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Golden State Water Company Standard Drawings

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Section 1

Pipeline Construction
NOTES:
1. Location and depth of existing and proposed utilities must be provided by the developer and shown on any plans submitted to the City/County Public Works Department for approval.

2. Changes may be permitted by GSWC in cases of conflicting facilities.

3. For commercial sidewalks, the fire hydrant shall be placed 18” behind sidewalk. Hydrants shall not be located in sidewalks.

4. Materials shall be selected from the accepted materials guideline.

5. Distance from curb face to water main is 4’ min for 8” pipe and 5’ min for 12” or larger pipe in residential/commercial developments in streets up to 40’ curb to curb. Distance can be 7’ in major streets greater than 40’ wide.

ITEM | DESCRIPTION
--- | ---
1 | Fire hydrant, locate in accordance with GSWC Std. Dwg. No. C-10
2 | Joint utilities trench
3 | Valve box
4 | Street lighting conduit in trench
5 | Street light base
6 | Domestic water main
7 | Reclaimed water main (where required)
8 | Storm drain
9 | Sewer main
10 | Gas main
CASE A  
FINISHED SURFACE  

EXIST SEWER  

10'  
NO RESTRICTIONS  

PARALLEL CONSTRUCTION REQUIREMENTS  
NEAR SEWERS

NOTES:  
1. New water mains shall not be installed in the same trench and shall be at least 10 feet horizontally from and 1 foot vertically above any parallel pipeline conveying:  
   a. untreated sewage  
   b. primary or secondary treated sewage  
   c. disinfected secondary recycled water  
   d. hazardous fluids such as fuels, industrial wastes and wastewater sludge  
2. Use professional judgement to propose construction that is protective of public health.

CASE B  
FINISHED SURFACE  

EXIST STORM DRAIN  

10'  
NO RESTRICTIONS  

PARALLEL CONSTRUCTION REQUIREMENTS  
NEAR STORM DRAINS

NOTES:  
1. New water mains shall not be installed in the same trench and shall be at least 4 feet horizontally from and 1 foot vertically above any parallel pipeline conveying:  
   a. storm drainage  
   b. disinfected tertiary recycled water  
2. Use professional judgement to propose construction that is protective of public health.  
3. The vertical separation in Case B is required when the horizontal separation is less than 10 feet.

CASE C  
FINISHED SURFACE  

EXIST NON-POTABLE PIPE  

8'  
8'  
NO CONNECTION JOINTS OR ELSE DOW APPROVAL IS REQUIRED

CROSSING CONSTRUCTION REQUIREMENTS  
NEAR NON-POTABLE PIPELINES

NOTES:  
1. New water mains crossing an existing pipeline carrying non-potable water fluids (as listed in Case A or Case B) shall be constructed no less than 45-degrees to and at least 1 foot above the existing pipeline. A DDW waiver is not required if the angle of the crossing is greater than 45 degrees and the water main is at least 1 foot above the pipe being crossed.  
2. No connection joints shall be made in the waterline within 8 feet horizontal measured on either side of the non-potable fluid pipeline (wall to wall measurement).  
3. Use professional judgement to propose construction that is protective of public health.
1. Separation Standards per Division of Drinking Water Requirements (DDW)
   
a. The Minimum Separation Requirements Between Water Mains And Non–Potable Pipelines As Contained In Section 64572, Title 22, California Code Of Regulations
   
i. Parallel Construction Requirements:
      1. Sewer Lines: Water mains shall be at least 10 feet clear horizontal distance from sewer lines and 1 foot clear vertical distance above sewer lines.
      2. Storm Drain Or Recycled Water Pipelines: Water mains shall be at least 4 feet clear horizontal and 1 foot clear vertical distance above storm drain or recycled water pipelines.
   
ii. Crossing Construction Requirements: When pipelines must cross, potable water mains shall be at least 1 foot clear above non–potable pipelines and at no less than 45–degrees crossing angle.
   
iii. Separation distances as specified shall be measured from the nearest outside edge of each pipeline; i.e. the clear distance.
   
iv. Water mains and sewer lines must not be installed in the same common trench.
   
v. New water mains shall not be installed within 100 horizontal feet of the nearest edge of any sanitary landfill, wastewater disposal pond or hazardous waste disposal site or within 25 horizontal feet of the nearest edge of any cesspool, septic tank, sewage leach field, seepage pit, underground hazardous material storage tank or groundwater recharge project site without written approval of the Department of Drinking Water.

b. Exceptions to Basic Separation Standards
   
i. Local conditions may create a situation where there is no alternative but to install water mains at a distance less than that required by the Basic Separation Standards above. In such cases alternative construction criteria as shown below should be followed.
   
ii. Sewer mains of 24 inches in diameter or larger may create special hazards because of the large volumes of flow from a pipeline break. Therefore installations of water mains in the vicinity of sewer mains 24 inches in diameter or larger must be reviewed on a case–by–case basis by DDW to determine if the separation and protection measures are adequate.
GENERAL NOTES CONTINUED:

II. Construction of Water Lines Parallel to Sewer and Storm Drain Lines
   a. See Case A and Case B
   b. New water mains in this zone shall be constructed of Special Pipe Materials (see
      Section VI). Joints shall be restrained.

III. Construction of Water Lines Crossing Sewer and Storm Drain Lines
   a. See Case C
   b. The new water main in this zone shall have no joints in the area over the existing
      non-potable pipe unless they are restrained and shall be constructed of Special Pipe
      Material. Water main inverts under existing sewer or storm drain piped shall be
      constructed as shown on GSWC Standard Drawings P–39, P–40, P–41 or P–42.

IV. Crossings of a Sewer Force Main
   a. In addition to other sewer requirements, when a new water main crosses over an
      existing sewer force main the water main shall be constructed of pipe materials with a
      minimum rated working pressure of 200 psi.
   b. No water main shall cross under a sewer force main.

V. Crossings of Gravity Sewer Laterals
   a. Special construction criteria, as defined above, shall apply to sewer laterals that cross
      above a potable water main but not to sewer laterals that cross below a potable water
      main.

VI. Definition of Special Pipe Material
   a. Ductile iron pipe (Class 350) with bitumastic coating (AWWA C151), or
   b. Welded steel pipe, CML & wrapped or CML&C rated at 200 psi or greater, or
   c. PVC water pipe (Class 305 DR14) (AWWA C–900) or equivalent, or
   d. Reinforced Concrete Pressure Pipe, Steel Cylinder Pipe, 200 psi minimum, (AWWA C300,
      C301 or C303, latest revisions), or
   e. HDPE pipe with fusion welded joints, (DR–18, 200 psi minimum) (AWWA C906)
UNPAVED AREAS, REPLACE WITH IDENTICAL MATERIAL AND FINISH. MINIMUM THICKNESS OF REPAIR TO MATCH EXISTING OR OTHER MATERIAL AS APPROVED BY GSWC.

MIN. 3" THICK @ 3" MAX COBBLES

EXIST. SURFACE

NATIVE MATERIAL BACKFILL OR CLASS 2 AB COMPACTED PER SPECIFICATIONS OR AS REQUIRED PER CITY/COUNTY PERMIT

WARNING TAPE

TRACER WIRE, INSULATED #10 SOLID COPPER TRACER WIRE (TAPPED TO PIPE EVERY 5 FEET)

WATER LINE

SELECT SAND, SHOVEL SLUICED UNDER HAUNCHES

SAND GRADATION REQUIREMENTS

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NOTES:

1. Trench and pavement per City/County permit requirements or as noted on the drawing and Std. Dwg. P-4.

2. Compaction of backfill per specifications.

3. Pipe base shall be 12" thick where native material has rocks larger than 6 inches in trench bottom.

4. Contractor shall hand excavate "bell hole" for each pipe joint so that the weight of the pipe does not rest on the bell. Contractor to refill and hand-tamp each "bell hole" prior to completing the placement of the bedding.

5. For areas where native soil contains cobbles and large stones (such as Rancho Cordova), place geotechnical filter fabric between Pipe Zone and Trench Zone backfill to prevent migration of rocks to the pipe.


7. Table shows gradation requirements for backfill in Pipe Bedding Zone.

8. Tracer wire shall be tested for electrical continuity by the Contractor prior to acceptance of the project.

APPROVED BY: GSWC STANDARDS COMMITTEE

EDC MANAGER  10/16

DATE

Golden State Water Company
A Subsidiary of American States Water Company

WATER PIPE BEDDING AND TRENCH BACKFILL

SCALE: NONE  10/16  1.1  P-3
## TRENCH DIMENSIONS

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### NOTES:

1. For specific repaving requirements see permit from City/County.

2. Contractor to clean surfaces that are adjacent new paving and remove rocks, dirt, old paving and/or old concrete that would prevent pavement compaction equipment from keeping contact with the new paving and prevent proper compaction of the new pavement.

3. Temporary paving shall be min. 2-inches thick and installed over a trench zone section that is level and square.
SCENARIO A

4" OR LARGER LATERAL TRENCH (LONG OR SHORT SIDE). RESURFACING REQUIREMENT PER THE LOCAL GOVERNING AGENCY.

RESURFACING AREA=10' MAXIMUM WIDTH (SEE NOTE 3).

LONG SIDE 2" OR SMALLER LATERAL RECEIVING PIT. RESURFACING REQUIREMENT PER THE LOCAL GOVERNING AGENCY (SEE NOTE 8).

NOTES:

1. TRENCH REPAIRS PER THE LOCAL GOVERNING AGENCY.
2. 1-1/2" OR 2" GRIND AND CAP PER THE LOCAL GOVERNING AGENCY, SHALL ENCOMPASS THE PIPELINE TRENCH AND DOMESTIC SERVICE CUTS.
3. THE RESURFACING AREA OVER THE TRENCH SHALL MAINTAIN A CONSTANT WIDTH THROUGHOUT THE ENTIRE PROJECT.
4. SCENARIO A - SHORT SIDE 2" OR SMALLER LATERAL SHALL BE INSTALLED BY METHOD OF OPEN CUT OR PNEUMATIC BORE.
5. SCENARIO B - SHORT SIDE 2" OR SMALLER LATERAL SHALL BE INSTALLED BY PNEUMATIC BORE. NO OPEN TRENCH UNLESS AUTHORIZED BY GSWC.
6. SCENARIO A AND B - LONG SIDE 2" OR SMALLER LATERAL SHALL BE INSTALLED BY USE OF PNEUMATIC BORE. NO OPEN TRENCH UNLESS AUTHORIZED BY GSWC.
7. LONG SIDE 2" OR SMALLER LATERAL RECEIVING PIT SHALL BE UNIFORM IN SIZE AND ALIGNMENT.
8. FLOATER (SECTION BETWEEN THE EDGE OF TRENCH TO THE EDGE OF EXISTING PAVEMENT) SHALL BE 2-3 FEET, OR AS REQUIRED BY THE LOCAL GOVERNING AGENCY.
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**NOTE:**

1. GSWC Standard for Trench Repaving Detail shall be used except where City/County repaving requirements are greater or as required by the encroachment permit.
NOTES:

1. Bearing area against undisturbed soil shall be the same as for dead ends. See Std. Dwg. P-18 for required thrust block area.

2. When called out on plans, install blow-off.

3. Thrust blocks shall be class 560-C-3250 concrete, unless otherwise specified.

4. All buried bolts shall be coated with "Devwrap 142S".

REMOVE EXIST. TEE
COMMON WHEN ABANDONING MAINS IN ALLEYWAYS & BACKYARD EASEMENTS

CUTTING & PLUGGING WATER MAINS

State A Subsidiary of American States Water Company
NOTES:

1. Use of trench plates shall meet the current requirements of the City/County jurisdiction where the work is being done or this drawing, whichever is more stringent.


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<th>Min. Plate Thickness</th>
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<td>1”</td>
</tr>
<tr>
<td>41’-63”</td>
<td>1 3⁄4”</td>
</tr>
</tbody>
</table>

3. For spans greater than 63’ a structural design shall be prepared by a California registered civil engineer.

4. All steel plates used in or out of the traveled way shall be without deformation. The GSWC representative shall determine the trueness of the steel plate by using a straight edge and will reject any plate that is permanently deformed.

5. Steel plates used in the traveled portion of the right of way shall have a surface that was manufactured with a nominal Coefficient of Friction (COF) of 0.35. The contractor shall determine what amount of surface wear is acceptable, and independently ascertain when to remove, test, or resurface an individual steel plate.

6. Contractor shall not install any steel plate that is permanently deformed or delivered without the required surfacing.

7. A warning sign meeting Caltrans standards shall be placed in advance of steel plate bridging. This sign shall be used with all other required construction signing.
NOTES:

1. On roads without curbs, fire hydrants shall be located within the road right of way, one foot clear from the property line unless otherwise indicated on the plans. The 3" square concrete pad under the hydrant shall be constructed.

2. Hydrants, risers and curbs are to be painted per local fire department requirements.

3. Ductile iron pipe shall be used when the main line is D.I.P.

4. In LA County, valves shall be 10’ – 25’ from hydrant. Install 2 valves if distance from main is greater than 25’. Include a 90° bend on 6” lateral pipe.

5. Fire hydrants shall be located per GSWC Std. Dwg. No. C-10.
1. On roads without curbs, fire hydrants shall be located within the road right of way, one foot clear from the property line unless otherwise indicated on the plans. The 3’ square concrete pad under the hydrant shall be constructed.

2. Hydrants, risers and curbs are to be painted per local fire department requirements.

3. In Wrightwood District, cover over main shall be 42” from top of pavement, use hydrant with minimum 54” bury length.

4. Adequate clearance between thrust block and drain hole shall be provided to assure proper drainage.

5. Ductile iron pipe shall be used when the main line is DIP.

6. In LA County, valves shall be 10’ – 25’ from hydrant. Install 2 valves if distance from main is greater than 25’. Include a 90° bend on 6” lateral pipe.

7. Fire hydrants shall be located per GSWC Std. Dwg. No. C-10.
NOTES:

1. GALVANIZED STEEL SHALL BE EPOXY COATED, SCH. 80 AND A53 GRADE B.

2. COATING MATERIALS SHALL BE PER GSWC PAINTING SPECIFICATIONS FOR ABOVE GRADE PIPING.

3. FLUSH OUT SHALL BE LOCATED SIMILAR TO GSWC STD. DWG. NO. C-10 FOR FIRE HYDRANTS.

4. ON ROADS WITHOUT CURBS, THE CONCRETE PAD UNDER THE FLUSH OUT SHALL BE LOCATED WITHIN THE ROAD RIGHT OF WAY, ONE FOOT CLEAR FROM THE PROPERTY LINE UNLESS OTHERWISE INDICATED ON THE PLANS.

5. DUCTILE IRON PIPE SHALL BE CEMENT LINED AND BITUMASTIC COATED AND BE USED WHERE MAIN INSTALLATION IS D.I.P.
NOTES:

1. On mains 12" and larger, install a 12" long flanged spool between 90° bend and gate valve.

2. Ductile iron pipe shall be used when the main line is DIP.

3. Coating materials shall be per GSWC painting specifications for above grade piping.

4. D.I.P. shall be cement lined and bituminous coated.

5. Fire hydrants shall be located per GSWC Std. Dwg. No. C-10.

6. On roads without curbs, flush out shall be located within the road right-of-way, one foot clear from the property line unless otherwise indicated on the plans. The concrete pad under the flush out shall be constructed.
1. Restrained joints are required.

2. Blow-off (hydrant body) to be painted "Safety Yellow" for potable water.

3. Blow-off shall be located similar to GSWC Std. Dwg. No. C-10 for fire hydrants.

4. DIP shall be cement lined and bitumastic coated.

5. On roads without curbs, flush out shall be located in the road right-of-way, one foot clear from the property line unless otherwise indicated on the plans. The concrete pad under the flush out shall be constructed.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>EACH</th>
<th>DESCRIPTION</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Std. 6&quot; tee branch</td>
<td>D.I. flg on 6&quot; branch</td>
<td>Set vertically down</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>6&quot; 90° L.R. bend</td>
<td>D.I. 6&quot; long radius, FLxFL</td>
<td>With thrust block</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>6&quot; gate valve</td>
<td></td>
<td>Resilient wedge, FLxFL</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>8&quot; valve well and cap</td>
<td>P-31 or P-32</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>6&quot; pipe blow-off lateral</td>
<td>FExFE or FExFE DIP or PVC</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>6&quot; std. fire hydrant bury</td>
<td></td>
<td>6 hole FExFE or FExMJ (6&quot;x54&quot; MIN.)</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>6&quot; residential fire hydrant</td>
<td>Std. Dwg. P-8 or P-9</td>
<td>4&quot;x2½&quot; James Jones JJ-3700, painted</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Valve anchor, Per GSWC Std. Dwg. No. P-43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>560 C3250 concrete pad</td>
<td>2'-6&quot;x2'-6&quot;x12&quot; deep</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>6&quot; dia. 90° base elbow, S.R.</td>
<td>FExFE or FExMJ</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>#10 copper tracer wire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

Item 8: Valve anchor, Per GSWC Std. Dwg. No. P-43

Item 9: 560 C3250 concrete pad, 2'-6"x2'-6"x12" deep

Item 10: 6" dia. 90° base elbow, S.R. FExFE or FExMJ

Item 11: #10 copper tracer wire taped to pipe
NOTES:

1. No sampling stations shall be installed beyond limits of public right of way without easements.
2. Door shall open to side opposite vehicular traffic.
3. Sampling stations shall be located similar to GSWC Std. Dwg. No. C-10 for Fire Hydrants.
4. Stainless steel materials to be electrically insulated from D.I.P. or copper materials.
5. In areas subject to freezing temperatures use sampling stations designed for use in freezing climates. See Potable Water Materials Guideline.
NOTES:

1. Maintain positive slope from main to air release valve.

2. Slip-on or copper fittings with silver solder brazing shall be used in lieu of copper pack joints.

3. Air valve assembly shall be located similar to GSWC Std. Dwg. No. C-10 for fire hydrants.

4. As an alternative the enclosure can be 12" dia. x 24" high.
NOTES:

1. Maintain positive slope from main to air release valve.
2. Slip-on or copper fittings with silver solder brazing shall be used in lieu of copper pack joints.
3. Air valve assembly shall be located similar to GSWC Std. Dwg. No. C-10 for fire hydrants.
LOW LINEAR DENSITY POLYETHYLENE ENCLOSURE (SANDSTONE COLOR) (20" DIA x 36" HIGH) ARMORCAST OR APPROVED EQUAL (SEE NOTE 5)

1" BRONZE BALL VALVE WITH FIPT, W/ BRONZE HANDLE

1" BRASS COUPLING OR TWO FLANGES

VALVE BOX PER GSWC STD. DWG. P–31 OR P–32 (WHICH EVER IS APPLICABLE OR AS SPECIFIED ON PLANS)

CURB & GUTTER

AC PAVEMENT

1" ELBOW, FIPT×COPPER, PACK JOINT

1" BALL VALVE, CC×MIP

1 1/8" COMBINATION AIR VALVE (SINGLE BODY) W/ INSECT SCREEN (ARI D–040 OR APPROVED EQUAL)

1" BRASS NIPPLE

28" SQ. CONC. BASE

14" SQUARE CONC. FILL (TO BE 6" BELOW PIPE)

1" BRASS NIPPLE

1" X 90° BRASS BEND

3/8"×6" ANCHOR BOLT (3 TOTAL)

1" BRASS PIPE

1" BALL VALVE CURB STOP W/ SQUARE NUT, COPPER PACK JOINT INLET & OUTLET

1" COPPER PIPE, TYPE 'K' SOFT

SERVICE SADDLE, (MAIN SIZE x 1" CC)

NOTES:

1. Maintain positive slope from main to air release valve.

2. Slip–on or copper fittings with silver solder brazing shall be used in lieu of copper pack joints.

3. Air valve assembly shall be located similar to GSWC Std. Dwg. No. C–10 for fire hydrants.

4. A foam insulator shall be used around A/V valve body, in areas where there are freezing conditions. See potable water materials guideline.

