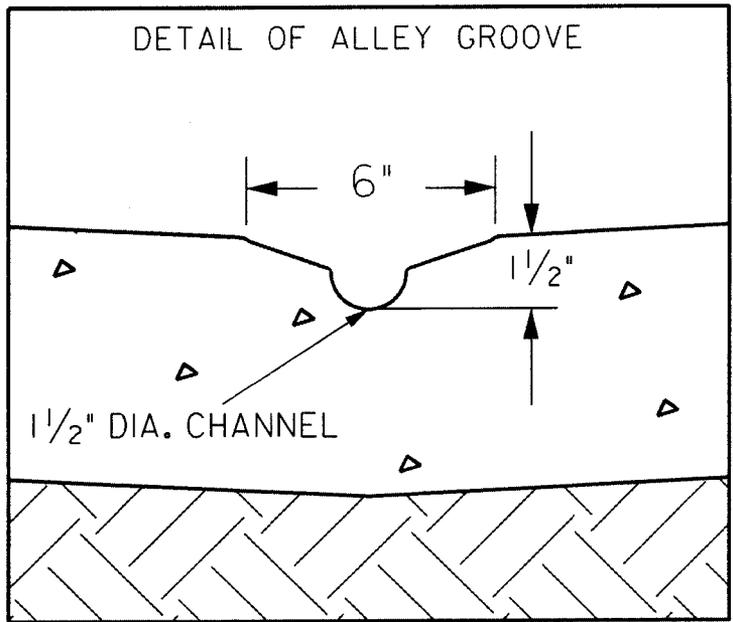
RY-WELD OPEN STEEL
GRATING EQUIVALENT

NOTES:
DURABLE SOLID WELD CONNECTIONS REQUIRED.
ALL WELDS TO CONFORM TO AMERICAN WELDING SOCIETY STANDARDS.
ALL CUT EDGES SHALL BE DEBURRED.
GRATES SHALL BE PAINTED WITH A PREMIUM GRADE EXTERIOR BLACK PAINT.
MNDOT STANDARD 2476 APPLIES TO ALL PAINTING.
EACH PANEL TO BE EDGE BANDED AROUND THE PERIMETER.
ONE SET PER JAKE GRATE BOX (3 PANELS).

NOT DESIGNED FOR VEHICLE TRAFFIC AREAS.
DESIGNED FOR BOULEVARD PLACEMENT ONLY.

