

TABLE OF CONTENTS

PART 3

3.1	GENERAL	2
3.2	SUBMITTALS	2
3.3	DESIGN REQUIREMENTS	2
3.4	PRODUCTS	2-6
3.5	INSTALLATION	6-8
3.6	TESTING	9
3.7	DISINFECTION	9-10
3.8	WARRANTY	11
3.9	AS-BUILTS	11

CITY OF LAKE WALES

WATER SYSTEM STANDARDS

3.1 General

Contractor shall furnish all labor, equipment, and materials and shall perform all operations in connection with installation of a complete water distribution system ready for use in accordance with the specifications and the City's requirements, either specific or implied. This includes any and all restoration required to duplicate original site conditions prior to the commencement of construction. All excavation, trenching and backfill for the installation of underground piping systems shall be conducted as specified hereunder. All standards cited shall be the latest edition at the time of project design. In addition, the installation of a jumper meter will be required for all new developments.

3.2 Submittals

Two (2) copies of shop drawings shall be submitted to the City Utilities Department for review on all materials. The City retains the right to refuse any proposed substitution.

3.3 Design Requirements

3.3.1 Minimum Line Size

All new water mains shall be a minimum of six (6) inches in diameter. Where water mains serve less than six lots and fire flow is not required, and there is no possibility of a future extension, the water main size may be reduced, at the discretion of the Utilities Department, to four (4) inches. All mains shall be looped for uniform flows throughout the system.

3.3.2 Looping of Distribution System

It is the City's policy that all new water lines shall be looped to minimize dead-end conditions and the need for flushing of the system. Wherever possible, lines shall be looped to provide at least two points of connection to the existing system. Where this is not feasible, as determined by the City Utilities Department, then easements and/or rights-of-way shall be provided to facilitate looping as future construction allows.

3.4 Products

3.4.1 Materials

- (1) All materials shall be new, of first quality manufactured in the United States, and shall conform to the appropriate AWWA standard.
- (2) All materials in contact with potable water shall be certified to comply with NSF Standard 61. These include piping, tank interiors, pump, and valve components.

3.4.2 Ductile Iron Pipe

- (1) Shall comply with the requirements of AWWA C150.
- (2) All underground pipes shall be a minimum of Class 350 with push-on or mechanical joints, in accordance with AWWA C111, unless otherwise indicated. Where cover exceeds 4.5 ft. The pipe manufacturer shall determine the additional wall thickness required, if any. All above-ground pipe to be Class 53 with flanged joints. Flanged joints shall be #125 standard with full-face rubber gaskets.
- (3) Pipe manufacturing shall be in accordance with AWWA C151.
- (4) Pipe shall be cement lined/bituminous coated in accordance with AWWA C104.

CITY OF LAKEWALES WATER SYSTEM STANDARDS

(5) Polyethylene encasement meeting the requirements of AWWA C105 shall be utilized on all ductile iron pipes installed in corrosive soils.

3.4.3 Polyvinyl Chloride (PVC) Pipe

(1) Four- (4) inches diameter to twelve (12) inches diameter shall be Class 150 pipe meeting the requirements of AWWA C-900-89 with a minimum SDR of 18 (blue only).

(2) PVC pipe larger than 12 inches shall meet the requirements of AWWA C-905, with a cast iron pipe outside diameter. Pipe shall have a pressure rating of 165 psi, and shall have a SDR of 18 (blue only).

(3) Each length shall be clearly labeled so as to allow identification and specification conformance. Pipe shall bear the National Sanitation Foundation Seal for potable water pipe.

(4) All PVC pipe shall be blue in color.

(5) Connection for PVC water pipes 4" to 10" and larger shall be rubber compression ring type. Bell shall consist of an integral wall section with a solid cross-section elastomeric ring, which meets the requirements of ASTM D1869. Bell section shall be designed to be at least as strong as the pipe barrel.

(6) PVC water pipe two- (2) inches diameter and smaller shall conform to ASTM-2241 with an SDR of 21 schedule 40 equal or better.

(7) Tracer wire shall be blue 12-gauge UF wire with joint seal.

(8) Caution tape should be placed 2 ft above the newly installed water line. The tape should be 3-in in width.

