

APPENDIX A

DESIGN CHECKLIST

<input checked="" type="checkbox"/> CHECKED <input type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> OUTSTANDING OR TO BE ADDED	CONTRACT NO. _____ SUBDIVISION/PROJECT _____ APPLICANT _____ ARCHITECT/ENGINEER _____ WSSC PROJECT MANAGER _____
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Complete this checklist and include it along with each water and sewer pipeline design submittal. The checklist is to be signed and sealed prior to submission of final plans.

I certify that every reasonable effort has been made to obtain and review supporting data and prepare the drawings with knowledgeable consideration of all design factors, whether on this checklist or not, necessary for the proper and safe construction and operation of the water and/or sewer system shown thereon.

_____ (Engineer's Seal)
 (Signature)

The Design Checklist serves as a guide for the preparation and review of water and sewer construction drawings. Any questions regarding items on the checklist will be referred to the WSSC for clarification. References to the applicable page number or section in the WSSC Pipeline Design Manual are in italic lettering.

GENERAL DESIGN GUIDELINES

- ___ 1. Read report in its entirety.
- ___ 2. Limits and sizes of proposed construction consistent with authorization. (If not, advise WSSC Project Manager prior to submittal.)
- ___ 3. Agreements (Paving Replacement, Relocations, etc.) Provide agreements or required information to WSSC Project Manager to initiate preparation of agreements.
- ___ 4. MBE Compliance Certification, if required.
- ___ 5. Submit all supporting data. (Plans will not be accepted without complete support information. All supporting plans must be approved prior to advertisement for construction.)
 - ___ a. Approved storm drain and paving plans.
 - ___ b. Approved street grades.
 - ___ c. Approved sediment control plans.
 - ___ d. Record plats.
 - ___ e. Site plans.
 - ___ f. On-site water and sewer plans.
 - ___ g. Existing water and sewer plans. *Page G-1.*
 - ___ h. Other utility plans (gas, electric, phone, other pipelines, and cables). *Pages G-1 and G-2.*



- ___ i. Current topography in areas not to be graded.
- ___ j. Check for planned paving/resurfacing by County/State (Submit Correspondence).
- ___ k. Research and show on plan and profile all existing WHC'S and SHC'S in vicinity of proposed water and sewer extensions.
- ___ l. Copy of correspondence to WSSC regarding any necessary relocations and impact on existing facilities.
- ___ m. Site Contamination Screening Submittals (see Part Three, Section 24, pipelines Crossing Contaminated Areas) *Page C-19.2 and Part Three, Section 24.*
 - ___ 1) Completed Environmental Questionnaire (*Page C-24-3*) including detailed explanation and applicable documentation for all "Yes" answers.
 - ___ 2) If the WSSC was previously requested to conduct the database search, provide a copy of the request letter.
 - ___ 3) If the WSSC was not requested to conduct the database search, provide a copy of the database search in accordance with ASTM E1527 including the database summary sheet or a Phase I Environmental Site Assessment report in accordance with ASTM E1527.
 - ___ 4) If the pipeline must be located through a contaminated area, prepare the contract documents to comply with the conditional requirements for crossing contaminated areas. *Page C-19.2 and Part Three, Section 24.*
- ___ 6. Soil Borings. *Pages C-20.1 and C-26.4, Appendix E-1 and Appendix F-1.*
 - ___ a. Soil boring proposed location plan.
(Approximate three hundred (300) foot interval - at intersection, vicinity of tunnels or wherever required for special design (e.g., blocking, structures)). *Page C-20.1, Appendix E-1 and Appendix F-1.*
 - ___ b. Minimum two (2) borings per contract. *Appendix E-1 and Appendix F-1.*
 - ___ c. Borings by developer, in accordance with Appendix E and F. *Appendix E-1 and Appendix F-1.*
 - ___ d. Coordinates (scaled) provided on each soil boring log. *Appendix E-3.*
 - ___ e. Soil Data. *Pages C-20.1 and C-20.2, Appendix E-3 and Appendix F-3.*
 - ___ f. Soil Report required. *Pages C-20.1 and C-26.4.*
 - ___ g. Soil and groundwater testing required for corrosion control design? (___ yes ___ no) *Pages C-28.2 and C-28.10.*
- ___ 7. Environmental. *Page C-8.1.*
 - ___ a. All existing Sediment Control Devices (SCD) shown on plans and profiles. *Page C-8.4.*
 - ___ b. No water and sewer alignments within fifty (50) feet of sediment control traps (draining ten (10) acres or more), basins, or water retention ponds. Alignments within fifty (50) feet shall be approved by WSSC on a case by case basis.
 - ___ c. Approval date and number (SCD) shown for developer's sediment control in General Notes. *Page C-8.4.*
 - ___ d. Show all sediment controls to be installed by contractor and reference by symbols (SBD, SF, etc.) *Pages C-8.4 thru C-8.12.*
 - ___ e. Show 100 year flood plain delineation.
 - ___ f. Show existing contours at five (5) foot intervals, in outfalls and flood plains, for a distance of one hundred (100) feet either side of pipe centerline.
 - ___ g. Show drainage area at stream crossings. *Page C-8.4.*
 - ___ h. Show all wooded area (delineation).
 - ___ i. Show individual trees within fifty (50) feet of work area limits.
 - ___ j. Show wetland boundaries and twenty (25) foot buffer delineation. One hundred (100) foot buffer where applicable. *Page C-23.1.*



