

**LOS ALAMOS  
COMMUNITY SERVICES DISTRICT**

Standards and Specifications for  
Developer Extensions to the  
Sewer and Water System

Resolution No. 16-348  
March 2016

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**SUBMITTAL REQUIREMENTS FOR PROJECT APPROVAL  
OF WATER AND SEWER MAIN EXTENSIONS  
BY THE LOS ALAMOS COMMUNITY SERVICES DISTRICT**

**A. TENTATIVE MAP SUBMITTAL**

In order for the District to provide the developer with a Service Availability Letter for County processing of a Tentative Map, the following submittal will be required.

1. Three (3) copies of the Tentative Map for District review.
2. A deposit for the Tentative Map review. Check with the District office for fee amount currently in effect.

At that time, the District will review if service can be provided for the proposed development. The District Engineer shall check the Tentative Map for compliance with District requirements. All water and sewer easements shall be noted on the Tentative Map as "public water and sewer easements for LACSD". Any changes to the map will be forwarded to the responsible engineer who has prepared the plan.

Once any corrections are made, the District will provide the Developer with a Service Availability Letter stating that upon completion and approval of construction drawings and compliance with all financial and other requirements of the District, the District shall provide a Can and Will Serve Letter for sewer and water service.

Any portion of the deposit not used by the District for review and administration of the proposed project shall be held in account for the express purpose of the project. If the project does not proceed, the developer may request in writing a refund of the fees not used.

**B. CONSTRUCTION DRAWING SUBMITTAL**

Three (3) sets of construction drawings and a copy of the final map shall be submitted to the District for plan check review by the District Engineer.

The District will return one set of redline drawings for corrections.

Once corrections have been made, one set of revised drawings shall be submitted to verify all corrections made. At this time an estimate by the District Engineer may be prepared for all sewer and water line work. This estimate shall be used for setting the applicable bond amounts required for the subject project. The bonds shall be in substantially the form set forth in these Standards and Specifications.

If additional plan checks are required, a redline set of drawings will be returned to the developer's engineer for corrections.

Once the plans are ready for signature by the District Engineer, the developer's design engineer shall make available the original mylar drawings for signature. The District requires that a duplicate set of mylar sepias be provided to the District for its records.

The District shall prepare the Waterline and Sewerline Extension Agreements, along with the appropriate bond forms for financial arrangements. A deposit amount will be set for all inspection fees and other District costs for administering this project through construction. These fees will be in accordance with District Ordinance No. 81 and No. 82, as said Ordinances may be amended from time to time.

Once the Agreements have been executed by the developer with the bonds posted and fees paid, the District shall provide the developer with the Can and Will Serve letter and clear the project with the County Surveyor.

Bond. No. \_\_\_\_\_

Name of Extension: \_\_\_\_\_

**PERFORMANCE, PAYMENT AND GUARANTEE BOND  
(Sewer Extension)**

KNOW ALL MEN BY THESE PRESENTS: THAT WHEREAS, the Los Alamos Community Services District, hereinafter designated as the "District", has entered into a Sewer Line Extension Agreement (the "Agreement") dated \_\_\_\_\_ with \_\_\_\_\_, hereinafter designated as the "Developer", whereby the Developer agrees to install sewer improvements consisting of an extension to the sewer system as therein described, which Agreement is on file with the District and by this reference is made a part hereof; and

WHEREAS, the Developer is required under the terms of the Agreement to furnish a bond for the faithful performance of said Agreement in accordance with the conditions hereafter set forth.

NOW, THEREFORE, the undersigned Developer, as principal, and \_\_\_\_\_, a corporation organized and existing by virtue of the laws of the State of \_\_\_\_\_, as surety, are held and firmly bound unto said District in the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment of which we do jointly and severally bind ourselves, our heirs, executors, administrators, personal representatives, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the said principal, his (or its) representatives, heirs, successors, and assigns shall well and truly keep and observe all of the covenants and conditions and agreements in said Agreement and shall faithfully perform all the provisions of the Agreement and pay all laborers, mechanics, subcontractors, and materialmen and all persons who shall supply such persons and subcontractors with provisions and supplies for carrying on such work and all engineering, legal and other fees and expenses incurred by the District under said Agreement, whether any such claim would arise under the public works lien statutes, or the mechanic lien statutes of the State of California and compliance with the formal requirements of either or both of said statutes shall not be a condition to recovery upon said bond, and shall indemnify and save harmless the District, its officers, and agents, from any pecuniary loss resulting from the breach of and of said terms, covenants, and conditions to be performed by the principal;

AND FURTHER, that if the principal will correct or replace any defective work or materials discovered by the District within a period of one (1) year from the date of acceptance of such work by the District, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

No change, extension of time, alteration, or addition to the work to be performed under the Agreement shall, in any way, affect principal's or surety's obligation on this bond, and surety does hereby waive notice of any change, extension of time, alteration or additions thereunder.

IN WITNESS WHEREOF, the said principal and the said surety have caused this bond to be signed and sealed by their duly authorized officers this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

"SURETY"

"DEVELOPER"

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Name of Developer)

By: \_\_\_\_\_  
(Signature)  
Its Attorney-in-Fact

By: \_\_\_\_\_  
(Signature)

**EXAMPLE**

\_\_\_\_\_  
(Name and Title - Printed or Typed)

\_\_\_\_\_  
(Name and Title - Printed or Typed)

Insurance Co: \_\_\_\_\_

Agency: \_\_\_\_\_

Address: \_\_\_\_\_

Premium Paid until: \_\_\_\_\_

Bond. No. \_\_\_\_\_

Name of Extension: \_\_\_\_\_

**PERFORMANCE, PAYMENT AND GUARANTEE BOND  
(Water Extension)**

KNOW ALL MEN BY THESE PRESENTS: THAT WHEREAS, the Los Alamos Community Services District, hereinafter designated as the "District", has entered into a Water Line Extension Agreement (the "Agreement") dated \_\_\_\_\_, with \_\_\_\_\_, hereinafter designated as the "Developer", whereby the Developer agrees to install water improvements consisting of an extension to the water system as therein described, which Agreement is on file with the District and by this reference is made a part hereof; and

WHEREAS, the Developer is required under the terms of the Agreement to furnish a bond for the faithful performance of said Agreement in accordance with the conditions hereafter set forth.

NOW, THEREFORE, the undersigned Developer, as principal, and \_\_\_\_\_, a corporation organized and existing by virtue of the laws of the State of \_\_\_\_\_, as surety, are held and firmly bound unto said District in the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) ~~for the payment of which we do jointly and severally bind ourselves,~~ our heirs, executors, administrators, personal representatives, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the said principal, his (or its) representatives, heirs, successors, and assigns shall well and truly keep and observe all of the covenants and conditions and agreements in said Agreement and shall faithfully perform all the provisions of the Agreement and pay all laborers, mechanics, subcontractors, and materialmen and all persons who shall supply such persons and subcontractors with provisions and supplies for carrying on such work and all engineering, legal and other fees and expenses incurred by the District under said Agreement, whether any such claim would arise under the public works lien statutes, or the mechanic lien statutes of the State of California and compliance with the formal requirements of either or both of said statutes shall not be a condition to recovery upon said bond, and shall indemnify and save harmless the District, its officers, and agents, from any pecuniary loss resulting from the breach of and of said terms, covenants, and conditions to be performed by the principal;

AND FURTHER, that if the principal will correct or replace any defective work or materials discovered by the District within a period of one (1) year from the date of acceptance of such work by the District, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

No change, extension of time, alteration, or addition to the work to be performed under the Agreement shall, in any way, affect principal's or surety's obligation on this bond, and surety does hereby waive notice of any change, extension of time, alteration or additions thereunder.

IN WITNESS WHEREOF, the said principal and the said surety have caused this bond to be signed and sealed by their duly authorized officers this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

"SURETY"

"DEVELOPER"

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Name of Developer)

By: \_\_\_\_\_  
(Signature)  
Its Attorney-in-Fact

By: \_\_\_\_\_  
(Signature)

**EXAMPLE**

\_\_\_\_\_  
(Name and Title - Printed or Typed)

\_\_\_\_\_  
(Name and Title - Printed or Typed)

Insurance Co: \_\_\_\_\_

Agency: \_\_\_\_\_

Address: \_\_\_\_\_

Premium Paid Until: \_\_\_\_\_



## LOS ALAMOS COMMUNITY SERVICES DISTRICT ABBREVIATED SEWER SYSTEM DESIGN STANDARDS

All extensions to the sewer system must conform to the design standards of the District. The system must be constructed of permanent materials and be capable of future expansion.

