



Development Advisory – 43
January 16, 2019

Public Facilities Manual (PFM) Update

The City is proposing several updates to the Public Facilities Manual (PFM). To view the proposed changes select the following link and select Development Advisory 43.

[Development Advisories](#)

The following PFM volume I Chapters are included in this update.

- Chapter 7 – Pavement Design
- Chapter 8 Streets Design
- Chapter 13 Fire Protection – Notice only
- Chapter 15 Soil Drainage Management Plan Design

The following PFM volume I Appendices are included in this update.

- Appendix 7
- Appendix 10A Declaration of Private Drainage Easement

The following PFM Volume II design details are included in this update.

- CG-7A
- CG-7C
- EGA-1 Emergency Gate Access

Summary of Changes

- Chapter 7 – Updated minimum pavement section and clarified submittal requirements for substituting crushed concrete for 21a or 21B base aggregate material.
- Chapter 8 – Revised minimum road elevation requirements for new streets.
- Chapter 13 – This chapter was up dated in September to add some exception for PIV locations.
- Chapter 15 – Correction of a typographic error no change in criteria.
- Appendix 7 – Added standard Plat notes for new BMP types
- Appendix 10A – New standard easement to establish a private drainage easement.
- CG-7A & 7C – Minor changes
- EGA-1 – Emergency Gate Access detail

Our time table is as follows; one (1) month comment period, incorporate any changes, effective date of PFM change will be February 15, 2019.

Should you have any questions contact Mark Curry at 757-382-6283 or at mcurry@cityofchesapeake.net

CHAPTER 7

PAVEMENT DESIGN

7.0 GENERAL

The purpose of this chapter is to define the requirements for design of pavement within proposed and existing roadways for new subdivision streets and secondary roads.

Pavement design for higher classifications will conform to AASHTO Pavement Design and VDOT Guidelines for AASHTO Pavement Designs.

Pavement design submittals must contain all applicable supporting information, calculations, geotechnical reports and supporting reference materials.

7.1 SOIL ANALYSIS

The following information shall be submitted to the Department of Development & Permits with the pavement design:

- A. 10' boring logs of sufficient quantity to determine the soil profile, related to elevations are required. These borings shall reflect the ground water elevations, description of materials and blow counts on the sampler. Borings shall reflect normal water table elevation, and projected seasonably high water table elevation. Maximum spacing of borings to be 500 feet, and located in the proposed streets. No less than two borings are required with any pavement design. All soil tests are to be performed by a professional engineer licensed to perform this type of work. A maximum average CBR of 4 may be assumed for preliminary design. However, all borings must be submitted prior to plan approval and a revised design approved if an assumed CBR was used in the initial design. Hand auger borings are not acceptable.
- B. Soil analysis of subgrade material shall include:
 1. Gradation (sieve and hydrometer analysis)
 2. Atterberg limits
 3. Moisture density relationships and curves
 4. Maximum dry weight
 5. Optimum moisture content
 6. Specific gravity
 7. Swell
 8. California Bearing Ratio in accordance with the Virginia Test Method (VTM-8).

- a. Soaked and unsoaked test results required.
- b. Tests are to be taken at the proposed street subgrade elevation.
- c. Maximum spacing of test shall be 500 feet (250' radius of coverage per test). No less than 2 tests are to be provided.

7.2. PAVEMENT DESIGN

- A. Alleys and service roads serving residential developments - The pavement shall be in accordance with one of the following alternates:
 1. The pavement shall be a 6" thickness of Class A-3 (Virginia Department of Transportation Specifications) concrete placed on a compacted subgrade with a minimum soaked CBR of 10.
 2. The pavement shall be a Class A-3 (Virginia Department of Transportation Specifications) concrete, thickness designed for unlimited stress repetitions of a single axle load of 20,000 pounds, in accordance with "Thickness Design for Concrete Pavements" (HB-35 published by the Portland Cement Association.)
- B. The design method for public streets shall be as follows:
 1. Rigid Pavement Design

Rigid Pavement Design shall be in accordance with the publication "Thickness Design for Concrete Pavement" (HB-35 published by Portland Cement Association). The traffic volume and characteristics shall be calculated as specified in this criteria.
 2. Flexible Pavement Design

Flexible Pavement Design shall be in accordance with the method in the publication VDOT Pavement Design Guide for Subdivision and Secondary Roads including all current addenda. (See Appendix 5 and available online at <http://viriniadot.org/business/manuals-default.asp>). The "Vaswani" Method shall be adjusted to reflect the percent heavy trucks when used to design 'higher type' street pavements.
 3. AASHTO Pavement Design

When the projected Average Daily Traffic exceeds 10,000 trips, AASHTO Pavement Design method should be employed.
- C. The use of a design which utilizes soil cement must include the following test:
 1. Methods of Test for Moisture Density Relations of Soil-Cement Mixtures, ASTM Designation: D558; AASHO Designation: T134.

2. Methods of Wetting and Drying Test of Compacted Soil-Cement Mixtures, ASTM Designation: D559; AASHTO Designation T135.
3. Methods of Freezing and Thawing Test of Compacted Soil - Cement Mixtures ASTM Designation: 560; AASHTO Designation: T136. Soil-Cement loses during 12 cycles of either the wet-dry test or freeze-thaw test shall conform to the following limits:

Soil Groups A-1, A-2-4, A-2-5, and A-3 not over 14 percent

Soil Groups A-2-6, A-2-7, A-4 and A-5, not over 10 percent

Soil Groups A-6 and A-7, not over 7 percent

Compressive strengths should increase both with age and with increases in cement content within the ranges of cement content producing results that meet requirements of the freezer-thaw and the wet-dry test.

The above tests are detailed in PCA Soil-Cement Laboratory Handbook. Short-cut Test Procedure outlined in the PCA Soil- Cement Laboratory Handbook dated 1971 can be used only with soils containing less than 50% material smaller than 0.05mm (silt and clay) less than 20% material smaller than 0.005mm (clay) and less than 45% material retained on the No. 4 sieve dark gray to black soils with appreciable amounts of organic impurities cannot be used. Also, granular soils containing material retained on the No. 4 sieve that has a bulk specific gravity less than 2.45 cannot be used.

- D. Regardless of street or pavement section proposed no portion of the pavement section shall be placed within 6" of the seasonably high water table. Seasonal water table shall be projected based on water table observation at time of test and adjusted for the time of year, soil gradation and topography (extreme weather conditions must be considered). Deviation from 6" min. may be accommodated by using alternative designs found in "Drainage Considerations for Flexible and Rigid Pavements" in PFM Appendix 5, and VDOT Pavement Design Guide.
- E. The pavement design for individual streets within a development should be based on the soil analysis that best represent the soil conditions for that street. In a development with homogeneous soils, an overall average CBR will be acceptable.
- F. CL and CH subgrade materials are unacceptable in the pavement structure. If this soil is found in the soil borings, the soil must be undercut and backfilled with select material.
- G. Minimum flexible pavement section **for public streets that do not exceed 350 vpd:**
 - 1.5 inch bituminous concrete surface course Tack coat.
 - 3 inch bituminous base course. ~~(If the surface course is installed at the same time as the base course, 2" of Intermediate asphalt can be substituted.)~~
 - 6 inch aggregate sub-base course.
 - 6 inch compacted subgrade.

- H. The 1-1/2" surface course must be excluded from the pavement design calculations. Streets exceeding 350 VPD must provide separate pavement design. This accommodates typical construction sequence application of final surface following majority of construction traffic use. Adequate cross slopes/weep holes shall be provided to prevent puddling at the catch basins while the surface course is not in place.
- I. No credit will be given for select material placed over subgrades where the average of the CBR test results used in the design is greater than 15.
- J. Not less than 33% of the required flexible pavement structure strength shall be composed of bituminous materials.
- K. Aggregate base materials, including crushed hydraulic cement concrete, shall meet requirements of VDOT's current Road and Bridge Specifications.

Type I- Aggregate base material (crushed material only)

Aggregate Number 21A or 21B (for < 1000 projected ADT).

Aggregate Number 21B (for > 1000 projected ADT).

Type II- Aggregate base material (crushed or uncrushed material)

Aggregate Number 21A or 22 (use for ADT of 1000 or less).

Type I materials are normally crushed, quarry materials. Type II materials are normally processed, locally available materials.

If crushed concrete aggregate base material is proposed, a plan revision may be submitted for evaluation. Plan submittal must include two (2) gradation analysis meeting VDOT specification Section 208. Laboratory analysis of samples shall be performed within 3 months from date of submittal placement of material and shall be performed by a 3rd party testing laboratory. A Soundness test and Abrasion Loss in accordance with VDOT Section 208.03 may be required.

