SECTION 02750

CURB AND SIDEWALK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Concrete sidewalks.

2. Concrete curbs.

3. Aggregate subbase for sidewalks.

5. Aggregate subbase for curbs.

1.02 REFERENCES

A. American Concrete Institute:

1. ACI 301 – Specifications for Structural Concrete.

2. ACI 304 – Guide for Measuring, Mixing, Transporting, and Placing Concrete.

B. ASTM International:

1. ASTM A185 – Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

2. ASTM A497 – Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.

3. ASTM A615/A615M – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

4. ASTM C33 – Standard Specification for Concrete Aggregates.

5. ASTM C94/C94M – Standard Specification for

6. ASTM C-94/C-94M - Ready-Mixed Concrete.

7. ASTM C150 – Standard Specification for Portland Cement.

8. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.

9. ASTM C494/C494M – Standard Specification for Chemical Admixtures for Concrete.

10. ASTM D1752 – Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.03 PERFORMANCE REQUIREMENTS

A. In accordance with PennDOT Specifications, Publication 408, Latest Edition, Section 704.1(b), except for aggregate subbase.

1.04 SUBMITTALS

A. Section 01330 – Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on joint filler concrete mix.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with PennDOT Specifications, Publication 408, Latest Edition, Sections 501.3 and 506.3.

B. Obtain ready mixed concrete from the same Penn DOT approved single source supplier throughout the entire project.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience and approved as a Penn DOT supplier.

B. Installer: Company specializing in performing work of this section with minimum five (5) years verifiable experience.

1.07 ENVIRONMENTAL REQIREMENTS (SEE 3.06.D.2.d of this Section) below)

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS.

A. Concrete Materials: In accordance with PennDOT Specifications, Publication 408, Latest Edition, Section 704.1(b).

2.02 ACCESSORIES

A. Curing material in accordance with PennDOT Specifications, Publication 408, Latest Edition, Section 711.

2.03 QUALITY CONTROL AND TESTS

A. Submit proposed mix design of each class of concrete to Engineer for review prior to commencement of work.

B. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.

C. When directed by the Engineer, take test sample cylinders in accordance with PennDOT Specifications, Publication 408, Latest Edition, Section 704.1(d)and related sections.

PART 3 EXECUTION

3.01 SUBBASE

A. For both curb and sidewalk construction, construct aggregate subbase using four inches (4”) AASHTO #57 (2B) mechanically tamped using vibra-plate.

3.02 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of forms with oil to prevent bond to concrete.

C. Notify Engineer minimum 48 working hours (Monday thru Friday) prior to commencement of pouring operations.

3.03 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.04 REINFORCEMENT

A. Place reinforcement as indicated for depressed curb and driveway aprons and sidewalk.

B. Interrupt reinforcement at expansion joints.

3.05 PLACING CONCRETE

A. Place concrete in accordance with PennDOT Specifications, Publication 408, Latest Edition, Sections 501.3 and 506.3.

B. Do not add water to mix unless directed by Engineer.

3.06 CURB AND SIDEWALK INSTALLATION

A. LINES AND GRADES

1. The grading of sidewalk areas and the construction and repairing of sidewalks, curbs, and driveway entrances along and in the existing streets of the Township shall be performed by the OWNER or OWNERS of the lot or lots abutting thereon in accordance with the lines and grades shown on recorded subdivision plans, or as established by the TOWNSHIP.

2. In all cases of new construction of curb, sidewalk, or driveway entrance, or resetting any curb, sidewalk, or driveway entrance, in excess of ten feet (10') in length, and in the case of any other type work as specifically requested by the applicant; the TOWNSHIP Engineer shall evaluate whether it is appropriate to furnish the applicant with necessary lines and/or grades, the cost of which shall be paid by the applicant.

B. PERMITS

1. Any person, firm, corporation, or other entity desiring to grade any sidewalk area, or to construct or repair any sidewalk, curb, or driveway entrance within an existing TOWNSHIP street right-of-way shall first obtain the necessary permit(s).

2. For the purpose of this section, the approved plans and public improvements agreement between the Developer and Township will waive the requirements for additional permits.

