UTILITIES CHECKLIST

CITY OF CHESAPEAKE
DEPARTMENT OF PUBLIC WORKS

SUBDIVISION NAME: _____

A/C _____ & TAX MAP PARCEL NOS _____
(13 DIGITS)

DEVELOPER: _____

REVIEWING ENGINEER:_____

WATERSHED (INCLUDE SUBSCRIPT)_____

I. PRELIMINARY ITEMS

___ A. Send plans to Service Engineer to verify existing utilities.
Date Sent _____ Date Recvd _____

___ B. Send plans to Fire Chief for fire protection coverage check.
Date Sent _____ Date Recvd _____

___ C. Property lines shall be shown on drawings.

___ D. Compare to City master water and sewer plans. Sewer and water extension requirements determined by DPU in accordance with II-V-A-1.

II. SEWER ITEMS

___ A. Determine possible flows in subdivision for immediate and future development. Verify minimum pipe sizes with State regulations. (II-V-B-I-e).

___ B. Check for water and sewer service to each lot and that laterals are shown at 90^{o} angle to mainline with 45^{o} angle in direction of flow. Laterals to be 5' off center line of lot with 10' separation between water and sewer laterals.

___ C. Check sewer grades and verify inverts. (II-V-B-1-f)

Sewer Size	Min. Slope in Feet Per 100 Feet
4" (Lateral)	0.1
8"	0.4 (0.30 for PVC pipe only)
10"	0.28 (.25 for PVC pipe only)
12"	0.22 (.19 for PVC pipe only)

___ D. No bends in sewer line will be permitted i.e., sewer line between two manholes will be aligned in a straight line.

___ E. Sewer manhole's spacing will be no greater than 400' for less than 15" diameter; 450' for greater than or equal to 15". (II-V-B-1d)

___ F. Sewer line shall terminate in a manhole if it can be extended in the future. A sufficient length of gravity sewer pipe shall be stubbed out of the manhole such that a future extension can be made without cutting the pavement. The sewer stub shall be plugged at both ends. All sewer lines shall terminate in a manhole, cleanout or inspection box. (II-V-B-1-k)

___ G. Manhole and cleanout locations in right-of-way must be located at the roadway centerline or quarter point and should be located out of low points to prevent inflows of storm water. (II-V-B-1.j) Drop manholes shall be utilized if difference in inverts is greater than 2 feet.

___ H. Check for minimum clearance with other utilities and structures and possible conflicts.

___ 1. Sewer and storm drain 12" min. with ABS & PVC. When separation is less than 12" then D.I. required.

___ 2. Water under sewer 18" min. vertical separation, D.I. sewer pipe required.

___ 3. Water over sewer 18" min. with ABS & PVC. When separation is less than 18" D.I. sewer required.

___ 4. Sewer and water mains under ditches 18" vertical clearance. (II-V-B-5-e)

___ 5. Min. horizontal clearance:

___ a. 10' separation between sanitary sewer, (II-V-B-5-d) or forcemain and water.(II-V-C-3-c)

___ b. 5' separation between sanitary sewer and storm sewer, sanitary forcemain and other utilities. (II-V-B-5-h)

___ c. 5' separation between forcemains and all utilities. (II-V-B-5-d)

___ 6. Vertical clearance water over sewer 18". See (II-V-B-3-e) for exceptions.

___ 7. Vertical clearance between sewer mains and other utilities, except open ditches or water, will be a minimum of 12 inches. (II-V-B-5-i)

___ I. Minimum cover over sanitary sewer shall be 3 feet. Minimum cover may be 2.5' if D.I. pipe. PVC-C-900 pipe is acceptable for sewers with 30 to 36 inches of cover. Solvent weld truss pipe and ductile iron pipe shall be used for sewers with greater than 13 feet of cover. (II-V-B-1-h)

___ 1. Gravity sewer mains shall not be installed deeper than 15 feet from the invert to the final grade unless a variance has been obtained in the predesign process. (DPU) (II-V-B-1-m)

___ 2. Gravity sewer shall have a minimum depth of 36" in new streets and 48" in existing streets without curb and gutter. Minimum depth may be reduced 6" if ductile iron pipe is used. (II-V-B-5-a)

___ J. If sanitary sewer line is installed in an easement between private properties, it shall be D.I. with no lateral connections allowed (i.e., a transition main). (DPU approval required) (II-V-B-2-g)

___ K. All pipe size changes, material changes, and change of direction shall take place only at manholes. (II-V-B-1-c)

___ L. Sewer laterals shall have a cover between 24" and 40" at property line of each lot (II-V-A-5-b) (only exception will be if roadside ditches do not permit it) and terminate in an unpaved area if possible. (II-V-B-2-f)

___ 1. At least one sewer lateral shall be provided to each lot (including undeveloped). One lateral shall be provided to each existing dwelling and the lateral location will be coordinated with the property owner. (note on plans) (II-V-B-2-b)

___ 2. Laterals will extend from the gravity main to the right-of-way line and will be perpendicular to the gravity main or extended from the manhole on cul-de-sac lots. (II-V-B-2-c)

___ 3. Laterals will be placed five feet from the centerline of the lot (opposite the water service) for undeveloped/proposed lots. (II-V-B-2-e)

