Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges



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Preface

The 2007 edition of the Prince George's County, Maryland, Department of Public Works and Transportation, *Specifications and Standards for Roadways and Bridges* replaces all previous editions. The purpose of this document is to bring together the resources necessary to the processes of building and maintaining Prince George's County's roadways and bridges. In doing so, it provides the reader with a variety of texts ranging from required forms to a tabulation of County variances from Maryland State Highway Administration specifications. In order to increase the likelihood of success in these pursuits, therefore, the user is strongly encouraged to read and become familiar with all aspects of this document.

The following four sections, including several appendixes, detail criteria for the design, construction, and materials prescribed as standard for roadway construction regulated by Subtitle 23, "Roads and Sidewalks," of the Prince George's County Code:

- Section I, "Roadway Development Guidelines," which provides the descriptive criteria and guidelines, along with definitions and a listing of reference documents recognized by the Department;
- Section II, "Technical Specifications," which adopts the Maryland State Highway Administration (SHA) 2001 *Standard Specifications for Construction and Materials* and lists in bold, italic, and/or strikeout print all applicable Prince George's County amendments or deviations adopted to meet County requirements;
- Section III, "Standard Sections and Details," which presents graphic standards for roadway sections and appurtenances;
- Section IV, "Appendixes of Departmental Documents," which includes
  - Appendix A, which contains checklists, instructional information, etc.;
  - Appendix B, which contains appropriate forms and other miscellaneous information;
  - Appendix C, "Enabling Legislation,"
  - Appendix D, which consists of the Neighborhood Traffic Management Program;
  - Appendix E, which consists of Prince George's County Policy and Specification for Utility Installation and Maintenance;
  - Appendix F, which consists of Guidelines for the Design of Scenic and Historic Roadways in Prince George's County, Maryland; and
  - Appendix G, which consists of Specifications and Standards for Traffic Control Signals in Prince George's County, Maryland.

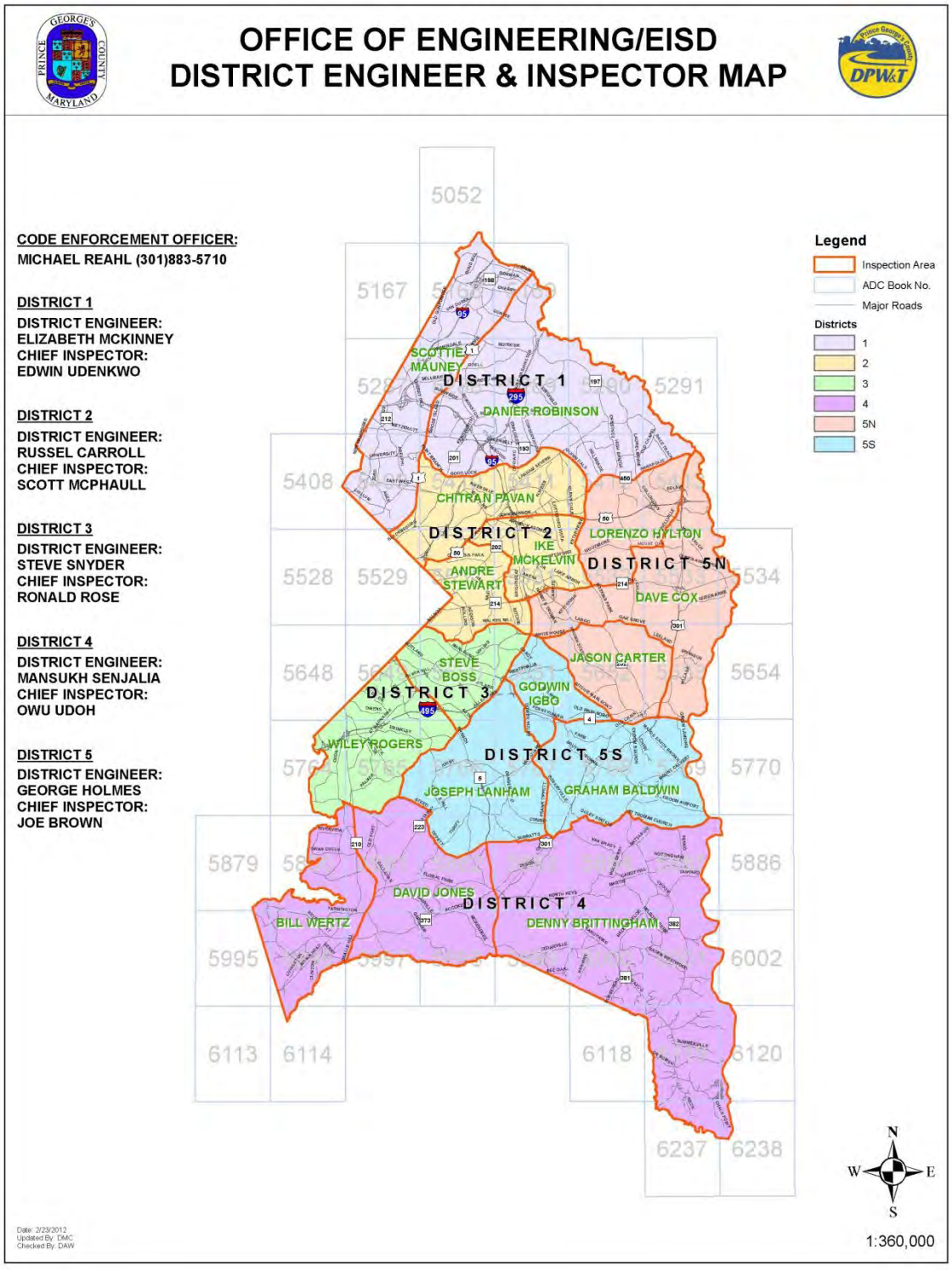
As adjustments or revisions to this document or new Department procedures are found to be necessary or advisable, they will be published as appropriate addenda.

Throughout this document, the applicability of the materials presented is subject to the authority of the Director of the Prince George's County Department of Public Works and

Transportation, or a duly authorized representative, as provided by Subtitle 23. These Specifications and Standards shall be followed strictly in the absence of specific waivers or variances granted in accordance with Subtitle 23. It is also expected that, in order to produce a safe and attractive result in accordance with recognized engineering practice, designers shall apply generally accepted principles of engineering to the specific situations encountered. Where this may necessitate a specific departure from the requirements of this document, the designer is expected to identify such situations as early as possible in the design process and to obtain the necessary concurrence, waivers, or variances as provided by Subtitle 23 and relevant directives of the Department.

Chartered Municipalities Within Prince George's County			
1	Berwyn Heights	15	Glenarden
2	Bladensburg	16	Greenbelt
3	Bowie	17	Hyattsville
4	Brentwood	18	Landover Hills
5	Capitol Heights	19	Laurel
6	Cheverly	20	Morningside
7	College Park	21	Mount Rainier
8	Colmar Manor	22	New Carrollton
9	Cottage City	23	North Brentwood
10	District Heights	24	Riverdale Park
11	Eagle Harbor	25	Seat Pleasant
12	Edmonston	26	University Park
13	Fairmount Heights	27	Upper Marlboro
14	Forest Heights		

Prince George's County Department of Public Works and Transportation
DPW&T Engineering and Maintenance Districts



Frequently Called Numbers
Prince George's County Government and Related Organizations

Prince George's County Government Main Information Number – 301.350.9700

DPW&T Office of the Director	
Director	301.883.5600
Personnel	301.883.5600
Community Partnering	301.883.5600
Illegal Dumping	301.883.5600

DPW&T Office of Project Management	
Associate Director	301.883.5642
Highway & Bridge Design	301.883.5640
Right-of-Way	301.883.5750

DPW&T Office of Transportation	
Associate Director	301.883.5700
Pavement Markings	301.883.5650
Damaged Sign Replace	301.883.5650
Traffic Signs	301.883.5650
Traffic Signals	301.883.5650
Transit Information	301.883.5656
Call-A-Cab	
Ridesharing	
Vanpooling	
Metro/Rail Schedules	
RideSmart Program	
Voucher Purchases	
Call-A-Bus	301.499.8603
THE BUS	**301.324.2877**

DPW&T Office of Highway Maintenance	
Associate Director	301.499.8523
Deputy Assoc. Director	301.499.8523
Customer Service	**301.499.8520**
Potholes	
Leaf Collection	
Snow/Ice Controls	
Service Requests	
Street Trees	
Roadside Litter/Illegal Dumping	
Concrete Repair	
Storm Drain Maintenance	
Adopt-A-Road/Median	301.499.8502
24-Hour Emergencies	**301.324.2710**
Snow Information Center	**301.350.0500**

DPW&T Office of Engineering	
Associate Director	301.883.5710
Roadway Permit Issuance	301.883.5915
Roadway Permit Inspection	301.883.5710
Engineering Services	301.883.5710
Construction Services	301.883.5730
Utility Section	301.883.5730
Streetlights	301.883.5730

Power/Utility Companies	
BGE	800.685.0123
Comcast	301.499.1980
PEPCO	877.737.2662
SMECO	888.440.3311
Verizon	888.550.2244
Washington Gas	301.843.6142
WSSC	301.206.4002

Prince George's County Police	
District I	301.699.2630
District II	301.390.2100
District III	301.772.4900
District IV	301.749.4900
District V	301.856.3130
District VI	301.937.0910

Maryland State Police	
Forestville Barracks	301.568.8101
College Park Barracks	301.345.3101

M-NCPPC Police	
Non-Emergency Phone Number	301-459-9088
Emergency Phone Number	301.459.3232

Other Useful Numbers	
Animal Management	301.499.8300
Building Permits	301.883.5784
Bulky Trash Collection	301.952.7600
Clean Lot Enforcement	301.883.6100
County Council	301.952.3700
County Executive	301.952.4131
Court System	301.952.3655
Emergencies, Fire, Medical, Police	**911**
Library System	301.322.0105
Metro	202.637.7000
Miss Utility	800.257.7777
Motor Vehicle Admin	800.950.1682
Permits & Review	301.883.5900
Property Standards	301.883.6100
Public School System	301.952.6001
Refuse Complaints	301.952.7630
Revenue Authority	301.925.9448
Sheriff's Department	301.952.4000
State Highway Admin	301.513.7300



For more information, please visit the Department's Web site:

http://www.princegeorgescountymd.gov

On the "Select an Agency" pull-down menu,
select "Public Works/Transportation"

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION I
Roadway Development Guidelines

Revision 03/14/12

Section I – Roadway Development Guidelines

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CHAPTER 1: INTRODUCTION

A. THE DEPARTMENT

1. Mission Statement

The mission of the Department of Public Works and Transportation is to provide and sustain a safe, well-maintained, aesthetically pleasing, and environmentally responsible transportation system of roads, bridges, sidewalks, bicycle paths, and transit services, as well as to enforce site development compliance. The Department also strives to provide the highest quality services to County residents and businesses, thereby stimulating the economic and community development of the County through improvements to the transportation infrastructure.

2. Organization

The Department is divided into four operating offices under the oversight of the Office of the Director. (See organization chart this chapter.)

The *Office of the Director* is responsible for the overall direction and management of the Department and provides staff support and services to the four operating offices, including human resource management; financial management; maintenance and repair of the Department's fleet of equipment used to deliver services; information technology management; and coordination of State, regional, and Federal transportation issues.

The Office of Transportation is composed of three primary divisions: Planning, Administration, and Operations.

- The Planning Section is tasked with service level improvements for transportation on a countywide basis. The latter includes route planning, ridership data analysis/reporting, marketing, and implementation for TheBus, ParaTransit Operations, and associated WMATA routes within the confines of Prince George's County. This division also retains the bus shelter and rideshare programs.
- The Administration Section oversees all key functionality for the Office of Transportation from a grant application, procurement, and finance standpoint. The latter is inclusive of allotment from both a capital and operational budget standpoint. This division is also in-charge of the Call-A-Cab program.
- The Operations Section is a merger of two halves. The County administrated portion is dubbed ParaTransit whereby the County partakes in Senior Transportation Services, Dialysis Transportation, and Call-A-Bus. The second portion is the fixed route portion known as TheBus; administered by a vendor with direct oversight by the County. TheBus operations includes an average of 26 fixed routes, a fleet size including 91 Gillig buses and an annual ridership approaching 3 million customers.

The *Office of Project Management* manages the planning, design, and construction of County-funded Capital Improvement Projects. It is composed of two operating divisions: Highways and Bridges, and Right-of-Way.

- The Division of Highways and Bridges plans, designs, and constructs roadway, drainage, flood control, and bridge-related capital improvement projects. This division also manages engineering and construction management firms engaged in the design and construction of

road, bridge, drainage, and flood control projects.

- The Division of Right-of-Way appraises and acquires the necessary rights-of-way and easements for Department construction and maintenance activities. This division also provides property acquisition support for many of the County's other departments.

The *Office of Engineering* is composed of two divisions: Engineering and Inspection Services and Traffic Safety.

- The Engineering and Inspection Services Division (EISD) reviews and approves construction plans for proposed road improvements and site developments submitted by the development community; issues permits for various work located within the County rights-of-way and site development; reviews, approves, and inspects stormwater management facilities, flood plain delineation and site grading; provides review comments to the Maryland-National Capital Park and Planning Commission (M-NCPPC) in reference to subdivision referrals; inspects and enforces code requirements for all permitted site construction and road construction within the public rights-of-way; and provides technical assistance to the County Council, citizens, and other agencies.

  The EISD also reviews and issues permits, regulates construction, and enforces all Chesapeake Bay Critical Area (CBCA) requirements. The CBCA is comprised of three distinct overlay zones (e.g., Intense Development, Limited Development, and Resource Conservation), all of which are subject to code enforcement, review, and the permitting process. The Division performs compliance reviews for new building construction building additions, accessory structures, and grading that may be impacted by the CBCA program.
  - The Materials Lab performs quality assurance testing of construction materials and reviews geotechnical studies in support of permits and the Department's Capital Improvement Program (CIP) projects.
  - The Permits Section, also part of the EISD, accepts and processes all permit-related activities for the Department. This section accepts applications from the general public, private contractors, and developers to perform site construction and roadway construction work within the public rights-of-way; collects permit fees and processes permit applications; and reviews cost estimates and roadway construction plans prepared by consultant engineers. The Permits Section also works in liaison with the Department's EISD, the Utility Section, and the County's Office of Law, as well as other county agencies, to ensure that County Code requirements related to the issuance of building permits are met. The Permits Section is responsible for releasing and closing out all permits.
- The Traffic Safety Division reviews and approves traffic designs for roadways and parking facilities, new developments, and subdivisions, including signing, pavement marking, and maintenance of traffic; forecasts future traffic volumes and patterns; implements the County's street lighting program; con-

ducts street light studies, traffic signal studies, traffic counts, traffic studies, and the speed awareness program; prepares traffic signal designs and maintenance of traffic designs. This division also implements the Neighborhood Traffic Management Program (NTMP). (See Section IV, Appendix D.)

- The Utility Section coordinates with utility service companies whose facilities are located within the County rights-of-way. It administers all aspects of the permitting of utility installation and maintenance in the County rights-of-way, including application, review, issuance, and inspections, in accordance with the *Prince George's County Policy and Specification for Utility Installation and Maintenance.* (See Section IV, Appendix E.)

The *Office of Highway Maintenance* provides a variety of services required for keeping the County's roadway system ready for use and reasonably free of hazards through its four operating divisions: Road Maintenance and Construction Services, Special Services, Storm Drainage Maintenance, and Traffic Management and Operations.

- The Road Maintenance and Construction Services Division coordinates maintenance and repair activities for the County's roadways. These activities include roadway repair, side ditch maintenance, leaf collection, and snow and ice control. This division also coordinates the construction of minor Capital Improvement Program (CIP) projects that are unsuitable for contracting and maintains bridges, box culverts, inlets, guardrails, sidewalks, and concrete curbs and gutters. The division also provides construction administration for roadway resurfacing and related rehabilitation projects.
- The Special Services Division maintains the trees, turf, and grounds associated with County roadways and certain buildings. This responsibility includes collecting and disposing of roadside litter and other debris and managing the County's mechanical street sweeping program.
- The Storm Drainage Maintenance Division develops, administers, and inspects both contractual and in-house maintenance and repair activities for the County's public storm drainage and flood control facilities; maintains and repairs the County's flood control pumping stations; and maintains stormwater systems, drainage channels, stormwater management ponds, and all

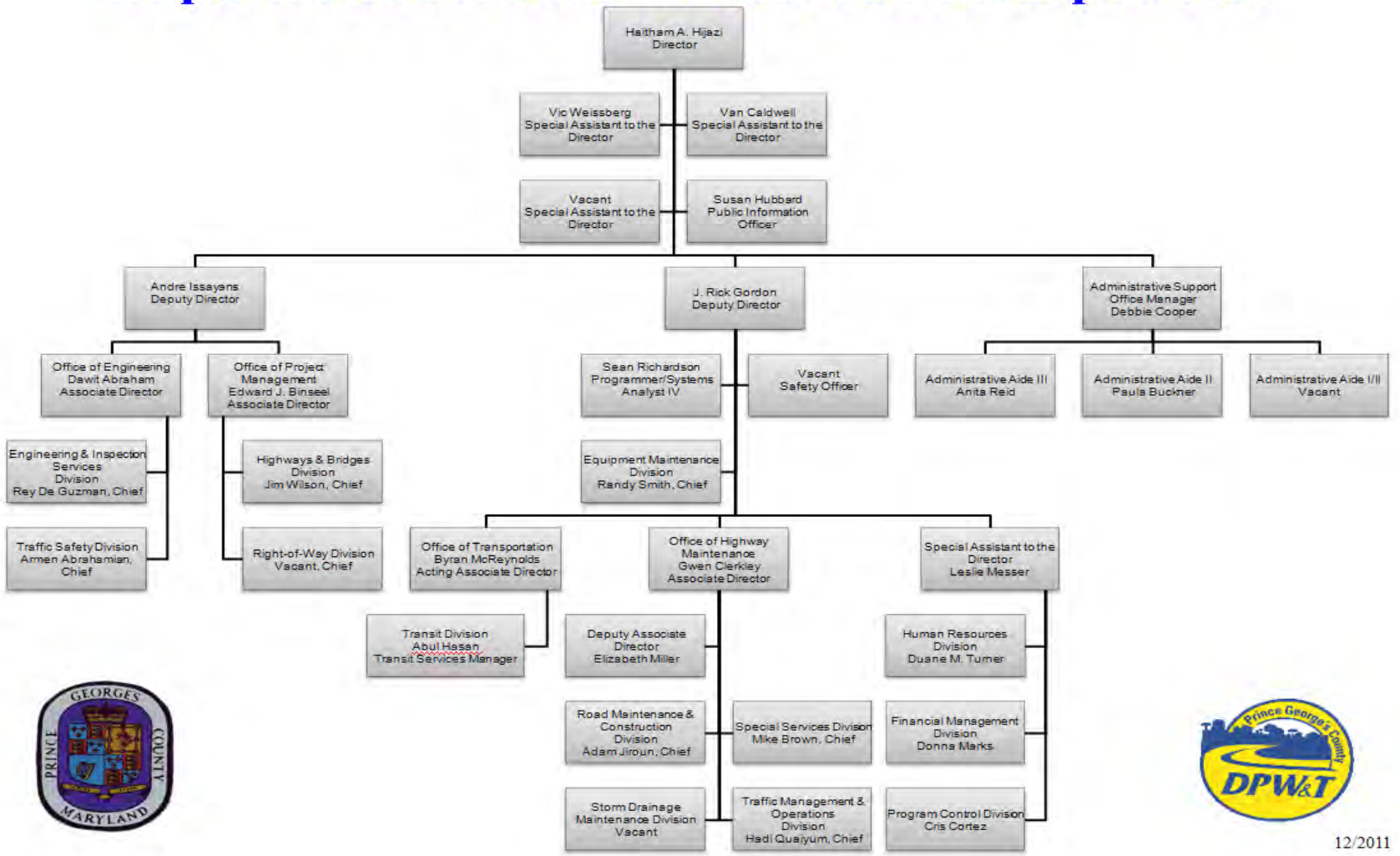
County-owned facilities located within storm drainage easements.

- The Traffic Management and Operations Division reviews traffic signal plans; evaluates the need for implementing traffic management measures; oversees the operation of the Transportation Response Information Partnership (TRIP) Center, which monitors County traffic signals through close circuit television cameras; observes and monitors real-time traffic signal coordination and signal timing; deploys temperature probes throughout the County to monitor pavement temperatures and weather conditions; and provides special pavement markings on roads in high-traffic-volume areas; provides special equipment for the speed awareness program; provides special pavement markings; and maintains all existing traffic signal equipment and street signs within the County rights-of-way.

3. Organization Chart

The organization chart of the Prince George's County Department of Public Works and Transportation appears on the following page.

Department of Public Works and Transportation



12/2011

B. GENERAL INFORMATION

The purpose of the *Specifications and Standards for Roadways and Bridges in Prince George's County, Maryland* (*Specifications and Standards*) is to promote uniform and consistent criteria, standards, and practices for the construction of roadways in Prince George's County, Maryland (the County). Section I serves as a guide to Permittees and their engineers, County Department of Public Works and Transportation (the Department) staff reviewers and designers, and consultants. It is intended for use, in conjunction with the requirements set out in Section II, "Technical Specifications," and Section III, "Standard Roadway Sections and Details," and regulations and policies of the Department, as well as applicable State and Federal standards, for the design and construction of a roadway system that is safe, efficient, durable, aesthetically pleasing, and environmentally acceptable.

The engineering data and recommendations presented herein are intended to represent acceptable standards for routine designs in normal circumstances. The user of this document should be alert, however, to the existence of special or nonstandard situations involving roadway design. Any departures from normal circumstances should be considered in consultation with Department reviewing engineers. Lowering of the acceptable standards established herein should be avoided unless there is a reasonable expectation that the situation will be upgraded at a future time to conform to these standards and it is evident that the lowered standards will fully meet the needs of the design requirements and predicted traffic volume for the life of the development without jeopardizing safety.

NOTE: Any lowering of standards from those prescribed in this document shall occur only with the prior written approval of the Department Director.

Departures from these standards that result in consistently higher standards and innovative solutions promoting traffic safety, and roadway durability and capacity, are encouraged.

NOTE: In all cases, roadway designs prepared for use in Prince George's County are subject to final review and approval by the Department Director.

These *Specifications and Standards* govern the design and construction work done in relation to Prince George's County Capital Improvement Program (CIP) projects and construction contracts administered by the Department, except in those instances referenced in such contracts. The scope of services to be performed under a departmental design contract, the design approval criteria, and the exact work to be performed under a departmental construction contract will be established by the Department Offices of Engineering, Highway Maintenance, Project Management, and/or Transportation, using the guidelines, specifications, and standards provided in these specifications.

1. Definitions

The technical, geometric, structural, and design terms used in these *Specifications and Standards* shall have the meanings stated in the *Standard Specifications for Construction and Materials* of the Maryland State Highway Administration (MSHA), and

the Prince George's County Code, Subtitle 23. Where not defined therein, those terms shall have the meanings established by the American Association of State Highway and Transportation Officials (AASHTO) and the American Society for Testing and Materials (ASTM).

In addition, certain terms that are used in this document shall be defined as follows:

- *Arterial roadway*—A through roadway with four to six traffic lanes divided by a median and designed to carry higher traffic volumes where parking and direct access are generally prohibited, and entrances, intersections, and median crossings are placed at wide intervals
- *Major Collector roadway*—A through roadway with four traffic lanes divided by a median and designed to carry moderate traffic volumes where parking is generally prohibited and direct property access is limited
- *Collector roadway*—A through roadway with four traffic lanes divided by a painted centerline and designed to carry moderate traffic volumes where parking is generally prohibited and direct property access is limited
- *Commercial roadway*—A roadway designed with sufficient strength to serve adjacent properties with commercial zoning designations; low-volume two-way traffic lanes may be accommodated, as well as some on-street parking, unless otherwise prohibited
- *Department*—The Prince George's County Department of Public Works and Transportation
- *Industrial roadway*—A roadway designed with superior strength to accommodate all industrial-related vehicles and serve adjacent properties having industrial zoning designations; high-volume two-way traffic lanes may be accommodated where on-street parking is prohibited
- *Residential roadway*—A local roadway designed to accommodate light vehicle traffic and to serve adjacent property having residential zoning classifications
- *Road Ordinance*—Subtitle 23 of the Prince George's County Code

2. Abbreviations

The abbreviations listed in GP-Section 1, Item 1.04, of the MSHA *General Provisions for Construction Contracts,* latest edition, are adopted. In addition, the following abbreviations shall have the meanings indicated here:

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGE	Baltimore Gas & Electric
CATV	Cable Television
CIP	Capital Improvement Program
DER	Department of Environmental Resources, Prince George's County
DPW&T	Department of Public Works and Transportation, Prince George's County
ENR	Engineering News-Record
FHWA	Federal Highway Administration
MDE	Maryland Department of the Environment
MDOT	Maryland Department of Transportation
M-NCPPC	Maryland-National Capital Park and Planning Commission
MSHA	Maryland State Highway Administration
MSMT	Maryland Standard Method of Tests
MUTCD	Manual on Uniform Traffic Control Devices

NCHRP	National Cooperative Highway Research Program
NTMP	Neighborhood Traffic Management Program
PEPCO	Potomac Electric Power Company
PGSCD	Prince George's Soil Conservation District
PUE	Public Utility Easement
SMECO	Southern Maryland Electric Cooperative
MOT	Maintenance of Traffic
USCS	Unified Soil Classification System
WGL	Washington Gas Light Company
WMATA	Washington Metropolitan Area Transit Authority
WSSC	Washington Suburban Sanitary Commission

3. References

The following documents provide general guidelines and policies on the design of highways. References to dated publications shall be understood to be updated as revisions or supplements are released by their respective publishers.

a. Publications of the American Association of State Highway and Transportation Officials (AASHTO):

- *A Policy on Geometric Design of Highways and Streets*, latest edition
- *Roadside Design Guide*, latest edition
- *A Policy on Design Standards/ Interstate Systems*, latest edition
- *Manual on Uniform Traffic Control Devices*, latest edition
- *Standard Specifications for Highway Bridges*, 1996 and current interim specifications
- *Guide for the Development of Bicycle Facilities,* latest edition

b. Publications of the Transportation Research Board (TRB), National Research Council, including the *Highway Capacity Manual*, latest edition.

c. Publications of the Prince George's County Department of Public Works and Transportation:

- The component parts of these *Specifications and Standards*:
    - Roadway Development Guidelines;
    - Technical Specifications;
    - Standard Roadway Sections and Details;
    - Appendixes.
- *Specifications and Standards for Traffic Control Signals*, Section IV, Appendix G;
- *Neighborhood Traffic Management Program*, Section IV, Appendix D;
- *Guidelines for the Design of Scenic and Historic Roads*, Section IV, Appendix F;
- *Policy and Specifications for Utility Installation and Maintenance*, Section IV, Appendix E;
- *Prince George's County Road Ordinance*, Section IV, Appendix C;
- *Specifications and Standards for Stormwater Management;*
- *Stormwater Management Design Manual.*

d. Other publications of the Prince George's County Government, including the County Code, and especially:

- Prince George's Soil Conservation District—Soil Erosion and Sediment Control—Pond Safety Reference Manual, May 2000 or latest edition;
- Subtitle 5A, Cable Television;
- Subtitle 23, Roads and Sidewalks (Road Ordinance 1989);
- Subtitle 24, Subdivisions;
- Subtitle 25, Trees and Vegetation;
- Subtitle 26, Vehicles and Traffic;
- Subtitle 27, Zoning Ordinance;
- Subtitle 28, Civil Monetary Fines or

Penalties.
- Subtitle 32 Water Resources Protection And Grading Code.

e. Publications of the Maryland State Highway Administration (MSHA), Maryland Department of Transportation (MDOT):
- *MDE 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control,* or latest edition;
- *Standard Specifications for Construction and Materials*, latest edition;
- *Book of Standards for Highways and Incidental Structures*, latest edition;
- Maryland Supplement to the *Manual on Uniform Traffic Control Devices*, latest edition.

f. The following landscape technical publications are referenced and their requirements adopted for landscape and arboricultural operations in Prince George's County:
- *Specifications and Standards for Roadways and Bridges in Prince George's County, Maryland,* Prince George's County Department of Public Works and Transportation (DPW&T), Section III, Standards 600.01 through 600.20;
- *Specifications and Standards for Construction and Materials,* MDOT, MSHA, Category 700, Landscaping, and Section 920, Landscaping;
- *Book of Standards—Maintenance of Traffic and Safety,* MDOT, MSHA;
- *The Maryland Roadside Tree Law, Title 08, Law and Regulations—Permits and Certified Tree Care Experts,* Maryland Department of Natural Resources (DNR);
- ANSI Z133.1-2000 for Arboricultural Operations, American National Standards Institute (ANSI);
- *Standard Procedures and Specifications—Planting Operations*, American Association of Nurserymen;
- *Seeding Operations,* Maryland Department of Agriculture, Seed Certification Agency;
- *Maryland Pesticide Applicator's Law—Certified Applicator of Pesticides (Category IIIA or VI),* Maryland Department of Agriculture;
- *Standards of the Association of Official Analytical Chemists—Fertilizer Grades,* Association of Official Analytical Chemists;
- *Topsoil Testing*, University of Maryland or certified private laboratory; and
- *Invasive Species,* Maryland Department of Agriculture, Maryland Invasive Species Council, Plant Protection and Weed Management Section.

g. Publications of the Washington Metropolitan Area Transit Authority (WMATA), including *General Provisions and Standard Specifications for Construction Projects.*

CHAPTER 2: OBJECTIVES AND ROAD CLASSIFICATIONS

A. OBJECTIVES

The general intention of these roadway classifications is to meet three objectives. First, new roadway construction or reconstruction shall result in roadways that are safe and that promote mobility for auto, pedestrian, bicycle, public transit, and all other elements of the traveling public. Second, to the extent possible, sufficient roadway capacity should be developed to accommodate existing local and regional traffic as well as that anticipated by recognized future traffic projections. Third, these objectives should be attained in a manner that is aesthetically pleasing, with minimal adverse impact on the environment, including all lands adjoining the roadway.

Because the primary objective is safety, all aspects of roadway design and construction (including hiker/biker trails, sidewalks, and street lighting) are expected to adhere to minimum nationally recognized standards. Where it is practical and consistently attainable, the highest level of safety should be sought by exceeding these minimum standards.

Subject to the foregoing, all roadway design and construction must meet the additional objectives of providing a safe, durable, low-maintenance, right-of-way area that is free of clutter, drainage problems, and other nuisances in a high-quality and visually pleasing environment.

In all cases, the Department Director or a duly authorized representative shall have final approval authority for all proposed roadway improvement projects within County rights-of-way.

B. ROAD CLASSIFICATIONS

The following are the functional classifications of roadways in Prince George's County. Urban classifications are closed-section (e.g., with curb and gutter) and rural classifications are open-section (e.g., no curb and gutter) roadways. For appropriate widths and rights-of-way, see Table I-1.

1. Arterial Road (Urban and Rural)

A through roadway which links principal State highways, or County arterial or collector roads. An arterial road:

- Is intended to serve major centers of activity in urban and rural areas and to carry the highest traffic volumes of County roadways;
- Separates opposing traffic with a median of sufficient width to contain exclusive left-turn lanes and to allow crossing vehicles to clear one-half of the roadway and wait safely in the median before entering the other half;
- Provides four or six through lanes;
- Generally prohibits on-street parking and direct private property access; where allowed, such parking and access are supported by additional lanes and specially approved entrances;
- Provides controlled access, limited to widely spaced entrances, intersections, and median crossings; with left turn, acceleration, and deceleration lanes; and signals provided as necessary;
- May use curbed or open drainage construction in both the median and roadside areas, depending on the setting and conditions of connecting roads; and
- In urban areas only, may provide either sidewalks or hiker/biker trails for pedestrian use.

Generally, the median width may vary, depending on the intersection and median crossing requirements and the availability of sufficient right-of-way width to accommodate the median. Additional median and/or right-of-way widths may be provided to accommodate sidewalks, hiker/biker trails, bike lanes, and future high-occupancy vehicle lanes, busways, or other public transit facilities (e.g., light rail).

Arterial roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.01 and 100.08.

2. Major Collector Road (Urban and Rural)

A through roadway which links State highways, or County arterial or collector roads. A major collector road:

- Is intended to carry moderate daily and peak traffic volumes typical of generally continuous, occasionally interrupted, traffic flow along a route that is dominant over the local streets, but subordinate to the State highways and County arterial roads;
- Separates opposing traffic by a median or painted centerline median and contains exclusive left-turn lanes while maintaining continuity;
- Provides four through lanes;
- Generally prohibits on-street parking and direct private property access; where allowed, such parking and access are supported by additional lanes or bays;
- Provides entrances, intersections, and median crossings that are spaced to avoid interference with right turn, acceleration, or deceleration lanes, as necessary;
- In urban areas only, may provide sidewalks or hiker/biker trails for pedestrian/bicycle use or bike lanes within the travel lanes; and
- May use curbed or open drainage roadside construction, depending on the setting and conditions of connecting roads.

Major collector roads shall be constructed to conform with the requirements stipulated in Section III, Standard 100.02.

3. Collector Road (Urban and Rural)

A through roadway comparable in function to a major collector road, except a median or other physical traffic barrier to separate opposing traffic is not required other than at critical locations. The collector road:

- Separates opposing traffic by a painted centerline or, where warranted, by a painted continuous two-way left-turn lane or exclusive left-turn lane; such exclusive left-turn lanes may be required in:
    - Commercial areas where access spacing is close;
    - Residential areas where homes front the roadway; or
    - Any area where closely spaced intersections require frequent transitions to accommodate left turns;

- Provides four through lanes for ultimate construction, except that, where traffic volumes are expected to remain low for some time, a phased construction of two through lanes with provisions for future widening may be provided; in addition:
    - On a four-lane collector where on-street parking is prohibited and where there is not a continuous left-turn lane, the pavement width is 46 feet; where one-side parking or separate bicycle lanes are re-

quired, a width of 54 feet is necessary;
    - On a four-lane collector with a continuous left-turn lane, where on-street parking is prohibited, a width of 58 feet is necessary; and
    - In low-traffic rural areas, permanent two-lane construction may be allowed;
- Treats on-street parking, direct private property access, entrances, intersections, and crossings in the same manner as a major collector road, except that access may be more liberally allowed in urbanized areas;
- In urban areas only, may provide sidewalks or hiker/biker trails for pedestrian/bicycle use or bike lanes within the travel lanes; and
- May use curbed or open drainage roadside construction, depending on the setting and conditions of connecting roads.

Collector roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.03, 100.04, and 100.09.

4. Urban Commercial and Industrial Road

A local roadway serving a developed area having commercial or industrial uses on either side, or predominantly institutional or high-density residential uses in the general area. A commercial and industrial road:

- Is geometrically similar to a collector road;
- Is intended to allow for frequent turning movements, and occasional curbside parking or standing of heavy vehicles;
- Separates opposing traffic by a painted centerline;
- Restricts on-street parking and direct private property access only where necessary for capacity, turning movements, or safety;
- Requires curbed roadside construction; increased intersection curb radii should be provided to accommodate large vehicles;
- Industrial roads require a more durable pavement design to accommodate increased-weight vehicles, characteristic of industrial areas; and
- May provide sidewalks for pedestrian use.

Commercial and industrial roads shall be constructed to conform with the requirements stipulated in Section III, Standard 100.05.

5. Primary Residential Road (Urban and Rural)

A local roadway intended to distribute light vehicles and occasional service traffic into or through a large residential area from a dominant roadway. A primary residential road:

- Is intended to serve adjacent properties with a clear two-way roadway at low speeds subject to traffic interruptions at intersections and driveways; through and point-to-point traffic may occur;
- Separates opposing traffic by a painted centerline;
- Restricts direct private property access only where necessary for capacity, turning movements, or other safety considerations;
- Restricts on-street parking only in the case of open drainage construction where the shoulder width is insufficient to park vehicles clear of the two through lanes and where necessary for

safe turning movements;

- May require either curbed or open drainage roadside construction, depending on the continuity with adjacent construction, available right-of-way, lot widths, spacing of entrances, availability of sufficient off-street parking, or drainage requirements; curbed construction is required where the abutting development will result in closely spaced entrances or where off-street parking will be in short supply, as is usually determined by the predominant lot widths, sizes, or setbacks, and by where the continuity of the roadway or drainage requires curbing; and
- In urban areas only, provides sidewalks for pedestrian use.

Primary residential roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.06 and 100.10.

6. Secondary Residential Road (Urban and Rural)

A local roadway intended to provide access to small residential areas with very limited or no through traffic. A secondary residential road:

- Is intended to provide adjacent properties with slow-speed access adequate for light vehicles and occasional service vehicles;
- Provides one clear through lane;
- May require opposing traffic to yield or to use adjacent parking lanes for passing;
- Generally does not restrict direct private property access, except in proximity to intersections;
- Restricts on-street parking only in the case of open drainage roadside construction, or where necessary for turning movements or other safety considerations;
- May require either curbed or open drainage roadside construction, depending on the density, setting, location, and style of the residential development and conditions of the connecting roads; curbed construction is required where the abutting development will result in closely spaced entrances or where off-street parking will be in short supply, as is usually determined by predominant lot widths, sizes, or setbacks, and by where the continuity of the roadway or drainage requires curbing; and
- In urban areas only, provides sidewalks for pedestrian use.

Secondary residential roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.07 and 100.11.

7. Scenic or Historic Rural Road

A through roadway which has been designated as possessing unique scenic or historic characteristics deemed worthy of preservation. Scenic or historic roadways may include among their identifying features: scenic views, distinctive topographical features, curving and/or rolling roadway alignments, leaf tunnels, views of historic buildings or sites, etc.

NOTE: For more information, including an approved list of scenic and historic rural roads in Prince George's County, and procedures for designation and planning, refer to the Department's *Guidelines for the Design of Scenic and Historic Roadways in Prince George's County, Maryland*. (See Section IV, Appendix F.)

A scenic roadway:

- Has been designated by the Prince George's County Council and provides scenic views along a substantial part of its length through natural or manmade features, such as forest or extensive woodland, cropland, pasturage, or meadows; distinctive topography, including outcroppings, streambeds, or wetlands; traditional building types; historic sites; or roadway features such as curving, rolling roadway alignment and 'leaf tunnels';
- Shall have as its goal to provide safe and enjoyable travel while preserving the scenic or historic value of adjacent areas;
- Is, in most cases, a two-lane rural roadway with open drainage;
- Requires that typical section and drainage needs be determined in each case by the Department Director, based on the projected development and traffic capacity needs of the area;
- May require, in some cases, an urban roadway with enclosed drainage; and
- Shall in no case be less than a 22-foot pavement, excluding the shoulder area. (See Section IV, Appendix F.)

A historic roadway:

- Has been designated as historic by the Prince George's County Council and is documented by historic surveys or maps that maintain its historic alignment and historic landscape context through views of natural features, historic sites and structures, historic farmstead groupings, or rural villages;
- Has been designated as historic because its use dates back to the County's early settlement, and it provides irreplaceable links to our past;
- Is, in most cases, a two-lane rural roadway with open drainage;
- Requires that typical section and drainage needs be determined in each case by the Department Director, based on the projected development and traffic capacity needs of the area;
- May require, in some cases, an urban roadway with enclosed drainage; and
- Shall in no case be less than a 22-foot pavement, excluding the shoulder area. (See Section IV, Appendix F.)

To set minimum standards for design and construction, each proposal for undertaking work on a particular rural road designated by the County as scenic or historic shall be reviewed by the Department Director or by a duly authorized representative, who shall also have final approval authority for all proposed roadway improvement projects within the County rights-of-way. This coordination will begin when the preliminary plan of subdivision is submitted by the prospective permit applicant to the M-NCPPC for approval. Prior to application submittal, a conceptual meeting will be scheduled by the applicant with M-NCPPC and the Department. The applicant will be required to present adequate project information in order that fundamental design requirements and approvals can be made. This information will include supporting statistics on present and projected travel demands, alignment alternatives, and a recommendation that addresses and satisfies necessary safety issues.

Scenic or historic rural roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.13 through 100.16.

8. Private Road (Rural)

A low-volume roadway designed to serve a limited number of properties in rural developments, particularly in open space; or residential agricultural, residential estate, or rural residential zones, as permitted under M-NCPPC regulations. A private rural road:

- Is comparable to a rural/secondary residential road, except that it is maintained by residents of the development;
- Does not necessarily restrict on-street parking, although the size of associated lots encourages off-street parking;
- Usually provides two usable through travel lanes;
- Generally does not restrict direct private property access, except as may be provided under the subdivision regulations;
- Usually does not separate opposing traffic;
- Requires open drainage, side ditch construction with permanent reinforced concrete storm drainage, concrete inlets and manholes, and steel guardrail barrier systems as standard;
- May not connect to more than one public roadway;
- Shall be located within a minimum private right-of-way of 50-foot width in the development served; and
- May serve a varying number of single-family lots, depending on the property zoning classification; in some rural areas, ingress/egress access may be provided to a maximum number of 8 lots, each being 2 acres or larger; in other rural areas, an unlimited number of lots, 5 acres or larger, with a minimum property frontage width of 300 feet, may be served.

The M-NCPPC Planning Board may approve a subdivision with private rural roads, provided that the roads are designated as common areas. In all cases, the property owner/subdivider shall submit covenants that apply maintenance responsibilities to the individual owners of property. Those covenants will always remain with whomever holds the title to the land. The covenants shall also be filed in the land records at the time of filing the final plat of the subdivision.

Private rural roads shall be constructed in accordance with the "Rural/Secondary Residential Road" standards, pursuant to Subtitle 23 of the Prince George's County Code, and in conformity with the requirements stipulated in Section III, Standard 100.12.

CHAPTER 3: ROAD DESIGN GUIDELINES AND CRITERIA

A. DESIGN

1. Design Speeds, Radii, Grades, and Sight Distances

For purposes of designing safe roadways, the geometric and sight distance values recommended in Table I-2 should be used. They are derived from the applicable AASHTO criteria. In accordance with AASHTO publications, the designer is expected to make a reasonable effort to provide sight distances equaling or exceeding those stated herein or as appropriate to the approved design speed throughout the length of the roadway under design.

Bearing in mind the goal of consistent driver expectation, the designer should use consistent standards to discourage driving at excessive speeds when transitioning onto roads with more restrictive standards. Specific situations, however, may allow other design speeds and provisions for corresponding sight distances, in consultation with Department reviewing engineers. The designer has latitude to submit designs based on other speeds if supported by recognized, authoritative references for the expected future traffic situation.

In urban situations and when approaching all intersections, necessary stopping sight distances require that pavement geometry, markings, and other traffic controls be visible sufficiently in advance for vehicle operators to stop their vehicles before they reach objects in their paths. Drivers should be able to comply without having to make abrupt maneuvers.

NOTE: See Table I-2 at the end of Section I for recommended radii, grades, and stopping sight distances.

Stopping sight distance is measured from a height of 3.5 feet (equivalent to a driver's eye) to the height of a 2-foot object lying on the surface of the road. Intersection sight distance is measured from a point on the minor roadway at least 15 feet from the edge of the major roadway pavement and measured from a height of 3.5 feet on the minor roadway to a 3.5-feet-high object in the major roadway. Both of these values must be considered at a driveway or intersection located near vertical or horizontal curves.

These eye-height and object-height criteria are established in the AASHTO *Policy on Geometric Design of Highways and Streets,* latest edition, which shall be used as the principal authority to justify any variance of design elements from these recommendations. The designer shall make a reasonable effort to provide sight distances equal to or exceeding those established by the applicable AASHTO publication.

The minimum centerline grades for all classes of roads are:

- 1 percent for urban (curbed) roads; and
- 2 percent for rural (side ditch or swale-drained) roads in cuts.

Where it will be necessary to allow surface flow across an intersection to drain to a curb return, the minimum grade of the roadway parallel to the swale shall not be less than 2 percent, or 1.5 percent for urban roads. Flatter grades may be approved for designated rural roads, located on fills where the roadside drainage ditch or swale follows the toe of the fill and has a grade of 2 percent or greater. Where the pattern of development and future

intersection or entrance locations have not been determined along primary residential roads, and higher classes of roadways, or where future development along a primary or secondary residential street may introduce closely spaced entrances or an on-street parking demand, it is anticipated that curbing would be required in the future. In such cases, the minimum grade would be the same as for a curbed street. Design speed and sight distance requirements for scenic or historic roads shall be determined by the Department, depending upon projected development of the area, traffic generation, and requirements necessary to provide safe travel, including factors such as vertical and horizontal alignment, road width, and traffic volume.

The minimum design criteria shall adhere to the specifications cited in Table I-2. Exceptions apply in the following circumstances:

- For commercial and industrial, primary and secondary residential, and private rural roads, where the right-of-way has been established by previously approved and recorded plats of subdivisions and where the subdivision is surrounded by developed lots and parcels, the centerline radius will generally follow the center of the right-of-way. Any specific potential hazards or obstructions should be alleviated by dedicating to public use or obtaining for and granting the County additional rights-of-way to increase the radius.
- Where the Department's reviewing engineers deem it appropriate, superelevation may be required on collector or higher class roads to provide consistent driver expectations and to accommodate existing or future roadway connections or general drainage patterns.

2. Road Widths

The right-of-way and travel way widths recommended in Table I-1 are for normal or standard conditions for each class of road; for use where specified to implement the Master Plans of the County; or for conformity to the above described functions. It is expected that roadways will be designed to be suitable for their projected traffic and level of service. Recognized, authoritative standards and engineering principles are to be applied.

Any departures from these recommendations must be supported by properly prepared and approved traffic studies. The Department recognizes the AASHTO *Policy on Geometric Design of Highways and Streets*, latest edition, as the principal authority in justifying any variance of design elements from these recommendations.

It should be recognized that most of the roadway classifications and requirements appearing on the County Master Plans are already supported by traffic estimates compiled by the staff of M-NCPPC and are based on the proposed ultimate zoning and development phasing. In the absence of specific direction or other approved studies, the designer is expected to comply with the Master Plans. The designer should be prepared to use or provide additional studies for roadway design as a possible prerequisite to obtain either authorization to proceed with the design or the Planning Board's approval of a development proposal.

In cases of in-fill development, where the roadway in question extends a previously constructed roadway or lies between previously constructed sections of the roadway of the same class, the designer is expected to conform to the width and alignment of the previously constructed roadway to attain a consistent travel way. Exceptions may be made in cases where a special design or additional lanes may be required for parking, turning, intersection approaches, or transitions between different classes or dissimilar existing sections. At major intersections on collector roads, the collector road shall ordinarily be modified with a left-turn lane.

NOTE: See Table I-1 at the end of Section I for required right-of-way and road widths.

3. Right-of-Way

The County controls the County rights-of-way in any of the following ways:

- The County may own the right-of-way by fee simple interest;
- A right-of-way may be dedicated to public use via the subdivision plat recordation process or via other instruments recorded in the land records of the County;
- A right-of-way may be held by less than fee simple interest, such as recorded easements;
- In many cases, a right-of-way may be established by a long-term use, commonly known as a prescriptive right-of-way.

The actual width of a right-of-way may vary and sometimes depends on the specific roadway and what interest, if any, the adjacent property owners have conveyed to the County.

In many instances, existing rights-of-way are of insufficient width to accommodate needed construction and roadway widening. Drainage structures and slope protection are sometimes required to accommodate construction. In these instances, additional land, private property, or easements must be acquired. The acquisition of additional rights-of-way should be conducted in a fair manner in accordance with all County, State, and Federal laws. Equally important, all landowners are entitled to just compensation when their land is taken for public improvements.

The County will not issue a permit for roadway construction unless all rights-of-way and easements necessary are dedicated or otherwise lawfully conveyed for public use and recorded among the land records of the County.

If a developer of property or Permittee is required to acquire any necessary land as part of their permit requirements, they shall be responsible to make every effort to acquire the rights-of-way through the process of negotiation. Should these efforts fail, however, Subtitle 23 of the County Code allows the County to acquire necessary rights-of-way through the process of eminent domain. The developer of the property or the Permittee will be required to reimburse the County for **all costs** the County may incur in the land acquisition and eminent domain processes, and will also provide front-end funding to cover the estimated costs.

A developer or Permittee developing property abutting an existing or proposed

County roadway shall be required to obtain dedication or otherwise lawful conveyance of sufficient right-of-way to public use and provide any necessary easements to enable roadway construction. This includes slope and drainage easements required for storm drainage construction and outfalls. All documents required as part of the permit and the developers land assembly responsibility, including rights-of-way, deeds, easements, conveyance instruments, and agreements, shall be prepared and recorded among the County's land records by the Department Right-of-Way Division. It should be noted that under no circumstances are such documents ever to be recorded by the developer or any third party soliciting this type of service.

In general, to be developable, lots are required to have frontage on public roadways so as to allow direct access for every lot. Any exception to this policy requires establishment of a private right-of-way or easement as the means of vehicular access. Subtitle 23 of the County Code requires that the Department review all private rights-of-way and access easements to assess entrance adequacy and suitability for use as a roadway, and to ensure that emergency vehicles can adequately access the property. The Department requires submittal of the following information for review of private rights-of-way:

- Letter of request outlining need for right-of-way, including name and address of applicant and copy of building permit application;
- Copy of deed(s) and plat, and tax account number;
- Copies of any existing private easement or rights-of-way documents;
- Copy of the site plan indicating existing and proposed topography; and
- Photo(s) of private road alignment and conditions.

The private rural/urban road shall also be constructed in accordance with private rural road regulations pursuant to Subtitles 23 and 24. The Department may also impose additional requirements and/or restrictions on the design and construction of the private drive to ensure the safety of the property owner and the public.

4. Geotechnical Requirements for Suitable Roadway Subgrade

Proper preparation and/or construction of the subgrade are critical to the surface quality and longevity of the roadway. In certain areas of the County, problematic soils may be encountered which complicate achievement of suitable subgrade conditions. Potential problems of such soils include ground slippage and instability, shrinking and swelling of certain high plasticity soils, high water table, and perched water conditions. Many of these conditions may be mitigated through proper design and construction techniques, while others may require complete removal and replacement of unsuitable material(s).

NOTE: For additional information on acceptable and unacceptable soil conditions for roadway subgrades, please see Item b, "Unsuitable Soil Conditions for Roadway Subgrade," under this heading.

Because of the likelihood of encountering unsuitable soil conditions on roadway construction projects, the Department requires that a complete geotechnical engineering study be performed to evaluate subsurface soil conditions and determine if soils are adequate to support the design traffic loading and roadway structures. A report detailing the findings of the geotechnical study shall be submitted to the Department.

NOTE: For further information on the properties of subgrade materials, see Table I-3; for further information on the types and uses of soils, see Table I-4.

Because subgrade conditions affect many aspects of roadway construction, the geotechnical report may affect a variety of issues related to the construction process. The following is a summary of report requirements, as well as issues generally to be addressed in the report.

a. General Requirements for Geotechnical Reports

For subdivisions, site plans, and Department design contracts, two copies of a soils report conforming to the following requirements must be submitted with the construction plans to the District Engineer or Project Manager prior to issuance of any grading or roadway construction permits or plan approval. The construction plans must incorporate recommendations based on the geotechnical report as requirements.

The investigation leading up to the geotechnical report must be planned with knowledge of the intended project size and the geologic history of the area.

i. Site and Soil Exploration

Site and soil exploration should take into account, but not be limited to, the following factual information, analysis, and recommendations:

- Surface features should include such features as old construction, rock outcrops, water courses, ditches, and filled-in areas. Reviewing aerial photographs of the area is recommended.
- Subsurface features should include a plotted record of vertical stratification and a subsurface profile, and should indicate the elevations of borings and test pits, and should provide 24-hour water level readings.
- Surface features and the boring locations shall be depicted on a site plan plotted with a true scale, a North arrow, and a general location map.
- Exploration methods must follow the applicable standards as set forth by the ASTM, the ASCE, the AASHTO, and the Association of Engineering Geologists, etc.
- Soil borings shall be spaced every 300 feet along the roadway, depending on the site conditions and the proposed construction, and extend a minimum of 10 feet below the design grade or existing ground, whichever is lower. Soil borings should include standard penetration tests that meet ASTM D-1586.
- The vertical interval of sampling will be based on soils encountered and other conditions. At least one sample shall be taken from each soil stratum at no more than 5-foot intervals.
- Hydrologic features must be documented, including the presence of any

seepage zones and depth to groundwater (if encountered). Groundwater measurements will be made at the time of boring and at a minimum of 24 hours later.

- If long-term water level readings are required by the Department, then perforated casings or piezometers in selected bore holes will be required.

ii. Classification and Description

Observation of soil samples from various depths and locations shall be required for comparison with the known geology of the area. Classification and description of soils and aggregates shall be performed according to AASHTO M-145; ASTM D-2487, Uniform Soil Classification System; and ASTM D-2488, Visual Manual Identification Procedure. Nomenclature used for description of soils must be clearly defined and include in-place conditions like moisture, color, and consistency or relative density; geologic names; local names; and any other information pertinent to the interpretation of soil characteristics.

NOTE: For further information on the AASHTO Soil Classification System, see Table I-5; for the State of Maryland DOT SHA soil classification system, see Table I-6.

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iii. Laboratory Testing

The nature and extent of laboratory testing required depends upon the soil characteristics and anticipated geotechnical issues to be addressed. The following tests are required per the latest specification updates:

- Moisture content of all samples (AASHTO T-265).
- California Bearing Ratio (CBR) tests (ASTM D-1883) are required on all roadway subgrades and shall be performed at or near the design subgrade finished elevations.
- Granular soils testing shall include gradation tests on representative samples (ASTM D-421) and moisture content determinations (ASTM D-2216).
- Testing of cohesive soils shall, at a minimum, include determination of Atterberg Limits (ASTM D-4318).
- On compacted subgrade materials, Modified Proctor tests (AASHTO T-180 or ASTM D-1557) are required for at least the two most common types of soils at proposed grades.
- In stiff, fissured clays, such as Marlboro clays, Atterberg limits and hydrometer analysis tests are needed for classification and prediction of certain properties.
- Consolidation tests should be performed on samples taken from relatively soft soils that may underlie foundations of roadway structures. Expansive pressure of clays should also be determined for the foundation design.
- For deltaic clays that have been subject to large strains in the past, properties for predicting long-term behavior include the residual effective friction angle and cohesion intercept (the absolute minimum strength of the clay material). These require appropriate additional laboratory testing.

iv. Engineering Analysis and Recommendations

The complete record of field and laboratory findings shall be included in the report,

as well as any conclusions and recommendations for the owner, the designer, and the Contractor. The report shall provide an elevation of the investigated *in-situ* soils and comments on their suitability for structural fill and roadway subgrade. It shall address any need for undercutting unsuitable materials, providing mechanical or chemical subgrade treatment or stabilization, and installing subsurface drainage. The report shall also provide a recommended pavement design addressing any demonstrated susceptibility to high water table (permanent, perched, and/or seasonal), as well as sufficient foundation and/or slope stability studies to allow reviewers to understand the logic and assumptions on which findings are based. Recommendations on pavement design, earthwork, site grading, drainage, slope and/or subgrade stabilization, and construction procedures must be included. The report shall further address any retaining wall design, as well as impacts on adjacent properties. If the presence of Marlboro or Christiana clays, or soils that are diatomaceous in nature, is possible, the engineering analysis shall include the short- and long-term stability of existing and planned roadways and slopes.

The report shall include a discussion on the problems of any potentially expansive soils including Codorus silt loam (CH) and Manor loam (MH) types. Design recommendations for such soils should be based on expansive properties, unless shown otherwise by X-ray diffraction studies or by other appropriate laboratory tests.

v. Report Appendix

The geotechnical engineering industry typically presents required testing and analysis data, like boring logs and laboratory testing results, in the report appendix. In addition, the appendix must include the following items:

- Tabulation of natural moisture content of all samples unless such data are numerically presented on the boring logs.
- At least two moisture density curves representing the two most common soil types at the proposed grades.
- All lab test results shall identify the tested samples in terms of soil type, sampling locations, and sampling depth.
- A grade establishment plan showing the boring locations on plan view, and their soil strata and depths on profile view.
- Addenda to the report if, after the soil report preparation, off-site or borrow material is identified and tested for use on the subject permit; if the submitted report is more than 5 years old or if there is a reason to believe that the subsurface conditions have significantly changed; or if the proposed roadway alignment (horizontal or vertical) has been modified.
- If an old report is still valid in terms of current *surface and subsurface conditions* and *recent roadway alignments* (horizontal and vertical), the geotechnical engineer shall submit a professional-opinion statement to that effect certifying that the report still meets current County requirements and geotechnical industry practice.

b. Unsuitable Soil Conditions for Roadway Subgrade

When suitable granular materials consisting of sand, silty sand, or sandy silt are not available, thereby necessitating the use of clayey sand, sandy clay, silt, clayey silt, silty clay, clay, and colloidal clay soil groups, *special attention shall be given to the design and construction of the embankment.* Materials from these groups shall be compacted to not less than 95 percent of the maximum dry density and to within 2 percentage points of the optimum moisture content per AASHTO T-180 requirements.

At least the top 12 inches of base and subgrade materials shall be compacted to a depth specified to not less than 97 percent of the maximum density and to within 2 percentage points of the optimum moisture content per AASHTO T-180 requirements.

NOTE: Base and subgrade materials consisting of sandy clay, silt, sandy silt, clayey silt, silty clay, clay, colloidal clay, mica, diatoms, silt, and swamp muck are unacceptable for roadway development and must be avoided, if at all possible. Such soils must be removed and replaced with an approved structural fill or base material.

These unacceptable materials may have high plasticity indexes and considerable volume change. All materials having high plasticity indexes in relation to liquid limit are subject to high volume change and are considered unacceptable or undesirable in all cases. Some of the above-mentioned materials may be approved for subgrade applications, but are still considered *poor to very poor* (Table I-6). Materials for aggregate and soil-aggregate subbase and subgrade shall meet minimum AASHTO criteria and allow the fraction passing the 0.075 mm sieve to be not greater than two-thirds of the fraction passing the 0.425-mm (No. 40) sieve. The fraction passing the 0.425 mm sieve shall have a liquid limit not greater than 25 and a plasticity index not greater than 6.

Silty clays, clay, and colloidal clay are cohesive soils and have no significant angle of internal friction. Soils in this category are subject to a large change of volume simply because they have a tendency to hold water. The volume change could amount to as much as 20 percent of the overall soil volume. Soils with these characteristics do not drain well nor do they dry out rapidly.

Areas of Marlboro clay outcrops are also of great concern. Many landslides, soil cave-ins, and structure failures occurring in this region have been attributed to shrinkage and slippage due to Marlboro clay. All new roadway developments in the County requiring significant cut through such soils must be carefully studied for shear and stability.

c. Subgrade Classification Guide

Table I-9 of this document presents typical saturated CBRs for use in determining suitability of soil types for roadway subgrades. Using this table may help developers determine if their site contains problematic soils and, if so, what geotechnical solutions are most cost-effective. The Department requires most proposed roadway subgrades to have a minimum CBR of 7, on average. Where approved, soil cement may be used to achieve this requirement.

d. Soil Cement

Soil cement is a term given to soils stabilized with at least five percent cement by weight. Subgrades treated with less cement are called

cement-modified subgrades. In addition to being, like lime, a quick answer to wet soils, cement stabilization offers a way to improve inherently weak, possibly expansive soil to a usable construction material whose physical engineering properties can be regulated. This significant improvement to the soil may include increased strength, decreased water sensitivity, and decreased volume change. Thus, otherwise unsuitable soils can be improved for use as a subbase for subsequent paving applications. The micaceous silts of the Piedmont can be greatly improved by the addition of cement. Soils having high water content, high mica content, or a plasticity index of less than 20 are also good candidates for such improvement.

NOTE: For further information on typical cement requirements for various soil types, see Table I-7.

It should be noted, however, that soil cement is not a cure-all. Among other limitations, it is not suited for soils that are extremely wet or frozen; nor for soils that have a high content of deleterious materials, an organic content greater than two percent, a pH of less than 5.3 (as in the case of acid sulfate soils), or underlying soil layers that may cause future settlement (e.g., existing, deep, uncontrolled fill). If the cement requirement and the target strength are not specified in the approved soils report, the Geotechnical Engineer of Record must submit a proposal in that regard to the Department Materials Lab for approval at least 10 days prior to commencement of the soil cement fieldwork.

Soil cement shall be applied and cured in general compliance with Section 502 of the MSHA Standard Specifications for Construction and Materials, latest edition, and in accordance with recommendations set forth in the soils report, subject to Department approval. Prior to applying soil cement, the subgrade shall be prepared in accordance with MSHA Section 502.03.03. Any soft subgrade materials must be removed and replaced with structurally adequate fill material so that the required soil cement strength can be achieved. As a subbase material, soil cement should have a 7-day, unconfined, compressive strength of at least 250 psi.

Test results verifying the required strength must be submitted to the Department. The structural integrity of soil cement shall also be verified to the Department Inspector either by witnessed-in-place density tests (per MSMT 350) performed by a certified quality-control technician or by witnessed proof-rolling with a 20-ton, loaded, dump truck. For new roadway construction, the soil cement layer must extend beneath the curb and gutter for closed sections, and beneath the shoulders for open sections. Regular Portland cement is most commonly used for soil cement, and may be applied to in-situ soils or imported select borrow material, depending on the purpose of the soil cement layer.

For in-situ applications, mixing shall be thoroughly uniform to the full thickness of the soil layer to be stabilized, and shall be in general compliance with MSHA Section 502.03.07. Pulverizing will be required to eliminate any particles not passing the 1-inch sieve. The Portland Cement Association Bulletin D5 reports test results showing that the quality of plastic silty or clayey soil cement is highest when all of the soil, exclusive of gravel-sized rock pieces, is pulverized to pass a No. 4 sieve. It is also recommended that the spreading of Portland cement be monitored to ensure uniform coverage and proper mix contents.

NOTE: All use of soil cement shall be closely coordinated with, and approved by, the Department.

Particular care must be exercised in grading or controlling the finished-surface (per Section 502.03.08 of the MSHA *Standard Specifications for Construction and Materials)*, since adjusting the final surface after soil cement has set is extremely difficult and possibly detrimental. Verification of grades during soil cement placement is highly recommended as pavement thickness may otherwise be compromised to match existing gutter elevations in closed sections. To avoid diminishing the cement value, all spreading, compaction, and shaping shall be completed within 3 hours after the mixing water and cement have come in contact.

Compaction of soil cement shall be done in accordance with MSHA Section 502.03.10. The compacted lifts shall be no less than 4 inches, nor more than 10 inches in compacted thickness.

Finishing, protecting, and curing shall be done in accordance with MSHA Sections 502.03.09 and 502.03.12. Soil cement is most often cured with emulsified asphalt, but proper plastic or paper sheeting or other moisture-retaining materials may also be acceptable to the Department. Construction joints must be made to conform with MSHA Specification Section 502.03.11 and Department recommendations.

Shrinkage is a natural occurrence of soil cement as the cement hydrates. Shrinkage cracks are not the result of structural failure of the soil cement or the underlying soils' strata. Reflection of these cracks into the courses of asphalt pavement, if adhered to the soil cement, is common. Such cracking can be greatly reduced or eliminated by placing a 4-inch-thick, crack-relief, stone layer (CR-6) between the asphalt and the soil cement, according to Paper 99-0600 of the TRB Record 1673. The stone layer is required in cut areas, where cut is needed to reach the planned subgrade, and particularly if perched water from adjacent properties is inevitable. Based on accelerated loading tests at the Louisiana Transportation Research Center Facility, Paper 99-0600 indicates that the lane in which a stone layer topped the soil cement resulted in a fatigue life that was five to six times longer than that of pavements without the stone layer.

When properly constructed, soil cement can provide a stable and durable subgrade for roadway construction.

e. Construction Plans

The recommendations based on the soils report shall be incorporated into the plans as *requirements* to be performed during construction. A professional engineer licensed in the State of Maryland must review and certify the report and the final construction plans, stating whether the plans have been prepared in accordance with the recommendations provided and noting deviations from those recommendations.

f. Footings of Roadway Structures

Footings of roadway structures (box culverts and crossing pipe cradles) must be placed at depths that will minimize differential settlement due to desiccation of underlying clays. Consideration must be given to stratification of underlying materials, natural moisture content, gradation of backfill soils, site grading, and adjacent vegetation.

Foundations in clays, such as Marlboro clays, should be at least 4 feet (1.2 meters) deep, and deeper where the geotechnical study indicates that the 4-foot (1.2-meter)

depth would be insufficient. Foundations in areas of expansive clay developed in residual soils can usually be emplaced on firm, underlying, weathered, rock materials.

g. Construction Techniques and Drainage

Surface and subsurface drainage are of special importance in the construction process of pavements (particularly Superpave). Good site drainage should be maintained during construction in order to minimize undercutting of wet subgrade. Sufficient surface and subsurface drainage (underdrain) systems shall be installed to minimize the effects of water entering the roadway subgrade and embankments. The underdrain shall be tied to a storm drain system unless otherwise approved by the Department.

In areas where subgrades are subject to moisture infiltration (behind curbs/gutters, at the edge of the pavement, through pavement joints, etc.), free-draining subgrades are required to maintain the structural integrity of the pavement section. Such areas may require capping of borrow materials to conform with the requirements of the MSHA *Standard Specifications for Construction and Materials,* 916.01.02.

Sheeting and shoring or other approved methods for trench bracing may be required during the construction of storm drains, utility trenches, and/or foundation excavations. Engineered fill and backfill in trenches or around structures shall be placed throughout with approved, select materials and shall be uniformly compacted in accordance with AASHTO T-180 or ASTM D-1557. (For information on materials for trenching and backfilling, see MSHA *Standard Specifications for Construction and Materials* and Section II of this document, "Technical Specifications.") Within the roadway, clays are not permitted as backfill in trenches or around structures.

h. Inspection and Testing

Geotechnical inspection and testing shall be performed under the supervision of a Maryland licensed engineer. Such engineer shall use an accredited testing laboratory and bear complete responsibility. The Department may monitor some field testing or make suggestions for quality assurance (QA), but the Department is not responsible for providing quality control (QC) testing and/or geotechnical consultation to developers or their contractors. The Permittee is responsible for constructing roadways that meet the minimum County standards. The Permittee shall bear all costs for QA and QC testing.

Unless otherwise approved by the Department, the Guidelines for QA/QC of Road Construction provided in Section IV, Appendix A, shall be followed. Construction QC testing shall be performed by an independently accredited laboratory and be certified by a Maryland licensed professional engineer retained by the Department, the Permittee, or the designer—not the Contractor. The Department representative shall witness the proof-rolling of the final layer of subgrade and must receive copies of all construction QC test reports (laboratory and field) for each layer of the roadway prior to coverage with a subsequent layer. If any subgrade layer is affected by weather, vehicular traffic, or prolonged exposure before coverage, a second proof-rolling may be requested by Department representatives. Department representatives may also request additional field tests.

Upon completion of subgrade QC testing and prior to any subsequent paving, the Permittee (or Contractor, if CIP work) shall provide to the District Engineer (or Project

Manager, if CIP work) a complete set of the QC test reports with an attached Letter of Certification from a licensed professional engineer. The letter shall certify that the subgrade inspection and testing were performed in accordance with the approved plans and geotechnical engineer's recommendations.

i. Minimum Frequency of Roadway Materials Density Testing

The minimum frequency of field density testing is depicted in Table I-8, unless otherwise approved by the Department. Testing frequencies are minimums considered necessary to provide effective QC of roadway materials under normal conditions. Additional testing will be performed if deemed necessary by the inspection and testing agency, the geotechnical engineer of record, or the Department site representative. All testing shall be done in conformance with MSMT test methods. In the event that other applicable standards or specifications require more frequent testing, these shall supersede the frequencies listed in Table I-8.

j. Review of Geotechnical Reports, Plans, and Specifications

An additional copy of the soils report and the geotechnical requirements shall be forwarded to the appropriate person in the Department Materials Section, who will review them and make recommendations to the District Engineer (or Project Manager, if CIP work). Recommendations may be made for approval, denial, or requirement of additional information or revisions of the plans, as appropriate. This review will be limited to geotechnical aspects of the design. All decisions regarding approval of the plans will be made by the District Engineer (or Project Manager, if CIP work), who will take into consideration the recommendations received from the Department Materials Section. Revisions to the soils report and/or the plans will remain the responsibility of the geotechnical engineer and/or designer, even if the revisions are based on Department recommendations.

5. Pavement Design

The purpose of pavement design is to develop a pavement structure with sufficient strength to accommodate anticipated traffic while preventing failure or excessive distress over the pavement design life. The latest version of the manual, *AASHTO Guide for Design of Pavement Structures*, shall be used for the structural design of pavements. Pavement sections are typically designed in accordance with this manual. Other design methods, such as the California Design Method or the Asphalt Institute Method, may also be approved on a case-by-case basis.

Design of pavement sections is typically based on the following major factors:

- *Strength of the subgrade soil.* Most pavement systems are supported by native soils, either as they exist in place or after being remolded as compacted, engineered fill. Unsuitable soils usually require substantial modification, such as cement or lime stabilization, depending on the strength of the subgrade soils. The strength of the subgrade soil shall be evaluated using the test known as the California Bearing Ratio (CBR) test. The County requires an average CBR value of *7* for roadway subgrades situated within the County right-of-way. For assistance in determining the suitability of various soil types for the roadway subgrade, see Table I-9.
- *Traffic loading conditions*. Traffic loading conditions are also a function

of the in-service use of the site.

- *Design serviceability loss*. The design serviceability loss typically ranges between 2.0 to 3.0 (as explained in the above-referenced AASHTO manual). An index of 2.5 to 3.0 is often suggested for the design of major highways and 2.0 is often suggested for roadways with a lower classification.

A structural number (SN) may be computed based on the above factors. Generally, once an SN has been reached, the designer can manipulate the thickness of the different layers of the pavement section. As a result, the layers should cumulatively yield the same design SN.

One additional factor plays a crucial role in pavement design: drainage requirements. Proper drainage is critical in the design and construction of any pavement. In certain circumstances, including but not limited to, high water table conditions or possible water accumulation in cut or low areas, the installation of underdrains and/or interceptor drains is required to prevent failure of the pavement structure. Also, a layer of graded aggregate subbase (CR-6 stone) with a minimum compacted thickness of 4 to 6 inches, is typically required on fine-grained and stabilized subgrade soils. This layer must be daylighted or hydraulically connected to suitable outfalls and should be placed on adequate geotextile fabric. Good surface drainage is also essential. For more on proper drainage, see Public Storm Drainage, in this chapter. The thickness of any pavement layer should not be less than specified for the different classes of roads provided in Section III, Standard Roadway Sections and Details, of these *Specifications and Standards*. The final factor in pavement design and pavement application is the need for pavement surface profile testing. Longitudinal pavement roughness is a major factor in the elevation of pavement condition and determination of expected life. Unless otherwise indicated, the Department requires the use of an Inertial Profiler to perform quality assurance testing for acceptance of all County roads with a design speed of 50 mph.

A number of methods are currently in use for measuring the roughness of roads. Some of them produce a roughness index, but not all devices do this by direct measurement of the longitudinal elevation profile. This work shall consist of measuring the roughness of the final surface of hot mix asphalt (HMA) pavement. The Department requires that the Contractor or Permittee use an International Roughness Index (IRI) Inertial Profiler to collect quality control data. The Inertial Profiler shall conform to E950 and MSMT 563.

Category 500 of the MSHA *Standards for Construction and Materials* manual requires standardization testing (synchronization) of IRI equipment at regular intervals for compliance with MSMT 563 regulations. Proof of recent MSHA standardization of equipment testing shall accompany the profile report for the project. Quality control test data obtained with an Inertial Profiler that has not completed standardization testing in conformance with MSMT 563 will not be accepted. (See Section 535, Pavement Surface Profile, in Section II and Appendix B-18 of this manual for regulations.)

6. Pavement Milling and Resurfacing

Milling of roadway surface may be required prior to resurfacing on all rehabilitation projects. The minimum allowable milling depth is 2 inches. Milling operations shall be performed in only one lane at a time. Saw cut and mill a 10-foot-wide

notch at existing edge of pavement where it is necessary to connect to or to extend an existing road. Overlay at a point of tie-in to ensure a smooth transition and positive drainage. In areas experiencing severe pavement deterioration or an uneven crown, additional milling could be necessary. If milling depth exceeds 2½ inches on highways actively carrying traffic, the abutting lane or shoulder must be milled on the same day. Regardless of depth, the abutting lane or shoulder must be milled prior to weekends or temporary shutdowns.

The milling contractor shall make every effort to avoid damage to existing signal detector loops during the performance of the milling operations. It will be the responsibility of the contractor to identify and field inspect potential conflicts with the field inspector prior to milling in these areas. Prior to commencing milling operations, contractors are required to contact the Department's Traffic Management and Operations Division to coordinate field location of signal loops. Failure to comply with these requirements may result in the Contractor being held responsible for the repair or replacement of damaged signal loops.

All milled materials become the property of the County. Milling contractors are required to deliver the material to either the Department's Glendale, Ritchie, or Brandywine facilities, as directed by the Department.

Prior to performing the milling operation, and placement of new resurface pavement material, roadway patching shall be performed. The roadway foundation must be structurally inspected for excess cracking and pavement damage. All cracks shall be properly filled and all new base patch material applied where necessary. All loose material shall be removed and all potholes must be thoroughly cleaned, filled and tamped as well. All utility frames and covers, valve boxes, inlets and other appurtenances, shall be adjusted and temporarily ramped to accommodate the proposed finished road surface elevation.

The resurface paving shall be placed in 2-inch thick layers unless otherwise directed by the Department. All applicable hot mix asphalt resurfacing material requirements shall meet minimum requirements as specified in Section II, Technical Specifications, or in MSHA's *Standard Specifications for Construction and Materials*. Upon completion of paving operations, pavement profiling will be required on all major arterial and collector roadways. This procedure shall be accomplished in accordance with the guidelines provided in the County's contract documents, these *Specifications and Standards*, and the regulations included in Section IV, Appendix B, of this manual.

7. Public Storm Drainage

Public storm drainage and related stormwater management facilities shall be designed to meet Prince George's County DPW&T requirements and applicable Federal and State regulations. Subject to those requirements and within the roadway right-of-way and appurtenant slope areas, the following criteria apply:

- In curbed areas, the allowable 10-year storm discharge along the curb should not result in a spread width greater than 10 feet, in the absence of parked vehicles or other temporary obstructions. The gutter discharge should never exceed the height of the curb or the containment capacity of the gutter, nor apron at depressed entrances and lots lying lower than the street. Where the street or gutter serves as the principal or

overflow path of a watershed exceeding 50 acres, or where otherwise required by the Department, it may be required that the discharge be calculated as provided by the Building Code, Subtitle 32of Water Resources and Grading, for flood overflow paths. In such cases, the roadway grade and drainage systems must also conform to Subtitle 23, the County Road Ordinance, Section 23-136(a)(4), and Subtitle 4 of the County Code, with respect to a 100-year flood event. For this purpose, the road is deemed to be passable during such a storm if one lane-width, at the center of the roadway or adjacent to each side of the median, remains flood-free.

- Designers must consider the effects of nonstandard, superelevated, and intersection transition cross slopes in calculating the spread of flow and must avoid overflows that directly discharge in unintended directions. Superelevated roadways are to be designed to utilize both spill and non-spill gutter designs. Standard non-spill gutters are required along medians in urban arterial roadway designs.
- Where drainage of a curb return is dependent on flow across a street at an intersection, the grade of the street parallel to the flow shall not be less than 2 percent; this allows for pavement irregularities. The actual flowline grade should not be less than 1 percent when allowance has been made for lowering the gutter lip at the spill-out area of the return. To determine the elevations and locations of the spill-out points and flowline grades, the curb return profiles must be plotted on a suitable scale as details of the paving plans. If the minimum grade cannot be provided, a shallow concrete gutter/swale may be required across the intersection to define the flowline. The 10-year storm discharge across an intersection in a swale should not exceed 3 cubic feet per second. Flowlines should cross only the side street—and not the main street—at an intersection.
- Where superelevation is used in roadways that have or will have curbs, drainage must be accommodated accordingly. Superelevated roadways are to be designed utilizing both spill and non-spill gutter designs. In urban arterial roadways, use of non-spill gutters is required along median sections. Designers must be alert to the effects of super-elevation transitions that may tend to flatten or reverse the curb grade, especially near intersections and the crests or low points of vertical curves. Such combinations of transition and profile grade should be avoided, or where found necessary, should be provided with storm inlets located so as to minimize stagnation of gutter flow or minor sheet flow across the roadway, which can result in hazardous freezing in the winter.
- Rural roadside drainage should use the shallowest ditch or swale section that can convey the calculated discharge. In general, the use of driveway culverts that force a deeper ditch profile downstream should be avoided near the upper end of the drainage catchment so that shallow swale designs may be continued downstream as far as possible. To this end, designers should set driveway grades to be compatible with a swale drainage crossing. For such swales, the full available cross-section, including the roadway shoulder, may be included in the flow calculation as long as the depth of flow does not ex-

ceed the height of the confining cut slope or berm along the right-of-way line.

- Using a paved ditch or paved swale sections is to be avoided, unless the calculated discharge will reach erosive velocities for the type of soil constituting the ditch or swale and no alternative is practicable. In such cases, alternative erosion-preventive measures, such as permanent turf-reinforcing mats or mesh, interceptor drains and subdrains, or special bioretention treatments, are encouraged instead of the use of concrete ditches. The need for pilot ditch paving to assure positive drainage on flat slopes should be prevented by establishing roadway or ditch grades of 2 percent or more. Where this is not possible, the provision of shallow infiltration beds and interceptor inlets along the flowline is preferable to a paved pilot ditch.
- Another alternative is the Low-impact Infiltration System depicted in Standard 300.16. This device operates much like an underdrain installed along the flowline of the ditch, consisting of a trench excavated below the invert grade of the ditch, and lined with filter fabric. The outfall pipe and gravel are enclosed in the trench by overlapping the filter fabric. The area is then graded to the regular profile of the ditch. Such systems help alleviate standing water where the roadway slope is not adequate for gravity surface flow.
- Where infiltration trenches or similar devices are required by DPW&T, the designer should seek to position them outside of the County right-of-way. Where this is not possible, they must be located clear of future curb lines, entrance aprons, and utility lines due to the probability of maintenance excavations and the consequences of settlement in these areas. Where it is found necessary to place an infiltration device in the roadside area, the device should be set deep enough to allow future utility installations to pass over it with a minimum 1-foot clearance.
- A roadway drainage design should be selected that does not present a potential collision or overturning hazard. Fixed hazardous objects, such as protruding headwalls, inlets, and manholes, should be avoided in the design of a roadway. In general, the designer should seek to carry the full normal roadway and shoulder or sidewalk section across a culvert without reduction of normal clearances. In urban areas, this includes the typical section for the full width of the normal right-of-way.
- Subdrains or underdrains are installed for a number of purposes, most of which fall into the following classifications:
    - Control of seepage in cuts or hillside locations; these installations are generally called intercepting drains;
    - The lowering of the groundwater table, as in very low or swampy areas; or
    - Drainage of wet or moist subgrades.

The term "subdrainage" is related to the control of groundwater encountered in both existing and proposed roadways. Subdrains are a necessary part of a complete drainage system for many roadways in certain urban and rural areas. Subdrains function together with adequate surface drainage facilities to prevent damage

caused by water in its various forms.

As shown in Section III, Standards 100.01 through 100.07, on urban road sections, underdrains are required to be placed behind the curb line of curbed road sections and extended to the nearest storm drainage inlet, manhole, or pipe. The purpose of this urban underdrain is twofold: to intercept, from abutting property, any springs and seepages that would otherwise flow continuously across the sidewalk or in the gutter, or otherwise affect the street subgrade or maintenance; and to provide an auxiliary system to which downspout and sump pump discharge connections may be required or permitted. The Department will not allow this type of connection to be installed through the curb line because it is likely to create icing conditions on the road during winter, cause algae growth, and stain concrete.

As shown in Section III, Standards 100.08 through 100.16, underdrains shall be required in all rural roadway sections used as part of the stormwater management low impact system. The Department will limit underdrain installation requirements in rural roadways to low points and high ground water areas. This is particularly important in areas where high ground water could affect or compromise adjacent properties or the roadway subgrade, base, and pavement in any way. Underdrain installation requirements must be shown on the plans indicating the area drained, the pipe layout and approximate depth, and the point of discharge to the surface or connection to the underground storm drainage system.

A highway-engineered construction subdrain or underdrain system usually consists of a circular pipe laid at a suitable depth in a trench, which is then backfilled with porous, granular material wrapped with geotextile filter fabric. Materials principally used in subdrains or underdrains include: solid and perforated 16 gauge, corrugated metal pipe (both galvanized steel and aluminum) to be used exclusively underneath the roadway pavement area, with no substitution. Outside of the paved roadway area, approved subdrains or underdrains include: rigid polyvinyl chloride (PVC) pipe, Schedule 40, ASTM designation F758; and corrugated, high-density, polyethylene-engineered (HDPE) drainage pipe that includes a smooth interior wall, meeting AASHTO M252, M294, Type S, minimum pipe stiffness 50 psi criteria. The size of the underdrain is usually based on previous experience and requires the approval of the Department. Pipes of 6-inch and 8-inch diameters are commonly used in Prince George's County. (For more information on pipe use, see Table I-10.)

Hydraulic design of subdrains may sometimes be required on major projects. The maximum recommended slope is 25 percent. The slope of the pipe should always be set at a sufficient grade to prevent the deposition or settling out of solid materials that may enter the pipe through perforations or joints. To reduce the likelihood of clogging due to the entrance of fine-grained soil into the pipe, perforated circular pipe is laid with the perforations turned down, and the granular backfill material is wrapped with geotextile filter fabric. In addition, pipe systems require sealed joints.

Excavation may be accomplished by either hand or machine methods. Trenches are usually shallow, are excavated with vertical walls whenever possible, and lend themselves to construction through the use of a ditching machine. When the pipe is being laid in a pervious, waterbearing stra-

tum, very little preparation of the trench bottom is necessary other than a nominal amount of shaping. If soft, unstable soils are encountered, sufficient granular material must be worked into the upper portion of the soil to ensure uniform support of the pipe. Proper granular backfilling and placement of geotextile filter fabric around the pipe and in the trench is extremely important if the drain is to function properly without an excessive amount of maintenance. The backfill material must be coarse enough to allow easy passage of water, but fine enough to prevent intrusion of fine-grained soil into the pipe.

In rolling terrain, cuts made during highway construction frequently expose flowing ground water or seepage. Seepage that occurs through a cut slope may be a source of damage to the slope and to the roadway itself. Similarly, a seepage zone itself may not be invaded by the construction of a hillside section, but the roadway and pavement structure may be located only slightly above a zone of flowing underground water, and, thus, may be subject to the detrimental effects of capillary action. In such cases, the flow of underground water is intercepted by a subdrain section so that the water is prevented from flowing beneath the roadway pavement. The subdrain or underdrain is normally placed parallel to the centerline and is called a longitudinal drain. In some cases, seepage flow may occur in a direction perpendicular or skewed to the centerline. Transverse drains beneath the pavement may then be needed to intercept this longitudinal seepage.

The design and location of the proposed subdrain system shall be provided on the paving and drainage plans before construction begins. Information obtained from a soil survey or geotechnical report may also dictate the actual location of any necessary transverse subdrains. In any case, water collected in the subdrains must be carried to a suitable outlet.

Lowering the water table in many locations, especially in flat terrain, may be cumbersome in certain cases. In the interest of economy, the roadway may be constructed on a low embankment, and the base may be only 2 or 3 feet above the water table. If the subgrade soil is one that is subject to capillary action, water will be drawn up into the subgrade and base, resulting in a loss of stability, possible frost damage, and other similar detrimental effects. The solution to such a problem is simply to lower the water table a sufficient amount to prevent harmful capillary action. This is usually accomplished by installing parallel lines and subdrains at the edges of the roadway or shoulders at the proper elevation. In practice, the solution is frequently complicated by the need to provide satisfactory outlets for the water collected in the subdrains. The depth required beneath the base varies with the type of soil encountered, but is generally from 3 to 6 feet. When the storm drainage system is placed between the curb and sidewalk area, the cover over the pipe shall be a minimum of 4.5 feet to allow installation of street trees.

8. Intersections and Entrances

Closely spaced entrances along any class of roadway should be avoided. Designers should seek to provide development layouts that minimize the number of entrances and maximize spacing along public streets. Where entrances will be closely spaced, curbed construction may be required to minimize the problems associated with multiple entrances crossing a roadway side ditch with swales or culverts. Private entrances opening directly into

collector or major collector roads should be avoided, and they must be limited or prohibited from opening directly into arterial roads.

Where an entrance is required along an existing roadway of any class, the applicant is required to investigate the resultant sight distances and operational safety of the entrance with respect to the design and operating speeds along the roadway. Where these conditions are found deficient, the applicant will be required to remove vegetation, grade adjacent banks, regrade shoulder areas, widen local pavement, or undertake such other measures as may be reasonably required to provide safe operation. Sight distance easements shall be required for all lines of sight falling outside the County's right-of-way. Where such measures are impracticable, unreasonably costly, or not available due to lack of land ownership, the Department may deny the entrance or require that it be relocated.

Maximum width for residential driveways is 20 feet at the right-of-way line. Transitions to serve wider onsite parking pads, carports, or garages shall not begin within 25 feet of the right-of-way line. (See Section III, Standard 200.09.) For duplex homes using a shared driveway apron, width may be increased to 22 feet, with prior Departmental approval.

For multifamily residential, institutional, or other uses requiring parking compounds in any zone, or for any uses in commercial or industrial zones, commercial entrances are required. These shall be standard commercial aprons not less than 30 feet wide, with curb radii of at least 12 feet. Heavily used entrances, such as shopping centers, may be designed as intersections with curb radii sufficient to smoothly accommodate expected traffic, provided that the street grade meets the minimum for swale drainage stated earlier in this Section. The designer may be required to provide acceleration, deceleration, or left-turn lanes in the vicinity of entrances where necessary for safety or to maintain the capacity of the roadway. In any case, the designer should consider whether the entrance needs to operate two ways and whether entering turns will be made from the curbside lane of the roadway or from a lane further out where parking is permitted along the roadway. As conditions warrant, the designer should then establish curb radii and entrance widths sufficient to operate without conflicts between the entering and exiting vehicles.

The designer must set entrance grades to be compatible with the roadway grade while considering the possibility of future roadway widening and curb additions within the life of the facility. Driveways that descend from the roadway must be profiled so that passenger vehicles, when reasonably loaded, will not drag on the apron, and so that curb or roadside drainage is contained and conveyed to an acceptable outfall. Driveways that ascend from the roadway must be profiled so that passenger vehicles, when reasonably loaded, will not drag on the pavement or apron when crossing the gutter line or roadside swale or when starting up the driveway grade. (See Section III, Standards 200.01 through 200.09.)

Angled or perpendicular parking is not permitted along public roads. Where such parking may be allowed along private roads, as in apartment or townhouse developments, the parking spaces must be of sufficient dimensions and so delineated that standard vehicles, light trucks, and vans will neither obstruct travel lanes nor project over side-

walk sections, thereby blocking or inconveniencing pedestrians.

Intersections in new developments and, as far as practicable, in in-fill developments, should be made at or nearly at right angles. Where an intersection is expected to handle large volumes of traffic, it will require the presentation of traffic studies to determine the need for acceleration, deceleration, storage, turning lanes, right-turn ramps, or other special treatment, including special signing and marking, illumination, or signalization. Where an intersection is introduced along a main roadway, opposite or nearly opposite another side street intersection, the intersections will require design, modification, or relocation to align the lanes for continuity.

In commercial and industrial developments or other locations of expected heavy truck traffic, increased curb return radii should be provided to allow for off-tracking of large single unit and tractor-trailer vehicles. Scaled templates based on the turning characteristics of the WB-50 vehicle, as shown in the AASHTO publication, *A Policy on Geometric Design of Highways and Streets,* latest edition, should be used to ensure that such vehicles can make the required turns without over-encroaching into other lanes. In the absence of such checking, the curb returns or travel lane pavement edges for commercial and industrial streets and roadways of higher classification must have radii of at least 50 feet. (See Table 1-2 for minimum turning radius criteria.) Where desirable speeds and maintenance of capacity may warrant a larger turning radii than these minimums, the designer should consider providing separated right-turn ramps of sufficient width and radii to allow an island area, the ramps should be separated from the through lanes, and constructed of sufficient size to be seen by approaching traffic.

9. Cul-de-sacs

Developments should be laid out to avoid the use of long streets ending in cul-de-sacs. Where possible, each street should be extended either to intersect another street or to be intercepted by other streets. This should be done either to eliminate any need for a cul-de-sac or to limit the length of a roadway from the nearest intersection to a cul-de-sac.

Where the introduction of a cul-de-sac is necessary, its right-of-way radius should be equal to the width of the right-of-way of the entering street. Please refer to the AASHTO publication, *A Policy on Geometric Design of Highways and Streets,* latest edition, for typical turning situations in cul-de-sacs. To avoid the necessity for long, dangerous backing maneuvers, any roadway with no outlet should be provided with a facility for turning around vehicles, such as fire trucks, snow plows, and refuse trucks. The preferred facility is a round cul-de-sac, either symmetrical or offset, adequate for turning single-unit trucks or buses less than 40 feet in length. For cul-de-sacs of minimum dimensions, a center island generally is not approved. Because it interferes with the aforementioned turning maneuver, the parking of vehicles, and the use of radially positioned entrances, a center island in a cul-de-sac is often driven over and becomes a maintenance problem. Finally, the designer must, in all cases, align the proposed low point of the cul-de-sac with the proposed property lot line. This will adequately address the required 100-year storm overflow path and minimize any impact on a proposed building location. The maximum centerline of the roadway grade in a cul-de-sac bulb shall not exceed 6 percent. (See Standards 200.12 through 200.20.)

T-pattern turnarounds may be used at the ends of privately maintained driveways within developments, such as townhouses, apartments, and certain cluster zones. (See Standard 200.10.) Because these turnarounds tend to be confused with parking areas, however, they seldom serve the intended purpose for vehicles turning at the ends of public streets. The use of T-pattern turnarounds on public streets should be limited to temporary situations in which there is a likelihood that the street will be extended in the future.

10. Bridges and Culverts

a. General Design Criteria

Subject to preliminary review and approval of type, size, and location (TS&L) by the Department and re-view/approval of any waterway opening also by the Department, all bridges and large culverts are to be designed to conform to "AASHTO Standard Specifications for Highway Bridges" (latest edition), "AASHTO LRFD Bridge Design Specificatio" Latest Edition "Standard Roadway Sections and Details," and design directives of the MSHA's latest edition. The Department may require that certain Federal and State permits be obtained before granting TS&L approval and may further condition its recommendations or approval on a plan of subdivision or development, or applicable roadway design submission.

Bridges, culverts, and similar road-way crossings of waterways shall be designed to pass or withstand the 100-year flood event while maintaining a 1-foot clearance between the superstructure and the floodwater surface. The structure shall be designed to avoid structural damage or forced closure of the roadway during the 100-year storm event. For purposes of the latter determination, DPW&T shall approve the 100-year discharge and water surface profile, and the flood stages may be based on an assumption of no debris blockage. The upstream headwater must be shown to leave one lane clear along the center or adjacent to the median of the roadway. The roadway embankment may be classified as part of a Class 'A' pond during a 100-year storm event, necessitating close coordination with the Department and the approval process. Such culvert waterways shall be designed to meet the road embankment design criteria specified in Natural Resources Conservation Service Maryland (NRCS-M) Code No. 378 Pond Standards / Specifications, latest edition.

To reduce long-term operational and maintenance expenses, the design of the bridge structure shall contain those material and construction details that will prolong the service life of the structure and reduce its life cycle cost. Culverts require a minimum horizontal (span) and vertical (rise) opening of 5 feet. Culverts 75 or more feet in length require rise of 6 feet.

Bridges shall be designed for a minimum life of 100 years with no replacement of the structure's deck or other major maintenance being required for a minimum of 35 years from the date of construction.

To achieve these goals, the designer shall address the structural integrity of new bridges by considering the use of:

- Continuity and redundancy to provide one or more alternative load paths;
- Durable structural members (girders, stringers, abutments, and piers) to ensure resistance to instability; and
- External protection systems to minimize damage to the bridge.

The length of the structure shall be measured in accordance with National Bridge Inspection Standards (NBIS) 23CFR650.3. All box culverts, multiple cell

pipe culverts, or simple span bridge structures that measure 17 feet or more, in accordance with the provisions of said standard, shall be resized to provide a minimum length of more than 20 feet as measured along the centerline of the roadway. Multiple pipe culverts shall be designed such that the clear distance between openings shall be less than half of the size of the smallest inside pipe diameter.

Bridges shall be designed to carry the following loads and forces: dead load, live load plus impact, dynamic effects of wind loads, ice loads, flood conditions, longitudinal forces, and other forces specified in the latest *AASHTO Standard Specifications for Highway Bridges* and "AASHTO LRFD Bridge Design Specification".

The water to cement ratio for all bridge structural concrete (except foundation footings) shall not exceed 0.40. This requirement pertains to cast-in-place as well as precast construction. Bridge superstructure concrete shall be high-performance concrete (HPC) with concrete porosity minimized and durability enhanced.

Where bridge parapets are provided, the parapets shall be designed so that a metal railing at the top of the parapet wall is not required. Where concrete box culverts are proposed, the endwalls and wingwalls shall be of cast-in-place construction, although the balance of the structure may be of precast construction.

The amount of concrete clear cover to be provided over reinforcing steel in reinforced concrete shall be a minimum of 2.5 inches, with the exception of bars at the top of piers and at the bottom and sides of all footings, which shall have 3-inch minimum cover. This requirement pertains to all cast-in-place construction. Where precast construction is proposed, the minimum clear cover over the reinforcing steel shall be 2 inches. Except at the beam seats, tops of abutments and pier caps shall be pitched to provide a 2% slope to enhance runoff and reduce the accumulation of water and debris around the beam seats.

A silane penetrant sealer shall be used as a protective sealant in the following areas prior to the application of epoxy coating:

- Entire bridge superstructure, including deck, beams, underside, sidewalks and parapets, and concrete approach slabs;
- Entire horizontal surface of the abutment bridge seat areas and contiguous vertical faces of backwalls and cheekwalls; and
- Entire horizontal surface of the pier bridge seat areas and all surfaces of the pier caps.

Multispan structures shall be designed to be continuous over piers, thereby eliminating all deck joints. The designer shall provide the Department with documentation of the proposed design and rating calculations for HS 27 and all vehicle included in SHA PPM D -97-97(4) and other vehicle added by the Prince George's County,(See Appendix , completed in accordance with the MSHA latest edition "Bridge Weight Posting Policy" for bridges and culverts in the State of Maryland.

b. Specific Design Criteria for New Bridge Structures

NOTE: Main structural members shall consist of concrete girder beams, unless written approval for steel is granted by the Department Director.

i. Superstructure

Design Method: Design Method or Load Factor Design(LFD) Method or Load

Resistance Factor Design(LRFD) Method as directed by the Office of Project Management (OPM). All steel or concrete beam structures shall be designed and constructed as composite structures by providing shear reinforcement or mechanical shear connectors at the junction of the main member and deck. The main members and splices shall be sized without benefit of composite action from the deck.

Loading: HS 27 and all vehicle included in SHA PPM D -97-97(4) and other vehicle added by the Prince George's County,(See Appendix shall be used as the design live loadings, with provisions for a future 2-inch wearing surface when the bridge deck needs rehabilitation. In addition, the dead load design shall reflect an additional 15 lb/ft^2 loading where steel bridge deck forms used in construction are to remain in place.

NOTE: Prefabricated panel forms shall not be used as permanent bridge deck forms.

All new pedestrian structures shall be designed for 85 lb/ft^2 live load. In addition, the dead load design shall reflect an additional 15 lb/ft^2 loading where steel bridge deck forms used in construction are to remain in place.

Material: The design of new structures shall incorporate the use of concrete wherever possible. For environmental reasons, concrete arches or "bottomless culverts" are preferred over single or multiple box culverts for short spans. For moderate single spans of 30 to 55 feet, solid prestressed concrete box beams are the preferred structural element. For spans greater than 55 feet, the use of concrete girders (AASHTO Beam Sections) is to be incorporated into the design rather than the use of steel girders. Due to the long-term maintenance issues associated with the use of steel girders, written approval from the Department is required prior to any design incorporating the use of steel, whether painted with an anti-corrosive coating or high-performance weathering steel.

ii. Deck

Design Method: Service Load Design Method or Load Factor Design Method.

Deck Material: The use of high-performance concrete (HPC) or MSHA concrete mix number 11 or 12is required. Bridge decks shall be continuous, with no joints. The use of integral/ semi Integral abutments is encouraged. Approach slabs shall be required at integral/semi integral abutments.

NOTE: Concrete or steel beam structures shall be designed and constructed as non-composite structures.

iii. Substructure

Design Method: Load Factor Design (LFD) Method or Load Resistance Factor Design (LRFD) Method as directed by the Office of Project Management(OPM).

Loading: HS 27 and all vehicle included in SHA PPM D -97-97(4) and other vehicle added by the Prince George's County,(See Appendix shall be used as the design live loadings.

Material: The minimum strength of concrete used in substructures (excluding pier caps and beam seat areas) shall be 3000 PSI. Minimum strength for pier caps and beam seats shall be 4500 PSI.If pipe piles are used in the foundation it should

be protected by the fiber glass jacket.

iv. Scour Evaluation

Structures shall be designed to resist damage from scour. The designer shall refer to MSHA Policy and Procedures Manual PPM D-91-42(4), titled "Scour Evaluation of Bridges Interim Design Criteria," (latest edition) and as per MASHA manual on Hydrologic and Hydraulics Design for scour evaluation requirements and scour countermeasure design criteria Designer shall also consider the design procedures for scour set forth in the FHWA publication, HEC 18, "Evaluating Scour at Bridges.", MSHA standard Hydraulic plan sheet and foundation report must be attached with the scour evaluation report.

v. Required Notes on the Contract Drawings

All Contract Drawings shall include notes detailing the design method, specifications, loading, concrete, structural reinforcement structural steel, chamfer requirements (if applicable), backfill materials, and any other relevant information as shown in the MSHA PPM latest edition, or as otherwise required by the Department, Table for the rating analysis for above mentioned vehicles shall included on General Plan and Elevation drawing.

c. Bridge Rehabilitation Projects

For rehabilitation projects involving replacement of the bridge deck, direction shall be taken from the MSHA PPM D-89-40(4), II (or latest amendment), regarding designs for the rehabilitation of existing bridges.

When rehabilitation work is to be performed to an existing bridge structure that involves replacement of the deck, then that bridge structure must be evaluated for the loading conditions described above. If the loading conditions are not satisfied, then the following sequence of analyses must be performed:

i. If the structure is a non-composite design, then it must be analyzed by making it a composite design to try to meet the new loading conditions.

ii. If step i above does not satisfy loading conditions, then the structure must be analyzed by reducing the weight for steel stay-in-place bridge deck forms from 15 lb/ft^2 to 9 lb/ft^2. The plans must specify that the form troughs must align with the transverse reinforcing bar spacing.

iii. If steps i and ii above do not satisfy the loading conditions, then the structure must be analyzed without the future 2-inch wearing surface.

iv. If steps i and iii above do not satisfy the loading conditions, then the struc ture must be analyzed by eliminating the 9 lb/ft^2 for steel stay-in-place bridge deck forms. Formwork shall be re moved after the concrete has achieved its required strength.

v. If steps i–iv above do not satisfy the loading conditions, then the structure must be analyzed using lightweight concrete. The use of steel stay-in-place bridge deck forms and a future wearing surface are to be reconsidered.

vi. If steps i–v above do not satisfy the loading conditions, then a chart sum marizing the above analyses must be

prepared and forwarded to the Depart ment for direction on how to proceed.

d. Reinforced Concrete Culverts

The design and installation of buried reinforced concrete structures that interact with the surrounding soil (soil-reinforced) shall be in accordance with the recommendations made in the most recent editions of the AASHTO publication, and the American Concrete Pipe Association's Concrete Pipe Design Manual. The design of such structures may be based on Load Factor Design (LFD) Method or Load Resistance Factor Design(LRFD) Method as directed by the Office of Project Management(OPM) . The design criteria shall include all structural aspects, handling, installation, and crack control.

Cast-in-place concrete box culverts shall have a minimum size of 5 feet by 5 feet, and wall thicknesses of not less than 12 inches. The thickness of the bottom slab shall be 1 inch greater than the top slab. All corners must be haunched and designed as fixed for applied bending moments. The minimum concrete cover for the reinforcing steel shall be 3 inches for the bottom slab and 2.5 inches for the walls and top slab. Culverts shall be installed at a minimum longitudinal slope of 2%.

To prolong the service life of box culvert structures (cast-in-place and precast), the following directions, as modified from the MSHA PPM D-77-14(4), V (or latest amendment), shall be followed:

i. Mix No. 6 concrete. Epoxy-coated reinforcing steel may be used for the entire box for any depth of fill.

ii. If the culvert has less than 2 feet of cover (fill or pavement), Asphalt pavement is not accepted and the reinforcing deck slab with epoxy coated reinforcement shall be provided on top of the box b, and the concrete shall be MSHA Mix No. 11 or 12. The top of deck slab shall receive a protective coating (silane penetrant sealer)..

iii. Where the application of such a treatment will not conflict with opening a bridge to early traffic use, all top slabs built to grade shall receive a protective coating (silane penetrant sealer).

iv. No openings for storm drain pipes shall be made in the sidewall or top slab of any culvert.

vii. The exterior sides and top of all box culverts shall be covered with waterproof membrane or coated with an asphaltic or tar coating to seal the surface of the concrete.

v. All joint shall be water tight

vi. The box unit shall be tighten using tie road.

Precast reinforced concrete pipes (circular, elliptical, and arch) shall have minimum pipe diameter of 15 inches and a minimum 2 feet of cover over the pipes. Beneath roadways, minimum pipe size shall be 24 inches and the maximum 84 inches. All concrete pipe joints shall be water tight and sealed with rubber gaskets to meet minimum specifications (See Section II, Technical Specifications.) Pipe systems 48 inches or less require video camera inspection as part of the final "As Built" construction requirements. Final "As Built" con-

struction plans shall also be furnished to the Engineering and Inspection Services Division prior to the release of the construction performance bond. All pipes shall be designed, fabricated, and installed in accordance with the most recent editions of the AASHTO publication, the American Concrete Pipe Association's *Concrete Pipe Design Manual*, the MSHA *Standard Specifications for Construction and Materials*, and other publications of nationally recognized organizations such as the American Society of Civil Engineers (ASCE), etc. (For more on pipe use, see Table I-10.)

With respect to wall thicknesses, reinforcing, and reinforcing steel cover, for the above-stipulated loadings, precast concrete structures shall be fabricated in strict conformance with the recommended designs of the American Society for Testing and Materials (ASTM) and AASHTO. Further, the manufacturer shall furnish certification to that effect signed by a professional engineer who is currently registered in Maryland or a state recognized by Maryland as having comparable qualification requirements, and who is qualified to design highway bridges. All headwalls must be cast-in-place and joint between headwall and culvert units shall be water tight.

For the determination of culvert length and the design of culvert end treatments, the designer shall refer to MSHA PPM D-78-15(4), latest edition, for design requirements.

e. Bottomless Culverts

The use of bottomless culverts is encouraged but will be considered and approved on a case-by-case basis. These structures must be designed to withstand the worst case scour for the site as defined by Maryland and Federal requirements. These design requirements shall be the same as those used to consider scour for bridges (see MSHA PPM D-91-42(4), titled "Scour Evaluation of Bridges Interim Design Criteria," latest edition, with attention given to the design procedures for scour set forth in the FHWA publication, HEC 18, "Evaluating Scour at Bridges."

Footings for bottomless culverts shall be placed on piles or scour resistant rock. Spread footings shall not be used on erosion prone soils All criteria stated on the reinforced concrete culvert are applicable to Precast concrete structure.

f. Structural Plate/Aluminum/Steel Culverts

In general, concrete is the preferred material for the construction of culverts. Any proposed use of structural plate pipe-arch culvert or corrugated metal structures will be reviewed and approved on a case-by-case basis. Similarly, aluminum pipe structures will be approved on a case-by-case basis. The use of galvanized steel is discouraged in urbanized conditions where inspection, maintenance, and replacement are costly, and stream pollution may aggravate corrosion.

g. Precast Concrete Structures

For the above-stipulated loadings and with respect to wall thicknesses, reinforcing, and reinforcing steel covers, all precast concrete structures shall be fabricated in strict conformance with the recommended designs of the ASTM and AASHTO. Further, the manufacturer shall furnish certification to that effect signed by a professional engineer who is currently registered in Maryland or a state recognized by Maryland as having comparable qualification requirements, and who is qualified to

design highway bridges. All headwalls for the precast concrete structures must be cast in place. Wingwalls can be precast, but tight joint construction between structure and wingwall must always be ensured All criteria stated on the reinforced concrete culvert are applicable to Precast concrete structure.

h. Plan Submission

The preliminary drawing showing Type Size and location(TSL) shall be submitted for approval before proceeding for the final design.

The designer has option to submit the semifinal plans for review.

The sample plans are available for reference from the Office of the Project Management.

The plans shall contained all details as per the MSHA check list included in Appendix for the different type of structures. (refer to Section IV, Appendix B, Item B-.

i. Structure Inventory and Appraisal (SI&A)
The designer of any such class of bridge, or any major modification thereto, is required to provide the Department, as a condition of acceptance of construction, with prepared Structure Inventory and Appraisal (SI&A) and Pontis forms (refer to Section IV, Appendix B, Item B-2), as prescribed by the Federal Highway Administration (FHWA), for purposes of reporting the bridge to MSHA for inclusion in the Federal bridge inventory. The SI&A forms, including Form 6A, shall be prepared in accordance with the MSHA "Guide for Completing Structure Inventory and Appraisal Input Forms." The structural computations on which the load rating and design are based shall be prepared under the direct supervision of a professional engineer currently licensed in Maryland and qualified to practice highway bridge design and analysis. That professional engineer shall sign and seal the plans and furnish completed SI&A forms. Since the County is designated by MSHA to see that municipal structures comply with the FHWA inventory and posting regulations, the requirements stated herein apply within all municipalities in the County.

i. Bridge Rating
The designer shall use Load Factor Design (LFD) Method or Load Resistance Factor Design(LRFD) Method as directed by the Office of Project Management(OPM) and should consider the composite section. The loading analysis is to be in accordance with the AASHTO Manual for Condition Evaluation of Bridges.

j. *Bridge and Culvert Design, Installation, and Inspection.*
The designer of any proposed bridge or culvert, or any major modification to an existing structure is required to provide the Department with a complete inspection report and other pertinent information (refer to Section IV, Appendix B, Item B-2 for a complete list of items). Upon completion of the project, the contractor or developer shall also provide a complete Inspection Report that includes the following documents:

- Location map
- Bridge sketches
- Sounding sheet
- Inspection and rating summary
- Bridge inspector's recommendation for

maintenance repairs
- Condition rating forms
- Color Photographs
- Structure inventory and appraisal forms
- PONTIS form
- As-built drawings
- Construction records
- Shop drawings
- Design calculation for all elements
- Inventory and operating rating analysis for HS 27 and all vehicle included in SHA PPM D -97-97(4) and other vehicle added by the Prince George's County,(See Appendix

All documents shall be signed by a Registered Professional Engineer in Maryland.

11. Utilities

Where new underground utility installations or extensions are provided, to the extent possible, they should not be located in the paved travel way. No above-ground utility appurtenances shall be allowed in County rights-of-way unless the activity has been permitted.

NOTE: For complete information and regulations regarding the installation and maintenance of utility appurtenances within County rights-of-way, see the Department's *Policy and Specification for Utility Installation and Maintenance* (the Department's Utility Policy) in Section IV, Appendix E.

The franchised electric, telephone, and cable television (CATV) lines should either be routed in the dedicated public utility easements (PUE) required to be granted on new plats of subdivision or in comparable easements obtained by the utilities. Where these easements are not available, the utilities should be routed in the roadside area within the County rights-of-way, but clear of the paved roadway, and if necessary, should use the under-sidewalk area. (This requires prior Departmental approval.) Utility lines should also be located clear of existing stormwater management and storm drain facilities.

In accordance with the Department's Utility Policy, except in emergency situations, no utility company or its contractor shall cut into any roadway pavement for a period of 5 years from the date of the County's acceptance of new roadway construction for perpetual maintenance, or County completion of pavement resurfacing in the case of improvement work.

Placing new utilities shall be accomplished to the maximum practicable extent by tunneling, jacking, boring, or other means that will avoid disturbing the new pavement, subject to the requirements and regulations set forth in the Department's Utility Policy.

12. Roadside Protection

One basic principle of safe roadway design is to avoid placing collision hazards in proximity to the traveled way. Fixed objects posing potential hazards include, but are not limited to light standards, utility poles, heavy sign supports, headwalls, parapets, abutments, traffic barriers, fire hydrants, trees, non-breakaway structural masonry mailbox supports, and gateposts. Because many of these items may be desirable or necessary parts of a roadway design, the designer has the task of locating or designing them so as to minimize the likelihood and consequences of a collision. The Department has established the following standards for roadside protection on County roadways. For cases not covered below, the clear zone criteria specified in the AASHTO publication, *Roadside Design*

Guide, latest edition, shall be used for this purpose.

- In many urban sections, a space 5 to 6 feet wide shall be provided behind the curb for necessary street appurtenances, such as fire hydrants, utility poles, street lights, guardrails, or trees. All other structures, including mailboxes, are to incorporate specifically designed breakaway features.
- Since shade trees and many ornamental trees eventually become overgrown in size, roadside trees in rural areas should be planted near the right-of-way line and should, wherever possible, complement the landscaping requirements of the abutting properties. This is consistent with the tree placement in back of the ditch line, normally provided along open roadways, and it allows conversion to curbed construction later or the retrofit of sidewalks with minimal disturbance of the trees. Use of other planting schemes requires written approval by the Department.
- In areas of new construction not subject to underground utilities, or where existing overhead utility lines will remain or be relocated, the utility poles shall be installed 1 foot inside the County's right-of-way line.
- Where the U.S. Postal Service requires that mailboxes be close to the curb line, the owner or Permittee will be required to use a lightweight metal breakaway or wood post or swing-away design. Group or community mailboxes must also be of a collision-safe design. Masonry mailbox supports and gateposts of any design are not allowed within the County right-of-way. Likewise, all monumental community entrances are to be located outside of the County right-of-way.
- In general, vehicular traffic barriers are to be avoided; and road alignment, grade, and slope should be configured to eliminate any need for them. The purpose of guardrail barriers is to redirect errant vehicles away from a hazard rather than to protect or prevent damage to a sign or other highway appurtenance. To be effective, guardrails must be carefully designed and installed. It should be remembered that guardrails may themselves constitute a fixed hazardous object. They should be used only where the hazardous feature cannot be eliminated.

Guardrails should be placed along roadways with steep embankments where the hazard of being redirected by a guardrail is less than that of being permitted access to the slope. The height and slope of an embankment are the factors that determine whether a guardrail should be installed along that embankment. While installation of barriers helps to improve safety for motorists, this objective is usually better attained through the proper design of roadside conditions. When required, the criteria for using such barriers shall conform with the AASHTO *Roadside Design Guide,* latest edition. Please refer to charts indicating the traffic volumes, slope, and fill height conditions under which such barriers are necessary. The use of barriers—where not warranted—may present a greater hazard to the roadway user than the condition from which the roadway user should be shielded. For a cost-effectiveness selection procedure, please refer to Appendix A of the AASHTO *Roadside Design Guide*, latest edition.

Where vehicular traffic barriers are necessary, the locations of entrances and other roadside constraints must be considered. The

preferred end treatment for all new and replacement barriers is the breakaway cable terminal for Type B, blocked-out steel, W-beam barriers. The appropriate, current MSHA standard details, W-beam, offset block, and type of posts should be used. The designer must provide a complete, technical description of the selected type with required offsets and development length in accordance with the tested designs; the roadside area must be designed to support them. The placement of barriers where the required development length and offset are not available, as at some entrances, must be avoided if possible. To ensure that barriers are not installed in a hazardous fashion, corrective measures, such as additional roadside slope easements and grading, relocation of entrances, use of energy-absorbing assemblies, or other measures may be required.

The use of vehicular traffic barriers in proximity to curbs is to be avoided. A curb in front of a barrier reduces the barrier's effectiveness. Where this is necessary, a special review will be required to ensure a safe design.

The location of barriers at corners or sharp curves where vehicles may hit them at high approach angles is to be avoided because the standard, W-beam, steel-post barrier is ineffective at such angles. In such cases, if the roadway location cannot be improved, a preferable solution is to provide one of the following: a safe runaway or recovery path for the vehicle, an energy absorbing barricade, or equivalent energy-absorbing grading.

Guardrail transitions to bridge parapets or other types of barrier connections should be carefully designed. Unless special precautions are taken, there could be a tendency for the guardrail to excessively deflect and pocket the vehicle, directing it into the end of the barrier. Special care should be exercised when designing and installing guardrail ends and transitions. Unless properly designed, exposed guardrail ends can sometimes spear a vehicle and injure or kill its occupants. It is advisable to flare guardrail ends away from the pavement or anchor them into a back slope, where possible. Barrier height should be maintained throughout the flare in order to redirect the errant vehicle and to minimize injuries and property damage.

13. Project Datum

All projects subject to review by the Department shall be referenced to the following geodetic datum, unless otherwise approved:

- *Horizontal*—Maryland Coordinate System (state plane grid) based on North American Datum of 1983 (NAD83).
- *Vertical*—North American Vertical Datum of 1988 (NAVD88).

B. TRAFFIC

1. Roadway Lighting Plan Approval Process

Prince George's County intends to provide sufficient lighting along public streets to ensure the safety and security of our pedestrians and motorists. In this respect, guidelines have been established to ensure proper lighting installation with all new developments along County roadways. For scenic or historic roads, lighting requirements may differ. (See Section IV, Appendix A, Form A-8.)

The requirements discussed here apply to all County CIP roadway projects and those constructed under permit. Generally, utility companies perform all street lighting work, and upon acceptance, provide electrical energy and maintenance to the

lighting fixtures under contract with the County. Therefore, all construction and materials shall be as specified by the electrical utility company providing service to the area: Baltimore Gas & Electric (BGE), Potomac Electric Power Company (PEPCO), or Southern Maryland Electric Cooperative (SMECO). The utility company will install street lighting in accordance with the County-approved plan.

The following guidelines describe the Contractor/Permittee's responsibilities for the design of street lighting improvements along existing and proposed County-maintained roadways, and upon areas adjacent to the permit site.

a. General Provisions and Responsibilities

The Permittee shall be responsible for designing a plan for lighting all existing and proposed County-maintained roadways within and adjoining the permit area and, upon approval by the Department, for ensuring the installation of the required roadway lighting improvements by the local utility company at the expense of the Permittee. Roadway lighting improvements may include installing underground electrical wiring, new lighting fixtures, converting or upgrading existing lights, and/or, when necessary, removing and relocating existing lighting fixtures. The Permittee shall also be responsible for having all existing mercury vapor (MV) or high pressure sodium (HPS) lights upgraded to the proper wattage HPS lights in accordance with County Standards. Photometric requirements will be at the discretion of DPW&T.

A street lighting plan must be submitted for each permit, including permits for areas where street lights exist. If the Permittee believes that the existing or pending lighting already satisfies these specifications, the Permittee should plot and correctly identify all existing lighting fixtures on the plan. If the Department agrees that the existing lighting is adequate, the plan will be approved and no further street lighting improvements will be required. A flow chart at the end of this section illustrates the procedure. (See Table I-11.)

b. Lighting Design

The Permittee shall determine:

- The utility company serving the area;
- The classification of each street within and adjoining the permit area; and
- The locations of all existing and pending lights along all connecting and adjoining streets within 150 feet of either end of the permit area. (Pending street lights are those approved for installation, but not yet installed.)

The Permittee shall contact the utility company for information regarding existing and pending street lighting, and consider their locations when preparing the lighting plan. Generally, the lamp type and wattage are indicated on a decal located on the underside of the luminaire. Yellow decals indicate HPS; blue decals indicate MV fixtures. The number on the decal indicates the wattage: 10 is 100 watts, 15 is 150 watts, 17 is 175 watts, 25 is 250 watts, etc. Cutoff optic luminaires are required when street lighting is necessary on all County roadways using underground pendant posts or overhead utility poles with cobra head street lighting. A rectilinear pole and fixture of designated wattage is required within scenic and historic areas on major roadways.

Using the required information, the appropriate "Luminaire and Support Guide," and "Summary of Street Lighting Fixtures by Utility" tables (see Tables I-12 through I-15

at the end of this section), the Permittee shall prepare a Street Lighting Plan. The Permittee may use only those lighting fixtures that the local utility company will install and maintain under the prevailing maintenance contract between the utility company and the County.

c. Location Details

Typical street light location details for various roadway cross sections are included in Section III, 500 series, of the Department's Specifications and Standards for Roadways and Bridges manual.

d. Fixtures and Configurations

Light wattages, fixture styles, arrangement configurations, etc., are indicated in the "Luminaire and Support Guides" for the various utility companies. These guides apply primarily to below-ground, served, lighting systems. Whenever an above-ground, served, lighting system is proposed, the lights typically consist of pendant lighting with cobra head luminaires and Type II lighting distribution. The arm, or bracket, should extend at least 2 feet over the roadway.

Generally, colonial style fixtures are to be used on all residential roadways less than 36 feet wide or less, arranged in a staggered configuration on alternating sides of the roadway. Colonial style lights may be permitted on 36-foot roadways with single-family homes where the homes face the roadway. Pendant or rectilinear style lights may be required on all other roadways. (For the types of street lighting fixtures currently available, see the "Summary of Street Lighting Fixtures by Utility," Table I-12.)

On all divided roadways and along all roads 58 feet wide or greater, two separate lighting arrangements shall be used—one for each side of the street, wherein each frontage owner is required to address their respective side of the street. Along all undivided roads less than 58 feet in width, the permittee is required to address lighting on both sides of the street. Street lights shall not be placed in existing or future medians without the written permission of the Department. Also, documentation of such permission shall be made part of the Street Lighting Plan.

When only one-half of a future divided roadway (one with a right-of-way 96 feet or greater) is to be built or improved, the lights are to be installed on the finished side of the street using a one-sided configuration. The fixture style shall be based on the future or ultimate width of the roadway.

e. Placement of Street Lighting

Street lighting is required along all urban and suburban roadways. These environments, with their denser populations, are more likely to have activities (i.e., pedestrian and bicycle traffic, parking) in or near the County right-of-way. Proper illumination of the roadway is required for the safe conduct of these activities, as well as for the traveling motorist to see and avoid potential obstacles. Lighting shall be installed in order to provide the most complete coverage possible, using the minimum number of light fixtures.

The Department has adopted the following guidelines for light placement. Because situations may exist where not all conditions can be satisfied, the guidelines are listed here in order of importance. Any significant deviation from these guidelines requires prior approval from the Department. (See Section III, Standard 500.12, Typical Street Light Spacing Detail, of the Department's Specifications and Standards for Roadways and Bridges manual.)

For large intersections, at least two

lights must illuminate an intersection and should be placed along the main thoroughfare at or near opposite corners of the intersection; lighting for the side street(s) must commence within 75 feet of the intersection. A minimum of one light is required at the intersection with smaller-classification roadways.

Lights are required within 25 feet of any roadway terminus or the end of a cul-de-sac.

The average spacing between lights shall be 150 feet. A maximum spacing of 170 feet is permitted in order to place lights at intersections and to avoid driveways and other obstructions. However, the 150-foot average must be maintained.

Lights must be placed a minimum of 5 feet from driveways and 15 feet from existing or proposed street trees. For rural residential roadways, utility or street light poles shall be placed not less than 5 feet from the edge of paved shoulder. (See Section III, Standard 500.10, of the Department's Specifications and Standards for Roadways and Bridges manual.)

In areas of single-family residential development, lights should be placed on or near lot lines to minimize the lights' visual impact on homes. (This is not required if lot frontages exceed 150 feet.)

Lights should be staggered (placed on alternate sides) or opposite along the roadway, in accordance with Tables I-13, I-14, and I-15.

f. Use of Existing Utility Poles

There may be roadways, or portions of roadways, within or adjacent to the permit area that have an overhead electrical distribution system existing prior to the issuance of the permit. Generally, the Department will not object to the Permittee using the utility company's poles for lighting, provided that the utility company approves and the utility poles are located in a manner suitable for roadway lighting purposes. However, under no circumstances shall overhead facilities be extended along any new or existing roadway without written permission from the Department. Also, where overhead facilities exist but the adjacent area will ultimately be served by below-ground distribution cables, the street lighting fixtures must also be served by a below-ground distribution system.

NOTE: When lights are mounted on utility poles, they may be placed higher than the typical underground-served street light. Consequently, the illumination is distributed over a greater area.

Therefore, on roadway lighting schemes utilizing utility poles, the distance between lights may be as great as 200 feet, but no greater, upon the written approval of the Department.

When an above-ground lighting scheme is proposed, it shall be the Permittee's responsibility to pay all costs associated with the relocation and/or installation of utility poles to provide a lighting arrangement necessary to satisfy the requirements herein.

g. Street Lighting Plan Submission

NOTE: To minimize delays, the Street Lighting Plan should be submitted to the Department for approval immediately after application for Street Construction Permit is completed.

The Permittee shall submit 4 Street Lighting Plan (one reproducible and four prints) for review and approval by the Department or a digital format at the discretion of DPW&T. (For a flow chart of the ap-

proval process, see Section I—Roadway Development Guidelines, Table I-11, Street Lighting Plan Approval Process.)

All initial Street Lighting Plans must be submitted to the Department EISD, and must include the following documentation:

- An outline of the permit area;
- An E-mail Address on the plan of the professional engineer /consultant;
- A copy of the completed application for Street Construction Permit and corresponding street construction plans;
- A listing of the streets plus the lot and block numbers of the sites being developed;
- The location of all existing, pending, and proposed street lights along any connecting or adjacent street within 150 feet of the permit area, plus the information specified below for each existing, pending, and proposed street light:
  - Below-ground, served, street lights—
    - Post material;
    - Mounting height;
  - Luminaire (housing, lamp, and source); and
  - Arm direction (where appropriate);
  - Above-ground, served, street lights—
  - Luminaire (housing, lamp, and source);
  - Arm direction;
  - Pole ownership; and
  - Pole number.
- Configuration and spacing arrangements; and
- A street light schedule for each permit, including: the subdivision name, the Department permit number, the utility company, and a summary of the required work, including the number, types, wattages, etc., of each street existing and proposed lights . The schedule should also include the various symbols used on the plan to designate the lights.

NOTE: For a detailed checklist of plan requirements, see Section IV, Appendix A, Form A-6, Street Tree and Lighting Plan (STLP) Requirements Checklist.

h. Plan Review

If the Street Lighting Plan is not approved, the reproducible plan and a marked copy of the reproducible plan will be returned for revision to the Permittee by the Division of Traffic. Once the plan has been revised, the Permittee shall return the marked copy of the plan along with four sets of the revised plan (a reproducible and four prints) to the Division of Traffic for approval.

Once the plan is approved, the reproducible plan will be returned to the Permittee by the EISD; one print will be retained by EISD for use during inspection; and one print will be retained by the Division of Traffic. After acquiring an approved plan, the Permittee shall be responsible to contract with the utility company for the lighting improvements and to make prompt payment for the related work.

i. Acceptance

First, the utility company notifies the Department that the Permittee has paid for the required lighting improvements. Second, the utility provides an acceptable proposal for the energy and maintenance costs to the Department. Thereafter, the Department will authorize the release of the street lighting requirements of the road construction bond, provided that all other permit requirements have been completed to the Department's satisfaction.

j. Securing Approvals

The requirements for the release of the street lighting requirements of the road construction bonds are summarized below:

- The Permittee must submit and acquire approval of a Street Lighting Plan from the Department;
- The Permittee must contract with the utility company for the lighting improvements;
- The utility company must provide the Department with an acceptable proposal for the energy and maintenance costs; and
- The Permittee must provide the Department with documentation showing that the Permittee has satisfied all financial responsibilities related to the lighting improvements to the utility company's satisfaction.

To minimize delays and expedite the approval process, the Permittee should use distinct symbols for each type of light to show their locations on the plan. Please see Section III, Standard 500.12, for the correct usage of symbols for lampposts and pole-mounted lighting. Where more than two symbols are required, hollow and shaded symbols may be used.

The Street Lighting Plan to be approved by the Department must not include lighting improvements proposed for private roads or parking lots, State highways, or roadways maintained by an incorporated area. Such lighting fixtures may be included for reference, but they must be properly identified.

Once payment is made to the utility company, the Permittee shall submit the receipt or other proof of payment to the Division of Traffic. The proof of payment should include: the subdivision name, the Department permit number, the utility company's proposal or project number, and the amount paid.

2. Traffic Control Devices

a. Capital Projects

For County Capital Improvement Projects, all traffic control devices pertaining to roadway improvement projects, including plans for street name signs, traffic regulatory, warning and guide signs, pavement markings, and traffic signals shall be furnished and installed by the Contractor. Traffic control device plans indicating all signs, signals, and markings shall be included in the approved roadway design plans and approved by the Division of Traffic safety and / or the Division of Traffic Management and Operations prior to CIP project plan approval.

b. Permit Projects

On all street construction permit projects, all required pavement markings shall be installed by the Permittee. All Permittees are required to pay a fee for the installation of all required street name signs to be installed by County forces.

i. Offsite/Access Road Improvements

For roadway improvements on subdivision access roadways such as arterial, collector or industrial roadways or offsite conditions for roadway improvements, the Permittee is responsible for the design and installation of all traffic control devices including traffic signs, signals, and markings. Separate signal plans shall be included in the permit plans, and be reviewed and approved by the Division of Traffic prior to permit issuance.

ii. Subdivision Streets

For internal subdivision streets, the Permittee is responsible for the design and installation of all traffic markings, traffic signals, if required, and payment of a fee for street name signs. Traffic signs will be furnished and installed by County forces.

The installation of all traffic control devices on County Roadways shall be designed in accordance with the MUTCD and the MSHA Maryland supplement to the MUTCD. All construction and material requirements shall be in conformance with the Technical Specifications in Section II of these *Specifications and Standards*. The traffic control device plans shall include the signing, signal and pavement marking plans, TS&Ls of all proposed signing, as well as the dimensions, type(s), and specifications of proposed pavement markings. The plans shall be prepared by a traffic engineer and sealed by a licensed professional engineer registered in the State of Maryland. All signing and pavement marking plans must be submitted to the Division of Engineering and Inspection Services for review and approval by the Department's Division of Traffic and the Division of Traffic Management and Operations.

3. Traffic Control Signals

Traffic control signals play an integral role in ensuring the safe and smooth flow of traffic on County roadways. Current traffic signal designs incorporate the latest technologies for enhanced operations, safety, and maintenance. In addition to familiar tri-color signals known by most as "stoplights", traffic control signals also include pedestrian crossing signals and pushbuttons, hazard identification signs and beacons, and the sophisticated computer technology required to simultaneously coordinate signals for one or more roadway intersections. Designs include the use of video detection cameras, Light Emitting Diode (LED) signal displays, battery backup of on-street operations, traffic surveillance features, pavement temperature-sensing equipment, and communications. Physical support systems are also state-of-the-art, utilizing mast-arm poles and non-corrosive materials for all brackets, suspension, and mounting hardware.

Complete specifications for County-approved traffic controls are contained in Section IV, Appendix G, *Specifications and Standards for Traffic Control Signals in Prince George's County, Maryland.*

Note: Due to the rapid advancement of technology in traffic control signal equipment, please consult with the Department prior to specifying traffic control signal designs to ensure conformance to the latest requirements.

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4. Maintenance of Traffic (MOT)

A Maintenance of Traffic (MOT) plan is essential for safe and continuous traffic circulation throughout a work zone. This is intended to maximize the safety of and minimize inconveniences to the traveling public while providing for the safety of motorists, pedestrians, and workers. A MOT plan shall include the design and placement of such items as: signing, pavement markings, variable message signs (VMS), delineation, channelization, barriers, crash cushions, and other items as required. All MOT plans shall conform with Part VI of the MUTCD and the MSHA *Temporary Traffic Control Manual*, latest editions. All MOT plans shall be approved prior to the issuance of a permit.

5. Residential Street Traffic Management

Quality of life for those along residential streets may be negatively impacted by excessive traffic volume and/or speeds. Thus, the Department supports design criteria that promote minimum traffic volumes and lowest possible speeds on residential streets. These objectives should be addressed at the planning and design stages through proper subdivision planning and street design. Subdivision layouts should limit average daily traffic (ADT) on secondary residential streets to 1000 vehicles and on primary residential streets to 3000 vehicles, with most streets experiencing volumes well below the upper limits. A discontinuous street pattern is also desirable, provided that the maximum travel distance from the furthest residence to the nearest collector road is limited to 0.5 miles and that a motorist need not make more than three turning movements. Street design elements, such as horizontal curves designed to the minimum allowable design speed, are acceptable.

6. The Neighborhood Traffic Management Program (NTMP)

On streets where high travel speeds and high traffic volumes are anticipated and where it is not possible to change the subdivision design to alleviate these conditions, physical traffic management devices may be required by the Department as part of the street construction permit. The type(s), design(s), and location(s) of these devices will be determined by the Department, in accordance with the NTMP.

Any determination of need for traffic calming measures should be based on the point assignment worksheet in the Department's *Neighborhood Traffic Management Program Guidelines and Criteria.* (See Section IV, Appendix D.) Designed for residential streets, NTMP promotes and maintains the safety and quality of life of the County's residential neighborhoods. By conducting the appropriate traffic engineering studies and by soliciting the input of community residents, NTMP provides a process for identifying, evaluating, and addressing undesirable traffic conditions related to speeding and excessive, cut-through, traffic volumes. Any physical, traffic calming measure(s) installed should comply with Department standards and specifications for speed humps, traffic circles, etc.

C. STREETSCAPE

1. Street Trees

The planting of trees has many positive effects. Among their effects, carefully planted trees:

- Help create a sense of community and enhance the appearance of our land and roadways;
- Improve our environment by providing better air quality as well as intercepting and dampening roadway noise;
- Help protect our soils by intercepting and deflecting raindrops before they strike the ground, thereby lessening the impact on the soils below; and
- Help hold the soil in place, further reducing the potential for soil erosion.

CIP construction projects and all street construction permits require the planting of roadside trees within the limits of either the County right-of-way or elsewhere within the permit limits. Street trees may not be planted over storm drain pipe or other utilities where vertical clearance from top of pipe to surface is less than 4 to 6 feet. A "typical roadside tree" is a perennial woody plant having a main trunk and, usually, a distinct crown, which meets the minimum caliper and height

requirements, is approved by the County, and otherwise complies with the requirements set forth in Section III, Standards 600.01 through 600.20. The CIP Contractor is required to plant, and shall be responsible for all costs associated with the maintenance or replacement of, such tree(s), for a period of two complete growing seasons after the CIP project roadway has been accepted by the County for perpetual maintenance. The street construction Permittee shall maintain and establish the plants for a period of one complete growing season (1 year). See Section II, MSHA Specification 710.03.06. (See also "Street Tree Guarantee and Maintenance Bond," in Chapter 4, Subsection C7 of Section I.) The Permittee or Contractor must also obtain the required permit from the Maryland Department of the Environment Forest Service to cut existing trees within the County rights-of-way.

2. Concrete Sidewalks (Sidewalk Ramps and Crosswalks)

The term sidewalk generally implies a separated (horizontally and/or vertically) and prepared pathway of concrete paving with a broom-finished surface, intended exclusively for pedestrian use, including those with disabilities. Sidewalks are primarily designed to serve pedestrian circulation and/or transportation functions, particularly in urban areas. They are usually located within the public right-of-way and provide a direct pedestrian connection between neighborhoods, residential areas, parks, bus stops, schools, employment centers, and other origins and destinations. Rural areas usually cannot accommodate sidewalks due to the presence of a grassed drainage ditch and backslope.

The minimum desirable width for sidewalk travel along arterial, collector, and industrial roadways shall be 60 inches wide. The development of sidewalk along roadways serving commercial, industrial, and business districts must be reviewed and determined by the Department prior to construction. The minimum width requirement for sidewalk construction along primary and secondary classified roadways is 60 inches. (It is important to note that an individual traveling with a service animal or sighted guide will require a minimum of 48 inches width for convenient passage.) If the width of the sidewalk is less than 60 inches in clear width, passing zones, measuring at least 60 inches, would need to be installed as required by the Federal accessibility guidelines of the Americans with Disabilities Act. The passing zones shall be located at reasonable intervals not to exceed 200 feet. Driveway aprons and lead walks constructed to standard with a maximum 2 percent cross slope are considered acceptable as passing zones.

In most cases, sidewalks are to be separated from the back of curb by a landscape strip, consisting of grass and street tree planting material. The space is also used for the placement of traffic signs, street light poles, underground drainage systems, house connections, fire hydrants, water valves, and meters.

The centerline roadway grade and the sidewalk slope grade, which runs parallel to the direction of the approved centerline of roadway grade, shall be the same. The sidewalk cross slope grade, which runs perpendicular to the centerline of roadway, shall be a maximum of 2 percent, including crossings at driveway entrances and medians. The maximum tolerance, for differential elevations established between adjacent surfaces, at drop curbs, and sidewalk ramps is ¼ inch. Any deviation from this maximum tolerance

is not an acceptable transition and is not in compliance with the Federal accessibility requirements of the Americans with Disabilities Act.

To ensure that public facilities are accessible and usable by pedestrians and those with disabilities, sidewalk construction is required on both sides of arterial, collector, and industrial roadways with no exceptions. Sidewalk construction requirements for primary and secondary classified roadways vary with the length of the roadway under consideration. Where the distance between the centerline of intersection roadways and the center of the cul-de-sac roadway is greater than 500 feet, sidewalk construction is required on both sides of the roadway. If the distance from the centerline of intersecting roadways to the center of the cul-de-sac is between 300 and 500 feet, sidewalks are required on one side only. The sidewalk shall run around the entire circumference of the cul-de-sac bulb. Sidewalk construction is optional on roadways where the distance from the centerline of the intersecting roadways to the center of the cul-de-sac is less than 300 feet.

In cases where sidewalks already exist on both sides (and development is expected to continue), sidewalks are to be provided on both sides of the roadway and shall continue to the next intersection. From the point of intersection and beyond, the sidewalk may transition to one-sided construction.

Sidewalk ramps and median crosswalk ramps shall have a maximum running slope of grade 1:12, and minimum length of 8 feet unless otherwise specified on the standard detail. Crosswalks constructed beyond the ramps within the roadway median shall have a maximum running slope grade of 2 percent.

A perpendicular curb ramp may be located within the radius of a curb line. Perpendicular sidewalk ramps are so named because the cuts run at a 90-degree angle to the direction of the curb. A parallel curb ramp slopes in the direction of sidewalk travel. Such ramps are useful in narrow sidewalks along the curb. The landing must be a minimum of 5 feet long to permit a turn into and out of the sidewalk. Like the sidewalk, the landing should not slope more than 2 percent to the street.

Sidewalk ramps and median crosswalks shall be equipped with a detectable warning surface consisting of a pattern of raised truncated domes. The warning surface shall be placed a distance of 6 to 8 inches behind the curb line, and extend 2 feet in the direction of travel, over the full width of the ramp. Domes shall have a diameter of 0.9 inches, a height of a nominal 0.2 inches, and a center-to-center spacing of a nominal 2.35 inches. The detectable warning surface shall color contrast visually with adjoining surfaces, either light-on-dark or dark-on-light. Use brick red panel with brick crosswalk and dark gray panel at all other locations. For detailed information on sidewalk ramp and median crosswalk construction requirements, see Section III, Standards 300.05, 300.06, 300.07, 300.08, 300.09, and 300.10.

Relative to signalized intersections, two ramps at each quadrant of the intersection are required. Additionally, one audible pedestrian warning signal is required at each respective ramp. This will provide audible detection for visually disabled pedestrians.

Since each sidewalk route or sidewalk ramp provides a unique connection between diverse origins and destinations, such pedestrian routes, when they occupy the public right-of-way, shall always be designated and constructed to be accessible to comply with

current Federal requirements of the American with Disabilities Act.

3. Hiker/Biker Trails

The need for shared use paths (hiker/ biker trails) is a function of subdivision density, motor vehicle traffic volumes, residents' preferences, and the proximity of bicycle/pedestrian trip generators, such as educational institutions or parks. Also to be taken into consideration is the established community-wide bicycle route system. Bicycles shall be considered with all other users during transportation planning, new roadway design, roadway reconstruction, repair and capacity improvements, and transit projects, as recommended by AASHTO.

Trails shared by bicycles and pedestrians are appropriate for low-volume or low-speed use, particularly those that loop through subdivisions, but are not used by motor traffic. These facilities are most commonly designed for two-way travel within their own separate right-of-way. For hiker/ biker trail use, a paved area of 10-foot width is desirable. However, due to right-of-way limitations, a minimum shared-use path width of 8 feet will be permitted, especially where the bicycle and pedestrian traffic volume is expected to be low.

Trails in common areas or other locations away from streets generally should be integrated into the detailed site plan or layout in a way that permits visual surveillance of the trails from the street or nearby homes. The opportunity for surveillance is an important factor for user safety and security. Other options may also be considered for accommodating bicycle traffic.

Street crossings for the biker and the pedestrian alike should always be located at points along the roadway that offer adequate sight distances. Traffic-controlled intersections are preferred. Curb cuts for bicycles may sometimes be provided in planned community developments when there are no ramps to accommodate a particular crossing. In some areas where heavily traveled trails cross busy collector streets, traffic control devices, such as signs and painted crosswalks may also be required. When trails intersect arterial streets, special traffic controls or overpasses provide the best methods for bicycle crossing. In all cases, the location and design of bicycle lanes and trails shall always be properly coordinated and approved by the Department.

4. Bike Lanes

In some cases, widening a street to accommodate a marked bicycle lane may be preferable to creating a separate trail. Where feasible, lanes should be 5 feet wide, located at the edge of the pavement, and striped and signed in accordance with the *AASHTO Guide for the Development of Bicycle Facilities*, latest edition. Limiting factors could include insufficient right-of-way, impacts to adjacent property, and/or excessive costs considered disproportionate to the projected need or use of a particular facility.

Bike lanes planned in urban areas within a new public roadway should be one-way facilities and should carry bike traffic flow in the same direction as that of adjacent motor vehicle traffic. Striping assists in separating bicyclists from motorists. One-way bike lanes should be 5 feet wide (minimum) as measured from the outside stripe of the motorists' travel way to the face-of-curb. Bike lanes should be provided on both sides of the roadway, assuming there are no obstructions or walls. Where feasible, pocket

lanes shall be included in intersections along roads with bike lanes in accordance with the *AASHTO Guide for the Development of Bicycle Facilities*, latest edition. Bike lanes planned within a public roadway in rural areas shall use the roadway shoulder, unless otherwise restricted.

5. Concrete Pavers (Crosswalks and Sidewalks)

Concrete paving units are required to be used for crosswalks in certain intersections. If damage should occur to the concrete paver, individual units can be easily removed and replaced.

All concrete pavers shall meet the highest quality standards, in accordance with ASTM C902 (pedestrian/light traffic) and C1272 (heavy vehicular traffic) paving brick standards, with an average compressive strength of 8000 psi and an average absorption rate of less than 5 percent when tested in accordance with ASTM C140. Pigment in concrete pavers shall conform to ASTM C979. Paver size shall be a nominal 4 inches by 8 inches by 2.375 inches and shall have a tolerance of plus or minus 0.0625 inches in all dimensions. All top edges of pavers shall have a 0.01875-inch bevel at 45 degrees.

Pavers shall exhibit resistance to 50 cycles of freeze-thaw while immersed in 3 percent saline solution. Pavers should be installed over an approved concrete base. (See Section III, Standards 300.22 and 300.23.) Note: Pavers shall be installed on a one-inch thick setting bed of material meeting ASTM C33 designation.

6. Clay Brick Pavers (Sidewalks and Sidewalk Ramps)

Concrete pavers or clay brick pavers may be used for sidewalks and sidewalk ramps. Clay brick pavers may be used for virtually any size or shape sidewalk and/or sidewalk ramp and are available in a variety of patterns. To minimize or eliminate the cutting of brick, a basket weave or stack bond pattern may be considered.

Clay brick pavers shall be installed over a 1-inch-thick setting bed of fine graded sand meeting ASTM C33 designation. The size of a typical clay brick paver shall be 4 inches by 8 inches by 2.25 inches. All clay brick pavers shall meet the highest quality standards in accordance with ASTM C902.

Joint and bedding sand for the clay brick pavers shall be clean, nonplastic, and free from harmful or foreign matter. The sand shall be natural or manufactured from crushed rock. The grade of sand for the joints and bedding shall be according to ASTM C33, ASTM C136, and ASTM C144.

7. Bus Passenger Shelters

Shelters shall be installed adjacent to those established County transit and Metrobus stop locations where County transit planners and project engineers deem such construction feasible and cost-effective. These structures shall be fabricated to conform with Department specifications (See Section IV, Appendix A, Form A-25.) and the AASHTO publication, *Roadside Design Guide*.

D. ROAD CLOSURE AND VACATION OF RIGHT-OF-WAY

1. Temporary Closure

The temporary closing of any roadway requires the approval of the Department Director and may be required for construction activities, emergencies (hazardous material spills or leaks, vehicular accidents, etc.), or special activities (community or municipal events, etc.). Temporary closings may not interrupt traffic on primary, collector, or arterial roads, nor deny legal access of any

person to their property without permission, unless the Director determines that:

- Acceptable alternative routes are available during the closure; or
- The closure will be of such short duration so as not to cause unreasonable inconvenience.

Any request for temporary closure must be made in writing to the Director at least 30 days in advance of the date of closure, except in emergencies. The request must include the following information:

- An explanation of the circumstances and a statement of necessity;
- The location and precise limits of the area to be closed;
- The date, time, and duration of the requested closing;
- A Maintenance of Traffic (MOT) plan indicating alternative routes, required signs, barricades, etc.; and
- Evidence of permission from property owners who will be denied access to their property.

The Director may approve, deny, or conditionally approve a temporary closing request. Any conditions imposed shall be provided to the person requesting closure and must be complied with throughout the duration of the closing. Noncompliance will result in immediate revocation of permission and may result in the immediate reopening of the roadway to public use. Completion of all activities necessitating the closure and any needed restoration of the roadway will be required prior to expiration of the time stated in the written permission for closure.

2. Permanent Closure

Road closure, which is recommended for rights-of-way no longer needed as public roadways, may be the result of realignment, access improvement, or other situations. The closure of a roadway terminates the right of the general public to use the right-of-way, but does not affect property ownership rights of the right-of-way or adjoining properties. (Property ownership in relation to right-of-way is addressed in "Procedure for Vacation of Right-of-Way," below.)

Permanent road closures may occur only by order of the County Executive upon recommendation by the Department Director, and shall be carried out in accordance with County Code Subtitle 23, Division 5. If no users of the roadway or of the portion of the roadway to be closed will be denied access to any property or area previously accessible, the County Executive may authorize the closing upon certification of such facts by the Director. Requests for road closures received from the general public are subject to a fee set by the Department to offset administrative costs of processing the closure.

A public hearing is required for the closing of any roadway where:

- The public would be denied access to certain properties or areas previously accessible;
- Access to abutting or nearby property owners will be denied; or
- There is potential, local objection to the closing.

The hearing is held to allow testimony to determine if a reasonable, alternative means of access exists and if the roadway is no longer needed as a public way. Public hearings are scheduled and administered by the Department.

Significant public notification of such hearings shall be provided, including:

- Certified mailing to abutting and nearby property owners;

- Advertisement of the hearing in local newspapers;
- Notification of offices of local elected officials; and
- Posting of signs in the vicinity of the proposed closure.

Public hearings are conducted at locations near the road closure. Public testimony is presented, and the minutes are professionally recorded and transcribed. Written comments will be accepted before and up to 30 days after the date of the hearing. All minutes and written testimony are forwarded to the Director, who renders the recommendation regarding the closure to the County Executive.

3. Procedure for Vacation of Right-of-Way

Public ownership of dedicated rights-of-way may be vacated only by the M-NCPPC, and requires the filing of a vacation petition with the County Planning Board according to Section 24-112 of the Prince George's County Code. This process is administered entirely by M-NCPPC. (Please contact M-NCPPC for a complete list of requirements.) Department approval of such vacation, however, is also required. Included here are the requirements and procedures to obtain written consent from the Department for vacation of right-of-way.

Once filed with the Planning Board, a vacation petition is handled by the Department's Office of Engineering. Upon filing, the petitioner is required to submit the following information:

- A copy of the actual petition to be presented to the Planning Board;
- A copy of the plat(s) of the subdivision under which dedications were made;
- Copies of all other exhibits referenced in the petition that identify the area to be vacated; and
- Delineation on the plat(s) of the exact area(s) in the subdivisions to be vacated.

In order to determine whether any or all of the areas in question should be retained in dedicated status, the Office of Engineering consults with other relevant Department divisions, including the Office of Transportation and the Right-of-Way Division. Consideration of the vacation request will be subject to the following guidelines:

- Consent shall not be given to vacate rights-of-way shown on the approved Master Plan (or adopted revision thereof);
- Consent shall not result in the severing of a community or preclude development of alternative routes for safety, emergency service, traffic circulation, or community access;
- Consent shall not create a remnant right-of-way of substandard nature, or result in the isolation of any parcel from access to the public roadway system;
- Where existing public utilities or facilities remain, provisions for relocation or replacement easements must be provided;
- Requests which fall in incorporated municipalities will be subject to the jurisdiction and consent of the municipality; and
- Requests that may affect State highways require the consent of the MSHA.

Upon completion of the review, the Department will prepare a letter to the Planning Board granting consent to the petition and noting any limitations or recommended conditions. The letter will

be accompanied by a copy of the subdivision record plats marked to delineate the exact location of the right-of-way for which consent to vacate is granted. If consent is denied, the petitioner will be notified with the reasons for denial.

CHAPTER 4: PERMITTING

A. INTRODUCTION

All construction work to be performed in the County right-of-way, or area to be dedicated, requires that an appropriate permit be issued by the Department (in addition to any permit required by other County, State, or Federal agencies). No work may begin until proper permits have been issued by the Department's Office of Engineering, EISD. In order to develop land abutting County right(s)-of-way, the owner/developer is required to construct and/or improve all abutting roadway(s) to an approved standard in accordance with Subtitle 23 of the Prince George's County Code, the Road Ordinance. The permit process ensures the proper and timely completion of projects within County rights-of-way. Submittal requirements vary with the type of permit to be issued.

Examples of activities requiring permits include but are not limited to:

- Grading within the County right-of-way, even with no other construction;
- Public storm drainage facility construction;
- Residential and commercial entrances for both new construction and repair/replacement;
- Utility construction/repairs and maintenance;
- Improvements/repairs to roadways;
- Specialized circumstances, such as using public roads for transportation of construction equipment and/or materials;
- Construction or reconstruction of County-maintained roadways, including sidewalks and other appurtenant facilities; and
- Construction of private roadways for single-family or townhouses.

Note: Checklists and requirements for various permit types are provided in Section IV, Appendix A. You may visit or call the Department's Permits Section to determine the permit type and other requirements necessary for your project.

B. TYPES OF PERMITS

1. Grading Permit

A Grading Permit is required for all grading within the County right-of-way, including disturbances of vegetative ground. Key requirements include:

- Detailed design plans for grade establishment;
- Submittal of sediment/erosion control plans approved by the Prince George's Soil Conservation District;
- Soil boring;
- Payment of filing and permit fees; and
- Approval of Grading Permit bonds.

Please refer to checklist A-2 in Section IV, Appendix A, for specific requirements.

2. Storm Drainage Permit

Installation of a public storm drainage facility within the County right- of-way, as a discrete project, requires a Storm Drainage Permit. Key requirements for obtaining this permit include:

- DPW&T-approved storm drainage design plans and corresponding stormwater management and storm drain construction permit;
- Submittal of sediment/erosion control plans approved by the Prince George's Soil Conservation District;
- Payment of filing and permit fees; and

- Approval of storm drainage permit bonds.

3. Street Construction Permit

Construction of County or public roadways and their appurtenances (sidewalks, storm drains, street trees, signage, etc.) requires a Street Construction Permit. A Street Construction Permit is required in those private developments where private roadways serve more than four single-family dwellings; or serve townhouse communities; or where the Department, in accordance with County Code regulations, has determined that a Street Permit is required. Permitting for street construction requires a comprehensive review by the Department of all aspects of the design and construction. Key requirements include:

- Detailed design plans for grade establishment, paving, and storm drainage;
- DPW&T-approved storm drainage design plans and corresponding stormwater management and storm drain construction permit;
- Submittal of sediment/erosion control plans approved by the Prince George's Soil Conservation District;
- Payment of filing and permit fees; and
- Approval of bonds for all phases of construction.

Please refer to checklist A-4 in Section IV, Appendix A, for specific requirements.

4. Utility Permit

Note: Please see Section IV, Appendix E, for complete information on all utility-related policies of the Department, including requirements, application instructions, and forms.

Utility permits are required for any installation or maintenance of utility facilities within the County right(s)-of-way, and fall into two categories.

- Utility Special Permit—A special permit is required for installation and/or construction of new facilities or equipment. This operates much like other permits for construction within the County right-of-way.
- Utility Maintenance Permit—An annually renewable permit is required, based on the number and size of actual work areas.

Note: Direct digital submissions of applications and related plan material is required as part of the referenced utility permits.

5. Rural/Urban Driveway Permit

All driveway entrances onto County roadways require a driveway permit. This policy applies to new driveway construction as well as repair or replacement of existing driveways. Key requirements for driveway permits Include:

- A site plan indicating the existing conditions, proposed improvements, relevant dimensions, etc.;
- Payment of filing and permit fees; and
- Approval of driveway permit bond(s).

Please refer to checklist A-9 in Section IV, Appendix A, for specific requirements.

6. Haul Road Permit for Mining, Excavation, and Fill Operations

Using County roadways for hauling materials in excess of 1000 cubic yards in volume from mining, fill operations, and other excavation requires a Haul Road

permit. Long-term use (greater than one year) requires annual extension of the permit. Permittees are responsible for all damage to County roadways resulting from hauling operations. Key requirements include:

- Submittal of a plan showing the location of the site and proposed hauling route;
- Submittal of sediment and erosion control plans approved by the Prince George's Soil Conservation District;
- Payment of filing and permit fees; and
- Approval of an appropriate performance bond for restoration in the amount of a $30,000 minimum to a $100,000 maximum.

Please refer to checklist A-17 in Section IV, Appendix A, for specific requirements.

7. Haul Road Permit for Transporting Timber/Equipment

Short-term use of the County right-of-way for hauling timber and related logging equipment requires a Haul Road Permit. Issued in conjunction with the DER Timber Harvest / DPW&T Grading Permit, a separate Haul Road Permit is required for each harvest site. Permittees are responsible for all damage to County roadways incurred by the hauling operations. Key requirements include:

- Submittal of a plan indicating the location of the site and proposed hauling route;
- Submittal of the sediment and erosion control plans approved by the Prince George's Soil Conservation District;
- Payment of the filing and permit fees; and
- Approval of an appropriate performance bond for restoration in the amount of $5000.

Please refer to checklist A-19 in Section IV, Appendix A, for specific requirements.

8. Special Permit for Overweight/ Oversize Vehicles

The transportation of extremely large or heavy items over County roadways (homes, electric transformers, turbines, etc.) requires an Overweight/Oversize Vehicle Permit. A minimum of 30 days notice is required for coordination of the haul route and impacted entities, including street lighting, traffic signals, etc. The Permittee is responsible for any damage to County roadways resulting from hauling operations and for coordination with all impacted utility companies to ensure no interference with overhead facilities and equipment en route. Key requirements include:

- Submittal of a route map indicating the location of the site and proposed hauling route;
- A copy of a MSHA Special Hauling Permit;
- A copy of a gross load analysis computation for combined loading;
- A copy of approvals from all affected local jurisdictions;
- Payment of the filing and permit fees; and
- Approval of an appropriate performance bond for restoration in the amount of a $10,000 minimum to a $100,000 maximum.

Please refer to checklist A-18 in Section IV, Appendix A, for specific requirements.

9. Special Permit for Incidental Activities

Onsite construction or incidental activities that may impact the adjacent County right-of-way require a Special Permit for Incidental Activities. This permit ensures that the County

right-of-way will be left with no damage resulting from incidental activities. Requirements for the permit vary somewhat with the proposed activity, but, at a minimum, will include:

- Submittal of approved plans, sketches, or other documents relevant to the on-site activities;
- Copies of any related public agency permits for the incidental activity;
- Payment of the filing and permit fees; and
- Approval of bond(s) or a letter of responsibility.

C. PROCESS OF PERMIT ISSUANCE

1. Application

At this time, applications must be filed in person at the Department Permit Center and must include copies of all plans, reports, cost estimates, and any prerequisite permits required by other agencies. Applicants are required to pay a nonrefundable filing fee equal to 3.3 percent of the estimated construction project cost, or a minimum of $50, whichever is greater. The cost estimate shall be prepared by the applicant's engineer using the Prince George's County DPW&T Construction Price List. (See Section IV, Appendix A, Item A-8.) The filing fee is applied toward the total permit fee. (For complete information on permit fees, please refer to Section IV, Appendix A, Item A-7, Schedule of Permit Fees.) The Office of Engineering performs a preliminary review of the permit package and confirms the accuracy of the applicant's cost estimate. The Department Permits Section uses the confirmed estimate to compute permit fees and establish bonding requirements. For most permits, a fee equal to 10 percent of the total project construction cost is assessed, which includes the filing fee already paid.

2. Bonding

All work conducted within the County right-of-way requires bonding to ensure satisfactory completion of all work and payment responsibilities covered by the permit. To achieve this, the Department uses three types of bonds.

- The first type of bond is a performance bond. This bond is valued in the amount of 125 percent of the project construction cost, as estimated by the permittee and approved by the Department. A performance bond is required in all cases.
- The second type of bond is the labor and materialman's bond, which is retained by the County to ensure payment of persons supplying labor or materials for work performed under the permit. This bond is valued in the amount of 50 percent of the project construction cost approved by the Department. This bond is required when a performance bond is posted in the form of a surety or when the project construction cost estimate is $25,000 or more.
- The third type of bond is the restoration bond. This bond is valued in the full amount of the estimated cost to restore any damaged areas of County roads resulting from the permitted activity.

It is required for repair or replacement of existing residential and commercial entrances to ensure proper and complete restoration of the County right-of-way and appurtenances after construction. For repair or replacement of existing residential driveway entrances, the applicant may sign a letter of responsibility in lieu of a restoration bond. A letter of responsibility is a signed and notarized affidavit indicating the applicant's promise to restore the County right-of-way damaged by the

permitted activity.

Bonds may be posted in the following forms:

- Cash;
- Irrevocable letter of credit;
- Irrevocable assignment of funds, savings account, or certificate of deposit;
- Corporate surety bond issued by an acceptable insurer; and/or
- Certificate of Guaranty by the Development Guarantee Group of Prince George's County, Inc.

Note: All bonds, except those posted in cash, require the review and approval of the Prince George's County Office of Law, prior to permit issuance by the Department.

3. Submittal Review

The Department's Office of Engineering performs a thorough review of the permit application package for all required components. As applicable, submittals are routed to other offices within the Department, including the following:

- Office of Highway Maintenance;
- Office of Project Management;
- Traffic Safety Division;
- Division of Transit;
- Division of Traffic Management and Operations; and
- Soils/Materials Testing Section.

All design and construction documents are reviewed for conformance to County requirements and regulations, proper engineering design, and safety aspects of the project. Significant interaction among the review staff and applicant is typical throughout the review process. The Department may impose certain conditions or requirements on the project in the interest of public safety.

4. Permits Issuance

No permit will be issued without all of the following:

- Departmental review and approval from the Office of Engineering;
- Permits from other agencies;
- Dedication of all necessary right-of-way requirements;
- Satisfaction of all conditions;
- Payment of all fees; and
- Approval of all required bonds.

Upon satisfactory completion of these requirements, permits will be issued, valid for a period of time, as stipulated on the permit. If the work is not completed within the stipulated time period, the applicant must file for an extension. The Permittee is responsible for requesting any necessary extension at least 30 days prior to expiration of the original permit. The Department shall assess an extension fee equal to 25 percent of the original permit fee—subject to a $25 minimum. For permits for street construction that is 90 percent or more complete, as verified by the Department's construction inspectors, the extension fee shall be equal to either 25 percent of the original permit fee or a maximum of $750, whichever is less.

Permit issuance is granted subject to all conditions imposed during the review process. All such conditions are made a part of the permit document, and full compliance is necessary to ensure full release of bonds.

5. Construction Inspection

Once work is started, the project will be subject to field inspection by Department Inspectors to verify proper completion of the work in conformance with these Specifications and Standards. Inspectors are assigned to each project according to the project's location, based on the Departmental Engineering District. Inspection and approval of all subgrade and concrete form work is required prior to placing any storm drain, sidewalk, curb and gutter, or pavement. Inspections will be conducted for all phases of construction as deemed appropriate by the Department.

The Inspection staff maintain a log of all activities related to the project, including inspection results, contractor performance, and any reports of unsatisfactory performance. As the project nears completion, a list of uncompleted permit requirements is issued by the Inspector. The Permittee shall have 30 days to satisfactorily complete all items on the list. When all permit requirements are completed in accordance with plans and specifications, the inspector then recommends release of the permit.

6. Release of Bond/Closing Permit

Upon recommendation from EISD, the Permits Section notifies the Permittee of any outstanding requirements prior to release of the bond(s). Such outstanding requirements may include releases of liens and/or a street tree guarantee and maintenance bond. Upon receipt of the requirement(s), the Permits Section notifies the bonding company and Permittee of release of the permit and bonding responsibilities; or in the case of Cash Bond(s), a refund check will be forwarded by the Office of Finance.

If requested by the Permittee, bonds that are not secured by surety bonds (cash, letters of credit, assignment of accounts, etc.) may be reduced based on the prorated value of the work completed and approved by the Department, according to the following criteria:

Percentage of Work Completed	Percentage of Bond Reduction Amount
50	25
80	75
Acceptance	100

Approved levels of completion will be determined solely by the Department Office of Engineering staff. Surety bonds are not subject to bond reduction, except in the following case: For urban road classifications where all work is completed except the planting of trees and placement of sod, the Permittee may request a reduction in security to 50 percent of the original amount or $25,000, whichever is greater. No reduction applies to surety bonds posted for rural road classifications.

7. Street Tree Guarantee and Maintenance Bond

The Department includes the cost of roadside trees in the cost estimate for determining the performance bond values of street construction permits. Prior to releasing the performance bond for the permit, however, a separate performance bond may be required from Permittees to ensure planting and/or growth and survival of roadside trees for a duration of two full growing seasons.

Note: The tree planting season lasts from October 15 to April 30; however, no planting shall occur where the soil is frozen. See Specification 710.03.06 in Section II for more information.

Because the completion of projects varies in relation to growing seasons, the Department will use the following criteria to determine if Permittees will be required to post separate bonds for roadside trees and to determine the amount of the bond required:

- Two growing seasons, all trees acceptable: No separate bonds will be required when roadside trees are maintained and established by the Permittee for two full growing seasons and are found in good health and of the species and cultivar approved in the tree plan for the permit, at the time of the final inspection and acceptance of the associated permit.

- Two growing seasons, trees not acceptable: If any dead or damaged trees are found at the time of the final inspection and acceptance of the associated permit, the Permittee may elect to:
  - Replace the unacceptable trees during the planting season with good stock trees; or
  - Post a bond equivalent to 100 percent of the value of the replacement trees, as determined by the Department Inspector, using the prevailing unit cost of street trees.

  The Permittee shall be responsible for replacing and replanting all dead or damaged trees with trees of the species and cultivars approved in the tree plan for the permit.

- Partial growing season: Should the final inspection and acceptance of the associated permit occur before the trees are established and maintained by the Permittee for two full growing seasons, the Permittee will be required to post a bond equivalent to 100 percent of the value of the planted trees, as determined by the Department Inspector, using the prevailing unit cost of planted trees.

- Trees not planted: If all work stipulated by the permit is satisfactorily completed in accordance with the permit requirements, but the roadside trees required by the permit are not planted due to adverse weather conditions or other reasons, the Permittee will be required to post a bond equivalent to 100 percent of the value of the trees, as determined by the Department Inspector, using the prevailing unit cost of planted trees.

All tree bonds shall be valid for sufficient time to allow trees to be established for two full growing seasons. Cash bonds will be required when the value of trees to be bonded is less than $10,000. Other forms of surety noted above are acceptable if the value of trees to be bonded exceeds $10,000.

The trees are reinspected at the end of the two growing seasons, and the tree bond is released if all trees are found to be viable and in good health and of the species and cultivar approved in the tree plan for the permit. For any dead or damaged trees, the Permittee may either replace the trees during the planting season or pay the County the cost of replacement (fee-in-lieu), as determined by the Department Inspector, using

the prevailing unit cost of planted trees. No further bonding will be required for the replacement trees.

8. Acceptance of New Street Construction

All new street construction, whether by permit or the CIP, will be subject to a formal acceptance procedure for inclusion in the County roadway network. Under this procedure, the Department staff prepares all necessary documentation on the new roadway and recommends that all construction work receive final approval. The Department Director then prepares an Executive Order and recommends to the County Executive that the work be accepted into the County road system for perpetual maintenance. The procedure is completed when the County Executive signs the document accepting the work under the authority of the Charter and the laws of Prince George's County.

9. Default

The Permittee must complete all work within the specified time of the permit or file for an appropriate extension. Within 30 days of the permit's expiration, the Department will inspect the project to determine if:

- Work has been completed and the permit can be accepted;
- Only minor work remains and bonds should not be called; or
- Significant work remains, necessitating the calling of bonds.

If the work is completed, the acceptance and bond release procedures will be initiated. For projects requiring only minor work for completion, the Permittee will be advised of outstanding work, and a timeframe for required completion will be specified. The Permittee may also be required to file for an extension at this time. If, however, a significant portion of the project remains uncompleted, the Permittee will be notified to file for an extension to complete the work. If the Permittee is unresponsive 30 days after the permit expiration date, the Director will declare the permit in default and move to call the bonds posted for the permit.

Once a permit is in default, the Department will immediately notify the bonding institution(s) to undertake and complete the work in accordance with the permit. If the bonding institution or agent fails to commit to undertaking completion of the work within 30 days of notice by the Department, the Director will move to collect all performance bonds posted for the work. The bonding institution or agent will have 30 days to issue payment to the County. Institutions that do not provide bond funding to complete the construction work risk being barred from issuing bonds for roadwork within the County for a period of 5 years.

The Department will move immediately to collect the bond and carry out the work. The Department will use a portion or all of the proceeds from the bonds. Any excess amount will be returned to the payer after all work has been finished and all costs have been settled.

10. Suspension/Revocation of Permit

The Director may suspend or revoke any permit for any of the following reasons:

- Violation of Subtitle 23 of the Prince George's County Code, the Road Ordinance;
- Violation of terms and conditions of the permit;
- Assignment or transfer of the permit; or
- Violation of a stop-work order issued by the Director.

Prior to revocation of a permit, the Permittee will be notified in writing. The Permittee will then have 14 days to request an administrative appeal. Once requested, sufficient notice of the appeal hearing will be given to both the Permittee and the public. After the appeal hearing, the Director will render a decision within 10 calendar days. If the ruling is for revocation, bond amounts posted will be forfeited to the County.

D. POLICIES GOVERNING FEES IN LIEU OF CONSTRUCTION

Note: Subtitle 23 of the Prince George's County Code authorizes the Director to collect a fee in lieu of roadway construction under the following circumstances.

Developers are required to construct or improve roadways in conjunction with land development activity. When such construction or improvements may not be practical or feasible at the time the land development work is being done, as determined by the Director the use of a fee-in-lieu allows developers to pay the cost of construction in lieu of actually undertaking the construction. Payment of all fee-in-lieu requirements must be made prior to permit issuance.

Note: Fees for the deferred roadway construction and improvement are calculated allowing for inflation and contingency factors.

A fee-in-lieu of roadway construction may be collected in either of the following two situations:

- In conjunction with permitting application—Approval of certain Department permits is often conditional on a requirement to improve roadways abutting areas of development to their ultimate configurations (as set out in the M-NCPPC Master Plan). Such improvements are not always practical or feasible at the time of permit issuance due to scattered development along the route, incomplete acquisition of right-of-way, or physical factors (grading, alignment, etc.).

  The Office of Engineering is responsible for reviewing comprehensive estimates for projects subject to fee-in-lieu using the current DER/Department Standard List of Unit Prices. This estimate is subject to a 25 percent contingency factor and an inflation factor. (The latter is calculated using the Engineering News-Record (ENR) Highway Construction Cost Index.) The resulting estimate is used for bonding and for calculating the construction cost charged to the developer.
- In conjunction with M-NCPPC approval of a subdivision, M-NCPPC requires, as part of its subdivision approval process, a contribution toward construction and/or improvement of roadways to satisfy M-NCPPC Adequate Public Facilities (APF) requirements. In accordance with the provisions of Subtitle 24 of the Prince George's County Code and Article 28, Section 7-116, of the Annotated Code of Maryland, the Planning Board has the authority to impose a fee-in-lieu in conjunction with subdivision approval. Please contact M-NCPPC for complete information and requirements.

CHAPTER 5: CAPITAL IMPROVEMENT PROGRAM

A. SUMMARY/OVERVIEW

The Prince George's County Capital Improvement Program (CIP) is a comprehensive 6-year plan to program and expend funds for capital projects, involving:

- Physical public improvements, such as construction of County roadways and bridges;
- Acquiring property for public use, including rights-of-way; and
- Purchasing equipment for any public improvement, when first constructed.

The program includes a transportation component for the construction and rehabilitation of County roads and bridges, as well as for the construction of mass transit facilities, such as parking garages at Metro stations. Funding for transportation comes primarily from general obligation bonds, but may also come from the Federal Government (generally dedicated to the bridge construction program), from State Government, and from developer contributions.

B. THE ROLE OF THE DEPARTMENT

The Department is responsible for all aspects of construction and rehabilitation projects relating to County roadways and bridges which are undertaken through the CIP, including the following:

- Analyzing and identifying roadway construction and/or rehabilitation needs;
- Establishing priorities for roadway construction and/or rehabilitation projects, and recommending projects for approval by the County Executive and, subsequently, the County Council;
- Managing the design phase, including the direction of the designers;
- Preparing contract specifications and bid documents for funded projects;
- Administering the construction bidding process;
- Appraising, negotiating, and purchasing the rights-of-way; and
- Managing all roadway/bridge construction and rehabilitation projects from groundbreaking through final acceptance.

C. PROJECT DEVELOPMENT

Through the course of its regular activities, the Department identifies roadway improvement and construction requirements that are beyond the scope of routine maintenance operations. Suggestions and requests for improvements may also come from communities impacted by transportation planning decisions or from concerns applicable to existing traffic or transportation conditions.

The initial development of a project requires a considerable amount of coordination to evaluate the purpose and need for the project and to prepare a project description and scope, including:

- The reasons the improvements are required;
- The location(s) of needed improvements;
- A detailed scope, including complete description and project limits;
- A preliminary cost estimate; and
- The anticipated CIP funding source.

Proposed projects are forwarded to the Director, who has full discretion to approve the project and funding source, and to assign a funding priority. The Program Control Division within the Director's Office main-

tains the list of approved projects that are awaiting funding. This Division also prepares the draft CIP for County Executive and County Council approval. The design and construction of approved CIP projects starts as soon as funds become available.

D. CONTRACT SPECIFICATIONS/BID DOCUMENTS

In accordance with the County's regulations and procurement policies, the construction of CIP projects is generally competitively bid after the Department develops contract specifications and bid documents. The bid documents contain instructions to bidders, standard County contractual terms and conditions, and technical specifications for proposed projects, including:

1. Instructions to Bidders

This document provides detailed directions on the bid process, including:

- Deadlines for the receipt and opening of bids;
- Availability and pricing of project specifications and plans;
- Bid security requirements;
- Required time of completion and liquidated damages clauses;
- Bidder's submittal requirements;
- Minority business enterprise (MBE) participation requirements;
- Prebid conference/site visit dates; and
- Other relevant bidding information.

2. General Terms

All CIP contracts awarded are subject to the "Prince George's County General Terms and Conditions of the contract between the County and the Contractor" (general terms). The general terms govern all aspects of the contractual relationship, including, but not limited to, the following conditions:

- Contractors' and County's responsibilities, insurance and bonding requirements, and warranties;
- Control of work, including inspections and correction of defective work;
- Acquisition of materials, including use of substitutions, payment of sales tax, and the storage and handling of materials;
- Progress of the work, contractual enforcement mechanisms, and final inspection requirements and procedures;
- Payment terms, including for progress and final payments, retainage provisions, and payment withholding for uncorrected or deficient work; and
- Subcontractor relationships, including MBE utilization requirements.

3. Technical Specifications

All requirements pertaining to the design or the construction contract are specified in this section. The technical specifications provide extensive detail on, among other things, construction techniques, required materials, and specifications for appurtenant facilities. The information contained in the technical specifications, when combined with the project drawings, is intended to provide all information necessary to bid and perform the Contract.

E. PROJECT ADMINISTRATIVE POLICIES

The Department has enacted certain practices and policies regarding the contracting and subcontracting of the work performed on CIP projects. The following policies are established in the general terms and fully enacted through Department directives:

1. Limits on Subcontracting

The Contractor shall not sublet more than 50 percent of the monetary value of the work. The costs of insurance, overhead, and supervision may not be claimed as a portion of the 50 percent requirement. All subcontractors must be approved by the Department.

2. Minority Business Enterprise (MBE) Utilization Requirements

The County's policy states that certified MBEs shall have maximum opportunities to participate in work on CIP projects. Mandatory utilization requirements are established in accordance with Subtitle 10A-136 of the Prince George's County Code.

3. Payment of Subcontractors

Final payment and the release of bonds will not be made until the Contractor provides the County with proof of payment to all subcontractors, including release of any liens.

4. Construction Inspection

Once work has begun, the project will be subject to field inspection by the Department's inspection staff, including consultant inspectors, to verify completion of all work and its conformance with the construction documents. Inspections are conducted through regular or frequent visits by the inspection staff and are documented.

F. CONTRACTOR PREQUALIFICATION

Prior to bidding on work to be performed in Prince George's County rights-of-way, all Contractors and subcontractors are required to complete and submit a Contractor's Qualification questionnaire. (See Section IV, Appendix B, Item B-3.) Submitted questionnaires are evaluated prior to award of any bid. The prequalification document details corporate information, project experience, financial and insurance ratings, and other information relevant to the evaluation of the Contractor, and must be certified by a corporate officer and notarized. Prime Contractors are also responsible for gathering and submitting prequalification questionnaires for all proposed subcontractors. The Department reserves the right to disqualify Contractors and/or subcontractors who are deemed to be not qualified based on the information contained in the prequalification questionnaire, through information acquired in reference checks, past performance on departmental projects, or other sound reasons.

G. CONTRACTOR PERFORMANCE EVALUATION

The Contractor performance evaluation process is based on regular reporting of Contractor and subcontractor performance by the Department engineering and inspection staff. The purpose of this effort is to assist the County in the consideration of future contract award/qualification decisions.

The process uses a series of forms completed and maintained by the Department. (Sample copies of the forms can be found in Section IV, Appendix B, Forms B-4, B-5, and B-6.) At the end of each project, a project evaluation form will be completed to grade the Contractor and subcontractors on, among other things, management, equipment, safety, and the quality of the work. On an annual basis, the project reports are summarized into an annual report and graded with a numerical score and provided to the Contractor. At any time, a report of unsatisfactory Contractor performance progress may be issued

for incidents of unsatisfactory performance on the job. The Contractor is expected to correct all unsatisfactory performance progress within time limits requested by the Department. The Department will maintain Contractor evaluations, and may consider past performance when awarding future contracts.

H. SUSPENSION/DISQUALIFICATION

Contractors and subcontractors who receive more than one (1) evaluation which reflects less than satisfactory performance may, at the discretion of the Department, be suspended or disqualified from performing work in Prince George's County rights-of-way. Suspensions can be ordered on a term (a fixed time period) and/or conditional basis.

In order to be reinstated, suspended Contractors must demonstrate compliance with required conditions, and meet any time restriction imposed. Contractors and subcontractors compiling suspensions, financial irregularities, or poor safety records may be subject to permanent disqualification from working on County roadways.

TABLES: I-1 THROUGH I-15

TABLE I-1: RECOMMENDED RIGHT-OF-WAY AND TRAVEL WAY WIDTHS

Source: Prince George's County Department of Public Works and Transportation

Department Standard No.	Road Classification	Right-of-Way (ft)	Travel Way (ft)	Median (ft)	Shoulders (ft)	Bike Lane (ft)
100.01	Urban Arterial Road	120 (130)*	2 x 36 (39)*	24 (26)	—	— (5)*
100.02	Urban Major Collector Road	100*	2 x 26 (30)*	20 (16)	—	— (5)*
100.03	Urban 4-Lane Collector Road	80*	46 (58)*	—	—	— (5)*
100.04	Urban 5-Lane Collector Road	80 (90)*	58 (68)*	—	—	— (5)*
100.05	Urban Commercial and Industrial Road	70	46	—	—	—
100.06	Urban Primary Residential Road	60 (70)*	36 (46)*	—	—	— (5)*
100.07	Urban Secondary Residential Road	50	26	—	—	—
100.08	Rural 4-Lane Arterial Road	130	2 x 22	24	4 (inside) 10 (outside)	Use shoulder
100.09	Rural 2-Lane Collector Road	80	24	—	10	Use Shoulder
100.10	Rural Primary Residential Road	60	24	—	6	Use shoulder
100.11	Rural Secondary Residential Road	60	22	—	4	Use shoulder
100.12	Rural Private Secondary Residential Road	50**	22	—	2	—
100.13	Scenic and Historic Rural 4-Lane Arterial Road	120	2 x 22	22	4 (inside) 6 (outside)	Use shoulder
100.14	Scenic and Historic Rural 2-Lane Collector Road	70	22	—	6	Use shoulder
100.15	Scenic and Historic Rural 4-Lane Collector Road	90	46	—	6	Use shoulder
100.16	Scenic and Historic Rural Primary Residential Road	60	22	—	4	Use shoulder

* For use with hiker/biker trail or bike lane application (both sides). Use Section III, Standards 100.01–100.04 and 100.06.

** Private right-of-way by easement (not publicly owned).

TABLE I-2: DESIGN CRITERIA

Adapted from AASHTO, *A Policy on Geometric Design of Highways and Streets 2001*
Sources: Prince George's County Department of Public Works and Transportation and American Association of State Highway and Transportation Officials (AASHTO)

Road Classification	Design Speed (MPH)	Minimum C/L Radius (ft.)	Maximum C/L Grade (%)	Minimum C/L Grade (%)	Minimum Stopping Sight Distance (ft.)	Minimum "K" *Value*— Sag	Minimum "K" Value— Crest	Minimum Intersec-tion Sight Distance (ft.)**	Minimum Turning Radius (ft.)	Right-of-Way (ft.)
Urban Arterial Road	50	1200	6	1	425	100	90	555	50	120/130
Urban Major Collector Road	40	700	8	1	305	70	50	445	45	100
Urban 4-Lane Collector Road	40	700	8	1	305	70	50	445	45	80
Urban 5-Lane Collector Road	40	700	8	1	305	70	50	445	45	80/90
Urban Commercial and Industrial Road	35	500	10	1	250	50	30	390	50	70
Urban Primary Residential Road	35	500	10	1	250	50	30	390	37	60/70
Urban Secondary Residential Road	30	300	10	1	200	40	20	335	37	50
Rural 4-Lane Arterial Road*	50	1200	6	2	425	100	90	555	50	130
Rural 2-Lane Collector Road*	40	700	8	2	305	70	50	445	50	80
Rural Primary Residential Road*	35	500	10	2	250	50	30	390	45	60
Rural Secondary Residential Road*	30	300	10	2	200	40	20	335	45	60
Rural Private Residential Road*	30	300	10	2	200	40	30	335	40	50
Scenic and Historic-Rural 4-Lane Collector Road	40	700	8	2	305	70	50	445	50	120

Note: Posted speed limits on County-maintained roads may be equal to or less than design speed (MPH).
* Also applicable to Scenic and Historic Road
** Left Turn from Stop scenario

Rate of vertical curvature: K = L/A
L = Length of vertical curve
A = Algebraic difference in grades (%)
Minimum 100' vertical curve

TABLE I-3: PROPERTIES OF SUBGRADE MATERIALS

Based on the Unified Soil Classification System (USCS) and AASHTO Classifications

Sources: Unified Soil Classification System (USCS) and American Association of State Highway and Transportation Officials (AASHTO)

Soil Type	Unified Soil Class	Finer Than 0.02 mm (%)	*Permeability*	*Frost Potential*[1]	*Typical CBR*[2]	Typical M_r psi[2]	*Design Class*
Gravels, Crushed Stone; Little or No Fines; < 0.02mm	GW,GP	0–1.5	Excellent	NFS	17	20,000	Very Good
Sands, Sand-Gravel Mix; Little or No Fines; < 0.02mm	SW, SP	0–3	Excellent	NFS	17	20,000	Very Good
Gravels, Crushed Stone; Some Fines; < 0.02mm	GW, GP	1.5–3	Good	PFS	17	20,000	Very Good
Sands, Sand-Gravel Mix; Some Fines; < 0.02mm	SW, SP	1.5–3	Good	PFS	17	20,000	Very Good
Gravelly Soils; Medium Fines; < 0.02mm	GW,GP, GM	3–6	Fair	Low	8	12,000	Good
Sandy Soils; Medium Fines; < 0.02mm	SW, SP, SM	3–6	Fair	Low	8	12,000	Good
Silty Gravel Soils; High Fines; < 0.02mm	GM GW-GM, GP GM	6–10 10–20	Fair to Low	Medium	8	12,000	Good
Silty Sand Soils; High Fines; < 0.02mm	SM SW-SM, SP-SM	6–15	Fair to Low	Medium	8	12,000	Good
Clayey Gravel Soils; High Fines; < 0.02mm	GM, GC	> 20	Fair to Low	Medium to High	5	7500	Medium
Clayey Sand Soils; High Fines; < 0.02mm	SM, SC	> 20	Low to Very Low	Medium to High	5	7500	Medium
Very Fine Silty Sands	SM	> 15	Low	High to Very High	5 Replace in severe frost areas	7500	Poor
Clays—Plasticity Index > 12	CL	—	Very Low	High	3 Replace in severe frost areas	4500	Poor
All Silt Soils	ML	—	Very Low	High to Very High	3 Replace in severe frost areas	4500	Poor
Clays—Plasticity Index < 12	CL, CL-CM	—	Very Low	High to Very High	3 Replace in severe frost areas	4500	Poor
Organic Soils	OL	—	Very Low	High to Very High	< 3 Replace	3000	Very Poor
Highly Plastic Soils (Plasticity Index > 20)	CH, MH	—	Very Low	High to Very High	 Replace		Very Poor

[1] NFS = not frost susceptible; PFS = possibly frost susceptible

[2] California bearing ratios (CBRs) and resilient modulus (M_r) values are minimum values expected for each subgrade class.

TABLE I-4: TYPES AND USES OF SOILS

Based on AASHTO Classifications

Source: American Association of State Highway and Transportation Officials (AASHTO)

Type	Composition	Recommendations
A-1	Well-graded gravels and sand-clays. Satisfactory treated surface. Good base with thin pavement. Excellent fill. Frost heave and breakup in North, if plastic.	Use subdrainage to lower water table. Stabilize chlorides or Portland cement mechanically.
A-2	Poorly graded sand and gravels. Good base for moderately flexible or thin, rigid pavement. Good fill. Frost heave, breakup, if plastic. Softens when wet if plastic.	Use base course when subgrade plasticity index is greater than 6. Subdrainage is effective. Stabilize with bitumen, chlorides, cement, or admixture soils.
A-3	Clean sands and gravels. Ideal base for moderately flexible or thin, rigid pavement. Good fill. No frost heave or breakup.	Subdrainage only through impervious shoulders. Stabilize with soil binder, bituminous, or chemical admixtures.
A-4	Silty soils. Not good for surface. Poor base, absorbs water. Unstable when wet. Bad frost heave and breakup.	Use subdrainage and/or base and subbase with flexible pavement. Use bituminous subgrade prime. Use thick concrete pavement (7–10″) with steel reinforcement and crack control.
A-5	Elastic silts.	Use subdrainage and/or granular base and subbase with bituminous subgrade prime. Use thick concrete pavement, reinforced with crack control. Stabilize with soil cement.
A-6	Clays. Impermeable and stable when dry and undisturbed (hard clay). Plastic and absorbent, if disturbed. Bad pumping into porous base macadam or pavement joints. Shrinks and cracks when dry.	Use granular base and subbase. Use subdrainage only when made pervious by cracks, foot holes, and laminations. Frost heave slight when impermeable, bad when pervious. Use subgrade prime. Use thick, strong, dense, flexible pavement or reinforced, crack-controlled concrete. Lime stabilization effective.
A-7	Expansive, plastic clays, excessive volume change. Bad frost heave and breakup.	Subdrainage not effective. Use thick, dense, flexible pavement with base and subbase over subgrade prime or reinforced, crack-controlled concrete placed on impervious paper. Stabilize with lime and kiln dust.
A-8	Muck and peat. Unfit for construction purposes.	Excavate to solid stratum and replace with selected fill. Displacement by superimposed fill is doubtful. Displacement by explosive under superimposed fill is sometimes effective.

TABLE I-5: AASHTO SOIL CLASSIFICATION SYSTEM
Classification of Soils and Soil-Aggregate Mixtures (with Suggested Subgroups)

Source: American Association of State Highway and Transportation Officials (AASHTO)

General Classification	Granular Materials (35 Percent or less passing a No. 200 sieve)							Silt-Clay Materials (More than 35 Percent passing a No. 200 sieve)			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6
Sieve Analysis (percent passing): No. 10 No. 40 No. 200	 50 Max 30 Max 15 Max	 — 60 Max 25 Max	 — 51 Max 10 Max	 — — 35 Max	 — — 35 Max	 — — 35 Max	 — — 35 Max	 — — 36 Min	 — — 36 Min	 — — 36 Min	 — — 36 Min
Characteristics of the Fraction Passing a No. 40 Sieve: Liquid Limit Plasticity Index	 — 6 Max		 — N.P.	 40 Max 10 Max	 41 Min 10 Max	 40 Max 11 Min	 41 Min 11 Min	 40 Max 10 Max	 41 Min 10 Max	 40 Max 11 Min	 41 Min 11 Min*
Group Index	0		0	0		4 Max		8 Max	12 Max	16 Max	20 Max
Usual Types of Significant Constituent Materials	Stone Fragments, Gravel, and Sand		Fine Sand	Silty or Clayey Soils, Gravel, and Sand				Silty Soils		Clayey Soils	
General Rating as Subgrade	Excellent to Good					Fair to Poor					

Note: The upper 12 inches of roadway subgrade should be constructed of materials meeting the following characteristics:

Liquid limit 40 Maximum (ASTM D 4318)
Plasticity index 12 Maximum (ASTM D 4318)
California bearing ratio 7 Minimum (ASTM D 1883)
Maximum dry density 105 pcf Minimum (ASTM D 698)

The above characteristics usually apply to AASHTO group classifications: A-1, A-2, and A-3.

*The plasticity index of subgroup A-7-5 is equal to or less than the liquid limit (LL) minus 30. The plasticity index of subgroup A-7-6 is greater than the LL minus 30.

TABLE I-6: MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION SOIL CLASSIFICATION SYSTEM

Classification of Soils and Soil-Aggregate Mixtures (Characteristics and Performance)

Source: Maryland State Highway Administration (MSHA)

General Classification	Granular Materials						Silt-Clay Materials							
Group Classification	**A-2**		**A-3**	**A-2-4**	**A-4-2**	**A-2-7**	**A-7-2**	**A-4**	**A-4-7**	**A-7-4**	**A-7**	**A-6**	**A-5**	**A-8**
General Description	Sand			Silty Sand	Sandy Silt	Clayey Sand	Sandy Clay	Silt	Clayey Silt	Silty Clay	Clay	Colloidal Clay	Mica, Diatoms, and Silt	Swamp Muck
Stability	When nonplas-tic is high	When plastic, good when dry	Ideal when confined	Good when dry	Good when dry	Good when dry and properly com-pacted	Good when properly compacted or undisturbed				Poor		Good to Poor	None
Use as a Base	Fair	Fair	Excellent	Fair	Fair	Poor	Unsatisfactory							
Use as a Subbase	Excellent	Good	Excellent	Fair	Fair	Fair	Unsatisfactory							
Use as a Subgrade	Excellent	Excellent	Excellent	Fair	Fair	Fair	Poor				Very Poor	Poor		Unsatis-factory
Fills under 50′	Excellent	Good	Good	Good	Poor	Fair	Good to Poor				Poor	Very Poor	Poor	Unsatis-factory
Fills over 50′	Good	Good to Fair	Good to Fair	Fair	Poor	Fair	Poor to Very Poor				Very Poor	Very Poor	Poor	Unsatis-factory
Frost Action	None to Low			Medium	High	Medium	Medium	High	Medium to High		Medium		High	Medium
Range of Maximum Dry Density (AASHO T-180) (PCF)	115-135	115-135	105-130	110-130	110-135	115-135	115-130	110-135	110-135	105-130	100-120	90-115	100-135	< 100
Range of Optimum Moisture Contents (AASHO T-180) (%)	9-12	8-12	8-15	8-15	9-15	6-12	9-15	8-15	10-15	10-17	12-25	14-30	11-18	—
Required Compaction (AASHO T-180) (%)	92-95	92-95	92-95	92-95	92-95	92-95	92-95			≤ 95%				Waste
Compaction Methods	Rolling with smooth face tamping, rubber-tired roller, or vibratory compactor		Tractor disking vibration	Tamping or rubber-tired roller	Tamping or rubber-tired roller	Tamping or rubber-tired roller	Tamping, sheepfoot roller, or rubber-tired roller						Tamping or Rubber-Tired Roller	Waste
Compaction Abilities	Good, with close control		Good	Good to Poor	Good to Poor	Good to Poor	Good to Poor				Poor	Poor	Very Poor	Waste
Pumping Action	Slight to None						Fair to Poor				Poor			Waste
Bearing Value	Excellent to Fair			Good to Fair			Fair to Poor				Poor			Waste
Drainage	Good		Drains freely	Fair to Practically Impervious			Fair to Impervious				Poor	Impervious	Fair to Impervious	Poor

Notes:A-2 to A-3 Soils: When used as a base, the plasticity index and the liquid limit should not exceed 6 and 25, respectively. These soils/silt-clay materials are best for soil-cement stabilization—generally, 8–12% cement by weight will be sufficient.

Nonplastic A-2 to A-3 Soils: These soils may require vibration for compaction.

A-4 to A-7 Soils: These fills should be placed during a dry season.

A-4 Silts: These are susceptible to settlement and erosion

A-5 Soils: When mica is present, these soils are very difficult to compact because of expansion and rebound.

A-6 Soils (Clay): These soils will pump in porous bases, forming cracks. Fills will settle over long periods of time. High banks in cuts and fills are very liable to slide.

TABLE I-7: TYPICAL CEMENT REQUIREMENTS FOR VARIOUS SOIL TYPES
Based on AASHTO and USCS Classifications

Sources: Prince George's County Department of Public Works and Transportation, American Association of State Highway and Transportation Officials (AASHTO), and Unified Soil Classification System (USCS)

AASHTO Soil Classification	USCS Soil Classification	Typical Range of Cement Requirement* (% by Weight)	Typical Cement Contents for Durability Tests ASTM D559 & D506 (% by Weight)
A-1-a	GW, GM	3–5	5
A-1-b	GP, GC	5–8	6
A-2	SM, SC, SW	5–9	7
A-3	SP	7–11	9
A-4	CL, ML	7–12	10
A-5	ML, MH	8–13	10
A-6	CL, CH	9–15	12
A-7	MH, CH	10–16	13

Note: Placement and curing procedures should generally comply with Section 502, "Soil Cement Base Course," MSHA *Standard Specifications for Construction and Materials*, latest edition. Field molds for compliance testing should have a minimum, unconfined, compressive strength of 250 psi in 7 days. Lime and kiln dust combinations have been more effective on Christiana clays used in 12-inch lifts. Soil cement is not suited for soil types with organic contents greater than 2 percent or pH less than 5.3. Acid sulfate soils are not suitable. Extremely cold temperatures or extremely wet soils should also be avoided. Minimum temperatures for curing should be 40 degrees Fahrenheit. Subgrade applications should be protected for 7 days by using straw mats or soil layers. Treated subgrades should not be exposed to vehicular traffic until adequate strength is attained; this usually occurs between 3 and 7 days.

* Does not include organic or poorly reacting soils. Also, additional cement may be required for severe exposure conditions, such as slope protection.

TABLE I-8: MINIMUM FREQUENCY FOR ROADWAY MATERIALS DENSITY TESTING

(unless otherwise advised by the Department or Materials Lab Inspector)
Sources: Prince George's County Department of Public Works and Transportation and American Association of State Highway and Transportation Officials (AASHTO)

Test Locations	Testing Frequency
Embankments—Fill sections for streets and travelways	One test shall be performed per 5000 ft² (500 m²) for each 8 in. (150 mm) compacted lift.
Subgrade—Cut and fill Sections	One test shall be performed per 5000 ft² (500 m²) of undivided roadway at the final subgrade elevation. The subgrade test shall not be performed at the same spot where the utility trench backfill test was performed. Trench testing shall be performed in addition to the subgrade testing. Under the curb and the gutter, one test shall be performed per 300 ft (90 m) on alternating sides.
Subbase Material—For streets and travelways	One test shall be performed per 5000 ft² (500 m²) for each 6 in. (150 mm) compacted lift. When the subbase aggregate is placed in layers or lifts, each lift shall be tested. Under curb and gutter when placed before the subbase material in the street, perform one test per 300 ft (90 m) on alternating sides.
Base Material	One test shall be performed per 5000 ft² (500 m²) at the finished base grade. When the base aggregate is placed in layers or lifts, each 6 in. (150 mm) compacted lift shall be tested at the required frequency.
Storm Drainage System—Backfill*	One test shall be performed per 300 ft (90 m) and at vertical intervals not to exceed 12 in. (300 mm).
Sidewalks and Driveway Aprons	Sidewalk subgrade: One test shall be performed per 500 ft (150 m) on alternating sides at the subgrade elevation. A minimum of two tests per street is required. Driveway apron: One test per apron shall be performed.
Asphalt Concrete Pavement (NOTE: The thin lift nuclear density test shall be used for any course placed with an amount under 200 tons or with a required constant or variable thickness less than 1.5 in., like wedge and leveling, patching, and other applications.)	*Cores (4 in. or 6 in. diameter; only 6 in. diameter for 25-mm mixes)* A minimum of one set of five cores is required for County testing per paving day per 1,000 tons of an asphalt mix unless otherwise requested by County. One additional set is required for each additional 1,000 tons or fraction thereof regardless of street length. *Thin Lift Nuclear Density Gauge (See note in left column.)* One test shall be performed per 300 ft of each lane. A minimum of two tests per lane is required, regardless of the length of the street.

*Testing required beneath structures only, including, but not limited to, sidewalks, driveways, streets, and stoops.

TABLE I-9: GENERAL SOIL CLASSIFICATION STRENGTH CORRELATION

California Bearing Ratio (Cbr)

Sources: Prince George's County Department of Public Works and Transportation, American Association of State Highway and Transportation Officials (AASHTO), and Unified Soil Classification System (USCS)

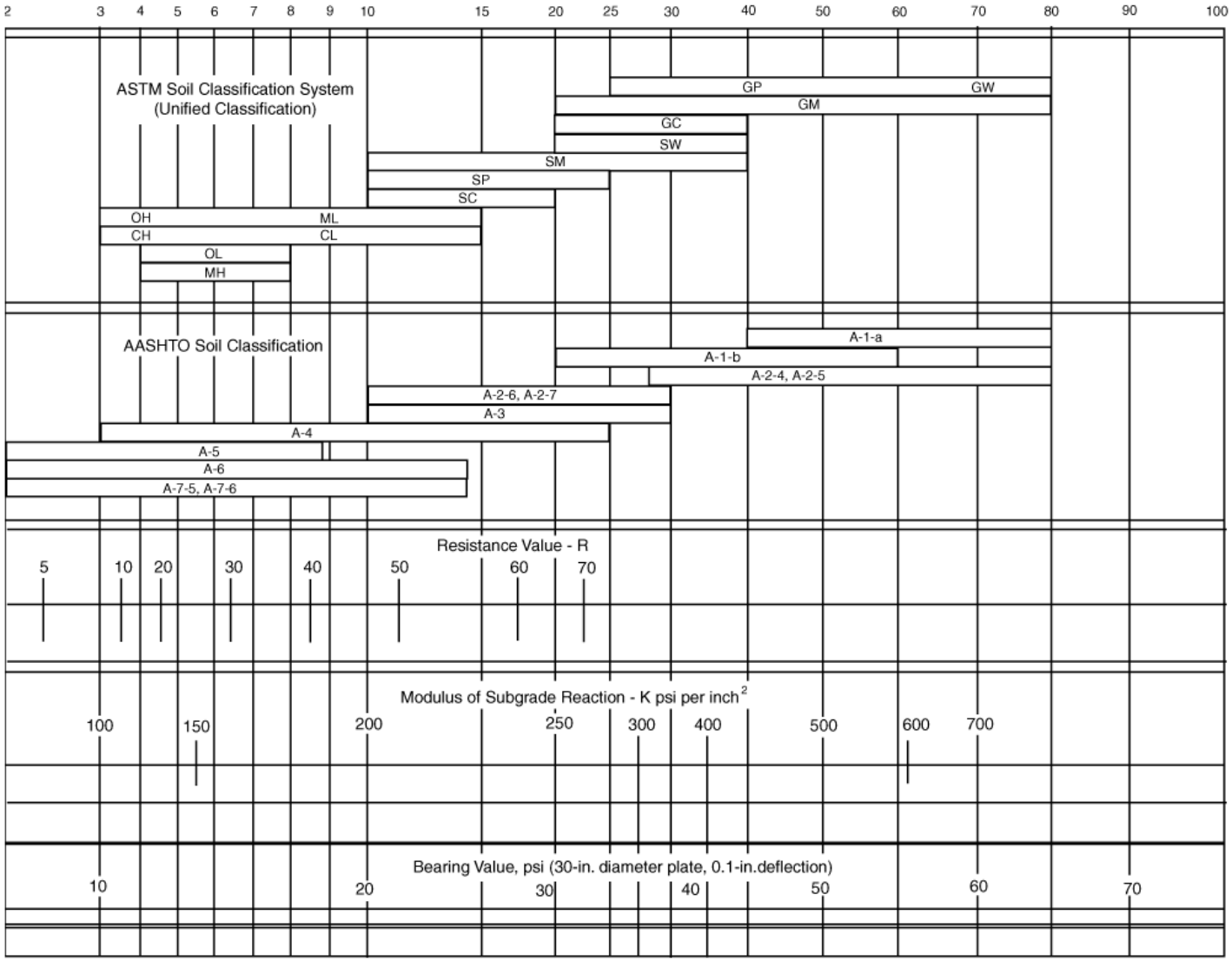


TABLE I-10: PIPE USE

Sources: Prince George's County Department of Public Works and Transportation, based on compiled data from American Association of State Highway and Transportation Officials (AASHTO) and American Society for Testing and Materials (ASTM)

Materials	Specifications		Requirements
	AASHTO	ASTM	
Reinforced, Concrete Pipe (RCP)	M170	C76, C361	Under roadbed, minimum Class 4; Beyond roadbed, minimum Class 3
Concrete End Sections	M170	C76	Must be reinforced to conform with Class 4 pipe
Polyvinyl Chloride (PVC) (solid), Plastic Pipe and Drain Pipe	M278	D1785 or D3034	For underdrain use, on a case-by-case basis
Polyvinyl Chloride (PVC) (perforated), Plastic Pipe	M278	F758 Type PS 28	For underdrain use, on a case-by-case basis
Polyethylene (HDPE) Plastic, Drain Pipe	M252 or M294	D2321	Underdrain outlet pipes, Type S—minimum pipe stiffness, 50 psi (rigid)
Reinforced Concrete Arch, Culvert	M206	C506	Under roadbed, minimum Class 4; Beyond roadbed, minimum Class 3
Reinforced Concrete Elliptical Pipe	M207	C507	Horizontal, elliptical pipe only Under roadbed, minimum Class 4; Beyond roadbed, minimum Class 3
Preformed, Rubber Joint for Circular, Reinforced, Concrete Pipe	M198 Type A	C443	Comply with slope requirements stipulated in County Storm Drainage Design Manual
Corrugated, Steel Pipe, Pipe Arches	M36	A760	Under driveways and under roadways* for underdrain purposes only
Corrugated, Aluminized, Steel Pipe	M36	A760	Under driveways and under roadways* for underdrain purposes only
Aluminum Steel, Spiral Rib Pipe	M36	A760	Under driveways and under roadways* for underdrain purposes only
Aluminum, Spiral Rib Pipe	M196	B745	Under driveways and under roadways* for underdrain purposes only
Standard Metal End Sections	M36	A760	All 3-piece units to have 12-gauge sides and 10-gauge center panels
Corrugated, Aluminum, Alloy Pipe	M196	B745	Use requires special approval by the Department
Aluminum, Structural, Plate Pipe, Pipe Arches, and Arches	M219	B746	Use requires special approval by the Department

* Corrugated steel pipe is not to be used under roadways if the Department allows the use of recycled concrete material in the roadbed in lieu of crushed stone.

TABLE I-11: STREET LIGHTING PLAN APPROVAL PROCESS

Source: Prince George's County Department of Public Works and Transportation

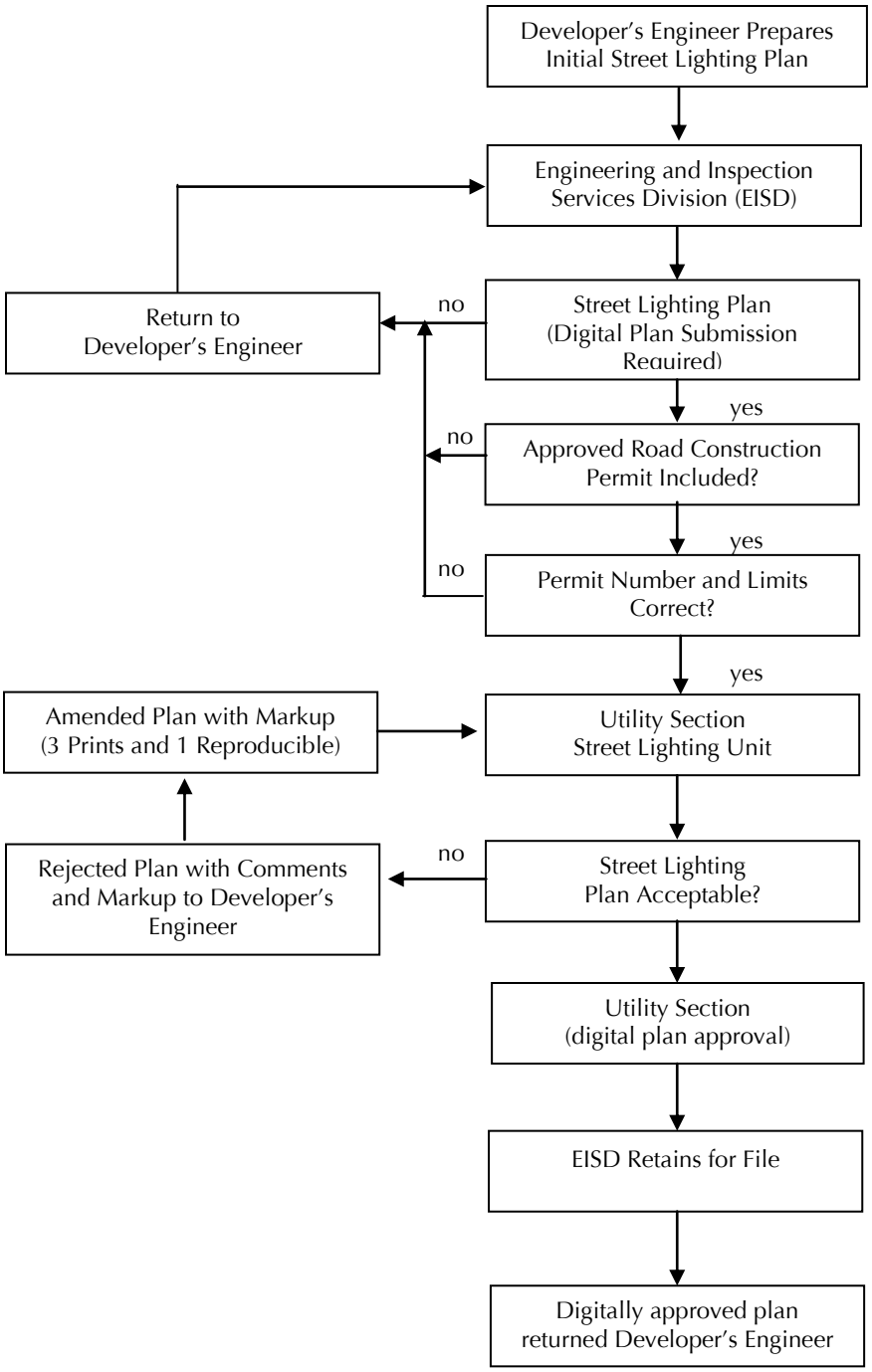


TABLE I-12: SUMMARY OF STREET LIGHTING FIXTURES BY UTILITY

(Lamp Wattages as Specified in Previous Tables)

Source: Prince George's County Department of Public Works and Transportation

Potomac Electric Power Company (PEPCO)

Fixture	Wattage (HPS)	Pole/Installation	Mounting Height (ft)
Underground-Served Fixtures			
Colonial Post-Top	100	Black Fiberglass Direct Buried	16
Pendant	*150/250	Black Fiberglass Direct Buried	26
Pendant	*150/250/400	Aluminum with Foundation (Concrete or Screw Type)	26
Rectilinear	*150/250/400	Bronze Fiberglass Direct Buried	30
Overhead-Served Fixtures			
	*100/150/250/400	Determined by Utility	Determined by Utility

Baltimore Gas & Electric (BGE)

Fixture	Wattage (HPS)	Pole/Installation	Mounting Height (ft)
Underground-Served Fixtures			
Traditionaire Post-Top	100/150	Black Fiberglass Direct Buried	16
Pendant	*150/250/400	Galvanized Steel Embedded	25
Rectilinear	*150/400	Bronze Fiberglass Direct Buried	30
Overhead-Served Fixtures			
	*100/150/250/400	Mounting and Equipment Determined by Utility	Determined by Utility

Southern Maryland Electric Cooperative (SMECO)

Fixture	Wattage (HPS)	Pole/Installation	Mounting Height (ft)
Underground-Served Fixtures			
Colonial Post-Top	100	Black Fiberglass Direct Buried	16
Pendant Cobra Head	*100/250	Aluminum with Foundation (Concrete or Screw Type)	26
Overhead-Served Fixtures			
	*100 Open/ 250 Cobra Head	Mounting and Equipment Determined by Utility	Determined by Utility

* Permittee specifies the desired materials/installation options for DPW&T approval.

TABLE I-13: LUMINAIRE AND SUPPORT GUIDE FOR POTOMAC ELECTRIC POWER COMPANY (PEPCO)

(page 1 of 3)

Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configura-tion
500.01	Urban Arterial Road:	250	Pendant Cobra Head or	Aluminum Base Mounted	26′	150′/170′	Opposite
	For new roadways or roadways with under-ground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Opposite
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Opposite
500.02	Urban Major Collector Road:	250	Pendant Cobra Head or	Aluminum Base Mounted	26′	150′/170′	Opposite
	For new roadways or roadways with under-ground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Opposite
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Opposite
500.03	Urban 4-Lane Collector Road: For new roadways or roadways with under-ground service and no street lights in the area For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Staggered
500.04	Urban 5-Lane Collector Road: For new roadways or roadways with under-ground service and no street lights in the area For existing roadways with pendant lights in the area	250/400	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Opposite

TABLE I-13: LUMINAIRE AND SUPPORT GUIDE FOR POTOMAC ELECTRIC POWER COMPANY (PEPCO)

(page 2 of 3)

Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configuration
500.05	Urban Commercial and Industrial Road:						
	For new roadways or roadways with underground service and no street lights in the area	250/400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Staggered
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Staggered
500.06	Urban Primary Residential Road:		Pendant Cobra Head 6′ Arm Type II				
	For multiple housing or single-family homes not facing the roadway	150	Colonial Post-Top Type IV or Pendan post at discretion of DPW&T	Aluminum Base Mounted	26′	150′/170′	Staggered
	For single-family homes facing the roadway	100		Black Fiberglass Direct Buried	16′	150′/170′	Staggered
500.07	Urban Secondary Residential Road:						
	For new roadways or roadways with underground service and no street lights in the area	100	Colonial Post-Top Type IV	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
500.08	Rural 4-Lane Arterial Road:	250	Pendant Cobra Head or	Black Fiberglass Direct Buried	26′	150′/170′	Opposite
	For new roadways or roadways with underground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Opposite
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head	Black Fiberglass Direct Buried	26′	150′/170′	Opposite
	For existing roadways with existing utility pole	250 WHPS	Pendant Cobra Head	Wood Utility Poles	Varies	150′/200′	Opposite

TABLE I-13: LUMINAIRE AND SUPPORT GUIDE FOR POTOMAC ELECTRIC POWER COMPANY (PEPCO)

(page 3 of 3)

Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configuration
500.09	Rural 2-Lane Collector Road: For new roadways or roadways with underground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Staggered
	For existing roadways with pendant lights in the area	150/250	Pendant Cobra Head 6′ Arm Type II	Black Fiberglass Direct Buried	26′	150′/170′	Staggered
	For existing roadways with existing utility pole	150/250	Pendant Cobra Head	Wood Utility Poles	Varies	150′/200′	Opposite
500.10	Rural Residential Road: For new roadways or roadways with underground service and no street lights in the area	100	Colonial Post-Top Type IV	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
	For existing roadways with existing utility pole	100/150	Pendant Cobra Head	Wood Utility Poles	Varies	150′/200′	Opposite
500.11	Rural 4-Lane Collector Road: For new roadways or roadways with underground service and no street lights in the area For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Black Fiberglass Direct Buried	26′	150′/170′	Opposite
	For existing roadways with existing utility pole	150/250	Pendant Cobra Head	Wood Utility Poles	Varies	150′/200′	Opposite

Note: For lighting requirements on Scenic and Historic Roadways, see Section IV, Appendix F.

TABLE I-14: LUMINAIRE AND SUPPORT GUIDE FOR BALTIMORE GAS & ELECTRIC (BGE)

(page 1 of 3)

Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configuration
500.01	Urban Arterial Road:	250	Pendant Cobra Head or	Galvanized Steel Embedded	25′	150′/170′	Opposite
	For new roadways or roadways with underground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Opposite
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Galvanized Steel Embedded	25′	150′/170′	Opposite
500.02	Urban Major Collector Road:	250	Pendant Cobra Head or	Galvanized Steel Embedded	25′	150′/170′	Opposite
	For new roadways or roadways with underground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Opposite
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Galvanized Steel Embedded	25′	150′/170′	Opposite
500.03	Urban 4-Lane Collector Road: For new roadways or roadways with underground service and no street lights in the area For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Galvanized Steel Embedded	25′	150′/170′	Staggered
500.04	Urban 5-Lane Collector Road: For new roadways or roadways with underground service and no street lights in the area For existing roadways with pendant lights in the area	250/400	Pendant Cobra Head 6′ Arm Type II	Galvanized Steel Embedded	25′	150′/170′	Opposite

TABLE I-14: LUMINAIRE AND SUPPORT GUIDE FOR BALTIMORE GAS & ELECTRIC (BGE)

(page 2 of 3)

Continued from page 109 Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configuration
500.05	Urban Commercial and Industrial Road: For new roadways or roadways with underground service and no street lights in the area	250/400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Staggered
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Galvanized Steel Embedded	25′	150′/170′	Staggered
500.06	Urban Primary Residential Road: For multiple housing or single-family homes not facing the roadway	150	Pendant Cobra Head 6′ Arm Type II	Galvanized Steel Embedded	25′	150′/170′	Staggered
	For single-family homes facing the roadway	100	Traditionaire Post-Top Type IV or pendant post at discretion of DPW&T	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
500.07	Urban Secondary Residential Road: For new roadways or roadways with underground service and no street lights in the area	100	Traditionaire Post-Top Type IV	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
500.08	Rural 4-Lane Arterial Road:	250	Pendant Cobra Head or	Galvanized Steel Embedded	25′	150′/170′	Opposite
	For new roadways or roadways with underground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Opposite
	For existing roadways with pendant lights in the area	250	Pendant Cobra Head	Galvanized Steel Embedded	25′	150′/170′	Opposite
	For existing roadways with existing utility poles	250	Pendant Cobra Head	Wood Utility Poles	Varies	150′/170′	Opposite

TABLE I-14: LUMINAIRE AND SUPPORT GUIDE FOR BALTIMORE GAS & ELECTRIC (BGE)

(page 3 of 3)

Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configuration
500.09	Rural 2-Lane Collector Road:	150/250	Pendant Cobra Head or	Galvanized Steel Embedded	25′	150′/170′	Staggered
	For new roadways or roadways with underground service and no street lights in the area	400	Rectilinear Type	Bronzed Fiberglass Direct Buried	30′	150′/170′	Staggered
	For existing roadways with pendant lights in the area	150/250	Pendant Cobra Head	Galvanized Steel Embedded	25′	150′/170′	Staggered
	For existing roadways with existing utility pole	150/250	Pendant Cobra Head	Wood Utility Poles	Varies	150′/170′	Opposite
500.10	Rural Residential Road:						
	For new roadways or roadways with underground service and no street lights in the area	100	Traditionaire Post-Top Type IV	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
	For existing roadways with existing utility pole	100/150	Pendant Cobra Head	Wood Utility Poles	Varies	150′/170′	Opposite
500.11	Rural 4-Lane Collector Road:						
	For new roadways or roadways with underground service and no street lights in the area For existing roadways with pendant lights in the area	250	Pendant Cobra Head 6′ Arm Type II	Black Fiberglass Direct Buried	26′	150′/170′	Opposite
	For existing roadways with existing utility pole	150/250	Pendant Cobra Head	Wood Utility Poles	Varies	150′/170′	Opposite

Note: For lighting requirements on Scenic and Historic Roadways, see Section IV, Appendix F.

