

APPENDIX J
PWSA NOTES SECTION FOR
PRIVATE WATER AND SEWER
CONSTRUCTION PLANS

PITTSBURGH WATER AND SEWER AUTHORITY

Notes for Private Construction Plans

General Notes

1. All work done and materials furnished under this contract shall be in accordance with the Pittsburgh Water and Sewer Authority (PWSA), and the City of Pittsburgh current general contract conditions standard specifications for the materials and construction dated November 1938, with supplements thereto and revisions thereof, using current updated PWSA specifications and standards for construction unless otherwise noted.
2. The developer/owner must furnish the PWSA with a performance bond (or approved equal) and a labor and material payment bond, each in an amount equal to 100 percent of the total project construction cost as determined by PWSA. The developer/owner shall also furnish the PWSA with a maintenance bond for the warranty of all construction for a period of 18 months from the date of the PWSA's acceptance of the completed work and board approval. The maintenance bond shall be in an amount equal to 15 percent of the cost of the work. The PWSA alone shall be named as an obligee on all bonds.
3. The developer/owner or his contractor shall obtain all building permits, plumbing permits, construction and/or street opening permits required by the City of Pittsburgh, County of Allegheny and the Commonwealth of Pennsylvania and/or any local surrounding municipalities as needed.
4. All construction materials must be submitted in a timely manner for review and approved by the PWSA department of engineering and construction prior to the start of construction. Submittal information shall include a list of materials and their source of supply as well as manufacturer's descriptive catalog data, drawings, charts, tables, etc. Necessary to substantiate compliance with the PWSA specification requirements.

List of materials and source thereof, together with work schedule, must be submitted and approved by the PWSA department of engineering and construction before construction is started.

Prior to the start of construction, the developer/owner or his contractor shall submit a schedule of the work to be performed for review by the PWSA's department of engineering and construction.

5. Contractor shall submit detailed shop drawings in accordance with the PWSA on uniform size sheets no smaller than 24 inches by 36 inches for review and approval.

Also submit drawings in DGN or DWG format on electronic media acceptable to the PWSA.

6. The preconstruction meeting shall be set by PWSA. Afterwards, the developer/owner or his contractor shall notify the PWSA department of engineering and construction no less than 72 hours in advance of the start of construction.
7. The developer/owner's contractor shall not perform any work during the night, on weekends, or on PWSA holidays, unless ordered to do so by the PWSA's director, or at the request of the contractor with the approval of the director. When the contractor is given permission to work during these periods, he shall reimburse the PWSA for all PWSA's representative's labor and expenses associated with inspection of the work.
8. Unless otherwise directed use precise City benchmark(s): Show on plans precise City B.M. No(s). _____ - and elevation(s)_____ (also note standard City description and location(s)).
9. Saw-cut all existing public and/or private sidewalk(s) and street pavement(s) (as directed).
10. The contractor shall apply a City approved scaling deterrent to all finished concrete pavement surfaces and sidewalks in accordance with current City specifications or as shown on the contract plans (if directed).
11. The contractor shall be responsible for cleaning all castings, water boxes, catch basins, storm inlets, and manholes after construction and/or paving is completed including any private casting surfaces (if directed).
12. Material required to replace unsuitable material for stabilization for sub- grade(s) shall be City/PWSA approved backfill material. The composition and method of compaction shall conform to current City of Pittsburgh specifications for sub-base treatment.
13. All old material removed under this contract and not to be reused shall become the property of the contractor and must be promptly removed from the site.

14. The CONTRACTOR shall dewater, bulkhead, and bury all existing lines that are abandoned in place. Abandoned line(s) larger than 8" in diameter must be filled with approved flowable fill.

