



Montgomery County, Maryland

Wheaton Central Business District

**STREETSCAPE
STANDARDS**

Department of Housing and Community Affairs

Revised 2002

WHEATON COMMERCIAL AREA STREETSCAPE STANDARDS

PREPARED BY:
DEPARTMENT OF HOUSING AND COMMUNITY AFFAIRS
COMMERCIAL REVITALIZATION SECTION

100 MARYLAND AVENUE, FOURTH FLOOR
ROCKVILLE, MARYLAND 20850

1. The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom.

2. The second part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom.

DESIGN CONSTRUCTION DETAILS

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



1 OF 34

TYPICAL PLAN LAYOUTS

The following pages typical plan layouts, entitled A-1, A-2, A-3, B-1 and C-1 apply, to various roads and streets governed by the Wheaton CBD Roadway Standards and Specifications. The following Plan Layout Index identifies the specific Typical Plan Layout applicable to each road or street.

PLAN LAYOUT INDEX

TYPE

Roads and Streets

- A-1 Viers Mill Road, east side, from Kensington Blvd. to Georgia Avenue.
Viers Mill Road, west side, from Kensington Blvd. to University Blvd.
Kensington Blvd., south side, from East Avenue to Viers Mill Road.
East Blvd., east side, from Kensington Blvd. to University Blvd.
Georgia Ave., both sides, from Prichard Rd., south approx. 900 ft.
Georgia Ave., east side, from University Blvd. to Price Avenue.
Ennalls Ave., both sides, from Viers Mill to Grandview Avenue.
- A-2 Georgia Ave., both sides, from Blueridge Ave., north approx. 350 ft.
Georgia Ave., east side, from Blueridge Ave. to University Blvd.
- A-3 Georgia Ave., west side, from Blueridge Ave. to Viers Mill Road.
Georgia Ave., east side, from Price Ave. to Prichard Rd.
Viers Mill Rd., west side, from University Blvd., to Georgia Ave.
- B-1 University Blvd., both sides, from Valley View Ave. to approx. 350 feet east of Amherst Ave.
- C-1 Blueridge Ave., both sides from Grandview Ave. to Elkin St.
Hickerson Dr., both sides, from Georgia Ave. to Elkin St.
Kensington Blvd., north side, from Grandview Ave. approx. 200 feet \pm .
Kensington Blvd., south side, from Viers Mill Rd. to Grandview Ave.
Ennalls Ave., both sides, from Grandview Ave. to Georgia Ave.
Price Ave., both sides, from Georgia Ave. to Fern Street.
Reedie Dr., both sides, from Viers Mill Road to Amherst Ave.
Grandview Ave., both sides, from Blueridge Ave. to Reedie Dr.
Elkin St., both sides, from Blueridge Ave. to Price St.
Fern St., both sides, from University Blvd. to Reedie Dr.
Amherst Ave., west side, from Blueridge Ave. to Prichard Rd.
Amherst Ave., east side, from Blueridge Ave. to Reedie Dr.
Prichard Rd., both sides, from Georgia Ave. to Amherst Ave.



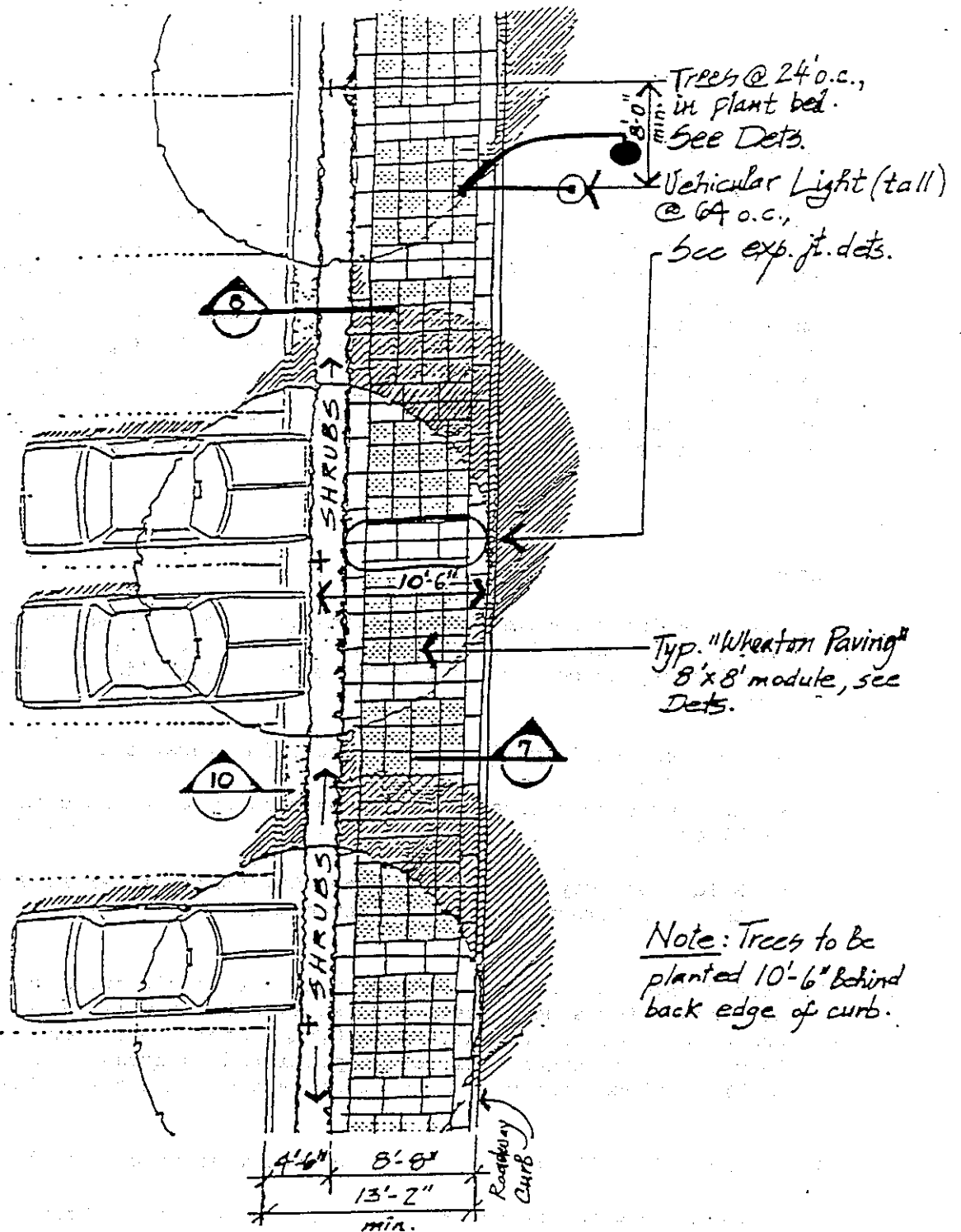
TREE PLANTING SCHEDULE

University Boulevard -----	Willow Oak
Georgia Avenue -----	Red Oak
Viers Mill Road -----	London Planetree
Reedie Drive -----	Littleleaf Linden
Grandview Avenue -----	Thornless Honeylocust
Amherst Avenue -----	Village Green Zelkova
Elkin Street -----	Littleleaf Linden
Ennalls Avenue -----	Willow Oak
Blueridge Avenue -----	Regent Scholartree
Fern Street -----	Village Green Zelkova
Price Avenue -----	Regent Scholartree
Hickerson Drive -----	Regent Scholartree
Prichard Drive -----	Village Green Zelkova

NOTES:

1. The planting schedule above is mandatory for University Blvd., Georgia Ave. and Viers Mill Road. For all other streets, ornamental species may be considered and approved in very limited circumstances if:
 - Overhead utility lines will remain in place, and
 - Another street tree had not been previously planted in that block.
 - Selections may be made from the 2002 State of Maryland "Proposed Approved Street Trees" (see Attachment 1).
2. Ground cover may be approved for use in tree pit areas on a case by case basis for side streets. No substitutions will be permitted for tree pit coverings on University Blvd., Georgia Ave. or Viers Mill Road. Substitutions will not be permitted in areas with on-street parking unless tree pit is set from back edge of curb at least 12".
3. Approval for all planting substitutions must be granted by:
 - Montgomery County Department of Public Works and Transportation (DPW&T), Highway Services Division, 240.777.ROAD, and
 - Wheaton Urban District, 240.777.8124





A-1

Type 'A-1' Typical Plan Layout

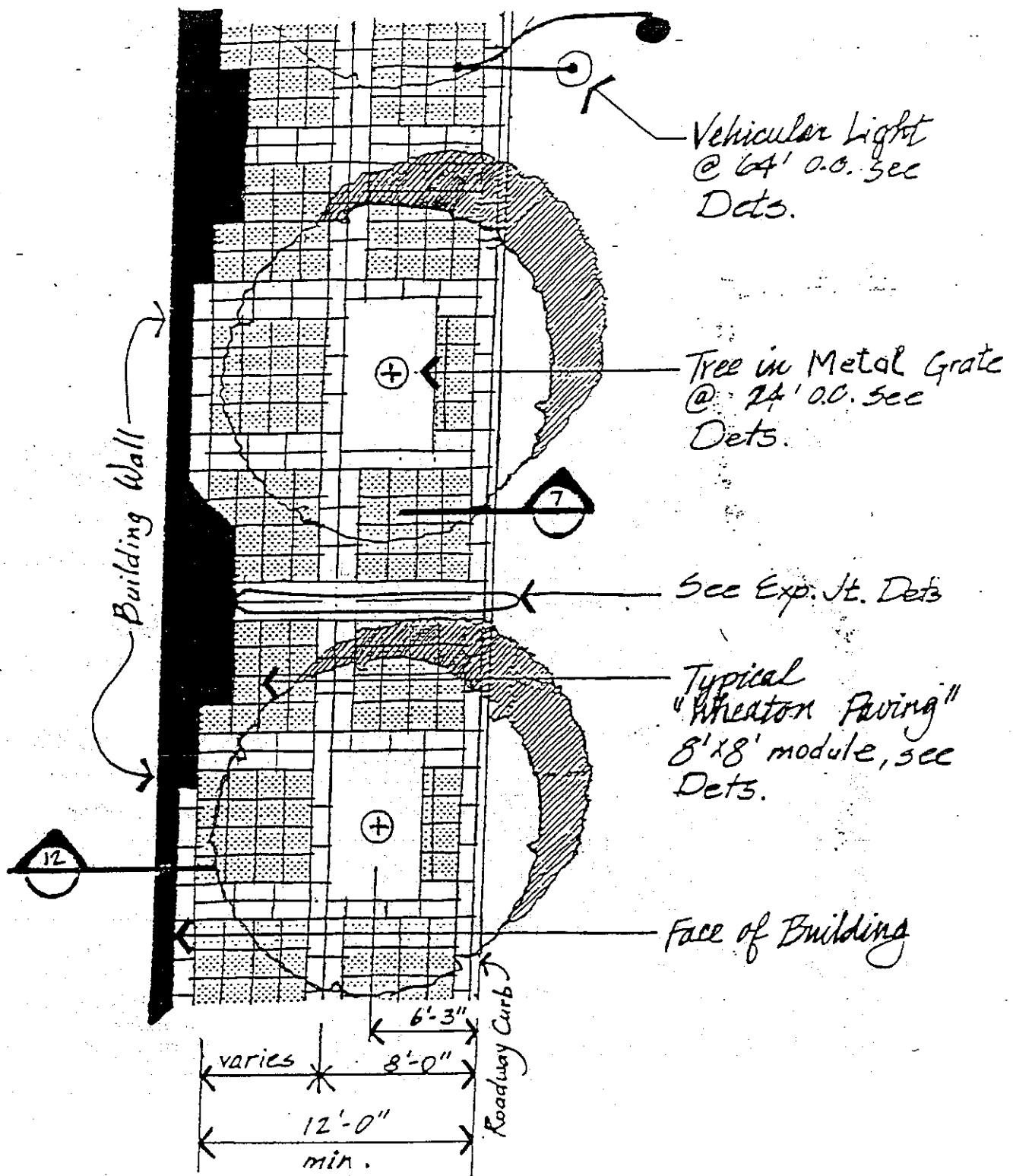
For use where sidewalk abutts parking

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



4 OF 34

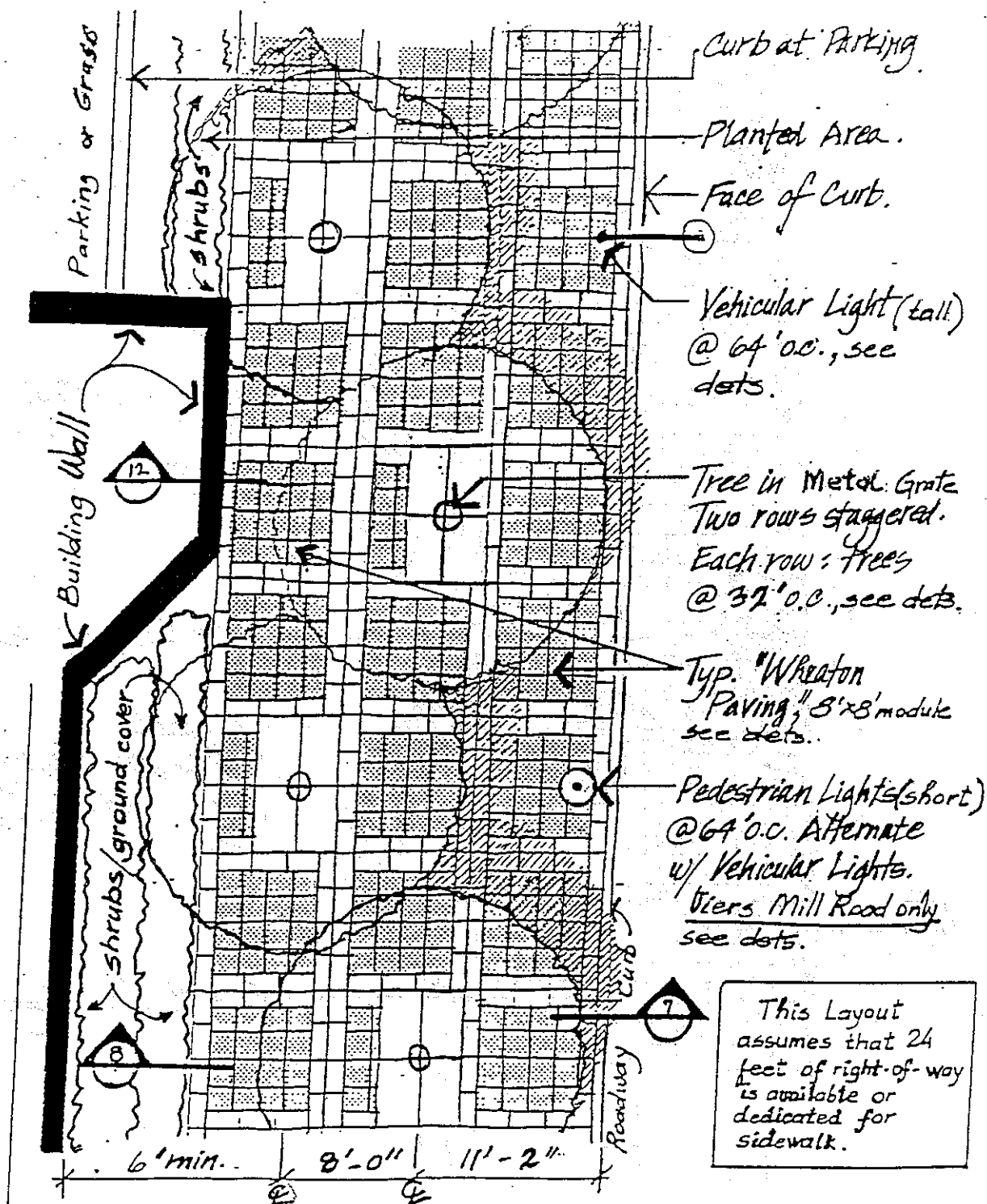


A-2

Type 'A-2' Typical Plan Layout

DESIGN STANDARDS - WHEATON STREETSCAPE





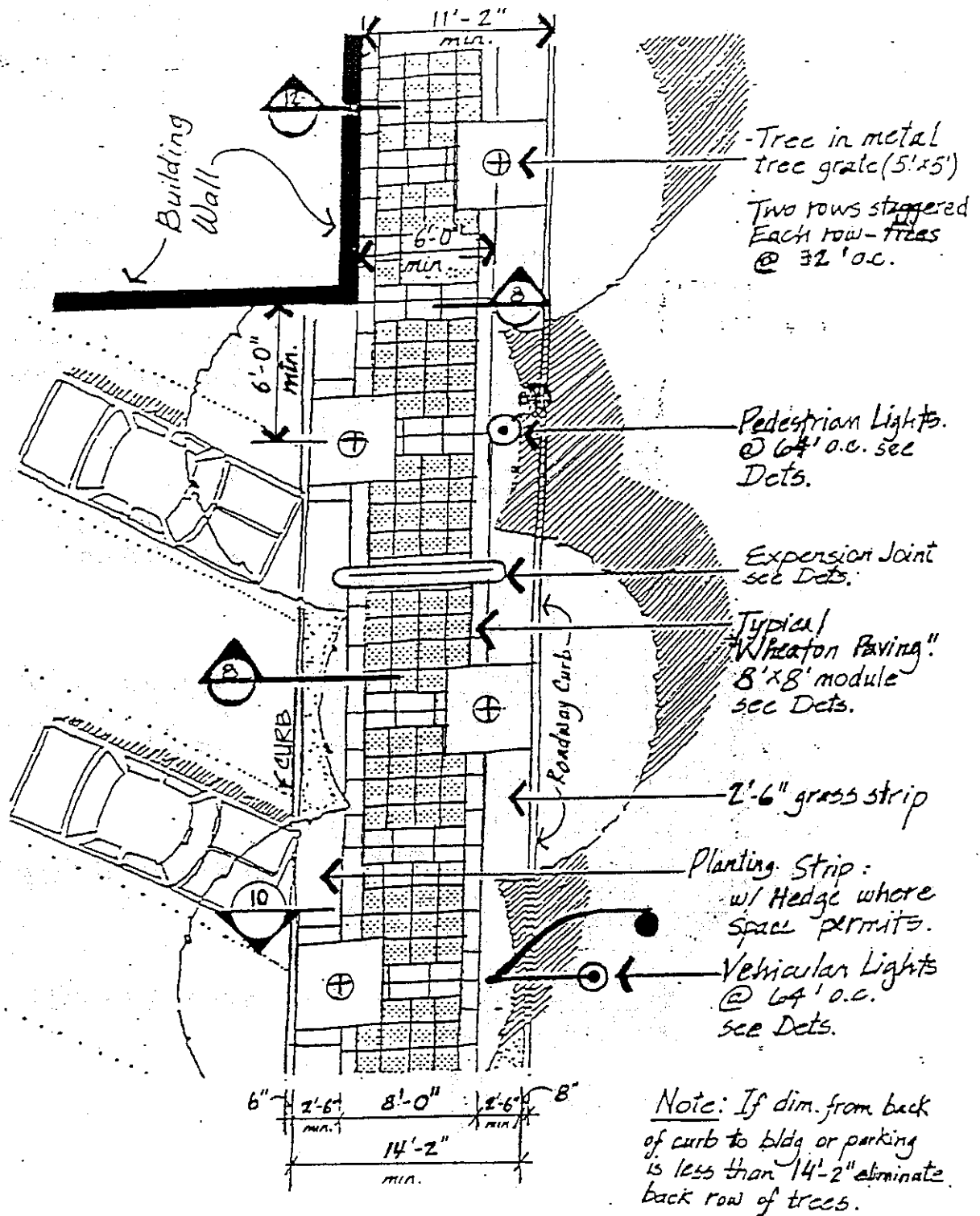
A-3

Type 'A-3' Typical Plan Layout

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



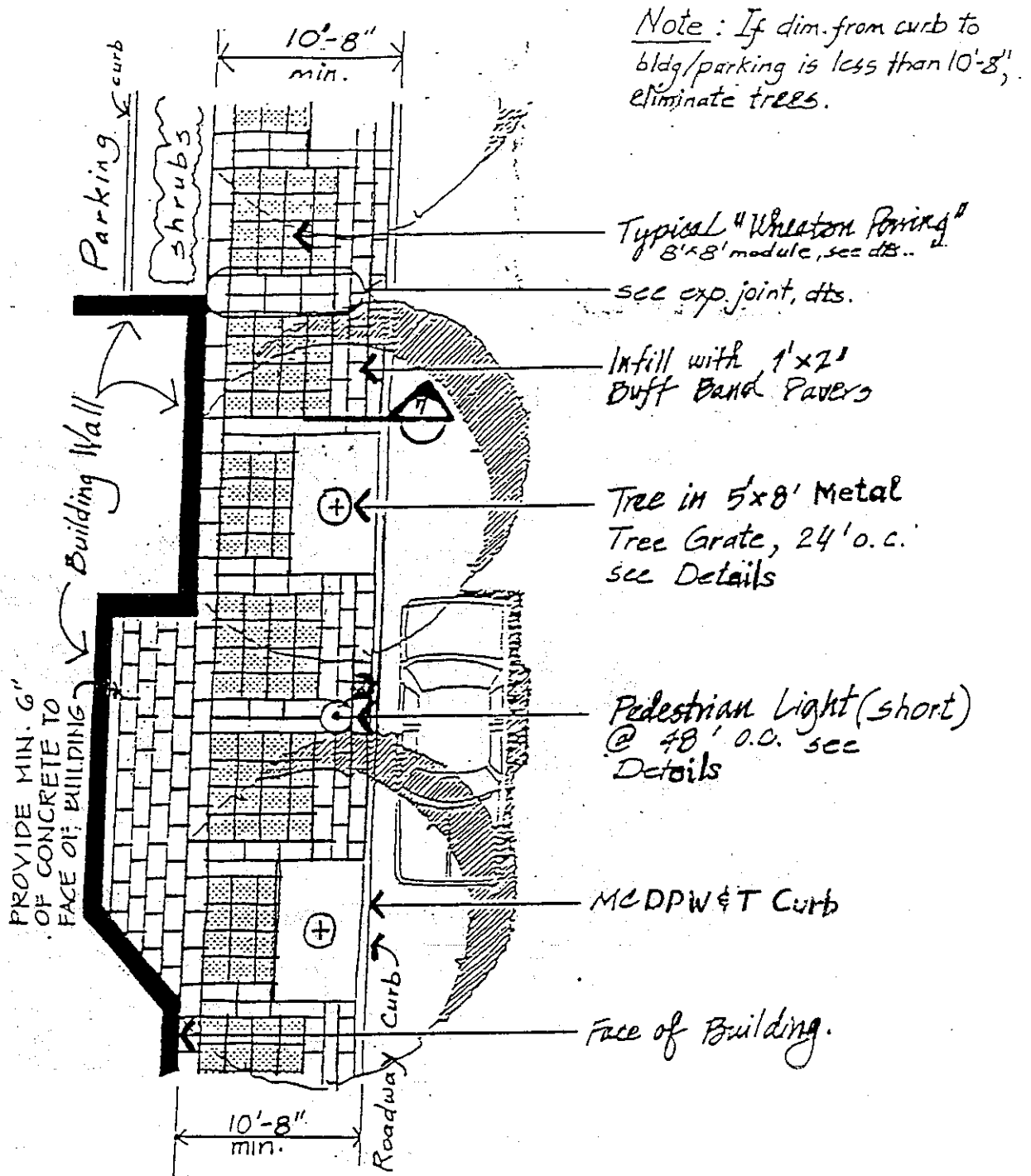


B-1

Type 'B-1' Typical Plan Layout

DESIGN STANDARDS - WHEATON STREETSCAPE





C-1

Type 'C-1' Typical Plan Layout

* - Reddie Drive only - install 16' wide sidewalk (two full modules). NO EXTRA BANDING AT CURB SIDE.

