

Development Engineering Division Developer Projects - Checklist

WATER AND SEWER PRELIMINARY CONSTRUCTION PLANS

To be completed by a Registered Professional Engineer with a Maryland Registration Number.

LEGEND Complied With Not complied with explanation attached Not Applicable Waiver Submitted

A. GENERAL

- | | |
|--------------------------|---|
| <input type="checkbox"/> | 1. Show the project's boundary and identify adjacent streets and property owners (i.e. name, address, parcel no., etc) |
| <input type="checkbox"/> | 2. Show topography at a minimum of 5-foot contour intervals |
| <input type="checkbox"/> | 3. Show all existing and proposed physical features (i.e. homes, buildings, ditches, ponds, tree lines, etc). Provide addresses of existing homes located on the parcels/lots |
| <input type="checkbox"/> | 4. The minimum horizontal scale is 1"=100'. (i.e. 1" = 200' is not acceptable) |
| <input type="checkbox"/> | 5. Show existing water mains, fire hydrants, valves, tees, and blow offs along with contract numbers and pipe sizes |
| <input type="checkbox"/> | 6. Show existing sewer mains, manholes with contract numbers, pipe sizes and directions of flow |
| <input type="checkbox"/> | 7. Show vicinity map on first sheet (scale 1" = 600') |
| <input type="checkbox"/> | 8. Show all existing water and sewer easements (public and private) |
| <input type="checkbox"/> | 9. Show all streams and waterways. Provide a profile at the proposed water/sewer crossing to assure the required depth of cover |
| <input type="checkbox"/> | 10. Show flood plain and wetlands |
| <input type="checkbox"/> | 11. Show and note overhead power and telephone lines that will interfere with excavating equipment during construction |
| <input type="checkbox"/> | 12. Show underground utilities requiring relocation and check with BGE, Verizon, Cable T.V. and others, as applicable |
| <input type="checkbox"/> | 13. Note the existing pipe material and provide field run invert elevations for all existing sewer and water mains in the immediate vicinity of tie-in with the proposed system |
| <input type="checkbox"/> | 14. Show all other proposed utilities to be constructed by utility companies, developers, or by County capital projects in project area by other contracts |
| <input type="checkbox"/> | 15. Identify all required relocations of existing water and/or sewer mains or other existing utilities |
| <input type="checkbox"/> | 16. Match lines and sheet numbers cross referenced to all adjoining plans |
| <input type="checkbox"/> | 17. Maintain all required clearances at utility crossings |
| <input type="checkbox"/> | 18. Check depths of proposed facilities which parallel streams or water courses, ensuring future crossing capability in accordance with design standards |

B. SEWER MAINS

- 1. Show the complete alignment of the proposed sewer system with manholes, pipe sizes and direction of flow
- 2. Check that the proposed sewer system does not cross over into an adjacent drainage basin
- 3. For projects involving more than 200 residential units, interceptors sewers or as directed by the County, provide a comprehensive utility plan showing phasing, design and flow computations, and the ability of the existing downstream sewer system to accept the flows generated by the development
- 4. Check the proposed sewer system for compliance with the approved Master Plan for Water and Sewerage
- 5. Where sewer mains are designed to be within existing County right-of-ways (including roads), the sewer mains are designed a minimum of five feet from the right-of-way line or provide additional easements
- 6. The minimum size of public sewer mains is 8 inches
- 7. Confirm that sewer service is provided to the cellar or lowest floor of the building or structure
- 8. Label any sewer service restrictions (i.e., no service or first floor only)
- 9. Verify that sewer house connections are 4" in size
- 10. Confirm there are no twin sewer house connections
- 11. The standard slope for sewer house connections is 2%. The minimum slope for a sewer house connection is 1%. The maximum slope is 5%.
- 12. Manhole spacing shall not exceed 400 feet
- 13. Manholes numbered and identified by type
- 14. Confirm that in residential development projects, where easements are running between two adjacent lots for future extension of the sewer system, a sewer main shall be constructed the full length of the easement between the lots
- 15. Show all off-site right-of-ways or easements required for the construction of the utility
- 16. Show all existing sewer house connections (SHC) to the parcels or lots under development. Identify which SHC's are to be used. Abandon the remaining SHC's.

