

Subdivision Plan Design/Review Checklist

Subdivision Name: _____

Date: _____ **Reviewed By:** _____

Construction plan submittals shall be accompanied with transmittal letter identifying firm, design engineer, contents, etc. and a copy of the approved tentative plan with written conditions letter.

Check boxes as appropriate **YES** = OK/Satisfactorily Addressed

NO = Not Addressed or Not Addressed Satisfactorily

N/A = Not Applicable for referenced project

If required item is not addressed or not addressed satisfactorily, enter the plan sheet number on which the item should appear in the column **SHEET**.

Administrative items

YES	NO	N/A	
			1. Stormwater Pollution Prevention Plan (SWPPP) included with plan submission
			2. Include one additional overall project section sheet showing entrance streetlight location, as per the streetlight policy.
			3. Copy of tentative approval letter included with plan submission.
			4. Copy of the Board of Supervisors meeting minutes with zoning approval or a copy of Chesterfield Planning Commission final approval letter included with plan submission.

Subdivision Plan Format

The following information (where applicable) is to be provided or considered on all plans submitted for review.

Cover Sheet shall contain the following information:

YES	NO	N/A	
			1. Subdivision name and section designation, date drawn.
			2. Magisterial District followed by "of Chesterfield County, Virginia".
			3. Zoning case number and Board approval date.
			4. Tentative case number and tentative approval date.
			5. Name of Developer/Owner, Walk-in Address, Telephone Number.
			6. Total disturbed acreage.
			7. Engineer or Surveyor, Address, signed certification stamp (insofar as allowed by State regulation laws), Telephone number.
			8. Vicinity Sketch (1" to 1000' scale) showing existing road names.
			9. General construction notes.
			10. Provide note stating how VSMP Part IIC or Part II B compliance has been achieved for the project.
			11. Sheet index.
			12. Property Tax ID/GPIN.
			13. Latitude and Longitude (in decimal degrees) of approximate parcel center.
			14. Name of receiving waters.
			15. VAHU6 four digit watershed code.

Construction Plan Sheets shall contain the following information:

YES	NO	N/A	SHEET	
				1. Plans shall be drawn to a scale of 1"=50' with an exception for lots greater than 1 acre, allowing 1"=100', unless otherwise approved.
				2. Indicate all proposed and existing rights-of-way widths, all lot lines, all lots with numbers, easements, all street names and existing State route numbers.
				3. Stipple all proposed pavement areas
				4. Indicate centerline stations at 100' intervals and at all other strategic points, i.e. drainage structuring, utilities, etc. and intersection of streets.
				5. When proposed and existing streets intersect, indicate existing conditions for 600 feet in each direction. This is to include width of pavement, right of way, location and direction of roadside drainage, any culverts to include inverts, utilities, etc.
				6. Indicate proposed driveway entrance culvert size (10-year), length, and location.
				7. Indicate all proposed and existing storm sewers, culverts and appurtenances, identify by type, size, length, material, inverts.
				8. Every inlet and segment of storm sewer shall be assigned a structure number and numbered consecutively. A drainage structure description shall be provided as applicable on each respective plan sheet.
				9. Indicate inlet and elevations of all appurtenances to include throat elevations and length.
				10. Indicate with arrows, the direction of flow in all gutters, storm sewers, ditches, subsurface drains, streams, etc.
				11. Indicate all existing and proposed ditches, streams and any relocations showing longitudinal slope providing detailed typical section showing type of stabilization to be provided and design depth(s).
				12. Provide north arrow, each sheet.
				13. Indicate location and description of all benchmarks and their elevation referenced to mean sea level. At least one (1) benchmark must be shown within the limits of the subdivision section.
				14. Indicate location of any county control monuments within vicinity.
				15. Provide notes that may be necessary to explain the intent and purposes of the plans.
				16. Indicate the location and width of all proposed and existing sidewalks and walkways.
				17. Show/label all USACOE wetlands, WOUS, 100-yr F/P, BW, RPAs.
				18. Dimension 25' building setback off the 100-yr F/P, 100-yr BW, wetlands/WOUS and RPA, whichever is most restrictive. (35' building setback in USCW)
				19. Show Dimensioned Building Envelopes (DBE) where critical, as determined by EE.
				20. Indicate proposed and existing lakes/ponds onsite and in vicinity of project. (NOTE: Separate detailed plans are to be submitted for all such structures).
				21. Adjacent property owners' names, GPINs and lot lines must be shown.
				22. Easements must be stationed in such a manner as to coordinate with profiles.
				23. Match lines must be shown with any overlap distinguished by dotting such overlap.
				24. Cut and fill construction limits must be shown, unless otherwise approved.
				25. Note in bold print that "all ditches/swales shall be roughed in at time of road construction".