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



8 OF 34

**PAVING
&
CONSTRUCTION DETAILS**

DESIGN STANDARDS - WHEATON STREETSCAPE

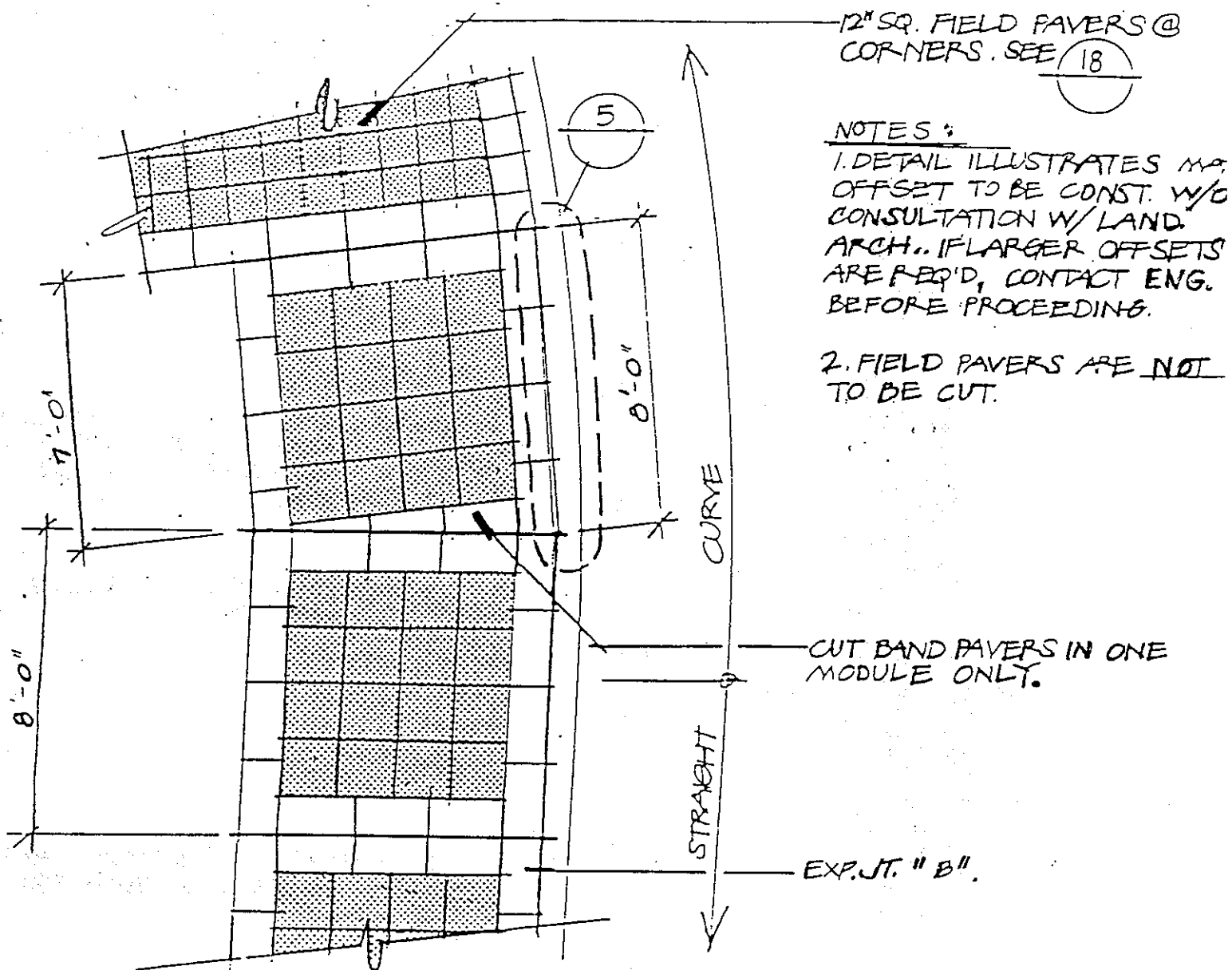
MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



9 OF 34



10 OF 34



4

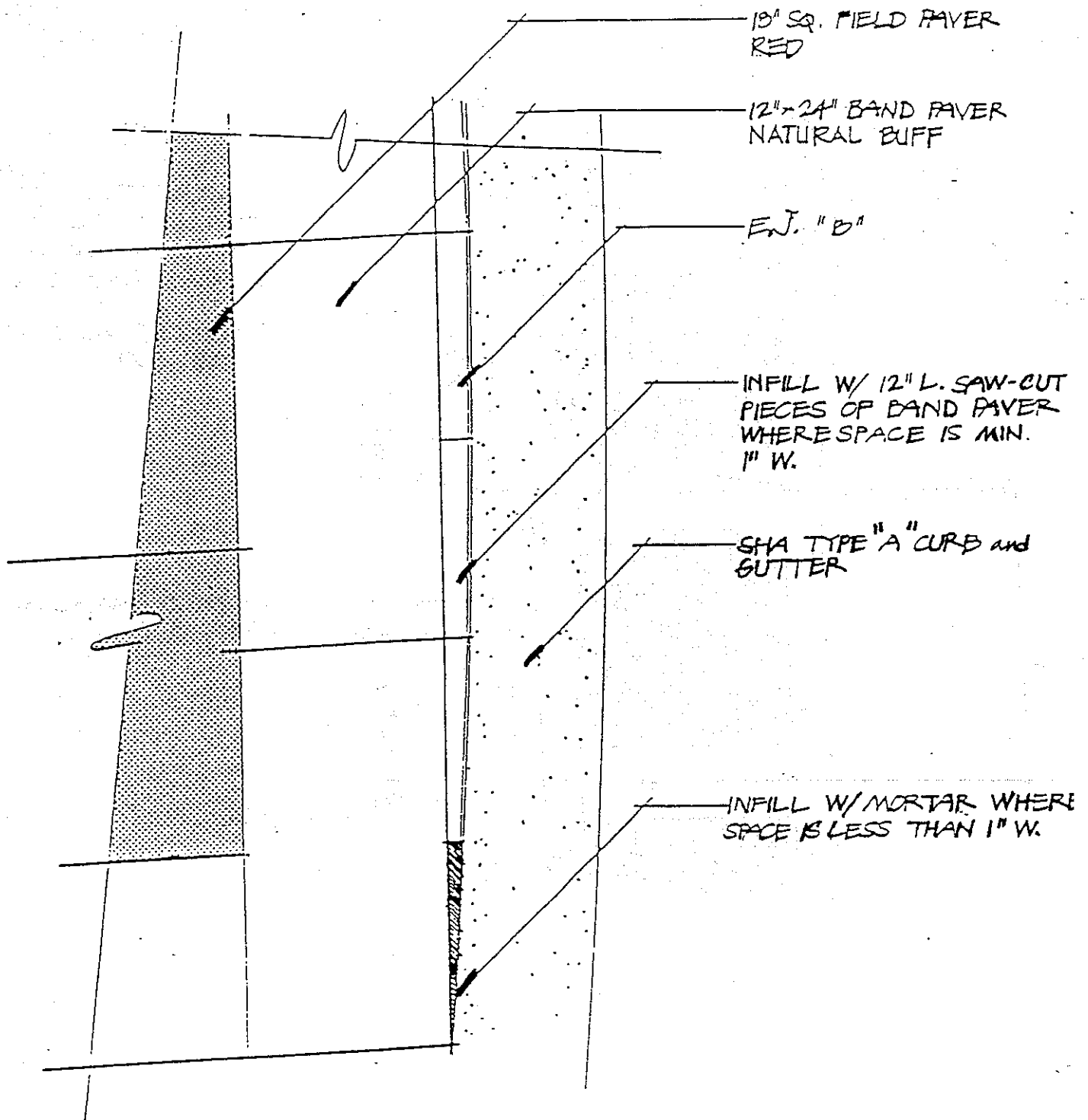
Sidewalk Paving Pattern at Curve

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



11 OF 34



5

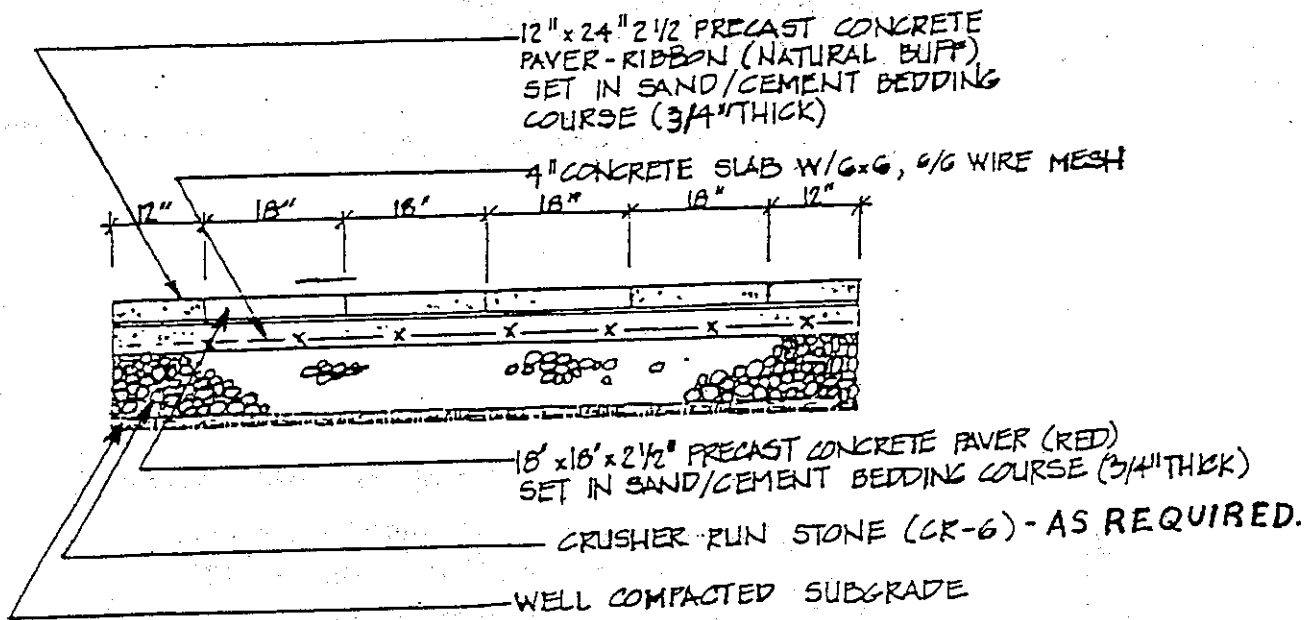
Sidewalk Edge at Curve

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



12 OF 34



6

Typical Sidewalk Section

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



13 OF 34

- PRECAST CONC. PAVERS
- $\frac{3}{8}$ " MORTAR JOINT
- 1" DRY LAID MORTAR

• CONCRETE SLAB WITH
6x6x6 WWM

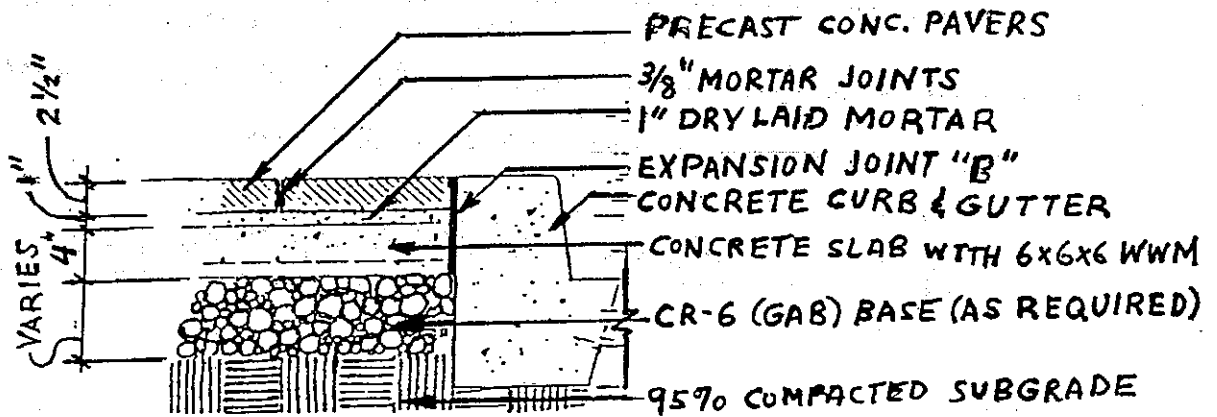
• CR-6 (GAB) BASE
(AS REQUIRED)

• 95% COMPACTED
SUBGRADE

STEEL EDGING W/ STEEL
STAPLES @ 2'-6" O.C.
PLANTED AREA - MULCH
SOD, SEED PER MCDPW & T
REVIEW & APPROVAL

8

Typical Pavement at Planted Area Without Curb



7

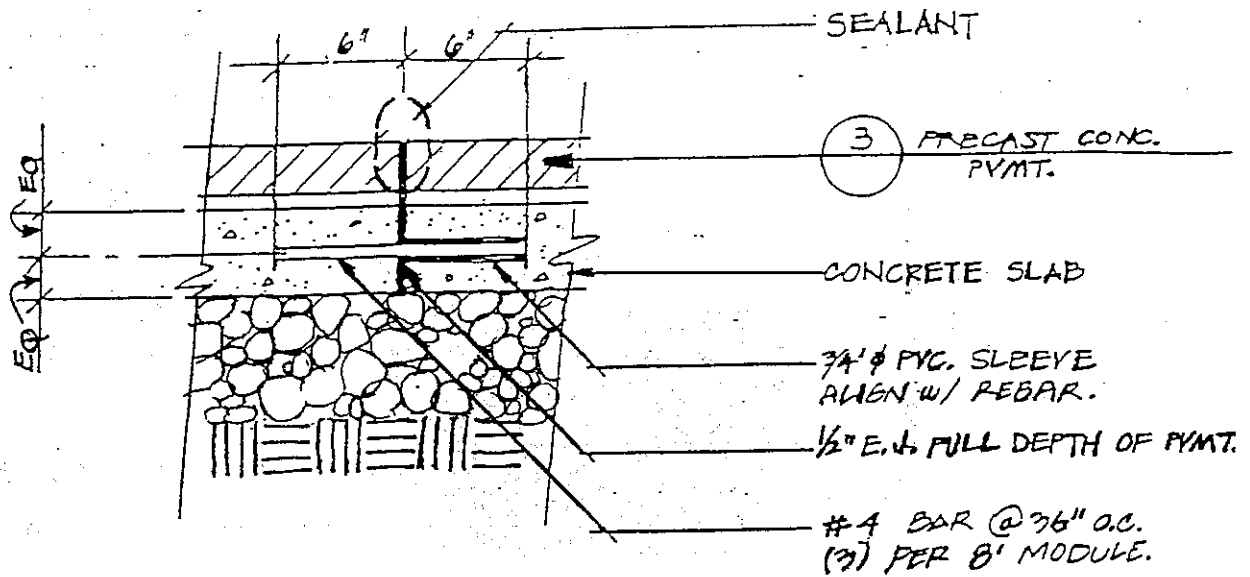
Typical Precast Paving at Curb and Gutter

DESIGN STANDARDS - WHEATON STREETSCAPE

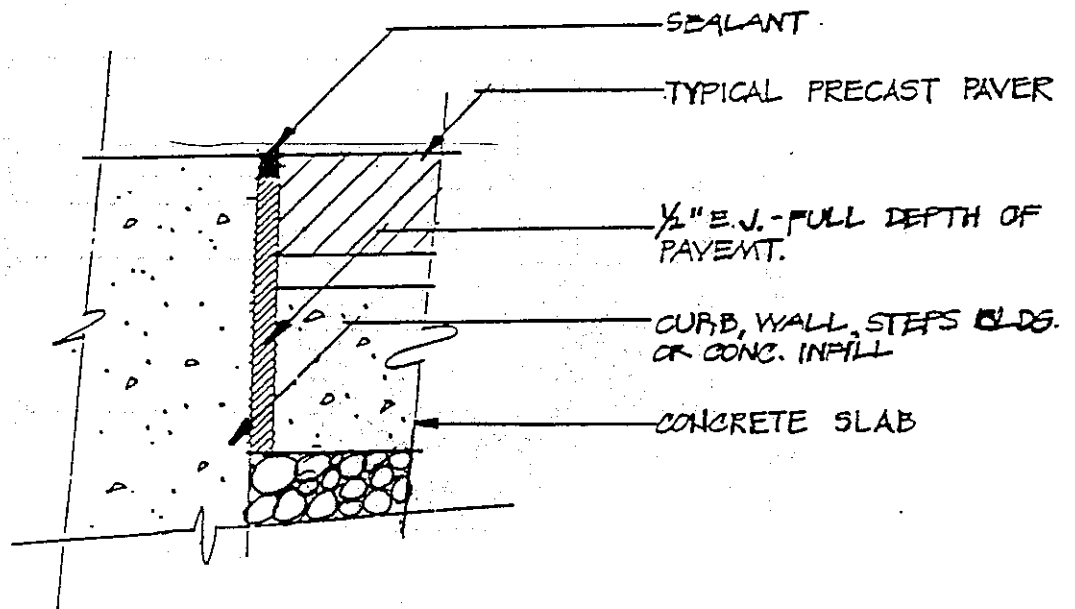
MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