C. SEWER PROFILE

- 1. Sewer profile scale: 1" = 5' Vertical and 1" = 50' Horizontal
- 2. Show existing grades and the appropriate finish grades over the sewer
- 3. Show sewer pipe size and slope of sewer main
- 4. Show all manholes and identify manholes with numbers matching the plan
- 5. Provide approximate distances between manholes and approximate invert elevations

D. WATER MAINS

- 1. All proposed water main fittings, fire hydrants, valves and trees clearly identified by size and type
- 2. Locate the house connection on the high end of the property
- 3. Check clearance between water main and sewer (minimum 10' horizontal); and water main and other underground utilities (minimum 5' horizontal)
- 4. Check clearance between water house connections and other utilities
- 5. For projects involving more than 200 residential units, or as directed by the County, provide a comprehensive utility plan showing phasing, design and flow computations, and the ability of the existing water system to provide adequate domestic and fire flows for each phase of the development. Design computations shall be developed for all features of the proposed system and shall be sufficiently detailed to enable the County to make expeditious review of the methods and criteria employed and results obtained

- 6. Check that the cover over the water main is not less than 3.5-feet for all water mains. The maximum allowable depth of water main shall not exceed 8-feet
- 7. Provide a water system loop if more than 50 residential units are to be serviced
- 8. The minimum design static pressure at the main shall not be less than 30 psi
- 9. The minimum size water house connection for a dwelling unit is 1 1/2 inch diameter
- 10. Show spacing of water main valves
- 11. Show spacing of fire hydrants
- 12. Confirm that in residential developments, where easements are required between two adjacent lots for future extension of the water system, a water main shall be constructed the full length of the easement between the lots
- 13. Label the sizes of water house connections and domestic/fire water services for commercial and industrial buildings
- 14. Check that the minimum vertical clearance between the water main and other underground utilities is 1-foot
- 15. All Ductile Iron Pipe (DIP) water mains shall be Thickness Class 54
- 16. Where PVC water mains are permitted check to ensure that all horizontal and vertical directional changes for PVC water mains are made by using proper fittings. (PVC pressure pipe shall not be crimped or bent)
- 17. Show all existing water house connections (WHC) to the parcels or lots under development. Identify which WHCs are to be used. Abandon the remaining WHCs

E. WATER MAIN PROFILES

- 1. Water main profile scale: 1" = 5' vertical and 1" = 50' horizontal
- 2. Show existing grades and the approximate finish grades over the water main
- 3. Show pipe size and provide approximate water main stationing
- 4. Where PVC water mains are permitted check to ensure that all horizontal and vertical directional changes for PVC water mains are made by using proper fittings (PVC pressure pipe shall not be crimped or bent)
- 5. Check for adequate clearance between crossing utilities and for minimum/maximum depth of cover

F. SUPPLEMENTAL INFORMATION

- 1. Submit preliminary cost estimate for water and sewer extensions
- 2. Submit 3.5% Review Fee
- 3. Submit two copies of preliminary plans to DPZ - Development Engineering Division
- 4. Submit a cover letter summarizing the proposed plan
- 5. Submit a transmittal

3.5% FEE ACCOUNT NUMBERS

1.75% EACH
 DED FUND: 10000000000, BUSINESS AREA: 3000, COST CENTER: 3000000000, GENERAL
 LEDGER: 432526, FUNCTIONAL AREA: PWPW000000000000
 DPW FUND: 10000000000, BUSINESS AREA: 3100, COST CENTER: 310000000000, GENERAL
 LEDGER: 432526, FUNCTIONAL AREA: PWPW000000000000

GENERAL NOTES

To be printed on Drawing No. 1 or 2 of the Water and/or Sewer Plans

Part I (to be printed on both water & sewer plans)

- | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|-----------|--------------|--------------------------------|--------------|----------------------|--------------|--------------------------|--------------|---------------------------|--------------|-------------------|--------------|-----------------------------------|--------------|--------------|--------------|
| <input type="checkbox"/> | 1. Approximate locations of existing mains are shown. The contractor shall take all necessary precautions to protect existing mains and services and maintains uninterrupted service. Any damage incurred shall be repaired immediately to the satisfaction of the Engineer at the contractor's expense | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 2. Topographic field surveys were performed on _____ (month, year) by _____ (Engineering/Survey firm) | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 3. Horizontal and Vertical Survey Controls:
<i>The coordinates shown on the drawings are based on Maryland State Reference System NAD '83/'91 as projected by Howard County Geodetic Control Stations No. ___ No. ___ and No. ___. (Engineering/Survey firm shall provide descriptions of vertical control points, i.e., iron bars, cross cuts on concrete structures)</i> | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 4. All pipe elevations shown are invert elevations unless otherwise noted on the plans | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 5. Clear all utilities by a minimum of 12 inches. Clear all poles by 5'-0" minimum or tunnel as required unless otherwise noted. The owner has contacted the utility companies and has made arrangements for bracing of poles as shown on the drawings. In the event the contractor's work requires the bracing of additional poles, any cost incurred by the owner for the bracing of additional poles or damages shall be deducted from monies owed the contractor. The contractor shall coordinate with the utility companies to schedule the bracing of the poles. | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 6. For details not shown on the drawing, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 7. Where test pits have been made on existing utilities, they are noted by the symbol at the locations of the test pits. A note or notes containing the results of the test pit or pits is included on the drawings. Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the contractor two weeks in advance of construction operations at his own expense | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 8. The contractor shall notify the following utility companies or agencies at least five working days before starting work shown on these plans:
<table border="0" style="margin-left: 40px; width: 90%;"><tr><td>AT&T.....</td><td>800-252-1133</td></tr><tr><td>BGE (contractor services).....</td><td>410-637-8713</td></tr><tr><td>BGE (emergency).....</td><td>410-685-0123</td></tr><tr><td>Bureau of Utilities.....</td><td>410-313-4900</td></tr><tr><td>Colonial Pipeline Co.....</td><td>410-795-1390</td></tr><tr><td>Miss Utility.....</td><td>800-257-7777</td></tr><tr><td>State Highway Administration.....</td><td>410-531-5533</td></tr><tr><td>Verizon.....</td><td>800-743-0033</td></tr></table> | AT&T..... | 800-252-1133 | BGE (contractor services)..... | 410-637-8713 | BGE (emergency)..... | 410-685-0123 | Bureau of Utilities..... | 410-313-4900 | Colonial Pipeline Co..... | 410-795-1390 | Miss Utility..... | 800-257-7777 | State Highway Administration..... | 410-531-5533 | Verizon..... | 800-743-0033 |
| AT&T..... | 800-252-1133 | | | | | | | | | | | | | | | | |
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| BGE (emergency)..... | 410-685-0123 | | | | | | | | | | | | | | | | |
| Bureau of Utilities..... | 410-313-4900 | | | | | | | | | | | | | | | | |
| Colonial Pipeline Co..... | 410-795-1390 | | | | | | | | | | | | | | | | |
| Miss Utility..... | 800-257-7777 | | | | | | | | | | | | | | | | |
| State Highway Administration..... | 410-531-5533 | | | | | | | | | | | | | | | | |
| Verizon..... | 800-743-0033 | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 9. Trees and shrubs are to be protected from damage to the maximum extent. Trees and shrubs located within the construction strip are not to be removed or damaged by the contractor | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 10. The contractor shall remove trees, stumps and roots along the line of excavation. Payment for such removal shall be included in the unit price bid for construction of the main | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | 11. The contractor shall notify the Bureau of Highways, Howard County at (410) 313-7450 at least five working days before open cutting or boring/jacking of any County roads for laying water/sewer mains or house connections. The approval of these drawings will constitute compliance with DPW requirements per Section 18.114(a) of the Howard County Code | | | | | | | | | | | | | | | | |

Part II (to be printed on water plans only)

