



WHITWORTH

WATER DISTRICT

SPECIFICATIONS

ADOPTED DECEMBER 07, 2017

**WHITWORTH WATER DISTRICT NO. 2
10828 N. WAIKIKI ROAD
SPOKANE, WA 99218
(509) 466-0550**

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I. GENERAL

The pages found herein are specifications and requirements for general installation of materials, mains and facilities to be located within the boundaries of the Whitworth Water District (District). These items are minimums only and may be expanded to cover any particular project.

The following list of items shall apply to any new construction or projects;

- A. A Water Service Agreement between the District and developer, builder, or contractor shall be signed prior to construction.
- B. All mains will be looped including mains in cul-de-sacs. Any exceptions will have to be approved by the District's General Manager, Operations Superintendent, and or Operations Supervisor (District Management). All mains that are allowed to dead-end will end with a fire hydrant. In cul-de-sacs where mains are less than 600' long, a flushing hydrant may be installed in place of a hydrant but must be approved by District Management.
- C. Prior to significant construction as determined by District Management, plans of proposed facilities are to be submitted in duplicate to the District for approval. Detail blowups of special items are to be included. Said plans must bear the seal of a professional engineer licensed in the State of Washington. One copy of the plans bearing the approval signature of the District's Engineer, District Management or both will be returned to owner, and these approved plans must be on the job site at all times during construction. Exceptions to these plan requirements can only be granted by the Board of Commissioners per item L.
- D. Maintenance manuals shall be given to Whitworth Water District for all equipment, buildings and controls.
- E. The District's Engineer and or District Management shall review and approve all plans prior to construction at the expense of the owner/developer. A minimum of fifteen (15) days shall be allowed for this review process.
- F. The owner/developer shall be responsible for obtaining plan approval or clearance from the Washington State Department of Health for his/her proposal at District's request.
- G. The Operations Superintendent or his authorized representative shall inspect all construction work at the expense of the owner/developer. It shall be incumbent upon the owner/developer to coordinate his/her construction activities and scheduling with the Operations Department to avoid lost time.
- H. District Operations Staff are the only individuals with the authority to open or close existing valves for construction purposes. The owner/developer shall notify the District at least 24 hours to his/her need to turn off water for construction purposes.
- I. Obtaining necessary permits shall be the responsibility of the developer, builder, contractor or property owner affected.

- J. Where franchises, easements or deeds to property are required, it shall be the responsibility of the affected party to provide same and submit appropriate documentation filing same with the County Auditor with a copy to the District prior to any construction.
- K. Fire protection requirements shall be approved by the appropriate agency prior to submission of plans to the District prior to construction.
- L. Any requests for deviations or changes to these specifications shall be submitted in writing to the District thirty (30) days prior to construction. The Board of Commissioners will then consider the requested deviated change(s) at their regularly scheduled meeting and either approve or deny the request(s).
- M. Equipment, tools, gauges, etc., required for tests shall be provided by the developer.
- N. After construction is completed, complete and accurate "AS BUILT" drawings shall be submitted to the District. These drawings shall include dimensions from permanent reference points for all water lines, elbows, valves, and other such appurtenances in sufficient detail to facilitate future location, one to be drawn on reproducible mylar and one to be drawn on quality bond paper. **All as built must be tied to a section corner.**
- O. A set of road plans will need to be provided.
- P. No water will be turned on until all paperwork, as required by the Water Service Agreement, is completed.
- Q. The one-year Maintenance Bond or Set Aside Agreement will not begin until all paperwork has been turned into and approved by the District.
- R. The owner/developer shall reimburse the District for all legal, engineering, and other incidental costs that the District may incur as a result of his/her proposal.
- S. Whenever a group of homeowners joins together to put in a line extension or other mutually beneficial project, they shall appoint one person to act as liaison between the group and the District on the project.

