STANDARDS
of the
WINTON WATER & SANITARY DISTRICT

WINTON WATER & SANITARY DISTRICT
6951 WINTON WAY (P.O. BOX 970)
WINTON, CA 95388
(209) 358-2367

Prepared By: Fremming, Parson & Pecchenino
2816 Park Avenue
Merced, CA 95348-3375
(209) 723-2066

Table of Contents

Incorporated herein are details and specifications for improvements frequently installed as part of the water and sewer improvements required in subdivisions or other development work.

Publishing this book and adopting its contents as official standards saves endless repetition in the drafting of construction details on different projects. By simple referral, these standards become part of the plans for any project. Complete sets and individual sheets are available for distribution. From time to time, we hope to add new standards to these now available, as need becomes apparent, and we will revise those already in existence as needed.

Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturers or vendors names, catalog numbers, etc., it is intended merely to establish a standard. Any material, article or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material's, article's or equipment's sole purpose is, in the opinion of the District Engineer, of equal substance and function. It shall not be purchased or installed by the contractor without the District Engineer's written approval.

All work shall conform to Merced County Standards, as augmented by these Winton Water & Sanitary District Standards, and where reference is made, to the State of California "Standard Specifications for Construction of Local Streets and Roads" (Caltrans Standard Specifications) latest edition, issued by the California Department of Transportation (also referred to as State Specifications or State Specs). When a standard is indicated (e.g., AWWA C900) it shall be assumed that it is the latest revision, except as noted otherwise.

Contact the District at least 48 hours (including two full working days) in advance of each required observation to place a construction observation request.

The right is reserved by the District Engineer to modify the attached standards to fit individual situations. Such modifications will be in writing if requested.

If any District Standard conflicts with State or Federal Requirements, it is the responsibility of the Contractor to follow the more stringent standard. Please bring any conflicts to the attention of the District Engineer.

NOTE THAT IT IS THE RESPONSIBILITY OF THE USERS OF THESE STANDARDS TO MAKE SURE THAT THEY ARE UP-TO-DATE.

INTRODUCTION TO STANDARD DESIGNS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		
SCALE: NONE	APPROVED BY:	DATE	G-1
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

In addition to the requirements contained herein and as specified elsewhere, the following shall be completed prior to acceptance of public water and sewer improvements:

1. Deposit sufficient funds as needed to cover District's cost to check plans, observe construction, update utility maps, etc.

2. Submit mylar as-built drawings showing all changes made during construction. Drawings shall be marked "As-Built" at the bottom right hand corner of each plan sheet with the date the "As-Builts" were completed. The invert elevation of all sewer lines at manholes shall be determined by a licensed surveyor. The design elevation shall be lined out and the actual elevation written in .

3. Submit a letter from the County Fire Department stating that fire flow is acceptable.

4. Provide two video tape or DVD copies of all sewer video inspections and a copy of the written report.

5. Provide copies of bacteriological tests showing absence of coliform bacteria in all water lines.

6. Provide copies of trench compaction results showing that all trench compaction meets requirements.

7. Provide a one-year maintenance bond or proof that District's improvements are covered under the maintenance bond provided to the County of Merced.

8. Complete continuity testing of water line tracer wire in the presence of construction observer.

9. Dedication of all necessary easements and right-of-ways.

ACCEPTANCE OF IMPROVEMENTS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		G-2
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

APPROVED BY THE WINTON WATER & SANITARY DISTRICT:

THE PUBLIC DOMESTIC WATER SYSTEM IMPROVEMENTS PROPOSED IN THESE PLANS MEET THE REQUIREMENTS OF THE WINTON WATER & SANITARY DISTRICT. THERE IS ADEQUATE CAPACITY TO SERVE THE ANTICIPATED DOMESTIC WATER NEEDS OF THE PROPOSED DEVELOPMENT.

THE PUBLIC SANITARY SEWER SYSTEM IMPROVEMENTS PROPOSED IN THESE PLANS MEET THE REQUIREMENTS OF THE WINTON WATER & SANITARY DISTRICT. THE EXISTING COLLECTION SYSTEM AND THE WASTEWATER TREATMENT PLANT HAVE ADEQUATE CAPACITY TO SERVE THE ADDITIONAL SERVICES SHOWN ON THESE PLANS.

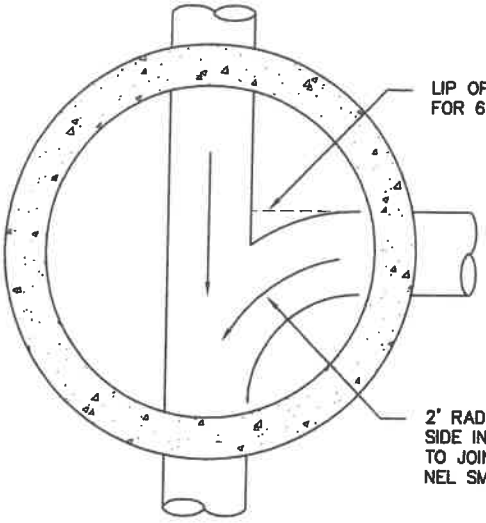
BY: _____

LEE FREMMING, DISTRICT ENGINEER DATE

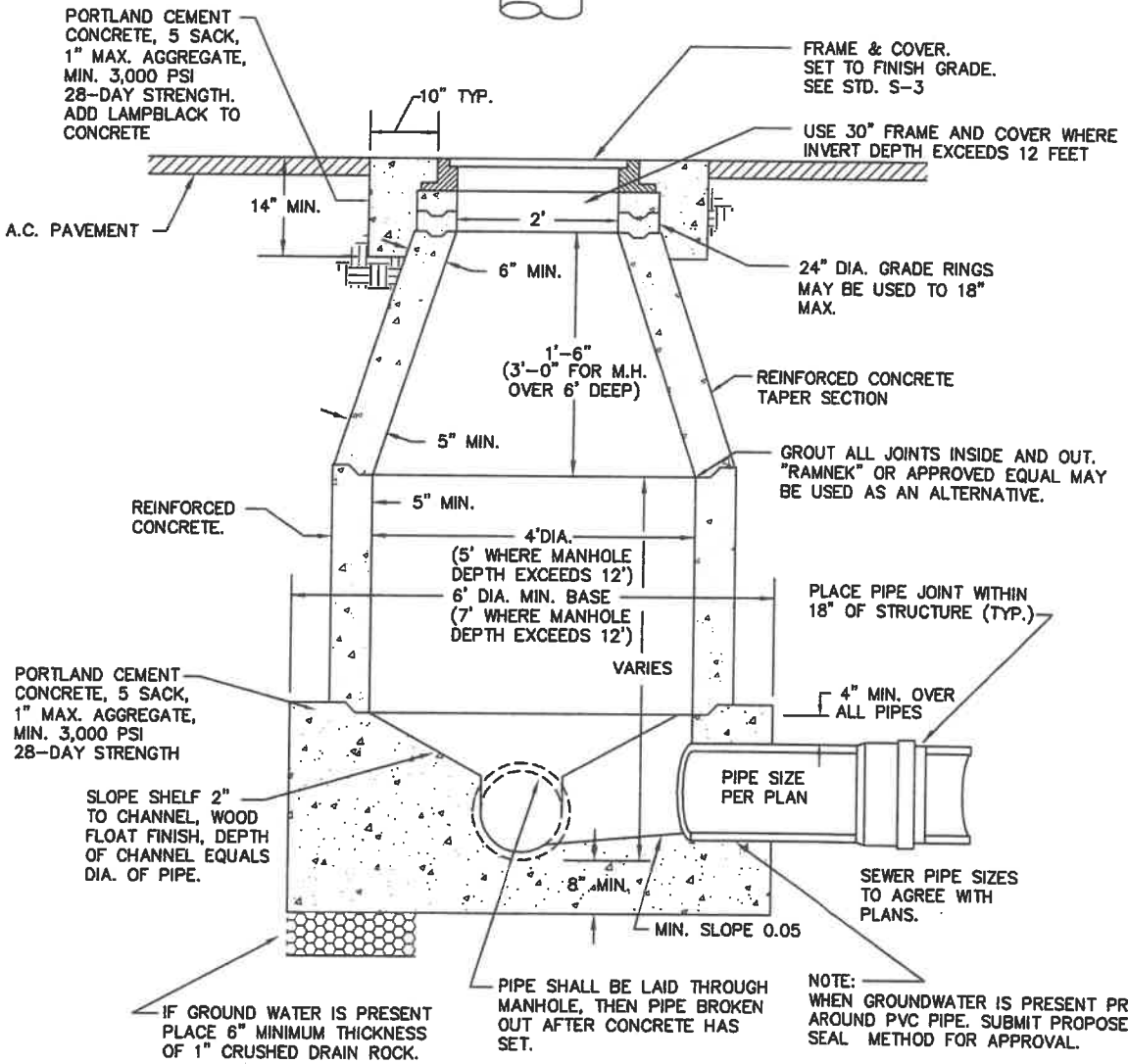
NOTE: THIS APPROVAL BLOCK SHALL BE ADDED TO THE TITLE SHEET OF APPLICABLE IMPROVEMENT PLANS.

STANDARD APPROVAL BLOCK

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	G-3
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER DATE 05/01/11	
DATE: 05/01/11		

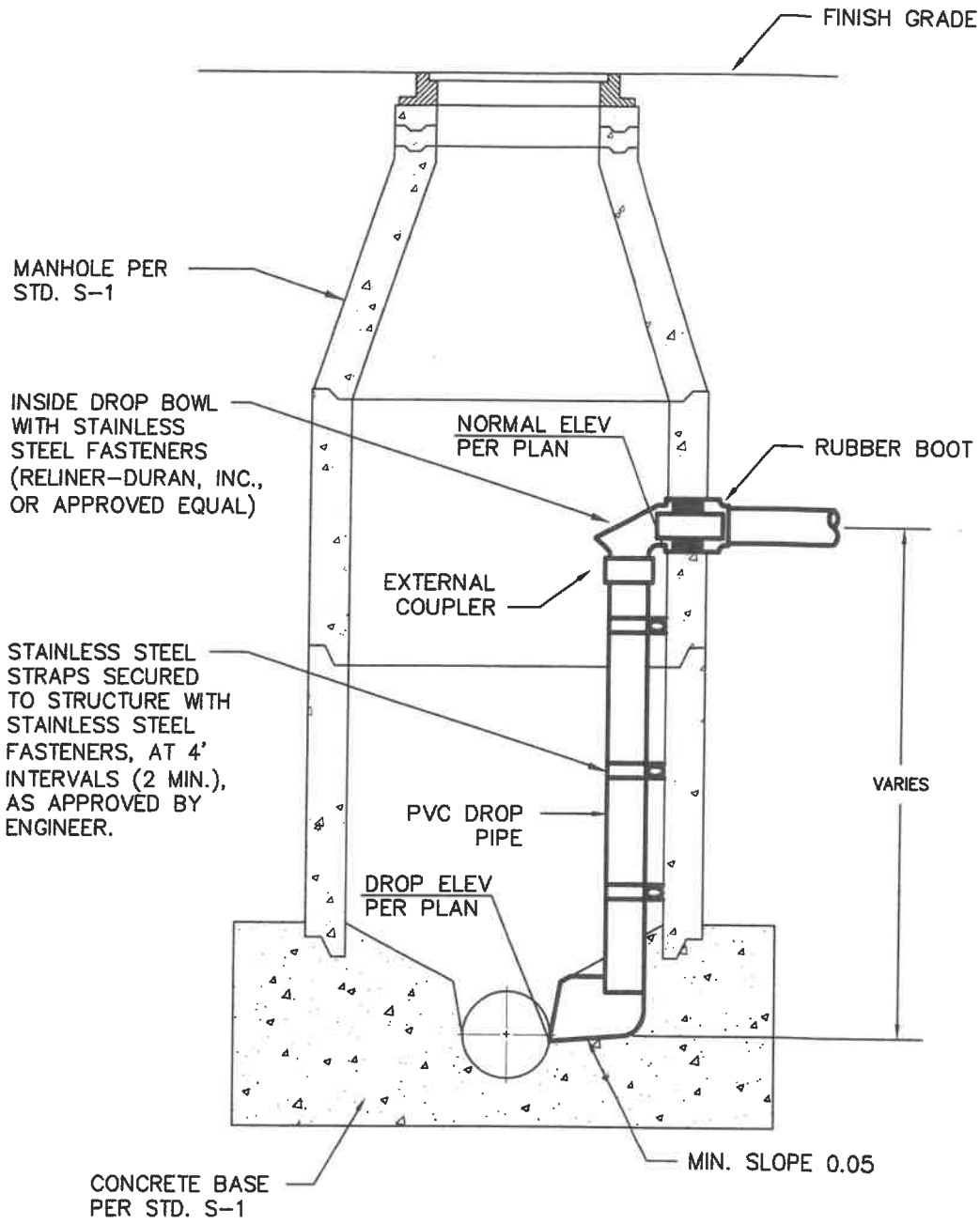


NOTES:
1. M.H. SHALL BE REINFORCED PRECAST CONCRETE PER ASTM C-478.
2. ALL STRAIGHT PIPE TO BE LAID THROUGH MANHOLES WITH TOP HALF REMOVED TO PROVIDE AT LEAST A 44" OPENING. ROUGH EDGES SHALL BE GROUND SMOOTH. THIS ALSO INCLUDES RADUIS AT CROWN OF INLETS AND OUTLETS.
3. SEWER PIPE SIZES TO AGREE WITH PLANS.
4. IF GROUND WATER IS PRESENT PLACE 6" MINIMUM THICKNESS OF 1" CRUSHED DRAIN ROCK.



SEWER MANHOLE DETAIL

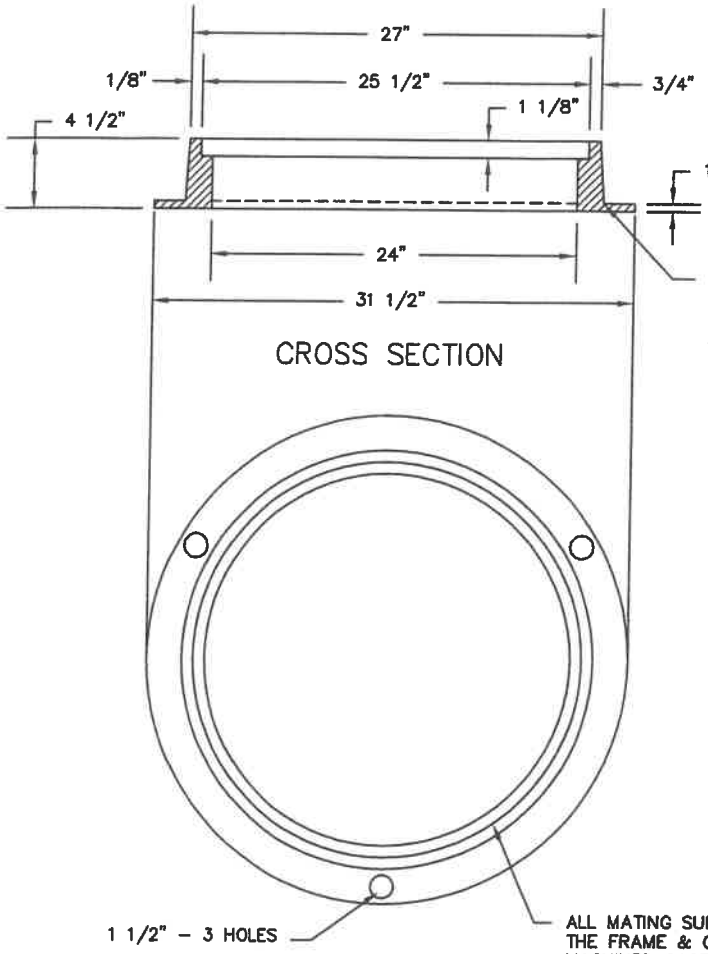
DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-1
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		



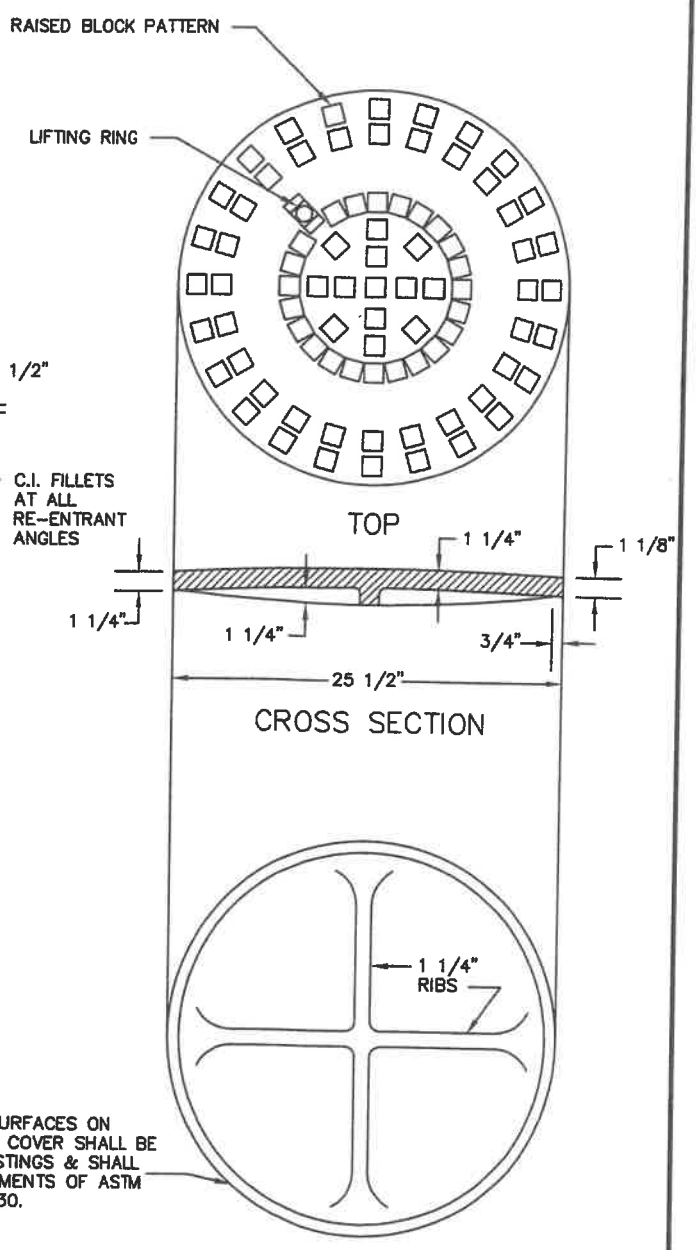
NOTE:
INSTALL UPPER SEWER PIPE, DROP BOWL AND DROP PIPE IN ACCORDANCE WITH THE DROP BOWL MANUFACTURER'S RECOMMENDATIONS. INSIDE DROP ONLY ALLOWED WITH PRIOR APROVAL OF DISTRICT ENGINEER.

DROP MANHOLE DETAIL

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-2
SCALE: NONE	APPROVED BY: DISTRICT'S ENGINEER — DATE 05/01/11	
DATE: 05/01/11		



MANHOLE FRAME



MANHOLE COVER

NOTES:

1. FRAME AND COVER BEARING SURFACES SHALL BE MACHINED TO ASSURE INTERCHANGEABILITY AND CLOSE, QUIET FIT.

2. CASTINGS SHALL BE PAINTED OR DIPPED IN A COMMERCIAL QUALITY ASPHALT PAINT.

3. ALL MATERIALS USED IN MANUFACTURING SHALL CONFORM TO ASTM SPECIFICATIONS A159-64T-G3000 OR A48-30.

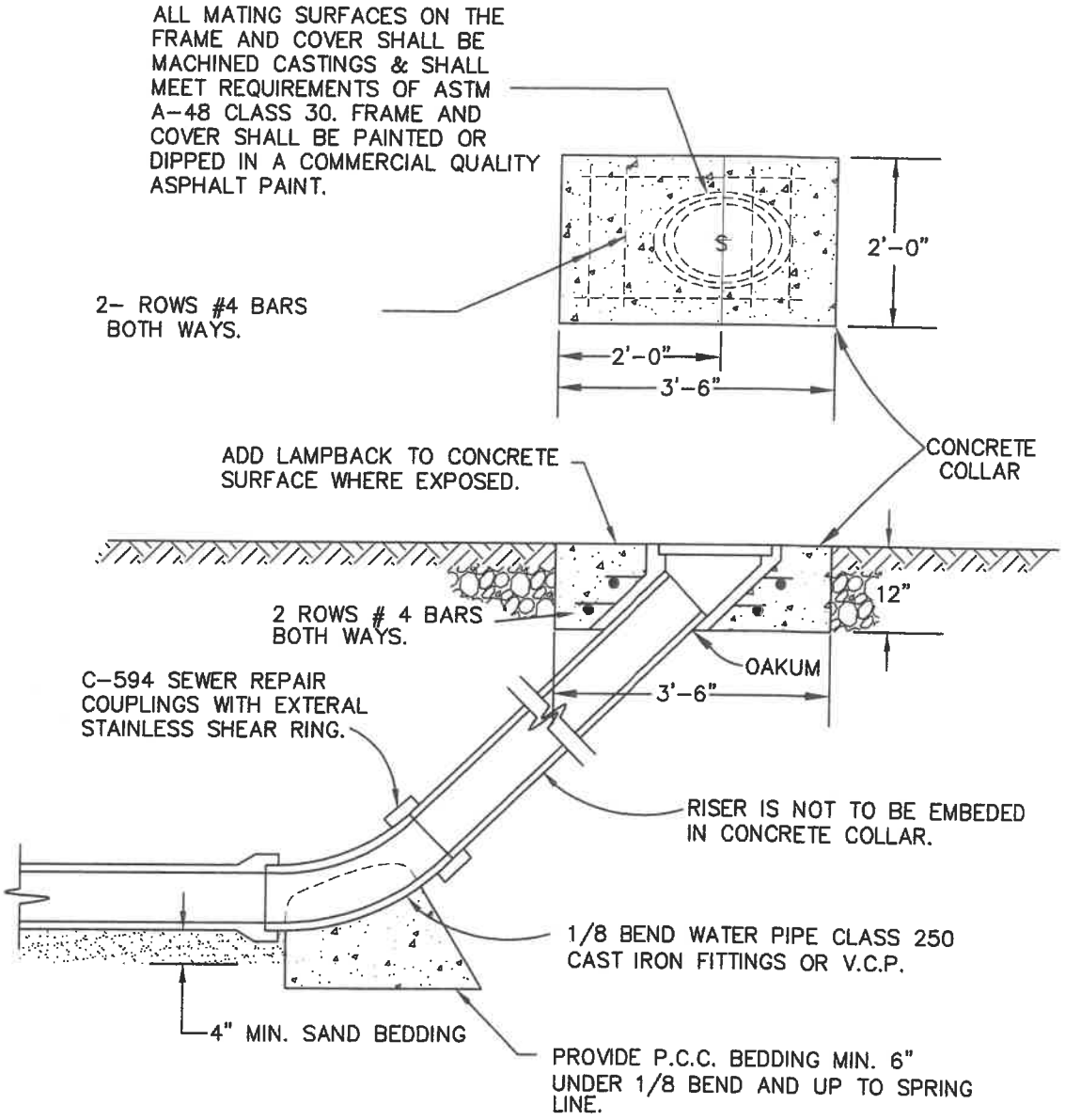
4. FRAME AND COVER SHALL BE DESIGNED TO CARRY AN H20 WHEEL LOADING.

