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7-0000 STREETS, PARKING AND DRIVEWAYS

7-0100 GENERAL STREET POLICIES

7-0101 Street Design

7-0101.1 Streets shall be provided to give access to adjoining property to the satisfaction of the Director. Also, streets shall be provided to connect with appropriate highways and with appropriate streets to adjoining developments.

7-0101.2 (109-11-PFM, 99-07-PFM, 89-05-PFM) All rights-of-way shall conform to the standards set forth in the current VDOT Subdivision Street Requirements and Plates 1-7 through 11-7, and § 7-0406.14E. 7-0101.2. Context-sensitive urban road design standards, including but not limited to minimum street width and parking, that are established by a Memorandum of Understanding (MOU) between Fairfax County and VDOT may deviate from the requirements set forth in the VDOT Road Design Manual and the PFM, and shall be used only in areas specified in the MOU.

7-0101.3 In subdivisions developed as R-C Clusters, 50-foot-wide access easements only will be required to adjoining properties which are otherwise land locked by having access only by means of a right-of-way less than 50 feet wide. No street construction will be required within the required 50-foot wide access easement.

7-0101.4 Subdivision blocks shall be spaced so as to provide reasonable traffic circulation within and between existing or anticipated subdivisions, except as limited above for R-C Cluster developments.

7-0101.5 Traffic Calming

7-0101.5A Traffic calming measures for all existing subdivision, roadways, or segments of roadways already incorporated in the VDOT secondary road system shall be in accordance with VDOT standards and the Fairfax County Residential Traffic Administration Program (RTAP).

7-0101.5B Traffic calming measures designed on new subdivision streets not yet incorporated in the VDOT secondary road system shall be in accordance with VDOT standards and the RTAP guidelines.

7-0101.5B(1) For any by-right development incorporating traffic-calming measures, the community support requirement in the RTAP guidelines shall not apply.

7-0101.5B(2) For any proposed development requiring approval of a rezoning, special exception or special permit and incorporating traffic-calming measures, the community support requirements in the RTAP guidelines shall apply only if stipulated by the Fairfax County Department of Transportation.

7-0102 Street Dedication

7-0102.1 (99-07-PFM) The width of the right-of-way shall be established in accordance with the current VDOT Subdivision Street Requirements and the current VDOT Road Design Manual. The width shall account for all features, which are to be maintained by VDOT.

7-0102.2 The subdivider may be required to dedicate more than one-half of the right-of-way, if necessary, to improve the horizontal alignment or meet the minimum design standards for that street.

7-0102.3 Also, the subdivider may be required to assume responsibility for such grading, widening or surfacing and curbing of such street as may be deemed necessary by the Director and VDOT to meet minimum State and County safety and/or design standards.

7-0102.4 (99-07-PFM) When a development abuts one side of any street which has been included in the VDOT Roadway System, the developer shall be required to dedicate one-half of any right-of-way necessary to make such street comply with the minimum width established for same. The subdivider may be required to dedicate more than one-half of the right-of-way, if necessary, to improve the horizontal alignment or meet the minimum design standards for that street.

7-0103 Curb & Gutter (See Plates 2-7, 3-7, 4-7, 7-7, 9-7, 11-7, 12-7)

7-0103.1 Curb and gutter shall be installed on side of arterial, collector and local streets which provide frontage to lots within new subdivisions in which the average lot size is less than 18,000 square feet.

7-0103.2 Header curbs shall be installed for raised medians and service drives for proper channelization of traffic as deemed necessary by the Director.

7-0103.3 (35-91-PFM) Curb cuts for commercial and industrial use entrances shall be in accordance with the latest edition of the VDOT Publication “Minimum Standards of Entrances to State Highways.”

7-0103.4 (35-91-PFM) Curb cuts for residential use entrances shall be located so as to provide a safe and convenient means of ingress and egress for motor vehicles to and from paved or otherwise improved parts of highways and streets, except that no curb cut on public streets shall be less than 30 feet from the point of curvature of the curb line/edge of pavement return of the intersecting streets, unless otherwise approved by the Director based upon the volume of traffic, angle of intersection, potential of expanded use in the future, conflicting turning movements, stacking and sight distance.

7-0104 Service Drive

7-0104.1 (101-08-PFM, 93-06-PFM) Whenever a development abuts a road which is included in the State system of primary highways (route numbers below 600), a service drive extending for the full length of the development along such road, and providing limited access thereto, shall be provided; except that in subdivisions approved for R-C Cluster development, dedication only, without construction, will be required. The situations outlined in § 7-0104.3 shall not be subject to the terms of this paragraph.

7-0104.2 Service drive construction shall conform to the standards as set forth in Plate 12-7.

7-0104.3 (93-06-PFM) Service drives are not required along adopted Virginia byways, the Dulles Toll Road (Route 267), or interstate highways. The plan shall clearly label the interstate highway, the Dulles Toll Road (Route 267), or the street designated as a Virginia byway by the Commonwealth of Virginia Transportation Board. The Board of Supervisors or the Director may waive service drive requirements if the service drive provisions of Article 17 of the Fairfax County Zoning Ordinance are met.

7-0105 Street Construction

7-0105.1 All streets should be constructed and surfaced in accordance with the standards set forth in Plates 1-7 through 13-7.

7-0105.2 Where required, easements of widths appropriate to the purpose intended shall be provided.

7-0105.2A If the design engineer is unable to obtain off-site easements necessary to construct streets to the property line, it may be permissible to stop the street construction a distance from the boundary of the development sufficient to allow the proper slope to the boundary line, and provide a deposit for future completion of the street to the boundary line.

7-0105.2B In this case, it is necessary to obtain on-site grading easements for future completion of the street when the off-site area is developed.

7-0106 Noise Abatement Facilities

7-0106.1 On roads where the Board by resolution has designated noise abatement districts or corridors, the grading plans for the subdivisions and site plans shall show noise abatement measures where the Director deems such construction would be effective.

7-0106.2 There are no specific engineering criteria for the abatement of noise which can be built into every street design. Each street is a separate case which must be designed separately to achieve the desired results.

7-0106.3 Noise buffers may be provided by three methods:

7-0106.3A Distance, such as greater setbacks;

7-0106.3B Bulk or mass, such as masonry walls or berms; and/or

7-0106.3C Elevation, lowering or raising the source so as to remove it from the plane in which its force will be strongest against that which is to be protected.

7-0106.4 The design of noise abatement devices is flexible and is the responsibility of the submitting engineer. It is also the responsibility of the submitting engineer to prove to the Director that he has attempted to provide noise abatement design in those areas designated by the Board.

7-0107 Street Signs

7-0107.1 Vandal-proof street name signs shall be installed within the dedicated public street right-of-way at all street intersections in a location satisfactory to the Director.

7-0107.2 A street name sign shall be required for all common pipestem driveways or private streets indicating the private street name, where applicable, the house numbers, and designation “private driveway.”

7-0107.3 All private street and private driveway signs that do not meet the vandal-proof sign standard for use within the dedicated public street right-of-way shall be privately owned and privately maintained.

7-0107.4 All methods and materials shall conform to the standards as set forth in Plates 14-7 through 19-7, and § 7-0107.6.

7-0107.5 Street signs shall be installed at all street intersections in a location satisfactory to the Director based on the following criteria used by VDOT (see Plates 14-7 through 19-7, and § 7-0107.6 *et seq.*).

7-0107.5A Stop or Yield signs shall be placed at intersections on those streets that have the least amount of anticipated traffic, and;

7-0107.5B Stop signs shall be placed at intersections where the potential of poor sight distance would necessitate a full stop to increase safety.

7-0107.6 (24-88-PFM) Street Sign Specifications

7-0000 STREETS, PARKING AND DRIVEWAYS

7-0107.6A The name plate will be a minimum width of 9 inches. The blank length to be used for a given street name is the shortest length on which the name will fit when 6 inch letters are used except the length will be a minimum of 30 inches.

7-0107.6B The maximum length will be 48 inches unless approved by the Director and Sign Shop Supervisor of DPWES.

7-0107.6C The blank name plate will be of the “EXTRUDED” type and consist of aluminum alloy, ASTM 209B-6063-T6, treated with “ALODINE 1200” chemical conversion coating process. The extruded blank name plate shall have a web thickness of 0.090 inches and flange thickness of 0.250 inches and each corner of the name blank shall be square cut. Holes are required in the blank name plate as detailed in Plates 15-7, 16-7 and 17-7.

7-0107.6D (99-07-PFM) The sign background shall be blue sheet reflective materials, letters shall be silver reflective sheeting, 3M® brand, conforming to the specifications for “Encapsulated Lens Reflective Sheeting for Traffic Control Signs,” as specified by VDOT Road and Bridge Specifications, Section 701.02, also specified in Federal Specification LS300C, Reflectivity 2, and specifications on file with the Director, or approved equal. (Approval by the Director and Sign Shop Supervisor of DPWES.) The specification on file with the Director contains a sheeting manufacturer’s field performance and replacement obligation. The reflective material shall be applied to both sides of the treated blank name plate with mechanical equipment in a manner specified by the sheeting manufacturer. The sign background shall be comprised of not more than one piece of reflective sheeting. Reverse screen process color method of fabrication is acceptable, provided that only process colors are used that are approved by the sheeting manufacturer. Screen process colors must be clear coated.

7-0107.6E Letter size and type will conform to FHWA “Standard Alphabets for Highway Signs,” Series C, 6 inches high or 3 inches, as applicable for street name and abbreviation. The letter height of the street name may be reduced from 6 inches to 5 inches when use of the 6-inch letters would require a sign blank longer than 48 inches.

7-0107.6F (32-90-PFM) The extruded street name plates shall be mounted to the sign post by means of a post to sign (post top) bracket and sign to sign (cross) bracket made of high strength die-cast aluminum alloy number 380 having a tensile strength of 49,000 PSI, such as Model No. VSS-6 as supplied by Vulcan Signs or an approved equal. The post top and cross brackets shall have two angled gussets or ribs on each side for extra strength and shall be smoothly finished free of holes, pits or flaws. Each set of brackets shall be drilled and tapped to receive six each 5/16 – 18 ½ inch, 12-point spline head bolts and four each 5/16 – 18 3/8 inch hex head set screws with 5/32-inch center pin, made of stainless steel, zinc, or cadmium plated steel. Post top and cross brackets shall be cast or machined to receive extruded blades with a 0.090-inch web and 0.250-inch flange thickness. Six vandal-proof 12-point spline head bolts and four hex head set screws with center pin shall be furnished with each set of brackets. The complete unit shall be rigidly fastened together and shall be theft proof when fastened to the post. The signs shall be non-rotating. The post will be galvanized steel 2-3/8 inches outside diameter, schedule 40, wall thickness 0.154 inches, such as manufactured

7-0000 STREETS, PARKING AND DRIVEWAYS

by United States Steel or an approved equal. The post shall be installed either in a concrete footing or an approved alternate anchoring system. When using concrete, the post and footing shall be at least 2-foot deep and the concrete shall extend a minimum of 4 inches outside the edges of the pipe. The concrete shall be exposed at the ground surface, see Plate 14-7. A key or anchor rod shall be provided in the post, 6 inches from the bottom of the post to prevent lifting and turning. The post may also be set 2 feet in the ground and supported by an approved anchor device which is listed in Plates 15-7 and 16-7.

7-0107.6G At signalized intersections, street name signs for both streets will be installed on all vertical supports for the traffic signals. Signs will be mounted with standard aluminum cantilevered pole mounted street name brackets.

7-0107.6H The bottom of the lowest street name plate shall be 10 feet above ground level, except at signalized intersections. At signalized intersections, the bottom of the lowest street name plate shall be at least 16 feet above ground level.

