# SANITARY SEWER STANDARD PLANS

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1. When manholes are installed in unimproved areas, the top of the cover shall be a min. of 1 foot above grade.

2. Min. of one 3° grade adjustment ring. Max. height of grade adjustment rings shall be 20°. Altemately, contractor may cast grade adjustment rings in place.

3. Set all barrel sections & tapers on an approved seal per the Engineer's List of Approved Items, per manufacturer's instructions. Use two seals per joint in high water table areas.

4. Concentric taper sections shall be used on all manholes except where a drop inlet is installed. Eccentric taper section shall be use where one drop is required with opening over drop.

5. After lower ring section is set, break out top half of pipe flush with inside face of M.H. wall and construct shelf and U-shaped channel. Make elevation changes gradually and directional changes with smooth curves. Slope and size of channels shall match upstream and downstream pipes. Manhole channels with a horizontal change in direction of 30° or more shall have a minimum drop of 0.1' across the manhole or shall match the slope of the pipe, whichever is greater.

6. Poured-in-place base shall be poured full thickness on undisturbed soil. Precast base to be from City Engineer's approved list and placed on 6' minimum of 3/4' drain rock installed against undisturbed earth.

7. Concrete for collar shall be per Section 90 of the City Specifications, and shall be 2' below finished grade.

8. Standard manhole barrel section per ASTM C476.

9. 48° I.D. M.H. to be used for sewer mains less than 18° or 60° I.D. M.H. to be used for all trunk and collector sewers 18° to 45° or where drop fittings are used.

10. Couplers used to connect PVC to PVC shall be SDR 26 gasketed type. Flexible transition couplers shall have stainless steel shear bonds. For DIP see Water Standards. Coupler to be installed in mainline trench and out of manhole excavation.

11. Excavation shall be a minimum of 24" wider than barrel sections to allow for proper compaction and testing.

12. See Sewer Construction Specifications regarding poured-in-place base over existing asbestos cement pipe.

**NOTES:**

**CITY OF SANTA ROSA**

**STANDARD PRECAST CONCRETE MANHOLE FOR SANITARY SEWER**

**SCALE:** NONE  **DATE:** Sept. 2017

**DRAWN:** GC  **APPROVED:** FILE NO.

**CHECKED:** RM **STD.- 500**
TYPE "A" MANHOLE

CONCRETE BASE

3'-0" - 6"'

Frame and cover
(See Std. 512)

Concrete collar
(See Std. 500)

2'-0" Min.
1'-0" Max.

SLOPE 1:6

INSIDE PIPE DIA.

(See Std. 500 note 6)

TYPE "B" MANHOLE

CONCRETE BASE

FOR 48" MANHOLE

1'-3" Grade ring
(minimum)

Concrete collar
(See Std. 500)

Cone section
to have 24"
top and 48"
based opening

2'-2" Min.
3'-3" Max.

SLOPE 1:6

INSIDE PIPE DIA.

15" or 24"

Conesection

SHALLOW MANHOLE DETAILS

NOTE - See Std. 500 for typical construction details
NOTE - Type "A" Manhole to be installed only where specifically approved by the Water Department Director.

JUNCTION STRUCTURE FOR MULTIPLE LATERALS

NOTES:
1. An approved water stop shall be installed on all pipe entering or leaving a manhole and centered under manhole wall as shown.
2. The elevations of the top of all pipes entering the manhole base block shall be the same.
3. The maximum number of laterals to be connected to a manhole is (4) four.
4. See Std. 500 for manhole construction details.
5. The channels shall be formed to provide smooth flow through the manhole to the satisfaction of the City Engineer.
6. Channels and laterals through the exterior of the base shall be constructed radially.
7. Long radius sweeps may be needed outside of the junction structure.

CITY OF SANTA ROSA

SHALLOW MANHOLES

JUNCTION STRUCTURES
FOR MULTIPLE LATERALS

SCALE: NONE
DATE: Sept. 2017
DWN: GC RR
CHK: RM
APPROVED
FILE NO. STD.-502
NOTES:

1. Manholes constructed using this standard shall be 60" in diameter and installed in conformance with Standard 500. Use 72" MH where there are two drop connections.