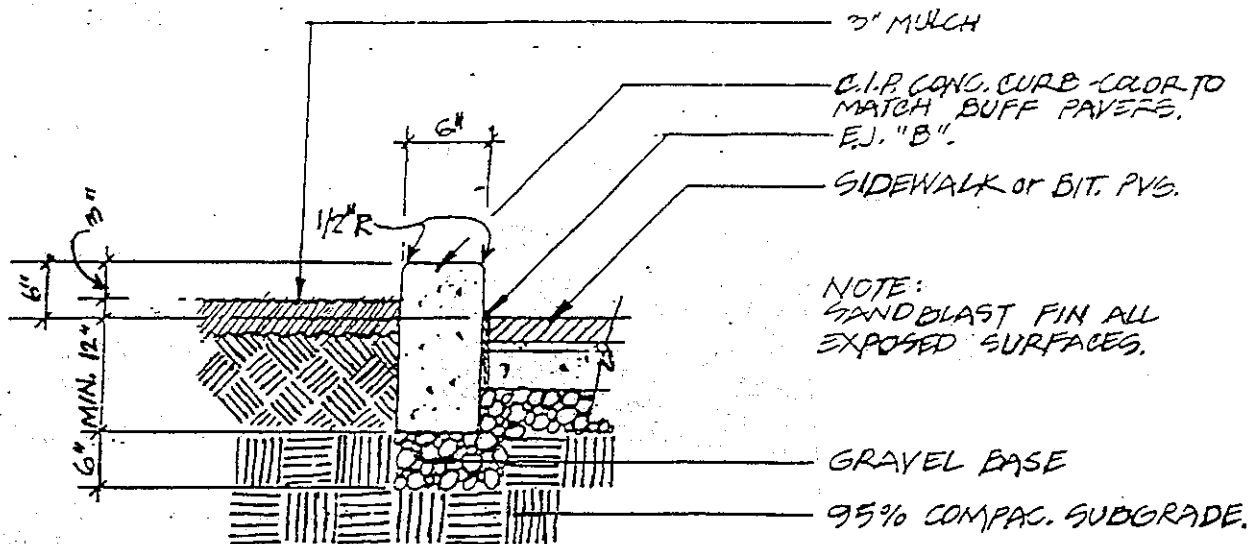
14 OF 34



9 Expansion Joint 'A'

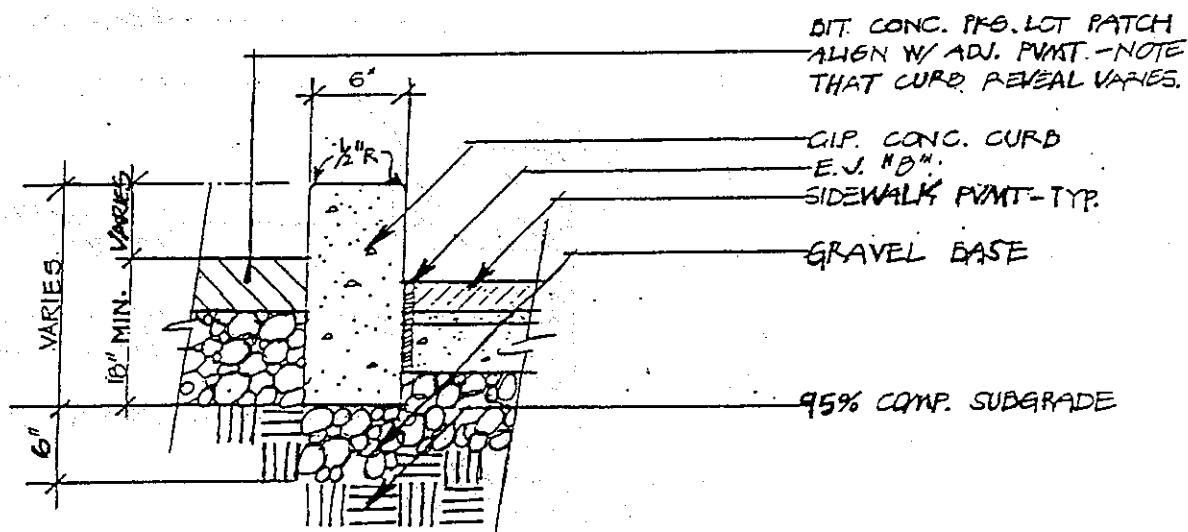


12 Expansion Joint 'B'



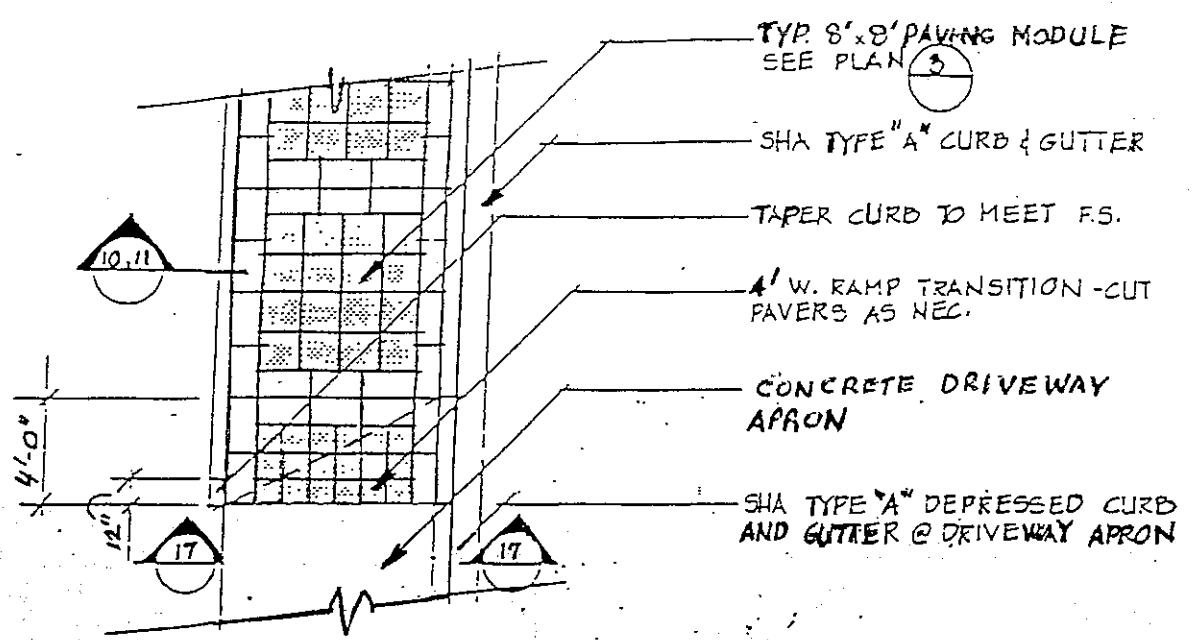
10

6" Straight Curb Between Sidewalk & Planter



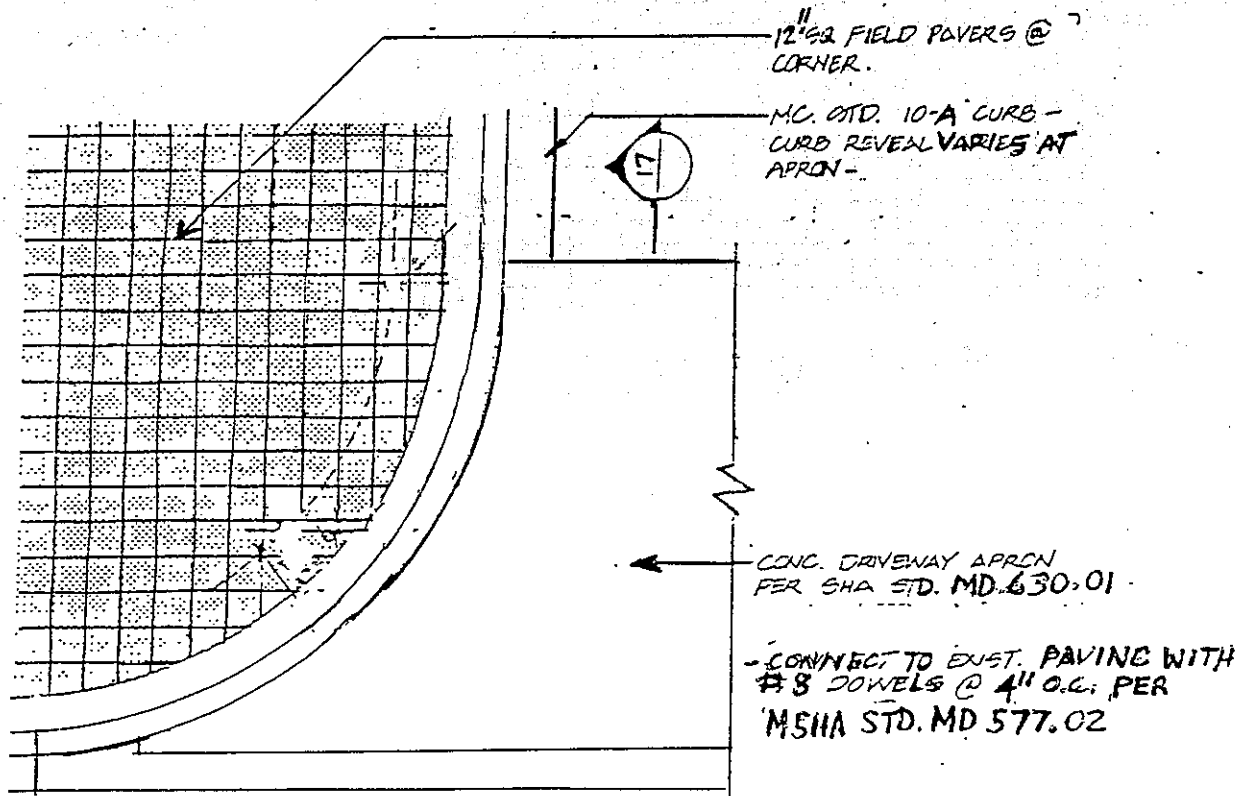
11

6" Straight Curb Between Sidewalk & Parking



13.

Typical Sidewalk / Driveway Transition - Option No. 1



16

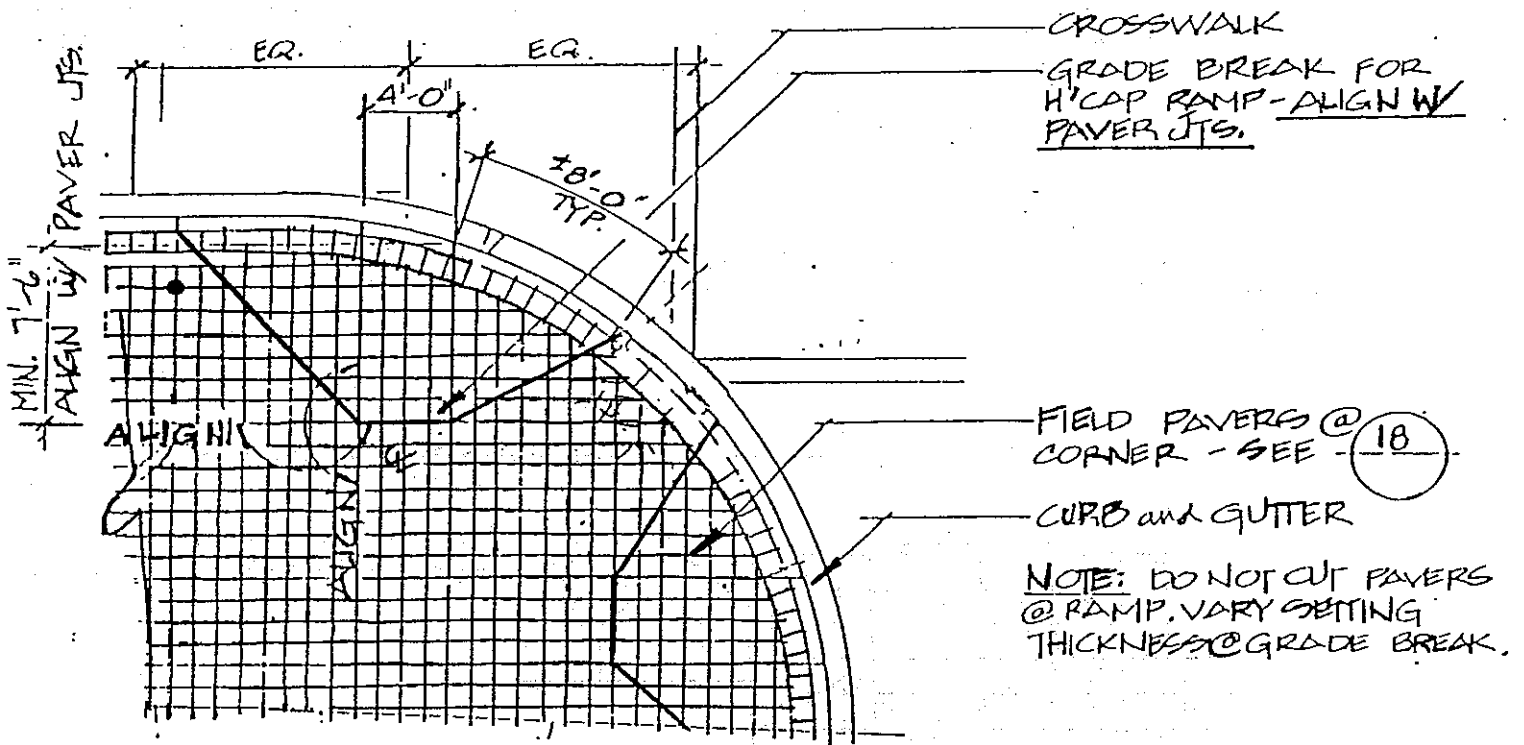
Typical Sidewalk / Driveway Transition - Option No. 2

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



17 OF 34



15

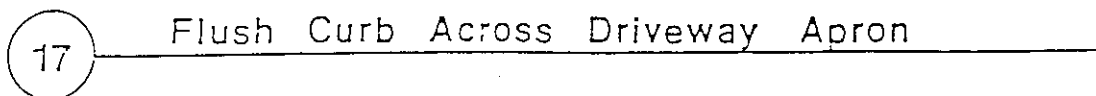
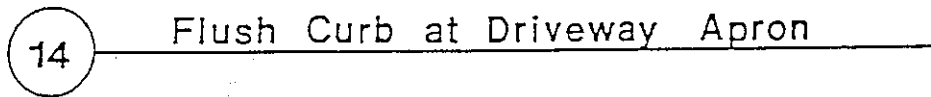
Handicap Ramp

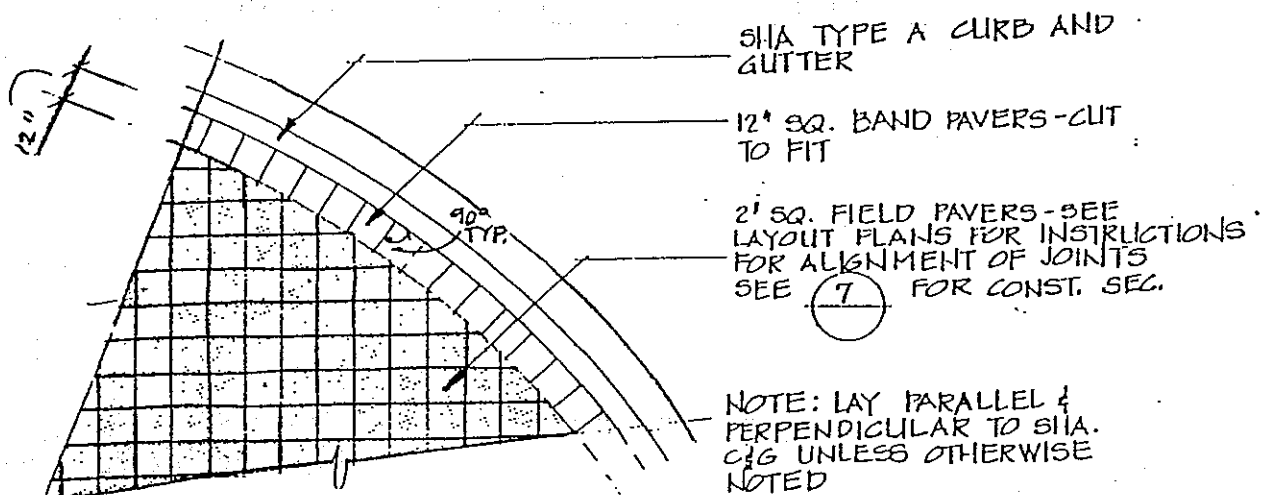
DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



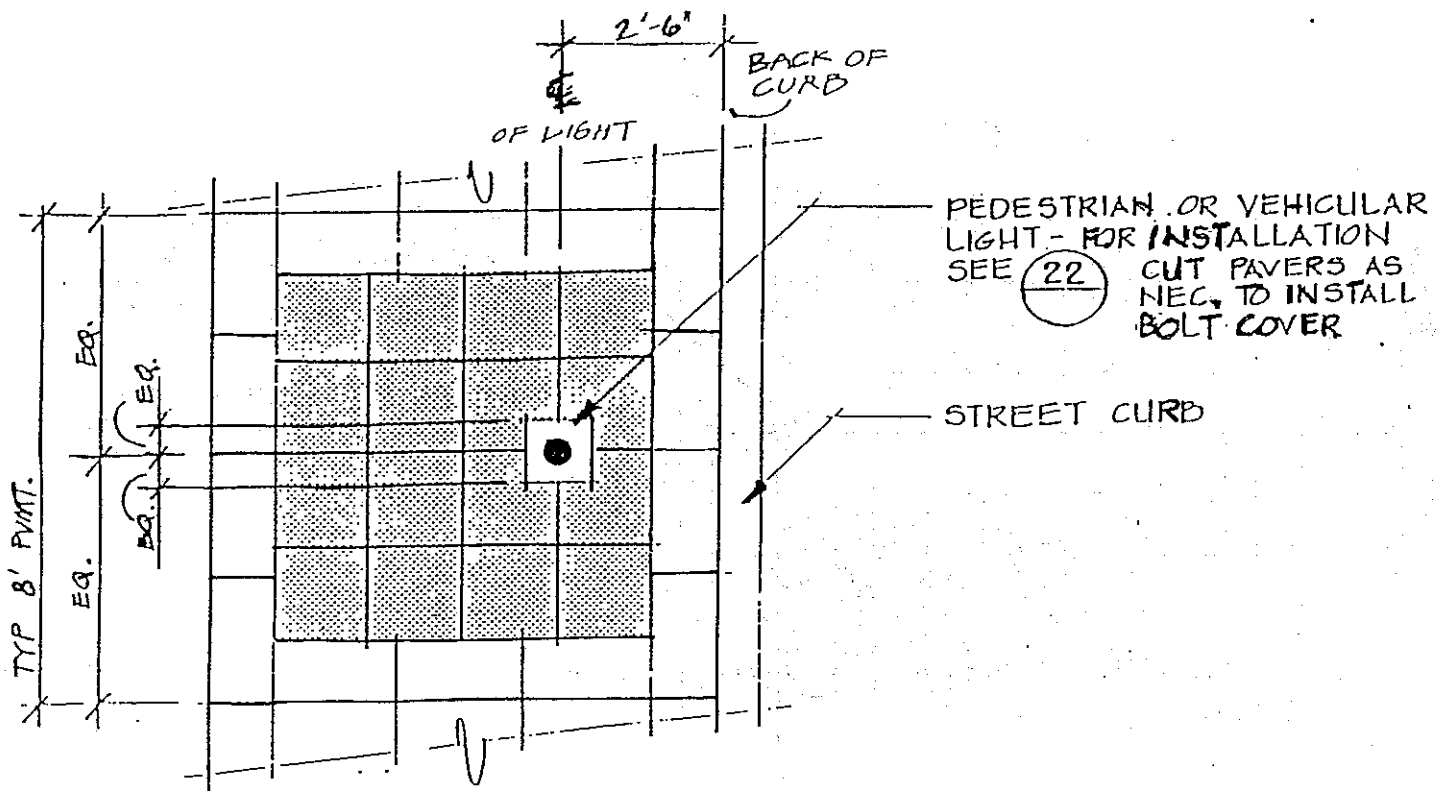
18 OF 34





Field Pavers at Curves, Corners, and Driveway Apron

18



19

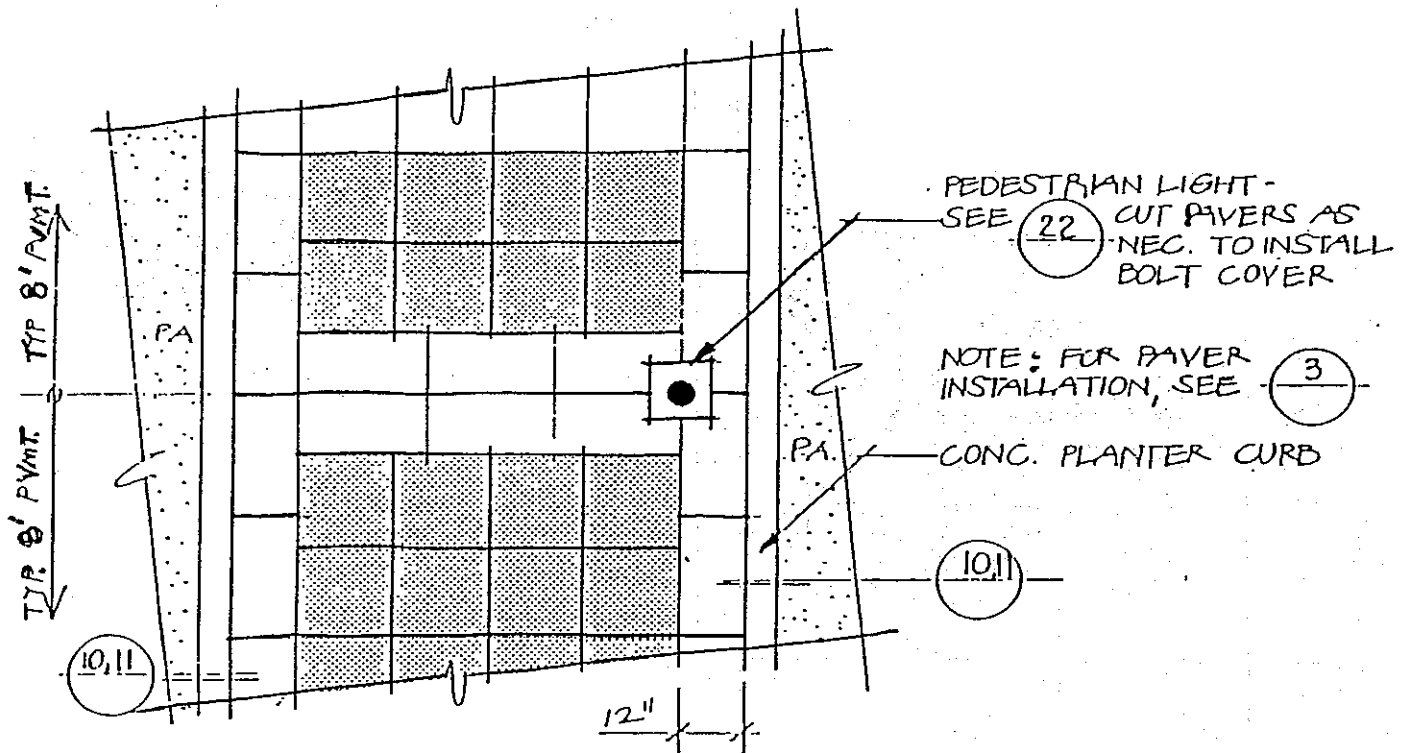
Light Location at Curb w/ Light Centered in Module