C. UTILITIES AND SIGNS

1. All utility lines affected by the work shall be raised and/or lowered to proper elevation. All legal requirements of the Commonwealth of Pennsylvania for notification to utility owners shall be complied with.

2. All traffic signs and street name signs removed during construction of concrete curb, sidewalk, and/or driveway entrances shall be replaced by the person, firm, corporation, or other entity performing the construction.

D. CURB CONSTRUCTION

1. All curbing, unless otherwise allowed by the TOWNSHIP, shall be constructed with a vertical face and shall be constructed to the following dimensions:

   a. Depth: Eighteen inches (18”).

   b. Curb shall be seven inches (7") thick at the top, eight inches (8") thick at the gutter line, and eight inches (8") thick at the bottom.

   c. Reveal: Height of curb above the gutter line shall be eight inches (8"); and one and one-half inches (1½”) along depressed curb for driveways.

   d. Slip-form methods of curb construction may be utilized upon obtaining the approval of the Engineer.

2. Materials for construction of concrete curbing shall be as follows:

   a. All concrete curbing shall be constructed on a four-inch (4") depth of AASHTO No. 57 (2B) stone. The 2B subbase must extend at least six inches (6”) beyond the face and back of the vertical curb.

   b. Wherever the curb ties into a pre-cast inlet, catch basin or other storm structure setting in the curb line, a three foot (3’) length of six inch (6”) perforated under-drain pipe shall be installed under the four inch (4”) 2B subbase and into the pre-cast inlet structure at a minimum depth of twenty eight inches (28”) below top of curb. The pipe shall be placed on solid subgrade and backfilled with 2B up to the bottom of curb grade.

   c. The concrete shall have a minimum Three Thousand Five Hundred Pound Per Square Inch (3,500 psi) compressive strength when cured for twenty-eight (28) days with an air entrainment equivalent to five percent (5%) plus or minus one percent ($\pm$1%).

   d. No concrete shall be poured in freezing conditions without the approval of the Engineer. When pouring concrete in cold weather conditions and if the ambient air temperature is to drop below thirty two (32) degree’s F during or within seventy-two hours after the pour, the concrete shall be protected with insulated thermal blankets for a period of seventy two (72) hours following the pour. If blankets are removed during the work day for the purpose of stripping forms, only remove small sections at a time and recover the concrete as soon as the form is stripped.

   e. Do not place concrete on a stone subbase that is frozen or sitting over a frozen subgrade.

f. Expansion joints shall consist of three-fourth inch (3/4") pre-molded non-extruding bitumastic material to be used for the entire depth and width of the curb, at a distance of twenty feet (20') with scored joints every ten feet (10').

g. For slip-form curb (4,000 psi minimum) expansion joints shall be installed every forty feet (40') with scored joints every ten feet (10').

h. Depressed Driveway Curb: Whether hand set or slip form, all depressed curb shall have two (2) #5 rebars installed along the entire length and to a point three (3') beyond the depressed radius. No expansion joints are to be inserted in the depressed curb. (See Detail in Appendix)

E. SIDEWALK CONSTRUCTION

1. All sidewalk grades shall conform to the curb grades. The slope of the sidewalk shall have a one quarter inch (1/4") pitch per foot sloping towards the street and measured from the curb face to the back edge of the sidewalk.

2. The width of the sidewalk shall be four feet (4') unless otherwise specified by the TOWNSHIP to conform to adjoining existing sidewalk.

3. A grassed area of the width shown on the Standard Detail (See Appendix) shall separate the curb from the sidewalk area.

4. All sidewalks shall be constructed as follows:

a. Stone Base: All concrete sidewalk will be placed on a AASHTO #57 (2B) stone base having a minimum depth of four inches following tamping with a mechanical "vibra-plate".

b. Minimum concrete thickness of four inches (4") except for driveway areas which shall be six inch (6") depth concrete with two layers of six inch (6") welded wire fabric; OR, eight inches (8")concrete with no wire mesh.

c. Concrete shall be a minimum of Three Thousand Five Hundred Pounds per square inch (3,500 psi) after twenty-eight (28) days curing time with air retaining equivalent to five percent (5%) plus or minus one percent (±1%).