2. Enclose elbow in concrete. Form smooth channel with sweep to manhole flowline.

3. Install waterstop in accordance with manufacturer's instructions as shown.

4. Pipe shall be PVC SDR 26 unless otherwise approved, and shall be the same nominal size as incoming pipe.

5. All piping inside manhole used to construct the drop shall be SDR 26 solvent weld material. PVC primer and cement shall be per pipe manufacturer's instructions.
Note: To be used for main sizes 10" or less and where sewer main will not be extended.
NOTES:

1. To be used where a sewer main has been stubbed out for future extension.

2. To be used only when specifically authorized by the Water Department Director.

3. Valve box lid shall be marked "sewer".

4. If depth is less than 3 feet, use Standard 505.
NOTES:

1. Pipe plugs shall be installed to the satisfaction of the Water Department Director.

2. Unless otherwise approved by the Director of Water abandoned pipes 12”Ø and larger shall be broken into every 50’ and shall be filled completely with a flowable fill material approved by the City of Santa Rosa’s Materials Engineer.
NOTES:

1. Remove frame, cover, taper and barrel sections as required to a minimum of 3' below finished grade.

2. After plugging all pipes in manhole, the remaining portion of the barrel section and all voids created by the removal of the upper portions of the manhole, shall be backfilled and compacted to 90% relative density. Use trench backfill or pipe bedding material per Std. 215.
NOTES:

1. Specify sanitary sewer, storm drain, electrical vault, or water when ordering. All castings shall be dipped in approved ASPHALTUM or BITUMINOUS Paint.

2. All material used in manufacturing shall conform to A.S.T.M. designation A-48 Class 35 B, or of United States Government Specifications QQ-652b.

3. Minimum weight components: Cover – 130 pounds
   Frame – 135 pounds

4. Bolt down covers are required on all sewer mains located in easements, on school grounds, through parks, and on any manhole within 1000ft of a creek. Bolts shall be 1/2" stainless steel with 3/4" hex head. Coat the bolt threads on the final bolt up with "anti-seize" or teflon based pipe dope.
1. The sewer service lateral shall be of sufficient depth to adequately serve the building site, and in no case shall be less than 3' deep at the cleanout unless otherwise authorized by the Water Department Director.

2. Where problems are anticipated in providing sewer service to a given building site, the lateral invert at the cleanout shall be staked by the owner's engineer.

3. Cleanout must be installed within the Public Right of Way or P.U.E. Cleanout to be installed behind sidewalk or at back of P.U.E. Where lateral must be in a driveway, install cleanout at back of sidewalk.

4. In cases where the cleanout installation conflicts with existing facilities, the contractor shall verify any alternate location with the City's Engineer prior to installation.

5. Minimum 2% slope for 4" laterals and a min. 1% slope for 8" laterals are required unless a variance is specifically approved by the Water Department Director and the Building Official.

6. A minimum of 12" when connecting to existing sewer lateral or extend to 1' behind P.U.E. or sidewalk for new construction.

7. For new construction, cap or plug end of service lateral watertight.

8. Lateral material shall be SDR 26 PVC or Ductile Iron pipe. Riser pipe shall be SDR 35 or 26 on 4" laterals and SDR 35 on 8" laterals.

9. Cleanout components shall be the same size as the lateral pipe, and all PVC fittings shall be SDR 26.

10. Tap fittings on mains smaller than 12" may only be used under the approval of the Water Department Director.
Cleanout box per Engineer’s Approved List

4" high "S" marked on face of curb or at back of sidewalk for lateral location.

Sidewalk or planter strip

See Note 3

Cleanout plug per Engineer’s Approved List

4" or 6" PVC riser extended to 6" below finish surface (see note 7)

< Diagram >

4" Pipe bedding

45° Long radius bend

Existing or proposed lateral

See note 6

Coupling per Engineer’s Approved List

Collector sanitary sewer main & WYE branch. (Tee not allowed) Min. invert elev. of WYE branch equals centerline of sewer main.

NOTES:

1. The sewer service lateral shall be of sufficient depth to adequately serve the building site, and in no case shall be less than 3 FT. deep at the back of the P.U.E. unless matching existing conditions on rehabilitation projects or as otherwise authorized by the Water Department Director.

2. Where problems are anticipated in providing sewer service to a given building site, the lateral invert at the back of the P.U.E. shall be staked by the Owner’s Engineer.

3. Cleanout must be installed within the Public Right of Way or P.U.E. Install 18" to 24" behind face of curb if field conditions allow. If unable to install 18" to 24" behind face of curb, install behind sidewalk to a minimum of 12". Where service is in driveway, install at back of sidewalk.

