



Albemarle County Design Standards Manual

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I. Engineering; policies and procedures administered by the County Engineer and Program Authority.

1. General Provisions

A. Purpose and Intent: This is intended to be a current source for administrative policies of the county engineer, as provided for in the County Code. It is intended to be an on-line resource and supplement.

B. Administration: These policies are administered by the county engineer, or designee.

1. Amendments: This manual will be amended as needed to keep current with practice, and to address issues raised with development. Amendments will follow these steps:
 - a. Draft amendments will be posted on the county website.
 - b. Comments received on draft amendments will be posted on the website with responses.
 - d. Unless pulled off to address comments, draft amendments will become official changes after 30 days from the initial post.
2. Waivers or Exceptions: Waivers or exceptions for any of these administrative policies or procedures can be granted by the county engineer as allowed for in the ordinances.



2. Water and Wastewater

The county engineer is charged with review, inspection and recommendations to the Board of Supervisors for private water and wastewater systems in Chapter 16 of the County Code. The County Engineer is the Program Authority for the Water Protection Ordinance, Chapter 17 of the County Code, of which Article IV is Groundwater Assessments.

A. Public systems: Please refer to the Albemarle County Service Authority (www.acsanet.com), and Code Chapters 14, and 18.

B. Private central well and septic systems: County engineer review and inspection of private central water and sewer systems will be according to Chapter 16 of the County Code, and Chapter 14 section 415. Please see this chapter (16-103) for administrative details. A review and approval by ACSA may be requested, in addition to the required state approvals (Thomas Jefferson Health District, Virginia Department of Health, Virginia Department of Environmental Quality, etc.).

1. Central Well Testing: County engineer inspection of well tests (16-107) must follow these steps:
 - a. Prior to start of the test the following items will be provided
 1. Three copies of complete technical data on the test pump and motor and generator
 2. An all weather access road to the site
 3. Three copies of the applicant's proposed test schedule (48-hour or a 72-hour test. No tests inspections on weekends, holidays, or nights.)
 - b. During the pump test the following items must be complied with;
 1. The individual performing the testing must be qualified and familiar with the operation.
 2. A county engineering inspector must be present.
 3. Flow will be metered continually in gallons per minute directly.
 4. Water height will be continuously monitored and recorded.
 5. A tap or sample outlet for taking water samples will provided.
 6. When existing wells are within 300 feet of the well being tested, the existing wells will be pumped at their capacity throughout the duration of the test. In addition to the well being tested, the monitoring and recording of the water level in the existing wells is required during the pump test. Should one well be rated less than 25 G.P.M., and another rated greater than 25 G.P.M., both tests will be run continuously for 72 hours.
 7. Discharge will be adequately dissipated to prevent impacts to adjacent properties.
 8. A pump log will be kept in a format approved by the county inspector.
 9. During the last six hours of the test, flow and water level readings will be taken at a minimum interval of every fifteen minutes.
 10. Recovery data of the well will be recorded on the pump test log. Readings will be taken at ten-minute intervals or less, until the well has reached 90% recovery.



11. Significant interruption of the test, due to power failure, pump or meter malfunction, or other cause as determined by the county inspector, will void the test and require retest of the well from start.
- c. Upon completion of the pump test the following items must be provided;
 1. Two copies of the pump test log.
 2. Two copies of the well completion report after drilling and grouting.
 3. A copy of the well operations permit.
 4. Two copies of all water sample testing reports.
 5. Yield results of the well based on the monitored readings.

C. Individual private wells and septic systems, and other systems: These systems must meet the requirements of Code Chapters 14, 16 and 18, and the State Code.

D. Groundwater assessments: Article IV of the Water Protection Ordinance requires groundwater assessments. See section 17-400 for a table stating when assessments are required, and the Subdivision Ordinance section 14-308.1. Groundwater assessments are reviewed by the Program Authority or designee.

1. Tier 3 and 4 assessment requirements: (there are no requirements for Tier 1 and 2)
 - a. A report certified by a licensed geologist containing
 1. a graphics section or plans containing
 - a. topography with land and water features
 - b. proposed development
 - c. geological contacts and features
 - d. surrounding property 1000ft beyond property lines with wells and septic system locations
 - e. all potential and known contamination sources
 - f. graphic depiction of groundwater recharge areas and flow
 - g. any other relevant information
 2. A narrative containing
 - a. review of existing hydro-geologic information
 - b. field survey summary
 - c. review and analysis of graphic and plan information
 - d. groundwater management plan addressing practices during and after construction, in addition to a contingency plan if wells dry up or become contaminated.
 - e. assessment of well drilling and testing



3. Erosion and Sediment Control

The County Engineer is the designated Program Administrator for the erosion and sediment control program, as well as the Program Authority for the Water Protection Ordinance. Please reference the Virginia Department of Environmental Quality for the state program requirements.

A. Additional plan requirements: The County has some plan requirements beyond those contained in the state minimum standards and guidelines, such as details and notes. These are given in the review checklist.

B. Variances: Variance requests must be submitted in writing (letter or e-mail) to the county engineer. Please include the minimum standard, proposed alternate, and an explanation of the hardship or constraint that makes this necessary. Below are some variances that have been used in the past;

1. dry basins/traps: elimination of the wet storage in sediment basins and traps where safety is a major concern.
2. mud traps: use of wire reinforced silt fence with rock weirs to act as silt traps where space constraints cannot be overcome.

C. Exceptions: In order to claim an exception under code section 17-407 or 14-408 a landowner must complete and submit to the program administrator an Erosion and Sediment Control Screening Form For Land Disturbance, available in the forms center of the county website.