d. Sidewalk within driveway areas shall have a minimum six inches (6") AASHTO #57 (2B) stone following tamping with a Vibra Plate.

e. Expansion joints shall consist of a one-half inch (1/2") preformed non-extruding resilient bituminous joint fill to be placed the full depth of the sidewalk every twenty feet (20'); and, scored joints shall be placed every four feet (4').

f. A combination Curing/Sealing Concrete Add Mixture shall be immediately applied to the finished concrete surface. Prior to pouring any sidewalk, the Contractor shall provide the Engineer the Manufacturer's product information for review and approval. Following approval, the contractor shall use the same curing/sealing product throughout the entire project.

F. DRIVEWAY ENTRANCES

1. All concrete used on driveways within the rights-of-way of public streets shall be an ultimate strength of Three Thousand Five Hundred pounds per square inch (3,500 psi) at twenty-eight (28) days and containing five percent (5%) plus or minus one percent (±1%) air by volume.

2. All driveways shall have a finish equivalent to that of the adjoining sidewalk, while the finish for curb radius, depressed curb shall be the same as adjoining curbing.

3. All driveways shall be constructed with the appropriate reinforcing wire fabric as specified in D. 4. b) above.

4. All Residential driveway entrances shall be of the depressed curb-ramp type.

5. All Commercial driveways and entrances to Commercial Land Developments shall have radius curb wherever the radius curb may be used or as depicted on the approved plan drawings.

6. The curb radius for the radius curb ramp type driveway entrance shall be as specified on the standard details.

7. All driveways to be used for business, commercial or industrial uses shall be constructed with reinforcing steel of a design adequate to handle the proposed loading and said design shall be subject to the approval of the Engineer.

8. All driveways shall be constructed as follows:

   a. The driveway entrance shall have the outside edge raised one and one half inches (1-1/2") above the flow line of the gutter.

   b. Depressed curb driveways shall have a slope from the front face of the curb to the outside edge (street side) of the sidewalk.

   c. All driveways located within the right-of-ways of public streets shall have a minimum of six inch (6") depth of compacted AASHTO No. 57 (2B) stone, six inches (6”) concrete with two (2) layers of welded wire mesh fabric; OR, eight inches (8”) concrete with no wire mesh.

   d. Driveway entrances over sidewalk areas at residential properties shall be minimum twelve feet (12') wide for a single driveway and twenty feet (20') wide for a double driveway.

G. DRAINS

1. No surface gutters are permitted on newly constructed sidewalks.

2. All drains, rainwater conductors, or roof drains shall be installed under the sidewalk and shall have an inside diameter of four inches (4").

3. Materials for drain pipes shall be in accordance with the requirements of the Plumbing Code adopted by the Township.

4. Installation of said drains shall be in such a manner that the invert of the drain shall be one inch (1") above the invert of the gutter flow line.

5. Over top of each drain pipe that passes through the curb, two (2) number three (#3) rebars, one foot (1') long and having a fifteen degree (15°) bend in the middle, shall be installed with end pointing down and in such a manner to be equal distance from the drain to the top of curb and also equal distance from the face of curb and the rear of curb.

H. GENERAL

1. On existing paved streets, no material shall be placed in the cartway area adjacent to curb or driveway entrances, which shall in any way impede the flow of storm water runoff in the cartway area of the street.

2. When the curb or driveway entrances are constructed or repaired, all areas of excavation within the cartway area shall be backfilled with Penn DOT #2A Aggregate (2A-Modified) stone and the base course and surface course of paving restored in kind. The curb line shall be sealed with hot AC-20 having a eight-inch (8") minimum width.

3. During the pouring operation, all concrete must be thoroughly settled by suitable means and thoroughly worked into the corners of the forms.

4. Exposed concrete surfaces shall be true and even, free from open or rough areas, depressions or projections.

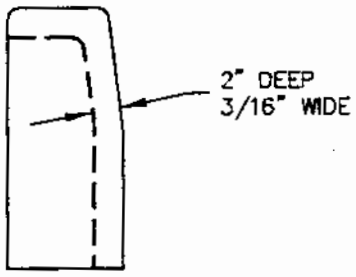
5. Forms shall be wood or metal and constructed of materials sufficient in strength to hold the concrete without deforming.