5. 30" FRAME AND COVER SHALL BE USED WHERE SURFACE TO INVERT DEPTH EXCEEDS 12 FEET.

6. LEGEND SHALL BE 2" RAISED LETTERS. "SEWER" WITH "S" IN CENTER.

MANHOLE FRAME A COVER

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-3
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

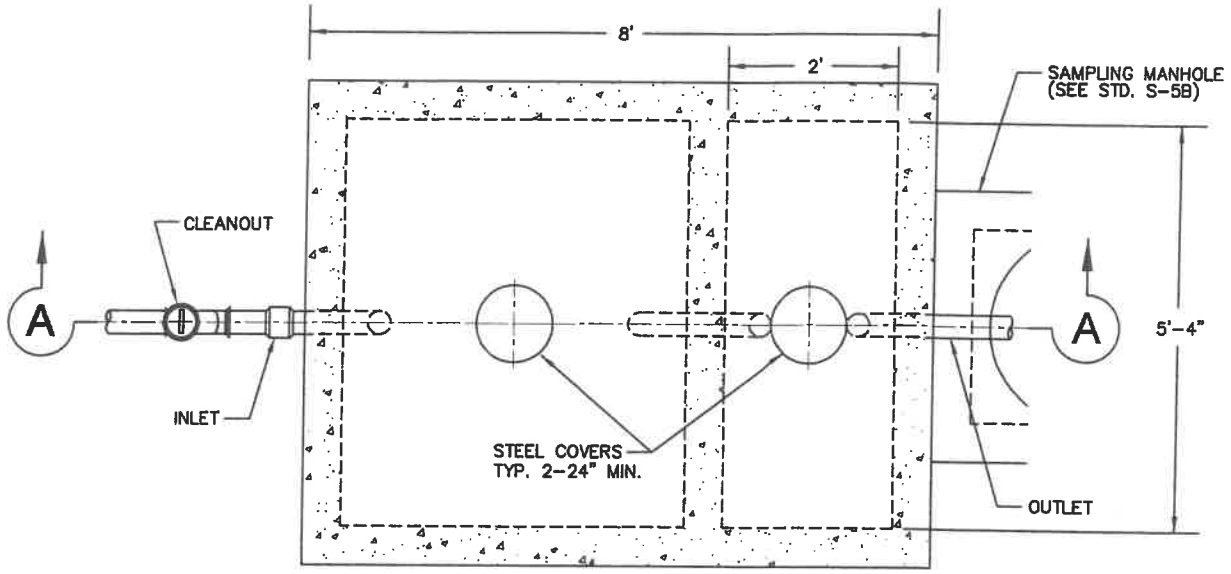


NOTE:

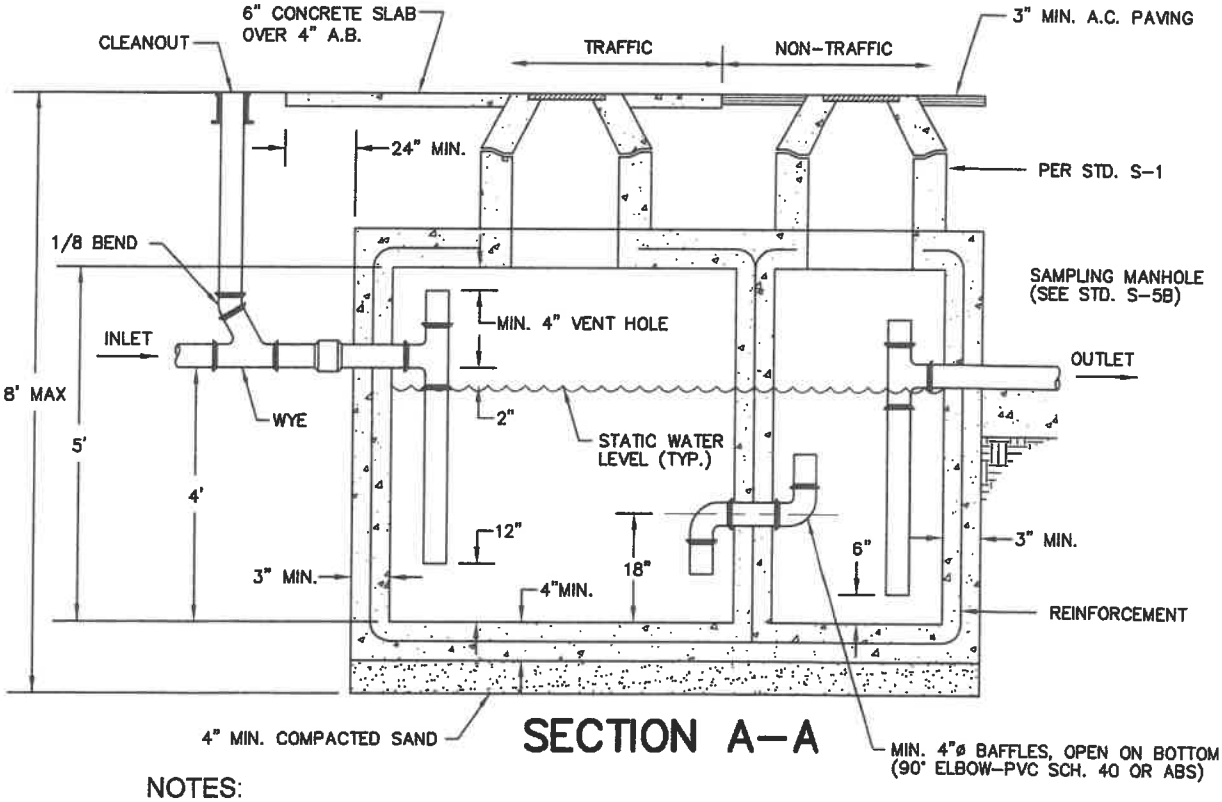
1. CLEAN OUT SHALL ONLY BE USED ON THE ENDS OF SEWER LINES THAT WILL BE EXTENDED IN THE FUTURE.

TEMPORARY CLEANOUT

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-4
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		



PLAN



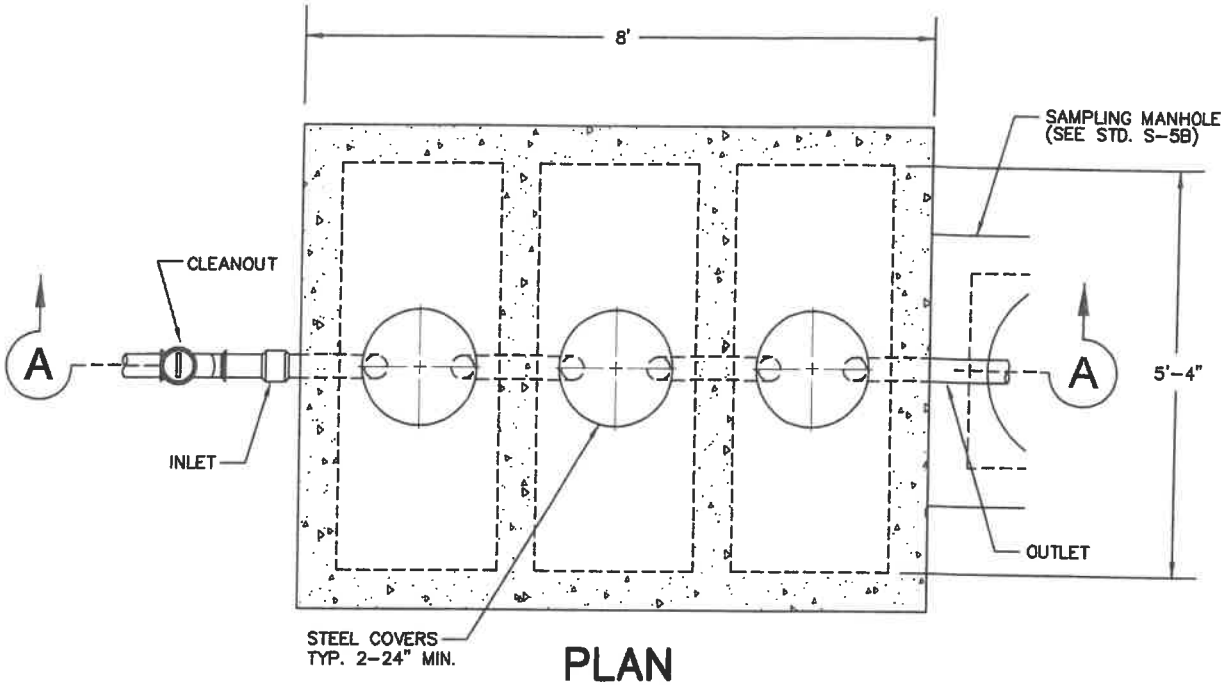
SECTION A-A

NOTES:

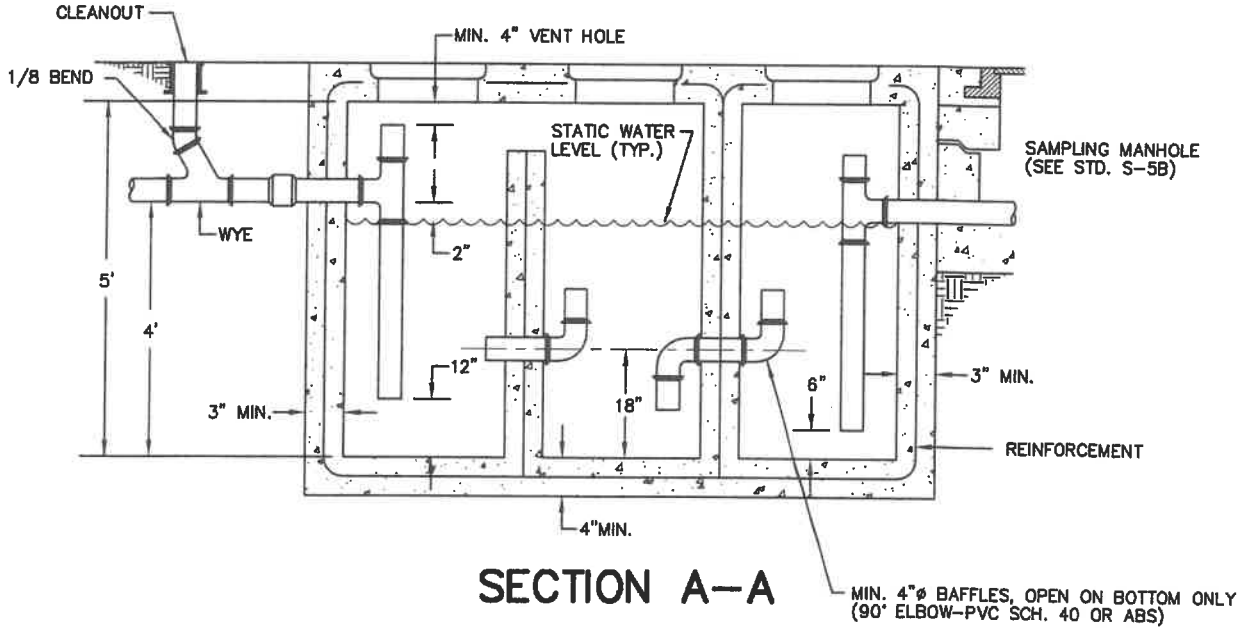
1. Dimensions shown are for a minimum size (800 gallon) interceptor.
2. Each unit shall be sized and structurally designed by a registered civil engineer. Submit calculations to District Engineer.
3. Toilets, urinals, and other similar fixtures shall not waste through the interceptor.
4. Concrete shall be minimum 3000 psi at 28 days.
5. Covers shall be steel and shall be gas tight.
6. Reinforcement shall be adequate for conditions where interceptor is located.

TYPICAL GREASE INTERCEPTOR

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-5
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	



PLAN



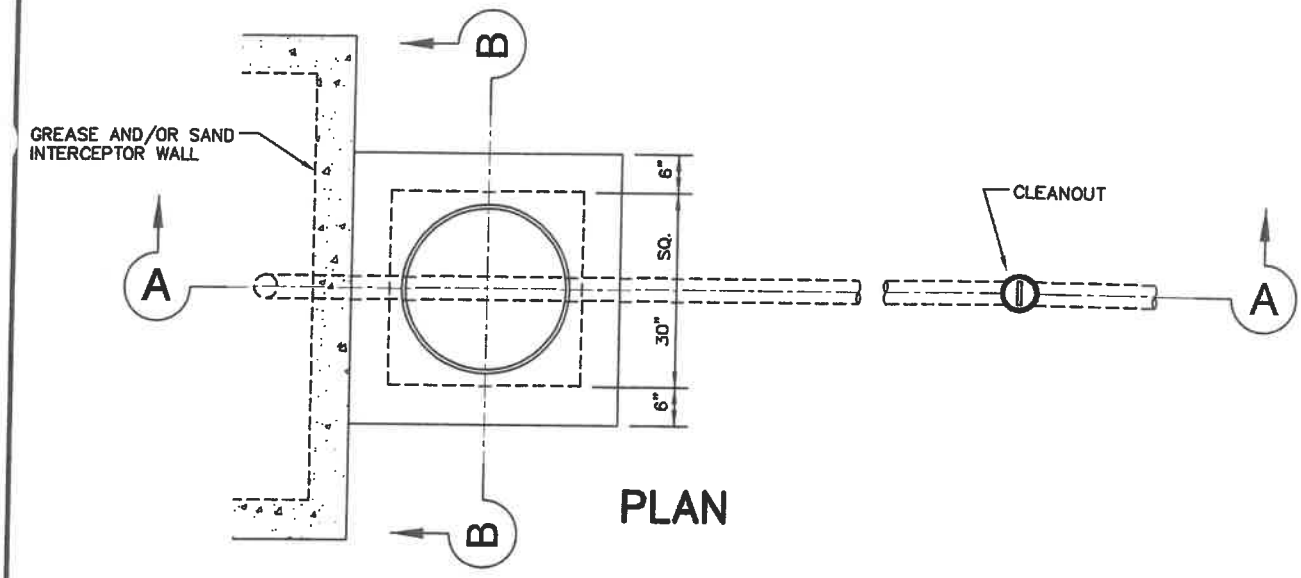
SECTION A-A

NOTES:

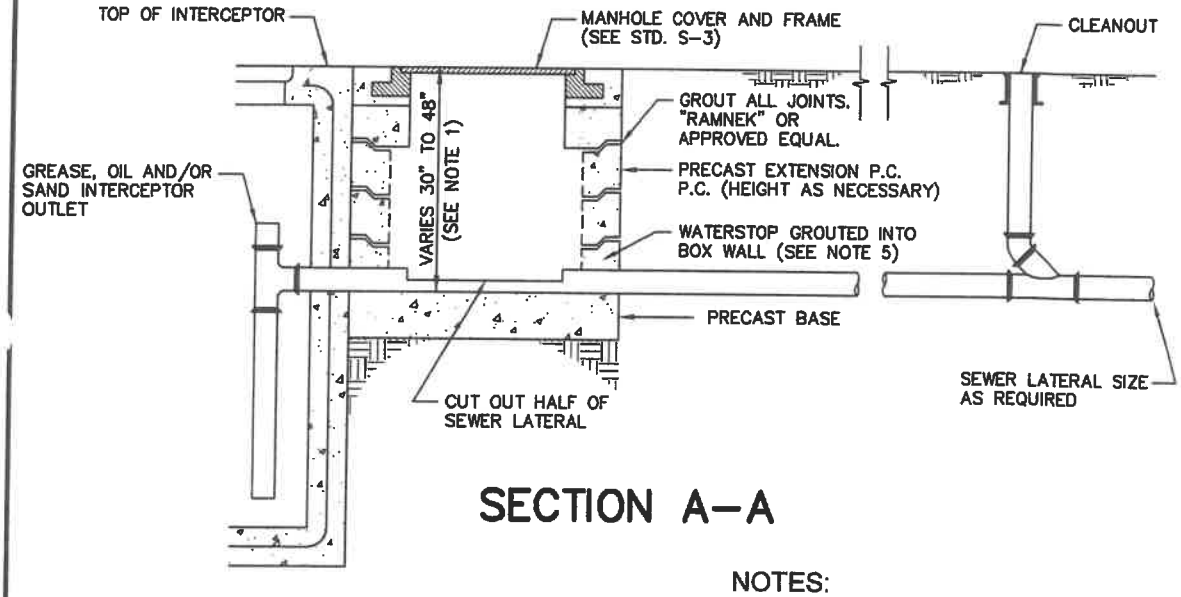
1. Concrete shall be minimum 3000 psi at 28 days.
2. Covers shall be steel and shall be gas tight.
3. Reinforcement shall be adequate for conditions in area where interceptor is located.
4. Each unit shall be sized and structurally designed by a registered civil engineer. Submit calculations to District Engineer.

TYPICAL SAND AND OIL INTERCEPTOR

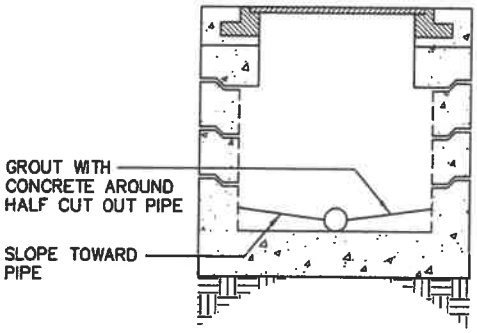
DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-5A
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	



PLAN



SECTION A–A



SECTION B–B

NOTES:

1. Sampling manhole to be located outside of public right-of-way.
2. An alternate design by a registered engineer may be submitted for review.
3. Location subject to the approval of the District Engineer.
4. All surface water must drain away from sampling manhole.
5. A waterstop consisting of a standard manhole adapter gasket as supplied by the pipe manufacturer to be grouted into the box wall near the center of the wall.

SAMPLING MANHOLE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-5B
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		

1. Dimensions shown are normal for minimum size (750 gallon) interceptor.

2. Tank shall be precast as manufactured by (or approved equal):

   a. Casey Concrete
      4200 Lester Road
      Denair, CA 95316
      (209) 667-0161

   b. P & L Concrete Products
      1900 Roosevelt Avenue
      Escalon, CA 95320
      (209) 521-6171 or
      (209) 838-1448

   c. M.C. Nottingham Co.
      4922 Irwindale Avenue
      Irwindale, CA 91706
      (800) 654-6469

3. Alternate design by a registered civil engineer requires review by the District Engineer.

4. All waste shall enter interceptor through the inlet pipe only.

5. Sampling manhole may be eliminated depending on use with approval of the District Engineer.

6. Tank capacity to be determined at time of permit application, and shall be subject to approval by the District Engineer.

7. Grease interceptor is required for all commercial food preparation such as:

   a. Restaurant
   b. Bakery
   c. Donut and Coffee Shop
   d. Cafeteria (School and Hospitals included)
   e. Mini Marts
   f. Any use where the Health Department requires a 3 compartment sink

8. Sand and Oil interceptor required for all:

   a. Auto - Maintenance Facility
   b. Car wash facility
   c. Paint - Body repair shop
   d. Facility handling flammable and/or oily liquid

9. All grease, sand and oil interceptors shall be located outside public right-of-way except with written approval of the District Engineer. Interceptors shall be so located as to prevent the entrance of foreign materials, to be easily accessible for cleaning and inspection, and to pose no hazard to public health and safety.

10. Inlet/outlet pipe shall be per U.P.C.

11. All surface water must drain away from manholes.

12 Prohibited and/or restricted equipment:

   a. The installation and use of garbage grinders (disposals) in Commercial food establishments is prohibited except in the case where a 1,000 gallon plus interceptor is in use.
   b. The use of enzymes or bacterial cultures designed to disperse grease is prohibited unless specifically approved in writing by the District Engineer.

13. Equipment to be connected to an interceptor:

   a. Mop and Scullery sinks
   b. Pots and pans sink
   c. Soup kettles and floor drains in kitchen and washing areas.
   d. Pre-wash rinses
   e. Dishwashers
   f. 3-compartment sinks

14. Restroom waste shall not be routed through interceptor.

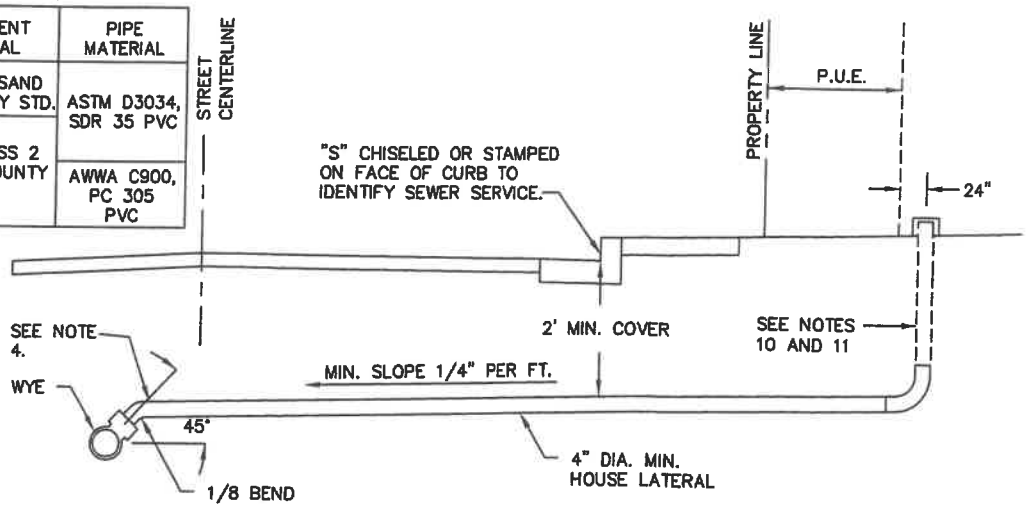
GENERAL REQUIREMENTS FOR GREASE, SAND AND OIL INTERCEPTORS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-5C
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		

EMBEDMENT AND PIPE REQUIREMENTS

CASE	COVER OVER PIPE @ GUTTER FLOW LINE	EMBEDMENT MATERIAL	PIPE MATERIAL
A	≥ 42"	CLASS 3 SAND PER COUNTY STD.	ASTM D3034, SDR 35 PVC
B	≥ 36" BUT < 42"	3/4" CLASS 2 AB PER COUNTY STD.	
C	≥ 24" BUT < 36"		AWWA C900, PC 305 PVC

NOTE:
THE CASE LETTER FOR EACH LATERAL SHALL BE INDICATED ON THE PLANS.



NOTES:

1. All house laterals shall be 4" minimum diameter unless otherwise noted. Pipe and embedment material used for lateral depend on the cover over the pipe at the gutter flow line. See table on this sheet.