### 1. GENERAL

#### a. Plans and Specifications

The installation of sewer extensions shall be made in accordance with the construction plans approved by the District Engineer. Construction plans shall be prepared by a professional engineer registered in the State of California in accordance with the conditions and standards set forth herein.

#### b. Rights-of-Way and Monuments

Permanent sewer easements shall not be less than fifteen feet (15') in width. If both sewer and water are being installed, a minimum easement of twenty feet (20') in width shall be granted to LACSD. Public rights-of-way shall be cleared, grubbed, and graded in accordance with the requirements of the Santa Barbara County Department of Transportation. Monuments shall be provided as required by the County.

### 2. DESIGN STANDARDS

- a. Gravity sewer pipe shall be polyvinyl chloride (PVC) SDR-35 sewer pipe with bell and spigot.
- b. Pressure mains shall be ductile iron, or PVC (AWWA C-900 DR14 CL305).
- c. All joints for gravity and pressure sewers shall be of the rubber gasket type.
- d. The pipe sizes shall be selected as indicated by good engineering practice and shall conform to the overall sewerage plan. Minimum pipe size for public gravity sewers shall be 6 inch I.D.
- e. Manholes shall be per L.A.C.S.D. Standard Detail S-1.
- f. Manhole covers shall be South Bay Foundry No. A-1254.
- g. Manholes shall be placed at each grade and direction change. Distances between manholes shall not exceed 350 feet for sewers 12 inch I.D. or less.
- h. Cleanouts may be used at the termination of each sewer line if within 200 feet or less of downstream manhole.

- i. Sewer grades shall be sufficient to maintain a velocity of as least two (2) feet per second at design flow. Design flow is based on the sewer line flowing one-half full. Minimum grades where better grades are unobtainable shall be as follows:

<u>SIZE</u>	<u>MINIMUM GRADE</u>
6"	0.0038
8"	0.0025
10"	0.0020
12"	0.0015

\*Minimum grades shown are based on "n" values for P.V.C. pipe (n = 0.010). Other pipe materials will require higher minimum grades.

- j. Gravity sewers shall have at least four feet (4') of cover or as approved by the District Engineer.
- k. Minimum horizontal and vertical separation between sewers and water mains shall be as required by the State Health Department. See drawings No. 1-4 herein.
- l. No vertical curves will be allowed in the sewer main.
- m. All sewer lateral connections shall be per L.A.C.S.D. Standards Detail S-3, and maintain 2% minimum slope

# LOS ALAMOS COMMUNITY SERVICES DISTRICT SPECIFICATIONS FOR MATERIALS AND THE INSTALLATION OF SEWER MAINS

## SECTION I - SCOPE AND GENERAL REQUIREMENTS

The specifications shall apply to all materials and work of construction of gravity sewer lines for the domestic sewer system of the Los Alamos Community Services District constructed pursuant of the requirements of a contract, local ordinances, subdivision or other agreements, and to other work as may be required as a condition of any permit.

The work herein provided for is to be done in accordance with the plans, profiles, cross-sections and the general and special provisions on file with the District Engineer of the Los Alamos Community Services District and these specifications which are intended to cover all items necessary for the installation and construction of sewer mains for sewer service. Public Improvement Plans shall be in accordance with District Policy and may not be used for construction unless signed by the District Engineer.

Two (2) complete sets and an electronic version (preferably AutoCAD) of "as-built" drawings showing the actual location of all mains, structures, wyes and laterals shall be filed with the District before final acceptance of the work.

## SECTION II - PIPE AND MATERIAL REQUIREMENTS

### A. GENERAL

Polyvinyl Chloride (PVC) sewer pipe and fittings shall conform to the requirements of A.S.T.M. Standard D 3034 latest revision. The minimum wall thickness shall be SDR-35 and shall have a minimum pipe stiffness of  $F/AY=46$  measured at 5 % deflection.

### B. PIPE AND FITTINGS

The standard length of pipe shall be fourteen (14') or twenty feet (20') with integral wall belled ends and elastomeric joints. All pipe and fittings shall have rubber ring bell and spigot joints providing a water tight seal and allowing for contraction and expansion. The bell shall consist of an integral wall section stiffened with two PVC retainer rings which securely lock the solid cross-section rubber ring into position. All pipe and fittings shall be free of imperfection and shall be clearly marked with the name of the manufacturer.

### C. SEWER MANHOLES

Sewer Manholes shall be provided as required per the approved set of construction drawings. Pre-cast sewer manholes shall be by Mid-State Concrete Products and placed on 6" minimum layer of  $\frac{3}{4}$ " crushed rock compacted to 95%. Joints shall be tongue and groove and shall conform with ASTM C-478 Section 14. Pre-cast units shall be assembled using Ram-Nek Concrete Sealant. Interior manhole section joints and other holes, gaps or imperfections, including the lifting pin recess pocket, shall be mortared to ensure a smooth

interior finish to the manhole.

PVC sewer pipe shall be connected with Kor-N-Seal I stainless steel wedge connectors. Gaps between the inlet/outlet pipes and the connectors shall be completely filled with class B mortar to create a smooth surface aligned with the interior of the manhole.

The frame and cover shall be South Bay Foundry No. A-1254, and shall have the word "SEWER" in 2" raised letters.

All work shall conform with the District's Standard Drawing S-1.

#### D. SEWER CLEANOUTS

Sewer Cleanouts shall be provided at the upstream end of all dead-end pipe mains unless a manhole is specified. All work shall conform with the District's Standard Drawing S-2.

#### E. SEWER LATERALS

A 4" sewer lateral shall be installed from the main to the property line and shall be owned by the property owner. All work shall conform with the District's Standard Drawing S-3. The connection to the sewer main shall be made with sanitary wyes and be rotated upward from the horizontal to an angle of 22-1/2 degrees. For all new construction, the lateral wye shall be glued in place. When connecting to an existing sewer main, the wye shall be secured with a saddle that has double banded clamps. The upper end of the sewer lateral shall be capped and sealed to prevent infiltration.

### SECTION III — CONSTRUCTION METHODS

#### A. TRENCHING

Trenching may be done either by machine or hand labor. Care shall be used to avoid excavating below the level required to provide earth mounds for the pipe in accordance with the manufacturer's specification for placing PVC pipe. All trenches shall comply with the requirements of Santa Barbara County Public Works.

Suitable shoring shall be utilized to protect the excavation when necessary in accordance with the State of California, Division of Industrial Safety (Cal-OSHA) Trench Construction Safety Orders. Shoring shall not be permitted to extend below the level of the bottom of the pipe. Any damage resulting from the failure to provide shoring shall be repaired by the Contractor at his own expense

All shoring shall be removed from the trench prior to backfilling.

## B. PLACING PVC PIPE

All P.V.C. sewer pipe shall be installed in accordance with the manufacturer's recommendations as they pertain to the particular soil conditions within the zone of the pipe bedding and trench backfill. At no time may the maximum deflection recommended by the manufacturer be exceeded.

After the subgrade has been brought to the true line and grade, the pipe shall be laid upgrade from structure to structure with the bell end of the pipe upgrade. The spigot end of the pipe shall be inserted the *full* depth into the socket of the pipe, centered in the socket, and laid with a uniform bearing under the *full* length of the barrel of the pipe. Adjustment to line and grade shall be made by scraping away or filling and tamping in under the barrel of the pipe with sand, gravel, or fine dirt approved by the District, and not by wedging or blocking up the pipe

All changes in pipe size will require a manhole structure for the transition, and no vertical curves will be allowed within the sewer main.

## C. TESTING

Following the placement and compaction of backfill and prior to placing the permanent surfacing, the following test shall be completed.

Pressurize the test section to 3.5 psi and hold above 3.0 psi for a minimum of 5 minutes. Add air as necessary to maintain the pressure above 3.0 psi.