___ 4. Laterals for sewers more than 13 feet deep shall be placed at the manhole in lieu of the main trunk line where possible. (II-V-B-2-h)

___ 5. Laterals shall terminate in cleanouts, inspection boxes or manholes at the property line. (II-V-B-2-i)

___ 6. Force mains shall have minimum 36" of cover in new streets or 48" in existing streets without curb and gutter unless it conflicts with existing or proposed utilities or storm drain. Every attempt must be made to prevent installation of pressure mains below gravity lines.
(II-V-B-5-c)

___ M. Horizontal separation between sewer line and edge of right-of-way or easement shall be a one to one function with respect to depth. (II-V-A-7-b)

___ N. Sewer or water line shall not be placed underneath sidewalks, curb and gutter, etc. Exception would be crossings for a short length. (II-V-A-7-a, II-V-B-1-j)

___ O. HRSD Certificate required if one of the following apply:

1. For all new pump stations.

2. Combined total of phases greater than or equal to 100 units or 40,000 GPD.

3. For all new connections into an existing HRSD force main.

___ P. Sewer and water details sheet shall not be required when City standards are noted on the plans.

III. PUMPING STATION

___ A. If flows are facilitated to an existing pumping station, contact Service Engineer (Department of Public Utilities) regarding the upgrading of the pumping station.

___ B. If flows are facilitated to a proposed pumping station, refer to check list for pumping stations.

IV. FORCE MAINS

___ A. Acceptable material is PVC-C-900 or ductile iron AWWA C-151. (II-V-B-4-a)

___ B. Restrained joint pipe will be used for bridge crossings and ball joint pipe will be used for buried river crossings. (II-V-B-4-c)

___ C. Thrust blocks, retainer glands, and or tie rods will be used at all tees, bonds, offsets or plugged ends. Designs shall consider the characteristics of the soil. (II-V-B-4-d)

___ D. A valve with a kicker-joint will be placed at all dead ends. (II-V-B-4-e)

___ E. Sizing shall be in accordance with the City's Master Sewer Plan and State Regulations, to carry the flows generated by the design area. (II-V-B-4-f)

___ F. Air release valves are required at all high points on force main lines. (II-V-B-4-g)

___ G. Whenever a new force main is tied into an existing force main, it shall be installed such that a valve will be placed on the upstream side of the connection. (II-V-A-4-i)

V. WATER ITEMS

___ A. Determine water flow requirements present and future, and check minimum pipe sizes with State Water Works Regulations and City's Master Water Plan. See II-V-C-1-F-i thru vi) for requirements.

___ 1. 8' minimum for fire hydrant.(II-V-C-1-l)

___ 2. 4" minimum for other water services.

___ 3. Short cul-de-sacs (less than 6 units), 2" can be used if looped.

___ B. Normal pipe cover shall be 36" (48" in existing streets without curb and gutter). (II-V-C-3-a)

___ C. Material for waterline shall be ductile iron AWWA C-151 or PVC-C-900. (II-V-D-1,2,3) (PFM III-33.02-A&B)

___ D. Valves shall be installed at every intersection (PFMII, VP-1)). Minimum number of valves T = 2, Cross = 3. Valves will be placed on each intersecting line and be located no more than three feet from each fitting unless otherwise specified. The number of valves shall be no less than one less than the number of pipes. Valve spacing on long straight runs of pipe will be determined by Public Utilities Department. Valve location can be affected by site specific conditions. (II-V-C-1-g)

___ E. Valving arrangement shall be such that the shortest section of water line can be shut.

___ F. Placement of water line within right-of-way shall be in such a manner that operation and maintenance can be performed with relative ease and without requiring encroachment on private property. (II-V-A-7-b)

___ G. If the system is a major loop, sizing of the system may be checked using Hardy-Cross Method. Calculations meet City criteria for fire flows.

___ H. Fire hydrant spacing is in accordance with II-VIII-D-1.

___ I. Thrust blocks, retainer glands, and/or tie rods shall be used at all tees, bends, offsets, or plugged ends. Designs of thrust restraint shall be based on a pressure of 150 psi and shall consider the characteristics of the soil. (II-V-C-1-d)

___ J. Valve with a kicker joint shall be placed at the end of a main for future extension. Dead ends should be minimized by looping. See II-V-C-1-e for blow off valve requirements.

___ K. Clearances

___ 1. Horizontal distance between water mains and other utilities, except sewer, will be a minimum of 5 feet. (II-V-C-3-c-i)

___ 2. Vertical clearance between water mains and other utilities, except sewer and open ditches, will be a minimum of 12 inches. (II-V-C-3-d-iv)

___ 3. Vertical clearance between water lines and storm drain pipes shall be 12 inches. (II-VII-C-3-d-v)

___ 4. Exceptions per II-V-C-3-c,d.

VI. PLAN COMPLIES WITH CITY CODE SECTION 70-167(e)

VII. APPROVAL OF IMPROVEMENT PLANS

___ A. Has HRSD Certificate of Flows been granted.

___ B. Has State Health Department approval been granted.

___ C. Prepare standard approval letter with any special provisions or agreement included.