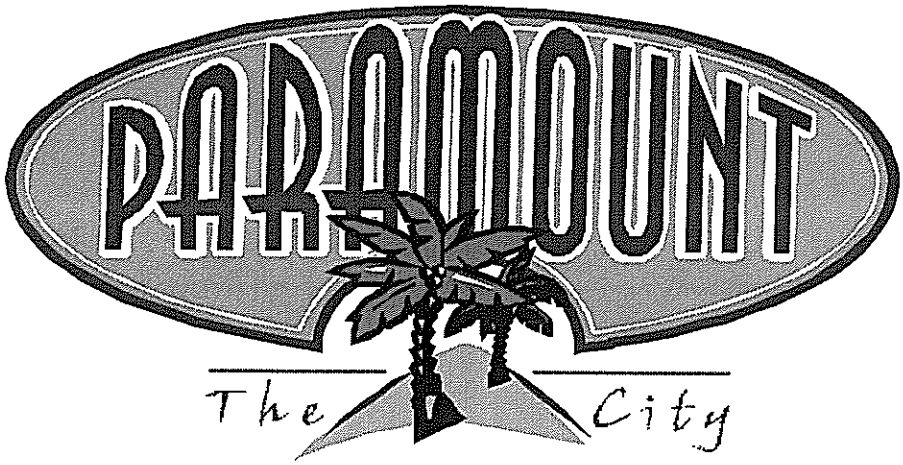

Standard Drawings and Specification for City of Paramount Water System

City of Paramount
Public Works Department
Water Division

August 2008

CITY OF PARAMOUNT WATER STANDARDS

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W-28	Water Quality Sampling Station

CITY OF PARAMOUNT
WATER MAIN CONSTRUCTION NOTES

SECTION 100

CITY INSPECTOR SHALL BE NOTIFIED OF ANY AND ALL WATER SYSTEM CONSTRUCTION 48 HOURS PRIOR TO BEGINNING CONSTRUCTION AT (562) 220-2020.

100.1 Materials shall be handled and installed in a workmanlike manner by a contractor holding a valid Class A or C-34 Specialty License from the State of California.

100.2 Excess material shall be returned to the City Yard prior to final approval.

100.3 Normal working hours are 7:00 a.m. to 3:30 p.m. Monday thru Friday, excluding City-observed holidays. The City Inspector shall be notified 48 hours prior to any work.

100.4 Polyvinyl Chloride water mains shall be installed in accordance with A.W.W.A. Standard for "Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water", C-605 latest version and the "City of Paramount Standard Drawings for Municipal Water System".

100.5 Pipe and fittings: Water pipeline materials in the City of Paramount shall be polyvinyl chloride (PVC) pressure pipe with push-on type joint with a nominal laying length of eighteen (18) feet in accordance with AWWA Standard C-900. The fittings shall be push-on type or mechanical joint end connections.

100.6 Ductile Iron water mains and appurtenances shall be installed in accordance with A.W.W.A. Standard for "Installation of Ductile-Iron Water Mains and their Appurtenances", C-600 latest version and the "City of Paramount Water Standards".

100.7 Pipe and fittings: When required, water pipeline materials in the City of Paramount shall be ductile iron pipe with push-on type joint with a nominal laying length of eighteen (18) feet in accordance with AWWA Standard C-151. The fittings shall be push-on type joint, mechanical joint or flanged end connections.

100.8 Trench excavation. The pipeline, fittings, and appurtenances shall be installed at a minimum depth of three and one-half (3.5) feet of cover relative to finished grade unless otherwise indicated on construction plans. An excavation permit shall be required for any excavation within public right-of-way.

100.9 Backfill:

Pipe Zone: Backfill within the pipe zone, four (4) inches below to twelve (12) inches above the pipe, shall be imported sand with a sand equivalent of 30. Imported sand used in the pipe zone shall conform to SSPWC Section 200-1.5.1 and shall meet the following gradation: 100% passing 3/8-inch sieve and not more than 20% passing a 200-mesh. Certification that the sand meets this requirement shall be provided.

Trench Zone: The trench zone includes the portion of the trench from the top of the pipe zone to the bottom of the pavement structural section in paved areas or to the existing surface in unpaved areas. Native or imported earth backfill acceptable for use, shall be fine-grained material free form roots, debris and rocks with a maximum dimension not larger than 4-inches

Rocky or unsuitable bedding and backfill material shall be replaced with gravel or crushed stone. Crushed and/or naturally occurring rock shall conform to SSPWC Section 200-1.2 and shall have the gradation for 1-1/2-inch rock meeting the following gradation:

100 to 90% passing 1-1/2" sieve, 55 to 30% passing 1" sieve, 15 to 0% passing ¾" sieve and 05 to 0% passing a 3/8" sieve.