- J. The pavement section shall specify the tack coat on the construction plans. If total asphalt thickness is equal to or exceeds four (4) inches, a prime coat may not be required. A tack coat will be used over base course and intermediate course if the subsequent course is not placed the same day and/or if traffic has been driving on the surface. See VDOT Road and Bridge Specifications.
- K. 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.
- L. A full depth asphalt section may be used on the following streets in lieu of matching the existing concrete section with an asphalt overlay.
 1. Military Hwy.
 2. Western Branch Blvd.
 3. North Battlefield Blvd.

4. Airline Blvd.

M. Lane additions and pavement cuts shall have the same surface material as the existing adjacent pavement.

7.3 TRAFFIC VOLUMES

A. 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 growth rate shall be 5% per year. Alternative growth rates may be used based on previous approved studies.

B. Proposed Streets

The following minimum 24 hour trip generation information shall be used to determine traffic volumes for undeveloped areas:

NOTE: It is the engineer's responsibility to verify current density/zoning relationships.

For land uses other than residential, the trip generation should be calculated using the latest edition of ITE "Trip Generation".

A-1 [1 dwelling unit per parcel] -- 10 trips per day per parcel rate--10 trips per day per dwelling unit [no major subdivisions permitted, must have residential classification].

RE-1 [.33 dwelling units per acre] -- 3 trips per day per acre rate-- 10 trips per day per dwelling unit.

R-15 [2.3 dwelling units per acre] -- 23 trips per day per acre rate-- 10 trips per day per dwelling unit.

R-10 [3.5 dwelling units per acre] -- 35 trips per day per acre rate-- 10 trips per day per dwelling unit.

R-12 [2.9 dwelling units per acre] -- 29 trips per day per acre rate-- 10 trips per day per dwelling unit.

R-MF-1 [15 dwelling units per acre] -- 91 trips per day per acre rate--6.1 trips per day per dwelling unit.

R-TH-1 [10 dwelling units per acre} -- 61 trips per day per acre rate-- 6.1 trips per day per dwelling unit.

B-1 & [Building area per acre -- 19602 sq. ft.]
B-2

- * Equation -- $\ln (T) = 0.65 \ln (19.602 x) + 5.92$
- B-3 [Building area per acre -- 21780 sq. ft.]
 - * Equation -- $\ln (T) = 0.65 \ln (21.780 x) + 5.92$
- B-4 [Building area per acre -- 15246 sq. ft.]
 - * Equation -- $\ln (T) = 0.65 \ln (15.246 x) + 5.92$
- O-I [Building area per acre -- 19602 sq. ft.]
 - * Equation -- $\ln (T) = 0.92 \ln (19.602 x) + 2.9$
- M-1 [Building area per acre -- 21780 sq. ft.]
 - * Equation -- $\ln (T) = 0.79 \ln (21.780 x) + 2.87$
- M-2 [Building area per acre -- 21780 sq. ft.]
 - * Equation -- $T = 3.88 (21.780 x) - 13.0$
 - * Where (T) equals trips per day and (x) equals number of acres.
 - Equations from Trip Generation Manual (4th edition) Institute of Transportation Engineers.
 - Figures must be adjusted when more detailed information is available.

C. Through Streets

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

- a. Number of acres expected to contribute traffic to this street.
- b. Ultimate development of property based on the LAND USE PLAN, developed by the Planning Department.
- c. Total number of units expected to contribute to subject street.
- d. A detailed topo or other map shall be submitted showing the offsite area and ultimate zoning. All assumptions of future traffic flow must be included. Future Zoning shall be derived from the approved LAND USE PLAN.
- e. Master Transportation Plan roadways must include a projected through volume.

CHAPTER 8

STREET DESIGN

8.0 GENERAL

A. Purpose

The purpose of this chapter is to define geometric design criteria for roadways within proposed and existing easements.

B. References

1. Unless otherwise noted, design City code and criteria for all roadways will conform to the applicable provisions in the Public Facilities Manual (PFM), Volume II.
2. The VDOT minimum design standards reference AASHTO “Green Book” policies and guidelines.

C. Variances

1. Deviations to City Code and PFM will be considered for innovative transportation approaches associated with land development proposals that are consistent with the geometric requirements in the VDOT Road Design Manual.

D. Definitions:

1. Minor streets - Streets which are used primarily for access to abutting property and not intended to provide through traffic movements (generally ADT <1000). Minor streets in new development shall have a minimum 50' right-of-way. (70-1, 70-95)
2. Collector streets - Streets which carry traffic from minor streets to the system of major streets (generally ADT >1000 but <5000). Collector streets in new development shall have a minimum 60' right-of-way. (70-1, 70-95)
3. Major or 'higher type' streets - Streets and highways which are used primarily for traffic movement. These streets shall have a minimum 90' right-of-way in new development. Existing higher type streets are characterized by traffic volumes of greater than or equal to 5000 vpd and/or posted speeds of at least 45 mph.

See PFM Chapter 16 Access Management for crossover spacing and sight distance.

8.1 GEOMETRIC STANDARDS

- A. Minimum street grade 0.2% regardless of the use of curb and gutter. (City Code Sec.70-97)
- B. Centerlines of all intersecting streets meet at a common point and shall intersect as near to a right angle as practical. (70-97)
- C. A barricaded stub street may be no more than one lot deep. If more than one lot, a City standard cul-de-sac is required. Cul-de-sacs are required for a permanent terminus of a dead-end street. All streets with a temporary cul-de-sac shall have a sign at the street's terminus stating the temporary nature of the cul-de-sac. (70-94c) (07/01)
- D. Improvements will be required along existing City streets in accordance with Section (70-167a) of the Chesapeake City Code.
- E. Street Width and Minimum Centerline Radius Requirements

RIGHT-OF-WAY	MAXIMUM ADT	MINIMUM CENTERLINE RADIUS
50'	ADT < 1000	125'
50' AND 60' CUL-DE-SACS	N/A	75' FOR LAST 600'
60'	1000 ≤ ADT < 5000	650'
70' & 80'	ADT < 5000	650'
90' & GREATER	ADT ≥ 5000	1,400'

*Minimum centerline for 70' and 80' right-of-way streets is 650' if the average daily traffic (ADT) is less than or equal to 5000 VPD. The minimum centerline radius for 90' right-of-way streets and higher is 1400'. Streets with rights- of-way 70' and greater and with ADT's higher than 5000 VPD shall design their centerline radii and provide super elevation in accordance with urban VDOT Road and Bridge Standards.

- F. In situations where roadside ditches are permitted along the frontage of a rural development; a shoulder shall be established in accordance with the table below.

<u>Street Type Minimum Shoulder Width</u>	
Minor and Collector	10'
Higher Type Streets	12'

- G. Street and Roadside Ditch Requirements for Subdivisions with a Curb and Gutter Variance. (Granted by the Planning Commission or approved Rural Cluster Development).
1. Ditches shall have 0.5% minimum longitudinal slope.
 2. Ditches shall have a 2.5' maximum depth and a 0.5' minimum depth.
 3. 2:1 side slopes.
 4. Pavement width shall be no less than 26 feet.
 5. The shoulder shall be 6' or greater with geometry as specified by VDOT Standard Highway Geometry. (VDOT Road and Bridge Standards) (07/01)
 6. A minimum 50' right-of-way and drainage easements shall be dedicated to the outside top of the ditch banks are required.
 7. Deed restrictions in accordance with Appendix 7.
- H. In accordance with State Code 15.2-2021, curb ramps for use by persons with mobility impairments shall be constructed at intersections and crosswalks on all new curbed streets where there exists sufficient room for sidewalks. Ramps shall be constructed in accordance with Chesapeake City Standard found in PFM, Volume II.
1. Sidewalks are required on both sides of all new streets in accordance with Section 70-167b of the City Code. In new subdivisions sidewalks will be installed by the developer of the subdivision as part of the physical improvements required.
- I. Future road requirements and improvements to existing roads shall be considered in development plan design. Right-of-way dedication and reservation shall be made in accordance with City Code Sections 70-95 and 70-99. Future road requirements include but are not limited to the specifications made in the council adopted 2050 Master Transportation Plan. A grid of connecting streets at 1 mile intervals is necessary for proper local traffic circulation. The City shall be consulted to determine the exact location of future highways and connecting streets. Stub streets shall also be provided to serve as circulation points with the development of adjacent parcels.
- J. Vertical curves are required in accordance with Appendix 15 when the algebraic difference in the street grades is greater than or equal to 1% over a distance of 50'.

On proposed low speed local streets with less than 400 ADT and no future increase in traffic volume, minimum grade changes in vertical curves may be increased or eliminated when requested by the design engineer of record.