15. A complete and accurate photographic archival hard copy four mill thick double matted mylar drawing (24 x 36) noting as-built record information marked in red ink, including all completed as built record information as to location, elevation, and stationing with offsets of sewer and/or water lines, catch basins, wye branch connections, gate valves, fittings, hydrants, stations, grades, etc. This required information must be furnished to the PWSA at the completion of the contract. The contractor shall submit one set of as built/record drawings showing the proposed PWSA facilities to be dedicated as constructed, including all deviations from both the approved project contract drawings and any related approved shop drawings. All as-built drawings shall be prepared on uniform size sheets as noted above not less than 24 inches by 36 inches and submitted within two weeks after final PWSA inspection and final testing of the system, plus include an approved electronic media copy compatible to the PWSA electronic filing systems. Said as-built information must be certified by an engineer licensed in Pennsylvania, or if directed measured up by a surveyor licensed in the Commonwealth of Pennsylvania.

Until the above described as built/record drawings are received and approved by the PWSA and final acceptance letter is written by the PWSA Director of Engineering and Construction, PWSA will not accept the newly built facilities to be dedicated a public infrastructure. The private developer/contractor will remain responsible for the privately constructed facilities, including all maintenance and/or repairs until PWSA's final acceptance of said facilities. Any required repairs and/or maintenance PWSA does to the new facilities in the interest of the general public prior to acceptance will be back charged to the private developer/contractor and/or reimbursement pursued. If acceptable as built information is not received within sixty days time after completion of the new project, PWSA reserves the right to create the required as built/record information and invoice the private developer/contractor and/or pursue reimbursement via their existing bond(s).

PWSA reserves the right to terminate and/or disconnect all private lines as determined by PWSA.

Sewer Line Notes

1. Buried main line pipe sewer(s) identification marker materials shall be an approved electronically locatable brightly colored plastic tape displaying the printed notation “sewer”. Tape shall be laid between backfilling lifts over the pipe, not less than two feet above the pipe or less than two feet below finished grade surface. In no event shall the tape be more than four feet below finished surface.
2. All manholes to be PWSA approved pre-cast concrete manholes as per ASTM designation C478 with poured-in-place cement concrete bases and/or PWSA approved precast bases as determined by PWSA. This includes reinforced concrete box manholes and/or brick manholes as directed by PWSA.
3. Sanitary manholes shall be exterior coated with PWSA approved emulsified bituminous coating as per ASTM designation D1227 or approved equal.
4. All standard house wyes to be minimum 4 inch diameter for sanitary sewers or minimum 6 inch diameter for storm or combination sewers unless otherwise noted.
5. Install the PWSA cast iron manhole castings as follows: frame No. 26, cover No. 25v (unless otherwise noted).
6. PWSA pipe sewer 15” diameter and smaller (unless otherwise directed) may be polyvinyl chloride (PVC), ASTM designation 3034, SDR-26 or for type PS46 ASTM designation D1784 (or PWSA approved equal). The pipe and fittings shall have integral wall bell and spigot joints with rubber ring joints. The pipe stiffness shall be in accordance with ASTM designation D2412; flexible elastomeric seals: ASTM designation D3212; seal material: ASTM designation F477. Standard installation of said sewer pipe shall be in compliance with ASTM designation D2321 and/or the PWSA current specifications.
7. All vitrified clay pipe sewer(s), (typically used for conveying sanitary or combination flows) including wye connections, shall be extra strength V.C. pipe (ASTM designation C700) compression joints for vitrified clay, bell and spigot shall conform to ASTM designation C425.
8. The reinforced concrete pipe sewer(s) shall conform to ASTM designation C76 with the following requirements:
 - A. All PWSA pipe sewers shall be minimum Class IV style, wall “B”.