6. Smooth rubbed finish for curbing.

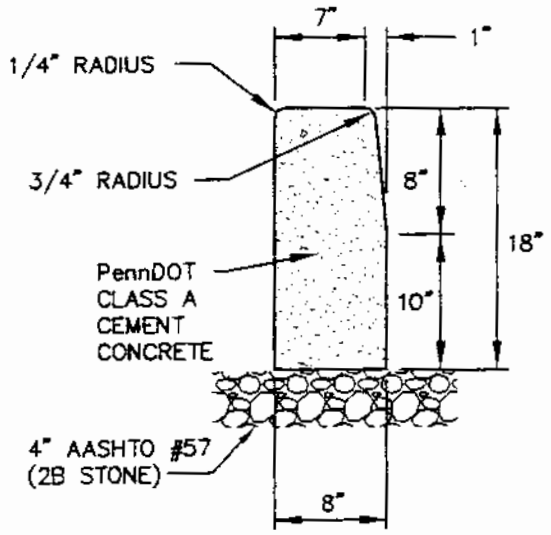
7. ADA Ramp: Shall be placed at all new or reconstructed street intersections and at stepdown driveways, intersections, and constructed as shown on the Standard Details. Materials used shall be as previously specified under Curb and Sidewalks of this manual.

8. Pursuant to the Federal Americans with Disabilities Act and the Pennsylvania Department of Labor & Industry, a minimum 3'L X 2'W truncated dome pedestrian warning device shall be placed at the bottom of the ADA ramp behind the curb. The warning device shall be made part of the concrete ramp by stamped concrete and the required 72% contrasting color shall be achieved by use of Symons Brick Red (or equivalent) concrete hardening die/powder; or, a concrete stain similar to the brick red color as approved by the Engineer. Pre-cast pavers will not be acceptable. (See Construction Detail in Appendix)

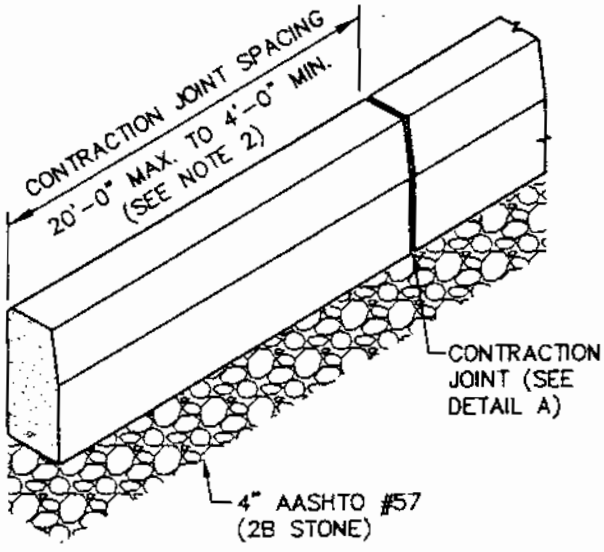
END OF SECTION 02750



DETAIL A
CONTRACTION JOINT



TYPICAL CROSS SECTION



NOTES:

1. MATERIALS AND CONSTRUCTION SHALL MEET THE REQUIREMENTS OF PUBLICATION 408, SECTION 630.
2. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.
3. PLACE 3/4" PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.