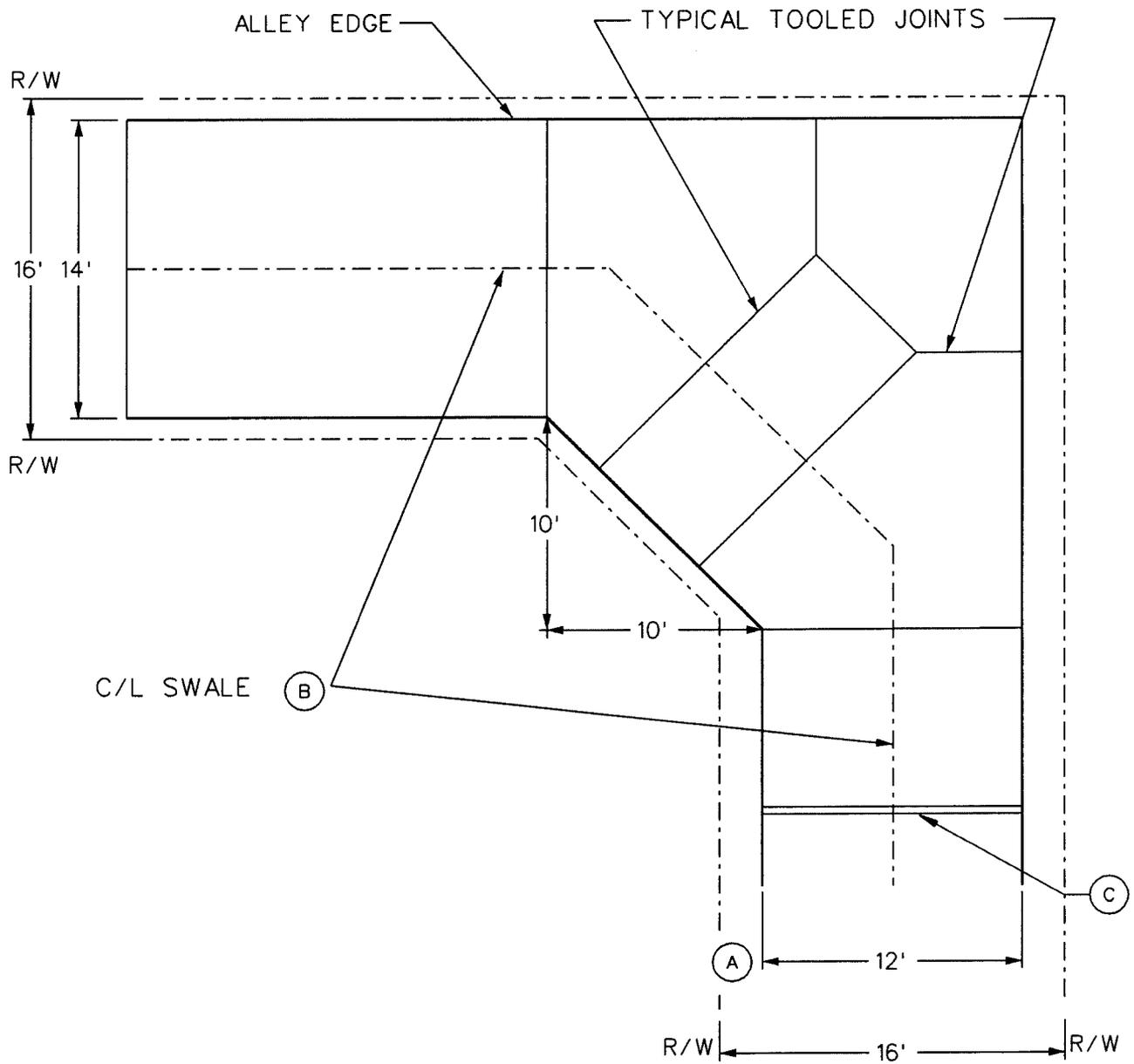
MINNEAPOLIS CUSTOM
MNDOT SPEC. REF. 3306
NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS		"JAKE" GRATE COVER	STANDARD PLATE NO. SEWR-1013
	DRAWN: DCD	DATE: 2/03		
	APPROVED: HRS	DATE: 12/06		



TYPICAL SECTION
THRU ALLEY

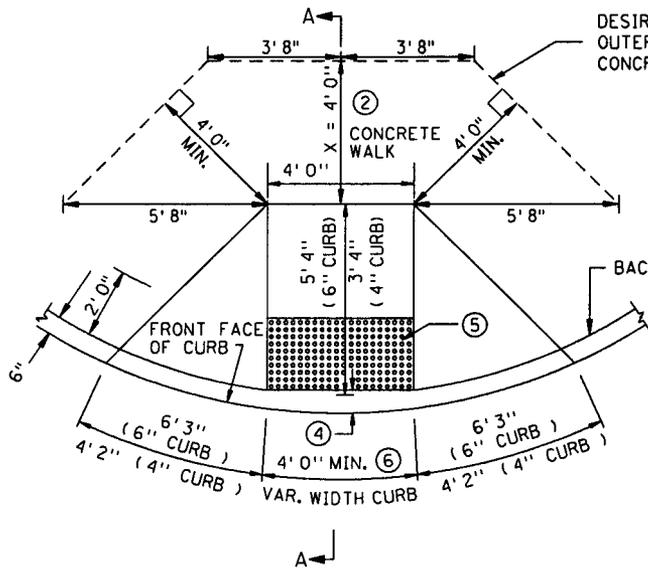
TYPICAL ALLEY CROSS SECTION



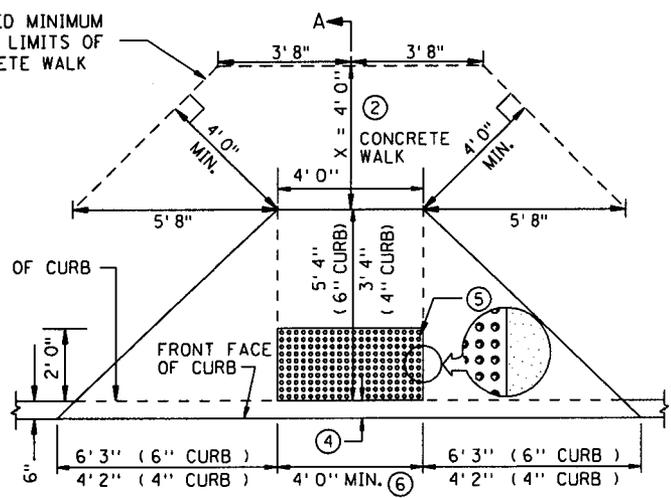
NOTES:

- A. BY ORDINANCE (598.230) ALLEY WIDTH IS 14' UNLESS MATCHING INTO EXISTING CONDITIONS (12' TO 14')
- B. SEE TYPICAL ALLEY SECTION FOR DIMENSIONS.
- C. SAW CUT EXISITING CONCRETE 1/2" EXPANSION JOINT

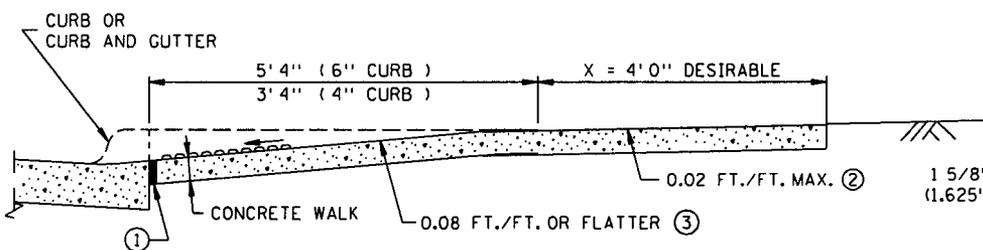
TYPICAL CONCRETE PANEL LAYOUT FOR RESIDENTIAL ALLEY CORNERS



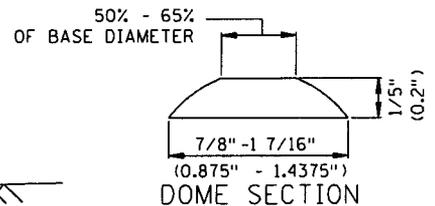
PLAN VIEW OF DIAGONAL RAMP



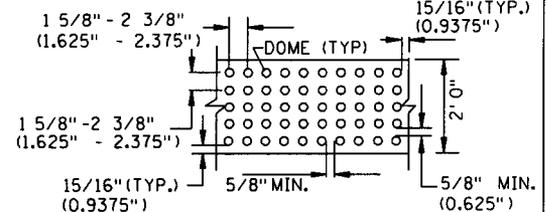
PLAN VIEW OF PERPENDICULAR RAMP



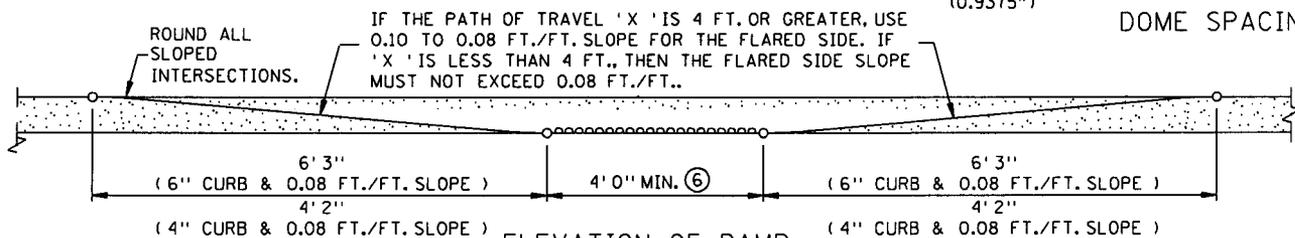
SECTION A-A



DOME SECTION



DOME SPACING



ELEVATION OF RAMP

NOTES:

- TO COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (ADA), ALL STATE AND LOCAL AGENCIES ARE REQUIRED TO COMPLY WITH THIS STANDARD PLATE.
- THE CURB AND CURB TRANSITION ON THE RAMP WILL BE PAID FOR AS LINEAR FEET OF CONCRETE CURB OR CONCRETE CURB AND GUTTER. THE RAMP AREA WILL BE PAID FOR AS CONCRETE WALK EXCLUDING THE TRUNCATED DOME AREA WHICH WILL BE PAID FOR AS TRUNCATED DOMES BY THE SQUARE FOOT. BIKE TRAILS SHALL HAVE TRUNCATED DOMES ACROSS THE ENTIRE WIDTH OF TRAIL WHEN THE TRAIL CROSSES A ROAD. DOMES ARE NOT TO BE USED ON SIDEWALKS OR TRAILS WHEN CROSSING ALLEYS OR DRIVEWAYS.
- ① 1/2 INCH PREFORMED JOINT FILLER MATERIAL, AASHTO M 213.
- ② WHEN POSSIBLE, PROVIDE A CLEAR PATH OF TRAVEL 4'0" WIDE BEHIND THE PEDESTRIAN RAMP. A RELATIVELY FLAT 4' X 4' LANDING WILL ALLOW WHEELCHAIRS TO NAVIGATE AROUND THE PEDESTRIAN RAMP. NO SIGNALS, SIGNS, CABINETS, OR OTHER OBSTRUCTIONS ARE ALLOWED IN THE RAMP OR PATH OF TRAVEL.
- ③ WHEN A MEDIAN IS NOT WIDE ENOUGH FOR TWO PEDESTRIAN RAMPS AND A 48" LANDING BETWEEN THEM, THE PEDESTRIAN CROSSING SHALL BE CUT THROUGH THE MEDIAN AT STREET LEVEL.
- ④ PLACE THE DETECTABLE WARNINGS (TRUNCATED DOMES) AT THE BACK OF CURB. WHEN THE DETECTABLE WARNING SYSTEM IS A PRECAST MATERIAL, THE CURB SHALL BE HAND FORMED TO FILL THE GAP.
- ⑤ ADA REQUIRED TRUNCATED DOME AREA SHALL BE 2'0" MIN. IN DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH (3'0" OR 4'0" TYP.) OF THE CURB RAMP. THIS 2'0" BY 3'0" OR 4'0" WIDTH (TYP.) TRUNCATED DOME AREA SHALL CONTRAST VISUALLY WITH THE ADJACENT WALKING SURFACE. THE ENTIRE TRUNCATED DOME AREA SHALL BE A LIGHT (GRAY OR BUFF TYPICALLY) COLOR WHEN THE ADJACENT SIDEWALK IS A DARK COLOR. THE ENTIRE TRUNCATED DOME AREA SHALL BE A DARK COLOR (RED OR DARK GRAY TYPICALLY) WHEN THE ADJACENT SIDEWALK IS A LIGHT GRAY CEMENT COLOR.
- ⑥ 4'0" MIN. FOR NEW CONSTRUCTION, 3'0" ALLOWED TO STAY IN PLACE FOR RETROFIT PROJECTS. IN SITUATIONS WHERE THE CURB CUT WIDTH EXCEEDS 4'0", THE DETECTABLE WARNINGS SHALL EXTEND THE FULL WIDTH.

APPROVED FEB. 20, 2004

M. Rakus
STATE DESIGN ENGINEER

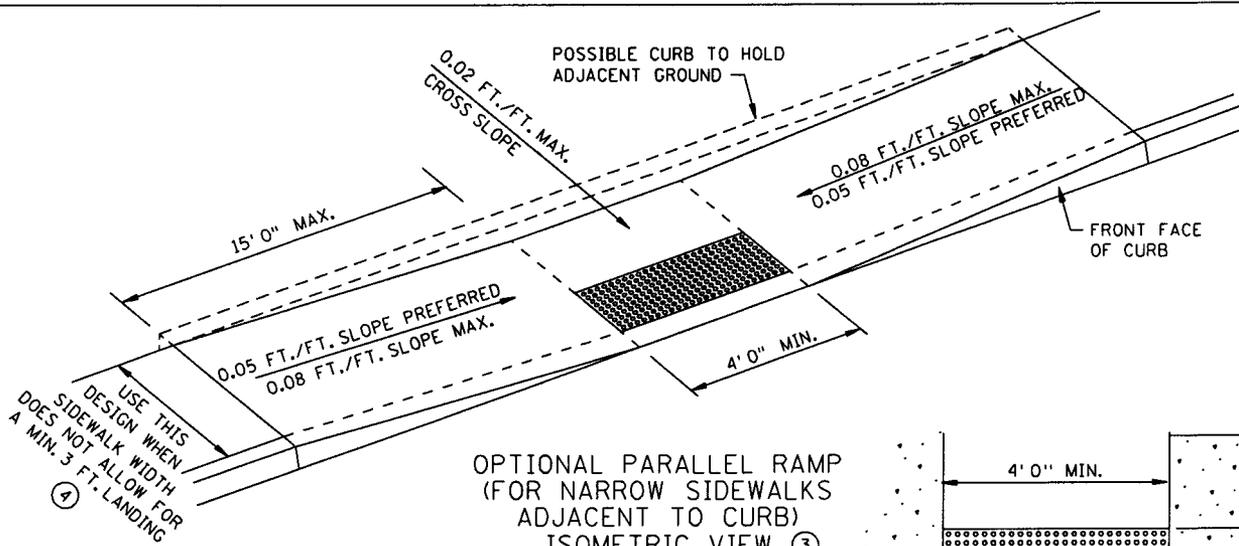
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