Note the pressure (3.0 psi minimum) and begin the timed period. If the pressure drops 0.5 psi or more in less than the time given in the following table, the section of pipe shall not have passed the test.

<u>Pipe Size</u>	<u>Minimum Time in Seconds</u>
4"	122
6"	184
8"	245
10"	306
12"	367

Note: For larger diameter pipe use the following formula: Minimum time in seconds = 370 x pipe diameter in feet

When the prevailing ground water is above the sewer being tested, air pressure shall be increased 0.43 psi for each foot the water table is above the flow line of the sewer pipe.

If the time for the pressure to drop 0.5 psi is 125 percent or less of the time given in the table above, the line shall be immediately repressurized to 3.0 psi and the test repeated. If

the test is not passed, the leak shall be found and repaired to the satisfaction of the District, and the length of repaired line retested.

Sewer laterals shall be considered part of the main to which they are connected and no adjustment of test time shall be allowed to compensate for the smaller diameter of the sewer lateral.

The pressure gauge used shall be supplied by the contractor and have minimum divisions of 0.10 psi with an accuracy of 0.04 psi. Accuracy and calibration of the gauge shall be certified by a reliable testing firm at six month intervals or when requested by the District.

All pipelines shall be cleansed and mandrelled to measure for obstructions, deflections joint offsets and lateral intrusions. The mandrel shall be rigid with a circular cross section having a diameter at least 96% of the specified average inside diameter of the pipe and shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe.

Should any section pipeline fail to pass the mandrel test, the Contractor shall open the pipe trench and repair the pipeline until it satisfactorily passes the mandrel test. All material, equipment and labor to perform the mandrel test shall be provided by the Contractor at no cost to the District.

All installed sewer mains shall be video taped for the District at the Contractor's expense prior to acceptance.

#### D. SEWER TIE-INS

No operating sewer line will be tied into, shut down, or otherwise interfered with, without the prior written permission of the District.

Prior to any tie-ins, a schedule showing all work to be done shall be submitted by the Contractor for approval by the District. All material must be on the site before permission will be granted to start the tie-in.

In the event of accidental breakage of sewer lines or interruption of sewer service in any manner, immediately notify the District office.

#### E. UTILITY LOCATIONS AND DAMAGES

The fact that any underground facility is not shown on the plans shall not relieve the Contractor of full responsibility for damage he causes, and such damaged facilities shall be immediately repaired to a condition equal or better than that which existed before damage.

#### F. METHOD OF ABANDONING RETIRED LINES

Sewer lines shown or indicated to be abandoned may be abandoned in place except that lines interfering with the conduct of the work shall be removed by the Contractor at no cost to the District. Abandoned lines, if severed or broken, shall be plugged and sealed in place with neat cement grout.

#### G. PUBLIC CONVENIENCE AND SAFETY

The Contractor's operation shall cause no unnecessary inconvenience and the travel rights of the public shall be maintained at all times.

The Contractor shall furnish, install and maintain all traffic control devices in compliance with California Department of Transportation and Santa Barbara County Road Department requirements.

The cost of furnishing and installing such signs, lights, flares, barricades and other facilities and the cost of providing and stationing such flagmen, all for the convenience and direction of public traffic, shall be borne solely by the Contractor. Failure of the Contractor to maintain all facilities and/or appurtenances utilized for traffic control will result in the District performing the work. The Contractor will be charged with any cost to the District to perform all traffic control which is the Contractor's responsibility in accordance with the Plans and Specifications.

#### I. BACKFILL AND COMPACTION

Backfill of all trenching shall comply with County of Santa Barbara Standards.

#### J. STANDARD DRAWINGS

Standard Drawings for sewer mains and appurtenances must be complied with and are a part of these specifications. They are:

- S-1 Standard Manhole
- S-2 Sewer Cleanout
- S-3 Sewer Lateral

SOUTH BAY FOUNDRY NO. A-1254  
FRAME & COVER

PRE-CAST MANHOLE  
BY MID STATE  
CONCRETE PRODUCTS

ADJUSTING RINGS  
AS REQUIRED  
MAX. 18" - MIN. 6"

KOR-N-SEAL I  
STAINLESS STEEL  
WEDGE CONNECTOR  
(TYP.)

24" MIN.  
TAPERED CONE

24"

5"

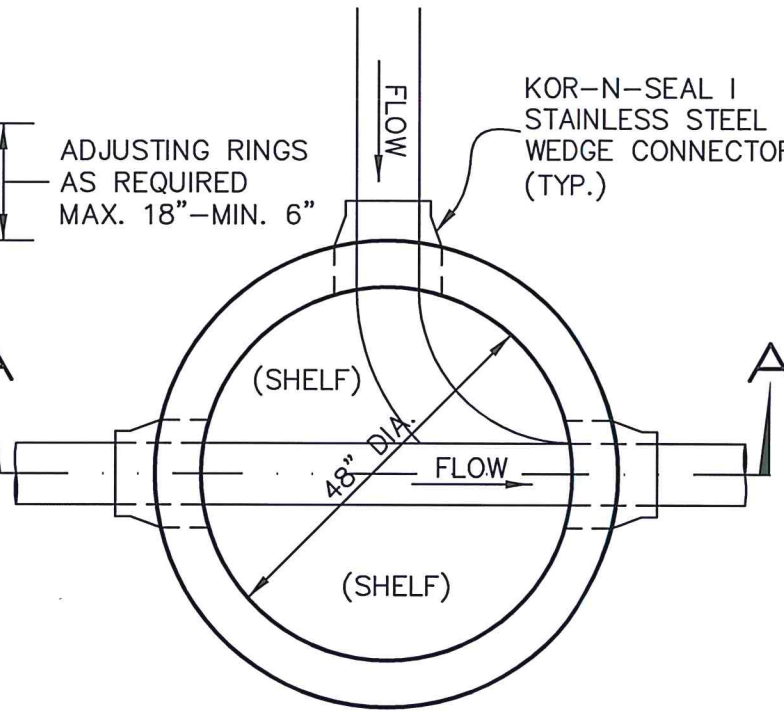
16" MAX. (TYP.)

LANE INTL. CORP.  
POLYPROPYLENE  
STEPS, TYP.

48"

6"

A



**PLAN VIEW**

NO SCALE

RAM-NEK CONCRETE SEALANT  
BETWEEN ALL JOINTS

MORTAR  
(SEE  
NOTE 6)

SLOPE SHELF  
@ 1" IN 12"

18"  
MAX.

KOR-N-SEAL I  
STAINLESS STEEL  
WEDGE CONNECTOR  
(TYP.)

INLET

OUTLET

0.10' MIN.

8"

6" MIN. 3/4" CRUSHED  
ROCK COMPACTED TO 95%

**SECTION A-A**

NO SCALE

**NOTE:**

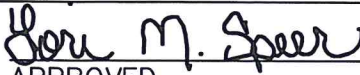
THE DISTRICT WILL REQUIRE CERTIFICATION FROM MID STATE CONCRETE PRODUCTS VERIFYING THAT THE INVERTS AND SLOPES OF THE MANHOLE BASES ARE IN ACCORDANCE WITH THE DESIGN OF THE DISTRICT APPROVED PLANS.

