

DEVELOPMENT STANDARDS
TREATED WATER SYSTEM

TABLE OF CONTENTS

DEVELOPER REQUIREMENTS FOR
TREATED WATER SYSTEM EXTENSIONS

GENERAL

Intent	DR-1
Developer Guidelines.....	DR-1
Conveyance Agreement.....	DR-1
Developer's Responsibility	DR-1

PLANS AND SPECIFICATIONS

Facility Design	DR-2
Environmental Requirements	DR-2
Improvement Plans	DR-2
Standard Specifications and Details	DR-3

CONSTRUCTION

Construction Management	DR-3
Submittals	DR-4
Inspection	DR-5
Clearing & Grubbing	DR-5
Measurement and Payment	DR-5

STANDARD SPECIFICATIONS FOR
TREATED WATER SYSTEM

SECTION 10 SPECIAL CONDITIONS FOR DEVELOPER

<u>10-1</u>	<u>General</u>	10-1
<u>10-2</u>	<u>Control of Work</u>	10-1
10-2.01	Permits, Agreements, and Licenses.....	10-1
10-2.02	Construction Staking	10-1
10-2.03	Use of Water from District System	10-1
10-2.04	Inclement Weather Shutdown	10-2
<u>10-3</u>	<u>Control of Materials</u>	10-2
10-3.01	Materials Furnished by District	10-2
10-3.02	Pipeline Material	10-2
10-3.03	Polyethylene Encasement for Ductile Iron Pipe	10-2
<u>10-4</u>	<u>Submittals</u>	10-2
10-4.01	General	10-2
<u>10-5</u>	<u>Prosecution and Progress</u>	10-4
10-5.01	Sequence of Work	10-4
10-5.02	Connections to District's System	10-4
10-5.03	Scheduled Water Service Outages	10-5
10-5.04	Concrete Quality Testing	10-5

*** TECHNICAL PROVISIONS ***

SECTION 11 Left Blank Intentionally

SECTION 12 WATER MAINS

<u>12-1</u>	<u>General</u>	12-1
12-1.01	Scope	12-1
12-1.02	Description of Work	12-1
12-1.03	Public Convenience, Preservation of Property, and Cleanup	12-1
12-1.04	Permits	12-1
12-1.05	Submittals	12-1
12-1.06	Inspection	12-2
<u>12-2</u>	<u>Materials</u>	12-2
12-2.01	General	12-2
12-2.02	Pipeline Material	12-2
12-2.02-A	Ductile Iron Pipe (DIP)	12-3
12-2.02-B	PVC Pressure Pipe (Polyvinyl Chloride)	12-3
12-2.02-C	PVC Transmission Pipe (Polyvinyl Chloride)	12-4
12-2.02-D	PVC Schedule 40 and 80 (Polyvinyl Chloride)	12-4
12-2.03	Fittings	12-4
12-2.04	Joint Configurations	12-5
12-2.05	Flange Insulation for Discontinuity	12-5
12-2.06	Restrained Joints	12-6
12-2.07	Polyethylene Encasement for Ductile Iron Pipe	12-6
12-2.08	PVC Primer and Solvent Cement	12-6
12-2.09	Mechanical Couplings	12-7
12-2.10	Concrete	12-7
12-2.11	Locating Wire and Connectors	12-7
12-2.12	Sand-Cement Slurry Backfill	12-7
12-2.13	Aggregate Base and Crushed Rock	12-7
12-2.13-A	Caltrans Class 2 Aggregate Base	12-7
12-2.13-B	Crushed Rock	12-7
12-2.14	Replacement Pavement	12-8
12-2.15	Chip Seal	12-8
12-2.16	Straw Bales	12-8
<u>12-3</u>	<u>Installation</u>	12-8
12-3.01	General	12-8
12-3.02	Horizontal Alignment	12-8
12-3.03	Vertical Alignment	12-8
12-3.03-A	Vertical Alignment Design Data	12-8
12-3.03-B	Percent Slopes	12-8
12-3.03-C	Vertical Clearances and Other Controlling Elevations	12-9
12-3.03-D	Minimum Cover	12-9
12-3.04	Separation of Water Mains and Sanitary Sewers	12-9
12-3.05	Pipe Lengths	12-10
12-3.06	Dust Control	12-10
12-3.07	Pipe Trench Excavation	12-10
12-3.07-A	Paved Areas	12-10
12-3.07-B	Trench Configuration	12-10
12-3.07-C	Stockpiling	12-10
12-3.07-D	Tree Roots	12-10
12-3.07-E	Underground Facilities	12-11

12-3.07-F	Drilling and Blasting	12-11
12-3.07-G	Over Excavation	12-11
12-3.07-H	Ground Water and Unsuitable Material	12-11
12-3.07-I	Disposal of Material	12-12
12-3.07-J	Trench and Excavation Support	12-12
12-3.07-K	Rock Excavation	12-12
12-3.08	Pipe and Fitting Installation	12-13
12-3.08-A	Storage and Handling	12-13
12-3.08-B	Installation	12-13
12-3.08-C	Corrosion Protection	12-14
12-3.08-D	Reaction Blocking	12-15
12-3.08-E	Locating Wire Installation	12-15
12-3.09	Pipe Trench Backfill	12-15
12-3.09-A	Backfill Selection	12-16
12-3.09-B	Backfilling Operations	12-17
12-3.09-C	Sand-Cement Slurry Backfill	12-17
12-3.09-D	Backfill for Wet Conditions	12-17
12-3.09-E	Backfill Compaction	12-17
12-3.10	Connection to Existing Water Mains	12-18
12-3.11	Temporary Erosion Control	12-18
12-3.11-A	Straw Bale Dikes	12-18
<u>12-4</u>	<u>Trench Restoration and Final Cleanup</u>	<u>12-19</u>
12-4.01	General	12-19
12-4.02	Paved Surfaces	12-19
12-4.03	Chip Seal	12-19
12-4.04	Paved Road Shoulders	12-19
12-4.05	Graveled Surfaces	12-20
12-4.06	Unimproved Surfaces	12-20
12-4.07	Final Cleanup	12-20
<u>12-5</u>	<u>Measurement and Payment</u>	<u>12-21</u>
12-5.01	Measurement	12-21
12-5.02	Payment	12-21

SECTION 13 WATER MAIN TAPS

<u>13-1</u>	<u>General</u>	<u>13-1</u>
13-1.01	Scope	13-1
13-1.02	Description of Work	13-1
13-1.03	Public Convenience, Preservation of Property, and Cleanup	13-1
13-1.04	Permits	13-1
13-1.05	Design	13-1
13-1.06	Submittals	13-2
13-1.07	Notice of Intent to Wet-Tap	13-2
13-1.08	Inspection	13-2
<u>13-2</u>	<u>Materials and Installation</u>	<u>13-2</u>
13-2.01	General	13-2
13-2.02	Storage and Handling	13-2
13-2.03	Excavation and Backfill	13-2
13-2.04	Tapping Saddles	13-3
13-2.04-A	Materials	13-3
13-2.04-B	Installation of Tapping Saddles	13-3
13-2.05	Tapped Couplings	13-4

13-2.05-A	Materials	13-4
13-2.05-B	Installation of Tapped Couplings	13-4
13-2.06	Tapping Sleeves	13-5
13-2.06-A	Cast Iron Split-Sleeve (CI)	13-5
13-2.06-B	Stainless Steel Tapping Sleeve (SS)	13-5
13-2.06-C	Installation of Tapping Sleeves	13-6
13-2.07	Corrosion Control	13-7
13-2.08	Reaction Blocking	13-7
13-2.09	Locating Wire	13-7
13-2.10	Surface Restoration and Cleanup	13-7
<u>13-3</u>	<u>Measurement and Payment</u>	13-7

