

**BOROUGH OF COLUMBIA  
TECHNICAL SPECIFICATIONS  
STANDARD DETAILS**

**EXHIBIT "B"**

**PREPARED BY:**



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### **1. GENERAL**

The following paragraphs refer to Special Conditions of work for all contractors who intend to work within the Borough street rights-of-way.

### **2. STORAGE OF MATERIALS**

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms, or other hard, clean surfaces, not the ground. They shall be placed under cover and protected from dampness, dust, and fire. Stored materials shall be located so as to facilitate prompt inspection. Lawns, grass plots, or other private property shall not be used for storage purposes without written permission of the Owner or Leasee.

### 3. FIRE

The Contractor shall take every precaution to prevent fire. Open burning on the site is not permitted.

### 4. NIGHT AND SUNDAY WORK

No work shall be done between the hours of 6:00 P.M. and 7 A.M., nor on Sunday, except as is necessary for the proper care and protection of work already performed or except in case of an emergency.

### 5. INSURANCES

The Contractor shall secure and maintain insurance policies with the following coverages:

#### (a) Workmen's Compensation and Employer's Liability:

The Contractor shall take out and maintain during the life of this Contract Workmen's Compensation Insurance for all employed at the site of the project. The Contractor shall require any subcontractor to provide the same coverage.

#### (b) Public Liability, Personal Injury, and Property Damage:

Public Liability Damage: Public Liability shall be in the amount of \$500,000 for all damages rising out of bodily injury, including death at any time resulting therefrom, sustained by any one person in any one accident and a limit of liability of not less than \$1,000,000 aggregate for any such damages sustained by two or more persons in any one accident.

Property Damage: Property Damage shall be in an amount of \$300,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$300,000 aggregate for any such damage sustained by two or more persons in any one accident.

#### (c) Explosion, Collapse, and Underground shall be covered with insurance in limits as required under Public Liability, Personal Injury, and Property Damage for each occurrence.

#### (d) Railroad Protective Liability and Property Damage: When the Contract includes work on or under Railroad rights-of-way or properties, the Contractor shall secure and maintain Railroad Protective Liability and Property Damage Insurance. The amount of Insurance, term of policy, and

name or names of the insured shall be in accordance with current railroad requirements.

- (e) Independent Contractors Liability Coverage: Public Liability shall be in an amount not less than \$500,000 for injuries including accidental death to any one person, or in an amount not less than \$1,000,000 on account of each occurrence. Property damage insurance shall not be less than \$300,000.
- (f) Blasting Coverage shall be in an amount not less than \$500,000 for injuries including accidental death to any one person, or in an amount not less than \$1,000,000 on amount of each occurrence. Property damage insurance shall not be less than \$300,000.
- (g) Completed Operations Liability shall be in an amount of not less than \$500,000.
- (h) Fire and Extended Coverage Insurances: The Contractor, at his own expense, shall carry insurance upon the insurable value of the work done pursuant to the Contract. Such policies shall provide protection against loss or damage as a result of fire, lightning, or perils covered by an extended coverage endorsement. Policies insuring work done pursuant to the Contract shall be written in the name and for the benefit of the Contractor and the Owner, as their respective interests may appear.
- (i) Automobile and Truck Public Liability, Bodily Injury, and Property Damage: Public Liability shall be in an amount of \$500,000, Personal Injury in and amount of \$500,000, and Property Damage in the amount of \$500,000.
- (j) Owner's and Engineer's Liability: The Contractor shall take out and maintain during the life of this Contract such Public Liability and Property Damage Insurance as shall protect the Owner and the Engineer from claims for damages for personal injury, including accidental death, as well as from claims for property damages that may arise from operations connected with or caused by any operation or matter related to this contract. The amounts of such insurance shall be in accordance with the limits stated in the paragraph (b) above.
- (k) Umbrella Excess Liability Insurance: The Contractor shall provide a minimum limit of liability of \$1,000,000 per occurrence which shall be in excess over the primary limits of insurance required in this section.

Certificates of such insurance shall be furnished to the Owner at the same time as signed Contract, showing the type, amount, effective dates, and date of expiration. No insurance shall be canceled or materially altered, except after fifteen (15) days written notice has been received by the Owner.

All insurance policies or certificates of insured to herein shall be deposited with the Owner. The insurance provided for herein shall be made payable to the Owner, and the Owner shall have the sole right to receive the proceeds thereof and, subject to the written consent of the party or parties in interest to adjust, collect and receipt for claims thereunder.

## 6. INDEMNIFICATION

The Contractor shall indemnify and hold harmless the State, the Borough of Columbia, and the Engineer and their agents and employees from and against all claims, damages, losses, and expenses including attorney's fees arising out of, or resulting from, the performance of work, provided that any such claim, damage, loss, or expense:

- (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and
- (b) is caused in whole or part by any negligent act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. The Contractor shall include a rider to his insurance policies that provides for contractual liability which shall save harmless the State, the Borough of Columbia, and the Engineer.

## 7. RESPONSIBILITY REGARDING EXISTING UTILITIES AND STRUCTURES

The existence and location of underground utilities, process piping, or plant conduits shall be investigated and verified in the field by the Contractor before starting work. The Contractor's attention is directed to the existing Local, State, and Federal regulations, especially the Pennsylvania One Call System, Inc., 1-800-242-1776.

Excavation in the vicinity of existing structures and utilities shall be carefully done. Contractor should call the Pennsylvania One Call System, Inc. before he starts to dig.

The Contractor shall be held liable for any damage done by reason of breaking any water, sewer, gas, telephone, electric, process piping, plant conduits, or other utility service. The Contractor shall notify all utility companies and the Owner's operating personnel in advance of construction and cooperate with agents of these companies and the Owner during the progress of the work. Then as any lines or services become broken or damaged during the progress of the Work, the Contractor shall cause them to be repaired at once at his own expense. Delays that would result in adjoining residences or businesses having to go overnight or for needlessly long periods during the day without utilities, or the plant

operation to be adversely affected, will not be tolerated. The Owner reserves the right to remedy such delays or neglect by ordering outside parties to make repairs at the expense of the Contractor without written notice.

Care shall be taken not to move, without the consent of the Engineer, any sewers, culverts, water, gas, electric, telephone, or other pipes or poles or structures. In crossing, or in running parallel with or near utility lines, process piping, or plant conduits, they shall be securely hung, braced, or supported in place until the work is completed. Whenever it is necessary to interfere with said structures, the Contractor, at his own expense, shall maintain their respective services, and if necessary, lay temporary lines or structures.

The Contractor shall repair all damage done to any structures and shall keep them in repair for a period of one year after the completion of the work.

#### **8. EROSION AND SEDIMENT CONTROL**

The Contractor shall adhere to the regulations relating to the control of erosion and sedimentation implemented by Pennsylvania under Chapter 102 of Public Law 1987, as amended.

#### **9. PREVENTION OF ENVIRONMENTAL POLLUTION AND PRESERVATION OF PUBLIC NATURAL RESOURCES**

The Contractor shall adhere to the provisions of the Pennsylvania Act No. 247 of 1972 relating to the prevention of environmental pollution and the preservation of public natural resources.

