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FORM F-1

WATER AND SEWER NOTES

1. All construction materials and installation shall conform to the latest edition of Standards, New Kent County Public Utilities Department.
2. Contractor shall submit shop drawings to New Kent County Public Utilities for approval of all materials prior to construction. Please show the Inspection fee calculation, the GIS fee calculation and the Plan Review fee calculation on these drawings. Fees must be paid prior to commencing construction
3. Approved "As Built" drawings must be provided to the county prior to acceptance of this work.
4. Contractor shall be responsible for notifying the New Kent County Public Utilities Department and scheduling a pre-construction meeting at least 48 hours prior to starting any work on this project. All work shall be subject to inspection by New Kent County inspectors. The Contractor shall obtain all necessary permits.
5. The Contractor shall include in applicable bid price, the cost of locating and uncovering all sewer manholes and all valve boxes after completion of all paving and adjust them to the final road grades.
6. The location of existing utilities across or along the line of the proposed work is not necessarily shown on the plans and where shown is only approximately correct. The Contractor shall, on his own initiative and at no extra cost, locate all underground lines and structures as necessary. The Contractor shall be responsible for any damage to underground structures.
7. Minimum cover over top of water pipe shall be 3.50 feet.
8. Datum for all elevations shown in National Geodetic Survey.
9. Engineer shall certify that unpaved streets are to subgrade prior to Contractor installing water system. Curb and gutter, if required, shall be installed prior to acceptance of water system by New Kent County Public Utilities Department.
10. Contractor shall call "Miss Utility" toll free at 1-800-552-7001 prior to construction.
11. No structures or planting of trees shall be permitted in utility easements.
12. Lighting may not be placed on easements which contain Water or Sewer Lines. If it is necessary to install lighting within the water or sewer easement, this work must be approved by New Kent County Public Utilities.
13. Service saddles must be used on all connections to PVC water mains.
14. Fire hydrants shall be installed in accordance with New Kent Standard Drawing D-160.
15. Vandalproof covers shall be used on all manholes in easements. Watertight covers shall be used in flood plains. The manhole covers shall be in accordance with DCWA Standard Drawings D-465 or D-466 and D-468.

16. Final Acceptance by New Kent shall not be made until all work shown on approved utility plans is completed including paving, grading, and all required adjustments.
17. When a conflict arises between the plans and county standards, New Kent County Specifications, latest addition, shall take precedent.
18. All meter and cleanout boxes must be installed to final grade. No water meters will be installed for any lot where the meter box or cleanout box are not to grade.
19. A Wetlands Permit may be required from the U.S. Army Corps of Engineers for this development. For information concerning such a requirement, contact of Corps at (804) 462-5382.
20. All water service connections below the <ELEVATION> contour where the static pressure is anticipated to be greater than 80 psi shall have individual pressure reducing valves installed as required by BOCA.

EROSION CONTROL NOTES

1. It shall be the developer's responsibility to inspect all erosion control devices periodically and after every erodible rainfall. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.
2. No disturbed area will be denuded for more than 30 calendar days.
3. All erosion and siltation measures are to be placed prior to or as the first step in grading.
4. All storm and sanitary sewer lines not in streets are to be mulched and seeded within fifteen days after backfill. No more than five hundred feet are to be open at one time.
5. Electric power, telephone, and gas supply trenches are to be compacted, seeded and mulched within fifteen days after backfill.
6. All temporary earth berms, diversions, and silt dams are to be mulched and seeded for vegetative cover within ten days after grading. Straw or hay mulch is required. The same applies to all soil stockpiles.
7. During construction, all storm sewer inlets will be protected by silt traps, maintained and modified as required by construction progress.
8. Any disturbed area not paved, sodded, or build upon by November 1st, is to be seeded on that date with oats, abruzzi, rye, or equivalent and mulched with hay or straw mulch. Modify as applicable depending on proposed time of construction.

NEW KENT COUNTY
REVIEW CHECKLIST FOR WATER AND SEWER PLANS

Date

Project Title

Project Owner

Project Engineering Firm

Title Page

- 1. Project Name
- 2. Engineer's or Licensed Surveyor's Seal and Signature
- 3. Vicinity Sketch (complete in detail)
- 4. Table of Estimated Quantities (including breakdown of type of pipe).
- 5. Title Block
- 6. Parcel Identification Numbers
- 7. Magisterial District
- 8. Name, Address, and Phone Number of Developer/Owner

General

- 1. The utility plan includes an overall plan of the water and sewer layout, including any phasing of the development.
- 2. A subdivision plat indexed to sheet numbers.
- 3. Engineer and/or Surveyor has notified all property owners prior to performing any design and/or surveying work (copy of such notification is attached).
- 4. Legend of sanitary sewer and water lines, other utilities and structures existing and proposed ground and pavement profile. Profile information must be shown on profile sheet.
- 5. Plans have been submitted to State agencies for review and approval where applicable. A copy of transmittal letter is attached to checklist.