- K. Streets shall be located to align with existing or proposed streets in the adjacent subdivision. Stub streets shall be provided for connectivity to adjacent undeveloped or under developed property.
- L. Valley gutters - The use of valley gutters is permissible only when the cost of extending drainage to eliminate the valley gutter exceeds twice the cost of the valley gutter. Under no circumstances are valley gutters permissible on through streets. Cost calculations must be submitted substantiating the use of valley gutter at each intersection.
- M. Intersecting street crowns shall be designed to maintain the typical section of the most heavily traveled through street. A minimum 1% intersection cross-slope shall be maintained.
- N. Proposed street system or entrance shall tie into an existing paved, accepted street or one improved and bonded pending acceptance.
- O. Street improvements are required along all proposed streets adjacent to lots being recorded. Stub streets are to be constructed to limits of subdivision.
- P. No more than one alternate pavement section is to be shown. It shall be noted that only one section shall be used on that portion of the roadway to be constructed.
- Q. Subdivision access - Not less than two public street access points shall be provided when the number of lots in a subdivision exceed 30 lots. See Fire Department Access criteria PFM Chapter 13. Regardless of number of unites, development must address connectivity with adjacent property to create a more efficient transportation network.
- R. Minimum Curb Return Radii At Intersections

1. Intersection curb radius table:

	MINOR STREET	COLLECTOR STREET
Minor Street	25'	40'
Collector Street	40'	40'

2. Any intersection involving a street with greater than a 60' right-of-way shall be designed to accommodate an AASHTO type WB-50 semitrailer

combination without entering opposing lane.

- S. The maximum block length within a new subdivision is 1400 feet.
- T. At least a 100 foot tangent length, or as prescribed by The City, shall be provided between all reverse curves. Tangent lengths less than 100' on minor streets will be considered with proper supporting documentation on a case-by-case basis.
- U. Minimum transition lengths for traffic lanes shall be determined by the following formulas:

40 MPH and below

Above 40 MPH

$$L = \frac{WS^2}{60}$$

$$L = WS$$

Where: L is transition length (FT).

W is width of lateral shift for the centerline of the vehicle (FT)

S is the speed (MPH)

- V. Tidal flooding shall be considered in site/subdivision street design. The entire length of every new street shall have some portion (or point) of the pavement riding surface above the Flood Insurance Study for 50 100 year storm (± 1% percent see table below). The 10-year tidal elevation must be below the gutter flow line or manhole rim in public facilities. Tidal elevation frequencies are to be based on Flood Insurance Study for the City of Chesapeake by the Federal Emergency Management Agency.

STILLWATER ELEVATION TABLE NAVD-88

EASTERN BRANCH ELIZABETH RIVER All areas	8.0
INDIAN RIVER All areas	8.0
NORTH LANDING RIVER/INTERCOSTAL WATERWAY Approx. 2 miles east of Centerville Trpk to VB City Line	4.0
INTRACOASTAL WATERWAY/ALBEMARLE CANAL Approx. 2 miles east of Centerville Trpk to Centerville Great Bridge Bypass (168) to Centerville Turnpike	5.0 6.0
Approx. 1 mile east of Dominion Blvd to Great Bridge Bypass (168)	7.0
SOUTHERN BRANCH ELIZABETH RIVER Approx. 1 mile east of Dominion Blvd to Norfolk City line Deep Creek	8.0 8.0

WESTERN BRANCH ELIZABETH RIVER

All areas

9.0

NORTHWEST RIVER

All areas

4.0

- W. The entire length of every new ~~minor and collector~~ street (including private streets) shall have some portion or point of the pavement ridging surface above the ~~50~~ 100 year static elevation of the detention facility serving that roadway. ~~The entire length of every street larger than a collector street shall have some portion or point of the pavement ridging surface above the 100-year static elevation of the detention facility serving that roadway~~
- X. All private streets (excluding alleys) within a multifamily development shall have a minimum street width of 30 feet measured face of curb to face of curb, except in the following circumstances:
1. Where 40 or fewer attached multifamily dwelling units, or 24 or fewer detached condominium units, front or have direct access to a private street, the minimum pavement width (excluding curb and/or gutter) of such street shall be 24 feet. In calculating the number of units that front or have direct access to a private street, the term "street" shall be construed to include the full length of a continuous privately owned road, without regard to intersecting streets, alleys, drive aisles, lanes and other rights-of-way, whether public or privately owned.
 2. Where a private alley, lane or drive aisle is designed to provide access to the side or rear of a dwelling unit in a multifamily district for use by the residents of such unit, the minimum width of such alley, lane or drive aisle shall be 20 feet of pavement. Greater minimum widths may be required in accordance with the Public Facilities Manual as necessary to accommodate parking or other needs of the development.
 3. Notwithstanding the foregoing, any private street on which public school buses will travel shall have a minimum width of 30 feet, face of curb to face of curb.
- Y. Additional Private street criteria per Zoning Ordinance 6-1602.
1. All streets shall have a minimum centerline radius of 75 feet for streets 30 feet in width, and 50 feet for streets 24 feet in width, with no minimum tangent line. The director of development and permits, or designee, may adjust these standards were deemed necessary to accommodate unique design conditions.
 2. Minimum pavement design shall meet the specifications applied to public streets as set forth in the Public Facilities Manual.
 3. Minimum lighting standards shall meet the specifications applied to public streets as set forth in the Public Facilities Manual, provided that the director of development and permits, or designee, may approve alternate standards of lighting
 4. Curb and guttering shall be required on private streets in accordance with

the specifications set out in the Public Facilities Manual, except that curb and guttering may be waived by the director of development and permits, or designee, for private alleys, lanes and drive aisles, not exceeding twenty-four (24) feet in width, where designed to provide access by residents to the side or rear of a dwelling unit in a multi-family zoning district. No rolled curbs shall be permitted on private streets, except as allowed by the director of development and permits, or designee, for such private alleys, lanes, and drive aisles described above.

8.2 PAVEMENT CUTS & PAVEMENT WIDENING

- A. No pavement cuts will be permitted on streets with traffic counts greater than 7500 vpd, recently (within the last 24 months) overlaid streets or new streets without prior approval from the City. Lines must be jacked or bored under these streets. Plans must state "bore" or "jack" at each required pavement crossing. Pavement patches will be permitted on streets with traffic counts less than 7500 vpd. Plans must provide a detail in accordance with City Standard PC-1. Surface tolerance shall not exceed 1/4 inch. Valve boxes must be flush with the pavement. (Test per PFM, Vol. III) 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.
1. Complete overlays are required under the following utility installations:
 - a. Projects which install utility lines down the centerline of the street.
 - b. Projects which have three or more utility cuts within a 500' interval.
 2. A complete overlay is not required with the addition of a complete new lane as long as the seam between the old and new pavement is not located in a travel lane and a consistent cross slope has been maintained from the centerline of the road to the new edge of pavement.
 3. Milling and overlays will be required to the centerline of the street under the following circumstances:
 - a. Projects where pavement cuts are limited to 1/2 of the street and there are more than 3 cuts in a 500' interval.
 - b. When necessary to ensure a consistent cross slope from the centerline of the street to the edge of pavement.
 - c. Pavement widening of existing streets requires mill & overlay to adjacent lane line.

- d. When eradication of lane lines would create unclear traffic canalization, pavement must be completely overlaid and re-striped to the nearest lane line.
- B. Plans must indicate Pavement Cut standards PC 1 through PC-3 from PFM Vol. II.

8.3 STREET MAINTENANCE DEFINITIONS

- A. Public Street - A strip of land reserved as a right-of-way for public use and accepted into the City's street system for maintenance purposes and one which shall include those streets accepted by the Virginia Department of Highways for maintenance under the terms of the "Byrd Act" of 1932.
- B. Paper Street - A dedicated right-of-way, which has not been accepted for maintenance purposes by the City.
- C. Private Street - A right-of-way which has been recorded in the Clerk of the Circuit Court's office as being for ingress and egress to specific properties, or as an easement for ingress and egress to specific property.

8.4 PAPER STREETS

- A. No maintenance shall be provided for paper streets by the City. Before the City shall accept a paper street into the City's street system for maintenance purposes it shall be improved so as to be made eligible for state maintenance payments in accordance with the standards listed in Section 8.4.D.
- B. Proposed developments which include and/or are adjacent to substandard or unimproved right-of-way must make necessary improvements for acceptance into the public street system. The legal status of an apparently existing right-of-way must be determined first. Required road improvements can then be determined as a condition of development.
- C. Paper streets can be improved by a private homeowner, as a private access, to gain access to their parcel without bringing the street up to City standards for the following conditions:
 - 1. City will not provide maintenance of the private access within the paper street.
 - 2. Private access shall be limited to 500' and shall not be extended without improving the paper street to a public street standard acceptable for street maintenance.
 - 3. Private access can be used to serve up to a maximum of 5 properties.