2. A manhole shall be installed at the sewer main whenever a lateral exceeds 4" in diameter.

3. See Standards T-1 & T-2 for trench excavation and backfill requirements.

4. Connection between pipes with different OD (e.g. ASTM D3034 SDR 35 to AWWA C900 PC 305) shall occur just beyond the 1/8 bend using a Mission Rubber Company Flex Seal Coupling, Series MR51 with Adjustable Repair Coupling (ARC) Shear Ring.

5. Sewer services shall have minimum 2' cover at gutter flowline.

6. Well compacted embedment material shall be placed under the wye branch, the fitting, and unsupported pipe. Additional embedment material shall be placed to 12" over pipe.

7. See Standards W-1A and W-1B for special construction at water and non-potable pipeline crossings.

8. See District's sewer ordinance for information relating to owner's liability for sewer lateral.

9. Sewer lateral shall be extended from the main through street section and public utilities easement, as shown above.

10. A 90° sweep shall be installed 2 feet beyond the P.U.E. The vertical line shall have a threaded cleanout plug capable of holding test pressure and shall terminate in a Christy V1 drain box (or equal), which shall be flush with the surface.

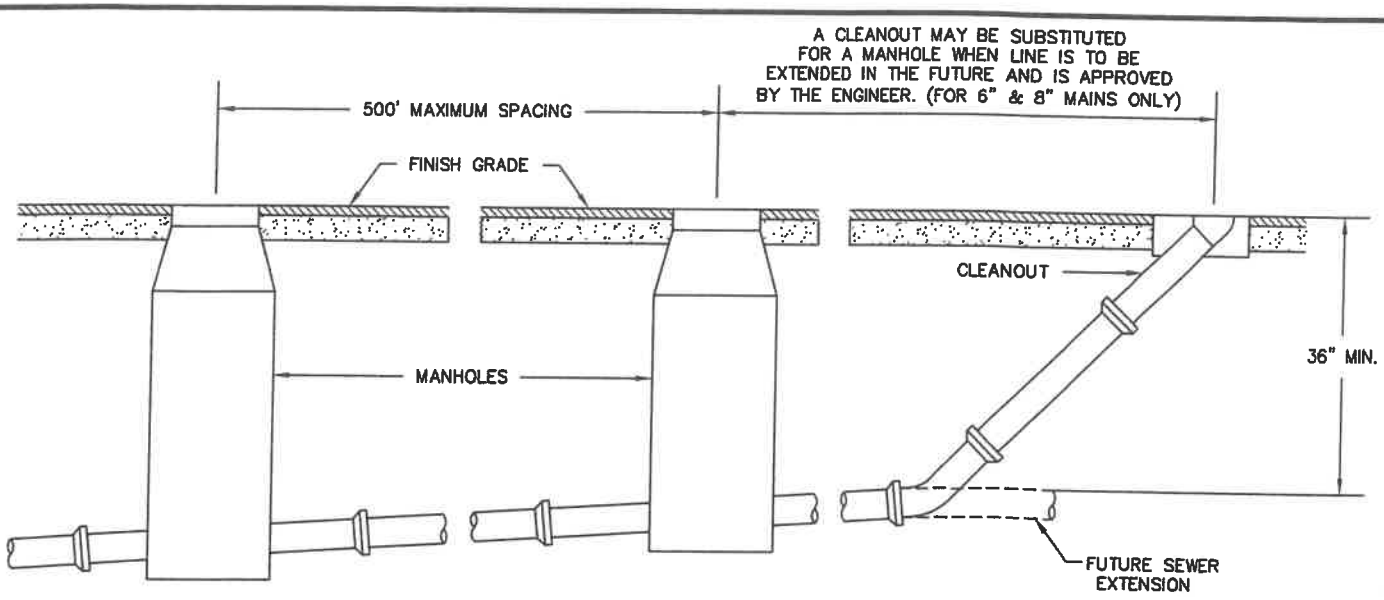
11. When the on-stie lateral is connected, the vertical line, box and 90° sweep shall be removed, and an approved backflow prevention device shall be installed in its place, if required by Section 710.1 of the Uniform Plaumbing Code.

12. Where approved, tap existing main line. Use a Romac Industries Style CB Sewer Saddle, or approved equal. All sewer main taps shall be accomplished with an appropriate tapping machine as recommended by the saddle manufacturer.

13. Water service and sewer lateral shall have a 10-foot separation within the public right-of-way.

SEWER LATERAL

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-6
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		



NOTES:

1. Sanitary sewer shall be ASTM D-3034, SDR 35 Solid Wall PVC with elastomeric joints conforming to ASTM F477, subject to the provisions of Standard S-11, this drawing and as noted otherwise, except that vitrified clay pipe (ASTM C700 extra strength with bell and spigot compression joints meeting ASTM C425) shall be used for sewers that are curved. Note that the pipe material used between manholes must be the same. Installation shall conform to ASTM D2321 for PVC pipe and ASTM C12 for VCP pipe.

2. Minimum cover shall be 36" unless otherwise approved by the District Engineer and the County of Merced.

3. Manhole shall be installed at ends of all public sewer lines and at all intersecting public sewers.

4. Connections to 4" sewers shall be made at wyes, unless approved otherwise by the District Engineer.

5. District Engineer shall be supplied with an "as-built" plan showing location of all laterals and invert elevations of all pipes at manholes.

6. No connections into any trunk sewer main (18" diameter or larger) shall be made without the installation of a manhole. The District Engineer may direct the installation of a local sewer main parallel to a trunk sewer to serve new developments.

7. Sewer mains shall be designed for a minimum velocity of 2.0 feet per second (fps) when flowing full.See table below for required slopes. The minimum slopes shown below may be used as approved by the District Engineer. A Manning's "n" value of 0.0013 shall be used for all design.

PIPE SIZE, Ø	6"	8"	10"	12"	15"	18"
SLOPE (V=2 fps)	0.0050	0.0034	0.0025	0.0019	0.0014	0.0011
*MIN. SLOPE (FT/FT)	0.0024	0.0020	0.0016	0.0012	0.0008	0.0008

* If approved by engineeer

8. See Standards T-1 and T-2 for trench excavation and backfill requirements.

9. All sewer improvements covered prior to observation shall be uncovered as directed by the District Engineer.

SANITARY SEWER DATA

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-7
SCALE: NONE	APPROVED BY:	DATE 05/01/11	
DATE: 05/01/11	DISTRICT ENGINEER		

Testing:

After trench and subgrade compaction is completed (including joint trenches), but before paving, all sewer lines shall be tested. Note the minimum time requirement for mandrelling in Std. S-11. The Contractor will correct defects in workmanship or materials revealed by the tests.

Flushing:

Prior to testing, all sewer mains shall be flushed with an approved sewer ball to remove all debris and dirt from the sewer mains.

Air Pressure Test:

PVC Pipe-

Each section of sewer shall be tested between manholes by plugging and bracing all openings in the sewer main line and the upper ends of all house connection sewers. The leakage test shall be conducted in the following manner:

(a) Air shall be introduced into the pipeline until 4.0 psi gauge pressure has been reached, at which time the flow of air shall be reduced and the internal air pressure shall be maintained at 4.0 psi for at least 2 minutes. Pressure in the pipeline shall be constantly monitored by a gauge and shall not be allowed to exceed 5 psi.

(b) After the temperature has stabilized and no air leaks at the plugs have been found, the air pressure shall be dropped to 3.5 psi, then a stopwatch or sweep-second-hand watch shall be used to determine the time lapse required for the air pressure to drop to 3.0 psi.

(c) If the time lapse is less than that shown in the table (Std. S-10), the necessary repairs must be made prior to acceptance by the Engineer.

Clay Pipe-

Clay pipe shall be tested in accordance with ASTM C828.

Infiltration Test:

In areas of high ground water where the groundwater level is above the pipe throughout the length being tested, an infiltration test shall be conducted. The amount of water obtained during the test period from the section under test shall be measured and it shall not exceed a rate of 100 gal/dia in/mi/day for the sewer being tested.

Television (TV) Camera Inspection:

In addition to the above, the contractor shall video inspect the inside of the sewer lines by means of a television camera in the presence of the District Engineer's observer. This test shall be performed before streets are paved, but after subgrade compaction is completed. Sufficient water shall be put in each line just prior to video taping so that low spots can be seen and measured. Provide two copies of the tape or DVD disk to the District Engineer.

Mandrel Test:

PVC pipe must also be tested with a mandrel having a cross section of at least 95 percent of the specified average inside diameter. This test will be conducted as outlined in Standard Specifications for Public Works Construction, Section 306-1.2.12. See Std. S-11 for additional requirements.

Repair and Retesting:

Sections failing any required test shall be repaired by means acceptable to the Engineer. Retesting is required for repaired areas before final acceptance of the sewers by the Engineer.

SEWER SYSTEM TESTING

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-8
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

MANHOLE TESTS REQUIRED

Water Test:

A leakage test shall be made for each manhole. This test shall be made by plugging all the openings into the manhole and filling the manhole with water to an elevation not more than one foot below a fixed point on the metal manhole rim. The water should be introduced into the test manhole at least four hours in advance of the official test period to allow the manhole material to become saturated. The manhole shall then be refilled to the original water level at the start of the official test period. After a period of four hours, the water elevation shall be measured from the same point on the manhole rim and the loss of water during the test period calculated; enough water shall be measured into the manhole to restore the water to the level existing at the beginning of the test, and the amount added taken as the total leakage.

The allowable leakage at the manhole during the four hour test period shall be 0.55 gallons per each foot of manhole depth (for a 4' diameter manhole), as measured from the lowest point in the manhole to the original water level. Should an initial test show excess leakage in the manhole, the manhole shall be waterproofed by grouting and/or other approved waterproofing methods satisfactory to the Engineer and the test repeated until an acceptable total leakage is obtained. For a 5' diameter manhole, allowable leakage shall be 0.85 gallons per each foot of manhole depth.

(Alternate) Vacuum Test:

The contractor, at his option, may choose to vacuum test manholes rather than following the water test described above. Each manhole shall be tested immediately after assembly and prior to backfilling. Vacuum testing requires the following steps:

(a) All lift holes shall be plugged with an approved non-shrink grout.

(b) All pipes entering the manhole shall be plugged, taking care to securely brace the plug from being drawn into the manhole.

(c) The test head shall be placed at the inside of the top of the cone section and the seal inflated in accordance with the manufacturer's recommendations.

(d) A vacuum of 10 inches of mercury shall be drawn and the vacuum shut off. With the valves closed, the time shall be measured for the vacuum drop to 9 inches. The manhole shall pass if the time is greater than 60 seconds for 48 inch diameter, 75 seconds for 60 inch diameter, and 90 seconds for 72 inch diameter manholes.

SEWER MANHOLE TESTING

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-9
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

TABLE II
MINIMUM SPECIFIED TIME REQUIRED FOR 0.5 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 Pipe Diameter (in.)	2 Minimum Time (min:sec.)	3 Length for Minimum Time (ft.)	4 Time for Longer Length (sec.)	Specification Time for Length (L) Shown (min:sec.)							
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
4	1:53	597	.190 L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.760 L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	.190 L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43	239	1.187 L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709 L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7:05	159	2.671 L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846 L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
21	9:55	114	3.846 L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	99	6.837L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17
27	12:45	88	8.653 L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54
30	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07
33	15:35	72	12.926 L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57
36	17:00	66	15.384 L	25:39	38:28	51:17	64.06	76:55	89.44	102:34	115:23
42	19:54	57	20.942 L	34:54	52:21	69:49	87:15	104:42	122:10	139:37	157:04
48	22:47	50	27.352 L	45:35	68:23	91:11	113.58	136.46	159:33	182:21	205:09
54	25:31	44	34.618 L	57:42	86:33	115:24	144:15	173:05	201:56	230:47	259:38
60	28:20	40	42.738 L	71:14	106:51	142:28	178:05	213:41	249:18	284:55	320:32

Note: If there has been no leakage (zero psig drop) after one hour of testing, the test shall be accepted and the test complete.

UNI-B-6-98

FROM UNI-BELL HANDBOOK OF PVC PIPE.

LOW PRESSURE AIR TEST TABLE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-10
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		

Sewer pipe shall be polyvinyl chloride (PVC) pipe and fittings of 6-inch, 8-inch, 10-inch, 12-inch and 15-inch diameter for mains and 4-inch and 6-inch for services conforming to ASTM D3034. Installation conforming to ASTM recommended practice D2321. ASTM D3034 and D2321 are subject to District Standards for trenching and backfill and the modifications below:

(1) Elastomeric gasket joints are required (ASTM F477).

(2) A minimum SDR value of 35 is required.

(3) The sewer main shall be proved with a mandrel after pavement subgrade compaction has been completed and prior to paving, except that mandrel testing shall occur at least 30 days after compaction is completed.

(4) All maximum allowable deflections for sewer main pipe is 5 percent of average inside diameter as follows:

Nominal	SDR-35 Average	Minimum Mandrel Diameter
6-inch	5.893	5.598
8-inch	7.891	7.496
10-inch	9.864	9.371
12-inch	11.737	11.150
15-inch	14.374	13.655

The Contractor shall take the necessary precautions required to prevent excavated or other foreign material from getting into the pipe during the laying operation. At all times, when laying operations are not in progress, at the close of the day's work, or whenever the workmen are absent from the job, close and block the open end of the last section of pipe placed to prevent entry of foreign material or creep of the gasketed joints.

Stubouts from manholes and for future connection by others shall be plugged or closed off with temporary plugs.

The Contractor shall take all precautions necessary to prevent the "uplift" or floating of the line prior to the completion of the backfilling operation.

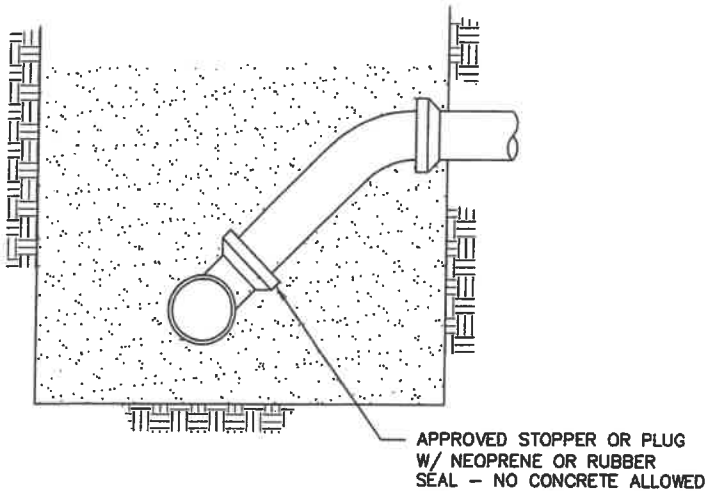
A standard pipe joint shall be located not more than 1.5 feet from the outside edge of the structure or manhole on each pipe connection to a structure or manhole.

PVC pipe is only allowed where sewer will carry flows from residential developments. Neither PVC pipe, nor any other flexible pipe accepted by the District for particular applications, shall be utilized in horizontal and/or vertical curve sections. These types of pipe are only allowed where entire length, between two manholes, is straight.

PVC SANITARY SEWER

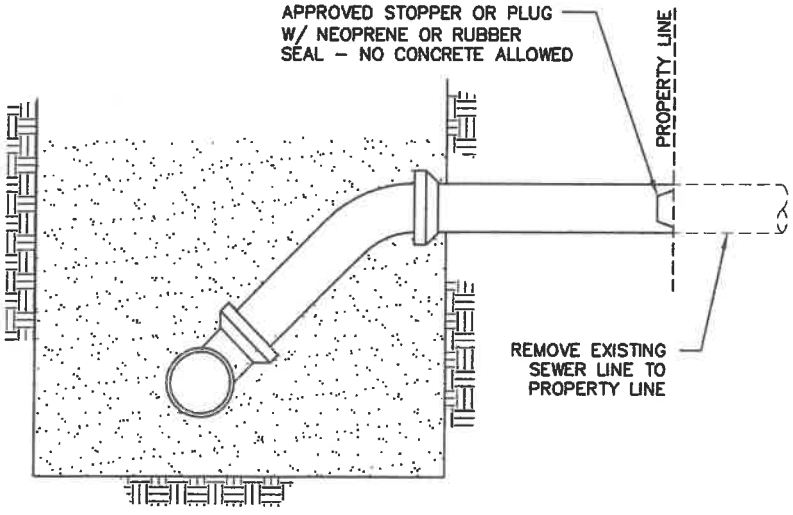
DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-11
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		

PERMANENT ABANDONMENT - LATERAL CAP AT MAIN



1. If lateral is Orangburg material or is in poor condition, saddle or cap must be installed at main.
2. If lateral material is cast iron or VCP with neoprene seals, the cap may be installed at property line.

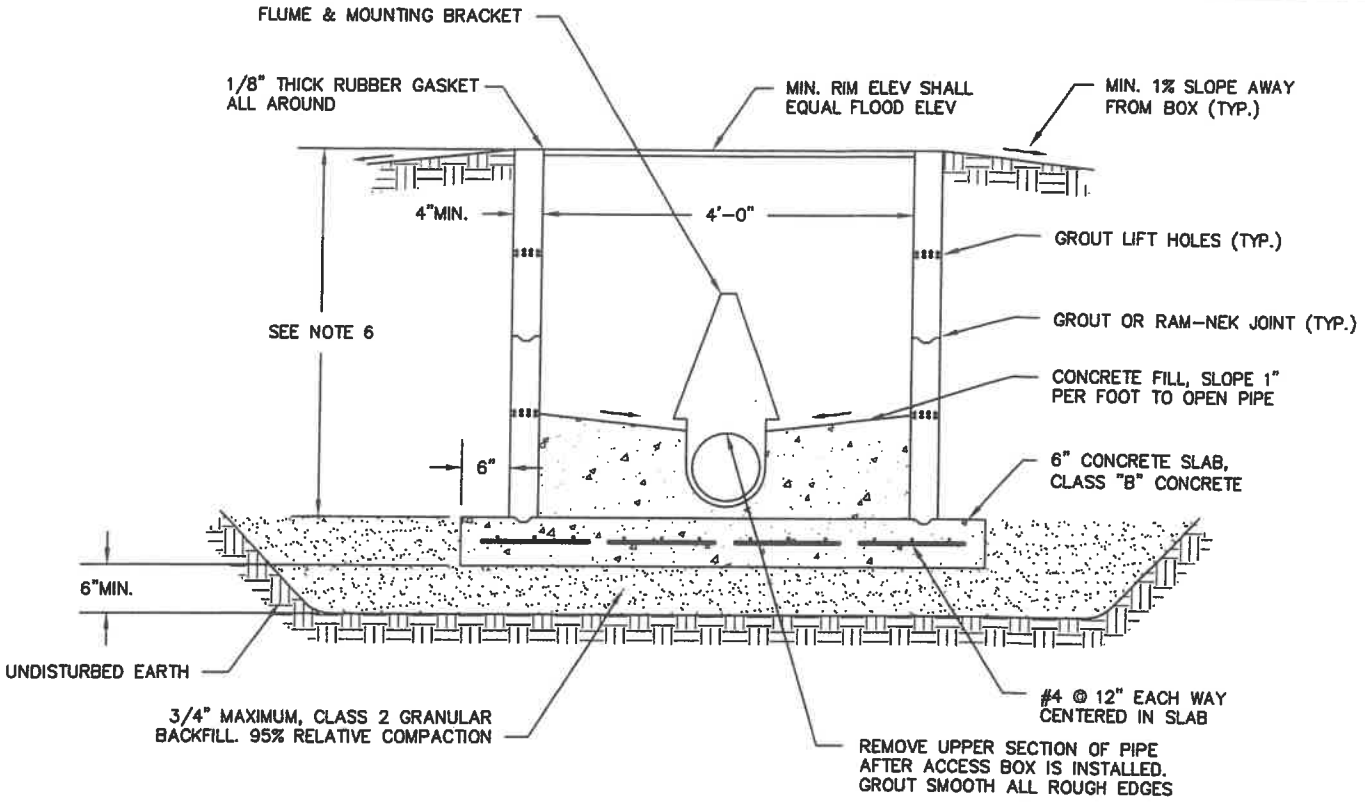
TEMPORARY ABANDONMENT - LATERAL CAP AT PROPERTY LINE



1. Cap at property line will be allowed if the lateral is in good condition and if it will be used in immediate future on an active project.
2. Sketch of capped lateral with measurements from street centerline and from nearest manhole shall be provided to the District Engineer.
3. Notes 1 & 2 for permanent abandonment apply to temporary caps also.

SEWER LATERAL ABANDONMENT

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	S-12
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		



(1) Access box type monitoring station and flume to be used with shallow laterals in non-traffic loaded areas.

(2) Access box shall be 5' x 4' pre-cast concrete with 2 piece galvanized steel lid, parkway type, hinged, springloaded, screw down type.

(3) Box and cover shall be Christy concrete products, "R" series pre-cast pit, or equal.

(4) Flume shall be Palmer Bowlus invert type or permanent type with transducer mounting bracket. Flume shall be manufactured by Plasti-Fab, or approved equal. Size to be determined by volume of flow to be measured. Set flume level at downstream end of pipe and grout in place with transducer bracket attached. Use integral end bulkheads to match the smaller flume when the pipe size is larger than the flume.