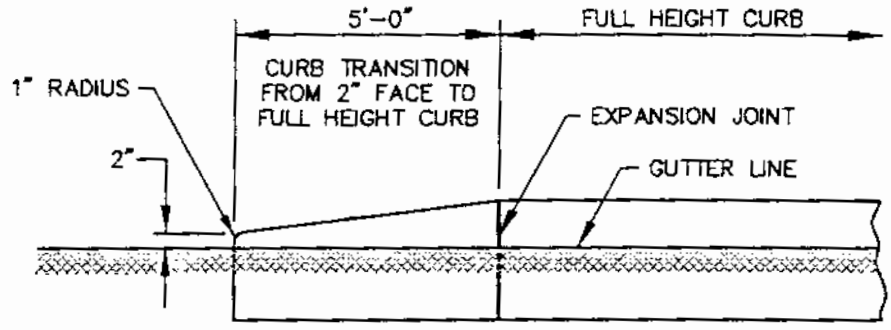
CONCRETE CURB

SCALE: NONE

TOWNSHIP OF SPRING

STANDARD DETAIL 02750-1

12/04
SPRING\STDSPECS\02750-1



CURB TRANSITION

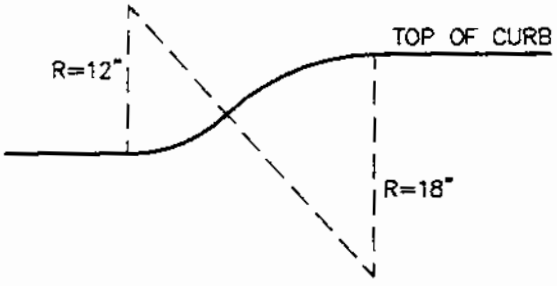
SCALE: NONE

TOWNSHIP OF SPRING

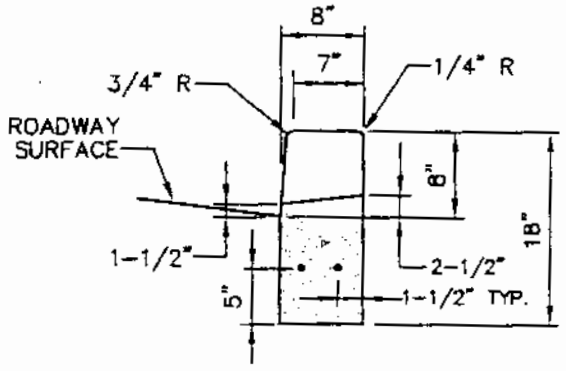
STANDARD DETAIL 02750-2

12/04

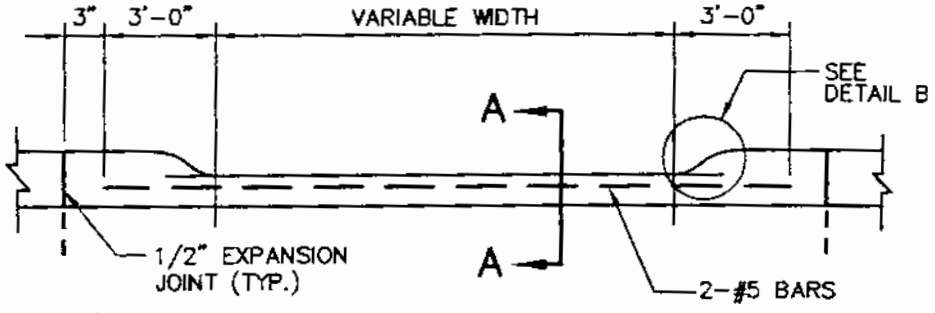