3.4.4 Polyethylene Water Service Tubing

Polyethylene tubing shall comply with PEP 3406 and ASTM Designations D-1248 (Materials), D-2737 (Tubing). Tubing shall be approved for potable water service by the National Sanitation Foundation and bear the NSF seal. The product shall be rated for a minimum working pressure of 160 psi and the standard dimension ratio (SDR) shall not exceed 9 for poly tube size. Fittings shall be brass equipped with compression type connections, "Insta-Tite", as manufactured by Mueller Company, Ford Company, or an approved equal.

3.4.5 Fittings

(1) All fittings shall be rated for not less than 150 psi working pressure.

(2) Grade for ductile-iron fittings shall conform to AWWA Standard C110 or AWWA C111/A21.11, and shall be cement lined inside and bituminous coated outside. Mechanical joint ductile-iron fittings complying with AWWA C153 are acceptable.

(3) Restrained joint assemblies (with mechanical joint pipe) shall be ductile iron mechanical joint retainer glands as manufactured by U.S. Pipe Company, M&H Valve Company, Mueller Company, or approved equal.

(4) Malleable iron fittings shall be brass conforming to the applicable provision of Federal Specification WW-P-521D, Type II, and may be used in sizes two (2) inches and under only.

3.4.6 Gate Valves

(1) Gate valves two (2) inches and over shall be of the resilient wedge type epoxy coating on the interior and exterior and shall be in accordance with AWWA C509 with O-ring type stem seal and two (2) inch square operating nut for buried services. Valves shall be mechanical joints unless otherwise noted and open left (counter clockwise). Gate valves for above-ground

CITY OF LAKEWALES WATER SYSTEM STANDARDS

service shall be outside screw and yoke (OS&Y), rising stem type with cast iron hand wheels.

(2) All valves shall be American made; minimum 150-psi cold water rated and shall be cast with manufacturer's name and pressure rating.

(3) Underground valve identification (UVI) markers shall be provided at each valve location as shown in the details. Gate valves operation nut shall always be a depth of no more than 4-ft. In areas where depth of the operating nut is greater than 4-ft, allowances should be made to install extensions, to maintain the required 4-ft depth for easy accessibility.

3.4.7 Butterfly Valves

(1) Butterfly valves shall meet all requirements of AWWA C504 and shall be of the tight-closing rubber seated type. Valves shall be rated at 150 psi and shall be bubble-tight in either direction at rated pressure. Valves shall be suitable for throttling service and/or operation after long periods of inactivity.

(2) Valve bodies shall be constructed of cast iron ASTM A-126, class B, with ends as indicated on the drawings. Valves shall not be of the wafer or lug type and must have a full valve body with internal cast-iron travel stop. Valve disc shall be ductile iron with 18-8 stainless steel edge or aluminum bronze ASTM B-148 952. Shaft shall be solid 18-8 stainless steel meeting AWWA C504 requirements. Seat shall be EPDM natural rubber or Buna and shall be mechanically retained in the valve body. Seat shall be field replaceable. Permanently attached or vulcanized seals are not acceptable. Shaft bearings shall be of the self-lubricating, corrosion resistant type. Bearings shall be designed for horizontal or vertical mounting. Packing shall be bi-directional and self-adjusting.

(3) Valves shall be hydrostatically and leak tested in accordance with AWWA C-504. Submit results to Engineer.

(4) Butterfly valves shall be Mueller, M&H Valve, American Darling Valve or approved equal.

(5) Provide actuator suitable for proposed service, underground or above-ground. Provide geared actuator for all butterfly valves larger than 6" size.

(6) All mechanical joint end valves shall be furnished complete with all required accessories, including bolts, nuts, gaskets, and glands.

3.4.8 Valve Boxes

Boxes shall be cast iron of standard design with adjustable drop section to fit disc or cover over valve. Interior diameter shall be not less than five (5) inches, with cast iron cover marked "WATER". Provisions must be made to install water main and service line markers on top of curb for easy identification.

3.4.9 Fire Hydrants

Shall be in compliance with AWWA C502 and the following requirements

(1) Dry barrel compression type.

(2) O-ring seal at operating nut stem and means for lubrication.

(3) Traffic model with flangible sections at ground line.

(4) Open left (counter clockwise).

(5) Two-2 1/2 inch hose nozzles and one 4 1/2 inch pump nozzle with National Standard threads.

(6) Main valve openings shall be not less than 5 1/4 inches.

(7) Paint shall be one (1) coat primer and two (2) coats finish to match City standard.