PEDESTRIAN CURB RAMP
FOR THE HANDICAPPED

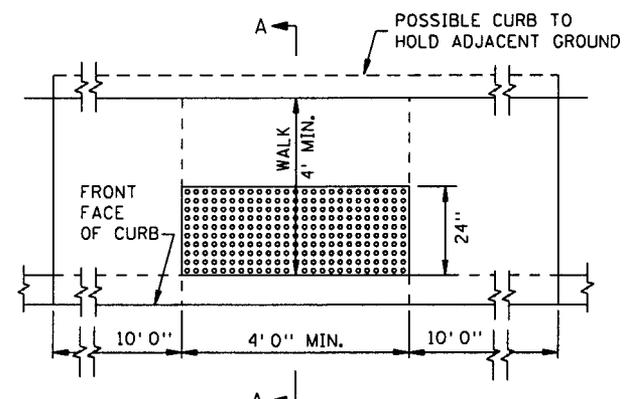
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REVISION DATE
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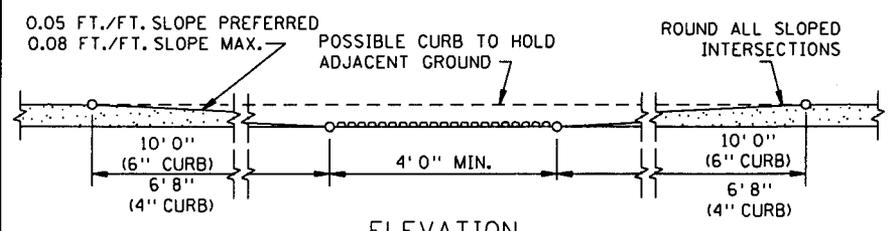
STANDARD
PLATE
NO.
7036F
1 OF 2