4. Wetlands investigation must be performed to determine the presence of wetlands. Any disturbance of wetlands shall be approved by the Army Corps of Engineers and DEQ, prior to disturbance.
 5. A construction plan is required for all proposed work within the right-of-way. The plan shall be approved by the City prior to issuance of any permits.
 6. Drainage analysis shall be performed to determine the need for culvert crossings under the access to accommodate the upstream drainage area.
 7. Private accesses shall be for private use only. Mail delivery and garbage collection will be limited to the closest accepted and maintained public street.
 8. Right-of-Way Permit must be secured from the City prior to any construction in the right-of-way.
- D. Proposed improvements must comply with the minimum standards referenced in Section 8.0 B of this chapter.
1. Prior to acceptance for maintenance on a paved status by the City, paper streets shall be improved in accordance with the following standards as prescribed by the Virginia Department of Highways and the City of Chesapeake:
 - a. Paper streets recorded prior to July 1, 1950, shall have at least 40 feet of right-of-way and a pavement width of 20 feet. Pavement and base shall conform to current subdivision requirements. Proper drainage shall be provided for such streets.
 - b. Paper streets recorded after July 1, 1950, shall have at least 50 feet of dedicated right-of-way and a pavement width of 30 feet. Pavement and base shall conform to current subdivision requirements. Proper drainage shall be provided for such streets.
- E. Prior to approval of construction plans for improvements to paper streets, the responsible party shall enter into an agreement and post surety in accordance with subdivision ordinance.

8.5 RAILROAD CROSSINGS

- A. New streets that propose crossings of existing rail roads shall provide a 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.

B. The City of Chesapeake traffic control system requirements for rail crossings are as follows:

1. Undivided Roadways - Flashing light signals and gates.
2. Divided Roadways - Cantilever flashing lights and gates at all four quadrants.

CHAPTER 15

SOIL DRAINAGE MANAGEMENT PLAN DESIGN

STATE HEALTH DEPARTMENT SEWAGE HANDLING AND DISPOSAL REGULATIONS

Article 5

Installation of Residential Sewage Disposal Systems in Political Subdivisions Having Soil Drainage Management Contracts with the State Health Department

15.0. 12VAC5-610-600 GENERAL.

It is the policy of the department to grant sewage disposal system permits for private residential systems utilizing subsurface soil absorption whenever such permits can be granted without endangering public health. Many soils are limited in their ability to accept sewage by high seasonal water tables. Some soils can accept sewage when an adequate local plan for soil Drainage Management Contract with the department and subsequently develops Soil Drainage Management Plan(s) in an area in which soils respond to artificial drainage and the plan is acceptable to the department, the department will consider the approval of subsurface soil absorption systems in soils that were previously unacceptable because of high seasonal water tables.

A. 12VAC5-610-610 DEFINITIONS.

Soil Drainage Management Contract (SDMC) means a contract between the department and the political subdivision for the development, operation, maintenance, and enforcement of all soil drainage management plans within the political subdivision.

Soil Drainage Management Plan (SDMP) means a plan approved by the commissioner, pursuant to 12VAC5-610-630 below, meeting criteria set forth in 12VAC5-610-640 below.

OSE means Authorized Onsite Soil Evaluator as licensed by the Virginia Department of Professional and Occupational Regulation.

B. 12VAC5-610-620 APPLICABILITY.

Part III, Article 5 shall be applicable only in those political subdivisions, which enter into Soil Drainage Management Contracts with the Department.

- C. 12VAC5-610-630 Procedures for entry into or withdrawal from a Soil Drainage Management Contract (SDMC).

15.1 Entry

- A. Any political subdivision in the Commonwealth may at any time apply to the department through the district or local health department for entry into an SDMC with the department. The application shall contain the following minimum elements:
 - 1. A proposed contract between the department and the political subdivision.
 - 2. Drafts of all ordinances, required easements, or other legal documents which the political subdivision proposes to adopt as a portion of the SDMC including a local ordinance requiring the holder of a sewage disposal construction permit issued in conjunction with the SDMC to have the permit recorded in the land records of the circuit court having jurisdiction.
- B. The department shall, within 60 days of the submission of an application for entry into and SDMC, evaluate the application and propose to the political subdivision any suggestions for modification to the SDMC.
- C. The political subdivision may review the department's suggested modifications and resubmit a revised application within such time as the political subdivision elects.
- D. The department shall accept or reject entry into and SDMC within 90 days of receipt of the final application from a political subdivision.
- E. Upon rejection by the department of a final application for entry into an SDMC, the political subdivision may appeal the department's decision to the appropriate circuit court. The Virginia Administrative Process Act, S 9-6.14:1, et seq., shall apply to such an appeal.

15.2. Withdrawal

- A. If the department determines that a political subdivision is failing to abide by the terms set forth in its SDMC with the department, the department may withdraw from the contract.
- B. The department shall, within 60 calendar days of its proposed withdrawal from an SDMC notify the political subdivision of the department's intent.

1. The political subdivision may apply to the department for a hearing upon the proposed withdrawal. Such hearing shall be held in accordance with the provisions governing case decisions contained within the Virginia Administrative Process Act
2. Within 30 calendar days after such hearing, the department shall notify the political subdivision whether the department will withdraw from the SDMC.
3. A decision by the department to withdraw from an SDMC may be appealed to the appropriate circuit court pursuant to the provisions of the Virginia Administrative Process Act.
4. If withdrawal occurs, continued maintenance of all SDMP's shall be the responsibility of the political subdivision in areas where permits were issued in accordance with these regulations.

15.3. 12VAC5-610-640 Minimum Standards for Soil Drainage Management Plans.

- A. Every SDMP offered in conjunction with a SDMC shall meet the following minimum standards for surface and groundwater management.
 1. Positive surface grading in the area of a dwelling and subsurface soil absorption's area at a minimum of 0.5%;
 2. Drainage ditches for diverting surface water and for lowering the seasonal groundwater table, which shall;
 - a. Completely surround the subsurface soil absorption system.
 - b. The perimeter ditch shall have absolute minimum grade of 0.2%.
 - c. Be located 70 ± 10 feet from the edge of the drainfield.
 - d. Have the invert of the ditch placed in a Group I, II or III soil at an elevation so that the normal water surface in the ditch is a least six inches below the invert of the trench of the subsurface soil absorption system.
 3. A French drain on one side in lieu of an open drainage ditch on one of the four sides.
 4. Diversion ditches or swales shall be:

- a. Required where adjacent property is equal to or higher in elevation than the proposed site and the adjacent property may be expected to discharge water onto the proposed site.
 - b. Designed to meet such site-specific individual requirements as the department determines to be necessary.
- 5. Diversion ditches, where required, or other ditches to transport stormwater and/or groundwater from a site to a receiving body in accordance with the political subdivision's criteria.
- 6. A receiving stormwater and groundwater drainage system which is adequate in capacity so that waters from a proposed site shall be conveyed to it in accordance with the political subdivision's criteria.
- 7. Ditches to remain open and not be piped and covered unless approved by appropriate local government official, such approval to be granted only with the concurrence of the department.
- 8. Only appurtenances to the subsurface soil absorption system shall be constructed within the confines of the perimeter ditches required in S 3.19 B 2a, above except where a French drain is provided on one side.
- 9. Lots which shall be a minimum of three (3) acres in size not including swamps or marshland.
- B. Single lot SDMP, a copy of Site Soil Evaluation and initial denial letter must be included with all plan submittals. The letter will include required drainfield size for primary treatment.
- C. Subdivision Developments; an AOSE (Onsite Soil Evaluator) or Professional Engineer will Submit to the Chesapeake Health Department for review, the soil evaluation and drainfield design on the "Abbreviated Design form" to the Chesapeake health Department for review. Upon Chesapeake Health Department completion of the review, the owner, consultant or Professional Engineer will submit the abbreviated Design form stating the drainfield sizes with the denial letter from the Chesapeake Health Department to Department of Development and Permits for review and approval. Drainfield size must be in accordance with the above.

15.4. Design Standards for all Soil Drainage Management Plans, Sites and Subdivisions

- A. Fill may be used within the drainfield to achieve the minimum positive grade of 0.5%, however the fill will not be considered in determining the minimum drainfield ditch depth. The drainfield and reserve areas shall not be located over an existing drainage ditch that was filled, where

applicable, individual approval may be sought from the Chesapeake Health Department must be obtained.

- B. Onsite topography is required, including sufficient data to determine the pre-developed drainfield elevations.
- C. The offset from the edge of the drainfield to the centerline of the ditch shall be 60-80 feet. Offsets greater than 80' must be approved by the Chesapeake Health Department prior to plan approval.
- D. If one of the ditches carries public water, it shall be sized based on ultimate runoff. When this is the case and the public ditch exceeds 10 feet top-of-bank width, the offset distance is to be a minimum of 50' measured from edge of drainfield to the top-of-bank.
- E. Drainfield ditch inverts shall be a minimum of $2' + 0.005(L)$ lower than edge of drainfield elevation (where L is the distance from edge of drainfield to centerline of ditch). However, the highest ditch elevation shall be at least 26" lower than the pre-developed minimum grade of any drainfield elevation unless a variance is approved by the Chesapeake Health Department.
- F. All SDMP ditches must be contained within recorded easements and perimeter ditches shall exhibit absolute minimum slope of 0.20%. The portion of the ditch outside the perimeter of the drainfield does not have to exhibit 0.2% slope to the .
- G. The use of public ditches as SDMP Ditches in a new subdivision shall be kept to a minimum. Public ditches serving as drainfield ditches must have absolute minimum 0.2% slope, and be located within easement or right-of-way.
- H. Wet or dry retention/detention for facilities are generally not accepted by the Virginia Department of Health for stormwater control in SDMP Subdivisions. Health Department approval for detention/ retention shall be obtained prior to plan submittals that proposed retention/detention.
- I. The receiving facility must be City maintained. If the receiving facility is not within the right-of-way or an existing public drainage easement then a drainage easement, sized to ultimate must be dedicated on the part of the ditch, which lies on the developer's property.
- J. The receiving public facility must exhibit a positive grade. Elevations in the receiving facility must be provided for a minimum of 200' upstream and 200' downstream of site to demonstrate positive grades.