Ponds: It is possible for ponds to be an allowable use under section 17-301G (and 17-604B). However, in most cases, the agricultural exemption for constructing them without an erosion control plan and permit is no longer looked upon favorably. Section 17-304 requires a determination on whether an activity is subject to the regulation. Ponds, for the most part, are built on estates as an amenity, and therefore subject to the regulation. The environmentally preferred methods for watering crops or livestock are through wells, which are much cheaper to construct, less expensive to maintain properly, and preserve streams and wetlands.

D. Bonding: Bonds estimates for erosion control plans per 17-414 are handled in plan review by the review engineers. Inspections and bond reductions and releases are handled by the Erosion Control Officer and Inspectors, who are the county engineer's designees in this regard. The form of agreement and surety acceptable to the county engineer are handled administratively. See the Community Development Document Center on the county website.

E. Agreement in Lieu of Plan: An Agreement in Lieu of an Erosion and Sediment Control plan per 17-402 may be provided for single family residences which disturb less than 1 acre. These are processed with building permits. In the rural areas, a **Critical Resource Plan** is



required to accompany the agreement, which identifies critical slopes and stream buffers, and verifies the access requirements of the Zoning Ordinance. Critical resource plan requirements are available with building permit information, and on the county website document center.

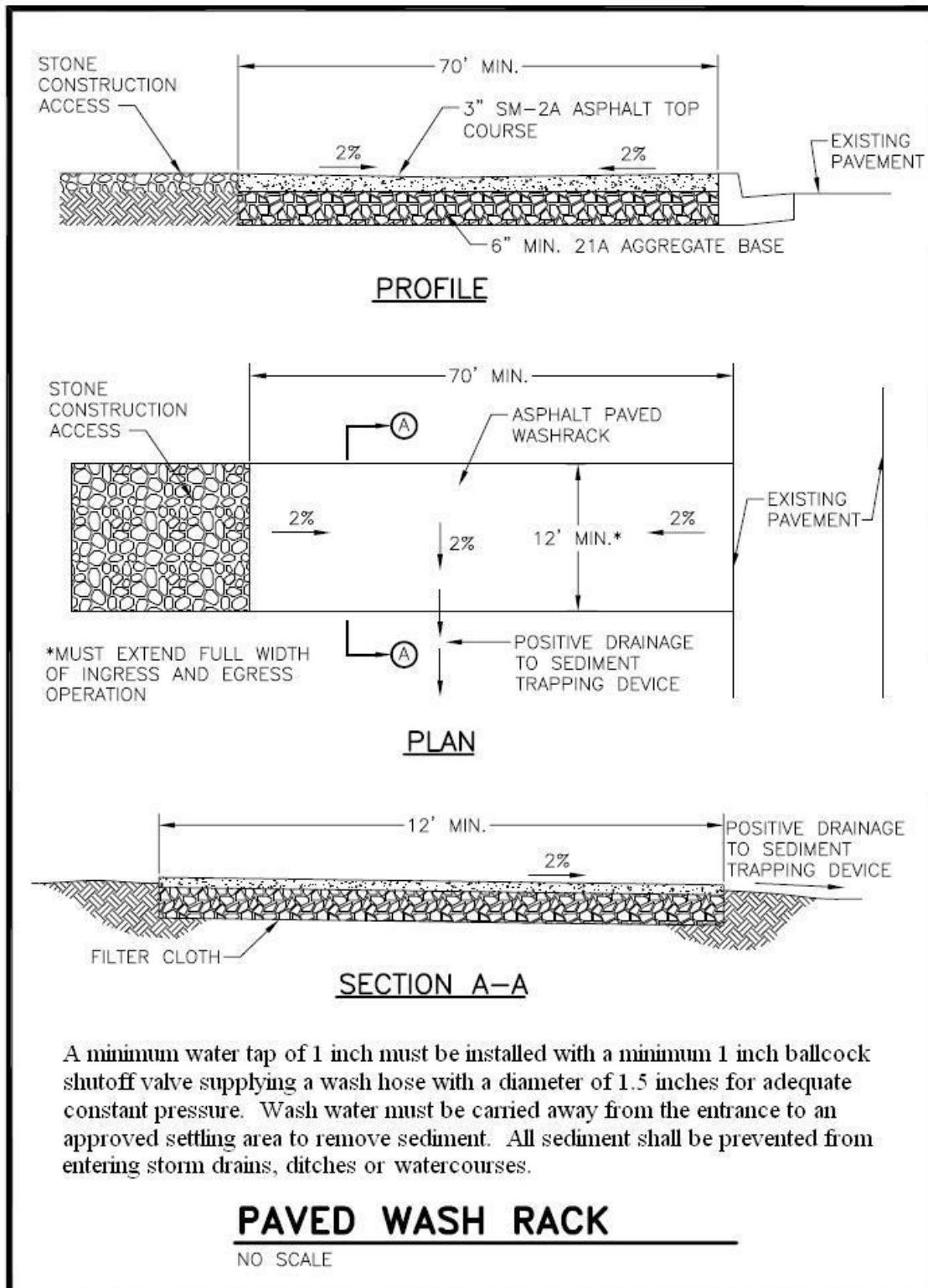
F. Adequate Channels: Where a demonstration of adequate channels is required by the state regulations;

A survey and evaluation of downstream channels is expected. This evaluation should provide as-built data. A demonstration of adequacy must include the following;

1. A plan view and/or aerial photograph depicting the system, along with the points studied.
2. For pipe systems, actual diameters, inverts, slopes, inlets, etc.
3. For channels, a contour map (if not on the plan view) with the channel longitudinal slope estimated, or field run topography to estimate the longitudinal slope.
4. A photo of each representative channel, inlet, or section at the points referenced in the plan view.
5. For channels, a detail or sketch and field measurements of the cross-sections in the photos, with bed, banks, etc, dimensioned.
6. Hydrology and a drainage area map for the system and points studied.
7. Hydraulic models for each point studied estimating the relative velocities in the channel, or capacity of the system. Roughness values and velocities should vary along a natural channel's width. For pipe systems, a pipe which does not flow within its open channel capacity will be considered inadequate.