#### **10. MAINTENANCE CREW**

The Contractor shall make available 24 hours a day a maintenance crew for the repairs and maintenance of trenches or other work that has become hazardous to the public or plant operations as a result of trench settlement or other reasons.

The Contractor shall make the name, address, and telephone number of a responsible maintenance person available to the Engineer and Owner. If the maintenance person so assigned fails to respond, and/or the Contractor fails to make the repairs within a reasonable period of time after being directed by the Engineer or Owner, the necessary repairs of maintenance shall be performed by others and the full costs of the work charged to the Contractor.

## 11. PROJECT SAFETY

Nothing contained in this exhibit or in any other document relating to this work shall be construed to require or authorize the Engineer to supervise or be in any way responsible for the Contractor's compliance with any applicable safety regulations or codes or the like. The Engineer shall have no duty to inform the Contractor of any safety violations, and should the Engineer voluntarily point out safety violations, such actions shall not be construed to mean that the Engineer has assumed any responsibility for the Contractor's compliance with any applicable safety regulations, codes, or the like. The Contractor is solely responsible for project safety.

## 12. WORK ZONE TRAFFIC CONTROL

The Contractor shall provide flagmen, signs, barricades, etc., as required to help ensure safe and efficient traffic movement through the work zones, and also to provide safety for the work force. All work zone traffic control shall be in accordance with PADOT Publication 203, titled, "Work Zone Traffic Control," latest edition.



## B. TECHNICAL SPECIFICATIONS

The Pennsylvania Department of Transportation Specifications Publication 408, with latest revisions and attachments shall be considered part of these specifications, and all work shall conform to those specifications. Any items that are not specifically listed here in these specifications shall be governed by the appropriate section in Publication 408. Where conflicts occur between Publication 408 and the documents preceding this page, the documents preceding this page will govern.

All finished gutter joints at the curb line and all surface joints of the streets and drives shall receive a bituminous seal coat of Emulsified Asphalt at least six (6) inches in width.

At the completion of a project, the Contractor shall deliver a written statement to the Borough certifying that his work was performed in accordance with these specifications.

### 1. EARTH WORK

Section 203 - Class 1, Class 1A and D, Class 1B Excavation.

All excavation shall be Class 1, and Section 203 should be revised to include the removal and disposal of concrete curb and sidewalk, and the saw cutting of existing pavement as required.

Section 210 - Subgrade.

### 2. BASE COURSES

Section 305 - Bituminous Concrete Base Course.

Section 350 - Subbase.

### 3. FLEXIBLE PAVEMENT

Section 401 - Plant-Mixed Bituminous Concrete Courses.

Section 420 - Bituminous Wearing Course ID-2.

The Contractor shall install the wearing surfaces with a maximum of two paving passes.

#### 4. INCIDENTAL CONSTRUCTION

##### Section 601 - Pipe Culverts.

All pipe shall comply with ASTM C - 76 class 4 standard concrete pipe specifications and use O-ring joints complying with ASTM C - 443 specifications.

##### Section 605 - Endwalls, Inlets, Manholes and Spring Boxes.

##### Section 613 - Stone Backfill for Miscellaneous Drainage.

A. 2 RC Stone Backfill – See Section 613.1 through Section 613.3. Refer to Borough Detail Sheet SD-12.

##### B. Flowable Backfill

###### 1. Description

This work is construction of flowable backfill of the type specified for trenches and structures. Refer to Borough Detail Sheet SD-12.

Flowable Backfill. Future excavation of the backfill may be necessary such as at utility trenches, pipe trenches, bridge abutments, and around box or arch culverts.

###### 2. Material

- (a) Cement: ASTM C150.
- (b) Slag Cement: ASTM C989.
- (c) Fine Aggregate: ASTM C33.
- (d) Air-Entraining ADMIX: ASTM C260.
- (e) Mix Design. Use Table 1 for the mix design or submit alternate design based on density guidelines and meeting strength requirements of Table 1.

Provide mix designs that meet specific density requirements, where specified. If source of material is changed, submit a revised mix design before using material. Conduct design mix testing at the highest flowability of slump that will be used for the project.

###### 3. Construction

- (a) General. Furnish indicated type of flowable backfill meeting the requirements of Table 1.

Mix and transport in accordance with Section 704 or by other approved methods.

Adjustments to mix in field are permissible provided criteria specified in Table 1 are achieved.

(b) Placement. Prepare supporting surface to receive flowable backfill as specified. Do not place flowable backfill during rain or through flowing water. Remove and replace flowable backfill damaged by rain or flowing water. When excavation cannot be dewatered, place flowable backfill by a tremie procedure, approved by the Engineer.

Break up lumps by remixing or other approved method.

Do not place flowable backfill at a material temperature below 50 F or when the temperature of either the air or the surface on which the flowable backfill is to be placed is 40 F or lower without protection of the exposed surface.

(c) Opening to Traffic. For flowable backfill material, do not open to traffic until 1 hour after the surface bleed water has dissipated by a dry surface and as permitted by the Engineer.

Section 630 - Plain Cement Concrete Curb.

All concrete should be Class AA.

Section 676 - Cement Concrete Sidewalks.

All concrete should be Class AA.

**TABLE 1**

**FLOWABLE BACKFILL  
CONCRETE MIX DESIGN  
100 PSI**

WEIGHTS PER CUBIC YARD (SATURATED, SURFACE-DRY)

CEMENT	90 -110
SLAG CEMENT	: 70 - 80
FINE AGGREGATE, ASTM C33	3000
WATER, LB (GAL-US)	400 (47.9)
TOTAL AIR, %	6.0 +/- 1.5
AIR-ENTRAINING ADMIX, ASTM C260	3.5
WATER/CEMENT RATIO	2.29
SLUMP, IN	9 - 11
CONCRETE UNIT WEIGHT, PCF	120-135
3 DAYS (MIN) PSI	50 - 100

## 5. MATERIALS

Section 701 - Cement.

Section 702 - Bituminous Material.

Section 703 - Aggregates.

Section 704 - Cement Concrete.

- A. Curing of concrete shall be done using a clear nonpigmented curing compound.
- B. Place no concrete until forms, reinforcing steel, and other work required to be built into concrete has been inspected and approved.
- C. All steps shall be poured independently of the sidewalk. The Contractor shall take all steps necessary to try to save those steps that are in good condition. If necessary, the Contractor shall be required to saw cut around those steps.
- D. It shall be the Contractor's responsibility to provide means necessary to adequately protect the fresh concrete from damage done by vandals. For this reason, it is preferred that all concrete pours be made before noon of each day.
- E. The Contractor shall schedule his concrete pours in sections to minimize the disruption of pedestrian traffic to the residences and businesses. The Contractor shall be required to provide access ramps and/or bridges over the sidewalk areas to maintain access to businesses and residences during construction.
- F. All cement concrete for this project shall be supplied by the same manufacturer using materials from the same site to insure the color likeness and durability of the finished product.
- G. Where downspouts are not piped under the sidewalk and will discharge onto the surface of the sidewalk, a slight depression into the sidewalk shall be made with a trowel to convey the spout water to the curb. Where side alleys meet the sidewalk, the Contractor shall provide for positive drainage of the alley over the sidewalk.
- H. The Contractor shall be responsible to install a four inch (4") PVC pipe vertically in the concrete walk in those locations were a sign post will be required. The Contractor shall contact the Borough twenty-four hours in advance for such locations.