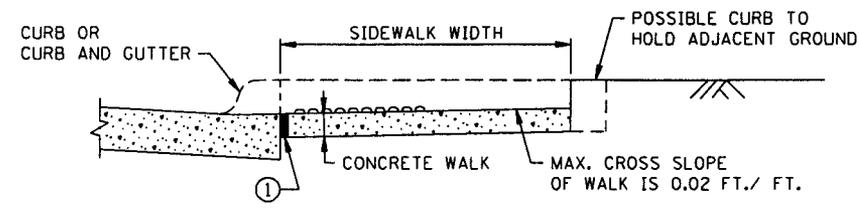
OPTIONAL PARALLEL RAMP
(FOR NARROW SIDEWALKS
ADJACENT TO CURB)
ISOMETRIC VIEW ③



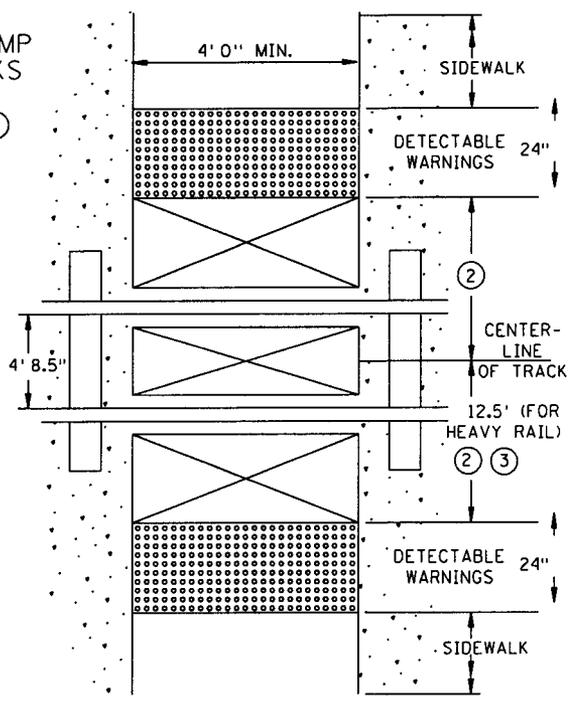
PARALLEL RAMP
PLAN VIEW



ELEVATION



PARALLEL RAMP
SECTION A-A



RAILROAD CROSSING
PLAN VIEW

NOTES:

- ① 1/2 INCH PREFORMED JOINT FILLER MATERIAL, AASHTO M 213.
- ② WHEN THERE IS A GATE ARM, THE EDGE OF THE DETECTABLE WARNING SHALL BE 17\"-19\" FROM THE FACE OF THE GATE ARM. WHEN THERE IS NO GATE, THE EDGE OF THE DETECTABLE WARNING SHALL BE 12.5 FT. (HEAVY RAIL) OR 8 FT. (LRT) FROM THE CENTERLINE OF THE NEAREST TRACK.
- ③ ALL RAIL IN STATE IS HEAVY RAIL WITH THE EXCEPTION OF THE LRT IN MINNEAPOLIS.
- ④ THE REASON FOR USING THIS VARIATION INSTEAD OF THE OFFICIAL DESIGN ON SH.1 SHALL BE DOCUMENTED. IF A LARGE AMOUNT OF WATER IS EXPECTED FROM THE ADJACENT PROPERTY, THE DESIGNER SHOULD PLAN ACCORDINGLY.

THESE ARE OPTIONAL PEDESTRIAN SIDEWALK ACCESS DETAILS THAT ARE NOT REQUIRED BY CURRENT ADA REGULATIONS

APPROVED FEB. 20, 2004

Milakus
STATE DESIGN ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

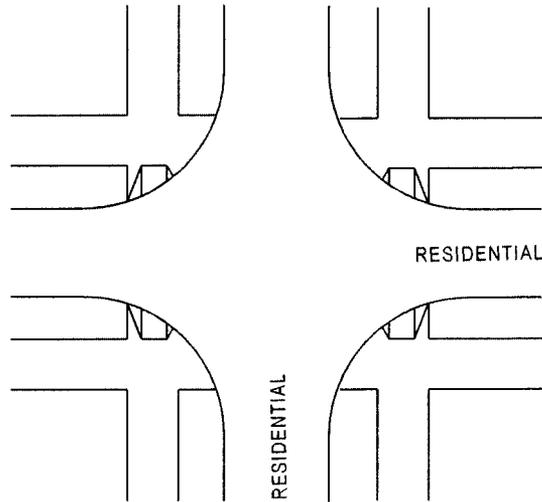
PEDESTRIAN CURB RAMP OPTIONS
FOR THE HANDICAPPED