Standards

- ___ 1. Standard Water and Sewer Notes are shown.
- ___ 2. Vertical scale is 1" = 5' or 1" = 10'; and horizontal scale is 1" = 50' or as approved by the County. A "bar" scale is shown on each sheet.
- ___ 3. All water and sewer designs conform to the latest County, State and Federal regulations or standards.
- ___ 4. Plan and Profile sheets are on 24" x 36" paper.
- ___ 5. Scale drawings are accurate to within +/- 2% for vertical and horizontal scales.

Utility Plans

- ___ 1. All water, sewer, road, and drainage structures are shown on one plan sheet, where applicable. May require larger scale to adequately obtain horizontal integrity.
- ___ 2. Existing water and/or sewer lines are properly labeled with size and with horizontal and vertical distances referenced on the plan.
- ___ 3. A bench mark is shown every 500 feet.
- ___ 4. Horizontal and vertical scale shown on each sheet (scale should be same on plan and profile).
- ___ 5. All existing easements are shown accurately and proposed utility easements are shown on plans. The existing easements reflect accurate recordation information. Easements need to be shown on County property.
- ___ 6. All existing and proposed storm sewer lines, gas, telephone, power, and other utility lines, which cross or run parallel to the sewer or water lines, are shown with exact horizontal and vertical separations given, where applicable. Subsurface exploration has been performed where potential conflicts exist, where applicable.
- ___ 7. Adjacent road and drainage projects are shown as required.
- ___ 8. Consideration has been given to areas where roads and drainage structures may be lowered in the future.
- ___ 9. Road names, state route numbers, and right-of-way widths are shown.
- ___ 10. Plan and profile are drawn in the same direction. Stations shall ascend from left to right.
- ___ 11. Proposed water and/or sewer lines are shown with reference distances from right of way, boundary, buildings, other utility lines, etc.
- ___ 12. All property lines and property markers (stones, rods, pins, pipes, monuments, etc.) are shown.
- ___ 13. Location of existing houses, buildings, fences, wells and other structures are shown on plans. In lawn or kept areas, trees and shrubs in the easements are shown (size and type).

- 14. All designs conform to the latest County and State erosion control and sedimentation rules, regulations, and ordinances.
- 15. The engineer understands that he/she is responsible for coordinating the utility design and construction work with other engineers where their projects connect or are affected by other projects.
- 16. Locations of special features (conc. encasement, rip-rap stabilization at creek crossings, clay dams, etc.).
- 17. Detail drawings of all stream crossings and storm sewer outlets, with elevations of the stream bed and high (100 year flood elevation) and normal water elevations.
- 18. Proper labeling of subdivision (lot, block, street names, boundaries, etc.).
- 19. Adjacent property owner names) are shown on plans.
- 20. All fill and cut areas are shown within the area of the existing and proposed sewer and/or water lines.
- 21. Necessary easement plats onsite and/or offsite have been submitted for processing.
- 22. Pavement replacement detail, boring detail, etc. are shown on plans.
- 23. Location and dimensions of all water and sewer service connections are shown.
- 24. Proposed, existing, and original ground elevations are shown.
- 25. Municipal, subdivision and/or drainage area boundaries are shown.
- 26. North Arrow is reflected on all plan sheets.
- 27. Miss Utility notation is shown.
- 28. Engineer understands that any changes made to the road, drainage, water and/or sewer design will require a submittal to the Utilities Department for review and approval of the revised water and sewer plans reflecting those changes.
- 29. All revisions include an explanation either on the plans or by separate transmittal.
- 30. If horizontal bore is required, bore location, length of bore, pit location (average 8' x 35') are shown and shown in relation to all existing and/or proposed utilities on plan and profile.
- 31. Alignment of utility in existing VDOT right of ways is consistent with County guidelines. A copy of a transmittal letter to Virginia Department of Transportation for their review is attached. Engineer understands that a letter of approval from Virginia Department of Transportation is required prior to final utility plan approval.
- 32. Clay dams or other acceptable designs are shown at the appropriate locations to avoid water from creek and/or lake being diverted along pipe bedding.
- 33. Engineer has contacted Virginia Power to obtain exact location of power lines and received as-built information. Utility plans reflect this information accurately and is in accordance with the "Overhead High Voltage Line Safety Act".