SECTION 14 MAIN LINE VALVE ASSEMBLIES

<u>14-1</u>	<u>General</u>	14-1
14-1.01	Scope	14-1
14-1.02	Description of Work	14-1
14-1.03	Location	14-1
14-1.04	Design	14-1
14-1.05	Submittals	14-1
14-1.06	Inspection	14-2
<u>14-2</u>	<u>Materials</u>	14-2
14-2.01	General	14-2
14-2.02	Valves	14-2
14-2.02-A	Resilient Seat Gate Valves (RSGV)	14-3
14-2.02-B	Butterfly Valves (BFV)	14-4
14-2.03	Valve Box, Lid, and Extensions	14-5
14-2.04	Locating Wire	14-5
14-2.05	Concrete	14-5
14-2.06	Stone Slope Protection	14-5
14-2.07	Replacement Pavement	14-5
14-2.08	Valve Operator Extension Shaft	14-5
14-2.09	Guide Markers	14-5
<u>14-3</u>	<u>Installation</u>	14-5
14-3.01	General	14-5
14-3.02	Storage and Handling	14-6
14-3.03	Excavation and Backfill	14-6
14-3.04	Corrosion Protection	14-6
14-3.05	Anchor Blocks	14-6
14-3.06	Valve Box Installation	14-6
14-3.07	Valve Operator Extension Shaft	14-7
14-3.08	Locating Wire	14-7
14-3.09	Surface Restoration and Final Cleanup	14-7
<u>14-4</u>	<u>Measurement and Payment</u>	14-7
14-4.01	Measurement	14-7
14-4.02	Payment	14-7

SECTION 15 AIR-RELEASE VALVE ASSEMBLIES

<u>15-1</u>	<u>General</u>	15-1
15-1.01	Scope	15-1
15-1.02	Description of Work	15-1

15-1.03	Location	15-1
15-1.04	Design	15-1
15-1.05	Submittals	15-1
15-1.06	Inspection	15-2
15-2	Materials	15-2
15-2.01	General	15-2
15-2.02	Air Valves	15-2
15-2.02-A	Air and Vacuum Release Valves	15-2
15-2.02-B	Air Release Valves	15-3
15-2.02-C	Combination Air Release Valves	15-3
15-2.03	Connection to the Water Main	15-3
15-2.04	Pipe and Fittings for Air Valve Laterals	15-3
15-2.05	Pipe and Fittings for Vent Pipe	15-3
15-2.06	Vent Pipe Clamps	15-4
15-2.07	Shutoff Valve	15-4
15-2.08	Drain Rock	15-4
15-2.09	Locating Wire	15-4
15-2.10	Box, Lid, and Extensions	15-4
15-2.10-A	Non-Traffic Locations	15-4
15-2.10-B	Traffic Locations	15-4
15-2.11	Concrete for Foundations and Pads	15-5
15-2.12	Stone Slope Protection	15-5
15-2.13	Replacement Pavement	15-5
15-2.14	Guide Markers	15-5
15-3	Installation	15-5
15-3.01	General	15-5
15-3.02	Storage and Handling	15-5
15-3.03	Excavation and Backfill	15-5
15-3.04	Air Valve Lateral and Vent Pipe Installation	15-5
15-3.05	Corrosion Protection	15-6
15-3.06	Shutoff Valve Box Installation	15-6
15-3.07	Air Valve Box Installation	15-6
15-3.08	Locating Wire.....	15-7
15-3.09	Surface Restoration and Final Cleanup	15-7
15-4	Measurement and Payment	15-7
15-4.01	Measurement	15-7
15-4.02	Payment	15-7

SECTION 16 BLOWOFF VALVE ASSEMBLIES

16-1	General	16-1
16-1.01	Scope	16-1
16-1.02	Description of Work	16-1
16-1.03	Location	16-1
16-1.04	Design	16-1
16-1.05	Submittals	16-1
16-1.06	Inspection	16-2
16-2	Materials	16-2
16-2.01	General	16-2
16-2.02	Connection to the Water Main	16-2
16-2.03	Pipe and Fittings for Blowoff Valve Laterals	16-2
16-2.04	Pipe and Fittings for Blowoff Discharge Pipes	16-2