4. In cases where the cleanout installation conflicts with existing facilities, the contractor shall verify any alternate location with the City’s Engineer prior to installation.

5. Minimum 2% slope for 4" laterals and a min. 1% slope for 6" laterals are required unless a variance is specifically approved by the Water Department Director and the Building Official.

6. If connecting to an existing lateral, tie in at a minimum of 12" behind sidewalk or P.U.E. If new construction, and property lateral is not yet installed, extend to 1' behind sidewalk or P.U.E. and cap or plug watertight.

7. Lateral material shall be SDR 26 PVC or Ductile Iron pipe. Riser pipe shall be SDR 35 or 26 on 4" lateral and SDR 35 on 6" lateral.

8. Cleanout components shall be the same size as the lateral pipe, and all PVC fittings shall be SDR 26.

9. If cover, at cleanout, is 5' or greater, or riser pipe must be installed more than 5' from vertical, construct sewer lateral per STD. 513 with one way cleanout behind sidewalk or P.U.E.

10. Where note says to “See Engineer’s Approved List” refer to list for City STD. 513

LATERAL CONNECTIONS TO EXISTING MAINS:

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<th>Main Size &amp; Material</th>
<th>Connection Type</th>
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<tr>
<td>6-10&quot; ACP, PVC</td>
<td>Cut in PVC y/e w/18&quot; spools each end</td>
<td>Rubber w/Steel shear bands</td>
</tr>
<tr>
<td>6-10&quot; PVC</td>
<td>Cut in PVC y/e w/18&quot; spools each end</td>
<td>Rigid slip couplings</td>
</tr>
<tr>
<td>6-10&quot; DIP</td>
<td>Cut in DIP y/e w/18&quot; spools each end</td>
<td>DIP couplings</td>
</tr>
<tr>
<td>12&quot; and larger</td>
<td>Top fitting; see Engineer’s approved list</td>
<td>NA</td>
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CITY OF SANTA ROSA
4" & 6" SEWER SERVICE LATERAL and TWO WAY CLEANOUT
SCALE: NONE DATE: Sept. 2017
OWN: DK RR CHK: RM FILE NO. STD.513 A
NOTES

1. Must be used for all private sewage lift station discharges. No discharges may be made directly to the collector sewer, trunk sewer, or manhole.

2. Any alternate design must be approved by the Water Department Director.

3. Construction details, slope and materials conform to STD-513.
**INSTALLATION OVER PIPE OR STRUCTURE**

- Install pipe with no joints
- D.I.P. or PVC (AWWA C-900 PC 305) pipe
- Storm drain or structure
- Undisturbed earth
- Trench Width

**INSTALLATION UNDER PIPE OR STRUCTURE**

- Install pipe with no joints
- D.I.P. or PVC (AWWA C-900 PC 305) or controlled density backfill

**INSTALLATION OF PIPE OR STRUCTURE UNDER SANITARY SEWER**

- Install pipe with no joints
- D.I.P. or PVC (AWWA C-900 PC 305)
- Storm drain or structure
- Undisturbed earth
- Trench Width

**INSTALLATION OF PIPE OR STRUCTURE OVER SANITARY SEWER**

- Install pipe with no joints
- D.I.P. or PVC (AWWA C-900 PC 305)
- Storm drain or structure

**NOTES:**

1. 1" minimum vertical clearance is required between pipes. Where clearance is less than 6", install felt expansion material or styrofoam between pipes.

2. This installation detail is required only if clearance is less than 1".

3. Ductile Iron pipe shall be encased in polyethylene film per City of Santa Rosa Construction Specifications.

4. Sewer/Water separation criteria are not part of this City Standard. See Appendix "A" of the City’s Water Distribution System Design Standards.

5. S.S. = Sanitary Sewer

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**CITY OF SANTA ROSA**

**MISCELLANEOUS PIPE INSTALLATION DETAILS**

**SCALE:** NONE  
**DATE:** Sept. 2017

**DNM:** GC  
**APPROVED:**  
**FILE NO:**  
**STD.** 517

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*NOTE:* REQUIRED PER CA UNIFORM PLUMBING CODE SECTION 314:1 2013 Rev.
NOTES:

1. Mark all materials with ASTM specification number, SDR number and deflection.

2. Plate diameter shall be 1” less than the mandrel diameter.

3. The 1/2” Bar Stock on edge provides clearance to pass small amounts of soil which may be in pipe.

4. Mandrel diameter has been calculated based on section 306-1.2.12 of the "Greenbook" Standard Specifications for Public Works Construction and or dimensions given in Table 1 of ASTM Standard D3034.