Profile Sheet(s) shall contain the following information:

YES	NO	N/A	SHEET	
				1. Stationed centerline profiles must be shown on all proposed streets, storm sewers, stream relocations outfall ditches (to existing streams, and on drainage ditches to include location and elevation of utility crossings).
				a. Profiles of existing ground should be shown to the right, left, and centerline of roads – include legend.
				2. The finished grade line of all streets must show:
				a. Percent of grade
				b. Stations and Elevations at the low points and at all points of intersections.
				3. Stations shown on profile must agree with stations shown on plan. Stations must progress in the same direction on both plan and profile.
				4. Show existing/proposed profiles 300 feet beyond construction limits of roads that stub into adjacent properties or future sections.
				5. Show proposed culvert or storm sewer crossing at the proper location and grade, as well as sanitary sewer and water crossings.
				6. Each storm sewer system should be shown in its entirety to include, as a minimum, the following information: (alternate identify Structure number)
				a. Percent of grade and length
				b. Size and material
				c. Show catch basins, inlets, etc. with proposed elevation for tops and inverts.
				d. Show existing and proposed ground surface over centerline of system.
				e. Existing utilities passing perpendicular to the system or sharing a common easement (to include outer elevation).
				f. Limits of 100 year floodplain, wetlands, RPA, ROW, etc.
				7. Open channels must include, as a minimum, the following:
				a. Percent of grade
				b. Centerline profile
				c. Existing ground profiles at centerline and easement limits (as deemed necessary).
				d. Typical section showing 10-year design depth, side slopes, lining, and pertinent hydraulic data.

Detail Sheet(s) shall contain the following information & must be drawn to scale:

YES	NO	N/A	SHEET	
				1. Show details of all proposed structures for which there is no standard drawing or modification of standards. Examples would be special drop inlets (DI-6), channel cross-sections, typical road cross-sections, sidewalk sections and erosion control devices, etc.
				2. If a VDOT standard is modified, detail must be shown with all applicable dimensions.
				3. List all construction notes necessary to complete the work
				4. Number assigned to structure shall be shown with detail.

General Topographic (Drainage Areas & Erosion Control) Sheet(s) shall contain the following information:

YES	NO	N/A	SHEET	
				1. The drainage area plan shall not be incorporated into the EC plan but be a separate sheet. It shall be drawn to a scale 1"=50' unless otherwise approved.
				2. Show existing and proposed contours (maximum of five foot interval) to mean sea level datum (or lesser interval where deemed necessary by county).
				3. Show proposed and existing road right of way with road lanes, easements, layout, property and lot lines; Residential and commercial building, parking lots, other physical features etc.
				4. Indicate schematically, all proposed and existing drainage structures, channels, etc. showing structure numbers.
				5. Indicate limits of drainage areas and the acreage of each area. When the off-site drainage area becomes larger than one hundred (100) acres, the limits of the area may be shown on a larger scale map (maximum 1"=2000') with a larger contour interval (maximum 10'). All drainage area maps must be scaled maps and completely contoured with contour elevation and part of the actual plan assembly. (not submitted separately)
				6. Indicate limits of computed 100-yr flood plains, wetlands, RPAs/RCMAs and identify.
				a. include text "RPA" within line type depicting limits of RPA
				7. Use arrows to indicate direction of flow on all roads, ditches, pipes, etc.
				8. Provide centerline stations and lot numbers.