- K. Ditch and shoulder improvements are required along the frontage of all SDMP lots created by a proposed subdivision. SDMP plans for existing parcels shall have a 50' minimum of ditch and shoulder improvements in the location of the proposed entrance. In any event, deepening a roadside ditch .5 feet will require ditch and shoulder improvements.
 - L. If the receiving ditch is not dry, the SDMP ditch shall tie in at an elevation above the normal water elevation. The ditch inverts and normal water elevation shall be shown on the plan.
 - M. Driveway pipes must be included on the construction plan for all SDMP's. Pipes shall be designed for ultimate flows in accordance with City criteria. Installation of driveway pipes shall be the responsibility of the developer (with note stating same on plan).
 - N. All ditches used as part of the soil drainage management system (except public ditches) require easements as describing under Drainage Policy. The easements shall be referred to as "Septic Tank Drainage Easements".
 - O. All plans/plats requiring soil drainage management must include the SDMP Easement and Drainage Statement (Appendix 7). All necessary two-party and three-party easements shall be executed prior to plan approval.
 - P. The acreage of each parcel (excluding wetland area) shall be specified on the Plan. Wetlands shall be delineated on the plans or note stating that no wetlands are within the development.
 - Q. A City standard French drain may be used in lieu of an open drainage ditch on one of the four sides. The drainfield ditches should be graded so that no other perimeter ditches are required to drain through the French drain.
- 15.5. 12VAC5-610-650 Department procedures relating to subsurface soil absorption system applications in SDMC counties and cities.
- A. All applications for subsurface soil absorption systems will be evaluated based in the criteria contained in Part III, Article I and Part IV of these regulations. When the site is limited only by a high seasonal water table and/or surface runoff the department shall require that a satisfactory SDMP be in place and functioning satisfactorily before issuance of a construction permit. Typed on the construction permit will be the following statement, which shall be signed by the applicant:

I understand that this soil has severe limitations for the disposal of septic effluent. With the aforementioned drainage measures the health

department expects reasonable serviceability; however, it may malfunction during extreme conditions.

I understand and acknowledge the above and agree to install and maintain the drainage measures.

Signed: _____

Date: _____

- B. Soils to be considered shall demonstrate their ability to be artificially drained and shall fall generally into Texture Group I, II, III.
- C. The SDMP and site specific drainage system(s) shall be certified, supervised, maintained and prepared by or under the direct supervision of a professional engineer licensed in Virginia who is a full time employee of the political subdivision. In addition the political subdivision shall have the manpower or other capability to maintain the applicable conditions of the SDMP, this certification shall become a part of the subsurface soil absorption system permit.
- D. Proper easements shall be provided for drainage to assure access for proper maintenance.
- E. Political subdivisions shall assure proper installation and maintenance of the stormwater and groundwater drainage system(s).
- F. The department retains the right to reject any SDMP if in the opinion of the department the SDMP proposed will result in a nuisance or health hazard condition.

NOTE: The foregoing was based on "Commonwealth of Virginia/State Board of Health" SEWAGE HANDLING & DISPOSAL REGULATIONS.

APPENDIX 7

PLAT AND PLAN SPECIAL NOTES

EASEMENT AND DRAINAGE STATEMENT
TO BE PLACED ON PLANS AND ALL SUBDIVISION PLATS
REQUIRING SOIL DRAINAGE MANAGEMENT PLANS

The easements designated as "Septic Tank Drainage Easement" are dedicated for the purpose of providing storm water runoff in accordance with an approved plan for a Soil Drainage Management Plan developed under the rules and criteria of the State Health Department and Sections 70-142 of the city code.

The Landowner, Developer) by his signature hereon agrees as follows:

1. The ditch or facility to be constructed in accordance with the approved plan is necessary for the proper functioning of a septic tank or other sewage disposal system on the property of the Landowner. Landowner agrees that such ditch or facility and septic or sewage disposal system shall be constructed, repaired, maintained and operated at its sole cost and expense.
2. City, its agents and employees, shall have the privilege of entry on Landowner's property for the purpose of inspection of said drainage or sewage disposal systems. Should the City determine after an inspection that the same is not being maintained in a condition adequate for its proper functioning, then the City shall notify the Landowner that it must, within ten days, correct such condition. If Landowner fails to correct such condition, then City may perform the necessary work at the expense of the Landowner, which expense the Landowner agrees to pay the City promptly upon demand.
3. The covenants and agreements contained herein shall run with the land and bind successors in interest to the parties named herein, except that such parties or their successors may be written instrument duly recorded declare any or all of such covenants no longer to be effective or binding.

VERBIAGE FOR ALL PLATS WITH RIGHT-OF-WAY RESERVATIONS

The Owner and/or its heirs, assigns, lessee, grantees or successor in interest agrees to reserve for future purchase by the City the area hereby designated on the plat and shall convey same to the City by deed containing GENERAL WARRANTY AND ENGLISH COVENANTS TO TITLE. The purchase value of said area is to be based on the fair market value as of the date the City exercises its right to purchase the area designated as reserved with no compensation for any improvements placed within the area. The Owner agrees that it shall not make or have any claims for damage to the said improvements or damages to the residue for the Owners property by reason of the said purchase.

VERBIAGE FOR ALL PLATS WITH PRIVATE DRAINAGE EASEMENTS

"Private Drainage Easements" shown hereon are for the purpose of conveying storm water drainage from upstream and adjacent lots. Maintenance shall be the responsibility of adjacent property owners unless the City expressly accepts the easement for public use.

VERBIAGE FOR ALL PLATS WITH PUBLIC DRAINAGE/ACCESS EASEMENT (07/01)

"Drainage/Access Easements" shown hereon are hereby dedicated to the City of Chesapeake granting the right to construct, operate and maintain a drainage ditch or structure upon and across the lands and property of the grantor and including the right of ingress to same. The right is granted to inspect the said drainage ditch or structures and to cut and clear all undergrowth and other obstructions in and along the said drainage or adjacent thereto that may in any way endanger or interfere with the proper use of the same. No physical obstructions including, but not limited to, fences, sheds, landscaping, trees, etc., will be placed within the easement at any time. The property owner agrees that in the event the City determines it is necessary to remove any obstruction(s), the property owner will promptly pay the City all costs associated with the removal of the obstruction(s). The property owner also agrees to preserve all signage marking the access easement.

VERBIAGE FOR ALL PLATS WITH PUBLIC DRAINAGE EASEMENT (07/01)

"Drainage Easements" shown hereon are hereby dedicated to the City of Chesapeake granting the right to construct, operate and maintain a drainage ditch or structure upon and across the lands and property of the grantor and including the right of ingress to same. The right is granted to inspect the said drainage ditch or structures and to cut and clear all undergrowth and other obstructions in and along

the said drainage or adjacent thereto that may in any way endanger or interfere with the proper use of the same.

VERBIAGE FOR ALL PLATS THAT HAVE MASTER DRAINAGE IMPOUNDMENT FACILITIES (07/01)

Impoundment easement for the purpose of providing storage and the flow of public drainage shall be available for the retention of stormwaters up to elevation _____, inclusive. NO alteration whatsoever of the drainage way and its bank side slopes, within the limits of the impoundment easement, is permitted without the approval of Chesapeake Department of Public Works. City maintenance shall be limited to any construction or maintenance required for adequate storage and flow of stormwater within the impoundment easement.

VERBIAGE FOR ALL PLATS THAT HAVE IMPOUNDMENT EASEMENTS (07/01)

Impoundment easement for the purpose of providing storage and the flow of public drainage with an aggregate volume of not less than ____ acre ft. shall be available for the retention of storm waters between elevations ___ and ___, inclusive. Bank side slopes of ___ shall be maintained from the top of bank down to the bottom of the facility. No alteration whatsoever of the lake and its bank side slopes, within the limits of the impoundment easement, is permitted without the approval of Chesapeake Department of Public Works. THE CITY RESERVES THE RIGHT OF INGRESS/EGRESS TO CONSTRUCT, OPERATE AND PERFORM LIMITED MAINTENANCE to provide for adequate storage and flow of stormwater within the impoundment easement.

VERBIAGE FOR ALL PLATS THAT HAVE "LAKE ACCESS" EASEMENTS (07/01)

"Lake Access Easements" shown hereon are hereby dedicated to the City of Chesapeake granting the right to access drainage facilities for maintenance and other public health and safety purposes. No physical obstructions including, but not limited to, fences, sheds, landscaping, trees, etc., will be placed within the easement at any time. The property owner agrees that in the event the City determines it is necessary to remove any obstruction(s), the property owner will promptly pay the City all costs associated with the removal of the obstruction(s). The property owner also agrees to preserve all signage marking the access easement.

VERBIAGE FOR LOTS APPROVED WITHOUT A WATER SERVICE AND/OR SEWER LATERAL (07/01)

This site is served by City water and sewer. Public water and sewer main lines exist in (street name) . Development of parcel _____ will require the property owner (Developer) to install any water service and sewer lateral for their proposed land use, which may include upgrade of existing Public Utilities.

VERBIAGE FOR LANDSCAPE BUFFER (07/01)

No structure shall be located in the landscape buffer and all plant material therein is to be maintained by the owner of the property as set forth in the City of Chesapeake Zoning Ordinance.

VERBIAGE FOR CBPA (07/01)

The area encompassed by this plat is within the Resource Protection Area (RPA) and/or the Resource Management Area (RMA) of the Chesapeake Bay Preservation Area Overlay District. Development and use of all lots shall be in compliance with said standards and subject to review, as set forth in the City of Chesapeake Zoning Ordinance.

VERBIAGE FOR VISIBILITY EASEMENT (07/01)

"Visibility Easements" shown hereon are hereby dedicated to the City of Chesapeake to ensure adequate sight visibility, there shall be no obstruction (i.e., shrubs, fences, vegetation, signs, etc.) within the visibility easement in excess of 2.5 feet above the curb line elevation.

VERBIAGE FOR SIDEWALK EASEMENT (07/01)

"Sidewalk Easements" shown hereon are hereby dedicated to the City for the purpose of maintenance of sidewalks across the land of property owners including pedestrian ingress & egress for the public.

VERBIAGE FOR TRAFFIC CONTROL EASEMENT (07/01)

"Traffic Control Easement" shown hereon hereby dedicated to allow for the construction, inspection and maintenance of traffic control features to include but not limited to traffic signal appurtenances, control box and signage.

VERBIAGE FOR INGRESS/EGRESS EASEMENT (07/01)

"Ingress/Egress Easements" shown hereon are to provide cross reciprocal ingress/egress to adjoining parcels and public streets.

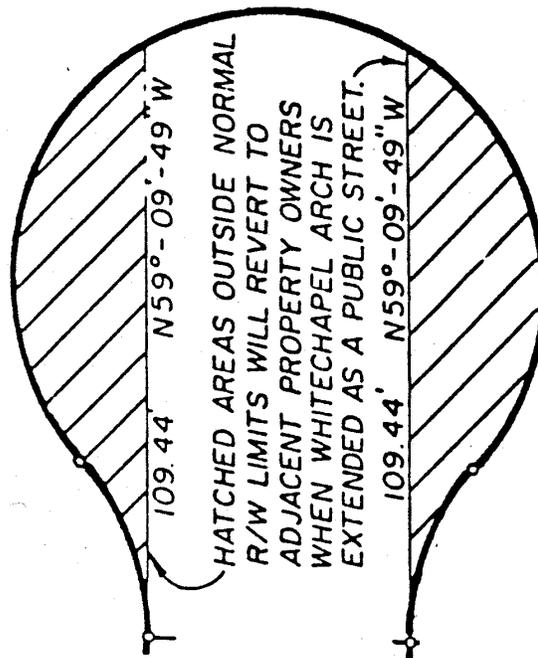
GENERAL NOTES FOR CUL-DE-SAC EXTENSIONS (02/03)

Cul-de-Sac Streets that can be extended in the future must contain the following note:

"Hatched areas outside normal right-of-way limits will revert to adjacent property owners when the adjacent public street is extended as a public street."

Upon street extension the following note is required:

"Hatched area depicts Cul-De-Sac area outside the limits of right-of-way needed for the street extension. Such area is hereby vacated pursuant to the authority in Section 70-31 of the City Code and Sections 15.2-2271 and 15.2-2272 of the Code of Virginia. Title to the vacated right-of-way shall vest in adjacent property owners as shown in Map Book ____, Page ____.



VERBIAGE FOR PLATS CONVEYING PRIVATE GRASS CHANNEL EASEMENTS

"Private Grass Channel Easements" are hereby established and are for the purpose of impounding and conveying storm water drainage from upstream and adjacent lots in accordance with DEQ Design Spec #3 dated 2013/2014. Maintenance shall be the responsibility of adjacent property owners. City, its agents and employees, shall have the privilege of entry on Landowner's property for the purpose of inspection of said drainage facilities. Should the City determine after an inspection that the same is not being maintained in a condition adequate for its proper functioning, then the City shall notify the Landowner that it must, within ten days, correct such condition. If Landowner fails to correct such condition, then City may perform the necessary work at the expense of the Landowner, which expense the Landowner agrees to pay the City promptly upon demand. The covenants and agreements contained herein shall run with the land and bind successors in interest to the parties named herein.

VERBIAGE FOR PLATS CONVEYING A CONSERVED OPEN SPACE EASEMENT

1. The Conserved Open Space Easement shown hereon is hereby dedicated to the City of Chesapeake for the purpose of treating and control of storm and surface waters in accordance with an approved construction plan developed under the rules and criteria of Chapter 26, Articles VII of the Chesapeake City Code. The Easement hereby establishes;

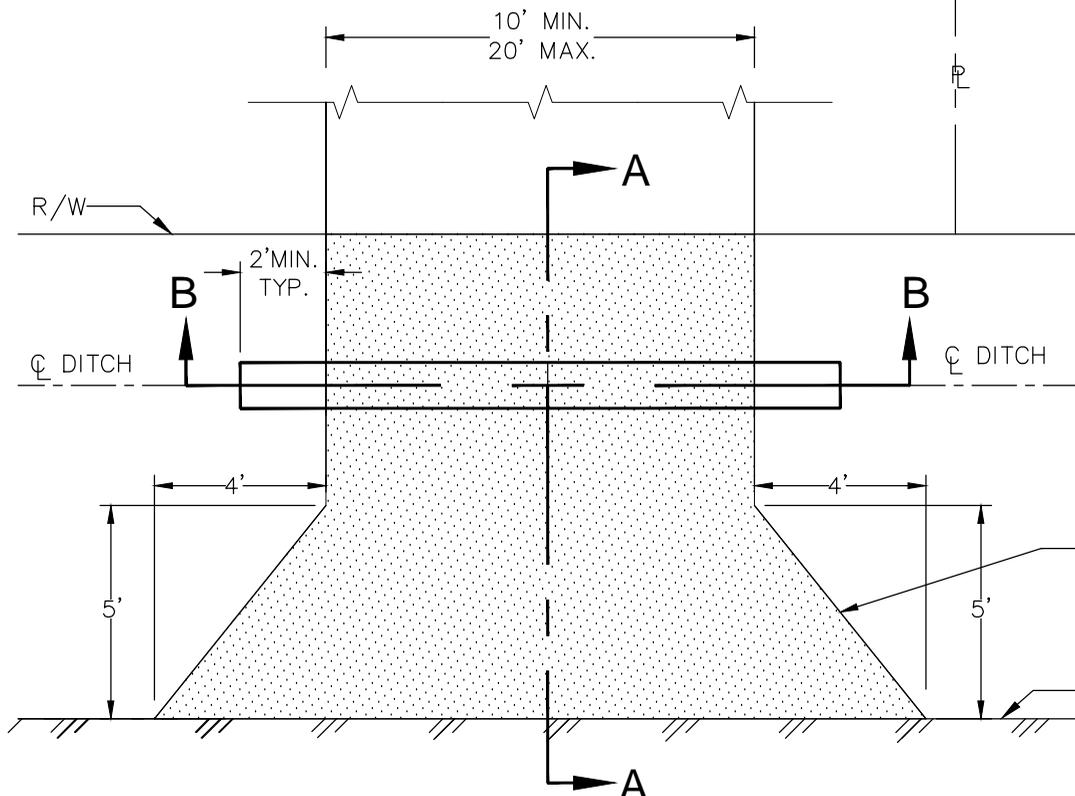
- A. The facility is necessary for treating stormwater runoff on the property of the Landowner; Landowner agrees that the Conserved Open Space Easement here after referred to as Conservation Easement, shall be maintained and operated at its sole cost and expense, and the same shall be performed in compliance with the approved construction plans and the standards set forth in Paragraph "B" below.
- B. Landowner shall, at its sole expense, make such changes or modifications to the Open Space/Conservation Easement as may, in the City's discretion, be determined necessary to ensure that the facility and system is properly maintained and continues to operate as designed and approved. The lots within this subdivision utilize DEQ Stormwater Design Specification – Conserved Open Space Version 1.9, March 1, 2011, for the purpose of managing the quality and quantity of stormwater runoff.
- C. The City, its agents, contractors and employees, shall have the privilege of entry on the Landowner's property for the purpose of inspection of the Conserved Open Space Easement in keeping with the City Code and Virginia Administration Code provisions as to stormwater management facilities designed to treat stormwater runoff primarily from an individual residential lot on which they are located. Should the City determine after an inspection that the same is not being maintained in a condition adequate for its proper functioning, then the City shall notify the Landowner that it must, within ten days, correct such condition. If Landowner fails to correct such condition, the City may construct, operate and perform limited maintenance at the City's discretion for adequate management of quality and quantity of stormwater

runoff, which expense shall be paid promptly upon demand by the City to the noncompliant Landowner.