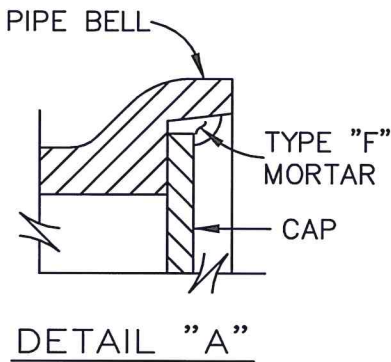
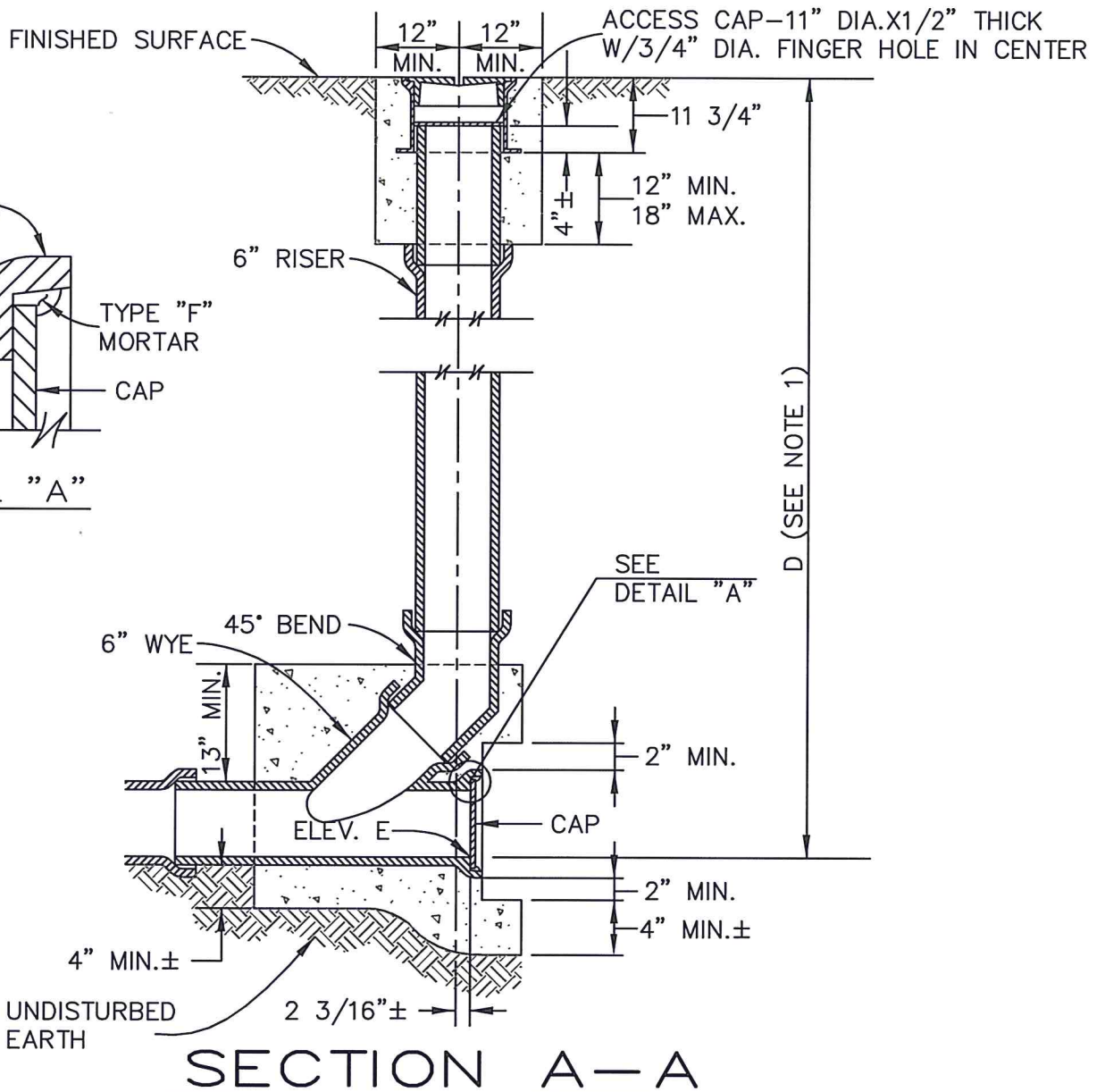
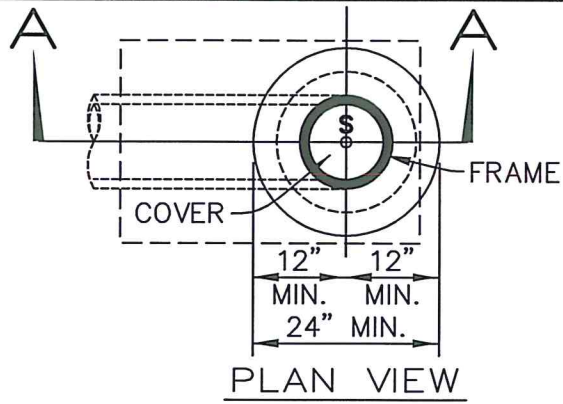
REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	
<i>Soren M. Speer</i> APPROVED		STANDARD MANHOLE	DWG. NO.
2/24/16	DATE		S-1
			1 OF 2



NOTES:

1. ALL PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C-478. THE INSIDE SURFACE MUST BE SMOOTH AND FREE OF VOIDS.
2. MANHOLE STEPS SHALL BE LANE INTERNATIONAL CORPORATION POLYPROPYLENE STEPS. THE MANHOLE STEPS SHALL BE UNIFORMLY SPACED AT A MAXIMUM OF 16" WITH THE TOP STEP PLACED JUST UNDER THE MANHOLE FRAME. THE LOWEST STEP SHALL BE PLACED NOT LESS THAN 8" NOR MORE THAN 18" ABOVE THE SHELF. THE TOP STEP AND THOSE IN THE 24" DIAMETER SECTION SHALL PROJECT 4" INSIDE THE MANHOLE.
3. THE 24" X 48" ECCENTRIC CONES AND RISER SECTIONS SHALL BE REINFORCED IN ACCORDANCE WITH ASTM C-478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 6" ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2" OF COVER OVER THE STEEL ON THE INSIDE FACE.
4. JOINTS SHALL BE TONGUE AND GROOVE AND SHALL CONFORM WITH ASTM C-478 SECTION 14.
5. PRECAST UNITS SHALL BE ASSEMBLED USING RAM-NEK CONCRETE SEALANT.
6. ALL GAPS BETWEEN THE INLET/OUTLET PIPES AND THE KOR-N-SEAL I CONNECTORS SHALL BE COMPLETELY FILLED WITH CLASS B MORTAR TO CREATE A SMOOTH SURFACE ALIGNED WITH THE INTERIOR OF THE MANHOLE.
7. MORTAR THE INTERIOR MANHOLE SECTION JOINTS AND OTHER HOLES, GAPS OR IMPERFECTIONS, INCLUDING THE LIFTING PIN RECESS POCKET, TO ENSURE A SMOOTH INTERIOR FINISH.
8. MANHOLE FRAME AND COVER SHALL BE SOUTH BAY FOUNDRY A-1254 AND SHALL HAVE THE WORD "SEWER" IN 2" RAISED LETTERS PRINTED ON TOP.
9. THE TOP OPENING OF THE MANHOLE AND THE STEPS SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE.

REVISION	DATE	<b>LOS ALAMOS COMMUNITY SERVICES DISTRICT</b>	
		<b>STANDARD MANHOLE</b>	
		DWG. NO.	S-1
 APPROVED	2/24/16 DATE	2 OF 2	



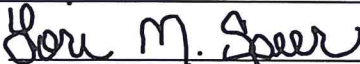
**SECTION A-A**

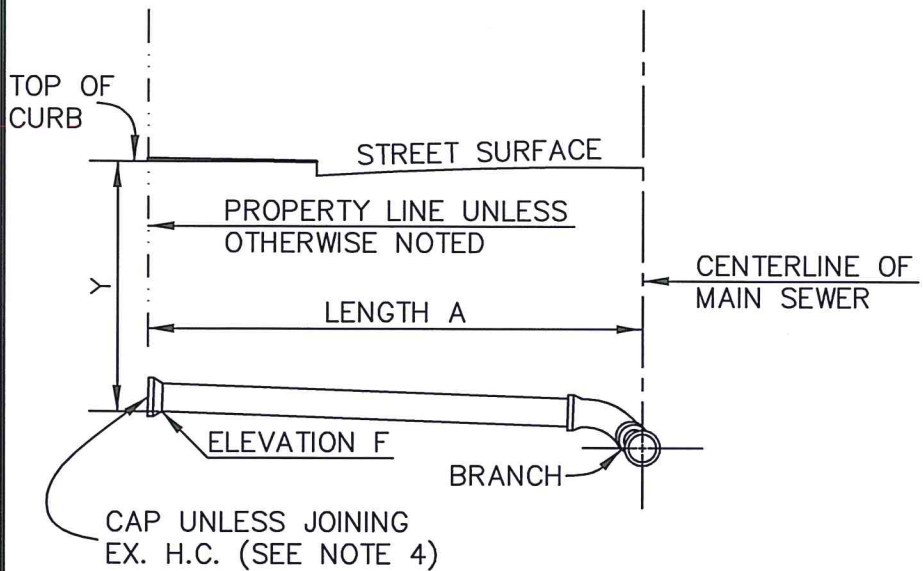
NO SCALE

REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	
<i>Gene M. Speer</i> APPROVED      2/24/16 DATE		STANDARD CLEANOUT	DWG. NO. S-2
			1 OF 2