16-2.05	Blowoff Valves	16-3
16-2.06	Locating Wire	16-3
16-2.07	Valve and Riser Box, Lid, and Extensions	16-3
16-2.08	Drain Rock	16-3
16-2.09	Concrete	16-3
16-2.10	Replacement Pavement	16-3
16-2.11	Valve Operator Extension Shaft	16-3
16-2.12	Stone Slope Protection	16-3
16-2.13	Guide Markers	16-4
<u>16-3</u>	<u>Installation</u>	<u>16-4</u>
16-3.01	General	16-4
16-3.02	Storage and Handling	16-4
16-3.03	Excavation and Backfill	16-4
16-3.04	Pipe and Fitting Installation	16-4
16-3.05	Corrosion Protection	16-4
16-3.06	Blowoff Valve Assembly Installation	16-5
16-3.07	Valve and Riser Box Installation	16-5
16-3.08	Locating Wire	16-5
16-3.09	Stone Slope Protection	16-5
16-3.10	Surface Restoration and Final Cleanup	16-5
<u>16-4</u>	<u>Measurement and Payment</u>	<u>16-5</u>
16-4.01	Measurement	16-5
16-4.02	Payment	16-5

SECTION 17 FIRE HYDRANT ASSEMBLIES

<u>17-1</u>	<u>General</u>	<u>17-1</u>
17-1.01	Scope	17-1
17-1.02	Description of Work	17-1
17-1.03	Location	17-1
17-1.04	Temporary Covers	17-1
17-1.05	Design	17-2
17-1.06	Submittals	17-2
17-1.07	Inspection	17-2
<u>17-2</u>	<u>Materials</u>	<u>17-2</u>
17-2.01	General	17-2
17-2.02	Fire Hydrants	17-2
17-2.03	Connection to the Water Main	17-3
17-2.04	Shutoff Valves	17-3
17-2.05	Pipe and Fittings for Fire Hydrant Laterals	17-4
17-2.06	Concrete	17-4
17-2.07	Drain Rock	17-4
17-2.08	Replacement Pavement	17-4
<u>17-3</u>	<u>Installation</u>	<u>17-4</u>
17-3.01	General	17-4
17-3.02	Storage and Handling	17-4
17-3.03	Excavation and Backfill	17-4
17-3.04	Shutoff Valve Installation	17-4
17-3.05	Fire Hydrant Lateral Installation	17-5
17-3.06	Corrosion Protection	17-5
17-3.07	Reaction Blocking	17-5

17-3.08	Drain Pit Installation	17-5
17-3.09	Surface Restoration and Final Cleanup	17-5
<u>17-4</u>	<u>Measurement and Payment</u>	<u>17-5</u>
17-4.01	Measurement	17-5
17-4.02	Payment	17-5

SECTION 18 RESERVED

SECTION 19 SERVICE ASSEMBLIES

<u>19-1</u>	<u>General</u>	<u>19-1</u>
19-1.01	Scope	19-1
19-1.02	Description of Work	19-1
19-1.03	Location	19-1
19-1.04	Design	19-1
19-1.05	Submittals	19-2
19-1.06	Inspection	19-2
<u>19-2</u>	<u>Materials</u>	<u>19-2</u>
19-2.01	General	19-2
19-2.02	Connection to the Water Main	19-2
19-2.03	Service Lines	19-2
19-2.04	Service Shutoff Valves	19-2
19-2.05	Service Line Fittings	19-2
19-2.06	Meter Valves	19-3
19-2.07	Brass Pipe and Fittings	19-4
19-2.08	Meter Boxes for 2-inch and Smaller Meters	19-4
19-2.08-A	Non-Traffic Locations	19-4
19-2.08-B	Traffic Locations	19-4
19-2.09	Meter Vaults for 3-inch and Larger Meters	19-5
19-2.10	Concrete for Meter Box Pad	19-5
19-2.11	Locating Wire and Connectors	19-5
19-2.12	Trench Restoration Materials	19-5
<u>19-3</u>	<u>Installation</u>	<u>19-5</u>
19-3.01	General	19-5
19-3.02	Storage and Handling	19-5
19-3.03	Excavation and Backfill	19-5
19-3.04	Service Line and Fitting Installation	19-6
19-3.05	Corrosion Protection	19-6
19-3.06	Locating Wire	19-6
19-3.07	Meter Box Installation	19-6
19-3.08	Surface Restoration and Final Cleanup	19-6
<u>19-4</u>	<u>Trench Restoration and Final Cleanup</u>	<u>19-7</u>
<u>19-5</u>	<u>Measurement and Payment</u>	<u>19-7</u>
19-5.01	Measurement	19-7
19-5.02	Payment	19-7