I. Closures, concrete fillers at curbs, and angular sections shall be installed as separate slabs and shall be separated from adjoining slabs by expansion joint filled material grooved and edged as dry joints.

J. Where light standards, poles, fire hydrants, access manhole covers, or other similar structures are within the limits of the new sidewalks, the concrete around such structures shall be scored, by edging and/or grooving, in a block eight (8) inches wider than the maximum dimensions of the structure at the sidewalk elevation. Prior to placing the concrete around such structures, premolded expansion joint material shall be placed around the structures to the full depth of the slab.

K. Formed transverse dummy joints should be spaced proportionately to form an aesthetically pleasing pattern, and additional joints should be added where required to prevent future sidewalk cracking.

Section 705 - Joint Material.

## 6. ROADSIDE DEVELOPMENT

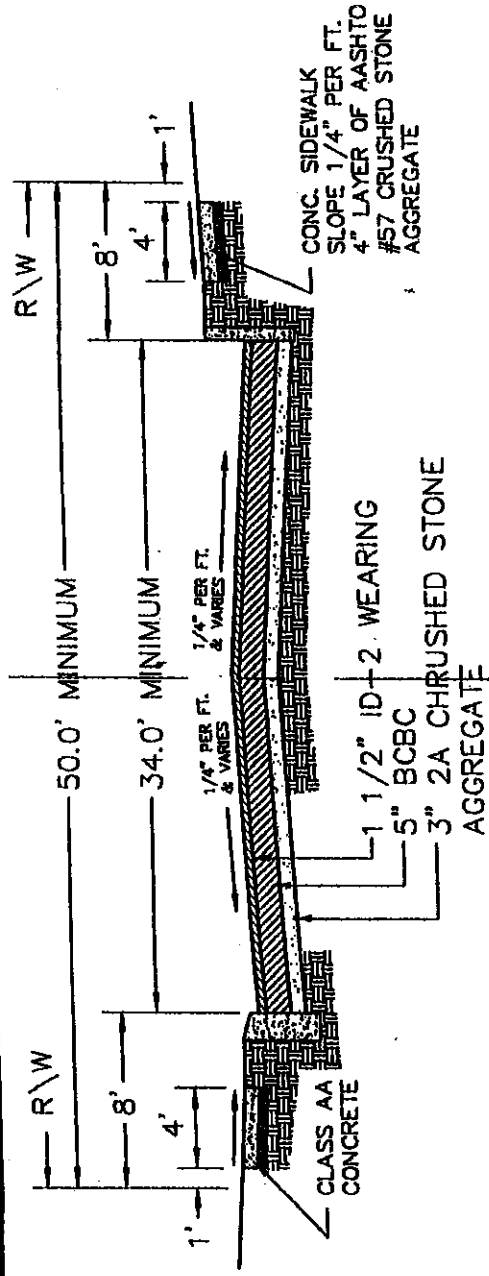
Section 801 - Stockpiling Topsoil.

Section 803 - Placing Stockpiled Topsoil.

Section 804 - Seeding and Soil Supplements (Formula "B").

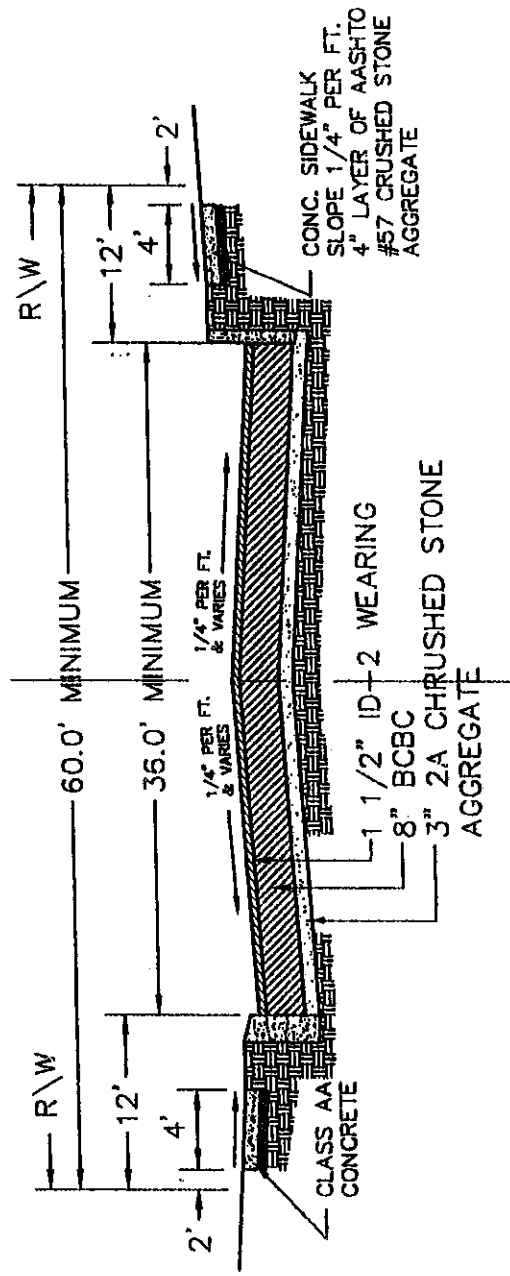
## 7. ROOF LEADER DRAINS

The Contractor shall furnish and install 4" PVC pipe with water tight connections as per the standard details (SD-10), where required, complete in place, including wire fabric reinforcement, elbows, fittings and connections to existing building down spouts.



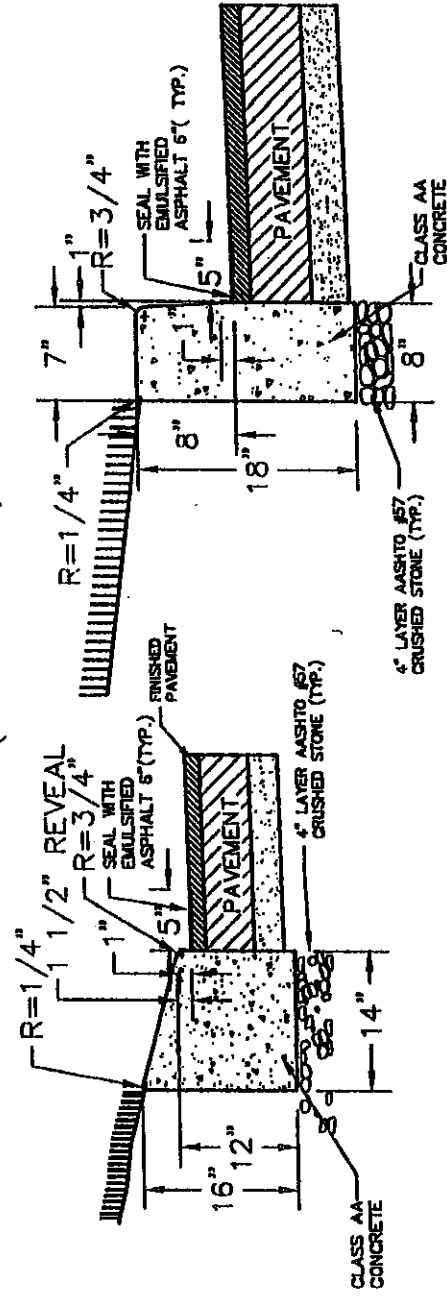
**TYPICAL LOCAL STREET CROSS SECTION**

(NOT TO SCALE)



