

Highlands Water Company

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Conditions and Specifications:

I. Approval of Plans and Prints involving Facilities of Highlands Water Company:

- A. Approval of Plans by the City of Clearlake and or the County of Lake does not constitute Approval of Plans by Highlands Water Company.
- B. Highlands Water Company must Sign all Final Plans and Prints.
- C. These Specifications are to be included into all Prints and Plans involving Facilities of Highlands Water Company.

II. City of Clearlake Business License:

- A. The City of Clearlake requires that to work within the City that Contractors acquire a City Business License. City Phone #(707) 994-8201

III. Limits of Highlands Water Companies Accepted Facilities Responsibility:

- A. Within the limits below Highlands Water Company assumes Responsibility for Facilities that are installed to Highlands Water Companies Specifications and Conditions.
- B. Meter Services:
 - 1. District Responsibility ends at the outlet of the Water Meter.
- C. Backflow Devices:
 - 1. The Property Owner is Responsible for the Backflow Device and its Supply Lines.
- D. Fire Protection Services:
 - 1. District Responsibility ends at the Valve on the Water Main.

IV. Requirements for assuming responsibility of Off-Site Facilities installed in Public Easements:

- A. Off-Site Facilities are installed to Highlands Water Companies Specifications and Conditions.
- B. Utility Easements and As-Built Plans of the completed Facilities are provided to Highlands Water Company.

V. Construction requirements for assuming responsibility of On-Site Facilities:

- A. Before acceptance of On-Site Facilities, all work shall be done to Highlands Water Companies Specifications and Conditions.
- B. Highlands Water Co. is provided with Utility Easements and As-Built Plans of the completed Underground Facilities, up to and including the Meter Settings.

VI. Construction requirements On-Site Facilities that will not be the responsibility of Highlands Water Company:

- A. Fire Protection Services:
 - 1. The Developer is responsible for Installation as well as Repair and Maintenance to Highlands Water Company Specifications and Conditions, from the Water Main Valve to the Outlet of the Double Check Assembly.
- B. Fire Hydrants and Supply Lines:
 - 1. Some Hydrants because of their placement under buildings or lack of easements etc Highlands Water will does not Assume Responsibly.
 - 2. The Developer is responsible for Installation as well as Repair and Maintenance to Highlands Water Company Specifications and Conditions, from the Water Main Valve to the Hydrant.
- C. Backflow Devices:
 - 1. Highlands Water Company determines the Need to Install the Type of Backflow Device and Placement of Backflow Device(s).
 - 2. The Developer is responsible for Installation as well as future Repair and Maintenance to Highlands Water Company Specifications and Conditions of Backflow Devices Assemblies.
- D. As-Built Plans are still required of all Underground Facilities listed above.

VII. Marking and Locating of Facilities:

- A. Highlands Water Company marking of Underground Facilities shall be considered to be within 2 feet (24 inches) of ether side of the marking.
- B. Contractor is to supply equipment to pothole when required to locate lines and mains.

VIII. Traffic Control:

- A. Traffic Control shall be to State of California Department of Transportation Traffic Control System for Lane Closure, Standard Plans, according to road type.
- B. The City of Clearlake and the Lakeshore Fire Department shall be kept informed on the location of work and the traffic control stasis.

IX. Work involving Highlands Water Company:

A. Inspection of Facilities:

1. Highlands Water Company will inspect all Materials before commencement of work.
2. Highlands Water Company will inspect all Facilities before being covered.
3. Highlands Water Company requires 48 hours advance notice for Inspections of Highlands Water Company Facilities.
4. Inspection of Facilities by Highlands Water Company is not done on Weekends.
5. Distribution System Shutdowns and other items that requires the participation of Highlands Water Company are not to be done on Weekends, Friday's or the Day before a Holiday.

B. Locating of Utility Facilities:

1. Contractors shall verify all Utility Locations before commencement of work, by calling Underground Service Alert (USA) at (800) 642-2444.
2. USA requests for Utility Locations must allow 48 hours during the Normal Workweek for marking of Utilities.

C. Distribution System Shutdowns and other items that requires participation of Highlands Water Company:

1. Two Weeks Notice is required of work that requires participation of Highlands Water Company.
2. Highlands Water Company must inspect all Project Materials 48 hours prior to Job.