7-0107.6I The shorter name plate shall be mounted above the longer name plate in the assembly. No more than 2 name plates shall be mounted in each assembly.

7-0107.6J In subdivisions where no curb and gutter is placed, the street name sign shall be erected in such a manner that the longest name plate is a minimum of 2 feet back of the ditch line and is safe from damage from traffic.

7-0107.6K In subdivisions where curb and gutter is placed, the street name sign shall be erected to conform to the location standard.

7-0107.7 (24-88-PFM) Specifications for cantilevered pole mounted street name sign wing brackets. (See Plate 18-7).

7-0107.7A Purpose. The purpose of this specification is to set forth certain specific minimum design requirements for a pole mounted street name sign wing bracket suitable for mounting modern street name signs, of lengths up to 48 inches and 9 inches upon the sides of steel, aluminum or wood traffic signal vertical supports and capable of being mounted either upon the side of pipe having an outside diameter of 2 inches or more.

7-0107.7B General Description

7-0107.7B(1) The brackets sought shall be cast of high strength aluminum alloy, or approved non-corrosive alternate, degreased, tumbled and polished to a low-sheen smooth finish to assure resistance to the accumulation of dirt and weather-borne deposits which might wash down upon the street name sign blades and cause premature defacement of the signs.

7-0107.7B(2) The brackets shall be "L" shaped in design, with one leg of the "L" intended for attachment to the upright support, and the other leg intended to cantilever out from the support to

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provide bracing for the sign against both vertical and lateral forces. The design of the bracket shall make it suitable either for nailing, screwing or banding to wood supports, or for bolting or banding to metal supports. The leg for attachment to the support shall be equipped with 3/8-inch holes, 1 inch on centers, or multiples thereof, to match the standard spacing of holes in channel posts.

7-0107.7B(3) The bracket shall be designed to accept and support the sign in the angle of the L, and each leg of the L shall be integrally cast block, containing a vertical slot with minimum dimensions 1-inch long, 1-inch deep and 0.140-inches wide for securing the sign blade to the bracket.

7-0107.7B(4) The sides of all slots shall be solid metal with two holes per slot (both on the same side of the slot), drilled and tapped to accept two special saw tooth heat-treated plated steel fasteners 5/16 inch – 18 UNC-2B for securing the sign blades against removal from the slots by vandalism, and to minimum fatigue failures in the sign blade resulting from wind vibration. The side of each slot opposite the set screws shall be cast or machined accurately vertical to assure when installed, the sign assembly will not appear bent or askew.

7-0107.7C Sample

7-0107.7C(1) A sample of the cantilevered bracket must be submitted to the purchaser, for approval of design at bid opening to assure that the bracket offered meets the requirements of purchaser and meets the purpose and intent of the specification.

7-0107.7C(2) Using a level is recommended on installation of posts, brackets, and signs.

7-0107.7C(3) Back of channel to be slotted for insertion of an aluminum leveling shim.

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7-0107.8 (24-88-PFM) List of Street Name Abbreviations – Standard SNS-1.

Table 7.1 Street Name Abbreviations

ALLEY	-	ALY	PATH	-	PATH (not PA)
AVENUE	-	AVE	PIKE	-	PIKE (not PI)
BOULEVARD	-	BLVD	PASS	-	PASS (not PS)
CENTER	-	CTR	PARKWAY	-	PKWY (not PKY)
CIRCLE	-	CIR	PLAZA	-	PLZ
CLUSTER	-	CL	ROAD	-	RD
CORRIDOR	-	CORR	RIDGE	-	RDG
COURT	-	CT	RUN	-	RUN (not RN)
COVE	-	COVE (not CV)	ROADWAY	-	RDWY (not RDY)
CAUSEWAY	-	CSWY	ROW	-	ROW (not RW)
DRIVE	-	DR	SOUTH	-	S
EAST	-	E	SQUARE	-	SQ
GREEN	-	GR	STREET	-	ST
GROVE	-	GRV	TRACE	-	TC
HEIGHT	-	HT	TERRACE	-	TER
HIGHWAY	-	HWY	TURNPIKE	-	TPKE
ISLE	-	ISLE (not IS)	TRAIL	-	TR
LANE	-	LA	VIEW	-	VIEW (not VW)
LANDING	-	LND	WALK	-	WALK (not WK)
LOOP	-	LP	WAY	-	WAY (not WY)
NOOK	-	NK	WEST	-	W
NORTH	-	N			

7-0200 PRELIMINARY STREET PLANNING

7-0201 General Requirements. (99-07-PFM, 89-05-PFM, 62-98-PFM) All streets which are to be dedicated for public use, shall be designed to comply with the applicable geometric standard in accordance with the current VDOT Road Design Manual and Plates 1-7 through 3-7.

7-0201.1 In order to determine the proper street cross-section to use to facilitate review and approval of preliminary plats, the following information shall be provided for each street intersection:

7-0201.1A The number of vehicles per day entering and leaving the intersection shall be noted on each leg of each street in each direction.

7-0201.1B The proposed street right-of-way, together with the proposed width of street (face of curb to face of curb or edge of pavement to edge of pavement) for each block on every street in the subdivision, is to be shown.

7-0201.1C All street construction shall be within the dedicated street right-of-way. Easements shall not be accepted to make up the minimum required right-of-way if any construction is proposed thereon. Slope construction easements shall be provided where required.

7-0201.2 The following information shall be shown for all streets which intersect the exterior boundary of the subdivision and which will provide access to adjoining undeveloped property:

7-0201.2A Number of acres expected to contribute vehicles to this street;

7-0201.2B An indication of how the adjoining property is shown on the adopted comprehensive plan together with the number of units per acre residential density proposed;

7-0201.2C The total number of units expected to be contributing to the subject street; and

7-0201.2D The total vehicles per day expected to be using the street.

7-0201.3 For streets which intersect the exterior boundary of the subdivision and connect with existing, dedicated or proposed streets in adjoining subdivisions, the following shall be required:

7-0201.3A The number of lots from the adjoining subdivision from which vehicles will be expected to use the subject street; and

7-0201.3B The number of vehicles expected to enter the subdivision over the subject street from said lots.

7-0202 Trip Generation

7-0202.1 (89-05-PFM, 62-98-PFM) Trip Generation shall be calculated in accordance with the current VDOT Road Design Manual Appendix B.

7-0203 Traffic Flow Characteristics

7-0203.1 In the determination of traffic flow calculations, all preliminary plats shall show traffic divides, in a manner similar to the way in which drainage divides are currently shown, for the traffic which will be generated by the subject development and from the adjoining development passing through it or from adjoining undeveloped property which will ultimately be subdivided with traffic passing through the subject subdivision.

7-0203.2 The following items shall be considered in the calculations of the traffic volumes where appropriate:

7-0203.2A Will any of the proposed streets serve as principal or secondary access to any school, either existing or proposed?

7-0203.2B Will any of the streets provide access to existing or proposed parks?

7-0203.2C Will any of the streets provide access to a neighborhood or other shopping area?

7-0203.2D Will any of the streets provide access to a public or semi-public facility or institutional use, such as church, nursing home, lodge hall, community swimming pool, private school, fire station, library, etc?

7-0203.2E Could any street in the subdivision serve as a bypass or shortcut for traffic with both origin and destination outside of the subject subdivision or the adjacent subdivision or undeveloped property?

7-0203.3 An allowance for additional traffic volume shall be included when any of the above traffic generators could affect the proposed subdivision streets or which reasonably may be expected to at some future date.

7-0204 Traffic Counts

7-0204.1 (47-95-PFM) Peak hour traffic estimates shall be used for intersection analysis. Twenty-four-hour ADT counts shall be used to determine typical sections.

7-0204.2 (99-07-PFM) Since this is a relatively new area of study and rapidly changing as new research data are compiled, the figures contained herein for traffic estimates may change as new data are made available.

7-0204.3 More precise information will be sought for the traffic generation of other impact uses.

7-0205 Street Cross-Section Determination

7-0205.1 When traffic volume falls off to indicate a reduced cross-section in the middle of the block, no reduction shall be permitted in midblock.

7-0205.2 Cross-sections may be reduced at intersections and at entrances contributing high volumes of traffic, such as shopping centers and apartments.

7-0205.3 If a through street has a wide cross-section on both ends and traffic volumes would indicate a reduction for only several hundred feet in the middle of the development, the full width street section shall be continued for its entire length.

7-0205.4 Averaging of traffic volumes (e.g., averaging 6,000 VPD on one end of the street with 2,000 VPD on the other end to produce a 4,000 VPD volume and thus a lower cross-section) shall not be permitted for the purpose of reducing cross-sections.

7-0205.5 All calculations which indicate the number of vehicles per day for each portion of each street in the subdivision shall be shown to expedite the review for conformance of proposed typical sections with VDOT standards. Lacking this information, it shall be assumed that no estimates have been made and the plan shall be returned for inclusion of traffic data.

7-0000 STREETS, PARKING AND DRIVEWAYS

7-0300 STREET FUNCTIONAL CLASSIFICATIONS

7-0301 General Information

7-0301.1 Functional classification is the process by which streets and highways are grouped into systems according to the character of service they are providing or are intended to provide. It is a method of organizing the network of streets to reflect how travel can be channelized within this network in a logical and efficient manner.

7-0301.2 Functional Classification of Road Systems

Table 7.2 Functional Classification of Road Systems

The types of systems include: Principal arterial streets Minor arterial streets Collector streets Local streets

7-0301.3 The urban functional classification is applied to the entire network of streets in the County.

7-0302 The Principal Arterial Street System

7-0302.1 The principal arterial street carries the major portion of the trips entering and leaving the urban area as well as the majority of through movements desiring to bypass the central city. Significant intra-area travel and important intra-urban and intercity bus services should be served by this class of facilities.

7-0302.2 On the principal arterial system, the concept of service to the abutting land is subordinate to the provision of travel service to major traffic movements.

7-0302.3 Because of the nature of travel served by the principal arterial system, almost all fully and partially controlled access facilities will be part of this functional class.

7-0203.4 Principal Arterial Street System

Table 7.2A Principal Arterial Street System

Variation in the characteristics and magnitude of service provided by principal arterial streets require further stratification of routes in this system: Interstates Freeways and Expressways Other Principal Streets

7-0303 The Minor Arterial Street System

7-0303.1 The minor arterial street system interconnects and augments the principal arterial system and provides service to trips of moderate length at a somewhat lower level of travel mobility.

7-0303.2 This system serves intra-urban trips between smaller geographic areas than those associated with the higher system. The system may carry local bus routes.

7-0303.3 Facilities in the system generally do not penetrate identifiable neighborhoods.

7-0304 The Collector Street System

7-0304.1 The collector street system differs from the arterial systems in that facilities on this system penetrate neighborhoods and provide access to abutting land use.

7-0304.2 It distributes trips from the arterials through the area to the ultimate destination which may be a local or collector street.

7-0304.3 In some instances, a small amount of through traffic may, due to the design of the collector facility, find its way to the collector system.

7-0305 The Local Street System

7-0305.1 The local street system provides direct access to abutting land and access to the higher order system and offers the lowest level of mobility and usually contains no bus routes.

7-0305.2 (89-05-PFM) Through traffic on these facilities is deliberately discouraged.

7-0306 Definitions (Area and Roadway Classification)

7-0306.1 Area Classification – Standard ARC-1

Table 7.3 Area Classification (44-94-PFM)

Residential – All land uses as described in Article 3 of the Zoning Ordinance.

Commercial Industrial – All land uses as described in Articles 4 and 5 of the Zoning Ordinance.

Planned Development – All land uses as described in Article 6 of the Zoning Ordinance.