**TYPICAL COLLECTOR STREET (TRUCK ROUTE) CROSS SECTION**

(NOT TO SCALE)

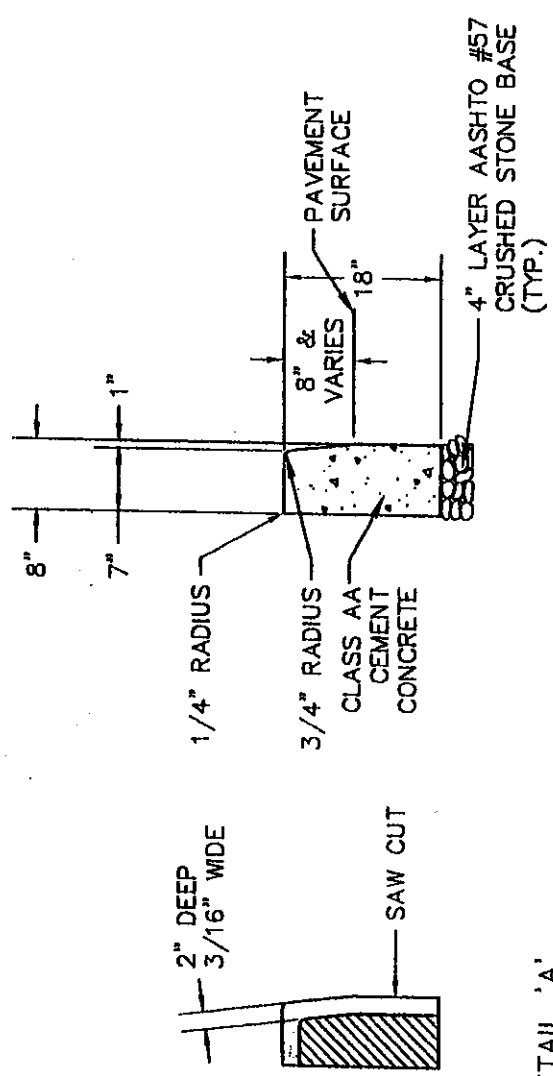


**STANDARD SLANT CURB**

(NOT TO SCALE)  
 (WHERE APPROVED BY  
 BOROUGH COUNCIL)

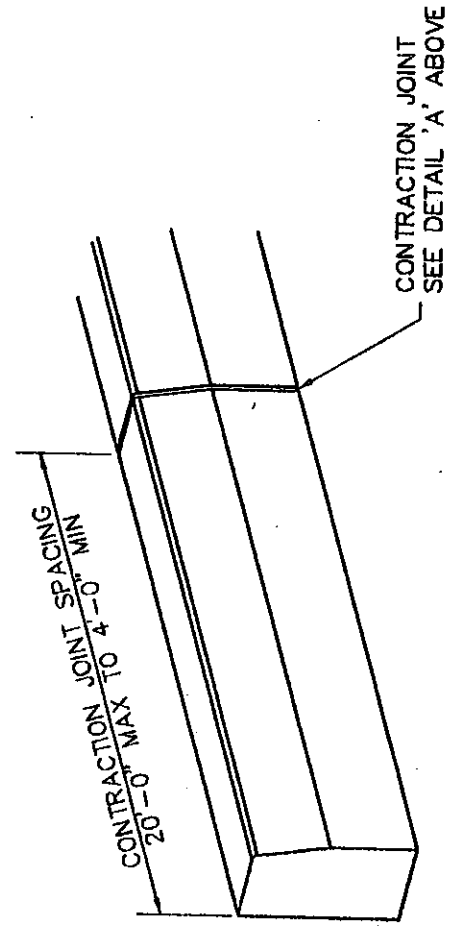
**STANDARD VERTICAL CONCRETE CURB**

(NOT TO SCALE)



DETAIL 'A'  
CONTRACTION JOINT

TYPICAL CROSS-SECTION

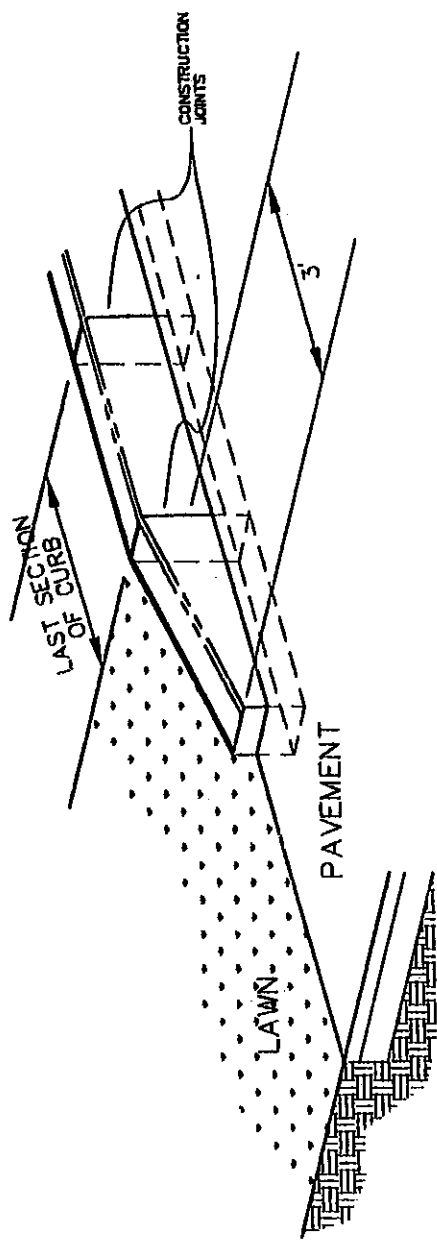


STANDARD VERTICAL CONCRETE CURB

(NOT TO SCALE)

Borough of Columbia Lancaster County, Pennsylvania	STANDARD VERTICAL CONCRETE CURB	DATE: May 19, 2000
	PREPARED BY: RAV ASSOCIATES, BOROUGH ENGINEER	





VERTICAL CURB END TREATMENT

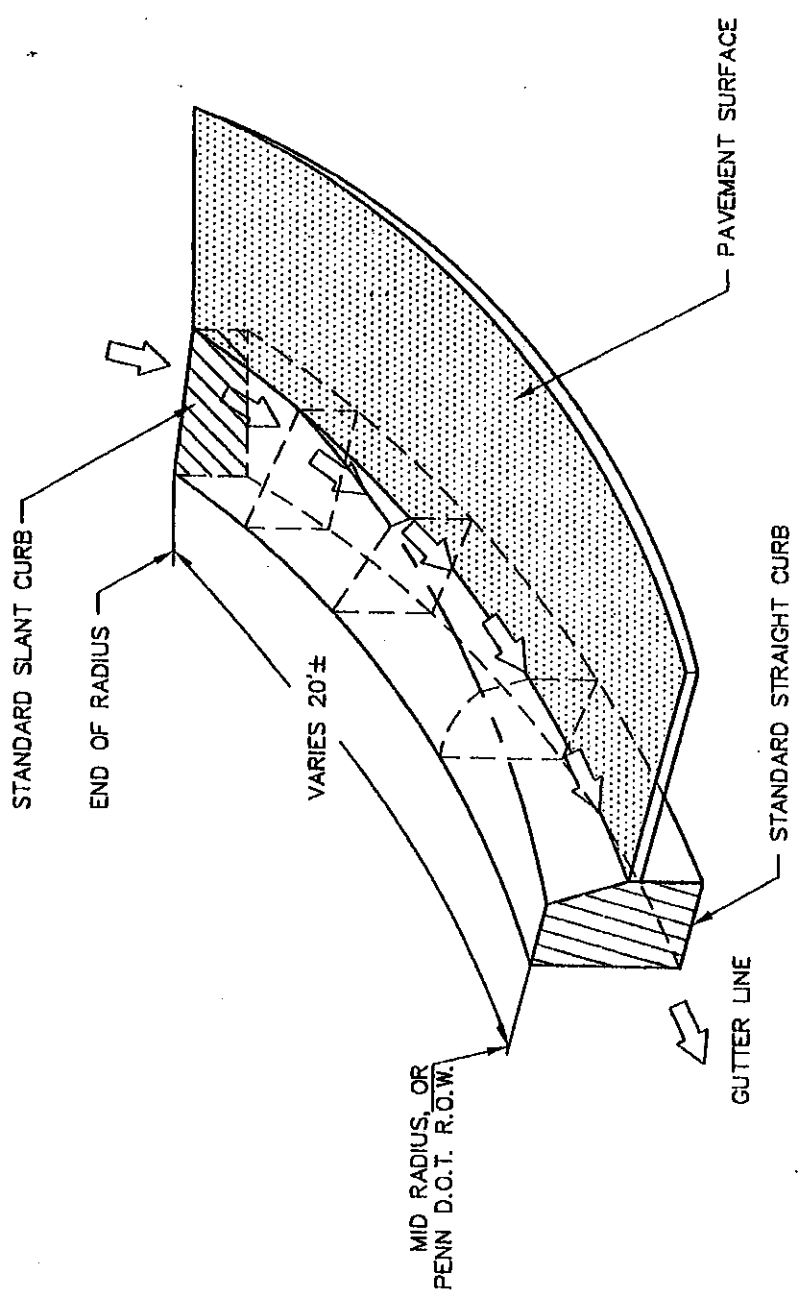
(NOT TO SCALE)

Borough of Columbia  
Lancaster County, Pennsylvania

VERTICAL CURB END  
TREATMENT

PREPARED BY: RAV ASSOCIATES, BOROUGH ENGINEER DATE: May 19, 2000

SD-03



CURB TRANSITION DETAIL

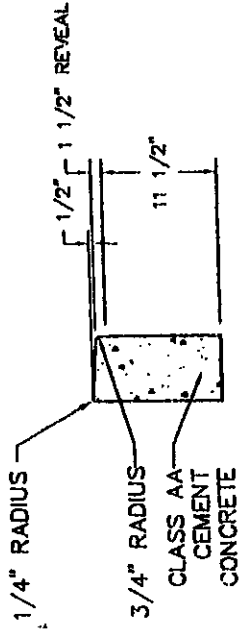
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Borough of Columbia  
Lancaster County, Pennsylvania

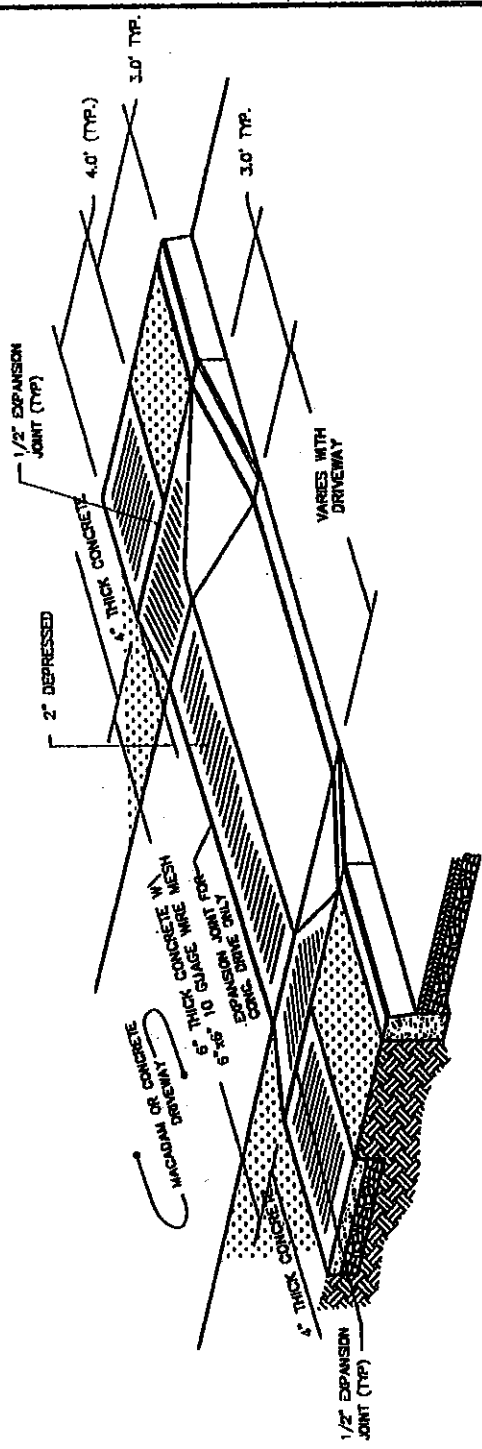
PREPARED BY: RAV ASSOCIATES, BOROUGH ENGINEER DATE: May 19, 2000

CURB TRANSITION DETAIL

SD-04



TYPICAL CROSS-SECTION  
DEPRESSED CURB



DEPRESSED CURB DETAIL  
W/ GRASS STRIP & SIDEWALK

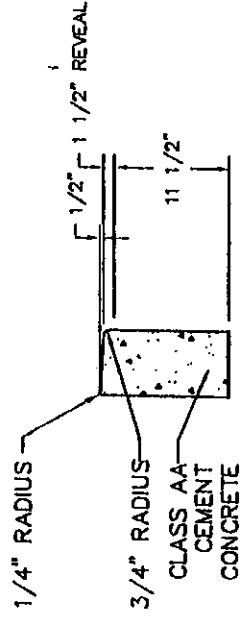
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Borough of Columbia  
Lancaster County, Pennsylvania