5. Alternative designs that match the deflection dimensions shown may be submitted for review.
Notes:
1. Pre manufactured tank shall be per Engineer's approved list.
2. All grease interceptors shall be located outside public right-of-way except with written approval of the Director of Public Works.
3. Grease interceptors shall be located outside of buildings in a location accessible to wastehauler pumper. Location subject to the approval of the Water Department Director.
4. Tank capacity to be determined at the time of permit application.
5. Alternate design by a Registered Engineer may be substituted for review by the City.
6. Interceptor to be used in conjunction with "Sampling Manhole" per City Std. 521.
7. Stainless steel clamp and bolts 3'-0" o.c. max. (typ.) min. 2 req'd.
8. A waterstop consisting of a standard manhole adapter gasket as supplied by the pipe manufacturer shall be grouted into the interceptor wall near the center of the inlet and outlet walls.
10. Concrete slab to extend min. 24" beyond all sides of tank in traffic areas.
11. Install interceptor per manufacturer's specifications.
12. Pipe and fittings to be 4" schedule 40 PVC DWV.
13. All surface water must drain away from manholes.
14. All waste must enter through inlet fittings only.
15. Protective coating shall cover all internal surfaces and meet the criteria of ASTM-C309.
16. Invert grades of inlet and outlet pipes pipes to be provided by design Engineer.
Notes:

1. Pre manufactured tank shall be per Engineer's approved list.

2. All grease interceptors shall be located outside public right-of-way except with written approval of the Director of Public Works.

3. Grease interceptors shall be located outside of buildings in a location accessible to wastehauler pumper. Location subject to the approval of the Water Department Director.

4. Tank capacity to be determined at the time of permit application.

5. Alternate design by a Registered Engineer may be substituted for review by the City.

6. Interceptor to be used in conjunction with "Sampling Manhole" per City Std. 521.

7. Stainless steel clamp and bolts 3'-0" o.c. max. (typ.) min. 2 req'd.

8. A waterstop consisting of a standard manhole adapter gasket as supplied by the pipe manufacturer shall be grouted into the interceptor wall near the center of the inlet and outlet walls.


10. Concrete slab to extend min. 24" beyond all sides of tank in traffic areas.

11. Install interceptor per manufacturer's specifications.

12. Pipe and fittings to be 4" schedule 40 PVC DWV.

13. All surface water must drain away from manholes.

14. All waste must enter through inlet fittings only.

15. Protective coating shall cover all internal surfaces and meet the criteria of ASTM-C339.

16. Invert grades of inlet and outlet pipes to be provided by design engineer.

CITY OF SANTA ROSA
THREE STAGE SAND AND GREASE INTERCEPTOR

SCALE: NO SCALE
DATE: Sept. 2017
DRAWN: RH RR
CHECKED: RM
FILE NO. STD.-520
1/4" Hinged aluminum floor hatch
(See Engineer's Approved List)

30" Min. to 48" See note 1
Seal joints and coat interior per STD-500
Precast extension
Height as necessary
Waterstop, both sides
(See Note 7)
Precast base

NOTES:
1. If less than 30" review with the City's Environmental Compliance Section for additional vault requirements. If greater than 48" and/or within traffic areas, install a manhole per STD-500 or STD-502 with flow through cut away pipe per this standard, and fitted with a frame and cover per STD-512.

2. Sampling manhole shall be located outside of public right of way unless approved, in writing, by the Water Department Director.

3. An alternative design by a Registered Engineer may be submitted for review by the Water Department.

4. Location subject to the approval of the Water Department Director.

5. Manhole shall be 30" x 30" inside dimension precast box with 24" x 24" hinged aluminum floor hatch or a manhole frame and cover per STD-512.

6. All surface water must drain away from sampling manhole.

7. A waterstop per the "Engineer's Approved List of Items" for STD-500 shall be centered and cast into the wall of the box.