7-0306.2 Road Classification – Standard ARC-1

Table 7.4 Road Classification (44-94-PFM)

Local – Roadways used primarily for direct access to residential, commercial, or industrial or other abutting property. These roadways do not carry through traffic.

Collector – Roadways used for serving through traffic between arterial and local roadways. These roadways are used mainly for traffic movement within residential, commercial and industrial areas.

Arterial – Roadways used as a principal network for through traffic flow. These roadways connect areas of principal traffic generation and important rural highways entering population centers such as cities.

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7-0400 STREET PLAN AND PROFILE REQUIREMENTS

7-0401 Curb Cut Ramps

7-0401.1 Policy on Ramps for Mobility Impaired Persons:

7-0401.1A (89-05-PFM) All single-family residential and all multi-family housing developments shall provide standard curb-cut ramps located to conform to VDOT standards or County standards, (IIM-LD-55.7 or subsequent revisions), if in the right-of-way, or Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Virginia USBC. Consideration shall be given to curb cut ramps when establishing right-of-way widths.

7-0401.1B In parking lots for commercial and industrial site plans, standard curb-cut ramps shall be located at the major crosswalks. Where site plan sidewalks are constructed at various vertical elevations, a curb-cut ramp shall be installed at each sidewalk elevation.

7-0401.1C Churches, schools and appropriate public facilities site plans shall provide standard curb-cut ramps as required by the Director.

7-0401.1D All requirements of the Virginia USBC shall be met.

7-0401.2 Location of Ramps for Mobility Impaired Persons:

7-0401.2A The locations of curb-cut ramps for mobility impaired persons shall be indicated per standards in § 8-0000 *et. seq.*

7-0402 Guardrails

7-0402.1 The location of guardrails shall be indicated on the plans.

7-0402.2 A guardrail will be required when vehicles are to be protected from fills in excess of 10 feet.

7-0402.2A (34-91-PFM) The actual starting and stopping point of the guardrail will be determined by the VDOT representative in the field after the fill has been placed.

7-0402.2B (99-07-PFM) Generally, a guardrail may be omitted when the side slopes are 6:1 or flatter for a minimum of 25 feet from the edge of pavement unless there are hazardous obstacles within the clear zone limits.

7-0402.2C Alternatives to metal guardrails, which are permitted in subdivisions, are:

7-0402.2C(1) A rustic wood post and wood rail design and/or,

7-0402.2C(2) A weathered steel guardrail with wooden posts.

7-0402.2D Approval of the alternatives by VDOT is required before plans will be approved by the Director.

7-0402.2E (47-95-PFM) The following note shall appear on all plans: “Standard guardrail and handrails shall be installed at hazardous locations, as designated during final field inspection by VDOT on all roads maintained by or to be maintained by VDOT and by Fairfax County for all other roads.”

7-0402.2F (99-07-PFM, 89-05-PFM) Sidewalk location in relation to guardrail shall be in accordance with the current Appendix B of the VDOT Road Design Manual.

7-0403 Entrances

7-0403.1 All driveway entrances (including pipestem entrances) shall be indicated, along with the size, length, and type of driveway entrance culvert.

7-0403.2 CG-11 entrances shall be used for subdivision street connections.

7-0403.3 (34-91-PFM) CG-11 entrances shall be used for all commercial entrances, entrances of parking bays, parking courts, townhouses, etc.

7-0403.4 (99-07-PFM) All two-way commercial entrances, including entrances to townhouse or multi-family dwelling developments and private streets, shall be a minimum of 30-feet wide at the back of the entrance return.

7-0404 Proposed Street Construction/Plan and Profile Preparation

7-0404.1 Stations shall be indicated every 100 feet on centerline; at points of curvature, points of intersection and points of tangency; at centerline intersections, at subdivision or section limits; and at turnaround radius points.

7-0404.2 Building restriction lines shall be shown in both plan and profile.

7-0404.3 Existing centerline profiles for 200 feet minimum distance shall be shown to insure a proper grade tie when a proposed street is an extension of or connects with an existing street.

7-0404.4 When a proposed street intersects with an existing street, the centerline profile of the existing street shall be shown for 350 feet minimum distance to right and left of proposed connection.

7-0404.5 The centerline and building restriction line profiles extended 300 feet beyond the property line or boundary shall be shown on all street providing access to adjoining property.

7-0404.6 A grade line of all proposed street construction shall include:

7-0404.6A (99-07-PFM, 89-05-PFM, 62-98-PFM, 34-91-PFM) Percent of grade. The minimum grade for curb and gutter shall be one percent except that the Director may allow a decrease to $\frac{1}{2}$ percent based upon unusual topographic conditions. The maximum grade of street construction shall be in accordance with the current VDOT Road Design Manual and Plate 6-7 of the PFM except as may be approved by the Director. The minimum grade for streets without curb and gutter shall be 1 percent.

7-0404.6B Elevations at the beginning and the end of all vertical curves.

7-0404.6C The length of vertical curves with elevations and stations of vertical points of intersection (PVI).

7-0404.6D Elevations computed every 500 feet on all tangent sections, and grades computed every 25 feet in all vertical curves.

7-0404.6E Elevations at all:

7-0404.6E(1) Centerline intersections of streets;

7-0404.6E(2) Street centerline intersections with the boundaries of a subdivision;

7-0404.6E(3) Curb returns;

7-0404.6E(4) Culvert and storm sewer crossings; and

7-0404.6E(5) Curb inlets.

7-0404.6(F) The point of finished grade on typical section (i.e., centerline, top of curb, etc.) shall be shown.

7-0404.7 Paved roadside ditches shall be indicated in the profile where the depth is not in conformance with the standard street cross-section.

7-0404.8 All proposed and existing culverts, storm sewer crossings, sanitary sewer crossings, and utility crossings shall be shown on street profiles at the proper location and grade.

7-0404.9 When a proposed street parallels or is located near an existing stream or open drainageway, profiles of the top of the bank of the stream, computed water elevations and invert (or flow line) of stream or open drainageway shall be provided. The relationship of a proposed street grade to existing profiles of the stream or open drainageway shall be shown. Street construction shall not encroach on the approved floodplain limit of the stream.

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7-0404.10 Grade profiles of proposed curb and gutter construction in cul-de-sacs are to be computed along the face of the curb starting at the beginning of the curb return, following the face of curb around the cul-de-sac to the end of the return opposite the point of beginning.

7-0404.10A Grade ties of the proposed street, before entering the cul-de-sac grade, shall be shown on each end of the cul-de-sac grade profile to insure proper grade connection.

7-0404.10B Other acceptable methods may be used subject to the approval of the Director and VDOT.

7-0404.11 Building restriction line profiles for cul-de-sacs shall be radial to the existing profile at face of curb and proposed curb grade.

7-0404.12 If a temporary turnaround/cul-de-sac is to be constructed at the end of a street which is intended to be extended with the development of the abutting property, the proposed grade and existing profiles shall be carried through to provide for the future extension of the proposed street for a distance of 300 feet beyond the property line. Final lot grading of the proposed extension shall be shown on the grading plan.

7-0404.12A (81-04-PFM) If approved by the Director, the developer shall provide and post a sign informing the public at temporary cul-de-sacs that the cul-de-sac is temporary and the road is subject to continuation in the future. The sign shall be located so as to be clearly visible to drivers and pedestrians entering the cul-de-sac bulb. The sign shall be in place prior to the issuance of the first residential use permit for any residence in the related site plan/subdivision plan that is using the street for access. The sign shall be maintained by the developer until bond release, or until the roadway is accepted into the VDOT system for maintenance and operations, whichever occurs first, after which the sign shall be maintained by Fairfax County.

7-0404.13 Street construction shall be provided for the full frontage of all lots.

7-0404.14 All street improvements intended for public maintenance must be constructed within the dedicated street right-of-way.

7-0404.15 The maximum centerline grade of permanent cul-de-sacs may not exceed 3 percent. However, steeper grades may be permitted in certain instances with the prior approval of the Director.

7-0404.16 If a difference exists in elevations on proposed curb grades, curb elevations showing top of right curb and top of left curb shall be shown on the plans.

7-0404.17 Curb returns shall be shown on the profiles. The identification, by number, of the curb returns may be required on the plan and profile.

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7-0404.18 Street landings shall be provided on plans to ensure adequate sight distance.

7-0404.19 Driveway profiles where steep grades prevail shall be shown. Lot grading plans must provide for adequate vehicular clearance for driveway approaches, departures and breakover transitions.

7-0404.20 Profiles of the centerline of a street and both left and right curb returns shall be shown at the intersections of streets on steep grades to assure proper transition from one street to the other.

7-0404.21 A proper connection to any proposed VDOT construction shall be shown when appropriate.

7-0404.21A VDOT approval is required on all plans and revisions within VDOT rights-of-way.

7-0404.21B State route numbers of existing streets shall be shown.

7-0404.21C A symmetrical transition of the pavement at an intersection with existing street shall be shown.

7-0404.21C(1) Transitions shall be a minimum of 60 feet from the end of the curb return to the existing edge of pavement.

7-0404.21C(2) A longer pavement transition and a turn lane may be required depending on the location of the intersection. Standard road edge delineators shall be shown. (See Plate 36-7.)

7-0405 Sight Distance (99-07-PFM, 89-05-PFM)

7-0405.1 All sight distance requirements on streets to be publicly maintained shall be in accordance with the current VDOT Road Design Manual. Sight distance shall be shown along the actual line of sight. Sight distance for the left turn position into an entrance or street shall be addressed. VDOT recognizes only two types of entrances onto the highway system; private entrances and commercial entrances.

7-0405.1A Subdivision street connections to the existing highway system are considered as commercial entrances until such time as these streets are accepted into the highway system.

7-0405.1B Roads within subdivisions, including commercial entrances, must meet the intersection sight distance requirements and stopping sight distance requirements.

7-0405.2 Sight distances shall take into consideration any objects that will restrict sight distance, including vegetation, which may only be apparent in the spring and summer. Two-foot vertical clearance is desirable along the line of sight. Two-foot horizontal clearance is desirable from the

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line of sight. Additional sight distance may be required with heavy truck volume and/or steep grades in accordance with Appendix C of the current VDOT Road Design Manual.

7-0405.3 (34-91-PFM) The sight distance requirements of R-C cluster subdivision streets, which are to be privately maintained shall be determined as set forth in Plate 6-7.

7-0405.4 Within new subdivision streets, for private residential entrances serving only one or two lots, sight distance requirements are based on providing stopping distance for a vehicle in the street with a height of eye and a height of object in accordance with the current VDOT Road Design Manual.

7-0405.5 If the design speed is unknown, it shall be assumed to be 5 mph above the posted speed limit.

7-0405.6 There shall be a minimum distance of 25 feet between entrances.

7-0405.7 Profiles of existing roads must be shown for a minimum of 350 feet or the applicable sight distance length, whichever is greater, beyond the limits of construction.

7-0405.8 (34-91-PFM) Crossover Spacing and Sight Distance

7-0405.8A (34-91-PFM) Crossover spacing and sight distance requirements shall be in accordance with the current VDOT Road Design Manual and shown along the actual line of sight.

7-0405.8A(1) Desirable crossover spacing should be the design standard for new construction.

7-0405.8A(2) Crossover spacing less than that shown as a minimum will be considered when necessitated by intersecting public highways or streets having a current ADT of 100 or greater.

7-0405.8A(3) All crossovers will only be allowed after an individual study and with the approval of VDOT.

7-0405.8B If traffic generating locations are not present, then crossovers are not to be shown on the plans.

7-0406 Other Information to be Shown on Plans

7-0406.1 The design for all pipestem driveways shall be shown, either by reference to a standard or by drawings. Turnarounds and the location of required utilities shall also be shown.

7-0406.2 Adequate ingress-egress easements shall be provided when more than one lot is to use a common driveway.