Compaction shall be completed to the satisfaction of the City Inspector, and no case shall be less than 90% to relative density for all backfill.

100.10 Main line taps: All main line taps 4-inches and greater in diameter to existing City mains shall be made by City crews and charged to the project. The project shall be responsible for excavation and backfill, maintaining temporary patch, compaction of backfill material, raising of valve box to finish grade, and permanent pavement surrounding the valve box.

100.11 Hydrant assembly: Hydrants shall be installed per Standard Drawings W-5 and W-6 where required.

100.12 Tie-ins: Connections to existing City water mains and/or tapping valves shall be made only after successful pressure test and disinfection has been completed.

100.13 Valve installation: Valves shall be installed per Standard Drawing W-2. Concrete valve supports shall be installed as shown on Standard Drawing W-1.

100.14 Thrust blocking: All changes in pipe direction or grade shall be adequately supported with concrete, per Standard Drawing W-20, or other approved means.

100.15 Polyethylene wrap: Polyethylene tubing shall be installed over all ductile iron pipe, copper tubing, valves, fittings, and appurtenances per A.W.W.A "Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems" C-105, latest edition.

100.16 Pressure test: The entire water system, including pipeline, connections, fittings, and appurtenant equipment shall be subject to a hydrostatic pressure test of not less than 225 pounds per square inch (psi) for a minimum of two hours. The water necessary to maintain this pressure shall be measured through a meter or other means satisfactory to the City Inspector. The amount of water entering the pipe during the test shall be considered as the leakage.

Leakage shall not exceed the rate of fifteen (15) gallons per inch of diameter per twenty-four (24) hours per mile of pipe tested. Any noticeable leak shall be stopped and any defective pipe shall be repaired or replaced with new sections and the test repeated. All water, temporary bulkheads, testing equipment or materials necessary for the test shall be furnished by the pipeline contractor.

100.17 Disinfection: Subsequent to the pressure test and prior to acceptance of the work, the entire water system, including pipeline, all fittings and other appurtenant equipment, shall be disinfected by the pipeline contractor in accordance with A.W.W.A. "Standard for Disinfecting Water Mains" C-651, latest version.

Treated water with 25 ppm of free chlorine shall be retained in the entire water system for at least twenty-four (24) hrs. and a free chlorine residual of not less than 10 PPM shall be produced in all parts of the system after the twenty-four hour period has elapsed.

After chlorination, the water shall be flushed from the entire water system, until replacement water test is equal chemically and bacteriologically to that of the permanent source of supply. It shall be the responsibility of the pipeline contractor to dispose of all chlorinated water in a safe, environmentally acceptable manner.

The City will perform all necessary bacteriological analyses.

100.18 Valve boxes: It shall be the responsibility of the developer and/or pipeline contractor to secure accurate locations of all valves affected by the project.

All on-site, off-site, and tapping valves shall be tied and raised to grade by contractor in accordance with Water Standard W-2. Water valve covers on all construction projects that are covered over before, during, and after construction operations shall be tied out with exact measurements by the contractor's surveyors. A copy of these survey measurements shall be given to the City's Inspector prior to covering over the water valves.

All water valve covers and cans shall be adjusted to grade within ten (10) working days after being paved over. Not withstanding, the Contractor shall raise all valves within the vicinity of and before placing traffic detector loops. The Contractor shall be responsible for cleaning all water valve can necks clear of debris before, during and after construction, and marking all ties clearly in the field for the City's use during construction operations.

The Contractor shall verify, in writing, to the City's Inspector prior to covering over water valves that:

1. Water valve can necks are cleaned, tied out and the ties are transmitted herewith.
2. Water valve ties are marked clearly in the field and the Contractor has field reviewed ties with the City Inspector.
3. The contractor shall provide the valve ties to the City Inspector for review and acceptance for all newly installed valves prior to completion of the project.

100.19 Final Inspection: Final inspection shall be made after complete installation of water system and appurtenances, disinfection, raising to grade of on-site, offsite, and tapping valves, meter boxes and installation of meter box and fire hydrant concrete collars.

