

2014

CITY OF SUFFOLK  
PUBLIC FACILITIES MANUAL



VOLUME I  
SECOND EDITION



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# 1. Introduction

## 1.1. General

This Public Facilities Manual shall provide both public and private users with the requirements and guidelines for design and construction of projects within the City of Suffolk. The manual specifically addresses, traffic control, roadway construction, stormwater management, erosion and sediment control and other related development activities. This manual also serves as a reference to other policies, procedures, and guidelines related to development in the City of Suffolk.

## 1.2 Intent

The purpose of the Public Facilities Manual is to provide guidelines for acceptable design standards for development within the City of Suffolk. By providing this manual, the City strives to improve the design review process and provide flexible design parameters and good engineering practices. The user of this manual should use sound engineering along with proper construction techniques to ensure public safety and a quality product.

## 1.3 Amendments

Upon adoption of this manual, the standards and design criteria may be updated with interim amendments by the City of Suffolk. This manual has been designed to accommodate the revisions and inclusions of information as it is amended.

Any changes and amendments to this manual will be posted on the City of Suffolk's Department of Public Works website. It is the responsibility of the user to obtain updates and changes to the manual via the [City of Suffolk website](#).

## 1.4 Variances

The Director of Public Works or their designee may authorize and approve, in specific cases, such variances or waivers from strict application of the terms of this manual, as will not be contrary to serving the public interest, when a literal enforcement will result in unnecessary hardships, provided that the intent of this manual will be observed and substantial justice done.

## 1.5 Separability

Should any section or provision of this manual be declared by the courts to be unconstitutional or invalid, such decision will not affect the validity of the manual as a whole, other than the part so declared to be unconstitutional or invalid. Any errors contained within this manual will not relieve the user from the responsibility of adhering to and complying with all established City ordinances, policies and guidelines. All plans must be designed using sound engineering



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practices. This publication will not be used as the only reference for engineering practices. Other references should be sought out and used as applicable.

### 1.6 Glossary of Terms

The following is a glossary of frequently used terms:

**AASHTO** – American Association of State Highway and Transportation Officials

**ADT** – Average daily traffic count

**Agreement in lieu of a plan** – contract between the plan-approving authority and the owner that specifies conservation measures that must be implemented in the construction of a single-family residence; this contract may be executed by the plan-approving authority in lieu of a formal site plan

**Aquatic bench** – A 10- to 15-foot wide bench around the inside perimeter of a permanent pool that ranges in depth from zero to 18 inches. Vegetated with emergent plants, the bench augments pollutant removal, provides habitats, conceals water level fluctuations, and enhances safety.

**Aquifer** – A porous, water bearing geologic formation generally restricted to materials capable of yielding an appreciable supply of water.

**Best Management Practices (BMP)** – A practice, or combination of practices, that is determined by a state or designated area-wide planning agency to be the most effective, practical means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

**Buffer area** – An area of natural or established vegetation managed to protect other components of a Resource Protection Area and state waters from significant degradation due to land disturbances.

**Chesapeake Bay Preservation Area (CBPA)** – Any land designated by the City pursuant to Part III of the Chesapeake Bay Preservation Area Designation and Management Regulations and 62.1-44.15:74 of the Chesapeake Bay Preservation Act. A Chesapeake Bay Preservation Area shall consist of a resource protection area and a resource management area.

**Channel** – A natural or artificial low-lying area with definite bed and banks, which confines and conducts continuous or periodic flows or water.

**Check dam** - Small dam constructed in a channel for the purpose of decreasing the flow velocity, minimize channel scour, and promote deposition of sediment. Check dams are a component of grassed channels, wet swales, and dry swales BMPs.



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**Common plan of development or sale** – A contiguous area where separate and distinct construction activities may be taking place at different times and on different schedules (ex. Subdivision).

**Construction Record Drawings (CRD)** – Drawings or certifications of conditions as they were actually constructed in the field (as-built).

**Cul-de-sac** – A street with only one outlet and having an appropriate turnaround for a safe and convenient reverse traffic movement and more specifically the turning area.

**Culvert** – A conduit for conveying water through an embankment.

**Design speed** – A speed selected for purposes of design and correlation of those features of a street such as curvature, super elevation, and sight distance, upon which the safe operation of vehicles is dependent.

**Developer** – A person who owns or leases property being developed or such person's authorized agent.

**Development** – The construction, or substantial alteration, of residential, commercial, industrial, institutional, recreation, transportation, or utility facilities or structures.

**Easement** – A grant by a property owner to another, evidenced by a deed recorded with the clerk of the circuit court, of the right to use the described land for a specific purpose. The term "easement" also includes a grant of a right to use property of an owner for specific, limited use or purpose.

**Emergency Spillway** - A channel, usually an open channel constructed adjacent to an embankment, which conveys flows in excess of the design capacity of the principal spillway.

**Erosion** – The detachment and movement of soil or rock fragments, or the wearing away of the land surface by water, wind, ice, or gravity.

**Farm** – A tract of land used for the production of crops and may include the incidental raising of livestock.

**Filter bed** - The section of a constructed filtration device that houses the filtering media.

**Filter Strip** - An area of vegetation, usually adjacent to a developed area, constructed to remove sediment, organic matter, and other pollutants from runoff in the form of sheet flow.

**Final plat** – A survey map of record which indicates the boundaries for streets, blocks, lots and other property divisions.

**Floodplain** – An area adjoining a river, stream or water course which has been or hereafter is likely to be covered by floodwaters. Included in this category are coastal flood hazards which



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are defined as land areas adjacent to open coast, coastal sounds and their upstream estuaries which are prone to flooding from hurricanes and storm surges.

**Flood routing** – The procedure used to derive a downstream hydrograph from an upstream hydrograph, or tributary hydrographs, and from considerations of local inflow by solving the storage equation.

**Forebay** - Storage space, commonly referred to as a sediment forebay, located near a stormwater BMP inlet that serves to trap incoming coarse sediments before they accumulate in the main treatment area.

**Freeboard** – Vertical distance between the surface elevation of the design high water and the top of a bank, dam, levee, or diversion ridge.

**Grade** – The slope of a specific surface of interest such as a road, channel bed or bank, top of embankment, bottom of excavation, or natural ground.

**Grassed channel** - An earthen conveyance system which is broad and shallow with check dams and vegetated with erosion resistant and flood tolerant grasses, engineered to remove pollutants from stormwater runoff by filtration through grass and infiltration into the soil.

**Hydrograph** – A plot showing the rate of discharge, depth or velocity of flow versus time for a given point on a stream or drainage system.

**Hydrology** – The science of dealing with the properties, distribution, and circulation of water.

**Infiltration** – The seepage of groundwater or surface runoff into the ground, a surface, or a material through a void, a pore or an opening.

**Impervious surface** – A surface comprised of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, any concrete, asphalt, or compacted gravel surface.

**Industrial wastes** – Any waste generated by manufacturing or industrial process that is not a regulated hazardous waste.

**Interior property line** – Any property line that is not adjacent to a street.

**Intersection** – The juncture of two or more streets at which point there are three or more legs.

**Invert** – That part of a pipe or sewer below the springing line (generally the lowest point of the internal cross section).

**Landscape** – An area set aside from structures and parking which is developed with natural materials and decorative features, including paving materials, walls, fences and street furniture.



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**Landscaping** – The improvement of a lot or parcel with grass, ground covers, shrubs, trees, other vegetation or ornamental objects. Landscaping may include earth forms, flower beds, ornamental objects such as trellises or fountains and other natural features.

**Land development/ Land –disturbing activity** – a manmade change to the land surface that potentially changes its runoff characteristics including any clearing, grading, or excavation except that the term shall not include those exemptions specified in Section 35-5 (b) of the Code of the City of Suffolk

**Linear development project** - A land-disturbing activity that is linear in nature such as, but not limited to, (i) the construction of electric and telephone utility lines, and natural gas pipelines; (ii) construction of tracks, rights-of-way, bridges, communication facilities and other related structures of a railroad company; and (iii) highway construction projects; (iv) construction of stormwater channels and stream restoration activities; and (v) water and sewer lines. Private subdivision roads or streets shall not be considered linear development projects.

**Level of service** – A qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and passengers. For the purposes of these requirements, the applicable provisions of the Highway Capacity Manual shall serve as the basis for determining “levels of service.”

**Loading Space** – A space within the main building or on the premises providing for the standing, loading or unloading of trucks.

**Lot** – A portion or parcel of land shown a plat of a recorded subdivision legally admitted to record

**Low impact development (LID)** – a land planning and engineering design approach to managing stormwater runoff. LID emphasizes conservation and use of on-site natural features to protect water quality. This approach implements engineered small-scale hydrologic controls to replicate the pre-development hydrologic regime of watersheds through infiltrating, filtering, storing, evaporating, and detaining runoff close to its source.

**Non-point source** – Generalized discharge of waste which cannot be located as to a specific source into a water body.

**Nontidal wetlands** – Those wetlands other than tidal wetlands that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined by the U.S. Environmental Protection Agency, in 33 C.F.R. 328.3b, dated November 13, 1986.

**Non vegetated wetlands** – Unvegetated lands lying contiguous to mean low water and between mean low water and mean high water.

**Plat** – The schematic representation of the land divided or to be divided.



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**Prior Developed Lands** – Land that has been previously utilized for residential, commercial, industrial, institutional, recreation, transportation or utility facilities or structures, and that will have the impervious areas associated with those uses altered during a land-disturbing activity.

**Private streets** – Subdivision streets that have not been dedicated to public use or that require the permission or invitation of a resident or owner to use the street. Such streets are not intended to be included in the secondary system of state highways maintained by the City of Suffolk or the Virginia Department of Transportation.

**Resource management area (RMA)** – The component of the Chesapeake Bay Preservation Area that is not classified as the Resource Protection Area

**Resource protection area (RPA)** – The component of the Chesapeake Bay Preservation Area comprised of lands at or near the shoreline that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation to the quality of state and local waters.

**Right-of-way** – Land reserved, used or to be used for a highway, street, alley, walkway, drainage facility, or other public purpose. The right-of-way includes the total width of land dedicated or reserved for public or restricted travel, including appurtenant facilities located therein, such as pavement, ditches, curbing, gutters, bikeways, sidewalks, shoulders, and sufficient land for the maintenance thereof. The term “right-of-way” also includes the land, property, or interest therein, usually in a strip, acquired for or devoted to a public street designated to become part of the secondary system of state highways.

**Setback** – The required minimum horizontal distance from any street right-of-way line, lot line, or other designated line that establishes the area within which buildings or structures may be erected. The setback to the nearest part of the applicable building, structure, or sign, measured perpendicular to the designated line.

**Stormwater/ Stormwater Runoff** – precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.

**Stormwater management facility (SWMF)** - A device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.

**Stormwater management facilities maintenance agreement** – a legally recorded document that acts as a property deed restriction, and which provides for the long-term maintenance of stormwater management practices, and is further described in the Code of The City of Suffolk Virginia.

**Stormwater management plan** - A document containing material for describing how existing runoff characteristics will be affected by a land development project and methods for complying



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with the requirements of this manual, the Code of the City of Suffolk Virginia and the Virginia Stormwater Management Regulations.

**Subdivision** – The division of a parcel of land into three or more lots or parcels of less than five acres each for the purpose of transfer of ownership or building development, or, if a new street is involved in such division, any division of a parcel of land. The term includes resubdivision and, when appropriate to the context, shall relate to the process of subdividing or to the land subdivided and solely for the purpose of recordation of any single division of land into two lots or parcels, a plat of such division shall be submitted for approval.

**Undeveloped property** – Any parcel that has not been altered from its natural state in such a manner that the topography or soils on the property have been disturbed or altered to the extent that the rate of surface infiltration of stormwater has been affected.

**Virginia Stormwater Management Program (VSMP)** – means a program approved by the Soil and Water Conservation Board after September 13, 2011, and until June 30, 2013, or the State Water Control Board on and after June 30, 2013, that has been established by a VSMP authority to manage the quality and quantity of runoff resulting from land-disturbing activities and shall include such items as local ordinances, rules, permit requirements, annual standards and specifications, policies and guidelines, technical materials, and requirements for plan review, inspection, enforcement, where authorized in the Stormwater Management Act of the Code of Virginia and evaluation with the requirements of Stormwater Management Act and the associated Regulations.

**VSMP Regulations** – Title 9, Agency 25, Chapter 870 of the Virginia Administrative Code, or its successor provision as the same may be amended and renumbered from time to time.

**Water Quality Standards** – Provisions of state or federal law that consist of a designated use or uses for the waters of the Commonwealth and water quality criteria for such waters based on such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water, and serve the purposes of the State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia), the Act (§ 62.1-44.15:24 et seq. of the Code of Virginia), and the CWA (33 USC § 1251 et seq.).

**Water Quality Volume** – The volume equal to the first one-half inch of runoff multiplied by the impervious surface of the land development project.

**Watershed** – A defined land area drained by a river or stream, or system of connecting rivers or streams such that all surface water within the area flows through a single outlet.

**Water table** – The upper surface of the zone of saturation in groundwater where the hydrostatic pressure is equal to atmospheric pressure.

**Wetlands** – Areas inundated by surface or groundwater with a frequency sufficient to support, under normal circumstances, a prevalence of vegetated or aquatic life requiring saturated or seasonally saturated soil conditions for growth or reproduction.



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## 2. Construction Plan Requirements

### 2.1. General

The purpose of this chapter is to define the requirements for civil site plan review. These requirements include items to be submitted with all Site Plans, Engineering Plans, Right-of-Way Improvement Plans, and Erosion and Sediment Control Only Plans. All plans shall be submitted to the Department of Planning with the exception of Erosion and Sediment Control Only Plans which shall be submitted to the Department of Public Works Engineering as outlined in this chapter.

The intent of this chapter is to provide guidance specific to the Department of Public Works Engineering and Public Works Traffic Engineering Division's requirements and is not intended to supersede the requirements set forth in the [Unified Development Ordinance \(UDO\)](#).

\*For single family site plan requirements, refer to section [2.12](#) of this chapter.

### 2.2 Presubmittal Meetings

A presubmittal meeting is recommended prior to the submittal of an Engineering or Site Plan. While the Public Facilities Manual contains design criteria and policy; site specific situations require consultation with the City and may require interpretation by city personnel. Addressing these and other key issues prior to plan submittal will greatly enhance the review and approval process and may eliminate the need for major design changes and subsequent plan revisions necessary to meet City standards.

### 2.3 Cover Sheet

In addition to the requirements imposed by the [Unified Development Ordinance](#), the following items shall be incorporated onto the plan cover sheet:

#### 2.3.1 Stormwater Management Facility (SWMF) Recapitulation Sheet

SWMF Recapitulation Sheet as provided in [Appendix B](#) shall be provided for each BMP utilized for development. If the block cannot be provided on the cover sheet, a note referencing its location within the plans should be provided. The SWMF Recapitulation Sheet can also be found on the City's [website](#).

#### 2.3.2 Standard Notes

The notes as specified in [Appendix B](#) shall be provided.

#### 2.3.3 Site Statistical Information

The following site statistical information shall be provided:

- Project title



- Vicinity map
- BMP drainage area
- Site area
- Total disturbed area
- Pre-development impervious area
- Post-development impervious area
- Contributing watershed
- Tax map ID number
- Sheet index

#### **2.3.4 Contact Information**

The name, address, and phone number for the following parties shall be provided as applicable:

- Engineer of Record
- Surveyor
- Contractor
- Owner
- Public Works Traffic Engineering
- Public Works Engineering
- Public Works Road Maintenance
- Public Utilities Engineering
- Public Utilities Operations
- Power Company
- Gas Company
- Telephone Company
- Local Zoning Office
- Building Code Official
- Other relevant agencies

#### **2.4 Submittal Package**

The plan review package should include but is not limited to the following:

##### **2.4.1 Fees**

The following fees are only for activities related to public works; fees associated with other departments may be required prior to plan approval.

All Fees shall be made payable to The City of Suffolk Treasurers Office after an approved invoice is received from the appropriate departments.

##### **2.4.1.1 *Plan review***

Plan review fees are to be paid prior to plan submittal. The [Public Works Plan Review Fee](#) calculation sheet found in [Appendix B](#) shall be used to calculate applicable plan review fees.



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Invoices for Erosion and Sediment Control Only Plans are generated by Public Works Engineering, invoicing for all other plan review fees for the Department of Public Works will be generated by the Department of Planning.

**2.4.1.2 Stormwater Pro Rata Share Assessment**

Pro Rata Fees are to be paid prior to plan approval. [The Pro Rata Share Assessment form](#) found in [Appendix B](#) should be utilized to calculate this fee.

**2.4.1.3 Construction Inspection**

Engineering Estimate for Inspection Fees form ([Commercial Projects](#) or [Subdivision Plans](#)) found in [Appendix B](#) shall be provided. The original signed documents must be submitted, reviewed, and approved prior to plan approval. Inspection fees shall be paid to the City Treasurer and a receipt must be received by the Department of Public Works prior to issuance of a land disturbance permit.

**2.4.1.4 Stormwater Maintenance Agreement**

If a stormwater maintenance agreement is required, the fee associated with the review of the document shall be paid prior to plan approval. This Public Works Plan Review [Fee Calculation Sheet](#) found in [Appendix B](#) shall be used to calculate the applicable fee.

**2.4.1.5 Amendments**

If a site plan or engineering plan is amended, the first submission of that amendment will be charged a fee additional to what was previously paid for plan review. The [Public Works Plan Review Fee](#) worksheet found in [Appendix B](#) shall be used to calculate applicable fees. Minor changes may be handled with a field change and may not require a full plan amendment. A Field Change Request Form is located in [Appendix B](#). It shall be up to the Plan Reviewer to determine if a field change is appropriate or if a plan amendment will be required.

**2.4.1.6 Plats**

A plat review fee shall be paid prior to or at the time of submittal of all plats. The [Public Works Plan Review](#) worksheet found in [Appendix B](#) shall be utilized to calculate applicable fees.

**2.4.2 Supporting Documents**

Supporting documents shall include but not be limited to:

**2.4.2.1 Traffic Impact Studies**

See the requirements for Traffic Impact Studies in [Chapter 4](#) of this manual.

**2.4.2.2 Comprehensive Design Report**

A complete and bound drainage report shall be provided. This shall be signed and sealed by a Virginia Licensed Professional Engineer. The drainage report should incorporate a project narrative describing the site, the area of disturbance, a description of the existing drainage, the proposed drainage, stormwater management facility routing calculations, all storm sewer design calculations including spread calculation in standard VDOT (Virginia Department of Transportation) table format and in accordance with the VDOT Drainage Manual, if applicable. The report should also include an erosion and sediment control narrative, along with any



temporary sediment trap or sediment basin calculations prepared in accordance with the Virginia [Erosion and Sediment Control Handbook](#), Third Edition 1992. Also include an executive summary in the drainage report which outlines the maximum outflow conditions. This summary should also include the appropriate elements and calculations required for a stormwater management plan in accordance with the Virginia Stormwater Management Regulations and/or the most recent version of the Virginia Stormwater Management Handbook demonstrating that the design meets required reductions for both stormwater quality and quantity.

#### **2.4.2.3 Geotechnical Reports**

The geotechnical report shall be bound and complete to include, soil boring profiles, CBRs, 24 hour groundwater elevations, permeability tests, etc., as applicable. It must be appropriately signed and sealed by a professional engineering geologist and/or professional engineer registered in the Commonwealth of Virginia, certifying the validity of the report.

#### **2.4.2.4 Stormwater Management Facilities Maintenance Documents**

If stormwater management is to be addressed through the use of a SWMF, two bound copies of a Stormwater Management Facility (SWMF) Maintenance document must be provided. This document outlines maintenance frequency requirements and tasks associated with being able to ensure design longevity of the facility. The SWMF Maintenance document should be a stand-alone document that transfers to the Owner of the property for their understanding of the facility, design life, maintenance schedule requirements, pertinent maintenance notes, as well as a table in the appendices for use as the inspector's checklist. The document should include maintenance costs and frequencies.

A [sample maintenance document](#) is available in [Appendix B](#).

#### **2.4.2.5 Stormwater Management Facilities Maintenance Agreement**

If stormwater management is to be addressed through the use of a SWMF, a Stormwater Management Facilities Maintenance Agreement or a recorded Deed of Easement addressing maintenance responsibilities and providing access for inspections by City staff is required. If applicable, the [Stormwater Management Facilities Maintenance Agreement](#) found in [Appendix B](#) must be completed, executed, and recorded prior to plan approval. A [checklist](#) of submittal requirements for the maintenance agreement is also provided in [Appendix B](#). Proof of recordation must be provided and the original copy of the maintenance agreement returned prior to plan approval. Agreements should be submitted for review as early as possible in the review process to ensure timely recordation.

#### **2.4.2.6 Stormwater Pollution Prevention Plan (SWPPP)**

Refer to section [2.6](#) for more detailed information.

#### **2.4.2.7 Pavement Design Calculations**

The minimum required pavement design shall be made in accordance with the latest edition of the Virginia Department of Transportation (VDOT) Manual [Pavement Design Guide for Subdivision and Secondary Roads in Virginia](#), including but not limited to, Design CBR, design average daily traffic counts and soil support values. Please reference Chapter 4 Pavement Design for more details. Schedule of installation of final surface course should be considered in the final pavement design within proposed or existing right-of-way. If installation of final



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surface course is not anticipated within six months of completion of roadway construction, the pavement design calculation shall not include this layer in pavement thickness determinations. Pavement thickness of the base layer shall be adjusted accordingly.

### **2.4.2.8 Easement Agreements**

Copies of existing easement agreements and deeds shall be submitted with the plan. It is the developer's responsibility to determine the restrictions imposed by existing easements or right-of-way within his project limit and to ensure that the proposed improvements do not conflict with these restrictions. This requirement includes but is not limited to, existing easements or right-of-way for electrical power companies, railroads, gas companies, telephone companies, television cable companies, public water, sewer, and stormwater.

All agreements and deeds of easements must be submitted to the Department of Public Works for review and approval. The Department of Public Works reserves the right to verify the rights of ownership.

### **2.4.2.9 Master Plan Layout**

Any project considered part of an approved master planned development must provide a site map that demonstrates the location of the proposed project within the master planned development as well as all supporting documentation regarding the stormwater design for the master planned development. Any amendments to a previously approved stormwater design for the master plan must be submitted as a revision to the master plan for review. Any increase in phosphorus load or any increase in stormwater flow from any one discharge point will necessitate an amendment to the master plan.

### **2.4.3 Resubmittals**

Resubmittals of any plan or plat for review will require copies of the plan or plat as well as all supporting documents to be marked or highlighted to show all items that have been changed since the last review. Any re-phrasing of a plan will require a resubmittal.

### **2.4.4 Variances**

Variances from the requirements of this manual are generally unacceptable. In the interest of time and review consistency, requests for variances should be submitted to the Director of Public Works and approved prior to plan submittal. The request for a variance that may arise as a result of plan review should be incorporated as early as possible in the review process to ensure timely review.

### **2.4.5 Sureties**

Sureties shall only be accepted if they are submitted in compliance with an approved format. Examples of acceptable submissions can be found on the City website. Types of sureties accepted by the City of Suffolk are:

- Insurance Bond
- Irrevocable Letter of Credit
- Surety Check



The following Sureties may be required depending on the scope of work:

#### ***2.4.5.1 Erosion and Sediment Control Surety***

Prior to the issuance of a Land Disturbance Permit, the owner or his designee shall post an Erosion and Sediment Control Surety with the Division of Public Works Engineering. The surety shall be in a form acceptable by the City. An Erosion and Sediment Control Surety Estimate Form must be submitted for review. The Erosion and Sediment Control Surety Estimate Form is located in [Appendix B](#) of this document. The estimate must be approved by Public Works Engineering prior to submittal of the surety. The surety estimate shall be based on the approved plan.

#### ***2.4.5.2 Right-of-Way Surety***

Prior to issuance of a Right-of-Way Permit to allow work within the public right-of-way, evidence of the contractors' public liability insurance, and surety in an amount equivalent to the value of the work to be undertaken, but not less than \$10,000.00 in a form approved by the city shall be provided. The Right-of-Way Permit request form can be found in [Appendix B](#) of this document.

#### ***2.4.5.3 Performance Surety***

A Performance surety may be required prior to issuance of a land-disturbing permit in order to insure all improvements proposed within the public right-of-way are installed as shown on the approved plan. This surety should be executed in accordance with section 31-512 of the City of Suffolk [Unified Development Ordinance](#).

#### ***2.4.5.4 Acceptable Surety Types***

Sureties shall only be accepted if they are submitted in compliance with an approved format. Examples of acceptable submissions can be found on the City website. The only types of sureties accepted by the City of Suffolk are:

- Insurance Bond
- Irrevocable Letter of Credit
- Surety Check

### **2.5 Plan Sheet Requirements**

Plan sheet size shall be 24"x 36". In addition to the requirements imposed by the Unified Development Ordinance, the following items shall be incorporated onto the plan sheet:

#### **2.5.1 Soils Test**

Identification and locations of soil tests shall be provided on the plan view and respective boring log included in Geotechnical report.



### **2.5.2 Easements and Rights of Way**

All existing and proposed easement and right-of-way locations shall be shown within or immediately adjacent to the proposed development. Provide width and legal references for existing easements and rights of way.

### **2.5.3 Construction Detail References**

Construction details for those improvements that do not conform to Virginia Department of Transportation or the latest edition of Hampton Roads Regional Construction Standards must be shown.

### **2.5.4 Flood Elevations**

The 25-year and 100-year flood elevations for the site must be represented on the plan.

### **2.5.5 Phasing Boundaries**

Phase boundaries should be depicted on all plan sheets. Amending of phase boundaries shall require an official plan amendment.

### **2.5.6 Wetland Delineations**

Delineation of all wetland areas must be provided on the plans. Improvements within wetlands area may require Army Corps of Engineers, VMRC, DEQ and/or local Wetlands Board approval. It is the responsibility of the developer and his consultant engineer to determine if approval is required from these or any other regulatory agencies. Approval and all permits from the proper environmental authorities shall be obtained prior to plan approval.

### **2.5.7 Limits of Tidal Wetlands**

Jurisdictional boundaries shall be established by providing representation of an elevation 1.5 times the mean tide range on any plan adjacent to tidal waters.

### **2.5.8 Resource Protection Area (RPA)**

Location of the 100' RPA boundaries and 50' Seaward Buffer shall be represented on the plan.

### **2.5.9 Street and Pavements Requirements**

#### ***2.5.9.1 Street Section***

A typical street section in accordance with applicable pavement design and city standards in [Chapter 4](#) shall be shown on the plans.

#### ***2.5.9.2 Pavement Section***

A complete detail for each pavement section used on the project shall be provided, to include pavement materials as well as base and subgrade materials. Pavement patch details shall be provided in accordance with [Chapter 4](#) of this manual.



### **2.5.9.3 Radius and Stationing**

Radius and stationing for the centerline of the streets and for all radial curbs shall be shown on the plan.

### **2.5.9.4 Profiles**

Profile sheets shall be provided for all streets, showing drainage facilities and utilities proposed in the right-of-way.

### **2.5.9.5 Right-of-Way**

Plans shall show the existing right-of-way lines, width, and the centerline of the original right-of-way in order to determine the amount and location of right-of-way dedication and/or reservation requirements. The plan shall address the restoration of public right-of-way. Plans shall also show the appropriate dedication and/or reservation.

## **2.5.10 Drainage, Topographic, and Erosion and Sediment Control Requirements**

### **2.5.10.1 Survey Information**

A combination of topographical and physical survey information shall be provided for the project site. Survey information shall extend at a minimum of 25' beyond all property lines, easements and right-of-ways or as necessary to ensure that proposed improvements are compatible with the existing facilities. Include two coordinates per sheet of a site survey boundary point that can be tied to the City Geodetic Control Network (Virginia State Plane Coordinate System (HARN-South Zone.))

### **2.5.10.2 Septic System Requirements**

All septic systems are required to conform to the Virginia Department of Health Standards and shall be depicted on the plan set including but not limited to, drainage fields, drainage ditches, and easements.

### **2.5.10.3 Cross Sections**

Plans shall contain typical cross sections for all ditches, swales, channels and detention/retention areas.

### **2.5.10.4 Storm Water Management Facility Details**

A detail of the BMP containing dimensions and elevations shall be provided. The TOS, TOB, the water quality elevation, and the 2-, 10-, and 100- year storm design high water elevations shall be shown.

### **2.5.10.5 Street Lights Requirements**

Street lighting requirements can be found in Article 6 Section 31-604 of the City of Suffolk [Unified Development Ordinance](#).

### **2.5.10.6 Landscape Requirements**

Landscape Requirements can be found in Article 6 Section 31-603 of the City of Suffolk [Unified Development Ordinance](#).



## **2.6 Stormwater Pollution Prevention Plan**

A Stormwater Pollution Prevention Plan (SWPPP) is a document that is prepared by a licensed professional, in accordance with good engineering principles, that identifies potential sources of pollutants that may reasonably be expected to affect the quality of stormwater discharges from the construction site. In addition the document shall identify and require the implementation of control measures, and shall include, but not be limited to the inclusion of; or the incorporation by reference of, an approved erosion and sediment control plan, an approved stormwater management plan, a pollution prevention plan, and a plan to address, if applicable, specific waste load allocations when discharging to waters with an approved TMDL.

### **2.6.1 Requirements**

The SWPPP must address the following requirements, to the extent otherwise required by state law or regulations and any applicable requirements of a VSMP permit:

- Control stormwater volume and velocity within the site to minimize soil erosion;
- Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
- Minimize the amount of soil exposed during construction activity;
- Minimize the disturbance off steep slopes;
- Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;
- Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible;
- Minimize soil compaction and, unless infeasible, preserve topsoil;
- Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed within a period of time determined by Public Works Engineering. In arid, semi-arid, and drought stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative stabilization measures must be employed as specified by Public Works Engineering; and
- Utilize outlet structures that withdraw water from the surface, unless infeasible, when discharging from basins and impoundments.

### **2.6.2 Amendments**

The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to state waters and that has not been previously addressed in the SWPPP. The SWPPP must be maintained at a location



onsite accessible to the inspector. If an onsite location is unavailable, notice of the SWPPP's location must be posted near the main entrance at the construction site.

## **2.7 Erosion and Sediment Control Plan**

An erosion and sediment control plan consistent with the requirements of the current Virginia Erosion and Sediment Control Law and regulations must be approved prior to issuance of a land disturbance permit. Erosion and Sediment Control Plans shall be signed and sealed by a Virginia Licensed Professional Engineer.

### **2.7.1 General**

Erosion and sediment control measures are necessary to reduce the impacts of existing and future development on the City's numerous natural streams and watercourses. All land-disturbing activities in excess of 2,500 square feet within the Chesapeake Bay Preservation Area (CBPA) or 10,000 square feet outside of the CBPA must provide a plan containing adequate measures in accordance with the City Erosion and Sedimentation Control Ordinance and the Virginia Erosion and Sediment Control Regulations. Erosion and Sediment Control Plans shall be included in all site and engineering plan submittals.

### **2.7.2 Minimum Requirements**

All erosion and sediment control measures shall be designed, installed, and maintained in accordance with the [Virginia Erosion and Sediment Control Handbook](#). All plans shall be in accordance with the [Virginia Erosion and Sediment Control Regulations](#) and [The Code of The City of Suffolk](#). Where inspections reveal that the approved plan is inadequate to satisfy applicable regulations, the city may require a revision of the approved plan.

The following are minimum criteria for inclusion in an Erosion and Sediment Control Plan:

- A complete Erosion and Sediment Control Checklist as found in Section VII of the Virginia Erosion and Sediment Handbook and as provided in [Appendix B](#) of this manual;
- All required permits from federal, state and local agencies shall be obtained prior to the commencement of any land-disturbing activity;
- Existing pipes, topographical information, proposed improvements, major drainage area boundaries, drainage size in acres, water features, wetlands, erosion and sediment control devices, and other items as required by the Virginia Erosion and Sediment Control Handbook;
- An Erosion and Sediment control narrative on the plans and calculations shall be produced in accordance with the Virginia Erosion and Sediment Control Handbook. The narrative should include the following:
  - Project description;
  - Description of existing site conditions;
  - Description of off-site land-disturbing activity (if applicable);
  - Type of soil and characteristics of the soil (e.g. permeability, depth, erodibility, texture, soil structure, etc.);
  - Description of critical areas that could have significant erosion problems;



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- Erosion and Sediment Control Measures;
  - Calculations of pre- and post-conditions or stormwater runoff shall be provided.
  - Provide calculations for the outfall demonstrating that MS-19 criteria have been met at the point discharge. Briefly describe existing bank conditions at the outfall;
- City of Suffolk, Standard Erosion and Sediment Control Notes shall be provided. The [standard notes](#) are provided in [Appendix B](#) of this manual;
  - Erosion and sediment control measures during all phases of construction, from initial land disturbance to final site stabilization shall be addressed. A phased Erosion and Sediment Control Plan may be necessary if the site construction is particularly complex or to minimize required measures;
  - Limits of Clearing shall be shown. Area of disturbance shall be on the cover sheet as part of the sites statistical data;
  - Construction staging and stock pile area(s) shall be shown;
  - A site specific erosion and sediment control sequence of construction should be represented on the plans and in the calculations;
  - A legend of erosion and sediment control symbols in accordance with VESCH shall be shown;
  - Required details for all erosion and sediment control measures;
  - For temporary sediment basins provide one (1) foot of freeboard for basins with an emergence spillway and two (2) feet of freeboard for basins without an emergency spillway. Ensure a minimum of six (6) hours drawdown of the dry storage volume;
  - Disturbed Area in acres shall be provided on the coversheet;
  - Limits of critical areas including wetlands, Resource Protection Area (RPA), limits of tidal wetlands, and proposed buffer delineations shall be shown.

### **2.8 Stormwater Management Plan**

A stormwater management plan consistent with the requirements of the Virginia Stormwater Management [Act](#) and [Regulations](#) must be approved prior to issuance of a land disturbance permit. A stormwater management plan for a land-disturbing activity shall apply the stormwater management technical criteria to the entire land-disturbing activity. Individual lots in new residential, commercial, or industrial developments shall not be considered separate land-disturbing activities.

A stormwater management plan shall consider all sources of surface runoff and all sources of subsurface and groundwater flows converted to surface runoff.

#### **2.8.1 Minimum Requirements**

A complete stormwater management plan shall include the following elements:

- Information on the type of and location of stormwater discharges, information on the features to which stormwater is being discharged including surface waters, and predevelopment and post development drainage areas;



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- Contact information including the name, address, and telephone number of the owner and the tax reference number and parcel number of the property or properties affected;
- A general description of the proposed stormwater management facilities and the mechanism through which the facilities will be operated and maintained after construction is complete;
- Information on the proposed stormwater management facilities, including the type of facilities, location, including geographic coordinates, acres treated, and the surface waters or MS4 into which the facility will discharge
- Hydrologic and hydraulic computations, including runoff characteristics;
- Documentation and calculations verifying compliance with the water quality and quantity requirements of this document and of the Virginia Stormwater Management Regulations
- A map or maps of the site that depicts the topography of the site and includes:
  - All contributing drainage areas;
  - Existing streams, ponds, culverts, ditches, wetlands, other water bodies, and floodplains;
  - Soil types, forest cover, wetlands, and other vegetative areas;
  - Current land use including existing structures, roads, and locations of known utilities and easements;
  - Sufficient information on adjoining parcels to assess the impacts of stormwater from the site on these parcels;
  - The limits of clearing and grading, and the proposed drainage patterns on the site;
  - Proposed buildings, roads, parking areas, utilities, and stormwater management facilities;
  - Proposed land use with tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, and easements;
- Elements of the stormwater management plans that include activities regulated under Chapter 4 of Title 54.1 shall be appropriately sealed and signed by a professional registered in the Commonwealth of Virginia pursuant to [Article 1 \(§54.1-400 et seq.\) of Chapter 4 of Title 54.1](#).

## **2.9 Pollution Prevention Plan**

A plan for implementing pollution prevention measures during construction activities shall be developed, implemented and updated as necessary. The pollution prevention plan shall detail the design, installation, implementation and maintenance of effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;



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- Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater; and
- Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.
- Discharges from dewatering activities are prohibited unless managed by appropriate controls

### **2.9.1 Minimum Requirements**

The Pollution Prevention Plan shall include:

- BMPs to prohibit discharge of wastewater from washout of concrete, unless managed by appropriate control;
- BMPs to prohibit discharge of wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
- BMPs to prohibit discharges of fuels, oils or other pollutants used in vehicle/equipment operation/ maintenance;
- BMPs to prohibit discharges of soaps or solvents used in vehicle/equipment washing;

### **2.10 Waste Load Allocations**

If a specific waste load allocation (WLA) for a pollutant has been established in TMDL waters and is assigned to stormwater discharges from a construction activity, additional control measures must be identified and included in the project design and implemented during construction so that discharges are consistent with the assumptions and requirements of the WLA in a State Water Control Board TMDL

### **2.11 Common Plan of Development**

A "larger common plan of development or sale" is a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan. For example, if a developer buys a 20-acre lot and builds roads, installs pipes, and runs electricity with the intention of constructing homes or other structures sometime in the future, this would be considered a larger common plan of development or sale. If the land is parceled off or sold, and construction occurs on plots that are less than one acre by separate, independent builders, this activity still would be subject to stormwater permitting requirements if the smaller plots were included on the original site plan. The larger common plan of development or sale also applies to other types of land development such as industrial parks or well fields.



## **2.12 Single Family Site Plan Requirements**

This section is to define submittal requirements for single family development to be constructed either:

In accordance with a previously approved subdivision plan; specifically, served by a stormwater management facility addressing water quality and quantity, and where the proposed lot elevations are in compliance with the City of Suffolk lot grading policy; or

In locations without a prior approved subdivision plan, grades, or a stormwater management facility. Compliance with the Erosion and Sediment Control, Stormwater Management, and lot grading requirements will be verified by Public Works Engineering.

Five working days are generally required for the review of Single Family Site Plans. If it is determined that the site plan is incomplete or there is missing information, additional review time will be required. If an individual SWMF is required, additional review time may be necessary. It can take two weeks or more for the required Stormwater Management Facilities Maintenance Agreement to be completed, executed, and recorded.

Single family homes do not require a state VSMP general permit registration statement unless they disturb an area greater than five (5) acres.

### **2.12.1 Submittal Package**

#### ***2.12.1.1 Application***

A copy of the [application package](#) is distributed by the Department of Planning and Community Development and also included in [Appendix B](#).

#### ***2.12.1.2 Agreement in Lieu of an Erosion and Sediment Control Plan***

An approved erosion and sediment control plan is required for all land-disturbing activities of 2,500 square feet or more in the Chesapeake Bay Preservation Area (CBPA) or 10,000 square feet or more outside of the CBPA; where the land-disturbing activity results from the construction of a single family residence, an agreement in lieu of a plan may be substituted for an approved erosion and sediment control plan. Please note; this requires the signature of a current Responsible Land Disturber, Licensed Surveyor, or Professional Engineer. The agreement is located in [Appendix B](#) of this manual and in the [application package](#).

#### ***2.12.1.3 Single Family Stormwater Pollution Prevention Plan***

A Stormwater Pollution Prevention Plan (SWPPP) is required for land-disturbing activities associated with the construction of a single family residence separately built and; part of a larger common plan of development or greater than one acre and not part of a larger common plan of development. A Single Family SWPPP template is located in Appendix B.

#### ***2.12.1.4 Agreement in Lieu of a Stormwater Management Plan***

An Agreement in Lieu of a Stormwater Management Plan is required for all land-disturbing activities associated with the construction of a single family residence separately built and; part of a larger common plan of development or greater than one acre and not part of a larger



common plan of development. The agreement can be found in [Appendix B](#) of this manual and in the [application package](#).

#### ***2.12.1.5 Fee Payment***

Prior to plan approval a plan review fee shall be paid to the City Treasurer and a receipt must be received by the Department of Planning and Community Development. The current fee is indicated on the [Lot Grading Plan Application](#) and is in accordance with the schedule of fees adopted with the annual operating budget.

#### ***2.12.1.6 Lot Grading Plan***

A lot grading plan shall be prepared in accordance with lot grading policy as stated in section [5.4.3](#) of this manual. Include one (1) copy of the formal lot grading plan with the application. The size of the plan shall be no larger than legal size paper, 8.5" x 14". **Plans shall be plotted to a standard engineering scale.**

### **2.13 Right-of-Way Linear Development Projects**

A right-of-way permit is required for all linear development projects conducted by franchise utility companies (i.e. power, gas, telecomm, etc.) in the City right-of-way. Detailed plans providing location of improvements, site restoration details, and traffic control details must be submitted to the Department of Public Works for review and approval prior to issuance of a right-of-way permit.

#### **2.13.1 Plan Requirements**

Plans submitted for review must include the following:

- Profiles showing the location and size of all proposed improvements in the right-of-way with all existing pipes and structures clearly delineated
- The location and size of all existing storm sewer pipes
- The location and size of all existing water, sewer, gas, power, and any other buried infrastructure
- Details for the restoration of any disturbed right-of-way, sidewalk, or street
- Details for the trenching, open cut, jack, bore, or directional drilling of any proposed improvements
- Mill and overlay information and details as required in [Section 4.3.2.1](#) of this manual
- Traffic control and lane closure information



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## 3. Permits

### 3.1 Applicability

Any project disturbing greater than 2,500 sqft inside the CBPA and 10,000 sqft outside the CBPA must obtain a Land Disturbance Permit. Any land disturbance project one acre or greater must obtain a VSMP Construction General Permit. Any work performed within the public right-of-way requires a Right-of-Way Permit.

Note\* Building permits are issued by the Department of Planning and Community Development.

### 3.2 Land Disturbance Permit

Prior to the issuance of a permit the following requirements shall be addressed:

#### 3.2.1 Completed Application

A completed [application](#) shall be submitted for review and approval.

#### 3.2.2 Approved Stormwater and/or Erosion and Sediment Control Plan

An approved plan shall meet all the requirements as set forth in this manual, the City of Suffolk Unified Development Ordinance, Virginia Erosion and Sediment Control Handbook (latest edition), and the Virginia Stormwater Management Handbook (latest edition).

#### 3.2.3 Responsible Land Disturber

A [Responsible Land Disturber \(RLD\) information sheet](#) located in [Appendix B](#) shall be completed. Should there be a desire to change the RLD designation following that time frame, then a new RLD information sheet shall be submitted to and approved by the City of Suffolk, Department of Public Works Engineering.

A Responsible Land Disturber is required to meet one of the following criteria:

- Responsible Land Disturber Certification issued by Virginia Department of Environmental Quality (DEQ);
- Erosion and Sediment Control Certification for Program Administrator, Combined Administrator, Plan Reviewer or Inspector issued by Virginia Department of Environmental Quality (DEQ)
- Virginia Licensed Professional Engineer

#### 3.2.4 Required Fees and Sureties

Fees and surety information is included in [Section 2.4.1](#) and [Section 2.4.5](#) of this manual respectively. These fees only apply for activities associated with public works, other fees and sureties may be necessary.



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### **3.2.5 SWPPP (if applicable)**

The SWPPP must meet all the requirements as set forth in [Chapter 2](#) of this manual and [9VAC25-870-54](#) of the VSMP regulations.

### **3.3 General Permit for Discharges of Stormwater from Construction Activities**

The General Permit for Discharges of Stormwater from Construction Activities is a Virginia state permit that is administered by localities that have an approved VSMP. The following requirements shall be addressed before a permit can be obtained:

#### **3.3.1 Registration Statement**

The operator must submit a complete and accurate registration statement on the official Department of Environmental Quality form to the City of Suffolk Department of Public Works in order to apply for VSMP permit coverage. The registration statement must be signed by the operator in accordance with [9VAC25-870-370](#). [The 2014 GCP Registration Statement](#) is located in [Appendix B](#).

#### **3.3.2 Approved Stormwater and/or Erosion and Sediment Control Plan**

An approved plan shall meet all the requirements as set forth in this manual, the [City of Suffolk Unified Development Ordinance](#), [Virginia Erosion and Sediment Control Handbook](#) (latest edition), and the [Virginia Stormwater Management Handbook](#) (latest edition).

#### **3.3.3 SWPPP**

The SWPPP must meet all the requirements as set forth in [Chapter 2](#) of this manual and [9VAC25-870-54](#) of the VSMP regulations.

#### **3.3.4 Required Fees**

Fees for any operator seeking coverage under the general permit are assessed by area of disturbance. A list of fees can be found in the [State Regulations](#).

### **3.4 Right-of-Way Permit**

Right-of-Way Permits are required for all work within the right-of-way. The following requirements must be addressed before issuance of a permit. For detailed information concerning work in and restoration of public right-of-way, please refer to [Appendix A](#) of this manual.

#### **3.4.1 Completed application**

A completed [application](#) shall be submitted to the Department of Public Works Engineering for review and approval.



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### **3.4.2 Approved Plan**

An approved plan shall meet all the requirements as set forth in this manual, the [City of Suffolk Unified Development Ordinance](#), [Virginia Erosion and Sediment Control Handbook](#) (latest edition), and the [Virginia Stormwater Management Handbook](#) (latest edition).

### **3.4.3 Traffic Control Plan (if applicable)**

Any work that will obstruct traffic flow or require flagging operations may need to submit a traffic control plan for review and approval.

### **3.5 Hauling or Moving Permit**

Hauling permits are issued to authorize travel on City roadways with an oversized load. Permits are issued by Public Works Engineering. Permits are always needed for loads which are:

- wider than eight and half (8.5) feet
- higher than 13' 6"
- more than 80,000 lbs. in weight
- longer than 60 feet including load

### **3.6 Temporary Logging Entrances**

Temporary logging entrance permits are always required in the City of Suffolk and are issued by Public Works Engineering. VDOT blanket permits are not accepted by the City of Suffolk.



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## 4. Traffic and Roadway Design

### 4.1. General

This chapter will detail the requirements for traffic impact studies, signal design, signing, pavement markings, access management, traffic calming, and construction procedures.

### 4.2 Traffic Engineering

The following are general guidelines that should be followed unless otherwise approved by the Director of Public Works.

All traffic control devices and their use shall conform to the current versions of the following manuals (including all changes and addenda to these documents):

- [United States Department of Transportation Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [Virginia Department of Transportation \(VDOT\) Virginia Supplement to the MUTCD](#)
- [VDOT Work Area Protection Manual](#)
- [VDOT Road & Bridge Standards](#)
- [VDOT Road & Bridge Specifications](#)
- [Institute of Transportation Engineers \(ITE\) – Equipment Standard Interim Purchase Specifications – Vehicle Traffic Signal Control Heads, Part 2: Light Emitting Diode \(LED\) Vehicle Traffic Signal Modules](#)
- [International Municipal Signal Association \(IMSA\) – Official Wire & Cable Specifications](#)
- [VDOT Minimum Standards of Entrance to State Highways](#)
- [VDOT Subdivision Street Requirements](#)
- [VDOT Road Design Manual including Appendix B, Subdivision Street Design Guide](#)
- [AASHTO. “A Policy on Geometric Design of Highways and Streets”](#)

#### 4.2.1 **Traffic Impact Studies**

The purpose of the Traffic Impact Study is to identify the impact on capacity, level of service (LOS), and safety that are likely to be created by a proposed development. These traffic studies should identify what improvements are needed to:

1. Ensure safe ingress and egress from a site;
2. Maintain adequate street capacity on public streets serving the development;
3. Ensure safe and reasonable traffic operating conditions on streets and at intersections in the vicinity of a proposed development;
4. Avoid creation of or mitigate existing hazardous traffic conditions;
5. Minimize the impact of non-residential traffic on residential neighborhood streets in the community; and
6. Protect the substantial public investment in the existing street system.



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### 4.2.1.1 *Applicability*

Traffic Impact Studies shall be required for any Comprehensive Plan Amendment, rezoning, request for preliminary subdivision plat, site plan, Conditional Use Permit, and also to any other Development permit or Development order subject to Section 31-601 of the UDO.

### 4.2.1.2 *Types of Studies*

Traffic Impact Studies may be required at several stages in the development process. No application for development will be accepted without an appropriate traffic study unless a waiver has been obtained from the Director of Planning in consultation with the Director of Public Works. The types of traffic studies required are:

- Traffic Impact Analysis – will be required for Rezoning & Land Use Plan amendment requests. The purpose of these studies will be to evaluate whether adequate transportation capacity exists or will be available within a reasonable time period to safely and conveniently accommodate proposed uses permitted under the requested land use or zoning classification. The impact area and level of service requirements for this type of study are specified in the UDO in Table 601-1. It is suggested that the engineer confer with the City Traffic Engineer prior to beginning this type of study to address the limits of the study area, and any special conditions that may be present. The submission requirements are listed in Section 4.2.1.5.
- Traffic Impact Report – will be required for Conditional Uses, Land Subdivisions, large site plans, Final Plats and certain permitted uses exceeding specific trip generation thresholds. The purpose of a Traffic Impact Report will be to:
  1. Evaluate traffic operations and impacts at site access points under projected traffic loads;
  2. Evaluate the impact of site-generated traffic on affected intersections in the vicinity of the development;
  3. Evaluate the impact of site-generated traffic on the quality of flow on public streets located in the vicinity of the site;
  4. Evaluate the impact of the proposed development on residential streets in the vicinity of the site;
  5. Ensure that site access and other improvements needed to mitigate the traffic impact of the development meet design standards referenced in this manual;
  6. Ensure that adequate facilities for pedestrians, transit users, and bicyclists have been provided; and
  7. Identify transportation infrastructure needs and related costs created by the development and cost sharing on needed improvements. The Traffic Impact Report is similar to a Traffic Impact Analysis except that the impact area is adjacent to the project. The submission requirements of Section 4.2.1.5 are applicable. The limits of the study area should be addressed with the City Traffic Engineer prior to submission.
- All subdivision and site plan applications which do not require a Traffic Impact Report will be required to complete a Traffic Design Analysis. The purpose of this report will be to:
  1. Ensure that the proposed street layout is consistent with current design criteria referenced in this manual;



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2. Ensure the proper design and spacing of site access points and identify where limitations on access should be established;
3. Ensure that potential safety concerns have been properly evaluated and addressed;
4. Ensure that internal circulation patterns will not interfere with traffic flow on existing public streets;
5. Ensure that appropriate facilities for pedestrians, transit users, and bicyclists have been provided in plans for the development; and
6. Identify the transportation infrastructure needs and related costs created by the development and cost sharing on needed improvements. This analysis will require that the requirements of Section 4.2.1.5 be addressed only for the specific site of development. This is the most limited scope of study required.

### **4.2.1.3 Waiver**

The requirements of this section for a Traffic Impact Study may be waived by the Director of Planning in consultation with the Director of Public Works when it is determined that such a report is not necessary to determine needed road improvements or that no unsafe or hazardous conditions will be created by the development as proposed.

### **4.2.1.4 Preparation**

The applicant shall furnish the full rationale, from an engineer licensed by the Commonwealth of Virginia to perform such studies, to support the recommendations of the analysis. The submission shall include pertinent traffic data and computations affecting the design proposal for the subdivision streets involved. The Traffic Impact Analysis Report shall be sealed and signed by a Virginia Registered Professional Engineer.

### **4.2.1.5 Contents**

The Traffic Impact Analysis shall include all information required by the following guidelines:

1. Preface – Responsible Impact Study Certificate
2. Introduction
  - A. Site location and study area
  - B. Existing and proposed site uses
  - C. Existing and proposed nearby uses
  - D. Existing roadways and programmed improvements
3. Analysis of Existing Conditions
  - A. Daily and peak hour(s) traffic volumes
  - B. Capacity analyses at critical points
  - C. Levels of service at critical points
4. Analysis of Future Conditions without Development
  - A. Daily and peak hour(s) traffic volumes
  - B. Capacity analyses at critical points – the analysis can include any programmed improvements that will be in place by the future year
  - C. Levels of service at critical points
5. Trip Generation



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6. Site Traffic Distribution and Traffic Assignments
7. Analysis of Future Conditions with Development
  - A. Future daily and peak hour(s) traffic volumes
  - B. Capacity analyses at critical points – the analysis should include those additional improvements that will be proffered by the developer
  - C. Levels of service at critical points
8. Recommended Improvements
  - A. Proposed improvements
  - B. Capacity analyses at critical points (with improvements)
  - C. Levels of service at critical points (with improvements)
9. Conclusions



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A brief narrative for each requirement of the Traffic Impact Analysis follows.

1. Preface:

Responsible Traffic Impact Study Certificate

The person identified below has had responsible charge of the attached study; its contents and the methodologies employed in its creation. This person is a Licensed Professional Engineer in the Commonwealth of Virginia.

\_\_\_\_\_ Virginia Licensed Professional Engineer

Name (Signature)\_\_\_\_\_ Date\_\_\_\_\_

Name (Print)\_\_\_\_\_

License Number\_\_\_\_\_

Company\_\_\_\_\_

Address\_\_\_\_\_

\_\_\_\_\_

Telephone #\_\_\_\_\_ Fax\_\_\_\_\_

Email\_\_\_\_\_

This report has been created utilizing nationally accepted methods, City of Suffolk and Virginia Department of Transportation Standards and Requirements, and/or city approved alternate methodologies, any deviations from approved methodologies are summarized below.

Deviations:

For City Use Only

This study has been reviewed and approved in its current form.

\_\_\_\_\_  
City Traffic Engineer

\_\_\_\_\_  
Date



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### 2. Introduction

- A. Site location and study area boundaries – include a map, Example 1, displaying the site and a brief description of the land parcel, the general terrain features, and the location within the jurisdiction and region. In addition, identify the roadways that provide access to the site and are included in the study area. The exact limits of the study area should be based on the area impacted by the site related traffic. If the project is being completed in phases, the report should describe the total project and the phases of development.
- B. Existing and proposed site uses – the report should identify the existing and proposed uses of the site in terms of the various zoning categories. In addition, it should identify the number and type of residential units, and type and amount of commercial, industrial or office uses in accordance with ITE trip generation categories. For a rezoning study, a description of potential uses to be evaluated shall be provided.
- C. Existing and proposed nearby uses – a complete description of the existing land uses in the vicinity of the site, as well as their current zoning should be provided. This section should also describe the proposed developments of adjacent land using the comprehensive land use plan. This is especially important where large tracts of under-developed land are in the vicinity of the site and are within or influence the traffic growth in the study area. This information should be displayed as shown in Example 2.
- D. Existing roadways and programmed improvements – this section should describe and provide diagrams of the existing roadways and intersections (including road geometrics, lane usage and traffic control) within the study area, as well as improvements contemplated by the City and State. Example 3 is a typical display for the existing road network. This description should include the type of improvement project, its extent, the implementation schedule and the agency or funding source responsible. These proposed improvements should not be included in the analysis unless they are programmed for implementation within three (3) years or the developer can ensure their construction through proffers.

### 3. Analysis of Existing Conditions

- A. Daily and peak hour(s) traffic volumes – the report must present diagrams depicting daily and peak hour traffic volumes for roadways within the study area. Typical displays for daily and peak hour traffic are shown in Examples 4 & 5. Turning movement and mainline volumes for the peak hour conditions (a.m. and p.m.) should be presented. In special cases, the site-generated peak hour should also be utilized. Also, the report should present the source and/or method of computation for all traffic volumes. The a.m. and p.m. peak hours will normally fall within the 7:00-9:00 a.m. and 4:00-6:00 p.m. peak periods. However, on certain developments, the a.m. and p.m. peak hour may fall outside these timeframes.



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- B. Capacity analyses at critical points – utilizing techniques as described in the [Highway Capacity Manual](#) (latest edition), assess the relative balance between roadway volumes and capacity. Analyze existing conditions (roadway geometrics and traffic signal control) for all peak hours. The results should be displayed as shown in Example 6 with levels of service provided for each lane group.

For capacity analysis and level of service determinations, the most recent Federal Highway Administration (FHWA-HCS) software package should be used for the different types of analysis required (e.g., signalized intersections, freeways, ramps). Other software, approved by the City, may also be used. All data used in the calculations must be provided along with the results of the capacity analysis so that the City may check the results with its own analysis. Any assumptions made that deviate from the programmed default table must be documented and an explanation provided as to why there was a change (i.e., lane utilization factor). Where a great number of intersections or road sections are analyzed, the engineer may perform the analysis with network analysis programs.

- C. Level of service at critical points – based on the results obtained in the previous section, determine and present levels of service (A – F). Include a description of typical operating conditions at each level of service.

#### 4. Analysis of Future Conditions without Development

This chapter describes the anticipated traffic volumes in the future and the ability of the roadway network to accommodate this traffic without the proposed site development. The future year(s) for which projections are made will be specified by the City and will be determined by the timing of the proposed development. In general, the analysis must include the “build out” year, when the development is expected to be completed. It should also include an analysis for each year in which significant phases are to be completed.

- A. Future daily and peak hour(s) traffic volumes – there should be a clear indication of the method and assumptions used to forecast future traffic volumes so that the City can approve the projected volumes. For short-term forecasts (3-5 years), the nearby zoning and traffic growth should be considered. In long-term (10-15 years) forecasts, the long range transportation plan forecasts may be used to determine the base forecast. See Examples 7 & 8 for typical displays for future average daily traffic and future peak hour traffic without development.
- B. Capacity at critical locations – the analysis must determine the ability of existing roadway systems to accommodate future traffic (without site development) for all peak hours based on the [Highway Capacity Manual](#) (latest edition). If roadway improvements or modifications are committed for implementation, present the capacity analysis for these conditions so that the City can replicate these calculations on FHWA-HCS.



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- C. Levels of service at critical points – based on the results obtained in the previous section, determine the levels of service (A – F). See Example 9 for the typical display of levels of service for intersection lane groups.

5. Trip Generation

The report must clearly present the traffic generated by the site for daily and three (3) peak hour conditions. A table showing the land use amount, land use code, the trip rate or trip equation and the number of trips generated by the site must be provided as shown in Table 4-1. Trip generation rates to be used should be those presented in the Institute of Transportation Engineers’ [Trip Generation](#) (latest edition). NOTE: Any deviation from these rates must be justified and documented to the satisfaction of the City.

Table 4.1  
Sample Site Trip Generation  
Mixed Use Development

Land Use & ITE Code *	Size	Peak Hour Trip Generation			
		AM		PM	
		In	Out	In	Out
Shopping Center – 820	600,000 GSF	300	170	1020	1020
Office Park – 750	25 acres	570	70	80	620
<b>TOTALS</b>		<b>870</b>	<b>240</b>	<b>1100</b>	<b>1640</b>

\* ITE Trip Generation.

6. Site Traffic Distribution and Assignment

This chapter describes the direction of approach for site-generated traffic and shows the traffic assignment to the road network serving the site for the appropriate time periods. The basic method and assumptions used must be clearly stated so that the City can review and approve the results. The directional distribution should be based on anticipated employment, commercial and residential sites that will serve as the market or “draw” for the proposed development. In urban areas, the trip distributions for traffic zones in the development area may be used. Example 10 shows the accepted method for displaying the directional distribution of site generated traffic.

The utilization of study area roadways by site-generated traffic must also be shown as displayed in Example 11. The traffic for each land use should be assigned to the adjacent roadways based on the applicable trip distributions from Example 10. These layers of traffic assignments Examples 11A and 11B are combined to form the total traffic distribution for the site.

The site-generated traffic volumes are then combined with the anticipated traffic volumes from Section 3 to illustrate, as shown in Example 12, the mainline traffic and turning movement volumes for future conditions with the site development. The report must clearly



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state the basic methods and assumptions used. NOTE: the City's pass-by trip policy may be applied to the trips generated by certain land uses.

### 7. Analysis of Future Conditions with Development

- A. Future daily and peak hour(s) traffic volumes – display the mainline and turning movement volumes (as shown in Example 12) for the highway network in the study area, as well as for the driveways and internal circulation roadways for all time periods.
- B. Capacity analysis at critical points – perform a capacity analysis for all peak hours for future conditions with the site developed as proposed using the [Highway Capacity Manual](#) (latest edition).
- C. Levels of service at critical points – as a result of the capacity analysis, compute and describe the level of service on the study area roadway system.

### 8. Recommended Improvements

If the analysis indicates that unsatisfactory levels of service will occur on study area roadways, improvements must be recommended to remedy deficiencies. The recommended improvements should be in addition to any programmed projects that were described in Section 1 and reflected in the analysis contained in Sections 2 and 3.

- A. Proposed improvements – the report must clearly describe and diagram the location, nature and extent of proposed improvements to ensure sufficient roadway capacity and safe access to the site. Accompanying this list of improvements should be preliminary cost estimates and timing.
- B. Capacity analysis at critical points – describe the anticipated results of making these improvements.
- C. Levels of service at critical points – as a result of the revised capacity analyses from the previous section, present the levels of service for the roadway system with improvements.

### 9. Conclusions

The last chapter of the report should be a clear, concise description of the study findings. This concluding chapter should serve as an executive summary.