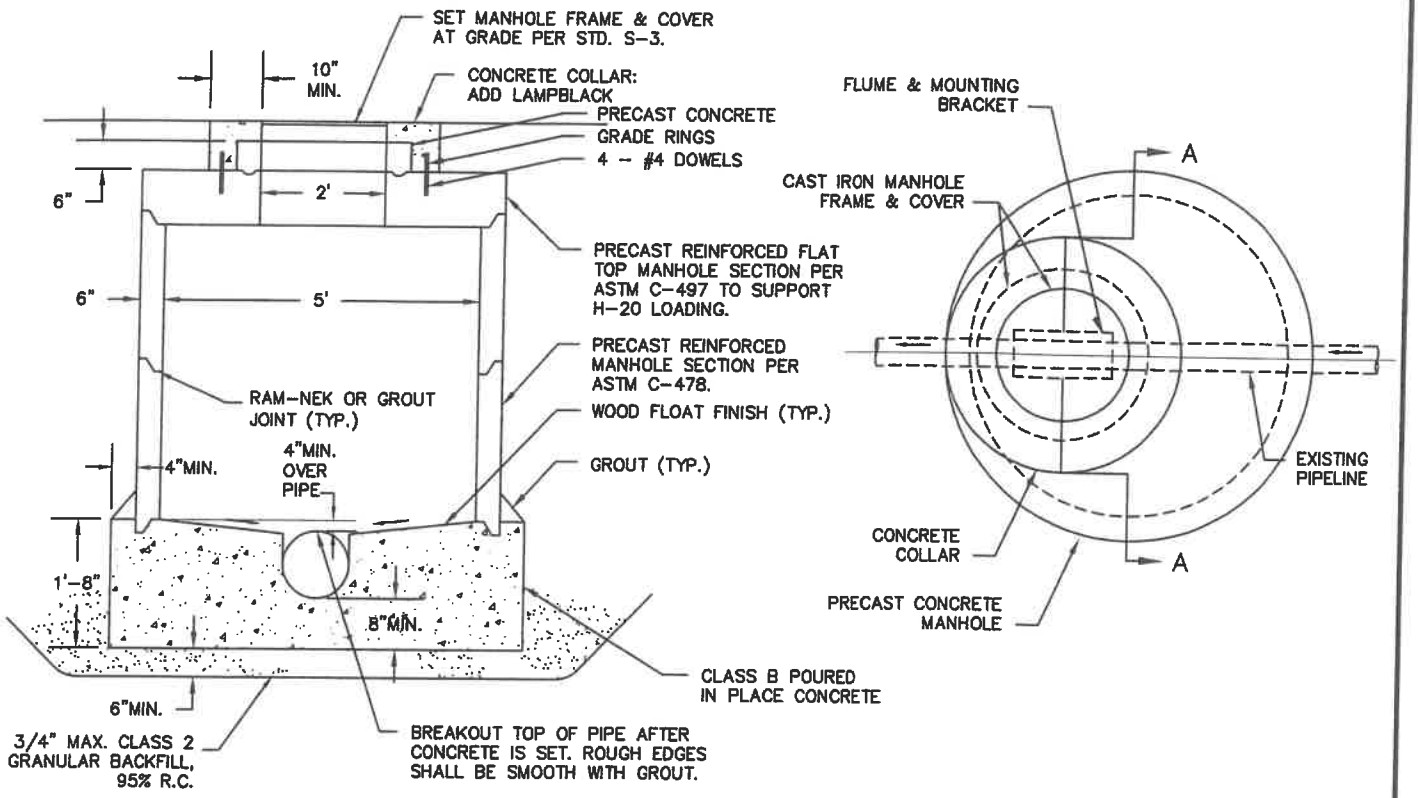
(5) A detailed submittal indicating exact equipment to be furnished, must be provided for District review and approval.

(6) Minimum vertical clearance must be verified prior to installation of flume and monitor equipment.

(7) Installation shall be free of back water conditions.

INDUSTRIAL WASTE MONITORING STATION - ACCESS BOX TYPE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-13
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	



SECTION A–A

(1) Manhole type monitoring station and flume to be used with deep laterals or in traffic loaded areas.

(2) Flume shall be Palmer Bowlus invert type or permanent type with transducer mounting bracket. Flume shall be Manning PBF, or equal. Size to be determined be volume of flow to be measured. Set flume level at downstram end of pipe and grout in place with transducer bracket attached. Use end bulkheads to match the smaller flume when the pipe size is larger than the flume.

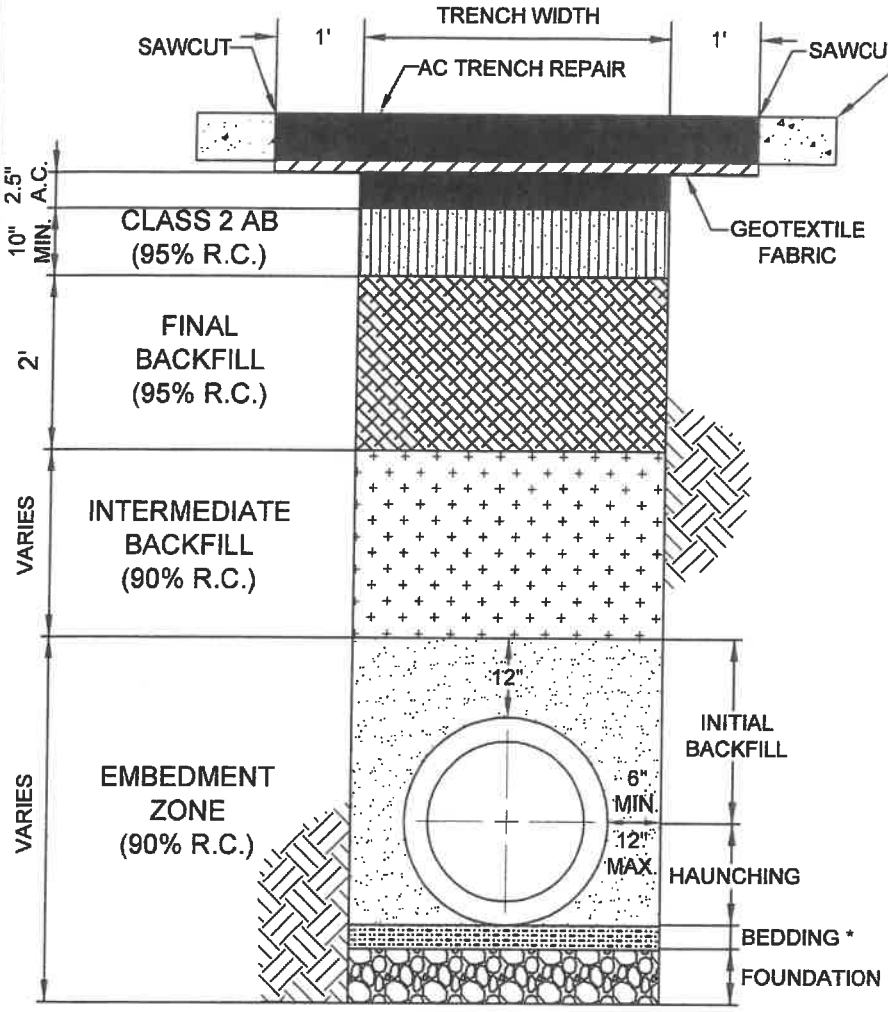
(3) A detailed submittal indicating exact equipment to be furnished must be provided for District review and approval.

(4) Minimum vertical clearance must be verified prior to installation of flume and monitor equipment.

(5) Installation shall be free of backwater conditions.

INDUSTRIAL WASTE MONITORING STATION - MANHOLE TYPE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		S-14
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	



* See Note 5

R.C. : Relative Compaction

NOTES

1. Sawcut shall result in a smooth vertical joint.

2. Apply a tack coat to all AC faces prior to placing geo-textile fabric and prior to placing additional AC lifts.

3. Thickness of AC trench repair shall, at a minimum, match the thickness of the existing AC. In no case shall the AC thickness be less than 2 inches.

4. AB thickness shall, at a minimum, match existing AB thickness. In no case shall the AB thickness be less than 10 inches.

5. Bedding shall have a 4 inch minimum thickness.

6. A trench foundation will be required if recommended by the project's soils geotechnical report.

7. Trenches less than 6 inches in width shall be backfilled with slurry cement, as approved by the District Engineer and the County.

8. If the width of the AC between the edge of the trench repair and the existing edge of pavement is less than 2 feet, then remove and replace all pavement to the edge of the road.

9. All materials and construction methods shall conform to Caltrans Standard Specifications.

10. This detail taken from Merced County Standard EB-01.

11. Compaction by ponding and jetting will not be allowed.

TRENCH EXCAVATION AND BACKFILL

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		T-1
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

Trench excavation and backfill shall conform to the requirements of the County of Merced, except as follows:

1. See Standard S-6 for special embedment material requirements for sewer laterals.

2. Embedment material for water mains and water services shall be Class 3 sand only per County Standards. No rock shall be allowed around the water mains and services.

3. Embedment material for sewer mains:

Depth of Cover	Embedment Material
Equal to or greater than 42"	Class 3 sand per County Standards
Equal to or greater than 36", but less than 42"	3/4 Class 2 aggregate base per County Standards.

4. If native material is to be used instead of Class 3 sand, the contractor shall submit a letter from a registered Civil Engineer or Geologist stating that the native material is equal to Class 3 sand.

TRENCHING AND BACKFILL REQUIREMENTS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		T-2
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11	
DATE: 05/01/11			

Figure 1 Parallel Construction

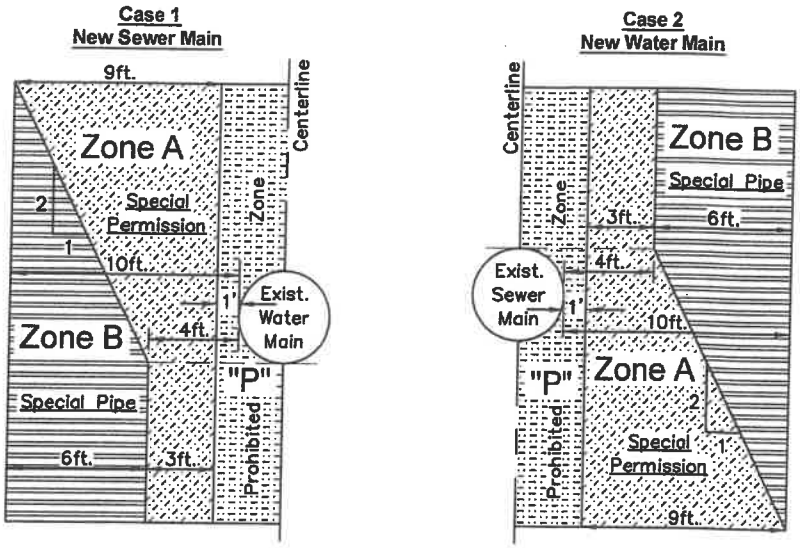
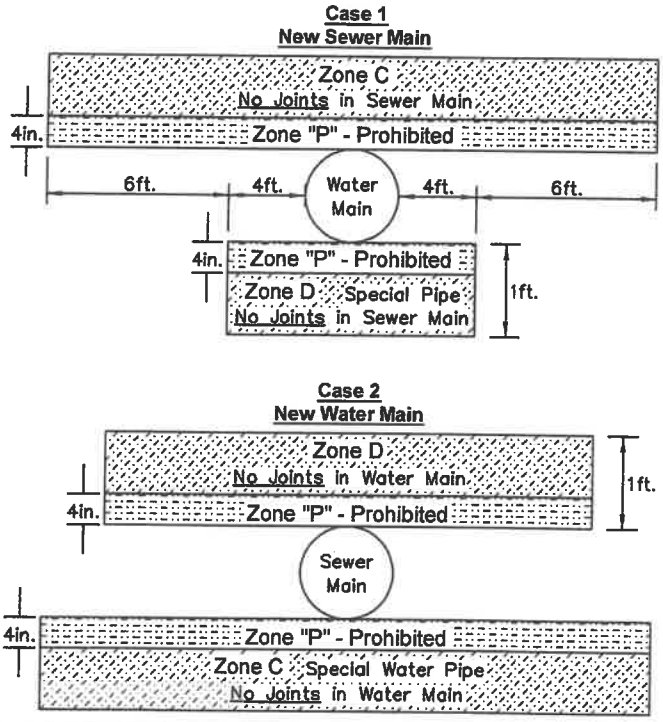


Figure 2 - Crossings



NOTES:

1. Zones are identical on either side of centerlines.
2. Zone "P" is a prohibitted zone.
3. Dimensions are from outside of water main to outside of sewer. All crossings shall be at 90° where possible.
4. Sewer lines larger than 24" diameter shall be reviewed and approved by the State Health Department.
5. This Standard does not apply to 4" house laterals that cross under a water main.
6. This Standard is based on CDPH Guidance Memo No. 2003-02, revised October 16, 2003.

SEPARATION OF WATER LINES FROM NON-POTABLE PIPELINES

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-1A

Case 1 - New Sewer Main Installation (Figures 1 and 2)

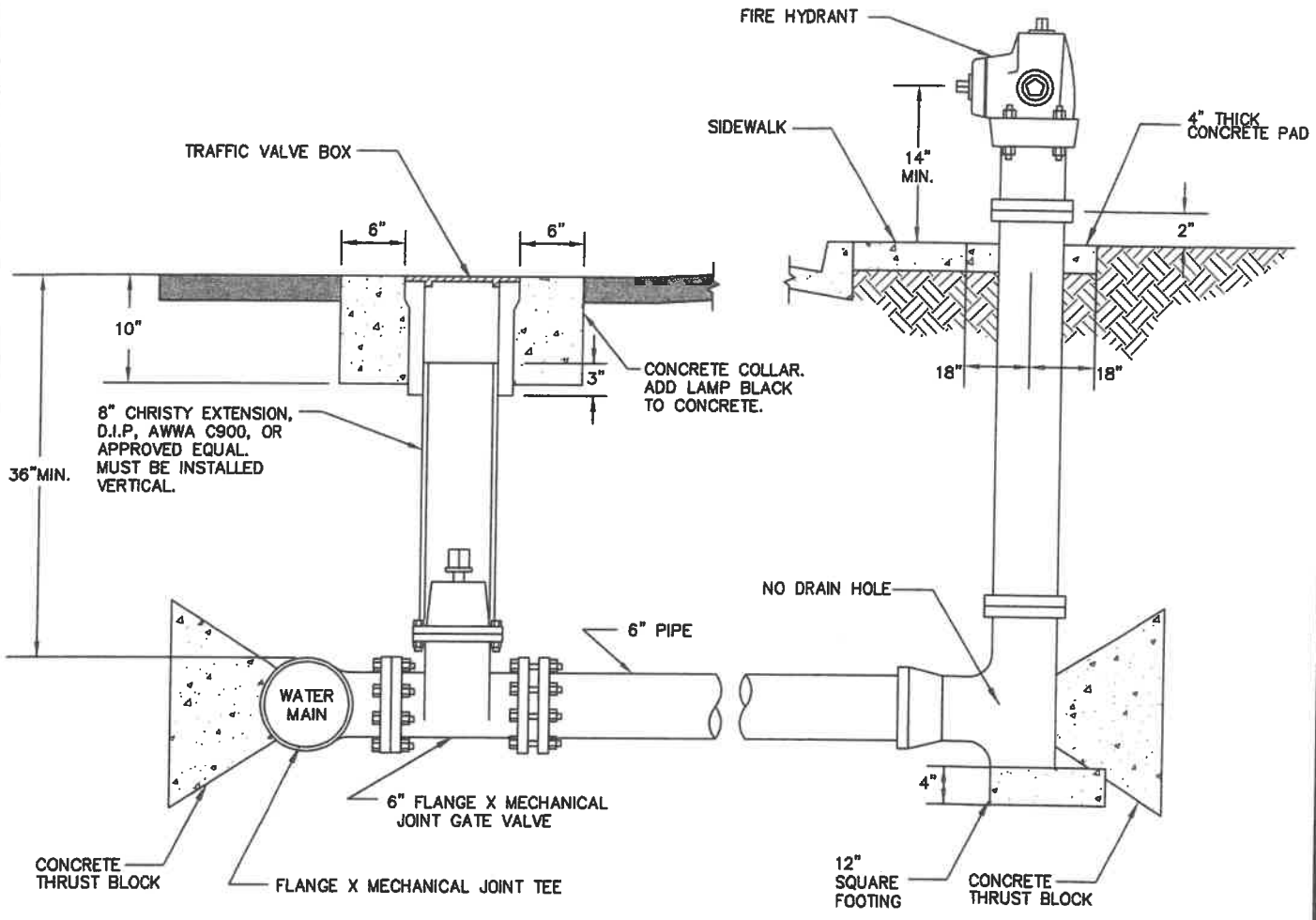
Zone	Special Construction Required for Sewer Main
A	Sanitary sewer mains parallel to water mains shall not be permitted in this zone without prior written approval from the California Department of Public Health.
B	If the water main paralleling the sanitary sewer main does not meet the Case 2 Zone B requirements, the sanitary sewer main shall be constructed of one of the following, subject to the approval of the District Engineer: 1. High-density polyethylene (HDPE) pipe with fusion welded joints (per AWWA C906-99); 2. Spirally-reinforced HDPE pipe with gasketed joints (per ASTM F-894); 3. Extra strength vitrified clay pipe with compression joints; 4. Class 400, Type II, asbsetos-cement pipe with rubber gasket joints; 5. PVC sewer pipe with rubber ring joints (per ASTM D3034) or equivalent; 6. Cast or ductile iron pipe with compression joints; or 7. Reinforced concrete pressure pipe with compression joints (per AWWA C302-95).
C	If the water main crossing below the sanitary sewer main does not meet the requirements for Case 2 Zone C, the sanitary sewer main shall have no joints within ten feet from either side of the water main (in Zone C) and shall be constructed of one of the following, subject to the approval of the District Engineer: 1. A continuous section of ductile iron pipe with hot dip bituminous coating; or 2. One of the Zone D options 1, 3, 4 or 5 below.
D	If the water main crossing above the sanitary sewer main does not meet the requirements for Case 2 Zone D, the sanitary sewer main shall have no joints within ten feet from either side of the water main (in Zone C) and shall be constructed of one of the following, subject to the approval of the District Engineer: 1. HDPE pipe with fusion-welded joints (per AWWA C906-99); 2. Ductile iron pipe with hot dip bituminous coating and mechanical joints (gasketed, bolted joints); 3. A continuous section of Class 200 (DR 14 per AWWA C900-97) PVC pipe or equivalent, centered over the pipe being crossed; 4. A continuous section of reinforced concrete pressure pipe (per AWWA C302) centered over the pipe being crossed, or 5. Any sanitary sewer main within a continuous sleeve.

Case 2 - New Water Main Installation (Figures 1 and 2)

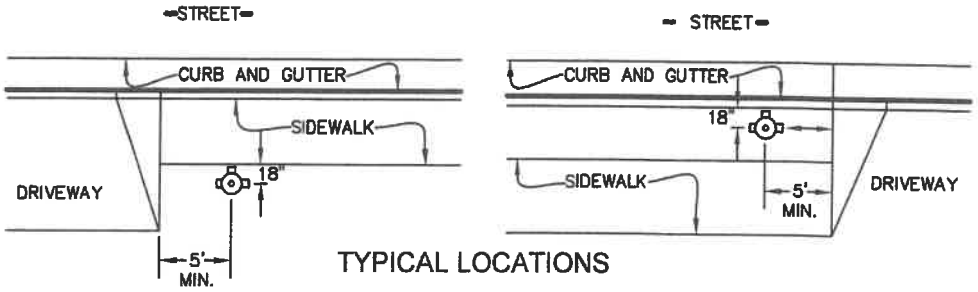
Zone	Special Construction Required for Water Main
A	No water mains parallel to sanitary sewer mains shall be constructed without prior written approval from the California Department of Public Health.
B	If the sanitary sewer main paralleling the water main does not meet the Case 1 Zone B requirements, the water main shall be constructed of one of the following, subject to approval of the District Engineer: 1. HDPE pipe with fusion-welded joints (per AWWA C906-99); 2. Ductile iron pipe with hot dip bituminous coating; 3. Dipped and wraped one-fourth-inch-thick welded steel pipe; 4. Class 200, Type II, asbestos-cement pressure pipe; 5. Class 200 pressure rated PVC water pipe (PC305 per AWWA C900 & C905) or equivalent; or 6. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300, C302 or C303).
C	If the sanitary sewer main crossing above the water main does not meet the Case 1 Zone C requirements, the water main shall have no joints within ten feet from either side of the sewer main (in Zone C) and be constructed of one of the following, subject to approval of the District Engineer: 1. HDPE pipe with fusion-welded joints (per AWWA C906-99); 2. Ductile iron pipe with hot dip bituminous coating; 3. Dipped and wrapped on-fourth-inch-thick welded steel pipe; 4. Class 200 pressure rated PVC water pipe (PC305 per AWWA C900 & C905); or 5. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300 or C302 or C303).
D	If the sanitary sewer main crossing below the water main does not meet the requirements for Case 1 Zone D, the water main shall have no joints within eight feet from either side of the sanitary sewer main (in Zone D) and should be constructed as for Zone C, subject to the approval of the District Engineer.

SEPARATION OF WATER LINES FROM NON-POTABLE PIPELINES

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		**W-1B**



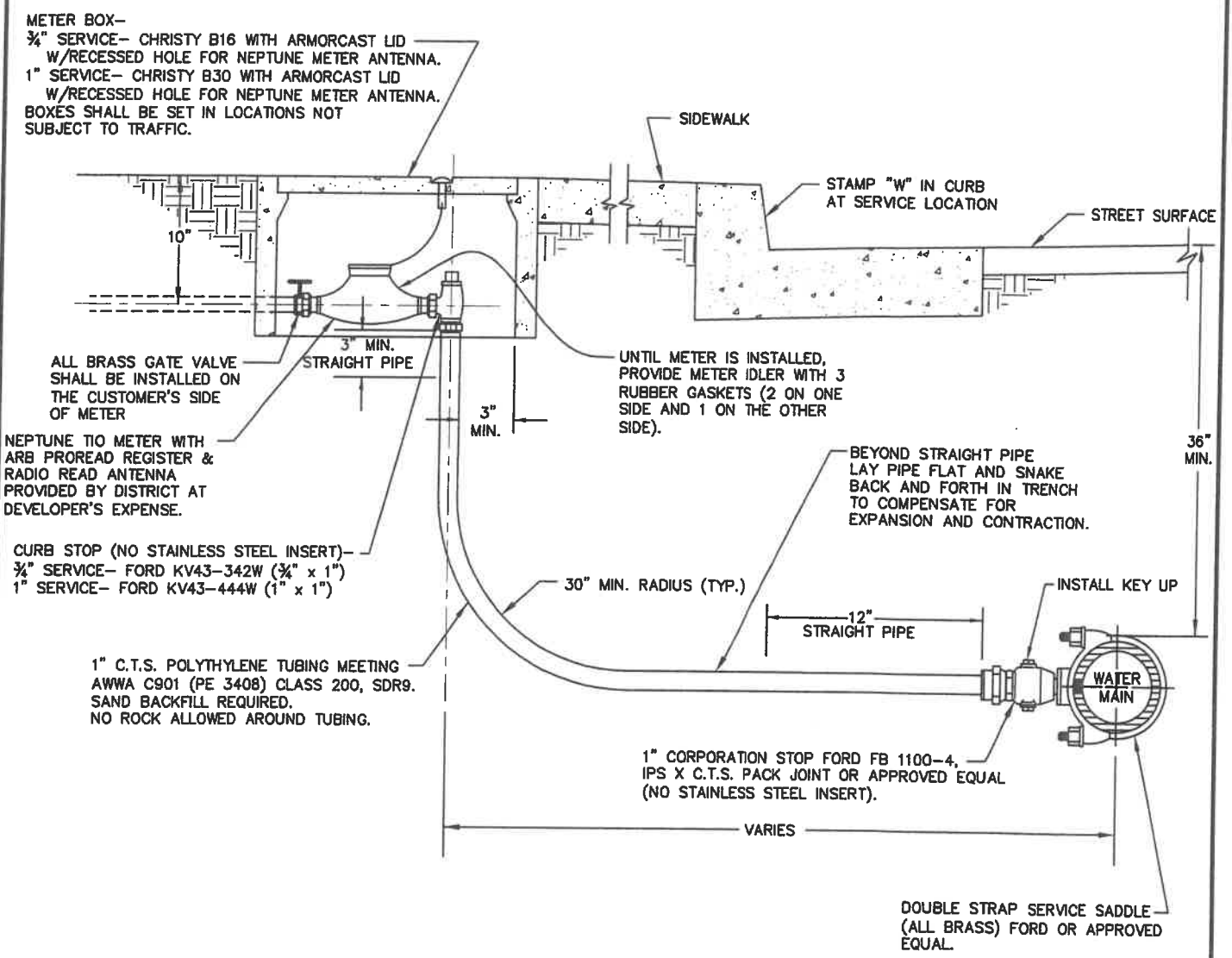
NOTES:
SEE COUNTY STANDARDS, PARAGRAPH 6.01B FOR OTHER REQUIREMENTS.