- B. The pipe shall have a maximum absorption of 5.5% density and shall be less than 155 pounds per cubic foot using limestone aggregate and type II cement (unless otherwise directed).
 - C. Pipe shall be furnished in minimum 8-foot lengths and marked with manufactured date and pipe class.
 - D. For sanitary and combined sewers, the contractor (if directed) will substitute type II cement with limestone aggregate in place of coal tar epoxy coating of interior surface of pipe.
 - E. All special radius R. C. pipe must be marked at the top exterior (crown) of each section to ensure proper alignment.
 - F. Joint assemblies shall be so formed and accurately manufactured that when the pipes are drawn together the pipe shall form a continuous watertight conduit with a smooth and uniform interior surface. The rubber gasket shall be the sole element of the joint depended upon to provide a watertight seal conforming to ASTM designation C443 and manufacturers recommendation for installation.
 - G. Pipe will be subject to rejection because of failure to conform to any of the above specification requirements.
9. Ductile iron pipe sewer and mechanical joint ductile iron fittings: shall be push-on joint ductile iron pipe with mechanical joint ductile iron fittings. Pipe and fittings to be used under this contract shall be in accordance with following specifications.
- A. Centrifugally cast – ductile iron pipe lined with a PWSA approved polymer lining (unless otherwise directed): AWWA/ANSI – C151/A21.51.
 - B. Interior lining PWSA approved ceramic epoxy coating consisting of an amine-cured novalac epoxy containing a minimum of 20% ceramic quartz pigment by volume or cement mortar lining for ductile iron and gray iron pipe and fittings as noted for water: AWWA/ANSI – C104/A21.4.
 - C. Use Mechanical joint ductile iron fittings: AWWA/ANSI – C110/A21.10. (as directed)
 - D. Rubber gasket joints for ductile iron and gray iron pressure sewer pipe and related fittings: as per AWWA/ANSI – C111/A21.11. Thickness design for ductile iron pipe AWWA/ANSI – C150/A21.50.

- E. All ductile iron pipe shall be minimum class 52.
- F. Ductile iron transition couplings and repair couplings.
 - 1) Material description – couplings furnished under this contract shall be at least equal to or exceed the following and shall conform with the requirements hereinafter given
 - a. Center ring: ductile cast iron meeting or exceeding the latest revision of ASTM A-536.
 - b. Gaskets: natural or synthetic rubber compounded for potable water service.
 - c. End rings: ductile cast iron meeting or exceeding the latest revision of ASTM designation A-536.
 - d. Bolts and nuts: high strength steel track head, natural course roll thread with heavy hex nuts electro- galvanized with di-chromate seal.
- 10. Infiltration and/or exfiltration test shall be conducted by the contractor under inspection of the PWSA, in accordance with the recommendations of the national clay pipe institute. Any sewer failing to meet these requirements shall be properly corrected and reconstructed. Infiltration and exfiltration amounts shall be limited to 200 gallons per inch diameter of pipe per mile per day. (0.001 gallon/inch/diameter/hour/foot).
- 11. All newly constructed public sewers on the project must be televised by the contractor as directed and a video copy complete with data sheets compatible with PWSA record systems and approved by PWSA before final project acceptance. A seventy two (72) hour advance notice shall be given to the PWSA representative who will witness said video inspection and the area must be accessible for TV equipment including vehicles. In order for inspection to occur, all existing and proposed manholes to remain shall be constructed and brought up to the top of finished grade.
- 12. Contractor will be directed to conduct PWSA approved air vacuum testing on all sewers and manholes as per current PWSA specifications as per ASTM designation C828.

13. Contractor will be directed to perform deflection testing on all flexible plastic pipe sewers or as deemed necessary by PWSA for other materials. The mandrel testing shall be performed in the presence of a PWSA inspector using a deflectometer, calibrated television, or properly sized “go, no-go” mandrels. Maximum deflection accepted by PWSA shall be 5 percent of pipe diameter.

Water Line Notes

1. Buried mainline pipe identification markers shall be approved electronically locatable brightly colored plastic tape displaying the printed notation “water”. Tape shall be laid between backfilling lifts over the pipe, not less than two feet above the pipe or less than two feet below finished ground surface. In no event shall the tape be more than four feet below finished surface.
2. Gate valve – affidavit of compliance: the contractor shall obtain from the manufacturer of the valves an affidavit stating that the valves and all the materials used in its construction conform to the applicable requirements of the PWSA and AWWA current standard and supplementary specifications and that all test specified therein have been performed and met.
3. All new PWSA water mains shall be wrapped with approved polyethylene wrap. Polyethylene wrap using virgin polyethylene material conforming to the requirements of the ANSI/ASTM designation D1248. The minimum nominal thickness shall be 8 mils thick.
4. Curb boxes – round curb boxes shall be PWSA approved of the M.E.G. type constructed of cast iron. Standard gate box lid shall have two notch openings with the word “water” stamped or cast into it. Lid diameter to match box. Gate box extensions are not to be used for new construction. A maximum of three extension rings can be used per gate box.
5. All salvageable existing water line materials and appurtenances (i.e. castings, pipe, valves, fire hydrants, meters, etc.) Removed during the course of construction by the contractor shall be removed, undamaged, and delivered to the PWSA brilliant yard. All other damaged and/or unusable water line materials and related appurtenances shall be disposed of by the contractor at the discretion of and to the satisfaction of the PWSA.
6. All pipe valves and fittings shall be mechanical joint and shall be constructed so that the deflection per joint does not exceed 85% of maximum permissible.