CITY OF LAKEWALES WATER SYSTEM STANDARDS

- (8) Pipe outlet shall be six- (6) inch mechanical joint.
- (9) Operating nut shall be pentagonal measuring ID inch point to flat.
- (10) All hydrant leads shall be valved, not to exceed 10-ft.
- (11) All hydrants shall be installed plumb and in true alignment with the connection pipe to the water main. A minimum of 18" clearance shall be provided between hose nozzles and finish grade.
- (12) Acceptable are Mueller Centurion A-423 or Kennedy K-81D. (no substitutes)
- (13) Flow test required. Shall be performed by contractor in the presence so the Fire Marshall. If city staff is required to do flow test, contractor will be charged at the rate of \$75.00 per hydrant.
- (14) Installation of fire hydrant should be no deeper than 4 ½ inches in depth.
- (15) Sample points shall be installed to the rear of each hydrant per City specifications for future testing.
- (16) There shall be no trees, shrubs, etc. planted around the fire hydrants or gate valve clusters to also include water mains.

3.4.10 Valves and Hydrants

- (1) Set valves on solid bearing.
- (2) Extension stems shall be provided on all valves where the operating nut is more than three feet below finish grade, with sufficient extension to place the operating nut between 24 and 36 inches below finish grade. Provided approved stem guides in valve boxes.
- (3) Center and plumb valve box over valve. Set box cover flush with finished grade. In unpaved areas, pour concrete pad 24" x 24" x 6" around valve box.
- (4) Prior to installation all hydrants should be inspected for direction of opening, nozzle threading, operating nut and cap-nut dimensions, tightness of pressure containing bolting, cleanliness of inlet elbows, handling damage and cracks. The contractor asserting the inspection must submit a report.
- (5) Set hydrants plumb and locate pumper nozzle facing the roadway.
- (6) Hydrants shall be set at the bury line with a minimum of 18" clearance from the hose connection to finish grade.
- (7) At each hydrant a control valve, not to exceed 10 ft, shall be attached directly to the water main by a gland, swivel tee, or a tapping saddle as approved by the City and must face away from the road to prevent any accidents in case of a break.
- (8) Hydrants shall be painted in accordance with City requirements.
- (9) All valves, hydrants, and major interconnections must be GPS identified.
- (10) Privately maintained hydrants shall have a base hydrant color of red. Publicly maintained hydrants shall have a base color of yellow.

3.4.11 Marking of Hydrants

- (1) Marking of hydrants should always include hydrant number for easy identification.
- (2) Classifications of Hydrants: Hydrants should be classified in accordance with their rated capacities as follows:

CITY OF LAKEWALES WATER SYSTEM STANDARDS

- (a) Class AA- Rated capacity if 1,500 GPM or greater.
 - (b) Class A- Rated capacity of 1,000-1,499 GPM.
 - (c) Class B- Rated capacity of 500-900 GPM.
 - (d) Class C- Rated capacity of 499 GPM or less.
- (3) Hydrant Color Code: All hydrant barrels are to be painted yellow. The top and nozzle caps should be painted with the following capacity indicating color to provide simplicity consistency.
- (a) Class AA- Light blue
 - (b) Class A- Green
 - (c) Class B- Orange
 - (d) Class C- Red

For rapid identification at night, it is recommended that the capacity colors be of a reflective type paint.

3.4.12 Steel Pipe Sleeves and Carrier Pipe

(1) All construction projects requiring steel sleeves shall conform to the minimum D.O.T requirements for roadway crossings. Railroad crossings shall conform to railroad requirements. The following casing sizes shall be used for the corresponding carrier pipes:

CARRIER PIPE (Normal OD.)	STEEL CASING (Required Dia.)
6"	12"
8"	16"
10"	20"
12"	24"
16"	36"
20"	40"

- (2) Casing pipe shall be steel and conform to the requirements of AWWA Standard C-200.
- (3) Joints shall be butt welded in accordance with requirements of AWWA Standard C-206.
- (4) The pipe shall be coated externally with coal-tar primer followed by hot coal-tar enamel in accordance with AWWA Standard C-203.

3.4.13 Air-Vacuum Valves

Shall be constructed with cast iron body and cover, stainless steel float and Buna rubber seat. All interior parts shall be stainless steel or bronze. Shall be Model No. 200 as manufactured by Apco Valve and Primer Corporation, Schamburg, IL, or Clow Style 5401. The Utilities Department as required shall size valves.