7-0406.3 Paved ditches at edge of roadway and at the toe of a fill shall be shown along with easements where necessary. Computations for determining the need for paved ditches shall be provided.

7-0406.4 A maximum 2:1 slope at end of street construction, with a necessary easement, shall be shown on the plan.

7-0406.5 Slope construction easements shall be shown where required.

7-0406.6 Erosion and Sediment control protection to be provided at the end of construction of curb and gutter shall be shown.

7-0406.7 The typical cross-section for public and private streets, access aisles and parking areas shall be shown.

7-0406.7A Where a special typical section is approved, details shall be provided on plans.

7-0406.7B (99-07-PFM) Typical sections and geometric design criteria for streets shall conform to the current VDOT Road Design Manual and Plates 1-7 through 13-7.

7-0406.8 Cul-de-sacs shall be provided at the ends of all dead-end streets, except where exempted by the stub street criteria in § 7-0700 *et seq.*

7-0406.8A (63-98-PFM) The minimum pavement radius in the cul-de-sac shall be no less than 45 feet and the minimum right-of-way radius of the cul-de-sac shall be no less than 52 feet for curb and gutter and 55 feet for ditch section streets.

7-0406.8B As may be determined by the Director, the minimum pavement radius of a cul-de-sac shall be no less than 60 feet and the minimum right-of-way radius of the cul-de-sac shall be no less than 70 feet for the purpose of providing a turnaround area for public school buses.

7-0406.8C The Director may require the greater cul-de-sac radius for school bus turnaround purposes where he finds that one or more of the following factors are present and indicate the present or future need for a school bus turnaround:

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7-0406.8C(1) Parking is permitted on the cul-de-sac.

7-0406.8C(2) There is no other means of providing safe and convenient access within a subdivision to an established or proposed school bus stop.

7-0406.8C(3) The cul-de-sac is further than 600 feet from an interior cross-section connection.

7-0406.8C(4) The cul-de-sac would serve to eliminate a school bus stop along an existing or proposed road with a respective traffic count of greater than 5,500 VPD.

7-0406.8C(5) The proposed cul-de-sac is greater than 1 mile from an existing or proposed elementary school site.

7-0406.9 (89-05-PFM) Sidewalks shall be shown where required by the Subdivision Ordinance, Zoning Ordinance and/or the PFM.

7-0406.10 Traffic barricades and “NO THRU STREET” signs shall be shown where required. (See Plate 20-7.)

7-0406.11 Water service cutoffs must be located in utility strips unless otherwise permitted by the Director.

7-0406.12 Asphalt header curb may be approved for use on site plans and subdivisions only when it is of a temporary nature and is expected to remain in place for a short duration. It shall not be approved for use in parking lots on commercial sites.

7-0406.13 (72-01-PFM) The following notes shall be shown on all plans: A smooth grade shall be maintained from centerline of existing road to proposed curb and gutter to preclude the forming of false gutters and/or the ponding of any water on the roadway.

7-0406.14 (72-01-PFM) The following notes shall be shown for all streets, service drives, etc., R-1 through R-5:

7-0406.14A The methods and materials used in the construction of all streets shall conform to the current VDOT Road and Bridge Specifications unless herein modified.

7-0406.14B (72-01-PFM, 47-95-PFM) Rights-of-way must be cleared for full width, all utilities in place, fine graded to true typical section before asphalt material is applied.

7-0406.14C (72-01-PFM) Dust control shall be maintained on those sections of the project as may be designated by the inspector.

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7-0406.14D (72-01-PFM, 62-98-PFM) A sidewalk must be provided as required by § 101-2-2 of the Subdivision Ordinance and Zoning Ordinance, § 17-201. Further, sidewalks shall be constructed in accordance with the PFM. VDOT will accept maintenance in accordance with their current Subdivision Street Requirements. Proposed sidewalks must be constructed in accordance with UD-3 standards.

7-0406.14E (99-07-PFM, 89-05-PFM, 72-01-PFM) When a trail is shown on the adopted comprehensive plan in the right-of-way, the right-of-way width shall be wide enough to accommodate the trail as shown on the adopted comprehensive plan or a trail which is constructed to VDOT standards, whichever requires more width. Right-of-way width shall be determined in accordance with the current VDOT Road Design Manual. If the trail is adjacent to slopes greater than 3:1, additional right-of-way may be needed to accommodate wider trail shoulders and safety features such as handrails.

7-0406.14F (72-01-PFM) Water curb stops or meters will not be accepted in the gutter line or wings of driveways aprons. Water curb stops or meters are to be located in the grass strip between the back of the curb and the front edge of the sidewalk.

7-0406.15 (97-07-PFM) If private streets are proposed in the development that do not meet VDOT standards, the following note shall be included on all plans and plats associated with the private streets: "The private streets in this development do not meet the standards necessary for inclusion in the system of state highways and will not be maintained by VDOT or Fairfax County, and are not eligible for rural addition funds or any other funds appropriated by the General Assembly of Virginia and allocated by the Commonwealth Transportation Board." If private streets are proposed in the development that are constructed to VDOT standards, but are not intended for inclusion in the system of state highways, the following note shall be included on all plans and plats associated with the private streets: "The private streets in this development are not intended for inclusion in the system of state highways and will not be maintained by VDOT or Fairfax County, and are not eligible for rural addition funds or any other funds appropriated by the General Assembly of Virginia and allocated by the Commonwealth Transportation Board."

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7-0500 PAVEMENT DESIGN

7-0501 Design for Subdivision Road Pavements (72-01-PFM)

7-0501.1 (89-05-PFM) Required thicknesses of subbase, base course, and top or surface are shown in the street standards. Subbase thickness is based on a subgrade CBR value of 10. CBR tests of subgrade soils must be conducted for actual determination of required subbase thickness prior to construction.

7-0501.2 (92-06-PFM) (62-98-PFM) Alternate equivalent pavement sections may be submitted with the approval of the Director prior to construction. Their design shall be in accordance with either the current VDOT Pavement Design Guide for Subdivision and Secondary Roads in Virginia or AASHTO Guide for Design of Pavement Structures, 1993 or for CBR test values less than 10, 1 inch of additional aggregate subbase shall be provided for each point below 10. The VDOT design method shall not be used when any subgrade CBR value is less than 4. When the subgrade CBR value is less than 4, 1 inch of additional subbase is required for each point below CBR 10. If one or both consecutive CBR values are less than 4, the pavement design shall be based on the lowest CBR value and remain constant between these test locations.

7-0501.2A All equivalency values shall be determined in accordance with the VDOT Pavement Design Guide, Appendix III, Paving Material & Allowable Values. The pavement design may vary in different sections of the road, where CBR values or traffic volumes change significantly. Subsurface drainage and construction method shall be considered in making this determination.

7-0501.2B Laboratory CBR tests are required for all pavement designs submitted for review. These tests shall be made at each change in subgrade soils and at a maximum spacing of 500 feet where subgrade soils remain constant. Spacing of CBR tests shall be in accordance with the VDOT Pavement Design Guide, and a minimum of two CBR samples will be required for cul-de-sac or dead end streets of less than 500 feet in length.

7-0501.2C Where base asphalt is required, a minimum thickness of 1½ inches of temporary asphalt surface shall be placed immediately after the base has been compacted and cured. Temporary asphalt shall be placed and maintained in “sag” curves to provide positive drainage to curb inlets. The temporary asphalt shall be removed immediately prior to placing the final surface course. As an alternate method of obtaining positive drainage, the approach gutters for drop inlet structures in sag areas shall temporarily be omitted. Instead, the face block is to be secured to the drop inlet and the base asphalt is to be finished flush with the opening of the structure at the face block. Immediately prior to placement of the final surface course, the base asphalt shall be removed and the approach gutter section cast.

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7-0502 Private Streets, Access Streets and Aisles, Parking Lots (27-89-PFM)

7-0502.1 In developments subject to common or joint use, such as townhouses, patios, and garden courts:

7-0502.1A For geometric design, see Plate 4-7.

7-0502.1B For pavement design, see standard pavement § 7-0502.5.

7-0502.2 For single family condominium and single family residential, five or less lots:

7-0502.2A For geometric design, use the pipestem lot standards.

7-0502.2B For pavement design, use standard pavement § 7-0502.5.

7-0502.3 For single family residential (including condominium) subdivisions in which the average lot size or equivalent is 18,000 square feet or more and when the street serves more than five units:

7-0502.3A (99-07-PFM) The geometric design shall be in accordance with the current VDOT Road Design Manual for shoulder and ditch section streets and Plate 1-7.

7-0502.3B (99-07-PFM) The pavement design shall be in accordance with the current VDOT Pavement Design Guide for Subdivision and Secondary Roads in Virginia.

7-0502.4 For single family residential (including condominium) subdivisions in which the average lot size or equivalent is less than 18,000 square feet and when the street serves more than five units:

7-0502.4A (99-07-PFM, 89-05-PFM) The geometric design shall be in accordance with the current VDOT Road Design Manual for curb and gutter section streets and Plate 2-7.

7-0502.4B (99-07-PFM, 89-05-PFM) The pavement design shall be in accordance with the current VDOT Pavement Design Guide for Subdivision and Secondary Roads in Virginia.

7-0502.5 Standard Pavement Design (92-06-PFM)

7-0502.5A When maintained by the property owner (e.g., shopping centers, office buildings):

7-0502.5A(1) (92-06-PFM, 47-95-PFM) A 6-inch base and a 1 1/4-inch asphalt surface is required to ensure a dustless surface.

7-0502.5A(2) No soils test or subbase will be required.

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7-0502.5A(3) A “2-shot” surface treatment may be approved by the Director in light traffic situations and in R-C Cluster developments.

7-0502.5A(4) A concrete pavement design in accordance with current engineering procedures is acceptable.

7-0502.5B When maintained by individual homeowners, a homeowners’ association or similar organization:

7-0502.5B(1) (47-95-PFM) A 6-inch base and a 2 ½-inch asphalt surface is required to ensure a dustless surface.

7-0502.5B(2) Soils tests shall be provided for the laboratory CBR test, VTM-8. If the CBR is less than 10, 1 inch of subbase is required for each point below CBR 10. If the subgrade CBR is 10 or greater, no subbase is required. These criteria do not apply to subdivisions or their metric equivalent.

7-0502.5B(3) A concrete pavement designed in accordance with current engineering procedures is acceptable.

7-0502.6 (92-06-PFM) All aggregate subbase and base material, as well as subgrade for all streets, parking areas, sidewalks, shoulders, and curb and gutter shall be compacted in accordance with VDOT Road and Bridge Specifications, Sections 305, 308 and 309.

7-0503 Private Driveway Entrances and Pipestem Driveway Standards (92-06-PFM, 89-05-PFM)

7-0503.1 Private Driveways

7-0503.1A Private driveway entrances on curb and gutter streets shall conform to VDOT standards (CG-9B through CG-9D). Private driveway entrances on streets with no curb and gutter shall conform to Plate 22-7.

7-0503.2 Pipestem Driveways

7-0503.2A For geometric design, see Plates 10-7, 11-7, 19-7, and 23-7.

7-0503.2B For pavement design, see standard pavement § 7-0502.5.

7-0503.2C All aggregate subbase and base material, as well as subgrade for pipestem driveways shall be compacted in accordance with VDOT Road and Bridge Specifications, Sections 305, 308 and 309.

7-0504 Dustless Surface Modification or Waiver (40-93-PFM)

7-0504.1 General Policy. The Director may approve a modification or waiver of the dustless surface requirements for off-street parking and loading areas, including aisles and driveways, upon a determination that such modification or waiver will not have an adverse impact on the site and on the surrounding area with regard to such factors as, but not limited to, the natural environment, storm drainage, water quality, and erosion and sediment.

7-0504.2 An application for a modification or waiver shall be reviewed based on the following items:

7-0504.2A Structure or use to which the off-street parking or loading area is accessory.

7-0504.2B Stated reasons for the request of the dustless surface modification or waiver.

7-0504.2C Requested duration of the dustless surface modification or waiver.

7-0504.2D Type(s) and location of proposed alternate parking lot surface(s).

7-0504.2E Size of the parking and loading area(s) and the percentage of these areas proposed for alternate surfacing.

7-0504.2F Type of vehicles which will use the facility and frequency of use.

7-0504.2G Soil types and details/sections of proposed alternate surface(s).

7-0504.2H Proposed maintenance program.

7-0504.2I Resultant effect of the modification or waiver on the natural environment, storm drainage, water quality and erosion and sediment.

7-0504.2J Proposed method of delineation of parking spaces and travelways.

7-0504.3 The proposed alternate surface shall consist of gravel. Other alternate surfaces, such as grass reinforcement systems and other appropriate surfaces, may be considered for use by the Director upon specific request based on factors related to storm drainage, frequency of use, types of vehicles used, soil conditions, and other relevant concerns.

7-0504.4 The Director may approve or deny such request and may impose such conditions, restrictions and time limitations as may be deemed necessary to assure that the off-street parking and/or loading areas will be compatible with and will not adversely impact the adjacent area. Such conditions and restrictions shall include but need not be limited to, the following:

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7-0504.4A The size and location of the alternate surface area may be restricted, and additional landscaping and transitional screening may be required to protect adjacent areas.

7-0504.4B Pavement shall be placed from the edge of the existing abutting roadway for a minimum distance of 25 feet into the interior of the site at each entrance and exit to prevent the parking area surfacing materials from entering the abutting street.

7-0504.4C Runoff shall be channeled away from and/or around driveway and parking area entrances. In addition, proper drainage provisions shall be required to ensure the stability of the alternate surface used in lieu of a dustless surface.

7-0504.4D The vehicle speed limit shall be restricted to 10 mph less.

7-0504.4E Parking spaces, loading spaces, and travelways shall be constructed and maintained in good condition at all times.

7-0504.4F Periodic inspections shall be performed by the owner to monitor dust conditions, drainage adequacy, and the compaction and migration of all surfaces.

7-0504.4G Routine maintenance shall be performed on the parking lot surface to prevent unevenness, wear-through to subgrade soil, and the creation of potholes. Corrective action shall be taken to alleviate such problems as they occur.

7-0504.4H The application of water, or other substance approved by the Director, shall be made during dry periods to the surface to control dust.

7-0504.4I A maintenance agreement shall be provided satisfactory to the Director.

7-0504.5 The Director shall have the right to revoke the approval of a dustless surface modification or waiver and require a dustless surface to be constructed at the owner's expense for violations of the conditions of approval, or when the Director determines that a change in the use of the site, site conditions or adjacent properties warrants the provision of a dustless surface.

**7-0600 THIS SECTION LEFT BLANK INTENTIONALLY (FORMERLY
“TOWNHOUSE STREETS”)**

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7-0700 VDOT POLICY ON THE ACCEPTANCE OF SUBDIVISION STREETS

7-0701 General Acceptance Policies

7-0701.1 (62-98-PFM) VDOT policy on the acceptance of subdivision streets shall be in accordance with the current VDOT Subdivision Street Requirements.

7-0702 Stub Streets

7-0702.1 Stub streets of a lot depth in length will be accepted into the State Secondary Highway System under the following conditions:

7-0702.1A There is no entrance access from the contiguous lots to the stub streets.

7-0702.1B The approved preliminary plat of the subdivision delineates the extension of the stub street on future sections of the subdivision.

7-0702.1B(1) In this instance the construction plan shall note that the street will be extended as a part of subsequent construction plans yet to be submitted, or

7-0702.1B(2) A preliminary plat of an adjacent parcel has been submitted which shows a connection to the stub street, or

7-0702.1B(3) The stub street is the sole access to an adjacent parcel, or

7-0702.1B(4) The stub street is a portion of a future street as delineated on an adopted Comprehensive Plan, or

7-0702.1B(5) Stub streets, requested by the Director to facilitate future traffic circulation between a subdivision being developed and an adjoining undeveloped property when it eventually becomes subdivided, and which have the concurrence of VDOT, are acceptable.

7-0702.1C Adequate on-site and off-site topography is provided to ensure that the stub streets can be extended to meet the current standards for street construction.

7-0702.2 Short dead-end streets that terminate at the subdivision boundary which are proposed for future extension beyond the subdivision boundary, and serve one or more lots, will be provided with a temporary cul-de-sac, constructed in a temporary easement, located either on-site or off-site. Funds shall be deposited with the Director for removal of an on-site cul-de-sac when the street is extended.

7-0703 Quit Claim of Utilities

7-0703.1 All utilities or other facilities located in the VDOT right-of-way must quit claim their rights in dedicated streets in exchange for a permit from VDOT.

7-0703.2 The permit shall be requested concurrently with the request for acceptance of the streets into the VDOT system for maintenance. The permit would also cover any overhead or underground crossings.

7-0800 PARKING GEOMETRICS AND STANDARDS (25-88-PFM)

7-0801 General Information (25-88-PFM)

Table 7.5 Layouts for Off-Street Parking Facilities

There shall be three major layouts for off-street parking facilities for automobiles:

- Parallel Parking
- Universal Size Car Parking
- Accessible Parking for Persons with Disabilities (37-92-PFM)

7-0802 Geometrics and Standards. (25-88-PFM) The following tables shall represent the minimum size requirements for required automobile parking spaces (see Article 11 of the Zoning Ordinance for required number of parking spaces per use):

7-0802.1 Parallel Parking Spaces (113-13-PFM) (63-98-PFM, 25-88-PFM)

Table 7.6 Parallel Parking Spaces

Direction of Parking	Stall Width ft.	Depth of Stalls ft.	Aisle Width ft.*
One-way aisle (one-side parking)	8	22	16
One-way aisle (two-side parking)	8 (16 feet total)	22	20
Two-way aisle (two-side parking)	8 (16 feet total)	22	20

* Where required, fire lanes shall be in accordance with § 9-0202.2J(5).

7-0802.2 Universal Size Car Spaces (113-13-PFM) (63-98-PFM, 25-88-PFM)

Table 7.7 Universal Size Car Spaces

Parking Angle	Stall Width ft.	Depth of Stalls Perpendicular to Aisle ft.	One-Way Aisle ft.	Two-Way Aisle ft. *
45°	8.5	19.0	15.5	18.0
60°	8.5	20.0	17.0	19.0
90°	8.5	18.0**	23.0	23.0

* Where required, fire lanes shall be in accordance with § 9-0202.2J(5).

** This dimension may be reduced by up to 1.5 ft. where the Director determines that adequate “head-in” overhang exists exclusive of required planting or screening requirements, and sidewalks.

7-0802.3 (110-12-PFM) Motorcycle Parking Spaces. When provided, motorcycle parking spaces shall conform to the following minimum geometrics. The stall width shall be 4 feet and the depth of the stall perpendicular to the aisle shall be 9 feet. The travel aisle shall be as set forth in Tables 7.6 and 7.7.

7-0802.3A Motorcycle parking spaces shall not be considered in the required parking tabulation.

7-0802.4 (87-05-PFM, 63-98-PFM, 61-98-PFM, 54-96-PFM, 37-92-PFM) Parking for Persons with Disabilities. Accessible parking spaces and related access aisles and accessible routes for persons with disabilities shall conform to all requirements of the USBC. Copies of the applicable specifications are available from the International Code Council. Each such space shall be identified by an above-grade sign. The required signs shall be 12 inches wide by 24 inches high. These signs shall display the internationally recognized symbol of accessibility and the words "DMV PERMIT REQUIRED, PENALTY \$100 - \$500 FINE TOW-AWAY ZONE" as illustrated in Plate 32A-7. Van accessible spaces shall have an additional sign 12 inches wide by 7 inches high and shall display the words "VAN ACCESSIBLE" as illustrated in Plate 32B-7 and shall be mounted below the primary sign. All required signs shall be installed on a wall or post so that the lower edge of the sign(s) is not less than 4 feet nor more than 7 feet above grade as illustrated in Plate 32C-7. Such signs shall be located so they cannot be obscured by a vehicle parked in the space. These signs shall consist of white lettering on a blue background.

7-0802.5 (25-88-PFM) Delineation of Parking Spaces. Except for parking spaces provided for and on the same lot with single family detached or attached dwellings, all paved parking areas shall be delineated in accordance with the following:

7-0802.5A All parking lot delineations shall be in white or, at the discretion of the Director, an alternative color may be permitted, provided the color is in contrast with the parking lot surface and does not conflict with the delineation of fire lanes or other restricted parking areas.

7-0802.5B Parking spaces shall be delineated with a single line having a minimum width of 4 inches. Parallel curb or head-in parking spaces shall be striped for the full width or length of the parking stall. Notwithstanding the above, the Director may approve an alternative delineation of parking spaces upon a determination that the proposed markings clearly define the parking spaces.

7-0802.5C The width or length of all parking stalls shall be measured from the centerline of the stripe or alternative marking to the centerline of the adjacent stripe or marking used to delineate the parking stall or face of a physical barrier, such as a wall or curbing.

7-0802.5D Parking space delineation shall be maintained for visual effectiveness.

7-0802.5E (40-93-PFM) Parking spaces in unpaved lots shall be delineated by providing individual wheel stops for each unpaved parking space, unless an alternative is approved by the Director.

7-0803 Off-Street Surface Parking Facilities Within Major Underground Utility Easements
(49-95-PFM)

7-0803.1 Use Limitations

7-0803.1A The use of concrete or porous pavement material shall not be permitted.

7-0803.1B Aboveground permanent structures shall not be permitted.

7-0803.1C Underground utility crossings and/or underground utilities which directly serve the parking facility shall be permitted.

7-0803.1D A representative of the owner of the major utility easement shall be present on-site during all grading and/or construction.

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7-0900 COMMON/PIPESTEM DRIVEWAYS

7-0901 General Requirements. See Plates 10-7, 11-7, 19-7, 23-7 and 24-7.

7-0901.1 The desirable maximum grade for all pipestem driveways is 15 percent. The Director may approve grades in excess thereof where an unusual environmental or topographic condition exists.

7-0901.2 All pipestem driveways shall have an adequate angle of approach and angle of departure. All pipestem driveways shall have a minimum centerline radius of 50 feet.

7-0902 Access Easements

7-0902.1 Adequate ingress and egress easements shall be provided when more than one lot is to use a common driveway, and suitable provision shall be made for a turnaround on all pipestem driveways serving three or more lots as per Plates 7-7, 10-7 and 11-7.

7-0902.2 Single lot pipestems under 12 feet in width shall be provided with an ingress and egress easement 12 feet in width.

7-0902.3 All pipestem driveways regardless of number of units served or easement width shall have such additional easements provided for slopes where necessary due to terrain. Easements shall note which lots have the right to use these driveways.

7-0903 Design and Construction Requirements (27-89-PFM)

7-0903.1 The plan view, including necessary turnaround, utilities, and typical section of pipestem driveways serving more than one lot, shall be shown on the grading plan for each construction or development phase. The pipestems shall be included in each project's completion bond.

7-0903.2 Pipestem driveways shall be designed and constructed in accordance with Plates 1-2, 19-7, 23-7 and 24-7, except that:

7-0903.2A In R-C Cluster subdivisions, the wearing surface of pipestem driveways may be surfaced with a prime coat and a double seal treatment over proper base, in accordance with VDOT Road and Bridge Specifications, Section 309, 314, 315 and 316.

