

Chapter 2 – Stormwater Management Plan Review and Approval

In order to maintain the character and integrity of neighborhoods, to promote excellence of development, to prevent undue traffic and environmental hazards, and to encourage the most harmonious development and use of land, a site development plan, including a storm water management plan and sediment control plan, is required for commercial and residential development and shall be submitted to the County of Roanoke's Department of Community Development. Plans should be submitted in compliance with the Digital Plan Submission Guide policy. (<http://www.roanokecountyva.gov/index.aspx?NID=317>)

These plans will be distributed to the appropriate departments and divisions for review and approval. When required, the applicant is also responsible for submittals to the Virginia Department of Transportation, Virginia Department of Environmental Quality, Western Virginia Water Authority, Town of Vinton, and other applicable regulatory agencies for their review and approval. When applicable, all of these entities must approve the site development plan prior to the issuance of any permits for all types of developments as required by the Zoning Ordinance, Subdivision Ordinance, Erosion and Sediment Control Ordinance, and Stormwater Management Ordinance.

In cases where jurisdictional waters exist on the proposed site, the applicant may need to obtain approvals and/or permits from any or all of the following agencies: the U.S. Army Corps of Engineers (USACE), the Federal Emergency Management Agency, the Virginia Department of Environmental Quality (DEQ), and the Virginia Marine Resource Commission (VMRC). It is the responsibility of the applicant to obtain all necessary permits from USACE, DEQ, VRMC, etc and provide Roanoke County with a copy of the required permit(s). Approval of plans by Roanoke County does not alleviate the applicant's liability of obtaining the required permit(s).

2.1 Overview of the Review and Approval Process

No application for land development, land use conversion, or land disturbance can be approved, and no permits issued, without all of the elements required for a VSMP permit, as more fully described in the County Stormwater Management Ordinance and 9VAC25-870-55. These elements generally include a permit application, erosion and sediment control plan, stormwater management plan, stormwater maintenance agreement, performance bond, fees, and executed development agreements. An agreement in lieu of a stormwater management plan may be accepted for a detached single family residence that is not part of a common plan of development.

The submittal, review, and approval of site development plans, including stormwater management plans will follow the Roanoke County Land Development Procedures. This document is available from the County of Roanoke Department of Community Development website (<http://www.roanokecountyva.gov/index.aspx?NID=317>).

2.2 Concept Stormwater Management Plan Submittal

A concept site development plan, including a concept stormwater management plan, is **strongly encouraged** by the County of Roanoke when the proposed development meets any of the conditions set forth in the Roanoke County Land Development Procedures. A concept site plan or concept stormwater management plan may also be submitted for any project at the applicant's option. If submitted, the concept site development plan, including a concept stormwater management plan, should address items as outlined in Roanoke County's Land Development Procedures.

2.3 Stormwater Management Master Plan Submittal

A stormwater management master plan and calculations are required for all phased projects that are part of a common plan of development. The master plan shall address grading, stormwater conveyance, and stormwater management BMPs for the overall development.

The master plan is required to be approved prior to issuance of any permits. Each phase must provide adequate stormwater treatment to address the stormwater requirements for each individual phase.

The Stormwater Master Plan shall show how the Designer will address stormwater management requirements for the entire project. At a minimum, the plans shall show the overall development, the location and type of the proposed BMPs required to treat the entire development, and contours. Additionally, the Designer shall provide applicable drainage areas to the BMPs and provide an accompanying VRRM worksheet to support the overall design.

The final stormwater management master plan shall be appropriately sealed and signed by a licensed professional in adherence to all minimum standards and requirements pertaining to the practice of that profession as required in the VA Stormwater Management Regulations.

2.4 Stormwater Management Plan Submittal

An approved site development plan and a local VSMP permit, is executed agreement in lieu of a stormwater management plan, is required prior to issuance of any other permits.

The final stormwater management plan shall be appropriately sealed and signed by a licensed professional in adherence to all minimum standards and requirements pertaining to the practice of that profession as required in the VA Stormwater Management Regulations.

The VSMP permit application information will be reviewed by the County of Roanoke. In addition to Roanoke County's review, the Virginia Department of Transportation may also review the site development plan with the stormwater management plan, as appropriate. Plans for review by these entities must be submitted directly to them, when required.