Sanitary Sewer Plans

- ___ 1. All sanitary sewer plans are labeled with size, grade, length, direction of flow, and type & class of pipes (with backup calculations on the type & class pipe needed, where applicable).
- ___ 2. Manholes are labeled with top and invert elevations; coordinates; and locations, size and inverts of drop stacks when a vertical drop exceeds 2 feet.
- ___ 3. Deflection angles at all manholes or bearings of all lines are shown on the plans.
- ___ 4. All minimum finished floor elevations and basement elevations are to be shown on plans, where applicable.
- ___ 5. A sewerage drainage area map with hydraulic analysis is included in plans.
- ___ 6. The engineer has field verified the inverts of the existing manhole(s). Where invert elevations are different from the as-built plan, the engineer has verified his survey work and notified the Utilities Department of the discrepancy.
- ___ 7. All manholes are designed to an elevation above the 100 year flood plain elevation as set forth in the design standards, unless otherwise approved by the Utilities Department.
- ___ 8. Reference all manholes in easements.
- ___ 9. Ground coverage over sewer pipe meets minimum criteria.
- ___ 10. Engineer has put a notation that a backwater valve is to be used where the building with a finished floor elevation of the building is below the top elevation of the nearest upgrade manhole from the building connection.
- ___ 11. Where the sewer lines are in excess of 12' deep, the Engineer has identified where the sewer lateral must be installed in accordance with the standard details and the appropriate notes are reflected on the plans.
- ___ 12. A NOTE stating that the contractor must field verify the inverts of all existing manholes, gas lines, other utility lines prior to the start of construction.
- ___ 13. All "%" slopes are divisible by 4 to the nearest hundredth, where possible.
- ___ 14. Greater than 0.4% minimum slope has been used whenever possible.
- ___ 15. Solid lines have been used for proposed sewers, short dashed lines for existing sewer and labeled future sewer or portions covered under other phases of construction.
- ___ 16. A minimum of ten (10) feet horizontal separation is maintained between sewer lines, sewer laterals and water meters or water blowoff devices (flushing hydrants) and between sewer line and storm drainage structures.
- ___ 17. All calculations have been checked for accuracy.
- ___ 18. All pipe between manholes are of like material and class.
- ___ 19. All temporary and/or permanent silt basins are shown and the sewer lines and manholes have been designed around these structures.

- ___ 20. All existing sewer laterals are shown on the plans, with station, length and depth, as depicted on the as-built plans.
- ___ 21. All sewer lines are designed with the entry into the manhole by the proposed sewer lines at an angle of 90° or greater to the downstream line, or if an exception has been granted, the engineer has increased the drop through the manhole to compensate for the reduced angle and has provided a blowup detail for the appropriate invert shaping that achieves the same results as a 90° or greater entry.
- ___ 22. The crowns of all sewer lines enter the manholes at crown's level or higher as specified in the design standards.
- ___ 23. Whenever connecting sewer lateral to an existing sewer line, Engineer has put on the plans the proper notation that "the contractor must use a mechanical hole cutter when tapping the existing sewer line and that an approved saddle shall be used" and the appropriate lots affected by this have been identified in the note.
- ___ 24. Where new manholes are proposed over existing lines, distance from the new manhole to the two existing manholes is shown; inverts of the manhole and each existing manhole are shown; slope of existing line from new manhole to upstream and downstream existing manholes is shown.
- ___ 25. Where future extensions are necessary, these lines are reflected on the plan.
- ___ 26. All manholes proposed within areas where vehicles travel are to be located either on center line of road or center of traveling lane.
- ___ 27. The following data appears on all lots with minimum finished floor (sewer) designations and for those lots where gravity sanitary sewer service is questionable:
- The minimum finish floor (sewer) elevation;
 - A note on the plans stating that the 6" sanitary sewer lateral for that lot is to be installed at 1% grade;
 - The invert elevation at the end of the 6" lateral;
 - The "building envelope" (at a minimum) and if possible, the building location (i.e. footprint);
 - A "lot shot" elevation within the "building envelope"/ building footprint line; and
 - Contours (labeled with elevations on each) of the lot.

Water Plans

- ___ 1. Plans show all fittings, fire hydrants, and valves including sizes. Each appurtenance is properly labeled.
- ___ 2. All conflicts with storm sewers and other utility lines are shown with appropriate design changes shown.
- ___ 3. A minimum of eighteen (18) inches of vertical clearance has been designed and obtained at all crossings of other utilities, or as specified by other utility agencies, or otherwise approved by the Utilities Department.
- ___ 4. All water lines have a minimum of 3.5' of cover.
- ___ 5. Fire hydrants and air relief valves are shown on plans and profile.
- ___ 6. Hydrants or blow-off valves are designed at major low places in the line where possible and air release valves are designed at the high points.
- ___ 7. Blowoff devices (flushing hydrants) or hydrants are designed at the end of all lines in cul-de-sacs. Locations of hydrants comply with guidelines outlined in design standards.
- ___ 8. All water services are shown in accordance with the design standards.
- ___ 9. Plans show all connections to the existing subdivision mains, etc.
- ___ 10. Engineer has designed water system in accordance with available pressures and has provided fire flow and pressure calculations to the Utilities Department.
- ___ 11. Line location is shown 4' from face of curb or 2' off pavement where there is ditch.
- ___ 12. Pipe sizes noted on plans.
- ___ 13. Ditch lines are shown on the plan and depth of ditch(s) are shown on the profile at the fire hydrant locations and service lines, where necessary.
- ___ 14. Water line stubs for future extensions are designed to be installed beyond the edge of pavement.
- ___ 15. Location of water meter boxes are shown outside of non-vehicular traveled areas. Where it is not possible to locate the boxes out of the traveled areas. Where it is not possible to locate the boxes out of the driveways, and/or vehicular traveled area, a cast iron box is specified.
- ___ 16. For water line tie-ins, the engineer has shown the valve to be used for cut off during the tie-in. Where tapping the main line vs. cuttings in a tee is applicable, the engineer has evaluated which method will be used as outlined in the County's Design Standards.
- ___ 17. Knockdown meter box shall not be located within any travel areas.
- ___ 18. Water line profiles are shown.