X. Except where noted in this, Document Specifications and Materials will conform to AWWA and California State Department of Health Specifications.

XI. Except where noted in this, Document Design and Construction Standards will be typical of the City of Santa Rosa Standards.

XII. Installation of Underground Facilities, Fill Materials and Compaction:

A. Fill Materials:

1. Red Sand is used as bedding Around Water Lines and Mains.
 - a) Red Sand is placed 6" under and 12" over Water Mains
 - b) Compaction of the Red Sand is required before Class 2 Gray Base is added. no jetting.
2. CATRANS Class 2 Gray Base is as fill over the Bedding Sand.

B. Compaction of Fill:

1. Compaction Requirements and Testing is dependent upon jurisdiction and shall be to the County of Lake or City of Clearlake Specifications.
2. If the County or City permits use of the native fill screening is required, so that there shall be no material over 2" in diameter in the fill.

XIII. Tracing and Marking of Mains and Service Lines:

A. Tracer Wire:

1. Mains and Service Lines shall use No. 10 insulated solid ground wire for Tracer Wire Detection.
2. On Water Mains Tracer Wire shall be half-hitched around the End-Bell of each Pipe Section.
3. Tracer Wire will be run up the outside of each Stand-Pipe Riser then between the Valve Box and Stand Pipe Riser, for connection purposes.
4. On Service Lines, the wire shall be tied to the Base of the Corporation Valve, and to the Curb-Stop or Y-Yoke in the Meter Box.
5. Tracer Wire will be taped to the Service Line every 2' feet, or more to prevent a separation of more than 2" inches.
6. Tracer Wires shall be neatly trimmed inside the Valve Riser and Meter Box so that the Tracer Wires will not snag on valve keys or other tools.
7. Connections to the Tracer Wire for new wire reels, tees, etc:
 - a) The wire ends will be twisted together and a proper size Wire Nut will be used on the connection.
 - b) After Inspection, the Connection will be taped to prevent corrosion.

B. Detection Tape:

1. Detection Tape is placed on top of the Bedding Sand Layer (12") directly over the Water Main.

XIV. Water Mains:

- A. Water Mains 4" and larger shall conform to AWWA C 900, Class 150, DR18, unless otherwise specified on Plans or because of Separation Criteria during construction.
- B. All Tees Valves and Fittings shall use Mechanical Joint or Flanged Ends no push on fittings.
- C. The End Taper of Pipe shall be removed and the Pipe cutoff square, before inserting into a Mechanical Joint.
- D. Flex Couplings shall be of the Power-Seal Brand.
- E. Water Mains shall be installed with Thrust Blocks on all Tees, Elbows and other Stress Points.
- F. Tie Back Thrust Blocks are used on Blow-Off's and other Thrust and Stress Points as deemed necessary by Highlands Water Company.
- G. Joint Trenches are not allowed with any Other Facilities.
- H. Pressure Testing, Disinfection and Bacteriological Tests:
 1. New Water Mains shall be Pressure Tested in accordance with section C603 of AWWA Specifications.
 2. Disinfection of New Water Mains will be in accordance with section C651 of AWWA Specifications.
 3. Flushing is required of new Water Mains is required to remove Turbidity etc.

4. After Flushing and before Public Use of New Water Facilities, Bacteriological Tests will be taken by Highlands Water Company.

I. Crossing, Conflicts and Proximity to other Facilities:

1. All installations shall meet "Criteria for the Separation of Water Mains and Sanitary Sewers" from the Department of Health Services (DHS) Office of Drinking Water (Title 22).
2. Class 200 DR14 shall be used where Water and Sewer Lines come within 10 feet or less in parallel of each other.
3. No Joints in Water Lines that cross a Sewer or Storm Drain shall come within 5 feet of the Sewer Line or Storm Drain.
4. Deflections and conflicts with other structures:
 - a) Ductile Iron Pipe shall be used in place of PVC Pipe.
 - b) Mechanical Joint Fittings with Retainer Glands or Flange Fittings shall be used.
 - c) Thrust Blocks are used on Elbows and Stress Points.
 - d) Support blocks shall be poured under deflections to prevent sagging of the assembly at the connection to the main runs.