5. As an alternative, the enclosure can be 12" dia. x 24" high.
NOTES:

1. MAINTAIN POSITIVE SLOPE FROM MAIN TO AIR RELEASE VALVE.

2. SLIP–ON OR COPPER FITTINGS WITH SILVER SOLDER BRAZING SHALL BE USED IN LIEU OF COPPER PACK JOINTS.

3. AIR VALVE ASSEMBLY SHALL BE LOCATED SIMILAR TO GSWC STD. DWG. NO. C–10 FOR FIRE HYDRANTS.

4. A FOAM INSULATOR SHALL BE USED AROUND AIR VALVE BODY. SEE APPROVED MATERIALS LIST.

5. ON ROADS WITHOUT CURBS, THE METER BOX SHALL BE LOCATED WITHIN THE ROAD RIGHT OF WAY, ONE FOOT FROM THE PROPERTY LINE UNLESS OTHERWISE INDICATED ON THE PLANS.
LOW LINEAR DENSITY POLYETHYLENE ENCLOSURE (SANDSTONE COLOR)
(20" DIA x 36" HIGH)
ARMORCAST OR APPROVED EQUAL
(SEE NOTE 5)

2" BRONZE BALL VALVE WITH
FIPT, W/ BRONZE HANDLE

2" BRASS COUPLING OR TWO FLANGES

VALVE BOX PER GSWC STD.
DWG. NO. P–31 OR P–32 (WHICH
EVER IS APPLICABLE OR
AS SPECIFIED ON PLANS)

Curb & Gutter

AC Pavement

2" Elbow, FIT x COPPER,
PACK JOINT

2" Ball Valve, CCxMIP

28" SQ. CONC. BASE

¾" x 6" Anchor Bolt (3 Total)

2" Brass Nipple

14" Square Conc. Fill
(to be 6" below pipe)

2" x 90° Brass Bend

2" Ball Valve Curb Stop
W/ Square Nut, Copper
Pack Joint Inlet & Outlet

2" Copper Pipe,
(TYPE "K" SOFT)

NOTES:

1. Maintain positive slope from main to air release valve.

2. Slip-on or copper fittings with silver solder brazing shall be used in lieu of copper pack joints.

3. Air valve assembly shall be located similar to GSWC Std. Dwg. No. C–10 for fire hydrants.

4. A foam insulator shall be used around A/V valve body, in areas where there are freezing conditions. See potable water materials guideline.

5. As an alternative, the enclosure can be 12" dia. x 24" high.
NOTES:
1. All buried bolts shall be coated with "Bitumastic No. 50" or approved equal.
2. Thrust block areas based on 225 PSI pressure and 2,000 PSF allowable soil pressure with 2½ feet of cover minimum. Additional bearing area required for special conditions shall be approved by the district engineer.
3. Thrust block bearing faces shall be placed against undisturbed soil, approved compacted backfill or class 100–E–100 slurry.
4. Thrust blocks shall be 560–C–3250 concrete, unless specified otherwise.
   A. Install ¥4" bend rod handles.
   B. Use cardboard separators between blocks, if needed.

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>4&quot;</td>
<td>3.1</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6.3</td>
</tr>
<tr>
<td>8&quot;</td>
<td>10.9</td>
</tr>
<tr>
<td>10&quot;</td>
<td>16.3</td>
</tr>
<tr>
<td>12&quot;</td>
<td>23.1</td>
</tr>
<tr>
<td>14&quot;</td>
<td>31.0</td>
</tr>
<tr>
<td>16&quot;</td>
<td>40.1</td>
</tr>
</tbody>
</table>

APPROVED BY: GSWC STANDARDS COMMITTEE

EDC MANAGER DATE

Golden State Water Company
A Subsidiary of American States Water Company

STANDARD THRUST BLOCK

SCALE: DATE: REV: STANDARD DWG NO.
NONE 01/16 1.0 P–18
NOTES:

1. "X" and "Y" shall be determined by length values using the DIPRA design method if conditions differ from assumptions given on Std. Dwg. No. P–21.

2. If actual conditions differ from those listed above or the required restrained length cannot be met, the restrained length shall be determined by the design engineer and concurred with the district engineer.
**NOTES:**

1. If actual conditions differ from those listed above or the required restrained length cannot be met, the restrained length shall be determined by the design engineer and concurred with the district engineer.
NOTES:
(Use for Std. Dwg. NO. P-19, P-20, & P-21)

1. All joint within length "L" shall be restrained.

2. Assumed Depth of cover for 8" pipe or less to be 3.5’ min. (42”); 16” pipe or greater to be 4.0’ min. (48”).

3. Assumptions for determining length shown:
   - Test pressure: 225 psi
   - Type 4 laying conditions
   - A safety factor of 2
   - Sand/silt soil conditions
   - Polyethylene wrap

4. Length calculated using DIPRA restrained joint program.

5. If actual conditions differ from those listed above or the required restrained length cannot be met, the restrained length shall be determined by the design engineer and concurred with the district engineer.
NOTES:

1. For PVC carrier pipe, use polyethylene casing insulators with polyethylene skids.

2. For ductile iron carrier pipe, use stainless steel band spacers and insulators with glass filled polymer plastic runners.

3. All casing insulators shall be designed by the manufacturer for application given the particular carrier pipe O.D. and casing pipe I.D.

4. All bolts and bands shall be Type 304 stainless steel.

5. Spacing between the casing insulators shall be per the manufacturers recommendations except that there shall be at least 4 casing insulators per pipe section, one 12" from each joint and two centered in between.

6. Both ends of the casing between the casing and carrier pipe must be sealed watertight using an end seal selected from the Potable Water Material Guidelines. Bands shall be Type 304 stainless steel. Casing end seal shall be 1/4-inch thick styrene butadiene rubber.

7. All steel casing pipe joints shall be welded full circumference.

8. Materials shall be selected from the Potable Water Materials Guidelines.

9. HDPE casing may be used if it meets adequate strength for geotechnical conditions and with written approval from GSWC.
NOTES:

1. Tapping sleeve to be stainless steel per Potable Water Materials Guidelines.

2. Tapping sleeve and valve are to be completely wrapped with 8 mil. polyethylene encasement.

3. After installation and before hot tap is complete, the tapping sleeve shall be tested at system pressure, for a minimum of 15 minutes with no visible leakage.

4. Tapping sleeve shall have a full length and width gasket. O–Ring gaskets are not acceptable.

5. Diameter of the hot tap shall be one pipe size smaller than the main line diameter. Size on size hot taps will require special approval by GSWC.

6. Tapping valve shall have a flange insulation kit between ductile iron valve and stainless steel tapping sleeve.

<table>
<thead>
<tr>
<th>EXISTING WATER MAIN SIZE (INCHES)</th>
<th>TAPPING PIPE SIZE (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
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<td>18</td>
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</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

* L = LENGTH OF TAPPING SLEEVE (INCHES)
NOTES:
1. Cut-in tee may use F.E.xF.E. or F.E.xM.J. as called out on the drawings.
2. Use pipe material similar to existing mainline (PVC pipe shall be 3' min. length).

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F.E.xF.E. (or F.E.xM.J.) gate valve per Potable Water Material Guidelines.</td>
</tr>
<tr>
<td>2</td>
<td>D.I.P. F.E.xP.E. per Potable Water Material Guidelines.</td>
</tr>
<tr>
<td>3</td>
<td>F.E.xF.E. tee per Potable Water Material Guidelines.</td>
</tr>
<tr>
<td>4</td>
<td>Flexible coupling per Potable Water Material Guidelines. For same size O.D. use Ductile Iron M.J. sleeve.</td>
</tr>
</tbody>
</table>
NEW SERVICE INSTALLATION NOTES:

1. Meter box placement shall be per GSWC Std. Dwg. No. P-28 and/or as shown on plans. No meters shall be installed beyond limits of public right of way without easements, unless otherwise indicated on plans.

2. 12” minimum spacing between service taps, except on ACP and PVC mains where 24” minimum spacing shall be provided.

3. For HDPE service lines, snake the service line in the trench to provide enough slack to allow at least one foot of thermal contraction per 100 feet of length. Attach tracer wire to HDPE service line.

4. No joints permitted in service lines unless an elbow is used for the 2” water service connection.

5. All new services shall be installed using service saddles.

6. For 5/8” x 3/4” meter, use an A24 adapter.

7. For 3/4” x 3/4” meter, use an A34 adapter.

8. For a 1” angle meter valve, 1” copper pack joint x 3/4” meter nut may be utilized when specified on construction plans.

9. Services shall be installed a minimum of 10 feet from all sewer laterals and proposed street tree or street light locations.

10. In areas with corrosive soils use HDPE service lines with tracer wire.

11. Use silver solder (lead free) for all copper service work.

12. Applicant to install backflow prevention assembly per requirements of GSWC’s Cross-Connection Control Policy on all services as called for on the plans.

13. Curb marking will be as allowed by the local governing agency.

REPLACEMENT HOUSELINE NOTES:

1. Minimum size shall be no less than 1 inch.

2. If the existing houseline is copper, it will be replaced with type K same size copper. If the existing houseline is standard galvanized or plastic, it will be replaced with HDPE or PVC SCH 80 unless the local building code specifies other material.

3. There is to be no PVC above grade. Above grade pipe shall match customer’s existing material. For bidding purposes contractor shall bid copper pipe with dielectric couplings.

4. A gate valve will be installed on new houselines that bypasses an existing valve.

5. Depth of houseline shall meet the requirements of the local plumbing code.

6. Reconnect the houseline no closer than 14 feet to the house. Cap the original houseline at the location of the original meter, unless otherwise noted. Flush original line in both directions until clear before installing cap.

7. Contractor will supply a list of materials used for each houseline and an as-built drawing of houseline installation.

8. Contractor shall restore impacted areas to equal or better than condition prior to performing work.

9. Curb marking will be as allowed by the local governing agency.
NOTES:

1. No water meter box shall be installed in driveway or sidewalk unless shown on the plans. Meter boxes shall be set to prevent water runoff into the box.

2. No service closer than 24 inches to pipe bell.

3. Water meters in Wrightwood shall be installed at a minimum depth of 30 inches below grade. Use 2 stacked water meter boxes over meter.

4. HDPE service line shall be installed with a tracer wire that will terminate with a 12" coil in the meter box.

5. GSWC may provide a meter spacer in lieu of a meter.

6. Meter box shall have one 3"x4" opening on one end of the box (customer side).

<table>
<thead>
<tr>
<th>ITEM</th>
<th>EACH</th>
<th>DESCRIPTION</th>
<th>SPECIFICATION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Service saddle</td>
<td>Strap to be S.S.</td>
<td>See Potable Water Material Guidelines</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1&quot; bronze ball valve corp. stop</td>
<td>C.C. x C.T.S. compression</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Copper tubing or HDPE</td>
<td>1&quot; Type K, soft</td>
<td>One piece only, no splices</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1&quot; angle meter stop (ball valve)</td>
<td>1&quot; C.T.S. compression x meter lock wing w/ 1/8&quot; thick cloth inserted in gasket</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Water meter</td>
<td>5/8&quot;, 3/4&quot; or 1&quot;</td>
<td>Supplied by GSWC; installed by contractor</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Water meter box</td>
<td>12&quot;x20&quot; meter box</td>
<td>See Potable Water Material Guidelines</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Water meter box pad</td>
<td>14&quot;x24&quot;x6&quot;, 3/4&quot; crushed rock</td>
<td>Pad for meter and box</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Trench with sand envelope</td>
<td>Imported with SE &gt; 30</td>
<td>12&quot; min. &amp; 24&quot; max. trench width</td>
</tr>
</tbody>
</table>
# NOTES:

1. No water meter boxes shall be installed in driveways or sidewalks unless shown on the plans. Meter boxes shall be set to prevent water runoff into the box.

2. No services closer than 24" to pipe bell.

3. Water meters in Wrightwood shall be installed at a minimum depth of 30" below grade. Use 2 stacked water meter boxes over meter.

4. HDPE service line shall be installed with a tracer wire that will terminate with a 12" coil in the meter box.

5. Flattening copper pipe to make the radius is not allowed.

6. GSWC may provide a meter spacer in lieu of a meter.

<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Service saddle</td>
<td>Strap to be S.S.</td>
<td>See Potable Water Material Guidelines</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2&quot; bronze ball valve stop</td>
<td>2&quot; C.C. x C.T.S. compression</td>
<td>See Potable Water Material Guidelines</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Copper tubing or HDPE</td>
<td>2&quot; Type K, soft</td>
<td>One piece only, no bends, unless elbow is used. Elbow joints to be silver soldered.</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Elbow (optional)</td>
<td>2&quot; C.T.S.</td>
<td>See Potable Water Material Guidelines</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Angle meter stop (ball valve)</td>
<td>2&quot; C.T.S. compression x meter lock wing w/ 1/8&quot; thick cloth inserted in gasket</td>
<td>1/8&quot; thick cloth gasket at both meter flanges.</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Water meter</td>
<td>2&quot; flg meter</td>
<td>Supplied by GSWC; installed by contractor</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Bronze water meter flange</td>
<td>2&quot; F.I.P. threads w/ 1/8&quot; thk cloth insert drop in gasket</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Brass nipple</td>
<td>2&quot; brass close nipple, M.I.P. x M.I.P.</td>
<td>See Potable Water Material Guidelines</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Water meter box</td>
<td>17&quot;x30&quot; meter box</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Water meter box pad</td>
<td>20&quot;x34&quot;x6&quot;, 3/4&quot; crushed rock</td>
<td>Pad for meter box</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>Trench with sand envelope</td>
<td>Imported with SE &gt; 30</td>
<td>12&quot; min. &amp; 24&quot; max. trench width</td>
</tr>
</tbody>
</table>

Golden State Water Company
A Subsidiary of American States Water Company

Title: 2-INCH WATER SERVICE CONNECTION

Approved by: GSWC STANDARDS COMMITTEE

Date: 1/18

Drawn by: [Signature]

EDC Manager: [Signature]

Scale: None

Date: 1/18

Rev: 1.3

Standard DWG No: P-27
NOTES:
1. Meter box size for 1" service will be 12"x20".
2. Meter box size for 2" service will be 17"x30".
3. For Meter Box Details see GSWC Std. Dwg. No. P–26 and P–27.
4. Location of meter box shall be called out on the plans by referencing this standard drawing.
NOTE:

1. Two-way feed shall be provided where six or more services are to be installed. A maximum of fifteen services may be installed on one battery.
ITEM | DESCRIPTION
--- | ---
1 | Non-traffic bearing 20k rated vault located behind curb and/or parkway, with open bottom. Lid shall be lockable, torsion spring assisted aluminum design for 10K loading. Use 20K rated vault and lid in traffic locations. See Potable Water Materials Guidelines for acceptable manufacturers and GSWC Std. Dwg. No. P–36 for vault details.
2 | Alternate hatch cover: 3 piece steel bolt down traffic/parkway cover. See GSWC Std. Dwg. No. P–36.
3 | Bypass piping shall be wrapped and epoxy lined Sch. 80 steel for 3" or larger bypass pipe.
4 | Bypass shut off valve shall be epoxy lined gate valve for 3" or larger bypass pipe.
5 | Victaulic coupling shall be AWWA approved Style 31 for DI pipe or style 77 for steel pipe.
7 | Service saddle with ball curb stop for meter testing.
8 | All dissimilar metals shall be insulated from each other by insulated flanges or bushings.
9 | Install tracer wire from main to inside the vault.

### VAULT DESCRIPTION

<table>
<thead>
<tr>
<th>PIPE/METER SIZE</th>
<th>A (UPSTREAM SPOOL)</th>
<th>B (METER)</th>
<th>VAULT SIZE</th>
<th>FLOW RANGE (GPM)</th>
<th>BYPASS PIPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;</td>
<td>3&quot;</td>
<td>12&quot;</td>
<td>4&quot;x4&quot;</td>
<td>1–500</td>
<td>3&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>7&quot;</td>
<td>14&quot;</td>
<td>4&quot;x4&quot;</td>
<td>500–1,000</td>
<td>3&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>12&quot;</td>
<td>18&quot;</td>
<td>4&quot;x4&quot;</td>
<td>1,000–1,600</td>
<td>3&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>16&quot;</td>
<td>20&quot;</td>
<td>4&quot;x5&quot;</td>
<td>1,600–2,800</td>
<td>4&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>20&quot;</td>
<td>18&quot;</td>
<td>4&quot;x5&quot;</td>
<td>2,800–5,500</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

### NOTE:

1. Bypass piping not required for irrigation services.
2. Ultra sonic meter shall be of a type approved by N.S.F., F.M. and A.W.W.A.
3. Ultra sonic meter body shall be Type 316 stainless steel or epoxy coated ductile iron.
5. All pipes on both sides of vault shall be fully restrained.
NOTES:

1. The following valve box types shall be used unless otherwise noted:
   - Type 1 – Unimproved areas, concrete surfaced streets, concrete pads, or as called out on the plans.
   - Type 3 – All other locations as called out on the plans.

2. Final rim elevation to be \( \frac{3}{8} \)" to \( \frac{1}{4} \)" below final street grade.

3. More stringent installation requirements may be imposed by the entity having the jurisdiction over the valve box installation location.

4. A valve extension stem shall be provided where the depth to the operating nut exceeds 4 feet.

5. Contractor to form 18 inch diameter concrete collar in unimproved areas with sonotube and remove prior to backfill installation (typ).