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



21 OF 34



20

Light Location w/ Light Centered in Scouring

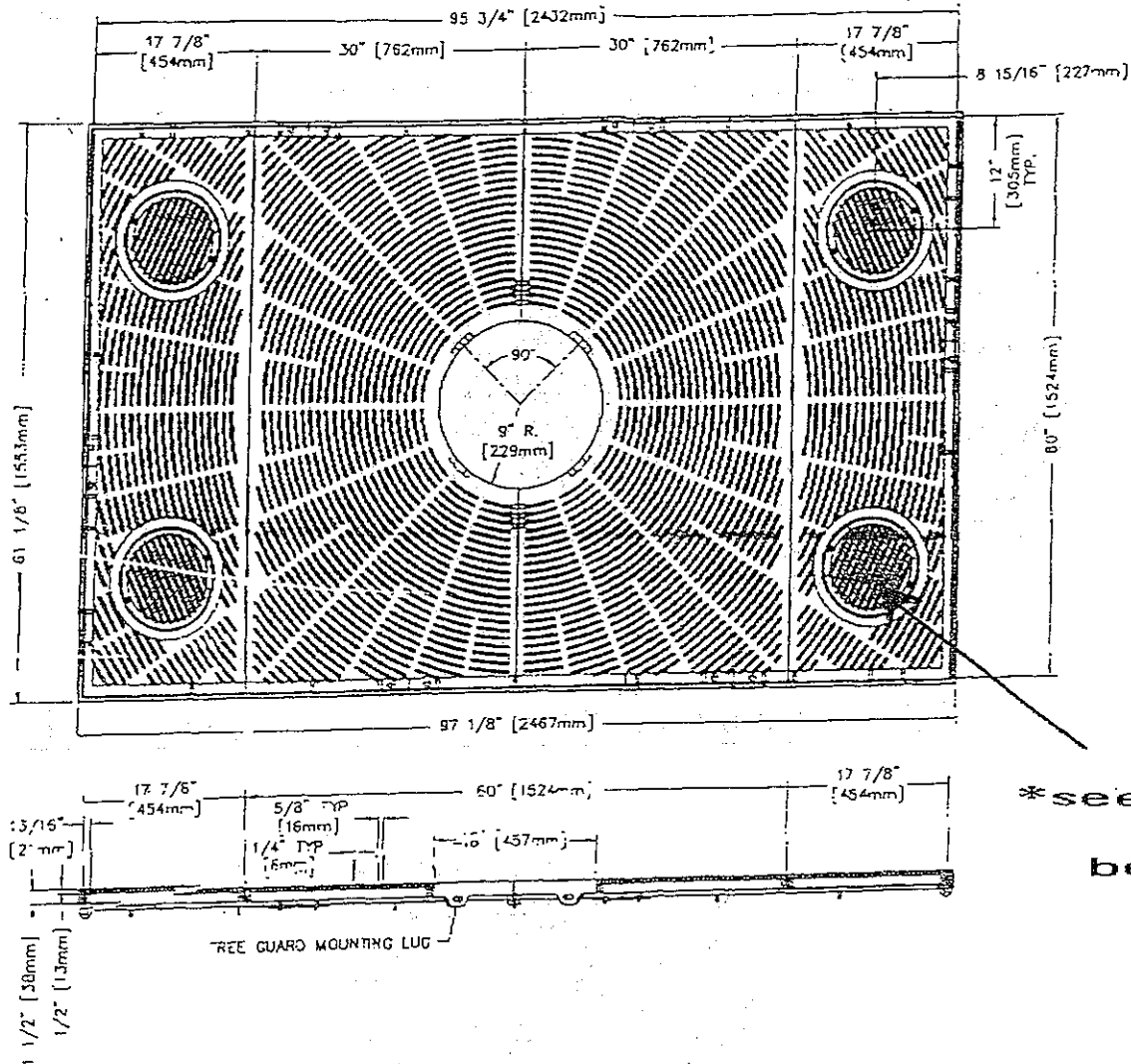
DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



22 OF 34

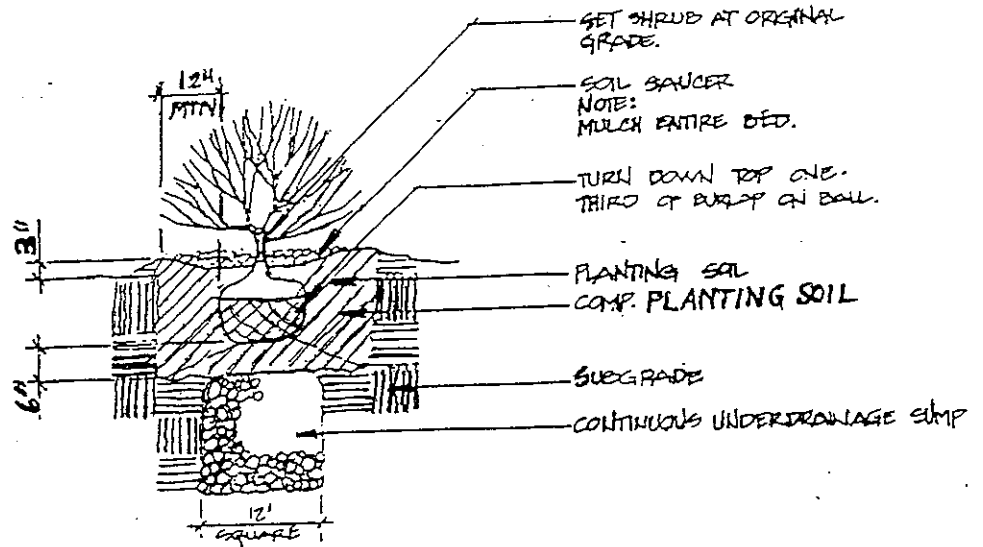
COMPONENT NO'S: TREE GRATE (2) 8713-0003; EXTENSION PC (2) 8713-0015			
LT OPEN. GRADE (4) 8718-0004			
FRAME: (4) 8500-8060; (2) 8500-0036			
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 358			
FINISH: NO PAINT			
WEIGHT: 810# / SET			
OR APPROVED EQUAL			
DR. CSK	SCALE	R-8816 FRAME AND TREE GRATE	
OK	1"=1'-0"	w/ 16" TREE OPENING AND EXTENSION PCS.	
APP. <i>Ka</i>	DM. CHK.	NEENAH FOUNDRY COMPANY	NF-8816 105 B
DATE 1-28-99			



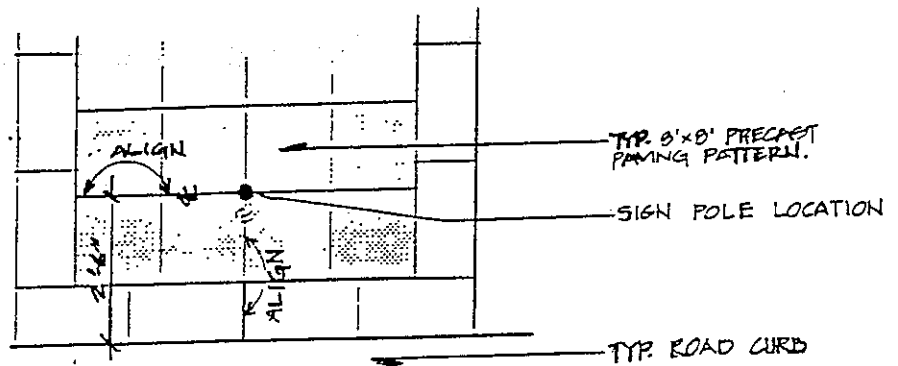
*see note
below

Metal Tree Grate Section -60"x96"

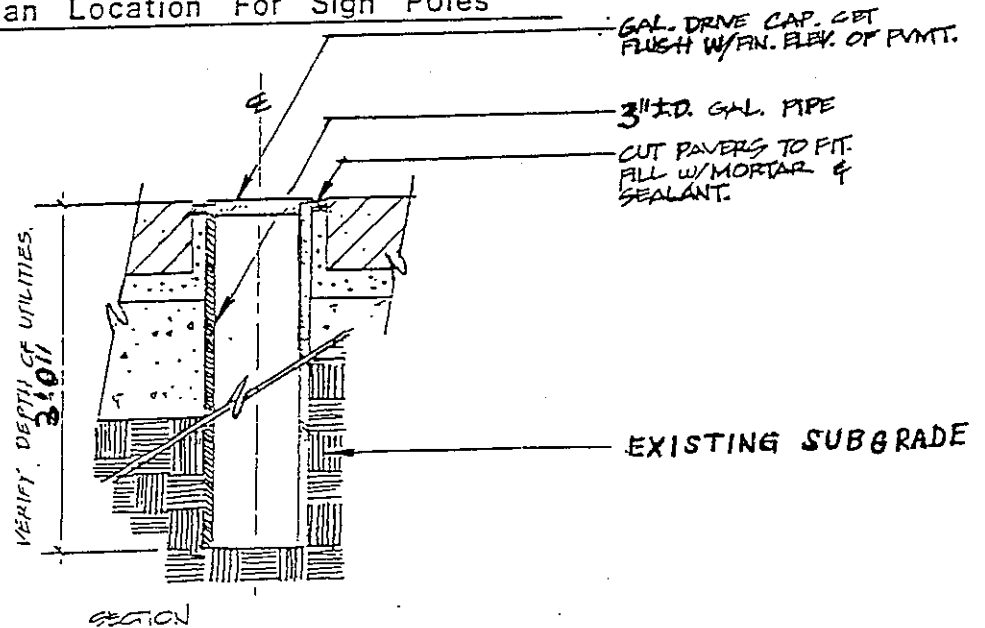
***(Light holes optional)**



29 Shrub Planting Detail



34 Plan Location For Sign Poles



35 Sleeve For Signage Pole

DESIGN STANDARDS - WHEATON STREETSCAPE



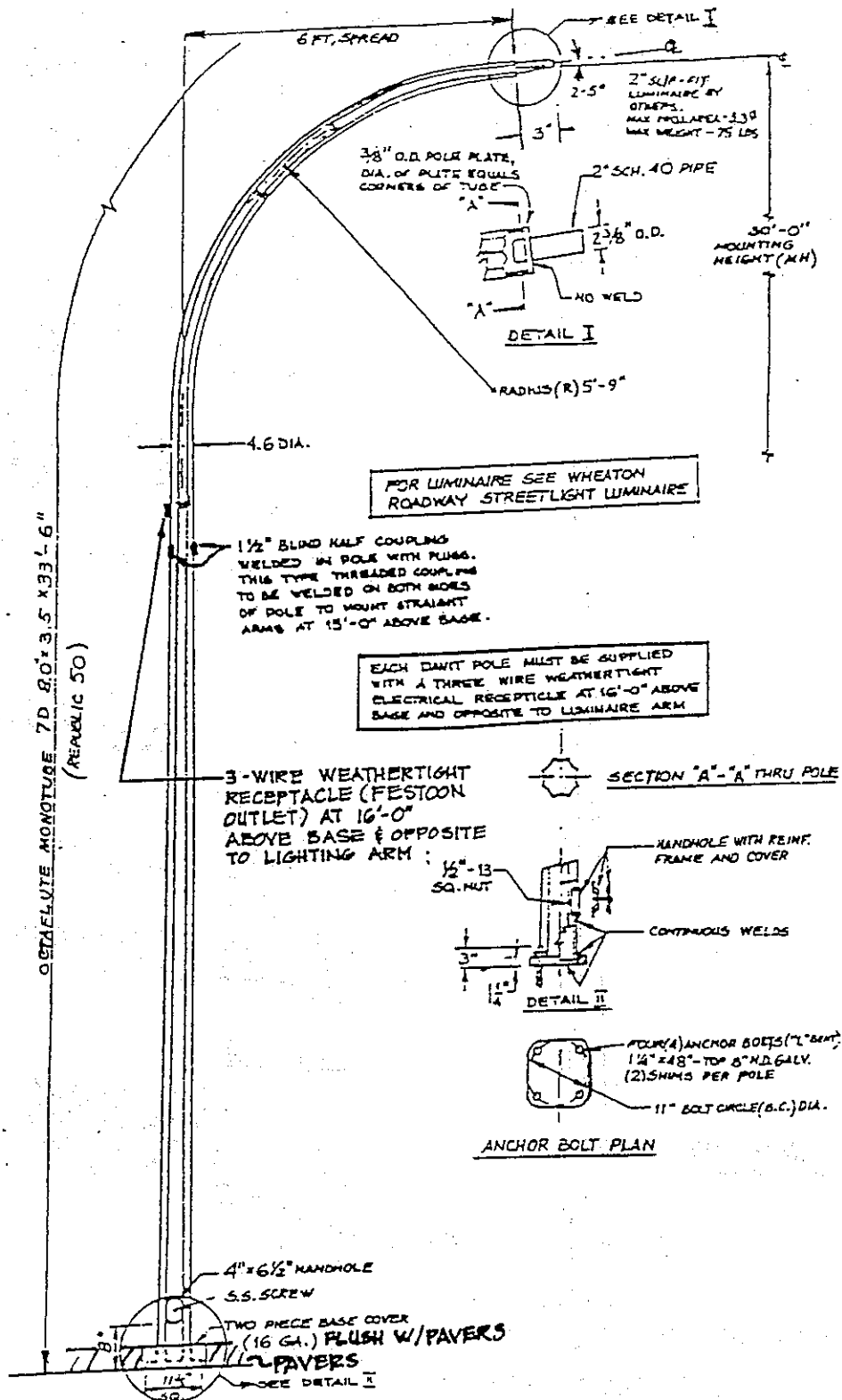
LIGHTING & ELECTRICAL

DESIGN STANDARDS - WHEATON STREETScape

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



30 OF 34



2

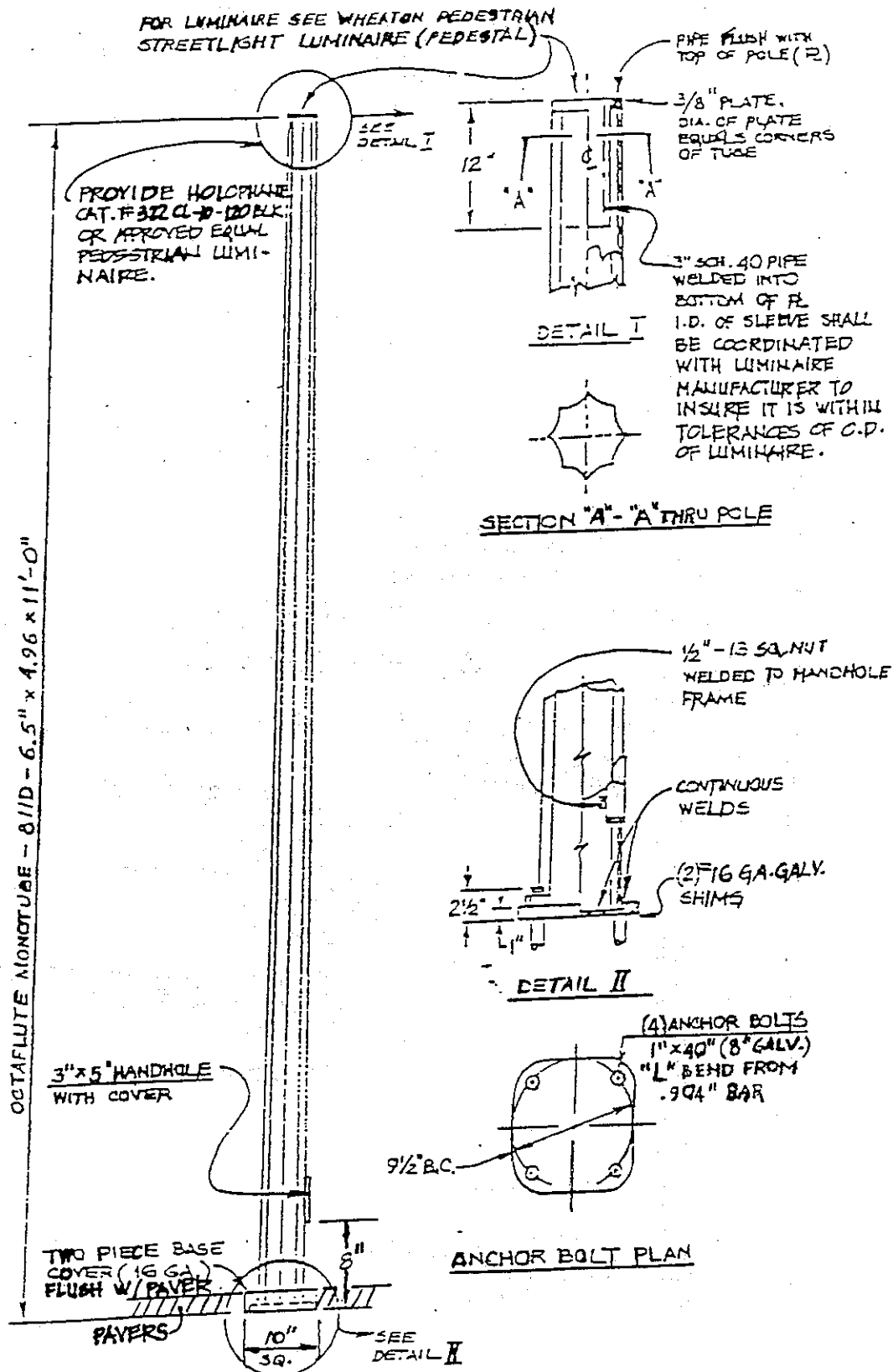
Vehicular (Tall) Light

Union Metal Corp, Model 901-Y87 or APPROVED EQUAL

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS





Pedestrian (Short) Light

1

Union Metal Corp., Model 10097-Y16 or APPROVED EQUAL

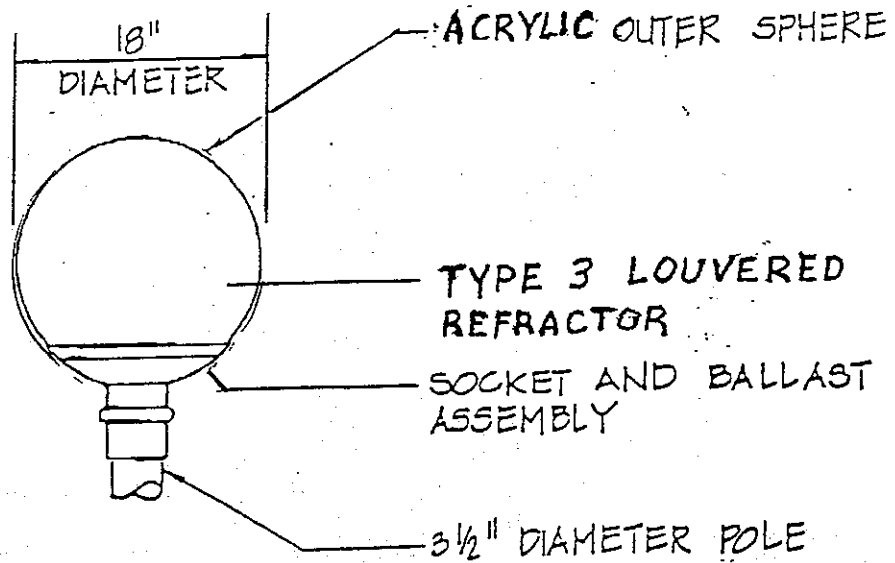
DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



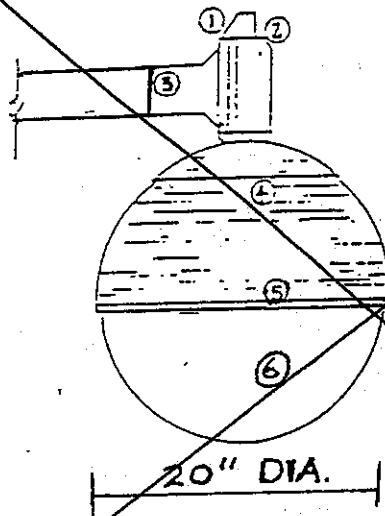
32 OF 34

ARCHITECTURAL AREA LIGHTING - MODEL NO. ALB 18GCR3- 100W HPS
OR APPROVED EQUAL



2-B

Globe for Pedestrian Lights



- ① Splice cover
- ② PrismaScope photocontrol
- ③ Cast aluminum silofitter for 2" pipe or 1 1/4" pipe with adaptor
- ④ Unitized ballast assembly
- ⑤ Spun-aluminum canopy
- ⑥ ACRYLIC HEMISPHERE

2-A

Globe for Vehicular Lights - NEW YORKER

OR APPROVED EQUAL

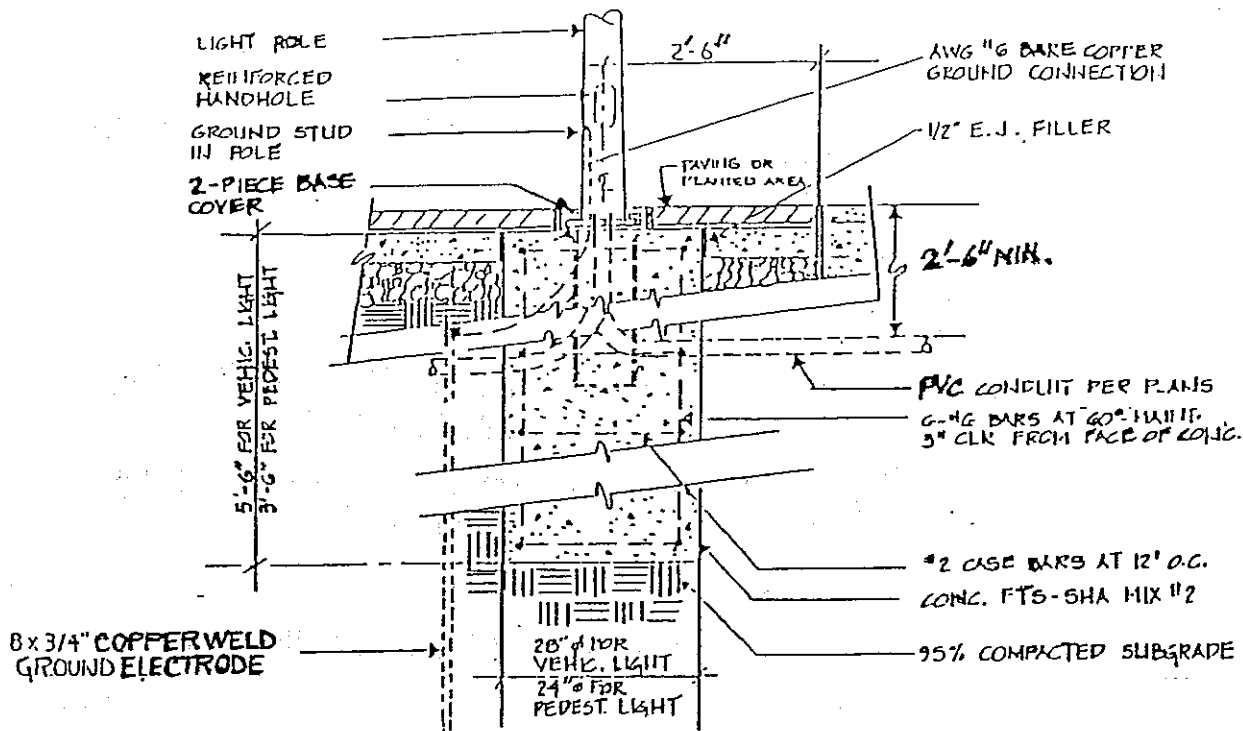
ARCHITECTURAL LIGHTING SYSTEMS - MODEL NO. PO 01287-PD-236623 - 150W HPS

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS

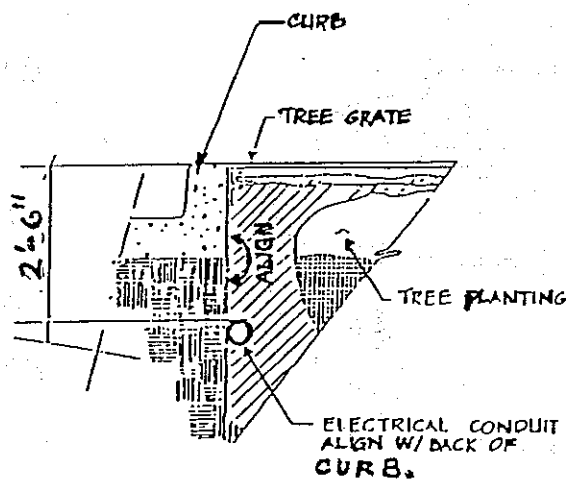


33 OF 34



22

Light Pole Footing Details - Pedestrian & Vehicular



21

Electrical Conduit in Planted Area

DESIGN STANDARDS - WHEATON STREETSCAPE

MONTGOMERY COUNTY DEPARTMENT OF HOUSING & COMMUNITY AFFAIRS



34 OF 34

TECHNICAL SPECIFICATIONS

WHEATON COMMERCIAL AREA STREETScape STANDARDS

BY:
DEPARTEMENT OF HOUSING & COMMUNITY AFFAIRS
COMMERCIAL REVITALIZATION SECTION
100 MARYLAND AVENUE, 4TH FLOOR
ROCKVILLE, MARYLAND 20850

GENERAL REQUIREMENTS

ORGANIZATON OF WORK

Experience has shown that this work proceeds more successfully if a general outline is followed that organized the various elements of work in successive steps. In general, the following outline shall be a required procedure.