SPECIFICATION
REFERENCE
2521
2531

STANDARD
PLATE
NO.
7036F
2 OF 2

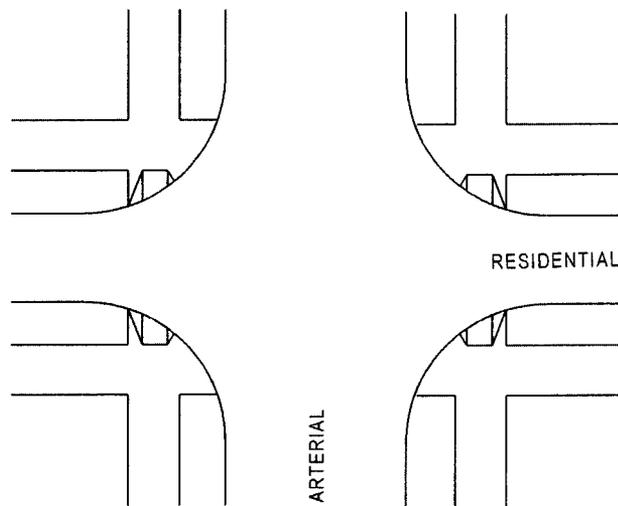


A. RESIDENTIAL- RESIDENTIAL *
NO TRAFFIC CONTROL

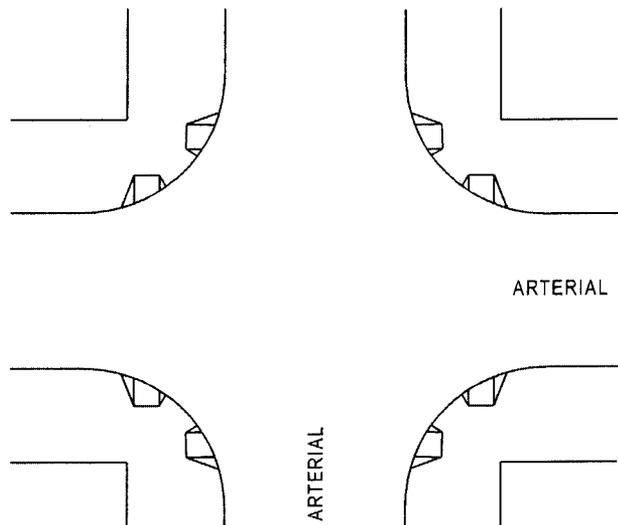


* RAMPS WILL BE PLACED ON A NORTH-SOUTH AXIS EXCEPT WHERE A STOP SIGN STOPS TRAFFIC IN ONE DIRECTION IN WHICH CASE THE RAMPS WILL BE PLACED PARALLEL TO THE THROUGH TRAFFIC, OR WHERE OTHERWISE DIRECTED BY THE CITY ENGINEER.