Subdivision Plan Design

Design Requirements

YES	NO	N/A	SHEET	
				1. Have zoning conditions been satisfactorily addressed in construction plans?
				2. Have tentative conditions been satisfactorily addressed in the construction plans?
				a. Does the construction plan road/lot layout and RPA limits match the approved tentative plan?
				3. Schedule site inspection to "field truth" existing conditions as shown in the construction plans.
				a. Do road beds or other features exist which should be graded or restored to surrounding ground elevation? Clearly label lot(s) as "No Building Permit" (NBP)
				4. Are natural drainage ways (unencumbered by wetlands/WOUS) adequate conveyance systems which have 25' Building Setback Line (BSL) dimensioned?
				a. Specify that such are to remain in a natural state, undisturbed.
				5. Does existing drainage flow pattern conflict with building envelop?
				a. Has a contoured lot grading and drainage plan been provided?
				b. If 5.a. is NO, earmark lot with NBP
				6. Has an approvable road design for sag conditions per VDOT Standards been provided a minimum 300' into adjacent property/future sections in plan and profile?
				a. Slope and Drainage easements for VDOT maintenance and TCE's for fill slopes outside ROW.
				7. Are easements and/or improvements necessary to guarantee upstream offsite areas a permanent conveyance thru onsite development?
				8. Are proposed road fill slopes beyond the limits of ROW enclosed in S/D easements for VDOT maintenance?

Design Requirements (Continued):

YES	NO	N/A	SHEET	
				a. Minimum 10' TCE's within lots adjacent to future road extensions
				9. Plans must show existing/proposed grading contours of road construction activity and any lot drainage problem areas.
				10. Does drainage cross more than 2 lots?
				a. Specify grass side yard swales (5:1 SS @ 12" depth) minimum 1% slope including a profile or spot flow line elevations.
				b. Dimension side yard swale 5' off the property line on the upstream side of downstream lot.
				c. Flatten swales before entering ROW to sheet flow less than 1 cfs over curb.
				d. Grass ditches across multiple lots to be enclosed in minimum 16' drainage easement to ensure permanent conveyance.
				e. Earmark lots requiring grass side yard swales with NBP
				f. Provide a 6" vertical opening with a 2' concrete gutter in the back of DI's within the ROW where available to intercept side yard swales.
				11. To assure positive lot drainage, are Minimum Crawl Space notations (MCS) needed? - must be specified a minimum 1' above original ground.
				a. Provide typical MCS detail.
				12. Do the submitted 100-yr calculations show that the backwater elevation is at or below the 100-yr floodplain upstream/offsite?
				a. If the proposed 100-yr elevation is higher, a 100-yr backwater easement or revised floodplain limits must be recorded.
				13. Does proposed grading activity establish limits of 100-yr floodplain or backwater?
				a. Has filling in the 100-yr FP to achieve a building envelope been proposed? This practice is not allowed.
				b. Has the 100-yr FP limits been shown to verify that proposed filling is only to enlarge building envelopes, by separate submittal?
				c. Limits must be certified by a licensed professional prior to the release of the Building Permit and so stated in the plans.
				14. Disturbance is prohibited within USCW 100 year floodplains when drainage areas exceed 100 acres.
				15. Could proposed building envelopes be impacted by a dam failure during the 100-yr storm event?
				a. Specify MFF(DF) elevation 1' above dam failure.
				b. Show Dimensioned Building Envelope (DBE) outside dam failure limits

Hydrology

YES	NO	N/A	SHEET	
				1. Rational Method limited to maximum 200 acres.
				a. 1.25 Saturation factor used for 100-yr storm calculations.
				b. OLF length does not exceed 200 feet.
				c. Flow path shown/labeled – sheet flow, shallow concentrated flow and channel flow.
				2. TR-55 method used for areas exceeding 200 acres unless otherwise required.