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TABLE 4.1A  
List of Examples

Examples	Title	Description
Exp. 1	Site Location	A vicinity map showing the site & its surroundings
Exp. 2	Existing & Planned Development	A land use map showing existing & expected land uses that may affect the site
Exp. 3	Existing Trans-Network	Existing roads that serve the site, including all travel modes, traffic control devices & moving lanes
Exp. 4	Existing Daily Traffic	A map showing the existing daily traffic on all roads shown in Figure 3 (may be combined with Fig.3)
Exp. 5	Existing Peak Hour	Current AM & PM peak hour traffic turning movements at all critical access points or intersections (NOTE: separate schematics for AM & PM)
Exp. 6	Existing Levels of Service	A map showing the existing levels of service for each lane group (through-left-right) on each approach at all existing intersection & on roadway sections that serve the proposed development site; this analysis is based on the traffic volumes displayed in Figure 5 (AM & PM)
Exp. 7	Future Average Daily Traffic (w/out development)	This map displays the future average daily volumes for these traffic volumes (also called “background traffic” by many consultants) represent the future traffic without the proposed development
Exp. 8	Future Peak Hour	This is also referred to as (non-site traffic) “background traffic”; it is all of the traffic growth on the adjacent road network without the site; it should be developed for AM & PM peak hours for the “build out” year, as well as development phases
Exp. 9	Future Peak Hour Levels (w/out development)	This figure displays the levels of service for each lane group (through-left-right) on all approaches at all intersections (AM & PM) for the future year in which the development is expected to “built out”; the analysis should include any programmed improvements
Exp. 10	Directional Distribution of Site Traffic	Percent of traffic to & from the site by land use (AM & PM)



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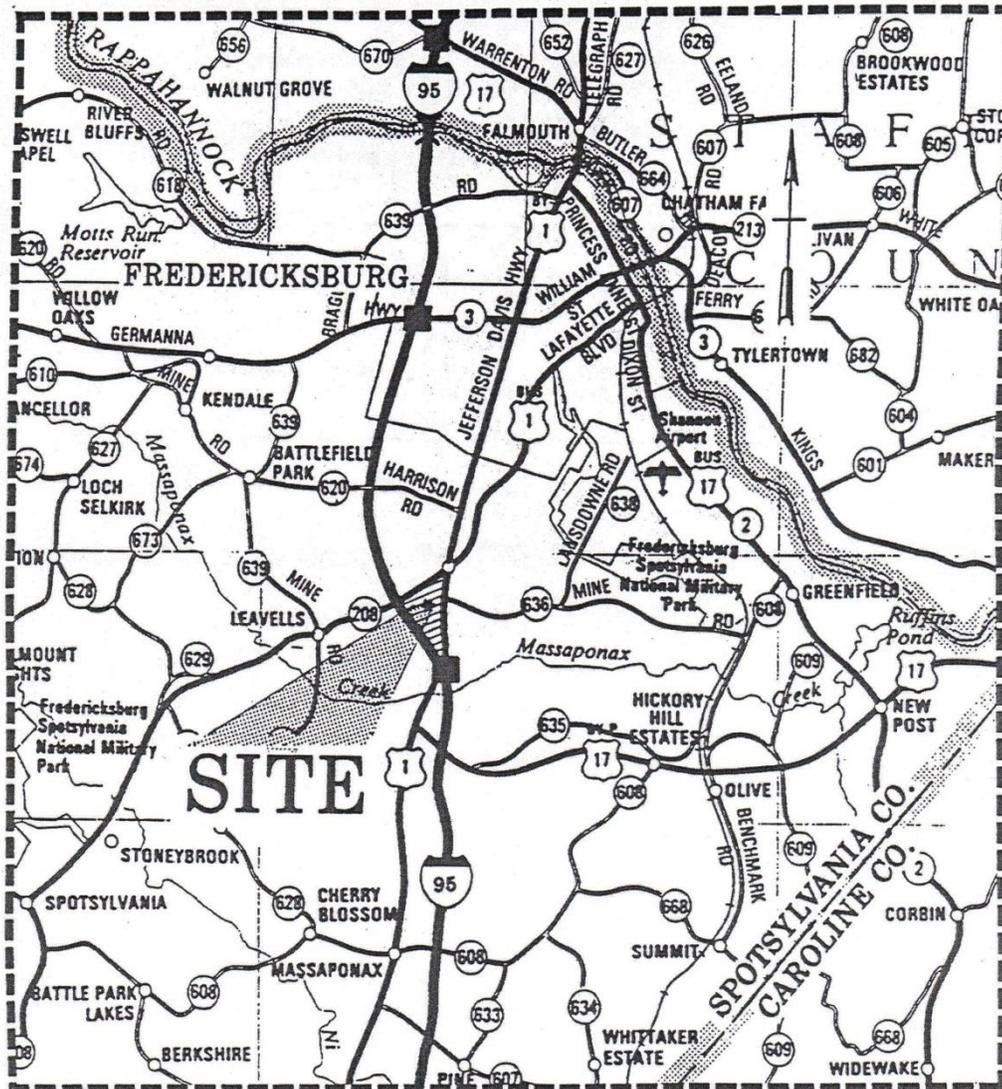
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Examples	Title	Description
Exp. 11	Total Site Traffic	AM & PM peak hour site traffic assigned to the adjacent road network; it includes turning movements at all access points; this should be developed for ultimate development & phases of development; it should also be developed in layers for each land use on the site (See Figures 11A & 11B)
11A	Land Use Site Traffic	
11B	Land Use Site Traffic	
Exp. 12	Total Peak Hour Traffic Volumes (w/development)	Includes traffic from Figures 7 & 11 for AM & PM peak hours at ultimate development and/or phases of the development
Exp. 13	Future Peak Hour Levels of Service (w/development on existing road network)	This figure displays the levels of service for each lane group (through-left-right) on all intersection approaches; this helps to identify and deficiencies that may occur if the new development traffic is added to the existing road system (NOTE: a level of service C should be maintained on the existing road system)
Exp. 14	Future Peak Hour Level of Service (w/development)	This figure displays the levels of service for each lane group (through-left-right) on all approaches at all inter-sections impacted by the development; this analysis based on traffic volumes from Figure 12 should include the improvements that are required to provide an acceptable level of service with the new development in place
Exp. 15	Recommended Improvements	Map showing locations of recommended off-site improvements, access points, additional lanes. length of auxiliary lanes, traffic signals & on-site circulation; a table & a description in the text of all recommended improvements should be provided; these improvements must alleviate any adverse conditions caused by the development; this may require special designs & large scale drawings



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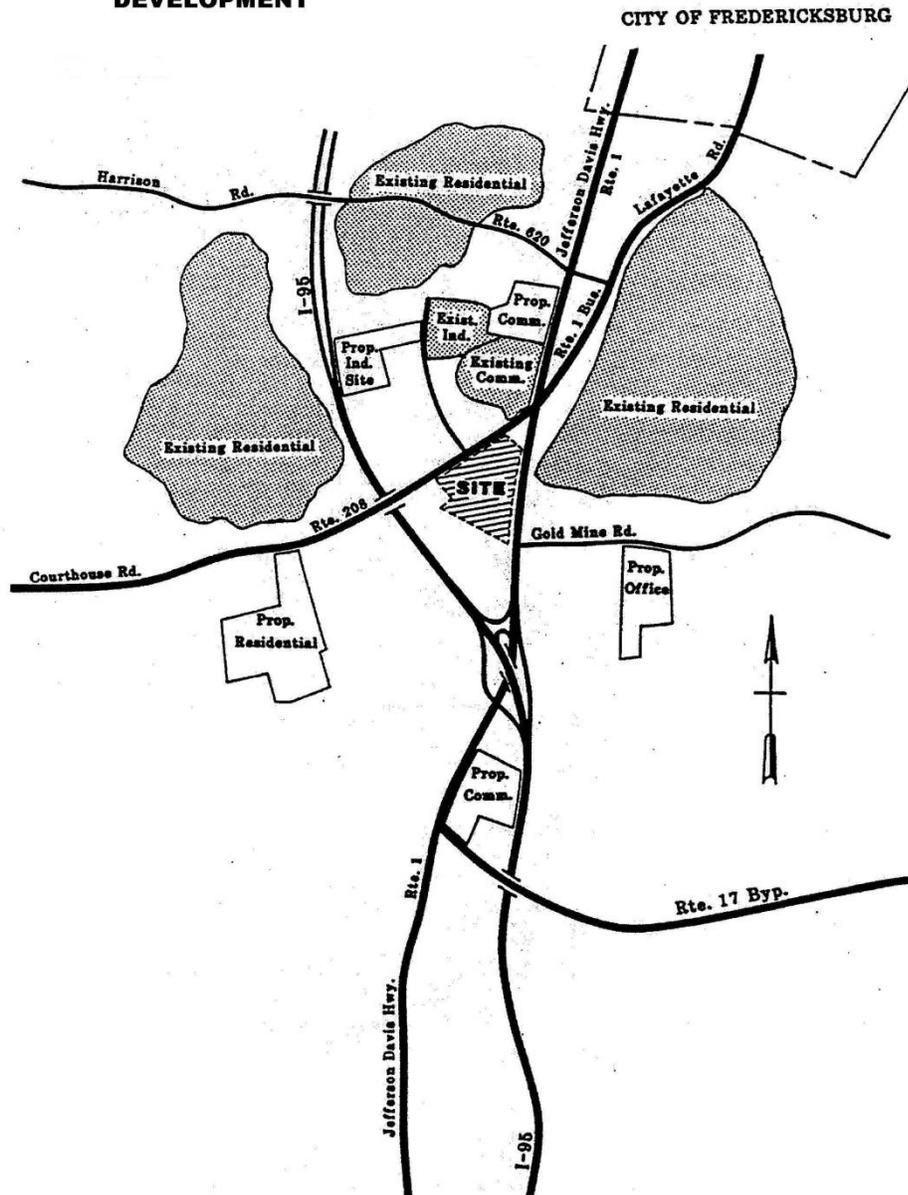
**EXAMPLE 1**  
**SITE LOCATION MAP**





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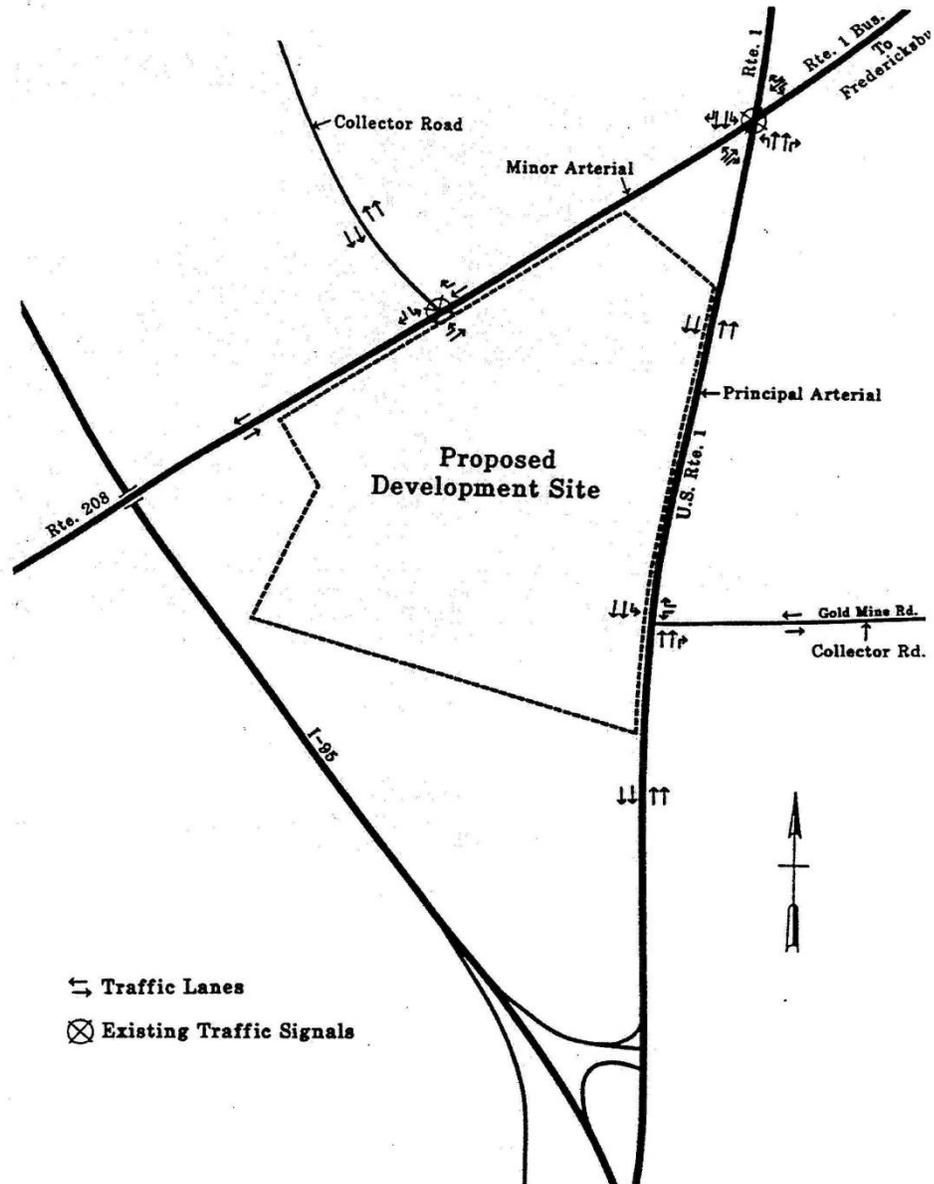
**EXAMPLE 2**  
**EXISTING AND PLANNED**  
**DEVELOPMENT**





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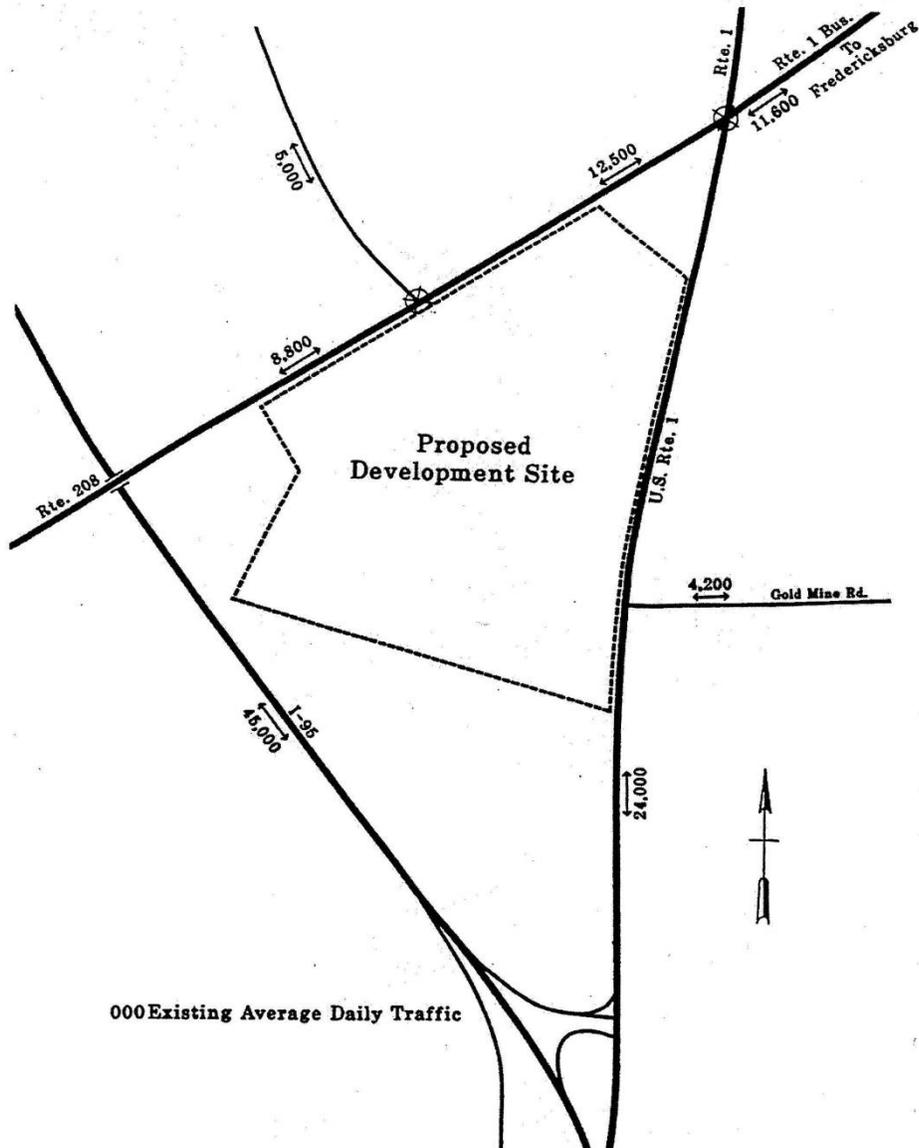
**EXAMPLE 3**  
**EXISTING TRANSPORTATION**  
**NETWORK**





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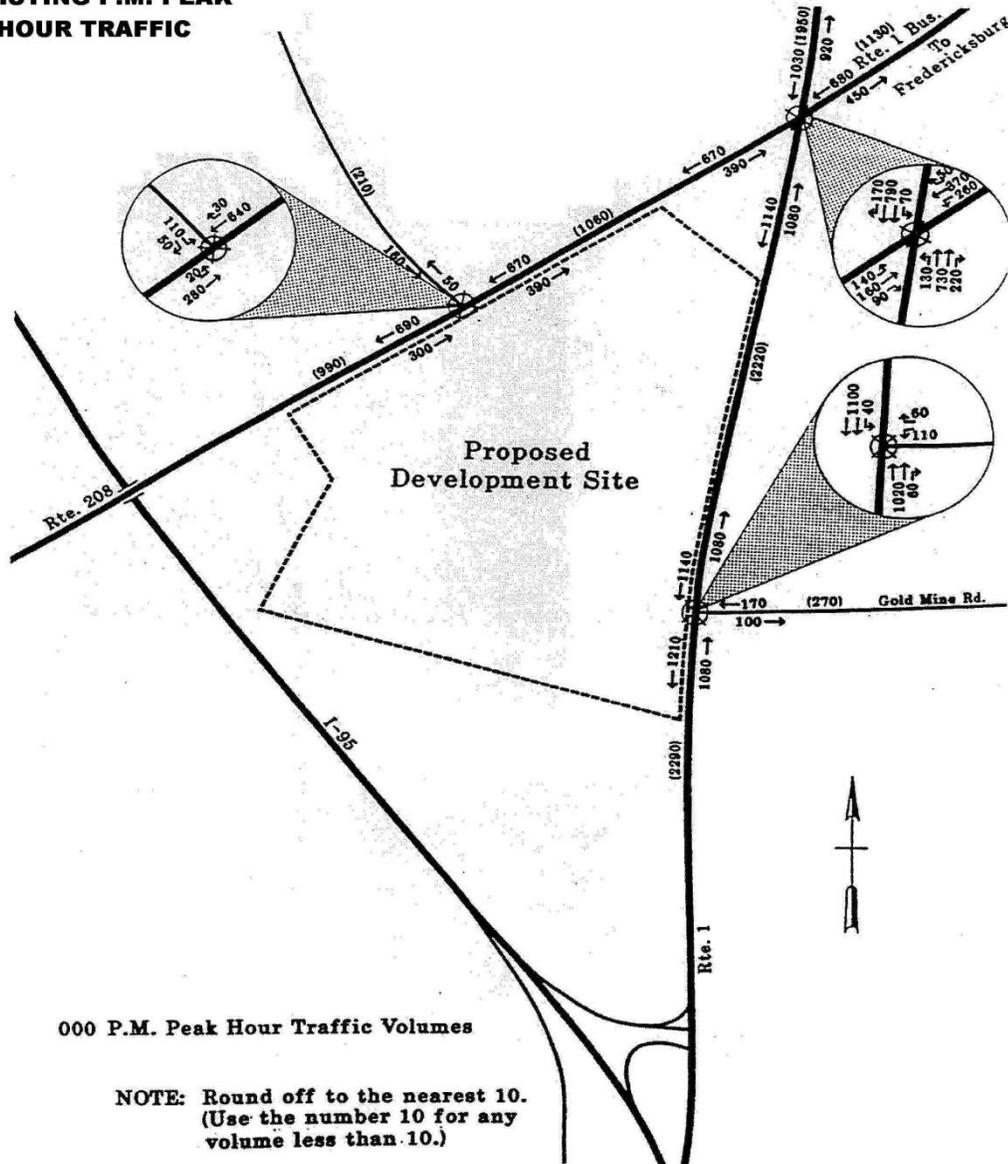
**EXAMPLE 4**  
**EXISTING AVERAGE DAILY TRAFFIC**





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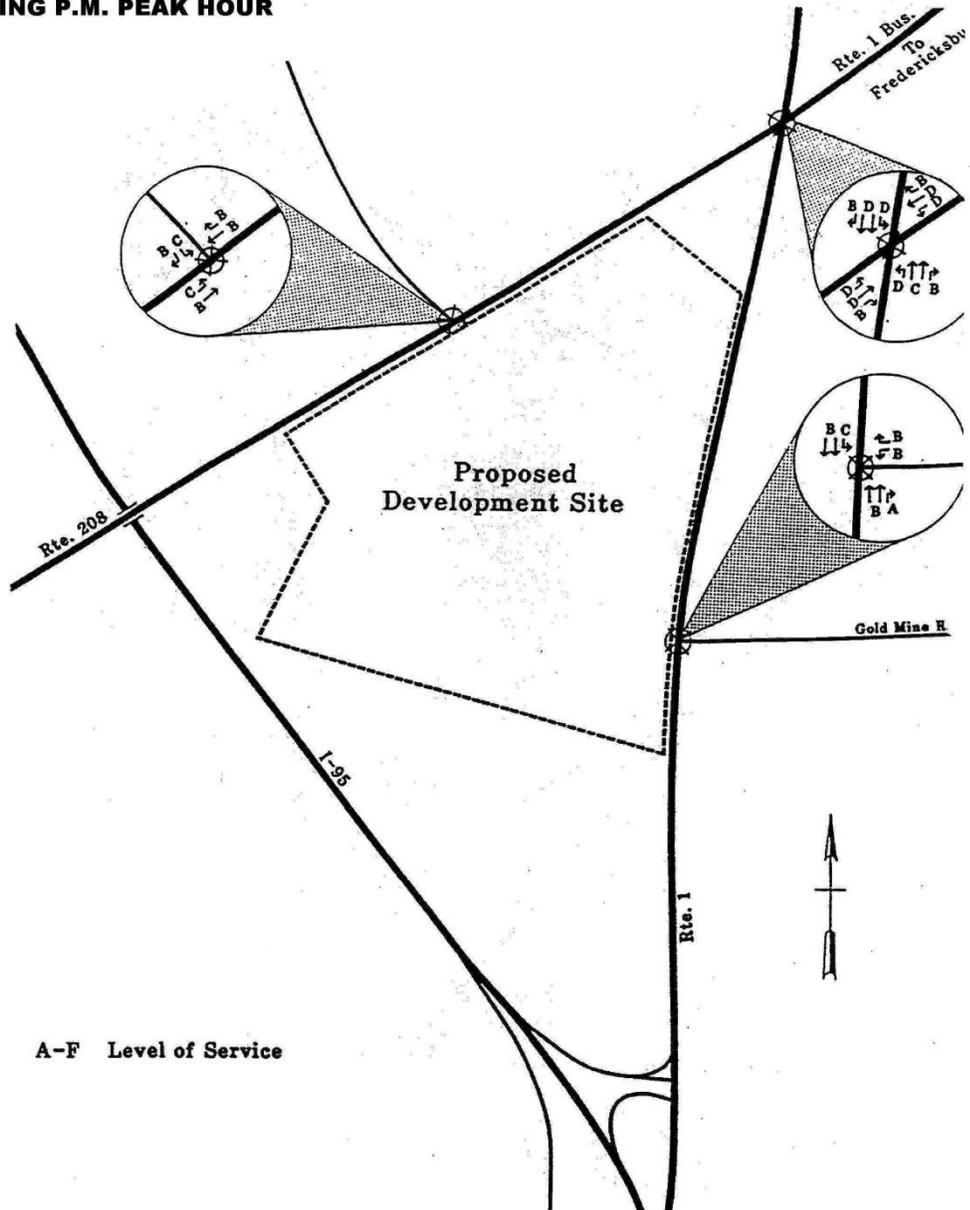
**EXAMPLE 5**  
**EXISTING P.M. PEAK**  
**HOUR TRAFFIC**





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**EXAMPLE 6**  
**LEVELS OF SERVICE**  
**EXISTING P.M. PEAK HOUR**

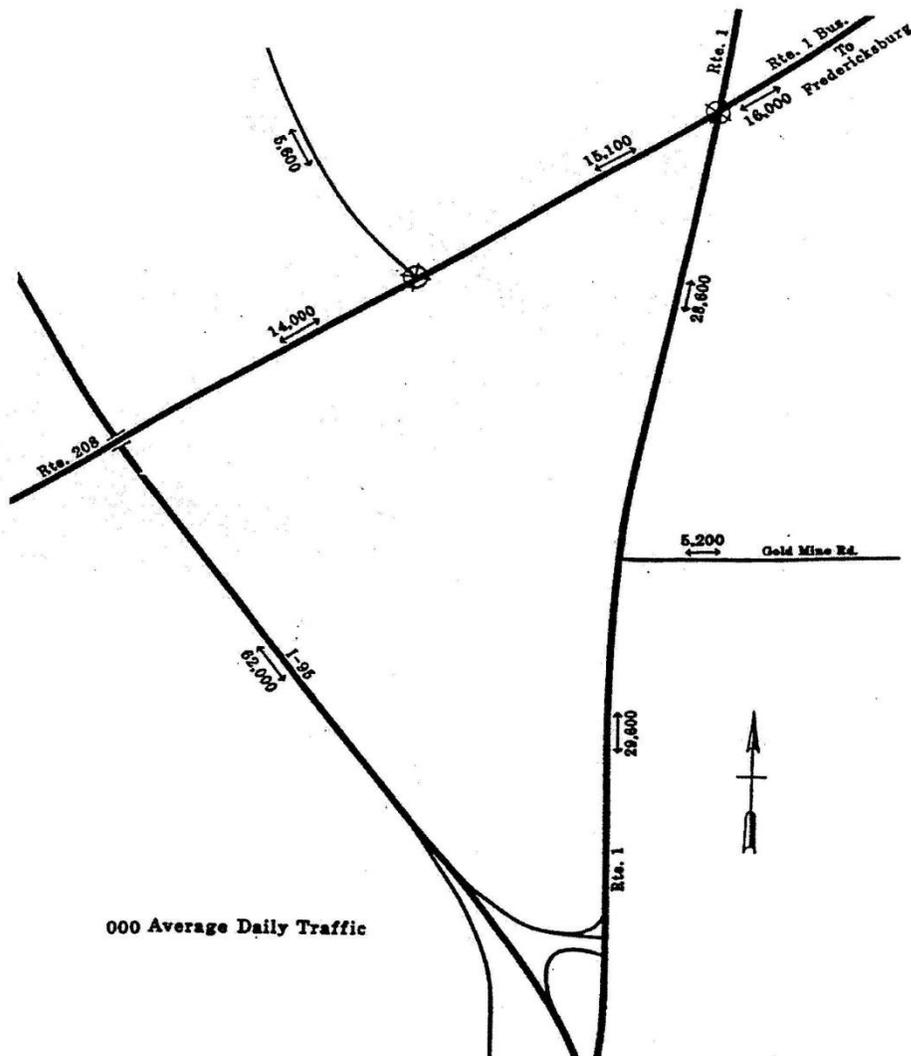


A-F Level of Service



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**EXAMPLE 7**  
**BUILD-OUT YEAR**  
**AVERAGE DAILY TRAFFIC**  
**WITHOUT DEVELOPMENT**  
**(BACKGROUND TRAFFIC)**

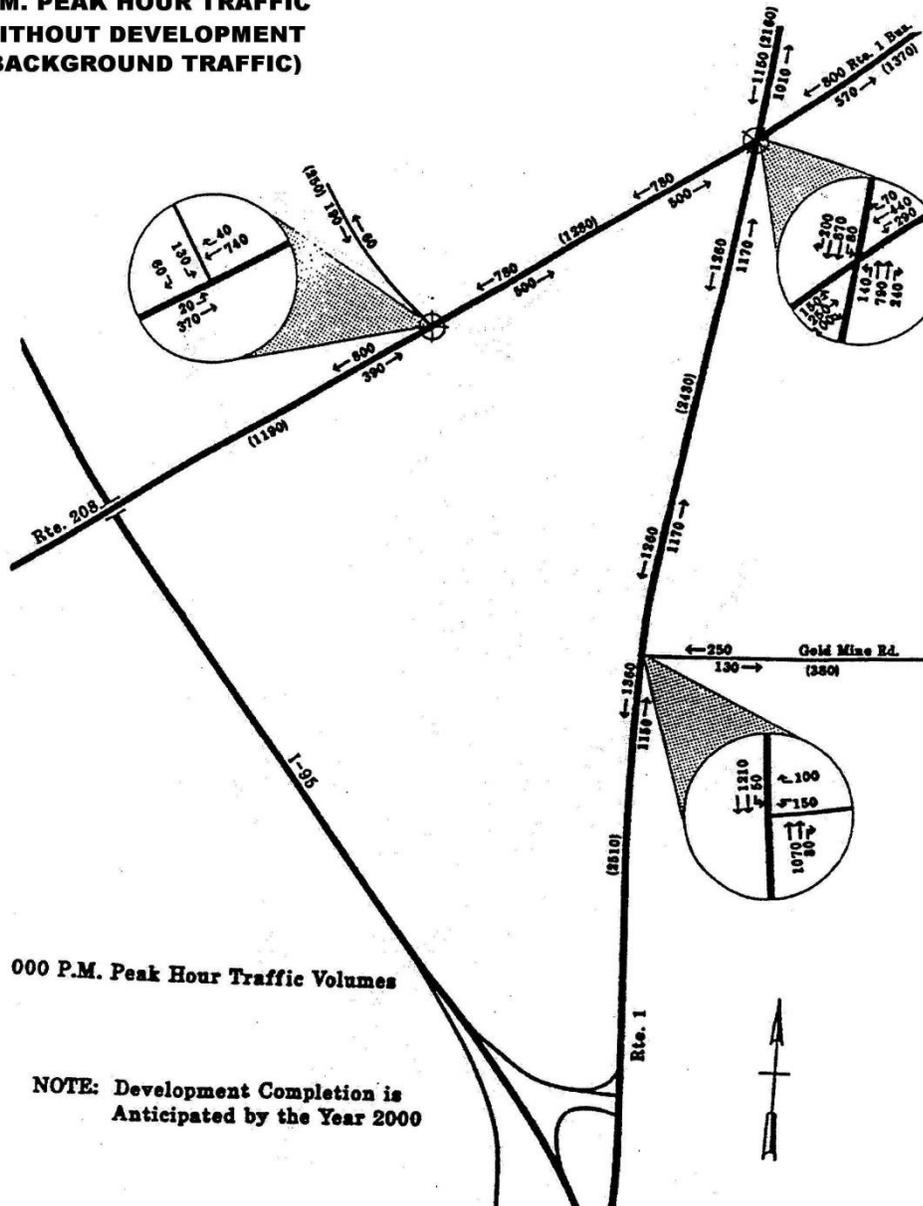


000 Average Daily Traffic



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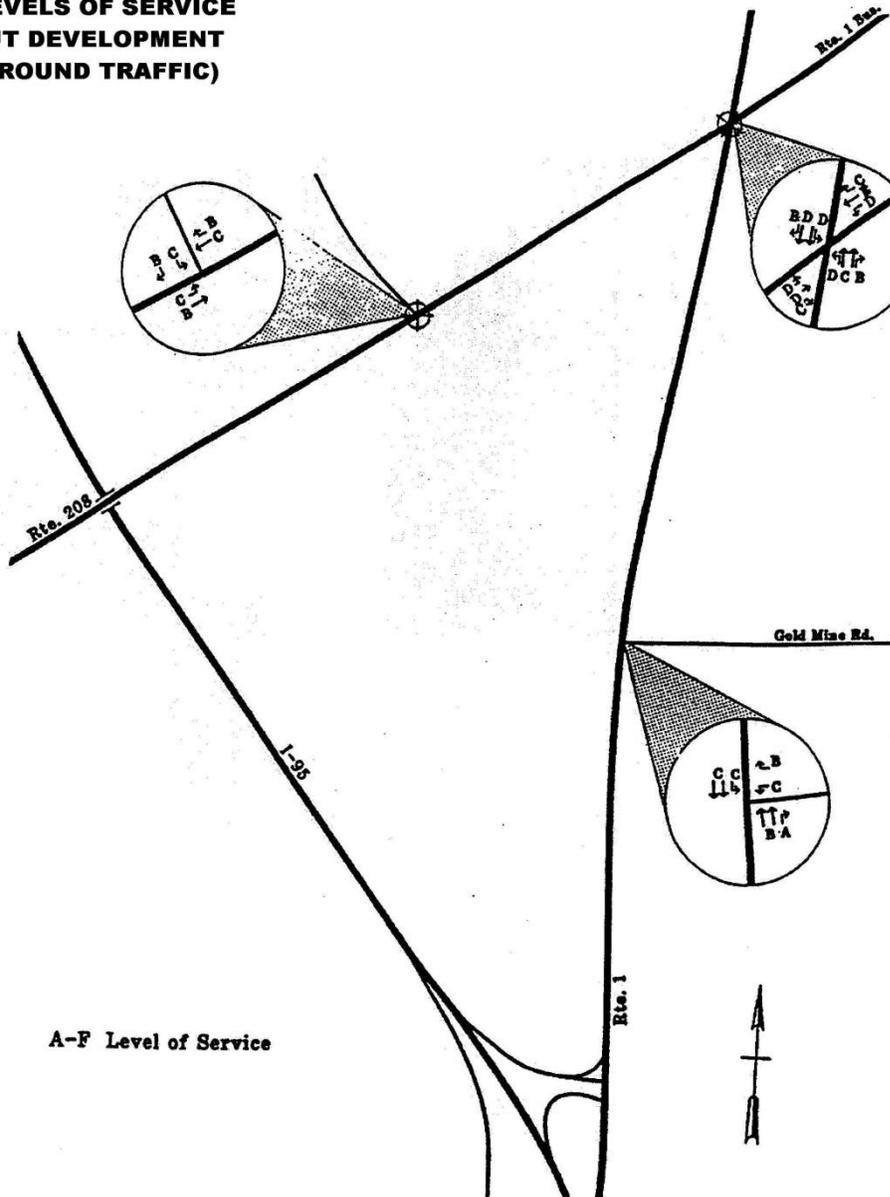
**EXAMPLE 8**  
**BUILD-OUT YEAR**  
**P.M. PEAK HOUR TRAFFIC**  
**WITHOUT DEVELOPMENT**  
**(BACKGROUND TRAFFIC)**





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**EXAMPLE 9**  
**BUILD-OUT YEAR PEAK**  
**HOUR LEVELS OF SERVICE**  
**WITHOUT DEVELOPMENT**  
**(BACKGROUND TRAFFIC)**

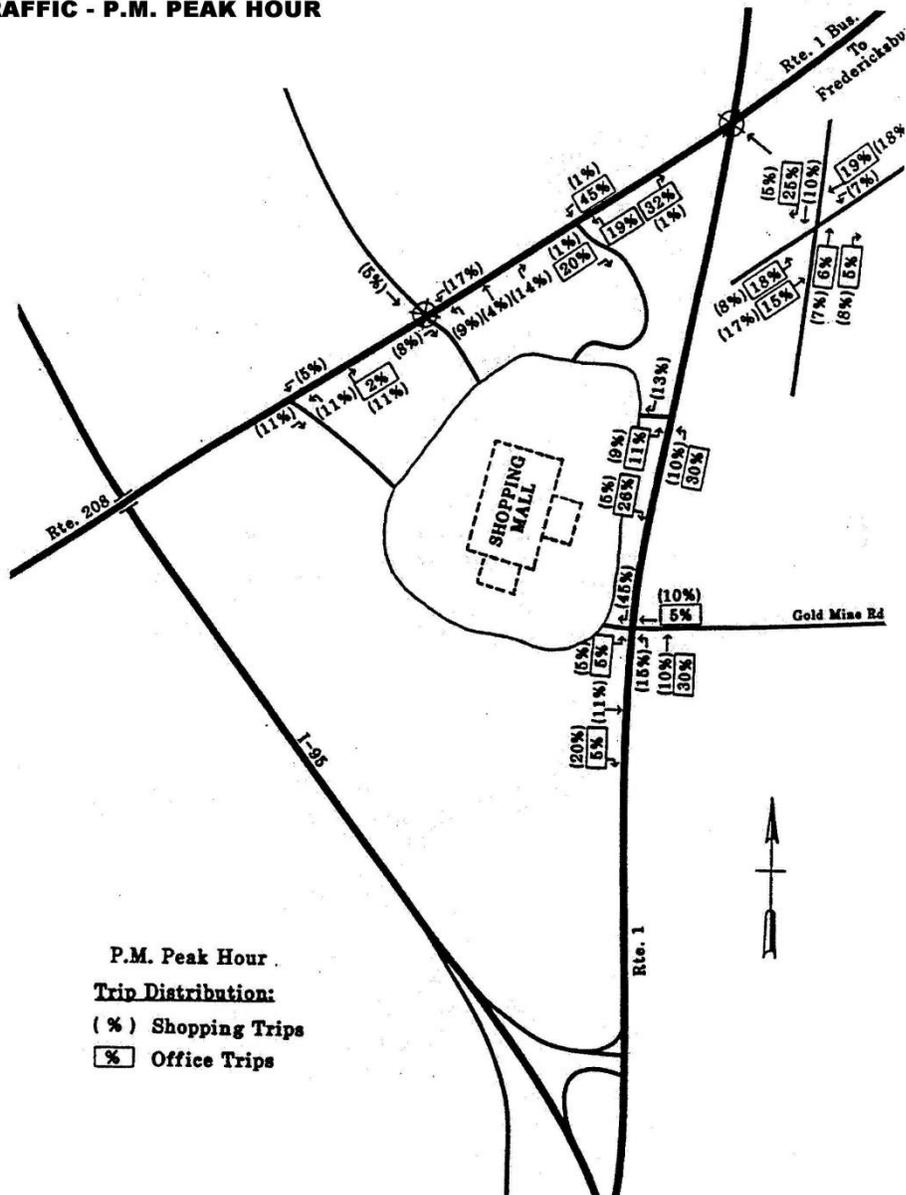


A-F Level of Service



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**EXAMPLE 10**  
**DIRECTIONAL DISTRIBUTION OF**  
**SITE TRAFFIC - P.M. PEAK HOUR**

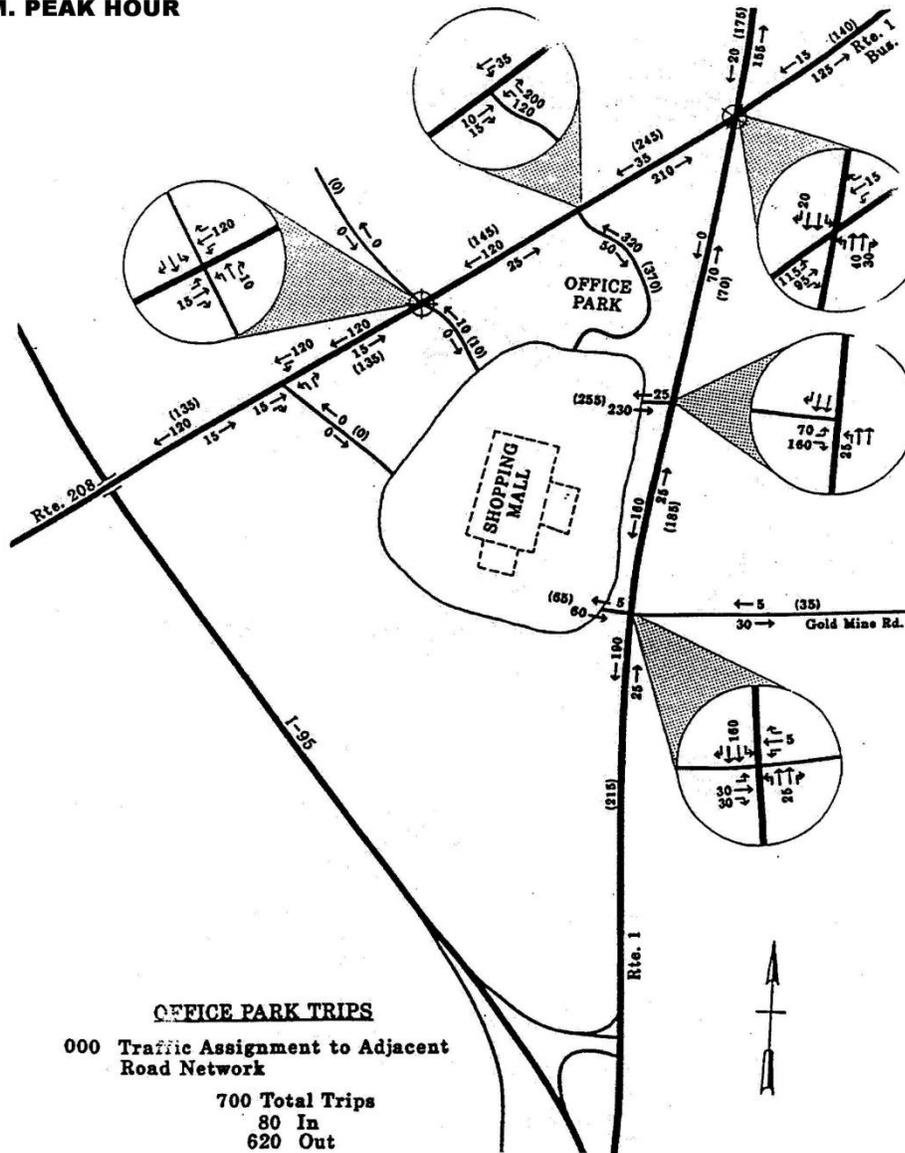






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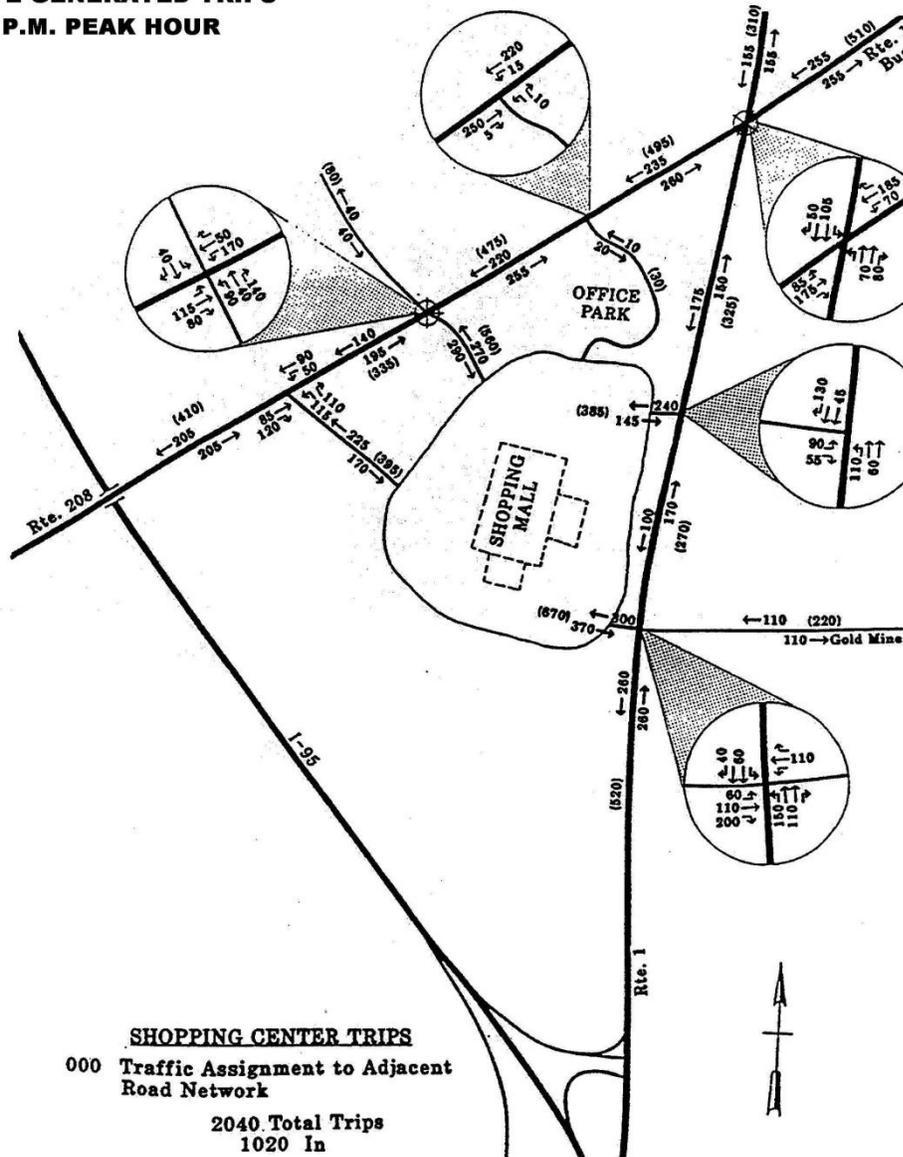
**EXAMPLE 11A**  
**SITE GENERATED TRIPS**  
**P.M. PEAK HOUR**





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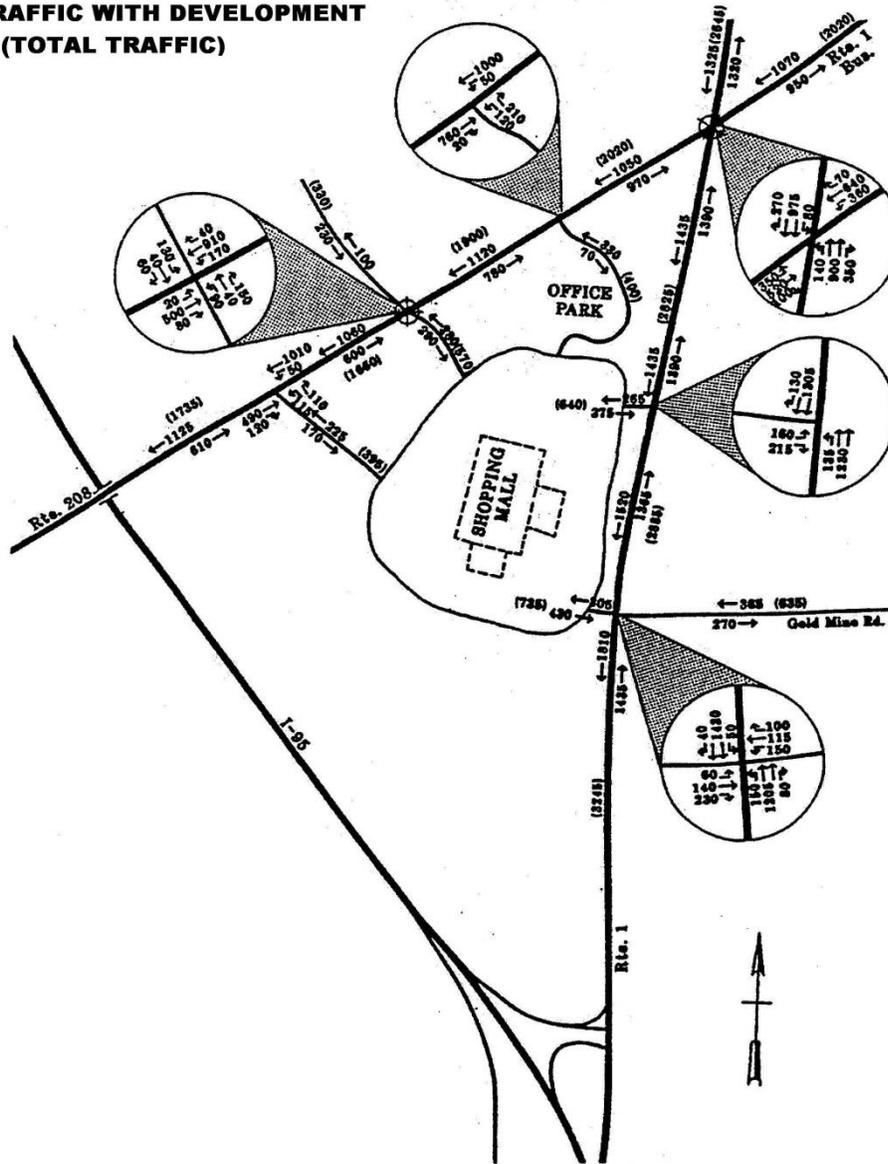
**EXAMPLE 11B**  
**SITE GENERATED TRIPS**  
**P.M. PEAK HOUR**





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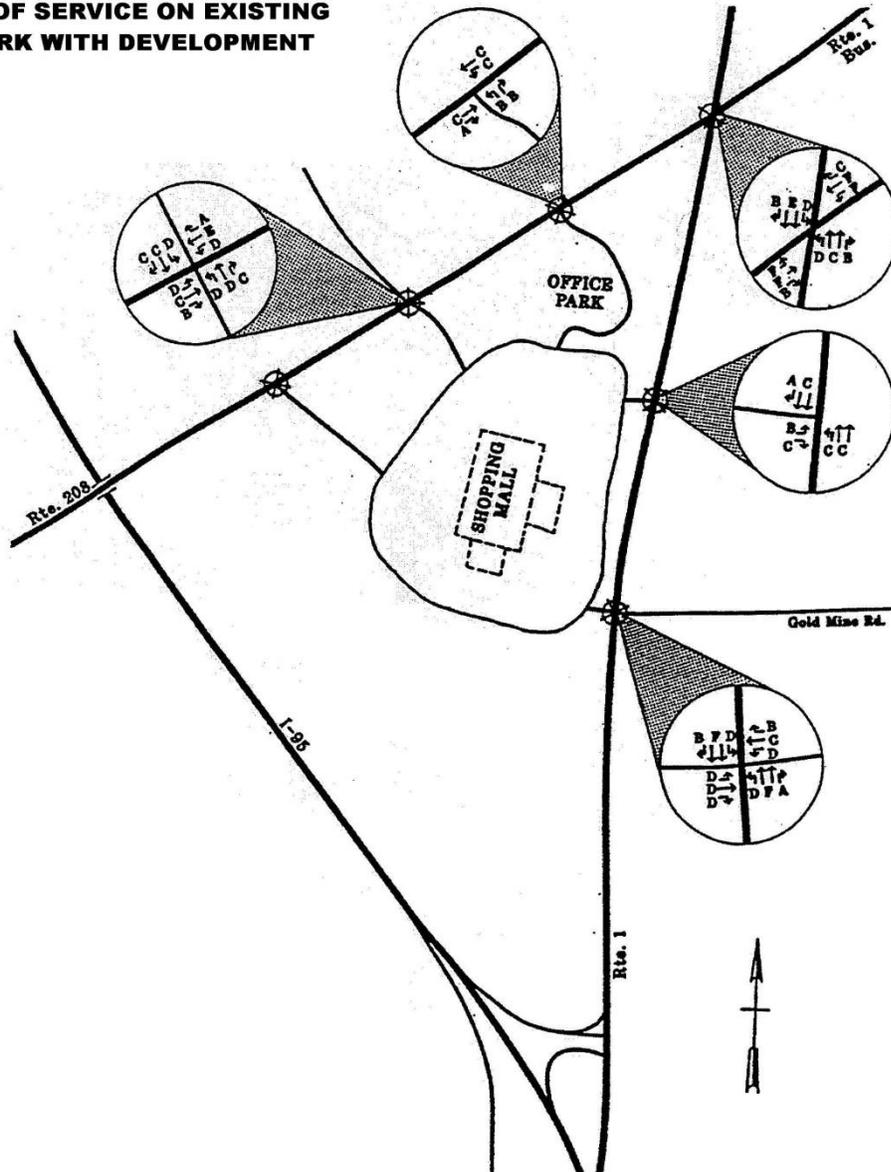
**EXAMPLE 12**  
**BUILD-OUT YEAR P.M. PEAK**  
**HOURLY TRAFFIC WITH DEVELOPMENT**  
**(TOTAL TRAFFIC)**





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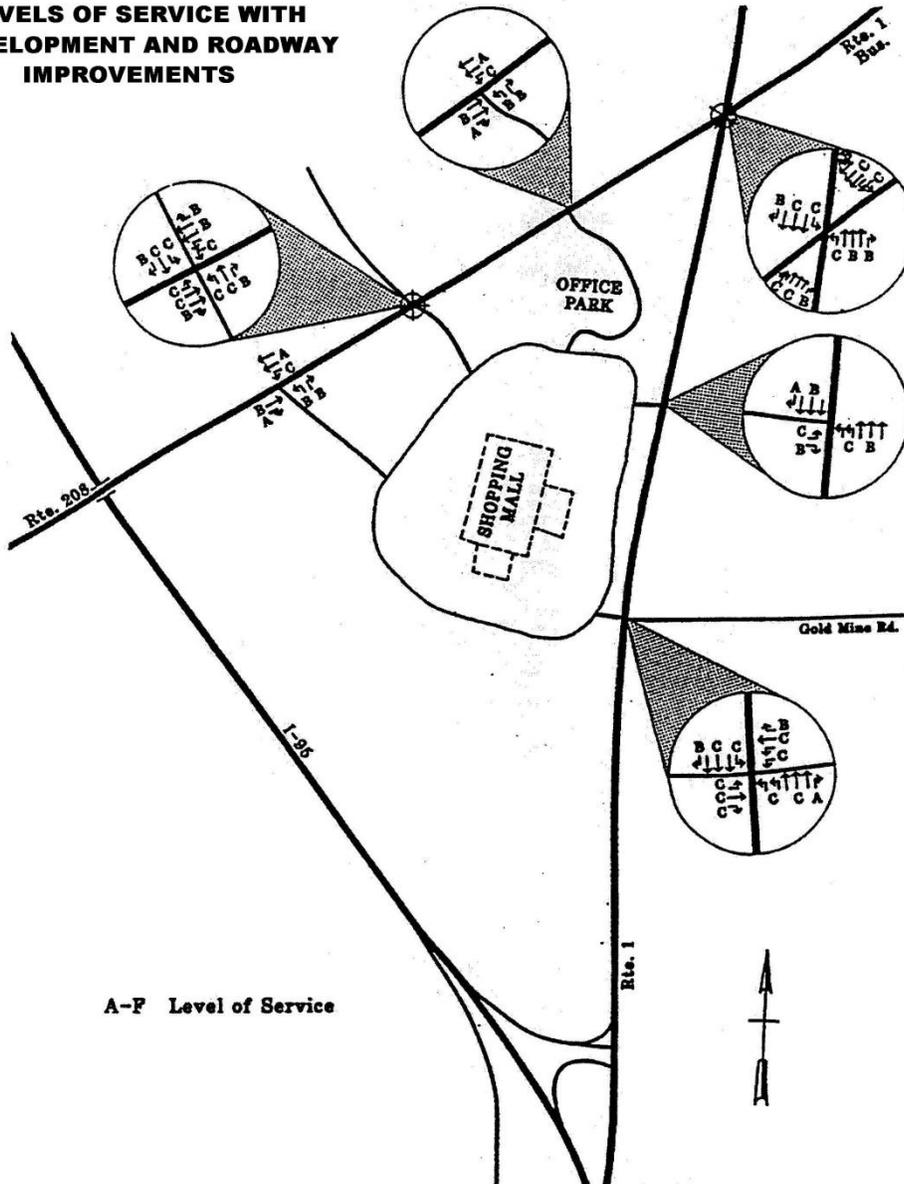
**EXAMPLE 13**  
**BUILD-OUT YEAR P.M. PEAK HOUR**  
**LEVELS OF SERVICE ON EXISTING**  
**NETWORK WITH DEVELOPMENT**





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**EXAMPLE 14**  
**BUILD-OUT YEAR P.M. PEAK HOUR**  
**LEVELS OF SERVICE WITH**  
**DEVELOPMENT AND ROADWAY**  
**IMPROVEMENTS**

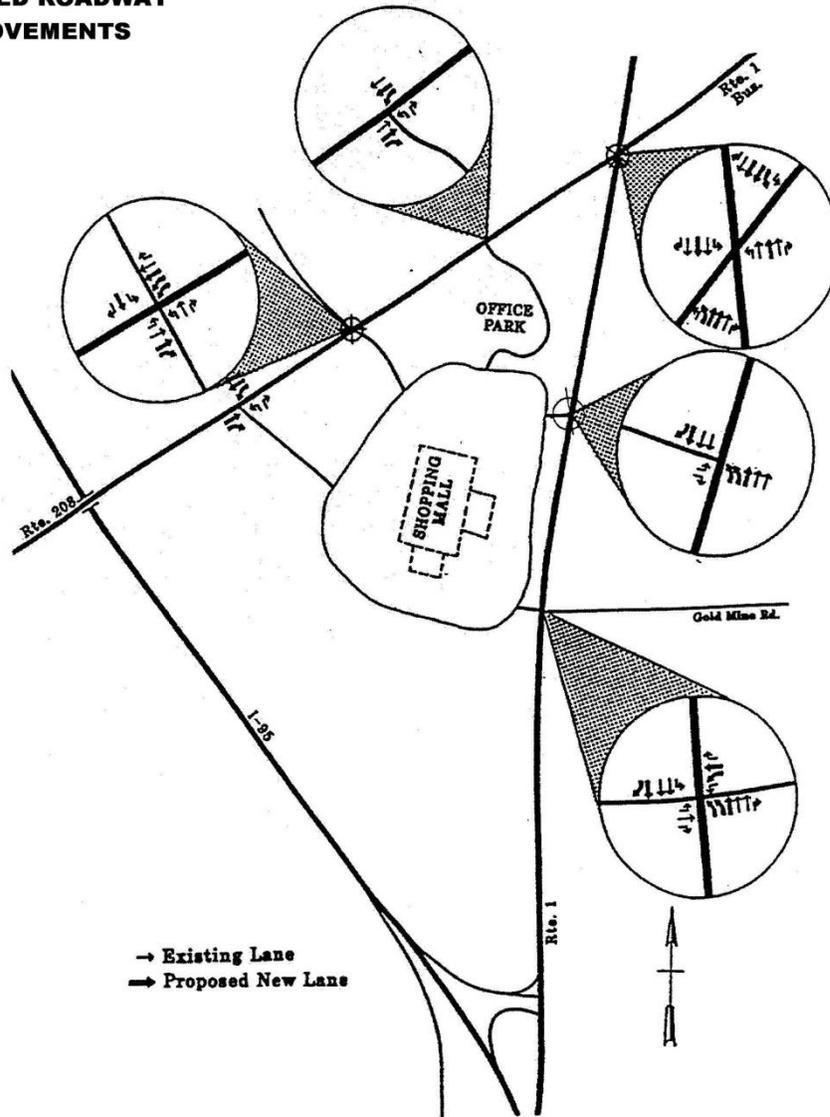


A-F Level of Service



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**EXAMPLE 15**  
**BUILD-OUT YEAR**  
**PROPOSED ROADWAY**  
**IMPROVEMENTS**





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### **4.2.1.6 Procedures**

The Traffic Impact Analysis shall include all information required by the following guidelines:

1. The applicant or his designated representative shall contact the City Traffic Engineer and Director to establish whether a traffic study is needed, and to define the parameters for the study. Following preparation of any traffic study, copies of the study report shall be submitted to the Director for distribution to staff involved in the construction and maintenance of public roadways serving the development. A conference between the staff and applicant shall be held to discuss the content and findings of the report and determine the need for any supplemental study or analysis.
2. When the City Traffic Engineer and Director have determined that the content of the report adequately addressed the applicable Traffic Level of Service Standards of Section 31-601, a finding shall be made that the traffic impact study is complete and proceedings on any application that was stayed pending completion of a traffic analysis can resume.
3. All data and computer models utilized in this study shall be submitted in written and electronic format.

#### **4.2.1.6.1 Highway Capacity Analysis**

The City accepts the [Highway Capacity Manual](#) (latest edition), Special Report 209, as the basis for performing capacity analysis on streets and highways in Suffolk. To assist in the analysis procedures, the City will use the latest version of the FHWA Highway Capacity Software (HCS) package. The program name and version number must be documented, along with all input data and assumptions. Summary reports must be provided with submissions; detailed reports may be required. The City may check this analysis using the FHWA-HCS package, and if different results occur, the submitted analysis may be rejected.

It is recommended that for FHWA-HCS signalized intersection analysis the Operational Methodology be used. The assumed “lost time” per phase must be at least three (3) seconds. Generally, the minimum green time on minor phases is seven (7) seconds and the minimum yellow/all red phase is five seconds.

For signalized intersection analysis the minimum acceptable level of service criteria shall be applied to each lane group, not just to the intersection overall. For example, an intersection with an overall Level of Service C, but with a lane group Level of Service F, would not be acceptable. This situation would indicate the need to reallocate green times such that the critical lane groups would have approximately the same v/c ratio. If a lane group on a minor street is borderline, it may be accepted.

The City uses the HCS software to determine levels of service at signalized intersections; signal timings and analysis of the impacts of intersections upon adjacent intersections will be determined using Synchro and SimTraffic.

#### **4.2.1.6.2 Trip Generation**

In determining the trip generation of new development sites, the City of Suffolk approves the use of information from the latest edition of [Trip Generation](#) as published by the Institute of Transportation Engineers (ITE). This approval is subject to the following conditions or limitations:



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1. On any development site, the results of the trip generation calculations for each land use must be clearly shown by land use code in the traffic impact report for the site.
2. The residential plan unit development (PUD) land use code 270 trip generation rates or equations are not accepted by the City. The rates for the specific uses within the development should be used instead.
3. Many proposed shopping centers have “out parcels” or peripheral buildings in addition to the main building or mall. These “out parcels” usually contain fast food restaurants, drive-in banks or small offices. The trip generation for the overall site should be the higher total of: (1) the trips generated by each individual parcel, plus the trips generated by the main building, or (2) combining the gross floor area as a whole for the site and applying the shopping center (Land Use 820) equation.
4. The trip generation for each land use must be determined by use of a trip rate or regression equation as delineated in the guidelines for using rates versus equations in ITE’s [Trip Generation](#), latest edition. After considering these guidelines, if no clear decision can be made, then the method producing the highest number of trips should be used.
5. Unless there are special circumstances, the trip generation for a development site will be calculated for daily (24 hour) conditions and both the AM and PM peak hours of the adjacent street system (usually between 7:00-9:00 AM and between 4:00-6:00 PM). In special cases, the City may require additional analysis for different hours of the day or for peak hours on Saturdays or Sundays.
6. Capture rates for internal trips on multi-use development and pass-by trips are to be applied as outlined in the City’s policies.
7. Any question concerning the application of these guidelines or policies will be resolved by the City Traffic Engineer.

### **4.2.1.6.3 Capture Rates for Internal Trips**

#### Background

A trip generation rate or equation is used to forecast trips for a proposed development. This rate or equation is generally based on the trip-making characteristics observed at a similar stand-alone, existing development. Often a forecast of trips for a development site consisting of several different types of land uses, e.g., a multi-use development, must be made. A common method of developing this forecast is to apply the trip rate or equation for each individual land use in the proposed development and then add the forecasts together. This method does not take into consideration the fact that some of the trips will occur within the multi-use development, either by vehicle or an alternate mode such as walking or transit. One of the most common examples of this trip-making occurs at multi-use developments containing residential and shopping areas. Some of the resident’s work trips and shopping trips are made to the on-site shopping area. Another example is the development containing offices and a shopping/service area. Some of the trips made from the offices to shops, to restaurants, or to banks may be made on-site. These types of trips thus become internal to the multi-use site; they are “captured” on-site.

A capture rate, therefore, can generally be defined as a percentage reduction in traditionally developed trip generation to account for these internal trips. The reduction is applied as described in the policy that follows.



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It is important to note that the reduction in trips is applied externally to the site – at site entrances, to adjacent intersections, and to adjacent roadways. There should be no reductions in trips at entrances, at intersections, or on roadways located internally (within the site).

Multi-use developments can be classified into two (2) categories. The first consists of a combination of residential and non-residential land uses, and the second consists of a combination of non-residential land uses only. Category I typically consists of one or more types of residences and a shopping and/or office component. Category II will typically consist of offices and a shopping/retail component, with possibly a hotel or motel.

A shopping center is also an example of a multi-use development. However, it has historically been considered as an individual or single land use, and the associated trip generation rates and equations already reflect the “multi-use” nature of the development. Accordingly, capture rates are not applicable and should not be utilized in the forecasting of trips for shopping centers. Likewise, a site which has general office buildings and support services such as banks, restaurants, and service stations should be considered as an office park, not as a multi-use development. Similarly, office buildings with support retail or restaurant facilities contained inside the building should be treated as general office buildings because the trip generation rates and equations already reflect this situation. In order for their trip generation to be assumed as part of the primary land use, the support services must be appropriately sized. For example, a building with 10,000 ft<sup>2</sup> of office space and 10,000 ft<sup>2</sup> of retail would not be considered as a general office building.

Finally, the reduction for captured trips is separate from the reduction allowed for pass-by trips. These are two (2) distinct phenomena, and both could be applicable for a proposed development.

### Policy

1. The allowable reductions in the policy statements hereafter are applicable as defined in the previous “Background.”
2. Unless stated otherwise, the allowable percentage reductions in the site trip generation are applicable to both daily and peak hour trip generation (7:00-9:00 AM and 4:00-6:00 PM).
3. Further reductions may be allowed on a case-by-case basis if acceptable evidence or proof is presented. The evidence or proof must consist of a bona fide traffic study of a similar type of development.
4. The procedure for estimating Internal Capture Rates shall be as stated in Chapter 7, Multi-Use Development” of the “[Trip Generation Handbook](#) (latest edition) as published by the Institute of Transportation Engineers.”
5. Any question concerning the application of this policy will be resolved by the City Traffic Engineer.

#### **4.2.1.6.4 Pass-By Trips**

##### Background

The trip generation rate or equation is used to forecast trips for a proposed development is generally based on trip-making characteristics observed at a similar stand-alone, existing



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development. Specifically, it is based on driveway counts; i.e., traffic counts made at the entrances and exits to the development. Driveway counts are important to site-specific design considerations; e.g., number and design of entrances/exits and number of parking spaces.

Often, however, traffic volumes are needed for design features on roadways adjacent to the development; e.g., signal and turn lane needs. A common method of determining this volume is to apply the aforementioned trip rate or equation based on driveway counts and simply add the forecast trips for the proposed development to the existing (or forecast) street traffic. This method does not take into consideration the fact that some of the traffic counted in the driveway is already included in the existing street traffic; it is not new to the area. That is, some of the existing street traffic that “passes by” the proposed development is attracted to the site. Probably the most common example is when a work to home trip is diverted to an adjacent shopping center.

A pass-by trip, therefore, can generally be defined as a trip attracted to a proposed development from the existing traffic stream on an adjacent street. Pass-by trips are accounted for in trip generation by allowing a percentage reduction in the forecast of trips that are added to the adjacent street from the proposed development.

It is important to note that the reduction is applied only to volumes on the adjacent streets, and is not applicable to entrance and exit volumes for the site itself. Further, the reduction is not universally applicable to adjacent streets. For example, if a shopping center were proposed next to a freeway with access on a minor side street, the reduction would most likely not apply to the side street since the pass-by trips would primarily be diverted from the freeway. If the side street is a major street, engineering judgment should be used in allowing a percentage reduction.

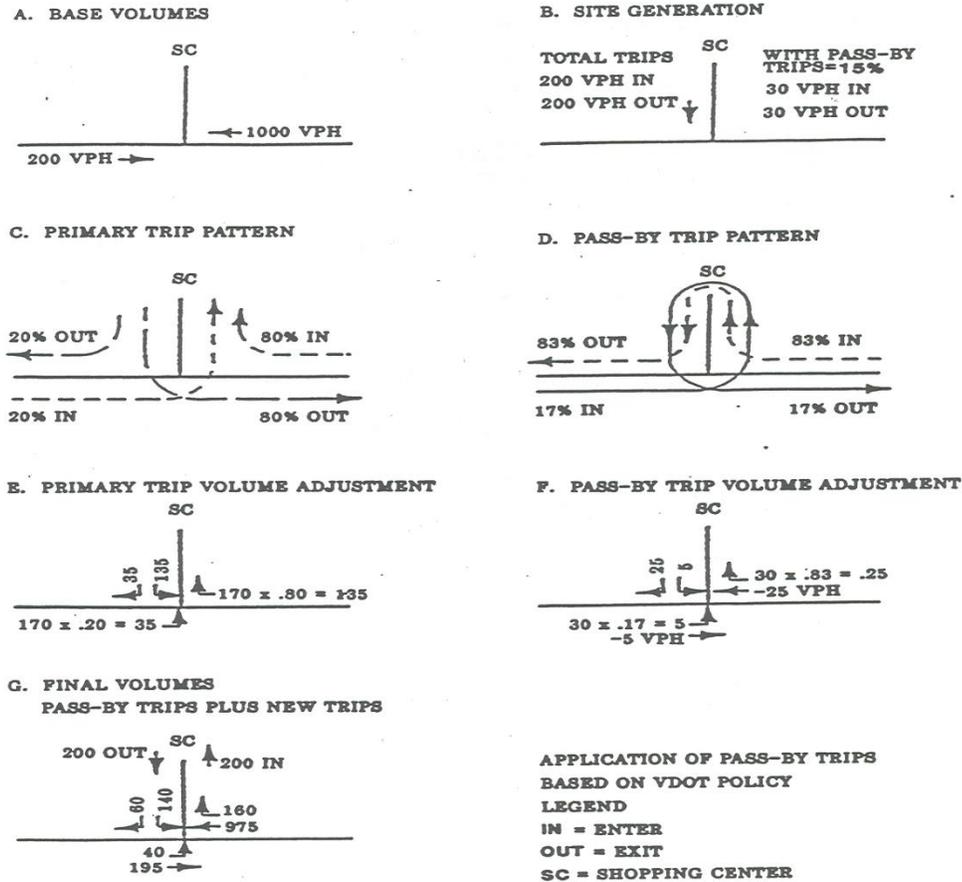
### Policy

1. The reductions in the policies hereafter are applicable as defined in the previous “Background.”
2. Unless stated otherwise, the percentage reductions in the policies hereafter are applicable to both daily and peak hour trip generation (7:00-9:00 AM and 4:00-6:00 PM).
3. Further reductions may be allowed on a case-by-case basis if acceptable evidence or proof is presented. The evidence or proof must consist of a bona fide traffic study of a similar type of development.
4. The procedure for estimating Pass-by Trips shall be as stated in Chapter 5, Pass-by, Primary and Diverted Linked Trips of the “[Trip Generation Handbook](#) (latest edition) as published by the Institute of Transportation Engineers.” Estimates of pass-by traffic that exceeds 20% daily and 35% peak hour, or 2% of adjacent street traffic, will not be accepted without prior approval by the City Traffic Engineer following a reasonable justification.
5. The application of pass-by trips to the adjacent street system must be as shown in the example in Figure 4.1.
6. Any question concerning the application of this policy will be resolved by the City Traffic Engineer.



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**Figure 4.1  
Example of Pass-By Trips**



**4.2.1.7 Report Findings**

1. When staff and the applicant concur that the technical analysis is complete, the report shall be forwarded to the platting authority at its next regular meeting. Negotiations with the platting authority, if needed, shall be held, and a Subdivision Improvement Agreement detailing the applicant's responsibilities and the City's responsibilities for implementing any mitigation measures shall be prepared, and what, if any, improvements may be assessed against other benefited properties.
2. If staff finds that the proposed development will not meet applicable service level standards, staff shall recommend one or more of the following actions on the associated development application, as may be needed:
  - A. Reduce the size, scale, scope or density of the development to reduce traffic generation;
  - B. Divide the project into phases and authorize only one (1) phase at a time until traffic capacity is adequate for the next phase of development;
  - C. Dedicate right-of-way for street improvements;



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1. Construct new streets;
  2. Expand the capacity of existing streets;
  3. Re-design ingress and egress to the project to reduce traffic conflicts;
  4. Reduce background (existing) traffic;
  5. Eliminate the potential for additional traffic generation from undeveloped properties in the vicinity of the proposed development;
  6. Integrate non-vehicular design components (e.g., pedestrian and bicycle paths or transit improvements) to reduce trip generation;
  7. Recommend denial of the application for development for which the Traffic Impact Report (TIR) is submitted.
3. When a system of signals is analyzed, the proposed timing changes and signal modification shall not degrade the level of service that currently exists in the system. The existing and proposed level of service for the system must be analyzed and presented. If the proposed level of service is less than the existing, then additional improvements must be proposed to raise the level of service to the existing level.

### **4.2.1.8 Computer Programs**

The following programs are acceptable for design and analysis:

- HCS
- Synchro
- SimTraffic
- AutoCAD
- Other programs as approved by Traffic Engineering

### **4.2.2 Turn Lanes**

Acceleration, deceleration and turning lanes shall be required by the decision-maker along existing or proposed streets for all subdivisions or site plans under the following conditions:

1. Roadway classification of arterial or major collector; or
2. Roadways with a posted speed limit of 45 m.p.h. or higher; or
3. Proposed development generates at least 30 v.p.h at a single entrance.

Accident history, pedestrian conflicts and existing capacity may also be factors in determining the need for a turn lane. In addition, arterials, collectors, sub-collectors, special corridor overlays and all commercial and major residential subdivisions shall have left and right turn lanes installed regardless of generated volumes as determined by the Department of Public Works. Pavement design of a turn lane shall be the same as the through lanes of the roadway.

All turn lanes shall be twelve (12) feet in width. The width of a right turn lane shall not include the gutter pan. Unless otherwise approved by the City, the design of the storage length of a turn lane shall:

- Use the design year volume for the peak hour;
- Assume each vehicle store uses 25 feet of length; and



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- Uses a minimum storage length of 200 feet for a left turn lane or 150 feet for a right turn lane
- For signalized intersections, the left turn lanes shall be designed as follows:
- Estimate the number of cycles per hour
- Use the following formula unless otherwise specified by the City Traffic Engineer:

$$L = (2 * V * 25) / N$$

where: L = design length for storage, in feet  
V = estimated turning volume during design peak hour, in v.p.h.  
N = number of cycles per hour, in design peak hour

For calculated lengths of L greater or equal to 300 feet, or for left turn volumes exceeding 300 vehicles per hour, it is desirable to consider the use of other techniques such as double left turn lanes. If a double left turn lane is installed, a minimum length of  $0.6 * L$  shall be provided for each lane. Double left turn lanes must be given a dedicated left turn signal phase to insure proper installation.

The taper lengths shall be a minimum of 200 feet for left turn lanes and 150 feet for right turn lanes.

### 4.2.3 Signs

Signing plans will be required for approval of the development. The plan set shall include the items listed on the checklist provided in Appendix 4.10. The City shall erect all street name signs. All other signage is to be furnished and erected by the developer to City standards. The developer is responsible for maintaining all signage prior to acceptance of the roads into public maintenance. Failure to maintain the signs will be grounds for the City to use the defect surety posted by the developer to replace the signs.



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**Table 4.2 Regulatory and Warning Signs**

Regulatory and warning signs listed in the table below shall be fabricated with VIP sign sheeting material. All other regulatory, warning, and guidance signage shall be fabricated with encapsulated lens sheeting material, unless otherwise specified by the City.

REGULATORY		MIN Size
Stop	R1-1	30" x 30"
Yield	R1-2	36" x 36"
Speed Limit	R2-1	24" x 30"
Reduced Speed Ahead	R2-5a	24" x 30"
Turn Prohibition Signs	R3-1, R3-3	24" x 24"
U-Turn Prohibition Signs	R3-4	24" x 24"
Lane Use Control Signs	R3-5 to R3-8 (Listed below)	
	R3-5	30" x 36"
	R3-5b, c, d, e, f & g	30" x 12"
	R3-6	30" x 36"
	R3-7	30" x 30"
	R3-8	30" x 30"
Two-Way Left Turn Only Signs	R3-9a, R3-9b	30" x 36", 24" x 36"
Do Not Pass	R4-1	24" x 30"
Keep Right/Left	R4-7/R4-8	24" x 30"
Do Not Enter	R5-1	30" x 30"
Wrong Way	R5-9	36" x 24"
One Way	R6-1, R6-2	36" x 12", 24" x 30"
Divided Highway Crossing	R6-3, R6-3a	30" x 24"
No Parking	R8-3A	12" x 18"
Traffic Signal Signs	R10-5 to 12	24" x 30"
Road Closed	R11-2 to 4	48" x 30" - 60" x 30"
<b>WARNING</b>		<b>MIN Size</b>
Turn Sign	W1-1	30" x 30"
Curve Sign	W1-2 to 5	30" x 30"
Large Arrow Sign	W1-6 to 7	48" x 24"
Chevron Alignment Sign	W1-8	18" x 24"
Intersection Series	W2-1 to 5	30" x 30"
Stop Ahead (Symbol)	W3-1a	36" x 36"
Yield Ahead (Symbol)	W3-2a	36" x 36"
Signal Ahead (Symbol)	W3-3	36" x 36"
Merge Sign	W4-1	30" x 30"
Added Lane	W4-2, W4-3	30" x 30"
Lane Reduction Transition Series	W9-1, W9-2	30" x 30"
Divided Highway Sign (Ends)	W6-1, W6-2	36" x 36"
Two Way Traffic Sign	W6-3	36" x 36"
Pavement Ends	W8-3	30" x 30"
Soft Shoulder	W8-4	30" x 30"
Advisory Speed Plates	W13-1	18" x 18"
Dead End	W14-1	24" x 24"
No Outlet	W14-2	36" x 8"
No Passing Zone	W14-3	30" x 40" x 40"



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**4.2.3.1 Road Extension Sign**

Signs indicating that a stub roadway, within a subdivision, will be extended in the future shall be installed at the end of stub roads as a part of the subdivision development. The sign shall have a message that indicates the following:

“This Road is to be Extended with Future Development.

For More Information, Contact

the City of Suffolk Planning Office at 514-4060.”

The sign is to be provided by the developer, and fabricated using a 0.080-inch gauge aluminum sign blank and fully reflective (minimum engineering grade material) sheeting.

An alternate sign message may be utilized if it is determined by the Traffic Engineer that the alternate message conveys a clear indication that the road will be extended in the future. Road extension signs shall be installed prior to the issuance of the first building permit in the subdivision.

The developer shall bear the cost of any maintenance which is needed to the road extension signs until such time the roads in the subdivision have formally been accepted into the City road system.

**4.2.3.2 Handicap Parking Sign**

Shall be as required by State Code attached below:

1. All parking spaces reserved for the use of persons with disabilities shall be identified by above grade signs, regardless of whether identification of such spaces by above grade signs was required when any particular space was reserved for the use of persons with disabilities. A sign or symbol painted or otherwise displayed on the pavement of a parking space shall not constitute an above grade sign. Any parking space not identified by an above grade sign shall not be a parking space reserved for the disabled within the meaning of this section.
2. All above grade disabled parking space signs shall have the bottom edge of the sign no lower than four (4) feet, nor higher than seven (7) feet above the parking surface. Such signs shall be designed and constructed in accordance with the provisions of the Uniform Statewide Building Code.
3. Building owners shall install above grade signs identifying all parking spaces reserved for the use of persons with disabilities in accordance with this section and the applicable provisions of the Uniform Statewide Building Code by January 1, 1993.
4. Effective July 1, 1998, all disabled parking signs shall include the following language: PENALTY \$100-\$500 Fine, TOW-AWAY ZONE. Such language may be placed on a separate sign and attached below existing above grade disabled parking signs, provided that the bottom edge of the attached sign is no lower than four (4) feet above the parking surface. (1992, cc. 753, 764; 1997, cc. 783, 904)



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**4.2.3.3 Standard Mast Arm Sign**

General: Internally illuminated street name sign assemblies and associated mounting hardware meeting the requirements of the Minimum Specifications for Traffic Control Devices (MSTCSD) and the manual on Uniform Traffic Control Devices (MUTCD). The sign shall incorporate LED technology with transparent reflective sheeting. Signs shall be able to be mounted to the face of the mast arm. Install should be of new components only.

Signs shall meet or exceed all required specifications of the Southern Manufacturing “Clean Profile” LED Illuminated Street Name Sign, Victorian Type C5:

- Construction

Each sign body is constructed from 5052 H32 .125” thick aluminum. Single face signs shall be one-piece construction and all seams shall be continuously welded to ensure a watertight seal. Double face sign bodies shall be continuously welded on all seams. The double face sign also features doors on both sides for easy access. 1/8” holes shall be incorporated in the bottom of the enclosure to prevent possible buildup of condensation.

The signs must be available with viewable areas up to 27” high and 10’ in width. The height shall vary in 1” increments from 12” to 27” and the width in one foot increments from 4’ to 10’.

The maximum thickness shall not exceed 4” for a single sided sign and 6” for a double sided sign.

The sign shall be constructed so that it is serviceable without any special tools. The lenses shall be mounted in doors that open down and allow for the lens to be replaced without removing the sign.

There shall be an external panel to allow access to the terminal block and fuse.

- Finish

The sign bodies and doors shall be polyester powder coated for durability using a satin black finish or other colors to match mast arms to the external aluminum surfaces.

- Mounting

Signs must be built to accommodate standard traffic hardware made by Pelco, Zapp, MD Solutions and other approved mounting hardware manufacturers.

Maximum Weights (Excluding brackets)

		Viewing Heights			
		Single Face		Double Face	
		15 inch	20 inch	15 inch	20 inch
Viewing Widths	4 ft	34 lbs	40 lbs	38 lbs	43 lbs
	6 ft	48 lbs	58 lbs	52 lbs	59 lbs
	8ft	62 lbs	72 lbs	67 lbs	75 lbs

- Illumination and power.



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The sign shall be illuminated by LED inside the top, the bottom or both top and bottom to provide even illumination without hot spots from top to bottom. The minimum brightness shall be 400 lux. The LEDs light panels shall be engineered such that the failure of one LED does not result in the failure of other LEDs. The LEDs shall have a minimum life of 60,000 hours.