II. SERVICES AND METERING THEREOF

A. GENERAL

1. Application for individual service will be made at the District office, including a legal description of the property to be served. A plot plan may also be required. The minimum size of the service will be determined by the District. Hook-up fees will be paid before installation will be made. Any other charges incidental to the extension of service lines to the applicant's property will be paid by the applicant.
2. Meters shall be furnished and installed by the District in accordance with District policy at Owner's expense.
3. Meters generally shall be installed inside houses or buildings unless otherwise approved by District Management. A minimum of two (2) feet of clearance shall be required for meter accessibility.

4. Service depth shall have a minimum of four and one half feet (4.5) of cover.
5. No services shall be made within three (3) feet of the end of any pipe or any coupling.
6. Backflow devices, when required, shall be installed according to the District's Backflow Prevention Program. A minimum clearance of three (3) feet shall be required for access and maintenance of the appliance. All shall be installed after the metering devices.
7. No service shall be installed within the prescribed distance of a drain field as required per the Spokane Regional Health District. Where easements through property exist, a ten (10) foot clearance on each side will be required to the drain fields.
8. Bullhead taps shall not be allowed on any services.
9. All copper connections shall be compression type fittings. All galvanized connections shall be threaded fittings.
10. Pressure regulators will be required where water pressure exceeds 80 PSI and are to be installed by the homeowner downstream of the meter.
11. All services shall be individually tapped to the distribution main or service main. NO DOMESTIC SERVICE(S), BE THEY TEMPORARY OR PERMANENT, WILL BE PLACED ON PRIVATE FIRE MAINS, PRIVATE FIRE SERVICES OR DISTRICT-OWNED TRANSMISSION MAINS.

B. SERVICE SIZE AND PARTS

1. Single family dwellings will be limited to a single one (1) inch service with a single one (1) inch meter.
2. For duplexes, each side shall be limited to a single one (1) inch service with a single one (1) inch meter.
3. Condominiums shall be designed on an individual basis. Approval must be obtained prior to authorization of service.
4. Services for three or more living units shall have a two (2) inch service with a two (2) inch meter; however, each apartment house or apartment complex service shall be approved by District Management.
5. Spacer requirements for plumbers shall be as follows:
 - a. 1" meter . . . 16"
 - b. 2" meter . . . 24"
6. All meters shall have a gate valve or ball valve on both sides of the meter.
7. All meters set up in manifolds shall be individually valved before and after same.

8. Metered services which enter a building from two opposing sides shall have a double check valve assembly installed on the discharge side of the meter(s).
9. Commercial buildings, churches, schools and residential office buildings shall be serviced as follows:
 - a. Buildings of a single story, with one occupant, or a three thousand square foot main floor, shall have a two (2) inch service with meter size determined by District Management.
 - b. All single-story buildings over three thousand square feet containing one or more occupants or buildings having occupied basements and/or one and one half (1.5) stories in height or more, regardless of square footage, shall have a two (2) inch service with minimum size meter of one (1) inch. However, in each installation, the District Management shall approve said installation prior to authorization of service.
10. Portions of the Uniform Plumbing Code will be used to assist in design of commercial services.

11. SADDLES

- a. All services shall be made with the use of double strap saddles, using iron pipe thread only. Any exception must be approved by the District Management or District Engineer.
- b. Dresser style 193 quick tap shall be used on asbestos concrete class 150 pipe with copper tubing. All services requiring a diameter of two (2) inches or larger shall have the following saddles:
 - 1) Double strap saddles with wide band shall be used on steel, A.C., cast iron or P.V.C. pipe.
 - 2) Services four (4) inches and larger may be made by using standard pipe tees or stainless-steel tapping sleeves with gate valves used in place of taps.

12. CORPORATION & CURB STOPS

- a. Ball type compression corporation stops shall be used on one (1) inch taps. Mueller H-10013 male iron pipe (ball type) corporation stop shall be used for two (2) inch taps.
- b. A two (2) inch ball type curb stop shall be used on two (2) inch services. One (1) inch compression ball type curb stop will be used on one (1) inch service.