TABLE I-15: LUMINAIRE AND SUPPORT GUIDE FOR SOUTHERN MARYLAND ELECTRIC COOPERATIVE (SMECO)

Source: Prince George's County Department of Public Works and Transportation

DPW&T Std. No.	Road Classification	Lamp (WHPS)	Luminaire Distribution Type	Post Material Installation	Mounting Height	Spacing Avg./Max.	Configuration
500.01	Urban Arterial Road	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Opposite
500.02	Urban Major Collector Road	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Opposite
500.03	Urban 4-Lane Collector Road	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Staggered
500.04	Urban 5-Lane Collector Road	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Opposite
500.05	Urban Commercial and Industrial Road	250	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	150′/170′	Staggered
500.06	Urban Primary Residential Road For multiple housing or single-family homes not facing the roadway	100	Pendant Cobra Head 6′ Arm Type II	Aluminum Base Mounted	26′	1 50′/170′	Staggered
	For single-family homes facing the road-way	100	Colonial Post-Top Type IV or pendant post at discretion of DPW&T	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
500.07	Urban Secondary Residential Road	100	Colonial Post-Top Type IV	Black Fiberglass Direct Buried	16′	150′/170′	Staggered
500.08	Rural 4-Lane Arterial Road	250	Pendant Cobra Head 6′ Arm Type II	Black Fiberglass Direct Buried	26′	150′/170′	Opposite
500.09	Rural 2-Lane Collector Road	100/250	Pendant Cobra Head 6′ Arm Type II	Black Fiberglass Direct Buried	26′	150′/170′	Staggered
500.10	Rural Residential Road	100	Colonial Post-Top Type IV	Black Fiberglass Direct Buried	26′	150′/170′	Staggered
500.11	Rural 4-Lane Collector Road	100/250	Pendant Cobra Head 6′ Arm Type II	Black Fiberglass Direct Buried	26′	150′/170′	Opposite

Note: For lighting requirements on Scenic and Historic Roadways, see Section IV, Appendix F.

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION II
Technical Specifications

Revision 03/14/12

Section II – Technical Specifications

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CHAPTER 1: INTRODUCTION

A. GENERAL

The Prince George's County Department of Public Works and Transportation (the Department) has adopted Part III, Technical Requirements of the Maryland Department of Transportation (MDOT) State Highway Administration's *Standard Specifications for Construction and Materials* (MSHA *Standard Specifications*), dated July 2008, as the Department's *Specifications and Standards for Roadways and Bridges* (*Specifications and Standards*).

The Department also hereby incorporates by reference any future supplements, revisions, or other amendments to Part III of the MSHA *Standard Specifications* issued after July 2008. Section II of the Department's *Specifications and Standards* includes minor modifications to the MSHA *Standard Specifications* by deleting, adding, or revising certain provisions to make them applicable for use within Prince George's County.

With the exception of Terms and Conditions (TC) 1.02, "Definitions," Parts I and II of the MSHA *Standard Specifications*, dated July 2008, are expressly not incorporated by reference, and are not applicable to permits or contracts issued by the Department unless otherwise specifically indicated within the permit or Contract Documents issued by the Department.

TC-1.02, "Definitions," of the MSHA S*tandard Specifications* is incorporated by reference since the defined terms are used throughout Part III of the MSHA *Standard Specifications*.

B. HOW TO USE THIS SECTION

Part III of the MSHA *Standard Specifications* serves as the basis for the Department's specifications for construction and materials. Section II of this document presents revisions and amendments to the Maryland State Highway Administration (MSHA) document to serve the specific requirements of Prince George's County, Maryland. The following pages are organized by reference to the system of numbering used in Part III of the MSHA *Standard Specifications*. Amendments to the State text are indicated by ***boldface italics*** for additions, **[**~~bracketed strikethrough~~**]** for deletions, and *regular italics* for instructions and book titles. The Table of Contents for the MSHA *Standard Specifications* is presented immediately following this chapter in order to assist the user in referencing specifications and identifying where modifications to the MSHA *Standard Specifications* have been made.

In Categories 100 (Preliminary) through 800 (Traffic), references to methods of measurement and the basis of payment, as described in Part III of the MSHA *Standard Specifications,* are applicable to County-administered construction contracts, but are not applicable to the Department's regulation of work performed by permit. In these categories, all subsections with numbers ending in .04 and titled "Measurement and Payment" are hereby deleted for all work covered by a permit issued by the Department.

C. MSHA STANDARD SPECIFICATIONS TABLE OF CONTENTS
(2008 Edition)

Pages II-2 to II-7 replicate the Table of Contents of the MSHA *Standard Specifications for Construction and Materials* (2008 Edition), for use in correlating category numbers (which are used to organize Section II of these *Specifications and Standards*) with topics of interest to the reader.

PART I - GENERAL PROVISIONS (GP)

The Sections below, comprising Part I of the Maryland State Highway Administration's *Standard Specifications for Construction and Materials* (MSHA *Standard Specifications*), DO NOT APPLY to the Department's *Specifications and Standards for Roadways and Bridges (Specifications and Standards)* unless otherwise specified in this document or in individual contracts.

- GP-SECTION 1—DEFINITIONS AND TERMS
- GP-SECTION 2—BIDDING REQUIREMENTS AND CONDITIONS
- GP-SECTION 3—AWARD AND EXECUTION OF CONTRACT
- GP-SECTION 4—SCOPE OF WORK
- GP-SECTION 5—CONTROL OF THE WORK
- GP-SECTION 6—CONTROL OF MATERIAL
- GP-SECTION 7—LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC
- GP-SECTION 8—PROSECUTION AND PROGRESS
- GP-SECTION 9—PAYMENT

PART II - TERMS AND CONDITIONS (TC)

The Sections below (except for Section TC-1.02, "Definitions"), comprising Part II of the Maryland State Highway Administration's *Standard Specifications for Construction and Materials (*MSHA *Standard Specifications)*, DO NOT APPLY to the Department's *Specifications and Standards for Roadways and Bridges* unless otherwise specified in this document or in individual contracts.

- TC SECTION 1—REFERENCES AND DEFINITIONS
- TC SECTION 2—BIDDING REQUIREMENTS AND CONDITIONS
- TC SECTION 3—SCOPE OF WORK
- TC SECTION 4—CONTROL OF WORK
- TC SECTION 5—LEGAL RELATIONS AND PROGRESS
- TC SECTION 6—RESTRICTIONS AND PERMITS
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CHAPTER 2: AMENDMENTS, ADDITIONS, AND/OR DELETIONS TO THE MSHA *STANDARD SPECIFICATIONS*

A. GENERAL PROVISIONS

Part I of the MSHA *Standard Specifications*, titled "General Provisions," has not been adopted by the Department and is not incorporated into these Technical Specifications.

B. TERMS AND CONDITIONS

Part II of the MSHA *Standard Specifications*, titled "Terms and Conditions," except for TC-1.02, "Definitions," has not been adopted by the Department and is not incorporated into these Technical Specifications.

C. TECHNICAL REQUIREMENTS

Part III of the MSHA Standard Specifications (2008) - **All references to Administration (MSHA) should be interpreted as Department for Department of Public Works and Transportation except in the context of work on State roadways under the jurisdiction of the Administration. References to MSHA divisions should be interpreted as County divisions.**

MSHA Spec. No.	Prince George's County Department of Public Works and Transportation Amendment
101 Clearing and Grubbing **101.03.02 Vegetation**	Subsection 101.03.02, Vegetation, is amended to read as follows: 101.03.02 Vegetation. The plans shall designate, clearly identify, and accurately locate any trees, shrubbery, and plants which are not to be removed, and the Contractor/Permitee shall protect the vegetation from damage. [~~The Engineer will designate and mark trees, shrubbery, and plants that are to remain in place. Protect them from any damage, as specified in GP-7.1 1~~] Cut and properly trim the branches of trees overhanging the proposed or existing travel lanes or shoulder areas of the roadway to maintain a vertical clearance of 16 ft. [~~Employ~~] Trimming shall be performed by skilled workmen in accordance with American National Standards Institute (ANSI) A300 standards under the supervision of a tree expert licensed by the State of Maryland to supervise all trimming operations. Perform all trimming and repair of cuts and scars as specified in Section 712.
102 Removal and Disposal of Existing Buildings	Subsection 102.03, Construction, is amended to read as follows: **102.03 Construction.** Schedule the removal, razing, or occupation of buildings and appurtenances as one of the first items of work. Post and protect the buildings from vandalism and

MSHA Spec. No.	Prince George's County Department of Public Works and Transportation Amendment
102.03 Construction	theft. Remove and dispose of buildings scheduled for temporary use immediately when vacated. ***In exceptional circumstances and only at the discretion of and with the written approval of the Department,*** buildings and appurtenances may be disposed of by burning if they are not located close to habitable dwellings and if ***burning is*** not prohibited by local or State laws, regulations, ordinances, or by the fire marshal. ***Where authorized, the Contractor / Permitee shall acquire all necessary permits.*** Salvaged materials shall become the property of the Contractor. Selling of merchantable material and removal by the purchaser shall be done only during daylight working hours and accompanied by a Contractor's representative.
107 Construction Stakeout 107.03.07 Right-of-way and Easement Lines	Subsection 107.03.07, Right-of-Way and Easement Lines is amended to read as follows: **107.03.07 Right-of-way and easement lines.** Promptly upon request, define the project right-of-way and easement lines for adjacent property owners. ***Upon completion of construction, the contractor or permittee shall confirm the presence of all existing property corner pins or set each property corner at the right-of-way line within the project or permit limits.***
201 Roadway Excavation (Class 1, Class 1-A, Class 2) 201.01.01 Classification	Subsection 201.01.01, Classification, is amended to read as follows: CLASS 1—All excavation ***within the typical road cross-section, or excavation not shown within the typical cross-section,*** where the width of the bottom of the cut is 15 ft. or more***, and is parallel to the centerline of the roadway alignment.*** CLASS 1-A—All excavation of unsuitable material below the lowest excavation limits established. CLASS 2—All excavation where the width of the bottom of the cut is less than 15 ft. ***and is perpendicular to the roadway alignment.*** *Excavation for flumes, ditches, and stream and channel changes are included in this classification unless otherwise specified in the Contract Documents.* (Underscoring added for emphasis.)
203 Borrow Excavation	Subsection 203.01, Description, is amended to read as follows:

MSHA Spec. No.	Prince George's County Department of Public Works and Transportation Amendment
203.01 Description	203.01 DESCRIPTION. Furnish, excavate, haul, and place approved materials for embankments and backfills when sufficient quantities of suitable materials are not available from other excavations as specified in the Contract Documents. It shall include all work prescribed for backfills, embankments, subgrade, and earth shoulders, all necessary clearing and grubbing, the removal and disposal of overburden or other unsuitable spoil material and the trimming, shaping, dressing, draining, and reclamation of the pit or location from which borrow material is secured. Refer to MSHA Specification 201.03.02 before securing borrow. *The Contractor must obtain a "Haul Road Permit for Mining, Excavation, and Fill Operations" from the Department for hauling material on County-maintained highways if the material is in excess of 1,000 cubic yards in volume.*
203.01.01 Contractor's Options	Subsection 203.01.01, Contractor's Options, shall apply to Capital Improvement Program construction contracts only. For the control of permit work in the County, Subsection 203.01.01 is replaced in whole to read as follows: *203.01.01, Contractor's Options. The Contractor shall obtain, separately or as part of the road construction permit, all permits required by the County Code and applicable State and Federal laws and regulations to obtain, excavate, and transport excavated material for use as borrow on the permitted work, and to construct any required haul roads. In addition, the Contractor shall restore to their original state any roadways damaged by hauling borrow material.*
203.03.03 Borrow Pit Material	Subsection 203.03.03, Borrow Pit After Excavation, is amended to read as follows: 203.03.03 Borrow Pit After Excavation. *After the necessary quantity of materials has been removed, meet the requirements of the Reclamation Plan/Permit. The borrow pit shall be graded or restored and stabilized as required by the Prince George's County Code and applicable requirements of the Prince George's County Soil Conservation District.* [~~Meet the requirements of the Reclamation (Permit) Plan after the necessary quantity of materials has been removed. Avoid steep slopes and sheer faces. Seed and mulch all disturbed areas as specified in Section 705, at no additional cost to the Administration.~~] *Shaping and seeding requirements* ~~do not~~

MSHA Spec. No.	Prince George's County Department of Public Works and Transportation Amendment
	apply to commercial borrow pits.
203.04 Measurement and Payment	Subsection 203.04, Measurement and Payment, is replaced in whole to read as follows: **203.04 Measurement and Payment.** *Borrow excavation shall be measured and paid for, using the cross-section method, following furnishing placement and compaction of the material in place. Measurement shall not be made within the borrow pit.*
204 Embankment and Subgrade 204.02 Materials	Subsection 204.02, Materials, is amended to read as follows: **204.02 Materials.** Unless otherwise specified, use soils and soil aggregate mixtures that [~~meet the common~~] *conform to AASHTO Classification A-1, A-2, A-3, or A-2-4* borrow requirements specified in Section 916. *Geotextiles that have permittivity of 0.1 or less and are in conformance with MSHA Specification 913.04 shall be placed as a liner in liquid-conveying utility trenches constructed through roadway embankments greater than 3 ft. in height, to increase the embankment protection against fines washout due to leaks.*
208 Subgrade Preparation 208.03.05 Subgrade Approval	Subsection 208.03.05, Subgrade Approval, is amended to read as follows: **208.03.05 Subgrade Approval.** Do not place subsequent cover material upon, a frozen subgrade or any subgrade, until *the underlying course or subgrade* ~~fit~~] has been checked and approved. *The approval expires if any subgrade layer is affected by weather, vehicular traffic, or prolonged exposure before coverage. In such cases, another approval shall be obtained from the Department's Engineer just before placement of a subsequent cover material.*
303 Pipe Culverts 303.03.04 Joints	Subsection 303.03.04, Pipe Culverts, is amended to read as follows: **303.03.04 Joints.** Seal pipe joints in a manner appropriate for the applicable pipe material.

MSHA Spec. No.	Prince George's County Department of Public Works and Transportation Amendment
	Reinforced Concrete Pipe. Seal joints with rubber type gaskets (circular pipe) or resilient type material (elliptical pipe) meeting M 198. Mortar joints are unacceptable. *Jointing Materials – Seal with rubber gaskets all joints of reinforced concrete pipes installed on all Capital Improvement Projects, and for all County street and permit-related storm drain conveyances. The gaskets shall meet all minimum requirements of Section 02730 of the Stormwater Management Standards and Specifications of Prince George's County, unless otherwise specified by the Department. Concrete pipe systems 48 inches or less require Video Camera inspection as part of the final "As-Built " construction and acceptance requirements.* **Metal Pipe.** Use Bell and spigot joints with integral rubber gaskets or butt pipes and seal using rubber gaskets with an approved coupling band meeting 905.01. **Plastic Pipe.** Use integral bell and spigot joints with rubber or neoprene gaskets meeting F 477. *All joints shall be "watertight".*
303.03.13 County Use	Section 303.03.13 County use, inserted in whole to read as follows: 303.03.13 County Use. Pipe material for the construction of storm drainage systems within County rights-of-way shall be reinforced concrete. On Capital Improvement program projects, HDPE smooth lined pipe may be specified with the Engineer's approval. The use of other types of pipe material shall require Department approval on a case-by-case basis. All rural driveway pipe culverts placed within County rights-of-way shall be reinforced concrete pipe (RCP) with concrete end sections/concrete headwalls as specified in Department Table 1-10, Pipe Use (see Section I). The use of other pipes for driveway culverts shall be reviewed on a case-by-case basis by the Department's Engineer.
306 Underdrains,	Subsection 306.03.04, Outlets, is amended to read as follows:

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Subgrade Drains, and Spring Control 306.03.04 Outlets	**306.03.04 Outlets.** Outlet the underdrains into drainage structures whenever possible. Outlets that empty into a drainage structure shall be at least 9 in. above the normal flow line in the structure and be constructed of normal underdrain outlet pipe. Maintain at least 18 in. of cover over the pipe. Rodent screens are not required when an underdrain outfalls into a drainage structure. When outfalled into a slope or ditch, (***outside County-maintained roadways unless otherwise directed by the Department),*** slope the outlet pipe at least three percent. Use Type 'S' (smooth interior wall) polyethylene (PE), or smooth-wall polyvinyl chloride (PVC) as specified in Section 905. Construct a sloped concrete headwall with a removable rodent screen at the end of the outlet pipe. Place a flexible delineator post on the slope headwall. Space outlets for longitudinal underdrains at intervals no more than 250 ft and at the lowest elevation on all vertical curves. When changing the direction of the longitudinal underdrain or outlet pipe, all bends shall have a radius of at least 3 ft.
306.03.08 Permanent Subgrade Drains	Subsection 306.03.08, Permanent Subgrade Drains, is amended to read as follows: **306.03.08 Permanent Subgrade Drains.** Construct permanent subgrade drains when specified ***or directed by the Department***. Subgrade drains consist of trenches excavated through the shoulder and roadside grading from the edges of the road pavement to a side ditch, embankment slope, or other approved outlet and filled with aggregate. Locate subgrade drains at low points, and space them at 25 ft intervals for a distance of 125 ft on each side of the low point, then at intervals of 100 ft to within 125 ft of the high point. Before placing the road pavement and before completion of the shoulder paving or final roadside grading areas, cut and shape trenches to a width of 24 in. Place No. 57 aggregate to the underside of the shoulder material and to the underside of the specified topsoil thickness in the roadside grading area. The portion of the trench within the roadside grading area shall be completely wrapped in geotextile. The bottom of the

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	trench at the end adjacent to the road pavement shall be at least 2 in. below the subgrade. *Sump pump drainage outfall systems, springs, surface seeps, and other ground water having objectional effects shall be capped with a porous gravel and/or sand with interlaced tile drains or perforated pipes connecting into a public storm drain system or continuously flowing natural water course.*
308 Erosion and Sediment Control	Section 308, Erosion and Sediment Control shall apply to all areas within the public right-of-way, particularly to Capital Improvement Projects. *For all County construction activities (particularly permit projects) located both inside and outside the public right-of-way, where material specifications or construction requirements contained in the MSHA Standard Specifications are also covered by: the "General Conditions and Standard Specifications" published by the Prince George's County Department of Environmental Resources (DER), or by the Soil Conservation District (SCD) approved plans, which must be based on the Maryland Department of the Environment (MDE) 1994 Manual and on the SCD 2005 Manual, the latest DER Standard Specifications and the SCD approved plan shall govern. In addition to, but not in substitution for SCD plan requirements and DER General Conditions and Standard Specifications, Section 308 requirements not in conflict shall also apply to areas within the public right-of-way.*
308 Erosion and Sediment Control 308.03.05 Preconstruction Conference	Subsection 308.03.05 Preconstruction Conference is amended as follows: The MSHA provisions of this subsection shall apply to Capital Improvement Program construction contracts only. For the control of permit work in the County, Subsection 308.03.05 is replaced in whole as follows: 308.03.05 Preconstruction Conference. *Prior to issuance of a Road Construction Permit or Entrance Permit, or the disturbance of any ground within the permit area, the Permittee shall obtain the approval of the Prince George's County Soil Conservation District for all areas of surface disturbance or earthwork within the permit area, and shall strictly comply with all provisions of the approved sediment control plans and appurtenant standards and regulations throughout the duration of the permit. In the event that additional or corrective sediment, erosion and pollution control measures are required due to*

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	the Permittee's negligence, insufficiency of effort, or an error in the approved sediment control plans, the Department's Engineer may order remedial work to be performed immediately, and may also require that a revised sediment control plan approval be obtained from the Prince George's County Soil Conservation District before any further earthwork in the contributing or affected area may proceed.
309 Concrete Ditches	*In Section 309, Concrete Ditches, where the material specifications and construction requirements contained within the MSHA* Standard Specifications *are also covered by the* General Conditions and Standard Specifications *of Prince George's County Department of Environmental Resources (DER)* or by the Soil Conservation District (SCD)-approved plans*, the DER* Standard Specifications and the SCD approved plans *shall govern. In addition to, but not in substitution for, the DER* General Conditions and Standard Specifications*, specific requirements of Section 309 that are not in conflict with the DER* Standard Specifications *shall also apply* to areas within the public right-of-way, particularly to Capital Improvement Program construction contracts..
309.03.04 Joints	Subsection 309.03.04, Joints, is amended to read as follows: **309.03.04 Joints.** Place ***contraction*** joints no more than [~~15~~] ***10*** ft apart. Use either bulkhead or weakened plane construction joints. Either tool or saw weakened plane joints to a depth of at least 3/4 in. Place expansion joints no more than 50 ft apart and seal.
310 Concrete Slope and Channel Protection	*In Section 310, Concrete Slope and Channel Protection, where the material specifications and construction requirements contained within the MSHA* Standard Specifications *are also covered by the* General Conditions and Standard Specifications *published by the Prince George's County Department of Environmental Resources (DER)* or by the Soil Conservation District (SCD)-approved plans, *the DER* Standard Specifications and the SCD approved plans *shall govern. In addition to, but not in substitution for,* SCD plan requirements and *the DER* General Conditions and Standard Specifications*, Section 310 requirements not in conflict shall also apply.*
310.02 Materials	Subsection 310.02, Materials, is amended to read as follows:

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	310.02 Materials. Crusher Run Aggregate CR-6 901.01 No. 57 Aggregate 901.01 Curing Materials 902.07 Form Release Compound 902.08 Portland Cement Concrete ~~[Con-~~ 902.10 Welded Steel Wire Fabric 908.05 Joint Sealer and Crack Filler 911.01 Preformed Joint Fillers 911.02 Roofing Paper 911.07 Borrow 916.00 ***The requirements for concrete for slope and channel protection shall be as required by DER and the SCD approved plans. Welded wire fabric shall be from sheets. Use of roll welded wire fabric is prohibited.***
311 Riprap Ditches	*In Section 311, Riprap Ditches, where the material specifications and construction requirements contained within the MSHA* Standard Specifications *are also covered by: the "*General Conditions and Standard Specifications" *published by the Prince George's County Department of Environmental Resources (DER),* or by the Soil Conservation District (SCD)-approved plans, the DER Standard Specifications and the SCD approved plans *shall govern. In addition to, but not in substitution for, the* SCD plan requirements and *the DER* General Conditions and Standard Specifications*, Section 311 requirements not in conflict shall also apply.*
312 Riprap Slope and Channel Protection	*In Section 312, Riprap Slope and Channel Protection, where the material specifications and construction requirements contained within the MSHA* Standard Specifications *are also covered by: the "*General Conditions and Standard Specifications" *published by the Prince George's County Department of Environmental Resources (DER),* or by the Soil Conservation District (SCD)-approved plans, the DER Standard Specifications and the SCD approved plans *shall govern. In addition to, but not in substitution for,* SCD plan requirements and *the DER* General Conditions and Standard Specifications*, Section 312 requirements not in conflict shall also apply.*

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313 Gabions	*In Section 313, Gabions, where the material specifications and construction requirements contained within the MSHA* Standard Specifications *are also covered by: the "*General Conditions and Standard Specifications*" published by the Prince George's County Department of Environmental Resources (DER),* or by the Soil Conservation District (SCD)-approved plans, the DER Standard Specifications and the SCD approved plans *shall govern. In addition to, but not in substitution for,* the SCD plan requirements and *the DER* General Conditions and Standard Specifications*, Section 313 requirements not in conflict shall also apply.*
401 Maintaining Existing Bridge Deck During Life of Contract 401.03 Construction	Subsection 401.03, Construction, is amended to read as follows: **401.03 Construction.** Periodically evaluate the existing deck with the Engineer to determine if any patching is necessary. Patch all holes over 1 in. deep having an area greater than 2 ft^2. ***When a concrete surface is being prepared for patching, a hole shall be saw cut at least 1 in. deep. The repair area shall extend at least 18 in. beyond the spalled area.*** Locations and limits of all patch areas shall be as approved. The Traffic Manager shall confer with the Engineer before patching begins to decide on a plan for diverting or detouring traffic. Meet all traffic safety and traffic control requirements. Areas requiring patching shall be clean and free of loose material and conform to the manufacturer's recommendations. Protect waterways and roadways under the structure from falling debris. Do not dispose of removed material in waterways. Place patching material to the top of the existing bridge deck surfaces. Furnish and install new reinforcement when directed. When opening to traffic prior to the patch achieving sufficient strength, cover the patch with steel plates as specified in 522.03.13. Build up areas around the plates with asphalt material.
420 Portland Cement	Subsection 420.03.02(p), Year-Built Marking. is amended to read

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Concrete Structures 420.03.02(p) Year-Built Marking	as follows: **420.03.02(p) Year Built Marking.** Supply the correctly sized forms and molds, and cast the year of completion ***and the Department's structure number*** into each structure***'s parapet wall in two places.*** [~~as determined by the Engineer.~~] ***The year-built numerals and structure number shall be of the size specified in the Contract documents or in accordance with Standard 300.32.*** The year of completion ***and the Department structure number*** shall be cast into each structure***'s parapet wall in two places*** [~~as determined by the Engineer~~]. Forms or molds for casting the year-built numerals ***and the structure number*** in the structure shall be supplied by the Contractor. The year-built numerals ***and structure number*** shall be the size specified in the Contract Documents. *The location of year-built markings and structure numbers on bridges and on headwalls for pipes and culverts shall be as follows:* • *Bridges with parapets—For dual bridges, at each approach end (outside shoulder); for a single bridge, at the approach end (north or east corner); where bridge has a concrete parapet and no definitive end post, place year-built marking and structure number on the face of parapet as close to the centerline of bearing at the abutment as practical;* • *Pier columns—Only on road-over-road bridges; place structure number on traffic side of approach end of all piers adjacent to the roadway;* • *Headwalls for pipes and/or arches with rise 3 ft. or greater—Place year-built marking and structure number at the centerline of headwall (upstream end) directly above the pipe; and* • *Box culverts—Place year-built marking and structure number on both sides of the headwall, at the same corner, at the approach end of the headwall.* *For more information, see the MSHA* Structural Standards Manual.
420.03.04(e) Forming Concrete Parapets	Subsection 420.03.04(e), Forming Concrete Parapets and Median Barriers on Bridges, is amended to read as follows: **420.03.04(e) Forming Concrete Parapets and Median Barriers on**

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and Median Barriers on Bridges	Bridges. *The Contractors shall construct full-height concrete parapets and median barriers by e*Either the slip form method or conventional fixed form method. ~~may be used.~~ However, do not use the slip form method on bridges maintaining traffic or on parapets when railing is specified. *No aluminum railing will be permitted on County structures.* *(See also Section 461, "Metal Railing.")*
420.03.12 Linseed Oil Protective Coating	Subsection 420.03.12, Linseed Oil Protective Coating, is replaced in whole to read as follows: *420.03.12 Silane Protective Coating . Silane protective coating shall be applied to the slabs of concrete bridge deck, bridge sidewalk and parapet surfaces, all pier caps and abutment seats, box culvert concrete wearing surfaces.* *Prior to the application of silane, the Contractor shall use degreasers, as required, to clean all concrete surfaces of dirt, dust, oil, grease, automotive contaminants, or other similar material that will interfere with the proper and effective application of the penetrating sealer. All surfaces shall then be cleaned by high pressure water cleaning (HPWC) prior to placing the silane protective coating. Blast racking, mobile power scrubbing, sand blasting, and other methods must be pre-approved by the County.* *Unless directed otherwise by the Department, any permanent paint or tape lane markings required on the concrete bridge superstructure riding surface, or the box-culvert wearing surface, shall be placed after the silane protective coating has been applied. The concrete surfaces to be treated shall also be dry and allowed to cure a minimum of 28 days.* *Expansion joints shall have been installed prior to the sealer application. Sealer material shall be applied as supplied by the manufacturer without dilution or alteration. Apply two coats of sealant using low pressure (15 psi) airless spray equipment with a fan spray coarse nozzle flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer. Follow manufacturer's guidelines between applications to allow for optimum placement of coatings.*

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	No sealer application shall be allowed if the ambient temperature is below 40° F, or if ice or frost are covering the substrate, or if ambient or surface temperature exceeds 100° F. No sealer shall be applied if precipitation has occurred within 48 hours prior to application and/or if rainy conditions or heavy rain is anticipated within 8 hours after application. Surface residue, pools, and puddles shall be broomed out thoroughly until they completely penetrate into the surface. Treated areas shall be protected by plastic sheeting or similar material from rain and other surface water for a period of not less than 8 hours after application.
420.04.07 Measurement and Payment	Subsection 420.04.07, Measurement and Payment, is replaced in whole to read as follows: *420.04.07 Measurement and Payment. Silane protective coating shall be measured and paid for at the Contract unit price per square yard. The payment shall be full compensation for all materials, labor, supervision, equipment, tools, surface preparation, testing, coring, and all incidentals necessary to complete the work.*
421 Reinforcing Steel 421.01 Description	Subsection 421.01, Description, is amended to read as follows: 421.01 Description. Furnish and place ~~[uncoated and]~~ epoxy coated reinforcing steel *including deformed steel bars, wire mesh, and plain round steel spiral bars, as specified in the contract document or as directed by the Engineer. All welded fabric (wire mesh) shall be provided in sheets, not rolls, and be epoxy coated.*
425 Lightweight Superstructure Concrete 425.02 Materials	Subsection 425.02, Materials, is amended to read as follows: 425.02 Materials Lightweight Concrete [902.10.11], Modified Mix 10 Water added to the mix using saturated aggregates shall be reduced so that the water/cement ratio does not exceed [~~0.45~~] 0.40 maximum. Modified Mix 10 is different from Mix 10 described under 902.10.11. Refer to Contract Documents and the Department's Office of Project

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	Management for Modified Mix 10 properties.
435 Cleaning and Painting New Structural Steel	Where the word "Administration" or the phrase "Office of Materials & Technology" is used in this Section, Cleaning and Painting New Structural Steel, it shall mean the Department of Public Works & Transportation or "The Department" for short..
436 Cleaning and Painting Existing Structural Steel	Where the word "Administration" or the phrase "Office of Materials & Technology" is used in this Section, Cleaning and Painting Existing Structural Steel, it shall mean the Department of Public Works & Transportation, "The Department" for short..
436.03.05 Paint Quality Assurance (QA) Inspector Notification	Subsection436.03.05, Paint Quality Assurance (QA) Inspector Notification, is amended to read as follows: 436.03.05, Paint Quality Assurance (QA). Notify *the Department* [~~Bridge Inspection and Remedial Engineering Division~~] at least 5 working days prior to beginning field cleaning and painting of new and existing steel. A paint inspector will be provided to assist the Engineer in performing QA observations of the cleaning and painting portion of the work. Failure to comply with this notification shall be cause for not accepting the work performed. Paint applied without QA acceptance may be required to be removed and reapplied at no additional cost to the *Department* [~~Administration~~]. Any test to determine acceptance shall be at no additional cost to the *Department* [~~Administration~~]. Do not perform additional work until a determination has been made.
440 Prestressed Concrete Beams and Slab Panels 440.02.01 Portland Cement Concrete	Subsection 440.02.01, Portland Cement Concrete, is amended to read as follows: 440.02.01 Portland Cement Concrete Maximum *water/cement* [~~WCM~~] ratio of *0.42* [~~0.45~~].
470 Utilities on Structures 470.01 Description	Subsection 470.01, Description, is amended to read as follows: 470.01 Description. *Relative to new construction, unless specifically waived by DPW&T, the attachment of utility lines onto any Prince George's County DPW&T bridge structure is prohibited.*

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	Also relative to new construction, unless specifically waived by DPW&T, the installation of utility lines through or under (within the foundation zone of influence) a DPW&T bridge structure is prohibited. *Utility markers to identify utilities shall be placed and maintained when they are newly installed, replaced, or relocated. Place the identification markers as specified herein and as approved.*
504 Hot Mix Asphalt Pavement 504.03 Construction	Subsection 504.03, Construction, is amended to read as follows: 504.03 Construction. Quality Control *(QC)* Plan — At least 30 days prior to placement of any [~~HMA~~] pavement, submit [~~a~~] Plant [~~Quality Control Plan to … District Engineer's representative~~] and [~~a~~] Field Quality Control Plan*s to the County Materials Lab* for approval. *The Quality Control Plan must conform to all of the requirements of Subsection 504.03 and must demonstrate to the satisfaction of the Department a minimum of three (3) years prior experience in the actual placement of Superpave mixes, including the completion of two (2) paving contracts of the size, type, tonnages and complexity comparable to the scope of the contract.* The Quality Control Plans shall contain a [~~statistically-based~~] procedure of random sampling *and shall show how the Contractor proposes to control the equipment, materials, production and paving operations to ensure conformance with these Specifications. A master Plant and Field Quality Control Plan shall be submitted for this prior to approval. When a master Field Quality Control Plan is submitted and approved,* an addendum shall be submitted for each specific Contract, *if requested by the Department (DPW&T). If not requested, Contractors may obtain asphalt from any manufacturer whose master QC plan has been approved by DPW&T.* The Contractor shall discuss the QC Plan requirements in the pre-construction pre-pave and progress meetings. *Where Maryland Standard Method of Tests, MSMT 735, is referred to in the DPW&T* Specifications & Standards; *Section II, Table II-2, and Section I, Table I-8, shall also be followed.* Plan Administrator and Certified Technicians — The Plan Administrator may supervise the Quality Control Plan on more than one project, if that person can be in contact with the job site within *1/2* [~~one~~] hour after being notified of a problem.

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	A Certified Field Technician shall be present at the job site for *paving or patching operations.* [~~unless otherwise approved in the *Contract*. Field Quality Control Plan~~] The Certified technician shall be responsible for the required field QC & QA sampling and QC testing in conformance with the approved QC plan, Contract Documents and *the Department's Materials Section's "Non-Conformance Resolution Procedures" and its "Cores Cutting & QC Testing Procedures". Unapproved [~~Any~~]* deviation from *the above references,* [~~the approved quality control plan~~] shall be *a* cause for immediate suspension of the production and paving operations *and justification for having all the pavement course placed on that day on one or more roads rejected by the Department and removed and replaced by the Contractor at no additional cost to the Department regardless of pavement areas that may be in compliance. No paving operation may start or continue without a Certified Field Technician. Pavement placed without a Certified Field Technician being present shall be deemed as non-conforming.* In addition to quality control testing, the Contractor's or Producer's technician certified by the Administration shall perform sampling for quality control (QC), sampling for quality assurance (QA), sampling for acceptance, and sampling for verifications. *The Certified Field Technician shall call the Department's Materials Lab with date and time of sampling so QA cores and HMA samples can be witnessed and received on site by a Department Inspector, when available. When not available, the Field Technician shall deliver the QA cores and field HMA samples to the Materials Lab no later than one business day after paving. If not properly identified, cores will not be accepted. If not properly labeled HMA samples will not be accepted.* *In the Field, the Technician shall first check and note down on the daily field record: the air and surface ambient temperatures, the asphalt delivery tickets for County-required information, and the asphalt temperature while being unloaded into the paver. Above all, the Field Technician shall understand, implement, and carry copies of the approved Quality Control Plan, the Materials Section's "Non-Conformance Resolution Procedures", and its "Cores Cutting & QC Testing Procedures", which are listed on the site plans under Item #33 of the "General Storm Drain & Paving Notes".* Submit quality control

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	(QC) test results to *the Department's Materials Lab no later than one business day after testing.* [~~the Engineer when requested~~]. *Test results will be admissible only if timely submitted on forms contained in the Department's "e-package". A copy of the Technician's daily field record shall be submitted to the Department with the quality control test results. Failure to provide the documentation shall make any paving performed during the reporting period non-conforming.* When a certified technician is deficient in his duties as defined in MSMT 731 and the Mid-Atlantic Region Technician Certification Program policy manual, the technician's certification will be rescinded. *If a certified technician fails to show up on site or is not adequately equipped with an approved, calibrated asphalt density gauge, calibrated thermometers, a communication device, etc,* [~~R~~]The deficient technician *must be replaced* with another certified technician before [~~resuming~~] production *and* paving operations [~~Administration~~]*.on County maintained streets (covered by contracts or permits) may resume.* *All non-conforming material shall be removed and replaced within seventy-two hours.*
504.03.02 Weather Restrictions	Subsection 504.03.02, Weather Restrictions, is amended to read as follows: 504.03.02 Weather Restrictions. Place *Superpave* HMA mixtures with *a binder grade of PG 64-22 or PG 70-22 and approved conventional (Marshall) mixtures* [~~used as the final surface~~] when the ambient air and surface temperatures are at least 40°F *and rising*. [~~Place mixtures used as intermediate and base layers when the ambient air and surface temperatures are at least 32 F, and~~] [~~p~~]Place polymer-modified surface mixes when the ambient air and surface temperatures are at least 50°F *and rising*. *These weather restrictions are applicable to surface, intermediate and base mixes.* The pavement surfaces shall be clean, dry, and approved by the Engineer before HMA paving begins. *At the time of pavement placement, all the requirements listed in Subsection 504.03.05 shall be complied with.*_When *unpredicted* weather conditions differ from these limits, or when it begins raining *unpredictably* while the work is underway, the Contractor is allowed to use material en route from the plant at the Contractor's

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	risk. *If the rain appears to be of a short duration -- a passing shower -- the mix should be held in the haul trucks. Once the rain has stopped and any puddles of water have been swept from the roadway surface, the mix can be unloaded from the waiting trucks into the paver and laid down, as long as chunks of mix do not appear behind the screed and the rollers can compact the mix adequately.* *If the weather forecast predicts rain, the paving Contractor's foreman shall put the entire operation on "stand-by" prior to any truck's arrival to the site. Paving operations shall be POSTPONED to the day that follows a dry weather day when the surface to be paved has fully dried out, if only one of the following is true:* *1. Asphalt trucks are NOT on site yet.* *2. Rain is NOT light. It's heavy.* *3. Surface to be paved has NOT been tacked or has been tacked but is covered with water puddles.* *4. Compaction cannot be expedited to densify the mix before it's too cold.* The Engineer reserves the right to perform any testing necessary to ensure the quality of the pavement. All testing and associated cost, including maintenance of traffic, will be at the Contractor's expense. If the Engineer *or the Department* stops placement of the material, material en route shall be wasted at no additional cost to the Department [~~Administration~~]. Do not place HMA on frozen graded aggregate base or frozen subgrade soil.
504.03.05 Hot Mix Asphalt Placement	Subsection 504.03.05, Hot Mix Asphalt Placement, is amended to read as follows: **504.03.05 Hot Mix Asphalt** Delivery of the mixture by the hauling units and placement should be continuous. At the time of placement, the temperature of the mixture shall be at least *250°* [225°] F *for conventional mixes, 250°F for PG 64-22 Superpave HMA mixes, and 270° for PG 70-22 and PG 76-22 Superpave HMA mixes*, or as identified in the approved Quality Control Plan for Field Operations. *Unless otherwise directed in*

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	the Contract Documents or approved by the Department, HMA shall be placed by the paver *as long as the area to be paved or patched is not smaller than the paver's footprint.* Do not broadcast loose mixture over the new surface.
504.03.06 Compaction	Subsection 504.03.06, Compaction, is amended to read as follows: **504.03.06 Compaction.** Immediately following placement of the HMA, roll the mixture to compact to the proper in-place density and ride smoothness requirement. *Roll conventional mixes to at least 95 percent of the Marshall target gravity, and Superpave mixes to at least 92 percent of the maximum theoretical specific gravity; and satisfy the ride smoothness requirement for full payment.* Incentive or disincentive price adjustment for density *will be* as specified in 504.04.02. *Incentive or d*isincentive price adjustment for ride smoothness will be as specified in the Contract Documents. Use steel wheel rollers for the first rolling of all joints and edges, the initial breakdown rolling, and the finish rolling. When base widening is too narrow to permit the use of conventional rollers, use a power driven … marks shall not be visible after rolling operations. After rolling is completed, *unless pre-approved by the Department,* no traffic of any kind is permitted on the pavement until the pavement has cooled to less than 140°F.
504.03.08 Edge Dropoff	Subsection 504.03.08, Edge Dropoff, is amended to read as follows: **504.03.08 Edge Drop-off.** Where *Superpave* HMA paving is being applied to highways carrying traffic, all compacted pavement courses exceeding 2-1/2 in. in depth shall be matched with the abutting lane or shoulder on the same working day. Where compacted pavement courses of 2-1/2 in. or less are placed, the Contractor shall have the option of paving the abutting lane or shoulder on alternate days. Pave the abutting lane or shoulder prior to weekends and temporary shutdowns, regardless of the depth of the compacted pavement course. When uneven pavement joints exist, place advance warning traffic control devices in conformance with the Contract Documents.

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	At the Department's discretion, the Contractor shall be required to provide a 45° asphaltic fillet along the pavement edges of all rural roadways where there is no curb and gutter. The purpose of the asphaltic fillet or angled edge is to help alleviate vehicular control problems associated with pavement edge dropoffs. The use of the beveled edge at an angle of 45° is to be accomplished by attaching a molding shoe device to the paving machine. The asphaltic fillet is formed along the pavement edge as the new roadway surface is placed. The molding shoe forms the shape of the asphaltic fillet and reduces the amount of handwork required to finish the pavement edge. *Compaction of the asphaltic fillet must be accomplished by the use of an edge compacting device attached to the compaction rollers. This device should consist of a hydraulically powered wheel that rolls alongside the roller's drum while simultaneously pinching the edge of the mat toward the drum and providing lateral resistance.* *Costs associated with this work are to be considered incidental to the Contract unit bid price per ton of the Hot Mix Asphalt item being utilized, and shall be full compensation for all labor, supervision, equipment, and materials*
504.03.11 Sampling and Testing for Density Determination	Subsection 504.03.11, Sampling and Testing for Density Determination, is amended to read as follows: **504.03.11 Sampling and Testing for Density Determination.** Quality Control (QC) sampling and testing shall be the responsibility of the Producer or Contractor. Quality Assurance (QA) sampling shall be performed by the Contractor as directed and witnessed by the ***Department***~~[Administration]~~. QA testing shall be the responsibility of the ***Department***~~[Administration]~~. The Engineer will select at random the core sampling locations for each sublot in conformance with MSMT 459. The Contractor shall sample the QC and QA cores in conformance with MSMT 458 as witnessed by the Engineer. *QA/QC sampling and QC testing shall be in conformance with approved QC plans, Contract documents, and the Materials Section's "Non-Conformance Resolution Procedures" and its "Cores Cut-*

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	ting & QC Testing Procedures", which are listed, on the site plans, under Item # 33 of the "General Storm Drain & Paving Notes". Any unapproved deviation from the above references, shall be a cause for immediate suspension of production and paving operations and justification for having all the pavement course placed on that day on one or more roads rejected by the Department and removed and replaced by the Contractor at no additional cost to the Department regardless of pavement areas that may be in compliance. A minimum of [~~10~~] *5* cores per day's paving per mix *but not less than* two per *street* [~~500 tons of paving per mix~~], whichever yields the higher frequency of cores, shall be taken, *unless otherwise instructed by the Department. Cores may not be required for a Contract or a project that calls for a total tonnage less than 200 tons of paving and/or patching, nor for certain applications like thin lifts, bridge decks, and non-traffic areas; in which cases acceptance shall be determined by the results of a calibrated thin lift density gauge.* A density lot is defined as a day's paving per mix. [~~A sublot shall not exceed 500 tons. The Engineer will designate one core sample for QC and one for QA for each sublot. A paving day shall begin with a new lot and sublots. Control strips shall be divided into five equal sublots~~]. The diameter of the cores shall be 6 in., except that a 4 in. core may be used for mixes smaller than 25 mm. The Engineer*/ the Department's Inspector or CIP Consultant* will note any density waiver on the daily field density forms with remarks for the waivers. *Core holes shall be backfilled immediately following the cutting of the core to prevent water intrusion through the pavement into the subgrade. Backfilling of core holes shall be done with well-compacted hot/cold mix asphalt or colored non-shrink grout. Identification of the existing materials' condition, including thickness and visible condition of existing asphalt courses and subbase stone lift, shall be the responsibility of the Contractor, who should take for that purpose at least five (5) full-depth cores or two per street, whichever yields the higher frequency of cores, no less than 10 business days prior to milling.*
504.03.11 Sampling & Testing for	Subsection 504.03.11(c), Acceptance, is amended to read as follows:

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Density Determination 504.03.11 (c) Acceptance	504.03.11 Sampling and Testing for Density Determination, A sublot shall not be greater than *200* [~~500~~] tons. When a paving day's production per mix is greater than 1000 tons, then each sublot size shall be *200* [~~500~~] tons or fraction thereof. On Contracts requiring less than *200* [~~500~~] tons of HMA or when HMA is used in non-traffic areas or on bridge decks, acceptance will be determined by the *Contractor's* use of a thin layer density gauge. *The gauge's use shall be in presence of a Departmental Inspector and* in conformance with the manufacturer's recommendations. *Contractors and permittees shall ensure that paving contractors are on the Department's annual list of approved paving contractors at least 30 days prior to the placement of any asphalt pavement. They also have the responsibility to implement the "Core Cutting and QC Testing Procedures" listed in the DPW&T "General Storm Drain and Paving Notes" and available through the Materials Section.* *Where visible defects exist or are observed in the placed asphalt mat, the Department reserves the right to require or perform further spot density testing and/or additional core drilling to determine the nature of the defects. The cost of said additional testing shall be at the Contractors expense.*
504.03.17 Pavement Profile	Subsection 504.03.17, Pavement Profile, is replaced in whole to read as follows: 504.03.17, Pavement Profile. *Unless otherwise specified in the Contract Documents, refer to "Pavement Design" in Section I and to "Surface Profile", Appendix B, Form B-18 in Section IV of the Department's Specifications and Standards.*
504.04.01 Price Adjustment for Asphalt Binder	Subsection 504.04.01, Price Adjustment for Asphalt Binder, is amended to read as follows: 504.04.01 Price Adjustment for Asphalt Binder. An adjustment will be made to the final Contract unit price for Hot Mix Asphalt if the price of asphalt binder fluctuates significantly from the prevailing price as quoted in the Contract Documents to the date of placement. This includes HMA patching material converted to tons. The Contract unit price will be adjusted by the amount of

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	fluctuation above 5 percent for Contracts scheduled to be paved during more than one construction season or having an estimated mix quantity of 15,000[~~10 000~~] tons or more. For Contracts completed within one construction season and having an estimated mix quantity of less than 15,000 [~~10 000~~] tons, the adjustment will be based upon the amount of fluctuation above 15 percent. Only the differential percent change beyond the above noted 5 and 15 percent will be used. ***Claims for adjustment of the Contract price as a result of an increase in the price of liquid asphalt binder, under the provisions of this clause, shall be submitted to the County within a period of ninety (90) days from the date of asphalt placement. Claims for adjustments submitted later than the required notification period of ninety days will be denied.***
504.04.02 Price Adjustment for HMA and Pavement Density	Subsection 504.04.02, Price Adjustment for HMA and Pavement Density, is amended to read as follows: 504.04.02 Price Adjustment for HMA and Pavement Density. A pay reduction ***or incentive payment*** adjustment for pavement density will be based on individual sublot core test data for a given lot and the lot average density as specified in this section. Pay adjustment due to noncompliance with the density requirements ***or incentive pay adjustment*** will be made against the adjusted Contract unit price for Hot Mix Asphalt in conformance with Table 504A. Price adjustment will be waived for that portion of the pavement where the Engineer determines that inadequate density is due to a poor foundation ***condition that is documented and noted in the daily field forms indicating that a waiver may be requested.***
504.04.05 Remedial Measures	Subsection 504.04.05, Remedial Measures is a new section and reads as follows: 504.04.05 Remedial Measures. *Longitudinal Joints. During the warranty period, or in the case of permitted construction before final acceptance, where a longitudinal pavement joint opens up such that the depth or width of the joint exceeds one-quarter inch, the section of roadway involved shall be repaired by the paving contractor or permittee. Repairs shall consist of full roadway width surface milling (pavement edge*

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	to pavement edge or curb to curb) to a depth of two inches and resurfacing the entire roadway with a two inch thick finished surface mat. The limits of the work shall extend twenty feet on either end of the open longitudinal joint. Where the open longitudinal joint is less than one-quarter inch in width or depth, the crack shall be sealed using materials and methods approved by the Department. *Mix segregation, raveling and fat spots. During the warranty period, or in the case of permitted construction before final acceptance, when a asphalt mix or installation problem is identified in the surface course mat that was placed, due to but not limited to asphalt content, segregation, raveling, bleeding, etc., the roadway section shall be repaired by the contractor or permittee. Repairs shall consist of full roadway width surface milling (pavement edge to pavement edge or curb to curb) to a depth of two inches and resurfacing the entire roadway with a two inch thick finished surface mat. The limits of the work shall extend on the roadway fifty feet beyond the limits of the repaired areas. Where three or more problem areas are identified within a 1000 foot section, which would result in a patch quilt appearance, the entire 1000 foot section shall be repaired as one area.* *Cost. The cost of all remedial repairs shall be the Contractor's or Permittee's responsibility with no cost to the Department or County.* *Time for Performance of Remedial Work. The contractor or Permittee shall correct deficient work within fourteen days of notification by the Department that corrective action is required.*
508 Milling Hot Mix Asphalt Pavement 508.03.02 Pavement Milling	Subsection 508.03.02, Pavement Milling, is amended to include the following: 508.03.02 Pavement Milling. *The milling materials are the property of the County, and the Contractor shall deliver and dump the material at the Department's Glendale, Ritchie, or Brandywine maintenance facilities, as directed by the Department's Engineer at no additional charges.*

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549 Permanent Pavement Markings 549.02 Materials	Section 549.02, Pavement Marking Materials, is amended by adding the following:: *549.02 Materials. The higher performance, wet reflective, preformed pliant polymer pavement marking material shall be used exclusively on new crosswalks, traffic calming areas, and longitudinally along the roadway when use is directed by the Department's Engineer. The material may be adhered to asphalt or concrete road surfaces by a precoated, pressure-sensitive adhesive. The pavement markings shall be capable of application on new, dense, and open-graded asphalt paving during the paving operation. The preformed patterned markings shall consist of white or yellow film with clear microcrystalline ceramic beads incorporated to provide immediate reflection during both wet and dry conditions. The markings shall be skid resistant and capable of withstanding high traffic volumes and severe weather conditions.* *The retroreflectance values shall be measured under dry conditions in accordance with ASTM D4061, and ASTM E2176 or ASTM E2177 under wet conditions. All skid-resistance tests shall be in accordance with ASTM E303. The patterned material without adhesive shall have a minimum caliper of 0.065 inches (1.651 mm) at the thickest portion of the patterned cross section and a minimum caliper of 0.020 inches (0.508 mm) at the thinnest portion of the cross section. Use of the high-performance pavement marking material requires prior approval by the Department's Engineer.*
549.03.01(a) Construction	Subsection 549.03.01(a) Construction is amended by adding the following: (a) Placement. Do not begin placement operations until the QCP is approved and a walkthrough has been performed to approve the layout with the Engineer, Contractor and pavement marking foreman. *A pre-paving and pavement marking meeting will be held at least 30 days in advance of the final surface paving operations with the Engineer, Contractor, Paving Contractor, and Department traffic engineering representatives. Topics to discuss are:*

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	maintenance of traffic, paving instructions or restrictions, quality control procedures, hours of paving operations, temporary markings, schedule for paving and placement of pavement markings and testing and inspection requirements. All permanent markings shall be installed immediately after the paving is completed and no longer than fourteen days after surfacing if temporary markings are required due to roadway, weather or schedule issues
602 Curb, Combination Curb and Gutter, and Monolithic Median 602.03.01(a) Excavation	Subsection 602.03.01(a), Excavation, is amended to include the following: 602.03.01(a), Excavation. Excavation. Excavate to the specified depth and to the width required to install and brace the forms. Compact the subgrade to *95* [~~92~~] percent density per T 180, Method C, and trim to the proper shape and required grade. Remove all soft and unsuitable material and replace with approved material. *The replacement suitable subbase material shall be extended underneath the concrete curb in accordance with the Standard Details and contract documents.*
602.03.01(c) Concreting	Subsection 602.03.01(c), Concreting, is amended to include the following: 602.03.01(c), Concreting. *Concrete mix sources and proportions shall not be changed after the project starts without the approval of the Department. After the surface has been struck off and screeded to the proper elevation, it shall be given a broom finish, free from depressions or irregularities of any kind. In no case shall dry cement or a mixture of dry cement and sand be sprinkled on the surface to absorb moisture or hasten hardening. Freshly placed concrete shall be protected from the elements during curing..*
602.03.01(j) Removal and Replacement of Concrete Curb and Gutter	Subsection 602.03.01, Curb, Combination Curb and Gutter, and Monolithic Median, is amended by adding the following new Subsection 602.03.01(j), Removal and Replacement of Concrete Curb and Gutter: 602.03.01(j), Removal and Replacement of Concrete Curb and

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	Gutter. *Unless otherwise directed by the Department's Engineer, the removal and replacement shall be bid and paid for on a linear foot basis, measured in place, completed and accepted. The linear footage, measured as specified above, shall constitute full compensation for the removal and disposal of all types of existing curb and gutter without exception, and the replacement with new curb and gutter, per Prince George's County Standard No. 300.01, as provided in the bid proposal. Measurement and payment as specified above shall also include removal and disposal, all necessary excavation, furnishing and placing all materials including expansion material, forms, all types of saw cutting, backfilling and backfill material, tamping, sod replacement, roadway patching, and for all material, labor, supervision, equipment, tools, and incidentals necessary to complete the items.* *The intent is to disturb as little as possible of the existing roadway outside the areas of concrete replacement. Unless otherwise directed by the Department's Engineer, all curb and gutter shall be removed from the backside only and the existing pavement is to be utilized as the front form for the new gutter pan. Cutting of the pavement edge is to be limited to 2-3 in. and only as necessary to repair damaged pavement. No additional payment will be considered for utilizing this method.* *When directed in the field by the Department's Engineer, existing paving is to be saw cut at the gutter edge and will not be paid for separately, but will be incidental to this item. No payment will be made under this item or other items of the Contract for the Contractor to achieve a straight edge as a correction or repair of the Contractor's work in accordance with this Section of the Contract.* *All transition sections of curb and gutter necessary due to type changes shall be 10 ft. in length and shall be measured and paid for as Department Standard 300.01, Concrete Curb and Gutter. Standard concrete curb depressions for the Americans with Disabilities Act (ADA)-compliant sidewalk ramps shall be measured and paid for under this item.* *Included in the unit bid prices for removing and replacing curb and gutter shall be the removal and replacement of all bituminous*

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	and/or concrete paving and gravel base course required, to a point 1 ft. or less from the leading front edge of the gutterpan, to allow for forming the front edge of the gutterpan.
603 Sidewalks 603.03.01(c) Concreting	Subsection 603.03.01(c), Concreting, is amended to read as follows: 603.03.01(c) Concreting. *Concrete mix sources and proportions shall not be changed after the project starts without the approval of the Department.*
603.03.01(d) Finishing	Subsection 603.03.01(d), Finishing, is amended to read as follows: 603.03.01(d), Finishing. *The concrete shall be given a broom finish, free from depressions or irregularities of any kind. In no case shall dry cement or a mixture of dry cement and sand be sprinkled on the surface to absorb moisture or hasten hardening. Freshly placed concrete shall be protected from the elements during curing.*
603.03.01(h) Removing and Replacing Concrete Side-walk	Subsection 603.03.01, Concrete Sidewalks, is amended by adding the following new Subsection 603.03.01(h), Removing and Replacing Concrete Sidewalk: 603.03.01(h), Removing and Replacing Concrete Sidewalk. *The Contract unit bid price per square foot for "Removing and Replacing Concrete Sidewalk" shall include furnishing and placing all materials including expansion material, all necessary excavation, the removal and disposal of the existing sidewalk, backfilling and compaction of the subgrade, sod replacement, and for all labor, equipment, tools, and incidentals necessary to complete the work. Unless otherwise designated by the Department's Engineer in the field, all concrete sidewalks shall conform to Department Standards 300.05, 300.06, 300.07, 300.08, 300.09, and 300.10. Americans with Disabilities Act (ADA)-compliant sidewalk ramps shall be measured and paid for under this item.* *All roadside trees within the Contract area are to be root-pruned with a Nermeer root-pruning machine or approved equivalent prior to removal of existing sidewalk. The cutting of tree roots larger than 2 in. caliper requires the authorization of the Department. Cut roots are to be painted with an approved tree wound dressing before installation of*

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	forms or backfilling. All costs involved shall be included in the Contract unit bid price for "Remove and Replace Concrete Sidewalk." *When working in the vicinity of roadside trees where damage to tree trunks and limbs may occur, excavation will be done with hand tools only, in such a manner that no trunk or limb damage will occur. Any tree damage is to be repaired by a Maryland State licensed tree expert at no additional cost to the County.*
603.03.01(i) Concrete Steps and Handrails	Subsection 603.03.01, Concrete Sidewalks, is amended by adding the following new Subsection 603.03.01(i), Concrete Steps and Handrails: *603.03.01(i), Concrete Steps and Handrails. Concrete steps and handrails shall consist of constructing concrete steps, including furnishing and placing handrails where specified, conforming to Maryland SHA's* Standards for Highways and Incidental Structures *("Book of Standards"), and Federal accessibility guidelines of the Americans with Disabilities Act (ADA). All concrete shall conform to Class 1 (MSHA Mix No. 3), air-entrained, and include reinforcing steel requirements. The handrail shall be fabricated of genuine wrought iron pipe, with prime coat and two coats of approved metal enamel, or in accordance with approved plans/Contract Documents.* *Steps shall be measured per linear foot of tread. Cheek walls are required for steps consisting of more than two risers and treads, and measurements shall be taken from the outside faces of cheek walls. Handrails shall also be measured per linear foot, slope measure, of top rail.* *Concrete steps shall be paid for at the unit bid price for linear foot of tread, which price shall be full compensation for excavating, forming, supplying, and finishing concrete and backfilling. The price shall also include supplying and placing reinforcement steel. Handrails shall be paid for at the unit bid price per linear foot of handrail, which price shall be full compensation for furnishing all materials, fabrication, painting, setting sockets, and installation.*
605 Metal Traffic Barriers	Subsection 605.03.05, W Beam Barrier Reflective Delineators, is amended to read as follows:

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605.03.05 W Beam Barrier Reflective Delineators	605.03.05 W Beam Barrier Reflective Delineators. [Install reflective delineators as specified]. ***Reflective delineators shall be installed behind the traffic barrier W beam as specified in the Contract Documents. This shall consist of erecting 7 ft. standard galvanized U-shaped steel channel traffic posts equipped with reflective red 12 in. x 12 in. diamond shape delineators placed along the rear of the barricade at a height of 4 ft. Spacing and quantity depend on the width of the right-of-way. Refer to Department Standards 200.10 and 200.11 for specific requirements.***
610 Shoulder Rumble Strips	Section 610, Shoulder Rumble Strips, is deleted in its entirety.
704 Temporary Seed and Temporary Mulch	*In Section 704, Temporary Seeding and Temporary Mulch, the material specifications (with the exception of measurement and payment) and construction requirements contained within the MSHA* Standard Specifications *are deleted and replaced in their entirety by the applicable provisions contained within the* ***Maryland Standards and Specifications for Soil Erosion and Sediment Control and the U.S. Department of Agriculture's Soil Conservation Service Technical Guide,*** *as used by the Prince George's County Soil Conservation District.*
705 Turf Establishment 705.01.03 Permanent Turf Establishment	In Section 705, Turfgrass Establishment is amended by deleting Subsections 705.03.11, Seeding Phase Acceptance, in whole and amending Subsection 705.01, Materials, to read as follows: 705.01.01 Turfgrass Seed Mix. ***All seeding to be done in conjunction with turf establishment shall utilize MSHA Standard Specifications for Construction and Materials, Subsection 920.06.07A, SHA Turfgrass Seed Mix. In no cases shall Temporary Seed Mix be used for permanent turf establishment.***
710 Tree, Shrub, and Perennial Installation and	Subsection 710.02, Materials, is amended to read as follows: 710.02, Materials

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Establishment 710.02 Materials	Plant Materials *MSHA* 920.07 *and Department Standards 600.08-600.20*
710.03.02 (c) Plant Material Inspection and approval	Subsection 710.03.02(c), Plant Material Inspection and Approval, is deleted and replaced with the following: 710.03.02(c), Plant Material Inspection and Approval. *The Contractor or Permittee shall perform all layout, bed preparation, and soil amending in accordance with street tree and landscape plans approved by the Department in accordance with Department Standards 600.01 through 600.06. Prior to planting, an inspection will conducted by the Department for planting approval.*
710.03.22(c) Pest Management	Subsection 710.03.22(c), Pest Management, is amended in whole to read as follows: 710.03.22(c), Pest Management. *Weed Control within the Public Right-of-Way. The use of herbicide chemicals for weed control shall only be carried out in strict compliance with State regulations. All herbicide chemical applications used for weed and/or vegetation control within the County's rights-of-way shall only be performed by an "applicator" licensed by the Maryland Department of Agriculture Pesticide Regulation Section. The applicator shall maintain and possess certification in Categories IIIA, IIIC, VI, and VII-E in accordance with the provisions of the Agriculture Article, Sections 5-201 through 5-211, of the Annotated Code of Maryland. The transporting, storing, handling, mixing, applying, or disposal of the herbicide chemical shall be done in strict compliance with the materials manufacturers' label and recommendations, and in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Resource Conservation Recovery Act (RCRA).*
710.03.23 Final Acceptance	Subsection 710.03.23, Final Acceptance, is amended to read as follows: 710.03.23 Final Acceptance. Refer to 710.03.21. Final Acceptance will be granted when the Punch List and all Establishment Phase requirements are completed. *The Contractor shall maintain and establish the plants for a minimum*

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	period of 1 year (a complete growing season) or in accordance with contract documents. The tree planting season lasts from October 15 to April 30. However, no planting shall occur where the soil is frozen. The following criteria shall apply in determining whether or not Permittees will be required to post performance bonds for the roadside trees and the amount of the bond required prior to the Department's release of performance bonds posted for street construction permits. • *For Capital Improvement Projects, refer to the contract documents for plant warranty.* • *For Street Construction Permits, the following plant warranties apply to all permittees:* *<u>One growing season, all trees acceptable</u>: No separate bonds will be required when roadside trees, planted during or outside the planting season (which lasts between October 15 and April 30), are maintained and established by the Permittee for one full growing season, and are found to be in good health and of the species and cultivar approved in the tree plan for the permit, at the time of the final inspection and acceptance of the associated street construction permit.* *<u>One growing season, some trees not acceptable</u>: If any dead or damaged trees are found at the time of the final inspection for acceptance of the associated street construction permit, the Permittee may elect to replace the unacceptable trees during a planting season, or the Permittee may elect to pay the County the cost of the replacement (fee-in-lieu), as determined by the Department Inspector using the prevailing unit cost of planted trees; or the Permittee may elect to post a bond equivalent to 100 percent of the value of the replacement trees, as determined by the Department Inspector using the prevailing unit cost of planted trees, until such time as the trees can be replaced during the planting season. Tree bonds shall be posted in cash when the value is less than $10,000.00. Letters of credit, assignment of funds, savings accounts in favor of Prince George's County, and certificates of guarantee issued by the Development Guaranty Group of Prince George's County, Inc., are also acceptable forms of security when the value of the trees to be bonded is $10,000.00 or more.* *<u>Partial growing season</u>: Should the final inspection and acceptance of the associated street construction permit occur before the trees are*

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	maintained and established by the Permittee for one full growing season, the Permittee will be required to post a bond equivalent to 100 percent of the value of the planted trees, as determined by the Department Inspector using the prevailing unit cost of planted trees, before the performance bond for the street construction permit will be released. The tree bond shall be valid for sufficient time to allow trees to be established for one full growing season. Tree bonds shall be posted in cash when the value is less than $10,000.00. Letters of credit, assignment of funds, savings accounts in favor of Prince George's County, and certificates of guarantee issued by the Development Guaranty Group of Prince George's County, Inc., are also acceptable forms of security when the value of the trees to be bonded is $10,000.00 or more. The trees will be reinspected at the end of the growing season (1 year), and the tree bond will be released if all trees are found to be viable and in good health. For any dead or damaged trees, the Permittee may either replace the trees during the planting season or pay the County the cost of the replacement (fee-in-lieu), as determined by the Department Inspector using the prevailing unit cost for planted trees. No further bonding will be required for the replacement trees. *Trees not planted: If all work stipulated by the permit is satisfactorily completed in accordance with the permit requirements, but the roadside trees required by the permit are not planted due to adverse weather conditions or other reasons, the Permittee will be required to post a bond equivalent to 100 percent of the value of the trees, as determined by the Department Inspector using the prevailing unit cost for planted trees, prior to the release of the performance bond for the permit. Tree bonds shall be posted in cash when the value is less than $10,000.00. Letters of credit, assignment of funds, savings accounts in favor of Prince George's County, and certificates of guarantee by the Development Guaranty Group of Prince George's County, Inc., are also acceptable forms of security when the value of the trees to be bonded is $10,000.00 or more. The tree bond shall be valid for sufficient time to allow for the planting of the trees during the planting season. If, after one full growing season, a re-inspection reveals all trees to be viable and in good health, and of the species and cultivar approved in the tree plan for the permit, the bond shall be released. However, for any trees found to be dead or damaged, the Permittee will be required to replace the trees during the plant-*

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	ing season or pay the County the cost of replacement (fee-in-lieu) as determined by the Department Inspector using the prevailing unit cost for planted trees. In addition to the above, all street trees must be planted in accordance with criteria stated in Section I, Chapter 3, Streetscape, Section II and Section III, Standards 600.01 to 600.20.
801 Concrete Foundations	*With the exception of Subsection 801.01 Description, which describes the types of work covered by Section 801, the provisions of "Section 801—Concrete Foundations" are deleted. For material specifications and construction requirements for the construction of traffic signals, the Department of Public Works and Transportation's* ***Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G) shall be used.*
804 Grounding	*The material specifications and construction requirements for furnishing and installing grounding systems for Section 804, Grounding, shall be as specified by the electric utility companies providing utility service to the area (BGE, PEPCO, and SMECO).*
805 Electrical Conduit and Fittings	*The material specifications and construction requirements for Section 805, Electrical Conduit and Fittings, which pertains to the construction of roadway lights and traffic signals, are contained in the* ***MSHA Standard Specifications, and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G), and the electrical utility requirements of the utility service to the area (BGE, PEPCO, and SMECO).*
806 Luminaires and Lamps	*The material specifications and construction requirements for Section 806, Luminaires and Lamps, which pertains to the construction of roadway lights, shall be as specified by the electrical utility company providing the utility service to the area (BGE, PEPCO, and SMECO).*
807 Electrical Service Equipment	*The material specifications and construction requirements for Section 807, Electrical Service Equipment, which pertains to the construction of traffic signals, are contained in the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*

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808 Lighting Structures	*The material specifications and construction requirements for Section 808, Lighting Structures, which pertains to the construction of roadway lights, shall be as specified by the electrical utility company providing the utility service to the area (BGE, PEPCO, and SMECO).*
809 Trenching and Backfilling	*The material specifications and construction requirements for Section 809, Trenching and Backfilling, which pertains to the construction of roadway lights, shall be as specified by the electrical utility company providing the utility service to the area (BGE, PEPCO, and SMECO), as long as they are outside the roadway limits. If within the roadway limits, refer to the MSHA Standard Specifications, Section 809, "Trenching and Backfilling."*
809.02 Materials	*The material specifications and construction requirements for Subsection 809.02, Materials, which pertains to the construction of roadway lights, shall be as specified by the electrical utility company providing the utility service to the area (BGE, PEPCO, and SMECO), as long as they are outside the roadway limits. If within the roadway limits, refer to the MSHA Standard Specifications, Section 809, "Trenching and Backfilling."*
810 Electrical Cable, Wire, and Connectors	*The material specifications and construction requirements for Section 810, Electrical Cable, Wire, and Connectors, which pertains to the construction of traffic signals, are contained in the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
810.01 Description	Subsection 810.01, Description, is amended to read as follows: **810.01, Description**. Furnish and install loop detector wires and leads, electrical cable, cable ducts, wire, micro-loop probe sets, communication cable, and associated connectors. *Warning: The cost of all repairs for damage to traffic signal loop detectors within a State- or County-maintained intersection shall be borne by the Contractor. For new construction or resurfacing of existing roadways, all loops, micro-loops, and other subsurface detection devices shall be installed in the base course paving as contained in the* Specifications and Standards for Traffic Control

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	Signals *(see Section IV, Appendix G).* *For existing roadways that have not been resurfaced, such devices shall be installed to the minimum depth specified in Standard TS-11 of the* Specifications and Standards for Traffic Control Signals *(see Section IV, Appendix G).*
810.04 Measurement and Payment	Subsection 810.04, Measurement and Payment, shall be amended by adding the following text: 810.04, Measurement and Payment. *Measurement and payment shall be as contained in the Contract Documents or* Specifications and Standards for Traffic Control Signals *(see Section IV, Appendix G).*
811 Electrical Hand Holes, Manholes, Pull and Junction Boxes	*Section 811, Electrical Hand Holes, Manholes, Pull and Junction Boxes, which pertains to the construction of roadway lights, the material specifications and construction requirements shall be as specified by the electrical utility company providing the utility service to the area (BGE, PEPCO, and SMECO).*
812 Wood Sign Supports	*NOTE: Wood sign supports shall not be used in the installation of temporary or permanent traffic signs on County projects unless approved in the construction documents.* Section 812, Wood Sign Supports, is amended by deleting it in whole and replacing it with the following text: *812—Galvanized U-Shape Steel Channel Sign Supports* *812.01 Description. This work shall consist of furnishing and erecting steel sign supports as specified in the Contract Documents, Department permit or as directed by the Department's Engineer. Wooden sign supports are not permitted within County-maintained roadways unless approved in construction documents. Signs shall be furnished and installed as specified in Section 813.*
812.02 Materials	Subsection 812.02, Materials, is deleted it its entirety and replaced with the following text: 813.02, Materials. *Galvanized U-Shape Steel Channel sign posts are to be used on all permanent signing within the County right-of-*

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	way in accordance with Contract Documents, Department permit or as directed by the County Engineer. The use of wooden sign posts for permanent sign installation is prohibited unless a special design is provided for in the approved construction documents or approved by the Engineer. U-Shape Steel Channel sign posts shall be 2.2 pounds per foot and galvanized.
812.03 Construction	Subsection 812.03, Construction, is deleted in its entirety: 812.03, Construction. ~~[Auger or dig holes using methods approved by the Engineer. Place supports in a plumb position and to the specified depth and lateral orientation. Backfill using suitable excavation material, and compact in place. Do not drive or hammer supports into undisturbed earth. When specified, wood sign supports shall have drilled holes conforming to the breakaway requirements specified in AASHTO Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, or as shown in the Contract Documents~~.
813 Signs 813.02.01 Materials	Subsection 813.02, Materials, is amended by adding the following new Subsection 813.02.01: 813.02, Materials. *All reflective sign sheeting materials used in conjunction with new County roadway development, or existing sign maintenance, shall use Type IV High Intensity grade prismatic reflective sheeting material in accordance with AASHTO M268 requirements. Use of other high-performance reflective sheeting requires prior approval by the Department's Engineer.*
813.03.01 Construction	Subsection 813.03, Construction, is amended by adding the following new Subsection 813.03.01: 813.03.01, Construction. *On County Capital Improvement Program projects, upon project completion, the contractor shall remove all project signs and return them to the Prince George's County sign shop on D'Arcy Road in Forestville.*
813.04.01(a) Measurement and Payment	Subsection 813.04, Measurement and Payment, is amended by adding the following to Subsection 813.04.01(a): 813.04, Measurement and Payment. *The removal of the project signs*

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	at the end of the project shall not be measured for payment, but this item shall be incidental to the SIGNS Items, within the bid.
814 Signal Heads	*The material specifications and construction requirements for Section 814, Signal Heads, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
816 Traffic Control Device Cabinets and Equipment	*The material specifications and construction requirements for Section 816, Traffic Control Device Cabinets and Equipment, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
817 Push Buttons and Push Button Signs	*The material specifications and construction requirements for Section 817, Push Buttons and Push Button Signs, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
818 Signal Structures	*The material specifications and construction requirements for Section 818, Signal Structures, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
819 Steel Span Wire	*The material specifications and construction requirements for Section 819, Steel Span Wire, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
820 General Electrical Work and Testing	*The material specifications and construction requirements for Section 820, General Electrical Work and Testing, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix*

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	G).
821 Breakaway Base Support Systems	*The material specifications and construction requirements for Section, 821, Breakaway Base Support Systems, which pertains to the construction of traffic signals, are contained within the* ***MSHA Standard Specifications and the Department of Public Works and Transportation's Specifications and Standards for Traffic Control Signals*** *(see Section IV, Appendix G).*
823 Remove and Relocate OR Remove and Dispose of Roadway Lighting Structures 823.03 Construction	Subsection 823.03 Construction, is amended by the addition of the following: 823.03 Construction. ***The Contractor or permittee is required to provide temporary street lighting during all phases of construction as deemed necessary by the Department.***
901 Aggregates 901.01 General	Subsection 901.01, General, is amended by adding Department Table II-1, Recycled Concrete Aggregate Gradation Requirements/Design Range Percent Passing, and accompanying notes. Table II-1 is not applicable "for permanent applications within the public right-of-way".
901.01(a) Recycled Concrete for Stabilized Construction Entrance	Subsection 901.01, General, is amended by adding the following new Subsection 901.01(a), Recycled Concrete for Stabilized Construction Entrance: 901.01(a), Recycled Concrete for Stabilized Construction Entrance. ***Grading of recycled concrete aggregate shall meet the requirements of AASHTO M43, size No. 2 (RC-2).***
902 Portland Cement Concrete and Related Products 902.02	Add Subsections 902.02(g) thru (i) g) Contractor shall submit current SHA-approved mix designs during pre-con meetings. h) Concrete Contractors shall e-mail their concrete-cylinder break results to County Inspector & the District Engineer. i) No concrete pouring unless temperature is 40°F & rising.

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902.07.01 Burlap	Subsection 902.07.01, Burlap, is amended to read as follows: **902.07.01 Burlap.** *AASHTO* M 182, Class [~~1. 2, or~~] 3.
902.12 Linseed Oil	Subsection 902.12, Linseed Oil, is replaced in whole to read as follows: 902.12, *Silane Concrete Penetrating Sealer. Sealer material shall be Protectosil BH-N (Dynasylan) as manufactured by Degussa ChemTrete, or approved equal. The Department shall make any determinations as to whether a product is an equal. The water repellent used shall be solvent-free, 100 percent active isobutyltrimethoxy silane ingredient by weight. The sealer material shall not alter the appearance of the surface texture nor affect the skid resistance of the concrete surfaces.* *No material shall be applied to the concrete deck, sidewalk, or wearing surfaces without the approval of the Department's Engineer. The Contractor/Permittee shall submit for the Department Engineer's approval materials certification showing all testing, application specification, and manufacturer's technical data prior to the start of construction. Two applications of the sealer shall be required.*
903 Masonry Products 903.05 Solid Concrete Masonry Block	Subsection 903.05, Solid Concrete Masonry Block, is amended to read as follows: **903.05, Solid Concrete Masonry Block.** Solid concrete masonry block shall conform to *ASTM C-140* [~~C 139~~].
904 Performance Graded Asphalt Binders and Hot Mix Asphalt 904.04.02 Mix Design	Subsection 904.04.02, Mix Design, is amended to read as follows: **904.04.02, Mix Design.** Crushed, recycled asphalt pavement (RAP) material and maximum of 5 percent roofing shingles from manufacturing waste may be used in the mix design *if the mix is approved by the State Highway Administration and <u>if</u> the asphalt-plant's Quality Control Plan covering such materials (RAP/shingles) is also approved by the Department's Lab for the specific year during which the mix will be applied.* Allowable percentage and suita-

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	bility for use shall be determined in conformance with MSMT 412 and M 323. When using less than 20 percent RAP, binder grade adjustments are not required. Surface ***and intermediate*** mixes using 20 percent or more Rap and base mixes using more than 25 percent RAP shall be tested and evaluated in accordance with TP 62: Determining Dynamic Modulus of Hot-Mix Asphalt Concrete Mixtures, to determine plant mixing capabilities. A demonstration strip or mix verification may be required before placement ***If approved by the State OMT for the same construction season,*** [~~T~~]the use of RAP, not to exceed 10 percent, may be considered ***by the Department*** for applications where higher polish value aggregates are required and in mixes requiring elastomer type polymer binder. Approval for use will be on an individual project basis by OMT. Placement areas within the project limits shall be designated by OMT. These applications shall require isolated RAP stockpiles from an identified single source. Submit documentation of RAP stockpile management, quality, and traceability ***to OMT and the Department*** for approval prior to use, ***and upon the Department's request***. Do not use crushed glass in surface mixes. Do not use roofing shingles in gap-graded mixes or mixes requiring elastomer type polymer binder.
904.04.05 Plant Control	Subsection 904.04.05, Plant Control, is amended by adding Note (c) to Table 904 A to read as follows: 904.04.05 Plant Control. ***(c) For 12.5 mm mixes with binders equivalent to PG 70-22 or higher quality, the asphalt content tolerances shall be - 0.2% to +0.4% for plant or hauling unit samples, and -0.3% to +0.5% for behind-the-paver samples; if the mix will be placed on a County arterial or major collector roadway.***

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905 Pipe	Section 905, Pipe, is replaced in whole to read as follows: 905 Pipe material. *Pipe material for the construction of storm drainage systems within County rights-of-way shall be reinforced concrete. The use of other types of pipe material shall require Department approval on a case-by-case basis.* *All rural driveway pipe culverts placed within County rights-of-way shall be corrugated metal pipe arch (CMPA) with metal end sections or reinforced concrete pipe (RCP) with concrete end sections/ concrete headwalls as specified in Department Table I-10, Pipe Use (see Section I). The use of other pipes for driveway culverts shall be reviewed on a case by case basis by the Department's Engineer.*
908 Reinforcement Steel 908.05 Welded Deformed Steel Wire Fabric	Subsection 908.05, Welded Deformed Steel Wire Fabric, is amended to read as follows: 908.05 Welded Steel Wire Fabric. M 55. Fabric used in pavement construction shall be furnished in flat sheets. *Fabric used in pavement or driveway construction shall be furnished in flat sheets. Rolled stock shall not be used.*
912 Coating Systems for Structural Steel 912.06 Graffiti Barrier Coatings	Section 912, Coating Systems for Structural Steel, is amended by adding the following new Subsection 912.06, Graffiti Barrier Coatings: 912.06 Graffiti Barrier Coatings. *To assist in the removal of graffiti, two products are approved by the Department: Permaclean and Seal-Krete. Permaclean is an aliphatic urethane resin coating available in several formulas, finishes, and colors. (Use of any color except clear requires prior approval by the Department.) It is a permanent coating able to withstand numerous cleanings without recoating. Color is to be appropriate to the setting. Seal-Krete is a clear waterborne polymer formula designed to be temporary and sacrificial, thereby allowing removal of graffiti by power washing. Seal-Krete requires recoating after each cleaning. The application of these products shall be done in accordance with the producers' instructions and recommendations.*
915 Production Plants	Subsection 915.01.04, Measuring Devices, is amended by adding the following new paragraph at the end of the final paragraph:

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915.01.04 Measuring Devices	915.01.04 Measuring Devices. *The producer's quality control section shall be responsible for maintaining a log of their balancing, calibration, daily testing, test results, and actions taken to correct problems. This log shall be available to the Department upon request.*
915.02 Hot Mix Asphalt (HMA) Plants	Subsection 915.02(d).(2), Hot Mix Asphalt (HMA) Plants, is amended to read as follows: (2) The producer shall supply a delivery ticket with the ID number, Contract number *or Permit/Development name, Name of street to be paved or its nearest major intersection, the complete State* ID of the type of mix i.e. *H120A12R1E01F (NOT only 12.5 mm), "Prince George's County Roadwork" stamp, validation by a certified HMA-Plant Technician for the first load ticket,* truck ID number, time loaded, gross and tare weights, and net weight of the mix for each load. When requested by the Engineer, the temperature of the mix shall be shown on the delivery ticket. *A copy of the HMA-1 Form showing results of the mix QC analysis performed on the day of delivery (not any other date) shall be attached to the validated first load ticket.*
915.02.01 Certified Hot Mix Asphalt (HMA) Plant. Responsibilities of the HMA Producer	Subsection 915.02.01, Certified Hot Mix Asphalt (HMA) Plant Responsibilities, is amended to read as follows: 915.02.01 Certified Hot Mix Asphalt (HMA) Plant: Responsibilities of the HMA Producer. (a) Notification. Notify the *DPW&T Materials Section/*Engineer one working day prior to producing materials for *County* [~~Administration~~] projects[~~. Report total tons shipped to Administration projects one business day of completed daily shipments.~~] *or no later than 8:00 AM of the production day. Utilize Materials Section notification forms to report the mix, total tons, project name, the assigned field technician's name, phone number, etc. Notify the Materials Section of any new certified technicians assigned to the job site or plant including contact info, certification numbers and other required information. Notify the Materials Section of*

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	any mix changes during the construction season no later than the day on which the change is implemented. (b) **Quality Control.** The minimum sampling and testing frequencies and criteria necessary for quality control of the HMA is the responsibility of the producer. Develop and use a quality control plan acceptable to the Engineer that addresses all elements necessary for quality control in the plant. *One master QC plan per plant shall be submitted to the Materials Section for approval on an annual basis. Upon the addition of a new certified technician to the plant workforce, forward an updated QC plan to the Materials Division for approval prior to sending the technician to County projects. The technician shall have a valid certification and a copy of the latest approved QC plan while working on County projects.* Conduct the minimum sampling and testing as specified in MSMT 735, Table 2 and *DPW&T* Specifications & Standards; *Section II, Table II-2*. Additional sampling and testing shall be performed when directed. The Engineer shall be offered the opportunity to witness all sampling and testing. (c) **Reports.** The test results shall be furnished to the Engineer on documents approved by the *Department*[~~Administration~~]. *The producer's quality control section shall be responsible for maintaining a log of their balancing, calibrations, testing, test results, and actions taken to correct problems. This documentation shall be available to the Department upon request. The HMA-1 Form documenting the mix QC analysis of an individual lot pavement shall be attached to the load ticket of the first load from each lot delivered to each paving site in the County. Subsequent HMA-1 forms shall be attached to the first load delivered for each subsequent lot pavement produced by the plant.*
915.03	Subsection 915.03, Portland Cement Concrete Plants, is amended

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Portland Cement Concrete Plants	by adding the following subsection: *915.03(a) Certification of Compliance. At the discretion of the Department's Engineer, Portland Cement concrete may be accepted on the basis of the producer's certificate of compliance. Material accepted on the basis of a producer's certification shall be certified by an officer of the producing company and submitted to the Department. The certificate shall state that all materials comply with pertinent specifications and that the mix is proportioned in accordance with the approved mix design.* *The producer's quality control section shall be responsible for maintaining a log of their balancing, calibrations, testing, test results, and actions taken to correct problems. This log shall be available to the Department on demand. Although the absolute maximum number of samples or sampling frequency cannot be rigidly established, minimum values must be established. For these minimum values, use Department Table II-3, Required Minimum Testing Frequency for Concrete Materials.*
915.03.03 Load Tickets	Subsection 915.03.03, Load Tickets, is replaced in whole to read as follows: 915.03.03 Load Tickets. *The producer shall provide and issue duplicate tickets for each load. Each ticket shall show the following:* *1. Time truck is charged (load time, leave plant time, or some indication of when water is added to cement);* *2. Total weight of cement, sand, and wet weight of aggregates (include mix identification);* *3. Quantity of any additives (especially air entrainment);* *4. Delivery point;* *5. Truck number or identification;* *6. Total quantity (cubic yards);* *7. Time arrived at delivery point; and* *8. Start time of pour.* [~~An Administration approved computer generated batch ticket indicating the pertinent information per M 157 shall be provided in duplicate for each load. The ticket shall indicate~~

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	~~maximum allowable water, and maximum water allowed for jobsite slump adjustment. Distribution shall be made as specified in 915.03.05 (c)(2). The producer's copy shall be readily available for inspection upon request by the Engineer. A completed Administration Form 116 shall be issued for each load in the event a computer generated batch ticket cannot be provided.~~]
915.03.04 Mixers and Agitators	Subsection 915.03.04, Mixers and Agitators, is amended by adding the following subsection: *915.03.04(d) Truck Mixers. Each acceptable truck mixer shall comply with the following requirements:* *1. There shall be no accumulation of hardened concrete within the mixer drum.* *2. When the height of the mixer blade is less than 90 percent of the original height, the blade is excessively worn and must be replaced. The manufacturer of the mixer, through the producer, will furnish original blade dimensions upon request.* *3. The charging and discharging openings and chute shall be in good condition, free from accumulations of cement or concrete.* 4. The drum, or container, shall be of such size that the rating as a mixer (in volume or mixed concrete) does not exceed 63 percent of the gross volume of the mixer discharging blades. *5. A plate shall be provided showing the mixer manufacturer's recommended operating speed for mixing, which must be in the range of 4 through 18 RPMs, and have a demonstrated capability to operate satisfactorily at recommended speed.* *6. The mixer shall be equipped with a counter in working condition to indicate the number of revolutions of the drum. Should the counter become defective, the producer shall be allotted 24 hours to make the necessary adjustments before condemnation of the mixer.* *7. On mixers equipped to batch, mixing water equipment shall be in proper working condition. Gauge glasses and water meters, clean and legibly graduated, water pump or injection system in good working order with nozzles unobstructed and without leakage into the mixer. Water measurement shall be spot checked and found accurate within ± 1 percent of mixing water capacity or*

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	± 1 gallon.
915.03.05 Certified Concrete Plant	Subsection 915.03.05, Certified Concrete Plant, is replaced in whole with the following: Subsection 915.03.05 Certified Concrete*. At the discretion of the Department's Engineer, Portland Cement concrete may be accepted on the basis of the producer's certification and shall be certified by an officer of the production plant and submitted to the Department. The certificate shall state that all materials comply with pertinent specifications and the mix is proportioned in accordance with the approved mix design.* *The producer's Quality Control Section will be responsible for maintaining a log of their daily testing. This log will be available to the Department Inspector upon request. Although the absolute maximum number of samples or sampling frequency cannot be rigidly established, minimum values must be established. For these minimum values, use Department Table II-3, Required Minimum Testing Frequency for Concrete Materials.*
916 Soil and Soil-Aggregate Borrow 916.01.01 Select Borrow	Subsection 916.01.01, Select Borrow, is amended to read as follows: 916.01.01 Soil and Soil Aggregate Borrow. Select borrow shall conform to *AASHTO Soil Classification System A-1,* A-2, A-3, or A-2-4 material*, or* as specified in the Contract Documents*, with a maximum of 30 percent passing the No. 200 sieve, a maximum of 7 P.I.* The maximum dry density shall be a minimum of 105 lb./ft.^{3}*, as determined by AASHTO T-180 Method*.
950 Traffic Materials 950.05 Backfill Material for Trenches for Buried Cable	Section 950.05, Backfill Material for Trenches for Buried Cable, is amended by deleting it in its entirety and replacing with the following: 950.05 Backfill Material for Trenches for Buried Cable. *All trenching and backfilling done within the roadway limits shall be done in accordance with the* Prince George's County Policy and Specification for Utility Installation and Maintenance *(see Section IV, Appendix E).*

D. TABLES II-1 THROUGH II-3

The following pages under this subhead comprise reference Tables II-1 through II-3, as cited in the previous text of Section II.

TABLE II-1: RECYCLED CONCRETE AGGREGATE BASE AND SUBBASE GRADATION REQUIREMENTS/DESIGN RANGE PERCENT PASSING

Source: Prince George's County Department of Public Works and Transportation based on American Association of State Highway and Transportation Officials (AASHTO) guidelines.

SIEVE SIZE	BASE (%*)	TOLERANCE	SUBBASE (%*)	TOLERANCE
2 inch	100	–2	100	–3
1-1/2 inch	95–100	±5	90–100	±5
3/4 inch	70–92	±8	—	—
3/8 inch	50–70	±8	—	—
#4	35–55	±8	30–60	±10
#30	12–25	±5	—	—
#200	0–8	±3	0–12	±5

*Mass percentage passing

Notes:

1. The liquid limit and plasticity index values shall not be greater than 30 and 6, respectively.
2. Where no soil fines passing the No. 200 sieve are present, the liquid limit and plasticity index requirements will be waived.
3. The percentage of wear shall not exceed 55 when tested in accordance with AASHTO T-96.
4. When control sampled results are within the master gradation specifications, but deviate from the approved dry gradation for the sample submitted by more than the specified tolerance, the material may be rejected by the inspector.
5. The maximum percentages of nonhomogeneous substances shall not exceed the following values:

Material Type	Percent by Weight
Bituminous Concrete	6.0
Brick	2.0
Foreign Matter, Glass, Wood	0.5
Fabric, Metals, etc.	1.0

6. Currently, recycled materials are NOT acceptable for permanent applications within proposed right-of-way in Prince George's County(except for recycled Asphalt pavement, RAP, mixed with fresh HMA mixes at asphalt plants)

TABLE II-2: REQUIRED MINIMUM TESTING FREQUENCY FOR SUPERPAVE HOT MIX ASPHALT (HMA) CONCRETE MATERIALS

Source: Prince George's County Department of Public Works and Transportation based on American Association of State Highway and Transportation Officials (AASHTO) guidelines.

ITEM	MATERIAL	AASHTO STANDARDS	FREQUENCY
Gradation of Aggregates	Stockpile aggregates	T-27	Once per shipment from the material source to the plant
Bulk Specific Gravity	Superpave HMA gyratory specimens compacted at N_{Des}	T-312 and T-166	One set of two specimens for Superpave HMA production up to 1000 tons
Maximum Specific Gravity	Uncompacted Superpave HMA sample	T-209	One test for Superpave HMA production up to 1000 tons
Resistance to Moisture-Induced Damage	Superpave HMA gyratory specimens	T-283	One test for each 6000 tons of Superpave HMA production
Asphalt Content Using Ignition Furnace and Combined Aggregate Gradation	Uncompacted Superpave HMA sample	T-308 and T-30	One test for Superpave HMA production up to 1000 tons
Performance Grading of Asphalt	Liquid asphalt	MP-2	Once per shipment from the material source to the plant

TABLE II-3: REQUIRED MINIMUM TESTING FREQUENCY FOR CONCRETE MATERIALS

Source: Prince George's County Department of Public Works and Transportation based on American Association of State Highway and Transportation Officials (AASHTO) guidelines.

ITEM	MATERIAL	REQUIREMENTS	AASHTO STANDARDS	FREQUENCY
Grading	Coarse aggregate	Stockpile sieve analysis	M-43	Twice daily, per shipment
Grading	Fine aggregate	Stockpile sieve analysis	M-6	Twice daily, per shipment
Chemical and Physical	Cement	Lab testing	M-85	Once biweekly
Fineness	Cement	Lab testing	T-153	Once biweekly
Setting	Cement	Lab testing	T-131	Once biweekly
pH	Water	Lab testing	T-26	Every 6 months
Quality	Water	Lab testing	T-26	Every 6 months
Chloride	Water	Lab testing	ASTM D-512	Every 6 months
Various	Chemical additives	Lab testing	Per appropriate specification for chemical used	Per shipment

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION III
Standard Roadway Sections and Details

Revision 03/14/12

Section III – Standard Roadway Sections and Details

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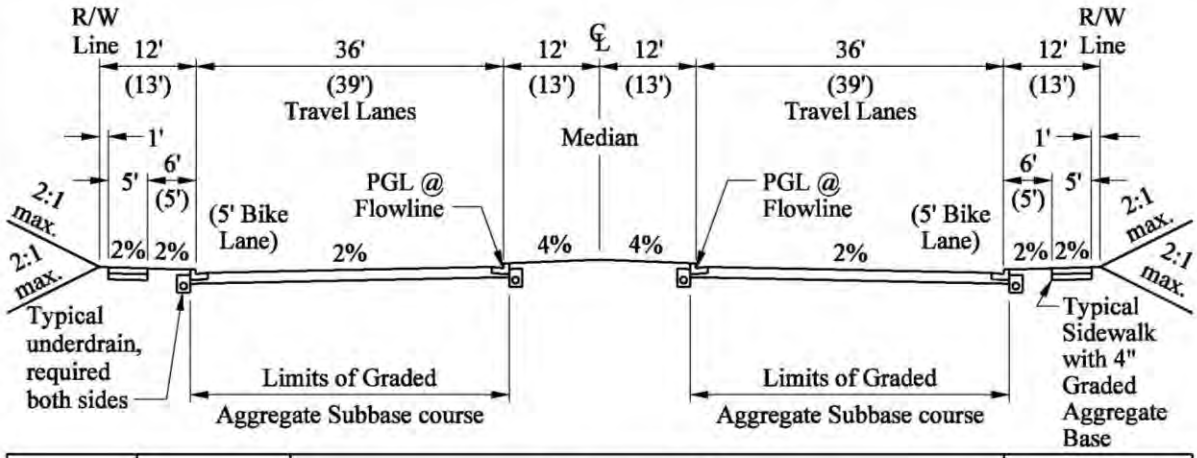
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500.05 Street Light Location (Urban Commercial and Industrial)
500.06 Street Light Location (Urban Primary Residential)
500.07 Street Light Location (Urban Secondary Residential)
500.08 Street Light Location (Rural 4-Lane Arterial)
500.09 Street Light Location (Rural 2-Lane Collector)
500.10 Street Light Location (Rural Residential)
500.11 Street Light Location (Rural 4-Lane Collector)
500.12 Street Light Spacing (Urban Area)

Category 600 Standard Roadway Trees and Plants
600.01 Street Tree Placement in Urban R/W
600.02 Street Tree Placement in Rural R/W
600.03 Street Tree Installation in Urban R/W
600.04 Street Tree Installation in Rural R/W
600.05 Street Trees: Buffer Evergreen Installation
600.06 Shrub Planting in Special Areas
600.07 Tree Selection Standards
600.08 Shade Trees
600.09 Ornamental Trees
600.10 Evergreen Trees: Screening
600.11 Ornamental Median Trees
600.12 Shrubbery
600.13 Shrubbery
600.14 Low-Growing Shrubbery
600.15 Ornamental Grasses
600.16 Ornamental Grasses
600.17 Groundcover Plantings
600.18 Groundcover Plantings
600.19 Flowering Perennials
600.20 Flowering Perennials

Category 700 Standard Traffic Calming Devices
700.01 Speed Hump: Flat Top Profile
700.02 Raised Crosswalk

700.03 Traffic Circle
700.04 Roundabout
700.05 Speed Reducing Islands
700.06 Pedestrian Island Crosswalk
700.07 Mountable Curb and Splash Block Combination
700.08 Choker
700.09 Semi-Diverter
700.10 Diverter
700.11 Full Closure
700.12 Speed Hump/Table Marking
700.13 Intersection Table
700.14 Intersection Table Signing and Marking Details
700.15 Raised Pavement Marker (RPM) Installation
700.16 Raised Pavement Marker (RPM) Placement

CATEGORY 100 STANDARD ROAD SECTIONS



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
50 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	120' (130')

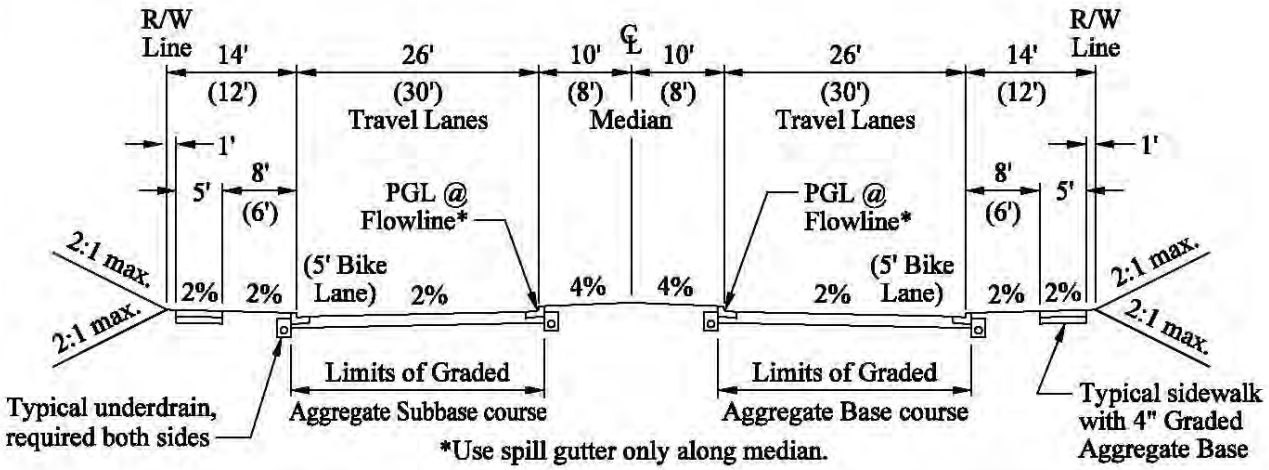
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Table I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. Travel lanes accomodate three (3) 11-foot minimum lanes and appropriate striping. For bike lanes, alternate configuration shown in parenthesis requires 130' right-of-way and accommodates one (1) 12-foot lane, two (2) 11-foot minimum lanes, and one (1) 5-foot (one-way) bike lane within the travel lanes. Alternate configuration may require additional dedication to accommodate streetscape.
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. For hiker/biker trail, use 130' right-of-way. Accommodates 6' and 8' hiker/biker trails. See Standard 100.18.
8. Refer to Category 500 for street light standards.
9. Refer to Category 600 for landscaping within the County right-of-way.
10. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
11. Where dual left turns are required, increase median width to 26'-0". Use 130' right-of-way where required.
12. Use standard (nonspill) curb and gutter in median sections, unless otherwise specified by the Department.
13. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
14. Refer to Standards 300.09 and 300.10 for median crosswalk details.
15. Top of outside curb elevation equals Profile Grade Line (PGL) elevation minus 0.17' (0.23') for 6" curb.

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Urban Arterial Road	STD. 100.01



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
40 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	100'

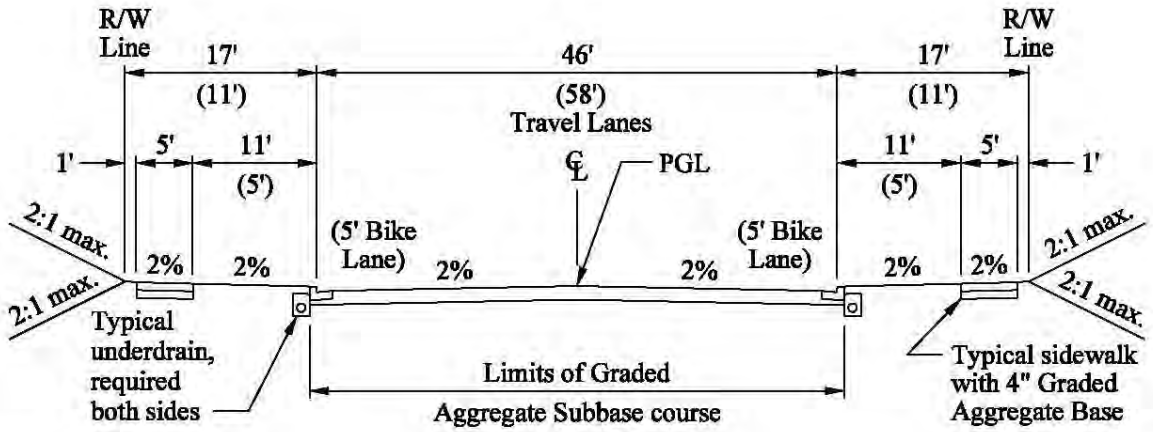
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Table I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. Travel lanes accomodate two (2) 11-foot minimum lanes and appropriate striping. For bike lanes, alternate configuration shown in parenthesis accommodates two (2) 12-foot lanes, and one (1) 5-foot (one-way) bike lane within the travel lanes. Alternate configuration may require additional dedication to accommodate streetscape.
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. For hiker/biker trail, right-of-way accommodates 6' hiker/biker trails. See Standard 100.18.
8. Refer to Catagory 500 for street light standards.
9. Refer to Catagory 600 for landscaping within the County right-of-way.
10. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
11. Use spill curb and gutter in median sections, unless otherwise specified by the Department.
12. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
13. Refer to Standards 300.09 and 300.10 for median crosswalk details.
14. Top of outside curb elevation equals Profile Grade Line (PGL) elevation minus 0.12' (0.20') for 6" curb.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Urban Major Collector Road	STD. 100.02



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
40 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	80'

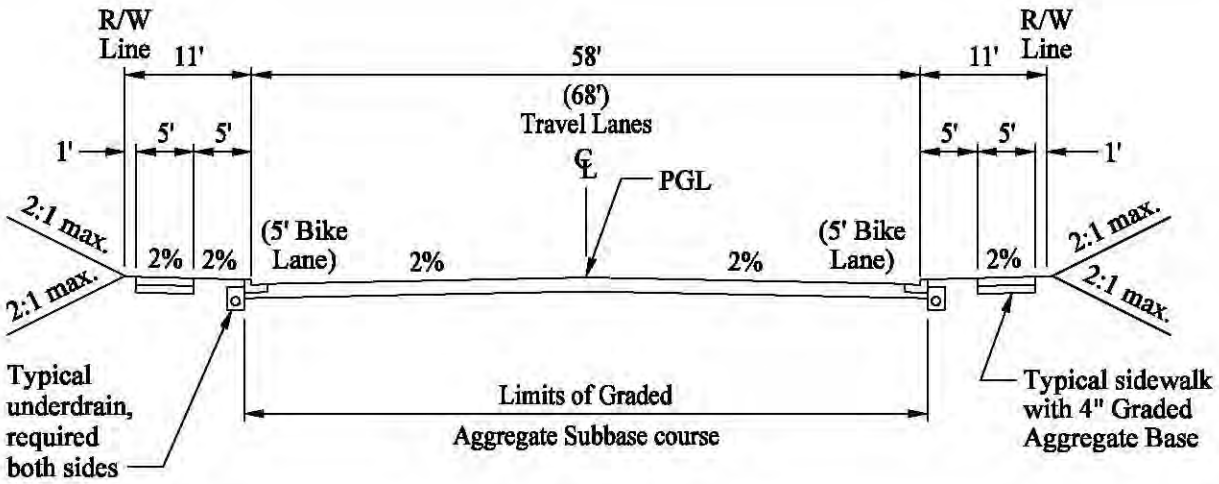
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Table I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. Travel lanes accommodate four (4) 11-foot minimum lanes and appropriate striping. For bike lanes, alternate configuration shown in parenthesis accommodates four (4) 11-foot minimum lanes, and two (2) 5-foot (one-way) bike lanes within the travel lanes. (For existing 52-foot travel lane applications, use the four (4) 12-foot travel lane configuration with appropriate striping for bike lanes. The tree box space is reduced to 14 feet.)
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. For hiker/biker trail, right-of-way accommodates 6' or 8' hiker/biker trail. See Standard 100.18. Configuration may require additional right-of way dedication to accomodate streetscape.
8. Refer to Category 500 for street light standards.
9. Refer to Category 600 for landscaping within the County right-of-way.
10. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
11. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
12. Top of curb elevation equals Profile Grade Line (PGL) elevation minus 0.06' (0.18') for 6" curb.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Urban 4-Lane Collector Road	STD. 100.03



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
40 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	80' (90')

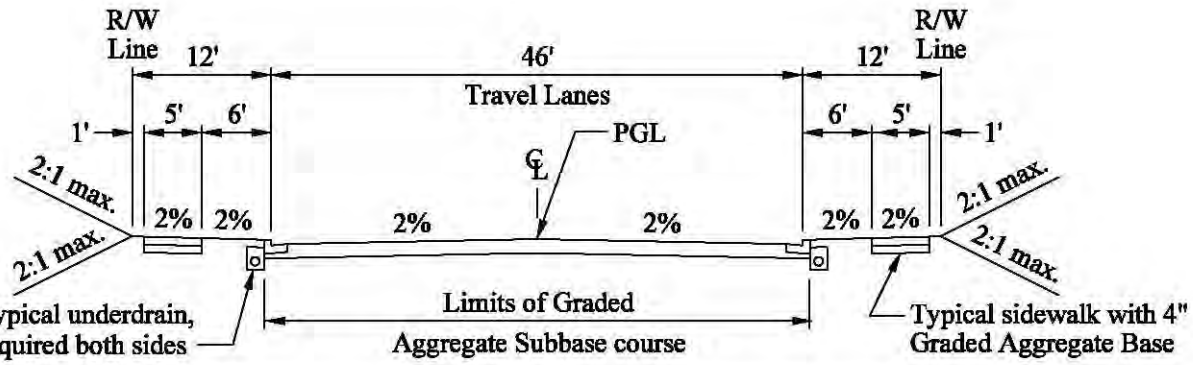
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Table I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. Travel lanes accomodate five (5) 11-foot minimum lanes and appropriate striping. (Note: This configuration requires additional dedication to accommodate streetscape.) For bike lanes, alternate configuration shown in parenthesis requires 90' right-of-way and accommodates five (5) 11-foot minimum lanes, and two (2) 5-foot (one-way) bike lanes within the travel lanes.
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. For hiker/biker trail, use 90' right-of-way. Accommodates 6' or 8' hiker/biker trail. See Standard 100.18.
8. Refer to Category 500 for street light standards.
9. Refer to Category 600 for landscaping within the County right-of-way.
10. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
11. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
12. Top of curb elevation equals Profile Grade Line (PGL) elevation minus 0.18' (0.28') for 6" curb.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Urban 5-Lane Collector Road	STD. 100.04



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
35 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	70'

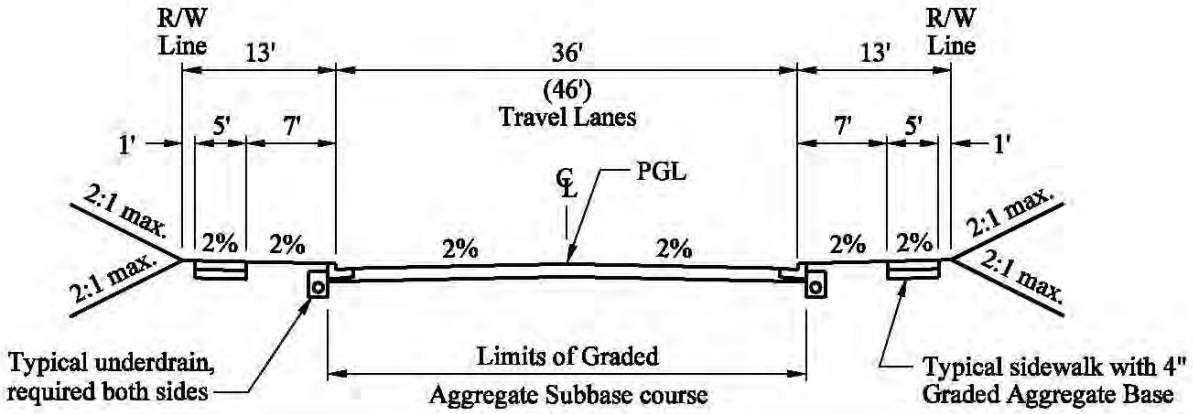
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Commercial-use: Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications," and General Note 11 below.
Industrial-use: Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 70-22. See Section II "Technical Specifications," and General Note 11 below.
D. Commercial-use: Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications," and General Note 11 below.
Industrial-use: Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications," and General Note 11 below.
E. Commercial-use: Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications," and General Note 11 below.
Industrial-use: Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications," and General Note 11 below.

General Notes

1. Travel lanes accomodate four (4) 11-foot lanes or two (2) 12-foot lanes and two (2) 11-foot parking lanes.
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. Refer to Category 500 for street light standards.
8. Refer to Category 600 for landscaping within the County right-of-way.
9. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
10. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
11. In areas of heavy industrial truck usage, apply PG 76-22 Superpave Mixture Hot Mix Asphalt (HMA) for intermediate surface course (D) and final surface course (E).
12. Top of curb elevation equals Profile Grade Line (PGL) elevation minus 0.06' for 6" curb.

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Urban Commercial and Industrial Road	STD. 100.05



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
35 MPH	CBR ≥ 7	6"	3"	1 1/2"	1 1/2"	60' (70')

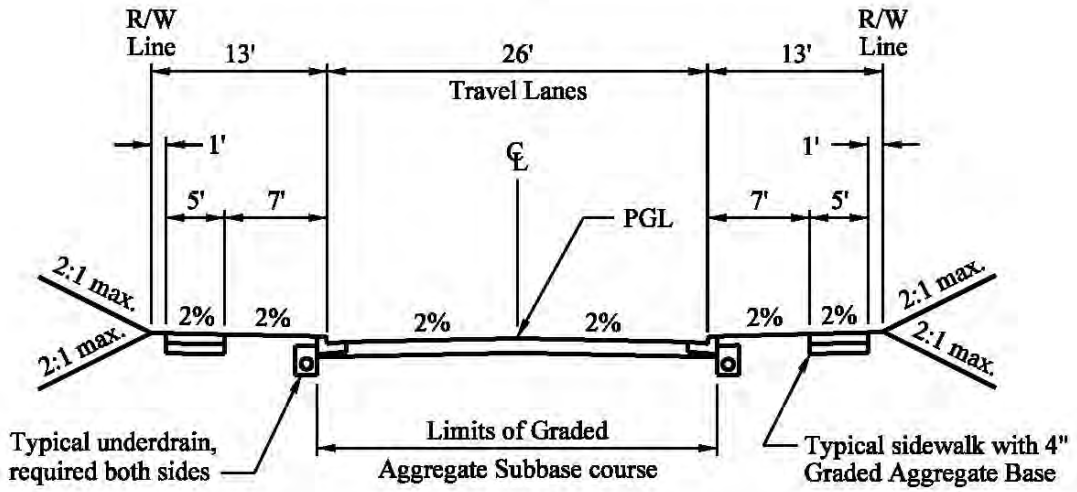
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 19mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications." Transit route: Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications"
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications." Transit route: Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications"

General Notes

1. Travel lanes accomodate two (2) 11-foot minimum lanes and appropriate striping plus 7-foot parking lanes on both sides. Alternate configuration shown in parenthesis accommodates two (2) 12-foot lanes, one (1) 12-foot left turn lane, and two (2) 5-foot (one-way) bike lanes within the travel lanes. (Where right-of-way width permits, pavement width may be increased to 38' to allow 8-foot parking lanes.)
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. Refer to Category 500 for street light standards.
8. Refer to Category 600 for landscaping within the County right-of-way.
9. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
10. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act, including acceptable sidewalk passing space requirements.
11. If roadway is designated by the Department as a Transit Route, use modified surface courses as indicated.
12. Top of curb elevation equals Profile Grade Line (PGL) elevation plus 0.04' (minus 0.06') for 6" curb.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Urban Primary Residential Road	STD. 100.06



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
30 MPH	CBR ≥ 7	6"	3"	1 1/2"	1 1/2"	50'

Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Table I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 19mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."

General Notes

1. Travel lanes accommodate two (2) 11-foot minimum lanes, or one (1) 12-foot lane and parallel parking on both sides.
2. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
3. See Section II "Technical Specifications" for materials and method of construction.
4. Refer to Standard 300.13 for underdrain details.
5. Refer to Standards 300.01 and 300.02 for curb and gutter details.
6. Refer to Standards 300.05 through 300.08 for sidewalk details.
7. Refer to Category 500 for street light standards.
8. Refer to Category 600 for landscaping within the County right-of-way.
9. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
10. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act, including acceptable sidewalk passing space requirements.
11. Top of curb elevation equals Profile Grade Line (PGL) elevation plus 0.14' for 6" curb.

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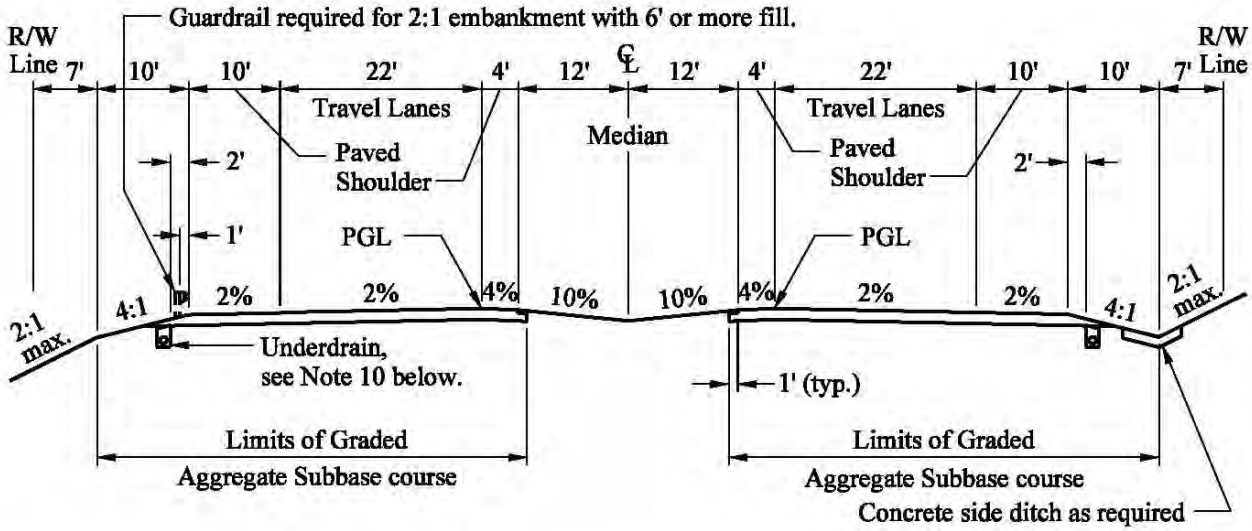
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Urban Secondary Residential Road

STD. 100.07



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
50 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	130'

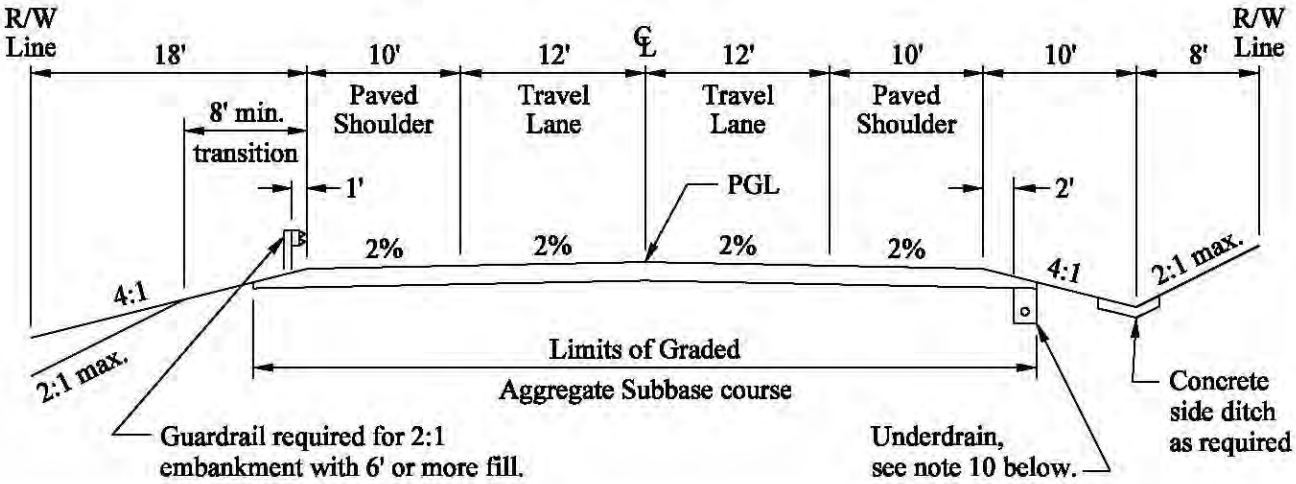
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Category 500 for street light standards.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Travel lanes require striping and edge line marking to delineate shoulder.
10. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Rural 4-Lane Arterial Road	STD. 100.08



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
40 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	80'

Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Category 500 for street light standards.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Travel lanes require striped centerline and edge line marking to delineate shoulder.
10. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

APPROVED:

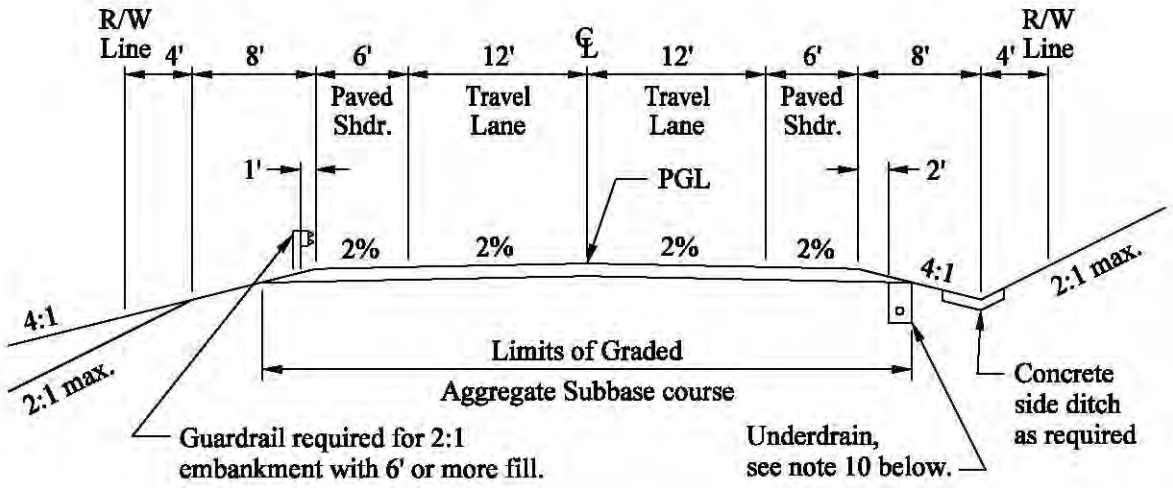
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Rural 2-Lane Collector Road

STD. 100.09



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
35 MPH	CBR ≥ 7	4"	3"	1 1/2"	1 1/2"	60'

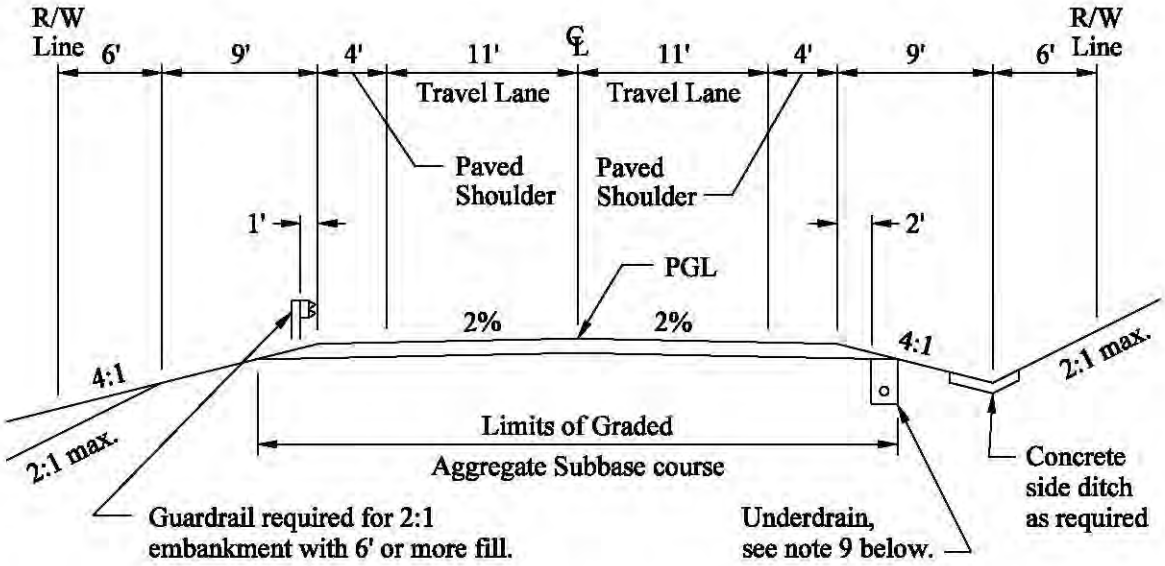
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 19mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Category 500 for street light standards.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Travel lanes require striped centerline and edge line marking to delineate shoulder.
10. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Rural Primary Residential Road	STD. 100.10



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
30 MPH	CBR ≥ 7	4"	3"	1 1/2"	1 1/2"	60'

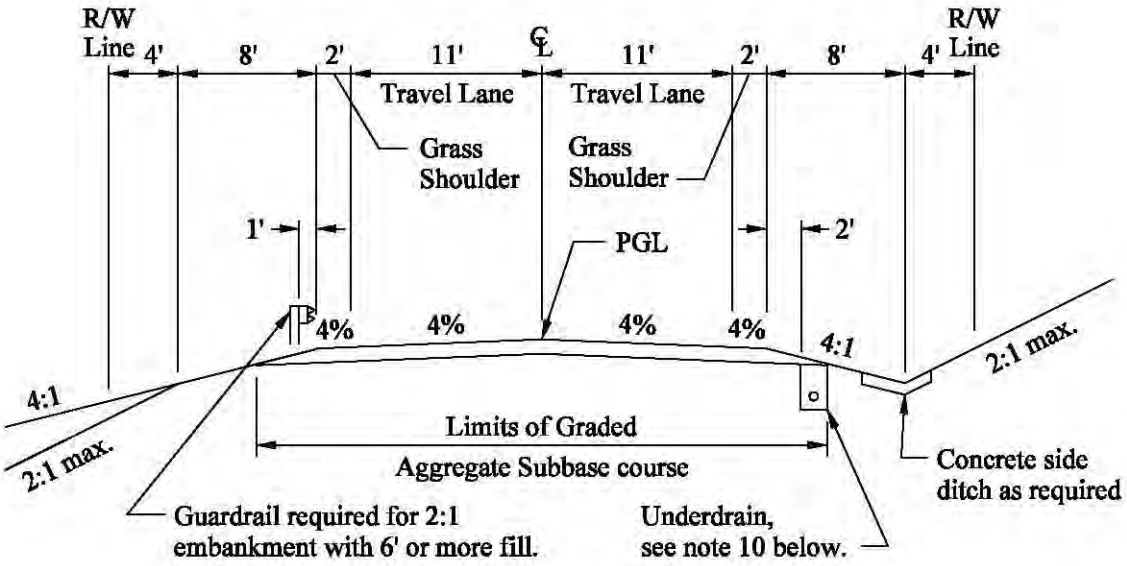
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 19mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines" for design criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Category 500 for street light standards.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Rural Secondary Residential Road	STD. 100.11



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
30 MPH	CBR ≥ 7	4"	3"	1 1/2"	1 1/2"	50'

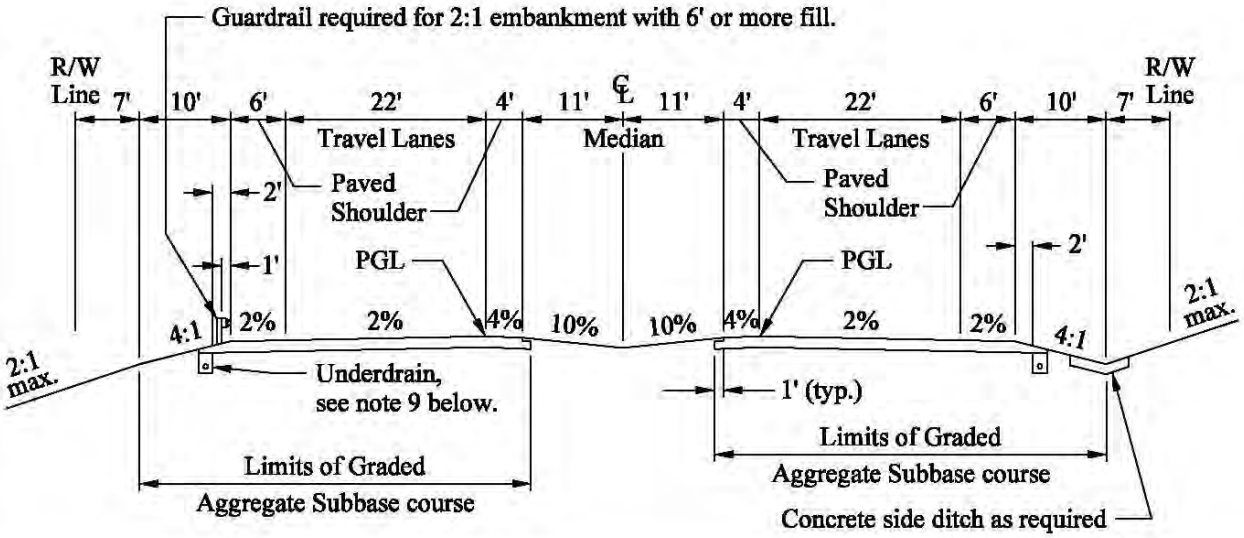
Footnotes

A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 19mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines", Rural Private Residential Road Design Criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Standard 500.10 for street light location detail.
5. Refer to Category 600 for landscaping requirements.
6. All unpaved areas within the private right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County permitting area shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. This design is for construction within a private right-of-way. Private roadways are not maintained by the County.
10. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Rural Private Secondary Residential Road	STD. 100.12



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
50 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	120'

Footnotes

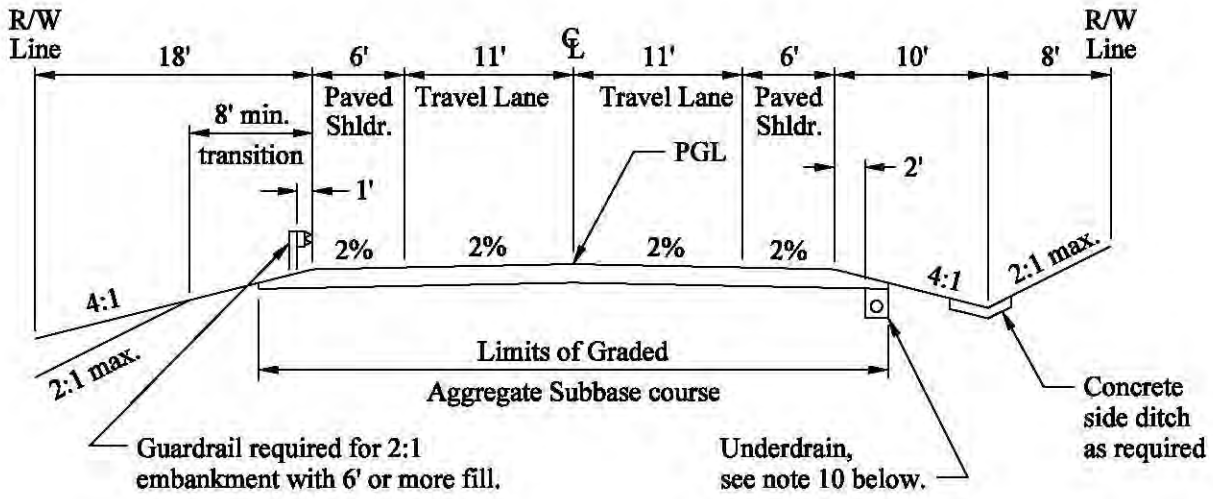
A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines," Rural 4-lane Arterial Road Design Criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Standard 500.08 for street light location detail.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

Refer to Guidelines for Design of Scenic and Historic Roadways in Prince George's County, Maryland, Appendix F.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Scenic and Historic Rural 4-Lane Arterial Road	STD. 100.13



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
40 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	70'

Footnotes

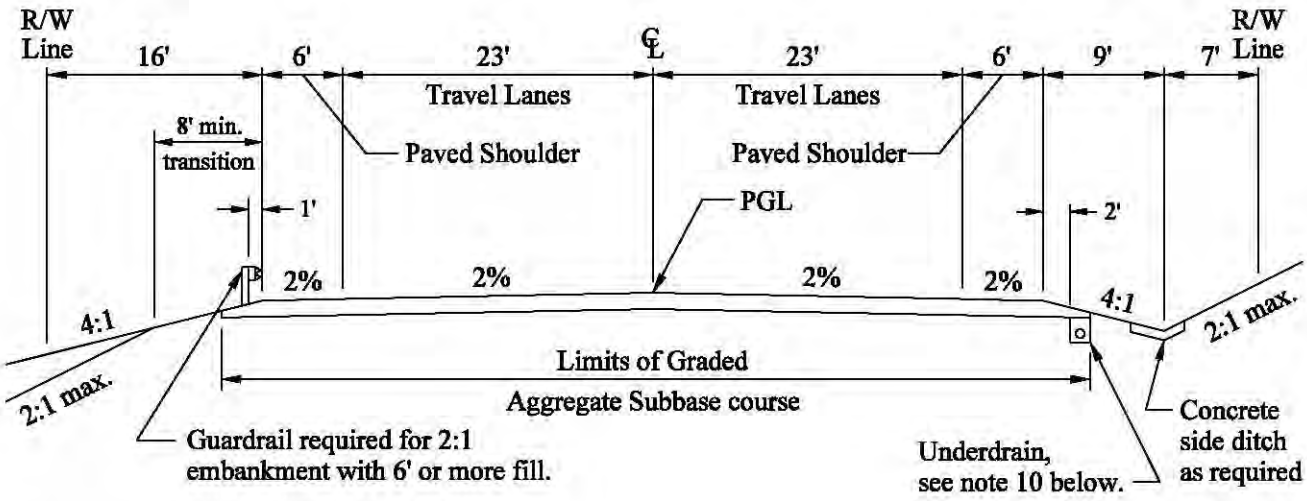
A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines," Rural 2-lane Collector Road Design Criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Standard 500.09 for street light location detail.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Travel lanes require striped centerline and edge line marking to delineate shoulder.
10. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

Refer to Guidelines for Design of Scenic and Historic Roadways in Prince George's County, Maryland, Appendix F.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Scenic and Historic Rural 2-Lane Collector Road	STD. 100.14



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
40 MPH	CBR ≥ 7	6"	4 1/2"	2"	2"	90'

Footnotes

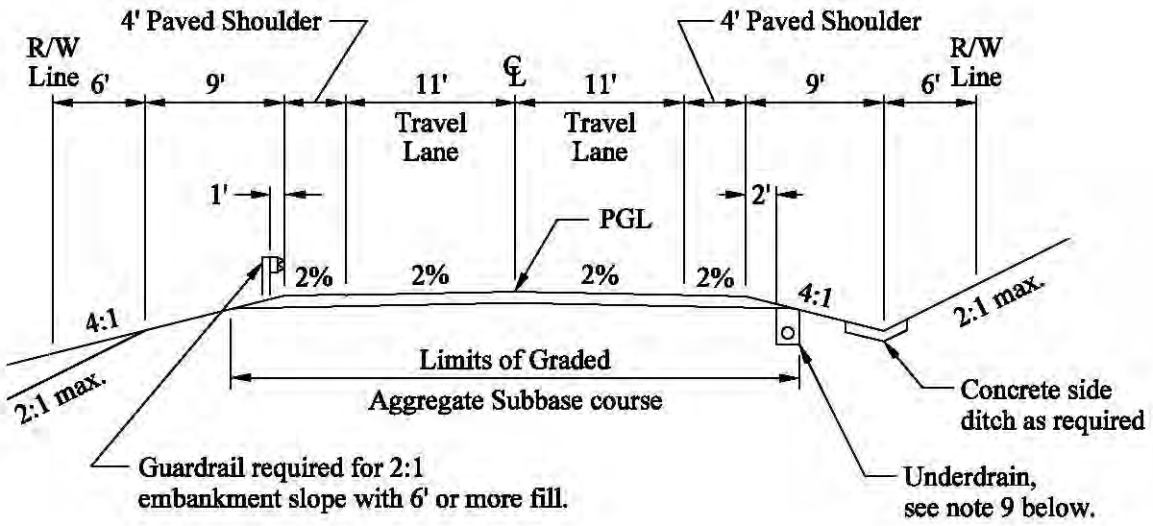
A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 25mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 12.5mm, PG 70-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 70-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Design Guidelines" for design criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Standard 500.11 for street light location detail.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Travel lanes require striped centerline and edge line marking to delineate shoulder.
10. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

Refer to Guidelines for Design of Scenic and Historic Roadways in Prince George's County, Maryland, Appendix F.

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Scenic and Historic Rural 4-Lane Collector Road	STD. 100.15



Design Speed	Subgrade (A)	Pavement Section				Right-of-Way Width
		GASB Course (B)	HMA Base Course (C)	Intermediate Surface Course (D)	Final Surface Course (E)	
30 MPH	CBR ≥ 7	4"	3"	1 1/2"	1 1/2"	60'

Footnotes

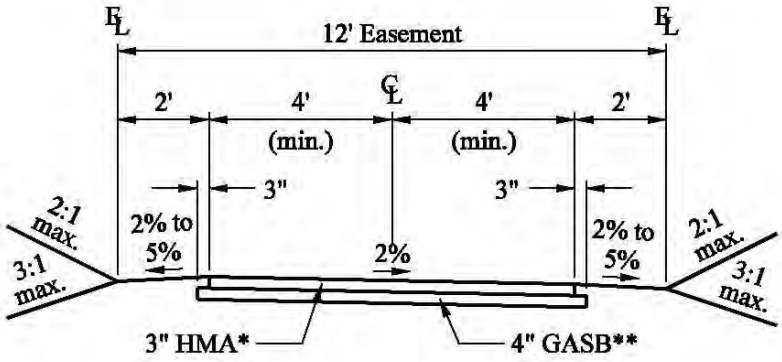
A. The top 12" of in-situ subgrade material shall have a minimum California Bearing Ratio (CBR) value of 7. See Tables I-3, I-4, I-5, I-6, I-7, I-8 and I-9 of Section I "Roadway Development Guidelines" for subgrade criteria.
B. Graded Aggregate Subbase (GASB). See Section II, "Technical Specifications."
C. Superpave Mixture Hot Mix Asphalt (HMA) base, 19mm, PG 64-22. See Section II "Technical Specifications."
D. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."
E. Superpave Mixture Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22. See Section II "Technical Specifications."

General Notes

1. See Table I-2 of Section I "Roadway Development Guidelines," Rural Secondary Residential Road Design Criteria.
2. See Section II "Technical Specifications" for materials and method of construction.
3. Refer to Standard 300.13 for underdrain details.
4. Refer to Standard 500.10 for street light location detail.
5. Refer to Category 600 for landscaping within the County right-of-way.
6. All unpaved areas within the County right-of-way shall receive a minimum of 3" of topsoil and sod.
7. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
8. Refer to Standard 300.12 for concrete side ditch and pilot channel details.
9. Underdrain is to be used at low points, areas of high water table, or in conjunction with low-impact infiltration systems.

Refer to Guidelines for Design of Scenic and Historic Roadways in Prince George's County, Maryland, Appendix F.

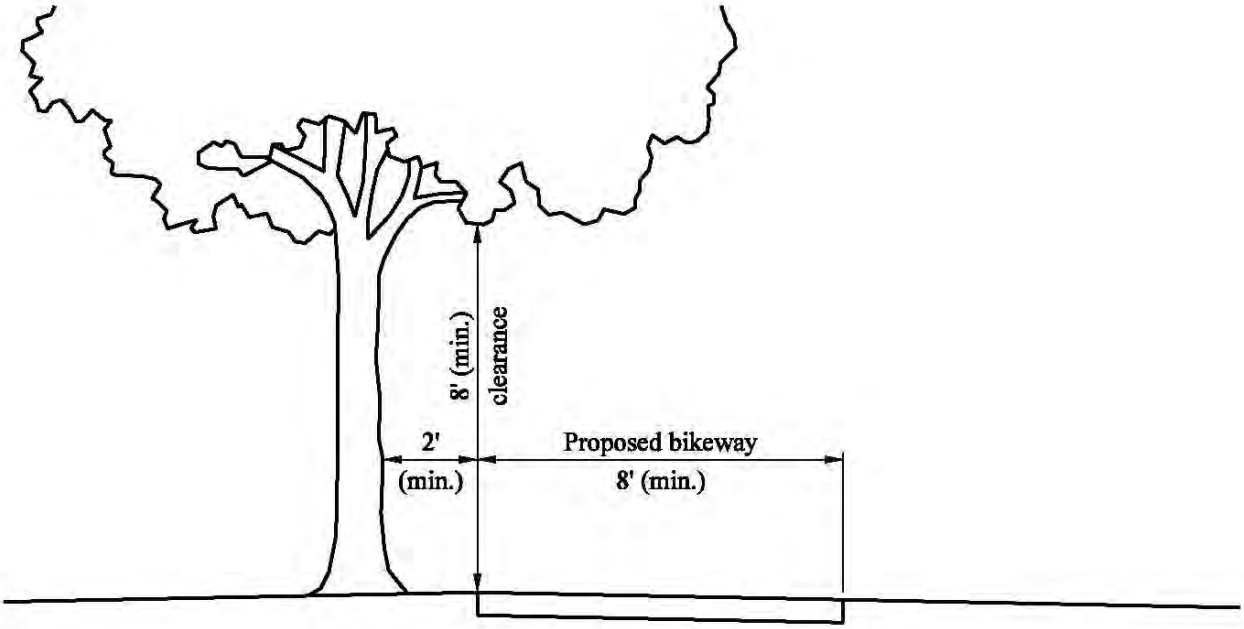
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Scenic and Historic Rural Residential Road	STD. 100.16



*3" Hot Mix Asphalt (HMA) surface (fine graduation only). For criteria see Section II, "Technical Specifications."
**4" Graded Aggregate Subbase (GASB). For criteria see Section II of these Specifications and Standards and MSHA Standard Specifications for Construction and Materials.

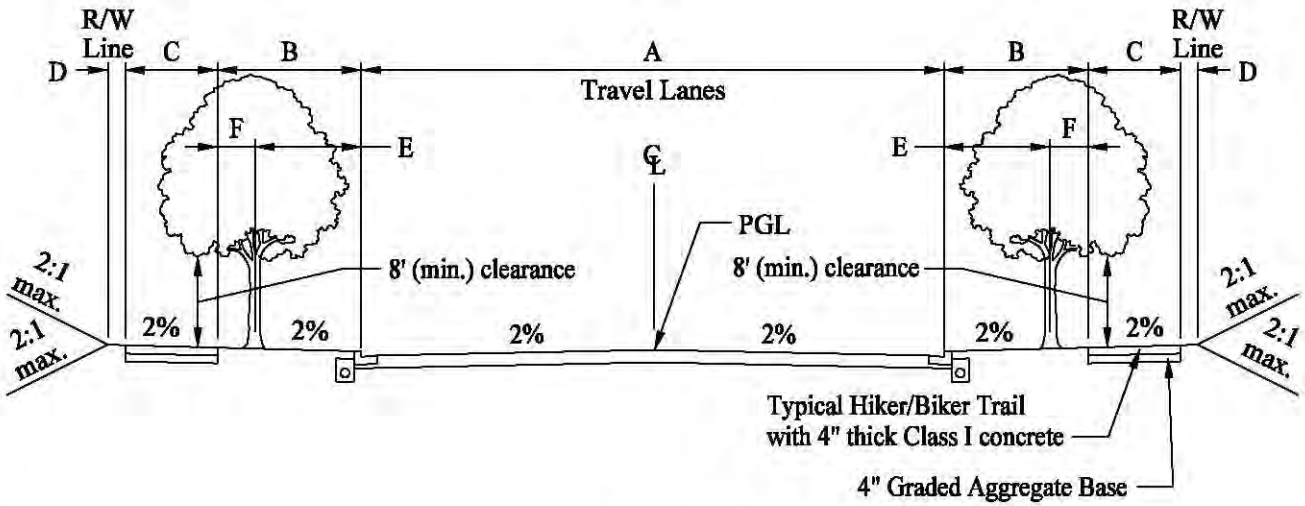
Notes:
1. Fill slope should typically range from 12:1 to 6:1, with a maximum slope of 3:1.
2. Easement for construction and maintainence is required where trail crosses property not in the County right-of-way.

Pavement Detail for Construction



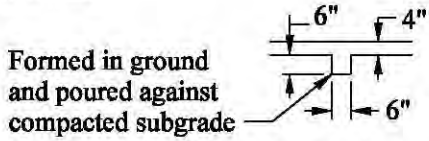
Clearance Detail

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Hiker/Biker Trail on Private Easement (Maintained by Others)	STD. 100.17



Concrete Hiker/Biker Trail (No Bike Lanes Within Urban Travel Lanes)							
Road Classification	R/W Width	A	B	C	D	E	F
Urban Arterial (w/ 6' Trail)	130'*	96'	10'	6'	1'	4' (min.)	3' (min.)
Urban Arterial (w/ 8' Trail)	130'*	96'	8'	8'	1'	4' (min.)	3' (min.)
Urban Major Collector (w/ 6' Trail)	100'	72'	7'	6'	1'	4'	3'
Urban 4-lane Collector (w/ 6' Trail)	80'	46'	10'	6'	1'	4' (min.)	3' (min.)
Urban 4-lane Collector (w/ 8' Trail)	80'	46'	8'	8'	1'	4' (min.)	3' (min.)
Urban 5-lane Collector (w/ 6' Trail)	90'*	58'	9'	6'	1'	4' (min.)	3' (min.)
Urban 5-lane Collector (w/ 8' Trail)	90'*	58'	7'	8'	1'	4'	3' (min.)

* Indicates increased R/W width.



Key Detail

A key which projects below the sidewalk/bike path, poured monolithic with slab, 6" thick by 6" deep, and full width, shall be constructed on grades of 5% or more. The key shall also be located approximately midway (50') between expansion joints. (See Note 2, below.)

General Notes

1. All new construction of concrete hiker/biker trails within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act.
2. All contraction joints in concrete hiker/biker trails shall be constructed at 8'-0" intervals and not scored in the middle, unless approved otherwise by the County Engineer. The contraction joints are to be constructed to a depth equal to 1/4 of the total depth of the hiker/biker trail. Premolded 1/2 " thick expansion joints shall also be constructed at 100' intervals, between the curb and hiker/biker trail, at sidewalk ramps, driveways, leadwalks, poles, or other permanent structures.
3. All unpaved areas within limits of the right-of-way shall receive a minimum of 3" of topsoil and sod.
4. All concrete shall be Class I (MSHA Mix No. 3), air-entrained, unless otherwise approved. Surface shall be broom finished.

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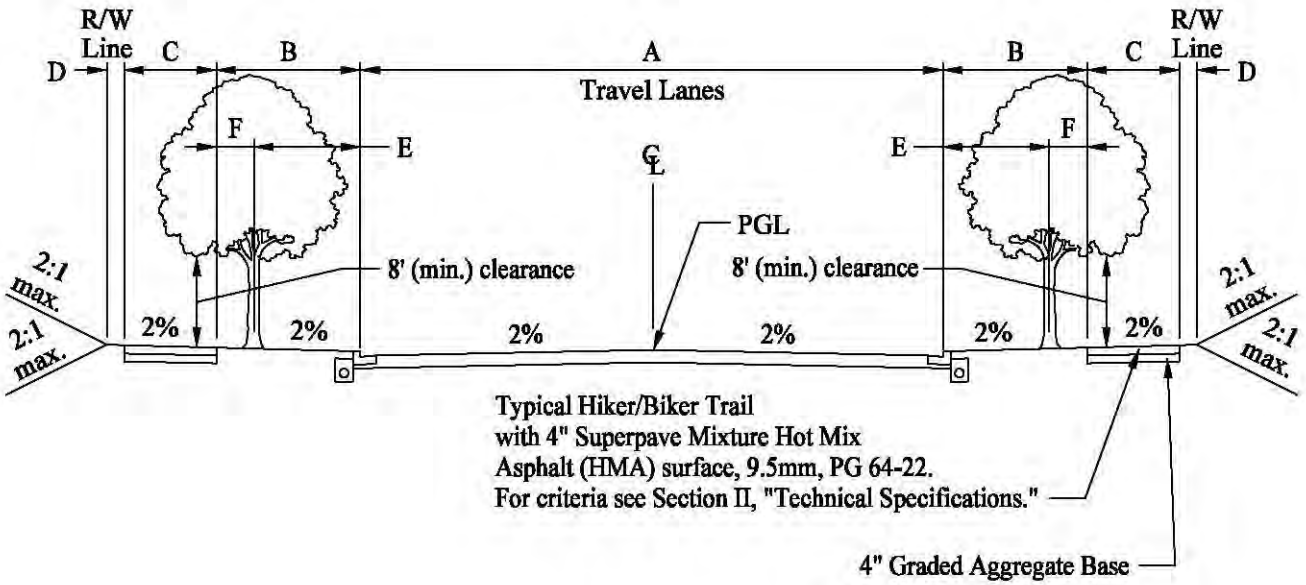
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Concrete Hiker/Biker Trail within Urban R/W (Maintained by County)

STD. 100.18



Asphalt Hiker/Biker Trail (No Bike Lanes Within Urban Travel Lanes)							
Road Classification	R/W Width	A	B	C	D	E	F
Urban Arterial (w/ 6' Trail)	130'*	96'	10'	6'	1'	4' (min.)	3' (min.)
Urban Arterial (w/ 8' Trail)	130'*	96'	8'	8'	1'	4' (min.)	3' (min.)
Urban Major Collector (w/ 6' Trail)	100'	72'	7'	6'	1'	4'	3'
Urban 4-lane Collector (w/ 6' Trail)	80'	46'	10'	6'	1'	4' (min.)	3' (min.)
Urban 4-lane Collector (w/ 8' Trail)	80'	46'	8'	8'	1'	4' (min.)	3' (min.)
Urban 5-lane Collector (w/ 6' Trail)	90'*	58'	9'	6'	1'	4' (min.)	3' (min.)
Urban 5-lane Collector (w/ 8' Trail)	90'*	58'	7'	8'	1'	4'	3' (min.)

* Indicates increased R/W width.

General Notes

1. All new construction of Hot Mix Asphalt concrete hiker/biker trails within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act.
2. All unpaved areas within limits of the right-of-way shall receive a minimum of 3" of topsoil and sod.

APPROVED:

DIRECTOR DATE

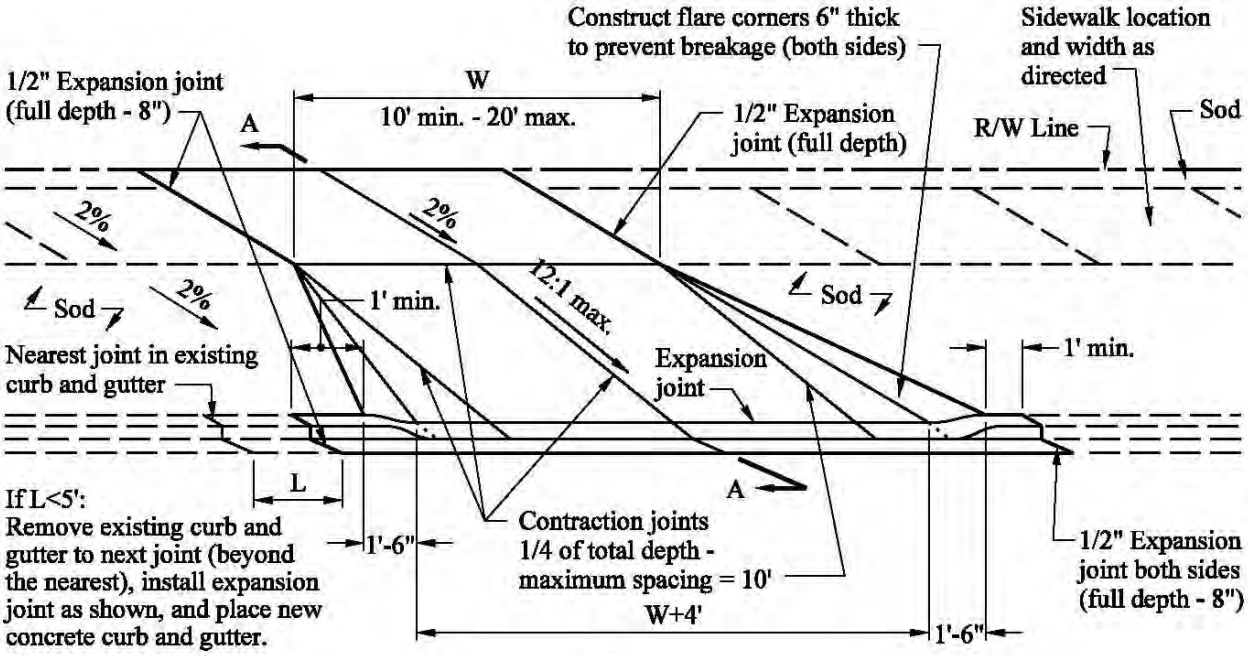
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Prince George's County, MD

Asphalt Hiker/Biker Trail within Urban R/W (Maintained by County)

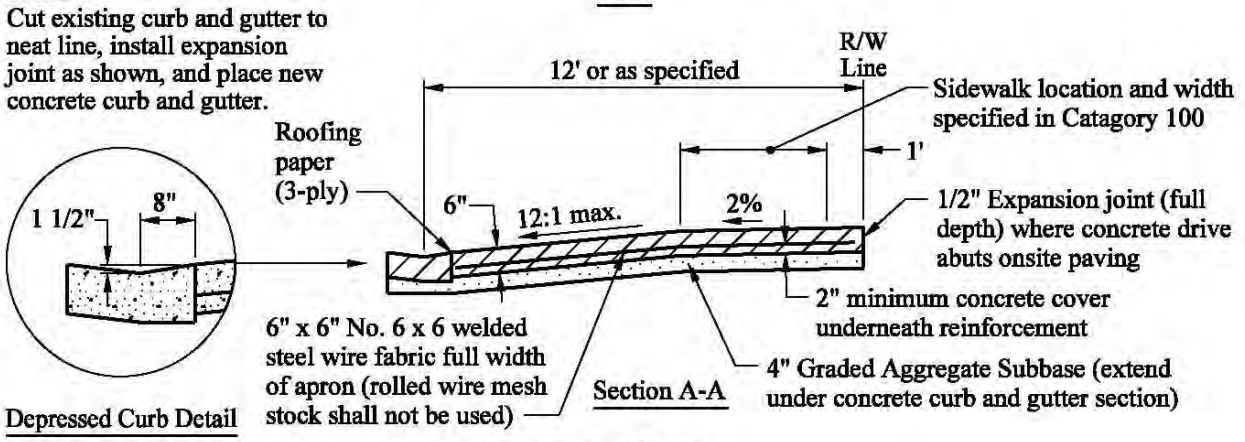
STD. 100.19

CATEGORY 200 STANDARD DRIVEWAY ENTRANCES AND CUL-DE-SACS



Plan

If L≥5':
Cut existing curb and gutter to neat line, install expansion joint as shown, and place new concrete curb and gutter.

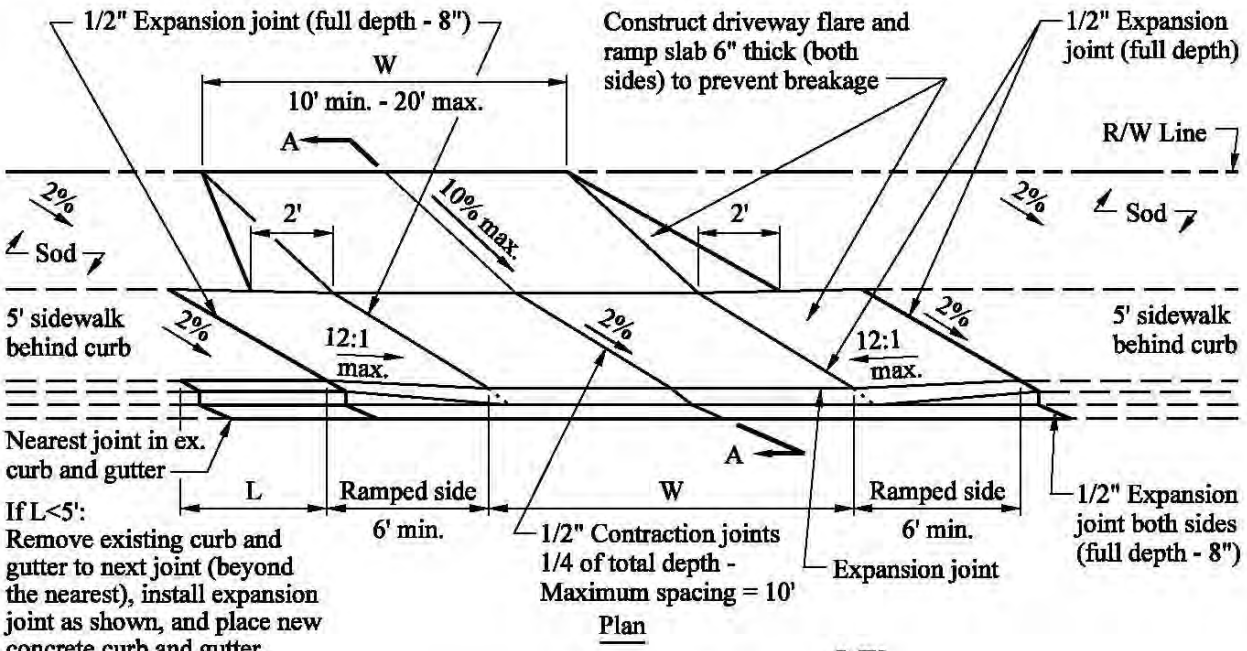


Depressed Curb Detail

General Notes

1. All concrete shall be Class 1 (MSHA Mix No. 3) air-entrained, unless otherwise approved.
2. The standard width of the driveway is equal to 10' minimum for single, 20' maximum for double.
3. For duplex homes using shared driveway apron, width (W) may be increased to 22' with prior Departmental approval.
4. Exact width of driveway is to equal parking pad at its widest point, or match existing conditions with a special design.
5. Expansion joint is required where driveway abuts the curb and gutter. Expansion joint material at this location shall be 3-ply roofing paper.
6. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
7. No residential driveway apron may be constructed within, or partially within any intersection curb fillet.
8. Design requirements noted hereon are also applicable to all onsite construction work abutting private roadways.

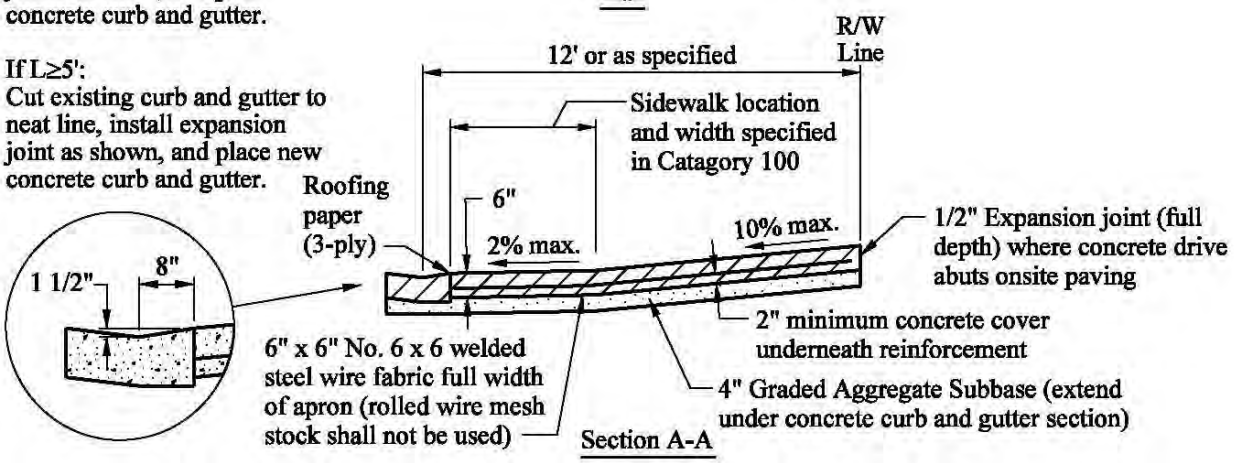
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Urban Residential Driveway Entrance	STD. 200.01



Plan

If L<5':
Remove existing curb and gutter to next joint (beyond the nearest), install expansion joint as shown, and place new concrete curb and gutter.

If L≥5':
Cut existing curb and gutter to neat line, install expansion joint as shown, and place new concrete curb and gutter.



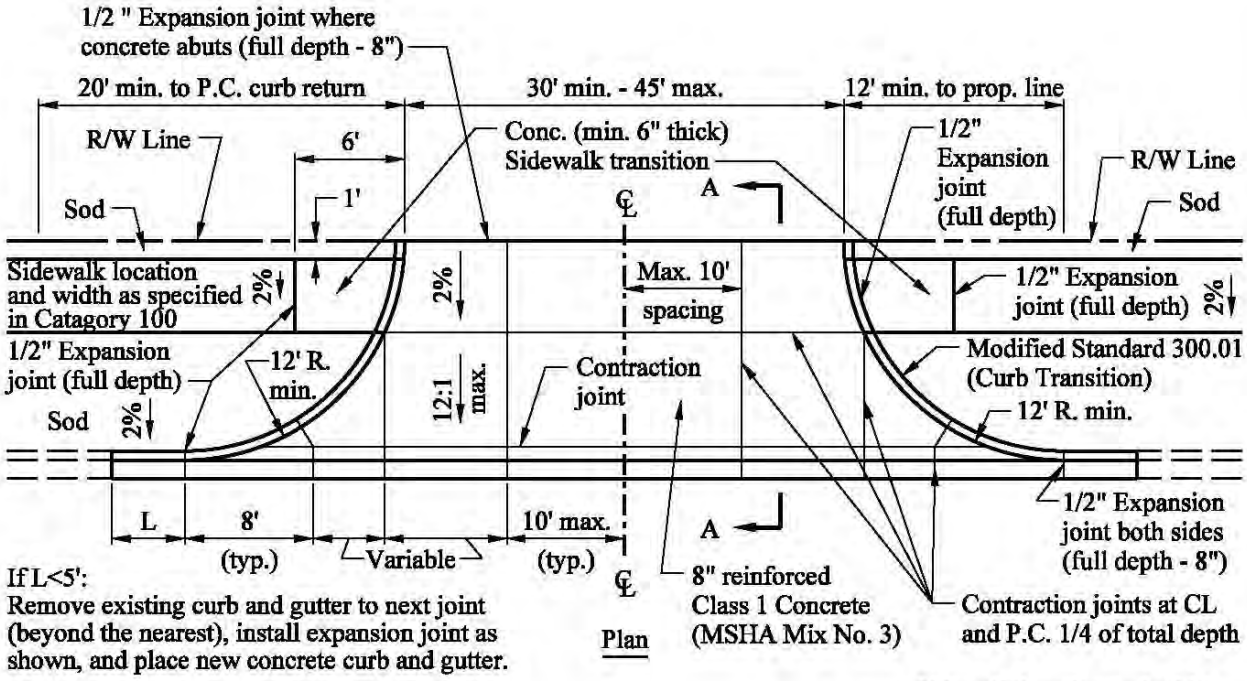
Section A-A

Depressed Curb Detail

General Notes

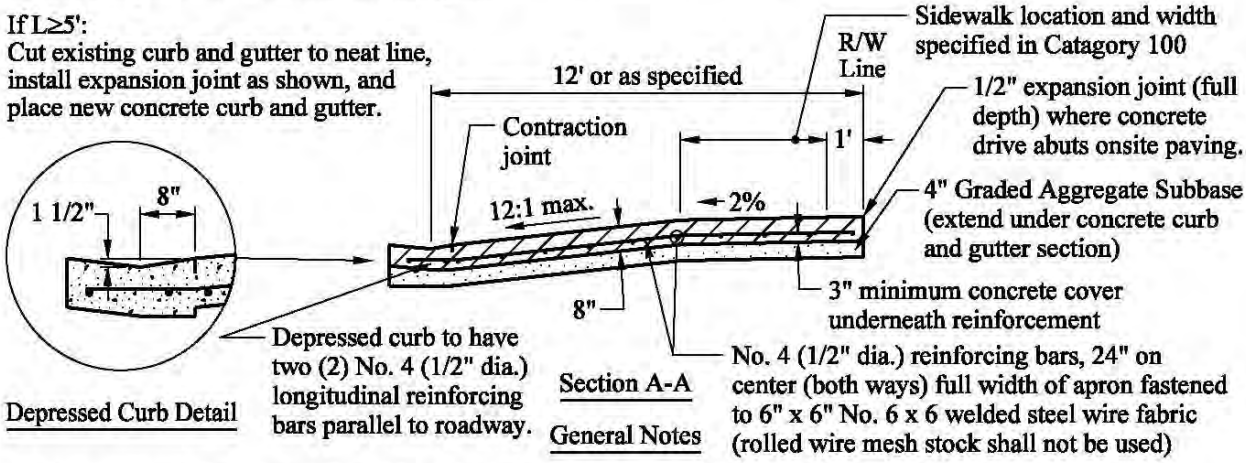
1. All concrete shall be Class 1 (MSHA Mix No. 3) air-entrained, unless otherwise approved.
2. The standard width of the driveway is equal to 10' minimum for single, 20' maximum for double.
3. For duplex homes using shared driveway apron, width (W) may be increased to 22' with prior Departmental approval.
4. Exact width of driveway is to equal parking pad at its widest point, or match existing conditions with a special design.
5. Expansion joint is required where driveway abuts the curb and gutter. Expansion joint material at this location shall be 3-ply roofing paper.
6. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
7. No residential driveway apron may be constructed within, or partially within any intersection curb fillet.
8. Design requirements noted hereon are also applicable to all onsite construction work abutting private roadways.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Urban Residential Driveway Entrance (Sidewalk at Curb)	STD. 200.02



If L<5':
Remove existing curb and gutter to next joint (beyond the nearest), install expansion joint as shown, and place new concrete curb and gutter.

If L≥5':
Cut existing curb and gutter to neat line, install expansion joint as shown, and place new concrete curb and gutter.



General Notes

1. New entrances shall not be closer than 12' to the nearest abutting property line.
2. All bikeway/sidewalk ramps shall be constructed in compliance with the Federal accessibility guidelines of the Americans with Disabilities Act.
3. Entrance may be constructed perpendicular to, or at an angle (60° min.), measured from the centerline of roadway paving to property line.
4. If commercial driveway depth exceeds 14', contraction joints are not to extend beyond 20'.
5. No commercial driveway apron may be constructed within, or partially within any intersection curb fillet.
6. Expansion joints will be required where driveway abuts the curb and gutter. All contraction joints are to be constructed to a depth equal to 1/4 of the total depth of concrete entrance.
7. Driveway paving and curb poured monolithically.

APPROVED:

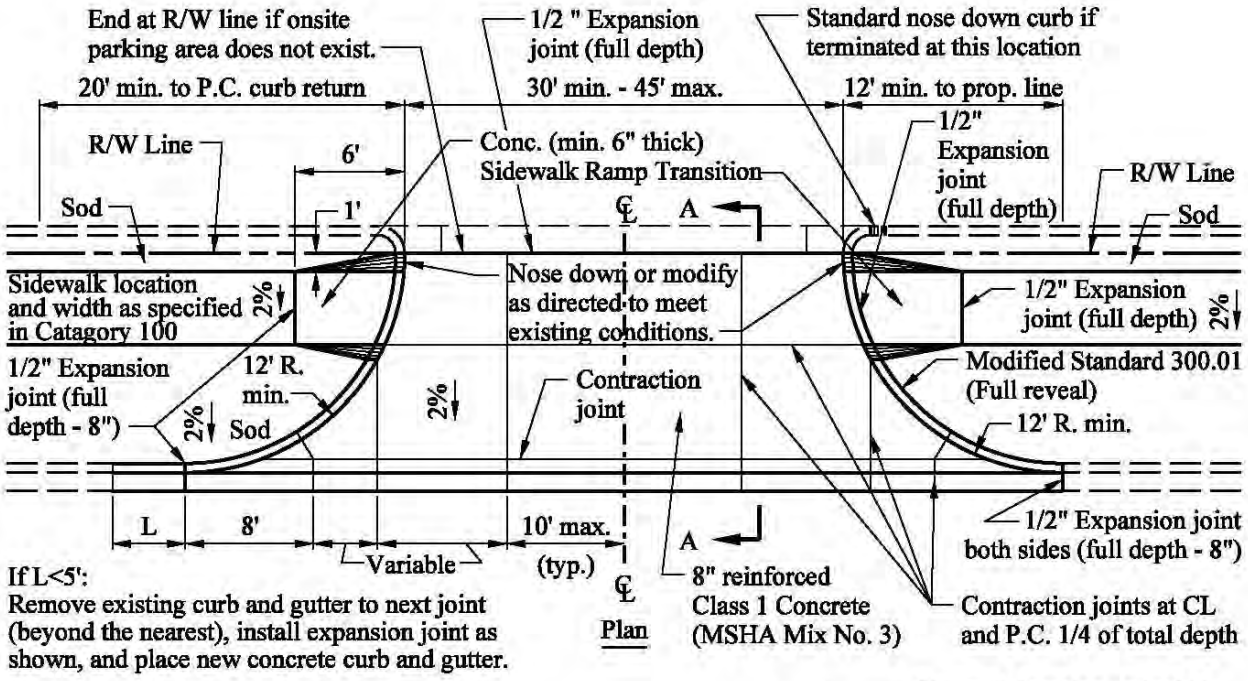
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

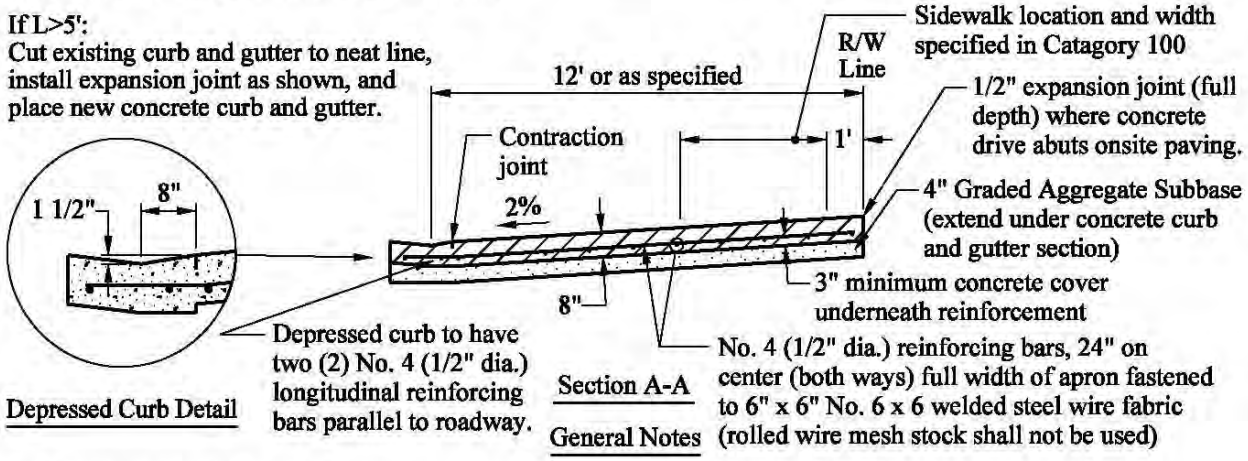
Commercial Driveway Entrance (Ramped to Sidewalk Elevations)

STD. 200.03



If L<5':
Remove existing curb and gutter to next joint (beyond the nearest), install expansion joint as shown, and place new concrete curb and gutter.

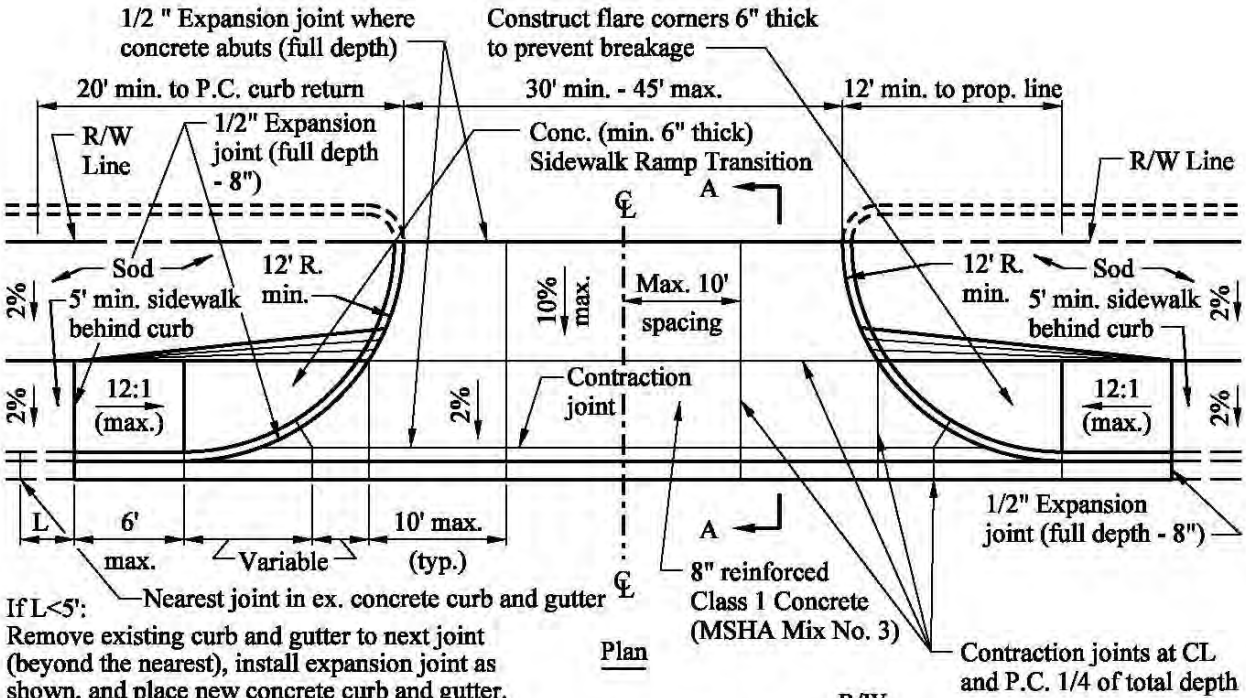
If L>5':
Cut existing curb and gutter to neat line, install expansion joint as shown, and place new concrete curb and gutter.



General Notes

1. New entrances shall not be closer than 12' to the nearest abutting property line.
2. All bikeway/sidewalk ramps shall be constructed in compliance with the Federal accessibility guidelines of the Americans with Disabilities Act.
3. Entrance may be constructed perpendicular to, or at an angle (60° min.), measured from the centerline of roadway paving to property line.
4. If commercial driveway depth exceeds 14', contraction joints are not to extend beyond 20'.
5. No commercial driveway apron may be constructed within, or partially within any intersection curb fillet.
6. Expansion joints will be required where driveway abuts the curb and gutter. All contraction joints are to be constructed to a depth equal to 1/4 of the total depth of concrete entrance.
7. Driveway paving and curb poured monolithically.

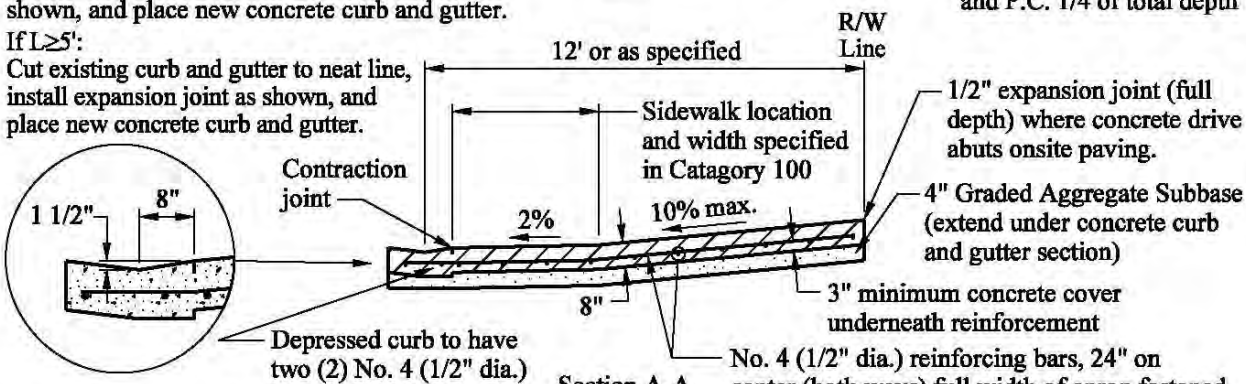
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Commercial Driveway Entrance (Full Reveal)	STD. 200.04



If L<5':
Remove existing curb and gutter to next joint (beyond the nearest), install expansion joint as shown, and place new concrete curb and gutter.

Plan

If L≥5':
Cut existing curb and gutter to neat line, install expansion joint as shown, and place new concrete curb and gutter.



Depressed Curb Detail

Section A-A

General Notes

1. New entrances shall not be closer than 12' to the nearest abutting property line.
2. All bikeway/sidewalk ramps shall be constructed in compliance with the Federal accessibility guidelines of the Americans with Disabilities Act.
3. Entrance may be constructed perpendicular to, or at an angle (60° min.), measured from the centerline of roadway paving to property line.
4. If commercial driveway depth exceeds 14', contraction joints are not to extend beyond 20'.
5. No commercial driveway apron may be constructed within, or partially within any intersection curb fillet.
6. Expansion joints will be required where driveway abuts the curb and gutter. All contraction joints are to be constructed to a depth equal to 1/4 of the total depth of concrete entrance.
7. Driveway paving and curb poured monolithically.

APPROVED:

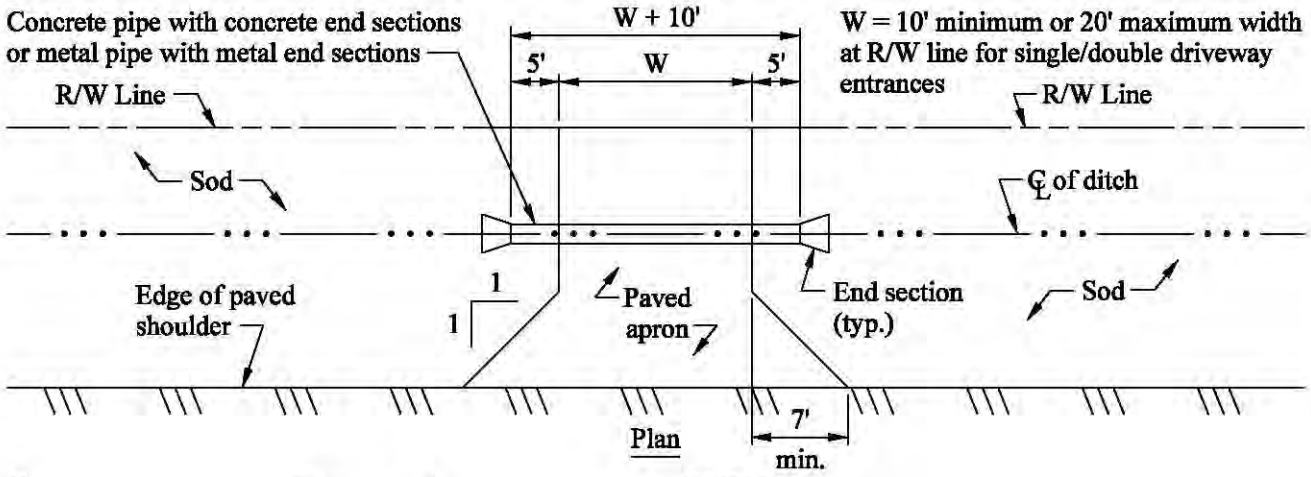
DIRECTOR DATE

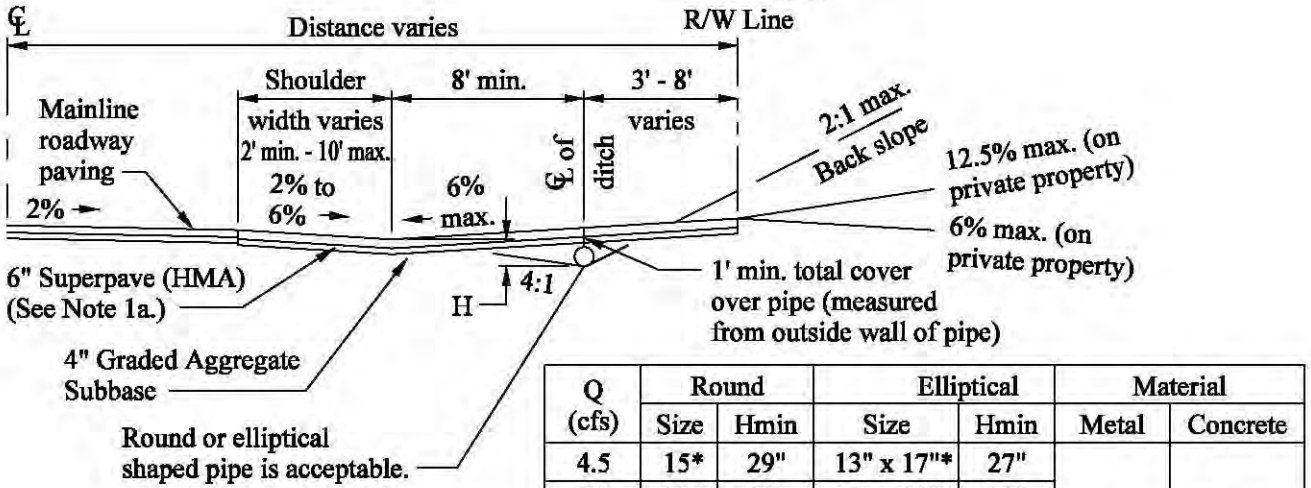
REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Commercial Driveway Entrance (Sidewalk at Curb)

STD. 200.05





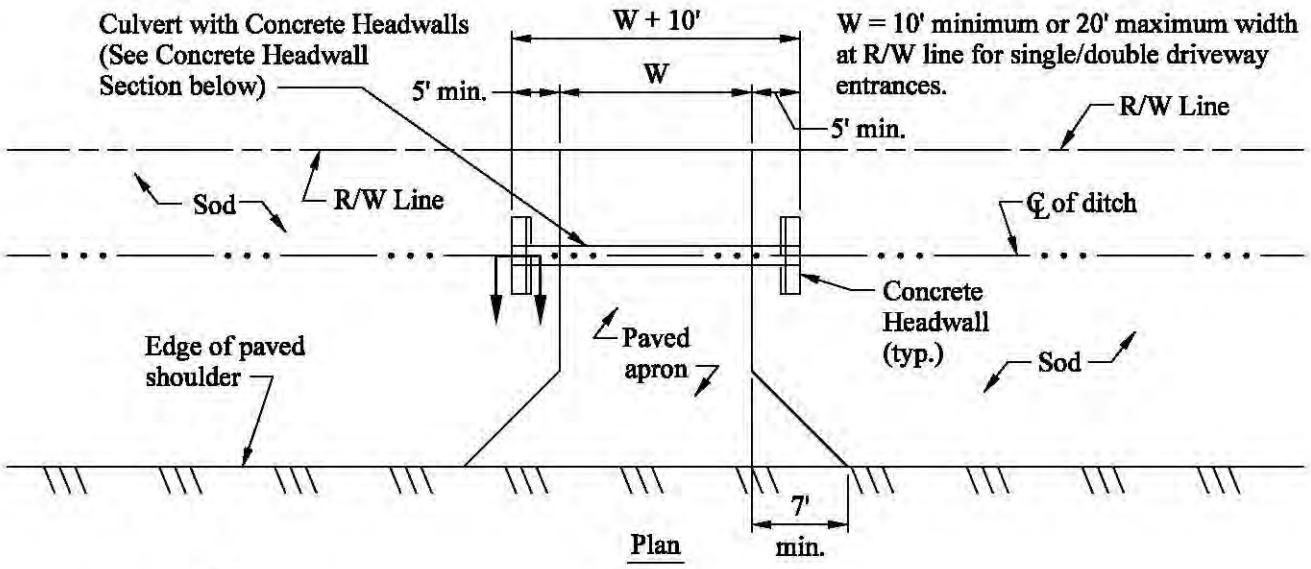
Q (cfs)	Round		Elliptical		Material	
	Size	Hmin	Size	Hmin	Metal	Concrete
4.5	15*	29"	13" x 17"*	27"	16 gage	Class III
7.0	18"	32"	15" x 21"	29"		
10.0	21"	35"	18" x 24"	32"		
13.0	-	-	21" x 27"	35"		

* Minimum pipe size in County right-of-way.

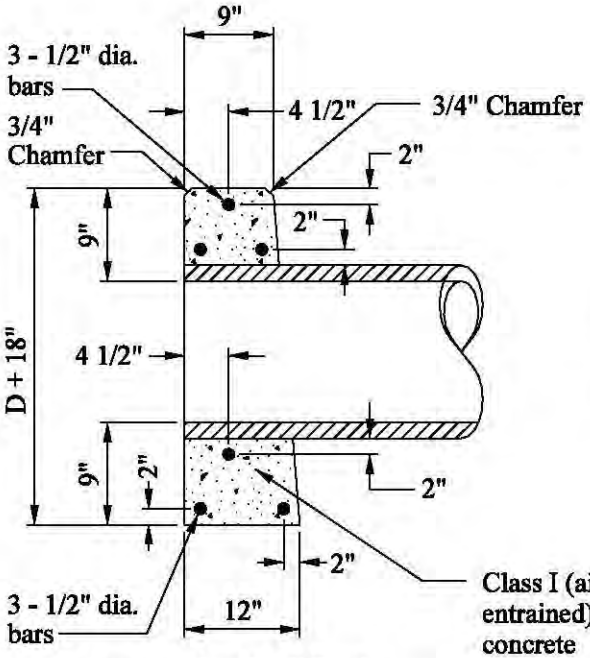
General Notes

1. Driveway paving section (See Superpave Specifications in Section II of "Technical Specifications; Section 504."):
   a) 6" Superpave Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22 (two - 3" lifts)
   Graded Aggregate Subbase (GASB) required where poor soil conditions exist; or
   b) If constructed simultaneous with road construction use applicable road paving section.
2. For standard driveway, W=10' minimum for single, 20' maximum for double, or match existing driveway width. Exact width of driveway apron to equal parking pad at its widest point, or refer to Std. 200.09 for special design.
3. Achieving onsite driveway grades (beyond the County right-of-way) in excess of 6% downhill grade or 12.5% maximum uphill grade, as shown, requires a special engineered design.
4. Under most circumstances, the departure grade beyond the right-of-way line is not to exceed 6% for a distance of 10' from centerline of ditch flow line.
5. Use of Class 1 (MSHA Mix No. 3) air-entrained concrete for a rural residential driveway requires special Departmental approval.
6. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.

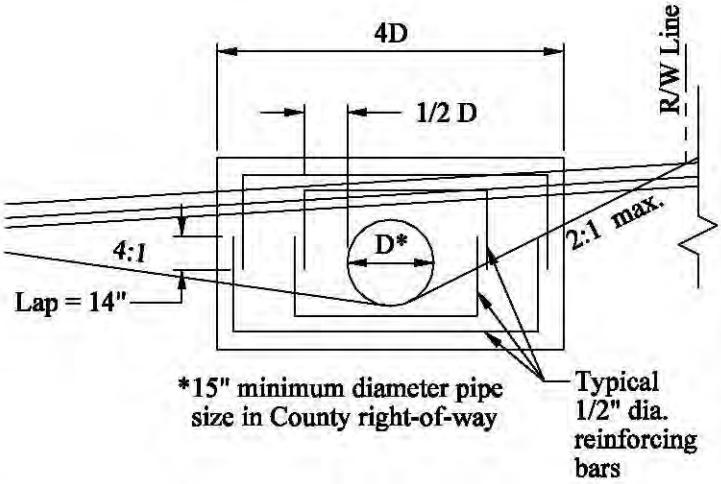
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Rural Residential Driveway Entrance with Culvert	STD. 200.06



Plan



Concrete Headwall Section

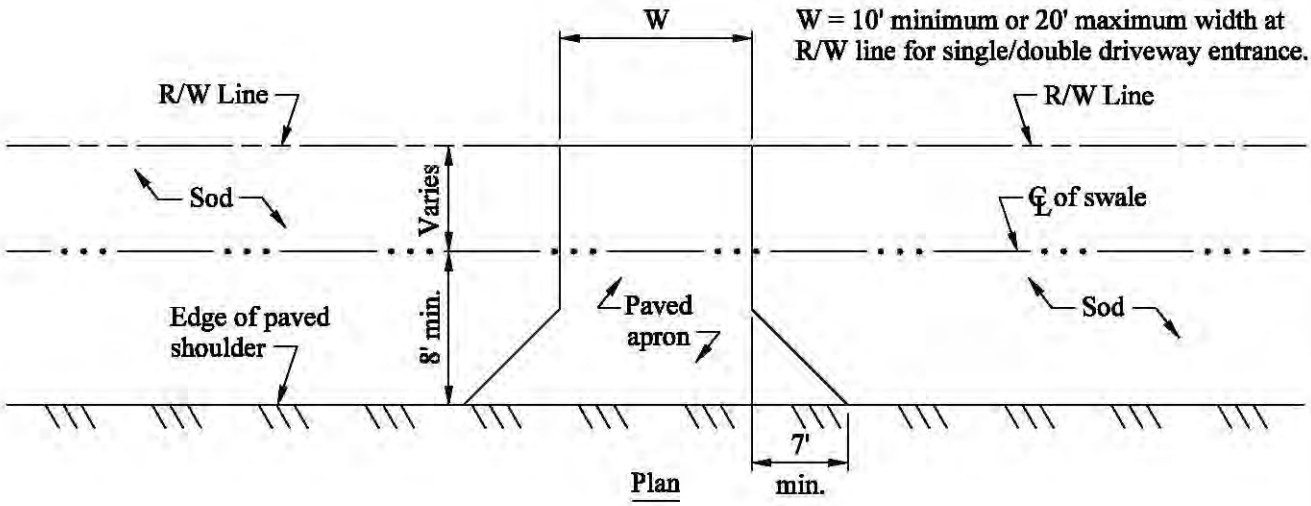


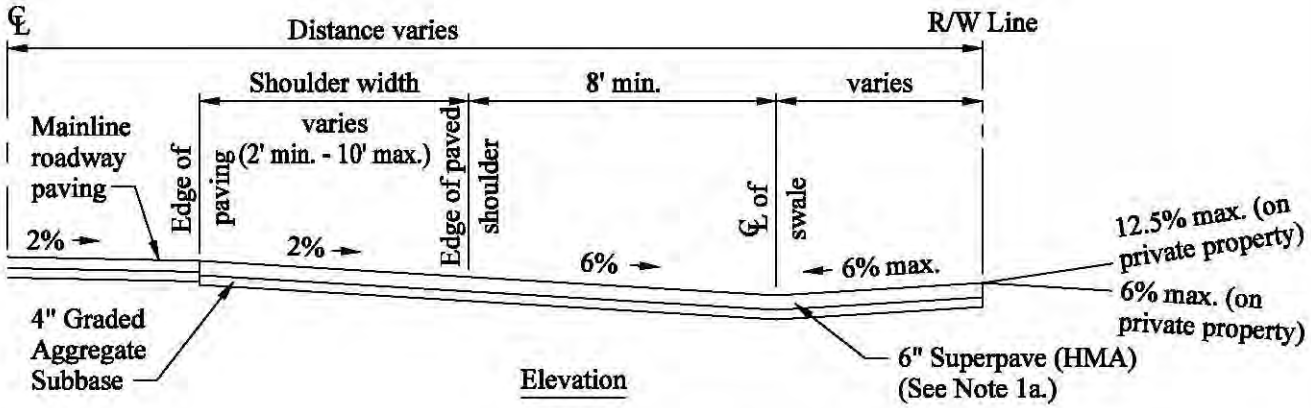
Elevation

General Notes

1. Culvert headwall to be used only where shown on plans and approved by the Department.
2. All headwall construction shall be Class 1 (MSHA Mix No. 3) air-entrained concrete. Six 1/2" deformed steel reinforcing bars are required in each headwall as shown.
3. For driveway paving section and width requirements refer to Standard 200.06.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Rural Residential Driveway Entrance with Culvert Headwall	STD. 200.07

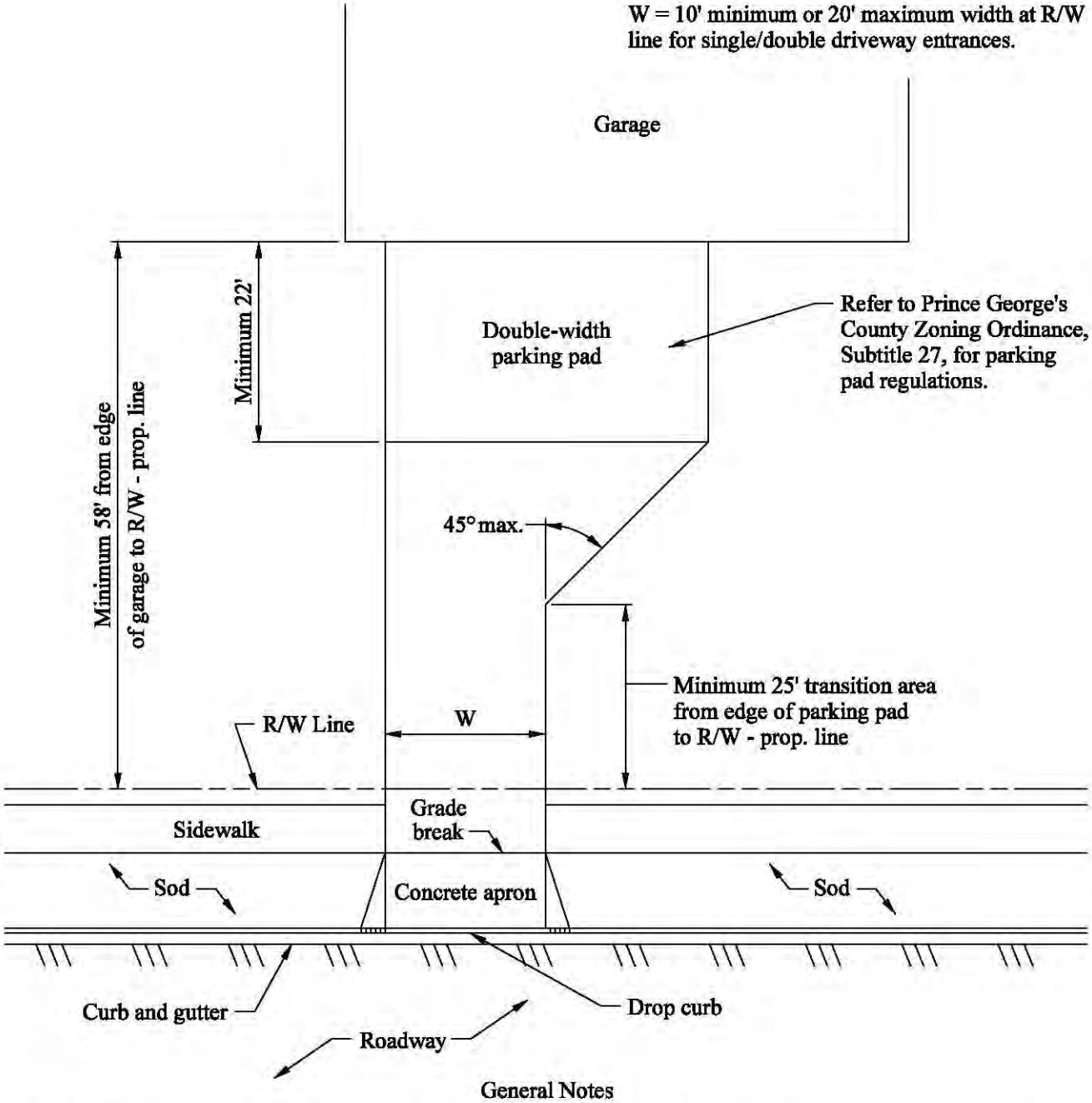




General Notes

1. Driveway paving section (See Superpave Specifications in Section II of "Technical Specifications; Section 504."):
   a) 6" Superpave Hot Mix Asphalt (HMA) surface, 9.5mm, PG 64-22 (two - 3" lifts)
   Graded Aggregate Subbase (GASB) required where poor soil conditions exist; or
   b) If constructed simultaneous with road construction use applicable road paving section.
2. For standard driveway, W=10' minimum for single, 20' maximum for double, or match existing driveway width. Exact width of driveway apron to equal parking pad at its widest point, or refer to Std. 200.08 for special design.
3. Achieving onsite driveway grades (beyond the County right-of-way) in excess of 6% downhill grade or 12.5% maximum uphill grade, as shown, requires a special engineered design.
4. Under most circumstances, the departure grade beyond the right-of-way line is not to exceed 6% for a distance of 10' from centerline of ditch flow line.
5. Use of Class 1 (MSHA Mix No. 3) air-entrained concrete for a rural residential driveway requires special Departmental approval.
6. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.

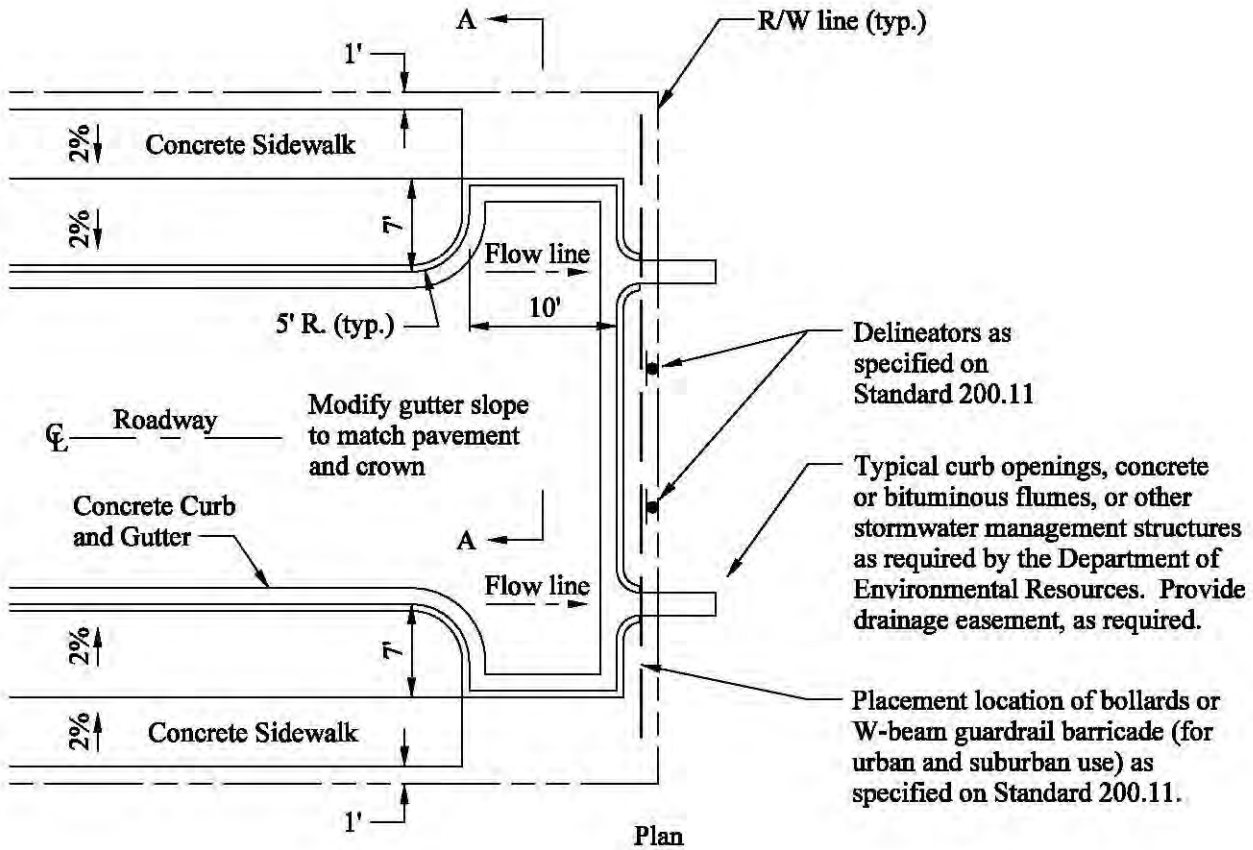
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Rural Residential Driveway Entrance with Swale	STD. 200.08



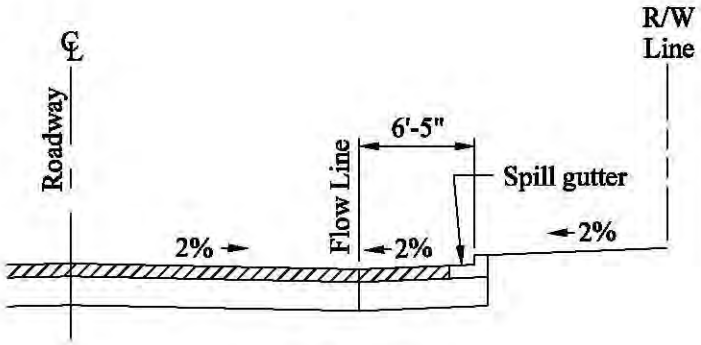
General Notes

1. For standard driveway, W=10' minimum for single, W=20' maximum for double. Construct concrete apron to match driveway width (W).
2. For duplex homes using shared driveway apron, width (W) may be increased to 22' with prior Departmental approval.
3. All new construction within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Special Urban Residential Driveway Single Apron with Double Parking Pad	STD. 200.09



Plan

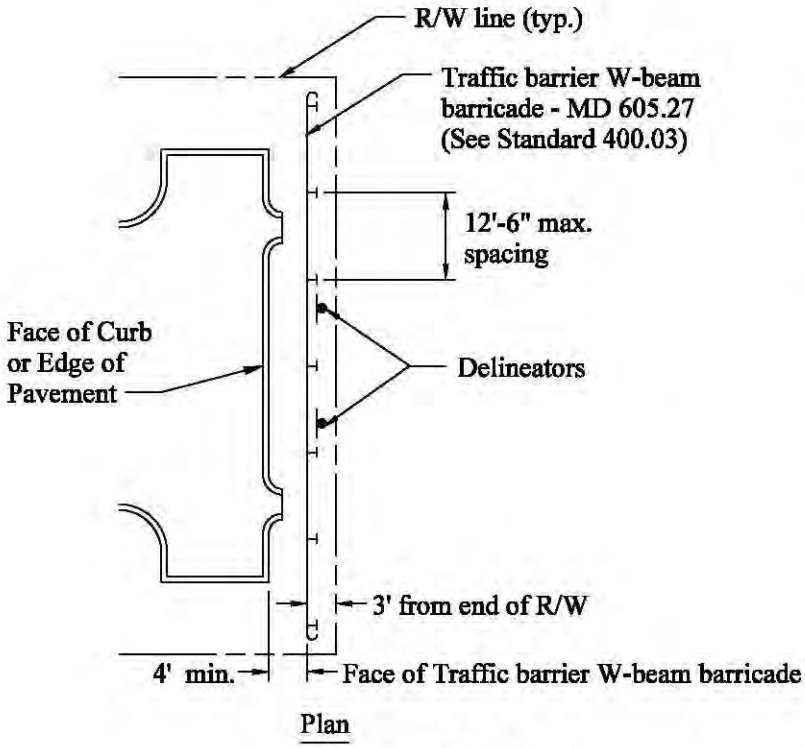


Section A-A

General Notes

1. This standard is to be used in staged development, where street will ultimately be extended.
2. For placement location of bollards or W-beam guardrail barricades, see Standard 200.11.
3. Spill gutter shall be used in terminus as shown. See Standard 300.01 for curb and gutter detail.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Roadway Terminus	STD. 200.10



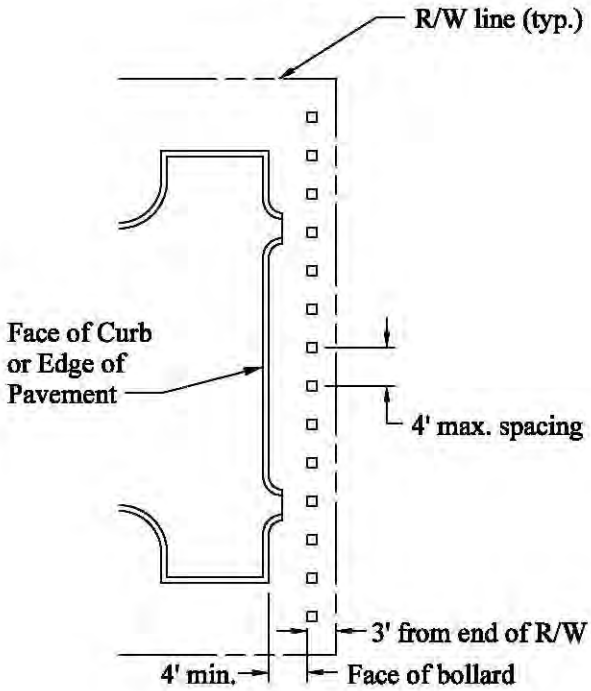
Plan

W-beam Barricade

Install traffic barrier W-beam barricade and standard U-shape 7' galvanized steel traffic posts to height of 4 feet,with reflective red 12"x12" diamond shape delineators, as specified below. "No Dumping" and/or "No Parking" signs are to be installed as required by the Department.

Required Delineators	
Travel Lanes Width (total)	No. req'd.*
26'	2
36'	3
46'	4
52'	5
58'	6

* placed symmetrically about centerline of roadway.



Plan

Bollards (for urban and suburban use)

Install bollards in accordance with Standards 300.29 and 300.30. "No Dumping" and/or "No Parking" signs are to be installed as required by the Department.

APPROVED:

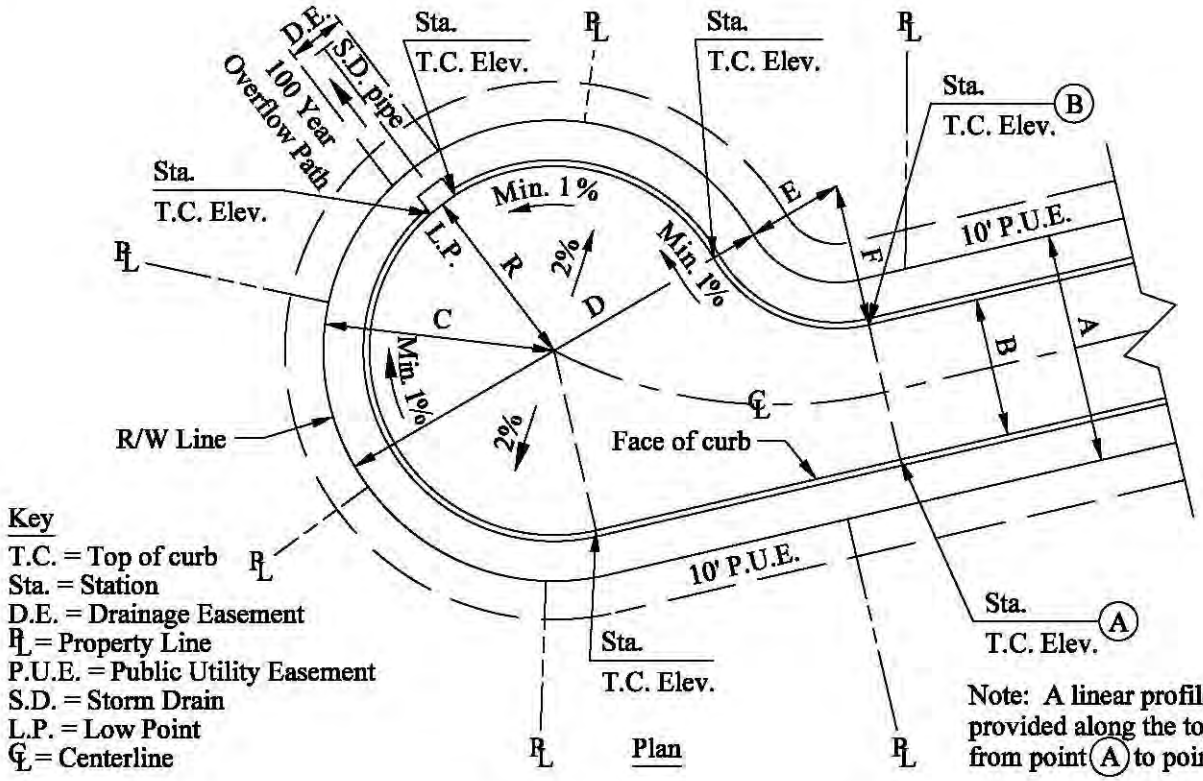
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Barricades for Roadway Terminus

STD. 200.11



Key
T.C. = Top of curb
Sta. = Station
D.E. = Drainage Easement
℄ = Property Line
P.U.E. = Public Utility Easement
S.D. = Storm Drain
L.P. = Low Point
℄ = Centerline

Note: A linear profile shall be provided along the top of curb from point (A) to point (B)

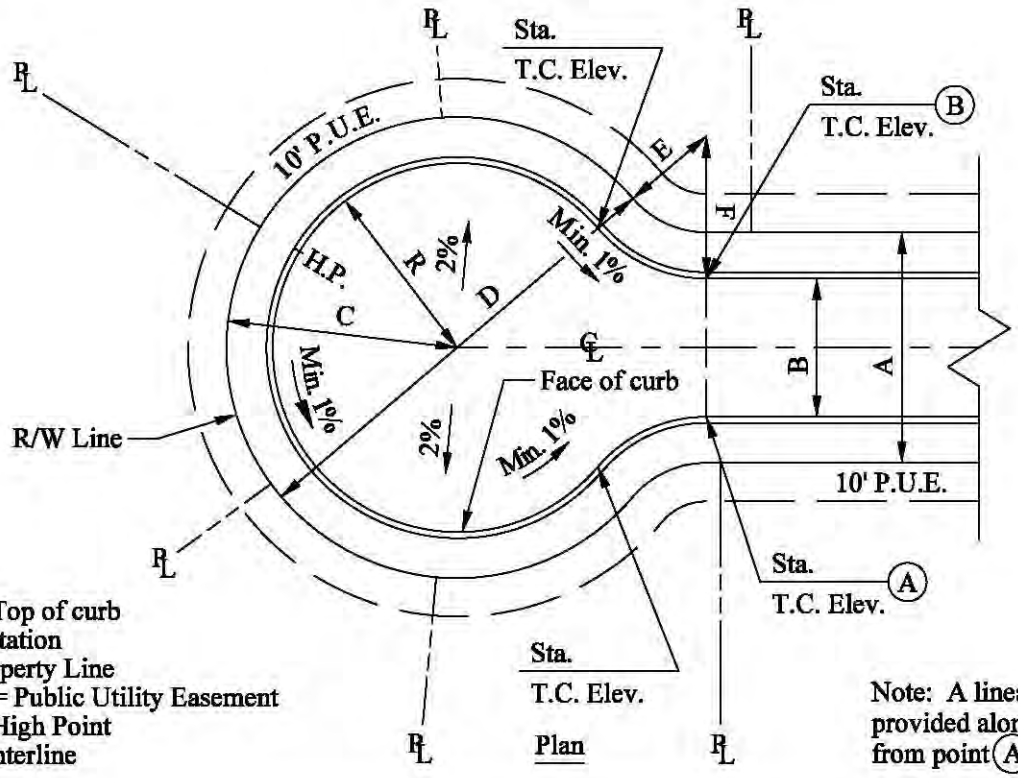
Road Classification	Cul-de-sac Dimensions						
	A	B	C	D	E**	F**	R
Urban Commercial and Industrial Road	70'	46'	70'	140'	25'	*37'	58'
Urban Primary Residential Road	60'	36'	60'	120'	25'	*37'	48'
Urban Secondary Residential Road	50'	26'	50'	100'	25'	*37'	38'

*Minimum distance unless directed otherwise by the Department.
**Alternate design using increased fillet radii (see dimensions 'E' and 'F') may be used with prior Departmental approval, subject to AASHTO and County subdivision regulations.