For off-site improvements, permanent easements will be required.

F. Paved Wash Rack: The county requires paved wash racks on construction sites. This can be waived in rural areas on small jobs where water is not available and a stone construction entrance proves effective. A detail is provided;



A minimum water tap of 1 inch must be installed with a minimum 1 inch ballcock shutoff valve supplying a wash hose with a diameter of 1.5 inches for adequate constant pressure. Wash water must be carried away from the entrance to an approved settling area to remove sediment. All sediment shall be prevented from entering storm drains, ditches or watercourses.



4. Floodplain

The county engineer reviews impacts to the floodplain according to the Zoning Ordinance, section 30.3, and the Subdivision Ordinance section 14-308. In this regard, the plan review engineers of the Current Development division of Community Development are the designees of the county engineer.

Reference is made to Federal Regulation 44 CFR 59-78 for further regulations. Albemarle is a level “d” community, meaning it has Detailed Flood Studies with an FIS (Flood Insurance Study) and BFE’s (Base Flood Elevations established) with Floodways delineated. It must meet federal regulations 60.3(a) through 60.3(d).

CFR 60.3(a)(4) requires all new proposed development to be reviewed and to be reasonably safe from flooding. This applies to any areas, not just FEMA mapped areas.

CFR 60.3(b) requires a permit (the County’s Floodplain Development Permit) for all proposed construction and other permits in Zone A (floodplain). Any development activity in the floodplain requires a Floodplain Development Permit. If there is a potential impact, then a special use permit may be required according to the Zoning Ordinance.

CFR 60.3(b) also requires base flood elevations be established for all development proposals greater than 50 lots or 5 acres. This especially impacts plans on which Zone A is present, because the BFE is not established by FEMA, but by an engineered study from the applicant.

A. Floodplain Impact Plans and Special Use Permits for proposed development in the FEMA floodplain: When a floodplain impact must be quantified, horizontally and vertically, or a base floodplain elevation established, or a floodway boundary determined, the following minimum information must be provided.

1. Information required for review:
 - a. drainage area map.
 - b. plan drawing of the existing and proposed floodplain limits, and the extent of the development proposed in the floodplain.
 - c. actual measured cross-sections of the existing stream and banks
 - d. proposed cross-sections, including any pipes, culverts, bridges, etc. It is the County’s preference that existing stream dimensions, bed and banks, be preserved where possible.
 - e. hydrologic computations for the drainage area. Flows should be computed and correlated to known FEMA data.
 - f. the elevation and limits of the floodplain must be established by calculation and shown on the existing and proposed cross-sections. There should be computed elevations and limits for the existing condition, which should be compared to the



- FEMA maps and any known flood data, as well as elevations and limits for the proposed condition.
- g. For FIRM's which have a delineated floodway, the limits of the floodway must be established and shown on the existing and proposed cross-sections.
 - e. hydraulic computations verifying the existing flood level, and computing the proposed, including any backwater affects at crossings. If the FIRM has a detailed study area, the existing HEC-RAS model must be used as a base. This HEC-RAS model will need to be modified with the proposed condition and addition cross-sections for the study area.
2. If the limits of the floodplain change, a FEMA amendment or revision will be a condition of any permit approval.
- B. Non-FEMA areas:** Subdivision Ordinance 14-308 and Zoning Ordinance 18-32.6.6 allow for the delineation of flood areas that drain 50 acres or more. In this case, items to be submitted with final subdivision or site plans are as listed above.



5. Stormwater Management and Water Quality

The county is a local Virginia Stormwater Management Program (VSMP) authority. The Program Administrator is the County Engineer. For information on the state program and local authority responsibilities, see the Department of Environmental Quality (DEQ) website; <http://www.deq.virginia.gov/Programs/Water.aspx>.

10,000 square feet: The county's threshold for permit requirements is 10,000 square feet of land disturbance. This is stricter than the state requirement, which is 1 acre for stormwater management. See 17-300.

Application and Templates; The county Water Protection Ordinance (WPO) application serves as the VSMP application. This application also serves for all amendments and revisions. Templates are also required for the Stormwater Pollution Prevention Plan (SWPPP) and Pollution Prevention Plan (PPP). See <http://www.albemarle.org/deptforms.asp?department=cdengwpo>.

Process: A summary of the process in flow chart form is contained on the following page. Please be aware the County only administers the state program. This means review and enforcement only of General Construction Permits for the Virginia Pollution Discharge Elimination System (VPDES) . The county does not approve, or issue, or terminate permits. The state has retained the sole authority to issue and terminate permits. The County issues a separate grading permit to authorize land disturbance and construction, after all fees are paid, bonds posted, and the General Permit issued by DEQ.

9-Month Permanent Stabilization Deadline: The county has a 9-month deadline for installing permanent stabilization on a project. This is stricter than state minimum standards, which are based on the last grading activity. See section 17-808.