7. All fittings and/or bends shall have concrete thrust blocking placed in accordance with the PWSA specifications/standards. Provide ductile iron retaining glands on all bends greater than 10 degrees including the required thrust blocking.
8. Thrust block concrete shall be City of Pittsburgh class “P” 4000# cement concrete as per the City of Pittsburgh specifications. A minimum of one foot of compacted backfill shall be placed above all thrust blocking prior to activating the water lines.
9. Ductile iron pipe and mechanical joint ductile iron fittings: all water lines shall be push-on joint ductile iron pipe with mechanical joint ductile iron fittings. Pipe and fittings to be used under this contract shall be in accordance with following specifications.
 - A. Centrifugally cast – ductile iron pipe: AWWA/ANSI – C151/A21.51.
 - B. Cement mortar lining for ductile iron and gray iron pipe and fittings for water lines: as per AWWA/ANSI – C104/A21.4.
 - C. Mechanical joint ductile iron fittings: AWWA/ANSI – C110/A21.10.
 - D. Rubber gasket joints for ductile iron and gray iron pressure pipe and fittings: AWWA/ANSI – C111/A21.11. Thickness design for ductile iron pipe AWWA/ANSI – C150/A21.50.
 - E. All ductile iron pipe shall be minimum class 52.
 - F. Ductile iron transition couplings and repair couplings
 - 1) Material description – couplings furnished under this contract shall be at least equal to or exceed the following and shall conform with the requirements hereinafter given
 - a. Center ring: ductile cast iron meeting or exceeding the latest revision of ASTM designation A-536.
 - b. Gaskets: natural or synthetic rubber compounded for potable water service.
 - c. End rings: ductile cast iron meeting or exceeding the latest revision of ASTM designation A-536.

- d. Bolts and nuts: high strength steel track head, natural course roll thread with heavy hex nuts electro- galvanized with di-chromate seal.

G. Glands for assembling mechanical joint fittings shall be restraining glands, consisting of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of AWWA/ANSI C-110/A21.10. The devices shall have a working pressure rating of 350 psi for 3-16 inch and 250 psi for 18-48 inch. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM designation A536. Ductile iron gripping wedges shall be heat treated within a range of 370 to 470 BHN. Mechanical joint restraint for ductile iron pie shall be Megalug series 1100 as manufactured by EBAA Iron, Inc. or approved equal.

- 10. The PWSA must be notified a minimum of 72 hours in advance of the time when the contractor proposes to connect the proposed waterlines to the existing water mains so that the PWSA operations division may arrange for the operation of the necessary valve shuts.
Only the PWSA personnel may operate public PWSA valves.
- 11. All new water and fire service mains shall be tested hydraulically at not less than 200 PSI pressure for not less than two hours, or 50 psi in excess of the maximum static pressure when the maximum static pressure is in excess of 150 PSI.
- 12. All proposed connections to exiting water mains shall be conducted during the time of least demand for water, unless otherwise directed.
- 13. Sterilization: following the testing of any potable water mains, the main shall be thoroughly flushed and sterilized.
- 14. Sterilization shall be in accordance with AWWA C-651-86 (revision of AWWA C-601-81), AWWA standard for disinfecting water mains.
- 15. The contractor is responsible to ensure against leakage of the sterilizing solution into the existing public system and for properly disposing of the sterilizing solution.