100.20 All City dedicated fire hydrants shall be painted after installation with the following: One coat of clean metal primer Rust-oleum 7673 or equal; One intermediate coat of Rust-oleum 2764 flat white or equal; One finish coat of high gloss Safety Yellow Rust-oleum 7644 or equal.

100.21 The City shall provide final approval to tie new water main only after successful pressure test, disinfection and sampling has been completed. When water mains and services, or any portion of them, have been pressure tested, disinfected and otherwise completed to the extent they are operable, the City may, at its sole discretion assume operation of the pipeline facilities and place them into service to provide water for fire protection and other uses. This may occur prior to the final inspection and final acceptance of all work.

The City shall provide the developer with notification when it shall commence operation of new on site facilities. Following such notification, all water valves and other appurtenances shall be operated by the **CITY PERSONNEL ONLY.**

This action by the City shall not be interpreted to relieve the developer and/or his contractor of the full responsibility for completing the work in its entirety, for correcting defective work, and for protecting the work from damage.

CITY OF PARAMOUNT
WATER SERVICE CONSTRUCTION NOTES

SECTON 200

CITY INSPECTOR SHALL BE NOTIFIED OF ANY AND ALL WATER SYSTEM CONSTRUCTION 48 HOURS PRIOR TO BEGINNING CONSTRUCTION AT (562) 220-2020

200.1 Materials shall be handled and installed in a workmanlike manner by a contractor holding a valid Class A or C-34 Specialty License from the State of California.

200.2 Excess material shall be returned to the Water Yard prior to final approval.

200.3 Normal working hours are 6:30 a.m. to 4:00 p.m. Monday thru Thursday, excluding City-observed holidays. The City Inspector shall be notified 48 hours prior to any work.

200.4 Water service laterals shall be installed in accordance with the "City of Paramount Standard Drawings for Municipal Water System".

200.5 Materials: Materials shall be provided by the contractor, except for water meters and water meter boxes for 1" and 2" services.

200.5.1 5/8" X 3/4" services shall be plumbed with 1" Polyethylene tubing. Connections shall be made with 1" corporation stop Jones J-3401 and 1" X 3/4" angle meter stop Jones J-4201 or equal.

200.5.2 1" services shall be plumbed with 1" Polyethylene tubing. Connections shall be made with 1" corporation stop Jones J-3401 and 1" angle meter stop Jones J-4201 or equal.

200.5.3 1 1/2" services shall be plumbed with 2" Polyethylene tubing. Connections shall be made with 2" corporation stop Ford FB-1000 and 2" angle meter valve FV43-777W or equal.

200.5.4 2" services shall be plumbed with 2" Polyethylene tubing. Connections shall be made with 2" corporation stop Ford FB-1000 and 2" angle meter valve FV43-777W or equal.

200.5.5 Type K copper tubing and fittings may be substituted for service laterals. Polyethylene tubing shall be installed over copper tubing per A.W.W.A "Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems" C-105, latest edition. All brazing of couplings, fittings and joints shall be silver soldered.

200.6 Trench Excavation: Service laterals shall be installed perpendicular to the alignment of the main line, and at a minimum depth of 24 inches cover relative to finished grade.

An encroachment permit shall be required for any excavation within public right-of-way. The permit shall be obtained from the City of Paramount Public Works Department at 15300 Downey Avenue, Paramount, California 90723.

200.7 Trench Backfill:

Pipe Zone: Backfill within the pipe zone, four (4) inches below to twelve (12) inches above the pipe, shall be imported sand with a sand equivalent of 30. Imported sand used in the pipe zone shall conform to SSPWC Section 200-1.5.1 and shall meet the following gradation: 100% passing 3/8-inch sieve and not more than 20% passing a 200-mesh. Certification that the sand meets this requirement shall be provided.

Trench Zone: The trench zone includes the portion of the trench from the top of the pipe zone to the bottom of the pavement structural section in paved areas or to the existing surface in unpaved areas. Native or imported earth backfill acceptable for use, shall be fine-grained material free form roots, debris and rocks with a maximum dimension not larger than 4-inches.

Rocky or unsuitable bedding and backfill material shall be replaced with gravel or crushed stone. Crushed and/or naturally occurring rock shall conform to SSPWC Section 200-1.2 and shall have the gradation for 1-1/2-inch rock meeting the following gradation: 100 to 90% passing 1-1/2" sieve, 55 to 30% passing 1" sieve, 15 to 0% passing ¾" sieve and 05 to 0% passing a 3/8" sieve.