Late Fees: Late payment of inspection and permit maintenance fees will incur interest and enforcement actions per 17-210. After a Notice to Comply, if fees are not paid, the grading permit revoked, and a Stop Work Order will be issued

Fees Based on Permit Disturbed Acreage: Acreage for the purpose of fee computations will be the entire permitted acreage. This is the disturbed acreage on approved plans and applications. If fees are to be reduced, an application for plan amendment must be made, and areas reduced by changes in limits of disturbance and appropriate plan changes. Such amendments must be *approved* prior to the fee due date. Amendments to remove disturbed areas can only be approved when such areas are completely stabilized and all erosion control measures (including traps and basins) removed.



Refunds: The County does not have a refund program. Fees will not be refunded based on completion within the year. Fees will not be pro-rated at payment, other than the first year VSMP fee as indicated in code section 17-209B.

Re-inspection Fees: Re-Inspection Fees will be charged for inspections following a Notice to Comply or a Stop Work Order. Fees are \$250 per inspection, or as given in code sections 17-207 and 17-208.

Best Management Practices for Stormwater Management: All practices must have adequate vehicle access; 10' width graded at less than 20%. Anything over 20% must be surfaced with gravel or pavement. Access must be to all structures and forebay cleanout areas. Easements must be provided over all access and facilities, to accompany deeds and agreements as available on the county website;

<http://www.albemarle.org/deptforms.asp?department=cdengwpo>

Some helpful links to DEQ information;

DEQ guidance; VRRM spreadsheets, grandfathering, technical bulletins:

<http://www.deq.virginia.gov/Programs/Water/Laws,Regulations,Guidance/Guidance/StormwaterManagementGuidance.aspx>

DEQ publications; stormwater manual:

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications.aspx>

BMP Clearinghouse; for stormwater BMP facility specifications:

<http://www.vwrrc.vt.edu/swc/>

State VSMP, VPDES, CGP Regulations;

<http://www.deq.virginia.gov/Programs/Water/Laws,Regulations,Guidance.aspx>

Albemarle County Regulations:

http://www.albemarle.org/upload/images/Forms_Center/Departments/County_Attorney/Forms/Albemarle_County_Code_Ch17_Water_Protection.pdf

DEQ Plan Review training; provides explanation of VRRM:

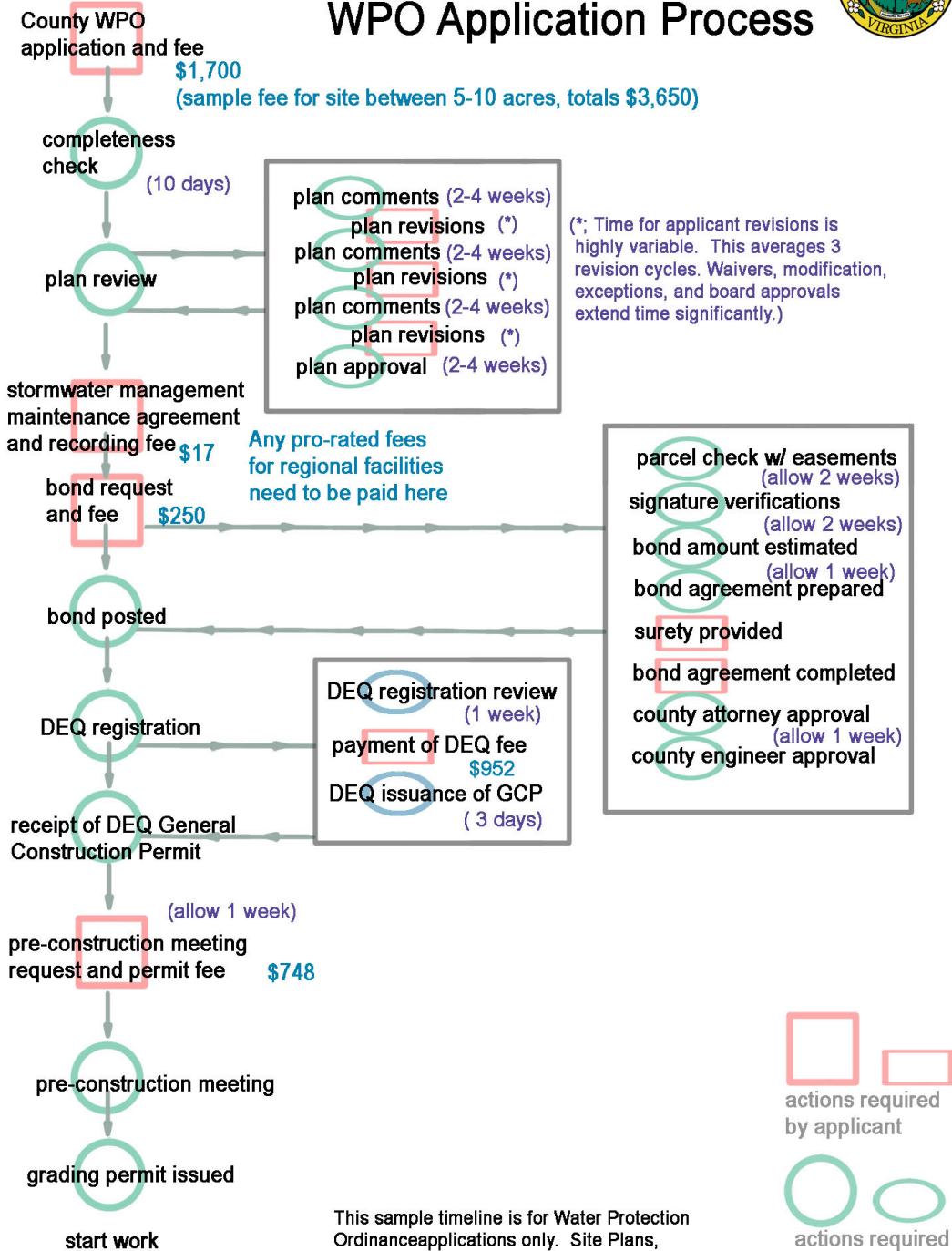
<http://www.deq.virginia.gov/ConnectWithDEQ/TrainingCertification/SWMTraining/PlanReviewerSWM.aspx>