The power supply shall be housed internally and have a minimum IP rating of 66.

The sign should be protected by a commercially available fuse mounted such that it can be changed without opening the sign.

- AC Loading Matrix for all sign types.

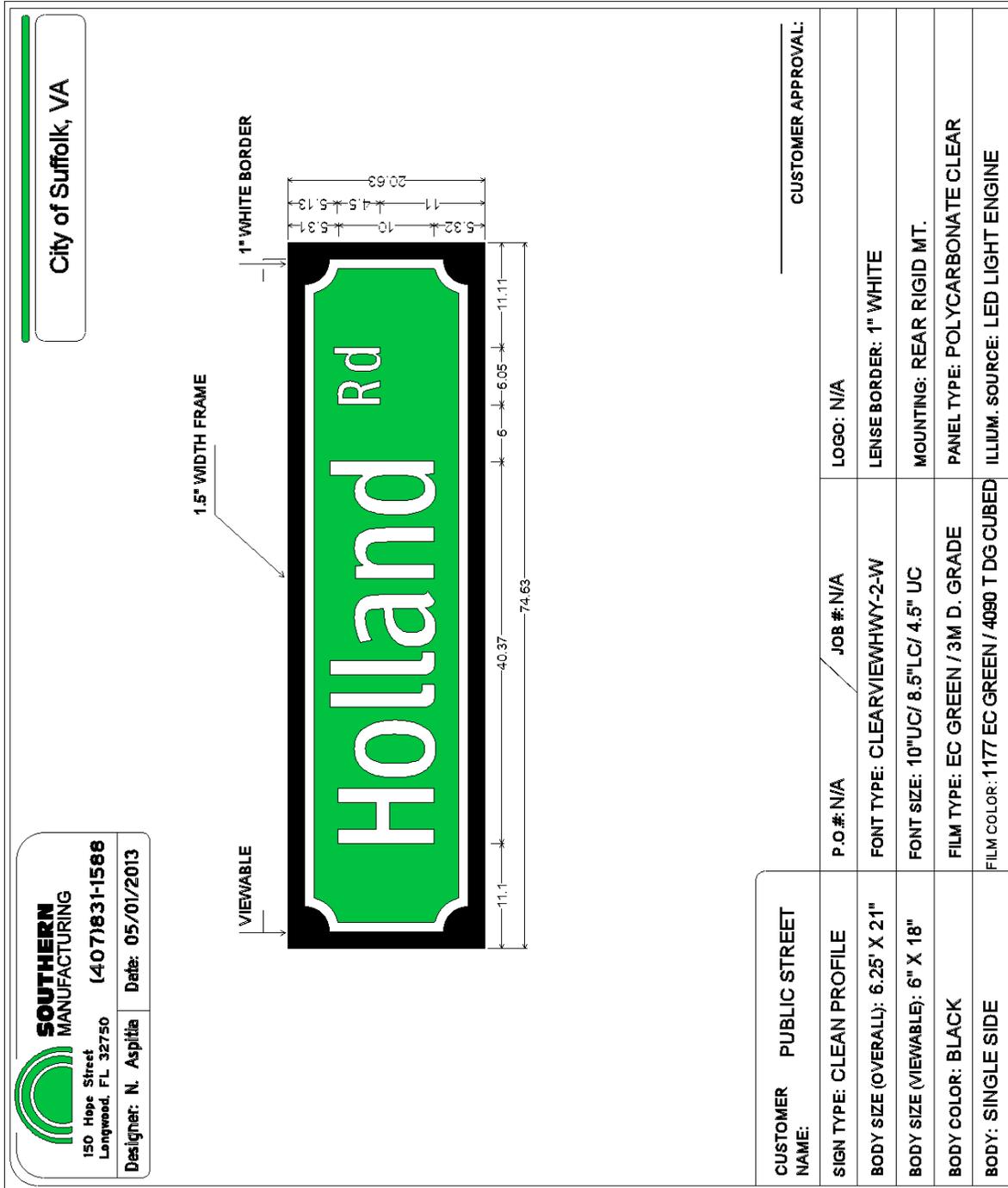
The incoming voltage shall be a minimum of 100 volts and a maximum of 277 volts AC. The maximum power consumption in watts shall not exceed 40 watts for signs with a viewable height of 18" or less and 70 watts for a viewable area of 19" or greater.

- Tests, Certifications, and Warranty
  - UL 48 Listed
  - Certified to 150 MPH wind load
  - Made in the USA
  - Manufacturer's warranty of not less than seven (7) years.
  - A list of references from at least six municipalities including one in the state of Virginia or a contiguous state where signs have been in service for at least one year.



4.2.3.4 Traffic Signal Mast Arm Sign Requirements

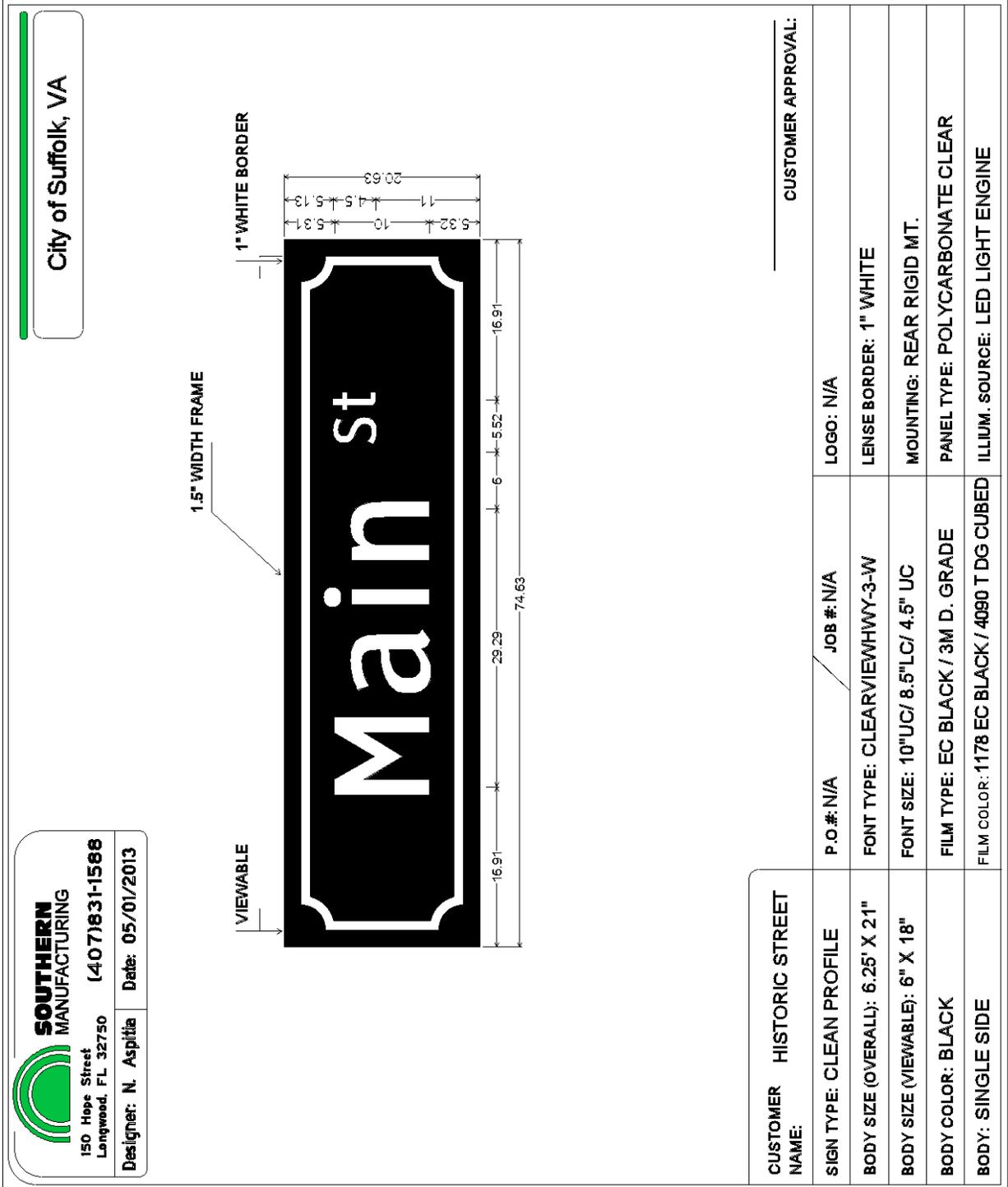
Figure 4.2.1 Standard Public Street Mast Arm Street Sign





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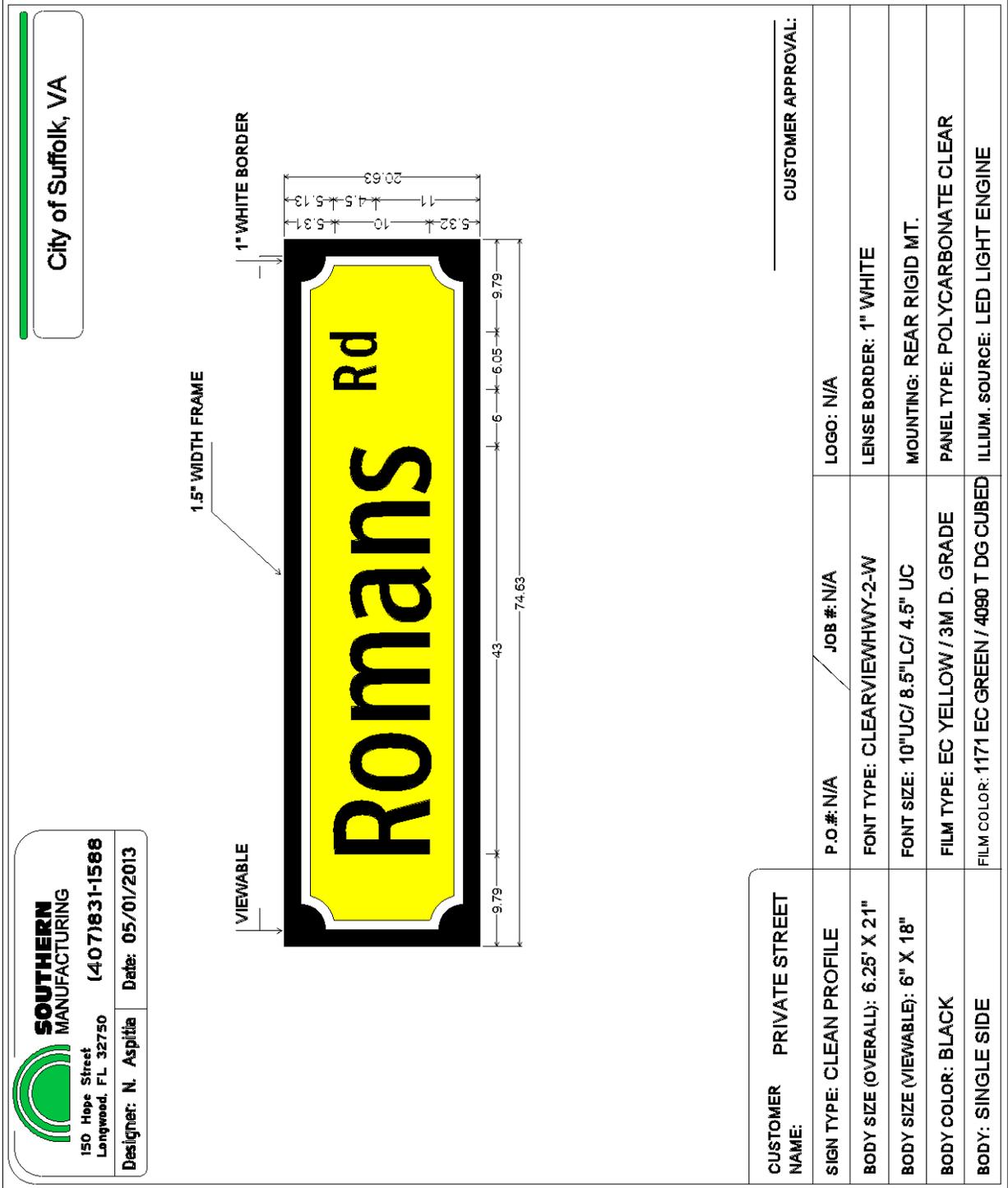
Figure 4.2.2 Standard Historic Mast Arm Street Sign





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Figure 4.2.3 Standard Private Mast Arm Street Sign





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### **4.2.3.5 School Directional Signs**

School directional signs shall only be considered for schools which are accredited by the Virginia Board of Education or have accreditation recognized by the Virginia Board of Education, shall provide significant public service through the use of its facilities for both scholastic and community activities, during the day and at night, on a year-round basis. The school must be located off of the route desired to be marked.

### **4.2.3.6 Signing for Traffic Signals**

Include MUTCD R10-12 signs on the span wire or mast arm, adjacent to each 5-section protected/permitted left turn signal. Do not use these signs for permitted left turn only movements.

Show street name signs mounted either on the mast arms or pole shafts. Mast arm mounted Metro Street Name signs generally should be shown mounted to the mast arm midway between the first two (2) signal heads. Mast arm mounted Internally Illuminated Street Name signs generally should be shown mounted to the mast arm in a position where they are centered over the curb return.

When a mast arm is not positioned perpendicular to a street, it may be necessary to show the Metro or Internally Illuminated street name sign as pole shaft mounted. Each Internally Illuminated street name sign is to have a 12AWG/3C conductor cable run from the sign to the controller cabinet. This cable is to be routed through the same conduit system as the signal cable. A separate conduit is not necessary.

When an exclusive pedestrian movement is included in the signal phasing, a NO RIGHT TURN ON RED sign should be shown to restrict right turning movements during the protected pedestrian phase.

Show New Signal Ahead Advance Warning signs (W3-3 signs with warning flags and light) on each approach signal installations. On approaches with two (2) or more lanes and a divided median, place a sign in the median and on the shoulder of the approach. The signs typically are placed a distance, in feet, in advance of the intersection of 10 times the speed limit. It may be necessary to adjust this setback because of the approach geometrics.

### **4.2.3.7 Private Access Lanes/Family Transfer Street Signs**

Any time a new family transfer plat is approved, if the plat contains three (3) or more parcels that do not front on a public street, the applicant will need to pay the City a fee of the current amount shown in the City Fee Schedule to post a private sign denoting the name of the private ingress/egress drive serving said parcels. The selected name of the private ingress/egress drive shall end in the word "lane" which is indicative of a relatively narrow passageway. Once done, all parcels will be addressed from the private ingress/egress lane.

Should any pre-existing situation be in existence in regard to multiple parcels/structures being located on a private ingress/egress lane, the City will put a private lane sign at the request of the property owners and at their expense.



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4.2.4 Pavement Markings

Pavement marking plans will be required for approval of the development. The plan set shall include the items listed on the checklist provided in Appendix 4.10. The developer shall place all pavement markings to City and VDOT standards.

4.2.5 Signals

Signal warrants will be included as part of the Traffic Impact Study. These warrants conform to the latest edition of the MUTCD. The developer shall pay for the design and installation of any new traffic signals or modification to an existing traffic signal, if warranted by their development. If no traffic signal exists, but one is anticipated at the subdivision street in the future, the developer will be required to install all underground infrastructure (i.e., junction boxes and conduit), as determined by the Traffic Engineer, at the time of construction of the new subdivision street.

The installation of street lighting on the traffic signal mast arm poles, as determined by the Traffic Engineer, is considered a part of the traffic signal installation.

4.2.5.1 Design Standards

- Existing signals to be modified or proposed signals shall conform to the following:
- Traffic signals shall conform to size, configuration and location as specified in the latest edition of the MUTCD. A minimum 12” signal head shall be used at all intersections. All signal heads shall have backplates. All heads shall have LED indicators conforming to the latest VDOT specifications.
- Traffic signal mast arm poles with rigid mounted signal heads shall be used except in those locations that the geometry would make it impractical. If span wire mounting is used, the signal head shall be tethered at the bottom. The signal layout should conform to a box configuration. Span wire mounting will only be approved in exceptional cases by the Department of Public Works.
- Specify mast arms in 5-foot increments. The furthest signal from the pole should be at least one (1) foot from the end of the arm.
- Traffic signal poles and street lighting shall be coordinated at signalized intersections so that the traffic signal pole may be used for the street light fixture to minimize the number of poles at an intersection. Poles shall be located where applicable clear zone criteria is satisfied.
- Traffic signal poles to be hot dipped galvanized unless otherwise required in special districts.
- Signal heads to be flat black unless otherwise specified in special districts.
- Where loop detectors are allowed, the following shall apply:
  - Presence loops shall be six (6) feet wide by 40 feet in length. Those used for left turn lanes shall be quadruple loop type TD-1E in the [VDOT Road and Bridge Standards](#) and shall be extended a minimum of two (2) feet in front of the stop bar. Pulse loops shall be six (6) feet by six (6) feet placed in the center of each lane. They should be placed as follows:

Speed Limit (MPH)	Detector Setback (Ft.)
25	105



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30	140
35	185
40	230
45	140, 285 *
50	110, 220, 340 *
55	100, 250, 400 *

\*On approaches with posted speed limits of 45 m.p.h. or greater, multiple sets of pulse loops are required. Loop wire shall be 12 AWG conforming to IMSA Specifications 51-5, 1991.

- Each loop shall be wired directly to the control cabinet by two (2) conductor shielded cable unless otherwise specified and approved by the City Traffic Engineer.
- A 1" conduit between the edge of pavement and the adjacent junction box, where the loop wires are spliced to the loop detector lead-in cable(s), is to be shown for each loop detector sawcut.
- A separate loop detector lead-in cable shall be shown for each presence loop detector. A separate loop detector lead-in cable shall be shown for each set of pulse loop detectors.
  - Where video detection is specified, equipment shall conform to City Video Detection Standards detailed on the City Website. The detection zone placement shall conform to the same distance standards noted for loop detectors.
  - Three (3) section signal heads shall be connected directly to the associated control cabinet signal terminals by five (5) conductor signal cable. Five (5) section signal heads shall be connected by seven (7) conductor signal cable. All other signal heads shall be connected by the number conductor signal head shown in plans, with each signal face connected directly to the designated control cabinet signal terminals. All wiring shall conform to IMSA Specification 20-1, 1991. Cable runs shall be continuous from the controller cabinet to the first signal head on each circuit. The designer shall not specify splicing of signal cables in hand holes or junction boxes, without the prior written approval of Traffic Engineering. Wiring from the first signal head to subsequent signals shall be accomplished by jumping conductor cables between the signal heads. It is typically not necessary to run a separate conductor cable from the cabinet to each signal head on the same phase; however, when the number of signals on the same phase or circuit exceeds three, the load should be reviewed to determine whether the wiring requirements should be modified and either specify a larger gauge conductor or add an additional conductor cable to divide the load. Consideration should be given to wiring a 3-section signal controlling a protected only left turn movement, with a seven (7) conductor cable. This will facilitate any future modification to convert the movement to protected/permitted operation.
- When traffic control devices such as signal poles, controller cabinets and junction boxes are located outside of the public right-of-way, the developer shall grant the City of Suffolk a traffic control easement to maintain these devices.



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- When sidewalks, bike paths or trails are provided, pedestrian pushbuttons shall be provided in the signal design. These pushbuttons shall be wired with a 2-conductor cable and a continuous run between the pushbutton and the controller. The designer shall not specify splicing of this cable in hand holes or junction boxes without prior approval from the City Traffic Engineer.
- Pedestrian signal heads shall conform to City Pedestrian Head Standard detailed in on the City Website unless otherwise specified by the City Traffic Engineer. All wiring to these heads shall be 5-conductor cable in a continuous run from the pedestrian head to the controller.
- Conduit runs may be a maximum of 190 feet between access points.
- All signal, detector and electrical service conductors and cables installed underground shall be placed in conduit. Conduit is specified as either Galvanized Rigid Steel (GRS) or PVC. The applications of each are as follows:
  - Rigid Steel conduit shall be specified as:
    - For risers placed on the surface of wood or steel poles
    - Between the edge of pavement and junction box for loop wires
    - For electrical service conductors between the controller cabinet and the point of connection
- PVC Schedule 40 shall be specified for all other areas unless directed by the Project Engineer
- Conduit, except as noted below, placed under roadway pavement shall be a minimum of 3" diameter regardless of cable fill area
- Conduit placed for electrical service conductors shall be 1 ¼ inches diameter GRS conduit, with the following exception: conduit placed under roadway pavement for electrical service conductors shall be 2" diameter GRS minimum
- Conduit placed between the edge of pavement and a junction box for loop wires shall be 1" diameter GRS
  - Except as noted in these guidelines, the minimum size conduit diameter shall be 2".
  - Conduit installation is placed into one of the three (3) following categories:
    1. Trenched – installed in an earth area
    2. Open cut – installed in existing pavement area and the pavement structure is to be open cut
    3. Jack/bore – installed underneath existing pavement area without disturbing the existing pavement structure
- All conduit runs under existing pavement must be jacked or bored and labeled as such on the plans.
- All controllers shall be ground mounted unless where limited by right-of-way. A VDOT standard CF-1 controller cabinet foundation shall be specified on the plans.
- All junction boxes shall be VDOT standard JB-1 through JB-5. Junction boxes should not be placed in the utility strip unless it is at least six (6) feet in width.
- Selecting the proper size of junction box is important to ensure there is adequate area for entry of conduits and cables, as well as splicing of vehicle loop detectors. The following guideline is furnished for selecting junction box sizes:



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Table 4.3 Junction Box Sizes

VDOT STD.	CONDUITS ENTERING THE BOX	COMMENTS
JB-1C	A single 2" or 3" conduit plus 1 or more 1" conduits	A conduit termination point where loop detectors are spliced
JB-2C	A single 2" conduit and a 3" stub out or A maximum of 2 conduits up to 3" diameter each or A maximum of 2 conduits up to 3" diameter each plus 1 or more 1" conduits	Electrical service point of connection  Interconnect cable  Loop detection system
JB-3C	3 conduits up to 3" diameter plus 1 or more 1" conduits	Junction boxes in the median and on corners of intersections
JB-4C		Typically not used
JB-5C	4 or more conduits up to 4" diameter	Typically used as the first junction box adjacent to the control cabinet when all the cables are routed to it in a mast arm installation

- Mast arm street signage shall be included in design and installation of all new signals and modifications of existing signals.
- Conduit shall be designed such that no conduit shall exceed 40% fill and at least one (1) conduit shall not exceed 25% fill. At least one (1) additional empty spare conduit shall also be provided (2" minimum) on all runs unless waived by the City Traffic Engineer. The attached Design Guide (Appendix 4.11) shown below can be used to aid in conduit design.
- All grounding requirements shall be controlled by VDOT Section 700.04(a) modified as found on the City Website.
- All signal work performed by private contractors shall be inspected to a minimum listing of requirements. This list can be found on the City Website.
- An uninterruptible power supply shall be installed at all new and modified traffic signals unless waived by the City Traffic Engineer. Requirements for this equipment are on the City Website.
- Traffic Signal Poles – traffic signal poles are to be located where applicable clear zone criteria is satisfied. Where the required clear zone setback cannot be provided, the



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structure shall be protected by guardrail. The designer shall make every effort to locate signal poles out of and behind the sidewalk area. On road construction projects, the locations of signal poles shall be identified with a Station and Offset. Wherever possible, the designer should consider the use of combination signalization/street lighting poles. When joint use poles are specified, the signal plans shall show the street lighting electrical conduit(s) necessary for lighting conductors. Lighting, signal and pedestal poles, sign post and overhead and bridge-mounted sign structures shall be designed in accordance with AASHTO's Standard Specification for Structural Supports for Highway Signs, Luminaries & Traffic Signals, using a 100 m.p.h. wind speed. For joint use traffic signal/ lighting poles, the design analysis shall use luminary ratings of 1.65 square feet effective projected area (Cd 1.0) and 60 lbs. weight per luminary

1. Wood Poles
  - A. Show down guys
  - B. Specify length of pole in 5-foot increments; select a length using the following information:
    - 1 feet in ground for every 6 feet above ground
    - 16-foot clearance to tether wire/bottom of signal heads
    - 5-foot signal head height
    - 5% span sag
    - Span attachment to be a minimum of 18" below the top of the pole (see VDOT Standard WD-2)
  - C. Select class of pole using the following: engineering calculations to substantiate proper loading and allowable stress of material
  - D. Specify that the wiring and rigging is to conform with VDOT Standard WD-2
2. Steel Strain Pole
  - A. 2-foot increments; select a length using the following:
    - 16-foot clearance to tether wire/bottom of signal heads
    - 5-foot signal head height
    - 5% span sag
    - Span attachment to be a minimum of 18" below the top of the pole (see VDOT Standard WD-1)
  - B. Specify that the wiring and rigging is to conform with VDOT Standard WD-1
3. Mast Arm Poles
  - A. Specify mast arms in 5-foot increments
  - B. Show luminary arm(s) on traffic signal plans
  - C. The outboard signal head on a mast arm should be shown mounted between 1-2 feet from the end of the arm
  - D. Specify mast arm mounted signals are to be mounted in accordance with VDOT Standard SM-3
  - E. The design shall take into account the following maximum allowable deflections:
    - Pole – 1% of pole length under dead load conditions



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- Mast Arm – 3% of arm length under dead load conditions and the arm shall not deflect below the horizontal plane
- 7% under dead load and wind load conditions

#### 4. Span Wire Installations

- A. Specify 5/8" diameter span wire for all span wire installations
- B. Specify 1/4" diameter tether wire for all span wire installations and that the tether rigging shall conform to VDOT Standard TA-1
- C. For temporary span wire installations, specify that cable rings are to be used by the contractor to attach the cables to the span; also, when adjustments in the locations of the signals will be needed due to construction, it should be specified that a quantity of extra cable be coiled either at each signal or at the pole; the Design Engineer must specify the length of cable to be coiled
- D. Specify span wire mounted signal heads are to be in accordance with VDOT Standard SW-1
- E. All 5-section signal heads are to be shown on the plans as one-way mounted; two 3-section signal heads may be shown as a 2-way mount; do not design for 3-way or 4-way mounting configurations



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APPENDIX 4.11

DESIGN GUIDE FOR  
CABLE & CONDUIT SIZING

CABLE

Non-Shielded

<u>Size Conductor</u>	<u>Area of Conductors</u>
14/2	.09
14/3	.10
14/4	.12
14/5	.14
14/7	.17
14/10	.30
14/12	.32
#8 EGC	.08

Shielded

<u>Size Conductor</u>	<u>Area of Conductors</u>
14/2	.13
14/4	.27
14/7	.33
14/12	.46
19/12 PR	.31
19/25 PR	.52

CONDUIT

<u>Size Conduit</u>	<u>Area Conduit</u>	<u>25% Area</u>	<u>40% Area</u>
1"	.79	.19	.32
1.25"	1.23	.30	.43
1.50"	1.77	.44	.71
2"	3.14	.78	1.26
3"	7.07	1.76	2.83
4"	12.57	3.14	5.03
5"	19.63	4.90	7.85
6"	28.27	7.06	11.31



**4.2.5.2 Traffic Signal Phasing**

All vehicle and pedestrian traffic movements shall be identified in accordance with the National Electrical Manufacturers Association (NEMA). The City uses a phase numbering scheme which is independent of the major streets running north-south. Phase assignments for full 8-phase operation with either protected or protected/permitted left turn movements are made as follows:

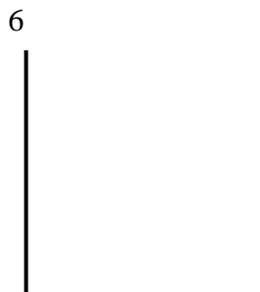
- Phase 1 - Vehicle southbound left turn movement
- Phase 2 - Vehicle northbound through movement
- Phase 2P- Pedestrian movement across east leg of intersection
- Phase 3 - Vehicle eastbound left turn movement
- Phase 4 - Vehicle westbound through movement
- Phase 4P- Pedestrian movement across north leg of intersection
- Phase 5 - Vehicle northbound left turn movement
- Phase 6 - Vehicle southbound through movement
- Phase 6P- Pedestrian movement across west leg of intersection
- Phase 7 - Vehicle westbound left turn movement
- Phase 8 - Vehicle eastbound through movement
- Phase 8P- Pedestrian movement across south leg of intersection

The left turn phase number is not used when the left turn movement is permissive only. In this event, the left turn movement has the same phase number as the adjacent through movement. For example, on a street running north-south, the northbound left turn and northbound through movement would both be identified as Phase 2.

Pedestrian movements are not numbered unless there are pedestrian signal or pedestrian view signal displays provided.

The designer should contact Traffic Engineering if there are questions concerning the designation of the major street or unique intersection geometrics or phasing requirements.

Figure 4.3





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### **4.2.5.3 Interconnection – Hardwire**

Junction boxes for interconnect cable shall be no more than 190 feet apart and should be no smaller than a JB-3.

Unless otherwise specified, all interconnect cable shall be placed underground.

Where the designer is dealing with modifying, relocating or connecting into the existing interconnect cable system, the plans must show the following notes:

1. Unless otherwise approved by the City Traffic Engineer, splicing of active interconnect cable shall be permitted during periods when the affected sections of the signal system are in scheduled non-coordinated standby operation.
2. The contractor shall notify the City Traffic Engineer 72 hours in advance of planned interconnect cable splicing work.
3. No splicing shall be permitted unless a City of Suffolk Public Works/Traffic representative is present.
4. Splices to interconnect cable shall be constructed using approved telephone and communications industry methods and materials. Individual conductors shall be spliced with sealed moisture resistant connectors. A heat shrinkable wrap around splice sleeve shall enclose the splice. The contractor shall submit three (3) copies of material specifications to Traffic Engineering for review and approval.
5. The contractor shall perform megger and fault tests on the section of spliced cable before it is placed into service. These tests shall be made from the nearest access points on either side of the splice(s).
6. The designer shall not show above ground splice enclosures located between the curb and sidewalk or in any location where they are susceptible to damage.

#### **4.2.5.3.1 Interconnection – Spread Spectrum Wireless**

Shall conform to specifications found on the City Website.

#### **4.2.5.3.2 Interconnection – Fiber Optic Wire**

Shall conform to specifications found on City Website

### **4.2.5.4 Preemption**

Shall be Opticom Priority Control System only. No substitutions allowed. The system shall include the following items:

- Card racks – Opticom Model 760 or as supplied original equipment by Cabinet Manufacturer for Opticom use
- Phase selectors – Opticom Model 764
- Auxiliary interface panel – Opticom Model 758
- Optical Detector – Opticom Model 721
- Detector cable – Opticom Model 138
- Preemption shall be required in all traffic signals under City maintenance. All signals which are upgraded shall also include the installation of this equipment.



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**4.2.5.5 Pedestrian Heads**

In addition to the requirements of Section 702 of the Virginia Department of Transportation Specifications, the pedestrian signal heads shall match exactly the specifications on the City Website and all components shall be painted flat black.

**4.2.5.6 Signal Timing Plans**

As a minimum shall include the following:

- Free plan/off peak
- AM peak
- Mid-day peak
- PM peak
- Early evening plan
- Coordination
- Time based backup plans
- Closed loop system plans
- Prior to beginning design, contact City Traffic Engineer to determine existing signal system and plan requirements.

**4.2.5.7 Traffic Signal Construction/Reconstruction Inspection Requirements**

1. Prior to any work beginning, a preconstruction meeting is required with Traffic Engineering. Contact Traffic Engineering to schedule.
2. The Traffic Control Plan must be submitted and approved by Traffic Engineering prior to application for Right-of-Way Permit.
3. A Right-of-Way Permit shall be secured by the contractor for all work. The Right-of-Way Permit may be obtained from the Public Works Department.
4. A supervisor, certified by IMSA (International Municipal Signal Association) shall be on-site any time work is being completed on a traffic signal. 24-hour, 7-days a week contact information for contractor staff shall be provided to Traffic Engineer prior to Right-of-Way Permit approval.
5. Contact Traffic Engineering a minimum of 48-hours in advance to schedule an inspection of the following items prior to work commencing.
  - A. All equipment location stake out.
  - B. All foundations prior to concrete pour including poles, cabinets and auxiliary equipment.
  - C. All conduit connections prior to backfilling including junction box connection.
  - D. All conduit runs may be required to have a conduit mandral pulled through them prior to wire installation.
  - E. A Traffic Engineering Representative must be present prior to turn on of any new equipment/installation.



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- F. Traffic Engineering will complete an extensive review of all aspects of signal, sign and pavement work markings and any punch list items corrected prior to acceptance by the City.
- G. Contractors must secure all required permits for electrical/gas work from the City Department of Planning & Community Development prior to beginning this work.

### **4.2.5.8 Traffic Engineering Required General Plan Notes**

For latest version of the Traffic Engineering Required General Plan Notes, please see the [City website](#).

### **4.2.5.9 Sample Traffic Signal Plans**

For samples of the Traffic Signal Plans, which meets all City requirements, please see the [City website](#).

### **4.2.6 School Zone Caution Lights**

The need to install school zone caution lights is based on the required amount of effective vehicle and pedestrian traffic controls and the existing geometric design of the subject road. The primary purpose of vehicle and pedestrian traffic controls in a school zone is to protect the safety of both the motorist and pedestrian. As school-oriented pedestrians crossing the road increases and/or the vehicular volume through the crossing increases, so do the safety hazards.

The presence of existing traffic controls, such as school crossing guards, signals and stop signs, indicates that pedestrian or vehicular traffic has already created safety, circulation or access concerns. If these existing controls are not adequate, the use of school zone caution lights may be justified to increase safety to an acceptable level.

The geometric design of the subject road also has a direct impact on the levels of safety afforded to both pedestrian and motorist. Important factors in this respect include the speed of the vehicles and the forward visibility provided to the driver. The posted speed limit and approach visibility must allow enough time and distance for the motorist to react and stop if necessary if: 1) pedestrians are either on or adjacent to the road; or 2) school buses are either entering or exiting school property. The installation of caution lights will compensate for inadequate road geometries and increase safety levels during school hours without impeding vehicle flows at other times.

An itemized list of warrants for the installation of beacons is listed below. The proper placement and operation of a warranted school zone caution light will maximize its ability to increase levels of safety for pedestrians and motorists, which is its primary function.

The placement of the beacons with respect to the road will define the school zone or area of influence where pedestrian and vehicle conflicts are of concern. The poles supporting the beacons should be placed so they meet clear zone criteria, and oriented such that they are clearly visible and do not impede vehicle or pedestrian flow. The clear delineation of the beginning of a school zone must provide proper vehicle-to-pedestrian distance for effective motorist reaction and speed reduction. The termination of a school zone should be noted by an "END SCHOOL ZONE" sign followed by a speed limit sign.



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At locations where the defined school zone includes side streets, a sign assembly containing a S4-3 “SCHOOL” panel, a R2-1 “SPEED LIMIT 25” sign and a S4-1 panel depicting the time of day the reduced speed is in effect should be installed. At locations where the side street contains a significant volume of traffic, a supplemental flashing caution light may be necessary. The decision to install an additional caution light should be based on an engineering study of conditions.

Operation and placement standards for the installation of school zone caution lights are listed below. The installation of school zone caution lights on a roadway with ingress and/or egress to a school site and with a posted speed limit greater than 25 m.p.h. may be justified when one (1) or more of the following warrants are satisfied:

- |            |  |
|------------|--|
| Warrant #1 | A minimum of 20 school-oriented pedestrians crossing the road adjacent to the school during a 2-hour period of a typical school day  |
| Warrant #2 | The vehicular volume on the road from which school buses access the school exceeds 200 vehicles per hour (v.p.h.) in urban areas or 140 v.p.h. in rural areas during those hours that school is opening or closing |
| Warrant #3 | A school crossing guard is present adjacent to the roadway in front of the school  |
| Warrant #4 | There is no other crossing controlled by a traffic signal, stop sign or adult crossing guard within 250-800 feet of the proposed location  |
| Warrant #5 | Existing safety hazards are present as established by previous accident data   |
| Warrant #6 | The approach visibility does not satisfy the VDOT or local jurisdiction stopping distance requirements   |

The above warrants represent minimum conditions which should exist for the installation of school zone caution lights. Engineering judgment should be exercised in conjunction with the above warrants when determining if conditions warrant the implementation of school zone caution lights.

The placement and operation of warranted school zone caution lights shall be governed by the following criteria:

- A. Virginia Department of Transportation (VDOT) “Clear Zone” criteria relating to the lateral placement of signs with respect to state controlled roads shall be satisfied. Normally, signs should not be closer than six (6) feet from the edge of the paved shoulder or 12 feet from the edge of the road. In urban areas, where these distances are not practical, a lateral clearance of not less than three (3) feet from the face of the curb is permissible.
- B. The installation of caution lights should not be less than 150 feet, nor more than 700 feet in advance of the school grounds or school crossing. If the distance exceeds 700 feet, then a supplemental fixed message sign assembly shall be posted midway between the caution light and school grounds.
- C. The length of the school zone between the beacons shall be not less than 600 feet.



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- D. Caution lights shall be at right angles to the existing roadway and facing the approaching vehicular traffic.
- E. School speed limit zones with intersecting side streets should have a supplemental fixed message sign assembly posted near the point of entry into the school zone. The fixed message sign assembly should consist of a top panel with the “SCHOOL” legend (MUTCD S4-3), a 25 m.p.h. speed limit sign (MUTCD R2-1) and a bottom panel indicating the specific periods of the day and/or days of the week when the special school speed limit applies (MUTCD S4-1). If the side street volumes exceed 200 v.p.h. for urban areas or 140 v.p.h. for rural areas or the normal posted speed limit exceeds 25 m.p.h., supplemental caution lights should be installed.
- F. The end of an authorized and posted school speed zone shall be marked with a standard “END SCHOOL ZONE” sign. This sign should be located opposite the beacon for opposing traffic or 150-700 feet beyond the school zone on one-way streets. A speed limit sign indicating the speed limit for the upcoming roadway section should be placed beyond the “END SCHOOL ZONE” sign.
- G. The caution lights shall be in operation as required, typically 30 minutes prior to the beginning of school to 15 minutes after the beginning of school in the morning, and 15 minutes prior to the closure of school to 30 minutes after classes are over.
- H. All flashing signals shall be fully automated with programmable capabilities. The units shall have the ability to skip pre-defined weekends and holidays.
- I. Sign installation shall conform to the MUTCD.
- J. At each caution light unit location, a “SCHOOL” pavement marking message shall be placed in each appropriate lane. The message shall be a minimum of eight (8) feet in height.

### 4.2.7 Warning Beacons

Contact Traffic Engineering for specific information concerning this item.

### 4.2.8 Emergency Traffic Signals

Emergency traffic signals are generally limited to fire station entrances. The same design criteria for traffic signals also are applicable to these installations, with the following special considerations and guidelines. Emergency signals shall operate in a normal mode during non-preempted periods. The signal displays shall be as follows:

- A. Facing the fire station entrance – two (2) 12” 3-section signal heads with displays from top to bottom of circular red, circular amber and circular green. During the non-preempted periods, these signals shall display a flashing circular red.
- B. Facing each of the main street approaches – two (2) 3-section signal heads (minimum) with displays from top to bottom of 12” circular red, 12” circular amber and 8” circular green. During the non-preempted mode, the main street signals shall display a 12” circular green.

The signal will be activated to the preempt mode by means of one (1) or more pushbuttons located in the fire station. A 14awg/3c conductor cable shall be installed between the controller cabinet and the pushbuttons in the fire station. The plan shall contain sufficient information and detail to identify the location of all pushbuttons in the building, and a



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schematic depicting the conduit routing/location and wiring within the building to each pushbutton. No vehicle detection is required.

A sign bearing the legend EMERGENCY SIGNAL sign should be placed adjacent to the traffic signals on each approach to the emergency signal.

A ground mounted controller cabinet shall be designed for Emergency Traffic Signals.

When the fire station is located within 500 feet of a traffic signal, the design should include a 2" conduit with a 14awg/3c conductor cable to the controller cabinet of that traffic signal. This will allow that signal to be preempted. The majority of the signalized intersections have controller units with integral preemption capability and all that will be needed in most instances is to relay the pushbutton preempt signal to the control equipment.

### 4.3 Street Design

The following are general guidelines that should be followed unless otherwise approved by the Director of Public Works.

All roadways shall be designed to the minimum standards given in the current editions of the City's [Unified Development Ordinances \(UDO\)](#), the [VDOT Road Design Manual](#), and [VDOT Road & Bridge Specifications](#) unless otherwise modified by this document.

#### 4.3.1 **Classification**

Classification of an existing or proposed street not already identified on the Master Thoroughfare Plan, for the purpose of determining the appropriate design of a roadway or development, or for the purpose of determining the appropriateness of a location for a proposed use, shall be done by the City Traffic Engineer in consultation with the Director of Public Works. Pursuant to 24 VAC Section 30-90-130 of the UDO, the classification system shown in Table 4-4 is hereby adopted for rural and urban streets within the City of Suffolk. Table 4-5 further details the requirements for local street design.

##### Classification Factors

In determining the classification of a street, factors to be considered include the following existing or proposed features:

- Facility Geometrics – including the number and width of traffic lanes, turning lane and parking lanes
- Access Conditions – including any restrictions on access, the spacing of private accesses and average lot frontages
- Traffic Characteristics – including ADT, percentage of trucks, average operating speed, percentage of turning movements, origin-destination characteristics of the traffic and peak hour characteristics of traffic
- Adjacent Land Uses

##### Street Patterns

Utilizing this information in conjunction with the Thoroughfare Plan Map and the narrative descriptions for each roadway classification provided in the Thoroughfare Plan and as set forth in the Street Patterns, below, the City Traffic Engineer shall determine which of the



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Thoroughfare Plan designations and Street Patterns apply to each street under consideration within a proposed subdivision plat or site plan. The minimum right-of-way, median width, and design specifications shall conform to the standards prescribed below for each Street Pattern. Where medians and sidewalks are required, streetscape landscaping shall be provided as required by Section 31-603(g) of the UDO. The [VDOT Road Design Manual](#) (latest edition) (hereinafter the "[Road Design Manual](#)") applies to some aspects of road construction, and is hereby incorporated by reference and made a part of this document.



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Table 4.4 Roadway Functional Classification 5

Classification	ADT	Street Patterns	Plate #7	Minimum Pavement Width <sup>6</sup> (Ft.)	Minimum R/W (Ft.)
Principal Arterial	>15,000	Freeway 1	N/A	Per VDOT Std.	Per VDOT Std.
		Expressway 1	N/A	Per VDOT Std.	Per VDOT Std.
		Arterial – Opt. 1 2	4013	54	100
		Arterial – Opt. 2 2	4014	78	125
Minor Arterial	>15,000	Arterial – Opt. 1 2	4012	54	100
Major Collector	7,901 – 15,000	Collector – Opt 1	4010	54	90
		Collector – Opt 2	4011	62	100
		Collector – Opt. 3	4012	70	110
		Industrial Access – Opt. 3	4009	52	80
Minor Collector	2,001 – 7,900	Main Street 3	4004	42	70
		Minor Collector – Opt. 1 3	4005	36/38	60
		Minor Collector – Opt. 2 3	4006	40	80
		Minor Collector – Opt. 3 3	4006-1	40	70
		Industrial Access – Opt. 2 4	4008	40	60
Local	401 – 2,000	Local (Urban)	4003	See Table 4-8	50
		Industrial Access – Opt. 2	4008	40	60
	< 401	Alley	4001	12	16
		Local (Rural Rd.)	4002	See Table 4-8	40
		Local (Urban)	4003	See Table 4-8	50
		Industrial Access – Opt. 1	4007	30	50

NOTES:

- 1 freeway & expressway patterns will only be required at the request of VDOT
- 2 for projects with proposed ADT > 25,000, the road will be designed as shown for proposed street patterns, but right-of-way will be secured to allow for future widening (Arterial – Opt. 2)
- 3 for projects with proposed ADT > 7,000, the road will be designed as shown for proposed street patterns, but right-of-way will be secured to allow for future widening (100' minimum right-of-way)
- 4 for industrial developments with projected traffic volumes > 7,000, the road will be designed as shown for proposed street patterns, but right-of-way will be secured to allow for future widening (Industrial Access – Option 3)
- 5 these classifications are for new roads; the Thoroughfare Plan shall be used for design requirements for existing roadway
- 6 pavement width is face of curb to face of curb
- 7 refer to Appendix D of UDO for all plate references



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Table 4.5. Local Street Requirements 7

Projected Traffic Volume (VPD)	Sidewalks Required (4' Minimum / 5' Desirable)	“W” Residential	“W” Non- Residential	“W” Non- Residential
		Minimum Pavement Width 2 (Ft.)	Parking Restricted Minimum Pavement Width 2 (Ft.)	Parking Allowed Minimum Pavement Width 2 (Ft.)
<b>Rural</b>				
≤ 250	Desired 1	283,4,6	24	30
251 – 400	Desired 1	283,4,6	24	30
401 – 2,000	Desired 1	365,6	N/A	38
<b>Urban</b>				
≤ 250	Required 8	283,4	24	30
251 – 400	Required 8	283,4	24	30
401 – 2,000	Required 8	365	N/A	38

**NOTES:**

- 1 8' trails are permitted on either side; this would increase the required right-of-way to 45'
- 2 pavement widths are from face of curb to face of curb
- 3 if road length is 0.5 miles or greater, minimum pavement width shall be 30'
- 4 if 3 or more off-street parking spaces – exclusive of any garage or similar car shelter facility for a single-family residence – are provided in the proximity of the dwelling unit they are intended to serve, and the roadway length is less than 0.5 miles, the minimum pavement width required may be reduced to 24'
- 5 if 3 or more off-street parking spaces – exclusive of any garage or similar car shelter facility for a single-family residence – are provided in the proximity of the dwelling units they are intended to serve, the minimum pavement width required may be reduced to 30'
- 6 for rural sections with pavement widths greater than 28', Standard CG-6 shall be used instead of Standard CG-2; the gutter pan width shall be included as part of the pavement width required
- 7 this table is to be used in conjunction with Plates 4002 (Rural) & 4003 (Urban) of UDO
- 8 sidewalks required based on zoning (See Table 4-8)



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Table 4.6 Curb & Gutter Section  
Geometric Design Standards for Residential Subdivision Streets (GS-SSR)  
Table 1 – Curb and Gutter Section

		HORIZONTAL AND VERTICAL CONTROLS				CURB AND GUTTER ROADWAYS		
		MAXIMUM 2:1 CUT OR FILL SLOPE				(SEE SPECIAL WIDTH REDUCTION CRITERIA)		
PROJECTED TRAFFIC VOLUME (ADT)	MINIMUM DESIGN SPEED (MPH) (NOT POSTED SPEED)	CURVE DATA		SUGGESTED MAXIMUM % GRADE	MINIMUM SIGHT DISTANCE		MINIMUM WIDTH (CURB TO CURB) (4) (PARKING ASSUMED)	CLEAR ZONE WITHOUT PARKING (MEASURED FROM FACE OF CURB) (6)
		MINIMUM CENTERLINE RADIUS	SUPER-ELEV.		STOPPING	INTERSECTIONS		
UP TO 400	20	110' (5)	NONE	10 (1)	125' (7)	200'	28' (2)	1.5'
401 - 2000	25	200'	NONE	10 (1)	155'	280'	36'	1.5'
2001 - 4000	30	335'	NONE	10 (1)	200'	335'	40' (3)	6
<b>NOTES:</b> For streets with volumes over 4000 or serving heavy commercial or Industrial traffic; use the appropriate geometric design standard. (see VDOT's Road Design Manual) The roadway with the highest volume will govern the sight distance. Right of Way requirements can be found in Section B-4.1 Right Of Way				1. For mountainous terrain, maximum percent of grade may be 18% for ADT up to 400 and 14% for 401-4000 ADT. 2. 28' allowed for streets < 400 vpd with concurrence of local officials. 3. 36' allowed for streets that are internal to the sub-division, with concurrence of local officials. 4. Pavement widths may be reduced if parking is not allowed. See page 12 of this Guide for roadway width exceptions criteria. 5. 100' minimum radius allowed in mountainous terrain 6. For curb and gutter streets with parking lanes, the clear zone is accommodated within the parking lane. However, VDOT has established a 3' minimum setback requirement behind the curb. 7. Based on 25 MPH Design Speed				

\* Rev. 1/06



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Table 4.7 One-Lane (One-Way) Subdivision Streets  
Geometric Design Standards for Residential Subdivision Streets (GS-SSR)

TRAFFIC	PROJECTED RAFFIC VOLUME (ADT)	DESIGN SPEED (MPH) (NOT POSTED SPEED)	HORIZONTAL AND VERTICAL CONTROLS Maximum 2:1 cut or fill slope				ROADWAY SECTION CRITERIA					
			MIN. CURVE RADIUS W/O SUPER-ELEV.	SUGGESTED MAXIMUM % GRADE	MINIMUM SIGHT DISTANCE		SHOULDER AND DITCH ROADWAYS Minimum ditch width (front slope*) should be 4 feet or greater, based on slopes of 3:1 (Gentler slopes promote homeowner maintenance of ditches) *Width includes 3' for G.R. installation.				CURB AND GUTTER ROADWAYS	
					STOPPING	INTER-SECTION	MINIMUM PAVEMENT WIDTH	FILL W. G.R.*	CUT OR FILL W/O G.R.	CLEAR ZONE (FROM EDGE OF TRAVELWAY)	CURB TO CURB WIDTH, WITH OR WITHOUT PARKING ON ONE SIDE	CLEAR ZONE (FROM FACE OF CURB)
ONE- WAY (1- LANE)	≤ 400 (5)	20	110' (6)	10% (2)	125' (7)	200'	16'	7'	4' (1)	6' (3)	22'	1.5'
<b>GENERAL NOTES:</b> These design standards may also be used for one-way divided pairs, such as subdivision entrances with wide medians. For streets anticipated to serve mixed residential-commercial, commercial, or industrial traffic, use the appropriate urban standard in the road design manual. In such settings, where <ul style="list-style-type: none"> <li>On-street parking is anticipated; a parking lane width not less than 7 feet should be used.</li> <li>Normal minimum shoulder widths and construction practices make parking along rural typical roadway sections inappropriate if not illegal.</li> </ul> Right Of Way requirements can be found in Section B-4.1 Right of Way							<b>FOOTNOTES:</b> <ol style="list-style-type: none"> <li>When pedestrian facilities are provided behind ditches, the shoulder width may be reduced to a minimum of 2 feet.</li> <li>The maximum percent of grade suggested may be adjusted to 18% in mountainous terrain.</li> <li>Clear zone widths may be reduced with the concurrence of the resident engineer where terrain or social/environmental impact considerations are appropriate</li> <li>For traffic volumes &gt; 400 ADT, pavement widths will be established by the resident engineer</li> <li>100' minimum radius allowed in mountainous terrain.</li> <li>Based on 25 MPH Design Speed.</li> </ol>					



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Table 4.8 Sidewalk Requirements 1\*

ZONING DISTRICT(S)	SIDEWALKS REQUIRED		
	Local	Collector	Arterial
A, RR, RE	Not required	Not required	Not required
RL, RLM, RM, RC, RU	Both sides of street	Both sides of street	Both sides of street
B-1, B-2, CP	Both sides of street	Both sides of street	Both sides of street
M-1, M-2	Both sides of street	One side of street	One side of street
CBD, VC, TND, PD	Both sides of street	Both sides of street	Both sides of street

FOOTNOTE:

1\* sidewalks, when required, may be constructed as a component to a multi-use trail as allowed per the requirements of Table 4-16, Bikeway Requirements

The following table shows minimum guidelines for roadway projects in the City:

Table 4.9 Geometric Design Criteria

Road Classification	Posted Speed (MPH)	Curb & Gutter (VDOT Standard)
Local (Rural)	25	CG-2
Local (Urban)	25	CG-6
Minor Collector	35	CG-6
Major Collector	35-45	CG-6 / CG-7
Arterial	≥ 45	CG-7

**4.3.1.1 Curbs & Gutters**

Curbs & gutters shall conform to the [Virginia Department of Transportation Road & Bridge Specifications](#) (latest edition); and the [HRPDC Regional Construction Standards](#) (latest edition). In the event of a conflict, the most restrictive standard shall govern. Curb and gutter for all streets and roads with posted speeds up to 45 m.p.h. shall be VDOT curb and gutter CG-2 or CG-6; rights-of-way for arterials with posted speeds above 45 m.p.h. shall be VDOT curb and gutter CG-3 or CG-7. The HRPDC construction details shall be used for all curbs & gutters in the right-of-way.

**4.3.2 Additional Design Requirements**

At existing or future major street intersections (existing or proposed traffic signals), no new driveways or street connections shall be allowed within the influence area of the intersection. The influence area is defined as the distance that vehicles will queue from the signalized intersection. This influence area shall be based upon traffic volumes summarized in the



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Comprehensive Plan based upon information consistent with the [Highway Capacity Manual](#). This influence area shall include an additional 100 feet beyond the queue length for back-to-back left turns. The minimum intersection spacing along minor arterials and major collectors shall be 500 feet, measured street centerline to centerline. Major arterial intersection spacing shall be not less than 1,000 feet, measured street centerline to centerline.

### **4.3.2.1 Pavement Cuts**

No pavement cuts will be permitted on streets with traffic counts greater than 2000 v.p.d., recently (within the last 24 months) overlaid streets or new streets without prior approval from Public Works. There will be no open cuts of roadways for pipes smaller than 8 inches in diameter. Lines must be jacked or bored under these streets. Any pipe crossing a major arterial shall be bored with a solid steel casing. Plans must state “bore” or “jack” at each required pavement crossing. Pavement patches may be permitted on streets with traffic counts less than 2000 v.p.d with Public Works approval. Any open cuts of roadways that are allowed shall provide for pavement patch or pavement reconstruction as per approved detail drawing. Surface tolerance shall not exceed ¼”. Valve boxes must be flush with the pavement. Traffic control plans must be submitted where open cuts have been permitted. No open cuts will be permitted for individual water laterals or franchise utility service lines unless the main line is located beneath the pavement and cutting is necessary to make the service connection.

**The designer shall contact the Public Works Department prior to plan submission to determine the required limits of milling and/or overlay.** The limits of the required milling and/or overlay shall be as approved in the plan approval process. If no formal plans are submitted such as a repair or maintenance operation, then the limits shall be in conformance with the requirements of the ROW permit issued by the Department of Public Works.

A pavement patching detail for open cuts is located on the [City website](#) and in [Appendix B](#). This detail must be used for all open cuts in the right-of-way with a trench width of two (2) feet or less. For trench widths greater than two (2) feet, a pavement section design must be submitted to the Public Works Department for review and approval. All applicable geotechnical information (including CBRs) must be submitted with the pavement section design in order for staff to evaluate the design.

### **4.3.2.2 Railroad Crossings**

1. Proposed public vehicular crossings of active railroads must be constructed at the cost of the developer, including any one-time fee to cover future maintenance and operation costs.
2. All site plans or subdivisions which increase the traffic volume at an existing rail crossing must upgrade any deficiency in the existing rail crossing traffic control system. The minimum requirement is flashing lights and gates. In the case of existing public rail crossings, the City will accept responsibility for a reasonable annual maintenance and operations cost.
3. The City of Suffolk traffic control system requirements for rail crossings are as follows:
  - a. Undivided Roadways – flashing light signals and gates.



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- b. Divided Roadways – cantilever flashing lights and gates at all four (4) quadrants.

### ***4.3.2.3 Bridge, Drainage and Other Grade Separation Structures***

Bridges, drainage and other grade separation structures shall be designed and constructed in accordance with all applicable City, State, and Federal criteria and standards. The City will accept grade separation structures as part of new subdivision streets provided the structure is a drainage structure or is intended to separate the movement of registered motor vehicles. In addition, the City will accept grade separation structures intended to separate pedestrians or bicyclists or any combination thereof from traffic using the roadway, provided:

- The structure is available for unrestricted public use;
  - The structure is accessible to pedestrian facilities, if any, situated along the street; and
  - The projected traffic volume of the street is not less than 4000 v.p.d. or, if the structure otherwise serves as part of the principle pedestrian access to a school and a peak hour traffic volume of 450 v.p.h. is projected.
- A. Loading – all bridges and culverts shall be evaluated for HS 20-44 loading or alternate military loading, or both, in accordance with the current AASHTO bridge design specifications and VDOT modifications. To facilitate the City’s review, all pertinent calculations for a structure’s design shall be submitted with each bridge plan or other non-standard drainage structure. All design information must be signed and sealed by an engineer licensed by the Commonwealth of Virginia.
  - B. Width – clear roadway widths of all structures shall be in accordance with the City’s design requirements.
  - C. Prior to final acceptance by the City for public street maintenance, the City will have the bridge inspected by its bridge inspection consultant in accordance with FHWA Bridge Inspection criteria. All costs associated with this inspection shall be the responsibility of the developer and must be paid prior to the inspection.

### **4.3.3 Design of Left Turn Lane Transitions**

The design of the left turn lane widening transitions shall be in conformance with the attached exhibits. Additionally, when pavement widening is required for turn lanes, the pavement transition shall be added as required, and then the entire intersection area shall be overlaid with new asphalt surface and new pavement stripping installed. It may be necessary to mill the area to be overlaid to correct roadway grade issues. The final determination of the issue of milling will be at the discretion of the Public Works Department. When asphalt overlays are installed, the edge of the curb to existing pavement shall be milled to depth of overlay to provide for a smooth connection to existing pavement.



Figure 4.4

# DESIGN FOR LEFT TURN LANES

## WIDENING ON ENTRANCE SIDE

FOR SPEEDS 45 OR MORE  $L = S \times W$  <sup>420</sup>  
FOR SPEEDS 40 OR LESS  $L = WS^2/60$  <sup>245</sup>  
L • TRANSITION LENGTH  
S • SPEED LIMIT  
W • OFFSET DISTANCE IN FEET (LANE WIDTH)

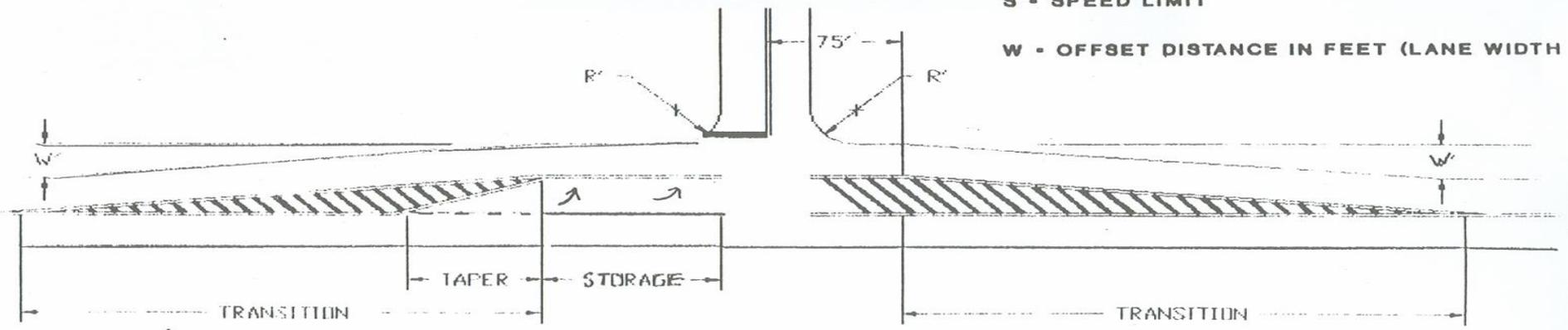




Figure 4.5

# DESIGN FOR LEFT TURN LANES

## WIDENING ON OPPOSITE SIDE

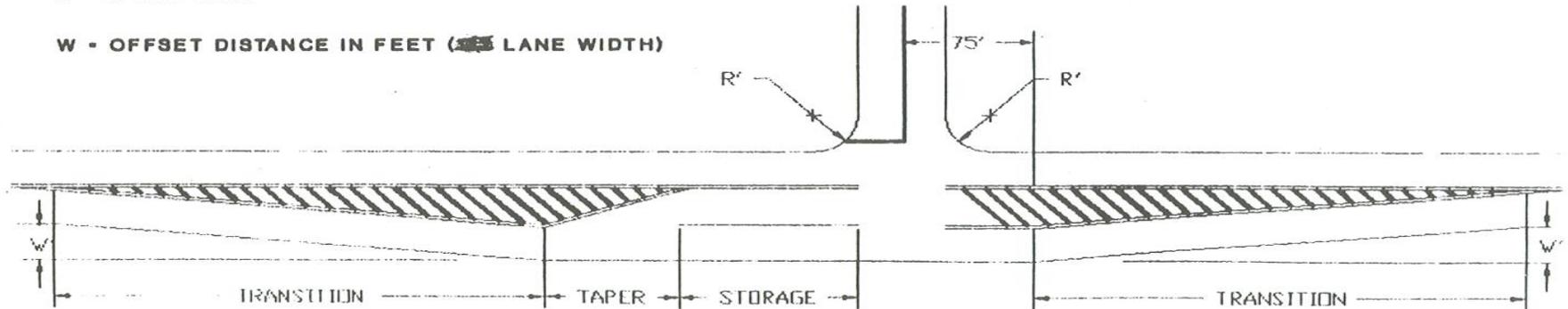
FOR SPEEDS 45 OR MORE  $L = S \times W$

FOR SPEEDS 40 OR LESS  $L = WS^2/80$

L - TRANSITION LENGTH

S - SPEED LIMIT

W - OFFSET DISTANCE IN FEET (~~2x~~ LANE WIDTH)



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11/13/96



Figure 4-6

# DESIGN FOR LEFT TURN LANES

## WIDENING ON BOTH SIDES

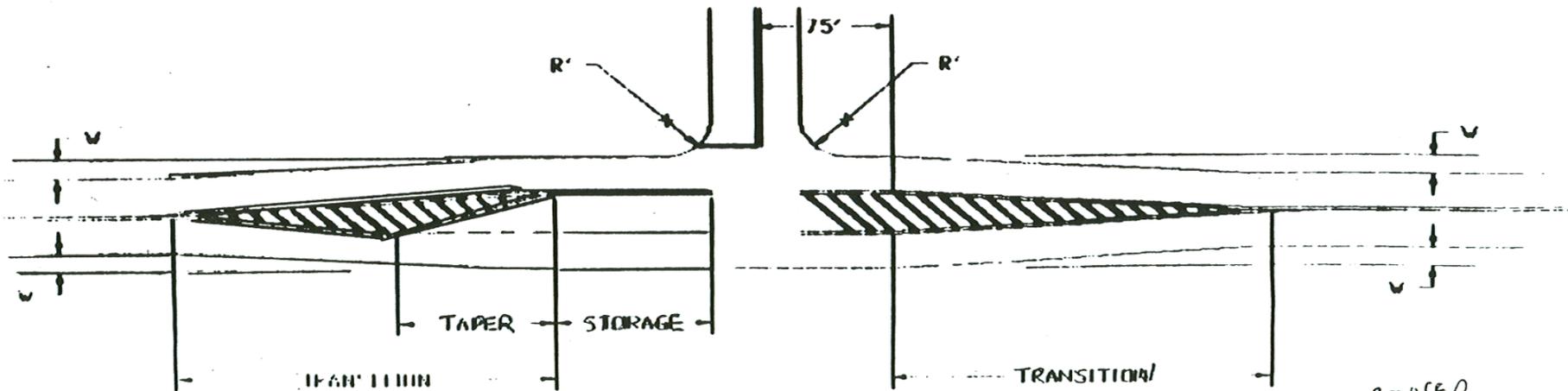
FOR SPEEDS 45 OR MORE  $L = S \times W$

FOR SPEEDS 40 OR LESS  $L = WS^2/60$

L - TRANSITION LENGTH

S - SPEED LIMIT

W - OFFSET DISTANCE IN FEET (LANE WIDTH)



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**4.3.4 Horizontal Alignment**

**4.3.4.1 Design Speed**

Design speed is the maximum safe speed that can be maintained over a specified section of roadway. For all roads with an anticipated posted speed limit of 30 m.p.h. or less, the design speed shall be 5 m.p.h. over the posted speed limit. For roads with an anticipated posted speed of 35 m.p.h. or greater, the design speed should be 10 m.p.h. over the posted speed limit.

**4.3.4.2 Centerline Radius**

The minimum centerline radius requirements for residential subdivision streets are outlined in Table 4.6. All other street design shall be as outlined in the [VDOT Road Design Manual](#).

**4.3.4.3 Sight Distance**

Two (2) types of sight distance exist for the design of roads:

- Stopping Sight Distance
- Intersection Sight Distance

**Stopping Sight Distance**

Stopping sight distance is the sum of two distances: the brake reaction distance and the braking distance. The breaking reaction distance is the distance a vehicle travels from the time a driver sees an object requiring a stop to the moment the brakes are applied. The braking distance is the distance a vehicle travels from the moment the brakes are applied, until it comes to a stop condition. Stopping sight distance is used for the design of vertical curves. In computing and measuring the sight distance, the 3.5 foot eye height and 2 foot criteria are used. The following table shows the stopping sight distance for various speed limits.

Table 4.10 Stopping Sight Distance for Various Speed Limits

	DESIGN SPEED						
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph
Stopping Sight Distance	200'	250'	305'	360'	425'	495'	570'

From AASHTO, A Policy On Geometric Design of Highways and Streets, 2011, Table 3-1, Page 3-4, Stopping Sight Distance on Level Roadways.

NOTE: Assumes wet pavement

**Intersection Sight Distance**

Intersection sight distance allows for the safe maneuver of a vehicle from the stopped position at an intersection even though an approaching vehicle comes into view on the intersecting road as the stopped vehicle begins its departure. The following table shows the minimum intersection sight distance for various posted speed limits:

Table 4.11 Intersection Sight Distance



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ROAD WIDTH (Ft.)	POSTED SPEED LIMIT							
	25	30	35	40	45	50	55	60
24	250'	300'	350'	400'	450'	500'	550'	600'
30	261'	313'	365'	417'	470'	522'	574'	626'
36	272'	326'	381'	435'	490'	544'	598'	653'
40	287'	344'	401'	459'	516'	573'	631'	688'
52	298'	357'	417'	476'	536'	595'	655'	714'
67	320'	384'	448'	511'	575'	639'	703'	767'

From AASHTO, A Policy On Geometric Design of Highways and Streets, 2011, page 745.

**4.3.4.3.1 Sight Distance Measurement**

The intersection sight distance is measured along the major roadway, based on the major roadway's design or, in the case of existing roadways, the operation speed limit.

Decision points (A, B & C in Figure 4-7) represent the position of drivers along the major and minor roadways. Two (2) sight distance triangles are considered, one (1) in each direction of the major roadway from decision point A, which represents the driver exiting the minor roadway. Decision point A is located four (4) feet from the centerline or left edge of pavement of the minor roadway and 20 feet from the middle of the nearest travel lane of the major roadway. (For reference purposes, AASHTO defines this point as 14.4 to 17.8 feet from the edge of the travel lane of the major roadway).

Decision point B is located in the middle of the nearest travel lane of the major roadway.

Decision point C is located in the nearest right to left movement lane of the major roadway, four (4) feet from the centerline or the left edge of pavement.



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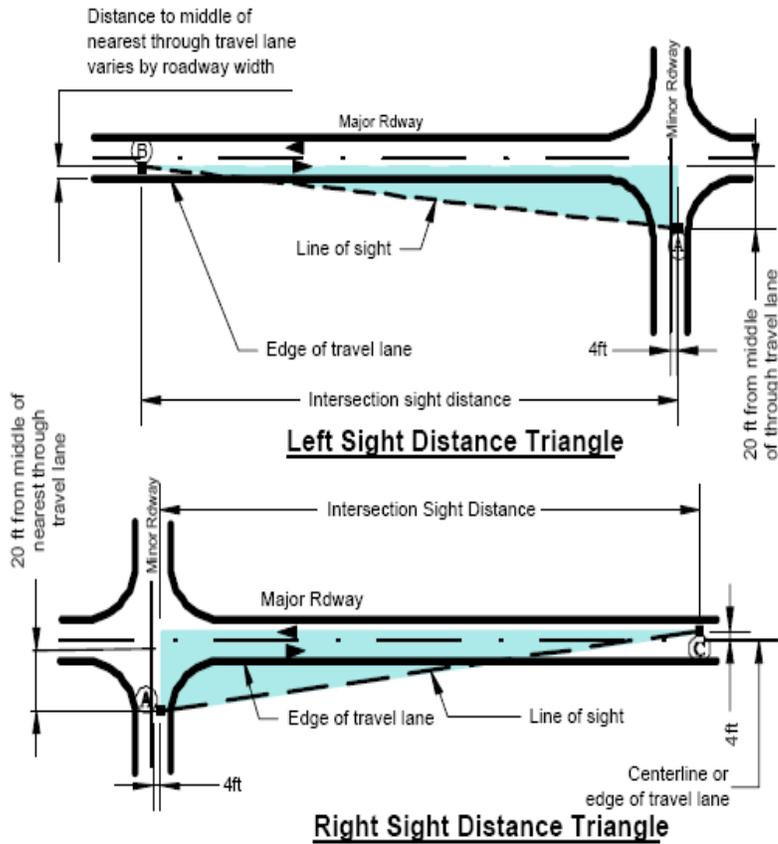


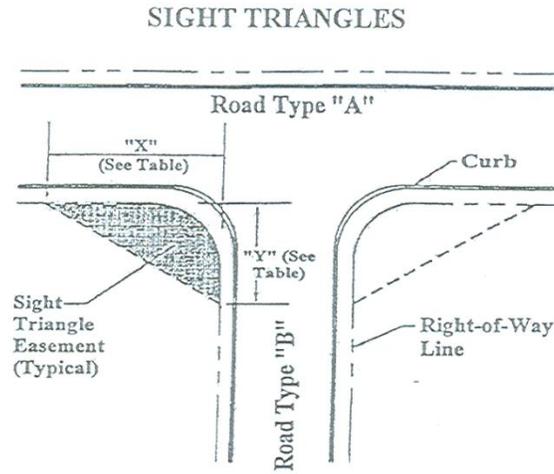
Figure 4.7

Additional information regarding distance requirements is available in AASHTO's Policy on Geometric Design of Highways and Streets.



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Figure 4.8



**Table 4.12 Sight Triangle Table**

ROAD TYPE "B"

ROAD TYPE "A"	X/Y = FEET (x/y) = Meters		ACCESS	LOCAL	MINOR COLLECTOR	MAJOR COLLECTOR	MINOR ARTERIAL	PRINCIPAL ARTERIAL
	ACCESS	20/20 (6/6)	20/20 (6/6)	20/30 (6/9)	20/40 (6/12)	20/50 (6/15)	20/60 (6/18)	
LOCAL	20/20 (6/6)	20/20 (6/6)	20/30 (6/9)	20/40 (6/12)	20/50 (6/15)	20/60 (6/18)		
MINOR COLLECTOR	30/20 (9/6)	30/20 (9/6)	30/30 (9/9)	30/40 (9/12)	30/50 (9/15)	30/60 (9/18)		
MAJOR COLLECTOR	40/20 (12/6)	40/20 (12/6)	40/30 (12/9)	40/40 (12/12)	40/50 (12/15)	40/60 (12/18)		
MINOR ARTERIAL	50/20 (15/6)	50/20 (15/6)	50/30 (15/9)	50/40 (15/12)	50/50 (15/15)	50/60 (15/18)		
PRINCIPAL ARTERIAL	60/20 (18/6)	60/20 (18/6)	60/30 (18/9)	60/40 (18/12)	60/50 (18/15)	60/60 (18/18)		



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**4.3.4.3.2 Sight Triangle Easement**

The Suffolk City Code also requires that minimum sight triangle easements be recorded on all plats, as well as shown on the design plans. The sight triangle should be shown on both the geometric design sheets and the associated landscaping plan sheets.