13. PIPE

- a. Two-hundred (200) PSI copper tube sized poly (CTS) or annealed copper Type K soft tubing only with a ten (10) or twelve (12) gauge solid copper insulated tracer wire shall be used on all one (1) inch services to the property line.
- b. Two (2) Inch Service Line Materials
 - i. CTS – Copper tube sized poly two-hundred (200) PSI with a ten (10) or twelve (12) gauge solid copper insulated tracer wire

ii. Galvanized Iron Pipe -Two (2) inch galvanized may be used on two (2) inch services. Swing joints are required at corporation stop. Two (2) inch top taps will not be allowed. Swing joints shall consist of not less than three (3) each ninety (90) degree elbows. Fittings shall be 150 PSI rated galvanized malleable pipe.

14. Taps on steel, P.V.C.-C.I.P. or A.C. pipe will have no gooseneck exceeding thirty (30) degrees.
15. Side taps of two (2) inches shall be made at ninety (90) degree angles on steel P.V.C.-C.I.P. or A.C. pipe.
16. Curb boxes for one (1) inch services shall be "Tyler" type adjustable box with capabilities from forty-five (45) to sixty-six (66) inches and shall be placed no less than five (5) feet inside property line.
17. The curb stop shall be no deeper than eighty-four (84) inches.
18. A three (3) foot clear radius around the curb box shall be maintained at all times.

III. WATER DISTRIBUTION

A. GENERAL

1. These specifications are intended for use in construction and as an aid to the licensed professional engineer in his design of facilities to become a part of the Whitworth Water District water system. All designs must be approved by Whitworth Water District prior to submitting to the Department of Health per WAC 246.190.220 and other State Department of Health rules and regulations pertaining to public water supplies.
2. All construction materials shall be new and unused and shall be approved by Whitworth Water District.

B. DESIGN FLOWS

1. Design flows will be the current flow required by either Spokane County Fire District No. 4 or Spokane County Fire District No. 9 plus maximum daily flow (see #5 below).
2. The District will review anticipated flow requirements for a new area to be served prior to final design of the system. Depending on the type of development, lot size, etc., requirements may vary and should be established before design of the system starts. Before the design phase starts, the District must verify that supply is available and anticipate the net effect of increased demand on the Whitworth system.
3. Minimum size of distribution mains shall be six (6) inches per Washington State Department of Health unless justified by hydraulic analysis per WAC 246.290.230.
4. A four-inch water line may be used under the following conditions:

- A. In cul-se-sacs where mains are less than 500' in length. Installation must receive prior approval of District Management.
 - B. Maximum number of services allowed to connect to the four-inch water line is ten (10).
 - C. No fire hydrants are allowed to connect to a four-inch water line.
5. Main sizing shall be based on a minimum residual pressure of 20 psi and a velocity of no greater than 8 feet per second at Peak Hourly Demand (PHD) plus required fire flow, and shall be determined by using 3500 gallons per day per connection times a peaking factor of 1.5.
6. RESIDUAL PRESSURE - Minimum of thirty (30) psi should be maintained at all curb stops during all design flows except fire flows.

IV. WATER MAINS

- A. Mains are to be installed across the front of the property, corner to corner. If a corner lot, the main shall be installed around the corner to the end of the property.
- B. For cluster developments, the water main shall be extended to the far edge of the total property, not just to the last lot served.
- C. Mains will be laid generally on the East and North side of streets, avenues, highways, and right-of-ways.
- D. Where mains are extended into private property, easements for construction and perpetual maintenance shall be obtained prior to construction and acceptance by the District. Easements shall be at least twenty (20) feet wide or as may be required by the District and shall specify no permanent buildings, fences or other structures be erected over water mains.
- E. Permits from appropriate agencies are to be the responsibility of the party undertaking construction and shall be obtained prior to start of all work.
- F. All mains shall have a minimum cover of four and one half (4.5) feet of earth cover. Where bottom of trench is found to have unstable soils, or is in rock conditions, an appropriate amount of material will be removed below the four and one half (4.5) feet, the depth being subject to District approval. Proper bedding material must also be used. Stones larger than one half (0.5) inch shall not be allowed within six (6) inches around any pipe.
- G. All shaping, backfilling and compacting shall comply with American Public Works Association Standards. Ninety-five (95) percent compaction shall be required in traveled areas and ninety (90) percent compaction required in non-traveled areas. Compaction shall be as calculated by the Modified Proctor Method (ASTM-D-1557). It is noted that most water mains will be placed in Spokane County right-of-way and their requirements may supersede the above stated District requirements. Settling of the trench within a period of one (1) year after completion of the work shall be incontrovertible evidence of

inadequate compaction and the developer shall be responsible for remedying the condition, including the replacement of surfacing materials, if necessary