DEQ Construction General Permit (CGP); Registration Statement, HUC codes, lat. and long:

<http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx>



Albemarle County WPO Application Process



This sample timeline is for Water Protection Ordinance applications only. Site Plans, Subdivision Plats, Street Plans, Zoning Map Amendmnets, Special Use Permits, and other plans and processes which may affect reviews, approvals, or permits are not shown.

1 July 2014



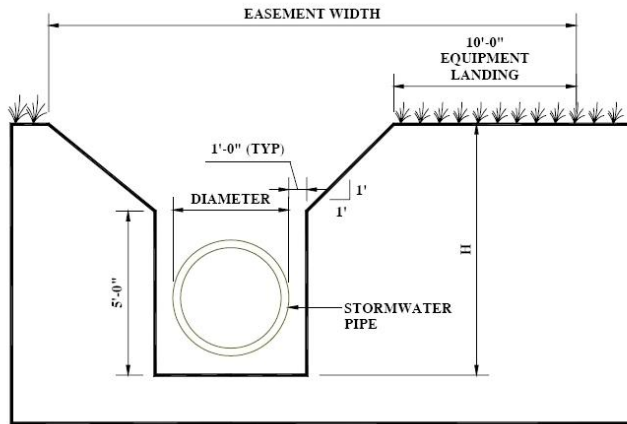
6. Drainage systems (collection and conveyance)

Drainage systems, or storm sewers, are reviewed by engineering reviewers at the county as part of the Site Review Committee. Refer to the Zoning Ordinance section 18-32 (which refers to a department of engineering and public works, now part of Community Development), and the Subdivision Ordinance sections 14-311, 14-417 and 14-431.

- A. Plans:** for plan requirements please refer to the review checklist at <http://www.albemarle.org/deptforms.asp?department=cdengwpo>.. For purposes of this design manual, the review checklist sets review policy, and is an integral part of the manual.
1. Design Guidelines; in general, designs must follow the VDOT Drainage Manual and the Road and Bridge Standards, with the following additional specific points; (see www.virginiadot.org/business/locdes)
 - a. overland flow relief must be provided to avoid flooding of structures
 - b. all pipes and drainage structures must be within open channel flow capacities. (no designed pressure flow)
 - c. for any drainage area over 20 acres, more than one hydrologic method must be used to verify flow rates.
 - d. public system designs are subject to additional criteria; A public system is defined here as one which carries water through the site from off-site, or from a public right-of-way or public property.
 1. minimum pipe sizes of 15 inch diameter.
 2. junction angles of 90 degrees or more
 3. provision of headwalls for pipe outlets over 48 inches, and ends sections for all others
 4. design velocities between 3 and 20 fps, with appropriate outlet protection
 5. maximum pipe slope of 16%
 6. drainage easements
 2. Computations; all plans must be accompanied by computations, as indicated in the review checklist.
 3. Drainage Easements (for public systems): drainage easements must be shown on final plats, and shown on site plans. For site plans, easement documents must be recorded prior to final approvals. Easements must include the following;
 - a. Locations on plats must be by centerline bearings or dimensions to property corners. Easement boundaries must be locatable in the field in case ditches or structures are incorrectly located.
 - b. Drainage easements must be dimensioned as indicated below and in the review checklist.



$$\text{EASEMENT WIDTH} = \text{DIAMETER} + 2' + 2 (H-5') + 10' \text{ (20' MIN.)}$$



- c. Drainage easements are to be labeled on plans and plats; “Drainage Easement” and “dedicated to public use”.
- d. Drainage easement plats must be accompanied by a deed. Standard deeds are provided by the Count Attorney, along with administrative guidelines. These are also available in the documents forms center of the county website;
<http://www.albemarle.org/deptforms.asp?department=cdengwpo>.



7. Streets, Alleys, Travelways, Parking, Sidewalks and Trails

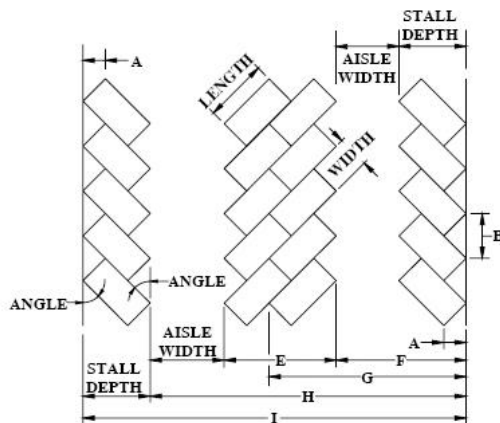
Streets, Alleys, Sidewalks, Travelways and Parking are reviewed by the county engineer as required by the Zoning and Subdivision Ordinances.

A. Design Plans: for plan requirements please refer to the review checklist, found at <http://www.albemarle.org/deptforms.asp?department=cdengwpo>.