1. Removal of all existing sidewalk and driveway aprons.
2. Installation and/or relocation of all underground utilities, including all overhead electrical, telephone and Cable TV wires as required.
3. Construction of all concrete footings for lighting, curbs and gutters, signs and tree pits.
4. Installation of all streetlights, so that they may receive electrical service and be placed in use by PEPCO.
5. Initiation of all other work required by these standards, including placing of paving material and planting trees and shrubs.

SMOOTH FINISHED PAVING SURFACES

Care shall be taken in assuring that there are no protrusions or uneven areas in the finished paving surface of the sidewalks and driveways that may cause a danger to pedestrians. In this case, adjust all covers for valves, hatches, manholes and other structures, as necessary, in the surface of the completed sidewalk area and coordinate this work with the respective utility companies. All covers shall be flush with the adjacent surface of the finished paving.

CONCEALED WORK

Before backfilling, placing concrete or performing other work which will conceal mechanical and electrical lines, concrete reinforcing, anchors and other items to be concealed in the finished project, secure inspection and approval of the appropriate public agency inspectors having jurisdiction.

WORKMANSHIP

Undertake all requirements of these Standards in a workmanlike manner and the quality of all work shall be equal to or better than the standard for the industry.

UTILITY COORDINATION

Before digging, trenching or pushing pipe under this construction contract please call or notify the Division of Traffic and Parking services at (240) 777-2100. (For marking traffic inter-connect conduit or other related utilities).

The following utility companies serve the area within the limits of these Standards. It shall be the Contactor's responsibility to notify these utilities and coordinate his construction operations with them to avoid unnecessary delays.

Washington Gas Company
Telephone: 703-750-4215

Potomac Electric Power Company
Telephone: 202-388-2122

Washington Suburban Sanitary Commission
Telephone: 301-206-8038

Verizon
Telephone: 301-595-6069

Comcast Cable
Telephone: 301-294-7694

**FOR LOCATIONS OF UTILITIES CALL "MISS UTILITY" 1-800-257-7777, 24 HOURS
A DAY, 48 HOURS IN ADVANCE OF ANY WORK.**

IMPLIED WORK

All incidental work required by the drawings and/or specification and work or materials not therein specified which are required to complete the work and which the County or State shall find to be required by implication, shall be done or furnished.

STANDARD SPECIFICATIONS

The following specifications and standards listed below, including the addenda, amendments and errata listed, form a part of this specification by references thereto.

1. Maryland State Highway Administration, Book of Standards for Highway and Incidental Structures, revised April 28, 2000 and all additions and revisions thereto.
2. Montgomery County Department of Public Works and Transportation, (DPW&T) "Design Standards, 2002 Edition" and all additions and revisions thereto.
3. The U.S. Department of Transportation, Federal Highway Administration "Manual On Uniform Traffic Control Devices for Streets and Highways, 2000," including all addenda, additions and revisions thereto.
4. "1991 Maryland Standards and Specifications for Soil Erosion and Sediment Control" and all additions and revisions thereto.
5. AASHTO Standard Specifications for Highway Bridges dated 1993.
6. National Electrical Code (NEC).
7. National Electrical Safety Code (NESC).
8. National Fire Protection Association (NFPA).
9. American Association of Nurserymen (AAN), "American Standard for Nursery Stock" (ANSI Z60.1) – current issue.

ABBREVIATIONS OR REFERENCED STANDARDS IN THESE SPECIFICATIONS

"A.A.S.H.T.O."	The American Association of State Highway and Transportation Officials
"A.S.T.M."	The American Society for Testing Materials
"S.H.A."	State of Maryland, State Highway Administration
"W.S.S.C."	Washington Suburban Sanitary Commission
"P.E.P.C.O."	Potomac Electric Power Company

ENVIRONMENTAL PROTECTION

The Contractor will be required to comply with all regulations of the County pertaining to environmental control such as Dust Control and Open Fire restrictions adopted under the Air Quality Control Law, Chapter 3 of the Montgomery County Code, 1972, as amended, and the Erosion and Sediment Control Provisions and the Noise Control Law, Chapter 3 of the Montgomery County Code, 1972, as amended. It shall be the responsibility of the Contractor to be knowledgeable and comply with all environmental regulations affecting the conduct of the work.

The Contractor's attention is directed to the provisions and requirements of Section 8-1104(b) of the Natural Resources Article of the Annotated Code of Maryland (1983).

Under this Act it is necessary for the Contractor to obtain permits and/or approvals from the Montgomery County Department of Environmental Protection for any off-site borrow pits, waste areas, and the treatment of these during and after the completion of the grading. A copy of the permits and/or approvals must be furnished to the Engineer prior to starting any work covering the said permits and/or approvals.

In the event of conflict between these requirements and erosion control laws, rules, or regulations of other Federal or State or local agencies, the more restrictive laws, rules, or regulations shall apply.

The County reserves the right to inspect erosion control measures in off-site borrow pits and waste areas and to report violations of permit requirements to the County agencies.

In the event that erosion control and pollution control measures are required, due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled and are ordered by the County, such work shall be performed by the Contractor at his own expense. Erosion and pollution control work required, which is not attributed to the Contractor's negligence, carelessness, or failure to install permanent controls, will be performed as ordered by the County.

Where the work to be performed is not attributed to the Contractor's negligence, carelessness, or failure to install permanent controls, and falls within the specifications for a work item that has a unit contract price, the units or work shall be paid for at the proper contract price.

MAINTENANCE OF TRAFFIC

Construction performed in the public right-of-way shall be performed under permit issued by the State of Maryland, State Highway Administration or the Montgomery County Department of Public Works and Transportation, whichever has jurisdiction. Maintenance of Traffic shall be in accord with the provisions of the respective permit.

EARTHWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and services necessary for and reasonably incidental to providing the required earthwork and site preparation within the project limits as shown on the drawings and/or specified herein.

1.2 EXISTING CONDITIONS

- A. The Contractor shall become thoroughly familiar with the site, consult records and drawings of adjacent structures and of existing utilities and their connections, and note all conditions which may influence the work of this section.

PART 2 - MATERIALS

2.1 GENERAL

- A. The contractor shall utilize suitable material resulting from on-site excavations when the excavated quantities permit and as directed for backfill. The suitability of any excavated materials for on-site use shall be at the discretion of the County.
- B. Material needed in addition to that available from on-site operations shall be obtained from suitable deposits and meet the applicable specification. Furnish all fill and backfill material needed to complete the work.

2.2 SUITABLE MATERIAL

- A. Suitable material shall be material resulting from on-site excavations which is free of organic matter, including logs, stumps and roots, rock larger than 6 inches in greatest dimension and debris such as concrete.
- B. Suitable excavated material shall be of such a gradation as to form a stable and firm sub grade.

2.3 TRENCH BACKFILL

- A. Trench backfill shall be the fine aggregate specified in Section 901 of the MSHA Standard Specifications.

2.4 SAND

- A. Sand shall meet the requirements of AASHTO MA5.

2.5 AGGREGATE BASE

- A. Aggregate base shall be as specified in Section 901 of the MSHA Standard Specifications.

2.6 GRAVEL BASE AND CONTINGENT BACKFILL

- A. Gravel base shall be as specified in Section 208.02 of the MSHA Standard Specifications.
- B. Contingent backfill shall be in accordance with MSHA Standards, Section 900.

PART 3 - EXECUTION

3.1 SAW CUTTING

- A. Saw cutting shall be executed along the curb and on the road bed as shown on the drawings. Saw cutting shall be performed in a straight and neat manner.

3.2 DRAINAGE

- A. Prior to beginning work, the Contractor shall construct a drainage system sufficient to maintain the site in good working condition in compliance with regulations of the Montgomery Co. Dept. of Environmental Protection. Such system may be of a temporary nature or may include portions of the permanent system.
- B. The Contractor shall maintain ample devices, including spare units kept ready in case of breakdowns, with which to intercept and dispose of all water entering excavations. Excavations shall be kept dry until structures and utilities have been completed to such extent that they will not be floated or otherwise damaged.

3.3 PROTECTION OF UTILITIES TO REMAIN

- A. Underground utilities have been indicated on the drawings to the extent of information available, but no guarantee is made that all utilities and structures are shown.
- B. As excavation approaches underground utilities and structures, excavation shall be done by hand tools.
- C. Utilities, structures, curbs, pavements, and other features intended to remain which are damaged due to the Contractor's operations shall be restored or replaced, at the Contractor's expense, to at least their original condition.
- D. Survey markers that are disturbed shall be restored at the Contractor's expense by a Land Surveyor registered in the State of Maryland.
- E. Utilities that will interfere with the progress of the work shall not be interrupted without the permission of the utility owner.

3.4 FREEZING

- A. No excavations to full depth shall be made when freezing temperature are expected, unless the structures are placed immediately after the excavation is completed. The excavation bottom shall be protected from freezing if the placing is delayed.

3.5 EARTH EXCAVATION

- A. Earth excavation shall be in accordance with Sections 201 and 404 of the MSHA Standard Specifications, except as modified herein.
- B. All broken bituminous surface material, broken concrete, broken rock, boulders, stones 6 inches or larger, stumps, roots, and other related material deemed by the County to be unsuitable for reuse, shall be suitably disposed of off-site.
- C. If material unsuitable for foundations is found at or below the excavation bottom, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted gravel base material.

- D. Trench backfill material shall be the fine aggregate as specified in Section 901 of the MSHA Standard Specifications.

3.6 BACKFILLING AND COMPACTION

- A. Fill and backfill under structures and pavements shall be placed in 6 inch layers and compacted to 95 percent, as determined by Method D of ASTM D1557, except for the following.
- B. Trenches shall be backfilled and compacted in accordance with Section 809 of the Standard Specifications.
- C. Backfill shall not be placed around structures until the concrete has sufficiently set.
- D. If specified, backfilling for certain utilities shall not be done until testing is complete.
- E. If a pipeline is backfilled before testing and fails a test, the Contractor shall remove and later replace such backfill at his own expense in order to repair or replace defective joints or pipe.

3.7 GRADING

- A. Grading shall be done to lines and levels indicated on the plans.

3.8 DISPOSAL

- A. All material resulting from excavations which is unsuitable for reuse shall become the property of the Contractor and suitably disposed of off-site.

3.9 TEST PIT EXCAVATION

- A. The Contractor, under the direction of the County, shall perform Test Pit Excavation to locate existing utilities that may conflict with the proposed construction.
- B. Test pits shall be of the size, depth, and location as approved by the County. Each pit shall be tamp backfilled after horizontal and vertical locations of the utilities have been obtained by the County.

SITE FURNISHINGS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all materials and equipment and do all work necessary to install the benches, trash receptacles, tree grates, tree guards, bollards and signage sleeves as indicated on the drawings and as specified.

1.2 DELIVERY, STORAGE, AND HANDLING OF PRODUCTS

- A. Deliver, store, handle and protect products according to manufacturer's instructions. Store all products in a dry and protected area in the manufacturer's protective shipping crates or packaging.
- B. Examine contents of all products delivered to the site immediately upon delivery. Any products damaged during shipping will be subject to rejection. Contractor shall inspect the shipment to ensure all items are complete and meet the requirements of this section.

1.3 TRASH RECEPTACLES

- A. Trash receptacles shall be the Ironsite Bethesda Series, Model S-35 as manufactured by Victor Stanley, Inc. P.O. Drawer 330, Dunkirk, MD 20754, or an approved equal. Trash receptacles shall be 24 gallon capacity with standard lid.
- B. Receptacle shall have 3/8" thick solid steel bar, welded all fabricated components are steel shot-blasted etched, phosphotized and electrostatically powder-coated with TGIC Polyester powder coating.
- C. Anchor: All hardware necessary for assembly shall be provided in sufficient quantity, sizes, lengths, shall be vandal-resistant hardware and quality suitable for the use intended. WA50414 "Wedge-all" Anchor shall be used, 1/2" x 4 1/4" as manufactured by Simpson Strong-Tie Co., or approved equal.
- D. Color: Color shall be Sherwin Williams Federal Green or approved equal.

1.4 TREE GRATES

- A. Iron tree grates shall be 5' x 5', Model #R-8713 by NEENAH, Neenah, WI or approved equal.
- B. Iron tree grates shall be 5' x 8', Model #R-8816 by NEENAH, Neenah, WI or approved equal.

1.5 SIGNAGE POLE

- A. Signage poles shall be of the same standard steel pipe as signage sleeve above, 1-1/2" O.D.

1.6 SIGNAGE ATTACHMENT SYSTEM

- A. Signage attachment system shall be Signfix available from National Capital Industries or approved equal.

PART 2 – MATERIALS

2.1 GENERAL

- A. All site furnishings shall be erected as recommended by the manufacturer and as indicated on the Drawings, plumb, level and snug, free from rocking. All necessary shimming and final adjustments shall be made.
- B. All shims shall be stainless steel washers of a diameter such that they do not protrude beyond the item's base so as to be visible.
- C. Exposed metal surfaces shall be finished in accordance with the Section of these standards entitled: Painting, except as noted otherwise.

PART 3 – EXECUTION

3.1 SIGNAGE INSTALLATION

- A. New signs to replace those removed from the public right-of-way shall be offset, mounted to signage poles with the signage attachment system, according to manufacturer's recommendations.
- B. Locations of signs to be reinstalled shall be shown on the Drawings.

UNIT PAVING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish all equipment and materials, and do all work necessary to construct walkways, including handicap ramps, as indicated on the drawings and as specified.

1.2 DELIVERY, HANDLING AND STORAGE OF PAVERS

- A. Pavers shall be packaged by strapping as per manufacturer's standards, and delivered on pallets. Handle project products in accordance with the manufacturer's instructions. Store in protected and dry areas in manufacturer's unopened shipping crates or pallets. Pavers damaged in any manner will be rejected and shall be replaced with new material at no additional cost to the County.

1.3 SUBMITTALS

- A. Submit installer qualifications verifying years of experience; include list of completed projects having similar scope of work identified by name, locations, date, reference names and phone numbers.
- B. Prior to beginning unit paving, the County will specify mock-ups for each form and pattern of unit pavers. Build mock-ups to comply with the following requirements, using the same materials and base construction as indicated for the final unit of work.
- C. Locate mock-ups on site in location directed by County. Notify County one week in advance of the dates and times when mock-ups will be erected. Demonstrate quality of workmanship that will be produced in final unit of work. Retain and maintain mock-ups during construction in undisturbed condition as a standard for judging completed work.
- D. When directed by the County, demolish and remove mock-ups from Project Site. Accepted mock-ups in undisturbed condition at the time of completion may become part of the completed unit of work.

PART 2 - MATERIALS

2.1 GRAVEL BASE

- A. Gravel base shall be as specified in Section labeled EARTHWORK.

2.2 REINFORCED CONCRETE SLAB

- A. Four (4) inch reinforced concrete slab base shall be installed as indicated on the drawings, specified herein, and in accordance with MSHA Standard Specifications Section 902.10.03 Mix #2.

2.3 EXPANSION JOINTS

- A. Expansion joint filler shall be as specified in the section titled Joints and Sealants.

2.4 MORTAR

- A. Mortar for setting bed and joints shall be composed of the following:

1. Sand shall be clean, natural bank sand, conforming to ASTM C-144, latest revised. Sample of sand and analysis of its contents by qualified testing laboratory shall be submitted to Engineer for approval before any sand is delivered to job site.
 2. Cement shall be Portland cement, standard gray, free from soluble salts which will cause efflorescence on exposed masonry surfaces and complying with the ASTM C-150, latest revised, Type I, one brand throughout work.
 3. Water shall meet the requirements of Section 919.01 of the Standard Specifications.
- B. Proportions shall be one part cement to three parts sand. Sand shall be measured damp and loose.
- C. Mortar color shall match closely that of mortar used as per completed phases of the Wheaton Streetscape Program, or approved equal.
- D. The Contractor shall submit to the Engineer a certificate from an independent testing laboratory showing that the mortar, when prepared in accordance with the manufacturer's recommendations, meets the following requirements:

Bond strength of setting mortars:	325 psi, minimum
Water absorption:	4% maximum
Expansion (ASTM Autoclave Test):	0.1% maximum
Shear bond strength after aging in ozone chamber for 200 hours @ 200 ppm:	325 psi, minimum

2.5 EDGE RESTRAINTS

- A. Edge restraints shall be Bric-Edg edging manufactured by Oly-Ola Sales, 124 East St. Charles Road, Villa Park, IL 60181, or approved equal. Supply in 15' Lengths, with stakes and anchors. Color: black.

2.6 UNIT PAVERS - GENERAL REQUIREMENTS

- A. Solid hydraulically pressed concrete pavers shall be from Hanover Architectural Paving Company, 240 Bender Road, Hanover, PA 17331, or approved equal. A manufacturer has to show that it has produced architectural quality concrete pressed pavers, with an average compressive strength of 8,500 pounds per square inch at 28 days, an absorption of 5% or less, and an average density of 150 pounds per cubic foot. It shall demonstrate not less than ten (10) years of experience, producing hydraulically pressed concrete paving materials of specified quality, finish, and in sufficient quantity without delay to progress of work in the following manner:

1. The concrete pavers shall be produced with special aggregates and custom mixed. The mix should be prepared in a stationary mixer to a 5-inch slump, mixed a minimum of 2 minutes, and placed in the mold in a homogenous state. The whole of the paver is to be of the same design and a single mix system. Hydraulic pressure to be employed should be a minimum of 800,000 pounds without the use of any vibration.

2. Cement, aggregate, and water shall be obtained from single sources for entire work under this contract, in order to assure regularity of appearance and uniformity of color.
3. An average compressive strength of 9400 pounds per square inch at 28 days, an absorption of 3.8%, and a density of 169.2 pounds per cubic foot shall be attained.

2.7 FIELD PAVERS

A. Field pavers shall be of the following sizes:

1. 450mm x 450mm x 65mm (18" x 18" x 2 1/2")
2. 300mm x 300mm x 65mm (12" x 12" x 2 1/2")

B. Pavers shall have a tolerance of +/- 1/16" in length and width, and +/- 1/8" in thickness. All top edges of pavers shall have a 3/16" bevel.

1. Aggregate shall be a special mix of approximately 90% crushed brick with red, orange, and dark brown tones, and 10% granite chips, producing pinkish tones.
2. Brick shall be #55 DD Cord Culls by Glen Gery or approved equal, comply with ASTM C902, Class SC, Type I, compressive strength 7000 psi. Color Mix: 35% dark, 10% light rose, 25% dark brown, 30% light tan to dark tan.
3. Granite shall be red granite of same color and texture as American Beauty, quarried at Cactus Canyon, Marble Falls, Texas, or approved equal. Aggregate shall be size "A" and "B". Mix with 65% aggregate "A" and 35% aggregate "B". Sieve test aggregate "A" passes 1/4" screen and is retained in 3/32 screen. Sieve test aggregate "B" passes 1/2" screen and is retained in 1/4" screen. "A" and "B" mix refers to size standard of Cactus Canyon Quarry.
4. Field Pavers are to be integrally colored with custom blended shades mixed in red/brownish tones and as developed by Hanover Architectural Products Company, BR-5, #1043, or an approved equal. Color shall closely match that of pavers installed in Phase I of the Wheaton Streetscape Program, as approved by the County.

E. Field pavers shall be tumbled finish, as per completed phases of the Wheaton Streetscape Program, or approved equal.

2.8 BAND PAVERS

A. Band pavers shall be of the following sizes:

1. 300mm x 600mm x 65mm (12" x 24" x 2-1/2")
2. 300mm x 300mm x 65mm (12" x 12" x 2-1/2")

B. Pavers shall have a tolerance of +/- 1/16" in length and width, and +/- 1/8" in thickness. All top edges of pavers shall have a 3/16" bevel.