B. RESIDENTIAL- ARTERIAL
ONE OR TWO-WAY TRAFFIC CONTROL

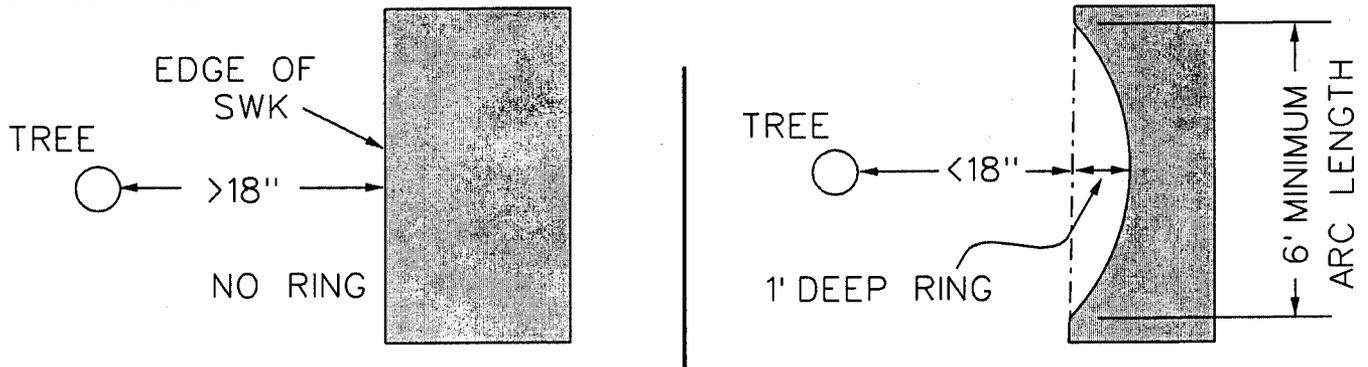


C. ARTERIAL- ARTERIAL
FOUR-WAY TRAFFIC CONTROL

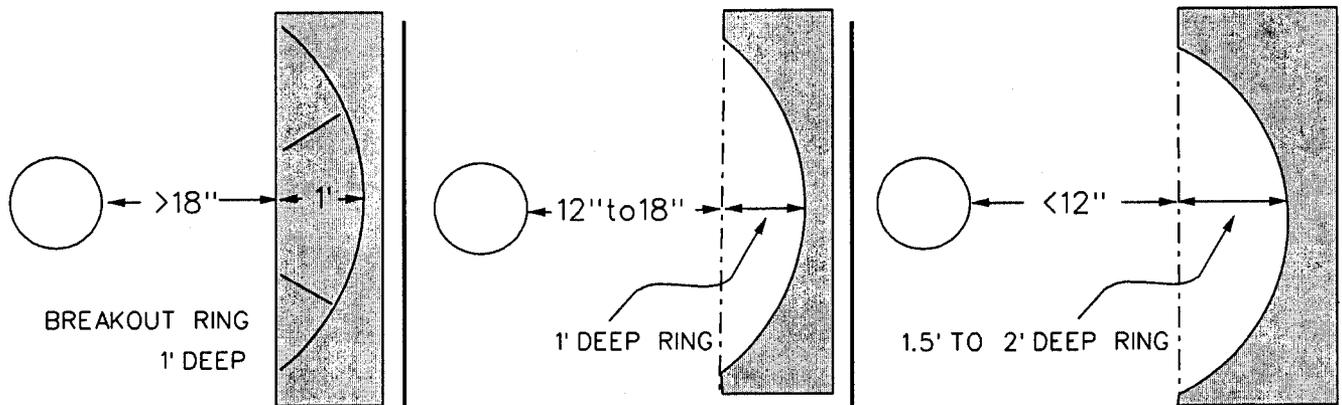


TYPICAL PEDESTRIAN RAMP LOCATIONS

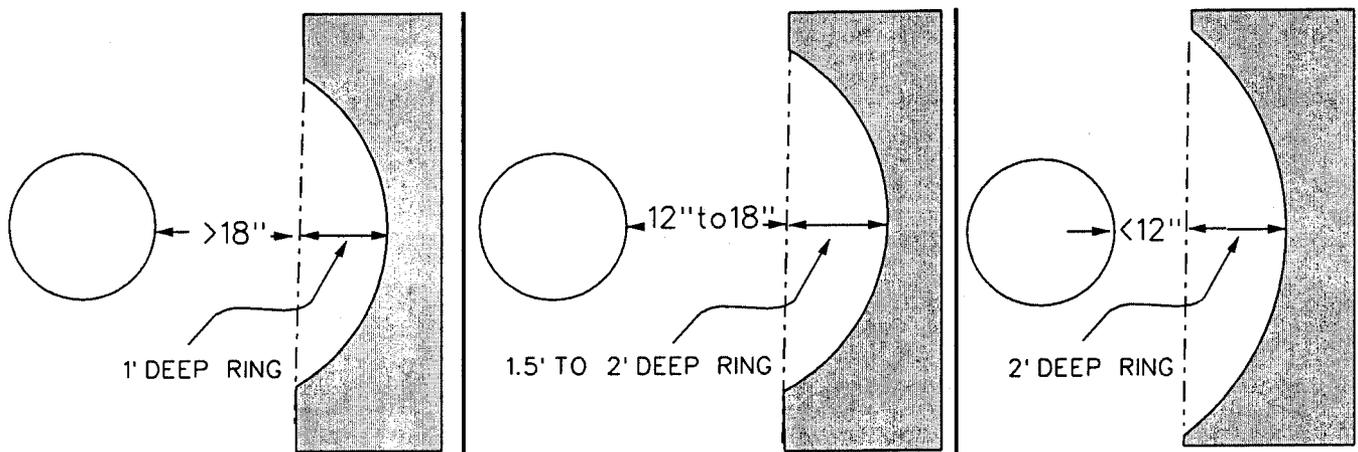
SMALL TREE - LESS THAN 8" DIAMETER AT A HEIGHT OF 4.5'



MEDIUM TREE - 8" TO 20" DIAMETER AT A HEIGHT OF 4.5'



LARGE TREE - GREATER THAN 20" DIAMETER AT A HEIGHT OF 4.5'



NOTES:

1. RING DEPTH IS THE DISTANCE MEASURED FROM THE NORMAL SIDEWALK EDGE TO THE POINT OF THE RING ARC PERPENDICULAR TO THE BASE OF THE TREE. (SEE DIAGRAM)
2. MINIMUM ARC LENGTH IS 6 X DEPTH OF TREE RING. MAXIMUM RING ARC LENGTH IS 18' UNLESS A LONGER ARC IS APPROVED BY THE CITY ENGINEER.
3. BREAKOUT RINGS WILL BE FORMED USING A TOOL JOINT AT LEAST 1/3 THE THICKNESS OF THE CONCRETE.
4. MINIMUM REMAINING SIDEWALK WIDTH IS 4'-0".

TREE RING INSTALLATION GUIDE