B. Traffic studies: traffic studies (typically for rezoning applications) are to be prepared according to the VDOT Land Development Manual. For larger studies, applicants should schedule a scoping meeting with VDOT and the county.

C. Parking lots and travelways: These are subject to county engineer approval per 18-32.7.2.7. All design elements are expected to be to VDOT standards, including curb, gutter, pavement, striping, etc., unless an alternative is approved.

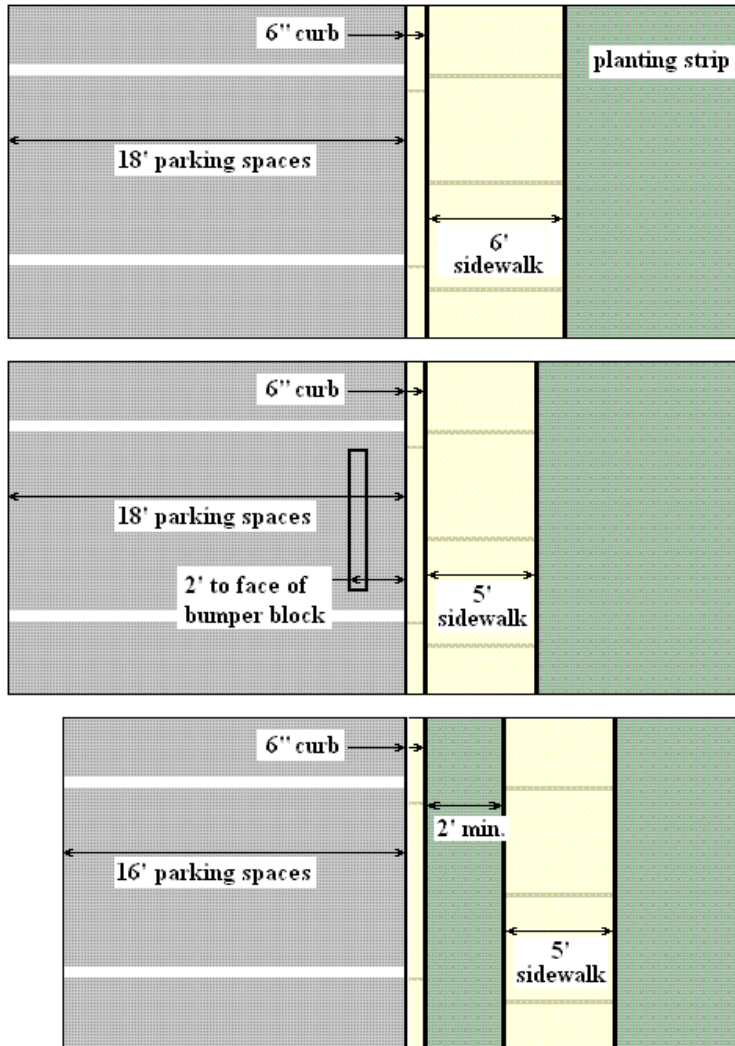
1. Sight distance: where the Zoning Ordinance refers to 100' sight distance (18-4.12.15.d), this is to be measured from a point in an intersection 10' off of the edge of pavement of the intersected travelway, to a point on the travelway centerline. A waiver to reduce this sight distance may be requested where all vehicles are required to stop, or between storage buildings where the travelways measure 30 feet in width. (This section is formerly design manual section 602 as referenced in 18-4.12.15.d)
 - a. For parking on the inside of a curved travelway, a minimum centerline radius of 120' is required to maintain sight distance
 - b. Private road standards will be requested (with profiles) per 18-4.12.15.d where travelways exceed 100 feet in length without parking.
2. Angled Parking: The following graphic serves to clarify the table contained in Zoning Ordinance section 18-4.12.16.c.3; (This is formerly design manual section 602.1)



3. Surface Materials: Please use the VDOT pavement design sheet from the VDOT Subdivision Street Pavement Design Guide, App. IV.



4. Aisle grades: increases in access aisle grades per 18-4.12.17.a must be based on demonstrated hardships, but in no case may exceed the maximum grade allowed for private roads.
5. Circulation: in general, entrance and lot arrangements which force site circulation onto the street must not be used.
6. Parking dimensions; the following graphics is helpful in understanding the zoning ordinance parking dimensions;



D. Alleys: Standards for alleys are provided here to clarify the county engineer determination of public safety and welfare, and adequate access in alley design per Subdivision Ordinance section 14-410.D;

1. Alleys must be centered within a 20 wide private access easement or right-of-way.
2. Surface must be paved to VDOT standards, with a width of at least 12 feet.
3. Grades must not exceed 20%.



4. Alleys must intersect streets at two locations. Dead-end alleys with turnarounds may be permitted by waiver from the county engineer.

VDOT DI-7, DI-1, or similar type grates should not be placed in the center of alleys. These have been causing significant grade and paving problems where used. Drainage should be taken to a side inlet or alternate system.

D. Private street authorization requests: The following information is that deemed necessary by the county engineer per 14-232.A.1.(a) & (b) for an earthwork or environmental comparison for private street authorization requests;

1. A plan and profile of the proposed private streets, with all significant trees and environmentally sensitive areas shown (see 14-234.A.1) with a statement of the date of the field run profile per 14-234.A.1.(a)
2. A plan and profile of the alternative public streets. Applicants are encouraged to meet with engineering reviewers to agree on alternative alignments. Both streets should have the same turnaround types, etc, so that this does not skew the earthwork comparisons.
3. Earthwork computations per 14-232.A.1 should be for each separate street per station or half-station. (Please do not submit only result totals for the entire project or street). This allows staff and the commission to see which areas of cut or fill on the street create the difference in earthwork, and if a design modification is reasonable.