7. For paving around valves not in the pavement, see GSWC Std. Dwg. No. C-12.
NOTES:

1. The following valve box types shall be used unless otherwise noted:
   Type 1 – Unimproved areas, concrete surfaced streets or pads or as called out on the plans.
   Type 3 – All other locations as called out on the plans.

2. Final rim elevation to be \( \frac{3}{8}" \) to \( \frac{3}{4}" \) below final street grade.

3. More stringent installation requirements may be imposed by the entity having the jurisdiction over the valve box installation location.

4. A valve extension stem shall be provided where the depth to the operating nut exceeds 4 feet.

5. Contractor to form 18 inch diameter concrete collar in unimproved areas with sonotube and remove sonotube prior to backfill installation (typ).


7. For paving around valves not in the pavement, see GSWC Std. Dwg. No. C-12.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Box and lid assembly per GSWC Std. Dwg. No. P–31 or P–32</td>
</tr>
<tr>
<td>2</td>
<td>Valve box</td>
</tr>
<tr>
<td>3</td>
<td>4”x4” redwood post</td>
</tr>
<tr>
<td>4</td>
<td>Route initials “GSWC–NC” for (normally closed) on all sides in 1½” high letters, ½” deep, clearly legible or security attach 1½” high brass label on all four sides engraved with “GSWC–NC”</td>
</tr>
</tbody>
</table>
**NOTES:**

1. Contractor shall clearly and permanently label the pressure zones on the inlet and outlet pipes, using 2" min. high numerals and letters.

2. Materials shall be selected from the Potable Water Materials Guidelines.

3. Finished surface (FS) elevations shall be shown on the plans.

4. Piping shall be painted "Desert Sand" for potable water.

5. (D1) = Large Diameter. (D2) = Small Diameter.

---

**PLAN**

**SELECTION TABLE**

<table>
<thead>
<tr>
<th>VALVE SIZE (INCHES)</th>
<th>MIN. FLOW RATE (GPM)</th>
<th>MAX. FLOW RATE (GPM)</th>
<th>DIA. BONNET (INCHES)</th>
<th>REQUIRED CLEAR SPACE (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>55</td>
<td>5.6</td>
<td>18</td>
</tr>
<tr>
<td>1½</td>
<td>1</td>
<td>125</td>
<td>5.6</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>210</td>
<td>6.6</td>
<td>18</td>
</tr>
<tr>
<td>2½</td>
<td>2</td>
<td>300</td>
<td>8.0</td>
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</tr>
<tr>
<td>3</td>
<td>2</td>
<td>460</td>
<td>9.1</td>
<td>22</td>
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<tr>
<td>4</td>
<td>4</td>
<td>800</td>
<td>11.5</td>
<td>24</td>
</tr>
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<td>6</td>
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<td>20.0</td>
<td>44</td>
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<td>35</td>
<td>4,900</td>
<td>23.6</td>
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<tr>
<td>12</td>
<td>50</td>
<td>7,000</td>
<td>28.0</td>
<td>52</td>
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<tr>
<td>14</td>
<td>70</td>
<td>8,400</td>
<td>32.8</td>
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<tr>
<td>16</td>
<td>95</td>
<td>11,000</td>
<td>35.5</td>
<td>60</td>
</tr>
</tbody>
</table>

* Pressure reducer valves larger than 12" may require a larger vault. Verify dimensions needed.

**ITEM**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(D1) Pressure reducer valve, FE</td>
</tr>
<tr>
<td>2</td>
<td>(D2) Pressure reducer valve, FE</td>
</tr>
<tr>
<td>3</td>
<td>Service saddle with 1&quot; ball valve for pressure gauges (4 req’d)</td>
</tr>
<tr>
<td>4</td>
<td>(D1) Gate valve, resilient wedge type (2 required)</td>
</tr>
<tr>
<td>5</td>
<td>(D2) Gate valve, resilient wedge type (2 required)</td>
</tr>
<tr>
<td>6</td>
<td>(D1) FE x grooved D.I. spool (length as required)</td>
</tr>
<tr>
<td>7</td>
<td>(D1) D.I. spool, FE</td>
</tr>
<tr>
<td>8</td>
<td>D.I. spool, FE (length as required)</td>
</tr>
<tr>
<td>9</td>
<td>D.I. spool, FExPE (length as required)</td>
</tr>
<tr>
<td>10</td>
<td>(D1) Victaulic coupling, grooved</td>
</tr>
<tr>
<td>11</td>
<td>(D2) Victaulic coupling, grooved</td>
</tr>
<tr>
<td>12</td>
<td>Pipe support (2 required)</td>
</tr>
<tr>
<td>13</td>
<td>90° elbow (2 required)</td>
</tr>
<tr>
<td>14</td>
<td>Required clear space for D1 valve</td>
</tr>
<tr>
<td>15</td>
<td>Required clear space for D2 valve</td>
</tr>
<tr>
<td>16</td>
<td>6”x6” concrete vault (shown) with H-20 rated spring assisted hinged lid (See GSWC Std. Dwg. No. P-36). Vault size to be determined based on valve size.</td>
</tr>
</tbody>
</table>
NOTES:

1. Contractor shall clearly and permanently label the pressure zones on the inlet and outlet pipes. Use 2” min. high numerals and letters.

2. Materials shall be selected from the Potable Water Materials Guidelines.

3. Finished surface (FS) elevations shall be shown on the plans.

4. Piping shall be painted “Desert Sand” for potable water.

5. (D1) = Large Diameter. (D2) = Small Diameter.

* Pressure reducer valves larger than 12” may require a larger vault. Verify dimensions needed.
NOTES:

1. The backflow preventer assembly shall consist of an approved Reduced Pressure or Double Check Valve in accordance with the GSWC Water Quality Department requirements. The assemblies shall be suitable for supply pressures.

2. A backflow preventer assembly for a fire service shall consist of an approved Reduced Pressure Principle Detector Assembly (RPDA) or Double Check Valve Detector Assembly (DCDA) in accordance with the GSWC water quality department requirements. The assemblies shall be suitable for supply pressure.

3. It is recommended that an angle style pressure reducing valve be installed on the upstream line of the backflow preventer when pressure in excess of 80 P.S.I. or more is supplied per section 608.2 of the Uniform Plumbing Code.

4. It is recommended that wye strainers be installed on the upstream side of the backflow preventer body. If required, a pressure regulator with a serviceable screen can be substituted for the wye strainer.

5. Location and installation shall be per plan as submitted to and accepted by GSWC.

6. It is recommended that all assemblies 2–1/2" and larger to be installed shall be equipped with resilient wedge gate valves.

7. Locate the assembly within 5 feet of customer service valve as possible. Other locations must be approved prior to installation.

8. Assemblies shall not be located in areas subject to flooding.

9. Only security enclosures providing adequate clearances and full view of assemblies are permitted.

10. Landscape or construction around assembly shall permit an unobstructed view of the assembly from the street.

11. Final inspection and acceptance test shall be provided to GSWC by the customer using a certified backflow tester.

12. No connections or tees are permitted between meter and backflow preventer.

13. It is recommended that sizes 3" and larger have additional pipe support.

14. It is recommended that the backflow assembly be the same size or one size larger than the meter.

15. Materials may be selected from the GSWC Potable Water Materials Guidelines.
NOTES:

1. Developer shall install a GSWC acceptable backflow preventer. Installation shall comply with all applicable rules, regulations, and ordinances. Depending on the application, a Reduced Pressure Principle Detector Assembly (RPDA) or Double Check Valve Detector Assembly (DCDA) may be required.

2. The assembly must be accessible for testing and maintenance. The assembly shall be installed above ground and a minimum of 12" above finished grade with a maximum of 36" and a minimum clearance of 12" or as needed if installed close to a building or structure.

3. All newly installed Backflow Prevention Assemblies must be tested in accordance with applicable regulations prior to being put in service and yearly thereafter. Copies of test results shall be submitted to GSWC prior to activation.

4. The Backflow Assembly shall be installed within five feet of the point of connection to the utility. There may be no connections or tees between the meter or point of connection and the Backflow Assembly.

5. Assemblies shall be horizontal and level unless approved for other orientations.

6. Backflow Assemblies are to be used within their rated operating conditions.

7. All installations of Backflow Assemblies must be in compliance with state and local plumbing and building codes. Contact local administrative authority for detailed requirements.
NOTES:

1. Vaults shall be designed for AASHTO 20K loads with open bottom and lockable torsion spring assisted aluminum lids.

2. When total depth is greater than 5 feet an attached aluminum ladder shall be provided with a Ladder-up Safety Pole.

3. Vaults for meter installation shall be equipped with a meter reading lid centered over the meter if called for on the plans.

4. Joints between vault sections shall have a butyl rubber sealant installed.

5. Install 6" high x 12" wide concrete base under all vault walls.

6. Bottom of vault shall be filled with 8" thick minimum layer of compacted ¾" crushed rock compacted or Class 2 AB.


**Approval Information:**

- **Approved By:** GSWC Standards Committee
- **Date:** 01/18
- **Standard Dwg No.:** P−36
- **Scale:** NONE
- **Rev:** 1.3
- **Title:** Utility Vault Installation

Gold State Water Company
A Subsidiary of American States Water Company
NOTES:

1. Opening thru vault wall shall be sized to accommodate pipe and rubber sealing device.

2. Buried application is shown. Where outside face of structure is above grade, fill the outside 2" of the sleeve with non-shrink grout.

NOTES:
1. Gasket shall be Type 'E' full face phenolic with O-Ring.
2. Sleeve shall be G10 Class.
3. Washers shall be G10 Class.
NOTES:

1. Pipe and fittings shall be standard weight steel, fusion bonded epoxy lined and coated per AWWA C550. All inverts shall be shop fabricated with exception of field installation of weld-on-flanges. Units shall provide 12'' extra vertical length.

2. Service saddle shall be installed on the high points of the offset for the installation of combination air release vacuum relief valve, as shown on the plan. Service saddle shall be 1'' on 8'' and smaller mains, and 2'' on larger existing mains.

3. If utility conduit is non–potable, minimum distance shall comply with DDW Waterworks Standards and Std. Dwg. No. P–2.

4. Trench backfill and bedding shall be as shown on Standard Drawing No. P–3 or as required by the local agency.
NOTES:

1. The concrete restraining blocks shall be a minimum of 24" high and 12" thick. The top of the block shall be no more than 6" above top of pipe.

2. All pipe joints at 90° bends shall be mechanical joint with Megalug or retaining gland. Flanged joints may be used where conditions warrant.

3. Installation shall be encased in a polyethylene wrapper per AWWA Standard C105.

4. Service saddle and combination air release vacuum relief valve shall be installed on the high points of the offset as shown or the plans. Service saddle shall be 1" on 8" and smaller existing mains and 2" on larger existing mains.

5. If bottom spool piece exceeds 18 feet, connect pipe sections with GSWC approved joint restraints.

6. If utility conduit is non-potable, minimum dimension shall comply with DDW Waterworks Standards and Std. Dwg. P–2.

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7. Trench backfill and bedding shall be as shown on Std. Dwg. No. P-3 or as required by the local agency.
NOTES:

1. All anchor rods are to be covered with 80 mils of bitumastic compound.

2. The anchor block shall be keyed no less than 12 inches into undisturbed soil of the trench wall and no less than 6 inches into the trench bottom.

3. Anchor block required only when valve is not flanged to a tee or cross.

4. Concrete shall be 2500 psi minimum with 3-inches minimum cover rebar. No concrete shall be poured on valve or joint.

5. Wrap exterior of valve, actuator and rebar with 8 mil polyethylene sheathing and tape.
Section 2

Civil and Site Work
NOTES:

1. This is to be used only where a storm drain connection cannot be made.

2. If existing curb is cracked or has an expansion joint within 3 feet of the proposed saw cut, extend limits of cut to that point.

3. An approved backflow prevention method shall be installed upstream to curb drain box.
NOTES:

1. Pipe supports shall be painted and coated in accordance with the GSWC standard paint specifications. Color to match piping.

2. All threaded areas shall be coated with "never-seize" or other equivalent anti-rust lubricant.

3. Support to be installed under all valves and at 10 foot maximum spacing.

4. Steel plate can be attached to a concrete pad if necessary using wedge type anchor bolts designed for use in concrete. Anchor bolts shall be be installed at least 2" into concrete and be ½" diameter x 3" long to allow for a washer and nut on the end. Bolt, washer and nut shall be galvanized for corrosion protection.
DETAILS FOR DOUBLE REINFORCEMENT
SEE REINFORCING SCHEDULES FOR REQD USE

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

REINFORCED CONCRETE BLOCK WALL

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

601-3

APPROVED BY:

Golden State Water Company
A Subsidiary of American States Water Company

EDC MANAGER

01/16

DATE

SCALE: DATE: REV STANDARD DWG NO.

NONE 01/16 1.0 C-3A
DETAILS FOR SINGLE REINFORCEMENT
SEE REINFORCING SCHEDULES FOR ALLOWED USE
SEE SHEET 1 FOR OTHER DIMENSIONS AND DETAILS

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION
REINFORCED CONCRETE BLOCK WALL

STANDARD PLAN
601-3
SHEET 2 OF 6

APPROVED BY:
GSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

EDC MANAGER 01/16

SCALE: DATE: REV
NONE 01/16 1.0

TITL:
REINFORCED CONCRETE BLOCK WALL

STANDARD DWG NO.
C-3B
REINFORCED CONCRETE BLOCK WALL

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

601-3

SHEET 3 OF 6

NOTE:
SINGLE VERTICAL REINFORCING BARS SHALL BE CENTERED IN CELLS. DOUBLE ROWS OF VERTICAL REINFORCING BARS SHALL HAVE THE REINFORCEMENT PLACED IN EACH FACE (EF).

#4 (#13M) EACH FACE

4 COURSES MAX.

#4 @ 12" (#13M @ 300)

SPREAD FOOTING TYPE 1 AND 2

4 COURSES MAX.

#4 @ 18"

(600 mm) (300)(600 mm)

OPTIONAL CORNER SHAPE

1:1

TRENCH FOOTING TYPE 3

24" 12" 24"

(600 mm) (300) (600 mm)

#4 (2"

(15 mm) 2"

(50 mm) 0"

(150 mm) 1"

(25 mm) 2"

(50 mm) 1"

(15 mm) 2"

PLACE FULL HEIGHT REINFORCEMENT TO MATCH VERTICAL WALL REINFORCEMENT AT EACH SIDE OF EXPANSION JOINT, CHANGE IN HEIGHT, OR END OF WALL

WALL ELEVATION

PREMOLDED EXPANSION JOINT FILLER

FULL HEIGHT VERTICAL BAR EACH SIDE OF JOINT TO MATCH VERTICAL WALL REINFORCEMENT

CAULKING SEALANT CONT. EACH SIDE

STOP JOINT REINFORCEMENT EACH SIDE OF EXPANSION JOINT.
SEE NOTE 13

CORNER DETAIL

4'-0" (1200 mm) MIN BOND BEAM AND REINFORCEMENT EXTENSION AT STEP

TOP OF FOOTING ELEVATION

TYPE 1 AND 2 FOOTING SHOWN

FOOTING STEP DETAILS

EDC MANAGER 01/16

Golden State Water Company
A Subsidiary of American States Water Company
<table>
<thead>
<tr>
<th>STEM</th>
<th>HO (m)</th>
<th>Ht (mm)</th>
<th>T (mm)</th>
<th>W1 TYPE 1</th>
<th>W2 TYPE 2</th>
<th>F TYPE 3</th>
<th>CUTOFF</th>
<th>SPACING, O.C.</th>
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<td>6'-0&quot;</td>
<td>6&quot;</td>
<td>150 mm</td>
<td>12&quot;</td>
<td>2'-3&quot;</td>
<td>2'-3&quot;</td>
<td>2'-9&quot;</td>
<td>#4 @ 48&quot;</td>
<td>(1.8 m)</td>
</tr>
<tr>
<td></td>
<td>8&quot;</td>
<td>200 mm</td>
<td>12&quot;</td>
<td>2'-9&quot;</td>
<td>2'-6&quot;</td>
<td>3'-3&quot;</td>
<td>#4 @ 48&quot;</td>
<td>(2.4 m)</td>
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<td>3'-9&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(3.0 m)</td>
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<table>
<thead>
<tr>
<th>STEM</th>
<th>HO (m)</th>
<th>Ht (mm)</th>
<th>T (mm)</th>
<th>W1 TYPE 1</th>
<th>W2 TYPE 2</th>
<th>F TYPE 3</th>
<th>CUTOFF</th>
<th>SPACING, O.C.</th>
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<tbody>
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<td>6'-0&quot;</td>
<td>6&quot;</td>
<td>150 mm</td>
<td>12&quot;</td>
<td>2'-9&quot;</td>
<td>2'-6&quot;</td>
<td>3'-3&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(1.8 m)</td>
</tr>
<tr>
<td></td>
<td>8&quot;</td>
<td>200 mm</td>
<td>12&quot;</td>
<td>3'-9&quot;</td>
<td>3'-0&quot;</td>
<td>3'-9&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(2.4 m)</td>
</tr>
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<td>10'-0&quot;</td>
<td>8&quot;</td>
<td>200 mm</td>
<td>12&quot;</td>
<td>4'-3&quot;</td>
<td>3'-6&quot;</td>
<td>4'-3&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(3.0 m)</td>
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</tbody>
</table>

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<tr>
<th>STEM</th>
<th>HO (m)</th>
<th>Ht (mm)</th>
<th>T (mm)</th>
<th>W1 TYPE 1</th>
<th>W2 TYPE 2</th>
<th>F TYPE 3</th>
<th>CUTOFF</th>
<th>SPACING, O.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6'-0&quot;</td>
<td>6&quot;</td>
<td>150 mm</td>
<td>12&quot;</td>
<td>3'-9&quot;</td>
<td>2'-9&quot;</td>
<td>3'-6&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(1.8 m)</td>
</tr>
<tr>
<td></td>
<td>8&quot;</td>
<td>200 mm</td>
<td>12&quot;</td>
<td>3'-9&quot;</td>
<td>3'-0&quot;</td>
<td>4'-0&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(2.4 m)</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>8&quot;</td>
<td>200 mm</td>
<td>12&quot;</td>
<td>4'-9&quot;</td>
<td>4'-0&quot;</td>
<td>4'-9&quot;</td>
<td>#4 @ 32&quot;</td>
<td>(3.0 m)</td>
</tr>
</tbody>
</table>

---

**NOTE**

SINGLE VERTICAL REINFORCING BARS SHALL BE CENTERED IN CELL.
* FOR SINGLE A-BARS IN FOUNDATION, SEE SHEET 2.
DOUBLE ROWS OF VERTICAL REINFORCING WHERE INDICATED SHALL BE PLACED AT EACH FACE (EF).
DESIGN CRITERIA:

MATERIALS DESIGN DATA:

REINFORCING STEEL  
fy = 60 KSI (400 MPa)

CONCRETE 28TH-DAY STRENGTH:
FOOTING  
f 'c = 2,500 PSI (17 MPa)

CONCRETE MASONRY:
PARTIALLY GROUTED  
f 'm = 1,500 PSI (10 MPa)

DESIGN CODE:  
GOVERNING BUILDING CODE

DESIGN METHOD:

CONCRETE  
ULTIMATE STRENGTH METHOD

CONCRETE MASONRY  
WORKING STRESS METHOD

FOUNDATION:

ALLOWABLE SOIL BEARING PRESSURE  
1,000 PSF (48 kPa)

ALLOWABLE LATERAL SOIL BEARING PRESSURE  
100 PSF / FT OF DEPTH  
(157 kPa / m OF DEPTH)

LATERAL SLIDING RESISTANCE AT CONTACT AREA:  
130 PSF (6.2 kPa)

SOIL DENSITY  
110 PCF (1760 kg/m^3)

FACTORS OF SAFETY FOR SPREAD FOOTING (BASED ON SERVICE LOAD CONDITIONS):

OVERTURNING  
1.75 MINIMUM

SLIDING  
1.5 MINIMUM

1/3 INCREASE IS ALLOWED FOR SHORT TERM LOADS.
GENERAL NOTES:

1. CONSULT WITH LOCAL GOVERNING AGENCY FOR DETERMINATION OF LATERAL LOAD AND WALL TYPE LISTED IN TABLES, FOR PROJECT-SPECIFIC USE.