- ___ k. Show Chesapeake Bay Critical Areas boundaries (delineation).
- ___ l. Show "Tree Save Areas" in vicinity of water and sewer lines in developments.
Page C-8.12.
- ___ m. Show stabilized construction entrance. *Page C-8.9.*
- ___ 8. Tunnel Soil Investigation and Design. *Pages C-20.1, C-25.1 thru C-25.3, C-26.1 thru C-26.19 and Appendix F.*
 - ___ a. WSSC tunnel meeting.
 - ___ b. Preliminary tunnel submittal. (Natural scale tunnel profiles with details and results of soils investigations). *Page C-26.4.*
 - ___ c. Tunnel Geotechnical Report required. (___ yes ___ no). *Pages C-26.4 and C-26.5.*
 - ___ d. Evaluation of pipe failure and settlement. *Page C-26.9.*
 - ___ e. Environmental concerns (blasting, utilities, water quality, etc.).
 - ___ f. Water table and dewatering. *Page C-26.16.*
 - ___ g. Comply with MSHA and/or railroad authority requirements. *Pages C-25.1 thru C-25.3.*
 - ___ h. Sufficient construction access. *Page C-26.16.*
 - ___ i. Tunnel Access Manhole for tunnels/casings greater than twenty (20) feet. *Page -26.17*
- ___ 9. Thrust Restraint. *Pages C-20.1, C-20.2, C-27.1 thru C-27.26.*
 - ___ a. Thrust Restraint Schedule, Form "A". *Page C-20.1 and page C-20-Form A-1.*
 - ___ b. Thrust Restraint Calculations. *Page C-20.2.*
- ___ 10. Corrosion Control. *Pages C-20.1, C-20.2 and C-28.1 thru C-28.11.*
 - ___ a. Corrosion Survey Checklist. *Pages C-20.1 and C-28.10.*
 - ___ b. Corrosion Documentation, Form "B". *Pages C-20.2 and C-28.11.*
 - ___ c. Corrosion Control plan and specifications. *Page C-28.2.*

BASIC PLAN

- ___ 1. General
 - ___ a. Title (1st line - election district, 2nd line - project description, 3rd line - street names, 4th line - subdivision name and part number).
 - ___ b. Vicinity Map - sheet #1 (upper right, over title block) Show layout of streets clearly sufficient for contractor's access; show locator map page and grid no. (Indicate contract number on map).
 - ___ c. Contract number.
 - ___ d. Project number (water and/or sewer, (e.g., S-75.01, W-80.03). Located over title block.
 - ___ e. Permit identification/as-built information/drawing index on Sheet #1.
Two-hundred (200) foot sheet and fifty (50) foot sheet numbers added.
 - ___ f. Scales. *Page G-1.*
 - ___ g. North arrow (generally pointing to top of sheets).
 - ___ h. Engineer's name, address, phone number.
 - ___ i. Developer's/Applicant's name, contact persons, address, and phone number.
 - ___ j. Drainage basin (over title block).
 - ___ k. Service categories shown (lower left-hand corner).
 - ___ l. "Inspection Only" noted if required (lower right hand corner, first sheet).
 - ___ m. Street names (label "Private" where applicable), lot and parcel numbers, lot frontages and block numbers.
 - ___ n. Miss Utility Note.
 - ___ o. MSHA Route No. (interstate, if applicable) on plan view and vicinity map.
 - ___ 1) Show ADT and MPH.