CITY OF SANTA ROSA
SAMPLING MANHOLE
EXTERIOR USE

SCALE: NONE
DATE: Sept. 2017
OWN: RH
CHK: RM
APPROVED
FILE NO. STD.-521
1/4" Hinged aluminum floor hatch
(See Engineer’s Approved List)

NOTES:
1. To be used in the interior of buildings, free of forklift traffic and accessible to City personnel.
2. Location subject to the approval of the Water Department Director.
3. An alternative design by a Registered Engineer may be submitted for review by the Water Department.
4. Box shall be 30" x 30" inside dimension precast box with 24" x 24" hinged aluminum floor hatch.
5. All surface water must drain away from sample box.
6. A waterstop per the “Engineer’s Approved List of Items” for STD-500 shall be centered and cast into the wall of the box.

SECTION A-A

SECTION B-B

Grout with concrete around half broken out pipe and provide a smooth troweled finish.
Notes:
1. Pre manufactured tank shall be per Engineer's approved list.
2. All grease interceptors shall be located outside public right-of-way except with written approval of the Director of Public Works.
3. Grease interceptors shall be located outside of buildings in a location accessible to waste hauler pumper, location subject to the approval of the Water Department Director.
4. Tank capacity to be determined at the time of permit application.
5. Alternate design by a Registered Engineer may be substituted for review by the City.
6. Interceptor to be used in conjunction with "Sampling Manhole" per STD-521.
7. Stainless steel clamp and bolts shall typically be installed 3'-0" o.c. max, and min. two per pipe.
8. A waterstop, per the Engineer's Approved List, shall be centered and cast into inlet and outlet wall penetrations.
9. Place on 6" bed of 3/4" drain rock, consolidated per STD-213.
10. Concrete slab to extend min. 24" beyond all sides of tank in traffic areas.
11. Install interceptor per manufacturer's specifications.
12. Pipe and fittings to be 4" schedule 40 PVC DWV.
13. All surface water must drain away from manholes.
14. All waste must enter through inlet fittings only.
15. Protective coating shall cover all internal surfaces and meet the criteria of ASTM-C309.
16. Invert grades of inlet and outlet pipes to be provided by Design Engineer.
Notes:

1. If less than 30", review with the City's Environmental Compliance Section for additional vault requirements. If greater than 48", install sampling manhole similar to Standard 500 with flow through cut away pipe as per this standard.

2. Sampling manhole to be located outside of public right of way except with written approval of the Water Department Director. The sampling manhole shall be situated in a secure location.

3. An alternative design by a Registered Engineer may be submitted for review by the City’s Environmental Compliance Section.

4. Location subject to the approval of the Water Department Director.

5. Manhole shall be 30" x 30" inside dimension precast box with 24" X 24" hinged aluminum floor hatch. Hatch shall be H20 rated if approved location has potential for wheeled traffic.

6. All surface water must drain away from sampling manhole.

7. A waterstop per the "Engineer’s Approved List of Items" for STD-500 shall be centered and cast into the walls of the box as shown.

8. Install a City approved secondary measuring device and flow recorder equipped with a 110 VAC Junction box for 4--20MA to provide pulse output for flow proportional sampling.

9. Install an approved primary flow device flume and weir, or an approved equivalent per manufacturer’s recommendations. The primary flow device shall be placed in the center of the box.
CONCRETE PAD
Reinforced with 6" x 6" / 10 x 10 welded wire fabric

PLAN VIEW

ELEVATION

Drain hole cover (See detail)

Finish grade

Counter-sunk PVC plug

4" SDR 35 PVC riser extended to 4" below finish surface.

4" x 2" Tee (for vent)

4"-45° Street elbow

4" x 4" wye

4" pvc or ductile iron pipe

NOTES:
1. Must install Reduced Pressure Backflow Prevention Device (RP) per STD-876 on water service, and have passing certification test, prior to installation of this disposal facility.

2. See STD-513 & Engineer's approved list for cleanout box and cover.

CITY OF SANTA ROSA
RECREATIONAL VEHICLE DISPOSAL FACILITY

DRAIN HOLE COVER DETAIL

Cast cover in slab so lip of opening is flush for washdown.

VAREC Fig. 46 drain hole cover assembly foot operated, cast iron body, bronze cover, or an approved equal.
NOTES:

1. Sewage Backwater Valve Assembly to be installed on all laterals where cover is 3' or less at the main, or where the finish floor elevation is less than 1' above the first upstream manhole.

2. Property owner is responsible for the installation and maintenance of the sewage backwater valve assembly.

3. Use extendable backwater valve if depth is greater than 24".