- H. All workmanship shall be in compliance with all departments of all governmental agencies involved. Paving, cutting and replacement shall be in compliance with City, County and, and/or State road or street requirements.
- I. Water mains shall be installed, under normal conditions, above all sanitary sewer lines. When deviations occur, the water main shall be sleeved with pressure sewer pipe in accordance with Washington Department of Ecology guidelines.
- J. Water mains shall have a minimum clearance of fifteen (15) feet from all drain fields.
- K. Pre-made thrust blocks will be used and are to be sized to resist design flaws and pressures. Ninety-five (95%) percent compaction is required behind all thrust blocks.
- L. No field welding or torch cutting of pipe shall be allowed on coated pipe. All cutting shall be accomplished with a specific cutter. Welds shall be done in a shop and coatings equal to original reapplied.
- M. Badly bent or stressed pipe shall be removed from the job site and replaced. All damaged wrapping shall be repaired with coatings approved by District Management. In all cases the minimum accepted coating shall be Koppers Pankote "300" enamel or equivalent.
- N. Lead caulked, flared, soldered or solvent weld joints shall not be allowed. All joints shall be made with AWWA approved materials.
- O. Number 10 or 12 solid copper insulated wire shall be installed in a continuous strand above all pipe. Wire shall be brought up inside all valve boxes. Wire shall also be run with all non-metallic service pipe. Water tight connectors will be used on all splices. 3M DBR-6 or equal.
- P. All gaskets required between flanges shall be one-eighth (0.13) inch thick red rubber ring gaskets. They shall comply with AWWA specifications.
- Q. All mains and their appurtenances shall be hydrostatically tested at one and one half (1.5) times the normal operating pressure for a period of one (1) hour. No leakage will be allowed and all defects shall be remedied and the line retested until it complies with the above requirements. Final testing shall be done in the presence of the District's Inspector, Engineer, or authorized representative. All necessary equipment, gauges, tools, etc., for testing the installed piping shall be provided by the owner/developer.
- R. Disinfection of all mains shall be accomplished according to AWWA specifications. Mains shall then be flushed and a satisfactory bacteriological sample must be achieved prior to placing mains in service for domestic consumption as per Spokane County Health District requirements. All samples will be taken by District personnel.

- S. Any water main extension that has not been in service for longer than six (6) months will need to have new water samples taken. If the new water samples fail, re-chlorination of the water main will be necessary and done at the owner's expense.
- T. The safe disposal of chlorinated water will be the responsibility of the developer/contractor.
- U. All cuttings, taps and other such work will only be performed with the specific tools manufactured for that purpose.
- V. All fittings for underground installation shall be cement mortar lined ductile iron fittings (per AWWA #C-151).
- W. Fittings used inside buildings and vaults will conform to the following:
 - 1. Steel fittings used in pumping stations and vaults shall meet Federal specifications ASTM, A234, ASTM A105.
 - 2. Where standard AWWA approved ductile iron fittings are used, Federal Specifications shall also be met.
 - 3. Coating used shall be Speedex Primer Finish 562-356628.
- X. All connections to existing water mains will be done by District employees only.

V. TYPE OF PIPE

- A. All distribution and transmission lines of four (4), six (6) inch, eight (8) inch, ten (10) inch and twelve (12) inch sizes shall be AWWA C900 PVC pipe and/or AWWA C-151 ductile iron pipe.
- B. All mains larger than twelve (12) inches shall be ductile iron, in accordance with AWWA C-151.
- C. Service lines from mains to either the meter or District shutoff shall be two-hundred (200) PSI copper tube sized poly (CTS) or copper for all 1" services. Two-hundred (200) PSI copper tube sized poly (CTS) or galvanized iron pipe for all 2" services.
- D. All fittings shall be cement mortar lined ductile iron and shall be rated at the same working pressure and shall be designed for the pipe being installed.
- E. Standard fittings for coupling sections together will be used.
- F. ASBESTOS CEMENT PIPE OR COATED STEEL PIPE ARE NOT ACCEPTABLE.