7-0903.2B (47-95-PFM) A 6-inch welded wire fabric reinforced concrete pavement is acceptable in lieu of 2 ½-inch asphalt surface (see Plate 24-7).

7-0903.2B(1) Concrete shall be as specified by Table II-17 of VDOT Road and Bridge Specifications, Section 217, Class 20 General Use, central mixed, and delivered in agitator-type equipment.

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7-0903.2B(2) The reinforcement shall be adequately supported by metal chairs at a level of 3 inches (+ or - ½ inches) above the bottom of concrete.

7-0903.2B(3) Expansion joints shall be provided every 30 feet in accordance with VDOT Road and Bridge Specifications, Section 212, and shall be placed all the way through the joints.

7-0903.2B(4) Contraction joints shall be provided every 15 feet. The joints shall be 1½ inches deep, or 1/4 of the concrete thickness.

7-0903.2B(5) Longitudinal control joints shall be provided in the center of all pipestems.

7-0903.2B(6) Compaction of subgrade shall conform to VDOT Road and Bridge Specifications, Section 305. The compaction shall be verified by County inspectors prior to placing the concrete.

7-0903.2B(7) The pavement surface shall have a minimum cross slope of 50:1. Storm water runoff shall not be channeled longitudinally within the paved portions of the pipestem or along the edge unless curb and gutter is provided. When a crown is used, a well-defined swale shall be provide, as required, on both sides of the drive.

7-0903.2B(8) Concrete curing materials shall conform to VDOT Road and Bridge Specifications, Section 220.

7-0903.2B(9) Opening to traffic shall conform to VDOT Road and Bridge Specifications, Section 316.04.

7-0903.2B(10) Concrete may be hand-finished, and shall be provided with a broom or burlap drag texture.

7-0903.2B(11) Material, equipment and construction methods shall comply with VDOT Road and Bridge Specifications, except where stricter specifications are identified.

7-1000 STREET LIGHTS (64-98-PFM, 44-94-PFM)

7-1001 General Information (80-03-PFM)

7-1001.1 (110-12-PFM) Street lighting shall be installed, unless waived by the Director with all developments as a requirement of subdivision and site plans for the purpose of enhancing crime deterrence and pedestrian safety, and improving potentially hazardous intersections. The extent of street lighting improvements required for each development shall be based on the proposed density and land use. The installation costs of the required street lighting improvements shall be paid by the Developer.

7-1001.2 The developer shall bond 100 percent of the estimated street light installation cost as part of the overall bond required by the Director prior to plan approval in accordance with § 2-0600 *et seq.* This bonding estimate will be based on an average cost per street light as determined by the Director. All easements required by the electric utility company for street lighting shall be provided by the developer.

7-1001.3 The required street lighting improvements shall be installed by the electric utility company serving the new development. However, the developer may perform the civil portion of the installation with the prior approval of the utility company. All required VDOT permits for the purpose of installing street lights shall be obtained by the electric utility. The fees for these VDOT permits will be included in the utility company cost estimate to be paid by the developer. The street lighting systems shall be owned and maintained by the electric utility, unless the developer opts for a nonstandard street lighting system in accordance with § 7-1005.

7-1001.4 After the street lights are installed and energized, the County shall be responsible for making payments to the electric utility company for the monthly operating and maintenance costs.

7-1001.5 The Board may approve a nonstandard street lighting system, if such a system satisfies all the criteria of § 7-1005.

7-1002 General Requirements (93-06-PFM, 80-03-PFM)

7-1002.1 Residential Subdivisions

7-1002.1A Subdivisions with an Average Lot Size Under 18,000 square feet.

7-1002.1A(1) Street lights shall be installed along all subdivision roadways that are or will be included in the State Roadway System. Along adopted Virginia byways, street lights shall only be required at intersections and entrances and to address the safety issues outlined in § 7-1001.1. Street lights are not required along private roadways.

7-1002.1A(2) A minimum of three street lights shall be installed along all the existing and/or proposed State roadway(s) at all entrances into the subdivision, except at private entrances serving a

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private home. If the frontage along the entrance is not sufficiently long to accommodate the three required street lights, then the number of required street lights shall be adjusted accordingly. When subdivision lots are accessed directly from an existing State roadway, street lights shall be installed along the entire frontage of these lots, unless the State roadway is designated as an adopted Virginia byway. Along adopted Virginia byways, street lights shall only be required at road intersections and commercial entrances and to address safety issues outlined in § 7-1001.1.

7-1002.1A(3) Refer to Plate 25-7 for a typical lighting layout.

7-1002.1B Subdivisions with an Average Lot Size of 18,000 square feet or greater.

7-1002.1B(1) Street lights shall not be required for roadways within subdivisions.

7-1002.1B(2) A minimum of three street lights shall be installed along all the existing State roadway(s) at all proposed entrances into the subdivision, except at private entrances serving a private home. If the frontage along the entrance is not sufficiently long to accommodate these three required street lights, then the number of required street lights shall be adjusted accordingly.

7-1002.1B(3) Refer to Plate 26-7 for a typical lighting layout.

7-1002.2 Industrial and Commercial Subdivisions

7-1002.2A Street lights shall be installed along all roadways that are or will be included in the State Roadway System. This shall include a minimum of one street light at each intersection within the subdivision. Along Virginia byways, street lights shall only be required at road intersections and commercial entrances and to address safety issues outlined in § 7-1001.1. Street lights are not required along private roadways.

7-1002.2B A minimum of three street lights shall be installed along the existing State roadway(s) at all entrances into the subdivision. When subdivision lots are accessed directly from an existing State roadway, street lights shall be installed along the entire frontage of these lots, unless the State roadway is designated as an adopted Virginia byway. Along adopted Virginia byways, street lights shall only be required at road intersections and commercial entrances and to address safety issues outlined in § 7-1001.1.

7-1002.2C Refer to Plate 27-7 for a typical lighting layout.

7-1002.3 Site Plans

7-1002.3A Street lights shall be installed along all existing and/or proposed State roads providing frontage to the development, unless the State roadway is designated as an adopted Virginia byway. Along adopted Virginia byways, street lights shall only be required at road intersections and commercial entrances and to address safety issues outlined in § 7-101.1.

7-1002.3B Refer to Plate 28-7 for a typical lighting layout.

7-1002.4 Planned Developments (PDH, PDC, PRC and PRM Districts)

7-1002.4A Street lights shall be installed along all roadways that are or will be included in the State Roadway System unless the State roadway is designated as an adopted Virginia byway. Along adopted Virginia byways, street lights shall only be required at road intersections and commercial entrances and to address safety issues outlined in § 7-1001.1.

7-1002.4B A minimum of three street lights shall be installed along all existing or proposed State roadways at all entrances into the development, except at private entrances serving a private home. If the property's frontage along the entrance is not sufficiently long to accommodate these three required street lights, then the number of required street lights shall be adjusted accordingly. Where the existing or proposed State roadway provides frontage to the development, street lights shall be installed along the entire frontage, unless the State roadway is designated as an adopted Virginia byway. Along adopted Virginia byways, street lights shall only be required at road intersections and commercial entrances and to address safety issues outlined in § 7-1001.1.

7-1002.4C Street lights shall be installed throughout the development in accordance with the residential subdivision, industrial and commercial subdivision and site plan requirements as previously stated in § 7-1002.1 *et. seq.*

7-1002.4D Refer to Plate 29-7 for a typical lighting layout.

7-1002.5 Public Improvement Plans

7-1002.5A Street lights shall be installed along roadways that are or will be included in the State Roadway System in accordance with the residential subdivision, industrial and commercial subdivision, site plan and planned development requirements as previously stated in § 7-1002.

7-1003 Authorization and Procedures (110-12-PFM, 80-03-PFM)

Fairfax County is served by two electric utility companies: Dominion Virginia Power (Dominion) and the Northern Virginia Electric Cooperative (NOVEC). Depending on which electric service area the project is located in, the following authorization and procedures shall be applicable.

7-1003.1 Dominion Electric Service Area (110-12-PFM):

7-1003.1A In order to minimize cost and disruption, Dominion may include the cabling to the new street lights in their construction plans for the electrical infrastructure serving the development. As soon as construction begins, the developer shall provide approved plans to Dominion showing all the street lighting improvements that have been bonded with the development.

7-1003.1B A minimum of 135 days prior to the desired street light installation date, the developer shall request that DPWES obtain a cost estimate and construction sketch for the street lights. DPWES will submit this cost estimate request to Dominion. Dominion will prepare and submit to DPWES a construction sketch and cost estimate within approximately 45 days. The use of common trenches for street light wiring and the electric service to the lots is to be considered in order to minimize cost. Upon receipt, DPWES will review the construction sketch and cost estimate to ensure that the scope of the street light installations conforms to the approved plan and then DPWES will forward the cost estimate to the developer for payment to the County.

7-1003.1C The developer shall make full payment to the County for the street light installations within 30 days after receiving the copy of the cost estimate, but in no case will the payment be accepted by DPWES after the cost estimate has expired. Fully executed copies of all deeds of the required street light easements shall be transmitted directly to Dominion. Dominion will not be obligated to install any street lights until authorization from DPWES and all signed easement agreements from the developer have been received. After the payment has been received and cleared by the bank, DPWES will authorize Dominion to proceed with the street light installation.

7-1003.1D The developer shall coordinate directly with Dominion to schedule the installation of street lights. This coordination shall be for installation of the wiring for the street lights, concurrently with the electric service, and the subsequent installation of the light poles, fixtures, and final connection when the site is ready for such work. If the street light installations have not been scheduled within one year of the date of the cost estimate, and provided the delay is not the fault of Dominion, Dominion may revise the cost estimate, which may require additional payment by the developer.

7-1003.1E Once full payment has been made by the developer for the bonded street lights and all easements have been granted to Dominion, the developer's bond can be reduced to account for the street light installation. Any damage claims resulting from the installation of the street lights shall be resolved between the developer and Dominion prior to final bond release.

7-1003.1F The County shall make final payment to Dominion and accept the street lights into the County Street Light System upon the submission of an invoice requesting payment and a standard completion report to DPWES by Dominion, except that the street light installations shall be inspected and approved by the County prior to making final payment and acceptance.

7-1003.2 NOVEC Electric Service Area (110-12-PFM):

7-1003.2A As soon as construction begins, the developer shall request in writing that NOVEC prepare a cost estimate for the required street lights. The developer shall provide approved plans to NOVEC showing all the street lighting improvements that have been bonded with the development.

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7-1003.2B NOVEC shall prepare and deliver a street light wiring construction sketch and cost letter to the developer for payment. The use of common trenches for street light wiring and the electric service to the lots is to be considered in order to minimize cost. The developer is to pay NOVEC directly for the required street light wiring work. NOVEC will prepare and provide the developer a cost estimate for the subsequent installation work of the street light poles and fixtures included on the plans, with a copy sent to DPWES. The street light poles and fixtures are to be installed when the site is ready for such work by NOVEC. Included with this cost letter shall be easement agreements and plats.

7-1003.2C DPWES will review NOVEC's construction sketch and cost estimate to ensure that the scope of the street light installations conforms to the approved development plan. DPWES will authorize NOVEC in writing to include the new street lights into the Fairfax County Street Light Account. If the cost estimate is not in agreement with the approved plans, DPWES will mark up the street light construction sketch indicating the deficiencies found and return it to NOVEC for correction. Adjustment to the street light layout may need to be made to account for any change in the original existing conditions when the plans were approved. After NOVEC has made the necessary corrections, it will be authorized by DPWES to include these street lights into the County account.