SECTION 20 – 24 RESERVED

SECTION 25 TESTING AND DISINFECTING WATER MAINS

<u>25-1</u>	<u>General</u>	25-1
25-1.01	Scope	25-1
25-1.02	Description of Work and Materials	25-1
25-1.03	Required Work Sequence	25-1
25-1.04	System Operations	25-1
25-1.05	Backflow Protection	25-1
<u>25-2</u>	<u>Testing</u>	25-2
25-2.01	General	25-2
25-2.02	Test Section Length	25-2
25-2.03	Testing Equipment	25-2
25-2.04	Test Pressure	25-2
25-2.05	Test Duration	25-2
25-2.06	Allowable Leakage	25-3
25-2.07	Repairs	25-3
<u>25-3</u>	<u>Disinfecting</u>	25-3
25-3.01	General	25-3
25-3.02	Preventive and Corrective Measures During Construction	25-4
25-3.03	Methods of Chlorination	25-4
25-3.03-A	Tablet Method	25-4
25-3.03-B	Continuous-Feed Method	25-4
25-3.04	Final Flushing	25-5
25-3.05	Bacteriological Samples	25-5
25-3.06	Re-disinfection	25-5
<u>25-4</u>	<u>Measurement and Payment</u>	25-5
25-4.01	Measurement	25-5
25-4.02	Payment	25-6

SECTION 26 RESERVED

SECTION 27 CONCRETE

<u>27-1</u>	<u>General</u>	27-1
27-1.01	Scope	27-1
27-1.02	Description of Work	27-1
27-1.03	Sequence of Work	27-1
27-1.04	Submittals	27-1
27-1.05	Storage	27-1
27-1.06	Lines and Grades	27-1
27-1.07	Excavation	27-2
27-1.08	Backfill	27-2
27-1.09	Inspection	27-2
<u>27-2</u>	<u>Materials</u>	27-2
27-2.01	General	27-2
27-2.02	Submittals	27-2
27-2.03	Concrete	27-2
27-2.03-A	Portland Cement	27-3
27-2.03-B	Water	27-3
27-2.03-C	Coarse Aggregate	27-3
27-2.03-D	Fine Aggregate	27-3
27-2.03-E	Fly Ash	27-3

27-2.03-F	Admixtures	27-3
27-2.04	Reinforcement	27-3
27-2.04-A	Steel Bars	27-3
27-2.04-B	Epoxy-Coated Steel Bars	27-3
27-2.04-C	Welded Wire Fabric	27-4
27-2.05	Reinforcing Supports	27-4
27-2.06	Expansion Joint Filler	27-4
27-2.07	Waterstops	27-4
27-2.08	Floor Hardener	27-4
27-2.09	Curing Aids	27-4
27-2.10	Bonding Agent	27-4
27-2.11	Patching Grout	27-4
27-2.12	Non-Shrink Grout	27-5
27-2.13	Epoxy Anchors	27-5
<u>27-3</u>	<u>Form Work</u>	<u>27-5</u>
27-3.01	General	27-5
27-3.02	Submittals	27-5
27-3.03	Forming Systems	27-5
27-3.04	Tolerances	27-6
27-3.05	Chamfers	27-7
<u>27-4</u>	<u>Placing Reinforcement</u>	<u>27-7</u>
27-4.01	General	27-7
27-4.02	Submittals	27-7
27-4.03	Bending	27-7
27-4.04	Storage and Protection	27-7
27-4.05	Placement	27-7
27-4.06	Splices	27-8
27-4.07	Welding	27-8
27-4.08	Minimum Concrete Cover Over Reinforcement	27-8
27-4.09	Repair of Epoxy-Coated Reinforcing Bars	27-8
<u>27-5</u>	<u>Concrete Mix</u>	<u>27-9</u>
27-5.01	General	27-9
27-5.02	Submittals	27-9
27-5.03	Concrete Mix Composition	27-9
27-5.04	Concrete Designation	27-9
27-5.05	Minimum Cement Content	27-10
27-5.06	Fly Ash	27-10
27-5.07	Aggregate Sizing	27-10
27-5.08	Measuring Materials	27-10
27-5.09	Concrete Mixing and Transporting	27-10
<u>27-6</u>	<u>Concrete Workmanship</u>	<u>27-11</u>
27-6.01	Preparation for Placement	27-11
27-6.02	Conveying and Placing	27-11
27-6.03	Concrete Vibrating	27-12
27-6.04	Cold Weather Concrete Work	27-13
27-6.05	Hot Weather Concrete Work	27-13
27-6.06	Construction Joints	27-13
27-6.07	Expansion Joints	27-13
27-6.08	Waterstops	27-14
27-6.09	Nonshrink Grout	27-14
27-6.10	Epoxy Anchors	27-14

