CITY OF NORFOLK
DEPARTMENT OF UTILITIES
Appendix F3 – Wastewater Collection System Design Checklist

Drawing Requirements

1. Only sanitary waste is collected and transported. No storm drainage or surface water is shown entering the sanitary sewer system.
2. All existing sewer laterals are shown on the drawings, with station, length, material, diameter, and depth, as depicted on the record drawings.
3. The separation between gravity sewers and water mains and appurtenances; and between gravity sewers and storm drainage structures; and between gravity sewers and building structures is shown on the drawings and complies with the minimum standards.
4. Proposed sewer lines are shown with reference distances from rights-of-way, property boundaries, buildings, other utility lines, etc.
5. If a horizontal bore is proposed, the bore location, length of bore, and pit locations, are shown in relation to all existing and/or proposed utilities on both the plan and profile views and the proposed boring method is identified on the drawings.
6. All sanitary sewer drawings are labeled with size, grade, length, direction of flow, and type and class of pipes (with supporting calculations for the pipe type & class where applicable).
7. Manholes are labeled with rim and invert elevations; GPS coordinates; and locations, and manhole diameter opening sizes.
8. Deflection angles at all manholes of all lines are shown on the drawings.
9. 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.
10. The Design Engineer or Licensed Surveyor has field verified the inverts of the existing manhole(s). Where invert elevations are different from the record drawings, the Design Engineer or Licensed Surveyor has verified his survey work and notified the Department of the discrepancy.
11. All rim elevations on manholes are designed to an elevation above the 100-year flood plain elevation or provided with rain stop inserts as set forth in the design standards, unless otherwise approved by the Utilities Department.
12. Manholes are spaced a maximum of 300 feet apart.
13. A note on the drawings stating that the contractor is responsible for verifying the location of all existing utilities, both vertically and horizontally within the project limits prior to commencing construction.
14. The Design Engineer has provided the manhole number as reflected on the record drawings at all existing manholes.
15. All pipe between adjacent manholes is the same material and class.
16. Where a new straddle manhole is proposed over existing sewers, the following information is shown:
    - the distance from the new manhole to the two existing manholes
    - the inverts of the new manhole and the two existing manholes
17. The slope of existing sewer from new manhole to upstream and downstream existing manholes is shown. All minimum finished floor elevations and basement elevations are shown on the drawings, where applicable.

18. All sewer pipework has 36-inches of coverage.
19. The Design Engineer has identified the locations where the sewer laterals must be installed in accordance with these standards.

Design Factors

1. The sewer system is designed for the estimated ultimate tributary population with an upper limit consisting of the 50-year population growth projection for the proposed service area.
2. A sewershed drainage area map and a completed hydraulic analysis table are included with the drawings.
3. The average sewage flow and peak sewage flow is determined from the HRSD Regional Sewage Flow Projection Data Table located in the design construction standards.
4. The Design Engineer has provided computations that indicate the slopes on the sewer lines produce a minimum velocity of two feet per second.
5. The minimum size main pipe in the sewer system is eight (8) inches.
6. The minimum sewer lateral size is four (4) inches for residential properties and (6) inches for commercial properties.
7. The Design Engineer has investigated the potential for hydrogen sulfide corrosion and has provided appropriate protection of the sewer system.
8. The Design Engineer has addressed special circumstances such as water crossings, road crossings, sewers in inaccessible areas, etc., in accordance with the design standards.
9. The sewer main is designed such that all service connections have a slope of not less than 1/8 inch per foot (1% slope).