C. Band pavers shall be fabricated of Coplay Cement, Type I, Buff or approved equal. Aggregate shall be at blend from 200 mesh to 4/8-inch, with a light gray color. The aggregate used shall have a PA S.R.L. test of H and a specific gravity of 2.79 and absorption of 2.60. The aggregates shall be washed, shall contain no deleterious substances, and shall have no thin or elongated pieces. The aggregates shall have an L.A.

abrasion test of 21 and an L.A. rattle loss test of 21.8% (at 500 revolutions). Most specifically, the aggregates shall have a wash test of less than 1%. This includes materials lost by washing the aggregate, even those finer than 200 mesh.

- D. Color shall be Natural Buff as developed by Hanover Architectural Products Company, or an approved equal, and shall match closely that of pavers installed in the early phases of the Wheaton Streetscape Improvement Program.

- 1. Finish shall be as specified in Paragraph 2.7 E above.

2.9 SETTING BED MATERIAL

- A. Sound stone screenings complying with ASTM D 448 for Size No. 10.

2.10 JOINT FILLER

- A. Fine, sharp, washed, natural sand or crushed stone with 100 percent passing No. 16 sieve and no more than 10 percent passing No. 200 sieve

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Excavation shall be made in close conformity with the lines and/or grades shown on the Plans. Unsuitable, unstable or unconsolidated subgrade material shall be excavated at the discretion of the County to a minimum depth of 11" below the finish grade of the paved surface. Where material has been removed from the subgrade it shall be backfilled with graded aggregate and the entire subgrade shall be compacted.

- 1. Care shall be taken so that no damage occurs to the pavers during handling. All pavers shall be free of chips and foreign matter before installation.

- 2. Setting bed material and joint filler material shall be stored with a waterproof covering to prevent exposure to rainfall.

- 3. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing and curing.

- 4. Schedule and coordinate work to permit other subcontractors to install their work prior to installing the concrete base, setting bed and pavers.

- 5. Pavers shall be cut to fit around all utility surface features. Where cutting is required, it shall be done with a high-speed masonry saw producing clean, sharp edges. Cutting of units shall only be permitted when use of full units is not possible.

- 6. No broken, chipped, or defective pavers shall be acceptable in finished work. Remove and replace such units with new acceptable materials.

3.2 CONSTRUCTING GRAVEL BASE

- A. Gravel base shall be installed as specified in the section titled EARTHWORK.

3.3 CONSTRUCTING CONCRETE SLAB

- A. Concrete slab shall be installed as specified in the section titled CONCRETE.
- B. Moisten subgrade materials to provide a uniform dampened condition at the time the concrete is placed. Verify the final elevations required for pavers, manholes, or other structures that are required at finish elevation and alignment as indicated in the Drawings before placing concrete.
- C. Place and spread concrete to the full depth of the forms. Use only square-end shovels or concrete rakes for hand spreading and consolidating concrete. Exercise care during spreading and consolidating operations to prevent segregation of aggregate.
- D. Place concrete in a continuous operation between expansion joints. Provide construction joints when sections cannot be placed continuously and as indicated on the Drawings.
- E. Place concrete in one course, monolithic construction, for the full width and depth of concrete work. Provide depths as indicated on the Drawings.
- F. Strike-off and bull-float concrete after consolidating. Level ridges and fill voids. Check surface with a 10'-0" straightedge. Fill depressions and refloat repaired areas.
- G. Construct control, expansion, and construction joints properly aligned with face perpendicular to concrete surface. Provide tooled or sawed control joints, sectioning concrete into areas indicated. Tool joints to a depth equal to not less than one-fifth (1/5) of the concrete thickness. Hand tool control joints in pattern and at spacing indicated. When not indicated, provide spacing equal to slab width and not greater than 10'-0" on center for concrete slab.
- H. Provide expansion joints using premolded joint filler for concrete work abutting curbs, buildings, and other structures.

3.4 INSTALLING UNIT PAVERS WITH MORTAR JOINTS

A. General Requirements:

1. Protect masonry against freezing when the temperature of the surrounding air is 40 degrees Fahrenheit and falling. Heat materials and provide temporary protection of completed portions of work. Comply with the requirements of the "Construction and Protection Recommendations for Cold Weather Masonry Construction: of the Technical Notes on Brick and Tile Construction by the Brick Institute of America (BIA)".
2. Frozen Materials: Do not use frozen materials or mixed or coated with ice or frost. For masonry which is specified to be wetted, comply with BIA recommendations.
3. Frozen Work: Do not build on frozen subgrade or setting beds. Remove and replace masonry work damaged by frost or freezing. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agent of any kind.

4. Hot Weather Requirements: Protect masonry paving in hot weather to prevent excessive evaporation of setting beds and grout. Provide artificial shade, wind breaks, and use cooled materials as required.
- B. Schedule and coordinate work to permit other subcontractors to install their work prior to installing setting bed and the solid hydraulically pressed concrete masonry paving units.
- C. Mix mortar dry until the mass is of uniform color. When thoroughly mixed, the mass shall be lightly moistened with water and to become a stiff-wet-mix. This stiff semi-dry mortar shall be evenly spread over and shaped upon the concrete slab to nominal thickness of 1 inch. The setting bed shall be shaped to a true surface, parallel with surface of finished paving, by means of template or striking board (121 x 2" x 6"). The bed shall then be struck off until proper alignment is secured.
- D. The area of bedding placed in any work day shall be scheduled so that no bedding course remains at the end of the day without a paver course. After final shaping, the bedding course shall not be disturbed prior to laying the pavers.
- E. The mortar setting bed shall not be placed over the surface of the cement concrete base course until the concrete has attained the compressive strength specified in the section titled CONCRETE.
- F. Pavers shall be laid in successive straight courses perpendicular to the curb and working toward the building line. The surface edge of one paver shall be level with the next adjacent pavers to that no voids, rocking motions, or tripping hazards are encountered. Edge to edge arris shall not exceed 1/16 inch. Good alignment must be kept, and the laying pattern shall be that shown on the plans or as approved by the Engineer in the field.
- G. Pavers shall be cut to fit around light fixture bases and all structures. Where cutting is required, it shall be done with a high-speed masonry saw producing clean, sharp edges. Cutting of units shall only be permitted when use of full units is not possible. Cutting to conform to grades shall be done so that proper lines and angles are maintained, including handicapped ramps. All cutting to be included in the unit price bid for installing the pavers.
- H. Joints between pavers shall be of a width to attain the paving patterns shown on the Drawings. Strike joints flush with top surface of paver and tool slightly concave.
- I. Maintain surface plan for finished paving as required, and not exceeding a tolerance of 1/8" in 10 ft. when tested with a 10 ft. straight edge.
1. For unusual conditions, if any, obtain approval of Engineer for exceptions prior to start of work.
2. It is intended that pavers NOT be cut to install handicap ramps, but that the depth of the setting bed be varied to maintain proper lines and grades.
- J. At expansion joint locations, omit mortar in joint and place pre-formed joint filler strip with top edge of strip set 3/8" below top of paver to allow for sealant.
1. Expansion joint filler shall extend through setting bed and concrete slab.
- K. No broken, chipped, or defective pavers will be acceptable in finished work. Remove and replace such units, if any, with new acceptable material.

3.5 CONSTRUCTING BLOCKOUTS

- A. Compact the existing sub-grade per the section titled CONCRETE paragraph 3.6.A.
- B. Place setting bed material (1" thick) on compacted sub-grade. Setting bed material shall be as specified in 2.9.A above.
- C. Install pavers hand-tight in blockout area according to standards stated in 3.3.E, F, and G above.
- D. After laying, pavers shall be immediately compacted with not less than two passes of a vibrating plate compactor. Sand shall then be swept into the joints and the pavement shall be compacted with the vibrating plate compactor. This process shall be repeated three times.

SITE UTILITIES

PART 1 – GENERAL

1.1 SCOPE OF WORK

Furnish all materials and equipment and perform all work necessary to construct, adjust and/or relocate all utilities necessary to construct project according to plans. This work includes storm drains, water, sewer, gas, electric, Cable TV, and telephone systems.

1.2 GENERAL

All work shall be done in compliance with "Standard Specifications for Construction and Materials", as published by the Maryland Department of Transportation, State Highway Administration, January 2001, except where otherwise directed. Any adjustments to other utilities shall be fully coordinated with the owners thereof as follows:

Washington Gas
703-750-4215

Potomac Electric Power Company
202-388-2662

Verizon
301-595-6069

Comcast Cable
301-294-7694

Division of Traffic and Parking - Traffic Inter-Connect Location
240-777-2100

CONCRETE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, and proper equipment and service necessary for and reasonably incidental to installing the cast-in-place concrete work items as shown on the drawings and/or as specified herein. Form work, reinforcement, placing, incidental hardware, and the following are included but not limited to: concrete slab and base for hand tight paving; standard curb and gutter; street light footers, concrete encasement for the conduits, and concrete curb for tree pits.

1.2 TESTING

- A. The Contractor shall comply with the latest approved edition of ACI Standards, MSHA Standard Specifications, and all local codes. Where the requirements of the specifications and the drawings are exceeded by those of local codes and regulations, the Contractor shall comply with the local codes and regulations at no additional cost to the County.

PART 2 - MATERIALS

2.1 CEMENT

- A. Portland Cement, ASTM C-150-65, Type I; for air-entraining Portland Cement, ASTM C-175, Type 1 (for Portland Cement with approved air-entraining agent).

2.2 FINE AGGREGATE

- A. Hard, durable, uncoated crushed stone or gravel, ASTM C-33, maximum size 3/8".

2.3 COARSE AGGREGATE

- A. Hard, durable, uncoated crushed stone or gravel, ASTM C-33, maximum size 3/4".

2.4 WATER

- A. Clean, fresh and free from harmful matter.

2.5 REINFORCEMENT STEEL BARS

- A. Per ASTM A-615-68, grade 60; wire mesh: 6" x 6", grade 6/6.

2.6 METAL ACCESSORIES

- A. Form Ties: Adjustable length, leaving holes not larger than 1" in concrete face. Following form removal, metal shall be a minimum of 1" from interior finished concrete surface and 2" from exterior.
- B. Chairs and Spacers: Metal of stock design for use intended. Accessories in exposed concrete shall be galvanized. Include all spacers, chairs, bolsters, holding bars, ties and other devices necessary for properly placing, spacing, supporting and fastening reinforcement in place. Metal accessories shall have plastic feet where legs will be exposed in finished concrete surfaces. All accessories shall conform to CRSI "Manual of Standard Practice for Reinforced Concrete Construction."

2.7 TEMPORARY FORMS

- A. 5/8" minimum Class 1BB, EXT-DFPA PLYFORM plywood for all exposed concrete form work.

2.8 EXPANSION JOINT FILLERS

- A. Self-expanding corkboard, conforming to ASTM D-1752-60T, Type 3, for exterior work. Joint Fillers: 1/2" thick and extend full thickness of slab.

2.9 CURING COMPOUND

- A. "Sure Cure" by Kaufman Products, Inc., or approved equal. Apply two coats for exterior slabs. Waterproof paper, "Sisalkraft" or approved equal.

2.10 COLOR

- A. Color of finished work shall closely match the color of buff pavers.

2.11 AGGREGATE BASE

- A. Aggregate base shall be as specified in Section 901 of the MSHA Standard Specifications.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Conform to shape, line and dimensions shown. Construct forms plumb, straight and with sufficiently tight joints to prevent leakage. Shore or truss forms to prevent deflection, displacement, and to safely support construction loads. Coat with grease part of form ties to be removed. Clean and wet forms immediately before placing concrete; do not wet when freezing is possible. Exercise care in forming exposed concrete; back up joints between form board sheets and secure solidly to framing members.

3.2 REINFORCING

- A. Fabricate and install reinforcing and provide standard supporting accessories in accordance with ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures," ACI 135.
- B. Remove rust, scale, paint and coatings from reinforcing. Place accurately, support on chairs spaced to prevent sagging. Furnish and install additional supports if directed. Position and wire to prevent movement during concrete placement; provide necessary support bars.
- C. Provide for installation of metal angles, channels, plates, inserts, hangers, ties, anchors, dowels, bolts, slots, sleeves, blocking, conduits furnished by other trades, etc. Coordinate locations with other trades and secure in position before concrete placement. If sleeves, conduits, outlet boxes, pipes, etc., interfere with reinforcing, consult the County.

3.3 STRENGTH, PROPORTION AND CONSISTENCY

- A. Strength: Use MSHA Mix No. 2 and 3 as specified, test strength of the concrete for all reinforced and structural work. Comply with MSHA Standard Specification 902.10.03.
- B. All concrete to be air-entrained, with no more than six gallons of water per bag of cement and (1) for non color conditioned concrete, containing 6%, plus or minus 1%, entraining air. Use air entraining cement, or an air entraining admixture conforming to ASTM C-260.
- C. Do not place concrete which has had water added more than one hour before placing. Use no accelerating agents or other admixtures without specific approval.
- D. For grout, use 1 part Portland cement and 1 part sand.

3.4 MIXING

- A. Use ready mixed concrete, mixed and delivered in accordance with ASTM C-95-65. Have delivery tickets available to the County upon request.

3.5 CONTROL TESTS

- A. Retain the services of a testing laboratory and pay all costs to take samples, make tests and submit four copies of test results.

3.6 EXTENT OF TESTS

- A. Secure minimum of three test cylinders from each day's pour for structural concrete including footings. One additional test cylinder shall be taken during cold weather concreting, and will be cured at the job site under the same conditions as the concrete it represents.
- B. Test one cylinder at the age of seven days and two cylinders at the age of 28 days. Secure samples: per ASTM C-172-54 (58). Specimens made to check the adequacy of the design for strength of concrete, or as a basis for acceptance of concrete shall be made and laboratory cured, per ASTM C-31-65. Additional tests of specimens cured entirely under field conditions may be utilized to check the adequacy of curing and protection of the concrete as directed. Make strength tests per ASTM C-39-61. All procedures necessary to perform the above mentioned testing requirements shall be done by and at the expense of the Contractor.
- C. If tests indicate that concrete does not meet specified requirements, comply with remedial measures determined by the County, without additional costs to the County.
- D. Slump Tests: Make tests for slump for each set of test cylinders taken at the place of deposit and in accordance with ASTM C-143-58. Unless otherwise noted or specified, the slump shall be 2" to 5" for SHA Mix No. 2, 3 and 6 and 1 1/2" to 3" for SHA Mix No. 7.
- E. The Contractor shall submit to the County, and send to the testing agency, his proposed concrete mix design for review, prior to commencement of the work.
- F. The Contractor shall provide free access to the work and cooperate with the testing agency selected by the County. The Contractor shall notify the testing agency and the County of his intent to place concrete at least 24 hours prior to scheduled time of placement.

- G. Any core testing of concrete or test cylinders required by the County shall be at the expense of the Contractor. Core testing may be required for each day's operation when concrete is poured.

3.7 WEATHER CONDITIONS

- A. For non-color conditioned concrete: Following methods and recommended practice for placing, protecting and curing concrete as provided in ACI Standard 604 for winter concreting and ACI Standard 605 hot weather concreting.

3.8 PLACING

- A. Preparation: Before placing concrete, remove all debris, water and ice from the area to be occupied by the concrete. Wet or oil wood forms thoroughly (except in freezing weather) and clean reinforcement, pipes, sleeves, conduit hangers, anchors and other inserts shall be inspected and approved by the County and the local building department before any concrete is deposited. Notify the County and the local building department before any concrete is deposited. Notify the County 48 hours in advance.

3.9 CURING

- A. Protect concrete against frost and rapid drying and keep moist for six days after placing. Do not pour concrete during cold, foggy, or damp weather, when rain is forecast, or during periods of significantly falling temperatures. However, should rain fall, the concrete may be covered for several hours only.

3.10 FINISHING

- A. All exposed concrete not used for pavements shall be trowel finished, smooth and free of cracks, depressions, extraneous material, etc.
- B. All concrete pavements shall be finished with a medium broom finish. Immediately after float finishing, roughen concrete surface by brooming with a fiber-bristle broom perpendicular to main traffic route.

3.11 CLEANING

- A. Clean all exposed concrete surfaces and all adjoining work stained by leakage of concrete to meet County's approval.
- B. Cut out surface defects where directed or where structural strength of concrete will not be impaired and refill with fresh concrete. Do not make cuts deeper than one inch (1"), and thoroughly wet just prior to filling with concrete of stiff consistency and of, approximately, the same mix as the adjoining work.

3.12 PROTECTION

- A. Cover exposed concrete with building paper and otherwise protect concrete from damage as stated below.

3.13 CONCRETE DEPRESSED CURB AND GUTTER AND STANDARD CURB AND GUTTER (Mix No. 3)

- A. This item is for construction of Concrete Depressed Curb and Gutter at all handicap ramps and as indicated on the plans and as directed by the County. This work shall be done in accordance with Section 609 of the Specifications. Depressed curb shall be

formed to the dimensions indicated on the plans with 16-inch constant depth. Aggregate Base shall be in accordance with Section 901 of the Standard Specifications.

3.14 CONCRETE FOOTINGS FOR STREET LIGHTS (Mix No. 3)

- A. Construction of footings shall be in accordance with SHA Specifications Section 801, as applicable, and these Specifications and Plans. SHA Concrete Mix No. 3 shall be used.
- B. Prior to pouring concrete for the footings, the Contractor shall obtain inspection and approval of the conduit stub-out from the County, Pepco and the streetlight sub-contractor. The Contractor shall provide 48 hours (2 working days) notice to Pepco prior to date of inspection.
- C. The Contractor shall place a temporary barricade above the completed footings until poles are installed.

3.15 POURED-IN-PLACE CONCRETE DRIVEWAYS (Mix No. 7)

- A. Construction of concrete driveway aprons shall be in accordance with SHA Specifications Section 610, as applicable, and these Specifications and Plans, except that the term "concrete apron" shall be substituted for "sidewalk" and that SHA Concrete Mix No. 6 shall be used.
- B. Prior to pouring concrete, the Contractor shall obtain inspection and approval of the forms and subgrade from the County. The Contractor shall provide 48 hours (2 working days) notice to the County prior to date of inspection.
- C. The Contractor shall place a temporary barricade around the completed concrete apron until a splitting tensile strength of 3000 psi is attained by testing.

3.16 TINTED CONCRETE FOR CONCRETE APRON (Mix No. 7 – High Early Mix)

- A. If tinted driveways are preferred, the tint shall be Venetian Pink No. A-56 Chromix Admixtures by L.M. Scofield Company or approved equal. Contact 1-800-800-9900 for local representatives.
- B. Apply full strength (unthinned) using an airless sprayer. Coverage rate shall be 300-400 square feet per gallon. (4' wide area on the concrete driveway apron).

JOINTS AND SEALANTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish all materials and equipment, and do all work necessary to construct joints and sealants, as indicated on the drawings and as specified.

PART 2 - MATERIALS

2.1 MORTAR JOINTS

- A. Mortar joints in pavements shall be as specified in the section titled UNIT PAVING.

2.2 EXPANSION JOINTS

- A. Concrete base courses shall have expansion joints conforming to ASTM C 1190.
- B. Expansion joints which will be exposed to view shall be as follows:
 - 1. Pre-molded joint filler shall be 1/2" preformed cork, non-asphaltic, conforming to ASTM D 1752. The joint filler shall be compatible with the sealant.
 - 2. Sealant primer shall be as recommended by the sealant manufacturer.
 - 3. Sealant shall be a one-part, non-sag urethane sealant conforming to Federal Spec. TT-S-00227. The sealant shall be Mameco weatherproofing sealant, Vulkem 116, one part high performance elastomer by Mameco International, Inc. 4475 East 175th Street, Cleveland, Ohio 44128-3599 or approved equal. Phone number 1-216-752-4401.
 - 4. Sealant colors shall match the sidewalk pavement color. The contractor shall submit samples of sealant color to the County Representative for approval.
 - 5. Expansion joints shall be provided using pre-molded cork-type joint filler at concrete work abutting curbs other than those curbs along the roadway edge or at radius curb returns at driveway aprons, structures and other fixed objects. Backer rod and sealant shall be used with cork-type joint filler.
 - 6. Expansion joints at concrete work abutting curb along the roadway edge or at radius curb returns at driveway aprons shall be 3-ply roofing paper.

PART 3 - EXECUTION

3.1 CONSTRUCTING MORTAR JOINTS

- A. Mortar joints shall be constructed in accordance with the section titled UNIT PAVING.

3.2 CONSTRUCTING EXPANSION JOINTS

- A. Pavements shall be placed with the pre-molded joint filler in place and to the proper elevation to allow for the proper sealant depth.

- B. After the concrete and mortar has set, the joints shall be thoroughly cleaned to remove all loose materials. Sealant shall be applied to clean, dry and structurally sound surfaces. Adjacent surfaces shall be protected with non-straining masking tape as necessary.
- C. Primer and sealant shall be applied in accordance with the manufacturer's written recommendations, using hand guns or pressure equipment on properly prepared surfaces. Temperature of sealant and concrete shall be as recommended by the sealant manufacturer. Sealant shall be forced into the joint in front of the tip of caulking gun, not pulled after it, and shall be forced against the sides to prevent entrapped air or pulling of sealant off the sides.
- D. Sealant shall be finished slightly recessed from the adjacent surfaces, adjusted in accordance with the outside air temperature. The colder the day, the greater the recess needed. Masking tape shall be removed immediately after tooling of the sealant and before the sealant face starts to skin over. Excess sealant shall be removed from adjacent surfaces.
- E. Construct expansion joints properly aligned with face perpendicular to concrete surface.
- F. Locate expansion joints as indicated. Align expansion joints with abutting curbs and walks.

PAINTING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish all labor, proper equipment and materials and do all work necessary to perform all painting work, complete as indicated on the drawings and as specified.
- B. Site furniture items, except cast iron tree grates, will arrive with a factory applied finish, with only abraded areas being touched up in the field. Cast iron tree grates shall be finish painted in the field. All metal fabrications shall be shop primed and field painted.