2. DISTANCE OF THE FOOTING FROM DESCENDING SLOPE SHALL BE PER LATEST GOVERNING BUILDING CODE OR PER AGENCY REQUIREMENTS.

3. SPECIAL INSPECTION IS NOT REQUIRED FOR WALLS.

4. GROUND LINE TO BE AT THE SAME ELEVATION ON BOTH SIDES OF THE WALL. WALL SHALL NOT BE USED TO RETAIN EARTH.

5. USE TABULAR INFORMATION FOR THE NEXT HIGHER H FOR INTERMEDIATE WALL HEIGHTS THAT ARE BETWEEN THE H'S GIVEN.

6. CONCRETE SHALL BE 500–C–2500 (295–C–17) PER SSPWC 201–1.1.2.

7. REINFORCING SHALL BE LAPPED A MINIMUM 48 BAR Dia. GRADE 60 UNLESS NOTED OTHERWISE PER SSPWC SECTION 201–2, 303–4.1.3, JOINT REINFORCING WIRE: ASTM A82.

8. ALL REINFORCED CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH SSPWC 303.

9. FOR TYPE OF BLOCKS, BOND PATTERN AND JOINT FINISH, SEE PROJECT PLANS.

10. ALL MASONRY CONSTRUCTION TO BE IN ACCORDANCE WITH SSPWC 303–4.

11. HOLLOW MASONRY UNITS...ASTM C–90, TYPE I, NORMAL WEIGHT UNITS.

   MORTAR ...:1/2:3; PORTLAND CEMENT – LIME – SAND RATIO, 1800 PSI (13 MPa) PER SSPWC 202–2.2.1.

   GROUT ......:3:2 PORTLAND CEMENT – SAND – PEA GRAVEL RATIO, 2,000 PSI (14 MPa) PER SSPWC 202–2.2.2.

12. PROVIDE FULL MORTAR BED AT THE BOTTOM OF THE FIRST COURSE AND OMIT MORTAR BETWEEN VERTICAL JOINTS OF LOWEST EXPOSED COURSE.

13. WHEN BLOCKS ARE LAID IN STACKED BOND, CONTINUOUS HORIZONTAL JOINT REINFORCEMENT SPACED AT 4′–0″ (1200 mm) OC SHALL BE PROVIDED IN ADDITION TO THE BOND BEAM REINFORCEMENT PER SSPWC 303–4.1.2, LOCATE REINFORCEMENT IN JOINTS THAT ARE APPROXIMATE MIDPOINT BETWEEN BOND BEAMS.

14. BOND BEAMS SHALL BE PLACED AT TOP OF WALL AND SUBSEQUENTLY SPACED NOT TO EXCEED 4′–0″ (1200 mm) O.C. BELOW.

15. ONLY CELLS WITH REINFORCING BARS SHALL BE GROUTED PER SSPWC 303–4.1.3.

16. HORIZONTAL JOINTS SHALL BE TOOLED CONCAVE OR WEATHERED, VERTICAL JOINTS SHALL BE TOOLED CONCAVE OR RAIRED. WEATHERED AND RAIRED JOINTS ARE NOT PERMITTED FOR SLUMPED BLOCKS.
NOTES:
1. Specific fence and gate design and detail shall be submitted as a shop drawing.
2. Curved tines can be used if shown on the shop drawings.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fence posts, 4&quot; square, 3/16&quot; wall (6&quot; o.c. max.)</td>
<td>10</td>
<td>Track</td>
</tr>
<tr>
<td>2</td>
<td>Gate frame, 2&quot; square, 14 GA.</td>
<td>11</td>
<td>Trolley</td>
</tr>
<tr>
<td>3</td>
<td>Track</td>
<td>12</td>
<td>Fence line</td>
</tr>
<tr>
<td>4</td>
<td>Carriage post, 4&quot; square, 3/16&quot; wall</td>
<td>13</td>
<td>Perimeter fence/wall</td>
</tr>
<tr>
<td>5</td>
<td>Guide Rollers</td>
<td>14</td>
<td>Steel tube horizontal bar, 1 3/8&quot;, 16 GA</td>
</tr>
<tr>
<td>6</td>
<td>1/4&quot;x3/4&quot; truss rod</td>
<td>15</td>
<td>Padlock hasps</td>
</tr>
<tr>
<td>7</td>
<td>1-1/8&quot; square, 16 GA. picket</td>
<td>16</td>
<td>Drop latch</td>
</tr>
<tr>
<td>8</td>
<td>Rollers</td>
<td>17</td>
<td>Concrete footing</td>
</tr>
<tr>
<td>9</td>
<td>Gate, width will vary depending on site</td>
<td>18</td>
<td>Hinge</td>
</tr>
</tbody>
</table>

APPROVED BY: GSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

EDC MANAGER
10/16

DATE

STEEL TUBE FENCE AND GATE

SCALE: DATE: REV STANDARD DWG NO.
NONE 10/16 1.1 C-4A
NOTES:
1. Specific fence and gate design and detail shall be submitted as a shop drawings.
2. Chain link fence and gates shall have 2" vinyl slats, colored.
3. All posts and hardware shall be galvanized.
4. All chain link fencing to be provided with top rails.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Corner and End Posts (10’ o.c. max) 2 ½” NPS (2.875”)</td>
</tr>
<tr>
<td>2</td>
<td>Walk Gate Posts 3” NPS (3.5”)</td>
</tr>
<tr>
<td>3</td>
<td>Entrance Swing Gate Posts 6 ½” NPS (0.825”)</td>
</tr>
<tr>
<td>4</td>
<td>Line Posts (Intermediate) 2” NPS (2.375”)</td>
</tr>
<tr>
<td>5</td>
<td>Top Rails and Braces 1 ½” NPS (1.660”)</td>
</tr>
<tr>
<td>6</td>
<td>Frames for Gates 1 ½” NPS (1.900”)</td>
</tr>
<tr>
<td>7</td>
<td>Tension Rod and Tightener for gates 1” threaded rod with tightener</td>
</tr>
<tr>
<td>8</td>
<td>Fence post cap (galvanized) drive fit and screw retained</td>
</tr>
<tr>
<td>9</td>
<td>Steel bonds (galvanized) at tension bars (¢ x 1”, 16” o.c.)</td>
</tr>
</tbody>
</table>
ITEM | DESCRIPTION
--- | ---
1 | 3" A.C. min. thickness
2 | 6" Class 2 A.B. min. thickness
3 | Concrete Alley Gutter per GSWC Std. Dwg. No. C-6
4 | Finished surface
5 | Finished surface elevation (varies) as shown on the plans
6 | Top of ringwall or building foundation per plans
7 | Tank shell or building wall
8 | Cut slope or fill slope per geotech recommendations. Soil compacted to 90% relative density.
9 | 2"x6" redwood header
NOTES:

1. Total vertical distance from top of A.C. to flow line of Alley Gutter is 0.20' which includes the 2" depression of the Alley Gutter plus 3/8" A.C. lip.
NOTES:

1. Type B and F curb and gutter shall have AC pavement 3/8" above lip for proper drainage.

2. Type C curb and gutter shall have AC pavement 3/8" below lip for proper drainage.
NOTES:

1. Sign panels shall be of sheet aluminum material 0.08-inch thick. Thickness, finish and structural integrity to conform to City, County and State standards and requirements.

2. Posts and skids shall be of treated/painted wood material. Dimensions, finish and structural integrity to conform to City, County and State standards and requirements.

3. Posts shall be either embedded into the ground with any needed support or anchoring or mounted on skids to meet City, County or State standards.

4. Signs shall be located within public right of way, and not interfere with the pedestrian or traffic flow.

5. Sign details – White background with reflective surface
   – Permanent lettering to be bold, block letters in GSWC dark blue

ALTERNATIVE "A"
SIGN (2 PANELS) MOUNTED ON 2 POSTS EMBEDDED IN THE GROUND

ALTERNATIVE "B"
SIGN (2 PANELS) MOUNTED ON 2 POSTS AFFIXED WITH BOLTS TO SKID TYPE FEET
NOTE:
LUBRICATION IN-GROUND PORTION OF THE PIPE TO PREVENT ADHESION TO THE SLEEVE

5" PIPE SLEEVE (1/4" MIN. WALL)

3" MIN. ABOVE FINISHED SURFACE

PLAN VIEW

BOLLARD TO BE EXTENDED MIN. 6" ABOVE HYDRANT HEAD

4" STEEL PIPE, SCH 40 FILLED W/CONCRETE

POSTS ENCASED IN CONCRETE, 18" DIA. PCC WITH f'c=2,500 PSI @ 28 DAYS

9" MIN. (TYP.)

NOTES:

1. Orientation of barricade may be changed according to field conditions.

2. Bollard coating color per local fire department requirements.

   A. In lieu of painting a protective polyethylene sleeve may be put over steel post colored to meet local fire department requirements.

3. Coating material shall be per GSWD painting specifications for above grade steel piping.

   A. A polyethylene encased steel post (Sch.40 pipe) may be used instead of a painted post.

4. See Potable Water Material Guidelines for acceptable manufacturers.

5. Wrightwood CSA shall have 5' tall barricades.
MATERIALS:

1. Residential hydrant with (1) 4" and (1) 2 1/2" fire hose outlets. Non-residential hydrant with (2) 4" and (1) 2 1/2" fire hose outlets.

2. Construct 48"x36"x6" thick or 36"x36"x6" thick concrete pad reinforced with W.W.M. 1.6x1.6.

NOTES:

1. Each marker shall be placed as follows:
   a. Arterial streets, install marker one foot outside of centerline strip or median curb or left turn pocket line toward the side where fire hydrant is located.
   b. Local streets, install marker one foot outside of centerline (stripped or unmarked) toward the side where fire hydrant is located.

2. One marker to be placed on adjacent street when hydrant is on corner of an arterial/arterial intersection or a local/local intersection.

3. Two markers to be placed one on each street when hydrant is on corner of an arterial/local intersection.
NOTE:
1. Slope will conform to governing agency road improvement standards and specifications, or meet existing conditions as directed by engineer. Pad shall be sloped away from valve lid.
2. Valves located in landscaped areas shall have a 2'x2' concrete pad installed around each valve.
3. AC or concrete pad.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>2&quot;x6&quot; redwood headers</td>
</tr>
<tr>
<td>②</td>
<td>2&quot;x4&quot;x18&quot; stakes (3 per side) at 30&quot; O.C.</td>
</tr>
<tr>
<td>③</td>
<td>Area to be paved</td>
</tr>
<tr>
<td>④</td>
<td>6&quot; of ¾&quot; Class 2 A.B.</td>
</tr>
</tbody>
</table>
NOTES:

1. Waterline marker post shall be installed where called for on the plans or as directed by the engineer. Spacing shall be approximately 200’ between markers, curved alignments less than 800’ in length shall have a minimum of four markers to define the curve.

2. Waterline marker post shall be installed 12” to the south and west of the utility.

3. Marker shall incorporate 1” high lettering branded/burned into paddle. Lettering shall include GSWC along with the utility identified. The color of the paddle shall be blue.

4. Lettering shall be white.

5. On back of marker write: "Call GSWC at (800) 999-4033" and "Before digging in this area call 811".

---

Approved by:
GSWC STANDARDS COMMITTEE

Robert M. Knecht
EDC MANAGER

Golden State
Water Company
A Subsidiary of American States Water Company

Title:
PIPELINE MARKER POST INSTALLATION

Scale:
NONE

Date:
01/16

Rev:
1.0

Standard DWG No.
C-13
LIGHTING FIXTURE COMPLETE WITH 1–130 LA WATT L.E.D. ARRAY, AND POLYCARBONATE LENS. BRONZE POWDER COAT FINISH TO MATCH POLE. PROVIDE INTERNAL REAR SHIELD WHERE BACK OR FIXTURE IS AGAINST PROPERTY LINE. PHOTO ELECTRIC CONTROL IS OPTIONAL BASED ON SITE AND PROJECT NEEDS.

4" SQUARE 16' HIGH STEEL POLE WITH BRONZE POWDER COAT FINISH

WEATHER PROOF RECEPTACLE (GFI)
HAND HOLE
GALVANIZED ANCHOR BOLT PER MFRS REQUIREMENTS (TYP 4)
¾" DIA.x30" LONG
½" CHAMFER

FINISHED GRADE
#4 TIES AT 8" O.C.
1½" PVC CONDUIT FROM POWER SOURCE
REINFORCED CONCRETE BASE (NOTE 1)

BURNDY CAT. #GK1426 GROUND CONNECTION
#10 SOLID COPPER GROUNDING WIRE
¾"Øx10' LONG COPPER GROUND ROD
4–#6 REBAR

POLE MOUNTED LIGHT
N.T.S.

NOTES:

1. Refer to civil/structural drawings for reinforcement detail.

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER 01/16

Golden State Water Company
A Subsidiary of American States Water Company

TITLE: POLE MOUNTED LIGHT

SCALE: NONE 01/16 1.0
STANDARD DWG NO. C-14
TEMPORARY RUMBLE PAD FOR
DIRT CONTROL TO BE REMOVED
AFTER FINAL PAVING.

10 FEET MIN OR
AS REQUIRED TO
ACCOMODATE
ANTICIPATED
TRAFFIC,
WHICHEVER
IS GREATER.

24 FEET (MIN.)

50 FEET MIN
OR FOUR TIMES THE CIRCUMFERENCE
OF THE LARGEST CONSTRUCTION VEHICLE TIRE
WHICHEVER IS GREATER

PLAN VIEW
N.T.S.

CRUSHED AGGREGATE GREATER THAN 3"
(75 MM) BUT SMALLER THAN 6" (150 MM)
FILER FABRIC

12" (30 MM) MIN

SECTION A
N.T.S.

CRUSHED AGGREGATE GREATER THAN 3"
(75 MM) BUT SMALLER THAN 6" (150 MM)
CORRUGATED STEEL PLATES

12" (30 MM) MIN

SECTION B
N.T.S.

FILTER FABRIC

ORIGINAL GRADE

MATCH EXISTING GRADE

EXISTING PAVED ROADWAY
NOTE:
INSTALL FIBER ROLL ALONG A LEVEL CONTOUR

VERTICAL SPACING MEASURED ALONG THE FACE OF THE SLOPE IS 20'.

TYPICAL FIBER ROLL INSTALLATION
N.T.S.

ENTRENCHMENT DETAIL
N.T.S.

3/4" x 3/4" WOOD STAKES
MAX 4' SPACING

FIBER ROLL
8" MIN

SLOPE VARIES

2" MIN
4" MAX

12" MIN
NOTE:
WALLS, FLOOR AND BACK OF HEADWALL STRUCTURE SHALL BE REINFORCED WITH #4 BARS @ 12" EACH WAY.
NOTES:

1. Protective cage to be constructed of formed steel angle frame and expanded metal mesh welded together.

2. Protect steel from corrosion with a high grade powder coated finish similar in color to adjacent pipe.

3. Provide lifting handles and hasp–type lock system.

4. Cage configuration to be modified to match structure or pipe where it will be constructed.
NOTES:

1. In unpaved traffic areas, install a 6-ft square concrete pad (6-in thick) as shown in plan view.

2. In paved areas, manhole frame and cover shall be flush with finished surface.
NOTES:

1. The systems integrator shall furnish and install coaxial cable and connectors (type "N"). All of the bends in the coaxial cable shall meet manufacturer’s minimum bending radius restrictions.

2. Coaxial cable shall be routed along, and secured to tower structural members. Furnish and install an "Andrew" type 43094 wire mesh hoisting grip or approved equal at top of tower to support coaxial cable.

3. Install grounding kit per coaxial cable manufacturer’s guidelines.

4. Exothermically bond all grounding leads to ground ring. Exothermically bond all existing site ground rod(s).

5. Provide and install concrete base footing which shall be designed in conformance with all Federal, State, and Local regulations.

6. All items shown are provided and installed by the systems integrator, unless specifically noted otherwise.
NOTES:

1. The systems integrator shall furnish and install coaxial cable and connectors (type "N"). All of the bends in the coaxial cable shall meet manufacturer’s minimum bending radius restrictions.

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5. Provide and install concrete base footing which shall be designed in conformance with all Federal, State, and Local regulations.