I hereby certify that I have complied with the above and do herewith submit these plans for approval.

Signature

Certificate Number

Name Typed or Printed

Date

NEW KENT COUNTY
REVIEW CHECKLIST FOR DEVELOPER PROJECTS
(in addition to Form F-5)

Date
Project Title
Project Owner
Project Engineering Firm

The following Developer Checklist for Utility Projects steps must be completed before the County will permit the Utilities Contractor to start construction:

- ___ 1. The developer may qualify for refunds where oversized lines are proposed. He should meet, as soon as possible, with the Department of Public Utilities to discuss his eligibility for refunds. One week prior to the meeting, the Developer shall submit a plat of the tract of land to be developed showing boundaries, title to the property and such other information required by the Department. Where refunds are involved, the developer must adhere to the current refund policy, copy of which is available upon request.
- ___ 2. The Department has reviewed the utilities plan. (Initial review of the plan will normally be completed within 2 to 3 weeks of receipt provided the engineer has submitted all required information needed to perform a proper review.
- ___ 3. The project plan has been approved by the appropriate agencies (i.e., County - erosion control, sewer, water, roads and drainage; Virginia Department of Transportation - roads and drainage; Virginia Department of Health and State Water Control Board) and written verification has been furnished to the Department of Public Utilities, where applicable.
- ___ 4. The developer has sent a letter to the Utilities Department requesting the County to prepare a Utilities Service Agreement. The letter needs to include a copy of the "accepted" unit price bid proposal between the owner and the utilities contractor. The County Administrator must approve agreements where refunds are involved.
- ___ 5. Both copies of the Utilities Service Agreement have been executed and one copy returned to the County.
- ___ 6. All off-site and on-site easements, not included in a subdivision plat for the project,

have been dedicated to the County. The Developer is to provide a check payable to the Clerk of the Circuit Court in the amount of the recordation costs when the executed easements are returned to the Right-of-Way Section. The Right-of-Way Section will calculate the charge and inform the Developer.

- ___ 7. The Utilities Contractor has obtained the highway permit, if required, and sent a copy of the permit to the Department of Public Utilities.
- ___ 8. For the onsite subdivision work, the erosion control measures have been installed and approved by the County. However, for the offsite utility work in conjunction with a subdivision, the field installation has been inspected by the Utility Inspector as approved by the County. Confirmation of approval should be obtained by the developer as early in the process to avoid any unnecessary delays in starting construction of the utilities.
- ___ 9. Prior to the installation of water mains, the Developer's engineer has submitted his certification that:
 - ___ a. All pavement and shoulder areas within the right-of-way and/or traveled areas of the development are graded to within 6" of subgrade.
 - ___ b. All ditches and slopes have been graded to final grade to a point 1 foot outside the right-of-way area.
 - ___ c. Markers for the sewer laterals are visible.

I hereby certify that I have complied with the above and do herewith submit these plans for approval.

Signature

Certificate Number

Name Typed or Printed

Date

NEW KENT COUNTY

HYDRANT FLOW TEST REPORT

The back of the form should include a location sketch labeling hydrant locations, line sizes, valves, hydrant branch size, and distance to next cross-connected line. When the tests are complete, this form should be mailed or delivered to the Department of Utilities.

Location _____ Date _____

Test made by _____ Time _____ .M.

Representative _____

Witness _____

State purpose of test _____

If pumps affect test, indicate pumps operating _____

Flow hydrants:	<u>A1</u>	<u>A2</u>	<u>A3</u>	<u>A4</u>	
Size nozzle					
Pitot reading					
Discharge coefficient					<u>TOTAL</u>
GPM					

Static B _____ psi Residual B _____ psi

Projected results @20 psi Residual _____ gpm or @ _____ psi Residual _____ gpm

Remarks:

