



**ENGINEERING AND RESOURCE PROTECTION REVIEW COMMENTS**  
**Kingsmill Riverwalk**  
**COUNTY PLAN NO. SP-086-13**  
*October 18, 2013*

**General:**

1. A Land-Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. It appears that this project includes stormwater conveyance and/or stormwater management facilities. Completion of a Stormwater Facilities Data Sheet and payment of Stormwater Facilities Inspection Fees may be applicable prior to issuance of a land-disturbing permit. For more information, contact the James City County Engineering and Resource Protection Division at (757) 253-6670.
3. Treasurer Certification. Please note that before accepting a Land-Disturbing Permit application for this project, certification from the James City County Office of the Treasurer is required. County staff will verify that all real estate taxes owed for subject properties have been paid in full in accordance with Section 24-24 of the County Subdivision ordinance (Ordinance 31A-247). To check status, contact the Treasurer's office at 757-253-6705.
4. A Standard Inspection / Maintenance agreement is required to be executed with the County due to the proposed stormwater conveyance systems and Stormwater Management/BMP facilities associated with this project.
5. Record Drawing and Construction Certification. The stormwater management/BMP facility and associated stormwater conveyance systems as proposed for this project may require submission, review, and approval of a record drawing (as-built) and construction certification prior to release of the posted bond/surety. Provide notes on the plan accordingly to ensure this activity is adequately coordinated and performed before, during and following construction in accordance with current County guidelines.
6. Wetlands. Prior to initiating grading or other on-site activities on any portion of a lot or parcel, all wetland permits required by federal, state and county laws and regulations shall be obtained and evidence of such submitted to the Engineering & Resource Protection Division. Refer to Section 23-9(b) (9) and 23-10(7) (d) of the Chapter 23 Chesapeake Bay Preservation ordinance. (Note: This includes securing necessary wetland permits through the U.S. Army Corps of Engineers Norfolk District and under the Virginia Department of Environmental Quality non-tidal wetlands programs, which became effective October 1st 2001.)
7. VSMP. It appears disturbed area for the site exceeds 2,500 square feet. Therefore, it is the owner's responsibility to register for coverage under the General Permit for Discharge of Stormwater from Construction Activities (VAR10), in accordance with current requirements of the Virginia Department of Environmental Quality and the Virginia Stormwater Management Program. Visit <http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/ConstructionGeneralPermit.aspx> or contact the DEQ Tidewater Regional Office at (757) 518-2000 or central office at 800-

592-5482 for additional information. (Note: Evidence of VSMP registration will be required by the County prior to or concurrently with a preconstruction meeting and must be provided prior to issuance of a local land-disturbing permit and start of land-disturbing activities.)

8. The applicant should be advised that building permits may be required for retaining walls greater than two feet high through the County's Building and Safety Permits Division.
9. Plan Number. Please reference the assigned County plan number on all subsequent submissions.
10. Professional seal and signature is required on final and complete approved stormwater management plans, drawings, technical reports, and specifications.

**Floodplain:**

11. Revise the note on cover sheet to reference the correct FEMA FIRM panel and any designated special flood hazard areas or zone designations associated with this site, as applicable.

**Chesapeake Bay Preservation:**

12. Water Quality Impact Assessment. A water quality impact assessment (WQIA) is required due to the location of project site features in the Resource Protection Area. Refer to Sections 23-7(b) and 23-11 of the Chesapeake Bay Preservation ordinance.
13. Steep Slope Areas. Section 23-5 of the Chesapeake Bay Preservation Ordinance does not allow land-disturbing activities to be performed on slopes 25 percent or greater. It appears that steep slope areas are impacted at proposed access corridors; therefore, a request for a waiver or exception is required, in writing.

**Erosion & Sediment Control Plan:**

14. Design Checklist. Please provide a standard James City County Erosion and Sediment Control and Stormwater Management Design Plan Checklist. Contact the Engineering & Resource Protection Division for a current version.
15. Temporary Stockpile Areas. Show any temporary soil stockpile or indicate on the plans that none are anticipated for the project site.
16. Additional Storage Areas. If additional equipment staging or material storage areas are anticipated further east along the shoreline for pier construction, this must also be shown on the plans with required erosion and sediment controls. If no other areas are to intended to be used to store materials other than those indicated on the plan, provide a bold not to indicate this intent.
17. Offsite Land Disturbing Areas. Identify any offsite land disturbing areas and provide evidence of permission to occupy or disturb the offsite adjacent tract from the parcel owner, or indicate on the plans that none are anticipated for this project. Provide a note on the title sheet of the plans providing that all objectionable and deleterious material is to be removed from the site and disposed of in a state approved facility meeting the requirements of all applicable local, state, and federal regulations

18. Slope Stabilization. Label all graded cut and fill slopes with slope indicators as intended (i.e. 3H:1V, 2H:1V, etc.). Provide specification in E&SC planned details with regard to type of matting.
19. Outlet Protections. Provide riprap outlet protection for all pipe, culvert and storm drain outfalls. Include specifications and calculations for riprap class (class I minimum) and thickness, pad dimensions and amount of stone to be used in accordance with requirements of the VESCH, Minimum Standards 3.18 and 3.19.

**Stormwater Management / Drainage:**

20. Be advised that the information provided with this submittal is incomplete and therefore insufficient for James City County staff to perform a complete review of the application. Items missing from the submittal package include computations for all proposed conveyance and attenuation measures, inverts and slopes for all stormwater conveyance measures, manhole structure at all changes in pipe alignment and slope, proposed contour information, and other items as necessary to make a complete evaluation and to verify the design is adequate or compliant. Please be advised that additional comments may be generated once all pertinent information has been provided. In addition, please provide a Stormwater Management Design Plan Checklist with the next submittal. The intent of the checklist is to ensure the plan preparer has provided all items necessary for a complete and expeditious review.
  - a. Contour Labels. Provide additional contour labels to ensure readability of plans. For example, contour labels are needed at the intersection of the proposed 12' wide asphalt path and the existing cart path near the western limits of the project area to properly complete grading operations.
  - b. Proposed Grading. Ensure all proposed and existing contours are continuous and achievable with the next submittal. For example, revise contours on sheet C.3.2 in the proposed dry swale.
  - c. Drainage Map. Revise the drainage map to show proposed drainage sub areas with divides for all stormwater drainage inlets, pipes and channels, BMPs and special points of analyses. Include the size of each drainage area as well as applicable runoff coefficients, times of concentration and applicable offsite service area.
  - d. Storm Drain Computations. Provide calculations to support the design of all closed-conduit stormwater conveyance systems including storm drains, culverts, inlets, etc. Provide peak discharge, inlet, storm sewer, culvert headwater and hydraulic grade line calculations based on the 10-year design storm to ensure inlets are not surcharged and storm drain capacities are not exceeded. Include hydraulic jump calculations for structure S-3 to show energy grade stays inside the inlet.
  - e. Stormwater Conveyance Channel Computations. Provide calculations to support the design of all stormwater conveyance channels and swales. Include drainage areas, times of concentration, runoff coefficients or curve numbers, and intensities for the 2- and 10-year design events and channel design assumptions (slopes, lining, sideslopes, etc.).
  - f. Stormwater Conveyance Channel Details. Provide typical sections with construction data for all proposed onsite stormwater conveyance (open) channels. Specify lining type required

(i.e. grassed, EC-2, EC-3, etc.) for all onsite open channels. Drainage swales will require a VESCH Treatment-2 (EC-3 type A) lining for design velocities greater than 4 feet per second.