XV. Blow-Offs:

- A. Blow-Offs are to be sized to provide proper water velocity for flushing.
- B. Valves on Blow-Off Assembly's will have 2" Operating Nuts.
- C. Blow-Off Piping will use Ductile Iron or Brass, no Galvanized or Black Iron Pipe is to be used.
- D. A Valve Boxes and Risers are used for access to the Valve for the Discharge Line.
 1. The Blow-Off Discharge Connection is uses a Brass Pipe Coupling with a hand tightened Brass Pipe Plug used to seal the end.
 2. In non-traffic, areas a Christy B9X Meter Box with a Steel Lid will be used to cover the Blow-Off Discharge End.
 3. In traffic areas, a Brooks or Christy Valve Box with a round lid shall be used for the discharge line.

XVI. Valve boxes and Risers:

- A. Valve Boxes shall be of the Brooks or Christy Brands with Triangle Lids.
- B. Triangle Lids on Valve Boxes are to indicate Facilities Direction.
- C. Highlands Water Company shall inspect Valve Box Orientations before final Valve Box Setting.
- D. Valve Box Pipe Risers are made of 8" PVC cut at bottom to form around valve.
- E. Valve Boxes shall have a 12" wide by 12" thick Concrete Collars with one ring of rebar poured around the Valve Box for support.
- F. On unpaved roads, Valve Boxes shall be .1 ft above grade with the Concrete Collars

tapering from the Valve Box to grade.

XVII. Water Meter Services:

A. Location of Meter Boxes:

1. The Developer will provide property boundaries and grade for Meter placement.
2. The location of Meter Placement is determined by Highlands Water Company.

B. Installation of Water Meter Services:

1. Highlands Water Company supplies the Water Meters for all New Connections.
2. Highlands Water Company installs Single 5/8" Meter Services for Time and Materials.
3. Installation of two or more Meters and all Meter Services $\frac{3}{4}$ " and over is the responsibility of the Developer, under Highlands Water Company Supervision and Specifications.
4. All Meter Connection Materials other than the Water Meters is the responsibility of the Developer.
5. 3" and 4" Meter Services both use 4" Feed Lines and Fittings.

C. Water Meter Service Saddles:

1. Brass Saddles shall be used on PVC Pipe
2. Double Strap Bronze Saddles on A.C. and steel pipe

D. Corporation Valves:

1. $\frac{3}{4}$ " to 2" Services use IPS Corporation Valves.
2. 1 $\frac{1}{2}$ " and 2" Corporation Valves have 2" Operating Nuts.
3. 1 $\frac{1}{2}$ " and larger Corporation Valves are required to have a Valve Box and Riser installed.
4. 3" and 4" Meter Services use 4" Flanged Gate Valves with 2" Operating Nuts
5. Gate Valves 4" and larger shall be American Darling resilient seat or equal.

E. Water Meter Service Lines:

1. $\frac{3}{4}$ " to 1" Meter Service Lines:
 - a) $\frac{3}{4}$ " to 1" Meter Service Lines are Standard Pipe Size (IPS), Polyethylene (PE) Pipe (C901 AWWA Specification). The Pipe shall be Orangeburg P.E. 3408; Wesflex P.E. 3408 or approved equivalent, 200 psi, SDR-7 and NSF approved.
 - b) $\frac{3}{4}$ " and 1" P.E. Service Lines use Muller Insta-Tite's on their ends.
2. 1 1/2" and 2" Meter Service Lines:
 - a) 2" Meter Service Lines are Copper Tubing Size (CPS), Polyethylene (PE) Pipe (C901 AWWA Specification). The Pipe shall be Orangeburg P.E. 3408; Wesflex P.E. 3408 or approved equivalent, 200 psi, SDR-7 and NSF approved.
3. 4" and Larger Meter Service Lines:
 - a) 4", Larger Meter Service Lines, and Fittings are to be of Ductile Iron.
 - b) Mechanical Joint Fittings with Retainer Glands or Flanged Fittings are to be used.

4. Service Lines shall not share a common trench with any other facility; this includes Water Mains and Fire Service Lines.