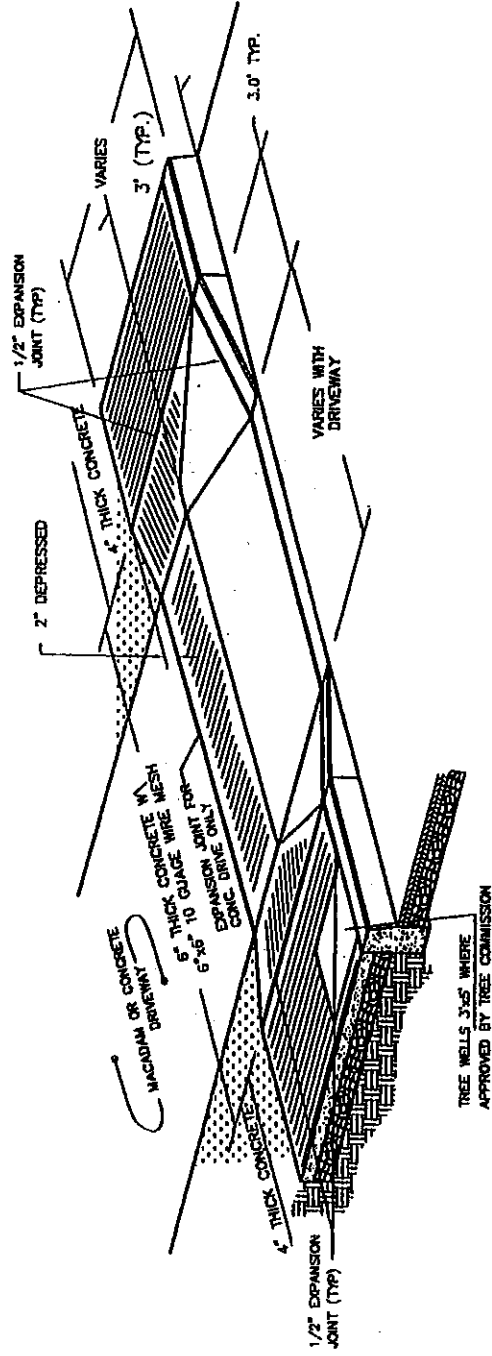
DEPRESSED CURB  
(GRASS STRIP ADJACENT)

PREPARED BY: RAY ASSOCIATES, BOROUGH ENGINEER DATE: May 19, 2000

SD-05



TYPICAL CROSS-SECTION  
DEPRESSED CURB



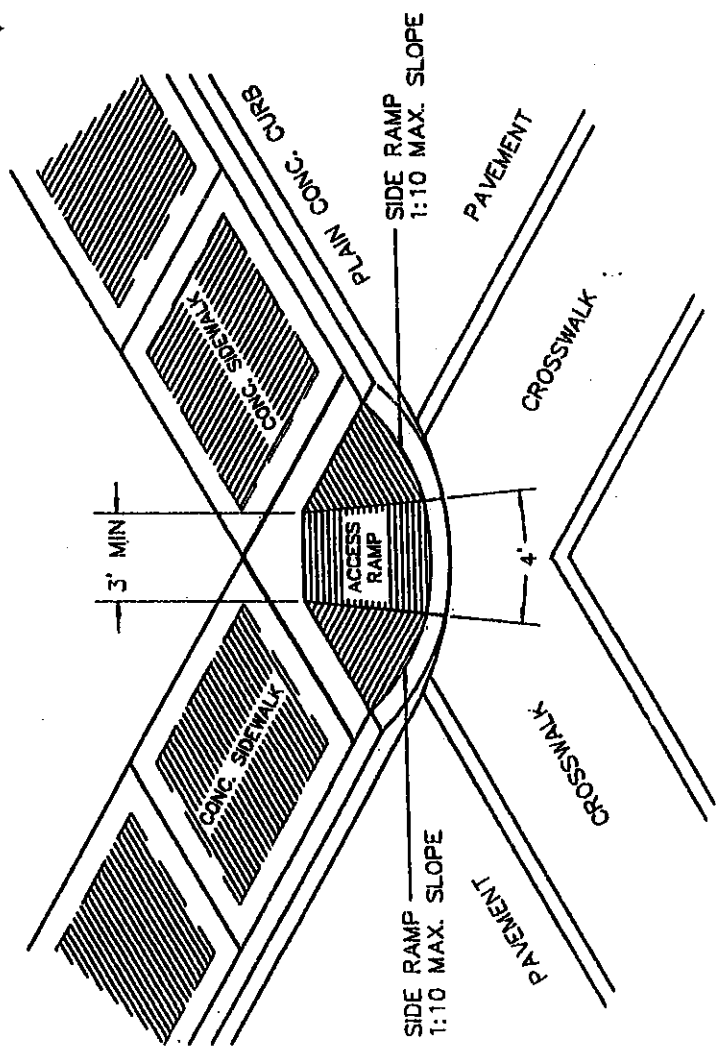
DEPRESSED CURB DETAIL  
& SIDEWALK w/o GRASS STRIP  
(NOT TO SCALE)

Borough of Columbia  
Lancaster County, Pennsylvania

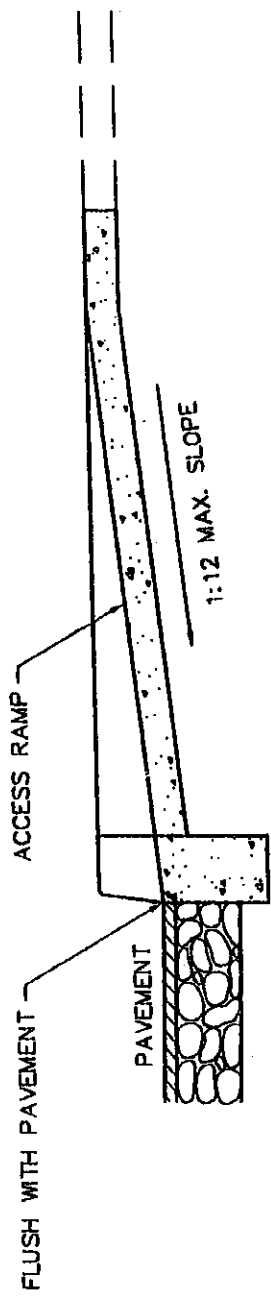
DEPRESSED CURB  
(SIDEWALK ADJACENT)

PREPARED BY: RAV ASSOCIATES, BOROUGH ENGINEER DATE: May 19, 2000

SD-06



ISOMETRIC VIEW, ACCESS RAMP



TYPICAL CROSS-SECTION OF ACCESS RAMP

HANDICAPPED ACCESS RAMP

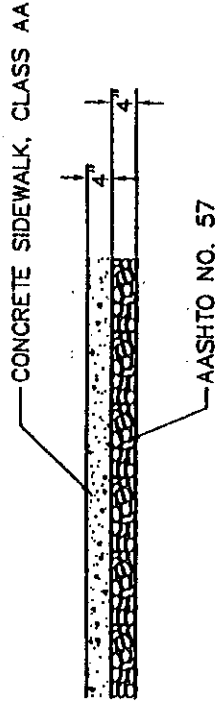
(NOT TO SCALE)