**4.3.4.4 Horizontal Curves**

When tangent centerline deflect from each other more than one degree (1°) and are not forming an intersection, they shall be connected by a curve with a minimum centerline radius of 300 feet, and a minimum centerline length of curve of 100 feet for local residential roads. Residential roads are not required to have super elevation. Residential roads intersecting any road shall have a tangent section of centerline at least 50 feet in length measured from the right-of-way line of the intersecting road.

When tangent centerlines on arterial and collector streets deflect from each other more than one degree (1°) and are not forming an intersection, they shall be connected by a curve with a minimum centerline length of curve based in the data in the following curve table.

Prior to initiating the design of a road, the engineer should contact the Department of Public Works regarding the degree of super elevation that will be permitted on the specific road. The determination as to whether super elevation will be permitted will be based on the functional classification of the road, as well as drainage characteristics and considerations. The maximum super elevation allowable is 0.04 foot/foot.

At least 100 foot tangent length shall be provided between all reverse curves.

Table 4.13 Degree of Curve & Minimum Radius for Roads  
Normal Crown Section

	DESIGN SPEED						
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph
Radius	2,030'	3,730'	4,770'	5,930'	7,220'	8,650'	10,300'

From AASHTO, A Policy On Geometric Design of Highways and Streets, 2011.



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Table 4.14 At Maximum Super Elevation (emax = 0.04)

	DESIGN SPEED						
	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph
Degree of Curve	19° 00'	13° 45'	10° 00'	7° 45'	6° 00'	4° 45'	3° 45'
Radius	250'	371'	533'	711'	926'	1,190'	1,500'

From AASHTO, A Policy On Geometric Design of Highways and Streets, 2004, page 167, Exhibit 3-25, Minimum Radii for Design Super elevation rates.

**4.3.5 Vertical Alignment**

**4.3.5.1 Design Criteria**

Each new street shall be designed with horizontal and vertical curves meeting or exceeding the minimum stopping sight distance outlined below. Vertical curves shall be a minimum length of 100 feet. Desirable sight distance values shall be used as the minimum values on all streets which will carry in excess of 7,000 vehicles per day (VPD).

Table 4.15 Minimum Stopping Sight Distance

Design Speed (MPH)	Minimum Sight Distance (Ft.)	K Value for:		Desirable Sight Distance (Ft.)	K Value for:	
		Crest Vertical Curve	Sag Vertical Curve		Crest Vertical Curve	Sag Vertical Curve
25	150	20	30	150	20	30
30	200	30	40	200	30	40
35	240	40	50	250	50	50
40	275	60	60	325	80	70
45	325	80	70	400	120	90
50	400	120	90	475	170	110
55	450	210	100	550	230	130
60	525	250	120	650	320	160
65	755	290	150	850	540	220

A minimum grade for streets with curb and gutter shall be three-tenths of a percent (0.3%). The maximum street grade shall be specified in the standards for each typical section.

The maximum centerline grade at a cul-de-sac shall not exceed five percent (5%). Any slope within the cul-de-sac pavement shall not exceed five percent (5%). The cross slope of the street leading to the cul-de-sac shall be a minimum of two percent (2%).



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### 4.3.5.2 *Vertical Curves & Minor Intersecting Streets*

All proposed streets and roads with a centerline vertical profile grade difference of greater than one percent (1%) must be designed with vertical curves at least 100 feet in length. The length of a vertical curve shall be determined by the passing sight distance noted in the Virginia Department of Transportation Road and Bridge Standards, (2001 or latest edition), for roads with posted speeds equal to or greater than 25 m.p.h. or a length appropriate for the design speed of the facility.

Minor intersecting streets shall have negative grade lines falling away from the major through streets with vertical curves on the approaches of the minor street to the major through street. This will be required if it is anticipated that the intersection will be signalized in the future.

#### Raised Median Design

Raised medians may be placed at subdivision entrances or can be used to create a divided roadway through a subdivision. All medians greater than 6 feet in width shall have a grass median and may have additional landscaping if approved by the Department of Public Works, and a Maintenance Agreement from a homeowners association or other group is provided. Any median less than six (6) feet wide shall be constructed of concrete, pavers, or stamped concrete.

#### Clear Zone Guidelines (i.e., Setback for non-breakaway fixed objects)

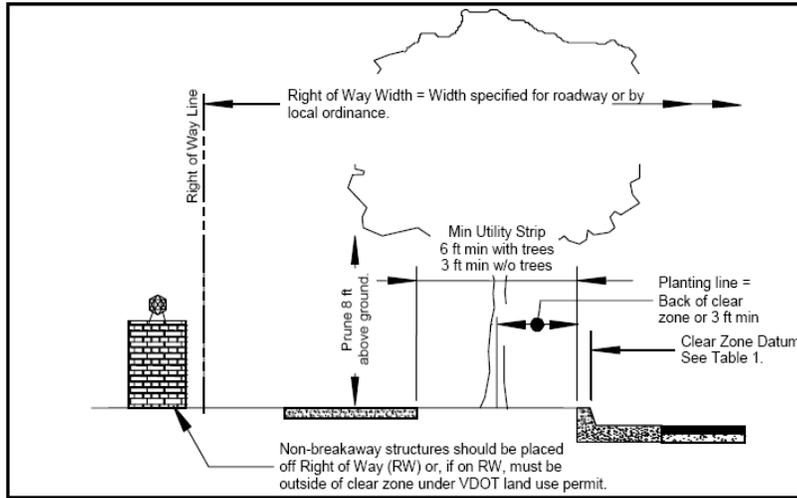
Except as may be authorized by Right-of-Way Permits, the right-of-way along public streets and highways maintained by the City of Suffolk must remain clear of all obstacles that are not designed to break away under impact. For the purposes of this section, breakaway structures are defined as a single 4"X4" square or 4" diameter wooden post or a standard strength, metal pipe post no greater than a 2" diameter. When curbing is used, the clear zone is measured from the face of the curb, except where a bike lane or parking lane exists between the curb and the traveled way. In such a case, clear zone may be measured from the edge of the traveled way. For shoulder and ditch sections, clear zone is measured from the edge of the pavement.

Traffic volume, operational or design speed of the street, and the typical cross section of the street determines the required clear zone. The design tables 4-6 and 4-7 provide clear zone requirements for subdivision streets. Any structures or landscaping, including fences, stone or columns or walls that do not meet breakaway requirements may not be located within the clear zone and will require review by the City Traffic Engineer to be placed on the right-of-way. If approved by the City Traffic Engineer, a Right-of-Way Permit must be issued for any such obstacle. However, no obstacles, even if they meet breakaway requirements, will be placed within the 1.5'-foot clear zones of a shared use path. For curb and gutters streets with parking lanes, the clear zone is accommodated within the parking lane. However, VDOT has established a 3' minimum setback requirement behind the curb. See note 6 Table 1 in section B-3 Roadway Geometric Design Criteria.



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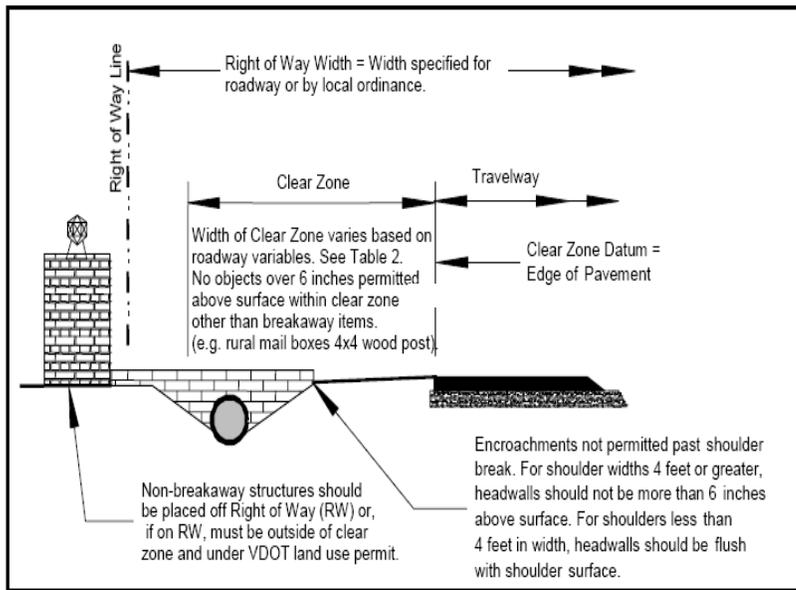
Figure 4.9



**FIGURE 10 - SETBACK DETAILS WITH CURB AND GUTTER**

Note: Driveway entrance curbing, regardless of height, shall not be permitted past sidewalks or within the area 3 feet behind curb and gutter.

Figure 4.10



**FIGURE 11 – SETBACK DETAILS WITH SHOULDER AND DITCH**

\* See [VDOT Road Design Manual](#). Appendix B. Pages B-32



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### 4.3.5.3 *Mailbox Standards for Use Within Right-Of-Way*

A mailbox installation that conforms to the following criteria will be considered acceptable unless in the judgment of the Director of Public Works, the installation interferes with the safety of the traveling public or the function, maintenance, or operation of the highway system.

#### 4.3.5.3.1 *LOCATION:*

- No mailbox will be permitted where access is obtained from the lanes of a freeway or where access is otherwise prohibited by law or regulation.
- Mailboxes shall be located on the right-hand side of the roadway in the direction of the delivery route except on one-way streets where they may be placed on the left-hand side. The bottom of the box shall be set at an elevation established by the U.S. Postal Service, usually between 41 inches and 45 inches above the roadway surface. The roadside face of the box shall be offset from the edge of the traveled way a minimum distance of the greater of the following: 8 feet (where no paved shoulder exists and shoulder cross-slope is 13% or flatter), the width of the all-weather shoulder present plus 8 inches to 12 inches, or the width of an all-weather turnout specified by the City of Suffolk plus 8 inches to 12 inches.
- Exceptions to the lateral placement criteria above will exist on residential streets and certain designated rural roads where the City of Suffolk deems it in the public interest to permit lesser clearance or to require greater clearances. On curbed streets, the roadside face of the mailbox shall be set back from the face of the curb a distance between 6 inches and 12 inches. On residential streets without curbs or all-weather shoulders and that carry low traffic volumes operating at low speeds, the roadside face of a mailbox shall be offset between 8 inches and 12 inches behind the edge of pavements. On very low volume roads with low operating speeds, the City of Suffolk may find it acceptable to offset mailboxes a minimum of 6 feet from the traveled ways and under some low volume, low speed conditions may find clearances as low as 30 inches acceptable.
- Where a mailbox is located at a driveway entrance, it shall be placed on the far side of the driveway in the direction of the delivery route.
- Where a mailbox is located at an intersecting road, it shall be located a minimum of 100 feet beyond the center of the intersecting road in the direction of the delivery route. This distance shall be increased to 200 feet when the average daily traffic on the intersecting road exceeds 400 vehicles per day.
- Where a mailbox is installed in the vicinity of an existing guardrail, it should, wherever practical, be placed behind the guardrail.

#### 4.3.5.3.2 *STRUCTURE*

- Mailboxes shall be of light sheet metal or plastic construction conforming to the requirements of the U.S. Postal Service. Newspaper delivery boxes shall be of light sheet metal or plastic construction of minimum dimensions suitable for holding a newspaper.
- No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangement have been shown to be safe by crash testing. However, lightweight newspaper boxes may be mounted below the mailbox on the side of the mailbox support.



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- Mailbox supports shall not be set in concrete unless the support design has been shown to be safe by crash tests when so installed.
- A single 4 inch X or 4 inch diameter wooden post or a metal post with strength no greater than a 2 inch diameter standard strength steel pipe and embedded no more than 24 inches into the ground will be acceptable as a mailbox support. A metal post shall not be fitted with an anchor plate, but it may have an anti-twist device that extends no more than 10 inches below the ground surface.
- The post to box attachment details should be of sufficient strength to prevent the box from separating from the post top if the installation is struck by a vehicle. Figures 1 through 8 (attached) show acceptable attachment details and mailbox support assemblies. The exact support hardware dimensions and design may vary, such as having a two piece platform bracket, or alternative slot and hole locations. The product must result in a satisfactory attachment of the mailbox to the post, and all components must fit together properly.
- The minimum spacing between the centers of supports posts shall be three-fourths the height of the posts above the ground line.
- Mailbox support designs not described in this regulation will must be approved by the Director of Public Works.
- Non-breakaway design mailboxes (i.e. brick structures) may be installed on residential classification streets if the posted speed limit is 25 mph and the structure is located at least 1.5 feet from the edge of pavement.

### ***4.3.5.3.3 SHOULDER AND PARKING AREA CONSTRUCTION***

- It will be the responsibility of the postal patron to inform the City of Suffolk of any new or existing mailbox installation where shoulder construction is inadequate to permit all weather vehicular access to the mailbox. Figure 9 shows VDOT details on this requirement.

### ***4.3.5.3.4 REMOVAL OF NONCONFORMING OR UNSAFE MAILBOXES***

- Any mailbox that is found to violate the intent of this regulation shall be removed by the postal patron upon notification by the City of Suffolk. At the discretion of the City of Suffolk, based on an assessment of hazard to the public, the patron will be granted not less than 24 hours or more than 30 days to remove an unacceptable mailbox. After the specified removal period has expired, the unacceptable mailbox will be removed by the City of Suffolk at the postal patron's expense.

REFERENCE: United States Postal Service Residential Mailbox Standards

<https://www.usps.com/manage/know-mailbox-guidelines.htm>

AASHTO – “A Guide for Erecting Mailboxes on Highways”

[http://www.suffolk.va.us/pub\\_wks/traffic/docs.html](http://www.suffolk.va.us/pub_wks/traffic/docs.html)



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### 4.3.6 Sidewalk, Shared Use Path & Trail Guidelines

#### Sidewalks

Any required improvements to existing publicly maintained streets necessitated by development shall provide curb and gutter and sidewalks or bicycle trails. Sidewalks shall be a minimum of four (4) feet, five (5) is desirable. Trails shall be a minimum of eight (8) feet in width, ten (10) feet in width is desirable. Sidewalk shall be in conformance with ADA requirements.

In general, sidewalks or trails shall be required within the street right-of-way of any development or subdivision with curb and gutter urban street sections. Sidewalks shall be provided as planned and determined in the plan approval process. In some cases, pedestrian trails may be located outside the street right-of-way in lieu of standard sidewalk required for the streets, and shall be maintained by the developer and/or homeowner association. Sidewalks or trails shall interconnect with those of surrounding developments to ensure safe and direct access to schools.

No occupancy permits shall be issued until all sidewalks, shared use paths and trails, in the general area of the units scheduled for occupancy have been constructed, inspected, and approved.

Sidewalks shall be required as set forth in Table 4-8, whether public or private, and shall be designed and constructed in accordance with the Master Thoroughfare Plan. Sidewalks or pedestrian walks with a pavement width of not less than four (4) feet may be required where deemed essential by the City to provide circulation or access to such schools, playgrounds, shopping areas, transportation services and other community facilities and services, as set forth below. Where such walks are provided, they shall be located, screened, lighted or otherwise improved with the intent of providing security, tranquility, and privacy for occupants of the adjoining property and safety for users of the walks.

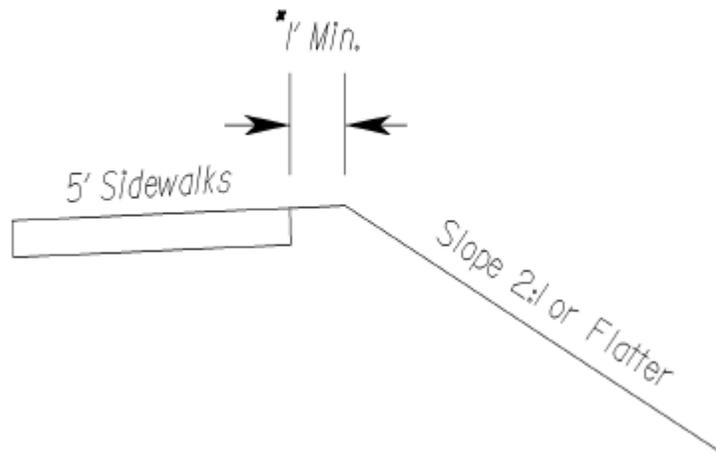
Sidewalks along shoulder and ditch streets shall be constructed in accordance with [VDOT's Road and Bridge Specifications](#) for asphalt concrete sidewalk or hydraulic cement concrete sidewalk, on a compacted subgrade, and include underdrains in accordance with VDOT's Standard UD-3, located at <http://www.virginiadot.org/business/locdes/road-and-bridge-standards.asp>.

Designers shall consider providing sidewalks with both a vertical and horizontal separation from the adjacent roadway. Vertical separation shall be created through the installation of curbs. Horizontal separation can be achieved through the installation of a buffer strip, landscaping or furniture zones for benches, planters, literature display boxes, or similar clearly defined features or surfaces that will help guide persons who may otherwise unintentionally enter the vehicular way.

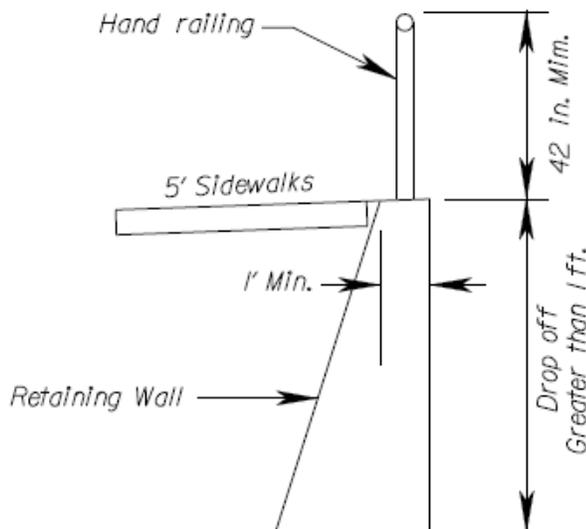
Sidewalks constructed along a shoulder and ditch section shall be placed behind the ditch in a manner that will be compatible with the roadway if the roadway is converted to a curb and gutter section. (Note: Placement of sidewalk within the shoulder area is not permitted.)



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No railing is required if a 1' min. graded area is provided at the back of sidewalk when the slope is 2:1 or flatter, unless adjacent to a parallel water hazard 2' deep or other obvious hazard. If a railing is required the graded area behind the sidewalk shall be increased by 1' to accommodate the railing. Contact the Public Works Department for special design considerations and details.



Railing (HR-1 Ty, II) is required when sidewalk is constructed adjacent to a vertical drop-off greater than 1'. However, gripping rail is required only when the grade of the sidewalk is 5% or greater. Contact the Public Works Department for special design considerations and details.

For all developments within the RL, RLM, RM, RC, RU, B-1, B-2 or PD zoning districts, sidewalks shall be provided between lots on a cul-de-sac or stub street. No more than one (1) sidewalk shall be required per cul-de-sac or other stub street. Such sidewalks shall provide



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connections to active or passive open spaces, schools or to adjacent commercial and residential developments.

For all developments within the RR and RE zoning districts, a coordinated trail system shall be established throughout the development. Such trails shall provide connections to active or passive open space, schools or adjacent commercial and residential developments.

### Shared Use Paths

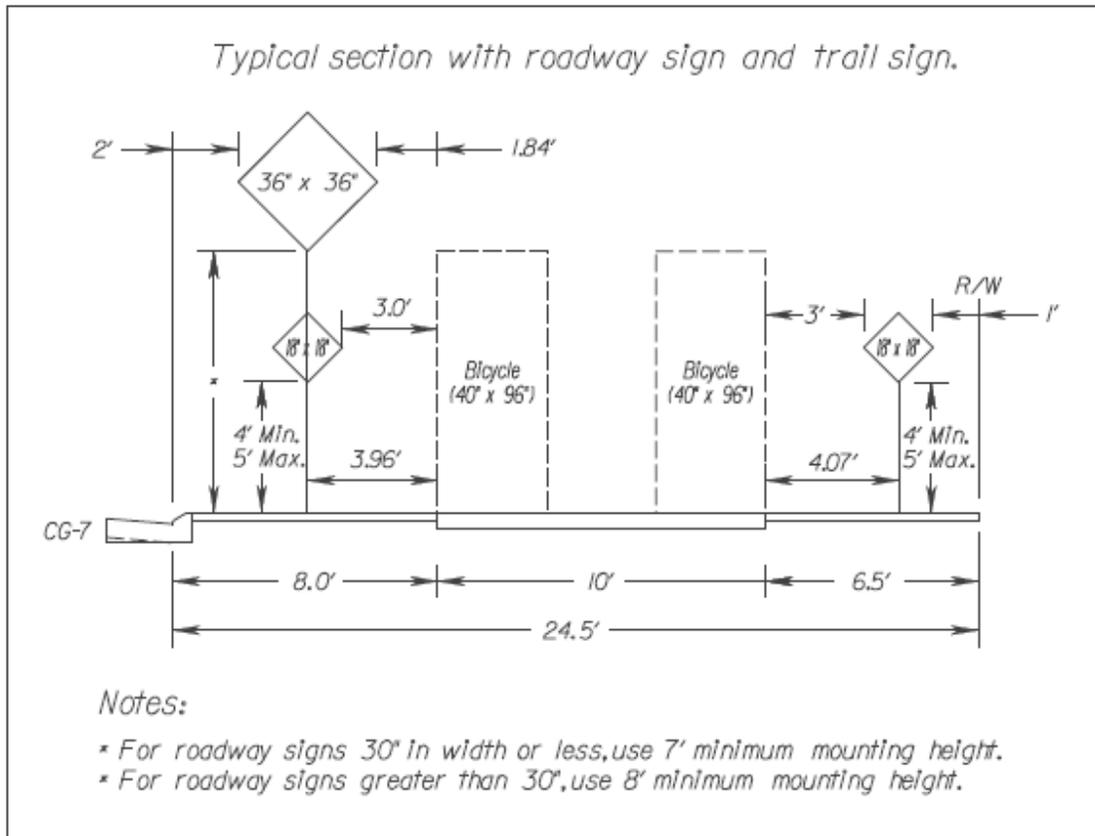
Shared use paths are facilities on exclusive right-of-way and with minimal cross flow by motor vehicles. Users are non-motorized and may include bicyclists, in-line skaters, roller skaters, wheelchair users (both non-motorized and motorized) and pedestrians including walkers, runners, and pedestrians with baby strollers and pedestrians walking dogs. Shared use paths are most commonly designed for two-way travel, and the following guidance assumes a two-way facility is planned unless otherwise stated. When paths are planned, it is desirable to provide paths on both sides of the roadway to decrease the likelihood of pedestrians crossing the road. Pavement design for shared use paths should follow the VDOT Materials Division requirements and/or that of the Director of Public Works.

When two directional shared use paths are located adjacent to a roadway, wide separation between a shared use path and the adjacent highway is desirable to demonstrate to both the bicyclist and the motorist that the path functions as an independent facility for bicyclists and others. On shoulder and ditch typical sections shared use paths should be placed behind the ditch in a manner that will be compatible with the roadway if the roadway is converted to a curb and/or curb and gutter typical section. When this is not possible and the distance between the outside edge of the graded shoulder and the shared use path is less than 5 feet, a suitable physical barrier is recommended. A suitable physical barrier is defined as dense shrubbery, railing or chain link fence. Such barriers serve both to prevent path users from making unwanted movements between the path and the highway shoulder and to reinforce the concept that the path is an independent facility. Where used, the barrier should be a minimum of 42 inches high (54 inches on structures), to prevent bicyclists from toppling over it. A barrier between a shared use path and adjacent highway should not impair sight distance at intersections, and should be designed to not be a hazard to motorists or bicyclists.

For curb and/or curb and gutter streets, the separation between from face of the curb to the edge of the shared use path shall be a minimum of 8 feet in order to meet the minimum lateral offset distance to install signs for the roadway and the shared use path in accordance with MUTCD Part 2 and part 9. If signs are required on the outside of the shared use path due to horizontal and vertical grade changes then a minimum of 6.5' of right-of-way from the edge of the path shall be provided. If signs are not required, a minimum 3' of right-of-way shall be provided. See VDOT Figure A-5-4.



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VDOT Figure A-5-4

### Shared Use Paths

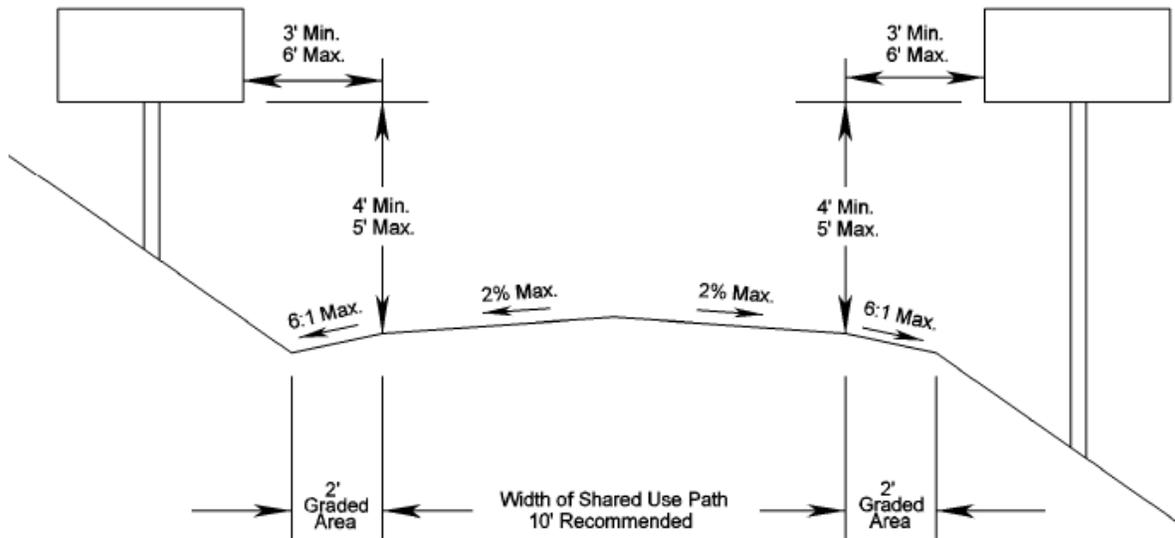
The paved width and the operating width required for a shared use path are primary design considerations. Under most conditions, the recommended paved width for a two-directional shared use path is 10 feet. See VDOT Figure A-5-5. However, in rare instances, a reduced width of 8 feet can be adequate. This reduced width should be used only where the following conditions prevail:

- Bicycle traffic is expected to be low, even on peak days or during peak hours.
- Pedestrian use of the facility is not expected to be more than occasional.
- There will be good horizontal and vertical alignment providing safe and frequent passing opportunities, and
- During normal maintenance activities the path will not be subjected to maintenance vehicle loading conditions that would cause pavement edge damage.

Under certain conditions it may be necessary or desirable to increase the width of a shared use path to 12 feet, or even 14 feet, due to substantial use by bicycles, joggers, skaters and pedestrians, use by large maintenance vehicles, and steep grades.



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VDOT Figure A-5-5

### Cross Section of Two-Way Shared Use Path on Separated Right-of-Way

The minimum width of a one-directional shared use path is 6 feet. A one-way path would rarely be designed and only in a special situation. It should be recognized that one-way path often would be used as two-way facilities unless effective measures are taken to assure one-way operation. Without such enforcement, it should be assumed that shared use paths would be used as two-way facilities by both pedestrians and bicyclists and designed accordingly.

A minimum 2 foot wide graded area with a maximum 6:1 slope, shall be maintained adjacent to both sides of the path. A minimum 3 foot clearance shall be maintained from the edge of the path to signs, trees, poles, walls, fences, railing, guardrail, or other lateral obstructions. Where the path is adjacent to parallel water hazard, other obvious hazard or downward slope equal to or steeper than 3:1, a minimum 5 foot wide separation from the edge of the path pavement to the top of slope is required. When the separation from the edge of the shared use path to the top of the slope is less than 5 feet, a physical barrier such as railing (HR-1, Ty.III) or chain link fence is required in the following situations:

- Slopes 2:1 or steeper, with a drop of 4 feet or greater
- Slopes 3:1 or steeper, with a drop of 6 feet or greater
- Slopes 3:1 or steeper, adjacent to a parallel water hazard or other obvious hazard

See VDOT Figure A-5-6 Physical Barrier for Shared Use Path.

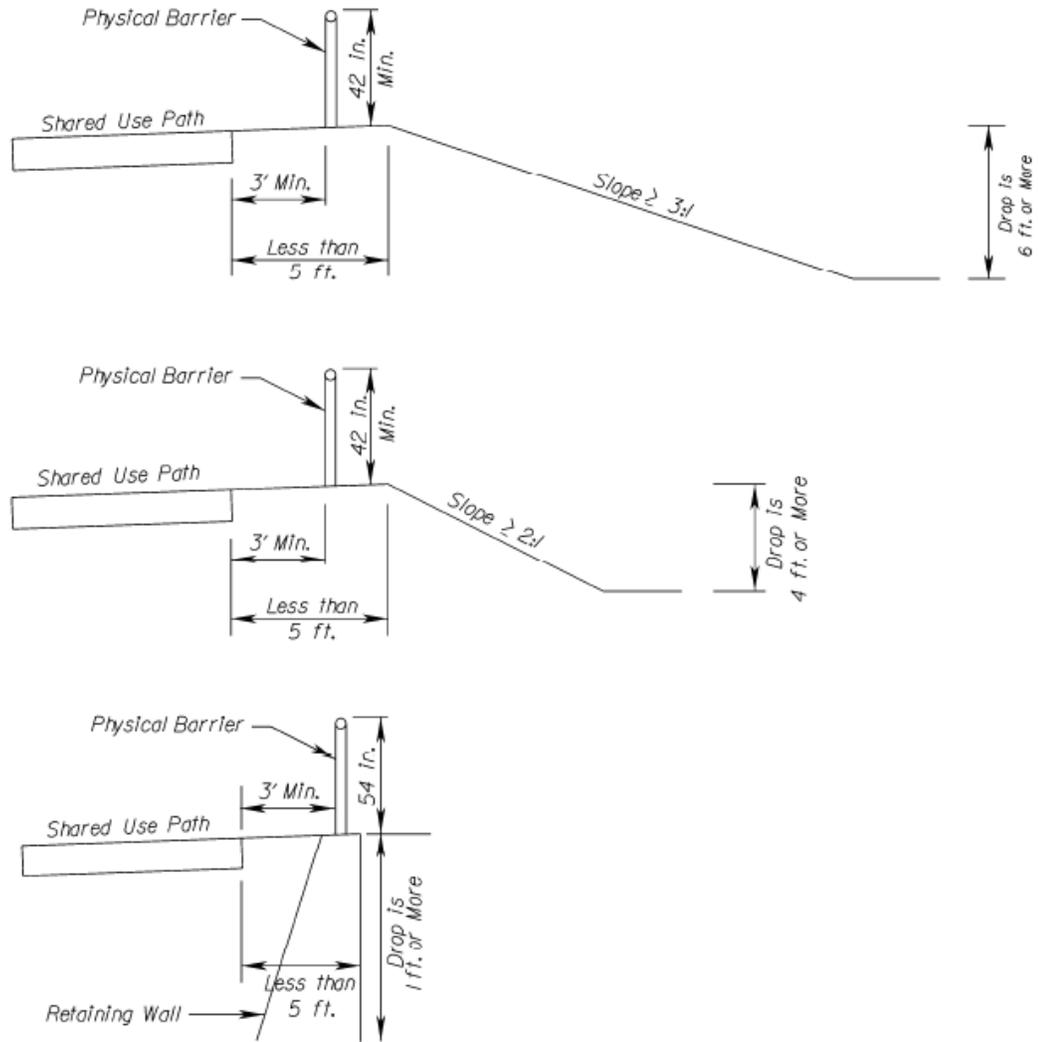
Note: When the separation from the edge of the shared use path to the top of the slope is 5 feet or greater situations may dictate a physical barrier, such as the height of embankment or conditions at the bottom (i.e. – water greater than 2 feet deep).

When a shared use path is constructed adjacent to a retaining wall or a structure with a drop-off 1' or more, a railing or chain link fence 54 inches high is required.

When physical barrier, railing (HR-1, Ty. III) or chain link fence are required. See [VDOT Road and Bridge Standards](#) for details.



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VDOT Figure A-5-6

## Physical Barrier for Shared Use Path

The vertical clearance to obstructions should be a minimum of 8 feet. However, vertical clearance may need to be greater to permit passage of maintenance and emergency vehicles. In under crossings and tunnels, 10 feet is desirable for adequate vertical shy distance.

Shared use paths should be designed for a selected speed that is at least as high as the preferred speed of the faster bicyclists. In general, a minimum design speed 20 mph would be used. When a downgrade exceeds 4 percent, or where strong prevailing tailwinds exist, a design speed of 30 mph or more is advisable.



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Most shared use paths built in the United States must also meet the requirements of the Americans with Disabilities Act; ADA guidelines require that cross slopes not exceed 2% to 3% to avoid the severe difficulties that greater cross slopes can create for people using wheelchairs. Thus, for most shared use paths, the maximum superelevation rate will be 3%. When transitioning a 3% superelevation, a minimum 25 foot transition distance should be provided between the end and beginning of consecutive and Reversing horizontal curves.

The coefficient of friction depends upon speed; surface type, roughness, and condition; tire type and condition; and whether the surface is wet or dry. Extrapolating from values used in highway design, design friction factors for paved shared use paths can be assumed to vary from 0.31 at 12 mph to 0.21 at 30 mph.

### Trails

Trail easements shall be a minimum of 15 feet in width. The construction and maintenance of trails shall conform to the [U. S. Department of Agriculture, Standard Specification for Construction and Maintenance of Trails](#) (latest edition). A profile of the proposed trail shall be included in the plans. Typical cross sections shall be provided for all critical (deep cuts, change in alignment, etc.) points along the trail.

The safety of pedestrians and bicyclists shall be the prime consideration in trail design. Trails shall be constructed adjacent to the street curb or pavement. Trails which are located adjacent to streets with speed limits exceeding 25 m.p.h., and have slopes greater than six percent (6%), may require special safety measures, such as the installation of barriers or other safety devices, or an increase in distance between the street and the trail.

Standard signing and markings in accordance with the MUTCD and the Virginia Supplement shall be included in the design and construction of the trail. The design engineer shall address stopping and intersection sight distance at all trail intersections, curves, and particularly where steep grades are proposed at trail/street intersections.

Standard curb ramps for person with mobility impairments shall be provided at all trail curb crossings to allow continuity of trail use by the handicapped and bicyclists. Curb depressions shall be equal to the trail slope and shall not be steeper than 12:1.

Where the typical road section does not include sufficient width to meet the minimum required trail, additional area shall be placed in an easement adjacent to the street right-of-way and dedicated to the City in the form of a public trail easement. Where trail easements are proposed to encroach in utility easement areas, appropriate coordination must be accomplished with, and approval obtained from, the affected utility owner.

A minimum grade of one percent (1%) shall be required for trails, except in sags where proper drainage is provided by the cross slope. A slope of one percent (1%) to six percent (6%) is generally required for all trails. If, due to topography, this requirement cannot be met, then a slope of six percent (6%) to ten percent (10%) may be allowed with the approval of the Director of Public Works.

Cross slope shall be a minimum of one-quarter inch (1/4") per foot width of trail with a maximum of a half-inch (1/2") per foot width of trail. Where slopes exceed these standards, the design engineer shall submit a special design including use and safety considerations, for review and approval by the Director of Public Works.



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Where a crossing of a water course is required, a pedestrian bridge or fair weather crossing shall be required. Pedestrian bridges shall be designed using a pre-fabricated standardized steel truss and with pressure treated decking. Special designs shall be reviewed for locations requiring spans greater than 50 feet, or other special design considerations. The pedestrian bridge width shall be a minimum of eight (8) feet, ten (10) feet is desirable. A bridge width that is two (2) feet wider than the trail is required for trails greater than eight (8) feet in width.

Trail steps shall only be provided in instances where requested by the Director of Public Works, and shall be concrete. Construction shall be in conformance with VDOT standards.

Bikeways shall be provided as required in Table 4.16. Plate 4015 in UDO shows additional design criteria.

Table 4.16 Bikeway Requirements

Zoning District(s)	Bikeways Required			
	Local	Minor Collector	Collector	Arterial
C, A, RR, RE	Not required	Option 1	Option 1 2	Option 2
RL, RLM, RM, RC, RU	Not required 3	Option 2	Option 3	Options 3 or 4
B1 B2, OI, CP	Not required 3	Option 2	Option 2	Options 3 or 4 4
M1, M2	Not required	Option 1	Option 1 2	Options 3 or 4 4
CBD, VC, TND, PD	Not required 3	Option 12	Option 2	Options 3 or 4 4

**FOOTNOTES;**

- 1 – Plates 4015 – 4018 in Appendix D of UDO show the design criteria for each bikeway & trail option; in the event the design recommendation in the Master Thoroughfare Plan conflicts with this section, design shall comply with the Master Thoroughfare Plan
- 2 – Option 2 shall be required if: a) ADT is 10,000 VPD; or b) speed limit is 30 m.p.h.
- 3 – Option 1 shall be required if ADT of roadway is 1,600 VPD
- 4 – Option 2 may be permitted on roadways classified as Minor Arterial

**4.3.7 Guardrail**

Guardrail shall be provided and installed by the developer where necessary for the safety of the traveling public, as well as protection for adjacent properties. The need for guardrail should be determined at the early stages of design to ensure that road sections are designed with enough width to facilitate the guardrail installation, and that drainage pipes have sufficient cover for the installation of posts and are extended to accommodate the necessary adjustments in the embankments and slopes.

**Warrant**

A traversable recovery area for vehicles should be provided beyond the traveled way (edge of pavement) whenever possible. Ideally, this recovery area or “clear zone” should be free of



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obstacles such as non-traversable drainage structures, steep slopes, and unyielding fixed objects that can cause accidents and result in injuries to motorists. In locations where it is not feasible to remove these obstacles from the clear zone, guardrail may be required in order to adequately protect motorists.

The following minimum guidelines for guardrail installation are based on AASHTO Roadside Design Guide and VDOT Road Design Manual. However, it should be noted that guardrail may be required in some locations that do not necessarily meet these criteria based on the judgment of the City Traffic Engineer. Such factors as traffic volumes, speed of traffic, accident history, road curvature, slopes of recovery area, presence of curb and gutter, location of trees, utility poles, etc., must all be taken in consideration when determining if guardrail is warranted in a particular location.

Guardrail is typically required on sections of roadway when any of the following conditions exist within the clear zone:

- A roadside parallel embankment (fill slope) of 3:1 or steeper and a depth of 4 feet or more
- A water hazard with a depth of 2 feet or more (as measured from the near edge of the pavement)
- A ditch section with a depth of 3 feet or more (as measured from the near edge of the pavement)
- A fixed object (such as a culvert, pipe, headwall, retaining wall, bridge pier or abutment)
- Other hazards as determined by the City Traffic Engineer

The City Traffic Engineer shall make the final determination as to whether guardrail is warranted along a section of roadway based on a review of the plans, a field inspection after rough grading has been completed, and/or prior to final acceptance. To avoid untimely adjustments to roadway features to facilitate guardrail, it shall be the responsibility of the developer to notify the City Traffic Engineer of potential guardrail needs at the earliest possible stage of construction, and prior to the installation of guardrail to ensure that the limits of potential hazards are adequately protected.

### Acceptable Types

Except as noted herein, all guardrail materials, types, and installation requirements shall be in accordance with the latest edition of the [VDOT Road and Bridge Specifications and Standards](#). Non-standard guardrail will not be permitted in the City right-of-way.

Guardrail shall be the strong post system, standard GR-2. Although VDOT Standards offer alternative types of posts and offset blocks, the City shall specify the type of guardrail and posts used, based on aesthetics, future maintenance, and the types of existing guardrail in the area. When circumstances dictate that the guardrail blend in with the surrounding environment, as well as other aesthetic consideration, “Corten” or weathering steel rail and accessories with wood posts and wood offset blocks will be required. The type of new guardrail installed at a given location should normally match the existing guardrail type in the immediate area. Prior to any installation, contact the Department of Public Works for approval of the type of guardrail to be installed.



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Guardrail terminal treatments (standard GR-6 or GR-7) are required on both the run-on and run-off ends of guardrail, except on roadways with raised or inverted median strips that physically divide opposing lanes of traffic. At locations where raised or inverted medians exist, a guardrail terminal treatment will only be required on the run-on end of the guardrail installation. The preferred treatment should be the standard GR-6 with the end buried into a cut slope, even if the guardrail must be extended a short distance to tie into a cut slope. If this installation is not practical, the standard GR-7 Breakaway Cable Terminal must be used.

The minimum offsets from the edge of pavement or face of curb to the face of the guardrail are shown in the following table.

Table 4.17 Guardrail Offsets

Road Classification		Minimum Offset (Ft) From Edge of Pavement or Face of Curb to Face or Rail
≤ 30 m.p.h.	Shoulders	4.0
	Curb & Gutter w/out Sidewalk	4.0
	Curb & Gutter w/Sidewalk	6.5
≥ 35 m.p.h.	Shoulders	6.0
	Curb & Gutter w/out Sidewalk	6.5
	Curb & Gutter w/Sidewalk	6.5 *

\* or face of rail, same as back of sidewalk if more than 6.5 ft.

In order to obtain the above offsets, and the 4-foot splays required for standard GR-7, it may be necessary to widen road sections and other engineering features. In addition, it may be necessary to dedicate additional right-of-way or permanent guardrail easements to encompass all of the guardrail installation, if sufficient right-of-way does not exist for the placement and maintenance of the facility.

**4.3.8 Parking on the Public Right-of-Way**

Parking may be permitted to take place on the right-of-way at the discretion of the City Traffic Engineer. Parking may be removed from the right-of-way at any time by the City Traffic Engineer if it is determined that such parking is creating a traffic safety problem, is impeding normal traffic flow, or if the area being used for parking is needed for another purpose.

**4.3.8.1 Parking Lane Widths (Curb & Gutter Only)**

The use of curb and gutter anticipates on-street parking will be accommodated, using the following widths for the parking lane:

- Residential Streets – 7 feet in width measured from the face of the curb
- Commercial and Mixed Use – 8 feet in width measured from the face of the curb



**4.3.9 Single Family Dwelling Driveways**

The width of the access point at the right-of-way line shall be 12 feet minimum. Wider access points will be considered on a case-by-case basis considering need, physical conditions of the area, and safety. No access point shall be permitted to be placed within the radius of a public road intersection.

**4.3.10 Cul-de-sacs**

For cul-de-sacs, a well-defined identifiable street segment, equal to the normal lot width along the intersected street that serves the cul-de-sac or 50 feet, whichever is greater, shall extend from the intersected street to the turning area. A minimum radius of 45 feet, measured to the edge of pavement or face of curb, shall be used for cul-de-sacs. A landscaped cul-de-sac shall be considered a one-way street.

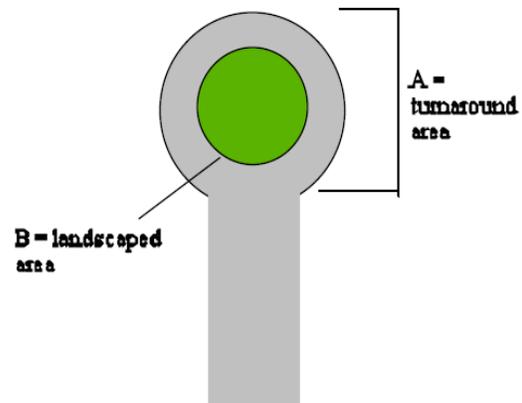
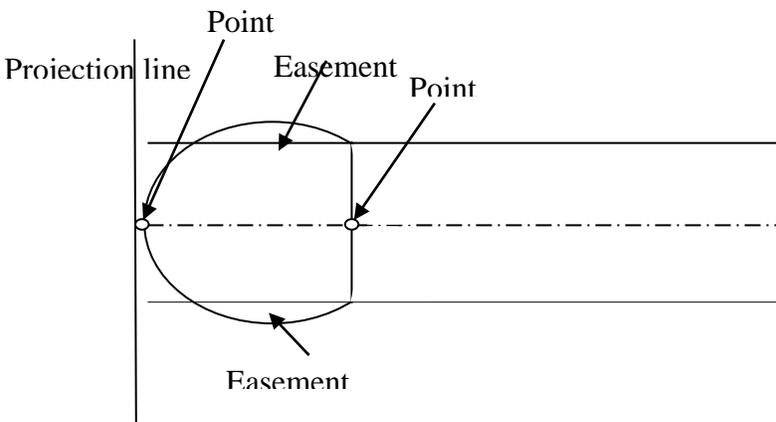
**4.3.10.1 Landscaping (Optional)**

Not less than 25% of the bulb of the cul-de-sac shall be landscaped in accordance with the standards set forth in Landscaping Standards, Section 31-603 of UDO. Minimum radius may have to be increased to allow safe passage of public safety, refuse, and moving vans/trailers.

The radius for the circular terminus, or turnaround, shall be not less than 45 feet. An island may be planted in the center of the turnaround of all residential cul-de-sacs in accordance with the standards set forth in the Landscaping Standards of this article. The perimeter of the island shall be the maximum needed to permit a 22-foot road width adjoining the island. On-street parking shall be prohibited for any road width less than 25 feet.

Cul-de-sacs warrant special considerations because of extra right-of-way required, and the manner in which the title to the underlying fee is held, especially when the cul-de-sac is a temporary facility.

Figure 4.11 Additions & Changes at Stub Streets  
(Temporary Cul-de-sac Easement)



Example: If A = 65,000 square feet, the landscaped area (B) is 16,250 square feet (A x 25%)

Limits of Right-of-Way



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**4.3.10.1.1 Permanent Cul-de-sacs**

The entire cul-de-sac should be within dedicated right-of-way.

**4.3.10.1.2 Turnaround**

Construction of a temporary turnaround area is required whenever a stub street extends more than one lot width from a corner or more than one lot fronts on the stub street on either side of the road. All temporary cul-de-sacs shall include a temporary cul-de-sac easement (See Fig. 4.11, Additions and Changes at Stub Streets). When a temporary cul-de-sac is no longer required because of a road extension, the developer of the road being extended shall be responsible for removing the temporary cul-de-sac, and extending the road and property components (curb & gutter, gravel driveways, paved driveways, sidewalks, mailboxes, etc.) to the new road section and regarding areas to finished contours acceptable to the adjacent property owners and the City.

**4.3.11 Roundabouts**

Roundabouts are used at intersections to calm traffic, as well as to control traffic. Proposed designs should be based on [Federal Highway Administration Publication Number FHWA-RD-00-067, Roundabouts: An Informational Guide](#). Additional information can be also found in [VDOT's Roundabouts Brochure](#).

Common characteristics of acceptable roundabouts include: (a) a domed center that is sufficiently clear to not compromise sight distance, and (b) a paved traversable apron not less than four (4) feet in width, the radius of which is sufficient to serve the turning radius of school buses and single unit design vehicles. If the percentage of trucks anticipated to use the road exceeds 5%, that radius should be sufficient to serve those vehicles.

**4.3.12 Intersection Design (Residential Design)**

Insofar as practical, streets shall intersect at an angle of 90° for a minimum of 50 feet measured from the right-of-way or roadway intersecting. In no case shall an angle be less than 70° unless the applicant submits a special intersection design for approval by the Director of Public Works. Intersections having more than four (4) corners shall be prohibited.

The following table provides guidelines for intersection radii (see UDO for zoning district definitions):

Table 4.18 Intersection Requirements

Zoning District(s)	Minimum Radius (Ft.)	Maximum Radius (Ft.)
A, RE, RR	25	--
RL, RLM, RM, RV, RC, RU	15	25
B-1, B-2, O-I, CP, M-1, M-2	20	35
CBD, VC, TND, PD	20	30



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Proposed streets which intersect opposite sides of another street (either existing or proposed) shall be laid out to intersect directly opposite each other. The offset between intersections shall be a minimum of 200 feet on through streets and as determined by the Director of Public Works on major streets.

All entrances except single-family detached driveways carrying less than 1,000 VPD which access a public street shall incorporate a two percent (2%) landing for a minimum of 25 feet from the existing edge of pavement.

Curb cut ramps shall be provided at all curbed intersections even when sidewalks and trails are not present. Curb cut ramps shall be provided in accordance with VDOT standards. Proposed streets which intersect opposite sides of another street (either existing or proposed) shall be laid out to intersect directly opposite each other. The offset between intersections shall be a minimum of 200 feet on through streets and as determined by the Director on major streets.

### **4.3.13 Vertical Clearances**

All overhead lines within the public rights-of-way shall be in accordance with the latest edition of the [National Electrical Code](#) and the [National Electric Safety Code](#).

### **4.3.14 Access Management**

#### **4.3.14.1 Entrance Locations**

Any parcel or lot having frontage along an arterial and in existence prior to November 7, 1990 shall be permitted one (1) direct access to that arterial, unless an access plan is submitted to, and approved by, the City for more than one (1) access.

At the time of submission and approval, if two (2) or more parcels in existence prior to November 7, 1990 are placed under one (1) ownership, control, and/or maintenance, such assembly shall be permitted one (1) direct access to the arterial, unless an access plan is submitted to, and approved by, the City for more than one (1) access.

Direct access to arterial roads shall be provided by one (1) or more of the following means for lots or parcels not permitted direct access to the arterial:

Access to the site may be provided by an existing or planned public streets; and/or

Access to the site may be provided via the internal circulation of a shopping center, an office complex, or similar group of buildings. Access through side and rear setbacks is encouraged, provided that the access is internal and generally perpendicular to the setback; and/or

Access to the site may be provided by a service drive and/or shared access which provided controlled access to the site.

A new entrance or street shall be placed in line with any existing entrance or street across the roadway from the parcel if that entrance or street falls within the property lines. Offset intersections must be approved by the City Traffic Engineer.

New individual driveway connections shall not be permitted along arterial and collector roadways, except for some minor subdivisions and individual lots exempt from subdivision requirements as detailed in the UDO Section 31-612. The removal and/or consolidation of



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existing private driveways on arterial and collector streets should be investigated as redevelopment of properties occurs.

At existing or future major street intersections (existing or proposed traffic signals), no new driveways or street connections shall be allowed within the influence area of the intersection. The influence area is defined as the distance that vehicles will queue from the signalized intersection. The influence area shall be based upon traffic volumes summarized in the Comprehensive Plan based upon information consistent with the [Highway Capacity Manual](#). This influence area shall include an additional 100 feet beyond the queue length for back-to-back left turn lanes.

Spacing between adjacent access locations or a proposed access location and an adjacent street intersection shall be consistent with the table below:

Table 4.19 Minimum Entrance Separation

Road Classification	Minimum Separation Between Driveways (A) (Ft.)	Minimum Separation Between Driveways & Intersecting Streets (B) (Ft.)
Local Streets	None	35
Sub-collectors	60	75
Major Collector or Frontage Road	125	150
Secondary Arterial	400	480
Primary Arterial or Freeway	1,000	1,200

**FOOTNOTES:**

- A – access separation between driveways shall be measured from centerline to centerline
- B – access separation between a driveway & intersecting street shall be measured from the centerline of the driveway & the nearest point of curvature of the intersecting street
- C – where the application of this sub-section would preclude a driveway on a lot which was platted as of the effective date of the UDO, one (1) driveway shall be permitted; such driveways shall be spaced as far from an existing driveway or intersection as possible without creating turning conflicts or other traffic hazards

**4.3.14.1.1 Intersection/Entrance Design Requirements**

- A. The type of entrance shall conform to City standards & be designated on the plan.
- B. Entrance improvements will be required when modifications are proposed to existing sites which will increase the traffic volume generated by the site or when the existing entrance presents undesirable traffic conditions.
- C. Entrances shall tie into an existing paved, accepted road or one improved and bonded pending acceptance.
- D. The minimum acceptable entrance width is 30 ft. for two-way traffic and 24 ft. for one-way traffic.



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- E. Entrances and intersections shall be designed such that an entering single unit (AASHTO Designation SU) design vehicle will not encroach upon the outbound lane of a two-way entrance. Geometric improvements must be provided to ensure exiting vehicles can be contained within the outside lane of the intended direction of travel. Anticipated volume of larger vehicles may be considered for small sites that have difficulty with full compliance.
- F. Intersection and entrance radii and width are to be designed to allow safe ingress/egress for a single unit vehicle. The minimum road turning radius shall accommodate a single unit vehicle. This requirement may exceed the minimum radii stated in the Streets chapter of this manual.
- G. The entrance radius shall become tangent to the street pavement before crossing the property line and shall intersect as near to a right angle as practical.
- H. Each acceptance lane within a new road project or development shall be 15 ft. wide minimum. The lane shall be tapered to 12 ft. using the following ratios.



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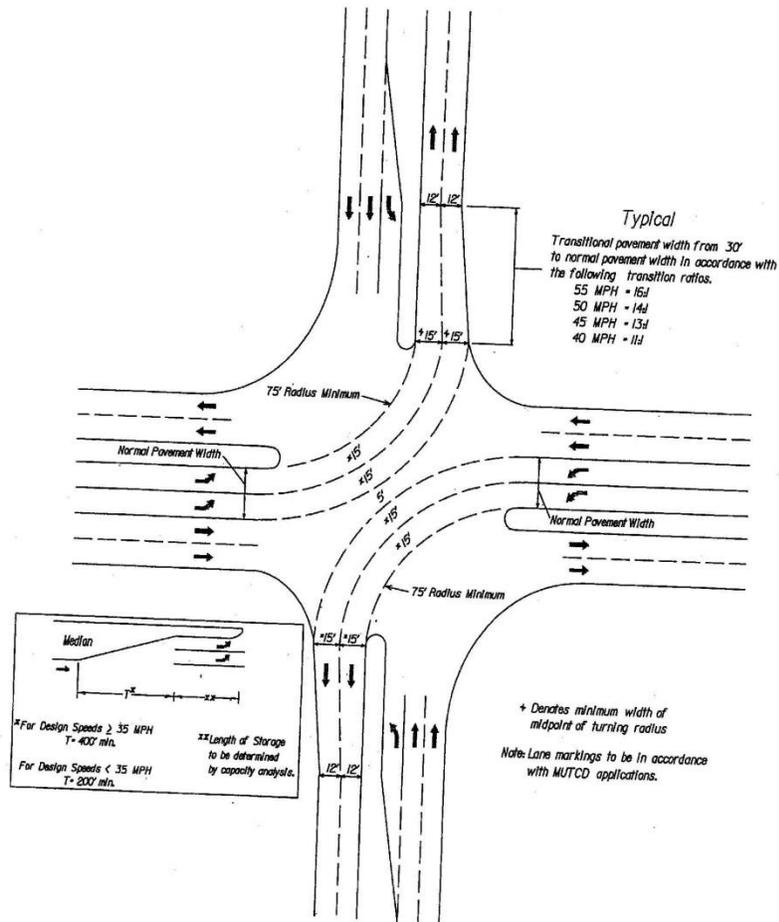


FIGURE 4.12 ACCEPTANCE LANES



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Table 4.20 Taper Ratio for Acceptance Lanes

Design Speed (mph)	Taper Ratio
55	16:1
50	14:1
45	13:1
40	11:1

I. Double (dual) left-turn lanes (DLTL's) shall be considered when left-turn demand exceeds 300 vph, and are desirable where peak left-turn movements exceed 350 vph. DLTL's require a protected (exclusive) signal phase, a 28' minimum median width, and a width of at least 30' on the acceptance lanes (see Figure C-1-2). The length of storage should accommodate at least 1.5 times the expected vehicles making left turns per cycle based on peak 15-min. periods. When DLTL's are required, a capacity analysis of the intersection should be performed to determine what traffic controls are necessary (i.e. – signalization, separate phasing) in order to have this double left-turn lane function properly.

**4.3.14.2 Crossover Spacing**

Spacing between median crossovers shall be determined by the following minimum requirements:

Table 4.21 Crossover Spacing Criteria

Design Speed of Highway (MPH)	Crossover Spacing (Ft.)		Minimum Sight Distance (Ft.)
	Desirable	Minimum	
70	1250	1000	825
60	1100	900	710
55	1000	800	650
50	900	700	590
45	800	650	530
40	700	600	475
35	600	500	415

Developers of all parcels or lots located at existing or proposed crossovers shall submit an access plan to the City for approval that addresses access for the surrounding area. The access plan shall demonstrate the ability to provide adequate access to the surrounding properties via cross-easement agreement(s) or document of same as shared access and/or public roads. An access plan shall be submitted and approved prior to Planned Development, Preliminary Plat or Site Plan approval. Such access plans shall be drawn to scale, including dimensions and distances, and clearly delineate the traffic circulation system and the pedestrian circulation system as coordinated with the adjacent properties, including the location and width of all streets, driveways, access aisles, entrance to parking areas, walkways, and bicycle paths. Right-in, right-



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out curb cuts between median crossovers shall not be approved unless there will be no reduction in the level of service for the affected roadway. When new median crossovers are created or existing median crossovers are modified to add left turn lanes, left turn lanes for both directions shall be required to be added for public safety. No medians shall be constructed without opposing left turn lanes.

### ***4.3.14.3 Reduction of Minimum Spacing Standards***

Consideration in crossover spacing less than the established minimum will be given for intersecting public roadways with a current ADT of 100 or less. Crossovers for private streets or commercial entrances will be considered on a case-by-case basis following an evaluation of an individual traffic safety and operation issues. This study shall be submitted by the design consultant and evaluated by Public Works Traffic Engineering.

Factors to be included in the study (but not limited to) shall be: operating speed, volume of traffic for crossover and the through street, signal operation/progression, accidents with and without the crossover, number of U-turns, weaving maneuvers, alternative solution, capacity analysis, type of vehicles, etc.

### ***4.3.14.4 Entrances Located Within the Right Turn Lane***

Entrances are allowed in the turn lane only when no alternative access is available. At least 50 feet on tangent is required between the end of the entrance radial curb and the end of the bay taper. This distance should be as long as possible.

### ***4.3.14.5 Channelized New Entrances***

The design of islands proposed within new (unbuilt) entrances can be difficult, due to the many variables involved. As stated before, there are no standard channelization island designs. The design should be based upon the function which the island must serve, and the following factors:

The appropriate design vehicle(s); \*

The desired turning characteristics (i.e., speed and ease of turn, lane placement);

Other geometric elements such as angle of intersection, curvature, grades and cross-section;

Other intersection activities (primarily pedestrians);

Constraints, such as the availability of right-of-way.

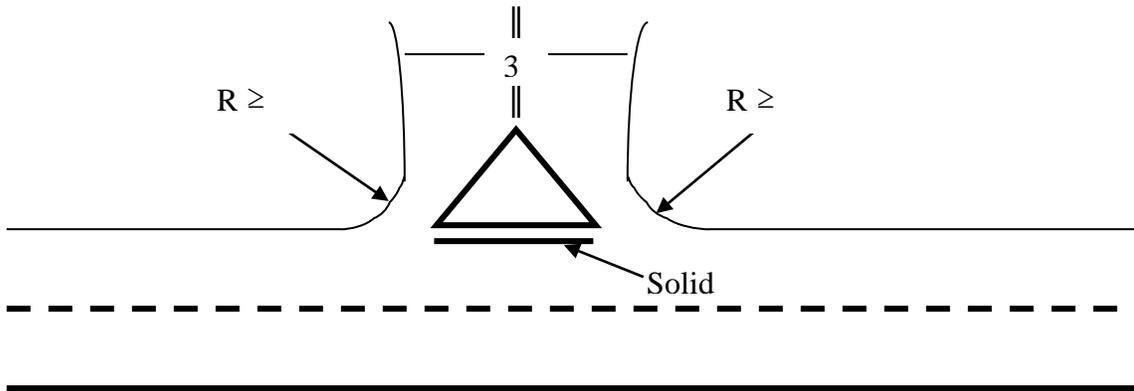
\*Where a mix of larger and small design vehicles is routinely expected, the concrete island may be constructed to serve the largest vehicle routinely using the entrance. To serve the smaller vehicles, pavement marking can be used to delineate the swept path of the smaller vehicle.

For predominate use by small vehicles, but occasional use by larger vehicles, the island may be constructed to suit the larger vehicle, but jiggle bars or raised pavement markers placed to serve the smaller vehicles. Where larger vehicle use of the entrance will be infrequent, encroaching into the island or shoulder may be acceptable.



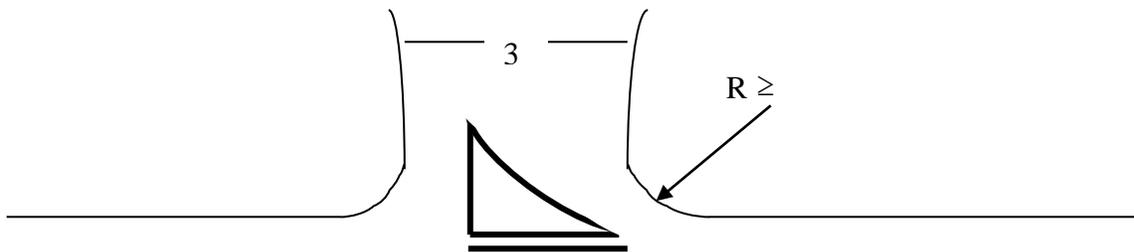
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Figure 4.13



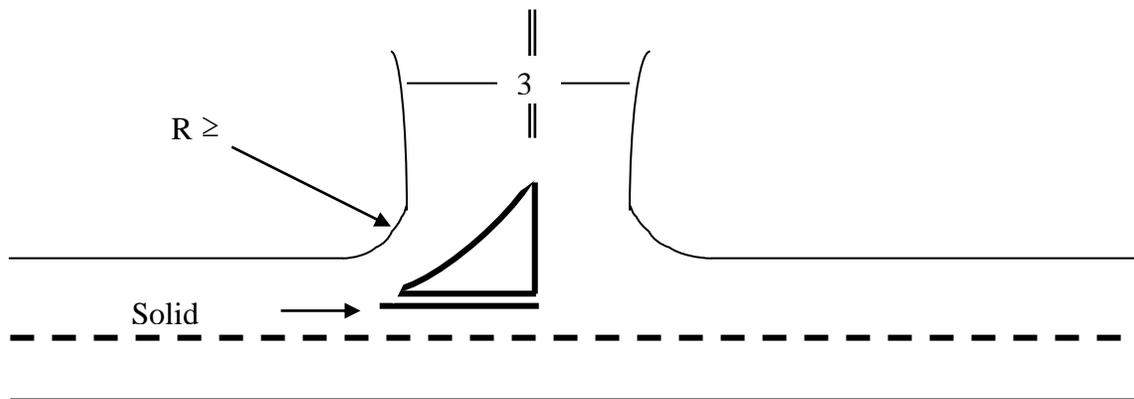
(a) Channelizing island to prohibit left-turn maneuvers

Figure 4.14



(b) Channelizing island to prohibit left-turn ingress maneuvers

Figure 4.15



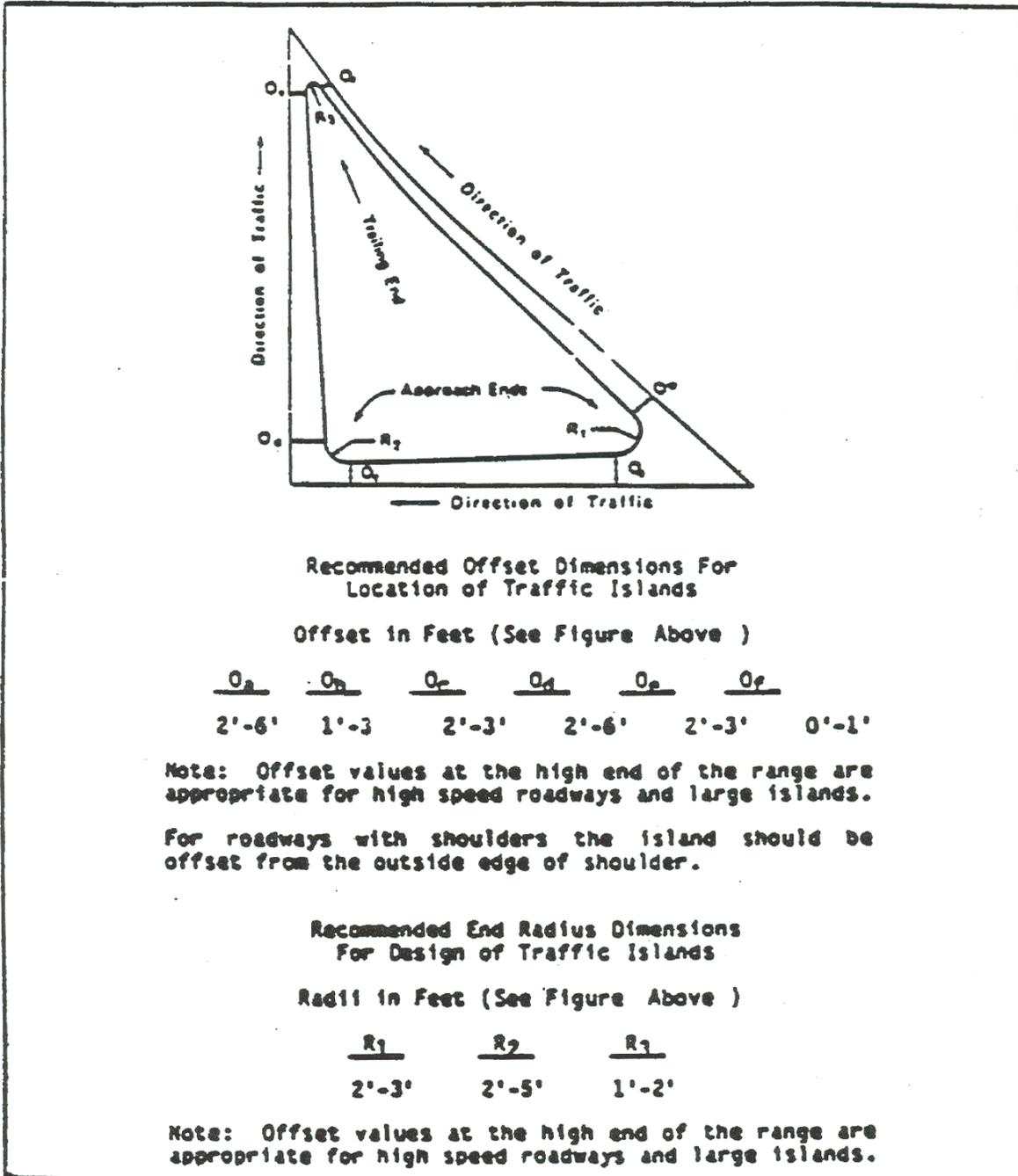
(c) Channelizing island to prohibit left-turn egress maneuvers



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Figure 4.16

Island Offset Recommendations





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### **4.3.14.6 Internal Circulation**

Internal circulation and ingress/egress easements may be required to accommodate adjoining properties to meet the access management requirements for the adjacent roadway. Entrance spacing and crossover access should be provided where possible for adjoining properties.

- A. Parking areas and access lanes shall also be designed to accommodate the circulation of a single unit vehicle. Sites where tractor-trailers are anticipated shall be designed accordingly.
- B. Truck loading/unloading operations, backing movements, etc., shall not block any public access to a commercial business.
- C. Stub streets shall be provided to serve as circulation points with the development of adjacent parcels. Stub streets will also be required to facilitate appropriate access to arterials for adjoining properties. Stub streets will allow multiple parcels to share one (1) or more points of access to an arterial. Stub streets shall be approved by the Director of Planning

### **4.3.15 Curb Ramps**

Reference the latest edition of the [VDOT Location & Design Division Instructional and Informational Memorandum, IIM-LM-55.15](#) for information pertaining to curb ramps.

### **4.3.16 Road Sections**

Roadway Sections shall conform to the City of Suffolk UDO and include Bikeway and Trail Sections.

## **4.4 Street Lighting**

The following are general guidelines that should be followed unless otherwise approved by the Director of Public Works.

### **Introduction**

The principal purpose of street lighting is to produce instantaneous, accurate, and comfortable visibility at night. The qualities of increased visibility combine to safeguard, facilitate, and encourage vehicular and pedestrian traffic. Every designer must keep in mind the basic fact that the lighting produced must provide for all the qualities required by the users. The proper use of street lighting as an operative tool provides safety, welfare, economic, and social benefits for the public. Improper lighting can be hazardous to traffic and may nullify the anticipated benefits. Therefore, any proposed lighting which will be on or over road right-of-way shall be in accordance with the guidelines herein to ensure compliance with established lighting standards and compatibility with the surrounding environment and intended usage.

Street lighting shall generally be designed in accordance with the following:

- [American National Standard Practice for Roadway Lighting](#) (ANSI/IESNA RP-8-00 or latest edition)



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- [The Roadway Lighting Handbook](#) – U.S. Dept. of Transportation (Federal Highway Administration latest edition)
- Virginia Department of Transportation – [Road and Bridge Specifications](#) (latest edition)
- [AASHTO – An Informational Guide to Roadway Lighting](#) (latest edition)

### 4.4.1 Street Lighting Equipment

#### 1. Description

The following criteria has been developed to provide a summary of those poles and fixtures to be used for the design of street lighting on all primary, secondary, and local subdivision roadways within the City of Suffolk.

#### 2. Availability of Equipment

Equipment is furnished by Dominion Virginia Power (DVP) and may be changed without notice. The developer pays DVP the actual cost of purchasing and installing street lighting equipment. DVP owns and maintains the equipment. DVP furnishes a variety of poles and equipment. For reasons including cost, performance, and aesthetics, the City uses only the equipment described below.

#### 3. Fixtures

Fixtures are currently grouped by DVP as Type 1 and Type 2, directional and interstate. Type 1 fixtures are considered standard fixtures, while Type 2 are specialty fixtures. Type 2 and interstate fixtures currently cost approximately twice as much per month for energy and maintenance as the same wattage Type 1 fixtures. Due to this cost differential, Type 1 fixtures are preferred. Type 2 fixtures will only be allowed with prior approval by the Director of Public Works. Since contract rates are subject to change, selection of alternative fixtures should be continually reviewed.

- A. Type 1 Fixtures – enclosed unit (cobra head) available in 70, 100, 150, 250 and 400 watt; colonial available in 70, 100 and 150 watt
- B. Type 2 Fixtures – ultra, available in 70, 100, 150, 250 and 400 watt
- C. Directional Fixtures – available in 400 and 1,000 watt
- D. Interstate Fixtures – available in 250 and 400 watt

#### 4. Poles

In general, all street lighting poles shall be direct buried fiberglass or concrete. Aluminum poles and breakaway bases may be used for lighting poles. Foundations and conduit runs will be necessary when using aluminum poles. See VDOT Standard LP-1, LP-2, and BS-1 for foundations. Use of aluminum poles will be required when street lights are installed on median barriers. All poles are presently supplied and installed by DVP.

#### 5. Joint Use Traffic Signal – Luminaire Poles

Location of intersection lighting poles shall be coordinated with the locations of the traffic signal poles. Combination mast arm/luminaire poles shall be used whenever possible.



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### 4.4.2 Street Lighting Plans

#### 1. Description

Street lighting plans shall be of sufficient detail so that they may be transmitted to DVP without further revisions by the City.