TYPICAL LOCATIONS

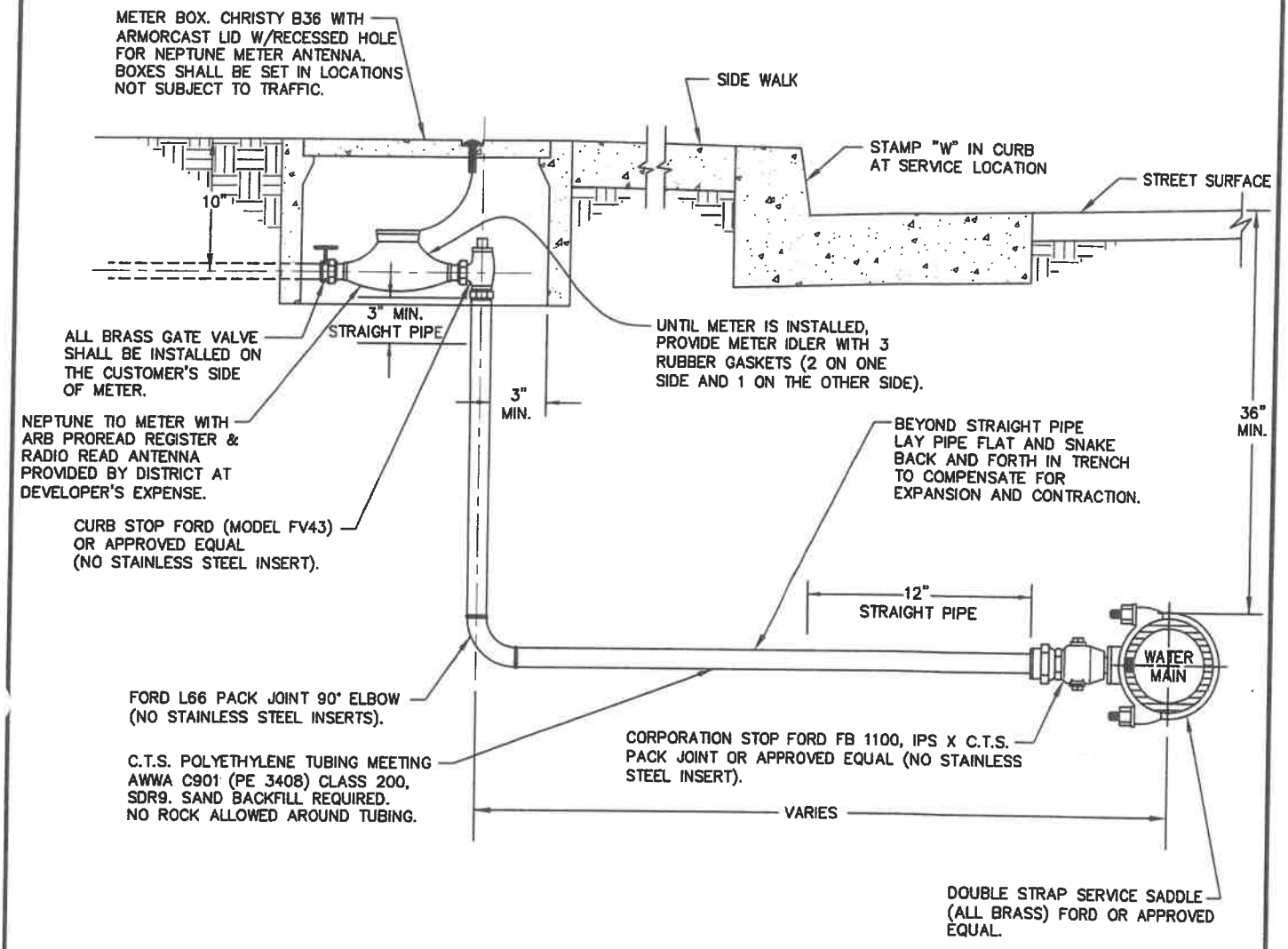
FIRE HYDRANT AND VALVE ASSEMBLY

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	W-2
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER DATE 05/01/11	
DATE: 05/01/11		



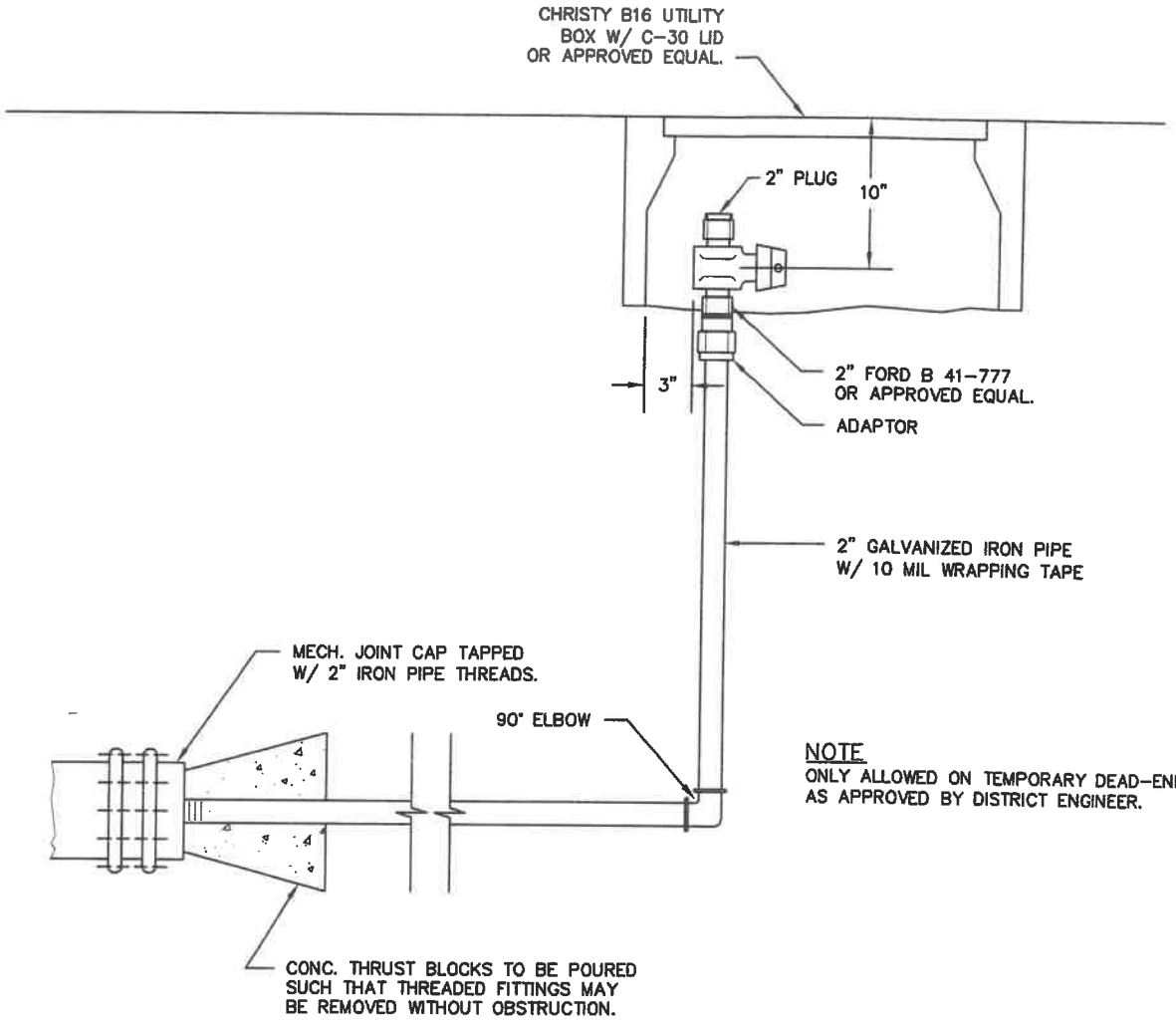
3/4" & 1" WATER SERVICE CONNECTIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		**W-3**



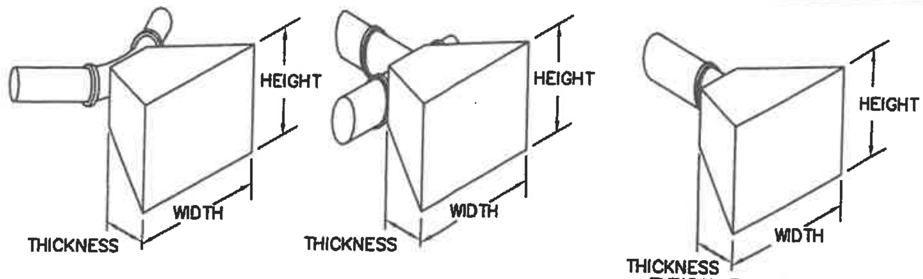
1 1/2" & 2" WATER SERVICE CONNECTIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-4



TEMPORARY BLOWOFF VALVE

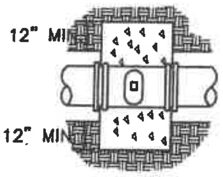
DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-5
SCALE: NONE	APPROVED BY:	DATE 05/01/11	
DATE: 05/01/11	DISTRICT ENGINEER		



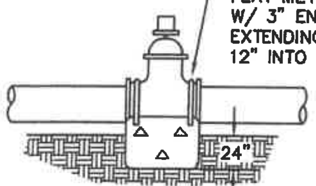
TYPICAL THRUST BLOCK CAST IRON BEND

TYPICAL THRUST BLOCK TEE OUTLET

TYPICAL THRUST BLOCK DEAD END OF PIPE OR BLIND FLANGED END OF FITTINGS

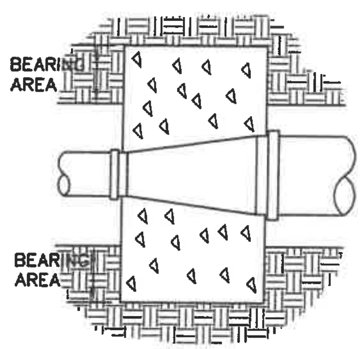


PLAN



ELEVATION

VALVES (12")



TYPICAL THRUST BLOCK REDUCER

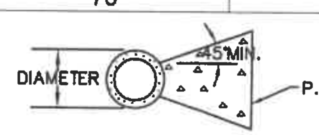
NOTE: ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. WHERE NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION

THRUST BLOCK SIZE

DIAMETER OF PIPE (INCHES)	HORIZONTAL BEND SURFACE AREA (SQ. FT.)	HORIZONTAL BEND THICKNESS (INCHES)	WEIGHT AT VERTICAL BENDS (LBS.)
22-1/2° BENDS			
6 OR LESS	2	6	1,700
8	3	12	3,000
10	3.5	12	4,600
12	4	14	6,600
16	5	18	9,000
18	6	18	11,600
45° BENDS			
6 OR LESS	4	12	3,200
8	5	14	5,600
10	6	18	9,000
12	7	18	13,000
16	8	24	17,000
18	11.5	24	23,200
90° BENDS AND HYDRANT BURYS			
6 OR LESS	6	12	6,000
8	8	15	10,700
10	10	18	16,700
12	12	18	24,000
16	18	24	32,000
18	21	24	42,700

TEES AND DEAD ENDS			REDUCERS SIZE	REDUCERS AREA
6 OR LESS	3	12	6X	1
8	4	15	8X6	1.5
10	6	18	SIZE	2
12	8.5	18	SIZE	2.5
16	11.5	24	SIZE	3
18	11.5	24	SIZE	3.5

SS= STAINLESS STEEL



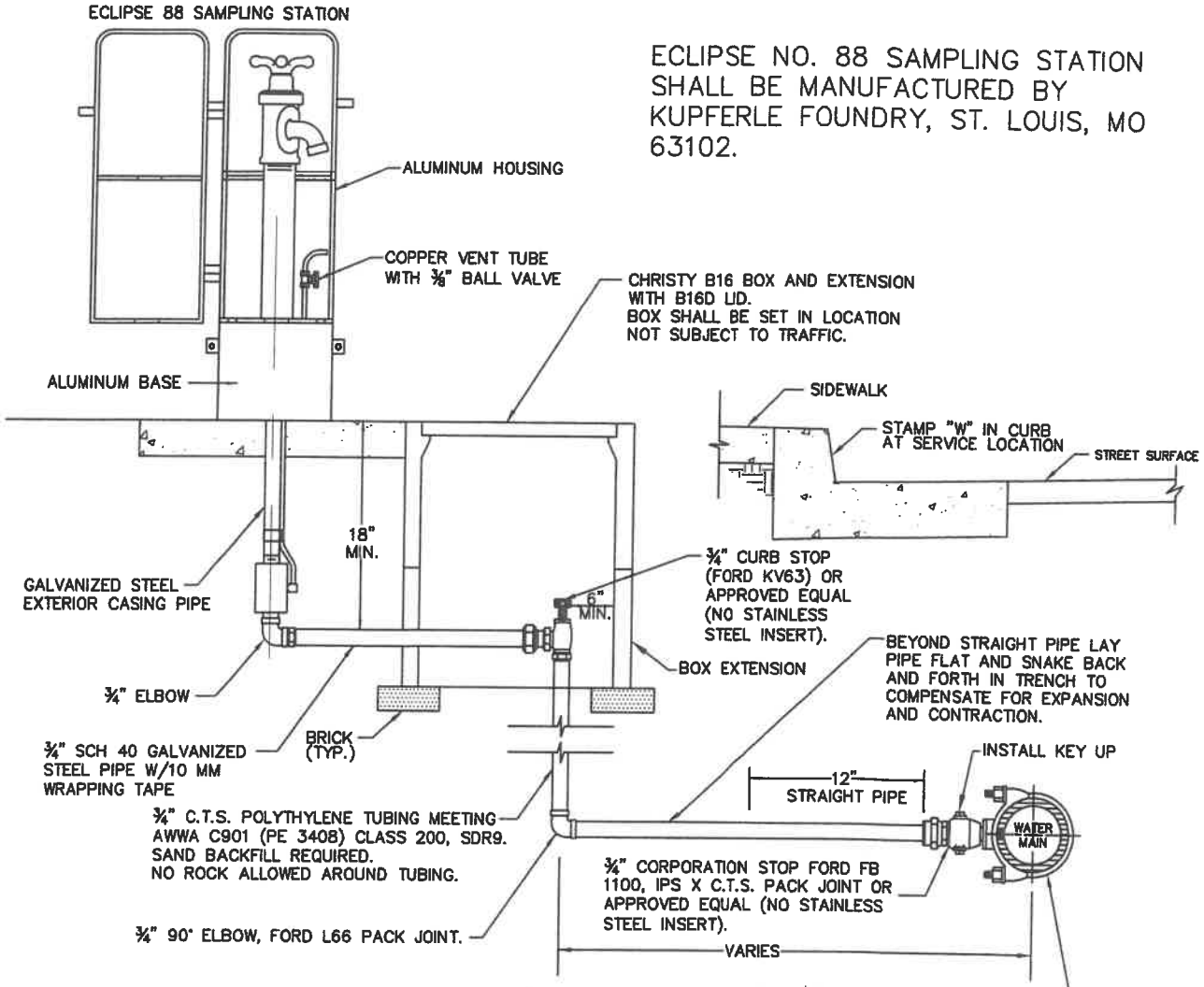
TYPICAL SECTION THRU THRUST BLOCK

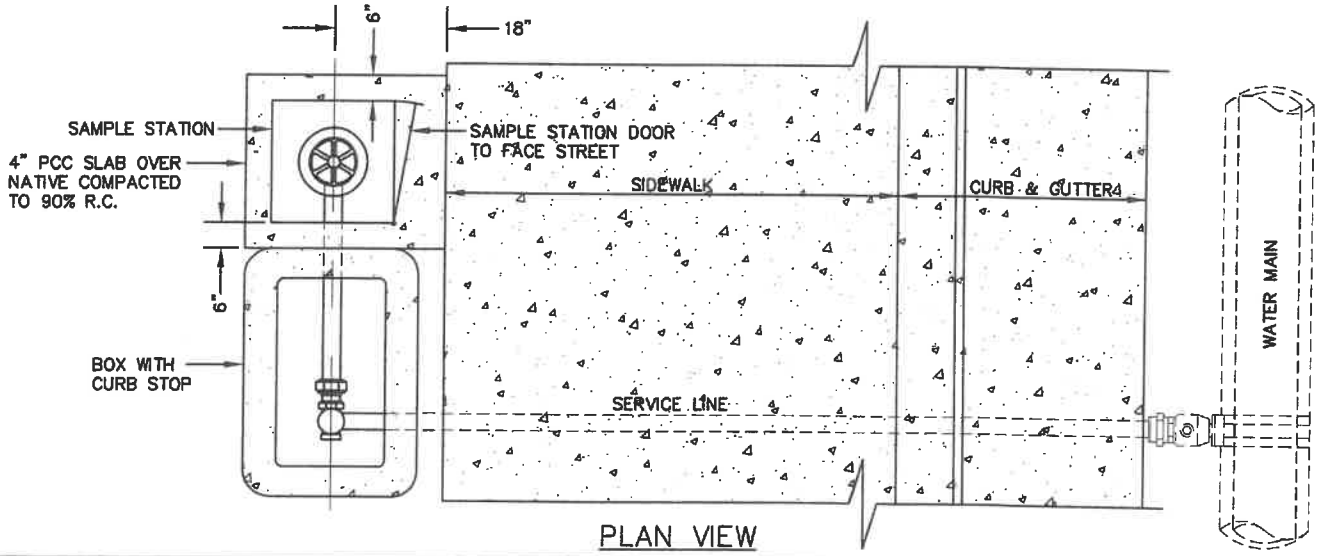
VERTICAL BENDS

THRUST BLOCKS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-6
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

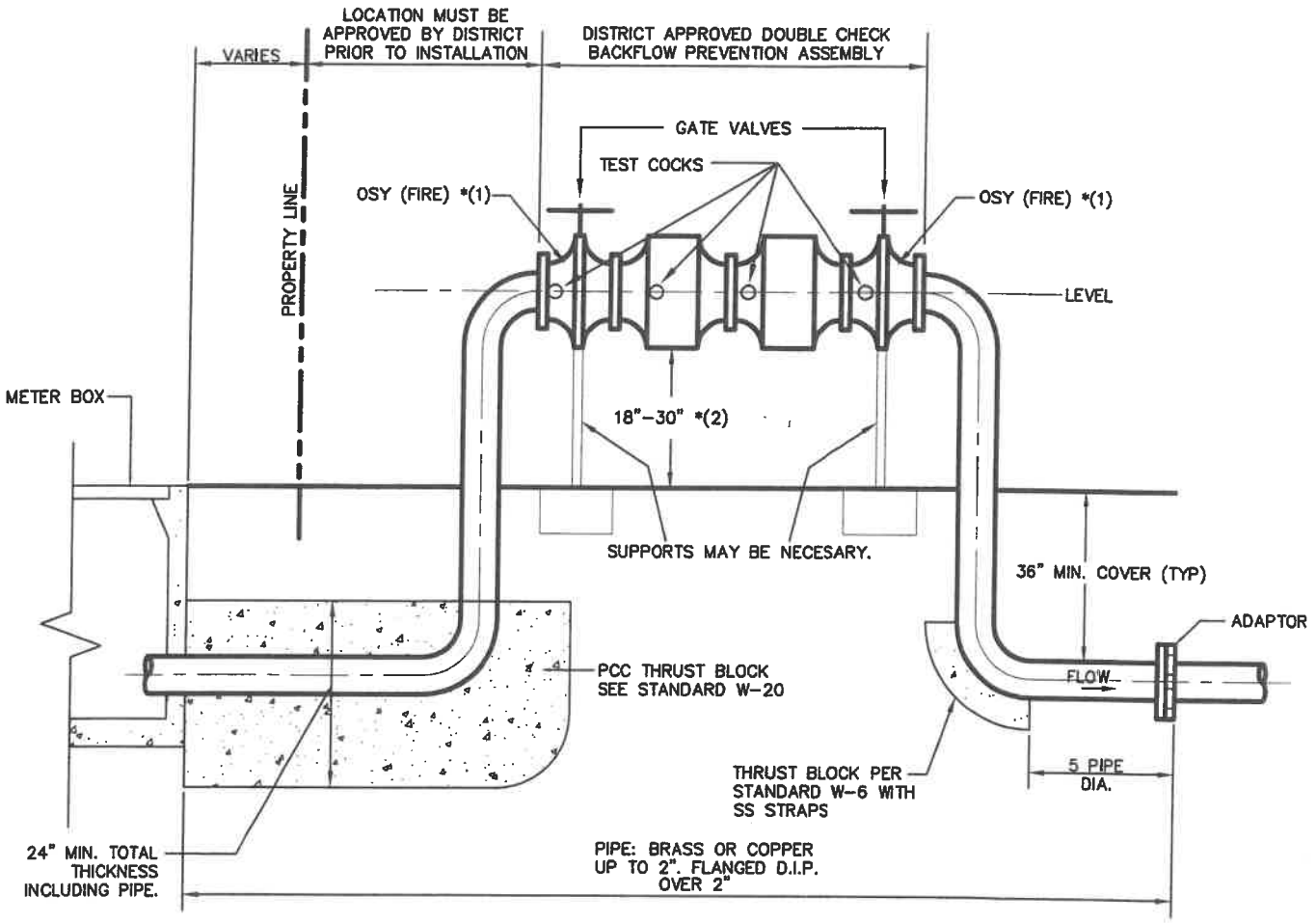
ECLIPSE NO. 88 SAMPLING STATION SHALL BE MANUFACTURED BY KUPFERLE FOUNDRY, ST. LOUIS, MO 63102.