7-1003.2D The developer shall make full payment to NOVEC for the street light installations within the time frame that the cost estimate is valid. Fully executed copies of all deeds of the required street light easements shall be included with the payment. NOVEC will not be obligated to install any street lights until full payment and all signed easement agreements have been received. NOVEC shall provide DPWES with a copy of the receipt provided to the developer for the street light installation payment.

7-1003.2E The developer shall coordinate directly with NOVEC to schedule the installation of street lights. This coordination shall be for installation of the wiring for of the street lights, concurrently with the electric service, and the subsequent installation of the light poles and fixtures when the site is ready for such work. If the street light installations are not completed within one year of the date of payment of the estimated cost, providing the delay is not the fault of NOVEC, NOVEC may require the developer to make additional payment.

7-1003.2F The developer shall submit to the County payment receipts for all the street light installations indicated on the approved plans as verification that the street light requirements have been satisfied. Subject to verification that all required easements have been provided to NOVEC, the developer's bond can be reduced to account for the street light installation.

7-1003.2G The County will accept the street lights into the County Street Light System upon the submission of a standard completion report to DPWES by NOVEC, except that the street light installations shall be inspected and approved by the County prior to acceptance.

7-1003.3 DPWES shall review the electric utility company construction sketch and cost estimate to ensure that the scope of the street light installations conforms to the approved development plan.

DPWES will authorize in writing the electric utility company to include the new street lights into the Fairfax County Street Light Account. If the cost estimate is not in agreement with the approved plans, DPWES shall mark up the street light construction sketch indicating the deficiencies found and return it to the electric utility company for correction. Adjustment to the street light layout may need to be made to account for any change in the original existing conditions when the plans were approved. After the electric utility company has made the necessary corrections, it will be authorized by DPWES to include these street lights into the County account.

7-1003.4 The developer shall make full payment to the electric utility company for the street light installations within the time frame that the cost estimate is valid. Fully executed copies of all deeds of the required street light easements shall be included with the payment. The electric utility company will not be obligated to install any street lights until full payment and all signed easement agreements have been received. The electric utility company shall provide DPWES with a copy of the receipt provided to the developer for the street light installation payment.

7-1003.5 The developer shall coordinate directly with the electric utility company to schedule the installation of street lights. This coordination shall be for the wiring of the street lights, concurrently with the electric service, and the subsequent installation of the light poles and fixtures when the site is ready for such work. If the street light installations are not completed within one year of the date of the cost estimate payment, providing the delay is not the fault of the electric utility company, the electric utility company may require the developer to make additional payment.

7-1003.6 The developer shall submit to the County payment receipts for all the street light installations indicated on the approved plans as verification that the street light requirements have been satisfied and that the developer's bond can be reduced to account for the street light installation.

7-1003.7 The County shall accept the street lights into the County Street Light System upon the submission of a standard completion report to DPWES by the electric utility company, except that the street light installations shall be inspected and approved by the County prior to acceptance.

7-1004 Standards and Criteria (80-03-PFM)

7-1004.1 Luminaire Style

7-1004.1A There are three standard lighting fixture styles and poles available for use. The selection of the style of fixture and pole combination for a particular development is to be made in relation to the area classification (see Table 7.3) and roadway classification (see Table 7.4). These lighting fixtures are to be set in accordance with current VDOT's Roadside Design Guide, Section A-2, Clear Zone Guidelines for fixed objects. The available lighting fixtures are as follows:

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7-1004.1A(1) Cobrahead (RF-1 and RF-2): This is a cut-off fixture which is bracket mounted to a concrete (RF-2) or wood pole (RF-1) (see Plates 30-7 and 31-7). These two fixtures can be used on all roadways and area classifications, where the clear zone is less than 20 feet. When street light poles are set in-line with an existing power pole line, the light pole is to be wood (RF-1). When the light pole is to be set in an area where the electrical distribution is underground, the poles are to be concrete (RF-2). When the street light poles are set in front of an existing pole line, either RF-1 and RF-2 (preferred) can be utilized.

7-1004.1A(2) Colonial (RF-3): This is a top pole mounted coach fixture on a black fiberglass pole that is set in the utility strip (see Plate 32-7).

7-1004.1A(3) (95-06-PFM) Interstate (IT): This fixture is only used on primary roadways where the VDOT's clear zone is greater than 20 feet. This fixture can be installed on wood poles (IT-1) or concrete (IT-2) (see Plate 31A-7).

7-1004.1B (99-07-PFM) Local Roadways (ADT 0-2000) in Residential classification areas: The preferred luminaire is the Colonial (RF-3). This fixture is limited to curb-and-gutter roadways with less than 3,000 VPD and for underground electrical wiring. As an alternative, the RF-1 and RF-2 can also be utilized.

7-1004.1B(1) (99-07-PFM) Local Roadways (ADT 2001-5500) in Residential classification areas: The luminaires to be used are the RF-1 and RF-2.

7-1004.1B(2) (99-07-PFM) Collector and Arterial roadways in Commercial and Residential classification areas: Luminaires to be used are the RF-1 or RF-2.

7-1004.1B(3) (99-07-PFM) Collector and Arterial roadways in Commercial and Residential classification areas: Where the clear zone for fixed object is greater than 20 feet, the luminaires to be used are the IT-1 and IT-2.

7-1004.2 Street Light Source

7-1004.2A (110-12-PFM) The standard light source for all street lights shall be the High Pressure Sodium (HPS) lamps. The use of HPS street lights shall conform to the standards as set forth in Tables 7.9, 7.10, and 7.11.

7-1004.2B (110-12-PFM) Any use of existing Mercury Vapor (MV) street lights along existing state road frontage shall be upgraded to meet the Illuminating Engineer Society of North America (IESNA), American National Standard Practice for Roadway Lighting (ANSI/IESNA RP-8-00, or latest).

7-1004.3 (110-12-PFM) Light Level Requirements. Illumination levels are determined based on area and road classification. See § 7-0306 for definitions of area and road classifications. Due to the variations in the geometrics and traffic counts for existing State roadways, the design of street lights at

these locations is very site specific. The initial design of these street lights shall conform to the generalized standards as set forth in Table 7.9. Special coordination with DPWES during the preparation of this street light design may be required to address specific site conditions. The design of these street lights must be shown on the first submission construction plans. This street light design shall be subject to revision after review by DPWES. DPWES may also adjust approved street lighting layouts along existing State roadways. DPWES shall explain to the developer the reasons why the approved lighting layout is adjusted. These modifications will be made only to coordinate with the location of existing or proposed street lights adjacent to the site or to meet current IESNA Standard Practice for Roadway Lighting.

7-1004.3A Residential Areas (110-12-PFM)

7-1004.3A(1) Street lights shall be provided along roadways within new residential subdivisions in accordance with § 7-1002.1. Luminaire size and maximum allowable spacing and mounting height shall conform to the standards set forth in Tables 7.9, 7.10 and 7.11.

7-1004.3A(2) A minimum of three street lights shall be provided at all subdivision entrances as set forth in Tables 7.9 and 7.10.

7-1004.3B Commercial/Industrial Areas (110-12-PFM)

7-1004.3B(1) Street lights shall be provided along all proposed and existing roadways that are or will be included in the State Roadway System within new commercial and industrial subdivisions. Luminaire size and maximum allowable spacing shall conform to the standards set forth in Tables 7.9 and 7.10.

7-1004.3B(2) A minimum of three street lights shall be provided at all subdivision entrances as set forth in Tables 7.9 and 7.10.

7-1004.4 Pole Placement and Bracket Length

7-1004.4A All standard roadway fixtures shall be installed in such a manner as to maintain a minimum roadway overhang of 2 feet. All pole locations shall conform to the current edition of the VDOT Road Design Manual, Section A-2-Clear Zone Guidelines.

7-1004.4A(1) (110-12-PFM) Residential Areas. Poles located at intersections shall be installed as close as possible to, but outside, the radius of the intersection. Poles located along roadways between intersections shall be installed with a 1-foot offset to side lot property boundaries. All pole placements shall conform to the standards set forth in Tables 7.9 and 7.10.

7-1004.4A(2) (110-12-PFM) Commercial/Industrial Areas. Poles located at intersections shall be installed as close as possible to, but outside, the radius of the intersection. Poles located along roadways between intersections shall be installed, if possible, with a 1-foot offset to side lot

property boundaries. All pole placements and bracket lengths shall conform to the standards set forth in Tables 7.9 and 7.10.

7-1004.4B (110-12-PFM) Standard colonial style roadway lighting fixtures shall utilize black fiberglass poles. These poles shall be installed 2 feet behind the face of curb as set forth in Table 7.11.

7-1004.4C If a development has frontage on an existing or proposed public service road, street lights shall be located to light the main roadway in accordance with adopted illumination standards.

7-1004.5 (110-12-PFM) Luminaire Mounting Height – All RF-1 and RF-2 luminaires shall be installed with mounting heights as specified in Tables 7.9 and 7.10. All RF-3 luminaires shall be installed at a height of 14 feet.

7-1004.6 Street light information to be shown on development plans

7-1004.6A The standard roadway fixture for use on ditch section roadways is the RF-1 (Plate 30-7). However, the RF-1 could be substituted with the RF-2 (concrete pole with underground wiring) if desired. The RF-1 locations shall be designated on the plan in accordance with the symbol shown in Plate 30-7 or 31-7. Each RF-1 location shall be dimensioned from edge-of-pavement to face-of-pole. Each RF-1 location shall be labeled as to luminaire size, bracket length and mounting height as follows: RF-1-(luminaire size)-(bracket length)(mounting height), e.g., RF-1-23-12(35) refers to a 23,000 lumen luminaire with a 12-foot bracket length at a mounting height of 35 feet.

7-1004.6B Standard roadway fixture for use on curb-and-gutter roadways (Plate 31-7). The RF-2 locations shall be designated on the plan with the symbol shown in Plate 31-7. Each RF-2 location shall be labeled as to luminaire size, bracket length and mounting height as follows: RF-2-(luminaire size)- (bracket length)(mounting height), e.g., RF-2-14-10(30) refers to a 14,000 lumen luminaire with a 10-foot bracket length at a mounting height of 30 feet.

7-1004.6C Standard colonial style roadway lighting fixture (Plate 32-7). The RF-3 locations shall be designated on the plan in accordance with the symbol shown in Plate 32-7. Each RF-3 location shall be labeled as to luminaire size as follows: RF-3-(luminaire size), e.g., RF-3-5 refers to a 5,000 lumen luminaire.

7-1004.6D All RF-1, RF-2, and RF-3 street lights shall be plotted accurately to scale on the plans with respect to pole location and, where applicable, bracket length.

7-1004.7 Lighting Levels

7-1004.7A Lighting Levels for Existing Streets Standard Roadway Fixture (RF-1 and RF-2)
Luminaire Size and Maximum Spacing:

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**Table 7.9 Lighting Levels For Existing Streets:
Standard Roadway Fixture (RF-1 and RF-2) (High Pressure Sodium Vapor) (110-12-PFM,
80-03-PFM)**

Area Classification	Roadway Section Type ft.	Roadway Width ft.	Lamp Size Lumens	Maximum Spacing ft.	Mounting Height ft.	Notes
Residential		30	8,000	175	30	1,3,4
	Curb & Gutter	36	8,000	155	30	1,3,4
		44	14,000	160	30	1,4
			24	8,000	165	25
	Ditch Section	36	8,000	160	30	1,4
		48	14,000	155	30	1,4
Industrial/ Commercial		30	14,000	165	30	1,4
	Curb & Gutter	36	23,000	220	35	1,4
		44	23,000	225	35	2,4
			24	14,000	185	30
	Ditch Section	36	14,000	155	30	1,4
		48	23,000	185	35	1,4

NOTES:

^{1/} All luminaires to be installed on one side of the roadway.