General Notes

1. Urban cul-de-sac designs shall accommodate all SU-30 vehicle turning maneuvers, except for secondary residential road.
2. Provide 1% minimum flow line gutter grades and 2% minimum paving cross slope grades throughout the cul-de-sac. Crowning the cul-de-sac in the bulbous area is not required if positive drainage can be maintained across this area and a minimum pavement slope of 2% is provided.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. Top-of-curb elevations are to be shown on the construction plans at points of curvature (PC's), points of tangency (PT's) and high/low points.
5. All concrete sidewalks and sidewalk ramps shall be constructed in accordance with Standards 300.05, 300.06, 300.07 and 300.08.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Urban Cul-de-sac (Offset Turnaround)	STD. 200.12



Key

T.C. = Top of curb
Sta. = Station
℄ = Property Line
P.U.E. = Public Utility Easement
H.P. = High Point
℄ = Centerline

Note: A linear profile shall be provided along the top of curb from point (A) to point (B)

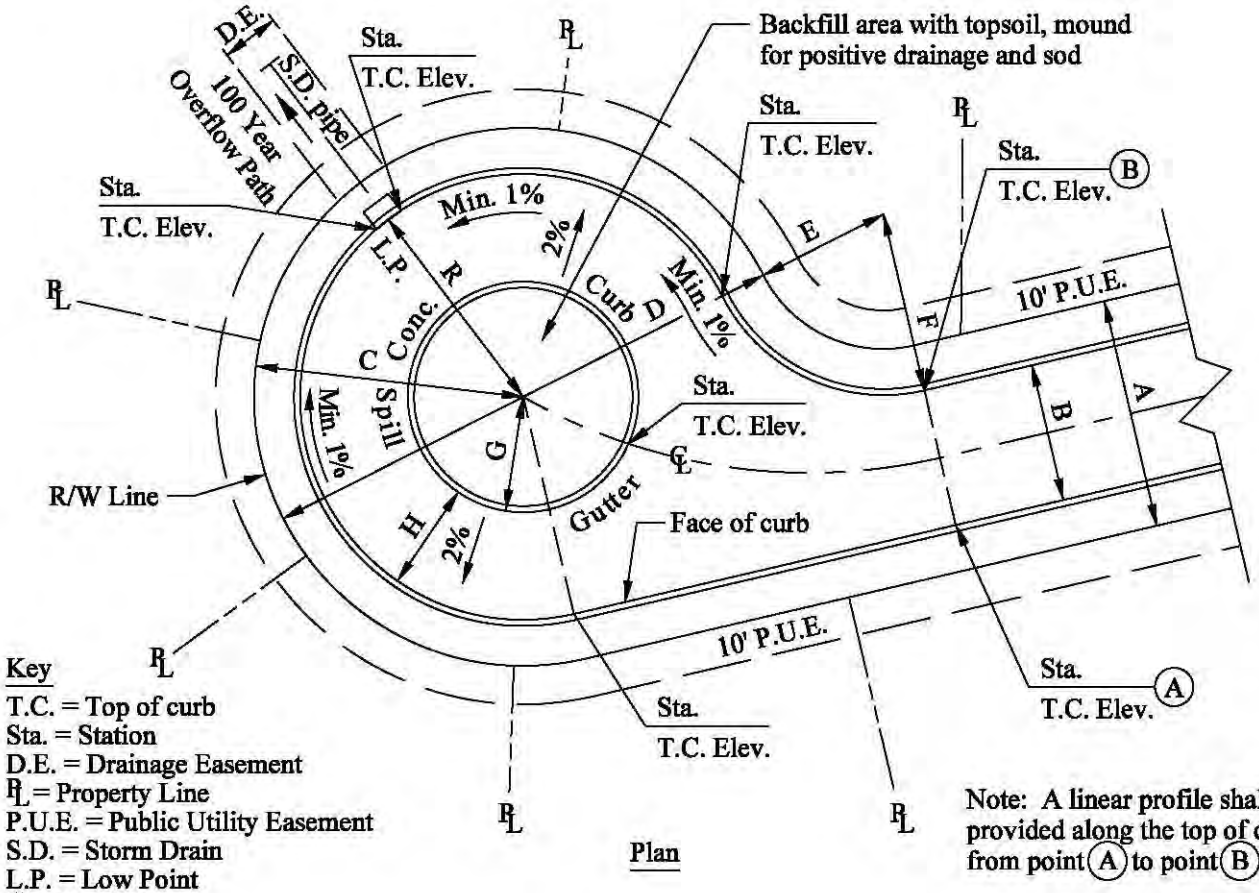
Road Classification	Cul-de-sac Dimensions						
	A	B	C	D	E**	F**	R
Urban Commercial and Industrial Road	70'	46'	70'	140'	25'	*37'	58'
Urban Primary Residential Road	60'	36'	60'	120'	25'	*37'	48'
Urban Secondary Residential Road	50'	26'	50'	100'	25'	*37'	38'

*Minimum distance unless directed otherwise by the Department.
**Alternate design using increased fillet radii (see dimensions 'E' and 'F') may be used with prior Departmental approval, subject to AASHTO and County subdivision regulations.

General Notes

1. Urban cul-de-sac designs shall accommodate all SU-30 vehicle turning maneuvers, except for secondary residential road.
2. Provide 1% minimum flow line gutter grades and 2% minimum paving cross slope grades throughout the cul-de-sac. Crowning the cul-de-sac in the bulbous area is not required if positive drainage can be maintained across this area and a minimum pavement slope of 2% is provided.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. Top-of-curb elevations are to be shown on the construction plans at points of curvature (PC's), points of tangency (PT's) and high/low points.
5. All concrete sidewalks and sidewalk ramps shall be constructed in accordance with Standards 300.05, 300.06, 300.07 and 300.08.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Urban Cul-de-sac (Symmetrical Turnaround)	STD. 200.13



Plan

Key
T.C. = Top of curb
Sta. = Station
D.E. = Drainage Easement
℄ = Property Line
P.U.E. = Public Utility Easement
S.D. = Storm Drain
L.P. = Low Point
℄ = Centerline

Note: A linear profile shall be provided along the top of curb from point (A) to point (B)

Road Classification	Cul-de-sac Dimensions								
	A	B	C	D	E	F	G	H	R
Urban Commercial and Industrial Road	70'	46'	80'	160'	40'	52'	32'	36'	68'
Urban Primary Residential Road	60'	36'	70'	140'	35'	47'	30'	28'	58'
Urban Secondary Residential Road	50'	26'	70'	140'	35'	47'	30'	28'	58'
Urban Collector Road	80'	46'	80'	160'	40'	52'	32'	36'	68'

General Notes

1. Urban cul-de-sac designs shall accommodate all SU-30 vehicle turning maneuvers.
2. Provide 1% minimum flow line gutter grades and 2% minimum paving cross slope grades throughout the cul-de-sac.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. Top-of-curb elevations are to be shown on the construction plans at points of curvature (PC's), points of tangency (PT's) and high/low points.
5. All concrete sidewalks and sidewalk ramps shall be constructed in accordance with Standards 300.05, 300.06, 300.07 and 300.08.

APPROVED:

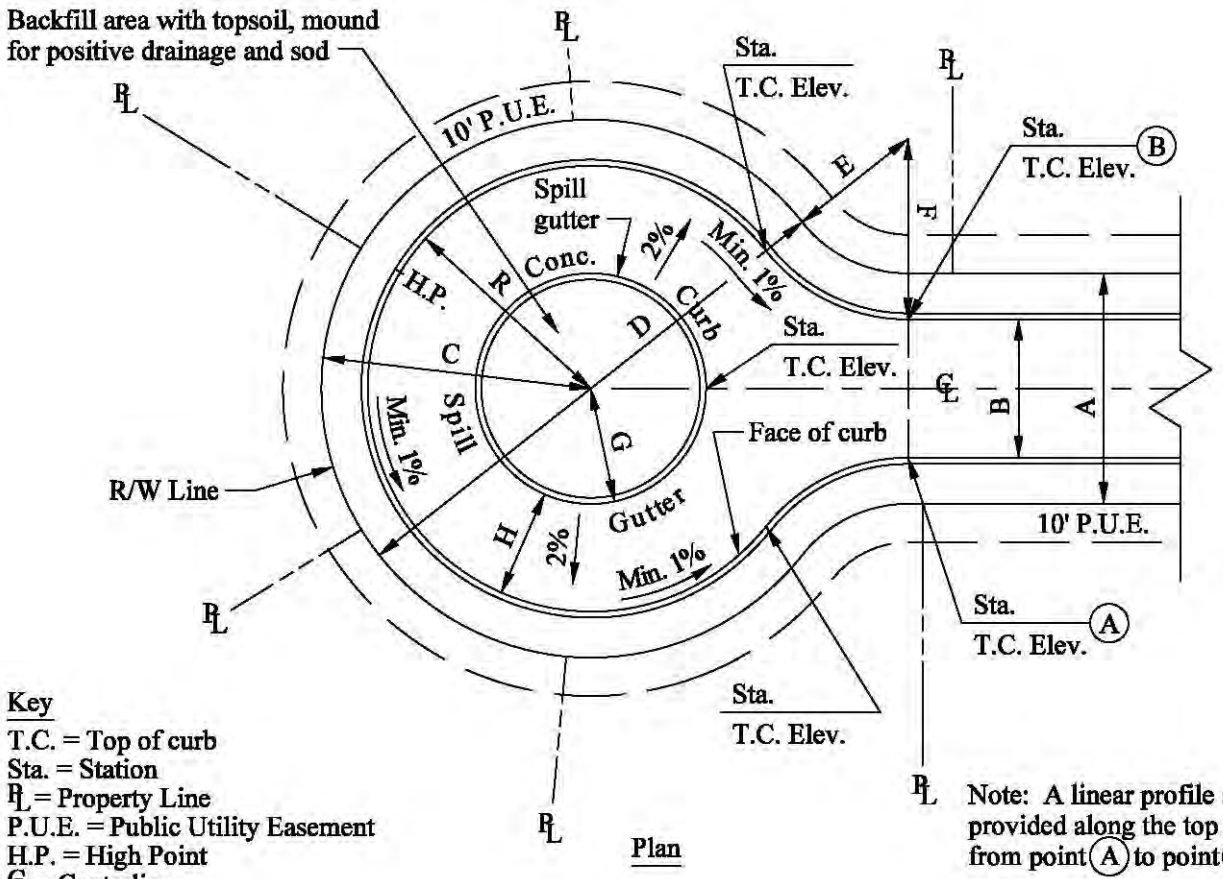
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Urban Cul-de-sac with Center Island (Offset Turnaround)

STD. 200.14



Plan

Key

T.C. = Top of curb
Sta. = Station
℄ = Property Line
P.U.E. = Public Utility Easement
H.P. = High Point
℄ = Centerline

Note: A linear profile shall be provided along the top of curb from point (A) to point (B)

Road Classification	Cul-de-sac Dimensions								
	A	B	C	D	E	F	G	H	R
Urban Commercial and Industrial Road	70'	46'	80'	160'	40'	52'	32'	36'	68'
Urban Primary Residential Road	60'	36'	70'	140'	35'	47'	30'	28'	58'
Urban Secondary Residential Road	50'	26'	70'	140'	35'	47'	30'	28'	58'
Urban Collector Road	80'	46'	80'	160'	40'	52'	32'	36'	68'

General Notes

1. Urban cul-de-sac designs shall accommodate all SU-30 vehicle turning maneuvers.
2. Provide 1% minimum flow line gutter grades and 2% minimum paving cross slope grades throughout the cul-de-sac.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. Top-of-curb elevations are to be shown on the construction plans at points of curvature (PC's), points of tangency (PT's) and high/low points.
5. All concrete sidewalks and sidewalk ramps shall be constructed in accordance with Standards 300.05, 300.06, 300.07 and 300.08.

APPROVED:

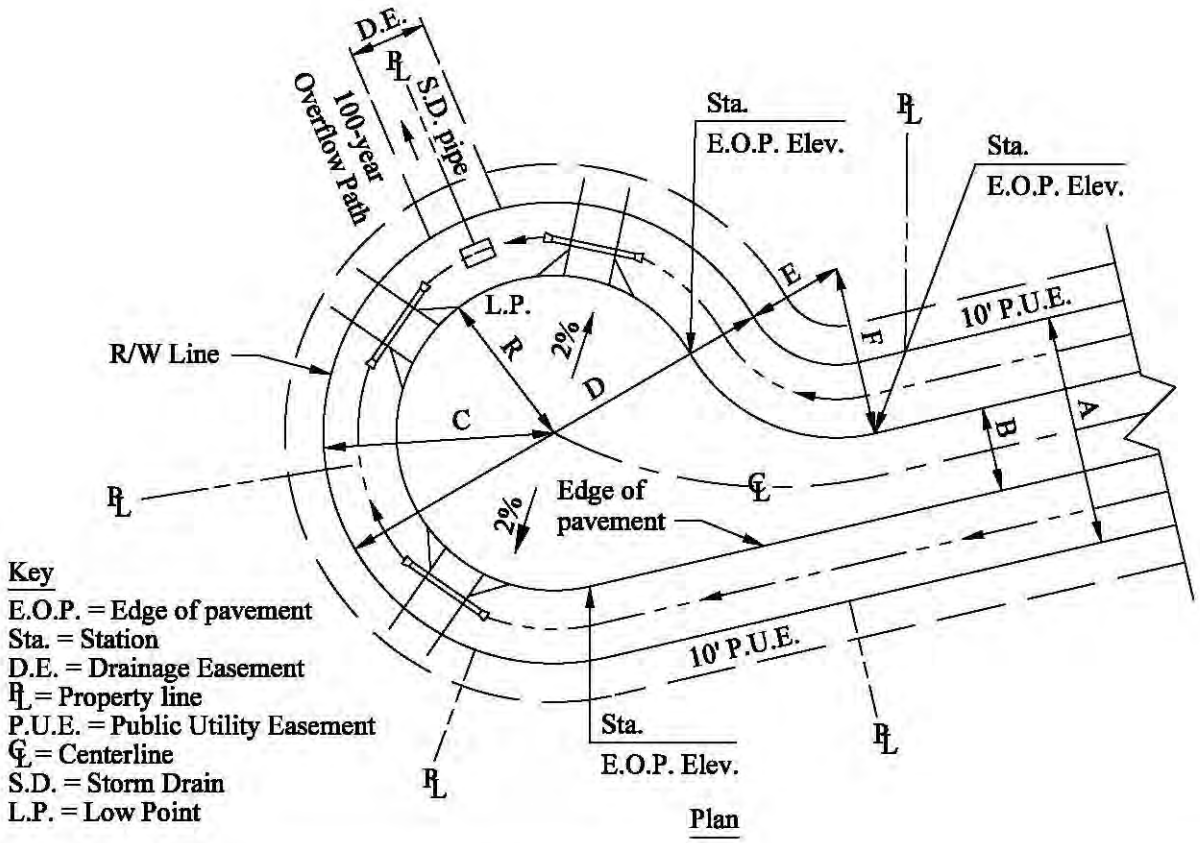
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Urban Cul-de-sac with Center Island (Symmetrical Turnaround)

STD. 200.15



Key
E.O.P. = Edge of pavement
Sta. = Station
D.E. = Drainage Easement
℄ = Property line
P.U.E. = Public Utility Easement
℄ = Centerline
S.D. = Storm Drain
L.P. = Low Point

Plan

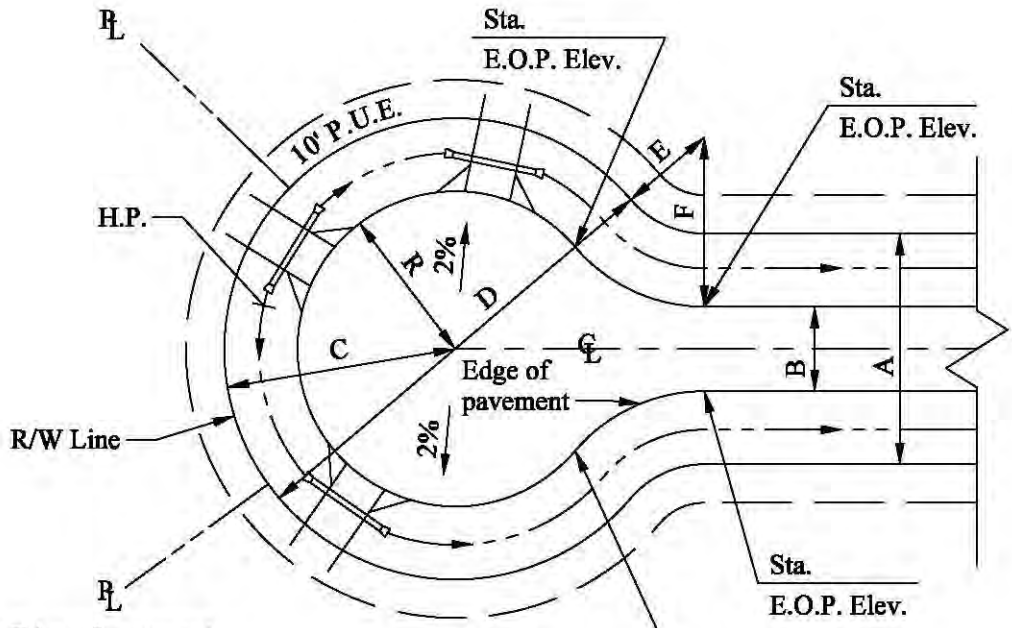
Road Classification	Cul-de-sac Dimensions						
	A	B	C	D	E**	F**	R
Rural Primary Residential Road	60'	24'	60'	120'	*25'	*43'	42'
Rural Secondary Residential Road	60'	22'	60'	120'	*25'	*44'	41'
Rural/Private Secondary Residential Road	50'	22'	50'	100'	*25'	*39'	36'
Scenic and Historic Rural Residential Road	60'	22'	60'	120'	*25'	*44'	41'

*Minimum distance unless directed otherwise by the Department.
**Alternate design using increased fillet radii (see dimensions 'E' and 'F') may be used with prior Departmental approval, subject to AASHTO and County subdivision regulations.

General Notes

1. Rural cul-de-sac roadway designs shall accommodate all SU-30 vehicle turning maneuvers.
2. Provide 2% centerline side ditch grades and 2% minimum paving cross slope grades throughout the cul-de-sac. Crowning the cul-de-sac in the bulbous area is not required if positive drainage can be maintained across this area and a minimum pavement slope of 2% is provided.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. All edge-of-paving elevations are to be shown on the construction plans at intervals not to exceed 50'.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Rural Cul-de-sac (Offset Turnaround)	STD. 200.16



Plan

Key

E.O.P. = Edge of pavement
Sta. = Station
℄ = Property line
P.U.E. = Public Utility Easement
℄ = Centerline
H.P. = High Point

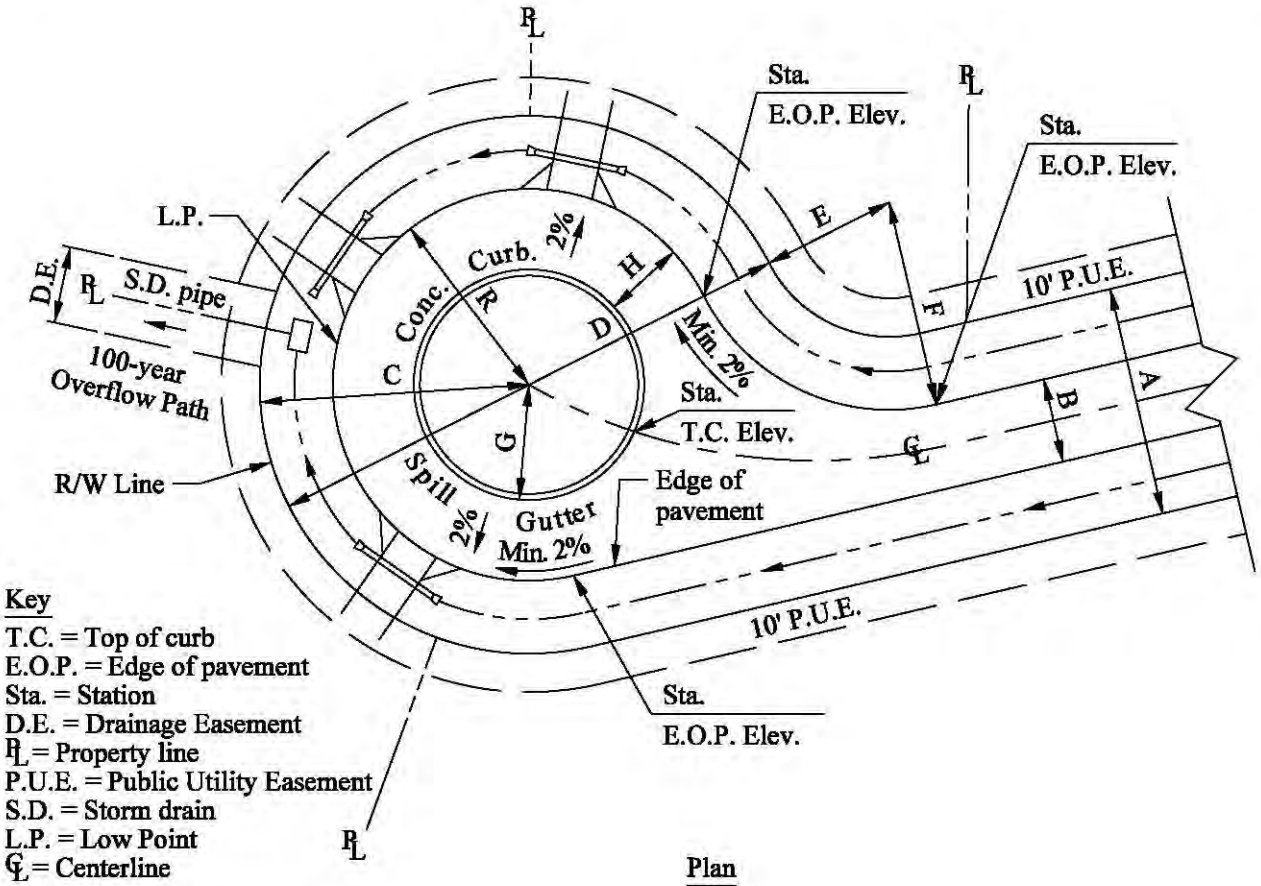
Road Classification	Cul-de-sac Dimensions						
	A	B	C	D	E**	F**	R
Rural Primary Residential Road	60'	24'	60'	120'	*25'	*43'	42'
Rural Secondary Residential Road	60'	22'	60'	120'	*25'	*44'	41'
Rural/Private Secondary Residential Road	50'	22'	50'	100'	*25'	*39'	36'
Scenic and Historic Rural Residential Road	60'	22'	60'	120'	*25'	*44'	41'

*Minimum distance unless directed otherwise by the Department.
**Alternate design using increased fillet radii (see dimensions 'E' and 'F') may be used with prior Departmental approval, subject to AASHTO and County subdivision regulations.

General Notes

1. Rural cul-de-sac roadway designs shall accommodate all SU-30 vehicle turning maneuvers.
2. Provide 2% centerline side ditch grades and 2% minimum paving cross slope grades throughout the cul-de-sac. Crowning the cul-de-sac in the bulbous area is not required if positive drainage can be maintained across this area and a minimum pavement slope of 2% is provided.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. All edge-of-paving elevations are to be shown on the construction plans at intervals not to exceed 50'.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Rural Cul-de-sac (Symmetrical Turnaround)	STD. 200.17



Key

T.C. = Top of curb
E.O.P. = Edge of pavement
Sta. = Station
D.E. = Drainage Easement
$\mathbb{P}_L$ = Property line
P.U.E. = Public Utility Easement
S.D. = Storm drain
L.P. = Low Point
$\mathbb{C}_L$ = Centerline

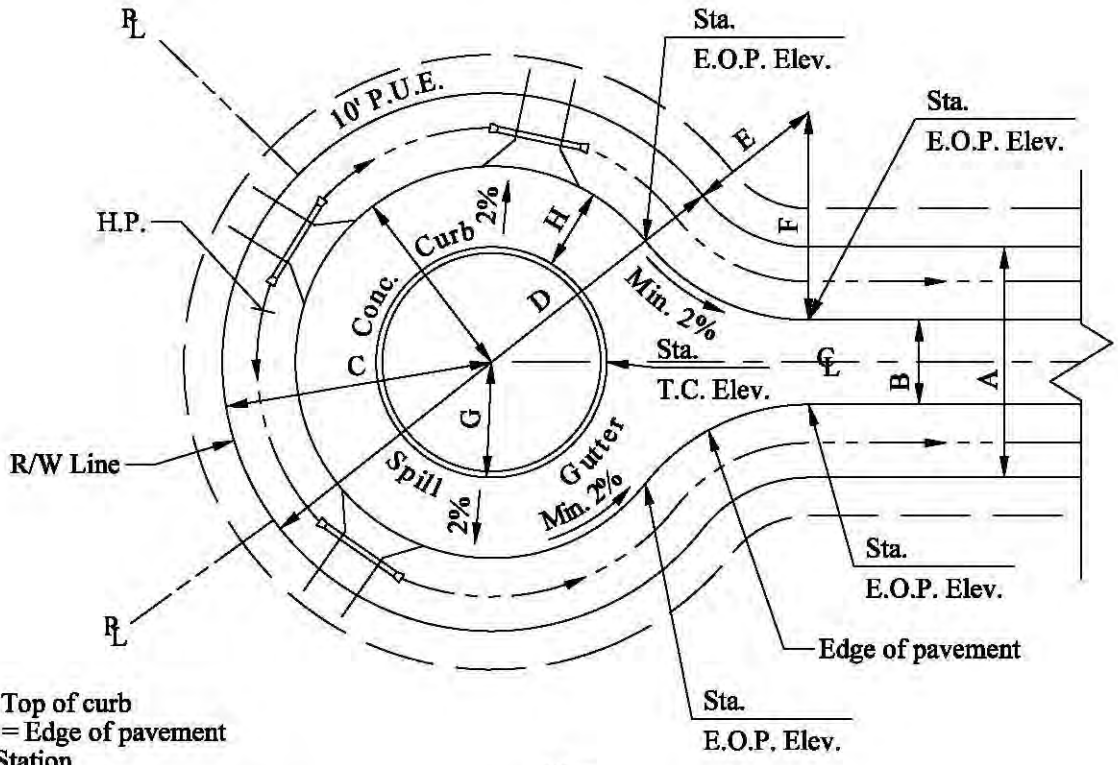
Plan

Road Classification	Cul-de-sac Dimensions								
	A	B	C	D	E	F	G	H	R
Rural Primary Residential Road	60'	24'	70'	140'	35'	53'	30'	22'	52'
Rural Secondary Residential Road	60'	22'	70'	140'	35'	54'	30'	21'	51'

General Notes

1. Rural cul-de-sac roadway designs shall accommodate all SU-30 vehicle turning maneuvers.
2. Center island shall be properly backfilled with topsoil, mounded and graded to prevent ponding, and stabilized with sod.
3. Provide 2% centerline side ditch grades and 2% minimum paving cross slope grades throughout the cul-de-sac. Crowning the cul-de-sac in the bulbous area is not required if positive drainage can be maintained across this area and a minimum pavement slope of 2% is provided.
4. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
5. All edge-of-paving elevations are to be shown on the construction plans at intervals not to exceed 50'.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Rural Cul-de-sac with Center Island (Offset Turnaround)	STD. 200.18



Plan

Key

T.C. = Top of curb
E.O.P. = Edge of pavement
Sta. = Station
℄ = Property line
P.U.E. = Public Utility Easement
H.P. = High Point
℄ = Centerline

Road Classification	Cul-de-sac Dimensions								
	A	B	C	D	E	F	G	H	R
Rural Primary Residential Road	60'	24'	70'	140'	35'	53'	30'	22'	52'
Rural Secondary Residential Road	60'	22'	70'	140'	35'	54'	30'	21'	51'

General Notes

1. Rural cul-de-sac roadway designs shall accommodate SU-30 vehicle turning maneuvers.
2. Center island shall be properly backfilled with topsoil, mounded and graded to prevent ponding, and stabilized with sod.
3. Provide 2% centerline side ditch grades and 2% minimum paving cross slope grades throughout the cul-de-sac.
4. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
5. All edge-of-paving elevations are to be shown on the construction plans at intervals not to exceed 50'.

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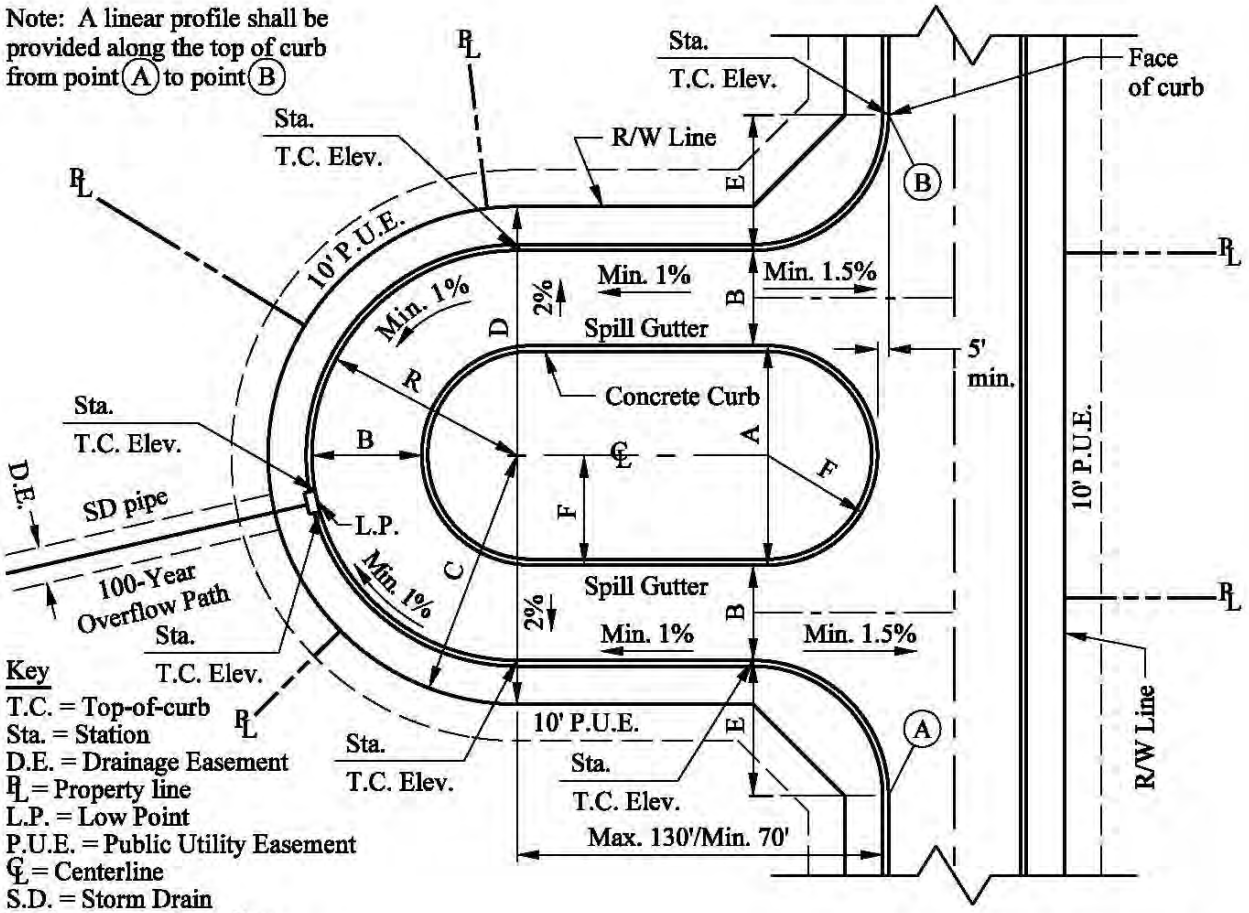
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Rural Cul-de-sac with Center Island (Symmetrical Turnaround)

STD. 200.19



Road Classification	A	B	C	D	E	F	R
Urban Secondary Residential Road	60'	28'	70'	140'	*37'	30'	58'

*Minimum distance unless directed otherwise by the Department.

General Notes

1. Urban cul-de-sac roadway designs shall accommodate all SU-30 vehicle turning maneuvers.
2. Provide 1% minimum flow line gutter grades and 2% minimum paving cross slope grades throughout the cul-de-sac. Crowning the cul-de-sac in the bulbous area is not required if positive drainage can be maintained across this area and a minimum pavement slope of 2% is provided.
3. Cul-de-sacs shall not have a vertical grade in excess of 6% beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
4. Top-of-curb elevations are to be shown on the construction plans at points of curvature (PC's), points of tangency (PT's) and high/low points.
5. All concrete sidewalks and sidewalk ramps shall be constructed in accordance with Standards 300.05, 300.06, 300.07 and 300.08.

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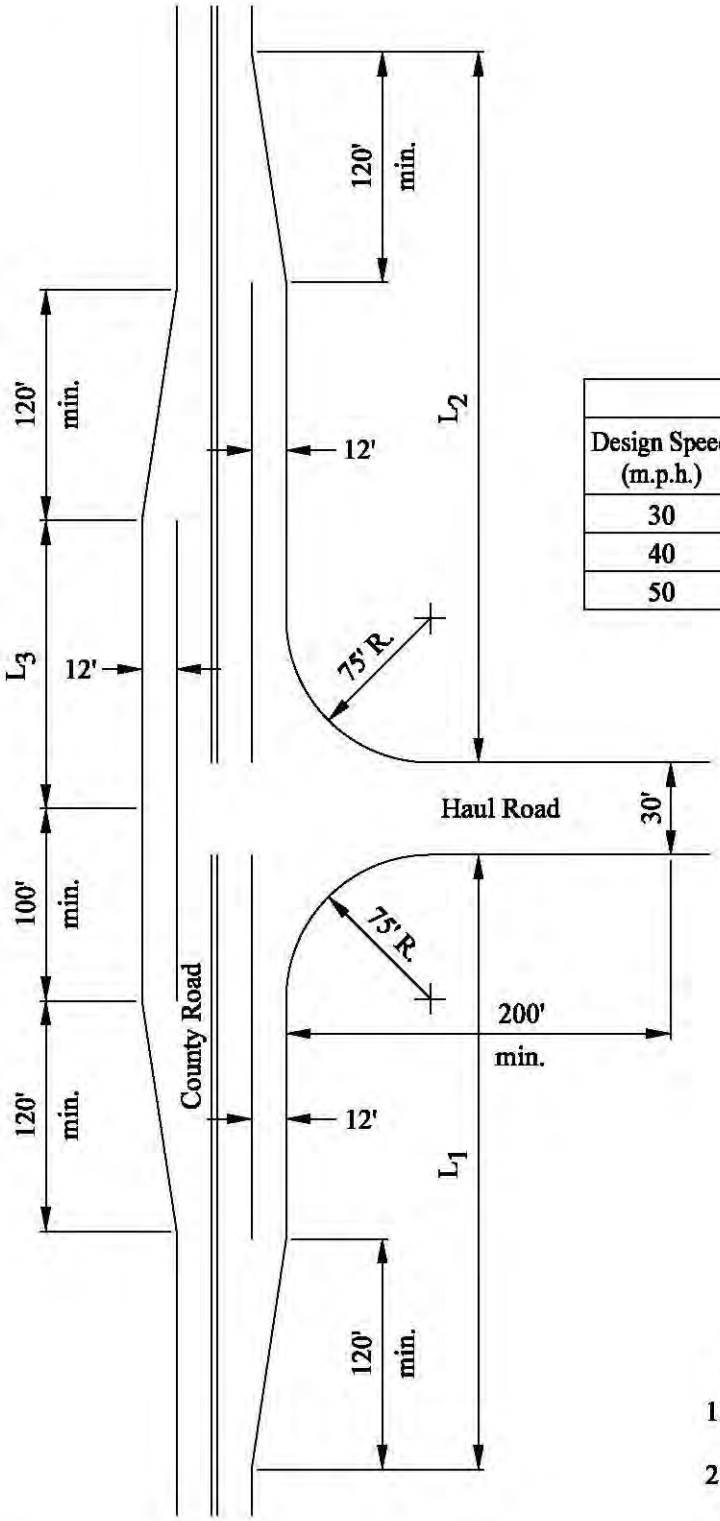
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Urban Cul-de-sac (Eyebrow Configuration)

STD. 200.20



Minimum Lane Lengths			
Design Speed (m.p.h.)	Lane Length (ft)		
	Deceleration (L1)	Acceleration (L2)	Bypass (L3)
30	270'	270'	100'
40	320'	370'	150'
50	420'	470'	200'

Notes

1. Distance requirements may be increased depending on volume, speed and sight distances.
2. 30'-width of paved haul road shall be constructed and maintained on site for at least 200'.

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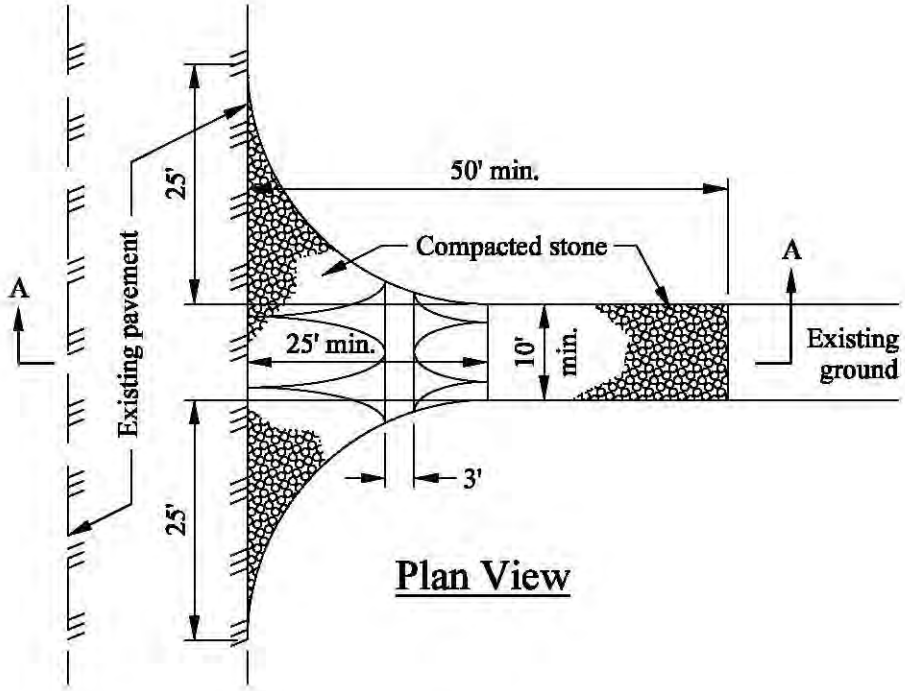
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

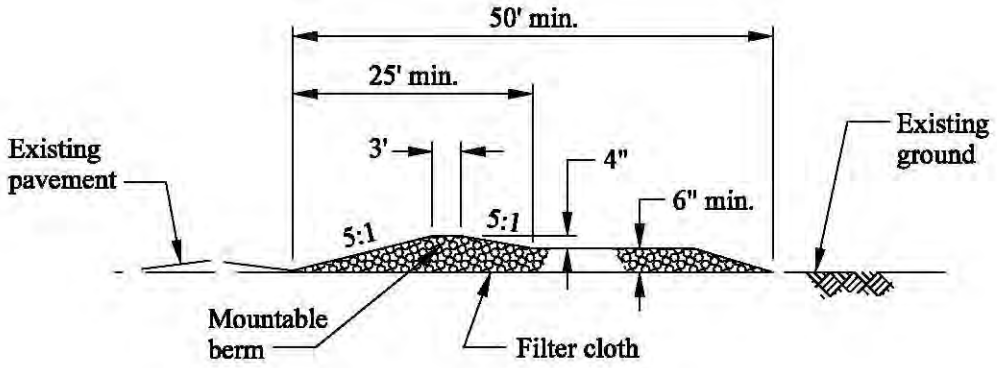
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Temporary Entrance for Haul Road with Bypass Lane

STD. 200.21



Plan View



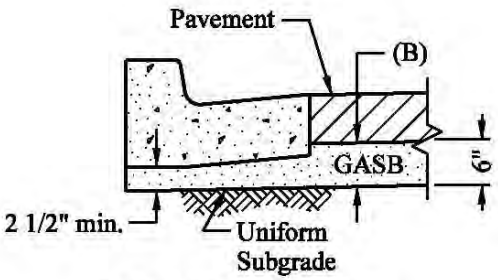
Section A-A

Notes

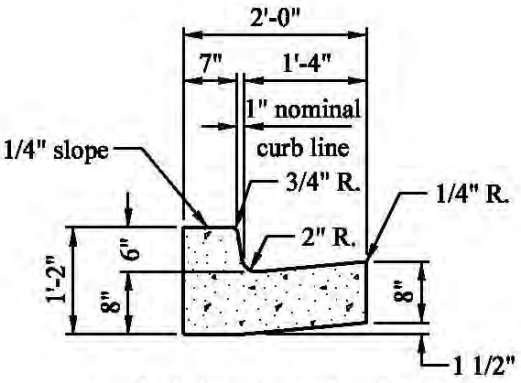
1. Stone size shall be 2 inches. Reclaimed or recycled concrete of an equivalent diameter may also be used.
2. Minimum depth of stone shall be 6 inches. Stone shall be placed in uniform, compacted layers of not more than 6 inches, or less than 3 inches in thickness.
3. Except for single-family residential lots, entrance shall be underlain with geotextile fabric appropriate for the soil and drainage conditions.
4. Mountable berms shall be installed at entrances where surface drainage will otherwise enter the roadway.
5. Side slopes (if necessary) shall be 2:1 or less.
6. Frequent maintenance and inspection required.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Temporary Stabilized Construction Entrance	STD. 200.22

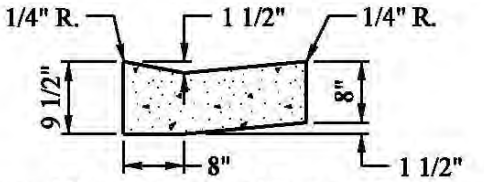
CATEGORY 300 STANDARD CONCRETE DETAILS AND APPURTENANCES



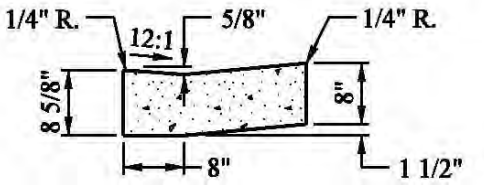
Graded Aggregate Subbase
Under Concrete Curb and Gutter



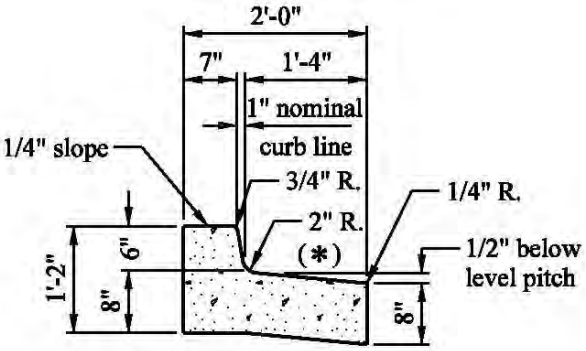
Standard Concrete Curb and Gutter



Depressed Concrete Curb and Gutter @ Driveway
(See note No. 6 below)



Depressed Concrete Curb and Gutter @ Sidewalk Ramp
(See note No. 6 below)



Spill Concrete Curb and Gutter
(See note No. 1 below)

General Notes

1. Use of spill concrete curb and gutter requires special Departmental approval, except for "Urban Major Collector Road" design.
2. The slope (*) of a spill concrete curb and gutter pan shall be equal to the cross slope of roadway paving.
3. Install expansion joints using 1/2" preformed non-extruding joint filler, at 100' intervals, at the beginning and end of curves with less than 100' radii, at structures, and at midpoints of curb returns.
4. All construction joints shall be located at 10' intervals. The contraction joints shall be constructed to a depth equal to 1/4 of the depth of the thickness of the concrete.
5. All concrete shall be Class I (MSHA Mix No. 3) air-entrained, unless otherwise approved by the Department. The surface shall be brush finished.
6. The depressed concrete curb and gutter sections shall be used at all driveway aprons and sidewalk ramps.
7. Preformed joint fillers shall conform to M 153. The bituminous fiber type joint shall conform to M 213, with the bitumen content determined using T 164.
8. Granite curb and gutter may be required under certain conditions.
9. Provide uniform subgrade under entire roadway section.
10. All new construction within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act and Fair Housing regulations.

APPROVED:

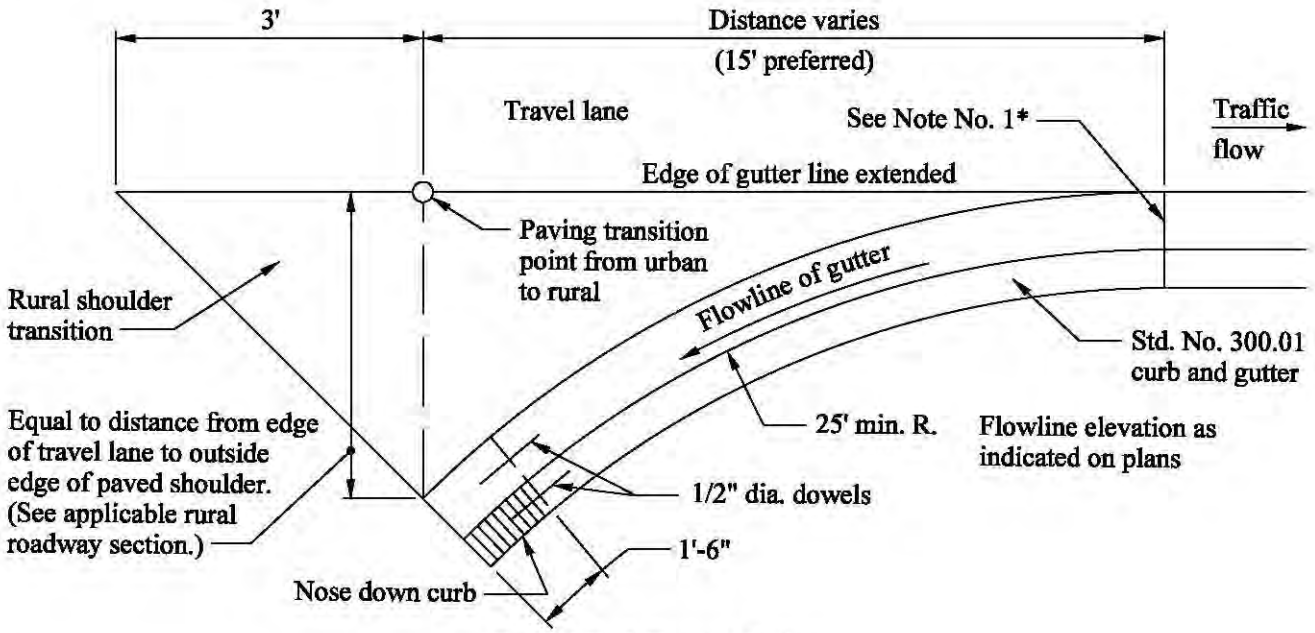
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

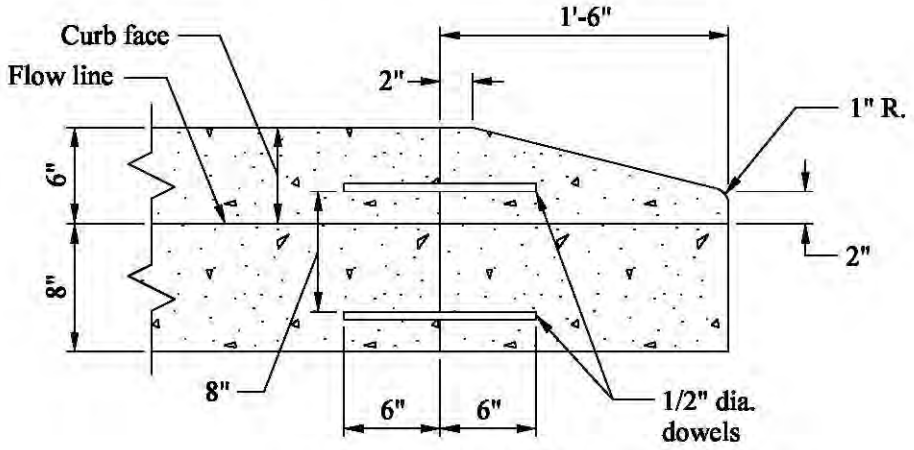
DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Concrete Curb and Gutter

STD. 300.01



Typical Curb Turnout Option

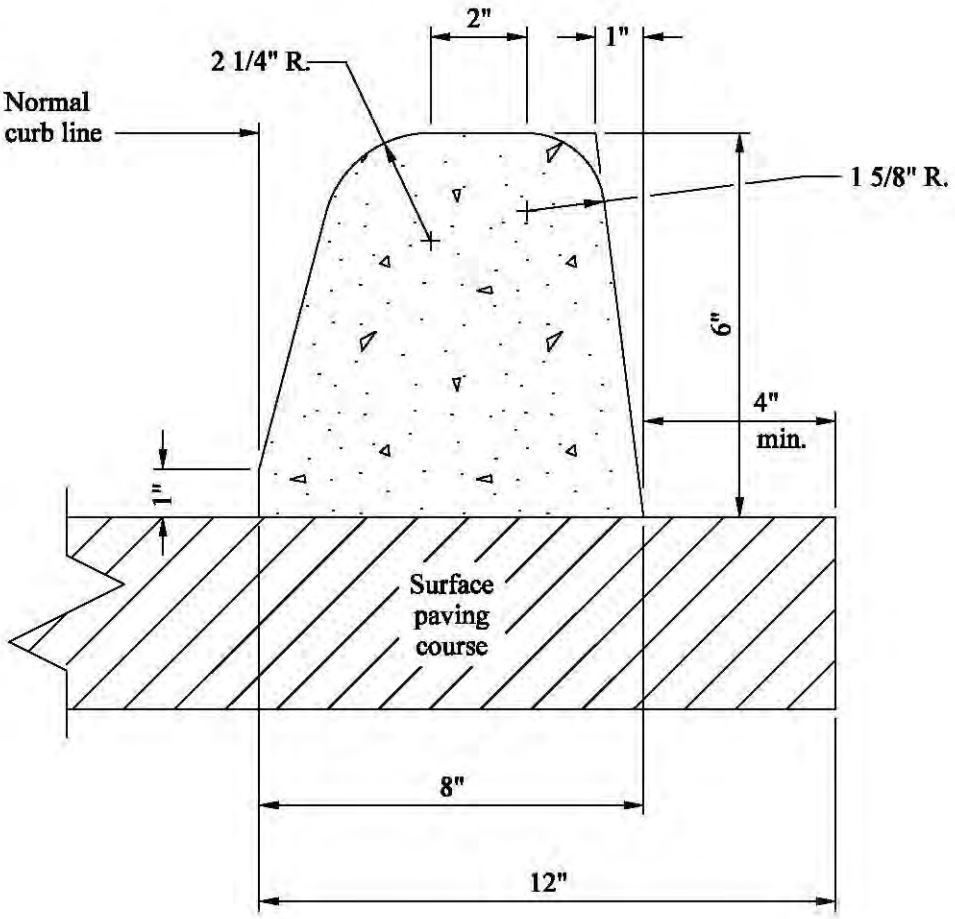


Nosed Down Curb Profile

General Notes

1. Install expansion joint (*) using 1/2" preformed nonextruding joint filler at the beginning of curve.
2. Preformed joint fillers shall conform to M 153. The bituminous fiber type joint shall conform to M 213, with the bitumen content determined using T 164.
3. All concrete shall be Class I (MSHA Mix No. 3) air-entrained, unless otherwise approved by the Department. The surface shall be broom finished.
4. Provide uniform subgrade under entire roadway section.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Concrete Curb Turnout and Nosed Down Curb	STD. 300.02



General Notes

(For temporary use only)

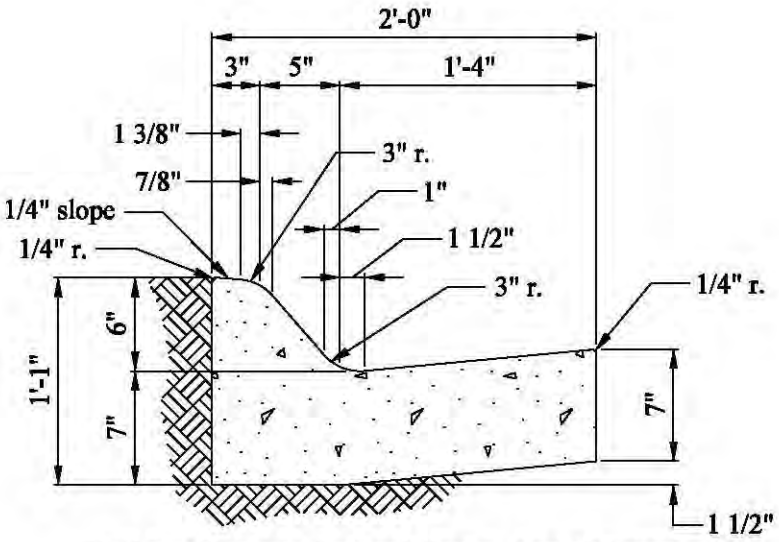
1. The use of Hot Mix Asphalt (HMA) curb requires special approval by the Department.

2. Material shall conform to Superpave Mixture Hot Mix Asphalt (HMA) for Surface 9.5mm, PG 64-22 or Bituminous Concrete Surface Fine (SF) mix. It shall be placed by a self-propelled machine. The machine shall form curbing that is uniform in texture, shape and density, and to a template as specified above, unless otherwise approved by the Department.

3. The base upon which the curb is to be placed shall be clean, dry and stable. It shall be tack coated with asphalt of the type and amount directed by the Department.

4. When required, the curb shall be backfilled with suitable fill material after it has sufficiently hardened, to prevent damage. The backfill shall be consolidated by tamping or rolling.

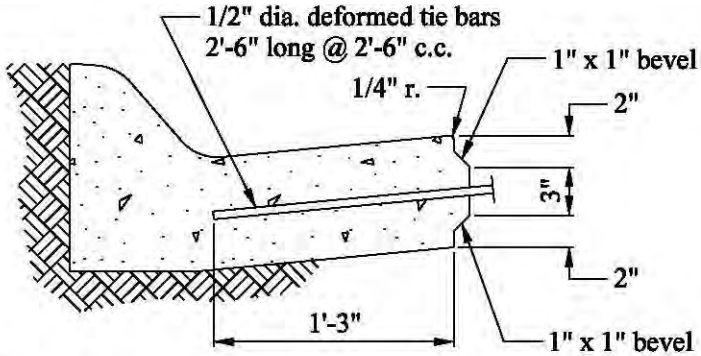
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Hot Mix Asphalt (HMA) Curb	STD. 300.03



Roll-type Concrete Curb and Gutter - Asphalt Pavement

Note: All dimensions not shown are same as above.

Note: Expansion joint to be spaced to match pavement slab joints.



Roll-type Concrete Curb and Gutter - Concrete Pavement

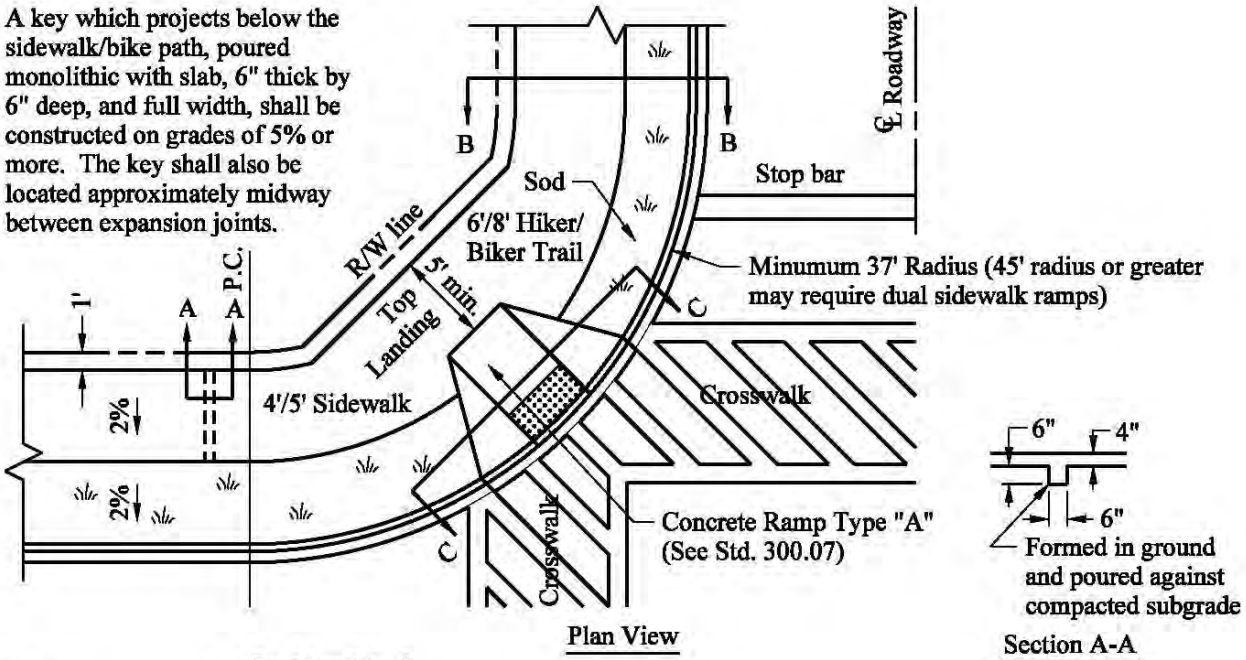
General Note

1. This curb is to be used for secondary residential streets only, where grades are less than 5% on tangents or curves more than 200' radius.
2. Install expansion joints using 1/2" preformed non-extruding joint filler, at 100' intervals, at the beginning and end of curves with less than 100' radii, at structures, and at midpoints of curb returns.
3. All concrete shall be Class I (MSHA Mix No. 3) air entrained, unless otherwise approved by the Department. The surface shall be brush finished.
4. All construction joints shall be located at 10' intervals. The contraction joints shall be constructed to a depth equal to 1/4 of the depth of the thickness of the concrete.
5. Provide uniform subgrade under entire roadway section.

This design shall be used only on Capital Improvement Program and rehabilitation projects, and requires written approval by the Department.

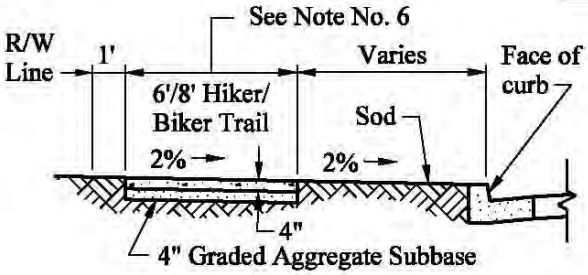
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Roll-Type Concrete Curb and Gutter	STD. 300.04

A key which projects below the sidewalk/bike path, poured monolithic with slab, 6" thick by 6" deep, and full width, shall be constructed on grades of 5% or more. The key shall also be located approximately midway between expansion joints.

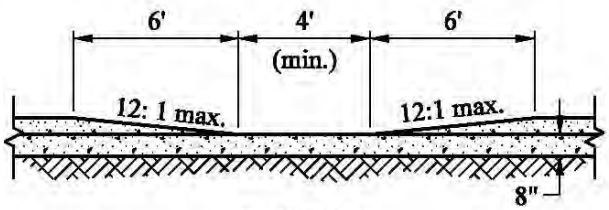


Plan View

Section A-A



Section B-B



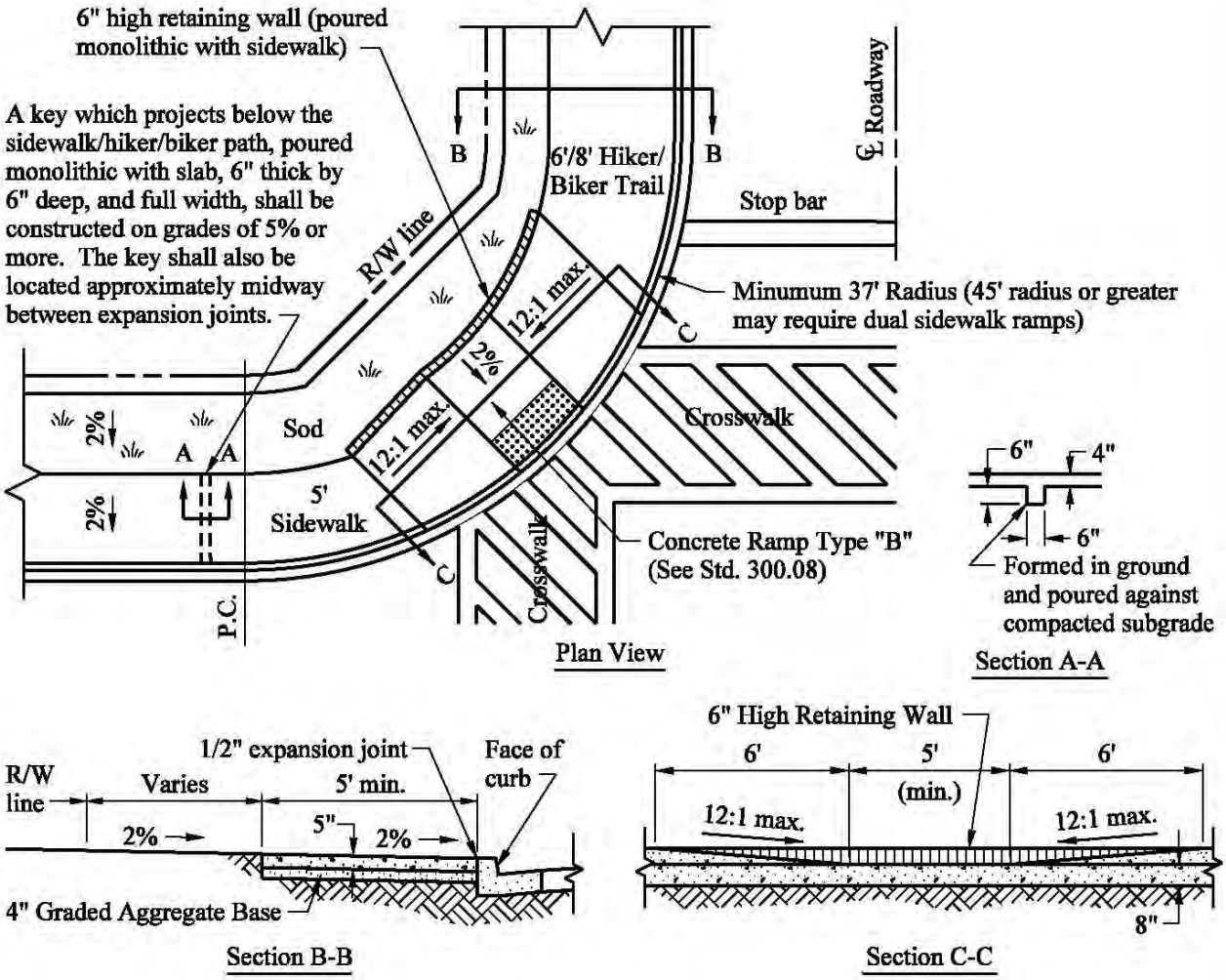
Section C-C

(Additional right-of-way required for 8' hiker/biker trail)

General Notes

1. All new concrete sidewalks, sidewalk ramps, depressed curbs and hiker/biker trails constructed within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act.
2. All new sidewalks and hiker/biker trails abutting sidewalk ramps within fillet areas, having a fixed obstruction not to include utility poles, shall be adjusted to provide a minimum clearance of 36".
3. All contraction joints in concrete sidewalks shall be constructed at 4' intervals and 6' or 8' intervals for hiker/biker trails unless otherwise approved by the Department. The contraction joints are to be constructed to a depth equal to 1/4 of the total depth of the sidewalk/hiker/biker trail. Premolded 1/2" thick expansion joints shall also be constructed at 50' intervals, between the curb and sidewalk/hiker/biker trail, at sidewalk ramps, driveways, leadwalks, poles, or other permanent structures.
4. Provide 4" thick graded aggregate base material under all concrete sidewalk and hiker/biker trails.
5. All concrete shall be Class I (MSHA Mix No. 3), air entrained, unless otherwise approved by the Department. The surface shall be broom finished.
6. Sidewalk width specified in category 100.

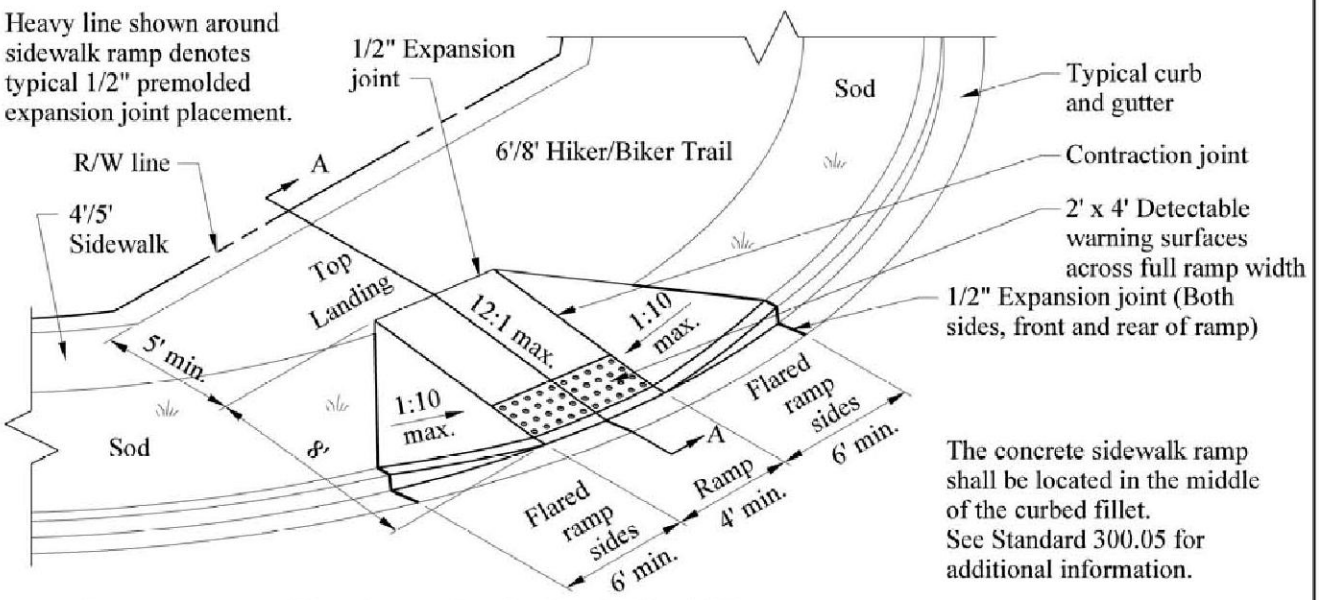
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Concrete Sidewalk and Ramp Location	STD. 300.05



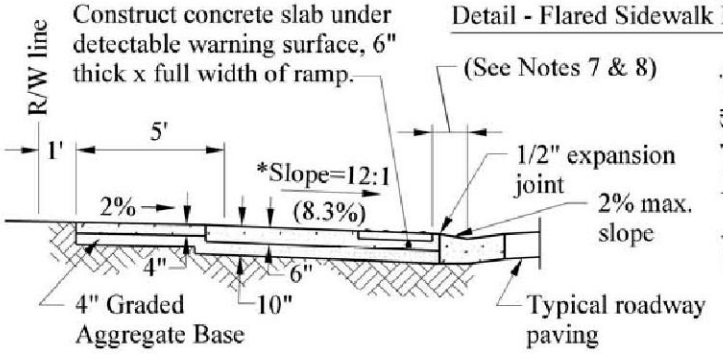
General Notes

1. All new concrete sidewalks, sidewalk ramps, depressed curbs and hiker/biker trails constructed within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act.
2. All new sidewalks and hiker/biker trails abutting sidewalk ramps within fillet areas, having a fixed obstruction not to include utility poles, shall be adjusted to provide a minimum clearance of 36".
3. All contraction joints in concrete sidewalks shall be constructed at 4'-0" intervals and 6'-0" or 8'-0" intervals for hiker/biker trails unless approved otherwise by the Department. The contraction joints are to be constructed to a depth equal to 1/4 of the total depth of the sidewalk/hiker/biker trail. Premolded 1/2" thick expansion joints shall also be constructed at 50' intervals, between the curb and sidewalk/hiker/biker trail, at sidewalk ramps, driveways, leadwalks, poles, or other permanent structures.
4. Provide 4" thick graded aggregate base material under all concrete sidewalk and hiker/biker trails.
5. All concrete shall be Class I (MSHA Mix No. 3), air entrained, unless otherwise approved by the Department. The surface shall be broom finished.

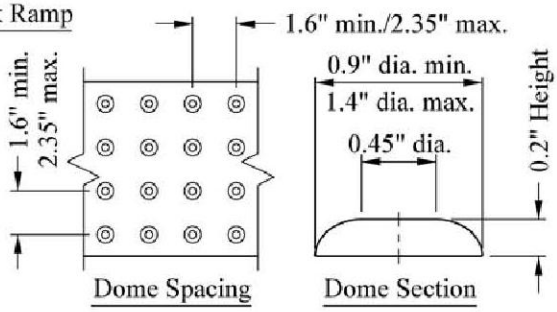
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Concrete Sidewalk at Curb and Ramp Location	STD. 300.06



Detail - Flared Sidewalk Ramp



Section A-A



Dome Spacing

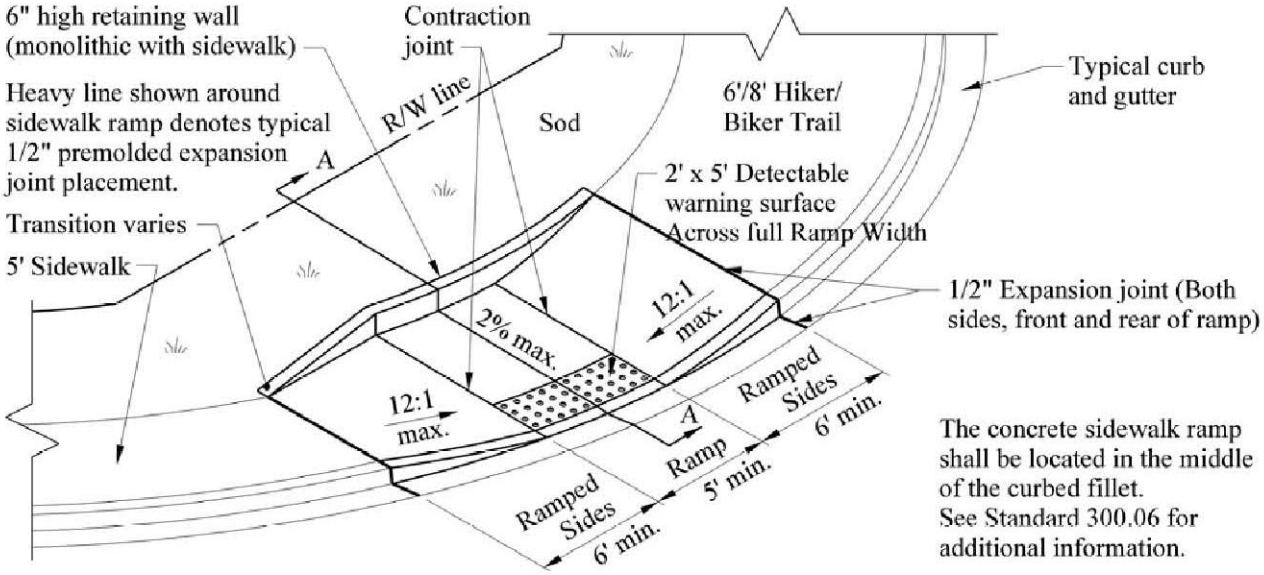
Dome Section

Detectable Warning Surface
Raised Truncated Domes

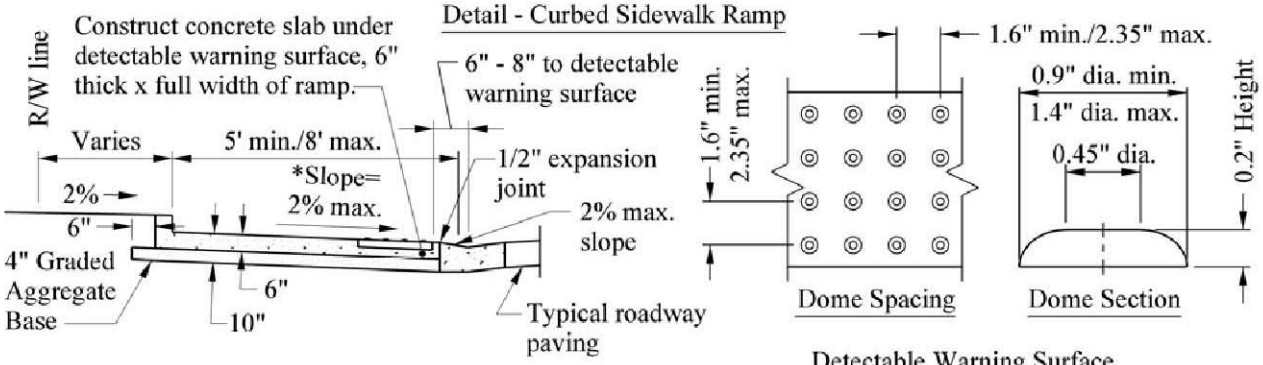
General Notes

1. All new concrete sidewalk ramps and depressed curbs constructed within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act. See Standard 300.01 for depressed curb requirements.
2. All sidewalk ramps and their approaches shall be designed and constructed so that water will not accumulate on walking surfaces.
3. The sidewalk ramp shall be constructed with the least possible running slope, not to exceed 12:1.
4. All concrete shall be Class 1 (MSHA Mix No. 3) air-entrained unless otherwise approved by the Department. The surface shall be broom finished.
5. Provide 4" thick graded aggregate base material under all concrete sidewalk and sidewalk ramps.
6. Detectable warning surface shall be 1" thick (hollow tile) diamond-hard vitrified polymer material, embedded into concrete with truncated dome pattern as specified above, and shall contrast visually with the adjacent surface (either dark-on-light or light-on-dark.) Color requirements: Use brick red panel with brick crosswalk and dark gray panel at all other locations.
7. Detectable warning surface shall be installed 6 to 8 inches behind the curb line, extend two feet in the direction of travel over the full width of the ramp, and shall be embedded so as to be flush with the surrounding surface.
8. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF THE CURB ARE NO LESS THAT 0.5" AND NO MORE 3.0" FROM THE BACK OF CURB . TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY

APPROVED: DIRECTOR DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD
REVISION DATE: / APPROVED BY:		Concrete Sidewalk Ramp Type "A" — STD. 300.07



Detail - Curbed Sidewalk Ramp



Section A-A

Dome Spacing

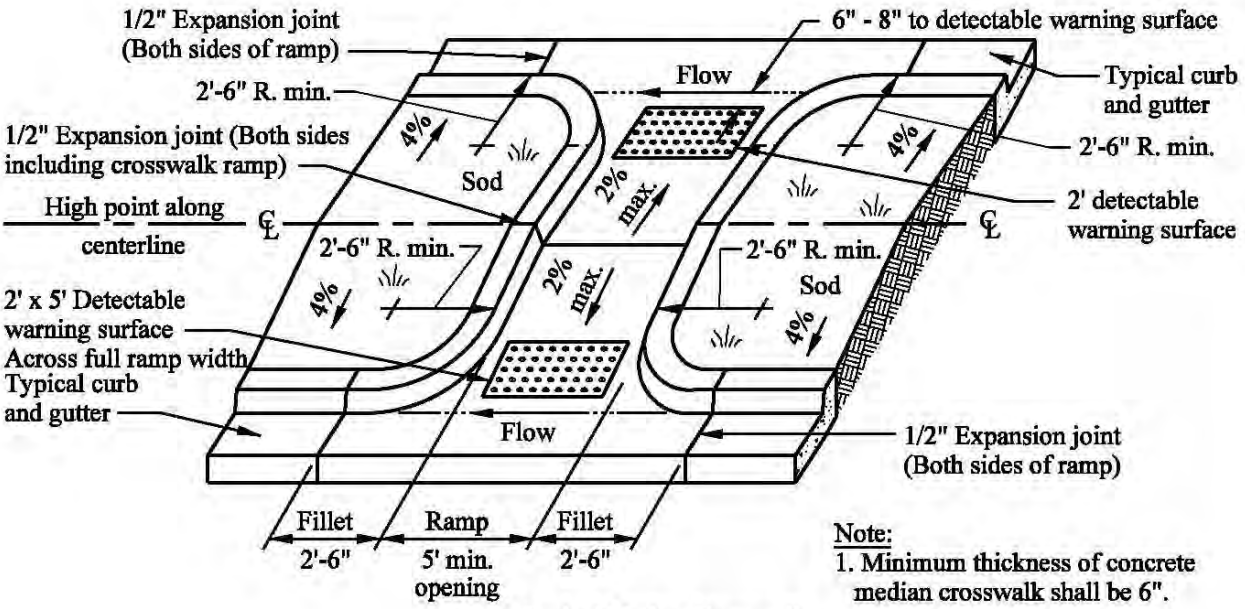
Dome Section

Detectable Warning Surface
Raised Truncated Domes

General Notes

1. All new concrete sidewalk ramps and depressed curbs constructed within the County right-of-way shall comply with the Federal accessibility guidelines of the Americans with Disabilities Act. See Standard 300.01 for depressed curb requirements.
2. All sidewalk ramps and their approaches shall be designed and constructed so that water will not accumulate on walking surfaces.
3. The sidewalk ramp shall be constructed with the least possible running slope not to exceed 12:1.
4. All concrete shall be class 1 (MSHA Mix No. 3) air-entrained unless otherwise approved by the Department. The surface shall be broom finished.
5. Provide 4" thick graded aggregate base material under all concrete sidewalk and sidewalk ramps.
6. Detectable warning surface shall be 1" thick (hollow tile) diamond-hard vitrified polymer material, embedded into concrete with truncated dome pattern as specified above, and shall contrast visually with the adjacent surface (either dark-on-light or light-on-dark.) Color requirements: Use brick red panel with brick crosswalk and dark gray panel at all other locations.
7. Detectable warning surface shall be installed 6 to 8 inches behind the curb line, extend two feet in the direction of travel over the full width of the ramp, and shall be embedded so as to be flush with the surrounding surface.
8. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF THE CURB ARE NO LESS THAT 0.5" AND NO MORE 3.0" FROM THE BACK OF CURB . TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY

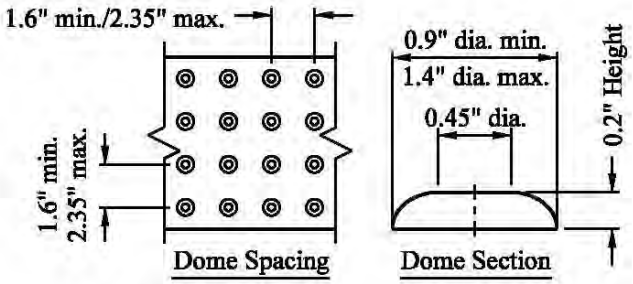
APPROVED: DIRECTOR DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD
REVISION DATE: / APPROVED BY:		Concrete Sidewalk Ramp Type "B" — STD. 300.08



Note:
1. Minimum thickness of concrete median crosswalk shall be 6".

Detail - Curbed Median Crosswalk

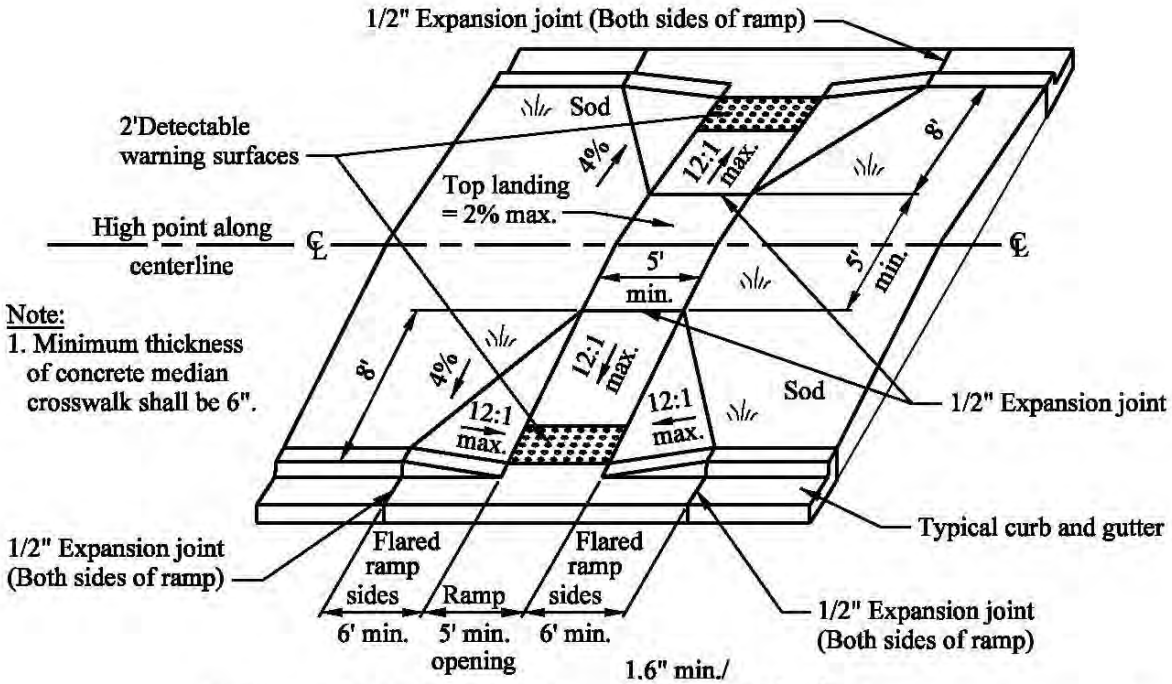
Detectable Warning Surface
Raised Truncated Domes



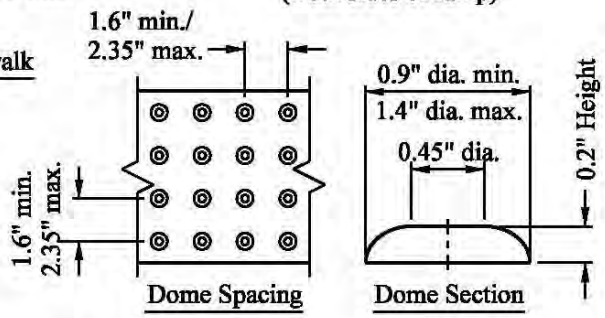
General Notes

1. All new concrete median crosswalk openings constructed within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
2. All median crosswalk openings shall be designed and constructed so that water will not accumulate on walking surfaces and will have a maximum slope of 2%.
3. All concrete to be Class 1 (MSHA Mix No. 3) air-entrained, unless otherwise approved by the Department. The surface shall be broom finished.
4. All contraction joints in concrete crosswalk ramp shall be constructed at 5' intervals unless otherwise approved by the Department. The contraction joints are to be constructed to a depth equal to 1/4 of the total depth (thickness).
5. Provide 4" thick graded aggregate base material under all concrete sidewalk and sidewalk ramps.
6. Detectable warning surface shall be 1" thick (hollow tile) diamond-hard vitrified polymer material, embedded into concrete with truncated dome pattern as specified above, and shall contrast visually with the adjacent surface (either dark-on-light or light-on-dark.) Color requirements: Use brick red panel with brick crosswalk and dark gray panel at all other locations.
7. Detectable warning surface shall be installed 6 to 8 inches behind the curb line, extend two feet in the direction of travel over the full width of the ramp, and shall be embedded so as to be flush with the surrounding surface.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Concrete Median Crosswalk Opening	STD. 300.09



Detail - Curbed Median Crosswalk

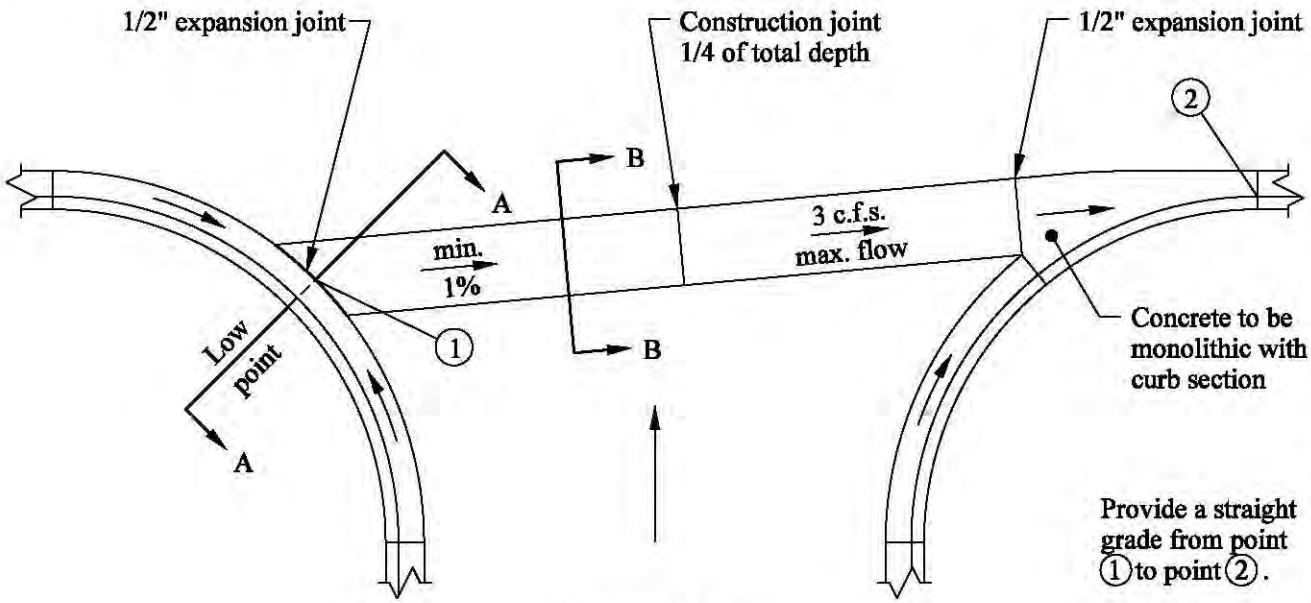


Detectable Warning Surface
Raised Truncated Domes

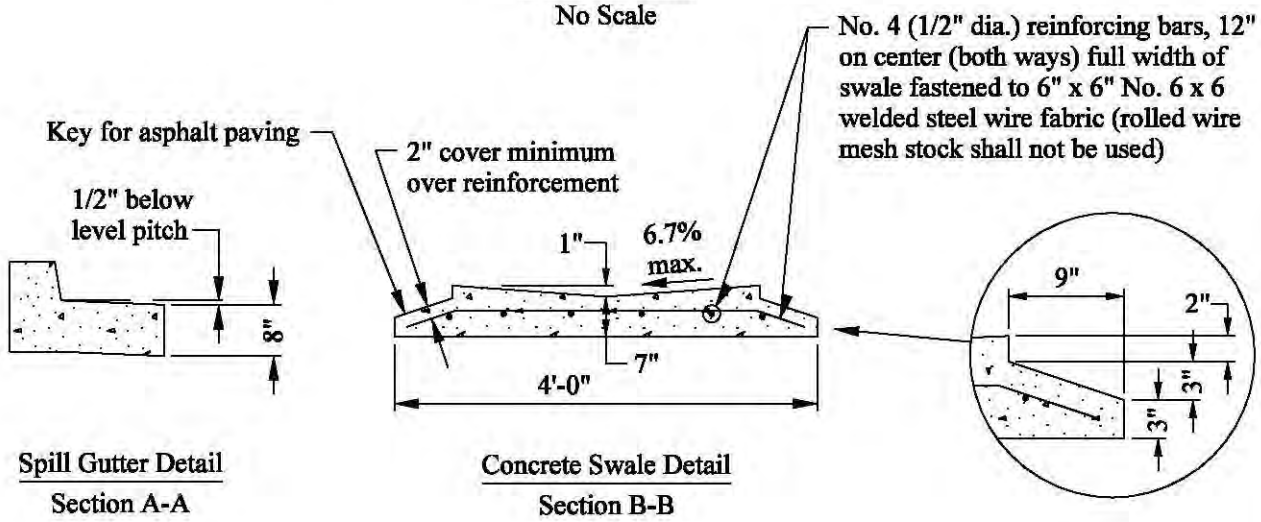
General Notes

1. All new concrete median crosswalk openings constructed within the County right-of-way shall comply with Federal accessibility guidelines of the Americans with Disabilities Act.
2. All median crosswalk openings shall be designed and constructed so that water will not accumulate on walking surfaces and will have a maximum slope of 2%.
3. All concrete to be Class 1 (MSHA Mix No. 3) air-entrained, unless otherwise approved by the Department. The surface shall be broom finished.
4. Provide 4" thick graded aggregate base material under all concrete ramps.
5. All contraction joints in concrete crosswalk ramp shall be constructed at 5' intervals unless otherwise approved by the Department. The contraction joints are to be constructed to a depth equal to 1/4 of the total depth (thickness).
6. Detectable warning surface shall be 1" thick (hollow tile) diamond-hard vitrified polymer material, embedded into concrete with truncated dome pattern as specified above, and shall contrast visually with the adjacent surface (either dark-on-light or light-on-dark.) Color requirements: Use brick red panel with brick crosswalk and dark gray panel at all other locations.
7. Detectable warning surface shall be installed 6 to 8 inches behind the curb line, extend two feet in the direction of travel over the full width of the ramp, and shall be embedded so as to be flush with the surrounding surface.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Concrete Median Crosswalk Ramps	STD. 300.10



Drainage Detail
No Scale



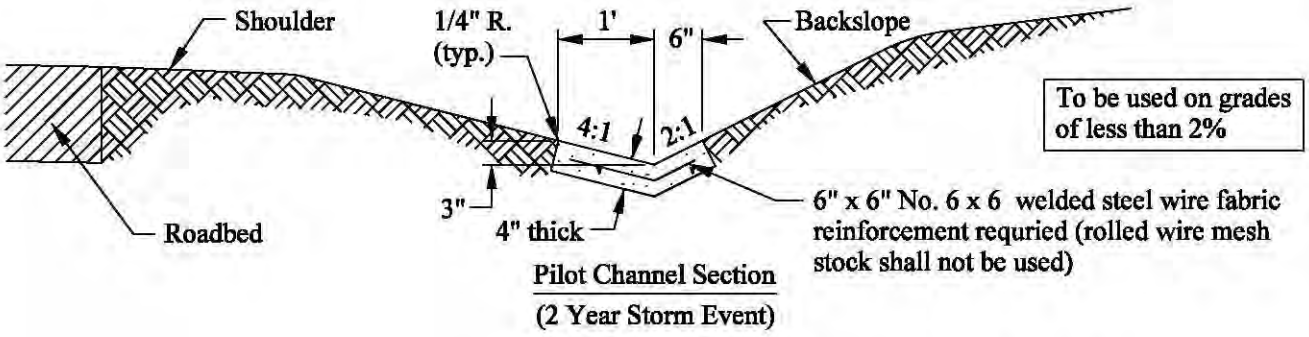
Spill Gutter Detail
Section A-A

Concrete Swale Detail
Section B-B

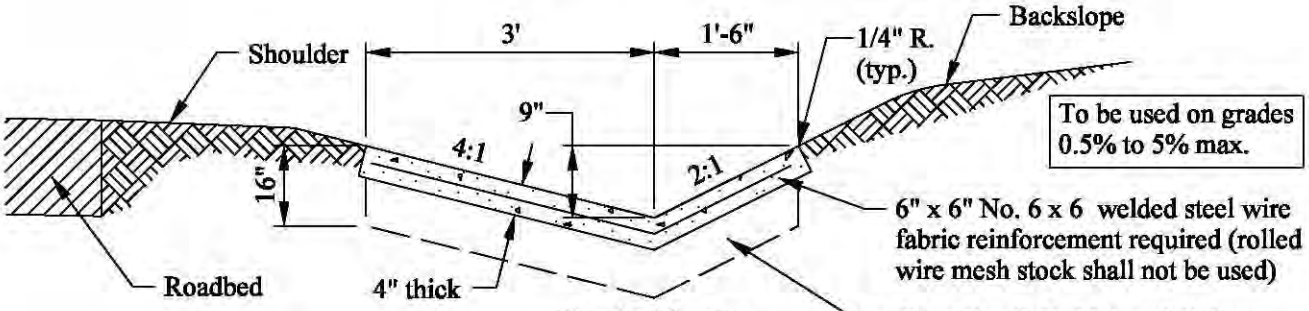
General Notes

1. The use of concrete intersection swale requires special Departmental approval.
2. All concrete shall be Class 1 (MSHA Mix No. 3) air-entrained, unless otherwise approved by the department. The surface shall be broom finished.
3. New roadway shall provide no less than 1.5% centerline grade through any intersection. In areas where this cannot be provided, the concrete swale shown hereon shall be provided, unless the detailed curb return profiles direct all flows to inlets located at curbed fillets.
4. Asphalt paving is to be installed so as to meet top edge of concrete swale.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Concrete Intersection Swale (For Grades Less Than 1.5%)	STD. 300.11



Pilot Channel Section
(2 Year Storm Event)



Standard Section
(10 Year Storm Event)

2 / 10 Year Storm Event Design Criteria			
Method of Ditch Protection	Longitudinal Grade	Maximum Velocity	Requirements
Sodded grass channel	Max. 5% with low "Q" value	4 fps on fill 5 fps or less on cut	Accommodates 2 thru 10 year storm event. Qmax. = 15 fps and normal conditions
Concrete pilot channel	less than 2%	5 fps or less	Required on street grades 2% or less. Also, accommodates 2 year storm event.
Standard concrete side ditch	Min. 0.5% Max. 5%	6 fps or greater	Accommodates 10 year storm event. Qmax. = 15 fps and design depth of 1' max.

General Notes

1. Side ditches along residential roadways with longitudinal grades greater than 5%, and having storm drainage runoff exceeding 15 cubic feet per second (c.f.s.), shall be enclosed in an approved underground pipe drainage system.
2. Use of Class I Rip Rap (ungrouted) Stone placed on geotextile fabric, in side ditches, requires special Departmental approval. Rip Rap Stone may only be used in side ditches with longitudinal grades of 6% to 10% maximum and where no mowing may ever be required.
3. Standard concrete side ditches shall contain the designated design flow with a 1 foot minimum freeboard.
4. All concrete shall be Class I (MSHA Mix No. 3) air-entrained, unless otherwise approved by the Department.
5. Cutoff wall, 6" thick and 12" deep, to be constructed to the full width of the concrete, approximately halfway between expansion joints on grades 5% or more, and cast in ground monolithically with the ditch paving.
6. Expansion joints (1/2", non-extruding), shall be spaced a maximum of 90' apart.
7. Contraction joints at 10' on center shall be tooled or sawed to a minimum depth of 3/4".

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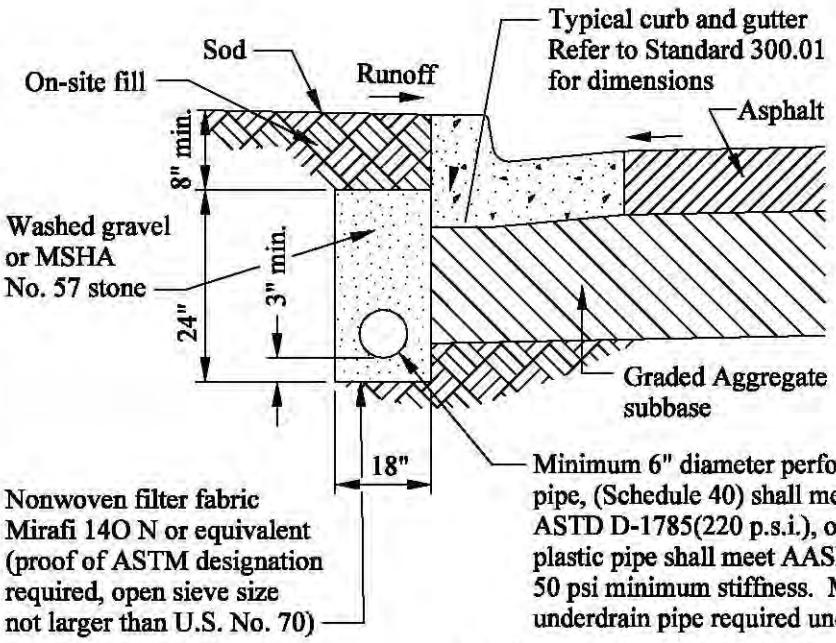
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

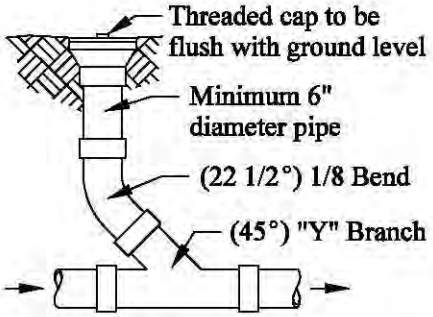
DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Concrete Side Ditch

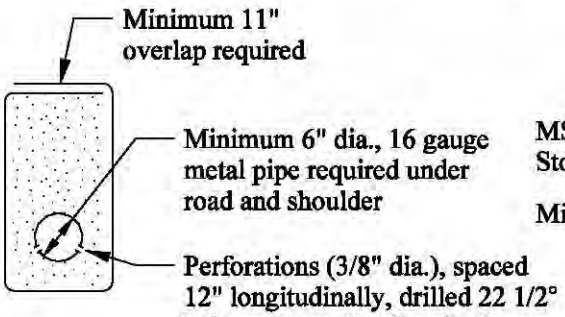
STD. 300.12



Roadway Section with Underdrain

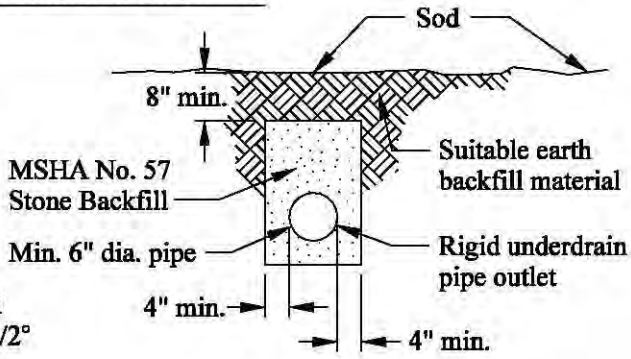


Underdrain Cleanout
(Install at 100' intervals)



Filter Fabric

Filter medium allows water to pass through while preventing soil particles from migrating into drainage stone.



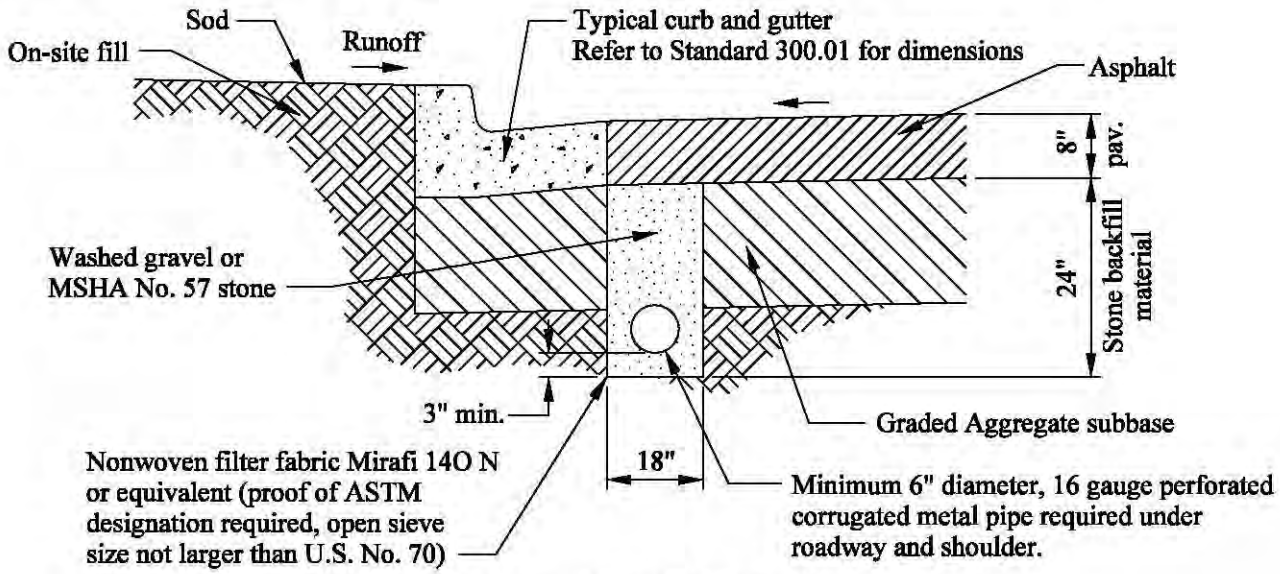
Outlet Ditch

Exposed pipe at end to be shaped to conform to the terrain along the outfall. An outlet headwall consisting of Class 1 Concrete with No.4 reinforcing bars forming a collar around the pipe may be required in some cases.

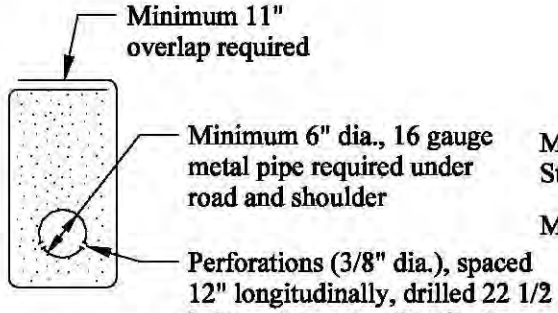
General Notes

1. Underdrain system can be located anywhere within 2' of back of the curb.
2. Underdrain system shall extend a minimum of 32" below the top of the curb.
3. 6" underdrain system shall be tied into stormwater structures or carried in a closed pipe to natural watershed.
4. Underdrain pipe shall be placed with a minimum 0.5% ft/ft positive slope toward the structure.
5. MSHA No. 57 stone backfill should meet gradation requirements outlined in ASTM D2940, AASHTO M43.
6. Underdrain placement in roadway or shoulder will require a minimum 16 gauge corrugated metal pipe.
7. Underdrain system to be used in all urban section roadways.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Underdrain (Urban Section)	STD. 300.13

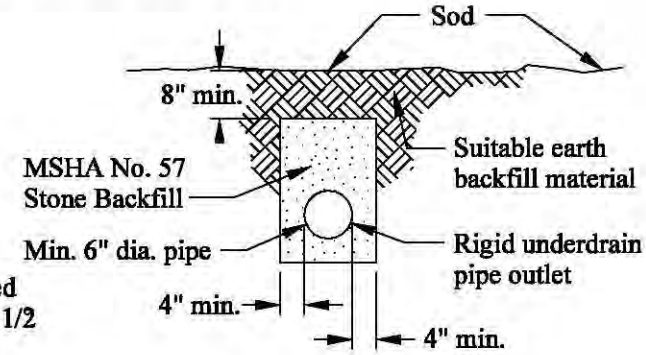


Roadway Section with Underdrain



Filter Fabric

Filter medium allows water to pass through while preventing soil particles from migrating into drainage stone.



Outlet Ditch

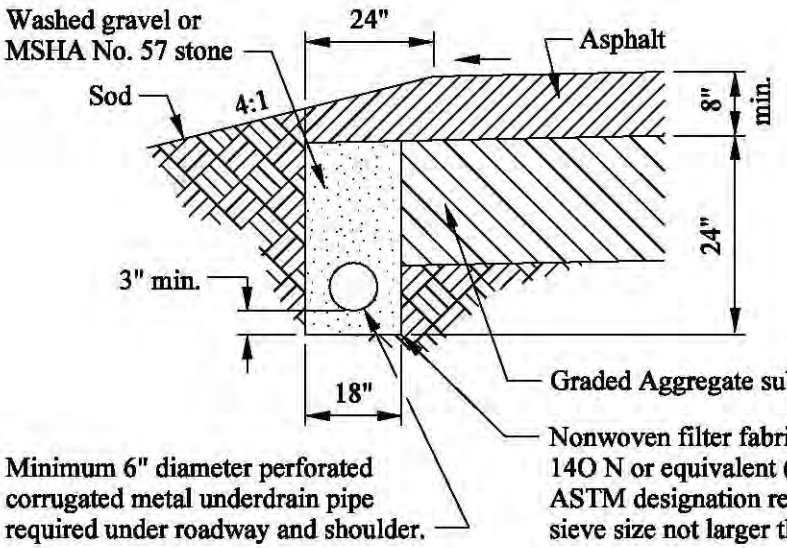
Exposed pipe at end to be shaped to conform to the terrain along the outfall. An outlet headwall consisting of Class 1 Concrete with No.4 reinforcing bars forming a collar around the pipe may be required in some cases.

General Notes

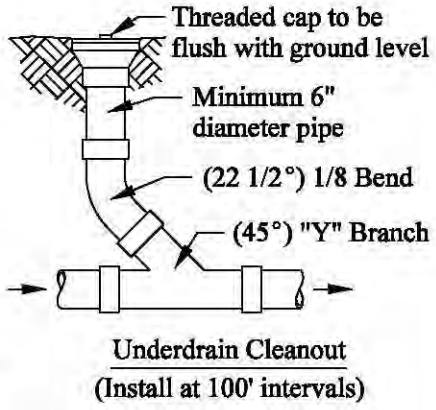
1. Underdrain system can be located in front of the curb.
2. Underdrain system shall extend a minimum of 32" below the top of gutter.
3. 6" underdrain system shall be tied into stormwater structures or carried in a closed pipe to natural watershed.
4. Underdrain pipe shall be placed with a minimum 0.5% ft/ft positive slope toward the structure.
5. MSHA No. 57 stone backfill should meet gradation requirements outlined in ASTM D2940, AASHTO M43.
6. Underdrain system placement in roadway or shoulder will require a minimum 16 gauge corrugated metal pipe.
7. Underdrain system to be used in all urban section roadways.

This design shall be used only on Capital Improvement Program and rehabilitation projects, and requires written approval by the Department.

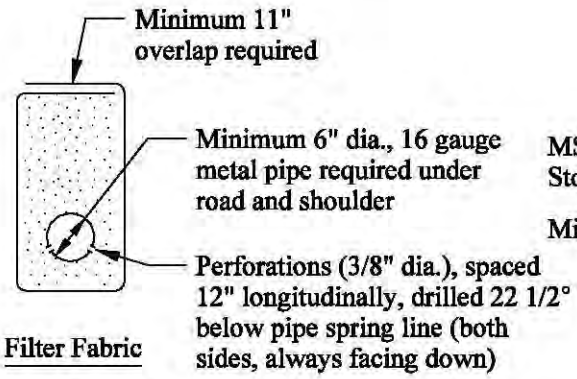
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Underdrain Special Conditions for Retrofit and CIP	STD. 300.14



Roadway Section with Underdrain

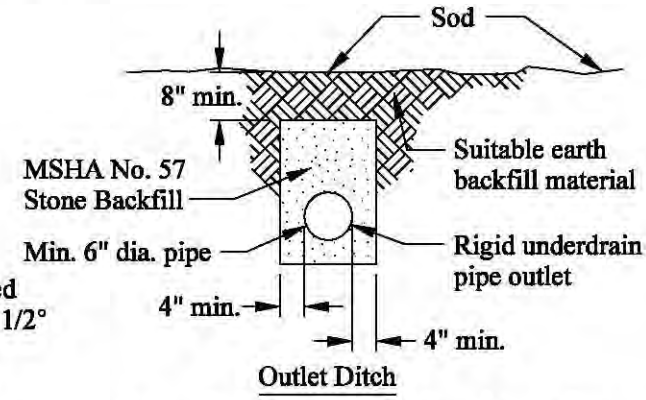


Underdrain Cleanout
(Install at 100' intervals)



Filter Fabric

Filter medium allows water to pass through while preventing soil particles from migrating into drainage stone.



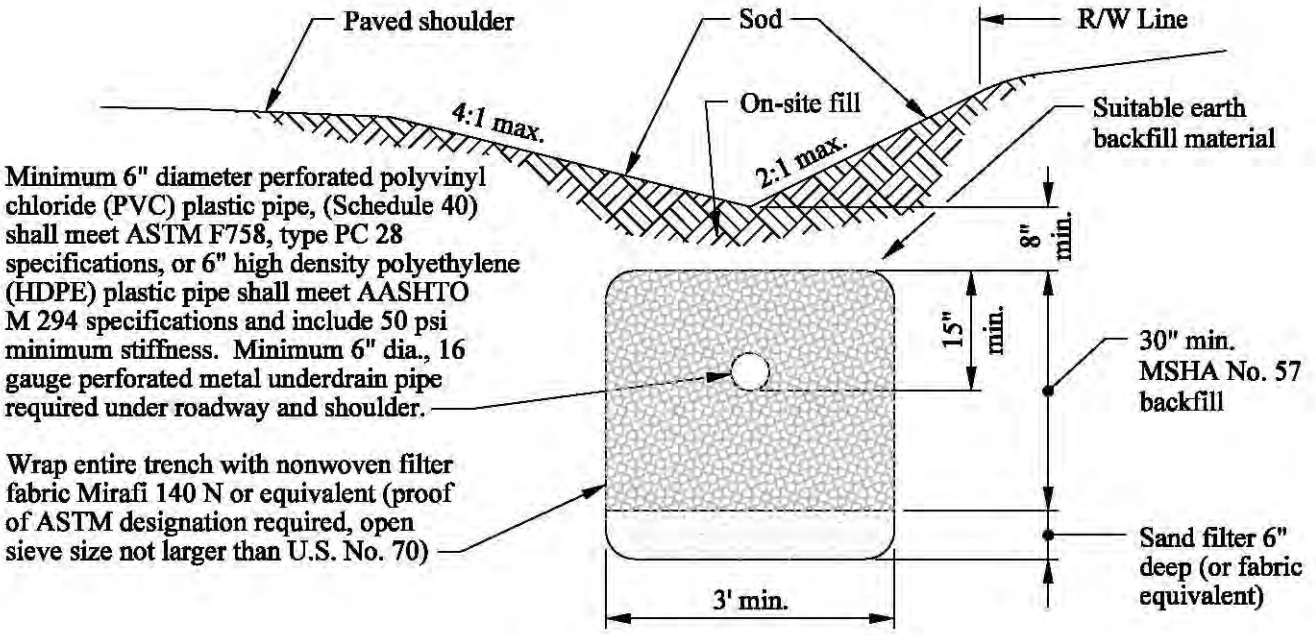
Outlet Ditch

Exposed pipe at end to be shaped to conform to the terrain along the outfall. An outlet headwall consisting of Class 1 Concrete with No.4 reinforcing bars forming a collar around the pipe may be required in some cases.

General Notes

1. Underdrain system can be located beyond edge of paved shoulder.
2. Underdrain system shall extend a minimum of 32" below the top of paved shoulder.
3. 6" underdrain system shall be tied into stormwater structures or carried in a closed pipe to natural watershed.
4. Underdrain pipe shall be placed with a minimum 0.5% ft/ft positive slope toward the structure.
5. MSHA No. 57 stone backfill should meet gradation requirements outlined in ASTM D2940, AASHTO M43.
6. Underdrain system placement in roadway or shoulder will require a minimum 16 gauge corrugated metal pipe.
7. Underdrain system to be used in rural sections at low points, areas of high water table, or in conjunction with stormwater management low-impact systems.

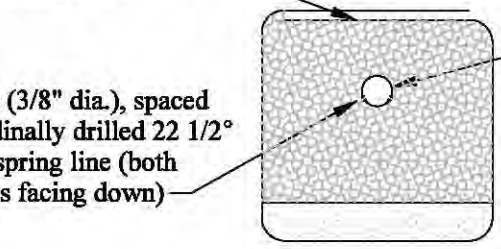
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Underdrain (Rural Section)	STD. 300.15



Minimum 6" diameter perforated polyvinyl chloride (PVC) plastic pipe, (Schedule 40) shall meet ASTM F758, type PC 28 specifications, or 6" high density polyethylene (HDPE) plastic pipe shall meet AASHTO M 294 specifications and include 50 psi minimum stiffness. Minimum 6" dia., 16 gauge perforated metal underdrain pipe required under roadway and shoulder.

Wrap entire trench with nonwoven filter fabric Mirafi 140 N or equivalent (proof of ASTM designation required, open sieve size not larger than U.S. No. 70)

Roadway Section with Infiltration System



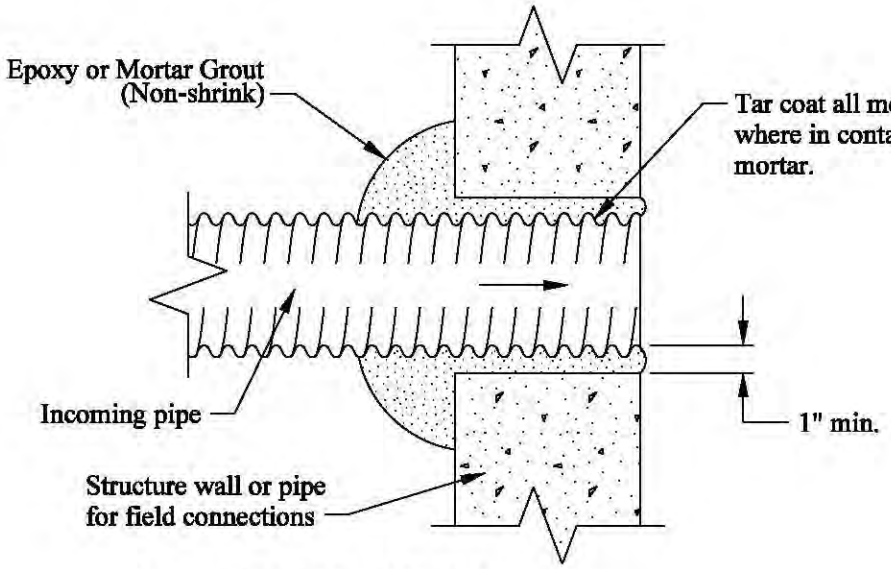
Filter medium allows water to pass through while preventing soil particles from migrating into drainage stone.

Filter fabric

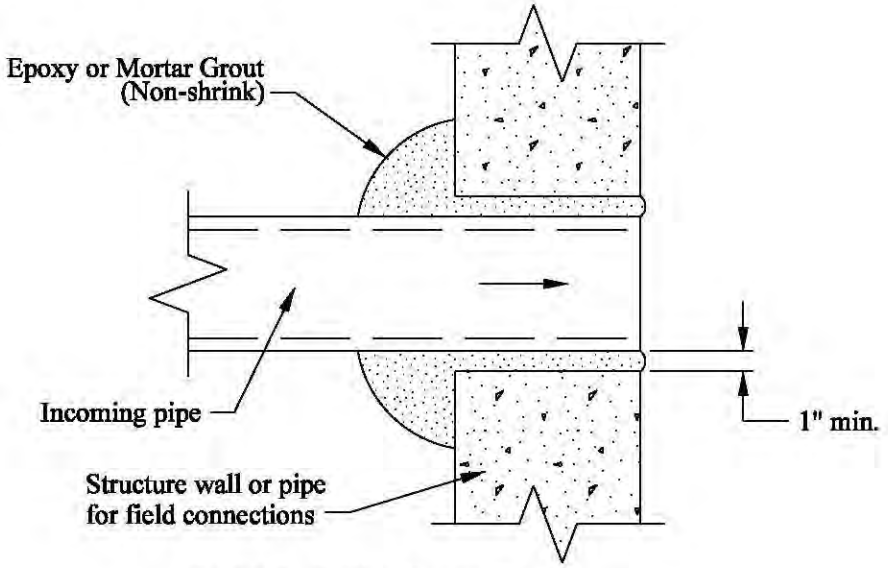
General Notes

1. Underdrain pipe and low-impact infiltration system shall be installed underneath the invert of the sideditch.
2. 6" underdrain pipe shall be tied directly into stormwater structures or carried as a closed system to a natural watershed. The exposed end of underdrain pipe shall be shaped to conform to the terrain along the outfall. In some cases, an outlet headwall consisting of Class I Concrete with No. 4 reinforcing bars forming a collar around the pipe may be required.
3. All drain pipe shall be placed with a minimum 0.5% ft./ft. positive slope toward the structure. Rigid underdrain pipe shall be used at outlet.
4. Bedding Sand to be a 6-inch layer of clean, washed and sand placed on the bottom of the trench to encourage drainage and to prevent compaction of the native soil while the stone aggregate is added. The sand must meet graduation requirements outlined in ASTM C33 Bedding Sand or as otherwise approved by the Department.
5. MSHA No. 57 stone backfill shall meet graduation requirements outlined in ASTM D2940, AASHTO M43.
6. Low-impact infiltration system shall be used along rural section roadways at low points, in locations where the subsoil is sufficiently permeable to provide infiltration and the sediment load is low. To avoid potential groundwater contamination, low-impact systems shall be carefully sited to avoid use in areas of high water table.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Low-impact Infiltration System	STD. 300.16



Corrugated Metal Pipe (CMP) Connection
(Minimum 6" diameter pipe)

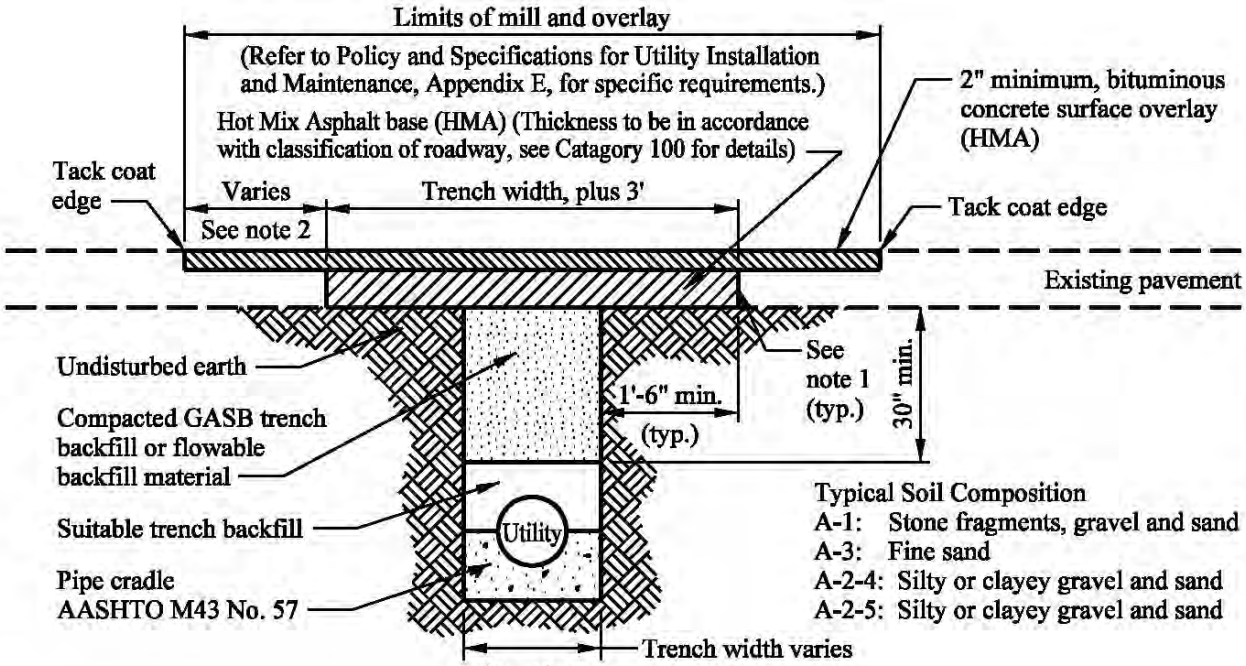


Rigid Plastic Pipe Connection
(Minimum 6" diameter pipe)

Notes:

1. Corrugated metal pipe (CMP) shall be used in roadway and shoulder area, and rigid plastic pipe outside of paved areas.
2. Grout shall be placed around pipe to form a tight fit.
3. Place bell against outside wall of storm drain pipe or structure and trim incoming pipe flush with inside wall or pipe.
4. All types of incoming pipe material must be approved by the Department.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Underdrain or Yard Drain Connection to Storm Drain Structure	STD. 300.17

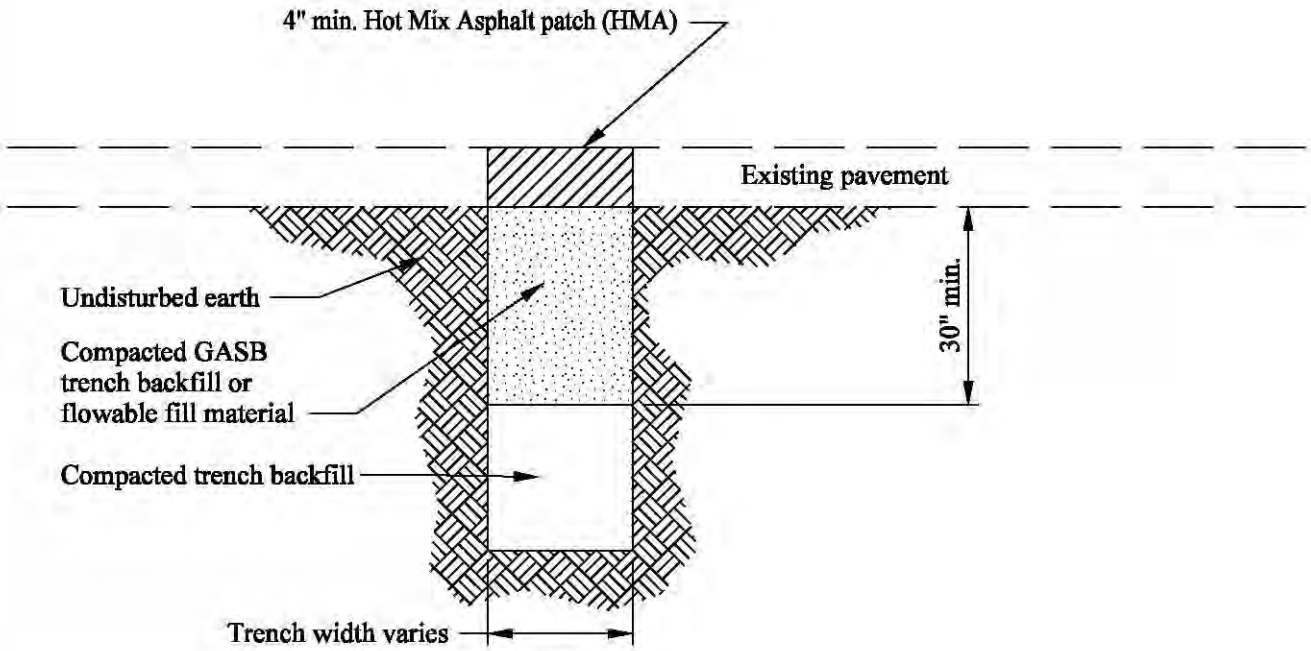


Section

Notes:

1. Existing pavement shall be milled or saw cut full depth where the limits of mill and overlay meet the existing pavement.
2. For longitudinal and transverse cuts, the limits of the mill and overlay shall be in accordance with the Policy and Specification for Utility Installation and Maintenance, Attachement 2 and 3, for specific requirements.
3. When the distance from the edge of the existing pavement to the edge of new asphalt base is 3 feet or less, the existing pavement shall be removed and replaced to the edge.
4. For transverse cuts, perimeter milling with a minimum width of 12" shall be required.
5. All milling shall be 2" minimum depth.
6. Hot Mix Asphalt (HMA) base and surface overlay mix design to be in accordance with classification of roadway, (see Category 100 for details)
7. Hot Mix Asphalt (HMA) surface shall be placed to a depth equal to the depth of the existing surface or 2" minimum, whichever is greater. Hot Mix Asphalt (HMA) base shall be a depth equal to the depth of the existing base or 4", whichever is greater. All Hot Mix Asphalt (HMA) shall be compacted to an in-place density of 92 to 97 percent of the maximum specific gravity.
8. The top two-and-one-half (2 1/2) feet of all trench backfill beneath the pavement layer shall be compacted Graded Aggregate Subbase (GASB) to 95% of the maximum dry density per AASHTO Designation T-99. Prior to and during compaction, moisture of fill material shall be maintained within 2% of optimum. The fill shall be placed and compacted in horizontal layers not to exceed 8" in thickness (loose). GASB shall conform to the requirements of the latest edition MSHA Standard Specifications for Construction and Materials manual. Flowable fill material may also be used when approved by the Department.
9. Suitable trench backfill below the top two-and-one-half (2 1/2) feet down to five (5) feet deep shall be placed in horizontal layers not to exceed 8 inches (loose) and compacted to at least 92% of maximum dry density per AASHTO Designation T-99. Moisture content shall be maintained within 2% optimum.
10. Trench backfill below five (5) feet deep shall be placed and compacted in layers not to exceed 1 foot in thickness (loose).
11. All compaction work shall be performed using suitable equipment such as sheepsfoot rollers or pneumatic and/or vibratory plate type compaction equipment. Backfill material shall be placed evenly around the structure and shall be free of boulders, frozen lumps or foreign matter that could cause hard spots or decompose creating voids.
12. Where cave-ins under existing asphalt pavement occur, the existing pavement shall be saw-cut 18 inches beyond the limit of the cave-in.
13. Use an independant testing lab to verify compaction.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Utility Patch in Flexible Asphalt Pavement	STD. 300.18

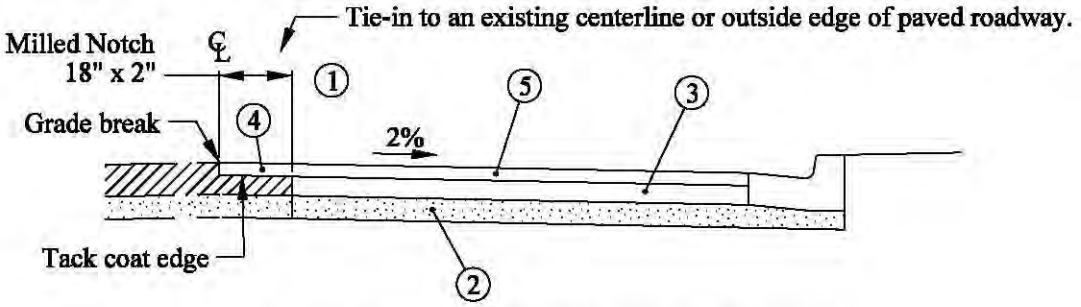


Section

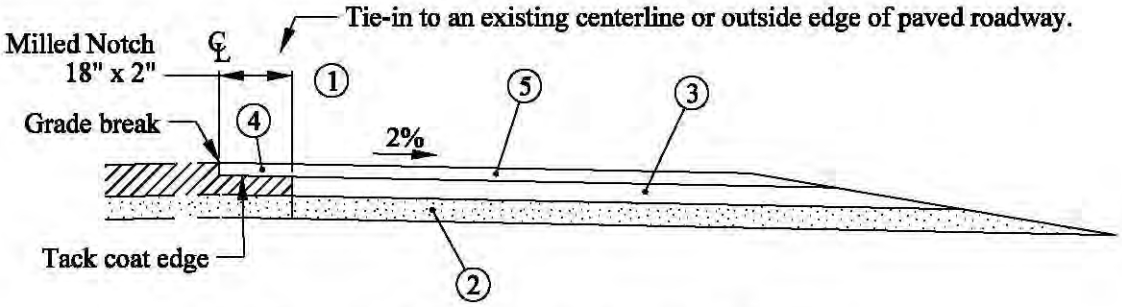
Notes:

1. When the distance from the edge of the existing pavement to the edge of new asphalt base is 3 feet or less, the existing pavement shall be removed and replaced back to the edge.
2. Hot Mix Asphalt (HMA) patch shall be placed to a depth equal to the depth of the existing surface or 4" minimum, whichever is greater. All Hot Mix Asphalt (HMA) shall be compacted to an in-place density of 92 to 97 percent of the maximum specific gravity.
3. The top two-and-one-half (2 1/2) feet of all trench backfill beneath the pavement layer shall be compacted Graded Aggregate Subbase (GASB) to 95% of the maximum dry density per AASHTO Designation T-99. Prior to and during compaction, moisture of fill material shall be maintained within 2% of optimum. The fill shall be placed and compacted in horizontal layers not to exceed 8" in thickness (loose). GASB shall conform to the requirements of the latest edition MSHA Standard Specifications for Construction and Materials manual. Flowable fill material may also be used when approved by the Department.
4. Suitable trench backfill below the top two-and-one-half (2 1/2) feet down to five (5) feet deep shall be placed in horizontal layers not to exceed 8 inches (loose) and compacted to at least 92% of maximum dry density per AASHTO Designation T-99. Moisture content shall be maintained within 2% optimum.
5. Trench backfill below five (5) feet deep shall be placed and compacted in layers not to exceed 1 foot in thickness (loose).
6. All compaction work shall be performed using suitable equipment such as sheepsfoot rollers or pneumatic and/or vibratory plate type compaction equipment. Backfill material shall be placed evenly around the structure and shall be free of boulders, frozen lumps or foreign matter that could cause hard spots or decompose creating voids.
7. Where cave-ins under existing asphalt pavement occur, the existing pavement shall be saw-cut 18 inches beyond the limit of the cave-in.
8. Use an independant testing lab to verify compaction.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Temporary Patch in Flexible Asphalt Pavement	STD. 300.19



Detail - Urban Roadway Widening



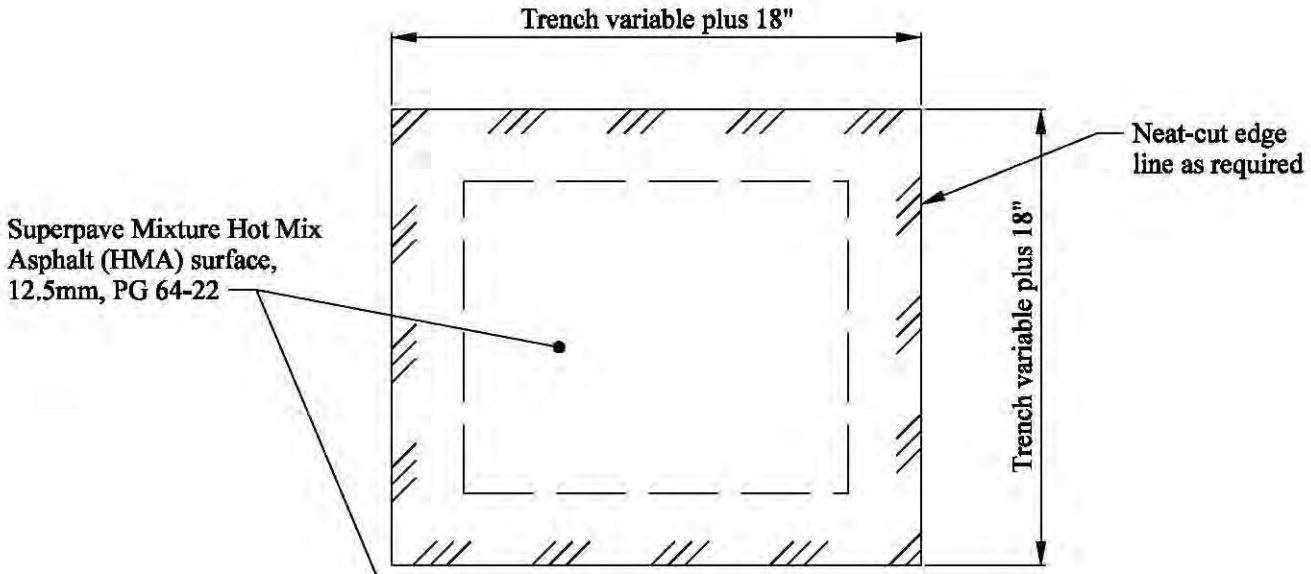
Detail - Rural Roadway Widening

Note: For required depth of paving and base material, see Catagory 100 Standard Details

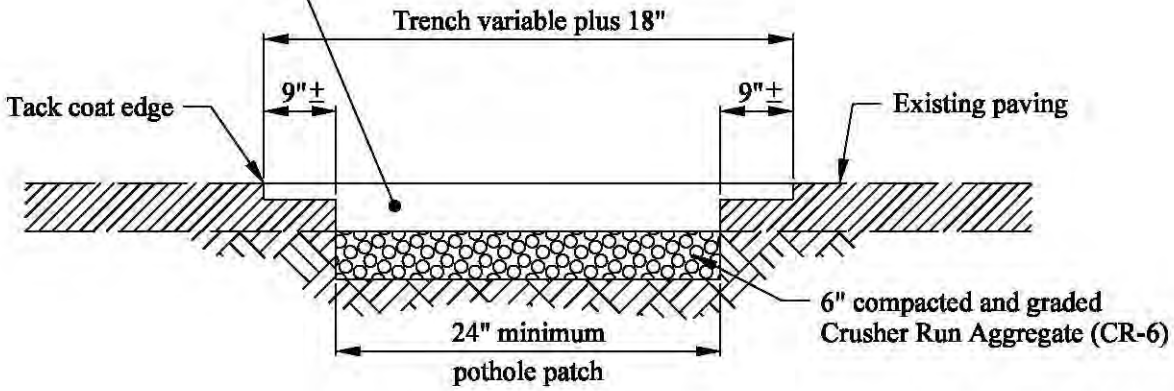
Roadway Widening Process

Step 1 - Saw cut edge of existing pavement to establish a clean, straight edge.
Step 2 - Place approved course of Graded Aggregate Subbase (GASB) material to limits of road widening.
Step 3 - Place Hot Mix Asphalt (HMA) the full limits of widening (base course only).
Step 4 - Mill an additional 18 inches (minimum) along existing pavement surface equal to the depth of final surface course. Note: Milling must remove existing yellow or white line stripes at centerline or edge of existing pavement. Limits of milling may be extended if deemed necessary by the Department Engineer.
Step 5 - Place Hot Mix Asphalt (HMA) surface course the full width of widening including the 18 inches of milled area noted in the above details. The overlapped joint will prevent settlement of pavement and also develops a water tight seal.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Method of Widening Existing Flexible Asphalt Pavement	STD. 300.20



Plan View

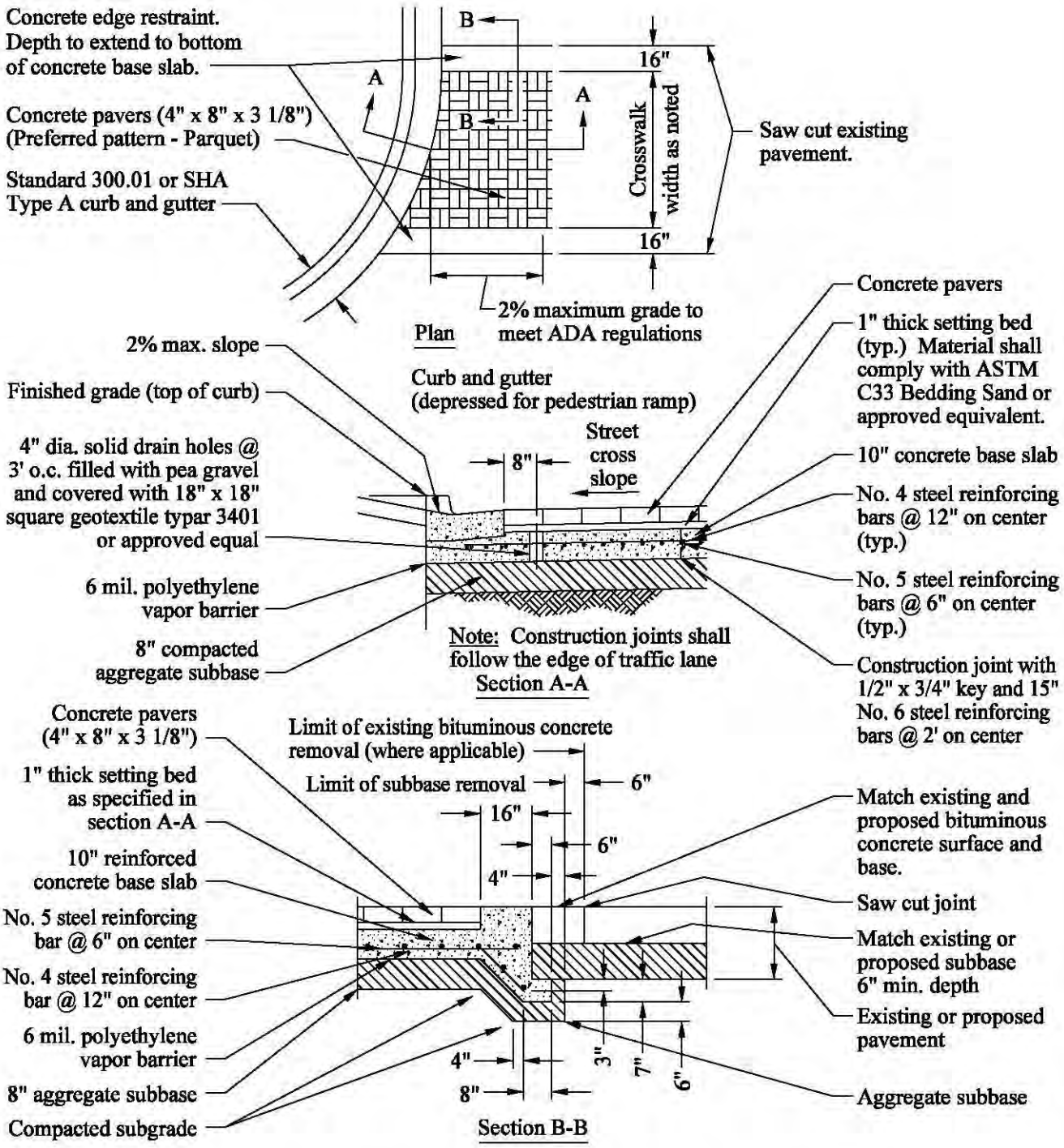


Detail

Notes:

1. Trim or saw cut a neat, straight edge along outside limits of pothole. See plan and detail above. Remove all loose or structurally unstable material. Trim an additional 9" off the surface pavement beyond the neat-cut edge line. Backfill with 6" compacted and graded Crusher Run Aggregate (CR-6) subbase material. Tack coat exposed overlapped pavement area and backfill with 6" minimum Superpave Hot Mix Asphalt (HMA) surface, 12.5mm, PG 64-22 material.
2. When the distance from the edge of existing pavement to the edge of the pothole is 3 feet or less, the existing pavement shall be removed and replaced to the edge.
3. All compaction work shall be performed using suitable power equipment such as rollers for the paving or pneumatic and/or vibratory plate type compaction equipment for all subbase backfill material.
4. When necessary, use an independent or County testing lab to verify compaction.

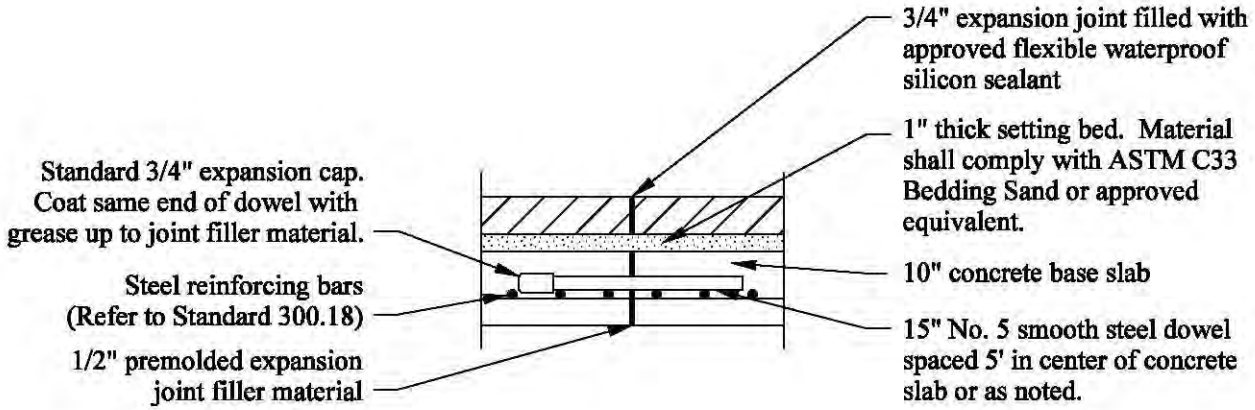
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Method of Permanent Pothole Patching in Flexible Asphalt Pavement	STD. 300.21



Notes:

1. All concrete shall be Class I (MSHA Mix No. 3), air-entrained, unless otherwise approved by the Department.
2. For expansion joint detail and notes, see Standard 300.23.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Pedestrian Crosswalk (Part I)	STD. 300.22

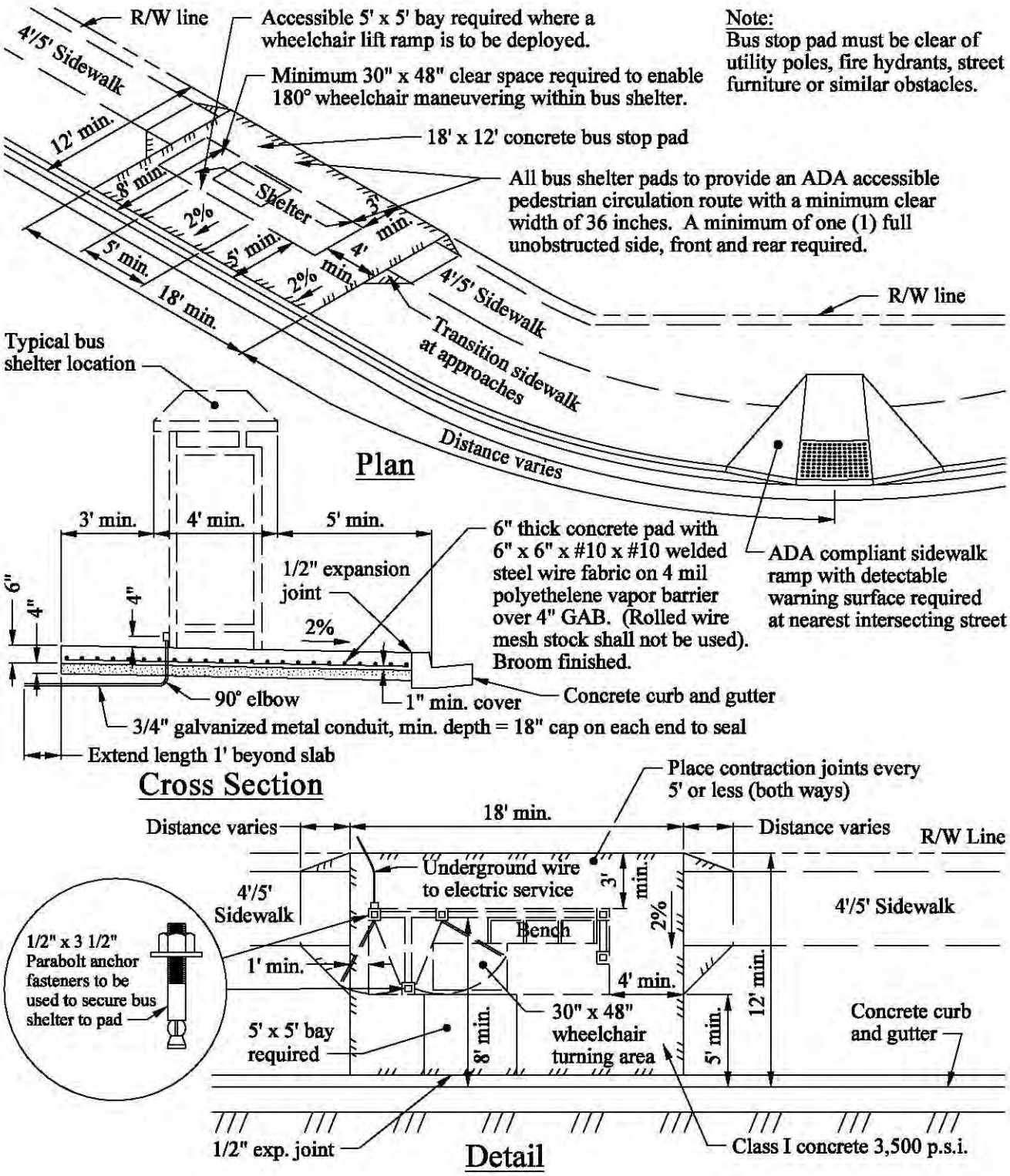


Expansion Joint Detail

Notes:

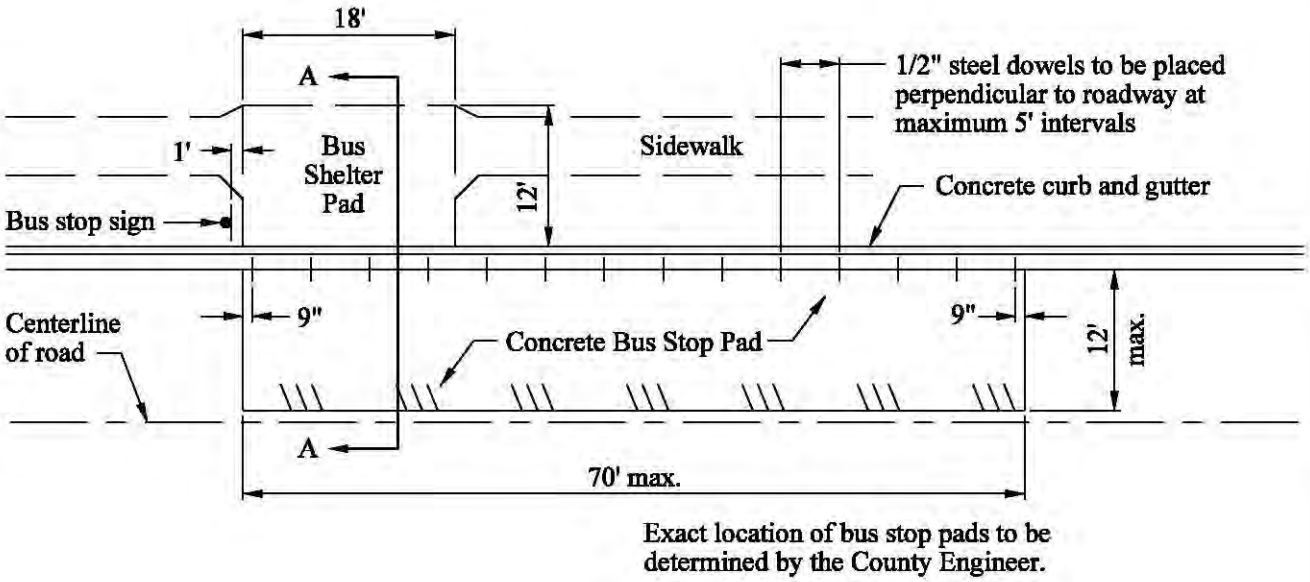
1. Provide expansion joint in crosswalk and concrete edge restraints at 15' maximum intervals.
2. Expansion joints shall be parallel to the street centerline, and shall be located along the edge of the traffic lane closest to the street centerline.
3. Use No. 5 smooth steel dowel only in concrete base slab with No. 3 and No. 4 steel reinforcement bars.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Pedestrian Crosswalk (Part II)	STD. 300.23



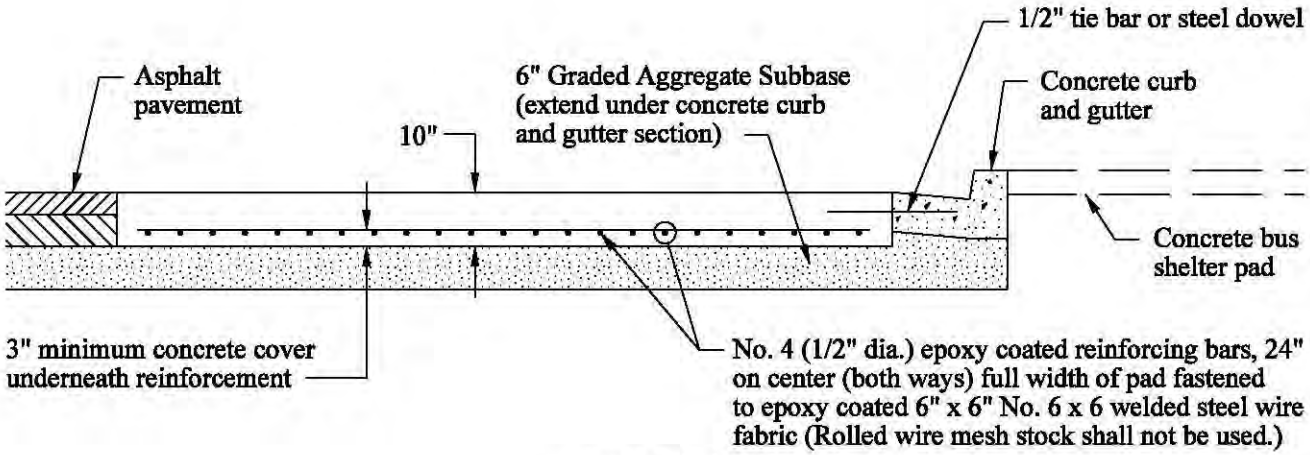
Note:
Bus stop pad must be clear of utility poles, fire hydrants, street furniture or similar obstacles.

APPROVED: DIRECTOR DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Concrete Bus Shelter Pad	STD. 300.24



Exact location of bus stop pads to be determined by the County Engineer.

Plan

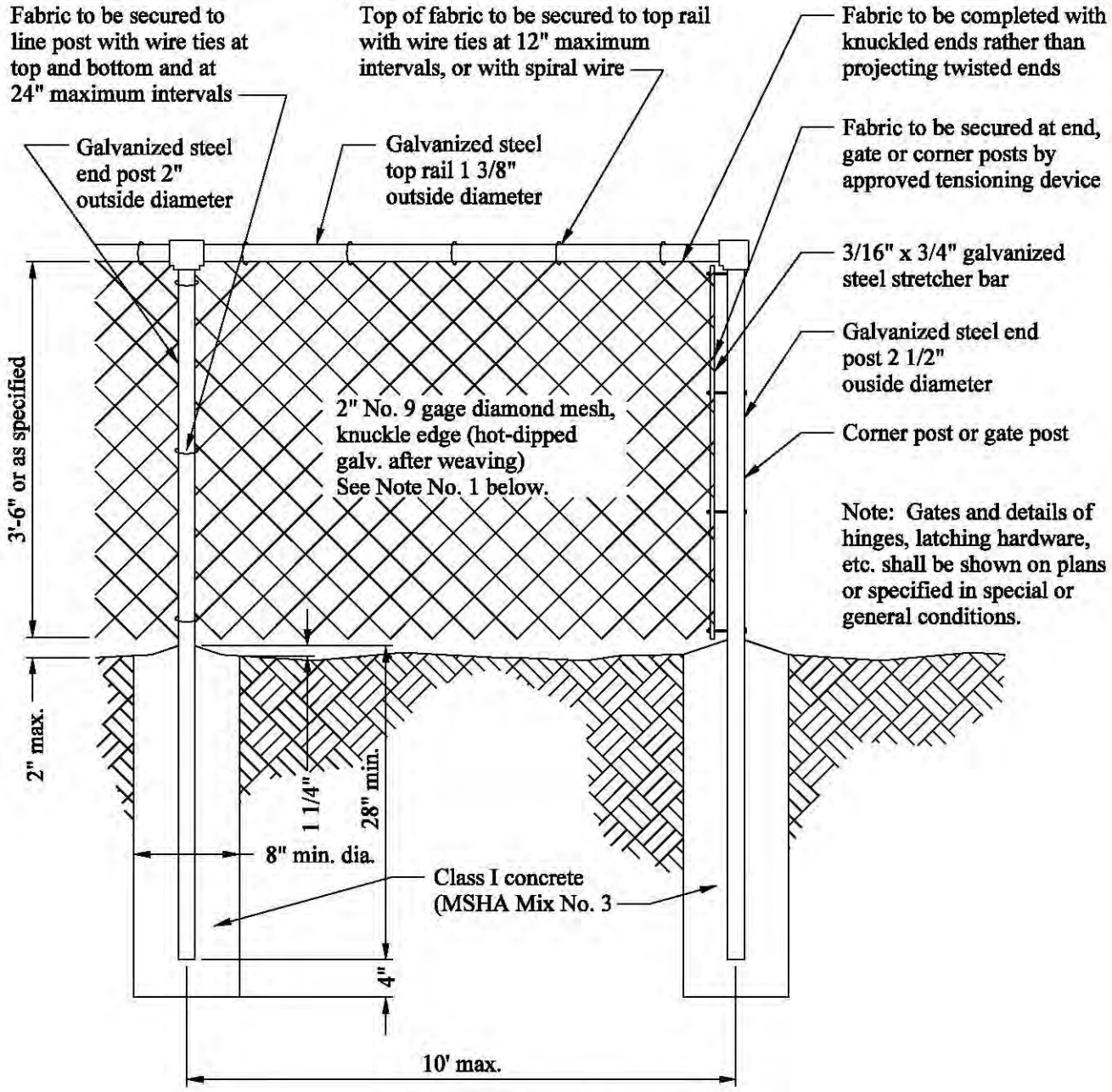


Section A-A

General Notes

1. All concrete to be Class II (MSHA mix No. 6) air-entrained, unless otherwise approved by the Department. Broom finish perpendicular to the roadway, and apply approved concrete liquid sealing compound and hardener to resist salt intrusion.
2. If length exceeds 14', contraction joints are to be placed at intervals not to exceed 20'.
3. No bus stop pad may be constructed within an intersection or end in the middle of a driveway entrance.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Concrete Bus Stop Pad	STD. 300.25

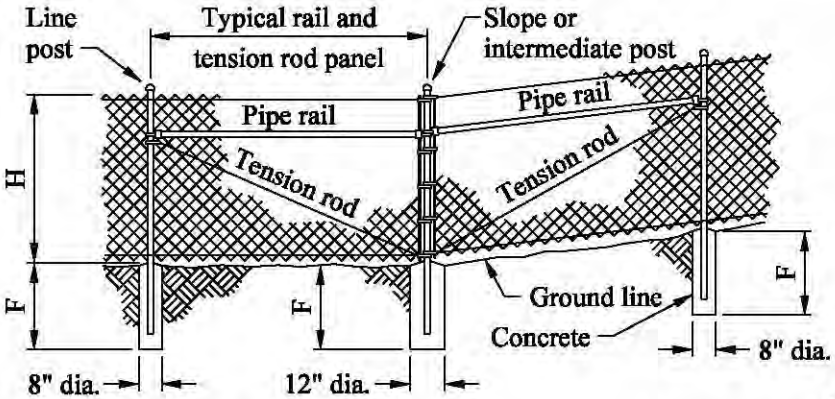


Typical Fence Elevation

Notes:

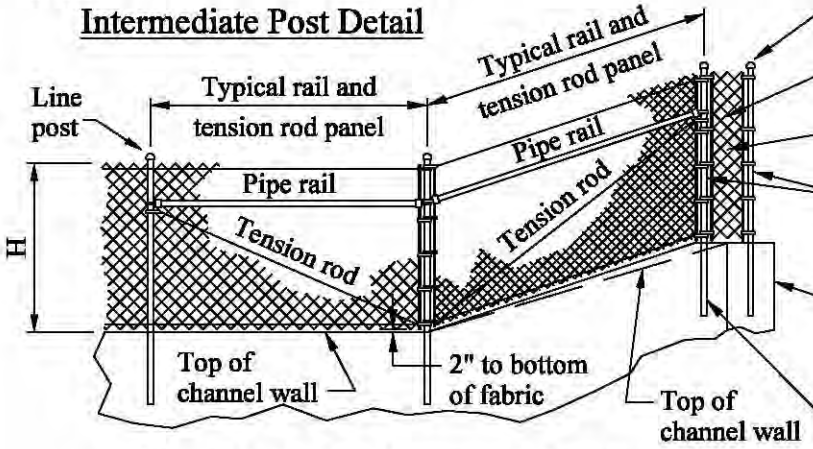
1. Black or dark green vinyl clad over galvanized steel chain link fence is required.
2. Galvanizing for all chain link fence types shall be in accordance with AASHTO M-181.
3. Fence posts used on structures shall be embedded 12" in epoxy sockets.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Chain Link Fence (Residential Property Installation)	STD. 300.26



Intermediate Post Detail

Intermediate and slope posts shall be installed at no more than 300' intervals along fence line and at grade changes exceeding 5%. Also applicable to channel fence.



Channel Wall and Wingwall Detail at Headwall

Headwall fence per details hereon except with top rail

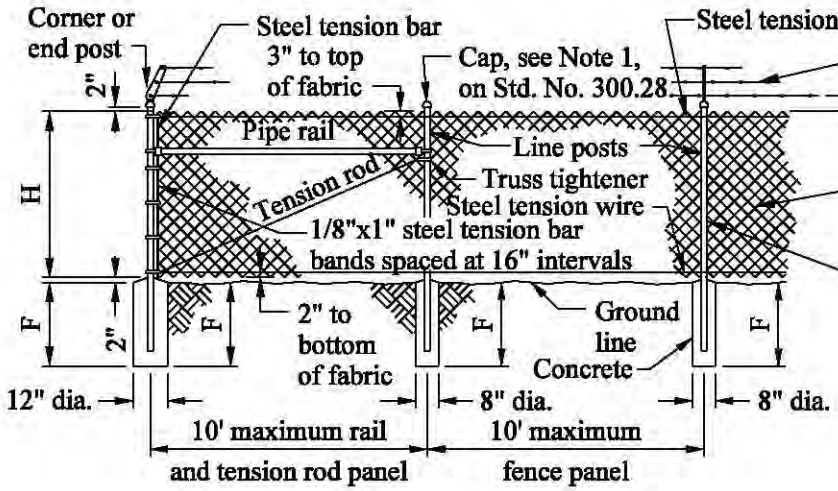
For less than 18" interval tie fabric to posts.

Fill clear openings greater than 3" with chain link fabric.

Use one post as an end and headwall post if top of channel wall is constructed

Concrete Headwall (If wall thickness is less than 8" install fence outside the wall)

See post embedment detail on Standard 300.28



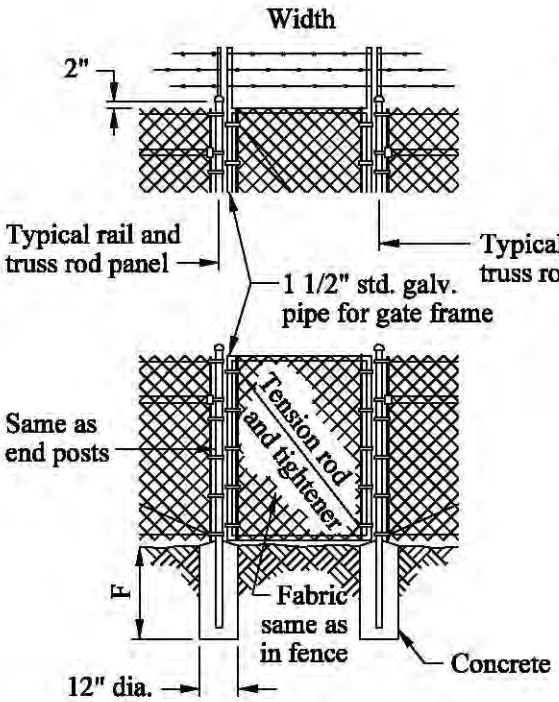
Typical Fence Elevation

H	F
60" or less	30"
Over 60"	36"

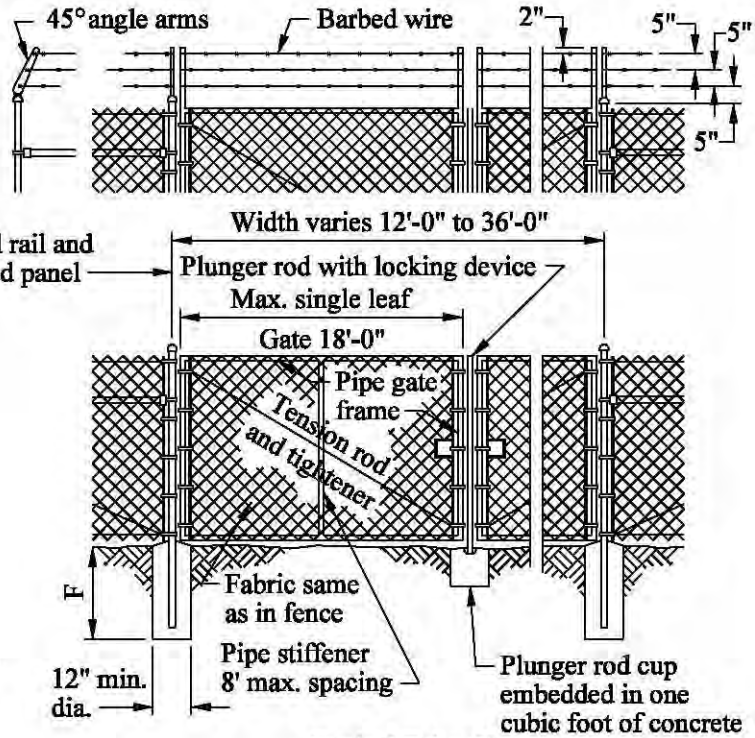
H = Height of fence
F = Depth of post foundation

Note: For slat installation, use heavier concrete footing and reinforced tension rod.

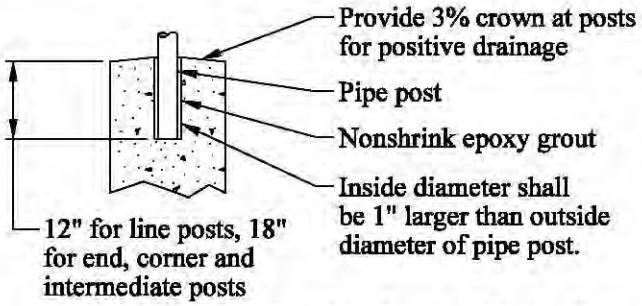
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Chain Link Fence (Commercial Property Installation) - Part I	STD. 300.27



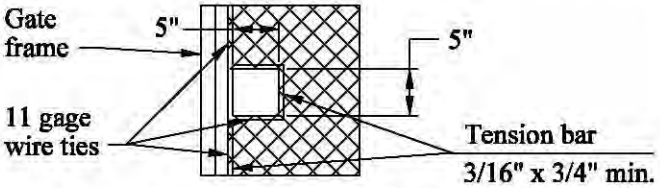
Typical Walk Gate



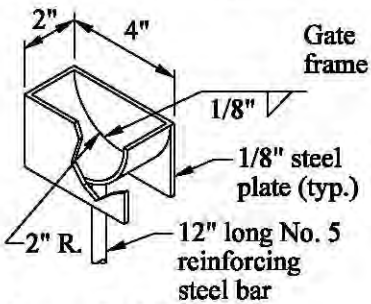
Typical Drive Gate



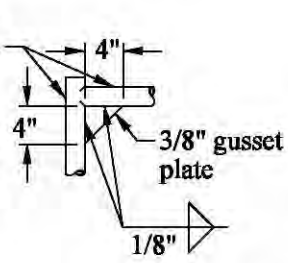
Post Embedment Detail in Concrete Headwalls, Retaining Walls, Channel Walls, etc.



Detail of Cut-out for Chain and Lock



Plunger Rod Cup Detail

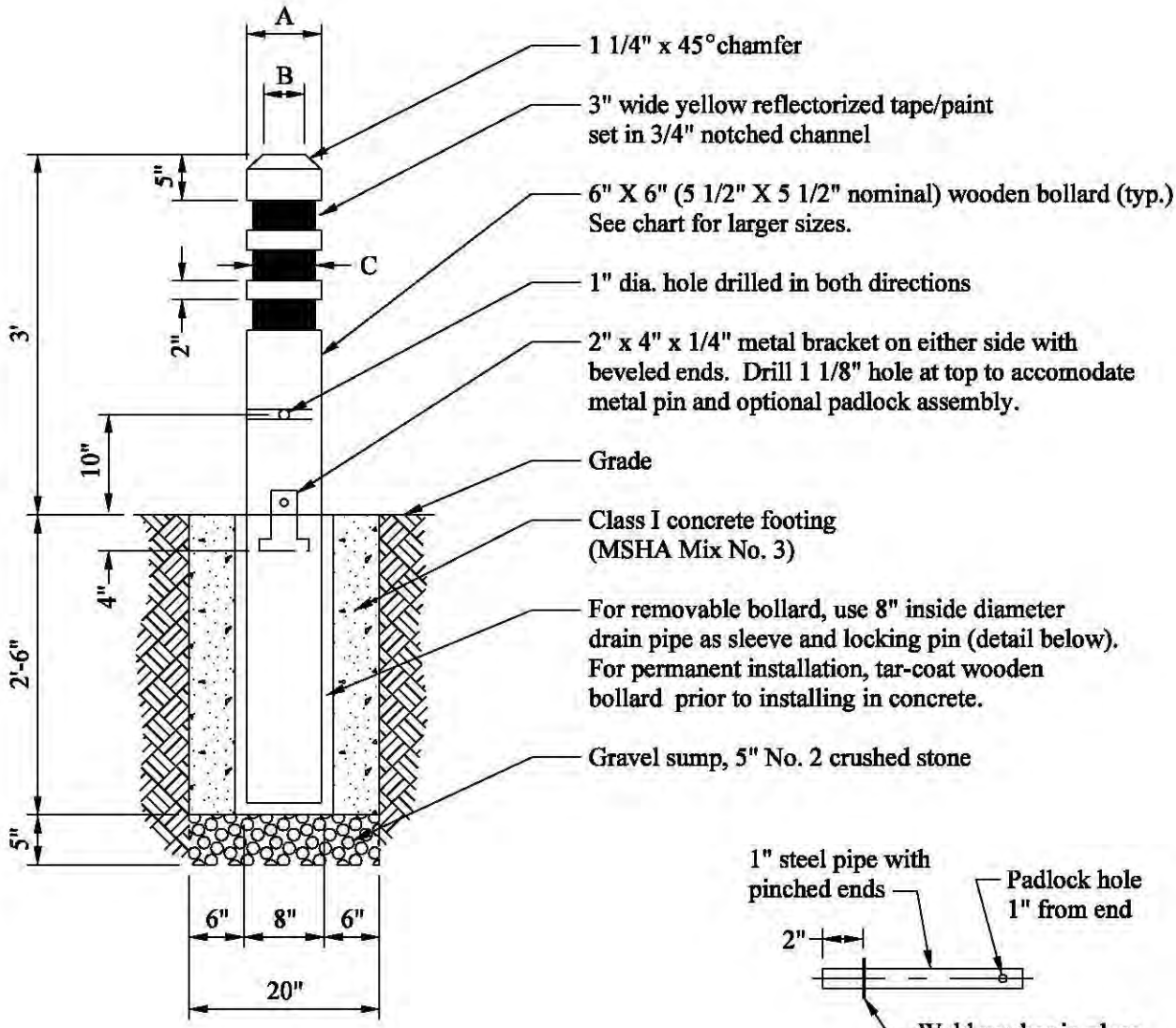


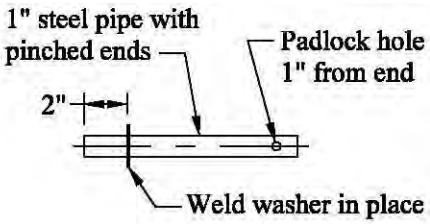
Gusset Detail

Notes:

1. Secure drive fit galvanized cap to post with 1/4" round head rivet.
2. H denotes fabric and/or fence height. F denotes depth of post foundation, see Standard 300.27.
3. F denotes depth of post foundation, see Standard 300.27.
4. If chain link fence with top rail is specified, delete steel tension wire at the top and the pipe rails at intermediate, end and corner posts. Extend tension rod to the top rail.
5. Barbed wire shall be used only when specified.
6. All data shown on typical details shall be applicable to other pertinent details.
7. Black or dark green vinyl clad over galvanized steel chain link fence is required.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Chain Link Fence (Commercial Property Installation) - Part II	STD. 300.28





Locking Pin Detail

Dimension Chart				
Post size	A	B	C	Note
6" x 6"	6"	3 1/2"	4 1/2"	Removable
8" x 8"	8"	5 1/2"	6 1/2"	Fixed
10" x 10"	10"	7 1/2"	8 1/2"	Fixed
12" x 12"	12"	9 1/2"	10 1/2"	Fixed

Notes:

1. All wood shall be pressure-treated Southern Yellow Pine or Cedar with exterior stain.
2. All connectors shall be galvanized.
3. Maximum spacing to be 4 feet when used to prevent vehicular traffic access.

APPROVED:

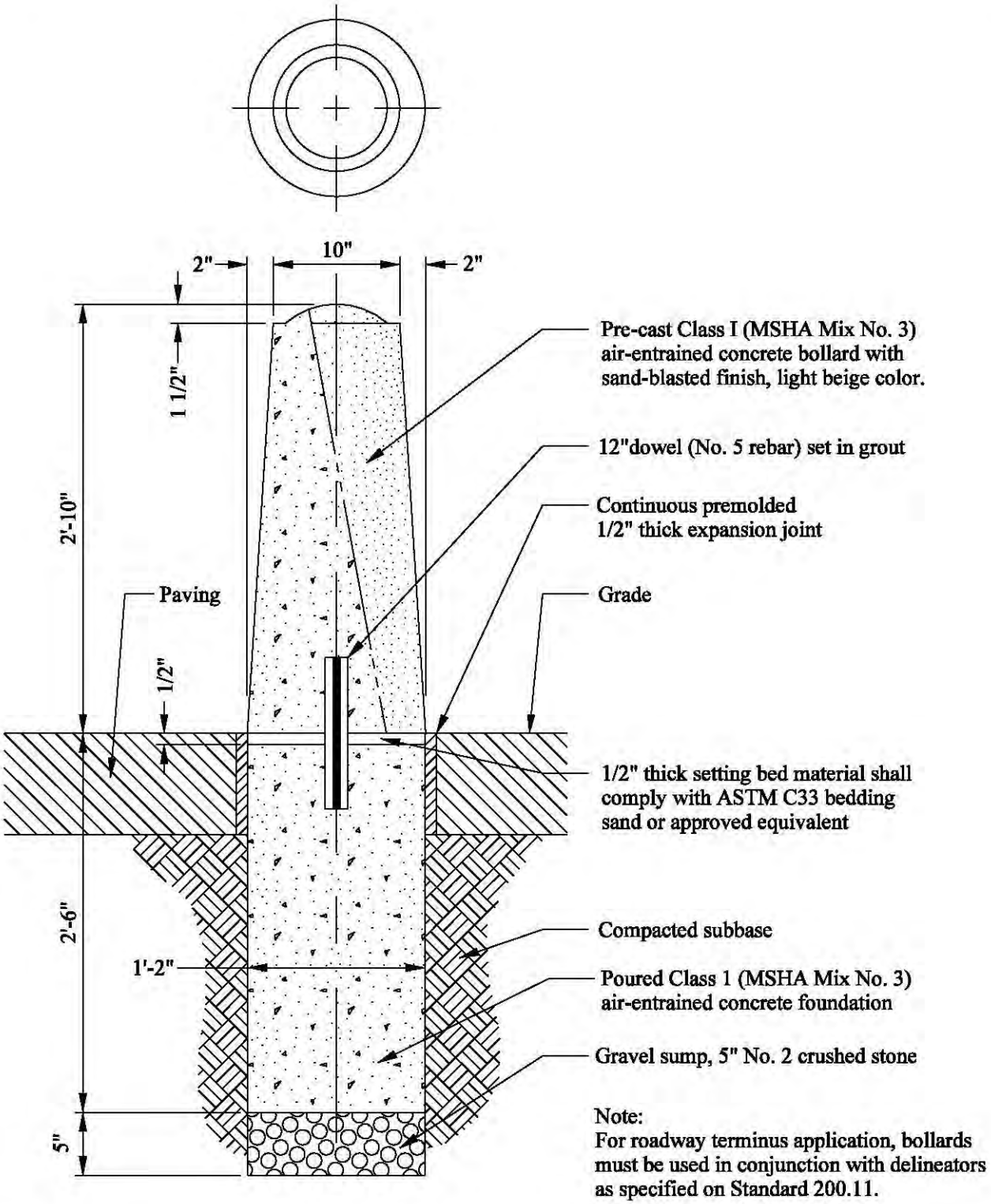
DIRECTOR DATE

REVISION DATE:	APPROVED BY:

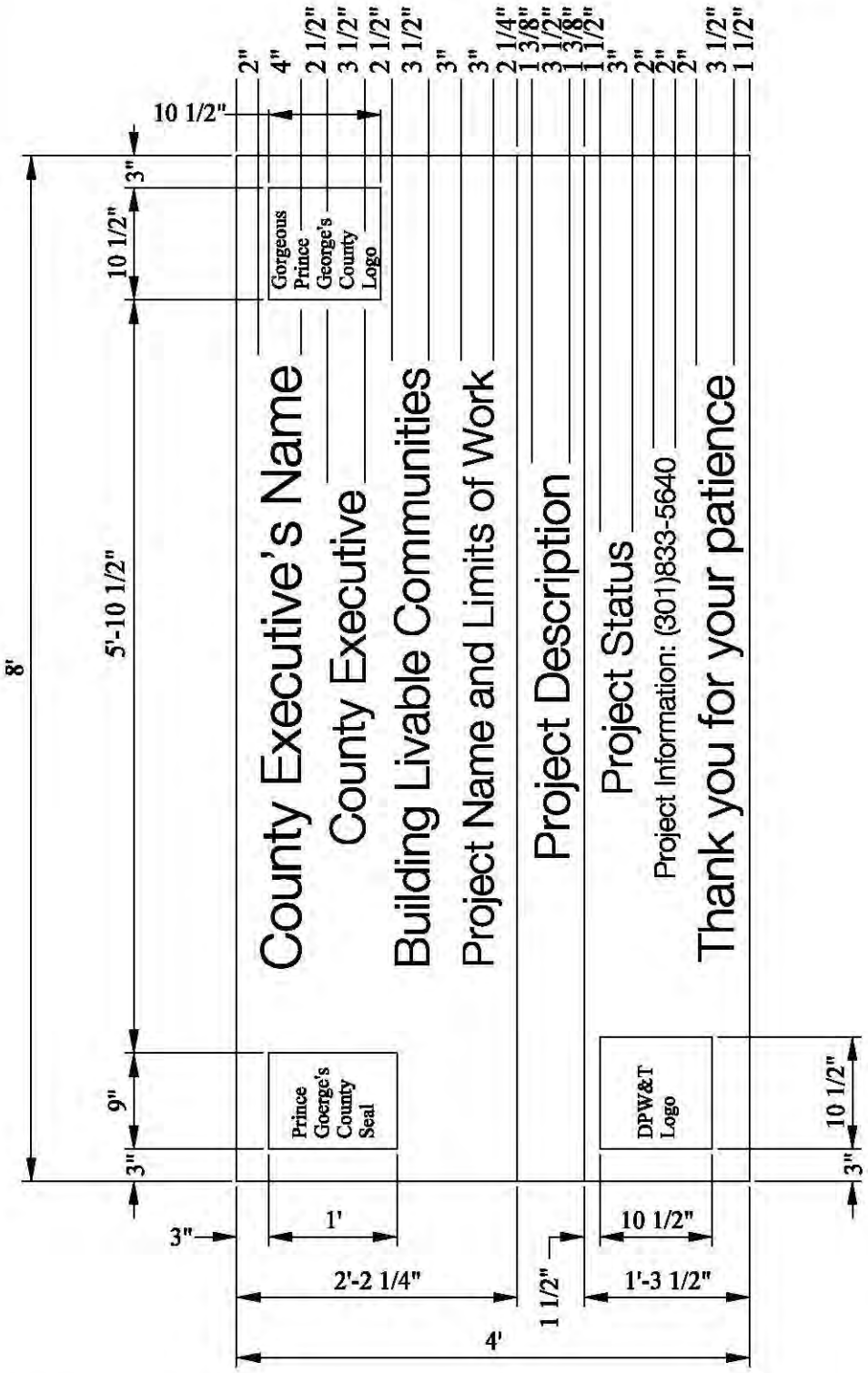
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Wooden Bollard

STD. 300.29

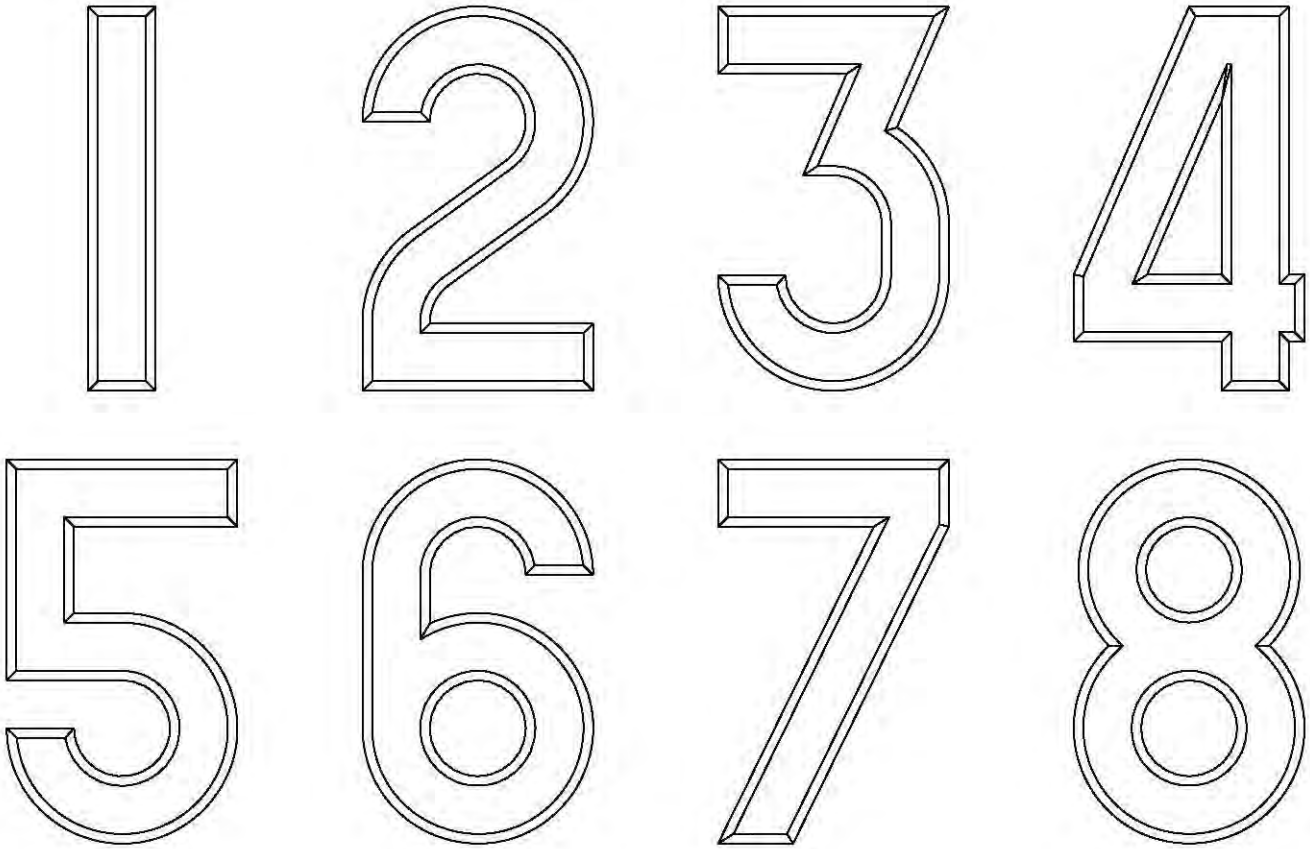


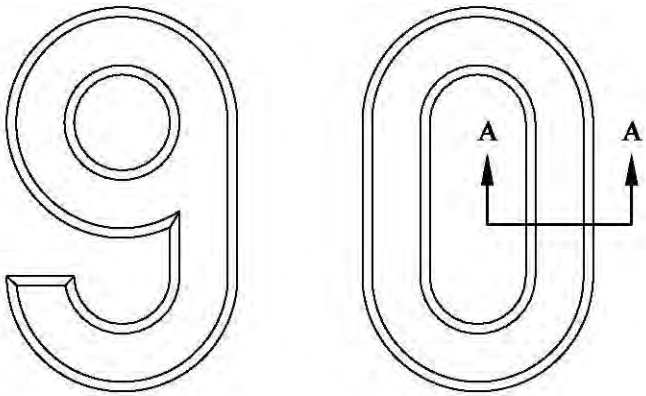
APPROVED: DIRECTOR DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Pre-cast Concrete Bollard	STD. 300.30

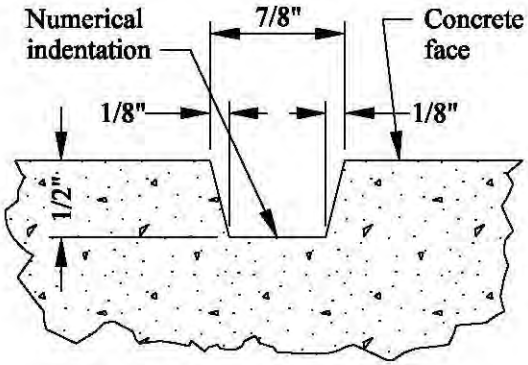


Notes:
Layout approval provided by Department's Project Manager
Font: Helvetica Medium
Top Panel: White Hi-intensity Sheeting w/ Olympic Blue Overlay
Lettering: White Reveal - Centered
Center Panel: Yellow Hi-intensity
Lettering: Black Solid - Centered
Bottom Panel: White Hi-intensity Sheeting w/ Olympic Blue Overlay
Lettering: White Reveal - Centered
Decals: Supplied by County

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Project Information Sign	STD. 300.31



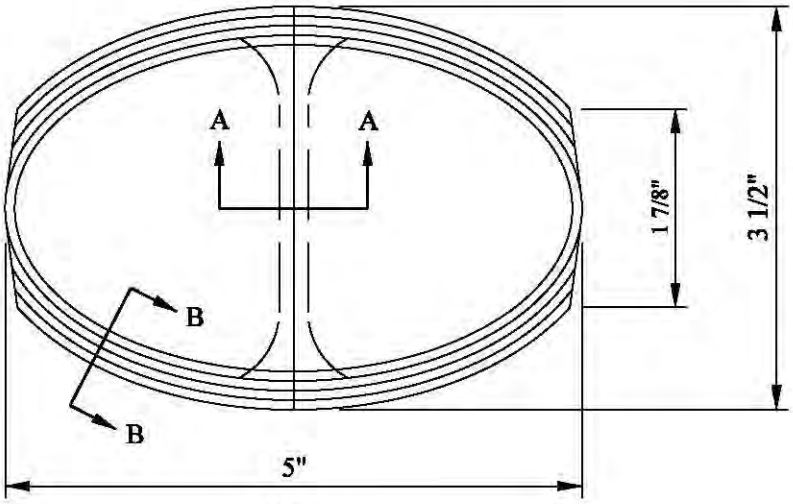




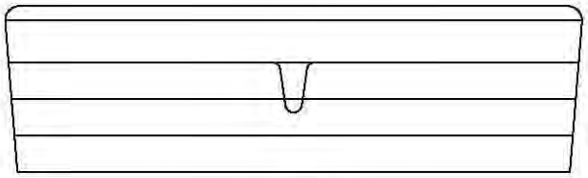
Section A-A

Notes:
1. All numerals are to be 5" high.
2. All numerals are to be 3" wide overall except "1" which will be 7/8" wide.
3. All numerals are to be indented into concrete (unpainted).
4. For more information, refer to MSHA Structural Standards Manual Standard No's. M(0.04)-99-331, M(0.05)-99-332 and M(0.07)-99-334.

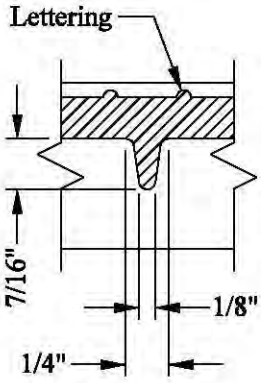
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Year Built Numerals for Structures	STD. 300.32



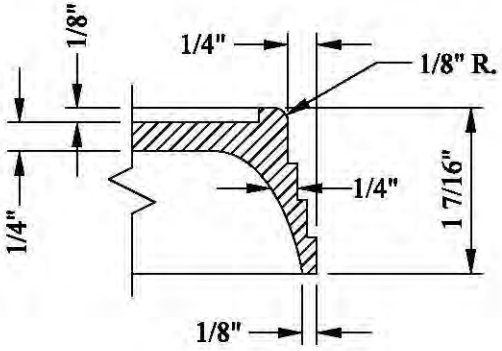
Plan



Elevation



Section A-A

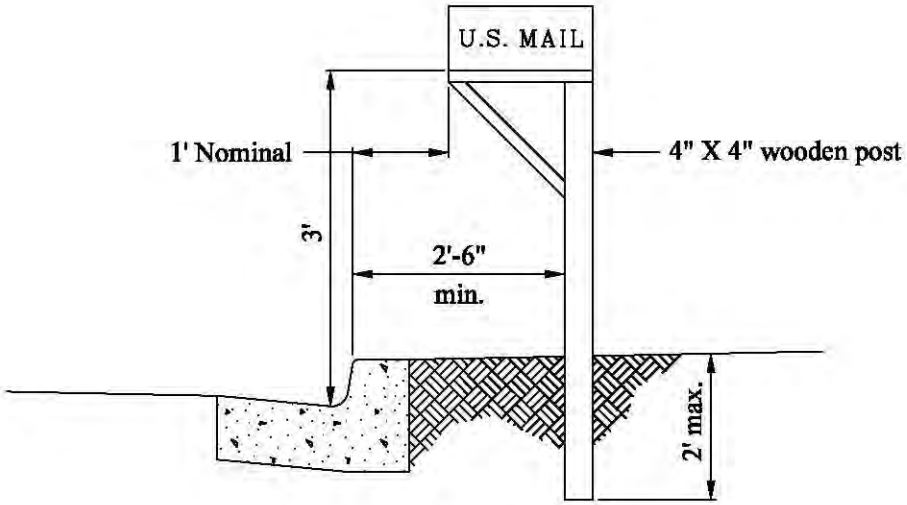


Section B-B

Notes

1. Material: Gray cast iron
2. Lettering: Raised 1/16" inside, 1/8" high rim
3. Message to include: Year of pavement repair, (min. size 5/16"), name or logo of utility company responsible for repair, (min. size 3/4")
4. Embed marker on all temporary and permanent patches placed in pavement surfaces within County right-of-way.
5. For usage requirements, refer to Policy and Specification for Utility Installation and Maintenance, Appendix E.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Utility Trench Marker	STD. 300.33



Section

Notes:

1. Maintain one foot distance from face of curb to face of mailbox, in urban areas, subject to any rules or regulations imposed by the U.S. Postal Service. No part of the mail box structure shall be permitted to encroach into the sidewalk area. Maintain one foot distance from edge of shoulder to face of mail box, in rural areas, subject to any rules or regulations imposed by the U.S. Postal Service.

2. Wooden posts larger than 4" x 4" require 1" hole (drilled both ways) placed six (6) inches above finished grade.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Mail Box Installation	STD. 300.34

CATEGORY 400 STANDARD TRAFFIC BARRIERS

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
Standards for Highways and Incidental Structures

NOTE: The following list of MSHA Traffic Barriers are recommended or rejected for use on County permit-related roadway improvement projects, Capital Improvement Program projects and roadway maintenance projects. Standard revisions are expected from time to time; therefore, all designers, engineers, contractors, developers and permittees are expected to furnish a copy of the latest edition of MSHA's "Traffic Barrier" Standard with each applicable project submission. Traffic barrier applications indicated below are for rural (open) roadway sections. Use of traffic barriers in urban (closed) roadway sections require special approval by the Department.

Standard Number	Title	Use on County Roadways
MD 605.01	Type A Traffic Barrier End Treatment (Single Rail)	Recommended
MD 605.01-01	Type A Traffic Barrier End Treatment (Double Rail)	Recommended
MD 605.01-02	Type A Traffic Barrier End Treatment End Anchorage Terminal Option 1	Recommended
MD 605.01-03	Type A Traffic Barrier End Treatment End Anchorage Terminal Option 2	Recommended
MD 605.02	Type B Traffic Barrier End Treatment	Recommended
MD 605.03	Type C Traffic Barrier End Treatment	Recommended when space is not available to erect Standard MD 605.02
MD 605.04	Grading Adjustment for 3 R Type Work (Resurface, Rehabilitation and Restoration)	Recommended for use on County roadways
MD 605.05	Type D Traffic Barrier End Treatment	Recommended for median use only
MD 605.06	Type E Traffic Barrier End Treatment (Permanent or Temporary)	Recommended as an alternative to MD 605.05 for median use only
MD 605.06-01	Type E Traffic Barrier End Treatment Criteria	Refer to MD 605.06 for Standard details.
MD 605.07	Type F Traffic Barrier End Treatment	Recommended as an alternative to MD 605.05 for median use only

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

MSHA Approved Traffic Barrier Listing

STD. 400.01

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
Standards for Highways and Incidental Structures

Standard Number	Title	Use on County Roadways
MD 605.08	Type G Traffic Barrier End Treatment	Not recommended unless approved by the Department
MD 605.08-01	Type G Traffic Barrier End Treatment Anchorage Bracket	For maintenance use
MD 605.09	Type H Traffic Barrier End Treatment	For maintenance use
MD 605.10	Type I Traffic Barrier End Treatment Option 1 Anchorage	Recommended only where there is no opposing traffic within 30 feet of barrier
MD 605.10-01	Type I Traffic Barrier End Treatment Option 2 & 3 Anchorage	Recommended in accordance with Standard MD 605.10
MD 605.10-02	Type I Traffic Barrier End Treatment Anchorage Details	Recommended in accordance with Standard MD 605.10
MD 605.11	Type J Traffic Barrier End Treatment (Permanent or Temporary)	Not recommended
MD 605.11-01	Type J Traffic Barrier End Treatment Criteria	Not recommended
MD 605.20	Traffic Barrier W Beam End Sections	Recommended
MD 605.21	Traffic Barrier W Beam with Wood Offset Block	Recommended
MD 605.22	Traffic Barrier W Beam Single Face	Recommended
MD 605.23	Traffic Barrier W Beam Metal Post, W Beam Splice and Wood Offset Block	Recommended
MD 605.23-01	Traffic Barrier W Beam Metal Post, Adaptable to 8" x 6" x 14" Wood Offset Block	Recommended
MD 605.23-02	Traffic Barrier W Beam Alternate 'C' Shape Strong Post	Recommended

APPROVED:

DIRECTOR _____ DATE _____

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

MSHA Approved Traffic Barrier Listing

STD. 400.02

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
Standards for Highways and Incidental Structures

Standard Number	Title	Use on County Roadways
MD 605.25	Traffic Barrier W Beam with Wood Offset Block Using 6 Foot Normal and 8 Foot Long Post	Recommended
MD 605.26	Traffic Barrier W Beam Post Placement Details for Spanning 12'-2" to 18'-5" Openings	Recommended
MD 605.26-01	Traffic Barrier W Beam Placement Details	Recommended
MD 605.27	Traffic Barrier W Beam Barricade	Recommended
MD 605.28	Traffic Barrier W Beam Median Barrier	Recommended
MD 605.29	Traffic Barrier Thrie Beam Single Face	Recommended
MD 605.29-01	Traffic Barrier Modified Thrie Beam Wood Offset Block Single Face	Recommended
MD 605.30	Traffic Barrier Thrie Beam Double Face	Recommended
MD 605.41	Traffic Barrier Thrie Beam Anchorage to Vertical Face (Wood Post)	Recommended
MD 605.41-01	Special Traffic Barrier Thrie Beam Anchorage at Vertical Face (Steel Post)	Recommended
MD 605.41-02	Traffic Barrier Thrie Beam Anchorage to Vertical Face	Recommended
MD 605.42	Traffic Barrier W Beam Anchorage to Vertical Face	Recommended
MD 605.43	Traffic Barrier W Beam Anchorage with Rub Rail to Jersey Shape or 'F' Shape	Not recommended unless approved by the Department.
MD 605.43-01	Traffic Barrier W Beam Anchorage with Rub Rail to Jersey Shape or F Shape	Recommended in accordance with Standard MD 605.43
MD 605.43-02	Traffic Barrier W Beam Anchorage with Rub Rail to Jersey Shape or F Shape	Recommended in accordance with Standard MD 605.43
MD 605.43-03	Traffic Barrier W Beam Anchorage with Rub Rail to Jersey Shape or F Shape	Recommended in accordance with Standard MD 605.43

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	MSHA Approved Traffic Barrier Listing	STD. 400.03

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
Standards for Highways and Incidental Structures

Standard Number	Title	Use on County Roadways
MD 605.44	Traffic Barrier W Beam Anchorage to Trail End of Jersey Shape or F Shape	Recommended
MD 605.45	Median Barrier W Beam Anchorage to Trail End Vertical Wall	Recommended
MD 605.46	Traffic Barrier Thrie Beam Anchorage at Jersey Shape Conrete Traffic Barrier Single Face Terminal End	Recommended
MD 605.46-01	Traffic Barrier Thrie Beam Anchorage at Jersey Shape Conrete Traffic Barrier Single Face Terminal End	Recommended
MD 605.47	Traffic Barrier W Beam Anchorage at Structures	Recommended
MD 605.49	Traffic Barrier Thrie Beam Anchorage 'F' Shape Conrete Traffic Barrier Single Face Terminal End	Recommended
MD 605.49-01	Traffic Barrier Thrie Beam Anchorage 'F' Shape Conrete Traffic Barrier Single Face Terminal End	Recommended
MD 605.50	Median Barrier Thrie Beam Anchorage to Vertical Face	Recommended
MD 605.51	Traffic Barrier Thrie Beam Anchorage at Bridge End Post Details	Recommended
MD 605.51-01	Traffic Barrier Thrie Beam Anchorage at Bridge End Post Details	Recommended

APPROVED:

DIRECTOR DATE

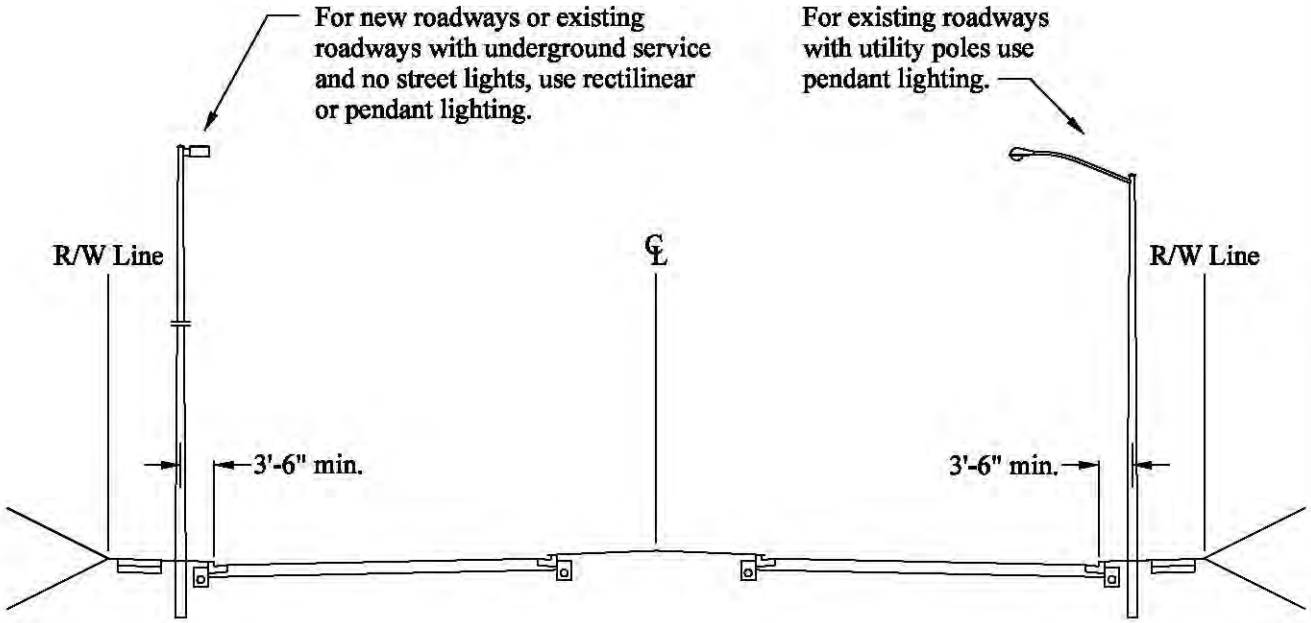
REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

MSHA Approved Traffic Barrier Listing

STD. 400.04

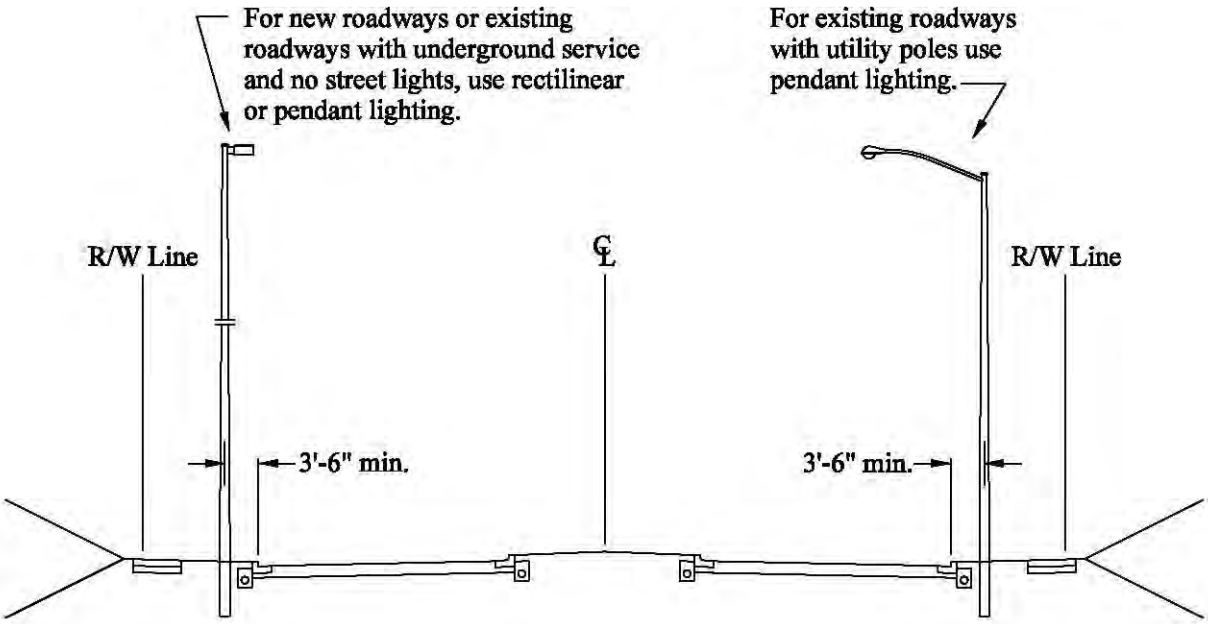
CATEGORY 500 STANDARD STREET LIGHT LOCATIONS



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed on both sides of roadway (opposite), unless otherwise approved by the Department.

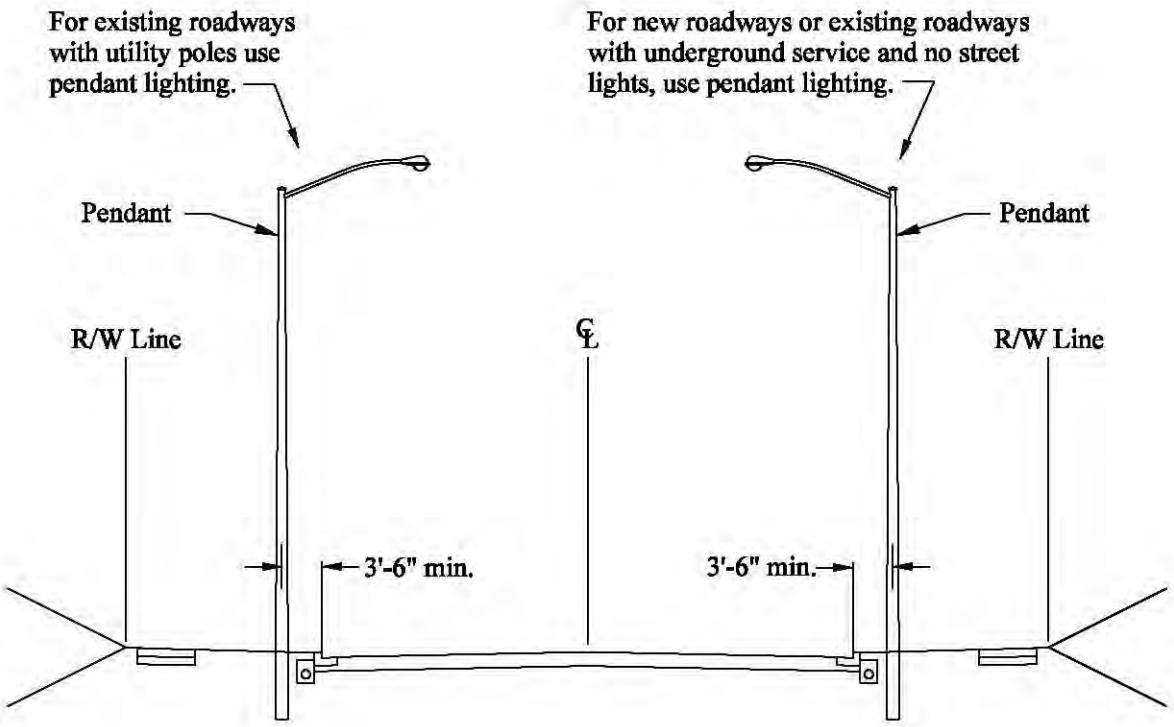
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Street Light Location Urban Arterial	STD. 500.01



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed on both sides of roadway (opposite), unless otherwise approved by the Department.

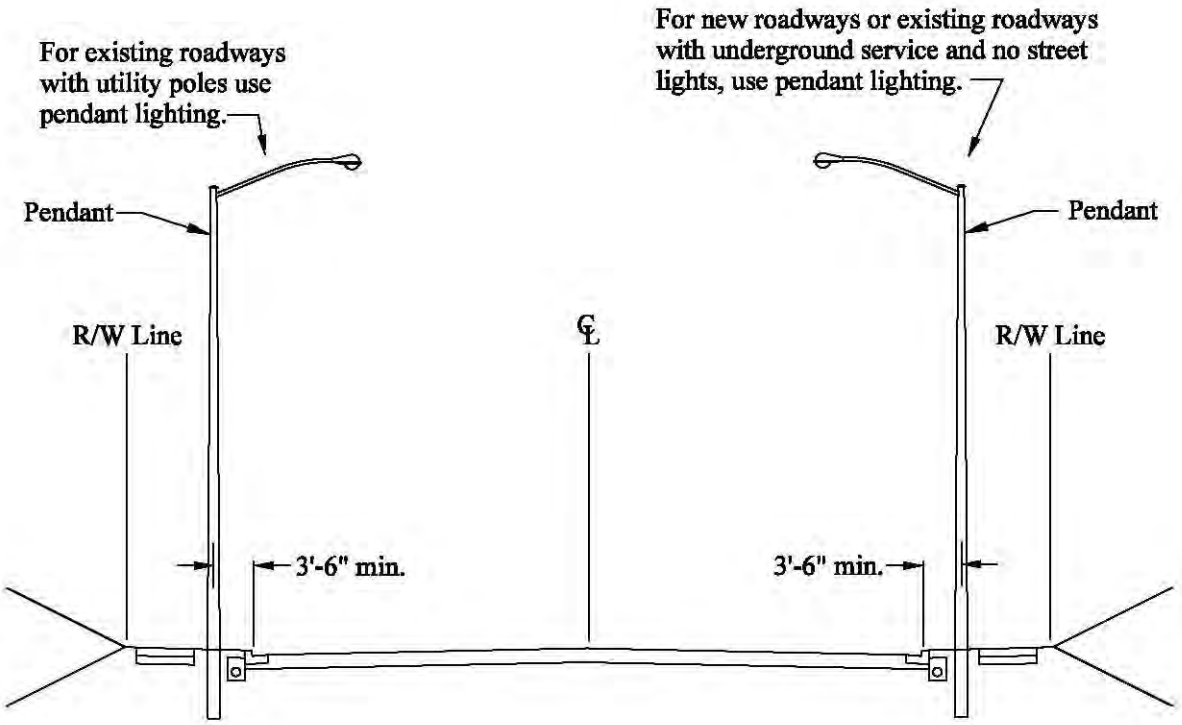
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Street Light Location Urban Major Collector	STD. 500.02



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed utilizing staggered spacing on both sides of roadway, unless otherwise approved by the Department.

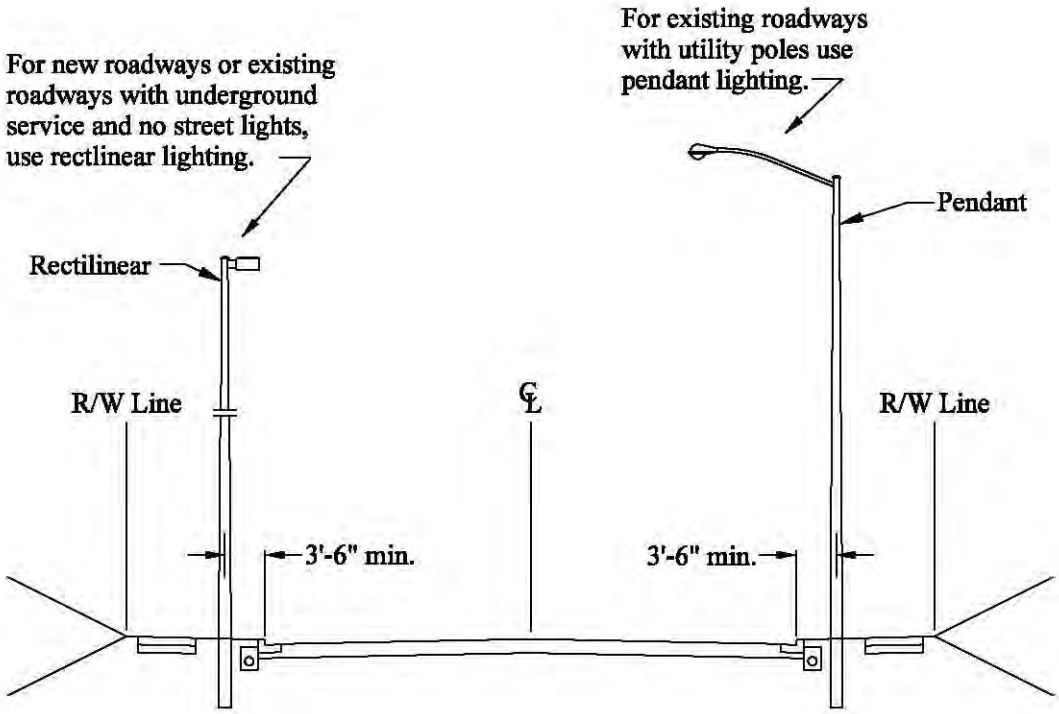
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Urban 4-Lane Collector	STD. 500.03



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed on both sides of roadway (opposite), unless otherwise approved by the Department.

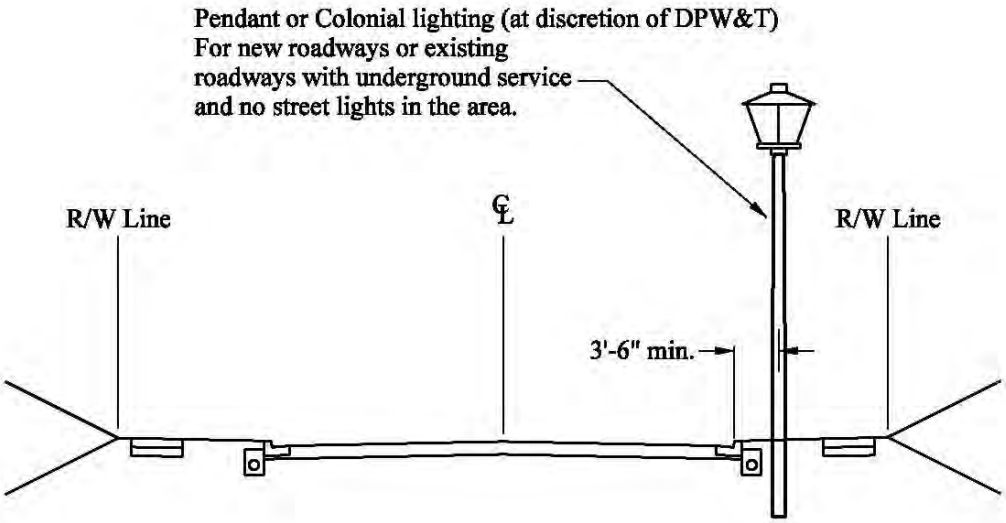
APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Street Light Location Urban 5-Lane Collector	STD. 500.04



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed utilizing staggered spacing on both sides of roadway, unless otherwise approved by the Department.

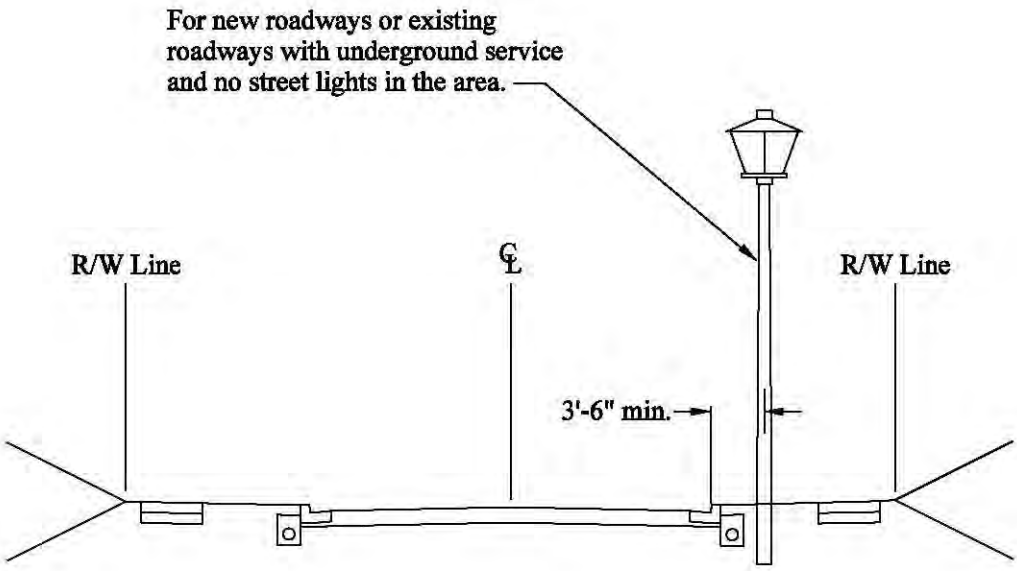
APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Street Light Location Urban Commercial and Industrial	STD. 500.05



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed utilizing staggered spacing on both sides of roadway, unless otherwise approved by the Department.