Hydrology (Continued)

YES	NO	N/A	SHEET	
				3. Are runoff coefficients, CN's, Tc's and drainage areas acceptable?
				4. Onsite DA Map on 50' scale unless otherwise approved.
				a. Numeric contour elevations clearly shown
				b. Contours clearly establish ridge lines

Hydraulics

YES	NO	N/A	SHEET	
				1. Culverts, storm sewer and open channels designed to minimum 10 year criteria.
				a. 10-yr flow less than pipe capacity.
				b. 10 yr HW/D < 1 for private entrance culverts within ROW.
				c. All calculations submitted on standard VDOT forms or other acceptable documentation.
				d. All pipes are minimum Class III RCP.
				e. Dimensioned channel section with 10-yr lining depth, side slopes, bottom width specified/shown in plan/profile.
				f. Open channel slopes < 0.75% shall be paved.
				g. Open channel/Storm sewer minimum slope 0.2%.
				h. Manhole steps required in structures 4 feet and greater in depth.
				i. EC-1 or OP specified at beginning and ends of storm sewer/culverts.
				j. IS-1 restricted to pipe diameters < 30".
				k. Pipe diameter > 30" shall qualify for 50% reduction in junction losses only if precast manhole tee's and elbows specified.
				l. First roadside ditch culvert adjacent to drainage break may be 12" RCP.
				2. Specify private/secondary RCP entrance culvert diameters and lengths on each lot.
				a. Minimum 20' length for private/secondary entrance culverts.
				b. Minimum 100-year design.
				3. Open Channel
				a. Rip rap channels not acceptable in front or beside single-family homes unless further than 100' from homes or otherwise approved.
				b. Rip rap channels can be used to rear of lots if no closer than 75' to homes.
				c. Where paved channels are steeper than 15%, anchor lugs are required every 10', C' - C'
				d. 8" vertical wall (freeboard) required along outside radius of paved ditches.
				e. Maximum permissible flow velocity of 3.5 fps for grass ditches.
				f. Open channel depths less than 3', otherwise shall be piped.
				4. Rip Rap lining a minimum 24" thickness with geotextile fabric underlayment.
				5. Has 3 inlet configuration or CG-6 with concrete driveway aprons specified on cul-de-sac's intercepting upstream road runoff?
				a. Has 20' transition from roll face C&G to CG-6 been shown?

Hydraulics (Continued):

YES	NO	N/A	SHEET	
				6. Maximum 18" RCP private entrance culvert within cul-de-sac bulb.
				a. Otherwise pickup ditch flow at reverse curve of cul-de-sac by culvert.
				7. Culverts, storm sewer, and open channels analyzed for 100-yr property protection.
				a. Are 100 yr limits contained within easements/ROW, otherwise, 100 yr overflow limits must be shown.
				b. Are 100 yr backwater limits/elevations shown?
				c. Do single point access roads and secondary entrance culverts pass the 100 yr storm without overtopping the road sag? Maximum 6" overtopping with second point access.
				d. Are 100 yr Floodplain limits shown along natural drainageways?
				e. Are 100 yr Floodplain cross sections with elevations shown along floodplain limits?
				f. Are MFF elevations specified at lots 1 foot above 100 yr floodplain (FP) or backwater (BW) or road sag (SAG) elevations, whichever is greater?
				g. Where flatter topography exists, 100 yr floodplain limits must be field verified by licensed professional and so stated in the plans.
				8. Headwalls required for pipes 30" or larger, or multiple lines or when slopes exceed 15%.
				9. DI-6 yard inlets required in county easements - horizontal grate/inlets not acceptable.
				a. Specified minimum 2' concrete gutters?
				b. Specified slot opening location by cardinal direction (N,E,W,S)?
				c. DI-6 detail included in construction plan details?