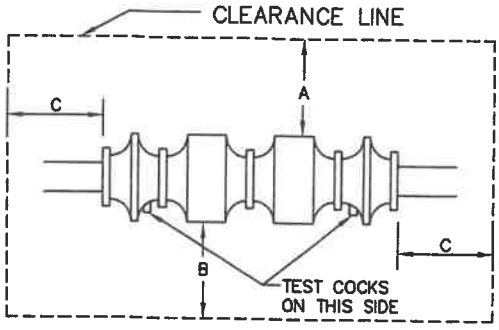


SAMPLING STATION

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-7



MINIMUM CLEARANCE			
SIZE / DC	A	B	C
1"–3"	12"	18"	12"
4" & UP	24"	24"	12"



(TOP VIEW)

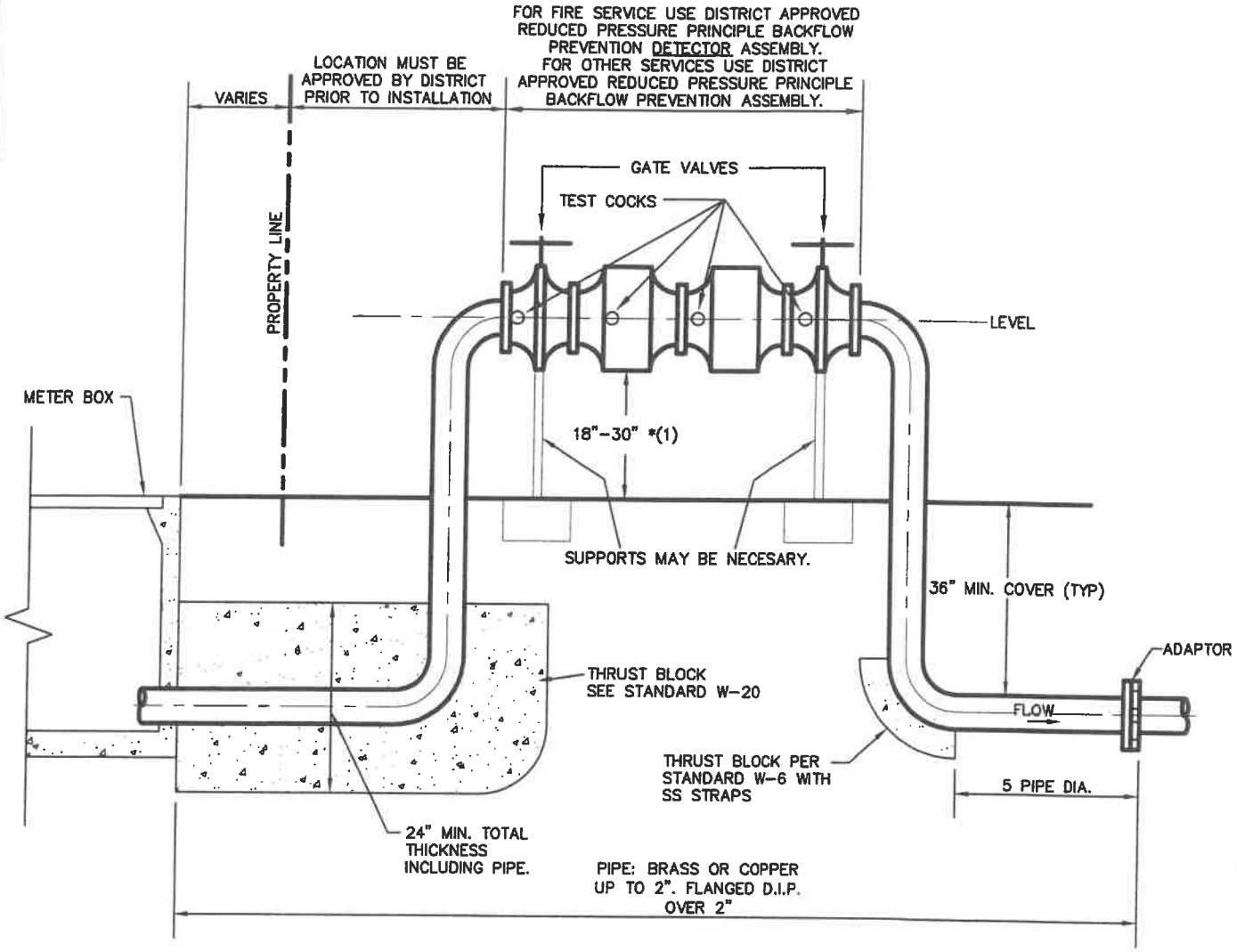
SEE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

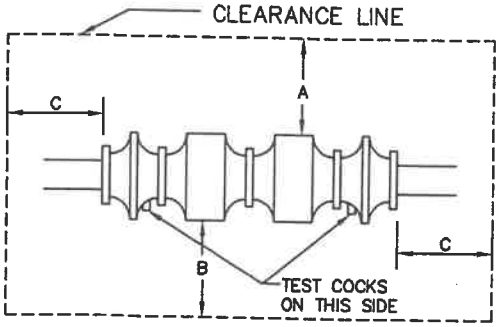
*(1) – FIRE SERVICES REQUIRE OSY VALVES; FOR DOMESTIC USE 3" AND LARGER, USE NRS VALVES.

*(2) – MUST BE ABOVE 100–YEAR FLOOD ELEVATION ESTABLISHED BY FEMA.

DOUBLE CHECK VALVE BACKFLOW PREVENTER

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-8





(TOP VIEW)

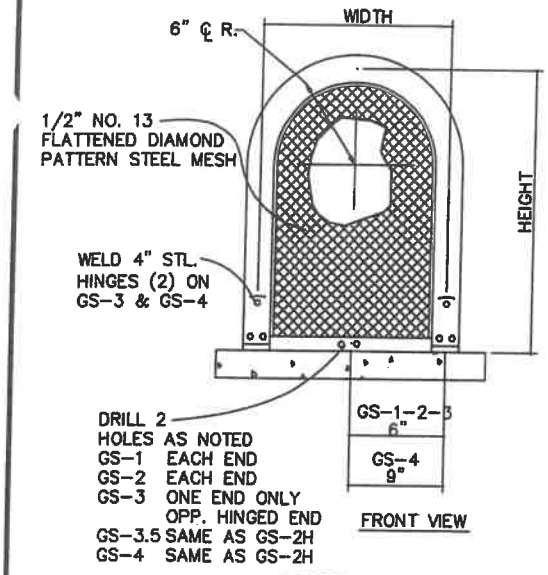
MINIMUM CLEARANCE			
SIZE	A	B	C
1"-3"	12"	18"	12"
4" & UP	24"	24"	12"

SEE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

*(1) - MUST BE ABOVE 100-YEAR FLOOD ELEVATION ESTABLISHED BY FEMA.

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		**W-9**



FRONT VIEW

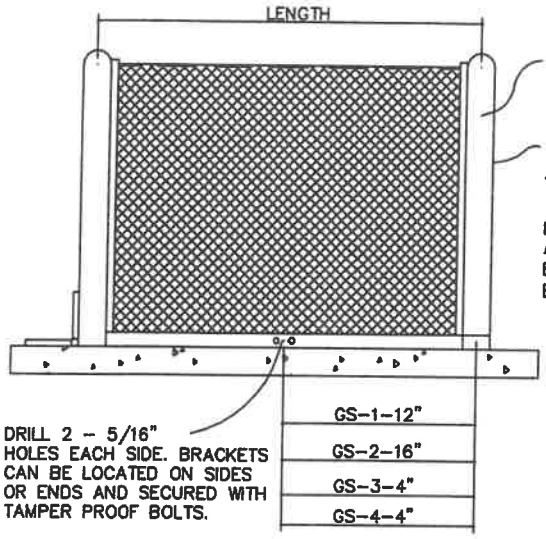
NOTES:
ENCLOSURE SHOWN IS BY A DISTRICT APPROVED MANUFACTURER. ANY ALTERNATES SHALL REQUIRE SUBMITTALS FOR APPROVAL BY THE DISTRICT IN ADVANCE OF CONSTRUCTION.

CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING THE PROPER ENCLOSER FOR THE BACKFLOW PREVENTOR USED.

COLOR SHALL BE "FOREST GREEN", OR APPROVED EQUAL.

ENCLOSURE BASE SHALL BE A MINIMUM OF 4" CONCRETE OVER 4" AB (WITH 3E" CLEARANCE FROM ALL EDGES), OR USE PRE-MANUFACTURED ENCLOSURE BASE. TOP OF BASE SHALL BE 1" MINIMUM ABOVE FINISH GRADE.

ALL UNITS SHALL BE HINGED (WHERE POSSIBLE) WITH FULL ACCESSIBILITY BY DISTRICT PERSONNEL, AND SHALL BE TAMPER-PROOF (LOCKABLE).



SIDE VIEW

MANUFACTURER'S NOTES:
AFTER ALL WELDING, ENTIRE UNIT SHALL BE PROCESSED WITH IRON PHOSPHATE PRETREATMENT. ELECTROSTATIC APPLICATION OF POWDER SHALL BE FUSION BONDED PRS-B-4004-C (BIEGE) OR PRS-B-4003-C (LEAF GREEN) OR APPROVED EQUAL.

ALL UNITS ALSO AVAILABLE IN 304 S.S. GS-3.5 AVAILABLE IN 304 S.S. ONLY.

ALL BOLTS FOR HINGES AND HASPS SHALL BE ZINC PLATED TAMPER PROOF, EXCEPTION - USE SS HARDWARE FOR SS UNITS.

STD. SIZES	CENTERLINE DIMENSIONS		WEIGHT GS	WEIGHT CGS
GS-.5	12"W x 18"H x 12"L	LIFT OFF UNIT	35	30
GS-1	12"W x 24"H x 24"L	LIFT OFF UNIT	40	34
GS-2	12"W x 24"H x 32"L	LIFT OFF UNIT	45	40
GS-3	12"W x 24"H x 42"L	HINGED UNIT	51	46
CGS-3.5	12"W x 30"H x 42"L	HINGED UNIT	N/A	55
GS-4	18"W x 30"H x 48"L	HINGED UNIT	67	60

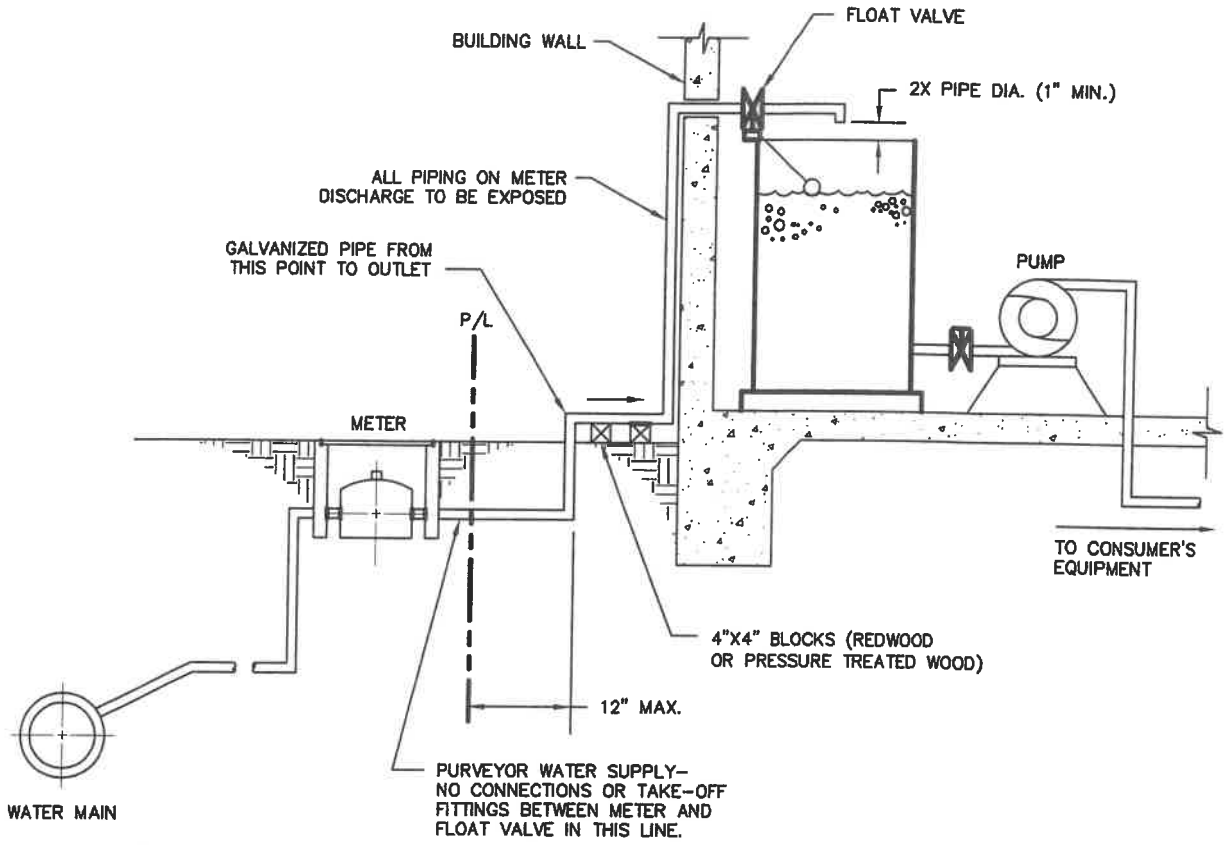
NOTE:
GS- POWDER COATED STEEL GUARD SHACK

CGS- STAINLESS STEEL COAST GUARD SHACK W/ SAND BLASTED SATIN FINISH.

BACKFLOW PREVENTION
DEVICE INNCLOSERS
15840 N. 32ND ST. SUITE 4
PHEONIX, ARIZONA 85032
(602) 788-5411
www.bpdi.com

BACKFLOW PREVENTER ENCLOSURE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-10

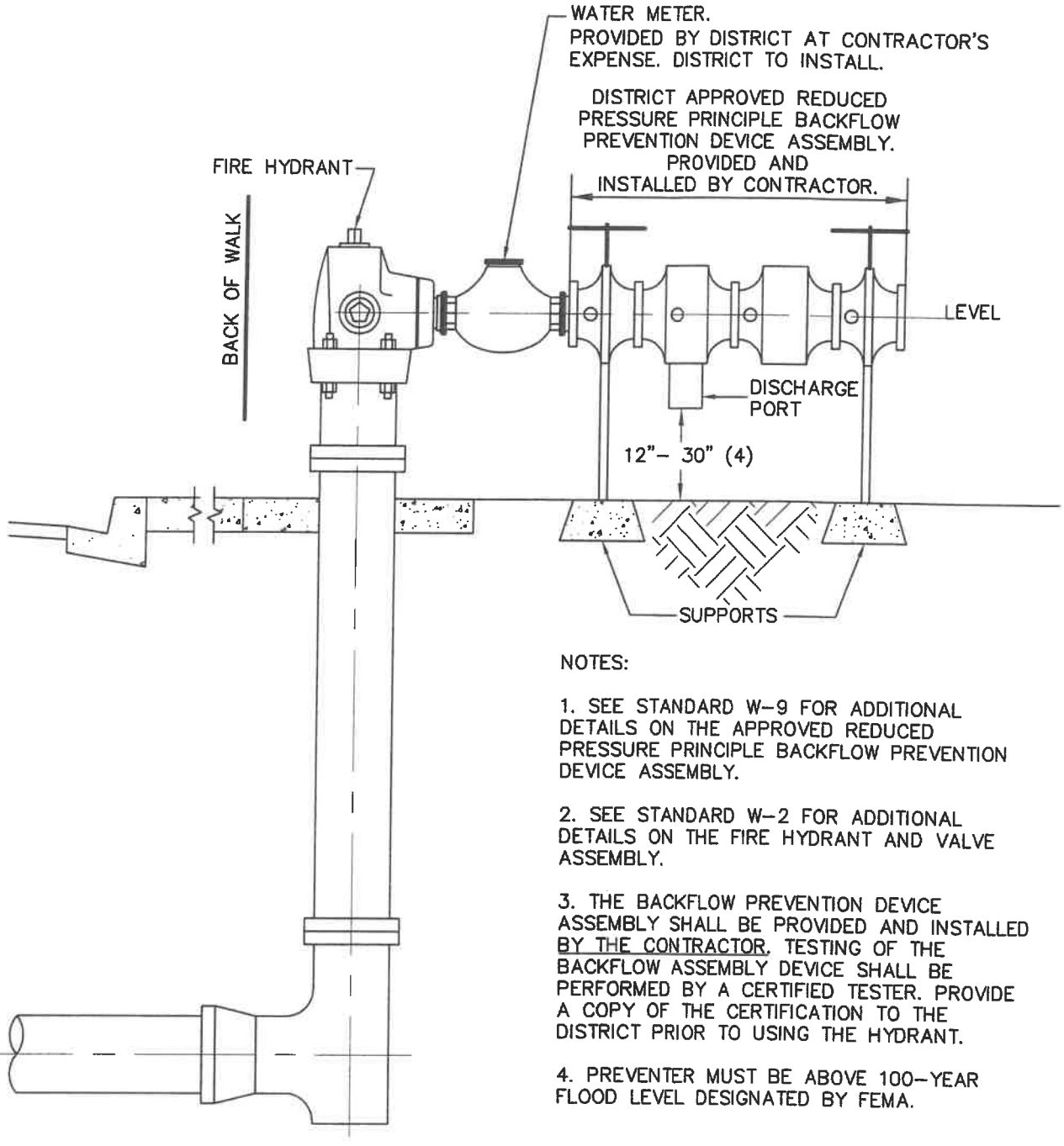


NOTES:

1. Tank is to be installed at a sufficient elevation to insure the desired net positive suction head on the pump.
2. No fittings or provisions for connections on the end of the fill pipe will be allowed.
3. Pipe must supply water tank immediately upon entering building.
4. Air-gap installation must be inspected annually, or more frequently as directed by the Delhi County Water District. An inspection fee is required.
5. Tank should be of substantial consruction and of a kind and size to suit consumers needs. Tank may be situated at ground level (with a pump to provide adequate pressure head) or be elevated above the ground.

AIR-GAP SEPARATION

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-11
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	



NOTES:

1. SEE STANDARD W–9 FOR ADDITIONAL DETAILS ON THE APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE ASSEMBLY.

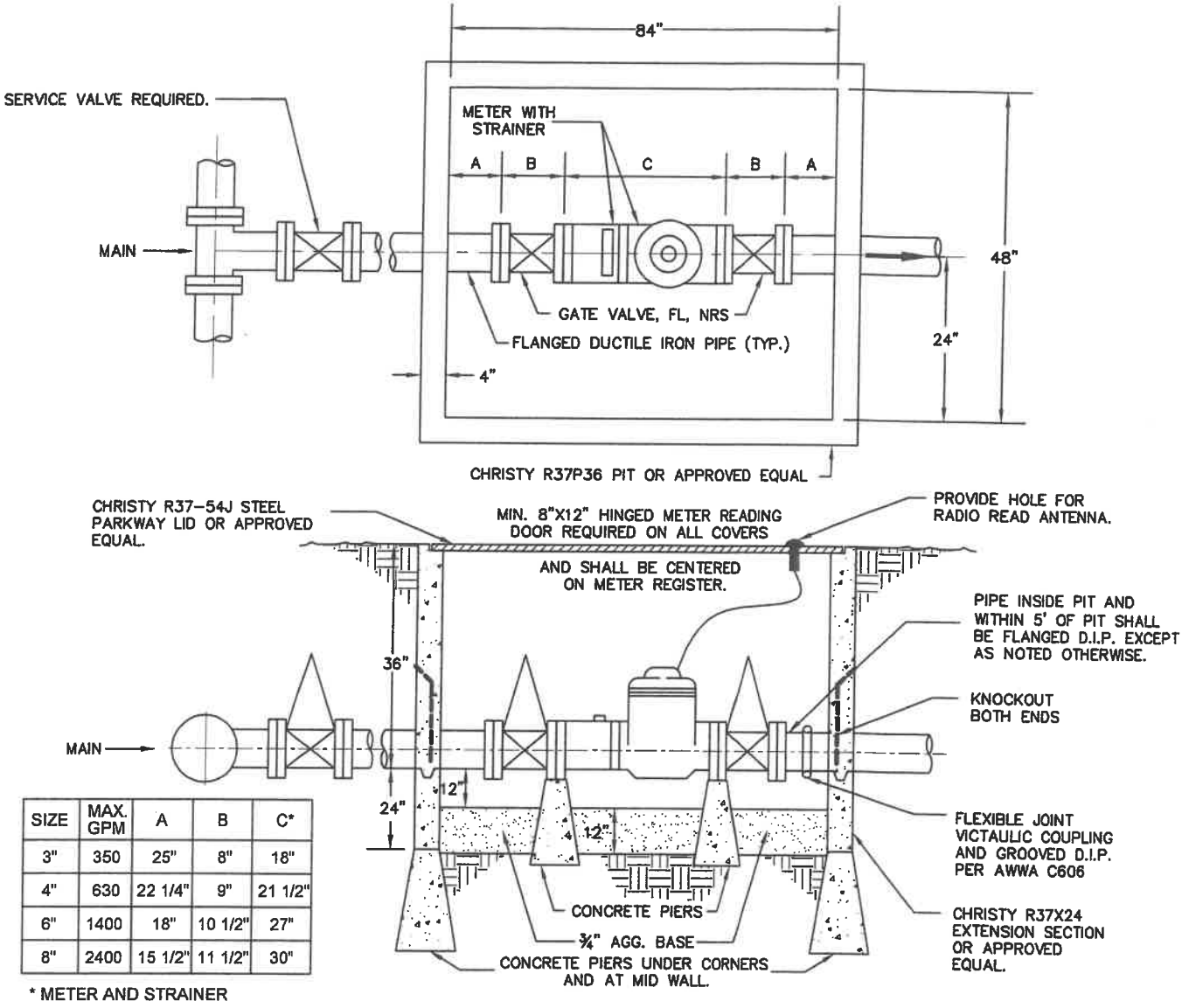
2. SEE STANDARD W–2 FOR ADDITIONAL DETAILS ON THE FIRE HYDRANT AND VALVE ASSEMBLY.

3. THE BACKFLOW PREVENTION DEVICE ASSEMBLY SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. TESTING OF THE BACKFLOW ASSEMBLY DEVICE SHALL BE PERFORMED BY A CERTIFIED TESTER. PROVIDE A COPY OF THE CERTIFICATION TO THE DISTRICT PRIOR TO USING THE HYDRANT.