E. Street Bonding and Inspection:

1. The form of agreement and surety acceptable to the county engineer per 14-435.A are handled administratively. Bond forms are available at the Community Development Bond Forms Center on the county website. Required bond estimate requests, bond schedules, inspection requests, and the different types of surety are all provided.
2. The public or private road acceptance procedure (available in the forms center of the county website) must be followed during construction. Additional procedures or inspections may be necessary based on field conditions.
3. As built plans are required and must follow the as-built plan policy, available in the forms center of the county website.
4. Partial release of bonds are only allowed at the discretion of the roads engineer with a signed and sealed certification of as-built data listing exactly what items are complete and any variances or inconsistencies with applicable standards and approved plans. The following items must be included;
 - a. recorded easements and right-of-way plats.
 - b. as-built plans
 - c. demonstration that all downstream systems are complete for drainage improvements.

F. Street Standards: Requirements for streets are as indicated in the Subdivision and Zoning Ordinances. All street standards not otherwise specified by ordinance follow the VDOT standards. Traffic Calming measures, roundabouts, and other related design elements should follow VDOT, FHWA, or ITE guidelines and standards. For street naming and addressing please contact the GDS division of Community Development. County street



sign requirements are specified in the Road Naming and Property Numbering Ordinance and Manual. For specific review items please refer to the review checklist. For purposes of this design manual, the review checklist sets review policy, and is an integral part of the manual.

The following table summarizes private street standards;

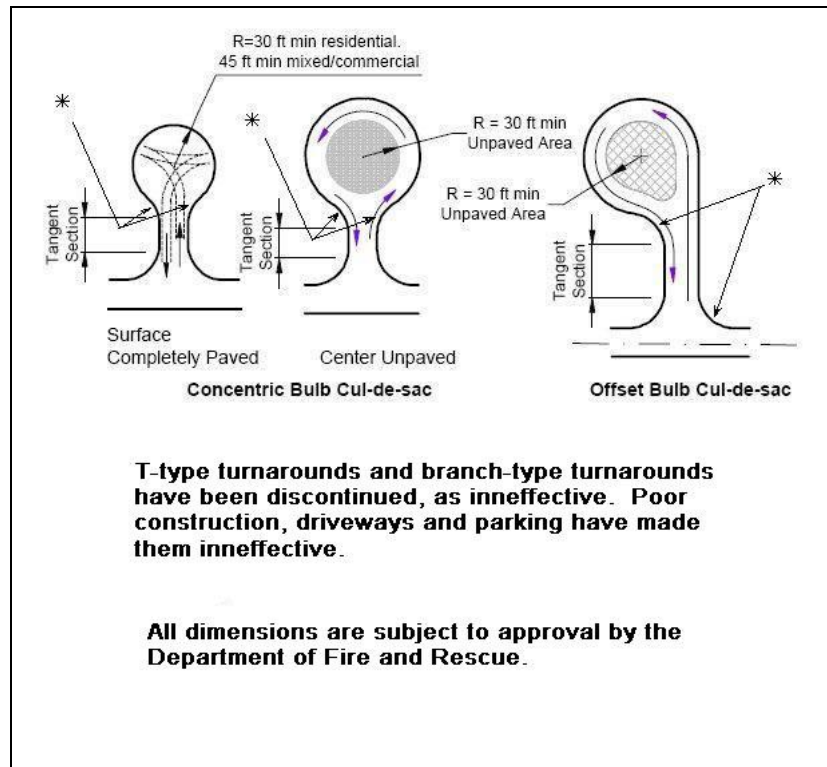
Private Street Standards for Albemarle County *										
Street	Design Speed mph	Min. CL radius ft.	Max. Grade	Min . K-crescent	Min . K-sag	Min. Stopping Sight Dist. Ft.	Min. travelway width ft.	Min. ROW or easement width	Min. shoulder width	Sources
rural 2-lot	(no standard)							30	n/a	14-412A1
rural 3-5 lots	15	40	20%	5	15	100	14	30	3	14-412A2, 410, 415
6 lots or more	same as VDOT standards, see Detail 5									14-412A3, 415
multifamily, nonresidential	n/a	40	10%	5	15	100	20 (curb to curb)**	30	n/a	14-412B
Alleys	n/a	n/a	20%	n/a	n/a	100	12***	20	n/a	14-410

* where standards are not specified (for guardrail or drainage for example) standards are to be as required by VDOT

** or 24' next to perpendicular parking spaces (Zoning Ordinance parking lot requirements, 18-4.12.15)

*** with 14' wide stone base

1. Angle of intersection shall be 80 degrees minimum
2. Temporary turnaround shall be provided on phased streets more than 300ft in length. Cul-de-sacs must be provided for permanent street ends. See the graphic below.
3. Reserved or spite strips are prohibite
4. In the development areas, curb and gutter, sidewalks (5' min.), and planting strips (6' min) are required



* 25' radii added by the County

G. Sidewalk Standards: All sidewalks must use VDOT standards unless otherwise specified by an approved zoning plan or code of development.