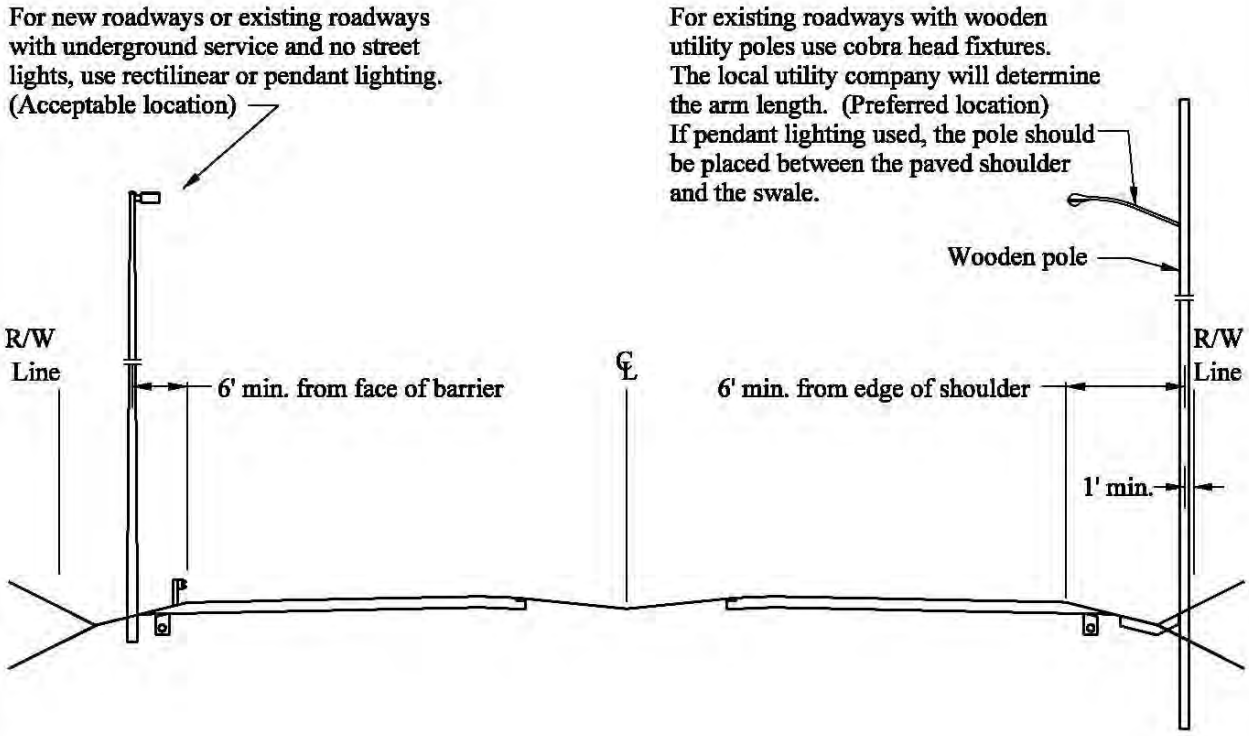
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Urban Primary Residential	STD. 500.06



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. Street lighting shall be installed utilizing staggered spacing on both sides of roadway, unless otherwise approved by the Department.

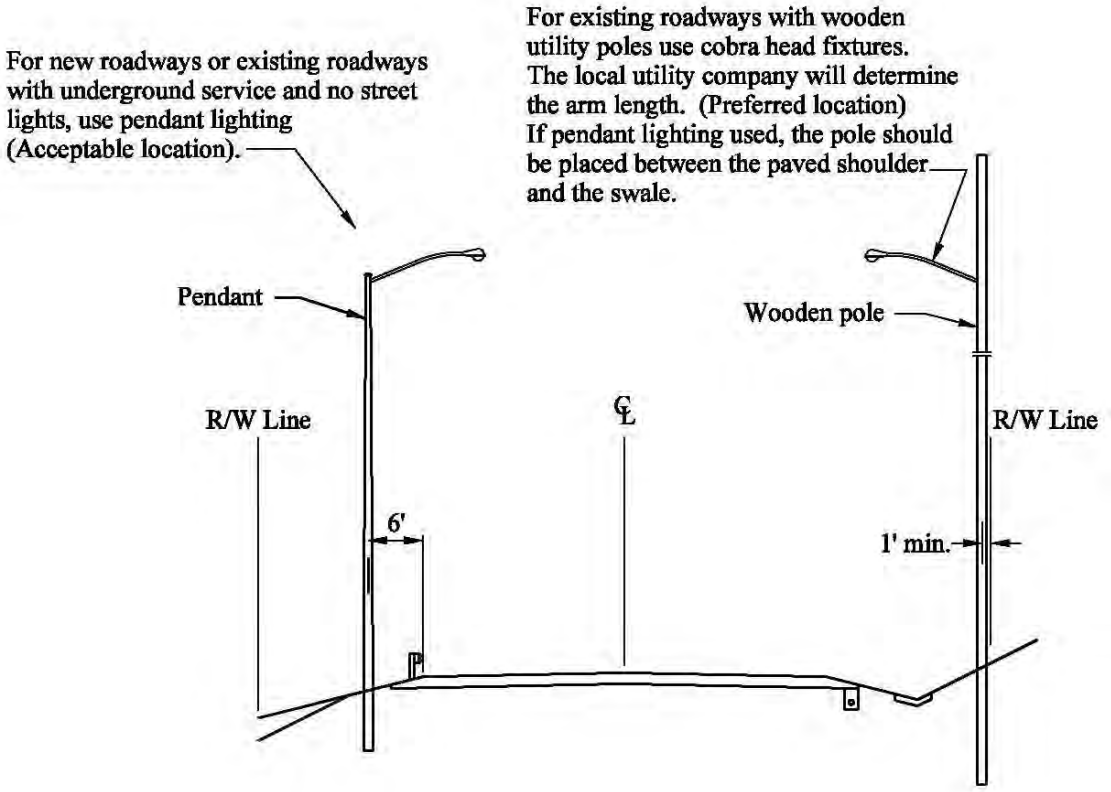
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Urban Secondary Residential	STD. 500.07



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. The Department requires installation of raised pavement markers (RPMs) along the centerline and lane lines of roadway in areas where street lighting is limited, in accordance with Standards 700.15 and 700.16.
4. For all rural, scenic and historic roadway applications, lighting shall be installed at intersections where continuous roadway lighting is not warranted.
5. Street lighting shall be installed on both sides of roadway (opposite), unless otherwise approved by the Department.
6. Cutoff optic luminaires are required when street lighting is necessary along scenic and historic roadways.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Rural 4-Lane Arterial	STD. 500.08

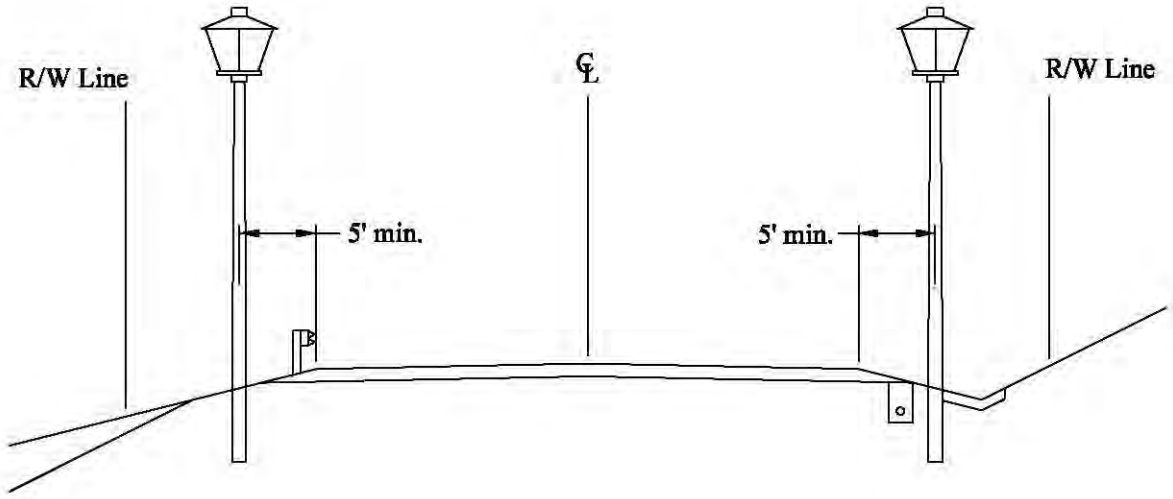


General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. The Department requires installation of raised pavement markers (RPMs) along the centerline and lane lines of roadway in areas where street lighting is limited, in accordance with Standards 700.15 and 700.16.
4. For all rural, scenic and historic roadway applications, lighting shall be installed at intersections where continuous roadway lighting is not warranted.
5. Street lighting shall be installed utilizing staggered spacing on both sides of roadway, unless otherwise approved by the Department.
6. Cutoff optic luminaires are required when street lighting is necessary along scenic and historic roadways.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Rural 2-Lane Collector	STD. 500.09

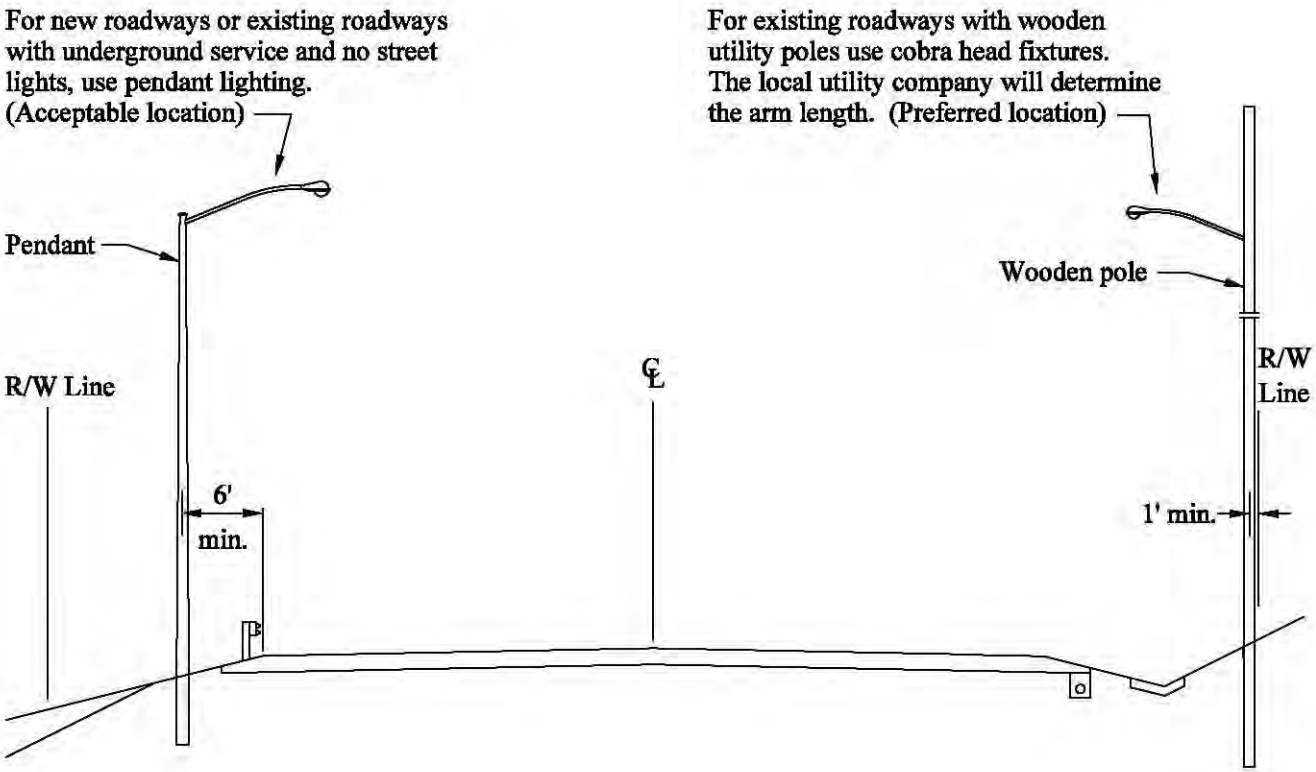
For new roadways or existing
roadways with underground service
and no street lights in the area.



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Street light pole to be a minimum of five feet from edge of paved roadway with final location to be approved by Division of Traffic.
3. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
4. For all rural, scenic and historic roadway applications, lighting shall be installed at intersections where continuous roadway lighting is not warranted.
5. Street lighting shall be installed utilizing staggered spacing on both sides of roadway, unless otherwise approved by the Department.
6. Cutoff optic luminaires are required when street lighting is necessary along scenic and historic roadways.

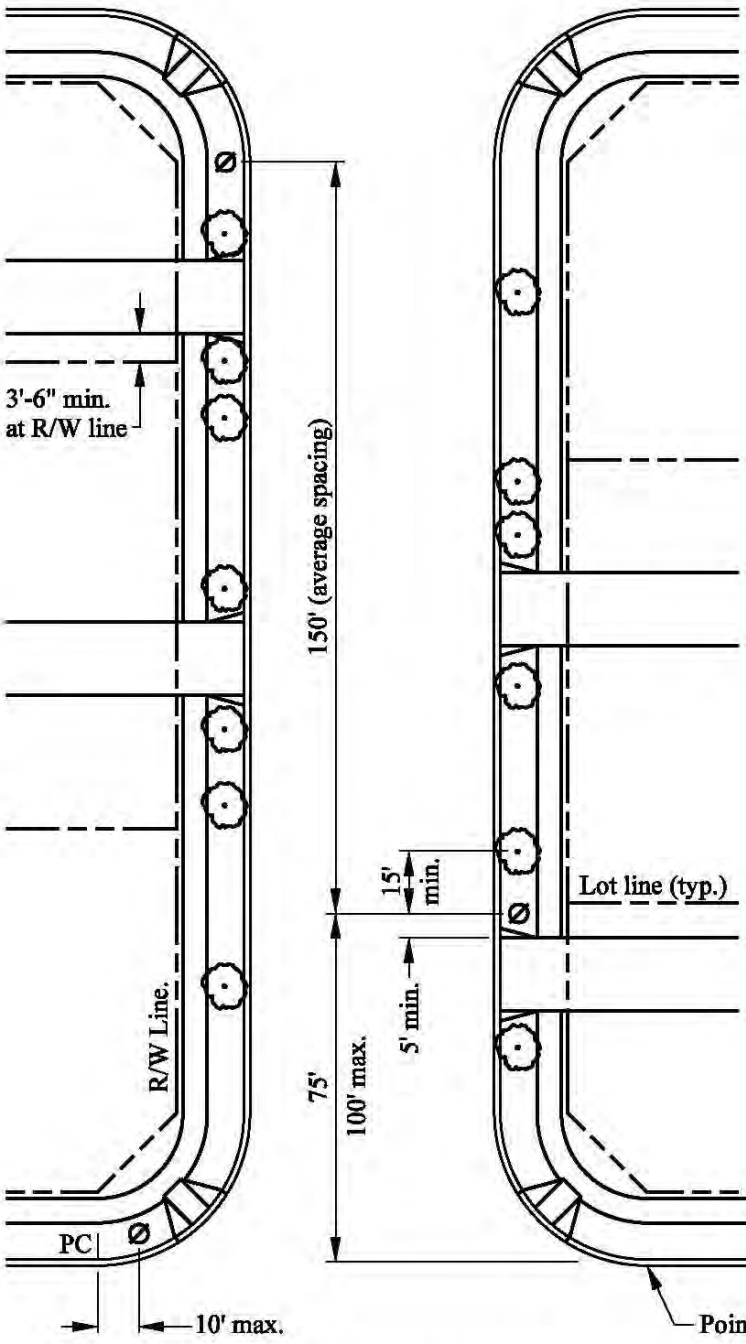
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Rural Residential	STD. 500.10



General Notes

1. For the required lighting equipment, see the Luminaire and Support Guide for the utility serving the location of construction. (See Section I, Tables I-12 through I-14.)
2. Footings for base-mounted light poles shall be constructed in accordance with the appropriate utility company's specifications.
3. The Department requires installation of raised pavement markers (RPMs) along the centerline and lane lines of roadway in areas where street lighting is limited, in accordance with Standards 700.15 and 700.16.
4. For all rural, scenic and historic roadway applications, lighting shall be installed at intersections where continuous roadway lighting is not warranted.
5. Street lighting shall be installed on both sides of roadway (opposite), unless otherwise approved by the Department.
6. Cutoff optic luminaires are required when street lighting is necessary along scenic and historic roadways.

APPROVED: DIRECTOR ____ DATE ____		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Location Rural 4-Lane Collector	STD. 500.11



Notes:

1. The dimensions shown hereon are typical and may be modified in specific situations by the Department.
2. Street lights are to be located on lot lines and at all intersections, subject to the clearances shown.
3. -A five (5) foot horizontal clearance is required between any proposed utility-pole mounted street light and the underground storm drainage system.

   -A five (5) foot horizontal clearance is recommended between any proposed pendant cobra head or rectiliear type mounted street light and the underground storm drainage system.

   -A one (1) foot horizontal clearance is required between any proposed colonial post-type street light and the underground storm drainage system
4. No Utility pole-mounted, pendant cobra head or rectilinear type street light permitted within the fillet of the intersection

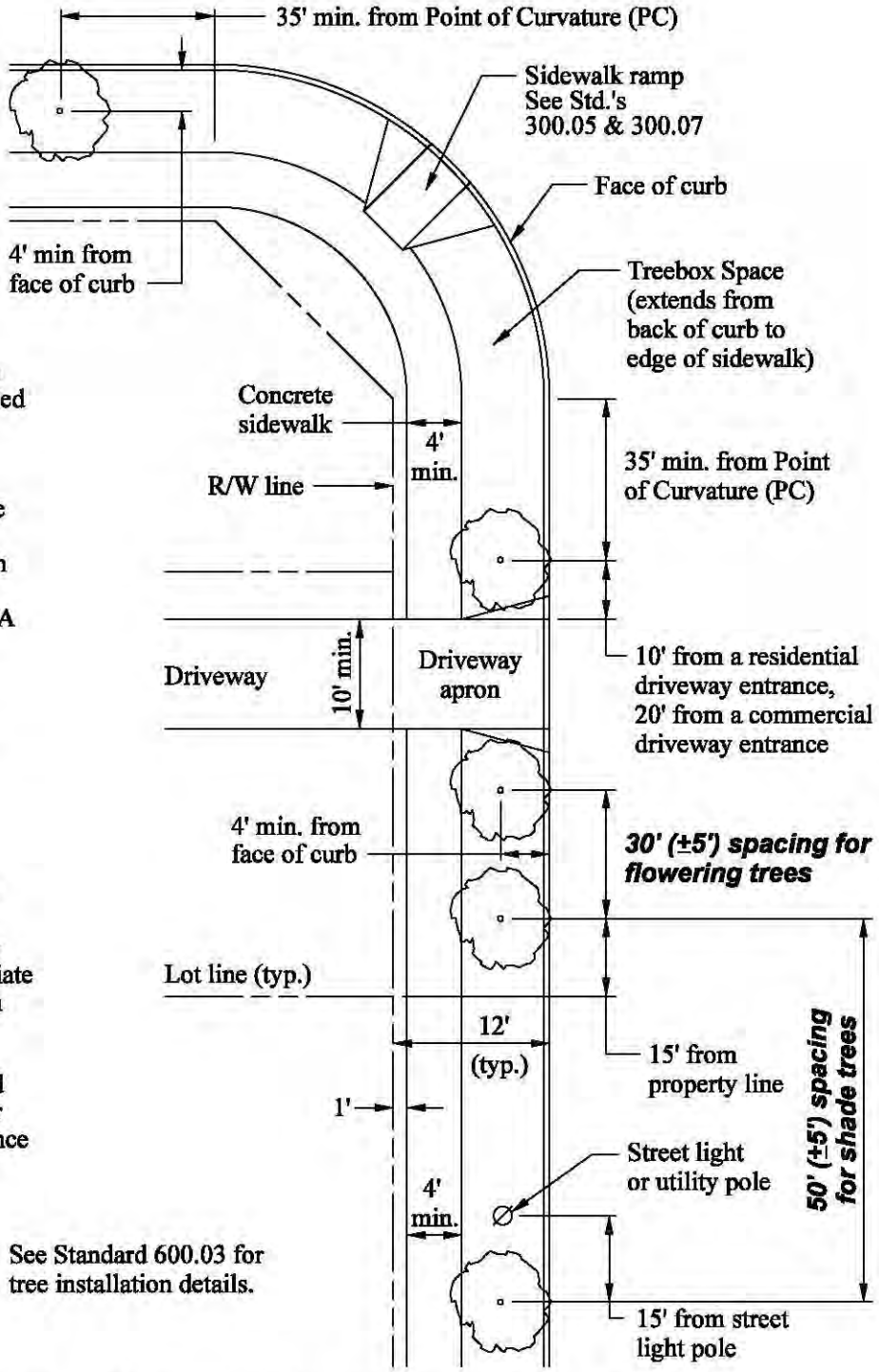
Key:

- Underground Served light
- Utility Pole-mounted light
- Street tree (must be of appropriate height so as not to interfere with overhead utility lines)

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to disturbing the existing ground within the County right-of-way.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Light Spacing (Urban Area)	STD. 500.12

CATEGORY 600 STANDARD ROADWAY TREES AND PLANTS



Notes:

1. The dimensions shown hereon are typical, and may be modified in specific situations by the Department.

   For traffic safety, all landscape operations within the County right-of-way shall comply with the MSHA's maintenance of Traffic regulations. See MSHA standards MD104.31-01 and MD104.31-02 for two-way roadways.

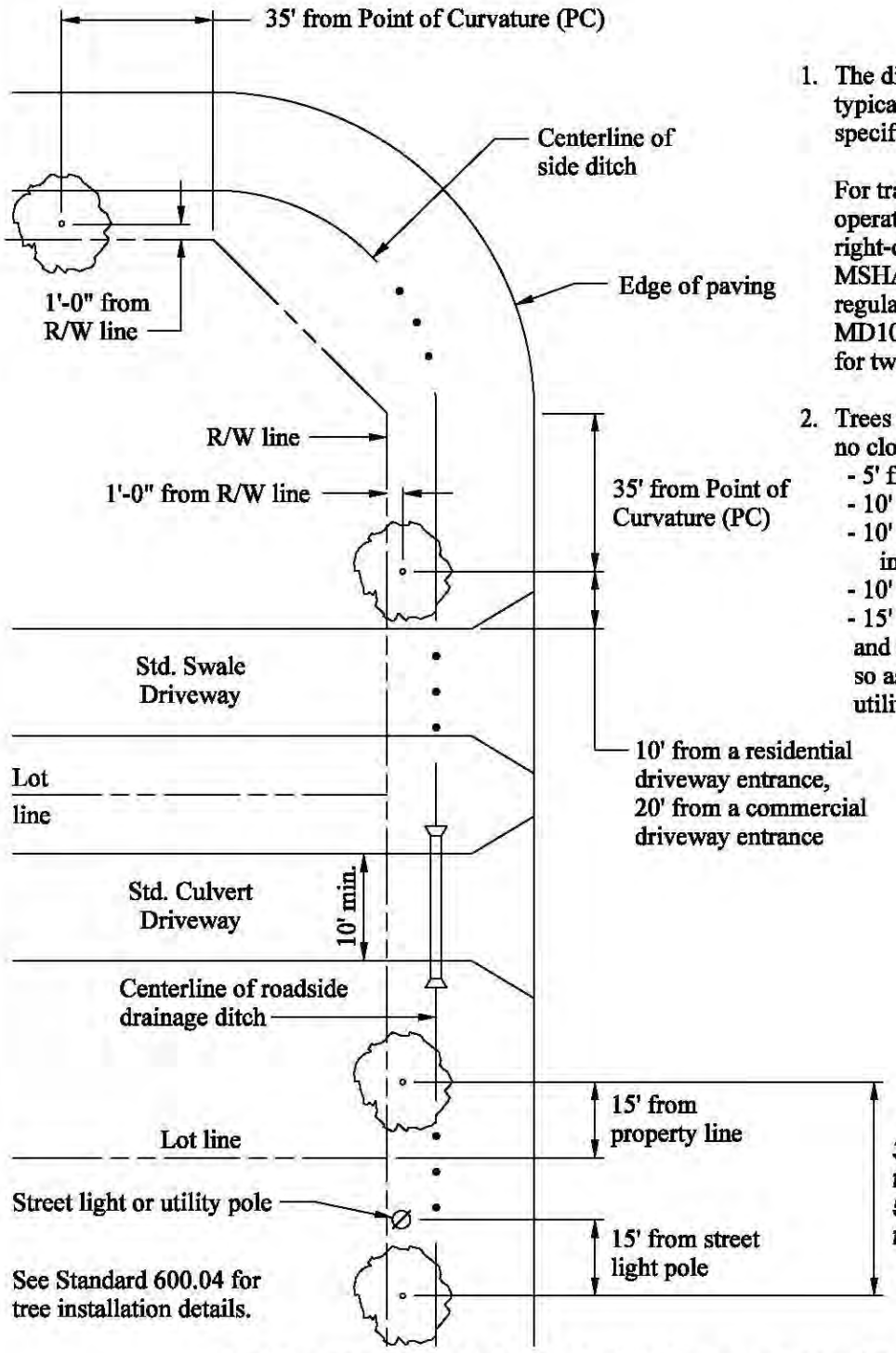
2. Trees to be located no closer than shown:
   - 5' from gas box
   - 10' from water meter
   - 10' from fire hydrant
   - 10' from storm drain inlet or manhole
   - 15' from street light or utility pole; and must be of appropriate height as not to interfere with overhead utility lines.

3. Street trees may not be planted over storm drain pipe (or other utilities) where vertical clearance from top of pipe to surface is less than 4'-6".

See Standard 600.03 for tree installation details.

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to the planting of street trees within the County right-of-way.

APPROVED: DIRECTOR ____ DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Tree Placement in Urban R/W	STD. 600.01



Notes:

1. The dimensions shown hereon are typical, and may be modified in specific situations by the Department.

   For traffic safety, all landscape operations within the County right-of-way shall comply with the MSHA's maintenance of Traffic regulations. See MSHA standards MD104.31-01 and MD104.31-02 for two-way roadways.

2. Trees to be located no closer than shown:
   - 5' from gas box
   - 10' from water meter
   - 10' from storm drain inlet or manhole
   - 10' from fire hydrant
   - 15' from street light or utility pole and must be of appropriate height so as not to interfere with overhead utility lines.

30' (± 5') spacing for flowering trees
50' (± 5') spacing for shade trees

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to the planting of street trees within the County right-of-way.

APPROVED: DIRECTOR ____ DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Street Tree Placement in Rural R/W	STD. 600.02

All plastic ties, labels, etc., are to be removed from the branches or trunk to prevent girdling.

All mulch to be double-shredded hardwood with no dyed or colored additives allowed. All mulched areas to include the appropriate amount of pre-emergent weed control.

Shade trees to be minimum 2 1/2 " caliper, 10'-12' height

Ornamental trees to be minimum 1 1/2 " caliper, 8'-10' height

20-gallon street tree polyethylene watering device, as directed by the Department.

The watering of trees shall begin immediately after planting and continue thereafter to ensure survival.

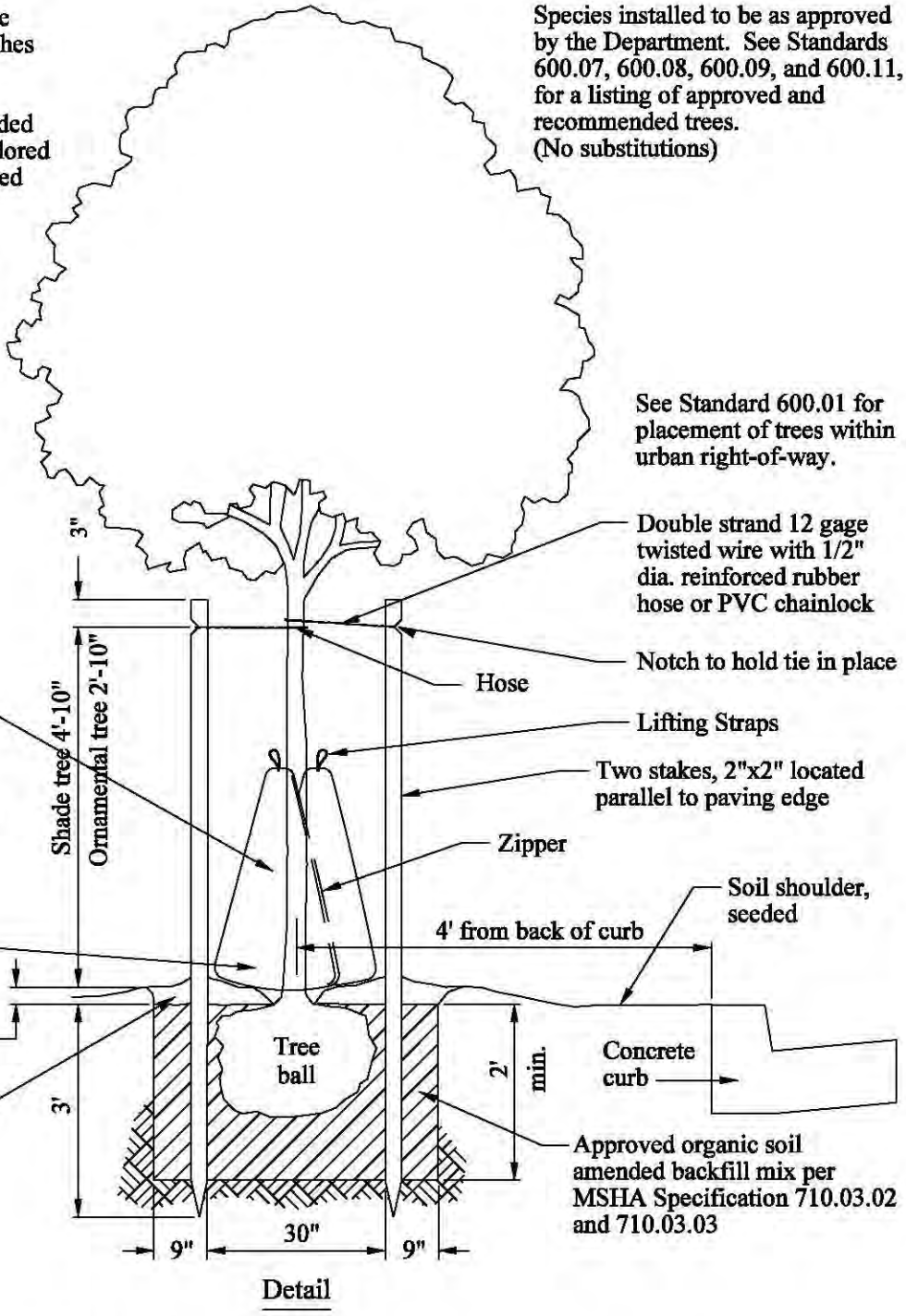
Final grade and saucer (Do not form mound around trunk.)

Maximum 2" mulch, as specified.

Tree caliper is typically measured 6" above the tree ball.

Species installed to be as approved by the Department. See Standards 600.07, 600.08, 600.09, and 600.11, for a listing of approved and recommended trees. (No substitutions)

See Standard 600.01 for placement of trees within urban right-of-way.



Detail

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to the planting of street trees within the County right-of-way.

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Street Tree Installation in Urban R/W	STD. 600.03

Species installed to be as approved by the Department. See Standards 600.07, 600.08, 600.09, and 600.11, for a listing of approved and recommended trees. (No substitutions.)

All plastic ties, labels, etc., are to be removed from the branches or trunk to prevent girdling.

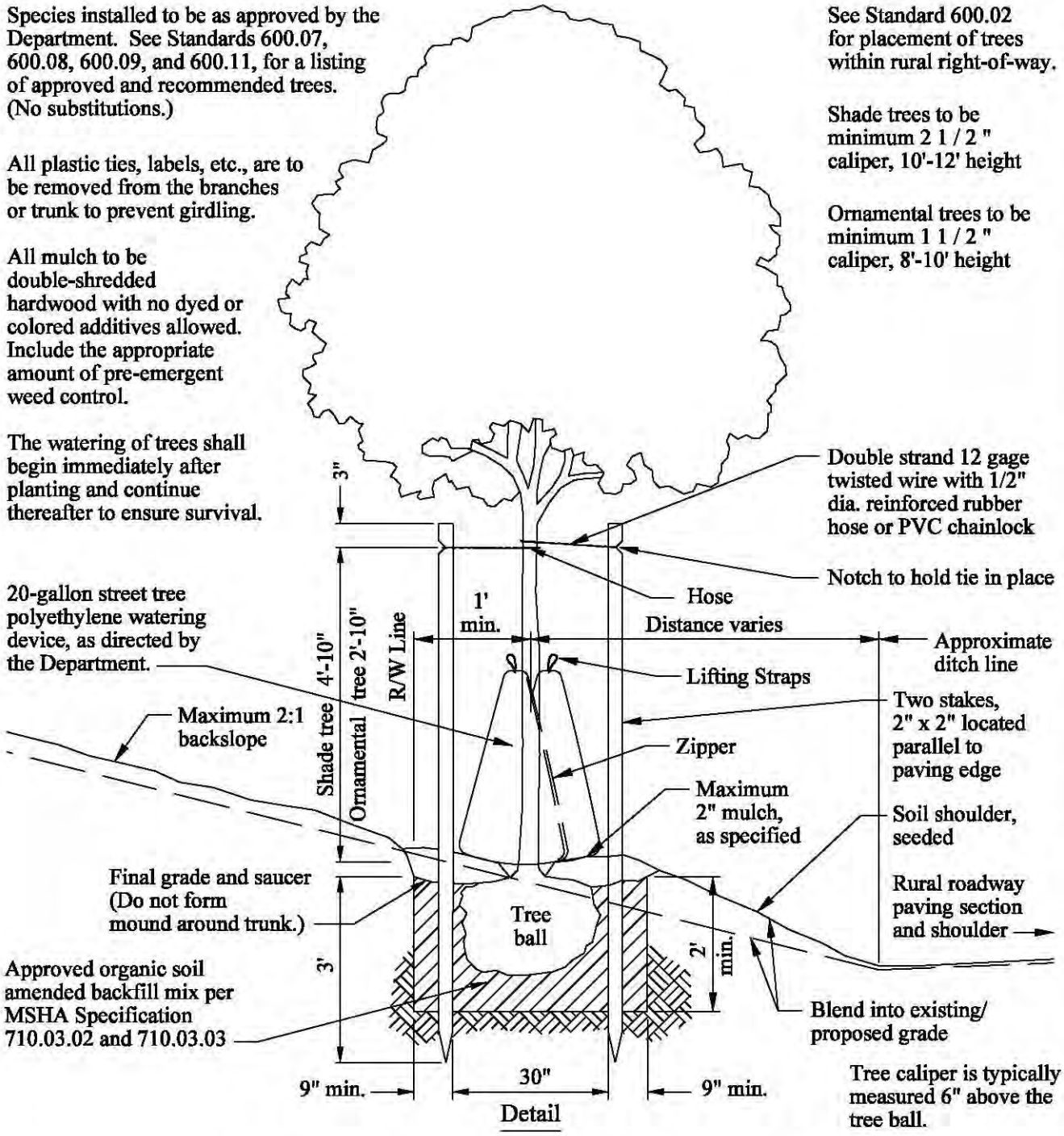
All mulch to be double-shredded hardwood with no dyed or colored additives allowed. Include the appropriate amount of pre-emergent weed control.

The watering of trees shall begin immediately after planting and continue thereafter to ensure survival.

See Standard 600.02 for placement of trees within rural right-of-way.

Shade trees to be minimum 2 1 / 2 " caliper, 10'-12' height

Ornamental trees to be minimum 1 1 / 2 " caliper, 8'-10' height

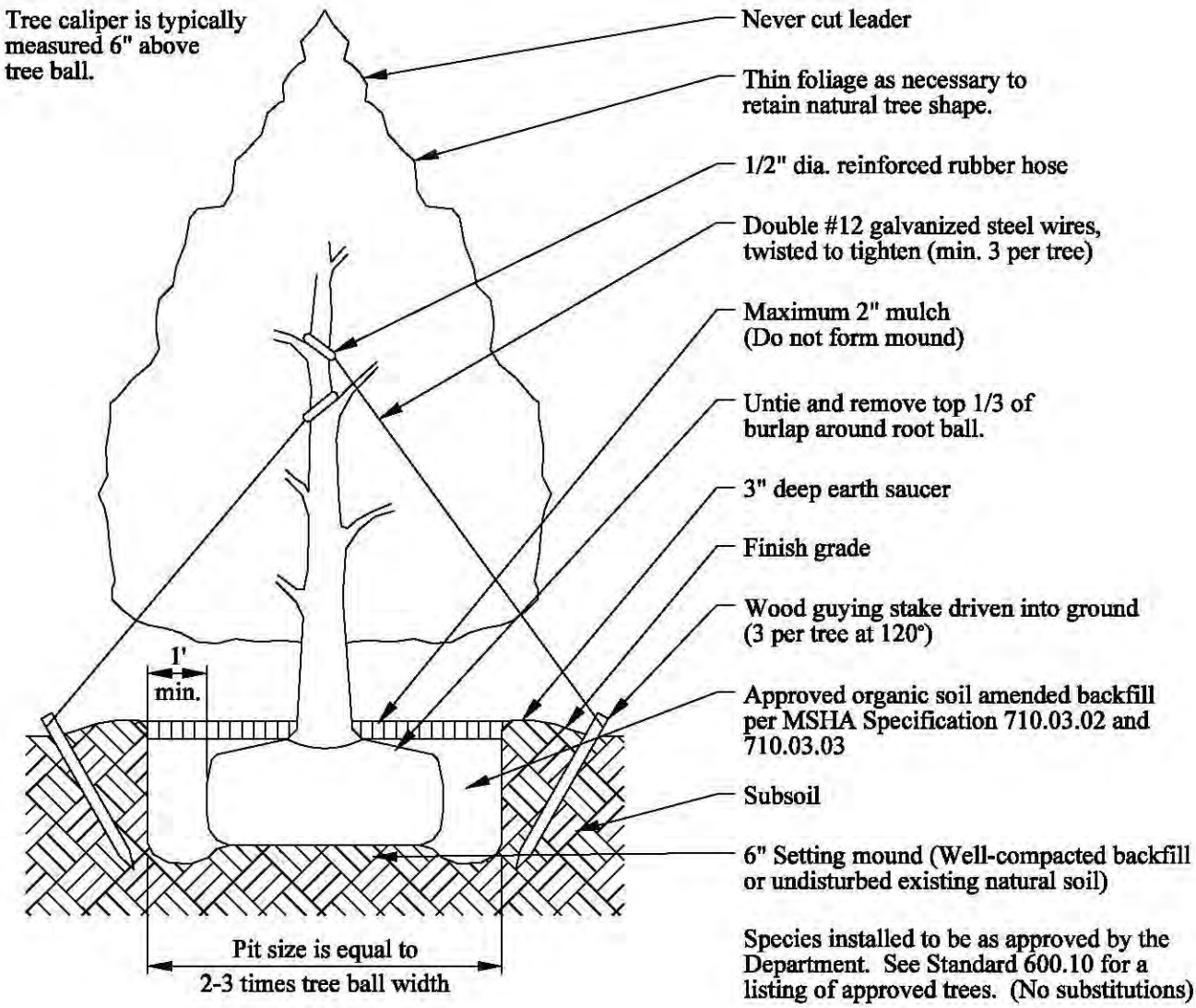


Tree caliper is typically measured 6" above the tree ball.

Detail

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to the planting of street trees within the County right-of-way.

APPROVED: DIRECTOR DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD
REVISION DATE: / APPROVED BY:		Street Tree Installation in Rural R/W — STD. 600.04



Notes:

1. Evergreen trees are to be used for buffering of on-site facilities and are not permitted as roadside trees.
2. Evergreen landscape screening may be installed inside the County right-of-way.
3. All plastic ties, labels, etc., are to be removed from the tree branches or trunk to prevent girdling.
4. All mulch to be double-shredded hardwood with no dyed or colored additives allowed.
5. All mulched areas to include the appropriate amount of pre-emergent weed control.
6. The watering of trees shall begin immediately after planting and continue thereafter to ensure survival.

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to the planting of street trees within the County right-of-way.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR ____ DATE ____			
REVISION DATE:	APPROVED BY:	Street Trees: Buffer Evergreen Installation	STD. 600.05

All plastic ties, labels, etc., are to be removed from the branches or trunk to prevent girdling.

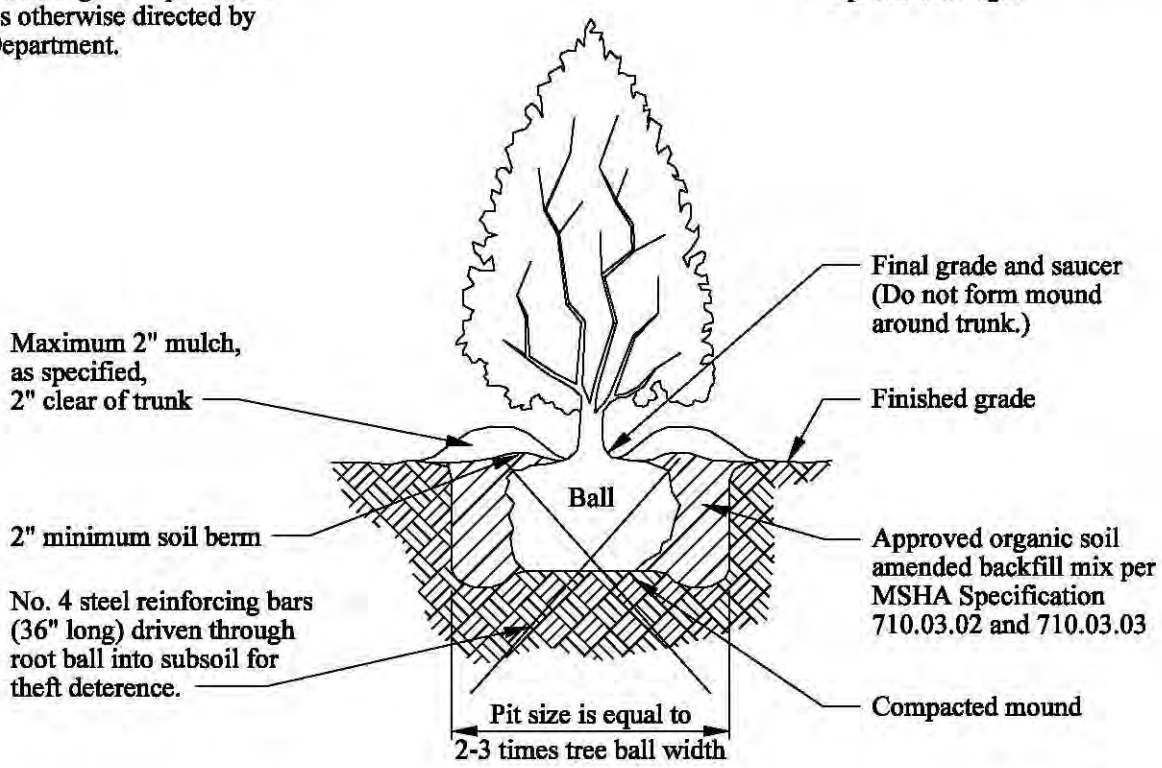
All mulch to be double-shredded hardwood with no dyed or colored additives allowed. Include the appropriate amount of pre-emergent weed control.

The watering of shrubs shall begin immediately after planting and continue thereafter to ensure survival. Provide 3-5 gallons per week unless otherwise directed by the Department.

Species installed to be as approved by the Department. See Standards 600.12, 600.13, and 600.14, for a listing of approved and recommended trees. (No substitutions.)

Cut back broken or excessively long branches to lateral branch. Avoid leaving stubs.

Scarify bottom of pit to a depth of 6", then compact setting mound to support root ball to improve drainage.



Detail

Call "Miss Utility" at 1-800-257-7777 for utility location 48 hours prior to the planting of street trees within the County right-of-way.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Shrub Planting in Special Areas	STD. 600.06

TREE SELECTION STANDARDS

Trees approved for use along roadways and streets in Prince George's County have been divided into shade, ornamental and buffer tree categories. Shade trees and ornamental trees can be planted in roadways built to urban specifications in the tree box space between the curb and sidewalk, the sidewalk and limit of right-of-way, or the curb and limit of right-of-way. These tree categories can also be used for rural roadway planting applications. Buffer trees are dense pyramidal-shaped evergreens used primarily for roadside buffering/screening of on-site facilities. Buffer trees are generally planted outside the public rights-of-way. Refer to the "Key" included as part of Standards 600.08 through 600.15 for guidance as the approved placement of trees and other plant materials.

Several species of trees contained in the following list are approved for use in median areas only. Medians where trees will be planted should not be less than 20' feet in width (except in special cases where special low growing grasses or low growing shrubbery may be planted), and no trees should be installed within 25 feet of any median break or return. In addition, where there are overhead utility lines, only the tree species designated as "under overhead wire" are to be planted. Caliper refers to the minimum allowable diameter of the tree trunk as measured 6 inches above the root ball. Shade trees should have a single leader (trunk) and ornamental trees should have a single leader to the initial branch crotch. All trees should be delivered balled and burlapped (B&B), in wire baskets, or in approved and appropriately sized containers.

General specifications for street trees are:

Category	Minimum Height	Caliper	Branched at / No. Branches
Shade Tree	10' - 12' (14' max.)	2 1/2" - 3"	60% height/8 or more
Ornamental Tree	8' - 10' (12' max.)	1 1/2" - 2"	60% height/7 or more
Buffer Tree*	6' - 8' (10' max.)	N/A	N/A

* May be located inside the County right-of-way with special approval from the Department, but not as roadside tree.

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Tree Selection Standards	STD. 600.07

PLANT SELECTION GUIDE FOR SHADE TREES

List of Approved Species and Cultivars

	Botanical name	Common name	Approved cultivar(s)	Acceptable use	Notable flower	Notable fruit	Notable foliage color	Mature height	Width
✓	Acer rubrum	Red maple	a. October glory b. Red sunset	R	Red Red	Red	Autumn/Red Autumn/Orange-red	50'-60'	40'-50'
✓	Acer tataricum	Tatarian maple	a. Rubrum	M, R, U		Red	Autumn/Yellow	15'-25'	15'-25'
	Acer truncatum	Norwegian sunset Shantung hybrid maple	a. Keithform	M,R	Yellow		Orange/Red	35'-45'	25'-35'
	Cercidiphyllum japonicum	Katsura tree (tree form only)		R			Autumn/Yellow-orange	40'-60'	25'-60'
✓	Gleditsia tricanthos inermis	Thornless honeylocust	a. Imperial b. Shademaster c. Skyline	R			Autumn/Yellow Autumn/Yellow-green Autumn/Yellow	40'-80'	40'-70'
✓	Plantanus x acerifolia	London plane tree	a. Bloodgood	R				70'-80'	55'-65'
✓	Quercus palustris	Pin oak	N/A	R		Acorn	Autumn/Copper-red	60'-80'	40'-50'
✓	Quercus phellos	Willow oak	N/A	R				55'-75'	45'-60'
✓	Quercus shumardii	Shumard oak	N/A	R			Autumn/Red-brown	60'-80'	45'-65'
✓	Sophora japonica	Japanese pagodatree or scholar tree	a. Fastigiata b. Regent	R	White White			40'-70'	40'-70'
✓	Tilia cordata	Littleleaf linden	a. Chancellor b. Enspire	R	Yellow Yellow			50'-70'	20'-30'
✓	Tilia tomentosa	Silverleaf linden	a. Green mountain b. Sterling	R	White White			50'-70'	45'-55'
	Ulmus parvifolia	Chinese elm	a. Dynasty	R			Autumn/Red-orange	50'-70'	30'-60'
✓	Zelkova serrata	Japanese zelkova	a. Green vase b. Village green	R			Autumn/Red Autumn/Red	50'-60'	50'-60'

KEY:

R = Roadside placement M = Median placement U = Under overhead wires placement ✓Recommended by Department

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Shade Trees

STD. 600.08

PLANT SELECTION GUIDE FOR ORNAMENTAL TREES

List of Approved Species and Cultivars

	Botanical name	Common name	Approved cultivar(s)	Acceptable use	Notable flower	Notable fruit	Notable foliage color	Mature height	Width
✓	Acer campestre	Hedge maple	a. Queen Elizabeth	M,R,U			Autumn/Yellow	25'-40'	25'-40'
	Acer ginnale	Amur maple	N/A	M,U		Red	Autumn/Yellow-orange-red	15'-20'	15'-20'
	Aesculus x carnea	Ruby red horsechestnut	a. Briottii	M,R	Red	Red		35'-50'	30'-45'
✓	Amelanchier x grandiflora	Serviceberry	a. Robin Hill	M,U	White	Purple	Autumn/Yellow-red	20'-25'	15'-18'
	Betula platyphylla	Whitespire Japanese white birch	a. Whitespire, Sr. b. Whitespire, Jr.	M	Catkins		Autumn/Yellow	40'-50'	15'-25'
	Cercis canadensis	Redbud	N/A	M,R,U	Pink		Autumn/Yellow	25'-30'	25'-35'
	Cornus kousa	Kousa dogwood	a. All improved	M	White	Red	Autumn/Red-purple	20'-30'	20'-30'
	Crataegus crusvgalli var. *	Thornless cockspur hawthorn	a. Inermis	M,U	White	Red	Autumn/Orange-purple-red	15'-20'	20'-25'
	Crataegus laevigata	Crimson cloud English hawthorn	a. Superba	M,R,U	Red	Red		15'-20'	12'-18'
✓	Crataegus phaenopyrum **	Washington hawthorn	N/A	M,U	White	Red	Autumn/Orange-purple-red	20'-30'	20'-30'
	Crataegus viridis	Green hawthorn	a. Winter King	M,U	White	Red	Autumn/Yellow-red	25'-30'	25'-30'
	Koelreuteria paniculata	Goldenrain tree	N/A	M,R,U	Yellow			25'-40'	25'-40'
	Lagerstroemia indica (hybrids)	Crape myrtle (tree form only)	N/A	M,U	Red-White			10'-25'	10'-20'
	Liquidambar styraciflua	Sweetgum	N/A	R		Ball	Autumn/Yellow/Purple	50'-75'	40'-65'
	Magnolia stellata	Star magnolia	N/A	R	Green/Yellow	Red	Autumn/Brown	20'-25'	20'-25'
	Magnolia soulangeana	Saucer magnolia	N/A	R	White/Pink		Autumn/Brown	20'	20'
	Magnolia virginiana	Sweet bay magnolia	N/A	R	Green/Yellow	Red	Autumn/Brown	20'-25'	20'-25'
	Prunus 'Accolade'	Accolade flowering cherry	N/A	R	Pink			30'-40'	25'-35'
✓	Prunus sargentii *	Sargent cherry	a. Columnaris	M,R,U	Pink		Autumn/Red-orange-yellow	30'-40'	12'-18'
	Prunus serrulata	Japanese cherry (Oriental)	a. Kwanzan	M,R,U	Pink			20'-25'	5'-10'
✓	Syringa reticulata	Lilac, Japanese tree	a. Ivory Silk b. Regent c. Summer Snow	M,U	White White White			25'-30'	15'-20'
	Taxodium distichum	Baldcypress		R		Cones	Autumn/Brown	60'-80'	20'-45'

KEY:

R = Roadside placement M = Median placement U = Under overhead wires placement ✓ = Recommended by Department

* Spring planting only ** Thorns not desirable

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Ornamental Trees

STD. 600.09

PLANT SELECTION GUIDE FOR EVERGREEN TREES

List of Approved Species

Botanical name	Common name	Approved cultivar	Mature height	Width	Description
Cedrus atlantica 'Glauca'	Blue atlas cedar		20'-60'	10'-15'	Slow-growing, lower branches may require pruning
Cupressocyparis leylandi	Leyland Cypress		60'-100'	20'-30'	Broad , symmetrical pyramid, fast grown rate
Ilex opaca (female)	Female american holly		15'-60'	15'-20'	Dense evergreen, produces numerous berries in fall
Ilex opaca (male)	Male american holly		15'-60'	15'-20'	Flowers to pollinate female hollies
Ilex x attenuata 'Fosteri'	Foster holly		20'-30'	10'	Female plants produce fruit without fertilization from a male pollinator
Ilex x 'nellie stevens'	Nellie Stevens holly		15'-20'	10'	Dense, dark evergreen foliage with abundant bright orange berries
Picea glauca	White spruce		20'-30'	15'-25'	Slow-growing conical tree with short branches
Picea pungens	Colorado spruce		80'-120'	15'-25'	Broadly conical tree, rigid branches with stiff needles
Pseudotsuga menziesii	Douglas fir		100'	30'	Very fast-growing, symmetrical pyramid
Tsuga canadensis	Canadian hemlock		80'-100'	15'-25'	Broad pyramid with arching, drooping branches, fast growth rate

NOTES:

1. Evergreen trees provide roadside buffering of onsite facilities.
2. Use of evergreen trees within the County right-of-way requires special approval by the Department.

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Evergreen Trees: Screening

STD. 600.10

PLANT SELECTION GUIDE FOR ORNAMENTAL MEDIAN TREES

List of Approved Species and Cultivars

Botanical name	Common name	Approved cultivar	Urban	Rural	Fall color	Flower	Height Width
Amelanchier canadensis	Serviceberry		M,P	M	Gold-orange	White	10'-20' 10'-15'
Cercis canadensis	Redbud		M,P	M	Yellow	Pink-red	20'-25' 20'-30'
Cornus kousa Cornus florida Cornus florida 'Rubra'	Dogwood		M,P	M	Red	Pink-white	18'-25' 15'-20'
Crataegus crusgalli var. inermis	Thornless cockspur hawthorn		M,P,R	M	Orange	White	20'-25' 20'
Crataegus phaenopyrum Crataegus laevigata 'Paulii'	Washington hawthorn English hawthorn		M,P,R	M	Orange-scarlet	White	20'-30' 20'-25'
Crataegus viridis 'Winter King'	Winter king hawthorn		M,P,R	M,R	Bronze-red	White	20' 25'
Lagerstroemia indica (hybrids)	Crape myrtle		M,P,R	M,R		Varies	25'-30' 20'-25'
Magnolia x soulangiana	Saucer magnolia		M,P	M,R		Pink-white	25'-30' 20'-25'
Magnolia stellata 'Royal Star'	Royal star magnolia		M,P	M		White	15' 10'
Prunus serrulata 'Kwanzan'	Japanese cherry		M,P,R	M	Red-copper	Pink	30' 20'
Prunus cerasifera 'Atropurpurea'	Purple leaf flowering plum		M,P,R	M,P,R		Pink	15'-20' 10'-15'
Cornus alternifolia	Pagoda dogwood		M,P,R	M,P,R	Red	White	15'-20'
Syringa reticulata (S. japonica)	Japanese tree lilac		M	M		Yellowish-white	20'-30'
Cornus mas	Cornelian cherry		M,P,R	M,P,R	Gold or red	Yellow clusters	20'

KEY:

M = Median Placement *P = Plaza Placement *R = Roadside Placement

* Use requires special approval by the Department

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Ornamental Median Trees

STD. 600.11

PLANT SELECTION GUIDE FOR SHRUBBERY

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Azalea supp.	Azalea	M,P,S	P,S	B	M				Varies	18'-6' 2'-6'
Buddleia davidii	Butterfly bush				B	B	B		Pink-purple	5'-7'
Clethra alnifolia paniculata rosea	Summersweet			B	B	B	B		White (or pink)	3'-6'
Euonymus alata compacta	Dwarf burning bush				B,M	B		Red		4'-5'
Forsythia x intermedia 'Lynwood Gold'	Lynwood gold forsythia						B		Yellow	8' 6'
Hamamelis vernalis	Vernal witch hazel				B	B	B	Red-yellow	Yellow	10'-15' 10'-15'
Hydrangea quercifolia	Oakleaf hydrangea				B	B		Wine	Yellow	4'-6' 3'-5'
Ilex crenata 'Green Luster'	Green luster holly	M,P,S	P,S	S				Evergreen		2'-3'
Ilex crenata 'Hetzii'	Large convex leaved holly	M,P,S	P,S	S	M			Evergreen		4'-6'
Ilex glabra 'Compacta'	Dwarf inkberry	M,P,S	P,S	S	M			Evergreen		2'-4'
Juniperus sabina 'Tamariscifolia'	Tam's juniper	M,P,S	P,S	S	M			Evergreen		18" 8'-10'
Juniperus sabina 'Broadmoor'	Broadmoor juniper	M,P,S	P,S	S	M			Evergreen		2' 6'-8'
Kalmia latifolia	Mountain laurel				B	B	B	Evergreen	White	8'-10'
Prunus laurocerasus 'Skipkaensis'	Cherry laurel				B	B		Evergreen		4'-6' 6'-8'
Rosa rugosa	Rugosa rose				B	B	B		White-pink	4'-6'
Rosa x 'Meiflopan'	Alba meideland rose	M,P,S	P,S	M,S	B	B	B		White	30" 4'-5'

KEY:

B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Shrubbery

STD.
600.12

PLANT SELECTION GUIDE FOR SHRUBBERY

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Rosa x 'Noatraum'	Flower carpet rose	M,P,S	P,S	S	B	B	B		Pink	24"-30" 3'-4'
Taxus baccata repandens	Spreading English yew	M,P,S	P,S	S				Evergreen		2'-4' 12'-15"
Taxus x media 'Hicksii'	Flower hick's yew							Evergreen		15'-20' 8'-10'
Viburnum x burkwoodii	Burkwood viburnum				B	B	B	Semi-evergreen	White	6'-8' 5'-7'
Viburnum carlesii	Koreanspice viburnum				B	B	B	Wine	White	4'-8'
Viburnum dilatatum	Linden viburnum				B	B	B	Red	White	10'-12'
Viburnum opulus 'Compactum'	Compact European cranberry bush				B	B	B	Wine	White	2'-3' 3'-4'
Viburnum rhytidophyllum 'Allegheny'	Alleghany leatherleaf viburnum				B	B	B	Red-wine	White	10'
Weigela florida	Old fashioned weigela				B	B	B		Pink	7'-10'
Nandina domestica	Heavenly Bamboo				B	B	B		White	6'-10'

KEY:

B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Shrubbery

STD. 600.13

PLANT SELECTION GUIDE FOR LOW-GROWING SHRUBBERY

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Berberis thunbergii 'Atropurpurea Nana'	Dwarf red or Crimson pygmy barberry	M,P,S	P,S	S	M,S	S	S	Red		6"-24" 12"-36"
Euonymus fortunei 'Berryhill'	Euonymus hedge	M,P,S	P,S	S	M,S	S	S	Evergreen		30" 30"
Ilex crenata 'Helleri'	Hellers dwarf Japanese holly	M,P,S	P,S	S	M,S	S	S	Evergreen	Small white with berries	24" 12"-36"
Spiraea x bumalda 'Anthony Waterer'	Anthony waterer spiraea	M,P,S	P,S	S	M,S	S	S	Pinkish-green	Rose-pink	24" 24"
Spiraea x bumalda 'Gold Flame'	Gold flame spiraea	M,P,S	P,S	S	M,S	S	S	Evergreen	Red copper orange gold	24" 24"
Spiraea x japonica 'Little Princess'	Little Princess	M,P,S	P,S	S	M,S	S	S	Evergreen	Pink	24"-48" 24"-48"
Viburnum opulus 'Nanum'	Dwarf european cranberry bush	M,P,S	P,S	S	M,S	S	S	Evergreen		24" 24"-30"

KEY:

M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Low-Growing Shrubbery

STD. 600.14

PLANT SELECTION GUIDE FOR ORNAMENTAL GRASSES

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Andropogon scoparius	Little blue stem	M	M		B	B	B			24"-36" 24"
Carex speciosa 'Catlin'	Catlin sedge	M,P	M,P		B	B	B			36" 12"
Cortideria selloana 'Pumila'	Compact pampas grass	M	M						Silver-pink	48"-60" 24"-36"
Festuca ovina glauca	Blue fescue	M,P,S	M,P,S	S					Blue	36" 12"
Miscanthus sinensis 'Gracillimus' nana	Dwarf maiden grass	M	M						Red-pink	48"-60" 36"-48"
Miscanthus sinensis 'Morning Light'	Morning light maiden grass	M	M						Red-pink	60" 48"-60"
Panicum virgatum 'Haense Herms'	Red switch grass	M	M						Silver-pink	36"-48" 24"-36"
Pennisetum alopecuroides 'Hameln'	Dwarf fountain grass	M	M,P	S					Copper	18" 12"-24"
Pennisetum alopecuroides 'National Arboretum'	Late Blooming Fountain Grass	M	M,P,S	S					Copper	24" 18"-24"
Pennisetum caudatum	White Flowering Fountain Grass	M	M						White	48"-60" 24"-36"
Sesleria autumnalis	Moor Grass	M	M						Silver-white	36" 12"
Sorghastrum nutans 'Sioux Blue'	Sioux blue indian grass								Gold	36" 48"-72"
Miscanthus variegatus	Maiden grass	M	S	S	M					48"-60" 36"
Miscanthus zebra grass	Yellow banded maiden grass	M	S	S	M					72"-84" 60"

KEY:
B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Ornamental Grasses

STD. 600.15

PLANT SELECTION GUIDE FOR ORNAMENTAL GRASSES

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Imperata cylindrica	Japanese bloodgrass	M	S	S	M					12"-24" Varies
Gracillimus	Maiden grass	M	S	S	M				Plumes	60"-84" 96"-120"
Purpurascens	Deep red grass	M	S	S	M				Red plumes	60" 48"
Cortaderia selloana	White pampas grass	M	S	S	M				White plumes	60"-84" 48"-60"

KEY:

B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Ornamental Grasses

STD. 600.16

PLANT SELECTION GUIDE FOR GROUNDCOVER PLANTINGS

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Ajuga reptans	Carpet Bugleweed	M,P,S	P,S					Maroon	Purple	6"-8" 12"-24"
Euonymus fortunei 'Colorata'	Purpleleaf winter-creeper							Red-purple		4"-6" 18"-24"
Liriope muscari	Lilyturf	M,P,S	P,S	S				Evergreen	Purple	12"-24" 24"-36"
Pachysandra terminalis	Pachysandra	P,S	P,S	S				Evergreen	White	6" 6"-12"
Vinca minor	Periwinkle	M,P,S	P,S	S				Evergreen	Purple	6" 6"-12"
Erica carnea	Spring heath	M,P,S	P,S	S	M,P,S	S		Evergreen	White pink purple red	6"-12" Spreads
Calluna vulgaris cultivarsens	Heather	M,P,S	P,S	S	M,P,S	S		Evergreen	White pink purple	8"-24" Spreads
Aegopodium praograria 'Variegatum'	Silveredge bishop's weed	M,P,S	P,S	S	M,P,S	S		Perennial	White	10"-15" Spreads
Arctostaphylos uva-ursi	Bearberry or kinnikinick	M,P,S	P,S	S	M,P,S	S		Bronze Evergreen	Pink	6"-12" Spreads
Coronilla varia	Crown vetch	M,P,S	P,S	S	M,P,S	S		Perennial	Pink White	6" 12"-24"
Cotoneaster adpreeus	Creeping cotoneaster	M,P,S	P,S	S	M,P,S	S		Evergreen	Pink	6"-12" 10"
Daphne cneorum	Garland flower	M,P,S	P,S	S	M,P,S	S		Evergreen	Pink Rose red white	8"-12" 24"-30"
Dianthus plumarius	Cottage pink or grass pink	M,P,S	P,S	S	M,P,S	S		Perennial	Pink white Purple	6" 12"-15"

KEY:

B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE: APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Groundcover Plantings

STD. 600.17

PLANT SELECTION GUIDE FOR GROUNDCOVER PLANTINGS

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Gaultheria procumbens	Wintergreen or Mountain tea	M,P,S	P,S	S	M,P,S	S		Evergreen	White	6" Spreads
Lamium maculatum 'Beacon Silver'	Beacon silver dead nettle	M,P,S	P,S	S	M,P,S	S		Evergreen	Pink	4"-6" Spreads
Juniperus chinensis var. procumbens 'Nana'	Dwarf Japanese garden juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Blue-green purplish	6" 10'-15'
Juniperus chinensis var. procumbens 'Variegata'	Variegated Japanese garden juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Gray-green with creamy white	12" 10'-15'
Juniperus chinensis var. 'Sargentii'	Sargent juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Bright green, steel blue-green	12"-24" 10'-15'
Juniperus horizontalis 'Douglasii'	Waujegan juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Blue-green purplish	12"-18" 12"16"
Juniperus horizontalis 'Plumosa Compacta Youngstown'	Compact Youngstown andorra juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Silvery green	10"-20" 10'-15'
Juniperus horizontalis 'Waltonii'	Blue rug juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Silvery blue	6" 12'-16'
Juniperus Sabina 'Arcadia'	Savin juniper	M,P,S	P,S	S	M,P,S	S		Evergreen	Gray-green	12"-18" 4'-5'
Dianthus x	Carpet rose	M,P,S	P,S	S	M,P,S	S		Evergreen	Red	8"-12" Spreads

KEY:

B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Groundcover Plantings

STD. 600.18

PLANT SELECTION GUIDE FOR FLOWERING PERENNIALS

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Achilliea sp.	Yarrow	M,P	P		B	B	B		Yellow-gold	36" 24"-36"
Aster novae-angliae	New England aster	M			B	B	B		Varies	26"-36" 24"-36"
Chrysanthemum x superbum	Shasta daisy				B	B	B		White	24" 24"-36"
Coreopsis grandiflora 'Sunray'	Sunray coreopsis	M,S	S	S					Gold	18" 18"-24"
Coreopsis verticillata 'Moonbeam'	Moonbeam coreopsis	M,S	S	S					Yellow	18" 18"-24"
Daucus carota	Queen Anne's lace				B	B	B		White	36" 24"-30"
Echinacea purpurea	Purple coneflower				B	B	B		Pink-purple	36" 24"-36"
Gaillardia x grandiflora	Blanket flower	M,S	S	S					Yellow-orange	24" 12"-24"
Heuchera sanguinea	Coral bells	M,S	S	S				Maroon	Red	24" 18"-24"
Hypericum calycinum	Aaronsbeard St. John's wort	M,P,S	P,S	S				Semi-Evergreen	Yellow	24" 18"-24"
Monarda didyma	Bergamot				B	B	B			
Rudbeckia fulgida speciosa 'Goldstrum'	Black eyed Susan	M		S	B	B			Yellow-gold	36"-42" 24"-36"

KEY:

B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Flowering Perennials

STD. 600.19

PLANT SELECTION GUIDE FOR FLOWERING PERENNIALS

List of Approved Species

Botanical name	Common name	Urban (Arterial 120' R/W)	Urban (Collector 80' R/W)	Urban (Residential 60' R/W)	Rural (Arterial 130' R/W)	Rural (Collector 80' R/W)	Rural (Residential/ secondary 50'-60' R/W)	Fall color	Flower	Height Width
Rudbeckia speciosa 'Viette's Little Suzy'	Viette's little Suzy Black eyed Susan	M,P,S	M,P,S	M,S	B	B	B		Yellow-gold	12"-16" 18"-24"
Sedum spectable 'Autumn Joy'	Autumn joy sedum	M,P,S	M,P,S	M,S	B	B	B		Copper-red	24"-30" 18"-24"
Veronica 'Goodness Grows'	Goodness grows Veronica	M	M	M					Purple	12"-18"
Wildflower planting mix * (mix as specified by State Highway Administration) Rudbeckia hurla Centaura cyanus Papaver rhoeas Hesperis matronalis Oenothera hookeri Cosmos bipinnatus Gaillardia aristata Achillea filipendulina Coreopsis lanceolata Chrysanthemum leucanthemum Coreopsis linetoria Echinacea purpurea Delphinum ajacis Achillea millefolium Calendula officianialis (suppliers: Wildweed Inc. Apple Seed Co., Environmental Seed Produce, Meyer Seed co. or other approved vendor)					B	B	B			Varies

* Use of wildflower planting mix requires special approval by the Department.

KEY:
B = Buffer M = Median placement P = Plaza placement S = Streetscape

APPROVED:

DIRECTOR DATE

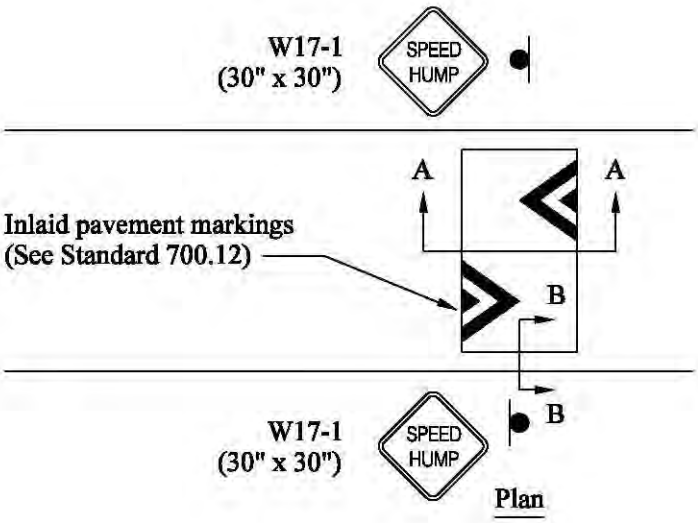
REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

Flowering Perennials

STD. 600.20

CATEGORY 700 STANDARD TRAFFIC CALMING DEVICES



Plan

Notes:

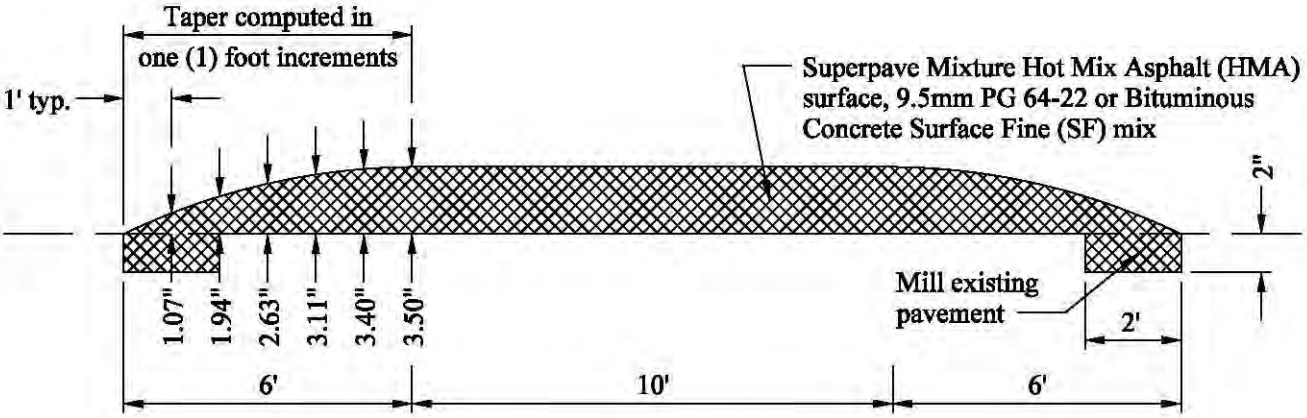
1. Advance warning signs shall be placed in each direction prior to a series of humps as determined by the Department.
2. See Chapter 6F "Temporary Traffic Control Zone Devices" of the MUTCD manual, latest edition, for size and placement of signs.



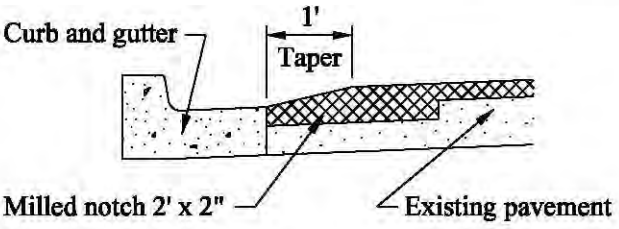
(24" x 24")*

(24" x 30")*

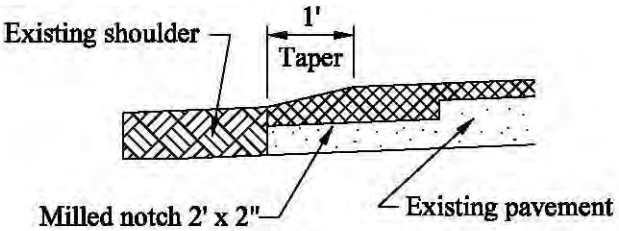
* These signs may require special fabrication.



Section A-A - Hump Profile



Urban Roadway



Rural Roadway

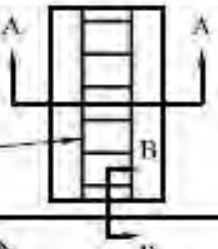
Section B-B - Edge Detail

APPROVED: DIRECTOR DATE		DPW&T	DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD
REVISION DATE:	APPROVED BY:		Speed Hump: Flat Top Profile / STD. 700.01

W11-2 (30"x30") (24"x12") * Black on flouresecent yellow-green



12" inlaid pavement markings (See Section II, Technical Specification for approved Permanent Pavement Marking Material



W11-2 (30"x30") (24"x12") * Black on flouresecent yellow-green



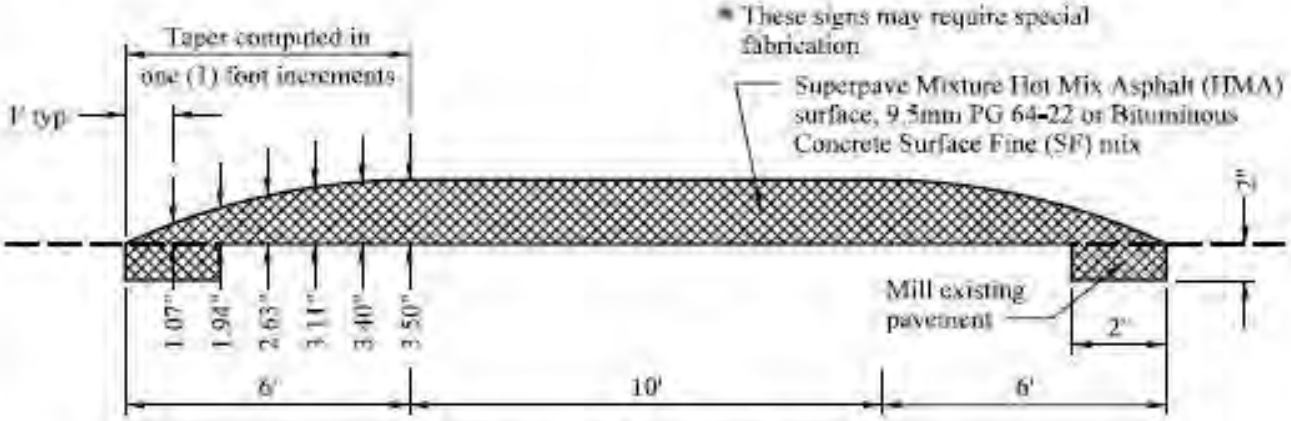
Plan

Notes:

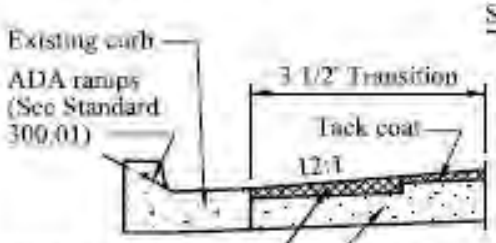
1. Advance warning signs shall be placed in each direction prior to a series of humps as determined by the Department.
2. Crosswalk shall be 10' wide. Crosswalk lines used on both sides of the crosswalk shall extend across the full width of pavement.
3. Longitudinal lines shall be spaced 24" apart. The spacing design should avoid the Wheel Path.
4. See Chapter 6F "Temporary Traffic Control Zone Devices" of the MUTCD manual, latest edition, for size and placement of signs.
5. All crosswalk ramps shall meet the Federal accessibility guidelines of the Americans with Disabilities Act.



* These signs may require special fabrication

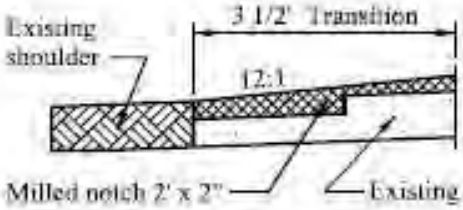


Section A-A - Hump Profile



Shoulder detail for streets with curb and crosswalks

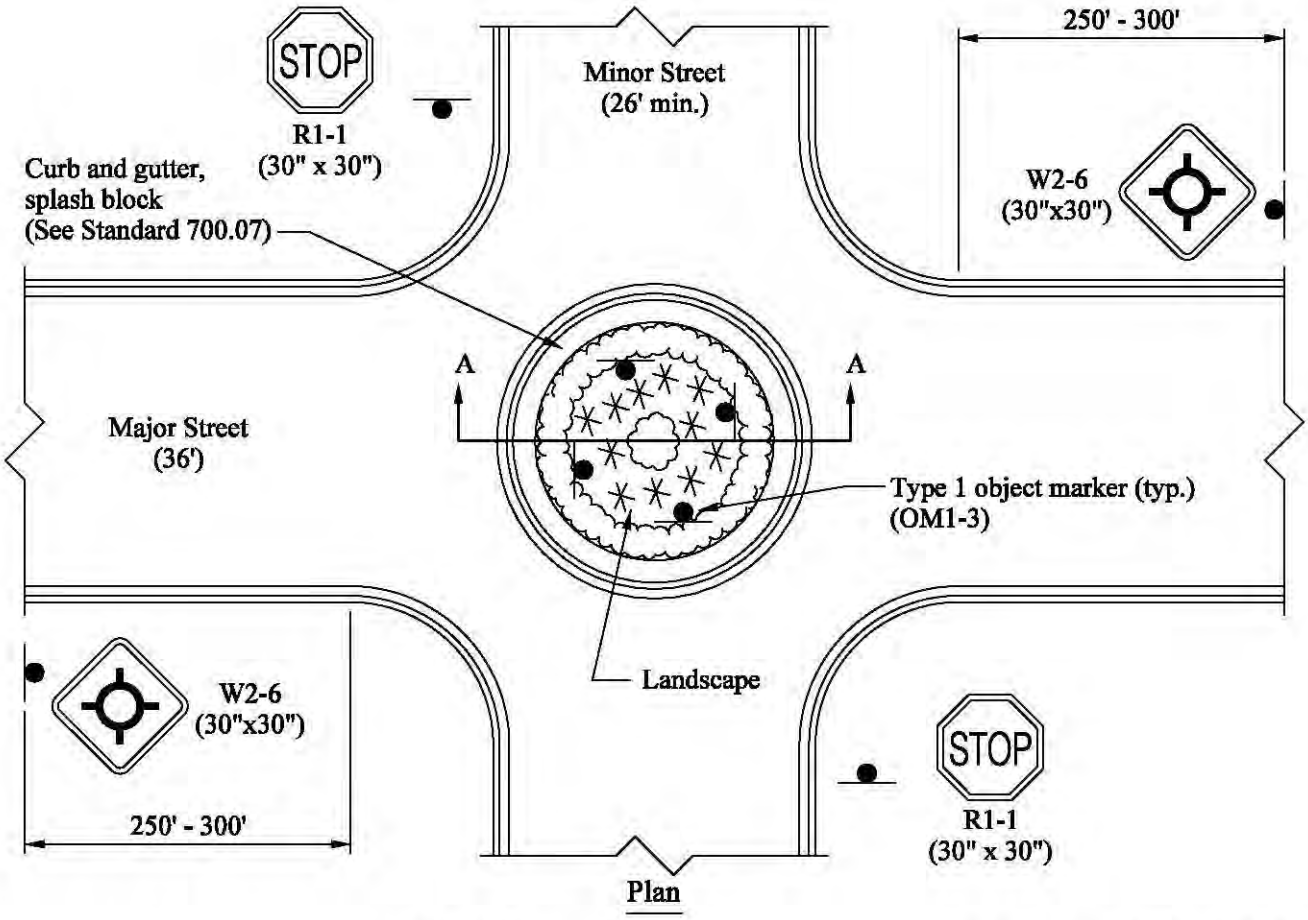
Urban Roadway



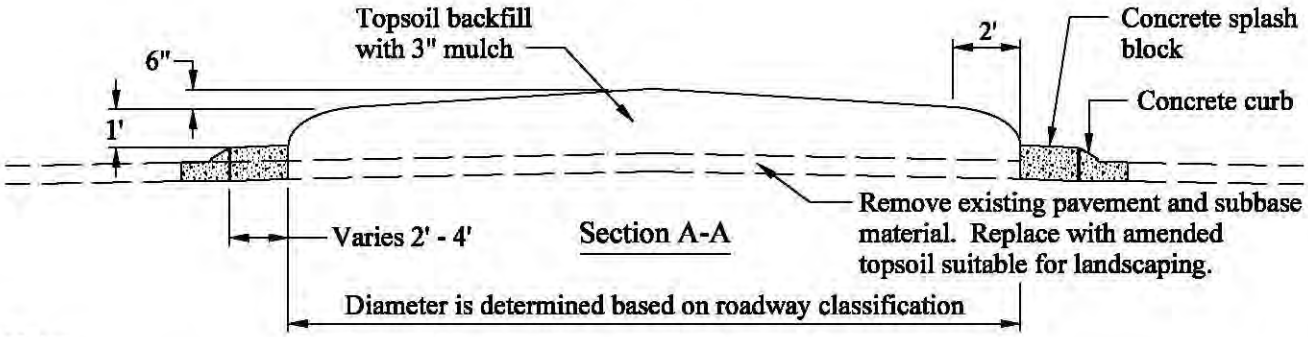
Rural Roadway

Section B-B - Edge Detail

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATES	APPROVED BY:	Raised Crosswalk	STD. 700.02



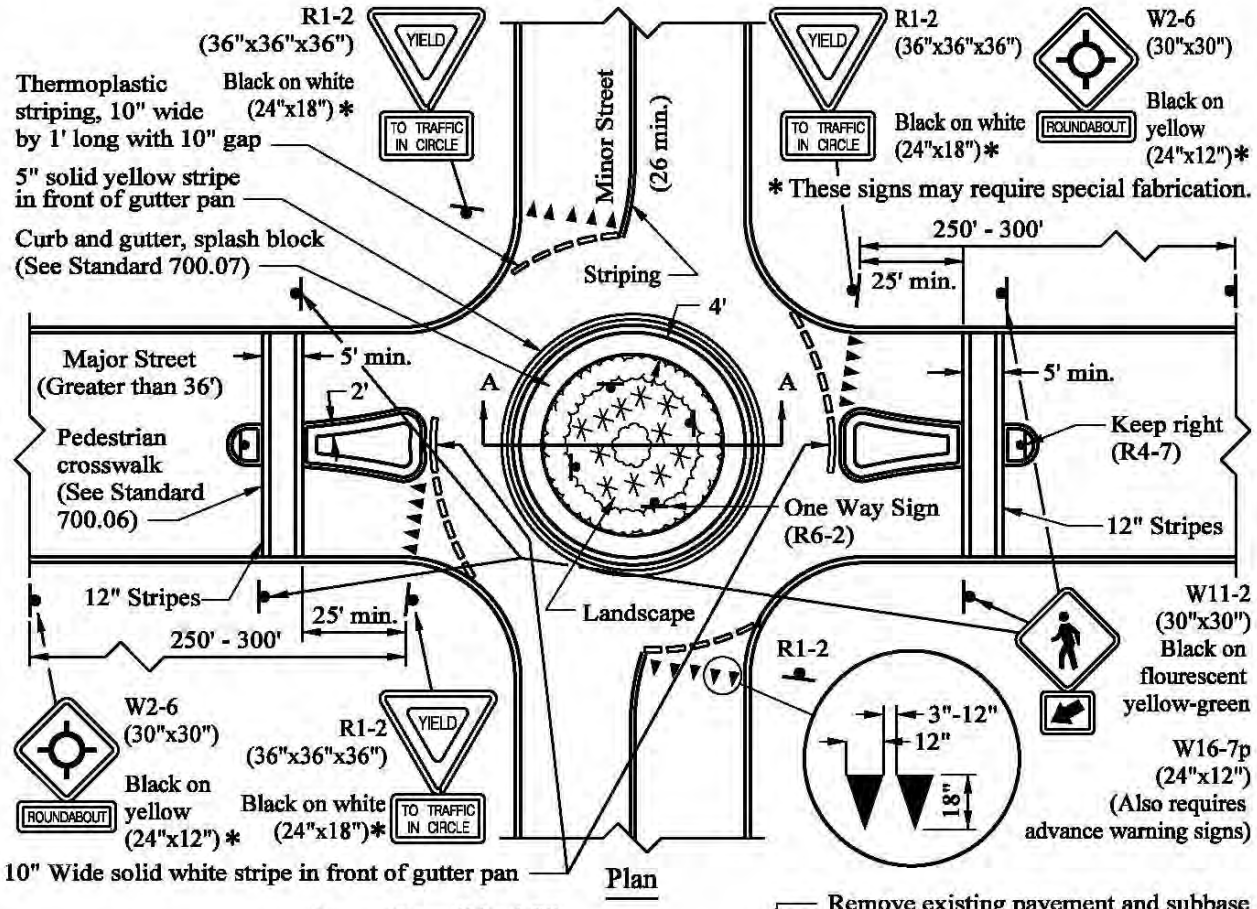
Plan



Notes:

1. Size and location of islands to be determined during design.
2. Landscape planting schemes shall be submitted for review and approved by the Department on a case-by-case basis.
3. In island areas, pavement shall be excavated and subbase material removed. Area shall be scarified to loosen subsoil and then backfilled with a minimum of 18" topsoil and 3" mulch, mounded and landscaped. All mulched areas must include pre-emergent weed control.
4. For design details, see MUTCD latest edition, and FHWA-RD-99-135 "Traffic Calming - State of the Practice" latest edition.

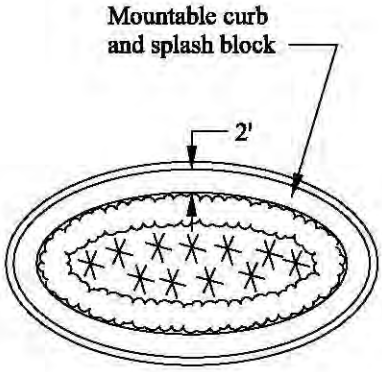
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Traffic Circle	STD. 700.03



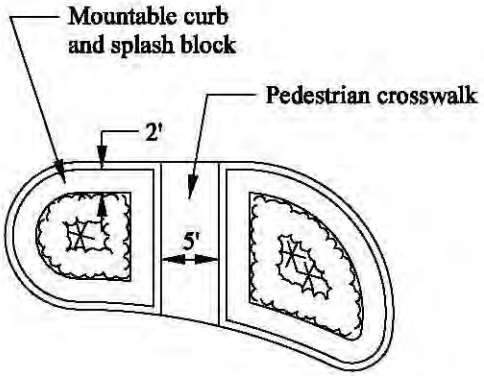
Notes:

1. Size and location of islands to be determined during design.
2. Landscape planting schemes shall be submitted for review and approved by the Department on a case-by-case basis.
3. In island areas, pavement shall be excavated and subbase material removed. Area shall be scarified to loosen subsoil and then backfilled with a minimum of 18" topsoil and 3" mulch, mounded and landscaped. All mulched areas must include pre-emergent weed control.
4. For design details, see MUTCD latest edition, and FHWA-RD-00-67 "Roundabouts: An Informational Guide" latest edition and FHWA-RD-99-135 "Traffic Calming - State of the Practice" latest edition.
5. Crosswalk markings are to be located a minimum of 25 feet upstream from the yield line, or if none, from the dotted white line.
6. Triangle length and base dimension (yield line marking): side street speed limit 35 m.p.h. and below - 18" x 12"; side street speed limit above 35 m.p.h. - 36" x 24". See typical yield line marking above.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Roundabout	STD. 700.04

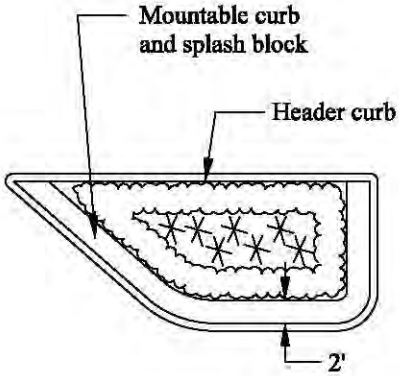


Oval Island

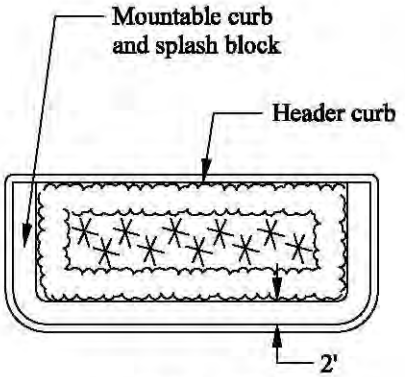


T-Intersection Diversion

(See Standard 700.06 Pedestrian Island Crosswalk)



Restrictor



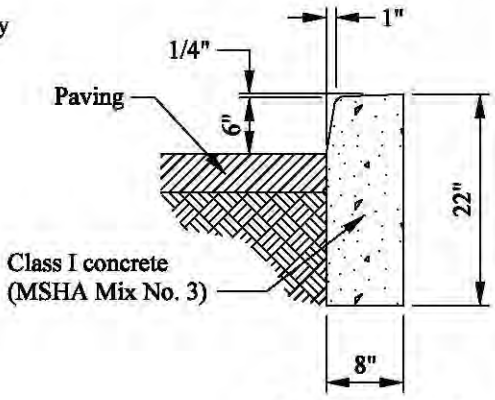
Rectangular Restrictor

Details

Note: Lengths and widths vary

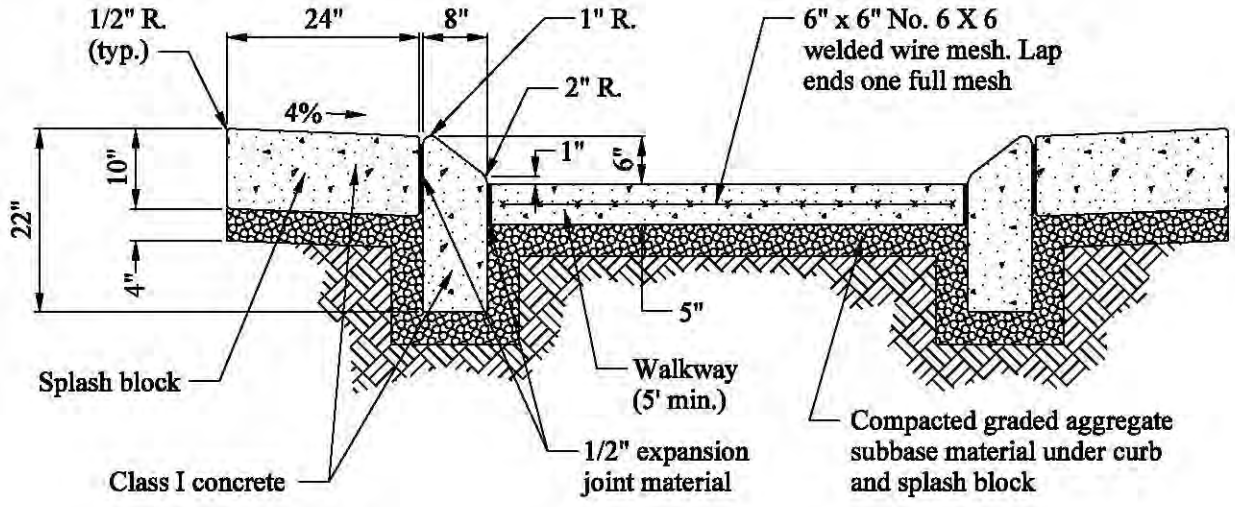
Notes:

1. Mountable curb and splash block shall be constructed in accordance with Standard 700.07.
2. Header curb shall be constructed in accordance with detail at right.
3. In island areas, pavement shall be excavated and subgrade disturbed. Area shall be scarified to loosen subsoil and then backfilled with a minimum of 18" topsoil and 3" mulch and mounded as shown in Standard 700.03 (provide a maximum plant height of 12" and no trees for islands less than 10' wide). All mulched areas must include pre-emergent weed control.
4. Landscape planting schemes shall be submitted for review and approved by the Department.

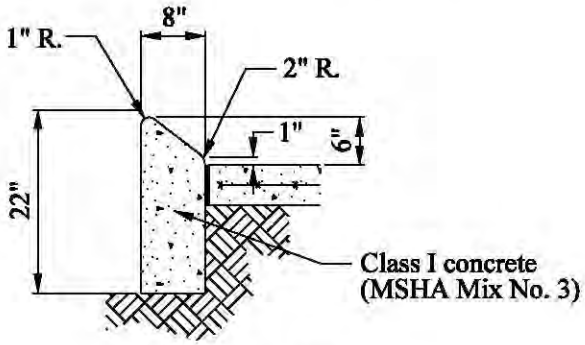


Header Curb Detail

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Speed Reducing Islands	STD. 700.05



Detail

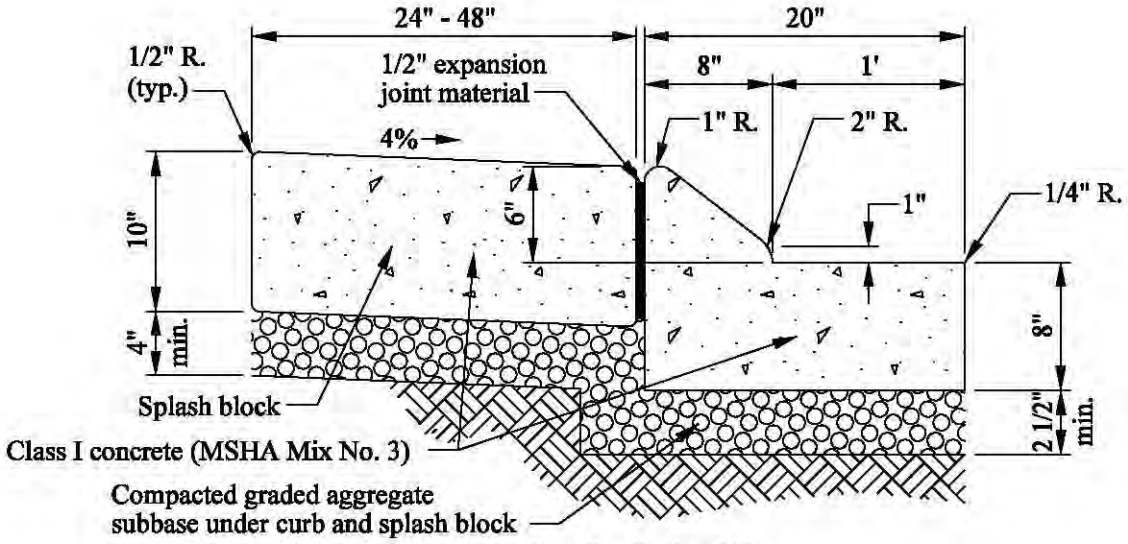


Header Curb Detail

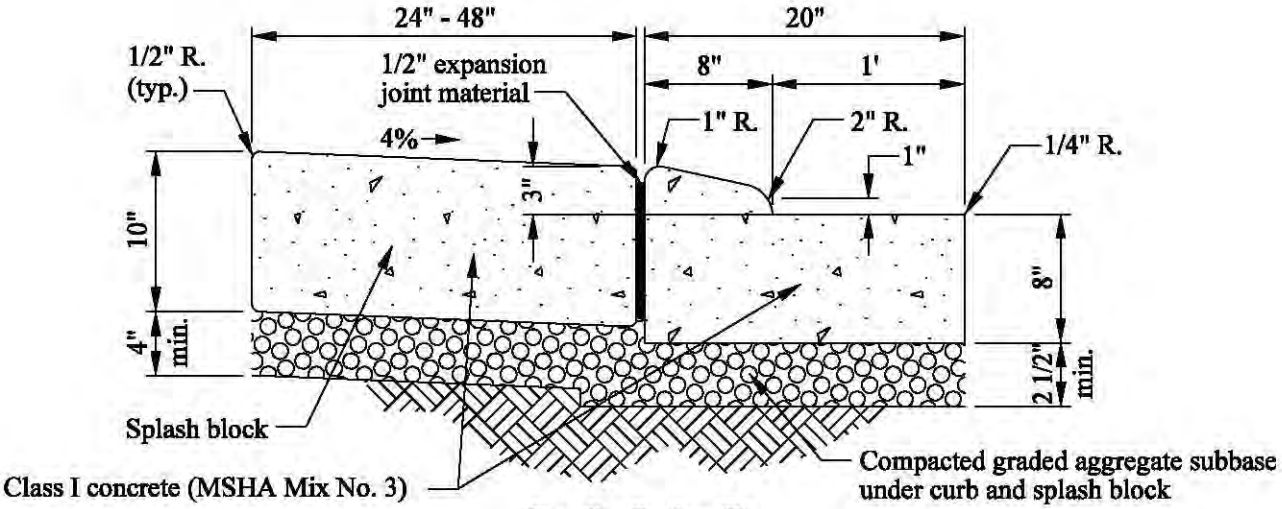
Notes:

1. Compacted graded aggregate subbase (GASB), 6" thick, shall be provided under the splash block, curb and walkway.
2. Splash block shall be Class I concrete (MSHA Mix No. 3) air-entrained, with "brick-red" color additives as approved by the Department, and trowelled only after the final floating.
3. While the concrete is still in the plastic stage of set, imprint tools shall be applied to make the desired imprint of brick or blocks to the surface.
4. After the initial curing period, the surface of the slab shall be sealed with an approved liquid sealing compound.
5. Install premolded 1/2" expansion joint material in curb and gutter, and in splash block at 100' intervals, at structures, and at the beginning and end of curves. Contraction joints shall be placed at 10' intervals.
6. The walkway shall be constructed to match the slopes of the existing pavement surfaces.
7. See Standards 700.04 and 700.05 for "Roundabout" and " Speed Reducing Island" plans.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Pedestrian Island Crosswalk	STD. 700.06



Detail - Option 'A'

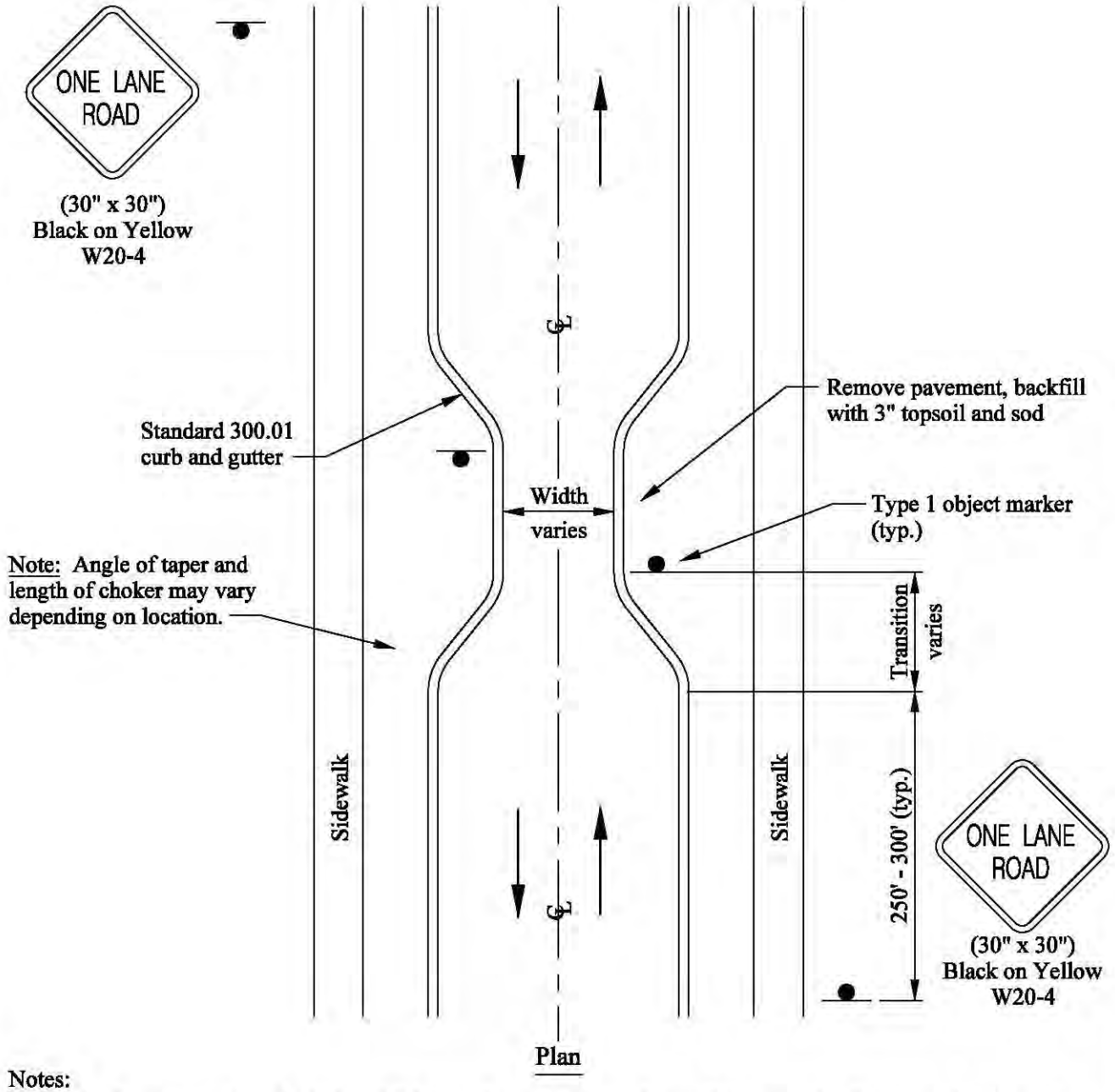


Detail - Option 'B'

Notes:

1. Gutter pan shall be spill type at slope of existing roadway under the splash block and the curb and gutter section.
2. Splash block shall be Class I concrete (MSHA Mix No. 3) air-entrained, with "brick-red" color additives as approved by the Department, and trowelled only after the final floating.
3. While the concrete is still in the plastic stage of set, imprint tools shall be applied to make the desired imprint of brick or blocks to the surface.
4. After the initial curing period, the surface of the slab shall be sealed with an approved liquid sealing compound.
5. Install 1/2" expansion joint material in curb and gutter, and in splash block at 100' intervals, at structures, and at the beginning and end of curves. Contraction joints shall be placed at 10' intervals.
6. For additional information, see Standards 700.03, 700.04, 700.06, and MSHA 'Combination Concrete Curb and Gutter' Standards MD 620.02, MD 620.02-01 and MD 620.03 for sidewalk ramps.

APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Mountable Curb and Splash Block Combination	STD. 700.07

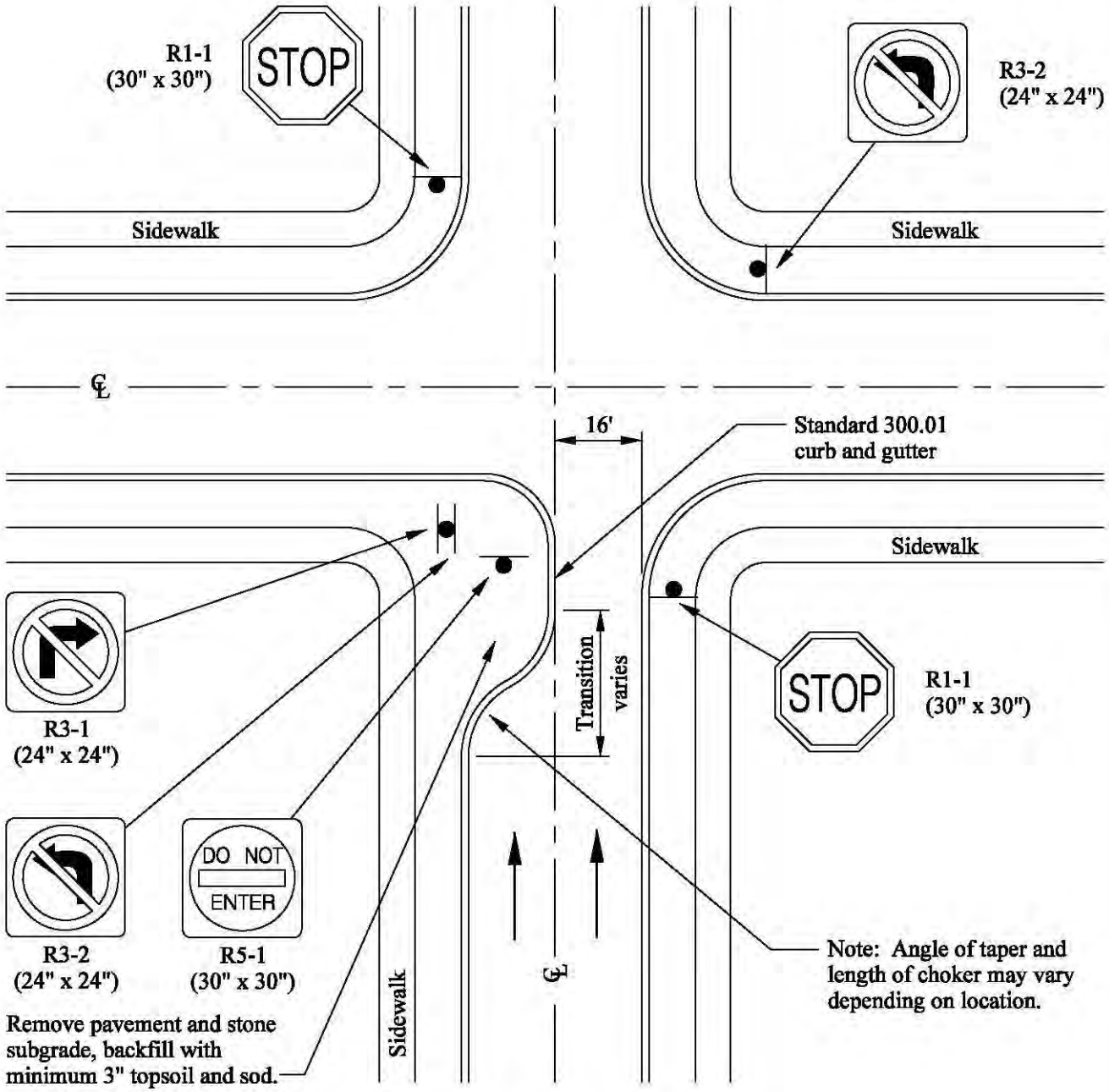


Notes:

1. Width of pavement through choker, 16' for one lane, 22' for two lanes. Primary and collector roadways require special traffic calming designs.
2. Provide pedestrian crossing with sidewalk ramps, where desired.
3. Advance warning sign necessary only for one-lane choker.
4. For additional information, see Appendix D, "Neighborhood Traffic Management Program."

Use of this design shall be for special cases only and requires written approval by the Department.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Choker	STD. 700.08



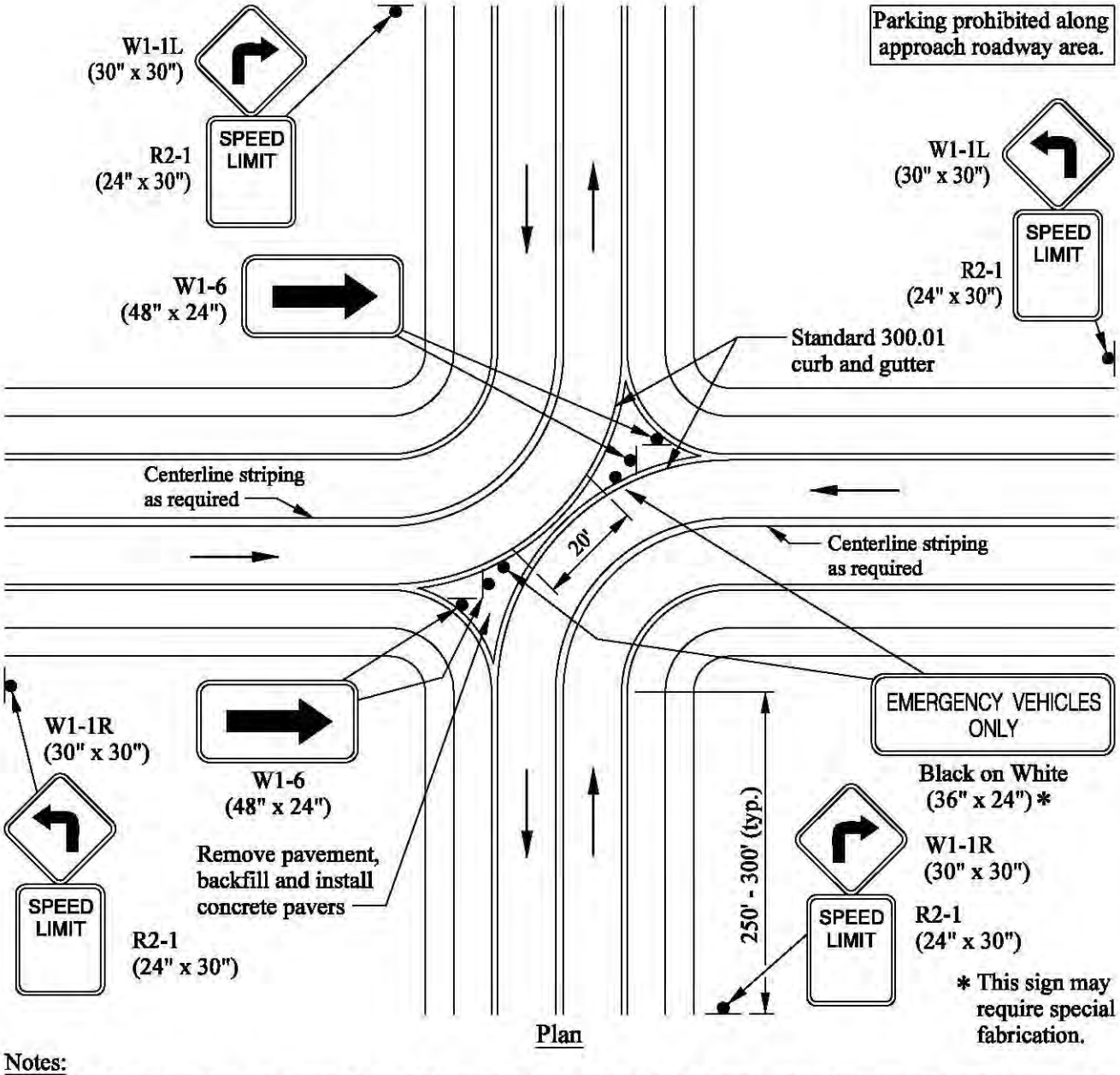
Plan

Notes:

1. Sidewalk and sidewalk ramps shall be modified, as necessary.
2. For additional information, see Appendix D, Neighborhood Traffic Management Program.

Use of this design shall be for special cases only and requires written approval by the Department.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Semi-Diverter	STD. 700.09



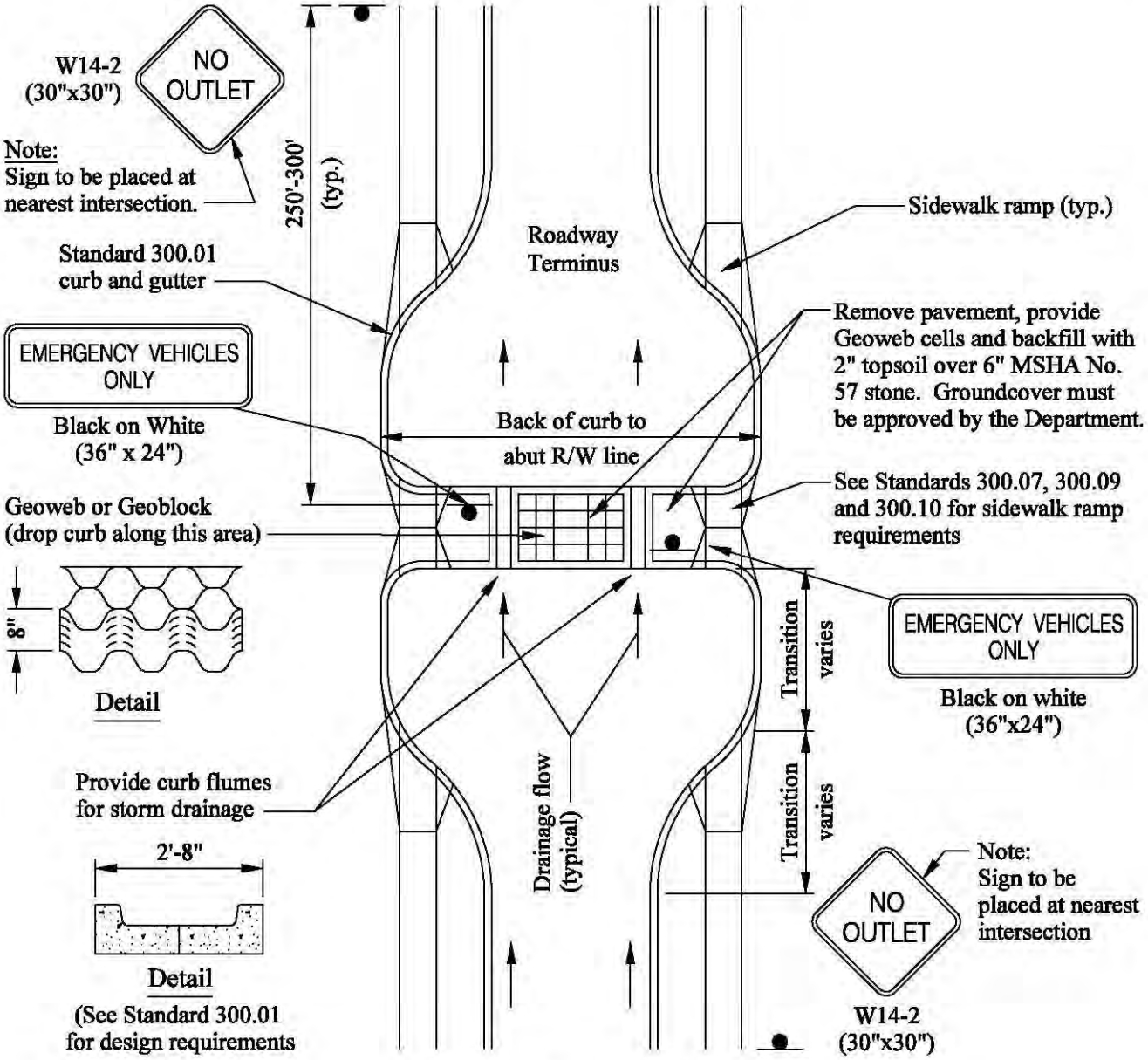
Plan

Notes:

1. Use of Diverter shall be approved by the Department. The planting of grass in the diversion area is not acceptable.
2. Emergency vehicle access concrete pavers (Std. 300.22 and 300.23); shall be provided as shown with signs on each approach, if necessary.
3. Sidewalk and sidewalk ramps shall be modified as necessary.
4. Advisory speed plates shall be installed on turn warning signs, as necessary.
5. The appropriate "Large Arrow" signs shall be visible on each approach.
6. For additional information, see Appendix D, Neighborhood Traffic Management Program.

Use of this design shall be for special cases only and requires written approval by the Department.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Diverter	STD. 700.10



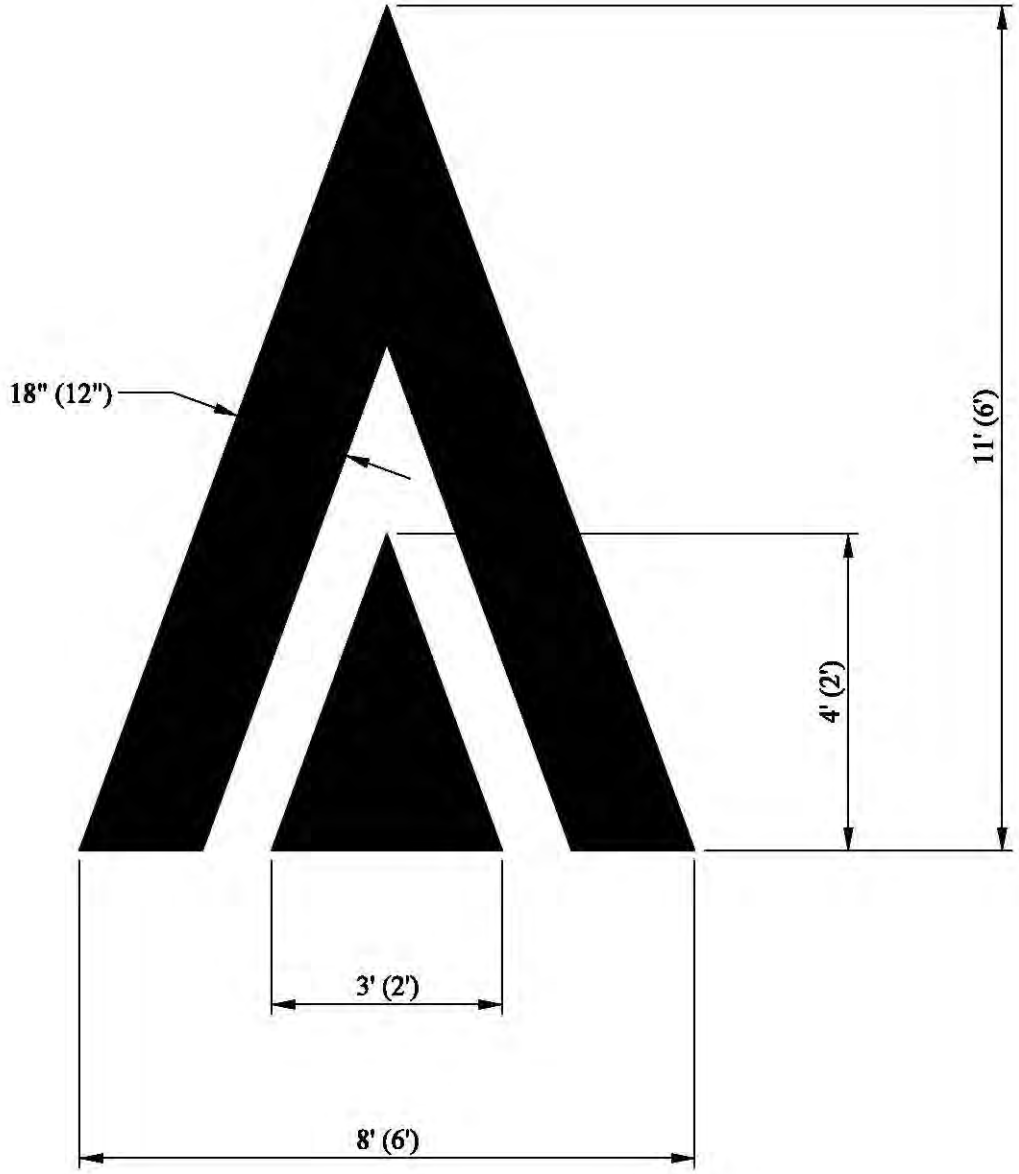
Plan

Notes:

1. Emergency vehicle access (using Geoweb or Geoblock) shall be provided as shown, with signs on each approach, if necessary.
2. Provide sidewalk ramps where sidewalk joins street.
3. For additional information, see Appendix D, Neighborhood Traffic Management Program.

Use of this design shall be for special cases only and requires written approval by the Department.

APPROVED: DIRECTOR DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD
REVISION DATE: / APPROVED BY:		Full Closure — STD. 700.11

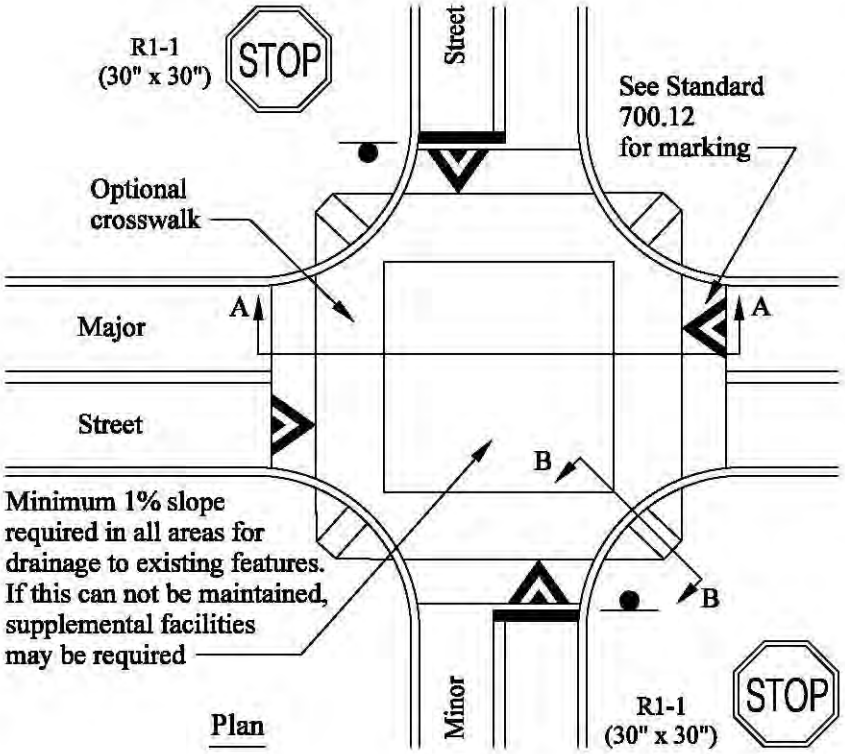


Detail

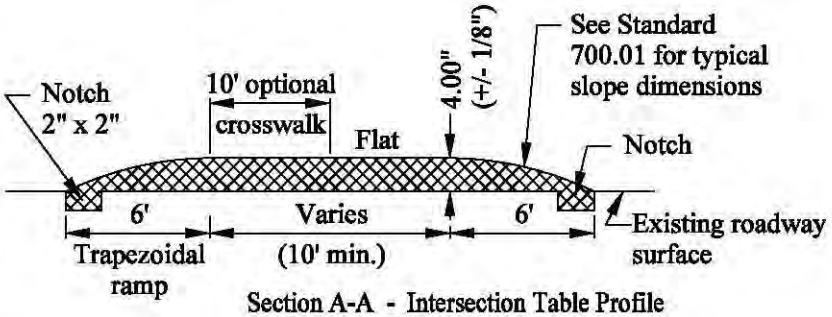
Notes:

1. Use dimensions outside the parentheses for flat-top profile humps. Dimensions inside the parentheses are to be used for raised crosswalks and speed tables.
2. For marking use 3M A420 or A440 pavement marking material, or approved equivalent and inlaid into the pavement in accordance with the manufacturer's specifications.

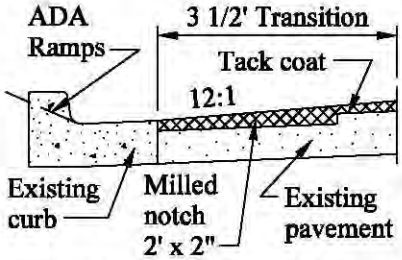
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Speed Hump/ Table Marking	STD. 700.12



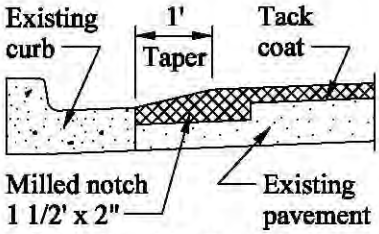
Plan



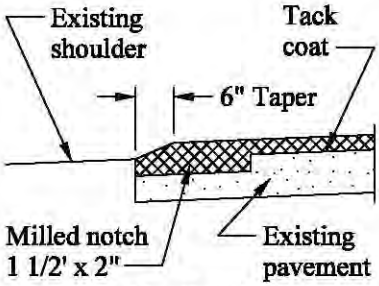
Section A-A - Intersection Table Profile



Urban Shoulder Detail (streets with curbs and crosswalks)



Urban Shoulder Detail (streets with curbs and without crosswalks)



Rural Shoulder Detail for (streets without curbs or crosswalks)

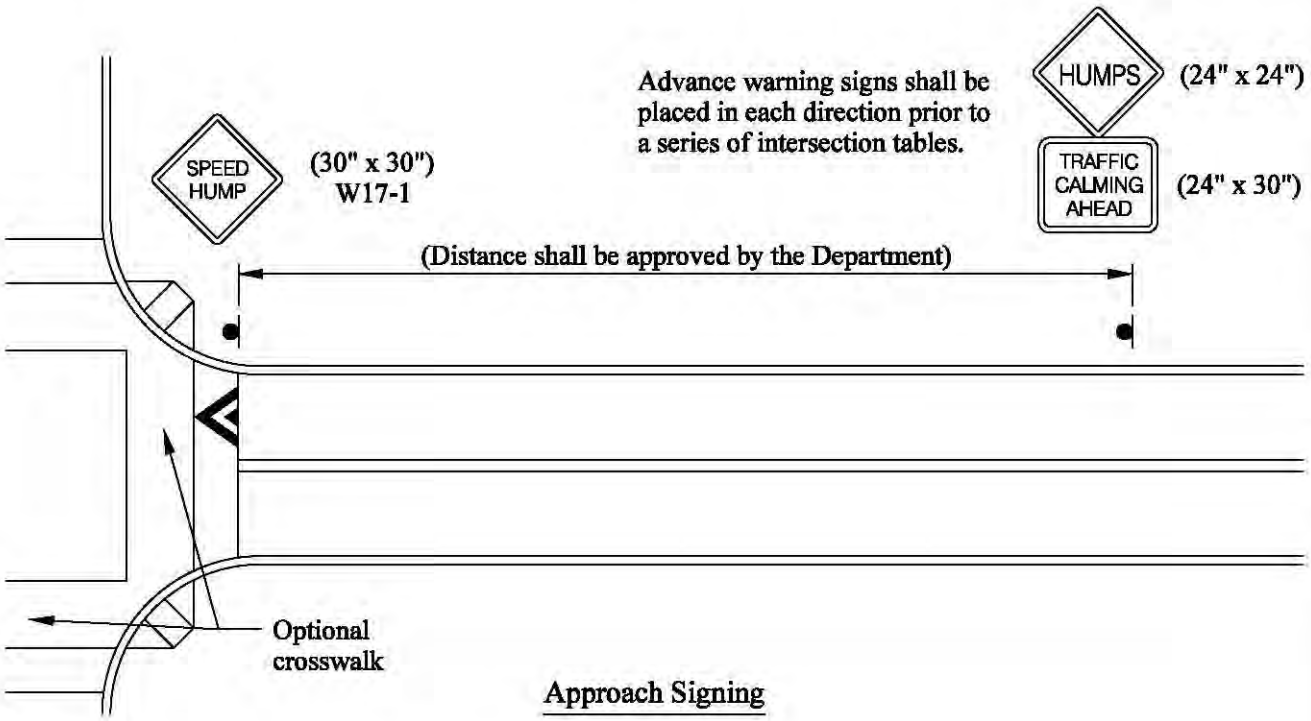
Section B-B

Notes:

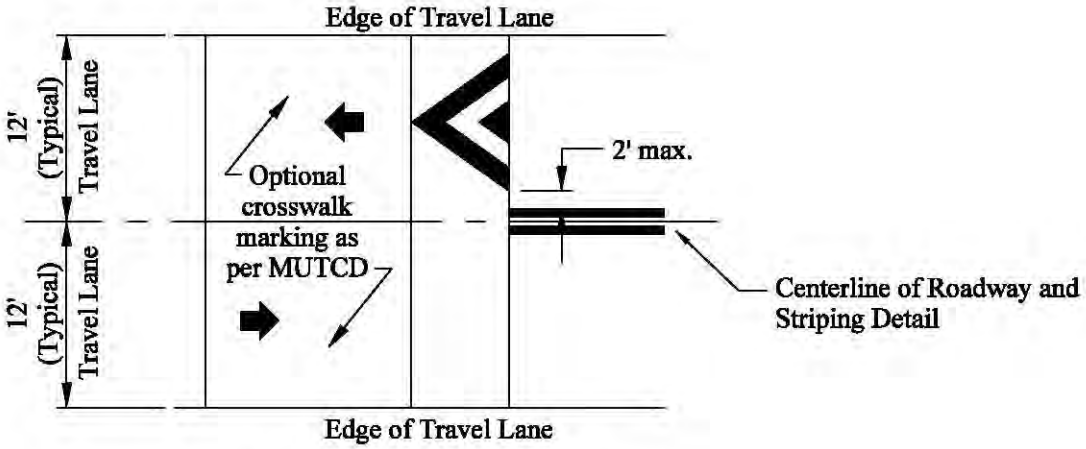
1. This standard is restricted for use on roadways with a 30 m.p.h. to 40 m.p.h. posted speed limit.
2. Various materials/techniques are allowed to increase visibility and aesthetic quality, including stamped concrete, and other such approved enhancements.
3. If crosswalks are used, trapezoidal ramp must be outside of the crosswalk.
4. The limits of the intersection table must be determined on a case by case basis.
5. Drainage must be accommodated so there is no standing water after a storm event. Drainage must be considered on a case by case basis.
6. For new street construction, ramps are required on side streets. Vertical alignment within the intersection shall be designed accordingly. Existing streets retrofitted with an Intersection Table require ramps on four (4) sides.
7. For additional information, see Appendix D, Neighborhood Traffic Management Program.

Use of this design shall be for special cases only and requires written approval by the Department.

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Intersection Table	STD. 700.13



Approach Signing

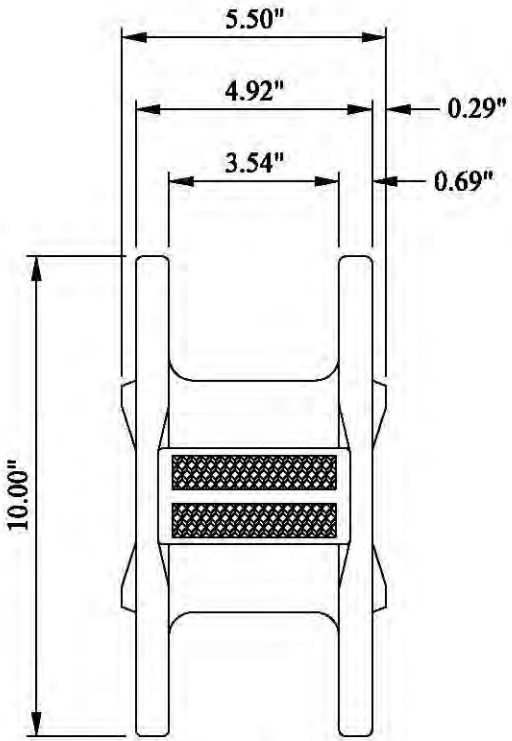


Ramp Pavement Markings

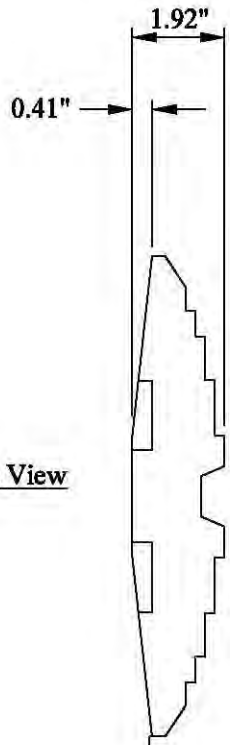
Notes:

1. Signing and marking shall be in accordance with the latest edition of MUTCD.
2. Sign location shall be verified by the Engineer prior to installation.
3. For marking use 3M A420 or A440 pavement marking material, or approved equivalent and inlaid into the pavement in accordance with the manufacturer's specifications (see Standard 700.12).
4. Modified markings as required for one-way streets.
5. For additional information, see Appendix D, Neighborhood Traffic Management Program.

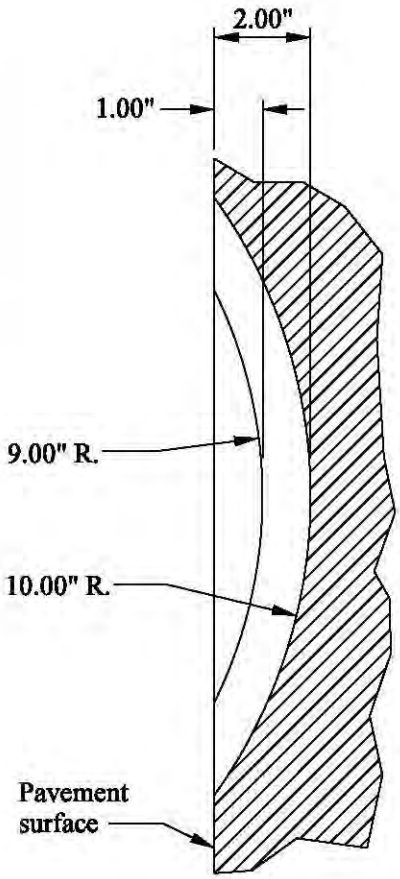
APPROVED: DIRECTOR / DATE		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Intersection Table Signing and Marking Details	STD. 700.14



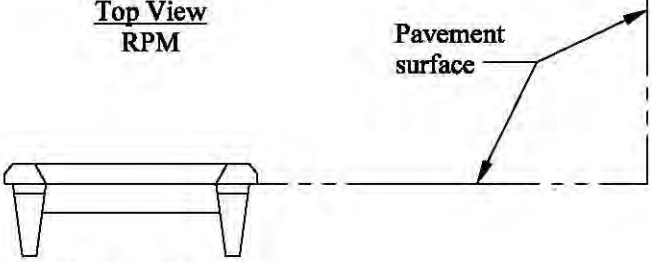
Top View
RPM



Side View



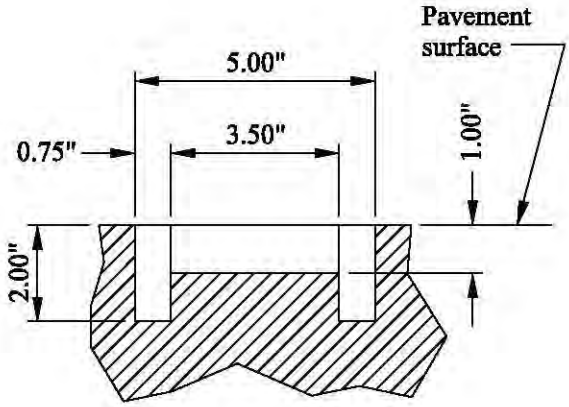
Sawcut Slot



Front Detail

Notes:

1. Two parallel slots and a concave surface shall be cut, as shown, with arbor and saw blade.
2. The cut pattern shall be cleaned, and dried with compressed air, then filled with epoxy adhesive which shall conform to AASHTO M 237 Type IV.
3. No marker shall be installed when either the pavement or air temperature is less than 50° F. if the relative humidity of the air is greater than 50 %, or if the pavement is wet or damp.
4. The marker shall be protected from traffic until the adhesive has properly hardened.



Sawcut Slot (profile)

APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Raised Pavement Marker (RPM) Installation	STD. 700.15

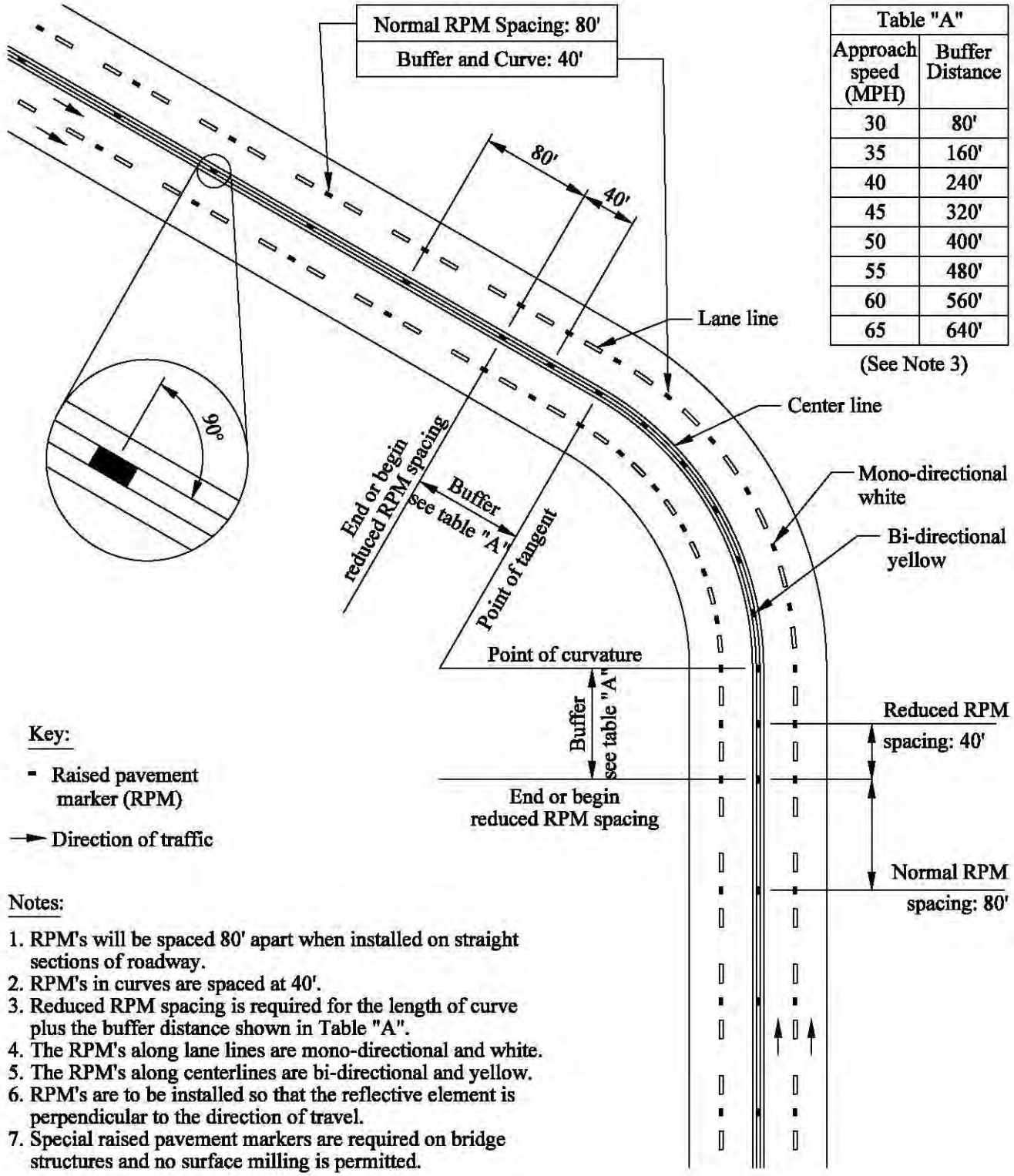


Table "A"	
Approach speed (MPH)	Buffer Distance
30	80'
35	160'
40	240'
45	320'
50	400'
55	480'
60	560'
65	640'

(See Note 3)

Notes:

1. RPM's will be spaced 80' apart when installed on straight sections of roadway.
2. RPM's in curves are spaced at 40'.
3. Reduced RPM spacing is required for the length of curve plus the buffer distance shown in Table "A".
4. The RPM's along lane lines are mono-directional and white.
5. The RPM's along centerlines are bi-directional and yellow.
6. RPM's are to be installed so that the reflective element is perpendicular to the direction of travel.
7. Special raised pavement markers are required on bridge structures and no surface milling is permitted.

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD

Raised Pavement Marker (RPM) Placement

STD. 700.16

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION IV
Appendices of Departmental Documents

Revision 03/14/12

Section IV – Appendices A, B and C

CONTENTS

Appendix A: Forms ..... A- i

Appendix B: Forms ..... B -i

Appendix C: Enabling Legislation..... C -i

APPENDIX A: FORMS

No. *Title*

Form A-1 .....Street Grade Establishment Plan Requirements Checklist
Form A-2 ..... Grading Permit Process Checklist
Form A-3 ..... Storm Drain Construction Permit Process Checklist
Form A-4 ..... Street Construction Permit Process Checklist
Form A-5 .....General Storm Drain and Paving Notes
Form A-6 ..... Street Tree and Lighting Plan (STLP) Requirements Checklist
Form A-7 ..... Schedule of Permit Fees
Form A-8 ..... Prince George's County DPWT Construction Price List
Form A-9 ..... Rural/Urban Driveway Construction Permit Process Checklist
Form A-10 ..... Box Culvert Plan Sheet Checklist
Form A-11 ..... Steel Girder Bridge Plan Sheet Checklist
Form A-12 ..... Concrete Girder Bridge Plan Sheet Checklist
Form A-13 .....Easement Agreement/Right-of-Way Dedication Requirements Checklist
Form A-14 .....Private Right-of-Way Requirements Checklist
Form A-15 .....Property Identification and Contact Information Form
Form A-16 ..... Sample Property Corner Monumentation Certification Letter
Form A-17 ....Haul Road Permit for Mining, Excavation, and Fill Operations Process Checklist
Form A-18 .....Special Permit for Overweight/Oversize Vehicle Process Checklist
Form A-19 .....Haul Road Permit for Transporting Timber/Equipment Process Checklist
Form A-20 ..... Special Permit Requirements for Restoration of Existing Adjacent Roadways for Timber Harvest
Form A-21 .....Transporting Equipment/Logging Permit Agreement of Responsibility for Restoration
Form A-22 .....Guidelines for Quality Assurance/Quality Control (QA/QC) of Road Construction
Form A-23 .....Specifications for Consulting Engineering Services
Form A-24 .....Task Descriptions and Deliverables-Task List Scoping Worksheet
Form A-25 .....Bus Shelter Construction Specifications

STREET GRADE ESTABLISHMENT PLAN
REQUIREMENTS CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) has established specific requirements for Street Grade Establishment Plan review submittals. The following checklist contains the required elements for Street Grade Establishment Plans on new and existing roadways.

Please use the following checklist in preparation of your submittal.

FORM A-1

STREET GRADE ESTABLISHMENT PLAN REQUIRMENTS CHECKLIST

Prince George's County
Department of Public Works Transportation

Please Read All of the Following Before Proceeding Further!

The following information is required on all Street Grade Establishment Plans for new and existing roadways:

A. Plan View

1. Title Block
   - ☐ Subdivision name (from Record Plat)
   - ☐ Street name (large and bold)
   - ☐ Stationing
   - ☐ Election district
   - ☐ Date
2. General notes shall contain a note stating that "I hereby certify that":
   - ☐ The information shown hereon has been compiled from field surveys conducted by (name source of survey and date).
   - ☐ There is (yes) existing paving, water, or sewer in this right-of-way.
   - ☐ There is (no) existing paving, water, or sewer in this right-of-way.
   - ☐ No portion of this right-of-way lies within, connects, or crosses an existing State road.

☐ 3. North arrow, datum
☐ 4. At least three grid tics with coordinates
☐ 5. Right-of-way centerline and matchline stationing
☐ 6. Right-of-way lines
☐ 7. Right-of-way widths
☐ 8. Ditch lines (when applicable)
☐ 9. Centerline stationing
☐ 10. Intersection stationing and right-of-way width of intersecting street
☐ 11. Street names
☐ 12. Lot lines
☐ 13. Lot and block number
☐ 14. Existing right-of-way, easements, paving, utilities
☐ 15. Adjacent property names or subdivision references, plat book and page, liber, and folio
☐ 16. Engineer's certificate
☐ 17. Label horizontal curves and fillets.
☐ 18. Provide curve table with start and end stationing and relevant curve information.
☐ 19. Street name, job name, file number, Professional Engineer seal, and station limits in lower right corner of sheet
☐ 20. Label high and low points (with flow arrows) in plan view.
☐ 21. Label street slope percent on street on flow arrows so that every percent grade is represented in plan view.
☐ 22. MSHA approval for County road connections to State-maintained roadways
☐ 23. WSSC approval (for existing Utilities within right-of-way) if applicable

24. In-lieu of fillet profiles:
   - ☐ Provide elevation at fillet point, along with Station and offset;
   - ☐ Provide elevation of midpoint along fillet or high or low point, along with Station and offset;
   - ☐ Provide spot elevation at centerline intersection; and
   - ☐ Show flow-arrows.
25. In-lieu of cul-de-sac profiles:
   - ☐ Provide elevation at fillet point, along with Station and offset;
   - ☐ Provide elevation of midpoint along cul-de-sac bulb, high or low point, along with Station and offset;
   - ☐ Provide a minimum of four elevation points along cul-de-sac bulb (not including the fillet points) with Station and offset info; and
   - ☐ Show flow-arrows with percentages specified along flowline of gutter or swale (if open section).

B. Profile

- ☐ **1.** Existing topography (centerline, left and right property line, extended left and right spots to 25 feet outside of the right-of-way) extend topography 300 feet past end of approval limit or 200 feet for cul-de-sacs (from center). Note: Not required in private townhouse developments.
- ☐ **2.** Legend
- ☐ **3.** Scale (horizontal and vertical)
- ☐ **4.** Elevations labeled on vertical axis
- ☐ **5.** Proposed and existing centerline grades (bold line) or top of curb where applicable
- ☐ **6.** 100-foot stationing and 25-foot tics
- ☐ **7.** Elevations every 25 feet for vertical curves
- ☐ **8.** Elevations every 25 feet for tangent sections
- ☐ **9.** PVC stations labeled with elevations
- ☐ **10.** PVT stations labeled with elevations
- ☐ **11.** PVI stations labeled with elevations and POC elevations
- ☐ **12.** PVRC stations and elevations
- ☐ **13.** PVRC stations and elevations
- ☐ **14.** When possible, PVC and PVT stations should fall on 25-foot tics and vertical curve lengths should be multiple of 50 feet.
- ☐ **15.** Gradebreak stations labeled with elevation
- ☐ **16.** Flowline stations labeled with elevations
- ☐ **17.** HP and LP elevations and stations
- ☐ **18.** Intersection elevations and stations
- ☐ **19.** Boundary line elevations and stations
- ☐ **20.** Tangent grade lines with slope percentage
- ☐ **21.** All streets maximum of 10% slope unless otherwise specified in Section 1, Design Guidelines and Table I-2
- ☐ **22.** Maximum of +2 percent and –4 percent slope out of an intersecting road.
- ☐ **23.** The grade of the street parallel to the flow shall not be less than 2 percent at intersections in order to allow for pavement irregularities and to have the actual flowline grade not less than 1 percent when allowance has been made for the lowering of the gutter lip at the spill-out area of the return.
- ☐ **24.** Crowning the cul-de-sac in the bulbous area is not required if it can be shown that positive drainage will occur across this area. This is usually appropriate on severe slopes into a cul-de-sac and is applicable on downgrade scenarios only. A minimum 1 percent flow line grade is required in the gutter to maintain positive drainage.
- ☐ **25.** Cul-de-sacs shall not have a vertical curve beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
- ☐ **26.** Cul-de-sacs shall not have a vertical grade in excess of 6 percent beyond the fillet point at the entrance to the cul-de-sac's bulbous end.
- ☐ **27.** Vertical curve lengths and "e" value
- ☐ **28.** Fillet profile (if applicable)
- ☐ **29.** Cul-de-sac profile (if applicable)
- ☐ **30.** Any existing utilities shown in profile
- ☐ **31.** No tangents less than 50 feet are allowed between vertical curves.
- ☐ **32.** Provide 100-foot tangent to gutter line of intersecting street if on downhill slope (note: there is some flexibility in this rule if it can be shown that no portion of vertical curve exceeds the landing grade maximum within this 100 feet).
- ☐ **33.** Provide 50 feet of tangent length to gutter line of intersecting street if on uphill slope (note: there is some flexibility in this rule if it can be shown that no portion of vertical curve exceeds the landing grade maximum within this 50 feet).
- ☐ **34.** Transition from 60-foot right-of-way to 50-foot right-of-way requires 25:1 taper in the transition zone. Transition should occur in an intersection where possible.
- ☐ **35. Clearly label requested limits of approval.** Provide station limits and refer to revision number and date.
- ☐ **36.** Clearly label previously approved limits. Show the date.
- ☐ **37.** Label design speed limit.
- ☐ **38.** Show K-factor.

C. Submittal Contents

- ☐ **1.** Approved Preliminary Plan
- ☐ **2.** Approved Record Plat

GRADING PERMIT
PROCESS CHECKLIST

All mass grading within public rights-of-way in Prince George's County, Maryland, as well as any disturbances of vegetative ground, requires a Grading Permit from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department). The process and requirements for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-2

GRADING PERMIT PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The street construction permit process is broken into the following components:
● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● CONSTRUCTION AND PERMIT RELEASE

The permit shall expire not more than 2 years from the date of issuance in cases where the cost of work is not more than $500,000, and 3 years, where the cost is more than this amount.

A. **APPLICATION PROCESS**: For the submission of application for department grading permit, the following items 1 through 5 are required:

- ☐ **1.** Filing fee—This fee shall be one-third (1/3) of the initial estimated permit fee, but not less than twenty-five dollars ($25). The filing fee will be credited toward payment of the final permit fee.
- ☐ **2.** Completed permit application [one copy]—This application form is available at the Permit Center, 6th floor, 9400 Peppercorn Place, Largo, Maryland.
- ☐ **3.** Approved Record Plat
- ☐ **4.** Soils Report
- ☐ **5.** Approved Preliminary Plan

B. **PERMIT ISSUANCE:** For the issuance of department grading permit, the following items 1 through 3 are required:

- ☐ **1.** Permit fee—This fee shall be 10 percent of the cost of the work as estimated by the Department, but not less than fifty dollars ($50). ☐ **2.** Posting of DPW&T grading permit bonds:
  - **a.** Performance bond = 125 percent of approved cost estimate amount
  - **b.** Labor and material bond = 50 percent of approved cost estimate amount
- ☐ **3.** Approved Sediment and Erosion Control Plan [3 copies]

C. **CONSTRUCTION AND PERMIT RELEASE:** For the construction and permit release process for grading, the following items 1 through 10 are required:

- ☐ **1.** Contact the Department Engineering and Inspection Services Division (EISD) office at 301-883-5710 to determine the Department Inspector for your project.
- ☐ **2.** Schedule a preconstruction meeting with the Inspector, giving the Inspector 48 hours advance notification.
- ☐ **3.** **The Permittee is required to coordinate with the inspector; 48-hour notification is required to schedule all inspections.**
- ☐ **4.** Once the work is near a final stage, and upon request, the Inspector will provide a list of uncompleted permit requirements to the Permittee. The list will be valid for 30 days.
- ☐ **5.** Once all items on the list have been addressed, the release is processed by the Inspector and forwarded to the Department District Engineer.
- ☐ **6.** The District Engineer will sign off on the release package and forward it to the Department Permits Section.
- ☐ **7.** The Permits Section will then log in the release package and process the final release of the permit.

If the grading permit bond is a cash bond, then:

- ☐ **8.** A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the grading permit bond is not a cash bond, then:

- ☐ **9.** The Permits Section will send a release of liens form to the Permittee.
- ☐ **10.** Once the release of liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the bond obligations have been met.

STORM DRAIN CONSTRUCTION
PERMIT PROCESS CHECKLIST

Any construction of storm drainage facilities within the public right-of-way in Prince George's County, Maryland, requires a Storm Drain Construction Permit from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department) in addition to any permits required by the Prince George's County Department of Environmental Resources (DER). The process and requirements for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-3

STORM DRAIN CONSTRUCTION PERMIT PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The storm drain construction permit process is broken into the following components:

● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● CONSTRUCTION AND PERMIT RELEASE

The permit shall expire not more than 2 years from the date of issuance in cases where the estimated cost of work is not more than $500,000 and 3 years when more than this amount.

A. **APPLICATION PROCESS:** For the submission of application for department storm drain construction permit, the following **items 1 through 7** are required:

- ☐ 1. **Filing fee**—This fee shall be one-third (1/3) of the initial estimated permit fee, but not less than fifty dollars ($50). The filing fee will be credited toward payment of the final permit fee.
- ☐ 2. **Completed permit application [one copy]**—This application form is available at the Permit Center, 6th floor, 9400 Peppercorn Place, Largo, Maryland.
- ☐ 3. **Approved Prince George's County Department of Public Works and Transportation (DPW&T) Stormwater Management (SWM) concept letter [one copy]**
- ☐ 4. **Cover letter for unusual or difficult design issues [one copy]**
- ☐ 5. **Cost estimate of road improvements [one copy]**
- ☐ 6. **Storm drain and road construction plan [two copies]**—Please highlight the limits of the permit.
- ☐ 7. **Approved MNCP&PC Resolutions, Site Plan, Preliminary Construction Plan, and any rezoning information.**

B. **PERMIT ISSUANCE:** For the issuance of department storm drain construction permit, the following **items 1 through 10** are required:

- ☐ 1. **Permit fee**—This fee shall be 10 percent of the cost of the work as estimated by the Department,but not less than fifty dollars ($50).
- ☐ 2. **Wetland permit**, if necessary
- ☐ 3. **Fee-in-lieu**, if necessary
- ☐ 4. **Right-of-way dedication, easement dedication**, **and/or recorded maintenance agreement**, if necessary
- ☐ 5. **Posting of Department storm drain construction permit bonds**—
  - ☐ a. Performance bond = 125 percent of approved cost estimate amount
  - ☐ b. Labor and material bond = 50 percent of approved cost estimate amount
- ☐ 6. **Approved Sediment Control Plan [3 copies]**
- ☐ 7. **Approved Storm Drain and Road Construction Plan [2 copies]**
- ☐ 8. **Related Storm Drain Permit and approved construction plan with construction limits highlighted [1 copy]**
- ☐ 9. Payment of applicable **utility administrative and utility inspection fees** (payment made directly to the Department Utility Section).
- ☐ 10. **A CD containing PDF and DXF files of the approved construction plan**.— PDF files shall be legible and scanned at 200 or 300 dpi resolution. DXF files format shall only show edge of pavement for all private and public roads, property lines, and roadway centerlines.

C. STORM DRAIN PLAN INFORMATION:
See Appendix A-4, Street Construction Permit Process Checklist, for plan preparation criteria for Storm Drain Permit. Utilize applicable information in Sections C through J.

D. CONSTRUCTION AND PERMIT RELEASE: The following items 1 through 7 are required:

1. Contact the Department Engineering and Inspection Services Division (EISD) office at (301) 883-5710 to determine the Department Inspector for your project.
2. Schedule a preconstruction meeting with the Inspector, giving the Inspector 48 hours advance notification.
3. At this point, the Permittee is required to coordinate with the inspector; 48-hour notification is required to schedule all inspections.
4. Once the work is near a final stage, and upon request, the Inspector will provide a list of uncompleted permit requirements to the Permittee. The list will be valid for 30 days.
5. Once all items on the list have been addressed, the release will be processed by the Inspector and forwarded to the Department District Engineer.
6. The District Engineer will sign off on the release package and forward it to the Department Permits Section.
7. The Permits Section will then log in the release package and process the final release of the permit.

E. PERFORMANCE BOND RELEASE:

If the Storm Drain Construction Permit bond is a cash bond, then:

1. A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the Storm Drain Construction Permit bond *is not* a cash bond, then:

1. The Permits Section will send a release of liens form to the Permittee.
2. Once the release of liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the performance and labor and materialman's bond obligations have been met.

STREET CONSTRUCTION
PERMIT PROCESS CHECKLIST

Construction of roadways and their appurtenances (i.e., sidewalks, storm drains, signage, etc.) in Prince George's County, Maryland, requires a Street Construction Permit from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department). The process and requirements for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-4

STREET CONSTRUCTION PERMIT PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The road/street construction permit process is broken into the following components:

● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● CONSTRUCTION AND PERMIT RELEASE

The permit shall expire not more than 2 years from the date of issuance in cases where the cost of work is not more than $500,000, and 3 years where the cost is more than this amount.

A. APPLICATION PROCESS: For the submission of application for road construction permit, the following items 1 through 10 are required:

☐ 1. **Filing fee**—This fee shall be one-third (1/3) of the initial estimated permit fee, but not less than fifty dollars ($50). The filing fee will be credited toward payment of the final permit fee. ☐ 2. **Completed permit application [one copy]**—This application form is available at the Permit Center, 6th floor, 9400 Peppercorn Place, Largo, Maryland.

☐ 3. **Soil boring report**, completed and sealed prior to the first review by a professional engineer licensed in Maryland.

☐ 4. **Approved road/street grade establishment plan [two copies]**

☐ 5. **Approved Prince George's County stormwater management (SWM) concept letter**

☐ 6. **Cover letter for unusual or difficult design issues**

☐ 7. **Record plat**

☐ 8. **Cost estimate of road improvements**

☐ 9. **M-NCPPC (Maryland-National Capital Park and Planning Commission) resolution for all stages of development review [one copy]**

☐ 10. **Storm drain and road construction plan [two copies]**—Please highlight the limits of the permit. Show soil boring logs in plan and profile views for review in conjunction with the soil boring report. (Provide 1 red-lined copy of the soil borings superimposed on the plan and profile0 view; a red-lined copy is recommended to enable a more expedient soils review.)

B. PERMIT ISSUANCE PROCESS: For the issuance of a road construction permit, the following items 1 through 15 are required in advance:

☐ 1. **Permit fee**—This fee shall be 10 percent of the cost of the work as estimated by the Department, but not less than fifty dollars ($50).

☐ 2. **Payment of any special utility permit/contribution fees,** if applicable.

☐ 3. **Payment of any other project-related fees**

☐ 4. **Wetland permit**, if necessary, with related fees

☐ 5. **Fee-in-lieu**, if necessary

☐ 6. **Right-of-way dedication, easement dedication, and/or recorded maintenance agreement**, if necessary;

☐ 7. **Posting and approval of road construction bonds:**
   a. Performance bond = 125 percent of approved cost estimate amount
   b. Labor and material bond = 50 percent of approved cost estimate amount

☐ 8. **Road/street tree and lighting plan**

☐ 9. **Approved sediment and erosion control plan [3 copies]**

- ☐ 10. **Related storm drain permit,** if applicable
- ☐ 11. **Payment of road/street name sign fee**
- ☐ 12. **Maintenance of traffic plan,** if applicable
- ☐ 13. **Pavement marking and signage plan,** if applicable
- ☐ 14. **Approved roadway and stormdrain construction plan** [two mylar copies showing all applicable approvals]
- ☐ 15. **A CD containing PDF and DXF files of the approved construction plan.**— PDF files shall be legible and scanned at 200 or 300 dpi resolution. DXF files format shall only show edge of pavement for all private and public roads, property lines, and roadway centerlines.

C. GENERAL GUIDELINES FOR PLAN PREPARATION

- ☐ 1. **Sheet size**—No greater than 36″ x 24″
- ☐ 2. **Title block**—Name of project, type of plan (public and/or private), election district, Prince George's County, and State of Maryland
- ☐ 3. **North arrow and datum**—New projects require the latest Maryland Coordinate System (State plane grid) based on North American Datum of 1983 (NAD83); vertical—North American Vertical Datum of 1988 (NAVD88) ;with a minimum of three ticks labeled per sheet.
- ☐ 4. **Scale**—1″ = 50′ for single family and 1″ = 30′ for townhouse, industrial, and commercial
- ☐ 5. **Vicinity map** with Prince George's County page and grid (first sheet)—Use 1″ = 2000′ scale.
- ☐ 6. **Matchlines** coordinated with current number of sheets
- ☐ 7. **Applicant's company name, contact name, contact position, address, phone, fax, and e-mail** (first sheet)
- ☐ 8. **Approval stamps**—leave a 4″ margin border on right side, all sheets
- ☐ 9. **"Miss Utility"** note (first sheet)
- ☐ 10. **General notes for paving and storm drain**—**Please use the latest general notes.** See Appendix A, Form A-5.
- ☐ 11. **Utility certification**—Sealed and dated by a professional engineer. Utility certification must be provided along with a schedule showing dates on which coordination was done to verify existing utilities (first plan sheet). [Affix to roadway construction plan]

> UTILITY CERTIFICATION
>
> I HEREBY CERTIFY THAT THE EXISTING AND/OR PROPOSED UNDERGROUND UTILITY INFORMATION SHOWN HEREON HAS BEEN CORRECTLY DUPLICATED FROM UTILITY COMPANY RECORDS, FURTHER, THAT THIS PROJECT HAS BEEN CAREFULLY COORDINATED WITH EACH INVOLVED UTILITY COMPANY, AND ALL AVAILABLE UNDERGROUND UTILITY INFORMATION RELATIVE TO THIS PLAN HAS BEEN SOLICITED FROM THEM.
>
> _____ _____
> ENGINEER'S NAME, P.E. DATE
>
> MD REGISTRATION NO. _____, EXPIRATION DATE: _____

- ☐ 12. **Existing and proposed buildings**—Show existing and proposed buildings that are adjacent to the proposed storm drain system.
- ☐ 13. **Limits of Department permit**—Clearly show limits of permit by cross-hatching areas that are not part of the current permit and by labeling permit numbers for all phases on the plan.
- ☐ 14. **All drafting symbols per Department of Environmental Resources Standards 1.0 and 1.1**
- ☐ 15. **Minimum text size: 0.08 or 0.10 inch tall is recommended**
- ☐ 16. **Limits of approved 100-year flood plain** (label Floodplain Review Section (FRS) Number)
- ☐ 17. **Secondary overflow path** for the 100-year storm is to be shown with directional arrows.
- ☐ 18. **Labeling of adjacent property ownership and/or plat reference**
- ☐ 19. **Survey control (traverse) stations** on plan, if necessary and no centerline control is available

- ☐ 20. **Bench marks** (minimum of two) on plan, if necessary
- ☐ 21. **Property lines**
- ☐ 22. **Lot and block numbers**
- ☐ 23. **Golf cart crossings**—Clearly show all golf cart crossings with labels identifying the type of crossing (*e.g.*, at-grade crossing, tunnel crossing, bridge crossing, etc.); MIDBLOCK CROSSINGS ARE NOT PERMITTED.
- ☐ 24. Drafted and checked **blocks** initialed by individual(s) responsible
- ☐ 25. **Professional engineer's seal and signature**
- ☐ 26. **Related storm drain approval stamp** on all sheets, in upper right corner in margin (after first submission is accepted)
- ☐ 27. **Department permit number**—Add a large, bold label of Department permit number in the lower right-side border of each sheet.
- ☐ 28. **Ultimate roadway width**—Label the ultimate roadway width for all existing and proposed public roads.
- ☐ 29. **Lot coverage**—Provide a table on every plan sheet showing the number of lots for the entire area governed by the Department street construction permit, using the following format:

Department Permit Number	Parcel and/or Lot and Block Identifiers

- ☐ 30. **Field inspection**—Provide date (_____)
- ☐ 31. **Maintenance of traffic (MOT) plan**—Has an MOT plan been completed, separate from this plan? If not, has traffic control been addressed by the storm drain and paving plan?
- ☐ 32. If an **MOT** has been integrated into this plan, is it in conformance with the *Manual on Uniform Traffic Control Devices* (MUTCD)?
- ☐ 33. **Entranceways**—Do the proposed entranceways create any sight-distance hazards?
- ☐ 34. **Culvert and bridge crossings**—Do any culvert and bridge crossings meet national bridge criteria? Contact the Department Office of Project Management at (301) 883-5626 to check these requirements, if applicable.
- ☐ 35. **Transit appurtenances**—To ensure that all required transit appurtenances (e.g., shelter, bus stop signs, etc.) are constructed, Permittee should coordinate with the Division of Transit at (301) 883-5656.
- ☐ 36. **Widening**—Where widening of an existing roadway is proposed, cross-sections every 50 feet are required that show the existing road, the proposed widening, and the future road section. As a minimum, each cross-section should represent the full width of the ultimate right-of-way and any additional width in order to show grade tie-outs.
- ☐ 37. **Scenic or historic roads**—To indicate scenic or historic roads that are covered by the street construction permit, add a bold note at the bottom left of the drawing.
- ☐ 38. **Mill and overlay**—Indicate on plan the mill (minimum 2 inches) and overlay requirements for frontage improvements (to the centerline), including utility pavement restoration requirements (Specifications and Standards, Appendix E: Prince George's County Policy and Specification for Utility Installation and Maintenance), roadway transitions (50 feet), and pavement marking.

D. ROADS

- ☐ 1. Show existing road names in the vicinity of the plan.
- ☐ 2. Show proposed road names.
- ☐ 3. Show future road names in the vicinity of the plan.
- ☐ 4. Show widths of road right-of-ways, paving section, and ultimate roadways.
- ☐ 5. Road grades should be labeled with directional arrows for proposed roads on tangent portions, grade breaks, and points of vertical reverse curvature (PVRCs).
- ☐ 6. Where applicable, note paving, curb and gutter, and sidewalk replacements. Shade proposed road and sidewalks under this permit.
- ☐ 7. Provide typical paving section. Include subgrade/subbase preparation requirements after first review.
- ☐ 8. Show fillets and cul-de-sacs numbered in triangles to relate to fillet and cul-de-sac profiles.
- ☐ 9. Show sidewalks and sidewalk ramps at road intersections. Begin crosswalks 4 feet from fillet points (toward the intersection) and place ramps at midpoint of the curve. Two sidewalk ramps may be required

within each fillet in cases of arterial and major collector roadways. Typical width of crosswalk is 6 feet minimum and 10 feet maximum in high pedestrian-count areas.

- ☐ 10. **Barricades**—If road ends, post a barricade; if an existing road is being extended, remove the barricade.
- ☐ 11. Show top of curb (TC) elevation/stations at all point of curvature (PC) and point of tangency (PT) stations, property lines within cul-de-sacs, and curb fillet PC and PT stations with offsets from centerline.
- ☐ 12. If required, show curb radii at road intersections and spill gutter.
- ☐ 13. Roads and sidewalks proposed under this permit should be shown as shaded.
- ☐ 14. Driveway culvert sizes for rural sections should be noted.
- ☐ 15. Provide a tie to the existing road centerline and property line for a commercial driveway entrance.
- ☐ 16. Provide **erosion protection** at ends of all curbs and gutters, where an outfall situation would be created due to termination of road construction.
- ☐ 17. Show any flumes within a fill area in the right-of-way at the termination of street construction.
- ☐ 18. Slope—When the slope across a road intersection is less than 1.5 percent, provide concrete valley gutters.
- ☐ 19. Drainage directional arrows should be provided at all road intersections.
- ☐ 20. For all townhouse courts, one paving cross-section and location should be shown for each court.
- ☐ 21. The minimum radius for a fillet at an intersection with the largest road being a primary and/or secondary road shall be 37 feet.
- ☐ 22. The minimum radius for a fillet at an intersection where the largest road is a collector road shall be 45 feet.
- ☐ 23. The minimum radius for a fillet at an intersection where the largest road is an arterial road shall be 50 feet.

E. CURB PROFILES—CUL-DE-SACS

(Provide only if this information is not already on the applicable road/street grade establishment plans.)

- ☐ 1. Approach grades and TC elevations should match the road/street grade at PC and PT.
- ☐ 2. A TC elevation should be provided for each PC, PT, PRC, and lot line to the nearest tenth.
- ☐ 3. The profile number in each triangle should match the plan view.
- ☐ 4. High or low point TC elevations should be provided to the nearest tenth and dimension from the closest lot line.
- ☐ 5. There should be a smooth curve throughout.
- ☐ 6. Datum elevation should be provided.
- ☐ 7. The road name should be provided at or near the PC and PT.
- ☐ 8. Lot numbers should be provided above the profile.

F. CURB PROFILES—FILLET PROFILES

(Provide only if this information is not already on the applicable road/street grade establishment plans.)

- ☐ 1. Approach grades and TC elevations should match the road/street grade at PC and PT.
- ☐ 2. The profile number in each triangle should match the plan view.
- ☐ 3. High, middle, and low point TC elevations should be provided to the nearest tenth and dimension from the closest PC and PT.
- ☐ 4. There should be a smooth curve throughout.
- ☐ 5. The road name should be provided at or near PC and PT.

G. UTILITIES

- ☐ 1. Show all existing and proposed water and sewer lines and appurtenances, including contract numbers.
- ☐ 2. Show all existing and proposed water and sewer house connections for storm drain crossings.
- ☐ 3. Show all existing storm drain lines, including contract numbers.
- ☐ 4. Show gas lines.
- ☐ 5. Show electric poles, pole numbers, guy wires, and underground conduits.
- ☐ 6. Show telephone poles, pole numbers, guy wires, and underground conduits.
- ☐ 7. Show any other facilities (cables, streamlines, etc.).
- ☐ 8. Show area dedicated for water meters in townhouse lots.
- ☐ 9. Show that all utility poles have been placed at the ultimate right-of-way within the project limit,

including the frontage with all existing roads of the subject property.

H. DITCHES AND IMPROVED CHANNELS

- ☐ 1. Show flow arrows for ditch drainage.
- ☐ 2. Check the outlet when discharging onto existing or proposed water, sewer, and other utilities.
- ☐ 3. Check **open ditchlines and the outfall system for non-erosive velocity** (otherwise provide adequate armoring) when discharging onto existing or proposed water, sewer, and other utilities.
- ☐ 4. Show **flow, depth, and velocity** in ditch where flow leaves frontage.
- ☐ 5. Show all existing and proposed topography for the entire channel reach.
- ☐ 6. Label the channel with material, length, bottom width, and side slope.
- ☐ 7. Note **sod** for drainage rights-of-way or easements.
- ☐ 8. Provide ties to centerline of improved channels.
- ☐ 9. Provide curve data for horizontal curves, including radius, arc, delta, tangent, chord, and beginning and ending stations.

I. STORM DRAIN SYSTEMS

Storm drains should be located to accommodate the ultimate development of the road system. The Department may require modification to the storm drain design if the implementation of the design creates a hazard or nuisance, or is otherwise not in compliance with County code or Department design and construction standards. This authority is per Road Ordinance Section 23-105.

For public and private storm drain systems, see County Code Subtitle 32, Division 3, Stormwater Management, Subdivisions 1 through 5.

- ☐ 1. Storm drains should be located to accommodate the ultimate development of the road system. Ensure proper drainage within all intersections and cul-de-sacs.
- ☐ 2. **Underdrain is required for the full length of all proposed and modified roadways throughout the limits of the permit.** Underdrain is reflected in plan view, the pavement section, and as a bold note on the plan. Add a note in plan view stating the following: "Install underdrain the full length of all proposed roadways and throughout the limits of permit in accordance with DPW&T Standards 300.13–300.17."
- ☐ 3. **Show standard "General Notes for Storm Drain and Paving,"** strike out those not applicable, and do not remove items from the list. See Appendix A, Form A-5.
- ☐ 4. Ensure that the flow is properly conveyed across intersections and cul-de-sacs. **Show flow arrows with percentage of slope in plan view.** Label percentage of slope at the intersections in direction the water will flow. Label the slopes at the bulbous ends of cul-de-sacs. Label proposed slope along all ditch lines when not part of typical section (extend to 50 feet beyond property line).
- ☐ 5. **Drainage directional arrows** should be provided at all road intersections and cul-de-sacs.
- ☐ 6. **Ensure that the top of pipe will not conflict with the curb and gutter.** Check this between structures as well as at inlets.
- ☐ 7. Provide concrete pilot channel or underdrain treatment when the flow in an open-section ditch is less than 2 percent.
- ☐ 8. **Storm drain invert channelization** is required in all public Department storm drain structures. Brick flow channels/benches are required in all Department storm drain structures. Concrete channels are not acceptable.
- ☐ 9. Provide information on the Storm Drain Plans differentiating between private and public storm drain systems.
- ☐ 10. Provide information on the Storm Drain Pipe and Storm Drain Structure Schedule to **indicate which structures/pipes are to be bonded and inspected by DPW&T.**
- ☐ 11. **When permitting "Storm Drain Only,"** label portions of storm drain **"not included in this permit,"** and label all areas with respective permit numbers.
- ☐ 12. **Drainage**—Have all upstream, off-site drainage areas been identified and designed for? If off-site drainage areas are not clear from M-NCPPC topography, what has been done to clarify?
- ☐ 13. Will the **top of pipe conflict with curb and gutter**? Check this between structures as well as at inlets.

☐ 14. **Surface drainage**—Is the proper surface drainage flow properly conveyed across all intersections and cul-de-sacs?
☐ 15. **Flows at the termination of a public road that discharge to private property** cannot be in excess of 3 c.f.s. Drainage easements shall be provided for flow in excess of 3 c.f.s. that takes the flows from the public right-of-way to an approved drainage course.
☐ 16. **Flows from any point along a public road that discharge to private property** (except at the termination of a road) cannot be in excess of 5 c.f.s. if no drainage easement has been provided that takes the flows from the public right-of-way to an approved drainage course.
☐ 17. **Cover** over storm drain pipes should be at least 4.5 feet to allow installation of street trees.

J. RIGHTS-OF-WAY

☐ 1. Show existing water, sewer, storm drain, and stormwater management right-of-ways.
☐ 2. Show proposed water and sewer right-of-way outside of public right-of-way.
☐ 3. Show proposed storm drain right-of-way outside of public right-of-way.
☐ 4. Show ingress and egress easement provided for isolated channel(s), storm drain systems, and storm water management basin.
☐ 5. Show proposed storm water management right-of-way.
☐ 6. Show infiltration system right-of-way if not within street right-of-way.
☐ 7. Show public utility easements.
☐ 8. Show 100-year flood plain easements.
☐ 9. No overlapping storm drain or water and sewer rights-of-way should exist, except at crossings.
☐ 10. Offsite right-of-way should be provided and the client advised.
☐ 11. Show surface drainage easements.

K. TRAFFIC AND TRANSIT

☐ 1. Ensure that proposed entranceways do **not** create any **sight-distance hazards**. Use Form B-16 (see Appendix B) and Section I, Table I-2, of the Specifications and Standards.
☐ 2. Provide, when required, **acceleration, deceleration,** and **bypass lanes** in accordance with Standard 200.21.
☐ 3. When applicable, provide **raised** and **reflectorized pavement markers (RPM)** per Standards 700.15–700.16.
☐ 4. To ensure that all required **transit appurtenances** (e.g., shelter, bus stop signs, etc.) are constructed, the Permittee should coordinate with the Division of Transit at (301) 883-5656.

L. TRAFFIC CONTROL PLAN

☐ 1. If a Traffic Control Plan is necessary**, approval** by the Traffic Safety Division is **required**. Submission of this plan is required through the District Engineer. In some instances, the relevant (typical) traffic control detail(s) may be simply incorporated onto the Storm Drain and Paving Plan. Otherwise, a full Traffic Control Plan is required.
☐ 2. **Conformance with** the *Manual on Uniform Traffic Control Devices* **(MUTCD)** as it relates to traffic control is **required.**
☐ 3. Traffic Control Plans shall clearly show and describe **in writing** all phases of the construction in detail.
☐ 4. All proposed lane **closures** shall occur during the off-peak hours**.** Off-peak hours are typically between **9:00 a.m.** and **3:00 p.m.** This may vary from location to location depending on the classification of the roadway and the traffic volume. The actual peak hours for any roadway may be verified by contacting the Traffic Safety Division at (301) 883-5710. Please note that the roadway should be fully restored at the end of each workday. If steel plates are utilized to temporarily restore the road, then Steel Plate warning signs shall be installed on all approaches. If lane closures are proposed, then the above information shall be clearly noted on the plans. During the period between November 15 of each year and March 15 of the following year **steel plates are NOT permitted except in emergency cases.** When any steel plate is installed, the permittee shall notify the Department's Dispatcher by phone, at (301) 324-2710 and the DPW&T Inspector, within the first 4

hours of installation of said steel plates. When installed, steel plates shall be appropriately identified by the permittee for traffic and pedestrian safety. In addition, a minimum of four 4-foot tall wooden survey stakes (painted bright pink) placed behind the face of the curb, or in rural areas, placed beyond the road shoulder, shall be required to denote the beginning and end of steel plates.

5. On all **arterial** and **collector** roadway **construction projects** of significant **size** or **duration**, **variable message signs** are to be utilized**.** Variable message sign (VMS) usage is required for all jobs where lane changes are required for a period of time, potentially hazardous conditions exist due to excavation along or on the roadway, or other major work will require the construction site to remain overnight or for a period of time.
6. In the event that adjacent construction projects occur simultaneously, coordination of the Traffic Control Plans for each project will be required. Specifically, the location of signs in overlapping work zones and advance signing must be addressed.

M. SIGNING AND PAVEMENT MARKING PLANS

1. A Signing and Pavement Marking plan is **necessary** whenever an existing roadway is impacted. Submission of this plan is required through the District Engineer.
2. Use the following minimum plan-view scales: 1″ = 40′ for larger projects and 1″ = 30′ for smaller projects.
3. Since approval is primarily for roadway signing and pavement marking, the critical base information required on the plan are the ultimate geometrics including any sidewalk and shoulder. All other construction details, such as utilities, contours, stations, etc., should not be shown on this plan.
4. A field **survey** of the existing roadway signing and marking should be conducted **prior** to preparing the plans**.** The limits of the survey shall be extended to a minimum of 500 feet beyond the project limits in order to make a sound assessment of the needs prior to design.
5. The plan shall show all **existing** and **proposed** signing. Based on the extent of the geometric changes, it may be necessary to provide recommendations to have individual signs to remain, be relocated, or be removed. Also, if a sign is old, faded, and difficult to read, recommendation should be made for replacement. This also applies to all signposts. All signs shown on the plan should reflect the referenced **MUTCD sign designation** and **size.**
6. Signs shall be aimed in the direction to which they would apply. For example, a "No Parking" sign is parallel with the curb, whereas a stop sign is perpendicular to the curb.
7. DPW&T requires galvanized steel 'U' channel posts (2.2 lbs per foot) for all sign installations. This should be stated on the plan. A Note shall be placed in a box on the signing plan indicating: "Highway signs shall consist of 0.080 gauge aluminum blanks and 3M High-Intensity background materials with 3M Electro Cut Film lettering in accordance with the MUTCD".
8. It should be noted on the plans that "Permittee shall contact DPW&T inspector at least 48 hours in advance of the installation of all permanent traffic control signs on existing roadways."
9. The Plan shall show the existing pavement markings outside of the project limits and clearly indicate where the new pavement marking ties into the existing marking.
10. All **dimensions** for the pavement markings shall be clearly indicated on the plan. Dimensions such as: lane widths, length of the solid line at a turn bay, exact location of proposed turn arrow and "only," etc. **Do not refer to stations,** as there are no survey crews providing the stakeout. Pavement marking contractors do not work with stations. Instead, provide dimensions from intersections or other physical features of the road.
11. Provide pavement marking details on the plan as outlined below. Provide a tag to each pavement marking on the plan indicating the letter item designation (A–H). If required, additional details could be added to the list provided:
    a. Install 5-inch-wide white solid pavement marking for lane line.
    b. Install 5-inch-wide white broken pavement marking (3-foot line segment and 9-foot gap) for longitudinal lane drop markings and/or merge area lane lines.
    c. Install 5-inch-wide white broken pavement line marking (10-foot line segment and 30-foot gap) for longitudinal broken pavement lane line markings.
    d. Install 5-inch-wide double yellow pavement marking for centerline.
    e. Install 24-inch-wide white pavement marking for stop bar.

f. Install 12-inch-wide white pavement marking for crosswalk. (See detail this sheet.)
g. Install pavement marking symbol / lettering as shown.
h. Tie to existing marking.

☐ 12. All lane lines shall be **extruded thermoplastic material** and be applied by **truck-mounted** equipment. Other symbolic markings such as Arrows, Only, and other wordings may be of pre-cut heat-applied thermoplastic material. Crosswalks and stop bars could be either extruded or pre-cut. This information should be clearly specified on the plan.

☐ 13. Please note that if any existing pavement marking needs to be removed**,** a **full-width mill** and **overlay** along that segment of roadway affected by the modification is **required.** No grinding or painting over will be allowed.

N. STREET TREE AND LIGHTING APPROVAL

Street Tree and Lighting Plans are part of the Street Construction Plan set required at time of permit application. Unless otherwise directed by the District Engineer to have these plans submitted separately, follow the procedures below.

Once the storm drain and paving plan(s) has been approved, the following road/street tree and lighting approval process begins:

☐ 1. Consultant will submit three prints and one Mylar of road/street tree and lighting plan (STLP) to the Department District Engineer.

☐ 2. District Engineer forwards all applicable plans to the DPW&T Traffic Safety Division, along with a copy of the permit application; if the road is a scenic or historic roadway, a note shall be placed on the transmittal so indicating.

☐ 3. The Traffic Safety Division next reviews for road/street lighting. During this process of review, the consultant and the Traffic Safety Division shall interact directly.

☐ 4. The Traffic Safety Division approves road/street lighting plan and forwards the approved Mylar to the District Engineer.

☐ 5. The District Engineer reviews the road/street tree plan. During this process of review, the consultant and the District Engineer shall interact directly.

☐ 6. If revisions to the road/street tree plan are required, the consultant shall return the revised Mylar(s) to the District Engineer for road/street tree approval.

☐ 7. Trees from the approved list are in consideration of overhead utility wires.

☐ 8. Permittee sends the approved road/street lighting plans to the appropriate utility company.

O. CONSTRUCTION AND PERMIT RELEASE PROCESS

☐ 1. Contact the Department Engineering and Inspection Services Division (EISD) office at (301) 883-5710 to determine the Department Inspector for your project.

☐ 2. Schedule a preconstruction meeting with the Department Inspector, giving the Inspector 48 hours advance notification.

☐ 3. At this stage, the permittee is required to coordinate with the Department Inspector. 48-hour notification is required to schedule all inspections.

☐ 4. Once the work is near a final stage, and upon request, the Department Inspector will provide a list of uncompleted permit requirements to the Permittee. The list will be valid for 30 days. The punch-list should include both outstanding construction and paperwork requirements. The standard paperwork requirements are as follows:

a. Provide WSSC Paving Clearance Certifications, certified by WSSC, for BOTH base paving and surface course paving.
b. Provide Bituminous Concrete Certification of BOTH base and surface paving by DPW&T.
c. Provide Storm Drain As-Built Approval letter.
d. All required street trees must either be planted, bonded, or replacement fees paid.
e. Submit property marker certification per Prince George's County Code, Section 24-120.
f. Approval of the Proof of Payment for street lights from the DPW&T Traffic Safety Division is required. Coordination of this item is the responsibility of the Permittee.
g. All bond matters must be settled (e.g., post bond for minor remaining work).

h. All financial matters must be settled (e.g., no outstanding bills to be paid to the County).
i. Submit certified release of liens from contractors and suppliers to the DPW&T Permit Section.

5. Once all items on the list have been addressed, the release is processed by the Inspector and forwarded to the Department District Engineer.
6. The District Engineer will approve the release package and forward it to the Department Permits Section.
7. The Permits Section will log in the release package and process the final release of the permit.

P. PERFORMANCE BOND RELEASE PROCESS

If the road construction bond is a cash bond, then:

1. A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the road construction bond is not a cash bond, then:

1. The Permits Section will send a release of liens form to the Permittee.
2. Once the release of liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the performance and labor and materialman's bond obligations have been met.

GENERAL STORM DRAIN AND PAVING NOTES

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) has established a specific set of general construction notes which are required on all roadway paving and drainage construction plans. These notes should appear only once on the first detail and/or typical section plan, or the first construction plan view included in a set of drawings. The notes include important information relating to underground utilities, storm drain construction and roadway paving. The notes also provide important technical and County Code requirements, and set forth the general requirements for all Consulting Engineering Services.

Please use these general notes in your submittal to the Department. Strike out those notes that are not applicable to your project.

FORM A-5

GENERAL STORM DRAIN AND PAVING NOTES

1) INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF THE MAINS BY DIGGING TEST PITS, BY HAND OR VACUUM, AT UTILITY CROSSINGS WELL IN ADVANCE OF TRENCHING. IF CLEARANCES TO WATER AND SEWER LINES ARE LESS THAN SHOWN ON THIS PLAN, OR LESS THAN TWELVE (12) INCHES, CONTACT THE DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION (DPW&T) INSPECTOR BEFORE PROCEEDING WITH CONSTRUCTION.
2) ALL STORM DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STORMWATER MANAGEMENT STANDARDS AND SPECIFICATIONS OF PRINCE GEORGE'S COUNTY DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION.
3) FOR TYPES OF STORM DRAIN STRUCTURES, REFER TO THE LATEST STANDARD DETAILS OF PRINCE GEORGE'S COUNTY DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION, UNLESS OTHERWISE NOTED.
4) ALL ROADWAY CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING: THE DPW&T SPECIFICATIONS AND STANDARDS FOR ROADWAYS AND BRIDGES; THE PRINCE GEORGE'S COUNTY CODE, SUBTITLE 23, ROAD ORDINANCE; AND THE PRINCE GEORGE'S COUNTY POLICY AND SPECIFICATION FOR UTILITY INSTALLATION AND MAINTENANCE.
5) PRIOR TO DIGGING WITHIN THE ROADWAY, CALL "MISS UTILITY" TOLL FREE AT (800) 257-7777 FOR UTILITY LOCATION AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION.
6) PRIOR TO STARTING ANY WORK SHOWN ON THIS PLAN, THE PERMITTEE SHALL ARRANGE A PRE-CONSTRUCTION MEETING WITH THE DPW&T INSPECTOR BY CALLING (301) 883-5730.
7) IN ACCORDANCE WITH SECTION 23-128, THE COUNTY'S ROAD ORDINANCE, A PROJECT SIGN SHALL BE POSTED PROMINENTLY DESCRIBING THE FOLLOWING:
   - SUBDIVISION NAME (AS SHOWN ON PERMIT APPLICATION)
   - OWNER/PERMITTEE NAME
   - OWNER/PERMITTEE ADDRESS AND PHONE
   - DPW&T PERMIT NUMBER
8) ALL ELEVATIONS SHOWN ON THIS PLAN ARE IN ACCORDANCE WITH THE FOLLOWING:
   - HORIZONTAL—MARYLAND COORDINATE SYSTEM (STATE PLANE GRID) BASED ON NORTH AMERICAN DATUM OF 1983 (NAD 83);
   - VERTICAL—NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
9) TEMPORARY TRAFFIC CONTROL AND PERMANENT TRAFFIC SIGNS SHALL CONFORM TO THE LATEST EDITION OF THE FEDERAL HIGHWAY ADMINISTRATION'S *MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES* (MUTCD).
10) IT SHALL BE THE RESPONSIBILITY OF THE PERMITTEE TO ARRANGE FOR THE ADJUSTMENT OR RELOCATION OF ALL UTILITIES.
11) ALL UNSUITABLE MATERIAL MUST BE REMOVED AND REPLACED WITH SUITABLE MATERIAL TO A DEPTH AS DIRECTED BY THE GEOTECHNICAL ENGINEER, THE DPW&T INSPECTOR, AND/OR THE DEPARTMENT'S ENGINEER.
12) EXCAVATION AND PLACEMENT OF FILL MATERIAL SHALL BE PERFORMED UNDER THE SUPERVISION OF A MARYLAND-LICENSED ENGINEER.
13) THE PERMITTEE WILL BE REQUIRED TO FURNISH COMPACTION REPORTS CERTIFIED BY A MARYLAND-LICENSED ENGINEER ON EACH LAYER OF FILL MATERIAL PRIOR TO PLACING SUBSEQUENT LAYERS.
14) DURING THE PLACEMENT OF A STANDARD PAVEMENT SECTION, NO PAVEMENT COURSE OR STONE LIFT SHALL BE PLACED UNTIL THE UNDERLYING COURSE OR SUBGRADE IS APPROVED BY THE DPW&T INSPECTOR. THE APPROVAL SHALL EXPIRE IF TRAFFIC OR INCLEMENT WEATHER AFFECTS THE SITE PRIOR TO PAVING.
15) AS SOON AS THE ASPHALT BASE COURSE IS APPROVED, THE INTERMEDIATE ASPHALT COURSE SHALL BE PLACED IMMEDIATELY OVER IT TO FORM A PROTECTIVE SEAL.
16) TEMPORARY STREET NAME SIGN INSTALLATION AND MAINTENANCE IS THE OBLIGATION OF THE PERMITTEE ONCE BASE PAVING IS COMPLETED.

17) WHERE ROADWAY CONSTRUCTION IS ON OR IN THE VICINITY OF AN EXISTING ROAD, IN-KIND PAVEMENT MARKING AND STRIPING REPLACEMENT (E.G., THERMOPLASTIC, PAINTED, ETC.) IS REQUIRED. ALSO, APPROPRIATE PAVEMENT MARKING AND STRIPING SHALL BE PROVIDED IN THE AREA OF PAVEMENT WIDENING AND/OR RECONSTRUCTION AND/OR OVERLAY OF AN EXISTING ROAD.
18) SAW CUT AND MILL A 2-INCH DEEP, 10-FOOT-WIDE NOTCH AT EXISTING EDGE OF PAVEMENT WHERE IT IS NECESSARY TO CONNECT TO OR TO EXTEND AN EXISTING ROAD. OVERLAY AT POINT OF TIE-IN TO ENSURE A SMOOTH TRANSITION AND POSITIVE DRAINAGE.
19) WHERE IT IS NECESSARY TO WIDEN AN EXISTING ROAD, AND MILLING AND OVERLAY REQUIREMENTS HAVE BEEN WAIVED OR REDUCED, THE FOLLOWING EDGE TREATMENT SHALL BE USED AT THE PROPOSED WIDENING OF EXISTING ROAD:
    - SAW CUT EDGE OF EXISTING PAVEMENT TO SET STRAIGHT EDGE.
    - PLACE APPROVED SUBGRADE AND SUBBASE FOR FULL WIDENING.
    - PLACE ASPHALT FOR FULL WIDENING (BASE COURSE ONLY).
    - MILL ADDITIONAL 1-FOOT MINIMUM WIDTH INTO EXISTING SURFACE
    - FOR DEPTH OF FINAL SURFACE COURSE (MILLING MUST REMOVE EXISTING WHITE STRIPE AT EDGE OF EXISTING ROAD). LIMITS OF MILLING MAY BE EXTENDED, IF NECESSARY.
    - PLACE ASPHALT FOR FULL WIDENING PLUS THIS ADDITIONAL 1 FOOT INTO EXISTING SURFACE (FINAL SURFACE COURSE).
20) ALL RESIDENTIAL ROADWAY FILLET RADII SHALL BE AT LEAST 37 FEET, UNLESS OTHERWISE NOTED. ROADWAYS WITH HIGHER CLASSIFICATION REQUIRE 45 FEET AND/OR 50 FEET RADII.
21) AN UNDERDRAIN SYSTEM IS REQUIRED FOR THE FULL LENGTH OF ALL PROPOSED AND MODIFIED ROADWAYS, ON BOTH SIDES, AND TO THE LIMITS OF THE PERMIT SHOWN ON THIS PLAN.
22) ALL CURB AND GUTTER SHALL BE CONSTRUCTED IN ACCORDANCE WITH DPW&T STANDARD NO. 300.01 UNLESS DIRECTED OTHERWISE BY THE DEPARTMENT.
23) BRICK CHANNELIZATION IS REQUIRED IN ALL PUBLIC DPW&T STORM DRAIN STRUCTURES. CONCRETE CHANNELIZATION IS NOT ALLOWED.
24) POSITIVE DRAINAGE SHALL BE MAINTAINED THROUGHOUT THE AREA COVERED BY THIS PERMIT AND THROUGH ADJACENT PROPERTY FRONTAGES.
25) ALL UNPAVED AREAS WITHIN THE RIGHT-OF-WAY SHALL BE SODDED.
26) ALL SIDEWALK RAMPS SHOWN ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH DPW&T STANDARDS 300.05–300.10 AND SHALL COMPLY WITH THE LATEST REVISION TO THE FEDERAL ACCESSIBILITY GUIDELINES OF THE AMERICANS WITH DISABILITIES ACT.
27) ALL SIDEWALKS SHOWN ON THIS PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST DPW&T STANDARDS AND SHALL COMPLY WITH THE LATEST REVISION TO THE FEDERAL ACCESSIBILITY GUIDELINES OF AMERICANS WITH DISABILITIES ACT.
28) ALL SIDEWALKS (EXCEPT AS NOTED HEREIN) ARE TO BE CONSTRUCTED BY THE SITE DEVELOPER.
29) SIDEWALKS ALONG FRONTAGES OF OPEN-SPACE PARCELS AND THOSE NOT COVERED BY A SINGLE-FAMILY BUILDING PERMIT SHALL BE CONSTRUCTED UNDER THIS STREET CONSTRUCTION PERMIT.
30) THE WIDTH OF A RESIDENTIAL DRIVEWAY APRON AT THE PROPERTY LINE SHALL NOT BE LESS THAN THE WIDTH OF THE ON-SITE PARKING PAD AT ITS WIDEST POINT, A MAXIMUM WIDTH OF 20 FEET, AND A MINIMUM WIDTH OF 10 FEET. A RESIDENTIAL DRIVEWAY APRON FLARE SHALL NOT BE CONSTRUCTED CLOSER THAN 3.5 FEET TO THE NEAREST ABUTTING PROPERTY LINE.
31) ALL DRIVEWAY APRONS ARE TO BE CONSTRUCTED BY THE SITE DEVELOPER.
32) ENSURE THAT STREET TREES ARE NO CLOSER THAN 1 FOOT TO THE RIGHT-OF-WAY LINE, IN AN OPEN SPACE SECTION CONFIGURATION, AND NO CLOSER THAN 15 FEET FROM STREET LIGHT OR POLE, AND OF APPROPRIATE HEIGHT SO AS NOT TO INTERFERE WITH EXISTING OR PROPOSED OVERHEAD UTILITY LINES. ALL STREETSCAPE PLANTING SHALL BE IN ACCORDANCE WITH DPW&T STANDARDS 600.01–600.20 UNLESS DIRECTED OTHERWISE BY THE DEPARTMENT.
33) PAVEMENT CORING OF ALL PAVEMENT COURSES WILL BE REQUIRED OF THE PERMITTEE USING THE FOLLOWING PROCESS:

- 48 HOURS PRIOR TO CORING, PERMITTEE CONTACTS INSPECTOR REQUESTING DEMARCATION OF CORE LOCATIONS AND PROVIDING PAVING INFORMATION NEEDED FOR THE DPW&T CORE TESTING REQUEST (CTR) FORM.
- INSPECTOR RANDOMLY SELECTS AND MARKS CORE LOCATIONS. INSPECTOR WILL INITIAL EACH CORE WITH KEEL MARKER AND THEN MARK WITH SPRAY PAINT TO ENSURE THAT THE CORE THAT GOES TO THE LAB HAS COME FROM THE SELECTED LOCATION. NOTE THAT THE LOCATION OF CORES OR CORING OF THE PAVEMENT IS PERMITTED ON THE SAME DAY THAT THE PAVING HAS OCCURRED.
- AFTER CORING, INSPECTOR VERIFIES THAT CORED LOCATIONS ARE THE SAME AS MARKED (DOES NOT ABSOLUTELY HAVE TO BE PRESENT TO WITNESS).
- PERMITTEE DELIVERS CORES TO THE MATERIALS LAB WITHIN 24 HOURS FROM PAVING. NOTE: THE PERMITTEE MAY SUBMIT CORES TO A COUNTY PRE-APPROVED PRIVATE MATERIALS LAB FOR ANALYSIS. RESULTS ARE THEN SUBMITTED DIRECTLY TO THE COUNTY MATERIALS LAB.
- COUNTY MATERIALS LAB PERFORMS ANALYSIS. THE PERMITTEE MAY USE AN ACCREDITED PRIVATE LAB TO PERFORM THE ANALYSIS.
- COUNTY MATERIALS LAB PROVIDES RESULTS TO INSPECTOR AND MAILS TO PERMITTEE.

34) PERMITTEE SHALL SUBMIT PROPERTY CORNER CERTIFICATIONS AND UTILIZE METAL PROPERTY MARKERS PER PRINCE GEORGE'S COUNTY CODE, SECTION 24–120, PRIOR TO ACCEPTANCE OF STREETS.
35) WASHINGTON SUBURBAN SANITARY COMMISSION 200 FOOT SHEET NO.:_____
36) DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION STORMWATER CONCEPT APPROVAL NUMBER: _____
37) SEDIMENT CONTROL APPROVAL NUMBER: _____
38) PRELIMINARY PLAN APPROVAL NUMBER: _____
39) RECORD PLAT RECORDING NUMBER: _____
40) APPROVED STREET GRADE ESTABLISHMENT INFORMATION:

ORIGINAL STREET NAME	APPROVAL NUMBER

41) AT THE TIME OF PERMIT RELEASE, THE FOLLOWING MINIMUM SUBMITTAL REQUIREMENTS WHERE APPLICABLE SHALL APPLY:
    - WASHINGTON SUBURBAN SANITARY COMMISSION PAVING CLEARANCE CERTIFICATION;
    - BITUMINOUS CONCRETE CORE CERTIFICATIONS, ALL PAVEMENT COURSES;
    - PROPERTY MARKER CERTIFICATION;
    - DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION LETTER APPROVING STORM DRAIN AS-BUILT;
    - TREE APPROVAL AND TREE BOND POSTED, IF NECESSARY;
    - STREET LIGHT PROOF OF PAYMENT (MUST BE ACCOMPANIED BY A MEMORANDUM FROM DPW&T'S TRAFFIC SAFETY DIVISION ACCEPTING THE PROOF OF PAYMENT); AND
    - PROOF/STATEMENT THAT ALL FINANCIAL MATTERS HAVE BEEN SETTLED.
42) THE PERMITTEE IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TRAFFIC SIGNS, TRAFFIC SIGNALS, AND ROADWAY MARKINGS FOR ROADWAY IMPROVEMENTS ON SUBDIVISION ACCESS ROADS WHICH INCLUDE ARTERIAL, COLLECTOR, INDUSTRIAL, AND ANY NECESSARY OFFSITE CONDITIONS WHICH REQUIRE ROADWAY IMPROVEMENTS. THE DESIGN AND/OR CONSTRUCTION DRAWINGS SHALL BE INCLUDED ALONG WITH THE PERMIT PLANS, AND SHALL BE REVIEWED THE DEPARTMENT'S TRAFFIC SAFETY DIVISION PRIOR TO PERMIT ISSUANCE.
43) THE PERMITTEE IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TRAFFIC MARKINGS, TRAFFIC SIGNALS, IF REQUIRED, AND PAYMENT OF FEE FOR STREET NAME SIGNS ON INTERNAL SUBDIVISION STREETS. TRAFFIC SIGNS WILL BE FURNISHED AND INSTALLED BY

COUNTY FORCES.

STREET TREE AND LIGHTING PLAN (STLP)
REQUIREMENTS CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) requires a Street Tree and Lighting Plan (STLP) for all street construction permits. The Department also requires Street Lighting Plans in conjunction with various roadway projects. The requirements for STLPs are contained in the following checklist.

Note: The checklist is made applicable to Street Lighting Plans (without street trees) by deleting reference to proposed street trees (checklist items 29, 30, and 31) and marking them "N/A".

Please use the following checklist in preparing STLPs and Street Lighting Plans.

FORM A-6

STREET TREE AND LIGHTING PLAN (STLP) REQUIREMENTS CHECKLIST

Prince George's County
Department of Public Works and Transportation

(Please see also Section I, Chapter 3, Item 'B.1', "Roadway Lighting Plan Approval Process" and Section I, Table I-11, "Roadway Lighting Plan Approval Process (Flowchart)".)

The following information is required on all Street Tree and Lighting Plans (STLPs):

- ☐ 1. **Sheet size**—No greater than 36" x 24"
- ☐ 2. **Title block**—Name of project, type of plan (public and/or private), election district, county, and State
- ☐ 3. **North arrow and datum**—In latest State plane datum or WSSC datum.
- ☐ 4. **Scale**—1" = 50' for single family and 1" = 30' for townhouse, industrial, and commercial (DER preferred)
- ☐ 5. **Vicinity map** with Prince George's County page and grid (first sheet)—Use 1" = 2000' scale
- ☐ 6. **Matchlines** coordinated with number of sheets
- ☐ 7. **Applicant's company name, contact name, contact position, address, phone, fax, and e-mail** (first sheet)
- ☐ 8. **Approval stamps**—leave a 4" margin border on right side, all sheets
- ☐ 9. **"Miss Utility"** note (first sheet)
- ☐ 10. **Existing and proposed streets**—Show all centerlines, edge-of-paving or curb and gutter, centerline stationing, and indicate where planned or existing.
- ☐ 11. **Existing and proposed buildings**—Show existing and proposed buildings that are adjacent to the proposed tree and/or lighting installation.
- ☐ 12. **Limits of Permit/Contract area**—Clearly identify limits of permit or contract area. Areas not included in contract should be hatched and/or labeled "Not in Contract."
- ☐ 13. Labeling of **adjacent properties** by lot/block or ownership (w/ plat/deed reference)
- ☐ 14. **Property lines**
- ☐ 15. **Design**—Drafted and checked blocks initialed by individual(s) responsible
- ☐ 16. **Engineer's seal and signature**
- ☐ 17. **Department permit label**—Add a large, bold label of Department permit number in the lower right-side border of each sheet.
- ☐ 18. **Field inspection**—Provide date (_____)
- ☐ 19. **Scenic and historic roads**—Indicate with note on plan, if applicable.
- ☐ 20. Show all existing and proposed **water and sewer lines and appurtenances**.
- ☐ 21 Show all existing and proposed **water and sewer house connections**.
- ☐ 22. Show all existing and proposed **storm drain lines**, including underdrain pipe.
- ☐ 23. Show **gas lines**.
- ☐ 24. Show existing **electric poles**, pole numbers, and conduits. Indicate if being used for lighting support.
- ☐ 25. Show **existing street lighting**, indicating type, size, and location.
- ☐ 26. Show **telephone poles**, pole numbers, and conduits.
- ☐ 27. Show any **other features** (outcroppings, streamlines, swales, etc.).
- ☐ 28. Show location of **proposed streetscape vegetation.** (See Standards 600.01 and 600.02 for placement details.)
- ☐ 29. Include planting **installation details**. (See Standards 600.03, 600.04, 600.05, and 600.06.)
- ☐ 30. Include **Planting Schedule** with key, botanical names, and common names. (See Standards 600.08 through 600.20.)
- ☐ 31. Show location of **proposed street lights**, (See Category 500 Standards and Section I, Chapter 3(B)(1)(e), "Placement of Street Lighting," for details.)
- ☐ 32. Include **Lighting Schedule** with key, description, lamp/wattage, post material, and quantity. (See Section I, Tables I-12, I-13, I-14, and I-15.)

SCHEDULE OF PERMIT FEES

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) utilizes the following Schedule of Permit Fees for all work to be done for the Department.

Please note that the Department requires a 25 percent contingency amount to be added to all construction cost estimates.

FORM A-7

SCHEDULE OF PERMIT FEES

Prince George's County
Department of Public Works and Transportation

The Prince George's County Department of Public Works and Transportation assesses the following permit fees for projects performed within the County right-of-way. **(Please note that the Permit Fee includes the cost of the filing fee. As such, all filing fee payments are credited toward the total Permit Fee.)**

PERMIT TYPE	FILING FEE	PERMIT FEE	EXTENSION FEE
Rural/Urban Driveway Construction Permit			
Type of Driveway:			
Standard Urban Single (10′ width)	$25 minimum	$111	25% of original Permit Fee* ($25 minimum)
Standard Urban Double (20′ width)	$25 minimum	$167	25% of original Permit Fee* ($25 minimum)
Urban, Modified (10′ width)	$25 minimum	$50	25% of original Permit Fee* ($25 minimum)
Urban, Modified (20′ width)	$25 minimum	$80	25% of original Permit Fee* ($25 minimum)
Rural Swale Single (10′ width)	$25 minimum	$100	25% of original Permit Fee* ($25 minimum)
Rural Swale Double (20′ width)	$25 minimum	$120	25% of original Permit Fee* ($25 minimum)
Rural Pipe (w/ no Headwall or End Section) Single (10′ width)	$25 minimum	$120	25% of original Permit Fee* ($25 minimum)
Rural Pipe (w/ no Headwall or End Section) Double (20′ width)	$25 minimum	$210	25% of original Permit Fee* ($25 minimum)
Rural Pipe (End Section only) Single (10′ width)	$25 minimum	$170	25% of original Permit Fee* ($25 minimum)
Rural Pipe (End Section only) Double (20′ width)	$25 minimum	$260	25% of original Permit Fee* ($25 minimum)
Rural Pipe (Headwall only) Single (10′ width)	$25 minimum	$220	25% of original Permit Fee* ($25 minimum)
Rural Pipe (Headwall only) Double (20′ width)	$25 minimum	$310	25% of original Permit Fee* ($25 minimum)
Grading Permit	1/3 of Permit Fee ($25 minimum)	10% of estimated construction cost ($25 minimum)	25% of original Permit Fee* ($25 minimum)
Storm Drain Construction Permit	1/3 of Permit Fee ($50 minimum)	10% of estimated construction cost ($50 minimum)	25% of original Permit Fee* ($25 minimum)
Street Construction Permit	1/3 of Permit Fee ($50 minimum)	10% of estimated construction cost ($50 minimum)	25% of original Permit Fee* ($25 minimum)
Haul Road Permit for Mining, Excavation and Fill Operations	$250	$800	$250
Special Permit for Over-size/Overweight Vehicle	$250	$800	(N/A)
Haul Road Permit for Transporting Timber/Equipment	$60	$60	$60

PERMIT TYPE	FILING FEE	PERMIT FEE	EXTENSION FEE
*****If project is 90% or more complete, EXTENSION FEE shall not exceed $750.			

PRINCE GEORGE'S COUNTY
DPW&T CONSTRUCTION PRICE LIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) utilizes this list of construction unit prices for estimating total construction costs for materials, labor, equipment, all other associated costs, and in the calculation of bond amounts and permit fees.

Please note that the Department requires a 25 percent contingency amount to be added to all construction cost estimates.