1. All water mains shall be D.I.P. Class 54 unless otherwise noted
2. Tops of all water mains shall have a minimum of 3'-6" of cover unless otherwise noted
3. Valves adjacent to trees shall be strapped to trees
4. All fittings shall be buttressed or anchored with concrete in accordance with Standard Details unless otherwise provided for on the drawings
5. Fire hydrants shall be set to the bury line elevations shown on the drawings. All fire hydrants shall be installed in accordance with Standard Details. The soil around the fire hydrant shall be compacted in accordance with Section 1000 and Section 1005 of the Standard Specifications
6. The contractor shall not operate any water main valves on the existing water system
7. Tracer wire and continuity test stations shall be installed on all DIP and PVC water mains in accordance with the Howard County Design Manual
8. For PVC water mains, all records for the Quality Control and Qualifications Test Requirements noted in Section 5.1 of the AWWA Standard C900 for PVC pressure pipes shall be submitted with the pipe material certifications or shop drawings prior to approval of the material for use. The test records shall be for the pipe to be installed under this contract. All PVC pipe shall contain markings to allow cross referencing of the pipe supplied to the test records received.
9. Unless otherwise noted on the plans or in the specifications, sacrificial anodes shall be installed on all valves and metallic fittings used with PVC water mains in accordance with Volume IV Standard Specifications and Details for Construction. 17 pound Magnesium anodes shall be installed on all valves and ductile iron fittings including restraints and harnesses. 12 pound Zinc anodes shall be installed on all stainless steel fittings and saddles used with PVC mains. All "tees" used with PVC mains shall be ductile iron
10. Proper assembly of Gasketed PVC Pipe Joints: The manufacturer's insertion line of gasketed PVC pipe joints indicates the maximum depth of insertion of the spigot into the bell. After assembly of the joint, the insertion line shall remain visible. Dual insertion lines on gasketed PVC pipe indicate the maximum and minimum depth of insertion of the spigot into the bell. The contractor shall not over insert or over home the spigot into the bell of the PVC pipe
11. All changes in horizontal or vertical direction of PVC water pipe shall be made with standard bends, 5-degree sweeps or high deflection (HD) couplings. No bending of the pipe or deflecting of PVC pipe joints is permitted. Where high deflection couplings or 5-degree sweeps are permitted, the contractor shall provide on full pipe length (20-foot long) on either side of the high deflection coupling or 5-degree sweep. The contractor shall use a vibratory plate compactor or other approved means to thoroughly compact the #57 stone on both sides of the high deflection coupling or 5-degree sweep, taking care not to use compaction equipment directly over the fitting.

PVC high deflection couplings shall be limited to a total deflection of 3-degrees (1 1/2-degree on either end of the coupling), shall be rated for a minimum 200 psi meeting the requirements of AWWA C900, shall have a minimum lay length of 9-inches and shall have center stops. PVC High deflection couplings shall be CertainTeed PVC High Deflection (HD) Stop Couplings or equal.

Five degree sweeps shall be bell by spigot, rated for a minimum 225 psi, DR 18 meeting the requirements of AWWA C900 and shall be Multi Fittings (Ipex) Blue Brute DR18 or equal

12. When PVC high deflection couplings or PVC 5- degree sweeps are used to facilitate changes in horizontal or vertical alignments of AWWA C-900 PVC pipelines, the contractor shall install devices for the prevention of over-insertion of the PVC pipe spigots or plain ends into the push on bell joint on both sides of the high deflection couplings and 5-degree sweeps. Bell stops shall be placed at the proper insertion line for the fitting. The bell stop shall be manufactured of ductile iron and incorporates an expansion retention spring to allow for pipe expansion and contraction. The bell stops shall be Series 5000 Mega-Stop, as manufactured by EBAA Iron, Inc. or approval equal.

Part III (to be printed on sewer plans only)

1. All sewer mains shall be D.I.P. or P.V.C. unless otherwise noted

2. All manholes shall be 4'-0" inside diameter unless otherwise noted

3. Force mains shall be D.I.P. only

4. Manholes shown with 12" and 16" walls are for brick manholes only

5. Manholes designated W.T. in plan and profile shall have watertight frame and cover. Standard Detail G5.52
Where watertight manhole frames and covers are used, set top of frame 1'-6" above finished grade unless otherwise noted on the drawings

6. House(s) with the Symbol "C.N.S." indicates the cellar cannot be served

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