200.8 Installation:

200.8.1 Service taps shall be at an angle of sixty degrees (60) relative to the vertical plane.

Service tapping of existing water mains shall conform to the following requirements:

1. Service saddles for PVC water mains shall be double strap for plastic pipe; Jones J-969 or approved equal.
2. Service saddles for cast iron or ductile iron water mains shall be double strap; Jones J-979 or approved equal.

200.8.2 All tapping saddles shall be all bronze and CS thread.

200.8.3 Angle meter stops shall be exposed and in proper alignment and location prior to setting of meters by the City.

200.8.4 No heating or splices will be allowed on a polyethylene tube service.

200.8.5 Contractor shall chip a 4-inch "+" in the curb face to identify the location of the curb stop.

200.9 Service laterals installed after the main line has been pressure tested shall be tapped into charged pipeline under normal system pressure. All corporation and angle meter stops shall be left exposed to facilitate proper inspection and detection of leaks.

Service laterals installed on dry main prior to the mainline pressure test shall be pressure tested with the mains. All corporation and angle meter stops shall be left exposed to facilitate proper inspection and detection of leaks.

200.10 Final Inspection: Final Inspection of water service shall be made with final inspection of the main line.

Materials

All water system materials furnished for installation by contractor shall be provided with clear manufacturer's markings and labeling indicating that the product furnished meets the materials standards requirements of the City of Paramount. All products shall be new, not previously used, and of current manufacture and supplied to the jobsite in unopened packaging. In addition to the labeling and packaging requirements, and upon the request of the City Inspector, all pipe, pipe fittings, valves, pipe appurtenances, and service materials shall be provided with a written manufacturer's statement indicating conformance with the specified materials and manufacturing requirements.

Hydrants, Burys, Extensions

Hydrants shall be wet-barrel type hydrants, manufactured to meet all applicable requirements of the latest revision of AWWA C-503.

Hydrants for commercial areas shall have two 2 ½" hose outlet and one 4" pumper outlet. Hydrants for residential areas shall have one 2 ½" hose outlet and one 4" pumper outlet. Outlet threads shall be American National Standard Hose Threads. Outlet caps shall be plastic and shall include chains and gaskets.

Valve stems shall be NDZ Bronze. All stems shall have pentagon operating nuts measuring 1 ½" from point to flat. Flange drilling shall be 6-hole. Bolts shall be the break-off type 5/8" x 3" plated hexagon-head machine bolts. Gaskets shall be full flange gaskets, made from 1/8" cloth-inserted rubber sheet.

Interior ferrous surfaces shall be coated with a fusion-bonded epoxy with a dry film thickness of not less than 8 Mils.

Exterior ferrous surfaces shall be painted after installation with the following: One coat of clean metal primer Rustoleum 7673 or equal; One intermediate coat of Rustoleum 2764 flat white or equal; One finish coat of high gloss Safety Yellow Rustoleum 7644 or equal

Hydrant bury shall be cast-iron with 6" MJ inlet connection. Interior surfaces shall be coated with a fusion-bonded epoxy with a dry film thickness of not less than 8 Mils.

Hydrant extensions shall be cast iron and fusion epoxy lined, 8 Mils.

The following hydrants are approved for use by the City of Paramount:

Residential: Jones J-3700 or approved equal
Commercial: Jones J-3765 or approved equal

Service Materials, 5/8" X 3/4" – 2"

The following manufacturers and types of service fittings are approved for use by the City of Paramount.

1" Angle Meter Stop, with compression connection and CS thread, Jones J-4201, Ford KV43-444W, or Mueller P-14258.

2" Angle Meter Valve, with compression connection and CS thread, Jones J-1975W, Ford FV43-777W, or Mueller P-14277

1" Corporation Stop, with compression connection and CS thread, Jones J-3401, Ford F1000, or Mueller B-25029

2" Corporation Stop, with compression connection and CS thread, Jones J-1935, Ford FB-1000, or Mueller B25029.

2" Blowoff

Eclipse No. 85 Blow-Off Hydrant

PE Tubing

All 1" and 2" service laterals shall be installed using polyethylene tubing, C.T.S., SDR 9.

Copper Tubing

Copper Pipe and fitting may be substituted for service laterals. All 5/8" X 3/4", 1", 1 ½", and 2" service laterals shall be installed using Type K soft copper. Polyethylene tubing shall be installed over copper tubing per A.W.W.A "Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems" C-105, latest edition.