SPRING\STDSPECS\02750-2



DETAIL B



SECTION A-A



FRONT VIEW

DEPRESSED CURB FOR DRIVES

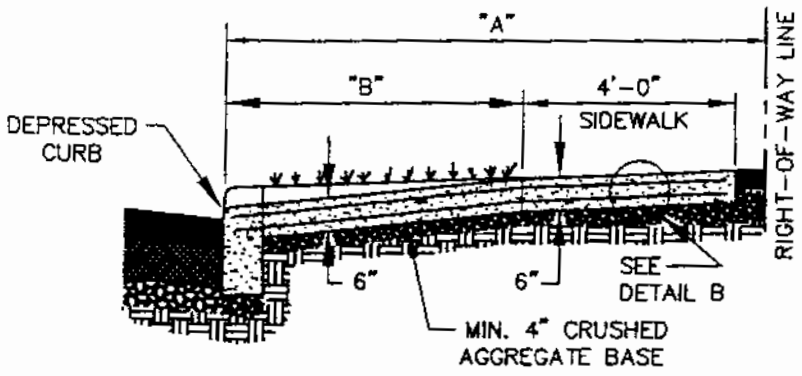
SCALE: NONE

TOWNSHIP OF SPRING

STANDARD DETAIL 02750-3

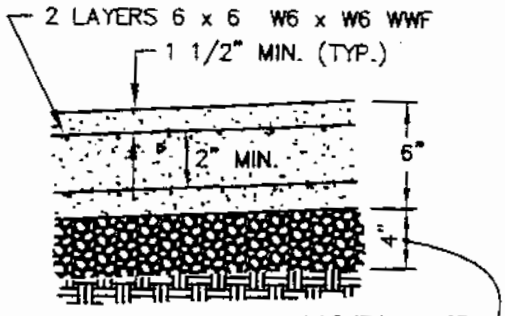
12/04
SPRING\STDSPECS\02750-3

REINFORCED METHOD



SECTION A-A

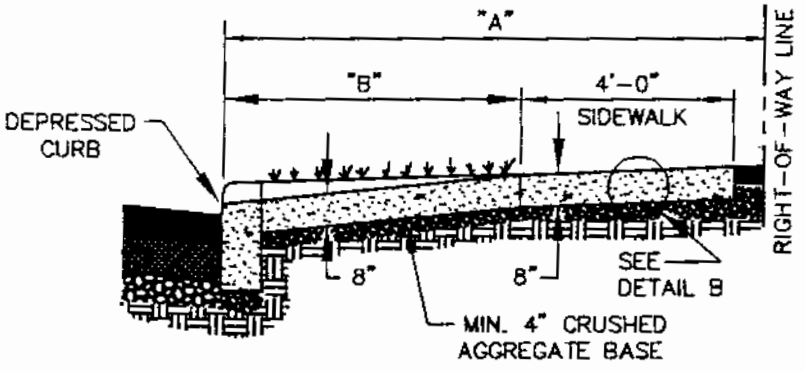
NO SCALE



DETAIL B