Roanoke County strongly encourages all commercial projects or sites within a common plan of development that disturb between 0.90 and 0.99 acres to provide point(s) with northing and eastings to delineate the disturbance limits on the plans. Additionally, Roanoke County strongly encourages that the plans include a note that the disturbance limits are clearly delineated by a surveyor in the field. Orange safety fence is the preferred method to mark the delineation.

2.5 Submittal of Stormwater Calculations

Calculations shall be submitted to the County of Roanoke supporting the stormwater management and storm drainage design. Calculations shall be well organized and coordinated with the design to allow for efficient review by the County. Calculations shall be bound together in a booklet or stapled together, depending on the number of pages. Each page of the calculations should include the date prepared, a unique page number, and the date revised.

Calculations shall follow the following general format:

- **Cover Sheet** – The cover sheet shall contain the project name, property tax parcel(s) number(s), applicant's name, design professional's name, calculation date, and (for final calculations) the seal and signature of the design professional.
- **Table of Contents** – A table of contents shall be provided where the calculations exceeds 25 pages, or where appropriate to assist the reviewer in locating information in the calculations.
- **Introduction** – A general description of the project providing information to assist the reviewer in understanding the nature and scope of the project and of the storm drainage and stormwater management facilities that are proposed. This should also explain existing and proposed conditions.
- **Criteria and Methodology** – A listing of the basic design criteria for water quality compliance, channel protection, flood protection, and TMDL (where appropriate).
- **References** – A listing of references that are used in the calculations
- **Assumptions** – A listing of all assumptions, and justification of the assumptions that are used in the calculations.
- **Analysis** - The body of the calculations clearly labeled as to what stormwater BMPs or storm drainage system the calculations are for. The calculations shall be step-by-step to ensure that a reviewer that is not familiar with the project can follow the progression of the calculations. If computer printouts are provided highlight the input

and output information and ensure that the input information is clearly supported in the calculations, and that the output is properly evaluated in the summary and conclusions. All calculation parameters must be fully supported and documented and include the design storm frequency, intensity and duration, times of concentration maps (including segment lengths, elevations, slopes, and flow types), soil curve numbers or runoff coefficients; calculations identifying pre-and post-development peak runoff rates and total runoff volumes for each watershed area, infiltration rates (where applicable), culvert, storm drain, and open channel capacities, flow velocities, data on the increase in rate and volume of runoff for the specified design storms, pre-and post-development phosphorous runoff rates and all other calculations needed to support the proposed design.

- VRRM Worksheet – A digital copy of the VRRM worksheet shall be submitted with the plan submittal. Roanoke County uses an annual rainfall of 42” for all projects located within Roanoke County and precipitation rates from the NOAA precipitation chart for the Roanoke County Airport.
- Drainage Area Maps – Drainage area maps shall be provided for storm drainage inlets and BMPs. Pre and post drainage area maps shall be provided.
- Summary and Conclusions – A summary of the results, preferably in tabular or chart form for each storm drain system and stormwater BMP to indicate that the land disturbing project meets County requirements and any conclusions. Provide Q_1 , Q_2 , and Q_{10} for pre and post conditions.
- Appendices and Attachments – Any supporting information such as pre-developed and post-developed drainage area maps, soils maps, U.S.G.S. quadrangle maps, NOAA precipitation chart, design nomographs, and computer printouts. Drainage maps must be clearly delineated and labeled to indicate the amount of area draining to each BMP and storm drainage inlet.

Calculations that are not well organized and coordinated with the design shall be rejected and the submittal shall not be reviewed until proper calculations are submitted.

2.6 Changes and Modifications to an Approved Plan

Changes to an approved subdivision or site plan, including an approved stormwater management plan, must be formally submitted for review to the County of Roanoke Department of Community Development at the counter with the Permit Technicians or via Roanoke County’s FTP site. The County of Roanoke, upon receipt of the resubmittal of an approved development plan, shall review and approve or disapprove the resubmitted plan according to the Roanoke County Land Development Procedures. Approval or disapproval of the resubmitted plan shall be made in writing to the applicant.

Any use, arrangement, location, or construction not in compliance with the approved plan is a violation of the County Code.