- _____ p. Montgomery County Roads - traffic control plan.
 _____ q. Prince George's County Roads.
 _____ 1) ADT shown.
 _____ 2) Traffic control plan.
 _____ r. Show authorization date (left border).
 _____ s. Property owner(s) names and addresses along improved roads and outfalls. Show existing houses.
- _____ 2. General Notes (on 1st sheet only).
 _____ a. Water pipe type or class; criteria; options. *Page W-2.1 and W-4.1.*
 _____ b. Sewer pipe type or class; options; exceptions. *Page S-3.1 and S-3.2.*
 _____ c. WHC; size; account numbers. Outside meters noted, if required. *Pages W-25.1 thru W-25.5.*
 _____ d. SHC; size; account numbers. SHC connected to a sewer main with a slope of 1% or less shall have a T-Wye fitting at the main line connection. *Pages S-27.1 and S-27.2*
 _____ e. Property corner/survey control note. *Page C-1.1*
 _____ f. All DI water mains and sewer mains to be minimum class 54 ductile iron pipe. *Pages W-4.1 and S-2.1.*
 _____ g. All DI water mains and sewer mains to be polyethylene encased following AWWA C105. *Page C-28.1.*
 _____ h. All DI sewer pipes to be lined following WSSC specifications. *Page S-3.1.*
 _____ i. Sediment Control notes. *Pages C-8.1 and C-8.2.*
 _____ j. WHC curb stop location specified where not on property line. *Page W-25.3 and W-25.4.*
 _____ k. Special notes shown for contracts where construction is not under this contract.
 _____ l. Notification required when construction is within town or city limits.
 _____ m. Note on plan:
- | | | | |
|-------------|-------|-------------------|-------|
| _____ | _____ | _____ | _____ |
| Designed By | Date | Field Reviewed By | Date |
- _____ 3. Existing Facilities.
 _____ a. Paving (Indicate type).
 _____ b. Water (Indicate plan number under which built): Indicate type of existing pipe, if PCCP, indicate (Lock Joint Number and Type). *Page W-9.3.*
 _____ c. Sewer (Indicate plan number under which built) Indicate type of existing pipe. *Page S-5.3.*
 _____ d. Type of existing manhole. (Indicate brick or precast). *Page S-12.1.*
 _____ e. Research WSSC files and contact agency and include copy of as-built permit for C & P conduit, PEPCO conduit, Gas Companies, and any other utilities. *Page G-1.*
 _____ f. Indicate all proposed construction within/adjacent to site (i.e., proposed utilities, paving limits, structures, etc.). *Page G-2.*
 _____ g. Show existing water and sewer, including services on the plan view.
 _____ h. Show in profile existing water/sewer mains that run parallel to proposed water/sewer.
 _____ i. Show in plan and profile all existing locations of water and sewer and house services.
 _____ j. Show profiles of existing water and sewer to be abandoned under this contract as required. *Page C-5.1.*
 _____ k. For DIP Water with bonded or special exterior coatings – Add note to Plans. *Page W-9.3.*
 _____ l. Show all Test Stations in Plan. *Page C-28.2*
- _____ 4. Waterways and Streams
 _____ a. Indicate drainage area of all stream crossings (or where construction is proposed in flood plain, indicate one-hundred (100) year floodplain with elevations on major stream crossings). Identify stream. Add notes for dewatering, temporary access, stream diversion, etc. and include Standard Detail Numbers. *Pages C-8.1 thru C-8.4.*