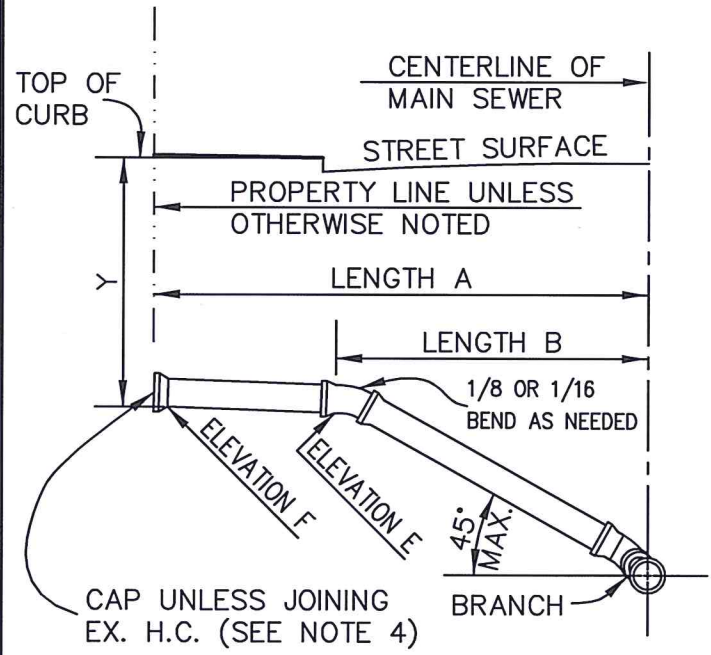
NOTES:

1. DIMENSION "D" AND ELEVATION "E" ARE PER DISTRICT APPROVED PLANS.
2. PIPES AND FITTINGS SHALL BE OF THE SAME MATERIAL (PVC) AS THE SEWER.
3. PIPES AND FITTINGS SHALL BE PROPERLY ALIGNED AND MAINTAINED WHILE CONCRETE IS BEING PLACED AND ALLOWED TO HARDEN. JOINTS FOR PIPES AND FITTINGS SHALL BE MADE PRIOR TO PLACING CONCRETE. CONCRETE FOR BEDDING, ENCASEMENT AND FITTINGS SHALL BE PLACED UNIFORMLY AROUND THE PIPE AND FITTINGS AS SHOWN HEREON TO MAINTAIN PROPER ALIGNMENT AND SHALL BE CLASS 420-C-2000.
4. THE ACCESS FRAME, COVER AND CAP SHALL BE CAST IRON. THE FINGER HOLE MAY BE DRILLED OUT OR MAY BE BLOCKED OUT PRIOR TO CASTING. IT SHALL NOT BE PUNCHED OUT.
5. THE RAISED LETTER "S" ON THE COVER SHALL BE 3" HIGH.

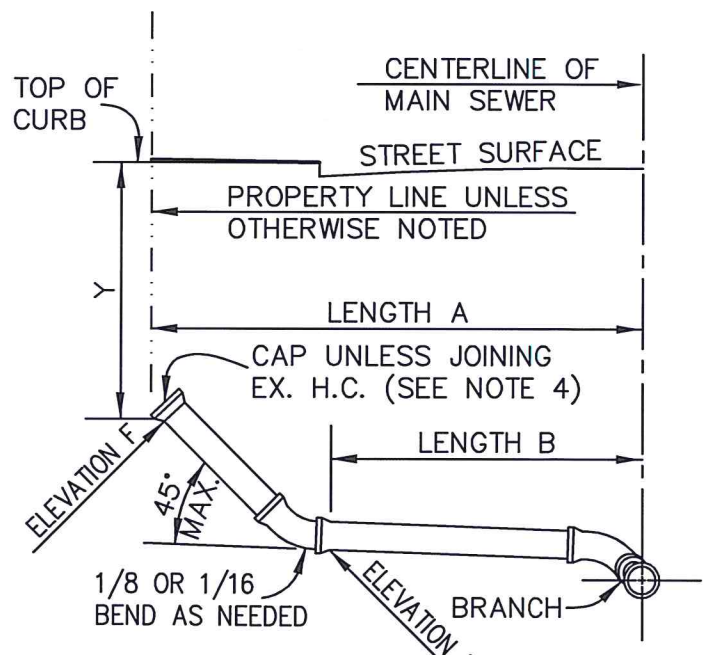
REVISION	DATE	<b>LOS ALAMOS COMMUNITY SERVICES DISTRICT</b>	
		<b>STANDARD CLEANOUT</b>	
 APPROVED	2/24/16 DATE	<b>STANDARD CLEANOUT</b>	DWG. NO. <b>S-2</b> 2 OF 2



**PROFILE  
TYPE A**



**PROFILE  
TYPE B**

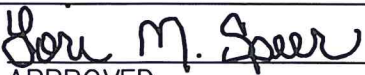


**PROFILE  
TYPE C**

REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	
		SEWER LATERAL	DWG. NO.
			S-3
<i>Joni M. Speer</i> APPROVED	2/24/16 DATE		1 OF 2

NOTES:

1. EXCEPT AS OTHERSIDE NOTED ON THE PLANS, ALL SEWER LATERLAS SHALL BE TYPE "A" AND SHALL BE CONSTRUCTED ON STRAIGHT LINES AND GRADES BETWEEN CONTROL POINTS AND ELEVATIONS.
2. DIMENSIONS:  
LENGTHS "A" AND "B" – SEE DISTRICT APPROVED PROJECT PLANS  
ELEVATIONS "E" AND "F" – SEE DISTRICT APPROVED PROJECT PLANS
3. ALL SEWER LATERALS SHALL BE A MINIMUM 4-INCH DIAMETER PVC PIPE.
4. THE UPPER END OF THE SEWER LATERAL SHALL BE SEALED BY INSTALLING A CAP AND SEALING THE CAP WITH 1-INCH THICK TYPE "F" MORTAR AROUND THE CIRCUMFERENCE OF THE CAP.
5. EXCEPT AS CONTROLLED BY ELEVATIONS INDICATED ON THE DISTRICT APPROVED PROJECT PLANS, THE MINIMUM SLOPE FOR ALL SEWER LATERALS SHALL BE 2.0% (S=0.02 MINIMUM).
6. A CHECK VALVE SHALL BE REQUIRED ON ALL SEWER LATERALS SERVING HOUSES WITH FINISHED FLOORS AT OR LOWER THAN THE RIM ELEVATION OF THE NEXT UP-STREAM MANHOLE OR CLEANOUT. THE CHECK VALVE SHALL BE INSTALLED OUT OF THE PUBLIC RIGHT-OF-WAY.

REVISION	DATE	<b>LOS ALAMOS COMMUNITY SERVICES DISTRICT</b>	
		<b>SEWER LATERAL</b>	
 APPROVED		2/24/16 DATE	DWG. NO. <b>S-3</b> 2 OF 2

# LOS ALAMOS COMMUNITY SERVICES DISTRICT ABBREVIATED WATER SYSTEM DESIGN STANDARDS

All extensions to the Water System must conform to the design standards of the District. The system must be constructed of permanent materials and be capable of future expansion.

## 1. GENERAL

### a. Plans and specifications

The installation water line extensions shall be made in accordance with the construction plans approved by the District Engineer. Construction plans shall be prepared by a professional engineer registered in the State of California in accordance with the conditions and standards set forth herein.

### b. Rights-of-Way and Monuments

Permanent water line easements shall not be less than fifteen feet (15') in width. If both sewer and water are being installed, a minimum easement of twenty feet (20') in width shall be granted to LACSD. Public rights-of-way shall be cleared, grubbed, and graded in accordance with the requirements of the Santa Barbara County Department of Transportation. Monuments shall be provided as required by the County.