4. PREVENTER MUST BE ABOVE 100–YEAR FLOOD LEVEL DESIGNATED BY FEMA.

WATER USE OUT OF FIRE HYDRANT

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	W-12
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		



SIZE	MAX. GPM	A	B	C*
3"	350	25"	8"	18"
4"	630	22 1/4"	9"	21 1/2"
6"	1400	18"	10 1/2"	27"
8"	2400	15 1/2"	11 1/2"	30"

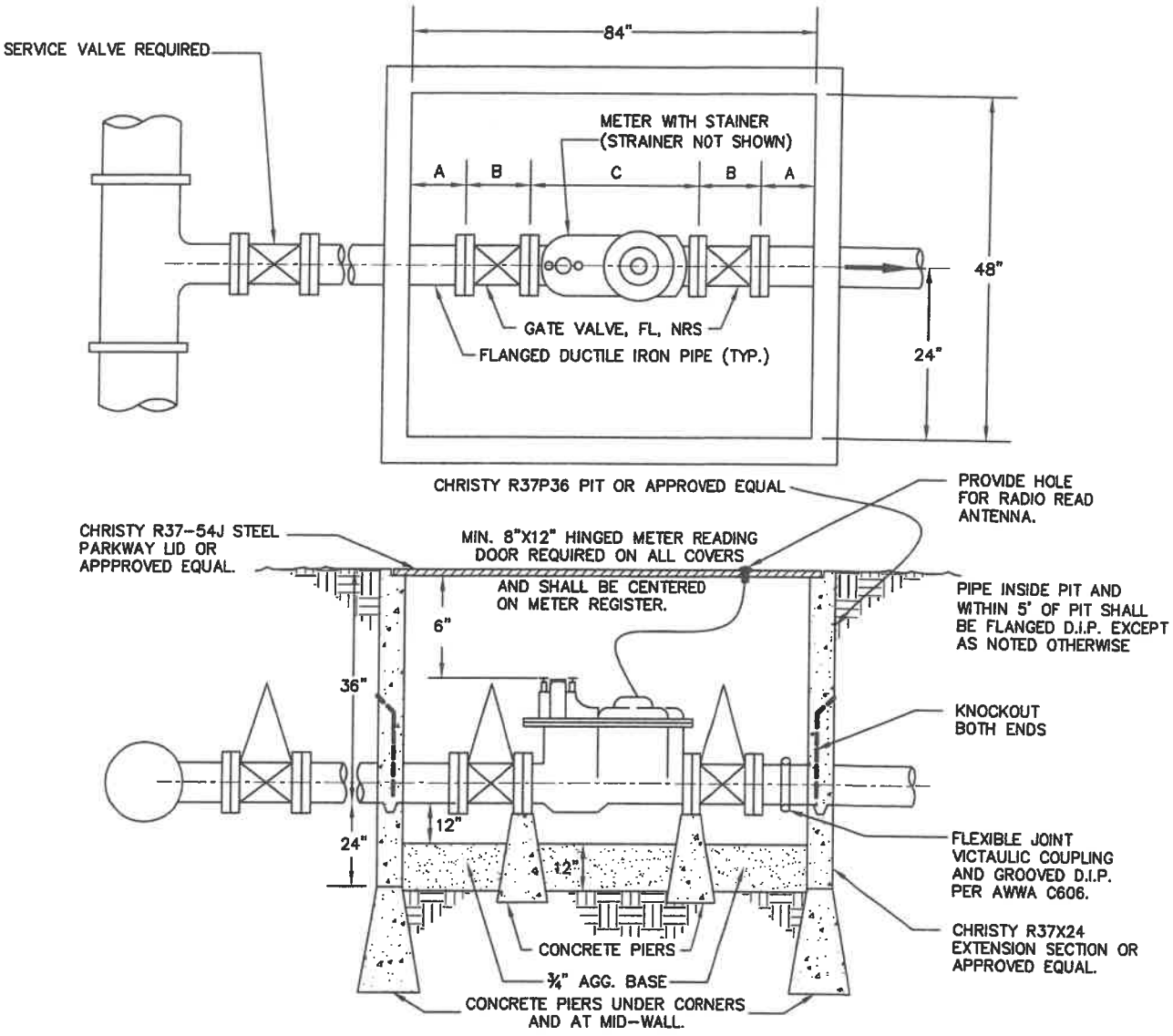
* METER AND STRAINER

Meter shall be a Neptune High Performance Turbine Meter with proread register and radio read antenna provided by District at Developer's expense.
Meters shall be equipped with strainers, manufactured by Neptune and shall be provided by District at Developer's expense.

Note: Turbine meters are rarely used in the District water system. Specific written approval is required. A detailed submittal shall be furnished to the District Engineer, prior to purchase, acceptance, or installation.

TURBINE METER

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-13



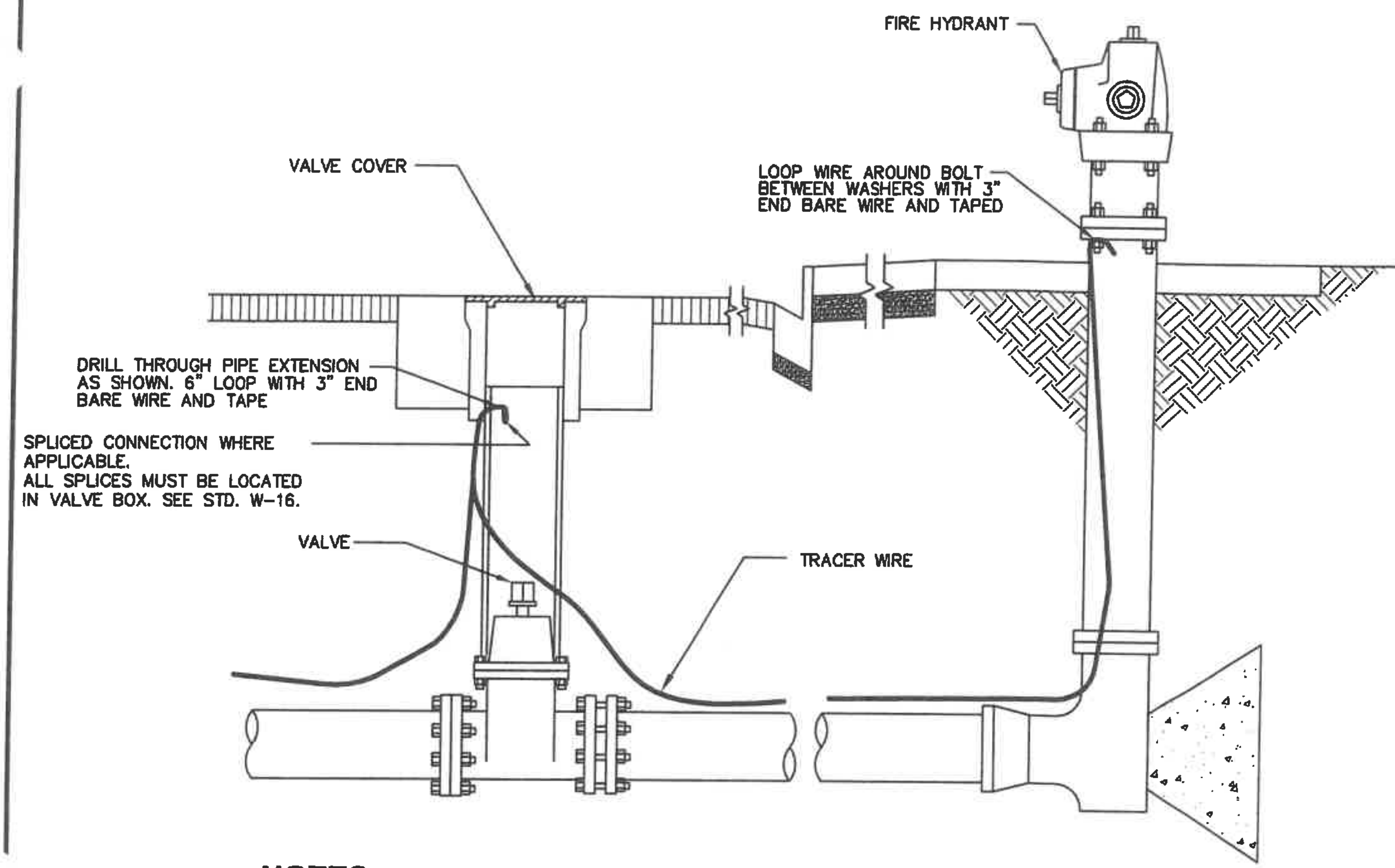
SIZE	MAX. GPM	A	B	C*
3"	320	22 1/2"	8"	23"
4"	500	19 1/4"	9"	27 1/2"
6"	1000	15"	10 1/2"	33"

* METER AND STRAINER.

1. Meters shall be furnished by District at Developer's expense and shall be a Neptune TRU/FLO compound meter with proread register and radio read antenna.
2. Meter shall be equipped with Neptune strainers provided by District at Developer's expense.

COMPOUND METER

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-14



NOTES:

1. Secure tracer wire to each fire hydrant and each main line valve box.

2. Tracer wire shall be laid on top of the water main, and shall be taped to the pipe at every 10' interval and at all fittings.

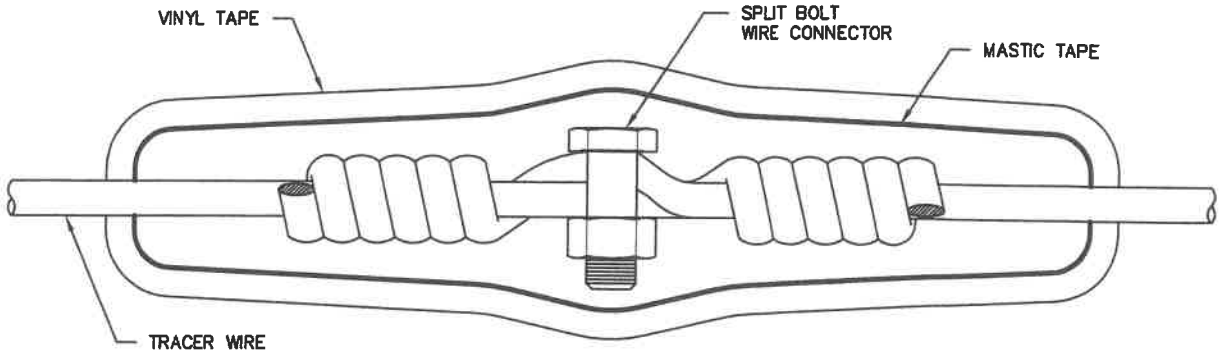
3. Contractor shall conduct a continuity test on all wire in the presence of a construction observer.

4. All splices must occur in a valve box.

5. See specifications for additional requirements

TRACER WIRE FOR PVC WATER MAIN

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-15
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	



NOTES:

(1) Twist the wire a minimum of five (5) times on each end.

(2) Install split bolt connector.

(3) Cover the entire splice with mastic tape wrap.

(4) Wrap mastic with vinyl tape.

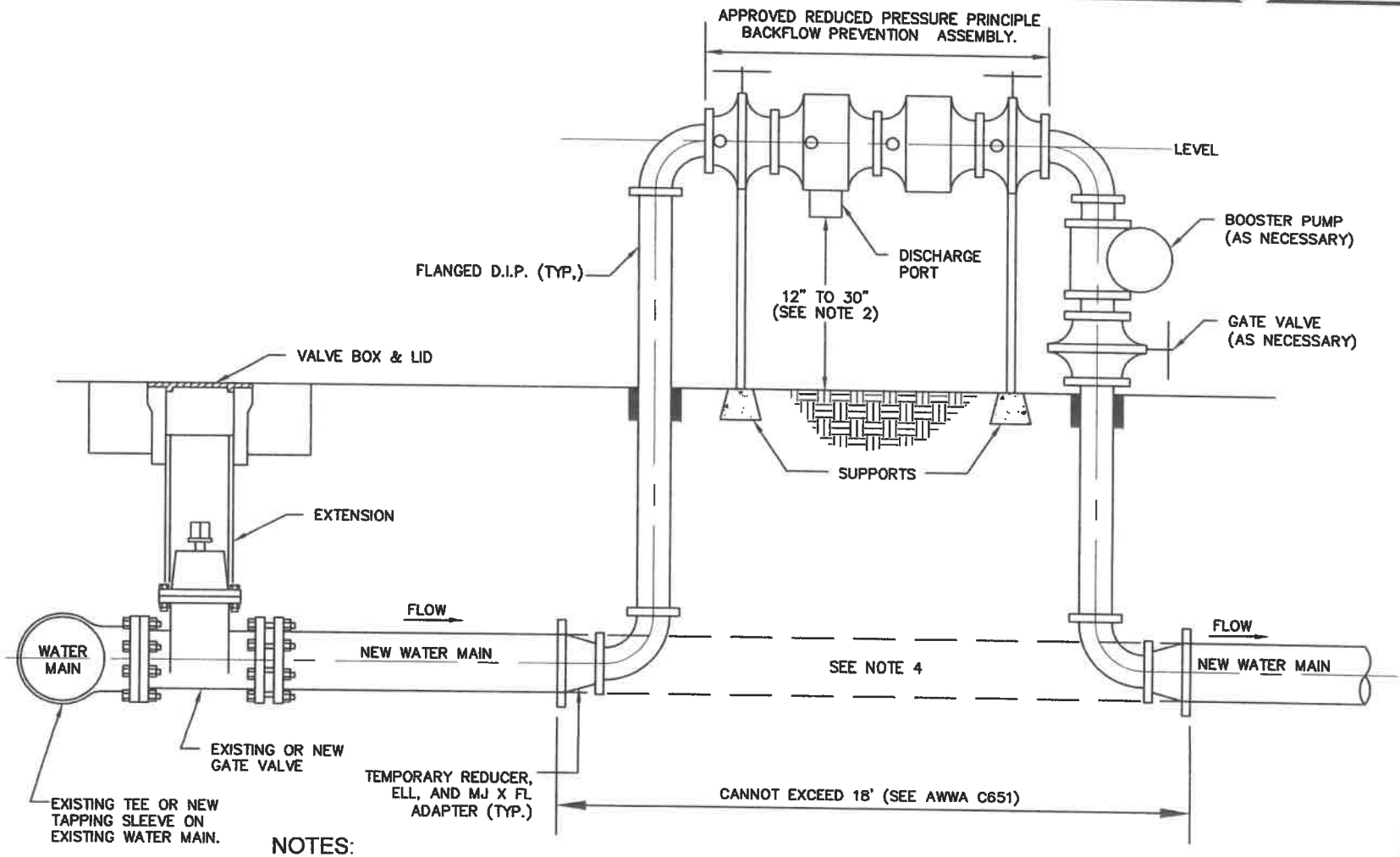
(5) **All wire splices shall be located within a valve box.**

* Soldering may be included in addition to the above.

TRACER WIRE SPLICE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	**W-16**
DATE: 05/01/11		

TEMPORARY BACKFLOW PROTECTION FOR NEW WATER MAIN



NOTES:

1. See Standard W-9 for additional details on the approved reduced pressure principle backflow prevention assemby.
2. Must be above 100-year flood level designated by FEMA.
3. Backflow preventer and all new pipe and appurtenances upstream of backflow preventer shall be thoroughly cleaned and disinfected. See Specifications.
4. After testing is complete, remove temporary backflow preventer, pipe, and appurtenances and install new pipe and coupling (if coupling needed). Disinfect piping and coupling per Specifications.
5. Provide thrust restraint as needed.
6. Assembly diameter shall be equal to or greater than 50% of the diameter of the largest main in the new system.

DRAWN BY: RWB

SCALE: NONE

DATE: 05/01/11

WINTON WATER & SANITARY DISTRICT

APPROVED BY: DISTRICT ENGINEER

DATE 05/01/11

W-17

Water Main:

Water main 4" thru 12" in diameter shall be AWWA C900, Pressure Class 305 Polyvinyl Chloride (PVC) pipe, with gaskets meeting ASTM F477, and joints in compliance with ASTM A3139. Install with 36" minimum cover to finish grade (In order to have 36" minimum cover without using aggregate base in the embedment zone, the County of Merced requires that the PVC water pipe be Pressure Class 305). Ductile iron pipe, where indicated or approved, shall conform to AWWA C151 and C104 and shall have "Tyton" joints, except pipe shall be flanged where indicated. All water services shall utilize saddles.

See Standards W-1A and W-1B for separation requirements from non-potable pipelines. All installations shall meet California Department of Public Health requirements.

Water mains shall normally, in new construction, be located 6 feet from the centerline and on the side of the street that has the most water services, subject to consistency with existing facilities.

Fittings:

Ductile iron compact fittings conforming to the requirements of AWWA C-153/A21.53 Class 250 with mechanical joints, except provide flanged outlet for fire hydrant runs and valves. Fittings shall be cement mortar lined in accordance with AWWA C104. The inside and outside of the fittings shall be bituminous coated. Nuts and bolts shall conform to the provisions of ANSI specifications B18.2.

Note: ANSI is American National Standards Institute.

Valves:

Valves (sizes 3" through 12") shall be resilient seated gate valves of the iron body, non-rising stem, resilient seat type as per AWWA Standard C509. Valves shall open left and be provided with 2-inch square wrench nuts. Valves shall have full opening flow-way of equal diameter as the nominal size of connecting pipe. All internal and external ferrous metal surfaces shall be fully coated with epoxy as per AWWA C550. Valves shall have two O-ring stem seals. Valves shall be so designed that complete zero leakage may be affected with flow in either direction at pressures up to 200 psi, which shall be working water pressure rating of the valves and they shall be suitable for throttling if required. Valves shall be flanged by mechanical joint. A sufficient number of valves shall be installed so that a break or main outage will not affect more than 1/4 mile of arterial mains, 500 feet of mains in commercial or industrial districts, 800 feet in other districts, but no more than two fire hydrants or 20 services in any district.

Valve Boxes and Pipe Risers:

Each valve shall be equipped with a valve box set to grade, Christy G5 traffic valve box with G5C lid, or approved equal with cast iron face and cover, marked "WATER". Valve boxes shall be raised to grade after paving. Paving shall be saw-cut to a regular shape around all such raised castings. See Standard W-2 for other requirements. Pipe riser must be installed vertically so valve nut can be accessed and turned easily with a valve wrench.

Mechanical Couplings:

Sleeve- type couplings shall be made from ductile iron compatible with the pressure rating of the pipe. Couplings shall have shop coat enamel, shall be made by Dresser, Rockwell, or approved equal, and shall be suitable for installation above or below ground.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-18
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

Fire Hydrants:

Fire hydrants shall conform to AWWA Specifications C502 and shall be American Darling B-84-B or approved equal, with two N.T.S. 2½ inch nozzles, one removable (Camlock type) pumper 4½ inch nozzle, 6 inch mechanical joint inlet, 1½ inch pentagon operating nut, and no drain. Provide exterior finish coat over one coat primer as approved by County Fire Department.

All fire hydrants shall be valved at the main and there shall be a minimum of 10 feet between hydrant and valve.

Fire hydrant spacing shall be per Merced County Fire Department requirements.

Fire flow testing and acceptance shall be done by the Merced County Fire Department at Contractor's request.

NSF International (NSF)/ANSI Certifications:

See Standard W-29. Submittals must indicate compliance.

Tracer Wire:

Tracer wire shall be used with polyvinyl chloride (PVC) pipe. Copper wire, UL Type UF, Size AWG #10 with PVC insulation suitable for direct burial shall be laid along the pipe to facilitate locating the pipe at a later date. See Standard W-16 for splice detail. Wire splices shall be placed within a valve box. Tracer wire shall be securely attached to each fire hydrant and each main line valve box, as shown on sheet W-15. After installation and backfill is completed, tracer wire shall be checked for continuity to the satisfaction of the District as a condition of acceptance. Tracer wire shall be taped to the pipe every ten feet (10') with duct tape of a length of at least 1/3 of the pipe circumference.

Pipe Laying:

Pipe installation shall be in accordance with AWWA C600 and C605. Unless otherwise specifically authorized by the District Engineer, all pipe shall be laid with the bells facing the direction of laying and shall be laid in accurate conformity with the prescribed lines and grades. Each length shall be jointed to the preceding section as hereinafter specified; and after said jointing procedure has commenced, there shall be no movement of the pipe whatsoever in subsequent operations. Each pipe shall have a firm bearing for its full length in the trench, except at bell holes and field joints.

Whenever necessary to deflect the pipe from a straight line either in a vertical or horizontal plane to avoid obstructions, or where long radius curves are permitted, the degree of deflection at joints shall be per pipe manufacturer's recommendations as approved by the District Engineer.

Before the pipe is laid, it shall be as free as possible of all foreign matter. If, in the opinion of the District Engineer or his field representative, the pipe contains dirt that will not be removed during the flushing operation, the interior of the pipe shall be cleaned of all dirt and swabbed, as necessary, with an antibacterial solution as approved by the District Engineer.

Every precaution shall be taken to protect the pipe against the entrance of foreign material during and after installation. At the close of the day's work, or whenever workmen are absent from the job site, the last section of pipe shall be plugged, capped or otherwise tightly closed to prevent the entry of water or foreign matter of any nature. If water or foreign material enters a water main, and the main cannot (in the opinion of the District Engineer), be satisfactorily cleaned, the main shall be removed and replaced.

All water improvements covered prior to observation shall be uncovered as directed by the District Engineer.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		**W-19**

Trenching:

See Standard T-1.All trenches shall be of sufficient depth to provide a minimum cover of 36 inches, measured from the top of pipe to the finish grade level. Greater depths of cover may be provided when approved by the District Engineer, or to provide clearance to the top of any valve stem or other water appurtenances.

Bedding, Backfill, and Compaction:

See Standards T-1 and T-2.

Concrete Thrust Blocks:

Concrete thrust blocks shall be provided at all bends, tees, dead- ends and fire hydrants, and other points as specified by the Engineer. Thrust blocks shall be constructed in accordance with Standard W-6 and shall be poured against undisturbed soil. Care shall be taken to insure that no concrete will cover bolt heads on fittings when thrust blocks are installed. Concrete shall be 5 sack minimum, 1" maximum aggregate with minimum 2,500 PSI 28-day compressive strength.

Plugs:

All plugs installed in tees or pipe ends shall be secured in place by means of approved mechanical devices.

Joints:

The type of joint to be used on the respective kinds of pipe, and on valves, fittings and hydrants, shall be compression type joints installed in accordance with the manufacturer's direction and requirements.

Connections and Temporary Backflow Preventer:

The contractor shall not make connections to the existing water mains except as approved. All connections shall meet the disinfection requirements contained in AWWA C651. Only one connection will be made to the existing system until the new system has been approved and accepted by the District. Until bacteria testing is completed, the contractor shall provide a temporary reduced pressure principle backflow prevention assembly to protect the existing system during sterilization and testing. See Standard W-17. The assembly shall be tested and approved by a certified backflow prevention technician just prior to filling the new water system. Provide a copy of the certificate to the District Engineer. The diameter of the assembly shall be at least equal to 50% of the diameter of the largest main in the new system. (e.g. If largest main is 10", the assembly size would be 6" minimum).

Operation of Valves:

The contractor will not be permitted to operate any valves in the existing water system. The Winton Water & Sanitary District shall be notified of the requirements, and they will operate the necessary valves upon request.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		**W-20**

Well Destruction:

Any on-site well must be abandoned in accordance with California Department of Water Resource Bulletin No. 74-81, or an approved reduced pressure principle backflow preventer must be installed in accordance with District Standards prior to connection to the District water system.

Backflow Preventers:

(a) Equipment to be supplied shall be as approved by the District Engineer. Complete assembly required. (No Substitution) All backflow prevention assemblies shall have a current approval from the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC Foundation). Provide written proof of USC Foundation approval (with manufacturer's installation requirements) to District Engineer for review 14 days prior to installation.

(b) No outlet, tee, tap, or connection of any kind to or from supply pipe between water meter and device.

(c) Notify District Engineer at least 2 working days in advance of installation. Do not backfill until installation has been inspected and approved by District Engineer or District personnel.

(d) Flush lines thoroughly to remove foreign material prior to installation.

(e) Device must be readily accessible for testing and maintenance.

(f) Discharge port (Reduced Pressure Principle Backflow Preventer) must have approved air gap.

(g) Protection (e.g. , insulation) may be necessary in areas subject to freezing.

(h) For a continuous supply of water, contact District Engineer for additional requirements.

(i) Supports must not interfere with testing or maintenance.

(j) Deviation from the District Standard drawing will not be permitted unless approved in writing by the District Engineer.

See section entitled "Protection of Water System" for additional requirements.

Shutoff Procedures:

(1) The Contractor shall submit a written request for each water shutoff to the District at least three working days prior to the time the shutoff is needed. The request shall include a detailed description of the work the Contractor is proposing to complete while the water is shut off.

(2) Only District Personnel shall operate valves.

(3) At the time the shutoff is to occur, the Contractor shall provide the necessary workers to assist District personnel with the water shutoff. This assistance will consist of opening fire hydrants, or other outlets as designated by the District, and observing the flow from the outlets as the valves are closed by District personnel. By observing the flows unexpected customer shutoffs can be avoided.

(4) Depending on the location of the shutoff and the number of customers effected, water shutoffs may have to be scheduled in the late evening or early morning hours, or an approved hot tap may be required.

(5) Water may only be shut off for a maximum of 4 hours.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-21
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11	
DATE: 05/01/11			

Testing (General) :

The contractor shall provide all necessary materials and equipment and shall perform all work required in connection with the testing and sterilization of all water lines.

All tests shall be made after trenches have been backfilled, compacted and approved for testing.

Hydrostatic and Leakage Tests.

All pipe work, including all joints, connection and fittings, shall be subjected by the contractor to a hydrostatic pressure test of 200 psi. Before testing, all valves shall be fully opened and all air shall be expelled from the line. Such pressure shall be maintained for a period of not less than 2 hours. Any leaks, failures, or imperfect construction revealed by such test shall be promptly corrected by the contractor at his sole expense, and retested until all leakage has been stopped. Contractor shall also coordinate testing with the Merced County Fire Department as required.

Pressure tests shall not be made until the pipe has been backfilled and compaction completed as indicated in the preceding sections. Tests shall not be made until at least 36 hours after the last concrete thrust or reaction backing has been cast with high early strength cement or at least 7 days after the last concrete thrust or reaction backing has been cast with standard cement.

Sterilization:

The system shall be disinfected in accordance with AWWA Standard C 651 (Including optional sections) with the following modifications:

(1) A chlorine concentration of approximately 100 parts of chlorine per million parts of water (PPM) is introduced into the water mains*. This shall produce a residual chlorine concentration of not less than 25 PPM after 24 hours**. All methods of chlorination included in AWWA Standard C 651 are approved except that the tablet method will not be used where a continuous run of 2,500 feet is to be chlorinated, nor for mains over 12 inches in diameter, nor where trench water or foreign material has entered the system as determined by the District.

If chlorine tablets are used, attach them to the top of the pipe. Silicone or any non-soluble adhesives are not allowed for adhering chlorine tablets to the interior of water mains during construction.

(2) 24 to 48 hours** after introduction of chlorinated water, treated water (minimum 25 PPM residual chlorine required) is flushed from the water mains and the chlorine concentration in the flushed water reduced to less than 1 milligram per liter by the use of a State Department of Public Health approved neutralizing agent. The residual chlorine concentration in the new water main after flushing shall be equal to or less than the concentration in the existing distribution system*. Flushing water is to be discharged into a storm drain system or other approved location. Discharge into the sanitary sewer system is strictly prohibited. In addition, dechlorination shall meet all applicable State and Federal requirements.

No water is to accumulate on public right-of-ways or easements or in any manner as to create a potential hazard to existing public improvements or under construction.

* District observation required

** Should the end of any of the foregoing periods fall on a District non-working day, the order of procedure will be continued to the next regular District working day.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT		W-22
SCALE: NONE	APPROVED BY:	DATE	
DATE: 05/01/11	DISTRICT ENGINEER	05/01/11	

Sterilization (cont.):

(3) 48 hours** after flushing the system, water samples are taken by a certified testing laboratory approved by the District at the Contractor's expense for bacteriological testing*. Should any water be removed from the new system during this 48 hour period, the tests will be invalidated resulting in restarting test procedures at Step 1. Sampling points will be at a maximum spacing of 500 feet. Sampling locations shall be as directed by the District. Fire hydrants shall not be used. Should a water service be designated as a sampling point, the contractor shall make the service accessible for testing. The standard number of samples (may be more or less as determined by the District) shall be one for each 1,000 feet of main plus one for each 10 services plus one for each 10 fire hydrants. Testing locations are to be evenly distributed with a minimum of 4 samples taken. Each dead end main will be sampled at a minimum of two locations. Hoses will not be permitted at a sampling point.

Unless otherwise directed by the District, one sample shall be taken at each sampling point.

(4) If all bacteriological test samples show the absence of coliform organisms after a 48 hour testing period, the water mains are considered clear. In the event that coliform organisms are detected, the sterilization procedure must be restarted at Step 1 within 24 hours of notice.

Sterilization Notes:

(1) Bacteriological samples may be obtained from a temporary blowoff or service connection or temporary service connection as approved by the District.

(2) The Contractor will not be permitted to operate any valves on the system being sterilized once sterilization procedures have begun. Any such operation will invalidate the test resulting in restarting the sterilization procedure at Step 1. After sterilization procedures are complete and the system accepted by the District, the contractor will not be permitted to operate any valves. District forces alone will have the authority to operate valves after sterilization.

(3) Note that disinfection includes, but is not limited to the requirements contained in AWWA C651.

(4) Basic disinfection procedures described in AWWA C651 are:

a) Preventing contaminating materials from entering the water main during storage, construction, or repair.

b) Removing, by flushing, pigging, or other means, those materials that may have entered the water main.

c) Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.

d) Protecting the existing distribution system from backflow due to hydrostatic pressure test and disinfection procedures.

e) Determining the bacterial quality by laboratory tests after disinfection.

f) Disinfection of the initial connection to the existing system, including the temporary reduced pressure backflow preventer, and final connections of the approved new water main to the existing system. (See Section 4.6 of AWWA C651. Use a 5% chlorine solution.)

* District observation required

** Should the end of any of the foregoing periods fall on a District non-working day, the order of procedure will be continued to the next regular District working day.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: _____ DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		W-23

PROTECTION OF WATER SYSTEM

The following information has been adopted as District policy relating to the protection of the public water supply system of the Delhi County Water District.

References: California Administrative Code (Title 17 - Public Health)
Delhi County Water District Standards
U.S. Environmental Protection Agency Manual #EPA-430/9-73-002
List of Approved Backflow Prevention Assemblies from University of Southern California Foundation for Cross-Connection Control and Hydraulic Research latest revision.

Information Prior to Turning on Water:

1. Backflow prevention assemblies shall have at least the same cross sectional area as the water meter. Where two or more such assemblies are installed in parallel, the sum of the cross section areas shall be at least equivalent to the cross sectional area of the water meter.

2. All water services to adjacent lots or parcels under the same ownership or control shall be equally protected. Such protection shall be based upon the highest level of existing or potential hazard on the premises or lots in question.

3. If a continuous supply of water is required, two or more backflow prevention assemblies shall be installed in parallel.

4. Backflow prevention assemblies shall be installed at the customer's expense. Such installation shall be done by a qualified journeyman plumber certified as competent for such purpose by the District. Such certification must be obtained prior to installation of such assembly.

5. Backflow prevention assembly shall be located as close to the water meter as is practical. Site approval for each device installed must be obtained prior to installation from the District Engineer or authorized District personnel

6. Only such assemblies as are approved by the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California (FCCC&HR) will be accepted for use by the Delhi County Water District to protect the public water supply system. This requirement does not apply to backflow prevention assemblies required by the County for use in protection of the occupants or users within a facility. Only complete assemblies, including shutoff valves and test cocks, as approved by FCCC&HR and as supplied by the manufacturer, are approved. Substitutions of valves or assembly from various components is prohibited.

7. The installation, testing, and maintenance of backflow prevention assemblies shall remain the responsibility of the customer as required by State law.

8. Outlets, tees, taps or connections of any kind to or from the supply pipe between the water meter and the required backflow prevention assemblies will not be permitted. Such an occurrence may result in immediate discontinuance of water service.

9. Backflow prevention assemblies connected to the District water system shall be inspected and tested prior to being put in service, and at least once in every twelve month period, or more often if conditions warrant. All backflow prevention assembly testers shall be hired by the customer, and shall be approved by the District. In the event a backflow prevention assembly fails a required test, the tester shall immediately notify the District and the owner or his authorized agent. Repairs to such assembly shall be corrected by the customer within the prescribed three (3) day period. Failure to correct such condition will result in termination of water service until such defects or conditions are corrected to the satisfaction of the District. If such failure presents an immediate hazard to the public water supply system, termination of service will be required immediately.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	W-24
DATE: 05/01/11		

10. An approved backflow prevention assembly of the type designated below shall be installed according to applicable District Standards. These are common applications and not a complete listing. Variations in specific applications may increase required level of protection.

AG: Air Gap separations.
RP: Approved reduced pressure principle backflow prevention device.
DC: Approved double check valve assembly backflow prevention device.

(1)	Air Conditioning Plants	RP
(2)	Aircraft and Missile Plants	RP
(3)	Automotive Plants	RP
(4)	Auxiliary Water Systems or Sources (Interconnected)	AG*
(5)	Auxiliary Water Systems or Sources (Not Interconnected)	RP
(6)	Battery Manufacturing	RP
(7)	Beverage Bottling Plants	RP
(8)	Breweries	RP
(9)	Buildings - With house pumps and/or water storage tanks, or multi-story without pumps or tanks	RP
(10)	Buildings - With sewage pumps	AG*
(11)	Canneries, Packing Houses, Reduction Plants	RP
(12)	Car Wash - With water reclamation system	RP
(13)	Chemical Plants	RP
(14)	Chemically Treated (Non-Potable) Water System	RP
(15)	Chemically Treated (Potable) Water System	RP
(16)	Civil Works (Facilities not subject to Merced City plumbing inspection)	RP
(17)	Cleaning and Dye Works	RP
(18)	Commercial Laundries	RP
(19)	Dairies and cold Storage Plants	RP
(20)	Film Processing Laboratories	RP
(21)	Fire System - Water pump and/or storage tank	DC
(22)	Fire System - With auxiliary supply or chemically affected water in pipes or storage tanks	AG*
(23)	Food Processing Facilities (Using Non-Toxic Materials)	DC
(24)	Food Processing Facilities (Using Toxic Materials)	RP
(25)	High Schools and Colleges	RP
(26)	Hospitals	RP
(27)	Laboratories (Using Toxic Materials)	RP
(28)	Manufacturing, Processing and Fabrication Facilities (Using Non-Toxic Materials)	RP
(29)	Manufacturing, Processing and Fabrication Facilities (Using Toxic Materials)	AG*
(30)	Medical and Dental Building - With X-ray Processing or Toxic Materials or Multi-Story	RP
(31)	Mobile Home Parks	RP
(32)	Mortuaries and Morgues	RP
(33)	Motion Picture Studios	RP
(34)	Oil and Gas Production Facilities	RP
(35)	Paper and Paper Production Plants	RP
(36)	Plating Plants	RP
(37)	Power Plants	RP

* An RP may be used in lieu of an air gap, provided the State Department of Health Services approves the substitution.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	W-25
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(38)	Radiator Works	RP
(39)	Radio-Active Materials Processing Facilities	RP
(40)	Rest Homes - Non-Ambulatory Only	RP
(41)	Rest Homes - Ambulatory	RP
(42)	Restaurants	RP
(43)	Restricted, Classified or Other Closed Facilities	RP
(44)	Rubber Plants	RP
(45)	Sand and Gravel Plants	RP
(46)	Sanitary Dump - For Recreational Vehicles	AG*
(47)	Sewage Facilities	RP
(48)	Solar Heating System or Heat Exchange (does not include once-through domestic hot water/swimming pools with own approved protection device)	RP
(49)	Waterfront Facilities	RP
(50)	Where a cross-connection is maintained	RP
(51)	Wineries	RP
(52)	Where the use of a substance, process water, or water supplied by the City water system is such as to subject the water deterioration in sanitary quality	RP
(53)	Where the water use is in conjunction with any pollutant	RP
(54)	Multiple Services - Domestic	RP
(55)	Multiple Services - All Others	RP

11. Reduced pressure principle backflow prevention assemblies (RP) must be installed such that the discharge port is a minimum of 12 inches above the floor, ground or any level subject to flooding, as defined by the Federal Emergency Management Agency's current Flood Map. An RP shall not, under any circumstances, be installed in a pit or vault.

12. Backflow prevention devices shall be installed in a horizontal position, unless the FCCC&HR has specifically approved the unit in the proposed position, and the District Engineer approves the alternate position.

13. All backflow prevention assemblies shall be readily accessible for testing and maintenance.

14. Larger sizes of backflow prevention assemblies may require supports. Supports shall not interfere with the operation, testing or maintenance of such device.

15. Protection of the assemblies may be required in areas subject to freezing conditions.

16. On an RP type assembly, water may be discharged on an intermittent basis from the relief port. This is normal. A continuous discharge indicates a failure of the unit. Such failure shall immediately be reported to the Public Works Operations Manager and repaired within three (3) day limit.

17. In order to perform the required annual test, water service must be terminated for a 15 to 30 minute period. If a continuous supply of water is required, see Item No. 3. An unprotected bypass is not permitted.

18. The District may discontinue the service of water to any premises and may physically disconnect the consumer's piping from the District's water system if a backflow prevention assembly required herein is not installed, tested, and maintained to the District Standards, or if any defect found in an installed backflow prevention assembly is not corrected within the prescribed three day period, or if it is found that a backflow prevention device has been removed or bypassed and service will not be restored until such conditions or defects are corrected.

* An RP may be used in lieu of an air gap, provided the State Department of Health Services approves the substitution.

WATER SYSTEM - CONSTRUCTION SPECIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	W-26
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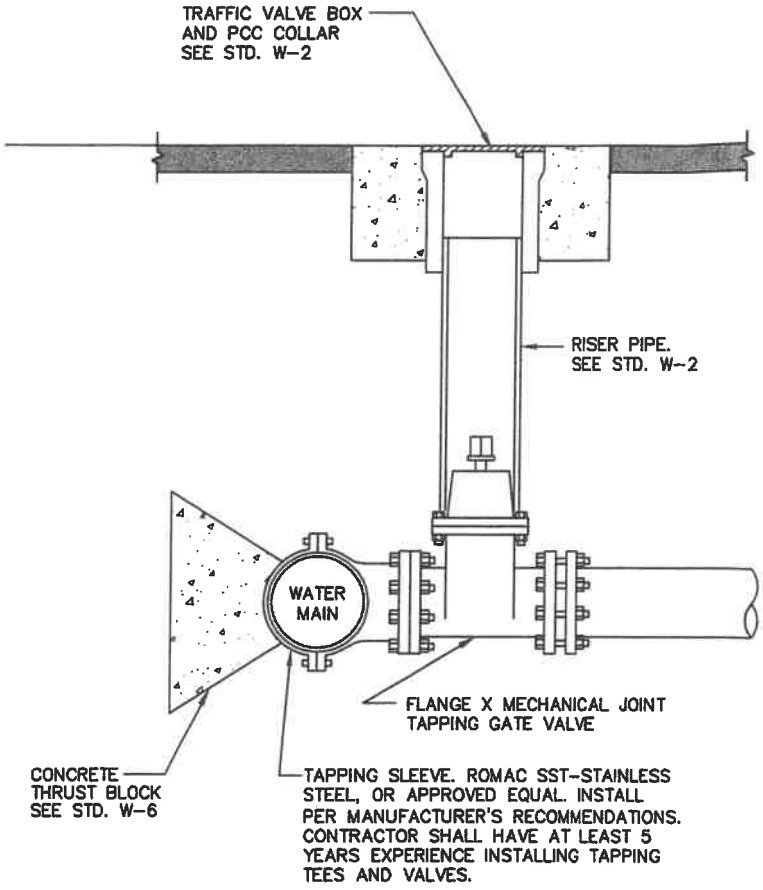
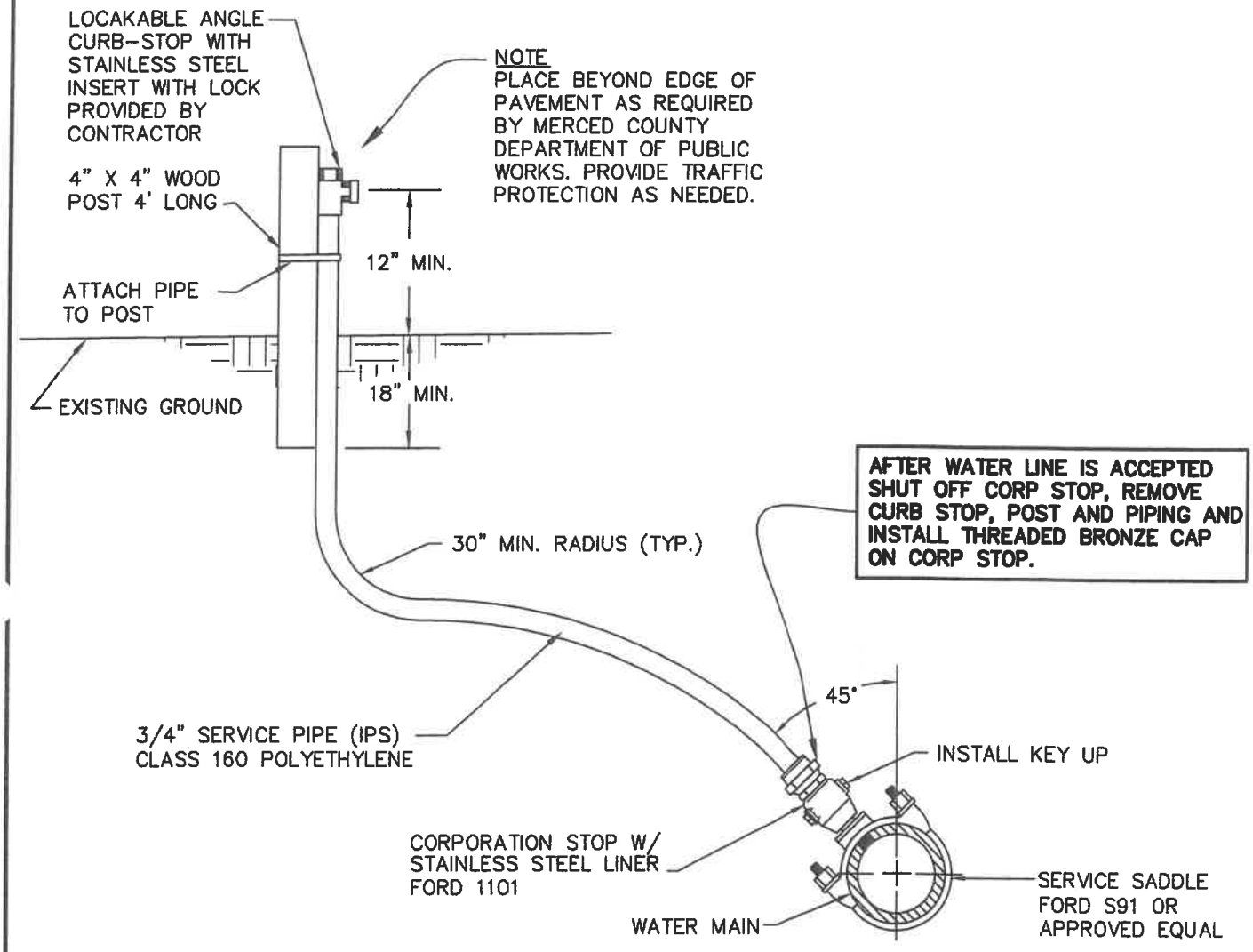


NOTE:
Before the tapping sleeve and valve are installed, the exterior of the water main to be tapped, and the interior surface of the sleeve and valve shall be thoroughly cleaned. The exterior of the water main and the interior suface of the sleeve and valve shall be disinfected in accordance with AWWA C651. Use a 5% chlorine solution. All points of the tapping machine that will come into contact with the water in the main shall also be cleaned thoroughly and disinfected.

TAPPING SLEEVE AND VALVE

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	W-27
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	
DATE: 05/01/11		



TEMPORARY WATER SAMPLING POINT

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER	DATE 05/01/11
DATE: 05/01/11		**W-28**

Additives:

All chemicals or products to be added to the drinking water by the Contractor shall be certified as meeting the specifications of NSF International/American National Standard Institute (NSF/ANSI) 60-2005 (Drinking Water Treatment Chemicals-Health Effects), which is hereby incorporated by reference. Certification shall be from an ANSI accredited product certification organization whose certification system includes, as a minimum, the following criteria for ensuring the chemical or product meets NSF/ANSI Standard 60:

a. Annual product testing,
b. Annual facility inspections,
c. Annual quality assurance and quality control review,
d. Annual manufacturing practice reviews, and
e. Annual chemical stock inspections.

Indirect Additives:

Contractor shall not use any chemical, material, lubricant or product that will result in its contact with the drinking water including protective materials (coatings, linings, liners), joining and sealing materials (solvent cements, welding materials, gaskets, lubricating oils), pipes and related products (pipes, tanks, fittings), and mechanical devices used in treatment/transmission/distribution systems (valves, chlorinators, separation membranes) that has not been tested and certified as meeting the specifications of NSF International/American National Standard Institute (NSF/ANSI) 61-2005 / Addendum 1.0-2005 (Drinking Water System Components-Health Effects), which is hereby incorporated by reference. This requirement shall be met under testing conducted by a product certification organization accredited for this purpose by the American National Standards Institute.

Use of Uncertified Chemicals, Materials or Products:

Contractor may use a chemical, material or product that has not been certified if the chemical, material or product is in the process of being tested and certified and there are no certified alternatives.

Prior to use of an uncertified chemical, material or product, the Contractor shall provide the California Department of Public Health, Drinking Water District Office with an explanation of the need for the chemical, material or product; the date that the chemical, material or product was submitted for testing; the name of the accredited product certification organization conducting the testing; and a statement that certified alternatives are not available.

Unless directed otherwise by the California Department of Public Health, Drinking Water District Office to ensure a pure and wholesome drinking water supply, the Contractor may use the following chemicals, materials or products that have not been and are not in the process of being certified:

a. A material or product previously approved by the Department for use or installation on or before March 9, 2008.
b. A material or product constructed of components meeting the requirements of Paragraphs A & B above.
c. Chemical by-products necessary for meeting drinking water standards, such as sodium hypochlorite for disinfection, generated by chemicals certified pursuant to Paragraphs A & B above.
d. Atmospheric air and small parts, such as probes, sensors, wires, nuts, bolts and tubing for which there are no certified alternatives.

Certifications:

Contractor shall submit the certifications and approvals described above with his submittals.

NSF INTERNATIONAL (NSF)/ANSI CERTIFICATIONS

DRAWN BY: RWB	WINTON WATER & SANITARY DISTRICT	
SCALE: NONE	APPROVED BY: DISTRICT ENGINEER — DATE 05/01/11	W-29
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