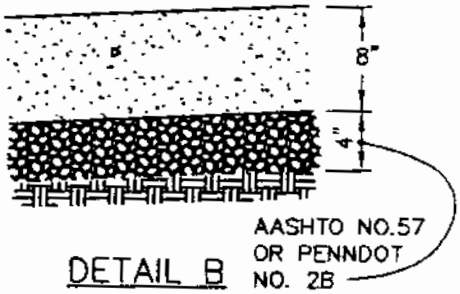
NO SCALE

NON-REINFORCED METHOD



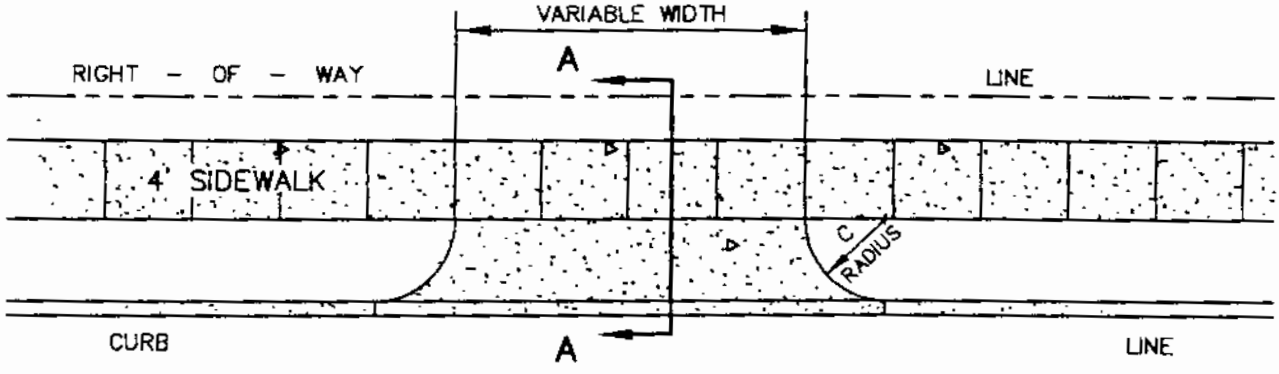
SECTION A-A

NO SCALE



DETAIL B

NO SCALE



RESIDENTIAL DEPRESSED CURB DRIVEWAY ENTRANCE

NO SCALE

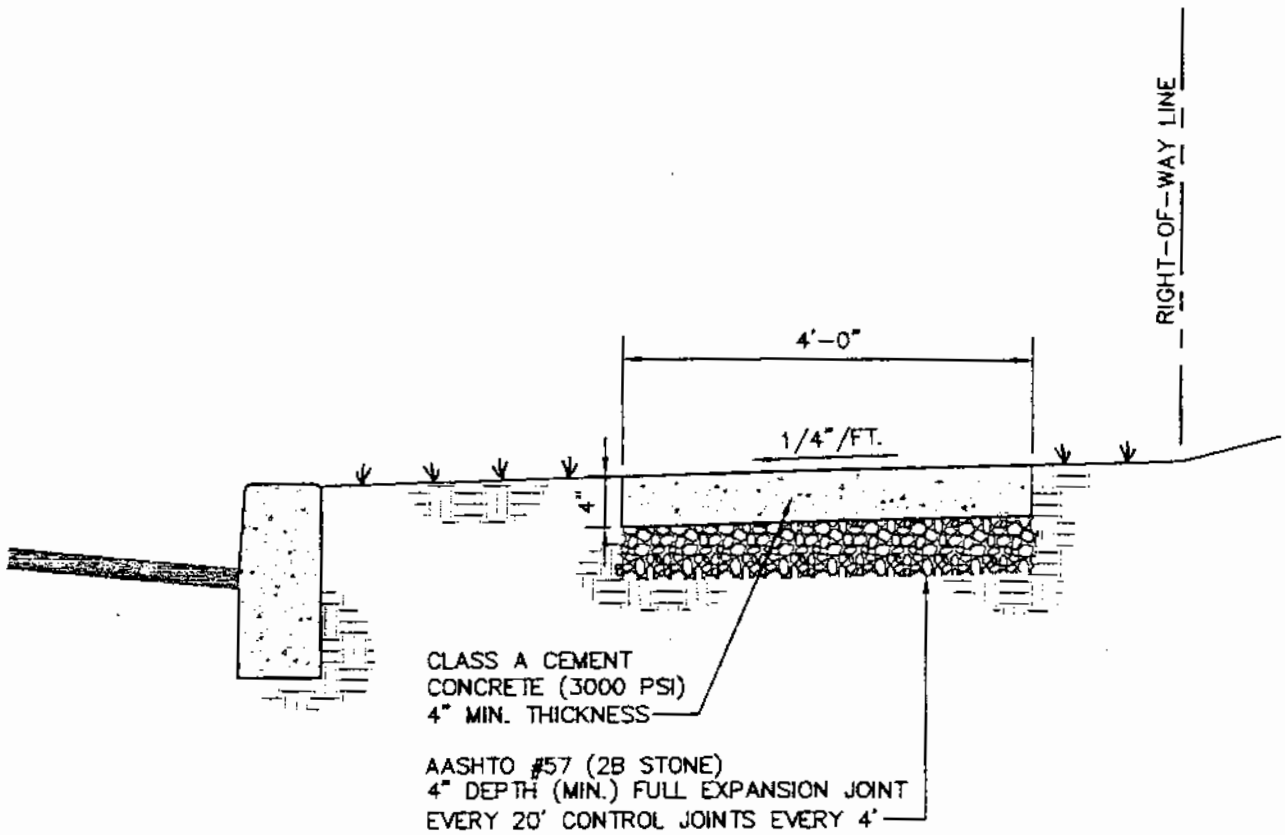
SIDEWALK AREA	A	6'-0"	8'-0"	10'-0"	13'-0"
GRASS PLOT	B	1'-4"	2'-4"	4'-4"	5'-0"
CURB RADIUS	C	2'-0"	3'-0"	3'-0"	4'-0"