Meter Box

Meter Size	Meter Box Size	Concrete Cover Size	Model
5/8"x3/4"	12"X18"X12"	12"X18"X1"	A6001425
1"	12"X18"X12"	12"X18"X1"	A6001425
1-1/2"	17"X30"X12"	17"X30"X2"	A6001640PCX12
2"	17"X30"X12"	17"X30"X2"	A6001640PCX12

Water Meter boxes and covers shall be reinforced polymer concrete (RPC) as manufactured by Armorcast Products Company or approved equal. The material shall be resistant to chemicals commonly found in soil or in the operating environment and shall be tested in accordance with ASTM D-543. The polymer concrete shall be resistant to sunlight and climatic conditions and shall be tested in accordance with ASTM D-756 Procedure E.

Gate Valves, 4" – 12"

Valves shall be cast or ductile iron bodied non-rising stem resilient-seated solid wedge gate valves, manufactured to meet all applicable requirements of the latest revision of AWWA C-509.

Valve body, bonnet, operating nut and gate shall be Cast Iron ASTM A-126, Class B or ductile iron ASTM A-536

Valve shall have a wedge type resilient seat fully encapsulated in peroxide cured EPDM.

Valve stems and stem nuts shall be of NDZ bronze.

Bonnet and seal plate bolts shall be T-316 stainless steel.

Inside and outside ferrous surfaces shall be coated with a fusion-bonded epoxy to a dry film thickness of not less than 8 Mils.

The following makes and models are approved for use by the City of Paramount:

Clow RW Valve
Kennedy Ken-Seal Valve
M & H Resilient Wedge Valve
Mueller A-2360 resilient Wedge Valve
U.S. pipe Metroseal Valve
American Flow Control Series 500 AFC Resilient Wedge Valve

Valve Boxes

Valve boxes shall have a concrete body, with an inside diameter of 10 ¼", and cast iron top with triangular cover marked "water", such as the Eisel Enterprises #4TT, Brooks #4-TT, or equivalent.

Valve box riser pipe shall be standard 8" diameter Sch. 40 PVC pipe.

Pipeline Materials

Polyvinyl Chloride Pipe

Pipe 4" – 12" shall be push-on type single-gasket joint ANSI/AWWA C-900 Class 150 Polyvinyl Chloride Pipe, with a nominal laying length of 20 feet. Pipe 14" and larger shall be push-on type single-gasket joint ANSI/AWWA C-905 Class 165 Polyvinyl Chloride Pipe.

Pipeline fittings shall be either compact, short-body ductile iron fittings manufactured in accordance with ANSI/AWWA C-153, or full-sized ductile or gray iron fittings manufactured in accordance with ANSI/AWWA C-110. All fittings shall be cement lined per ANSI/AWWA C104. Fittings are to be MJ x MJ or MJ x Flg as indicated on the plans. T-head bolts are to be Corten steel.

Locator Wire: Copper tracer wire shall be placed continuously centered just above the top center of the pipe for the purpose of providing a continuous signal path for electronic pipe locations used to determine the pipe alignment after installation. The wire shall be electrically continuous throughout the entire pipe system including adjacent service line assemblies. The copper wire shall be No. 12 cu. with HMWPE insulation. The wire shall be brought to the surface at valve locations and shall be accessible by removing the valve can cover. The wire shall be brought to the surface per the City's standard drawings. The wire shall also be tapped in place by means of a plastic adhesive tape, placed at 10 foot intervals. Any splices shall be wrapped with PVC tape. The Contractor shall provide the City with the results of an electrical continuity test.

Ductile Iron Pipe

Pipe 4" – 12" shall be push-on type single-gasket joint Class 350 Ductile Iron Pipe, with a nominal laying length of 18 feet. Pipe 16" and larger shall be push-on type single-gasket joint Class 250 Ductile Iron Pipe. All pipe shall be manufactured in accordance with ANSI/AWWA C-151. All pipe shall be cement lined per ANSI/AWWA C104.

Pipeline fittings shall be either compact, short-body ductile iron fittings manufactured in accordance with ANSI/AWWA C-153, or full-sized ductile or gray iron fittings manufactured in accordance with ANSI/AWWA C-110. All fittings shall be cement lined per ANSI/AWWA C104. Fittings are to be MJ x MJ or MJ x Flg as indicated on the plans. T-head bolts are to be Corten steel.

All pipe and pipeline fittings shall be wrapped with polyethylene in accordance with ANSI/AWWA C-105. Polyethylene material shall be clear 8 Mil polyethylene flat tubing with dimensions appropriate for the size of pipe installed.