6. All items shown are provided and installed by the systems integrator, unless specifically noted otherwise.

7. Pole shall be anodized aluminum, painted steel or fiberglass. See bid sheet.

<table>
<thead>
<tr>
<th>POLE EXPOSED HEIGHT</th>
<th>DIAMETER</th>
<th>BASE PLATE SIZE</th>
<th>O.C. BOLT HOLES</th>
<th>ANCHOR BOLT SIZE</th>
<th>FOUNDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>25'</td>
<td>5' 3 1/4&quot;</td>
<td>20&quot;x20&quot;x1 1/2&quot;</td>
<td>16&quot; 3/4&quot;x24&quot;</td>
<td>34&quot; 42&quot;</td>
<td></td>
</tr>
<tr>
<td>30'</td>
<td>6&quot; 3 1/2&quot;</td>
<td>20&quot;x20&quot;x1 1/2&quot;</td>
<td>16&quot; 1&quot;x36&quot;</td>
<td>36&quot; 42&quot;</td>
<td></td>
</tr>
<tr>
<td>35'</td>
<td>7&quot; 3 1/2&quot;</td>
<td>24&quot;x24&quot;x1 1/2&quot;</td>
<td>20&quot; 1&quot;x36&quot;</td>
<td>36&quot; 48&quot;</td>
<td></td>
</tr>
<tr>
<td>40'</td>
<td>8&quot; 3 1/2&quot;</td>
<td>24&quot;x24&quot;x1 1/2&quot;</td>
<td>20&quot; 1&quot;x36&quot;</td>
<td>42&quot; 54&quot;</td>
<td></td>
</tr>
<tr>
<td>45'</td>
<td>8&quot; 3 1/2&quot;</td>
<td>30&quot;x30&quot;x3/4&quot;</td>
<td>24&quot; 1&quot;x36&quot;</td>
<td>42&quot; 54&quot;</td>
<td></td>
</tr>
<tr>
<td>50'</td>
<td>10&quot; 4&quot;</td>
<td>30&quot;x30&quot;x3/4&quot;</td>
<td>24&quot; 1 1/4&quot;x48&quot;</td>
<td>48&quot; 66&quot;</td>
<td></td>
</tr>
<tr>
<td>60'</td>
<td>10&quot; 4&quot;</td>
<td>36&quot;x36&quot;x1&quot;</td>
<td>30&quot; 1 1/4&quot;x48&quot;</td>
<td>48&quot; 78&quot;</td>
<td></td>
</tr>
</tbody>
</table>

FIBERGLASS REINF. PLASTIC ROUND GROUND ROD HANDHELD WITH COVER

SEE NOTE 5

INSTALL PULL BOX FOR COAXIAL DISCONNECT

TO EQUIPMENT RACK

COUNTERBALANCED ANTENNA POLE

SIDE VIEW

ANTENNA MOUNTING BRACKETS

GROUND COAXIAL CABLE

NOTE 2

NOTE 3

STEEL CENTERING ANGLE WELDED TO STOP PLATE & LOCK PLATE TO CENTER PLATE

YAGI OR OMNI DIRECTIONAL ANTENNA

WEATHERPROOF FEED LINE CONNECTION @ ANTENNA WITH "ANDREW" VAPOR WRAP, TYPE 221213 WEATHERPROOFING KIT, THEN COAT WITH SCOTCHTIGHT

1/18

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER  DATE

Golden State
Water Company
A Subsidiary of American States Water Company

SCALE: 1/18  DATE: 1/18  REV: 1.3  STANDARD DWG NO. C-20 B

SCADA ANTENNA POLE AND GROUNDING

SEE TABLE
Part B – Facility Design Drawings
Section 3

Pump Stations
NOTES:

1. Dimensions, locations, and drainage shall be modified for each specific project.

2. Lot should drain to the street. Adjust lot elevations as needed.
NOTES:
1. 2"x6" Exterior Walls.
2. 2"x4" Interior Walls.
3. All pipe is epoxy lined, cement mortar coated welded steel pipe underground, epoxy lined and painted welded steel pipe aboveground.
4. Flange insulation gaskets to be used between all dissimilar metals.
CONSTRUCTION NOTES:

1. WELDED STEEL TEE (EPoxy LINED & CMC)
2. WELDED STEEL 90° ELBOW (EPoxy LINED)
3. WELDED STEEL (EPoxy LINED & CMC BELOW GRADE)
4. PIPE SUPPORT
5. PRESSURE GAUGE AND TRANSDUCER
6. VICTAULIC COUPLING, STYLE 77
7. FLANGED RESILIENT WEDGE GATE VALVE
8. FLANGED PRESSURE RELIEF VALVE, CLA-VAL MODEL 50-01
9. WELD-ON FLANGE
10. AIR RELEASE AND VACUUM VALVE ASSEMBLY
CONSTRUCTION NOTES:
1. WELDED STEEL TEE (EPoxy LINED & CMC)
2. WELDED STEEL 90° ELBOW (EPoxy LINED & CMC)
3. WELDED STEEL (EPoxy LINED & CMC BELOW GRADE)
4. MOTOR
5. STEEL PUMP BARREL—1/4” WALL THICKNESS

SECTION B

TYPICAL PUMP STATION
BUILDING AND PIPING SECTION

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER 10/16

Golden State Water Company
A Subsidiary of American States Water Company

DATE: 10/16
REV: 1.1
STANDARD DWG NO. PS-3C
TYPICAL REINFORCED CONCRETE PUMP CAN
(OPTION 1)

*NOTE:
4’-0" COVER FOR 4" PIPE
4’-6" COVER FOR 12" PIPE

1’ CHAMFER ON ALL EDGES
RTV SILICONE SEALANT
8" TYP.
FLOOR SLAB (PER PLAN)
9" TYP.
3" CLR (TYP)
3" CLR (TYP)

12" OR 8" BARREL
2" MIN (TYP)

SUCTION LINE

#4 @ 12 OC ALL AROUND
LENGTH AS REQUIRED BY PUMP
LENGTH AS REQUIRED FOR PUMP

CONCRETE ENCASTEMENT
PUMP CAN
1/4" WALL THICKNESS
(EPOXY LINED), DIAMETER PER PLAN

3/8" THICK STEEL PLATE (DIAMETER PER PLAN) WITH 6" EQUALLY
SPACED 3/8" WEDGE ANCHORS.
STEEL PLATE SHALL BE FULLY WELDED (INSIDE & OUTSIDE) TO
PUMP CAN. PROVIDE ANCHOR BOLTS WITH DOUBLE NUTS FOR
SETTING PUMP CAN SQUARE AND PLUMB ON TOP.

Golden State
Water Company
A Subsidiary of American States Water Company

APPROVED BY:
GSWC STANDARDS COMMITTEE

TYPICAL PUMP STATION
BUILDING AND PIPING SECTION

EDC MANAGER
DATE
10/16

TITLE:
SCALE:
DATE:
REV
STANDARD DWG NO.
NONE
10/16
1.1
PS-3D
TYPICAL REINFORCED CONCRETE PUMP CAN
(OPTION 2)

1/8" THICK STEEL PLATE (DIAMETER PER PLAN) WITH
6" EQUALLY SPACED 1/4" WEDGE ANCHORS. STEEL PLATE
SHALL BE FULLY WELDED (INSIDE & OUTSIDE)
TO 20" PUMP CAN. PROVIDE ANCHOR BOLTS WITH DOUBLE
NUTS FOR SETTING PUMP CAN SQUARE AND PLUMB.

1-1/2# ± NON-SHRINK
GROUT, LEVEL PUMP CAN
BEFORE PLACING CONCRETE
INSIDE WALLS

1/4" MIN. THICKNESS
PUMP CAN

CLASS 560-C-3250
CONCRETE

#5 BARS (TYP.)

SUCTION PIPE INLET

4'-0" O.C.

1/8" CHAMFER ON ALL SURFACES

12" O.C.

EPOXY LINED
PUMP CAN

12-#5 BARS VERTICALLY

4-#5 BARS CURVED
TO FIT COIL

12-#5 VERTICAL BENT BARS

#5 BARS @
14" O.C. EACH WAY

36" SQUARE
UNLESS SHOWN DIFFERENT
ON THE PLANS

EDC MANAGER 10/16

10/16

TYPICAL PUMP STATION
BUILDING AND PIPING SECTION
TOP OF SLAB

LAP PER SCHED

HORIZONTAL REINFORCING

MIN.

STAGGER LENGTH = LAP SPLICE LENGTH

HORIZONTAL REINFORCING

2d MIN.

BOTTOM OF SLAB

TYP. HORIZ. LAP SPLICE REINF.

N.T.S.

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>TENSION LAP 'Lt' (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F'c=3,000 PSI</td>
</tr>
<tr>
<td></td>
<td>TOP BARS</td>
</tr>
<tr>
<td>#3</td>
<td>29</td>
</tr>
<tr>
<td>#4</td>
<td>38</td>
</tr>
<tr>
<td>#5</td>
<td>47</td>
</tr>
<tr>
<td>#6</td>
<td>56</td>
</tr>
<tr>
<td>#7</td>
<td>82</td>
</tr>
<tr>
<td>#8</td>
<td>94</td>
</tr>
</tbody>
</table>

Concrete=Class 560–C–3250
f'yd=60,000 PSI

NOTES:

1. Splice length shall be determined from the size of the smaller bar spliced.

2. Minimum cover 1.5", minimum bar clear spacing 2 bar diameter.

3. Top bars are defined as bars with 12" or more of fresh concrete placed below them.

4. Lt values in schedule shall be multiplied by 1.3 for light weight concrete.
TYP. VERT. LAP SPLICE REINF. N.T.S.

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>TENSION LAP 'L' (IN.)</th>
<th>HOOK EMBED (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F'c=3,000 PSI</td>
<td>F'c=4,000 PSI</td>
</tr>
<tr>
<td>#3</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>#4</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>#5</td>
<td>36</td>
<td>31</td>
</tr>
<tr>
<td>#6</td>
<td>43</td>
<td>37</td>
</tr>
<tr>
<td>#7</td>
<td>63</td>
<td>54</td>
</tr>
<tr>
<td>#8</td>
<td>72</td>
<td>62</td>
</tr>
</tbody>
</table>

F'y=60 KSI  
CONCRETE=CLASS 560-C-3250

NOTES:
1. All vertical reinforcing for column, piers and walls shall be doweled.
2. Minimum clear spacing 2d, minimum cover 1.5".
3. Dowels shall be the same grade, size, quantity and/or spacing as vertical reinforcing.
NOTES:
1. WHERE STUD AND ANCHOR BOLT INTERFERENCE OCCURS PROVIDE SCAB PER STD. DWG. PS-9
2. MINIMUM (2) AB PER PL.
3. 4" MINIMUM AMD 12" MAXIMUM TO END OF SILL

TYPICAL SILL BOLT LAYOUT
N.T.S.

- Holdown Stud
- Washer Pl
- Sill Plate
- Top of slab on grade
- Headed bolts per sched

TYPICAL LEDGER SPLICE
N.T.S.

- Note: Fill all holes with nails

NOTES:
1. Hold down shall be ‘Simpson Strong-Tie’ or equal.
2. Headed anchor bolts (AB) must be tied in place prior to pouring concrete.

<table>
<thead>
<tr>
<th>Hold Down</th>
<th>Hold Down Stud</th>
<th>Stud Connection</th>
<th>Anchor Bolt</th>
<th>Embedment ‘D’</th>
<th>Allowable Load (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDU2</td>
<td>4x</td>
<td>(6) SDS 1/4&quot;x2 1/2&quot;</td>
<td>5/8&quot;</td>
<td>12&quot;</td>
<td>3075</td>
</tr>
<tr>
<td>HDU4</td>
<td>4x</td>
<td>(10) SDS 1/4&quot;x2 1/2&quot;</td>
<td>5/8&quot;</td>
<td>14&quot;</td>
<td>4565</td>
</tr>
</tbody>
</table>

TYPICAL HOLDOWN ANCHOR
N.T.S.

- See detail 2 PS-4A

Golden State Water Company
A Subsidiary of American States Water Company

Approved by: GSWC Standards Committee

Robert H. Hoffman
Manager

Title: Sill Bolt, Hold Down Anchor and Ledger Splice Details

Scale: None

Date: 01/16

Rev: 1.0

Standard DWG No: PS-5
NOTES:

1. Shear wall nailing, shall be applied along entire length including above & below all openings.

2. Interior of walls shall have 4” fiberglass insulation covered by 1/2” plywood from sill plate to rafter and painted "off-white".
NOTES:
1. All nails shall be common wire nails.
2. Plywood shall conform to product standard PS 1-07 and shall be bonded with exterior glue.
3. Provide 3x studs & blocking at walls where nailing is less than 3" O.C.
4. Nails for plywood panels & sill plates shall be common or galvanized box (U.O.N.).
5. Plywood panels may be applied either vertically or horizontally, but all edges shall be nailed to studs, plates or blocking.
6. Anchor bolts shall be equally spaced & located within 12" of any end of sill plate.
7. Holes in panels are not permitted unless detailed by the engineer.
8. Minimum width of plywood shall be 2'−0" although 4'−0"x8'−0" shall be used where possible.
9. Where plywood is applied to both faces, panel joints shall be offset to fall on different framing members.
10. Stagger nails at all 3x members.
11. Use 3x blkg or rim joist above double top plate connection for single sided shearwall and solid blkg for double sided shearwalls.
12. Predrill holes for all 20d nails and lag screws.
13. Anchor bolts shall include steel plate washers. A minimum of 0.229"x3"x3" between sill plate and nut.
14. Studs shall be nailed to 3x sill plate with (2) 20d end nails or (4) 8d toe nails min.
15. HGA10 uses (4) SDS 1/4"x1 1/2" to rim joist or blkg and (4) SDS 1/4"x3" to double top plate.
16. Screws shall be 1/4" Simpson SDS installed per ESR 2236.
17. Sill bolt and sill plate requirements for structural walls shall meet the minimum requirements of the shear wall schedule, U.O.N.
TYPICAL STRAP ACROSS OPENING
N.T.S.

TYP SCAB AT STUD OVER BOLT
N.T.S.

2x SCAB x 2'-6"± LONG W/ (2) 16d EA END PREDRILL 1 1/2" DIA HOLE FOR AB & 5" DIA 3/8" DEEP HOLE FOR WASHER
SILL PLATE PRESSURE TREATED

4x BLKG TYP

2x TRIM STUD TYP UON

'ST6236' TYP

HDR

OPEN

STUDS
4'-0" MIN LAP BETWEEN UPPER & LOWER PLATES

JINTS IN LOWER PLATE TO BE OVER CENTER OF STUD OR MULLION TYP

1 1/2"

3" MIN 16d

NAILED SPLICE N.T.S.

4'-0" MIN LAP BETWEEN UPPER & LOWER PLATES DO NOT RECESS HEAD OF NUTS

16d @ 18" WHEN BOLTS ARE OVER 18"

BOLTS W/ WASHER

5 1/2" MIN EQUAL SPACING (4" MIN)

BOLTED SPLICE N.T.S.

<table>
<thead>
<tr>
<th>SPLICE</th>
<th>FASTENER</th>
<th>LOAD (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8-16d</td>
<td>1138</td>
</tr>
<tr>
<td>B</td>
<td>10-16d</td>
<td>1423</td>
</tr>
<tr>
<td>C</td>
<td>12-16d</td>
<td>1707</td>
</tr>
</tbody>
</table>

NOTES:

1. Number of nails or bolts listed shall be used each side of upper & lower plate joint.

2. Minimum splice nailing: (2) rows of 16d @ 12".

3. When 2x & 3x top plate occurs, nailing shall apply thru 2x.

4. If double top plate is intermitted for any reason, splice w/ Simpson 'MSTA36'.
NOTEs:

1. Minimum plywood sheet size shall be 2'-0" x 4'-0". Long dimension of plywood shall span across joists or rafters.


3. Boundary nail (B.N.) over all beams and around all openings (10d @ 6" O.C.).

4. Plywood sheathing shall be laid perpendicular to framing with 4'-0" staggered joints.

5. All floor sheathing should be glued to framing member with A.P.A. approved adhesive.

6. Diaphragm sheathing nails or other approved sheathing connector shall be driven so that their head or crown is flush w/ the surface of the sheathing.

7. Block all unsupported edges with 2x4 flat (typ), with face grain perpendicular to framing.
NOTE:
NAILING AND FASTENING OF MECHANICAL CONNECTORS SHALL BE PER MANUFACTURER’S REQUIREMENTS.
NOTE:
NAILING AND FASTENING OF MECHANICAL CONNECTORS SHALL BE PER MANUFACTURER’S REQUIREMENTS.
AIR FLOW SCHEMATIC

SCHEDULE
1. Louvered Gate Vent in Attic.
2. AC Controlled Electrical Room.
3. Louvered Door.
5. Acoustical Louvered Vent in Wall.
6. Vent Thru Ceiling to Attic W/ Attic Fan (Rated 700 CFM).

NOTE:
Two isolated air systems shown in schematic.

--- System 1 Electrical Room
--- System 2 Pump Room
NOTES:

1. Installation of skylight to be per manufacturer’s requirements.
2. Coordinate with roofing contractor to ensure a weatherproof installation.
Section 4

Wells
NOTES:

1. The well shall be cleaned, as needed, so that all undesirable materials, including obstructions to filling and sealing, sediment, debris, oil from oil-lubricated pumps, or pollutants and contaminants that could interfere with well destruction are removed for disposal.

2. Conditions may require that the casing be perforated using a millsknife or explosive charges prior to placement of sealing material.

3. Unless specifically described in the specifications, the sealing material shall be mixed at a ratio of not more than 188 pounds of sand to one 94 pound sack of portland cement (2 parts sand to 1 part cement, by weight) and about 7 gallons of clean water, where type I or type II portland cement is used. This is equivalent to a "10.3 sack mix". Less water shall be used if less sand than 2 parts sand per 1 part cement by weight is used. Additional water may be required when special additives, such as bentonite, or "accelerators" or "retardants" are used.

4. Sealing material shall be poured utilizing a tremie.

5. Backfill and compact the excavation only after sufficient time has been allowed for sealing material to set.

6. Each well destruction project is unique and requires specific approval and permits from the local jurisdictional agency.

7. Coordinate all well destruction work with the Water Resources group for current plans and specifications.
NOTES:

1. Minimum lot size is 80'x100' (100'x100' is preferred).

2. Property is fenced on property line. Vehicle gate location will depend on lot line set back from curb and gutter to allow 20' drive-in from curb to fence.

3. A man-gate should be installed near vehicle gate.

4. Paving as shown. Alternative paving at least to chemical building.

5. Lot should drain to street. Adjust lot elevations as needed.

6. 50' clearance to property lines required for sanitary control.

7. Dimensions, locations and drainage shall be modified for each specific project.
**NOTE:**

1. Depths of louvered and blank casing will be determined for each well drilling project based on hydrogeologic conditions.

2. Each well destruction project is unique and requires specific approval and permits from the local jurisdictional agency.

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**TYPICAL WELD-ON TYPE CASING CENTRALIZER**

N.T.S.

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**TYPICAL WELL CROSS SECTION**

N.T.S.

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**TYPICAL WELL CONSTRUCTION CROSS SECTION**

<table>
<thead>
<tr>
<th>Anticipated Well Capacity</th>
<th>Upper Borehole Dia</th>
<th>Conductor Casing Dia</th>
<th>Well Borehole Dia</th>
<th>Well Casing Dia</th>
<th>Pump Column</th>
<th>Well Pump Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1,000 gpm</td>
<td>42&quot;</td>
<td>36&quot;</td>
<td>28&quot;</td>
<td>14&quot;</td>
<td>6&quot;</td>
<td>4' sq</td>
</tr>
<tr>
<td>1,000 to 3,000 gpm</td>
<td>48&quot;</td>
<td>42&quot;</td>
<td>32&quot;</td>
<td>18&quot;</td>
<td>8&quot;</td>
<td>5' sq</td>
</tr>
</tbody>
</table>

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**TYPICAL WELD-ON TYPE CASING CENTRALIZER**

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**TYPICAL WELL CONSTRUCTION CROSS SECTION**

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**TYPICAL WELD-ON TYPE CASING CENTRALIZER**

N.T.S.
1. Wellhead mating flange (sole plate) threaded flange bolt holes. Weld flange to well casing. Recess the bolt area in concrete underside of the flange to accommodate bolt run through.