VI. FIRE HYDRANTS

- A. Fire hydrants located on the District's distribution and transmission system are owned and maintained by the District.

- B. Unauthorized use of water from fire hydrants is prohibited and violators will be prosecuted.
- C. Hydrant installation shall be accomplished under the supervision of Water District personnel.
- D. PLACEMENT OF HYDRANTS
 - 1. The placement and number of hydrants for a lot, plat, building, or service area shall be determined by the fire department or fire protection district directly responsible for the fire protection of the area involved and will be placed on the construction print accordingly.
 - 2. Hydrants shall be placed at the edge of right-of-way or dedicated easement.
 - 3. Hydrants installed in traffic congested areas, or where damage feasibility is high, shall have adequate protection provided, and detail of the hydrant installation shown on plans.
 - 4. Hydrants will have four (4) foot clearance from all obstacles to facilitate water maintenance and fire department operations.
- E. All fire hydrants shall be traffic model type M&H, 29T, American Darling B62B, or equal, and must include the following features:
 - 1. Five and one fourth (5.25) inch main valve opening (M.V.O.).
 - 2. Two (2) ports (each two and one half [2.5] inch) for hose connections with National Standard thread (NST). Ports extending into nozzle barrel must be approved by District.
 - 3. Four and one half (4.5) inch pumper port (steamer) with Stortz connection. Port extending into barrel must be approved by District.
 - 4. Valves and covers shall open counter clockwise, one and one half (1.5) inch flat point pentagon operation and cap nuts. Minimum coefficient of hydrant to be 0.80.
 - 5. Hydrants shall be self-draining type with minimum five sixteenth (0.31) inch drain holes (2 each).
 - 6. Hydrants shall be painted chrome yellow.
- F. The barrel of the hydrant shall be set perpendicular to the ground with the bottom flange of the nozzle portion above the finished curb grade. Pumper port shall face the street.
 - 1. A minimum five (5) foot bury shall be used.
 - 2. If extensions are needed, a minimum length of six (6) inches and a maximum length of twenty-four (24) inches can be used.

3. Should the finished grade of a lot, block or plat be raised or lowered for any reason, cost to adjust hydrant to new grade shall be borne by contractor, developer or property owner.
- G. A twelve inch by twelve inch by four inch (12 x 12 x 4) bearing block (concrete) shall be installed beneath the shoe. A pre-made thrust block shall be installed at the foot between the shoe and undisturbed earth (trench side).
- H. One quarter (0.25) cubic yard of one (1) inch washed gravel shall be installed around the drain holes.
- I. Supply stub shall be six (6) inch, with a minimum length of five (5) feet. A six (6) inch gate valve shall be placed at the main.

VII. VALVES

A. BURIED

1. All gate valves shall be resilient seated with O-ring type packing glands and two (2) inch operating nut.
2. Valves twelve (12) inches and larger will be butterfly type with two (2) inch operating nut unless otherwise approved by District Management.
3. Valve boxes will be set so the bell on the bottom section is at the base of the operating nut only. Box shall not set on valve bonnet. Valve box bottom section barrel shall be not less than six (6) inches in diameter. If extensions are required, five (5) inch double hub soil pipe will be allowed; however, normal bottom sections must be used initially. The top of the bottom section must be inside the top section not less than four (4) inches and not more than ten (10) inches. Box shall be adjustable.
4. Valve boxes will be set to final finished grade. Where pavement, concrete sidewalks or curbs are to be installed, the contractor shall be responsible for the setting of boxes to final pavement grade. Final acceptance of these items shall not be given until this is completed and the top of the valve is accessible.
5. Top sections shall be minimum fourteen (14) inches in length having lip at the bottom of section and capable of holding Tyler 16T 6855/6865 series lid or equal.
6. Thrust or bearing blocks will be required wherever District personnel and/or Engineer require them to be placed.
7. All valves fourteen (14) inches and larger may be required to have a bypass line two (2) inch (minimum) with a two (2) inch gate valve in bypass line.
8. All valves shall open to the left only.