Chesapeake Bay Preservation Act (CBPA)/Virginia Stormwater Management Program (VSMP)

YES	NO	N/A	SHEET	
				1. Are Worksheet A/VSMP Part II C (pollutant removal requirements) calculations approved?
				2. Have BMP design calculations been submitted?
				a. Volumes where depths exceed 8' (entire water column) excluded from water quality volume?
				3. Have requirements from EERM CBPA chapter section 12.9.3 been addressed on CBPA compliance sheet(s)?
				a. Title/label CBPA/VSMP compliance sheet(s).
				b. CBPA/MS4 table/VSMP Table.
				c. RPA/RMA limits & wetlands shown.
				d. VSMP impervious areas, manged turf, open space/forested areas shown in plan view?
				e. Other pertinent information documenting compliance.
				4. Provide separate BMP grading plan on 1" = 20' scale.
				a. Specify the normal pool and 10/100 year water surface elevations (WSE).
				b. Provide minimum 2:1 length to width ratio per VA E&SC Handbook, otherwise, concrete baffles required.

CBPA/VSMP (Continued)

YES	NO	N/A	SHEET	
				4. Continued
				c. Provide scaled centerline profile of the pond and embankment with applicable elevations, slopes, widths, etc. Begin at inflow thru spillway to adequate receiving facility.
				d. Does principal concrete spillway provide 10-yr capacity and minimum 18" curtain walls?
				e. Have sediment forebay(s) been provided at major inflow points?
				1) Forebay dimensions should not exceed 20' cleanout limitations.
				f. Emergency spillway may be grass or riprap lined in natural ground or paved in fill to 100-yr depth.
				g. Does wet pond range in depth from 3' to 8'?
				h. Top of dam shall provide minimum 1' freeboard above 100 year WSE.
				i. Top of dam width minimum 8' and slopes 3:1 or flatter for maintenance.
				j. Does dam embankment section specify an impermeable clay core keyed into impermeable subgrade?
				k. Provide 12" valve/12" pipe with elbow off the bottom to lower pond for maintenance. Show location and detail valve box.
				l. O-ring RCP pipe shall be used for barrels/risers.
				n. Inflow pipes shall be partially submerged to the spring line (half the pipe diameter).
				o. Riser and pipe barrels no smaller than 15". Detail stem extension on outside of riser. Is buoyancy addressed (safety factor 1.25).
				p. Plastic Trash rack specified and dimensioned detail provided.
				5. Has SWM/BMP easement been shown enclosing entire facility and embankment/outfall?
				a. Established 25' off 100-yr WSE or toe of dam, whichever most restrictive.
				b. Provided minimum 20' wide access easement.
				c. Provided minimum 12' wide, 6" base stone access road design & detail.
				d. Provide minimum 16' gated access location and detail.
				e. Provided 12' wide maintenance corridor slopes not exceeding 15% to inflow/outflow locations?
				6. SWM/BMP safety measures required for slopes steeper than 6:1 20' from the shoreline.
				a. When concrete weir depth exceeds 3', a pedestrian crossing structure shall be constructed across the weir.
				b. Basin 4' or less in depth and < 1 acre surface area, safety bench required.
				c. Basin greater than 4' in depth or more than 1 acre surface area, both safety and aquatic benches required.
				d. Is safety bench 10' wide at 10:1 slope?
				e. Is aquatic bench 6' wide at 6:1 slope?
				f. Fencing around basin alternative to safety/aquatic benches – 6' minimum height.
				g. Vehicular safety measures may be required adjacent to wet or dry ponds.
				7. Has 50' vegetative perimeter yard setback measured from 100-yr WSE or the toe of dam, whichever more restrictive, been shown/dimensioned? (Must be within limits of project.)

CBPA/VSMP (Continued)

YES	NO	N/A	SHEET
			8. Dimension/Label the "100' RPA Buffer Area" landward of wetlands contiguous to perennial stream to establish limits of the RPA.
			9. RPA signage to be located on every other lot along RPA and include RPA sign detail?
			10. Is RPA buffer area restoration required? If so please include detail.
			11. Are SWM/BMP grading limits outside of RPA?
			12. Has Water Quality approved RPA limits and coordinates shown in construction plans?