#### 2. Design Responsibilities

- A. Subdivision and site plan lighting will be designed by DVP at the Engineer's request. The Engineer shall transfer this information to his plans, checking for overhead and underground conflicts, clear zone, conflicts with landscaping, etc.
- B. Lighting on highway projects will be performed by the Design Engineer. The Design Engineer is responsible for coordinating relocation, power sources, conduit locations, etc., with DVP.

#### 3. Plan Scale

- A. Highway improvement roadway lighting shall be shown on the roadway signing and marking plan sheets, as well as on the construction plan sheets at a scale of 1" = 25'. However, where roadway lighting plans are not being prepared as part of a project, other scales may be used with the approval of the Director of Public Works.
- B. For subdivision plans, street lighting shall be shown on a 1" = 100' for the overall lighting plan, as well as on the construction plans.

#### 4. Utilities

On all lighting construction plans, the following shall be shown: storm sewer, water lines, sanitary sewer, electric lines (both overhead and underground), gas lines (both natural and liquid), telephone lines (both overhead and underground), cable television (both overhead and underground), City of Suffolk interconnect cable (both overhead and underground), and any other known private or public overhead or underground utility.

#### 5. Streetlight Locations

- A. Existing streetlights shall be shown including pole locations, size of poles, pole numbers, streetlight wattage, arm lengths, orientation, and style of head.
- B. Proposed streetlights shall be shown including pole locations, size and type of pole, wattage, mounting height, arm lengths, orientation, style of head, type of lamp, and distribution pattern.
- C. In general, lights shall be designed and installed in new subdivisions, at all street intersections, in all cul-de-sacs, and on all existing roadways which the new subdivisions front on, and should be placed on or near lot lines to minimize the impact to building lots.
- D. Site Plan Lights – lights shall be designed and installed on the road frontage for commercial development. They shall be in conformance with design standards contained in this chapter according to the classification of the roadway they front on.



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### 4.4.3 Lighting Design Standards

#### 1. Mounting Height

Mounting height is measured from the surface of the roadway to the luminaire.

- A. Arterial Streets – luminaire mounting height shall be from minimum of 30 feet to maximum of 40 feet.
- B. Local and Collector Streets – luminaire mounting heights shall be 28 feet on local and collector roads. Where colonial style lights are used, they shall be mounted at 16 feet.
- C. When the elevation at the pole location varies due to slope changes, ditches, etc., poles shall be longer or shorter, as necessary, to maintain the specified mounting height.

#### 2. Setback

- A. Lighting poles shall have a minimum setback from the face of the unmountable curb of 9.5 feet. DVP furnished streetlight poles have not been approved as breakaway; therefore, clear zone criteria must be met (see [VDOT Road and Bridge Standards](#) for requirements). Design exceptions to these criteria may be discussed with the Director of Public Works.
- B. Where guardrail is provided, lighting poles shall be located a minimum of two (2) feet behind the guardrail.

#### 3. Lamp Type

High pressure sodium vapor is to be utilized wherever possible for street lighting applications. Mercury vapor should be used for overhead sign structures due to its better color quality.

#### 4. Lighting Distribution

The light distribution of the luminaries shall be I.E.S. Type II or Type III medium, non-cutoff. Type III distribution is the most common. Type II should be used only if significantly greater economy or uniformity would result over a Type III design.

#### 5. Lighting Levels

There are two (2) major design criteria involved in street lighting. The first is average level of illumination, which is simply the average amount of illumination over a given area measured in foot candles. The second is the uniformity, which is a measure of the quality of the lighting. For design purposes, the uniformity is taken as the average illumination divided by the minimum illumination for a given area. All lighting design standards are in accordance with the “[American Nations Standard Practice for Roadway Lighting](#)” (latest edition). Light spacings given below are for tangent road sections utilizing 9.5 foot pole setback and 12 foot arm. All lights are assumed to be oriented perpendicular to the road. When roads curve, or lights are not oriented parallel to each other, or any other lighting design characteristics varies from standards, the spacing must be based on calculations.

- A. Major Arterial Streets – the primary purpose of these streets is in moving through traffic. Streets are characterized by high volumes of vehicular traffic. Site access is considered a secondary function of these roads. Impacts of site access are often



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minimized by installation of turn lanes or by reducing the size and number of entrances. Pedestrian movements are minimal. On-street parking is prohibited.

- 4- or 6-Lane Divided Major Arterial Streets
- Average Level of Illumination = 0.80 fc
- Typical Light Spacing = 200 ft.
- Wattage = 250

Recommended Mounting Height = 30 feet

B. Minor Arterial Streets – the purpose and use of minor arterial streets is similar to that of major arterial streets, however, traffic volumes are somewhat lower. Minor arterial streets serve as an intermediary route between local and collector streets and major arterial streets. Access and pedestrian movements are similar to major arterials.

- 4-Lane Divided Minor Arterial Streets
- Average Level of Illumination = 0.75 fc
- Typical Light Spacing = 250 ft.
- Recommended Mounting Height = 30 feet

C. Local and Collector Streets – the primary purpose of local and collector streets is to access businesses and residences. Travel speeds are low, with no through traffic. The primary need for lighting is seen as security. Lighting needs for traffic is minimal. Evening pedestrian activity is low. Lighting levels and uniformity are decreased to conform to these needs. On-site security lighting will be considered private responsibility rather than public. Emphasis will be to provide minimal lighting on the roadway to help identify parked cars, driveways, etc.

- Local and Collector Streets
- Level of Illumination = 0.15 fc
- Light Spacing = 175 ft.
- Mounting Height = 10 feet – 16 feet

D. Special Needs Area – these are areas that do not fit into the definitions described above. These may be characterized by unusually high evening pedestrian activity, crime rate, unusually high vehicular traffic or any other features such as bridges or underpasses not specified in the area/facility types described above.

Standards: lighting needs in these areas may be higher or lower than typical areas as determined by the Director of Public Works.

### 6. Method of Analysis

Continuous roadway lighting, complete traffic interchange lighting, and intersection lighting shall be designed using the illuminance method of analysis.

### 7. Area of Calculation



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The point method indicating illumination levels shall be calculated for the full width of the pavement, shoulders, and median.

8. Levels of Illumination for Intersections

The minimum average maintained illumination levels for an intersection shall be equal to the sum of the recommended values for each of the intersecting roadways (e.g.: two 4-lane divided highways intersecting – 0.8 fc for each roadway – the average maintained level of illumination would be 1.6 fc).

9. The manufacturer’s initial lumen rating for the clear lamp high pressure sodium shall be as follows: (or most current listing)

70 watt	5,000 lumen
100 watt	9,500 lumen
150 watt	16,000 lumen
250 watt	23,000 lumen
400 watt	50,000 lumen
1,000 watt	140,000 lumen

10. Maintenance Factor

Total maintenance factor used for design shall be 0.69 (as recommended by VDOT). This includes both lamp loss and dirt depreciation.

11. Design Calculations

Design calculations shall be required for highway projects only. For site, subdivision, or special needs areas where levels of illumination vary from typical standards, lighting calculations may be required as determined by the Director of Public Works. Point calculations shall be provided for each typical section and all intersections. Average level of illumination shall also be required. The edges of the pavement, median, and radius, shall be indicated on the computer point calculation printout.

**4.4.4 Guidelines for Installing Street Lighting on Existing Roadways**

1. Primary Roadways

Street lighting installed on primary roadways (3 lanes or greater and speed limit greater than 45 mph) shall be roadway lighting, not security lighting. The roadway must meet the minimum warrant criteria listed in the [Roadway Lighting Handbook](#) or the VDOT Lighting Evaluation Form for Existing Non-Controlled Access Facility to be considered for street lighting. Meeting the warrant criteria does not guarantee the installation of roadway lighting. Final discretion will be left to the Director of Public Works.

2. Residential Areas

Street lighting installed in residential areas shall be security lighting. For street lighting to be considered on a residential street, the following criteria must be met:

- A. There must be at least six (6) residences within a distance of 1,200 feet.



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B. A petition (available from the Director of Public Works) must be signed by a minimum of 75% of the residences of property abutting on the entire area in question.

Once a qualifying petition has been submitted to the Director of Public Works, the City will analyze the residential street(s) and determine if installation of street lighting is justified. If installation of street lighting is justified, the Director of Public Works will send a letter to the power company requesting an estimate for the purchase and installation of the street lighting. Upon receipt of the cost estimate by the power company, the Director of Public Works will review the estimate and if satisfied, authorize the power company to begin work. All rejected street lighting requests shall be kept on file and will subsequently be reviewed if the justifications for installing street lighting are amended.

### 3. Continuation of Existing Systems

Areas characterized by existing systems, but which have gaps due to housing density not meeting the criteria described above, may be lighted to provide a continuous lighting system provided that at least four (4) residences are within a distance of 1,200 feet and a petition is signed by a minimum of 75% of the residents of property abutting on the entire area in question.

### 4. Special Needs Area

Areas characterized by unusually high evening pedestrian activity, high crime rate, unusually high vehicular traffic, or any other distinct feature compromising citizen safety shall be equipped with street lighting at the direction of City Council or the City Manager, regardless of whether the area meets current warrant criteria.

### 5. Commercial Areas

See Section 4.4.2 and Section 4.4.3 for Street Lighting Plans, Streetlight Locations and Lighting Design Standards, and Lighting Levels.

#### ***4.4.4.1 Policy on Security Street Lighting***

The City policy regarding the installation of security street lighting on residential streets is as follows:

Investigations to justify the installation of security streetlights shall be made only where there is a density of at least six (6) residences within a distance of 1,200 feet. It will be made upon receipt of this petition signed by a minimum of seventy-five percent (75%) of the residents of property abutting on the entire area in question. If justification is warranted, the street lighting will be installed under the following provisions:

1. Request should be submitted to the Director of Public Works on the form provided for this purpose.
2. Public Works will review the request and determine if the request conforms to this policy. The originator of the request will be notified of the results along with the City Manager and City Councilperson who represents the district where the street lighting is requested.
3. If approved, the City of Suffolk will determine the number, type, and location of security streetlights to be installed. All security street lighting approved by the City will be installed by the power company.



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4. A letter will be sent to the power company requesting a cost estimate for the purchase and installation of security street lighting.
5. Upon receipt of the cost estimate from the power company, the Director of Public Works will review the estimate. If final approval is given, Dominion Virginia Power is authorized to commence work.
6. The maximum size for security streetlights shall be 5,000 HPS lumen unless a larger size lamp is needed for highway safety at such points as road intersections.
7. Although it is recognized that a certain amount of illumination will spill onto private properties as a result of the installation of the streetlights, no shielding or shading of any type will be authorized in order to prevent this from occurring.
8. Light must be a security streetlight – that is, it must be on a public street and mounted on the street side of the pole.
9. In the event lights are in need of replacement – for either upgrading or downgrading – the City shall determine the replacement light size.

### 4.5 Traffic Calming

The objective of traffic calming is to:

- Maintain/enhance neighborhood livability
- Enhance safety
- Enhance the environment
- Promote alternative transportation modes; and
- Encourage public involvement

During street layout and design, the issue of traffic calming should be considered. Early consideration can minimize future speeding problems and improve the livability of the neighborhood. If the street layout cannot be designed to encourage target speeds, traffic calming treatment may be appropriate. The type of treatment chosen for incorporation in the design depends on the function and traffic volume of the roadway segment.

Subdivision streets should be designed to encourage 85th percentile speed in the range of 25 to 30 mph. This can be accomplished with attention to three major design areas- the width of the paved roadway surface, the length of tangent sections and the vertical grade.

The width of pavement should be the minimum to safely accommodate the proposed traffic. If this is not practical for other reasons, the road width can also be restricted at specific points through the use of chokers or raised median islands.

Tangent length should be ideally not exceeding 500 feet. Studies indicate that operating speeds were 30 mph or less when the tangent sections were no longer than 500 feet. Long tangent sections can be segmented by conditions that require a complete stop, such as T intersection or by conditions that require reduced speeds such as a traffic calming device. Devices that are suggested for new subdivisions with an average daily traffic between 600 and 4,000 vehicles per day includes roundabouts, chokers, raised median/island, crosswalk refuges or raised pedestrian crosswalks.



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Steep downgrades should be avoided in subdivision street design as vehicle speeds tend to increase on downward slopes and vehicles can quickly exceed desirable speeds. Speed humps should be avoided in favor of raised crosswalks. Four-way stop conditions should be avoided on low volume streets because there will be a tendency for the stop to be ignored and that has potential to train drivers that 4-way stops don't really mean "stop." Any proposal for four-way must be reviewed by the City Traffic Engineer.

### Project Selection

Application of traffic calming enhancements shall be limited to those neighborhood collector streets that are primarily residential, and to local service streets. To be classified as primarily residential, at least 75% of the properties with frontage on the street must be in residential zoning. In addition, the 85th percentile speed must be at least 5 mph over the posted speed, have 5 or more accidents in a 12-month period, or have a high bicycle or pedestrian movement.

If a street section is selected for a project, the residents and business owners along the street will be surveyed to find out whether they support traffic calming procedures. The project would only be undertaken if the survey results are favorable (at least 60%).

### Traffic Calming Devices

The following traffic calming techniques may be used within the City with the approval of the Director of Public Works:

- All way stops or lowering speed limit – erection of stop signs or speed limit signs as needed may require police enforcement to increase effectiveness
- Slow points – small islands in the middle of the street with marked bike lanes on both sides. They serve to narrow the vehicle travel lanes and can be installed either at intersections or mid-block. Slow points are used to enhance pedestrian crossing points and provide visual narrowing along the roadway. Should be designed to provide comfortable refuge for pedestrians (10' is desirable). Can be used on roads with volumes less than 8,000 vehicles per day (VPD).
- Curb extensions – narrow the street by widening the sidewalk and/or the landscaped parking strip. They are used to make pedestrian crossings easier and to provide a visual narrowing along the roadway that helps increase driver awareness. They may be installed at the intersections or mid-block.
- Speed humps – 22' long in the direction of travel and 3" tall at their highest point. This corresponds to the "Seminole County" design with a 6' parabolic curve up to the 3" height, a 10' platform and a 6' parabolic curve back to the natural grade. This design has a design speed of 25-30 mph. The City of Suffolk prefers a 22' hump with a raised brick crosswalk at certain locations. A 14' speed hump is also acceptable with a 7' parabolic curve and no platform. The design speed for the 14' speed hump is 15-20 mph. The humps are placed on top of the existing roadway, constructed of asphalt concrete, and inlaid with chevron markings. Speed humps may be used on roads with an average annual daily traffic (AADT) of up to 15,000 VPD. The optimal spacing for the 14' hump is 500'-700' and for the 22' hump 400'-600'. Speed humps may be installed on street sections with a grade equal to or less than five (5%) percent. Engineering evaluation should be conducted to assure speed humps placed along a horizontal curve allow safe vehicle passage at the design speed of the curve. In addition, warning signs for the speed



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humps should be placed in such a manner as to be clearly visible by approaching motorists according to the MUTCD. Speed humps should not be placed at a driveway location. Tolerance for the speed hump height is +/- 0.5" Final design will be determined by the Department of Public Works.

- Street closures, one-way streets and traffic diverters – prohibit one or more traffic movements. Will only be considered after other techniques have been used and failed.

All traffic calming projects shall be submitted for emergency access review by the Director of Public Works.

### Applicability

Although this chapter and attached guide are intended for existing streets, there is a concern about preventing traffic problems from developing on new subdivision streets. In the process of design and review of subdivision plans, care should be taken to identify and address potential traffic calming needs, as well as other traffic management concerns that may develop. The Design Engineer should ensure that emphasis is placed on geometric concepts that make streets less desirable for speed and cut-through traffic. Additional detailed information may be found on city web site.

Ideally, potential traffic calming concerns in new developments should be addressed with roadway design geometric changes, especially roadway width (narrowing) and road curvature. In lieu of, or in addition to, the geometric changes, traffic calming measures that generally serve to narrow the travel way include pavement marking, delineating parking, shoulders or bike lanes, roundabouts, chokers, crosswalk refuges, and short medians. The developer should consult with the City Traffic Engineer prior to submitting a plan specifying traffic calming measures on newly developed streets.

Additional detailed information may be found on City web page.

### **4.6 Criteria for Street Acceptance for Public Maintenance**

Upon major completion and installation of the right-of-way components within a project with dedicated ROW, the owner or developer may place a formal request of acceptance by the City of Suffolk to review the respective ROW and determine the eligibility of such request. The following procedure is incorporated within this manual to give the owner a baseline guide to acceptance into the city maintenance system. Special or specific site conditions may exist that could alter this process, and must be reviewed and approved by the Director of Public Works.

Any owner/developer wishing to have dedicated public ROW accepted into the City maintenance system must submit a formal request, in writing, to the Public Works Engineering Division for review to determine the eligibility of acceptance by this department. The request form may be found on the city website, or by contacting the Public Works Engineering department. Email or fax delivery will be considered acceptable forms of request, with the request form filled out and included.

**Note:** Construction Record Drawings and CCTV video should be submitted to Public Works Engineering for review as soon as possible to avoid delays in acceptance. Ideally, the CCTV should be performed prior to installation of the surface course of asphalt to prevent the



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possibility of disturbance to the finished pavement structure. Please refer to section 6.4 of this manual for the requirements of CCTV of storm drain lines. No private irrigation or sprinkler systems are permitted in the right-of-way.

Upon receiving the formal request, and the site is determined to be at an appropriate stage of construction so as to continue with the review, a copy of the request will be forwarded to Public Works Street Maintenance and Right-Of-Way, Public Utilities, Public Works Storm Water Division, Traffic Engineering, Planning and Public Works Engineering Inspections. All divisions will be given ample time to respond to the request with approval for acceptance or a notification indicating that the site has outstanding issues and approval is not granted at this time. If acceptance is not obtained by all the departments, then a punch list will be developed and forwarded to the owner/developer within 30 days of submittal, containing all outstanding items in need of correction or installation before accepting the ROW.

A time line of 60 days will be afforded the owner to correct the outstanding issues included on the punch list, and the site will be re-inspected for approval. If no work to correct the outstanding issues has commenced by the end of the 60 day timeline, the request will be considered terminated and a new request will be required to be submitted.

Once the project site has been approved by all departments, and digital copies of the approved Construction Record Drawings have been received, a certificate of completion will be issued to the owner by Public Works Engineering. At this time, a defect bond (and Ancillary Bond if allowed and approved) will be required to be submitted in the amount determined by Public Works Engineering. Receipt of the Defect bond will prompt final acceptance of the dedicated ROW into the city's maintenance program and release of the performance bond for the respective ROW.

Sidewalk Ancillary Bonds for subdivisions will need to be approved by the city, and will only be approved for residential subdivisions that contain completed Single Family homes below 75% of the total number of housing units for the subdivision, or phase of subdivision, in which the request for acceptance relates too. Ancillary Bonds will not be accepted for commercial projects. All Ancillary Bonds will be for a not to exceed term of two (2) years. At the end of the two (2) year term, the sidewalk must be installed completely according to the approved plan and in an acceptable condition to Public Works Engineering. A two (2) year defect Bond for sidewalk will also be required to be submitted to the city for the sidewalk, once the entire sidewalk has been completed. The amount of this defect bond will be determined by Public Works Engineering.

### **4.7 Right-of-Way Permits**

The following are general guidelines that should be followed unless otherwise approved by the Director of Public Works.

All roadways shall be designed to the minimum standards given in the current editions of the [City Unified Development Ordinances \(UDO\)](#), the [VDOT Road Design Manual](#), and [VDOT Road & Bridge Specifications](#) unless otherwise modified by this document.

#### **4.7.1 City of Suffolk Right-of-Way Permit Manual**

See [Appendix A](#) of this manual for the Right-of-Way Excavation and Restoration Manual



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### **4.8 Pavement Design**

The pavement design for all streets and Commercial/ Industrial access roads shall be in accordance with the appropriate road classifications shown in the [City's Roadway Inventory and Functional Classification Document](#).

#### **4.8.1 Flexible Pavement Design Methods**

New subdivision street pavement designs are to be developed using the "Flexible Pavement Design Worksheet for New Subdivision Streets" (Appendix IV) of the [Pavement Design Guide](#), which the developer shall submit with the design documents for each new subdivision street. Certain new subdivision streets (with a low traffic volume) may qualify to use the Alternate Pavement Design Method. Pavement designs for secondary road projects, including developer projects augmenting, realigning, or relocating secondary roads, are to be developed using the Conventional Pavement Design Method. The Maximum vehicles per day, as shown for the appropriate road classification, shall be used as the Design ADT in the nomograph to determine the Thickness Index for the pavement and for any adjustments to the pavement design.

Reductions to the minimum requirements found in Appendix III and IV of the Pavement Design Guide will not be considered. Final approval of all submitted pavement designs will reside with the Public Works Engineering Department or Traffic Engineering Department.

##### **4.8.1.1 Base Course and Surface Course**

Schedule of installation of final surface course should be considered in the final pavement design within proposed or existing right-of-way. If installation of final surface course is not anticipated within six months of completion of roadway construction, the pavement design calculation shall not include this layer in pavement thickness determinations. Pavement thickness of the base layer shall be adjusted accordingly to take into consideration anticipated construction vehicles, equipment, and the subdivision AADT for the base asphalt layer only. In the preliminary design phase of development, the engineer shall take into consideration all possible road extensions, Growth rates, and the percent of Heavy Commercial Traffic, to determine the appropriate adjustments in the AADT. [REDACTED]

[REDACTED] Premature deterioration of the base asphalt as a result of extended exposure to weather and heavy traffic loading will be reviewed periodically during the course of construction and may necessitate installation of surface course at an earlier date as determined by Public Works Engineering. Failure to install final surface course within the required time frame may result in the City of Suffolk exercising its right to utilize performance surety or surety for a right-of-way permit to perform the work.

##### **4.8.1.2 Sub-grades**

Field Sampling of the sub-grade soils shall be a requirement for pavement design. Specific guidelines for obtaining and conducting CBR tests are contained in the latest version of the Pavement Design Guide for Subdivision and Secondary Roads. CBR lab testing shall be performed in accordance with ["The Virginia Test Method for Conducting California Bearing Ratio Tests" \(Designation VTM-8\)](#).



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The design CBR determination process assumes that the properly compacted subgrade soil will produce a stable platform for pavement construction. If an unstable subgrade is encountered, it should be undercut to a firm foundation and be replaced with adequately compacted soil or aggregate materials or otherwise be stabilized by lime, cement, or the use of a geotextile to produce a stable platform for construction. The services of an independent testing firm to perform testing and issue recommendations to the City for review concerning undercut and backfill and/or additional stabilization measures concerning the subgrade and pavement structure shall be obtained by the owner. The use of soil stabilization fabrics within the City right-of-way must be approved by the Department of Public Works, and will not be considered as an added structural component in the design of the roadway pavement. The City reserves the right to accept or reject the recommendations provided by the third party testing firm, and require a second recommendation from another source.

Regardless of the street or pavement section proposed, no portion of the pavement section shall be placed within 12" of the seasonal high water table. Seasonal high water table shall be projected based upon the water table observation at the time of testing, and adjusted for the time of year, soil type and gradation, and topography. Extreme weather conditions must also be considered that would influence ground water table fluctuations at lower elevations.

### **4.8.2 Under-drains**

Standard UD-2 under-drains with outlets may be required for in grass medians to prevent water infiltration through or under the pavement structure. Longitudinal pavement edge drains, Standard UD-4 with outlets for lateral drainage, may also be required in all road classifications with a design AADT of 1,000 vpd or greater.

### **4.8.3 Other Pavement Section Considerations**

Not less than 33% of the required flexible pavement structure strength shall be composed of bituminous materials.

All untreated aggregate base or sub-base material shall be 21B aggregate except on roads with less than 1000 VPD where 21A or 21B may be used.

The pavement section shall specify the tack coat or the prime coat on the construction plans. The pavement section for additional traffic lanes shall be based on traffic counts, but under no circumstances shall it be less than the existing adjacent pavement section.

Lane additions and pavement cuts shall have the same surface material as the existing adjacent pavement. All lane editions shall conform to [VDOT WP-2](#) standards.

All pavement cuts and lane tie-ins must saw cut or mill the surface 12" beyond the edge of cut or lane tie-in.

### **4.8.4 Traffic Volumes**

On existing streets, actual traffic counts and 20-year projected traffic volumes shall be used as a basis for calculating the design traffic volume. This 20-year traffic projection shall be provided by Public Works. The design traffic volume shall be determined by means of the existing traffic volume and the 20-year projected volume. The minimum acceptable growth rate shall be 5% per year.



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When proposed streets intersect the property line of the subdivision and provide access with adjoining undeveloped property, the design traffic shall be based on:

- Number of acres expected to contribute traffic to this streets
- Ultimate development of property based on the LAND USE PLAN, developed by the Planning Dept.
- Total number of units expected to contribute to subject street
- A detailed topo or other map shall be submitted showing the off-site area and ultimate zoning; all assumptions of future traffic flow must be included; future zoning shall be derived from the approved LAND USE PLAN

### **4.8.5 Commercial Entrance Pavement Design**

Entrance pavement section shall be designed to accommodate the type and volume of traffic generated by the site and through the anticipated soil strength.

Pavement calculations are required for all pavement widening, entrances and accel/decal lanes. Stating "match existing pavement section" is not acceptable. Pavement widening for entrances is to be based on anticipated site traffic generations, but shall not be less than the existing pavement section.

### **4.9 Road Construction Guidelines**

The methods and materials used in construction of all streets shall be in conformance with the requirements of the current VDOT Road & Bridge Specifications, VDOT Road and Bridge Standards Vol.'s 1 & 2, HRPDC Regional Construction Standards, the Virginia Erosion & Sediment Control Handbook, City of Suffolk UDO, and this manual.

All street construction, including sidewalks, shall be within the dedicated street right-of-way or the required easements. Grading may be done in adjoining easements.

At the conclusion of street construction, all equipment, forms, barriers, excess material, and related items shall be removed from site. Final approval of the construction shall include proper cleanup of the site.

Access to all streets and entrances shall be maintained at all times unless otherwise approved by the Director of Public Works.

The City shall be notified at least 72 hours before any work is to begin on City or State roadways.

#### **4.9.1 Pavement Subgrade**

The preparation of the subgrade should be in accordance with the Latest Edition of the Virginia Department of Transportation's Road and Bridge Specifications. Prior to the placement of the sub-base/base layer, the in-situ subgrade soils shall be scarified and re-compacted to a depth of 6 inches for a distance of 2 feet beyond the proposed edges of pavement. Once subgrade elevation has been obtained for a section of roadway, the subgrade shall be inspected by proof-rolling the soils utilizing a loaded, tandem dump truck as accepted by the City. All proof-rolls must be coordinated with the Department of Public Works the developer's representative and an engineer



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or representative from an independent testing firm. Subgrade compaction shall also be verified every 500 feet before placement of the sub-base/base layer, with a minimum of two compaction tests per road and conducted in accordance with the VDOT Road and Bridge Specifications latest edition.

### **4.9.2 Sub-base and Aggregate Base Material**

Sub-base and Aggregate base materials used for road construction and pavement support shall conform to the requirements set forth in the most recent publication of the VDOT Road and Bridge Specifications.

Sub-base and aggregate base materials shall be placed on approved subgrades in lifts not exceeding 6 inches in depth, or as directed by the City. Placement and compaction of the sub-base or base layer shall conform to the most recent publication of the VDOT Road and Bridge Specifications.

Prior to placement of asphalt, the aggregate base must be proof-rolled in the same manner as required for pavement subgrades. Soft, or yielding areas noticed during proof-rolling operations must be addressed prior to installation of the first layer of pavement. The owner shall have a third party engineer on-site during all proof-roll operations, and recommendations made for areas found to be un-acceptable shall be reviewed and approved by the City of Suffolk prior to the implementation of the recommendations.

At the discretion of the City inspector, tests to determine the depth of aggregate prior to placement of asphalt pavement, may be required for any road designated to be future public ROW. The aggregate depth shall be measured following section 308.04 of the specifications.

Upon final approval of the sub-base/base material, placement of the asphalt layers shall be completed in a timely manner so as to prevent weathering or deterioration of the stable base layer(s). Subsequent proof rolling may be required if significant time has lapsed since final approval of the sub-base material.

### **4.9.3 Material Certification and Acceptance**

The materials used on the project shall conform to the requirements of the plans and specifications, and shall be considered as new except as allowed by the current version of the VDOT Road and Bridge Standards, with final approval by the City of Suffolk.

Material proposed for use within the City right-of-way must be accompanied with certifications from an approved testing laboratory providing the necessary information needed to confirm compliance with the project requirements as well as requirements of VDOT and the City of Suffolk. The City of Suffolk will provide final approval on all materials proposed for use within the City right-of-way.

### **4.10 Procedures for Complying with VDOT 527 Regulations**

Information on complying with VDOT 527 Regulations can be found below:

<http://www.suffolkva.us/files/3513/5820/0076/527Process.pdf>

<http://www.suffolkva.us/files/5713/5819/9803/527Map.pdf>



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## 5. Stormwater Management

The goal of storm water management is to mitigate the impact on the hydrologic cycle resulting from changes to the land surface. Urban development has been identified as having a direct impact on the hydrologic cycle by reducing or even eliminating the natural storage capacity of the land. This impact is the result of a decrease in tree cover, loose organic surface soils, and natural depressions, all of which provide natural storage capacity. These natural storage areas are then replaced with impervious and managed pervious surfaces. Impervious cover prevents the percolation of the runoff into soil, which means most, if not all of the rainfall is converted to runoff. In addition, managed pervious areas, such as courtyards and lawn areas typically do not provide opportunities for infiltration due to compaction of the surface soil profile and improved drainage conveyances. The results of increased stormwater runoff can be classified by its impact on water quality, stream channel erosion, and localized flooding.

This chapter outlines design criteria for grading, drainage, and stormwater management for new development and redevelopment within the City of Suffolk. It has been compiled to aide consultants in preparing design submittals to the City. This document is not intended to replace sound engineering judgment and good engineering practices.

### 5.1 Stormwater Management Program

The Virginia Erosion and Sediment Control [Law](#) and [Regulations](#), the Chesapeake Bay Preservation [Law](#) and [Regulations](#), the Virginia Stormwater Management [Act](#) and [Regulations](#), [The Code of the City of Suffolk](#), and the City of Suffolk [Unified Development Ordinance](#) govern stormwater management in the City of Suffolk and form the basis for the City of Suffolk Stormwater Management Program.

The Virginia Department of Environmental Quality (DEQ) administers the Virginia Stormwater Management Regulations. These regulations provide criteria required to control stormwater runoff quality and quantity. These guidelines and regulations are provided in the most recent version of the [Virginia Stormwater Management Handbook](#) and the [Virginia BMP Clearinghouse Website](#).

The Chesapeake Bay Preservation Act protects the water quality of the Chesapeake Bay from stormwater runoff pollution produced from new development and redevelopment within designated management areas. The Chesapeake Bay Preservation Act requirements are implemented by the City of Suffolk, Unified Development Ordinance and the Virginia Stormwater Management Handbook.

The Virginia Erosion and Sediment Control Law and Regulations, which is administered by the Virginia Department of Environmental Quality (DEQ), were created to control erosion and sedimentation during land-disturbing activities. [The Virginia Erosion and Sediment Control Handbook](#) describes the minimum design criteria, standards, and techniques for all regulated activities.



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### 5.2 Calculation Methods

New stormwater management regulations were passed in September 2011 and became effective July 2014. As a result two different sets of criteria exist for the purpose of stormwater design. The Virginia Stormwater Regulations describe both in detail as technical criteria part IIB and technical criteria part IIC. The part IIB criterion holds development to a quality standard of 0.41 lbs. per acre per year and uses the energy balance equation to calculate quantity requirements. The part IIC criteria utilizes a 16% impervious area limit and makes sure post development flow does not exceed pre-developed conditions. The part IIC criterion uses the familiar CBPA calculation sheets whilst the newer part IIB criterion uses the Virginia Runoff-Reduction Method spreadsheet. Any new development will use the part IIB criteria unless it meets the requirements of [9VAC25-870-47](#) or is considered “grandfathered” by [9VAC25-870-48](#). The applicant is responsible for selection of the correct design criteria.

#### 5.2.1 Time of Applicability 9VAC25-870-47

A. Nothing in this chapter shall be construed as limiting the applicability of other laws and regulations, including, but not limited to, the CWA, Virginia Stormwater Management Act, Virginia Erosion and Sediment Control Law, and the Chesapeake Bay Preservation Act, except as provided in § 62.1-44.15:27 K of the Code of Virginia, and all applicable regulations adopted in accordance with those laws, or the rights of other federal agencies, state agencies, or local governments to impose more stringent technical criteria or other requirements as allowed by law.

B. Land-disturbing activities that obtain an initial state permit or commence land disturbance prior to July 1, 2014, shall be conducted in accordance with the Part II C (9VAC25-870-93 et seq.) technical criteria of this chapter. Such projects shall remain subject to the Part II C technical criteria for two additional state permit cycles. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.

C. Land-disturbing activities that obtain an initial state permit on or after July 1, 2014, shall be conducted in accordance with the Part II B (9VAC25-870-62 et seq.) technical criteria of this chapter, except as provided for in 9VAC25-870-48. Land-disturbing activities conducted in accordance with the Part II B technical criteria shall remain subject to the Part II B technical criteria for two additional state permit cycles. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.

D. Nothing in this section shall preclude an operator from constructing to a more stringent standard at his discretion.

#### 5.2.2 Grandfathering 9VAC25-870-48

A. Any land-disturbing activity shall be considered grandfathered by the VSMP authority and shall be subject to the Part II C (9VAC25-870-93 et seq.) technical criteria of this chapter provided:

1. A proffered or conditional zoning plan, zoning with a plan of development, preliminary or final subdivision plat, preliminary or final site plan, or any document determined by the locality to be equivalent thereto (i) was approved by the locality prior to July 1, 2012, (ii) provided a layout as defined in 9VAC25-870-10, (iii) will comply with the Part II C technical criteria of this



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chapter, and (iv) has not been subsequently modified or amended in a manner resulting in an increase in the amount of phosphorus leaving each point of discharge, and such that there is no increase in the volume or rate of runoff;

2. A state permit has not been issued prior to July 1, 2014; and

3. Land disturbance did not commence prior to July 1, 2014.

B. Locality, state, and federal projects shall be considered grandfathered by the VSMP authority and shall be subject to the Part II C technical criteria of this chapter provided:

1. There has been an obligation of locality, state, or federal funding, in whole or in part, prior to July 1, 2012, or the department has approved a stormwater management plan prior to July 1, 2012;

2. A state permit has not been issued prior to July 1, 2014; and

3. Land disturbance did not commence prior to July 1, 2014.

C. Land-disturbing activities grandfathered under subsections A and B of this section shall remain subject to the Part II C technical criteria of this chapter for one additional state permit cycle. After such time, portions of the project not under construction shall become subject to any new technical criteria adopted by the board.

D. In cases where governmental bonding or public debt financing has been issued for a project prior to July 1, 2012, such project shall be subject to the technical criteria of Part II C.

E. Nothing in this section shall preclude an operator from constructing to a more stringent standard at his discretion.

### **5.2.3 Technical Criteria Part II B (new projects)**

#### ***5.2.3.1 New Development***

1. New development. The total phosphorus load of new development projects shall not exceed 0.41 pounds per acre per year. Compliance with the water quality design criteria set out in subdivisions A 1 and A 2 of [9VAC25-870-63](#) of the Code of Virginia shall be determined by utilizing the [Virginia Runoff Reduction Method](#) and in accordance with the procedures set forth in this manual. The City of Suffolk reserves the right to establish more stringent regulations if necessary to address total maximum daily load requirements or to protect exceptional state waterways.

#### ***5.2.3.2 Development on prior developed lands***

a. For land-disturbing activities disturbing greater than or equal to one acre that result in no net increase in impervious cover from the predevelopment condition, the total phosphorus load shall be reduced at least 20% below the predevelopment total phosphorus load.

b. For regulated land-disturbing activities disturbing less than one acre that result in no net increase in impervious cover from the predevelopment condition, the total phosphorus load shall be reduced at least 10% below the predevelopment total phosphorus load.

c. For land-disturbing activities that result in a net increase in impervious cover over the predevelopment condition, the design criteria for new development shall be applied to the



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increased impervious area. Depending on the area of disturbance, the criteria of subdivisions a or b above, shall be applied to the remainder of the site.

d. In lieu of subdivision c of this subsection, the total phosphorus load of a linear development project occurring on prior developed lands shall be reduced 20% below the predevelopment total phosphorus load.

e. The total phosphorus load shall not be required to be reduced to below the applicable standard for new development unless a more stringent standard has been established by a locality.

### **5.2.3.3 Water quality compliance**

A. Compliance with the water quality design criteria set out in subdivisions A 1 and A 2 of [9VAC25-870-63](#) shall be determined by utilizing the Virginia Runoff Reduction Method or another equivalent methodology that is approved by the board.

B. The BMPs listed in this subsection are approved for use as necessary to effectively reduce the phosphorus load and runoff volume in accordance with the Virginia Runoff Reduction Method. Other approved BMPs found on the [Virginia Stormwater BMP Clearinghouse Website](#) may also be utilized. Design specifications and the pollutant removal efficiencies for all approved BMPs are found on the Virginia Stormwater BMP Clearinghouse Website.

C. BMPs differing from those listed in subsection B of this section shall be reviewed and approved by the director in accordance with procedures established by the department.

D. A VSMP authority may establish limitations on the use of specific BMPs in accordance with [§ 62.1-44.15:33 of the Code of Virginia](#).

E. The VSMP authority shall have the discretion to allow for application of the design criteria to each drainage area of the site. However, where a site drains to more than one HUC, the pollutant load reduction requirements shall be applied independently within each HUC unless reductions are achieved in accordance with a comprehensive watershed stormwater management plan in accordance with [9VAC25-870-92](#).

F. Offsite alternatives where allowed in accordance with [9VAC25-870-69](#) may be utilized to meet the design criteria of subsection A of [9VAC25-870-63](#).

### **5.2.3.4 Water Quantity**

A. Channel protection and flood protection shall be addressed in accordance with the minimum standards set out in this section, which are established pursuant to the requirements of subdivision 7 of § 4 62.1-44.15:28 of the Code of Virginia. Nothing in this section shall prohibit a locality's VSMP authority from establishing a more stringent standard in accordance with § 62.1-44.15:33 of the Code of Virginia especially where more stringent requirements are necessary to address total maximum daily load requirements or to protect exceptional state waters. Compliance with the minimum standards set out in this section shall be deemed to satisfy the requirements of subdivision 19 of 9VAC25-840-40 (Minimum standards; Virginia Erosion and Sediment Control Regulations).

B. Channel protection. Concentrated stormwater flow shall be released into a stormwater conveyance system and shall meet the criteria in subdivision 1, 2, or 3 of this subsection, where applicable, from the point of discharge to a point to the limits of analysis in subdivision 4 of this subsection.



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1. Manmade stormwater conveyance systems. When stormwater from a development is discharged to a manmade stormwater conveyance system, following the land-disturbing activity, either:

- a. The manmade stormwater conveyance system shall convey the postdevelopment peak flow rate from the two-year 24-hour storm event without causing erosion of the system. Detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet this criterion, at the discretion of the VSMP authority; or
- b. The peak discharge requirements for concentrated stormwater flow to natural stormwater conveyance systems in subdivision 3 of this subsection shall be met.

2. Restored stormwater conveyance systems. When stormwater from a development is discharged to a restored stormwater conveyance system that has been restored using natural design concepts, following the land-disturbing activity, either:

- a. The development shall be consistent, in combination with other stormwater runoff, with the design parameters of the restored stormwater conveyance system that is functioning in accordance with the design objectives; or
- b. The peak discharge requirements for concentrated stormwater flow to natural stormwater conveyance systems in subdivision 3 of this subsection shall be met.

3. Natural stormwater conveyance systems. When stormwater from a development is discharged to a natural stormwater conveyance system, the maximum peak flow rate from the one-year 24-hour storm following the land-disturbing activity shall be calculated either:

a. In accordance with the following methodology:

$$Q_{\text{Developed}} \leq I.F. * (Q_{\text{Pre-developed}} * RV_{\text{Pre-Developed}}) / RV_{\text{Developed}}$$

Under no condition shall  $Q_{\text{Developed}}$  be greater than  $Q_{\text{Pre-Developed}}$  nor shall  $Q_{\text{Developed}}$  be required to be less than that calculated in the equation  $(Q_{\text{Forest}} * RV_{\text{Forest}}) / RV_{\text{Developed}}$ ; where:

I.F. (Improvement Factor) equals 0.8 for sites > 1 acre or 0.9 for sites ≤ 1 acre.

$Q_{\text{Developed}}$  = The allowable peak flow rate of runoff from the developed site.

$RV_{\text{Developed}}$  = The volume of runoff from the site in the developed condition.

$Q_{\text{Pre-Developed}}$  = The peak flow rate of runoff from the site in the pre-developed condition.

$RV_{\text{Pre-Developed}}$  = The volume of runoff from the site in pre-developed condition.

$Q_{\text{Forest}}$  = The peak flow rate of runoff from the site in a forested condition.

$RV_{\text{Forest}}$  = The volume of runoff from the site in a forested condition; or

b. In accordance with another methodology that is demonstrated by the VSMP authority to achieve equivalent results and is approved by the board.

4. Limits of analysis. Unless subdivision 3 of this subsection is utilized to show compliance with the channel protection criteria, stormwater conveyance systems shall be analyzed for compliance with channel protection criteria to a point where either:



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a. Based on land area, the site's contributing drainage area is less than or equal to 1.0% of the total watershed area; or

b. Based on peak flow rate, the site's peak flow rate from the one-year 24-hour storm is less than or equal to 1.0% of the existing peak flow rate from the one-year 24-hour storm prior to the implementation of any stormwater quantity control measures.

C. Flood protection. Concentrated stormwater flow shall be released into a stormwater conveyance system and shall meet one of the following criteria as demonstrated by use of acceptable hydrologic and hydraulic methodologies:

1. Concentrated stormwater flow to stormwater conveyance systems that currently do not experience localized flooding during the 10-year 24-hour storm event: The point of discharge releases stormwater into a stormwater conveyance system that, following the land-disturbing activity, confines the postdevelopment peak flow rate from the 10-year 24-hour storm event within the stormwater conveyance system. Detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet this criterion, at the discretion of the VSMP authority.

2. Concentrated stormwater flow to stormwater conveyance systems that currently experience localized flooding during the 10-year 24-hour storm event: The point of discharge either:

a. Confines the postdevelopment peak flow rate from the 10-year 24-hour storm event within the stormwater conveyance system to avoid the localized flooding. Detention of stormwater or downstream improvements may be incorporated into the approved land-disturbing activity to meet this criterion, at the discretion of the VSMP authority; or

b. Releases a postdevelopment peak flow rate for the 10-year 24-hour storm event that is less than the predevelopment peak flow rate from the 10-year 24-hour storm event. Downstream stormwater conveyance systems do not require any additional analysis to show compliance with flood protection criteria if this option is utilized.

3. Limits of analysis. Unless subdivision 2 b of this subsection is utilized to comply with the flood protection criteria, stormwater conveyance systems shall be analyzed for compliance with flood protection criteria to a point where:

a. The site's contributing drainage area is less than or equal to 1.0% of the total watershed area draining to a point of analysis in the downstream stormwater conveyance system;

b. Based on peak flow rate, the site's peak flow rate from the 10-year 24-hour storm event is less than or equal to 1.0% of the existing peak flow rate from the 10-year 24-hour storm event prior to the implementation of any stormwater quantity control measures; or

c. The stormwater conveyance system enters a mapped floodplain or other flood-prone area, adopted by ordinance, of any locality.

D. Increased volumes of sheet flow resulting from pervious or disconnected impervious areas, or from physical spreading of concentrated flow through level spreaders, must be identified and evaluated for potential impacts on down-gradient properties or resources. Increased volumes of sheet flow that will cause or contribute to erosion, sedimentation, or flooding of down gradient properties or resources shall be diverted to a stormwater management facility or a stormwater conveyance system that conveys the runoff without causing down-gradient erosion,



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sedimentation, or flooding. If all runoff from the site is sheet flow and the conditions of this subsection are met, no further water quantity controls are required.

E. For purposes of computing predevelopment runoff, all pervious lands on the site shall be assumed to be in good hydrologic condition in accordance with the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) standards, regardless of conditions existing at the time of computation. Predevelopment runoff calculations utilizing other hydrologic conditions may be utilized provided that it is demonstrated to and approved by the VSMP authority that actual site conditions warrant such considerations.

F. Predevelopment and postdevelopment runoff characteristics and site hydrology shall be verified by site inspections, topographic surveys, available soil mapping or studies, and calculations consistent with good engineering practices. Guidance provided in the Virginia Stormwater Management Handbook and on the Virginia Stormwater BMP Clearinghouse Website shall be considered appropriate practices.

### ***5.2.3.5 Offsite Compliance Options***

A. Offsite compliance options that a VSMP authority may allow an operator to use to meet required phosphorus nutrient reductions include the following:

1. Offsite controls utilized in accordance with a comprehensive stormwater management plan adopted pursuant to 9VAC25-870-92 for the local watershed within which a project is located;
2. A locality pollutant loading pro rata share program established pursuant to § 15.2-2243 of the Code of Virginia or similar local funding mechanism;
3. The nonpoint nutrient offset program established pursuant to § 62.1-44.15:35 of the Code of Virginia;
4. Any other offsite options approved by an applicable state agency or state board; and
5. When an operator has additional properties available within the same HUC or upstream HUC that the land-disturbing activity directly discharges to or within the same watershed as determined by the VSMP authority, offsite stormwater management facilities on those properties may be utilized to meet the required phosphorus nutrient reductions from the land-disturbing activity.

B. Notwithstanding subsection A of this section, and pursuant to § 62.1-44.15:35 of the Code of Virginia, operators shall be allowed to utilize offsite options identified in subsection A of this section under any of the following conditions:

1. Less than five acres of land will be disturbed;
2. The post-construction phosphorus control requirement is less than 10 pounds per year; or
3. At least 75% of the required phosphorus nutrient reductions are achieved on-site. If at least 75% of the required phosphorus nutrient reductions cannot be met on-site, and the operator can demonstrate to the satisfaction of the VSMP authority that (i) alternative site designs have been considered that may accommodate on-site best management practices, (ii) on-site best management practices have been considered in alternative site designs to the maximum extent practicable, (iii) appropriate on-site best management practices will be implemented, and (iv) full compliance with postdevelopment nonpoint nutrient runoff compliance requirements cannot



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practicably be met on-site, then the required phosphorus nutrient reductions may be achieved, in whole or in part, through the use of off-site compliance options.

C. Notwithstanding subsections A and B of this section, offsite options shall not be allowed:

1. Unless the selected offsite option achieves the necessary nutrient reductions prior to the commencement of the operator's land-disturbing activity. In the case of a phased project, the operator may acquire or achieve offsite nutrient reductions prior to the commencement of each phase of land-disturbing activity in an amount sufficient for each phase.
2. In contravention of local water quality-based limitations at the point of discharge that are (i) consistent with the determinations made pursuant to subsection B of § 62.1-44.19:7 of the Code of Virginia, (ii) contained in a municipal separate storm sewer system (MS4) program plan accepted by the department, or (iii) as otherwise may be established or approved by the board.

D. In order to meet the requirements of 9VAC25-870-66, offsite options described in subdivisions 1 and 2 of subsection A of this section may be utilized.

E. A list of local water ways with quality-based limitations can on [DEQ's list of impaired waterways](#).

### ***5.2.3.6 Design Storms and Hydrologic Methods***

A. Unless otherwise specified, the prescribed design storms are the one-year, two-year, and 10-year 24-hour storms using the site-specific rainfall precipitation frequency data recommended by the U.S. National Oceanic and Atmospheric Administration (NOAA) Atlas 14. Partial duration time series shall be used for the precipitation data.

B. Unless otherwise specified, all hydrologic analyses shall be based on the existing watershed characteristics and how the ultimate development condition of the subject project will be addressed.

C. The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) synthetic 24-hour rainfall distribution and models, including, but not limited to TR-55 and TR-20; hydrologic and hydraulic methods developed by the U.S. Army Corps of Engineers; or other standard hydrologic and hydraulic methods, shall be used to conduct the analyses described in this part.

D. For drainage areas of 200 acres or less, the VSMP authority may allow for the use of the Rational Method for evaluating peak discharges.

E. For drainage areas of 200 acres or less, the VSMP authority may allow for the use of the Modified Rational Method for evaluating volumetric flows to stormwater conveyances.

### ***5.2.3.7 Linear Development Projects***

Linear development projects shall control post development stormwater runoff in accordance with a site-specific stormwater management plan or a comprehensive watershed stormwater management plan developed in accordance with these regulations.

### ***5.2.3.8 Additional Safety Requirements***

Stormwater management wet ponds and extended detention ponds that are not covered by the Impounding Structure Regulations ([4VAC50-20](#)) shall, at a minimum, be engineered for



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structural integrity for the 100-year storm event. All stormwater management facilities are required to supply 1 foot of freeboard over the 100-year storm event if an emergency spillway is utilized. If there is no emergency spillway, 2 feet of freeboard over the 100-year storm event is required.

### **5.2.4 Technical Criteria Part II C (grandfathered or existing projects)**

Any submittal seeking to utilize the part IIC criteria should submit evidence of “grandfathering” under section [5.2.2](#) of this manual or evidence of existing permit coverage under section [5.2.1](#) of this manual. This criterion is discussed in detail in the first edition of the [Virginia Stormwater Management Handbook](#).

#### **5.2.4.1 Technology-Based vs. Performance Based Calculations**

The First Edition Virginia Stormwater Management Handbook (VSMH) allows water quality calculations based on either of two criteria –Technology Based or Performance Based. The City of Suffolk allows for the use of either methodology. Contact the Department of Public Works for a listing of specifically designated areas. Refer to the First Edition Virginia Stormwater Management Handbook for a complete discussion of the two methods.

Consult with the Department of Public Works prior to commencing study to confirm applicable use of technology based methodology. The technology - based approach is permitted in areas classified as redevelopment, however, the applicant shall demonstrate that the performance-based approach cannot be reasonably met.

#### **5.2.4.2 Calculations**

Stormwater Management Design and Compliance Calculations for meeting water quality requirements shall be submitted in accordance with the requirements of the First Edition Virginia Stormwater Management Handbook, (VSMH). The designer shall submit the CBPA worksheets as found in the VSMH, Appendix 5D for all projects regardless of watershed. Projects not located in the CBPA, RMA shall meet the requirements of the Virginia Stormwater Management Handbook. Water Quality Treatment shall require the use of a “Best Management Practice” (BMP) as defined by the VSMH and shall require appropriate compliance calculations in accordance with the CBPA worksheet. The designer shall submit calculations documenting treatment of the required Water Quality Volume (WQV). The design shall also provide 2, 10, and 100 year storm quantity calculations that demonstrate that post developed flow conditions do not exceed pre developed flow conditions.

### **5.3 Considerations for New and Existing Stormwater Management Plans**

The following considerations apply to projects utilizing either set of technical criteria for design.

#### **5.3.1 Regional Stormwater Master Plans**

The objective of a stormwater master plan is to address the stormwater management and water quality concerns in a given watershed with greater economy and efficiency by installing regional stormwater management facilities as opposed to individual, site specific facilities. The result will be fewer stormwater management facilities to design, build and maintain in the affected watershed. Regional stormwater facilities should not only help to mitigate the impacts of new



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development, but may also provide for the remediation of flooding or water quantity problems caused by existing development within the given watershed.

If developed, the regional stormwater master plan shall, at a minimum, address the following:

- The specific stormwater management issues within the targeted watersheds.
- The implications of any local comprehensive plan, zoning requirements and other planning documents.
- Proposed land use.
- Water quantity and water quality criteria.
- Maintenance of the selected stormwater management facilities.
- Future expansion of the selected stormwater management facilities in the event that development exceeds the anticipated level.

### **5.3.2 Modification of Existing Stormwater Master Plans**

After July 1, 2014 any stormwater master plans approved prior to July 1, 2012 will no longer fall under the category of “grandfathered” if the plan has been modified or amended in a manner resulting in an increase in the amount of phosphorus leaving each point of discharge, and such that there is no increase in the volume or rate of runoff.

Amendment of any approved plan that has received permit coverage prior to July 1, 2014 after July 1, 2014 will require resubmittal and may necessitate redesign under the new part IIB technical criteria if the plan has been modified or amended in a manner resulting in an increase in the amount of phosphorus leaving each point of discharge, and such that there is no increase in the volume or rate of runoff.

### **5.3.3 Previously Approved Stormwater Management Plans and Proposed BMP Modifications**

BMPs designed and approved prior to July 1st, 2014 may not meet current stormwater regulations and standards and may require modifications in order to bring it into compliance. As a result of these changes in law, a comprehensive written document along with relevant supporting data and other material will be required to be submitted to the City of Suffolk for review and approval. For modification or expansion of a BMP designed after July 1st, 2014, a new as-built survey maybe required.

The existing and proposed BMP detail shall be included in the site plan. Construction details and notes shall also be included specifying what upgrades have been made based on the field investigation. The engineer shall state that the proposed modifications will meet new regulations and standards. Relevant engineering calculations and a narrative section of the stormwater plan shall be submitted to the City for review. It shall be the consultant’s responsibility to prove through appropriate engineering calculations and written narrative that the proposed BMP is adequate for the proposed development.

### **5.3.4 Environmental Documentation within the Chesapeake Bay Preservation Area**

A Water Quality Impact Assessment (WQIA) is required for any proposed development within the RPA, including any buffer area modification or reduction as provided for in the Chesapeake Bay Preservation Overlay District.



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### 5.3.5 Multiple Jurisdictions/Drinking Water Reservoirs

Multiple jurisdictions own and maintain drinking water supply reservoirs (source water) in the City of Suffolk. The design of all development shall meet any water quality requirements of the separate jurisdictions in addition to the requirements for water quality provided in this manual. It shall be the responsibility of the designer to submit appropriate plans and calculations to the separate jurisdictions for review and approval.

### 5.3.6 SWMF Recapitulation Sheet

All new development and redevelopment plans providing a SWMF shall contain a SWMF Recapitulation Sheet on the front cover of the plans. The SWMF Recapitulation Sheet provides specific details of the chosen SWMF for the proposed site. The [SWMF Recapitulation Sheet](#) is provided in [Appendix B](#).

### 5.3.7 Oil-Water Separators

BMP's designed for the removal of nutrients and sediment are not suited for the removal of Light Non-Aqueous Phase Liquids (LNAPLs) such as gasoline, oils and light solvents. Site plans being submitted for development containing fueling stations, automotive repair, salvage yards or any other site deemed likely to produce stormwater runoff containing LNAPL constituents are required to have an oil-water separator prior to the SWMF or, if no SWMF is used in the design prior to the site outfall. The submitted Stormwater Maintenance Document must contain information regarding proper use, maintenance and schedule of service for the oil-water separator. As an example: A fueling station uses a trench drain around the fuel pumps to direct any runoff or spillage directly into the oil-water separator prior to the SWMF. A recorded Stormwater Management Facilities Maintenance Agreement is required for oil-water separators.

## 5.4 Stormwater System Design Criteria

### 5.4.1 Storm Drains

This section contains the technical criteria required for the design of conduits, inlets, and other components of a storm drain system. For detailed design calculation guidelines, the user is referred to the [VDOT Drainage Manual](#). If information from the VDOT Drainage Manual conflicts with the design criteria in this chapter, the more conservative calculation shall take precedence.

#### 5.4.1.1 *Inlet Design & Spread*

This section describes basic technical criteria required for design of stormwater inlets. For detailed design guidelines, the user is referred to the VDOT Drainage Manual.

The primary objective of stormwater design in the right-of-way is to drain water flowing into the roadway and interfering or adversely affecting the movement of traffic. Inherent in this objective is to remove the water quickly and efficiently. In order to minimize water accumulation, inlet design and spacing requirements should be adhered to as specified in the VDOT Drainage Manual.



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Drainage inlets should be sized and located in accordance with the VDOT Drainage Manual. Where feasible, inlets should be placed immediately upstream of pedestrian walkways and street intersections and should intercept 100% of design flow.

Where an inlet is located on a continuous grade, the flow bypassing that inlet shall be included in the total gutter flow contributing to the next inlet downstream unless the flow is diverted or intercepted.

To properly drain a sump or low point, a check of the width of spread approaching the low point from each direction where the gutter grade is one-tenth of a percent is required.

At major sag points, significant ponding may occur. It is recommended practice to place a minimum of one flanking inlet on each side of the inlet at the sag point. The flanking inlets should be placed to limit ponding in the flatter slope approaches to the sag inlet and to act in relief of the sag inlet should it become clogged. The typical location for flanking inlets is 50 feet each side of the sag point. Refer to the VDOT Drainage Manual for additional criteria on Flanking Inlets.

Curb opening inlets shall be designed and spaced to pick up 85 to 90 percent of the gutter flow.

After having located the inlets for the suggested design storm, the designer shall check for excessive flooding and adjust the spacing accordingly.

### **5.4.1.2 Inlet Types**

All stormwater inlet structures must be selected and placed in accordance with the most current versions of the [VDOT Road and Bridge Standards](#) and [VDOT Road and Bridge Specifications](#); however the following structures are prohibited for use within the right-of-way:

- Curb cuts, whether directing flow to a yard drain style inlet or to a paved flume or directly to an outfall.
- Structures containing a grate in the gutter pan.

### **5.4.1.3 Pavement Drainage**

The desirable gutter profile grade for curbed pavements should not be less than 0.3 percent. The minimum gutter profile grade is 0.2 percent. The minimum pavement cross slope should not be less than 2 percent except during the occurrence of super elevation transition. The coincident occurrence of super elevation transitions and sag points or zero grades should be avoided.

### **5.4.1.4 Pipe Design Criteria**

Storm drain systems should be designed to convey the design storm with no surcharge. Analysis and design of storm drain systems should be accomplished using the guidelines presented in the VDOT Drainage Manual, which are based on Manning's Equation for non-surcharged flow:

$$Q = \frac{1.486}{n} AR^{2/3} S_o^{1/2}$$

Where: Q = Discharge (ft<sup>3</sup>/s)  
A = Cross-sectional area (ft<sup>2</sup>)  
n = Manning's roughness coefficient  
R = Hydraulic radius (feet)  
So = Pipe invert slope (ft. /ft.)



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Pipe design shall meet the following criteria:

1. All pipes shall have a minimum, self-cleansing velocity of 2.5 feet per second at design volume to discourage sedimentation. Maximum pipe velocity will be limited by outfall channel lining permissible velocity.
2. The minimum and maximum pipe slopes will be governed by the allowable pipe velocities. Slopes that incur uniform flow velocities in excess of 10 feet per second should be avoided because of the potential for abrasion. Slopes in excess of 16 percent are not preferred because of the need for anchor blocks. In steeper terrain, large elevation differences can be accommodated using drop structures.
3. The minimum diameter shall be 15 inches for storm drain pipes in public right-of-way.
4. Maximum spacing between manholes or inlets shall be 300 feet for pipe diameter up to 42 inches. Maximum spacing shall be 400 feet for pipe diameter greater than 42 inches.
5. Access shall be provided at all pipe junctions and bends. When a new pipe ties into an existing pipe, a structure must be provided.
6. A minimum of 90-degrees is required between the structure and an outflowing pipe.
7. All RCP joints shall be wrapped with filter fabric.
8. Pipe bedding shall be in accordance with the VDOT Road and Bridge Standards.
9. The contractor shall provide soil test results from an independent laboratory.
10. The determination of pipe capacity will be based upon "Manning's Equation" with subsequent tail-water equations, or by other methods acceptable to the City.
11. Reinforced concrete pipe shall be required in all public right-of-way or public drainage easements.
12. Submerged systems are prohibited with the exception of the last 100ft discharging to a SWMF.
13. A reduction in pipe size along the direction of flow is not permitted.
14. Radial storm drain pipes are not permitted.
15. The hydraulic grade line shall not exceed the crown of the pipe with the exception of the last 100 feet discharging to a stormwater management facility (SWMF).
16. All storm systems outside of the public right-of-way that collect runoff from a public right-of-way must have a drainage easement dedicated to the city.
17. No Stub-outs are permitted. All pipes must terminate with a structure.
18. No conflict manholes are permitted.
19. Pumps of any kind are not permitted in storm drain systems.



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### **5.4.1.5 Hydraulic Grade Line**

The hydraulic grade line (HGL) indicates the water surface elevation at any point along the system. The calculation of the hydraulic grade line shall be determined for the entire system. The Hydraulic Grade Line Procedure found in the VDOT Drainage Manual is recommended for calculating the HGL.

The hydraulic grade line shall not exceed the manhole rim elevation, yard drain, or curb inlet flow line elevation at any point in the system.

The tail water elevation used in calculations shall be determined by the selected design frequency storm elevation, or 0.8 x the pipe diameter, whichever is greater. Evaluate conditions of the downstream channel or stormwater management basin for the selected design frequency.

### **5.4.1.6 Pipe Material**

Class III reinforced concrete pipe is required for all pipes in the right-of-way or public drainage easement and those routinely subject to vehicular traffic including cross pipes in ditch maintenance strips.

Higher class pipe shall be required in railroad crossings. (Class V or in accordance with railroad requirements). Class IV/V pipe may be required to address cover limitations.

Alternative pipe materials may only be used on private property.

A minimum of 2 feet of cover should be provided over the pipe. If 2 feet of cover cannot be provided, class IV or V pipe may be used with 1 foot of cover.

## **5.4.2 Culverts**

A culvert is an open-ended conduit of storm drain pipe or box culvert, which conveys stormwater runoff under a roadway, entrance or similar embankment. This section describes technical criteria required for culvert design. In addition to these requirements, at culvert sites where a heavy volume of debris is expected, debris control structures shall be provided.

Culvert flows are under either inlet or outlet control, and designers shall be familiar with all aspects of both. The design criteria for outlet velocity and buoyancy failure are contained in the VDOT Drainage Manual, which shall be used.

### **5.4.2.1 Calculation Methods**

For detailed calculation procedures of designing culverts the user is referred to the VDOT Drainage Manual.

## **5.4.3 Ditches/Open Channels**

This section describes technical design criteria for stormwater channels and ditches. The VDOT Drainage Manual and the Virginia Erosion and Sediment Control Handbook contain detailed procedures for designing stormwater conveyance channels and linings.

### **5.4.3.1 Design Frequency**

Open channel design frequency shall be in accordance with Minimum Standard 19 (MS-19) as defined by the Virginia Department of Environmental Quality (DEQ) and provided in the Virginia Stormwater Management Handbook.



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For natural channels the flow shall be contained within the banks for a 2-year storm. For manmade channels the flow shall be contained within the banks for a 10-year storm and not exhibit erosive velocities during a 2-year storm. Refer to the Virginia Stormwater Management Handbook for additional criteria. In all cases, the design should allow for 1 foot of free board in addition to the design storm for both natural and manmade channels.

### **5.4.3.2 Selection Criteria/Pipe Policy**

Open systems are prohibited and will be considered on a case-by-case basis only where the required concrete pipe diameter exceeds 72 inches, or the following conditions are deemed to exist by the City:

- Flow characteristics make piping impractical
- Shallow ground cover or flat outfall slopes prohibit the installation of an efficient enclosed system.
- A potential flooding hazard to the public is created.

Existing ditches shall be closed and piped by the Applicant.

The following pipe policy shall apply to all new developments:

Pipe Policy in New Development:

1. All interior ditches shall be piped in their entirety.
2. A perimeter ditch is defined as a facility that generally follows a property boundary. If the ultimate required easement extends to the property boundary, the existing ditch shall be considered a perimeter facility.
3. Perimeter ditches whose sole function is to drain the subject subdivision shall be piped in their entirety.
4. Perimeter ditches which drain adjacent and upstream lands shall be piped in accordance with the following formula: “The subject subdivision shall install pipe fifty percent of the linear distance of each common boundary between the subject subdivision and each adjacent undeveloped property. When the perimeter ditch divides the subject subdivision from an existing subdivision, the fifty-percent shall be applied to the common boundary of the two subdivisions. In calculating the length of pipe that shall be required, the measurements shall exclude any pipe to be placed under existing or proposed streets and highways. The location of the pipe to be installed shall be subject to the approval of the Department of Public Works. When the subject subdivision abuts an existing subdivision which has been developed under the requirements of this Pipe Policy, the subject subdivision shall install pipe in the remainder of the perimeter ditch to provide a one-hundred percent piped facility”.
5. In situations where the adjacent property owner refuses to permit piping of the perimeter ditch, the 50% piping shall be done entirely on the developer’s property so as to establish a parallel system with the existing ditch. The appropriate width easement must be dedicated in accordance with Section [5.6](#) of this chapter.
6. The remaining 50% of perimeter ditch not piped will be sized for the ultimate flow and developer responsible for ½ of the ditch section on his side.
7. Piping of ditches along the frontage of sites is required for all new development where the ditch depth will exceed 18”. Curb cuts are not appropriate in new construction and should not be utilized.



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### 5.4.3.3 Calculation Methods

A channel must be designed to convey a 10-year design storm plus 1 foot of freeboard without overtopping its banks. Calculations should be based on Manning's Equation and the continuity equation:

$$Q = \frac{1.486}{n} AR^{2/3} S_o^{1/2}$$
$$Q = V_1 A_1 = V_2 A_2$$

Where: Q = Discharge (ft<sup>3</sup>/s)  
A = Cross-sectional area (ft<sup>2</sup>)  
n = Manning's roughness coefficient  
R = Hydraulic radius (feet)  
So = Channel slope (ft. /ft.)  
V = Velocity (ft. /s)

Manning's n indicates a channel's resistance to flow. Typical values of Manning's n can be found in the VDOT Drainage Manual.

### 5.4.3.4 Adequate Channel

All storm water discharges shall be discharged to an adequate channel. A channel shall be deemed adequate to be in compliance with MS-19 if it meets the criteria established in section [5.2.3.4](#) of this manual.

Refer to MS-19 in the [Virginia Erosion & Sediment Control Handbook](#) for a discussion of minimum standards.

Documentation of existing conditions, the design of a proposed facility and analyses of the effects a proposed change will exert on existing conditions shall be provided. A determination of water surface profile, velocity and flow distribution in individual reaches of the channel shall also be provided by the designer. This may be achieved by providing a minimum of three cross sections of the existing ditch spaced 50 feet on center.

### 5.4.3.5 Channel Design Criteria

The following criteria shall apply:

1. Minimum channel velocity should be selected to allow drainage of standing water.
2. Maximum channel velocity will be determined by permissible velocity of channel lining and safety considerations.
3. Minimum and maximum longitudinal channel slopes will be governed by allowable channel velocities. The maximum side slopes for earth with riprap is 2:1, and the maximum side slope for earth with vegetation is 3:1.
4. V-shaped channels are generally used for low flow and low velocity conditions. Parabolic channels are generally used for higher flow and low velocity conditions where adequate space is available for a wide channel. Trapezoidal channels are generally used for high flow and high velocity conditions.
5. Swales shall be considered on a case-by-case basis. The depth of a swale shall be a minimum of six inches and a maximum of 18 inches below adjacent ground at its centerline. The minimum slope for a swale shall be 0.5 %. The maximum length of a



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swale shall be 150 feet. All other open drainage ways are considered to be ditches or channels.

6. Structures, such as pipes, box culverts, or others entering a channel shall not project into the normal flow area

### **5.4.3.6 Channel Lining**

Erosion control linings or protective linings for roadside ditches, median ditches, and off-road channels shall be designed to convey a 2-year storm without erosive damage. The City may require more stringent criteria for man-made channels depending upon location, flood risk, future needs, and environmental considerations.

Liner designs shall include provisions to prevent undermining. All rip rap linings (grouted or ungrouted) shall be placed on filter fabric. Ditch or channel protection shall provide linings based on permissible velocities as discussed in the VDOT Drainage Manual.

If channel velocities exceed the maximum allowed, low maintenance liners (rip rap) will be required for open channel systems. Green solutions are encouraged.

## **5.4.4 Stormwater Management Facility Design**

### **5.4.4.1 General Requirements**

All Stormwater Management Facilities shall be designed according to the most current design criteria provided in the [Virginia Stormwater Management Handbook](#) and the [Virginia Stormwater BMP Clearinghouse](#) prepared by the Virginia Department Environmental Quality and the [Suffolk Unified Development Ordinance \(UDO\)](#). Numerous examples and extensive explanations are provided in the reference above and as such are only briefly repeated in this PFM. All projects considered “Grandfathered” may use the design criteria in the First Edition of the Virginia Stormwater Management Handbook dated 1999. However, nothing in this section shall preclude designing to a more stringent standard.

The City of Suffolk, Unified Development Ordinance (UDO) requires stormwater management (BMP) facilities to be implemented for all development and redevelopment occurring within the Chesapeake Bay Preservation Area (CBPA). The requirements may be satisfied by constructing new on-site stormwater management facilities that are privately owned and maintained.

Stormwater management facilities should be designed for control of peak discharges and volumes. Facilities may also be designed for volume control, as well as removal of pollutants.

The stormwater management facility type shall be chosen based on the pollutant removal requirement as calculated using the Virginia Runoff Reduction Method Allowable stormwater management facility types and their pollutant removal percentages are given in the following table. The developer may use other BMP types not listed in the Virginia Stormwater BMP Clearinghouse if approved by the State Water Control Board.

All stormwater management facilities shall be designed and comply with the most current promulgated standards and regulations listed in the Virginia Stormwater Management Handbook, Virginia Stormwater BMP Clearinghouse, Virginia Erosion and Sediment Control Handbook, and VDOT Drainage Manual.

The following are general criteria that must be met for all stormwater management facility types:



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- Provide an impoundment easement for the dimensions of the BMP. Include a minimum 20 foot maintenance easement around the perimeter of the BMP and its outfall. Provide access to the BMP by supplying an ingress/egress easement from the right-of-way to the proposed maintenance easement.
- All stormwater management facilities must be maintained by the owner to achieve design standards throughout the life of the facility. Maintenance of the facility shall be in accordance with guidelines provided in the approved maintenance document.
- Landscaping is required to provide an aesthetically pleasing view when the facility will be visible to the public. Landscaping requirements can be found in the City of Suffolk, UDO. Planting lists, including wetland plants, and landscaping guidelines can be found in the [Virginia Erosion and Sediment Control Handbook](#).
- All stormwater management facility designs shall require geotechnical investigation to support the design. Submit a geotechnical boring of each facility location documenting soil types, the 24-hour stabilized groundwater elevations, indications of soil mottling zones and other information as necessary to support the design. Geotechnical investigations shall be in compliance with the standards set forth in the Virginia BMP Clearinghouse
- Pumps of any kind are not permitted for use in SWMFs.

### **5.4.4.2 Farm Pond Conversion**

Farm ponds to be converted to stormwater management facilities shall meet the most current promulgated requirements and criteria set forth in the Virginia Stormwater Management Handbook and Virginia Stormwater BMP Clearinghouse. An assessment of current conditions and a drainage area map shall be provided for the existing farm pond.

### **5.4.4.3 Dam Safety**

The Virginia Dam Safety Act provides for the safe design, construction, operation, and maintenance of the dams in Virginia to protect the public safety and is regulated by the Virginia Department of Conservation and Recreation (DCR). All dams in Virginia are subject to the Dam Safety Act unless specifically excluded. A dam may be excluded only if it:

- is less than six feet high;
- has a maximum capacity less than 50 acre-feet and is less than 25 feet in height;
- has a maximum capacity of less than 15 acre-feet and is more than 25 feet in height;
- is used primarily for agricultural purposes and has a maximum capacity of less than 100 acre-feet or is less than 25 feet in height (if the use or ownership changes, the dam may be subject to regulation);
- is owned or licensed by the federal government;
- is operated for mining purposes under [45.1-222](#) or [45.1-225.1](#) of the Code of Virginia;
- is an obstruction in a canal used to raise or lower water levels;
- The height of a dam is defined as the vertical distance from the streambed at the downstream toe to the top of the dam;
- The maximum capacity of a dam is defined as the maximum volume capable of being impounded at the top of the dam.