- D. No alteration whatsoever of the Conserved Open Space Easement, including but not limited to encroachment, land disturbing, cutting or removal of live trees or native vegetation, or drainage modifications, shall be permitted except with the approval of the Chesapeake Department of Development & Permits.
- E. The Landowner, its heir(s), successor(s) or assign(s), agrees to hold the City harmless and defend same from any liability or claims of any kind resulting from the construction, maintenance or failure of the aforementioned Conserved Open Space Easement to operate properly.
- F. The covenants and agreements contained herein shall run with the land and bind successors in interest to the parties named herein
- G. This conveyance is made subject to the conditions, restrictions, easements, and reservations of record, if any, affecting the aforesaid property and constituting constructive notice.

VERBIAGE FOR PLATS CONVEYING PRIVATE IMPOUNDMENT EASEMENT

“Private Impoundment Easements” shown hereon are for the purpose of providing storage and the flow of stormwater run-off on the property. No alteration whatsoever of the facility within the limits of the private impoundment easement is permitted without the approval of Chesapeake Department of Development and Permits. The City, its agents and employees, shall have the privilege of entry on Landowner's property for the purpose of inspection of said impoundment facility and for maintenance in the event of Landowner's default as described further below. Should the City determine after an inspection that the same is not being maintained in a condition adequate for its proper functioning, then the City shall notify the Landowner that it must, within ten days, correct such condition. If Landowner fails to correct such condition, then the City may perform the necessary work at the expense of the Landowner, which expense the Landowner agrees to pay the City promptly upon demand.

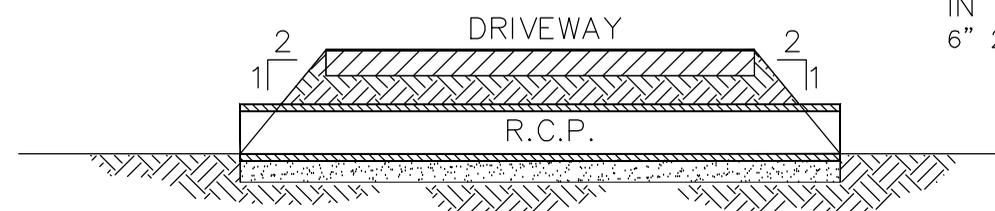


RESIDENTIAL ENTRANCE

FLARE SHALL NOT EXTEND BEYOND LIMITS OF PROPERTY.
EDGE OF EXIST. PAVEMENT

ALLOWABLE SURFACES:
2"-ASPHALT/6" 21A OR B AGGREGATE
7"-CLASS A-3 CONCRETE

IN RURAL AREAS:
6" 21A OR B AGGREGATE

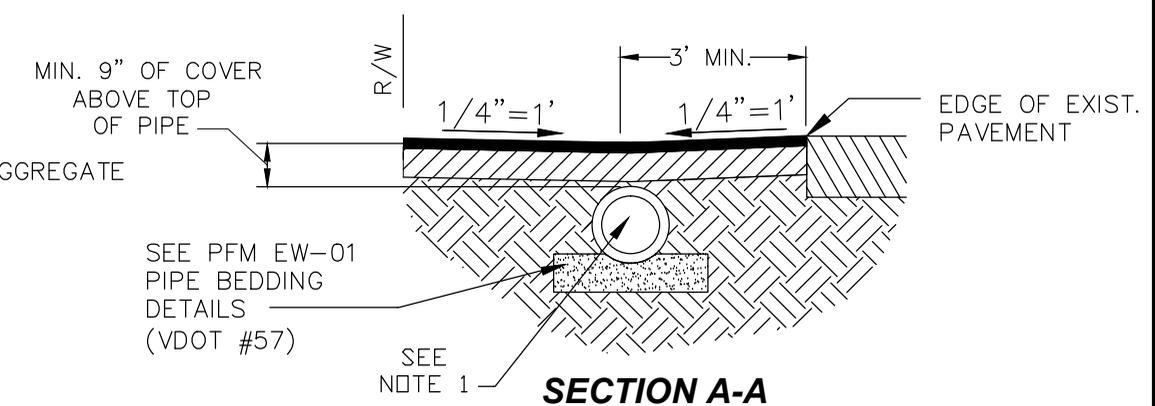


SECTION B-B

NOTES:

1. PIPE SIZE TO BE DETERMINED BY THE DEPT. OF DEVELOPMENT & PERMITS
2. MINIMUM 24 L.F.-15" R.C.P. CLASS III REQUIRED
3. DITCH TO BE CLEANED AND REGRADED
4. ALL JOINTS TO BE WRAPPED WITH NON-WOVEN FILTER FABRIC.
5. ALL STONE TO BE #21A OR 21B

ROUND PIPE	ELLIPTICAL PIPE
18"	14" X 23"
24"	19" X 30"
27"	22" X 34"
30"	24" X 38"
36"	29" X 45"



SECTION A-A

	DESIGN AND CONSTRUCTION STANDARDS	
	RESIDENTIAL ENTRANCE FOR STREETS WITHOUT CURB & GUTTER	
09/20/18	STANDARD UPDATED	DRW.BY: RNW DATE: 12/2009
01/15/10	REVIEWED PFM 2010 EDITION FOR WEB	CHK.BY: ALH DATE: 12/2009
DATE	REVISIONS	APPV.BY: TDC DATE: 12/2009

CG-7A

APPROVED FOR THE WEB _____
City Engineer

_____/_____/_____
Date

NOTES:

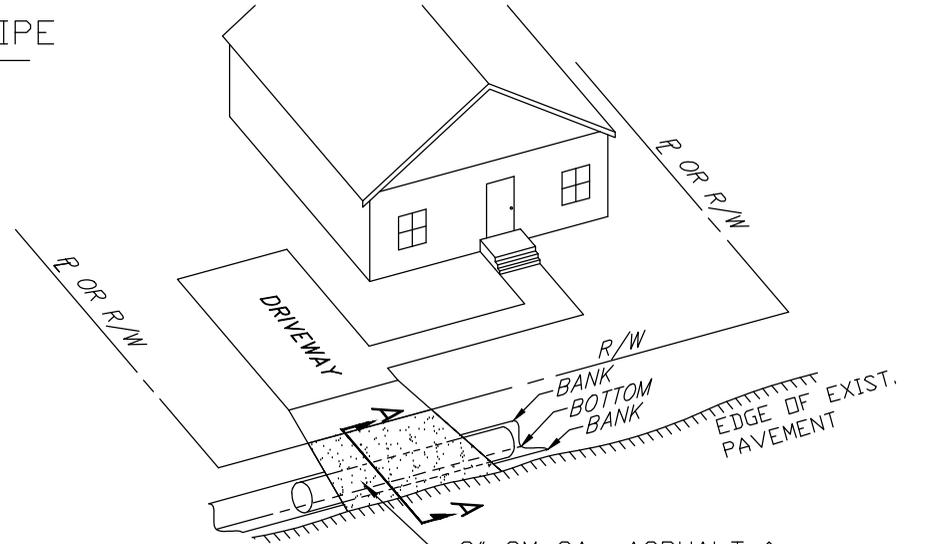
1. PIPE SIZE TO BE DETERMINED BY THE CITY
2. MINIMUM 24 L.F. R.C.P. CLASS III REQUIRED
3. DITCH TO BE CLEANED AND REGRADED
4. ALL JOINTS TO BE SEALED WITH MORTAR DIV. 10.02A.3
5. ALL STONE TO BE #21 CRUSHER RUN STONE DIV. 10.02I AS PER CURRENT VDOT ROAD AND BRIDGE SPECIFICATIONS
6. CG-7A ENTRANCE TO BE APPROVED ON AN INDIVIDUAL BASIS BY DEPARTMENT OF DEVELOPMENT & PERMITS
7. LOW HEAD ELLIPTICAL PIPE OF SAME AREA MAY BE USED

ROUND PIPE

- 18"
- 24"
- 27"
- 30"
- 36"