3.4.14 Meter boxes

The contractor shall supply and install meter boxes to finish grade. All boxes must be located within the right-of-way and boxes must not conflict with sidewalks or driveways. The City shall determine type and size of meter boxes to be supplied.

3.4.15 Corporation Stops and Curb Stops

Units shall be brass, equipped with connections compatible with the connection service pipe type, in accordance with AWWA Standard C-800. Corporation stops shall be Type F-I 101, as manufactured by the Ford Meter Box Company, or approved equal. Curb stops for double services shall be Catalog Number UVBS43-42W and for single services shall be Catalog Number B43-342W, or approved equal. All curb stops shall be furnished with provisions for

CITY OF LAKEWALES WATER SYSTEM STANDARDS

locking. **Master locks keyed alike must be supplied to the City's Utilities Department from the manufacture. Contact Utilities personnel for the correct key number.**

3.4.16 Backflow Preventors

- (1) The assembly shall be of the reduced pressure type, with shut-off gate valves provided at each end, and shall comply with the applicable provisions of AWWA Standard C-506. All hose bibs shall have a Watts 8A BFP-8 or equal vacuum breaker installed.
- (2) Minimum backflow device on any irrigation applications shall be a (PVB) Pressure Vacuum Breaker or better.

3.4.17 Expansion Joints

Pipe expansion joints shall be suitable for the applicable service with a minimum of 150-psi working pressure and shall be Style No. 500, as manufactured by Mercer Rubber Company, or approved equal.

3.4.18 Flanged Coupling Adapters

Units shall be manufactured by Smith-Blair, South San Francisco, California, Ford meter box company or approved equal. Model Numbers shall be Type 912, for pipe sizes to 12"; and Type 913, for larger sizes; and shall be compatible with ANSI Standard, 125 lb. flanges.

3.4.19 Cast Couplings

Units shall be as manufactured by Smith-Blair, Inc., South San Francisco, California, or approved equal, as follows: Type 431 (connecting equal outside diameter pipes); Type 433 (connecting equal size pipes with variations in outside diameter); and Type 435 (reducing coupling). Gaskets shall be suitable for the special applications.

3.4.20 Tapping Sleeves and Crosses

Sleeves and crosses shall be of full seal type with outlet flange standard. All bolts are to be stainless steel.

3.4.21 Service Saddles

Saddle shall be double strap all stainless steel.

3.5 Installation

3.5.1 Preparation - Remove scale and dirt, on inside and outside, before assembly.

3.5.2 Pipe and Fittings

- (1) Trenches shall be maintained in a dry condition at all times unless otherwise approved by the City's Inspector.
- (2) Swabs shall be installed during installation for flushing purposes.
- (3) Maintain 6-inch minimum horizontal or 12-inch minimum vertical separation of water from sewer piping in accordance with State requirements. Sewer should always be below water on vertical separations.
- (4) Install pipe to indicated elevation to within tolerance of 5/8 inches. Minimum cover shall be 36-inches unless otherwise stipulated or authorized by the City.
- (5) Install ductile iron piping and fittings to comply with requirements of AWWA C600. Install PVC Piping to comply with Uni-B-3 recommended practices. All tapping shall be done with a tapping machine designed for this specific service. All pipe cutting shall be accomplished by

CITY OF LAKEWALES WATER SYSTEM STANDARDS

power-operated abrasive wheel or saw cutters.

- (6) Route pipe in straight line, except as noted. Deflections from a straight line or grade are not allowed, except with fittings.
- (7) Install pipe to allow for expansion and contraction without stressing pipe or joints.
- (8) Install access fittings to permit the disinfection of the new water system.
- (9) All fittings and valves shall be restrained with megalug or equal retainer glands. All stubs shall be restrained with a minimum of 80 lineal feet of pipe beyond the valve. Where this is not possible, utilize City approved retaining glands.
- (10) A blue-coated 12-gauge UF solid tracer and joint seal shall be installed along all pipe and up to meter services. Tracer wire shall be taped to the pipe and stubbed up at all hydrants and valves.
- (11) Pipe shall be laid in a level trench. Hand trim excavation for accurate placement of pipe to elevations indicated. The width of trenches for installation of all lines shall be in accordance with the pipe manufacturer recommendations, OSHA safety requirements, and all applicable codes. Trench widths shall not be less than necessary for safe and proper construction. Where required, excavation support systems shall be provided.
- (12) Installation and restoration operation under roads, shoulders or other level areas shall be performed in compliance with any City, County or State requirement, which ever may apply.
- (13) Every effort shall be made to cover pipe ends during installation and a watertight plug or other approved seal must be used when installation is not in progress.
- (14) The inspector, to minimize public inconvenience or danger to life or property, may limit length of an open trench on existing roads.
- (15) At the completion of pipe installation, contractor must pig lines to clean and remove any foreign debris from water main prior to doing disinfection.