## 5.5 Grading

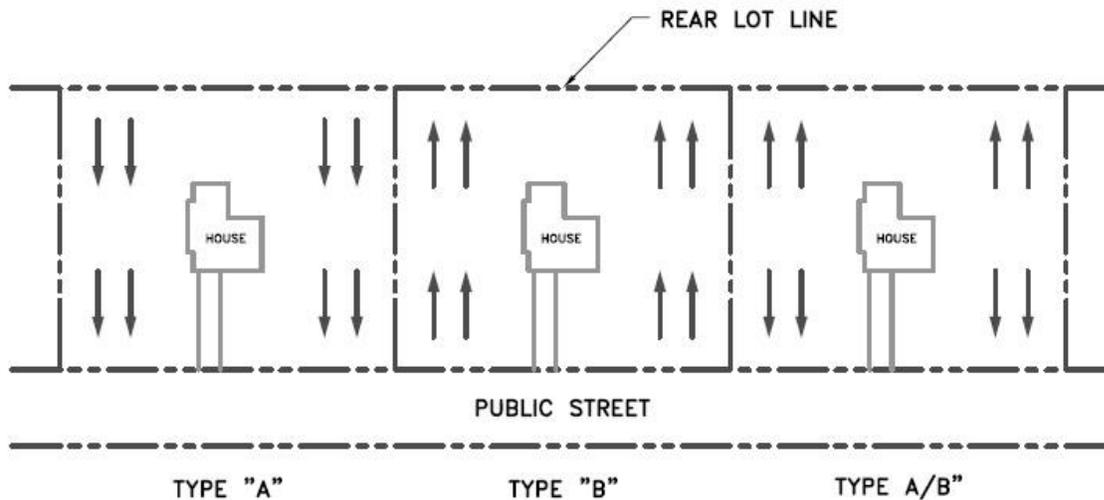
### 5.5.1 Subdivision Lot Grading and Drainage

Plans of any subdivision shall include a “Grading and Drainage” plan sheet, which shall include: the proposed lot grades, ridge lines, directional flow arrows, rim and invert elevations of any storm drainage structure, details of any stormwater management facility, and an indication of lot grading methods for each lot (i.e. A, B, A/B see Figure 5.1).

For systems with B or A/B type drainage, adequate drainage in the rear of lots shall be provided. Generally, public drainage easements for rear lot drainage are not permitted. The designer may provide private drainage contained within private drainage easements. This system shall be maintained by the homeowners association. For single family subdivisions, private rear lot drainage pipes shall be a minimum diameter of 12 inches. Standard VDOT structures shall be provided.

Stormwater runoff shall be conveyed in an adequate pipe network system. Open channel drainage systems shall not be allowed unless the channel is less than 18 inches deep (swales) and less than 150 feet long. Drain pipes that convey runoff from a subdivision shall have a public drainage easement dedicated to the City. All storm drainage inlet structures shall be designed based on the VDOT Design Road and Bridge Standards. All subdivision lots shall be graded such that runoff is drained away from any building or structure to a public right-of-way or a large natural drainage channel. Grading shall be designed in such a manner that stormwater runoff flows to an approved drainage structure. The grading and drainage structures shall provide protection for wetlands, ponds, lakes and sinkholes from increased sedimentation.

Figure 5.1 Lot Grading Methods





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### 5.5.2 Multi-Family Grading and Drainage

This section pertains to all new multi-family developments in the City of Suffolk including townhomes, condominiums, apartments, and other developments constructed similar to these dwellings:

1. Positive drainage is required for all multi-family developments. All rear lot drainage shall be collected in a combination of swales and storm drainage systems and discharged to the closed storm drainage system with access between buildings as necessary. PVC pipe and PVC type inlets shall be allowed so long as they are not installed in a public right-of-way.
2. Swales are permitted to drain a maximum of two lots before closed drainage is required.
3. For condominiums and apartments, rear lot drainage may be provided in swales for a maximum of 150 feet with a minimum slope of 1%. The maximum depth permitted for swales shall be 18 inches.
4. For drainage of common areas the maximum length of swale shall be 150 feet at 1%.
5. All swales and pipe systems must be installed prior to issuance of an occupancy certificate on affected lots.
6. For multi-family units abutting golf courses or other large land areas the applicant shall account for any off-site flows and ensure no encroachments of the adjoining land uses.
7. Spot grades are required in between buildings, where necessary, to demonstrate that drainage is flowing away from structures.

### 5.5.3 Single Family Lot Development

Site plans showing lot grading must be submitted with the building permit application. This plan must be in accordance with the drainage plan approved by Public Works. In the event a previously approved drainage plan does not exist, the applicant shall submit a formal lot grading plan prepared by a registered engineer, surveyor, or other person duly licensed by the Commonwealth of Virginia to practice as such. Single family lot grading plans shall adhere to the following criteria:

1. Site plans showing lot grading must be submitted with the building permit application. This plan must be in accordance with the engineering plans approved by Public Works, under no circumstance will a lot grading plan be approved if the proposed impervious area exceeds the allowable impervious area defined in the approved engineering plans. In the event that previously approved engineering plans do not exist, plans shall be prepared in accordance with lot grading standards established in the Unified Development Ordinance and this Lot Grading Policy.
2. Lot grading plans shall provide sufficient grades, ridge lines and directional arrows to define the proposed drainage pattern of the entire lot. A minimum of seven proposed lot grades shall be provided: four at the corners; two at the side yard midpoints; and one grade located at the center of the lot (rear of typical structure location). Intermediate grades may be required in order to verify positive drainage. Note the lot drainage type (A, B, or AB) for each lot.
3. The Resource Protection Area (RPA) must be delineated on the plans as applicable.



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4. The Limits of Tidal Wetlands must be delineated on any plans adjacent to tidal waters. This is defined by an elevation 1.5 times the mean tide range.
5. The amount of impervious area in acres and percentage of the site that is impervious shall be depicted.
6. Storm water runoff should be directed to adequate drainage structures or large natural drainage features.
7. For larger parcels, the entire lot may not require a topographic survey (large wooded areas, agricultural fields, wetlands, etc.). Adequate drainage around the proposed residence, yard, driveways, and other structures must be demonstrated.
8. A minimum slope of 0.5% is required with a slope of 1.0% desirable where practical.
9. Lots shall be graded to within 0.1 feet of the final grade prior to issuance of a Certificate of Occupancy (CO). In addition, a minimum grade of 0.5% minimum slope must also be provided. A lot grading certification must be submitted to Community Development prior to issuance of a Certificate of Occupancy.
10. Lot grading which requires considerable fill (greater than 4.0 feet) shall be clearly delineated (shaded, cross-hatched, etc.) on the plan and is the responsibility of the developer.
11. Overland flow onto adjacent offsite property is generally unacceptable. When a natural slope of 5.0% or greater exists or more than four feet of fill is required, an area may drain in its natural direction. Easements may be required to drain water across adjacent property when runoff is increased or the direction of flow is altered.
12. Compliance with the current edition of the Virginia Erosion and Sediment Control Handbook minimum standards (MS-19) is required.
13. The size of plot plans shall be no larger than legal size paper, 8.5" x 14".
14. A Driveway Permit is required for any construction within the associated Right-of-Way, including the installation of driveway culverts. A minimum 15-inch diameter RCP (reinforced concrete pipe) is required for driveway culverts. HDPE or similar is not a suitable building material for work in the Right-of-Way. See [Chapter 3](#) for right-of-way permit details.
15. All proposed developments are required to have an approved erosion and sediment control plan for all land-disturbing activities of 2,500 square feet or more within the Chesapeake Bay Preservation Area (CBPA) and 10,000 square feet or more outside of the CBPA.
16. Applicants for construction of a single family residence may complete an [Agreement in lieu of an Erosion and Sediment Control Plan](#). This agreement states the landowner and the registered land disturber agree to meet the minimum requirements of the City of Suffolk Erosion and Sedimentation Control Ordinance as opposed to completing an erosion and sediment control plan.
17. Applicants for construction of a single family residence may be required to complete an agreement in lieu of a stormwater management plan and stormwater pollution prevention plan. More information regarding these documents can be found in [Section 2.12](#) of this manual, in the [Single Family Residence Submittal Package](#), and [Appendix B](#).



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### 5.6 Easements and Setbacks

All storm drainage systems collecting runoff from a public right-of-way must have a drainage easement dedicated to the City to the point of outfall from the proposed site. Any storm drainage system that collects runoff from a private property encroaching on other private property must also have a drainage easement granting drainage rights to the third party. Easements required by and conveyed to the City shall be used solely for drainage and utilities that are maintained by the City.

Drainage easements for storm drain pipes shall be centered over the storm pipes. The width of the drainage easement shall be determined by the following:

$$W = 2d + D + 2 \text{ feet}$$

Where:

W	=	easement width (in feet)
d	=	depth of pipe (invert to final grade, in feet)
D	=	diameter of pipe (in feet)

All easement widths should be rounded to the nearest 5 feet and have a minimum width of 10 feet.

All open channel drainage systems (ditches and channels) shall have a drainage/access easement, which will vary with the width of the top of bank. Open channel drainage systems with top of bank width of:

- 5 feet or less should have an easement width of 25 feet, with a 15-foot access easement on one side.
- 15 feet or less should have a minimum easement width of 20 feet larger than the top width of the open channel, with a 15-foot access easement on one side.
- Greater than 15 feet should have a minimum easement of 30 feet greater than the width of the open channel, including a 20-foot access easement on one side.

All subdivision and commercial site plans must meet this requirement for approval from the City.

A development that drains into an adequate downstream system or a wetland area in a natural flood plain may not require a drainage easement and can continue to drain into the system so long as any increase in the current runoff volume does not cause any damage upstream or downstream. Any runoff that flows into a downstream system from a public right-of-way shall be provided a public drainage easement to the area of wetlands/large water body.

Floodplain management involves the designation of flood-prone areas and the managing of their uses. It is also aimed at minimizing modifications to streams, reducing flood hazards, and protecting the beneficial uses of the floodplain such as water quality protection. As such, floodplain management can be seen as a subset of the larger consideration of surface water and stormwater management.



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Floodplain regulations and development restrictions can greatly reduce future flooding impacts, preserve green space and habitat, and protect their function in safely conveying floodwaters and protecting water quality.

### ***5.6.1.1 Impoundment, Ingress/Egress, and Maintenance Easements***

An impoundment easement dedicated to the City of Suffolk, shall be provided on all lakes, ponds, drainage systems, and stormwater management facilities. The limits of impoundment should be displayed on the plans and the impoundment easement plat.

An ingress/egress easement dedicated to the City of Suffolk, shall be provided for all Stormwater Management Facilities connecting the public right-of-way to facility, and shall be have a minimum width of 20 feet.

All stormwater management facilities shall have a minimum 20 foot maintenance easement provided along the top of the bank. This maintenance easement should be free from obstructions, so the facility is accessible to maintenance vehicles and equipment.

Private irrigation systems should not be located within any easement or right-of-way dedicated to the City of Suffolk.

### ***5.6.1.2 Stormwater Management Facility Setbacks***

This section provides criteria for facility setbacks for Stormwater Management Facilities (SWMF). A setback is the distance measured from the property line to the top of the bank of any detention basin/retention basin.

The following SWMF setbacks meet the following criteria:

Retention basins/detention basins shall maintain a minimum 20 foot wide setback from any other structure or property line. These SWMF shall maintain a 50 foot setback from any slope greater than 15%, and should be 100 feet back from any septic tank/drain field.

Constructed wetlands shall maintain a minimum 20 foot wide setback from any other structure or property line. These SWMF shall maintain a 50 foot setback from any slope greater than 10%, and should be 100 feet back from any septic tank/drain field.

## **5.7 Flood Plain Management**

A hydrologic study must show that the proposed development will neither create, nor increase drainage problems upstream or downstream from the site. The 100-year storm elevation shall not increase any more than 1 foot at any point in the floodplain or by zero feet at any point in the flood way due to encroachments.

Fill shall not be placed in a flood plain below the design year storm elevation without construction plans that compensate the flood plains for loss of natural detention volume. Changes to the floodplain/floodway may require a map revision to the local Federal Insurance Rate Map (FIRM). Coordinate with FEMA for any map revisions.

All land development proposals shall identify the special flood hazard areas adjacent to or located on the site on the cover sheet and included with the site statistical data.

All subdivision plans shall provide the elevations of any proposed structures and building pads.



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Any construction plans submitted within the flood plain overlay district must meet the criteria set forth in Section 416.1 of the [City of Suffolk UDO](#)

### **5.8 Wetlands**

Wetland areas must be delineated on the plan. Improvements within any wetlands area may require Army Corps of Engineers, Virginia Department of Environmental Quality, or Wetlands Board approval. It is the responsibility of the developer and his consultant engineer to determine if approval is required from these or any other regulatory agencies. Approval and all permits from the proper environmental authorities shall be obtained prior to plan approval.

Existing wetlands may not be utilized for water quality treatment or applied to the water quantity calculations.



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## 6. Post Construction

### 6.1 Construction Record Drawings

#### 6.1.2 General

The purpose of Construction Record Drawings (CRD) is to provide the City with a permanent record of the public facility construction and associated equipment. Deviations in the approved plan shall be marked on as-constructed drawings for review by the City. A final CRD reflecting the approved as-constructed conditions shall be submitted for acceptance. The drawings and certifications also provide verification that facilities are installed in accordance with the appropriate specifications.

#### 6.1.3 Submittal Requirements

CRDs must be reviewed and approved by the Department of Public Works prior to the acceptance of public streets, public storm drainage, and traffic control systems. Two (2) copies of the as-built drawings must be submitted for review by the City prior to execution of a final inspection.

Upon approval of the Construction Record Drawings and prior to surety or bond release the following shall be provided:

- A CD containing the signed CRD in PDF format and a copy of the approved as-built plans in AutoCAD .dwg format
- A DVD of the closed circuit television (CCTV) footage of the stormwater pipes

#### 6.1.4 CRD Requirements

##### 6.1.4.1 General

The submitted CRD shall be a replica of the original approved plan with the additional as-constructed information. Construction that deviates from the approved plans shall be clearly distinguished by strike-through and as-constructed details added.

Each set of construction record drawings shall be signed and sealed by a Virginia Licensed Land Surveyor indicating the date when the as-built survey was conducted.

Each drawing shall include control points located in accordance with the City of Suffolk Global Positioning System (GPS) Geodetic Survey Network and tied to NAD 83, Virginia State Plane Coordinate System. Drawings shall indicate the location of structures in the correct coordinate space with bearings and distances with at least two coordinates tied to the City of Suffolk's geodetic control network.

No CRD will be accepted without roads having final surface completed. Sidewalks must also be completed unless an Ancillary Agreement is in place. In the event that an Ancillary Agreement and bond is in place for the sidewalks, the CRD may be accepted upon the condition that a revised CRD is submitted when all sidewalks are completed.



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**6.1.4.2 Stormwater Management/ Best Management Practices Facilities (BMP)**

The accuracy of BMP elevations and contours shall be +/- 0.1 foot vertical and +/- 1.0 foot horizontal. The survey shall include location and elevation for the following but is not limited to:

- Top of bank
- Bottom of bank
- Edge of normal water
- Bottom of pond
- All pipes (inflow and outflow) and invert elevations of those pipes
- All storm water control structures
- All easements associated with the facility
- Setback distances to property lines and/or right-of-way lines
- All safety and aquatic benches
- All fencing
- 50- foot vegetative buffer
- Edge of tidal wetlands – An elevation 1.5 times the mean tide range (on any plan adjacent to tidal waters)

**6.1.4.3 Streets**

The accuracy of curb/curb and gutter shall be +/- 0.1 foot vertical and +/- 0.1 foot horizontal.

- The survey shall indicate all high points, low points, and curb returns.
- The roads surface shall have elevations indicated for all high points and low points on both sides of the street and an elevation at the street centerline, additionally there shall be one elevation on both sides of the street and at the street centerline, centered between all high and low points.
- Any sidewalk indicated shall depict the width of the sidewalk its vertical elevation and the existence of all handicap ramps. The elevation point's location shall mirror the elevation locations indicated for the road surface portion of as-built as applicable.

**6.1.4.4 Stormwater Sewer System**

All elements of open storm sewer systems shall be indicated on the CRD. The tolerance shall be +/- 0.1 foot vertical and +/- 1.0 foot horizontal. CRDs shall show all elements of the storm drain system constructed to serve the subdivision or commercial property in the case of newly installed infrastructure in a public right-of-way; this includes but is not limited to:

- Constructed vertical elevation, horizontal location, size, and material of all storm sewers, manholes, junction boxes and other appurtenances or elements of the storm drain system.
- All storm sewer lines that are plugged and capped. Clearly indicate their condition as such on the CRD.
- Horizontal and vertical location of the storm sewer system shall be indicated at 100 foot intervals, at interconnections or other appurtenances or, the frequency and location shall match the proposed grade elevations shown on the approved drawings, whichever is more stringent shall dictate.



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### **6.1.5 Certification Statements**

The [certification statements](#) can be found in [Appendix B](#) shall be placed on the cover sheet of the Construction Record Drawings. After receiving written approval of the CRDs from the Public Works Department, the certification statements shall be signed prior to providing a final digital copy to the City.

### **6.2 Construction Data Tolerances**

HRPDC Regional Construction Standards indicates requirements for the various components of the CRD contained herein. See HRPDC Regional Construction Standards for full details. In the event of a conflict, the most restrictive standards shall govern.

CRDs with construction deficiencies that exceed established tolerances are subject to rejection. Such deficiencies in construction and proposed corrective action should be identified by the developer's representative to expedite CRD approval.

### **6.3 Standard Structures and Inspections**

All underground storm sewers and open drainage systems shall be designed and constructed in accordance with Virginia Department of Transportation, Road and Bridge [Standards](#) and [Specifications](#) (Current Edition).

Any substandard construction work, pipe defects or damage shall be corrected by the developer, contractor, or permittee at his/her expense and shall be shown satisfactory to City inspection staff before the release of bonds, issuance of certificates of completion, or other releases granted.

All stormwater management facilities shall be properly maintained and inspected in accordance with the applicable Stormwater Management Facilities Maintenance Agreement. The BMP should undergo at least one (1) inspection prior to the approval of the final plat. The BMP will also have at least one (1) annual inspection.

### **6.4 C.C.T.V. Inspection of Storm Drain Lines**

Prior to acceptance into the secondary system of highways, closed storm drain systems within the public right-of-way or public easements must be inspected by closed circuit video. Video should provide adequate recordings to ensure that the closed stormwater conveyance systems have been installed per approved plans and specifications and are functioning properly,

All costs associated with the video documentation will be borne by the owner, and the City of Suffolk will not be held responsible for any costs associated with video documentation, nor any of the defect(s) found, which requires remediation. The Department of Public Works shall be given at least a 48 hour notice prior to the closed circuit video documentation occurring. In addition, a Public Works inspector shall be present during the entire video process, to oversee the documentation.

Selection of the pipe segments to be video recorded will be at the discretion of the Public



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Works Department, and the total length of segments selected for video recording shall be a minimum of 25% of the total linear distance of pipe installed as part of that plan or phase.

If the project is a phased project, and phases are being accepted separately, the length of pipe in each phase will be used to determine the amount of video documentation required based upon the 25% threshold.

For commercial projects that include any closed storm drain system to be installed in an existing right-of-way or public easement as part of an approved commercial development plan, the entire storm drain system shall be recorded. Exceptions to this may involve open ended culverts less than 100 feet in length where the pipe may be reviewed in the field by city staff. The determination of the need to video will be made by Public Works Engineering.

Should any defects be detected during the closed circuit video documentation process, a complete video documentary of the entire stormwater system will be required, regardless of any phasing delineations in the approved plan.

Any defect found during the closed circuit video documentation shall be corrected, prior to street acceptance. The City of Suffolk recommends that the CCTV be performed during the early stages of development to reduce the possibility of damage to the finished pavement structure, if repairs are required to be made to the storm drain.

Flushing of the storm drain system will be a required prior to final acceptance of the roadway. Flushing is also typically necessary before CCTV is performed to ensure the entire drainage system can be recorded.

Any sediment within the storm drain system noted during the CCTV process will be required to be removed by flushing. Sections of pipe observed to contain heavy sediment may require multiple flushes, which may also involve subsequent reviews by CCTV of those sections.

A full circumferential view of each pipe Joint is required for the submitted video to be accepted. Defects observed in workmanship, pipe construction or damage to the pipe is required to be videoed and documented during the CCTV process. Pipe containing sediment that exceeds 5% of the cross-sectional area of the pipe will be required to be flushed so that the entire joint and bottom of pipe can be reviewed.

A DVD of the videoed segments or the entire system (if defects are found) shall be submitted to the Public Works Department as part of the as-built review process. Please reference this manual for a complete description of the as-built submittal process.

## **6.5 Agreements, Bonds, and Forms**

### **6.5.1 Ancillary Agreement**

Sidewalk Ancillary Bonds for subdivisions will need to be approved by the city, and will only be approved for residential subdivisions that contain completed Single Family homes below 75% of the total number of housing units for the subdivision, or phase of subdivision, in which the request for acceptance relates too. Ancillary Bonds will not be accepted for commercial projects. All Ancillary Bonds will be for a not to exceed term of two (2) years. At the end of the two (2) year term, the sidewalk must be installed completely according to the approved plan and in an



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acceptable condition to Public Works Engineering. A two (2) year defect Bond for sidewalk will also be required to be submitted to the city for the sidewalk, once the entire sidewalk has been completed. The amount of this defect bond will be determined by Public Works Engineering. A copy of the [Ancillary Agreement](#) is located in [Appendix B](#).

### **6.5.2 Maintenance Bond (Defect Bond)**

The applicant shall file a maintenance bond with the City, in a form satisfactory to the City Attorney. The amount of the bond shall be sufficient to assure the satisfactory condition of required public improvements for a period of one year after the date of their acceptance by the City and dedication to the City. If defects are found to exist within the designated period, the costs for correcting such defects shall be deducted from the maintenance bond. Any balance remaining shall be paid to the applicant. A copy of the maintenance bond ([defect bond](#)) is located in [Appendix B](#).

### **6.5.3 Lot Grading Certification**

A sealed copy of the lot grading certification is required prior to plat recordation. A copy of the [certification form](#) can be found in [Appendix B](#).



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**Appendix A: Right-of-Way Excavation and Restoration Manual  
(RESERVED)**



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**City of Suffolk Standard Plan Notes**



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**City of Suffolk Standard Plan Notes**

City of Suffolk Standard Erosion & Sediment Control Notes

1. Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook (3<sup>rd</sup> Edition, 1992) and the City of Suffolk Erosion and Sediment Control Ordinance.
2. The Contractor shall apply permanent or temporary soil stabilization to all denuded or disturbed areas within 7 days after final grade is reached on any portion of the site. Soil stabilization must also be applied to denuded or disturbed areas which may not be at final grade but which will remain undisturbed for longer than 14 days. Soil stabilization measures include vegetative establishment, mulching, and the early application of gravel base material on areas to be paved.
3. All erosion and sediment control measures are to be placed prior to or as the first step in land disturbance.
4. The contractor shall inspect all erosion control measures periodically and after each runoff producing rainfall event. Any necessary repairs to maintain the effectiveness of the erosion control devices and cleanup of sedimentation are the responsibility of the contractor and shall be made immediately.
5. The contractor shall limit site access by construction vehicles to entrances protected by a stone construction entrance (VESCH, Std. and Spec 3.02) or an approved comparable control measure. Sediment shall be removed from paved areas on a daily basis.
6. Stock piles of soil and other erodible materials shall be stabilized or protected with sediment trapping measures. The contractor is responsible for the temporary protection and permanent stabilization for stock piles on site as well as for materials transported from the project site.
7. The contractor shall monitor and take precautions to control dust including (but not limited to) use of water, mulch, or chemical dust adhesives and control of construction site traffic.
8. Effluent from de-watering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect adjacent properties, wetlands, waterways, or the storm drainage system.
9. The contractor is responsible for installation and maintenance of any additional control measures necessary to prevent erosion and sedimentation as determined necessary by the plan approving authority.
10. Temporary erosion and sediment control measures are not to be removed until all disturbed areas are stabilized. After stabilization is complete, all measures shall be removed within 30 days. Trapped sediment shall be spread and seeded.



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**City of Suffolk Standard Plan Notes**

THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO ALL OWNERS AND RESIDENTS OF PROPERTY ADJACENT TO A DEVELOPMENT OR OFFSITE IMPROVEMENTS, 30 DAYS PRIOR TO COMMENCEMENT OF WORK UNLESS OTHERWISE DIRECTED BY THE CITY.

All work areas and lane closures shall be in accordance with the Virginia Work Area Protection Manual dated August 2011 and shall be directed or approved by City of Suffolk Public Works Department - Engineering Division. No lane closure operation shall be conducted without a received written request 48 to 72 hours prior to the operation. Once the request has been approved, work may commence. Hours of closure shall be conducted between 9:00 am and 4:00 pm Monday through Friday. Lane closures will not be permitted on Saturdays, Sundays, state recognized holidays and other days deemed by the City of Suffolk to be the same as holidays. Lane closures will be prohibited from noon prior to a three day weekend to noon the following work day. The Contractor shall not conduct operations when the weather causes unsafe conditions for the traveling public as determined by the Public Works Department - Engineering Division. The Public Works Engineering Department reserves the right to change any or all of the working hours when such changes are in the best interest of the traveling public. The Contractor may request a change in the hours of operation if the requested time will be safe for the traveling public. This request must be approved by the Public Works Engineering Department prior to conducting such operation. All signs, equipment and material will be removed from the City of Suffolk's right-of-way prior to the end of the lane closure time indicated. For work on Routes 10/32, 13, 17, 58, 337, and 460, there shall be at least one lane open at all times.



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**SWMF Recapitulation Sheet**

## SWMF Recapitulation Sheet

**Project Name:** \_\_\_\_\_

**BMP Type and Level (BMP Clearinghouse designation):** \_\_\_\_\_

**Latitude (decimal degrees):** \_\_\_\_\_

**Longitude (decimal degrees):** \_\_\_\_\_

**Tax Parcel #:** \_\_\_\_\_

**RPA/RMA/Outside CBPA (choose one):** \_\_\_\_\_

**Receiving Water(s) and Hydrologic Unit Code (6<sup>th</sup> Order):**

**Name:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**HUC:** \_\_\_\_\_ **HUC:** \_\_\_\_\_

**Drainage Area of SWMF (acres):** \_\_\_\_\_

**Total Impervious Area Draining to SWMF (acres):** \_\_\_\_\_

**Total Project Area (acres):** \_\_\_\_\_

**Total Disturbed Area (acres):** \_\_\_\_\_

**Nitrogen Removal (lb/yr):** \_\_\_\_\_

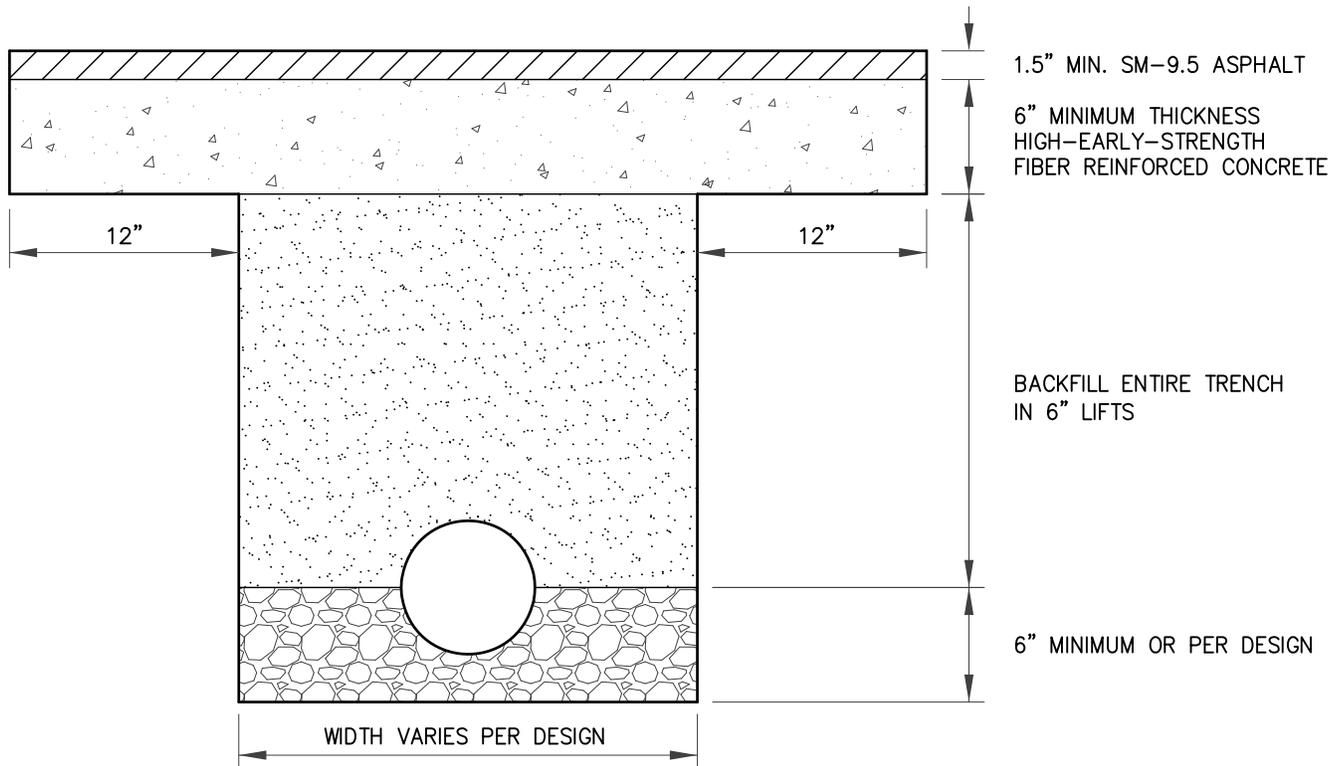
**Phosphorous Removal (lb/yr):** \_\_\_\_\_



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**Pavement Patching Detail for Open Pavement Cuts**

GENERAL NOTES:

1. BACKFILL TO BE PLACED AND COMPACTED ACCORDING TO VDOT ROAD AND BRIDGE SPECIFICATIONS SECTION 302 AND 303.
2. BACKFILL MATERIAL PER VDOT SPECIFICATIONS.
3. CERTIFICATION OF COMPACTION MUST BE SUBMITTED FROM A GEOTECHNICAL ENGINEERING FIRM.

## PAVEMENT PATCHING DETAIL

For Open Pavement Cuts With a Width of 2'-0" or Less

NOTE: FOR OPEN PAVEMENT CUTS WITH A WIDTH GREATER THAN 2'-0", A PAVEMENT SECTION DESIGN MUST BE SUBMITTED TO THE PUBLIC WORKS DEPARTMENT FOR REVIEW AND APPROVAL.



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**Checklist for Erosion and Sediment Control Plans**

**CHECKLIST****FOR EROSION AND SEDIMENT CONTROL PLANS**

\_\_\_\_\_ **Minimum Standards** - All applicable Minimum Standards must be addressed.

**NARRATIVE**

\_\_\_\_\_ **Project description** - Briefly describes the nature and purpose of the land-disturbing activity, and the area (acres) to be disturbed.

\_\_\_\_\_ **Existing site conditions** - A description of the existing topography, vegetation and drainage.

\_\_\_\_\_ **Adjacent areas** - A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.

\_\_\_\_\_ **Off-site areas** - Describe any off-site land-disturbing activities that will occur (including borrow sites, waste or surplus areas, etc.). Will any other areas be disturbed?

\_\_\_\_\_ **Soils** - A brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure.

\_\_\_\_\_ **Critical areas** - A description of areas on the site which have potentially serious erosion problems (e.g., steep slopes, channels, wet weather/ underground springs, etc.).

\_\_\_\_\_ **Erosion and sediment control measures** - A description of the methods which will be used to control erosion and sedimentation on the site. (Controls should satisfy minimum standards in Chapter 3.)

\_\_\_\_\_ **Permanent stabilization** - A brief description, including specifications, of how the site will be stabilized after construction is completed.

\_\_\_\_\_ **Stormwater runoff considerations** - Will the development site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff.

\_\_\_\_\_ **Calculations** - Detailed calculations for the design of temporary sediment basins, permanent stormwater detention basins, diversions, channels, etc. Include calculations for pre- and post-development runoff.

## SITE PLAN

- \_\_\_\_\_ Vicinity map - A small map locating the site in relation to the surrounding area. Include any landmarks which might assist in locating the site.
- \_\_\_\_\_ Indicate north - The direction of north in relation to the site.
- \_\_\_\_\_ Limits of clearing and grading - Areas which are to be cleared and graded.
- \_\_\_\_\_ Existing contours - The existing contours of the site.
- \_\_\_\_\_ Final contours - Changes to the existing contours, including final drainage patterns.
- \_\_\_\_\_ Existing vegetation - The existing tree lines, grassed areas, or unique vegetation.
- \_\_\_\_\_ Soils - The boundaries of different soil types.
- \_\_\_\_\_ Existing drainage patterns - The dividing lines and the direction of flow for the different drainage areas. Include the size (acreage) of each drainage area.
- \_\_\_\_\_ Critical erosion areas - Areas with potentially serious erosion problems. (See Chapter 6 for criteria.)
- \_\_\_\_\_ Site Development - Show all improvements such as buildings, parking lots, access roads, utility construction, etc.
- \_\_\_\_\_ Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the E&S Handbook.
- \_\_\_\_\_ Off-site areas - Identify any off-site land-disturbing activities (e.g., borrow sites, waste areas, etc.). Show location of erosion controls. (Is there sufficient information to assure adequate protection and stabilization?)
- \_\_\_\_\_ Detail drawings - Any structural practices used that are not referenced to the E&S Handbook or local handbooks should be explained and illustrated with detail drawings.
- \_\_\_\_\_ Maintenance - A schedule of regular inspections and repair of erosion and sediment control structures should be set forth.



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**Checklist for Stormwater Management Plans**

**EXAMPLE Site Plan Review Checklists**

**1.0. INTRODUCTION**

Site design and plan review checklists provide general guidance for both the designer and plan reviewer. Many items listed on the checklists may not apply to any given design and it is therefore up to the designer to indicate items as “*not applicable*” or “*NA*” as appropriate. Similarly, the reviewer must be able to distinguish which items are required based on the local conditions or requirements and verify the status of those items. These checklists serve as a tool for providing the designer with the necessary information needed to develop an approvable plan, as well as for providing the program authority with a consistent plan review procedure.

**2.0. EXAMPLE CHECKLIST FOR AN PRELIMINARY STORMWATER MANAGEMENT SITE PLAN PREPARATION AND REVIEW**

**1. Applicant Information**

Initial/Preliminary Plan Submission Date \_\_\_\_\_  
Project Name \_\_\_\_\_  
Site Plan/Permit Number \_\_\_\_\_  
Site Address \_\_\_\_\_  
Applicant \_\_\_\_\_ Phone Number \_\_\_\_\_  
Applicant Legal Address \_\_\_\_\_  
Owner \_\_\_\_\_ Phone Number \_\_\_\_\_  
Principal Designer \_\_\_\_\_ Phone Number \_\_\_\_\_  
General Contractor \_\_\_\_\_ Phone Number \_\_\_\_\_

**2. Plan Status**

_____ Approved	<b>Legend:</b>	<input type="checkbox"/> - Complete
_____ Not Approved		<u>Inc.</u> - Incomplete/Incorrect
		<u>N/A</u> - Not Applicable

**3. \_\_\_\_\_ Common address (with latitude and longitude coordinates or GPS position) and legal description of the site, including the tax reference number(s) and parcel number(s) of the property or properties affected.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**4. Existing and proposed mapping and plans (recommended scale of 1” = 50’, or greater detail), which illustrates the following at a minimum:**

- \_\_\_\_\_ North arrow
- \_\_\_\_\_ Legend
- \_\_\_\_\_ Vicinity map
- \_\_\_\_\_ Existing and proposed topography (minimum of 2-foot contours recommended)
- \_\_\_\_\_ Property lines
- \_\_\_\_\_ Perennial and intermittent streams
- \_\_\_\_\_ Mapping of predominant soils from USDA soils surveys
- \_\_\_\_\_ Boundaries of existing predominant vegetation, areas of the site to be protected from disturbance, and proposed limits of clearing and grading

### ***EXAMPLE Site Plan Review Checklists***

- \_\_\_\_\_ Location and boundaries of natural feature protection and conservation areas, such as wetlands, lakes, ponds, aquifers, public drinking water supplies, and applicable setbacks, etc.)
- \_\_\_\_\_ Identification of any on-site or adjacent water bodies included on the Virginia 303(d) list of impaired waters
- \_\_\_\_\_ Current and proposed land use and location of existing and proposed roads, buildings, parking lots and other impervious areas
- \_\_\_\_\_ Location and description of any planned demolition of existing structures, roads, etc.
- \_\_\_\_\_ Location of existing and proposed utilities [e.g., water (including wells), sewer (including septic systems), gas, electric, telecommunications, cable TV, etc.] and drainage and other easements
- \_\_\_\_\_ Preliminary estimates of unified stormwater sizing criteria requirements
- \_\_\_\_\_ Preliminary identification and calculation of stormwater site design credits, if any apply
- \_\_\_\_\_ Preliminary selection and location of stormwater control measures
- \_\_\_\_\_ Location of existing and proposed conveyance systems, such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow
- \_\_\_\_\_ Flow paths
- \_\_\_\_\_ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainages
- \_\_\_\_\_ Preliminary location of all contributing drainage areas and points of stormwater discharge, receiving surface waters or karst features into which stormwater discharges, the pre-development and post-development conditions for drainage areas, and the potential impacts of site stormwater on adjoining parcels
- \_\_\_\_\_ Note all critical areas on the plan, such as critical slopes.

#### **5. Hydrologic and hydraulic analysis, including the following:**

- \_\_\_\_\_ A hydrologic analysis for the existing (pre-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
- \_\_\_\_\_ A hydrologic analysis for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
- \_\_\_\_\_ Hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms
- \_\_\_\_\_ Preliminary sizing calculations for stormwater control measures, including contributing drainage areas, storage, and outlet configurations
- \_\_\_\_\_ Preliminary analysis of the potential downstream impacts/effects of the project, where necessary

#### **6. \_\_\_\_\_ Preliminary erosion and sediment control plan that, at a minimum, meets the requirements outlined in the Virginia Erosion and Sediment Control Regulations and Handbook**

#### **7. \_\_\_\_\_ Preliminary landscaping plans for stormwater control measures and any site reforestation or revegetation**

#### **8. \_\_\_\_\_ Preliminary identification of waiver/exception requests**

*EXAMPLE Site Plan Review Checklists*

**3.0. EXAMPLE CHECKLIST FOR A FINAL STORMWATER MANAGEMENT SITE PLAN PREPARATION AND REVIEW**

**1. Applicant Information**

Final Plan Submission Date \_\_\_\_\_  
Project Name \_\_\_\_\_  
Site Plan/Permit Number \_\_\_\_\_  
Site Address \_\_\_\_\_  
Applicant \_\_\_\_\_ Phone Number \_\_\_\_\_  
Applicant Legal Address \_\_\_\_\_  
Owner \_\_\_\_\_ Phone Number \_\_\_\_\_  
Principal Designer \_\_\_\_\_ Phone Number \_\_\_\_\_  
General Contractor \_\_\_\_\_ Phone Number \_\_\_\_\_

**2. \_\_\_\_\_ Signature and stamp of licensed professional consultant and owner certification**

**3. Plan Status**

\_\_\_\_\_ Approved  
\_\_\_\_\_ Not Approved

**Legend:**

\_\_\_\_\_ - Complete  
Inc. - Incomplete/Incorrect  
N/A - Not Applicable

**4. \_\_\_\_\_ Common address and legal description of the site, including the tax reference number(s) and parcel number(s) of the property or properties affected.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**5. \_\_\_\_\_ A narrative that includes a description of current site conditions and proposed development and final site conditions, including proposed use of environmental site design techniques and practices, stormwater control measures, relevant information pertaining to long-term maintenance of these measures (see item #12 below), and a construction schedule.**

**6. Existing and proposed mapping and plans (recommended scale of 1" = 50', or greater detail), which illustrates the following at a minimum:**

- \_\_\_\_\_ North arrow
- \_\_\_\_\_ Legend
- \_\_\_\_\_ Vicinity map
- \_\_\_\_\_ Existing and proposed topography (minimum of 2-foot contours recommended)
- \_\_\_\_\_ Property lines
- \_\_\_\_\_ Perennial and intermittent streams
- \_\_\_\_\_ Mapping of predominant soils from USDA soils surveys as well as the location of any site-specific test bore hole investigations that may have been conducted and information identifying the hydrologic characteristics and structural properties of soils used in the installation of stormwater management facilities
- \_\_\_\_\_ Boundaries of existing predominant vegetation and proposed limits of clearing and grading

### **EXAMPLE Site Plan Review Checklists**

- \_\_\_\_\_ Location and boundaries of natural feature protection and conservation areas (e.g., wetlands, lakes, ponds, aquifers, public drinking water supplies, etc.) and applicable setbacks (e.g., stream buffers, drinking water well setbacks, septic drainfield setbacks, building setbacks, etc.)
- \_\_\_\_\_ Identification of any on-site or adjacent water bodies included on the Virginia 303(d) list of impaired waters
- \_\_\_\_\_ Current land use and location of existing and proposed roads, buildings, parking lots and other impervious areas
- \_\_\_\_\_ Location and description of any planned demolition of existing structures, roads, etc.
- \_\_\_\_\_ Proposed land use(s) with a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, parking lots, stormwater management facilities, and easements
- \_\_\_\_\_ Location of existing and proposed utilities [e.g., water (including wells), sewer (including septic systems), gas, electric, telecommunications, cable TV, etc.] and easements
- \_\_\_\_\_ Earthwork specifications
- \_\_\_\_\_ Selection, location and design of both structural and non-structural stormwater control measures, including maintenance access and limits of disturbance
- \_\_\_\_\_ Storm drainage plans for site areas *not* draining to any BMP(s)
- \_\_\_\_\_ Location of existing and proposed conveyance systems, such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow, including grades, dimensions, and direction of flow
- \_\_\_\_\_ Final drainage patterns and flow paths
- \_\_\_\_\_ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainage systems
- \_\_\_\_\_ Location of all contributing drainage areas and points of stormwater discharge, receiving surface waters or karst features into which stormwater discharges, the pre-development and post-development conditions for drainage areas, and the potential impacts of site stormwater on adjoining parcels
- \_\_\_\_\_ Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
- \_\_\_\_\_ Final stabilization and landscaping plans

### **7. Hydrologic and hydraulic analysis, including the following:**

- \_\_\_\_\_ Site map with locations of design points and drainage areas (size in acres) for runoff calculations
- \_\_\_\_\_ Identification and calculation of stormwater site design credits, if any apply
- \_\_\_\_\_ Estimates of unified stormwater sizing criteria requirements
- \_\_\_\_\_ Time of concentration (and associated flow paths)
- \_\_\_\_\_ Imperviousness of the entire site and each drainage area
- \_\_\_\_\_ NRCS runoff curve numbers or volumetric runoff coefficients
- \_\_\_\_\_ A hydrologic analysis for the existing (pre-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
- \_\_\_\_\_ A hydrologic analysis for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
- \_\_\_\_\_ Hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms
- \_\_\_\_\_ Pollution load and load reduction requirements and calculations

*EXAMPLE Site Plan Review Checklists*

- \_\_\_\_\_ Final good engineering and sizing calculations for stormwater control measures, including contributing drainage areas, storage, and outlet configurations, verifying compliance with the water quality and water quantity requirements of the regulations
- \_\_\_\_\_ Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities
- \_\_\_\_\_ Final analysis of the potential downstream impacts/effects of the project, where necessary
- \_\_\_\_\_ Downstream analysis, where detention is proposed
- \_\_\_\_\_ Dam safety and breach analysis, where necessary

**8. Representative cross-section and profile drawings and details of stormwater control measures and conveyances which include the following:**

- \_\_\_\_\_ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.)
- \_\_\_\_\_ Design water surface elevations
- \_\_\_\_\_ Structural details of BMP designs, outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.

**9. \_\_\_\_\_ Applicable construction and material specifications, including references to applicable material and construction standards (ASTM, etc.)**

**10. \_\_\_\_\_ Erosion and sediment control plan that, at a minimum, meets the requirements outlined in the Virginia Erosion and Sediment Control Regulations and Handbook**

**11. \_\_\_\_\_ Landscaping plans for stormwater control measures and any site reforestation or revegetation**

**12. Operations and maintenance plan/agreement that includes the following:**

- \_\_\_\_\_ Name, legal address and phone number of the party or parties responsible for long-term maintenance activities
- \_\_\_\_\_ Description and schedule of maintenance tasks
- \_\_\_\_\_ Identification/description of the source of funding to support maintenance activities
- \_\_\_\_\_ Description of access and safety issues
- \_\_\_\_\_ Procedures for testing and disposal of sediments, if required
- \_\_\_\_\_ Right-of-entry authorization for local government inspections/repairs, as needed

**13. \_\_\_\_\_ Evidence of acquisition of all applicable local and non-local permits**

**14. \_\_\_\_\_ Waiver/exception requests**

**15. \_\_\_\_\_ Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts, etc.)**

**16. \_\_\_\_\_ Applicable supporting documents and studies (e.g., infiltration tests, geotechnical investigations, TMDLs, flood studies, etc.)**

**17. \_\_\_\_\_ Other required permits**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Public Works Plan Review Fee Calculation Sheet**



# CITY OF SUFFOLK

Department of Public Works/ Engineering Division

440 Market Street - 2<sup>nd</sup> Floor • Suffolk, Virginia 23434 • Phone (757) 514-7725 • Fax (757) 514-7727

## Public Works Fee Calculation Form

Project Name: \_\_\_\_\_ Planning # \_\_\_\_\_

### Public Works Engineering/Stormwater Plan Submittal Fees

(Please check where applicable)

**Engineering Plan Review**  
\$1,000 + \_\_\_\_\_ lf of roadway \* (\$1/lf of roadway) = \_\_\_\_\_ fee for Engineering Plan review services.

### Site Plan/Erosion & Sediment Control Plan Review

\$460 for up to 10,000 SF of disturbance     \$835 for 10,000 SF - 0.5 acre of disturbance     \$1,585 for 0.5 - 1.0 acre of disturbance

\$1,585 + \$\_\_\_\_\_ (\$250/additional acre over 1 acre of disturbance or portion thereof)

*Example: for a site with 2.25 acres of disturbance → (\$1,585 (for 1<sup>st</sup> acre + (2 × \$250 for each additional acre) = \$2,085)*

Total acreage of disturbance \_\_\_\_\_ = \$\_\_\_\_\_ fee for Site/ESC plan review services

Engineering Plan Amendment = \$350

Plat = \$750/plat

Site Plan Amendment = \$350

Stormwater Maintenance Agreement = \$150

Total Submittal Fee for Public Works Engineering (Sum of all applicable review services): \$ \_\_\_\_\_

### State Fee for General Construction Permit

(Please check where applicable)

\$756 for 1 to 5 acre(s) of disturbance

\$952 for 5 acres to 10 acres of disturbance

\$1,260 for 10 acres to 50 acres of disturbance

\$1,708 for 50 acres to 100 acres of disturbance

\$2,688 for sites with over 100 acres of disturbance

Total acreage of disturbance \_\_\_\_\_ = \$\_\_\_\_\_ State Fee for General Construction Permit

### Public Works Traffic Engineering Plan Submittal Fees

(Please check where applicable)

Engineering Plan Review = \$1,000/application

Site Plan Review = \$500/application

Major Final Subdivision Plat = \$100/plat

Total Submittal Fee for Public Works Traffic Engineering: \$ \_\_\_\_\_

Submitted by: \_\_\_\_\_

Applicant name

Date: \_\_\_\_\_

Comments - City use only

Amended Fee Amount: \$ \_\_\_\_\_

Comments: \_\_\_\_\_

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Stormwater Pro Rata Share Assessment**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 Market St, 2<sup>nd</sup> Floor, Suffolk, Virginia 23434; Phone (757) 514-7611; Fax (757) 514-7726

## Pro Rata Share Assessment \*ORIGINAL SIGNATURES REQUIRED\*

Submit to: Public Works Engineering Division  
440 Market Street, 2<sup>nd</sup> Floor  
Suffolk, VA 23434  
Phone# (757) 514-7725

Project Name: \_\_\_\_\_

Date: \_\_\_\_\_ Owner/ Developer: \_\_\_\_\_

Prepared By: \_\_\_\_\_ Address: \_\_\_\_\_

Firm/ Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Fax: \_\_\_\_\_

Fee for services: The fee for shall be calculated as follows:  
\_\_\_\_\_ (proposed increase in impervious acreage) \* \_\_\_\_\_ (watershed share rate) = \_\_\_\_\_.  
Please use the values below to determine the appropriate watershed share rate. This project will be within the \_\_\_\_\_ watershed.

<u>Watersheds</u>	<u>Share Rate</u>	<u>Treasurer's Code</u>
James River:	\$632 per acre	<b>PWJR</b>
Great Dismal Swamp:	\$263 per acre	<b>PWGS</b>
Chowan River:	\$958 per acre	<b>PWCR</b>

Total Fee: \_\_\_\_\_ Approved by: \_\_\_\_\_

*City use only*

\*\*\*\*\*  
**THIS IS TO CERTIFY THAT I HAVE EXAMINED THIS ESTIMATE FOR THE ABOVE NAMED PROJECT AND DO HEREBY CERTIFY THAT THE PROPOSED IMPERVIOUS ACREAGE PROVIDED ABOVE, TO THE BEST OF MY KNOWLEDGE FAIRLY REFLECTS THE SITE AREA ON THE APPROVED SITE PLAN AS SHOWN.**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Consulting Engineer's seal and endorsement.



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Engineer's Estimate for Inspection Fees for Commercial Projects**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET SUFFOLK, VIRGINIA 23434 PHONE (757) 514-7725; FAX (757)514-7727

## ENGINEER'S ESTIMATE FOR INSPECTION FEES FOR COMMERCIAL PROJECTS

**\*ORIGINAL SIGNATURES REQUIRED\***

Submit to: Public Works Engineering Division  
440 Market Street, 2nd Floor  
Phone# (757) 514-7725

Project Name: \_\_\_\_\_

Date: \_\_\_\_\_ Owner/ Developer: \_\_\_\_\_

Prepared By: \_\_\_\_\_ Address: \_\_\_\_\_

Firm/ Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Fax: \_\_\_\_\_

Fee for services: The fee for commercial projects shall be calculated as follows:  
\_\_\_\_\_ (disturbed acreage) \* \$400.00/ per acre = \_\_\_\_\_ or \$1,400.00 minimum whichever is greater, and the fee shall not exceed \$8,000.00 maximum.

Total Fee: \_\_\_\_\_ Approved by: \_\_\_\_\_

*City use only*

**Treasurer's Code: PWINSP**

\*\*\*\*\*

**THIS IS TO CERTIFY THAT I HAVE EXAMINED THIS ESTIMATE FOR THE ABOVE NAMED PROJECT AND DO HEREBY CERTIFY THAT THE DISTURBED ACREAGE PROVIDED ABOVE, TO THE BEST OF MY KNOWLEDGE FAIRLY REFLECTS THE SITE AREA ON THE APPROVED SITE PLAN AS SHOWN.**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Consulting Engineer's seal and endorsement.



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Engineer's Estimate for Inspection Fees for Subdivision Plans**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET SUFFOLK, VIRGINIA 23434, PHONE (757) 514-7725 FAX (757) 514-7727

## ENGINEER'S ESTIMATE FOR INSPECTION FEES FOR SUBDIVISION PLANS

**\*ORIGINAL SIGNATURES REQUIRED\***

Submit to: Public Works Engineering Division  
440 Market Street, 2nd Floor  
Phone# (757)514-7725

Project Name: \_\_\_\_\_

Date: \_\_\_\_\_

Owner/ Developer: \_\_\_\_\_

Prepared By: \_\_\_\_\_

Address: \_\_\_\_\_

Firm/ Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Fax: \_\_\_\_\_

The fee for inspection services for the above referenced project is computed by multiplying the total cost of the estimate as approved by public works by 2%.

\_\_\_\_\_ Total cost X 2% = \_\_\_\_\_ fee for inspection services.

Total Fee: \_\_\_\_\_

Approved by: \_\_\_\_\_

*City use only*

**Treasurer's Code: PWINSP**

\*\*\*\*\*

**THIS IS TO CERTIFY THAT I HAVE EXAMINED THIS ESTIMATE FOR THE ABOVE NAMED PROJECT AND DO HERBY CERTIFY THAT THIS ESTIMATE TO THE BEST OF MY KNOWLDEGE FAIRLY REPRESENTS THE QUANTITIES EXPRESSED ON THE DEVELOPMENT PLAN AS SHOWN.**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Consulting Engineer's seal and endorsement.



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Erosion and Sediment Control Surety Estimate**



City of Suffolk

**Erosion and Sediment Control Surety Estimate**

**PROJECT:** \_\_\_\_\_

**PREPARED BY:** \_\_\_\_\_ (OWNER / ENGINEER / CONTRACTOR)

**DATE PREPARED:** \_\_\_\_\_ **REVISED (DATE/BY):** \_\_\_\_\_

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL
3.02	Temporary Stone Construction Entrance		EA	\$ 2,000.00	\$ -
3.03	Construction Road Stabilization		SY	\$ 5.00	\$ -
3.05	Silt Fence		LF	\$ 3.00	\$ -
3.07	Storm Drain Inlet Protection		EA	\$ 300.00	\$ -
3.08	Culvert Inlet Protection		EA	\$ 150.00	\$ -
3.09	Temporary Diversion Dike		LF	\$ 5.00	\$ -
3.13	Temporary Sediment Trap		CY	\$ 10.00	\$ -
3.14	Temporary Sediment Basin		CY	\$ 10.00	\$ -
3.18	Outlet Protection		CY	\$ 100.00	\$ -
3.19	Riprap (EC-1)		TON	\$ 75.00	\$ -
3.20	Rock Check Dams		EA	\$ 600.00	\$ -
3.26	Dewatering Structures		EA	\$ 500.00	\$ -
3.30	Topsoiling		AC	\$ 5,000.00	\$ -
3.31	Temporary Seeding		AC	\$ 3,000.00	\$ -
3.32	Permanent Seeding		AC	\$ 3,000.00	\$ -
3.35	Mulching (Straw)		AC	\$ 1,000.00	\$ -
3.38	Tree Protection		LF	\$ 3.00	\$ -
	<b>SUBTOTAL</b>				\$ -
	Additional Measures Req'd in Field			10%	\$ -
	<b>TOTAL</b>				\$ -

**Approved By:** \_\_\_\_\_

**Date:** \_\_\_\_\_



**Stormwater Management Facilities Maintenance Agreement  
Checklist**



# CITY OF SUFFOLK

## Department of Public Works / Engineering Division

P.O. BOX 1858, SUFFOLK, VA 23434 PHONE (757) 514-7725; FAX (757) 514-7727

Checklist for

### **STORMWATER MANAGEMENT FACILITIES MAINTENANCE FOR COMMERCIAL DEVELOPMENT AGREEMENT PACKAGE**

Submittal

Date: \_\_\_\_\_

Consulting Firm: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Owner or Developer: \_\_\_\_\_

Owner/Developer's Address: \_\_\_\_\_

Plan Title: \_\_\_\_\_

File #: \_\_\_\_\_ Project Manager: \_\_\_\_\_

**The following items are required in the Stormwater Management Facilities Maintenance for Commercial Development Agreement submittal package. Each item must be included or the submitted package will be rejected and returned to the preparer without review or comment.**

- Transmittal letter
- \*One (1) Original Executed Agreement (Rev. May 5, 2014)
- \*Exhibit "A" Attachment (legal description of property)
- \*Exhibit "B" Attachment (plan sheet depicting BMP and associated easements)
- \*Exhibit "C" Attachment (approved Stormwater Practices Maintenance Document)
- Current Title Report (less than six months old as held by current owner)
- If the property is owned by a religious organization – (other than Catholic or Episcopal Church or incorporated Church) - a Certified Copy of the Court Order appointing the trustees who are authorized to execute legal documents for the organization must accompany the agreement. See Virginia Code §57-8.
- If property is owned by corporation, LLC, partnership, etc., then proof of signatory authority/corporate approval must be attached (i.e., copy of operating agreement, corporate resolution, etc.)

Are approved plans being held by this office for receipt of this agreement? \_\_\_\_\_ Yes \_\_\_\_\_ No

Other Comments: \_\_\_\_\_

Has there been any discussion with City Staff regarding this agreement? \_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, with whom? \_\_\_\_\_

Items discussed: \_\_\_\_\_

**\*NOTE: PURSUANT TO THE RULES OF THE CIRCUIT COURT CLERK'S OFFICE IN WHICH THIS DOCUMENT IS TO BE RECORDED, THE USE OF CORRECTION FLUID ("WHITE OUT"), CORRECTION TAPE, STRIKE-OUTS, ETC., ARE NOT ALLOWED ANYWHERE ON THE ORIGINAL DOCUMENTS. ANY DOCUMENTS RECEIVED WITH THESE MODIFICATIONS WILL BE REJECTED.**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Stormwater Management Facilities Maintenance Agreement**

**STORMWATER MANAGEMENT FACILITIES  
MAINTENANCE AGREEMENT**

THIS STORMWATER MANAGEMENT FACILITIES MAINTENANCE AGREEMENT made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_ (the “Covenantor,” and for indexing purposes “Grantor” (individual, partnership, association, corporation, LLC)); the CITY OF SUFFOLK, a municipal corporation of the Commonwealth of Virginia, (the “City”, and for indexing purposes “Grantee”); \_\_\_\_\_, (the “Noteholder”, and for indexing purposes “Grantor”), and \_\_\_\_\_ (the “Trustee”, and for indexing purposes “Grantor”).

**WITNESSETH:**

WHEREAS, the City is authorized and required to regulate and control the disposition of storm and surface waters as set forth in Title 62.1, Chapter 3.1 of the Code of Virginia, as amended (the “Act”), the City of Suffolk Unified Development Ordinance, as amended (the “Ordinance”) and the Code of the City of Suffolk, as amended (the “City Code”); and

WHEREAS, the Covenantor is the owner and is seized in fee simple of a certain tract or parcel of land more particularly described on Exhibit “A” attached hereto (the “Property”); and

WHEREAS, Covenantor desires to construct certain improvements on the Property which will alter existing storm and surface water conditions on both the Property and adjacent lands; and

WHEREAS, in order to accommodate and regulate these anticipated changes in existing storm and surface water flow conditions, the Covenantor desires to build and maintain at Covenantor’s expense a storm and surface water management facility and system (the “Facility

Acct. No. \_\_\_\_\_ Prepared by: \_\_\_\_\_  
(must be owner or attorney)

and System”) with associated maintenance, impoundment, and access easements, more particularly described as \_\_\_\_\_ and shown on plans on file with the Department of Planning of the City of Suffolk, Virginia, which are hereby incorporated herein by reference (the “Site Plan”), referenced by Planning Number \_\_\_\_\_, and further identified graphically by plan sheet included on Exhibit “B” attached hereto, and the approved Stormwater Practices Maintenance Document, attached hereto as Exhibit “C”; and

WHEREAS, the City has reviewed and approved the Site Plan subject to the execution of this Agreement.

NOW, THEREFORE, in consideration of the benefit received and to be received by the Covenantor, its successors and assigns, as a result of the City’s approval of the Site Plan, the Covenantor hereby covenants and agrees with the City as follows:

1. At their sole expense, the Covenantor, its successors and assigns, shall construct and perpetually maintain the Facility and System in strict accordance with the Site Plan and any amendments thereto which have been approved by the City, the Ordinance and the Act.

2. At their sole expense, the Covenantor, its successors and assigns, shall make such changes or modifications to the Facility and System as may be determined as reasonably necessary by the City to ensure that the Facility and System is properly maintained and continues to operate as originally designed and approved.

3. At reasonable times and in a reasonable manner as provided in Section 62.1-44.15:37 of the Act and Section 31-611 of the Ordinance, and Chapter 35 of the Code, the City, its agents, employees and contractors, shall have the right of ingress and egress over the Property and the right to inspect the Facility and System in order to ensure that

the Facility and System is being properly maintained, is continuing to perform in an adequate manner and is in compliance with the Act, the Ordinance, the Code and Site Plan and any amendments thereto approved by the City.

4. Should either the Covenantor or its successors and assigns, fail to correct any defects in the Facility and System within the time specified in a written notice from the City that the Covenantor or its successors and assigns has/have failed to maintain the Facility and System in accordance with the approved design standards and/or the Site Plan and in accordance with the law and applicable regulations of the Act, the Code and the Ordinance, the City may pursue such remedies as provided by law, including, but not limited to, such civil and criminal remedies set forth in Section 62.1-44.15:48 of the Act and in Section 35-51 of the Code.

5. The Covenantor, its successors and assigns, shall indemnify, hold harmless and defend the City from and against any and all claims, demands, suits, liabilities, losses, damages and payments, including reasonable attorney fees claimed or made against the City that are alleged or proven to result or arise from the Covenantor's, its successors' and/or assigns', construction, operations or maintenance of the Facility and System.

6. This Agreement and the covenants and agreements contained herein shall run with the title to the land and whenever the Property shall be held, sold, conveyed or otherwise transferred, it shall be subject to the covenants, stipulations, agreements and provisions of this Agreement which shall apply to, bind and be obligatory upon the Covenantor hereto, its successors and assigns, and shall bind all present and subsequent owners of the Property described herein.

Initially, the Covenantor is solely responsible for the performance of the obligations required hereunder and, to the extent permitted under applicable law, the payment of any and all fees, fines, and penalties associated with such performance or failure to perform under this Agreement. Notwithstanding any provisions of this Agreement to the contrary, upon the recordation of a deed or other instrument of sale, transfer or other conveyance of fee simple title to the Property or any portion thereof (a "Transfer") to a third party (the "Transferee"), the Covenantor shall be released of all of its obligations and responsibilities under this Agreement accruing after the date of such Transfer to the extent such obligations and responsibilities are applicable to that portion of the Property included in such Transfer, but such release shall be expressly conditioned upon the Transferee assuming such obligations and responsibilities by recorded written agreement for the benefit of the City. Such written agreement may be included in the Transfer deed or instrument, provided that the Transferee joins in the execution of such deed or instrument. A certified copy of such deed, instrument or agreement shall be provided to the City. The provisions of the preceding three sentences shall be applicable to the original Covenantor and any successor Transferee who has assumed the obligations and responsibilities of the Covenantor under this Agreement as provided above.

7. Nothing herein shall be construed to prohibit a transfer by the Covenantor to subsequent owners and assigns.

8. The provisions of this Agreement shall be severable and if any phrase, clause, sentence or provision is declared unconstitutional, or the applicability thereof to the Covenantor, its successors and assigns, is held invalid, the remainder of the Covenant

shall not be affected thereby. This Agreement shall be interpreted under the laws of the Commonwealth of Virginia.

9. \_\_\_\_\_, the Noteholder, being the holder of a note or notes secured by a lien on the Property through a deed of trust dated \_\_\_\_\_, from \_\_\_\_\_ to \_\_\_\_\_ and \_\_\_\_\_, Trustees, either of whom may act, recorded in the Clerk's Office of the Circuit Court of the City of Suffolk, Virginia (the "Clerk's Office") as Instrument # \_\_\_\_\_ (the "Deed of Trust"), joins in the execution of this Agreement to evidence its consent to the provisions hereof and to direct the Trustee to execute same for subordination purposes. At the direction of the Noteholder, the Trustee joins herein to subordinate the lien of the Deed of Trust, and the Noteholder and the Trustee hereby acknowledge and agree that the lien of the Deed of Trust is hereby subordinated to this Agreement, the covenants created or set forth herein and all of the rights of the City hereunder.

10. This Agreement shall be recorded in the Clerk's Office of the Circuit Court of the City of Suffolk, Virginia.

11. In the event that the City shall determine at its sole discretion at any future time that the Facility and System is no longer required, then at the request of the Covenantor, its successors and/or assigns, the city shall execute a release of this Agreement which the Covenantor, its successors and/or assigns, shall record in the aforesaid Clerk's Office, at its/their expense.

12. This Agreement shall be deemed to be a Virginia contract and shall be governed as to all matters whether of validity, interpretations, obligations, performance or

otherwise exclusively by the laws of the Commonwealth of Virginia, and all questions arising with respect thereto shall be determined in accordance with such laws. Regardless of where actually delivered and accepted, this Agreement shall be deemed to have been delivered and accepted by all parties in the Commonwealth of Virginia.

13. Any and all suits for any claims or for any and every breach or dispute arising out of this Agreement shall be maintained in the appropriate court of competent jurisdiction in the City of Suffolk.

14. This Agreement shall not be modified except by written instrument executed by the City and the owner(s) of the Property at the time of modification, and no modification shall be effective until recorded in the Clerk's Office.

**[SIGNATURE PAGES ATTACHED]**

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first set forth above.

OWNER/COVENANTOR:

\_\_\_\_\_  
Owner / Covenantor's Name

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

ATTEST:

By: \_\_\_\_\_  
Name Title

OWNER ACKNOWLEDGEMENT

STATE OF \_\_\_\_\_  
CITY OF \_\_\_\_\_, to wit:

I, \_\_\_\_\_, a Notary Public in and for the City and State aforesaid, do hereby certify that \_\_\_\_\_ (name), \_\_\_\_\_ (title), of \_\_\_\_\_ (name of corporation, partnership, individual, assoc.), whose name as such is signed to the foregoing Agreement, has acknowledged the same before me in my City and State aforesaid. He/She is personally known to me or has produced \_\_\_\_\_ identification.

GIVEN under my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_  
Notary Registration No. \_\_\_\_\_

CITY SIGNATURES / NOTARY CERTIFICATION

ATTEST: CITY OF SUFFOLK, VIRGINIA

\_\_\_\_\_  
Signature – City Clerk

\_\_\_\_\_  
City Manager/Authorized Designee of City Manager

APPROVED AS TO CONTENT:

APPROVED AS TO FORM:

\_\_\_\_\_  
Signature – Department of Public Works

\_\_\_\_\_  
Signature – City Attorney

CITY’S ACKNOWLEDGEMENT

STATE OF VIRGINIA  
CITY OF SUFFOLK, to wit:

I, \_\_\_\_\_, a Notary Public in and for the City and State aforesaid, do hereby certify that \_\_\_\_\_ City Manager/Authorized designee of the City Manager Pursuant to §2-1 of the City Code, whose name is signed to the foregoing Agreement, bearing date the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, has acknowledged the same before me in my City and State aforesaid. He/She is personally known to me.

Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_  
Notary Registration No.: \_\_\_\_\_

STATE OF VIRGINIA  
CITY OF SUFFOLK, to wit:

I, \_\_\_\_\_, a Notary Public in and for the City and State aforesaid, do hereby certify that \_\_\_\_\_, City Clerk for the City of Suffolk, Virginia, whose name is signed to the foregoing Agreement, bearing date the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, has acknowledged the same before me in my City and State aforesaid. He/She/They is/are personally known to me.

GIVEN under my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_  
Notary Registration No. \_\_\_\_\_

NOTEHOLDER SIGNATURE/NOTARY CERTIFICATION

\_\_\_\_\_  
Noteholder

BY: \_\_\_\_\_  
Name Title

ATTEST:

By: \_\_\_\_\_  
Name Title

NOTEHOLDER ACKNOWLEDGEMENT

STATE OF \_\_\_\_\_  
CITY OF \_\_\_\_\_, to wit:

I, \_\_\_\_\_, a Notary Public in and for the City and State aforesaid, do hereby certify that \_\_\_\_\_ (name), \_\_\_\_\_ (title), whose name is signed on behalf of \_\_\_\_\_ (noteholder), and as such are signed to the foregoing Agreement, have acknowledged the same before me in my City and State aforesaid. He/She is personally known to me or has produced \_\_\_\_\_ identification.

GIVEN under my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_  
Notary Registration No. \_\_\_\_\_

TRUSTEE SIGNATURE/NOTARY CERTIFICATION

\_\_\_\_\_  
Trustee (for noteholder)

\_\_\_\_\_  
Trustee (for noteholder)

TRUSTEE ACKNOWLEDGEMENT

STATE OF \_\_\_\_\_  
CITY OF \_\_\_\_\_, to wit:

I, \_\_\_\_\_, a Notary Public in and for the City and state aforesaid, do hereby certify that \_\_\_\_\_, Trustee, and \_\_\_\_\_, Trustee, whose name(s) as such is/are signed to the foregoing Agreement, has/have acknowledged the same before me in my City and State aforesaid. He/She/They is / are personally known to me or has/have produced \_\_\_\_\_ identification.

Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_  
Notary Registration No. \_\_\_\_\_



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Sample Stormwater Management Facilities Maintenance  
Document**

*Best Management Practices (BMP)  
Maintenance Documents  
for  
Linkside Cove at the Riverfront  
Suffolk, Virginia*

*February 13, 2004*

KHA Project No. 016050016

**Prepared for:**  
*Terry-Peterson Residential  
4640 Shore Drive  
Suite 111  
Virginia Beach, VA 23455*

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# Table of Contents

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  - a. Wet Pond
  - b. BaySaver Unit
  - c. Outlet Protection
  - d. Grassed Swale
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3. Maintenance Items
4. Probable Cost
5. Appendices
  - a. Wet Pond Inspection Checklist
  - b. Baysaver Inspection Checklist
  - c. Outlet Protection Inspection Checklist
  - d. Grassed Swale Inspection Checklist
  - e. BaySaver Separation System Technical and Design Manual

## Description of Facilities

### **Wet Pond**

Wet Ponds contain a permanent pool of water much like a lake. The wet pond is designed to hold a permanent pool, above which stormwater runoff is temporarily stored and released at a controlled rate. The impounded water is discharged through an outlet that provides for prolonged release. Wet ponds can also serve as an aesthetic or recreational amenity as well as a habitat for some wildlife. The life expectancy of a well-maintained wet pond is 20-50 years.

### **Baysaver Unit**

The Baysaver unit is a physical separation system that meets regulations for non-point source pollution control. The system operates using gravity flow and density differences to remove oils, suspended sediments, and floatables (trash and other floating debris) from stormwater runoff. The Baysaver provides many of the operations that the wet pond provides without using the valuable acreage necessary for the wet pond. The life expectancy of a well-maintained Baysaver Unit is indefinite. For more information about the Baysaver, see appendix E.

### **Outlet Protection**

Outlet protection is structurally lined aprons or other acceptable energy dissipating devices placed at the outlets of pipes or paved channel sections. The purpose of outlet protection is to prevent scour at stormwater outlets, to protect the outlet structure and to minimize the potential for downstream erosion by reducing the velocity and energy of concentrated stormwater flows. The life expectancy of well-maintained outlet protection is 20-50 years.

### **Grassed Swale**

Grassed swales are common devices for directing stormwater runoff, though not always designed to treat stormwater. Typically, grassed swales are concave, earthen conveyance systems designed to simply transfer runoff. As a water quality device, a grassed swale is constructed to allow stormwater to soak into the soil, and particles are trapped by the groundcover, usually turf grass. The life expectancy of a well-maintained grassed swale is indefinite.