2. Camera tube, sounding tube, gravel tube and access vent to be located as close to vertical as possible through the top of the base and still avoid pump sole plate.

3. 1" chamfer on all edges.
NOTES:

1. Camera tube, sounding tube, gravel tube and access vent to be located as close to vertical as possible through the top of the base and still avoid pump sole plate.
**DESIGN NOTES:**

1. Pipe and meter size shall produce velocity less than 10 fps.

2. Testing ports shall be 5 pipe diameters upstream and 2 pipe diameters downstream of the meter with no bends or pipe breaks that could cause turbulence.

3. All steel pipe shall be epoxy lined & painted after fabrication.

4. Pipe sizes shown are for 16-inch diameter pipe. Adjust dimensions as needed for different pipe sizes.
CONSTRUCTION NOTES FOR WELL DISCHARGE PIPE

1. INSTALL 12" STANDARD WEIGHT STEEL SPOOL, FE
2. INSTALL 12" STANDARD WEIGHT STEEL PIPE, P.E.
3. INSTALL 4"x8" STANDARD WEIGHT STEEL ECCENTRIC REDUCER, FE.
4. INSTALL 12" BLIND FLANGE WITH 4" TAP.
5. INSTALL WATER QUALITY SAMPLE
6. INSTALL 12"x90° LR STANDARD WEIGHT STEEL WELD ELBOW WITH THRUST BLOCK.
7. INSTALL 12" STANDARD WEIGHT STEEL TEE, FE.
8. INSTALL 12" BUTTERFLY VALVE, FE.
9. INSTALL 12" STANDARD WEIGHT STEEL SPOOL.
10. INSTALL 12" FE CLA--VAL SWING CHECK VALVE.
11. INSTALL 4" CLA--VAL PUMP CONTROL VALVE, FE, MODEL 61-02
12. NOT USED
13. INSTALL 12" FLOW METER, PER SPECIFICATIONS FE, (METER SPECIFIED DEPENDS ON REGION INSTALLED).
14. INSTALL 12" STANDARD WEIGHT STEEL SPOOL, FE, WITH 1" THREAD--O--LET, 1" CORPORATION STOP, 1" BRASS PLUG FOR METER TEST 45° ANGLE FROM TOP.
15. INSTALL 12" STANDARD WEIGHT STEEL SPOOL, FE, TAPPED FOR 3 OPENINGS FOR THE INSTALLATION OF CHEMICAL INJECTION QUILLIS.
16. INSTALL 4" GATE VALVE, FE.
17. INSTALL 8"x90° LR STANDARD WEIGHT STEEL ELBOW, FE
18. INSTALL 12"x90° LR STANDARD WEIGHT STEEL WELD ELBOW, FE
19. INSTALL 4" PVC DRAIN.
20. INSTALL ADJUSTABLE PIPE SUPPORT.
21. INSTALL 2" THREAD--O--LET, 2" CORPORATION STOP AND 2" COPPER TUBING, SOLENOID VALVE AND CONNECT TO PUMP FOR STARTUP PRE-LUBRICATION.
22. INSTALL CHEMICAL INJECTION QUILL ASSEMBLY, THREE LOCATIONS.
23. INSTALL 1" THREAD--O--LET, A 1" X ½" BUSHING AND A RAINBIRD DRAIN VALVE (PART NO. 164FDC1) TO DRAIN RISER.
24. INSTALL CHEMICAL CONVEYANCE TUBING AND CONTAINMENT PIPE.
25. INSTALL 8" STANDARD WEIGHT STEEL SPOOL.
26. INSTALL 8"x90° SR STANDARD WEIGHT STEEL WELD ELBOW.
27. STAINLESS STEEL SCREEN PER GSWC STD. DWG. T-4, DETAIL 1.
28. INSTALL 4" DIAMETER RCP STANDPIPE.
29. INSTALL SEAL WITH NON--SHRINK GROUT, 2" AROUND PIPE OD. PENETRATE RCP STAND PIPE ABOVE CONCRETE BASE FOR 4" DRAIN LINE CONNECTION.
30. INSTALL 12" PVC DRAIN.
31. INSTALL 2½"x2½"x2" WIDE x ¾" GALVANIZED ANGLE FLAT IRON BAR. ANCHOR TO WALL W/ SS ½" DIA. x 2" LONG THREADED ANCHOR BOLT, SS WASHER & NUT. DRILL & EPOXY ANCHOR TO RCP WALL ABOVE RING BAR (TAMPER PROOF TAB).

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER DATE

Golden State Water Company
A Subsidiary of American States Water Company

SCALE: NONE DATE: 1/18 REV: 1.3 STANDARD DWG NO: W-58
NOTE:
2" A/V for small well installation (1,000 gpm).
4" A/V for large well installation (1,500 gpm+).

PUMP AIR RELEASE/VACUUM VALVE DETAIL
N.T.S.

NOTE:
1. All steel shall be hot-dip galvanized after fabrication.

ABOVE GROUND WATER QUALITY SAMPLING DETAIL
N.T.S.

SECTION A-A
N.T.S.
NOTE:
ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.

WATER QUALITY SAMPLING AND AIR RELEASE & VACUUM VALVE ASSEMBLY

SCALE: NONE
DATE: 10/16
REV: 1.1
STANDARD DWG NO. W-6
STEEL PIPE

PRESSURE GAUGE

1/2" S.S. BALL VALVE

1/2" S.S. NIPPLE

1" x 1/2" S.S. BUSHING

1/2" CARBON STEEL EXTRA HEAVY COUPLING OR THREAD-O-LET

1/4" SS TUBE

1/2" S.S. CROSS

1/2" S.S. NIPPLE

1/2" S.S. BALL VALVE

REMTELY MOUNTED PRESSURE SWITCH

1/2" x 1/4" S.S. BUSHING

PRESSURE GAGE AND PRESSURE TRANSMITTAL DETAIL
N.T.S.

STEEL PIPE

1" CARBON STEEL EXTRA HEAVY HALF COUPLING OR THREAD-O-LET

1" x 1/2" S.S. BUSHING

1/2" S.S. NIPPLE

3/8" S.S. TUBING WITH NUT AND PLASTIC CAP

3/8" YOR-LOK TUBE FITTINGS

1/2" S.S. THREADED BALL VALVE

WATER QUALITY SAMPLING PORT DETAIL
N.T.S.
LENGTH = BOTTOM OF CORP STOP TO CENTER OF STEEL PIPE

STEEL PIPE
1" THREAD-O-LET
1"x3/4" BUSHING
3/4" CORP STOP

FLOW

SEAL END OF PIPE WITH FLEXIBLE CAULK
CONTAINMENT PIPE

CHEMICAL TUBING

INJECTION LINE TUBING TO CHEMICAL FEED SYSTEM

3/16"

3/4" NPT BRASS CORPORATION STOP ASSEMBLY

PVC FEMALE HALF QUICK DISCONNECT

SOLUTION TUBE ASSEMBLY

NOTES:
1. INJECTION ASSEMBLY MATERIALS IN CONTACT WITH CHEMICAL SHALL BE COMPATIBLE WITH CHEMICAL BEING CONVEYED.

CHEMICAL INJECTION QUILL DETAIL N.T.S.

1"

1" HOSE BIBB

1" MIP ADAPTOR

1½" FRP UNISTRUT WITH PIPE CLAMP AND 316 SST HARDWARE

2/6"

1" TYPE L COPPER PIPE

90° ELBOW

SAME HEIGHT BOTH SIDES

NOTE:
1. Install a vacuum breaker on each hose bib.

HOSE BIBB DETAIL N.T.S.

Golden State Water Company
A Subsidiary of American States Water Company

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER 01/16
DATE

TITLES:
CHEMICAL INJECTION QUILL AND HOSE BIB

SCALE: NONE 01/16 1.0
DATE: STANDARD DWG NO. W-8

REV
NOTE:

1. Vacuum breakers to be installed on all hose bibs.
CONSTRUCTION NOTES:

1. Laminate countertop with 12" high backsplash.

2. Plastic resin workbench legs, 36" high–rocker hardware item no. 48509.

3. Plastic lumber

4. All exposed wood surfaces on bottom and back of countertop shall be painted with 3 coats of latex exterior paint for protection.

5. All screws and fasteners will be stainless steel.
ROOF PLAN
N.T.S

NOTES:

1. Building foundation to be constructed of Type C concrete. Building slab to receive a trowel finish. Place control joints @ center of slab, each direction.

2. 5/8" plywood T1-11 sheathing for exterior walls. 2x blocking at panel edges w/ 10d @ 6" nails at panel edges and interior supports. Furnish interior walls w/ 1/2" exterior grade plywood, painted per the specifications.

3. 1/2" plywood roof sheathing. 2x blocking at panel edges w/ 10d @ 6" nails at panel edges and 10d @ 12" at interior supports. Stagger panels edges as shown on this drawing.

4. This design shows an 8" pump discharge and 12" discharge pipe.

5. Roof exhaust fan shall provide 6000CFM air flow. Use Dayton 12" Turbine Vent Model CX12EBALMLUPS or approved equal. Use sloped roof curb to keep ventilator parallel to ground.
CONSTRUCTION NOTES:

1. INSTALL 12" STANDARD WEIGHT STEEL SPOOL, FE/G.
2. INSTALL 12" VIC TAULIC COUPLING, STYLE 77.
3. INSTALL 12" STANDARD WEIGHT STEEL SPOOL, FE/GE, THREADED FOR THE INSTALLATION OF AIR/VACUUM VALVE ASSEMBLY.
4. INSTALL 2" APICO VERTICAL TURBINE AIR/VACUUM VALVE WITH 2" WELDOLET, 2" BALL VALVE AND 2" BUSHINGS PER STD. DOW. W-6.
5. INSTALL 12"x90° SR STANDARD WEIGHT STEEL WELD ELBOW, FE.
6. INSTALL PRESSURE SWITCH AND GAUGE PER STD. DWG. W-17.
7. INSTALL 4" PVC DRAIN
8. INSTALL 4" CLEANOUT
9. INSTALL 4" DIP WYE
10. INSTALL 1" THREAD-0-LET, 1/2" BUSHING AND 1/2" COPPER TUBING TO DRAIN.
11. WATER QUALITY SAMPLING PORT ON SIDE OF PIPE PER STD. DWG. W-17.

SEE STD. DWG W10 FOR CONTINUATION
SECTION A
N.T.S.
M-10A-1

SECTION B
N.T.S.
M-10A-1

12" TURBINE VENT
(DAYTON MODEL
CX12ESALMILUPS), TYP.

4x8 ORDER
SIMPSON
LCE4 EA SIDE

2x PERIMETER
BLOCKING (TYP)

2x6 OUTRIGGER (TYP 6)

2x6 CALEDAR
FASCIA

PLYWOOD
SHEATHING

4x8 CROSS MEMBER
(TYP EA SIDE)

2" FIRESTOP @
46" OC (MAX)

SIMPSON
LSTA12 (TYP 4)

2x6 STIFFENER
(TYP EA SIDE)

STUDS @ 16" OC

4x4 POST
(EA SIDE)

1/2" EXTERIOR
GRADE PLYWOOD ON
INTERIOR SURFACES

16d NAILS (TYP EA SIDE)

SIMPSON H4T4 W/ 5/8" AB
W/ 3"x3"x1/4" PLATE ANCHOR
AT UNDERSIDE OF SILL
BEAM (TYP EA SIDE)

4x8 SILL BEAM

PLYWOOD
SHEATHING

2x6 CALEDAR
FASCIA

EDGE NAILING
@ DDBL 2x4 TOP
PLATE

1/2" TURBINE VENT
(DAYTON MODEL
CX12ESALMILUPS), TYP.

2x4 STUDS @ 16" OC

DBL 2x4 TOP PLATE
SIMPSON 4X4@16" OC
(TYP & PERIMETER
BLOCKING)

4x8 POST
(EA SIDE)

4x8 ORDER
SIMPSON LCE4
EA SIDE

2x PERIMETER
BLOCKING (TYP)

2x6 OUTRIGGER
(TYP 6)

DBL 2x4 TOP PLATE
SIMPSON LSTA12
(4x6 OVER BLOCKING)

1/2" EXTERIOR
GRADE PLYWOOD ON
INTERIOR SURFACES

4x4 POST
(EA SIDE)

SIMPSON H4T4 W/ 5/8" AB
W/ 3"x3"x1/4" PLATE ANCHOR
AT UNDERSIDE OF SILL
BEAM (TYP EA SIDE)

4x8 SILL BEAM

16d NAILS (TYP EA SIDE)

SIMPSON H4T4 W/ 5/8" AB
W/ 3"x3"x1/4" PLATE ANCHOR
AT UNDERSIDE OF SILL
BEAM (TYP EA SIDE)

4x8 SILL BEAM

PLYWOOD
SHEATHING

2x6 CALEDAR
FASCIA

EDGE NAILING
@ DDBL 2x4 TOP
PLATE

1/2" TURBINE VENT
(DAYTON MODEL
CX12ESALMILUPS), TYP.

2x4 STUDS @ 16" OC

DBL 2x4 TOP PLATE
SIMPSON 4X4@16" OC
(TYP & PERIMETER
BLOCKING)

4x8 POST
(EA SIDE)

4x8 ORDER
SIMPSON LCE4
EA SIDE

2x PERIMETER
BLOCKING (TYP)

2x6 OUTRIGGER
(TYP 6)

DBL 2x4 TOP PLATE
SIMPSON LSTA12
(4x6 OVER BLOCKING)

1/2" EXTERIOR
GRADE PLYWOOD ON
INTERIOR SURFACES

4x4 POST
(EA SIDE)

SIMPSON H4T4 W/ 5/8" AB
W/ 3"x3"x1/4" PLATE ANCHOR
AT UNDERSIDE OF SILL
BEAM (TYP EA SIDE)

4x8 SILL BEAM

PLYWOOD
SHEATHING

2x6 CALEDAR
FASCIA

EDGE NAILING
@ DDBL 2x4 TOP
PLATE

1/2" TURBINE VENT
(DAYTON MODEL
CX12ESALMILUPS), TYP.
NOTES:

1. Side wall construction similar to each other.

2. Steel hardware shall be hot-dip galvanized unless otherwise noted.
NOTE:
ATTACH 3 STACKED 2x4 (TOTAL DEPTH 4 1/2") BETWEEN THE WHEELS AND AT THE FRONT AND REAR TO SERVE AS NAILERS FOR THE 1x8 CEDAR TRIM ALONG THE BOTTOM.

SECTION E

SECTION F

DETAIL 1

TITLE: MOVABLE WELL BUILDING (UP TO 200HP MOTOR)

Approved by:
GSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

SCALE: NONE
DATE: 02/17
REV: 1.1
STANDARD DWG NO. W-10E

EDC MANAGER 01/16
RIGHT SIDE ELEVATION

- 12" TURBINE VENT (DAYTON MODEL CX12EBALMILUPS)
- COMPOSITE ASPHALT SHINGLE ROOFING SYSTEM
- LIGHTING FIXTURE
- ROLL-UP DOOR
- 1x4 AND 1x3 CEDAR CORNER TRIM
- CEMENT FIBER PANEL (SIERRA), TYP ALL AROUND
- CEMENT FIBER PANEL (STUCCO), TYP ALL AROUND
- 1x8 CEDAR TRIM
- TOP OF FLOOR SLAB
- CONT 22 GA, GALV. DRIP FLASHING PRIMED AND PAINTED, RIGHT SIDE, LEFT SIDE AND REAR ELEVATIONS ONLY.
- 36"x8" SCREED BRICK VENTS (TYP)

3
W-103

LEFT SIDE ELEVATION

- 36" SQ. SCREENED LOUVERED VENT
- LIGHTING FIXTURE
- 1x4 AND 1x3 CEDAR CORNER TRIM
- CEMENT FIBER PANEL
- 1x8 CEDAR TRIM
- CONT 22 GA, GALV. DRIP FLASHING PRIMED AND PAINTED, RIGHT SIDE, LEFT SIDE AND REAR ELEVATIONS ONLY.
- 36" SHUTTER MOUNT EXHAUST FAN (DAYTON MODEL 1HLB6)
- 1x4 CEDAR TRIM
- 2x8 CEDAR FASCIA
- RIGHT SIDE AND LEFT SIDE SILL PER DETAIL 3
W-103
REAR ELEVATION
N.T.S.

1x4 CEDAR TRIM

48"x18" SCREENED LOUVERED VENT

2x8 CEDAR TRIM

(2) TURBINE VENT (12")
(DAYTON MODEL CX12E BALMILUPS)
LOCATE FAN BETWEEN JOISTS

LIGHTING FIXTURE

1x4 AND 1x3 CEDAR CORNER TRIM

16"x8" SCREENED BRICK VENTS (TYP)

FRONT ELEVATION
N.T.S.

2x8 CEDAR FASCIA

LIGHTING FIXTURE, TYP.

1x4 AND 1x3 CEDAR CORNER TRIM

S.S. LOCK HASP

1x8 CEDAR TRIM

CONT. 23 GA. GALV. DRIP FLASHING PRIMED AND PAINTED

PREFINISHED 8' x 0' x 0' - 11" T4
SECTIONS DOOR PROVIDE DOOR WITH REQUIRED 14" CLEARANCE ABOVE DOOR MAXIMUM SEE W-10J

1x4 CEDAR TRIM

NO FLASHING ON WEST ELEVATION

PROVIDE 8"x8" NOTCH FOR TRACK CLEARANCE WITH REMOVABLE 20 GA COVER PLATE BOTH SIDES OF DOOR

TITLE: MOVABLE WELL BUILDING (UP TO 200HP MOTOR)
BUILDING ELEVATIONS

APPROVED BY:
GSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

EDC MANAGER
10/16

DATE

TITLE:
MOVABLE WELL BUILDING (UP TO 200HP MOTOR)
BUILDING ELEVATIONS

SCALE: NONE
DATE: 02/17
REV: 1.2
STANDARD DWG NO. W-101
1. Building foundation to be constructed of Type C concrete. Building slab to receive a trowel finish. Place control joints @ center of slab, each direction.