3.5.3 Service Lines

- (1) Water installation shall include service stubs at alternate lot lines or other locations as required by the City Utilities Department. **Meter boxes must be provided and installed to finish grade. All meter boxes must be located in the right-of-way outside of sidewalks and driveways.**
- (2) In all cases, a gate valve shall immediately adjoin the main connection and a second gate valve, equivalent in size to the service crossing, shall be provided at termination adjacent to the property line or other specified point. This valve should be approximately 12" deep, buried and staked. Valve boxes are required in either case and are also required in all paved areas.
- (3) Services shall not exceed 10-ft from meter. Meters should generally be placed at the front property corners. All services must branch off from a 2" minimum tap into the main.
- (4) Road crossing services shall be run diagonally to the respective property corners to avoid having valves in driveway.
- (5) A blue-coated #12 gauge UF solid tracer and joint seal shall be installed along all pipe and services. Tracer wire shall be taped to the pipe and stubbed up at all hydrants and valves.
- (6) The City at the Developer's expense will install all meters. Developer's contractor will be responsible for the installation of meter fittings as illustrated in the City's details.
- (7) Construction plans shall include a typical meter installation for each size meter to be installed. (See City details) Where applicable, developer shall provide dual metering to accommodate potable water service separate from irrigation. The proper sizing for service

CITY OF LAKEWALES WATER SYSTEM STANDARDS

lines is the responsibility of the Developer's Engineer. Meters will be available in the following sizes ¾", 1", 1-1/2", 2" and larger sizes as necessary. Each meter will require a meter box to be installed at finished grade away from roadways, sidewalks, and driveways by the Developer's contractor.

3.5.4 Connections to Existing Lines

(1) All connections to existing City water mains up to 6-inches in size shall be performed by the City at the developer's expense. All connections over 6-inches shall be made under the direction of the City at the developer's expense.

(2) Where connections are required to be made between new mains and existing water mains, the connection shall be made in a thorough and workmanlike manner using proper materials, fittings, and labor practices to suit the existing materials and conditions.

(3) Where a connection is made to an existing fitting, the contractor shall schedule his work so that the excavation and location of this existing fitting can be completed prior to starting trench work on the line.

(4) The Contractor under the direction of the City shall do all taps to existing lines in the presence of the City's Utilities Inspector, unless otherwise approved.

(5) Whenever it is required to interrupt existing water supplies to residences or businesses, the contractor shall notify all concerned parties or agencies at least 72 hours in advance of such cut-off. Contractor must first obtain approval from the Director of Utilities.

3.5.5 Terminations

No distribution line shall be terminated without a hydrant or a blow-off. Blow-offs shall be one-half the size of the distribution main and shall be constructed with galvanized or ductile iron pipe and fittings and enclosed in a meter box in accordance with the City's standard details.

3.5.6 Jacking and Boring

The boring and jacking operations shall be done simultaneously with correct line and grade carefully maintained for the casing. Holes for casing shall be bored with an auger mounted inside the pipe with the auger extending a short distance beyond the lead end of the pipe to preclude caving. Excavation for jacking pits or shafts shall be in accordance with the applicable section of these specifications. Carrier pipe shall have mechanical joints or push-on joints with field lock gaskets followed by 1390 restrainer for pipes 4-inches through 12-inches to prevent damage to either carrier or casing pipe. Ends of the casing pipe shall be sealed with Thunderline Link-Seal after installation of carrier pipe. All road crossings must have a MJ gate valve on each side of the road.

3.5.7 Directional Bores

Refer to Part 7 of City of Lake Wales Standards. HDPE shall be allowed on a case by case basis. Approval shall be obtained from the Utilities Director or a designated representative.