## 2. DESIGN STANDARDS

- a. Water lines shall conform to P.V.C. AWWA C-900 Water Pipe DR18 CL235. Asbestos-Cement pipe may be used for connections and transitions to existing AC.P.
- b. The pipe sizes shall be selected as indicated by good engineering practice and shall conform to the Overall Water Plan. Minimum pipe size for Public Water Mains shall be 6 inch I.D.
- c. Water mains shall have at least three feet (3') of cover or as approved by the District Engineer.
- d. Water valves shall be iron body resilient seated gate valves AWWA C-509 (CLOW, MUELLER, or M & H).
- e. Fire hydrants shall be CLOW model 860 Ductile Iron and shall have a minimum of 1-4" outlet and 2-2½" outlets.
- f. Fire hydrant spacing and locations shall be per County of Santa Barbara Fire Department Standards.

- g. Minimum horizontal and vertical separation between sewers and water mains shall be as required by the State Health Department. See drawings No. 1-4 herein.
  
- h. All water service connections shall be per L.A.C.S.D. Standard Detail W-1 and shall be 1 inch minimum size.
  
- i. All utility trenching and backfill are per County of Santa Barbara Engineering Design Standards, most recent edition.

# LOS ALAMOS COMMUNITY SERVICES DISTRICT SPECIFICATIONS FOR MATERIALS AND THE INSTALLATION OF WATER SYSTEMS

## SECTION I - SCOPE AND GENERAL REQUIREMENTS

The specifications shall apply to all materials and work of construction of water lines for the domestic water system of the Los Alamos Community Services District constructed pursuant to the requirements of a contract, local ordinances, subdivision or other agreements, and to other work as may be required as a condition of any permit. All work, methods and materials shall be in compliance with the applicable AWWA (American Water Works Association) Standards and AWWA Manual No. M23 (PVC) as last revised, State of California Department of Health Services criteria as well as any other State and National laws; and County ordinances where applicable, and shall fully comply with the provisions of such laws and ordinances.

The work herein provided for is to be done in accordance with the plans, profiles, cross-sections and the general and special provisions on file with the District Engineer of the Los Alamos Community Services District and these specifications which are intended to cover all items necessary for the installation and construction of water mains for domestic water supply and fire protection and appurtenances thereto. Public Improvement Plans shall be in accordance with District Policy and may not be used for construction unless signed by the District Engineer.

Two (2) complete sets and an electronic version (preferably AutoCAD) of "as-built" drawings showing the actual location of all mains, structures, wyes and laterals shall be filed with the District before final acceptance of the work.

## SECTION II- PIPE AND MATERIAL REQUIREMENTS

### A. GENERAL

Polyvinyl Chloride pressure pipe shall be used and shall conform to AWWA C900 American Water Works Association (AWWA) Standards as last revised. PVC pipe sizes 4" through 12", AWWA C900 shall be of Class 150, DR 18, and withstand a working pressure of not less than 150 psi. PVC water transmission pipe sizes 14" through 36", AWWA C905 shall be DR 25 with a pressure rating (PR) of 165 psi.

### B. PIPE

The finished pipe shall be such that it may be cut, drilled or tapped. The standard length of pipe shall be twenty feet (20'). A tolerance of plus or minus one inch (1") shall be allowed on the length of individual pipe. A maximum of fifteen percent (15%) of each pipe size may be furnished in random lengths of not less than 10 feet (10') each. Any lot shorter than standard lengths must be in multiples of six inches (6").



## C. HYDRAULIC TESTS

Each and every length of pipe and each coupling sleeve shall, before shipment, be tested under an internal hydrostatic pressure of 600 psi for AWWA C900, (Section 3.3) and 330 psi for AWWA C905 (Section 4.6), and shall be stamped by manufacturer with marking requirements per AWWA standards. Each pipe length shall bear the Underwriter's Laboratory label. The water pressure shall be applied gradually and be maintained for at least 5 seconds. Any pipe or coupling sleeve showing any leakage, sweating or other defect shall be rejected

## D. FITTINGS

All changes of direction (tees and bends), changes in size, and stops or dead ends of PVC pipe shall be made with ductile iron fittings meeting AWWA Specification ANSI/AWWA C110 and/or C153 and shall be secured by concrete thrust blocks per Standard Drawing W6.

The interior and exterior of all fittings shall be coated with a petroleum asphaltic material applied in compliance with AWWA Specification C110, Section 10-9 and/or C153, Section 53-10. Care shall be taken in handling so as not to injure the coating.

All fittings shall be ductile-iron and marked in compliance with Section 10-10 and/or Section 5311 of the above specifications. The rated working pressure of all C 110 fittings shall be 250 psi and all C153 fittings shall be 350 psi, which shall be cast on the fitting body. In lieu of the casting requirement, a certificate of compliance from the manufacturer shall be provided for the C110 fittings (working pressure rating at 250 psi) and for C153 fittings (working pressure rating of 350 psi). Gaskets shall be rubber (ring type) in accordance with AWWA C111.

Flanged fittings shall conform to the requirements of ANSI B16.1, Class 125 dimensions and drilling. Flange gaskets shall be rubber (ring type) in accordance with AWWA C110. Bolts shall be the appropriate diameter and length of each fitting, and all bolts shall be high tensile carbon steel meeting ASTM Specification A307 and shall be electro-galvanized.

All threaded fittings shall be lubricated with Bostik Inc. "Never Seez" anti-seize lubricating compound.

## E. VALVES

### 1. Line Valves

#### a. Resilient-Seated Gate Valves, AWWA C509

All valve sizes from 4" through 12" shall be iron body "Resilient-seated Gate Valves". The valves shall be epoxy coated CLOW, Mueller or M & H C509.

#### b. Rubber-Seated Butterfly Valves, AWWA C504

All valve sizes 14" and above shall be ductile iron body "Rubber-seated Butterfly Valves" and designed for direct burial operation. The valves shall be Mueller Brand Lineseal III Epoxy lined I.D., AWWA C504. Wafer valves may NOT be used. Body seats shall be stainless steel with mating rubber disc seats.

The number of valves required at a junction is the number of legs less one, unless otherwise approved by the District Engineer.

All valves shall have end flanges conforming to ANSI B16.1, Class 125 dimensions and drilling and shall meet all requirements of ANSI/AWWA Specification C509 and C504.

All valves shall have a two-inch (2") operating nut. If the operating nut is over forty-eight inches (48") beneath finish grade, a one-inch (1 ") diameter, solid steel extension shaft shall be provided and installed with another two-inch (2") operating nut and a two-inch (2") socket.

All valves shall be marked and proof tested in compliance with ANSI/AWWA Specification C504 and C509. The marking shall include valve size, name of manufacturer, class of valve and date of manufacture. The test will require certified copies from the manufacturer of results of the performance, leakage and/or hydrostatic tests.

## 2. Fire Hydrant and Fire System Valves

Resilient seated gate valves shall be used for fire hydrants and fire systems. Wedge valves for fire hydrants shall be CLOW, MUELLER, or M & H.

## F. FIRE HYDRANTS

Fire hydrants shall be the "East Bay" California type manufactured by CLOW model 860 Ductile Iron with 6-bolt pattern only. The body shall be of ductile iron, six inches (6") in diameter with one two and one-half inch (2-1/2") and one four inch (4") NST outlets. All outlet valves, stems and packing glands shall be bronze. Fire hydrant shall be fitted with cast iron bury with flange with 6 bolt pattern only and mechanical joint end of the proper size to receive the squared-off end of the PVC water pipe. A cast iron break off spool shall be installed between the flange and the fire hydrant with approved galvanized or cadmium plated break-away bolts. The pipe between the fire hydrant and water main shall be at least six inches (6") in diameter and shall have a valve conforming with section titled "Valves" Herein. Fire hydrants shall be in accordance with the County of Santa Barbara Fire Department Standards in relation to the height above and distance from the curb, and in accordance with District Standard Drawing W-5. Hydrants not installed behind curbs shall be protected by the installation of a Standard Fire Hydrant Protection Assembly.

Threads on the four inch (4") and two and one-half inch (2-1/2") outlets shall be lubricated with "Never Seez" regular grade anti-seize lubricating compound as manufactured by Bostik, Inc..

The interior and exterior of cast iron buries are to be coated with petroleum asphaltic material in compliance with AWWA C110-87.