FORM A-8

CONSTRUCTION PRICE LIST

Prince George's County
Department of Public Works and Transportation
Office of Engineering

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Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
	Utility – Adjustments/Relocations		
1001	Adjust Curb Boxes	Ea	150
1002	Adjust Fire Hydrant	Ea	1,350
1003	Adjust Sewer Manhole	Ea	450
1004	Adjust Water Meters	Ea	310
1005	Adjust Water Valves	Ea	275
1006	Relocate Fire Hydrant	Ea	1,750
	Miscellaneous – Lighting		
1010	Brace Utility Pole	Ea	3,500
1011	Relocate Utility Pole	Ea	15,000
1012	Street Light on Existing Pole	Ea	1,050
1013	Street Light Colonial Post	Ea	1,450
1014	Street Light Rectilinear	Ea	2,000
1015	Street Light Stand Alone Pendant	Ea	1,680
1016	Street Light w/cut-off Optic Luminaire on Existing Pole	Ea	1,050
1017	Traffic Signal - 3 Legged Intersection	Ea	120,000
1018	Traffic Signal - 4 Legged Intersection	Ea	150,000
1019	School Beacon	Ea	35,000
	Miscellaneous – Storm Drain		
1030	4 Inch Polyvinyl Chloride (PVC) Pipe	Lf	12
1031	6 Inch PVC Pipe	Lf	18
1032	8 Inch PVC Pipe	Lf	22
1033	10 Inch PVC Pipe	Lf	30
1034	12 Inch PVC Pipe	Lf	35
1035	15 Inch PVC Pipe	Lf	40
1036	Granite Block 6 Inch	Sf	15
1037	Infiltration Trench	Cy	75
1038	Storm Drain Encasement	Cy	175
1039	Televised Pipe	Lf	2
	Miscellaneous – Site General		
1050	Boring and Jacking up to 15 Inch Pipe	Lf	500
1051	Lf. Trash Rack and Base	Ea	675
1052	Lot Stakeout	Ls	250
1053	Mobilization (Construction. Cost $100K–500K)	Ls	10,000
1054	Mobilization (Construction Cost $500K–1000K)	Ls	20,000
1055	Mobilization (Construction Cost $1000K–1500K)	Ls	30,000
1056	Street Sign	Ea	330
1057	Bikeway Sign	Ea	420
1058	Test Pit	Cy	65

Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
1059	Test Pit-Hand	Cy	50
	Removals – Site Remediation		
2100	Mill Exist Pavement 1 1/2 Inch	Sy	4
2101	Mill Exist Pavement 2 Inch	Sy	5
2102	Mill Exist Pavement 2 1/2 Inch	Sy	6
2103	Remove Barricade	Lf	5
2104	Remove Curb and Gutter	Lf	4
2105	Remove Driveway	Sy	20
2106	Remove Inlet or Manhole	Ea	924
2107	Remove Pavement	Sy	4
2108	Remove Sidewalk	Sf	2
2109	Remove Storm Drain Pipe	Lf	12
2110	Remove and Dispose Headwall	Ea	280
2111	Remove/Reset Existing Fence	Lf	4
2112	Saw Cut Existing Paving	Lf	2
	Site Work – Site Preparation		
2200	Clear and Grub Light	Ac	3,300
2201	Clear and Grub Medium	Ac	6,700
2202	Clear and Grub Heavy	Ac	11,000
2203	Rough Grading	Ac	1,350
2204	Final Grading (Road)	Ac	6,160
2205	Final Grading (Flat)	Ac	3,360
2206	Final Grading (Slope)	Ac	4,000
	Earthwork – Site		
2300	Cut and Fill	Cy	10
2301	Core Trench Placement (On Site Material)	Cy	20
2302	Core Trench Placement (Off Site Material)	Cy	22
2303	Ditch Excavation	Cy	38
2304	Flowable Fill	Cy	37
2305	Roadway Excavation	Cy	12
2306	Select Fill under Storm Drain	Cy	20
2307	Spoil and Borrow	Cy	15
2308	Unsuitable Material	Cy	37
	Graded Aggregate Subbase (GASB)		
2701	2 Inch Graded Aggregate Subbase (GASB) Course	Sy	3
2702	2 1/2 Inch Graded Aggregate Subbase (GASB) Course	Sy	3.5
2703	3 Inch Graded Aggregate Subbase (GASB) Course	Sy	4
2704	4 Inch Graded Aggregate Subbase (GASB) Course	Sy	5
2705	5 Inch Graded Aggregate Subbase (GASB) Course	Sy	6
2706	6 Inch Graded Aggregate Subbase (GASB) Course	Sy	7
2707	7 Inch Graded Aggregate Subbase (GASB) Course	Sy	8
2708	8 Inch Graded Aggregate Subbase (GASB) Course	Sy	9

Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

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Item No.	Description	Unit	Unit Cost ($)
2709	9 Inch Graded Aggregate Subbase (GASB) Course	Sy	10
2710	10 Inch Graded Aggregate Subbase (GASB) Course	Sy	12
2711	11 Inch Graded Aggregate Subbase (GASB) Course	Sy	13
2712	12 Inch Graded Aggregate Subbase (GASB) Course	Sy	14
	Gravel – General		
2720	Gravel	Cy	40
2721	Gravel SHA #2	Cy	40
2722	Gravel #57	Cy	40
2723	Bluestone	Cy	45
2724	Crusher Run Bluestone	Cy	45
	Pavers – General		
2780	Brick Pavers	Sf	16
2781	Concrete Pavers	Sf	18
2782	Granite Blocks	Sf	20
2783	Imprint Red Thermoplastic for Brick Paver Crosswalk	Sy	185
2784	Norblock Pavers	Sy	50
	Fence – Galvanized Steel		
2790	4 Foot High Chain Link Fence	Lf	12
2791	5 Foot High Chain Link Fence	Lf	13
2792	6 Foot High Chain Link Fence	Lf	16
2793	7 Foot High Chain Link Fence	Lf	17
2794	8 Foot High Chain Link Fence	Lf	20
2795	Double Gate Fence - 4 Foot High	Ea	500
	Superpave – Flexible Hot Mix Asphalt (HMA)		
4000	1 1/2 Inch Hot Mix Asphalt (HMA) Surface 9.5mm PG 64-22	Sy	6
4001	2 Inch HMA Surface 9.5mm PG 64-22	Sy	8
4002	2 1/2 Inch HMA Surface 9.5mm PG 64-22	Sy	9
4003	3 Inch HMA Surface 9.5mm PG 64-22	Sy	11
4004	3 1/2 Inch HMA Surface 9.5mm PG 64-22	Sy	12
4005	4 Inch HMA Surface 9.5mm PG 64-22	Sy	15
4006	4 1/2 Inch HMA Surface 9.5mm PG 64-22	Sy	16
4007	5 Inch HMA Surface 9.5mm PG 64-22	Sy	18
4008	1 1/2 Inch HMA Surface 9.5mm PG70-22	Sy	6
4009	2 Inch HMA Surface 9.5mm PG 70-22	Sy	8
4010	2 1/2 Inch HMA Surface 9.5mm PG 70-22	Sy	9
4011	3 Inch HMA Surface 9.5mm PG 70-22	Sy	11
4012	3 1/2 Inch HMA Surface 9.5mm PG 70-22	Sy	12
4013	4 Inch HMA Surface 9.5mm PG 70-22	Sy	15
4014	4 1/2 Inch HMA Surface 9.5mm PG 70-22	Sy	16
4015	5 Inch HMA Surface 9.5mm PG 70-22	Sy	18
4016	1 1/2 Inch HMA Surface 12.5mm PG 64-22	Sy	6
4017	2 Inch HMA Surface 12.5mm PG 64-22	Sy	8

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Item No.	Description	Unit	Unit Cost ($)
4018	2 1/2 Inch HMA Surface 12.5mm PG 64-22	Sy	9
4019	3 Inch HMA Surface 12.5mm PG 64-22	Sy	11
4020	3 1/2 Inch HMA Surface 12.5mm PG 64-22	Sy	12
4021	4 Inch HMA Surface 12.5mm PG 64-22	Sy	15
4022	4 1/2 Inch HMA Surface 12.5mm PG 64-22	Sy	16
4023	5 Inch HMA Surface 12.5mm PG 64-22	Sy	18
4024	1 1/2 Inch HMA Surface 12.5mm PG 70-22	Sy	6
4025	2 Inch HMA Surface 12.5mm PG 70-22	Sy	8
4026	2 1/2 Inch HMA Surface 12.5mm PG 70-22	Sy	9
4027	3 Inch HMA Surface 12.5mm PG 70-22	Sy	11
4028	3 1/2 Inch HMA Surface 12.5mm PG 70-22	Sy	12
4029	4 Inch HMA Surface 12.5mm PG 70-22	Sy	15
4030	4 1/2 Inch HMA Surface 12.5mm PG 70-22	Sy	16
4031	5 Inch HMA Surface 12.5mm PG 70-22	Sy	18
4032	1 1/2 Inch HMA Surface 9.5mm PG 76-22	Sy	7
4033	2 Inch HMA Surface 9.5mm PG 76-22	Sy	9
4034	2 1/2 Inch HMA Surface 9.5mm PG 76-22	Sy	11
4035	3 Inch HMA Surface 9.5mm PG 76-22	Sy	12
4036	3 1/2 Inch HMA Surface 9.5mm PG 76-22	Sy	15
4037	4 Inch HMA Surface 9.5mm PG 76-22	Sy	16
4038	4 1/2 Inch HMA Surface 9.5mm PG 76-22	Sy	18
4039	5 Inch HMA Surface 9.5mm PG 76-22	Sy	22
4040	3 inch HMA Base 19 mm PG 64-22	Sy	11
4041	3 1/2 inch HMA Base 19 mm PG 64-22	Sy	12
4042	4 inch HMA Base 19 mm PG 64-22	Sy	15
4043	4 1/2 inch HMA Base 19 mm PG 64-22	Sy	16
4044	3 inch HMA Base 25 mm PG 64-22	Sy	11
4045	3 1/2 inch HMA Base 25 mm PG 64-22	Sy	12
4046	4 inch HMA Base 25 mm PG 64-22	Sy	15
4047	4 1/2 inch HMA Base 25 mm PG 64-22	Sy	16
4048	1 1/2 Inch HMA Base 12.5mm PG 70-22	Sy	6
4049	2 Inch HMA Base 12.5mm PG 70-22	Sy	8
4050	2 1/2 Inch HMA Base 12.5mm PG 70-22	Sy	9
4051	3 Inch HMA Base 12.5mm PG 70-22	Sy	11
4052	3 1/2 Inch HMA Base 12.5mm PG 70-22	Sy	12
4053	4 Inch HMA Base 12.5mm PG 70-22	Sy	15
4054	4 1/2 Inch HMA Base 12.5mm PG 70-22	Sy	16
4055	5 Inch HMA Base 12.5mm PG 70-22	Sy	18
4056	2 Inch HMA Base 19mm PG 70-22	Sy	8
4057	2 1/2 Inch HMA Base 19mm PG 70-22	Sy	9
4058	3 Inch HMA Base 19mm PG 70-22	Sy	11
4059	3 1/2 Inch HMA Base 19mm PG 70-22	Sy	12

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Item No.	Description	Unit	Unit Cost ($)
4060	4 Inch HMA Base 19mm PG 70-22	Sy	15
4061	4 1/2 Inch HMA Base 19mm PG 70-22	Sy	16
4062	5 Inch HMA Base 19mm PG 70-22	Sy	8
4063	2 1/2 Inch HMA Base 25mm PG 70-22	Sy	11
4064	3 Inch HMA Base 25mm PG 70-22	Sy	12
4065	3 1/2 Inch HMA Base 25mm PG 70-22	Sy	15
4066	4 Inch HMA Base 25mm PG 70-22	Sy	16
4067	4 1/2 Inch HMA Base 25mm PG 70-22	Sy	18
4068	5 Inch HMA Base 25mm PG 70-22	Sy	22
4069	2 Inch HMA Base 19mm PG 76-22	Sy	9
4070	2 1/2 Inch HMA Base 19mm PG 76-22	Sy	11
4071	3 Inch HMA Base 19mm PG 76-22	Sy	12
4072	3 1/2 Inch HMA Base 19mm PG 76-22	Sy	15
4073	4 Inch HMA Base 19mm PG 76-22	Sy	16
4074	4 1/2 Inch HMA Base 19mm PG 76-22	Sy	18
4075	5 Inch HMA Base 19mm PG 76-22	Sy	22
4076	2 1/2 Inch HMA Base 25mm PG 76-22	Sy	11
4077	3 Inch HMA Base 25mm PG 76-22	Sy	12
4078	3 1/2 Inch HMA Base 25mm PG 76-22	Sy	15
4079	4 Inch HMA Base 25mm PG 76-22	Sy	16
4080	4 1/2 Inch HMA Base 25mm PG 76-22	Sy	18
4081	5 Inch HMA Base 25mm PG 76-22	Sy	22
4082	6 Inch HMA Base 25mm PG 76-22	Sy	24
	Storm Drain – Corrugated Metal Pipe (CMP)		
4700	8 Inch Corrugated Metal Pipe (CMP) 16 Gauge	Lf	25
4701	10 Inch CMP 16 Gauge	Lf	31
4702	12 Inch CMP 16 Gauge	Lf	38
4703	15 Inch CMP 16 Gauge	Lf	43
4704	18 Inch CMP 16 Gauge	Lf	48
4705	21 Inch CMP 16 Gauge	Lf	50
4706	24 Inch CMP 16 Gauge	Lf	58
4707	27 Inch CMP 16 Gauge	Lf	67
4708	30 Inch CMP 14 Gauge	Lf	80
4709	36 Inch CMP 12 Gauge	Lf	102
4710	48 Inch CMP 12 Gauge	Lf	140
4711	54 Inch CMP 12 Gauge	Lf	169
4712	60 Inch CMP 10 Gauge	Lf	186
4713	66 Inch CMP 10 Gauge	Lf	238
4714	72 Inch CMP 8 Gauge	Lf	288
4715	78 Inch CMP 8 Gauge	Lf	335
4716	84 Inch CMP 8 Gauge	Lf	388
4717	6 Inch Bituminous Coated CMP (BCCMP) 16 Gauge	Lf	25

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Item No.	Description	Unit	Unit Cost ($)
4718	8 Inch BCCMP 16 Gauge	Lf	30
4719	12 Inch BCCMP 16 Gauge	Lf	48
4720	15 Inch BCCMP 16 Gauge	Lf	56
4721	18 Inch BCCMP 16 Gauge	Lf	61
4722	21 Inch BCCMP 16 Gauge	Lf	67
4723	24 Inch BCCMP 16 Gauge	Lf	78
4724	27 Inch BCCMP 16 Gauge	Lf	90
4725	30 Inch BCCMP 16 Gauge	Lf	96
4726	6 Inch BCCMP 14 Gauge	Lf	27
4727	18 Inch BCCMP 14 Gauge	Lf	65
4728	21 Inch BCCMP 14 Gauge	Lf	77
4729	24 Inch BCCMP 14 Gauge	Lf	88
4730	27 Inch BCCMP 14 Gauge	Lf	101
4731	30 Inch BCCMP 14 Gauge	Lf	108
4732	36 Inch BCCMP 14 Gauge	Lf	132
4733	42 Inch BCCMP 14 Gauge	Lf	155
4734	48 Inch BCCMP 14 Gauge	Lf	175
4735	54 Inch BCCMP 14 Gauge	Lf	197
4736	60 Inch BCCMP 14 Gauge	Lf	220
4737	17 Inch X 13 Inch Corrugated Metal Pipe Arch (CMPA) 16 Gauge	Lf	48
4738	21 Inch X 15 Inch CMPA 16 Gauge	Lf	64
4739	24 Inch X 18 Inch CMPA 16 Gauge	Lf	75
4740	28 Inch X 20 Inch CMPA 16 Gauge	Lf	86
4741	35 Inch X 24 Inch CMPA 16 Gauge	Lf	107
4742	42 Inch X 29 Inch CMPA 16 Gauge	Lf	155
4743	49 Inch X 33 Inch CMPA 16 Gauge	Lf	182
4744	57 Inch X 38 Inch CMPA 16 Gauge	Lf	208
4745	64 Inch X 43 Inch CMPA 14 Gauge	Lf	248
4746	71 Inch X 47 Inch CMPA 12 Gauge	Lf	275
4747	77 Inch X 52 Inch CMPA 12 Gauge	Lf	330
4748	83 Inch X 57 Inch CMPA 10 Gauge	Lf	380
	Storm Drain – Reinforced Concrete Pipe (RCP) Class III Round		
4750	15 Inch Reinforced Concrete Pipe (RCP) Class III	Lf	44
4751	18 Inch RCP CL III	Lf	49
4752	21 Inch RCP CL III	Lf	55
4753	24 Inch RCP CL III	Lf	63
4754	27 Inch RCP CL III	Lf	82
4755	30 Inch RCP CL III	Lf	87
4756	33 Inch RCP CL III	Lf	100
4757	36 Inch RCP CL III	Lf	111
4758	42 Inch RCP CL III	Lf	136
4759	48 Inch RCP CL III	Lf	160

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Item No.	Description	Unit	Unit Cost ($)
4760	54 Inch RCP CL III	Lf	199
4761	60 Inch RCP CL III	Lf	232
4762	66 Inch RCP CL III	Lf	270
4763	72 Inch RCP CL III	Lf	307
4764	78 Inch RCP CL III	Lf	385
4765	84 Inch RCP CL III	Lf	463
4766	90 Inch RCP CL III	Lf	515
4767	96 Inch RCP CL III	Lf	566
4768	102 Inch RCP CL III	Lf	641
4769	108 Inch RCP CL III	Lf	716
4770	114 Inch RCP CL III	Lf	796
4771	120 Inch RCP CL III	Lf	881
4772	126 Inch RCP CL III	Lf	968
4773	132 Inch RCP CL III	Lf	1,057
4774	138 Inch RCP CL III	Lf	1,158
4775	144 Inch RCP CL III	Lf	1,263
4776	15 Inch RCP CL III w/Rubber Gasket	Lf	49
4777	18 Inch RCP CL III w/Rubber Gasket	Lf	55
4778	21 Inch RCP CL III w/Rubber Gasket	Lf	62
4779	24 Inch RCP CL III w/Rubber Gasket	Lf	71
4780	27 Inch RCP CL III w/Rubber Gasket	Lf	92
4781	30 Inch RCP CL III w/Rubber Gasket	Lf	97
4782	33 Inch RCP CL III w/Rubber Gasket	Lf	112
4783	36 Inch RCP CL III w/Rubber Gasket	Lf	124
4784	42 Inch RCP CL III w/Rubber Gasket	Lf	152
4785	48 Inch RCP CL III w/Rubber Gasket	Lf	179
4786	54 Inch RCP CL III w/Rubber Gasket	Lf	223
4787	60 Inch RCP CL III w/Rubber Gasket	Lf	260
4788	66 Inch RCP CL III w/Rubber Gasket	Lf	302
4789	72 Inch RCP CL III w/Rubber Gasket	Lf	344
4790	78 Inch RCP CL III w/Rubber Gasket	Lf	431
4791	84 Inch RCP CL III w/Rubber Gasket	Lf	519
4792	90 Inch RCP CL III w/Rubber Gasket	Lf	577
4793	96 Inch RCP CL III w/Rubber Gasket	Lf	634
4794	102 Inch RCP CL III w/Rubber Gasket	Lf	718
4795	108 Inch RCP CL III w/Rubber Gasket	Lf	802
4796	114 Inch RCP CL III w/Rubber Gasket	Lf	891
4797	120 Inch RCP CL III w/Rubber Gasket	Lf	987
4798	126 Inch RCP CL III w/Rubber Gasket	Lf	1,084
4799	132 Inch RCP CL III w/Rubber Gasket	Lf	1,184
4800	138 Inch RCP CL III w/Rubber Gasket	Lf	1,297
4801	144 Inch RCP CL III w/Rubber Gasket	Lf	1,415

Item No.	Description	Unit	Unit Cost ($)
	Storm Drain – Reinforced Concrete Pipe (RCP) Class IV Round		
4802	15 Inch RCP CL IV	Lf	46
4803	18 Inch RCP CL IV	Lf	50
4804	21 Inch RCP CL IV	Lf	59
4805	24 Inch RCP CL IV	Lf	67
4806	27 Inch RCP CL IV	Lf	93
4807	30 Inch RCP CL IV	Lf	98
4808	33 Inch RCP CL IV	Lf	108
4809	36 Inch RCP CL IV	Lf	121
4810	42 Inch RCP CL IV	Lf	151
4811	48 Inch RCP CL IV	Lf	175
4812	54 Inch RCP CL IV	Lf	222
4813	60 Inch RCP CL IV	Lf	268
4814	66 Inch RCP CL IV	Lf	306
4815	72 Inch RCP CL IV	Lf	353
4816	78 Inch RCP CL IV	Lf	443
4817	84 Inch RCP CL IV	Lf	532
4818	90 Inch RCP CL IV	Lf	592
4819	96 Inch RCP CL IV	Lf	650
4820	102 Inch RCP CL IV	Lf	737
4821	108 Inch RCP CL IV	Lf	823
4822	114 Inch RCP CL IV	Lf	915
4823	120 Inch RCP CL IV	Lf	1,013
4824	126 Inch RCP CL IV	Lf	1,113
4825	132 Inch RCP CL IV	Lf	1,215
4826	138 Inch RCP CL IV	Lf	1,332
4827	144 Inch RCP CL IV	Lf	1,452
4828	15 Inch RCP CL IV w/Rubber Gasket	Lf	52
4829	18 Inch RCP CL IV w/Rubber Gasket	Lf	56
4830	21 Inch RCP CL IV w/Rubber Gasket	Lf	66
4831	24 Inch RCP CL IV w/Rubber Gasket	Lf	75
4832	27 Inch RCP CL IV w/Rubber Gasket	Lf	104
4833	30 Inch RCP CL IV w/Rubber Gasket	Lf	110
4834	33 Inch RCP CL IV w/Rubber Gasket	Lf	121
4835	36 Inch RCP CL IV w/Rubber Gasket	Lf	136
4836	42 Inch RCP CL IV w/Rubber Gasket	Lf	136
4837	48 Inch RCP CL IV w/Rubber Gasket	Lf	196
4838	54 Inch RCP CL IV w/Rubber Gasket	Lf	249
4839	60 Inch RCP CL IV w/Rubber Gasket	Lf	300
4840	66 Inch RCP CL IV w/Rubber Gasket	Lf	343
4841	72 Inch RCP CL IV w/Rubber Gasket	Lf	395
4842	78 Inch RCP CL IV w/Rubber Gasket	Lf	496

Item No.	Description	Unit	Unit Cost ($)
4843	84 Inch RCP CL IV w/Rubber Gasket	Lf	596
4844	90 Inch RCP CL IV w/Rubber Gasket	Lf	663
4845	96 Inch RCP CL IV w/Rubber Gasket	Lf	728
4846	102 Inch RCP CL IV w/Rubber Gasket	Lf	825
4847	108 Inch RCP CL IV w/Rubber Gasket	Lf	922
4848	114 Inch RCP CL IV w/Rubber Gasket	Lf	1,025
4849	120 Inch RCP CL IV w/Rubber Gasket	Lf	1,135
4850	126 Inch RCP CL IV w/Rubber Gasket	Lf	1,247
4851	132 Inch RCP CL IV w/Rubber Gasket	Lf	1,360
4852	138 Inch RCP CL IV w/Rubber Gasket	Lf	1,492
4853	144 Inch RCP CL IV w/Rubber Gasket	Lf	1,626
	Storm Drain – Reinforced Concrete Pipe (RCP) Class V Round		
4854	15 Inch RCP CL V	Lf	54
4855	18 Inch RCP CL V	Lf	59
4856	21 Inch RCP CL V	Lf	70
4857	24 Inch RCP CL V	Lf	79
4858	27 Inch RCP CL V	Lf	110
4859	30 Inch RCP CL V	Lf	116
4860	33 Inch RCP CL V	Lf	127
4861	36 Inch RCP CL V	Lf	143
4862	42 Inch RCP CL IV	Lf	178
4863	48 Inch RCP CL V	Lf	207
4864	54 Inch RCP CL V	Lf	262
4865	60 Inch RCP CL V	Lf	316
4866	66 Inch RCP CL V	Lf	361
4867	72 Inch RCP CL V	Lf	416
4868	78 Inch RCP CL V	Lf	523
4869	84 Inch RCP CL V	Lf	628
4870	90 Inch RCP CL V	Lf	698
4871	96 Inch RCP CL V	Lf	767
4872	102 Inch RCP CL V	Lf	870
4873	108 Inch RCP CL V	Lf	971
4874	114 Inch RCP CL V	Lf	1,080
4875	120 Inch RCP CL V	Lf	1,195
4876	126 Inch RCP CL V	Lf	1,313
4877	132 Inch RCP CL V	Lf	1,434
4878	138 Inch RCP CL V	Lf	1,572
4879	144 Inch RCP CL V	Lf	1,713
4880	15 Inch RCP CL V with Rubber Gasket	Lf	60
4881	18 Inch RCP CL V with Rubber Gasket	Lf	66
4882	21 Inch RCP CL V with Rubber Gasket	Lf	78
4883	24 Inch RCP CL V with Rubber Gasket	Lf	88

Item No.	Description	Unit	Unit Cost ($)
4884	27 Inch RCP CL V with Rubber Gasket	Lf	123
4885	30 Inch RCP CL V with Rubber Gasket	Lf	130
4886	33 Inch RCP CL V w/Rubber Gasket	Lf	142
4887	36 Inch RCP CL V w/Rubber Gasket	Lf	160
4888	42 Inch RCP CL IV w/Rubber Gasket	Lf	199
4889	48 Inch RCP CL V w/Rubber Gasket	Lf	232
4890	54 Inch RCP CL V w/Rubber Gasket	Lf	293
4891	60 Inch RCP CL V w/Rubber Gasket	Lf	354
4892	66 Inch RCP CL V w/Rubber Gasket	Lf	404
4893	72 Inch RCP CL V w/Rubber Gasket	Lf	466
4894	78 Inch RCP CL V w/Rubber Gasket	Lf	586
4895	84 Inch RCP CL V w/Rubber Gasket	Lf	703
4896	90 Inch RCP CL V w/Rubber Gasket	Lf	782
4897	96 Inch RCP CL V w/Rubber Gasket	Lf	859
4898	102 Inch RCP CL V w/Rubber Gasket	Lf	974
4899	108 Inch RCP CL V w/Rubber Gasket	Lf	1,088
4900	114 Inch RCP CL V w/Rubber Gasket	Lf	1,210
4901	120 Inch RCP CL V w/Rubber Gasket	Lf	1,338
4902	126 Inch RCP CL V w/Rubber Gasket	Lf	1,471
4903	132 Inch RCP CL V w/Rubber Gasket	Lf	1,606
4904	138 Inch RCP CL V w/Rubber Gasket	Lf	1,761
4905	144 Inch RCP CL V w/Rubber Gasket	Lf	1,919
	Storm Drain – Reinforced Concrete Pipe (RCP) Class III Elliptical		
4910	14 Inch X 23 Inch RCP CL III	Lf	63
4911	19 Inch X 30 Inch RCP CL III	Lf	74
4912	22 Inch X 34 Inch RCP CL III	Lf	85
4913	24 Inch X 38 Inch RCP CL III	Lf	96
4914	27 Inch X 42 Inch RCP CL III	Lf	116
4915	29 Inch X 45 Inch RCP CL III	Lf	144
4916	32 Inch X 49 Inch RCP CL III	Lf	149
4917	34 Inch X 53 Inch RCP CL III	Lf	157
4918	38 Inch X 60 Inch RCP CL III	Lf	178
4919	43 Inch X 68 Inch RCP CL III	Lf	216
4920	48 Inch X 76 Inch RCP CL III	Lf	265
4921	53 Inch X 83 Inch RCP CL III	Lf	339
4922	58 Inch X 91 Inch RCP CL III	Lf	398
4923	63 Inch X 98 Inch RCP CL III	Lf	460
4924	68 Inch X 106 Inch RCP CL III	Lf	525
4925	72 Inch X 113 Inch RCP CL III	Lf	642
4926	77 Inch X 121 Inch RCP CL III	Lf	718
4927	82 Inch X 128 Inch RCP CL III	Lf	784
4928	87 Inch X 136 Inch RCP CL III	Lf	860

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Item No.	Description	Unit	Unit Cost ($)
4929	92 Inch X 143 Inch RCP CL III	Lf	941
4930	97 Inch X 151 Inch RCP CL III	Lf	1,038
4931	106 Inch X 166 Inch RCP CL III	Lf	1,242
4932	116 Inch X 180 Inch RCP CL III	Lf	1,473
	Storm Drain – Reinforced Concrete Pipe (RCP) Class IV Elliptical		
4933	14 Inch X 23 Inch RCP CL IV	Lf	66
4934	19 Inch X 30 Inch RCP CL IV	Lf	78
4935	22 Inch X 34 Inch RCP CL IV	Lf	89
4936	24 Inch X 38 Inch RCP CL IV	Lf	101
4937	27 Inch X 42 Inch RCP CL III	Lf	122
4938	29 Inch X 45 Inch RCP CL IV	Lf	151
4939	32 Inch X 49 Inch RCP CL IV	Lf	156
4940	34 Inch X 53 Inch RCP CL IV	Lf	166
4941	38 Inch X 60 Inch RCP CL IV	Lf	187
4942	43 Inch X 68 Inch RCP CL IV	Lf	227
4943	48 Inch X 76 Inch RCP CL IV	Lf	278
4944	53 Inch X 83 Inch RCP CL IV	Lf	356
4945	58 Inch X 91 Inch RCP CL IV	Lf	418
4946	63 Inch X 98 Inch RCP CL IV	Lf	483
4947	68 Inch X 106 Inch RCP CL IV	Lf	551
4948	72 Inch X 113 Inch RCP CL IV	Lf	674
4949	77 Inch X 121 Inch RCP CL IV	Lf	754
4950	82 Inch X 128 Inch RCP CL IV	Lf	823
4951	87 Inch X 136 Inch RCP CL IV	Lf	903
4952	92 Inch X 143 Inch RCP CL IV	Lf	988
4953	97 Inch X 151 Inch RCP CL IV	Lf	1,090
4954	106 Inch X 166 Inch RCP CL IV	Lf	1,304
4955	116 Inch X 180 Inch RCP CL IV	Lf	1,547
	Storm Drain – Reinforced Concrete Pipe (RCP) Class III Arch		
4960	11 Inch X 18 Inch RCP CL III	Lf	55
4961	13 1/2 Inch X 22 Inch RCP CL III	Lf	63
4962	15 1/2 Inch X 26 Inch RCP CL III	Lf	68
4963	18 Inch X 28 1/2 Inch RCP CL III	Lf	74
4964	22 1/2 Inch X 36 1/4 Inch RCP CL III	Lf	96
4965	26 5/8 Inch X 43 3/4 Inch RCP CL III	Lf	144
4966	31 5/16 Inch X 51 1/8 Inch RCP CL III	Lf	157
4967	36 Inch X 58 1/2 Inch RCP L III	Lf	178
4968	40 Inch X 65 Inch RCP CL III	Lf	216
4969	45 Inch X 73 Inch RCP CL III	Lf	265
4970	54 Inch X 88 Inch RCP CL III	Lf	398
4971	62 Inch X 102 Inch RCP CL III	Lf	525
4972	72 Inch X 115 Inch RCP CL III	Lf	642

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
4973	77 1/4 Inch X 122 Inch RCP CL III	Lf	718
4974	87 1/8 Inch X 138 Inch RCP CL III	Lf	860
4975	96 7/8 Inch X 154 Inch RCP CL III	Lf	1,038
4976	106 1/2 Inch X 168 3/4 Inch RCP CL III	Lf	1,242
	Storm Drain – Reinforced Concrete Pipe (RCP) Class IV Arch		
4977	11 Inch X 18 Inch RCP CL IV	Lf	58
4978	13 1/2 Inch X 22 Inch RCP CL IV	Lf	66
4979	15 1/2 Inch X 26 Inch RCP CL IV	Lf	72
4980	18 Inch X 28 1/2 Inch RCP CL IV	Lf	78
4981	22 1/2 Inch X 36 1/4 Inch RCP CL IV	Lf	101
4982	26 5/8 Inch X 43 3/4 Inch RCP CL IV	Lf	122
4983	31 5/16 Inch X 51 1/8 Inch RCP CL IV	Lf	166
4984	36 Inch X 58 1/2 Inch RCP CL IV	Lf	187
4985	40 Inch X 65 Inch RCP CL IV	Lf	227
4986	45 Inch X 73 Inch RCP CL IV	Lf	278
4987	54 Inch X 88 Inch RCP CL IV	Lf	418
4988	62 Inch X 102 Inch RCP CL IV	Lf	551
4989	72 Inch X 115 Inch RCP CL IV	Lf	674
4990	77 1/4 Inch X 122 Inch RCP CL IV	Lf	754
4991	87 1/8 Inch X 138 Inch RCP CL IV	Lf	903
4992	96 7/8 Inch X 154 Inch RCP CL IV	Lf	1,090
4993	106 1/2 Inch X 168 3/4 Inch RCP CL IV	Lf	1,304
	Storm Drain – Reinforced Concrete Box Culvert		
5000	5 Foot X 3 Foot RCP	Lf	297
5001	5 Foot X 4 Foot RCP	Lf	326
5002	5 Foot X 5 Foot RCP	Lf	358
5003	6 Foot X 5 Foot RCP	Lf	462
5004	6 Foot X 6 Foot RCP	Lf	498
5005	7 Foot X 5 Foot RCP	Lf	578
5006	7 Foot X 6 Foot RCP	Lf	620
5007	7 Foot X 7 Foot RCP	Lf	660
5008	8 Foot X 5 Foot RCP	Lf	620
5009	8 Foot X 6 Foot RCP	Lf	660
5010	8 Foot X 7 Foot RCP	Lf	702
5012	8 Foot X 8 Foot RCP	Lf	743
5013	9 Foot X 5 Foot RCP	Lf	755
5014	9 Foot X 6 Foot RCP	Lf	801
5015	9 Foot X 7 Foot RCP	Lf	851
5016	9 Foot X 8 Foot RCP	Lf	896
5017	9 Foot X 9 Foot RCP	Lf	941
5018	10 Foot X 5 Foot RCP	Lf	903
5019	10 Foot X 6 Foot RCP	Lf	957

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
5020	10 Foot X 7 Foot RCP	Lf	1,007
5021	10 Foot X 8 Foot RCP	Lf	1,061
5022	10 Foot X 9 Foot RCP	Lf	1,110
5023	10 Foot X 10 Foot RCP	Lf	1,164
5024	11 Foot X 6 Foot RCP	Lf	1,122
5025	11 Foot X 8 Foot RCP	Lf	1,233
5026	11 Foot X 10 Foot RCP	Lf	1,349
5027	11 Foot X 11 Foot RCP	Lf	1,407
5028	12 Foot X 6 Foot RCP	Lf	1,299
5029	12 Foot X 8 Foot RCP	Lf	1,424
5030	12 Foot X 10 Foot RCP	Lf	1,547
5031	12 Foot X 12 Foot RCP	Lf	1,671
	Storm Drain – Reinforced Concrete Pipe – Round – End Sections		
5050	15 Inch End Section	Ea	380
5051	18 Inch End Section	Ea	468
5052	21 Inch End Section	Ea	558
5053	24 Inch End Section	Ea	588
5054	27 Inch End Section	Ea	782
5055	30 Inch End Section	Ea	862
5056	33 Inch End Section	Ea	1,291
5057	36 Inch End Section	Ea	1,312
5058	42 Inch End Section	Ea	1,577
5059	48 Inch End Section	Ea	2,102
5060	54 Inch End Section	Ea	2,575
5061	60 Inch End section	Ea	3,278
	Storm Drain – Reinforced Concrete Pipe – Elliptical – End Sections		
5100	14 Inch X 23 Inch End Section	Ea	1,198
5101	19 Inch X 30 Inch End Section	Ea	1,555
5102	22 Inch X 34 Inch End Section	Ea	1,984
5103	24 Inch X 38 Inch End Section	Ea	2,540
5104	27 Inch X 42 Inch End Section	Ea	3,181
5105	29 Inch X 45 Inch End Section	Ea	4,538
5106	34 Inch X 53 Inch End Section	Ea	4,960
5107	38 Inch X 60 Inch End section	Ea	5,948
5108	43 Inch X 68 Inch End Section	Ea	6,894
5109	48 Inch X 76 Inch End Section	Ea	7,873
	Storm Drain – Underdrains		
5250	6 Inch PVC Underdrain Slotted/Solid	Lf	13
5251	8 Inch PVC Underdrain Slotted/Solid	Lf	17
5252	10 Inch PVC Underdrain Slotted/Solid	Lf	20
5253	12 Inch PVC Underdrain Slotted/Solid	Lf	22
5254	6 Inch CMP Underdrain Slotted/Solid	Lf	14

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
5255	8 Inch CMP Underdrain Slotted/Solid	Lf	18
5256	10 Inch CMP Underdrain Slotted/Solid	Lf	20
5257	12 Inch CMP Underdrain Slotted/Solid	Lf	23
5258	6 Inch High Density Polyethylene (HDPE) Underdrain Slotted/Solid	Lf	11
5259	8 Inch HDPE Underdrain Slotted/Solid	Lf	14
5260	10 Inch HDPE Underdrain Slotted/Solid	Lf	16
5261	12 Inch HDPE Underdrain Slotted/Solid	Lf	18
	Storm Drain – Reinforced Concrete Pipe Field Connections		
5270	Field Connection 15 Inch to 27 Inch	Ea	1,193
5271	Field Connection 15 Inch to 30 Inch	Ea	1,335
5272	Field Connection 15 Inch to 33 Inch	Ea	1,523
5273	Field Connection 15 Inch to 36 Inch	Ea	1,554
5274	Field Connection 15 Inch to 42 Inch	Ea	1,804
5275	Field Connection 15 Inch to 48 Inch	Ea	2,020
5276	Field Connection 15 Inch to 54 Inch	Ea	2,667
5277	Field Connection 15 Inch to 60 Inch	Ea	3,074
5278	Field Connection 15 Inch to 66 Inch	Ea	3,617
5279	Field Connection 15 Inch to 72 Inch	Ea	4,181
5280	Field Connection 18 Inch to 60 Inch	Ea	3,074
5281	Field Connection 18 Inch to 66 Inch	Ea	3,617
5282	Field Connection 18 Inch to 72 Inch	Ea	4,181
5283	Field Connection 21 Inch to 60 Inch	Ea	3,160
5284	Field Connection 24 Inch to 60 Inch	Ea	3,205
5285	Field Connection 24 Inch to 66 Inch	Ea	3,747
5286	Field Connection 24 Inch to 72 Inch	Ea	4,311
5287	Field Connection 27 Inch to 60 Inch	Ea	3,274
5288	Field Connection 27 Inch to 66 Inch	Ea	3,816
5289	Field Connection 27 Inch to 72 Inch	Ea	4,380
	Storm Drain Structures – Type “A” Inlets		
5700	A-5 Inlet 2.5 Foot <=3 V.F.	Ea	2,170
5701	A-5 Inlet 3.0 Foot <=3 V.F.	Ea	2,200
5702	A-5 Inlet 3.5 Foot <=3 V.F.	Ea	2,230
5703	A-5 Inlet 4.0 Foot <=3 V.F.	Ea	2,275
5704	A-5 Inlet 4.5 Foot <=3 V.F.	Ea	2,320
5705	A-5 Inlet 5.0 Foot <=3 V.F.	Ea	2,380
5706	A-5 > 3.0 V.F.	Vf	130
5707	A-10 Inlet 2.5 Foot <=3 V.F.	Ea	3,025
5708	A-10 Inlet 3.0 Foot <=3 V.F.	Ea	3,110
5709	A-10 Inlet 3.5 Foot <=3 V.F.	Ea	3,190
5710	A-10 Inlet 4.0 Foot <=3 V.F.	Ea	3,260
5711	A-10 Inlet 4.5 Foot <=3 V.F.	Ea	3,400
5712	A-10 Inlet 5.0 Foot <=3 V.F.	Ea	3,480

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
5713	A-10 Inlet >3.0 V.F.	Vf	240
5714	A-15 Inlet 2.5 Foot <=3 Foot	Ea	4,180
5715	A-15 Inlet 3.0 Foot <=3 Foot	Ea	4,340
5716	A-15 Inlet 3.5 Foot <=3 Foot	Ea	4,500
5717	A-15 Inlet 4.0 Foot <=3 Foot	Ea	4,630
5718	A-15 Inlet 4.5 Foot <=3 Foot	Ea	4,760
5719	A-15 Inlet 5.0 Foot <=3 Foot	Ea	4,830
5720	A-15 Inlet 5.5 Foot <=3 Foot	Ea	4,900
5721	A-15 Inlet 6.0 Foot <=3 Foot	Ea	4,970
5722	A-15 Inlet 6.5 Foot <=3 Foot	Ea	5,040
5723	A-15 Inlet 7.0 Foot <=3 Foot	Ea	5,110
5724	A-15 Inlet 7.5 Foot <=3 Foot	Ea	5,180
5725	A-15 Inlet > 3.0 Foot	Vf	360
5726	A-20 Inlet 2.5 Foot <=3 Foot	Ea	6,770
5727	A-20 Inlet 3.0 Foot <=3 Foot	Ea	6,880
5728	A-20 Inlet 3.5 Foot <=3 Foot	Ea	6,990
5729	A-20 Inlet 4.0 Foot <=3 Foot	Ea	7,100
5730	A-20 Inlet 4.5 Foot <=3 Foot	Ea	7,210
5731	A-20 Inlet 5.0 Foot <=3 Foot	Ea	7,320
5732	A-20 Inlet 5.5 Foot <=3 Foot	Ea	7,430
5733	A-20 Inlet 6.0 Foot <=3 Foot	Ea	7,540
5734	A-20 Inlet 6.5 Foot <=3 Foot	Ea	7,650
5735	A-20 Inlet 7.0 Foot <=3 Foot	Ea	7,760
5736	A-20 Inlet 7.5 Foot <=3 Foot	Ea	7,870
5737	A-20 Inlet 8.0 Foot <=3 Foot	Ea	7,980
5738	A-20 Inlet 9.0 Foot <=3 Foot	Ea	8,090
5739	A-20 Inlet 9.5 Foot <=3 Foot	Ea	8,200
5740	A-20 Inlet 10.0 Foot <=3 Foot	Ea	8,310
5741	A-20 > 3.0 V.F.	Vf	630
	Storm Drain Structures – Type "B" Inlets		
5750	B-5 Inlet 2.5 Foot <=3 V.F.	Ea	3,700
5751	B-5 Inlet 3.0 Foot <=3 V.F.	Ea	3,750
5752	B-5 Inlet 3.5 Foot <=3 V.F.	Ea	3,800
5753	B-5 Inlet 4.0 Foot <=3 V.F.	Ea	3,850
5754	B-5 Inlet 4.5 Foot <=3 V.F.	Ea	3,900
5755	B-5 Inlet 5.0 Foot <=3 V.F.	Ea	3,950
5756	B-5 > 3.0 V.F.	Vf	220
5757	B-10 Inlet 4.0 Foot <=3 Foot	Ea	4,740
5758	B-10 Inlet 5.0 Foot <=3 Foot	Ea	4,970
5759	B-10 Inlet 6.0 Foot <=3 Foot	Ea	5,080
5760	B-10 Inlet 7.0 Foot <=3 Foot	Ea	5,220
5761	B-10 Inlet 8.0 Foot <=3 Foot	Ea	5,360

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
5762	B-10 Inlet 9.0 Foot <=3 Foot	Ea	5,620
5763	B-10 Inlet 10.0 Foot <=3 Foot	Ea	6,120
5764	B-10 Inlet > 3 V.F.	Vf	240
5765	B-15 Inlet 4.0 Foot <=3 Foot	Ea	4,890
5766	B-15 Inlet 5.0 Foot <=3 Foot	Ea	5,030
5767	B-15 Inlet 6.0 Foot <=3 Foot	Ea	5,200
5768	B-15 Inlet 7.0 Foot <=3 Foot	Ea	5,460
5769	B-15 Inlet 8.0 Foot <=3 Foot	Ea	5,960
5770	B-15 Inlet 9.0 Foot <=3 Foot	Ea	6,460
5771	B-15 Inlet 10.0 Foot <=3 Foot	Ea	6,920
5772	B-15 Inlet > 3.0 V.F.	Vf	360
5773	B-20 Inlet 4.0 Foot <=3 Foot	Ea	7,240
5774	B-20 Inlet 5.0 Foot <=3 Foot	Ea	7,460
5775	B-20 Inlet 6.0 Foot <=3 Foot	Ea	7,680
5776	B-20 Inlet 7.0 Foot <=3 Foot	Ea	7,900
5777	B-20 Inlet 8.0 Foot <=3 Foot	Ea	8,120
5778	B-20 Inlet 9.0 Foot <=3 Foot	Ea	8,230
5779	B-20 Inlet 10.0 Foot <=3 Foot	Ea	8,540
5780	B-20 Inlet > 3.0 V.F.	Vf	630
	Storm Drain Structures – Other Inlets		
5781	D1 Inlet	Vf	300
5782	D2 Inlet	Vf	325
5783	E Inlet	Vf	300
5784	J Inlet	Vf	310
5785	K Inlet	Ea	1,850
5786	K Inlet > 4 V.F.	Vf	350
5787	Yard Inlet	Ea	1,500
5788	MSHA J Inlet	Ea	1,500
5789	MSHA K Inlet <=4 V.F.	Ea	2,000
5790	MSHA K Inlet >4 V.F.	Vf	350
5791	MSHA S Single	Ea	2,500
5792	MSHA S Double	Ea	3,700
5793	Single WR Inlet <= 4 V.F.	Ea	1,800
5794	Single WR Inlet > 4 V.F.	Vf	250
5795	MSHA STD WR Inlet <= 4 V.F.	Ea	2,200
5796	MSHA STD WR Inlet > 4 V.F.	Vf	250
	Storm Drain Structures – Manholes		
5800	A/B Manhole 48 Inch	Vf	500
5801	A/B Manhole 54 Inch	Vf	550
5802	A/B Manhole 60 Inch	Vf	600
5803	A/B Manhole 66 Inch	Vf	660
5804	A/B Manhole 72 Inch	Vf	700

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
5805	A/B Manhole 78 Inch	Vf	725
5806	A/B Manhole 84 Inch	Vf	750
5807	A/B Manhole 90 Inch	Vf	800
5808	A/B Manhole 96 Inch	Vf	825
5809	Modified B Manhole w/D1 Top <= 4 V.F.	Ea	2,250
5810	Modified B Manhole w/D1 Top > 4 V.F.	Vf	170
	Storm Drain Structures – Concrete Endwalls		
5811	Endwall 15 Inch RCP	Ea	930
5812	Endwall 18 Inch RCP	Ea	1,100
5813	Endwall 21 Inch RCP	Ea	1,375
5814	Endwall 24 Inch RCP	Ea	1,560
5815	Endwall 27 Inch RCP	Ea	1,820
5816	Endwall 30 Inch RCP	Ea	2,220
5817	Endwall 33 Inch RCP	Ea	2,480
5818	Endwall 36 Inch RCP	Ea	4,160
5819	Endwall 42 Inch RCP	Ea	5,070
5820	Endwall 48 Inch RCP	Ea	6,090
5821	Endwall 54 Inch RCP	Ea	7,620
5822	Endwall 60 Inch RCP	Ea	8,820
5823	Endwall 66 Inch RCP	Ea	10,040
5824	Endwall 72 Inch RCP	Ea	11,460
5825	Type "A" Headwall 48 Inch RCP	Ea	4,300
5826	Type "A" Headwall 54 Inch RCP	Ea	5,300
5827	Type "A" Headwall 60 Inch RCP	Ea	6,000
5828	Type "B" Headwall 66 Inch RCP	Ea	9,700
5829	Type "B" Headwall 72 Inch RCP	Ea	10,900
5830	Type "B" Headwall 78 Inch RCP	Ea	13,300
5831	Type "B" Headwall 84 Inch RCP	Ea	14,700
5832	Type "H" Endwall 15 Inch RCP	Ea	990
5833	Type "H" Endwall 18 Inch RCP	Ea	1,170
5834	Type "H" Endwall 21 Inch RCP	Ea	1,380
5835	Type "H" Endwall 24 Inch RCP	Ea	1,840
5836	Type "H" Endwall 27 Inch RCP	Ea	2,110
5837	Type "H" Endwall 30 Inch RCP	Ea	2,570
5838	Type "H" Endwall 33 Inch RCP	Ea	2,920
5839	Type "H" Endwall 36 Inch RCP	Ea	4,990
5840	Type "H" Endwall 42 Inch RCP	Ea	6,020
5841	Type "H" Endwall 48 Inch RCP	Ea	7,340
	Storm Drain Structures – Concrete Cutoff Walls		
5850	15 In Cutoff Wall	Ea	550
5851	18 In Cutoff Wall	Ea	580
5852	21 In Cutoff Wall	Ea	620

Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
5853	24 In Cutoff Wall	Ea	660
5854	27 In Cutoff Wall	Ea	770
5855	30 In Cutoff Wall	Ea	850
5856	33 In Cutoff Wall	Ea	950
5857	36 In Cutoff Wall	Ea	1,650
5858	42 In Cutoff Wall	Ea	1,960
5859	48 In Cutoff Wall	Ea	2,270
5860	54 In Cutoff Wall	Ea	2,860
5861	60 In Cutoff Wall	Ea	3,220
5862	66 In Cutoff Wall	Ea	3,700
5863	72 In Cutoff Wall	Ea	4,200
	Concrete Work		
5870	Concrete Curb and Gutter	Lf	15
5871	Concrete Curb and Gutter - Roll-Type (limited use)	Lf	15
5872	Concrete Curb and Gutter - Maryland State Highway Administration (MSHA) Type "A"	Lf	18
5873	Monolithic Concrete Median - Standard	Lf	50
5874	Concrete Islands	Sy	60
5875	Concrete Side Ditch - Standard Section	Lf	40
5876	Concrete Side Ditch - Pilot Channel	Lf	10
5877	Urban Residential Driveway Entrance - Single	Ea	1,200
5878	Urban Residential Driveway Entrance - Double	Ea	2,500
5879	Rural Residential Driveway Entrance w/swale - Single	Ea	1,000
5880	Rural Residential Driveway Entrance w/swale - Double	Ea	2,000
5881	Rural Residential Driveway Entrance w/pipe - Single	Ea	1,250
5882	Rural Residential Driveway Entrance w/pipe - Double	Ea	2,500
5883	Commercial Driveway Entrance - 30 Foot Wide	Ea	3,000
5884	Concrete Sidewalk - 4 Foot Wide	Lf	16
5885	Concrete Sidewalk - 5 Foot Wide	Lf	20
5886	Concrete Sidewalk Ramp Type "A"	Ea	600
5887	Concrete Sidewalk Ramp Type "B"	Ea	850
5888	Concrete Median Crosswalk Ramps	Ea	1,500
5889	Concrete Median Crosswalk Opening	Ea	2,000
5890	Concrete Intersection Swale - 50 Foot Roadway	Ea	1,500
5891	Concrete Intersection Swale - 60 Foot Roadway	Ea	2,000
5892	Concrete Intersection Swale - 70 Foot Roadway	Ea	2,600
5893	Concrete Cradle	Cy	290
5894	Concrete - General Use	Cy	175
5895	Concrete - Reinforced, in place	Cy	600
5896	Concrete Anti-Seep Collar	Cy	410
5897	Hot Mix Asphalt (HMA) Curb	Lf	8
5898	Pre-cast Concrete Bollard	Ea	100
5899	Wooden Bollard	Ea	150

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
	Stone Protection		
5900	Rip-Rap Class 1 Grouted	Sy	55
5901	Rip-Rap Class 1 Ungrouted	Sy	50
5902	Rip-Rap Class 2 Grouted	Sy	80
5903	Rip-Rap Class 2 Ungrouted	Sy	70
5904	Rip-Rap Class 3 Grouted	Sy	150
5905	Rip-Rap Class 3 Ungrouted	Sy	125
5906	Gabion Basket, 3 Foot X 3 Foot X 3 Foot	Ea	175
5907	Gabion Basket, 6 Foot X 3 Foot X 3 Foot	Ea	310
5908	Gabion Basket, 9 Foot X 3 Foot X 3 Foot	Ea	460
5909	Gabion Basket, 12 Foot X 3 Foot X 3 Foot	Ea	675
5910	Gabion Mat or Basket, 6" Deep	Sy	50
5911	PVC Gabions	Sy	80
	Traffic Control		
7100	Guardrail W-Beam	Lf	30
7101	Barricade Post	Ea	90
7102	W-Beam Barricade	Ea	1,875
7103	Type A Traffic Barrier End Treatment	Ea	1,000
7104	Type B Traffic Barrier End Treatment	Ea	1,500
7105	Type C Traffic Barrier End Treatment	Ea	2,200
7106	Type D Traffic Barrier End Treatment	Ea	4,500
7107	Type E Traffic Barrier End Treatment	Ea	2,000
7108	Type F Traffic Barrier End Treatment	Ea	2,600
7109	Type G Traffic Barrier End Treatment	Ea	750
7110	Type H Traffic Barrier End Treatment	Ea	500
7111	Type I Traffic Barrier End Treatment	Ea	1,000
7112	Bollard Barricade	Ea	150
	Pavement Marking		
7120	Thermoplastic White Pavement Marking, 4 Inch	Lf	2
7121	Thermoplastic White Pavement Marking, 5 Inch	Lf	3
7122	Thermoplastic Yellow Pavement Marking, 4 Inch	Lf	2
7123	Thermoplastic Yellow Pavement Marking, 5 Inch	Lf	3
7124	Thermoplastic White Pavement Marking, 8 Inch	Lf	4
7125	Thermoplastic Stop Bar, 24 Inch	Lf	6
7126	Temporary Pavement Stripping Tape, 5 Inch	Lf	2
7127	Thermoplastic White Pavement Marking Arrow	Ea	300
7128	Thermoplastic White Pavement Marking "ONLY"	Ea	350
7129	Thermoplastic Brick Red Pavement Crosswalk	Sy	185
	Maintenance of Traffic		
7130	Crush Cushion	Ea	250
7131	Drums	Ea	65
7132	Flashing Arrow Panel (Rent Only)	Day	350

Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
7133	Hump Sign	Ea	300
7134	Install Bollard - Concrete	Ea	100
7135	Install Object Marker	Ea	125
7136	Install Speed Hump	Ea	2,500
7137	Install Speed Table Hump	Sy	30
7138	Jersey Barrier for Maintenance of Traffic	Lf	25
7139	Marking for Hump	Ea	450
7140	Raised Pavement Marker	Ea	55
7141	Speed Limit Sign 18"X24"	Ea	250
7142	Speed Sign 24"X30"	Ea	250
7143	Stop Sign 30"X30"	Ea	250
7144	Street Name Sign	Ea	350
7145	Variable Message Sign	Day	650
7146	Type III Barricade	Ea	2,500
	Stabilization		
7300	Sodding	Sy	4
7301	Seeding	Sy	2
7302	Seeding and Mulching	Sy	3
7303	Temporary Seeding	Sy	2
7304	Temporary Mulching	Sy	1
7305	Hydroseeding	Sy	3
7306	Top Soil, Seed, and Mulch	Sy	4
7307	Top Soiling - 2 Inch	Sy	2
7308	Fertilizing	Ac	800
7309	Liming	Ac	550
7310	Bed Mulching - 6 Inch	Sy	3
	Landscaping		
7700	DPW&T Street Tree	Ea	250
7701	Northern Red Oak 2 Inch Cal.	Ea	250
7702	Dogwood 1 Inch Cal.	Ea	95
7703	Forsythia 18–24 Inch Cal.	Ea	35
7704	Leyland Cypress 6–8 Foot	Ea	165
7705	Mountain Laurel 18–24 Inch Cont.	Ea	40
7706	Eastern White Pine 5–6 Foot	Ea	55
7707	Loblolly Pine 5–6 Foot	Ea	55
7708	Willow Oak 1.75 Inch Cal.	Ea	150
7709	Red Oak 1.75 Inch Cal.	Ea	165
7710	Red Maple 1.75 Inch Cal.	Ea	165
7711	Tulip Poplar 1.75 Inch Cal.	Ea	125
7712	Sweet Gum 1.75 Inch Cal.	Ea	150
7713	Shadblow Service Berry 5–6 Foot	Ea	85
7714	Shadblow Service Berry 6–7 Foot	Ea	110

Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
7715	Eastern Redbud 5–6 Foot	Ea	50
7716	Norway Spruce 5–6 Foot	Ea	65
7717	Green Ash 1.75 Inch Cal.	Ea	125
7718	River Birch 3–5 Foot Trunks	Ea	135
7719	Leyland Cypress 6–7 Foot	Ea	135
7720	Flower Cherry 1.75 Inch Cal.	Ea	125
7721	Swamp White Oak 1.75 Inch Cal.	Ea	130
7722	Dense Yews 24–30 Inch	Ea	40
7723	Rob Green Juniper 24–30 Inch	Ea	25
7724	Japanese Holly 24–30 Inch	Ea	25
7725	Rhododendron 24–30 Inch	Ea	45
7726	Azalea 24–30 Inch	Ea	30
7727	Forsythia 24–30 Inch	Ea	25
7728	Mountain Laurel 24–30 Inch	Ea	50
7729	American Holly 30–36 Inch	Ea	35
7730	Bed Preparation	Ac	1,485
	Sediment Control		
8001	Earth Berm/Dike	Lf	3
8002	Earth Channel	Sy	25
8003	Earth Ditch 3 Foot Wide, 2:1 Side Slopes	Lf	5
8004	Earth Side Ditch	Cy	25
8005	Filter Cloth	Sy	2
8006	Inlet Protection Device	Ea	250
8007	Mirimat Material	Sy	15
8008	Safety Fence	Lf	4
8009	Silt Fence	Lf	4
8010	Stabilized Construction Entrance	Ea	1,250
8011	Stone Outlet Sediment Trap	Ea	350
8012	Straw Bales	Lf	4
8013	Super Silt Fence	Lf	15
8014	Wash Rack	Ls	6,000
	Sediment Control for Bonding		
8040	Rough Sediment Control (Within Roadway Area—New Development)	Sy	2
8041	Silt Fence (Both Sides of Existing Roadway)	Lf	4
8042	Inlet Protection Device (Existing and Proposed)	Ea	250
8043	Super Silt Fence	Lf	15
8044	Earth Berm/Dike	Lf	3
	Utility/Telecommunications Restoration		
9001	100 Sf. Patch Paving	Ea	550
9002	Aerial Installation	Lf	1.1
9003	Directional Boring	Lf	5.5
9004	Handhole in Concrete (Sidewalk)	Ea	2,200

Ac = Acre; Cy = cubic yard; Ea = each; Lf = linear foot; Ls = lump sum; Sf = square foot; Sy = square yard; Vf = vertical feet

DPW&T CONSTRUCTION PRICE LIST

Item No.	Description	Unit	Unit Cost ($)
9005	Handhole in Grass	Ea	550
9006	Larger than 100 Sf. Patch Paving	Ea	1,650
9007	Open Trench in Grass	Lf	11
9008	Open Trench in Pavement	Lf	22
9009	Plowing (Cable Trenching)	Lf	3.3
	Utility Permit – Fee Calculation		
	Utility Installation and Upgrade Permit (Special Permit)		
9010	Administrative Fee	Ls	300
	Inspection Fee		
9011	Underground Utilities to be installed in roadway	Lf	2
9012	Underground Utilities to be installed outside the roadway	Lf	0.5
9013	Aboveground Utilities to be installed in roadway	Lf	0.2
	Impact Fee		
9014	Length of Pavement within the Moratorium period to be excavated	Lf	10
	Utility Infrastructure Maintenance Permit		
9015	Administrative Fee	Ls	5,000
	Maintenance Fee		
9016	Category I (Underground Utilities)	Lf	0.6
	Linear feet of Existing Utilities		
9017	Category II (Aboveground Utilities)	Lf	0.12
	Linear feet of Existing Utilities		
9018	Square feet of Surface Structures	Sf	1
9019	Number of Utility Poles	Ea	5

RURAL/URBAN
DRIVEWAY CONSTRUCTION
PERMIT PROCESS CHECKLIST

All driveway entrance construction within the public rights-of-way (whether new or repair/replacement) in Prince George's County, Maryland, requires a Driveway Permit from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department). The process and requirements for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-9

RURAL/URBAN DRIVEWAY CONSTRUCTION PERMIT PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The rural or urban driveway process is broken into the following components:
● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● DRIVEWAY CONSTRUCTION AND RELEASE

The permit shall expire 1 year from the date of issuance.

A. APPLICATION PROCESS: For the submission of application for rural or urban driveway permit, the following items 1 through 3b are required:

☐ **1. Filing fee of $25.00**
☐ **2. Completed permit application [one copy]**—This application form is available at the Department Permit Center, 6th Floor, 9400 Peppercorn Place, Largo, Maryland.
☐ **3a. Site plan [2 copies]**—This must meet the following requirements:

i.	*Title block information*— Subdivision name Type of plan (public and/or private) Election district "Miss Utility" note Lot and house dimensions Lot, block, and/or parcel information
ii.	*Basic plan information*— Sheet size no greater than 36" x 24" North arrow and datum (*State plane datum is recommended*) Scale (minimum of 1" = 50' scale) Street name
iii.	*Vicinity map*—Prince George's Page and Grid Map, 1st sheet (*Use 1" =2000' scale*)
iv.	*Permittee information*— Permittee's company name Permittee's contact name Permittee's address Permittee's phone Permittee's fax
v.	*Existing and proposed driveway information*— Location and dimensions of existing driveway, if applicable Location and dimensions of proposed driveway Standard detail type reference

☐ **3b. NOTE:** When a private homeowner is upgrading an existing driveway or creating a new access point, then **site plan requirements** listed in **3a.** are *replaced* by the following:

i.	*Basic plan information*— North arrow and datum Show dimensions to locate the proposed driveway relative to permanent features on the ground (*e.g.*, fire hydrant, utility pole, water meter, etc.) Show street name Show property lines Show location of house

B. **PERMIT:** For the issuance of permit, the following items 1 through 4 are required in advance:

☐ 1. **Permit fee**—This fee is based on 10 percent of the bond amount that covers the construction of the driveway. **NOTE:** If you have already paid the $25.00 filing fee, subtract that amount from this permit fee.

Driveway Type and Description	Bond Amount	Permit Fee
Standard urban residential driveway, single, 10′ width Department standard detail #200.01/200.02	$1387	$111
Standard urban residential driveway, double, 20′ width Department standard detail #200.01/200.02	$2088	$167
Rural swale driveway, single, 10′ width Department standard detail #200.08	$1250	$100
Rural swale driveway, double, 20′ width Department standard detail #200.08	$1500	$120
Rural pipe driveway, no headwalls or end sections, single, 10′ width Department standard detail #200.06	$1500	$120
Rural pipe driveway, no headwalls or end sections, double, 20′ width Department standard detail #200.06	$2625	$210
Rural pipe driveway, end section only, single, 10′ width Department standard detail #200.06	$2125	$170
Rural pipe driveway, end section only, double, 20′ width Department standard detail #200.06	$3250	$260
Rural pipe driveway, headwall only, single, 10′ width Department standard detail #200.07	$2750	$220
Rural pipe driveway, headwall only, double, 20′ width Department standard detail #200.07	$3875	$310

Note: Commercial driveway entrances require a street construction permit.

☐ 2. **Bonds** must be posted. **NOTE:** Permittee will need to allow adequate time for the County Office of Law to approve any bond instrument *other* than a cash bond.

☐ 3. **Approval** from the Department Engineering and Inspection Services Division (EISD) on the type of driveway.*

☐ 4. **Determination** from EISD that no further requirements remain to be completed (*e.g.*, street construction permit, right-of-way dedication, contribution fee payment).*

*EISD provides review/approval services through one of the following mechanisms:

- The Department of Environmental Resources (DER) permit referral process: Many DER permits (including building, fence, and partial lot grading) require Department approval prior to issuance. Once the determination is made by EISD of all applicable Department requirements and that these DPW&T requirements have been met, DER is notified that the permit may be issued.
- Department permit referral process: In some instances, an application for a driveway is made directly to the Department. Under these circumstances, EISD will be asked for input to confirm the adequacy of the driveway type and that there are no further Department requirements.

C. DRIVEWAY: For the construction and permit release process; the following items 1 through 12 are required in advance:

- 1. Contact the Engineering and Inspection Services Division (EISD) office at 301-883-5710 to determine the Department Inspector for your project.
- 2. Schedule an inspection of the driveway once the forms and expansion joint material have been installed and the job is ready for the concrete pour. A 48-hour notification prior to the inspection is required.
- 3. The Department Inspector will provide a list of uncompleted permit requirements either verbally or in writing to the Permittee.
- 4. Once all items in the list have been addressed, the Permittee may proceed with the work.
- 5. Schedule an inspection of the driveway once the work is completed. A 48-hour notification prior to the inspection is required.
- 6. Upon request, and at the final inspection stage, the Department Inspector will provide a final list of uncompleted permit requirements either verbally or in writing to the Permittee.
- 7. Once all items on the list have been addressed, the release is processed by the Department Inspector and forwarded to the Department District Engineer.
- 8. The District Engineer will sign off on the release package and forward it to the Department Permits Section.
- 9. The Department Permits Section will then log in the driveway release package and process the final release of the permit.

If the driveway bond is a cash bond, then:

- 10. A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the driveway bond is not a cash bond, then:

- 11. The Permits Section will send a release of liens form to the Permittee.
- 12. Once the release of liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the bond obligations have been met

BOX CULVERT
PLAN SHEET CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) is responsible for reviewing and granting approval for type, size, and location (TS&L), as well as final foundation and overall structure approval for all Box Culvert Plans. All applicable Federal and State permits shall be included with the plan submission before TS&L approval may be granted.

Please use the following checklist in preparation of your submission.

FORM A-10

BOX CULVERT PLAN SHEET CHECKLIST

Prince George's County
Department of Public Works and Transportation
Office of Engineering

Please Read All of the Following Before You Start the Planning Process!

All construction plans shall be submitted on Mylar plan sheets no greater than 36 inches by 24 inches and shall include the following general information.

A. General

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Title block information in accordance with Department Standards and MSHA Policies and Procedures Manual (PPM) P-79-16(G) or latest guideline.
●	●	●	All views in plan sheets are to be drawn in accordance with MSHA Policies and Procedures Manual (PPM) P-75-7(4) and to scale, except for profile grade line diagrams.
●	●	●	All lettering should be in accordance with Maryland State Highway Administration (MSHA) *Policies and Procedures Manual* (PPM) P-76-9(G) or the latest guideline.

B. Structure Location Map

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	All projects with multiple structures shall have a structures location map in accordance with MSHA (PPM) P-83-24(G).

C. General Plan and Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	General notes in accordance with Department Specifications and MSHA (PPM) P-77-14(4).
●	●	●	Show diagram to scale of proposed vertical curve and list associated curve data.

1. General Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show base line of construction (line with stationing) for roadway over the culvert. Orient with stations increasing from bottom to top of sheet. In all cases, the structure plans must match the highway plans with respect to labeling (base line of construction and profile grade line (PGL)) of this line.
●	●	●	Show centerline of culvert intersecting the baseline. Include station and skew angle (to local tangent for curved baselines).
●	●	●	Show working line for curved alignments.
●	●	●	Show length of culvert (out-to-out dimension of head walls) measured along the centerline of culvert with dimensions tying to the base line/working line.
●	●	●	Show the angle each head wall makes with the centerline of culvert.
●	●	●	Show a North arrow.
●	●	●	Label roadways (e.g., "Bock Road") and streams (e.g., "Henson Creek").
●	●	●	Label wing walls and show the angle each makes with the culvert.
●	●	●	Show existing and proposed out-to-out dimension of headwalls, lane, shoulder, offset to slope, sidewalk and parapet/headwall widths tied to the base line of construction or working line.
●	●	●	Show a destination arrow and label for each roadway (e.g., "To Largo").
●	●	●	Show a lane arrow in every lane over the culvert.
●	●	●	Show limits and type of inlet and outlet riprap protection.
●	●	●	Show direction of flow arrow.
●	●	●	Show all traffic barrier attachments at end posts/headwalls.
●	●	●	Show all points of curvature (PCs) and points of tangency (PTs) on the base line and list the associated curve data.
●	●	●	Show all existing utilities and list their dispositions (to be relocated under this contract, etc.).
●	●	●	Show all proposed utilities.
●	●	●	Show where Typical Longitudinal Section View is cut.
●	●	●	Show where Typical Section Culvert Barrel is cut.
●	●	●	Show existing structures in long dashed lines.
●	●	●	Show existing and proposed right-of-way lines and easements.
●	●	●	Show any pertinent topographic features.

2. Longitudinal Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show a section view of the structure as a projection of the general plan showing invert elevations (top of bottom slab and ultimate invert after siltation) and slope of culvert.
●	●	●	Show location of expansion and contraction joints in culvert barrel.
●	●	●	Show any fencing or railing along the headwalls and wing walls.
●	●	●	Show location of traffic barrier.
●	●	●	Show existing and proposed ground lines including proposed slope/channel protection.
●	●	●	Show a datum line.
●	●	●	Show all applicable water surface elevations (design storm, normal water surface).
●	●	●	Show all underground utilities.
●	●	●	Show minimum/maximum depth of fill and grading details over top of the culvert.
		●	Address limits where precast sections will be acceptable.

D. Hydrologic and Hydraulic Data Sheet

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
	●	●	Include this sheet after the general plan sheet.

E. Geometric and Footing Layout

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-86-28(G) (or latest guideline); copy is attached.
		●	Show location of construction joints required for maintenance of traffic and maintenance of stream flow.
		●	This layout should reference the working line only. A small, exaggerated view may be included on this sheet to show the relationship between the baseline and working line. The entire barrel and wing wall footings shall be dimensioned to form a closed traverse around the structure. All working points shall be listed in a table with coordinate data provided.

F. Sequence of Construction and Maintenance of Stream Flow

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	The terminology (e.g., "Stage II," "Phase 2," etc.) must be consistent for all sheets (Highway and Structure).
●		●	Show maintenance of stream flow details (sandbags, dikes, dewatering basins etc.) and maintenance of traffic details for all stages (phases) of construction.
●		●	Include step-by-step notes describing the work involved in each stage (phases).
●		●	Include a list of any in-stream restrictions.
●		●	Show existing structure typical with out-to-out dimension, lane, shoulder, offset from shoulder to slope, sidewalk and parapet/head wall widths tied to the base line of construction or working line.
●		●	Draw subsequent stage construction typicals directly beneath the existing typical (base line of construction on the existing view lines up with the base line of construction for stage construction typicals).
●		●	Show proposed lane, shoulder, offset from shoulder to slope and sidewalk widths tied to the base line of construction or working line.
●		●	Show location of temporary barrier. For culverts with slabs built to grade, show the anchorage configuration to the concrete slab.
●		●	Show typical for Stage I removal with removal limits tied to the base line of construction or working line. Show separate typical for Stage I construction, with build limits tied to the base line of construction or working line. Repeat for each subsequent stage.
●		●	Show gap between existing and proposed construction. Identify requirements for mechanical reinforcing bar couplers or lap splices.
●		●	Show completed typical with out-to-out dimension, lane, shoulder, offset from shoulder to slope, sidewalk and parapet/head wall widths tied to the base line of construction or working line.

G. Pile Plans (if applicable)

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show location of piles referenced to working points/working lines.
		●	Show working points established on Geometric and Footing layout.
		●	Show North arrow.
		●	Show location of test pile(s) if applicable.
		●	Show arrow on battered piles and indicate batter ratio.
		●	Show reinforcing bar mat over piles (three #6 reinforcing bars).
		●	Show construction joints for staged construction.
		●	Show pile driving data chart in accordance with MSHA PPM P-93-35(4) (or latest guideline).
		●	Show pile driving notes from MSHA PPM P-82-20(G) (or latest guideline).

H. Typical Section Culvert Barrel

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Refer to MSHA Standard BC(6.07)-76-38 and BC(6.08)-76-39 (or latest guidelines) for culvert design criteria.
●	●	●	Show sizes of all cell openings and slab/cell wall thickness/widths.
●	●	●	Show construction joints for staged construction.
●	●	●	Show normal water surface elevation and label as limits of payment for Class 3 and Class 4 Excavation, using MSHA classification. Show ultimate invert after siltation.
		●	Label size and spacing of all reinforcing bars. Indicate which reinforcing bars are epoxy coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bars. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles in bottom slab. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show two-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.
●	●	●	Show approximate existing ground line.
		●	Show applicable notes for precast alternative.
	●	●	Show any stone required to replace unsuitable material beneath culvert barrel.

I. Headwall and Wing Walls

1. Plan View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show a plan view of the headwall/wing wall configuration for both the inlet and outlet end of the culvert.
●	●	●	Show all working points from Geometric and Footing Layout.
●	●	●	Show a North arrow.
●	●	●	Show relation of walls to working line.
●	●	●	Show angles between wing wall stems and headwall.
		●	Show location of expansion/contraction joints (refer to MSHA Standard BC (6.04) 75-10 and BC (6.06) 76-37) (or latest guidelines) for design criteria.
		●	If proposed work is an extension to an existing culvert, then show all pertinent connection details to the existing culvert including removal of portions of the culvert.
		●	Show layout of footing reinforcing steel in wing wall and how it ties into toe wall of the box culvert barrel. Refer to MSHA Standard BC (6.09) 89-200. Label size and spacing of all reinforcing bars.

2. Elevation View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show an elevation view of the headwall/wing wall configuration for both the inlet and outlet end of the culvert. This view should show how details from the two wings tie into the headwall (e.g., footings, fencing, etc.).
●		●	Show wing walls and headwall having any aesthetic treatment.
		●	Show elevation of bottom and top of footing (bottom of wing wall footing should match bottom of toe wall elevation at inlet/outlet end).
		●	Show elevation of ends and break points along top of wing wall stem and along top of culvert headwall.
		●	Show where typical section is cut.
		●	Show drainage system behind wing wall stem.
		●	If proposed work is an extension to an existing culvert, then show all pertinent connection details to the existing culvert including removal of portions of the culvert.
		●	Show any fencing or railing on top of the headwall/wing wall.
		●	Show location of expansion and contraction joints.
		●	Show existing and proposed ground lines.
		●	Show limits of slope and channel protection.

3. Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show Typical Wing Wall Section, indicating size of footing and stem.
		●	Refer to MSHA PPM P-77-13(3) and BR-SB (0.01)-80-101 (or latest guidelines).
		●	Label size and spacing of all reinforcing bars. Refer to MSHA PPM P-89-32 (4) for size of longitudinal reinforcing bars in wing wall stem and vertical reinforcing bars in the front face of wing wall. Indicate which reinforcing bars are to be epoxy coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bars. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles in footing. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show 2-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.
		●	Show any fencing or railing on top of the headwall/wing wall.
		●	Provide a stepped key at the stem to footing connection. Key shall be 6 inches high by one-half the width of the stem.
		●	Show any subfoundation concrete required to replace unsuitable material beneath culvert wing walls.

4. Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show orientation of main reinforcing bars in box culvert slab (is it parallel to headwall or normal to culvert side walls?). If normal to culvert sidewalls and the headwall is acting as an edge beam to carry the load from partial reinforcing bars, then show details of headwall reinforcing.

J. Borings and Drive Tests

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
	●	●	On all box culvert structures for which borings and drive tests are taken, a separate sheet shall be prepared as part of the contract plans and titled "Borings and Drive Tests." Refer to MSHA PPM P-75-3(4).

K. Standards

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to the Department's *Specifications and Standards for Roadways and Bridges* and MSHA's *Book of Standards for Highways and Incidental Structures*. Refer to MSHA PPM P-75-5(4).

STEEL GIRDER BRIDGE
PLAN SHEET CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) is responsible for reviewing and granting approval for type, size, and location (TS&L), as well as final foundation and overall structure approval for all steel girder bridge plans. All applicable Federal and State permits shall be included with the plan submission before TS&L approval may be granted.

Please use the following checklist in preparation of your submission.

FORM A-11

STEEL GIRDER BRIDGE PLAN SHEET CHECKLIST

Prince George's County
Department of Public Works and Transportation
Office of Engineering

Please Read All of the Following Before You Start the Planning Process!

All construction plans shall be submitted on Mylar plan sheets no greater than 36 inches by 24 inches and shall include the following general information.

A. General

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Title block information in accordance with the Maryland State Highway Administration (MSHA) *Policies and Procedures Manual* (PPM) P-79-16(G) or the latest guideline.
●	●	●	Designation of structural elements in accordance with MSHA PPM P-93-36 (4).
●	●	●	All views in accordance with MSHA PPM P-75-7(4) or the latest guideline.
●	●	●	All lettering in accordance with MSHA PPM P-76-9(G) or the latest guideline.

B. Structure Location Map

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	All projects with multiple structures shall have a structures location map in accordance with MSHA PPM P-83-24(G) or the latest guideline.

C. General Plan and Elevation

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	General notes in accordance with MSHA PPM P-77-14(4) or the latest guideline.
●	●	●	Show a diagram drawn to scale of the proposed vertical curve and list associated curve data.

1. General Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show base line of construction (line with stationing) for roadway over and under the bridge. Orient with stations increasing left to right unless the associated highway plans are different. In all cases the structure plans must match the highway plans with respect to labeling the base line of construction and profile grade line (PGL).
●	●	●	Show working line for curved alignments in accordance with MSHA PPM P-85-25(G) or the latest guideline.
●	●	●	Show a North arrow.
●	●	●	Show station equality and an angle at all intersecting base lines and working lines.
●	●	●	Show all centerlines of bearing of for each substructure unit.
●	●	●	Show centerline of each substructure unit with the station and angle at the intersection with the base line of construction or show centerline of each substructure unit with the working point and angle at its intersection with the working line.
●	●	●	Show existing and proposed out-to-out dimensions, lane, shoulder, sidewalk and parapet widths tied to the base line of construction or working line.
●	●	●	Show span numbers and span length dimensions.
●	●	●	Show out-to-out dimension of back walls.
●	●	●	Show a destination arrow and label for each roadway (e.g., "To Baltimore").
●	●	●	Show a lane arrow in every lane over and, if applicable, under the bridge.
●	●	●	Show the point of minimum vertical underclearance for structures over highways, railroads, or navigable waters. For bridges over divided highways, show this point over both roadways.
●	●	●	Show limits and types of slope protection. Show limits of soil stabilization matting.
●	●	●	Show width of lane, shoulder, sidewalk and grading limits under the bridge.
●	●	●	Show waterway name and direction of flow arrow for hydraulic structures.
●	●	●	Show horizontal navigational/railroad clearances.
●	●	●	Show all traffic barrier attachments at end posts.
●	●	●	Show all points of curvature (PCs) and points of tangency (PTs) on the base line, and list associated curve data.
●	●	●	Show all existing utilities, and list their disposition (i.e., to be relocated under this Contract, etc.).
●	●	●	Show all proposed utilities.
●	●	●	Show existing structures in long dashed lines.
●	●	●	Show existing and proposed right-of-way lines.
●	●	●	Show any pertinent topographic features.

2. Elevation

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show the elevation view of the structure as a projection of the General Plan.
●	●	●	Show minimum vertical underclearance for structures over highways, railroads, or navigable water. For bridges over divided highways, show this dimension for both roadways.
●	●	●	Show any fencing or railing along the parapet.
●	●	●	Show existing and proposed ground lines.
●	●	●	Show a datum line.
●	●	●	Show all bearing designations ("Fixed" or "Expansion").
●	●	●	Show all applicable water surface elevations (design storm, normal water surface).
●	●	●	Show all underground utilities.
●	●	●	Show grading details (2:1 slope, 4:1 slope) under the bridge.

D. Hydrologic and Hydraulic Data Sheet

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
	●	●	Include this sheet after the General Plan Sheet for all structures crossing waterways.

E. Geometric and Footing Layout

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-86-28(G) or the latest guideline.
		●	Show location of construction joints for staged construction.
		●	This layout should reference the working line only. A small exaggerated view may be included on this sheet to show the relationship between the baseline and working line. All piers and abutments shall be dimensioned to form a closed traverse around the footing. All working points shall be listed in a table with coordinate data provided.

F. Sequence of Construction

1. General

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
●	●	●	Sequence of construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

2. Superstructure

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show existing bridge typical with out-to-out dimensions, lane, shoulder, sidewalk, and parapet widths tied to the base line of construction or working line.
●		●	Draw subsequent stage construction typicals directly beneath the existing typical (base line of construction on the existing view lines up with the base line of construction for stage construction typicals) that indicate the location of traffic for each stage.
●		●	Show proposed lane, shoulder, and sidewalk widths tied to the base line of construction or working line.
●		●	Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
●		●	Show typical for stage I removal with removal limits tied to the base line of construction or working line. Show separate typical for Stage I construction with build limits tied to the base line of construction or working line. Repeat for each subsequent stage.
●		●	Show gap between existing and proposed construction. Identify requirements for mechanical reinforcing bar couplers or lap splices.
●		●	Show completed typical with out-to-out dimensions, lane, shoulder, sidewalk, and parapet widths tied to the base line of construction or working line.

3. Substructure

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show existing substructure units with column and stringer spacings.
●	●	●	Draw subsequent stage construction typicals directly beneath the existing typical (base line of construction on the existing view lines up with the base line of construction for stage construction typicals).
●	●	●	Show proposed column and stringer spacings.
●	●	●	Show location of temporary pier cap supports.
●	●	●	Show typical for Stage I removal with removal limits tied to the base line of construction or working line. Show separate typical for Stage I construction with build limits tied to the base line of construction or working line. Repeat for each subsequent stage.
●	●	●	Show the location of any sheet piling necessary to maintain the existing or proposed construction.
●	●	●	Show gap between existing and proposed construction. Identify requirements for mechanical reinforcing bar couplers or lap splices.
●	●	●	Show completed typical with column and stringer spacings.

G. Pile Plans

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show base line of construction with station and angle at intersection with centerline of bearing or show working line with working point and angle at intersection with centerline of bearing.
		●	Show working points established on Geometric and Footing Layout.
		●	Show North arrow.
		●	Show location of piles referenced to working points/working lines which can be tied to the intersection point established in item 1 above.
		●	Show location of test pile.
		●	Show arrow on battered piles and indicate batter.
		●	Show reinforcing bar mat over piles (three #6 reinforcing bars) and reinforcing bar lap at construction joints.
		●	Show construction joints for staged construction.
		●	Show footing steps when necessary.
		●	Show pile driving data chart in accordance with MSHA PPM P-93-35(4) or the latest guideline.
		●	Show pile driving notes from MSHA PPM P-82-20(G) or the latest guideline.

H. Abutments

1. Plan View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show base line of construction with station and angle at intersection with centerline of bearing, or show working line with working point and angle at intersection with centerline of bearing.
		●	Show all working points from Geometric and Footing Layout.
●		●	Show North arrow.
		●	Show drainage system behind abutment stem and wing walls.
●		●	Show layout of beam seats along centerline of bearing.
		●	Show footing steps when necessary.
		●	Show layout of wing walls/end posts off base line of construction or working line.
		●	Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use.
●		●	Show location of construction joints for staged construction.
		●	Show location of expansion and contraction joints.

2. Elevation View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show existing and proposed ground lines.
		●	Show profile/grade elevation (P/GE) and elevations along top of back wall at gutter lines and at crown break and any other break points.
		●	Show elevation of beam seats and bridge seat.
		●	Show elevation of bottom and top of footing.
●		●	Show where typical section is cut.
		●	Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use. See applicable MSHA standards.
		●	Show drainage system behind abutment stem.
●		●	Show location of construction joints for staged construction.
		●	Show location of expansion and contraction joints.
		●	Show footing steps when necessary.
		●	Show conduit in end posts.
		●	Show drainage trough layout.

3. Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show typical section through abutment with dimensions locating the centerline of bearing, etc.
		●	Show limits of Mix 6 and Mix 3 concrete.
		●	Show limits of payment for footing concrete and substructure concrete.
		●	Show abutment drainage system (perforated pipe, concrete base, pipe through stem and aggregate backfill). Refer to MSHA PPM P-77-13(3) and BR-SB (0.01)-80-101 or the latest guidelines.
		●	Label size and spacing of all reinforcing bars. Refer to MSHA PPM P-89-32 (4) or the latest guideline, for size of longitudinal reinforcing bars in abutment stem and vertical reinforcing bars in the front face of abutments. Indicate which reinforcing bars are epoxy-coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bars. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles (types and sizes) in footing. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show location of bridge seat elevation at face of back wall.
		●	Show bridge seat area sloped to drain at 0.25 inches per foot from back wall to abutment face.
		●	Show two-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.
		●	Show configuration on reinforcing bars in top portion of back wall. Show joint angle configuration on top of back wall. Include this note: "Top portion of back wall shall not be placed until entire bridge deck slab is completely in place."
		●	Show this note: "At Contractor's option, the dowel and stem reinforcing bar may be placed as a continuous reinforcing bar. No additional compensation will be allowed for this option."
		●	Show drainage trough.
		●	Show centerline of bearing and dimension back wall, stem, and footing widths and offsets.

I. Wing Walls

1. Elevation View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●			Show an elevation view of a typical wing wall with aesthetic treatment.
		●	Show an elevation view of all wing walls including lengths.
		●	Show elevations along top of end post at ends and all breakpoints.
		●	Show elevation on top of cheek wall at face of back wall and at end of cheek wall. Include the following note: "One inch clear from underside of superstructure to top of cheek wall."
		●	Show elevation of bottom and top of footing.
●		●	Show where typical section is cut.
		●	Show drainage system behind wing wall stem.
		●	Show any fencing or railing on top of the end post.
		●	Show location of expansion and construction joints.
		●	Show existing and proposed ground lines.

2. Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show typical section with stem, parapets, and surface treatment.
		●	Show limits of Mix 6 and Mix 3 concrete.
		●	Show limits of payment for footing concrete, substructure concrete, and parapet concrete.
		●	Show abutment drainage system (perforated pipe, concrete base, pipe through stem, and aggregate backfill). Refer to MSHA PPM P-77-13(3) and BR-SB (0.01)-80-101 or the latest guidelines.
		●	Label size and spacing of all reinforcing bars. Refer to MSHA PPM P-89-32(4) or the latest guideline for size of longitudinal reinforcing bars in wing wall stem and vertical reinforcing bars in the front face of wing wall. Indicate which reinforcing bars are to be epoxy coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bars. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles (types and sizes) in footing. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show two-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.
●		●	Show any fencing or railing on top of the wing wall/end post.
		●	Show conduit in end post.
		●	Show this note: "At Contractor's option the dowel and stem reinforcing bars may be placed as continuous reinforcing bars. No additional compensation will be allowed for this option."
		●	Provide a stepped key at the stem to footing connection. Key shall be 6 inches high by one-half the width of the stem.

J. Abutment Details

1. Footing Reinforcing Bar Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show base line of construction with station and angle at intersection with center-line of bearing or show working line with working point and angle at intersection with centerline of bearing.
		●	Show all working points from Geometric and Footing Layout.
		●	Show North arrow.
		●	Show layout of top mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall reinforcing bars into abutment section and extension of abutment reinforcing bars into wing wall section. Label size and spacing of all reinforcing bars.
		●	Show layout of bottom mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall reinforcing bars into abutment section and extension of abutment reinforcing bars into wing wall section. Show layout of this reinforcing bar to miss any piles in footing. Label size and spacing of all reinforcing bar.
		●	Show location of and lapping of reinforcing bars at construction joints for staged construction.

2. Corner Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show sections of abutment at intersection of abutment proper with wing walls. One section should be shown for the area below the bridge seat and another for the area above the bridge seat.
		●	Label size and spacing of all reinforcing bars including embedment lengths and splice laps. Refer to MSHA PPM P-89-32 (4) or the latest guideline for size of longitudinal reinforcing bars in wing wall stem and vertical reinforcing bars in the front face of wing wall. Indicate which reinforcing bars are to be epoxy coated.
		●	Show the lapping of longitudinal (horizontal) reinforcing bars from the wing wall to the abutment proper with loose corner reinforcing bars. Show this note: "At Contractor's option, the loose corner reinforcing bars may be eliminated provided the longitudinal reinforcing is extended to lap 2 feet minimum on one face. No additional compensation will be allowed for this option."
		●	Show two-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.

K. Piers

1. Plan View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show base line of construction with station and angle at intersection with centerline of bearing, or show working line with working point and angle at intersection with centerline of bearing.
●	●	●	Show all working points from Geometric and Footing Layout.
●	●	●	Show North arrow.
		●	Show layout of beam seats along centerline of bearing.
●	●	●	Show location of construction joints for staged construction.

2. Elevation View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●			Show elevation view of the type of pier proposed with any aesthetic treatments.
●		●	Show layout of columns tied to the base line of construction or working line.
		●	Show elevation of beam seats and bridge seat.
●	●	●	Show elevation of bottom and top of footing.
●		●	Show where typical section is cut.
●		●	Show existing and proposed ground lines.
		●	Show construction joints at the top and bottom of all columns with key size.
		●	Show layout of stirrup and tie reinforcement.
		●	Show layout of any reinforcing that can not be clearly shown in sections (e.g., layout of reinforcing bar in the ends of a pier cap).

3. Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show typical section through the pier with all pertinent dimensions.
		●	Show limits of payment for footing concrete and substructure concrete.
		●	Label size and spacing of all reinforcing bars. Indicate which reinforcing bars are epoxy coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bars. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles (types and sizes) in footing. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show this note: "At Contractor's option, the dowel and stem reinforcing bar may be placed as a continuous reinforcing bar. No additional compensation will be allowed for this option."
		●	Show sections through caps and columns with all dimensions and reinforcing bar size and spacing.

L. Superstructure Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Typical section shall be drawn looking at stations ahead.
●	●	●	Show base line of construction or working line and profile grade line (PGL).
●	●	●	Show proposed out-to-out dimension, lane, shoulder, clear roadway, sidewalk, and parapet widths tied to the base line of construction or working line.
●	●	●	Show and label all stringers and cross frames/diaphragms.
●	●	●	For bridges with haunched girders, show the minimum and maximum depth of web.
●	●	●	Show stringer spacing and overhang widths. For bridges on curved alignments, note how these dimensions are measured (normal to the base line, etc.).
●	●	●	Show the profile/grade elevation (P/GE), crown point, and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to MSHA PPM P-74-2(4) or the latest guideline. Show superelevation transition if applicable.
●	●	●	Show the slab and "D" dimension in accordance with the deck slab standards.
●	●	●	Show construction joints for staged construction.
●	●	●	Show all utilities located on the bridge.
		●	Show number of shear developers per row on top of the stringers.
●	●	●	Show any fencing or railing on top of the parapet.
●	●	●	Show note indicating whether slip forming will be allowed for parapets.
●	●	●	Show any conduit required in the parapets. Refer to MSHA PPM P-90-33(4).
		●	Refer to the applicable deck slab standard.
●	●	●	Refer to the applicable parapet/sidewalk standard.
●	●	●	Refer to the applicable fencing/railing standard.

M. Deck Pouring Sequence

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-76-11 (4).

N. Framing Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show base line of construction with station and angle at intersection with center-line of bearing, or show working line with working point and angle at intersection with centerline of bearing.
		●	Show North arrow.
		●	Show span numbers and span length dimensions.
		●	Show, label, and dimension all stringers and all diaphragm/cross frame locations (abutment, pier, intermediate, etc.).
		●	Show bolted field splice locations in accordance with MSHA PPM D-83-26 (4) or the latest guideline.
		●	Show all bearing designations (MF IV).
		●	Show all centerlines of bearing of substructure units.
		●	Show all utilities and utility cross frames.

O. Girder Elevation

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show span numbers and span length dimensions.
		●	Show spacing of shear stud developers and number per row. Show this note: "The estimated number of steel stud shear connectors is _____."
		●	Show stress areas along top flange (tension, compression, and stress reversal). Show this note: "There shall be no field welding to the top flange, except for shear studs, in the tension and stress reversal areas."
		●	Show size of all flange and web plates (girders), rolled sections, bearing stiffeners, and seat angles/plates. Include this note: "Extend fascia girder exterior bearing stiffener to top flange."
		●	Show location of bolted field splices. Show this note: "Space studs to miss splice bolts."
		●	Show size of web to flange weld (girders).

P. Camber and Deflection Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-74-1(4) or the latest guideline.

Q. Cross Frame Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show details of cross frames at abutments, piers, and intermediate locations.
		●	Show special cross frames required for utilities.
		●	Show weld size connecting cross frame members to gusset plates.
		●	Show bolt pattern connecting gusset plates to bearing stiffeners and connection plates. Indicate notes for bolt type, bolt size, hole size, etc.
		●	Show size of cross frame members.
		●	Show connection details for attachment to girder web at abutments, piers, and intermediate locations.
		●	Show location of all bent gusset plates.

R. Splice Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA BR-SS (8.09)-81-124 or the latest guideline.
		●	Show a plan and elevation view of the splice with member sizes.
		●	Show all splice and fill plates with size.
		●	Show bolt spacing in flange and web splice.
		●	Show these notes: Field splices shall be completely shop-assembled and match marked after all shop welding has been completed. Contact surfaces shall be free of all oil and dirt. Holes to be 0.9375 (15/16) inches in diameter for 0.875 (7/8) inch diameter high-strength bolts (A 325). On fascia girders, the bolts shall be placed so that the bolt head is visible on the outside face of web. All bolts on flange splices shall have bolt heads on the bottom. At Contractor's option, lock-pin and collar fasteners may be used in lieu of bolts. No additional compensation will be allowed for either option.

S. Bearing Stiffener Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA BR-SS (8.07)-78-73 or the latest guideline.

T. Finished Roadway Elevations

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-75-8(4) or the latest guideline.

U. Borings and Drive Tests

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
	●	●	Refer to MSHA PPM P-75-3(4) or the latest guideline.

V. Standards

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-75-5(4) or the latest guideline.

CONCRETE GIRDER BRIDGE
PLAN SHEET CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) is responsible for reviewing and granting approval for type, size, and location (TS&L), as well as final foundation and overall structure approval for all concrete girder bridge plans. All applicable Federal and State permits shall be included with the plan submission before TS&L approval may be granted.

Please use the following checklist in preparation of your submission.

FORM A-12

CONCRETE GIRDER BRIDGE PLAN SHEET CHECKLIST

Prince George's County
Department of Public Works and Transportation
Office of Engineering

Please Read All of the Following Before You Start the Planning Process!

All construction plans shall be submitted on Mylar plan sheets no greater than 36 inches by 24 inches and shall include the following general information.

A. General

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Title block information in accordance with Department Standards and MSHA Policies and Procedures Manual (PPM) P-79-16(G) or latest guideline.
●	●	●	Designation of structural elements in accordance with the Maryland State Highway Administration (MSHA) *Policies and Procedures Manual* (PPM) P-93-36 (4) or the latest guideline.
●	●	●	All views in accordance with MSHA PPM P-75-7(4) or the latest guideline.
●	●	●	All lettering in accordance with MSHA PPM P-76-9(G) or the latest guideline.

B. Structure Location Map

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	All projects with multiple structures shall have a structures location map in accordance with MSHA PPM P-83-24(G) or the latest guideline.

C. General Plan and Elevation

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	General notes in accordance with MSHA PPM P-77-14(4) or the latest guideline and the following: Prestressed Concrete Design: *Allowable stress design*—The precast concrete beams are designed as noncomposite simple spans for all dead loads except the parapet and future wearing surface; the precast beams are designed as continuous for live loads as well as the parapet and future wearing surface dead loads; *Reinforcing steel design*—fs = 24,000 psi (nonpretensioning steel). Prestressed Concrete: The minimum compressive strength for prestressed concrete at the age of 28 days shall be f'c = 7,000 psi; the minimum compressive strength at the transfer of prestress shall be f'ci = 5,800 psi. Pretensioning Steel: Pretensioning steel shall consist of 0.5-inch-diameter 7-wire low relaxation strands conforming to the requirements of American Society of Materials and Testing (ASMT) M 203 Grade 270. Each 0.5-inch-diameter strand shall be pretensioned to 30,980 pounds (0.75 f's).
●	●	●	Show a diagram of the proposed vertical curve and list associated curve data.

1. General Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show base line of construction (line with stationing) for roadway over and under bridge. Orient so stations increase left to right unless the associated highway plans are different. In all cases, structure plans must match highway plans with respect to labeling (base line of construction and profile grade line (PGL)) of this line.
●	●	●	Show working line for curved alignments in accordance with MSHA PPM P-85-25(G) or the latest guideline.
●	●	●	Show a North arrow.
●	●	●	Show station equality and an angle at all intersecting base lines and working lines.
●	●	●	Show all centerlines of bearing for each substructure unit.
●	●	●	Show centerline of each substructure unit with the station and angle at its intersection with the base line of construction or show centerline of each substructure unit with the working point and angle at its intersection with the working line.
●	●	●	Show existing and proposed out-to-out dimension, lane, shoulder, sidewalk, and parapet widths tied to the base line of construction or working line.
●	●	●	Show span numbers and span length dimensions.
●	●	●	Show out-to-out dimension of back walls.
●	●	●	Show a destination arrow and label for each roadway (e.g., "To Baltimore").
●	●	●	Show a lane arrow in every lane over and, if applicable, under the bridge.
●	●	●	Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
		●	Show limits and type of slope protection. Show limits of soil stabilization matting.
●	●	●	Show width of lane, shoulder, sidewalk, and grading limits under the bridge.
●	●	●	Show waterway name and direction of flow arrow for hydraulic structures.
●	●	●	Show horizontal navigational/railroad clearances.
		●	Show all traffic barrier attachments at end posts.
●	●	●	Show all points of curvature (PCs) and points of tangency (PTs) on the base line and list the associated curve data.
●	●	●	Show all existing utilities and list their dispositions (i.e., to be relocated under this contract, etc.).
●	●	●	Show all proposed utilities.
●	●	●	Show existing structures in long dashed lines.
●	●	●	Show existing and proposed right-of-way lines.
●	●	●	Show any pertinent topographic features.

2. Elevation

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show the elevation view of the structure as a projection of the general plan.
●	●	●	Show minimum vertical underclearance for highway over highway, railroad, or navigable water bridges. For bridges over dual highways, show this dimension for both roadways.
●	●	●	Show any fencing or railing along the parapet.
●	●	●	Show existing and proposed ground lines.
●	●	●	Show a datum line.
●	●	●	Show all bearing designations ("Fixed" or "Expansion").
●	●	●	Show all applicable water surface elevations (design storm, normal water surface).
●	●	●	Show all underground utilities.
●	●	●	Show grading details (2:1 slope, 4:1 slope) under the bridge.

D. Hydrologic and Hydraulic Data Sheet

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Include this sheet after the general plan sheet for all structures crossing waterways.

E. Geometric and Footing Layout

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-86-28 (G) or the latest guideline.
		●	Show location of construction joints for staged construction.
		●	This layout should reference the working line only. A small, exaggerated view may be included on this sheet to show the relationship between the base line and working line. All piers and abutments shall be dimensioned to form a closed traverse around the footing. All working points shall be listed in a table for which coordinate data are provided.

F. Sequence of Construction

1. General

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	The terminology (e.g., "Stage II," "Phase 2," etc.) must be consistent for all sheets (Highway and Structure).
●	●	●	Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

2. Superstructure

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show existing bridge typical with out-to-out dimension, lane, shoulder, sidewalk and parapet widths tied to the base line of construction or working line.
●		●	Draw subsequent stage construction typicals directly beneath the existing typical base line of construction on the existing view lines up with the base line of construction for stage construction typicals) which indicate the location of traffic for each stage.
●		●	Show proposed lane, shoulder, and sidewalk widths tied to the base line of construction or working line.
●		●	Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
●		●	Show typical for Stage I removal with removal limits tied to the base line of construction or working line. Show separate typical for Stage I construction with build limits tied to the base line of construction or working line. Repeat for each subsequent stage.
●		●	Show gap between existing and proposed construction. Identify requirements for mechanical reinforcing bar couplers or lap splices.
●		●	Show completed typical with out-to-out dimension, lane, shoulder, sidewalk and parapet widths tied to the base line of construction or working line.

3. Substructure

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show existing substructure units with column and stringer spacings.
●	●	●	Draw subsequent stage construction typicals directly beneath the existing typical (base line of construction on the existing view lines up with the base line of construction for stage construction typicals).
●	●	●	Show proposed column and stringer spacings.
●	●	●	Show location of temporary pier cap supports.
●	●	●	Show typical for Stage I removal with removal limits tied to the base line of construction or working line. Show separate typical for Stage I construction with build limits tied to the base line of construction or working line. Repeat for each subsequent stage.
●	●	●	Show the location of any sheet piling necessary to maintain the existing or proposed construction.
●	●	●	Show gap between existing and proposed construction. Identify requirements for mechanical reinforcing bar couplers or lap splices.
●	●	●	Show completed typical with column and stringer spacings.

G. Pile Plans

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show base line of construction with station and angle at intersection with centerline of bearing or show working line with working point and angle at intersection with centerline of bearing.
		●	Show working points established on Geometric and Footing Layout.
		●	Show North arrow.
		●	Show location of piles referenced to working points/working lines which can be tied to the intersection point established in item 1 above.
		●	Show location of test pile.
		●	Show arrow on battered piles and indicate batter.
		●	Show reinforcing bar mat over piles (three #6 reinforcing bars) and reinforcing bar lap at construction joints.
		●	Show construction joints for staged construction.
		●	Show footing steps when necessary.
		●	Show pile driving data chart in accordance with MSHA PPM P-93-35 (4) or the latest guideline.
		●	Show pile driving notes from MSHA PPM P-82-20 (G) or the latest guideline.

H. Abutments

1. Plan View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show base line of construction with station and angle at intersection with centerline of bearing or show working line with working point and angle at intersection with centerline of bearing.
		●	Show all working points from Geometric and Footing Layout.
●		●	Show North arrow.

		●	Show drainage system behind abutment stem and wing walls.
●		●	Show layout of beam seats along centerline of bearing.
		●	Show footing steps when necessary.
		●	Show layout of wing walls/end posts off base line of construction or working line. Designate wing walls in accordance with MSHA PPM P-93-36 (4) or the latest guideline.
●		●	Show location of bridge seat elevation at face of back wall.
●		●	Show bridge seat area sloped to drain at 0.25 inches per foot from back wall to abutment face.
		●	Show two-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.
●		●	Show configuration on reinforcing bar in top portion of back wall. Show joint angle configuration on top of back wall. Include this note: "Top portion of back wall shall not be placed until entire bridge deck slab is complete in place."
		●	Show this note: "At Contractor's option the dowel and stem reinforcing bar may be placed as a continuous reinforcing bar. No additional compensation will be allowed for this option."
●		●	Show drainage trough.
●		●	Show centerline of bearing and dimension back wall, stem, footing widths, and offsets.
		●	Show location of existing utility opening(s) in back wall. Include proposed utilities and sleeve for future use.
●		●	Show location of construction joints for staged construction.
		●	Show location of expansion and contraction joints.

I. Wing Walls

1. Elevation View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show an elevation view of a typical wing wall with aesthetic treatment.
		●	Show an elevation view of all wing walls including lengths.
		●	Show profile/gutter elevations (P/G E) along top of end post at ends, back wall at gutter lines, crown break, and all breakpoints.
		●	Show elevation on top of cheek wall at face of back wall and at end of cheek wall. Include the following note: "One inch clear from underside of superstructure to top of cheek wall."
		●	Show elevation of bottom and top of footing.
●		●	Show where typical section is cut.
		●	Show drainage system behind wing wall stem.
		●	Show any fencing or railing on top of the end post.
		●	Show location of expansion and construction joints.
		●	Show existing and proposed ground lines.
●		●	Show location of construction joints for staggered construction.
		●	Show footing steps when necessary.
		●	Show conduit in end posts.
		●	Show drainage trough layout.

2. Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●		●	Show typical section with stem, parapets, and surface treatment. Locate center-line of bearing.
		●	Show limits of Mix 6 and Mix 3 concrete.

J. Abutment Details

1. Footing Reinforcing Bar Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show base line of construction with station and angle at intersection with centerline of bearing or show working line with working point and angle at intersection with centerline of bearing.
		●	Show all working points from Geometric and Footing Layout.
		●	Show North arrow.
		●	Show layout of top mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall reinforcing bars into abutment section and extension of abutment reinforcing bars into wing wall section. Label size and spacing of all reinforcing bars.
		●	Show layout of bottom mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall reinforcing bars into abutment section and extension of abutment reinforcing bars into wing wall section. Show layout of these reinforcing bars to miss any piles in footing. Label size and spacing of all reinforcing bars.
		●	Show location of and lapping of reinforcing bars at construction joints for staged construction.
		●	Show limits of payment for footing concrete, substructure concrete, and parapet concrete.
		●	Show abutment drainage system (perforated pipe, concrete base, pipe through stem, and aggregate backfill). Refer to MSHA PPM P-77-13 (3) and BR-SB (0.01)-80-101 or the latest guidelines.
		●	Label size and spacing of all reinforcing bar. Refer to MSHA PPM P-89-32 (4) or the latest guideline for size of longitudinal reinforcing bar in wing wall stem and vertical reinforcing bars in the front face of wing wall. Indicate which reinforcing bars are to be epoxy coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bar. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles (type and size) in footing. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show two-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.
●		●	Show any fencing or railing on top of the wing wall/end post.
		●	Show conduit in end post.
		●	Show this note: "At Contractor's option the dowel and stem reinforcing bar may be placed as a continuous reinforcing bar. No additional compensation will be allowed for this option."
		●	Provide a stepped key at the stem to footing connection. Key shall be 6 inches high by one-half the width of the stem. Show centerline bearing, back wall dimension, stem, and width of footings.

		●	Show location of beam seat elevation at face of bridge back wall.
		●	Show beam seat sloped to drain 2 percent from bridge back wall to face of bridge abutment.
		●	Show reinforcing bar configuration in upper portion of back wall. Include configuration of joint angle and the following note: Top portion of back wall shall not be placed until entire bridge deck slab is complete and in place.
		●	Show drainage trough layout.

2. Corner Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show sections of abutment at intersection of abutment proper with wing walls. One section should be shown for the area below the bridge seat and another for the area above the bridge seat.
		●	Label size and spacing of all reinforcing bars including embedment lengths and splice laps. Refer to MSHA PPM P-89-32 (4) (or latest guideline) for size of longitudinal reinforcing bars in wing wall stem and vertical reinforcing bars in the front face of wing wall. Indicate which reinforcing bars are to be epoxy coated.
		●	Show the lapping of longitudinal (horizontal) reinforcing bars from the wing wall to the abutment proper with loose corner reinforcing bars. Show this note: "At Contractor's option the loose corner reinforcing bars may be eliminated provided the longitudinal reinforcing is extended to lap 2 feet minimum on one face. No additional compensation will be allowed for this option."
		●	Show 2-ply waterproofing membrane on earth side of all construction joints where the other side is exposed to air.

K. Piers

1. Plan View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show base line of construction with station and angle at intersection with centerline of bearing or show working line with working point and angle at intersection with centerline of bearing.
●	●	●	Show all working points from Geometric and Footing Layout.
●	●	●	Show North arrow.
		●	Show layout of beam seats along centerline of bearing.
●	●	●	Show location of construction joints for staged construction.

2. Elevation View

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●			Show elevation view of the type of pier proposed with any aesthetic treatments.
●		●	Show layout of columns tied to the base line of construction or working line.
		●	Show elevation of beam seats and bridge seat.
●	●	●	Show elevation of bottom and top of footing.
●		●	Show where typical section is cut.
●		●	Show existing and proposed ground lines.
		●	Show construction joints at the top and bottom of all columns with key size.
		●	Show layout of stirrup and tie reinforcement.
		●	Show layout of any reinforcing that cannot be clearly shown in sections (e.g., layout of reinforcing bar in the ends of a pier cap).

3. Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Show typical section through the pier with all pertinent dimensions.
		●	Show limits of payment for footing concrete and substructure concrete.
		●	Label size and spacing of all reinforcing bar. Indicate which reinforcing bars are epoxy coated.
		●	Show lap lengths of all reinforcing bar splices. Show embedment and hook lengths for all reinforcing bars. Show clear cover to reinforcing bars at face of concrete.
		●	Show any piles (type and size) in footing. Show reinforcing bar mat 3 inches above piles (three #6 reinforcing bars).
		●	Show this note: "At Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option."
		●	Show sections through caps and columns with all dimensions and reinforcing bar size and spacing.

L. Superstructure Typical Section

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
●	●	●	Typical section shall be drawn looking stations ahead.
●	●	●	Show base line of construction or working line and profile grade line (PGL).
●	●	●	Show proposed out-to-out dimension, lane, shoulder, clear roadway, sidewalk, and parapet widths tied to the base line of construction or working line.
●	●	●	Show and label all girders and diaphragms.
●	●	●	Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the base line, etc.).
●	●	●	Show the profile/gutter elevation (P/GE), crown point, and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to MSHA PPM P-74-2 (4) or the latest guideline. Show superelevation transition if applicable.
●	●	●	Show the slab and "D" dimension.
●	●	●	Show construction joints for staged construction.
●	●	●	Show all utilities located on the bridge.
●	●	●	Show any fencing or railing on top of the parapet.
●	●	●	Show note concerning whether slip forming will be allowed for parapets.
●	●	●	Show any conduit required in the parapets. Refer to MSHA PPM P-90-33 (4) or the latest guideline.
		●	Refer to the applicable deck slab standard.
●	●	●	Refer to the applicable parapet/sidewalk standard.
●	●	●	Refer to the applicable fencing/railing standard.
●		●	Call out the American Association of State Highway and Transportation Officials (AASHTO) girder type and the depth.

M. Deck Pouring Sequence

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-76-11 (4) or the latest guideline.

N. Framing Plan

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show base line of construction with station and angle at intersection with centerline of bearing or show working line with working point and angle at intersection with centerline of bearing.
		●	Show North arrow.
		●	Show span numbers and span length dimensions.
		●	Show, label, and specify the AASHTO girder type and dimension of all girders and all diaphragm locations (abutment, pier, intermediate, etc.).
		●	Show all fixed and expansion bearing designations.
		●	Show all centerlines of bearing of substructure units.
		●	Show all utilities and utility supports.

O. Girder Elevation and Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show span numbers and span length dimensions.
		●	Show girder elevation(s) with size, location, and number of deflected and straight strands, stirrup size and spacing, and size and location(s) of holes or threaded inserts at diaphragms. Use threaded inserts for the inside face of fascia girders.
		●	Show typical girder mild reinforcing details, girder dimensions, clear cover, reinforcing bar sizes and shapes for end block and continuity reinforcing for adjacent spans.
		●	Show the following notes: Girders are AASHTO type __. All mild steel reinforcement in girders shall be epoxy coated. For permanent steel bridge deck form details, see Sheet No. __. Girder lengths in casting bed shall be determined and depicted in shop drawings to compensate for grade shortening due to prestress effect. Top surface of all girders shall be rough-finished to a full amplitude of 0.25 inches and scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding. No clear cover less than as shown on these plans will be accepted. The girders have been designed using a draped strand pattern as shown on the plans. The MSHA Office of Bridge Development will not consider any proposals from a Contractor which involve the use of straight strands in lieu of draped strands. Losses are estimated at 17.56 percent of the initial prestressed force for the interior girders resulting in a final effective prestress force per strand of 25,540 pounds.
		●	Show girder prestressing strand details at midspan and at ends. Call out number and size of strands.

P. Camber and Deflection Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	In tabular form, list the following at the eighth points (must match the interval established for the finished roadway elevations) of the span: Camber due to girder prestress and girder dead load. Deflection due to slab and diaphragms. Deflection due to superimposed dead load. Total deflection due to (b) and (c). e) Net camber due to (a) – (b) – (c).
		●	Show camber diagram for each span with lines depicting the top of slab, the bottom of slab, the top of girder before placing the slab and diaphragm(s), and the top of girder after placing the slab and diaphragm(s): Show the centerlines of bearing at each end of the span and the haunch height at each centerline of bearing.
		●	Show the following notes: Superimposed dead load (SDL) includes the effects of the concrete curbs and railings. It does not include the effect of the future wearing surface. Camber due to prestress force plus slab dead load is to be checked in the field prior to placement of deck forms. Finished grade elevations are to be obtained by adjusting the haunch depth of the slab to accommodate any difference between the proposed and actual camber and deflections. Prestress camber and dead load deflection data shown is theoretical and will vary depending on concrete strength, storage time, variable prestressing conditions, etc. Girder deflections shall be checked after deck slab pours, and the screed settings for subsequent pours shall be modified as required subject to the approval of the engineer.
		●	Vertical curve camber will be handled by varying the haunch depth.

Q. Superstructure Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show Girder End Stirrup Reinforcing Details for both the continuous end at a pier and the discontinuous end at an abutment/pier. Indicate the number, size, and spacing of all reinforcing steel. Indicate size, number, and location of all holes through the girder for diaphragm reinforcing steel to pass. Show threaded inserts at inside face of fascia girders for diaphragm reinforcing steel attachment.
		●	Show a view of the bottom flange of the end of girder reinforcing steel that shows the bearing plate embedded in the girder with its anchor studs, all reinforcing steel, all prestressing strands, and the size and location of the holes for diaphragm reinforcing steel to pass through.
		●	Show a detail of the girder lifting device with its type, size, and location shown. Include the note: "At Contractor's option, alternate lifting details will be considered subject to the approval of the engineer."
		●	Show a detail of the top flange of girder and the area the stirrup reinforcing steel must extend into in the deck slab. Show the slab thickness and the note: "Top surface of all girders shall be rough finished to a full amplitude of 0.25 inches and scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding."
		●	Show the Form Anchor Detail. Indicate the support system as required by the manufacturer and the galvanized anchor insert the support system is to be welded to. The anchor insert is to be provided at each weld required along the

			deck form and shall not be continuous. Show the following notes: Permanent steel bridge deck forms and supports shall be fabricated from steel conforming to American Society of Testing and Materials (ASTM) A446 (Grades A through E) and shall be zinc coated (galvanized) in conformance with ASTM A653, coating designation 690. These forms shall be the proper gauge to support, within specified deflections, the specified weights for the particular span involved. Note also that no form less than 0.0359 inches in thickness will be accepted. The design span shall be the clear distance between girder flanges, less 2 inches. Any permanently exposed form metal where the galvanized coating has been damaged shall be thoroughly cleaned, wire brushed, and painted with two coats of zinc dust/zinc oxide paint, no color added, to the satisfaction of the engineer. Minor heat discoloration in areas of welds need not be touched up.

R. Diaphragm Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	All diaphragms for concrete girder bridges shall be placed parallel to the center-line of bearing (not staggered). This will allow the horizontal reinforcing bar to be continuous through the webs of all interior girders.
		●	Show details of concrete diaphragm at abutments in both elevation and section views, indicating all reinforcing steel for and the size of diaphragm. Indicate that all diaphragm reinforcing steel and threaded rods are to be epoxy coated. Show holes through girder web(s), threaded inserts and rods, and continuous reinforc-ing bars through the web(s).
		●	Show details of intermediate concrete diaphragm(s) in both elevation and section views, indicating all reinforcing steel for and the size of diaphragm. Indicate that all diaphragm reinforcing steel and threaded rods are to be epoxy coated. Show holes through girder web(s), threaded inserts and rods, and continuous reinforcing bars through the web(s).
		●	Show details of concrete diaphragm at pier(s) in both elevation and section views, indicating all reinforcing steel for and the size of diaphragm. Indicate that all diaphragm reinforcing steel and threaded rods are to be epoxy coated. Show holes through girder web(s), threaded inserts and rods and continuous reinforc-ing bars through the web(s).
		●	Show a detail of the galvanized A-36 steel anchor plate for attachment of the clip angle. Indicate the size of the plate, the size, and location of the anchor studs and the size and location of the threaded studs for attachment of the clip angle. Allow the contractor the option of replacing the studs with bolts that are tack welded to the anchor plate.
		●	Show details of the galvanized A-36 steel clip angle indicating its size, location of the slotted holes for attaching to the anchor plate, and the location and size of the slot for attaching the roadway joint angle.

S. Bearing Details

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Show a side view and an end view of the fixed bearing(s), indicating the size of all plates (sole and embedded) and elastomeric pads, and the size and location of the swedge anchor bolts.
		●	Show a side view and an end view of the expansion bearing(s) indicating the size of all plates (sole, masonry, and embedded) and elastomeric pads, and the size and location of the swedge anchor bolts and angle washers.

		●	Show the Embedded Plate Details for both the fixed and expansion bearings with all plate dimensions shown and the anchor studs located.
		●	Show the Slotted Sole Plate Expansion Bearing Detail with all dimensions shown and the slotted holes located.
		●	Show the Sole Plate Fixed Bearing Detail with all dimensions shown and the holes located.
		●	Show the Expansion Bearing Angle Washer Detail with all pertinent dimensions shown.
		●	Show the following notes: Sole and masonry plates to be ASTM A 709 grade 36 steel painted to match the color of concrete. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer. A surface finish of 1000 micro-inches root mean square (RMS) is required except where otherwise noted on these plans or in the Contract specifications. Top of sole plate must be beveled to fit grade of roadway. Bearings shall be placed normal to the centerline of girder. All anchor bolts and washers shall be unpainted ASTM A 709 grade 36 galvanized steel. All nuts shall be unpainted ASTM A 307 galvanized steel. Elastomeric bearings shall be 60 durometer hardness. All centerlines of bearing and centerline of shoes are coincident. All bearing shoes are to be shipped assembled as units. All concrete bearing areas shall meet the surface requirements of subsection 414.03.07(C). The maximum design load for the fixed bearing(s) = __ kips. The maximum design load for the expansion bearing(s) = __ kips. Polytetraflouroethylene (PTFE) self-lubrication bearing elements shall be composed of 100 percent virgin (unfilled) polytetraflouroethylene (PTFE) polymer. The surface of the stainless steel sheets in contact with the PTFE shall have a surface finish less than 20 micro-inches RMS. The minimum coefficient of friction for the PTFE and the bearing assembly shall be = 0.08.

T. Finished Roadway Elevations

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-75-8 (4) or the latest guideline.

U. Borings and Drive Tests

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
	●	●	Refer to MSHA PPM P-75-3 (4) or the latest guideline.

V. Standards

TS&L	Foundation	Structure	The information below is required at the plan submission and review stages indicated at left.
		●	Refer to MSHA PPM P-75-5 (4) or the latest guideline.
		●	With the standards for the railing or fencing, show a plan view of the parapets and indicate the rail post spacing.

EASEMENT AGREEMENT/RIGHT-OF-WAY DEDICATION REQUIREMENTS CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) has established a specific procedure and requirements for preparation of dedication documents. The following checklist describes the process and requirements.

Please use the following checklist in preparation of your submittal.

FORM A-13

EASEMENT AGREEMENT/RIGHT-OF-WAY DEDICATION REQUIREMENTS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before Proceeding Further!

Dedication of easements and rights-of-way in conjunction with any aspect of street construction requires preparation of dedication of right-of-way and/or easement agreement documents by the Department of Public Works and Transportation (the Department) in accordance with the following procedure.

A. Tentative approval of right-of-way or storm drainage plans must be obtained from Prince George's County, Maryland, prior to the acceptance of any submissions.

B. The following items must be submitted to the Department Office of Engineering, 9400 Peppercorn Place, 4th Floor, Largo, Maryland 20774, by the Permittee and/or their Engineers or Agents:

☐ **1.** Ownership information shall include all of the following:
- **a.** Proof of current ownership, as indicated among the Land Records of Prince George's County;
- **b.** Copy of the Deed to the current owner;
- **c.** Corporation information indicating officers authorized to sign documents; and
- **d.** Assessment account number.

☐ **2.** Typed legal description shall be provided, in an original or clear copy, of the area to be granted easement or right-of-way, with the first paragraph to read as follows:

"Being part of the land conveyed by _[*name of previous owner*]_ to _[*name of current owner*]_ by Deed dated _[*information from deed*]_ and duly recorded in Liber _____ at Folio _____ among the Land Records of Prince George's County, Maryland; and being more particularly described as follows: [*Continue with metes and bounds description.*]".

Please send the original or clear document and three copies.

☐ **3.** Plat Information shall be provided on a Mylar tracing showing the right-of-way or easement and its relative location to the subdivision or the tract of land of which the right-of-way or easement is a part. The linen shall have outside dimensions of 8.5 inches by 11 inches, may be presented in either landscape or portrait orientation, and shall provide a space of 2 inches by 3 inches in the lower right-hand corner for the Department title block. The border shall be 0.5 inches on all sides.

C. The omission of any title or plat information above requested will be cause for return.

D. Upon review of the required information, the necessary agreement will be prepared by the Department Right-of-Way Division and mailed to the Permittee for execution by the parties of interest.

E. Agreements are not to be recorded by the Permittee, but will be processed by the staff of the Department. Note: real estate taxes MUST be paid prior to the recording of any deed and the release of the permit. All executed agreements are to be delivered, by mail or in person, to the Office of Project Management, Right-of-Way Division, Department of Public Works and Transportation, 9400 Peppercorn Place, Room 310, Largo, MD 20774.

F. Inquiries about the above requirements shall be made to the Department Office of Project Management, Right-of-Way Division, at 301-883-5642.

PRIVATE RIGHT-OF-WAY
REQUIREMENTS CHECKLIST

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) has established specific procedures and requirements for the Departmental review of private rights-of-way for development of land without property frontage accessing public roads. The following checklist describes the procedures and requirements.

Please use the following checklist in preparation of your submittal.

FORM A-14

PRIVATE RIGHT-OF-WAY REQUIREMENTS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before Proceeding Further!

Prior to construction on a parcel of land with no frontage on a public road, physical and legal access to the lot must be ensured to allow services (including emergency response) to reach the parcel. In conjunction with building permits, such situations require that the private right-of-way (or easement) be reviewed by the Department's Office of Engineering and Right-of-Way Division, in accordance with the following procedure.

Requests for review of Private Rights-of-Way shall be submitted in writing to the Department's Office of Engineering, 9400 Peppercorn Place, 4th Floor, Largo, Maryland 20774, to the attention of the District Engineer at (301) 883-5710. The request must include, at a minimum, all of the following documentation (no review may begin until all items have been received):

1. Cover letter requesting review and providing contact information for the applicant. The request shall also reference and include a copy of the building permit application.
2. Ownership information shall include all of the following in the submittal:
    - Current ownership, as indicated among the Land Records of Prince George's County;
    - Assessment account number;
    - Copy of the deed to the current owner, and plat (if any).
3. A copy of the deed or plat by which the private right-of-way or easement was established.
4. Copies of the deeds to each property through which the applicant's private right-of-way or easement crosses.
5. A copy of the current site plan for the applicant's property.
6. A copy of a topographic map or survey indicating the location of the applicant's property and the limits of the private right-of-way.
7. Current photograph(s) of the private road at:
    - the point of access from the driveway of the applicant's property;
    - the point where it intersects the nearest public road; and
    - intermittently along the length of the private road (as necessary).

(If the access is not improved, a statement to that effect should be provided.)

All requests will be reviewed by the Office of Engineering prior to being forwarded to the Department's Right-of-Way Division for final review. Inquiries about the above requirements shall be made to the Right-of-Way Division at (301) 883-5642. If the right-of-way is deemed acceptable, the Director's Office will issue a memorandum of approval.

PROPERTY IDENTIFICATION AND CONTACT INFORMATION FORM

A Property Identification and Contact Information Form shall be prepared for submission to the Prince George's County, Maryland, Department of Public Works and Transportation (the Department) by the Owner of Record or Company. This information will help gain release of Street Construction Permits, Driveway Permits, and Private Road investigations. It will also help the Department execute accurate legal agreements/descriptions for recording among the County Land Records.

Please use the following form in preparation of your submittal.

FORM A-15

PROPERTY IDENTIFICATION AND CONTACT INFORMATION FORM

Prince George's County
Department of Public Works and Transportation
Office of Project Management—Right-of-Way Division

Name of Road_____

Permit No. & Type (e.g., driveway, street construction, etc.) _____

Related DPW&T/DER Building Permit No. _____

Legal Description of Property:

Lot_____

Block _____

Subdivision _____

OR

Map No. _____

Grid _____

Parcel No. _____

Election District _____

Tax Account Number _____

Owner(s) of Record _____

_____

_____

_____

If a Company, Please Provide LLC, etc. _____
(Signatory)

(Please print name under signature) _____

_____
(Title or Capacity)

Address Where Document Is To Be Mailed for Signature _____.

SAMPLE
PROPERTY CORNER MONUMENTATION CERTIFICATION LETTER

Prior to release of Street Construction Permits, a Property Corner Monumentation Certification Letter shall be prepared for submission to the Prince George's County, Maryland, Department of Public Works and Transportation (the Department) by a Land Surveyor licensed in the State of Maryland.

The certification letter shall utilize the format contained in the following sample letter.

FORM A-16

SAMPLE
PROPERTY CORNER MONUMENTATION
CERTIFICATION LETTER
Prince George's County
Department of Public Works and Transportation

Xxxxxx Xxxxxxxxx
Professional Land Surveyor

Date

Department of Public Works and Transportation
Office of Engineering
Engineering and Inspection Services Division
9400 Peppercorn Place, Suite 420
Largo, Maryland 20774

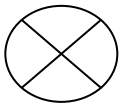
Re: Subdivision Name:
Lots/Block(s) Covered:
DPW&T Permit No.:

Dear Sir/Madam:

This is to certify that all property corner markers were set or found on _____ (Date)*, in accordance with Section 24-120 of Prince George's County Subdivision Regulations with regard to the above referenced permit.

Sincerely,

Professional Land Surveyor
Maryland No.



SEAL

* This date should be within the 60-day period after the location of the installation of the property markers.

HAUL ROAD PERMIT FOR MINING, EXCAVATION, AND FILL OPERATIONS PROCESS CHECKLIST

Any use of public roadways in Prince George's County, Maryland, for the hauling of materials from mining, mass excavation, and/or fill operations requires a Haul Road Permit from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department). The process and requirements for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-17

HAUL ROAD PERMIT FOR MINING, EXCAVATION, AND FILL OPERATIONS PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The haul road permit process is broken into the following components:

● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● PERMIT CONSTRUCTION AND RELEASE

The permit shall expire 1 year from the date of issuance.

A. **APPLICATION PROCESS:** For the submission of application for haul road permit, the following **items 1 through 4** are required:

- ☐ 1. **Minimum filing fee** of $250
- ☐ 2. **Completed permit application [one copy]**—This application form is available at the Permit Center, 6th floor, 9400 Peppercorn Place, Largo, Maryland.
- ☐ 3. **Record plat [one copy]**
- ☐ 4. **Copy of plan** showing the site needing the haul road and the proposed haul road route

B. **PERMIT ISSUANCE:** For the issuance of a haul road permit, the following **items 1 and 2** are required prior to issuance:

- ☐ 1. **Permit fee** of $800, less the filing fee (a $250 extension fee per year after first year)
- ☐ 2. **Posting of Department haul road permit bonds**—Performance bond = $30,000

C. **PERMIT RELEASE:** For the construction and permit release process for grading, the following **items 1 through 9** are required:

- ☐ 1. Contact the Department Engineering and Inspection Services Division (EISD) office at 301-883-5710 to determine the Department Inspector for your project.
- ☐ 2. Schedule a meeting with the Inspector, giving the Inspector 48 hours advance notification. On the agenda of this meeting should be:
  - a. Discussion of the route that the Permittee will be using
  - b. Identification of areas where the road is in poor condition; the Inspector should document these areas
- ☐ 3. Once the work that necessitated the haul road is completed, and upon request, the Inspector will provide a written list of uncompleted permit requirements to the Permittee. The list will be valid for 30 days.
- ☐ 4. Once all items on the list have been addressed, the release is processed by the Inspector and forwarded to the Department District Engineer.
- ☐ 5. The District Engineer will sign off on the release package and forward it to the Department Permits Section.
- ☐ 6. The Permits Section will then log in the release package and process the final release of the permit.

If the haul road permit bond is a cash bond, then:

- ☐ 7. A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the haul road permit bond is not a cash bond, then:

- ☐ 8. The Permits Section will send a release-of-liens form to the Permittee.
- ☐ 9. Once the release-of-liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the bond obligations have been met.

SPECIAL PERMIT FOR OVERWEIGHT/OVERSIZE VEHICLE PROCESS CHECKLIST

The transportation of extremely large and/or heavy items (i.e., homes, electric transformers, turbines, etc.) over any public roadway in Prince George's County, Maryland, requires a Special Permit for Overweight/Oversize Vehicle. The process and requirements for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-18

SPECIAL PERMIT FOR OVERWEIGHT/OVERSIZE VEHICLE PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The haul road permit process is broken into the following components:

● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● PERMIT RELEASE

The permit shall expire 6 months from the date of issuance.

A. **APPLICATION PROCESS:** 30–45 **days advance notice** is required for coordination of permit for transporting houses, electrical transformers, gas/electric turbines, overweight/oversize equipment, etc. In addition, the Department requires sufficient time to conduct an inspection of the proposed hauling route and for analysis of the equipment. No bridges, box culverts, or corrugated steel/aluminum pipe arch culverts may be crossed if combined load is in excess of Maryland Legal Load Limits or Posting Limits. Adjustment to County-maintained traffic signal heads and supporting cables, etc., may constitute additional fees/charges and/or performance bonds. Proof of coordination with all applicable overhead cable/wire utility companies is required prior to the issuance of a Department permit.

For the submission of application for a special permit for overweight/oversize vehicle, the following **items 1 through 7** are required:

- ☐ 1. **Minimum filing fee** of $250.00
- ☐ 2. **Completed permit application [one copy]**—This application form is available at the Permit Center, 6th floor, 9400 Peppercorn Place, Largo, Maryland.
- ☐ 3. **Proof of Maryland Department of Transportation State Highway Administration Special Hauling Permit** if State-maintained roads are included in the hauling route. **[one copy required]**
- ☐ 4. **Proof of valid commercial license to haul class of loading, copy of insurance policy, and policy number. [one copy required]**
- ☐ 5. **Copy of map** indicating proposed hauling route. The applicant must show the origin and the point of destination.
- ☐ 6. **Copy of gross load analysis computation for combined loading,** including the steering axle load, load per tire, size of tires, etc. Duplicate same for drive axles and all trailer axles. Applicant must also provide a profile drawing of the combined height, overall length, payload dimensions, counterweights, all axle spacing (center-to-center), and an end view detail of the top view of the trailer.
- 7. Coordination with local elected officials, State Police, County Police, Federal Police (if applicable), and Fire Department.

B. **PERMIT ISSUANCE:** For the issuance of a special permit for overweight/oversize vehicle, the following **items 1 and 2** are required prior to issuance:

- ☐ 1. **Permit fee** of $800, less the filing fee.
- ☐ 2. **Posting of Department haul road permit bonds**—Performance bond = $10,000 minimum and $100,000 maximum.

C. **SPECIAL CONDITIONS:** For the special conditions for a special permit for overweight/oversize vehicle, the following **items 1 through 11** are required:

- ☐ 1. Maryland State Police escort is required on all State-maintained roadways.
- ☐ 2. Park Police escort is required on all roadways under the jurisdiction of the U.S. Department of Interior.
- ☐ 3. All County, Federal, or State Police may temporarily close parts of the public right-of-way as deemed necessary during the hauling operation.

4. Coordination with State Police, County Police, Fire Department, and Police/Fire Communications is required.
5. The Permittee is responsible for overhead clearances. A **letter of permission** is required from the appropriate utility company accepting responsibility for adjustments to all applicable overhead wires and supporting cable.
6. A letter of proof is required pertaining to all impacted traffic signal lights to be adjusted along County-maintained or State-maintained roadways. (Applicant must coordinate with DPW&T's Traffic Management and Operations Division for traffic signal clearances.)
7. All Saturday afternoon, Sunday, and holiday movements are prohibited and subject to penalty in accordance with County Code.
8. Flagmen equipped with emergency flares and/or other devices visible at night, including wide load banners on front and rear of equipment, flashing lights on the tractor/truck, trailer, and private escort vehicles are required on all County-maintained roadways.
9. Two escort vehicles equipped with flashing lights are required, one for the front and one for the rear of the payload.
10. No more than 30,000 pounds maximum is permitted on any one axle, per State regulation.
11. Maximum speed allowed is 35 mph on highways.

D. GENERAL CONDITIONS

1. The permit is subject to favorable time frames and road and weather conditions.
2. Issuance of the Department permit shall include written permission, from other applicable jurisdictions and agencies, authorizing the special hauling use over their highways, bridges, roads, and railroad crossings, bridges in municipalities, and adjacent County or State roadways.

E. PERMIT RELEASE: For the special permit for overweight/oversize vehicle release process, the following **items 1 through 9** are required:

1. Contact the Department Engineering and Inspection Services Division (EISD) office at 301-883-5710 to determine the Department Inspector for your project.
2. Schedule a meeting with the Department District Engineer, giving 30 to 45 days advance notification. On the agenda of this meeting should be:
   a. Discussion of the route that the Permittee will be using
   b. Identification of areas where the road is in poor condition (the Inspector should document these areas)
3. Once the work that necessitated the haul road is completed, and upon request, the Inspector will provide a written list of uncompleted permit requirements to the Permittee. The list will be valid for 10 days.
4. Once all items on the list have been addressed, the release is processed by the Inspector and forwarded to the District Engineer.
5. The District Engineer will sign off on the release package and forward it to the Department Permits Section.
6. The Permits Section will then log in the release package and process the final release of the permit.

If the haul road permit bond is a cash bond, then:

7. A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the haul road permit bond is not a cash bond, then:

8. The Permits Section will send a release-of-liens form to the Permittee.
9. Once the release-of-liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the bond obligations have been met.

HAUL ROAD PERMIT FOR TRANSPORTING TIMBER/EQUIPMENT PROCESS CHECKLIST

The short-term use of any public right-of-way in Prince George's County, Maryland, for the purpose of hauling timber and related logging equipment requires a Haul Road Permit for Transporting Timber/Equipment from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department). The process and checklist for obtaining this permit are contained in the following checklist.

Please use the following checklist in preparation of your submission.

FORM A-19

HAUL ROAD PERMIT FOR TRANSPORTING TIMBER/EQUIPMENT PROCESS CHECKLIST

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before You Start the Permit Application Process!

The haul road permit process is broken into the following components:

● APPLICATION PROCESS; ● PERMIT ISSUANCE; ● PERMIT RELEASE

The permit shall expire 1 year from the date of issuance.

A. **APPLICATION PROCESS:** For the submission of application for haul road permit, the following **items 1 through 6** are required:

☐ 1. **Minimum filing fee** of $60.00
☐ 2. **Completed permit application [one copy]**—This application form is available at the Permit Center, 6th floor, 9400 Peppercorn Place, Largo, Maryland.
☐ 3. **Applicant to provide two (2) completed copies of Department of Environmental Resources (DER) Logging Permit application worksheet** to the Department of Public Works and Transportation (the Department).
☐ 4. **Applicant to provide two (2) completed copies of Forest Harvest Operations Sediment Control Plan Application** to the Department, as coordinated through the Prince George's County Soil Conservation District. **Package must be sealed by a registered professional forester in the State of Maryland and include the Green Stamp, as provided by the Prince George's County Soil Conservation District. Additional copies as required DER.**
☐ 5. **Provide original completed copy of Transporting Equipment/Logging Permit Agreement of Responsibility for Restoration Form** if property being harvested does not have direct frontage on a County-maintained road and must be accessed through private property. Note: The logger/timber harvester shall be responsible for any damage that may occur to private property.
☐ 6. **Copy of plan** showing the site needing the haul road and the proposed haul road route

B. **PERMIT ISSUANCE:** For the issuance of a haul road permit, the following **items 1 and 2** are required prior to issuance:

☐ 1. **Permit fee** of $50.00 to be collected at time of filing, as listed above in Item A.1.
☐ 2. **Posting of Department haul road permit bonds**—Performance bond = $5,000 (applies to one timber harvest only, not multiple)
☐ 3. Applicant shall construct a Stabilized Construction Entrance (SCE) when an existing hard-surfaced driveway is not available for entrance/exit access.

C. **PERMIT RELEASE:** For the haul permit release process for timber harvest/DER grading, the following **items 1 through 9** are required:

☐ 1. Contact the Department Engineering and Inspection Services Division (EISD) office at 301-883-5710 to determine the Department Inspector for your project.
☐ 2. Schedule a meeting with the Department Inspector, giving the Inspector 48 hours advance notification. On the agenda of this meeting should be:
   a. Discussion of the route that the Permittee will be using
   b. Identification of areas where the road is in poor condition (the Inspector should document these areas)
☐ 3. Once the work that necessitated the haul road is completed, and upon request, the Inspector will provide a written list of uncompleted permit requirements to the Permittee. The list will be valid for 30 days.
☐ 4. Once all the items on the list has been addressed, the release is processed by the Inspector and forwarded to the Department District Engineer.

5. The District Engineer will sign off on the release package and forward it to the Department Permits Section.
6. The Permits Section will then log in the release package and process the final release of the permit.

If the haul road permit bond is a cash bond, then:

7. A letter is written to the Prince George's County Office of Finance by the Permits Section requesting that the cash bond be refunded. This process takes approximately 4–6 weeks.

If the haul road permit bond is not a cash bond, then:

8. The Permits Section will send a release of liens form to the Permittee.
9. Once the release of liens form has been processed, then a letter is sent by the Permits Section to the bond company indicating that the bond obligations have been met.

SPECIAL PERMIT REQUIREMENTS FOR RESTORATION OF EXISTING ADJACENT ROADWAYS FOR TIMBER HARVEST

All Haul Road Permits issued by the Prince George's County, Maryland, Department of Public Works and Transportation (the Department) are subject to special requirements concerning the restoration of existing adjacent roadways. The requirements for obtaining the necessary special permit and applicant's acknowledgment of said requirements are contained in the following document.

Please use the following document in preparation of your submission.

FORM A-20

SPECIAL PERMIT REQUIREMENTS FOR RESTORATION OF EXISTING ADJACENT ROADWAYS FOR TIMBER HARVEST

Prince George's County
Department of Public Works and Transportation

The Prince George's County Department of Public Works and Transportation hereby grants permission to the property owner or _____ (agent) to obtain Special Permit Number _____ for transporting approximately _____ loads of logs per day with commercial/industrial vehicles over a _____-month period. Approximately _____ acres of timber will be harvested on the property owned by _____ (Parcel/Lot _____, Block _____, Liber _____, Folio _____), located at _____
_____.

Permission, however, to use _____, a rural/urban roadway, as a temporary commercial/industrial hauling route, is subject to the operator/applicant following the conditions and adhering to the responsibilities described in the Prince George's County Code, Subtitle 23, Divisions 1 and 2, Sections 23-103(g), 23-05(a)(b)(c), 23-107(b), 23-109(a)(b), and 23-23-116(a)(d)(e)(1)(A)(ii):

Performance Bond Required

Because of possible damage to the existing County-maintained roadway, a Performance Bond or some other form of security in the amount of $5,000 will be required. The Performance Bond will assure restoration of any damage to the existing roadway surface, shoulders, side ditches, adjacent shrubbery/trees located within the public right-of-way, underground/aboveground utilities, culverts, bridges, underground storm drainage systems, curb and gutter, etc., caused by the temporary commercial/industrial hauling operation.

The Performance Bond shall be held by the Department throughout the duration of the permit and until documentation has been produced by the County that states that said Performance Bond may be released. The security posted to ensure performance shall be certified as discharged upon acceptance of the termination of the use of the specified hauling route and, if applicable, upon acceptance of the restoration of damage that may have resulted within the public right-of-way during the performance of the Special Permit. However, discharge of the security posted to ensure performance shall not operate as a discharge of any other bonds.

In the event that the bond amount collected is not sufficient to cover the damage, if any should result, then the operator/Permittee or their agent should be aware that the County is entitled to bill for any additional costs required for corrective action. The Performance Bond and associated permit fees are to be posted at the Department Permits Center, located on the sixth floor of the Inglewood Center III Building in Largo, Maryland.

Permit Fees Required

A permit fee in the amount of $60 is required. The permit fee is nonrefundable and shall be charged to offset the administrative costs incurred.

Use and Restoration of Existing Adjacent Roadways

At all times, all adjacent road surfaces should be kept clean of dirt and debris attributable to the use of the haul road, as directed by the Department.

In order to protect the traveling public at all times, especially during any type of commercial/ industrial hauling, flagmen, temporary barricades equipped with flashing lights, traffic cones, and temporary portable signs shall be required at any time to temporarily regulate traffic, as deemed necessary by the Office of Engineering and Inspection Services Division (EISD).

It shall be the responsibility of the operator/Permittee to notify the EISD Inspector assigned to the area 48 hours in advance of starting the hauling operations. The Inspector may be reached at EISD by calling (301) 883-5730.

The EISD Inspector will immediately review the existing street conditions to monitor visible problems and will continue to monitor the hauling route at least twice a week throughout the duration of the permit.

At the termination of the timber harvest and/or hauling operation, it shall be the responsibility of the operator/Permittee to repair any damage to the public right-of-way, determined to be a result of the performance of this permit, to its original condition or better, as directed by the Department.

Other Requirements

The permit is issued for the purpose of enabling a legal haul activity within the County-maintained (public) right-of-way. The permit does not authorize the use of private driveways, private right-of-way, State-maintained right-of-way, etc., nor does it authorize public roadwork other than construction of a temporary stabilized construction entrance (SCE).

Every precaution is to be taken to protect adjacent properties from damage through the performance of this permit. Prince George's County assumes no responsibility for any suits or actions resulting from any work executed under this permit. Failure to comply with the conditions and requirements will result in revocation of the permit. Failure to comply will also be considered a violation of the Road Ordinance and the operator/Permittee will be subject to penalty.

NOTE: Where applicable, the application submitted for the permit shall be accompanied by a letter from adjacent property owners that provides the written consent to temporarily use/cross private property/ roads with commercial/industrial vehicles.

I, the undersigned, do hereby certify that I have read the above requirements and general specifications, and I do understand that I am obligated to comply and obtain a permit.

PERMITTEE WITNESS

TRANSPORTING EQUIPMENT/LOGGING PERMIT
AGREEMENT OF RESPONSIBILITY FOR RESTORATION

All Haul Road Permits for Transporting of Timber/Equipment are subject to a separate Agreement of Responsibility for Restoration of roadways to be obtained from the Prince George's County, Maryland, Department of Public Works and Transportation (the Department). The agreement shall be in the format shown in the following document.

Please use the following agreement in preparation of your submission.

FORM A-21

TRANSPORTING EQUIPMENT/LOGGING PERMIT
AGREEMENT OF RESPONSIBILITY FOR RESTORATION
of _____, a Privately Owned Road

Prince George's County
Department of Public Works and Transportation

We, the undersigned, agree to allow _____ (lumber company's name) to use _____, a Privately Owned Road, for the sole purpose of hauling and removing timber from the property owned by _____ so long as the following conditions are adhered to:

The road will be maintained during the length of time it takes to cut, haul, and remove the timber from the _____ property. This includes the immediate removal of any mud that accumulates on the road during said operation. In addition, excessive dust must be controlled while the logs are being hauled on the trucks.

During the course of removal and hauling of the timber, any and all ruts, potholes, or other types of damage to the roadway and right-of-way will immediately be repaired and restored to its original condition. The buyer of the timber is solely responsible for any and all costs associated with maintaining and/or repairing _____. In addition, the residents on _____ _____ are relieved of all associated costs.

The buyer of the timber agrees to repair any damage to utilities, fences, gates, structures, etc., and will bear the cost of these repairs.

This agreement is valid only for the length of the timber sale contract/hauling operation and expires at the end of this time.

The buyer of the timber will notify and meet with the residents or their representatives of _____ _____ one week before the beginning and at the completion of the timber harvest and will meet with said residents or their representative(s) to inspect the road.

All repairs and maintenance of _____ will be completed prior to the removal of the logging equipment.

A designated resident (_____) of _____ _____will serve as the contact person who will coordinate with _____ _____ (lumber company's name) and _____ _____ (County forest consultant) during the course of this operation.

In the event of excessive wet weather or other adverse weather conditions that may cause excessive damage to _____, a Privately Owned Road, the owner(s) have the right to stop the hauling and removal of the timber until said conditions improve.

Signed:

_____ _____

_____ _____

_____ _____

Lumber Company Owner: _____ Date: _____

This agreement does not include the use of _____, a Privately Owned Road, by private individuals for the cutting and removal of firewood.

GUIDELINES FOR QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) OF ROAD CONSTRUCTION

All roadway construction to be done in Prince George's County, Maryland, shall be subject to rigorous Quality Assurance/Quality Control (QA/QC) Standards. The guidelines and requirements for QA/QC of road construction are contained in the following checklist.

Please use the following checklist in the QA/QC of roadway construction projects.

FORM A-22

GUIDELINES FOR QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) OF ROAD CONSTRUCTION

Prince George's County
Department of Public Works and Transportation

I. Permits

A. Technical data required from soils report and construction plan

Prior to commencement of site work, the County representative shall make a record of the following data and request any clarification, as necessary:

1. Classification of Soils and Soil Aggregates (AASHTO M-145)
2. Moisture-Density Relationship (Modified Proctor; AASHTO T-180)
3. Special recommendation concerning subgrade preparation, fill placement, problematic soils, and retaining wall design (if any).
4. Any deviation from Department policies, regulations, and/or specifications.

B. Construction of road embankment

The embankment shall be constructed as per the County-modified Maryland State Highway Administration (MSHA) Specification, Section 204. As specified, each embankment layer shall not exceed 8 inch (200 mm) compacted depth.

Quality Control (QC) testing and requirements to be performed by the developer, contractor, and/or hisagents:

1. Construction QC testing shall be performed by an accredited laboratory subject to County approval and certified by a Maryland-licensed Professional Engineer.
2. Prior to field testing commencement, the Permittee or contractor shall submit a copy of the lab accreditation certificate for soils testing along with the permit application to the Department District Engineer or Project Manager and shall notify the Department representative (Inspector) 2 to 3 days in advance regarding the field-testing dates.
3. In-place density and moisture content shall be measured as specified in Maryland State Method of Tests (MSMT) 350 or 352, for each embankment layer.
4. Embankment located within 5 feet deep shall be placed and compacted in layers not to exceed 1 foot in thickness (loose). The finished subgrade level shall be compacted to a minimum of 95 percent of modified Proctor density (T-180).
5. The moisture content at the time of compaction shall be within 2 percent of the optimum moisture content (T-180).
6. Pipes through the road embankment shall be constructed according to MSHA Specification 303.
7. For high embankments, fill soils shall be benched into the existing in-situ soils for better bonding.
8. Upon completion of embankment testing, and prior to placing any subsequent pavement layer, the Permittee or contractor shall furnish the Department with a complete set of field testing reports. This is to be accompanied by a letter of certification written by a Maryland-licensed Professional Engineer that certifies that the embankment inspection and testing has been completed in accordance with the approved construction plans and the Geotechnical Engineer's recommendations.

Quality Assurance (QA) checks to be performed by the Department representative:

Yes	No	
☐	☐	1. Construction operations shall be monitored, using as many forms of Quality Control (QC) testing as possible.
☐	☐	2. A record shall be kept of witnessed tests and equipment used (model, type, weight, etc.), defining the road/trench stations near which the tests were conducted.
☐	☐	3. Copies of all construction test reports (field and lab) of each 8-inch layer shall be received in a timely manner.
☐	☐	4. Thickness and density test results shall be reviewed and approved for each completed layer prior to covering it with a subsequent new layer.
☐	☐	5. Keying and benching operations shall be observed. Any signs of erosion, tension cracking, seepage, etc., shall be noted, along with plans or sketches to show the location(s) of such areas.
☐	☐	6. The condition of the starting/original subgrade shall be observed. If covered by a layer of fill materials, this must be clearly documented.
☐	☐	7. A record of observed fill materials shall be kept, including their type (clayey sand, sandy silt, etc.), origin (borrow, on-site native, on-site old fill), and estimated depth, since the previous site visit.
☐	☐	8. Other and/or additional field tests may be requested.
☐	☐	9. Known recommendations provided by engineers and actions taken by the contractor shall be recorded.

C. Construction of subgrade

"Geotechnical Requirements for Suitable Roadway Subgrade" may be found in Section I, Chapter 3, Item 4, of this document. As per the County-modified MSHA Section 204, the subgrade shall be constructed and shaped to the specified cross-section after all cuts, embankments, and backfilling have been completed. Each subgrade layer shall not exceed a 6-inch compacted depth.

QC testing and requirements to be performed by the developer, contractor, and/or his agents:

Yes	No	
☐	☐	1. Construction QC testing shall be performed by an accredited laboratory and certified by a Maryland-licensed Professional Engineer.
☐	☐	2. Prior to the start of field testing, the Permittee or contractor shall submit a copy of the lab accreditation certificate for soils testing along with the permit application to the Department District Engineer or Project Manager and shall notify the Department representative (Inspector) 2 to 3 days in advance regarding the field-testing dates.
☐	☐	3. In-place density and moisture content shall be measured as specified in MSMT 350 or 352 for each embankment subgrade layer.
☐	☐	4. Material located in the top 5 feet of the subgrade shall not contain any undesirable materials as defined in Maryland State and Prince George's County standard specifications.
☐	☐	5. The moisture content at the time of compaction shall be within 2 percent of the optimum moisture content (T-180).
☐	☐	6. Each layer in the top 1 foot of the subgrade shall be compacted to a minimum of 97 percent of modified Proctor density (T-180).
☐	☐	7. Before starting placement of aggregate or Superpave hot mix asphalt (HMA) base course, all the testing records of subgrade and embankment must be submitted to and approved by the Department Materials Section.

QA checks to be performed by the Department representative:

Yes	No		
☐	☐	1.	Construction operations shall be monitored, using as many forms of Quality Control (QC) testing as possible.
☐	☐	2.	The condition of the starting/original subgrade shall be observed. If covered by a layer of roadway materials, this must be clearly documented.
☐	☐	3.	Density testing and proof-rolling of the final layer of subgrade must be witnessed and copies of all QC test reports (field and lab) of each layer received in a timely manner.
☐	☐	4.	Documentation shall be provided for any soft or pumping subgrade condition, the extent of pumping, and the procedure(s) used to rectify the condition; plans or sketches shall be used to show the locations of such areas.
☐	☐	5.	A record shall be kept of witnessed tests and equipment used (model, type, weight, etc.), defining the road/trench stations near which the tests were conducted.
☐	☐	6.	Thickness and density test results shall be reviewed and approved for each completed layer prior to covering it with a subsequent new layer.
☐	☐	7.	A record of observed fill materials shall be kept, including their type (clayey sand, sandy silt, etc.), origin (borrow, on-site native, on-site old fill), and estimated depth, since the previous site visit.
☐	☐	8.	Other and/or additional field tests may be requested.
☐	☐	9.	Known recommendations provided by engineers and actions taken by the contractor shall be documented.

D. Construction of aggregate base course

Aggregate base course shall be constructed as per MSHA Section 501. The following material and construction quality checks shall be performed:

QC testing and requirements to be performed by the developer, contractor, and/or his agents

Yes	No		
☐	☐	1.	Construction QC testing shall be performed by an accredited laboratory and certified by a Maryland-licensed Professional Engineer.
☐	☐	2.	Prior to the start of field testing, the Permittee or contractor shall submit a copy of the lab accreditation certificate for soils testing along with the permit application to the Department District Engineer or Project Manager and shall notify the Department representative (Inspector) 2 to 3 days in advance about the field-testing dates.
☐	☐	3.	In-place density shall be measured as specified in MSMT 350 or 352.
☐	☐	4.	The base material shall be uniformly spread without segregation, in layers of approximately equal thickness, to provide the specified depth.
☐	☐	5.	The base material shall be compacted to a minimum of 97 percent of modified Proctor density (T-180).
☐	☐	6.	The moisture content at the time of compaction shall be within 2 percent of the optimum moisture content (T-180).

QA checks to be performed by the Department representative:

Yes	No		
☐	☐	1.	Construction operations shall be monitored, using as many forms of Quality Control (QC) testing as possible.
☐	☐	2.	A record shall be kept of witnessed tests and equipment used (model, type, weight, etc.), defining the road stations near which the tests were conducted.
☐	☐	3.	Thickness and density test results shall be reviewed and approved prior to covering the aggregate base course material with Superpave HMA.
☐	☐	4.	A record of observed base course materials shall be kept, including their type, source, and estimated depth, since the previous site visit.
☐	☐	5.	Other and/or additional field tests may be requested.

☐ ☐ 6. Any use of geotech fabrics, including their types (e.g., Mirafi 140N), shall be documented.
☐ ☐ 7. Known recommendations provided by engineers and actions taken by the contractors shall be documented.

E. Superpave hot mix asphalt (HMA) pavement

The construction of HMA pavement shall be performed as per County-modified MSHA Specification, Section 504.

QC testing and requirements to be performed by the developer, contractor, and/or his agents:

Yes No
☐ ☐ 1. Prior to placement of paving material, the foundation (subbase/GAB) shall be constructed as specified in the project documents approved by the Department.
☐ ☐ 2. The surface shall be clean of all loose and foreign materials (including tree leaves) prior to application of the tack coat.
☐ ☐ 3. The tack coat shall be applied uniformly across the entire width of the road.
☐ ☐ 4. The Superpave HMA shall be loaded, transported, and laid down without segregation (the 3-drops loading method shall be followed), and shall be compacted to the required density as specified in County-modified MSHA Specification, Section 504.
☐ ☐ 5. The Superpave HMA shall be approved by the State and produced by an SHA-approved asphalt plant in compliance with a Department-approved QC plan.
☐ ☐ 6. The temperature of the mix at the time of placement shall not be less than 250°F for a PG64-22 and 270°F for a PG70-22 and PG76-22 asphalt binder, unless otherwise approved by the Department Materials Lab.
☐ ☐ 7. The paver and its screed shall be free of mechanical problems.
☐ ☐ 8. The Permittee or contractor shall, in a timely manner, submit to the Department all the QC test results of the Superpave HMA that are performed at the HMA plant.
☐ ☐ 9. After its placement, the Superpave HMA shall be compacted to 95 percent of its maximum density.
☐ ☐ 10. The Permittee or contractor shall arrange to cut cores within 24 hours of placement of each Superpave HMA layer and shall deliver the cores to the Department Materials Lab.

QA checks to be performed by the County representative:

Yes No
☐ ☐ 1. Paving operations shall be monitored as much as possible.
☐ ☐ 2. A record shall be kept of witnessed tests and equipment used (model, type, weight, etc.).
☐ ☐ 3. Delivery tickets shall be checked to ensure that the asphalt dispatched belongs to the project.
☐ ☐ 4. The paving machinery shall be inspected for oil or fluid leakage.
☐ ☐ 5. The asphalt temperature shall be measured at the time of its placement and rolling.
☐ ☐ 6. If the Department representative is present during paving, he/she shall ensure that trash and tree leaves/branches were removed from the road in front of and behind the paver.
☐ ☐ 7. The Department representative shall randomly select locations for cores, witness their cutting at the site, and bring them to the Materials Lab for testing within 24 hours of compaction.
☐ ☐ 8. The Materials Lab shall be contacted for any suspected plant-originated quality problem(s) and the District Engineer or Project Manager for any field problem(s) not adjusted on the spot.

BUS SHELTER CONSTRUCTION SPECIFICATIONS

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) has established the following specifications for the construction of bus shelters to be installed along County roadways and at County parking facilities.

FORM A-23

BUS SHELTER CONSTRUCTION SPECIFICATIONS

Prince George's County
Department of Public Works and Transportation

Please Read All of the Following Before Proceeding Further!

Contractor (or Permittee) shall furnish all labor, equipment, services, and supplies necessary for, and incidental to, furnishing and installing the below-specified shelters and benches, and for the construction of concrete pads and associated sidewalks, ramps, and curb, as detailed below.

Bus shelter construction shall be in conformance with the following specifications:

- Shelters shall be three-sided and rectangular in shape, and be of modular construction identical in design and fabrication, so as to allow ready interchangeability of parts if required for repairs.

- Minimum overall dimensions shall be not less than the following: 8-foot-wide back panel; 4-foot-wide side panels; and 7.5-foot-high back and side panels. Maximum overall dimensions shall not exceed the following: 9-foot-wide back panel; 5-foot-wide side panels; and 8-foot-high back and side panels.

- All structural frame and window frame members and roof fascia shall be of one-piece seamless extruded aluminum, 6063-T52 anodized to 215-Ra, 1-hour (minimum) dip with a #313 bronze duranodic finish. Thickness shall be 0.125 inches minimum and shall conform to the standards of the Aluminum Association, ALSC, ASTM, UL, etc., as applicable to the aluminum, steel, plastics, and other parts.

- The roof shall be a one-piece molded acrylic (0.25-inches thickness) skylight dome. The roof shall be leak- and condensation-proof and shall be completely enclosed, top and bottom, by a continuous compressed gasket of expanded EPT rubber or neoprene SCE41 with adhesive backing. All roof seams and joints between dome and aluminum shall be sealed with a premium construction grade silicone.

- All structured frame connectors will be internal for vandal-resistance and appearance. Window frame fasteners shall be tamper-proof rivets that permit window replacement by authorized personnel only.

- Panels shall be of glass or a County-approved equivalent material with the same resistance to breakage and scratching, and shall have the same cleaning qualities if marked with graffiti. Windows shall be set in frames with a minimum 0.5-inch edge engagement and shall be independently framed and sealed with a continuous gasket.

- The bench shall be constructed of ATM B-221 6063-T52 aluminum or 6063-T5 alloy (or County-approved equivalent) as suitable to the manufacturer, with backrest

at a length to allow access to the advertising panel, and shall be attached to the rear of the shelter at each mullion using a triangular aluminum support bracket 0.16 inches thick.

- A lighted advertising panel measuring 4 feet by 6 feet of the same panel material specified above shall be affixed to the one side panel farthest from approaching buses. The panel will contain all electrical components to illuminate the panel. Wiring will be within the shelter members with access holes/cover plates and will meet the standards of the Prince George's County Electrical Code Adoption of the 1993 National Electrical Code.

- Shelter design shall be such that the shelter structure is stable with all panels, roof, fascia, and ground fastenings removed and must conform to construction standards of the American Society of Civil Engineers (ASCE). The structure must be able to withstand dead loads of 40 PSF and a minimum wind load of 75 mph.

- The concrete pad shall measure 12 feet by 18 feet, 6 inches thick, and shall be reinforced with 6-inch-by-6-inch 10/10 welded wire reinforcement (in mats, not from rolls) placed on 4-millimeter polyethylene vapor barrier, with surface to be broom-finished. (See Section III, Standard 300.24, for additional information.)

- A minimum 4-inch aggregate base shall be provided beneath the concrete pad in accordance with MSHA *Standards and Specifications for Construction and Materials,* Section 304. Aggregate shall be MSHA type 6.

- Electrical conduit (0.75-inch galvanized steel) shall be installed within the pad so as to extend 4 inches beyond the top of the pad and 6 inches from the side of the pad, and shall be capped at both ends.

- The work shall include furnishing and placing all materials (including concrete, formwork, and expansion materials), all necessary excavation, the placement of compacted subgrade or base, the removal of existing sidewalk (and form work), concrete placement, finishing, and curing, backfilling, regrading where necessary, and sod replacement. All concrete sidewalks shall conform to Prince George's County Standards, unless otherwise approved in writing by the Department.

- Prior to construction, shop plans and working drawings (having been sealed by a Professional Engineer registered in the State of Maryland) must be submitted for review by the Construction Services Division of the Department of Transportation.

APPENDIX B: FORMS

No. *Title*

Form B-1 ..... Superpave Hot Mix Asphalt (HMA) Field Inspection Checklist
Form B-2 ..... Prince George's County Structure Inventory and Appraisal Report
Form B-3 ..... Contractor Qualification Questionnaire
Form B-4 ..... Contractor Performance Evaluation Form
Forms B-5 and B-6..... Annual Contractor Performance Evaluation and Contractor Rating Summary Worksheet
Form B-7 ..... Report of Unsatisfactory Contractor Performance/Progress
Form B-8 ..... Engineering Consultant Rating Form
Form B-9 ..... Certified List of Subcontractors, Suppliers, and Materialmen
Form B-10 ..... Certified Release of Liens
Form B-11 ..... Permit Acceptance and Bond Release Request
Form B-12 ..... Roadway Acceptance and Bond Release Requirements
Form B-13 ..... Daily Construction Log Report
Form B-14 ..... Asphalt Cores Testing Request
Form B-15 ..... Street Tree Inspection/Evaluation and Bond Worksheet
Form B-16 ..... Intersection Sight Distance Evaluation
Form B-17 ..... Utility Color Codes
Form B-18 ..... Pavement Surface Profile Procedures and MSHA-Form PD-11

SUPERPAVE HMA (HOT MIX ASPHALT)
FIELD INSPECTION CHECKLIST

The Superpave HMA (Hot Mix Asphalt) Field Inspection Checklist is completed for every placement of asphalt material and provides both a checklist and comments section in order to document conformance to the construction requirements of the Prince George's County Department of Public Works and Transportation (the Department).

The following sample report, provided here for informational purposes only, is to be completed by an authorized representative of the Department.

FORM B-1

SUPERPAVE HMA (HOT MIX ASPHALT)
FIELD INSPECTION CHECKLIST

Prince George's County
Department of Public Works and Transportation
Office of Engineering, Engineering and Inspection Division

Project Name_____

Asphalt Plant_____ Town _____

Weather _____ Date _____

In each of the numbered items below, please check the appropriate box at right under "yes," "no," or "N/A." If the answer is not "yes," please explain under "Comments," at bottom.

Checklist	Yes	No	N/A
I monitored as much of the paving operations as possible.			
Delivery tickets were checked to ensure that the asphalt dispatched belongs to this project.			
If paving on subgrade, the Contractor tested subgrade compaction (98% to 100% of maximum dry density for upper 1 foot of subgrade) and proof rolled prior to paving.			
I performed all QA checks for subgrade and aggregate subbase (if used).			
Before applying new pavement/tack coat, the road surface was cleaned free of dust and loose materials.			
Tack coat was applied evenly by a truck across the entire width of the road.			
I kept records of all witnessed tests and equipment used (model, type, weight, etc.).			
At the time of placement, the asphalt temperature was _____ °F.			
Trucks and paving machinery were free of oil/fluid leakage.			
Paver and its screed were free of mechanical problems during asphalt production.			
The roller type, weight, and number of passes were documented and meet the specs.			
Trash and tree leaves/branches were removed from the road in front of and behind the paver.			
Contractor cut cores **within 24 hours** of compaction from spots that **I** randomly selected. Cores were delivered to the Material Lab on the same day.			
I contacted the Material Lab for any suspected plant-originated quality problem(s) and my District Engineer for any suspected field problem(s) not adjusted on the spot.			

Comments:

_____

_____

_____

This is to certify that field problems were pointed out to Contractor's Foreman (when present) and that the District Engineer was personally informed at _____ **am/pm** of that same day in regard to all failing temperatures and suspected field problems that were **not adjusted on site** on the day of paving.

_____
County Inspector

CONTRACTOR PERFORMANCE EVALUATION FORM

The Contractor Performance Evaluation Form provides a record of evaluation of the performance of firms performing work under contract for the Prince George's County Department of Public Works and Transportation (the Department). This record, which may be filed on the basis of a completed task or as an annual report, provides the County with a weighted method of scoring each Contractor's performance.

The following sample report, provided here for informational purposes only, is to be completed by an authorized representative of the Department.

FORM B-2

CONTRACTOR PERFORMANCE EVALUATION FORM

Prince George's County
Department of Public Works and Transportation

☐ Project Completion
☐ Annual Rating

Contractor Name _____

Address _____

Contract Number _____ Inspection District _____

Project Description _____

_____

☐ Prime Contractor ☐ Joint Venture Partner ☐ MBE/WBE

Total Score from Page 2: _____

1. Management	Rating	Weight	Score
Cooperation with DPW&T		1.5	
Cooperation with other government agencies, utilities, WRA, etc.		1.0	
Cooperation with Subcontractors or other Prime Contractors		0.5	
Utilization of MBE/WBE as shown in approved MBE utilization schedule		1.0	
Attitude toward traveling public and property owners		1.0	
Attitude toward Contract changes		1.0	
Prompt and adequate response to correspondence and/or instructions		0.5	

Subtotal _____

2. Personnel			
Sufficient quantity of on-site supervision		1.0	
Quality of on-site supervision		1.5	
Sufficient quantity of skilled personnel		1.0	
Quality of skilled personnel		1.5	

Subtotal _____

3. Equipment			
Sufficient amount of equipment		1.5	
Proper type of equipment		1.0	
Condition of equipment		1.0	

Subtotal _____

Contractor Performance Evaluation

Contractor Name _____

Contract Number _____

4. Work Quality			
Job safety practices		1.0	
Timely work progress/completion		1.5	
Specification compliance		1.0	
Sediment and erosion control		1.0	
Materials approval obtained		0.5	
		Subtotal	
		Subtotals	1
			2
			3
			4
		Total Score	

Project Inspector Comments (Continue on other side, if necessary)**:**

_____

_____

Inspector _____ Date _____

Chief Inspector or Project Manager Comments (Continue on other side, if necessary)**:**

_____

_____

Inspector or Project Manager _____ Date _____

Instructions: The Contractor Performance Evaluation form is to be completed at the time of the final acceptance of the Contract by the Department of Transportation and shall be retained in the appropriate Division office for use in preparation of the Annual Evaluation. In the event that the Contract is not completed in the calendar year, the rating form will be prepared and noted as annual.

Rate 1.0 to 5.0, with 2.5 being acceptable, 1.0 poor, and 5.0 excellent. Multiply each rating times the weight factor shown to reach a total score. Any rating of less than 1.5 or greater than 3.5 should be explained under "Comments." When an activity is not applicable to a Contractor, a rating of "N/A" shall be entered.

ANNUAL CONTRACTOR PERFORMANCE EVALUATION and CONTRACTOR RATING SUMMARY WORK SHEET

The Annual Contractor Performance Evaluation is a summary of Performance Evaluation Reports held on file by the Prince George's County Department of Public Works and Transportation (the Department). Its purpose is to facilitate comparison among Contractors performing work for the Department.

The following sample report and work sheet, provided here for informational purposes only, are to be completed by an authorized representative of the Department.

FORM B-3 AND FORM B-4

ANNUAL CONTRACTOR PERFORMANCE EVALUATION

Prince George's County
Department of Public Works and Transportation

Contractor Name _____

Contractor Address _____

Number of Projects _____ Inspection District _____

☐ Prime Contractor ☐ Joint Venture Partner ☐ MBE/WBE

Instructions: The Annual Contractor Performance Evaluation is a summary of Performance Evaluation Reports held on file for all projects performed by one contractor through December 31 of the year being reported. An overall score of 50 is considered to be average. Those scores falling out of the range of 40–60 should be accompanied by an explanation and supporting documentation.

Scoring:

Category	**Score** (average of all projects)	**Maximum Allowable Score**
Management		32.5
Personnel		25.0
Equipment		17.5
Work Quality		25.0
Total		100.0

Comments (Continue on other side, if necessary)**:**

_____

_____

_____

_____

_____ _____
Chief Inspector or Project Manager Date

_____ _____
Division Chief Date

CONTRACTOR RATING SUMMARY WORK SHEET

Prince George's County
Department of Public Works and Transportation

Contractor Name_____ Year _____

Contract No.	Contract Status C, A	Capacity P, PD	Score					Remarks
			I	II	III	IV	Total	

C = Completed in rating year
A = Active at end of rating year
P = Prime contractor
PD = Prime disadvantaged (MBE/WBE)
I = Management
II = Personnel
III = Equipment
IV = Work quality

REPORT OF UNSATISFACTORY CONTRACTOR PERFORMANCE/PROGRESS

A Report of Unsatisfactory Contractor Performance/Progress is issued by the Prince George's County Department of Public Works and Transportation (the Department) for incidents of unsatisfactory performance or progress and may be issued on either capital improvement or permit projects. The reports are maintained for use in the Contractor qualification process.

The following sample report, provided here for information purposes only, is to be completed by an authorized representative of the Department.

FORM B-5

REPORT OF UNSATISFACTORY CONTRACTOR PERFORMANCE/PROGRESS

Prince George's County
Department of Public Works and Transportation

This form is to be completed by the Division Chiefs of the Prince George's County Department of Public Works and Transportation (the Department) to report **unsatisfactory performance/progress** of a Prime Contractor when it occurs during the course of the Contract. Use a separate form for each Contractor. Submit additional reports to indicate continued unsatisfactory performance. Please furnish complete information. Each completed form must be signed on page two by the authorized person.

Contractor Name___

Contractor Address ___

Contract Number ___ Inspection District __

Project Description ___

___

Contract Amount ___ Completion Date ___

☐ Prime Contractor ☐ Joint Venture Partner ☐ MBE/WBE

On this Contract: Number of change orders ___ Number of claims pending ____

This report is being filed: ☐ While Contract is in progress ☐ With Annual Report
☐ At completion of Contract ☐ After completion of Contract

Please provide all requested data. Place an "X" in the box next to the statements that describe this Contractor's **unsatisfactory performance/progress**. Attach supporting information, records of any claims or disputes, and any correspondence with the Contractor's bonding company.
Unsatisfactory Performance Areas

1. Contractor's work progress is unsatisfactory ☐ At start ☐ In progress ☐ At completion

   Number of days allowed by Contract for work completed to date _____

   Actual days required for work completed to date _____

   ☐ Contractor's progress has had an adverse effect on work schedule or other Contractors.

2. Contractor's performance is unsatisfactory in the following areas:
   ☐ Cooperation with other contractors, subcontractors, the Department, or other agencies
   ☐ Attitude and concern toward traveling public and property owners
   ☐ Adequate response to Department correspondence and/or instructions
   ☐ Management of Affirmative Action Program
   ☐ Other (provide details) _____

3. Contractor's performance is unsatisfactory in the following areas (continued):
   - ☐ Management of subcontractors
   - ☐ Supervision of Contract
   - ☐ Manpower (quality/quantity)
   - ☐ Equipment (quality/quantity)
   - ☐ Specification awareness, review, planning
   - ☐ Use or attempted use of materials not specified or approved
   - ☐ Job safety practices
   - ☐ Timely work progress
   - ☐ Compliance with sediment and erosion control regulations
   - ☐ Other (provide details): _____

4. The completed work is unsatisfactory in the following areas:
   - ☐ Workmanship
   - ☐ Compliance with specifications
   - ☐ Final cleanup
   - ☐ Frequency and scope of problems appearing after completion
   - ☐ Other (provide details): _____

5. ☐ Complaints concerning Contractor's performance have been received and verified.

6. Unsatisfactory performance has resulted in:
   - ☐ A major problem resulting in substantial additional cost
   - ☐ A serious problem requiring special attention by the inspection or administrative sections of a County agency
   - ☐ Inconvenience and delays for the County, its citizens, or other contractors or agencies
   - ☐ Termination of the Contract
   - ☐ Other (provide details) _____

Do you recommend that the Department consider this evaluation to prequalify this Contractor in future contract bids? ☐ Yes ☐ No

_____ _____
Division Chief Date

Concurrence: ☐ Yes ☐ No

_____ _____
Associate Director Date

Instructions: A report of Unsatisfactory Performance or Progress should be initiated by the District Engineer or Project Manager. Details and all supporting data must be attached for each unsatisfactory category.

If the Division Chief should recommend that the Department consider disqualification of the offending Contractor, the report and supporting documentation shall be forwarded to the Associate Director for concurrence/nonconcurrence.

CERTIFIED LIST OF SUBCONTRACTORS, SUPPLIERS, AND MATERIALMEN

All Contractors performing work in the public rights-of-way of Prince George's County, Maryland, shall complete a Certified List of Subcontractors, Suppliers, and Materialmen and submit it to the Prince George's County Department of Public Works and Transportation (the Department). All parties on the list will be required to complete a Release of Liens form prior to the release of final payment or bonds.

Please use the following list in preparation of Contract or bond documents.

FORM B-6

CERTIFIED LIST OF SUBCONTRACTORS, SUPPLIERS, AND MATERIALMEN

Prince George's County
Department of Public Works and Transportation

Project/
Subdivision _____ Date _____

Permittee/Contractor _____Contract/Permit Number _____

I/We _____ (Name of Contractor/Permittee) hereby certify that the following subcontractors, suppliers, and materialmen listed below were utilized on the above referenced project under the above referenced contract/permit number, and all have been paid in full in accordance with the terms and the conditions of their contracts:

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.

Witness _____ Contractor/Permittee _____

Notary

Subscribed and sworn before me this _____ day of _____, 20 ____ .

Notary Public _____

My commission expires _____

Prince George's County Department of Public Works and Transportation
9400 Peppercorn Place, Largo, Maryland 20774

CERTIFIED RELEASE OF LIENS

Prior to the release of final payments or bonds for all projects performed in the public rights-of-way of Prince George's County, Maryland, a Certified Release of Liens shall be submitted by all subcontractors, suppliers, and materialmen to the Prince George's County Department of Public Works and Transportation (the Department).

Please use the following document to prepare final payment or bond release requests.

FORM B-7

CERTIFIED RELEASE OF LIENS

Prince George's County
Department of Public Works and Transportation

Project/Subdivision _____

Contract/Permit Number _____

To whom it may concern:

This is to certify that I/We _____
(Name of Contractor/Supplier)
did provide the following work on the above referenced permit:

(*Check one box*)

☐ Excavation	☐ Bituminous Base	☐ Entrance Driveway
☐ Sediment Control	☐ Bituminous Surface	☐ Storm Drainage
☐ Gravel Base	☐ Concrete Work	☐ Landscaping

☐ Other Work_____
(*Describe work performed*)

I/We have been paid in full and there are no outstanding claims, liens, or unpaid bills for any of the work contracted for/by _____ (Name of Contractor/Permittee).

I/We hereby release and waive any and all rights, claims, liens, and damages arising in any manner in connection with the project.

Name of
Contractor/
Supplier _____

Signature_____

Witness _____ and Title _____

Date _____ Date _____

Prince George's County Department of Public Works and Transportation, Permits Section
9400 Peppercorn Place, Largo, Maryland 20774

PERMIT ACCEPTANCE AND BOND RELEASE REQUEST

In order to initiate permit closure and bond release once all construction is completed, the Contractor must submit a Permit Acceptance and Bond Release Request to the Prince George's County Department of Public Works and Transportation (the Department). This request shall only be submitted after all the requirements on Form B-12 have been completed.

Please use the following document in your submission.

FORM B-8

PERMIT ACCEPTANCE AND BOND RELEASE REQUEST

Prince George's County
Department of Public Works and Transportation
Office of Engineering

Subdivision/
Case Name _____

Case Number _____ District _____
Street/Location of
Construction Activity _____

_____

Inspector Name_____

Permittee _____

Address_____

Telephone (O) _____ (H) _____ (F) _____

Requesting Party _____ Request Date _____

Below this line, for use by DPW&T only.

_ _

Inspector Name _____ Date _____

Comments _____

_____

_____

_____

_____

_____

_____

_____

District Engineer _____ Date _____

ROADWAY ACCEPTANCE AND BOND RELEASE REQUIREMENTS CHECKLIST

The Roadway Acceptance and Bond Release Requirements Checklist is used after the completion of all the requirements associated with a Street Construction Permit. The checklist is a listing of all the Road Ordinance and Department Requirements for roadway acceptance and bond release of Street Construction Permits.

The form is designed to assist the permittee and construction inspector in addressing all the requirements for roadway acceptance and bond release. The form should be distributed by the inspector at the pre-construction meeting, and when a permit is nearing completion and acceptance by the County.

FORM B-9

ROADWAY ACCEPTANCE AND BOND RELEASE REQUIREMENTS CHECKLIST

Prince George's County
Department of Public Works and Transportation

The following items must be completed prior to requesting roadway acceptance and bond release:

☐ 1. **All work completed in Accordance with Approved Plans and County Specifications**—All work performed within the County right-of-way shall conform in all respects with the approved permit plans and County specifications including satisfactory completion of all punch list items. Prior to starting construction a pre-construction meeting must be scheduled by calling the Department's Office of Engineering at (301) 883-5710.

☐ 2. **Washington Suburban Sanitary Commission (WSSC) Paving Clearance Certificate, signed by WSSC**—This document provides assurance that water and sewer structures located within the County right-of-way are properly adjusted to final grade elevations for both base paving and surface course paving. Contact the WSSC's Office of Engineering and Construction on (301) 206-8000 upon completion of base paving (prior to placing surface course) and once again upon completion of surface course.

☐ 3. **Bituminous Concrete Asphalt**—A certification is required from the Department indicating that the bituminous concrete asphalt meets standards for both depth and density on both base paving and surface course core samples. Core samples may be taken by the paving contractor or a third-party consultant, but the project inspector must witness the sample coring. Contact the Department's Office of Engineering on (301) 883-5710 to schedule the inspector for sample coring.

☐ 4. **Storm Drain As-Built Approved by the Department of Public Works & Transportation (DPW&T**—Submit As-built drawings to DPW&T for review and approval. Contact DPW&T's Office of Engineering, Engineering & Inspection Division to arrange for submittal of As-built drawings.

☐ 5. **Street Trees Planted and Accepted or Bonded**—All required street trees must be planted, bonded, or replacement fees paid as required by Subtitle 23, Prince George's County Code Road Ordinance (see Appendix C). Contact the Department's Office of Engineering on (301) 833-5710 for inspection services at the time of planting; final inspection for acceptance of trees; release of partial tree bonds subsequent to permit acceptance; and after trees survive one full growing season. (See Form B-15, Street Tree Inspection/Evaluation and Bond Worksheet.)

☐ 6. **Property Marker Certification**—This certification is required under Prince George's County Code Subtitle 24-120. The certification letter must be of format specified in Form A-16, Sample Property Corner Monumentation Certification Letter, and must be signed and stamped by a professional Land Surveyor registered in the State of Maryland. Submit the certification to the Department's Office of Engineering; telephone (301) 883-5700.

 7. **Proof of Payment for Streetlights**—Proof of payment for street light installation is required from the utility company under whose jurisdiction the project falls. Proof of payment shall be printed on utility company letterhead and submitted to the Department's Office of Engineering, Traffic Safety Division; telephone (301) 883-5710.

 8. **Other Agency Approvals**—All work required by other agencies in conjunction with the County permit including the Maryland State Highway Administration (signals, intersection work), WSSC, Maryland–National Capital Park and Planning Commission (M-NCPPC) (storm drain outfall onto property owned by M-NCPPC) shall be completed and accepted by the respective agency. The permittee is also responsible for coordination with the Department Inspector on the completion of such items and the confirmation thereof.

 9. **All Bond Matters Settled**—Bonding shall be posted for any remaining work such as minor paving, sodding, and miscellaneous items that could not be finished due to weather conditions or for other reasons. Any uncompleted lots also require Restoration Bonds. For further information, contact the Department's Permits Section on (301) 883-5909.

 10. **All Financial Matters Settled**—Ensure that there are no outstanding bills due to the County (such as for emergency repairs, snow plowing, etc.). The permittee is also responsible for coordination with the Department Inspector on the completion of such items.

 11. **Release of Liens**—The permittee must submit a Certified List of Contractors, Suppliers and Materialmen (see Form B-9) and Certified Release of Liens (see Form B-10) for each entity listed. For further information, contact the Department's Permits Section on (301) 883-5909.

DAILY CONSTRUCTION LOG REPORT

The Daily Construction Log Report is a summary of construction conditions and practices as reported on a daily basis and held on file by the Prince George's County Department of Public Works and Transportation (the Department).

The following sample page is provided here for informational purposes only and is to be completed by an authorized representative of the Department.

FORM B-10

DAILY CONSTRUCTION LOG REPOR

Prince George's County
Department of Public Works and Transportation

ORIGINAL	—FIELD OFFICE
DUPLICATE	—DIST. OFFICE
TRIPLICATE	—CONTRACTOR
QUADRUPLICATE	—CHIEF

CONTR. NO. _____ DAY _____ DATE _____
FAP NO. _____ SKY _____ WIND _____ PRECIP. _____
ROUTE _____ SOIL/GRADE CONDITION _____ TEMPERATURE:
LOCATION _____ STREAM/TIDE STAGE _____ max _____
DESCRIPTION _____ CONTRACTOR _____ min _____ TIME
CHARGED: Prior _____ Today _____ To Date _____

REMARKS: INSTRUCTIONS, REVISIONS, VISITORS, DELAYS; REASON FOR IDLE EQUIPMENT BY KEY NO.	LABOR			EQUIPMENT		HOURS		KEY NO.
	NO.	KIND	HRS.	NO.	KIND	WK'D.	IDLE	
		SUPERINTENDENT						
		CLERKS						
		ENGINEERS						
		FOREMEN						
		MECHANICS						
		SKILLED LABOR						
		SEMISKILLED LABOR						
		UNSKILLED LABOR						
DELAYS: ☐ R/W ☐ UTILITY ☐ MATERIAL ☐ OTHER								
FOR DETAILS, SEE LOG DATED:								

ITEM NO.	THICKNESS	DESCRIPTION OR TYPE CLASS, MIX, OR BAND	LOCATION			LENGTH (ft.)	WIDTH (ft.)	AREA (sq. yd.)	TONS–CY–GALS		RATIO USED/ REQ'D.	RATIO USED/REQ'D. TO DATE
			LANE OR R/L CL	STA.	STA.				REQ/D.	USED		

PAVING RECORD
WORK DONE/MATERIAL USE

RECORD ITEM NO., DESCRIPTION, LOCATION BY STA. & OFFSET, QUANTITY COMPLETED, MATERIALS USED, ETC.	INSPECTION STAFF		
	NAME	ASSIGNMENT	HOURS

RECORD UTILITY WORK UNDER SIGNATURES:
REMARKS. LOGS MAY BE
DISCONTINUED ONLY DURING AN CONTRACTOR'S REPRESENTATIVE _____ DATE _____
OFFICIAL, COMPLETE SHUTDOWN.
DEPARTMENT REPRESENTATIVE _____ DATE _____

ASPHALT CORES
TESTING REQUEST

An Asphalt Cores Testing Request form is required for all placement of asphalt paving to be performed in Prince George's County, Maryland. The attached form must be completed and submitted to the Prince George's County Department of Public Works and Transportation (the Department) with all core test samples.

Please use the attached request form to submit core test samples.

FORM B-11

ASPHALT CORES TESTING REQUEST

Prince George's County
Department of Public Works and Transportation
Office of Engineering—Materials Section

(Complete ONE form per permit number)

Name of Project _____ Permit Number _____

Address of Project _____
County Map
_____ Coordinates _____

Date of Paving: Surface ___/___/___/ Intermediate ___/___/___/ Base ___/___/___/

Required Thickness: Surface _____ in. Intermediate _____ in. Base _____ in.

Total = _____ in.

Type of Mix: ***Surface and*** ☐ Superpave 9.5mm/12.5mm
(Check one box) ***Intermediate:*** ☐ SC/SF

Base: ☐ Superpave 19mm/25mm
☐ BC/BF

Attached to This Form: ☐ Asphalt Tickets
(Check all applicable boxes) ☐ Blueprints
☐ Acceptance Letter

If any of the above forms is not available, when will it be? ___/___/___/

Paving Contractor/ Asphalt Producer Location _____ Plant _____
Inspector's Name and Phone _____ District _____
Engineer
Core Cutter Name _____ Phone _____
Number

Core Number	Location	Coring Date	Thickness	Remarks

Submitted by _____ Date _____ Received by _____ Date _____
Prince George's County DPW&T—Materials Lab 8450-B D'Arcy Road, Forestville, MD 20747 (301) 499-8585

STREET TREE INSPECTION/EVALUATION AND BOND WORKSHEET

In order to evaluate the street tree survival and establish bonding requirements, the Prince George's County Department of Public Works and Transportation (the Department) requires the completion of a Street Tree Inspection/Evaluation and Bond Worksheet before the release of street construction permits.

The following document, provided here for informational purposes only, is to be completed by an authorized representative of the Department.

FORM B-12

STREET TREE INSPECTION/EVALUATION AND BOND WORKSHEET

Prince George's County
Department of Public Works and Transportation
Office of Engineering—Engineering and Inspection Services Division

Subdivision _____ Permit Number_____

Requested by_____ Phone Number_____

Nursery/Landscape Contractor _____ Date Requested_____

Permittee_____

Address _____

Species	Qty.	Accept	Reject	Comments

Trees Approved? ☐ Yes ☐ No (If NO, then complete Tree Bond Worksheet if requested by Permittee.)
☐ Yes ☐ No Trees from approved Plant Selection Guide
☐ Yes ☐ No Overhead utility wire consideration

Tree Bond Worksheet

Category	Qty.	Bond Each	Total
Trees that did not go through a full growing season			
Trees with one full growing season (bond unacceptable)			
Trees planted out of season, dead, unhealthy, or not installed			
Total cash tree bond required =			

Inspector's Signature _____ Date _____
Permittee's Signature_____ Date _____

NOTE: This tree inspection is valid for 90 days. If final acceptance of the permit is not made or a bond is not posted within the 90-day period, a reinspection must be requested. Please call (301) 883-5730 to schedule an inspection.

Prince George's County Department of Public Works and Transportation, Engineering and Inspection Services Division9400 Peppercorn Place, Largo, MD 20774

INTERSECTION SIGHT DISTANCE EVALUATION

The available sight distance for an entering vehicle at a roadway intersection or driveway must be adequate to allow drivers to perceive the presence of potentially conflicting vehicles. The intersection sight distance allows drivers a sufficient view of all oncoming vehicles to decide when to safely enter the roadway. Intersecting sight distances should exceed stopping sight distances.

This form shall be used to review all intersecting roadways and driveways for adequate sight distances. Please use the following evaluation form and plan in your submission.

FORM B-13

INTERSECTION SIGHT DISTANCE EVALUATION

Prince George's County
Department of Public Works and Transportation

PLEASE READ ALL OF THE FOLLOWING BEFORE YOU START THE PERMIT APPLICATION PROCESS!

Project/Subdivision Name: _____ Permit No. _____

Street Name: _____ Classification: _____

Design Speed: _____Posted Speed Limit: _____

Intersecting Street/Driveway: ___		Intersecting Street/Driveway: _____	
Sight Distance (ft)	Acceptable?	Sight Distance (ft)	Acceptable?
Right ___	Yes No	Right ___	Yes No
Left ___	Yes No	Left ___	Yes No
Comments/Corrections: _		Comments/Corrections: _____	
___ _____			
___ _____			

Intersecting Street/Driveway: ___		Intersecting Street/Driveway: _____	
Sight Distance (ft)	Acceptable?	Sight Distance (ft)	Acceptable?
Right ___	Yes No	Right ___	Yes No
Left ___	Yes No	Left ___	Yes No
Comments/Corrections: _		Comments/Corrections: _____	
___ _____			
___ _____			

ENGINEER'S CERTIFICATE

I hereby certify that this information is accurate and has been corrected in accordance with these guidelines.

_____ _____
Signature Date

_____
MD P.E. Reg. # Seal

STOPPING SIGHT DISTANCE GUIDELINES

ROADWAY	DESIGN SPEED (MPH)	SIGHT DISTANCE (FT)
Arterial	50	425
Collector	40	305
Industrial	35	250
Primary Residential	35	250
Secondary Residential	30	200

Engineer should reference AASHTO's A Policy on Geometric Design of Highways and Streets, latest edition, for the appropriate sight distance adequacy requirements.

Accepted by: _____ Date: _____

Sight Distance

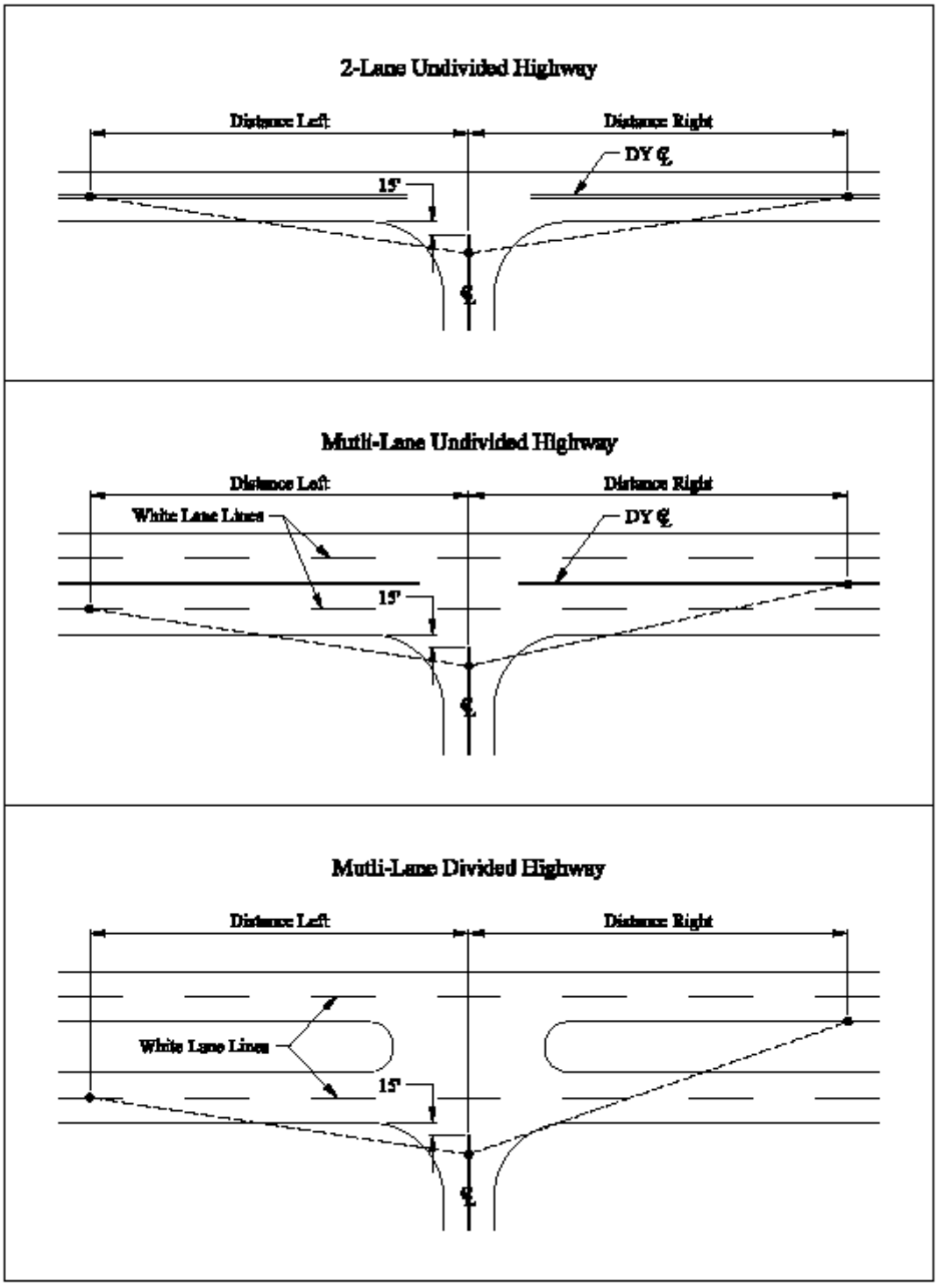
Sight distance is the distance along a roadway throughout which an object of specified height is continuously visible to the driver. The distance is dependent on the height of the driver's eye above the road surface, the specified object height above the road surface, and the height and lateral position of sight obstruction within the driver's line of sight.

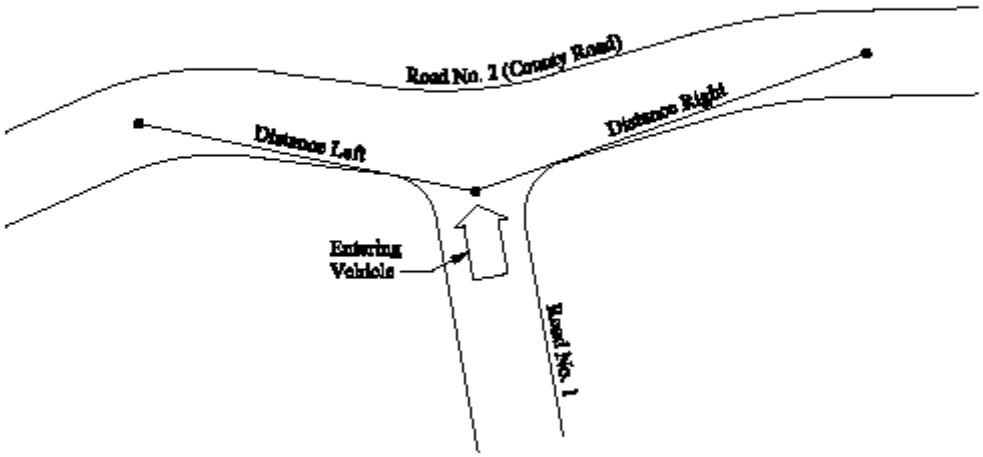
For sight distance calculations for passenger vehicles, the driver's eye is considered to be 3.5 feet above the road surface. The height of the object to be seen is 3.5 feet above the surface of the roadway.

The intersection sight distance measurement is made at a distance of 14.5 feet from the edge of the traveled roadway or curb and gutter in the appropriate lane to the furthest point along the center-line of the intersecting roadway where a point 3.5 feet above the roadway surface is visible.

Source: American Association of State Highway and Transportation Officials

Please see attached drawings (list):

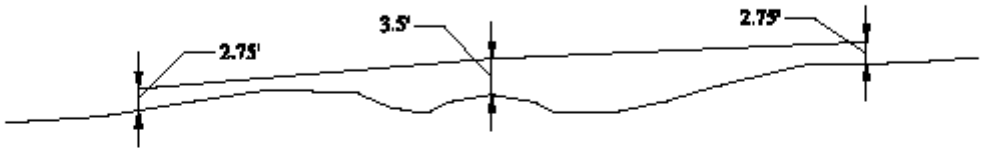

2-Lane Undivided Highway
Distance Left
Distance Right
DY ℄
15'
℄
Mutli-Lane Undivided Highway
Distance Left
Distance Right
White Lane Lines
DY ℄
15'
℄
Mutli-Lane Divided Highway
Distance Left
Distance Right
White Lane Lines
15'
℄



Plan View

(Not to scale)

For minimum sight distance requirements, utilize Table I-2 which may be found in Section I-Roadway Development Guidelines.



Vertical Profile

(Not to scale)

UTILITY COLOR CODES

Prior to undertaking any construction work or digging within the public right-of-way, all utility facility companies, contractors, permittees, residents or other parties must request a utility location check. Forty eight (48) hours before you dig or start roadway construction work, please call the "Miss Utility" Service Protection Center at 1-800-257-7777 or go online to www.missutility.net. Miss Utility representatives will coordinate the marking of all underground utilities within the limits of your construction work area. Each underground utility must always be appropriately marked with color-coded paint. The various colors identify the specific type of underground utility that exists and alerts work crews of any hazardous conditions.

FORM B-14

UTILITY COLOR CODES

Prince George's County
Department of Public Works and Transportation

Color Codes for Marking Underground Utility Lines

The facility owner or its contract locator will mark the ground with either flags or paint. The colors below are industry standard and each color identifies a specific type of utility.
These Pantone Matching System (PMS) colors are close approximations of the ink formulas represented by American National Standards Institute color chips for safety colors.
Forty eight (48) hours before you dig, call "Miss Utility" Service Protection Center at 1-800-257-7777 or go online to www.missutility.net.

AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE

		WHITE—Proposed Excavation
PMS 806		**PINK**—Temporary Survey Markings
PMS 1795		**RED**—Electric Power Lines, Cables, Conduit, and Lighting Cables
PMS 108		**YELLOW**—Gas, Oil, Steam, Petroleum or Gaseous Materials
PMS 144		**ORANGE**—Communication, Alarm or Signal Lines, Cables, or Conduit
13.5 parts process, 2.5 parts reflex		**BLUE**—Potable Water
PMS 253		**PURPLE**—Reclaimed Water, Irrigation, and Slurry Lines
PMS 3415		**GREEN**—Sewers and Drain Lines

PAVEMENT SURFACE PROFILE PROCEDURES AND MSHA-FORM PD-11

The Prince George's County, Maryland, Department of Public Works and Transportation (the Department) has adopted the Maryland State Highway Administration's (MSHA) testing procedures for determining ride quality on new asphalt road surfaces. Category 500 of the Maryland State Highway Administration *Standards for Construction and Materials* manual requires standardization testing (synchronization) based on International Roughness Index (IDI) testing procedures.

Upon completion of road pavement operations, the Department requires the use of an Inertial Profiler to perform Quality Assurance (QA) testing prior to acceptance of all arterial and major collector roads having a minimum design speed of 50 mph. This procedure shall be accomplished in accordance with these guidelines and applies to Capital Improvement Program Contracts and Street Construction Permits.

Please utilize the following Pavement Surface Profile guidelines for testing and acceptance of final roadway paving.

FORM B-15

Recommend Approval:			Maryland Department of Transportation State Highway Administration Office of Materials Technology MARYLAND STANDARD METHOD OF TESTS	
	Team Leader	Date		
	Division Chief	Date		
Approved:	Director	Date	OPERATION OF THE INERTIAL PROFILER	MSMT 563

SCOPE:

This procedure is used to measure pavement roughness using an inertial profiler with laser height sensors. A vehicle containing the sensors and electronic processing equipment is driven over the pavement to be measured. A computer-generated profile is used to derive the International Roughness Index and to identify defects that exceed a specific threshold.

REFERENCE DOCUMENTS:

ASTM E 950 Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference.

Sayers, Michael W., and Karamihas, Steven M. "The Little Book of Profiling", University of Michigan Transportation Institute, Ann Arbor, Michigan, 1998.

National Cooperative Highway Research Program Report 434 "Guidelines for Longitudinal Pavement Profile Measurement" 1999.

TERMINOLOGY:

Accelerometer is a transducer that provides an output proportional to acceleration.

Aliasing is the error which results from sampling a long wavelength signal that is mixed with a short wavelength noise signal.

Anti-Aliasing filter is a low pass filter. It suppresses short wavelength contamination of longer wavelength measurements to improve the accuracy of the sampling process.

Filtering is a procedure to extract desired information from a signal that also contains unwanted information (commonly called noise). Digital filtering is a calculation procedure that takes one set of numbers and transforms them into another set in which the noise is reduced. Moving averages are one type of such transform or filter.

High-Pass filtering reduces the effect of long wavelengths that are associated with gradual elevation changes such as hills.

Index. A measure or standard. Within the context of this test method, a suitably chosen index quantifies the ride quality of a pavement.

Inertial Profiler. The Inertial Profiler is a vehicle that has to be moving in order to measure and record the elevations profiles of a roadway from which roadway roughness is determined.

Infrared laser sensor is a non-contacting transducer that provides an output proportional to the distance from the sensor to a reflecting surface. These sensors are mounted at a nominal height, or standoff, above the roadway surface when the test vehicle is in the static position.

Low-Pass filter is a smoothing type filter. It reduces the effect of short wavelengths that are associated with rapid elevation changes such as expansion joint ribs.

Measurement range is the detectable range of heights, measurable by the sensor.

Moving average is a filtering process whereby each data point is replaced with the average value of several adjacent points or elevations. It is a smoothing process because the changes from one elevation point to the next will not be as significant due to the fact that the difference has been divided by the total number of data points in the averaging scheme. It is a type of "low-pass" filter.

Profile is a two-dimensional slice of the roadway surface, taken along an imaginary line, such as the wheel path, in the longitudinal or travel direction. It represents the perpendicular deviations of the pavement surface from an established reference parallel to the horizontal.

Reference Line is the imaginary line formed by the infrared laser sensor and the accelerometer in a static mode.

Repeatability is consistency in successive measurements of the same quantity over time. It is a quantifier of the variability in measurement error.

Roughness is the deviation of the roadway surface from a true horizontal surface, due to surface finish, aggregate texture, the underlying layers etc. All of the properties that induce vertical motion in traveling vehicles contribute to the roughness (or lack of smoothness) of the traveled surface that is being evaluated.

Sensors are devices that measure quantities. They are responsive to a change in a physical measurement such as distance, temperature, or acceleration.

Sample Interval is the longitudinal distance between data capture points. The data includes height and accelerometer values. This is different from the sampling rate of the sensors which is typically much faster

Report Interval is the travel distance between the output of an elevation for the creation of a profile or is used for the calculation of derivative indexes.

Standoff Distance is the distance from the light source to a point in the center of the measurement range.

Transducer is a device that converts variables of one type (i.e. distance) into those of another type (i.e. voltage). These conversions must conform to a known transformation (i.e. proportional) to be useful.

SUMMARY OF METHOD:

This test method provides a means for measuring the roughness of existing, new, or rehabilitated pavement surfaces. The resultant International Roughness Index (IRI) will indicate a riding condition of the highway pavement. Low roughness can increase the roadway's durability, improve ride quality, and reduce operating cost for the motorist.

APPARATUS:

1. The Inertial Profiler is a test vehicle conforming to E 950 Class I/II containing the following minimum equipment:

   (a) Accelerometers
   (b) Infrared Laser Sensors
   (c) Distance Measurement Instrument
   (d) Data Acquisition System
   (e) On Board Computer
   (f) On Board Display
   (g) External Data Storage Device
   (h) Calibration Blocks
   (i) Automated start and stop triggering device

2. The On Board Computer in the test vehicle shall be capable of collecting and analyzing data from the sensors. The computer shall generate a simulated profile and calculate IRI and provide data on defects greater than a specified threshold. The computer shall be capable of providing the following information:

   (a) Report the appropriate date, time, contract number, route, location, testing directions, lane, and operator data, software versions for data collection and processing, filter settings, and data collection speed.

   (b) Record the equipment parameters relating to calibration and settings.

   (c) Provide a generated profile, using a scale of 1 in. = 25 ft for horizontal measurements and a 1:1 scale for vertical measurements.

   (d) Report the accumulated distance or station number for each 25 ft section in whole numbers. Report the IRI for each wheel path for each section, the average IRI of the two wheel paths for each section, and the average IRI for the entire run. Report sections are 25 ft long and one lane wide. Tested sections shorter than 25 ft due to exempt areas [535.03.02(b)] or the project end will be ignored for purposes of pay adjustment, but still shall be measured and reported.

   (e) Note the vertical measurements on exempt areas, along with continuing to accumulate odometer measurements. These readings shall be omitted from the readings used for any pay adjustments.

3. The profiler shall take measurements in both wheel paths simultaneously, with a spacing between the wheel paths from 67 to 69 in.

CALIBRATION:

General.

Based on the nature of the equipment and the precision level required, it necessitates the establishment of a regular calibration schedule. The manufacturer of this equipment has a recommended schedule that can be used as a guide for a regular schedule. The equipment should be calibrated according to the manufacturer's calibration and on a monthly basis as a minimum.

Transducers and Sensors.

Accelerometer. All accelerometers shall be self-calibrating. This calibration feature may be internal or external. After calibration, the accelerometer shall display an alarm when it detects an abnormal value for acceptance or rejection by the operator.

Displacement Transducer. The manufacturer shall provide detailed calibration procedures that are to be followed. This typically involves:

Displacement transducers are calibrated in a static mode with the operator in the test vehicle. The first distance to be checked is the standoff distance. This check is accomplished by having the transducers measure the distance to a calibration bar. The top end of this bar is at the standoff distance. When the sensors are reading the calibration bar correctly, an accurately measured step is placed underneath the transducers. The readings obtained are then compared to those that should be indicated by the sensors, taking into consideration the readings that were obtained at the standoff height and the block thickness. Typical values for the standoff height are 8.0 to 16.0 in. and a block thickness of 2.0 in. To check linearity, a second 4.0 in. block may be used. Once calibrated, an alarm should be triggered if a height beyond a specified range is detected.

Distance Transducer. Distance transducers come with manufacturer recommendations on calibration. This usually involves the following:

A predetermined segment of roadway is first established. This is normally at least 1000 ft in length. The vehicle, with the distance transducer turned on, is driven along this reference segment and a reading of pulses is obtained. Several runs are made of the same segment. Then the average pulse count is computed and entered as the calibration constant. Distance transducers should be checked according to their manufacturers recommended frequency, when vehicle tires are changed, total vehicle weight including operator is changed, or when there is a question about their performance.

The distance-measuring device should generate an alarm if it detects unreliable signals from its transducer.

Annual Approval. All profilers used on Administration projects will be approved annually at a designated state facility. This approval is in addition to the Standardization testing. For approval, the profiler shall be subjected to a series of tests to verify its ability to measure standardized profiles

with the required accuracy. All filters and mathematical transforms that are built into the processing system that create the IRI will also be checked.

Standardization. All profilers used on Administration projects shall be run on an Administration pre-established specified highway test site on a regular basis. Three runs on one of the pre-established specified highway test sites shall be completed within the previous 60 calendar days before profiling for pavement surface profile on a project. These three runs shall meet the repeatability requirements shown in the Calculations section of this test method. The standardization test results will provide a measurement baseline for comparison of quality control and quality assurance test results at the project level. The following test sites each 0.2 miles in length are for use as Standardization Test Sites:

1. Baltimore County: I 70 between I 695 (Baltimore Beltway) and the Park and Ride at the east end of I 70. Test site signs are posted in the Eastbound direction along the median. The test site is in the far left travel lane.
2. Allegany County: MD 144 (Old National Pike) east of Flintstone Elementary School. Off of I 68 at exit #56 to MD 144 - National Pike : Flintstone. Test site signs are posted in the Eastbound direction.
3. Talbot County: MD 662 (Centreville Road) between Airport Road and Forest Street. Located off of US 50 near the Easton Airport. Test site signs are posted in the Northbound direction.

PROJECT TEST SECTION SETUP:

1. When ready to profile a project, begin at the limit of paving, measure 50 ft in the direction of travel and mark the limit of profiling at the start of the project. From the start of profiling, IRI shall be reported in 25 ft sections. Mark the end of profiling at any exemption area [Section 535.03.02(b)] or the limit of profiling at the end of the project (50 ft before the limit of paving). After an exemption area, mark the beginning of a new 25 ft section. Any resulting section less than 25 ft in length shall be ignored for purposes of pay adjustments. Repeat this process for the other direction of travel on the project. Note that the section breaks may be at different locations for each direction of travel. Sections prior to an exemption area or the last section on the project in each direction of travel are the only sections that might be less than 25 ft. For dual lane or wider roadways, mark the limits of profiling and exemption areas across all lanes in the same travel direction at the same point. This may result in slightly more than 50 ft being ignored for profiling in some lanes at skewed bridges on multi lane roads.

2. During the paving operation, if the end of a days production does not occur at the limit of work or at an exemption area then profile the resulting partial section, area less than 25 ft long, and the transverse joint with the next paving days production as a full 25 ft section. The result will be IRI reported for full 25 ft sections with no partial sections due to the end of a paving shift.

TESTING PROCEDURE.

General.

System Power. Electronic equipment should be turned on and warmed up before any testing can be done. The stabilization period is found in the manufacturer's manual.

System Parameters. Selection of wavelength limits, available indices, etc. must be checked to comply with the following:

1. Long wavelength filter - 300 ft
2. Short wavelength filter - 0.5 ft

Calibration Checks. Perform system calibration checks prior to any testing as outlined in the section above.

Measuring Speed. Driving speed shall be as nearly constant during testing as can be maintained. Often better results are obtained at speeds in the normal driving range. The selected measuring speed shall be within the range that was utilized when the equipment was most recently approved.

Sudden changes in speed should be avoided (i.e. hard braking) while testing. This may give erroneous readings if the light beam falls outside the standoff range or the sensors are not perfectly vertical.

Test Location. When preparing to run a test on a roadway it is recommended that the operator become familiar with the project, its limits, and other outstanding features to facilitate safe testing at a constant speed.

Data Acquisition. Enter the information on the operator, project, and equipment parameters. For the test data, collection shall be done in the direction of travel for that lane.

The vehicle and all systems should stabilize at the test speed prior to entering the test sections. This requires bringing the vehicle to the desired test speed at least 300 ft prior to the beginning of the test location.

Prior to reaching the test sections, activate all testing and recording equipment so that it is stabilized at the test speed.

Identify the beginning of the first test section by beginning the capture of data. This activation must be automatic. It is typically triggered by reflective tape on the pavement or attached to a traffic cone. This start point should be repeatable to less than 0.5 ft.

Maintain a smooth driving pattern with the height sensors centered in the wheel paths.

Compare the data being displayed from both wheel paths. They should track favorably except

for the short wavelength portion.

Identify any features along the test sections such as bridges, culverts, milepost or other pertinent information. Identify the end of the test length.

Repeat these data acquisition steps until three acceptable runs have been measured. See Calculations section below for criteria.

CALCULATIONS.

The following is a list of the calculations that will be completed for each tested 25 ft section and each run:

1. The average IRI for each section (averaging left and right wheel paths) on each run

2. The overall average IRI for each run

3. The coefficient of variation of the overall average IRIs; this value must be less than or equal to 3 percent for three runs for the data to be accepted.

All IRI values shall be computed in units of inches per mile and rounded to the nearest whole number.

REPORT.

A copy of the final roughness report for all sections tested shall be submitted to the Engineer and the Administration's Office of Materials and Technology in accordance with the Special Provisions. The report shall contain the following:

1. An electronic copy, and if requested a printed copy, of the results from traversing one of the standardization sites as printed and saved by the test equipment. It shall include as header information, the same information as required for data collection on a project. This information is required with the first Quality Control data submission for the project and for any future data submissions more than 60 days from the previously submitted standardization test.

2. An electronic copy, and if requested a printed copy, of the test results for the pavement being measured as generated by the equipment performing the test. This report shall be for project level Quality Control (QC) data and shall include:

   (a) Header information including the equipment identification and approval date, site description (route, lane, limits, and direction), date and time of testing, equipment settings, the operator's name, software versions, filter lengths and test speed data (if not given for each section).

   (b) The IRI values of each wheel path for each section of the 3 required runs.

(c) The exact length of each test section (typically 25 ft).

(d) The location of any section exceeding the prescribed IRI section limit

(e) Identification of data sections that represent any exempt areas which are to be excluded from pay adjustment calculations.

(f) A column identifying the accumulated distance or station number for each 25 ft section.

An electronic copy, and if requested hard copy data shall be submitted to the parties and locations and within the required time limits as specified in the Special Provisions. Electronic data shall be submitted either by e-mail, on 3.5" diskettes, or on CD-ROM. Raw profile data (distance and elevation values) shall be saved by the testing vehicle's computer equipment and shall be available for all standardization and project QC data runs until the project is closed. However, the raw profile data does not need to be submitted unless specifically requested by the Administration.

Data Submittal. All data shall be submitted to the Engineer and in electronic format to the Administration's Office of Materials and Technology via one of the following:

(a) **E-mail:** ridespec@sha.state.md.us

(b) **Delivered:** **Office of Materials Technology**
2323 West Joppa Road
Lutherville, MD 21093
Attention: Team Leader

APPENDIX C: ENABLING LEGISLATION

PREFACE

The Prince George's County Code provides enabling legislation to support these *Specifications and Standards for Roadways and Bridges in Prince George's County, Maryland*. Appendix C provides the user with a quick reference to County law that regulates and governs roadway functions or activities which pertain to the Department of Public Works and Transportation.

Applicable sections of Subtitles 23 through 28 of the Prince George's County Code have been included to provide the user with documentation of the County law that regulates and governs construction, transportation and circulation on private roads and easements, the protection of trees and vegetation, vehicles and traffic, and the prohibition of illegal sign installation within the right-of-way.

For the **most recent version** of the County Code, you are directed to the Prince George's County Web site to utilize the County Legislative Information System (LIS) at

http://www.princegeorgescountymd.gov/Online_Services/
Select "Legislative Information System."

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SUBTITLE 23. ROADS AND SIDEWALKS.

DIVISION 1. GENERAL PROVISIONS.

Sec. 23-101. Short title; purpose.

(a) This Subtitle and all provisions herein shall be known and may be hereafter cited as "The Road Ordinance of Prince George's County, Maryland."

(b) The purpose of this Subtitle shall be to promote the safety and welfare of the citizens of the County by regulating and establishing standards for all road construction, as herein defined, and to assure the provision of adequate and safe roads in connection with the development of, or construction upon, adjacent or nearby lands.

(CB-98-1989)

Sec. 23-102. Definitions.

(a) Except as herein provided, the definitions of words and phrases used in this Subtitle shall be the same as stated in Subtitles 1, 4, 24, 26, and 27 of this Code. If not defined in the said Subtitles or herein, the words or phrases shall have the meanings generally recognized under Maryland law.

(b) The following words and phrases are hereby defined with respect to their use in this Subtitle:

Acceptance. The decision or ruling of the Director, or his duly authorized agent, that the construction specified in a permit, or under contract with the County, has been completed so as to allow the release of the permit and the assumption of County maintenance of the completed construction.

Applicant. Any person, as herein defined, who has applied for a permit to perform any construction regulated by this Subtitle.

Approval. The decision or ruling of the Director, or his duly authorized agent, that the plans, specifications, agreements, conditions, and other supporting documents submitted by an applicant are in order and meet the applicable standards and requirements of this Code, so that a permit may be issued.

Default. The condition in which a permittee has failed to complete the work covered within the scope of the permit within the time prescribed in the permit, or the time prescribed by this Subtitle if not stated in the permit.

Department. The Department of Public Works and Transportation of Prince George's County.

Design and Construction Standards. The "General Specifications and Standards for Highway and Street Construction" and the "Specifications and Standards for Highway Traffic Signals" of the Department, as adopted and amended from time to time as provided for by this Subtitle, together with the Design and Construction Standards specified herein, and the policies and procedures adopted pursuant to the authority of the Director as provided for by this Subtitle.

Developer. Any person, as herein defined, undertaking any building, alteration, reconstruction, or other development or redevelopment activity as herein defined.

Director. The Director of the Department of Public Works and Transportation, or his duly authorized agent.

Inspector. A person authorized by the Director to observe and inspect conditions within or affecting the right-of-way, to include road construction and materials used in road construction to determine or enforce compliance with this Subtitle, the Design and Construction Standards, and the terms of any permit or contract requirement.

Litter. Litter as defined by Section 13-261 of this Code.
Park and Planning Commission. The Maryland-National Capital Park and Planning Commission.
Permit. An official document or certificate issued by the Director, or his duly authorized agent, authorizing performance of specified construction at a specified location and within a specified time, together with all supporting documents, agreements, conditions, plans, and specifications.
Permittee. Any person who has been granted a permit for construction. Also, any contractor, subcontractor, excavator, or other person undertaking construction pursuant to a permit.
Person. A person as defined by Section 1-102 of this Code; also any public utility, public agency, political subdivision, authority, or agent thereof.
Planning Board. The Planning Board for Prince George's County, as defined in Article 28 of the Annotated Code of Maryland.
Public Utility. An organization franchised by the County or State Government or authorized by law to install, operate, and maintain facilities in public or private rights-of-way for the purpose of distribution of fuel or energy, for communication, or for distribution of a public water supply and collection and conveyance of sanitary sewage or storm water. This term does not include an organization franchised to construct, operate, or maintain a public transportation system.
Right-of-Way. Any land area which has been dedicated to public use by a plat of subdivision or other instrument recorded in the land records of the County; also, any land area deeded to or acquired by the County for road or transportation purposes; also, any land area which has been conveyed to a public agency by easement for public use for road or transportation purposes; also, any land area which has been declared by competent authority to be a public right-of-way through use or through prescriptive usage in accordance with Maryland law; also, any land area along a County-maintained road which falls within the traveled way or the actively maintained shoulders and side ditches of the County-maintained road. With respect to a private road conforming to this Code, any land area contained in an easement or private right-of-way recorded in the land records of the County for ingress and egress, access, or terms of similar meaning. With respect to storm water management facilities, any land area contained in an easement or right-of-way recorded in the land records of the County for the installation, operation, or maintenance of the said facilities.
Road. Any travel way or right-of-way, whether open or not, and any land area dedicated to public use, in a recorded deed or recorded plat of subdivision, for the purpose of, or used for, passage of vehicular or pedestrian traffic, together with adjacent appurtenant drainage ditches, channels, support slopes, structures, walks, and traffic control devices. This term shall embrace all ways designated as roads, streets, alleys, lanes, paths, highways, avenues, or terms of similar meaning.