Borough of Columbia  
Lancaster County, Pennsylvania

CORNER - HANDICAPPED  
ACCESS RAMP

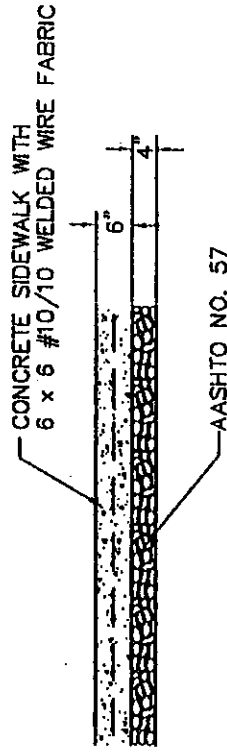
PREPARED BY: RAV ASSOCIATES. BOROUGH ENGINEER | DATE: May 19, 2000

SD-07



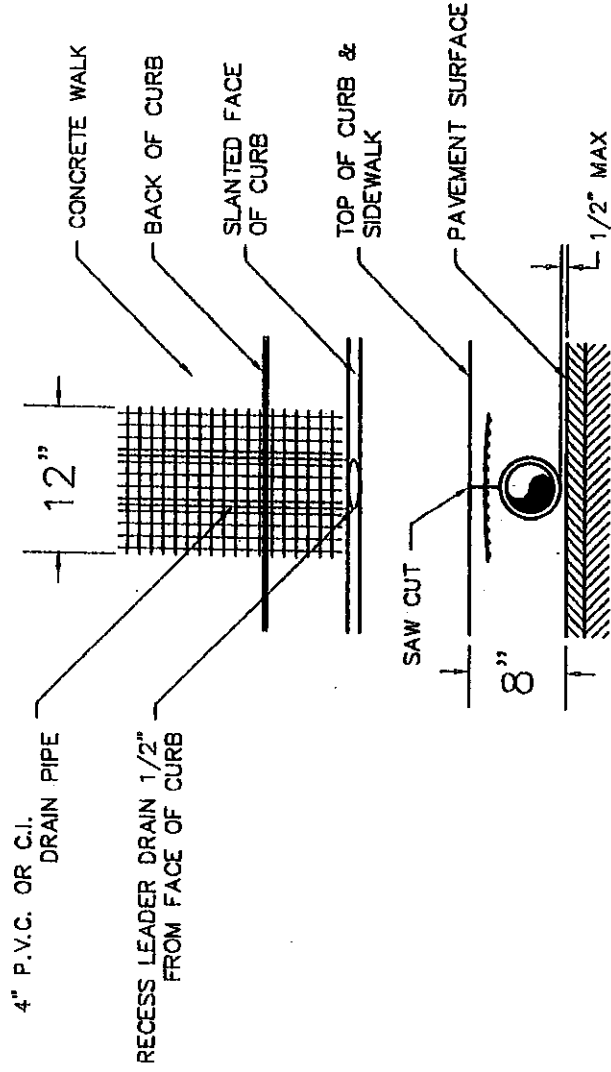
**CONCRETE SIDEWALK 4" THICK DETAIL**

(NOT TO SCALE)



**CONCRETE SIDEWALK 6" THICK DETAIL**

(NOT TO SCALE)

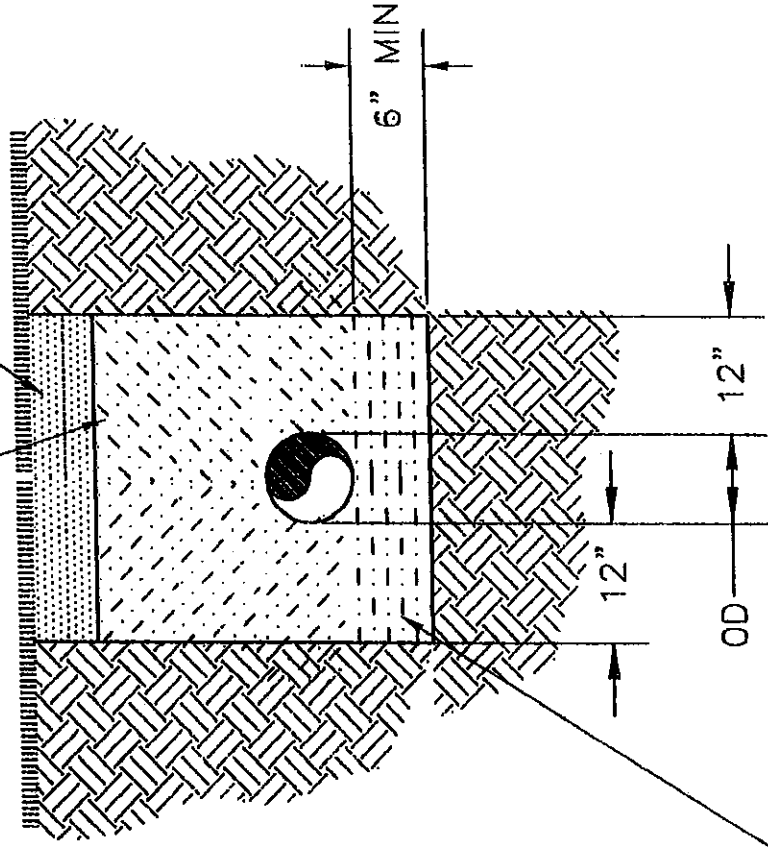


**LEADER DRAIN DETAIL**

(NOT TO SCALE)

SUITABLE BACKFILL  
95% MINIMUM COMPACTION

4" TOPSOIL & SEED



CLASS A BEDDING AASHTO NO.8  
COARSE AGGREGATE OR COARSE SAND,  
GRAVEL AND/OR CRUSHED STONE WITH  
MAXIMUM DIAMETER OF 1/2".  
SUBJECT TO THE APPROVAL OF THE ENGINEER

**TRENCH DETAIL**  
**LAWN AREAS**  
**STORM SEWERS ONLY**

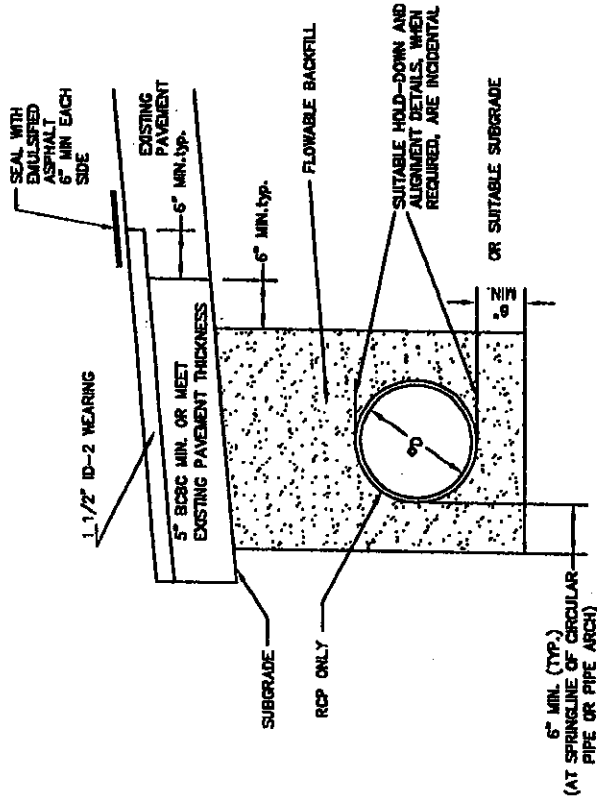
(NOT TO SCALE)