- g. Culverts. Provide culvert and headwater charts or computations. All culverts shall be designed for the 10-year design storm event.
  - h. Manhole Structures. Per James City County drainage design guidelines, manholes must be provided at all locations of changes in pipe alignment, size, or material. For example, a manhole is required between pipes P-1 and P-2 on sheet C.3.1.
  - i. Runoff Reduction. Though information was provided for the required load reduction required, no calculations were submitted to show compliance based on removal efficiencies of the proposed swale. Include evidence to substantiate compliance with the next submittal, including information to shown swales have the capacity to convey water quality volume (one inch per impervious acre).
  - j. Retaining Wall Drains. Provide information in plans with regard to location, inverts and connections as indicated in detail on sheet C.3.4 for proposed retaining walls drains that connect to the storm sewer system.
  - k. Trench Drains. Staff has some concerns with regard to the ability of a series of trench drains to handle substantial concentrated drainage along the curbed side walk connecting the pool area and the amenity pier based on proposed contours. In addition to the calculations already requested, consider either reconfiguring the drains to receive drainage longitudinally or use an alternative method to collect drainage.
  - l. Offsite Channel Adequacy. Submit adequacy analyses for all receiving drainage facilities, whether natural (swales, channels, etc.) or man-made (pipes, culverts, etc.) where additional impervious area is proposed. Adequacy computations are required to verify that man-made channels are adequate for velocity based on the 2-year event and for capacity based on the 10-year event.
21. DI Type. Please specify all proposed grates to be similar in type to a DI-7 grate as DI-1 grate inlets are prone to clogging and have caused significant problems throughout the county.
  22. Dissimilar Materials. Dissimilar Materials. Provide specifications in the plan set to indicate how the contractor is to connect the proposed plastic pipes into the proposed concrete manholes. For this comment to be appropriately addressed, product information “or equivalent” must be provided in the plans.
  23. Concrete Outfalls. Revise plan to use concrete pipe outfalls to the James River. Typically plastic should not be used as outfalls due to UV deformation, buoyancy, and instability through a riprap bulkhead.
  24. Minimum Pipe Size. Minimum pipe size from a DI is 15” based on County drainage standards and due to problems with clogging.

25. Temporary Culvert. Replace temporary culvert and proposed concrete slot drain with permanent culvert pipe as slot drains are not typically design to convey concentrated flow from a swale. Include sizing calculations per previous comment.
26. Existing Flume. Provide dimensions and elevations of existing flume and 30" outfall on C.3.2 and include detail for proposed path crossing. Certification of structural stability and original design computations may be required to verify design.
27. RCP Pipe. Provide specifications for all reinforced concrete storm drainage pipe being used on the project (ASTM C76 with C443 gaskets, etc.). Show class required for all proposed onsite reinforced concrete pipe storm drains and culverts. Consider dead and live loads and cover depths during and following construction.
28. PVC Storm Drains. Show type, class (thickness) and installation bedding and backfill requirements for all PVC pipes required for onsite storm drains (i.e. Schedule 40, ASTM D 3034, ASTM 2241, etc.)
29. Detail Reference. Provide references for details on sheet C.3.4 and ensure consistency with site plan.
30. Dry Swale Underdrain. There appears to be some dry swale BMPs that do not adhere to the requirements set forth by the VSMH and County BMP manual requirements. If an underdrain is not incorporated into the design of a dry swale, evidence must be provide that there is adequate infiltration present in soils beneath the permeable soil component. In addition to the forthcoming design calculations, this should be addressed with regard to infiltration rates in a geotechnical report.
31. Geotechnical. Provide note in plans referencing geotechnical requirements throughout project cited in current geotechnical report including slope stability, subgrade preparation, compaction, timber pile testing, and retaining wall design. Include guidelines in sequence of construction for when a geotechnical engineer is required to be onsite.
32. Sequence of Construction. Sequence of construction should be expanded to include detail for phasing of pier construction, grading operations, stormwater structures, and requirements for additional design of some site components by a geotechnical engineer. Ensure sufficient area is provided for material storage throughout the course of the project.