1.2 COMPLIANCE

- A. Application shall conform to the manufacturer's literature and label analysis for all paint being used.
- B. Where recommended application rates of schedules for a specified paint differ from those specified herein, the manufacturer's printed recommendations shall take precedence.

1.3 QUALITY ASSURANCE

- A. Except where higher standards are specified, materials and methods shall conform to the Painting and Decorating Contractors of America "Painting Specifications for Type I Recommended Jobs".

PART 2- MATERIAL

2.1 GENERAL

- A. For any given surface to be painted, the painting system to be applied shall consist of one manufacturer's products, so as to ensure the integrity of the painting system.
- B. All materials shall be first quality and of the types and manufacturers listed. All materials shall be pure and unadulterated, delivered to the job site in the original, unbroken containers bearing the name, brand number and batch number for identification purposes.
- C. Products of Sherwin-Williams are specified to set type and quality level required. Paints of other manufacturers will be accepted, provided they are equivalent to the paints specified in color retention, resistance to weather, abrasion, chemical attack, texture and other significant features as determined by the inspector.

2.2 PAINT SYSTEM FOR METAL FABRICATIONS

- A. Primer shall be Salvite metal Primer by Sherwin-Williams, Speedhide Galvanized Steel Primer by PPG, or approved equal.
- B. Finish coats shall be Metalastic II Enamel by Sherwin-Williams, Speedhide Alkyd Gloss Enamel by PPG or approved equal. Color shall be black.

2.3 PAINT SYSTEM FOR OTHER METAL STREET FURNITURE

- A. Paint for touch up purposes shall match closely to the adjacent finish.

PART 3 - EXECUTION

3.1 GENERAL

- A. Surfaces shall be free of oil, dirt, grease and other contaminants prior to painting. Surfaces requiring cleaning may be treated with mild solvents such as xylol or mineral spirits in order to ensure proper bonding of the primer to the metal surface.

3.2 APPLICATION

- A. Before starting work, all surfaces to be painted shall be inspected and all defects noted.
- B. Paint materials shall be mixed thoroughly prior to commencement of painting operations. Thinning for application purposes may be done only in accordance with the manufacturer's printed instructions.
- C. No paint shall be applied at temperatures below 50 degrees Fahrenheit, nor upon wet surfaces, nor under any conditions which would leave finished work unsatisfactory. No paint finish shall be applied until the preceding coat is thoroughly dried in accordance with the manufacturer's recommendations.
- D. Adjacent work and materials shall be protected from paint spills or splashing by suitable drop cloths or other similar material. Upon completion, all damage, including paint spots, shall be repaired and work left in a satisfactory condition.
- E. Painted surfaces shall be protected from time of application to project completion.
- F. All surfaces not meeting the Inspector's approval shall be repaired at the Contractor's expense.
- G. Dry film thickness for each coat shall be that thickness recommended by the paint manufacturer.
- H. All paint shall be applied under favorable conditions by skilled painters and shall be brushed out carefully to a smooth, even coating without runs or sags. Enamel shall be flowed on evenly and smoothly. Each coat of paint shall be allowed to dry thoroughly, not only on the surface, but throughout the thickness of the paint film before the next coat is applied. Finish surfaces shall be uniform in finish and color and free from flash spots and brush marks.
- I. Spraying with adequate apparatus may be substituted for brush application of those paints and in those locations for which spraying is suitable.

3.3 PROTECTION AND FIELD TOUCH-UPS

- A. Take all necessary precautions during construction operations in order to minimize damage to shop-painted galvanized surfaces, including those of streetscape luminaries. Where surface damage occurs, such areas shall be touched-up with paint as provided by the manufacturer.
- B. Any paint left over after field touch-ups shall be turned over to the Owner.

ELECTRICAL WORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall provide all labor and materials required for complete installation of all electrical work as specified and shown on the drawings. All work shall be subject to the Engineer's review and acceptance.
- B. Work Included - The work included under this section of the specifications, in general, shall consist of the following list of items. This list shall not be considered as a complete list of all the work to be included. Items not listed herein, which are otherwise specified or shown on the drawings, shall be included as required for complete electrical installation.
 - 1. Permits and Certificates
 - 2. All on-site conduit work for PEPCO's use.
 - 3. Lighting fixtures and lamps as called for on the contract drawings.
 - 4. Poles and anchor base.
 - 5. Tools and Spare Material as required.
- C. Other Specification Sections - The contractor shall examine other sections of the specifications in order to determine the extent of other work required to be completed under this section. Failure to do so will not relieve the Contractor of responsibility to perform all work for a complete and satisfactory installation.

1.2 REGULATIONS

- A. The latest effective publications of the following codes, standards, etc., as applicable, shall form a part of the specification, as if written herein, and shall form the basis for minimum requirements. The maximum requirements shall not relieve the Contractor from providing a high grade of materials and workmanship where specified herein. Where local codes and regulations have requirements in excess of those shown on the drawings or specified, the local requirements shall be provided by the Contractor at no additional cost to the County. After completion of work, the Electrical Contractor shall furnish to the County a certificate of final inspection.
 - 1. The Local Electrical Code.
 - 2. The National Electrical Code.
 - 3. OSHA and MOSHA
 - 4. Rules and Regulations of Potomac Electric Power Co.

1.3 EXISTING ELECTRICAL INSTALLATIONS

- A. All existing electrical work which will not rendered obsolete and which may be distributed due to any changes required by these standards shall be restored to its original condition. Electrical or wiring rendered obsolete shall be abandoned where concealed and removed where exposed. Old, unused wiring and devices shall be removed. Except where specified otherwise, all disconnected material and equipment that is not to be reused shall be removed from the site.
- B. Where existing electrical work interferes with new work and where such installations are to remain in use, the installation shall be disconnected and relocated and/or reconnected to coordinate with the work indicated on the drawings and as specified.

PART 2 - MATERIALS

2.1 DELIVERY AND STORAGE

- A. All materials and equipment shall be delivered in manufacturer's original packages with seals unbroken, and with manufacturer's name and contents legibly marked thereon. Store materials off the ground, under cover, and protected from the weather and construction.

2.2 POLES

- A. Poles for vehicular lighting shall be octaflute, tapered steel, davit type prime coated, inside and out and finished coated in weatherproof bronze. Provide Union Metal Corp., Model 901-Y87 or approved equal with a 6 foot davit extension as follows:
1. Luminaire mounting height - 30ft.
 2. Anchor bolts - 4 @ 1 1/4 x 48" x 8"
 3. Required weight support (luminaire) - 80lbs.
 4. Provide a reinforced handhole, minimum size 4" x 6 1/2", with ground stud 8" above the base.

2.3 LUMINAIRES AND LAMPS

- A. Luminaires shall be as follows:
1. Pedestrian lighting - Architectural Area Lighting, 14249 Artesia Blvd., La Mirada, CA 90638, 714-994-2700 - Model No. ALB 18GCR3 or approved equal, with 100 watt HPS lamp and HPF ballast as follows:
 - a. Size - 18" polycarbonate sphere.
 - b. Provide post-top fitter assembly to match the specified pole.
 - c. Metal portions shall be finished to match the bronze color of the pole.
 2. Vehicular lighting - Architectural Lighting Systems, 30 Sherwood Drive, Taunton, MA 02780, 508-823-8277, Model No. PO 01287-PD-236623 or approved equal with 150 watt HPS lamp.
- B. Ballasts shall be made specifically for operation of specified lamps. They shall be high power factor, (90% minimum), and shall be designed for satisfactory operation to minus 29°C, (minus 20°F) at 120 volts plus or minus 10%.
- C. Lamps shall be clear, high pressure sodium by General Electric of Sylvania.

PART 3 - EXECUTION

3.1 GENERAL

- A. All work shall be done in strict accordance with the National Electric Code as a minimum standard. Higher standards as specified herein or indicated on the drawings shall apply.

3.2 POLES AND LUMINAIRES

- A. Vehicular and pedestrian lighting poles shall be installed completely wired down to the pole base, ready for service connection by PEPCO. Wire within poles shall be Type THW, copper conductor, AWG No. 8.

3.3 GROUNDING

- A. In general, all poles shall be grounded in compliance with Article 250 of the NEC. Provide ground rods, bare ground conductor and approved ground clamps.

3.4 CLEANING, PAINTING AND MARKING

- A. All metal surfaces installed under this section of specifications shall be thoroughly cleaned of all dirt, dust, scale, etc., and factory finishes restored, if damaged.

LANDSCAPING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and incidentals for furnishing, installing and maintaining landscape plantings, sod and any other incidental items necessary for satisfactory completion of all planting as shown on the Drawings and/or as specified in accordance with Landscape Specification Guidelines by Landscape Contractors Association, latest edition (1994).

1. Total number of plants shall be as drawn on the plan. If this total differs from the plant key, the Contractor shall notify the Owner before bid date.

- B. The work shall include, but is not limited to:

1. Supplying plants, topsoil, organic amendments, and accessories.
2. Mixing planting soil.
3. Placing plants, sod and materials.
4. Maintaining plants.
5. Fulfilling the guarantee and replacement requirements.

1.2 QUALITY ASSURANCE

- A. Quality Assurance Standards

1. All plant material provided under this Contract shall conform to the current issue of the American Standard for Nursery Stock published by the American Association of Nurserymen. (ANSI Z60.1).

2. Reference Codes and Standards:

- a. American Standard for Nursery Stock ANSI Z60.1
- b. Bailey's Standard Cyclopedia of Horticulture
- c. Standardized Plant Names, American Joint Committee on Horticultural Nomenclature (AJCHN)
- d. Hortus III

3. Source Quality Control:

- a. Packaged products shall indicate the analysis and recommendations for use on the manufacturer's package and arrive on site as originally packaged and unopened.
- b. For freshly dug plants, use nursery grown stock acclimated to the soil and climatic conditions in the local area of intended planting.
- c. The Contractor shall submit to the Owner for approval the names and locations of nurseries which he proposes to use as sources of acceptable plant material. The Contractor shall personally inspect all nursery materials to determine that the materials meet the requirements of this section. Proposed materials shall be flagged at the nurseries by the Contractor prior to viewing by the Owner.
- d. The Contractor shall schedule with the Owner a time for viewing plant material in the nursery in order for the Owner to determine whether

plant materials conform to specification requirements. Trips to nurseries shall be efficiently arranged to allow the Owner to maximize its viewing time. A minimum of 6 weeks shall be allowed for this viewing prior to time that plants are to be dug.

- e. The Owner may choose to attach its seal to each plant, or representative samples.
- f. Where requested by the Owner, photographs of plant material or representative samples of plants shall be submitted.
- g. Use plants grown under good nursery practices for a period of two full growing seasons.
- h. Plant material shall be selected from nurseries that have been inspected and approved by the Owner at the place of growth for conformity to specification requirements as to quality, size and variety.
- i. Tagging of trees at nursery does not preclude the County's right to reject material at the site of planting.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver packaged products to the site in unopened containers with labels intact and legible.
- B. Deliver plant materials to the site in a protected condition to prevent wind damage and drying. Plant materials exhibiting a "heated" or "sweated" condition due to tight packaging or poor ventilation are subject to rejection.
- C. Deliver plants tagged with the name and size legibly indicated in accordance with the AAN standards of practice. Provide at least one tagged plant in each bundle or lot. In all cases, botanical names shall take precedence over common names.
- D. Store packaged products in such a manner to prevent moisture damage and other forms of contamination.
- E. Prepare dug plants for handling and shipment with balled and burlapped (B&B) root systems. Perform B&B work in accordance with AAN standards and in accordance with ANSI Z60.1 concerning diameter and depths of balls on B&B plants. B&B plants arriving at the site with broken, loose, dried or fractured balls, or with abraded bark, are subject to rejection. When a plant has been so rejected, the Contractor shall at once remove it from the area of the work and replace it.
- F. Plants shall not be dug at the nursery or approved source until the Contractor is ready to transport them from their original locations to the site of the work or acceptable storage locations.
- G. Unless otherwise authorized by the Owner, the Contractor shall notify the Owner at least 48 hours in advance of the anticipated delivery date of any, plant material. A legible copy of the invoice, showing kinds and sizes of materials included for each shipment shall be furnished to the Owner. Certificate of Inspection, when required, shall accompany each shipment of plant material.
- H. Sod shall be placed within 48 hours of cutting and shall be protected and maintained during transit, or storage on site, as necessary to ensure vigorous growth after placement.

Sod remaining on the site not placed after 48 hours will be rejected. All yellowing or otherwise discolored sod will be rejected.

- I. Anti-desiccant shall be applied to all plants dug in foliage.
- J. Temporary Storage: No plant shall remain in temporary storage over the winter or summer. Plants that are not planted immediately shall be protected as follows:
 - 1. Plants shall remain on the site of the work no longer than three days prior to being planted or placed in storage.
 - 2. The earth balls shall be kept moist and their solidity carefully preserved. To prevent drying out or freezing, they shall be stored in a compact group with a suitable mulch material placed around and between the balls so they are completely covered. The duration and method of storage of plants and mulch material shall be approved by the Engineer.

1.4 JOB CONDITIONS

- A. Environmental Requirements: Do not perform work of this Section when soil or weather conditions are unsuitable. Unsuitable conditions include soil saturated with moisture or frozen in place and precipitation of any kind present or occurring during the work.
- B. Plant Setting Dates: The following dates shall govern, except that when environmental conditions warrant, the County may extend the plant setting dates.
 - 1. Trees and Shrubs: October 15 to December 15; and March 15 to May 15 inclusive.
 - 2. Sod: August 15 to October 15, and March 15 to May 15 inclusive.
- C. Unforeseen Contingencies: The Contractor will not be held responsible for unforeseen contingencies such as, but not limited to, rock, water, clay pan or other obstacles encountered in excavation work which are not apparent on the surface.
 - 1. Course of action will be decided at the time of encounter, per approval of the Engineer.
- D. Drainage: No plants shall be planted in situations that show obviously poor drainage. Such situations shall be brought to the attention of the County, and, if necessary, the plants shall be relocated or underdrained.
- E. Water: Water must be supplied by the Contractor.
- F. Utilities: The Contractor shall note the potential minimum earth cover of buried utilities and shall be prepared to dig all tree pits and shrub beds by hand to minimize disturbances. Hand digging will not be considered as an extra and no additional payments will be made for such work.

PART 2 - MATERIAL

2.1 PLANT MATERIALS

- A. Plants shall conform to the varieties specified in the plant list and be true to botanical name as listed. Plants shall be in accordance with ANSI Z60.1 except as otherwise stated in the specifications or shown on the Drawings. Where the drawings or specifications are in conflict with ANSI Z60.1, the drawings and specifications shall prevail.

1. Planting stock shall be well-branched and well-formed, sound, vigorous, healthy, and free from disease, sun-scald, windburn, abrasion, disfiguring knots, cuts of limbs over 3/4 inch which have not completely callused, and harmful insects or insect eggs and shall have healthy, normal, and unbroken root systems. Deciduous trees and shrubs shall be symmetrically developed, of uniform habit of growth, with straight holes or stems, and free from objectionable disfigurements. Trees shall have a single main trunk. Only shrubs and groundcover plants well established in removable containers, integral containers, or formed homogeneous soil sections shall be used. Plants shall have been grown under climatic conditions similar to those in the locality of the project.
2. Plants selected in rows (street trees) shall be matching in form.
3. The minimum acceptable sizes of all plants, measured before pruning and with branches in normal position, shall conform to the measurements indicated on the drawings. Plants larger in size than specified may be used with the approval of the Engineer with no change in the contract price. If larger plants are used, the ball of earth or spread of roots shall be increased in accordance with ANSI Z60.1. Plants shall not be pruned before delivery.

B. Plant material shall be nursery grown unless otherwise indicated and shall conform to the requirements and recommendations of ANSI Z60.1. Plants shall be dug and prepared for shipment in a manner that will not cause damage to branches, shape, and future development after planting.

1. Balled and burlapped (B&B) plants shall have ball sizes conforming to ANSI Z60.1. Plants shall be balled with firm natural balls of soil. B&B plants shall be wrapped firmly with burlap or strong cloth and tied securely. In size grading balled-and-burlapped trees, caliper shall take precedence over height. Caliper of the trunk shall be taken 6 inches above the natural ground level for trees up to and including 4 inch caliper size. For trees larger than 4-inch caliper, caliper shall be taken at 12 inches above the natural ground level.
2. Container grown plants shall have sufficient root growth to hold the earth intact when removed from containers but shall not be root bound.

2.2 ANTI-DESICCANT

- A. Anti-Desiccant: "Wilt-pruf" Nursery Specialty Products, Inc., 410 Greenwich Avenue, Greenwich, Connecticut 06830, or approved equivalent.

2.3 ORGANIC AMENDMENT

- A. Leaf Mold: Well-rotted decomposed leaf material.

2.4 FERTILIZERS

Commercial fertilizers: FS 0-F-241, type 1, of Grade noted, level B, composite and bearing manufacturer's guaranteed statement of analysis. Unless otherwise noted or specified, use 10-6-4 meeting the following minimum requirements; 10 percent of nitrogen (50% organic by weight), 6 percent of available phosphoric acid, and 4 percent of potash.

2.5 BACKFILL MIXTURES

A. Trees:

1. Two parts existing soil, free of stones or other material not conducive to good plant growth.
2. One part organic amendment, mixed thoroughly by volume.

B. Shrub and Groundcover Beds: Excavate entire bed to depth of 8" for groundcovers and 18" for shrubs. Backfill with:

1. Two parts existing soil, free of stones or other material not conducive to good plant growth.
2. One part organic amendment, mix thoroughly by volume.

2.6 MULCH

A. Mulch material for plants shall be either composted (shredded) hardwood bark, pine bark, or approved equivalent. Material shall be mulching grade, uniform in size, and free of foreign matter.

B. Ground covers around trees not in grates will be accepted at the discretion of the County.

2.7 WATER

A. Potable: To be supplied by Contractor.

2.8 INSECTICIDES

A. A control program for borers shall be implemented as soon as trees are installed. Apply liquid application of Durisbane at time of planting and 3 weeks later from ground level to the height of the first branch level.

2.9 SOD

A. Sod shall be nursery grown lawn sod and shall contain all the dense root system of the grasses and shall exhibit vigorous healthy root growth, free of noxious weeds, objectionable grasses, grubs, diseases, or injurious insects.

B. Sod shall be composed of Tall Fescue grasses of a minimum of three varieties. Submit proposed mix to Engineer for approval.

C. Thickness of Cut: Sod shall be machine cut at a uniform soil thickness of 5/8 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness shall exclude top growth and thatch.

D. Strip Size: Individual pieces of sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus 1/2 inch on width and plus or minus 5 percent on length. Broken strips and torn or uneven ends will not be acceptable.

- E. Strength of Sod Strips: Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape if suspended vertically when grasped in the upper 10% of the section.
- F. Moisture Content: Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- G. Time Limitations: Sod shall be harvested, delivered and transplanted within a period of 36 hours unless a suitable preservation method is approved prior to delivery. Sod not transplanted within this period shall be inspected and approved by the Engineer prior to its installation.
- H. Thatch: Sod shall be relatively free of thatch. Up to a maximum of 1/2 inch (uncompressed) will be permitted.
- I. Diseases, Nematodes, and Insects: Sod shall be free of diseases, nematodes, and soil-borne insects. State Nursery and Plant Materials Laws require that all sod be inspected and approved for sale. The inspection and approval must be made by the State Agricultural Department, Office of the State Entomologist.
- J. Weeds: Sod shall be free of objectionable grassy and broad leaf weeds.

PART 3 - EXECUTION

3.1 PLANTING PROCEDURES FOR TREES AND SHRUBS

- A. Layout of Work:
 - 1. Prior to digging plant pits, Contractor shall layout and stake proposed locations for all plant materials. Layout shall be approved by the County prior to installation.
- B. Test Pits: Should staked locations lie in proximity to subsurface utilities, Contractor, may perform subsurface exploration to verify utility locations, at the instruction of the County.
- C. Digging Plant Pits:
 - 1. Excavate and reserve existing soil to depths indicated on drawings.
 - 2. Plants shall bear the same relationship to finished grade as at the nursery. Any loose soil at the bottom of the pit shall be tamped by hand so as to inhibit settling.
 - 3. Add any amendments or fertilizers to reserved existing soil as specified.
 - 4. Place plants in planting pit or planting bed to proper grade and alignment indicated.
- D. Plant Pit Drainage Improvements:
 - 1. Should the Contractor, when digging tree and shrub pits, encounter poorly drained soils, standing water, and/or perched or high water tables, he shall notify and obtain approval from the County to implement corrective drainage measures.
 - 2. Install underdrainage system as shown on Contract Documents for street trees using 4" - 6" ADS piping.

3. Install 4" ADS perforated pipe vent stock for each tree installed. Install a slit 6"-8" ADS pipe depending on tree caliper at the base of each tree for protection against lawn mowers and edging.
4. When pits are dug in wet areas or where subsoil or utilities will not permit underdrainage, set plant higher than normal using extra depth of crushed stone or sand, up to 12 inches total depth, to keep ball from settling. Subject to the County's approval, plants may be set up to 6 inches higher than normal, if the immediate area outside the saucer is blended with suitable soil to meet existing grade within 5 feet of edge of pit.

E. Set the plants straight and in the center of the pit with the most desirable side of the plant facing toward the prominent view (sidewalk, building, street, etc.), as directed by the County.

F. Plants grown in containers shall be opened as per planter's detail. Place plants in plant pit or trench, and carefully tamp planting mixture to fill voids under and around the ball, then backfill with planting mixture in 6-inch layers and settle with water.

G. Backfilling Plant Pits:

1. Backfill plant pit with the soil mixture stated prior in Section 2 of the specifications.
2. Mix soil amendments prior to filling pit.
3. Make sure plant remains plumb during backfilling procedure.
4. Backfill sides of plant pit halfway with soil mixture and tamp as pit is being filled.
5. Cut rope or wire from ball and remove from plant. Pull burlap back to the edge of the tree ball. Remove all plastic wraps and plastic twine.
6. Finish backfilling sides of plant pit and tamp firmly.
7. Never cover top of tree ball with soil.
 - (1) Form a saucer above existing grade and around the outer rim of the plant pit, not above root ball, as shown on the Drawings.
 - (2) Mulch top of root ball and saucer within 48 hours to a depth of 3 inches, as shown on the Drawings.
8. Water to saturation on the interior of the tree saucer until it is filled, even if it is raining. A second watering may be necessary to insure saturation of the root ball.