Borough of Columbia  
Lancaster County, Pennsylvania

PIPE INSTALLATION &  
TRENCH RESTORATION

PREPARED BY: RAV ASSOCIATES, BOROUGH ENGINEER DATE: May 19, 2000

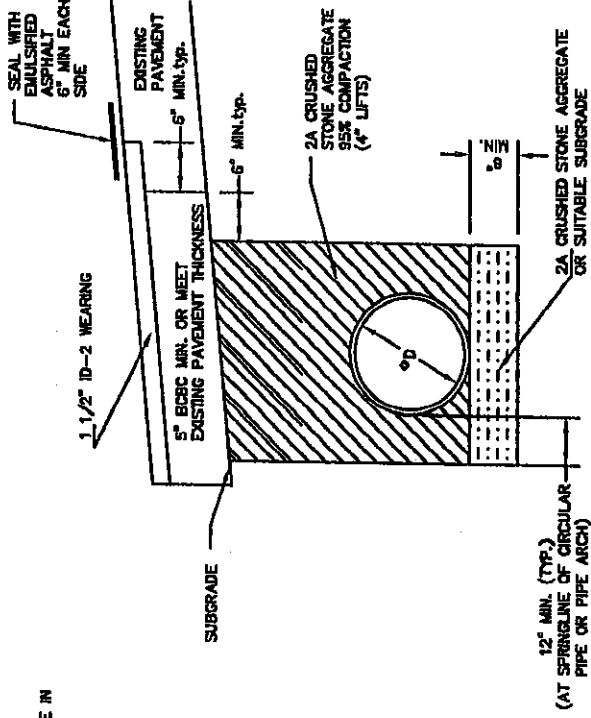
SD-09



EXISTING RECONSTRUCTED STREETS  
WITH 5" MINIMUM OF BCBC  
REGARDLESS OF AGE  
(SEE BOROUGH MAP OF STREETS  
MARKED EXHIBIT No. 1)

W FLOWABLE BACKFILL

°D = NOMINAL DIAMETER OR RISE IN  
DESCRIPTION OF PIPE ITEM,  
36" MAXIMUM DIAMETER  
OR RISE



EXISTING STREETS NON-RECONSTRUCTED  
PAVEMENT OLDER THAN 10 YEARS.  
(SEE BOROUGH MAP OF STREETS  
MARKED EXHIBIT No. 1)

W 2A CRUSHED STONE BACKFILL

TRENCH DETAIL

(NOT TO SCALE)

Borough of Columbia  
Lancaster County, Pennsylvania

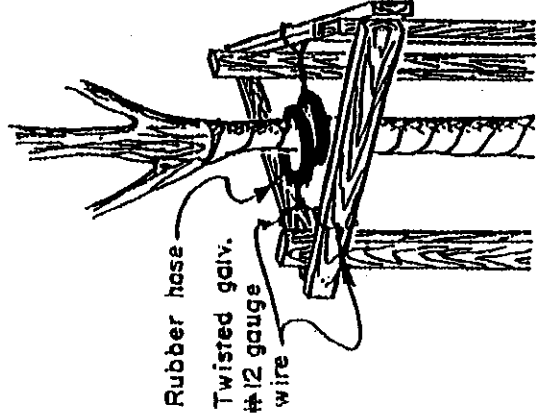
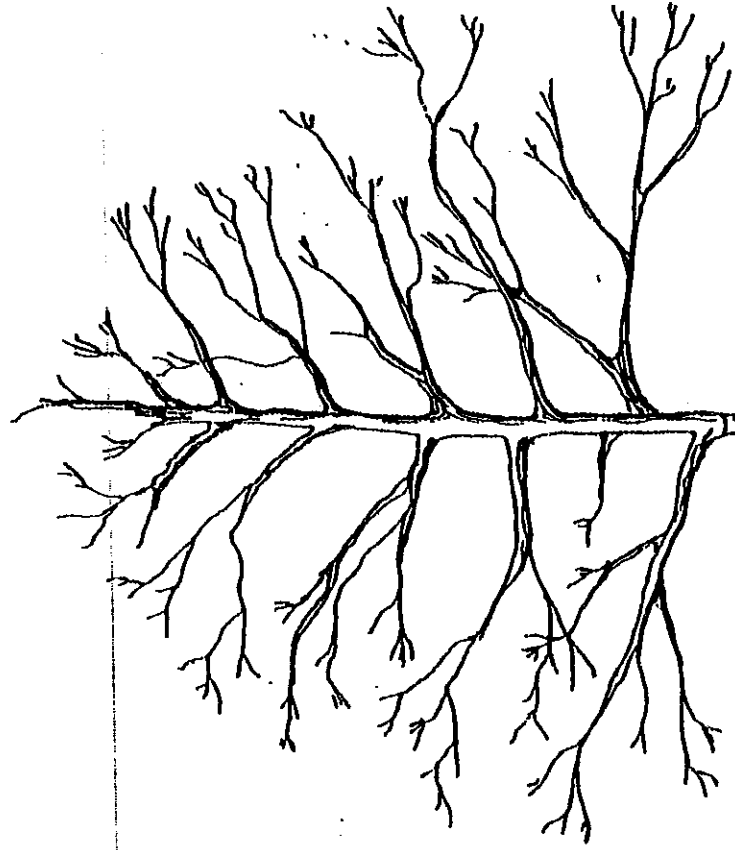
PIPE INSTALLATION &  
TRENCH RESTORATION

PREPARED BY: RAV ASSOCIATES, BOROUGH ENGINEER DATE: May 19, 2000

SD-10



THERE IS NO STANDARD DETAIL 11 (SD-11)



Rubber hose  
Twisted galv.  
#12 gauge  
wire

**TREE GUYING  
DETAIL**

1" x 3" brace

2" x 3" wood stakes (3 req'd)

Tree shall bear same relation  
to finished grade as it bore to  
previous finished grade

1" x 1/2" angle to  
support grate

Conc. curb  
Street

3'-0"

Finished grade

Top of grate (provided by borough)

Conc. walk

Cut & remove burlap from to  
third of ball

Topsoil mixture

Broken stone in bottom of pit

Stakes 1'-0" deeper than tree pit

Type of tree to be specified below:

3'-1" Square

**STREET TREE DETAIL**

(NOT TO SCALE)