TOWNSHIP OF SPRING

STANDARD DETAIL 02750-4

12/04

SPRING\STDSPECS\02750-4



CONCRETE SIDEWALK

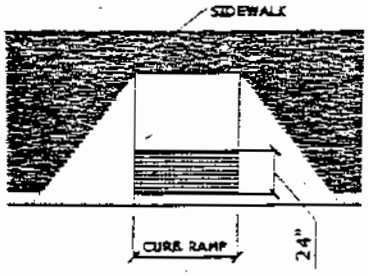
SCALE: NONE

TOWNSHIP OF SPRING

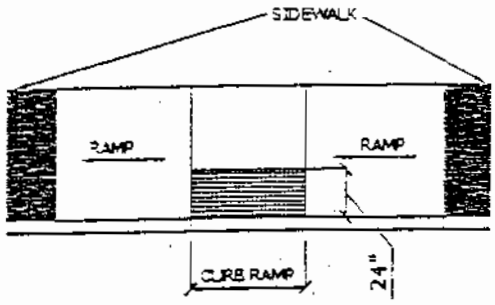
STANDARD DETAIL 02750-5

12/04

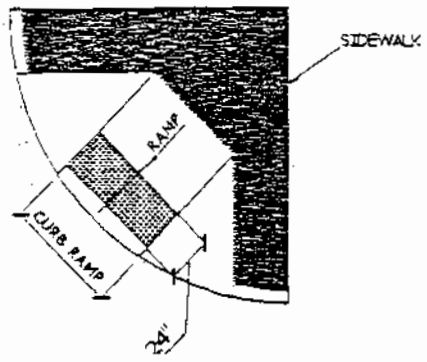
SPRING\STDSPECS\02750-5



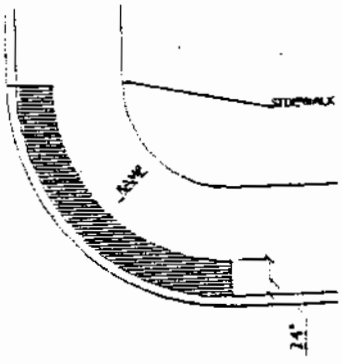
DETECTABLE WARNING AT CURB RAMP



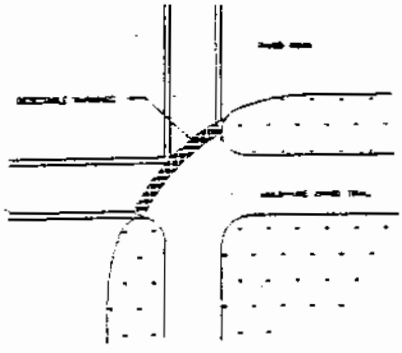
TRANSITION RAMP WITH DETECTABLE WARNING



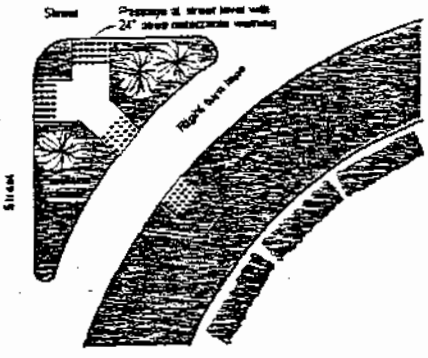
SHARED CURB RAMP WITH DETECTABLE WARNING



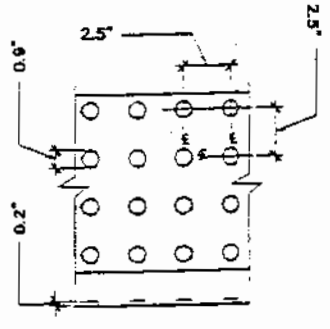
DETECTABLE WARNING AT BLENDED CURB



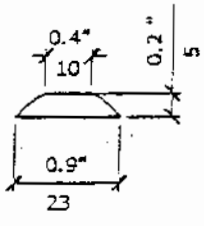
DETECTABLE WARNING AT MULTI-USE PATH



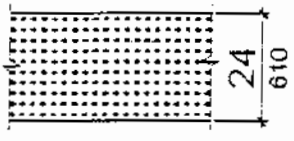
REFUGE ISLAND WITH DETECTABLE WARNINGS



DOME SPACING



DOME SECTION



DOME ALIGNMENT

DETECTABLE WARNINGS

SCALE: NONE

TOWNSHIP OF SPRING

STANDARD DETAIL 02750-6