(A) **County Road**.

(i) **County-maintained**. A public road which has been accepted for full perpetual maintenance by the County.

(ii) **Other Public**. A public road which has been dedicated, deeded, or assigned to public use through easement, and is open to the public, but over which no public agency has assumed the responsibility for full maintenance. Maintenance by the County is limited to the correction of dangerous conditions so as to permit all-weather use by emergency vehicles and to correct any condition that jeopardizes the lives of the motoring public.

(iii) **Other Public Surfaced**. An other public road which has been improved with an all-weather surface by the County. Maintenance is limited to providing snow and ice control as necessary for emergency vehicle access, drainage work necessary to protect the all-weather surface, and repairs to the paved surface.

(B) **Federal Road**. A public road which is under the jurisdiction of the United States Government.

(C) **Historic Road**. A public or private road, as designated by the County Council, which has been documented by historic surveys or maps, and which maintains its historic alignment and

historic landscape context through views of natural features, historic landscape patterns, historic sites and structures, historic farmstead groupings, or rural villages.

(D) **Municipal Road**. A public road which is under the jurisdiction of an incorporated municipality.

(E) **Park Road**. A public road which is under the jurisdiction of the Park and Planning Commission.

(F) **Private Road**. Any road which is not a public road.

(G) **Public Road**. A road which has been accepted for maintenance by a public agency, political subdivision, or incorporated municipality; also, any road which lies within a right-of-way owned by, or under the jurisdiction of, the County or dedicated to public use by a recorded deed or recorded plat of subdivision; also, any road which has become recognized as public under Maryland law through long use by the general public.

(H) **Scenic Road**. A public or private road, as designated by the County Council, which provides scenic views along a substantial part of its length through natural or manmade features such as forest or extensive woodland, cropland, pasturage, or meadows; distinctive topography, including outcroppings, streambeds, or wetlands; traditional building types; historic sites; or roadway features such as curving, rolling roadway alignment and "leaf tunnels."

(I) **State Road**. A public road that is under the jurisdiction of the State of Maryland.

Road Construction. Any act of opening, cutting into, clearing, grading, cultivating, excavating, maintaining, repairing, building, constructing, improving, or otherwise altering any road or any part thereof; also, placing any structure, plant, or other permanent object in a road, whether authorized by permit or not; also, any act of establishing or creating an entrance into any road.

Roadside Tree. Any tree or shrub growing within the right- of-way of any public road.

S.H.A. The State Highway Administration of Maryland.

Specifications. The "General Specifications and Standards for Highway and Street Construction" and the "Specifications and Standards for Highway Traffic Signals" of the Department, as adopted by this Subtitle and as amended from time to time as provided by this Subtitle, along with any construction specifications, general specifications, special conditions, and terms of any covenant or agreement referenced in a construction contract or a permit for road construction, as adopted pursuant to the authority of the Director as provided for by this Subtitle.

WSSC. The Washington Suburban Sanitary Commission.

Weeds. Weeds as defined by Section 13-261 of this Code.

(CB-98-1989; CB-73-2000; CB-75-2000)

Editor's Note: CR-113-1992 designated Bryan Point Road as a scenic road and requires the Department of Public Works and Transportation to recommend design standards for scenic roads. CR-39-1999 designated a portion of Old Crain Highway between the Town of Upper Marlboro and U.S. Route 301 as a scenic road.

Sec. 23-103. Obligation for road improvements.

(a) Any person seeking to undertake building, alteration, reconstruction, or other development or redevelopment on land which fronts on an existing or proposed public road shall be responsible for constructing or upgrading said road to an approved standard. No person shall undertake any building, alteration, reconstruction, or other development or redevelopment on a property, and no building permit shall be issued for such activities unless the Department has determined compliance with the requirements of this Subtitle. The road shall be constructed to its ultimate cross section in accordance with the Design and Construction Standards, to an alignment approved by the Department.

(b) Any person required to obtain a haul road permit pursuant to the provisions of this Subtitle shall be required to install pavement for a sufficient distance, as determined by the inspector, from an existing road onto the site wherein the facility is located, as would effectively prevent the deposit of debris, fill, refuse, or other sediment on an existing road during the ordinary course of hauling operations, unless other methods consistent with said purpose, and approved by the inspector, are employed.

(c) No person shall undertake any road construction without having first obtained a permit from the Department in accordance with the provisions of this Subtitle, unless specifically exempted.

(d) All road construction shall conform to the requirements of this Subtitle and to the approved plans, specifications, and terms of a permit issued by the Department, and, unless otherwise stated in the approved plans and the permit, to the Design and Construction Standards.

(e) Where the Director has waived or deferred requirements for improvements to an other public road, any further improvements to the roadway shall be at the sole expense of the owners of the abutting properties to the extent that the improvements to be made include those improvements which were previously waived or deferred. The County shall not be obligated to assume responsibility for the maintenance, repair, or improvement of the road or portion of the road where road construction requirements have been waived or deferred.

(f) Where the Director has waived or deferred requirements for improvements on or along County-maintained roads, any further improvements to the roadway shall be at the sole expense of the owners of the abutting properties to the extent that the improvements to be made include those improvements which were previously waived or deferred.

(g) No person shall establish or create an entrance or intersection of a road, driveway, haul road, or other vehicular way into any County road unless the Director has determined compliance with the requirements of this Subtitle.

(CB-98-1989)

Sec. 23-104. Exemptions.

(a) The following road construction activities do not require a permit from the Department:

(1) Road construction by the United States Government, or an agency thereof, incidental to construction or development on property under the jurisdiction of the United States Government;

(2) Road construction by the Maryland State Highway Administration in connection with the construction, improvement, or maintenance of a State road;

(3) Road construction by, or under, a permit or contract issued by an incorporated city, town, or village upon a municipal road under the jurisdiction of said city, town, or village;

(4) Road construction by a person working in conformance with a contract with the Department for construction, improvement, or maintenance;

(5) Activities pursuant to mandatory requirements for removal of snow and ice and incidental upkeep of sidewalks, entrances, and grass areas in the public right-of-way by, or on behalf of, the owner of abutting property;

(6) Placement of mailboxes, newspaper delivery boxes, and similar facilities, provided that they conform to standards established by the Department;

(7) Erection of temporary real estate directional signs in conformance with this Code;

(8) Activities for which the Director has granted a waiver.

(CB-98-1989)

Sec. 23-105. Authority of the Director.

(a) The Director shall administer and enforce this Subtitle except as specifically provided otherwise. In addition, the Director is authorized and empowered to make, adopt, and amend such rules and regulations as are reasonably necessary to implement the requirements and purpose of this Subtitle, and to fully exercise the authority of Article 25A of the Annotated Code of Maryland and the County Charter, to protect the public safety and health with respect to public roads under the jurisdiction of the County.

(b) The Director shall review the Design and Construction Standards and may recommend amendments or revisions as he deems necessary, from time to time, except as otherwise specifically prohibited. Prior to implementing a revision to the Design and Construction Standards, the proposed revision shall be made available to the public for input.

(c) The Director may disapprove the issuance of a permit for all or part of the proposed road construction where the work will interfere with the access to adjacent properties or the abutting lots, will not provide adequate traffic safety or circulation or continuation of the road, or the road construction may have an adverse effect on the public roads or nearby properties.

(d) At any time prior to acceptance of the completed road construction under a permit issued by the Department, the Director may find that the limits or details of the work called for in the permit will not provide proper grading, will interfere with access to adjacent properties or the abutting lots, or will not provide adequate drainage or traffic circulation or continuation of the road, and for these and other reasons indicating that the road construction may have an adverse effect on the public roads or nearby properties may:

(1) Alter the permit requirements to extend, reduce, or modify the extent or details of the road construction; or

(2) Revoke the permit where work has not started pursuant to the procedures contained herein.

(e) Where the Director finds that road construction has been performed by an owner, occupant, or developer of property abutting a road, or by another person, whether the work was under a permit or not, and a situation has been created which constitutes or creates a hazard or interference to the users of the road, results in a nuisance, or is otherwise not in compliance with the County Code or the Design and Construction Standards, the Director may order the owner or developer of the abutting properties, or the person who created the situation, to correct or remove the construction or correct the situation within a specified period of time. If the owner or developer of the abutting property fails to take corrective action as specified in the order within the designated period of time, in conformance with this Subtitle, the Director may cause the necessary corrections to be made, and the costs of this action may be assessed to the owner in accordance with the provisions of Section 23-109. If a person who is not the owner, developer, or representative of same for the abutting property creates a situation, as set forth above, which the person fails to correct when notified by the Department, the Department may perform the necessary corrective action and the person who created the situation shall be guilty of a misdemeanor.

(f) The Director shall establish and apply standards for the maintenance of all County roads.

(g) The Director is authorized to waive, defer, or accept payment in lieu of compliance with the requirements of this Subtitle (except as provided in Subsection (h), in whole or in part, where construction of road improvements is not practicable or desirable due to scattered ownership of lots in the area, insufficient right-of-way, or other factors determined by the Director to constitute an unreasonable hardship to the applicant or permittee, or hazard or nuisance to the public. Nothing herein shall be deemed to authorize the Director to waive or reduce any private right-of-way or easement standards set forth in Section 24-128 of this Code, but the Director may increase these standards when deemed appropriate.

Sec. 23-106. Validity of prior ordinance limited.

Any valid permit, issued in conformance with this Subtitle prior to the effective date of this Section and in force on said date, shall continue in force subject to the requirements of law in effect at the time of its issuance; however, such permit shall be subject to the requirements of the fee schedule and bond requirements in force at the time of any request for extension. (CB-98-1989)

Sec. 23-107. Penalty.

(a) Any person who does any road construction in a public right-of-way without a valid permit, or performs work in conflict with the detailed plans submitted and approved for work to be performed under permit, or creates a situation within the right-of-way which requires corrective action shall immediately take those actions necessary to reinstate a pre-existing permit where the permit has expired or been suspended, or obtain a permit where none existed, and then correct or remove said work or correct said situation to bring it into conformance with established requirements or standards within the time specified in a written Notice of Violation from the Department. Noncompliance on the part of the responsible person shall be a violation of this Subtitle.

(b) Any person required by this Subtitle to have a permit who performs work which is in violation of the provisions of this Subtitle, approved permit plans, or a lawful order issued there under, or creates a situation in the right-of-way which constitutes a hazard to public safety, shall be guilty of a misdemeanor punishable by a fine of not more than One Thousand Dollars ($1,000.00), by imprisonment for not more than ninety (90) days, or by both such fine and imprisonment for each offense. Each day that a violation continues shall be deemed a separate offense.

(c) The application of such penalty shall not preclude the enforced removal, abatement, or correction of the conditions, which were found to be in noncompliance, through appropriate proceedings in a court of competent jurisdiction. In addition, the County may take those actions necessary to correct the situation, and all costs therefore shall be billed to the responsible person in accordance with the provisions of Section 23-109, or be recovered through legal recourse. (CB-98-1989)

Sec. 23-108. Appeals; right of appeal.

(a) Prior to the commencement of any appeal, any person aggrieved, with the exception of a person aggrieved under Section 23-117(a), shall, within fifteen (15) days of a decision, action, or nonaction by an authorized representative of the Department, make known in writing the basis of his complaint to the individual responsible for the decision, action, or nonaction, together with a request for review. If a satisfactory resolution cannot be reached within fifteen (15) days of the receipt of the written complaint, the person aggrieved may request a review of the decision by the next higher level of authority (Division Chief, Associate Director, Director).

(b) Any person may file an appeal to the Board of Administrative Appeals within thirty (30) days (except for a Notice of Violation which shall require the appeal to be filed within fifteen (15) days) after the resolution period provided for in Subsection (a), above, or within thirty (30) days after the expiration of a thirty (30) day period allowed for such resolution. No appeal (with the exception of a Notice of Violation) shall be considered by the Board of Administrative Appeals until the person aggrieved has obtained a decision by the Director, or the thirty (30) day period for resolution has passed without such decision.

(CB-98-1989)

Sec. 23-109. Enforcement; charges; recorded statement; lien.

(a) Whenever the Director has provided notice to a person and instructed said person to perform corrective action within or adjacent to a public right-of-way, or to perform construction which has been deferred in accordance with the terms of an agreement or covenant, which said person fails to perform within the amount of time specified by the Director, the Director may cause the necessary corrective action or construction to be made at County expense and initiate the procedure for reimbursement of the cost as set forth herein.

(b) When the County has effected the removal of a hazard, or taken necessary corrective action to correct a problem within or adjacent to a public right-of-way, or has paid for said removal or corrective action, or has performed construction which was the responsibility of the permittee, adjacent property owner, or another responsible person, the actual cost thereof, if not paid by the permittee, owner, or person within thirty (30) days, shall be collected by initiating one or more of the following courses of action:

(1) The recordation of a statement from the Director creating a lien against the adjacent property to be collected through a supplemental tax bill where the owner is responsible; or

(2) Action against any bonds posted by the responsible party where the permittee is responsible; or

(3) Legal action, including action for injunction relief, in a court of competent jurisdiction.

(c) Where the full amount due the County is not paid by such owner within thirty (30) days after notice of the charges for the removal of a hazard or correction of a problem, the Director shall cause to be recorded with the Office of Finance for Prince George's County a sworn statement showing the cost and expense incurred for the work, the date the work was done, and the location of the property on which, or adjacent to which, said work was done. The sworn statement shall be available for public inspection. Recordation of such a statement shall constitute a lien on the subject property, and the amount of such lien shall be collected in the same manner as the County tax on real property.
(CB-98-1989)

Sec. 23-110. Reserved.

Sec. 23-111. Reserved.

DIVISION 2. PERMITS, BONDS, FEES.

Sec. 23-112. Application for permit.

(a) Application for a road construction permit shall be made on forms provided by the Director, and shall, when required, be accompanied by:

(1) The specifications applicable to the scope of work covered by the permit;
(2) Suitable prints of detailed plans of the work;
(3) A filing fee in accordance with Section 23-115 for each application;
(4) Estimated cost of the work;
(5) The signature of the owner or authorized agent: and
6) Report of Subsurface Investigation and Geotechnical Engineering Analysis & Recom

mendations.

(b) The Director may refuse to accept an application for a road construction permit from any applicant, as principal, who is or was in default on a previously issued permit, or who is the permittee listed on an expired permit which is not currently in the process of being extended by County administrative action.

(c) Before the Department may issue a road construction permit, or concur in the issuance of a building permit, all bonds required shall be approved by the Director and the County Attorney. (CB-98-1989)

Sec. 23-113. Submittal and approval of plans required.

(a) No permit shall be issued until plans have been submitted to the Department and approved by the Director as conforming to the requirements of this Subtitle, and the Director has determined that all required fees have been paid to the County and all required security has been posted.

(b) All plans which are submitted in compliance with Subsection (a) of this Section shall conform to the Design and Construction Standards.

(c) All plans submitted for approval of road construction shall be on polyester drafting film or comparably durable drafting media, 24 inches by 36 inches, suitable for reproduction on a Diazo white printer or similar copier.

(d) All plans submitted for approval shall be accompanied by such supporting documentation, calculations, drawings, and correspondence as may be required to establish the suitability and correctness of the design. and establish a slope stability with a factor of safety of 1.5 or higher, when stability of the slopes is an issue.

(e) All plans and reports submitted for approval shall be prepared by, or under the direct supervision of, a professional engineer or professional land surveyor registered in Maryland, who shall affix his or her seal and signature to the plans and computations. The signed and sealed plans shall particularly include those showing the design of storm drains, storm water management facilities, or load-bearing structures of any kind

(f) The engineer or land surveyor, as the case may be, shall certify on the plan that:

(1) All public utilities have reviewed the plans for conflicts with their systems and have approved the plans; and

(2) All existing and proposed utilities within or adjacent to the planned work areas have been properly located and shown on the plans.

(g) When application is made for maintenance work to be done on an other public road, the type and number of plans required to be submitted shall be specified by the Director.

(h) Types of plans required.

(1) Proposed Road Profile. The proposed road profile shall be on plan and profile sheets showing the adjacent properties with lot and block or parcel designations. The profile section shall show the computed proposed grade with vertical curve information, curb fillet profiles, and existing ground lines at the center line, both right-of-way lines, the building restriction lines. the soil borings profile depicting at least: the soil types, their N-values in blows per foot (bpf), and teir moisture contents (%). All ground lines shall be extended a minimum of five hundred (500) linear feet past the grade limit or the distance required to assure proper grade design elements as determined by the Department. The proposed grade on all roads shall be approved by the Department. Where SHA or WSSC facilities may be affected by the proposed grade, the permittee must obtain the approval of the respective agencies prior to approval by the Department.

(2) Street Construction Plan. The Street construction plan shall show the following:

(A) All existing or proposed storm drainage and other utilities located within the right-

of-way (water, sewer, electric, telephone, etc.) in plan and profile;

(B) Ground profiles and other design data for all storm drainage;

(C) Right-of-way, road names, dimensions, location map (on a 2000 scale, showing all vicinity streets and located in upper right-hand corner of plan), north point, scale, datum, survey controls, property lines, curb and gutter, sidewalks, hiker-biker trails, driveways, traffic signals and street lights, types of paving, existing specimen trees to be retained, new trees, storm drainage inlets with elevations shown, and sufficient elevations at all intersections for the curb, gutter, and paving to assure adequate drainage of the intersection. The Director may require topography and coordinates to be added to the plan;

(D) Approval by governmental agencies affected where applicable;

(E) Where determined necessary by the applicant due to the amount of material necessary to be shown on the plan, the applicant may use two (2) plans to separately show the drainage and paving related information.

(3) Sediment Control Plans.

(A) No street grading or street construction permit shall be issued without the approval of the sediment control plans by the Prince George's Soil Conservation District.

(i) Approval; phases. The Director may separately approve plans for the various phases of construction, including, but not limited to, grading, storm drainage, and paving. The phases and scope of work covered by the approved sediment control plans submitted to the Prince George's Soil Conservation District must be the same scope and phasing submitted to the Department of Public Works and Transportation for permitting purposes.

(j) Modification of plans previously approved. Prior to or during construction, the Director may require additional data and design revisions pertinent to the scope of the work covered by the permit and/or require such work changes as are deemed necessary to provide a completed facility in accordance with the Design and Construction Standards, or as determined to be necessary by the Director for the general safety of the public. When the Director requires design revisions or additional work to be performed as part of a permit, the applicant or permittee shall coordinate and obtain all associated permit approvals from the other governmental agencies having jurisdiction.

(1) Street Construction Plan Approvals. Approval of a street construction plan shall expire three (3) years after the date of approval or upon expiration of the permit and any extension thereof, whichever is longer.
(CB-98-1989)

Sec. 23-114. Review of application for permit.

(a) If the Department, upon review of the application, determines that the proposed work conforms with the Design and Construction Standards, the Department shall notify the applicant of the amount of the permit fee and the amount and types of bond required.

(b) If the Department, upon review of the application, determines that the proposed work does not conform to the Design and Construction Standards, the Department shall notify the applicant of its objection to the proposed work and inform him of the actions which shall be required to bring the plans into compliance so that the applicant may amend his application.

(C)If the applicant does not post bond and pay the required permit fee within six (6) months from the date the application is filed, and such failure is not created by governmental action or . +inaction, the permit application shall be void and the filing fee will be forfeited at the discretion of the Director.

(d) Substantive modifications by the applicant to an existing permit application which result in

significant changes to the plans will require the payment of a new filing fee in an amount based upon the incremental change in the estimated construction cost. The amount shall be equal to seven and one half percent (10%) of the incremental change, but in no case less than Twenty-five Dollars ($25.00).
(CB-98-1989)

Sec. 23-115. Permit fees.

(a) The fee for issuance of any road construction permit required by this ordinance, excepting excluding a utility permit fee for a public utility, or a haul road fee for operation of a haul road, shall be ten percent (10%) of the cost of the work as estimated by the Department. The estimated cost for this purpose shall not include the contingency allowance. In no event shall the amount of the fee be less than Twenty- five Dollars ($25.00).

(b) The Director shall establish and maintain a Table of Fees for all types of permits, shall have the authority to change the fees from time to time as he determines necessary and to republish the Table of Fees which shall be posted in the Department's Permit Office. Prior to implementing a change in the fees, the Department shall publish the proposed change and hold a public hearing thereon.

(c) A nonrefundable-filing fee shall be charged to process an application for a road construction permit. The filing fee for a road construction permit shall be one-third (1/3) of the estimated permit fee, but not less than Twenty-five Dollars ($25.00). If bond and fee are posted within the time allotted as set forth in Section 23-114(c), the filing fee will be credited toward payment of the permit fee. Where an application fails to result in the issuance of a permit, the filing fee will be retained to offset the administrative costs incurred.
(CB-98-1989)

Sec. 23-116. Bonds; required.

(a) Requirement of Bond. Permits required by this Subtitle shall not be issued until the applicant, as principal, has posted a performance bond in favor of Prince George's County to ensure the satisfactory performance and completion of all work covered by the permit; and/or, where applicable, a payment bond to ensure timely payment to the County, subcontractors, and/or suppliers for work performed under the permit. Said payment bond shall be held by the Department until one (1) year after the date of final acceptance of the permit in order to adequately protect subcontractors and suppliers for work performed under the permit. However, notwithstanding the above, the Director (at his sole discretion) may release a payment bond earlier than the one-year period upon receipt of documentation which proves that all supplies and subcontractors have been paid. Where the estimated cost of the work is less than One Thousand Dollars ($1,000.00), no performance bond will be required. The limits for a labor and material man's bond shall be as stated in Section 23-116(e)(2)(A). The acceptable forms of security are:

(1) Irrevocable letter of credit from a financial institution with automatic renewal until released by the County;
(2) Irrevocable assignment of funds in favor of Prince George's County;
(3) Corporate surety bond;
(4) Cash bond;
(5) Irrevocable assignment of certificate of deposit or of savings certificate;
(6) Irrevocable assignment of savings account; or
(7) Certificate of guarantee as provided for in Section 2-463 of this Code.

(b) Waiver of Bond for Public Utilities and Governmental Agencies and Authorities. The

Director may waive the requirement for bond for any permit issued to a public utility, governmental agency, or authority where it is determined that the utility, agency, or authority has equivalent financial resources and responsibility.

(c) Amount of Bond. Except as otherwise provided, the amount of any bond required to be posted under this Section shall be equal to, or greater than, the total cost of the project as estimated by the Department, including an additional twenty-five percent (25%) of the estimated cost for contingencies. The maximum amount of a restoration bond shall not exceed One Hundred Thousand Dollars ($100,000.00).

(d) Conditions Imposed Upon Obligation of Permittee to Post Performance Bond. Notwithstanding the presence of a document identified as a performance bond and the terms of such document, if filed, the following conditions shall be a part of the terms of the performance bond posted by the applicant or permittee, as principal, with the County, and such performance bond may be forfeited in the entire amount of the value of the work remaining to be completed, including an additional twenty-five percent (25%) of the estimated cost for contingencies, upon breach of any of the following conditions by the permittee:

(1) To comply with all of the applicable terms, conditions, provisions, requirements, standards, and specifications of this ordinance;

(2) To faithfully and timely complete the work for which the permit was issued;

(3) To hold harmless the County from:

(A) Any expense incurred because of noncompletion of the work;

(B) Any damages growing out of the performance or nonperformance of the work; or

(C) Any failure to pay any bills incurred by the County arising out of the work covered by the permit.

(e) Types of Bonds. The following types of bonds shall be required, as applicable, in accordance with Subsection (g) of this Section:

Performance Bonds.

(A) Restoration Bond. A restoration bond will be required to insure restoration of any damage done to existing curb, gutter, sidewalk, hiker-biker trail, driveway, pavement, sod, tree, or any other items within the right-of-way adjacent to the lots being developed or within the area of road adjacent to grading, filling, or mining sites.

(i) A restoration bond shall also be required to gain the Department's concurrence for release of building permits in areas where roads are completed and maintained, or under permit to another developer, to insure restoration of any damage to the existing public facility as a result of the on-site construction, or for additions to an existing building, installation of in-ground swimming pools, or other types of construction where heavy equipment will cross the right-of-way. For minor work on a single lot, a letter from the property owner accepting responsibility for restoration of the facilities adjacent to the residential property may be acceptable to the Director in lieu of a bond.

(ii) Where restoration is required to repair damage within the right-of-way, it shall be the duty of the applicant to apply to the Department for a permit, pay the established fee, and post bond if a restoration bond was not posted previously, the bond amount posted is less than the value of the corrective work, or the work to be performed is beyond the scope of the bonds posted.

(iii) A restoration bond will be released when all damaged facilities, if any, have been restored to the satisfaction of the Director, in accordance with accepted standards.

(B) Uncompleted Work Bond. Where the permittee cannot complete the work under a permit due to a future roadway construction project, uncompleted construction of a utility, inability to obtain adjacent rights-of-way, difficulties produced by the character of adjacent terrain, or other circumstances as the Director may determine, the permittee shall be required to post a bond

for the uncompleted work plus a twenty-five percent (25%) contingency, including the cost as determined by the Director for acquisition of any required rights-of-way or easements.

(i) The original bond and Department concurrence for building permits within areas adjacent to uncompleted work may be released after receipt of the uncompleted work bond by the Department.

(ii) In the event it becomes practical or feasible for the permittee, who posted the uncompleted work bond, to complete the work covered by the bond, the Director shall promptly notify the permittee to complete the work covered by the bond. Where the permittee fails to perform and complete the previously uncompleted work within two (2) years of the date of notification to proceed, the total value of the bond will be forfeited to the County.

(iii) If, after the permittee has posted bond for the uncompleted work, the Director determines that the work cannot be performed within three (3) years from the date of acceptance of the previously completed work, the total value of the bond may be released by the County.

(C) Payment in Lieu of Construction. As an alternative to, or to replace an existing Uncompleted Work Bond in whole or in part, the Director may instruct the permittee to make a payment to the County in lieu of construction for all or part of the remaining work in an amount equal to the value of the work as currently estimated by the Department, plus the twenty-five percent (25%) contingency provided for by this Subtitle. The payment of the said Payment in Lieu of Construction shall satisfy all, or a portion of, the requirements of the permit depending on the amount of Bond to be either released or reduced in value to reflect the value of the remaining work.

(2) Payment Bonds.

(A) Labor and Material man's Bond. A labor and material man's bond shall be provided by the applicant prior to the issuance of a permit, and retained by the County to ensure payment of persons supplying labor or material for work performed under the permit. A labor and material man's bond shall be posted whenever the form of security posted as a performance bond is a corporate surety bond and for all other types of security posted if the estimated cost of the work is Twenty-five Thousand Dollars ($25,000.00), or more. The labor and material man's bond shall remain in full force and effect until such time as all outstanding bills and obligations for labor and materials supplied for performance of the work defined in the permit are paid for in full, and a certified release of liens and claims is received by the Department.

(B) Reimbursement Bond. A reimbursement bond will be required where the permittee enters into a contract with the County for the County to perform work within the right-of-way which cannot be performed by the permittee, but which the permittee is obligated to perform. Said bond is to insure payment to Prince George's County for work performed by the County under this contract. At the time of completion of construction for work performed under this contract, the County will bill the permittee for the total cost of the work.

(C) Traffic Signal Bond. If it is determined by the Director that a land development requires new, or impacts existing, traffic signal(s), a bond will be required to insure that the cost of the new or corrective work will be borne by the developer. The Director may authorize a permit applicant to design and install traffic control signals. The bond will be released when the traffic signals have been installed or reconstructed, accepted, and all expenses paid.

(D) Overhead Structures Bond. The applicant, pursuant to the provisions of this Subtitle, shall be required to post a bond which shall indemnify the County, for a period of five (5) years from the time of completion of the construction, from any harm which the County may suffer as a result of the construction and maintenance of an overhead structure in a road. The amount of the bond shall be one hundred twenty-five percent (125%) of the estimated cost of demolition and removal of the structure as determined at the time the bond is posted. The bond shall be posted prior to the issuance of a permit.

(f) Utility. Each public utility which is qualified as a public service company under Maryland law shall, at the time of issuance of the public utility permit, submit to the Director a letter of responsibility in lieu of a bond. Any other public or private utility shall be required to post a bond.

(g) Approval of Bonds Required Before Issuance of Permit. Before the Department may issue a permit, or concur in the issuance of a permit, all required bonds shall be approved by the Director and the County Attorney.

(h) Refund Agreements for Phases of Work Completed.

(1) Cash, letters of credit, certificates of guarantee, and other instruments, not to include surety bonds, posted by the permittee and accepted by the County may be refunded upon request of the permittee on a prorated basis, depending on the value of the completed and approved work, as follows:

% OF WORK COMPLETED	% REDUCTION OF ORIGINAL BOND POSTED
50	25
80	50
Acceptance	100

(2) Reduction in the Amount of a Surety Bond Posted for Urban Road Classifications. When all work is completed on a permit except the placement of sod and the planting of trees, the permittee may request a reduction in the surety bond amount to fifty percent (50%) of the original amount or Twenty-five Thousand Dollars ($25,000.00), whichever is greater, provided that all of the storm water drainage systems have been constructed by the permittee and approved by the Director.

(3) There shall be no reduction in the amount of a surety bond posted for rural road classifications.

(4) Release of Claims. In no event shall any labor and material man's bond be reduced or released until all claims by laborers and material suppliers have been paid, and a release of claims covering the work completed has been filed with the Department.

(i) Release of Bonds. Bonds covering construction shall not be released until the construction covered by such bonds has been finally approved by the Director in accordance with this Subtitle and subject to such requirements to comply with Subsections (e)(1)(B) and (C) of this Section. Upon acceptance of the work by the Director, the security posted to insure performance shall be certified as discharged. Discharge of the security posted to insure performance shall not operate as a discharge of any other bond.

(j) Action on Defaulted Permit.

(1) Where the Director determines that a permit is in default and the work is guaranteed by a surety bond, the Department shall immediately notify the bonding institution or agent to undertake and complete the work in accordance with the permit.

(2) Where the Director has determined that a permit is in default and the work is guaranteed by a form of bond other than a surety bond, and the bonding institution or agent fails to commit to undertake completion of the work within thirty (30) days of having been given notice by the Department, the Director shall immediately move to collect all performance bonds which have been posted.

(3) Upon a decision to collect the bonds, the Director shall evaluate the work remaining to be done, determine whether the work covered by the permit should be completed, the work site should be restored to its original condition, or other modifications to the permitted work site should be made. The Director shall then determine whether the bonds posted are sufficient to carry out the required completion, restoration, or modified work.

(4) After evaluating the work to be performed as specified above, the Director shall develop an estimate of the costs for said work, to include an amount equal to twenty-five percent (25%)

of the anticipated construction cost as a contingency, and compare the estimated amount to the amount of bond posted by the permittee. If the amount of bond posted is in excess of the estimate, the Department shall immediately move to collect the bonds and carry out the necessary work. The entire amount of the bonds posted may be used either in or near the permit site as may be determined by the Director to be necessary.

(5) If the bonds posted are not sufficient, the Department shall develop and implement a course of action as determined by the Director. The Department shall immediately move to collect all of the bonds which have been posted.

(6) If the bonds which have been posted are in excess of the amount required to carry out the completion, restoration, or modified work determined by the Director to be necessary, the excess amount shall be released to the payer after all work has been finished by the Department and all costs of same have been accounted for.

(7) Upon notification that a bond has been forfeited in accordance with this Subtitle, the bonding institution or agent providing the bond shall have thirty (30) days to issue payment to the County. If the bonding institution or agent fails to render payment within thirty (30) days of the notice from the Director to make payment, the bonding institution or agent may be barred from issuing any subsequent bonds for any other road construction work within the County for a period of five (5) years. The right to reissue bonds after having been previously barred shall be allowed only after all outstanding amounts have been paid, plus an amount equal to ten percent (10%) a year, compounded annually.
(CB-98-1989)

Sec. 23-117. Suspension or revocation of a permit.

(a) Suspension or Revocation. The Director may suspend or revoke any permit required by this Subtitle for one or more of the following reasons:

(1) Violation of this Subtitle;
(2) Violation of the permit;
(3) Assignment or transfer of the permit; or
(4) Violation of a stop work order issued by the Director.

(b) Before the Director may revoke a permit, he shall advise the permittee of his intent in writing. If a written request is made by the permittee within fourteen (14) calendar days from the date of the notice of intent to revoke, the Director shall conduct a hearing on the record. Requested hearings shall be held after reasonable notice to any interested person, to include the permittee. The notice shall include the time and place of the hearing, a brief description of the permit being considered for revocation, and the ground(s) for the revocation. The Director shall render a decision in writing on the matter within ten (10) calendar days after the date of the hearing.

(c) Forfeiture of Bonds. When a permit is revoked, the bond amounts posted shall be forfeited to the County after the administrative appeal process has been completed.
(CB-98-1989)

Sec. 23-118. Haul road permit.

No person shall operate a grading, filling, or mining facility without first obtaining a haul road permit from the Department.
(CB-98-1989)

Sec. 23-119. Permit for overweight/oversize vehicles.

Permits for overweight/oversize vehicles issued by the SHA shall be valid for County roads provided weight restrictions for structures are observed.
(CB-98-1989)

Sec. 23-120. Other types of permits.

(a) Utility Permit. Utilities shall be required to apply for and obtain a permit from the Department for all work performed within the public right-of-way related to the repair or modification of their systems. A separate permit may be required for each new installation, major repair, or modification to the system located within the paved portion of the right-of-way. The Director may issue to a utility, at his discretion, a blanket permit or permits for the performance of work within the right-of-way, and establish the conditions for operation under the permit(s) so issued.

(1) Blanket permits may be issued for a period of up to one year. Bonding and permit fees for utility permits shall be in accordance with this Subtitle.

(b) Permit for Overhead Structures. No overpass, bridge, elevated walkway, or roadway may be constructed over a public right-of-way without a permit issued by the Director.

(1) The Director is authorized to grant permits for the construction and maintenance of bridges, overpasses, elevated walkways, roadways, and any other structure which will occupy in any manner, temporarily or permanently, the air space above any road.

(2) The construction location or design of said overhead structures shall not in any manner affect any private rights-of-way of any adjacent landowner with respect to light, air, and access to the public highway, nor shall the County be deprived of the right to control and regulate the use of the public highway over which the structure extends to the minimum elevation above the surface of the road in accordance with the applicable standards, including those of the American Association of State Highway and Transportation Officials.

(3) Where the Director determines that a proposed overhead structure would reduce the natural illumination of the public road to less than the level required for the safety of the public, he may require the permittee to provide artificial illumination sufficient to meet the requirements for safety to the public. The design of such illumination shall be subject to the approval of the Director.

(c) Driveway Entrance/Access Permit. Any person undertaking to construct or improve an entrance of a driveway, private road, or other vehicular access from an abutting property into a County road shall be required to obtain a driveway entrance/access permit from the Department for all work performed in the public right-of-way. A separate permit may be required for each such entrance; however, this does not prohibit the inclusion of such entrances/access points within a road construction permit when such entrances are within the extent of the road construction covered by said permit.

(1) The Director may approve or require changes in the type or standard and the width to be required for each such entrance or access point in accordance with the use of the abutting property, its location, the classification and condition of the public road to be entered, and the volume of traffic thereon.

(2) The Director may deny a permit for an entrance/access point at any location deemed to present a hazard to the users of the public road or to the users of the proposed entrance/access point, provided that a reasonable means of access to the abutting property can be provided at some other, safer location.

(3) The Director may require such nearby road, roadside, or drainage improvements as are necessary in conjunction with the construction of the entrance to alleviate any hazards, operational and maintenance burdens, or nuisances that would otherwise be created by the existence of the

entrance.
(CB-98-1989)

Sec. 23-121. Time for work; commencement and expiration of permit.

(a) Commencement. When a permit has been issued, the permittee shall commence work within sixty (60) days from the date of issuance of the permit, except for good cause shown. Thereafter, the permittee shall have a duty to diligently perform the work to the conclusion of all work covered by the permit.

(b) Expiration.

(1) Road Construction Permits.

(A) Where the estimated cost of work is not more than Five Hundred Thousand Dollars ($500,000.00), the permit shall expire not more than two (2) years from date of issuance of permit.

(B) Where the estimated cost of permitted work is equal to, or more than, Five Hundred Thousand Dollars ($500,000.00), the permit shall expire not more than three (3) years from date of issuance of permit.

(C) The estimated cost of work for this determination shall include twenty-five percent (25%) for contingencies.

(2) Other Types of Permits. Permits for other than road and storm drainage construction, such as driveways, lead walks, planting, sodding or seeding, minor grading, or haul roads, shall be valid for a period of time consistent with the scope of work, but in no case less than three (3) months.

(3) No work will be allowed on an expired permit.
(CB-98-1989)

Sec. 23-122. Extension; fees for extension.

(a) Extension. The Director is authorized to grant or deny a request for extension of time for a permit, where a permittee is or will be unable to complete the work, as determined by the Director, within the time allowed.

(1) It shall be the responsibility of the permittee to apply for an extension not less than thirty (30) days prior to the expiration date of the permit. Such request shall be in writing and shall state the reasons for extension and the time required to complete the work.

(2) Where the permittee has requested an extension of a valid permit prior to its expiration and, through no fault of his own, the extension has not yet been granted or denied by the Department, the permittee may continue work under the permit. If the request for extension of the permit is denied, all work will cease immediately. Such denial may be appealed as provided herein.

(3) Where the Director determines that an additional bond amount is necessary because of inflation or other factors, the permittee shall be required to post the additional bond in an amount determined by the Director before the extension of time is granted. Where the permittee is working under the provisions of Section 23-122(a)(2), a grace period of ten (10) working days will be allowed for the posting of additional bond. Failure to post the additional bond during the ten (10) day period will cause the permit to be automatically suspended.

(4) The Director shall decide upon the request for extension and shall notify, in writing, the affected bonding institution and the applicant of his decision within twenty (20) working days of a formal request. This decision shall be contingent upon the payment of the necessary extension fee and notification to the Department of the consent of the bonding agent.

(b) Fee for extension.

(1) A fee in the amount of twenty-five percent (25%) of the original permit fee, but not less

than Twenty-five Dollars ($25.00), shall be charged for an extension of a valid permit (not to include road construction or haul road permits).

(2) The fee for an extension of a road construction permit shall be twenty-five percent (25%) of the original permit fee. Where the percentage of completion of a road construction permit exceeds ninety percent (90%) as determined by the Department, the permit fee shall be a maximum of Seven Hundred Fifty Dollars ($750.00).

(c) Security. The only forms of security which shall be acceptable to the County for the extension of a permit shall be a Cash Bond, an Irrevocable Letter of Credit, Surety Bond, or a Certificate of Guarantee.
(CB-98-1989)

Sec. 23-123. Inspection and notice.

(a) Notice. The permittee shall post notice in the following situations:

(1) A notice provided by the Department shall be posted in a conspicuous place on each project site near an existing road;

(2) The permittee shall notify the Department of the time of commencement of work at least two (2), and not more than five (5), working days before commencement of any construction under the said permit;

(3) Where work is interrupted for a period of five (5) working days or more, the permittee shall, at the end of each interruption, notify the Department of his intent to actively resume work under the permit;

(4) Where the permittee has completed work on the subgrade and concrete forms, he shall give notice to the Department that the work is ready for inspection and approval.

(b) Inspection; penalty for noninspection.

(1) The Department shall provide inspection services to assure compliance with this Subtitle. The permittee shall, during the hours of work, make available to the inspector and to other employees of the Department the construction work, materials, plans, and specifications.

(2) The permittee may not commence construction of storm drainage, sidewalk, curb and gutter, or pavement unless the Department has conducted an inspection and given approval to the subgrade and concrete formwork. In addition, where water and sewer utilities are involved, the permittee shall notify WSSC immediately after base paving to obtain a preliminary paving clearance certificate, and notify WSSC again after final paving to obtain a final paving clearance certificate.

(3) Where the permittee performs any work under the permit without an inspection, such work shall be considered improper, and such conduct on the part of the permittee may result in removal and replacement of all said construction by the permittee at his expense. In the event that proper notice is provided to the Department for inspection services to be performed on a permit, but no inspection is provided by the Department within two working days (48 hours) of the time of the request, the permittee, after verbal notification to the Chief, Engineering &Inspection Services-Division, may proceed with the work using independent inspection certification of the work or materials. The independent inspection certification must be provided by an agency approved by the Director.

(4) Where the permittee performs any work under a permit (with or without an inspection), and the work does not comply with this Subtitle, the inspector is empowered to issue written notice to require the work to be removed and replaced by the permittee at his expense.

(c) Notice of Violation. Whenever the Director finds and determines that the requirements of this Subtitle have been violated, he shall notify the responsible person, owner, or permittee, in writing, and detail the corrective action required and the amount of time within which the correc-

tive work must be performed. Such notice may be delivered in person or by United States Postal Service regular mail and addressed to the said responsible person, owner, or permittee at the last known address or the address shown on the real property tax records in the Treasurer's Office for Prince George's County. Such notice, when delivered in person or so addressed and deposited with the Postal Service with proper postage paid, shall be deemed complete and sufficient.

(d) Compliance; penalties.

(1) The permittee, including public utilities, agents, contractors, and subcontractors shall comply with all requirements of the permit, including sediment and erosion control, either before or during the course of construction.

(2) Where the permittee fails to comply with the requirements cited in the Notice of Violation, said noncompliance may result in the following:

(A) Issuance of a stop work order. A stop work order shall be issued by the Director and constitute a suspension of the applicable permit, and shall prohibit the violator from doing any further work under the permit except such work as shall bring any previous work into compliance. When the permittee corrects the work to the satisfaction of the Department in accordance with the applicable requirements, the Director shall rescind the stop work order in writing at which time the permittee may resume further work under the permit; or

(B) The County may complete the required work and charge the permittee on a cost basis, including the costs of administration and overhead.

(3) Any governmental agency not required to obtain a permit from the Department or post a bond shall be subject to the provisions of Subsections (d)(1) and (d)(2), above. In addition, nonpayment by any governmental agency of any outstanding balance due to the County within the time allotted shall subject said governmental agency to liability in the amount of nonpayment, except where state or federal law provides to the contrary.

(e) Safety hazards; work in noncompliance. Safety hazards, or work which is determined not to be in compliance with the provisions of this Subtitle, which occur within the right-of-way as a result of the work performed by the permittee and the resolution of which is considered urgent by the Department, shall be resolved by contacting the person whose name appears on the sign required under Section 23-129. If that person cannot be contacted, the inability of the Department to contact the permittee at the 24-hour telephone number shall constitute notice, and the Department shall be authorized to proceed with the necessary corrective action and bill the permittee accordingly for all costs incurred in accordance with Section 23-109. Failure of the permittee to pay the amount billed within thirty (30) days may be sufficient grounds for suspension or revocation of the permit.

(f) Inspection by others. Subject to prior written arrangement, the Director may accept reports of inspection by approved agencies for work performed under permits issued by the Department. All reports of such inspections shall be in writing and certified by a responsible officer of such approved agency. The Director shall develop criteria for the approval of individual agencies for the purpose of performing inspections, and promulgate policy and procedures for the conducting of such inspections.

(CB-98-1989)

Sec. 23-124. Approval and acceptance of work.

(a) Final approval of construction work shall be given by the Director upon verification through inspection that the work conforms in all respects with the permit and includes all work required thereby. Notification by the Director that all work under the permit has been approved and accepted by the County shall serve as formal notice to the permittee and the bonding institution that all requirements of the permit have been satisfied.

(b) Acceptance. Where the road construction adds to or extends the County maintained road system mileage, the Director shall verify in writing to the County Executive that the construction work has received final approval. The Director's verification shall constitute a recommendation to the County Executive that the work be accepted into the County road system for perpetual maintenance. The County Executive, or his designee, shall, in each individual case, have the authority to accept roads into the County road system for perpetual maintenance.

(c) Partial acceptance. A permittee may request a final approval of part of the work covered by the permit, provided that the limits of work requested for partial acceptance be completed in accordance with this ordinance. Such request and approval, if any, shall be in writing and may be verified by the Director and accepted by the Executive upon the recommendation of the Director. Partial acceptance may, at the discretion of the Director, result in a reduction in the amount of bond posted for the permit.

(d) Status of Permit Obligations. Permit obligations not completed shall remain in force and survive permit suspension, expiration, revocation, and default. Permit obligations may be satisfied by completion and acceptance of the work or delivery of a cash payment to the County in an amount sufficient to complete the work.

(CB-98-1989)

Sec. 23-125. through Sec. 23-127. Reserved.

DIVISION 3. DESIGN AND CONSTRUCTION STANDARDS AND REQUIREMENTS.

Sec. 23-128. Requirement of conformity to Subtitle, specifications, and standards.

(a) The "General Specifications and Standards for Highway and Street Construction" and the "Specifications and Standards for Highway Traffic Signals" of the Department of Public Works and Transportation of Prince George's County, copies of which have been filed with the Clerk's Office, are hereby adopted with the same authority and force as if set forth in their entirety herein. Amendments and revisions shall be made by Council resolution.

(b) The Department shall make available for inspection current copies of this Subtitle and the Design and Construction Standards. The Design and Construction Standards referred to herein may be purchased from the Department of Public Works and Transportation at the established prevailing price.

(CB-98-1989)

Editor's Note: CR-113-1992 designated Bryan Point Road as a scenic road and requires the Department of Public Works and Transportation to recommend design standards for scenic roads.

Sec. 23-129. General construction requirements for existing or proposed County roads.

(a) All road construction shall conform to this Subtitle.

(b) All roads to be constructed shall be graded to the full width of the right-of-way or as shown on the approved plans.

(c) Grading shall include clearing and grubbing, the removal and replacement of all unsuitable material, and the proper preparation of subgrade.

(d) Standard under drains shall be installed Unless otherwise approved by the Department.

(e) No work on road pavement shall be started until all underground utilities within areas of public dedication have been installed and properly backfilled in accordance with accepted standards as determined by the inspector. In the case of water and sewer utilities, the permittee is required to notify WSSC immediately after base paving operations so WSSC can schedule an inspection of its facilities within ten (10) working days and issue a preliminary paving clearance certificate. Notification shall include the project name, location, Department permit number, and contact person's name at the site. Upon completion of final paving, the permittee is also required to notify the WSSC so that WSSC can schedule an inspection of its facilities within ten (10) working days and issue a final paving clearance certificate.

(f) All materials used in construction shall conform in every detail to the Design and Construction Standards. The Director is authorized to accept materials which are substantially equivalent to the materials required by the Design and Construction Standards. If the equivalent materials are new to the Department, they need to be approved first by relevant State departments or administrations, like the State Highway Administration (SHA).

(g) A street name sign shall be installed at each intersection where required by the Director. The Department shall be responsible for the manufacturing and installation of street signs and for the development of standards for their design and installation. Permittees responsible for the construction of new roadways shall be responsible for all costs associated with manufacturing and installing new signs. Until the permanent signs are installed, Permittees shall have also the responsibility to install and maintain temporary street signs once newly constructed roads become passable, after curb and gutter installation.

(h) The permittee shall erect barricades of a design approved by the Director at locations as shown on approved plans or in accordance with accepted standards as determined by the inspector.

(i) Until such time as the Director accepts the work, the permittee, including a public utility, shall safely maintain pedestrian and vehicular traffic on the roadway within the permit limits of the work, and provide materials, labor, and equipment in accordance with accepted standards as directed by the inspector, including construction of warning signs, flagmen, lights, and barricades to properly maintain traffic in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways as published by the U.S. Department of Transportation. The inspector may, in cooperation with police and/or traffic authorities, discontinue traffic temporarily where public safety absolutely requires same. The permittee shall also have a duty to:

(1) Properly illuminate, mark, and barricade excavations or other hazards at all times;

(2) Provide adequate access, to include the removal of snow and ice from partially constructed roadways, to all driveways and sidewalks within the permit limits;

(3) Control dust conditions within the area covered by the permit by placing calcium chloride or water, or both, as directed;

(4) Shape up and crown subgrade soil of proposed the roadway by blading, as directed; to prevent warter ponding on approved subgrades. Subgrades' approval may expire if inclement weather or traffic affects the site negatively before paving;

(5) Correct muddy or soft subgrade conditions by placing temporary gravel or stone thereon; , and protect subgrades of paved roadways from water intrusion by properly vegetating, covering, or sealing soils that may remain exposed behind the curb during construction;

(6) Promptly remove any dirt and debris on streets in, and adjacent to, the work area during the construction period as directed by the inspector; and

(7) Utilize only the roadways designated by the Department for access and egress of construction vehicles.

(8) Failure of construction vehicles to adhere to signed prohibitions of use may result in revocation of permits issued to the permittee by the Department.

(j) Utility cuts.

(1) No person, including any public or private utility, shall cut any road for the purpose of installing, connecting, repairing, or otherwise modifying underground gas, electric power, water, sewer, storm water, telephone or cable lines, or other utility without first obtaining a permit from the Director. Any person, including public utilities with a valid public utility permit, shall be required to provide the Department with forty-eight (48) hours notice prior to cutting the pavement. Said notice shall include the location, type, timing, and extent of the cut.

(2) Except in an emergency, no utility or person shall be allowed to cut into any road pavement for a period of three (3) years from the date of acceptance of the road construction in the case of new road construction, or completion of pavement resurfacing in the case of maintenance or improvement to an existing road. The placement of all new utilities shall be accomplished, to the maximum practicable extent as determined by the Director, by tunneling, jacking, boring, or other means which will avoid disturbing the pavement

(3) Any public utility which cuts, and then subsequently repairs a pavement with either a temporary or permanent patch, shall mark the patch or adjacent pavement surface to identify the utility responsible for the pavement cut. Temporary patches may be designated using paint or other approved markers. Permanent pavement patches shall be designated using an approved marker manufactured and installed in accordance with the Design and Construction Standards.

(4) The permittee shall have in his possession on site, and make available to an inspector, on request, a copy of the subject permit and detailed plans showing the location of all existing utilities within the area of the cut.

(5) Prior to actual excavation, the permittee, or his agent, shall contact the Utility Service Protection Center and nonmember utilities requesting that the utility locate all underground lines in the area of the cut.

(6) Prior to actual excavation within four hundred (400) feet of a signalized intersection, the permittee shall contact the Traffic Safety Division of the Department to allow for the marking or protection of wiring and detectors associated with the intersection.

(7) Operations. When excavation approaches the estimated location of an underground installation, the permittee or his agent shall conduct such excavation by careful hand probing and/or hand digging. In the event that utility lines are uncovered, the permittee shall provide proper supports for the existing installation as determined by the inspector in conjunction with the utility company affected.

(8) Emergencies. In case of an emergency cut, the utility desiring to make the cut shall proceed immediately. After the emergency is corrected, the utility shall give verbal notice to the Department within twenty-four (24) hours or by the beginning of the next working day, indicating the location, time, type, and nature of the emergency, and shall give written notice within five (5) working days.

(9) Restoration and Repairs.

(A) Where a pavement cut has been made, the permittee shall be responsible for the following in accordance with the Design and Construction Standards:

(i) Restore road base and surface to comply with County standards and specifications;

(ii) Repair pavement failure;

(iii) Repair settlements; and

(iv) Construct permanent patches in the cut area. per the Department Standards and its Utility Policy

(B) The permittee shall also be responsible for all future repairs to the cut area which are the result of consolidation, subsidence, or inadequate compaction of the subgrade, or any other type of failure of the patch.

(C) It shall be the sole responsibility of the permittee to protect property adjacent to, and within the area of, the cut, including sidewalks, driveways, shrubbery, trees, buildings, lawns, or other objects during construction and maintenance. In the event that a public utility (ies) cuts the pavement in so many places or in such a way that the road surface or subgrade deteriorates over time resulting in numerous pavement failures or a poor riding surface such that the road must be resurfaced or reconstructed as a direct result of the utility cuts and pavement repairs, the Director may instruct the utility company (ies) to resurface or reconstruct the roadway as the Director may determine. Failure to repair the roadway in a timely fashion shall result in the suspension of any existing permits.

(10) In the event that the permittee fails to verify the location of underground utilities and damages any underground utility thereby, as determined by the inspector in conjunction with the affected utility (ies), and the permittee has not undertaken to perform repairs, the Director may suspend any applicable road permit until such time as the utility company whose property has been damaged determines that the damage has been repaired or corrected to its satisfaction, at the expense of the permittee. The same requirements apply to traffic signs and signals. In the event any individual utility company fails to furnish the requisite information to the permittee within a reasonable time, as determined by the Director under all of the circumstances, then the a foregoing provision as to suspension shall not apply.

(k) Signage. Permittees, to include public utilities, working in or immediately adjacent to a public right-of-way shall be required to post a sign on the property line, or in such other location as the Director may prescribe, which shall be clearly visible from the road without creating a traffic safety problem and shall remain in place until such time as all work has been completed. Where the work is performed by a public utility, the sign shall remain in place until such time as the permanent pavement repair has been completed. The sign shall be constructed of all-weather material, be a minimum of twelve (12) inches by twenty-four (24) inches in size, with black letters on a white background stating a minimum of the following:

(1) The name of the firm performing work under the permit;

(2) The Department's permit number;

(3) The name of a responsible individual within the firm who may be contacted twenty-four (24) hours a day to resolve problems which develop as a consequence of performing work under the permit; and

(4) The phone number(s) where the individual identified in (3), above, may be contacted twenty-four (24) hours a day.

(CB-98-1989)

Sec. 23-130. Limits of work.

(a) The limits of work within rights-of-way in a subdivision area will generally be set at the farthest property lines of the abutting lots which are being developed, or for which building permits are applied. Intersecting roads must be improved to the farthest lot line(s) of the corner building site(s).

(1) If the limit of work extends to an outlot or intersecting alley, the work must be extended to the far line of the outlot or alley. Work will not extend into or across a utility right-of-way or easement unless the property on the far side of the utility right-of-way or easement is concurrently under construction, or the public right-of-way on the far side of the utility right-of-way or easement has been constructed or is under construction.

(2) If the limit of work ends at an intersection of an existing or dedicated road, then said intersection shall be completed and, where there are no such existing or dedicated roads, the permittee shall provide temporary or permanent turnarounds in accordance with the Design and

Construction Standards.
(CB-98-1989)

Sec. 23-131. Connecting roads.

The County Executive, or his designee, or any public agency which maintains a road in Prince George's County, shall not accept, for perpetual maintenance, any proposed road which is not connected to a maintained road, unless a suitable connecting road is either under separate permit for construction or is improved to standards approved by the Director.
(CB-98-1989)

Sec. 23-132. Partial road construction.

(a) Where capacity and/or safety considerations require a full road in accordance with the Design and Construction Standards, partial road construction shall not be permitted, except:

(1) Where the applicant is developing property on only one side of the road. In such a case, the Director may waive certain items of construction required by this Subtitle. The waiver would apply for certain items of construction where the work would be adjacent to the property located on the opposite side of the street, including, but not limited to, curb and gutter, sidewalks, storm drainage, trees, and a portion of the paving where such construction is not necessary to accommodate traffic or to provide proper maintenance of the road as determined by the Director.

(2) Where the applicant does not plan or propose to develop the adjacent private property by constructing buildings or other facilities thereon, the Director may defer the construction of certain items of construction required by this Subtitle limited to driveway entrances, sidewalks, trees, and streetlights. Where such deferral has been granted, a subsequent applicant for a building permit shall be required to complete the work deferred from the original road permit.

(3) Where the Department determines that no current purpose would be served in requiring road improvements to be made along a residential road, the Director may defer the construction of the improvements upon petition by the affected property owner. Where the Director grants a deferral of construction, the requirements for construction shall be stated in a covenant to be executed by the owner of record of the private property adjacent to the limits of the deferred road construction. The covenant shall be filed in the land records and run with the land, binding the owner and all successors in interest to perform the deferred road construction when notified by the Department that the improvements are necessary.

(4) Where the Director determines that no current purpose would be served in requiring street improvements to be made along roads which are other than residential roads, the Director shall require the applicant to make a payment in lieu of construction prior to the release of a building permit for the site. The amount of the payment shall be not less than the value of an estimate for the deferred street improvements, as estimated by the Department, plus an amount equal to twenty-five (25) percent to cover the cost of contingencies. The value of the estimate shall be updated to make the value of the payment current when payment is made to the County.

(b) In circumstances where the width of the right-of-way compromises roadway capacity or safety and the applicant is unable to obtain the right-of-way necessary to widen a road or install or construct necessary facilities, the County may obtain the necessary right-of-way and charge all costs incurred to the applicant/permittee.
(CB-98-1989)

Sec. 23-133. Road widths.

The permittee shall construct widths of roads consistent with the Design and Construction Standards and the ultimate development of the roadway.
(CB-98-1989)

Sec. 23-134. Storm drainage.

(a) A storm drainage system covered by a specific permit shall be completed within the limits of work established for the permit, including facilities and storm drainage easements lying in or partially in lots or parcels abutting the proposed street right-of-way to be improved.

(b) Plans for the proposed drainage system shall be submitted to the Department Public Works and Transportation for review and approval.

(c) Final inspection and acceptance of the storm drainage construction shall be performed by the Department before release of any bonds posted for the construction of the storm drainage system as provided for on the approved plans.
(CB-98-1989)

Sec. 23-135. Curb and gutter; hiker-biker trails; sidewalk.

(a) Curb and gutter shall be required in the following circumstances:

(1) Where the majority of individual lots abutting any road have a frontage of one hundred (100) feet or less;

(2) Where any road abuts property in the process of development for multidwelling residential, commercial, or industrial use which is not being subdivided into individual building lots;

(3) Where any road abuts property in the process of development for townhouses, cluster, or similar uses in which individual building lots are interior to the subdivision and the road abuts common or open space areas of the subdivision;

(4) Where curb and gutter construction is required by traffic or pedestrian conditions as determined by the Director.

(b) Hiker-biker trails. Hiker-biker trails with appropriate ramps may be required in accordance with the Design and Construction Standards within the road right-of-way along routes designated as such on the Adopted and Approved Countywide Trails Plan or Area Master Plans maintained by the Maryland-National Capital Park and Planning Commission. The Department will accept the trail for maintenance only where the trail is located within, or parallel to and touching, the road right-of-way, and upon completion and acceptance of the construction. In addition, the Director may require construction of such trails along primary residential, collector, arterial, and industrial-commercial roads.

(c) Sidewalks. Sidewalks shall be required along urban roads in the following circumstances:

(1) Arterials - both sides.

(2) Collectors - both sides.

(3) Commercial/Industrial - as determined by the Director.

(4) Primary Residential - on one side. Where existing sidewalks are located on both sides of the street, construction of the sidewalks on both sides of the street shall be continued to the next intersection where the sidewalk construction will transition to one-sided construction.

(5) Secondary Residential - on one side. Where existing sidewalks are located on both sides of the street, construction of the sidewalks on both sides of the street shall be continued to the next intersection where the sidewalk construction will transition to one-sided construction.

(d) Sidewalks on State roads. Sidewalks may be required along all State roads that have concrete curb and gutter, or where it is required by the SHA. A permit issued by the Department will be required for this work where a SHA permit is not required.

(CB-98-1989)

Sec. 23-136. Grades.

(a) Grades shall be approved by the Director in accordance with the relevant specifications of the American Association of State Highway and Transportation Officials (AASHTO), as amended, and with the following:

(1) No grade shall be less than one percent (1%) or more than ten percent (10%) except under extraordinary circumstances, as determined by the Director.

(2) Where roads are constructed with concrete curb and gutter, a minimum of one and one-half percent (1.5%) grade will be required through the intersection of intersecting roads.

(3) Where roads are constructed without curb and gutter, the minimum street grade shall be two percent (2%). Where a street grade of less than two percent (2%) is used, ditches shall have positive drainage.

(4) All new roads shall be constructed to remain passable during a 100-year flood event along any adjacent or nearby watercourse having a watershed of fifty (50) acres or more. The determination of the 100-year flood level with respect to the roadway for purposes of this Subsection shall include the effects of the roadway itself and any appurtenant structures and adjacent or nearby developments, but not the effects of partial or complete blockage of the approved drainage systems or structures. Exceptions to this requirement may be allowed at the discretion of the Director when:

(A) The watercourse is to be conveyed in an approved storm drain system running along the right-of-way and depending on the roadway as the overflow path for storms in excess of the 10-year storm, provided the watershed area does not exceed four hundred (400) acres, and provided that the Department of Public Works &Transportation approves the resultant 100-year floodway with respect to affected properties; or

(B) The roadway must be constructed to a lower elevation in order to serve existing development or to connect with an existing publicly maintained road, provided the extent of the lowering is the minimum practicable while meeting the requirements of paragraphs (1), (2), and (3) of this Subsection; or

(C) The roadway would be overtopped solely by reason of computed flood elevations and flow routing resulting from assumed partial or complete blockage of the approved drainage systems or structures;

(D) The roadway is a private road, right-of-way, or easement serving no more than four (4) lots or dwelling units.

(CB-98-1989)

Sec. 23-137. Alignment.

(a) Roads shall be centered in the dedicated public right-of-way unless variations are approved by the Director.

(b) If the established right-of-way is not of sufficient width to construct the roadway in accordance with the Design and Construction Standards currently in effect, the applicant may be required to obtain and dedicate to public use, or deed to the County, additional right-of-way and/or easements, as needed, to construct the road to the approved standard. Where the applicant has been unable to acquire the necessary right-of-way and/or easements, the County may obtain the right-of-way or easements and charge all costs incurred to the applicant/permittee.

(CB-98-1989)

Sec. 23-138. Standard paving sections.

. Pavement sections shall be in conformance with Category 100 of Section III of DPW&T manual. Where determined by the Director to be necessary by reason of engineering criteria, special designs may be allowed or required.
(CB-98-1989)

Sec. 23-139. Driveway entrance.

Driveway entrances shall be in conformance with Category 200 of Section III of DPW&T manual and the following requirements that are not in conflict with Category 200:

(a) Residential, commercial, and industrial driveway aprons may not be constructed within, or partially within, any intersection curb returns. Driveway entrances shall be placed across the parkway strip in accordance with County standards and in accordance with the following requirements:

(1) Residential Driveway Entrances. The required width of the apron shall be not less than ten (10) feet. Widths may be required to correspond to the width of the driveway or parking pad, including any garage, carport, or open parking pad within twenty-five (25) feet of the street right-of-way line, but, generally, shall not be wider than twenty (20) feet.

(A) A residential driveway apron may not be constructed within, or partially within, any intersection curb filet.

(B) No residential driveway apron may be:

(i) Closer than three and one-half (3 1/2) feet to the nearest abutting property line;

(ii) Closer than three and one-half (3 1/2 feet) to the outside line of a storm drainage inlet; or

(iii) Closer than eighteen (18) feet of full curb height to the beginning of the flare of another driveway on any one (1) building site.

(3) Not less than one (1) standard driveway apron shall be provided for each dwelling unit abutting the permit limit in every detached, semi-detached, or triple-detached residential dwelling, as defined in the Zoning Ordinance.

(b) Nonresidential Driveway Entrances.

(1) Driveway entrances to commercial or industrial property shall have a minimum width of thirty (30) feet and a maximum width of forty-five (45) feet and shall be limited to a maximum of two (2) on each road. The Director may, in his discretion, approve additional driveways, width or dualization, or may deny the construction of a driveway entrance(s) on a street, provided access is available on another public road.

(2) In the case of a corner lot, a driveway entrance shall not be located less than twenty (20) feet from the point of curvature of the curb return as measured at the property line.
(CB-98-1989)

Sec. 23-140. Street lighting.

(a) The permittee shall be responsible for the cost of any street lights required by the Department.

(b) Street lights shall be required on all County roadways, and on such other roads where deemed necessary by the Director.

(c) In accordance with the Design and Construction Standards, the permittee shall be responsible for preparing an engineering plan for lighting all County roadways within and adjoining the

permit area and, upon review and approval of the plan by the County and the utility company, for having the lights installed.

(d) The permittee shall be responsible for ordering the installation of the streetlights from the utility company and for the payment of all associated costs related to the installation to the utility company.

(e) When the utility company has notified the County that the installation of the street lights has been ordered and the costs for the installation have been paid in full, the road construction permit which is in effect will be processed for acceptance, provided the street construction is complete. The bonds posted for the construction of the roads should not be released until the utility has notified the County of receipt of payment for the street lights, all other permit requirements having been met.

(f) The utility company shall be responsible for notifying the County when it has completed the installation of the streetlights covered by a particular permit.

(CB-98-1989)

Sec. 23-141. Planting and removal of roadside trees.

(a) Purposes. The following requirements shall be interpreted consistently with the purpose of this Section, which is to plant, control, protect, regulate, and improve roadside trees within the right-of-way, within nonutility easements adjacent to the right-of-way, or on adjacent private property where the Director determines that a public hazard exists requiring remedial action to correct.

(b) Planting required. The permittee shall be required to plant roadside trees within the limits of the permit area and shall be responsible for all costs associated with such planting.

(1) In accordance with the Design and Construction Standards, the applicant shall be responsible for preparing an engineering plan detailing the location of the trees, their coordination with driveway aprons, street lights, utilities, etc., and specifying the species to be planted. The applicant shall consider such things as conflicts with utilities and traffic control devices when preparing the design. The plan shall be referred to the Urban Design Division of the Park and Planning Commission for design comments on street tree plantings in relationship to on-site landscaping. The plan shall be subject to review and approval by the Department.

(2) Where the Director finds that trees or other plantings planted in the standard locations would be in conflict with existing or required public utilities, traffic control devices, illumination, or sight distance, the Director may designate alternative locations for trees or modify the standards for their placement.

(c) Prohibited acts during road and building construction and maintenance: No person shall do or cause any of the following acts to be done to any roadside tree:

(1) Place salt, brine, oil, herbicide, or other substances injurious to roadside trees on, or in the area of, a roadside tree;

(2) Build any fire or station any kettle, construction equipment, or other engine on or along any road in such a manner that the hot vapors or fumes therefrom may injure any roadside tree;

(3) Erect, alter, or repair any building or structure without placing such guards around all roadside trees within a reasonable distance of the building site that will, as determined by the inspector, effectively prevent injury to such trees;

(4) Operate or use vehicles or equipment in such a manner as would damage or destroy any roadside tree;

(5) Attach or fasten any wire, insulator, or other device for holding any wires to any roadside tree;

(6) Provide an open space of less than two (2) feet on all sides of the base of any roadside

tree, except where limited by previously established curb and/or sidewalk;

(7) Attach by any means any sign, poster, or advertisement to any tree in the public right-of-way or any tree located in an easement adjacent to the right-of-way.

(d) Permission required prior to certain acts. No person shall do or cause to be done any of the following acts to any roadside tree without the permission of the Department:

(1) Plant, spray, or trim any roadside tree;

(2) Place any stone, concrete structure, or other substance in the public right-of-way, or an easement adjacent to the right-of-way, which may impede the free access of air and water to any roadside tree;

(3) Excavate within the area of branch spread of any roadside tree or, during excavation, to expose or cut roots more than one inch in diameter of any roadside tree;

(4) Remove or damage any guard or device placed to protect any roadside tree.

(e) Permits from the Department of Natural Resources of the State of Maryland are also required in accordance with the provisions pertaining to roadside trees within the Natural Resources Article of the Annotated Code of Maryland.

(f) Where the permission of the Department of Natural Resources is required by this or by any other law, any permittee required to obtain such permission may first make application therefore to the Department.

(g) Conflict. The provisions of this Section are to be construed, where reasonable, as consistent with any State law, rule, or regulation concerning roadside trees. Any part of this Section found to be in conflict therewith shall be of no force or effect.

(h) Public or private utilities. When the Director determines that it is necessary to prune, top, or remove any roadside tree, the affected utility shall have the option of either temporarily removing its overhead wire(s) within forty-eight (48) hours after notice from the Director or pruning, topping, or removing such tree(s) under the direction of the Department.

(i) The Department shall be responsible for the removal and replacement of dead specimen trees within the public right-of-way.

(j) Dead or dying trees on private property that constitute a public nuisance. Where a tree exists on private property adjacent to a public right-of-way with dead or decaying branches overhead which protrude into the right-of-way, and the Director determines that such tree creates a public nuisance, the property owner shall remove the tree or the dead or decaying branches, thereby removing the hazard to the public.

(1) The Department shall notify the property owner in writing that the hazard must be removed within a specified time period. The time period may vary depending upon the severity of the hazard.

(2) In the event that the property owner fails to remove the hazard within the specified period, the Department shall proceed to abate the nuisance by applying to a court of proper jurisdiction for injunctive relief. The Department shall recover the costs pursuant to the provisions of this Subtitle.

(3) Notwithstanding the above where, in the opinion of the Director, the hazard constitutes an immediate threat to the safety of the public, the Department shall be authorized to take immediate action to eliminate the hazard and recover the cost for same from the property owner.

(k) Coordination between Beautification Committee and Department. The Committee may advise and make recommendations to the Director as to plans of planting, maintaining, and protecting roadside trees. The Committee may recommend species to be planted and the methods and times for plantings. The Department shall coordinate, where possible, with the recommendations of the Committee.

(CB-98-1989; CB-72-1993)

Sec. 23-142. Right-of-way.

(a) Responsibility for obtaining rights-of-way. No permit shall be issued for road construction unless all rights-of-way and easements necessary for the work are dedicated, or otherwise lawfully conveyed for public use, and have been duly recorded among the land records of the County.

(b) Private right-of-way. In order to regulate the opening of street surfaces in all new developments in the County, the Department shall have the authority to prescribe design standards and to require road construction on private rights-of-way in accordance with the Zoning Ordinance and Subdivision Regulations of Prince George's County, without responsibility on the part of the County to maintain the private right-of-way after completion of the work to the satisfaction of the Director.

(c) Dedication of right-of-way. Where an applicant proposes to develop a property abutting an existing or proposed County-maintained road, the applicant shall be required to obtain dedication, or otherwise lawful conveyance to public use, of sufficient right-of-way, as identified within this Subtitle, and provide the necessary easements to enable the road to be constructed consistently with the Design and Construction Standards or ultimate planned needs. The recording of the rights-of-way and easements in the land records of the County without the approval of the Director does not constitute acceptance. The right-of-way plats shall be prepared consistently with standards set forth by the Director.

(d) The requirement to dedicate or otherwise lawfully convey right-of-way shall apply to all properties proposed for development whether or not there already exists an approved plat of subdivision.

(e) Where a property located within a municipality abuts a County-maintained road, the owner of record who proposes to develop the property shall be required to deed, or otherwise lawfully convey to the County, right-of-way as stated above. In addition, the owner shall be responsible for constructing or upgrading the section of roadway abutting his property to current standards, as determined by the Director. Municipalities within the County shall not process and issue a building permit for the property until the right-of-way has been deeded or otherwise lawfully conveyed to the County, bonds have been posted in favor of the County, and a road construction permit fee has been paid to the County for the improvement of the road.

(f) Where road construction requires the dedication of right-of-way or the acquiring of easements from a parcel(s) of land not owned by the applicant or permittee, the Department may acquire the necessary right-of-way or easements, as necessary for the work, at the applicant's or permittee's expense.

(CB-98-1989)

Sec. 23-143. Improvements to County-maintained roads.

(a) A person who desires to develop land abutting a County-maintained road, or other public road, shall be responsible for providing all work required to improve a road maintained by the County to conform to the applicable standards for alignment and cross-section when the person proposes to develop the property adjacent thereto. Where a County road is not in conformance with the applicable standards, the person will be responsible for improvements, including, but not limited to, curb and gutter, sidewalks, trails, and street lights on that portion of the road adjacent to his property.

(1) Where the property proposed for development has a frontage of less than three hundred (300) feet:

(A) Traffic Hazard. If the existing County-maintained road is not constructed to an approved line and grade, such that the required construction would constitute a traffic hazard, as

determined by the Director, the person will be required to submit plans for approval for the construction of a special rural design consistent with the existing roadway features. Such rural design may include road widening, shoulder widening, side ditches, driveway entrances, and such other design features as the Director determines.

(B) No Traffic Hazard. If the existing County-maintained road is not constructed to an approved line and grade, but required construction would not constitute a traffic hazard as determined by the Director, the person will be required to perform the work, including the construction of curb and gutter, in accordance with the Design and Construction Standards. The person shall provide pavement tying in the curb and gutter and existing pavement.

(2) Where the property proposed for development has a frontage of greater than three hundred (300) feet:

(A) If the alignment and grade of the existing County road is satisfactory, construction as described in Subsection (a)(1)(B), above, will be required.

(B) If the circumstances set forth in Subsection (a)(1)(B), above, are not feasible, the person may be required to regrade the road and do all construction to provide a minimum of thirty (30) feet of pavement for primary residential streets and higher class roadways, or twenty four (24) feet of pavement for secondary residential streets. If the person is required to regrade the road, the County will assist in obtaining the necessary rights-of-way beyond the extent of lands owned or controlled by the person for which the person has been unable to obtain right-of-way. The County will be responsible for acquiring and providing these rights-of-way only after the person has submitted evidence satisfactory to the Director of a bona fide effort to obtain or negotiate such rights-of-way. The person will reimburse the County for all expenses experienced by the County while acquiring said rights-of-way on behalf of the person.

(3) Where the road adjacent to the property proposed for development is already constructed to an approved line and grade, but where all elements of the standard cross-section or existing intersections have not been constructed, the person will be required to provide that construction necessary to complete the road to the applicable standards for that cross-section and/or intersection.

(CB-98-1989)

Sec. 23-144. Location of utilities.

Installations of new utility systems, major alterations to existing systems, and major replacements to existing systems shall be located either within the public right-of-way or in an easement adjacent to the right-of-way. Utility installations in new subdivisions and along new public right-of-way may be installed in utility easements, provided the utility easements are acquired either by dedication on the subdivision plat(s) or by the County when the new public right-of-way is acquired. On existing public right-of-way or new public right-of-way where utility easement(s) have not been dedicated or acquired by the County, utilities will be installed in the public right-of-way out of the paved roadway wherever possible.

(CB-98-1989)

Sec. 23-145. Traffic signals.

When the Director determines that a subdivision proposed for development may generate sufficient traffic to warrant the installation of a traffic signal during the build out of the subdivision, the Director may require the owner to sign a covenant and post bond whereby the owner shall acknowledge responsibility to install a traffic signal(s) at the entrance road or driveway entrance to the subdivision. Said covenant shall be signed by the owner and recorded among the land records

of the County. The covenant shall require the owner to bear all costs associated with design and installation of the traffic signal(s), the conveyance to the County of any associated rights-of-way necessary for the installation of the signals and geometric improvements to the intersection, and all design and construction costs associated with any modifications to the intersection where and when the signal is installed. The traffic signal and intersection improvements shall be made by the owner immediately upon notification by the Director that said installation is necessary. Failure by the owner to immediately perform the necessary improvements shall result in the work being performed by the Department, the cost of which shall be billed to the owner. Where said owner fails to pay any cost incurred by the County within thirty (30) days of the date of billing by the County, said nonpayment shall result in a tax lien being placed against the affected property. Upon certification of a tax lien to the Director of Finance by the Director, the amount of such lien shall be collected in the same manner as the County tax on real property.
(CB-98-1989)

Sec. 23-146. through Sec. 23-149. Reserved.

DIVISION 4. REQUIRED REMOVAL OF SNOW, ICE, WEEDS, LITTER, AND DEBRIS FROM SIDEWALKS AND DEBRIS FROM ROADWAYS.

Sec. 23-150. Duty to remove snow, ice, weeds, litter, and debris.

(a) For the purposes of this Section only, "commercial property" shall mean any property that is used to conduct a trade or business that provides goods or services to the public. It shall also include properties that are zoned industrial, commercial, or residential under the provisions of Subtitle 27 of this Code that are used to provide goods or services to the public.

(b) It shall be the duty of the owner or lessor, as the case may be, of a residential dwelling unit or commercial property, unless such duty has been delegated to a lessee in actual possession, to remove snow and ice from any sidewalk abutting the subject property within forty-eight (48) hours after snow has fallen or ice has formed as a result of inclement weather or runoff from abutting surfaces.

(c) It shall be the duty of the owner or lessor, as the case may be, of a residential dwelling unit or commercial property, unless such duty has been delegated to a lessee in actual possession, to remove litter and debris from the property line of that building, lot, or land to the edge of the concrete curb and gutter adjoining the roadway in the case of an urban (closed) section roadway, and from the private property line to the edge of the paved roadway surface in the case of a rural (open) section roadway.

(d) It shall be the duty of the owner or lessor, as the case may be, of a residential dwelling unit or commercial property, unless such duty has been delegated to a lessee in actual possession, to keep all weeds, as defined in Section 23-102 of this Subtitle, located in the public space set forth in Subsection (c) of this Section, cut to a height of not over six (6) inches.

(e) The Police Department or other appropriate County enforcement agency shall be responsible for enforcing the provisions of this Section.

(f) Any person primarily responsible for the removal of snow, ice, weeds, litter, or debris who breaches said duty shall be subject to a civil fine not to exceed One Hundred Dollars ($100.00) for each separate offense.

(g) This Section shall not apply to materials left within the public right-of-way as a result of a lawfully executed eviction action, from a single-family rental facility as defined in Section 13-138

of the Code or for bulky trash left in the right-of-way as a result of illegal dumping by others. (CB-98-1989; CB-73-2000; CB-74-2001)

Sec. 23-151. Duty to prevent deposit of sediment or other materials in road right-of-way.

(a) It shall be the duty of the owner or lessor of any real property, improved or unimproved, unless such duty has been delegated to a lessee in actual possession, as the case may be, to prevent the deposit of dirt, sediment, debris, gravel, oil, litter, or any other matter in a road right-of-way, or in any drain or ditch designed to carry surface water from a road right-of-way, whether improved or not. For the purpose of this Section, the deposit of oil shall include the drainage or leakage of oil, transmission fluid, antifreeze, and similar substances from a vehicle or machine in addition to the discharge or dumping of such substances by any other means. The prevention of the deposit of silt in the road right-of-way shall not apply where a temporary approved sediment-trapping device has been constructed in the right-of-way as part of an ongoing development construction project. It shall also be the responsibility of said person to prevent the formation of algae on sidewalks located within the right-of-way.

(b) Any person primarily responsible for the said duty will be required to correct any cited condition within the date of written notice by the Department or immediately if the condition cited is determined hazardous. Noncompliance on the part of the responsible person within the required time will result in correction or removal of the cited condition by the County, and all costs therefore shall be billed to the responsible person. Failure to pay any cost incurred by the County within thirty (30) days of the billing date shall result in a tax lien being placed against the affected property in accordance with the provisions of this Subtitle.

(c) Any person primarily responsible for the deposition of dirt, sediment, debris, gravel, oil, litter, or other foreign matter into a public right-of-way shall be subject to a civil fine not to exceed One Thousand Dollars ($1,000.00) for each separate offense. The procedures of Subdivision 1, Division 3, Subtitle 28 of this Code shall apply. In addition, any person responsible for a violation of this Section may also be subject to the following criminal penalties:

(1) A person who dumps litter in violation of this Section in an amount not exceeding 100 pounds in weight or 27 cubic feet in volume and not for commercial purposes is guilty of a misdemeanor and is subject to a fine of not more than One Thousand Dollars ($1,000) or by imprisonment for not more than thirty (30) days, or both;

(2) A person who dumps litter in violation of this Section in an amount exceeding 100 pounds in weight or 27 cubic feet in volume, but not exceeding 500 pounds in weight or 216 cubic feet in volume, and not for commercial purposes is guilty of a misdemeanor and subject to a fine of not more than Ten Thousand Dollars ($10,000) or imprisonment for not more than one (1) year, or both;

(3) A person who dumps litter in violation of this Section in an amount exceeding 500 pounds in weight or 216 cubic feet in volume or in any quantity for commercial purposes is guilty of a misdemeanor and subject to a fine of not more than Twenty-five Thousand Dollars ($25,000) or imprisonment for not more than five (5) years, or both.

(d) In addition to the sentences provided by this Section, a court may order the violator to:

(1) Remove or render harmless the litter dumped in violation of this Section;

(2) Repair or restore property damaged by, or pay damages for, any damage arising out of dumping the litter in violation of this Section;

(3) Perform public service relating to the removal of litter dumped in violation of this Section or to the restoration of an area polluted by litter dumped in violation of this Section; or

(4) Reimburse the State, County, municipal corporation, or bicounty agency for any costs incurred by the State, County, municipal corporation, or bicounty agency in the removal of litter

dumped in violation of this Section.

(e) The placement of personal property in the right-of-way as the result of an eviction from a single-family rental facility as defined in Section 13-138 of the Code, shall not be subject to the prohibitions of this Section.

(CB-98-1989; CB-75-2000; CB-74-2001)

Sec. 23-152. through Sec. 23-155. Reserved.

DIVISION 5. ROAD CLOSINGS.

Sec. 23-156. Authority to close roads.

The County Executive may, upon recommendation of the Director, authorize the closing of any road under the jurisdiction of the County in accordance with the procedures set forth in this Division.

(CB-98-1989)

Sec. 23-157. Procedures.

(a) Where users of the road or portion of road to be closed will not be denied access to any property or area which was previously accessible, the County Executive may authorize the closing upon the certification of such facts by the Director.

(b) Where the closing of the road will deny access to public users to areas or properties accessible from the road to be closed, or will take from abutting or nearby property owners the only direct access to a public road, or the Director finds or is advised that there is potential local objection to the closing, the Director shall first hold a public hearing. If the Director finds that local opposition to the closing is unlikely, he may notify the property owners served by the road, in writing, and post notices, in accordance with the following procedure, offering the opportunity to request a hearing; and, if no request is received, he may proceed as in Subsection (a), above. The purpose of the hearing shall be to take testimony to determine that reasonable or alternative means of access exist to property formerly accessible by the road to be closed, and that the road is no longer needed as a public way or that other public needs outweigh the need for the road as a public way. Each property owner as shown on the assessment books of the County abutting a portion of the road to be closed or any utilities which may gain access to their facilities by means of the portion of the road to be closed shall be notified in writing of the closing and of the date, time, and place a hearing will be held. In addition thereto, a notice shall be posted in such manner and size to give reasonable notice to the users of the road of the intended closing and time and place of hearing.

(CB-98-1989)

Sec. 23-158. Effect of closing.

A closing of a road shall constitute the termination of the right of the general public to use the right-of-way but shall have no effect on private rights of ownership or easements in the roadway.

(CB-98-1989)

Sec. 23-159. Barricades.

Upon a closing of the road, the Department may barricade the road or may permit the abutting owners to place barricades, fences, or gates in such a manner as not to deny individual property rights.
(CB-98-1989)

Sec. 23-160. Roads in subdivision.

The provisions of this Division shall have no effect on the procedure for vacation of subdivision plats. Where, however, vacation of a subdivision plat affects a road which is being utilized at the time by the general public, the Director shall not consent to such vacation until such time as the County Executive has issued an Executive Order authorizing the closing of the road.
(CB-98-1989)

Sec. 23-161. Roads within municipalities.

The provisions of this Division shall not apply to any road within the boundaries of a municipality which is not under the County's jurisdiction.
(CB-98-1989)

Sec. 23-162. Temporary closures of public roads.

(a) No person, except as otherwise specifically permitted by law, shall close a County road without first obtaining the permission of the Director. An applicant seeking a road closure shall provide information to the Department in a format as determined by the Director.

(b) The Director, in his sole discretion, may authorize the temporary closing of any County-maintained or other public road, or any part thereof, for the purposes of performing road construction, installation, maintenance, or repair of public utilities, or for similar activities.

(c) No temporary closing of a road shall deny to any person the legal access to his property, without his permission, nor interrupt through traffic on any primary, collector, or arterial road unless the Director determines that there is an acceptable alternate route or that the interruption will be of such short duration not to cause unreasonable inconvenience to the users of the road.

(d) A request from any person to temporarily close any road or any part thereof must be submitted in writing to the Department not less than ten (10) working days in advance of the date of the proposed closing. The Director may waive the ten (10) day notice requirement in cases of emergency beyond the control of the requester. The request shall include not less than the following information:

(1) Explanation of the road construction, utility work, or event for which the closing is requested, and a statement of why closing is necessary for the proposed activity;

(2) The location and precise limits of the requested closing;

(3) The date, time, and duration of the requested closing;

(4) A traffic control plan acceptable to the Department showing all required traffic signs, barricades, alternate routes, and such other traffic control measures as the Director may require;

(5) Evidence of permission from any property owner or tenant who will be temporarily denied access to his property from the public road system.

(e) Where a public utility experiences an emergency condition which requires the immediate temporary closure or partial closure of a public road for reasons of public safety due to a failure of their system, the utility shall immediately contact the Department. During the day, notification

shall be made to the Office of Transportation. During nonworking hours, notification shall be made to the Department's dispatcher.

(f) Upon review by the Department, the Director may deny the request for temporary closing or may grant permission for the temporary closing in writing, as requested or as revised upon recommendation of the Department, with a statement of any conditions of the permission. The written permission and conditions must be acknowledged in writing by the person requesting the temporary closing, and shall be complied with throughout the duration of the activity for which the closing is requested.

(g) Failure of the requester to comply with any condition of the written permission for temporary closing shall result in immediate revocation of the permission, and the Director may require the roadway to be restored to a safe condition and to be reopened to public use immediately.

(h) Prior to expiration of the time stated in the written permission for the temporary closing, the requester shall be required to restore the road to a safe condition and shall reopen the road to public use at the end of the time stated. However, the Director may, in his sole discretion, grant an extension of the time for reopening, upon his determination that such extension is necessary for public safety or convenience or is necessitated by reasons beyond the control of the requester.

(i) The denial by the Director of permission to temporarily close a road or any part thereof or to extend the time of closing shall not be subject to review by the Board of Appeals for Prince George's County.

(CB-98-1989)

SUBTITLE 24. SUBDIVISIONS.

DIVISION 4. REQUIREMENTS: TRANSPORTATION AND CIRCULATION.

Sec. 24-128. Private roads and easements.

(a) No subdivision plat or plan of development (however designated) shall be approved that provides for a private road, right-of-way, or easement as the means of vehicular access to any lot, and no building permit shall be issued for the construction of any building in a subdivision unless such building is to be located on a lot or parcel of land having frontage on and direct vehicular access to a public street, except as hereinafter provided.

(b) The Planning Board may approve plats and plans of development containing private roads, rights-of-way, alleys, and/or easements under the following conditions:

(1) In the O-S, R-A, R-E, and R-R Zones, a private right-of-way easement may be deemed adequate by the Planning Board if no more than four (4) lots are to be served by the easement and if shown to be in conformance with the following criteria:

(A) Such easement shall have a minimum right-of-way width of twenty-two (22) feet connecting the lots to a public road;

(B) All lots served by such easement shall have a minimum net lot area of two (2) acres, as provided in Section 24-129(a) of this Subtitle; and

(C) The use of such lots shall be restricted to one-family dwellings or agricultural purposes.

(2) In any residential zone, a private right-of-way easement with a minimum right-of-way width of twenty-two (22) feet may be deemed adequate by the Planning Board to connect any publicly-owned and operated park to a public road.

(3) In any O-S, R-A, R-E, or R-R Zone, upon the submission by the subdivider of covenants running with the land, which the Planning Board finds meet the purposes and intent of this paragraph, and upon a finding that the subdivision will not adversely affect the development of a public road system in the area of the subject property, the Planning Board may approve the subdivision with private rural roads provided that such private rural roads are designated as common areas as herein defined, and subject to the following conditions:

(A) The covenants shall be filed in the land records at time of filing the final plat and a certification shall be included on the record plat to the effect that the subdivision is subject to covenants.

(B) A resubdivision increasing the number of lots shall not be permitted unless there is a resubdivision of the entire tract.

(C) A maximum of eight (8) lots, two (2) acres or larger, shall be permitted in a subdivision using private rural roads and the number of lots five (5) acres or larger shall be unlimited, provided that each lot adjoining a private rural road shall be used for one-family dwelling or agricultural purposes.

(D) A private rural road shall not connect to more than one (1) public road and shall be constructed in accordance with the private rural road standards, pursuant to Subtitle 23 of this Code. No final plat of subdivision shall be approved without completion of the road or the posting of a completion bond with the Department of Public Works and Transportation to assure completion of the road prior to the issuance of any use and occupancy permit.

(4) In the R-T Zone, and in the R-30, R-30C, R-18, and R-18C Zones, when land is developed in conformance with the requirements of the R-T Zone, the Planning Board may approve the subdivision with private roads, pursuant to the provisions of Section 27-433 of the Zoning Ordinance.

(5) In the R-35 Zone, the Planning Board may approve the subdivision with private rights-of-way, pursuant to the provisions of Section 27-431 of the Zoning Ordinance.

(6) Private roads may be deemed adequate to serve a recreational community development provided for by the Zoning Ordinance, provided that:

(A) Such private roads shall be conveyed to a homes association and provisions for maintenance charges shall be made; and

(B) Such private roads shall be improved to the standards set forth in Section 23-121(b) of Subtitle 23 of this Code.

(7) In Comprehensive Design and Mixed Use Zones:

(A) For land in the V-L, V-M, R-L, R-S, R-M, R-U, M-U-I, L-A-C, M-A-C, M-X-C, M-U-TC, and M-X-T Zones, the Planning Board may approve a subdivision (and all attendant plans of development) with private roads to serve attached single-family dwellings, two-family dwellings, and three-family dwellings, but not single-family detached or multifamily dwellings, in accordance with the requirements of Subsections (e) and (f) of Section 27-433 of the Zoning Ordinance, except as hereinafter provided. In all of the above zones, and in the R-R Zone when developed as a cluster subdivision, the Planning Board may approve a subdivision with alleys to serve any permitted use, provided the lot has frontage on and pedestrian access to a public right-of-way. The District Council may disapprove the inclusion of alleys during the consideration of the detailed site plan for a cluster subdivision. For the purposes of this Section, an "alley" shall mean a road providing vehicular access to the rear or side of abutting lots, and which is not intended for general traffic circulation.

(i) The pavement width of private roads may be reduced to not less than a minimum of twenty-two (22) feet when it is determined that the provision of the minimum width is consistent with a safe, efficient, hierarchical street system for a development.

(ii) The pavement width of private alleys shall be not less than eighteen (18) feet when it is determined that the provision of the minimum width is consistent with a safe, efficient, vehicular access to individual lots. Since alleys only provide vehicular access to lots with frontage on a public street, alleys shall not be required to be improved with street trees or curb and gutter, unless a drainage problem has been identified by the Department of Environmental Resources or the Department of Public Works and Transportation.

(B) Notwithstanding the provisions of subparagraph (A), above, a use and occupancy permit may be issued for a dwelling of any type on a lot in the R-S, R-M, R-U, L-A-C, or M-A-C Zone that is served by a private road, right-of-way, or easement (shown on a record plat) which does not meet the requirements of Subsection (a), above, provided that a building permit for such dwelling was issued prior to January 1, 1985, and further provided that the use of such lot shall be restricted to residential purposes, and development complies with all other applicable requirements of this Code.

(C) Notwithstanding the provisions of subparagraphs (A) and (B), above, the Planning Board may approve subdivision plats and Specific Design Plans, and building and use and occupancy permits may be issued, for one-family detached dwellings on lots in the R-S Zone that are served by a private access road shown on a Comprehensive Design Plan approved by the Planning Board prior to January 1, 1985, provided that:

(i) Development shall comply with all other applicable requirements of this Code;

(ii) Covenants shall be recorded among the Land Records of Prince George's County, Maryland, stating that the subject property is to be developed for one-family detached dwellings, only, and that the homeowners' association is responsible for the maintenance of the private roads, and for accessibility of the private roads to emergency equipment;

(iii) Prior to recordation, the developer shall submit a copy of said covenants to the Office of Law, for the County Attorney's review and approval of the conformity of the covenants

with the requirements of this Section;

(iv) The requirements of Section 11-276(d) of the Prince George's County Code shall be met by having the Fire Chief (or his designee) approve the private roads; and

(v) The private roads to be constructed shall, at a minimum, consist of six (6) inches of bank run gravel and two (2) inches of bituminous concrete, to a width of at least twenty (20) feet.

(8) Within a Transit District Overlay (T-D-O) or Development District Overlay (DDO) Zone, the Planning Board may approve a subdivision with private rights-of-way, easements, alleys or roads.

(9) Where direct vehicular access to an individual lot fronting on a public street should be denied due to a potentially hazardous or dangerous traffic situation, a private easement may be approved in accordance with the driveway standards in Part 11 of Subtitle 27, in order to provide vehicular access, when deemed appropriate by the Planning Board.

(10) In any zone where development is pursuant to the requirements for opportunity housing as defined in Subtitle 27, the Planning Board may approve a subdivision with vehicular access via a private easement. This easement shall be at least sixty (60) feet in width and established for public ingress and egress.

(11) In the O-S, R-A, and R-E Zones, the Planning Board may approve the subdivision with private rights-of-way, provided that:

(A) The private roads shall have a minimum pavement width equal to the standard roadway width for secondary residential streets or primary residential streets, as appropriate, and shall be constructed pursuant to the Department of Public Works and Transportation specifications and standards;

(B) Covenants shall be recorded among the Land Records of Prince George's County stating that a homeowners' association is responsible for maintenance of the private roads and for accessibility of the private roads to emergency equipment; and

(C) The accessibility of the private roads to emergency equipment shall be ensured by having the Fire Chief (or designee) approve the private roads.

(12) Private roads provided for by this Subsection shall have a public utility easement contiguous to the right-of-way. Said easement shall be at least ten (10) feet in width, and shall be adjacent to either right-of-way line.

(13) Notwithstanding any provision of this Code to the contrary, the Planning Board may approve a system of public roads, private roads, rights-of-way, and/or easements for a subdivision, with land in any Residential Zone and/or the R-M Zone, provided a portion of the land is zoned M-X-T and all of the land is the subject of the same approved Conceptual Site Plan. In such cases, the applicant shall present the Planning Board with sufficient assurances regarding the perpetual maintenance of the nonpublic roads. Prior to action by the Planning Board, the Department of Public Works and Transportation shall approve the conceptual design and widths of the nonpublic roads and conceptual connections to public roads.

(14) For an integrated development which shall contain either land in each of the R-A, L-A-C, and R-L Zones which is a planned golf course community, or land in the M-X-C Zone, the Planning Board may approve a subdivision that includes single-family detached or single-family attached dwellings with private roads, and public utility easements for water and sewer, natural gas, electric, and telephone service and private easements for all other public utilities in accordance with the following requirements:

(A) The preliminary plan for the subject property shall include a statement explaining why private roads or rights-of-way and private easements for public utilities other than water and sewer, natural gas, electric, and telephone, notwithstanding the restrictions of Section 24-128(b)(12), will be used. The applicant shall demonstrate that dedicating roads or rights-of-way

to public use in the subdivision is impractical or unnecessary, and that using private access is consistent with sound planning for the development.

(B) Department of Public Works and Transportation shall review and comment and the Planning Board shall find that the proposed access by private roads or rights-of-way will be adequate to serve the lots in the subdivision and that they are consistent with a safe, efficient, hierarchical street system for the development.

(C) Covenants approved as to form and sufficiency by the Planning Board's attorney and the County Attorney shall be recorded among the Land Records of Prince George's County, Maryland, stating that the subject property is to be developed with private roads or rights-of-way, and that the property's homeowners' association, property owners, or tenants are responsible for the maintenance of all private roads or rights-of-way including appropriate capital reserve funds, and for the accessibility to emergency vehicles of all lots on the property. The capital reserve funds shall ensure maintenance as well as resurfacing of the private roads and associated improvements such as, but not limited to, storm drainage, street lights, and street trees normally associated with public roads.

(D) The requirements of Section 11-276 of the Prince George's County Code shall be met by having the Fire Chief or his designee approve the private roads or rights-of-way, notwithstanding Section 11-276(b) and Section 11-276(f) for one- and two-family detached dwellings. For all others, the requirements of Section 11-276 shall apply.

(E) Development shall comply with all other applicable requirements of the Code. Private roads shall be bonded, permitted, and inspected by the Department of Public Works and Transportation pursuant to Section 23-142(b) of the Prince George's County Code and shall include public storm drain easements. Private streets for townhouses shall be constructed in compliance with Section 27-433(e) of the Code or as determined by the Department of Public Works and Transportation. All private roadways serving more than four (4) lots or dwelling units shall be constructed to remain passable during a 100-year flood event pursuant to Section 23-136(a)(4)(D) of the Prince George's County Code.

(F) If property in the M-X-C Zone is the subject of a recorded final plat of subdivision with public roads, upon satisfying the above criteria, the owner may vacate the public roads and replat the roads pursuant to the provisions of Section 24-108 to create parcels to be conveyed to a homeowners' association.

(15) For Use as Part of an Integrated Shopping Center:

(A) For land in the C-S-C, M-A-C, M-X-C, or M-X-T Zones, the Planning Board may approve a subdivision with a private right-of-way or easement, provided that:

(i) Such right-of-way or easement shall have a minimum right-of-way width of twenty-two (22) feet connecting the lots to a public road;

(ii) Such authorization shall be based on a written finding that the private right-of-way or easement is adequate to serve the extent of the development proposed and shall not result in any adverse impact on the access and use of other lots or parcels within the Integrated Shopping Center; and

(iii) The development shall comply with all other applicable requirements of this Code.

(B) Approval of the right-of-way or easement per this subsection shall be deemed the creation of a driveway in accordance with Part 11 of Subtitle 27.

(c) Upon petition of the owner of an existing lot having its sole frontage on, or its only direct vehicular access to, a private right-of-way or easement not provided for by Subsection (b), paragraphs (2) through (11), above, the Director of the Department of Public Works and Transportation may determine the adequacy of the private right-of-way or easement for the issuance of a building permit for a building or other structure on such lot, subject to the following conditions:

(1) The use of such lot shall be restricted to one-family detached dwellings or agricultural uses, and structures and uses accessory thereto;

(2) The private right-of-way or easement width shall be a minimum of fifteen (15) feet, and the travel way width shall be a minimum of ten (10) feet;

(3) Such authorization shall be based upon a written finding that the private right-of-way or easement is adequate to serve the extent of the development proposed;

(4) The private right-of-way or easement shall not lie within a municipality or connect to a street under the jurisdiction of a municipality; and

(5) The development shall comply with all other applicable requirements of this Code.

(d) Upon petition of the owner of an existing lot having its sole frontage on, or its only direct vehicular access to, a private right-of-way or easement not provided for by Subsection (b), paragraphs (2) through (11), or Subsection (c), above, and upon the recommendation of the County Executive, the County Council, by resolution, may approve the issuance of a building permit for any building or other structure on such lot, subject to the following conditions:

(1) For a one-family detached dwelling, and structures accessory thereto, including a detached garage, but excluding any other buildings, such approval shall be based upon a finding that the private right-of-way or easement is adequate to serve such lot and the development proposed thereon, provided that such development complies with all other applicable requirements of this Code.

(2) For any other building or structure, such approval shall not be granted unless the findings in paragraph (1) are made, and the owner submits documentary evidence demonstrating the inability to obtain access for use of the parcel by any other means, including dedication to public use of the right-of-way. In addition, the owner shall submit detailed construction plans demonstrating that the private road shall be constructed in accordance with the provisions governing standard paving sections and Fire Department access in Subtitle 11 and Subtitle 23 of this Code. Such plans shall be reviewed by the Department of Public Works and Transportation for adequacy, a performance bond shall be posted by the owner in an amount determined by that Department, and the Department shall have the right to inspect all work for conformance with the approved plans.

(3) No private right-of-way or easement across land in a Residential Zone shall be deemed adequate access to serve any development other than a one-family detached dwelling, and structures accessory thereto, including a detached garage, or a nonprofit group residential facility where the private right-of-way or easement is owned by a governmental entity.

(4) Where the issuance of a building permit has been approved pursuant to the provisions of this Subsection, the Planning Board may approve any applicable subdivision plat or plan of development for such lot.

(e) When the private right-of-way or easement, which is the subject of a petition pursuant to Subsection (d), lies within a municipality or connects to a street under the jurisdiction of a municipality, the municipality shall be given notice of said petition. The municipality shall have thirty (30) calendar days from the date such notice is mailed to review the petition and to submit comments thereon to the Department of Public Works and Transportation. In the event that a municipality recommends denial of the petition, said petition may be granted only upon the affirmative vote of two-thirds of the full Council.

(CB-48-1981; CB-24-1982; CB-6-1984; CB-4-1985; CB-71-1985; CB-55-1986; CB-30-1989; CB-39-1990; CB-105-1990; CB-26-1992; CB-40-1992; CB-129-1993; CB-72-1994; CB-109-1994; CB-85-1996; CB-45-1997; CB-47-1997; CB-72-2000; CB-44-2003; CB-60-2003; CB-6-2005)

SUBTITLE 25. TREES AND VEGETATION.

Sec. 25-101. Definitions.

(a) As used in this Subtitle:
Beautification Committee shall mean the tree planting committee established in Section 2-343 and its duly authorized representatives.
Forest Wardens shall mean the person appointed by the Director of the State Department of Forests and Parks to carry out the pruning, planting and maintenance of roadside trees in the County.
Roadside tree shall mean all trees and shrubs that may be growing within the right-of-way of any street.
Shade tree shall mean shade and ornamental trees, plants, and shrubbery located or planted in any street in the County.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-102. Beautification Committee; powers and duties.

The Beautification Committee may advise and make recommendations to the Department of Public Works as to plans of planting, caring for and protecting roadside trees and shade trees. The Committee may also designate species of such trees to be planted and recommend methods and times for planting. The Department of Public Works is encouraged to cooperate with and to coordinate the Committee's suggestions as far as possible with its regulatory policies.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-103. Application for consent; procedure.

(a) Where the permission, consent or approval of the Department of Public Works or the State Department of Forests and Parks is required by the provisions of this Subtitle, or by any other law, any person required to obtain such permission, consent or approval shall first make application to the Department of Public Works.
(b) Where the permission, consent or approval of the State Department of Forests and Parks is required, such approval shall be subject to the appointment of the administrator of the Department of Public Works to the office of Forest Warden. The appointment shall be made by the Director of the State Department of Forests and Parks. Such appointment shall be under supervision of the Director of the State Department of Forests and Parks.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-104. Prohibited acts relating to trees and shrubs.

(a) No person shall do or cause to be done by others any of the following acts to any shade tree, shrub or plant without the permission of the Department of Public Works:
(1) Plant, care and maintain;
(2) Cut, prune, mutilate or in any manner injure;
(3) Cut, disturb or interfere in any way with any roots; or,
(4) Spray with any chemical.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-105. Prohibited acts relating to roadside trees.

(a) No person shall do or cause to be done by others any of the following acts to any roadside tree, without the permission of the Department of Public Works and the State Department of Forests and Parks:
(1) Plant, care, and maintain;
(2) Cut, prune, mutilate, or in any manner injure; or
(3) Cut, disturb, or interfere in any way with any roots.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-106. Open space around tree trunks.

An open space of not less than two (2) feet outside the trunks of trees at their bases on all sides shall be provided on all trees on any street, except where limited by a previously established curb or sidewalk.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-107. Protection of trees during construction.

In the erection, altering, or repairing of any building or structure, the owner, or contractor shall place such guards around all nearby trees in streets as will effectively prevent injury to such trees.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-108. Protection of trees during excavations; roots.

(a) No person shall do any excavating within two (2) feet of any tree or shrub on any street without the written permission of the Department of Public Works, and a permit from the State Department of Forests and Parks.
(b) Where in an authorized excavation it becomes necessary to expose or cut roots more than one (1) inch in diameter of a tree on any street, it shall be the duty of the contractor to protect such roots, under advice from the Department of Public Works. The contractor shall obtain a permit from the Department of Public Works, and obtain a permit from the State Department of Forests and Parks.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-109. Pruning and removal of trees for utility wires.

Any utility company or its agent may, with prior permission from the Department of Public Works and the State Department of Forests and Parks, prune and remove trees for line clearance of utility wires.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-110. Removal of utility wires; option.

(a) When necessary to prune or remove any tree in a street, any person having wires running through such street shall temporarily remove such wires within twenty-four (24) hours after the service of a notice from the Department of Public Works upon the owner of such wires, or his agent.

(b) Any utility company, instead of temporarily removing service wires, shall have the option of pruning, toping or removing such trees under the direction of the Department of Public Works and the State Department of Forests and Parks.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-111. Obstructing air or water access to trees.

No person, without the permission of the Department of Public Works, shall place or maintain, or cause to be placed or maintained, upon the ground in a street any stone, cement, sidewalk or other substance which impedes the free access of air and water to the roots of any tree or shrub in any street, or which will injure any tree or shrub.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-112. Use of certain substances restricted.

No person shall place salt, brine, oil, weed killers or other substances injurious to plant growth in any street in such a manner as to injure any tree or shrub growing on such street.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-113. Injuring trees by fire or fumes.

No person shall build any fire or station any kettle, road roller or other engine in any street in such a manner that its hot vapors or fumes may injure any tree or shrub growing on such street.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-114. Operation of vehicles and machinery.

Automobiles, trucks and other vehicles, shovels and all other implements, machines and tools shall be used or operated in such a manner as not to damage or destroy any tree, shrub or plant in any street.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-115. Attachment of wires or devices to trees.

No person, without the consent of the Department of Public Works, shall attach or fasten any wire, insulator or other device for holding any wires to any tree or shrub in any street.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-116. Damaging tree guards prohibited.

No person, without the consent of the Department of Public Works shall remove or damage any guard or device placed to protect any tree or shrub.
(Gen. Res. No. 20-1967, Sec. 6)

Sec. 25-117. Woodland Conservation and Tree Preservation.

(a) Authority.
(1) The revised Prince George's County Woodland Conservation and Tree Preservation Policy

Document (October 1992), Part 2 through Part 7 (inclusive), as amended, is hereby adopted by reference and made a part of this Subtitle with the same force and effect as the regulations set forth herein.

(b) Enforcement, mitigation.

(1) Enforcement of this Section and the approved Tree Conservation Plan is the responsibility of the County Department of Public Works & Transportation.

(2) The permittee shall complete the approved mitigation measures within the time specified by the Planning Director, or his designee, but not later than prior to the issuance of any use and occupancy certificate(s). Only field grown nursery stock, with a preference for plants indigenous to coastal and piedmont regions, planted in an approved pattern, shall be used for mitigation. Specimen trees shall be replaced according to the cost formula developed by the International Society of Arboriculture (ISA) and published in the most recent edition of "Valuation of Landscape Trees, Shrubs, and Other Plants."

(3) Woodland destroyed or damaged without a permit, or in violation of either the Prince George's County Code or an approved Tree Conservation Plan, shall be replaced or mitigated at a cost not to exceed One Dollar and Fifty cents ($1.50) per square foot. In addition, any specimen trees destroyed shall be replaced or mitigated according to the cost formula developed by the International Society of Arboriculture (ISA) and published in the most recent edition of "Valuation of Landscape Trees, Shrubs, and Other Plants." The property owner or permittee shall provide a completion bond acceptable to the County Attorney to cover the mitigation measures approved by the Planning Director, or his designee.

(c) Minor changes.

(1) The Planning Director may approve minor changes or revisions to a Tree Conservation Plan, provided that:

(A) The increased area of disturbance is not greater than five hundred (500) square feet;

(B) The disturbance does not encroach into the one hundred (100) year floodplain;

(C) The revision in no way affects wetlands; and

(D) The revision meets all requirements of the Zoning Ordinance.

(d) Within a Tree Conservation Area, except for land located in the Chesapeake Bay Critical Area Overlay Zones, cutting or clearing of trees shall be prohibited except that:

(1) Individual trees that are in danger of falling or causing damage to dwellings or other structures or that are in danger of falling and thereby causing the blockage of streams, or resulting in accelerated shore erosion may be removed;

(2) Silva cultural practices may be used to maintain the health of woodlands and individual trees; and

(3) Trees that are one (1) inch or less in diameter at breast height and woody vegetation may be cut or cleared.

(CB-73-1989; CB-106-1992; CB-51-2004)

SUBTITLE 26. VEHICLES AND TRAFFIC.

DIVISION 1. ADMINISTRATIVE PROVISIONS.

Sec. 26-101. Definitions.

(a) For the purposes of this Subtitle, the following words and phrases shall have the meanings respectively ascribed to them hereunder:

(1) **Bicycle** means a vehicle that is designed to be operated by human power or with assistance of a motor that has a capacity of less than 50 cubic centimeters piston displacement or rated less than one brake horsepower, that has two or three wheels of which one is more than 14 inches in diameter, that have a rear drive, and with wheel configuration as follows:

(A) Two wheels -- in tandem;

(B) Three wheels -- single front wheel with two rear wheels on a horizontal axis perpendicular to the longitudinal plane of the front wheel and spaced equidistant from the front wheel centerline;

(C) For the purposes of this Subtitle, a two or three wheeled vehicle operated by human power and not defined as a bicycle herein shall be considered a "play vehicle."

(2) **Commercial bus** means a vehicle designed to carry more than ten passengers and which is used to carry people for compensation in furtherance of a commercial, for-profit purpose. This shall not include a van-pool operation as described in the Transportation Article of the Annotated Code of Maryland.

(3) **Commercial Trailer** means every trailer or semitrailer designed and used for carrying freight or merchandise and every trailer or semitrailer used for carrying freight or merchandise in the furtherance of any commercial enterprise.

(4) **County** means Prince George's County, Maryland.

(5) **Director** means the Director of the Department of Public Works and Transportation, his duly authorized agent, or the Director of Central Services, for the limited purpose of developing and implementing a reserved and metered parking program for employee and visitor parking lots or structures at county government facilities.

(6) **Heavy Commercial Truck** means trucks except light commercial vehicles.

(7) **Light Commercial Vehicles** includes pickups and panel trucks up to and including those of a 3/4-ton capacity and Maryland Motor Vehicle Administration registration restricting vehicles to 10,000 pounds gross vehicle weight.

(8) **Loading Zone** means space reserved for the exclusive use of vehicles during the loading or unloading of passengers or property.

(9) **Minibike** means a motor vehicle designed to travel on not more than three wheels, that is not registered for use on the public highways. This definition does not include tractors.

(10) **Operate a Bicycle** means to propel a bicycle by human power or to walk or stand with or otherwise be in control of a bicycle incidental to its propulsion, but does not include the carrying or transporting of a bicycle, without any passenger or rider thereupon, in any vehicle or carton or by any other similar means.

(11) **Passenger Loading Zone** means a place reserved for the exclusive use of vehicles while receiving or discharging passengers.

(12) **Public Agency** is the Prince George's County Government or the Washington Metropolitan Area Transit Authority.

(13) **Public Bicycle Area** means any highway, street, sidewalk, bicycle path, or other facility or area maintained by the State or designated, established, or maintained by the County pursuant to this Subtitle for the exclusive or nonexclusive use of bicycles.

(14) **Public Parking Facility** means those properties in Prince George's County owned or leased by Prince George's County and designated for public parking; and those properties in Prince George's County owned or leased and operated by the Washington Metropolitan Area Transit Authority or the Revenue Authority and designated for public parking.

(15) **Recorded Images** means images recorded by a traffic control signal monitoring system on two or more photographs, microphotographs, electronic images, a videotape, or any other medium which shows the rear of a motor vehicle clearly identifying the registration plate number on the motor vehicle on at least one image or on a portion of tape.

(16) **Revenue Authority** means the Revenue Authority of Prince George's County.

(17) **State** means the State of Maryland.

(18) **Traffic Control Signal Monitoring System** means a device with one or more motor vehicle sensors working in conjunction with a traffic control signal to produce recorded images of motor vehicles entering into an intersection against a red signal indication.

(19) **Unpaved Area of a Residential Lot** means, in any yard of a lot with one or more dwellings, an area not covered by asphalt, brick, block, concrete, or other structural material able to hold the weight of a vehicle, but does not include the uncovered area of a driveway with paved tracks for vehicle wheels.

(20)**Vehicle** means any automobile, trailer, or other vehicle of a type required to be registered with the Maryland Motor Vehicle Administration.

(b) Whenever any words and phrases used herein are not defined herein but are defined in the State laws regulating the operation of vehicles, any such definition therein shall be deemed to apply to such words and phrases used herein, except when the context otherwise requires. (CB-51-1978; CB-2-1986; CB-111-1987; CB-85-1989; CB-81-1998; CB-1-1999; CB-79-2001; CB-15-2002)

Sec. 26-102. Delegation of authority to director of Public Works and Transportation.

The Director shall determine the installation and proper timing and maintenance of traffic control devices; conduct engineering analysis of traffic accidents and devise remedial measures; conduct engineering investigation of traffic conditions; plan the operation of traffic on the streets and highways under the jurisdiction of this County; make recommendations to the Council for the improvement of traffic conditions in the County which cannot be accomplished by the directives, orders, rules or regulations promulgated by the Director; and cooperate with the County Police Department in the development of ways and means to improve traffic conditions and cooperate in carrying out the additional powers and duties imposed by ordinances of this County and State. (CB-51-1978)

Sec. 26-103. Emergency and experimental regulations.

(a) The Chief of Police by and with the approval of the Director is hereby empowered to make and enforce temporary or experimental regulations to cover emergencies or special conditions. No such temporary or experimental regulation shall remain in effect for more than ten (10) days.

(b) The Chief of Police may authorize the temporary placing of official traffic control devices when required by an emergency. The Chief of Police shall notify the Director of his action as soon thereafter as is practicable.

(c) The Chief of Police is hereby authorized to pass and adopt reasonable rules and regulations governing parking, traffic and the movement of vehicles in the vicinity of any fair, game, parade, or other public event where a large gathering of people or vehicles is anticipated.

(d) The Director may test traffic control devices under actual conditions of traffic.

(CB-51-1978)

Sec. 26-104. Enforcement and obedience to traffic regulations.

(a) Authority of Police.

(1) It shall be the duty of the officers of the Police Department, cadets, or such officers as are assigned by the Chief of Police to enforce all street traffic laws of this County.

(2) Officers of the Police Department, cadets, crossing guards, or such officers as are assigned by the Chief of Police are hereby authorized to direct all traffic by voice, hand or signal in conformance with traffic laws, provided that, in the event of a fire or other emergency or to expedite traffic or to safeguard pedestrians, officers, cadets, or crossing guards of the Police Department may direct traffic as conditions may require notwithstanding the provisions of the traffic laws. Any person who shall violate or disobey any lawful order or direction of any police officer, cadet, or crossing guard, or other such officers as assigned by the Chief shall be deemed guilty of a misdemeanor.
(CB-51-1978)

DIVISION 2. TRAFFIC CONTROL DEVICES.

Sec. 26-105. Authority to install traffic control devices.

(a) The Director shall place and maintain official traffic control devices when and as required under this Subtitle to make effective the provisions hereof and may place and maintain such additional traffic-control devices on the streets and highways and public parking facilities under the jurisdiction of this County as may be deemed necessary to regulate traffic pursuant to County or State law or to guide or warn traffic.

(b) The Director shall coordinate and approve the installation and maintenance of traffic control signal monitoring systems as permitted under this Subtitle as may be deemed necessary to regulate and enhance enforcement of traffic laws pertaining to traffic control signals.
(CB-51-1978; CB-1-1999)

Sec. 26-106. Manual and specifications for traffic-control devices.

(a) All traffic-control signs, signals, and devices shall conform to the specifications approved by the State Highway Administration. All signs and signals required hereunder for a particular purpose shall so far as practicable be uniform as to type and location throughout the County. All traffic-control devices so erected and not inconsistent with the provisions of State law or this subtitle shall be official traffic-control devices.

(b) All traffic control signal monitoring systems equipment shall conform to the requirements of the Transportation Article, Annotated Code of Maryland.
(CB-51-1978; CB-1-1999)

Sec. 26-107. When official traffic control devices required for enforcement purposes.

(a) No provision of this Subtitle which requires official traffic control devices shall be enforced against an alleged violator if at the time and place of the alleged violation an official device is not

in proper position and sufficiently legible to be seen by an ordinarily observant person. Whenever a particular section does not state that official traffic control devices are required, such section shall be effective even though no official traffic control devices are erected or in place.

(b) For purposes of civil enforcement using recorded images from traffic control signal monitoring systems equipment, only the traffic control signal is required to be in proper position and visible to an ordinarily observant person.

(CB-51-1978; CB-1-1999)

Sec. 26-108. Official traffic control devices; presumption of legality.

(a) Whenever official traffic control devices are placed in position approximately conforming to the requirements of this subtitle, such devices shall be presumed to have been so placed by the official act or direction of lawful authority, unless the contrary shall be established by competent evidence.

(b) Any official traffic control device placed pursuant to the provisions of this Subtitle and purporting to conform to the lawful requirements pertaining to such devices shall be presumed to comply with the requirements of this Subtitle, unless the contrary shall be established by competent evidence.

(c) Any traffic control signal monitoring system and its recorded images shall be presumed to conform to the lawful requirements of State and County law, unless the contrary shall be established by competent evidence.

(CB-51-1978; CB-1-1999)

Sec. 26-108.01. Obedience to regulations and traffic control devices.

(a) No person, without lawful authority, shall willfully deface, injure, move, or interfere with any sign, signal, or any other traffic control device, or any part thereof, erected by the authority of the Director or any directions, lines, or marks painted by the authority of the Director on any pavement, curb, or roadway for the purpose of directing traffic or parking vehicles.

(b) No person shall fail, neglect, or refuse to comply with any instructions or direction on any sign, markings, signal, or other traffic control device installed by the authority of the Director for the regulation of traffic or parking.

(c) No person shall violate any rule, regulation, order, or directive promulgated by the Director as provided in this Subtitle.

(CB-51-1978)

DIVISION 3. ROAD MARKINGS.

Sec. 26-109. Crosswalks and safety zones.

(a) The director is hereby authorized:

(1) To designate and maintain, by appropriate devices, marks, or lines upon the surface of the roadway, crosswalks at intersections where, in his opinion, there is particular danger to pedestrians crossing the roadway, and at such other places as he may deem necessary.

(2) To establish safety zones of such kind and character and at such places as he may deem necessary for the protection of pedestrians.

(CB-51-1978)

Sec. 26-110. Traffic lanes.

The Director is hereby authorized to mark traffic lanes upon the roadway of any street or highway where a regular alignment of traffic is necessary.
(CB-51-1978)

Sec. 26-111. No-passing zones.

(a) The Director is hereby authorized to determine those portions of any highway where overtaking and passing or driving to the left of the roadway would be especially hazardous and may by appropriate signs or markings on the roadway indicate the beginning and end of such zones and when such signs or markings are in place and clearly visible to an ordinarily observant person every driver of a vehicle shall obey the directions thereof.

(b) Where signs or markings are in place to define a no-passing zone as set forth in Subsection (a) no driver shall at any time drive on the left side of the roadway within such no-passing zone or on the left side of any pavement striping designed to mark such no-passing zone throughout its length.

(c) This section does not apply when an obstruction exists making it necessary to drive to the left of the center of the highway; provided, any person so doing shall yield the right-of-way to all vehicles traveling in the proper direction upon the unobstructed portion of the highway within such distances as to constitute an immediate hazard, nor to the driver of a vehicle turning left into or from a private road or driveway.
(CB-51-1978)

DIVISION 4. SPEED REGULATIONS.

Sec. 26-112. State speed laws applicable.

The State traffic laws regulating the speed of vehicles shall be applicable upon all streets within this County, except where the Director, upon the basis of engineering and traffic investigation, determines that other speed limits shall be applicable upon specified streets or in certain areas, in which event it shall be unlawful for any person to drive a vehicle at a speed in excess of any speed so determined when signs are in place giving notice thereof.
(CB-51-1978)

Sec. 26-113. Altering maximum state speed limits.

The Director is hereby authorized to alter the maximum State speed limits under the limitations set forth by State law.
(CB-51-1978)

Sec. 26-114. Regulation of speed by traffic signals.

The Director is authorized to regulate the timing of traffic signals so as to permit the movement of traffic in an orderly and safe manner at speeds slightly at variance from the speeds otherwise

applicable within the district or at intersections and shall erect appropriate signs giving notice thereof.
(CB-51-1978)

DIVISION 5. TURNING MOVEMENTS.

Sec. 26-115. Authority to place devices altering normal course for turns.

The Director is authorized to place official traffic control devices within or adjacent to intersections indicating the course to be traveled by vehicles turning at such intersections, and such course to be traveled as so indicated may conform to or be other than as prescribed by law.
(CB-51-1978)

Sec. 26-116. Authority to place restricted turn signs.

The Director is hereby authorized to determine those intersections at which drivers of vehicles shall not make a right, left, or U-turn, and shall place proper signs at such intersections. The making of such turns may be prohibited between certain hours of any day and permitted at other hours, in which event the same shall be plainly indicated on the signs or they may be removed when such turns are permitted.
(CB-51-1978)

DIVISION 6. ONE-WAY STREETS.

Sec. 26-117. Authority to designate one-way streets and alleys.

The Director is hereby authorized to designate any street or alley or portion thereof upon which vehicular traffic shall proceed in one direction at all or such times as shall be indicated by official traffic control devices.
(CB-51-1978)

Sec. 26-118. Authority to restrict direction of movement on streets during certain hours.

The Director is hereby authorized to determine and designate streets, parts of streets, or specific lanes thereon upon which vehicular traffic shall proceed in one direction during one period and the opposite direction during another period of the day and shall place and maintain appropriate markings, signs, barriers, or other devices to give notice thereof. The Director may erect signs temporarily designating lanes to be used by traffic moving in a particular direction, regardless of the center line of the roadway.
(CB-51-1978)

DIVISION 7. STOP, YIELD, AND SIGNALIZED INTERSECTIONS.

Sec. 26-119. Authority to designate through streets and stop and yield intersections.

The Director is hereby authorized to designate through highways and erect stop signs or yield signs at specified entrances thereto, or may designate intersections or other roadway junctions at which vehicular traffic on one or more of the roadways should yield or stop and yield before entering the intersection or junction.
(CB-51-1978)

Sec. 26-120. Authority to install traffic control signals and monitoring devices.

(a) The Director is hereby authorized to determine those intersections where traffic control signals are to be installed to regulate traffic.

(b) The Director, in conjunction with the Chief of Police, is authorized to determine those intersections where traffic control signal monitoring systems are to be installed to regulate traffic. The Director is authorized to contract with the State of Maryland and municipalities for the installation of traffic control signal monitoring systems at intersections in the County which are in whole or in part under the jurisdiction of the State or municipality.

(c) The Purchasing Agent, upon the recommendation of the Chief of Police, is authorized to contract with the State or another county within Maryland, without the need for obtaining competitive bids, for the processing of recorded images and civil citations for violations recorded by a traffic control signal monitoring system.
(CB-51-1978; CB-1-1999)

DIVISION 8. PARKING REGULATIONS.

Sec. 26-121. Authority of Director.

(a) The Director is hereby authorized, on the basis of an engineering and traffic investigation, to prohibit, regulate, or limit stopping, standing, or parking of vehicles at all times or during specified hours.

(b) No prohibition, regulation, or limitation relating to stopping, standing, or parking imposed under this or any other ordinance of the County which requires an official traffic control device shall be effective unless official traffic control devices are erected and in place at the time of any alleged offense and it shall be the duty of the Director to erect and maintain such devices.
(CB-51-1978)

Sec. 26-122. Parking for longer than seventy-two hours prohibited.

(a) No person shall park or allow to stand any vehicle on any of the public streets or roadways in the County for a period in excess of seventy-two (72) hours.

(b) Any person issued a citation for a violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each violation.
(CB-51-1978; CB-111-1979; CB-20-1999)

Sec. 26-123. Overnight and weekend parking of commercial buses, trailers, and trucks restricted; impounding; penalty.

(a) No person shall park any commercial bus, commercial trailer, or heavy commercial truck on any street or highway in the County, outside the corporate limits of any municipality, between the hours of 6:00 P.M. and 6:00 A.M. each day of the week or at any time on Sundays or holidays.

(b) This Section shall not apply to vehicles which are in the course of a commercial purpose and do not park for more than a two (2) hour period.

(c) Any vehicle which is parked in violation of this Section shall be subject to being towed by the Police Department or the Revenue Authority from such highway or street and impounded after it has been parked for a twenty-four (24) hour period. The impoundment of the vehicle shall be done pursuant to Division 18 of this Subtitle.

(d) Any person issued a citation for a violation of this Section shall be subject to a fine of One Hundred Fifty Dollars ($150.00) for each violation.

(e) If any municipality in Prince George's County shall adopt this Section as it may be amended from time to time and without modification, and request that the County enforce the provisions hereof within the corporate limits of such municipality, the County shall hereafter administer and enforce the provisions of this Section within such incorporated municipality.
(CB-51-1978; CB-18-1979; CB-111-1979; CB-72-1981; CB-124-1982; CB-2-1986; CB-81-1998; CB-20-1999; CB-79-2001)

Sec. 26-124. Authority to designate loading zones.

The Director is hereby authorized to determine the location of loading zones and passenger loading zones and shall place and maintain appropriate signs indicating the same and stating the hours during which the provisions of this Section are applicable.
(CB-51-1978)

Sec. 26-125. Standing in passenger loading zones.

(a) No person shall stop, stand or park a vehicle for any purpose or period of time other than for the expeditious loading or unloading of passengers in any place marked as a passenger loading zone during hours when the regulations applicable to such loading zone are effective, and then only for a period not to exceed three (3) minutes.

(b) Any person issued a citation for a violation of this Section shall be subject to a fine of Ten Dollars ($10.00) for each violation.
(CB-51-1978; CB-111-1979)

Sec. 26-126. Standing in loading zones.

(a) No person shall stop, stand, or park a vehicle for any purpose or length of time other than for the expeditious unloading and delivery or pickup and loading of materials in any place marked as a loading zone during hours when the provisions applicable to such zones are in effect. In no case shall the stop for loading and unloading of property exceed thirty (30) minutes.

(b) The driver of a passenger vehicle may stop temporarily at a loading zone for the purpose of, and while actually engaged in, loading or unloading passengers when such stopping does not interfere with any vehicle which is waiting to enter or about to enter such zone to load or unload property.

(c) Any person issued a citation for a violation of this Section shall be subject to a fine of Twenty Dollars ($20.00) for each violation.
(CB-51-1978; CB-111-1979; CB-79-1990)

Sec. 26-127. Standing or parking restricted at bus stops.

(a) The Director is hereby authorized to approve or disapprove the location of bus stops or rescind or modify any prior approval heretofore given.

(b) No person shall stop, stand, or park a vehicle other than a bus within thirty (30) feet of a bus stop, except that a driver of a passenger vehicle may temporarily stop therein for the purpose of, and while actually engaged in, loading or unloading passengers when such stopping does not interfere with any bus waiting to enter or about to enter such zone. Any person issued a citation for a violation of this Subsection shall be subject to a fine of Twenty Dollars ($20.00) for each violation.
(CB-51-1978; CB-111-1979; CB-79-1990)

Sec. 26-127.01. Parking of unregistered motor vehicles or unregistered trailers.

(a) No person shall park any unregistered motor vehicle or unregistered trailer upon the highways, roads, streets, or other public property in the County at any time.

(b) Any person issued a citation for violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each violation.
(CB-51-1978; CB-111-1979; CB-14-1985; CB-20-1999)

Sec. 26-127.02. Stopping, standing, or parking on private property.

(a) No person shall park, stop, or stand a vehicle on any private property not owned by the owner or driver of the vehicle unless the person has express or implied permission from the property owner, his tenant, or his agent to park, stop, or stand the vehicle, as the case may be.

(b) Any person issued a citation for a violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each violation.

(c) The Revenue Authority of Prince George's County shall be authorized to enforce this Code provision.
(CB-51-1978; CB-111-1979; CB-14-1985; CB-20-1999; CB-94-2003)

Sec. 26-127.03. Reserved parking for the handicapped.

(a) No person shall stand or park a vehicle in any parking space on public or private property which is designated as parking reserved for the physically handicapped with the proper signs posted in conformance with the most recent edition of the State of Maryland Manual on Uniform Traffic Control Devices for Streets and Highways, unless said vehicle displays a special handicapped registration plate or permit issued by the State.

(b) Any person issued a citation for a violation of this Section shall be subject to a fine of Two Hundred Dollars ($200.00) for each violation.

(c) The provisions of Section 26-163.01 shall not be subject to the penalty imposed under this Section.
(CB-51-1978; CB-111-1979; CB-72-1981; CB-120-1982; CB-21-1988; CB-59-1988)

Sec. 26-127.04. Stopping, standing, or parking prohibited in specified places.

(a) General rule. The provisions of this Section apply except as necessary to avoid conflict with other traffic or in compliance with law or the directions of a police officer or traffic control device.

(b) Stopping, standing, or parking. No person shall stop, stand, or park a vehicle:

(1) In front of a public driveway;

(2) On a sidewalk;

(3) In an intersection;

(4) On a crosswalk;

(5) Between a safety zone and the adjacent curb or within thirty (30) feet of points on the curb immediately opposite the ends of a safety zone, unless the Director indicates a different length by signs or markings;

(6) Alongside or opposite any highway excavation or obstruction if to do so would obstruct traffic;

(7) On any bridge or other elevated structure on a highway;

(8) In a highway tunnel;

(9) At any place where stopping is prohibited by an official sign; or

(10) On any entrance or exit ramp of any highway with two or more lanes for traffic moving in the same direction.

(c) Standing or parking. No person shall stand or park a vehicle:

(1) In front of a private driveway without the consent of the owner or occupant of the premises;

(2) Within fifteen (15) feet of a fire hydrant;

(3) Within twenty (20) feet of a crosswalk at an intersection;

(4) Within thirty (30) feet on the approach to any flashing signal, stop sign, yield sign, or traffic control signal located at the side of a roadway;

(5) Within twenty (20) feet of the driveway entrance to any fire station or on the side of a highway opposite the entrance to any fire station within seventy-five (75) feet of the entrance, if properly sign posted;

(6) At any place where standing is prohibited by an official sign;

(7) On the roadway side of any other vehicle that is stopped or parked at the edge or curb of a highway; or

(8) On a curve or hill where solid lines on the surface of the roadway indicate a zone in which passing is prohibited;

(9) With one or more of the side wheels more than twelve (12) inches from the curb;

(10) In a direction other than the flow of traffic;

(11) So as to prevent another vehicle already stopped near the curb or otherwise legally parked, from moving away;

(12) Not wholly within a designated parking space, or within two (2) feet of the front or rear bumper of another vehicle parked at or parallel to the curb;

(13) In a taxi stand when properly posted by official signs;

(14) Upon any street or alley in such a manner or under such conditions as to leave available less than nine (9) feet of the width of a roadway for free movement of vehicular traffic;

(15) Upon any street where no-passing lines have been marked in such a manner or under such conditions as to leave available less than nine (9) feet of width of the roadway between said vehicle and the no-passing line;

(16) Upon the left-hand side of a highway which includes two or more separate roadways with traffic restricted to one direction upon any such roadway unless signs are erected to

permit such standing or parking on any such one-way roadway;

(17) Between the curb lines and the adjacent property lines except where signs are installed designating this as a permissible parking area.

(18) On an unpaved area of a residential lot that is one (1) acre or less in size.

(d) Parking. No person shall park a vehicle:

(1) Within fifty (50) feet of the nearest rail in a railroad grade crossing;

(2) Unless for the use of handicapped individual, in a space or zone marked as restricted for the use of handicapped individuals;

(3) At any other place where parking is prohibited by an official sign.

(e) Penalty. Any person issued a citation for a violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each offense.

(CB-51-1978; CB-111-1979; CB-14-1985; CB-20-1999; CB-15-2002; CB-81-2003)

Sec. 26-128. Reserved parking spaces designated.

(a) The Director is authorized, from time to time, to designate certain property for the parking of vehicles to be so designated by the affixing of a sign or other markings on or near the area so reserved. Signs or markings so erected shall be erected only under order of the County Executive or his designee in areas and under the conditions in the Order.

(b) The Director may reserve parking for individuals, groups of individuals or to the public at large and for any other use designated by the County Executive or his designee. The Director shall reserve not less than fifteen (15) parking spaces for the County Council, to be designated as the County Council shall direct in an area suitable to the County Council.

(c) The designated use appearing upon any sign so affixed by the Director shall be prima facie evidence as to the purpose for which the area may be used and that the sign was affixed by the Director.

(d) Parking permits may be issued by the County Executive for reserved parking spaces or areas created under this Section. Said parking permits shall be conspicuously displayed as directed by Administrative Procedure. Any vehicle upon which said reserved permit is not displayed in the manner required shall be presumed to be unlawfully parked in said reserved space or area.

(CB-58-1971; CB-9-1972; CB-51-1978; CB-120-1982; CB-85-1989)

Sec. 26-129. Unauthorized use of reserved parking spaces; impounding; penalty.

(a) No person shall park, store, or leave any vehicle of any kind, whether attended or not, and no owner of any vehicle of any kind shall allow, permit, or suffer any vehicle to be parked, stored, or left, whether attended or not, upon any property owned or leased by the County and used for parking purposes, including access and egress roadways, without the consent of the County Executive.

(b) Any vehicle found parked in a reserved parking space designated as provided in Section 26-128, whose owner or driver is not authorized to park in the space, may be impounded by the Police Department or County work force. The impoundment of the vehicle shall be done pursuant to Division 18 of this Subtitle.

(c) Any person issued a citation for violation of this Section shall be subject to a fine of Twenty-five Dollars ($25.00) for each violation.

(CB-58-1971; CB-9-1972; CB-51-1978: CB-111-1979; CB-124-1982; CB-85-1989)

Sec. 26-130. Reserved.

Sec. 26-131. Erection of parking meters; parkings; maintenance.

(a) The Director shall be authorized, from time to time, to designate certain County owned or leased property for the erection of parking meters. Parking meters so erected shall be erected only under County Executive Order in areas and under the conditions as designated in such Order.

(b) Any parking meter so erected shall have affixed on or about it a sign or writing notifying prospective users of the conditions of parking. The designated use appearing upon any parking meter or writing so affixed by the Director shall be prima facie evidence as to the purpose for which the adjacent area may be used and that the sign or writing was affixed by the Director.

(c) It shall be the duty of the Director to see to the maintenance of parking meters and periodic collection of money deposited in any parking meters erected pursuant to this Division.
(CB-51-1978)

Sec. 26-132. Use of parking meters; impounding; penalty.

(a) No person shall park, store, or leave any vehicle of any kind, whether attended or not, and no owner of any vehicle shall allow, permit, or suffer the vehicle to be parked, stored, or left, whether attended or not, upon any property upon which have been erected parking meters by the Director, except in strict conformance with the designated use, time, and other conditions appearing on or about any parking meters erected thereon.

(b) Any vehicle found parked, stored, or left in violation of the conditions found on or about any parking meter may be impounded by the Police Department or the Revenue Authority, or any County work force. The impoundment of the vehicle shall be done pursuant to Division 18 of Subtitle 26 of this Code.

(c) Any person issued a citation for a violation of this Section shall be subject to a fine of not more than Fifteen Dollars ($15.00) for each offense.
(CB-51-1978; CB-111-1979; CB-124-1982; CB-79-1990; CB-81-1998; CB-79-2001)

Sec. 26-133. Damaging parking meters or signs.

(a) No person shall willfully damage, destroy, or tamper with any parking meter, sign, or writing erected pursuant to this Division.

(b) Any person violating this Section shall be guilty of a misdemeanor and, upon conviction, shall be subject to a fine not exceeding Twenty-five Dollars ($25.00) for each offense.
(CB-51-1978; CB-85-1989)

Sec. 26-134. Enforcement of parking regulations.

It shall be the duty of the Police Officers of the County, the Revenue Authority, or any other County employees specifically designated by the County Executive, to enforce the provisions of this Division.
(CB-51-1978; CB-111-1987; CB-79-1990; CB-81-1998; CB-79-2001; CB-94-2003)

Sec. 26-135. Reserved.

DIVISION 9. PARKING PERMIT AREAS.

Sec. 26-136. Designation of parking permit areas.

(a) The County Executive is authorized to designate roads, streets, and other areas in the County as Parking Permit Areas in which the parking of vehicles is restricted during specified times, unless a proper parking permit is displayed in or on the vehicle. The parking restrictions shall normally limit nonresident parking to periods of three (3) hours or less between the hours of 7 A.M. and 6 P.M., Monday through Saturday, excluding holidays; however, when deemed necessary the County Executive may prescribe other hours and days when the parking restrictions are operative. Subject to Subsection (b), the County Executive may prohibit all nonresident parking in a Parking Permit Area during the specified times when the restrictions are in effect.

(b) Except as modified below, the following shall be necessary to the designation of a County Parking Permit Area:

(1) The area shall be one consisting solely of residential uses and in which commercial and industrial uses do not exist.

(2) A County traffic engineering survey shall establish that during the time period when parking restrictions may be imposed:

(A) Nonresidents park their vehicles in the area and proceed by other means to an area of commercial or industrial use, to a school or recreational area, or to public transportation; or in the alternative, park their vehicles in the area and proceed to a multifamily unit or complex; and

(B) The average number of vehicles parked as described in (2)(A) is in excess of twenty-five percent (25%) of the number of parking spaces available to the public without charge in the area and the total number of such spaces occupied by any vehicles exceeds seventy-five percent (75%) of such spaces; and

(C) At least twenty-five percent (25%) of the affected residential units have less than two (2) off-street parking spaces.

(3) A residential area may be considered for parking permit restrictions upon request of the residents affected or upon request of the elected officials of any incorporated municipality.

(4) Before a parking permit area is established or terminated, the County Executive or his designee shall cause a public hearing to be held. The hearing shall be at a location within or reasonably adjacent to the area concerned and shall be preceded by due public notice published in a County newspaper of record. The notice shall state the time, place, and purpose of the hearing, the exact description of the area being considered, the time proposed for restrictive parking and any parking permit fee proposed. In addition to the published notice, reasonable efforts shall be made to mail a similar notice to each household within the parking permit area.

(5) In residential areas adjacent to a proposed facility required to construct over 3,000 parking spaces, the County Executive is authorized to determine the requirements of the traffic engineering survey to assure that a parking permit area may be established and implemented prior to the opening of that facility, so long as any overflow parking generated by such facility has a minimal impact on the surrounding residential areas.

(CB-15-1978; CB-51-1978; CB-8-1979; CB-115-1979; CB-37-1981; CB-53-198

Sec. 26-137. Parking permits.

Permits for parking in any Parking Permit Area may be granted under objective criteria to be established by the County Executive to include, but not necessarily be limited to, residents of the area for every vehicle owned by such residents; and visitors of residents of the area for a period of 30 days, which permit may be renewable.

(CB-15-1978; CB-51-1978; CB-136-1979)

Sec. 26-138. Exceptions.

(a) Parking restrictions of this Division shall not apply to service or delivery vehicles being used to provide services or delivery to a resident of the area.

(b) The County Executive shall except metered parking spaces from area restrictions.

(c) There shall also be issued permits exempting handicapped persons from the restrictions of any parking permit area which may be established; automobiles equipped with special handicapped license plates shall need no further permit under this Section.

(CB-15-1978; CB-51-1978)

Sec. 26-139. Signs.

Following designation of a Parking Permit Area, the County Executive shall cause parking signs to be placed in the area indicating the parking restrictions and the parking permit exceptions.

(CB-15-1978; CB-51-1978)

Sec. 26-140. Parking area violation; penalty.

(a) No person shall park any vehicle or use any parking permit in a manner contrary to the regulations and provisions established by the County Executive pursuant to this Division.

(b) Any person issued a citation for a violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each violation.

(c) It shall be the duty of the Police Officers of the County, the Revenue Authority, or any other County employees specifically designated by the County Executive, to enforce the provisions of this Division. The Police Department is authorized to impound and remove any vehicle parked in violation of the regulations and provisions established pursuant to this Division without prior notice pursuant to Division 18 of this Subtitle.

(d) The Revenue Authority may designate persons to enforce the provisions of this Division for property owned or operated by the Revenue Authority or other such public parking facilities or streets and highways as may be designated by Executive Order and approved by the County Council for enforcement by the Revenue Authority.

(CB-15-1978; CB-51-1978; CB-111-1979; CB-14-1985; CB-57-1997; CB-81-1998; CB-79-2001; CB-94-2003)

Sec. 26-141. Application within a municipality.

The provisions of this Division do not apply within a municipality; provided, however, a municipality may adopt its own municipal ordinance establishing Municipal Parking Permit Areas. The County may enforce a Municipal Parking Permit Area created by a municipality if requested to do so by the municipality and provided that municipality shall transmit to the County Executive an authenticated copy of any municipal ordinance enacted to create a Municipal Parking Permit Area.

(CB-15-1978; CB-51-1978; CB-115-1979)

DIVISION 10. TOWING AND IMPOUNDMENT OF MOTOR VEHICLES FROM PRIVATE PROPERTY.

Sec. 26-142. Definitions.

(a) For the purposes of this Division, the following words and phrases shall have the meanings assigned below, except in those instances in which the context clearly indicates a different meaning:

(1) **Authorized towing company** means a towing company duly licensed by Prince George's County, Maryland, pursuant to the provisions of Subtitle 5, Division 21, of this Code.

(2) **County** means Prince George's County, Maryland.

(3) **County Police** means the County Police of Prince George's County, Maryland.

(4) **Impounding** means the temporary storage of a vehicle that has been removed from private property, as herein defined, at a facility maintained by the County.

(5) **Motor Vehicle Administration** means the Motor Vehicle Administration of the State of Maryland.

(6) **Motor Vehicle Law of Maryland** means Titles 11 through 27 of the Transportation Article of the Annotated Code of Maryland (1977), as may be amended from time to time.

(7) **Private property** means private property which has been posted by the owner of the property against unauthorized parking pursuant to the provisions of this Division.

(8) **Property owner** includes the owner of property or any person having a possessory interest in such property.

(9) **Towing** means the moving or removing, and the preparation therefor, of an impoundable vehicle by another vehicle for which a service charge is made either directly or indirectly. A charge made indirectly refers to dues or other charges of bona fide clubs or associations which provide towing services.

(10) **Towing company** means a natural person, partnership, corporation, fiduciary, association, or other entity owning, operating, or conducting the business of towing or removing illegally parked vehicles from private property.

(11) **Vehicle** means a vehicle as defined in Section 11-176 of the Transportation Article of the Annotated Code of Maryland (1977) as amended from time to time, which includes but is not limited to motor vehicles, motorcycles and trailers.

(CB-32-1975; CB-46-1977; CB-51-1978; CB-124-1982; CB-27-1987)

Sec. 26-142.01. Parking on posted property; determination of owner.

It shall be unlawful for any person to park or cause to be parked a vehicle on private property which has been posted against parking pursuant to this Division without the consent of the owner of said property. The last owner of record of a vehicle found parked illegally on private property, as shown by the files of the Motor Vehicle Administration, shall be deemed prima facie to have been the owner of such vehicle at the time it was parked and the person who parked or caused to be parked said vehicle.

(CB-27-1987)

Sec. 26-142.02. Obtaining of signs; execution of agreement.

(a) Any property owner desiring to utilize the procedures provided by this Division shall obtain from the Chief of Police approval for signs which shall be posted on said owner's property. Before erecting said sign or signs, a property owner shall execute an indemnification and save-

harmless agreement which shall provide that the property owner shall indemnify and save harmless the County against any claim of damage resulting from the towing and impoundment of vehicles removed from said private property pursuant to this Division.

(b) Any permits or stickers or other method indicating authorized parking on posted property must be approved by the Chief of Police as to design and content.
(CB-27-1987)

Sec. 26-142.03. Content and location of signs.

Signs as described in Section 26-142.02 shall state that unauthorized parking is prohibited and that vehicles parked without authorization may be towed and impounded without notice at the vehicle owner's expense. Said signs shall be posted in such a manner and in such location as to be clearly visible from the area where parking is to be prohibited and subject to prior approval by the Chief of Police.
(CB-27-1987)

Sec. 26-142.04. Complaint by property owner.

Any property owner or property owner's agent may, when a vehicle is parked without authorization upon his private property without his consent, make a complaint to an authorized towing company stating that he requests that said vehicle be removed from his property. Said complaint shall be on a form approved by the Chief of Police and shall contain a statement made by the property owner or property owner's agent, under oath, that the vehicle which he seeks to have removed was parked on his property without his consent and that the vehicle was parked in an area from which a sign prohibiting unauthorized parking was clearly visible.
(CB-27-1987)

Sec. 26-142.05. Tow slip.

(a) The towing company shall cause to be presented to the property owner or property owner's agent a tow slip, approved by the Chief of Police as to form and content, which shall consist of one (1) original and three (3) copies. The towing company shall cause said tow slip to be completed by filling in all pertinent data. Before towing or removing the subject vehicle, the towing company shall cause the property owner or property owner's agent to sign said tow slip in the place provided. The towing company shall then cause a copy of the towing slip to be securely affixed to the subject vehicle.

(b) The tow slip shall provide, as a minimum, spaces for filling in pertinent data as make and model of the vehicle, vehicle identification number, date and time of towing, license plate number, location towed from, name of complaining party, specific reason for the towing of the unauthorized vehicle, name and phone number of towing company, and location where vehicle will be stored.

(c) If the property owner has a written contract with the towing company, the property owner or property owner's agent shall not be required to either sign a complaint or tow slip prior to the towing or removal of an unauthorized vehicle from his property in the following instances:

(1) If the towing occurs during the hours of 12:00 A.M. and 6:00 A.M.; or

(2) If the vehicle is directly blocking a clearly marked fire lane, a handicapped parking space or access to the property or a building on the property.

(d) Prior to the towing or removal of an unauthorized vehicle pursuant to this Section, the towing company shall photograph the vehicle in a manner that documents the unauthorized

parking of the vehicle. The photographs shall be firmly attached to the original tow slip and retained for a period of at least sixty (60) calendar days.
(CB-27-1987; CB-101-2001; CB-82-2004; CB-41-2005)

Sec. 26-142.06. Towing of vehicle.

(a) After completion of the requirements of Section 26-142.05 of this Division, the towing company may proceed to tow the subject vehicle to an impoundment facility maintained by the County Police or by an authorized towing company.

(b) A towing company may not tow a vehicle defined as abandoned pursuant to Section 26-162 of this Code until forty-eight (48) hours after notice of such proposed towing has been securely attached to and conspicuously displayed on the vehicle.

(c) Within one (1) hour after completion of the removal of the subject vehicle, the authorized towing company shall notify the County Police of the location and identification of the vehicle pursuant to regulations of the Chief of Police.

(d) A towing company that undertakes the towing or removal of a vehicle from private property may not employ individuals, commonly referred to as "spotters", whose primary task is to report the presence of unauthorized parked vehicles for the purposes of towing or removal.

(e) A towing company shall not pay or offer to pay a property owner, and a property owner shall not accept payment for authorizing the towing of a vehicle from any private property.
(CB-27-1987; CB-41-2005)

Sec. 26-142.07. Maintenance during impoundment.

The impoundment custodian shall keep the keys to the vehicle, if same are therein, in his possession at all times while the vehicle is impounded. He shall keep the impounded vehicle secure and make periodic inspections of all impounded vehicles.
(CB-27-1987)

Sec. 26-142.08. Notification to owner.

(a) Notification after impoundment shall be in accordance with the provisions of Section 26-168 of this Code.

(b) The notice shall:

(1) State that the vehicle has been taken into custody for violation of the County ordinance prohibiting unauthorized parking on private property;

(2) State the year, make, model, and vehicle identification number of the vehicle;

(3) Give the location of the impoundment facility where the vehicle is held;

(4) Inform the vehicle owner that he has the right to contest the validity of the towing and storage of his vehicle at any time within twenty-one (21) days of the date of such notice by filing a request for hearing with the County Police on a request form which shall be included with such notice;

(5) Inform the owner and secured party of his right to reclaim the vehicle within twenty-one (21) days after the date of said notice on payment of all towing and storage charges resulting from the towing and storage of the vehicle;

(6) State that the failure of the owner or the secured party to exercise his right as provided in Subsection (b)(5), above, to reclaim the vehicle in the time provided is a waiver by him of all his right, title and interest in the vehicle and is a consent to the sale of the vehicle at public auction.
(CB-27-1987)

Sec. 26-142.09. Notification by publication.

(a) This Section shall apply if:

(1) The identity of the last registered owner of an impounded vehicle cannot be determined;

(2) The registration of the vehicle gives no address for the owner;

(3) It is impossible to determine with reasonable certainty the identity and address of each secured party; or

(4) The registered mail notice required by Section 26-142.08 of this Division is returned as undeliverable.

(b) Under Subsection (a)(1) of this Section, the Police Department shall give the notice provided for in Section 26-142.08 by publication in at least one (1) newspaper of general circulation in Prince George's County, Maryland.

(c) The notice by publication:

(1) May contain multiple listings of abandoned vehicles;

(2) Shall contain the information required by Section 26-142.08 of this Division; and

(3) Shall be published within fifteen (15) days of the taking into custody of the vehicle or, if the notice by publication is made because of the return as undeliverable of a prior notice by registered mail, within seven (7) days of the return of that prior notice.

(CB-27-1987)

Sec. 26-142.10. Hearing; determination; appeals.

(a) Within twenty-one (21) days from the date notice is mailed by the County Police pursuant to Sections 26-142.08 or 26-142.09 of this Division, the owner or secured party of a vehicle which has been impounded may request that a hearing be held to determine whether the vehicle was properly towed and impounded under the provisions of this Division. The request for a hearing shall be made by filing a request-for-hearing form with the County Police.

(b) The hearing shall be held within three (3) working days after the request for a hearing is filed with the County Police. The hearing shall be before a hearing officer designated by the County Attorney of Prince George's County. Such hearing officer shall not be a member of any state or local police department.

(c) Determination as to whether vehicle was parked illegally.

(1) If it is determined at the hearing that the vehicle was not parked on private property in violation of this Division, then the hearing officer shall issue an order that the vehicle be returned to the owner and that such owner is not liable for any of the towing, storage, or other charges incurred by the County Police in connection with the impoundment. If the owner has already paid such towing, storage, and other charges to the County Police, he shall be entitled to receive reimbursement of all such payments from the County Police which, in turn, shall be entitled to payment of all such charges from the property owner who filed the complaint which caused the towing and impoundment of the vehicle.

(2) If the hearing officer shall determine that the vehicle was illegally parked on private property in violation of this Division, then the owner of the vehicle may not reclaim it until he has paid to the County Police all towing and storage charges and costs of notice incurred by the County Police.

(CB-27-1987)

Sec. 26-142.11. Payment of charges.

The owner or secured party of a vehicle which has been impounded may reclaim such vehicle within twenty-one (21) days of the date notice is mailed by the County Police pursuant to Sections 26-142.08 or 26-142.09 by paying all towing and storage charges and costs of notice incurred in connection with said impoundment pursuant to regulations issued by the Chief of Police.
(CB-27-1987)

Sec. 26-142.12. Failure to reclaim vehicle.

If the owner or secured party fails to reclaim an impounded vehicle within twenty-one (21) days after notice is mailed by the County Police pursuant to this Division, the owner or secured party is deemed to have waived all of his right, title and interest in the vehicle and to have consented to the sale of the vehicle at public auction.
(CB-27-1987)

Sec. 26-142.13. Sale of vehicle; disposition of proceeds.

If an impounded vehicle is not reclaimed as provided for in this Division, the vehicle may be sold at public auction. The buyer of the vehicle at auction shall take title to the vehicle free and clear of any claim of ownership or lien, shall be entitled to a sales receipt from the County Police and shall be entitled to obtain a certificate of title of the vehicle and to register it in his own name. The sales receipt shall be sufficient title for transferring the vehicle to a scrap processor for dismantling, destroying or scrapping, in which case only, a certificate of title is not required. The County Police or the authorized towing company shall reimburse itself from the proceeds of the sale of the vehicle for the costs of towing, preserving and storing the vehicle and the expenses of the auction, including all notice and publication costs incurred under this Division. Any remaining proceeds of the sale shall be held for ninety (90) days for the owner of the vehicle and any entitled secured party, after which the remaining proceeds shall revert to the treasury of Prince George's County.
(CB-27-1987)

Sec. 26-142.14. Fees.

(a) The towing charge is not to exceed:

(1) One Hundred Dollars ($100) for any vehicle up to ten thousand (10,000) pounds gross vehicle weight. The charge includes the first calendar day of storage, mileage, and hook-up fees, which includes the use of a dolly and transportation to a storage facility. The rate chargeable per day for storage where the motor vehicle is to be stored by the towing company is not to exceed Fifty Dollars ($50).

(2) Two Hundred Fifty Dollars ($250) for any vehicle between ten thousand one (10,001) and twenty-six thousand (26,000) pounds gross vehicle weight and Four Hundred Dollars ($400) for any vehicle over twenty-six thousand (26,000) pounds gross vehicle weight. The charge includes winching, unlocking vehicles, go jacks, dollies, caging brakes and removal of a drive line. The maximum storage charge per day allowed shall be Fifty Dollars ($50).

(b) If a vehicle owner returns to an unauthorized vehicle at any time after the vehicle is attached to the tow truck but before it is towed from private property, the towing company shall release the vehicle to the vehicle owner. If all procedures have been followed under Section 26-142.05 of this Division and the tow truck operator has physically attached the vehicle to the tow truck and lifted the vehicle at least six (6) inches off the ground before the vehicle owner returns, a drop fee may be charged not to exceed Fifty Dollars ($50) for vehicles up to ten thousand (10,000)

pounds gross vehicle weight. A drop fee not to exceed One Hundred Dollars ($100) may be charged for vehicles over ten thousand (10,000) pounds gross vehicle weight. The towing company shall provide a receipt indicating the drop fee paid and the date of the incomplete tow.

(c) Storage charges may only commence after the first calendar day the motor vehicle is available for recovery by the owner and/or operator of the motor vehicle.

(d) A towing company shall accept payment in cash or by a major credit card with a credit card slip validly signed by the vehicle owner or the owner's agent for the amount of all valid charges. The towing company shall accept the two (2) most widely used major credit cards of MasterCard and Visa.

(e) If the vehicle owner withholds payment in a credit card transaction with a towing service and a court in any subsequent civil action finds that the tow was valid and the amount charged was correct, the vehicle owner shall pay the towing service, in addition to the amount validly charged, liquidated damages of two (2) times the amount validly charged, but not more than One Thousand Dollars ($1,000), and all reasonable costs of collection, including court costs and a reasonable attorney's fee.

(f) A towing company shall display prominently at each storage facility a copy of its current fee schedule and a statement that these fees do not exceed the authorized County amount.

(g) This Section shall not apply to those vehicles that are towed from private property by the Department of Environmental Resources at the direction of the property owner or the owner's authorized agent.

(CB-41-2005)

Sec. 26-142.15. Immobilization of vehicle; prohibited.

A towing company or tow truck operator shall not immobilize a motor vehicle on private property by using any method, object, or device, including a clamp or lock, to prevent or inhibit the movement of a motor vehicle.

(CB-41-2005)

DIVISION 11. PUBLIC PARKING AREAS.

Sec. 26-143. Applicability of Division.

This Division shall apply to all public parking facilities throughout the County operated by a public agency or the Revenue Authority of Prince George's County requiring regulatory enforcement.

(CB-51-1978; CB-111-1987; CB-79-2001)

Sec. 26-144. Marking of public parking facilities.

(a) Spaces for parking of motor vehicles shall be marked off along public parking facilities by means of painted lines on the parking surface, by raised curbs, or by other suitable means so as to clearly delineate said space as a designated and authorized parking space for one vehicle. Directional arrows, stop signs, or stop bars and other traffic control devices shall be provided to assist and direct circulation within public parking facilities.

(b) Areas of public parking facilities not otherwise designated by painted lines or otherwise as parking spaces, shall be considered official "no parking" zones when indicated by posted signs or

yellow paint applied to top and face of curb or by yellow painted lines on the parking surface unless otherwise posted.
(CB-51-1978)

Sec. 26-145. Parking regulations – public parking facilities.

(a) Except temporarily for the purpose of, and while actually engaged in, loading or unloading passengers or for emergency repairs when the vehicle cannot be driven, no person shall park any vehicle on a public parking facility:

(1) In violation of any of the other parking provisions of this Subtitle;

(2) In a "no parking zone" when posted by sign or indicated by yellow painted curb or yellow painted lines on the parking surface;

(3) Any place not otherwise designated by painted parking spaces or otherwise prohibited, including driving aisles, driveways, raised curb channelization structures, sidewalks, landscaped areas, islands, etc.;

(4) In an area where parking is temporarily prohibited when marked off by temporary signs or barricades or when an official cover or hood is placed over a parking meter;

(5) So as to prevent another vehicle already stopped or otherwise legally parked in a designated parking space, from moving away;

(6) For a period longer than twenty-four hours;

(7) By backing said vehicle into a parking space when posted by "Front In Only" signs;

(8) In such a manner as to cause said vehicle to straddle the painted lines marking a parking space or otherwise cause the vehicle to be parked not wholly within the area of one designated parking space;

(9) And leave it unattended without first stopping the engine, locking the ignition, removing the key, and effectively setting the brake thereon; or

(10) In such a manner so as to impede or obstruct the free flow of traffic or to cause a hazard to public safety.

(b) Any person issued a citation for a violation of this Section shall be subject to a fine of Twenty Dollars ($20.00) for each violation.
(CB-51-1978; CB-111-1979; CB-79-1990)

Sec. 26-146. Acts and conduct prohibited.

(a) It shall be unlawful for any person to enter upon a public parking facility and:

(1) Engage in any conduct, sport, or activity which may jeopardize the safety or welfare of persons or property including, but not limited to, riding any coasting device, bicycle, or unregistered self-propelled vehicle, playing in or tampering with elevators, climbing, skating, or skateboard riding, ball playing, throwing, slinging, or otherwise projecting objects within or from public parking facility and sledding;

(2) Tamper with, deface, or otherwise cause injury to fire equipment, parking equipment, or other public property contained therein or to any automobile parked therein;

(3) Discard waste material or otherwise deposit litter on the premises;

(4) Fail to pay the prescribed parking fee upon entering or leaving said facility when such facility is operated by an attendant, cashier, or automatic collection device controlled by the public agency.
(CB-51-1978)

Sec. 26-147. Uses prohibited.

(a) Except when authorized by written permission of the public agency, no person, association, business, or corporation shall cause, or otherwise be responsible for, a public owned or leased and operated public parking facility to be used for any of the following purposes:

(1) The storage of or for access to refuse containers associated with the use of any adjacent property;

(2) For vehicular access to the adjacent property;

(3) For the staging of construction, maintenance, or repair work to the adjacent property;

(4) For the solicitation of the general public for taxi, charity, business, or political purposes or for the distribution of any handbill;

(5) For a public assembly;

(6) For the storage of equipment or materials of any kind;

(7) To perform any service, maintenance, or repair on any motor vehicle parked therein except for emergency service and repair necessary for the removal of an inoperative motor vehicle;

(8) To park or store any motor vehicle left in the custody of the management of a garage, repair shop, or service facility;

(9) To park or store any new or used automobile which has been transferred to an automobile dealership for the purpose of trade or sale and not registered unless the vehicle displays dealer license plates;

(10) To load or unload commercial vehicles; or

(11) To cause, allow, or conduct student driver training classes or instruction.

(CB-51-1978)

Sec. 26-148. Obedience to public parking area regulations.

(a) It shall be a violation of this Division for any person to disobey any directions on any official traffic control device or any of the other provisions of this Division.

(b) Any vehicle parked in violation of this Division or otherwise parked so as to constitute a definite hazard to public safety or is so parked, stopped, or standing so as to impede or obstruct the normal movement of traffic or pedestrians, may be impounded by members of the Police Department or the Revenue Authority, or other authorized persons designated by the Chief of Police pursuant to Division 18 of this Subtitle.

(CB-51-1978; CB-124-1982; CB-81-1998; CB-79-2001)

Sec. 26-149. Penalties.

Unless another penalty is expressly provided by law or a specific penalty is provided within a section of this Division every person convicted of a violation of any provisions of this Division shall be punished by a fine of not more than One Hundred Dollars ($100.00).

(CB-51-1978)

Sec. 26-149.01. The Revenue Authority of Prince George's County.

The Revenue Authority shall designate persons to enforce the provisions of this Division.

(CB-111-1987; CB-79-1990; CB-81-1998; CB-79-2001; CB-94-2003)

DIVISION 12. BICYCLES AND PLAY VEHICLES.

Sec. 26-150. Designation of sidewalks and trails.

The County Executive shall have the authority to designate or establish sidewalks or trails in Prince George's County for the exclusive or combined use of bicycles, play vehicles, or pedestrians provided that such designation or establishment would not be contrary to public safety, that the cost would not be excessively disproportionate to the projected need or use thereof, or that there is not a demonstrated absence of the projected need due to sparsity of population or the existence of other available facilities or other factors which demonstrate an absence of any need for such facilities. All new County financed road construction and reconstruction projects shall include facilities for the combined or exclusive use of bicycles, play vehicles, and pedestrians, except when cost shall be disproportionate to the projected need or when such facilities would be inappropriate due to the nature of the project or of the neighborhood. The location of such facilities shall not be limited to road rights-of-way, nor shall they be limited to locations parallel to roads.
(CB-43-1974; CB-51-1978)

Sec. 26-151. Exclusive use.

If projected bicycle traffic or the safety of the cyclists or pedestrians justify a separate facility, bicycle trails for the exclusive use of bicycles shall be established.
(CB-43-1974; CB-51-1978)

Sec. 26-152. Motorized vehicles prohibited.

No person shall stop, park, stand, or drive any motorized vehicle on any sidewalk or trail established under this Division. Any person issued a citation for a violation of this Section shall be subject to a fine of Ten Dollars ($10.00) for each offense.
(CB-43-1974; CB-51-1978; CB-111-1979)

Sec. 26-153. Signs posted.

The Director shall erect or cause to be erected, posted, and maintained signs or other suitable identification at regular intervals.
(CB-43-1974; CB-51-1978)

Sec. 26-154. Applicable laws.

Any sidewalk or trail designated or established by the County Executive for use by bicycles shall be deemed to be a public bicycle area and every person operating a bicycle thereon shall be subject to the applicable provisions of the Laws of the State of Maryland.
(CB-43-1974; CB-51-1978)

DIVISION 13. MISCELLANEOUS REGULATIONS.

Sec. 26-155. Authority to prohibit through trucks.

(a) The Director is hereby authorized to regulate through truck traffic, and in the regulations prohibit trucks from using any highway or alley which has not been designated or maintained as part of the State or Federal highway system or an extension thereof, provided the Director has designated an adequate alternate route for truck traffic diverted or prohibited from using any highway or alley.

(b) When signs are erected giving notice thereof, no person shall operate any truck upon any such street, or portion of street, except that such vehicles may be operated thereon for the purpose of delivering or picking up materials or merchandise and then only by entering such street at the intersection nearest the destination of the vehicle and proceeding thereon no farther than the nearest intersection thereafter.

(c) This Section does not apply to light commercial vehicles.

(CB-51-1978)

Sec. 26-156. Authority to restrict right to use highways.

(a) The Director may prohibit the operation of vehicles upon the road or highway or impose restrictions as to the weight of vehicles to be operated upon the highway, or reduce the maximum speed limits of vehicles operating upon the highway for any one period not to exceed 60 days, and for a total period of not to exceed 90 days in any one calendar year, whenever the road or highway by reason of deterioration, rain, snow, or other condition will be seriously damaged or destroyed unless the use of vehicles thereon is prohibited or the permissible weights thereof reduced or the maximum speed limits be reduced; provided, however, vehicles supplying emergency service such as supplying fuel and fuel oil and hauling milk may use the roads and highways upon written permission of the Director or his duly authorized representative. The Director may designate and define the term "vehicle supplying emergency service" as hereinabove used.

(b) The Director shall erect or cause to be erected, posted, and maintained signs designating the provisions of the ordinance or resolution at each end of that portion of any road or highway affected thereby, and the resolution shall not be effective unless and until the signs are erected and posted.

(c) Any person, whether the owner of such vehicle, the person in charge and control over the same, or employee or agent, who draws, drives, propels, or in any other manner takes or causes to be taken, drawn, driven, or propelled over the road or highway posted as aforesaid any vehicles of any kind, weighing, with or without any load which may be in or upon the same, more than the number of pounds specified on the signboard so erected, at the entrance to the road or highway, or at a greater rate of speed than that specified on the signboard, without a permit in writing from the Director shall be deemed guilty of a misdemeanor. In addition, the owner or person in control of the vehicle shall be liable to the County for all damages which may be done to the road or highway by the violation of the regulation so prescribed. In any trial of any person charged with a violation of any of the provisions of this Section, oral proof of the existence of the signboard posted as herein provided and its contents shall be accepted as prima facie evidence of the validity of the regulation thereon prescribed.

(CB-51-1978)

Sec. 26-157. Authority to designate snow emergency routes.

(a) The Director is hereby authorized to designate County roads as snow emergency routes, along which parking shall be prohibited during snow emergencies, and any vehicle using such prescribed routes shall be required to use snow tires or snow chains during such emergency. The Director shall adequately post such emergency routes with proper signs to warn the public of the provisions of this Section, and such posted roads are determined to be emergency routes subject to the provisions of this Section.

(b) No person shall park a motor vehicle or drive a motor vehicle without snow tires or snow chains during the emergency period on emergency routes designated by the Director.

(c) Any vehicle which is parked in violation of this Section, or any vehicle not equipped with snow tires or snow chains which is stalled on any emergency route, shall be subject to being towed from such emergency route and impounded. The towing and storage charge shall be a lien against the vehicle and shall be paid before the vehicle may be released from impoundment.

(d) Any person issued a citation for a violation of this Section shall be subject to a fine of Thirty Dollars ($30.00) for each violation.

(CB-51-1978; CB-111-1979)

Sec. 26-157.01. Restricted on-street parking during snow and ice conditions or other emergency conditions.

(a) The Director or his designee may restrict on-street parking during snow and ice emergencies or other emergency conditions on any or all streets maintained by the County where parking is permitted on both sides of the street. While such restriction is in effect, vehicles shall remain parked on the even-numbered side of the street until such time as the condition causing this restriction is cleared from the odd-numbered unparked side of the street at which time all vehicles must be moved to the odd-numbered side of the street. Provided, however, that nothing in this Section permits parking in areas in which parking is otherwise prohibited.

(b) Said restriction shall be effectuated by public broadcast (Metro area television and radio) with said broadcasts deemed sufficient for enforcement of this Section.

(c) The Director shall be responsible for the promulgation of regulations for the implementation of this Section.

(d) Any vehicle which is parked in violation of Subsection (a) shall be issued a citation for such violation and be subject to being towed and impounded by the County police or other authorized police agency.

(e) Any person issued a citation for a violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each violation.

(CB-123-1987; CB-20-1999)

Sec. 26-158. Use of bridges restricted; regulations.

(a) The Director shall designate the weights of wagons, trucks, road engines, road rollers, traction engines, threshing machines, or other vehicles of any kind passing over any bridges or culverts included in the County road system and the rate of speed of such vehicles while passing over the bridges or culverts.

(b) Such regulations shall be indicated by the conspicuous posting and maintenance of signs at both ends of or the entrance to such bridges or culverts. Such signs shall be those set forth as standard applications for vehicle weight and speed restriction in the most recent edition of the State of Maryland Manual on Uniform Traffic Control Devices for Streets and Highways, adopted

by the Maryland State Highway Administration pursuant to the Annotated Code of Maryland, Transportation Article, Section 25-104.

(c) Such signs shall be taken to mean that no vehicle of any kind, weighing, with or without any load which may be in or upon the vehicle, more than the number of pounds specified on such signboard shall pass or be drawn, driven, propelled, or in any other manner taken over such bridge or culvert, and that no such vehicle of any kind, shall pass or be drawn, driven, propelled, or in any other manner taken over such bridge or culvert at a greater rate of speed than that specified on such signboard.

(d) Any person, whether the owner of such vehicle, the person in charge and control over the vehicle, or an employee or agent of any such person, who draws, drives, propels, or in any other manner takes or causes to be taken, drawn, driven, or propelled over any such bridge or culvert so posted, any wagon, truck, road engine, road roller, traction engine, threshing machine, or other vehicle of any kind, weighing, with or without any load which may be in or upon the vehicle, more than the number of pounds specified on the signboard so erected at the entrances or approaches of such bridge or culvert, or at a greater rate of speed than that specified on such signboard, without a permit, in writing, from the Director, shall be deemed guilty of a violation of this Code. In addition to any penalty provided therefor, the owner or person in control of such vehicle shall be liable to the County for all damages which may be done to the bridge or culvert by the violation of the regulation.

(e) In any trial of any person charged with a violation of any of the provisions of this Section, oral proof of the existence of such signboard posted as provided in this Division and its contents shall be accepted as prima facie evidence of the validity of the regulations prescribed on such sign.

(CB-51-1978; CB-120-1982)

Sec. 26-159. Restricting use of streets for construction, etc., purposes.

(a) The Director is hereby authorized to post signs and signals at such places and for such times as it is reasonably necessary to construct, alter, repair, clean by vehicular devices, or protect the public from dangerous conditions in any public right-of-way.

(b) No person shall park or drive a vehicle on the public road, street, alley, or other public controlled way in violation of a closed street sign, no parking sign, or other traffic sign or signal as posted. Any person issued a citation for a violation of this Section shall be subject to a fine of Thirty Dollars ($30.00) for each violation.

(CB-51-1978; CB-111-1979; CB-20-1999)

Sec. 26-160. Removal and impounding of unattended vehicles.

If any motor vehicle is left unattended upon any public road, highway, alley, or parking lot within the County in violation of any law, ordinance, or order regarding the parking of motor vehicles, or if any motor vehicle is left unattended upon any road, highway, alley, or parking lot within the County for an unreasonable length of time so as to impede the movement of traffic or constitute a threat to public safety, the County Police Department shall have authority to impound and remove such motor vehicle pursuant to Division 18 of this Subtitle.

(CB-51-1978; CB-124-1982)

Sec. 26-161. Removal of obstructions to vision.

(a) Whenever the Director finds that there exists on any private property within the County

any obstructions such as trees, bushes, vines, weeds, undergrowth, loose earth, equipment, or any other obstructions either fixed or movable, except buildings and similar structures affixed to the ground, that obstruct the vision of operators of vehicles traveling upon any public street, road, or highway so as to constitute a traffic hazard, the Director shall immediately serve the owner, agent, lessee, or any other person having supervision over such property a written notice describing the premises whereon such obstruction exists, a statement of the particulars in which the vision of operators of vehicles is obstructed, including the steps necessary to correct such conditions, and an order directing that corrective steps be taken within a stated period of time.

(b) Any person who considers himself aggrieved by any order issued pursuant to the authority of this Section may, within ten days of the receipt of such order, petition the Director, in writing, for a hearing thereon. Within ten days from the receipt of such petition, the Director shall hold such a hearing after which he may either affirm, modify, or rescind the order. No official of the County government shall remove any obstruction or enforce any order issued hereunder until after such hearing by the Director has been held or until the time to petition for such hearing has expired without such a petition having been filed, or until any appeal becomes final.

(c) Upon failure of any person to comply with the provisions of any order issued under this Section within the time specified therein, the Director shall direct his subordinates to enter upon the property whereon the obstruction is located and remove all or such part of the obstruction as may be necessary to eliminate the traffic hazard.

(d) All orders and notices issued by the Director pursuant to the authority of this Section shall be served on the person to whom they are directed either by registered mail or by personal delivery to such person. If such person is not known to reside and cannot be found in the County, such service shall be made by publication and posting shall be deemed to be made on the day of publication or posting.

(e) Whenever it is necessary for the Director to provide for the removal or elimination of any type of obstruction referred to herein pursuant to the procedures prescribed above, he shall file with the accounting officer's office a certified statement of the cost to the County of such removal or elimination, together with proof of service and the notice prescribed above. The cost of such removal together with the cost of publication shall constitute a charge and lien against the property and shall be collected in the same manner as are real estate taxes.
(CB-51-1978)

DIVISION 14. ABANDONED VEHICLES.

Sec. 26-162. Abandoned vehicles prohibited.

(a) No person shall leave any abandoned vehicle at any place within the County and no owner, lessee, or custodian in charge of any lot, field, road, street, lane, or other property shall permit any abandoned vehicle to remain on such property within the County.

(b) **Abandoned vehicle** means any motor vehicle, trailer, or semitrailer:

(1) That is inoperable and left unattended on public property for more than forty-eight (48) hours;

(2) That has remained illegally on public property for more than forty-eight (48) hours;

(3) That has remained on public property for more than forty-eight (48) hours; and

(A) Is not displaying currently valid registration plates; or

(B) Is displaying registration plates of another vehicle.

(4) That has remained on private property for more than forty-eight (48) hours; and

(A) Is inoperable in that one or more of its major mechanical components, including but not limited to engine, transmission, drive train, and wheels, is missing or not functional unless such vehicle is kept in an enclosed building or as permitted by Subtitle 13 or Subtitle 27 of the Code; or

(B) Is not displaying currently valid registration plates; or

(C) Is displaying registration plates of another vehicle.

(c) Any partially dismantled, wrecked, or junked motor vehicle may be presumed to have been or be abandoned.

(d) Any person issued a citation for a violation of this Section shall be subject to a fine of Fifty Dollars ($50.00) for each violation.

(e) The Revenue Authority of Prince George's County shall be authorized to enforce this Code provision.

(CB-51-1978; CB-111-1979; CB-14-1985; CB-101-1986; CB-28-1987; CB-94-2003)

DIVISION 15. PENALTIES.

Sec. 26-163. Authority to levy penalties.

Unless another penalty is expressly provided by law or a specific penalty is provided within this Subtitle, every person convicted of a violation of any provision of this Subtitle shall be punished by a fine of not more than One Hundred Dollars ($100.00).

(CB-51-1978)

Sec. 26-163.01. Payment of fines; penalty for late payment.

(a) Unless a person elects to stand trial pursuant to Section 26-303 of Article "Transportation," Annotated Code of Maryland, the following shall apply:

(1) Any person issued a citation for violation of any Section of this Subtitle shall pay the fine imposed as a penalty for violation of that Section at the Treasury Division, Office of Finance, within thirty (30) days from the date of notice of violation;

(2) Any person who fails to pay a required fine within thirty (30) days of the date of notice of violation shall pay at the Treasury Division, Office of Finance:

(A) Twice the amount of the fine if paid after thirty (30) days but not more than sixty (60) days after the date of notice of violation; or

(B) Four times the amount of the fine if paid more than sixty (60) days after the date of notice of violation.

(c) Any fine that is not paid within ninety (90) days of the date of the notice of violation shall be considered delinquent and shall be subject to the provisions of Section 26-163.02.

(CB-111-1979; CB-81-1998)

Sec. 26-163.02. Outstanding traffic and parking violation notices; impoundment.

(a) Any unattended motor vehicle found parked at any time upon any public street in Prince George's County, or any parking facility owned or operated by the Revenue Authority or Prince George's County, against which there are two or more outstanding or otherwise unsettled traffic and/or parking violation notices or against which there have been issued two or more warrants, may, by, or under the direction of the County Police Department either by towing or otherwise, be

removed or conveyed to and impounded in any place designated by the Chief of Police or the Revenue Authority, or immobilized in such manner as to prevent its operation, except that no such vehicle shall be immobilized by any means other than by the use of a device or other mechanism which will cause no damage to such vehicle unless it is moved while such device or mechanism is in place.

(b) The impoundment or immobilization of a vehicle shall be done pursuant to Division 18 of this Subtitle. In any case involving immobilization of a vehicle pursuant to this Subsection, such member or officer shall cause to be placed on such vehicle, in a conspicuous manner, notice sufficient to warn any individual to the effect that such vehicle has been immobilized and that any attempt to move such vehicle might result in damage to such vehicle.

(c) The owner of such impounded or immobilized motor vehicle, or other duly authorized person, shall be permitted to repossess or to secure the release of the vehicle upon presentation of a "Certificate of No Probable Cause" or upon satisfaction of all outstanding traffic and/or parking violation notices and reimbursement of all towing, storage, and other costs incurred as a result of the impoundment or immobilization.

(CB-111-1979; CB-124-1982; CB-81-1998; CB-79-2001)

DIVISION 16. APPLICATION.

Sec. 26-164. Applicability of this Subtitle to vehicles upon highways of the County.

The provisions of this Subtitle relating to the operation of vehicles refer exclusively to the operation of vehicles upon highways except where a different place is specifically referred to in a given section.

(CB-51-1978)

DIVISION 17. EXCEPTIONS.

Sec. 26-165. Public agency and Public Service Commission vehicle exception.

Nothing in this Subtitle shall apply to the use of highways by or the parking of vehicles of a public agency or public services company as defined in Article 78, Section 2(o) of the Annotated Code of Maryland, when such parking or highway use is necessary for the repair or maintenance of facilities under the jurisdiction of such agency or company.

(CB-51-1978)

DIVISION 18. IMPOUNDMENT.

Sec. 26-166. Impoundment without prior notice.

(a) A vehicle subject to impoundment under any provision of Federal, State, or local law may be impounded without giving prior notice to its owner under the following circumstances:

(1) When the vehicle is impeding or is likely to impede the normal flow of vehicular or pedestrian traffic; or

(2) When the vehicle is illegally parked in any zone that has been limited to designated classes of vehicles or where parking is prohibited during certain hours, on designated days or at all times, and where such vehicle is interfering with the proper and intended use of such zones; or

(3) When the vehicle imposes an immediate danger to the public safety; or

(4) When a police officer has probable cause to believe that the vehicle is stolen; or

(5) When a police officer has probable cause to believe that the vehicle constitutes evidence of a crime or contains evidence of a crime, if impoundment is reasonably necessary in such instance to obtain or observe such evidence; or

(6) When the operator of the vehicle has been taken into custody and impoundment of the vehicle is reasonably necessary to provide for the safekeeping of the vehicle; or

(7) When the vehicle is both:

(A) An abandoned vehicle as defined by Section 26-162(b); and

(B) Located on any public street, highway, roadway, shoulder, other public property or public utility right of way, provided that any impoundment from public property must be at the direction of the Police Department; or

(7.1) When the vehicle is found parked in a reserved parking space in violation of Section 26-129; or

(8) When the vehicle is parked on private property in violation of Section 26-142.01 of this Code.

(CB-124-1982; CB-101-1986; CB-27-1987; CB-85-1989)

Sec. 26-167. Impoundment after prior notice.

(a) A vehicle that is otherwise subject to impoundment pursuant to Federal, State, or local law but not subject to impoundment without prior notice pursuant to Section 26-166 of this Code may not be impounded until seven (7) calendar days after notice of such proposed impoundment has been securely attached to, and conspicuously displayed on, the vehicle and has been mailed to the last known address of the registered owner and to each secured party as may be disclosed by the vehicle license number, and to any other person who claims the right to possession of such vehicle and whose identity is known.

(b) The notice shall state that the owner, secured party of the motor vehicle, or one who claims possession may request a hearing to determine whether there is probable cause to impound the vehicle within seven (7) calendar days of the posting of the notice on the vehicle and the mailing. Failure to timely request a hearing shall be deemed a waiver of the right to a hearing.

(c) If a request for a hearing is received by the Police Department within seven (7) calendar days of the posting of the notice and mailing, a hearing shall be held before a hearing officer designated by the County Attorney pursuant to the procedures set forth for post seizure hearings in Section 26-169(c) and (d) of this Code within twenty-one (21) calendar days of the request. The vehicle shall not be impounded unless the hearing officer finds that there is probable cause to impound the vehicle. Reasonable charges for costs attributable to the towing and storage of the vehicle impounded are hereby authorized. These charges shall be paid to the custodian of the

vehicle by the person to whom the vehicle is registered, his authorized agent or the person to whom the vehicle is released.
(CB-124-1982)

Sec. 26-168. Impoundment; notice to owner.

(a) Within two (2) full County working days after impoundment of any vehicle pursuant to Section 26-166 (a)(1) through (7) of this Code, the police department or Revenue Authority shall mail a notice by registered mail to the last known registered owner of the vehicle and to each secured party, as may be disclosed by the vehicle license number, if such be obtainable, and to any other person who claims the right to possession of the vehicle, if such a claim is actually known to an officer, agent, or employee of the police department who has knowledge of the impoundment. If a police officer who has knowledge of the impoundment has reason to believe that an owner or one who claims the right to possession of the vehicle is residing or is in custody at some different address which is known to the officer, a copy of the notice shall also be mailed by regular mail to such owner or claimant at the known address. If a vehicle is redeemed prior to the mailing of such notice, then notice need not be mailed.

(b) The notice shall contain the following:

(1) A statement as to the reason why the vehicle has been impounded;

(2) The year, make, model, and vehicle identification number of the vehicle;

(3) The location of the impoundment facility where the vehicle is being held;

(4) A statement that the vehicle owner or secured party has the right to a hearing to contest the validity of the impoundment at any time within twenty-one (21) calendar days of the date of such notice by filing a request for hearing with the Police Department on a request form which shall be included with such notice; and

(5) A statement that the owner or the secured party may have a right, depending upon the reason for the impoundment, to reclaim the vehicle upon payment of all outstanding parking violations and all towing and storage charges resulting from the storage and towing of the vehicle.
(CB-124-1982; CB-27-1987; CB-81-1998; CB-79-2001)

Sec. 26-169. Same; hearings.

(a) Within twenty-one (21) calendar days from the date notice is mailed by the Police Department pursuant to Section 26-168, the owner or secured party of a vehicle which has been impounded may request that a hearing be held to determine whether there was probable cause to impound the vehicle. The request for a hearing shall be made by filing a request for hearing form with the Police Department.

(b) A hearing shall be conducted before a hearing officer designated by the County Attorney within twenty-four (24) hours of receipt of a written demand therefor from the person seeking the hearing unless such person waives the right to a speedy hearing. Saturdays, Sundays, and County holidays are to be excluded from the twenty-four (24) hour period.

(c) The sole issue before the hearing officer shall be whether there was probable cause to impound the vehicle in question. "Probable cause to impound" shall mean such a state of facts as would lead a person with ordinary care and prudence to believe that there was sufficient breach of local, state, or federal law to grant legal authority for the removal of the vehicle.

(d) The hearing officer shall conduct the hearing in an informal manner so as to provide fundamental fairness and shall not be bound by formal rules of evidence. The person demanding the hearing shall carry the burden of establishing that such person has the right to possession of the vehicle. The police department shall carry the burden of establishing that there was probable

cause to impound the vehicle in question. At the conclusion of the hearing, the hearing officer shall prepare a written decision which shall be made available to all interested parties. The hearing officer's decision in no way affects any criminal proceeding in connection with the impoundment in question and any criminal charges shall only be challenged in the appropriate court. The decision of the hearing officer is final. Failure of the registered or legal owner to request or attend a scheduled hearing shall be deemed a waiver of the right to such hearing.
(CB-124-1982)

Sec. 26-170. Same; decision of the hearing officer.

(a) If the hearing officer determines that there was no probable cause to impound the vehicle, the hearing officer shall prepare and date a "Certificate of No Probable Cause," copies of which shall be given to the person who has the right to possess the vehicle and the Police Department. Upon presentation of this certificate, the custodian of the vehicle shall release the vehicle without payment of towing and storage fees. Costs of the hearing and towing and storage fees shall be paid by the County or the owner of the premises from which the vehicle was towed if such owner or his agent authorized the towing and impoundment. Failure to present this certificate to the custodian of the vehicle within twenty-four (24) hours of its receipt, excluding such days when the custodian is not open for business, shall result in the liability of the owner or possessor of all subsequent storage charges and a lien by the custodian on the vehicle for the amount of such charges.

(b) If the hearing officer determines that there was probable cause to impound the vehicle, then the vehicle can be reclaimed only after payment of the costs of the hearing, all towing and storage charges and costs of notice incurred by the Police Department in connection with the impoundment.
(CB-124-1982)

Sec. 26-171. Same; redemption of the vehicle without a hearing; bond.

(a) The owner or secured party of a vehicle which has been impounded may redeem such vehicle without a hearing by paying all towing and storage charges and the costs of notice incurred by the Police Department in connection with said impoundment.

(b) The owner or secured party may redeem the vehicle prior to a hearing without waiving the right to a hearing by posting a bond in the amount of all towing and storage costs and costs of notice incurred by the Police Department accruing up to the scheduled date of the hearing. This bond shall be forfeited in the event that the person requesting a hearing fails to attend the scheduled hearing or the hearing officer determines that there was probable cause to impound the vehicle.
(CB-124-1982)

DIVISION 19. OFF-ROAD VEHICLES.

Sec. 26-172. Definitions.

(a) The following definitions shall apply to this Division:

(1) **All-Terrain Vehicle** shall mean a motor driven, off-road, recreational vehicle that has a saddle or seat for use of the rider, is designed to travel on at least three (3) low-pressure tires, and is not subject to registration requirements under the Maryland Vehicle Law.

(2) **Miniature Scooter** shall mean a motorized or electric two-wheel vehicle that has a saddle or seat for the rider or may be operated while standing and is not subject to registration or licensing requirements under the Maryland Vehicle Law, and includes scooters commonly referred to as "razor scooters" or "go-peds."

(3) **Miniature Motorcycle** shall mean a motorized or electric two-wheel vehicle that has a saddle or seat for the rider, is not subject to registration under the Maryland Vehicle Law, and includes mini-motorcycles commonly referred to as "pocket bikes".

(4) **Off-Road Vehicle** shall mean a vehicle that has been manufactured for off-road use and not subject to registration under the Maryland Vehicle Law, including off-the-road motorcycles, miniature motorcycles, miniature scooters and all-terrain vehicles.

(5) **Off-the-Road Motorcycles** shall have the meaning given by Section 25-102.01 of the Transportation Article, Annotated Code of Maryland, and shall mean a motorcycle not otherwise registered under the Transportation Article and includes motorcycles designed for off-the-road operation, motorcycles not otherwise eligible for registration under the Transportation Article, and motorcycles commonly referred to as "dirt bikes." The term "Off-the-Road Motorcycles" shall not include a "Moped" as defined in Section 11-134.01 of the Transportation Article, Annotated Code of Maryland.

(CB-121-1984; CB-104-2004)

Sec. 26-173. Registration.

All off-road vehicles shall be registered with the Prince George's County Department of Environmental Resources and shall display the registration tag issued by the Department. The registration tag shall be firmly attached and kept clean and legible at all times. The registration fee shall be Thirty Dollars ($30.00) and shall be valid for two (2) years. The off-road vehicle shall be required to be reregistered upon sale or transfer to any new owner. Registration of the vehicle shall be in the name of the owner or, where the owner is under the age of eighteen (18) years, in the name of the parent or guardian.

(CB-121-1984; CB-29-1995; CB-22-2001; CB-104-2004)

Sec. 26-174. Use of off-road vehicles.

(a) An off-road vehicle shall not be driven or operated on any public street or sidewalk within Prince George's County.

(b) An off-road vehicle shall not be driven, or the motor allowed to run, on any private or publicly owned property unless the person using the vehicle has on his person, the express written permission of an owner or other person having jurisdiction of the property in advance of its entry onto the property.

(c) An off-road vehicle may only be operated on private property between the hours of 7 A.M. and 8 P.M.

(d) A child under the age of sixteen (16) years must be supervised by a parent or guardian while operating an off-road vehicle.

(e) Helmets must be worn by all drivers and passengers while the vehicle is being operated.

(CB-121-1984; CB-104-2004)

Sec. 26-174.01. Exceptions.

(a) Motorized golf carts may be operated on any licensed public or private golf course.

(b) Mobility devices for disabled persons including electric motor-driven wheelchairs and

scooters are exempt from the requirements of this Division.

(c) All-terrain vehicles used by government agencies in the performance of their official duties are exempt from the requirements of this Division.

(CB-104-2004)

Sec. 26-175. Enforcement.

(a) Any violation of this Division shall be subject to a civil monetary fine of Two Hundred Fifty Dollars ($250.00) for the first violation, Five Hundred Dollars ($500.00) for the second violation, and One Thousand Dollars ($1,000.00) for any subsequent violation pursuant to the provisions of Subtitle 28 of this Code. The citation notice shall be issued in the name of the operator unless the operator is under the age of eighteen (18) years in which case the citation notice shall be issued to the person in whose name the vehicle is registered. Where the operator is under the age of eighteen (18) years and the vehicle is not registered, the citation notice shall be issued to the parent or guardian of the operator.

(b) The County may seek an injunctive order pursuant to the provisions of Subtitle 28 of this Code to prevent such conduct by the violator in the future and to recover damages from the violator for any injury to County property occurring as a result of the violation.

(c) The County Police Department may impound any unregistered off-road vehicle pursuant to the provisions of Division 18 of this Subtitle. The vehicle may be impounded until such time as the fine and all towing and storage fees are paid by the operator, the operator's parent or legal guardian.

(CB-121-1984; CB-104-2004)

SUBTITLE 27. ZONING--PART 3. ADMINISTRATION

DIVISION 8. ENFORCEMENT.

Sec. 27-265. Penalties.

(a) Any person may be liable for a civil fine (provided for in Subtitle 28 of the Code) or be prosecuted for a misdemeanor if he:

(1) Erects, maintains, or uses any structure or land in violation of any portion of the Zoning Ordinance;

(2) Violates any order issued in accordance with this Subtitle; or

(3) Fails to erect structures or use land in accordance with the provisions of this Subtitle.

(b) If he is convicted of a misdemeanor, the violator shall be subject to a fine not exceeding Five Hundred Dollars ($500.00) or up to ninety (90) days imprisonment, or both, in the discretion of the Court. The application of the penalty shall not preclude abatement of the violation through appropriate proceedings in equity.

(c) If the violation is of a continuing nature, each and every day during which the violation continues is a separate violation.

SUBTITLE 27. ZONING--PART 12. SIGNS.

DIVISION 1. GENERAL.

Sec. 27-593. Prohibited signs.

(a) The following signs are prohibited:

(1) Any sign not expressly permitted in this Subtitle;

(2) Any sign no longer advertising a business on the premises, or advertising products no longer stocked or sold. These signs shall be removed within thirty (30) days of the date the business or sale of the products ceases;

(3) Pennants, pinwheels, and similar circus- or carnival-type attractors which are visible from a street or from residential property;

(4) Signs which obstruct any opening intended to provide ingress or egress for any building or structure;

(5) Signs which obstruct the view of traffic control devices;

(6) Signs which, because of their shape, color, or wording, may be confused with any traffic control device (placed by a public authority), or which may mislead motorists;

(7) Signs which are not clean, legible, or in a state of good repair;

(8) Signs or sign structures that are no longer in use, effaced, or otherwise obsolete;

(9) Signs which are illegal under State or Federal regulations;

(10) Signs which are not consistent with the provisions of this Subtitle;

(11) Signs which are placed on a municipal, County, or State street right-of-way, except those of, or authorized by, public authorities or agencies, unless specifically authorized elsewhere in this Part;

(12) Signs projecting from the structural housing of a gasoline pump, service appliance, or vending machine; and

(13) Outdoor advertising signs (billboards).

(CB-77-1985; CB-24-1991; CB-59-1993)

DIVISION 2. ADMINISTRATION.

SUBDIVISION 1. PERMITS.

Sec. 27-602. Signs exempt from sign permit.

(a) Types of signs exempt from sign permit, when all applicable Design Standards of Division 3, Subdivision 3, of this Part are met:

(1) **Public**: Signs of a noncommercial nature which are erected by, or ordered to be erected by, a public official in the performance of official duty, or by a governmental agency, such as: safety signs; traffic control signs; signs of historical interest; and names or locations of cities, towns, and villages.

(2) **Real estate, directional**: Temporary signs containing a directional arrow and advertising real estate for sale or lease, not located on the premises being advertised.

(3) **Real estate, identification**: Temporary signs advertising the prospective sale or lease of real estate, located on the premises being advertised.

(4) **Temporary Signs - Institutional**: Temporary signs pertaining to events sponsored by a church; library; school; hospital; fire station; community center; day care center for children; service, fraternal, or civic organizations; or other similar group.

(5) **Theater bills and changeable copy**: The changing of bills of acts and features on frames for which a permit has been issued, and changing the copy of any changeable copy sign.

(6) **Window signs**: Signs painted on windows to identify the occupants of buildings in Commercial or Industrial Zones, and in Commercial Zones, temporary signs located in or on the interior side of windows which indicate the products or services offered in the building.

(b) The erection or continued existence of the signs listed above shall require conformance with the following:

(1) An electrical permit shall be obtained, where applicable;

(2) A building permit shall be obtained, where applicable;

(3) The signs shall be maintained in accordance with the requirements of this Part for all signs; and

(4) The requirements of Division 3, Subdivision 4, below, shall be followed.

(c) Unless otherwise specified within the regulations for the individual zones, in the I-3, M-X-T, and Comprehensive Design Zones, these signs shall be approved by the Planning Board at the time of Detailed Site Plan or Specific Design Plan approval.

(CB-77-1985; CB-109-1989; CB-23-1992; CB-59-1993)

SUBDIVISION 3. ENFORCEMENT.

Sec. 27-609. Maintenance and removal of unsafe or illegal signs.

(a) Whenever the Director of Environmental Resources, the Director of Public Works and Transportation, or a designated representative of either determines that a sign is unsafe or illegal, the Director or designated representative shall (in writing) order that the sign be made safe or removed. The order shall be complied with by the person owning or using the sign or, in the case of a gateway sign, the Homeowners' Association or other entity responsible for maintenance within five (5) days after the person, Homeowners' Association, or entity receives the order. In the event of an emergency situation (when there is an immediate danger to public safety), the unsafe sign shall be made safe or removed without any delay or written order.

(b) If the unsafe or illegal sign is not removed or maintained in accordance with the order, the Director or designated representative shall have the sign removed. The cost of removal shall be borne by the owner, user, Homeowners' Association, or entity responsible for the sign. For purposes of this Subtitle, all illegal signs in the County right-of-way shall be deemed an immediate danger to public safety and may be removed without any delay or written order. Any costs of removal shall be borne by the person or entity responsible for the sign.

(c) The penalties prescribed in Section 27-265 may be invoked if the sign is not removed or maintained in accordance with the order.

(d) The maintenance of an entrance feature, including gateway signs and associated landscaping, shall be the responsibility of a Homeowner's Association or any other entity or person designated in a maintenance arrangement approved by the Department of Environmental Resources. Any entrance which has not been maintained in a safe and attractive manner may, for the purpose of this Section, be deemed by the Department of Environmental Resources to be an unsafe sign.

(e) It shall be unlawful for any person to attach any sign or poster to any public utility pole or to the exterior of any other public structure. Unless rebutted by competent evidence, any such sign or poster shall be presumed to be owned by and attached by the person whose business name, business address, business telephone, or trademark is contained on the face of the sign or poster.

(CB-50-1984; CB-109-1989; CB-59-1993; CB-73-2001)

Sec. 27-610. Violations.

(a) If a sign violates any of the requirements of the applicable ordinances existing at the time of its erection, the Director of Environmental Resources, the Director of Public Works and Transportation, or a designated representative of either shall order (in writing) that the sign be removed or made to conform to the requirements of this Part. The order shall be complied with by the owner or user of the sign within fifteen (15) days (or a different time period if so stated in the order).

(b) If the order is not complied with, the Director or designated representative may have the sign removed. The cost of removal shall be borne by the owner or user of the sign.

(c) The penalties prescribed in Section 27-265 may be invoked if the order is not complied with.

(CB-50-1984; CB-33-1985; CB-59-1993; CB-73-2001)

DIVISION 3. DESIGN STANDARDS

SUBDIVISION 2. SIGNS FOR SPECIFIC USES.

Sec. 27-628. Public interest events/campaign.

(a) Location.

(1) At least 10 feet behind the street line; and

(2) At least 50 feet from the nearest corner of any street intersection.

(b) Validity period.

(1) Campaign signs may be erected forty-five (45) days prior to the election. The signs shall be removed within ten (10) days after the general election, or within 10 days after the primary election if the candidate is not successful.

(2) Other public interest signs may be erected for a period not to exceed 30 consecutive days.

(c) Other regulations.

(1) One permit is required per applicant per event.

(CB-59-1993; CB-95-1994)

SUBDIVISION 3. SIGNS EXEMPT FROM SIGN PERMIT.

Sec. 27-631. Real estate, directional.

(a) Not located in right-of-way:

(1) Area.

(A) Maximum area - 3 square feet.

(2) Location.

(A) The signs shall be placed on private property behind the street line, as authorized by the owner or tenant.

(3) Quantity.

(A) Maximum number - 4 per each property advertised.

(4) Height.

(A) Maximum height - 3 feet (above finished grade at base of sign).

(b) Located in right-of-way:

(1) Area.

(A) Maximum area - 1.5 square feet.

(2) Location.

(A) Within public street rights-of-way under Prince George's County jurisdiction; and

(B) Within 25 feet of the corner of a street intersection.

(3) Quantity.

(A) Maximum number - 4 per each property advertised.

(B) At any one intersection, there shall be only one (1) sign facing each direction of traffic.

(4) Height.

(A) Maximum height - 3 feet (above finished grade at base of sign).

(5) Validity period.

(A) These signs may only be erected between the hours of noon Saturday and noon of the following Monday.

(6) Other regulations.

(A) If a police officer finds that the sign is a hazard to traffic, he may remove the sign; and

(B) The sign shall be erected in accordance with standards adopted by District Council Resolution.

(CB-59-1993)

SUBTITLE 28. CIVIL MONETARY FINES OR PENALTIES.

DIVISION 1. ZONING VIOLATIONS.

SUBDIVISION 2. CIVIL VIOLATIONS AND FINES.

Sec. 28-111. Schedule of civil monetary fines.

(a) The civil monetary fine for each civil violation of the Zoning Ordinance shall be Fifty Dollars ($50.00), except as provided in Subsections (b) and (c), below.

(b) For a repeated civil violation by the same violator, the following fines shall apply:

2nd violation	$100.00
3rd violation	$150.00
4th violation	$200.00
Each violation in excess of four (4)	$500.00

(c) For violations of Sections 27-593, 27-609, or 27-610 of this Code concerning illegal signs, the following civil monetary fines shall apply:

Ist violation	$100.00
2nd violation	$500.00
3rd and subsequent violations	$1,000.00

(CB-112-1981; CB-111-1982; CB-89-2003)

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION IV-APPENDIX D
Neighborhood Traffic Management Program



Revision 03/14/12

Section IV – Appendix D - Neighborhood Traffic Management Program

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CHAPTER 1: NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

INTRODUCTION

The Neighborhood Traffic Management Program (NTMP) for residential streets represents the commitment of Prince George's County and the Department of Public Works and Transportation (DPW&T; the Department) to promoting and encouraging the safety and livability of the County's residential communities. In an effort to reduce the impact of traffic on our neighborhoods, the NTMP provides a process for identifying, evaluating, and addressing undesirable traffic conditions related to speeding and excessive volumes.

This document describes traffic management measures available through the NTMP that can be implemented (Chapter 2), the methods used to evaluate the need for traffic management measures on a given street (Chapter 3), and the process whereby citizens and the County government work together to improve neighborhood traffic conditions through NTMP (Chapter 5).

NTMP GOALS

The Neighborhood Traffic Management Program has four primary goals:

- Improve neighborhood livability by reducing the speeds and impact of vehicular traffic on residential streets, while providing for the safe, efficient, and economical movement of persons and goods throughout the County.
- Promote safe and pleasant conditions for residents, pedestrians, bicyclists, and motorists on neighborhood streets, while preserving access for emergency-vehicles, buses, and other users.
- Encourage and promote citizen involvement in all phases of NTMP.
- Make efficient use of County resources by ranking requested streets according to their NTMP point assignment scores and other factors.

NTMP PROCESS

When the Department receives a request from a community for traffic management changes on a particular residential street, the Department conducts traffic engineering studies to determine the type and severity of traffic problems occurring on the street and solicits the input of community residents. Using the NTMP's point assignment system (see Chapter 3), requested streets can be evaluated and rated according to their individual point scores, which reflect the prevailing traffic conditions on the given street. It should be noted that NTMP entails only the neighborhood streets and does not include arterial and collector type roadways that are in our roadway system. These exempted roadways are classified as arterial/collector roadways and typically have a wider (right-of-way) that connects two major routes. Arterial/collector roadways are exempt from the installation of NTMP's physical devices as they are designed to accommodate higher volumes of traffic at relatively higher speed to handle increased capacity and also to minimize the reduction of emergency response times, especially for large trucks using these roadways.

If a residential street is found eligible (according to its point score and other factors), if the required approval of the residents has been obtained, and if the necessary funding is available, the Department will install traffic management

devices such as speed humps, traffic circles, or diverters, if found feasible. The Department will also make available through the NTMP traffic diversion measures such as one-way street patterns or turn prohibitions, if feasible. Educational measures such as the Speed Awareness Programs will also be considered.

CHAPTER 2: NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM MEASURES

All County streets qualify for traffic control devices in accordance with the Manual on Uniform Traffic Control Devices, the use of which is mandated by State law. This Manual, prepared by a national joint committee of municipal, county, and State officials, describes conditions or warrants which should be present prior to the installation of traffic control devices, including the multi-way stop control.

The NTMP measures used for residential communities have been classified in three levels, each progressively more restrictive to motorists using the street. This section describes the measures.

Note that the multi-way stop control, one of the most requested traffic control devices, is not included within the NTMP. The multi-way stop control may be warranted at locations with significant and approximately equal volumes on all approaches, where a correctable accident problem exists that cannot be solved using other means, or as an interim measure where a traffic control signal is urgently required. Due to the significant volumes required, a multi-way stop control is seldom warranted within residential neighborhoods. The multi-way stop has been shown to be ineffective in providing the desired state of reasonable and consistent speeds throughout the street, is detrimental to air and noise quality due to the number of starts and stops, and can cause safety problems, including vehicular crashes and serious pedestrian injuries, due to the high incidence of non-compliance.

TRAFFIC MANAGEMENT MEASURES

LEVEL I
Speed Awareness Program
Special Pavement Markings
Signs, including Speed Limit Signs

LEVEL II
One-Way Streets
Turn Prohibitions
Speed Humps
Traffic Circles
Roundabouts
Semi-Diverters
Chokers

LEVEL III
Diagonal Diverters
Full Closures

LEVEL I MEASURES
(REQUIRED POINTS SCORE = 50 POINTS)

Level 1 measures are passive in nature and include educational methods and special pavement markings. For some of these measures to be implemented, a civic association's involvement is required. Residents may also be required to participate in the educational measures.

Speed Awareness Program

The Speed Awareness Program is an educational measure intended to increase motorists' awareness of the speed at which they travel on neighborhood streets and to provide residents a positive outlet to show their concerns regarding speeding in their neighborhood. The program provides a Speed Monitoring Awareness Radar Trailer (SMART), which includes a radar unit, a



speed limit sign, and a digital speed display board that shows motorists the speed at which they travel. SMART is used during Speed Awareness Day events scheduled and attended by at least 10 members of a participating civic association.

The purpose of the Speed Awareness Program is to assist citizens' organizations throughout the County in addressing chronic speeding conditions on specific roadway sections by participating in "Speed Awareness Day" events.

A Speed Awareness Day is a 4- to 6-hour event during which a group of citizens minimum 10 persons) assembles at a safe location adjacent to the targeted roadway to demonstrate their concern about speeding conditions. Typically, groups draw attention by conveying a positive message to passing motorists (e.g. "Safe at 25 MPH," "No Need to Speed," etc.) through the use of pre-printed signs and apparel. It is the sole responsibility of the citizens' organization to plan, schedule, and publicize the event and to provide the necessary signs, T-shirts, etc.

For its role, the Department provides and monitors a Speed Monitoring Awareness Radar Trailer (SMART) and provides loaner safety vests for the participants. The Department will also request that at least one Prince George's County Police Department officer be present during the event.

Requests for scheduling of Speed Awareness Day events are coordinated through the Department's Traffic Safety Division.

Special Pavement Markings

Special pavement markings include the installation of shoulder/parking lanes and center left-turn lanes to narrow the travel path in an effort to reduce speeds. These special lanes are used on streets which are at least 36 feet wide, and they have the greatest benefit on streets where limited on-street parking occurs.



Special Pavement Markings

LEVEL II MEASURES
(REQUIRED POINTS SCORE = 60 POINTS)

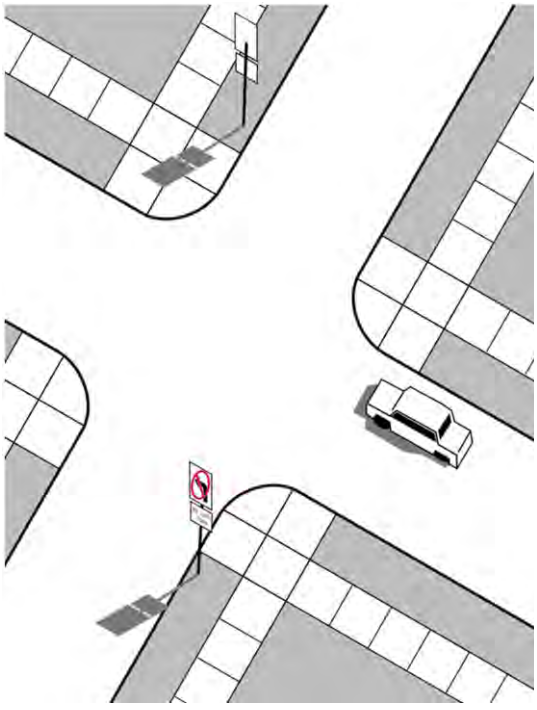
Level II measures include traffic control devices and physical measures which control access to neighborhoods, change travel patterns, and regulate the flow of traffic through the neighborhood. Prior to implementation of a Level II measure, a petition must be signed by the affected residents.

One-Way Streets

One-way streets are used to deter cut-through traffic by changing the traffic pattern in a neighborhood. They should be implemented only after careful study, as they may cause speeding conditions due to the lack of opposing traffic, and they may increase emergency-vehicle response times. To be implemented, one-way streets require a convenient parallel street and approval by residents of both streets. They should not be implemented on streets wider than 26 feet or when alternative routes are not available.

Turn Prohibitions

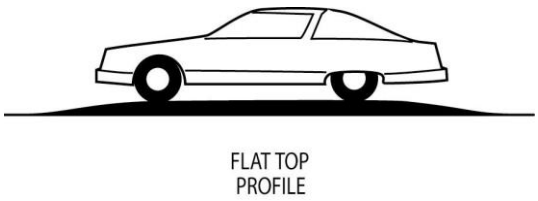
Turn prohibitions are used to deter cut-through traffic by prohibiting entry into and out of a neighborhood on streets which primarily experience a peak hour through-traffic problem. Turn prohibitions should be implemented only after careful study as they may divert traffic to nearby residential streets or to intersections with an existing congestion problem. Turn prohibitions shall not be considered for residential collector streets. Turn prohibitions require police enforcement to be effective.



Turn Prohibition/One Way

Speed Humps

Speed humps are raised sections of pavements designed to reduce speeds on residential streets. They may also reduce through traffic volumes where suitable alternative routes are available. Speed humps are not to be confused with speed bumps: humps have a more gradual rise and have not been found to create safety or operational problems. Humps are used in a series and are usually spaced from 600 to 1000 feet apart. They should not be installed at driveways, on severe grades or curves, near intersections, or on streets wider than 40 feet. Locations without curb and gutter must be considered carefully as such locations may encourage motorists to use the shoulders to avoid the hump. The type of speed hump currently used by the Department is the flat-top profile, which is designed for use on roads with an average weekday traffic (AWDT) volume of fewer than 5,000 vehicles. Streets with an AWDT of more than 5,000 vehicles must be stu-



Speed Bump and Flat Top Speed Hump Profiles

died carefully prior to the installation of any feasible device. The County's experience with flat-top humps has shown they reduce speeds to between 24 and 30 miles per hour (MPH) throughout the entire street.

Traffic Circles

Traffic circles are raised islands placed at four-way intersections. Used only on residential streets, circles are intended to reduce the speed of traffic by reducing the street's width and forcing motorists from their normal travel path. The circles are installed in a series and are spaced from 600 to 1,000 feet apart to maintain a reasonable speed throughout the street. Traffic circles offer the neighborhood an opportunity for community enhancements, as landscaping may be placed within the raised islands. (Prior to installation of traffic circles, a civic or homeowners' association needs to sign a maintenance agreement to maintain the landscaped area.) Traffic circles differ from roundabouts (see below) in that motorists turning left at traffic circles are not required to drive around the island placed within the intersection. This type of operation is required due to the difficulty experienced by truck operators in making left-turn movements when they are required to drive around the island. Stop signs are retained on the minor street approaches, and the normal right-of-way rules prevail. To limit the number of conflicts within the intersection, it is recommended that the greater of the minor streets' AWDT be limited to fewer than 1,000 vehicles per day and that the street's width not exceed 36 feet. Traffic circles may be supplemented by other raised traffic islands on a street where unevenly spaced intersections would lead to improperly spaced traffic circles. These islands (which vary in shape) are placed at T-intersections and mid-block locations; they cause a lateral (horizontal) shift in traffic, thereby slowing motorists.



Traffic Circle

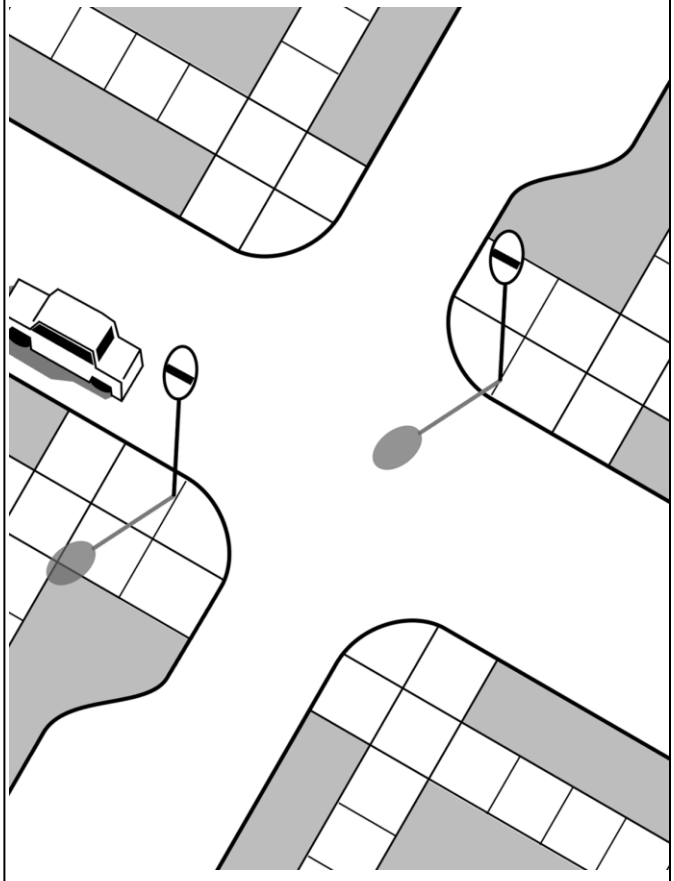
Roundabouts

Like traffic circles, roundabouts have a circular raised island in the center of an intersection. In addition, divisional islands are used on some or all of the approaches to prevent traffic from making direct left turn movements in front of the center island. Roundabouts are large enough for trucks and buses to traverse, and KEEP RIGHT and ONE WAY signs are placed to establish a counter-clockwise flow of traffic around the island. Roundabouts are appropriate where traffic circles are desired but the minor street AWDT exceeds 1,000 vehicles per day, and on streets wider than 36 feet. Roundabouts have YIELD signs on each approach and provide the added benefit of reducing delays to side-street traffic by giving equal vehicular right of way. They also reduce intersec-

tion related accidents by slowing approaching motorists and eliminating direct left turns.