## Inspection Criteria

The following schedule sets forth the minimum frequency of inspections for the BMP:

Wet Pond:	Annually
Baysaver Unit:	Annually
Outlet Protection:	Annually
Grassed Swales:	Annually

For inspection checklists for the BMP devices, see appendices A-D.

SAMPLE

# Maintenance Items

## Wet Pond

- **Twice annually, minimum:**
  - Mow grass to a minimum height of 4", preferred height of 6-8"
- **Annually or as needed:**
  - Cleaning and removal of debris after major storm events
  - Harvest excess vegetation
  - Repair embankment and side slopes
  - Repair of outlet structure
- **5 to 10-year cycle:**
  - Removal of accumulated sediment from pond when 10% of the capacity has been lost due to sediment accumulation

## Baysaver Unit

- **Annually, or as needed:**
  - Removal of accumulated trash and sediment from unit

## Outlet Protection

- **Annually, or as needed:**
  - Replace any dislodged or washed out rip-rap
  - Regrade and stabilize any eroded soils with rip-rap or permanent seeding
  - Remove vegetation

## Grassed Swale

- **Annually, or as needed:**
  - Mowing and litter and debris removal
  - Stabilization of eroded side slopes and bottom
  - Nutrient and pesticide use management
  - De-thatching swale bottom and removal of thatching
  - Disking or aeration of swale bottom
- **5-year cycle**
  - Scraping swale bottom, and removal of sediment to restore original cross section and infiltration rate
  - Seeding and sodding to restore ground cover (use proper erosion and sediment control)

## Probable Cost

### Wet Pond

- Maintenance of grassed side slopes of the wet pond should be included in landscaping services fees.
- Sediment removal costs potentially between \$4,000 and \$15,000 every 5 to 10 years.

### Baysaver Unit

- Removal of water and sediment from unit, cleaning unit and disposal of sediment approximate cost \$2,000 per year.

### Outlet Protection

- Maintenance of outlet protection and vegetation removal should be included in the landscaping services fees.

### Grassed Swale

- Maintenance of grassed swale, including mowing and unwanted vegetation removal should be included in the landscaping services fees.

SAMPLE

*Appendix A*  
*Wet Pond Inspection Checklist*

**Operation and Maintenance Checklist**

Page 1 of 3

	YES/NO	REPAIR	INVESTIGATE	Inspector Name: _____
				Inspection Date: _____
				- Type of BMP: _____
				-
Item				Comments
<b>I. EMBANKMENT</b>				
<b>A. Crest</b>				
1. Visual settlement				
2. Misalignment				
3. Cracking				
<b>B. Upstream slope</b>				
1. Erosion				
2. Adequate groundcover				
3. Trees, shrubs or other				
4. Cracks, settlements or bulges				
5. Rodent holes				
<b>C. Downstream slope</b>				
1. Erosion				
2. Adequate groundcover				
3. Trees, shrubs or other				
4. Cracks, settlements or bulges				
5. Rodent holes				
<b>D. Abutments</b>				
1. Erosion				
2. Seepage				
3. Cracks				

**Operation and Maintenance Checklist**

Page 2 of 3

	YES/NO	REPAIR	INVESTIGATE	Inspector Name: _____ Inspection Date: _____ Type of BMP: _____
<b>E. Drainage, seepage control</b>				
1. Internal drains flowing				
2. Seepage at toe				
<b>II. EMERGENCY SPILLWAY</b>				
1. Eroding or backcutting				
2. Obstructed				
3. Leaking				
4. Operational				
<b>IV. PRINCIPAL SPILLWAY BARREL</b>				
1. Seepage into conduit				
2. Debris present				
3. Displaced or offset joints				
<b>V. OUTLET PROTECTION/ STILLING BASIN</b>				
1. Obstructed				
2. Adequate riprap				
3. Undercutting at outlet				
4. Outlet channel scour				
<b>VI. BASIN &amp; UPLAND BUFFER AREA</b>				
<b>A. Low flow channel</b>				
1. Erosion				
2. Adequate vegetation				
3. Obstructed				

**Operation and Maintenance Checklist**

	YES/NO	REPAIR	INVESTIGATE	Inspector Name: _____ Inspection Date: _____ Type of BMP: _____
<b>B. Basin bottom &amp; side slopes</b>				
1. Erosion				
2. Adequate stabilization				
3. Sediment accumulation				
4. Floating debris				
5. High water marks				
6. Shoreline protection				
<b>C. Inflow channels/pipes</b>				
1. Erosion				
2. Adequate stabilization				
3. Undercutting				
<b>D. Sediment forebay</b>				
1. Sediment accumulation				
2. Stable overflow into basin				
<b>E. Upland landscaping</b>				
<b>F. Aquatic landscaping</b>				

SAMPLE

*Appendix B*  
*BaySaver Inspection Checklist*

INSPECTION CHECKLIST FOR THE BAYSAVER SEPARATOR UNIT

	YES/NO	REPAIR	Inspector Name: _____ Inspection Date: _____
Item			Comments
I. Manhole Structures			
A. Manhole Covers			
B. Manhole Tops			
C. Manhole Steps			
D. Manhole Sides			
E. Inlet Pipe			
F. Trash/Debris Accumulation			
II. BaySaver Separator Unit			
A. Wier			
B. Two (2) 10" PVC Pipes			
C. 36" Corrugated Pipe			

SAMPLE

SAMPLE

*Appendix C*  
*Outlet Protection Inspection Checklist*

INSPECTION CHECKLIST FOR RIP-RAP OUTFALL

	YES/NO	REPAIR	Inspector Name: _____
			Inspection Date: _____
Item			Comments
Grass			
Trash/debris/leaves			
Shrubs			
Trees			
Silt and/or sediment			
Bare spots			
Missing stone			
Erosion/scouring			

SAMPLE

SAMPLE

*Appendix D*  
*Grassed Swale Inspection Checklist*

INSPECTION CHECKLIST FOR GRASS SWALES

	YES/NO	REPAIR	Inspector Name: _____ Inspection Date: _____
Item			Comments
Grass height			
Trash/debris/leaves			
Shrubs			
Trees			
Silt and/or sediment			
Bare spots			
Erosion/scouring			

SAMPLE

SAMPLE

*Appendix E*  
*BaySaver Separation System Technical*  
*and Design Manual*

BaySaver® Separation System  
Technical and Design Manual

October, 2002

SAMPLE

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[www.BaySaver.com](http://www.BaySaver.com)

1302 Rising Ridge Rd. Unit 1 • Mount Airy, Maryland 21771

Phone (301) 829-6470

800-BaySaver

Fax (301) 829-3747

## Introduction

For years the BaySaver® team has been protecting lakes, streams, and waterways from environmental problems. One of BaySaver®'s most innovative products to control non-point source pollution is the BaySaver® Separation System<sup>1</sup>. The system has been installed in commercial, industrial, and residential applications worldwide, and continues to be used in projects as varied as parking lots, gas stations, service stations, maintenance facilities, and highways. It is also used as pre-treatment for other types of stormwater technologies such as ponds, infiltration systems, etc.

The BaySaver® Separation System is a physical separation system that meets regulations for non-point source pollution control. The system operates using gravity flow and density differences to remove oils, suspended sediments, and floatables (trash and other floating debris) from stormwater runoff. Easy to specify, install, inspect, and maintain, the BaySaver® Separation System helps you avoid using the valuable acreage necessary for other types of best management practices (BMPs).

**BaySaver® is the leading technology in stormwater pollution control.** This manual is an introduction to the BaySaver® Separation System line of products and to the technical details that will help you meet your stormwater pollution control requirements both now and in the future.

The BaySaver® team thanks you for your interest in BaySaver® stormwater pollution control products and services. We are committed to providing you with stormwater treatment systems that make sense and with excellent customer service. If you have any questions about the information in this manual, please contact the BaySaver® team at 1-800-229-7283 (1-800-BaySaver) or by e-mail at [TechQuestions@BaySaver.com](mailto:TechQuestions@BaySaver.com).

---

<sup>1</sup> The BaySaver® Separation System is manufactured in Mount Airy, Maryland, by BaySaver, Inc., and is protected by one or more U.S. and international patents. Any infringement on these patents will be prosecuted to the fullest extent of the law. For detailed information on specifying, purchasing, or installing a BaySaver® Separation System, please contact BaySaver, Inc. or an authorized representative directly.

## The BaySaver<sup>®</sup> Separation System

The BaySaver<sup>®</sup> Separation System is composed of two standard precast manholes and the BaySaver<sup>®</sup> Separator Unit. The two manholes allow the removal and storage of pollutants, while the separator unit directs the flow of water to provide the most efficient treatment possible. Figure 1 shows a cutaway view of the complete BaySaver<sup>®</sup> Separation System.

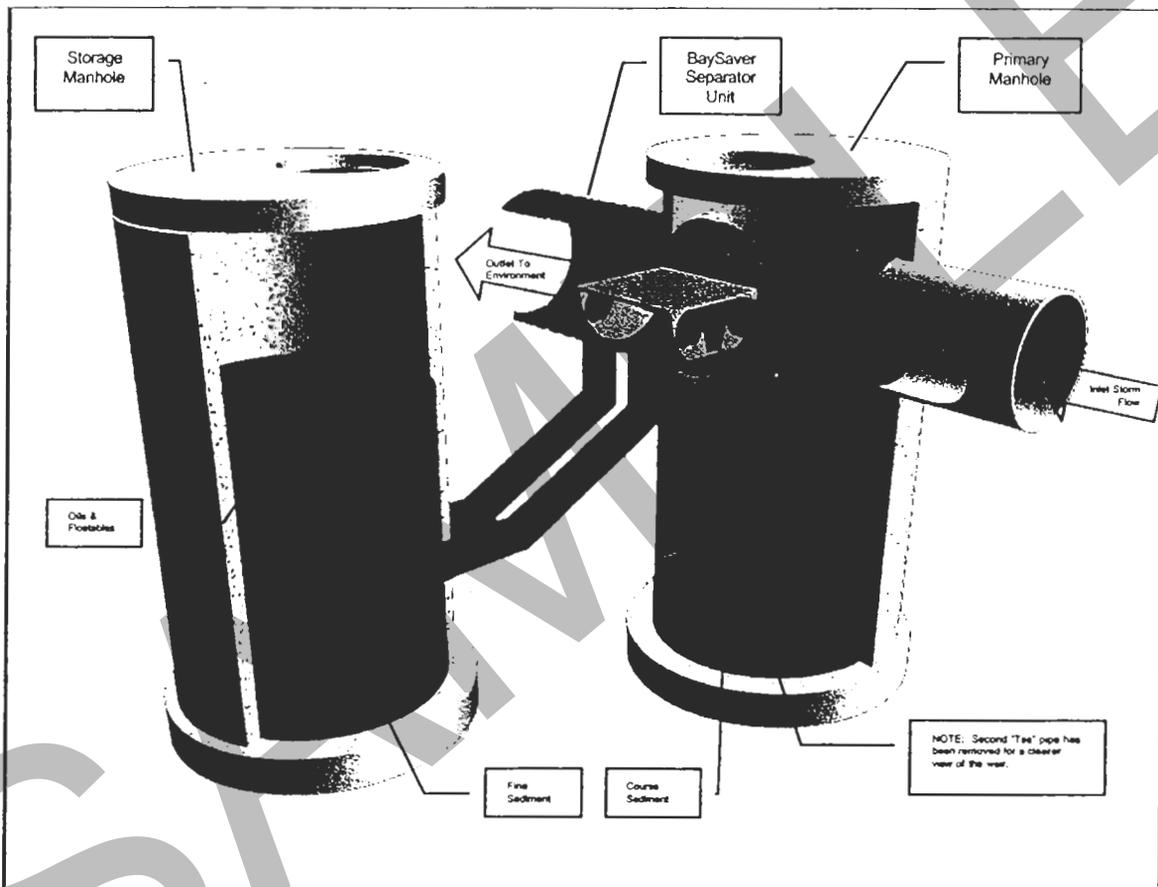


FIGURE 1: THE BAYSAVER<sup>®</sup> SEPARATION SYSTEM

Included with this manual is a disk containing AutoCAD details and other information to make it easy for you to specify the BaySaver<sup>®</sup> Separation System. This manual and the AutoCAD details are also available at the BaySaver<sup>®</sup> web site at [www.BaySaver.com](http://www.BaySaver.com). If you need clarification of any of the information provided, please contact BaySaver<sup>®</sup> technical support at 1-800-229-7283 (1-800-BaySaver).

The primary manhole, shown in Figure 2, is a standard precast structure used to remove coarse sediments. **This manhole is generally installed in-line with the storm drain and can be used as a multiple inlet structure.** The precast manholes can be purchased from local concrete distributors to reduce freight costs, ensure the structures meet local regulations, and enable contractors to shop for the best price. Manhole sizing guidelines can be found in Table 3 on page 12.

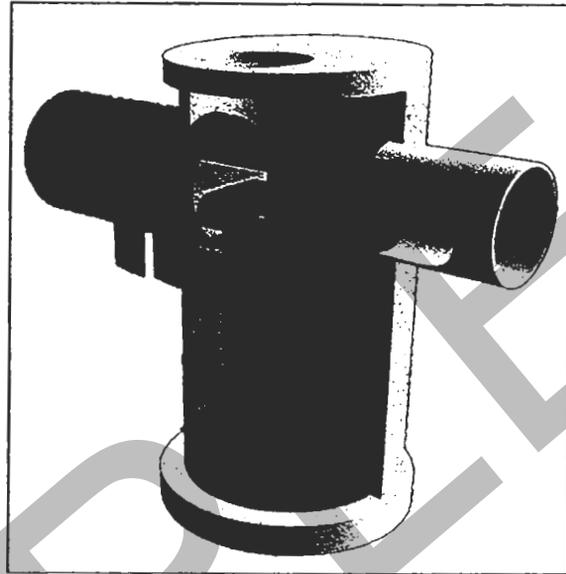


FIGURE 2: THE PRIMARY MANHOLE

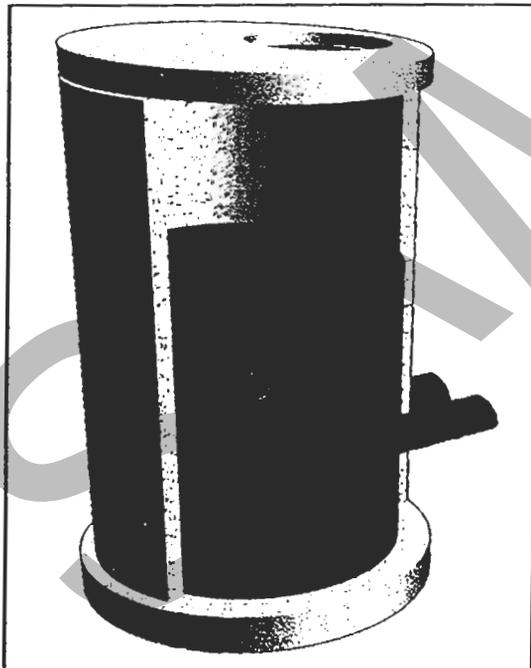


FIGURE 3: THE STORAGE MANHOLE

Shown in Figure 3, the storage manhole acts as a secondary treatment device for the collection of oils, fine sediments and floatables. It is a standard precast manhole that can also be purchased locally. The storage manhole is a key component that sets the BaySaver® Separation System apart from other less effective systems. **The BaySaver® Separation System stores the pollutants offline to prevent resuspension.** BaySaver® benefits are further discussed in the operation section beginning on page 5.

Figure 4 is a picture of the heart of the BaySaver® Separation System, the Separator Unit. The Bay-Saver® Separator Unit is the device that controls the influent flow through the two manholes. This device is manufactured at BaySaver®'s facilities and can be purchased directly from BaySaver, Inc., or through a local BaySaver® technical sales representative (contact BaySaver, Inc. for additional sales information).

The BaySaver® Separator Unit is fabricated entirely of high density polyethylene (HDPE) infused with UV-resistant carbon-black. HDPE is a non-brittle, chemically inert material known for its corrosion-resistant properties. It is commonly used in applications that expose it to harsh conditions (landfills and chemical plants, for example) and is used in storm drains throughout the world.

**The separator unit itself is constructed using state-of-the-art technology and the best materials available to ensure the quality of your BaySaver® system.** Extrusion welding ensures that the entire system is well designed to take the abuse associated with construction applications. The separator unit is light, easy to install, and delivered with the connecting pipes, couplers, and seals needed to install the unit to the manholes.

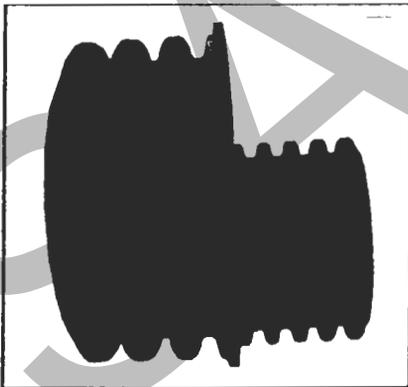
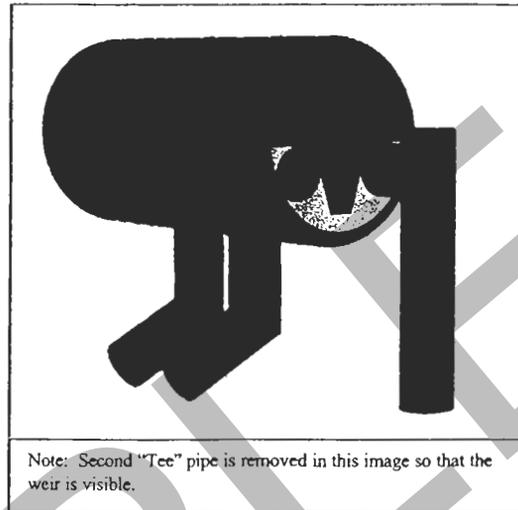


FIGURE 5: THE BAYSAVER REDUCER/ADAPTOR



Note: Second "Tee" pipe is removed in this image so that the weir is visible.

FIGURE 4: THE BAYSAVER SEPARATOR UNIT

The reducer/adapter in Figure 5 is used to adapt the outlet of the BaySaver® Separator Unit to your pipe configuration. It also allows the BaySaver® Separator Unit to be attached to any type of outlet pipe (concrete, metal, HDPE, etc.).

The reducer/adapter is custom manufactured from HDPE for each project. When you specify your outlet pipe diameter, the reducer/adapter will be shipped with your unit along with the proper fittings for your pipe.

## BaySaver® Separation System Operation

When rain begins to fall on an impervious surface, the runoff carries with it the oils, total suspended solids (TSS), and floatables that have built up since the last storm. In the past it was thought that the majority of these pollutants are mobilized during the first 20 to 30 minutes of precipitation. This phenomenon is referred to as the "first flush." Because of this theory, many BMPs have been designed around treating only the low flows associated with this first flush. New studies<sup>2</sup> indicate that when designing a treatment system to treat only the first flush, it is likely the amount of pollutants captured will not meet stormwater regulations. Even before these studies began, the BaySaver® Separation System was designed to treat throughout the storm.

During a storm event, rainfall intensity can vary significantly. Peaks in the rainfall intensity result in higher runoff flows at various frequencies during the storm. These higher intensity precipitation flows result in additional flushes of contaminants. The subsequent flushes need to be treated to prevent the discharge of pollutants. While competing systems are designed to treat only the first flush and bypass these flows, the **BaySaver® Separation System was designed, from its inception, to operate throughout the entire storm, and when properly sized will treat all flows of an average storm for any given geographic area.**

The BaySaver® Separation System is designed with three distinct flow paths to convey and treat stormwater runoff. During low flows, the most common level of operation, the path of influent water is through both manholes in series. During higher flows, all influent water is treated in the primary manhole, and a portion of the water, containing oils, sediments, and floatables, is diverted to the storage manhole for secondary treatment. During extreme flows, the influent is directed through the system to avoid resuspension of materials that have already been collected and to prevent flooding upstream in the system. This section describes the flow paths and removal mechanisms for each level of treatment.

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<sup>2</sup> Studies by the University of Alabama; City of Portland, Oregon; City of Austin, Texas; University of Texas. For more information, please contact BaySaver, Inc.

## Low Flows

During low flows, the BaySaver® Separation System treats all water twice. This flow situation occurs during small storms and during the beginning of more intense storms.

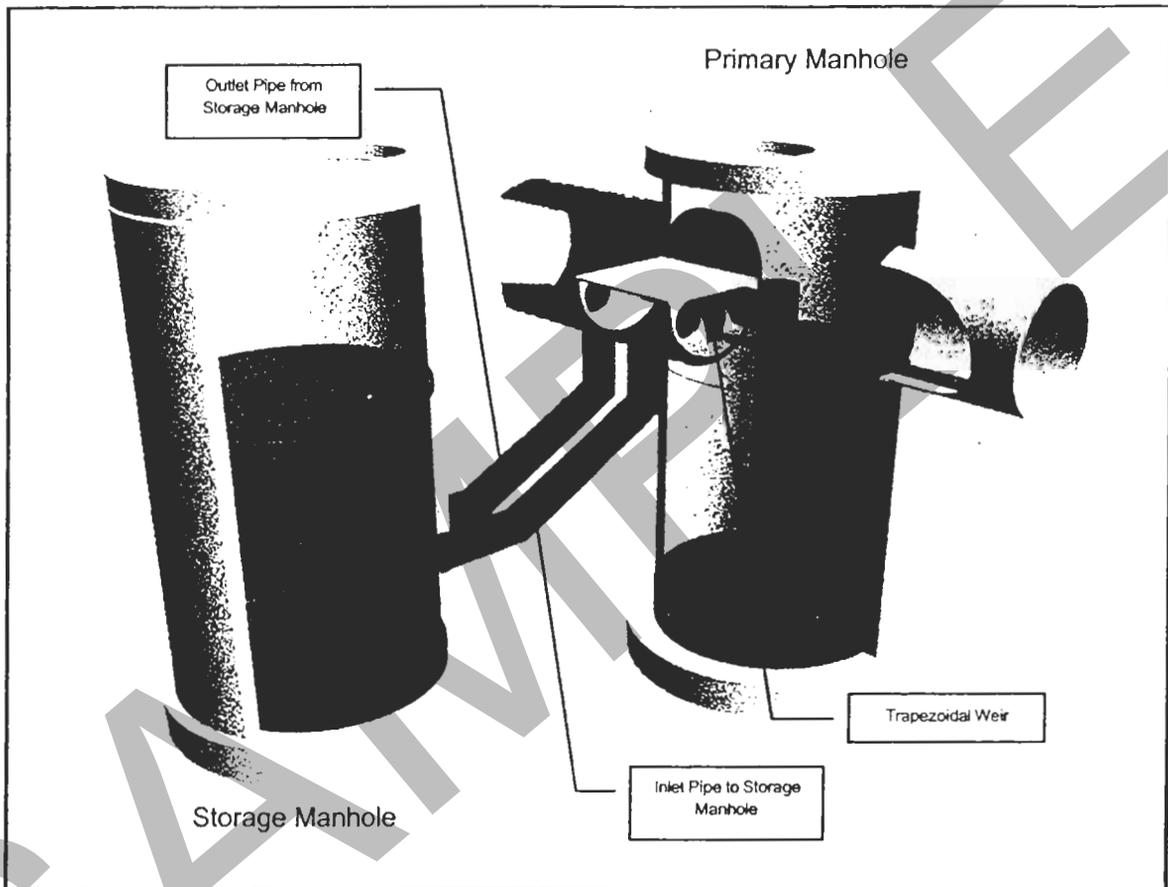


FIGURE 6: LOW FLOW OPERATION

As shown in Figure 6, water enters the BaySaver® Separation System's primary manhole through the inlet pipe shown on the right side of the figure. Coarse sediments (gravel and sand) immediately fall to the floor of the primary manhole. The influent water, carrying floatables and finer sediments, is skimmed off the surface by the trapezoidal weir and conveyed into the storage manhole (on the left). When water enters the storage manhole from the submerged inlet pipe, oils and other floatables rise to the surface, while sediments settle to the floor. These contaminants remain trapped off-line and are not resuspended during larger flows. The influent water displaces clean water from the center of the column, which is forced back up the return pipe to the system outfall. In this way, all of the water that reaches the system outfall has been treated in both the primary and storage manholes.

### Maximum Treatment Flow

During larger storms, as storm intensity increases, flow rates continue to increase. The BaySaver® Separation System was designed to treat these increased flows as well. During these larger storm events, the BaySaver® Separator Unit continues to divert low flows (containing the majority of suspended sediments, as well as the oils and other floatables) from the primary manhole to the storage manhole.



**FIGURE 7: MAXIMUM TREATMENT FLOW**

Additional flows associated with the larger storm are treated by separation in the primary manhole. As the pollutants are separated in the primary manhole, the influent water displaces treated water from the center of the column and forces it up the "Tee" pipes to the system outfall. **One of the advantages of the BaySaver® Separation System design is that it treats these larger storm flows in the same way that first flush flows were treated in the past.**

## Inspection and Maintenance

### Inspection

By removing the manhole covers, **the inspector or maintenance contractor can gain unobstructed access to the bottom of the manholes, making confined space entry unnecessary.** Site-specific inspection scheduling, coupled with maintenance that can be completed from above grade, results in more efficient maintenance at lower cost.

Beginning the day that construction is complete, periodic inspection determines the cleaning frequency. Most systems require yearly cleaning. In the first year, the system should be inspected quarterly to determine pollutant loading rates. Maintenance is needed when the sediment accumulation has reached a height of two feet from the floor in either manhole.

### Maintenance

One of the advantages of BaySaver® Separation Systems is their ease of maintenance. Like any system that collects pollutants, the BaySaver® Separation System must be maintained for continued effectiveness. Maintenance is a simple procedure and is performed using a vacuum truck or similar equipment. Access to the contaminant storage is available through 30" manhole covers in each structure. Vacuum hoses can reach the entire floor area of both manholes, so all sediments can be evacuated.

The BaySaver® Separation System was designed to minimize the volume of water removed during routine maintenance, thus reducing disposal costs. The entire maintenance procedure typically takes from 2 to 4 hours, depending on the size of the system. The recommended maintenance procedure for the BaySaver® Separation System follows.

## Maintenance Instructions

1. Remove the two manhole covers to provide access to the contaminant storage.
2. Remove all water, debris, oils, and sediment from the storage manhole using a vacuum truck or other equipment.
3. Using a high pressure hose, clean the storage manhole and remove the cleaning water using the vacuum truck.
4. Using a submersible pump, pump the bulk of the water from the primary manhole into the clean storage manhole. The pump intake must be kept below the water surface to avoid pumping surface oils, and pumping must be stopped when the water surface falls to a level one foot above the accumulated sediments.
5. Remove the remaining water and sediment from the primary manhole using a vacuum truck or other equipment.
6. Using a high pressure hose, clean the primary manhole and remove the cleaning water using the vacuum truck.
7. Fill the primary manhole with water to the invert of the BaySaver® Separator Unit. Fill the storage manhole with water to a depth of 8 feet.
8. Replace the two manhole covers.
9. Dispose of the contaminated water at an approved facility. Local regulations often prohibit discharge of this material to the sanitary sewer; the local sewer authority must authorize such a discharge.

This procedure is intended to remove all the collected pollutants from the system while minimizing the volume of water that must be disposed. Additional local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor; therefore maintenance should be performed only by a qualified contractor.

BaySaver® can assist in coordinating a maintenance contractor in the installation area, or work directly with owners who wish to perform their own maintenance. Contact BaySaver® at 1-800-229-7283 (1-800-BaySaver) for more information.

## System Costs and Availability

Material costs, installation costs, and maintenance costs vary significantly throughout the country. **The BaySaver® Separation System is your best value per treated CFS regardless of your geographic location.** For BaySaver® pricing in your area, please contact BaySaver® at 1-800-229-7283 (1-800-BaySaver) or an authorized representative directly.

**The BaySaver® Separator Unit and materials can be shipped anywhere in the continental United States within two weeks or less.** Custom systems may require additional time.

Reminder: The system's precast manholes need to be ordered locally to arrive in conjunction with the BaySaver® Separator Unit.



## **Drainage Easement**

**THIS DEED OF EASEMENT**, made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between \_\_\_\_\_, parties of the first part, (hereinafter called “Landowner”), Grantors, and the **CITY OF SUFFOLK, VIRGINIA**, a Virginia municipal corporation, whose address is c/o City Clerk, 441 Market Street, Suffolk, Virginia, 23434, party of the second part (hereinafter called “City”), Grantee.

WHEREAS, the Landowner is the sole owner of certain real estate shown on the City’s Tax Map as Map and Parcel No. \_\_\_\_\_ as shown on the attached plat entitled “\_\_\_\_\_”, which plat is dated \_\_\_\_\_, and made by \_\_\_\_\_, and which plat is attached hereto and made a part hereof (hereinafter referred to as the “Property”); and

WHEREAS, provision for the installation and maintenance of storm water drainage and facilities within the confines of the Property are necessary, and not hereinbefore specifically provided; and

WHEREAS, the City and the Landowner, their successors and assigns, agree that the health, safety and welfare of the Landowner and neighboring properties require that proper installation, maintenance and management of stormwater drainage on the Property be performed.

**WITNESSETH:**

That for and in consideration of the sum of TEN DOLLARS (\$10.00), the receipt of which is hereby acknowledged by the party of the first part, and for other good and valuable consideration, the Landowner grants to the City, its successors and assigns, the \_\_\_\_ square foot (\_\_\_\_ acres) permanent drainage easement as shown on the plat referenced hereinabove, and identified on said plat as “\_\_\_\_\_”, which plat is attached hereto and incorporated herein. Said easement shall be a free, perpetual and exclusive easement, right of way and privilege for the purposes of constructing, operating, maintaining, adding to, or replacing present or future stormwater drainage pipes, culverts, necessary structures, and appurtenances necessary for the collection of stormwater and its transmission through and across the property of the Landowner.

Said easement is subject to the following conditions:

1. All culverts, pipes, inlet structures and appurtenant facilities which are installed in the easement shall be and remain the property of the City, its successors and assigns.
2. The City and its agents shall have full and free use of the said easement for the purposes named herein, and shall have all rights and privileges reasonably necessary for the utilization of the easement and the right to use adjoining land of the Landowner where necessary; provided, however, that its right to use adjoining land shall be exercised only during periods of actual construction or maintenance, and further, this right shall not be construed to allow the City to erect any building or structure of a permanent nature on such adjoining land.

3. The City shall have the right to trim, cut, and remove trees, shrubbery, fences, structures, or other obstructions or facilities in or near the easement being conveyed, deemed by it to interfere with the proper and efficient construction, operation, and maintenance of said easement; provided, however, that the City shall at its own expense restore, as nearly as possible, the premises to their original condition, such restoration including the backfilling of trenches and the reseeded or resodding of lawns or pasture areas, but not the replacement of structures, trees, or other facilities located within the easement.

4. The City shall have the right of ingress and egress over, under, and across the lands of the Landowner for the purpose of exercising the rights herein granted.

5. The City shall have the right to open and close fences.

6. The easement granted herein for the specific location described above is in addition to any easement or right of way now in existence or which may be acquired in the future.

7. The Landowner warrants that they are the owner of the interest hereby conveyed and that they have the right to make this conveyance, and covenants that the City, its successors and assigns, shall quietly enjoy the premises for the uses herein stated.

8. The Landowner further covenants that no building or structure shall be erected within the easement or right of way herein granted without the written consent of the City.

9. The Landowner further covenants that they shall not change the grade along or upon the easement or right of way by removing or replacing earth, unless otherwise agreed to in writing by the parties prior to such activity taking place.

10. The City shall not be liable to the Landowner, or their successors in title, for damages occasioned to any structures, lawns, trees, or shrubs or other property due to the presence of said drainage facilities or to the maintenance, repair or renewal of same, except for failure to use reasonable care and diligence.

11. The Landowner, their successors and assigns, hereby grants permission to the City, its authorized agents and employees, to enter upon the Property and to inspect the stormwater management facilities whenever the City deems it necessary. The purpose of inspection is to follow-up on reported deficiencies and/or respond to citizen complaints.

12. The rights provided herein impose no liability of any kind whatsoever on the City, and the Landowner agrees to hold the City harmless from any liability in the event the stormwater management facilities fail to operate properly.

13. This agreement shall be recorded among the land records of the Circuit Court Clerk's Office of the City of Suffolk, Virginia, and shall constitute a covenant running with the land, and shall be binding upon the Landowner, their administrators, executors, assigns, heirs and any other successors in interest, including any homeowner's associations.

WITNESS the following signatures and seals:

LANDOWNER:

\_\_\_\_\_  
\_\_\_\_\_

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF \_\_\_\_\_, to-wit:

The foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_, by \_\_\_\_\_.

My commission expires: \_\_\_\_\_

Notary Registration No. \_\_\_\_\_

\_\_\_\_\_  
Notary Public

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF \_\_\_\_\_, to-wit:

The foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_, by \_\_\_\_\_.

My commission expires: \_\_\_\_\_

Notary Registration No. \_\_\_\_\_

\_\_\_\_\_  
Notary Public

ACCEPTED ON BEHALF OF THE CITY OF SUFFOLK:

CITY OF SUFFOLK, VIRGINIA

\_\_\_\_\_  
Selena Cuffee-Glenn, City Manager

Attest:

\_\_\_\_\_  
Erika S. Dawley, City Clerk

COMMONWEALTH OF VIRGINIA

CITY OF SUFFOLK, to-wit:

The foregoing instrument was acknowledged before me this \_\_\_ day of \_\_\_\_\_, 20\_\_, by Selena Cuffee-Glenn, City Manager, and Erika S. Dawley, City Clerk, on behalf of the City of Suffolk, Virginia.

My commission expires: \_\_\_\_\_  
Notary Registration No. \_\_\_\_\_

\_\_\_\_\_  
Notary Public

Approved as to Form:

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Karla C. Williams, Associate City Attorney

Approved as to Content:

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Department of Public Works



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Land Disturbance Permit Application**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET • 2<sup>nd</sup> FLOOR • SUFFOLK, VIRGINIA 23434 •  
PHONE (757) 514-7611 • FAX (757) 514-7727

## LAND DISTURBANCE PERMIT APPLICATION

**\*ORIGINAL SIGNATURES REQUIRED\***

DATE OF APPLICATION: \_\_\_\_\_ PERMIT EFFECTIVE DATE: \_\_\_\_\_

PERMIT #: \_\_\_\_\_ (OFFICE USE) PLANNING # \_\_\_\_\_

APPLICANT: \_\_\_\_\_  
(FULL NAME) (BUSINESS PHONE)

\_\_\_\_\_  
(ADDRESS)

LANDOWNER: \_\_\_\_\_  
(FULL NAME) (BUSINESS PHONE)

\_\_\_\_\_  
(ADDRESS)

PROJECT: \_\_\_\_\_

PLAN PREPARED BY: \_\_\_\_\_

LOCATION: \_\_\_\_\_

ACRES OF DEVELOPMENT: \_\_\_\_\_

I, \_\_\_\_\_ hereby certify that I fully understand the provisions of the City of Suffolk Erosion and Sediment Control Ordinance and Program, and that I accept the responsibility for carrying out the Erosion and Sediment Control Plan for the above- referenced project as approved by the City.

I further grant the right-of-entry onto this property, as described above, to the designated personnel of the City of Suffolk for the purpose of inspecting and monitoring for compliance with aforesaid Ordinance.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

APPROVED BY: CITY OF SUFFOLK, VIRGINIA

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

The following general statements shall apply to all Land Disturbance Permits in the City of Suffolk

- 1) All projects shall conform to the minimum standards expressed in the Virginia Erosion and Sediment Control Handbook, 3<sup>rd</sup> edition (1992), and the latest version of the Virginia Erosion and Sediment Control Law and Regulations, unless a variance has been granted in writing by the City of Suffolk.
- 2) This permit must be kept on the work site and shown when requested.
- 3) The Department of Public Works must be notified at least 48 hours prior to commencement of land-disturbing activities.
- 4) Work on the project shall not commence until the sediment controls are in place as specified on the plan.
- 5) The applicant agrees to be responsible for any and all damages to any other installations already in place as a result of work covered by this permit.
- 6) The applicant agrees to maintain the work in the manner approved upon its completion.
- 7) A permit may be denied to any applicant, and all permits issued by the City may be revoked, whenever, in the opinion of the City Council or its designated agent, the safety, use, or maintenance of the property so requires.

I, \_\_\_\_\_ certify that I have read and understand the above requirements of this permit.

§ 62.1-44.15:57 as amended of the Virginia Erosion and Sediment Control Act, authorizes the City of Suffolk to require that a Bond of Surety be posted with the Administrator in the amount determined by the Administrator. Such bond shall be conditioned to ensure all work conforms to approved standards, specifications, and criteria as set out in the approved Erosion and Sediment Control Plan.

Final inspections of the project shall be made by the Plan Approving Authority. The release of bonds and sureties is contingent upon the findings of such inspections and the submission of construction record drawings. Release shall occur within 60 days after disturbed areas are deemed permanently stabilized by the inspector and approved construction record drawings are received. It is the responsibility of the applicant, to request in writing that a final inspection be performed for the purpose of releasing bonds or sureties.

The amount of such surety is hereby set at \$ \_\_\_\_\_.

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**CGP Registration Statement 2014**

**Registration Statement**  
**General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)**

(Please Type or Print All Information)

1. **Construction Activity Operator:** *(General permit coverage will be issued to this operator. The Certification in Item #12 must be signed by the appropriate person associated with this operator.)*

Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

Email address (if available): \_\_\_\_\_

Indicate if DEQ may transmit general permit correspondence electronically: Yes  No

2. **Existing General Permit Registration Number (for renewals only):** \_\_\_\_\_

3. **Name and Location of the Construction Activity:**

Name: \_\_\_\_\_

Address (if available): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

County (if not located within a City): \_\_\_\_\_

Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_

**Name and Location of all Off-site Support Activities to be covered under the general permit:**

Name: \_\_\_\_\_

Address (if available): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

County (if not located within a City): \_\_\_\_\_

Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_

4. **Status of the Construction Activity (check only one):** Federal  State  Public  Private

5. **Nature of the Construction Activity (e.g., commercial, industrial, residential, agricultural, oil and gas, etc.):**

\_\_\_\_\_

6. **Name of the Receiving Water(s) and Hydrologic Unit Code (HUC):**

Name: \_\_\_\_\_ Name: \_\_\_\_\_

HUC: \_\_\_\_\_ HUC: \_\_\_\_\_

7. **If the discharge is through a Municipal Separate Storm Sewer System (MS4), the name of the MS4 operator:**

\_\_\_\_\_

8. **Estimated Project Start and Completion Date:**

Start Date (mm/dd/yyyy): \_\_\_\_\_ Completion Date (mm/dd/yyyy): \_\_\_\_\_

9. **Total Land Area of Development (to the nearest one-hundredth acre):** \_\_\_\_\_

**Estimated Area to be Disturbed (to the nearest one-hundredth acre):** \_\_\_\_\_

10. **Is the area to be disturbed part of a larger common plan of development or sale?** Yes  No

11. **A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.**

12. **Certification:** "I certify under penalty of law that I have read and understand this Registration Statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**(Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)**

# Instructions for Completing the Registration Statement

## General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

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### GENERAL

#### A. Coverage under this General Permit.

Any operator applying for coverage under this general permit who is required to submit a Registration Statement (see Section B below) must submit a complete Registration Statement to the Department. The Registration Statement serves as a Notice of Intent for coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10).

#### B. Single-family Residences.

Operators with an existing stormwater discharge or proposing a new stormwater discharge associated with the construction of a single-family residence separately built, disturbing less than one acre and part of a larger common plan of development or sale is not required to submit a Registration Statement, provided that the stormwater management plan for the larger common plan of development provides permanent control measures (i.e., stormwater management facilities) encompassing the single family residence.

Operators of these types of discharges are authorized to discharge under this general permit immediately upon the general permit's effective date of July 1, 2014.

#### C. To Apply for Permit Coverage.

**1. New Construction Activities.** Any operator proposing a new stormwater discharge from construction activities shall submit a complete Registration Statement to the Department prior to the commencement of land disturbance, unless exempted by Section B above. Any operator proposing a new stormwater discharge from construction activities in response to a public emergency where the related work requires immediate authorization to avoid imminent endangerment to human health or the environment is immediately authorized to discharge under this general permit and must submit a complete Registration Statement to the Department no later than 30 days after commencing land disturbance; documentation to substantiate the occurrence of the public emergency must accompany the Registration Statement.

**2. Existing Construction Activities.** Any operator that was authorized to discharge under the general permit issued in 2009, and who intends to continue coverage under this general permit, shall submit a complete Registration Statement to the Department on or before June 1, 2014, unless exempted by Section B above.

#### D. Where to Submit Registration Statements.

All Registration Statements should be submitted to:

**Department of Public Works Engineering**  
**440 Market Street**  
**2<sup>nd</sup> Floor**  
**Suffolk, VA 23434**

### LINE-BY-LINE INSTRUCTIONS

#### Item 1: Construction Activity Operator Information.

"Operator" means the owner or operator of any facility or activity subject to the Stormwater Management Act and regulations. In the context of stormwater associated with a large or small construction activity, operator means any person associated with a construction project that meets either of the following two criteria: (i) the person has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications or (ii) the person has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other state permit or VSMP authority permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the

stormwater pollution prevention plan or comply with other permit conditions).

The entities that are considered operators will commonly consist of the owner or developer of a project (the party with control of project plans and specifications) or the general contractor (the party with day to day operational control of the activities at the project site which are necessary to ensure compliance with the general permit).

Provide the legal name (do not use a colloquial name), contact, mailing address, telephone number, and email address (if available) of the construction activity operator; general permit coverage will be issued to this operator. Indicate if the Department may transmit general permit correspondence electronically.

#### Item 2: Existing General Permit Registration Number.

For reapplications only, provide the existing general permit registration number for the construction activity. This item does not need to be completed for new construction activities applying for general permit coverage.

#### Item 3: Name and Location of the Construction Activity Information.

Provide the official name, street address (if available), city or county (if not located within a City) of the construction activity. Also, provide the latitude and longitude in decimal degrees of the approximate center of the construction activity (e.g., N 37.5000, W 77.5000).

#### Name and Location of Off-site Support Activity Information.

This general permit also authorizes stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that (i) the support activity is directly related to a construction activity that is required to have general permit coverage; (ii) the support activity is not a commercial operation, nor does it serve multiple unrelated construction activities by different operators; (iii) the support activity does not operate beyond the completion of the construction activity it supports; (iv) the support activity is identified in the registration statement at the time of general permit coverage; (v) appropriate control measures are identified in a SWPPP and implemented to address the discharges from the support activity areas; and (vi) all applicable state, federal, and local approvals are obtained for the support activity.

Provide the official name, street address (if available), City and County (if not located within a City) of all off-site support activities to be covered under this general permit. Also, provide the latitude and longitude in decimal degrees of the approximate center of the off-site support activities (e.g., N 37.5000, W 77.5000). Also, if an off-site support activity is going to be covered under this general permit the total land area of the off-site support activity and the estimated area to be disturbed by the off-site support activity need to be included in Item #9.

#### Item 4: Status of the Construction Activity.

Indicate the appropriate status (Federal, State, Public, or Private) of the construction activity.

#### Item 5: Nature of the Construction Activity.

Provide a brief description of the construction activity, such as commercial, residential, agricultural, oil and gas, etc. This list is not all inclusive.

#### Item 6: Receiving Waters(s) and HUC Information.

Provide the name of the receiving water(s) and corresponding HUC for all stormwater discharges including any stormwater discharges from off-site support activities to be covered under this general permit.

Hydrologic Unit Code or HUC is a watershed unit established in the most recent version of Virginia's 6<sup>th</sup> order national watershed boundary dataset.

**Item 7: MS4 Information.**

If stormwater is discharged through a municipal separate storm sewer system (MS4), provide the name of the MS4 operator. The name of the MS4 operator is generally the Town, City, County, Institute or Federal facility where the construction activity is located.

**Item 8: Construction Activity Start and Completion Date Information.**

Provide the estimated start date (month/day/year) of the construction activity. Provide the estimated completion date (month/day/year) of the construction activity.

**Item 9: Construction Activity Area Information.**

Provide the total area (to the nearest one-hundredth acre) of the development (i.e., the total acreage of the larger common plan of development or sale). Include the total acreage of any off-site support activity to be covered under this general permit.

Provide the estimated area (to the nearest one-hundredth acre) to be disturbed by the construction activity. Include the estimated area of land disturbance that will occur at any off-site support activity to be covered under this general permit.

**Item 10: Common Plan of Development or Sale Information.**

Indicate if the area to be disturbed by the construction activity is part of a larger common plan of development or sale. Larger common plan of development or sale is defined as a contiguous area where separate and distinct construction may be taking place at different times on different schedules. Plan is broadly defined as any announcement or documentation, including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, etc., or physical demarcation such as boundary signs, lot stakes, or surveyor markings indicating that construction activities may occur.

**Item 11: Stormwater Pollution Prevention Plan (SWPPP).**

A Stormwater Pollution Prevention Plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10) prior to submitting this Registration Statement. By signing this Registration Statement the operator is certifying that the SWPPP has been prepared.

**Item 12: Certification.**

A properly authorized individual associated with the operator identified in Item 1 of the Registration Statement is responsible for certifying and signing the Registration Statement. **Please sign the Registration Statement in INK.**

State statutes provide for severe penalties for submitting false information on the Registration Statement. State regulations require that the Registration Statement be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means:

(i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or

(ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to

gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes:

(i) The chief executive officer of the agency, or

(ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Responsible Land Disturber Designation**

## RESPONSIBLE LAND DISTURBER DESIGNATION

THE PERSON IDENTIFIED BELOW IS DESIGNATED AS THE RESPONSIBLE LAND DISTURBER WHO WILL BE IN CHARGE OF AND RESPONSIBLE FOR CARRYING OUT THE LAND-DISTURBING ACTIVITY ASSOCIATED WITH THIS PROJECT. THIS PERSON MEETS THE APPLICABLE REQUIREMENTS OF SECTION 62.1-44.15:52 AND 62.1-44.15:55 OF THE CODE OF VIRGINIA BY VIRTUE OF THE FOLLOWING:

- RESPONSIBLE LAND DISTURBER CERTIFICATE
- DCR/DEQ CERTIFICATION FOR COMBINED ADMINISTRATOR, PROGRAM ADMINISTRATOR, PLAN REVIEWER, OR INSPECTOR
- VIRGINIA PROFESSIONAL ENGINEER, LAND SURVEYOR, LANDSCAPE ARCHITECT, OR ARCHITECT

RESPONSIBLE LAND DISTURBER CONTACT INFORMATION:

NAME (SIGNATURE) \_\_\_\_\_ DATE: \_\_\_\_\_

NAME (PRINT) \_\_\_\_\_

CERTIFICATION / REGISTRATION NUMBER \_\_\_\_\_

COMPANY \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

\_\_\_\_\_

TELEPHONE \_\_\_\_\_ FAX \_\_\_\_\_

E-MAIL \_\_\_\_\_

**THIS DESIGNATION MAY ONLY BE CHANGED BY PROVIDING A LETTER WITH DOCUMENTATION IDENTIFYING THE NEW RLD TO THE DEPARTMENT OF PUBLIC WORKS - ENGINEERING FOR VERIFICATION AND APPROVAL.**

**THE DEPARTMENT OF PUBLIC WORKS - ENGINEERING MUST BE CONTACTED AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY LAND-DISTURBING ACTIVITY IN ORDER TO SCHEDULE A PRE-CONSTRUCTION MEETING. PLEASE CALL THE CONSTRUCTION MANAGER AT (757) 514-7704.**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Right-of-Way Permit Applications**



The Permittee, its agents, employees, officers and assigns assume all responsibility and liability for any injury to persons or damage to public or private property, caused directly or indirectly, by the performance of permitted work under this permit. Furthermore, the Permittee, its agents, employees, officers or assigns agree to save and hold harmless the City of Suffolk, its agents, employees, and officers from any and all claims, demands, actions, judgments, executions, damages or proceedings for any and all personal injury and injuries to property, real or personal, public or private caused by or arising out of, directly or indirectly, from the performance of permitted work.

*I certify that the above information is accurate, that proper permission from the property owner has been obtained to perform the work, and that all work will be done in accordance with the City of Suffolk Right of Way Excavation and Restoration Manual, as amended.*

PRINT NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
(Permit Applicant or Authorized Agent)

The applicant hereby agrees that:

- A fee of \$100.00 will be charged for each permit issued.
- Application must be submitted seven (7) business days in advance of work site date.
- All work will be performed in accordance with the Laws, Zoning Ordinances, City Code of the City of Suffolk, Virginia, the attached detailed plan, and as directed by the City Manager or designated representative.
- The work shall be carried out in accordance with Chapter 74 of the Suffolk City Code, entitled "Streets and Sidewalks." Failure to have in possession a copy of this document does not relieve the permittee from the responsibility of having knowledge of and adhering to the requirements described therein.
- Applicants to whom permits are issued at all times indemnify and save harmless the City of Suffolk from responsibility and damage to, or liability arising from, the exercise of privileges granted in such permit either during construction or at any time in the future.
- Permits are issued for street openings at specified locations. If additional openings are necessary to complete the work at this site, the permittee must notify the City Manager or designated representative immediately.
- Limitations of working hours may be stipulated when necessary.
- Traffic is not to be rerouted without special permission of the City Manager or designated representative.
- Traffic is to be protected by adequate lights, barricades, and constructions signs at all times in accordance with MUTCD standards.
- All backfilling of trenches is to be made in layers not to exceed six (6) inches loose depth and compacted to a density rate of 95%.
- Compaction by water will not be permitted.
- Where entrances are disturbed, they must be restored to their original condition or to a condition satisfactory to the City Manager or designated representative.
- The absence of an inspector does not in any way relieve the permittee of his responsibility to perform the work in accordance with the provisions of this permit.
- The permittee is responsible for ensuring that all utility markings are removed within 20 days after the completion of work. If the utility marks are not removed by the time specified herein, the City will consider the marks as graffiti. The City, in accordance with existing City ordinances, may remove graffiti, and the costs associated with such removal will be the responsibility of the contractor or permittee. The City shall have the right to suspend further permits to contractor or permittee until the utility marks are removed.
- The permittee, its agents, employees, officers, and assignees assume all responsibility and liability for any injury to persons to damage to public or private property caused directly or indirectly by the performance of work performed under this permit.
- This permit shall expire six (6) months from the date of approval.
- The City of Suffolk reserves full municipal control over the subject of this permit.
- Permittee agrees to notify the Department of Public Works when the work herein referred to is completed.
- A copy of this permit must be maintained on the site at all times.

In an effort to coordinate work & ensure safe travel, all work zones within the City Of Suffolk shall be reported to *Public Works Dispatch*, each day by 8:00AM. E-mail notices shall be sent to: [workzonenotifications@suffolkva.us](mailto:workzonenotifications@suffolkva.us). Additional option shall be called in at 757-514-7600. If there is not answer, please leave information regarding company name, location of work zone, duration of work, extent of work, a contact name & call-back phone number.

**You are required to call the Construction Manager at 757-514-7725 to arrange an inspection 48 hours prior to the start of any work in the Right of Way, including utility cuts.**

**A minimum 15-inch diameter RCP (reinforced concrete pipe) is required for driveway culverts.**

**RETURN COMPLETED APPLICATION TO:  
PUBLIC WORKS, 440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VA 23434  
PHONE: (757) 514-7725 FAX: (757) 514-7620 EMAIL: [rowpermits@suffolkva.us](mailto:rowpermits@suffolkva.us)**



**CITY OF SUFFOLK**  
**Department of Public Works**  
**Engineering Division**

<b>FOR CITY USE ONLY</b>		
Approved <input type="checkbox"/>	Denied <input type="checkbox"/>	Date _____
Permit # _____		
Bond # _____	Amount \$ _____	
By _____		

**RIGHT OF WAY PERMIT APPLICATION FOR UTILITY WORK**

(Type or Print Clearly)

**Applicant Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Applicant Address:** \_\_\_\_\_ **Phone:** \_\_\_\_\_  
 (Street, City, State, Zip)

**Person, firm or corporation other than applicant performing the work:**

\_\_\_\_\_  
 Company Name Phone Number

**Construction Contact Person/Title:** \_\_\_\_\_  
 Fax #: \_\_\_\_\_ Phone #: \_\_\_\_\_ Email: \_\_\_\_\_

**Worksite Address:** \_\_\_\_\_

**Install:** Gas line  Electric line  Sewer line  Waterline  Storm drain  Communication line  Test holes   
 Other  (explain) \_\_\_\_\_

**Description of Work for Gas, Sewer, Water or Storm Drain:** Install new  Renew  Repair  Retire  Relocate   
 Main  \_\_\_\_\_ (ft.) Service lateral  \_\_\_\_\_ (ft.) Valve  Cathodic protection   
 Other  (explain) \_\_\_\_\_

**Description of Work for Electric or Communication Facilities:** (list quantity & size)  
 Conduit \_\_\_\_\_ (ft.) Conduit size \_\_\_\_\_ (in.) # of Conduits \_\_\_\_\_ Coaxial cable \_\_\_\_\_ (ft.)  
 Fiber optic cable \_\_\_\_\_ (ft.) Electric cable/conductor \_\_\_\_\_ (ft.) Communications cable \_\_\_\_\_ (ft.)  
 Depth of cover \_\_\_\_\_ (in. - 24" min.) Other (explain) \_\_\_\_\_

**Install Pole, Guy, Aerial Cable/Conductor:**  
 # of poles: New \_\_\_\_\_ Renewed \_\_\_\_\_ Removed \_\_\_\_\_  
 # of guywires/anchors: New \_\_\_\_\_ Renewed \_\_\_\_\_ Removed \_\_\_\_\_  
 Aerial cable/conductor (ft.): New \_\_\_\_\_ Renewed \_\_\_\_\_ Removed \_\_\_\_\_

**Install Cabinets, Vaults, Manholes, Junction Boxes, Pedestals, Transformers, Switches, Meters, etc.:**  
 # of cabinets \_\_\_\_\_ # of junction boxes \_\_\_\_\_ # of pedestals \_\_\_\_\_ Meters \_\_\_\_\_  
 # of transformers \_\_\_\_\_ # of switches \_\_\_\_\_ # of witness markers \_\_\_\_\_  
 # of vaults \_\_\_\_\_ # of manholes \_\_\_\_\_ # of standby power supplies \_\_\_\_\_

Does installation comply with the City's landscaping and site location policy? Yes  No  N/A

**Dirt Utility Cut(s) (list cut size, length X width):**

**NOTE:** If any cuts are in asphalt, concrete or brick, please use Street and Major Utility Construction Permit Application in addition to this application.

Quantity \_\_\_\_\_ Cut \_\_\_\_\_ X \_\_\_\_\_ Quantity \_\_\_\_\_ Cut \_\_\_\_\_ X \_\_\_\_\_ Quantity \_\_\_\_\_ Cut \_\_\_\_\_ X \_\_\_\_\_

**Method of Construction:**

Open pavement cut  Direct buried  Jack & bore  Horizontal directional drilling (HDD)  Aerial

A permit will NOT be issued unless accompanied by a proper site plan of proposed work. Site plan shall show all requested work on the application, including property lines, or city right of way, edge of pavement, curb & gutter, sidewalk, driveways, closest cross street, city trees and north arrow, existing sewer and water lines, referencing them to the edge of pavement. All work shall be done in accordance with this application or as amended and approved by this office. Please submit application and site plan in duplicate (2 copies).

A bond as required by the City Code:  is attached hereto **AND**  is on file with the City in the \_\_\_\_\_ Department. Work for this permit will commence on \_\_\_\_\_ and will be completed on \_\_\_\_\_.



**CITY OF SUFFOLK**  
**Department of Public Works**  
**Engineering Division**

**STREET AND MAJOR UTILITY CONSTRUCTION PERMIT APPLICATION**

(Type or Print Clearly)

<b>Construction Date(s):</b>	<b>From:</b>	<b>To:</b>
<b>General Contractor/Utility:</b>		
<b>Address:</b>		
<b>Phone:</b>		
<b>Fax:</b>		
<b>E-mail:</b>		
<b>Sub-Contractor:</b>		
<b>Worksite Address:</b>		
<b>Project/Work ID#:</b>		
<b>Excavation/Utility Cut Description(s):</b> (list cut size, length x width for each pavement type)  <b>NOTE:</b> If all cuts are in dirt, please use ROW Permit form instead on Page 1.	Quantity: ___ Asphalt: ___ x ___ Concrete: ___ x ___ Brick: ___ x ___	
	Quantity: ___ Asphalt: ___ x ___ Concrete: ___ x ___ Brick: ___ x ___	
	Quantity: ___ Asphalt: ___ x ___ Concrete: ___ x ___ Brick: ___ x ___	
	Quantity: ___ Asphalt: ___ x ___ Concrete: ___ x ___ Brick: ___ x ___	
<b>Method:</b> (select all that apply)	Open Cut	HDD                      Bore                      Other _____
<b>Restoration Type:</b> (select all that apply)	Single Cut	Multiple Cuts                      Full Street Repave
<b>Reason for work:</b>		
<b>Is the work being performed for the City of Suffolk?</b>	No                      Yes, for _____	
<b>Primary &amp; Secondary Contact:</b> (contractor performing the work)	Name: Work Phone: Cell Phone: After Hours: E-mail:	Name: Work Phone: Cell Phone: After Hours: E-mail:

The Permittee, its agents, employees, officers and assigns assume all responsibility and liability for any injury to persons or damage to public or private property, caused directly or indirectly, by the performance of permitted work under this permit. Furthermore, the Permittee, its agents, employees, officers or assigns agree to save and hold harmless the City of Suffolk, its agents, employees, and officers from any and all claims, demands, actions, judgments, executions, damages or proceedings for any and all personal injury and injuries to property, real or personal, public or private caused by or arising out of, directly or indirectly, from the performance of permitted work.

***I certify that the above information is accurate, that proper permission from the property owner has been obtained to perform the work, and that all work will be done in accordance with the City of Suffolk Right of Way Excavation and Restoration Manual, as amended.***

PRINT NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
(Permit Applicant or Authorized Agent)

The applicant hereby agrees that:

- A fee of \$100.00 will be charged for each permit issued.
- Application must be submitted seven (7) business days in advance of work site date.
- All work will be performed in accordance with the Laws, Zoning Ordinances, City Code of the City of Suffolk, Virginia, the attached detailed plan, and as directed by the City Manager or designated representative.
- The work shall be carried out in accordance with Chapter 74 of the Suffolk City Code, entitled "Streets and Sidewalks." Failure to have in possession a copy of this document does not relieve the permittee from the responsibility of having knowledge of and adhering to the requirements described therein.
- Applicants to whom permits are issued at all times indemnify and save harmless the City of Suffolk from responsibility and damage to, or liability arising from, the exercise of privileges granted in such permit either during construction or at any time in the future.
- Permits are issued for street openings at specified locations. If additional openings are necessary to complete the work at this site, the permittee must notify the City Manager or designated representative immediately.
- Limitations of working hours may be stipulated when necessary.
- Traffic is not to be rerouted without special permission of the City Manager or designated representative.
- Traffic is to be protected by adequate lights, barricades, and construction signs at all times in accordance with MUTCD standards.
- All backfilling of trenches is to be made in layers not to exceed six (6) inches loose depth and compacted to a density rate of 95%.
- Compaction by water will not be permitted.
- Where entrances are disturbed, they must be restored to their original condition or to a condition satisfactory to the City Manager or designated representative.
- The absence of an inspector does not in any way relieve the permittee of his responsibility to perform the work in accordance with the provisions of this permit.
- The permittee is responsible for ensuring that all utility markings are removed within 20 days after the completion of work. If the utility marks are not removed by the time specified herein, the City will consider the marks as graffiti. The City, in accordance with existing City ordinances, may remove graffiti, and the costs associated with such removal will be the responsibility of the contractor or permittee. The City shall have the right to suspend further permits to contractor or permittee until the utility marks are removed.
- The permittee, its agents, employees, officers, and assignees assume all responsibility and liability for any injury to persons to damage to public or private property caused directly or indirectly by the performance of work performed under this permit.
- This permit shall expire six (6) months from the date of approval.
- The City of Suffolk reserves full municipal control over the subject of this permit.
- Permittee agrees to notify the Department of Public Works when the work herein referred to is completed.
- A copy of this permit must be maintained on the site at all times.

In an effort to coordinate work & ensure safe travel, all work zones within the City Of Suffolk shall be reported to *Public Works Dispatch*, each day by 8:00AM. E-mail notices shall be sent to: [workzonenotifications@suffolkva.us](mailto:workzonenotifications@suffolkva.us). Additional option shall be called in at 757-514-7600. If there is not answer, please leave information regarding company name, location of work zone, duration of work, extent of work, a contact name & call-back phone number.

**You are required to call the Construction Manager at 757-514-7725 to arrange an inspection 48 hours prior to the start of any work in the Right of Way, including utility cuts.**

**RETURN COMPLETED APPLICATION TO:  
PUBLIC WORKS, 440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VA 23434  
PHONE: (757) 514-7725 FAX: (757) 514-7620 EMAIL: [rowpermits@suffolkva.us](mailto:rowpermits@suffolkva.us)**



**CITY OF SUFFOLK**  
**Department of Public Works**  
**Engineering Division**

**STREET, LANE, SIDEWALK CLOSURE PERMIT APPLICATION**

(Type or Print Clearly)

<b>Closure Date(s):</b>	From:	To:
<b>Closure Time(s):</b>	From:	To:
<b>General Contractor/Utility:</b>		
<b>Address:</b>		
<b>Phone:</b>		
<b>Fax:</b>		
<b>E-mail:</b>		
<b>Sub-Contractor:</b>		
<b>Worksite Address:</b>		
<b>Closest Street(s):</b>		
<b>Lane Description:</b> (select all that apply)	<input type="checkbox"/> Left <input type="checkbox"/> Right <input type="checkbox"/> Shoulder <input type="checkbox"/> Center <input type="checkbox"/> Sidewalk <input type="checkbox"/> Center Left <input type="checkbox"/> Center Right <input type="checkbox"/> Parking Lane	
<b>Direction:</b> (select all that apply)	<input type="checkbox"/> North <input type="checkbox"/> South <input type="checkbox"/> East <input type="checkbox"/> West	
<b>Type:</b> (select all that apply)	<input type="checkbox"/> Single <input type="checkbox"/> Multiple <input type="checkbox"/> Mobile <input type="checkbox"/> Alternating <input type="checkbox"/> Flagger <input type="checkbox"/> Off-duty Police Officer	
<b>Reason for closure:</b>		
<b>Primary &amp; Secondary Contacts</b> (contractor performing the work):	Name: Work Phone: Cell Phone: After Hours: E-mail:	Name: Work Phone: Cell Phone: After Hours: E-mail:

Application must be submitted **seven (7)** business days in advance of the requested closure.

- 1.) A permit will not be issued unless this application is accompanied by a traffic control plan for the requested closure.
- 2.) The traffic control plan must show work zone, all traffic control devices, street, lane or sidewalk to be closed, closest street, and north arrow. All plans must comply with the latest version of the Virginia Work Area Protection Manual and the Manual for Uniform Traffic Control Devices.

The Permittee, its agents, employees, officers and assigns assume all responsibility and liability for any injury to persons or damage to public or private property, caused directly or indirectly, by the performance of permitted work under this permit. Furthermore, the Permittee, its agents, employees, officers or assigns agree to save and hold harmless the City of Suffolk, its agents, employees, and officers from any and all claims, demands, actions, judgments, executions, damages or proceedings for any and all personal injury and injuries to property, real or personal, public or private caused by or arising out of, directly or indirectly, from the performance of permitted work.

***I certify that the above information is accurate, that proper permission from the property owner has been obtained to perform the work, and that all work will be done in accordance with the City of Suffolk Right of Way Excavation and Restoration Manual, as amended.***

PRINT NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
(Permit Applicant or Authorized Agent)

The applicant hereby agrees that:

- A fee will be charged for each permit issued.
- Application must be submitted seven (7) business days in advance of work site date.
- All work will be performed in accordance with the Laws, Zoning Ordinances, City Code of the City of Suffolk, Virginia, the attached detailed plan, and as directed by the City Manager or designated representative.
- The work shall be carried out in accordance with Chapter 74 of the Suffolk City Code, entitled "Streets and Sidewalks." Failure to have in possession a copy of this document does not relieve the permittee from the responsibility of having knowledge of and adhering to the requirements described therein.
- Applicants to whom permits are issued at all times indemnify and save harmless the City of Suffolk from responsibility and damage to, or liability arising from, the exercise of privileges granted in such permit either during construction or at any time in the future.
- Permits are issued for street openings at specified locations. If additional openings are necessary to complete the work at this site, the permittee must notify the City Manager or designated representative immediately.
- Limitations of working hours may be stipulated when necessary.
- Traffic is not to be rerouted without special permission of the City Manager or designated representative.
- Traffic is to be protected by adequate lights, barricades, and construction signs at all times in accordance with MUTCD standards.
- All backfilling of trenches is to be made in layers not to exceed six (6) inches loose depth and compacted to a density rate of 95%.
- Compaction by water will not be permitted.
- Where entrances are disturbed, they must be restored to their original condition or to a condition satisfactory to the City Manager or designated representative.
- The absence of an inspector does not in any way relieve the permittee of his responsibility to perform the work in accordance with the provisions of this permit.
- The permittee is responsible for ensuring that all utility markings are removed within 20 days after the completion of work. If the utility marks are not removed by the time specified herein, the City will consider the marks as graffiti. The City, in accordance with existing City ordinances, may remove graffiti, and the costs associated with such removal will be the responsibility of the contractor or permittee. The City shall have the right to suspend further permits to contractor or permittee until the utility marks are removed.
- The permittee, its agents, employees, officers, and assignees assume all responsibility and liability for any injury to persons to damage to public or private property caused directly or indirectly by the performance of work performed under this permit.
- This permit shall expire six (6) months from the date of approval.
- The City of Suffolk reserves full municipal control over the subject of this permit.
- Permittee agrees to notify the Department of Public Works when the work herein referred to is completed.
- A copy of this permit must be maintained on the site at all times.

In an effort to coordinate work & ensure safe travel, all work zones within the City Of Suffolk shall be reported to *Public Works Dispatch*, each day by 8:00AM. E-mail notices shall be sent to: [workzonenotifications@suffolkva.us](mailto:workzonenotifications@suffolkva.us). Additional option shall be called in at 757-514-7600. If there is not answer, please leave information regarding company name, location of work zone, duration of work, extent of work, a contact name & call-back phone number.

**You are required to call the Construction Manager at 757-514-7725 to arrange an inspection 48 hours prior to the start of any work in the Right of Way, including utility cuts.**

**RETURN COMPLETED APPLICATION TO:  
PUBLIC WORKS, 440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VA 23434  
PHONE: (757) 514-7725 FAX: (757) 514-7620 EMAIL: [rowpermits@suffolkva.us](mailto:rowpermits@suffolkva.us)**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Right-of-Way Surety**



# CITY OF SUFFOLK

440 Market Street, Suffolk, VA 23434

Phone: (757) 514-7725 Fax (757) 514-7620

## WORK WITHIN THE RIGHT OF WAY SURETY

BE KNOWN THAT WE \_\_\_\_\_ as Principal,  
and \_\_\_\_\_ a

corporation duly incorporated under the Laws of the State of \_\_\_\_\_, as Surety, are held and firmly bound unto the City of Suffolk in the full and just sum of \_\_\_\_\_ U. S. Dollars (\$ \_\_\_\_\_), to be paid to the said City of Suffolk to the payment whereof we hereby bind ourselves and our heirs, executors, administrators, successors and assignees, jointly and severally, firmly by these presents, sealed and dated this \_\_\_\_\_ day of \_\_\_\_\_.

**WHEREAS**, The said Principal hereunder has been or will be granted permit(s) authorizing one or more of the following activities; (A) to cut surface of the roadways of the City of Suffolk, or to tunnel under such roadways; (B) to install and/or erect and maintain telephone, electric power lines, water, sewer, gas or other utilities on, under or over such roadways, bridges or tunnels;(C) to install an entrance or tie-in into a public roadway and/or grading upon the Right -of- way; or (D) for the following purposes: Explain below exact purpose(s) for which surety coverage is being obtained.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**THEREFORE**, The conditions of this obligation are such that if the said Principal shall in all respects comply with the terms and conditions of said permit(s), and fully meet and perform obligations thereunder in accordance with requirements for permits as set forth in the Code of the City of Suffolk in effect at time of permit issuance, and shall satisfactorily complete the work permitted, and shall indemnify and save harmless the City of Suffolk against and from all loss, cost, expense damage or injury to roadways and bridges and to persons and property lawfully on such roadways, growing out of the granting of such permit(s) to said Principal, then this obligation shall be void, otherwise to be and remain in full force and effect.

NOW THEREFORE, it is expressly understood that this Bond may be cancelled by the Surety at the expiration of sixty (60) days from the date which the Surety shall have lodged with the City manager or his designees written notice to so cancel. This provision, however, shall not operate to relieve, release, or discharge the Surety from any liability already accrued, or which shall accrue, based upon permits issued before the expiration of the sixty (60) day period. **Bonds securing performance on specified active permit(s) may be cancelled only upon satisfactory completion of the work permitted, as determined by the Public Works Department.** NOTE: Continuous Bonds cannot be cancelled unless facilities insured by the bond have been removed from the Right-of-Way, or the Principal has arranged for replacement surety protection. **ALL permit work covered under section (B) above shall be covered by a bond at all times.**

Said principal and surety, being properly authorized, have caused these presents to be executed and their seals affixed the day and year first above written.

**\* POWER OF ATTORNEY AUTHORIZATION TO BE ATTACHED**

## Affidavit and Acknowledgement of Surety

Surety Name: \_\_\_\_\_  
\_\_\_\_\_  
Bond Number: \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Contact Person \_\_\_\_\_  
Phone Number \_\_\_\_\_  
Signature \_\_\_\_\_  
Attorney-in-Fact Name \_\_\_\_\_

### Attorney-in-Fact (Seal)

STATE OF \_\_\_\_\_ COUNTY/TOWN/CITY OF \_\_\_\_\_

I, the undersigned, a Notary Public in and for the County/Town/City aforesaid, in the State aforesaid do certify that \_\_\_\_\_ (Attorney in fact name) personally appeared before me and made oath that he is \_\_\_\_\_ (Title) of the \_\_\_\_\_ (Name of Surety), that he is duly authorized to execute the foregoing bond by virtue of a certain power of attorney of said company; that said power of attorney has not been revoked; that the company has complied with all the requirements of law regulating the admission of such companies to transact business in the State of Virginia; that the company holds the certificate of the Commissioner of Insurance authorizing it to do business in the State of Virginia; that it has a paid-up cash capital of not less than \$250,000; that the paid-up capital plus the surplus and undivided profits of the company is \$ \_\_\_\_\_; that the penalty of the foregoing bond is not in excess of ten percentum of said sum; that the company is not by said bond incurring in the aggregate, on behalf or on account of the principal names in said bond, a liability for an amount larger than one-tenth of its paid-up capital, plus its surplus and undivided profits; that the company is solvent and fully able to meet promptly all its obligations, and the said \_\_\_\_\_ (Attorney in fact name) thereupon, in the name and on behalf of the company, acknowledged the foregoing writing as its act and deed.

Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, year \_\_\_\_\_.

My Commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public

**Acknowledgement of Principal**

Principle Name: \_\_\_\_\_  
\_\_\_\_\_
Tax ID # or DMV ID # \_\_\_\_\_
Address \_\_\_\_\_
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_
Contact Person \_\_\_\_\_
Phone Number \_\_\_\_\_
Signature \_\_\_\_\_
Printed name \_\_\_\_\_

STATE OF \_\_\_\_\_ COUNTY /TOWN/CITY OF \_\_\_\_\_

I, the undersigned, a Notary Public in and for the County /Town /City aforesaid, in the State aforesaid, do certify that, \_\_\_\_\_ whose name as Principal is signed to the foregoing writing bearing date on the \_\_\_\_\_ day of \_\_\_\_\_, year \_\_\_\_\_, personally appeared before me and acknowledged the same.

Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, year \_\_\_\_\_.

My Commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public

Original to be filed with the Public Works Department Engineering Division, City of Suffolk  
Request for Surety Bond Cancellation may be addressed to:

City of Suffolk  
Public Works Department  
Engineering Division  
440 Market Street  
Suffolk, VA 23434



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Lane Closure Procedures for Contractors**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**City of Suffolk Lane Closure Procedures for Contractors**

There are several items that the City of Suffolk requires prior to work within the right-of-way when a lane closure is needed. This is a general list of the most important or time sensitive items, the remaining issues can be worked out between the City and contractor after we have the following information. The list should be done in the following order:

1. - Deliver to Public Works Traffic Engineering and the Public Works Construction Manager at the addresses below a **detailed** description of what type of work will be performed and when the work will commence and end (dates and times - 9:00 to 4:00 is typical work day and any variance in this schedule will need to be requested and approved). Also submit a sketch including dimensions from any intersections or existing building/structure numbers, etc., so that the work area is accurately defined. The **description** and **sketch** must be received a minimum of 72 hours prior to work beginning. Do not send a request on Friday and expect to work on Monday. Do not send partial information as this will only cause delays.
2. - Send (or hand deliver) a detailed Traffic Control Plan with dimensions for the project site. Include all information with respect to sign type and flagger locations for each lane. The traffic control must follow guidelines depicted in the 2011 Virginia Work Area Protection Manual, which can be found online. Flagmen, if needed, must be certified!

After all information has been received, you will be contacted by the Construction Manager with any adjustments that will need to be made to the proposed work zone (or if a meeting will be required for additional information), and if the time requested for the work will be approved. For longer duration lane closures, it would benefit contractors to make their request a week in advance rather than 72 hours.

**\*FYI – Although certified, the City does not generate a traffic control plan for anyone. We can only comment on or reject the one submitted. It is the contractor’s ultimate responsibility for a safe work zone.**

**Please refer to the attached VDOT Work Zone Safety Checklist and Limitations of Operations for additional information on work zone safety and State/City work zone policies.**

**Construction Manager, Public Works – (757) 514-7725**

**Public Works Department - Engineering Division  
440 Market Street, Second Floor  
Suffolk, Virginia 23434**

**City Traffic Engineer – (757) 514-7603  
Assistant City Traffic Engineer – (757) 514-7603  
Sign and Paint Manager – (757) 514-7603**

**Public Works Traffic Engineering  
866 Carolina Road, Bldg. C  
Suffolk, Va. 23434**



## City of Suffolk, Department of Public Works Public Facilities Manual

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### Limitations of Operation and Maintenance of Traffic

All work areas and lane closures shall be in accordance with the *Virginia Work Area Protection Manual* dated August 2011 and shall be directed or approved by Public Works Engineering. With any roadway construction that may affect traffic lane usage, Contractors/Developers are required to submit a Traffic Control Plan for approval by Public Works Traffic Engineering. Traffic Control Plans must include the following: signage, pavement-marking changes with methodology for removal and replacement, pavement widening, and other items that will impact traffic patterns. The Department reserves the right to change any or all of the working hours when such changes are in the best interest of the traveling public.

The Contractor shall not conduct operations when the weather causes unsafe conditions for the traveling public as determined by the Department.

It shall be the Contractor's responsibility to abide by the *Traffic Control Work Plan* approved with the project's Land Disturbance Permit or as modified by Public Works Engineering. Additional responsibilities will include inspections along with maintenance of all traffic control devices, signs, barricades, channelizing devices, and lighting during the time traffic is restricted due to the operation.

All signs, equipment, and material will be moved from the City of Suffolk's right-of-way prior to the end of the lane closure time indicated. No lane closure signing to include other traffic disruptive work is to be initiated prior to the specified times. Lane closures will not be permitted on Saturdays, Sundays, state recognized holidays or other days deemed by Public Works to be the same as holidays (i.e. Easter). Lane closures will be prohibited from noon (Friday as the case may be) until noon the following day (Tuesday as the case may be) in accordance with VDOT requirements for work zones. **No lane closure operation shall be conducted without a received written request, 72 hours prior to the operation. Once the request has been approved, work may commence.**

There shall be one lane open at all times on RTE 10/32, 13, 17, 58, 337, and 460. The hours of the closure shall be conducted between 9:00 a.m. and 4:00 p.m. Monday through Friday. The Contractor may request a change in the hours of operation if the requested time will be safe for the traveling public. This request must be approved by the Department prior to conducting such operation.



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**VDOT Work Zone Safety Checklists**

Form #TE-97001  
TRAFFIC ENGINEERING  
CONSTRUCTION / MAINTENANCE / UTILITY / PERMIT

**WORK ZONE SAFETY CHECKLIST**

URGENT CORRECT IMMEDIATELY []  
5 - WORKING DAYS TO CORRECT []

WHEN URGENT IS MARKED  
DENOTE ITEM

RESIDENCY: \_\_\_\_\_ CONTRACTOR / AREA HEADQUARTERS: \_\_\_\_\_  
CITY / COUNTY: \_\_\_\_\_ PROJ. NO. / PERMIT NO. / LOCATION: \_\_\_\_\_  
TYPE OF OPERATION: \_\_\_\_\_ DAY / DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
PERSON IN CHARGE: \_\_\_\_\_ POSTED SPEED: \_\_\_\_\_ MPH  
WEATHER CONDITION: \_\_\_\_\_ DAY OR NIGHT WORK  IN  NOT IN PROGRESS

**A. DRIVE THRU:**

- ARE MANEUVERS DIFFICULT OR UNEXPECTED?  YES  NO
- ADEQUATE WARNING OF HAZARDS?  YES  NO
- IS SIGNING CLEAR / UNCLUTTERED AND PROPERLY SPACED?  YES  NO
- ARE TRAFFIC CONTROL DEVICES SUFFICIENTLY VISIBLE?  YES  NO

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

**B. SIGNS:**

- ADEQUATE  INADEQUATE
- NEED TO BE (REMOVED / REPOSITIONED / COVERED)
- NEED (CLEANING / REPLACEMENT)
- CONFLICTING (PERMANENT / TEMPORARY SIGNING)
- NON-APPROVED SIGN SUPPORT
- BLOCKED BY VEGETATION

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

**C. PORTABLE CHANGEABLE MESSAGE SIGN:**

- ADEQUATE  INADEQUATE
- APPLICATION DOES NOT MEET GUIDELINES
- INAPPROPRIATE (MESSAGE)
- TO MUCH INFORMATION ON P.C.M.S.
- NOT DELINEATED, NO CONES / BARRELS

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

**D. ARROW BOARD:**

- ADEQUATE  INADEQUATE
- MALFUNCTION (BULB OUT, ETC.)
- INCORRECT PLACEMENT
- MISALIGNED BULBS
- NOT DIMMED AT NIGHT

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

**E. DRUMS = D / OTHER = O:**

- ADEQUATE  INADEQUATE
- INAPPROPRIATE TAPER LENGTH
- SPACING INADEQUATE (TO LONG / TOO SHORT
- (REPAIR / CLEAN / REPLACEMENT)
- REFLECTIVE BANDS (DAMAGED/ MISSING)
- ON DRUMS / OTHER DEVICES)
- ADDITIONAL DEVICES NEEDED
- MISALIGNED

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

**F. TRAFFIC BARRIER:**

- ADEQUATE  INADEQUATE
- IMPROPER BARRIER WALL FLARE
- IMPROPER TERMINAL TREATMENT
- BARRIER NEEDS TO BE (REALIGNED / REMOVED)
- WARNING LIGHT (SERVICE / CLEAN)
- DELINEATORS (CLEAN / ADDITIONAL)
- 8' X 12" VERTICAL BARRIER PANELS (CLEAN ADDITIONAL)
- ATTENUATOR (REPAIR / REPLACE)

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

FORM #TE - 97002

**G. FLAGGING OPERATION:**

ADEQUATE       INADEQUATE

NEED ADDITIONAL ADVANCE SIGNING

**ARE FLAGPERSONS**

CERTIFIED?                       YES       NO

POSITIONED CORRECTLY?       YES       NO

HIGHLY VISIBLE?                 YES       NO

PROPERLY CLOTHED?             YES       NO

FLAGGING CORRECTLY?          YES       NO

**COMMENTS:**

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**H. PAVEMENT MARKING:**

PERMANENT     CONSTRUCTION

ADEQUATE       INADEQUATE

REMOVE

REPAIR

NEED ADDITIONAL

UNNECESSARY (MARKINGS /

NOT ERADICATED COMPLETED)

**COMMENTS:**

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**I. PAVEMENT MARKERS:**

PERMANENT       CONSTRUCTION

ADEQUATE       INADEQUATE

REPLACE MISSING                     

REMOVE                                     

NEED ADDITIONAL                     

**COMMENTS:**

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**J. TRUCK-MOUNTED ATTENUATOR:**

PROPERLY POSITIONED?                       YES     NO

PROPERLY MAINTAINED /

DELINEATED?                                 YES     NO

**COMMENTS:**

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**K. MISCELLANEOUS:**

YES     NO

ADEQUATE BUFFER SPACE?                       YES     NO

IS THE WORK AREA PROTECTED?                 YES     NO

MATERIALS PROPERLY STORED?                 YES     NO

ARE LANE CLOSURES IN ACCORD WITH ALLOWED HOURS"                       YES     NO

**ACCIDENTS:**

EVIDENCE OF AN ACCIDENT    |     YES     NO

DAMAGED TRAFFIC CONTROL DEVICES                     

SKID MARKS                                          DEBRIS   

**COMMENTS / RECOMMENDATION:**

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REVIEWED BY: \_\_\_\_\_  
(SIGN & DATE)

REVIEWED WITH: \_\_\_\_\_  
(SIGN & DATE)

COPY: CONTRACTOR, INSPECTOR, RESIDENT ENGINEER, OR OTHER \_\_\_\_\_



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Erosion and Sediment Control Plan Application**



**City of Suffolk, Virginia**  
**Department of Public Works**  
Division of Engineering/Stormwater

**Erosion and Sediment Control Plan Application**

This application should be used when submitting a standalone erosion and sediment control plan. ESC plan review is necessary to reduce the impacts of existing and future development on the City's numerous natural streams and watercourses. All land-disturbing activities in excess of 2,500 sqft within the Chesapeake Bay Preservation Area (CBPA) or 10,000 sqft outside of the CBPA must be provided with adequate measures in accordance with the City Erosion and Sedimentation Control Ordinance and the Virginia Erosion and Sediment Control Regulations.

Fee Calculations: If a VSMP Permit is required additional fees will be required.

- \_\_\_\_\_ \$460 (0-10,000 sf of disturbance)
- \_\_\_\_\_ \$835 (10,000 – 0.5 acre of disturbance)
- \_\_\_\_\_ \$1585 (0.5-1.0 acre of disturbance)
- \_\_\_\_\_ \$1585 + \$\_\_\_\_\_ (\$250/additional acre over 1 acre of disturbance or portion thereof)

DO NOT WRITE IN THIS SPACE		
Project Number: ESC-	Submission Date:	Fees Paid

**1. Application For:**

Project Name: \_\_\_\_\_

This property is located in the following overlay and /or special zoning district(s) (check all that apply):

- |  |  |                     |
|--|--|---------------------|
| ___ Special Corridor Overlay                   | ___ Central Business                     | ___ Airport Overlay |
| ___ Historic and Cultural Conservation Overlay | ___ Planned Development                  | ___ Village Center  |
|  | ___ Traditional Neighborhood Development |                     |

**2. Legal Property Description:**

Property Address (if any) \_\_\_\_\_

Name of Subdivision(if applicable) \_\_\_\_\_

Total Acreage (existing) \_\_\_\_\_

Section: \_\_\_\_\_ Block: \_\_\_\_\_ Lot: \_\_\_\_\_ Tax Assessor's Map and Parcel # \_\_\_\_\_

Zoning District: \_\_\_\_\_ Tax Account Number: \_\_\_\_\_

**3. Applicant Information** (complete if different from the property owner):

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Email: \_\_\_\_\_

\_\_\_\_\_  
*Applicant's Signature*

\_\_\_\_\_  
*Date*

**4. Authority for Application**

This application must be signed by the owner(s) of the subject property or must have attached to it written evidence of the owner's consent, which may be in the form of a binding contract of sale with the owner's signature or a letter signed by the owner(s) authorizing the applicant to act as his or her agent. Signing this application shall constitute the granting of authority of the City to enter onto the property for the purpose of conducting site analysis.

**Property Owner(s):**

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

Contact Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Email: \_\_\_\_\_

\_\_\_\_\_  
*Property Owner Signature* *Date*

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

Contact Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Email: \_\_\_\_\_

\_\_\_\_\_  
*Property Owner Signature* *Date*

**Agent Representing the Applicant:**

Name(s): \_\_\_\_\_

Company: \_\_\_\_\_

Address of Applicant(s): \_\_\_\_\_

Contact Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Email: \_\_\_\_\_

\_\_\_\_\_  
*Property Owner Signature* *Date*

**Notice: The attached checklist must be completed, certified, and submitted or the application will be considered incomplete.**

Remit Application to: City of Suffolk Public Works Engineering, P.O. Box 1858, Suffolk, VA 23434

## Erosion & Sediment Control Plan

Erosion and sediment control measures are necessary to reduce the impacts of existing and future development on the City's numerous natural streams and watercourses. All land-disturbing activities in excess of 2,500 sqft within the Chesapeake Bay Preservation Area (CBPA), or 10,000 sqft outside of the CBPA must be provided with adequate measures in accordance with the City Erosion and Sedimentation Control Ordinance and the Virginia Erosion and Sediment Control Regulations. Erosion and Sediment Control Plans shall be included in all site and engineering plan submittals.

\_\_\_\_\_ 1. **General:** The erosion and sediment control plan shall be presented in permanent ink and shall contain any anticipated changes or addition. Plans shall be prepared by an Appropriate Authorized Design professional licensed to practice in Virginia. No person shall prepare or certify design elements of E&S plans which are outside the limits of their professional expertise and license. All revision dates must be shown. A properly completed and signed application form and fees shall be submitted. The property owner(s) must sign the application.

\_\_\_\_\_ 2. **Number of Copies:** Seven (7) full size folded copies of the final erosion and sediment control plan on black or blue line prints shall be submitted to the Department of Public Works- Engineering. No plan shall be deemed received until all relevant fees and the applications are submitted.

\_\_\_\_\_ 3. **Multiple Sheets:** Multiple sheet plans may be used. All sheets shall be numbered and referenced to an index map, and all required certificates shall appear on a single sheet (along with the index and vicinity maps).

\_\_\_\_\_ 4. **Ownership:** The applicant shall submit the citations of last instrument conveying title to the property giving grantor, grantee, date, and land records reference including existing or proposed private deed restrictions, if any.

\_\_\_\_\_ 5. **Plan Size:** Erosion and sediment control plans shall be prepared to an engineer's scale appropriate to the lot size and intensity of use, and acceptable to the Public Works Engineering Manager. Plan sheet size shall be twenty-four by thirty-six inches (24"x36").

\_\_\_\_\_ 6. **Minimum Standards:** All applicable Minimum Standards must be addressed.

### **Narrative**

\_\_\_\_\_ **Project Description:** Briefly describes the nature and purpose of the land disturbing activity, and the area (acres) to be disturbed.

\_\_\_\_\_ **Existing Site Conditions:** A description of the existing topography, vegetation and drainage.

\_\_\_\_\_ **Adjacent Areas:** A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.

\_\_\_\_\_ **Off-site Areas:** Describe any off-site land disturbing activities that will occur (including borrows sites, waste or surplus areas, etc.). Will any other areas be disturbed?

\_\_\_\_\_ **Soils:** A brief description of the soils on the site giving such information as soil name, mapping unit, permeability, depth, texture, and soil structure.

\_\_\_\_\_ **Critical Areas:** A description of areas on the site which have potentially serious erosion problems (i.e. steep slopes, channels, wet weather/underground springs, etc.).

\_\_\_\_\_ **Erosion and Sediment Control Measures:** A description of the methods which will be used to control erosion and sedimentation on the site. (Controls should satisfy minimum standards in Chapter 3).

\_\_\_\_\_ **Permanent Stabilization:** A brief description, including specifications, of how the site will be stabilized after construction is completed.

\_\_\_\_\_ **Stormwater Runoff Considerations:** Will the development site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff.

\_\_\_\_\_ **Calculations:** Detailed calculations for the design of temporary sediment traps or basins, permanent stormwater detention basins, diversions, channels, etc. Include calculations for pre- and post-development runoff.

*\* Any request for a waiver from any supplemental item must be submitted to the Public Works Engineering Manager and approved prior to submittal of the erosion and sediment control plan application.*

**This form must accompany all erosion and sediment control plan applications and be signed by the responsible party certifying that the items noted about have been fully addressed as part of this submittal.**

I, \_\_\_\_\_ certify that this application is complete.

\_\_\_\_\_  
**Date**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Public Works Engineering Single Family Residence Submittal  
Package**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VIRGINIA 23434

PHONE (757) 514-7611; FAX (757) 514-7727

## **PUBLIC WORKS ENGINEERING SINGLE FAMILY RESIDENCE SUBMITTAL PACKAGE**

- 1) City of Suffolk Lot Grading Policy
- 2) Single Family Lot Grading Plan Application
- 3) Agreement in Lieu of an Erosion and Sediment Control Plan for a Single Family Residence
- 4) Agreement in Lieu of a Stormwater Management Plan for a Single Family Residence
- 5) Single Family Residence Common Plan of Development or Sale Stormwater Pollution Prevention Plan (SWPPP)
- 6) Driveway Permit Application

The City of Suffolk Lot Grading Policy must be followed when preparing the single family residence lot grading plan.

A Single Family Lot Grading Plan Application is required for all submissions.

An Agreement in Lieu of an Erosion and Sediment Control Plan for a Single Family Residence is required for all land-disturbing activities of 2,500 square feet or more in the Chesapeake Bay Preservation Area (CBPA); or 10,000 square feet or more outside of the CBPA.

An Agreement in Lieu of a Stormwater Management Plan is required for all land-disturbing activities associated with the construction of a single family residence separately built and; part of a larger common plan of development, **or** greater than or equal to **one acre** and not part of a larger common plan of development.

A Single Family Residence Common Plan of Development or Sale Stormwater Pollution Prevention Plan (SWPPP) is required for all land-disturbing activities associated with the construction of a single family residence separately built and; part of a larger common plan of development, **or** greater than or equal to **one acre** and not part of a larger common plan of development.

A Driveway Permit Application is required for **any** work in the right-of-way.

These forms are specific to the Public Works Department. There will be additional forms required by Community Development.

*Revised July 2014*

## **CITY OF SUFFOLK SINGLE FAMILY LOT GRADING POLICY**

- 1) Site plans showing lot grading must be submitted with the building permit application. This plan must be in accordance with the engineering plans approved by Public Works, **under no circumstance will a lot grading plan be approved if the proposed impervious area exceeds the allowable impervious area defined in the approved engineering plans.** In the event that previously approved engineering plans do not exist, plans shall be prepared in accordance with lot grading standards established in the Unified Development Ordinance and this Lot Grading Policy.
- 2) Lot grading plans shall provide sufficient grades, ridge lines and directional arrows to define the proposed drainage pattern of the entire lot. A minimum of seven proposed lot grades shall be provided: four at the corners: two at the side yard midpoints; and one grade located at the center of the lot (rear of typical structure location). Intermediate grades may be required in order to verify positive drainage. Note the lot drainage type (A, B, or AB) for each lot.
- 3) The Resource Protection Area (RPA) must be delineated on the plans as applicable.
- 4) The Limits of Tidal Wetlands must be delineated on any plans adjacent to tidal waters. This is defined by an elevation 1.5 times the mean tide range.
- 5) The amount of impervious area in acres and percentage of the site that is impervious shall be depicted.
- 6) Storm water runoff should be directed to adequate drainage structures or large natural drainage features.
- 7) For larger parcels, the entire lot may not require a topographic survey (large wooded areas, agricultural fields, wetlands, etc.). Adequate drainage around the proposed residence, yard, driveways, and other structures must be demonstrated.
- 8) A minimum slope of 0.5% is required with a slope of 1.0% desirable where practical.
- 9) Lots shall be graded to within 0.1 feet of the final grade prior to issuance of a Certificate of Occupancy (CO). In addition, a minimum grade of 0.5% minimum slope must also be provided. A lot grading certification must be submitted to Community Development prior to issuance of a Certificate of Occupancy.
- 10) Lot grading which requires considerable fill (greater than 4.0 feet) shall be clearly delineated (shaded, cross-hatched, etc.) on the plan and is the responsibility of the developer.
- 11) Overland flow onto adjacent offsite property is generally unacceptable. When a natural slope of 5.0% or greater exists or more than four feet of fill is required, an area may drain in its natural direction. Easements may be required to drain water across adjacent property when runoff is increased or the direction of flow is altered.
- 12) Compliance with the current edition of the Virginia Erosion and Sediment Control Handbook minimum standards (MS-19) is required.
- 13) **The size of plot plans shall be no larger than legal size paper, 8.5" x 14".**
- 14) **A Driveway Permit is required for any construction within the associated right-of-way, including the installation of driveway culverts. A minimum 15-inch diameter RCP (reinforced concrete pipe) is required for driveway culverts.**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VIRGINIA 23434  
PHONE (757) 514-7611; FAX (757) 514-7727

## SINGLE FAMILY LOT GRADING PLAN APPLICATION

A formal lot grading plan prepared by a Professional Engineer, Surveyor, or other person licensed by the Commonwealth of Virginia to practice as such, shall be submitted with this application for review. Parcels located within an approved subdivision or otherwise master planned, shall be designed in accordance with the previously established lot grades and allowable impervious area. **Under no circumstance will a lot grading plan be approved if the proposed impervious area exceeds the allowable impervious area defined in the approved engineering plans.** The Certificate of Occupancy may be withheld if it is determined that a deviation exists between the actual site grades and the formal lot grading plan or the "City of Suffolk Single Family Lot Grading Policy".

Application Procedure:

- 1) Complete the information at the bottom of this application
- 2) Complete the necessary agreement in lieu of forms and the Driveway Permit Application
- 3) Attach one copy of the formal lot grading plan
- 4) Submit the lot grading package to Community Development
- 5) Public Works Engineering staff will review the lot grading plan
- 6) Pay the fee of \$290.00 to the **Treasurer's Office** prior to issuance of permit(s)

### LOT GRADING PLANS MAY TAKE 1-5 WORKING DAYS TO REVIEW

Tax Map #: \_\_\_\_\_ SFC \_\_\_\_\_ (City Use)

Is this lot located within a subdivision with prior approved plan grades and served by a stormwater BMP facility? Yes \_\_\_\_\_ Subdivision Name: \_\_\_\_\_  
No \_\_\_\_\_ Lot number: \_\_\_\_\_

Parcel Address: \_\_\_\_\_

Contact Person (owner/builder/permittee):

Name: \_\_\_\_\_ Daytime Phone Number: \_\_\_\_\_

Address: \_\_\_\_\_ Alternate Phone Number: \_\_\_\_\_

\_\_\_\_\_ Fax Number: \_\_\_\_\_

Applicants Printed Name: \_\_\_\_\_

Applicants Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*Revised July 2014*



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VIRGINIA 23434

PHONE (757) 514-7611; FAX (757) 514-7727

## AGREEMENT IN LIEU OF AN EROSION AND SEDIMENT CONTROL PLAN FOR A SINGLE FAMILY RESIDENCE

Tax Map #: \_\_\_\_\_

Subdivision: \_\_\_\_\_

Lot Number: \_\_\_\_\_

Parcel Address: \_\_\_\_\_

An approved erosion and sediment control plan is required for all land disturbing activities of 2,500 square feet or more in a Chesapeake Bay Preservation Area (CBPA); or 10,000 square feet or more outside of the CBPA. Where the land-disturbing activity results from the construction of a single family residence, an agreement in lieu of a plan may be substituted for an approved erosion and sediment control plan. Lots with approved engineering plans shall be designed in accordance with the previously established lot grades and impervious areas. **Under no circumstance will a lot grading plan be approved if the proposed impervious area exceeds the allowable impervious area defined in the approved engineering plans.**

Single family residential sites shall implement the following minimum practices, which will be considered to meet the requirements of the City of Suffolk Erosion and Sedimentation Control Ordinance, unless additional measures are specifically required by the Public Works Department:

- Silt fence is required behind the curb line at the front of the property and on all sides of the property that slope away from the site. Silt fence is required between the work site and any wetlands or other environmentally sensitive areas. The bottom of all silt fences shall be trenched at least 4 inches into the ground per the Virginia Erosion and Sediment Control Handbook.
- Streets and gutters are to remain free of all sediment and construction debris. Any sediment deposited onto the street must be cleaned up (shoveled and broom swept by the end of each day and prior to pending rain events).
- If a curb or drop inlet receives stormwater runoff from the lot, inlet protection must be provided and kept clean of sediment and trash. The inlet protection must be removed once the parcel is stabilized.
- A construction entrance is required unless otherwise allowed by the Public Works Inspector.
- All denuded areas on the lot shall be stabilized within seven (7) days of final grading with permanent vegetation or a protective ground cover suitable for the time of year.

ADDITIONAL MEASURES: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

In accepting an agreement in lieu of an erosion and sediment control plan, the landowner agrees to allow free access to the site for the Public Works Inspector. Inspections will be periodic and unscheduled. Deficiencies will be noted by the Public Works Inspector with a time period specified to allow corrections of deficiencies. If corrections are not made within the specified time period, a Notice to Comply will be issued. If corrections are not made within the time limit specified in the Notice to Comply, a Stop Work Order will be issued for all activities except for erosion and sediment control corrective measures. The Order will remain in place until released by a Public Works Inspector.

In lieu of submission of an erosion and sediment control plan for the construction of this single family residence, I hereby agree to comply with the City of Suffolk Erosion and Sedimentation Control Ordinance and the requirements determined necessary by the Public Works Department as outlined above. Such requirements shall be based on the Virginia Erosion and Sediment Control Handbook and conservation standards contained in the City of Suffolk Erosion and Sedimentation Control Ordinance, and shall represent the minimum practices necessary to provide adequate control of erosion and sedimentation. I further understand that failure to comply with such requirements following notice representatives of the City of Suffolk could result in citation for violation of the City of Suffolk Erosion and Sedimentation Control Ordinance. I also agree to allow free access to the site for the Public Works Inspector.

If it is found that: (a) The Responsible Land Disturber certification is expired or otherwise invalid, or (b) It is inaccurately indicated on the Lot Grading Plan Application that the parcel is located in a subdivision served by a best management practice stormwater facility with an approved drainage pattern when in fact it is not; this application will be revoked and a stop work order issued by the Public Works Department.

**Name of Landowner (Print):** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Signature of Landowner:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Responsible Land Disturber\* (Print):** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Signature of Responsible Land Disturber:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Type of Certification:** \_\_\_\_\_ **Certification Number:** \_\_\_\_\_

**Accepted by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

City use only

*\* A "Responsible Land Disturber" is an individual certified by the Virginia Department of Conservation and Recreation (DCR), Virginia Department of Environmental Quality (DEQ), or licensed in Virginia as a Land Surveyor, Professional Engineer, Registered Architect, or Landscape Architect.*



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VIRGINIA 23434

PHONE (757) 514-7611; FAX (757) 514-7727

## AGREEMENT IN LIEU OF STORMWATER MANAGEMENT PLAN FOR A SINGLE FAMILY RESIDENCE

Tax Map # \_\_\_\_\_

Subdivision: \_\_\_\_\_

Lot Number: \_\_\_\_\_

Parcel Address: \_\_\_\_\_

Area of Disturbance: \_\_\_\_\_ Acres      Proposed Impervious Area: \_\_\_\_\_ Acres

Watershed: \_\_\_\_\_      HUC: \_\_\_\_\_

An Agreement in Lieu of a Stormwater Management Plan is required for all land-disturbing activities associated with the construction of a single family residence separately built and; part of a larger common plan of development, or greater than one acre and not part of a larger common plan of development. Parcels located within an approved subdivision or otherwise master planned, shall be designed in accordance with the previously established lot grades and allowable impervious area. **Under no circumstance will a lot grading plan be approved if the proposed impervious area exceeds the allowable impervious area defined in the approved engineering plans.**

In lieu of submitting a formal stormwater management plan for development of this single family residence, I agree to comply with the requirements of the Virginia Stormwater Management Regulations and Section 35 of the City Code, and to provide all necessary pollution prevention and stormwater management measures in order to protect against pollutant discharge from the property. I further agree to comply with any additional requirements deemed necessary by the Department of Public Works - Engineering. Such requirements shall be based on established stormwater management standards and shall represent the minimum practices necessary to provide adequate treatment and control of stormwater runoff resulting from this development.

As a minimum I agree to prepare the following prior to beginning any land-disturbing activity:

1. A Stormwater Pollution Prevention Plan (SWPPP) containing the content specified by Regulation Section 9VAC25-870-54, which includes a general description of the proposed stormwater management facilities and the mechanism through which the facilities will be operated and maintained after construction is completed, as well as documentation and calculations verifying compliance with the water quality and quantity requirements.
2. A Pollution Prevention Plan (PPP) required by Regulation 9VAC25-870-56, detailing the design, installation, implementation, and maintenance of effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented, and maintained to:

*Revised July 2014*

- (1) Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- (2) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater; and
- (3) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

The pollution prevention plan shall include effective best management practices to prohibit the following discharges:

- (1) Wastewater from washout of concrete, unless managed by an appropriate control;
- (2) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, retarders for exposed aggregate finishes, and other construction materials;
- (3) Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- (4) Soaps or solvents used in vehicle and equipment washing; and
- (5) Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, unless managed by appropriate controls.

I further understand that failure to comply with such requirements within the reasonable time specified in a documented notice by the City of Suffolk Public Works Department will result in a citation for each day the violation remains uncorrected thereafter and that the penalty for each violation is up to \$32,500.

I hereby grant the City of Suffolk the right to enter upon the subject property periodically for inspections to ensure compliance with the Virginia Stormwater Management Regulations and the City of Suffolk Stormwater Management Ordinance.

**Name of Landowner (Print):** \_\_\_\_\_ **Phone:** \_\_\_\_\_

**Signature of Landowner:** \_\_\_\_\_ **Date:** \_\_\_\_\_

<b>(Operator/Contractor)</b>	
Name: _____	Contractor License #: _____
Address: _____	Phone #: _____

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VIRGINIA 23434; PHONE (757) 514-7725; FAX (757) 514-7727

## **SINGLE FAMILY RESIDENCE** **STORMWATER POLLUTION PREVENTION PLAN (SWPPP)**

### **FOR CONSTRUCTION ACTIVITIES AT:**

PROJECT NAME/ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP CODE: \_\_\_\_\_

LATITUDE (DECIMAL DEGREES): \_\_\_\_\_

LONGITUDE (DECIMAL DEGREES): \_\_\_\_\_

HUC/WATERSHED/RECEIVING STREAM: \_\_\_\_\_

### **CONSTRUCTION ACTIVITY OPERATOR:**

COMPANY/ORGANIZATION NAME: \_\_\_\_\_

OPERATOR NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP CODE: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

24-HOUR EMERGENCY CONTACT: \_\_\_\_\_

### **SWPPP PREPARATION DATE:**

MONTH/DAY/YEAR: \_\_\_\_\_

### **CERTIFICATION:**

"I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

OPERATOR NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

**PROJECT NAME:** \_\_\_\_\_

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**

**1.0 SWPPP Documents Located Onsite & Available for Review:**

SWPPP Document Type	Located Onsite & Available for Review?	
	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Registration Statement	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Notice of Coverage Letter	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Construction General Permit	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Site Plan	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Erosion and Sediment Control Plan (or agreement in lieu of)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A
Stormwater Management Plan (as applicable or agreement in lieu of)	<input type="checkbox"/> Yes	<input type="checkbox"/> N/A

**2.0 Authorized Non-Stormwater Discharges:**

Type of Authorized Non-Stormwater Discharge	Likely Present at Your Project Site?	
	<input type="checkbox"/> Yes	<input type="checkbox"/> No
External buildings wash down	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Uncontaminated foundation or footing drains	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Uncontaminated excavation dewatering	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Landscape irrigation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Others:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

**3.0 Pollution Prevention Awareness:**

Employees will be given a “walk through” of the site identifying areas of possible pollution and will be shown Erosion and Sediment Controls and Pollution Prevention Practices (identified in Sections 4.0 and 5.0 of this SWPPP) that are applicable to their assigned job duties. A refresher meeting and “walk through” will be conducted on an as needed basis.

**4.0 Erosion and Sediment Controls:**

Select all that apply	Erosion and Sediment Control	Estimated Installation Date	Estimated Removal Date	Responsible Party
<input type="checkbox"/>	Construction Entrance (Std. & Spec. 3.02)			Construction Activity Operator (See Cover Page of this SWPPP)
<input type="checkbox"/>	Silt Fence (Std. & Spec. 3.05)			
<input type="checkbox"/>	Culvert Inlet Protection (Std. & Spec. 3.08)			
<input type="checkbox"/>	Outlet Protection (Std. & Spec. 3.18)		N/A	
<input type="checkbox"/>	Temporary Seeding (Std. & Spec. 3.31)	As required by 3.31	N/A	
<input type="checkbox"/>	Permanent Seeding (Std. & Spec. 3.32)		N/A	
<input type="checkbox"/>	Sodding (Std. & Spec. 3.33)		N/A	
<input type="checkbox"/>	Mulching (Std. & Spec. 3.35)		N/A	
<input type="checkbox"/>	Others:			

**PROJECT NAME:** \_\_\_\_\_

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**

**5.0 Potential Sources of Pollutants & Pollution Prevention Practices:**

Pollutant-Generating Activity	Pollutants										Pollution Prevention Practice	Responsible Party
	Likely Present at Your Project Site?	Sediment	Nutrients	Heavy Metals	pH (acids and bases)	Pesticides & Herbicides	Oil & Grease	Bacteria & Viruses	Trash, Debris, Solids	Other Toxic Chemicals		
Clearing, grading, excavating, and un-stabilized areas	<input type="checkbox"/> Yes <input type="checkbox"/> No	X							X		(1)	Construction Activity Operator (See Cover Page of this SWPPP)
Paving operations	<input type="checkbox"/> Yes <input type="checkbox"/> No	X					X		X		(2)	
Concrete washout and cement waste	<input type="checkbox"/> Yes <input type="checkbox"/> No			X	X				X		(3)	
Structure construction, stucco, painting, and cleaning	<input type="checkbox"/> Yes <input type="checkbox"/> No			X	X				X	X	(4)	
Dewatering operations	<input type="checkbox"/> Yes <input type="checkbox"/> No	X	X						X		(5)	
Materials delivery and storage	<input type="checkbox"/> Yes <input type="checkbox"/> No	X	X	X	X		X		X	X	(6)	
Material use during building process	<input type="checkbox"/> Yes <input type="checkbox"/> No		X	X	X		X		X	X	(7)	
Solid waste disposal	<input type="checkbox"/> Yes <input type="checkbox"/> No								X	X	(8)	
Sanitary waste	<input type="checkbox"/> Yes <input type="checkbox"/> No		X		X			X			(9)	
Landscaping operations	<input type="checkbox"/> Yes <input type="checkbox"/> No	X	X			X			X	X	(10)	
Others:	<input type="checkbox"/> Yes <input type="checkbox"/> No										(11)	

PROJECT NAME: \_\_\_\_\_

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**

**Pollution Prevention Practices:**

- (1) **Clearing, grading, excavating, and un-stabilized areas** – Utilize erosion and sediment controls to prevent sediment laden or turbid runoff from leaving the construction site. Dispose of clearing debris at acceptable disposal sites. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities.
- (2) **Paving operations** – Cover storm drain inlets during paving operations and utilize pollution prevention materials such as drip pans and absorbent/oil dry for all paving machines to limit leaks and spills of paving materials and fluids.
- (3) **Concrete washout and cement waste** – Direct concrete wash water into a leak-proof container or leak-proof settling basin that is designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes.
- (4) **Structure construction, stucco, painting, and cleaning** – Enclose, cover or berm building material storage areas if susceptible to contaminated stormwater runoff. Conduct painting operations consistent with local air quality and OSHA regulations. Mix paint indoors, in a containment area or in a flat unpaved area. Prevent the discharge of soaps, solvents, detergents and wash water from construction materials, including the clean-up of stucco paint, form release oils and curing compounds.
- (5) **Dewatering operations** – Construction site dewatering from building footings or other sources may not be discharged without treatment. Sediment laden or turbid water shall be filtered, settled or similarly treated prior to discharge.
- (6) **Material delivery and storage** – Designate areas of the construction site for material delivery and storage. Place near construction entrances, away from waterways, and avoid transport near drainage paths or waterways.
- (7) **Material use during building process** – Use materials only where and when needed to complete the construction activity. Follow manufacturer's instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- (8) **Solid waste disposal** – Designate a waste collection area on the construction site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterway. Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. Schedule waste collection to prevent the containers from overflowing.
- (9) **Sanitary waste** – Prevent the discharge of sanitary waste by providing convenient and well-maintained portable sanitary facilities. Locate sanitary facilities in a convenient location away from waterways.
- (10) **Landscaping operations** – Maintain as much existing vegetation as practicable. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities. Apply nutrients in accordance with manufacturer's recommendations and not during rainfall events.
- (11) **Others** – If applicable, describe your Pollution Prevention Practice.

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**

**6.0 Stormwater Management Controls:**

Select all that apply	Stormwater Management	Estimated Installation Date	Responsible Party
<input type="checkbox"/>	Post-development Stormwater Management Controls provided by a Larger Common Plan of Development or Sale	N/A	Common Plan Construction Activity Operator
<b>Other Stormwater Management Controls (List BMP type and level)</b>			Construction Activity Operator (See Cover Page of this SWPPP)
<input type="checkbox"/>	BMP 1:		
<input type="checkbox"/>	BMP 2:		
<input type="checkbox"/>	BMP 3:		

**7.0 Spill Prevention and Response:**

Most spills can be cleaned up following manufacturer specifications. Absorbent/oil dry, sealable containers, plastic bags, and shovels/brooms are suggested minimum spill response items that should be available at this location.

1. Check for hazards (flammable material, noxious fumes, cause of spill) - if flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave the area and immediately call 911. **LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.**
2. Make Sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.
3. Stop the spill source.
4. Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers.
5. If possible, stop spill from entering drains (use absorbent or other material as necessary).
6. Stop spill from spreading (use absorbent or other material).
7. If spilled material has entered a storm sewer; contact Public Works – Engineering at (757) 514-7725.
8. Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials and do not flush area with water.
9. Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications.

**Emergency Contacts:**

Public Works - Engineering	(757) 514-7725
Department of Environmental Quality - Tidewater Regional Office	(757) 518-2000
VA Department of Emergency Management (24 Hour Reporting Service)	(804) 674-2400
Suffolk Fire and Rescue Department	(757) 514-4550
Police Department	(757) 514-7912

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**

**8.0 Inspections & Corrective Action Log (make additional copies as needed):**

**Qualified Inspector**

Company/Organization: \_\_\_\_\_

Name: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Qualifications: \_\_\_\_\_

**Inspection Schedule**

**Discharges to surface waters:**

- Once every 7 days; or
- Once every 14 days and no later than 48 hours following any measurable storm event.

**Discharges to impaired waters, surface water within a TMDL watershed, or exceptional waters:**

- Once every 4 days; or
- Once every 7 days and no later than 48 hours following any measurable storm event.

**Inspection Date:** \_\_\_\_\_

<b>Best Management Practices (BMPs)</b>	<b>In Compliance with SWPPP?</b>	<b>Corrective Action Needed; Responsible Party</b>	<b>Date Corrective Action Taken</b>
Erosion & Sediment Controls (Section 4.0)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Pollution Prevention Practices (Section 5.0)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Stormwater Management Controls (Section 6.0)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		

Inspector Name: \_\_\_\_\_

Operator Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**PROJECT NAME:** \_\_\_\_\_

**THE STORMWATER POLLUTION PREVENTION PLAN MUST BE MAINTAINED ONSITE AT ALL TIMES. COORDINATE WITH THE CITY INSPECTOR TO DETERMINE AN APPROPRIATE LOCATION.**

**9.0 Inspections & Corrective Action Log (make additional copies as needed):**

Date Grading Activity Installed	Description of the Grading Activity (including location)	Date Grading Activity Ceased	Date Stabilization Measures Initiated	Description of the Stabilization Measures (including location)

**10.0 SWPPP Modification & Update Log:**

Modification Date	Description of the Modification/Update	Modification Prepared By (name& title)



The Permittee, its agents, employees, officers and assigns assume all responsibility and liability for any injury to persons or damage to public or private property, caused directly or indirectly, by the performance of permitted work under this permit. Furthermore, the Permittee, its agents, employees, officers or assigns agree to save and hold harmless the City of Suffolk, its agents, employees, and officers from any and all claims, demands, actions, judgments, executions, damages or proceedings for any and all personal injury and injuries to property, real or personal, public or private caused by or arising out of, directly or indirectly, from the performance of permitted work.

***I certify that the above information is accurate, that proper permission from the property owner has been obtained to perform the work, and that all work will be done in accordance with the City of Suffolk Right of Way Excavation and Restoration Manual, as amended.***

PRINT NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
(Permit Applicant or Authorized Agent)

The applicant hereby agrees that:

- A fee of \$100.00 will be charged for each permit issued.
- Application must be submitted seven (7) business days in advance of work site date.
- All work will be performed in accordance with the Laws, Zoning Ordinances, City Code of the City of Suffolk, Virginia, the attached detailed plan, and as directed by the City Manager or designated representative.
- The work shall be carried out in accordance with Chapter 74 of the Suffolk City Code, entitled "Streets and Sidewalks." Failure to have in possession a copy of this document does not relieve the permittee from the responsibility of having knowledge of and adhering to the requirements described therein.
- Applicants to whom permits are issued at all times indemnify and save harmless the City of Suffolk from responsibility and damage to, or liability arising from, the exercise of privileges granted in such permit either during construction or at any time in the future.
- Permits are issued for street openings at specified locations. If additional openings are necessary to complete the work at this site, the permittee must notify the City Manager or designated representative immediately.
- Limitations of working hours may be stipulated when necessary.
- Traffic is not to be rerouted without special permission of the City Manager or designated representative.
- Traffic is to be protected by adequate lights, barricades, and constructions signs at all times in accordance with MUTCD standards.
- All backfilling of trenches is to be made in layers not to exceed six (6) inches loose depth and compacted to a density rate of 95%.
- Compaction by water will not be permitted.
- Where entrances are disturbed, they must be restored to their original condition or to a condition satisfactory to the City Manager or designated representative.
- The absence of an inspector does not in any way relieve the permittee of his responsibility to perform the work in accordance with the provisions of this permit.
- The permittee is responsible for ensuring that all utility markings are removed within 20 days after the completion of work. If the utility marks are not removed by the time specified herein, the City will consider the marks as graffiti. The City, in accordance with existing City ordinances, may remove graffiti, and the costs associated with such removal will be the responsibility of the contractor or permittee. The City shall have the right to suspend further permits to contractor or permittee until the utility marks are removed.
- The permittee, its agents, employees, officers, and assignees assume all responsibility and liability for any injury to persons to damage to public or private property caused directly or indirectly by the performance of work performed under this permit.
- This permit shall expire six (6) months from the date of approval.
- The City of Suffolk reserves full municipal control over the subject of this permit.
- Permittee agrees to notify the Department of Public Works when the work herein referred to is completed.
- A copy of this permit must be maintained on the site at all times.

In an effort to coordinate work & ensure safe travel, all work zones within the City Of Suffolk shall be reported to *Public Works Dispatch*, each day by 8:00AM. E-mail notices shall be sent to: [workzonenotifications@suffolkva.us](mailto:workzonenotifications@suffolkva.us). Additional option shall be called in at 757-514-7600. If there is not answer, please leave information regarding company name, location of work zone, duration of work, extent of work, a contact name & call-back phone number.

**You are required to call the Construction Manager at 757-514-7725 to arrange an inspection 48 hours prior to the start of any work in the Right of Way, including utility cuts.**

**A minimum 15-inch diameter RCP (reinforced concrete pipe) is required for driveway culverts.**

**RETURN COMPLETED APPLICATION TO:  
PUBLIC WORKS, 440 MARKET STREET, 2<sup>ND</sup> FLOOR, SUFFOLK, VA 23434  
PHONE: (757) 514-7725 FAX: (757) 514-7620 EMAIL: [rowpermits@suffolkva.us](mailto:rowpermits@suffolkva.us)**



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Construction Record Drawing Certification Statements**

**DEVELOPER:** By our dated signatures below, we acknowledge that upon acceptance of the Construction Record Drawings by the City of Suffolk, that said plan becomes that of the City of Suffolk.

Developer: \_\_\_\_\_

Signature and Date: \_\_\_\_\_

This set of plans is entitled **CONSTRUCTION RECORD DRAWINGS OF** \_\_\_\_\_ [project name] [if not the entire project, indicate section, phase or other portion.] These Construction Record Drawings (CRD's) are:

a. Based on the construction plans for this project entitled and dated as follows:

i. Title: \_\_\_\_\_

ii. Date of last approval, including latest post-approval revisions: \_\_\_\_\_

iii. Preparing firm: \_\_\_\_\_

b. A collaborative effort of those who, by signing below and on each additional sheet, state the accuracy of their respective contributions.

1. **LAYOUT FIRM:** My firm set layout stakes for the infrastructure which are the subject of these CRD's, and that those stakes were set in the manner, and to the standards of accuracy and precision, customary for such construction surveying in the Hampton Roads, Virginia area.

Firm Name: \_\_\_\_\_

Signature and Date: \_\_\_\_\_

Name, Title, License Type and Number: \_\_\_\_\_

2. **CONTRACTOR:** My firm installed the infrastructure which are the subject of these CRD's, and, with respect to those improvements and, except as noted on these CRD's, that:

- a. They were installed in accordance with the City approved construction plans listed above,
- b. They were installed in accordance with the *Public Facilities Manual* and any other standards, criteria and details referenced in the construction plans,
- c. With regard to that portion of the improvements which are underground and whose as-installed position could not be measured by the post-installation survey (paragraph 3 below), they were installed in accordance with the stakes and marks set by the firm signing paragraph 1 above, to the construction tolerances for such improvements set forth in the *Public Facilities Manual*, unless approved by the City.

Firm Name: \_\_\_\_\_

Signature and Date: \_\_\_\_\_

Name and Title: \_\_\_\_\_

3. **CRD PREPARING PROFESSIONAL**: My firm measured the as-installed locations and elevations of that portion of the improvements which can be measured from the surface and that those measurements:

- a. Were prepared in the manner set forth in the *Public Facilities Manual*,
- b. Have been indicated on the following sheets accurately and in a manner which distinguishes this as-constructed information from the as-designed information, and that,
- c. Any additional information furnished by the installing contractor signing paragraph 2 above has been accurately transcribed onto these CRD's.

Firm Name: \_\_\_\_\_

Signature and Date: \_\_\_\_\_

Name, Title, License Type and Number: \_\_\_\_\_

4. **STORMWATER MANAGEMENT FACILITY**:

I certify that the Stormwater management facility has been constructed in accordance with the approved plan and the design volume has been achieved.

Firm Name: \_\_\_\_\_

Signature and Date: \_\_\_\_\_

Name, Title, License Type and Number: \_\_\_\_\_

The following CRD Certification Statement shall be placed on all sheets other than the cover.

By our dated signatures below, we reaffirm our respective declarations on the first sheet of these **CONSTRUCTION RECORD DRAWINGS**, as relates specifically to the contents of this sheet. Our responsibility for the accuracy of the information hereon is limited as set forth in those declarations.

1. <b><u>Layout Firm</u></b>	
2. <b><u>Contractor</u></b>	
3. <b><u>CRD Preparing Professional</u></b>	
4. <b><u>Stormwater Management Facility</u></b>	



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Rough Lot Grading Certification**



**LOT GRADING CERTIFICATION  
ROUGH GRADING CERTIFICATION**  
(Required prior to plat recordation)

I certify that the lot grades for \_\_\_\_\_ are  
(Title on Plat)

within 0.4' of the proposed grades and have the minimum positive side slopes of  
0.25% in the direction indicated on the approved plan dated \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
P.E or Surveyor Signature                      Date



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Final Lot Grading Certification**



**FINAL GRADING CERTIFICATION**  
**(Required prior to release of C.O. for building construction)**

I have surveyed the lot grading proposed with the building permit

# \_\_\_\_\_ . The lot grades established are certified to be within  
0.1' of the proposed grades as shown on the site plan/engineering plans included in the  
permit and a minimum grade of 0.5 % (positive slope has been established).

(Seal-Land Surveyor)

\_\_\_\_\_  
Surveyor or Builder Signature

\_\_\_\_\_  
Date

Contractor's License No.: \_\_\_\_\_

Date of Expiration: \_\_\_\_\_



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Erosion and Sediment Control Surety**



# CITY OF SUFFOLK

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

440 MARKET STREET SUFFOLK, VIRGINIA 23434 PHONE (757) 514-7725; FAX (757) 514-7727

## Erosion and Sediment Control Surety

**Bond Number:** \_\_\_\_\_

**Project:** \_\_\_\_\_

**Location:** \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, THAT:

\_\_\_\_\_, as Principal, and  
\_\_\_\_\_, as Surety, are held  
and firmly bound unto City of Suffolk, 441 Market Street, Suffolk, Virginia 23434, as Obligee,  
in the amount of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) )  
for payments whereof said principal and Surety bind themselves, their heirs, executors,  
administrators, successors, and assigns jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that if said Principal shall construct in  
accordance with the approved erosion and sediment control plan thereof, the following  
improvements to wit:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

in accordance with the applicable regulations, specifications, standards, ordinances, and law of  
said City of Suffolk and of the Commonwealth of Virginia, then this obligation to be void:  
otherwise to remain in full force and effect.

This Surety hereby waives notice of any alternation of extension of time made by Obligee,

Dated at Suffolk, Virginia this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Principal  
By: \_\_\_\_\_  
Surety  
By: \_\_\_\_\_  
Attorney-in-Fact

Countersigned

By: \_\_\_\_\_  
Resident Agent



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Irrevocable Letter of Credit**

# City of Suffolk, VA

## IRREVOCABLE LETTER OF CREDIT

Date: \_\_\_\_\_

LETTER OF CREDIT NO. \_\_\_\_\_

AMOUNT U.S. \$ \_\_\_\_\_

DATE OF ISSUE \_\_\_\_\_

**APPLICANT:**

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_

TAX ID #: \_\_\_\_\_

**BENEFICIARY:**

City of Suffolk  
c/o Public Works Department  
Engineering Division  
440 Market Street, 2nd Floor  
Suffolk, VA 23434

**RE: *(Type of Improvements-Project Name and Location)***

At the request of and for the account of the Applicant, \_\_\_\_\_ (hereinafter, "Customer"), (name of banking institution) ("Issuing Bank") hereby issues this Irrevocable Letter of Credit, number \_\_\_\_\_, in favor of the City of Suffolk ("Beneficiary") for a sum not exceeding \_\_\_\_\_ U.S. Dollars (\$ \_\_\_\_\_) (the "Credit Amount") available by sight draft on the above stated Issuing Bank accompanied by the document specified below:

A signed written statement from the **Director of the Department of Public Works of the City of Suffolk** certifying that: (Developer's Name) has failed to satisfactorily perform, prior to the expiration of the Letter of Credit, all or part of the terms and conditions of the above-mentioned project or any plans approved by and on file with the City of Suffolk, and the City of Suffolk is, in consequence, entitled to the amount sighted.

We hereby engage with drawers, endorsers and bona fide holders that all drafts drawn in compliance with the terms of this Letter of Credit shall be duly honored upon presentation and delivery of this document. This Irrevocable Letter of Credit shall remain in full force and effect for a period of two (2) years from the date hereof and shall automatically renew itself for three (3) additional periods of one year each from the initial and each future expiration date unless and until we notify you and the Customer via certified mail, return receipt requested, at least ninety (90) days prior of our intent not to renew the Letter of Credit. During said ninety (90) day notice period, this Irrevocable Letter of Credit shall remain in full force and effect. This credit shall be terminated upon the Director giving written release stating that the terms and conditions of the above-mentioned project have been completed and accepted by the City of Suffolk.

If any expiration date specified herein shall fall upon a day other than a regular business day of the Issuing Bank, the expiration date shall *ipso facto* be extended to the close of business on the next successive business day of the Issuing Bank.

The issuing Bank shall give prompt notice to the Customer and the Beneficiary of any notice received or action filed alleging the insolvency or bankruptcy of the Issuing Bank, or alleging any violations or regulatory requirements which could result in the suspension or revocation of the Issuing Bank's charter or license to do business.

This Letter of Credit is subject to the "UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS PUBLISHED BY THE INTERNATIONAL CHAMBER OF COMMERCE IN EFFECT ON DATE OF ISSUANCE AND THE LAWS OF THE STATE OF VIRGINIA"

ISSUING BANK:

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Field Change Request Form**





**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Defect Bond**



# CITY OF SUFFOLK

P. O. Box 1858, Suffolk, VA 23439  
Phone: (757) 514-7625 Fax (757) 923-2484

## DEFECT BOND

BE KNOWN THAT WE \_\_\_\_\_ as Principal, and \_\_\_\_\_ a corporation duly incorporated under the Laws of the State of \_\_\_\_\_, as Surety, are held and firmly bound unto the City of Suffolk in the full and just sum of \_\_\_\_\_ U. S . Dollars (\$ \_\_\_\_\_), to be paid to the said City of Suffolk to the payment whereof we hereby bind ourselves and our heirs, executors, administrators, successors and assignees, jointly and severally, firmly by these presents, sealed and dated this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

WHEREAS, the Principal and the Oblige have by agreement, which is attached hereto and which agreement is hereby referred to, incorporated into, and made a part hereof as fully and to the same extent as if copied at length herein agreed to comply with the subdivision regulations of the CITY OF SUFFOLK for the subdivision known as:

\_\_\_\_\_ and,

WHEREAS, it was agreed that upon completion of the work, the Principal would furnish the Oblige a bond and/or security acceptable to the CITY OF SUFFOLK or its authorized representatives guaranteeing to repair any and all defects due to inferior materials or faulty workmanship for a period of two (2) years from the date of acceptance of the requirement improvements.

NOW THEREFORE, the condition of this obligation is such that if Principal shall remedy any defects due to faulty materials or workmanship, and pay for any damage to other work resulting therefrom, which shall appear within a period of two (2) years from the date of acceptance of the required improvements provided for in the agreement, then this obligation shall be void; otherwise to remain in full force and effect for a period of two (2) years.

Said principal and surety, being properly authorized, have caused these presents to be executed and their seals affixed the day and year first above written.

Surety Name _____	Principal Name _____
Bond Number _____	TAX ID # or DMV ID # _____
Address _____	Address _____
City _____ State _____ ZIP _____	City _____ State _____ ZIP _____
Contact Person _____	Contact Person _____
Phone Number _____	Phone Number ( _____ ) _____
Attorney-in-Fact Name _____	Signature _____
Signature _____	

Attorney-In-Fact  
(Seal)

\* POWER OF ATTORNEY AUTHORIZATION TO BE ATTACHED

**Acknowledgement of Principal**

STATE OF \_\_\_\_\_ COUNTY /TOWN/CITY OF \_\_\_\_\_

I, the undersigned, a Notary Public in and for the County / Town / City aforesaid, in the State aforesaid, do certify that, \_\_\_\_\_ whose name as Principal is signed to the foregoing writing bearing date on the \_\_\_\_\_ day of \_\_\_\_\_, year \_\_\_\_\_, personally appeared before me and acknowledged the same.

Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, year \_\_\_\_\_.

My Commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public

**Affidavit and Acknowledgement of Surety**

STATE OF \_\_\_\_\_ COUNTY/TOWN/CITY OF \_\_\_\_\_

I, the undersigned, a Notary Public in and for the County/Town/City aforesaid, in the State aforesaid do certify that \_\_\_\_\_ (Attorney in fact name) personally appeared before me and made oath that he is \_\_\_\_\_ (Title) of the \_\_\_\_\_ (Name of Surety), that he is duly authorized to execute the foregoing bond by virtue of a certain power of attorney of said company; that said power of attorney has not been revoked; that the company has complied with all the requirements of law regulating the admission of such companies to transact business in the State of Virginia; that the company holds the certificate of the Commissioner of Insurance authorizing it to do business in the State of Virginia; that it has a paid-up cash capital of not less than \$250,000; that the paid-up capital plus the surplus and undivided profits of company is \$ \_\_\_\_\_; that the penalty of the foregoing bond is not in excess of ten percentum of said sum; that the company is not by said bond incurring in the aggregate, on behalf or on account of the principal names in said bond, a liability for an amount larger than one-tenth of its paid-up capital, plus its surplus and undivided profits; that the company is solvent and fully able to meet promptly all its obligations, and the said \_\_\_\_\_ (Attorney in fact name) thereupon, in the name and on behalf of the company, acknowledged the foregoing writing as its act and deed.

Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, year \_\_\_\_\_.

My Commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public

Original to be filed with the Public Works Department Street Maintenance Division, City of Suffolk  
Request for Surety Bond Cancellation may be addressed to:

City of Suffolk

\_\_\_\_\_  
\_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
Karla C. Haynes, Assistant City Attorney



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**Ancillary Agreement for Sidewalks**

**ANCILLARY AGREEMENT**  
(Sidewalks)

**THIS AGREEMENT**, made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_, party of the first part, hereinafter referred to as “the Owner,” and the City of Suffolk, Virginia a municipal corporation, party of the second part, hereinafter referred to as “the City.”

**WHEREAS**, the Owner has caused to be subdivided into lots, a certain tract or parcel of land situated in the \_\_\_\_\_ Borough of the City of Suffolk, Virginia, as shown on a certain plat entitled \_\_\_\_\_, dated \_\_\_\_\_, made by \_\_\_\_\_, \_\_\_\_\_, and has previously entered into an Agreement with bond dated \_\_\_\_\_, guaranteeing the installation of physical improvements as required by the Suffolk Unified Development Ordinance (U.D.O.); and

**WHEREAS**, the construction of certain improvements, as shown on the approved development plan for the subdivision, and as required by the above-mentioned Agreement and the Suffolk Unified Development Ordinance (U.D.O.), have not yet been completed; and

**WHEREAS**, said Owner desires that its original Subdivision Agreement and bond be cancelled; and

**WHEREAS**, said Owner is willing to execute an Agreement with surety to guarantee the installation of said improvements.

**NOW, THEREFORE, THIS AGREEMENT WITNESSETH:** That for and in consideration of the mutual covenants and agreements contained herein, the parties hereto agree as follows:

1. The said Owner hereby covenants and agrees that the sidewalks will be installed within 24 months of the date of this agreement or when seventy-five (75%) of home construction has been completed on the recorded lots, whichever comes first, as required by the Suffolk Department of Public Works, and further agrees to comply with all provisions of the Suffolk U.D.O. as it relates to the subject development. The said Owner further agrees that it will provide the City with a bond or cash deposit in the amount of \$\_\_\_\_\_ Dollars to guarantee the installation of said improvements for said period of time to guarantee faithful compliance with all the provisions of the Suffolk U.D.O.; should the above amount not be sufficient to complete said improvements, the Owner agrees to pay a sum necessary for completion to the City on demand.

2. The City hereby agrees to release of the Subdivision Agreement and bond heretofore entered into by the Owner dated \_\_\_\_\_.

3. It is mutually understood and agreed that in the event the Owner fails to complete the physical improvements provided hereinabove in the time designated, the City may complete or cause the same to be completed, and the Owner, as principal and/or surety, shall be jointly and severally liable to pay the City the entire cost necessary to complete said improvements.

4. It is further understood by the parties to this agreement that the City may, at its option, collect the total cost for the completion of the improvements from the principal and/or surety prior to the actual construction of same, which cost is to be determined by estimates prepared by the Department of Public Works of the City of Suffolk. In the event the estimated cost is greater than the cost necessary to complete the construction, the City will refund to the Owner and/or surety the difference.

5. In the event that the Owner defaults in any of the terms of this Agreement, the City shall have the right to refuse the issuance of building permits and/or to withhold all City services in the subdivision.

6. It is mutually understood and agreed that if the Owner shall faithfully execute each and all requirements of the said Subdivision Ordinance and the provisions of this Agreement, then the aforementioned bond shall be released by the City to the Owner.

**WITNESS** the following signatures and seals:

\_\_\_\_\_

BY \_\_\_\_\_

ATTEST:

\_\_\_\_\_

STATE OF \_\_\_\_\_,  
CITY/COUNTY OF \_\_\_\_\_, to-wit:

The foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_,  
20\_\_, by \_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

**CITY OF SUFFOLK, VIRGINIA**

BY \_\_\_\_\_  
City Manager/Authorized Designee

ATTEST:

\_\_\_\_\_  
City Clerk

STATE OF VIRGINIA,  
CITY OF \_\_\_\_\_, to-wit:

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_, by \_\_\_\_\_.  
City Manager/Authorized Designee

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

Approved as to form:

\_\_\_\_\_  
City Attorney

**KNOW ALL MEN BY THESE PRESENTS**, that \_\_\_\_\_, with its principal office at \_\_\_\_\_, as Principal, and \_\_\_\_\_, organized under the laws of the State of \_\_\_\_\_, and having its principal office in the City of \_\_\_\_\_, State of \_\_\_\_\_, as Surety, are held and firmly bound unto the City of Suffolk, Virginia, in the sum of \$\_\_\_\_\_ lawful money of the United States of America, for the payment of which well and truly to be made we bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation is such that, whereas the Principal has entered into an Agreement with the City of Suffolk, Virginia, dated the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, relating to all physical improvements in the subdivision plat of \_\_\_\_\_ therein fully set forth, a copy of which is attached hereto as a part of thereof.

**NOW THEREFORE**, if the said Principal shall well and truly perform each and every provision of the said Agreement, then this obligation to be void, otherwise to remain in full force and effect.

**IN WITNESS WHEREOF**, the said \_\_\_\_\_, Principal, has signed and sealed this bond, and the said \_\_\_\_\_, Surety, has caused the same to be signed in its name and its corporation seal to be hereto affixed and attested by its duly authorized Attorney in Fact, this \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

By: \_\_\_\_\_

\_\_\_\_\_  
Title

ATTEST:

\_\_\_\_\_  
Secretary

By: \_\_\_\_\_  
Attorney in Fact



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**CGP Notice of Termination 2014**

**Notice of Termination**  
**General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)**

(Please Type or Print All Information)

**1. Construction Activity Operator:**

Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

Email address (if available): \_\_\_\_\_

**2. Name and Location of the Construction Activity:** (As listed on the Registration Statement.)

Name: \_\_\_\_\_

Address (if available): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

County (if not located within a City): \_\_\_\_\_

Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_

**3. General Permit Registration Number:** \_\_\_\_\_

**4. Reason for Terminating Coverage Under the General Permit:** (The operator shall submit a Notice of Termination after one or more of the following conditions have been met.)

- A. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long-term responsibility and maintenance requirements for permanent control measures shall be recorded in the local land records prior to the submission of a notice of termination;
- B. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;
- C. Coverage under an alternative VPDES or state permit has been obtained; or
- D. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

*The notice of termination should be submitted no later than 30 days after one of the above conditions being met. Authorization to discharge terminates at midnight on the date that the notice of termination is submitted for the conditions set forth in subsections B through D above, unless otherwise notified by the VSMP authority or the Department. Termination of authorizations to discharge for the conditions set forth in subsection A above shall be effective upon notification from the Department that the provisions of subsection A have been met or 60 days after submittal of the notice of terminations, whichever occurs first.*

**5. Permanent Control Measures Installed:** (When applicable, a list of the on-site and off-site permanent control measures (both structural and nonstructural) that were installed to comply with the stormwater management technical criteria. Attach a separate list if additional space is needed.)

**Permanent Control Measure #1**

Type of Permanent Control Measure: \_\_\_\_\_

Date Functional: \_\_\_\_\_

Address (if available): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

County (if not located within a City): \_\_\_\_\_

Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_

Receiving Water: \_\_\_\_\_

Total Acres Treated: \_\_\_\_\_ Impervious Acres Treated: \_\_\_\_\_

**Permanent Control Measure #2**

Type of Permanent Control Measure: \_\_\_\_\_  
Date Functional: \_\_\_\_\_  
Address (if available): \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
County (if not located within a City): \_\_\_\_\_  
Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_  
Receiving Water: \_\_\_\_\_  
Total Acres Treated: \_\_\_\_\_ Impervious Acres Treated: \_\_\_\_\_

**Permanent Control Measure #3**

Type of Permanent Control Measure: \_\_\_\_\_  
Date Functional: \_\_\_\_\_  
Address (if available): \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
County (if not located within a City): \_\_\_\_\_  
Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_  
Receiving Water: \_\_\_\_\_  
Total Acres Treated: \_\_\_\_\_ Impervious Acres Treated: \_\_\_\_\_

6. **Participation in a Regional Stormwater Management Plan:** (When applicable, information related to the participation in a regional stormwater management plan. Attach a separate list if additional space is needed.)

**Regional Stormwater Management Facility**

Type of Regional Stormwater Management Facility: \_\_\_\_\_  
Address (if available): \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
County (if not located within a City): \_\_\_\_\_  
Latitude (decimal degrees): \_\_\_\_\_ Longitude (decimal degrees): \_\_\_\_\_  
Total Site Acres Treated: \_\_\_\_\_ Impervious Site Acres Treated: \_\_\_\_\_

7. **Perpetual Nutrient Credits:** (When applicable, information related to perpetual nutrient credits that were acquired in accordance with § 62.1-44.15:35 of the Code of Virginia. Attach a separate list if additional space is needed.)

**Nonpoint Nutrient Credit Generating Entity**

Name: \_\_\_\_\_  
Perpetual Nutrient Credits Acquired (lbs/acre/year): \_\_\_\_\_

8. **Certification:** "I certify under penalty of law that I have read and understand this Notice of Termination and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**(Please sign in INK. This Certification must be signed by the appropriate person associated with the operator identified in Item #1.)**

# Instructions for Completing the Notice of Termination General VDPES Permit for Discharges of Stormwater from Construction Activities (VAR10)

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## GENERAL

A Notice of Termination must be submitted when an operator no longer wishes to be covered under the General VDPES Permit for Discharges of Stormwater from Construction Activities (VAR10).

All Notice of Terminations should be submitted to:

**Department of Public Works Engineering**  
440 Market Street  
2<sup>nd</sup> Floor  
Suffolk, VA 23434

## LINE-BY-LINE INSTRUCTIONS

### Item 1: Construction Activity Operator Information.

Provide the legal name (do not use a colloquial name), contact, mailing address, telephone number, and email address (if available) of the construction activity operator that was issued general permit coverage.

### Item 2: Name and Location of the Construction Activity Information.

Provide the official name, street address (if available), city or county (if not located within a City) of the construction activity. Also, provide the latitude and longitude in decimal degrees of the approximate center of the construction activity (e.g., N 37.5000, W 77.5000). NOTE: This information can be obtained from the previously submitted Registration Statement.

### Item 3: General Permit Registration Number.

Provide the existing general permit registration number for the construction activity identified in Item 2.

### Item 4: Reason for Termination.

Indicate the appropriate reason for submitting this Notice of Termination. The Notice of Termination may only be submitted after one or more of the following conditions have been met:

- a. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long-term responsibility and maintenance requirements for permanent control measures shall be recorded in the local land records prior to the submission of a notice of termination;
- b. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;
- c. Coverage under an alternative VDPES or state permit has been obtained; or
- d. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

The Notice of Termination should be submitted no later than 30 days after one of the above conditions being met.

### Item 5: Permanent Control Measures (when applicable).

For each on-site and off-site permanent control measure (both structural and non-structural) that was installed to comply with the stormwater management technical criteria provide the following information:

- a. The type of permanent control measure;

- b. The date that the permanent control measure became functional as a post-development stormwater management control;
- c. The street address (if available), City or County (if not located within a City) of the permanent control measure;
- d. The latitude and longitude in decimal degrees of the approximate center of the permanent control measure;
- e. The receiving water of the permanent control measure; and
- f. The number of total and impervious acres treated by the permanent control measure (to the nearest one-tenth of an acre).

Attach a separate list if additional space is needed.

### Item 6: Participation in a Regional Stormwater Management Plan (when applicable).

For each Regional Stormwater Management Facility provide the following information:

- a. The type of regional facility to which the site contributes;
- b. The street address (if available), City or County (if not located within a City) of the regional facility;
- c. The latitude and longitude in decimal degrees of the approximate center of the regional facility; and
- d. The number of total and impervious site acres treated by the regional facility (to the nearest one-tenth of an acre).

Attach a separate list if additional space is needed.

### Item 7: Perpetual Nutrient Credits (when applicable).

Provide the following information related to perpetual nutrient credits that were acquired in accordance with § 62.1-44.15:35 of the Code of Virginia:

- a. The name of the nonpoint nutrient credit generating entity from which perpetual nutrient credits were acquired; and
- b. The number of perpetual nutrient credits acquired (lbs. per acre per year).

Attach a separate list if additional space is needed.

### Item 8: Certification.

A properly authorized individual associated with the operator identified in Item 1 of the Registration Statement is responsible for certifying and signing the Registration Statement. **Please sign the Registration Statement in INK.**

State statutes provide for severe penalties for submitting false information on the Registration Statement. State regulations require that the Registration Statement be signed as follows:

- a. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means:
  - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or
  - (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated

facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes:

(i) The chief executive officer of the agency, or

(ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.



**City of Suffolk, Department of Public Works  
Public Facilities Manual**

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**CGP Transfer of Ownership Agreement Form 2014**

**Transfer of Ownership Agreement Form**  
**General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)**

(Please Type or Print All Information)

**Instructions:** This agreement form must be signed in INK by properly authorized individuals as specified in the General VPDES Permit for Stormwater Discharges from Construction Activities (VAR10), Part III K (Signatory Requirements). Please retain a copy of this agreement form for your records.

Mail the original agreement form to:

**Department of Public Works Engineering**  
**440 Market Street**  
**2<sup>nd</sup> Floor**  
**Suffolk, VA 23434**

General Permit Registration Number: \_\_\_\_\_ Date of Transfer (mm/dd/yyyy): \_\_\_\_\_

Construction Activity Name: \_\_\_\_\_

**CURRENT CONSTRUCTION ACTIVITY OPERATOR:**

Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

Email Address (if available): \_\_\_\_\_

"I (We) hereby agree to the transfer of ownership modification to the referenced General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)."

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**NEW CONSTRUCTION ACTIVITY OPERATOR:**

Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

Email Address (if available): \_\_\_\_\_

Indicate if DEQ may transmit general permit correspondence electronically: Yes  No

I (We) hereby agree to the change of ownership modification to the referenced General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10), and agree to accept all responsibility, coverage, and liability of the general permit."

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_