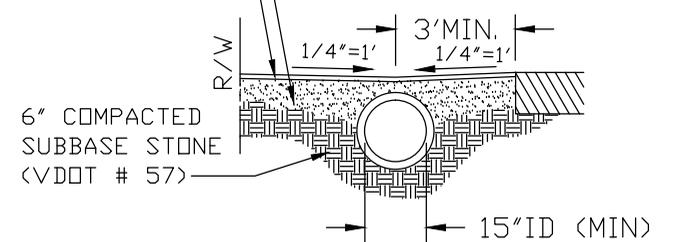
ELLIPTICAL PIPE

- 14" X 23"
- 19" X 30"
- 22" X 34"
- 24" X 38"
- 29" X 45"

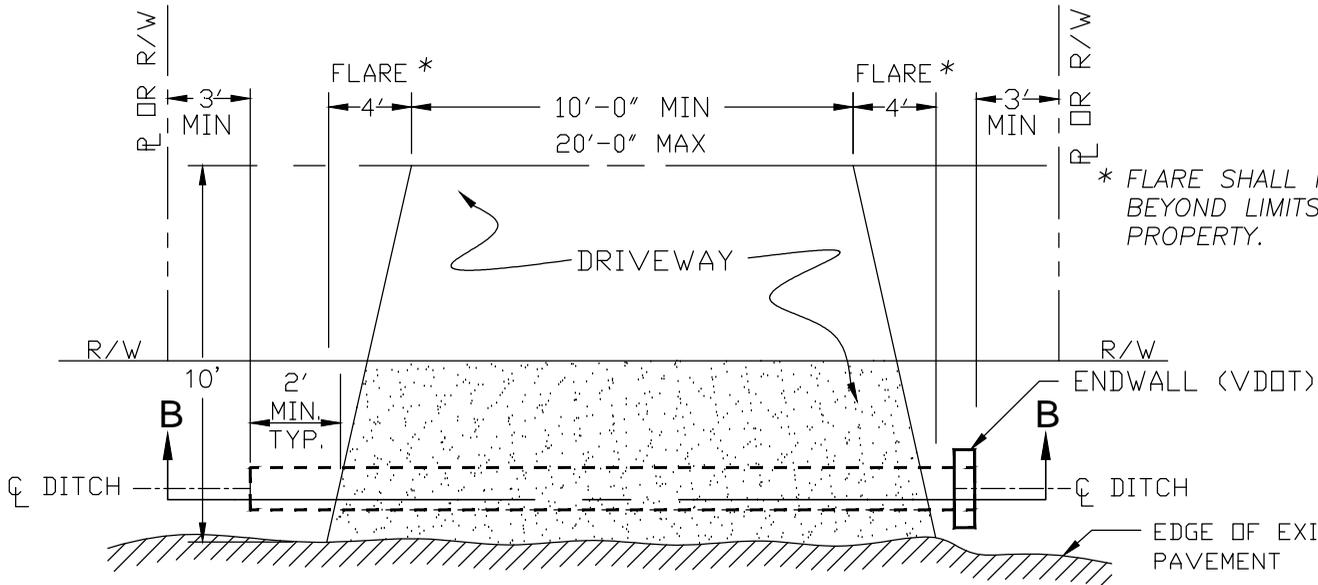


2" SM-2A ASPHALT & 6" CRUSHER STONE OR 7" CLASS A-3 CONCRETE

7" CLASS A-3 CONCRETE OR 2" SM-2A ASPHALT 6" #21 CRUSHER RUN STONE COVER

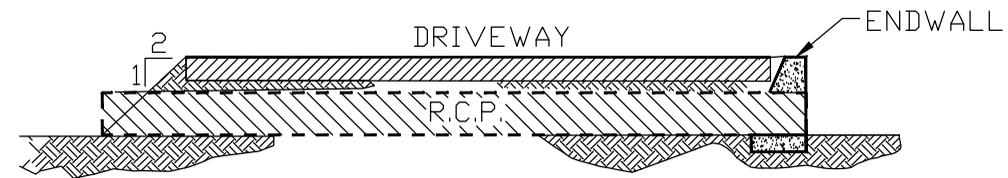


RESIDENTIAL STANDARD SECTION A-A



* FLARE SHALL NOT EXTEND BEYOND LIMITS OF PROPERTY.

RESIDENTIAL ENTRANCE DETAIL

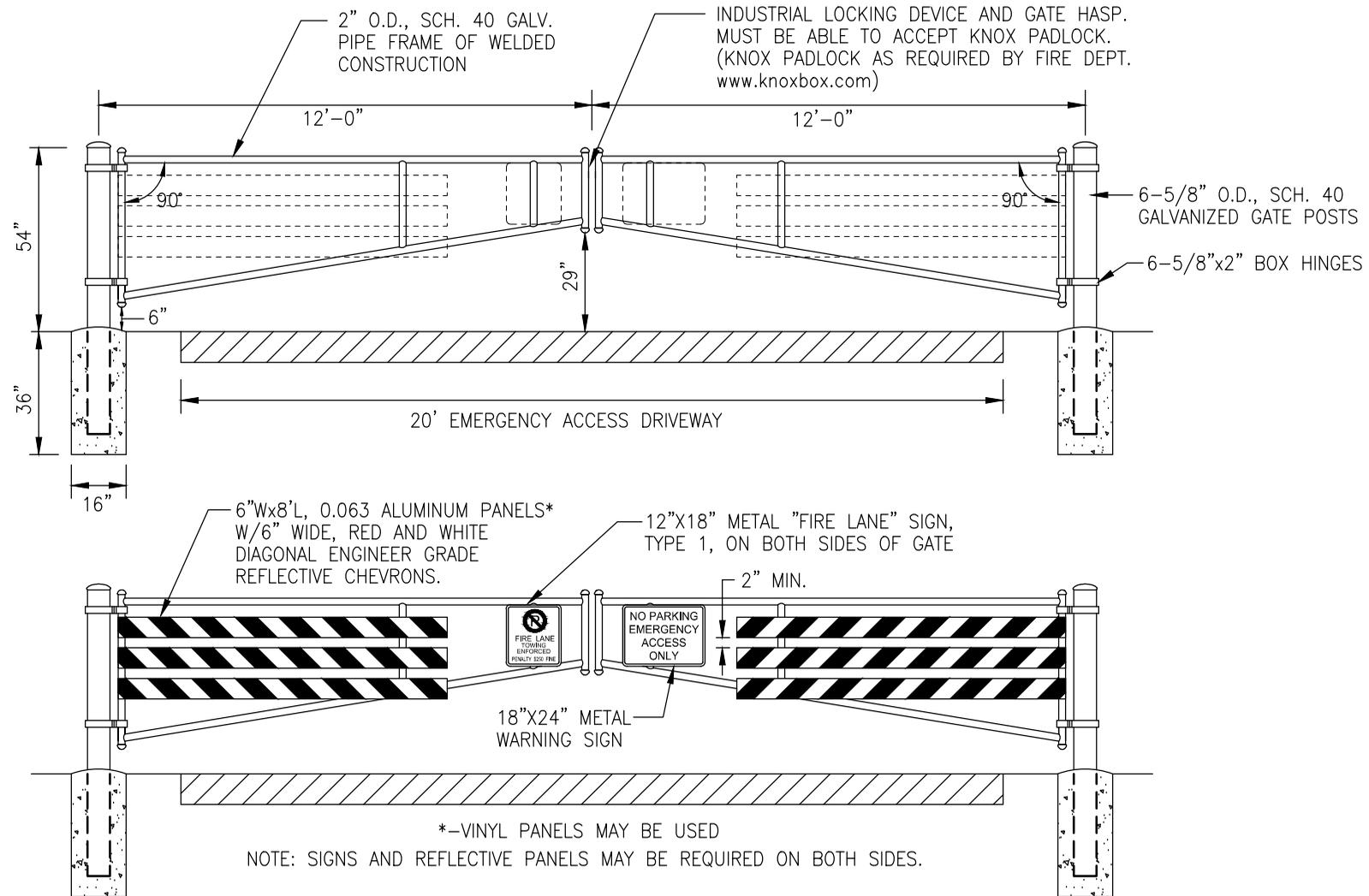


SECTION B-B

FOR USE ON STREETS HAVING ≥ 40 MPH SPEED LIMIT OR ≥ 10,000 V.P.D. TRAFFIC VOLUME.

	DESIGN AND CONSTRUCTION STANDARDS		
	HIGH TRAFFIC VOLUME RESIDENTIAL ENTRANCE WITHOUT CURB & GUTTER		
09/20/18	STANDARD UPDATE	DR. BY:	DATE:
08/01/03	REV. FOR INTERNET 2003	CHK. BY:	DATE:
DATE	REVISIONS	APP. BY:	DATE:

CG-7C



EMERGENCY GATE ACCESS DETAIL

NOT TO SCALE

		DESIGN AND CONSTRUCTION STANDARDS	
		EMERGENCY GATE ACCESS DETAIL	
07/20/17	REVISION FOR INTERNET 2017	DR. BY:	
DATE	REVISIONS	CHK. BY:	
		APP. BY:	GATE:
			EGA-1

APPROVED FOR THE WEB

City Engineer

Date

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