H. Trail Standards:

Classification	Min. surface requirements	Min. width	Design alignment	Other design considerations
Class B – type 1 primitive nature trail	Earth, mulch, or stone dust	enough to mark the location	20% maximum grade (this is a minimum impact nature trail)	Trail breaks to prevent erosion, with foot bridges over major obstacles
Class B -type 2 high-maintenance pedestrian path	Stone dust, gravel, or equivalent semi-permanent Surface	5' surface	10% maximum longitudinal grade, 2% maximum cross-grade	Drainage design as given below
Class A – type 1 low-maintenance pedestrian path	2" asphalt over 4" aggregate base	5' surface	10% maximum longitudinal grade, 2% maximum cross-grade	Drainage design as given below



Class A – type 2 low-maintenance multi-use, shared use path	2” asphalt over 6” aggregate base	10’ surface and 2’ cleared shoulders	Grades to be ADA accessible.	Drainage design as for a public road
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All trails are required to have appropriate signage and markings at road crossings per VDOT standards. At a minimum crossing signs and sidewalk pavement markings must be placed on the roadway, with stop signs and warning signs on the trail.

Trails should be in common areas, and maintained through neighborhood covenants or private agreements. When not in common areas, all trails are required to have easements, which must be a minimum of 10’ wide.

These standards are not sidewalk standards. Sidewalks are to follow VDOT requirements. These trails are intended to be independent and separate from streets, although they may parallel a street alignment.

Drainage provisions where referenced above are to follow VDOT standards for a 2year design storm. Concentrated runoff must not run across the trail, and culverts or footbridges are to be provided, especially where the trail crosses ditches. Where the trial crosses swampy areas, provisions such as boardwalks are to be provided for a dry surface. Where a non-paved surface is used, trail breaks and erosion prevention measures must be used on grades above 7% to prevent repeated washout of the surface.

I. Driveways: Driveways in the rural areas must meet requirements of the Zoning Ordinance, section 18-4.6.6. Driveways follow the VDOT standards in the right-of-way, and general safety and access provisions of the zoning ordinance and building code as administered by the agent, the zoning administrator and the building official. The Zoning Administrator has a policy regarding adequate access before certificates of occupancy can be issued, and this policy is available from zoning officials.



8. Grading

Grading issues are regulated by the county engineer as part of the site plan provisions of the Zoning Ordinance, sections 18-32, 18-30, the erosion and sediment control provisions of the Water Protection Ordinance, Article II, and with respect to walls and steep grades per the safety and welfare provisions of the Subdivision Ordinance, section 14-101 and Zoning Ordinance section 18-1.4 and 18-30.

A. Steep Slopes: for plan requirements please refer to the review checklist.

1. For constructed slopes, the maximum steepness is 2:1 (horizontal:vertical).
2. For grass stabilization on constructed slopes, the maximum steepness is 3:1. Slopes steeper than 3:1 must be permanently stabilized with landscaping vegetation hardier than grass, which will not require mowing.
3. Constructed slopes steeper than 2:1 must have a waiver from the county engineer. Requests for waiver should include demonstrable hardship, and provisions for permanent stabilization and structural stability.
4. Concentrated drainage must not be discharged over slopes.
5. The construction standards for managed slopes in the steep slopes overlay district (18-30) of the zoning ordinance are a guideline for the development of slopes.

B. Retaining Walls:

1. A building permit is required for walls. Please refer to the Building Official.
2. Engineering details and computations may be required on site plans where walls will support or potentially conflict with stormwater facilities, travelways, parking, or present a safety concern. This includes where walls are placed too close (a distance equal to the wall height) to property lines, such that they may affect neighboring property. In such cases the following items will be required.
 - a. A typical detail. (VDOT standard walls are acceptable)
 - b. specific details as required for unusual or possibly conflicting areas. An example is where utilities are expected to go through walls or footings.
 - c. certified computations to support the design. All soil and bearing assumptions, as well as reinforcement materials and assumed loadings must be included.
3. Safety provisions for vehicles and pedestrians may be required for walls over 30" high. This is typically a guardrail, wall, or fencing.

C. Off-site Work: plans which show off-site work (in the opinion of the plan reviewer) will require easements. A letter of permission from an off-site property owner is sufficient as an easement in this case, but only for the purposes of plan review. Bonds will need to be signed by the owners of all properties on which construction takes place, or legal easements will be needed.

1. As a general guideline, where slopes or diversions are expected, at least 5' distance must be maintained between final contours and the property line in order to safely stay off neighboring property. For retaining walls, at least the height of the wall should be maintained from the property line.



9. Certified Engineer's Report

According to Zoning Ordinance section 18-4.14.8, Albemarle County requires a certified engineer's report for uses of an industrial character prior to issuing a zoning compliance clearance, which must be reviewed by the County Engineer (or designee).

A certified engineers report shall consist of;

Type 1: For uses which will have no discharge, noise, vibration, smell, lighting, emissions, impulses or radiation beyond a normal office use, and will not store any hazardous materials, a letter from the owner with the following information will suffice as a certified engineer's report;

1. a description of the business and the physical process involved.
2. a description of any machinery and operations.
3. a statement or explanation for meeting each of the performance standards of section 18-4.14; noise, vibration, glare, air pollution, water pollution, radioactivity, electrical interference.

Examples of type 1 uses might be offices or warehouse storage of clothes. An example letter is available.

Type 2: For uses which will have any discharge, noise, vibration, smell, lighting, emission, impulse or radiation which might reasonable be expected to exceed the performance standards of 18-4.14.4 at any time, or which have any permit requirements from DEQ, EPA, or other local, state or federal agency, a full certified engineers report is required. This report must contain a signed and dated seal from a professional engineer. It must contain copies of any local, state or federal permits. It must contain plans and descriptions of physical and operational measures to meet all of the performance standards, with actual supporting measurements and data where applicable. Examples of type 2 uses might be a contractor's office and storage yard or equipment repair shop, or a manufacturer of electrical components.