B. VALVES USED IN BUILDINGS AND VALVE PITS

1. Types of valves used and locations installed at well or booster pumps shall be approved by the District Engineer and shall comply with AWWA Spec C-500.
2. In-line valves for deep well pumps shall be placed in such a way that all meters, check valves, or surge chambers precede said valve. All appurtenances must be capable of being isolated for removal purposes.

C. VALVES USED WITH HYDRAULIC VALVES

1. Valves used in conjunction with hydraulic valves placed in vaults shall be approved by the District Engineer. Reduction valves shall be valved on both inlet and discharge sides and bolted directly to the hydraulic valve (this shall apply to all backflow prevention devices as well).
2. Hydraulic valves used for relief valve functions shall have a valve on the inlet side only.

D. VALVES USED FOR SECURING METER INSTALLATION

1. Valves used to isolate meters larger than 2" shall be resilient seating gate valves with hand wheels.

E. HYDRAULIC VALVES

1. Hydraulic operated valves may be used within District confines for reduction of pressure, relieving pressure, flow controlling, deep well pump(s) operation, booster pump(s) operation, etc. Those acceptable will be Clayton valves. In all cases the valves shall have stainless steel main stems. Pilot control adjustment must be capable of going down to 20 PSI in pressure reducing, flow controlling and relief valves.
2. All hydraulic valves shall have gate valves on inlet side. Pressure reduction valves shall be valved on both sides.
3. By-pass valves, where installed in combination with pressure reduction valves (PRV), shall be sized according to use.
4. Liquid filled pressure gauges with isolation valves shall be installed to indicate upstream and downstream pressure at all times for each valve.

VIII. BACK FLOW

- A. All devices must be State approved.
- B. All commercial services will have a minimum of a Double Check Valve Assembly after the meter.
- C. Minimum protection for a sprinkler system is a pressure vacuum breaker.

- D. All other backflow installation practices, devices and testing procedures will be in accordance with the District Backflow Prevention Policy and State Drinking Water Regulations. Copies of this policy and the regulations are available from the Whitworth Water District office.

IX. METER VAULTS

- A. All meter vaults shall be approved by District Management staff prior to installation.
- B. Manifold meters, protectus meters, large compound meters and mainflow meters when placed in vaults shall be installed in facilities which have the following clearances:
 - 1. Minimum clearance around sides and bottom of three (3) feet.
 - 2. Total minimum inside height of seven (7) feet.
 - 3. Minimum inside width of four (4) feet.
 - 4. Minimum inside length of six (6) feet.
 - 5. Steps shall be integrated into all vaults.
- C. All vaults constructed for traffic bearing conditions inside Washington State Highway right-of-ways shall have written approval of the local Washington DOT District Engineer's office when they are outside corporate limits of cities or towns. Those vaults to be constructed within the confines of the City of Spokane shall submit plans for written approval to the Director of Public Works office thirty (30) days prior to construction.
- D. Those vaults constructed within the Spokane County right-of-way shall have the approval of the County Road Engineer's Office.
- E. In all cases the District minimum requirements for traffic bearing vaults shall be the same as Section A-2, with six (6) inch walls having one half (0.5) inch reinforcement rod. The lid shall meet any or all road "load" requirements, as approved by the appropriate governmental agency. An adequate size hatch must be provided so any installed equipment can be removed. Hatch shall be capable of being opened by one person.
- F. Meter vaults shall have no bottoms and shall have crushed, washed gravel installed for drainage. The lid on meter vaults shall be placed over the steps of the vault unless otherwise approved by District Management.
- G. Pipe installed within ten (10) feet of the inlet side or discharge side of meter vaults(s) shall be either two (2) inch galvanized pipe or ductile iron pipe if larger than two (2) inches.
- H. A flexible coupling shall be installed on inlet and discharge pipe outside of and within three (3) feet of structure (to prevent bending/shear on pipes due to settlement, vibration, etc.).