#### G. WATER SERVICES

Domestic water service lines shall be installed from the main to the property line. This line shall be type "K" soft copper for 1" water service and Type "K" soft copper for 1-1/2" and 2" water services.

Approved brass valves shall be used. This service shall include a saddle and corporation cock, type "K" copper service line, meter stop and meter box. The District will furnish and install the meters when connection fees are paid, unless otherwise specified.

One inch (1") water service shall comply with Standard Drawing W- 1; one and one-half inch (1-1/2") and two-inch (2") water services shall comply with Standard Drawing W-2. Smaller services are not permitted and larger services are subject to design approval by the Engineer.

Meter box shall be Christy B-16 for 3/4" & 1" meters. Christy B-36 shall be used for 1-1/2" and 2" meters.

#### H. VALVE BOXES AND RISERS

Every valve shall receive a valve box, cover and 8" dia. PVC-SDR 35 riser. Boxes shall be Christy No. G-5 Traffic Valve Box with one-piece lid marker "WATER"

#### I. CONCRETE

All concrete used in conjunction with water main installation shall be either five sack Class C or six sack Class A as required in compliance with Section 90 of the Standard Specifications of the Division of Highways, State of California, as applicable.

#### J. BACKFLOW-PREVENTION ASSEMBLIES

All backflow-prevention assemblies shall be in accordance with Section 7601 of Title 17 of the California Code of Regulations which specifies that public water systems may only use backflow prevention assemblies which have been tested by an acceptable laboratory and approved for use by the California Department of Health Services. Installation of an assembly not on the list is a violation of State Regulation. At this time, the USC Foundation for Cross-Connection Control and Hydraulic Research is the only such organization recognized by the Department of Health Services.

A list of approved backflow-prevention assemblies can be obtained from Los Alamos Community Services District, 82 N. St. Joseph Street, Los Alamos, CA 93440 (805) 344-4195.

Backflow-prevention assemblies shall be installed above ground with 12 to 18 inches clearance unless otherwise approved by the District Engineer.

## SECTION III - CONSTRUCTION METHODS

### A. TRENCHING

Trenching may be done either by machine or hand labor. Care shall be used to avoid excavating below the level required to provide earth mounds for the pipe in accordance with the manufacturer's specifications for placing PVC pipe. Trench widths shall be held between the maximum and minimum required by County of Santa Barbara Public Works, for minimum cover of pipe.

Suitable shoring shall be utilized to protect the excavation when necessary in accordance with the State of California, Division of Industrial Safety (Cal-OSHA), Trench Construction Safety Orders. Shoring shall not be permitted to extend below the level of the bottom of the pipe.

Any damage resulting from the failure to provide shoring shall be repaired by the Contractor at his own expense.

All shoring shall be removed from the trench prior to backfilling.

### B. PLACING PVC PIPE

PVC pipe shall be connected by the use of couplings and rubber rings as provided by the manufacturer. The laying of PVC pipe shall be done strictly in accordance with the instructions furnished by the manufacturer. At no time may the maximum deflection recommended by the manufacturer be exceeded.

Pipe shall be laid on two earth mounds located at the fifth points (as indicated by stencil marks on the pipe). These mounds shall be high and firm enough to provide two-inch (2") clearance between the couplings and the trench bottom. The sand backfill shall be hand tamped under the pipe and up to a minimum of twelve inches (12") over the top of the pipe. Backfill material must have a sand equivalent of 20, or qualifying material shall be imported. Backfill shall be placed in eight-inch (8") layers, compacted to ninety-five percent (95%) minimum relative compaction in uniform horizontal layers.

All changes of direction (at tees and bends), changes in size (as at reducers, some crosses and tees), and stops or dead ends shall be made with fittings as heretofore specified and secured by concrete thrust blocks.

Thrust blocks shall rest against undisturbed earth in all locations and be of the size as shown on Standard Drawing W-6. This section is applicable to all sizes and types of water pipe. A 6 mil polyethylene membrane shall be used to separate concrete from the fitting.

All mains shall have a tracer wire installed along with them. Tracer wire shall be 410 AWG wire with a THHN/THWN insulation rating. Wire shall begin and end at valve boxes with a minimum of 1' exposed wire.

## C. TESTS

After the pipe has been laid in any isolated section and after the trench has been backfilled and tamped sufficiently and after thrust blocks have had sufficient time to set, the pipe line shall be slowly filled with water.

All air must be expelled from the pipeline during filling. If hydrants, blow-offs, or air/vacuum release valves are not available for expelling air, taps shall be made at points of highest elevation before any tests are made. After tests have been completed, brass plugs shall be inserted in the pipe openings. After filling, the pipeline shall be subjected to a two hundred twenty-five pounds per square inch (p.s.i.) 4/40 pressure for at least two (2) hours.

After all visible leaks have been satisfactorily repaired, a test for leakage shall be made at one hundred fifty pounds per square inch (150 p.s.i.) and held for four (4) hours. No pipe installation shall be accepted until the leakage is less than the number of gallons as determined by the following table:

Allowable Leakage Per 50 Joints in U.S. Gallons for Various Pipe Diameter

Test Pressure 150 p.s.i	6"	8"	10"	12"	Inches Diameter
	0.50	0.66	0.83	0.99	Gallons per hr.

The allowable leakage for a pipeline is calculated by multiplying the leakage per hour per 50 joints at the test pressure and diameter of pipe tested, as obtained from the above table, by the duration of the test in hours and the total number of joints in the line divided by 100. If the section under test contains joints of various diameters, the allowable leakage will be the sum of the computed leakage for each size joint. Leakage allowances for other sizes shall be computed from the manufacturer's installation guide.

Test pressure of the filled section of the line shall be maintained through a 5/8" x 3/4" meter so that any leakage may be measured. District shall furnish meter for test purposes.

Any cracked or defective pipes, fittings, valves, hydrants or consumer water services discovered during these tests shall be removed and replaced with sound material and the tests repeated until satisfactory.

All consumer water service pipes and fittings, up to and including the stop cocks but not the water meter, shall be installed prior to and be included in these tests.

Fire hydrants, blow-offs and miscellaneous services shall also be included in these tests.

Tests may be made against existing valves only upon approval of the District Engineer. The only circumstance that would allow testing against existing valves would be that there is no possibility of contamination of water lines in use. End caps shall be provided and installed

with thrust protection as required, or as directed by the District Engineer for all tests.

#### D. STERILIZATION OF WATER FACILITIES

Prior to pressure testing and prior to acceptance of work, the entire pipeline, including all valves, fittings, hydrants, service laterals and other accessories shall be sterilized in accordance with AWWA Specification C651, which provides detail specifications for:

1. Limiting contaminated materials from entering the water mains during construction or repair;
2. Removing and flushing contaminating materials that may have entered the water main during construction or repair;
3. Disinfecting any residual contamination that may remain after cleaning;
4. Determining the bacteriologic quality of fresh water in the main after disinfecting the main.

All mains shall be flushed with potable water after completion of construction and prior to disinfection. The Contractor shall provide a sufficient number of suitable outlets at the end(s) of the line(s) being sterilized in addition to those required by the Plans, to permit the main to be flushed with water at a velocity of at least five and one-half feet (5.5') per second over its entire length. The outlets provided shall meet the requirements for fittings as specified for the type of main constructed. Temporary blow-offs may be installed during the sterilization and flushing to satisfy those requirements. Drainage facilities shall be constructed such that the water lines cannot be contaminated through flushing outlets.

After flushing, chlorine gas or chlorine compound solution made with liquid chlorine, calcium hypochlorite in solution or sodium hypochlorite solution shall be water mixed and introduced into the mains to form a chlorine concentration of approximately 100 parts per million (ppm) or that which will provide a minimum residual of 50 ppm in all parts of the line after twenty-four (24) hours have elapsed. During the sterilization process, all valves, hydrants and other accessories shall be operated. After chlorination, the water shall be flushed from the line at its extremities until the replacement water tests are equal chemically and bacteriologically to those of the permanent source of supply.

The placing of HTH capsules or tablets in pipe sections during the laying process will be considered as an acceptable method of introducing chlorine for the test.

The chlorine water solutions shall be diluted to a chlorine concentration of not more than 100 ppm and not less than 50 ppm measured in water lines. The Contractor shall keep adequate chlorine residual testing and indicating apparatus available on the site during the entire sterilization period.