H. Pruning

1. Each tree and shrub shall be pruned to preserve the natural character of the plant. Pruning shall be done after delivery of plants and after plants have been inspected and approved by the County. Pruning procedures shall be reviewed with the County before proceeding. In general, however, only dead or broken branches are to be pruned.
2. DO NOT cut the main leader when pruning trees.

3. Make all cuts flush with trunk or lateral branch.
4. All cuts greater than 1/2 inch shall be carefully pared over with a sharp knife.
5. Prune out all dead and broken branches.
6. Remove all tags, labels, strings, etc. from the plants.

3.2 SOD

- A. Moisten the soil surfaces with a fine spray immediately before laying sod.
- B. Laying: Fit sod pieces tightly together so that no joint is visible, and tamp firmly or roll with lightweight turf roller so as to eliminate all air pockets, provide a true and even surface, and ensure knitting without displacement of sod or deformation of the surface of sodded areas. Following compaction, screened topsoil shall be used to fill all cracks between sods. Excess soil shall be worked into the grass. Stakes, splits, or pegs shall be used on all sod strips or patches in sufficient number to ensure the stability of the sod.
- C. Watering: After the sod has been placed, it shall be saturated to a depth of 4" by watering with a fine spray.

3.3 CLEAN-UP

- A. Clean up all rubbish and debris caused by this work and remove from site. Keep site clean during maintenance period.
 1. Sweep and wash surfaces soiled by this operation.

3.4 INITIAL WARRANTY ACCEPTANCE

- A. Contractor shall notify County of request for initial acceptance of Contract work at least 10 calendar days before estimated date of completion.
- B. Initial acceptance of plant material by the County shall be for general conformance to specified size, character, and quality, and shall not relieve the Contractor of responsibility for full conformance to the Contract Documents, including current specifications.

3.5 MAINTENANCE OF PLANTING

- A. Maintenance shall begin immediately after each plant is planted and shall continue through the warranty period until date of Final Acceptance.

3.6 WARRANTY PERIOD

- A. Contractor shall guarantee all plant material for a period as determined by the County, to be free from diseases, insects, and in a healthy and vigorous growing conditions from initial planting through the date of Final Acceptance by the County. At that time, all maintenance and replacement responsibility will be transferred to the County.
- B. During the warranty and replacement period, replace planted trees that are dead, or are in an unhealthy, unsightly, or badly impaired condition. Remove dead plants as soon as the condition is evident. Replace with healthy plants of comparable size and quality as soon as is reasonably possible. Do not make replacement in any season unfavorable for planting.

1. Contractor shall be required to replace all plant materials as many times as required to meet the terms of Final Acceptance.
- C. The Contractor will not be held responsible or liable for damage to plants and planting materials by animals, vandalism, malicious or careless damage by humans or agencies over which he has no control, by fire and storm damage.

3.7 FINAL ACCEPTANCE

- A. At the conclusion of the warranty period, the County will make an inspection of the work to determine condition of all plants. Plants not in a healthy growing condition, as determined by the County, will be noted. Remove immediately and replace as soon as seasonal conditions permit with healthy plants of the same kinds and sizes as originally specified. Make such replacement in the same manner as specified for the original planting, and at no extra cost to the County.

Montgomery County DPW&T
APPROVED STREET TREES - 2002

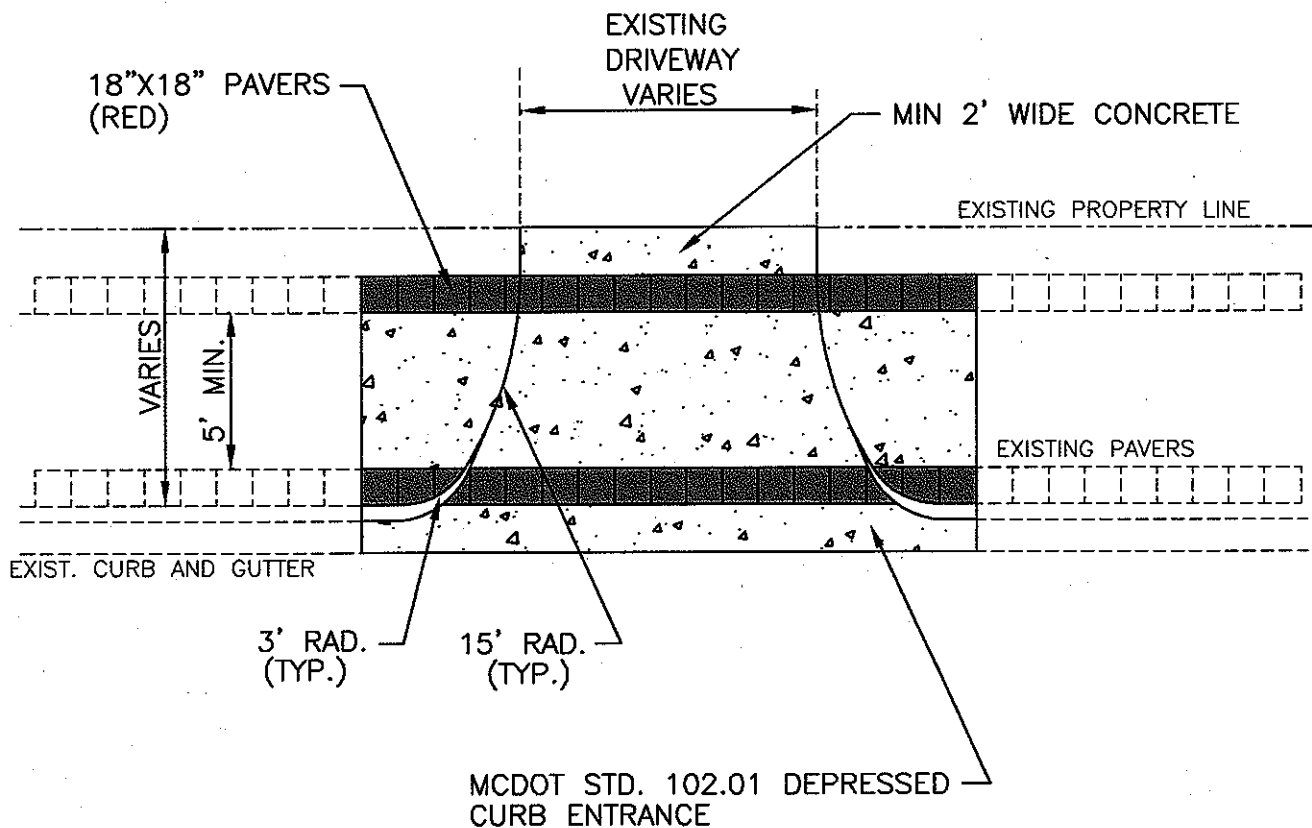
Major Trees

Scientific Name	Common Name	Height	Width
1. <i>Acer rubrum</i> 'Armstrong'	Armstrong Red Maple	50'-60'	20'-25'
2. <i>Acer saccharum</i> 'Green Mountain'	Green Mountain Sugar Maple	50'-75'	40'-60'
3. <i>Betula nira</i> 'Heritage'	Heritage River Birch (single stem)	40'-50'	40'-50'
4. <i>Carpinus betulus</i>	European Hornbeam	40'-60'	30'-40'
5. <i>Carpinus betulus</i> 'Fastigiata'	Fastigate European Hornbeam	35'-40'	20'-30'
6. <i>Celtis occidentalis</i> 'Prairie Pride'	"Prairie Pride" Hackberry	40'-50'	40'-50'
7. <i>Cladasris lutea</i> *	Yellowwood	30'-50'	40'-50'
8. <i>Fagus sylvatica</i>	European Beech	50'-75'	40'-60'
9. <i>Fraxinus permsylvanica</i> 'Marshall'	'Marshall Seedless' Ash	45'-55'	35'-45'
10. <i>Ginko biloba</i>	Ginko (male grafted only)	50'-80'	40'-80'
11. <i>Gleditsia tricanthos</i> 'Inermis'	Thornless Honeylocust	50'-70'	35'-50'
12. <i>Liquidambar styraciflua</i> 'Rotundiloba'	Sweetgum (fruitless)	65'-75'	40'-50'
13. <i>Nyssa sylvatica</i>	Blackgum	40'-70'	35'-45'
14. <i>Platanus x acerifolia</i> 'Bloodgood'	Bloodgood London Planetree	70'-80'	55'-65'
15. <i>Quercus bicolor</i>	Swamp White Oak	60'-80'	50'-80'
16. <i>Quercus rubra</i>	Northern Red Oak	60'-80'	45'-60'
17. <i>Quercus phellos</i>	Willow Oak	60'-75'	40'-60'
18. <i>Sophora japonica</i> 'Regent'	Regent Scholartree	40'-70'	30'-40'
19. <i>Tilia cordata</i> 'Greenspire'	Greenspire Littleleaf Linden	50'-70'	35'-50'
20. <i>Tilia tomentosa</i>	Silver Linden	50'-60'	50'-60'
21. <i>Ulmusparvifolia</i>	LacebarkElm	40'-45'	45'-50'
22. <i>Zelkova serrata</i> 'Village Green'	Village Green Zelkova.	50'-60'	50'-60'

Minor

1. <i>Acer campestre</i>	Hedge Maple	30'-35'	30'-35'
2. <i>Acer ginnala</i>	Amur Maple	15'-20'	15'-25'
3. <i>Acer griseum</i>	Paperbark Maple	20'-30'	15'-25'
4. <i>Amelanchier laevis</i> *	Allegheny Serviceberry	30'-40'	15'-20'
5. <i>Carpinus caroliniana</i>	American Hornbeam	20'-40'	20'-30'
6. <i>Cercis canadensis</i> * 'Texas White'	Redbud Texas White	20'-30'	15'-30'
7. <i>Cercis Canadensis</i> *	Eastern Redbud	20'-30'	15'-30'
8. <i>Chinoanthus virslinicus</i> *	Fringetree (tree form)	12'-20'	12'-20'
9. <i>Comus florida</i> *	White Flowering Dogwood	20'-30'	20'-30'
10. <i>Comus florida</i> 'rubra'	Pink Flowering Dogwood	20'-30'	20'-30'
11. <i>Cornus kousa</i> *	Kousa Dogwood	15'-20'	15'-20'
12. <i>Crataegus crusgalli</i> 'Inennis'	Thornless Cockspur Hawthorn	20'-30'	20'-35'
13. <i>Crataegus virdis</i> 'Winter King,'*	Winter King Green Hawthorn	25'-30'	20'-35'
14. <i>Koeleruteria paniculata</i> *	Goldenraintree	30'-40'	30'-40'
15. <i>Prunus x incamp</i> 'Okame'*	Okame Cherry	15'-25'	15'-20'
16. <i>Prunus yedoensis</i> *	Yeoshino Cherry	35'-40'	35'-45'
17. <i>Pyrus calleryana</i> 'Aristocrat'*	Aristocrat Pear	35'-45'	25'-35'
18. <i>Pyrus calleryana</i> 'Redspire'	Redspire Pear	35'-45'	20'-25'
19. <i>Quercus myrsinifolia</i>	Chinese Evergreen Oak	30'-35'	30'-35'
20. <i>Stewartia pseudocamellia</i> *	Japanese Stewartia.	30'-40'	20'-30'
21. <i>Stytaxjaponica</i> *	Japanese Snowbell	20'-30'	15'-25'
22. <i>Syringia reticulate</i> *	Japanese Treelilac	20'-25'	15'-20'
23. <i>Vibumam prunifolium</i>	Blackhaw Viburnam (tree form)	15'-20'	8'-12'

* denotes a flowering tree



GENERAL NOTES

- 1) SEE MC-302.01 COMMERCIAL DRIVEWAY FOR DRIVEWAY ENTRANCE PROFILE SPECIFICATIONS AND MIN. TAPER WIDTHS
- 2) SEE WHEATON STREETSCAPE STD. FOR PAVER SIDEWALK DETAILS

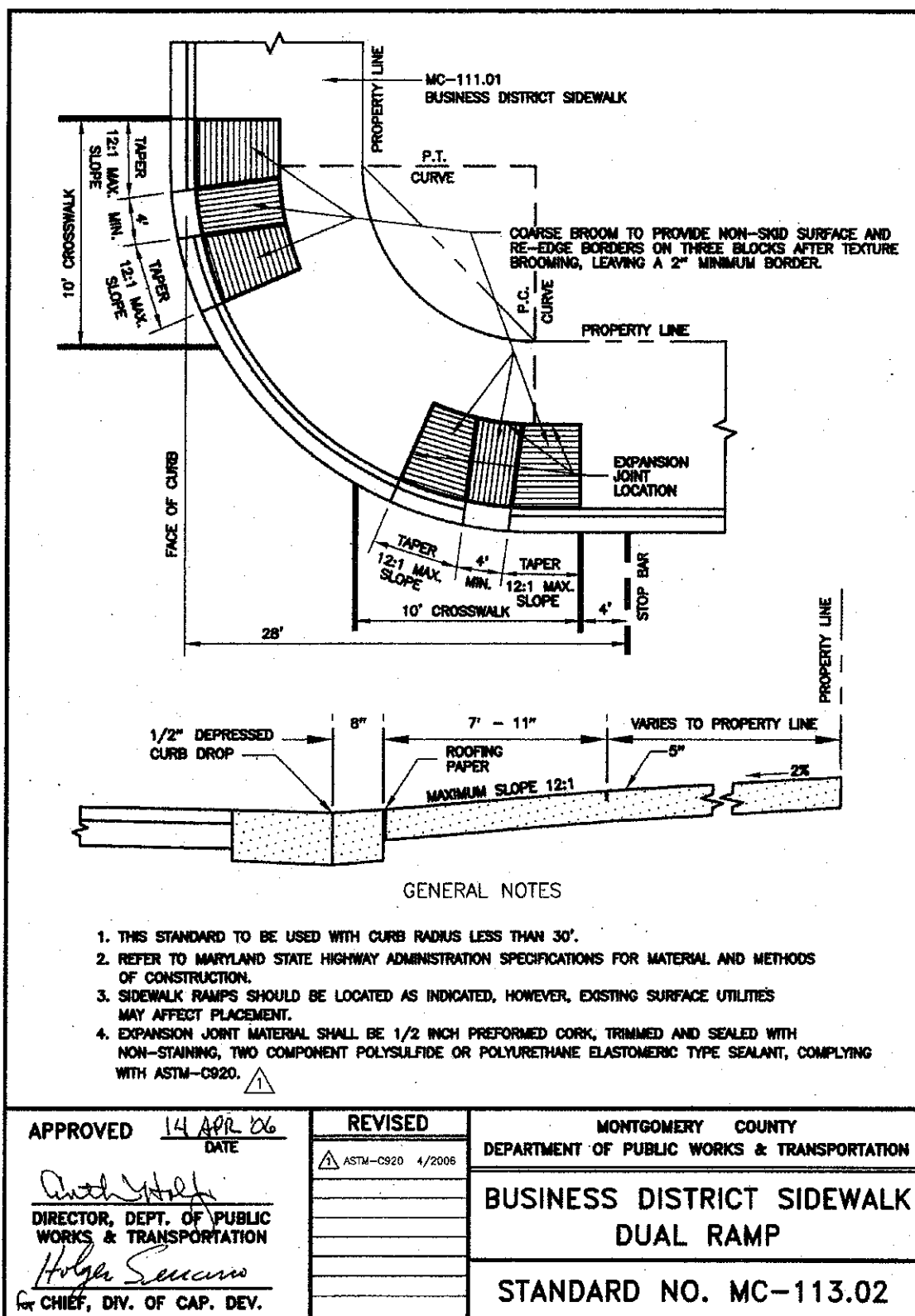
COMMERCIAL DRIVEWAY ENTRANCE

NOT TO SCALE

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

DESIGN STANDARDS – WHEATON STREETSCAPE

		03/24/2009	nmt
NO.	REVISION	DATE	BY



Return to Standards

MONTGOMERY COUNTY, MARYLAND
DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING AND OPERATIONS

MAY 2009

WHEATON DECORATIVE VEHICULAR LUMINAIRE

1) PURPOSE

The purpose of these specifications is to provide minimum requirements for the design, manufacture, finishing and delivery of the Wheaton decorative vehicular luminaire. The Wheaton vehicular luminaire is intended to be mounted on decorative pole in urban streetscape areas in Montgomery County. Any manufacturer, distributor or vendor who submits bid shall agree to comply with these specifications.

2) DESCRIPTION

The luminaire shall be UL/CUL listed, Type III, wide, cutoff fixture, the luminaire shall be 36.8 inches in length and 16.7 inches in width with a maximum EPA of 2.05, designed to be used as an outdoor streetlight. Each luminaire (Holophane catalog number G15AHP12LWFKRF1 or approved equal) shall be complete with:

- a) Lamp;
- b) NEMA Twist-lock photoelectric cell receptacle to be installed atop the luminaire;
- c) All the necessary hardware for installation over a 2.375 inch OD tenon;
- d) Finish color shall match semi-gloss black Thermo-setting, Polyester Powder Coating (fusion bonded coating);
- e) Clear Flat-Glass
- f) Die cast aluminum housing and fitter assembly.

The luminaire must be a suitable size to accommodate a 150 watt HPSV bulb and ballast.

3) OPTICAL ASSEMBLY

The reflector shall consist of high purity (#3002 alloy) aluminum of minimum .08 inch thick sheet. Flat lens shall be 1/8 inch tempered glass. A type III distribution patterns shall be provided in full cutoff depending on tilt angle. These shall include a wide roadway. A clear flat glass lens to mount on the door frame.

4) HOUSING

The housing door and fitter shall be die cast aluminum. The housing shall have an electrostatically applied 2 to 4 mil coat of TGIC polyester powder paint cured @ 425 degree F. It shall have passed a 1000 hour salt spray test as specified by ASTM B-117. It shall be available in brown and gloss black paint finishes. All external hardware shall be corrosion resistant. Housing access shall not require tools and be a hinged latching system. All electrical components shall be on the door for ease of maintenance. The fitter shall be integral to the luminaire and accommodate a 2 inch tenon or arm. The luminaire shall be capable of being tilted between 0 and 18 degrees. Electrical connection shall be inside the fitter assembly and not require fixture entry.

5) BALLAST

The ballast shall be for a 150 Watt, High Pressure Sodium Vapor (HPSV) lamp with a 120 volt power supply. The ballast shall be copper wound high power factor type as specified. It shall reliably start the luminaire to minus 40 degree F. The plug in starter shall be fully encapsulated with a material that electrically and thermally insulates all components from lamp and ballast heat. The capacitor shall be 90 degree C rated with a rated life of 60,000 hours. The luminaire shall have a range of 100 to 400 watt high pressure sodium and metal halide lamping options. Fusing shall be provided inside the luminaire. The ballast shall be tray mounted to allow easy removal of ballast assembly with all connections polarized for quick disconnect. The ballast shall provide lamp wattage within $\pm 5\%$ with $\pm 12\%$ primary line voltage fluctuations.

5.1 Testing results

Test results from an authorized testing facility showing power factor ratings through 24,000 hours at 3,000 hour interval shall be submitted along with a volt watt trace curve of the typical ballast performance to ANSI standards.

6) LAMP

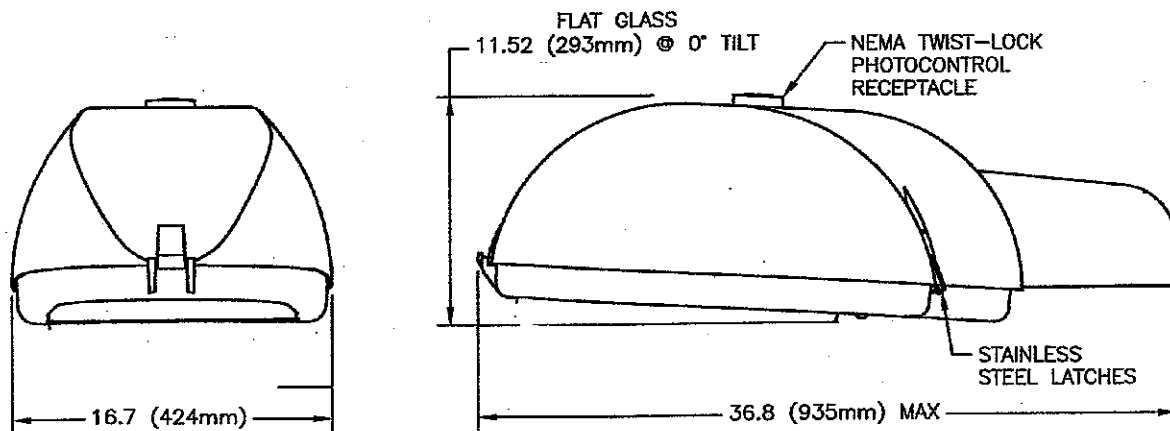
The lamp shall be ANCI code - S55SC-150 (150 watt HPSV). The operating voltage of the lamp and the output voltage of the ballast shall be the same.

7) PHOTOELECTRIC CELL

The photocell shall be a NEMA twist-lock type or equal

8) CORROSION PROTECTION

The complete luminaire assembly must be U.L. listed as "Suitable for Wet Locations." The U.L. listing number shall be submitted with the bid. All exposed metal parts of the luminaire shall be protected against corrosive environments by alkaline cleaning, zinc phosphate pretreatment and Triglycidyl Isocyanate polyester powder paint.



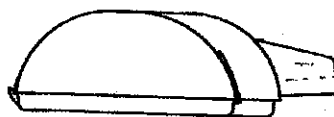
G15AHP12LWFK R F1

CATALOG NUMBER



OPTIC TILT RANGE

WF LOW



"H" MOUNTING
ATTACHES TO A
HORIZONTAL TENON