^{2/} Luminaires are to be set symmetrically on both sides of the roadway. When the development only fronts one side of the road, street lights only need to be provided on that side at the spacing specified.

^{3/} The standard colonial style roadway lighting fixture may be used at these locations. See Table 7.11 for additional details.

^{4/} Luminaires bracket lengths are to be sized as to provide a 2-ft. roadway overhang. The maximum bracket length for standard concrete poles is 12 ft. Longer brackets, up to 20 ft. (in 2-ft. increments), are available for wood poles (down guiding is required) and for special concrete poles. Pole locations are to be determined based on current VDOT Road Design Manual, Section A-2-Clear Zone Guidelines.

7-1004.7B (99-07-PFM) Lighting Levels for Proposed Curb and Gutter Streets Standard Roadway Fixture (Plate 31-7) Luminaire Size and Maximum Spacing:

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**Table 7.10 Lighting Levels For Proposed Curb & Gutter Streets:
Standard Roadway Fixture (RF-2)
(High Pressure Sodium Vapor) (110-12-PFM, 99-07-PFM, 80-03-PFM)**

Area Class	Roadway Class	ADT	Lamp Size Lumens	Maximum Spacing ft.	Mounting Height ft.	Notes
Residential	Local	0-250	8,000	180	30	1,3,4
		251-400	8,000	180	30	1,3,4
		401-1000	8,000	160	30	1,3,4
		1001-2000	8,000	160	25	1,3,4
		2001-4000	8,000	160	30	1,4
		4001-5500	8,000	155	30	1,4
	Collector	4001-5500	14,000	160	30	2,4
Industrial/ Commercial	Local	0-250	14,000	170	30	1,4
		251-400	14,000	175	30	1,4
		401-1000	14,000	160	30	1,4
		1001-2000	23,000	210	35	1,4
		2001-4000	23,000	215	35	1,4
		4001-5500	23,000	210	35	1,4
	Collector	4001-5500	23,000	220	35	2,4

NOTES:

^{1/} Luminaires are to be set on one side of the roadway.

^{2/} Luminaires are to be set symmetrically on both side of the roadway.

^{3/} The standard colonial style roadway lighting fixture may be used at these locations. See Table 7.11 for additional details.

^{4/} Luminaires bracket lengths are to be sized as to provide a 2-ft. roadway overhang. The maximum bracket length for standard concrete poles is 12 ft. Longer brackets, up to 20 ft. (in 2-ft. increments), are available for wood poles (down guiding is required) and for special concrete poles. Pole locations are to be determined based on current VDOT Road Design Manual, Section A-2-Clear Zone Guidelines

7-1004.7C (99-07-PFM) Lighting levels for proposed curb and gutter streets alternate security lighting fixture (RF-3) luminaire size and maximum spacing.

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**Table 7.11 Lighting Levels For Proposed Curb & Gutter Streets:
Alternate Security Fixtures (RF-3)
(High Pressure Sodium Vapor) (111-13-PFM, 110-12-PFM, 99-07-PFM, 80-03-PFM)**

Area Class	Roadway Class	ADT	Lamp Size Lumens	Maximum Spacing ft.	Mounting Height ft.	Notes
Residential	Local	0-400	5,000	160	14	1,2
		401-2000	8,000	160	14	1,2

NOTES:
^{1/} Measured from face of pole to face of curb.
^{2/} Poles to be placed on one side of the roadway.

Table 7.12 Quick Street Light Requirement Selection (99-07-PFM, 80-03-PFM)

Plan Classification		Three Street Lights at All Entrances	Street Lights along all Interior Roadways	Street Lights Along All Abutting Roadways	Street Lights Required at Private Roadways
Site Plan		N/A	N/A	YES	NO
Subdivision Plans	Above 18,000 ft ²	YES	YES	N/A	NO
	Below 18,000 ft ²	YES	NO	N/A	NO
	Industrial or Commercial	YES	YES	N/A	NO
Public Improvements Plans		N/A	YES	YES	NO

7-1005 Nonstandard Street Lighting

7-1005.1 (80-03-PFM) It is the County’s objective to provide for the implementation of a safe, effective, and economical street lighting system. To this end, standard fixtures, lighting intensities, and implementation criteria are specified in § 7-1001 through § 7-1004. However, nonstandard street lighting systems may be approved to satisfy the requirements of § 7-1000 et seq., provided the resulting lighting levels meet or exceed those specified for the area under consideration. In addition, the nonstandard street lighting system must meet the general County goals of crime deterrence, increased pedestrian safety, and reduced hazardous driving conditions. Any proposed street light system that does not conform to the requirements of § 7-1001 through 7-1004 shall be considered nonstandard. This may include any deviation from standard fixtures, poles, brackets, illumination intensities, light sources, lighting layout, etc., required in § 7-1000 et seq. However, minor adjustments of standard pole locations to accommodate lot lines or unusual

physical topographical features of the site are allowable and will not cause a lighting system to be considered nonstandard.

7-1005.2 The procedure to obtain approval of a nonstandard street light system will be as follows:

7-1005.2A (80-03-PFM) The developer must submit to DPWES a written request to use a nonstandard street light system. This request will include a description of the nonstandard street light system components and lighting layout, and lighting computations as per 7-1005.5B. Schematic drawings or pictures of the nonstandard street light components, manufacturer's specifications, and photometric data shall also be submitted.

7-1005.2B After reviewing the information submitted, DPWES will provide a recommendation on the acceptance, modification, or rejection of the proposed nonstandard street light system.

7-1005.3 All nonstandard street light systems must comply with VDOT requirements for street lights, including clear zone consideration.

7-1005.4 If a nonstandard street light system is proposed for a planned development made up of more than one section, then an overall nonstandard street lighting layout for the entire development must be submitted to DPWES prior to approval of any section of the development.

7-1005.5 The following conditions must be met prior to a final approval of a nonstandard street light system:

7-1005.5A The existing and/or proposed nonstandard street light system must include all areas where street lighting is specified in accordance with § 7-1000 *et. seq.*

7-1005.5B (80-03-PFM) Lighting computations for the proposed nonstandard lighting system shall be provided by the developer to DPWES. These computations shall show that the proposed nonstandard lighting system meets the current IESNA Standard Practice for Roadway Lighting (ANSI/IESNA RP-8-00 or latest version), and that conforms to the guidelines of the International Dark-Sky Association (IDA) concerning glare and light trespass. These computations shall be sealed by a Lighting Certified professional by the National Council on Qualifications for the Lighting Professional (NCQLP), or by a State licensed professional engineer.

7-1005.5C The developer shall, as a condition of the approval of the nonstandard street light system, enter into an agreement with the County for the perpetual maintenance and operation of the lighting system. This agreement shall be recorded in the land records of the County and shall run with the title of the land. The agreement will stipulate the following:

7-1005.5C(1) The arrangements for and all costs associated with perpetual operation and maintenance of the nonstandard street light system shall be the responsibility of and at the sole

expense of the property owner(s). The County shall not be obligated to bear any of the cost to operate or maintain the nonstandard street light system.

7-1005.5C(2) The nonstandard street light system will be replaced with standard street lights, as specified in § 7-1000 *et seq.*, at the option of the County, if this system is not properly operated or maintained in the future. Such a street light replacement shall be at the sole expense of the property owner(s).

7-1005.5C(3) The County shall not be obligated to install, remove or replace or to pay for the installation, removal or replacement of nonstandard street lights.

7-1006 Design Examples

7-1006.1 Typical Lighting Layout Plate 25-7. This is a proposed hypothetical residential subdivision containing lots averaging less than 18,000 square feet in area.

7-1006.1A (80-03-PFM, 62-98-PFM) According to § 7-1002.1A, street lighting is required at all entrances to the subdivision along all roads to be included in the State roadway system. A minimum of three lights are required at the entrances to the subdivision. This existing State roadway is a curb-and-gutter roadway with a 44 foot pavement width. Therefore, the standard RF-2 must be utilized in accordance with § 7 1004.1. According to Table 7.9, 14,000 lumen street lights at a maximum spacing of 160 feet are required with a mounting height of 30 feet.

7-1006.1B (99-07-PFM, 80-03-PFM) Since roads with ADTs between 0 and 250 meet all requirements for use of the standard colonial style roadway lighting fixture, (§ 7-1004.1) the developer may use the standard RF-3. According to Table 7.11, for a local residential road with ADTs between 0 and 250, a luminaire size of 5,000 lumens is required at a spacing of 160 feet. The poles shall be placed 2 feet behind the curb as specified on Plate 32-7 and along the property line between the lots.

7-1006.1C (99-07-PFM, 80-03-PFM) Roads with ADTs between 1001 and 2000 also meet all requirements for use of the RF-3 fixture. According to Table 7.11, a luminaire size of 8,000 lumens is required at a maximum spacing of 160 feet. As stated above, pole placement shall be 2 feet behind the face-of-curb and along the property line between the lots.

7-1006.2 (80-03-PFM, 62-98-PFM) Typical Lighting Layout Plate 26-7. This is a proposed hypothetical residential subdivision containing lots averaging 18,000 square feet and greater. According to § 7-1002.1B(2), a minimum of three street lights are required at the proposed subdivision entrance along the existing State road. This existing State road is a 24-foot wide ditch section road. According to Table 7.9, an 8,000 lumen RF-1 light must be utilized at a spacing of 165 feet with a mounting height of 25 feet.

7-1006.3 (99-07-PFM, 80-03-PFM, 62-98-PFM) Typical Lighting Layout Plate 27-7. This is a proposed hypothetical industrial subdivision with roads with ADTs between 2001 and 4000.

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According to § 7-1002.2, street lighting is required at the entrance to the subdivision and along the proposed State road within the subdivision. The existing State road is a 44-foot wide curb and gutter section road. According to § 7-1004.1, the standard RF-2 fixture must be utilized. As shown in Table 7.9, 23,000 lumen street lights are required at a spacing of 225 feet at a mounting height of 35 feet. According to § 7-1004.3B(1), a standard roadway fixture must be utilized to light the interior road of this subdivision. Since this proposed road will be a curb and gutter section road and located in an industrial area, the standard RF-2 fixture must be used (Plate 31-7). The proposed road is a local industrial road with an ADT between 2001 and 4000 and therefore, according to Table 7.10, requires a 23,000 lumen street light at a spacing of 215 feet with poles placed 9 feet behind the face of curb and a 12-foot bracket length and mounting height of 35 feet.

7-1006.4 (80-03-PFM, 62-98-PFM) Typical Lighting Layout Plate 28-7. This is a proposed hypothetical commercial development: According to § 7-1002.3, street lights shall be installed along all existing State roads providing frontage to the site. The existing State roads are curb and gutter section roads 36 feet wide. Therefore, according to Table 7.9, a 23,000 lumen street light at a spacing of 220 feet with a mounting height of 35 feet is required.

7-1006.5 (99-07-PFM, 80-03-PFM, 62-98-PFM) Typical Lighting Layout Plate 29-7. This is a proposed hypothetical planned development. Street lights shall be provided according to § 7-1002.4. The proposed collector street is a road with an ADT between 4001 and 5500. According to § 7-1004.1A, the standard roadway fixture must be utilized. As shown on Table 7.10 for a residential collector road, 14,000 lumen street lights are required with poles placed 9.5 feet from the face of the curb and 12-foot bracket lengths, at a spacing of 160 feet along the road at a mounting height of 30 feet.

7-1006.5A (62-98-PFM) The other State roads proposed under this development shall be lighted in accordance with these requirements and the referenced examples.

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7-1100 UTILITY LOCATIONS, MAIL BOX AND ROAD EDGE DELINEATOR

See Plates 33-7 and 34-7 for utility locations for water, gas, sewer and utility poles. See Plate 35-7 for mail box locations. See Plate 36-7 for road edge delineator locations.