- ___ b. For any water body within one hundred (100) feet of construction area, indicate wetland boundaries and one hundred (100) year floodplain with elevations. *Page C-8.2.*
- ___ c. For all existing or proposed stream/ditch crossings, show field inverts/bottom of stream/ditch on Profile. *Page W-11.1 and S-8.3*
- ___ 5. Restoration Schedule completed, see Specifications and other agency requirements.
- ___ 6. Notes to connect to existing water and/or sewer. *Pages W-9.1 and S-5.2.*
- ___ 7. Notes for abandoning existing water and/or sewer. *Page C-5.1.*
- ___ 8. All mains to be designed with a minimum of fifteen (15) feet for 12-inch and smaller pipelines and twenty (25) feet for larger than 12-inch diameter pipelines clearance from proposed or existing buildings. *Page C-3.2.*
- ___ 9. Permits.
 - ___ a. Railroad.
 - ___ 1) Show location of water and/or sewer crossing railroad right of way with dimension from milepost marker, stationing, etc.
 - ___ 2) Display Pipe Crossing Data.
 - ___ 3) Show non-standard details for method of installation.
 - ___ b. MNCP&PC
 - ___ 1) Show required work limits.
 - ___ c. Montgomery County Department of Permitting Services (MCDPS)
 - ___ 1) Traffic Control Plan may be required on streets with a seventy (70) foot right of way or greater. For inquiries, contact MCDPS. Show traffic control plans on standard WSSC plan size (except in cases where 8 1/2" x 11" sketches are acceptable).
 - ___ 2) Rural-Rustic Roads. At the request of MCDPS, a field site meeting may be required with MCDPS and WSSC. Centerline stakeout and additional drawings may be required.
 - ___ d. Maryland Department of Environment, Water Management Administration
 - ___ 1) Maintain twenty five (25) feet from nearest stream bank to edge of work limits. *Page C-9.2.*
 - ___ 2) Design stream crossing with three (3) feet minimum cover over proposed main. *Pages W-11.1 and S-8.1.*
 - ___ 3) Show property owner's name and address.
 - ___ 4) Tidal Wetlands Division.
 - ___ a) 8 1/2" x 11" sketches will be required.
 - ___ 5) Nontidal Wetlands Division. *Page C-23.1.*
 - ___ a) Show property owner's name and address.
 - ___ b) Show environmental consultant on the plan above the title block in the vicinity of applicant information.
 - ___ c) Add previous wetland permit approval(s) (include number of permit).
 - ___ d) Wetlands standard notes on drawings. *Page C-23.1.*
 - ___ 6) Army Corps of Engineers.
 - ___ a) 8 1/2" x 11" sketches will be required.
 - ___ e. Prince George's County – all existing roadways in Prince George's County (PGDPWT)
 - ___ f. Maryland State Highway Administration (SHA permit)



PRELIMINARY WATER

- ___ 1. Minimum size 4" for mainline water pipelines, Minimum size 8" with fire hydrants.
Page W-24.2 and page App. B-5.
- ___ 2. Sizes indicated on plan and profile. *Pages W-8.2 and W-11.1.*
- ___ 3. Fire hydrants shown five hundred (500) feet in single family developments; two hundred fifty (250) to three hundred (300) feet in townhouse developments or industrial/commercial. Generally located on lot lines or consistent with proposed driveways, parking bays, etc. *Pages W-24.1 - W-24.3.*
- ___ 4. Valves. *Page W-18.1*
 - ___ a. All small mains off larger mains. *Page W-18.1*
 - ___ b. Valves to be located to provide line shutdown limited to fifty (50) units, or two blocks maximum.
 - ___ c. Indicate division valves and pressure zone lines where applicable. *Page W-18.1*
 - ___ d. Double valves required (6" - 12", laterals from 42" and up). *Page W-18.1*
 - ___ e. Valves on all fire hydrant leads. *Page W-18.1*
- ___ 5. Show WHC to each lot, parcel or building (indicate location of WHC curb stops if standard location conflicts with sidewalk/curb and gutter; on projects with tertiary streets, extend WHC's to limits of PUE or PIE easement). *Page W-25.6*
- ___ 6. Profiles.
 - ___ a. Indicate approved grade by agency and date (or finished grade from development plan). Establish street grades if required. *Page W-11.2*
 - ___ b. Design main with four (4) feet of cover below proposed grade for new street (deep subgrade - new County and MSHA roads should be considered at this time; existing or proposed ground in developed streets). *Pages W-11.1 and W-11.2.*
 - ___ c. Minimum one (1) foot vertical clearance of existing or proposed utilities at crossings (water, sewer, WHC, SHC, storm drains, gas, electric, telephone, etc.). *Page C-3.1.* Verify required clearance with other utilities.
 - ___ d. Class of pipe consistent with depth. *Page W-4.1*
- ___ 7. Plan - Alignment. *Page W-8.1.*
 - ___ a. Minimum separation of ten (10) feet from existing or proposed sewer (OD to OD). *Page C-3.3.*
 - ___ b. Minimum separation of five (5) feet from existing or proposed storm drains, inlets, poles, gas mains, conduits, etc. *Page C-3.2.*
 - ___ c. Minimum of five (5) feet off centerline of proposed rural type paving or centered in proposed shoulder.
 - ___ d. Curb and gutter section - seven (7) feet off centerline. *Page W-8.1.*
 - ___ e. Minimize specifying bends. *Page W-7.2.*
 - ___ f. Maximum joint deflection not utilized in horizontal and vertical plane simultaneously. *Page W-12.1.*
 - ___ g. Sufficient plan and profile shown for future extensions. *Page W-11.3.*
 - ___ h. Minimum pipe radii:
 - ___ 1) **DIP Pipe Push on Joint** *Page W-12.1.*
 - 4" to 12" = 290 ft
 - 14" and greater = 480 ft



- ___ 2) **DIP Mechanical Joint** *Page W-12.2.*
 - 4" to 12" = 290 ft
 - 14" to 20" = 480 ft
 - 24" and greater = 720 ft
- ___ 3) **Wedge Action Restraining Glands- Mechanical Joint DIP** *Page W-12.3.*
 - 4" to 12" = 290 ft
 - 14" to 20" = 480 ft
 - 24" and greater = 720 ft
- ___ 4) **Manufacturer's Proprietary Restrained Joint DIP- Push-on Restrained Joint Gaskets** *Page W-12.3.*
 - 4" to 12" = 290 ft
 - 14" to 24" = 480 ft
- ___ 5) **Manufacturer's Proprietary Restrained Joint DIP** *Page W-12.4.*
 - 14" to 16" = 480 ft
 - 18" to 30" = 820 ft
 - 36" to 54" = 2860 ft
- ___ 6) **Wedge Action Restraining Glands- DIP Push-on Joints** *Page W-12.4.*
 - 4" to 12" = 290 ft
 - 14" to 48" = 480 ft
- ___ 7) **PVC Pipe with Push on Joints** *Page W-12.1.*
 - 4" to 12" = 820 ft
- ___ 8) **Push-on PVC Pipe with Wedge Action Restraining Glands** *Page W-12.5.*
 - 4" to 12" = 820 ft
- ___ i. **Blocking.** *Page C-27.1.*
 - 1) Thrust Restraint Schedule, Form A. *Pages C-20.2, C-20-Form A-1.*
- ___ j. **Corrosion Control.** *Page C-28.1.*
 - 1) Corrosion Survey Checklist. *Pages C-28.2 and C-28.10.*
 - 2) Corrosion Documentation, Form "B". *Pages C-28.2, C-28.9 and C-28.11.*

PRELIMINARY SEWER

- ___ 1. Sizes and direction of flow indicated on plan. *Page S-5.2.*
- ___ 2. Minimum pipe size for mainline sewer pipelines. *Page S-2.1.*
- ___ 3. Computations submitted, if required.
- ___ 4. Sufficient plan and profile shown for future extensions. *Page S-8.5.*
- ___ 5. Basement elevations shown on plan and profile. If only first floor service is to be provided, verify adequate cover over SHC within the property. (Existing and proposed houses). *Page S-27.3.*
- ___ 6. Profile
 - ___ a. Sewers designed at normal depth, eight (8) to ten (10) feet, unless otherwise required by design. *Page S-8.1.*
 - ___ b. Minimum one (1) foot clearance of existing or proposed utilities (water, sewer, WHC, SHC, storm drains, gas, electric, telephone, etc.). *Page C-3.1.*
 - ___ c. Class of pipe consistent with depth. *Page S 3.3.*



- ___ 7. Plan
 - ___ a. SHC to each lot, parcel or building. *Page S-27.2.*
 - ___ b. Manholes, located to avoid sidewalks, if possible. *Page S-11.1.*
 - ___ c. Locate manholes out of parking areas where possible. *Page S-11.1.*
 - ___ d. Existing septic tanks and wells shown.
 - ___ e. Sewage flow tabulation chart on plan.
 - ___ f. Manhole diameter consistent with angle of incoming and outgoing pipes.
Page S 14.1 thru S 14.3
- ___ 8. Hydrogen Sulfide Control Evaluation. *Page S-28.1.* (Required for gravity sewers 27" and larger, force mains and pressure sewer grinder pump systems).
 - ___ a. Calculations submitted. *Page S-28.1.*
 - ___ b. Special manhole coating required. (___ yes ___ no)
 - ___ c. Special pipe material or coating/lining required. (___ yes ___ no)

FINAL GENERAL

- ___ 1. For water pipelines show LHG and HHG on plan (lower left corner). *Page W-5.1.*
- ___ 2. PE Stamp and Signature. *Pages G-1..*
- ___ 3. Field review note signed and dated within ninety (90) days of submission or advertisement.
- ___ 4. Dependency Note on plan. *Pages W-9.2 and S-5.4.*
- ___ 5. Tree protection. *Page C-8.12.*
- ___ 6. WHC and SHC information complete. *Pages W-25.1 and S-27.1.*
 - ___ a. Size and Type (Standard or Right of Way).
 - ___ b. Account Number.
 - ___ c. Permit Number.
- ___ 7. Blocking Review. *Page C-20.1.*
 - ___ a. Complete coverage. *Pages C-20-Form A-1 and C-20-Form A-2.*
 - ___ b. Special blocking details and/or pipe restraint shown. *Pages C-27.2 and C-27.14.*
 - ___ c. Fire hydrants strapped to mains. *Page W-24.2.*
 - ___ d. Existing special blocking and restrained joints shown on existing main at connections to existing pipe. *Page W-9.3.*
 - ___ e. Existing ground behind plugs/caps (firm bearing for block). *Pages C-27.2 and C-27.25.*
 - ___ f. Submit computations to support special blocking design. *Pages C-20.2 and C-27.2.*
 - ___ g. If fitting is in fill, submit computations to assure standard blocking is sufficient.
Page C-27.2.
- ___ 8. Valves and Fire Hydrants.
 - ___ a. Elbow elevation and fire hydrant lengths shown. *Page W-24.1.*
 - ___ b. Fire hydrant extensions required. *Page W-24.1.*
 - ___ c. Valve extension required. *Page W-18.2.*
 - ___ d. Valve strapped to main (existing and proposed). *Pages W-24.2 and W-18.1.*
 - ___ e. Prepurchase valves. *Page W-18.6.*
 - ___ f. Division valve - open/close valve requirement. *Page W-18.1.*
 - ___ g. Fire hydrant facing note. *Page W-24.2.*



- ___ h. Salvage note for valves and fire hydrants. *Page C-5.1.*
- ___ i. Valves shall be placed on main where slope will allow valve to be operable. *Page W-18.3.*
- ___ 9. Tapping Sleeve and Valve (DIP) or Tapping Assembly and Valve (PCCP).
Pages W-7.3 and W-7.4.
 - ___ a. Type of existing pipe shown. *Pages W-7.3 and W-7.4.*
 - ___ b. Show Lock Joint Number (if PCCP). Provide connection detail. *Page W-7.4.*
 - ___ c. Proper tap size. *Page W-7.5.*
 - ___ d. Sufficient room to make tap. *Pages W-7.4 and W-7.5.*
- ___ 10. Special structures: Blow-off, Air Valve, PRV'S, Thrust Vaults, etc. *Pages W-16.1, W-18.1, W-19.1, W-20.1, W-21.1, W-22.1, and C-27.20.*
 - ___ a. Shown on plan and profile (drawn to scale).
 - ___ b. Calculations submitted.
- ___ 11. Rights of Way and Construction Strips. *Page C-2.1 and Appendix D.*
 - ___ a. Executed (Date: _____).
 - ___ b. Properly shown/described.
 - ___ c. Property owner's name shown.
 - ___ d. Special commitments.
 - ___ e. Offset in right of way, 15"S and larger (for future relief sewer). *Page C-2.2.*
 - ___ f. Show existing right of way with liber/folio on right of way affected by current design.
 - ___ g. Special considerations for PCCP water mains. *Page C-2.1.*
 - ___ h. Each right of way for deep sewers. *Page C-2.2.*
- ___ 12. Pipe Protection.
 - ___ a. Polyethylene encasement on all DIP mains. *Pages W-2.1 and S-3.1.*
 - ___ b. For DIP sewers, special exterior lining. *Page S-.1.*
 - ___ c. UngROUTED riprap, plan and profile (Standard Detail SC/3.0).
 - ___ d. Erosion check (ground over pipe 20% or greater). Every fifteen (15) feet, show number required on profile Standard Detail M/3.0). *Page C-7.1.*
 - ___ e. Concrete anchors for pipes. *Page C-14.1*
 - ___ 1) 24" and smaller, anchors per Standard Detail M/4.0 shown on the drawings, ductile iron or AWWA C900 PVC noted on plan and profile. *Page C-14.1.*
 - ___ 2) Larger than 24", special design, calculations and special detail required. *Page C-14.1.*
 - ___ f. Encasement shown on plan and profile. *Page C-13.1.*
 - ___ g. Special construction requirements for work performed in the vicinity of existing water/sewer mains. *Page C-3.7.*
 - ___ h. Corrosion Control measures incorporated. *Page C-28.1.*
 - ___ 1) Test station numbers provided by WSSC. Total number of test stations indicated on Sheet 1. *Page C-28.2.*
 - ___ 2) Type of existing corrosion control measures indicated on plan at connections to existing pipe. *Page C-28.6 and W-9.3.*
 - ___ i. Settlement indicators (Standard Detail M/7.0 and M/7.1). *Page C-26.18.*
 - ___ j. Where water main is below or parallel to sewer, SHC or septic field, provide proper protection of water supply. *Pages C-3.1 thru C-3.7 and C-13.1 thru C-13.2.*
 - ___ k. Maintain minimum cover under streams for water and sewer pipelines.
Pages W-11.1, S-9.3 and C-9.3.
 - ___ l. Buoyancy of pipelines. *Page C-4.1.*



- ___ 13. Azimuth, Distance Ties and Bench Marks. *Page C-1.1 and Appendix D.*
 - ___ a. Tie to each manhole, fitting, PC and PT, soil boring, test station, etc. *Pages C-1.1 and C-1.2.*
 - ___ b. Azimuth and distance between traverse stations shown. *Page C-1.1.*
 - ___ c. Traverse station ties shown. *Page C-1.1.*
 - ___ d. Curve data required. *Page C-1.2.*
 - ___ e. Required bench marks shown minimum 3 per sheet. (Iron pipes, manholes and fire hydrants not acceptable). *Page C-1.1.*
- ___ 14. Tunnel/bore-jack. *Page C-26.1 and Appendix F.*
 - ___ a. Computations submitted to support the design, as required (non-standard items may require computations).
 - ___ b. Options given. *Page C-25.1.*
 - ___ c. Observation wells as required at tunnel borings. *Appendix F-1.*
 - ___ d. Final Tunnel Geotechnical Report, if required. *Pages C-20.1 and C-26.3.*
 - ___ e. Permit from issuing agency in conformance with design. *Page C-25.1.*
- ___ 15. Special Provisions to Specifications, if required.
 - ___ a. Identify and submit technical information necessary to prepare Special Provisions and include Special Provisions in the Contract Documents. *Page C-6.1.*
- ___ 16. Hydrogen Sulfide Protection. *Page S-28.1.*
 - ___ a. Protection for manholes/structures provided.
 - ___ b. Protection for pipe and/or coatings/linings provided.

FINAL WATER

- ___ 1. Size main.
 - ___ a. Compare with profile. *Page W-8.2*
 - ___ b. Size/class in General Notes. *Page W-4.1 and W-8.2.*
- ___ 2. Dimensions.
 - ___ a. All fittings and fire hydrants tied in. *Page C-1.1.*
 - ___ b. Sufficient number to stakeout. *Page C-1.1.*
 - ___ c. Final ties to existing ends or NTA. *Page C-1.1.*
 - ___ d. Show nearest existing fire hydrant. *Page W-24.1.*
 - ___ e. Existing valves necessary for shutdown are located. *Page W-18.2.*
- ___ 3. Fittings.
 - ___ a. Labeled on plans. *Page W-8.2.*
 - ___ b. 100 foot stations shown on plans. *Page W-8.2.*
 - ___ c. Stations at fittings shown on plan for 16" water and larger. *Page W-8.2.*
 - ___ d. Labeled on profiles. *Page W-11.1.*
- ___ 4. Temporary water service required during construction.
- ___ 5. Water House Connections *Page W-25.1.*
 - ___ a. WHC to each lot, parcel or building. *Page W-25.1.*
 - ___ b. Permit numbers shown. *Page W-25.1.*
 - ___ c. WHC lowering at storm drains, ditches and other utilities. *Page W-25.5.*
 - ___ d. Curb stop locations not in conflict with sidewalks or curbs. *Page W-25.4.*



- ___ e. Insulating joints at connections to existing water pipelines. *Page W-25.8.*
- ___ 6. Profiles.
- ___ a. Water profile proper depth (check structure requirements). *Pages W-11.2.*
- ___ b. Stations in correct sequence.
- ___ c. Compares with plan length. *Page W-8.2.*
- ___ d. Fittings at intersections same elevation.
- ___ e. Fire hydrant lengths correct - submit tabulations. *Page W-24.1.*

FINAL SEWER

- ___ 1. Size sewer line.
- ___ a. Compare with profile.
- ___ b. Compare with computations, if required.
- ___ c. Size and type in General Notes. *Page S-3.1.*
- ___ 2. Dimensions.
- ___ a. All manholes tied in. *Page C-1.2.*
- ___ 3. Sewer House Connections.
- ___ a. Connection to each lot, parcel or building. *Page S-27.1.*
- ___ b. Permit numbers shown. *Page S-27.2.*
- ___ c. Connections from existing sewer in right of way, provide note "Not Included in Contract", if connection is not part of contract.
- ___ d. Note if normal service not being provided.
- ___ e. DHC'S shown, (minimum 8 feet deep at property line). *Page S-27.4.*
- ___ 4. Profiles.
- ___ a. Length compare with plan.
- ___ b. Sewer grades correct, submit tabulations if required.
- ___ c. Invert elevations correct, proper jump in inverts between different sizes. *Page S-17.1.*
- ___ d. Invert elevations at intersection coincide.
- ___ e. Rim elevations shown, submit tabulations. Verify rim elevations with other profiles. *Page S-11.2*
- ___ f. Existing, proposed or future grade lines shown, where required. *Page S-8.4.*
- ___ g. Sewer pipelines at stream crossings.
 - 1) DIP for smaller than 21-inch sewer pipelines and DIP or RCP for 21-inch and larger sewer pipelines with twelve (12) foot lengths. *Page S-8.2.*
 - 2) For RCP, label in profile and include in the general notes the pipe class required and minimum lay length of twelve (12) feet. *Page S-8.2.*
- ___ h. Sewer pipeline on steep grades, ten (10%) percent and greater. PVC AWWA C-900 for 12" and smaller and DIP or PVC AWWA C-905 for larger than 12". *Page S-15.3.*
- ___ i. Verify minimum slope requirements on Table 11. *Page S-9.1.*
- ___ j. DHC's shown, station and top elevation. *Page S-27.4*
- ___ k. Minimum grade 1% for terminal sewers. *Page S-9.1.*
- ___ 5. Manholes.
- ___ a. Manhole depths within Standard Details limitations. *Page S-18.1.*
- ___ b. Frame and cover set at proposed elevation shown on profile, one (1) foot above existing ground or at existing grade. *Page S-11.2.*
- ___ c. Shallow manhole specified on profile. *Page S-18.1.*



- ___ d. Manhole geometry, sufficient inside diameter for incoming and outgoing sewer pipelines. *Page S14.1*
- ___ e. Manhole drop connections labeled on plan and profile. *Page S-16.1.*
- ___ f. Pipe to manhole connection note for deep manholes. *Pages S-18.1.*
- ___ g. Pipe to manhole connection note for steep grades. *Pages S-14.5 and S-15.3.*
- ___ h. Special design for manholes over twenty four (24) feet deep. *Page S-18.1.*
- ___ i. Fall prevention systems for manholes over twenty (20) feet deep (minimum 60" diameter manhole) shown in profile. *Pages S-18.1 and S-20.1.*
- ___ j. 0.1 foot minimum channel drop at manholes. *Page S-17.1.*
- ___ k. Manhole rotation note. *Page S-11.1.*
- ___ l. Protective coatings for H₂S control. *Page S-28.3.*
- ___ 6. Pressure Sewers (Grinder Pump Systems).
- ___ a. Calculations for sizing the pressure sewer lines have been prepared and approved. *Page S-25.2.*
- ___ b. Compare sizing of pipe diameters for PVC and HDPE. *Page 25.3.*
- ___ c. Compare size of pressure sewers for consistency between calculations, plans and profiles. *Page S-25.3.*
- ___ d. Thrust restraint. *Page S-25.3.*
- ___ e. Air/vacuum and air release valves provided at high points. Ideally, high points should be avoided. *Pages S-25.3 and S-25.4.*
- ___ f. Flushing connections every four hundred (400) ± feet and at dead ends. *Page S-25.4.*
- ___ g. Locator stations and tracer wire for directionally drilled HDPE pressure sewers. *Page 25.4.*
- ___ h. No ninety (90°) degree bends. *Page S-25.5.*
- ___ i. Minimum radius of curvature to be in accordance with design criteria. *Page S-25.5.*
- ___ j. Transition manhole at pressure sewer connection to gravity system. *Page S-25.4.*
- ___ k. Verify cellar elevations on drawings are compatible with elevations of grinder pumps used in calculations. *Page 25.3.*
- ___ l. WHCs are not located in same trench with Pressure Sewer House Connections (ten (10) feet minimum horizontal clearance). *Pages S-25.5 and C-3.1.*
- ___ m. Pipe and manhole protection required for H₂S corrosion and odor control downstream of discharge into gravity system. *Pages S-25.5 and S-25.6.*

Final Design Field Reviewed By

Title & Date

Final Design Checked By

Title & Date