F. Water Meter Settings:

1. Single 5/8" Meter Settings use Angled Curbstops on the Corporation Side with 3/4" Gate Valves with Cast Iron Wheels for the Customer Side of the Meter.
2. Twin 5/8" Meter Settings use a 1" by 3/4" Brass Y-Yoke with two 3/4" Angled Curbstops on the Corporation Side with 3/4" Gate Valves with Cast Iron Wheels on the Customer Side of the Meter.
3. Meter Service By-Pass Lines:
 - a) Meter Services 1 1/2" and larger will have Locking By-Pass Valves on their Meter Settings for Meter Service and or Repair.
 - b) 1 1/2" Meters use Ford Copper Customsetter Catalog Number VBB 76-12B-11-66.
 - c) 2" Meters use Ford Copper Customsetter Catalog Number VBB 77-12B-11-77.
 - d) 3", 4" and Larger Meter Services will have Meter Inlet and Outlet Valves with 2" Meter By-Pass Lines installed around the Meter and Meter Valves, the By-Pass Line will have a 2" inch Ball Valve with Lock Wings.

G. Water Meter Boxes:

1. The Meter Box Size and Type shall determine Meter Depth and Location in the Meter Box.
2. Large Meter Boxes are required to have Reader Lids in their Tops; the Meter Dial will be located under the Reader Lid.
3. Meter boxes are to be of the Christy Brand, size and type is specified by Highlands Water Company.
4. Christy Meter Box Sizes:

	Single Meter	Double Meter
Meter Size:	Meter Box Size	Meter Box Size
5/8" & 3/4"	B-9X	B-24
1"	B-12	
1-1/2" & 2"	B-40	
3" & 4"	B-52	

H. PVC Pipe 3/4" to 2":

1. Only Sch 80 PVC Pipe 3/4" to 2" will be used when allowed by Highlands Water Company.
2. Fitting and Gluing of Sch 80 PVC Pipe:
 - a) Fitting of PVC Pipe must follow Manufacturer Specifications and Guide Lines.
 - b) Ends of PVC Pipe to be glued must be beveled using a file, no sharp edges are allowed.
 - c) Sch 80 Primer and Glue is used on the all PVC Fittings. Primer is first applied inside and outside the fittings and allowed to dry. Primer is applied a second time while still wet Glue is applied.
 - d) Gluing and Curing of PVC Pipe and Fittings are not done in direct sunlight.

XVIII. Backflow Devices:

- A. Highlands Water Company determines if a Backflow Device is required for a Property.**
- B. Highlands Water Company determines the Type of Backflow Device required.**
- C. New Backflow Devices must be listed on the Current State Health Department Approved List of Backflow Devices.**
- D. The Backflow Device Pipe Size must be at least the same Size as the Meter.**
- E. All New Commercial Installations will install a Backflow Device or Devices.**
- F. Highlands Water Company determines the location and placement of Backflow Devices.**
- G. Above ground Backflow Device Installations must provide for proper ground clearance.**
- H. The installation of Backflow Devices below ground level is allowed only with the permission of Highlands Water Company.**
- I. Below ground Installation of Backflow Devices must provide for drainage and proper clearance of the Backflow Device.**
- J. New Backflow Devices are to be tested after Installation.**
- K. Yearly required Testing and Maintenance of Backflow Devices:**
 - 1. The Property Owner is responsible Yearly Testing and Maintenance of their Backflow Devices.**
 - 2. Defective Backflow Devices are required to be repaired or replaced.**

XIX. Hydrants and Hydrant Connections:

- A. Hydrants shall be 4 1/2" steamers of American Darling or Waterous brands, with 5 1/4" main valve opening.**
- B. Valves and Materials are as specified by Highlands Water Company.**
- C. Thrust Blocks is required on the Hydrant Bury also Concrete Ring Isolation Blocks at the top of each Hydrant Bury.**
- D. A Flanged Valve with Valve Box and Riser will be attached to the Water Main Branch that supplies the Hydrant Supply Line.**

XX. Fire Protection Services:

- A. Fire Services shall use Double Checks with a Metered Flow Detector, Febco 806YD, DCDA, OS&Y-RW or equivalent.**
- B. Fire Protection Service Assemblies Support Stands.**
- C. A Flanged Valve with Valve Box and Riser will be attached to the Water Main Branch that supplies the Hydrant Supply Line.**
- D. Meter Service Lines shall not be connected to Fire Protection Service Lines.**