Semi-Diverters

Semi-diverters are the narrowing of street approaches to intersections. In conjunction with Do Not Enter signs, these devices are used to prevent access into a neighborhood. Semi-diverters are installed to address through traffic problems by modifying traffic patterns in the same manner as one-way streets, while still allowing two-way traffic beyond the prohibition. Because of their effect on traffic patterns, semi-diverters should be installed only on streets which have an adequate alternative route to serve diverted traffic. Because they can be easily violated, police enforcement is required to obtain the full benefits of semi-diverters



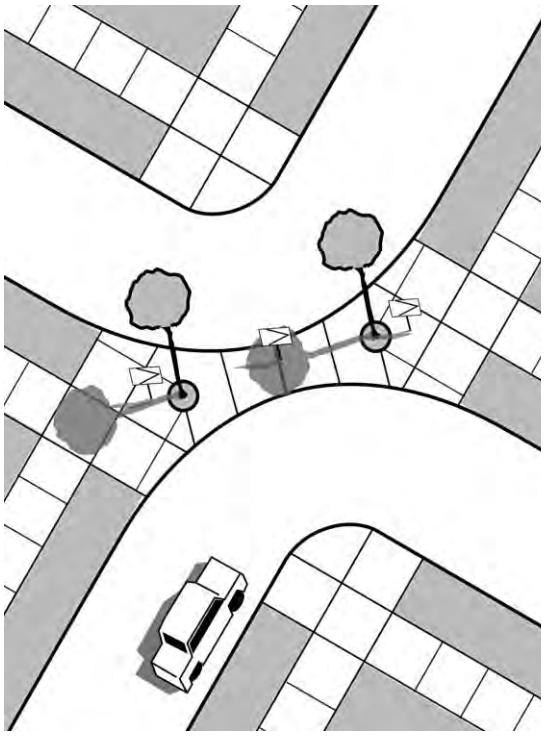
Semi-Diverter

Chokers

Chokers are the narrowing of streets, either at an intersection or midblock location, to reduce the speed of motorists. The narrowing is usually accomplished by reconstructing the curb line to extend into the street in a "bulb" fashion, but can also be achieved by providing an island in the center of the street (reverse choker). Chokers are similar in appearance to semi-diverters, but two-way traffic is maintained. The primary advantages of chokers are safer pedestrian movements due to a reduction in the distance and time it takes to cross the street, and an improved neighborhood appearance when properly landscaped. Due to the limited effect on travel speeds and volumes when used alone, chokers should only be used in conjunction with other physical measures such as traffic circles or roundabouts.

LEVEL III MEASURES
(REQUIRED POINTS SCORE = 80 POINTS)

Level III measures are used solely for the purpose of addressing severe through-traffic problems. These measures have the greatest detrimental impact on the residents of the neighborhood and should be considered only after all other measures have been shown to be ineffective. In addition to requiring a petition (as in Level II), Level III measures require a public hearing to give the general public an opportunity to express their concerns. Due to the severe impact on travel patterns, Level III measures should not be considered on residential collector streets.



Diagonal Diverter

Diagonal Diverters

Diagonal diverters are raised curbed and landscaped areas placed diagonally at intersections. These devices convert the intersections into two unconnected streets with sharp turns. They are strategically located to prevent direct movements through a neighborhood while still allowing the through movement to occur over a longer distance. The additional time it takes to traverse the neighborhood discourages through traffic. Diverters should only be used as part of a system of neighborhood traffic management devices, as individual installations do not benefit the neighborhood as a whole.

Full Closures

Full closures are the most effective, but also the most restrictive, neighborhood traffic management devices used to deter through traffic. They involve removing or completely blocking the paved area at a strategic point and constructing turn-arounds.

Full closures should only be considered when all other traffic management devices have been found to be ineffective in addressing the neighborhood's problem. Full closures should only be considered at locations where a reasonable alternate route exists and where the impacts to the neighborhood and the general traveling public are considered acceptable.

Note: The Department reserves the right to implement or install NTMP measures to address critical safety issues directly attributable to excessive traffic speeds or volumes, even if the generally required community support is not received. Once any NTMP physical measure is installed, it shall only be removed or modified if it is determined that the measure is the direct cause of a traffic safety problem.



Full Closure Planter

CHAPTER 3: NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM POINT ASSIGNMENT SYSTEM

For the purposes of NTMP, a *residential street* is defined as a County-maintained roadway with substantial residential development (with lot sizes of two acres or smaller) fronting both sides of the street, and which does not function as a rural or major collector or as an arterial road. The following methodology is used to develop a numerical score for each requested residential street. Scores are used to rate the requested streets according to their prevailing traffic conditions and to determine which level of NTMP measures is appropriate for the subject street. A high score, available funding, and other factors are used to determine which roadways will proceed to the next NTMP phase, which may involve direct community participation in educational measures such as the Speed Awareness Program or obtaining the required community approval for the installation of such measures as speed humps and traffic circles.

ROADWAY CATEGORIES

The initial step in determining a requested residential street's point score is to identify the roadway category into which the street falls. The NTMP recognizes six categories of residential streets:

- *Minor secondary residential:* A 26-foot-wide (or narrower) local access street.
- *Major secondary residential:* A 26-foot-wide (or narrower) street which functions as a main access point to a neighborhood or as a through street.
- *Minor primary residential:* A 36-foot-wide street which functions as a main access point to a neighborhood or as a through street, but does not directly connect two major streets.
- *Major primary residential:* A 52-foot-wide street which functions as a main access point to a neighborhood or as a through street, but does not directly connect two major streets.
- *Minor residential collector:* A 36-foot-wide street which directly connects two major roadways. This type of street, along with the major residential collector described below, serves a significant volume of commuter traffic.
- *Major residential collector:* A 52-foot-wide street which directly connects two major roadways.

Given the wide variety of roadways throughout the County, many of which are constructed to non-standard designs and which have unique functions, some streets for which measures are requested may not comfortably fall into any of the above categories. However, it is expected that through the use of sound traffic engineering judgment, each street will be assigned an appropriate category to which it is most closely related.

POINT SYSTEM CRITERIA

Once a requested street has been categorized, a point system using eight criteria is used to determine the street's score

Traffic volume

Points are assigned according to the street's category and the desirable AWDT for that category. The desirable AWDT is based on the street's width, function, and the type of traffic which it should handle, considering the overall local roadway network. Points are assigned according to how much greater (by percentage) the

current AWDT volume on the requested street is than the desirable AWDT volume for the street category into which it falls (see the Neighborhood Traffic Management Program Point Assignment Worksheet in Chapter 4 for details about the traffic volume and other criteria).

- *30 points maximum score*

Speed

Points are assigned according to how many miles per hour the measured 85th percentile speed on the requested street is over the posted speed limit. The 85th percentile speed indicates that 85 percent of vehicles on a particular street are traveling at this speed or below, as measured by a spot speed study. The 85th percentile speed is a nationally recognized standard.

- *35 points maximum score*

Traffic accidents

Points are assigned based on the street's accident rate (accidents per million vehicle miles) for the three most recent years for which accident data is available. Adjustment factors of 2 and 1.5 are used, respectively, for converting accident rates into score points for Primary and Secondary residential streets.

- *30 points maximum score*

Elementary school or playground on the street

Five (5) points are assigned to a street on which an elementary school or a playground is located.

- *5 points score*

Major pedestrian generators

Five (5) points are assigned to a street which has one or more major pedestrian generators within one-quarter mile of the street. Major pedestrian generators include schools, libraries, parks, playgrounds, major bus stops, and stores.

- *5 points score*

Sidewalk

Points are assigned according to how much (by percentage) of the street does not have sidewalk. The points are calculated by multiplying the percentage of the street without sidewalk by 10. For example: 80% (without sidewalk) x 10 = 8 points. If the majority of the street's section(s) without sidewalk has adequate walking areas, 5 points are subtracted from the tabulated points. To continue the above example: 8 points – 5 points = 3 points. An adequate walking area is defined as a gravel, paved, or grassy area at least five (5) feet wide and that is unobstructed and reasonably level.

- *10 points maximum score*

Limited sight distance

Five (5) points are assigned to a street with uncorrectable and extensive sight distance limitations due to such conditions as vertical or horizontal curves, vegetation, or parked vehicles.

- *5 points score*

Non-local traffic

Five (5) points are assigned to a street on which a majority of the current AWDT volume is comprised of non-local (cut-through) traffic. It is expected that non-local motorists (typically commuters) may not be as sensitive to a neighborhood's safety needs as the neighborhood's residents. In addition, non-local motorists may be less receptive to neighborhood-sponsored educational measures such as the Speed Awareness Program.

- *10 points maximum score*

CHAPTER 4: NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM
POINT ASSIGNMENT WORKSHEET

STREET NAME: _____

FROM: _____ TO: _____

STAFF: _____ DATE: _____

1) VOLUME (Average Week Day Traffic) _____ _____POINTS
(MAXIMUM 30)

RESIDENTIAL STREET CATEGORY	DESIRABLE AVERAGE WEEK DAY TRAFFIC (vehicles per day)	DESIRABLE PEAK HOUR VOLUME	CURRENT AVERAGE WEEK DAY TRAFFIC (vehicles per day)		
		If exceeded (10 Points)	0–25% (10 Points)	25–50% (20 Points)	>50% (30 Points)
Minor Secondary Residential	600	100 vpd	600–750	751–900	>900
Major Secondary Residential	1000	100 vpd	1000–1250	1251–1500	>1500
Minor Primary Residential	2000	200 vpd	2000–2500	2501–3000	>3000
Major Primary Residential	3000	200 vpd	3000–3750	3751–4500	>4500
Minor Residential Collector	3000	300 vpd	3000–3750	3751–4500	>4500
Major Residential Collector	4000	300 vpd	4000–5000	5001–6000	>6000

Minor Secondary Residential	26′ (or narrower) local access street.
Major Secondary Residential	26′ (or narrower) street which functions as a main access point to a neighborhood.
Minor Primary Residential	36′ primary residential street which may function as a through street but does not directly connect two major streets.
Major Primary Residential	52′ primary residential road which may function as a through street but does not directly connect two major streets.
Minor Residential Collector	36′ through street which directly connects two major roadways.
Major Residential Collector	52′ through street which directly connects two major roadways.

2) 85TH PERCENTILE SPEED_____ _____ POINTS
(MAXIMUM 35)

POSTED SPEED LIMIT _____

	MILES PER HOUR (MPH) OVER POSTED SPEED LIMIT			
TYPE OF STREET	<6 MPH	6–10 MPH	11–15 MPH	>15MPH
Secondary Residential	0	15 points	20 points	35 points
Primary Residential	0	15 points	20 points	35 points
Residential Collector	0	15 points	20 points	35 points

TOTAL POINTS SHEET 1: _____

STREET NAME: _____ DATE: _____

3) ACCIDENT RATE: _____ _____POINTS
(ACCIDENTS PER MILLION VEHICLE MILES) (MAX. 30)

4) ELEMENTARY SCHOOL OR PLAYGROUND ON ROADWAY _____POINTS
(YES = 5)

5) MAJOR PEDESTRIAN GENERATORS _____POINTS
Schools, libraries, parks, playgrounds, major bus stops, (YES = 5)
stores, etc. within ¼ mile radius of subject road.

6) SIDEWALK _____POINTS
% of roadway without sidewalk on at least one side multiplied by 10. (MAX. 10)
Example: 80% x 10 = 8 pts. Subtract 5 points if majority of the road
without sidewalk has adequate walking areas.

Adequate walking area: A gravel, paved, or grassy area at least 5 feet wide and which is unobstructed and level.

7) LIMITED SIGHT DISTANCE _____POINTS
(Uncorrectable and extensive sight distance conditions due (YES = 5)
to vertical or horizontal curves, vegetation, parked vehicles, etc.)

8) MAJORITY OF TRAFFIC IS NON-LOCAL _____POINTS
(MAX. 10)

SHEET 2 TOTAL: _____POINTS

SHEET 1 TOTAL: _____POINTS

TOTAL SCORE: _____POINTS

CHAPTER 5: NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM PROCEDURES

TRAFFIC MANAGEMENT REQUESTS AND DEPARTMENT RESPONSE

Requests for neighborhood traffic management can be made by community organizations, individual residents, or elected officials.

When a request is received, the Department will conduct a traffic study of the requested street in order to obtain traffic volume, speed, and accident information. In addition, information on pedestrian safety and the street's physical conditions will be gathered. The Department will review this information and assign points to the studied street, as described in the preceding section, NTMP's Point Assignment System (page 9).

According to the street's point score and the study's overall findings, the staff will recommend the appropriate level of NTMP measures to address the street's prevailing conditions. (A minimum score of 50, 60, or 80 points is required for a street to be eligible for Level I, II, or III measures, respectively.)

If the street is eligible for either Level II or III NTMP measures, further review will be made to determine whether the street's physical conditions (horizontal curvature, grade, drainage, etc.) will allow the safe installation of traffic management devices and to ensure that emergency-vehicle and bus access will be maintained. Also to be assessed at this point is the probability that the installation of traffic management
devices on a particular street may divert traffic onto other residential streets. If a significant volume of traffic is expected to be diverted onto other streets, those streets will be identified and evaluated for the installation of traffic management devices.

If a street is found not to be eligible for any level of NTMP measures, the staff will always review the street to ensure that all of the appropriate traffic control devices are in place in accordance with the *Manual on Uniform Traffic Control Devices.*

DEPARTMENT'S RESPONSE TO REQUESTOR AND NEIGHBORHOOD MEETING

The original requestor will be informed in writing of the study's results and the Department's recommendations. If the requested street is eligible for NTMP measures, the requestor will be informed regarding the next step in the process, which involves scheduling a meeting between the neighborhood residents and the Department's staff. At this meeting, details about the various NTMP educational measures (such as the Speed Awareness Program), the installation of physical traffic management devices (traffic circles, speed humps, etc.) or the implementation of traffic diversion measures (one-way street patterns, turn prohibitions, etc.) will be discussed. The required community approval process (by agreement, petition, and/or public hearing) for the selected measure will also be discussed.

IMPLEMENTATION OF APPROVED NTMP MEASURES

When the Department receives the required neighborhood agreement to participate in educational measures or the required approval for either the traffic management devices or traffic diversion

plans, it will proceed as follows:

For educational measures, schedule and coordinate Speed Awareness Days;

For traffic diversion measures, install the appropriate traffic control devices (signs) to establish one-way streets or turn prohibitions; and

For the installation of traffic management devices, place the eligible street on a candidate list for installation, which will be prioritized according to each street's point score, the initial date of request for the street, available funding, schedule of resurfacing of that particular street, and other factors.

After any of the described measures have been installed, the Department will monitor the street and the residents' input to determine the effectiveness of the utilized measures and their impact on the surrounding road network.

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION IV-APPENDIX E
Policy and Specification for Utility Installation and Maintenance



Revision 03/14/12

Section IV – Appendix E – Policy and Specification for Utility Installation and Maintenance

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CHAPTER 1: DEFINITIONS AND ABBREVIATIONS

AASHTO: American Association of State Highway and Transportation Officials.

Acceptance: The decision or ruling of the Director or the Director's designee that the construction specified in a permit or under contract with the County has been completed so as to allow the release of the permit and the assumption by the County to maintain the completed construction.

Applicant: Any person, as herein defined, who has applied for a permit to perform any construction regulated by Subtitle 23 of the Prince George's County Code.

Approval: The decision or ruling of the Director or the Director's designee that the plans, specifications, agreements, conditions, and other supporting documents submitted by an applicant are in order and meet the applicable standards and requirements of this Utility Policy and Specification, so that a permit may be issued.

Arterial roadway: A through roadway with the following characteristics: a) consisting of four (4) to six (6) traffic lanes that are divided by a median; b) designed to carry higher traffic volumes; c) parking and direct access are generally prohibited; and d) entrances, intersections, and median crossings are placed at wide intervals.

As-built drawing: A scale drawing that shows the utility's work or utility-related work as it was built and that incorporates details of any additions, deletions, or variations from the approved plans.

Average daily traffic (ADT): The average 24-hour traffic volume during a specified duration of calendar days, which is calculated by counting the number of motorized vehicles traveling on a designated portion of roadway during consecutive 24-hour periods and dividing the total by the number of consecutive 24-hour periods during which the volume of vehicular traffic was counted.

Betterment: A material improvement, adjustment, modification, or addition to an existing utility facility that increases the utility's capacity without major changes to its original construction.

CIP project: Prince George's County Capital improvement Program project.

Collector roadway: A through roadway with the following characteristics: a) consisting of two (2) to four (4) traffic lanes that are generally divided by a painted centerline; b) designed to carry moderate traffic volumes; c) street parking generally is prohibited; and d) direct property access is limited.

Commercial/Industrial roadway: A local roadway that serves a developed area and meets *at least one* of the following conditions: a) commercial or industrial uses exist on either side of the roadway or b) the predominant uses within the general area are either institutional and/or high-density residential.

Contractor: One who agrees to provide materials and/or supplies, and/or to perform certain types of work, according to an agreed schedule and to defined standards for a specified sum of money.

County: Prince George's County, Maryland, including, without limitation, the Department of Public Works and Transportation.

County-maintained road: A public road that has been accepted for full perpetual maintenance by the County.

Default: The condition in which a permittee has failed to complete the work covered within the scope of the permit within the time prescribed in the permit or the time prescribed by this Utility Policy and Specification.

Department: The Prince George's County Department of Public Works and Transportation.

Developer: Any person, utility company, or other entity, as herein defined, undertaking a permit for any building, alteration, reconstruction, or other development or redevelopment activity in Prince George's County.

Director: The Director of the Prince George's County Department of Public Works and Transportation, including, without limitation, the Director's duly authorized representatives.

DPW&T: The Prince George's County Department of Public Works and Transportation.

Easement: A legal right, other than the acquisition of title, to use or to control the use of the real property of another individual for a designated purpose and for a specified time.

Emergency: A serious, sudden, and unexpected happening or unforeseen occurrence or condition that requires immediate corrective action to protect the safety of the general public or to restore service.

Federal road: A public road that is under the jurisdiction of the United States Government.

Free flow: Flow of traffic that is not hindered or otherwise impeded by obstruction or constriction.

Historic road: A public or private road, as designated by the County Council, that has been documented by historic surveys or maps and that maintains its historic alignment and historic landscape context through views of natural features, historic landscape patterns, historic sites and structures, historic farmstead groupings, or rural villages.

Infrastructure: Basic public and private facilities, services, and installations including but not limited to roads, bridges, and utilities.

Inspector: A person authorized by the Director to a) observe and inspect conditions within or affecting the public right-of-way, to include, without limitation, road construction and materials used in road construction, and to b) determine or enforce compliance with the Prince George's County Code, as amended; the *Specifications and Standards for Roadways and Bridges,* which includes this Utility Policy and Specification; and/or the terms and conditions of any permit issued by the Department or the terms of any contract with the Department.

Maintenance Utility Permit: A type of permit that each utility company must obtain to cover certain maintenance and repair activities performed on its existing utility facility infrastructure located within public rights-of-way or easements under the jurisdiction of Prince George's County, Department of Public Works and Transportation as described in Section 3.1 of this Utility Policy and Specification.

Miss Utility: A one-call notification center (1-800-257-7777) that identifies the location of utility facilities within the infrastructure and notifies subscribing underground utility owners of proposed excavation plans.

Moratorium period: The five (5) year period during which the cutting of new or resurfaced pavements is prohibited unless approved by the Department.

MSHA: Maryland State Highway Administration.

Municipal road: A public road that is under the jurisdiction of an incorporated municipality.

MUTCD: The *Manual on Uniform Traffic Control Devices.*

Other public road: A public road that has been dedicated, deeded, or assigned to public use through easement and is open to the public, but over which no public agency has assumed the responsibility for full maintenance. Maintenance by the County is limited to the correction of dangerous conditions so as to permit all-weather use by emergency vehicles and to correct any condition that jeopardizes the lives of the motoring public.

Other public surfaced road: Any other public road that has been improved with an all-weather surface by the County. Maintenance is limited to providing snow and ice control as necessary for emergency vehicle access, drainage work necessary to protect the all-

weather surface, and repairs to the paved surface.

Park and Planning Commission: The Maryland–National Capital Park and Planning Commission (MNCPPC).

Park road: A public road that is under the jurisdiction of the Maryland–National Capital Park and Planning Commission.

Permit: An official document or certificate issued by the Director or the Director's duly authorized representative, authorizing performance of specified construction at a specified location and within a specified time, as further provided and detailed in the supporting documents, agreements, conditions, plans, and specifications relating thereto.

Permittee: Any person, contractor, subcontractor, organization, or company who/that has been granted a permit, and any person, contractor, subcontractor, organization, or company who/that is undertaking work pursuant to a permit.

Person: A person as defined by Section 1-102 of the Prince George's County Code; also any utility, public agency, political subdivision, authority, or agent thereof.

Planning Board: The Planning Board of the Maryland-National Capital Park and Planning Commission of Prince George's County, as defined in Article 28 of the Annotated Code of Maryland.

Primary residential road: A local roadway designed to accommodate light vehicle traffic and to serve adjacent property having residential zoning classifications.

Private road: Any road that is not a public road.

Property line: Lines, which may be established by survey if necessary that set the legal boundaries of real property.

Public right-of-way: Any land area that meets one of the following conditions: a) has been dedicated to public use for road or transportation purposes by a plat of subdivision or other instrument recorded in the land records of the County; b) has been deeded to or acquired by the County for road or transportation purposes; c) has been conveyed to a public agency by easement for public use for road or transportation purposes; d) has been declared by competent authority to be public right-of-way through use or through prescriptive usage in accordance with Maryland law; or e) is located along a County-maintained road that falls within the traveled way or the actively maintained shoulders and side ditches of the County-maintained road. "Public right-of-way" shall not include state roads, federal roads, municipal roads, park roads, private roads, or public utility easement as defined herein.

Public road: Any road that a) has been accepted for maintenance by a public agency,

political subdivision, or incorporated municipality; b) lies within a right-of-way owned by and under the jurisdiction of the County or dedicated to public use by a recorded deed or recorded plat of subdivision; or c) has become recognized as public under Maryland law through long use by the general public.

Public utility easement (PUE): A portion of a lot or parcel, generally located outside and adjacent to the public right-of-way, reserved for the placement of utility facilities.

Road: Any travel way or right-of-way, whether open or not, and any land area dedicated to public use in a recorded deed or recorded plat of subdivision, for the purpose of, or used for, passage of vehicular and pedestrian traffic, together with adjacent appurtenant drainage ditches, channels, support slopes, structures, walks, and traffic control devices. This term shall embrace all ways designated as roads, streets, alleys, lanes, paths, highways, avenues, or terms of similar meaning.

Road construction: Any act of a) opening, cutting into, clearing, grading, cultivating, excavating, maintaining, repairing, building, constructing, improving, or otherwise altering any road or any part thereof; b) placing any structure, plant, or other permanent object in a road, whether authorized by permit or not; or c) establishing or creating an entrance into any road.

Roadside tree: Any tree or shrub growing within the right-of-way of any public road.

Roadway: The portion of a road, including shoulders, designated for vehicular use.

Secondary residential road: A local roadway intended to provide access to small residential areas with very limited or no through-traffic.

Scenic road: A public or private road, as designated by the County Council, that provides scenic views along a substantial part of its length through a) natural or manmade features, such as forest, extensive woodland, cropland, pasturage, or meadows; b) distinctive topography, including outcroppings, streambeds, or wetlands; c) traditional building types; d) historic sites; or e) roadway features, such as curving, rolling roadway alignment, or "leaf tunnels."

Service connections: Utility pipes, conduits, or any other connection material or type that connect main distribution lines to an end-use source.

Special Utility Permit: This type of permit is required to be obtained by a utility company for the installation or upgrade of utility facilities within the public right-of-way or easements under the jurisdiction of Prince George's County, Department of Public Works and Transportation, and under certain other circumstances as described in Section 3.1 of this Utility Policy and Specification.

Specifications and Standards: The *Specifications and Standards For Roadways and Bridges in Prince George's County, Maryland* (*Specifications and Standards*) which includes the design and construction standards specified within this Utility Policy and Specification, and any other policies, procedures, or requirements adopted pursuant to the authority of the Director of the Department.

State road: A public road that is under the jurisdiction of the State of Maryland.

Traffic control plan (TCP): A work zone traffic control plan to guide vehicular and pedestrian traffic safely through a construction area.

Traffic control device: Sign, signal, marking, or other device placed on or adjacent to a street or highway to regulate, warn, or guide traffic.

Utility: All privately, publicly, or cooperatively owned systems for producing, transmitting, or distributing communication, cable television, power, electricity, light, heat, gas, oil, water, steam, waste, and the like that directly or indirectly serve and/or benefit the public or any portion thereof.

Utility company: The owner of any utilities or utility facilities, and any organization franchised or otherwise authorized by the County or State Government to install, operate, or maintain such utilities or utility facilities, including without limitation any entity duly authorized by WSSC to install, operate, or maintain utility facilities. This term does not include an organization franchised to construct, operate, or maintain a public transportation system.

Utility facility: Includes, without limitation, any and all poles, wires, guys, anchors, buried cable, conduits, pedestals, pipelines, hydrants, valve boxes, manholes, casings, river gages, and related fixtures and devices for producing, transmitting, or distributing communication, cable television, power, electricity, light, heat, gas, oil, water, steam, waste, and the like that directly or indirectly serve and/or benefit the public or any portion thereof.

Utility patch: A temporary or permanent patch in the roadway pavement or sidewalk that is required as the result of excavation of the pavement or the sidewalk to repair or place a utility line or appurtenance.

Utility Policy and Specification: The *Prince George's County Policy and Specification for Utility Installation and Maintenance*, latest edition.

WSSC: The Washington Suburban Sanitary Commission.

CHAPTER 2: POLICY ON UTILITY ACCOMMODATION

2.1. AUTHORITY, PURPOSE, AND SCOPE OF REGULATIONS

2.1.1. Authority to Regulate.

A) **County Regulation Authorized.** The County is authorized under Article 25A of the Annotated Code of Maryland to issue ordinances, regulations, and specifications to permit the installation of utility facilities within the public right-of-way. Provisions for the Department to regulate utilities and utility facilities within the public right-of-way are contained within Subtitle 23 of the Prince George's County Code, the Prince George's County Road Ordinance (the County Road Ordinance). In accordance with the County Road Ordinance and provisions of the County Charter, the Director is authorized to establish, issue, and enforce reasonable policies, procedures, and specifications governing without limitation the installation, construction, maintenance, renewal, removal, and relocation of utilities and utility facilities in, on, along, over, or under any and all County public rights-of-way and to establish and collect fees for all such activities

B) **Basis for Standards.** The policies, specifications, and standards contained herein have been established after careful review of standards and best practices of other government agencies; recommendations of national associations of highway, public works, and utility officials; as well as review of national standards and codes governing utilities. This Utility Policy and Specification also is based on the prior experience of the Department with utility permit operations and its judgment with regard to proper design, construction, and operation practices. This Utility Policy and Specification conforms generally with other standards under which the Department operates, and provides reasonable requirements for the protection of the public interest in accommodating utilities within public rights-of-way.

2.1.2. Purposes

A) **Utility Policy and Specification.** The purposes for the establishment of this Utility Policy and Specification are to facilitate increased safety and convenience for the traveling public; preserve the County's infrastructure; mitigate the impact of utilities on the structural integrity, durability, and aesthetic quality of the County's roadways; provide for the accommodation of utility facilities within the right-of-way, and establish procedures and controls for the issuance of permits, regulating any and all activities relating to utility facilities by the Department. The permit system established herein makes known the intent of the utility company to carry out work within the public right-of-way by requiring the advance submission of a written application; provides that the nature and extent of any utility work within

the public right-of-way work shall be clearly defined by the utility company and agreed to by the Department; establishes an administrative means for the Department to coordinate the use of space within the public right-of-way and to hold the utility company responsible for such authorized work; and provides a means to grant approval for the authorized work and to establish records of all utility work and operations within the public right-of-way.

B) **Revision of Published Policies.** This Utility Policy and Specification supersedes and replaces any and all other policies or specifications of the Department relative to the accommodation of utilities and utility facilities within the public right-of-way, which may be in conflict herewith.

2.1.3. Applicability.

Unless otherwise exempted by law or written agreement, the requirement and provisions of this Utility Policy and Specification apply to all utility companies and utility facilities, whether privately or publicly owned.

2.1.4. Suspension or Revocation.

The Director may suspend or revoke any permit in accordance with Section 23-117 of the Prince George's County Road Ordinance. In addition, the Director shall enforce all applicable sanctions or penalties provided under the County Road Ordinance or other applicable law against the utility company and/or its agent for any violations of this Utility Policy and Specification.

2.2. LIMITATIONS ON RIGHT-OF-WAY OCCUPANCY

2.2.1 Protection of Traffic and Roadway. It is the policy of the Department that no utility may occupy or perform either maintenance or operations on any public right-of-way unless sufficient space is available so that the free flow and safety of roadway traffic is not unduly impaired and the utility installation does not prevent the Department from reasonably maintaining the roadways, structures, traffic control devices, and other appurtenant facilities.

2.2.2 Written Authorization Required. Except for emergencies, no work shall be performed on any utility or utility facility located within the public right-of-way without a Maintenance Utility Permit or a Special Utility Permit issued in accordance with the provisions of Sections 3.1 through 3.4 of this Utility Policy and Specification. If a utility company has not been granted the right by statute to locate utility facilities within the public right-of-way in addition to obtaining the appropriate permit, the utility company also shall obtain a Letter of Authorization from the Department. The request for a Letter of Authorization shall be sent to the Director and shall include a written description of the work to be performed, including its exact location and a schematic plan. Any such work that is performed without written authorization shall be removed by the responsible utility company

immediately upon demand by the Department, and the utility company shall restore the public right-of-way to its condition prior to the performance of the unauthorized work. All such restoration work shall be at the sole cost and expense of the utility company, which shall also be responsible for reimbursing the Department for any and all costs and expenses that it may incur arising out of or relating to such unauthorized work.

2.2.3 **Compliance with this Utility Policy and Specification.** This Utility Policy and Specification covers most utility-related situations. It is general in application, particularly with regard to the permissible location of utility facilities within the public right-of-way. There may be instances where proposed utility installations or maintenance activities appear to meet the requirements of this Utility Policy and Specification, but special circumstances make the proposed location or installation inappropriate. Each permit application will be reviewed by the Department on its own merit with regard to factors including its impact on safety and traffic flow; durability and visual quality of the roadway; and the cost or feasibility of roadway and utility facility construction and maintenance. The Department shall have the right to waive any of the requirements contained herein on a case-by-case basis if, in its sole discretion, such waiver is deemed appropriate under the circumstances.

2.2.4 **Compliance with Federal Policies**. Requirements for accommodation of utility facilities on federal-aid projects are prescribed in the *Federal-Aid Policy Guide* (FAPG), latest edition, which cites relevant sections of the *Code of Federal Regulations*. It is the policy of the Department to require full compliance with the FAPG for all installations of utility facilities within the public right-of-way on any federally funded project.

2.3. POLICY ON RELOCATION OF UTILITY FACILITIES

2.3.1. **Relocation for Department Project.** The Department reserves the right to require a utility company to remove, repair, adjust, or otherwise relocate any utility facility located within the public right-of-way of a road that the Department has undertaken to maintain, repair, or improve, when, in the discretion of the Department, the utility facility constitutes a hazard or otherwise will interfere with road construction or maintenance activities. Upon written notification by the Department of such an impending project, affected utility companies shall relocate or remove utility facilities within th public right-of-way so as to have no adverse impact on preconstruction, construction, or maintenance activities related to the project. A utility company shall be liable for any and all costs incurred by the Department or its agents for delays caused by the failure of the utility company to relocate its utility facilities within the time specified in this Utility Policy and Specification or otherwise by the Department.

A. **Compensation for Relocation.** The removal, relocation, or adjustment of utility facilities shall be accomplished at the sole expense of the utility company

unless otherwise expressly provided for in this Utility Policy and Specification, in a written agreement between the Department and the affected utility company, or where the utility company is deemed to have prior property rights.

B. Site for New Installation. In the event that it becomes necessary to require a utility company to relocate its utility facilities and such utility facilities are still in use, the Department may specify a new location within the public right-of-way, if such suitable space is available, to which such utility facilities may be moved.

2.3.2. Failure to Remove Utility Facilities. Upon receiving written notice from the Department to remove, relocate, repair, or otherwise adjust its utility facilities due to an impending Department project, the affected utility company shall, within ninety (90) calendar days thereafter, commence said removal, relocation, repair, or adjustment in accordance with said written notice and instructions from the Department. Should the utility company fail to comply with such notice within a reasonable time sufficient to allow for engineering and other procedures deemed by the County to be reasonably necessary for the removal and relocation of the facilities, the Department may give the utility company a final notice directing that such removal begin no later than fourteen (14) calendar days from the receipt of such final notice.

A. Removal by Department. Except as otherwise provided for in this Utility Policy and Specification, if the utility company does not, within fourteen (14) calendar days of receipt of such final notice, begin to remove or relocate the utility facilities or, having so begun, thereafter fails to complete the work within a reasonable timey prosecute the work to completion, the Department may remove or relocate the same with its forces, or by employing or contracting for the necessary engineering, labor, equipment, tools, supervision, or other necessary services or materials. The affected utility company shall be solely responsible for any loss or damage to its facilities arising out of or relating to any such work undertaken by the Department, or its agents.

B. Reimbursement by Utility Company. Except as otherwise provided for in this Utility Policy and Specification, the Department shall submit to the utility company a bill for all costs and expenses connected with removing and relocating such utility facilities. Such bill shall also include demand for payment for all other damages or costs due to any construction delays, plus an administrative fee of ten (10) percent of all such damages and costs. The total amount shall become due immediately, or within such time as otherwise may be agreed upon between the utility company and the Department. In the event that the utility company does not make payment or arrange to make payment within thirty (30) calendar days after receipt of a bill from the Department, the Department shall certify that amount for collection to the County Attorney, and interest shall accrue on the principal amount due at the legal rate then allowed.

2.3.3. **Relocation or Removal of WSSC Utility Facility.** The need for relocation or removal notification of a WSSC utility facility and reimbursement by the County to WSSC, or vice versa, shall be in accordance with Article 29 of the Annotated Code of Maryland.

CHAPTER 3: PROCEDURES FOR ISSUANCE OF UTILITY PERMITS FOR UTILITY FACILITIES

3.1. TYPES OF UTILITY PERMITS

3.1.1. Special Utility Permit.

A. A Special Utility Permit shall be required for the following types of utility facility construction within public rights-of-way or easements under the jurisdiction of the Prince George's County, Department of Public Works and Transportation:

- Construction of new utility facilities, except underground utility construction within publicly dedicated future roadways of new subdivisions.
- Material upgrades to existing utility facilities.
- Material relocation or realignment of existing utility facilities, except for relocation required by the County.
- Material extensions of existing utility facilities.
- Service connections that require the placement or relocation of any utility pole or that require any open cut of the roadway pavement on arterial roadways, collector roadways, industrial/commercial roadways, transit routes, or any other roadway that has average daily traffic (ADT) volume of six thousand (6,000) vehicles per day or greater.
- Service connections that require two (2) or more open cuts of the roadway pavement by the same utility company within two hundred (200) feet of each other within a 6-month period.
- Relining and/or cleaning underground utility systems.
- Any utility work that requires the cutting of any pavement within the moratorium period.

B. Except for WSSC, the owner of the utility facility that is being constructed, upgraded, relocated, or extended shall be responsible for obtaining the Special Utility Permit. For water and sewer work within existing public roadways, either WSSC or the entity duly authorized by WSSC to perform the work shall obtain the Special Utility Permit.

C. The Special Utility Permit shall be issued for a standard duration of ninety (90) calendar days. A longer duration may be granted if, at the time of permit application, the permittee submits a request for additional time and an explanation as to why ninety (90) calendar days is insufficient. If additional time is requested at the time of application, no additional fee shall be required. After the issuance of the permit, the permit duration may be extended by applying for a permit extension and paying the permit-extension fee.

3.1.2. Maintenance Utility Permit.

A. A Maintenance Utility Permit shall be required for each utility company to cover the following work performed on its existing utility facilities located within public rights-of-way or easements under the jurisdiction of the Prince George's County, Department of Public Works and Transportation:

- Routine maintenance of existing utility facilities.
- Repairs to existing utility facility infrastructure that do not constitute a material upgrade or betterment of the utility facility.
- Underground utility facility construction within publicly dedicated future roadways of new subdivisions.
- Modifications to utility facilities that are required for Capital Improvement Program (CIP) projects, except for any such modification to WSSC utility facilities required to be made by a party under direct contract with the Department for a CIP project.
- Service connections that do not require the placement or relocation of any utility pole and do not require any open cut of the roadway pavement on arterial roadways, collector roadways, industrial/ commercial roadways, transit routes, or any other roadway that has ADT volume of six thousand (6,000) vehicles per day or greater.
- Service connections that do not require two (2) or more open cuts of the roadway pavement by the same utility company within two hundred (200) feet of each other within a six- (6)month period.

B. The owner of the utility facility which is being maintained or repaired shall be responsible for obtaining the Maintenance Utility Permit.

C. The Maintenance Utility Permit is issued for a duration of one (1) year, to be renewed annually. One (1) Maintenance Utility Permit shall be issued for each utility company to cover that utility company's entire utility facility infrastructure located within the public right-of-way.

3.2. REQUIRED SUBMITTALS

3.2.1. Special Utility Permit.

A. The permittee shall submit electronically to the Department's Office of Engineering a completed copy of the application for a Special Utility Permit using the permit form available from the Department's website (for specifics on said website see the Preface from DPW&T's *Specifications and Standards for Roadways and Bridges)*. The permit application shall be accompanied by the following:

A.1. **Indemnification.** The permittee shall submit a signed letter of responsibility, as shown in Attachment 5, issued by a duly authorized officer of the utility company and indicating that the utility and the permittee shall indemnify, defend, and hold harmless Prince George's County, Maryland, its agents, officials, and employees, from and against all claims, damages, losses, expenses, causes of action, suits, liabilities or judgments, including but not limited to attorney's fees and the cost of suits arising out of or resulting from personal injury, death, destruction of real or tangible personal property or otherwise, that is caused in whole or in part by any act, omission to act, or negligence of the utility or the permittee, its agents, contractors, or subcontractors arising out of the performance of work in connection with the County's *Policy and Specification for Utility Installation and Maintenance* manual. The utility company shall provide written proof of its officer's authority to obligate the utility company as set forth herein. This statement shall be dated and shall be submitted annually by the utility company.

A.2. **Proof of insurance.** The permittee shall obtain and maintain at all times, even beyond the expiration and acceptance of the permit, commercial insurance protecting the permittee. Each such policy shall provide coverage in an amount not less than two million dollars ($2,000,000) per occurrence general liability insurance and commercial automotive liability insurance (combined single limit), including bodily injury and property damage, and not less than two million dollars ($2,000,000) aggregate for each personal injury liability, products/completed operations, and each accident. Such insurance shall name the County, its officials, boards, commissions, officers, employees, agents, and contractors as additional named insured with respect to liability arising out of the permittee's performance of work in the public right-of-way, or suitable additional insured endorsement acceptable to the County. Claims-made policies are not acceptable. Such insurance shall not be canceled or materially altered to reduce coverage until the County has received at least thirty (30) calendar days' advance written notice of such cancellation directly from the insurance carrier and an opportunity to cure any payment deficiency within said thirty- (30-)

calendar-day period. All insurance policies must be issued by companies duly qualified to do business in Maryland, and all such policies shall be in a form acceptable to the Department and the County Attorney. The Department may waive this provision on a case-by-case basis if, in its sole discretion, such waiver is deemed appropriate under the circumstances.

A.3. **Bonds.** A performance bond and a payment bond shall be submitted in accordance with Section 23-116 of the County Road Ordinance. The required bonds shall be issued by a surety duly qualified to do business in Maryland and listed as approved on the latest version of the U.S. Department of Treasury Circular 570, to guarantee that the work covered by the permit will be completed in accordance with the Department's *Specifications and Standards for Roadways and Bridges*, which includes this Utility Policy and Specification, and the approved construction plans. At the Department's discretion, alternative forms of security including, but not limited to, letters of credit and other written guarantees may be accepted in lieu of a surety bond. The Department may waive this provision on a case-by-case basis if, in its sole discretion, such waiver is deemed appropriate under the circumstances.

A.4. **Traffic Control Plan.** In accordance with Section 4.2 of this Utility Policy and Specification, a site-specific traffic control plan (TCP) shall be submitted with the permit application for utility work performed on any arterial or collector roadway, industrial/commercial roadway, transit route, or any other roadway where the ADT volume equals or exceeds six thousand (6,000) vehicles per day. Attachment 1 of this Utility Policy and Specification includes a list of County arterial and collector roadways. All utility companies must reference the Prince George's County Traffic Count Book to identify roadways with ADT equal to or exceeding six thousand (6,000) vehicles per day. The Department will review the TCP and return it along with any comments, requirements, and/or conditions that shall be met or satisfied by the permittee.

A.5. **Road Closures.** Regardless of the ADT, if a complete road closure is necessary to work on a utility facility, the permittee shall submit with its permit application, in addition to a TCP, a written request to the Department detailing the reasons why closure is necessary in accordance with Section 23-162 of the County Road Ordinance. The request shall include (a) the limits and description of the work requiring the closure; (b) justification that the work cannot be performed without a temporary road closure; (c) the duration (in calendar days) of the proposed closure and the daily time period during which the road will be closed; and (d) the name, office address, electronic mail address, and telephone numbers of the primary point of contact, and the same information for the point of contact in case of an emergency.

For complete road closures, in addition to the requirements of Section 4.2. of this Utility Policy and Specification, the TCP shall also depict all traffic detours required for the closure. The Department will review the request and TCP to determine the adequacy of the TCP and whether or not permission for the road closure will be allowed. If the Department agrees to the road closure, approval will be granted subject to the conditions, restrictions, or other requirements that the Department may impose, which must be accepted in writing by the permittee prior to starting any work. If a road closure is required, the permittee shall reimburse the Department for all administrative costs associated with the closure, in addition to the permit fees described in Section 3.3.1. of this Utility Policy and Specification.

A.6. **Schematic Plans.** Except for aerial installations utilizing existing pole lines, the permittee shall submit to the Department with its permit application a digital set of its proposed construction plan, in a format readable by the Department, for all work within the public right-of-way, including without limitation new manholes and appurtenances, conduit and piping, service connections, street lights, and new or relocated utility poles.

The construction plans shall be dimensioned drawings that include at a minimum the following (within the proposed limits of work):

a) Existing topographic details
   1. Paving: roadway, curb and gutter, driveways, and sidewalks.
   2. Storm-drain system: inlets, manholes, pipes, channels, and outfalls.
   3. Other utility company facilities: poles, fire hydrants, conduit, and pipes, etc.
   4. Trees and shrubs.
   5. Vicinity map showing all the roads within the limits of the proposed permit work and within a half-mile (0.5 mile) radius of the planned work.
   6. Traffic control systems, including but not limited to loop detectors, junction boxes, signal poles, vehicle detection cameras, and controllers.

b) Existing public rights-of-way and easements (including Public Utility Easements)

c) Proposed utility facility construction
   1. Manholes, conduit, pipelines, etc. (including elevations).
   2. Utility poles, including streetlights.
   3. Relocated utility poles.
   4. The limits of the area to be disturbed.

5. Roadway restoration details.
6. Any anticipated location conflicts with existing or relocated utility facilities (shown and noted).
7. Erosion and sediment controls.

d) On the submitted plans, dimensions shall be provided showing references to (i) public right-of-way/property line; (ii) edge of pavement or face of curb and gutter; (iii) storm-drain structures, including the pipeline.

For aerial installations utilizing existing pole lines, the permittee need not submit the information set forth in subsections a–d, above. It is sufficient for the permittee to submit engineering plan view and schematic diagrams of the proposed work.

It is the permittee's responsibility to locate, identify, and resolve all potential conflicts with all existing public infrastructure within the right-of-way (including without limitation, utility facilities of the affected utility company or other utility companies' infrastructure) prior to the submission of its construction plans. Approval of the permittee's application by the Department shall in no way or manner relieve the permittee of the obligation to locate, identify, and resolve all potential conflicts with existing public right-of-way, nor shall any such approval be deemed (a) an acknowledgment or acceptance that a permittee has, in fact, complied with all obligations in this regard or (b) a waiver or release by the Department of any rights relating to a permittee's failure to comply fully with all obligations in this regard.

Installation of the permittee's utility facility work shall be based on the Department's approved grade establishment and cross section shown on the construction plans. In the event the Department finds that the original plans and/or approval conditions are inadequate or otherwise inappropriate for the proposed construction, the Director may require revised plans and/or may condition approval upon specific requirements. Any such plan revisions and conditions shall thereafter be prepared and/or performed by the permittee and resubmitted to the Department, and they shall thereafter become a part and condition of the permit.

In the event that the drawings or details submitted on the plans are substandard, approval of the permit application and plans shall not relieve the permittee of the requirement to meet or exceed the minimum requirements of this Utility Policy and Specification and the Department's Specifications and Standards for Roadways and Bridges.

A.7. Construction Schedule. A construction schedule in a form acceptable to the

Department, in its sole discretion is required.

A.8. **Water and Sewer.** Any permittee, other than WSSC itself, seeking to perform water- and sewer-related utility facility work under a Special Utility Permit shall submit written proof to the Department that WSSC has duly authorized the applicant to perform such work.

A.9. **Fees.** The administrative and inspection fee as described in Section 3.3.1. of this Utility Policy and Specification, and as calculated using the Utility Permit Fee Calculation Sheet provided in application, as well as the moratorium fee as described in Section 4.7.1., if applicable.

B. The Department shall return the application to the permittee with one of the following determinations: approved, approved with special conditions, denied, or denied accompanied with comments for revision.

C. As-built drawings of the location of the utility facilities within the right-of-way shall be submitted by the permitted utility company to the Department within ninety (90) calendar days of the completion of construction. The prints shall be neatly and clearly marked to show the work actually performed and all variations from the approved plans. The drawings shall also include supplementary notes, legends, and details to fully explain the work. As-built drawings shall be submitted in a format deemed acceptable by the Department.

D. The permittee shall notify the Department's Office of Engineering, at (301) 883-5730, when the installation authorized by the permit has been completed so that an inspection can be made by the Department's representative to ensure that the provisions of the permit have been met and that all areas within the public right-of-way have been adequately restored.

3.2.2. Maintenance Utility Permit.

A. The permittee shall submit electronically to the Department's Office of Engineering a completed copy of the application for a Maintenance Utility Permit which authorizes construction within the public right-of-way using the permit form available from the Department's website (for specifics on said website see the Preface from DPW&T's *Specifications and Standards for Roadways and Bridges)*. The permit application shall be accompanied by the following.

A.1. **Indemnification.** The permittee shall submit a signed letter of responsibility, as shown in Attachment 5, issued by a duly authorized officer of the utility company and indicating that the utility company and the permittee shall indemnify, defend, and hold harmless Prince George's County, Maryland, its

agents, officials, and employees from and against all claims, damages, losses, expenses, causes of action, suits, liabilities, or judgments, including but not limited to attorney's fees and the cost of suits arising out of or resulting from personal injury, death, destruction of real or tangible personal property, or otherwise that is caused in whole or in part by any act, omission to act, or negligence of the utility or the permittee, its agents, contractors, or subcontractors arising out of the performance of work in connection with the County' *Policy and Specification for Utility Installation and Maintenance* manual. The utility company shall provide written proof of its officer's authority to obligate the utility company as set forth herein. This statement shall be dated and shall be submitted annually by the utility company.

A.2. **Proof of insurance.** The permittee shall obtain and maintain at all times, even beyond the expiration and acceptance of the permit, commercial general liability insurance and commercial automotive liability insurance protecting the permittee. Each such policy shall provide coverage in an amount of not less than two million dollars ($2,000,000) per occurrence (combined single limit), including bodily injury and property damage, and not less than two million dollars ($2,000,000) aggregate, for each personal injury liability, products/completed operations, and each accident. Such insurance shall name the County, its officials, boards, commissions, officers, employees, agents, and contractors as additional named insured with respect to liability arising out of the permittee's performance of work in the public right-of-way, or suitable additional insured endorsement acceptable to the County. Claims-made policies are not acceptable. Such insurance shall not be canceled or materially altered to reduce coverage until the County has received at least thirty (30) calendar days' advance written notice of such cancellation directly from the insurance carrier and an opportunity to cure any payment deficiency within said thirty- (30-) calendar-day period. All insurance policies must be issued by companies duly qualified to do business in Maryland, and all such policies shall be in a form acceptable to the Department and the County Attorney. The Department may waive this provision on a case-by-case basis if, in its sole discretion, such waiver is deemed appropriate under the circumstances.

A.3. **Bonds.** A performance bond and a payment bond in accordance with Section 23-116 of the County Road Ordinance. The required bonds shall be issued by a surety duly qualified to do business in Maryland and listed as approved on the then current version of the U.S. Department of Treasury Circular 570 to guarantee that the work covered by the permit will be completed in accordance with the Department's *Specifications and Standards for Roadways and Bridges*, which includes this Utility Policy and Specification, and the approved construction plans. At the Department's discretion, alternative forms of security including, but not limited to, letters

of credit and other written guarantees, may be accepted in lieu of a surety bond. The Department may waive this provision on a case-by-case basis if, in its sole discretion, such waiver is deemed appropriate under the circumstances.

A.4. **Traffic Control Plan.** In accordance with Section 4.2. of this Utility Policy and Specification, except for emergencies and other unanticipated work, if maintenance and repair activities require utility facility work to be performed on any arterial or collector roadway, industrial/commercial roadway, transit route, or any other roadway where the ADT volume equals or exceeds six thousand (6,000) vehicles per day, a site-specific TCP shall be submitted to the Department prior to the start of work. Attachment 1 to this Utility Policy and Specification is a list of arterial and collector roadways. All utility companies must reference the Prince George's County Traffic Count Book to identify roadways with ADT equal to or exceeding six thousand (6,000) vehicles per day. The Department will review the TCP and return it along with any comments, requirements, and conditions that shall be met or satisfied by the permittee.

A.5. **Road Closures.** Regardless of ADT, except for emergencies and other unanticipated work, if a road closure is necessary to work on a utility facility, the permittee shall submit, in addition to a TCP and at least thirty (30) calendar days prior to the anticipated start of work, a written request to the Department detailing the reasons why closure is necessary in accordance with Section 23–162 of the County Road Ordinance. The request shall include (a) the limits and description of the work requiring the closure; (b) justification that the work cannot be performed without a temporary roadway closure; (c) the duration (in calendar days) of the proposed closure and the daily time period in which the road will be closed; and (d) the name, office address, electronic mail address, and telephone numbers of the primary point of contact and the same information for the point of contact in the event of an emergency. In the event that the anticipated start date or the anticipated completion date changes, the utility company shall promptly notify the Department of the change.

A.6. For complete road closures, in addition to the requirements of Section 4.2. of this Utility Policy and Specification, the TCP shall also depict all traffic detours required for the closure. The Department will review the request and TCP to determine the adequacy of the TCP and whether or not permission for the road closure will be allowed. If the Department agrees to the road closure, approval will be granted subject to the conditions, restrictions, or other requirements that the Department may impose, which must be accepted in writing by the permittee prior to starting any work. If a road closure is required, the permittee shall reimburse the Department for all administrative costs associated with the closure in addition to the permit

fees described in Section 3.3.2. of this Utility Policy and Specification.

A.7. **Fees.** The application and processing fee described in Section 3.3.2.(A) of this Utility Policy and Specification, and as calculated using the Utility Permit Fee Calculation Sheet provided in the permit application.

B. The Department shall return the application to the permittee with one of the following determinations: approved, approved with special conditions, denied, or denied accompanied with comments for revision.

C. Upon issuance of the permit, the following activities are required by the utility company:

C.1. **Schedules.** On or before the fifteenth (15th) day of each month, the permittee shall submit to the DPW&T Office of Engineering a schedule identifying all proposed scheduled maintenance work that is expected to be performed during the coming month. For deviations to the submitted schedule, the permittee shall notify the Department's Office of Engineering of the change in work at least two (2) full business days prior to the start of work as initially proposed.

For emergency or other unanticipated work that cannot be identified on the schedule and that involves excavation of any portion of the public right-of-way, the permittee shall notify the Department's Office of Engineering of the utility work by the end of the first (1st) business day after the unanticipated work commences.

C.2. **Monthly Activity Reports.** On or before the fifteenth (15th) day of each month, the permittee shall submit to the Department's Office of Engineering a complete listing of all cuts made during the prior month under the Maintenance Utility Permit. The cuts shall be reported in a form acceptable to the Department. Such reports may be made daily or monthly, at the permittee's discretion. Each utility patch shall be listed with a unique designation number assigned by the permittee for future reference.The listing shall separately identify cuts made in the pavement (asphalt) and cuts made outside of the pavement (asphalt).

a. The listing of cuts made in the pavement (asphalt) shall include the date and location of each pavement cut, the date of the permanent utility patch, the date of any subsequent repair at that location, if any, and the size of the utility patch in square feet.

b. The listing of cuts made outside the pavement (asphalt) shall include the date and location of each cut, the date of repair at that location, and the size of the cut in square feet.

On or before the fifteenth (15th) day of each month, the permittee shall also submit to the Department's Office of Engineering a complete listing of all maintenance work performed on overhead facilities under the Maintenance Utility Permit during the previous month. Such reports may be made daily or monthly, at the permittee's discretion. The listing shall identify the type of work, the date on which it was performed, and the location at which it was performed in a form acceptable to the Department.

C.3. Fees for Maintenance Activities. On a quarterly basis, the Department shall determine what work identified pursuant to subsection (i), above, was performed within the public right-of-way, and shall calculate the fee owed by each utility in accordance with Section 3.3.2.(B).

The Department shall provide written notice to the permittee of the applicable fee. If the permittee does not challenge the amount of the fee in writing within fifteen (15) days after such notice, the Department shall deduct the applicable fee from a draw-down account maintained by the permittee with the Department. The balance of the draw-down account shall be replenished by the utility company as necessary to maintain a sufficient balance each quarter. In the event of a dispute between the permittee and the Department as to the amount of the fee, the Department shall deduct any undisputed amount from the draw-down account, but shall not deduct any disputed amount until outstanding issues are resolved.

3.3. UTILITY PERMIT FEES

This section describes the permit fees that are required for all Special and Maintenance Utility Permits in Prince George's County. With the xception oWSSC, the utility company that obtains the permit shall pay the fees described herein. In accordance with Article 29 of the Annotated Code of Maryland, WSSC shall be exempt from paying the permit fees. However, any entity duly authorized by WSSC to apply for and perform work under a Special Utility Permit shall be required to pay the fees described herein. All permit fees are non-refundable.

3.3.1. Special Utility Permit.

A. The permit fee for issuance of a Special Utility Permit shall include both the administrative and inspection fee set forth below and the moratorium fee described in Section 4.7.1., if applicable. These fees are imposed to provide the County with a means of recovering the administrative and inspection costs it will incur in connection with work performed under Special Permits.

A.1. Administrative Fee: The administrative shall be a flat fee of three hundred dollars ($300.00).

A.2. A.2 Inspection Fee: The inspection fee shall be calculated based upon a

cost of two dollars (**$2.00**) per linear foot of utility facility installation under the roadway pavement, plus fifty cents (**$0.50**) per linear foot of underground utility facility installation outside of the roadway, plus twenty cents (**$0.20**) per linear foot for aerial utility facility installations within the right-of-way. Joint trenches are encouraged and shall be treated as one utility facility installation. Multiple pipes, conduits, cables, etc. within the same trench shall be measured as one utility facility installation for fee purposes.

B. For an extension of an existing Special Utility Permit, the fee shall be one hundred dollars (**$100.00**) for additional administrative expenses.

C. The Department shall deduct all applicable fees from a draw-down account maintained by the permittee with the Department.

3.3.2. Maintenance Utility Permit.

The fees for issuance or renewal of a Maintenance Utility Permit shall include both the application and processing fee and the administrative and inspection fee as follows:

A. Application and Processing Fee: five thousand dollars (**$5,000.00**).

B. Administrative and Inspection Fee: The administrative and inspection fee shall be based on the amount of work performed by a utility company within the public right-of-way. This fee is imposed to provide the County with a means of recovering the administrative and inspection costs it will incur in connection with work performed under the utility company's Maintenance Utility Permit. The Department requires the utility company to submit prior to the fifteenth (15^{th}) day of each month a schedule identifying all proposed scheduled maintenance that is expected to be performed during the course of the coming month pursuant to Section 3.2.2.B. In addition to the schedule, a complete listing showing all pavement cuts and repairs made during the previous month shall be reported in a form acceptable to the Department pursuant to the requirements described in Section 3.2.2.B. On an annual basis, the Department shall determine what work was performed and calculate the fee owed by the utility company pursuant to Section 3.2.2.

The total administrative and inspection fee shall be the sum of the following:

B.1. Category I: Cuts within the paved (asphalt) portion of the public right-of-way
   a) Cuts of one hundred (100) square feet or smaller: one hundred twenty-five dollars (**$125**) per cut
   b) Cuts larger than on hundred (100) square feet: three hundred dollars (**$300**) per cut

B.2. Category II: Cuts outside the paved (asphalt) portion of the public right-of-

way

a) Cuts of one hundred (100) square feet or smaller: fifty dollars ($50) per cut
b) Cuts larger than one hundred (100) square feet: one hundred dollars ($100) per cut

B.3. All work performed on aboveground infrastructure shall be paid in accordance with Section 3.4.2(B): seventeen dollars and fifty cents ($17.50) per aerial job

C. The Department shall deduct all applicable fees from a draw-down account maintained by the permittee with the Department.

3.4. PAYMENTS

3.4.1. Special Utility Permit.

A. Utility companies or other permittees applying for a Special Utility Permit shall submit the administrative and inspection fee at the time of application. If the permit requires the cutting of the roadway pavement within the five- (5) year moratorium period, the moratorium fee described in Section 4.7.1. shall also be due prior to issuance of the permit.

B. Fees may be paid by cash or check or by other methods that may be approved by the Director from time to time. Checks shall be made payable to Prince George's County and shall reference the applicable Special Utility Permit number.

C. The County reserves the right to verify the administrative and inspection fee and the moratorium fee as calculated by the utility company on the Utility Permit Fee Calculation Sheet and to require the utility company to cure any underpayment of such fees prior to the issuance of the permit. At the sole discretion of the Department's Office of Engineering, any overpayment shall be reimbursed by the County or credited to the next permit fee.

3.4.2. Maintenance Utility Permit.

A. Utility companies applying for a Maintenance Utility Permit or for renewal of an existing Maintenance Utility Permit shall submit the application and processing fee at the time of application.

B. Fees may be paid by cash or check or other methods that may be approved by the Director from time to time. Checks shall be made payable to Prince George's County and shall reference the applicable Maintenance Utility Permit number.

C. The administrative and inspection fee for work performed under a Maintenance

Utility Permit during a given month shall be deducted quarterly from a draw-down account maintained by the permittee with the Department, in accordance with Section 3.2.2. of this Utility Policy and Specification.

CHAPTER 4: TECHNICAL SPECIFICATIONS FOR UTILITY FACILITY INSTALLATION AND MAINTENANCE

4.1. GENERAL

4.1.1 This Utility Policy and Specification applies to all installation, maintenance, repair, and other improvements or activities relating to utility facilities within public rights-of-way or easements under the jurisdiction of Prince George's County, Maryland. Such work shall conform to the Department's *Specifications and Standards for Roadways and Bridges*, which includes this Utility Policy and Specification; the MSHA *Standard Specifications for Construction and Materials*, latest editions; and any special conditions or requirements set forth in the Maintenance Utility Permit. The permittee shall submit a letter of certification (Attachment 4) with the submission of each Maintenance Utility Permit.

4.1.2 For the design of utility facilities on Scenic and Historic Roadways, the permittee shall adhere to and comply with the *Guidelines for the Designing of Scenic and Historic Roadways in Prince George's County, Maryland*, latest edition. The proposed utility installations shall be designed in such a way that construction would have minimal or no impact upon the scenic and/or historic characteristics of the roadway.

4.1.3 By authority of the Occupational Safety and Health Act, it is unlawful to require any laborer or mechanic employed in the performance of the job to work in surroundings or under working conditions that are unsanitary, hazardous, or dangerous to the worker's health or safety. The Department recommends that the permittee, its agents, and contractors become completely familiar with the *Safety and Health Standards for the Construction Industry*, latest edition. Special attention should be focused on Subpart P, which covers excavations, trenching, and shoring.

4.1.4 The permittee, its agents, and contractors shall protect the following from damage: utility conduits, sewer conduits, water conduits, lawns, shrubbery, trees, fences, structures, and other property or infrastructure of any sort encountered in its work. The permittee shall not trespass upon private property. It is the responsibility of the permittee to determine the boundary between public right-of-way and private property.

4.1.5 For work for which a Special Utility Permit is required, the permittee shall contact occupants of all adjoining properties and inform them of the scope and the duration of the work at least two (2) full business days prior to the start of any work covered by the permit.

4.1.6 It shall be the responsibility of the permittee, except WSSC, to utilize the Public Utility Easement (PUE), where authorized. Policing of obstructions within these

easements is the responsibility of the permittee. With the exception of water and sewer, all underground utilities, as permitted by law, need to be placed within the PUE, where it exists. Site-specific cases will be evaluated when new utilities are proposed within established neighborhoods. A permittee may, at its discretion, utilize a private easement as an alternative to using the PUE.

4.1.7 For Special Utility Permits, the permittee shall have in its possession on site and make available to a Department inspector, upon request, a copy of the subject permit and detailed plans showing the location of all existing utility facilities within the area of the cut.

4.1.8 For Special Utility Permits, the permittee shall provide signage at the job site that identifies the name of the utility company, the permit number, and the name and telephone numbers of the point of contact with the utility company who may be contacted twenty-four (24) hours a day to resolve problems that develop as a consequence of performing the permit work. Such signage shall be in accordance with Subsection 23-129 (k) of the County Road Ordinance.

4.1.9 For all utility-related activity performed within the public right-of-way, the permittee shall provide the name and telephone numbers of the point of contact with the utility company who may be contacted twenty-four (24) hours a day to resolve problems that develop as a consequence of performing utility-related work.

4.1.10 Except for emergencies and other unanticipated work, the Department's Office of Engineering shall be notified at least two (2) full business days prior to the start of any work to be performed on utility facilities located on arterial or collector roadways, industrial/commercial roadways, transit routes, or any other roadways where the ADT in the public right-of-way exceeds six thousand (6,000) vehicles per day. Attachment 1 to this Utility Policy and Specification is a list of arterial and collector roadways. All utility companies must reference the Prince George's County Traffic Count Book to identify roadways with ADT equal to or exceeding six thousand (6,000) vehicles per day. The permittee shall call the Department's Office of Engineering at (301) 883-5730 to provide notification of the date, time, location, permit number, and nature of the work to be performed. In the event of an emergency, the permittee shall commence work and immediately thereafter, but in no case later than the end of the next business day, inform the Department's Office of Engineering in writing of the location and nature of the work performed.

4.2. TRAFFIC CONTROL

4.2.1 The permittee, its agents, and its contractors shall at all times maintain traffic and insure the safety of the traveling public. The permittee shall provide, install, and maintain traffic control devices as prescribed by the approved TCP or, when no TCP is required, in accordance with the *Manual on Uniform Traffic Control Devices*, latest edition, and as directed by the Department.

4.2.2 Except for emergencies and other unanticipated work, no work shall be performed on any utility facility located on any roadway classified as an arterial or collector roadway, industrial/commercial roadway, transit route, or any other roadway with an ADT equal to or exceeding six thousand (6,000) vehicles per day unless a site-specific TCP has been submitted by the permittee and approved by the Department. Attachment 1 to this Utility Policy and Specification is a list of arterial and collector roadways. All utility companies must reference the Prince George's County Traffic Count Book to identify roadways with ADT equal to or exceeding six thousand (6,000) vehicles per day.

The TCP shall correctly depict the following at a minimum: the names of the affected roadways; the correct number of lanes, including turn and parking lanes; medians; traffic islands; posted speed limits; all intersecting streets; and sidewalks within the permitted limits of work. The TCP shall identify the proposed work zone and staging areas. The TCP shall identify and provide specific locations for all traffic control devices including, but not limited to, signs; barricades; channelizing devices; pavement markings; lights; arrow panels; variable message devices; and flagging personnel. The TCP shall conform to the *Manual on Uniform Traffic Control Devices* and the MSHA *Traffic Control Manual,* latest editions. All traffic control devices shall be installed and maintained in good condition and working order.

4.2.3 The Department reserves the right to inspect all work locations at any time for proper installation of traffic control devices. The Department has the authority to modify the TCP at its sole discretion where it determines that modifications are needed for public safety. The Department also has the authority to require the permittee to stop work, restore the right-of-way to a safe condition for the traveling public, and vacate the public right-of-way if, in its sole discretion, proper traffic control is not being provided by the permittee.

4.2.4 Flashing arrow panels shall be used in advance of any lane closure on multi-lane roadways.

4.2.5 Where two-way roadways are restricted by the permit work to one lane width, the permittee shall provide flaggers to control the traffic in alternating directions. Flaggers shall use STOP/SLOW paddles to direct traffic. If the lane closure exceeds two hundred (200) feet, or if the flaggers cannot see each other, or for any other

reason as determined by the Department, radio communication between the flaggers is required. At no time shall the width of the travel way of any roadway be restricted to less than eleven (11) feet.

4.2.6 The permittee shall properly illuminate, mark, and barricade excavations and any other hazards at all times.

4.2.7 During nighttime operations, reflectorized traffic drums shall normally be used. However, for emergency work activities where traffic drums are not readily available, orange reflectorized traffic cones are required. Reflectorized cones that are twenty-eight (28) inches to thirty-six (36) inches in height shall be provided, with a four- (4) inch orange top and at least two (2) six- (6) inch reflective bands within the top twenty (20) inches of the cone. All work areas left unattended at night shall be delineated with reflectorized traffic drums in good condition.

4.2.8 Unless otherwise expressly approved by the Department, or in the case of emergencies, no work within the traveled portion of the roadway shall take place between the hours of 7:00 a.m. to 9:00 a.m. or 3:30 p.m. to 6:30 p.m., Monday through Friday. At the discretion of the Department, work hours may be adjusted as permitted or required by traffic conditions.

4.2.9 Access to all driveways shall be maintained at all times, unless written permission for closure is granted by the property owner/manager. However, accessibility for emergency vehicles shall be maintained at all times.

4.2.10 Pedestrian traffic shall be maintained at all times throughout the project. For the safety of pedestrian traffic, sidewalks shall be kept clear of obstructions and debris. If a sidewalk closure is required to perform the permit work, the permittee shall implement a plan to safely reroute pedestrian traffic. Such a plan shall be subject to the approval of the Department inspector.

4.2.11 The permittee shall keep the subject roadway as well as adjacent and adjoining roadways clean of dirt and debris at all times during the construction period. No materials or equipment shall be stored on the roadway surface or sidewalk during non-work periods. All stored materials and equipment shall be set back at least six (6) feet behind the back of curb or edge of shoulder.

4.2.12 In areas where a drop-off in the level of the pavement is two (2) inches or less, traffic may be allowed to freely cross under the following conditions:

A. Where longitudinal paving joints of two (2) inches or less are exposed to traffic, warning signs shall be posted indicating UNEVEN PAVEMENT. These signs (W8-11 modified) shall be in good condition and shall be placed in advance of the uneven joint in accordance with the *Manual on Uniform Traffic Control*

Devices (MUTCD) manual.

B. Where lateral paving joints of two (2) inches or less are exposed to traffic, a BUMP sign in good condition shall be posted in advance of the joint in accordance with the MUTCD manual.

C. Where milled pavement is left exposed to traffic, a ROUGH ROAD or GROOVED PAVEMENT sign (W8-8a) in good condition shall be placed in advance of the milled area in accordance with the MUTCD manual.

D. These warning signs shall be thirty-six (36) inches by thirty-six (36) inches where prevailing speeds are less than forty (40) MPH and forty-eight (48) inches by forty-eight (48) inches where speeds are forty (40) MPH or greater.

E. Where the drop-off in the level of the pavement is greater than two (2) inches, refer to the MSHA *Traffic Control Manual.*

4.2.13 All warning signs not applicable to actual site conditions shall either be removed or covered during periods when the signs do not apply.

4.2.14 With the exception of STOP and YIELD signs, existing traffic signs that interfere with the permittee's performance of work may be removed temporarily. All signs removed by the permittee shall be stored, protected, and reinstalled in their proper location and mounting height prior to the completion of the work. STOP and YIELD signs shall not be removed, altered, or relocated absent specific, advance, written approval of the Department. All costs and expenses for any existing sign, marker, or device lost, defaced, damaged, or destroyed by the work shall be the permittee's sole responsibility, and the permittee shall immediately reimburse Prince George's County for such costs and expenses upon receipt of a bill or invoice from the County.

4.3. ENVIRONMENTAL CONSIDERATIONS

4.3.1 The permittee shall comply with all applicable Federal, State, and local environmental laws, rules, regulations, and ordinances, and all rules and regulations of the Prince George's County Department of Environmental Resources. The permittee shall also obtain and comply with all required permits relating to any of the foregoing.

4.3.2 Erosion and sediment control measures shall be in accordance with the *Maryland Standards and Specifications for Soil Erosion and Sediment Control*, latest edition. All sediment and erosion control measures shall be installed and in working order prior to the start of any excavation or clearing activities.

4.3.3 All erosion and sediment control devices shall be inspected and maintained by the permittee on a weekly basis and after each rain event.

4.3.4 All installation, maintenance, and monitoring of erosion and sediment control

devices shall be performed under the supervision of an agent or employee, employed by or on behalf of the permittee, who has satisfactorily completed an Erosion and Sediment Control Training Program authorized by the Maryland Department of the Environment.

4.3.5 The Department reserves the right to inspect all work locations at any time for proper installation and maintenance of erosion and sediment control devices. The Department has the authority to stop work whenever, in its sole discretion, proper erosion and sediment controls are not provided by the permittee.

4.3.6 All areas adjacent to occupied residences shall be sodded during the growing season. In all other areas, seed with mulch will be permitted with Departmental approval. It should be noted that sodding would result in a betterment when compared to existing adjacent ground cover. Seed may also be approved in those areas requiring sod during periods outside the growing season subject to the following conditions:

A. Seeded areas that have been determined by the Department inspector to have insufficient growth shall be immediately reseeded. All seeding is to be done in conformance with the Department's turf establishment regulations as specified in Section II of the Department's *Specifications and Standards for Roadways and Bridges* and in the MSHA *Standard Specifications for Construction and Materials,* subsection 920.04.02. At a minimum, mix No. 1 shall be utilized, and at least eighty (80) percent seed germination is required in all cases.

B. Sod shall be placed during the next growing season in those areas where the Department inspector determines that there has been insufficient growth.

4.4. LOCATION OF FACILITIES WITHIN THE RIGHT-OF-WAY

4.4.1 Utility facilities shall be located to minimize the need for later adjustments to accommodate future roadway improvements and to permit access for servicing such facilities with minimum interference to roadway traffic.

4.4.2 Longitudinal installations are to be located on uniform alignment as near as practical to the right-of-way line so as to provide a safe environment for traffic operation and to preserve space for future roadway improvements or other utility installations. Joint use trenching is strongly encouraged, especially in congested areas. Underground pipeline installations shall not be located within the pavement or between the edge of pavement and the ditch or toe of front slope, except where no other practical alternative exists and a special request for exception has been submitted to and approved by the Department.

4.4.3 Unless otherwise approved, utility line crossing of the roadway shall occur on a line generally normal to the highway alignment.

4.4.4 Installation of underground utility facilities in roadway drainage culverts is prohibited.

4.4.5 Above-ground utility facilities shall be deemed forms of roadside obstacles and, therefore, their location must be consistent with the clearances applicable to all roadside obstacles for the type of roadway involved. At a minimum, all overhead clearances shall be based on worst-case considerations of electrical conductor loading, physical conductor loading, and ambient conditions. The following overhead vertical clearances are herein defined as the shortest vertical distance of the utility facility over any location within the County's right-of-way:

A. At the crossing of any County roadway located within a public right-of-way or private roadway subject to County Code regulations, the Department requires the following minimum vertical clearance:

A.1. Primary and Secondary Roads: All overhead communication cables, guy wires, and secondary power wires less than seven hundred fifty (750) volts shall be installed at a minimum of eighteen (18) feet above the highest elevation of the finished (paved) roadway.

A.2. Arterial, Collector, and Commercial/Industrial Roads: All overhead communication cables, guy wires, and secondary power wires for voltages between twenty-two (22) kilovolts and four hundred seventy (470) kilovolts shall be installed at a minimum of twenty-one (21) feet above the highest elevation of the finished (paved) roadway.

B. For all longitudinal lines located within the County right-of-way, the Department requires the following minimum vertical clearance:

B.1. Primary and Secondary Roads: All overhead communication cables, guy wires, and secondary power wires less than seven hundred fifty (750) volts shall be installed at a minimum of eighteen (18) feet above the highest elevation of the finished roadway backslope, shoulder, or parkway strip area.

B.2. Arterial, Collector, and Com/Industrial Roads: All overhead communication cables, guy wires, and secondary power wires for voltages between (twenty-two) 22 kilovolts and four hundred seventy (470) kilovolts shall be installed at a minimum of twenty-one (21) feet above the highest elevation of the finished roadway backslope, shoulder, or parkway strip area.

C. The permittee shall consult the National Electrical Safety Code ANSI-C2 manual, latest edition, for any additional overhead clearance regulations for

utility facilities located within the County's right-of-way.

4.5. LOCATION OF FACILITIES OUTSIDE THE RIGHT-OF-WAY

4.5.1 When a utility company chooses to locate its facilities outside the right-of-way, the Department encourages utility companies to achieve maximum setback of its facilities.

4.5.2 A Special Permit will be required to cover clearing of trees in the public right-of-way. The permit drawings shall clearly show the width to be cleared in the public right-of-way.

4.6. PROJECT FIELD INSPECTION

4.6.1 After the Department's receipt of the permittee's construction plans related to a Special Utility Permit, an initial utility field inspection will be performed by the Department to review the project site with regard to the proposed work and to determine what utility facilities are within the public right-of-way and whether other utility companies require notification of the permittee's planned construction. The goals of the inspection are to minimize damage to utility facilities and to reduce or eliminate conflicts and coordination problems during construction. The following, at a minimum, shall be reviewed by the Department inspector:

A. Verification that the plans, submitted by the permittee, are accurate with regard to the location of the existing utility facilities, such as poles, sanitary sewers, fire hydrants, water meters, valve boxes, and drainage structures.

B. Verification of all utility facilities' major main lines located within the project limits, such as water, gas, sanitary sewer, and storm drainage.

C. Verification of the horizontal location of the existing underground utility facilities with respect to public rights-of-way lines and edges of pavements.

D. Verification of utility facilities that must be relocated.

E. Verification of the length and location of trench cuts and directional drilling. The Department inspector's verification shall in no way relieve the permittee from the responsibility to locate independently all utility facilities within the project limits and to perform in accordance with the approved permit, the Department's *Specifications and Standards for Roadways and Bridges*, which includes this Utility Policy and Specification; the Prince George's County Road Ordinance, and the MSHA *Standard Specifications for Construction and Materials*, latest editions.

4.6.2 The Department reserves the right to inspect all work locations at any time for

compliance with the Department's *Specifications and Standards for Roadways and Bridges*, which includes this Utility Policy and Specification, and the MSHA *Standard Specifications for Construction and Materials*, latest editions, as well as the approved permit application and plans, and all applicable County, State, and Federal laws, rules, regulations, and ordinances.

4.7. CONSTRUCTION AND WORK REQUIREMENTS

4.7.1 Utility companies shall not cut pavements of newly constructed, resurfaced, or reconstructed roadways for a period of five (5) years (the moratorium period) after any such work is completed. For purposes of this section, time is measured from the date the Department accepts a newly constructed roadway for perpetual maintenance or the date the Department's contractor completes the resurfacing of a County roadway, as applicable. During the above-referenced moratorium period, placement of utility facilities under the roadbed shall be accomplished by tunneling, jacking, boring, or by other means that will avoid disturbing the pavement, unless specifically authorized by the Department. By restricting pavement cuts during the moratorium period, the Department is attempting to maintain the structural integrity and service life of newly constructed or resurfaced roadways.

In the event that a utility company determines that cutting the paved surface of a roadway during the moratorium period is unavoidable, a Special Utility Permit is required for all work, including emergency repairs. The permit application shall set forth the reason(s) why cutting the pavement is required. In the event that emergency repairs require the cutting of a roadway within the moratorium period, the necessary work shall proceed and the utility company shall provide written notification to the Department's Office of Engineering within two (2) business days of commencing the work. The utility company shall also promptly thereafter apply for a Special Utility Permit.

In the event that the paved surface of a roadway is cut within the moratorium period, each such cut shall be subject to a moratorium fee of ten dollars ($10.00) per linear foot of roadway cut, measured longitudinally along the utility line, in addition to the Special Utility Permit fee. The moratorium fee shall not apply to utility facilities installed by trenchless technology, in which the roadway is not cut.

4.7.2 Any utility company cutting the pavement of any roadway during the moratorium period for any reason including, without limitation, emergencies and service connections, shall repair the utility cut in accordance with the Department's Standards 300.18 and 300.19. Such repair shall include resurfacing the pavement in the work area (see the pavement restoration formula below and in Attachment 3 in this Utility Policy and Specification manual). In addition, the utility company shall mill and overlay the affected pavement in accordance with the following

specifications:

A. For longitudinal pavement cuts at least fifty (50) feet in length on roadways up to and including fifty-two (52) feet in width, the mill and overlay shall extend across the full width of the roadway.
B. For longitudinal cuts at least fifty (50) feet in length on roadways greater than fifty-two (52) feet in width, the mill and overlay shall extend to the centerline.
C. For longitudinal pavement cuts, each utility company shall be responsible for milling and resurfacing the roadway for a distance of twenty-five (25) feet beyond each end of the cut.
D. For transverse cuts and short longitudinal pavement cuts (i.e., less than fifty [50] feet in length) the milling distance will be fifty (50) feet from each edge of the cut for the entire width of the roadway .
E. For diagonal cuts, the utility company shall follow the same requirements as those for longitudinal cuts.

4.7.3 For roadways not constructed or resurfaced within the moratorium period, any pavement cut shall be repaired in accordance with the Department's Standards 300.18 and 300.19. In addition, the utility company shall mill and overlay the affected pavement in accordance with the following specifications (see Attachments):

A. For longitudinal pavement cuts at least fifty (50) feet in length, the width of the cut lane shall be milled and resurfaced to a distance of ten (10) feet beyond each end of the cut.
B. For transverse cuts and short longitudinal pavement cuts (i.e., less than fifty [50] feet in length) the entire width of the roadway shall be milled and resurfaced.
C. Transverse cuts shall be milled and resurfaced to a distance of twelve and a half (12.5) feet beyond each edge of their cut.
D. For diagonal cuts, the utility company shall follow the same requirements as those for longitudinal cuts.

4.7.4 For any pavement cut, whether during the moratorium period or not, the following pavement rehabilitation considerations apply:

A. When the pavement cut is within a roadway intersection (i.e. up to the outside fillet points that define the roadway intersection), the mill and overlay requirements, as a minimum, apply to the full surface area of said intersection.

B. When the pavement cut is within a cul-de-sac bulb, (i.e. up to the outside fillet points where the cul-de-sac bulb meets the regular section roadway), the mill and overlay requirements, as a minimum, apply to the full surface area of said cul-de-sac bulb.

C. When the pavement cut is, through a speed hump or speed table, the complete reconstruction of said speed hump or speed table is required.

D. When the pavement cut is within two hundred (200) feet of another cut (that has been cut in the last five [5] years), the mill and overlay limits of [both cuts] shall be connected.

E. Prior to performing the mill and overlay, the permittee shall obtain approval on mill and overlay limits from DPW&T inspector and, to promote more effective repairs on roadways, shall contact the DPW&T inspector in advance to coordinate base pavement repairs by DPW&T, where appropriate .

F. There should be no more than five (5) days between milling and overlay operations.

4.7.5 Utility facilities installed under the roadbed by trenchless technology, jacking, or boring shall be installed at a minimum of thirty-six (36) inches below the surface of the roadway pavement. Prior Departmental consent shall be required for any drilling with water/fluid injection beneath the roadway. All underground utility facilities installed within the County's right-of-way shall meet all applicable regulations, at a minimum, as provided in the National Electric Code (NEC) manual, latest edition, and meet all safety guidelines and regulations, at a minimum, as provided in the National Electrical Safety Code ANSI-C2 manual, latest edition. For all utility facility lines within the County right-of-way, the Department requires the following minimum covers:

A. Underground secondary utility facilities including cable television lines, telephone communication lines, and other similar utility facility lines containing no more than thirty (30) volts shall be buried with a minimum cover equal to not less than eighteen (18) inches measured to the top cable or conduit. All cable television and communication lines containing thirty (30) volts or more shall be connected to a grounding conductor and equipped with over-current safety protection devices as necessary when required by governing codes.

B. Underground direct buried cables and conductors for mainline utility facility circuits including fiber-optic communication lines, cable television lines, and other forms of communication lines with a minimum of fifty (50) volts and a maximum of six hundred (600) volts shall be buried with a minimum cover equal to but not less than twenty-four (24) inches measured from the surface to the top of the cable or conduit, unless otherwise specified by governing codes. Low voltage underground electric lines located within the County right-of-way require special approval from the Department and the local electric power company.

C. All direct buried electric utility facilities located within the County's right-of-

way shall be placed in approved conduits or placed within concrete duct banks with a minimum cover equal to but not less than thirty (36) inches measured from the surface to the top of the utility line.

4.7.6 For all permanent utility patches placed within the roadway pavement, the permittee shall place a marker in the asphalt surface of the utility patch in accordance with Standard 300.33. The marker shall bear the initials of the permittee performing said cut and be firmly secured in the surface course of the utility patch. Temporary utility patches shall be marked with the initials of the permittee using a paint stencil with four- (4-) inch-high letters in the appropriate "Miss Utility" color (see Form B-17).

4.7.7 Whenever the permittee is unable to place a permanent utility patch immediately upon completion of its work, a bituminous concrete temporary utility patch shall be placed in accordance with Standards 300.18 and 300.19. Proper temporary patching shall be made immediately upon the completion of backfilling. **Permanent utility patches shall be completed within sixty (60) calendar days, weather permitting, of the completion of the repair or new installation.** The permanent utility patch shall be in accordance with Standards 300.18 and 300.19.

At any location where the permittee fails to complete permanent repairs within the allotted time, the Department shall have the right to make the necessary permanent repairs to restore the roadway to a satisfactory condition. Before the Department undertakes to make such repairs, it shall provide the utility company with written notice of the failure and allow thirty (30) days for the company to cure the failure, except where, for safety reasons, a shorter period of time is required. All costs and expenses for any repair or restoration work performed by or on behalf of the Department shall be billed to and be the sole responsibility of the permittee, and payment shall be due within thirty (30) calendar days. Failure or refusal of the permittee to pay any such bill within the allotted time period may result in, among other things, the revocation of the permittee's permit and other appropriate relief.

4.7.8 In those situations where the Department determines that the amount of damage done to the pavement by the permittee requires that entire sections of road be resurfaced, the permittee shall be required to resurface the affected section of the roadway upon written notification by the Department. Where such notification has occurred, the resurfacing work shall become a requirement for continued operation under the permit.

4.7.9 All excavations in the roadway pavement shall be backfilled and capped with asphalt or steel-plated at the end of each workday, and all traffic lanes shall be re-opened. If steel plates are utilized, the sides of the plate shall be anchored into the existing pavement with pins spaced as necessary to ensure that the plate is secure. No corner of any steel plate shall overhang the excavated trench. All steel plates

shall be marked to clearly identify ownership. The plates shall be well ramped with asphalt at the edges of the plate. The permittee shall provide, install, and maintain STEEL PLATE AHEAD warning signs in advance of the plate in all directions in accordance with the MUTCD manual, latest edition, to warn motorists and snow plows. The permittee shall be responsible for all damage that occurs due to its failure to conform to this Utility Policy and Specification, including but not limited to damage to snow plows and other equipment operated by or for the Department or any other party or agency of Prince George's County.

During the period between November 15 of each year and March 15 of the following year, the installation of steel plates is strictly prohibited, the only exception being an emergency circumstance where there are no other mechanisms of securing the roadway. In these very limited circumstances, the permittee shall notify the Department's Dispatcher by phone, at (301) 324-2710 and the DPW&T Utility Section at (301) 883-5730, within the first four (4) hours of installation of said steel plates. When installed, steel plates shall be appropriately identified by the permittee for traffic and pedestrian safety. In addition, a minimum of four (4) two- (2-) foot tall wooden survey stakes (painted bright pink) placed behind the face of the curb or, in rural areas, placed beyond the road shoulder shall be required to denote the beginning and end of steel plates. A listing of steel plate locations (in a format approved by DPW&T) shall be provided, as necessary.

4.7.10 The permittee shall assume responsibility, upon cutting the existing paved or unpaved road surface under the County's jurisdiction, for settling or failure of its utility patches until the road is resurfaced or reconstructed. Additionally, and in accordance with Section 23-129 of the County Road Ordinance, the permittee shall be responsible for all future repairs to the utility-cut area that are the result of consolidation, subsidence, or inadequate compaction of the subgrade or any other type of failure. Upon notification by the Department that repair of a utility patch is required, the permittee shall make repairs within a time agreed to by the Department and the utility company. At any location where the permittee fails to complete repairs within the allotted time, the Department shall have the right to make the necessary repairs to restore the roadway to a satisfactory condition. All costs and expenses for any such work performed by or on behalf of the Department shall be billed to and be the sole responsibility of the permittee, and payment shall be due within thirty (30) calendar days. Failure or refusal of the permittee to pay any such bill within the allotted time period may result in the revocation of the permittee's permit and other appropriate relief.

4.7.11 The permittee shall promptly correct any unsatisfactory conditions resulting from failure to perform work in accordance with the DPW&T *Specifications and Standards for Roadways and Bridges*, which includes this Utility Policy and Specification, and the MSHA *Standard Specifications for Construction and Materials*, latest editions, as well as any special conditions or requirements set forth on the utility permit. For emergency situations and on arterial or collector

roadways, said corrective action shall be made by or on behalf of the permittee within twenty-four (24) hours of notification by the Department.

4.7.12 Failure to comply with the foregoing requirements may result in, among other things, immediate revocation of the permit. Any work for which a utility permit is required that is performed by the permittee after permit revocation and before reinstatement shall be deemed a violation of the County Road Ordinance and shall subject the permittee to the penalties contained therein. Upon abatement of all permit violations and submission of written certification of such abatement by the permittee to the Department, the Department may reinstate the permit.

ATTACHMENTS 1 THROUGH 5

ATTACHMENT 1

Prince George's County

Department of Public Works and Transportation

Arterial and Collector Roadways

January 2007

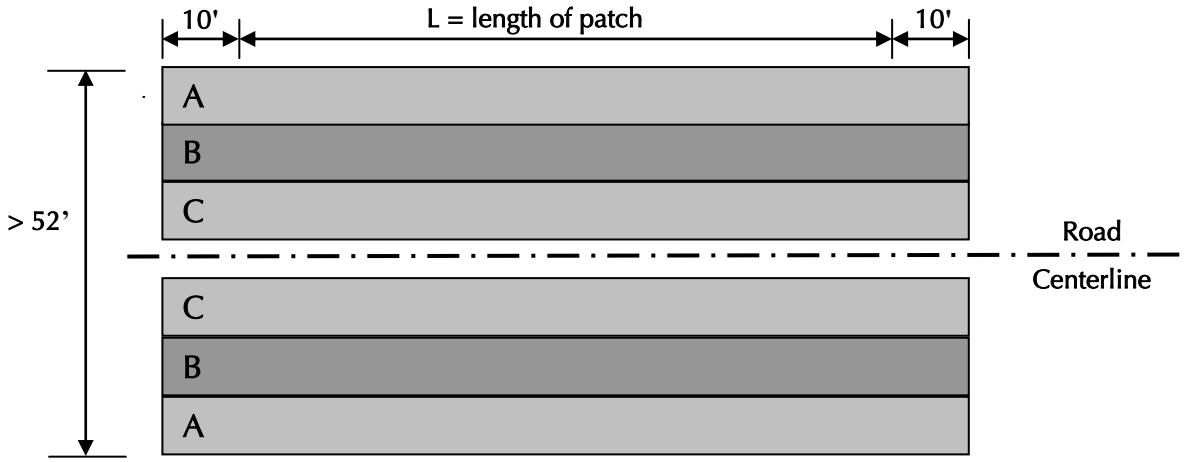
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Aragona Boulevard
Ardwick-Ardmore Road
Arena Drive
Ashbox Road
Auburn Avenue
Auth Place
Auth Road
Auth Way
Baden Naylor Road
Baden-Westwood Road
Bald Eagle School Road
Barlowe Road
Bealle Hill Road
Beaver Dam Road
Beech Road / Stamp Road
Belcrest Road
Bell Station Road
Belle Haven Drive
Belefonte Lane
Beltsville Drive
Berry Road
Bishop Peebles Drive
Bock Road
Bond Mill Road
Bowie Road
Brae Brook Road
Briggs Chaney Road
Brightseat Road
Brinkley Road
Brock Bridge Road
Brooke Lane
Brooklyn Bridge Road
Brooks Church Road
Brooks Drive
Brown Road
Brown Station Road
Bryan Point Road
Business Parkway
Cabin Branch Drive
Calverton Boulevard
Campus Drive
Campus Way North
Campus Way South
Candy Hill Road
Capital Gateway Drive
Carter Avenue
Cedarville Road
Charles L Armentrout Drive
Chelthenham Road
Cherry Hill Road
Cherry Lane
Cherry Tree Crossing Road
Chew Road
Chillum Road
Church Road
Cipriano Road
Columbia Park Road
Commerce Drive
Commo Road
Contee Road
Cool Spring Road
Cooper Lane
Corporate Drive
County Road
Coventry Way
Croom Airport Road
Croom Station Road
Cross Road Trail
Cypress Street
Daisy Lane
Dangerfield Road
Danville Road
D'Arcy Road
Dent Road
Doctor Bowen Road
Dodge Park Road
Donnell Drive
Dower House Road
Duckettown Road
Duley Station Road
Dyson Road
Eagle Harbor Road
Edgeworth Drive
Edmonston Road
Ellin Road / 85th Avenue
Farmington Road
FedEx Way
Finns Lane
Fisher Road
Fletchertown Road
Floral Park Road
Forbes Boulevard
Forestville Road
Fort Foote Road
Fort Washington Road
Frank Tippet Road
Furman Parkway
Gallahan Road
Garden City Drive
Gardner Road
Garrett A Morgan Boulevard
Gibbons Church Road
Glen Dale Road

Good Luck Road
Governor Bridge Road
Governor Oden Bowie Drive
Greencastle Road
Greenvale Parkway
Hagan Road
Hamilton Street
Hampton Park Boulevard
Harkins Road
Harry S. Truman Drive
Heathermore Boulevard
High Bridge Road / Chestnut Avenue
Hill Oaks Drive
Hill Road
Hillmeade Road
Horsehead Road
Hospital Drive
Iverson Place
Iverson Street
Jamestown Road
Jefferson Avenue
Jericho Park Road
John Rogers Boulevard
Karen Boulevard
Kettering Drive
Kirby Road
Lake Arbor Way
Largo Center Drive
Largo Drive West
Livingston Road / St. Barnabas Road
Lottsford Road
Lottsford Vista Road
Magruders Ferry Road
Malcolm Road
Manchester Drive
Marlboro Pike / South Osborne Road
Marshall Hall Road
Martin Road
Mattaponi Road
McCormick Drive
McKendree Road
Melwood Road
Mercy Lane
Metzerott Road
Milltown Landing Road
Missouri Avenue
Mitchellville Road
Molly Berry Road
Montgomery Road
Montpelier Road
Mount Calvert Road
Mount Oak Road
Mt. Lubentia Way
Muirkirk Meadows Drive
Muirkirk Road
Nelson Perrie Road
North Keys Road
Nottingham Road
Oak Grove Road / Leeland Road
Odell Road
Old Alexandria Ferry Road
Old Baltimore Pike
Old Branch Avenue / Brandywine Road
Old Chapel Road
Old Crain Highway
Old Fort Place
Old Fort Road North
Old Fort Road South
Old Gunpowder Road
Old Indian Head Road
Old Landover Road
Old Laurel Bowie Road
Old Marlboro Pike
Old Marshall Hall Road
Old Sandy Spring Road
Osborne Road
Owens Road
Oxon Hill Road
Paint Branch Parkway
Palmer Road
Pennsy Drive
Powder Mill Road
Presidential Parkway
Prince George's Boulevard
Princess Garden Parkway
Professional Place
Prospect Hill Road
Queen Anne Bridge Road
Queen Anne Road
Race Track Road
Ray Road
Redskins Road
Regency Parkway
Rhode Island Avenue
Ritchie Marlboro Road
Ritchie Road
Ritz Way
River Airport Road
River Road
Riverdale Road
Riverview Road
Rosaryville Road
Saint Thomas Church Road / Fenno Rd.
Sansbury Road
Sargent Road
Seat Pleasant Drive
Sellman Road
Sheriff Road
Short Cut Road
Springfield Road
Springfield Road S.
Steed Road
Suitland Road
Sunnyside Avenue
Surratts Road
Swan Creek Road
Swan Creek Road E.
Sweitzer Lane
Tanyard Road
Temple Hill Road
Thrift Road
Tippett Road
Toledo Terrace
Trade Zone Avenue
Trueman Point Road
Trumps Hill Road

Tucker Road
Van Brady Road
Van Dusen Road
Virginia Manor Road
Walker Mill Road
Wallace Lane
Walters Lane
Westphalia Road
Westwood Road
Wheeler Road
White House Road
Whitfield Chapel Road
William Beanes Road
Windbrook Drive
Woodmore Road

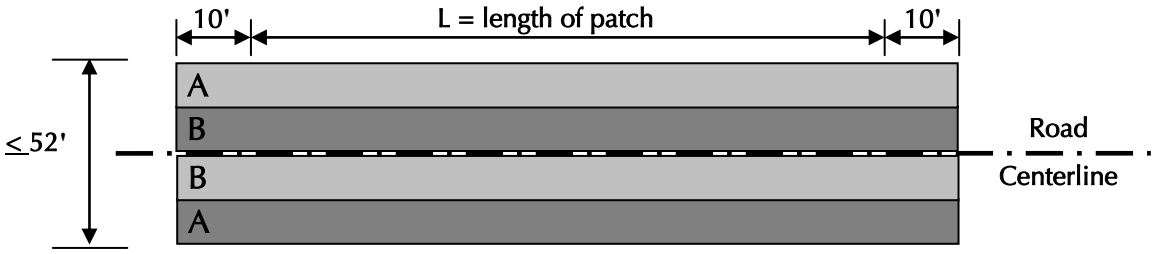
ATTACHMENT 2
MILL AND OVERLAY REQUIREMENTS FOR ROADWAYS NOT UNDER MORATORIUM PERIOD

Longitudinal Cuts in Roadway greater than 52 feet



- For roads of all widths in this category, the milling length = L + 10 feet from each edge of the cut.
- If the cut is in lane A, the mill and overlay will be for A+B.
- If the cut is in lane B, the mill and overlay will be for A+B+C.
- If the cut is in lane C, the mill and overlay will be for C+B.

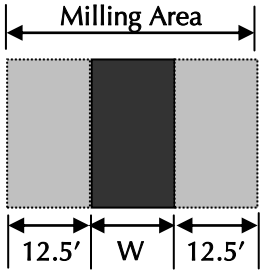
Longitudinal Cuts in Roadways up to and including 52 feet



- For roads of all widths in this category, the milling length = L + 10 feet from each edge of the cut.
- For roadways in this category, the mill and overlay will be A+B if the cut is in lane A or B.

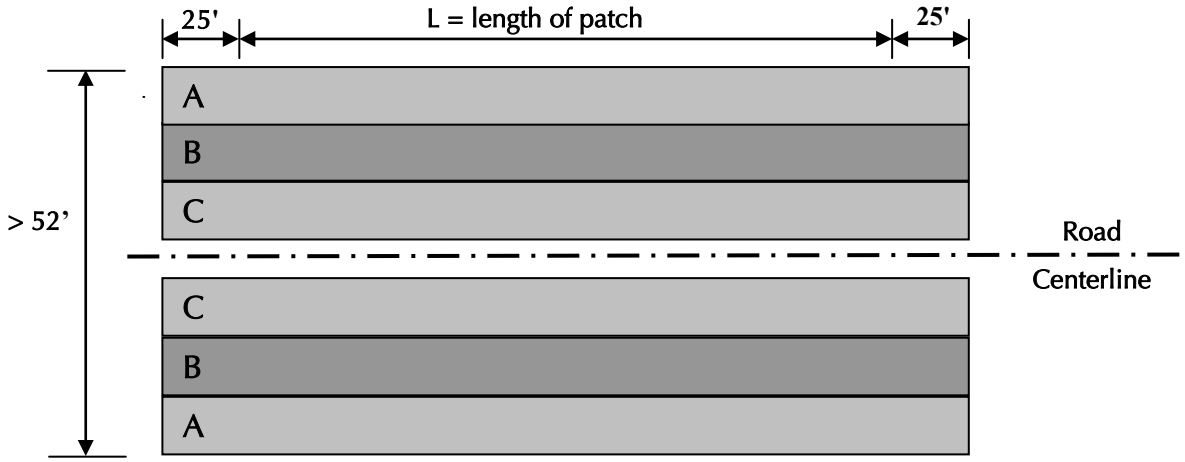
Transverse Cuts

- For roadways of all widths, the milling width = width of cut (W) + 12.5 feet from each edge of the cut for the <u>full width</u> of the roadway.



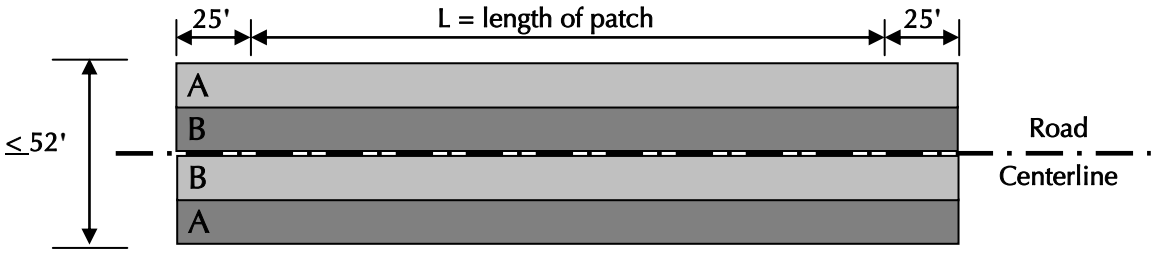
ATTACHMENT 3
MILL AND OVERLAY REQUIREMENTS FOR ROADWAYS UNDER 5-YEAR MORATORIUM

Longitudinal Cuts in Roadway greater than 52 feet



- For roadways of all widths, the milling length = L + 25 feet from each edge of the cut.
- If the cut is in lane A, the mill and overlay will be for A+B+C.
- If the cut is in lane B, the mill and overlay will be for A+B+C.
- If the cut is in lane C, the mill and overlay will be for A+B+C.

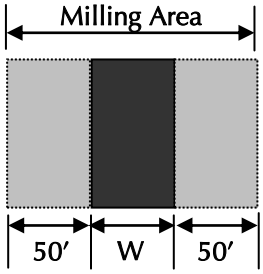
Longitudinal Cuts in Roadways up to and including 52 feet



- For roadways of all widths, the milling length = L + 25 feet from each edge of the cut.
- For roadways of all widths, the mill and overlay will be full-width if the cut is in lanes A or B.

Transverse Cuts

- For roadways of all widths, the milling width = width of cut (W) + 50 feet from each edge of the cut for the full width of the roadway.



ATTACHMENT 4
Work Certification Letter

[*Date*]

_____, Director
Prince George's County Department of Public Works and Transportation
Inglewood Centre 3
9400 Peppercorn Place
Largo, Maryland 20774

Re: [*Various Subdivisions*]
Permit Number _____

Dear _____:

In accordance with the Road Ordinance of Prince George's County, Maryland, and in consideration for the issuance of a permit for utility repair and replacement or construction, we, [Utility Company,] do hereby affirm and certify that all work performed by this Company or any contractor or subcontractor for this Company within roads under the jurisdiction of Prince George's County, Maryland, shall be in compliance with the provisions of the Prince George's County Code and all the rules, regulations, policies, standards and specifications of the Prince George's County Department of Public Works and Transportation. As the undersigned to this letter, I also certify that I have the authority to bind and to act on behalf of the [Utility Company].

Very truly yours,

[*Signature*]
[*Title*]

ACKNOWLEDGEMENT

STATE OF _____
COUNTY OF _____

On this _____ day of _____, 20[_ _], before me personally appeared _____ of [*Utility Company Name*] to me known and known to me to be the individual described in and who executed the foregoing instrument and who acknowledged that (s)he executed the same.

_____
Notary Public (Seal)
My Commission Expires _____

ATTACHMENT 5
Letter of Responsibility

[*Date*]

Prince George's County Department of Public Works and Transportation
Utility Section - Fourth Floor
Inglewood Centre 3
9400 Peppercorn Place
Largo, Maryland 20774

Re: [*Name of Subdivision*]
Location: [*Location of job site*]
DPW&T Permit Number: _____

Dear _____:

Regarding the subject permit for the subdivision and location stated above, the Prince George's County Department of Public Works and Transportation has determined that the on-site construction and the construction within the public right-of-way may cause damage to the existing facilities in the public right-of-way. In order to save and hold the County harmless from any expense or cost for repair of the potential damage, we, [*Utility Company*], as property owner, and subject to the terms and conditions of the permit identified above, do hereby accept all responsibility for any necessary repair, as directed by the Department. I/We understand that an inspection will be made prior to the start of the permit work and that I/we will not be held responsible for the repair of any condition that existed prior to issuance of the permit. I also certify in my capacity as the undersigned to this letter, that I have the authority to bind and act on behalf of [*Utility Company*].

Very truly yours,

[*Signature*]
[*Title*]

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for Roadways and Bridges

SECTION IV-APPENDIX F
Guidelines for the Design of
Scenic and Historic Roadways



Revision 03/14/12

Section IV – Appendix F - Guidelines for the Design of Scenic and Historic Roadways

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CHAPTER 1: INTRODUCTION

A. General

Prince George's County, Maryland (the County), designates certain roadways as historic because their use dates back to the County's early settlement. Thus, they provide irreplaceable links to our past. In addition, some roadways are designated as scenic because they possess unique qualities that enhance the life of the County. These qualities may include scenic views, distinctive topographical features, curving and/or rolling roadway alignments, leaf tunnels, or views of historic buildings or sites. Their rural beauty is exceptional in the Baltimore-Washington metropolitan region.

In other words, such roadways are resources whose value should be preserved and enhanced wherever possible. One of the difficulties in conserving these resources is the occasional conflict between preservation and safety. Scenic and historic roadways tend to be narrow and in some cases winding. Many have steep banks that make it difficult to widen a roadway without affecting what makes the character of the area interesting or unique.

While it is important to preserve scenic and historic roads, the paramount concern of the County Department of Public Works and Transportation (the Department) is providing a safe travel environment for vehicles, bicycles, and pedestrians. It is the desire of the Department to find the proper balance of these and other goals, such as appropriate land development and providing sufficient roadway capacity. This means providing a safe, durable, minimum-maintenance roadway design that addresses a variety of potential concerns such as flooding and drainage problems, nuisances, distractions, and unexpected driving situations.

To ensure these ends, the Department has devised this document, *Guidelines for the Design of Scenic and Historic Roadways in Prince George's County, Maryland* (Guidelines). These Guidelines provide guidance for the design of designated scenic and historic roadways in the County, particularly in dealing with the impacts of new development along scenic and historic roads. These Guidelines must be used as a reference whenever a scenic or historic roadway is under review in anticipation of reconstruction or other roadway improvements. Any such review will be based on the unique and particular circumstances. In resolving such matters as needed safety improvements, maintenance issues, and preservation of scenic or historic features, all parties are to consider various solutions for attaining the primary goals of safety and scenic or historic feature conservation.

These Guidelines are incorporated by reference into the Department's *Specifications and Standards for Roadways and Bridges in Prince George's County, Maryland* (Specifications and Standards). The standard details applicable to scenic and historic roadway sections are located in Section III of the Specifications and Standards. Those roadways which the County has designated as scenic and/or historic are identified on the Master List of Scenic and Historic Roads in Prince George's County, Maryland, found in the Attachment to these Guidelines.

These Guidelines may be used as a reference for other improvements to County roadways, as well.

The Department Director, or duly authorized representative, has primary responsibility for implementing these Guidelines and shall have final approval authority for all

proposed roadway construction and roadway improvement projects within the County right-of-way. Clarification of any items or information contained in these Guidelines may be obtained through the Office of the Director of the Department. The Planning Department of the Maryland-National Capital Park and Planning Commission (M-NCPPC) provided invaluable assistance in the development of these Guidelines and will provide consultation and assistance in their practical application.

B. Definitions

1. *Historic Road*

A historic road is defined in the County Code Subtitle 23, Road Ordinance, as "a public or private road, as designated by the County Council, which has been documented by historic surveys or maps and which maintains its historic alignment and historic landscape context through views of natural features, historic landscape patterns, historic sites and structures, historic farmstead groupings, or rural villages."

2. *Scenic Road*

A scenic road is defined in the County Code Subtitle 23, Road Ordinance, as "a public or private road, designated by the County Council, which provides scenic views along a substantial part of its length through natural or manmade features, such as forest or extensive woodland, cropland, pasturage, or meadows; distinctive topography, including outcroppings, streambeds or wetlands; traditional building types; historic sites; or roadway features such as curving, rolling roadway alignment and 'leaf tunnels.'"

3. *Inventory of Scenic and Historic Features*

The inventory of scenic and historic features consists of text and maps necessary to describe significant visual features of a proposed new development site, as identified in these Guidelines. Additional guidance in the preparation of visual inventories and evaluation can be found in *National Register Bulletin 18: How to Evaluate and Nominate Designed Historic Landscapes* and *National Register Bulletin 30: How to Identify, Evaluate and Register Rural Historic Landscapes.* The following factors must be addressed in the inventory:

- Patterns of landscape spatial organizations;
- Land use categories and activities;
- Patterns related to human response to natural features;
- Established circulation networks and systems (i.e., railroad beds, farm roads, rivers, paths, bridges, ferries, historic waterways, etc.);
- Traditional visual boundaries (i.e., fences, waterways, roads, hedge rows, ditches, walls);
- Woodlands and vegetation patterns related to land use;
- Building arrangements, the layout of farms, and the orientation of individual buildings and structures;
- Building and structure types;
- Small-scale elements (cemeteries, grave sites and stones, gate posts);
- Perceptual qualities;
- Topographic and adjusted viewsheds;
- Historic resources and environmental settings; and
- Other significant scenic features.

4. *Master List of Scenic and Historic Roads*

The Master List of Scenic and Historic Roads is a list of roadways that have been designated as scenic or historic by the County Council. This list is maintained by the Planning Department, M-NCPPC, and may be updated every 4 years or in response to Council action (see Attachment).

5. *Master Plan*

A Master Plan (or Area Master Plan) is defined by County ordinance as a current, approved local plan for the physical development of a particular planning area, combination of planning areas, or parts of planning areas, as set forth in the Regional District Act. A Master Plan consists of a plan map along with supporting data, text, and other maps that provide specific recommendations on a planning area or subregion basis on the environment, historic preservation, living areas, housing, commercial areas, employment areas, urban design, circulation, and transportation. A Small Area Plan is "part of a planning area," in relation to a Master Plan. It follows the same process and procedures.

Another type of small area plan is the Sector Plan. A Sector Plan often involves a specific land use evaluation for a portion of major corridors or economically-viable focus areas such as town centers or highway intersections.

C. Abbreviations

The abbreviations listed in the *Specifications and Standards for Roadways and Bridges in Prince George's County,* Section 1, Chapter 1, and the General Provisions, Section 1, item 1.04, of the Maryland Department of Transportation (MDOT) State Highway Administration (MSHA) *Standard Specifications for Construction and Materials* (latest edition) are adopted. In addition, the following abbreviations shall have the meanings indicated here:

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADT	Average daily traffic
DER	Department of Environmental Resources, Prince George's County
DPW&T	Department of Public Works and Transportation, Prince George's County
FHWA	Federal Highway Administration
MDOT	Maryland Department of Transportation
M-NCPPC	Maryland National Capital Park and Planning Commission
MSHA	Maryland State Highway Administration
MUTCD	*Manual on Uniform Traffic Control Devices*
NCHRP	National Cooperative Highway Research Program
NTMP	Neighborhood Traffic Management Program
PUE	Public Utility Easement
TCP	Traffic Control Plan
THE	Transportation, Health, and Environment Committee of the County Council

D. References

The following documents are cited as guides and policies for general observation and conformance, except as otherwise provided in the County Code Subtitle 23, the County Road Ordinance, and the Specifications and Standards, or as provided elsewhere in these Guidelines. References to publications shall be understood to be the latest editions of such publications.

1. Publications of the American Association of State Highway and Transportation Officials (AASHTO):
   - *A Policy on Geometric Design of Highways and Streets*, latest edition
   - *Roadside Design Guide*, latest edition
   - *Geometric Design Standards for Highways Other than Freeways*, latest edition
   - *Geometric Design Guide for Local Roads and Streets*, latest edition
   - *Manual on Uniform Traffic Control Devices*, latest edition
   - *Standard Specifications for Highway Bridges*, 1983 and current interim specifications

2. Publications of the Transportation Research Board (TRB), National Academy of Sciences:
   - Highway Capacity Manual
   - NCHRP Report #255

3. Publications of the Prince George's County Department of Environmental Resources:
   - *Specifications and Standards for Stormwater Management*
   - *Stormwater Management Design Manual*

4. Publications of the Prince George's County Department of Public Works and Transportation:
   - Directives of the Department
   - DPW&T *Specifications and Standards for Roadways and Bridges*
   - *Specifications and Standards for Traffic Control Signals*

5. Publications of the Prince George's County Government, including the County Code, and especially:
   - Subtitle 23, Road Ordinance
   - Subtitle 24, Subdivision Regulations
   - Subtitle 26, Vehicles and Traffic Code
   - Subtitle 27, Zoning Ordinance
   - Subtitle 32, Water Resources Protection and Grading Code

6. Publications of the Maryland State Highway Administration (MSHA):
   - *Standard Specifications for Construction and Materials*, 2001 or latest edition
   - *Book of Standards for Highways and Incidental Structures*

7. Publications of the U.S. Department of the Interior National Park Service:
   - National Register Bulletin 18: "How to Evaluate and Nominate Historic Landscapes," 1987 or latest edition
   - National Register Bulletin 30: "How to Identify, Evaluate, and Register Rural Historic Landscapes," 1990 or latest edition

CHAPTER 2: PROCEDURES FOR DESIGNATION OF SCENIC AND HISTORIC ROADS

Scenic and historic roadways can be first nominated and then designated in one of two ways:

- Through the Master Plan preparation process; and
- By the County Council.

A. Designation Through the Master Plan Preparation Process

For both scenic and historic roadways that are considered during the Master Plan preparation process, any proposed nominations are to be submitted to M-NCPPC, which will coordinate the review with the Department.

1. Scenic Roads

During the preparation of the Master Plan, roadways in the study area will be evaluated for designation as scenic if they meet the criteria defined in the County Road Ordinance, Section 23-102, b.17.H, "Definitions." After that evaluation, reviewers will make one of the following recommendations concerning the road:

a. The roadway may be designated as a scenic roadway if it meets the referenced criteria; or
b. The roadway may be designated as a scenic roadway because it meets the referenced criteria, and special design guidelines for the roadway and projects adjacent to the road, as stated in the Master Plan, shall be followed; or
c. The roadway will not be designated as a scenic roadway because it does not meet the criteria.

2. Historic Roads

During the preparation of the Master Plan, those roadways in the area being considered that are either listed in the Prince George's County *Historic Sites and Districts Plan* or have features and evidence that support their designation as historic roadways, in the County Road Ordinance, Section 23-102, b.17.C, will be evaluated for inclusion in the Master Plan as historic roads. After that evaluation, reviewers will make one of the following recommendations concerning the road:

a. The roadway may be designated as a historic roadway because it meets the referenced criteria; or
b. The roadway may be designated as a historic roadway because it meets the referenced criteria, and special design guidelines for the roadway and projects adjacent to the road, as stated in the Master Plan, shall be followed; or
c. The roadway will not be designated as a historic roadway because it does not meet the criteria stated herein.

The Master Plan or Small Area Plan then follows the standard review and approval process. When either Plan is adopted by the County Council, any roadways nominated are then considered as scenic or historic roadways and are added to the Master List of Scenic and Historic Roads in Prince George's County, Maryland.

B. Designation by the County Council

Roadways are included in, or removed from, the Master List of Scenic and Historic Roads in Prince George's County, Maryland through action of the Prince George's Council. A 12-week nomination period is

held once every 4 years. Nominations can be submitted to the Council at other times, but the nominations will not be evaluated or acted upon until the next nomination period. Anyone can nominate a roadway for scenic or historic roadway designation. The subject roadway must meet the criteria stated in the County Road Ordinance, Section 23-102, in order to be considered for designation.

The following is the process for designation by the County Council of a scenic or historic road:

1. M-NCPPC sends a written notice to all County Council offices and to the Department announcing the open season for nominations for designation as scenic or historic roads. Notifications will be sent three months prior to the start of the open nomination period. The notifications will include a nomination form.

2. Nominations are received by M-NCPPC by the end of the open nomination period.

3. M-NCPPC staff coordinate a meeting with appropriate Department staff to review the applications.

4. M-NCPPC staff evaluate the nominations and make a recommendation to the County Planning Board. The Planning Board holds a public hearing and receives testimony on the nominations. The Planning Board makes a recommendation to the Council on each nomination.

5. The County Council holds a public hearing on nominations and receives testimony.

6. The Transportation, Health, and Environment (THE) Committee of the County Council holds a meeting to discuss the nominations. Recommendations of the Committee are forwarded to the Council.

7. After the County Council reviews the recommendations of the THE Committee, the County Council makes a final decision on each nomination. Those nominations that are approved by the Council are added to the list of designated scenic and historic roads.

8. Nominations approved by the Council become designations and are added to the Master List of Scenic and Historic Roads by M-NCPPC.

CHAPTER 3: REVIEW PROCEDURES

A. Development projects that are to be sited on scenic or historic roadways and are entering M-NCPPC development review will undergo the following procedures:

1. On the plan under review, a note shall be provided that indicates where the proposed project abuts or is adjacent to a scenic or historic roadway.

2. As part of the development review application, the applicant is required to provide an evaluation of features most worthy of preservation according to the guidelines provided in this document.

3. The applicant must state whether the project is subject to scenic or historic roadway requirements on the Record Plat.

4. The applicant shall contact the Department to coordinate a pre-application meeting with MSHA, if necessary, and M-NCPPC prior to the submittal of Paving and Storm Drain Plans, and whenever possible, prior to initiation of engineering design of roadway improvements. At that meeting, the applicant will provide adequate base information such as existing existing property information, topography, and site features.

B. Development projects that are to be sited on scenic or historic roadways and are to be permitted by the Department after receiving approval from M-NCPPC, prior to the development of scenic or historic roadway guidelines in 1993, will undergo the following procedures:

1. The application for the Department's street construction permit should indicate where the proposed project abuts or is adjacent to a scenic or historic roadway.

2. The applicant must state whether the project is subject to scenic or historic roadway requirements on the Record Plat. The applicant shall contact the Department to coordinate a pre-application meeting with MSHA, if necessary, and M-NCPPC prior to the submittal of Paving and Storm Drain Plans, and whenever possible, prior to the initiation of engineering design of roadway improvements. At that meeting, the applicant will provide adequate base information, topography, and site features.

C. In all cases, roadway design requirements to be considered by the Department will, in accordance with these Guidelines, take into account the scenic and historic features recommended for preservation. Determination regarding the final design concept will be based on the Specifications and Standards, these Guidelines, and AASHTO design standards.

CHAPTER 4: DESIGN CONSIDERATIONS FOR SCENIC AND HISTORIC ROADS

When work is planned on a scenic or historic roadway, issues relating to the balance between preservation and safety goals must be resolved during the design phase. The following are a few of the main issues that must be considered during this process:

- Safety features;
- Design speeds, sight distances, and grades;
- Roadway widths;
- Roadway elements;
- Utilities;
- Street lighting;
- Raised pavement markers; and
- Landscaping and plant materials.

A. Safety Feature

When considering safety-related design changes to a scenic or historic roadway, any changes should strive to retain, to the maximum extent possible, the scenic and historic character of the roadway. To determine where and how safety issues must be addressed, a safety evaluation should be conducted before the design of any section of roadway. In addressing an identified safety concern, the following is a list of site features that should be considered:

- Traffic calming measures;
- Increases in sight distance;
- Traffic control and regulation signage;
- Pavement striping and marking;
- Raised pavement markers; and
- Street lighting.

B. Design Speeds, Sight Distances, and Grades

Design speeds and sight distance requirements, as well as consideration of grade, for scenic or historic roadways shall be determined by the Department Director, or duly authorized representative. This determination shall, in each case, be made based on projected development of the area, subsequent traffic generation, and the requirements necessary to provide safe travel. Determining factors will be vertical and horizontal alignment, roadway width, and projected traffic volume.

1. Design Speeds

Design speeds and minimum stopping and intersection sight distances must adhere to current AASHTO criteria. The use of nonconforming design speeds, and of corresponding sight distances, depending on the specifics of a given situation, may be allowed in consultation with the Department's reviewing engineers.

The designer should avoid the use of inconsistent standards. Such standards create a safety hazard because of the resulting confusion about allowable speeds.

2. Sight Distances

Stopping sight distance is measured from a height of 3.5 feet (equivalent to a driver's eye) to the height of a 2-foot object lying above the surface of the roadway. Intersection sight distance is measured from a point on the minor roadway at least 15 feet from the edge of the major road pavement and measured from a height of 3.5 feet (equivalent to a driver's eye) on the minor roadway to a 3.5-foot-high object in the major road. Both of these values must

be considered at a driveway or intersection near a vertical or horizontal curve. The application of these eye-height and object-height criteria is established in the AASHTO *Policy on Geometric Design of Highways and Streets* (latest edition), which will be used as the principal authority in justifying any variance of design elements from these recommendations.

The designer shall make a reasonable effort to provide sight distances equal to or exceeding those in accordance with the applicable AASHTO publications.

In urban situations and approaches to intersections, sight distances should be set so that pavement geometry, markings, and other traffic controls are visible at an appropriate distance. Drivers should be able to comply without having to make abrupt maneuvers.

3. Grades

The minimum grades for all classes of roadways are 1 percent for urban (curbed) sections and alleys, and 2 percent for rural (side ditch or swale-drained) sections in cuts. Where surface flow across an intersection in a swale will be necessary to drain a curb return, the minimum roadway grade parallel to the swale shall be not less than 2 percent. Flatter grades may be approved for permanently rural sections on fills where the roadside drain ditch or swale follows the toe of the fill and has a grade of 2 percent or greater.

Where the pattern of development and future intersection or entrance locations have not been determined along major roadways, or where the future development along a primary or secondary residential street may introduce closely spaced entrances or on-street parking demand, it is to be assumed that curbing may be required in the future. The minimum grade shall be the same as for a curbed space. Conformance with maximum grades as established by AASHTO and the Department is required.

C. Roadway Widths

The typical roadway sections for scenic and historic roadways are contained in the Department's Specifications and Standards for each class of roadway. In keeping with the intent of these Guidelines, each design situation on a scenic or historic roadway should be considered on an individual basis. Prior to determining the appropriate design solution, the existing site features and conditions shall be considered.

The Department recognizes the AASHTO *Policy on Geometric Design of Highways and Streets* (latest edition) as the principal authority for justifying variances in design elements. It is anticipated that the principal design variable will be the 20-year projected average daily traffic (ADT) or design hourly volume, as applicable. Projected ADTs are to be determined using methods from the National Cooperative Highway Research Program (NCHRP) Report #255. A level of service "D" or better, as calculated by the methods of the *Highway Capacity Manual*, should be attained if possible.

The roadway classifications and requirements appearing on the County Master Plans are already supported by traffic estimates compiled by the staff of M-NCPPC, based on the proposed ultimate zoning and development phasing. The designer is expected to comply with the Master Plans in the absence of further approved studies. The designer may be required to use or prepare additional

studies for the purpose of roadway design.

In cases of in-fill development, where the roadway in question extends a previously constructed roadway or lies between previously constructed sections of a roadway of the same class, the designer is expected to attain a consistent travel way by conforming to the width and alignment of previous construction. Exceptions to this include cases where a special design or additional lanes may be required for parking, turning, intersection approaches, or transitions between different classes or dissimilar existing sections. At major intersections on collector roadways, the collector roadway should usually be retrofitted with a left-turn lane. If a roadway requires widening, the new pavement should be extended to include shoulder paving.

D. Roadway Elements

1. *Horizontal and Vertical Alignments*

The improved roadway section should follow the existing horizontal and vertical alignments to the maximum extent practical, except as provided below:

- Standards for horizontal and vertical alignment in accordance with AASHTO guidelines should be applied where the existing horizontal and vertical alignments are below these standards.
- Without sacrificing safety, the horizontal and vertical alignments may, in the sole discretion of the Department, be adjusted to preserve the elements set forth in the inventory of scenic and historic features.

The natural topographic characteristics of the views should be preserved and enhanced whenever possible. Without sacrificing safety and maintenance concerns, grading should retain the natural contours of the land whenever possible while maintaining positive drainage away from the roadway to approved drainage courses.

The following are some alternatives that might be considered, if appropriate:

- Consider extending the grading to provide a gentle transition to existing topography where a slope is toward level, and if no trees are to be preserved, if it is appropriate, consider extending the grading to provide a gentle transition to existing topography.
- Consider alternatives to proposals for widening and realignment of roadways that would affect the scenic or historic character of the corridor.
- Consider the use of parallel but separate roadways to preserve original scenic or historic roadway beds in locations where it is necessary to increase traffic capacity and safety.
- Consider the creation of left- and right-turn bypass lanes by restriping the existing roadway pavement section.

2. *Driveways*

Driveway entrances should provide for both traffic safety and the preservation of scenic and historic roadway character. Entrances that are cut into banks should preserve the original frontage of the roadway to the extent possible. Careful design must assure that AASHTO sight distance requirements are met.

3. *Traffic Control Devices*

Signs, traffic barriers (i.e., guard rails),

and fences should not detract from or overwhelm the visual character of the natural or constructed landscape.

Traffic barriers should be made of materials that harmonize with the surrounding landscape. They should enhance the roadway's scenic appearance.

To minimize visual clutter, signs to be placed in the right-of-way should be consolidated whenever possible. They should be kept to the minimum number necessary for roadway safety and the identification of historic sites and roadways. In addition, if a scenic or historic roadway marker is proposed, it should be designed to be in harmony with the surrounding environment.

4. Clear Zones and Fences

While assuring adequate sight distance for user safety, clear zones should be provided and maintained. If fences are proposed, they should be low, open, horizontal, and constructed of wood or other natural materials native to the area.

5. Bridges and Stream Crossings

Bridges and stream crossings are to be designed to meet all Department, MSHA, and AASHTO design and safety standards. Bridge replacement or rehabilitation should be of a design and material that preserves and enhances the historic and/or scenic qualities of the roadway and meets the maintenance requirements of the Department.

6. Views

Where possible, the designer should provide views for vehicle passengers through the use of open bridge structures. To maintain desirable views, the visual quality of bridges or stream crossings should be considered.

E. Utilities

Utilities should be placed or relocated so as to preserve or enhance the character of the scenic or historic roadway. Preservation and restoration of the scenic qualities of the roadway should be considered for all utility installation within the right-of-way.

Whenever possible, utilities should be consolidated and unnecessary poles removed. Overhead utility lines or replacements should be designed to place any required guy wires or similar supports as far from the roadway as possible with minimal impact to the surrounding area. Where overhead utility wires are near the roadway, only low growing vegetation should be planted underneath wires to reduce the need for periodic pruning. New utility wires should be carefully sited where they will not require excessive pruning of existing or proposed landscape features.

The public utility easement (PUE) should be located where it will result in minimal disturbance to identified scenic and historic qualities. The alignment of the PUE should be determined on a case-by-case basis at the time of the development plan review.

F. Street Lighting

As determined by the Department, and in situations where public safety is not affected, street lighting along scenic and historic roadways may be reduced from the standard Department street lighting requirements. Consideration shall be given to the possible installation of pavement marking and signing to alert motorists to special situations. Street lighting will, however, be required at intersections of public roadways, at major access points along existing scenic and historic roadways, and along

roadways with an ADT of 6000 or more (with said ADT projected 20 years forward). In addition, street lighting will be required along any scenic and historic roadway with security problems or poor vertical and horizontal alignments, or when traffic accident data or traffic volumes warrant street light installation. New and replacement lighting along scenic and historic roadways will use full cut-off optics luminaires to minimize glare and light pollution. The illumination intensity (measured in lumens) for each light will be consistent with current street light standards for County roads.

G. Raised Pavement Markers

On scenic and historic roads, where street-lighting requirements have been reduced as described above, the installation of raised pavement markers (RPMs) is required along the centerlines on two-lane roadways and along lane lines on multi-lane roadways. For roadways with pavement widths of less than 18 feet, RPMs are required only along edge lines. RPMs shall be bidirectional yellow on the centerlines and white on the lane lines and edge lines. RPMs for through traffic shall be installed so that the reflective element is perpendicular to such traffic. RPMs shall be installed per MSHA Standard Detail MD 557.10 and Department Specifications and Standards 700.15 and 700.16.

H. Landscaping and Plant Materials

Natural landscape features, particularly native and traditional plant materials and tree cover, should be preserved and enhanced. Natural vegetation should be allowed to become established as close to the shoulder edge as possible. Where appropriate, the use of native plant materials in natural planting patterns and historically traditional plant materials should be emphasized to enhance the character of the roadway.

Where applicable, plantings of roadside grasses or native ground covers should be used to address erosion problems on shallow slopes. Erosion problems on steeper slopes should be addressed, where applicable, by the planting of vines, ground cover, or other lower-growing herbaceous or woody plants.

Where public safety or future maintenance concerns are not at issue, removal of existing healthy trees should be avoided. In particular, specimen trees and other interesting landscape features within the right-of-way should remain undisturbed to the extent possible. Use of guard rails or curbing should be considered if these features will allow large trees to remain, but safety is paramount in this consideration. If a tree must be removed, it should be replaced with the same or a similar species having a minimum size of 2-1/2- to 3-inch caliper for deciduous trees or 6 feet in height for evergreen trees.

CHAPTER 5: MAINTENANCE CONSIDERATIONS

Scenic and historic roadways should receive the level of maintenance necessary for safe public travel that preserves the roadway's scenic and historic characteristics.

A. Drainage

Positive drainage must be maintained where necessary to prevent damage to the road, washouts, and other detriments to safety.

B. Bridge Repairs

Where feasible, when bridge repairs are necessary, they should be made in such a way as to preserve the scenic and/or historic qualities of the structure.

C. Guardrails

Where feasible, when a guardrail is replaced along a scenic or historic roadway or in a historic district, it should be of a material that enhances the scenic or historic roadway.

D. Vegetation

Control of undesirable vegetation should be accomplished by mowing or selective cutting. The use of herbicides should be considered only on a limited basis, but, if necessary, shall be employed in a judicious and prudent manner, following all local, State and Federal regulations. Guardrail and sidewalk/curb joints will be sprayed as needed for weed control.

E. Trees

Tree removal and/or pruning should be selective and follow good arboricultural practices in order to maintain the character of the roadway. Tree elevation trimming and sight distance clearing shall be performed on a 7-year cycle, or as needed.

Selective tree cutting may be deemed a necessary periodic maintenance technique to maintain the scenic vistas of a designated roadway. The Department cannot remove any healthy trees from its right-of-way without permission from the State Forestry Office.

F. Litter and Dumping

Special attention should be given to the regular collection and disposal of litter and illegal dumping. This may include efforts for litter removal and enforcement and prosecution for dumping.

ATTACHMENT: MASTER LIST OF SCENIC AND HISTORIC ROADS IN PRINCE GEORGE'S COUNTY

Amended by Maryland–National Capital Park and Planning Commission July 28, 2004, To Include All Historic Roads Listed in 1992 *Approved Historic Sites and Districts Plan,* Appendix H

Road Name	Limits	Functional Class	Original Source Reference	Master Plan	Historic	Scenic	Trail	Dep't. District
Accokeek Road (MD 373)	0.4 mi. W. of MD 5 to MD 5	Local	1992 HS&D Plan	1993 Subregion V	X			4
Accokeek Road (MD 373)	0.9 mi. W. of MD 5 to 0.4 mi. W. of MD 5	Collector	1992 HS&D Plan	1993 Subregion V	X		X	4
Accokeek Road (MD 373)	Bealle Hill Road to 0.9 mi. W. of MD 5	Arterial pkwy.	1992 HS&D Plan	1993 Subregion V	X		X	4
Aquasco Road	Baden-Westwood Rd. to Croom Rd. (MD 382)	Rural collector	1992 HS&D Plan	1993 Subregion VI	X		X	4
Ardwick-Ardmore Road	Jefferson Street to Lottsford Vista Rd.	Collector	1992 HS&D Plan	1990 Largo-Lottsford	X		X	2
Baden-Naylor Road	MD 382 to Baden-Westwood Road	Local	1992 HS&D Plan	1993 Subregion VI	X		X	4
Bealle Hill Road	MD 228 to MD 373	Primary	1993 Subregion V	1993 Subregion V	X			4
Bealle Hill Road	MD 373 to Livingston Rd.	Collector	1993 Subregion V	1993 Subregion V	X			4
Bell Station Road	MD 193 to Old Prospect Hill Rd.	Local	1992 HS&D Plan	1993 Glenn Dale	X	X	X	1
Bell Station Road	MD 450 to MD 193	Collector	1992 HS&D Plan	1993 Glenn Dale	X	X		1
Brandywine Road (MD 381)	Floral Park Road to North Keys Rd.	Local	1993 Subregion V	1993 Subregion V	X			4
Brandywine Road (MD 381)	N. Keys Rd. to Pepco R/W near Gibbons Church Rd.	Collector	1992 HS&D Plan	1993 Subregion V	X			4
Brooke Lane	Ritchie-Marlboro Road to Brown Station Rd.	Primary	1992 HS&D Plan	1994 Melwood-Westphalia	X		X	5
Bryan Point Road	Farmington Rd. W. to National Colonial Farm	Local	1993 Subregion V & CR-113-1992	1993 Subregion V	X	X		4
Bryan Point Road	Main Boulevard to Farmington Road West	Local	1993 Subregion V	1993 Subregion V		X		4
Cedarville Road	Betty Boulevard (A-63) to Chalk Point RR	Collector	1992 HS&D Plan	1993 Subregion V	X			4
Cedarville Road	Chalk Point RR to Brandywine Rd. (MD 381)	Local	1992 HS&D Plan	1993 Subregion VI	X		X	4
Cedarville Road	US 301 to Betty Boulevard (A-63)	Arterial	1992 HS&D Plan	1993 Subregion V	X			4
Chew Road	Croom Station Road to Popes Creek RR	Local	1992 HS&D Plan	1993 Subregion VI	X			5
Church Road	0.9 mi. S. of MD 450 to Oak Grove Rd.	Collector	1992 HS&D Plan	1991 Bowie-Collington	X	X	X	5
Church Road	MD 450 to 0.9 mi. S. of MD 450	Local	1992 HS&D Plan	1991 Bowie-Collington	X	X	X	5
Croom Road (MD 382)	Croom Station Road to Baden-Naylor Road	Rural collector	1992 HS&D Plan	1993 Subregion VI	X		X	
Croom Road (MD 382)	River Airport Road to the Charles Co. Line	Rural collector	1992 HS&D Plan	1993 Subregion VI	X		X	4
Croom Station Road	Chew Road to Popes Creek Railroad	Local	1992 HS&D Plan	1993 Subregion VI	X		X	5
Danville Road	Floral Park Road to MD 373	Rural collector	1993 Subregion V	1993 Subregion V	X		X	4
Duley Station Road	Wallace Lane to Grandhaven Avenue	Local	1992 HS&D Plan	1993 Subregion VI	X			5
Duley Station Road	Grandhaven Avenue to Croom Road (MD 382)	Collector	1992 HS&D Plan	1993 Subregion VI	X			5
Duvall Road	Mt. Calvert Road to Croom Airport Road	Collector	1992 HS&D Plan	1993 Subregion VI	X			5
Farmington Road East	MD 210 to Livingston Rd.	Arterial	1993 Subregion V	1993 Subregion V	X		X	4
Farmington Road West	MD 210 to Bryan Point Rd.	Rural collector	1993 Subregion V	1993 Subregion V	X	X	X	4
Floral Park Road	Livingston Road to Piscataway Rd.	Local	1993 Subregion V	1993 Subregion V	X		X	4

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Amended by Maryland–National Capital Park and Planning Commission July 28, 2004, To Include All Historic Roads Listed in 1992 *Approved Historic Sites and Districts Plan,* Appendix H

Road Name	Limits	Functional Class	Original Source Reference	Master Plan	Historic	Scenic	Trail	Dep't. District
Floral Park Road	MD 223 to Brandywine Rd.	Collector	1993 Subregion V	1993 Subregion V	X	X	X	4
Gallahan Road	MD 223 to Old Fort Rd.	Collector	1984 Scenic Roads	1993 Subregion V		X		4
Governor Bridge Road	US 301 to Patuxent River	Local	1992 HS&D Plan	1991 Bowie-Collington	X			5
Livingston Road	Bealle Hill Road to Farmington Road East	Collector	1993 Subregion V	1993 Subregion V	X			4
Livingston Road	Farmington Road East to Floral Park Rd.	Arterial	1993 Subregion V	1993 Subregion V	X		X	4
Livingston Road	Fort Washington Road to St. John's Way	Local	1992 HS&D Plan	1981 Subregion VII	X			3/4
Livingston Road	Swan Creek Road to W. Livingston Rd.	Service road	1992 HS&D Plan	1981 Subregion VII	X		X	4
Livingston Road	W. Livingston Road to Fort Washington Rd.	Collector	1992 HS&D Plan	1981 Subregion VII	X			4
Lottsford Road	MD 202 to MD 193	Arterial/PT-1	1984 Scenic Roads	1990 Largo-Lottsford		X	X	2
Lottsford Vista Road	US 50 to Old Lottsford Rd.	Collector	1992 HS&D Plan	1990 Largo-Lottsford	X		X	2
Marlboro Pike	US 301 east to Wells Corner	Local	1992 HS&D Plan	1993 Subregion VI	X			5
McKendree Road	0.2 mi. N. of Mister Rd. to 0.6 mi. W. of US 301	Primary	1993 Subregion V	1993 Subregion V	X			4
McKendree Road	MD 373 to 0.2 mi. N. of Mister Rd.	Local	1993 Subregion V	1993 Subregion V	X			4
McKendree Road	US 301 to 0.6 mi. W. of US 301	Major collector	1993 Subregion V	1993 Subregion V	X			4
Mellwood Road	Westphalia Road to Old Marlboro Pike	Trail	1992 HS&D Plan	1994 Melwood-Westphalia	X		X	5
Mill Branch Road	Mill Branch Place to Queen Anne Bridge Rd.	Local	1984 Scenic Roads	1991 Bowie-Collington		X		5
Mill Branch Road	US 301 to Mill Branch Place	Local	1992 HS&D Plan	1991 Bowie-Collington	X			5
Milltown Landing Road	Croom Road (MD 382) and the Patuxent River	Local	1992 HS&D Plan	1993 Subregion VI	X			4
Molly Berry Road	Croom Road (MD 382) to Candy Hill Road	Rural collector	1992 HS&D Plan	1993 Subregion VI	X		X	4
Molly Berry Road	Candy Hill Road to Baden-Naylor Road	Local	1992 HS&D Plan	1993 Subregion VI	X		X	4
Mount Oak Road	Church Road to Popes Creek RR	Arterial	1984 Scenic Roads	1991 Bowie-Collington		X	X	5
North Keys Road	Molly Berry Road to Gibbons Church Road	Rural collector	1992 HS&D Plan	1993 Subregion VI	X		X	4
Oak Grove Road	Leeland Road to MD 202	Local	1992 HS&D Plan	1993 Subregion VI	X		X	5
Old Baltimore Pike	Cook Rd. to Prop. MD 201 Ext. (A-56)	Industrial	1992 HS&D Plan	1990 Subregion I	X			1
Old Baltimore Pike	Edmonston Road to Muirkirk Rd.	Collector	1992 HS&D Plan	1990 Subregion I	X		X	1
Old Baltimore Pike	Odell Road to Edmonston Rd.	Service road	1992 HS&D Plan	1990 Subregion I	X		X	1
Old Baltimore Pike	Prop. MD 201 Ext. (A-56) to Odell Rd.	Local	1992 HS&D Plan	1990 Subregion I	X			1
Old Crain Highway	Wells Corners/Marlboro Pike to Village Drive N.	Collector	1992 HS&D Plan	1993 Subregion VI	X			5
Old Crain Highway	Town Line to 1000 ft. S. of Croom Station Rd.	Note 1	CR-39-1999	1993 Subregion VI		X	X	5
Old Crain Highway	1000 ft. S. of Croom Station Road to Route 301	Note 1	CR-39-1999	1993 Subregion VI		X	X	5
Old Enterprise Road	Segment through Watkins Park	Local	1990 Largo-Lottsford	1990 Largo-Lottsford		X		5

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ATTACHMENT: MASTER LIST OF SCENIC AND HISTORIC ROADS IN PRINCE GEORGE'S COUNTY

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Road Name	Limits	Functional Class	Original Source Reference	Master Plan	Historic	Scenic	Trail	Dep't. District
Old Enterprise Road	Watkins Park Dr. to entrance of Watkins Park	Local	1992 HS&D Plan	1990 Largo-Lottsford	X			5
Old Marlboro Pike	MD 223 to Brown Station Rd.	Collector	1992 HS&D Plan	1994 Melwood-Westphalia	X		X	5
Old Marlboro Pike	US 301 east to Wells Corners	Local	1992 HS&D Plan	1993 Subregion VI	X			5
Old Marshall Hall Road	Livingston Road to Colonial Rd.	Local	1984 Scenic Roads	1993 Subregion V		X		4
Old Muirkirk Road	Loop off of Muirkirk E. of B&O RR	Local	1992 HS&D Plan	1990 Subregion I	X			1
Old Walker Mill Drive	Shady Glen Drive to Old Ritchie Rd.	Local	1992 HS&D Plan	1985 Suitland-Dist. Hts.	X			5
Piscataway Road (MD 223)	Floral Park Road to Brandywine Rd.	Arterial	1992 HS&D Plan	1993 Subregion V	X			4
Queen Anne Bridge Road	US 301 to Mill Branch Rd.	Local	1984 Scenic Roads	1991 Bowie-Collington		X		5
Queen Anne Bridge Road	Mill Branch Rd. to MD 214	Local	1992 HS&D Plan	1991 Bowie-Collington	X	X		5
Queen Anne Bridge Road	MD 214 to Queen Anne Rd.	Local	1984 Scenic Roads	1991 Bowie-Collington		X		5
Queen Anne Road	Queen Anne Bridge Road to US 301	Local	1992 HS&D Plan	1991 Bowie-Collington	X	X		5
Ritchie-Marlboro Road	0.6 mi. S. of White House Rd. to White House Rd.	Primary	1992 HS&D Plan	1994 Melwood-Westphalia	X			5
Ritchie-Marlboro Road	Old Marlboro Pk. to 0.6 mi. S. of White House Rd.	Arterial	1992 HS&D Plan	1994 Melwood-Westphalia	X		X	5
South Osborne Road	0.1 mi. S. of Carroll Way to William Beanes Rd.	Local	1993 Subregion VI	1993 Subregion VI		X		5
Tanyard Road	Nottingham Road to Croom Road (MD 382)	Local	1992 HS&D Plan	1993 Subregion VI	X			4
Thrift Road	Windbrook Drive to Tippett Rd.	Collector	1984 Scenic Roads	1993 Subregion V		X	X	4
Trumps Hill Road	Croom Road (MD 382) to Heathermore Blvd.	Primary	1992 HS&D Plan	1993 Subregion VI	X		X	4
Trumps Hill Road	Heathermore Blvd. to US 301	Local	1992 HS&D Plan	1993 Subregion VI	X			4
Watkins Park Dr. (MD 193)	Oak Grove Road to Old Enterprise Rd.	Arterial	1992 HS&D Plan	1991 Bowie-Collington	X		X	5
Westphalia Road	D'Arcy Road to Ritchie-Marlboro Rd.	Collector	1992 HS&D Plan	1994 Melwood-Westphalia	X		X	5
Wharf Road	Farmington Road W. to Piscataway Bay	Local	1993 Subregion V	1993 Subregion V		X		4
White's Landing Road	Croom Road (MD 382) to the Patuxent River	Local	1992 HS&D Plan	1993 Subregion VI	X			4
Woodmore Road	MD 193 to Church Rd.	Arterial/PT-1	1992 HS&D Plan	1991 Bowie-Collington	X	X	X	5

Notes: 1. Adopted Plan shows Arterial (A-62) on map. Approved Plan deleted A-62 from map but retained A-62 in the text.

2. Revised December 13, 2002, to correct names in accordance with DPW&T conventions and correct Milltown Landing Road.

3. QCed for names and mapping KIF August 21, 2003.

4. Visit M-NCPPC's Web site at www.MNCPPC.org.

Prince George's County, Maryland
Department of Public Works and Transportation
Largo, Maryland

Specifications and Standards for
Roadways and Bridges

SECTION IV-APPENDIX G
Specifications and Standards for Traffic Control Signals



Revision 03/14/12

Section IV – Appendix G - Specifications and Standards for Traffic Control Signals

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CHAPTER 1: INTRODUCTION

1.A. GENERAL

1.A.01. This publication, *Specifications and Standards for Traffic Control Signals in Prince George's County, Maryland,* contains the specifications (written requirements) and standards (illustrations) required by the Prince George's County, Maryland, Department of Public Works and Transportation (the Department) for the construction of traffic control signals. It is included in the *Specifications and Standards for Roadways and Bridges in Prince George's County, Maryland*. In order to maintain existing systems, these specifications may, in some cases, identify a specific component by manufacture and model number. Inasmuch as other items may be applicable, the *Specifications and Standards for Roadways and Bridges* and the *Standard Specifications for Construction and Materials*, of the Maryland Department of Transportation (MDOT) State Highway Administration (MSHA), are part of the Contract Documents.

1.A.02. Before submitting a proposal, the Bidder is advised to be thoroughly familiar with the Department's Specifications and Standards, MSHA Specifications for Construction and Materials, General Provisions, Terms and Conditions, Special Conditions of the proposed project, Technical Requirements, and the Specifications and Standards contained herein.

1.B. ABBREVIATIONS

The abbreviations listed in the General Provisions, Section 1, item 1.04, of the Maryland Department of Transportation (MDOT) State Highway Administration (MSHA) *Standard Specifications for Construction and Materials* (latest edition) are adopted. In addition, the following abbreviations and acronyms shall have the meanings indicated here:

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average daily traffic
DPWT	Department of Public Works and Transportation, Prince George's County (the Department)
FHWA	Federal Highway Administration
GFCI	Ground fault circuit interruption
IMSA	International Municipal Signal Association
ITE	Institute of Transportation Engineers
LCD	Liquid crystal display
LED	Light emitting diode
MDOT	Maryland Department of Transportation
MOV	Metal oxide Varistor
MSHA	Maryland State Highway Administration
MUTCD	*Manual on Uniform Traffic Control Devices*
NCHRP	National Cooperative Highway Research Program
NEMA	National Electrical Manufacturer's Association
RFI	Radio frequency interference
TBC/BCT	Time-based coordination/ back ground cycle timer
TCP	Traffic control plan
UL	Underwriters Laboratories
WMATA	Washington Metropolitan Area Transit Authority

1.C. REFERENCES

1.C.01. The following documents are cited as guides and policies for general observation and conformance, except as otherwise provided in the Prince George's County Code, Subtitle 23, Road Ordinance, and the Department Specifications and Stan-

dards, or as provided elsewhere in this document. References to dated publications shall be understood to be updated as revisions or supplements, released by their respective publishers.

1.C.02. Publications of the American Association of State Highway and Transportation Officials (AASHTO):

- *Driver Expectancy Checklist*, latest edition
- *Geometric Design Guide for Local Roads and Streets*, latest edition
- *Geometric Design Standards for Highways other than Freeways*, latest edition
- *A Policy on Geometric Design of Highways and Streets*, latest edition
- *Roadside Design Guide*, latest edition
- *Standard Specifications for Highway Bridges*, latest edition, and current interim specifications.

1.C.03. Publications of the Transportation Research Board (TRB), National Academy of Sciences:

- *Highway Capacity Manual*
- *National Cooperative Highway*
- *Research Program (NCHRP) Report 255.*

1.C.04. Publications of the Prince George's County Department of Environmental Resources:

- *Specifications and Standards for Stormwater Management*
- *Stormwater Management Design Manual.*

1.C.05. Publications of the Prince George's County Department of Public Works and Transportation:

- *Directives of the Department*
- *Specifications and Standards for Roadways and Bridges*
- *Specifications and Standards for Traffic Control Signals.*

1.C.06. Publications of the Prince George's County Government, including the County Code, and especially:

- *Subtitle 23, Road Ordinance*
- *Subtitle 24, Subdivision Regulations*
- *Subtitle 26, Vehicles and Traffic Code*
- *Subtitle 27, Zoning Ordinance.*
- Subtitle 32, Water Resources Protection and Grading Code.

1.C.07. Publications of the Maryland Department of Transportation (MDOT), State Highway Administration (MSHA):

- *Standard Specifications for Construction and Materials*, latest edition
- *Book of Standards for Highways and Incidental Structures.*

1.C.08. Publications of the Federal Highway Administration (FHWA), U.S. Department of Transportation:

- *Manual on Uniform Traffic Control Devices* (MUTCD), latest edition.

1.C.09. Publications of the National Park Service:

- *National Register Bulletin 18*: "How to Evaluate and Nominate Historic Landscapes." Washington, DC, National Park Service, 1987, or latest edition
- *National Register Bulletin 30*: "How to Identify, Evaluate and Register Rural Historic Landscapes." Washington, DC, National Park Service, 1990, or latest edition.

CHAPTER 2: MAINTENANCE OF TRAFFIC

2.A. DESCRIPTION

2.A.01. This Specification covers the performance of activities and supply of necessary materials that provide for the smooth flow of traffic during the course of a project with minimum interruption and maximum safety.

2.A.02. The purpose of devising a traffic control plan (TCP) for a project, as described in the Contract, is to set forth the traffic control requirements necessary for the safe and continuous maintenance of traffic at the project site and to minimize inconvenience to the traveling public and the Contractor. Maintenance of traffic is by nature a flexible activity that will vary in extent and with the scope of the project during the performance of the Contract. The Contractor will be responsible for maintaining traffic, providing a reasonably smooth road surface, and providing access to adjacent property throughout the life of each construction project. All traffic control devices provided and used by the Contractor shall be fabricated, installed, and maintained in accordance with the *Work Zone Traffic Control Guidelines Manual*, Maryland Department of Transportation (MDOT), State Highway Administration (MSHA), January 1994, or latest edition.

2.B. WORK SCHEDULE

To minimize the impact of construction activities on traffic and to permit continuous County inspection, no work shall be performed or lanes closed during weekdays before 9:00 a.m. or after 3:00 p.m., or on any Saturday, Sunday, or any of the following listed County holidays without the approval of the Department:

- New Year's Day
- Martin Luther King's Birthday
- Presidential Inauguration Day (when applicable)
- Washington's Birthday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Veterans Day
- Thanksgiving Day
- County Employees' Appreciation Day (day after Thanksgiving Day)
- Christmas Day

2.C. TEMPORARY ROAD CLOSURE

2.C.01. On some occasions, it may be necessary to temporarily close a particular road section to all traffic. The Contractor's actions shall conform to the County Road Ordinance and the temporary County Road Closing Policies of the Department. This process is described in detail in Section I, Chapter 3, Part D of the Department's *Specification and Standards for Roadways and Bridges.* These actions shall include, but are not limited to, the following:

2.C.01.a. Provide the Department with a written request for closure and a TCP at least 30 days in advance of the proposed road closure for written permission and approval of the plan.

2.C.02.b. Notify all affected fire departments, police departments (State, County, and municipal), utility companies, the Washington Metropolitan Area Transit Authority (WMATA), and school boards in writing at least 2 weeks in advance of the proposed closure, once approved.

2.C.03.c. Upon approval, provide appropriate advance signage, including proper signage for any necessary detour routes, and later remove the advance notice signs.

2.D. AUTHORITY

In the event of noncompliance with any of the above conditions to provide maintenance of traffic or with the TCP, the Department has the authority to issue a Stop Work Order until the job site is brought into compliance.

2.E. TRAINING AND CERTIFICATION REQUIREMENTS

The Contractor's supervisor on the job site must have completed a "Temporary Traffic Control Traffic Manager's Training Course," must have passed the written examination, and must possess a valid Maryland Temporary Traffic Control (TTC) Traffic Manager's Certificate and International Municipal Signal Association(IMSA) Work Zone Traffic Control. If training is needed, contact the MSHA Traffic Development Division at 410-787-5860.

Additionally, a competent person possessing a current Level II (or better) IMSA traffic signal certification must be on-site during all work performed by the contractor. A copy of this certification must be on file with the Department before commencement of work

2.F. BASIS OF PAYMENT

All work, equipment, and materials incidental to maintenance of traffic, shall be provided and removed by the Contractor and shall be included in the cost for the individual bid items. Maintenance of traffic is not a separate pay item.

CHAPTER 3: REMOVAL AND SALVAGE OF EQUIPMENT

3.A. DESCRIPTION

3.A.01. This Specification covers the removal, salvage, and disposal of equipment and materials during the construction, modification, or removal of traffic control signals. Unless otherwise specified, all equipment indicated for removal shall be disposed of by the Contractor. The Contractor shall call the Department's Signal Shop at 301-499-8661 or the Department's Traffic Operations Section at 301-324-2781, 48 hours in advance of returning any specified equipment. The Contractor shall deliver the salvaged equipment to one of the following places or to the latest County-designated Salvage Contractor and obtain a receipt:

- The Department's Signal Shop
  8450-A D'Arcy Road
  Forestville, MD 20747
- Joseph Smith & Sons, Inc.
  2001 Kenilworth Avenue
  Beaver Heights, MD 20743
- Colonial Auctions
  1382 Marlboro Road
  Upper Marlboro, MD 20772

3.A.02. Final acceptance and payment will be withheld if the Contractor cannot present receipts or other satisfactory documentation showing that the specified salvaged equipment has been delivered to the County as specified. Material that is not to be salvaged shall be removed from the job site and properly discarded by the Contractor. The delivery and disposal costs will not be measured as pay items, but shall be included in the bid price of other items.

3.B. SPECIFIC ITEMS

3.B.01. Controllers and Cabinets

3.B.01.a. Prior to their removal, every cabinet, controller, , conflict monitor, detector amplifier, video equipment, UPS Units (including the batteries), fiber switches, and other major equipment shall be tagged and identified with the intersection name from which it was removed. Each piece of equipment shall then be carefully removed from the cabinet and boxed; and the pins and threaded portion of the connectors shall be protected with plastic covers, or the harnesses shall be left in place to prevent damage. The cabinet, with all other related equipment (clocks, flashers, load switches, etc.), may then be removed and transported intact.

3.B.01.b. Foundations of ground-mounted cabinets shall be excavated to 1 foot below the ground by demolishing the concrete and severing the anchor bolts, and, then, shall be backfilled to grade, compacted, and seeded. Where a base has extended into a sidewalk or other paved surface, that portion of the removed base shall be brought to grade and finished with the same material as the adjacent paving.

3.B.02. Signal Heads

All signal heads, including pedestrian heads, that are to be removed and salvaged shall be carefully dismounted, keeping as much of the hardware intact as possible. During removal and delivery, special care shall be taken to prevent damage to the lenses, L.E.D.'s and visors; broken lenses, L.E.D.'s should be removed, and loose visors should be tightened.

3.B.03. Poles

This item shall include the removal and salvage of strain poles, pedestal poles, mast arms, uprights, CCTV poles, HIB poles, flasher poles and their related hardware (pole tops, bolt covers, hand-hole covers, transformer bases, etc.). Pole foundations shall be excavated to 1 foot below the ground by demolishing the concrete and severing the anchor bolts, and, then, they shall be back-filled to grade, compacted, and seeded. Where a base has extended into a sidewalk or other paved surface, that portion of the removed base shall be brought to grade and finished with the same material as the adjacent paving.

3.B.04. Miscellaneous Equipment and Materials

The removal and salvage of miscellaneous equipment and materials covers those items not otherwise specified (e.g., steel cable, electrical cable, interconnect cable, conduit, handbox and splicebox frames and covers, courtesy pads, solar panels, etc.). Care should be taken in dismantling such equipment so as to permit its reuse in the future. All remaining holes or depressions shall be backfilled to grade, compacted, and seeded.

3.C. METHOD OF MEASUREMENT

The removal and salvage of equipment will be measured by each type specified. Unless otherwise specified, the related costs (e.g., transportation, disposal, concrete, seeding, etc.) will not be measured for payment, but shall be included in the bid price of other items.

3.D. BASIS OF PAYMENT

3.D.01. The removal and salvage of equipment, measured and accepted, as provided above, will be paid at the Contract bid price of:

QUANTITY	ITEM
(Each)	Remove and salvage or dispose of at the County's discretion controller all associated equipment in the cabinet and pole-mount cabinet
(Each)	Remove and salvage or dispose of at the County's discretion controller all associated equipment in the cabinet and base-mount cabinet
(Each)	Remove and salvage or dispose of electrical service
(Each)	Remove and salvage or dispose of strain pole
(Each)	Remove and salvage or dispose of mast arm pole and arm(s)
(Each)	Remove and salvage or dispose of breakaway pedestal pole
(Each)	Remove and salvage or dispose of overhead sign
(Each)	Remove and salvage or dispose of signal head
(Each)	Remove and salvage or dispose of street light and arm
(Each)	Remove and salvage or dispose of pedestrian push button and sign
(Each)	Remove and salvage or dispose of handbox/splicebox
(Each)	Remove and salvage or dispose of at grade regulatory/warning sign

3.D.02. Such payment shall consist of full compensation for the removal, salvage, disposal, and transporting of the specified equipment and materials, as well as for the furnishing of all materials, equipment, labor, and incidentals required to perform the work.

CHAPTER 4: COUNTY-SUPPLIED EQUIPMENT

4.A. DESCRIPTION

This Specification covers the installation of equipment that will be supplied by the County at designated locations. The appropriate locations and the applicable Specifications and Standards shall be shown on the design plans.

4.B. MATERIALS

The plans state specifically which materials will be supplied by the County. *All other materials shall be furnished by the Contractor.* The Contractor should refer to the appropriate Contract specifications to determine what other materials will be required to complete the installation. Those materials must then physically meet the specification stated. The Contractor shall also supply any additional miscellaneous materials that will result in a complete and acceptable job.

4.C. CERTIFICATION

The Contractor shall provide certification that any supplied materials will meet all applicable specifications and industry standards.

4.D. GUARANTEE

For any materials supplied by the Contractor, the Contractor shall furnish the County with all warranties offered by the manufacturers as normal trade practice. For the materials and workmanship supplied by the Contractor, the Contractor shall, during a period of 12 months following final acceptance, replace any item that fails because of defective material(s) or workmanship.

4.E. CONSTRUCTION METHODS

All workmanship and construction methods shall be in accordance with the appropriate specification(s) and in agreement with the applicable standard(s). For example, in the bid item, "Install controller and base-mount cabinet," the Contractor shall refer to these specifications: Chapter 5, "Traffic Signal Control Equipment." The Contractor shall then furnish any other necessary materials and shall complete the work needed to result in an acceptable finished installation. The Contractor shall also refer to the construction plans and typical standards details.

4.F. METHOD OF MEASUREMENT

Installation of County-supplied equipment will be measured by each major item specified and erected in place as shown on the plans, including miscellaneous materials and all labor, to result in a fully operable, complete, and acceptable installation.

4.G. BASIS OF PAYMENT

4.G.01. Installed, County-supplied equipment, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Install (equipment description)

4.G.02. The Contract unit bid price shall consist of full compensation for all work and miscellaneous materials necessary to complete the work item specified.

CHAPTER 5: TRAFFIC SIGNAL CONTROL EQUIPMENT

5.A. GENERAL

5.A.01. This Specification covers the requirements for the Contractor to provide a traffic signal controller assembly to be used by Prince George's County as part of the County's existing closed-loop traffic signal Streetwise system or the ATMS software from Naztec, Inc.

5.A.02. The controller assembly shall include a cabinet; a solid-state, full-actuated, controller/master unit; and a video detector rack with digital video detector boards, load switches, a flasher, and a conflict monitor or a Malfunction Management Unit (MMU)..

5.A.03. The controller assembly provided under this specification shall be a shelf-mounted minimum, eight-phase, full-actuated, solid-state, controller unit with internal time-based coordination / background cycle timer (TBC/BCT), railroad/firerun (emergency vehicle) preemption, hardwire interconnect, and computer online input for future computer control.

5.B. INDUSTRY CODES AND STANDARDS

In addition to the requirements designated elsewhere in this specification, the manufacture, materials, fabrication, installation, and testing of the controller assembly shall be in accordance with the latest issues and addenda, in effect at the date of inquiry issue, of the following industry codes and standards:

- National Electrical Manufacturer's Association (NEMA) Publication No. TS1-1989 Parts 2, 5, 6, 8, 13, and 14
- Military Specifications, MIL-W-16878D Type B/N PVC with nylon jacket
- American Society of Testing and Materials (ASTM), ASTM A320 B8F stainless steel pin
- Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices (MUTCD)
- Electronic Industry Association Standard RS-232 (RS-232).

5.C. CABINET REQUIREMENTS

5.C.01. Design Requirements

5.C.01.a. The cabinet shall be constructed using unpainted sheet aluminum with a minimum thickness of 0.125 inch. The outside shall be a natural aluminum finish and inside of the cabinet including the document drawer and shelves shall be painted white. No wood, wood fiber products, or other flammable materials shall be used in the cabinet. All welds shall be neat and shall have uniform consistency.

5.C.01.b. The cabinet shall be completely weatherproofed to prevent the entry of water. All nonwelded seams shall be sealed with a clear or aluminum-colored, weather-seal compound.

5.C.01.c. Vertical shelf support channels shall be provided to permit adjustment of the shelf location in the field. The channels shall have a single, continuous slot to allow shelves to be placed at any height within the cabinet. Channels with fixed notches or holes are not acceptable.

5.C.01.d. Each cabinet shall be equipped with an extra set of unistrut channels or a keyhole panel on either side of the front section of the cabinet to permit the mounting of additional equipment as necessary.

5.C.01.e. Shelves shall be at least 10.5 inches deep and shall be located in

the cabinet to provide a 0.5-inch clearance between the back of the shelf and the back of the cabinet. A 1.5-inch drawer shall be provided in the base cabinet, mounted directly beneath the controller support shelf. This drawer shall have a hinged top cover and shall be capable of storing documents and miscellaneous equipment. This drawer shall support up to 50 pounds in weight when fully extended and shall open and close smoothly. Drawer dimensions shall make maximum use of the available width and depth offered by the cabinet and the controller shelf.

5.C.01.f. The cabinet shall be vented and cooled by a thermostatically controlled fan. The fan shall be a commercially available model with a capacity of at least 100 cubic feet per minute (CFM). The thermostat shall be an adjustable type with an adjustment range of 70 to 160°F. A press-to-test switch shall be provided to test the operation of the fan. The fan shall be equipped with a fan guard.

5.C.01.g. The intake for the vent system shall be filtered with a standard, 16 inches by 20 inches by 1 inch, air conditioning filter. The filter shall be securely mounted by a spring spanning the entire width of the filter. The cabinet opening for intake of air shall be large enough to use the entire filter. The air intake and exhaust vent shall be screened to prevent entry of insects. The screen shall have openings no larger than 0.0125-square inches. The total free air opening of the exhaust vent shall be large enough to prevent excessive back pressure on the fan.

5.C.01.h. The cabinet shall be provided with a unique five-digit serial number which shall be stamped directly on the cabinet, engraved on a metal or metallized Mylar plate, epoxied or riveted with aluminum rivets to the cabinet. The digits shall be at least 0.2 inches in height and located on the upper right sidewall of the cabinet near the front.

5.C.01.i. The cabinet shall be either a base-mounted cabinet with the following external dimensions:

- Width: 44 inches,
- Height: 54 inches, or 68 inches
- Depth: 26 inches;

or a pole-mounted cabinet with the following external dimensions:

- Width: 30 inches,
- Height: 50 inches, and
- Depth: 18 inches.

The size and type of cabinet to be supplied will be determined by approved design plans.

5.C.01.j. The nominal height and depth dimensions may be increased up to 4 inches or decreased no more than 2 inches.

5.C.01.k. The base-mounting holes shall be located at the corners of a 40.6-inches by 18.5-inches rectangle. The holes shall be slotted to allow adjustment of the cabinet of ± 0.5 inches along the short dimension of the cabinet and shall be large enough to accommodate a 1-inch-diameter bolt.

5.C.01.l. Four, 0.625-inch (minimum) by 8-inch, galvanized, anchor bolts with nuts, washers, and a mounting template shall be provided for each cabinet.

5.C.01.m. A minimum of two, aluminum brackets suitable for pole mounting shall be included on the pole-mounted cabinet. These brackets will be of a type used with standard, stainless steel, banding systems and shall accommodate two bands each.

5.C.01.n. There shall be sufficient shelf space to accommodate a 13-inch-high controller unit; a 12-channel NEMA-enhanced, back-lit, liquid crystal display (LCD), conflict monitor or Malfunction

Management Unit (MMU); and a Clary, SP1000 SN with power interface module 30C, batteries (6) 51AH (#OP-72D), battery connector harness (single string 72VDC battery cable, model #SP-14E1), back-up, power unit to maintain a continuous power supply. An additional shelf shall be provided to house either one eight-slot detector rack and one five-slot video rack, or only one five-slot video rack, as specified by the model number. An external power supply shall be included in either case.

5.C.01.o. The cabinet interior shall be painted white.

5.C.01.p. All hardware used to connect this assembly, to terminate wires, to attach shelves, or to make provision for any type of connection will be stainless steel or nickel-plated brass. This includes all screws, nuts, bolts, and washers. No exceptions to this requirement shall be allowed.

5.C.01.q. No vertical seams shall be allowed, except for in the corners. The cabinet sidewalls and back shall be fabricated from one piece of sheet metal.

5.C.01.r. The exterior finish of the cabinet shall be bare aluminum.

5.C.02. Back Panel

5.C.02.a. The back panel shall be hinged at the bottom and shall fold down and out from the top for maintenance with all components (load switches, relays, etc.) in place. It shall be possible to gain full access to the back of the back panel in less than 2 minutes using simple tools. Wire termination points on the back of the back panel shall be numbered or identified to correspond to the labeling on the face of the panel. No printed circuit back panels shall be permitted. No components, with the exception of transient suppression devices for relay coils, shall be mounted behind the back panel.

5.C.02.b. Outputs from the controller to the load switches and from the detectors to the controller shall be brought through posted 0.1875 x 0.25" binder head screw terminals with removable shorting bars installed.

5.C.02.c. The load switches and flashers shall be supported by a bracket(s) designed to accept all NEMA-Type load switches and flashers. The bracket(s) shall support the switch and prevent vibration from dislodging it from the socket in the back panel.

5.C.02.d. Each load switch output shall have a Metal Oxide Veristor (MOV) device, with a minimum rating of 20 joules, connected from the terminal to the cabinet ground. The MOVs may be mounted on either the front or the back of the panel. In either case, the MOVs shall not obstruct or interfere with the field wiring.

5.C.02.e. The assembly for the base-mount cabinet shall provide 16 load switch sockets. The assembly for the pole-mount cabinet shall provide 12 load switch sockets. From left to right, they shall be connected for eight vehicle phases (phases 1–8), four overlaps (overlaps 1–4), four pedestrian phases (phases 2, 4, 6, and 8), and a NEMA two-circuit flasher. A minimum of six flash-transfer relays shall be provided to permit use of the overlap/pedestrian load switches in any combination without having to add more relays.

5.C.02.f. Flash-transfer relays shall be wired to remain de-energized during the normal operation mode of the intersection. The flash relays will become energized only upon command of manual or conflict flash. A relay is required that will disconnect 24V DC from the common side of all load switch packs during manual or conflict flash. The relay shall have a push button to apply momentary power to the switch packs to aid in troubleshooting. This is provided for safety purposes and is designed to prevent the intersection from

flashing and displaying colors at the same time. There will be no exceptions to this requirement.

5.C.02.g. The ground shall consist of a bus bar connected to the back panel. The bus bar shall be connected to the cabinet by an insulated, braided, copper, ground strap. The strap shall be bonded to the cabinet and shall not interfere with the lowering of the back panel.

5.C.03. Cabinet Door—All Cabinets

5.C.03.a. The cabinet shall be provided with one door in the front that will provide access to the cabinet. The door shall be provided with a full-length piano hinge with a stainless steel pin spot-welded at the top of the hinge. The hinge shall be mounted so that it is not possible to remove it from the door or cabinet without first opening the door. The bottom of the door opening shall extend at least to the bottom level of the back panel.

5.C.03.b. The door and hinges shall be braced to withstand a 50-pound load per vertical foot of door height applied to the outer edge of the door when standing open. There shall be no permanent deformation or impairment of any part of the door or cabinet body when the load is removed. Provisions shall be made to hold the door open at approximately 90-degree and 180-degree positions.

5.C.03.c. The cabinet door shall be fitted with a No. 2 Corbin lock and a stainless steel handle with a 0.625-inch (minimum) shaft and a three-point latch. The lock and latch design shall be such that the handle cannot be released until the lock is released. One key shall be provided for each cabinet. The lock shall be located to be clear of the arc of the handle. The door handle shall be capable of being padlocked in the closed position.

5.C.03.d. A gasket shall be provided to act as a permanent dust- and weather-resistant seal at the controller cabinet door facing. The gasket material shall be made of a nonabsorbent material and shall maintain its resiliency after long-term exposure to the outdoor environment. The gasket shall have a minimum thickness of 0.375 inches. The gasket shall be located in a channel provided for this purpose on either the cabinet or the door(s). An ell bracket is acceptable in lieu of this channel if the gasket is fitted snugly against the bracket to ensure a uniform dust- and weather-resistant seal around the entire door facing. Any other method is subject to approval by the Department.

5.C.03.e. A locking auxiliary police door shall be provided in the door of the cabinet to provide access to a panel that shall contain a signal flash and on/off switches.

5.C.03.f. The police door shall be gasketed to prevent entry of moisture or dust, and the lock shall be provided with one brass key.

5.C.04. "D" Panel

5.C.04.a. Master or secondary operation for any given application shall be operator selective. All input/output connections shall be brought to terminal strips on the coordination panel and shall be clearly identified by function. For maintenance purposes, the entire panel shall be readily replaceable in the field with the use of common tools.

5.C.04.b. All coordination inputs and outputs between the "D" panel and the controller shall be grounded and operated at 24V DC.

5.C.04.c. It shall not be necessary to make any cabinet wiring changes other than the addition of a master/secondary jumper (in the controller) to change from secondary to master operation.

5.C.05. RS-232 Connector

5.C.05.a. The traffic signal controller unit shall be furnished with an external, RS-232 interface with a DB-25 connector for use with a modem. The following functions shall be available for access by a modem: TD, RD, RTS, CTS, DSR, DCD, and DTR (as defined in RS-232).

5.C.05.b. One terminal block with a minimum of six terminals will be required on the communications interface panel. Each pair shall be protected by gallium arsenide (GaAs) tube suppressors.

5.C.06. Cabinet Wiring

5.C.06.a. All wiring within the cabinet shall be neatly routed so that opening and closing the cabinet door, or raising or lowering the back panel, will not twist or crimp the wiring. All wiring harnesses shall be either braided, sheathed in nylon mesh sleeving, or made of polyvinyl chloride (PVC) or polyethylene-insulated-jacketed cable. Wiring leading to the door shall be of PVC-jacketed cable only.

5.C.06.b. All conductors between the main power circuit breakers and the signal power bus shall be made of, at a minimum, size No. 10, American wire gauge (AWG), stranded copper. All conductors carrying individual signal-lamp current shall be, at a minimum, size No. 16 AWG, stranded copper. All alternating current (AC) service lines shall be of sufficient size to carry the maximum current of the circuit or circuits they are provided for. The minimum cabinet conductor wire size shall be No. 22 AWG, stranded copper. All wiring and insulation shall be rated for 600V or greater.

5.C.06.c. Conductors for AC common shall be white. Conductors for equipment grounding shall be green. All other conductors shall be a color other than the foregoing.

5.C.06.d. A barrier terminal block with a minimum of three terminals and one compression fitting designed to accept up to No. 4 AWG, stranded wire shall be provided for connection of the AC power lines. The block shall be rated at 50 amperes and shall have double 10-32 x 5/16" or larger binder head screw terminals.

5.C.06.e. All AC wiring in the path from the terminal block to the transient surge suppression device, as specified later in this Section, shall be isolated and bundled separately from all other wiring in the cabinet.

5.C.06.f. All terminals shall be permanently identified in accordance with the cabinet wiring diagram. Where through-panel solder lugs or other suitable connectors are used, both sides of the panel shall have the terminals properly identified. Identification shall be silk-screened as close to the terminal strip as possible and shall not be affixed to any part which is easily removable from the terminal block panel.

(i) Each controller input and output function shall be distinctly identified, with no obstructions, at each terminal point in the cabinet, with both a number and the function designation. The same identification must be used consistently on the cabinet wiring diagrams.

(ii) Each load switch socket shall be identified by phase number and overlap number as applicable. No cabinet equipment, including the load switches themselves, may obstruct these identifications.

(iii) Each flash-transfer base and power-relay base shall be properly identified, with no possible obstructions.

(iv) Each harness within the cabinet shall be distinctly identified by function on the connector end.

(v) The flasher socket shall be distinctly identified, with no possible obstruction.
(vi) All other sockets required by the Contract specifications, or the attachment thereto, shall be distinctly identified.
(vii) Except for the load switch inputs to the conflict monitor, all NEMA controller unit and conflict monitor connector pinouts shall be made available on 0.1875 x 0.25", at a minimum, binder head screw terminals on the back panel.
(viii) The controller unit harness (A, B, and/or C plugs) shall be long enough to reach any point 16 inches above the timer shelf. The conflict monitor harness and any required auxiliary harness shall reach 24 inches from the conflict monitor shelf.
(ix) An unused, spare terminal block with 10 terminals shall be provided. This block shall be composed of a double 8-32 x 5/16" binder head screw design with shorting bars. These terminal strips shall be located on the lower third of either side of the cabinet.
(x) Copper ground buses shall be provided for both the power supply neutral (common) and chassis ground. Each bus bar must provide a minimum of 10 unused terminals with 8-32 x 5/16" or larger screws. The AC neutral and chassis ground buses shall be jumpered together with a minimum No. 10 AWG wire. The logic ground shall be isolated from the AC neutral and shall be terminated on a logic ground bus designed to accept 20 No. 20 AWG, stranded wires.
(xi) The circuit breakers shall be equipped with solderless connectors and installed on the right side wall facing the cabinet, or on the lower right-hand side of the back panel inside the cabinet. In order to be easily accessible, the breakers shall be positioned so that the rating markings are visible.
(xii) The above breakers are in addition to any auxiliary fuses that may be furnished with the controller to protect component parts such as transformers, etc.
(xiii) The load side of the main circuit breaker shall be protected by Hesco/RLS HE1800 or equivalent lightning surge suppressors.
(xiv) The suppressor ground connection shall be connected to the cabinet by means of a short, heavy, copper, ground strap. The strap shall be bonded to the cabinet.
(xv) The suppressor shall be connected to the line filter as recommended by the manufacturer. A No. 10 AWG or larger wire shall be used for connections to the suppressor, line filter, and load switch bus.
(xvi) A fluorescent light, with a switch, shall be installed in the cabinet. This light shall be turned on when the cabinet door is opened, and turned off when the cabinet door is closed. A switch shall also be provided to turn off any incandescent display that may be used in a controller unit or in other equipment. An MOV or other such transient suppression device shall be placed across the AC power input to the light.
(xvii) Transient suppression devices shall be placed on the coil side of all relays in the cabinet. DC relay coils shall have, at a minimum, a reversed biased diode across the coil. AC relays shall have MOVs or equivalent suppression across their coils. Resistor capacitor (RC) networks are acceptable. One suppression device shall be supplied for each relay.

(xviii) Except where soldered, all wires shall be provided with lugs or other approved terminal fittings for attachment to binding posts. Insulation parts and wire insulation shall be insulated for a minimum of 600V.
(xix) The outgoing traffic control signal circuits shall be of the same polarity as the line side of the power source.
(xx) A switch shall be provided on the inside face of the cabinet door and shall be labeled "Flash–NORMAL." When the switch is in the Auto position, a call for flashing operation shall remove the power from the controller unit. When the switch is in the Flash position, a call for flashing operation shall permit the controller unit to continue to run so that its operation can be observed. Metal switch protectors will be provided in order to prevent accidental contact with all switches.
(xxi) A switch shall be provided near the Flash- Auto switch to cause the controller unit and any auxiliary equipment to stop timing. It shall be labeled "STOP TIMING." In addition, the cabinet shall be wired so that activation of the conflict monitor or Malfunction Management Unit(MMU)will cause the controller unit and any auxiliary equipment to stop timing.
(xxii) The cabinet shall be wired so that activation of the conflict monitor or Malfunction Management Unit(MMU will cause the controller unit and any auxiliary equipment to stop timing.
(xxiii) Conflict and manual flash shall be wired in amber for phase 2 and 6; all other phases and overlaps shall be red.
(xxiv) The cabinet shall be designed and equipped with enough transfer relays to allow the technician, using only simple tools, to change any main street indications (movements 2 and 6 and/or 1 and 5) to change to amber for the conflict and/or manual flash operation on the face of the back panel or a side panel.
(xxv) Transfer relays shall be the plug-in type manufactured by Midtex (Part No. 136-62T3Al) or Struthers-Dunn (Part No. 21ACPX-2/21XBXP), or equivalent. The relays shall have contacts, at a minimum, of 0.375 inches in diameter and shall be rated at a minimum of 30 amperes 120/240V AC, 20 amperes 28V DC.
(xxvi) The red enable and remote reset from the conflict monitor shall be terminated on the face of the back panel.
(xxvii) A 20-, a 30-, and a 50-ampere, thermal-type circuit breaker shall each be mounted and wired in the cabinet. The 20-ampere breaker shall protect the fluorescent cabinet light, trouble light, ground fault circuit interruption (GFCI) receptacle, and fan. The 30-ampere breaker shall protect the flasher circuit. The 50-ampere breaker shall protect the signal load circuits, controller circuits, conflict monitor, and loop detectors. The breakers shall be Square "D" QUO 150 series, or equivalent.
(xxviii) A radio frequency interference (RFI) suppressor shall be provided and installed on the load side of the signal circuit breaker and shall be protected by the surge protector. This filter shall be rated at 50 amperes and shall provide a minimum attenuation of 50 decibels over the frequency range of 200 kilohertz to 75 megahertz.
(xxix) A 75-ampere, normally open, solid-state (CRYDOM series 1-A2475, or equivalent) relay shall be wired between the RFI filter output and the load switch power buses. The relay shall be controlled by the flash switch and shall

operate within the NEMA temperature range by de-rating the device and using necessary heat sinks.

(xxx) A ground fault circuit interruption (GFCI-Type) duplex receptacle shall be mounted and wired in the lower right side wall of the cabinet. This receptacle shall be wired on the load side of the 20-ampere circuit breaker.

(xxxi) All exposed AC wiring points, including the RFI filter, surge suppressor, and solid-state relay, shall be covered with a clear, nonconductive, plastic cover to prevent accidental contact. Unless otherwise noted in this specification, wiring at terminal strips is exempted from this requirement.

(xxxii) A safety lighting panel will be wired so that the photoelectric cell will call in a load relay, and the power source for the luminaires will be on one normally open contact. The photoelectric cell, load relay, and luminaire shall be connected through a terminal block. The load relay shall be the plug-in type manufactured by Midtex (Part No. 136-62T3AI), AEMCO (Part No. 136-4992), or equivalent. The wire gauge shall be, at a minimum, a No. 12 AWG for all wires connected to the load relay.

(xxxiii) A down light relay shall be wired to operate from the special function output I through a 24V relay with a contact rating of 20 amperes, and the outputs shall be wired back to the field termination panel.

(xxxiv) The auto/flash switch, housed in the police door, shall apply external start to the controller when it is in the flash position.

(xxxv) The signal on/off switch, housed in the police door, shall turn off (become dark) the signal indications whether the controller is in normal or flash operation.

5.D. FULL-ACTUATED TRAFFIC SIGNAL CONTROLLER REQUIREMENTS

5.D.01. General Requirements

5.D.01.a. The controller unit shall meet the requirements of NEMA *Publication No. TS1-1989*, and TS2-2003 v02.06 or the latest edition of each publication,. Where a difference occurs, the requirements in this document shall govern unless directed otherwise by the Department.

5.D.01.b. All inputs and outputs to the controller unit shall conform to all interface and environmental standards in NEMA *Publication No. TS1-1989* and TS2-2003 v02.06 or the latest edition of each publication. Where a difference occurs, these requirements shall govern.

5.D.01.c. Each controller unit shall have a unique serial number that is permanently and neatly engraved on the face of the unit. If this serial number is not on the face of the unit, then an additional typed, metallized, Mylar label shall be affixed to the controller unit face.

5.D.02. Hardware Design Requirements

5.D.02.a. The controller unit shall be completely solid-state and digitally timed. All timing shall be referenced to the 60 hertz power line.

5.D.02.b. The dimensions of the controller unit shall not exceed 13 inches high, 17.5 inches wide, and 13 inches deep.

5.D.02.c. The controller unit shall be built using one or more circuit boards. All printed circuit boards shall be designed to plug into a mother board or harness within the unit. Power supply, transformers, capacitors, and heat-dissipating components are exempt from the above requirements.

5.D.02.d. The design shall allow for removal or replacement of a circuit board without unplugging or removing other circuit boards.

5.D.02.e. The unit shall be designed so that one side of each board can be completely accessible for troubleshooting and testing the unit while it is still operating. This may be accomplished with extender boards or cables. This need apply to only one circuit board at a time.

5.D.02.f. No more than two circuit boards shall be attached to each other to constitute a circuit assembly. Use captive nuts or another acceptable method when attaching hardware to secure the boards together. The boards shall be designed so that the controller unit can be tested and operated with the boards separated.

5.D.02.g. No circuit cuts shall be allowed on circuit boards in any of the equipment supplied. Any wire jumpers included on circuit boards shall be placed in plated through holes that are specifically designed to contain them. Jumpers that are tack-soldered to circuit traces or that are added to correct board layout errors are not acceptable.

5.D.02.h. For easy maintenance, all integrated circuit (IC) chips will be mounted in sockets. Dual-in-line package (DIP) devices shall be mounted in military specification sockets. All sockets shall have two-piece, machined contacts and closed-end construction to eliminate solder wicking. The outer sleeve shall be brass with tin or gold plating and tapered to allow easy IC insertion. The inner contact shall be beryllium copper subplated with nickel and plated with gold. All sockets shall have thermoplastic bodies meeting Underwriters Laboratories (UL) Specification 94V-0. Each IC socket contact shall be plated with at least 50 microns of gold. Zero insertion force sockets will not be allowed.

5.D.02.i. Each of the following shall be displayed on the face of the unit:

- Phase(s) in service (one per ring);
- Phase(s) next to be serviced (one per ring);
- Presence of vehicle call (one per phase);
- Presence of pedestrian call (one per phase);
- Reason for green termination (one per ring);
- Gap-out;
- Maximum time-out;
- Force-off;
- Pedestrian service (one per phase); and
- Max II in effect (one per ring).

5.D.02.j. Steady and flashing indications may be used for phase-in, phase-next, and pedestrian service ("walk," "don't walk"), or any other mutually exclusive indications.

5.D.02.k. User-programmed entries and timing settings shall be stored and maintained in nonvolatile memory. Battery power will not be allowed for this application.

5.D.02.l. The firmware updates shall be accomplished by using the supplied upload/download units connected to the controller's RS-232 port (stored in flash read-only memory [ROM]). It shall not be necessary to physically replace hardware components to update the firmware. The update procedure shall be accomplished by connecting the upload/download unit to a communications port on the controller and transferring the new firmware from files on the PC to the controller programmable read-only memory (PROM). The components shall accept a minimum of 1,000 firmware updates. In addition to the upload/download unit, the following components shall be supplied to accomplish the firmware update:

(i) PC-compatible, software program to accomplish the transfer with a verification routine;

(ii) RS-232 cables for interconnecting the upload/download unit to the controller (one for every upload/download unit); and
(iii) One copy of the instruction manual for the entire process.
The update process shall be accomplished at a minimum transfer rate of 9600 baud and shall be completed in 10 minutes or less.

5.D.02.m. All circuit components shall be of high quality and shall be designed to withstand any of the environments and voltage conditions described in the NEMA *Publication No. TS1-1989*. and TS2-2003 v02.06 or the latest edition of each publication.

5.D.02.n. The controller unit shall be designed to operate properly with the logic ground isolated from the AC neutral (common).

5.D.02.o. A high-quality keyboard with a minimum rated lifetime of 1×10^6 operations/key shall be provided on the front panel of the controller unit. The keyboard shall be used for programming all user-entered timings and settings.

5.D.02.p. A direct-reading, alphanumeric or graphic, LCD with back lighting shall be provided on the front panel of the controller unit. The display shall be clearly readable in ambient light (including the cabinet light), in full sunlight, or in the absence of light from a distance of approximately 3.5 feet at a 45-degree angle. The display shall have an automatic time-out feature, unless the display has an expected continuous life of 10 years or more, and shall have an operating and viewing temperature range of –30°F (-34°C) to +165°F (+74°C). The display shall blank out 10 minutes after the last keystroke is made.

5.D.02.q. The backlighted display consists of a minimum of 40 characters on 4 lines. The Contractor shall demonstrate that all display requirements of this specification are met prior to acceptance. If an LCD contrast adjustment control is required for visibility at extreme viewing angles, then the control shall be on the face of the controller unit and shall be adjustable without the use of tools.

5.D.02.r. There shall be a minimum of five external alarms. The inputs shall be brought into the controller through the 57-pin connector described in Appendix B, Standard Details.

5.D.02.s. The Contractor shall provide one spare set of all proprietary components, including displays, ICs, and PROMs for every 10 controller units purchased, or portions thereof, with a minimum of one set per order.

5.D.03. Time-Based Coordinator/Background Cycle Timer (TBC/BCT) (Clock Function)

5.D.03.a. If the clock assembly is provided on a plug-in card, a capacitor shall be provided so that the clock does not lose memory or synchronization when removed or disconnected. When removed from the controller unit, the clock assembly shall maintain 0.005 percent accuracy for a minimum of 168 continuous hours.

5.D.03.b. The clock shall use the 60 hertz power line frequency as a time base when power is present. The clock operating voltage range shall be 95 to 135V AC over the temperature range of –30°F (-34°C) to 165°F (74°C).

5.D.03.c. In the event of power failure, a capacitor shall be provided so that the clock continues to operate for 168 continuous hours per outage while maintaining a cumulative accuracy of ± 0.005 percent (less than 4.4 seconds per day) over a temperature range of –30°F (-34°C) to 165°F (74°C), regardless of the number of

power failures. Any clock correction factors shall be delivered with the default settings necessary to maintain the clock accuracy.

5.D.03.d. The following displays shall be provided continuously on the front panel, or they shall be displayed by single-keystroke requests or by multiple strokes of a single key or by a menu entry not more than two levels removed from the main menu:

(i) Current cycle;
(ii) Current split;
(iii) Current offset;
(iv) Coordination status (type of coordination);
(v) Local background cycle timer; and
(vi) System background cycle timer.

5.D.04. Preempt

5.D.04.a. There shall be a minimum of six preempt inputs. The inputs shall be brought into the controller unit through the 57-pin connector described in Appendix A, Controller Detector Inputs Mode 2.

5.D.04.b. A delay to eliminate false preemption commands shall be provided by the controller unit before initiation of the preempt sequence.

5.D.04.c. Countdown interval timing displays shall be provided for each interval and shall be displayed during the timing of the associated interval.

5.D.04.d. Controller unit inputs and outputs provided for the preempt function shall conform to all requirements of NEMA *Publication No. TS1-1989*, Section 13, Parts 13.1 and 13.2; and Section 2, Part 2.1.7.

5.D.05. Hardwire Interconnect

External cycle and split commands shall be encoded (binary) on the respective cycle and split input lines so that cycle 1 and split 1 shall be called for by neither of their respective pairs of inputs being active. Cycle 4 and split 4, if provided, shall be called for by activation of both cycles 2 and 3, or splits 2 and 3 respectively. The offset selection scheme received from, or transmitted to, any external interconnect cable by the interconnect termination panel shall have the synchronization pulse superimposed upon whichever of the offset lines (1, 2, 3, or 4) is energized at any one time. Any scheme where the synchronization pulse is transmitted on a line separate from the offset selection lines is not acceptable.

5.D.06. External Download/Upload Interface

5.D.06.a. The controller unit shall have an RS-232 serial port accessible through a DB-25S connector. The reserve connector pin assignments shall be as follows:

PIN	DESIGNATION
1	Frame ground
2	Transmit data
3	Receive data
4	Request to send
5	Clear to send
6	Data set ready
7	Signal ground
8	Data carrier detect
20	Data terminal ready
22	Ring indicator

5.D.06.b. The baud rate of the port shall be keyboard- or jumper-selectable for any one or more of the following rates: 600, 1200, 2400, 4800, 9600, or 19200.

5.D.06.c. The port shall be configured for an eight-bit word, one start bit, one stop bit, and no parity.

5.D.07. Dimming

5.D.07.a. Dimming shall be selective by phase and by color (red, yellow, and green), including pedestrian intervals and overlaps.

5.D.07.b. The dimming intensity shall be 50 percent of the power to the signal. Only one dimming intensity shall prevail for all indications selected for dimming.

5.D.07.c. Occurrences of dimming shall be determined by the internal time-of-day (TOD) program.

5.D.07.d. Overlap intervals shall also have the capability to be dimmed as described in this Section.

5.D.07.e. The dimming feature shall be capable of functioning in a cabinet equipped with a NEMA-enhanced, back-lit, LCD conflict monitor.

5.D.08. Program Requirements

5.D.08.a. Programming of the controller unit, including TBC/BCT features, shall be done by using a keyboard and display on the front of the controller unit. Internal DIP may be used for option start-up programming. Programming shall require only simple keystrokes aided by full menu displays.

5.D.08.b. Ease of programming and ease in interpreting the display shall be required for acceptance. The menu structure shall contain a main menu which contains options for all sections of the controller on one screen. Each option shall be selectable by a numeric entry. Each subsequent menu shall be a detailed breakdown of one of the previous menu options. Each menu option shall be a descriptive name to prompt the user to the desired section for programming. All entries shall be displayed and entered in plain English. Toggle-type entries shall be set by entering YES/NO or ON/OFF responses. Non-alphanumeric symbols used to display information shall be clear and unambiguous in their meaning. Numeric entries shall be in the base 10 (decimal) number system. Entries in other number bases such as hexadecimal or binary are not acceptable.

5.D.08.c. Each of the NEMA timing intervals shall be programmable for all eight phases from the same display screen in a spreadsheet format. The display may be rolled, or paged down, to display additional intervals or information.

5.D.08.d. A user-selectable, four-digit (minimum) code shall be available to secure access to timing and configuration of the unit. Display features shall be available without the need to access the unit. The controller units shall be supplied with the code preset to be all zeros (0000). Internal DIP switches may be used to establish codes.

5.D.08.e. Instructions for use of the access code shall not be provided on the face of the unit.

5.D.08.f. A keyboard-entered, coded command (a series of commands or entries, not a single entry) shall be provided which will set all controller and TBC timings and entries to a default or inactive value. This coded command shall allow new values to be entered without first deleting prior entries.

5.D.08.g. The controller unit shall have a copying mode whereby the user, after having programmed all intervals of one phase, may copy this information into all or selected remaining phases. Other versions of the copying process that meet the functional intent are acceptable.

5.D.08.h. The controller shall have two modes of input line assignments. Mode 1 shall be the standard NEMA inputs. Mode 2 shall be 32 inputs plus 24 additional inputs as defined in Appendix A, Controller Detector Inputs Mode 2. This setting shall be keyboard selectable with mode 1 labeled "NEMA/Advanced Traffic Management System (ATMS)" and mode 2 labeled "32 Detector (DET) INPUTS."

5.D.09. Controller Operational Features

5.D.09.a. Volume density timing shall be provided as specified in the NEMA *Publication No. TS1-1989* and TS2-2003 v02.06 or the latest edition of each publication's minimum requirements.

5.D.09.b. The controller unit shall be programmable for dual-entry operations.

5.D.09.c. The following modes shall be available on a per phase basis:

(i) Maximum recall;
(ii) Minimum recall;
(iii) Pedestrian recall;
(iv) Soft recall;
(v) Detector locking and non-locking memory;
(vi) Phase omit; and
(vii) Maximum and pedestrian recall.

5.D.09.d. The following configurations, at a minimum, shall be programmed within the controller unit and be user-selectable:

(i) Eight-phase NEMA;
(ii) Eight-phase sequential; and
(iii) NEMA phasing to the left of the barrier and sequential phasing to the right of the barrier (quad sequential).

5.D.09.e. The controller unit shall be designed to provide pedestrian phasing with any phase(s).

5.D.09.f. Eight overlaps shall be provided and designated as overlaps "A, B, C, D, E, F, G, and H." All overlaps shall be programmable through the keyboard and shall function as described in NEMA *Publication No. TS1-1989*, Paragraph 14.3.7. Each overlap shall have an associated green time independent of the parent phases and shall time at the termination of the parent phase.

5.D.09.g. The controller shall have a configuration which allows user-programmable barriers or rings (compatibility lines, reference points to assure there shall be no concurrent selection and timing of conflicting phases). A minimum of four barriers or rings will be available in this configuration.

5.D.09.h. The controller shall have programmable conflicting phase settings, where simultaneous operation of compatible phases is not allowed. This shall be selectable by the time of day.

5.D.09.i. The controller shall be programmable for simultaneous gap operation to allow a phase-in, dual-ring operation to re-extend out of a green rest state. When the phase(s) to be serviced next conflict(s) with both phases being serviced, both concurrent phases must reach a green rest state together before they may terminate. Termination of the Max timer or application of a force-off shall override this feature. The phases shall not be allowed to advance to a green interval beyond the rest state which might defeat the simultaneous gap operation.

5.D.09.j. The controller shall be programmable for conditional servicing of left turns in the eight-phase NEMA configuration if the following conditions are true:

(i) The opposing through movement has gapped out.
(ii) The compatible through movement green continues to extend.
(iii) The compatible through movement has adequate time on the Max timer to service the left turn's minimum time and the terminating through movement's amber and red times. If a left turn is re-serviced, the controller shall terminate the phases when the through phase gap termination or Max termination points are reached.

5.D.09.k. The controller shall have user- programmable detector assignments. All 32 detectors shall be assignable to any phase for the purpose of calling or extend-

ing the phase. The default detector assignments shall be as defined by NEMA *Publication No. TS1-1989* and TS2-2003 v02.06 or the latest edition of each publication for detectors 1 through 8; the remainder of the detectors will be unassigned in the default mode.

5.D.09.l. The overlaps shall be keyboard-programmable to run pedestrian times associated with active vehicle movements. If a serviceable call in the programmed overlap at the end of the walk time exists, the pedestrian overlap shall rest in "walk" until the pedestrian timing of the next parent phase starts.

5.D.09.m. A dynamic Max time (MAX3), which increments the current maximum in programmable steps (MAX STEP in seconds) to this maximum setting, shall be provided. The incrementing of maximum time will initiate after two consecutive Max terminations and will terminate after any gap termination.

5.D.10. TBC/BCT Operation

5.D.10.a. The TBC/BCT shall select and coordinate reversible, left-turn sequence operations (dual-leading, leading and lagging, or lagging and leading left turns). It shall be possible to transfer operation from one sequence to another at a preprogrammed time. Transfer shall take place at the barrier following phases 1, 2, 5, and 6, or at T(0) as defined in Section 5.D.11, "Coordinator Operation."

5.D.10.b. There shall be a pedestrian override mode, in addition to any modes of operation described in this specification, that operates as follows:

(i) When pedestrian calls are present, the normal phase timings programmed for a particular coordination plan shall be effective for service of the intersection.

(ii) When a pedestrian call is present, the call will be serviced by timing the programmed pedestrian times for that phase and by overriding the normal split times. The intersection shall suspend the local TBC counter upon the activation of the phase force-off until the pedestrian time has been serviced. The controller unit shall return to coordination in the manner described in this specification after the call is serviced. The programmed phase sequence may not be altered in reestablishing coordination.

(iii) When the intersection is being operated under ATMS control, this mode shall be ignored.

(iv) All timing entries required to operate in this mode shall be user-programmable. The timings shall be programmable on a per phase basis. Normal pedestrian timing entries may be used for the pedestrian override timings in this mode. (Special pedestrian timings are not required.)

(v) This mode shall not be a default operating mode. This mode shall be selectable by an individual plan.

5.D.10.c. A minimum of 64 patterns specifying cycle length, splits, and offsets shall be required. The 64 patterns shall consist of:

(i) A minimum of 16 cycle length selections, each changeable from 30 to 255 seconds in 1-second increments;

(ii) A minimum of one split per cycle length selection; or

(iii) A unique offset of every cycle/split combination adjustable from 0 to 255 seconds in 1-second increments.

The patterns not specified above can be achieved by additional cycle lengths, splits per cycle length selection, or offsets per cycle split combination.

5.D.11. Coordinator Operation

5.D.11.a. The coordinator shall reference a system-wide reference cycle timer (system cycle timer). The term T(0) shall refer to the point in the local cycle timer when the coordinated phase (or leading coordinated phase if a pair of coordinated phases was selected by the user) is scheduled to turn on the first time. Note: This may not be the beginning of green in the case of early return. In the event of early return to Main Street Green, the pedestrian outputs shall not turn on until after a point when no other phases are allowed to be serviced before T(0). The offset shall be the amount that the local cycle timer is behind the system cycle timer. For example, if the offset is +10 seconds, T(0) (the point at which the local cycle timer is at 0) will occur when the system cycle timer is at 10 seconds.

5.D.11.b. There shall be two modes of automatic coordination programming, fixed and floating force-off modes. The following information shall be all that is required from the user to establish a pattern:

(i) Basic NEMA controller timing;
(ii) Cycle length in seconds;
(iii) Phase sequence desired for the particular pattern;
(iv) Total seconds or percentage of the cycle that a phase is to be active, including green, amber, and red times when there is constant demand on all input detectors;
(v) The offset of the first coordinated phase serviced in the sequence from the reference clock's T(0) in seconds; and
(vi) Pedestrian override mode selection.

5.D.11.c. Using the above information in fixed force-off mode, the coordinator must perform the following functions for each pattern:

(i) Guarantee the coordinated phase(s) programmed time will be serviced in its entirety to achieve coordination between intersections. The programmed time of the first coordinated phase in the phase sequence shall start at T(0).
(ii) Calculate each phase's force-off point (the point at which a phase's green must terminate in order to not violate the following phase's programmed times when calls exist).
(iii) Calculate the beginning of each phase's permissive window (the points in the cycle when each phase's preceding phase is allowed to yield to the phase).
(iv) Calculate the end of each phase's vehicle permissive window (the point preceding a phase's force-off point by its minimum time and the prior phase's clearance time). Any phase receiving a vehicle call before the end of the vehicle permissive window will be serviced during the current cycle.
(v) Calculate the end of each phase's pedestrian permissive window (the point preceding a phase's force-off point by pedestrian walk and pedestrian clearance times and the prior phase's clearance time). Any pedestrian call received by a phase before the end of pedestrian permissive window will be serviced during the current cycle.
(vi) Guarantee that each phase's programmed time is serviced in full if the call was received before the beginning of the permissive window and if the phase does not terminate due to gap out.

5.D.11.d. Using the same information in floating force-off mode, the coordinator must operate in the same manner as fixed force-off mode except that if a noncoordinated phase is entered early, it will remain

active only for the time programmed in the split time. Setting the Max timer to accomplish this function in each plan is acceptable.

5.D.11.e. In addition to the automatic programming mode, there shall be a mode of operation which allows the user to manually program the following:

(i) Two force-offs per phase, which will be referenced to the local cycle counter;

(ii) A dual permissive period where the yield phases for each permissive period are defined;

(iii) The coordinated phase, which will have a hold applied when it is entered, remaining until the permissive period occurs; and

(iv) A force-off of all phases except the coordinated phase.

5.D.11.f. No percentage inputs are allowable except for coordination phase times. Once the information for phase service is entered, the controller unit shall test the plan to ensure that the plan does not violate any minimum times based on the specified numbers and cycle length. If a faulty plan is detected, the controller unit shall show an error code indicating the problem. If the error is not corrected, the controller unit shall run in free operation mode when the erroneous plan is selected. If pedestrian override has been selected, the coordinator shall ignore errors detected due to the pedestrian times violating the phase split time and operate as specified in Subsection 11, "TBC/BCT Operation," above.

5.D.11.g. The TBC/BCT shall be programmable to seek offsets by shortway (lengthening or shortening the cycle length up to 20 percent) and by dwell in the coordination phase awaiting the proper offset. The user shall determine which method to use and may program the longest permissible dwell times.

5.D.11.h. The TBC/BCT shall allow the following features and operations under TOD control:

- Max II timing;
- Gap/ext. II timing;
- Phase omit;
- Dual entry;
- Ped omit;
- Free operation;
- Flash operation;
- Soft recall;
- Three-detector assignments;
- Eight specified function outputs;
- Conflicting phase selection;
- Selective phase recall;
- Conditional service;
- Phase rotation;
- Inhibit Max; and
- Re-service.

5.D.11.i. Transfer into and out of flash shall be in accordance with the MUTCD. It shall be possible to program each phase and overlap to flash either yellow or red via the front panel of the controller unit. The flashing operation shall be accomplished by flashing the load switch driver outputs simultaneously.

5.D.11.j. The controller unit coordination program shall be designed to be programmed from the front panel to emulate the operation of a pre-timed controller by recall or BCT for applications where no vehicle detection is provided.

5.D.11.k. Pedestrian movements for the main street shall rest in green and "don't walk" at points in the cycle where servicing the "walk" would violate other phases' permissive period (unless the call to nonactuated function is active).

5.D.11.l. The internal reference synchronization pulse, from which the local offset is calculated, shall resynchronize at midnight; or other resynchronization shall be user-programmable with a default to midnight. A pulse shall be generated whenever the TOD clock shows a time which is an exact multiple of the current cycle length after this resynchronization. In case of a power failure, resynchronization shall be calculated from the programmed resynchronization time. The power failure recovery routine shall accommodate the case of a power failure at midnight. If the TBC is operating in the free mode, the current cycle length will still cause a resynchronization pulse to be output. This output will not cease due to preempt input, stop timing, manual control enable, or any command other than external start, in which case all coordination outputs shall be false.

5.D.11.m. When establishing its offset from the reference point, the coordinator shall reference only the leading edge of the synchronization pulse, regardless of its width. Pulse width shall be a minimum of 3 seconds.

5.D.11.n. The internal coordination and upload/download programs shall be simultaneously operable and mutually noninterfering. Revised timing parameters loaded into the timer shall be programmed to occur only at points in the controller coordination cycles which do not alter the selected phase sequence. The controller unit may temporarily drop out of synchronization during the upload/download, but must continue to operate.

5.D.12. Master Operation

5.D.12.a. Controllers furnished under this Contract shall be capable of functioning simultaneously as both a master controller and as a traffic-actuated controller.

5.D.12.b. The master shall be capable of selecting and generating traffic programs as selected by traffic samples, TOD programs, or by manual control inputs. In addition, the master shall be an interface unit for connecting the traffic signal system to a remote personal computer or terminal. This shall allow an operator to monitor the system operation, change master or local controller data bases, or obtain traffic flow information from a location remote to the master.

5.D.12.c. The solid-state master controllers, traffic signal controllers, and central computers shall include a standard communications protocol that meets or exceeds the requirements as specified by the California Department of Transportation (Caltrans) as well as the manufacturer's proprietary communications protocol. The equipment shall support both protocols simultaneously. No changes in hardware, firmware, or software shall be required. The normal communications protocol shall be the default protocol enabled on master start-up. The protocol shall include support for uploading system, detector data using the optional message defined for that purpose. The Contractor shall certify, in writing, that the master software complies with this Section.

5.D.12.d. The master shall have the following parameters available to operate a signal system:

<u>Outputs:</u>

- Intersection timing plan selection
- Four cycle lengths
- Four offsets
- Four splits
- System flash
- Special function
- Free or coordinated operation

Inputs:

- Four dial selections
- Three offset selections
- Free selection
- System flash selection
- Sixteen sampling detectors
- Two 9600-baud, full-duplex communication lines

5.D.12.e. When interconnected with modems in each local controller, the total number of intersections that can be placed under system control shall be 31. In this configuration, the master shall act as the communications interface between a central computer and the system. The master shall provide the capability for the computer to monitor system operation, change local controller timings, and modify the master data base. To allow communication, each master shall be provided with an external U.S. Robotics dial-up (smart) modem, with a selectable baud rate range from 1200 to 19200 minimum.

5.D.12.f. The master shall operate the signal system in one of three modes: manual, time-of-day/day-of-week (TOD/DOW), or traffic-responsive. The selection modes shall be prioritized as follows:

- Highest priority = Operator manual selection
- Second priority = TOD/DOW program
- Lowest priority = Traffic-responsive mode

5.D.12.g. In addition to being the second level of priority for system operating parameters, the TOD/DOW program shall have two other functions. It shall be used to enable traffic-responsive selection on a parameter by parameter basis, and, also, shall be used as the back-up for the traffic-responsive program in the event of system detector failure.

5.D.12.h. When the TOD/DOW programs are loaded into memory, each parameter (cycle, offset, split, free, or special functions) shall be independently enabled for traffic-responsive mode. If the parameter is not enabled by TOD, a manual command is present. This feature provides the operator with the option of selecting any combination of parameters by traffic sampling.

5.D.12.i. The master shall have the capacity to accept a minimum of 16 system detectors from up to 16 separate locations. The inputs from these detectors shall be processed into volume and occupancy values which are used by the traffic-responsive program to select the proper operating parameters. To ensure that accurate data is being used for traffic-responsive selection, all the system detectors shall be constantly tested for proper operation. In the traffic-responsive mode, the master shall compare the volume and occupancy of the system detectors with sets of volume and occupancy profiles stored in memory. It shall then identify the profile in memory that most closely matches the actual traffic currently in the system. Each traffic profile stored in memory shall have an associated timing plan that is designed to serve that particular type of traffic.

5.D.12.j. The master shall be capable of storing up to 12 different traffic profiles for use in selecting the optimum traffic-responsive mode. Each profile shall have the following data in memory for use by the processor:

- Profiles enabled for selection;
- A smoothed volume for each detector;
- A smoothed occupancy for each detector;
- A dial for the selected profile;
- An offset for the selected profile;

- A split for the selected profile; and
- An intersection timing plan for the selected profile.

Pattern selection may be made by the following process:

(i) Each minute, the volume of each active system detector is accumulated, expanded to an hourly rate, and smoothed.

(ii) Each minute, the percentage of occupancy over each active system detector shall be calculated and smoothed.

(iii) Following the calculation and loading of the "new smoothed volume and occupancy values," the master shall compare the volumes with the 12 traffic profiles stored in memory.

5.D.13. Communication

5.D.13.a. Internal settings, including coordination, shall be accessible via an external modem through the RS-232 interface. All functions including detector actuations, signal indications, gap-out, max-out, minimum green, extensions, preempt, and coordination synchronization status shall be displayed on the modem connected download/upload unit or other compatible unit in approximate real time on a graphical display of the intersection.

5.D.13.b. All alarms provided shall be accessible through the RS-232 port by remote interrogation and by automatic dialing initiated by the controller unit.

5.D.13.c. Four ports shall be provided for communications with the central application software, portable download/upload unit, conflict monitor, and detector card racks. These four ports shall be keyboard-assignable for any of the communications functions.

5.D.13.d. Four ports shall be accessible from the front panel of the controller unit. The pin configuration shall be consistent with standard, RS-232 specifications, as follows:

- Ports 1 and 2 shall be a DB-25 type female;
- Ports 3 and 4 shall be a DB-9 type female;
- All four ports shall be RS-232 serial ports accessible through DB-25 type connectors.

5.D.13.e. Communications with each RS232 port shall be defined as follows on the face plate of each controller:

- Port 1—Upload/download;
- Port 2—Central;
- Port 3—Detector; and
- Port 4—Monitor.

Four (4) RS232 ports shall be provided for communications with the system software, portable download/upload unit, conflict monitor and intra-system communications. These four (4) ports shall be keyboard-assignable for any of the communications functions. All four (4) ports shall be RS-232 serial port accessible through both DB-25 and DB-9, twenty-five pin and nine pin, subminiature, dual-inline connectors. An Ethernet jack port shall be provided. Additional ports required for closed loop secondary operation shall be supplied, if necessary to support the vendor's standard closed-loop application software. Each unit shall support all necessary communication ports for both master and secondary operation.

One SDLC port shall be provided per unit in compliance with NEMA TS-2, 1998 specifications.

All connectors shall be mounted a minimum 1-1/2 inches apart providing hand working room for comfortable installing and removing of the mating connectors.

All inputs and outputs to the controller unit shall conform to the applicable inter-

face and environmental requirements of the NEMA Standard.

The Controller shall have the capability of containing an internal Ethernet module that connects to the CPU board via a ribbon cable. The ribbon cable and Ethernet module shall contain a locking device to prevent accidental unplugging. The unit shall be easily serviceable for ease of maintenance and programming. The internal Ethernet module shall be an independent module that can be added to any controller on this contract. The bid documents shall state if the module is to be included with each controller unit or supplied as a separate line item on the bid.

5.D.14. System Software

All software required to perform the functions described in Subsection 5.D.12.d shall be provided as part of the controller software and shall be provided as a set consisting of the software on CD-ROM and on 3.5-inch diskettes. Three sets of software shall be provided. The County reserves the right to make additional copies of this software for its own use.

5.D.15. Card Rack Protocol

5.D.15.a. This protocol is designed for use between the controller unit and the detector racks or panel. The command will be issued by the controller through a request issued by the central computer. The detector card will respond to the request, which will be transferred to the central computer at 300 bps or greater.

5.D.15.b. The reset, request No. 3, will be confirmed by echoing the command sent back to the controller. Requests Nos. 2, 5, 6, and 7 will be a command sent back to the controller that will be expressed as a binary representation of the decimal value.

5.D.15.c. If any of the status bits are on, the fail 1 output will be active. If all of the status bits are off, then fail 1 will be inactive.

5.D.16. Detector Counts

5.D.16.a. The signal controller shall log traffic volume raw data in selectable intervals and maintain a minimum of 99 periods. Each period shall be programmable from 1 to 24 minutes in 1-minute increments. The controller shall be capable of transmitting the volume data to the microcomputer on demand and automatically, according to a user-defined schedule.

5.D.16.b. The closed-loop software shall provide a menu system for selecting a report to gather the volume data from the controller. This report shall define the date, time, and frequency for the microcomputer to process this report. A supplemental program shall be provided to allow the user to format a report to be sent to a printer. The format of the report shall provide a 7-day count with date headings and hourly intervals, 24-hour totals, and 5- and 7-day average daily traffic (ADT). The software shall allow the user to enter the report heading to consist of the road name, location, and direction.

5.D.16.c. The closed-loop software shall allow the user to select any combination of detectors from the same count to be grouped for the purpose of adding identical periods and obtaining a total volume.

5.D.17. Clock/Calendar Programming Requirements

5.D.17.a. The clock shall be easily set to the year, month, day of month, day of week, hour, minute, and second.

5.D.17.b. The clock shall store an entire yearly program including dates and times for starting and ending daylight savings time (DST). The dates for the start and end of DST shall be keyboard-programmable by the user.

5.D.17.c. Dates for fixed and floating holidays and special events shall be user-programmable.

5.D.17.d. Calendar adjustments for leap years shall be automatic.

5.D.17.e. The clock shall store sequences of operations in the form of 1 yearly program, 10 weekly programs, 15 day programs, and 30 exception programs.

5.D.17.f. The structure and interrelationships of each type of program shall be in accordance with the following paragraphs.