27-6.11	Other Embedded Items	27-14
<u>27-7</u>	<u>Form Removal, Curing, and Protecting</u>	<u>27-14</u>
27-7.01	Form Removal	27-14
27-7.02	Curing and Protecting	27-15
27-7.02-A	Curing	27-15
27-7.02-B	Protecting	27-15
<u>27-8</u>	<u>Finishing</u>	<u>27-16</u>
27-8.01	General	27-16
27-8.02	Formed Surfaces	27-17
27-8.02-A	Formed	27-17
27-8.02-B	Repaired	27-17
27-8.02-C	Dressed	27-18
27-8.03	Screeded Areas	27-18
27-8.03-A	Screeded	27-18
27-8.03-B	Floated	27-19
27-8.03-C	Troweled	27-19
27-8.03-D	Lightly Broomed	27-19
27-8.03-E	Flooring Applied	27-19
27-8.03-F	Floor Hardener Applied	27-19
27-8.03-G	Abrasive, Nonskid Applied	27-19
<u>27-9</u>	<u>Concrete Fillets, Topping Slabs, and Equipment Pads</u>	<u>27-20</u>
27-9.01	General	27-20
27-9.02	Construction	27-20
<u>27-10</u>	<u>Testing</u>	<u>27-20</u>
27-10.01	General	27-20
27-10.02	Quality Testing	27-20
27-10.03	Watertightness	27-21
<u>27-11</u>	<u>Measurement and Payment</u>	<u>27-21</u>

SECTION 28 SHORING

<u>28-1</u>	<u>General</u>	<u>28-1</u>
28-1.01	Scope	28-1
28-1.02	Description of Work	28-1
28-1.03	Submittals	28-1
<u>28-2</u>	<u>Measurement and Payment</u>	<u>28-1</u>
28-2.01	Measurement.....	28-1
28-2.02	Payment	28-1

SECTION 29 SEEDING AND MULCHING

<u>29-1</u>	<u>General</u>	<u>29-1</u>
29-1.01	Scope	29-1
29-1.02	Description of Work	29-1
29-1.03	Sequence of Work	29-1
29-1.04	Location	29-1
29-1.05	Submittals	29-1
29-1.06	Inspection	29-1

<u>29-2</u>	<u>Materials and Installation</u>	29-2
29-2.01	General	29-2
29-2.02	Seedbed Preparation	29-2
29-2.03	Seeding	29-2
29-2.04	Straw Mulch	29-2
29-2.05	Fertilizer and Stabilizing Emulsion	29-2
29-2.06	Maintenance	29-3
<u>29-3</u>	<u>Measurement and Payment</u>	29-3
29-3.01	Measurement	29-3
29-3.02	Payment	29-3

SECTION 29 - 33 RESERVED

SECTION 34 BRASS PIPE AND FITTINGS

<u>34-1</u>	<u>General</u>	34-1
34-1.01	Scope	34-1
34-1.04	Design	34-1
34-1.05	Submittals	34-1
34-2	Materials	34-1
34-2.01	General	34-1
34-2.04	Brass Pipe and Fittings	34-1
<u>34-4</u>	<u>Measurement and Payment</u>	34-1
34-4.01	Measurement and Payment	34-1

APPENDIX A	Developer Guidelines for Water System Extensions
APPENDIX B	Conveyance Agreement Standard Form
APPENDIX C	Standard Specifications Section Cover Memoranda