3.6 TESTING

3.6.1 A 48-hour notice must be provided to the City prior to testing. After installation is completed, the system shall be filled with water and flushed at the highest obtainable velocity and at the furthest points. Velocity must be at least 2.5 feet per second. All air must be expelled. A pressure of at least equal to the City's existing system (**150 PSI**) shall be maintained for a period of two (2) hours. Flushing of the system and control of the connecting valve shall be under the direct control of the City's inspector. All connections and pipe for fire service shall be flushed prior to entering the structure. Flushing must be accomplished by

CITY OF LAKEWALES WATER SYSTEM STANDARDS

partially opening & closing valves and hydrants several times under expected line pressure. No flushing shall take place through backflow preventers. Should the system appear tight, the leakage test may begin.

8.6.2 Testing shall conform to AWWA C600.

(1) Test continuity of tracer wire. Refer to 7.7

(2) Hydrants shall be flow tested at contractor's expense. They must also be painted to the National Fire Standard color code before final acceptance.

(3) Engineer must provide contractor with completed testing form. The City is not required to provide this to the contractor.

3.6.3 The contractor will pump his lines to a pressure equal to or greater than 150 psi. Should pressure fall below 145 psi during the test period, it shall be voided and restarted. Test period shall be two hours.

3.6.4 Hydrostatic Testing requirements shall conform to AWWA C-600-93 for ductile iron water mains & AWWA C-605-94 for PVC Pipe water mains.

3.7 DISINFECTION

3.7.1 Before any portion of the newly installed system can be placed in service, all mains and appurtenances shall be thoroughly disinfected and tested.

3.7.2 Procedures to be used shall conform to AVVWA Standard C-651 -92. Pertinent requirements are as follow:

(1) Chlorine solution shall be added to ensure a 50-PPM residual in all portions of the system. Inspectors may designate points where residual is measured.

(2) Retention time shall be not less than 24 hours.

(3) A minimum 25-PPM chlorine residual must remain at the end of the 24-hour period.

(4) Chlorine may be used in the following forms:

(a) Liquid chlorine as gas/water mixture through an approved solution-feeding device.

(b) Sodium Hypo chlorite in a packaged liquid form with 5% to 15% available chlorine.

(c) Calcium Hypo chlorite in a dry form (powder or tablets) with 80% available solution such as HTH or Perchloron.

3.7.3 After the disinfection process has been completed; all lines shall be thoroughly flushed to a condition equal to the normal base residual.

3.7.4 Copies of satisfactory bacteriological analysis (a.k.a. Main Clearance) must be taken within 45 days of completion of construction, from representative points within the distribution system to be cleared. Samples shall be taken on two consecutive days at least 6 hours apart with sample location and chlorine residual readings clearly indicated on report (AWWA 651). Such sample points should include:

1. One set of samples from every 1,200 feet of the new water main.

2. One set from the end of the line (each line).

3. One set from each branch.

4. One set from connection of proposed to existing.

3.7.5 A Letter of Clearance will be required from the Polk County Health Department before the City

will provide service.

3.8 WARRANTY

All portions of the installed water system and site restoration shall be fully guaranteed against material defects of improper workmanship for a period of one year from acceptance by the City. During this time, repairs will be made by the developer at no cost to the City. Any repairs made on the newly installed system by the City during this period will be charged to the developer.

3.8 AS-BUILTS

The engineer of record, or such Registered Engineer as may apply, shall submit to the to the City two sets of certified "As-Built/Record Drawing" (Blueprint), one set on mylar and one set on electronic media compatible with the City systems shall be provided to the Utilities Department for the water system. The "As-Built" shall contain a certification from a registered Engineer in the state of Florida that indicated that the project has been substantially completed in accordance with the approved plans and specifications, or that the deviations noted on the "Record Drawings" will not prevent the project from complying with the design function of the project.

In order to effectively comply with this requirement, it would be necessary for the certifying Engineer to have provided periodic review and inspection of the installation of those facilities within the project. The Engineer may supplement his review and inspection of the project by utilizing information taken from a valid survey. The "As-Built/Record Drawings" shall provide information on project facilities that indicates sufficient horizontal and vertical dimensional data so that the constructed improvements may be located and delineated. All dimensions both horizontal and vertical shall be placed on the "As-Built/Record Drawings" and certified by a Professional Surveyor or Mapper and Professional Engineer before submitting to the City.

"As-Built/Record Drawings" that contain disclaimers that essentially render the Professional Engineer's certification meaningless will not be accepted.