5.D.17.g. A day program shall consist of the following: Event 1, Event 2, …, Event 10, … where each event is unique. There shall be a minimum of 10 events per day program. There shall be a total of 15 day programs.

5.D.17.h. Each event in a day program shall consist of, or shall call a plan which consists of, the following:

- Time of day;
- Cycle (1–6);
- Offset (1–4);
- Split (1–4);
- MUTCD flash (on/off);
- Mode of operation (a means of changing operating modes by TOD);
- Special function 1 (on/off);
- Special function 2 (on/off);
- Left-turn sequence (lead-lead/lead-lag/lag-lead);
- Max II; and
- Gap/ext.

Any or all of the above may be selected within a single event.

A weekly program shall have the flexibility to program one entry to control all 7 days of the week, or 5 days of the week (Monday-Friday), or a specific day of the week. There shall be a total of 10 weekly programs.

5.D.17.i. A yearly program shall consist of up to 52 entries, each consisting of the following:

- Starting month (1–12)
- Starting day of the month (1–31)
- Weekly program number (1–10).

5.D.17.j. There shall be 30 user-programmable exception programs. The first 10 programs shall be programmable for the following standard holidays:

- New Year's Day;
- Martin Luther King's Birthday;
- Washington's Birthday;
- Memorial Day;
- Independence Day;
- Labor Day;
- Columbus Day;
- Veterans Day;
- Thanksgiving Day; and
- Christmas Day.

5.D.17.k. The 30 exception programs shall be user-programmable for both fixed and floating exceptions.

5.D.17.l. Fixed-exception format shall consist of the structure of a day program defined above, but shall also have a date (month/day of month) assigned to it indicating when it should override the normally operating program.

5.D.17.m. Floating-exception format shall consist of the structure of a day program defined above, but shall also have a date (month/week of month/day of week) assigned to it indicating when it should override the normally operating program.

5.D.17.n. There shall be a copy feature that allows the transfer of entries between programs within the same program level (weekly program to weekly program, day to day, exception to exception).

5.D.17.o. Other programming schemes meeting functional intent may be acceptable, but may require approval by the Department.

5.D.18. Coordination Control Hierarchy

5.D.18.a. In the absence of any on-line control by a central computer, the internal time-based coordinator (TBC) shall control the coordinated, free, and flash operation of the intersection when no 120V AC conventional-interconnect line inputs are present or when the interconnect-free input is not present.

5.D.18.b. When the interconnect-free input signal is present and the intersection is not under computer control, the controller unit shall be under the control of the master controller TBC.

5.D.18.c. When the central computer brings the intersection on-line via the computer on-line input, its control shall supersede, though not interfere with, that of the internal time base or external conventional-interconnect inputs.

5.D.18.d. For non-computerized applications where conventional-interconnect lines (120V AC) are present, it shall be possible to operate the TBC and cabinet interface as provided, both as a master for the conventional wire system and as a local that will accept conventional cycle, offset, split, free/flash, and on-line commands from the interconnect line.

5.D.19. Preemption Programming Requirements

5.D.19.a. The internal preemptor supplied shall be easily programmable from the front panel for either railroad or fire-run preemption sequences.

5.D.19.b. Phases shall be selectable so that a limited signal sequence may be operational during preempt (PE). It shall be possible to add phases to this special limited sequence that are not in the intersection sequence. This shall be accomplished without adding external logic.

5.D.19.c. The following intervals shall be provided at a minimum. Terminology may vary but the meaning must be clear. Additional unspecified intervals which may lead to confusion shall be programmable to zero. If three-letter abbreviations or interval numbers are used on the display, they shall be defined on the front panel. While in preemption, the display will clearly identify the intervals being timed as preempt intervals. Yellow and red clearances from the phase timings may be used instead of the clearance intervals shown in the table below, providing all other preemption requirements are met.

Timing Interval	Time (Seconds)	Increments (Seconds)
0. Preempt (PE) delay (emergency vehicle PE)	0–99	1.0
1. PE minimum green	0–9	1.0
2. PE yellow	3–9.9	0.1
3. PE red clearance	0–9.9	0.1
4. Track green	0–99	1.0
5. Track yellow	0–9.9	0.1
6. Track red	0–9.9	0.1
7. Minimum PE duration (flash or limited cycle)	0–99	1.0
8. Return yellow (solid display) (yellow after limited-cycle green)	0–9.9	0.1
9. Return red clearance (red after flash PE)	0–9.9	0.1

5.D.19.d. The phases to be serviced following the preempt sequence shall be front-panel, keyboard-programmable.

5.D.19.e. Preempt sequences shall be selectable using external inputs. Preempt priority shall be assigned, with the number

one being the highest. If a higher priority preempt input is received during a preempt sequence, the controller unit shall immediately clear to the next all-red interval before entering the new sequence. The transition shall take place in a safe manner from any point in the sequence--meeting all MUTCD requirements.

5.D.19.f. Preempt 1 shall be reserved for a priority railroad preempt. If more than two preempts are provided, it shall be possible to delete the priority override for all but the railroad preempt. If a non-priority preempt is activated during another preempt cycle, the one in progress shall continue through its entire cycle. If the second preempt input is still active when the first one is completed, the controller unit shall go to all-red flash or to the appropriate point in the non-priority preempt. When all preempt inputs are removed, the controller unit shall proceed through the normal sequence to return red clearance (interval 9).

5.D.19.g. Once the controller unit has entered the first timed interval following preempt delay (interval 1), the sequence shall continue to the end even if the preempt call is dropped. If the call returns or remains through the minimum preempt (interval 7), the controller unit shall remain in this interval until the call is dropped.

5.D.19.h. The controller unit shall be programmable to be in flash or in limited sequence during interval 7. If flash is specified, the phases shall flash yellow or red as programmed from the front panel. Flash shall be implemented by simultaneously flashing the appropriate load switch driver outputs and not by setting the voltage monitor output on false. If limited sequence is selected, all phases shall be programmable even if they are not normally used in the intersection sequence.

5.D.20. Preemption Timing Interval Definition

5.D.20.a. All intervals are sequential.

(i) Preempt Delay (0)

This time shall start immediately when the preempt command is received. It shall not affect the normal operation of the controller unit until the delay time-out occurs. This interval may be used for emergency vehicle (fire lane) preemption delay. If zero time is set, the interval shall be omitted.

(ii) PE Minimum Green (1)

Any vehicle signal that is green at the time this interval becomes active shall not terminate unless it has been displayed for at least the time programmed in this interval. "Walk/walk" clearance indications shall immediately change to "don't walk" at the end of this interval. If zero time is set, the interval shall be omitted.

(iii) PE Yellow Clearance (2)

Green signals that are not programmed as track or fire lane signals shall change from green to yellow. Red signals shall not change. Signals displaying yellow at the start of this interval shall remain yellow. All yellows, including those already yellow at the start of this interval, shall display yellow for a minimum of 3 seconds before leaving this interval. "Walk/walk" clearance indications shall immediately change to "don't walk" at the beginning of this interval. Signals programmed as track or fire lane signals that are yellow shall remain yellow. Green and red signals shall not change.

(iv) PE Red Clearance (3)

All yellow signals shall change from yellow to red. Red signals shall not change. Green signals shall not change.

(v) Track Green (4)

Signals programmed as track (fire lane) signals shall remain green or be

changed to green. All other signals shall be red. Intervals 4, 5, and 6 shall be optionally programmable to zero during emergency vehicle PE.

(vi) Track Yellow (5)

This interval is the yellow interval for the track (fire lane) signals. All other signals shall remain red.

(vii) Track Red (6)

This interval provides all-red time for clearance of the track or fire lane.

(viii) Minimum PE Duration (7)

The preempt sequence shall not terminate until the preempt input signal is removed, and the minimum duration time has expired. Each signal shall be keyboard-programmable for red, red flash, yellow flash, or green. As an alternative, a limited cycle shall be programmable for use with railroad preempts.

(ix) Return Yellow Clearance (8)

This interval shall provide a solid yellow clearance for indications that were green or flashing yellow. Red and flashing red displays shall display solid red. This interval shall be skipped if programmed to zero.

(x) Return Red Clearance (9)

This interval shall be an all-red clearance in preparation for return to the normal cycle. Return phases shall be keyboard- programmable.

5.D.20.b. In the event of a power interrupt (as defined in NEMA *Publication No. TS1-1989*), if the preempt command is present when power is restored, the controller unit shall power up in all-red flash operation and remain there until the PE command is removed.

5.D.20.c. Overlap phases shall begin and end with the parent phases as described in NEMA *Publication No. TSI-1989*. If the PE call occurs during yellow or red displays between parent phases, the overlap phase shall display a minimum of 3 seconds of yellow and a minimum of 1 second of red clearance.

5.D.20.d. "Don't walk" shall be displayed throughout the preempt sequence unless a limited cycle is run during PE duration (intervals 2 through 9). During a limited cycle (interval 7), the pedestrian heads may be programmed to be dark.

5.D.20.e. Preempt routines shall have priority over all functions except for emergency and conflict flash.

5.D.20.f. The signal from the conflict monitor shall stop the preempt cycle time until it is removed or reset.

5.E. DETECTOR RACK AND AMPLIFIERS REQUIREMENTS

5.E.01. Item 5.E. shall govern in furnishing and making operational a digital card rack, an inductive-loop-detector assembly in designated field locations, and equipment cabinets, as shown on the plans.

5.E.02. Detector Unit

5.E.02.a. Loop detector units provided under this item shall meet or exceed the requirements of NEMA *Publication No. TS1-1989*, Section 15, latest review, unless otherwise indicated in this specification.

5.E.02.b. The loop detector units shall be digital, solid-state devices designed for 24V ± 2.5V DC operation and card mounting. Each detector channel shall consume not more than 50 milliamperes.

5.E.02.c. Each loop detector unit shall sequentially scan two channels.

5.E.02.d. The front panel of the loop detector unit shall be made of metal or an impact-resistant plastic material designed to permit easy access to the internal components.

5.E.02.e. The detector unit shall have a minimum of eight sensitivity selections for each channel.

5.E.02.f. Each detector unit channel shall be supplied with the delay and extend output features described below:

(i) Delay output: A variable delay circuit shall be furnished to provide a delayed output. This circuit shall be variable from 0 to at least 30 seconds in 1-second increments. Detection of a vehicle shall be delayed for the amount of time selected, therefore, providing no detector output until a vehicle has been present in the loop for this length of time. This timing shall reset each time the loop is vacated; however, the delay circuit shall be disabled immediately when logic ground is present on pin 1 for channel A or pin 2 for channel B.

(ii) Extend output: A variable extend circuit shall be furnished to provide a carryover output. This circuit shall be variable from 0 to at least 15 seconds in 0.25-second increments or smaller. Detector actuation shall be extended after the vehicle leaves the loop. The timing circuit shall reset after the extension has expired; however, the extend circuit shall not be disabled when logic ground is present at pin 1 or pin 2 of the connector described herein.

The timing shall be digital and all programming settings shall be accomplished by thumbwheels or DIP switches. The delay and extend features described above shall both be programmable for a detector channel.

5.E.02.g. Each detector unit channel shall function in the following two front panel selectable modes:

(i) Presence: When a NEMA class 2 vehicle, or larger vehicle, occupies the center of any loop, the detector unit channel shall maintain a detection output for the length of time that the vehicle is in the loop and for the time period programmed for the extend output.

(ii) Pulse: A vehicle passing over a loop shall cause an actuation lasting between 75 and 150 milliseconds. If a vehicle stops in the loop area, the detector unit channel shall, within 3 seconds, detect subsequent vehicles passing over the unoccupied area of the loop.

5.E.02.h. Maximum presence time shall be switch-programmable from 1 to 15 minutes in 1-minute increments or less. Upon termination of the time programmed for maximum presence, the unit shall, via DIP switch programming, retune to the environment either immediately or upon the loss of green for that phase.

5.E.02.i. The detector unit channel, after being actuated continuously for any period, shall regain 100 percent of the selected sensitivity within 0.5 seconds after the loop is cleared of vehicles, regardless of the duration of presence.

5.E.02.j. Each detector unit channel shall have a minimum of three switch-selectable operating frequencies.

5.E.02.k. The loop input for each channel shall be isolated from the detector circuitry by means of an isolation transformer.

5.E.02.l. The outputs from each detector unit channel shall be solid-state and optically isolated.

5.E.02.m. A switch or switch position shall be provided on the front panel to disable each channel output.

5.E.02.n. Each detector unit channel shall have an individual reset switch.

5.E.02.o. If a detector loop circuit becomes open, the detector unit channel shall produce an output that shall remain until the malfunction is corrected.

5.E.02.p. If power is lost to any detector unit, a constant call shall be produced until the power is restored.

5.E.02.q. The detector unit channel shall be set to produce an output in response to a 0.13 percent or greater negative change in loop inductance within not more than 5 milliseconds. When the change is removed, the detector unit channel shall terminate its output within not more than 5 milliseconds.

5.E.02.r. All sensitivity, frequency, and mode programming for each channel shall be external and located on the face of the unit. Extend, delay, and maximum presence time programming may be via DIP switches on the circuit board.

5.E.02.s. Indicator(s) on the front panel shall be provided to distinguish among detection, detection delay, or detection extended for each channel.

5.E.02.t. Upon restoration of electrical power after a power failure of any length, the detector unit channel shall automatically return to its normal state of operation within 2 seconds.

5.E.02.u. In addition to the requirements of NEMA *Publication No. TS1-1989*, Paragraph 15.2.21, the detector unit channel shall continue to operate when the resistance between ground and either loop input is varied from 100 mega ohms to 50 ohms.

5.E.02.v. The connector on the detector card shall be a 2 x 22 pin printed circuit board edge connector with pins on 0.156" centers and gold flashed contacts, configured as shown below.

PIN	FUNCTION
A	Logic ground
B	Detector DC supply
C	External reset
D	Channel A loop input
E	Channel A loop input
F	Channel A output (collector)
H	Channel A output (emitter)
J	Channel B loop input
K	Channel B loop input
L	Chassis ground
W	Channel B output (collector)
X	Channel B output (emitter)

PIN	FUNCTION
1	Channel A delay inhibit
2	Channel B delay inhibit
3	Detector address bit No. 3
6	Detector address bit No. 0
7	Fail 1
10	Detector address bit No. 1
15	Detector address bit No. 2
19	Data transmit
21	Data receive
22	Fail 2

5.E.02.w. The data transmit for each card rack connector will be connected together. The data receive for each card rack connector in a rack will be connected together and connected to a 25-pin, RS-232 connector on the face of the rack. All other pins shall be connected as per Section 5.E.02.v.

5.E.02.x. The detector card shall be capable of transmitting in the following ASCII formats:

FORMAT	CONFIGURATION
Request report 1	31H
Request report 2	32H
Request report 3	33H
XON (Dcl)	11H
XOFF (DC3)	13H

5.E.02.y. All circuit traces shall have a conductivity equivalent to at least 2 ounces per square foot of copper.

5.E.02.z. Lightning protection shall be installed within the loop detector unit. The protection shall enable the amplifier to withstand the discharge of a 10-microfarad capacitor charged to ± 1000V directly across the detector input pins with no load present. In more recent equipment, the

protection shall enable the loop detector unit to withstand the discharge of a 10-microfarad capacitor charged to ± 2000V directly across either the detector inputs or from either side of the detector inputs to earth ground. For this test, the detector chassis shall be grounded, and the detector inputs shall have a dummy-resistive load attached equal to 5.0 ohms.

5.E.03. Functional Requirements

5.E.03.a. The loop configurations referred to in this specification shall be:

- 6 x 30 foot, quadrupole 2-4-2 turns; or
- 6 x 6 foot, 3 turns.

5.E.03.b. The detector unit channel shall detect all vehicles that traverse public streets and highways and that consist of sufficient conductive material, suitably located to permit recognition by the detector system. For this specification, test vehicles shall be as follows:

- Class 1—A standard 10-speed, 26-inch bicycle;
- Class 2—A 50-CC motorcycle;
- Class 3—An automobile ranging from 1,700 to 2,000 pounds; and
- Class 4—A standard C-50 tractor trailer combination.

5.E.03.c. The detector unit channel shall detect all of the vehicles described above with all of the configurations specified herein.

5.E.03.d. When detecting test vehicles of the same class as described herein and on any of the loop configurations, each channel of the detector unit shall include means to adjust sensitivity so that it shall not produce an output when the test vehicle is more than 36 inches from the perimeter of the loop.

5.E.03.e. The detector unit channel shall detect all vehicles on any of the loop configurations described herein traveling in the speed range of 3 to 80 miles per hour.

5.E.03.f. The following functions shall be monitored through the communication port:

- Watchdog failure;
- Excessive change of inductance;
- Maximum presence time exceeded;
- Open loop; and
- Shorted loop.

5.E.03.g. All ICs required to upgrade communication software shall be socketed; socket requirements are described in Section 5.D.02.h.

5.E.04. Detector Card Rack

5.E.04.a. The card rack shall accommodate up to eight two-channel detector units.

5.E.04.b. The detector card rack frame shall be fabricated from aluminum and shall have slots set in a modular fashion so that the printed circuit board edge connectors shall plug into the rear while sliding between top and bottom card guides for each module. A dust cover, with adequate ventilation on the top and back of the rack frame, shall be provided. Mounting flanges, turned outward for ease of access, shall be provided. The detector card rack shall be bolted to the lower cabinet shelf. It shall be possible to unbolt the rack using simple tools. Printed circuit board edge connectors and card edge connectors will have a 50-micron gold plating.

5.E.04.c. Each slot in the card rack shall mate with a 2 x 22 pin card edge connector with 0.156" pin spacings and match the detector card edge connector. Key slots shall be between pins B and C, and between pins M and N. Each card edge connector shall be secured to the rack by means of threaded hardware in order to provide mechanical

rigidity while still maintaining ease of replacement.

5.E.04.d. All wiring to the rack shall enter and exit in the lower left rear corner when viewed from the front. It shall be labeled and neatly run to other parts of the cabinet and detector termination panel.

5.E.04.e. The slots shall be numbered left to right when viewed from the front of the rack. Each rack slot shall be wired as follows:

PIN	FUNCTION
A	Logic ground
B	Detector DC supply
C	External reset
D	Channel A loop input
E	Channel A loop input
F	Channel A output (collector)
H	Channel A output (emitter)
J	Channel B loop input
K	Channel B loop input
L	Chassis ground
W	Channel B output (collector)
X	Channel B output (emitter)
1	Channel A delay inhibit
2	Channel B delay inhibit
6	Detector address bit No. 0
10	Detector address bit No. 1
15	Detector address bit No. 2
19	Data transmit
21	Data receive

5.E.04.f. All loop inputs shall be wired with shielded, twisted pair leads to improve signal isolation. All grounds within the twisted pair leads shall be connected to a chassis ground bus bar on the back of the rack.

5.E.04.g. The external reset inputs (pin C) shall be bussed to a common point and wired to the detector panel.

5.E.04.h. The channel loop outputs (–) shall not be bussed together in the rack assembly.

5.E.04.i. The channels shall be wired to the detector panel and labeled as follows:

SLOT	CHANNEL	DETECTOR NO.	CHANNEL	DETECTOR NO.
1	A	1	B	2
2	A	3	B	4
3	A	5	B	6
4	A	7	B	8
5	A	9	B	10
6	A	11	B	12
7	A	13	B	14
8	A	15	B	16
9	A	17	B	18
10	A	19	B	20
11	A	21	B	22
12	A	23	B	24
13	A	25	B	26
14	A	27	B	28
15	A	29	B	30
16	A	31	B	32

5.E.04.j. The detector DC supply (pin B) shall be bussed to a common point and wired to the intersection detector panel.

5.*E.04.k.* The chassis ground (pin L) shall be bussed to a common point and wired to the detector panel.

5.E.04.l. The data transmit (pin 19) shall be bussed to a common point and wired to the detector panel.

5.E.04.m. The data receive (pin 21) shall be bussed to a common point and wired to the intersection detector panel.

5.E.04.n. The logic ground (pin A) shall be bussed to a common point and wired to the detector panel.

5.E.04.o. The data address bits Nos. 0, 1, and 2 shall be connected to the logic ground as follows:

Slot	Channels	Bit No. 0	Bit No. 1	Bit No. 2
1	1–2	OFF	OFF	OFF
2	3–4	ON	OFF	OFF
3	5–6	OFF	ON	OFF
4	7–8	ON	ON	OFF
5	9–10	OFF	OFF	ON
6	11–12	ON	OFF	ON
7	13–14	OFF	ON	ON
8	15–16	ON	ON	ON

ON = Connected to logic ground
OFF = Not connected

5.E.04.p. Each detector rack shall be supplied with a 4-foot, RS-232 cable with RS-232, 25-DB pin, male plugs.

5.E.05. Power Supply

5.E.05.a. The power supply shall be a shelf-mounted, enclosed, 24V DC power supply capable of supplying a minimum of 3.6 amperes. The front panel of the power supply shall provide a power-on LED, a power on-off switch, an appropriately sized fuse for the 120V AC input line, and a connector. The connector shall have a metallic shell that is connected to the chassis ground internally and shall mate with a Military Specification Socket MS-3106A-18-1S cable connector. Connector pin terminations shall be as follows:

Pin	Function
A	AC neutral
B	Reserved
C	120V AC line
D	Reserved
E	24V AC line
F	Reserved
G	Logic ground
H	Chassis ground
I	Reserved
J	Reserved

5.E.05.b. One power supply cable per power supply shall be furnished and installed in each cabinet. The wires shall be terminated to bus bars or to terminals on the front of the back panel or detector panels, as appropriate. The connections shall be made with forked spade lugs or other materials as needed. Each individual wire shall be cut to the length required to reach the point at which it is to be connected. There shall be a minimum of 10 feet of cable from the mounting point on the panel to the connector. After all wires have been connected, the power supply cable shall be neatly bundled.

5.E.06. Detector Panel

5.E.06.a. The detector panel shall provide all connections between the detector loops and the detector amplifiers, pedestrian call isolation, and detector test switches. It shall also provide all connections between the detector amplifiers and the control unit.

5.E.06.b. The detector panel shall meet the following requirements:

(i) The panel shall be constructed of 0.125-inch thick aluminum.

(ii) The panel shall contain a 3-inch horizontal slot in each corner to accommodate 0.25-inch mounting bolts.

(iii) Inputs from the loops shall be brought through posted 10-32 x 5/16" binder screw terminals.

(iv) Each loop pair shall be protected by lightning surge suppressors for use on loop detector inputs. The suppressors may be mounted either on the front of or behind the panel.

(v) A recall-on toggle switch shall be provided for each vehicle and pedestrian phase in order to permit placing either a constant call on the phase using the recall position, or a temporary call using the momentary position, or

normal operation when left in the ON position.

(vi) The outputs from the detector amplifiers to external control units shall be brought through posted 6-32 x ¼" binder head screw terminals with removable shorting bars installed.

(vii) The panel shall provide the following connection points, at a minimum, for 16 detectors:

CONNECTION POINT	NO. OF CONNECTION POINTS
Loop outputs (collectors)	16 1 for each detector
Loop outputs (emitters)	16 1 for each detector
Data transmit	1
Data receive	1
Reset	1
External 24V power supply	1
Loop inputs	32 2 inputs for each detector
Logic ground	6
Spares	6
Chassis ground bus	bus

(viii) The loop outputs (emitters) shall be bussed together with individual clips on the front of the panel. The emitters shall be strapped onto the front of the panel to a logic ground terminal.

(ix) The logic ground terminals shall be bussed on the back of the panel with a bus bar.

(x) A chassis ground bus bar shall be provided on the panel and connected to the cabinet by an insulated, braided, copper, ground strap. The strap shall be bonded to the cabinet.

(xi) Pedestrian calls from push buttons shall be optically isolated from the controller inputs using external solid-state circuitry mounted on a pedestrian isolation card. There shall be an LED on each pedestrian phase to indicate push-button actuations.

5.E.07. Functional Requirements

5.E.07.a. In the presence mode, all class 1, 2, 3, or 4 vehicles stopped over a 6-foot by 6-foot, 3-turn loop with a 100-foot lead-in shall be detected. Class 3 and 4 vehicles shall be continuously detected for a minimum of the time programmed for maximum presence or for at least 0.5 hour.

5.E.07.b. All classes of vehicles moving over a 6-foot by 6-foot, three-turn loop with 100-foot lead-in shall generate a single-pulse output from the loop detector unit channel in the pulse mode.

5.E.07.c. There shall be no crosstalk between adjacent loops connected to separate channels or loop detector units with or without a vehicle on one of the loops after the loop detector unit channels are adjusted.

5.E.07.d. A 6-foot by 6-foot, three-turn loop connected to a detector unit channel in the presence mode shall detect a class 3 vehicle for not less than 15 minutes and shall, upon departure of this vehicle from the zone of detection, recover and, after 1 second, detect a class 2 vehicle.

5.E.07.e. The 6-foot by 30-foot quadrupole loop adjusted (sensitivity) for any one class of vehicles shall not detect a numerically equal class vehicle passing 36 inches outside any part of the loop's perimeter.

5.E.07.f. A class 1 vehicle traveling at 3 miles per hour over either a 6-foot by 6-foot, three-turn loop with 100-foot lead-in, or a 6-foot by 30-foot quadrupole loop with 100-foot lead-in, shall be detected.

5.E.07.g. A 6-foot by 6-foot loop with 100-foot lead-in connected to a loop detector unit channel shall continue to operate normally while resistance to ground on one of either loop lead-ins vary

from 100 mega ohms to 50 ohms gradually in a 15-minute period. As loop integrity is gradually restored in the same time interval, the unit shall continue to operate normally.

5.E.07.h. When an open circuit induced in a loop circuit is restored, the detector unit shall automatically become operational within 2 seconds or upon termination of the time programmed for maximum presence.

5.E.07.i. A 150-picofarad capacitor will be connected in parallel across a functioning 6-foot by 6-foot loop with 100-foot lead-in, with a class 3 vehicle over the loop. The loop detector unit channel shall continue to function normally.

5.E.07.j. A loop detector unit channel connected to a 6-foot by 6-foot, three-turn loop with 100-foot lead-in shall detect class 2, 3, and 4 vehicles traveling from 3 miles per hour to 80 miles per hour.

5.F. CONFLICT MONITOR REQUIREMENTS

5.F.01. The conflict monitor shall meet the standards of NEMA *Publication No. TS1-1989*, Section 6, for 12 channel types. The monitor shall also meet all environmental and transient specifications of NEMA *Publication No. TS1-1989*, Section 2. A Type-12 conflict monitor having 12 fully programmable input channels shall be provided.

5.F.02. No circuit cuts shall be allowed on circuit boards in any of the equipment supplied. Any wire jumpers included on circuit boards shall be placed in plated through holes that are specifically designed to contain them. Jumpers, tack soldered to circuit traces or added to correct board layout errors, are not acceptable.

5.F.03. For easy maintenance, all IC chips will be mounted in sockets. DIP devices shall be mounted in military specification sockets. All sockets shall have two-piece, machined contacts and closed-end construction to eliminate solder wicking. The outer sleeve shall be brass with tin or gold plating and shall be tapered to allow easy IC insertion. The inner contact shall be beryllium copper subplated with nickel and plated with gold. All sockets shall have thermoplastic bodies meeting UL Specification 94V-0. Each IC socket contact shall be plated with at least 50 microns of gold.

5.F.04. In addition to the above requirements, an LCD display shall be provided to indicate continuously when a channel is active due to green, yellow, red, or walk inputs. It shall also continue to display the channels that were active at the time of a conflict, until the conflict monitor is manually reset.

5.F.05. If the conflict was caused by a loss of red, the display array shall indicate loss of red.

5.F.06. If the conflict was caused by the voltage monitor, the display array shall indicate a voltage error.

5.F.07. The monitor shall conflict on a multiple indication within each phase (green-yellow, green-red, yellow-red). The display shall show which indications caused the conflict.

5.F.08. The monitor shall provide a programmable, short, yellow, clearance indicator for each channel.

5.F.09. All monitors shall be programmable as called for in NEMA *Publication No. TS1-1989*, Section 6.

5.F.10. Each conflict monitor will be supplied with a 4-foot, RS-232 cable with male connectors on each end.

5.F.11. The conflict monitor shall be preprogrammed for 8 phases including quad left with pedestrian phases.

5.F.12. When the line voltage is reduced to 90V AC, the conflict monitor labeled voltage monitor output shall cause the signal outputs to flash. Hysteresis shall be sufficient to prevent "pinballing" of the outputs during gradual voltage recovery.

5.F.13. The monitor shall store a minimum of 10 failures and 10 power condition changes stamped by day, date, and time.

5.F.14. Communications

5.F.14.a. The conflict monitor shall generate a report to the controller each time a change in status occurs. The report shall include the following at a minimum:

(i) The configuration of the programming card;

(ii) The channels which have the NEMA- plus features enabled; and

(iii) A listing of the phases which are monitored for short, yellow times.

5.F.14.b. Additionally, the conflict monitor shall store and report at least the last five failures containing the information listed above when interrogated directly via the portable download/upload unit. The report shall list, at a minimum, the following information about the failure:

(i) Time of the failure;

(ii) The channels (green, yellow, red, and walk) that were active at the time of the failures;

(iii) The status of the CVM input and the +24V 1 and 2 inputs; and

(iv) The type of failure (conflict, switch, and/or red failure, etc.).

5.F.14.c. The conflict monitor will be capable of transmitting (via a RS-232 port) an ASCII report to the controller unit.

5.F.14.d. The conflict monitor shall provide three reports for interrogation. The first is an ASCII record of all data entries and programming card configurations. The second is an ASCII-formatted record of all failures and each power on/off cycle. The last 10 of these failure records will be available in report form. The third report will be a sampling report and will contain 20 samples of all of the inputs to the conflict monitor. Each sample will be taken at 0.1-second intervals so that the last 2 seconds of real-time outputs of the load switches can be viewed. Each of the reports will have the appropriate headings and will consist of ASCII lines of no more than 80 characters so that a clear presentation of the data can be viewed from the screen of a notebook using the standard ASCII character codes.

5.F.14.e. The monitor port shall be programmed in the following format:

(i) Standard, EIA, RS-232 convention;

(ii) Each word shall be 11 bits long: 8 data bits, 1 start bit, 1 stop bit, and no parity;

(iii) 2400 baud; and

(iv) The notebook or traffic controller unit will send a message of one byte to the monitor requesting each of the reports. After the one-byte message, the controller will issue an XON command to start the data flow. The data flow can be stopped with an XOFF command at any time. The data sent to the notebook or controller unit in response to the request message will be the ASCII report requested. The last byte sent by the monitor will be an End of Text (EOT)-04H. If the controller issues an XOFF

during a reporting request, the monitor will stop the data flow. If an XON is not issued within 30 seconds, the monitor will time out and set its pointer to the beginning of the report. The next XON will then start at the beginning of the requested report. A report will also perform the XOFF function to the conflict monitor.

5.F.15. Programming

5.F.15.a. Each channel shall have a programmable, short, green monitor selectable in 1-second increments.

5.F.15.b. Upon detection of a short green, the monitor shall place the intersection controller in flash operation.

5.F.15.c. Programming shall be accomplished through a 20-position keyboard with the following keypad layout.

(i) Ten white keys—Numbers 0–9
(ii) Six gray keys—Cursor controls
(iii) Four red keys—Function controls

5.F.15.d. The keyboard shall be a true tactile feedback-style operation with an operator response through positive touch feedback as well as an audible beeper. An operator entry shall be provided that will disable the beeper mode.

5.F.15.e. Programming shall be menu driven with easy-to-follow numbers. The menus shall be visible in all lighting conditions through the utilization of a back-lit display. The display shall have a programmable, automatic time-out feature having a range of 2–99 minute settings with 1-minute resolution. The operator shall be able to control the back lighting with an on/off selection mode available through the keyboard.

5.F.15.f. An active display shall provide the following:

(i) AC line voltage;
(ii) A record of the number of power disturbances;
(iii) A record of the last 20 power-up/down conditions; and
(iv) A record of power surge/dip/over-voltage conditions.

5.G. SOLID-STATE LOAD SWITCH REQUIREMENTS

5.G.01. The solid-state load switches shall meet the requirements set forth in Section 5 of the NEMA *Publication No. TS1-1989*, and shall be "Triple-Signal Load Switch" type.

5.G.02. An indicator light for each circuit shall be provided in each load switch. The indicator light shall be on when a "true" input to the load switch is present.

5.H. TWO-CIRCUIT, SOLID-STATE FLASHER REQUIREMENTS

5.H.01. The flasher shall meet the electrical and physical characteristics described in Section 8 of the NEMA *Publication No. TS1-1989*.

5.H.02. The two-circuit flasher shall be of solid-state design and shall contain no electromechanical devices.

5.H.03. The voltage range shall be 95V to 135V AC. The nominal voltage shall be 120V AC. The operating frequency range shall be 60 hertz ± 3.0 hertz.

5.H.04. The two-circuit, solid-state flasher shall be designed to operate as specified at any ambient temperature range from –30 °F to +165 °F.

5.H.05. The flasher shall be constructed so that each component may be readily replaced if needed.

5.H.06. The flasher shall be a Type-III unit (a dual circuit, rated at 15 amperes per circuit).

5.I. DOCUMENTATION

5.I.01. Cabinet

Each cabinet shall be provided with two sets of the following documentation:

5.I.01.a. Complete, accurate, and fully legible cabinet wiring diagrams;

5.I.01.b. Complete parts list, including names of vendors for parts not listed by universal part numbers; and

5.I.01.c Contractor's specifications for cooling the fan, including the CFM rating of the fan.

5.I.02. Controller Unit

Each controller unit shall be provided with two sets of the following documentation:

5.I.02.a. Service manual, including description of controller and its operation, and basic maintenance and troubleshooting information;

5.I.02.b. Complete and accurate schematic diagrams for all circuitry in the controller unit; one set of these diagrams may be included in each service manual;

5.I.02.c. Complete parts list, including names of vendors for parts not identified by universal part numbers; this may be included in the service manual; and

5.I.02.d. Pictorial of components' layout for each circuit board with each component on the board clearly identified or labeled; this may be included in the service manual.

5.I.02.e. Blank program/timing sheets for the controller are required. Two sheets for each unit are to be supplied.

5.I.03. Conflict Monitor

Each conflict monitor shall be provided with two sets of each of the following documentation:

5.I.03.a. Complete and accurate schematic diagrams;

5.I.03.b. Complete parts list, including names of vendors for parts not identified by universal part numbers; and

5.I.03.c. Pictorial of components' layout on circuit board(s).

5.I.03.d. Blank program/timing sheets for the conflict monitor are required. Two sheets for each unit are to be supplied.

5.I.04. Solid-state Load Switches

Solid-state load switches shall be provided with two sets per cabinet of each of the following documentation:

5.I.04.a. Complete and accurate schematic diagrams;

5.I.04.b. Complete parts list, including names of vendors for parts not identified by universal part numbers; and

5.I.04.c. Pictorial of components' layout on circuit board(s).

5.I.05. Solid-state, Two-Circuit Flasher

Each solid-state, two-circuit flasher shall be provided with two sets of the following documentation:

5.I.05.a. Complete and accurate schematic diagrams.

5.I.06. Detector Rack

Each detector rack shall be provided with two sets of the following documentation:

5.I.06.a. Complete and accurate schematic diagrams;

5.I.06.b. Complete installation procedure;

5.I.06.c. Complete performance specifications for both electrical and mechanical items on the unit;

5.I.06.d. Complete parts list, including names of vendors for parts not identified by universal part numbers;

5.I.06.e. Pictorial of components' layout on circuit board;

5.I.06.f. Complete maintenance and troubleshooting procedures; and

5.I.06.g. Complete stage-by-stage explanation of circuit theory and operation.

5.I.07. Traffic Signal Controller Assembly

The traffic signal controller assembly shall be identical to the approved pre-shipment sample. Any deviation from the approved sample shall be submitted to the Department for evaluation and approval before any shipment is accepted.

5.I.08. Deviations

Deviation from the approved sample, as determined by the Department, after shipment of any part of the order shall be cause for rejection and nonpayment of the remainder of the order. Excessive delays or noncompliance by the Contractor at any point in the approval process may be cause for cancellation and nonpayment.

5.J. TRAINING

The Contractor shall provide no less than three 40-hour training sessions provided by personnel qualified by the manufacturer. The Department shall set the date, time, and place for these sessions.

5.K. WARRANTY

5.K.01. The controller unit and component shall have a full warranty due to manufacture defects for parts and labor for a minimum of 5 years from the date of final acceptance. If batteries are supplied, the batteries and any damage caused by battery failure will be warranted for 10 years. Any integrated circuits with 14 or more pins that are not socketed shall have a 10-year warranty on the parts and labor. All other components within the controller assembly shall be fully warranted for the parts and labor for a minimum of 1 year from the date of final acceptance. The Contractor shall submit three copies of all warranties with the first delivery of each component.

5.K.02. The Contractor shall bear all expenses connected with return of any materials which any agency deems necessary to return for adjustment during the warranty.

5.K.03. The Department, or its agent, reserves the right to withhold payments which may be due should it be discovered that materials do not meet specifications and/or claims of the manufacturer.

5.K.04. The Contractor, at no additional cost, shall make the following items available to the Department for the life of the contract: all engineering data, diagrams, and software changes or improvements that increase performance of equipment.

5.K.05. The Contractor shall have field engineers or technicians available on request to ensure satisfactory initial operation and to consult with the Department or his representative on any special circuitry that may be required in certain applications.

5.K.06. Department maintenance personnel will determine the manufacturer's responsibility for any controller assembly failure if failure occurs within the warranty period. Department personnel will contact the manufacturer with instructions on the pickup and delivery of any defective controller assembly components.

5.L. TESTING AND ACCEPTANCE OF TRAFFIC SIGNAL CONTROLLER ASSEMBLY

Environmental testing of every controller assembly shall be based on test procedures described in Part 2 of NEMA *Publication No. TS1-1989*. The Contractor shall be prepared to provide a certified test report from a federally certified independent laboratory indicating that each controller assembly meets the requirements of NEMA *Publication No. TS1-1989*. The certification will be required before acceptance (two copies for each controller assembly). The acceptability of the laboratory is determined by the Department, and all costs for certification shall be borne by the Contractor.

5.M. METHOD OF MEASUREMENT

Traffic signal control equipment furnished will be appropriately measured and shall include all miscellaneous hardware, wiring, and electrical connections.

5.N. BASIS OF PAYMENT

Furnished and/or installed traffic signal control equipment, measured and accepted, as provided above, will be paid for at the Contract bid price of the following items:

QUANTITY	ITEM
(Each)	Pole-mounted controller and cabinet—Naztec Inc., model number 70006-PGC2 or 70006-PGC2V; Clary SP1000-PGC with PIM 30
(Each)	Base-mounted controller and cabinet—Naztec Inc., model number 70008-PGC2 or 70008-PGC2V; Clary SP1000-PGC with PIM 30

CHAPTER 6: HAZARD IDENTIFICATION BEACON

6.A. DESCRIPTION

This work shall consist of furnishing and installing hazard identification beacons (HIBs) that use either standard electrical service connections or a solar power source. The aluminum cabinet housing, signal heads, solar panels, sign, and all related wiring necessary to provide an HIB shall be in accordance with these Specifications and Standards (Standard TS-6). Items such as breakaway pedestal poles, vehicle signal heads, electrical conduit, and electrical cable are specified elsewhere in this document.

6.B. MATERIALS

6.B.01. Cabinet

6.B.01.a. Type The HIB cabinet shall be constructed of aluminum and conform to ASTM B26/B26M Casting S-5A.

6.B.01.b. Design The HIB cabinet shall be designed for pole mounting.

6.B.01.c. Size The minimum approximate size should be 16 inches high by 13 inches wide by 13 inches deep; however, the cabinet must be large enough to comfortably hold the clock specified, as well as the other components.

6.B.01.d. Door The door shall be hinged with fully weather-tight gaskets. The door shall include a No. 2 rustproof cylinder lock with a key.

6.B.01.e. Hardware The cabinet shall have top and bottom mounting brackets; these and all related mounting brackets shall be rustproofed. Features required for a pole-mounted cabinet are shown in Standard TS-6. Mounting straps are to be stainless steel.

6.B.01.f. Features Features of the cabinet shall include the following:

(i) Circuit breaker, 10 amperes;

(ii) Radio-frequency line filter, 15 amperes;

(iii) Lightning arrester or approved solid-state device; and

(iv) Other hardware necessary to complete the installation.

6.B.01.g. Wiring The cabinet shall have a terminal strip sufficient to handle the number of signal heads specified, plus all grounds, commons, or other connections. All cables and terminals shall be clearly identified (labeled).

6.B.01.h. Schematic The Contractor, at his expense, shall supply three copies of complete schematic diagrams for each HIB.

6.B.02. Concrete

6.B.02.a. Unless otherwise specified, a concrete courtesy pad shall be provided as shown in Standard TS-6.

6.B.02.b. Whenever other concrete work is specified (e.g., sidewalk and driveway alterations), all materials and construction work shall be in accordance with Section II, Technical Specifications, and Section III, Standard Roadway Sections and Details, of the *Specifications and Standards for Roadways and Bridges*.

6.B.03. Conduit

Conduit bends or risers shall be galvanized or made of PVC material equal to that specified in Chapter 15, "Electrical Conduit."

6.B.04. Miscellaneous

All components or hardware shall be made of non-corrosive materials.

6.C. CERTIFICATION

At bid opening, the Bidder shall provide certification that the above material specifications will be met and that the fabricator's workmanship will be inspected prior to installation.

6.D. CONSTRUCTION METHODS

6.D.01. Mounting

The cabinet shall be mounted as shown in Standard TS-6, and in accordance with the plans or as directed by the Department.

6.D.02. Wiring

6.D.02.a. Electrical cables shall be connected to the terminals so as to provide the proper display indication.

6.D.02.b. Electrical cable runs shall be indicated in these Specifications and Standards and on the plans.

6.D.02.c. Ground wires shall run continuously from the ground rod in the pole base to the cabinet. Where the plans call for the use of an existing ungrounded pole, a ground rod shall be driven and a ground wire shall be installed.

6.E. METHOD OF MEASUREMENT

Furnishing and installing HIBs shall be measured by each unit erected and placed as shown on the plans, including signal heads, signs, miscellaneous electronics, electrical connections, concrete courtesy pad, etc. Furthermore, the cabinet shall be of sufficient size and shall be wired to accommodate the clock and other components.

NOTE: The furnishing, installation, and payment of the splice-box, conduit, electrical service, and other major items are specified elsewhere in this document.

6.F. BASIS OF PAYMENT

6.F.01. Any and all furnished and/or installed HIB(s), measured and accepted, as provided above, shall be paid at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Hazard identification beacon (HIB)

6.F.02. Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified.

CHAPTER 7: STRAIN POLE

7.A. DESCRIPTION

7.A.01. This work shall consist of furnishing and installing traffic signal strain poles, 32 feet or less in length, of the types and sizes shown in the plans, in accordance with these specifications, and in close conformity to the locations shown on the plans or as established by the Department.

7.A.02. A strain pole shall consist of a single-section, tapered, steel pole-shaft with a base-plate, anchor bolts and nuts, reinforcing steel, ground rod, conduit bends, and miscellaneous hardware, all mounted on a concrete foundation. A strain pole shall be of the specified length, shall be galvanized, and shall be installed on a concrete foundation. (See Standards TS-1, TS-5, and TS-7.)

7.B. MATERIALS

7.B.01. Materials used for strain poles shall meet the minimum requirements as specified in the latest edition of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, except as noted. All welding shall be in accordance with the *American Welding Society* [AWS] *Structural Welding Code DI.I.*

7.B.02. Each strain pole shall consist of a steel shaft with a steel anchor base, four anchor bolts, and miscellaneous hardware. The shaft shall be manufactured from steel tubing meeting the requirements of ASTM A595 Grade A.

7.B.03. Strain Pole Shaft

7.B.03.a. The strain pole shaft shall be manufactured from steel tubing meeting the requirements of ASTM A595 Grade A. Each strain pole shaft shall be fabricated of one length and shall have one longitudinal weld parallel to the long axis of the pole shaft and with no transverse welds. The longitudinal weld shall be finished to form a smooth outside surface, and the wall of the shaft shall be uniform in thickness, including the welded area. The shaft shall be round or multisided (not less than eight sides) in cross-section and be uniformly tapered from butt to tip with approximately a 1-inch reduction in diameter for each 7 feet in length (0.14 inches per foot).

(i) All 26-foot and 28-foot strain pole shafts shall be 12 inches in diameter and shall be made of 3-gauge (3 GA) steel.

(ii) All 30-foot strain pole shafts shall be 12 inches in diameter at the base and shall be made of 0-gauge (0 GA) steel.

(iii) All 32-foot strain pole shafts shall be either 12 inches or 14 inches in diameter at the base and shall be made of double- 0-gauge (00 GA) steel.

7.B.03.b. All strain poles shall be supplied with an anchor base with a minimum 10-inch opening. The material shall meet the requirements of ASTM A36 or A27 grade 65-35 and shall be of sufficient size and strength. The base shall be secured to the lower end of the shaft by two continuous electric arc welds. The base shall telescope the shaft with one weld on the inside of the base at the end of the shaft. The remaining weld shall be located on the outside of the base at the top of the shaft. The weld connection shall develop the full strength of the adjacent shaft to resist bending action.

7.B.03.c. Hand-holes are to be welded into the shaft. A galvanized steel cover, conforming to ASTM A36 and ASTM A153, held in place with two hex head stainless steel screws 0.25-inch, 20 Unified Nominal Coarse (UNC), and a No. 10 stainless

steel captive chain shall be provided. A 0.5-inch, 20 UNC, welded, threaded, grounding nut shall be supplied and mounted to the side of the hand hole opening along with one 0.5-inch-diameter by 0.75-inch-length, 13 UNC, stainless steel bolt with two stainless steel flat washers.

7.B.03.d. Strain poles are to be provided with entrance ways for cable. These holes shall be factory-drilled; and a straight-tapped coupling, conforming to *Underwriters Laboratory's UL-6 Specification, Section 10*, for 3-inch rigid conduits, shall be installed for each hole. A chase nipple shall then be installed and fully seated on the interior side of the coupling.

7.B.03.e. A "J" hook shall be welded near the top of the shaft for cable support.

7.B.03.f. All strain poles and hardware, except materials manufactured from stainless steel or cast aluminum, shall be hot-dipped galvanized. The galvanized coating shall meet the thickness, adherence, and quality requirements of ASTM A123 or ASTM A153 for hardware. Threaded components shall be chased and cleaned after galvanizing. All internally threaded components shall be tapped and sized to the minimum amount required to permit assembly on the coated, externally threaded fastener. Internally threaded components shall be provided with a lubricant that shall be clean and dry to the touch.

7.B.03.g. Each strain pole shall be supplied with four, removable, ornamental, anchor- bolt covers made of cast aluminum. Bolt holes for attaching the bolt covers to the base plate shall be drilled at the location obtained by following the diagonal line of the base plate until it intersects the bolt circle diameter, then proceeding tangentially from the bolt circle diameter a distance equal to the anchor bolt center to bolt slot center distance. Attachment to the base shall be made using hex head stainless steel screws 0.25-inch, 20 UNC.

7.B.03.h. Each shaft shall be supplied with a removable, domed cap, fabricated from cast aluminum and circumferentially attached to the side of the pole with three hex head stainless steel screws 0.25-inch, 20 UNC.

7.B.03.i. Each pole shall have an identification plate mechanically attached and oriented so that the identification plate may be read from a ground observation position.

7.B.03.j. Recessed, hub-type, galvanized, malleable, iron plugs shall be inserted flush into all couplings.

7.B.04 Anchor Bolts

7.B.04.a. Each strain pole anchor bolt shall be made of steel in accordance with ASTM A576, except as modified to have a minimum yield strength of 55,000 pounds per square inch (psi) and a 15,000-psi minimum differential between yield and ultimate tensile strength.

7.B.04.b. Anchor bolt threads shall be of cut thread design with a minimum of 9 inches of threads at the top.

7.B.04.c. A 90-degree ell bend, 6 inches in length, shall be part of the overall bolt length.

7.B.04.d. The diameter of the anchor bolt shall be stamped into the top of the threaded end of each anchor bolt.

7.B.04.e. Each anchor bolt shall be provided with two anchor bolt nuts and two flat washers, as follows:

(i) Anchor bolt nuts shall conform to the requirements of ASTM A194 Grade 2 or 2H, or ASTM A563 D or DH.

(ii) All nuts shall be tapped and sized to the minimum amount required to permit assembly on the coated externally threaded fastener.

(iii) Washers shall meet the requirements of ASTM F346.

7.B.04.f. All nuts, washers, and the top 12 inches of all anchor bolts shall be hot-dipped or mechanically galvanized. The galvanized coating shall meet the thickness, adherence, and quality requirements of ASTM A123 or ASTM A153 for hardware.

7.B.05. Manufacturer
All strain poles provided for any individual project shall be made by the same manufacturer.

7.B.06. Concrete
The concrete used in the foundation shall be MSHA Mix No. 2 and shall conform to the requirements of MSHA *Standard Specifications for Construction and Materials*, Section 801.

7.B.07. Ground Rods
All ground rods shall be 10 feet long and consist of a 0.625-inch diameter, copper-clad rod. A minimum of No. 8 AWG, bare, copper wire shall be used in the ground connection. Each pole shall have one ground rod located inside the base of the pole.

7.B.08. Conduit Bends
Conduit bends shall be composed of galvanized material or PVC equal to that specified in Chapter 15, "Electrical Conduit." There shall be at least one 3-inch minimum conduit bend in each pole base.

7.B.09. Reinforcing Steel
Reinforcing steel shall conform to the requirements of MSHA and *Standard Specifications for Construction and Materials*, Section 908, and shall be intermediate grade and constructed as shown in Standard TS-1.

7.B.10. Miscellaneous
All components or hardware shall be made of non-corrosive materials or be made of the same material(s) as the item being installed.

7.C. CERTIFICATION
7.C.01. At bid opening, the Bidder shall provide descriptions and drawings of each type of pole that is being supplied.

7.C.02. The Bidder shall provide certification (catalogue cuts) that the requirements of the material(s) specified for this item will be met and that the fabricator's workmanship will be inspected prior to installation.

7.D. GUARANTEE
The Contractor shall furnish the Department with all warranties on equipment and materials offered by the manufacturer as normal trade practice. This guarantee shall include a statement from the manufacturer that all strain poles provided under this item shall have a guaranteed minimum yield strength of 55,000 psi and shall withstand the stringing tension or resultant stress without deflecting more than 2.67 percent of the length from the base to the point where the span wire is to be connected.

7.E. CONSTRUCTION METHODS
7.E.01. Foundation
7.E.01.a. The foundation shall be constructed as shown in Standard TS-1. It shall be 36 inches in diameter and at least 10 feet deep with a circular, reinforcing cage. The hole shall be augured, and the concrete shall be poured into undisturbed earth.

7.E.01.b. The concrete shall be mixed, placed, cured, protected, and tested in

accordance with applicable portions of MSHA *Standard Specifications for Construction and Materials*, Section 801.

7.E.01.c. The top of the concrete foundation shall have a broom finish.

7.E.01.d. No load (i.e., no pole) shall be placed on the foundation until the concrete has been allowed to cure for 7 days.

7.E.02. Anchor Bolts

The anchor bolts shall be set using preformed templates to provide a bolt circle in accordance with the pole manufacturer. The templates shall be left in place until the concrete has cured.

7.E.03.Conduit Bends

Conduit bends shall be set and capped in the excavation before the concrete is poured. The size and number shall be that which is necessary to mate the incoming runs. However, where no conduit is indicated on the plans, a 3-inch conduit bend will be placed for future use. All conduits shall extend beyond the side of the finished foundation by 12 inches in the direction of, and at a depth commensurate with, the incoming conduit. The conduit shall extend 3 to 6 inches above the top of the finished foundation. (See Standard TS-1.)

7.E.04. Ground Rod and Ground Wire

7.E.04.a. The ground rod and ground wire are to be furnished and installed with each foundation. The ground rod shall be embedded in the foundation as shown in Standard TS-1.

7.E.04.b. Ground wires shall run continuously from the ground rod to the controller cabinet (in pole-mounted cabinets); they shall run continuously from the ground rod to the conduit bends and shall be connected to the ground nut in the base of the pole or pedestal.

7.E.05. Raking

7.E.05.a. The poles shall be raked in the direction opposing the tension by adjusting the nuts of the anchor bolts.

7.E.05.b. When final load is applied, the pole shaft shall have a vertical appearance.

7.E.06. Flashing

The space between the pole base and the top of the concrete footing shall be encased with sheet metal flashing made of a material and gauge specified in the Contract Documents.

7.E.07. Painting

Galvanized poles shall not be painted. Any scars shall be repaired by field galvanizing.

7.F. METHOD OF MEASUREMENT

Furnishing and installing traffic signal strain poles will be measured by each of the types and sizes specified, erected in place as shown on the plans when complete, including concrete, anchor bolts, nut covers, pole covers, reinforcing steel, ground rod, ground wire, conduit bends, and all miscellaneous hardware as required.

7.G. BASIS OF PAYMENT

7.G.01. Furnished and/or installed traffic signal strain poles, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Strain pole- Install
(Each)	Strain pole – Furnish and Install

7.G.02. Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified.

CHAPTER 8: MAST ARM POLES

8.A. DESCRIPTION

8.A.01. This work shall consist of furnishing and installing traffic signal poles with mast arm(s) of the types and sizes shown on the plans in accordance with these specifications and in close conformity to the locations shown on the plans or as established by the Department.

8.A.02. An assembly shall consist of a single-section, tapered, steel, pole shaft with the base plate, anchor bolts and nuts, the mast arm(s), reinforcing steel where required, ground rod, conduit bends, and miscellaneous hardware, mounted on a concrete foundation. The pole with mast arm(s) shall be the specified lengths and shall be galvanized. (See Standards TS-1, TS-5, and TS-8.)

8.B. MATERIALS

8.B.01. Materials shall meet the minimum requirements as specified in the latest edition of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, except as noted below. All welding shall be in accordance with the *American Welding Society* (AWS) *Structural Welding Code DI.1*.

8.B.02. All mast arm poles shall be 27 feet tall and designed to support, at the free end of the mast arm, a minimum, vertical, downward, dead load of 150 pounds and a minimum, horizontal, wind load applied at a right angle to the mast arm of 700 pounds. Design stress for the mast arm pole and its components shall not exceed 55 percent of yield strength of the material(s) used, equivalent to a 1.8 factor of safety.

8.B.03. Mast Arm Pole Shaft and Arms

8.B.03.a. The mast arm pole shaft and arms shall be manufactured from steel tubing meeting the requirements of ASTM A595 Grade A. Each mast arm pole shaft or mast arm shall be fabricated of one length and shall have one longitudinal weld parallel to the long axis of the pole shaft, with no transverse welds. The longitudinal weld shall be finished to form a smooth outside surface, and the wall of the shaft and mast arms shall be of uniform thickness, including the welded area. The shaft and arms shall be round or multisided (not less than eight sides) in the cross-section and be uniformly tapered from butt to tip with a 1-inch reduction in diameter for each 7 feet in length (0.14 inches per foot). Mast arms shall be designed with two pieces for all mast arms 40 feet in length or longer, provided that any combination of two pieces of the same butt diameter fit together. As an example, for the group of 40-foot through 50-foot arm lengths, any arm piece with a flange plate must mate with all extensions of arms in that group. The bolted splice connection for two-piece arms shall be as noted in the Contract Documents.

8.B.03.b. Mast arms of the group, 40 feet through 50 feet in length, shall have a butt section between 30 feet and 34.5 feet in length. Mast arms of the group, 52 feet through 64 feet in length, shall have a butt section between 35 feet and 39.5 feet in length.

8.B.03.c. All mast arm poles shall be supplied with an anchor base with a minimum 10-inch opening. The material shall meet the requirements of ASTM A-36 or A-27 Grade 65-35 and shall have sufficient size and strength. The base shall be secured to the lower end of the shaft by two continuous electric arc welds. The base shall telescope the shaft with one weld

located on the inside of the base at the end of the shaft. The remaining weld shall be located on the outside, top surface of the base plate. The weld connections shall develop the full strength of the adjacent shaft to resist bending action.

8.B.03.d. All mast arm poles and shafts are to be supplied with flange plate(s). These attachments, including the bolts, shall be attached in such a manner as to develop the minimum guaranteed yield and ultimate tensile strength for the shaft and mast arm. This assembly shall be capable of transferring the maximum moment being carried by the mast arm without distortion or rotation of the mast arm or the attachment. The flange plate(s) shall be connected by using four bolts. Four, 1.5-inch, outside diameter, rubber grommets are to be furnished per mast arm. The mast arm flange plate shall be secured to the lower end of the mast arm shaft by two continuous electric arc welds. The mast arm flange plate shall telescope the mast arm shaft, with one weld located on the inside of the flange plate at the end of the shaft. The remaining weld shall be located on the outside surface of the flange plate. The weld connections shall develop the full strength of the adjacent shaft to resist bending action.

(i) Pole plate and arm plate surfaces shall be planed to within 0.0625 inch and shall be free of any buildup of galvanizing (drips, runs, etc.) that would prevent complete contact between the mating surfaces.

(ii) Hand holes are to be welded into the shaft as shown on the appropriate detail. A galvanized steel cover, conforming to ASTM A36 and ASTM 153, held in place with two hex head stainless steel screws (0.25 inch—20 UNC), and a No. 10, stainless steel, captive chain shall be provided. A 0.5-inch (13 UNC), welded, threaded, grounding nut shall be supplied along with one 0.5-inch-diameter by 0.75-inch-length (13 UNC) stainless steel bolt with two stainless steel flat washers for the bottom hand hole.

(iii) Mast arm poles are to be provided with entrance ways for cable. These holes shall be factory-drilled, and a straight tapped coupling, conforming to *Underwriters Laboratory's UL-6 Specifications*, Section 10, for 3-inch rigid conduits, shall be installed for each hole. A chase nipple shall then be installed and fully seated on the interior side of the coupling.

(iv) Located 1 foot above the highest mast arm "T" dimension, "J" hooks shall be installed as follows:

A single "J" hook shall be welded inside the pole for single-mast arm poles; or

Two "J" hooks shall be welded inside the pole for twin arm poles.

8.B.03.e. All mast arms, mast arm poles, and hardware, except materials manufactured from stainless steel or cast aluminum, shall be hot-dipped galvanized. The galvanized coating shall meet the thickness, adherence, and quality requirements of ASTM A123 and ASTM A153 for hardware. Threaded components shall be chased and cleaned after galvanizing. All internally threaded components shall be tapped and sized to the minimum amount required to permit assembly on the coated, externally threaded fastener. Galvanized nuts and internally threaded components shall be provided with a lubricant which shall be clean and dry to the touch.

8.B.03.f. Each mast arm pole shall be supplied with four removable, ornamental, anchor-bolt covers made of cast aluminum. Bolt holes for attaching the bolt covers to the base plate shall be drilled at the loca-

tion obtained by following the diagonal line of the base plate until it intersects the bolt circle diameter, then proceeding tangentially from the bolt circle diameter to the anchor bolt center to bolt slot center distance. Attachment of the bolt cover to the base shall be made using 0.25" hex head stainless steel screws (20 UNC).

8.B.03.g. Each shaft and mast arm extension shall be supplied with a removable, domed cap, fabricated from cast aluminum and circumferentially attached to the side of the pole with three 0.25" hex head stainless steel screws (20 UNC).

8.B.03.h. Each mast arm pole and mast arm shall have an identification plate mechanically attached and oriented so that the identification plate may be read from a ground observation position.

8.B.03.i. Single-piece mast arms and the butt section of two-piece mast arms must have the identification plate attached 6 inches above the flange plate. The extension section of two-piece mast arms must have the identification plate attached 6 inches from the larger diameter end. Poles shall have the identification plate attached 6 inches above the bottom flange plate.

8.B.03.j. Recessed, hub-type, galvanized, malleable, iron plugs shall be inserted flush into all couplings.

8.B.04. Anchor Bolts

8.B.04.a. Each mast arm pole anchor bolt shall be made of steel in accordance with ASTM A576, except as modified to have a minimum yield strength of 55,000 psi and a 15,000-psi minimum differential between yield and ultimate tensile strength.

8.B.04.b. Anchor bolt threads shall be of cut thread design with a minimum of 9 inches of threads at the top.

8.B.04.c. A 90-degree ell bend, 6 inches in length, shall be part of the overall bolt length.

8.B.04.d. The anchor bolt shall be provided with two anchor bolt nuts and two flat washers.

8.B.04.e. Anchor bolt nuts shall conform to the requirements of the ASTM A194 Grade 2 or 2H, and ASTM A563 D or DH. All nuts shall be tapped and sized to the minimum amount required to permit assembly on the coated, externally threaded fastener. Washers shall meet the requirements of ASTM F436.

8.B.04.f. All nuts, washers, and the top 12 inches of all anchor bolts shall be hot-dipped or mechanically galvanized. The galvanized coating shall meet the thickness, adherence, and quality requirements of ASTM A123 and ASTM A153 for hardware.

8.B.05. Concrete

The concrete used in the foundation shall be MSHA Mix No. 2 and shall conform to the requirements of MSHA *Standard Specifications for Construction and Materials*, Section 801.

8.B.06. Ground Rods

All ground rods shall be 10 feet long and consist of 0.625-inch diameter, copper-clad rod. A minimum No. 8 AWG, bare, copper wire shall be used in the ground connection. Each pole shall have one ground rod, which shall be located inside the base of the pole.

8.B.07. Conduit Bends

There shall be at least one conduit (3-inch minimum) bend in each pole base. Conduit bends shall be galvanized material equal to that specified in Chapter 15, "Electrical Conduit."

8.B.08. Reinforcing Steel

Steel reinforcement shall conform to the requirements of MSHA *Standard Specifica-*

tions for Construction and Materials, Section 908, and shall be intermediate grade and constructed as shown in Standard TS-1.

8.B.09. Miscellaneous

All components or hardware shall be made of non-corrosive materials or be made of the same material(s) as the item being installed.

8.C. CERTIFICATION

8.C.01. At bid opening, the Bidder shall provide descriptions and drawings of each type of pole that is being supplied.

8.C.02. Catalog "cuts" required: The Bidder shall provide certification in the form of catalog cuts that the requirements of the material(s) specified for this item will be met and that the fabricator's workmanship will be inspected prior to installation.

8.D. GUARANTEE

The Contractor shall furnish the Department with all warranties on equipment and materials offered by the manufacturers as normal trade practice. This guarantee shall include a statement from the manufacturer that all poles provided under this item shall have a guaranteed minimum yield strength of 55,000 psi.

8.E. CONSTRUCTION METHODS

8.E.01. Foundation

8.E.01.a. The foundation shall be constructed as shown in Standard TS-1. Each foundation shall be 36 inches in diameter and at least 10 feet deep with a circular reinforcing cage. The hole shall be augured, and the concrete shall be poured into undisturbed earth.

8.E.01.b. The concrete shall be mixed, placed, cured, protected, and tested in accordance with applicable portions of MSHA *Standard Specifications for Construction and Materials*, Section 801.

8.E.01.c. No load (i.e., no pole) shall be placed on the foundation until the concrete has been allowed to cure for 7 days.

8.E.01.d. The top of the concrete foundation shall have a broom finish.

8.E.02. Anchor Bolts

The anchor bolts shall be set using preformed templates to provide a bolt circle in accordance with the pole manufacturer. The templates shall be left in place until the concrete has cured.

8.E.03. Conduit Bonds

Conduit bonds shall be set and capped in the excavation before the concrete is poured. The size and number shall be that necessary to mate the incoming runs. However, where no conduit is indicated on the plans, a 3-inch conduit bend will be placed for future use. All conduits shall extend beyond the side of the finished foundation by approximately 12 inches, in the direction of, and at a depth commensurate with, the incoming conduit. The conduit shall extend 3 to 6 inches above the top of the finished foundation. (See Standard TS-1.)

8.E.04. Ground Rod and Ground Wire

8.E.04.a. The ground rod and ground wire are to be furnished and installed with each foundation.

8.E.04.b. The ground rod shall be embedded in the foundation as shown in Standard TS-1.

8.E.04.c. Ground wires shall run continuously from the ground rod to the controller cabinet (in pole-mounted cabinets), shall run continuously from the ground rod to the conduit bends, and shall be connected to the ground nut in the base of the pole or pedestal.

8.E.05. Flashing
The space between the pole base and the top of the concrete footing shall be encased with sheet metal flashing, made of a material and gauge specified in the Contract Documents.

8.E.06. Painting
Galvanized poles shall not be painted. Any scars shall be repaired by spraying cold galvanizing compound.

8.E.07. Cutting
When required by the plans, poles and arms shall be saw-cut. In other words, clean the disturbed area inside and outside with a wire brush. Spray cold, galvanized compound on the disturbed area. Then, place an end cap of matching size on the pole or arm.

8.F. METHOD OF MEASUREMENT
Furnishing and installing traffic signal poles with mast arm(s) will be measured by each of the types and sizes specified, erected in place as shown in the plans, complete, including concrete, anchor bolts, nut covers, pole covers, end caps, reinforcing steel, ground rods, ground wires, conduit bends, and all miscellaneous hardware, as required. Cuts shall be measured by each cut required.

8.G. BASIS OF PAYMENT
8.G.01. Furnished and/or installed traffic signal mast arm poles, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Mast arm pole and arms
(Each)	Cut pole or arm (including single and twin arm poles)

8.G.02. Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work specified.

CHAPTER 9: BREAKAWAY PEDESTAL POLES

9.A. DESCRIPTION

9.A.01. This work shall consist of furnishing and installing pedestal poles of the sizes shown on the plans in accordance with these Specifications and Standards and in reasonably close conformity to the locations shown on the plans or as established by the Department.

9.A.02. A pedestal pole shall consist of a concrete foundation, a transformer base, a pole shaft, anchor bolts, ground rod, conduit bends, and miscellaneous hardware as necessary. The pedestal pole shall be galvanized. (See Standard TS-2.)

9.B. MATERIALS

9.B.01. Materials shall meet the minimum requirements as specified in the latest edition of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, except as noted.

9.B.02. Poles

9.B.02.a. Each pole shall consist of a steel shaft of the length specified on the plans, with a steel anchor base, four anchor bolts, and a precast cap; and shall be in accordance with ASTM A-595 (tapered), or equivalent (non-tapered).

9.B.02.b. The shaft shall be made from basic, open-hearth, hot-rolled steel. It shall be of one-piece construction with no transverse welds and a continuous taper of 0.14 inches per foot in diameter for tapered shaft. It shall not have more than one longitudinal continuous welded seam.

9.B.02.c. Monotube Poles The shaft shall be fabricated of one length and shall have one longitudinal weld with no transverse welds in the fabrication of the shaft. The longitudinal weld shall be finished to form a smooth outside surface, and the wall of the shaft shall be uniform in thickness throughout, including the welded area. The shaft shall be round or multisided (not less than eight sides) in cross-section. The tapered shaft shall be uniformly tapered from butt to tip, approximately 1 inch in diameter for each 7 feet in length (0.14 inches per foot).

9.B.02.d. All poles shall be designed to meet the standards in the latest edition of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.*

9.B.02.e. Each pole shall be supplied with four anchor bolts and shall be made of steel in accordance with ASTM A-576, but shall be modified to have a minimum yield point of 55,000 psi and a 15,000-psi differential between yield and ultimate tensile strength.

(i) The anchor bolts shall be 1 inch in diameter and 40 inches in length, with 6 inches of thread on the top and a 4-inch, 90-degree ell bend at the lower end. Each anchor bolt shall be provided with a leveling nut and a hexagonal nut to meet ASTM A-194 Grade 2 or 2H. The top 12 inches of all anchor bolts and all nuts shall be either mechanically or hot-dipped galvanized. The coating shall meet the thickness, adherence, and quality requirements of ASTM A-153. The remainder of the rod need not be galvanized or painted.

(ii) All poles shall be supplied with a transformer base made of an aluminum meeting ASTM B-26, Alloy 356.0, and meeting the latest FHWA and AASHTO requirements for breakaway characteristics. Supporting ears shall be provided in the bottom of the base for an-

chor bolts. The dimensions of anchor bolts shall be as noted.

(iii) The top of the transformer base shall be designed to receive a pole base plate with four bolts.

(iv) An inspection door shall be provided in the base, which shall be fastened to the transformer base with a single stainless steel bolt of a proper size. The size of the opening shall be approximately 8 inches by 9 inches in order to permit work to be performed inside the base. This opening shall not be less than 40 square inches.

9.B.02.f. All screws, bolts, nuts, washers, and miscellaneous hardware—other than anchor bolts—shall be stainless steel, American Iron and Steel Institute (AISI) No. 304.

9.B.02.g. The top of the shaft shall be designed to receive a 4.5-inch outside diameter (OD) slipfitter. The total height of the shaft and the pedestal shall be 10 feet for pedestrian poles and 14 feet for HIBs.

9.B.02.h. All poles, transformer bases, and miscellaneous incidentals shall be mechanically or hot-dipped galvanized. The coating shall meet the thickness, adherence, and quality requirements of ASTM A-153.

9.B.03. Hardware

Screws, nuts, bolts, washers, and miscellaneous assembly hardware—other than anchor bolts—shall be made of stainless steel, AISI No. 304.

9.B.04. Concrete

All concrete shall be MSHA Mix No. 2 and shall conform to the requirements of MSHA *Standard Specifications for Construction and Materials*, Section 801.

9.B.05. Ground Rod

The ground rod shall be 10 feet long and consist of a 0.625-inch diameter, copper-clad rod. A minimum No. 8 AWG, bare, copper wire shall be used as a ground wire and in the ground connection.

9.B.06. Conduit Bends

Conduit bends shall be made of galvanized material equal to that specified in Chapter 15, "Electrical Conduit."

9.B.07. Miscellaneous

All components or hardware shall be made of non-corrosive materials or of the same material as the item being installed.

9.C. CERTIFICATION

9.C.01. At bid opening, the Bidder shall provide descriptions and drawings of each type of pedestal pole that he will supply.

9.C.02. The Bidder shall provide certification that the requirements of the material specified for this item will be met and that the fabricator's workmanship will be inspected prior to installation.

9.D. GUARANTEE

The Contractor shall furnish the Department with all warranties on equipment and materials offered by the manufacturer as normal trade practice.

9.E. CONSTRUCTION METHODS

9.E.01. Concrete Foundation

The foundation shall be constructed to the dimensions shown in the standards. Bolt circle data shall be in accordance with applicable portions of MSHA, Article 34.08, and shall be cured and protected in accordance with MSHA, Article 35.04. Suitable templates for setting anchor bolts shall be accurately set and left in place until the concrete has cured.

9.E.02. Ground Rod and Ground Wire

9.E.02.a. The ground rod and ground wire are to be furnished and installed with each foundation.

9.E.02.b. The ground rod shall be embedded in the foundation and shall protrude inside the transformer base as shown in the standards.

9.E.02.c. The ground wire shall run continuously from the ground rod to the controller cabinet (in pole-mounted cabinets) and shall be connected to the ground nut in the base of the pedestal.

9.E.03. Conduit Bends

Conduit bends shall be set in the footing excavation before the concrete is poured. The size and number shall be that necessary to mate the incoming runs. The conduit shall extend beyond the side of the finished foundation by approximately 12 inches in the direction of, and at a depth commensurate with, the incoming conduit. The conduit shall extend 3 to 6 inches above the top of the finished foundation inside the transformer base.

9.F. METHOD OF MEASUREMENT

Furnishing and installing pedestal poles will be measured by each of the types and sizes specified, erected in place as shown on the plans: complete, including concrete, anchor bolts, ground rod, ground wire, conduit bends, and all miscellaneous hardware as required.

9.G. BASIS OF PAYMENT

9.G.01. Furnished and/or installed pedestal poles, measured and accepted, as provided above, will be paid at the Contract bid price of:

QUANTITY	ITEM
(Each)	Breakaway pedestal pole

9.G.02. Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified.

CHAPTER 10: DETECTORS

10.A. DESCRIPTION

10.A.01. Vehicle and temperature detectors shall include loops; micro-loops; acoustic, video, and temperature sensors; and microwave detection devices. These shall be installed in accordance with the details specified on the plans; in Standards TS-9, TS-10, TS-11, and TS-12; in the manufacturer's instructions; and as directed by the Department.

10.A.02. The video detection system to be used shall be TRAFICON VIP3D.2 or the latest approved revision. This system includes the video image processing unit(s); video camera(s) with infrared (IR) filters, enclosure, and sunshield; camera lens; surge suppressor; and all other necessary equipment for operation. The detection camera shall be located as described in Standard TS-8 in Appendix B of these Specifications.

10.B. MATERIALS

10.B.01. This specification covers the material requirements for the wire used in inductance loop vehicle detectors. This inductance loop wire shall consist of No. 14 AWG, National Electrical Code Type THHN, THWN, or XHHW stranded, single-conductor, copper wire. The exterior jacket of the wire shall be marked at regular intervals with the proper type letter or letters, the manufacturer's name or trademark, the AWG size, and the maximum-rated voltage.

10.B.02. The loop wire shall be protected by a continuous, flexible, polyethylene, plastic tubing, of 0.184-inch minimum inside diameter (ID), 0.031-inch minimum wall thickness, and 0.26-inch maximum outside diameter (OD), with a smooth bore. The tubing shall not adhere to the loop wire in any way and shall be capable of resisting deterioration from oils, solvents, and temperatures up to 100°C. The tubing shall also be highly abrasion- resistant and remain flexible from –30°C to 100°C.

10.B.03. Two-conductor loop lead-in cables shall be 600V, polyethylene-insulated, stranded, tinned, copper conductors in No. 14 AWG sizes in a twisted pair configuration, wrapped in a Mylar-backed aluminum foil shield (aluminum side out); with a stranded, tinned, copper, uninsulated, ground/drain wire cabled against the aluminum shield in the groove/interstice formed by the twisted pair underneath the shield, with a black, polyethylene, overall outer jacket (IMSA Spec. No. 50-2-1984).

10.B.04. Acceptance of inductance loop wire will be based on manufacturer's certification of compliance with these specification requirements.

10.B.05. Camera Cable shall be 28-16ga Siamese (Isotec #X3416667-00) with single crimp 2 piece BNC connectors.

10.C. CONSTRUCTION METHODS

10.C.01. Loop dimensions shall be as specified on the plans. Pull-boxes, conduits, and detector sleeves (one per detector) shall be completed before beginning the detector installation. The detector shall be marked on the pavement to conform to the specified configuration. A power saw shall be used to cut a slot in the pavement. The saw-cut for the loop shall be 0.375 inch wide and of the depth specified in Standard TS-12. The saw-cut from the loop to the conduit shall be 0.5 inch wide to allow for the twisting of ducted cable and depth as specified. The corners shall be

cored, drilled, or chipped out as shown in Standard TS-12. Sharp edges in the corners shall be smoothed. All saw-cuts and corners shall be of the same depth. Immediately after sawing, the slot and pavement shall be flushed with clean water and compressed air (Venturi principle) to remove the saw slurry. Filtered, compressed air shall be used to remove all dust and moisture from the slot. If the slot is damp, do not proceed with the installation until it is dry. Hot air may be used to dry the saw slot.

10.C.02. At the edge of the pavement or curb, a 1-inch minimum diameter conduit shall be installed between the pavement and the pull-box in accordance with details specified in Standard TS-11. The conduit shall be: made of galvanized steel; zinc-coated; Carlon Carflex; liquid-tight, non-metallic, Type 2; or rigid plastic.

10.C.03. The loop wire shall be installed starting at the roadside pull-box, and, then, the loop wire shall go around the loop for the specified number of turns; and, finally, the loop wire shall return back to the pull-box. Splices shall not be permitted outside the pull-box. Temperature and micro-loop detectors shall run from the street back through the pull-box and to the control cabinet without any splices. The wire shall be depressed in the slot without the use of sharp objects that might damage the wire insulation. The detector shall be held in place every 2 feet with 1-inch (approximate) strips of rubber, neoprene, flexible tubing, or foam backer rod, as approved by the Department. The hold-down strips shall be left in place while the slot is filled with roadway-loop embedding sealer.

10.C.04. The ends of the tubing that encase the loop wire shall be given a waterproof seal immediately after placing the wire in order to prevent moisture from entering the tube. Where the detector wires cross pavement joints and cracks, the loop wires shall be protected using the method specified in Standard TS-12.

10.C.05. The pair of loop wires between the end of the loop and the splice to the shielded lead-in cable in the pull-box shall be twisted together with at least two turns per foot.

10.C.06. The splice between the loop wires (twisted pair) and the shielded lead-in cable shall be moisture-proof and shall have a dielectric strength at least equal to that of the original insulation.

10.C.07. Moisture shall be excluded from the splice during the operation, and the work shall be done in dry weather or under shelter. All parts of the splices and tools involved shall be clean and dry. Individual splices in each wire shall be staggered in a manner so as to minimize the outside diameter of the finished splice. The bared conductor ends shall be butt-connected with 3M Type MNG14BCMX grease-filled connectors and shall be crimped with ratchet-type crimpers. All connections and the outer jacket will be enclosed within a 3M Type 3832 encapsulation kit, using 3M Type 4403-B semi-hardening epoxy filling compound or equivalent.

10.C.08. The detector wire(s) and the splice to the shielded lead-in cable within the pull-box shall be held by wire hangers as near as possible to the top of the pull-box in order to prevent their immersion in water. The shielded lead-in cable shall be continuous (no splices) from the splice to the loop wires to the controller cabinet terminals.

10.C.09. The completed loop installation, including the shielded lead-in to the controller cabinet, shall have a minimum of 100,000 mega ohms, leakage resistance to the ground. This resistance shall be tested before the loop is sealed in the pavement and after the splice is made between the loop wires (twisted pair) and the shielded lead-in.

10.C.10. Overhead detection devices shall be rigid-mounted on brackets or hangers per the manufacturer's recommendation.

10.C.11. Temperature sensors shall be installed at the end of the saw-cut with the tips being level with the roadway surface. The sensors shall be held in place with hold-down strips while sealed.

10.C.12. When it is determined that the resistance-to-ground requirements are met, the slot shall be filled with roadway loop embedding sealer. All work involving the sealer shall comply with the manufacturer's specifications.

10.D. METHOD OF MEASUREMENT

Detectors shall be measured by the LF of: loop detector cable; loop lead-in cable; saw-cut; micro-loop sets; temperature sensors; overhead detectors; and cable as actually placed, including sealer, electrical connections, testing, and incidental hardware.

NOTE: Conduit, hand-boxes, splice-boxes, and vehicle detector amplifiers are measured elsewhere as separate items.

10.E. BASIS OF PAYMENT

10.E.01. Detectors furnished and/or installed, measured and accepted, as provided above, shall be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(LF)	Loop detector wire, tubing encased
(LF)	2-conductor, aluminum-shielded cable
(LF)	Saw-cut
(Each)	Micro-loop detector (4 probe, max)
(LF)	Micro-loop detector cable
(Each)	Overhead vehicle detector (micro-wave, ultrasonic, acoustic)
(Each)	Video detector system (Traficon VIP3.2 PGC)
(Each)	Video camera
(LF)	Video camera cable
(Each)	Temperature sensor
(LF)	Temperature sensor cable

10.E.02. Such payment shall be full compensation for furnishing all materials, equipment, and labor, and for providing all details and incidentals necessary to provide proper vehicle detection that is complete, in place, and as specified.

CHAPTER 11: HAND-BOXES

11.A. DESCRIPTION

This work shall consist of furnishing and installing hand-boxes at the locations shown on the plans or as established by the Department, in accordance with these specifications. The hand-box may consist of either a steel frame and cover mounted on a base of pre-cast concrete brick or cement block; or a two-piece lid and box of polymer concrete and structural fiber-glass-reinforced polymers. Regardless of composition, all hand-boxes must be able to withstand possible vehicle traffic weights (27,000 pounds minimum). Hand-boxes that conform to MSHA specifications will be designated as MSHA Type. Boxes with a 9,000-square-inch or larger capacity shall be designated as hand-boxes and, under 4,000 square inches, as splice-boxes.

11.B. MATERIALS

The materials shall meet the following requirements:

11.B.01. Steel frames and covers for MSHA Type shall conform to MSHA Standard No. MD-811.02.01.

11.B.02. MSHA Type bases shall be pre-cast or man-made and shall conform to MSHA Standard No. MD-811.03.

11.B.03. Hand-boxes and splice-boxes shall be made from polymer concrete (PC) and structural fiberglass-reinforced polymers (FRP) which shall meet ASTM C857 load designation.

11.B.04. The cover top shall be skid resistant and shall be marked "TRAFFIC."

11.B.05. Boxes shall have a concrete collar poured around the lid at grade.

11.C. CERTIFICATION

The Bidder shall provide certification that the above material specifications will be met and that the fabricator's workmanship will be inspected prior to installation.

11.D. CONSTRUCTION METHODS

11.D.01. Construction

11.D.01.a. Hand-boxes shall be constructed in accordance with Standards TS-3 and TS-4 and as indicated at locations shown on the plans or as established by the Department, in accordance with these specifications.

11.D.01.b. The drain hole at the bottom of the hand-box shall be filled with MSHA No. 6 aggregate or other approved material.

11.D.01.c. The hand-box shall be constructed so that the top of the unit is flush with the adjacent ground, sidewalk, or proposed elevation, as directed by the Department.

11.D.01.d. Hand-boxes shall be placed at least 1 foot behind the curb line or edge of the roadway.

11.D.02. Conduit

11.D.02.a. The conduit shall enter the box not less than 2 inches from the bottom and shall extend at least 4 inches into the box.

11.D.02.b. The conduit shall enter from the direction of the run unless otherwise permitted by the Department.

11.D.02.c. The conduit entrance holes shall be used if provided. If additional openings are required, they shall be made in accordance with the manufacturer's recommendations.

11.D.02.d. All metallic conduit ends within the box shall have grounding bushings with plastic inserts and shall be bonded together with a minimum No. 8 AWG, copper, ground wire.

11.D.02.e. All PVC conduit ends within the box shall have bell ends to protect the cable.

11.D.02.f. The space between the conduit and box wall shall be filled or patched with concrete or other acceptable material so that no leakage or settlement will occur.

11.D.02.g. All conduit ends shall be filled with duct seal.

11.E. METHOD OF MEASUREMENT

Furnishing and installing boxes will be measured by the number placed completely, including frame, cover, base, aggregate, ground wire, ground bushing, and all miscellaneous hardware and incidentals required.

11.F. BASIS OF PAYMENT

11.F.01. Furnished and/or installed boxes, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Hand-box
(Each)	Splice-box

11.F.02. Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified.

CHAPTER 12: VEHICLE SIGNAL HEADS

12.A. DESCRIPTION

This work shall consist of furnishing and installing vehicle signal heads of the types and sizes shown on the plans in accordance with these Specifications and Standards and in reasonably close conformity to the locations shown on the plans or established by the Department. This includes relocations deemed necessary by the Department for optimum visibility.

12.B. MATERIALS

12.B.01. Vehicle signal heads of specified types, sizes, and arrangements are to be furnished by the Contractor together with all the necessary hardware for the specified make-up and mounting. All vehicle signal heads shall be made by the same manufacturer and shall conform to the specifications of the Institute of Transportation Engineers, Technical Report 1—"A Standard for Adjustable Face Vehicular Traffic Control Signal Heads," revised in 1970, and any significant revisions thereof. The basic material requirements are listed below.

12.B.02. Housing

12.B.02.a. The signal head housing or case shall consist of an assembly of separate, interchangeable sections, expansible type for vertical mounting without the rods, substantially secured together in a watertight manner to form a single unit. Each section shall house an individual optical unit.

12.B.02.b. The housing of each section shall be a one-piece, corrosion-resistant, aluminum alloy, die-cast unit or glass reinforced- polycarbonate resin, black in color, and complete with cast top, bottom, and sides. A drain hole shall be in the bottom of the housing.

12.B.02.c. All cast metal parts shall have a tensile strength of not less than 17,000 psi. All parts shall be clean, smooth, and free from flaws, cracks, blowholes, and imperfections. Glass-reinforced-polycarbonate, resin housing shall be a minimum of 0.125 inches thick throughout.

12.B.02.d. The die-cast, aluminum, housing door and/or cast visors of the signal heads shall be from the following specifications: Die Casting SC-84A, SC-84B, SG-100A, SG-100B, S-12A, S-12B; or ASTM Specifications B-85-60.

12.B.02.e. The top and bottom of the signal housing shall have an opening to accommodate standard 1.5-inch pipe brackets.

12.B.02.f. Each housing shall be arranged with round openings in the top and bottom so that it may be rotated between waterproof supporting brackets or trunnions, and, thus, be capable of being securely fastened at increments of not more than 7 degrees of rotation. The top and bottom of each section shall be properly reinforced so as to have sufficient strength against breakage from shock.

12.B.03. Housing Door

12.B.03.a. The housing door of each signal section shall be a one-piece, corrosion-resistant, die-cast, aluminum alloy, or glass-reinforced-polycarbonate resin, and shall be gloss black in color. Two hinge lugs shall be cast on the left side of the door, and latch jaws shall be cast on the right side of the door.

12.B.03.b. The door shall be attached to the housing by means of two, solid, stainless steel, hinge pins of not less than 1/4-inch diameter.

12.B.03.c. A stainless steel latch screw, wing nut, and washer on the latch jaw side of the housing shall provide for opening and closing the signal door without the use of any special tools.

12.B.03.d. A gasket groove on the inside of the door shall accommodate a weatherproof neoprene gasket, which, when the door is closed, shall sit against a raised bead on the housing, thereby making a positive weatherproof and dustproof seal.

12.B.03.e. The outer face of the door shall have four tapped holes equally spaced around the circumference of the lens opening to accommodate four screws for securing the signal head visors.

12.B.03.f. Latch screws, hinge pins, wing nuts, and washers shall be Type 304 stainless steel.

12.B.03.g. The housing door shall provide a visible diameter of not less than 11.5 inches nor more than 12 inches for a nominal 12-inch-round lens. The lens door shall provide a square front on each signal indication.

12.B.04. Optical Unit

12.B.04.a. Incandescent lamps and associated reflectors, lens, sockets, etc. are not permitted. Only light emitting diode (LED) signals shall be permitted. Only the following Dialight products or approved equals are acceptable.

SIGNAL TYPE	DIALIGHT PART NUMBER
12" green ball	4332270001XL
12″ yellow ball	4333230901XL
12″ red ball	4331210003XL
8″ green ball (clear)	4332170001XL
8″ yellow ball	4333130901XL
8″ red ball	4331110003XL
12″ green arrow	4322374001XOD
12″ yellow arrow	4313334901XOD
12″ red arrow	4432114001XOD
12″ Bi Model Arrow	4306370001
12″ green ball (clear, 12V)	4332270005XL
12″ yellow ball (12V)	4333230905XL
12″ red ball (12V)	4331210005XL
8″ green ball (clear, 12V)	4332170005XL
8″ yellow ball (12V)	4333130905XL
8″ red ball (12V)	4331110005XL

12.B.05. Visors

12.B.05.a. Unless otherwise specified, visors shall be of the tunnel type, with a minimum length of 9.5 inches for a 12-inch lens, and not less than 0.05 inches in thickness with a minimum downward tilt of 3.5 degrees.

12.B.05.b. The visor shall be made of the same material as the housing and housing door. Visors shall be mounted with twist-on slots and stainless steel screws.

12.B.06. Brackets and Suspensions

12.B.06.a. All brackets and suspensions used for assembling and mounting vehicle traffic control signal faces shall be made from noncorrosive materials and shall be entirely weather-tight.

12.B.06.b. All tubular parts shall be 1.5-inch IPS pipe. When hollow-cast brackets are used, they shall be of sufficient strength to support the maximum load imposed by the signal heads under all normal wind conditions.

12.B.06.c. The lower support or connection between signal heads in a span wire or mast arm mounted signal may be an aluminum casting or stamping of suitable strength.

12.B.06.d. Wire raceway areas within brackets and suspensions shall be of adequate size to carry all necessary wires without crowding. Raceway surfaces shall be free of sharp edges or protrusions that might damage insulation or wires.

12.B.06.e. Suspensions for span wire or mast arm mounting shall be made from a noncorrosive material and shall include a bronze balance adjuster to permit adjust-

ment for proper vertical alignment at the signal head.

12.B.07. Finish

All surfaces of the aluminum signal heads, inside and outside, excepting the LED unit, but including the mountings, visors, and assemblies, shall be finished with the best quality synthetic resin black enamel.

12.C. CERTIFICATION

At bid opening, the Bidder shall provide certification from the intended manufacturer that all of the material specifications will be met.

12.D. GUARANTEE

During the 12 months following the date of final acceptance, the Contractor shall replace, at no expense to the County, any part that fails by reason of defective material(s) or workmanship. LED signals shall be guaranteed for 5 years of field operation.

12.E. CONSTRUCTION METHODS

12.E.01. Location

12.E.01.a. Vehicle signal heads shall be installed where shown on the plans or at other locations as directed by the Department. This includes relocations deemed necessary by the Department for optimum visibility.

12.E.01.b. The top section of all vehicle signal heads mounted on the same pole or pedestal shall be within 6 inches of being the same height unless otherwise specified on the plans.

12.E.01.c. All combination signal heads shall be arranged with their top sections at the same elevation.

12.E.02. Clearance

12.E.02.a. Signal heads placed over the roadway shall be installed to provide a minimum clearance of 17 feet. This clearance shall be measured from the pavement to the lowest part of the assembly.

12.E.02.b. Signal heads mounted on poles or pedestals shall be mounted to provide a nominal clearance of 10 feet (8 feet minimum, 15 feet maximum) from the surface grade to the lowest part of the assembly.

12.E.03. Wiring

12.E.03.a. Electrical cable shall be connected to the terminals in each signal head to provide the proper display indication when the other end is connected to the controller.

12.E.03.b. External splicing of cables shall not be permitted.

12.E.03.c. Electrical cable runs shall be as indicated in these Specifications and Standards and as shown on the plans.

12.E.04. Hardware

12.E.04.a. All hardware is to be made of non-corrosive materials or material(s) compatible with the item being used.

12.E.04.b. All signal heads that require rigid mounting shall be mounted by using adjustable signal brackets.

12.E.04.c. All brackets and suspensions shall be made of non-corrosive, unpainted materials.

12.F. OPTICALLY PROGRAMMED SIGNAL HEADS

McCain optically programmed signal heads may be required at selected intersections. All heads of this type will be provided with LED light sources. as shown or specified on the design plans.

12.G. METHOD OF MEASUREMENT

The furnishing and installing of vehicle signal heads shall be measured by each type of head assembly and/or mounting method specified, including all electrical connections and required incidental hardware.

12.H. BASIS OF PAYMENT

12.H.01. Furnished and/or installed vehicle signal heads, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	12-inch, (3)-section signal head with LED 12-inch, (4)-section signal head with LED 12-inch, (5)-section signal head with LED
(Each)	12-inch, (3)-section optically programmed signal head 12-inch, (4)-section optically programmed signal head 12-inch, (5)-section optically programmed signal head
(Each)	8-inch, (3)-section signal head with LED
(Each)	8-inch, (3)-section signal head (optically programmed.)

12.H.02. Such payment shall be full compensation for furnishing and placing the electrical connections, and all necessary specified equipment, signal head aiming, hardware and incidentals.

CHAPTER 13: PEDESTRIAN SIGNAL HEADS

13.A. DESCRIPTION

This work shall consist of furnishing and installing pedestrian signal heads of the types and sizes shown on the plans in accordance with these specifications, and the signal heads shall be in reasonably close conformity to the locations shown on the plans or established by the Department.

13.B. MATERIALS

13.B.01. The subject pedestrian signal shall be designed and constructed to be compatible with post-type, bracket, or clam shell mounting hardware. The general construction shall include a single-piece, cast-aluminum housing; a single-piece, double-parabolic reflector; a two-symbol, two-color glass message lens; a single-piece, cast-aluminum, swing-down door frame; a blank-out, Z-Crate-Type sun visor; two A21 Type, long-life, traffic signal lamps with appropriate sockets; and other hardware. The design shall optimize performance per unit of energy consumed and shall accommodate LED assemblies.

13.B.02. LED Signal Display

13.B.02.a. Incandescent lamps and associated reflectors, lens, sockets, etc., are not permitted. Only light-emitting diode (LED) signals shall be permitted. Only the following Dialight products or approved equals are acceptable.

SIGNAL TYPE	DIALIGHT PART NUMBER
Hand/man, overlay (fits 16″ X 18″ housing)	4306472001X
Hand/man, overlay with countdown feature (fits 16″ X 18″ housing)	4306479001X

For additional information see Pedestrian Count Down Signal Head requirements in the Federal Highway Administration's latest edition of *Manual on Uniform Traffic Control Devices* (MUTCD).

13.B.03. Dimensions

The maximum overall dimension of the signal shall be 18.5 inches wide, 18.75 inches high, and 9 inches deep, including a Z-Crate-Type visor and hinges. The distance between the mounting surfaces of the upper (non-Shurlock) and the lower (Shurlock) openings shall be 15.75 inches.

13.B.04. Visor

Each signal shall be provided with a Z-Crate- Type visor designed to eliminate sun phantom. The Z-Crate-Type visor shall be installed parallel to the face of the "Hand/Walking Person" message. The Z-Crate-Type visor assembly shall be held in place by stainless steel screws.

13.B.05. Field Terminal Assembly

The field terminal assembly shall include a screw-type terminal block for termination of the field wires. The free end of each lead shall terminate with an insulated female quick disconnect socket that mates with the male lug supplied on the solid-state message module.

13.B.06. Case

The case shall be a one-piece, corrosion-resistant, aluminum alloy, die-cast unit complete with integrally cast top, bottom, sides, and back. The unit shall accommodate standard, 1.5-inch, pipe brackets with top and bottom openings each having a Shurlock boss integrally cast into the case. The top opening shall also have a removable, weather-tight plug installed in it. Integrally cast hinge lugs shall be provided for operation of a swing-down door. When

properly mated to other pedestrian signal components and mounting hardware, the case shall provide a dustproof and weatherproof enclosure and shall allow easy access and replacement of all components.

13.B.07. Door Frame

The door frame shall be a one-piece, corrosion-resistant, die-cast, aluminum alloy unit complete with hinge lugs cast at the bottom and the top of the door. The door shall be attached to the case by means of two, Type 304 stainless steel, spring pins. Hence, latching or unlatching the door shall require no tools.

13.B.08. Painting

Prior to final assembly, the case, the door, the frame, and the Z-Crate-Type visor (aluminum portion only) shall be thoroughly cleaned, and a chromate conversion coating shall be applied inside and out per Military Specification MIL-C-5541. A synthetic enamel conforming to Military Specification TTE-529 shall then be electrostatically applied. The color of the door frame and Z-Crate visor shall be flat black. The color of the case shall be black.

13.C. CERTIFICATION

At bid opening, the Bidder shall provide certification from the intended manufacturer that all of the material specifications will be met.

13.D. GUARANTEE

The entire pedestrian signal shall be warranted for 5 years from the date of original shipment against defects in workmanship and/or materials.

13.E. CONSTRUCTION METHODS

13.E.01. Location

13.E.01.a. Pedestrian signal heads shall be installed where shown on the plans or at other locations as directed or permitted by the Department. This includes relocations deemed necessary by the Department for optimum visibility.

13.E.01.b. Pedestrian signal heads mounted on the same pole or pedestal shall be within 6 inches of being the same height unless otherwise specified on the plans.

13.E.02. Clearance

13.E.02.a. Pedestrian signal heads shall be mounted so that no portion of the assembly is closer than 18 inches to the face of the curb. (See Standards TS-7 and TS-8.)

13.E.02.b. Pedestrian signal heads mounted on poles or pedestals shall be mounted to provide a clearance of 10 feet from the surface grade to the lowest part of the unit. (See Standards TS-7 and TS-8.)

13.E.03. Wiring

13.E.03.a. Electrical cable shall be connected to the terminals in each signal head to provide the proper display indication when the other end is connected to the controller.

13.E.03.b. External splicing of cables shall not be permitted.

13.E.03.c. Electrical cable runs shall be as indicated in these Specifications and Standards and as shown on the plans.

13.E.04. Hardware

13.E.04.a. All hardware is to be of noncorrosive material or else compatible with the item(s) being used.

13.E.04.b. All brackets, arms, and other hardware shall be painted Blackor the color specified by the Department.

13.E.05. Mounting

All pedestrian signal heads shall be mounted as shown in Standards TS-7 and TS-8.

13.F. METHOD OF MEASUREMENT

The furnishing and installing of pedestrian signal heads shall be measured by each type of head assembly and/or mounting method specified, including all electrical connections and required incidental hardware.

13.G. BASIS OF PAYMENT

13.G.01. Furnished and/or installed pedestrian signal heads, measured and accepted, as provided above, will be paid at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Pedestrian signal head with LED pedestrian displays
(Each)	Pedestrian signal head with count-down LED pedestrian displays

13.G.02. Such payment shall be full compensation for furnishing and placing the specified equipment, signal head aiming, electrical connections, and all necessary hardware and incidentals.

CHAPTER 14: PEDESTRIAN PUSH BUTTONS ,SIGNS AND AUDIBLEPEDSTRIANS SYSTEMS

14.A. DESCRIPTION

This work shall consist of furnishing , installing pedestrian push buttons and push- button signs and audible pedestrian systems at locations shown on the plans or in accordance with these Specifications and Standards or as established by the Department. The Contractor shall also provide the appropriate mounting hard-ware and shall perform all electrical con-nections.

14.B. MATERIALS

14.B.01. Push Buttons

14.B.01.a. Each push-button assembly shall be watertight, constructed of heavy cast aluminum, freeze-proof and have a contoured back.

14.B.01.b. The contour of the back side of the frame shall:

(i) Be flat for surface mounting;

(ii) Have a 12-inch radius for strain pole mounting; or

(iii) Have a 4-inch radius for pedestal pole mounting.

14.B.01.c. All exposed screws on the push-button assembly shall be made of stainless steel or other rust-resistant materi-al and shall be tamperproof.

14.B.01.d. The push-button housing shall be Black.

14.B.01.e. The push buttons shall operate on a circuit not to exceed 24V.

14.B.02. Push-Button Signs

Push-button signs shall consist of a 9-inch by 12-inch or 9-inch by 15-inch aluminum blank with rounded corners and black legend on white background in accordance with the latest edition of the *Manual on*

Uniform Traffic Control Devices, FHWA, U.S. Department of Transportation.

14.C. CERTIFICATION

The Bidder shall provide a certification that the above specifications for materials will be met and that the fabricator's workmanship will be inspected prior to installation.

14.D. CONSTRUCTION METHODS

14.D.01. Push Buttons

14.D.01.a. Push buttons shall be installed where shown on the plans or as directed by the Department.

14.D.01.b. Push buttons placed on poles shall be at a height of 3feet above grade and shall be bolted to the pole.

14.D.01.c. The push button shall be located and wired in such a manner so as to clearly indicate, to the pedestrian, the crosswalk to which it is associated.

14.D.01.d. Unless specified otherwise, the cable for the push button shall be brought through the rear of the assembly, directly into the pole or controller cabinet.

14.D.01.e. Each push button shall be connected with the appropriate electrical cable so as to actuate the proper phase of the controller. (See Chapter 17, "Electrical Cable.") The necessary cable is specified as a separate item.

14.D.01.f. Each push button shall be bolted to the pole using two bolts per button; and each bolt shall be stainless steel, 0.25 inch by 1 inch in size.

14.D.02. Push-Button Signs

14.D.02.a. Each push-button sign shall be installed directly above its associated push button.

14.D.02.b. Each sign shall be bolted to the pole.

14.E. METHOD OF MEASUREMENT

Furnishing and installing pedestrian push buttons and signs shall be measured by the unit in place, including the quality of all incidental hardware and the performance of all electrical connections.

14.F. BASIS OF PAYMENT

14.F.01. Furnished and/or installed pedestrian push buttons , signs and audible pedestrian systems, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	Push button and sign
(Each)	Campbell APS Model #A915
(Each)	Campbell AAPS Model #APB915

14.F.02. Such payment shall be full compensation for furnishing materials, including all labor and incidentals necessary to complete the work as specified.

CHAPTER 15: ELECTRICAL CONDUIT

15.A. DESCRIPTION

This work shall consist of furnishing and installing electrical conduit with underground marking tape of the types and sizes specified herein at locations shown on the plans or as established by the Department, in accordance with these specifications. Also, all materials will be subject to inspection for condition by the Department just prior to incorporation of the materials into the work.

15.B. MATERIALS

15.B.01. All PVC conduit shall conform to the requirements of ASTM D-1785, Schedule 80.

15.B.02. Usage

The type and size of conduit shall be in accordance with the plans and as shown in Appendix B, Standard Details. The outside cross-sectional area of the cable shall never exceed 40 percent of the inside cross-sectional area of the conduit.

15.B.03. Underground Marking Tape

All conduit installed in non-paved surfaces shall be protected by marking tape. This tape shall be at least 2 inches wide and red in color, with a solid metal core (detectable). An imprinted message stating: "Traffic Signal Wire Below, Prince George's County, Call 301-324-2710" shall be included on the tape.

15.C. CERTIFICATION

At bid opening, the Bidder shall provide a certification that the above material specifications will be met and that the fabricator's workmanship will be inspected prior to installation.

15.D. CONSTRUCTION METHODS

15.D.01. General

Unless otherwise specified, all conduit shall be placed at a minimum depth of 18 inches below surface grade. All conduit runs shall be cleaned and swabbed before cables are installed.

15.D.02. Direction

A change in direction of conduit shall be accomplished by standard bends, by elbows, or, in the case of rigid conduit, by bending. If bent, the rigid conduit shall have a uniform radius of six times the internal diameter of the pipe. Sharp kinks in the conduit or the substitution of unlike materials will not be permitted where a change in direction is required.

15.D.03. Multiple Conduits

The plans may call for the installation of more than one conduit in the same cut. The minimum depth of 18 inches must be maintained from the uppermost conduit.

15.D.04. Fittings

Only standard, manufactured elbows, nipples, tees, reducers, bends, couplings, unions, etc., shall be used throughout the conduit line. All fittings shall be tightly connected to the conduit. When using PVC conduit, a solvent-weld cement shall be used. All conduit fittings shall be free of burrs and rough places, and shall be cleaned and swabbed before cables are installed. All conduit runs ending in a hand-box, hand-hole, or other approved junction point shall be provided with a bushing or bell ends to protect the cable from abrasion, except for open ends of conduit being placed for future use, which shall be capped.

15.D.05. Trenching—Non-paved Surfaces

15.D.05.a. Trenches shall be excavated to the depth necessary to provide 18 inches minimum cover over the conduit. Cinders, broken concrete, or other hard, abrasive materials will not be permitted in the backfilling. The trench shall be free of such materials before the conduit is placed. No conduit shall be placed prior to inspection of the trench by the Department.

15.D.05.b. Underground marking tape shall be placed in the trench during the backfill operation so that a 6-inch cover is provided.

15.D.06. Slot Cutting of Paved Surfaces

Slot cutting of existing pavement normally will not be permitted. However, where the Department deems such slot cutting necessary, all work shall be done in accordance with the *Specifications and Standards for Roadways and Bridges*. Furthermore, slot cutting of paved surfaces shall be considered a separate pay item.

15.D.07. Pushed Conduit

When plans require that conduit be placed under existing roadways, driveways, sidewalks, or other paved surfaces, it shall be pushed unless otherwise permitted by the Department. Pushed conduit shall be placed by jacking, pushing, boring, or any other means necessary to place the conduit without cutting or removing the pavement.

15.D.08. Restoration

The Contractor shall restore all cuts and openings to their original condition. Grass surfaces shall be replaced with pre-grown, cut turf (sod), or shall be raked, seeded, and fertilized. Damaged trees and shrubs shall be replaced. All asphalt and other surfaces shall be replaced in kind. The cost of restoration will be considered incidental to other Contract bid items and will not be included as a separate pay item.

15.E. METHOD OF MEASUREMENT

15.E.01. Electrical conduit of the type and size specified will be measured by the LF by method of installation along the centerline of the conduit from end to end and shall include all required fittings. Methods of installation shall be understood as follows:

(i) Trenched—To include all trenching of non-paved surfaces and all conduit placed underground;
(ii) Slotted—To include all slot cutting of paved surfaces (when permitted by the Department); and
(iii) Pushed—To include all pushed conduit.
(iv) Bored—To include all boring under paved surfaces.

15.E.02. Each conduit run shall constitute a separate pay item.

15.E.03. Unless otherwise provided, excavating, trenching, backfilling, and marking tape will not be measured as for payment.

15.F. BASIS OF PAYMENT

15.F.01. Furnished and/or installed electrical conduit, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(LF)	(Size)(number) PVC electrical conduit, schedule 80, trenched
(LF)	(Size)(number) PVC electrical conduit, schedule 80, slotted
(LF)	(Size) (Number)PVC electrical conduit, schedule 80, pushed
(LF)	(Size) (number) PVC electrical conduit, schedule 80, Bored

(LF)	1-Inch electrical conduit, pushed (detector sleeve)

Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals required to complete the work as specified.

CHAPTER 16: STEEL CABLE

16.A. DESCRIPTION

This work shall consist of furnishing and installing steel cable and messenger rings for mounting signal heads, signs, interconnect runs, etc., of the size specified herein, at locations shown on the plans or as established by the Department in accordance with these specifications.

16.B. MATERIALS

Materials shall meet the requirements listed below.

16.B.01 Fabrication

Steel cable shall be fabricated of seven steel wires, double-galvanized in accordance with ASTM A-475 and twisted into a single concentric strand to conform with the following schedule:

DIAMETER (INCHES)	STRAND SIZE (AWG)	TENSILE STRENGTH (POUNDS)
0.25	14.0	3,150
0.375	11.0	6,950

16.B.02. Usage

16.B.02.a. All steel cable used as span wire shall be 0.375 inches in diameter, unless otherwise noted on the plans.

16.B.02.b. All steel cable used as tether wire shall be 0.25 inches in diameter, unless otherwise noted on the plans.

16.B.03. Messenger Rings

16.B.03.a. All messenger rings must be galvanized in accordance with ASTM A-153, or be aluminum; and the design must be approved by the Department.

16.B.03.b. All messenger rings shall be a minimum of 2 inches unless otherwise noted on the plans or permitted by the Department.

16.C. CERTIFICATION

The Bidder shall provide a certification that the steel cable will be tested to satisfy the required tensile strength and that the fabricator's workmanship will be inspected.

16.D. CONSTRUCTION METHODS

16.D.01. Span Wire

16.D.01.a. Before erecting the span wire, the Contractor shall determine the length required to span the distance indicated on the plans, allowing a sufficient additional length to compensate for sag, pole connections, and adjustments to make the whole assembly conform with Standards TS-5 and TS-7 .

16.D.01.b. The span wire shall be wrapped one and one-half turns around each pole at the proper height.

16.D.01.c. The free end of the wrapped span wire shall be 2 feet in length and shall be secured with a heavy, galvanized, steel clamp using three, 0.625-inch, galvanized bolts. The clamp shall be placed not more than 6 inches from the face of the pole. The use of cable grips will not be permitted.

16.D.01.d. The span wire, with signals installed (loaded), shall have a maximum sag of 5 percent and a minimum sag of 3 percent.

16.D.01.e. The Contractor shall set the span wire so that the height of the installed signal heads and signs, including all hardware, shall conform to the clearances set forth in these Specifications and Standards or as directed by the Department.

16.D.01.f. The span wire shall not be permanently tied off until all signal heads, signs, and cables are in place. The ends of each span wire cable are to be served with galvanized ServiSleeves.

16.D.01.g. The Contractor shall not erect any span wire that lays on or is likely to rub a utility company's cable. If a span

wire, as erected, is within 6 inches of any other cable, wire, or structure, it shall be protected with plastic wire guards (rubbing blocks).

16.D.02. Messenger Wire

16.D.02.a. Where messenger wire is attached to traffic signal strain poles, it shall be installed in the same manner as specified for span wire.

16.D.02.b. Where messenger wire is attached to utility poles, it shall be installed in accordance with the utility company's specifications.

16.D.03. Tether Wire

Where steel cable is specified to provide a tether, all signs and signal heads shall be attached with appropriate hardware for the entire length of the run.

16.D.04. Messenger Rings

16.D.04.a. Messenger rings shall be used to support electrical cable from span wire and messenger wire.

16.D.04.b. All messenger rings shall be spaced at 8- to 10-inch intervals.

16.E. METHOD OF MEASUREMENT

Steel cable of the size specified will be measured by the LF of material actually placed.

16.F. BASIS OF PAYMENT

16.F.01. Furnished and/or installed steel cable, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(LF)	Steel cable, 0.375-inch span
(LF)	Steel cable, 0.250-inch tether/messenger

16.F.02. Such payment shall be full compensation for furnishing and placing the cable, messenger rings, clamps, plastic wire guards, and other incidentals required to complete the work as specified.

CHAPTER 17: ELECTRICAL CABLE

17.A. DESCRIPTION

This work shall consist of furnishing and installing electrical cable as shown on the plans or as established by the Department, in accordance with these specifications.

17.B. MATERIALS

Materials shall meet the requirements listed below.

17.B.01. Wiring

17.B.01.a. Unless specified elsewhere, all electrical field wiring shall consist of black polyethylene outer jacket (polyethylene, insulated, No. 19 AWG, solid, copper conductors) that meet the latest International Municipal Signal Association (IMSA) specifications for aerial and below-ground use.

17.B.01.b. Each cable run shall have the number of conductors indicated on the wiring diagram, which includes the provision of at least one spare conductor. The substitution of additional cables to attain the required number of conductors shall not be permitted.

17.B.01.c. Each conductor of the cable shall be color-coded in accordance with the latest IMSA specifications.

7.B.01.d. The table below is provided as a guide to the general use of electrical cable. Overhead communication runs attached to wooden utility poles shall use self-supporting cable with an integrated 0.25-inch messenger. The messenger cable shall, at a minimum, consist of 7-wire, high-strength (6,650-pound test), flooded, galvanized, steel strand.

TYPE	CONDUCTORS	IMSA SPECIFICATION
Signal: 3 or 4 sections	5	20-1-1984
Signal: 5 sections	7	20-1-1984
Pedestrian signal: 1 or 2 sections	3	20-1-1984
Signal: 1 section	3	20-1-1984
Pedestrian push button		20-1-1984
Communications cable	3, shielded pair	40-2-1984
Street light No. 12, stranded, flat (tray cable)	2	(per manufacturer's recommendations)
Video cable,		

17.B.01.e. Overhead communication runs attached to wooden utility poles shall use self-supporting cable with an integrated 0.25-inch messenger. The messenger cable shall, at a minimum, consist of 7-wire, high-strength (6,650-pound test), flooded, galvanized, steel strand.

17.B.02. Electrical Service

17.B.02.a. The materials for this item shall be those necessary for the complete electrical service installation, i.e., cabinet, weather-head, cable, conduit, meter pan, wiring trough, mounting panel, stainless steel disconnect switch, clevis, and related hardware. Furthermore, pole-mounted, cabinet-mounted, and isolated services shall be considered separate pay items.

17.B.02.b. All conduit, including bends and fittings, shall be made of hot-dipped, galvanized steel or schedule 80 PVC material equal to that specified under Chapter 15, "Electrical Conduit."

17.B.02.c. The completed service shall be in accordance with the local utility

company's specifications. Generally, a three-wire No. 4 or 6 AWG cable of Type THHN, THWN, and MTW will be required.

17.B.03. Telephone Service

17.B.03.a. The materials for this item shall be those which are necessary for complete telephone service installation, i.e., cable, PVC conduit, weather-head, clevis, and related hardware. Furthermore, pole-mounted and cabinet-mounted services shall be considered separate pay items.

NOTE: Telephone interface boxes are supplied by the County.

17.B.03.b. All conduit, including bends, elbows, and fittings, shall be PVC material equal to that specified under Chapter 15, "Electrical Conduit."

17.B.03.c. The completed service shall be in accordance with the local utility company's specifications.

17.B.04. Loop Detector Wire

See Chapter 10, "Detectors."

17.B.05. Loop Lead-in Cable

See Chapter 10, "Detectors."

17.B.06. Camera Cable

See Chapter 10 "Detectors"

17.C. CERTIFICATION

At bid opening, the Bidder shall provide a certification that the cable to be supplied will meet the IMSA specifications, as noted in Section 17.B.01.

17.D. GUARANTEE

The Contractor shall furnish the Department with any warranties on equipment and materials offered by the manufacturer as normal trade practice.

17.E. CONSTRUCTION METHODS

17.E.01. Field Wiring

17.E.01.a. All field wiring shall be in accordance with the prevailing national, State, and local electrical codes.

17.E.01.b. Unless otherwise permitted by the Department, all cable runs shall be continuous, with splices only in approved access points, e.g., hand-boxes, splice-boxes, junction boxes, manholes, and signal heads.

17.E.01.c. At hand-boxes and splice-boxes, at least 6 feet of cable slack shall be provided. The slack shall be coiled neatly. All splices should be positioned off the bottom of the hole. At each of the following cabinet types, the listed amounts of cable slack will be provided:

CABINET TYPE	CABLE SLACK (IN FEET)
Pole mount	10
Base Mount	10
Hazard identification beacon (HIB)	2

17.E.01.d. All cable raps will be neat and properly bundled to permit cleaning of cabinets with minimal moving of cables. All cable bundles will be wrapped with a tie-wrap-type tool. No jagged edges will be permitted.

17.E.01.e. All electrical cable installed in conduit shall be drawn in place, free from electrical and mechanical injury. When a lubricating agent is needed, a wire-pulling compound shall be used that is compatible with the cable insulation.

17.E.01.f. Vertical cable runs mounted on the outside of poles shall be installed in rigid metal conduit, except for telephone service installations.

17.E.01.g. Weather service heads shall be used wherever electrical cable directly enters a strain pole or a vertical conduit run.

17.E.01.h. Drip loops of at least 8 inches shall be provided at all overhead entrance points, such as signal heads, strain poles, or weather-heads.

17.E.02. Electrical and Telephone Services

17.E.02.a. The electrical service and telephone service grounding system shall be installed in accordance with the specifications of the local utility company. However, the general details for above- and below-ground service installations are included in Standards TS-5, TS-13, TS-14, TS-15, and TS-18. (Notice the use of a clevis to provide a drip loop.)

17.E.02.b. All vertical and below-ground electrical and telephone service runs shall be within separate conduit systems or in accordance with the local utility company requirements. Conduit of 1-inch PVC is used for all telephone runs.

17.E.02.c. All conduit and conduit bends shall be made of material as described in Chapter 15, "Electrical Conduit," and shall be installed in conformance with the appropriate specification.

17.E.03. Loop Detector Wire

See Chapter 10, "Detectors."

17.E.04. Loop Lead-in Cable

See Chapter 10, "Detectors."

17.F. METHOD OF MEASUREMENT

17.F.01. Electrical Cable

With the exception of the electrical and telephone service cable, all electrical cable lengths of the size specified shall be measured per LF as actually furnished and installed completely in place and accepted, with each size cable being a separate pay item.

17.F.02. Electrical and Telephone Service

The electrical and telephone service installation shall constitute a separate lump sum pay item to include the weather-head, cable, conduit, meter pan, disconnect switch, interface box, clevis, and related hardware, complete and operational.

17.G. BASIS OF PAYMENT

17.G.01. These items furnished and/or installed, measured and accepted, as provided below, will be paid for at the Contract bid price of:

QUANTITY	ITEM
(LF)	( ) Conductor cable
(LF)	Street lighting cable (tray)
(lump sum)	Electrical service, pole-mounted, complete
(lump sum)	Electrical service, cabinet-mounted, complete
(lump sum)	Electrical service, isolated, complete
(LF)	Three-shielded pair, communication cable
(LF)	Three-shielded pair, self-supporting, communication cable
(lump sum)	Telephone service, pole-mounted, complete
(lump sum)	Telephone service, cabinet-mounted, complete
	Two-conductor, aluminum-shielded cable—See Chapter 10, "Detectors."
	Loop detector wire—See Chapter 10, "Detectors."

17.G.02. Such payment shall be full compensation for furnishing all materials, labor, equipment, and incidentals necessary for furnishing and installing cable as specified.

CHAPTER 18: SIGNS

18.A. DESCRIPTION (GENERAL)

This work shall consist of furnishing and installing active and static traffic control signing at the locations shown on the plans in accordance with the Federal Highway Administration publication, *Manual on Uniform Traffic Control Devices,* latest edition, and these specifications.

18.B. MATERIALS (ACTIVE)

The Active School Driver Feedback Speed Sign is a dynamic numeric sign that gives motorists passing through a school zone real-time feedback as to their vehicle's speed via radar speed detection. It is intended, by providing this feedback, that motorists will better obey the speed limit and enhance pedestrian safety. The vehicle speed is detected via a radar module mounted within the sign enclosure. Specifically, the specifications are as follows:

18.B.01. Display

18.B.01.a. The display shall utilize 3M Scotchlite Diamond Grade Fluorescent Reflective Sheeting and one (1) high-output InGaAIP LED per pixel.

18.B.01.b. The LEDs shall have 1.4 candela luminous intensity and 22 degrees viewing angle. The lighting system shall be controlled automatically by a photocell, utilizing pulse width modulation. This system adjusts the lighting intensity, for daytime, nighttime, and adverse weather conditions.

18.B.01.c. The fluorescent yellow-green reflective pixels shall have a viewing angle of at least 160 degrees in daylight. At night, when measured at 1.0 degree observation in accordance with ASTM E810, the pixels shall have a minimum viewing angle of 30 degrees and a minimum Coefficient of Retro-reflection of 8.0 cd/1x/m2 at 45 degree entrance.

18.B.01.d. The pixels shall be impregnated with polytetrafluorethylene (PTFE). The self-lubricating PTFE coated bearing shall have a Mean Time Before Failure (MTBF) of 300 million cycles @ 4HZ, which equates to 200,000 hours under normal operating conditions (typical message cycle of 3 seconds, 2 seconds ON; 1 second OFF/CHANGE).

18.B.01.e. The display shall utilize a single 8 by 16 module capable of displaying approaching vehicle speed.

18.B.01.f. Numeric characters shall be 12 inches in height.

18.B.01.g. The display shall operate in two modes: (1) LED and shutter; and (2) shutter only.

18.B.01.h. The display shall flash the LEDs, independent of the shutters, should the detected vehicle speed exceed the posted speed.

18.B.02. Power

18.B.02.a. Power shall be one of three options:

(i) The display shall operate off land line AC, 80 to 260 volts;
(ii) VDC battery power; or
(iii) 24 VDC solar charging system.

18.B.02.b. Battery/solar power supply shall be capable of opening the radar and display during normal school hours on normal school days throughout the school year without the aid of recharging from an additional power source.

18.B.03. Cabinet

18.B.03.a. The cabinet shall be constructed out of aluminum.

18.B.03.b. The face of the cabinet shall be constructed of aluminum. White 3M Scotchlite Diamond Grade VIP Reflective

Sheeting Series 3990 sign sheeting shall be applied to this area above the display with "YOUR SPEED" printed in two lines of 4 inch-high letters.

18.B.03.c. The face of the display shall be non-glare, UV-inhibited, high-impact polycarbonate.

18.B.03.d. The cabinet shall be vandal and tamper resistant.

18.B.03.e. The cabinet shall be less than 4.5 inches deep.

18.B.03.f. Cabinet dimensions shall be 24 inches wide by 30 inches high.

18.B.03.g. The Cabinet shall house the display, radar gun (K-band one-way) power supply, and controller in a sealed, weather-tight environment.

18.B.04. Controller

18.B.04.a. The controller shall be capable of taking radar-generated speed input and displaying it on the sign.

18.B.04.b. The controller shall have either one of two options, software programmable or local control.

(i) The software programmable option shall meet these requirements: RF communication option is capable of wireless data transfer up to a range of 1.5 miles from the sign(s). Minimum PC system requirements for operating the remote software shall be Windows 95, 98, 2000, or NT.

(ii) The local control option shall meet these requirements: The local control shall be a lockable, vandal resistant switch to allow for on/off toggle control of the sign at the sign location or shall be hard-wired dry contact.

18.C. MATERIALS (STATIC)

18.C.01. Aluminum Blanks

Aluminum blanks shall be .080 gauge. They shall meet ASTM aluminum alloy 5052-H38 specifications with Alodine 1200 finish to include edges. Maximum deviation from flat per foot of blank surface on the sign shall not exceed 0.045 inches in any direction. All blanks shall be de-burred and shall have rounded corners with 1.5-inch radius, except for octagons.

18.C.02. Fiberglass-reinforced Plastic

Fiberglass-reinforced, plastic panels may be substituted for aluminum blanks if approved by the Department.

18.C.03. Holes

Holes shall be standard in accordance with the size of the sign blank to permit mounting on standard U-channel posts. Holes shall be 0.375 inches in diameter.

18.C.04. Sheeting

Sheeting shall be a prismatic lens, reflective-type, 3M Diamond Grade Series 3970 or an approved equal for all overhead applications. Sheeting shall be Type 3M Hi-Intensity Grade Series 3800 and shall be used for all at-grade applications.

18.C.05. Sizes

Typical sizes shall be 36 inches by 36 inches, or 30 inches by 36 inches for regulatory and warning signs, and 16 inches or 24 inches by up to 144 inches for street name signs.

18.C.06. Brackets and Suspensions

All brackets and suspensions used for assembling and mounting overhead signs shall be made from non-corrosive materials and shall be of sufficient strength to support the maximum load imposed by the sign face under all normal wind conditions.

18.C.07. U-channel Posts

U-channel posts shall be 2.2 pounds per foot and galvanized.

18.D. MANUFACTURING METHODS

All traffic control signs shall be fabricated using accepted industrial practices and shall comply with manufacturers' specification requirements.

18.E. CERTIFICATION

At bid opening, the Bidder shall provide a certification that the above material specifications will be met and that the fabricator's workmanship will be inspected prior to installation.

18.F. CONSTRUCTION METHODS

18.F.01. Signs shall be installed where shown on the plans or at other locations as directed or permitted by the Department. This includes relocations deemed necessary by the Department for optimum visibility.

18.F.02. Signs installed prior to signal turn-on must be bagged or covered.

18.F.03. No stop sign may be removed without approval of the Department. No stop sign will be left in place after activation of a new traffic signal.

18.F.04. Signs placed over the roadway shall be installed to provide a minimum clearance of 17 feet. This clearance shall be measured from the pavement to the lowest part of the assembly.

18.F.05. Signs placed over the roadway shall be leveled and installed on a horizontal line with any other signs and signal heads aimed at the same approach.

18.F.06. All overhead signs shall be tethered.

18.G. METHOD OF MEASUREMENT

Furnishing and installing signs will be measured by the number placed completely, including brackets, suspensions, and required incidental hardware.

18.H. BASIS OF PAYMENT

18.H.01. Furnishing and installing signs, measured and accepted, as provided above, will be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	At-grade regulatory/warning sign
(Each)	Overhead regulatory/warning sign
(Each)	Overhead street name sign
(Each)	Remove at-grade regulatory/ warning sign

18.H.02. Such payment shall be full compensation for furnishing and placing the specified equipment and all necessary hardware and incidentals.

CHAPTER 19: LUMINAIRES, LAMPS, AND ARMS

19.A. DESCRIPTION

This work shall consist of furnishing and installing strain or mast arm, pole-mounted, luminaire arms, and luminaires of the types and sizes shown on the plans and in accordance with these specifications.

19.B. GENERAL

Unless otherwise specified, the luminaire shall be a complete lighting device consisting of a housing, support clamp, reflector, refractor or flat lens, socket, lamp, integral ballast, terminal block, associated hardware, and necessary wiring. All parts of the luminaires shall incorporate the latest ratings and design improvements up to the date of the bid opening. Luminaires shall incorporate individual photoelectric cells if specified. Exposed hardware shall be stainless steel.

19.B.01. Luminaire(High Pressure Sodium)

19.B.01.a. The bracket arm-mounted luminaire shall be cast aluminum with a natural finish. The housing shall contain and support the reflector, refractor or flat lens, socket, ballast, terminal block, and support clamp. Provisions shall be made for leveling and adjusting the luminaire to the specified transverse and longitudinal position of the roadway.

19.B.01.b. The reflector shall be made of specular Alzak aluminum or equivalent aluminum reflective surface. It shall be held firmly in the housing but shall be easily removed without the use of special tools. Silicone rubber, ethylene-propylene terpolymer, dacron-felt gaskets, or other gasketing materials, as approved by the Department, shall seal the optical assembly at the socket entry and between the refractor and reflector to make a dust-tight optical system. The reflector shall be clean and free from scratches.

19.B.01.c. The refractor or flat lens retaining ring shall be securely latched with an operable hinge made from non-corrosive material and shall provide a removable enclosure for the optical system.

19.B.01.d. Glass for the refractor or flat lens shall be heat-resistant, borosilicate glass, free of imperfections. The optical system of the luminaire shall clearly indicate the street side and curb side.

19.B.01.e. The socket shall be a mogul screw with a large, center, contact spring, providing a firm contact with the lamp base. The socket shall have lamp grips to prevent the lamp from loosening. The shell may be of the skeleton type or may be shrouded in porcelain. The contacts shall be identifiable. Socket extension adapters may be permitted for special applications as directed by the Department. Luminaires providing various types of distribution by socket adjustment shall also include a means of identification to associate each lamp position with each distribution type. The socket adjustment shall provide positive positionings by means of index holes, lugs, or notches. Slots with infinite settings will not be acceptable.

19.B.01.f. The ballast shall be a high-power, auto-regulator type capable of operating from a multiple circuit and shall operate a high-intensity discharge lamp of the type, wattage, and voltage specified. Multi-tap ballasts shall be provided where supply voltage is 277V or less. The ballast shall start the lamp at a temperature as low as –20°F (–35°C) and shall deliver rated lamp current at a circuit voltage variation of plus or minus 10 percent. The primary power factor shall not be less than 90 percent with normal secondary load. The ballast shall be provided with plug-in connectors and shall be

installed on a hinged door to permit ready interchange of ballast.

19.B.02. Lamps
Lamps shall be 250-watt, high-pressure sodium.

19.B.03. Arms
Arms shall be the specified length and shall be galvanized, meeting the current MSHA specifications.

19.C. BASIS OF PAYMENT
19.C.01. Street lights furnished and/or installed shall be paid for at the Contract unit bid price of:

QUANTITY	ITEM
(Each)	400-watt luminaire
(Each)	250-watt luminaire
(Each)	10-foot luminaire arm
(Each)	15-foot luminaire arm
(Each)	25-foot luminaire arm

Such payment shall be full compensation for furnishing all materials, equipment, labor, details, and incidentals necessary to provide proper lighting in place as specified.

19. D.01.b. Terminal block shall be accessible via a hinged, tooless entry door and shall be capable of #14 AWG to # 6 AWG wiring.

19. D.01.c. Operating temperature shall be -40 degree Fahrenheit to 165 degree Fahrenheit or -40 degree Celsius to 74 degree Celsius.

19. D.01.d. LED drive current shall be 350ma or less.

19. E. LED.

19. E.01.a. CRI (color rendering index) shall be greater than 70.

19. E.01.b. CCT (correlated color temperature) shall be 4700K to 6000K.

19. E.01.c. Optics shall be IES type II or type III as specified in the plans. Only the following Dialight products or approved equals are acceptable.
250 watt hps replacement type II, Dialight Model # SL2C4HLGH.
250 watt hps replacement type III, Dialight Model # SL3C4HLGH.

19. F. Basis of Payment
19. F.01. Street lights furnished and/or installed shall be paid for at the Contract unit bid price of:

Quantity	Item
(Each)	400-watt luminaire
(Each)	250-watt luminaire
(Each)	10-foot luminaire arm
(Each)	15-foot luminaire arm
(Each)	20-foot luminaire arm
(Each)	150-watt hps equivalent Luminaire (LED)
(Each)	250-watt hps equivalent Luminaire (LED)
(Each)	400-watt hps equivalent Luminaire (LED)

19. F.01. Such payment shall be full compensation for furnishing all materials, equipment, labor, details, and incidentals necessary to provide proper.

CHAPTER 20: PAVEMENT MARKING

20.A. DESCRIPTION

This work shall consist of furnishing, installing, and/or removing thermoplastic pavement markings of the types and sizes shown on the plans and in accordance with these specifications.

20.B. GENERAL

The markings must be a resilient white or yellow, thermoplastic product with glass beads uniformly distributed throughout the entire cross-section area. The markings must be resistant to the detrimental effects of motor fuels, lubricants, hydraulic fluids, etc. Lines, legends, and symbols shall be affixed to bituminous and/or Portland cement pavements by using the normal heat of a propane torch. Other colors shall be available as required. The markings must be capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures. The markings shall have resealing characteristics, so that they are capable of fusing with themselves and previously applied thermoplastic when heated with a torch. It must be possible to apply the markings in temperatures down to 32F (0C) without any special storage or preheating of the material before application.

20.C. MATERIALS

The materials shall meet the following requirements.

20.C.01. Markings

Markings are composed of an ester-modified rosin, resistant to degradation by motor fuels, lubricants, etc., in conjunction with aggregates, pigments, binders, and glass beads which have been factory-produced as a finished product and the markings meet the requirements of the FHWA's *Manual on Uniform Traffic Control Devices*, current edition. The thermoplastic material conforms to AASHTO designation M249-79 (86), with the exception of certain relevant differences due to the material being supplied in a preformed state.

20.C.02. Graded Glass Beads

The material must contain a minimum of 30 percent, intermixed, graded, glass beads, by weight. The intermixed beads shall be clear and transparent. No more than 20 percent shall consist of irregular fused spheroids or silica. The index of refraction shall not be less than 1.50. The material must have factory-applied-coated surface beads in addition to the intermixed beads, at a rate of 1 pound (+10 percent) per 11 square feet. These factory-applied-coated surface beads shall have the following specifications:

- Minimum 80 percent rounds;
- Minimum refractive index of 1.5;
- Minimum SiO2 content of 70 percent; and
- Maximum iron content of 0.1 percent.

20.C.03. Pigments

20.C.03.a. White Sufficient titanium dioxide pigment is used to ensure a color similar to Federal Highway White, color No. 17886, per Federal Standard 595.

20.C.03.b. Yellow Sufficient yellow pigment is used to ensure a color similar to Federal Highway Yellow, color No. 13655, per Federal Standard 595. The yellow pigment must be of an organic nature only and must contain no lead chromate.

20.C.04. Heating Indicators
The top surface of the material (same side as the factory-applied surface beads) shall have regularly spaced indents. These indents shall act as an indicator system for the operator to properly gauge the correct amount of heat to apply during installation. The indents shall work by closing together to show that the material has reached a molten state.

20.C.05. Skid Resistance
The surface, with properly applied and embedded surface beads, must provide a minimum resistance value of 50 BPN when tested according to ASTM E 303.

20.C.06. Thickness
The material must be supplied at a minimum of 125 mils (3.15 mm).

20.C.07. Versatility
As an option, turn arrows and combination arrows may come without surface-applied glass beads, thus, facilitating the use of those arrows as either left or right indicators and reducing inventory requirements.

20.C.08. Environmental
The material must be resistant to deterioration due to exposure to sunlight, water, salt, or adverse weather conditions, and must be impervious to oil and gasoline.

20.D. PACKAGING
The preformed, thermoplastic markings shall be placed in protective, plastic film with cardboard stiffeners where necessary to prevent damage in transit. Linear material must be cut to a maximum of 3-foot-long pieces. The weight of an individual carton must not exceed 70 pounds. A protective film must be applied around the box in order to protect the material from rain or premature aging.

20.E. CONSTRUCTION METHODS
20.E.01. Removal
Existing marking may require removal as directed by the Department. All markings shall be removed by pavement grinding using a rotary oscillating grinder designed to minimize pavement grooving damage. At least 95 percent of the existing markings shall be eliminated.

20.E.02. Asphalt
The materials shall be applied using the propane torch method recommended by the manufacturer. It must be possible to apply the materials at ambient and road temperatures down to 32°F (0°C) without any preheating of the pavement to a specific temperature. The pavement shall be clean, dry, and free of debris. The supplier must enclose application instructions with each box/package.

20.E.03. Portland Concrete
The same application procedure shall be used as described under Section 20.E.02. However, a compatible primer shall be applied before application in order to ensure proper adhesion.

20.F. METHOD OF MEASUREMENT
Furnishing and installing thermoplastic, pavement markings shall be measured by each symbol, block of four characters, or LF of material, installed as shown on the plans. Removal of existing markings shall be measured by the symbol, block of four characters, or LF of material removed.

20.G. BASIS OF PAYMENT

20.G.01. Furnished and/or installed pavement markings, measured and accepted, as provided above, will be paid at the Contract unit bid price of:

QUANTITY	ITEM
(LF)	Double center line, yellow
(LF)	Edge line, lane line, white
(LF)	X-walk, 12 inches
(Each)	Arrow, right or left
(Each)	Arrow, combination
(Each)	Word message, four character
(LF)	Remove double center line
(LF)	Remove edge line, lane line
(Each)	Remove arrow or work marking
(LF)	Remove 24-inch stop line
(LF)	Remove 12-inch crosswalk

20.G.02. Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified.

CHAPTER 21: TRAFFIC SIGNAL COMMUNICATIONS

21A. DESCRIPTION

This work shall consist of furnishing and installing the County with communication media and related equipment that will allow for real-time communication with traffic signaling devices. Fiber optic cable, Enclosures/Light Interface Unit (LIU) boxes, data switching equipment, broadband connectivity and all related communication equipment necessary to provide communication in accordance with these specifications and standards (Standard TS 6) Items such as fiber optic cable, LIU boxes, data switching equipment and broadband connectivity are specified elsewhere in the Document.

21B. MATERIALS

21B.01. Fiber Optic Cable

21.B.01.a. Type of Fiber Fiber Optic cable shall be furnished and installed using the following specifications:

- Corning Altos OSP Single-Mode 8.3 Micron 24 count Fiber 024Ew4-T4101D20
- All fiber end-points shall be fusion spliced and terminate with ST connectors inside the LIU unless otherwise specified by the County.
- Fiber tails may be used where necessary to bring splice points into the LIU from a nearby vault.

21.B.01.b. Fiber Optic Distribution Equipment A Light Interface Unit (LIU) shall be furnished and installed using the following specifications:

- Systimax Light Interface Unit (LIU) 12 Port and/or 24 ports depending on the fiber count shall be furnished and install inside the traffic signal cabinet.
- LIU part number is 100A3 LIU with ST Connectors.
- LIU shall be mounted inside the cabinet next to communication panel.

21.B.01.c. Data Switching Equipment

Data switching equipment shall be furnished and given to County Trip Center department staff to be configured to County standards. The data switching equipment shall consist of one of the following configurations depending on what types of telecom services are available to the County at the location in question:

Configuration 1

Network connectivity via fiber to new and/or re-designed traffic signal locations requires the following equipment:

- Cisco 24 Port 3560 Data Switch Part # WS-C3560G-24PS-S and a quantity of 4 SFP
- 10 Gigabit LC connectors Part # 10 Gig LX/LHS FP LC Connector GLC-LHSM

Configuration 2

Network connectivity via a Service Provider (Comcast/Verizon) to new and/or re-designed traffic signal locations requires the following equipment:

Cisco 1800 series Routers 8 ports to 10 ports with VPN capability extends the Trip Center traffic network to remote traffic signal locations using cable modem services from Comcast; while giving Trip Center department staff access to traffic signal devices at that intersection. This Site-to-site remote-access and a dynamic VPN service requires the following equipment:

- CISCO 1800 series routers 8 to 10 ports with VPN Capacity Part Number 341-0135-02 (Cisco 1811)
- Cisco 24 Port 3560 Data Switch Part # WS-C3560G-24PS-S and a quantity of 4 SFP
- 10 Gigabit LC connectors Part # 10 Gig LX/LHS FP LC Connector GLC-LHSM

Configuration 3

Network connectivity via point-to-point wireless to new and/or re-designed traffic signal locations requires the following equipment:

- Cisco Aironet 1410 Wireless Bridge with 22.5 dBi Antenna Part# AIR-BR1410A-A-K9
- Cisco 24 Port 3560 Data Switch Part # WS-C3560G-24PS-S and a quantity of 4 SFP
- 10 Gigabit LC connectors Part # 10 Gig LX/LHS FP LC Connector GLC-LHSM

CHAPTER 22: TRAFFIC CAMERA SPECIFICATIONS

22A. INTRODUCTION

Department of Public Works and Transportation of Prince George's County use long-range PTZ cameras to monitor traffic and road conditions throughout the county. These cameras operate 24/7 all year long. The camera system should produce high quality video. The camera system must have video and control distribution capability over IP network. The camera system should have control capability both through direct local connection and over IP network. The camera system should meet or exceed following criteria. All the equipment must use 120 V power supply.

22B. CAMERA MODULE

22B.01. The camera units along with it housing shall be fully assembled, tested and pressurized at the original manufacturing facility and shipped as a complete unit.

22B.02. The camera module must have an integrated hybrid network IP/Analog camera position system (IPCPS) with at least 35x optical zoom range and a selectable automatic or manual focus. The resolution of the camera should be high Definition (HD) or Standard Definition (as determined by the Traffic Management and Operations Division) to produce clear images of just about anything within its field of view.

22B.03. The Camera Must have 360° continuous rotation Pan range. The pan rotation should be high-speed (100°/sec. max.) with up to 0.2° accuracy. and -90° to +90°

22B.04. Required continuous high-speed tilt from -90° to +90° range.

22B.05. The Camera must have automatic Day/Night switching technology that delivers high definition or Standard Definition color images during daylight and high sensitivity monochrome images after dark or low-light.

22B.06. The Camera must have High quality electronic image stabilization to deliver clear image in windy condition is required.

22B.07. The camera shall integrate an SDTV 480p resolution or HDTV 1080p resolution @ 30 frames per second camera with 35x motorized zoom optic to deliver day/night capability, and H.264/MJPEG ASIC based encoding

22B.08. The Camera must be able to withstand harsh operational environments conforming to NEMA TS2 requirements for temperature, power, shock and vibration as well as IP67 environmental standards.

22B.09. Maximum Lens Aperture: f/1.4 (wide) to f/4.2 (tele) & 12. Minimum Focus Distance: 40"(tele), 0.4 (wide). Auto Focus: Selectable Auto/Manual; Minimum Scene Illumination for Reliable Auto Focus, 30% video.

22B.10. Iris shall automatically adjust to compensate for changes in scene illumination to maintain constant video level output within sensitivity specifications.

22B.11. Sensitivity: Scene Illumination @ F1.4

- fc (1.0 lux) @ 1/60 shutter, color mode
- fc (0.1 lux)@ 1/4 shutter, color mode
- 0.005 fc (0.05 lux) @ 1/2 shutter, color mode
- fc (0.01 lux) @ 1/4 shutter, mono mode

22B.13. The Camera must support Presets, Tours, Sector Zones, Privacy Zones

22B.14. Should provide "Low Pressure" message on video for indication insufficient pressure.

22B.15. Should use flash memory to update firmware and new features.

22B.16. The camera to use is COHU Helios 396OSD or COHU Helios 3960HD

22B.17. The camera module should be delivered complete with Heavy Duty Camera Control cable AC38 and all the clamp, connectors and adapter plates.

22C. INTEGRATED CAMERA CONTROL

22C.01. Should provide integrated camera control inside camera body onsite

22C.02. Supports NTCIP and system protocol from most major CCTV camera manufacturers including the Camera Module specified above and Cohu.

22D. DISTRIBUTION SYSTEM (ENCODER/DECODER)

22D.01. The units shall be ruggedly built, and designed for extreme adverse environments, meeting NEMA TS-2 environmental standards

22D.02. The integrated encoder must be able to convert to an H.264 and MJPEG

22D.03. The integrated decoder should be able to convert H.264 and MJPED video.

22D.04. Support video image resolutions 4CIF, 2CIF, CIF and QCIF.

22D.05. Must support PTZ control over IP network.

22D.06. Provide ability for encoder to decoder persistent connection, allowing point-to-point connections to be established without use of 3rd party controlling agent.

22D.07. Streaming Mode Rate control with bit rate setting from 10K to 6MB.

22D.08. Frame rate up to 30 frame/sec.

22D.09. Capability of Video Motion Detection with a. Enable/Disable VMD region, b. Adjustable sensitivity property and c. Programmable detection area

22D.10. On unit status indicator LED to indicate power, activity and communication.

22D.11. Should support IP multicast and Unicast.

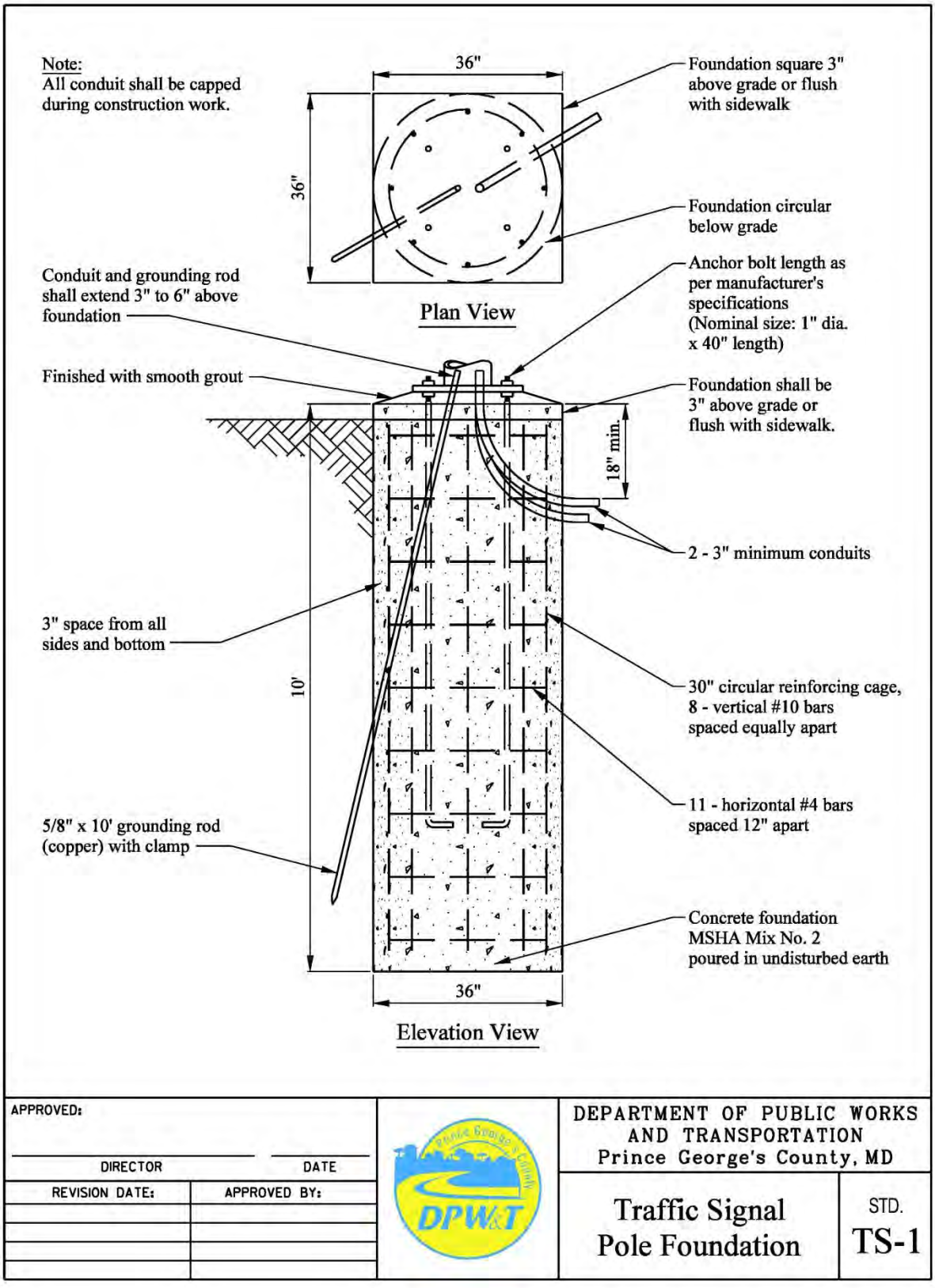
22D.12. Should have integrated intuitive graphical user interface to control the camera over IP network. It should have multi-user access capability with password protection,

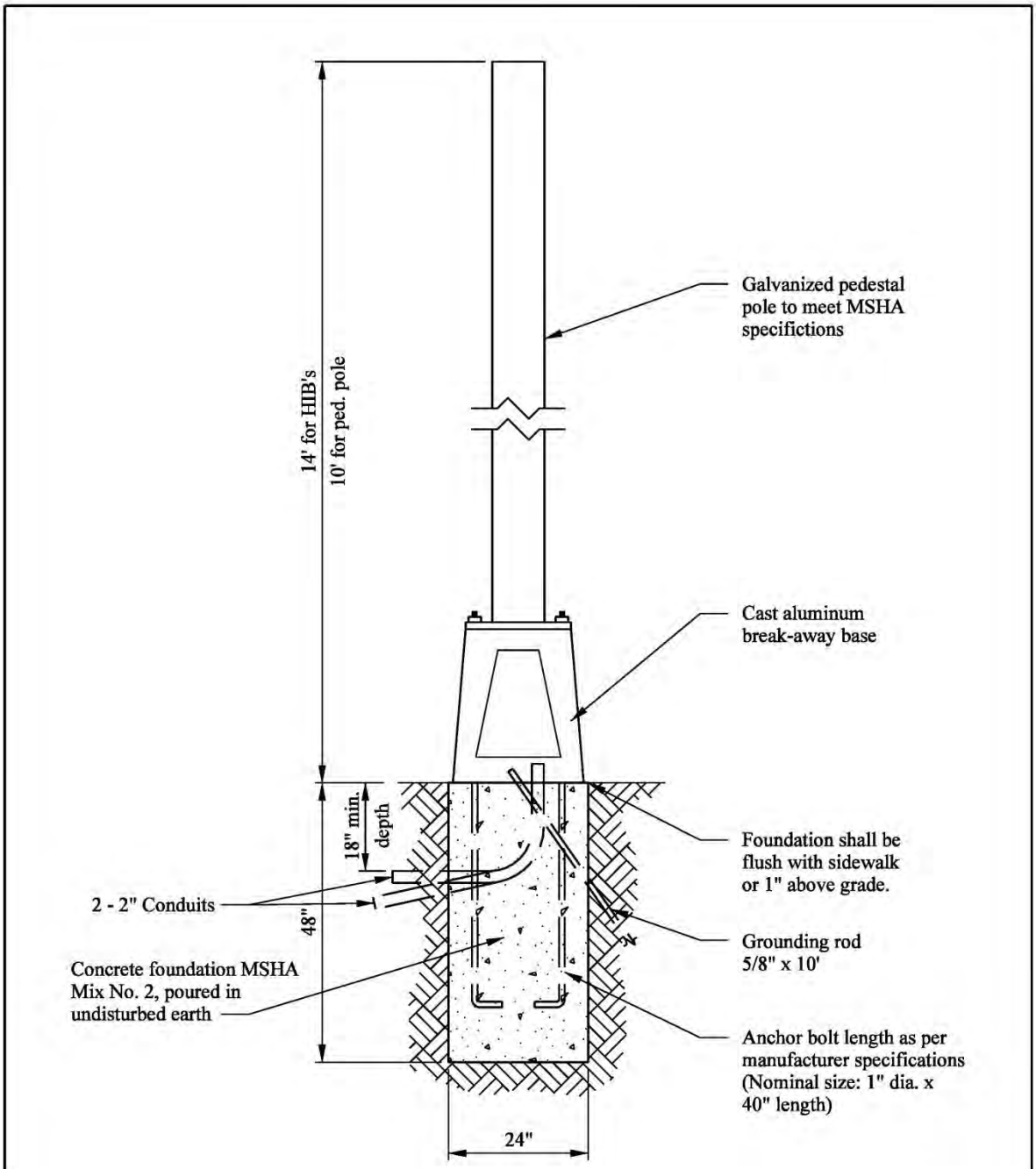
APPENDIX A: CONTROLLER DETECTOR INPUTS MODE 2

PIN	NEMA TSI ASSIGNMENT	32 SET-UP ASSIGNMENT
A-h	Phase 1 hold	Detector 9
A-M	Phase 2 hold	Detector 10
B-I	Phase 3 hold	Detector 11
B-h	Phase 4 hold	Detector 12
C-m	Phase 5 hold	Detector 13
C-p	Phase 6 hold	Detector 14
C-EE	Phase 7 hold	Detector 15
C-x	Phase 8 hold	Detector 16
B-U	Phase 1 phase omit	Detector 17
B-R	Phase 2 phase omit	Detector 18
B-S	Phase 3 phase omit	Detector 19
B-g	Phase 4 phase omit	Detector 20
C-n	Phase 5 phase omit	Detector 21
C-q	Phase 6 phase omit	Detector 22
C-r	Phase 7 phase omit	Detector 23
C-s	Phase 8 phase omit	Detector 24
A-EE	Phase 1 ped omit	Detector 25
A-v	Phase 2 ped omit	Detector 26
B-j	Phase 3 ped omit	Detector 27
B-x	Phase 4 ped omit	Detector 28
B-T	Phase 5 ped omit	Detector 29
B-k	Phase 6 ped omit	Detector 30
B-m	Phase 7 ped omit	Detector 31
B-n	Phase 8 ped omit	Detector 32

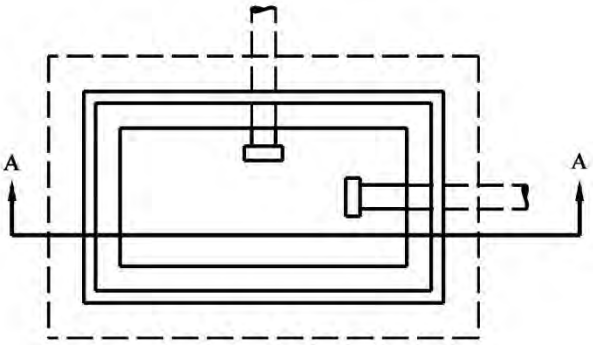
APPENDIX B: STANDARD DETAILS

TS-1	Traffic Signal Pole Foundation
TS-2	Breakaway Pedestal Pole Foundation
TS-3	Hand-box and Splice-box
TS-4	Prefabricated Junction Box
TS-5	Traffic Signal Pole
TS-6	Hazard Identification Beacon (HIB)
TS-7	Traffic Signal Head and Sign Configuration (SpanWire)
TS-8	Traffic Signal Head and Sign Configuration (Mast Arm)
TS-9	Typical Quadrupole Loop Detector Configuration
TS-10	Typical Vehicle Loop Detector Configuration
TS-11	Loop Detector Sleeve
TS-12	Typical Loop Detector
TS-13	Embedded Service Pedestal (Part I)
TS-14	Embedded Service Pedestal (Part II)
TS-15	Typical Telephone Service
TS-16	Base-Mounted Cabinet Foundation
TS-17	Solar Panel
TS-18	Pedestal Pole-Mounted Electrical Service


Note:
All conduit shall be capped during construction work.
36"
36"
Foundation square 3" above grade or flush with sidewalk
Foundation circular below grade
Plan View
Conduit and grounding rod shall extend 3" to 6" above foundation
Anchor bolt length as per manufacturer's specifications (Nominal size: 1" dia. x 40" length)
Finished with smooth grout
Foundation shall be 3" above grade or flush with sidewalk.
18" min.
2 - 3" minimum conduits
3" space from all sides and bottom
10'
30" circular reinforcing cage, 8 - vertical #10 bars spaced equally apart
11 - horizontal #4 bars spaced 12" apart
5/8" x 10' grounding rod (copper) with clamp
Concrete foundation MSHA Mix No. 2 poured in undisturbed earth
36"
Elevation View
APPROVED:
DIRECTOR
DATE
REVISION DATE:
APPROVED BY:
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD
Traffic Signal Pole Foundation
STD.
TS-1

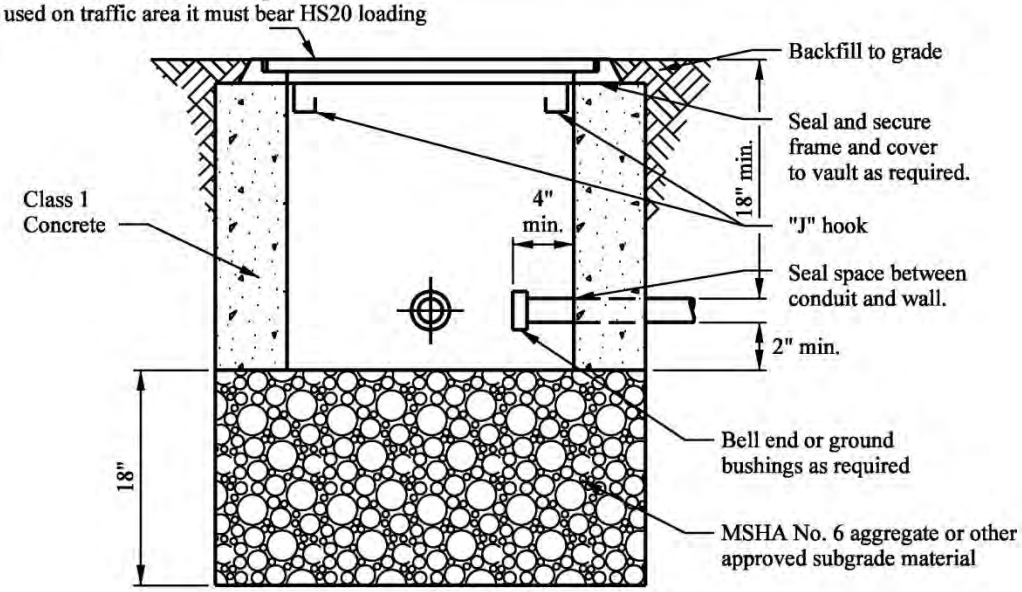


APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Break-away Pedestal Pole Foundation	STD. TS-2



Plan View

Frame and cover shall be made of high-density polymer concrete, and installed to grade.
When used on traffic area it must bear HS20 loading

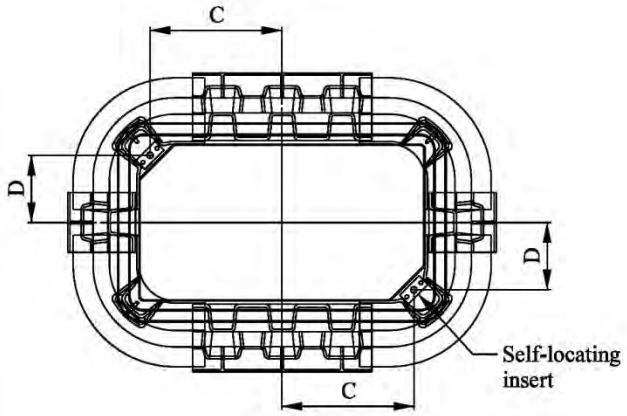


Section A-A

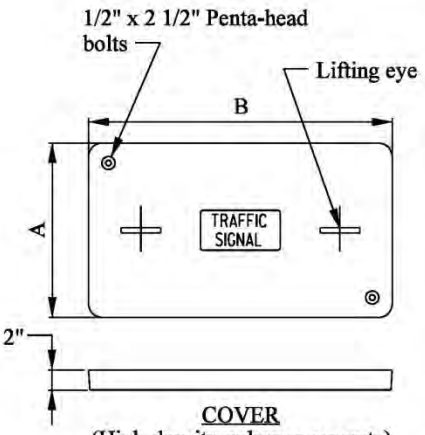
Notes

1. The concrete vault, cover and frame, shall be constructed to support HS 20 loading when used in traffic load bearing areas. When in these areas, use #4 steel reinforcing bars placed both ways and spaced at 6" center-to-center. All reinforcing steel shall conform to ASTM A615 Grade 60.
2. The concrete mix shall be a minimum of fc' = 5,000 psi @ 28 days, with air-entrained additives included.

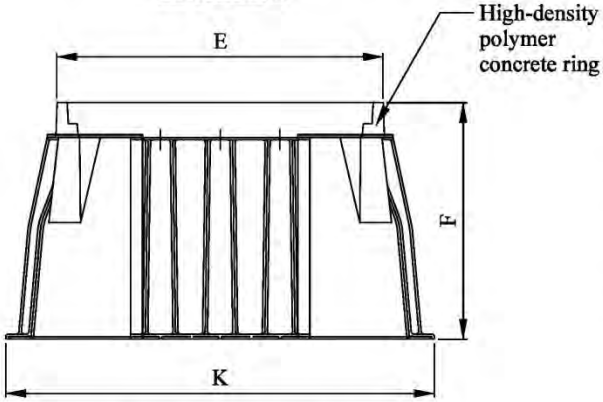
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Hand-Box and Splice-Box	STD. TS-3



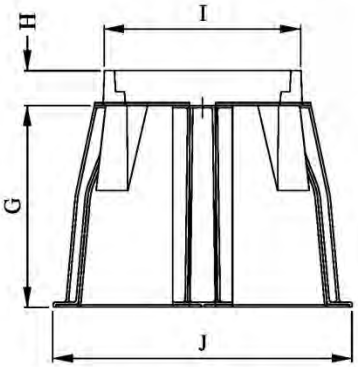
PLAN VIEW



COVER
(High-density polymer concrete)



ELEVATION VIEW



SIDE VIEW

TABLE OF DIMENSIONS (in inches)											
SIZE	A	B	C	D	E	F	G	H	I	J	K
11 x 18	11-1/4	18-1/8	7-7/16	4	20-3/8	17-1/2	14-1/4	3-1/4	13-1/2	23-1/16	22-9/16
13 x 24	13-3/4	23-1/4	9-7/8	5-1/8	25-1/8	25-3/4	22-1/4	3-9/16	16	26-5/16	35
17 x 30	17-1/2	30-1/2	13-1/4	6-3/4	32-3/4	25-3/4	22-1/4	3-1/2	18-3/4	20-1/16	43-3/16

Notes
1. Cover shall be made of high-density polymer concrete, and be rated for wheel loads of at least 20,000 lbs. (over 10" x 10" test area) and shall be "concrete gray" color and imprinted with "TRAFFIC SIGNAL" logo.
2. Body shall be made of Sheet Molding Compound (SMC), and "concrete gray" in color.

APPROVED:

DIRECTOR DATE

REVISION DATE:	APPROVED BY:

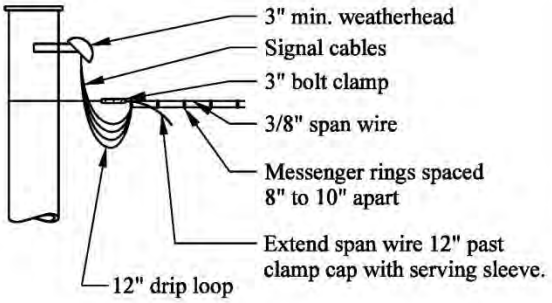
DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
Prince George's County, MD

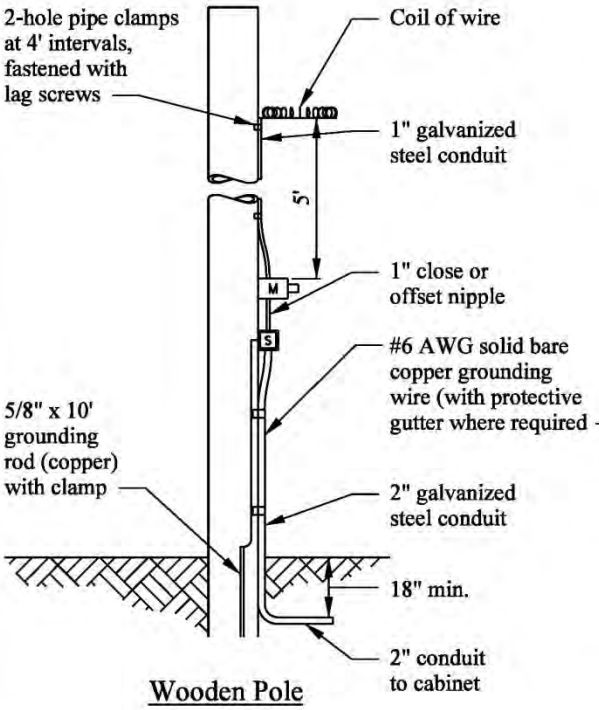
Prefabricated Junction Box

STD. TS-4

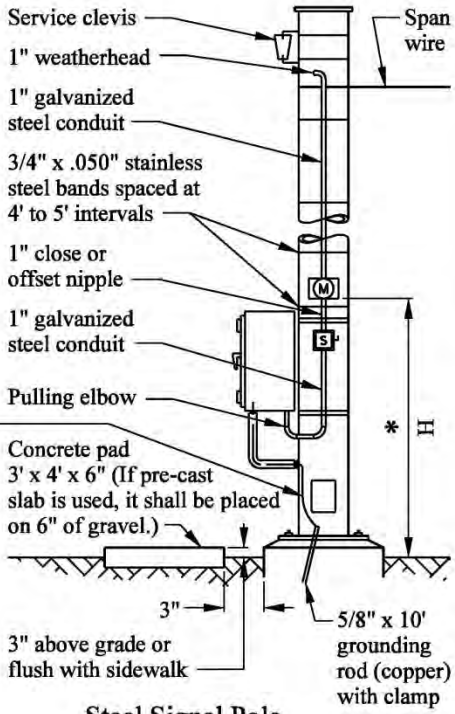
Notes:

1. All threaded conduit make-ups shall be painted with joint compound.
2. Weatherheads and couplings are to be hot-dipped galvanized steel or aluminum threaded for rigid conduit.
3. Wooden poles used only with special permission of the Department.





Wooden Pole

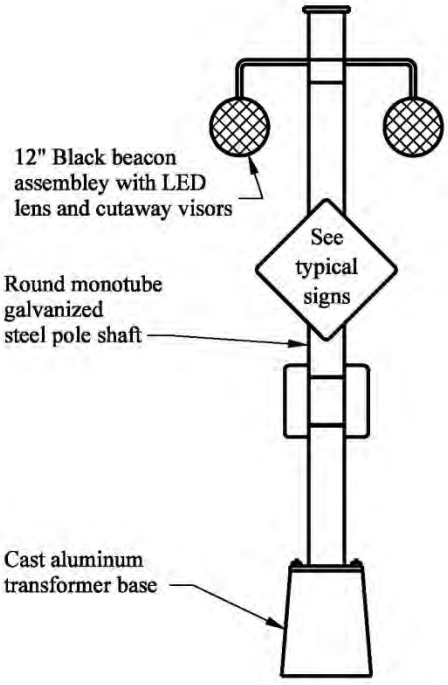


Steel Signal Pole

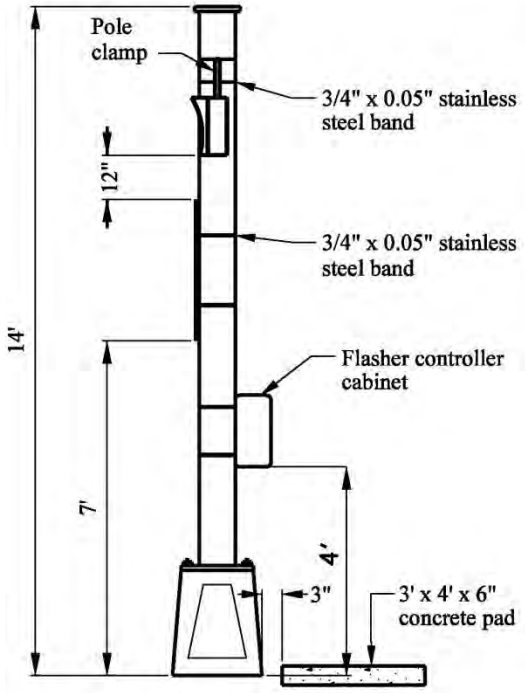
For utility-owned wooden pole, 1" conduit is to be extended only 5' above meter socket with sufficient wire to allow taps at specific heights.

* = According to local power company specifications (Typ. 7' to 7'-6")
H = Meter mounting height
M = Light-duty meter pan
S = 30 amp disconnect switch

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REVISION DATE:	APPROVED BY:	Traffic Signal Pole	STD. TS-5

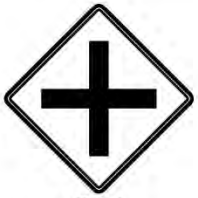


Elevation view



Side view

Typical warning signs



W2-1
(Flourescent Yellow Background)
(36" x 36")



B/FYG
S5-1
24"x48"
B/W

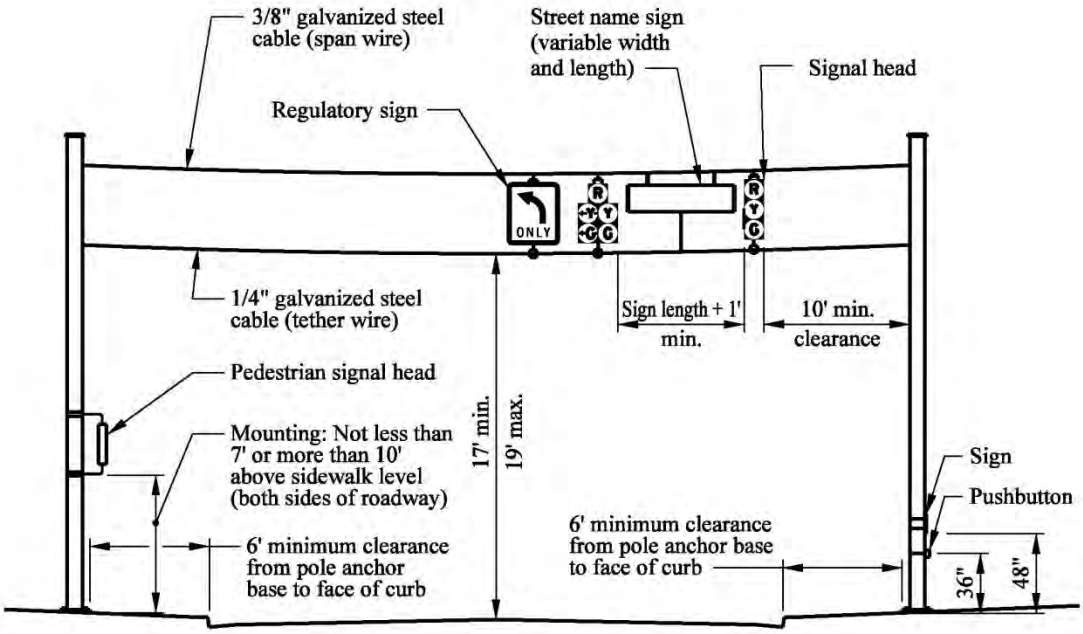


S1-1
(Flourescent Yellow-Green Background)
(36" x 36")



W16-9p
(24" x 12")

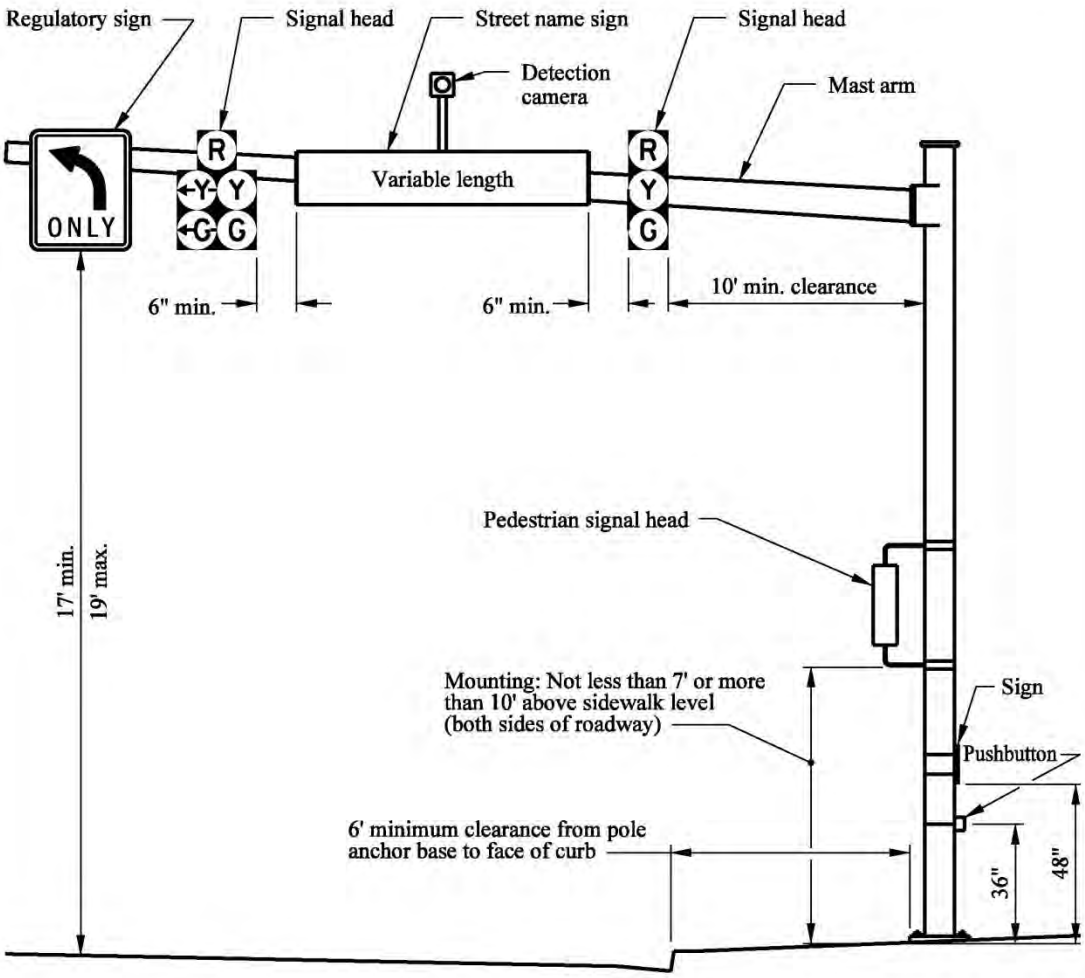
APPROVED: DIRECTOR ____ DATE ____		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
REVISION DATE:	APPROVED BY:	Hazard Identification Beacon (H.I.B.)	STD. TS-6



Notes:

1. Signal head and sign placement shall be per signal plan or as directed by the Department's Signal Inspector.
2. All overhead signs and signals are to be tethered.
3. All hangers are to be non-corrosivewith stainless steel hardware.
4. Span and tether wire (cable) installations shall meet the following criteria: 5% maximum sag/3% minimum sag
5. For pedestrian signal head mounting and clearance requirements, see 13.E.02. of the Specifications and Standards for Traffic Control Signals.

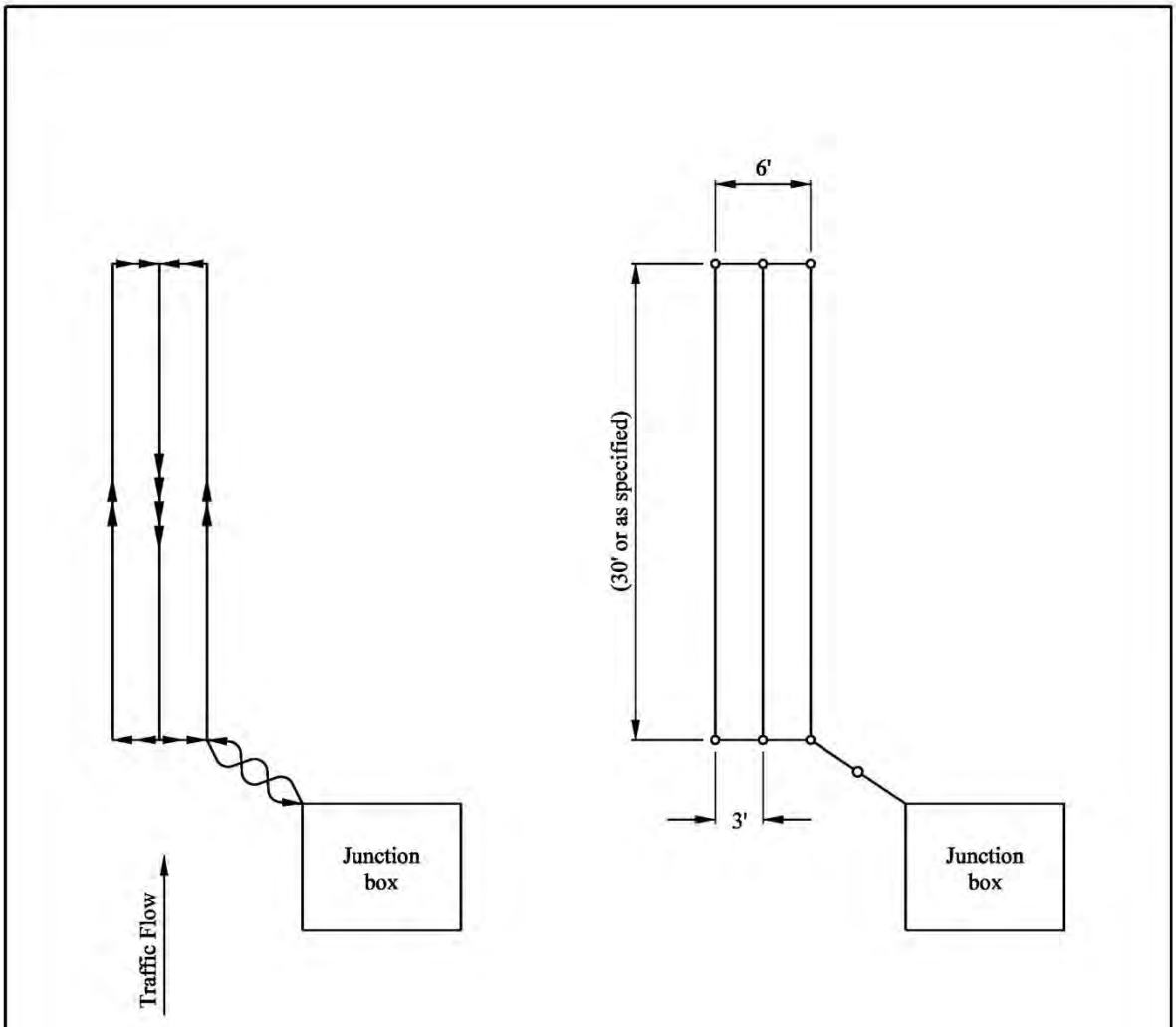
APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Traffic Signal Head and Sign Configuration (Span Wire)	STD. TS-7



Notes:

1. Signal head and sign placement shall be per signal plan or as directed by the Department's Signal Inspector.
2. Signal heads are mounted to pole with Pepco Cable mount assemblies AB-0125-L-L, AB-0133-L-L or approved equivalent.
3. Detection camera shall be positioned in the center of the through travel lanes unless otherwise specified by the Department's Signal Inspector.
4. For pedestrian signal head mounting and clearance requirements, see 13.E.02. of the Specifications and Standards for Traffic Control Signals.

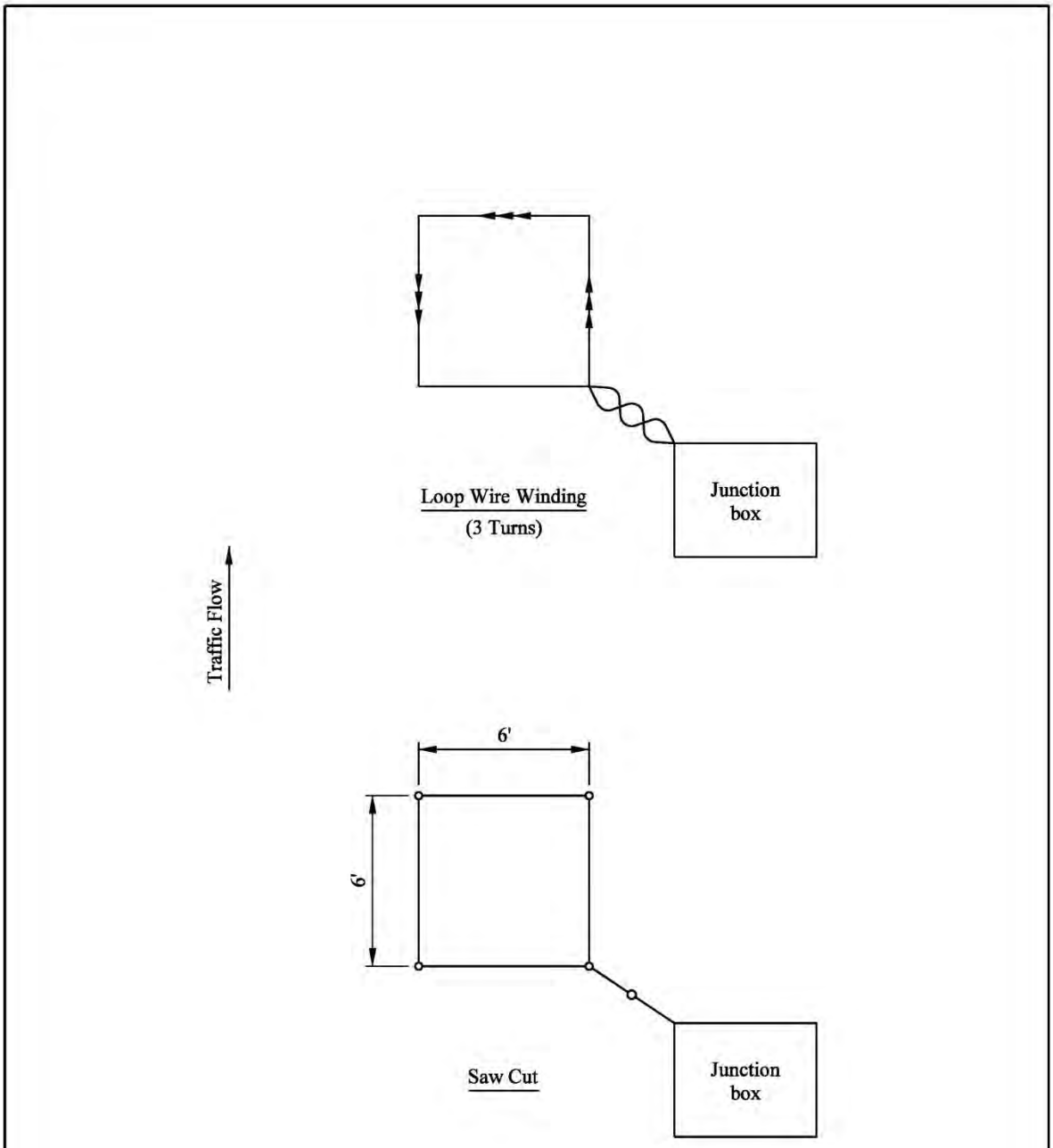
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR _____ DATE _____		Traffic Signal Head and Sign Configuration (Mast Arm)	STD. TS-8
REVISION DATE:	APPROVED BY:		



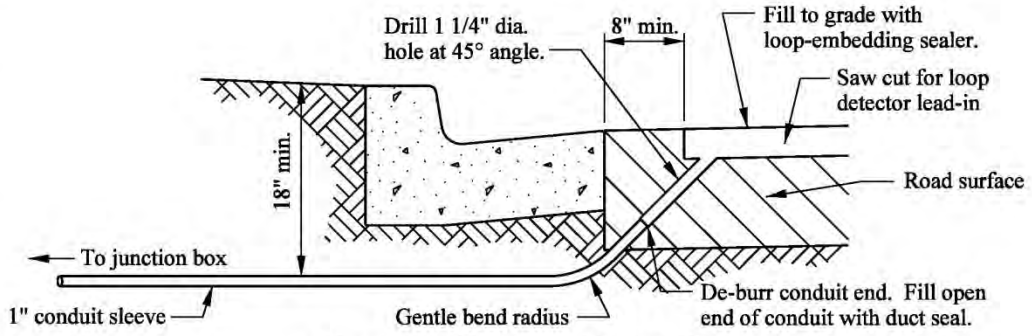
Loop Wire Winding
(2-4-2 Turns)

Saw Cut

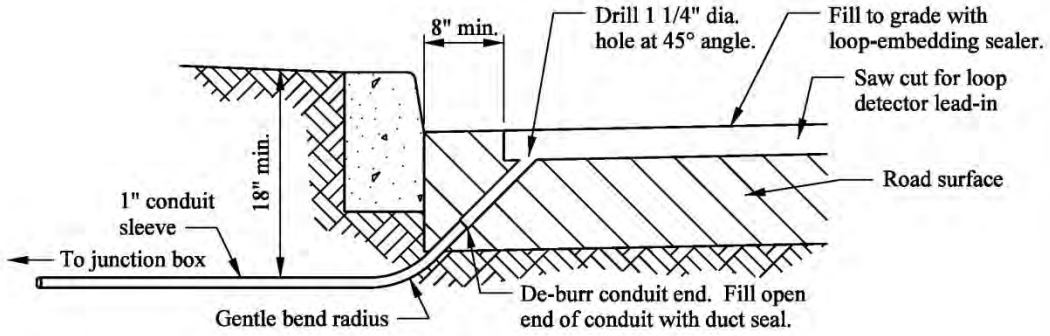
APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE				
REVISION DATE:	APPROVED BY:		Typical Quadrupole Loop Detector Configuration	STD. TS-9



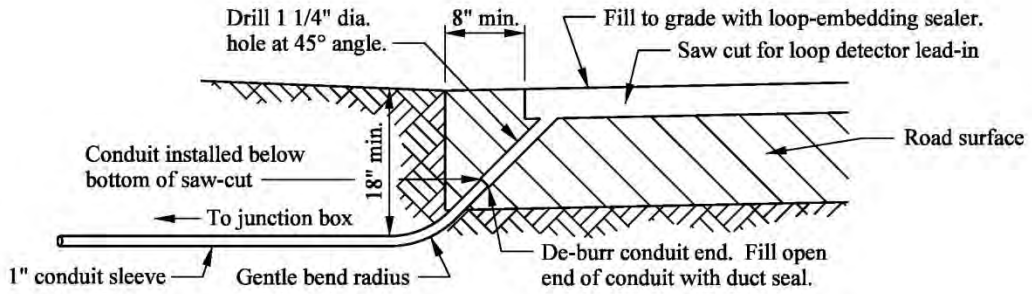
APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Typical Vehicle Loop Detector Configuration	STD. TS-10



Concrete Curb and Gutter Pan

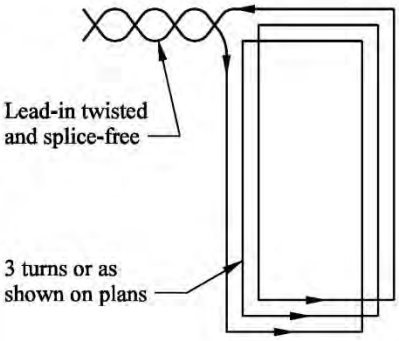


Concrete or Bituminous Header Curb



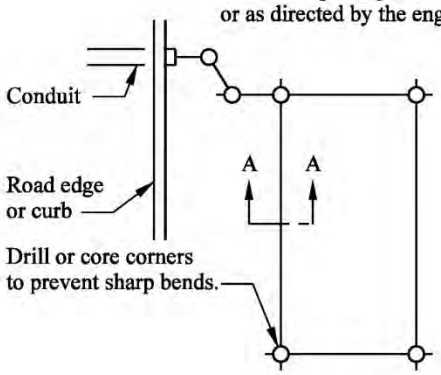
Roadway Shoulder

APPROVED:			DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Loop Detector Sleeve	STD. TS-11

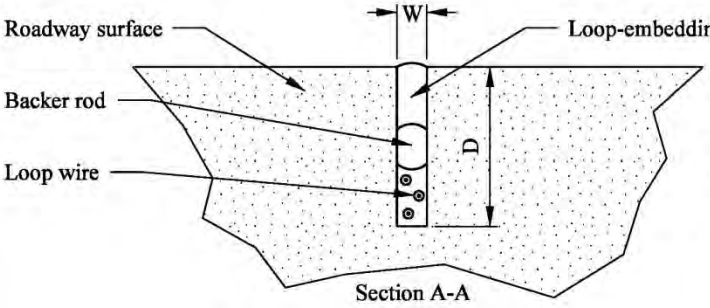


Electrical Plan

Note:
Size of loop designated on plans
or as directed by the engineer.



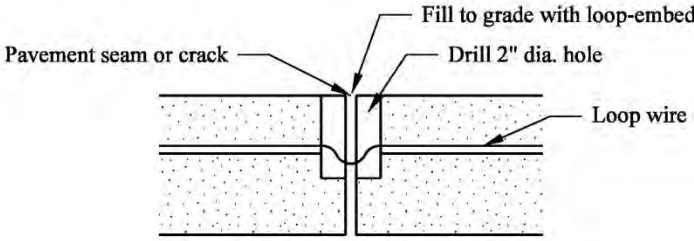
Sawcut Plan



D = 2" in concrete surface and 3" in asphalt surfaces. D=4" for quad loop.

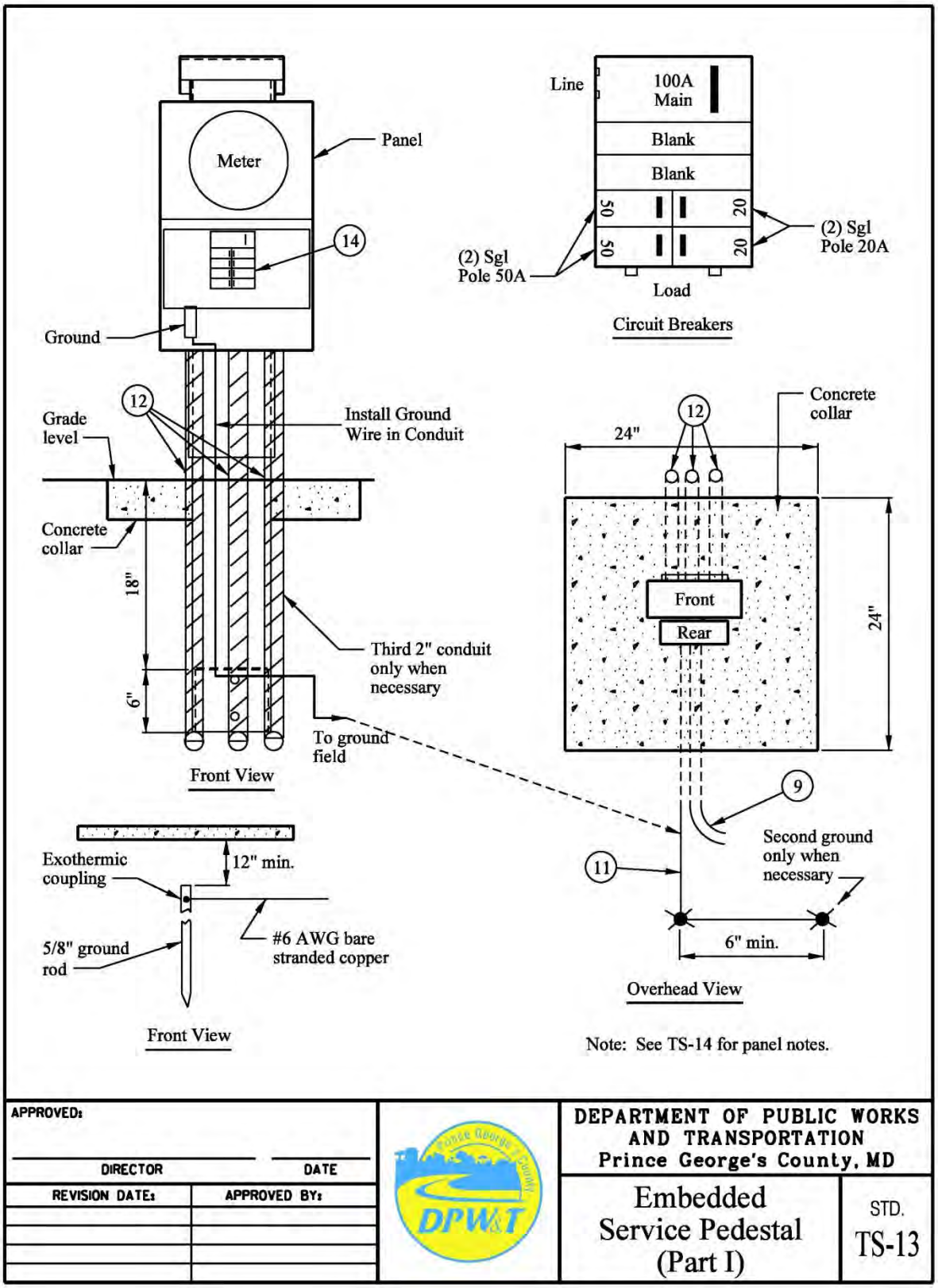
W = 3/8" for loop detector slot and 1/2" for loop lead-in slot.

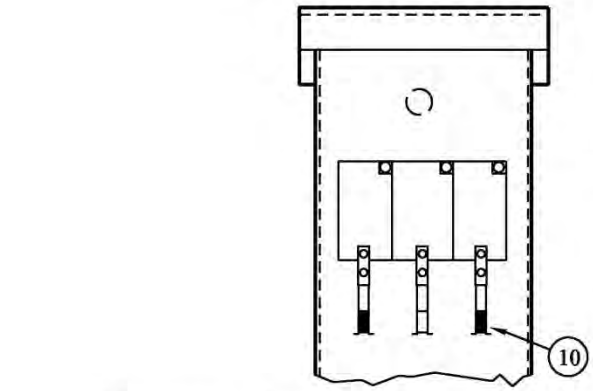
Loop Wire in Sawcut Slot



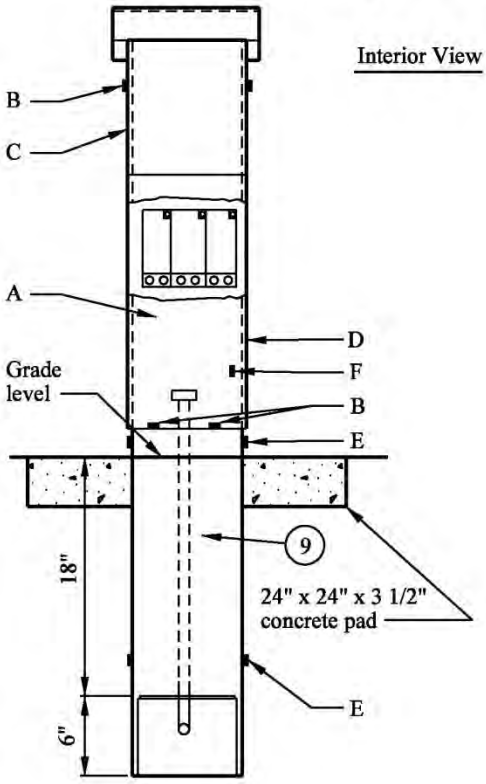
Sawcut/Loop Wire Through Pavement Crack or Seam

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REVISION DATE:	APPROVED BY:	Typical Loop Detector	STD. TS-12


Meter
Panel
14
Ground
12
Grade level
Install Ground Wire in Conduit
Concrete collar
18"
6"
Third 2" conduit only when necessary
To ground field
Front View
Line
100A Main
Blank
Blank
50
50
20
20
(2) Sgl Pole 50A
(2) Sgl Pole 20A
Load
Circuit Breakers
12
24"
Concrete collar
Front
Rear
24"
9
Second ground only when necessary
11
6" min.
Overhead View
Exothermic coupling
12" min.
#6 AWG bare stranded copper
5/8" ground rod
Front View
Note: See TS-14 for panel notes.
APPROVED:
DIRECTOR
DATE
REVISION DATE:
APPROVED BY:
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
Prince George's County, MD
Embedded Service Pedestal (Part I)
STD.
TS-13



Interior View

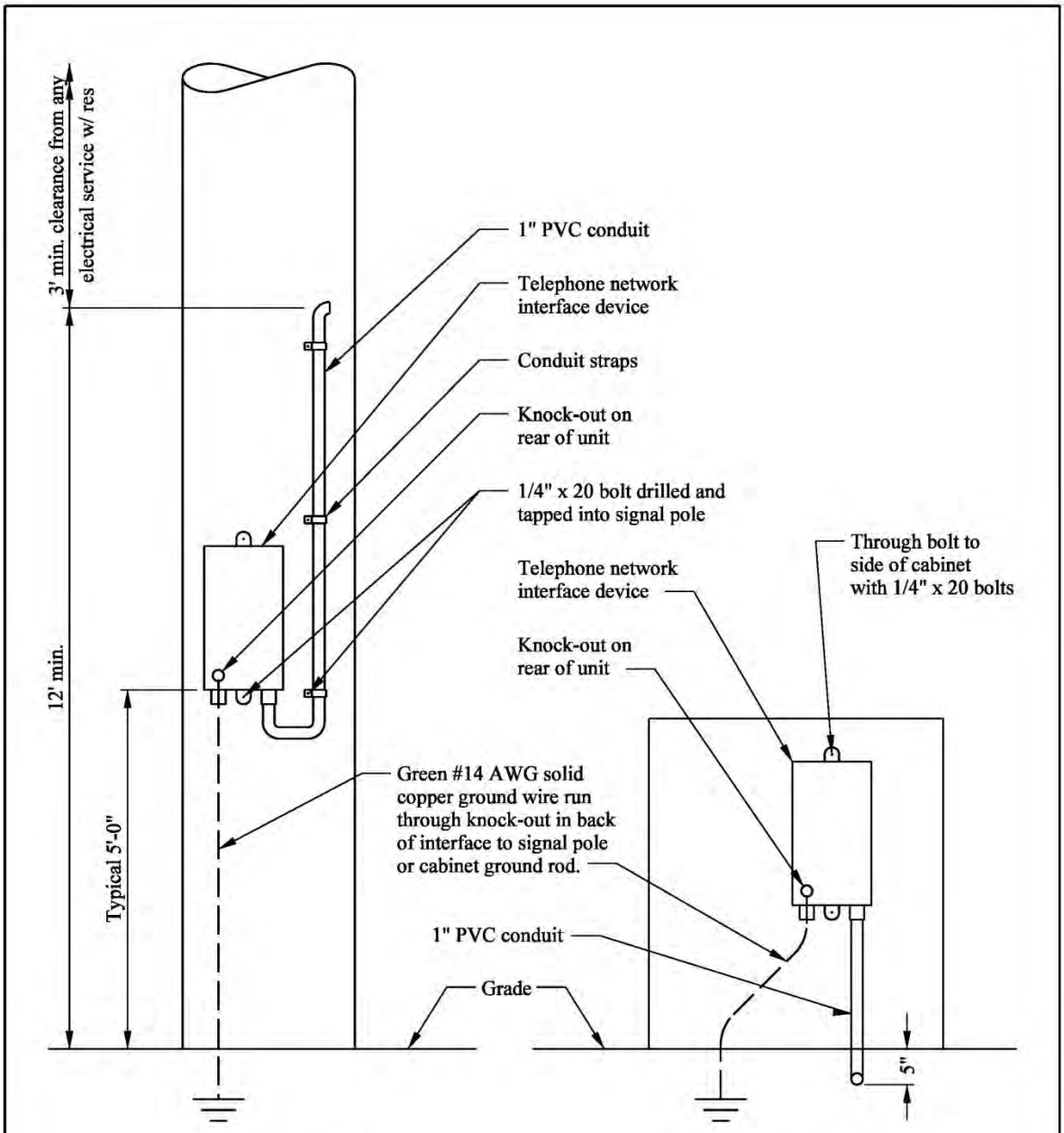


Rear View

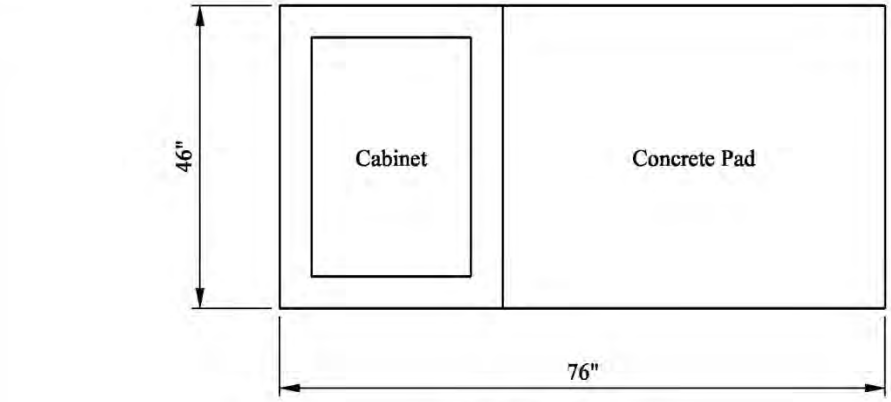
Notes

1. Remove cover "A" by removing (4) screws labeled "B". Slide cover slightly towards bottom of post allowing top of cover to clear top of retaining bracket and pull cover away from post.
2. Remove cover "D" by removing (4) screws labeled "E". Pull cover away from post.
3. Remove cover "C" when load conductors exit the bottom of post. Remove small horizontal barrier and rotate 90 degrees to form a vertical barrier inside the post. Re-assemble using the same screw and mounting hole.
4. Lay wiring in and attach to terminal bar. (See wiring diagram in post for torque specifications and wire size information.)
5. Replace cover "D" on post and fasten with (4) screws labeled "E".
6. Replace cover "A" on post and fasten with (4) screws labeled "B".
7. To padlock cover "A", utilize hasp labeled "F".
8. Concrete collar shall be approximately 24" x 24" x 3 1/2" minimum thickness. Ensure pad is flush with ground.
9. Install correctly sized schedule 80 PVC conduit. Line side and conduit size to be as per local electric power company's requirements. Verify size with utility company prior to installation and include 90 degree elbows as necessary.
10. Attach correctly sized (e.g. 2/O AWG) copper wire. Lugged from termination point shown through correctly sized conduit and to power source to be utilized. Run correctly sized PVC (e.g. 4") riser at least 10" up pole and leave 30' of cable coiled at top of riser to be utilized by power company for hookup.
11. Install grounding using #6 bare stranded copper wire from point in breaker panel to the external ground in field.
12. Install three (3) 2" PVC conduits from bottom of panel as shown.
13. Install four (4) single pole circuit breakers.
    Two (2) - 20 amp
    Two (2) - 50 amp
    *Note: All PVC conduit shall be schedule 80.

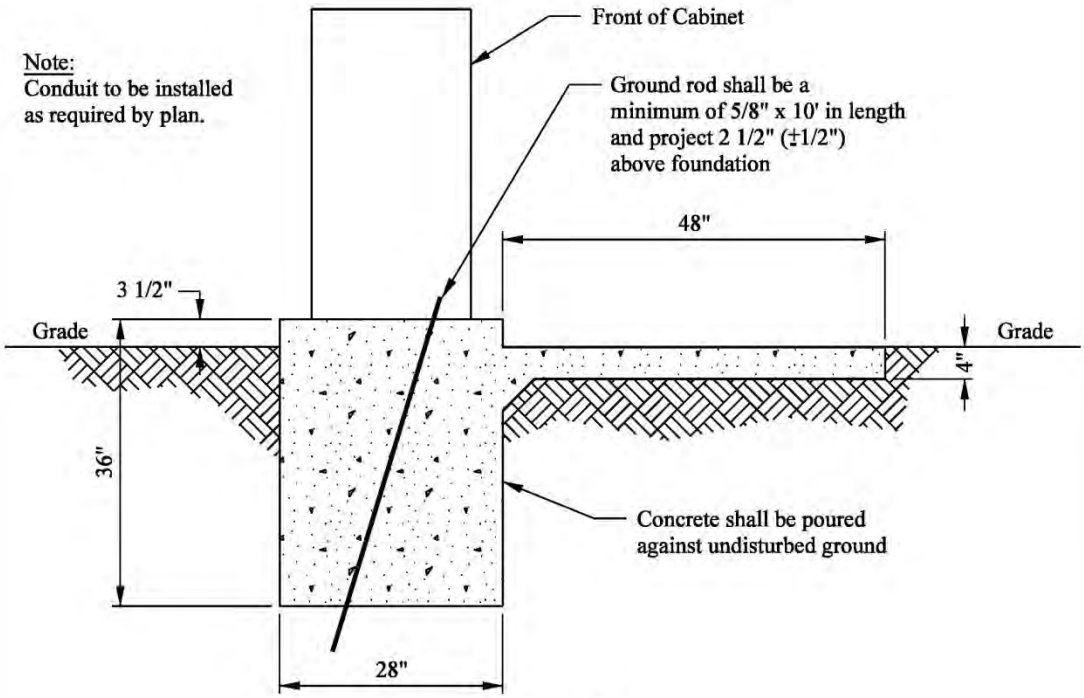
APPROVED:		DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION Prince George's County, MD	
DIRECTOR / DATE			
REVISION DATE:	APPROVED BY:	Embedded Service Pedestal (Part II)	STD. TS-14



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REVISION DATE: / APPROVED BY:	Typical Telephone Service	STD. TS-15

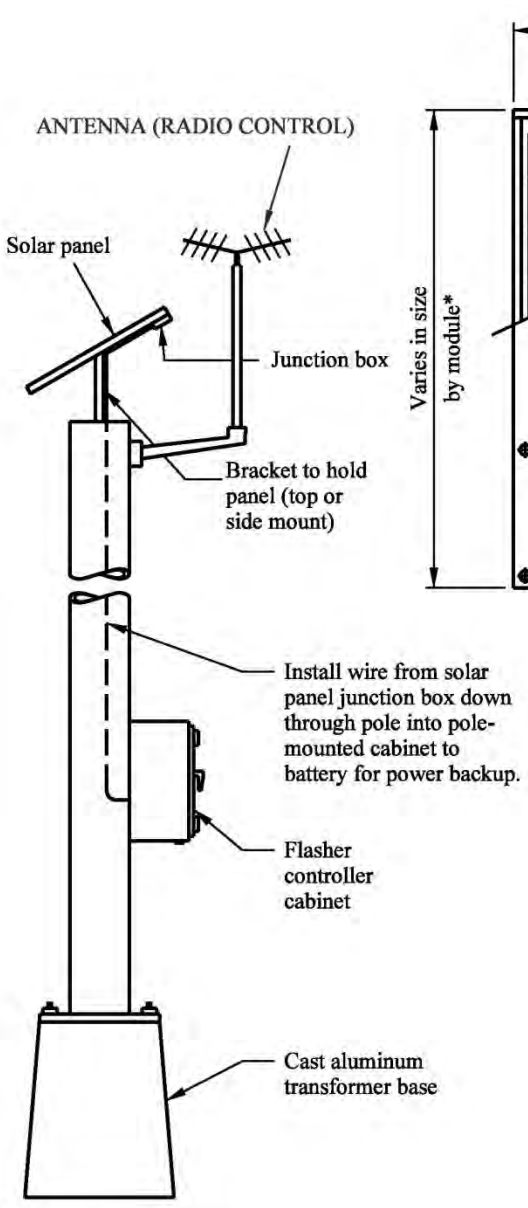


Plan View

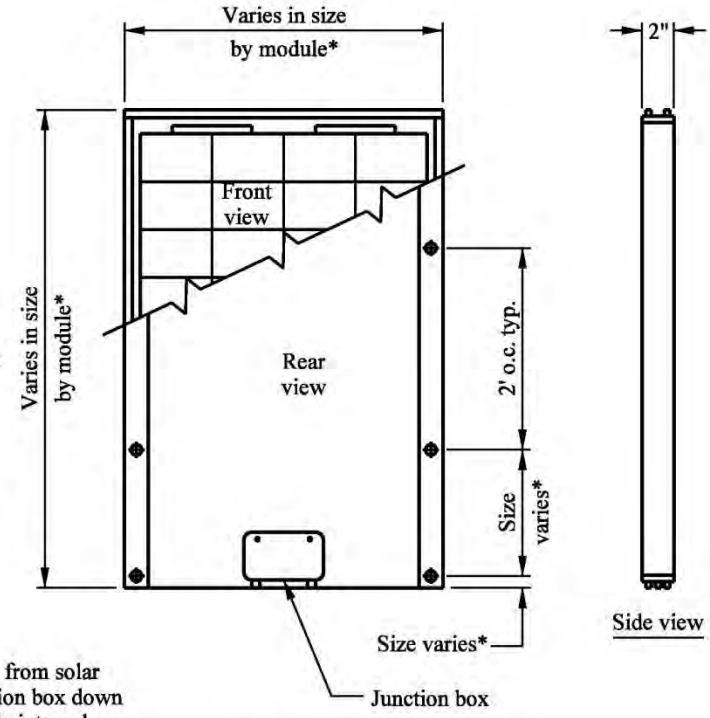


Elevation View

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DIRECTOR	DATE			
REVISION DATE:	APPROVED BY:		Base-mounted Cabinet Foundation	STD. TS-16



Elevation View

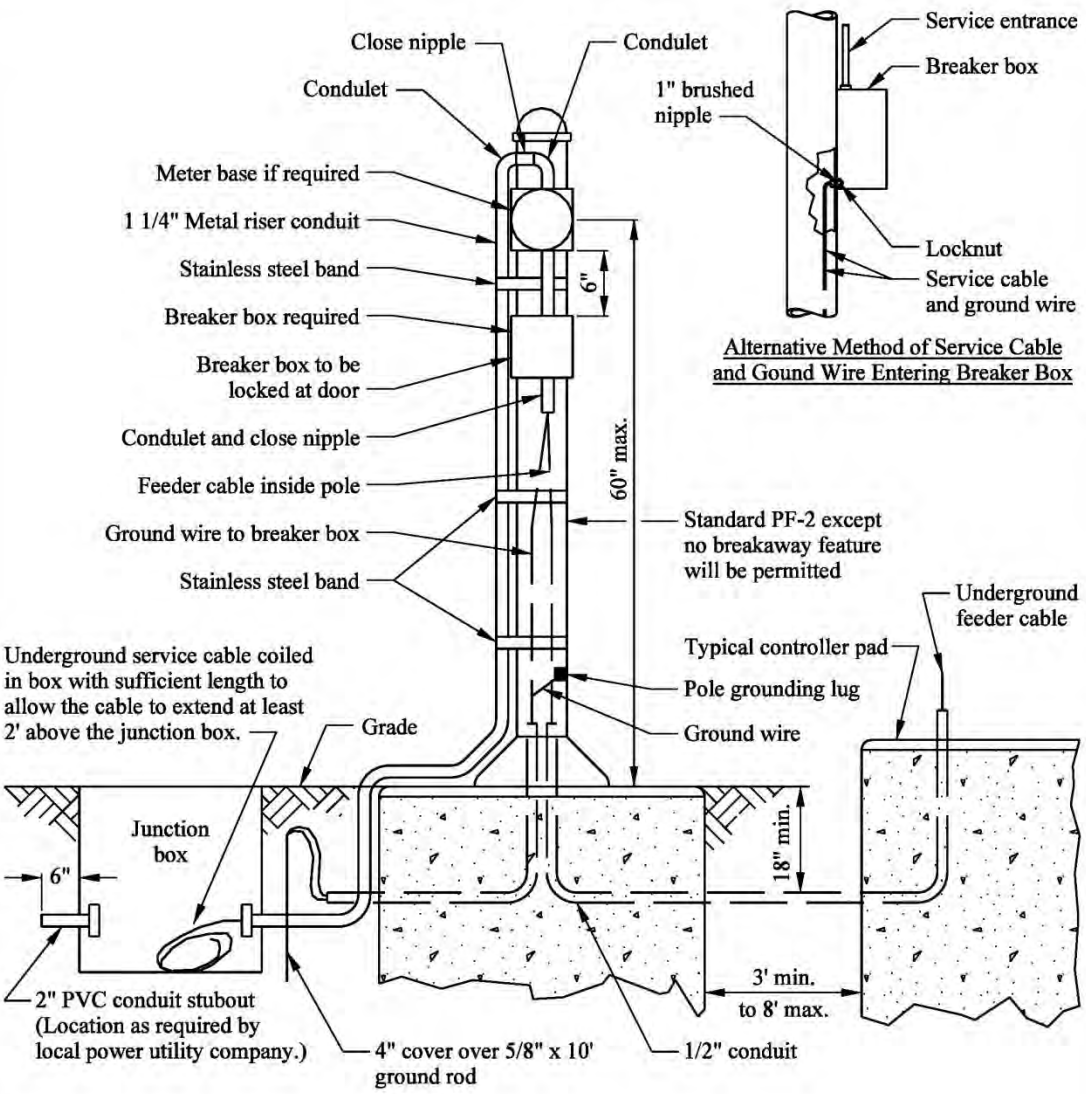


Solar Panel Detail

Notes:

1. There are two types of module specifications: MSX and VLX.
2. *Refer to the solar panel manual features for dimensions of the module used.

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DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Solar Panel	STD. TS-17



Notes:

1. No other conducters shall be run in the same conduit with electrical service cable.
2. Local power utility will install service power utility cable from their power source to the junction box and make required splices to the service cable coiled in the junction box.
3. Chamfer all exposed concrete edges 1".

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DIRECTOR	DATE		
REVISION DATE:	APPROVED BY:	Pedestal Pole-Mounted Electrical Service	STD. TS-18

EXECUTIVE SUMMARY – REVISIONS

ENTIRE DOCUMENT

- 2010 – Formatting Changes.
- 11/2011 Removal of former County Executive's name and Director's name & minor formatting changes

SECTION I

SECTION II

- 11/2010 – Sherif Elkabbani/Nancy Solomon revised specifications relative to pavement and sub-base materials based upon input from M.J. Labban in coordination with Dawit Abraham
- 1/14/11 – Erv Beckert addressed 10/22/10 input from OPM's Dale Coppage. This addresses changes to the DPW&T Specifications and Standards for paving.
- 1/20/11 – Erv Beckert addressed 1/20/11 input from OPM's Dale Coppage

SECTION III

- 11/2010 – Sherif Elkabbani/Nancy Solomon revised details relative to sidewalk width based upon input from Dale Coppage in coordination with Dawit Abraham.

SECTION IV APPENDIX A

SECTION IV APPENDIX B

SECTION IV APPENDIX C

SECTION IV APPENDIX D – NTMP

SECTION IV APPENDIX E – UTILITY POLICY

- Fall, 2010 – Updates to Utility Policy to reflect current policies and practices

SECTION IV APPENDIX F – SCENIC & HISTORIC ROADS

SECTION IV APPENDIX G – TRAFFIC SIGNAL SPECS.

- 2/2011 – Erv Beckert/Sherif Elkabbani updated traffic signal specs. based upon input from Traffic Operations and Planning Division