2. 5/8" plywood T1-11 sheathing for exterior walls. 2x blocking at panel edges w/ 10d @ 6" nails at panel edges and interior supports. Furnish interior walls w/ 1/2" exterior grade plywood, painted per the specifications.

3. 1/2" plywood roof sheathing. 2x blocking at panel edges w/ 10d @ 6" nails at panel edges and 10d @ 12" at interior supports. Stagger panels edges as shown on this drawing.

4. This design shows an 12" pump discharge and 16" discharge pipe.

5. Roof exhaust fan shall provide 6000CFM air flow. Use Dayton 12" Turbine Vent Model CX12EBALMILUPS or approved equal. Use sloped roof curb to keep ventilator parallel to ground.
CONSTRUCTION NOTES:

1. INSTALL 16" STANDARD WEIGHT STEEL SPOOL, FEDE.
2. INSTALL 16" VICTAULIC COUPLING, STYLE 77.
3. INSTALL 16" STANDARD WEIGHT STEEL SPOOL, FEDE, THREADED FOR THE INSTALLATION OF AIR/VACUUM VALVE ASSEMBLY.
4. INSTALL 2" AFCG VERTICAL TURBINE AIR/VACUUM VALVE WITH 2" WELDOLET, 2" BALL VALVE AND 2" BUSHINGS PER STD. DWG. W-6
5. INSTALL 16"x90° SR STANDARD WEIGHT STEEL WELD ELBOW, FE.

6. INSTALL PRESSURE SWITCH AND GAUGE, PER STD. DWG. W-17.
7. INSTALL 4" PVC DRAIN
8. INSTALL 4" CLEANOUT
9. INSTALL 4" DP WYE
10. INSTALL 1" THREAD-O-LET, 3/8" BUSHING AND 3/8" COMPRESSION FITTING AND 3/8" COPPER TUBING TO DRAIN.
11. WATER QUALITY SAMPLING PORT ON SIDE OF PIPE, PER STD. DWG. W-17.
NOTES:

1. Side wall construction similar to each other.

2. Steel hardware shall be hot-dip galvanized unless otherwise noted.
NOTE:
ATTACH 3 STACKED 2x4 (TOTAL DEPTH 4 1/2") BETWEEN THE WHEELS AND AT THE FRONT AND REAR TO SERVE AS NAILERS FOR THE 1x8 CEDAR TRIM ALONG THE BOTTOM.

SECTION E
N.T.S. W-11E

SECTION F
N.T.S. W-11F

DETAIL 1
N.T.S. W-11F

Golden State Water Company
A Subsidiary of American States Water Company

TITLE: MOBILE WELL BUILDING (250HP MOTOR AND LARGER)

SCALE: NONE
DATE: 02/17
REV: 1.2
STANDARD DWG NO.: W-11E

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER
ROBERT R. KEMP 10/16
DATE
(2) 5/8"Ø SS BOLTS

2"x2"x1/4" SS PL WASHER

6x8 SILL BEAM

(4) 5/8"Ø RODS W/ 5" EPOXY ADHESIVE EMBEDMENT

BUILDING CENTER PLATE WHEEL

PLACE BOLTS AT CENTERLINE OF 6x8 SHORT SLOT HOLES VERTICALLY

1/4" PLATE (TYP)

RIGID CASTER WHEEL BEYOND

PLAN

ELEVATION

DETAIL 9
N.T.S. W-11E
REAR ELEVATION
N.T.S.

2x8 CEDAR FASCIA
(2) TURBINE VENT (12")
(DAYTON MODEL CX12EBALMULPS)
LOCATE FAN BETWEEN JOISTS

48"x18" SCREENED LOUVERED VENT
1x4 CEDAR TRIM

FRONT ELEVATION
N.T.S.

2x8 CEDAR FASCIA
(2) TURBINE VENT (12")
(DAYTON MODEL CX12EBALMULPS)
LOCATE FAN BETWEEN JOISTS

48"x18" SCREENED BRICK VENTS (TYP)
16"x16" SCREENED BRICK VENTS (TYP)

1x4 AND 1x3 CEDAR CORNER TRIM
1x4 CEDAR TRIM

S.S. LOCK HASP

CONT. 23 GA. GALV. DRIP FLASHING PRIMED AND PAINTED

PROVIDE 5"Wx2"H NOTCH FOR TRACK CLEARANCE WITH REMOVABLE 20 GA COVER PLATE BOTH SIDES OF DOOR

PREFINISHED 8'-0"Wx9'-11"H
SECTIONAL DOOR. PROVIDE DOOR WITH REQUIRED 14" CLEARANCE ABOVE DOOR MAXIMUM. SEE W-11K

NO FLASHING ON WEST ELEVATION

EDC MANAGER
10/16
DATE

W-113

MOVABLE WELL BUILDING
(250HP MOTOR AND LARGER)
BUILDING ELEVATIONS
WELL BUILDING
SITE GRADING AND PAVING SECTION
N.T.S.

2x6 STUDS @ 16" OC

#5@12" OC (TYP)

#5@12" EW T&B

PUMP BASE

OVER EXCAVATE TO 5' BELOW FINISH FLOOR

2'0" 2'0"

3-#5 CONT (TYP)

2-6" 2-6"

FINISH FLOOR EL

10' MIN

BOTTOM OF FOOTING

2'-6"

2'-0"

2" CLEAN SAND T&B (TOTAL 4") SANDWICHING 10 MIL VAPOR BARRIER

6" LAYER OF CLEAN AND ANGULAR CRUSHED ROCK

MOISTURE CONDITION
STRUCTURAL FILL TO 2% OF OPTIMUM AND COMPACT TO 95% OF MAXIMUM DENSITY

COMPETENT UNDISTURBED NATIVE SOIL

APPROVED BY:
CSWC STANDARDS COMMITTEE

EDC MANAGER 01/16

Golden State Water Company
A Subsidiary of American States Water Company

TITLE: SUBBASE AND SOILS PREPARATION

SCALE: NONE DATE: 01/16 REV: 1.0 STANDARD DWG NO. W-12
NOTES:
1. Acoustical enclosure shall be installed by contractor.
2. The enclosure shall be installed with a boom truck or equivalent.
3. The contractor shall not disassemble pump enclosure for or during installation.
4. Concrete slab, electrical connections and anchor bolts not provided by rps industries.
5. Powder coat: color shall be selected for each project.
6. Install (2) Grainger fan P/N 4YDY82, (1) Grainger thermostat P/N 2E340
NOTES:
1. Acoustical enclosure shall be installed by contractor.
2. The enclosure shall be installed with a boom truck or equivalent.
3. The enclosure shall not disassemble, pump enclosure for or during installation.
4. Concrete slab, electrical connections and anchor bolts not provided by rps industries.
5. Powder coat color shall be selected for each project.
6. Install (4) Granger fan P/N 418082, (2) Granger thermostat P/N 2E3410.
NOTE:
ROOF EXHAUST FAN SHALL PROVIDE
190 CFM AIR FLOW. USE COOK
ACE-D(70 C15 DH) OR APPROVED
EQUAL. FAN TO BE INSTALLED
PARALLEL TO ROOF.

NOTE:
SEE PUMP STATION BUILDING STANDARD DRAWINGS
FOR BUILDING FRAMING AND ROOF DETAILS.

FLOOR AND ROOF PLAN OF
DISINFECTION BUILDING
(1 BAY BUILDING)
UPPER SIDING, FIBER CEMENT PANEL align sheet vertically without horizontal seams "HARDIE PANEL SIERRA" (COLOR PER SPECS)

HARDIE PANEL (SIERRA) FIBER CEMENT PANEL

HARDIE PANEL (STUCCO) FIBER CEMENT PANEL

8'x4' SOLID DOORS, FIBER REINFORCED PLASTIC WITH 12"x24" VENTS IN LOWER PORTION

FINISHED GRADE

12'x14" LOUVERED CABLE VENT

TOP OF PLATE

TOP OF WALL

8'x8"

7'x6"

12'-0"

OPENING FOR EXHAUST FAN

1' SQUARE CABLE LOUVER FOR EXHAUST FAN

2" VENT

UPPER SIDING, FIBER CEMENT PANEL align sheet vertically without horizontal seams "HARDIE PANEL SIERRA" (COLOR PER SPECS)

12" SQUARE SCREENED LOUVERED VENT (TYP.)

HARDIE PANEL (SIERRA) FIBER CEMENT PANEL

HARDIE PANEL (STUCCO) FIBER CEMENT PANEL

FINISHED GRADE

12'-0"

4'-0"

OPENING FOR EXHAUST FAN

REAR ELEVATION
N.T.S.

FRONT ELEVATION
N.T.S.

ARCHITECTURAL VIEWS OF DISINFECTION BUILDING

PROPOSED BY:
GSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

EDC MANAGER 10/16

TITLE:

DATE:

REV

STANDARD DWG NO.

NONE 10/16 1.1 W-14B
FLOOR PLAN

ROOM #1
ELECTRICAL ROOM & INSTRUMENTATION

ROOM #2
SODIUM HYPOCHLORITE (NaOCl) CHEMICAL

NOTE:

- Roof exhaust fan shall provide 190 CFM airflow. Use Cook ACE-D (C15 DH) or approved equal fan to be installed parallel to roof.

NOTE:

See pump station building standard drawings for building framing and roof details.

Golden State Water Company
A Subsidiary of American States Water Company

Approved by: GSWC Standards Committee

Date: 09/16

EdC Manager

Title: Floor and roof plan of disinfection building (2-bay building)

Scale: None
Date: 10/16
Rev: 1.1
Standard DWG No.: W-15A
NOTE:

All interior corners in the walls and ceiling shall be sealed with a rubber silicone joint sealant resistant to chlorine vapors prior to painting.
FRONT ELEVATION

NOTE:

All interior corners in the walls and ceiling shall be sealed with a rubber silicone joint sealant resistant to chlorine vapors prior to painting.
NOTE:

All interior corners in the walls and ceiling shall be sealed with a rubber silicone joint sealant resistant to chlorine vapors prior to painting.
NOTE:
ROOF EXHAUST FAN SHALL PROVIDE
190 CFM AIR FLOW. USE COOK
ACE-D(70 C15 DH) OR APPROVED
EQUAL. FAN TO BE INSTALLED
PARALLEL TO ROOF.

NOTE:
SEE PUMP STATION BUILDING STANDARD DRAWINGS
FOR BUILDING FRAMING AND ROOF DETAILS.
1" SQUARE GABLE LOUVERS FOR EXHAUST FAN

UPPER SIDING, FIBER CEMENT PANEL
ALIGNED SHEETS VERTICALLY WITHOUT
HORIZONTAL SEAMS "HARDIE PANEL SI
(COLOR PER SPECS)

LIGHT FIXTURE

FIBER REINFORCED
PLASTIC SOLID DOORS
WITH 12"x24" VENTS IN
LOWER PORTION (TYP.)

LOWER SIDING,
FIBER CEMENT PANEL
ALIGNED SHEETS VERTICALLY
WITHOUT HORIZONTAL SEAMS
"HARDIE PANEL STUCCO"
(COLOR PER SPECS)

FINISH
GRADE

FRONT ELEVATION
N.T.S.

DORMER OR ROTARY
VENT (TYP.)

2"Ø VENT

12" SQ. LOUVERED
VENT (TYP.)

TOP OF
VENT

FINISH
GRADE

SIDE ELEVATION
N.T.S.

ARCHITECTURAL VIEWS OF
FLUORIDE INJECTION BUILDING

Golden State
Water Company
A Subsidiary of American States Water Company

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER 10/16

DATE

TITLE:

SCALE: NONE 10/16

DATE: 1.1

REV

STANDARD DWG NO. W-18B
CHEMICAL NAME
(TRADE NAME)
CONCENTRATION
CHEMICAL
DESIGNATION

SODIUM HYPOCHLORITE
(HYPOCHLORATE
SOLUTION) NaOCl
(15% MAX. SOLUTION)
DANGEROUS / HAZARDOUS
CHEMICAL

SODIUM HYPOCHLORITE
CHEMICAL SIGN

SODIUM FLUORIDE
(FLUORIDE)
NaF
DANGEROUS / HAZARDOUS
CHEMICAL

SODIUM FLUORIDE
CHEMICAL SIGN

AQUEOUS AMMONIA
(AMMONIA)
NH₄OH
(50% MAX. SOLUTION)
DANGEROUS / HAZARDOUS
CHEMICAL

AQUEOUS AMMONIA
CHEMICAL SIGN

NOTES:
1) N.F.P.A. SIGNS SHOWN ARE
   TYPICAL EXAMPLES
2) EXACT N.F.P.A. SIGNS SHALL
   BE AS DIRECTED BY GSWC
   AND/OR CHEMICAL SUPPLIER.
CHEMICAL STORAGE NOTES

1. Building Requirements
   a. The Disinfection Building shall be constructed of either wood frame construction, pre-cast concrete or cement masonry block (CMU) as shown on the plans for each specific project.
      i. All exposed electrical conduits shall be constructed of non-corrosive materials except where metal conduits used in the concrete slab project above the floor. Such projections of metal conduits shall be wrapped with PVC tape.
      ii. The doors, frames and ventilation equipment shall be constructed of non-corrosive materials such as Fiberglass Reinforced Plastic (FRP), aluminum or stainless steel to minimize corrosion from chemical vapors that will be present in the chemical rooms.
   b. Each room in the building shall have a depressed floor at least 8-inches deep for backup spill containment. Rooms shall have grated floor drains connected to the on-site underdrain system that discharges to the local storm drain for which GSWC has a NPDES permit. Each floor drain shall be connected to the underdrain system with a normally closed ball valve. The floor drains shall not be connected to any sink or chemical analyzer drains.
   c. In the event of an accidental spill into one or more of the containment areas, one chemical at a time shall be diluted with clean water and then released into the underdrain system so that chemicals are not released at full strength or at the same time.
   d. All rooms of the Disinfection Building shall be securely locked when employees are not present.
   e. A Material Safety Data Sheet (MSDS) shall be maintained on the premises and be readily available for reference.

2. Storage Tank Requirements
   a. Storage tanks with double walls for secondary containment shall be furnished by either GSWC or an outside vendor. See the Bid Sheets for specific requirements on each project. Chemical treatment will be provided to the ground water pumped from the local wells by injection of sodium hypochlorite and/or other water treatment chemicals.
      i. The secondary containment shall be capable of holding 100% of the storage tank volume without spilling over the top.
   b. Storage tanks shall be either a 275 gallon or 500 gallon double-walled tank for storing sodium hypochlorite. (See the Plans for specific tank size.) Other tank sizes may be called for on the construction plans.
   c. Chemical tanks shall be clearly marked and labeled in accordance with nationally recognized standards.
   d. There may be other chemicals stored in the building which are used for further water treatment. These may include but not be limited to ammonia and sodium fluoride.
      i. Each chemical shall be in its own room with its own double-walled chemical storage tank and its own chemical injection pump system.
   e. All chemical tanks and related equipment shall be anchored to meet anticipated seismic loads per the latest requirements of the California Building Standards Code (CBS).
   f. Tanks shall be equipped with level measurement equipment connected to the local SCADA system. The SCADA system shall be modified to signal the District’s Operations Staff on tank level and leak detection.

3. Chemical Piping Requirements
   a. All chemical piping shall be accordance with 8001.4.3 of the California Fire Code (CFC). Tubing carrying the chemicals shall be fully contained in rigid Schedule 80 PVC piping.
   b. All chemical piping shall be clearly identified in English to indicate material being conveyed and showing the direction of flow.
   c. Shut off valves shall be installed on the chemical injection systems at the following locations:
      i. At the pump suction point on each tank.
      ii. At each injection point within the plant.
      iii. On both sides of each pump.
   d. All shut off valves shall be identified by signs.
   e. Check valves shall be installed at all locations where backflows could create a hazardous condition or unauthorized discharge of hazardous materials.
   f. Installation Instructions
      i. Materials: Use 1/2 OD black polyethylene fittings, 1/2 black polypropylene tubing, 2” schedule 80 PVC pipe, 2” male adapters and 2” male pipe union with stainless steel hose clamps.
      ii. Installation:
         1. The Schedule 80 PVC pipe shall be installed below ground with long sweeps at each turn.
         2. A socket female thread coupling and male hose adapter shall be placed at each end of the pipe.
         3. The clear vinyl tubing shall be installed over the male hose adapters with hose clamps.
         4. The black polyethylene line shall be pulled through the PVC pipe and clear vinyl tubing.
         5. The black polyethylene line shall be connected at the pump and the point of injection with the black polyethylene fittings and the clear vinyl tubing pulled over the fittings and clamped.

4. Sign Requirements
   a. Signs shall be installed at the following locations:
      i. Hazardous Material Signs complying with National Fire Protection Association (NFPA) 704 shall be installed:
         1. At entrances to the site.
         2. At entrances to buildings.
         3. On each tank.
      ii. No Smoking Signs shall be posted at all buildings.
   b. A Site Location Sign shall be attached on each entrance gate using 3-inch high blue letters on a white background. The sign material shall be 0.06-inch thick sheet aluminum. Mount the sign on the outside of the gates using the wording shown on the plans.
      i. At a minimum provide the site address and a 24-hour phone number.

APPROVED BY:
GSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

EDC MANAGER 10/16 DATE

TITLe: CHEMICAL BUILDING STORAGE/USAGE NOTES

SCALE: DATE: REV STANDARD DWG NO.
NONE 10/16 1.1 W-21B
HAZARDOUS MATERIAL NOTES:

1. **Storage tanks** shall have secondary containment capable of holding storage tank contents.

2. **Tanks** shall be clearly marked and labeled in accordance with nationally recognized standards.

3. **A material safety data sheet (M.S.D.S.)** shall be maintained on the premises and be readily available.

4. **Piping for chemicals, all materials being used for primary lines and secondary containment lines** shall be compatible with the chemical solutions and shall be as follows:

   **USE:**
   1/2” O.D. black polypropylene fittings, 1/2” black polypropylene tubing, 2” schedule 80 PVC pipe on 2” male adapters and 2” nalgene clear vinyl tubing with stainless steel hose clamps. The PVC pipe shall be installed below ground with long sweeps at each turn. **A socket female thread coupling and male hose adapter** shall be placed at each end of the pipe. **The clear vinyl shall be installed over the male hose adapters with hose clamps. The black polyethylene line shall be pulled through the PVC pipe and clear vinyl tubing. The black polyethylene line shall be connected at the pump and the point of injection with the black polyethylene fittings and the clear vinyl pulled over the fittings and clamped. This procedure shall be the same for the suction line.**

5. **Shut off valves** shall be located on all chemical piping at pumps and at injection points.
NOTE:
2"X6" Exterior Walls
2"X4" Interior Walls
A Subsidiary of American States Water Company

Golden Water Company

TYPICAL PANEL REINFORCING PLACEMENT

FRONT PANEL 4" THICK (1) REQUIRED

REAR PANEL 4" THICK (1) REQUIRED

BUILDING FLOOR 6" THICK (1) REQUIRED

ROOF PANEL 4" THICK (1) REQUIRED

10½" SQ. OPENING FOR FORCED AIR FAN (CENTERED IN WALL)

6" (TYP)

OPENING FOR 12"x12" SUMP BOX

10" WIDE STEP

FLOOR PENETRATION

GROUT (TYP.)