CBPA/VSMP Part II B

YES	NO	N/A	SHEET
			1. Has the VRRM spreadsheet which shows compliance been provided in the plan submittal package?
			a. Have the BMP's design criteria selected from the Virginia Stormwater Clearinghouse been provided in the construction plans?
			b. Have the appropriate drainage easements been used to enclose the rain gardens, dry swales, etc?
			c. Have design calculations for each BMP been provided?

Erosion Control/VSMP

YES	NO	N/A	SHEET
			1. The E&SC plans shall be a minimum of 2 phases and scaled 1"=50' unless otherwise approved.
			2. Has the narrative checklist consisting of eleven components been incorporated into the EC plan? Refer to appendix 10.1 in the training notebook for plan reviewers.
			3. Have the construction narratives been divided into minimum 2 phases and shown on the EC plan, not elsewhere?
			4. Do the EC phase 1 and 2 plans ghost such features as ROW, property lines, centerline stationing, street names, lot numbers such that the EC measures and related activity "standout" in the plans?
			5. Have the standard EC notes from the handbook been included on the EC detail sheet?
			6. Are details with applicable information provided on the detail sheet for every EC measure specified?
			7. Has a temporary sediment trap schedule been provided on the applicable EC plan sheet with volumes and dimensions (length, width, depth, and side slopes)?
			8. Do EC plans show drainage area limits/acreage directed to temporary sediment traps/basins
			9. Does the phase 1 EC narrative specify that the county inspector and CRLD must meet to inspect EC measures before proceeding to phase 2?
			10. Have the clearing limits been restricted to only that necessary to install the phase 1 EC measures-SF, DD, ST's, SB's, and stockpile area?
			11. Does the phase 1 plan specify that pipe barrel/riser must be onsite before issuance of Land Disturbance Permit (LDP)?
			12. Does the phase 1 plan specify that the safety fence and flagging along the RPA/wetlands/sensitive areas must be visible before the issuance of the LDP?

Erosion Control/VSMP (Continued)

YES	NO	N/A	SHEET	
				13. Do the EC plans for phase 1 provide a 1' contoured grading plan for the construction of the sediment basin(s)?
				a. Provide trash rack detail with dimensions.
				b. Provide Sediment Basin dam section with elevations and dimensions.
				c. Provide emergency spillway detail with dimensions.
				d. Provide reclamation grading plan for removal of the sediment basin.
				14. Are temporary slope drains specified to convey sediment laden runoff from the road templates over the fill slopes exceeding 5' in height?
				15. Does the phase 2 EC narrative state that additional EC measures may be required by EE if warranted by field conditions?
				16. Does the phase 2 EC narrative state that no temporary sediment traps or sediment basins shall be removed until approved by EE?
				17. Has itemized Cost Estimate been submitted for approval of bond amount?
				18. Have major culvert crossings complied with specifications 3.24/3.25 and detailed installation narrative provided? Does the narrative address favorable weather forecast, pipe/related materials stockpiled onsite prior to start of installation, diversion channel/coffer dam/pumping design provided?
				19. For VSMP Part II C - has the MS-19 table (dated 8-17-2010) with description of adequacy situations been provided on the EC plan?
				a. Section locations shown/labeled. Field surveyed scaled cross sections provided?
				b. Variance requests accompany initial plan submittal
				20. For VSMP Part IIB - Has channel protection from concentrated stormwater flow been satisfied by energy balance equation or 1% rule?
				a. Flood protection - do stormwater conveyance systems outfall to a mapped 100 yr floodplain or satisfy the 1% rule?
				b. Have increased volumes of sheet flow been determined not to cause erosion, sedimentation or flooding?
				21. Prior to issuance of Land Disturbance Permit:
				a. Construction plans received full approval?
				b. Received wetlands documentation from COE/DEQ?
				c. Received and processed VSMP registration statement and fees?
				d. Provided DB-PG of all offsite easements?
				e. If applicable, received processed VDOT land use permit applications?
				f. EC bond posted?
				g. Received signed notifications from applicable adjacent owners unless otherwise required.
				h. CD/electronic format containing applicable separate layer files received?

ADDITIONAL COMMENTS (Use following page if necessary) :