X. POWER AND ELECTRICAL INSTALLATIONS

- A. All electrical service to buildings shall be capable of handling full operating and full starting load requirements. The service(s) shall be three phase.
- B. Master switch(es) shall meet all overload requirements.
- C. Electrical driven units shall have individual disconnect switches and fuses.
- D. Lighting shall be fluorescent tube type with heavy duty ballasts.
- E. All electrical designs shall be approved by the District Engineer prior to start of construction.
- F. District approved phase protection devices shall be installed on all pump motors. They shall be installed so that each motor will have an individual device placed two (2) feet above the floor.
- G. All electrical work shall meet the latest edition of the National Electrical Codes(s).
- H. All WISHA/OSHA requirements shall be adhered to in all construction.
- I. All electrical installations and equipment must be provided with lightning and surge protection.
- J. Washington State's Electrical Installations Law, RCW 19.28, paragraph RCW 19.28.010, requires that all electrical equipment be labeled and listed by an independent testing laboratory. Each piece of equipment or assembly must have a label from one of the following agencies:
 - 1. Underwriters' Laboratory
 - 2. Canadian Standards Association
 - 3. American Gas Association
 - 4. Factory Mutual System
 - 5. Applied Research Laboratories
 - 6. Electrical Testing Laboratories
 - 7. MEI Electrical Testing Corporation

XI. CONTROLS

- A. Control panels and specifications will be reviewed and approved by both Whitworth's Engineer and Electrical Engineer.
- B. Wiring diagrams, catalog cuts and complete operation and maintenance manuals will be provided for any control installations and equipment.

- C. All control installations and equipment must be provided with lightning and surge protection devices.

XII. PUMPING STATIONS

- A. Minimum distance between pumping unit(s) and inside edge of outside wall or other obstructions shall be four (4) feet.
- B. Minimum distance between piping and appurtenances and inside edge of outside wall or other obstructions shall be four (4) feet.
- C. Inside building height shall be not less than eight (8) feet.
- D. Vertical motors extending above six (6) feet shall have a minimum clearance of four (4) feet above top cover.
- E. Where removal of pumps and motors is required by means of overhead equipment, a hatch shall be installed. Hatches shall have a minimum inside dimension of four (4) square feet.
- F. Hatches shall have outside covering of 14-gauge sheet metal galvanized and shall be insulated with spun glass type insulation.
- G. Doors shall have a minimum width of three (3) feet. Doors are to be sized to allow removal of all equipment installed in building. Locks for doors will be furnished by the District.
- H. Acceptable engineering standards shall be used for designing the facility. Design is to include the building operating environment, heating or cooling units, drainage, electrical installation, type of construction and aesthetics.
- I. All construction designs, etc. shall conform to all Spokane County, State and Federal codes.
- J. Designs and plans shall be reviewed and accepted by the District prior to construction.
- K. The District Engineer will approval all designs prior to construction.

XIII. WORKMANSHIP AND MATERIALS

All construction work shall be performed by workers skilled in the trade at which they are performing and completed work shall be neat, sound and particularly suited for its intended use. All materials shall be new and unused and specifically designed for its intended use. If, in the opinion of District Management or their authorized representative, the completed work does not show a degree of craftsmanship, materials used are inferior or otherwise not suited for use in the District's Water System, or other makeshift connections, devices, or other appurtenances have been installed, then he shall have cause to reject the work. All such rejected work shall be removed and replaced to the District's satisfaction and at the owner/developer's expense.

XIV. STANDARD SPECIFICATIONS

- A. Unless specifically stated otherwise herein all work shall be performed in accordance with the Standard Specifications for Road, Bridge, and Municipal construction as prepared by the Washington State Department of Transportation and American Public Works Association (APWA), latest edition.
- B. Unless specifically stated otherwise herein, all materials shall conform to the American Water Works Association Standards (AWWA)