3-3" P.V.C. SCH 80 PIPES SPACED 5" O.C. MIN.

PVC CAP ON EACH END OF PIPE (TYP)

3" P.V.C. CONDUIT

CONDUIT AND PENETRATION DETAIL

TYPICAL PANEL REINFORCING PLACEMENT

N.T.S.

Golden State Water Company
A Subsidiary of American States Water Company

PRECAST CONCRETE DISINFECTION BUILDING ARCHITECTURAL VIEWS

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER

1/18

DATE

SCALE:
NONE

DATE:
1/18

REV:
1.3

STANDARD DWG NO.
W-23C
LEFT SIDE 4" THICK (1) REQUIRED

REAR PANEL 4" THICK (1) REQUIRED

NOTES:

1. (2) #4 rebar at all panel edges and openings.
2. #4 rebar @ 12" o.c. each way (typ).
3. Reinforcing steel: Grade 60, f_y = 60 ksi.
4. Concrete: footings and slab on grade: f_c = 4000 psi.
   All other concrete: f_c = 4000 psi.
5. Adjust weld plates spacing for openings. Match weld plates
   on floor panel to wall panels, and roof panels to wall panels.
6. Two weld plates at each wall panel connection.
7. Reinforcing steel placed in panels, 2" from panel surface.
8. After construction all weld plates shall be covered by
   cement grout to protect from corrosion.
9. Install two ½-inch wide beads of butyl rubber sealant between wall
    panels and top rim of building floor and between top of walls and
    roof panel prior to setting wall panels and roof. clean any excess
    from interior or exterior vertical surfaces.
10. Floor sloped 0.5% to floor drain.

TYP. WALL TO ROOF SLAB
WELDED CONNECTION DETAIL

TYP. WALL TO FLOOR SLAB
WELDED CONNECTION DETAIL

OPEN SPACE TO BE SEALED WITH CEMENT GROUT WHEN WELDING IS COMPLETED

TYP. WALL TO FLOOR SLAB
WELDED CONNECTION DETAIL

WELD PLATE DETAIL

NOTES:

N.T.S.

GSCWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company
Section 5

Water Tanks
1. TANK INLET PIPING (SEE STD. DWG. T-2)
2. 12" OVERFLOW PIPE (SEE STD. DWG. T-4)
3. 4'x8' CONCRETE VAULT (SEE STD. DWG. T-6)
4. 1" SCH 40 PVC ELECTRICAL CONDUIT
5. 4" SCH 40 PVC ELECTRICAL CONDUIT
6. OUTLET PIPING (SEE STD. DWG. T-3)
7. WATER LEVEL INDICATOR (SEE STD. DWG. T-17)
8. FLANGED ROOF HATCH (SEE STD. DWG. T-12)
9. SENSING AND SAMPLING CONNECTION (SEE STD. DWG. T-16)
10. LARGE MANWAY AND DRAIN PIPE (SEE STD. DWG. T-5)
11. ROOF HATCH (SEE STD. DWG. T-10)
12. STAIRS (SEE STD. DWG. T-8)
13. 36" ACCESS MANWAY (SEE STD. DWG. T-7)
14. CENTER ROOF VENT (SEE STD. DWG. T-13)
15. TRANSITION COUPLING (PVC OR DIP TO STEEL)
16. CONCRETE ALLEY GUTTER (SEE STD. DWG. C-6)
17. 12" PVC AWWA 2900 CLASS 235
18. TIE-OFF ANCHORS AROUND ROOF VENT (SEE STD. DWG. T-9)
**LIST OF MATERIALS**

1. Compacted oil sand w/ 6–8 lbs. of SC–800 liquid asphalt per 100 lbs. of sand
2. ¾" drain rock
3. Impermeable membrane (1% min. slope to leak detection drain; lap a min. of 3" on conc. footing
4. Sand (SE30)
5. Select granular material per soils engineer’s recommendations
6. Steel trowel finish top (to be level with ¾" in any 30" and ¼" overall)
7. Continuous cellular fiber joint filler between floor plate and top of ring wall—1/2" thick (WR Meadows Product)
8. Rebar per plans
9. 2" Sch. 40 P.V.C., perforated and wrapped in filter fabric
TELEMETRY CONDUIT
WELDED BRACKET DETAIL
N.T.S.
(Locations to be shown on the plans)
NOTES:

1. Pipe diameter to be called out in drawings.

2. All steel pipe below grade shall be cement mortar coated. All steel pipe above grade shall be painted to match tank.

3. Dimensions shown are for 12" pipe. Larger or smaller pipe will require modifications to these dimensions.
INLET CONNECTION CONSTRUCTION NOTES:

1. "" WELDED STEEL PIPE, SCH. 40, CMC & EPOXY LINED.
2. "" WELDED STEEL PIPE, SCH. 40, EPOXY LINED.
3. "" WELDED STEEL 90° L.R. ELBOW, SCH. 40, CMC & EPOXY LINED.
4. "" WELDED STEEL 90° L.R. ELBOW, SCH. 40, EPOXY LINED.
5. "" WELDED STEEL 45° ELBOW, SCH. 40, EPOXY LINED.
6. "" FLEX–TEND FORCE BALANCED EXPANSION JOINT FROM EBAA IRON.
7. "" SLIP–ON WELDED FLANGE.
8. SHELL REINFORCING PLATE PER GSWC STD. DWG. T–1 AND AWWA D–100.
9. SUPPORT BRACKET PER GSWC STD. DWG. T–6.
10. 1"" WELDED THREAD–O–LET, 1"" BALL VALVE AND 1"" PLUG FOR SAMPLING.
11. VEHICLE BARRIER PER GSWC STD. DWG. C–9.
12. "" BFV, FE.
INLET CONNECTION CONSTRUCTION NOTES:

1. 1" WELDED STEEL PIPE, SCH. 40, CMC & EPOXY LINED.
2. 2" WELDED STEEL PIPE, SCH. 40, EPOXY LINED.
3. 3" WELDED STEEL 90° L.R. ELBOW, SCH. 40, CMC & EPOXY LINED.
4. 4" WELDED STEEL 90° L.R. ELBOW, SCH. 40, EPOXY LINED.
5. 5" WELDED STEEL 45° ELBOW, SCH. 40, EPOXY LINED.
6. 6" FLEX-TEENDE EXPANSION JOINT FROM EBAA IRON.
7. 7" SLIP-ON WELDED FLANGE.
8. 8" SHELL REINFORCING PLATE PER GSWC STD. DWG. T-1 AND AWWA D-100.
9. 9" SUPPORT BRACKET PER GSWC STD. DWG. T-6.
10. 10" WELDED THREAD-0-LET, 1" BALL VALVE AND 1" PLUG FOR SAMPLING.
11. 11" VEHICLE BARRIER PER GSWC STD. DWG. C-9.
12. 12" BFV, FE.
NOTES:
1. Pipe diameter to be called out in drawings.
2. All steel pipe below grade shall be cement mortar coated. All steel pipe above grade shall be painted to match tank.
3. Dimensions shown are for 12" pipe. Larger or smaller pipe will require modifications to these dimensions.
OUTLET CONNECTION CONSTRUCTION NOTES:

1. ___" WELDED STEEL PIPE, SCH. 40, CMC & EPOXY LINED.
2. ___" WELDED STEEL PIPE, SCH. 40, EPOXY LINED.
3. ___" WELDED STEEL 90° L.R. ELBOW, SCH. 40, CMC & EPOXY LINED.
4. ___" WELDED STEEL 90° L.R. ELBOW, SCH. 40, EPOXY LINED.
5. ___" WELDED STEEL 45° ELBOW, SCH. 40, EPOXY LINED.
6. ___" FLEX-TEND FORCE BALANCED EXPANSION JOINT FROM EBAA IRON.
7. ___" SLIP-ON WELDED FLANGE.
8. SHELL REINFORCING PLATE PER GSWC STD. DWG. T–1 AND AWWA D–100.
9. SUPPORT BRACKET PER GSWC STD. DWG. T–6.
10. 1" WELDED THREAD–O–LET, 1" BALL VALVE AND 1" PLUG FOR SAMPLING.
11. VEHICLE BARRIER PER GSWC STD. DWG. C–9.
12. ___" BFV, FE.
13. ___" WAFER SWING CHECK, CLA–VAL SERIES 501A.
NOTES:

1. See plans for size of overflow pipe.

2. See Std. Dwg. T-5 and T-6 for front and plan view and to see complete assembly with Large Access Manway.

STAINLESS STEEL SCREEN DETAIL

STAINLESS STEEL (TYPE 304) SQUARE WEAVE WIRE MESH 1/2" SQ OPENING WITH 0.092" WIRE DIAMETER

BOLT & NUT 1/2" x 1 1/4" LG. W/FLAT WASHER

OVERFLOW PIPE

NOTES:

1. See plans for size of overflow pipe.

2. See Std. Dwg. T-5 and T-6 for front and plan view and to see complete assembly with Large Access Manway.

STAINLESS STEEL SCREEN DETAIL

STAINLESS STEEL (TYPE 304) SQUARE WEAVE WIRE MESH 1/2" SQ OPENING WITH 0.092" WIRE DIAMETER

BOLT & NUT 1/2" x 1 1/4" LG. W/FLAT WASHER

OVERFLOW PIPE

NOTES:

1. See plans for size of overflow pipe.

2. See Std. Dwg. T-5 and T-6 for front and plan view and to see complete assembly with Large Access Manway.

STAINLESS STEEL SCREEN DETAIL

STAINLESS STEEL (TYPE 304) SQUARE WEAVE WIRE MESH 1/2" SQ OPENING WITH 0.092" WIRE DIAMETER

BOLT & NUT 1/2" x 1 1/4" LG. W/FLAT WASHER

OVERFLOW PIPE

NOTES:

1. See plans for size of overflow pipe.

2. See Std. Dwg. T-5 and T-6 for front and plan view and to see complete assembly with Large Access Manway.

STAINLESS STEEL SCREEN DETAIL

STAINLESS STEEL (TYPE 304) SQUARE WEAVE WIRE MESH 1/2" SQ OPENING WITH 0.092" WIRE DIAMETER

BOLT & NUT 1/2" x 1 1/4" LG. W/FLAT WASHER

OVERFLOW PIPE

NOTES:

1. See plans for size of overflow pipe.

2. See Std. Dwg. T-5 and T-6 for front and plan view and to see complete assembly with Large Access Manway.
NOTES:

1. Top of concrete ringwall will need to be notched to suit bottom reinforcing plate and flush-type cleanout manhole. Contractor shall verify with tank manufacture exact dimensions and limits of required work on concrete ringwall.

2. This Std. Dwg. is based on a 16" dia overflow pipe. Larger or smaller pipes will require appropriate resizing of affected facilities.
NOTES:

1. See plans for size of overflow pipe. Some resizing of dimensions may be required.
2. See plans for location of clean-out and overflow pipe.
3. Fully weld steel plates to shell and pipe and weld steel angles to each other and steel plates per shop drawings.
ACCESS WAY COVER HINGE
JACKSCREW
ACCESS WAY COVER HANDLE
1/8" N.P.T. TEST HOLE

SHELL REINFORCING PLATE
(PER AWWA STANDARDS)

PLAN

FILLET WELDS (ALL INTERIOR
SURFACES TO BE UNIFORM
& SMOOTH

HANDLE

SHELL REINFORCING PLATE
(PER AWWA STANDARDS)

SECTION A

36-INCH ACCESS WAY
AND SECTION

Golden State
Water Company
A Subsidiary of American States Water Company

APPROVED BY:
GSWC STANDARDS COMMITTEE

EDC MANAGER 01/16

DATE

SCALE: DATE: REV STANDARD DWG NO.
NONE 01/16 1.0 T-7
NOTE:

1. Nothing to be installed under stair cage that could be used to assist climbing efforts.

**ANTI-CLIMB STAIRWAY CAGE**

**ANTI-CLIMB STAIRWAY GATE**
NOTES:
1. Construct handrail against tank from top of platform to 1 foot below bottom of knuckle.
2. Handrail to extend 1-1/2” min. from the tank shell at all locations.
3. Locate tie-off anchors 90° apart around center vent.
4. Construct 4” high toe kick plate under all handrail. Leave 1/4” gap at bottom for drainage.
NOTES:

1. Ladder, brackets, & hardware shall be type 316 stainless steel.

2. Carbon steel brackets shall be welded to tank shell and bolted to ladder.

3. Ladder shall be equipped with type 316 stainless steel safe-climb fall prevention system.

4. All dissimilar metals shall be electrically isolated from each other.

5. A rubberized water proof gasket shall be installed on the interior of the hatch that prevents dust and dirt from entering the tank.

6. All steel plate for roof hatch and neck shall be 3/8" thick min.

INTERNAL LADDER
N.T.S.

2-HINGES REQUIRED GALVANIZED STEEL

3/4" DIA. BAR HANDLE (TYP.)

36" HINGED ROOF HATCH
N.T.S.

2-HINGES REQUIRED GALVANIZED STEEL WITH HOLD-OPEN FEATURE

PADLOCK HASP

36" S.Q.

ROOF HATCH SECTION
N.T.S.
NOTE:
CLAMP BRACKET MAY BE REVERSED TO ACCOMMODATE RUNG SIZES OF 3/4" TO 1 1/4" WITH STANDARD 2" BOLTS FURNISHED. LARGER RUNGS WILL REQUIRE LONGER BOLTS.
ROOF HATCH HINGE

ROOF HATCH COVER HANDLE

JACKSCREW

SHELL REINFORCING PLATE
(PER AWWA STANDARDS)
UNDER HINGE
(36" x 6" x 3/8" THICK)

PLAN

(12) 1-3/8" H OLES FOR 1" Ø
BOLTS SPACED EQUALLY TO
SECURE ALL SIDES

3'-2 3/4" MANWAY COVER OVERLAPS
ALL SIDES OF OPENING EQUALLY

HANDLE

HINGE CLIP

3/8" THICK PLATE

NOTE: Full faced gasket shall be installed between the roof hatch cover and shell flange.

SECTION A

APPROVED BY:
GSWG STANDARDS COMMITTEE

EDC MANAGER

Golden State Water Company
A Subsidiary of American States Water Company

TITLE:
SEALED FLANGED ROOF HATCH

SCALE: DATE: REV STANDARD DWG NO.
NONE 01/16 1.0 T-12
TANK ROOF CP HAND HOLE COVER AND RUBBER GROMMET

EXISTING 5"Ø ACCESS HOLE CUT IN TANK ROOF AT EACH ANODE AND REFERENCE ELECTRODE LOCATION

6" GALVANIZED STEEL ACCESS HOLE COVER

CP HAND HOLE RUBBER GROMMET DETAIL

TANK ROOF CP HAND HOLE COVER

Golden State Water Company
A Subsidiary of American States Water Company

APPROVED BY:
CSWC STANDARDS COMMITTEE

EDC MANAGER 01/16
DATE

T-14

SCALE: DATE: REV STANDARD DWG NO.
NONE 01/16 1.0
NOTES:

See plans for locations of tank appurtenances specific to any project.
ENCLOSURE DETAIL

N.T.S.

(LEVEL TRANSMITTER TO BE INSTALLED BY OTHERS)

1. Sensing line for altitude valve control and water level depth sensing shall be 6" above the tank bottom.

NOTES:

WATER SAMPLING CONNECTION

N.T.S.

(Showcasing sensing line)

SECTION

N.T.S.

ENCLOSURE SHALL EXTEND 2" BEYOND EDGE OF RINGWALL. CONTRACTOR SHALL, IF NECESSARY, MAKE ADJUSTMENTS TO ENCLOSURE WIDTH AFTER RINGWALL DESIGN IS APPROVED.

WATER SAMPLING CONNECTION

N.T.S.

1. Sensing line for altitude valve control and water level depth sensing shall be 6" above the tank bottom.
CONSTRUCTION NOTES:

1. ADAPTER 90 BRS 1/2" CMPX 1/2" MPT.
2. ADAPTER SAMPLE PORT WELDMENT 316SS.
3. BOLT 1/4" x 1" HDG GR A325 WITH INSULATING WASHER BETWEEN BOLT HEAD AND S.S. CLAMP.
4. BOLT, HEX, HVY 0.625 DIA; UNC; 3.25" LG; CS; RH.
5. FLANGE 2" x 1/2" RD 316SS NPT S40 I.
6. CLAMP 1/2" SS TUBING W/RL 1/4" BN.
7. GASKET FLG 2 RED RUBBER RING 0.125 THICK 150# RING.
8. NOZZLE 3/4" 316SS L 1" EFF x 0.010 SLOT FNPT PER DRAWING SAMPLE SCREEN.DWG.
9. NUT;HH;0.25" DIAMETER GALVANIZED DH (INCLUDED W/ BOLT).
10. NUT;HH;0.75" DIAMETER; STEEL; GALVANIZED DH (INCLUDED W/BOLT).
11. TUBE;RND;SS;316/316L;0.5" 0.035";RND.
12. TUBE;RND;SS;316/316L;0.5" 0.035";RND.
13. VALVE; BALL FULL PT 0.5" 316SS BDY NPT.
14. WASHER 1/4" HOT DIPPED GALVANIZED FLAT.
15. WASHER;FLAT;0.625";CS; GALVANIZED.
16. WASHER;SPLIT;0.25";OD;STEEL;GALVANIZED.
17. WELDED BRACKET AND STRUT (6" LONG x 2" WIDE x 3/8" THICK) SIMILAR TO DETAIL (LOCATED 4" VERTICAL O.C.)

TANK SAMPLE PORT
N.T.S.

LOCATION OF TANK SAMPLE PORTS ON TANK SHELL
(HORIZONTAL DISTANCE BETWEEN S.S. TUBES)
N.T.S.

APPROVED BY:
CSWC STANDARDS COMMITTEE

Golden State Water Company
A Subsidiary of American States Water Company

TANK MULTIPLE SAMPLE PORTS

SCALE: NONE
DATE: 01/16
REV: 1.0
STANDARD DWG NO: T-16B
HALF HEIGHT WATER LEVEL INDICATOR
N.T.S.

NOTES:

1. See plans for location of level indicator on tank.

2. Locate level indicator as close to roof hatch as possible for maintenance access.
ALTITUDE VALVE & VAULT
N.T.S.

NOTES:
SEE PLANS FOR LOCATION AND SIZES.