After final flushing, the flushing fittings shall be plugged with devices intended for this purpose,

at the pressure class of the pipe. Where water main is coated, plugs and outlets shall be similarly coated.

Bacteriologic samples of water for the specified bacteriologic test shall be taken from each end of the sterilized main (located downstream of the point of introduction of chlorine disinfectant), and at other locations as determined necessary by the District Engineer. When an entire water main is to be tested, it shall be completely isolated from the existing system. Bacteriologic samples shall be taken a minimum of forty-eight (48) hours after the mains have been flushed of all chlorine. Bacteriologic samples shall be obtained in the following manner:

At corporation stops, risers shall be installed that will discharge water directly downward towards the ground. The discharge point of the risers shall be a minimum of two feet (2') above the ground. Risers shall include the necessary bends to accomplish the foregoing and shall be equipped with inline valves near the discharge points to regulate the flow. The Contractor shall provide and supply these hookups; full compensation therefore to be included in the amount bid for the various water main bid items.

For mains over thirteen hundred feet (1,300') in length with no services, samples in addition to those obtained at each end shall be taken at intermediate points in such a manner that at least one sample is taken for each seven hundred feet (700') of main.

The recommended procedure of sterilizing and testing water mains is as follows:

1. Chlorine residual of between 50 and 100 ppm is introduced into the water mains;
2. Twenty-four (24) hours later, treated water is flushed from the water mains;
3. Forty-eight (48) hours after flushing, water samples are taken for bacteriologic test;
4. Ninety-six (96) hours after samples are taken, results of Water samples are reported to the contractor,
5. If the bacteriologic tests show a coliform M.P.N./100 ML water of 2.2 or less on all samples, the water facilities tested will be considered clear. In the event the coliform number is above 2.2, the sterilization procedures shall be commenced again within twenty-four (24) hours of notice by the District that the bacteriologic test failed.

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.

During construction, all lines shall be sealed at the end of each day's work with positive water-tight mechanical type end cap Smith-Blair 602. Failure of any seal or failure to place the seal shall be cause for rejection of that entire portion of line until it has been cleaned by swabbing in compliance with AWWA Specification C651, latest revision.

## E. WATER TIE-INS

No operating water line will be tied into, shut down, turned on, or otherwise interfered with, without the prior written permission of the District.

All valves will be operated only by or under the direction of Los Alamos Community Services District.

Prior to any tie-ins, a schedule showing all work to be done, location of pertinent valves, etc., shall be submitted by the Contractor for approval by the District. All material must be on the site before permission will be granted to start the tie-in.

In the event of accidental breakage of water lines or interruption of water service in any manner, immediately notify the District office.

## F. UTILITY LOCATIONS AND DAMAGES

The fact that any underground facility is not shown on the plans shall not relieve the Contractor of full responsibility for damage he causes, and such damaged facilities shall be immediately repaired to a condition equal or better than that which existed before damage.

## G. METHOD OF ABANDONING RETIRED LINES

Water lines shown or indicated to be abandoned may be abandoned in place except that lines interfering with the conduct of the work shall be removed by the contractor at no cost to the District. Abandoned lines, if severed or broken, shall be plugged and sealed in place with neat cement grout.

The live ends of lines shown to be abandoned shall be capped off at their source with ductile iron blind flanges or caps with thrust blocks or as directed to eliminate any dead end lines.

## H. PUBLIC CONVENIENCE AND SAFETY

The Contractor's operation shall cause no unnecessary inconvenience and the travel rights of the public shall be maintained at all times.

The Contractor shall furnish, install and maintain all traffic control devices in compliance with California Department of Transportation and Santa Barbara County Road Department requirements. The Contractor is to prepare and submit for approval a traffic control plan covering all job sites prior to commencing work.

The cost of furnishing and installing such signs, lights, flares, barricades and other facilities and the cost of providing and stationing such flagmen, all for the convenience and direction of public traffic, shall be borne solely by the Contractor. Failure of the



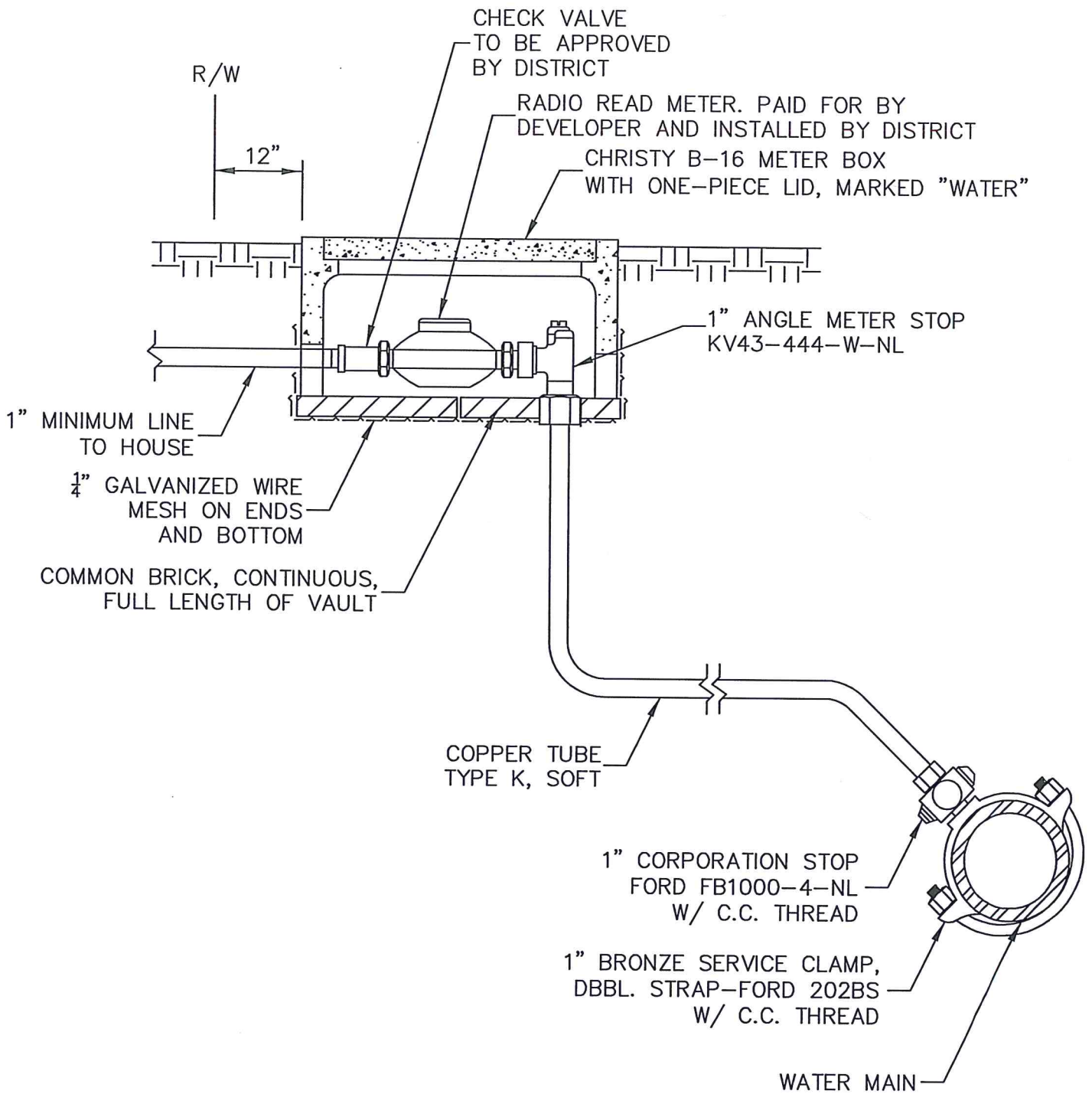
Contractor to maintain all facilities and/or appurtenances utilized for traffic control will result in the District performing the work. Payment to the Contractor will be reduced by the cost to the District to perform all traffic control which is the Contractor's responsibility in accordance with the Plans and Specifications.

#### I. BACKFILL AND COMPACTION

Backfill of all trenching shall comply with County of Santa Barbara Standards.

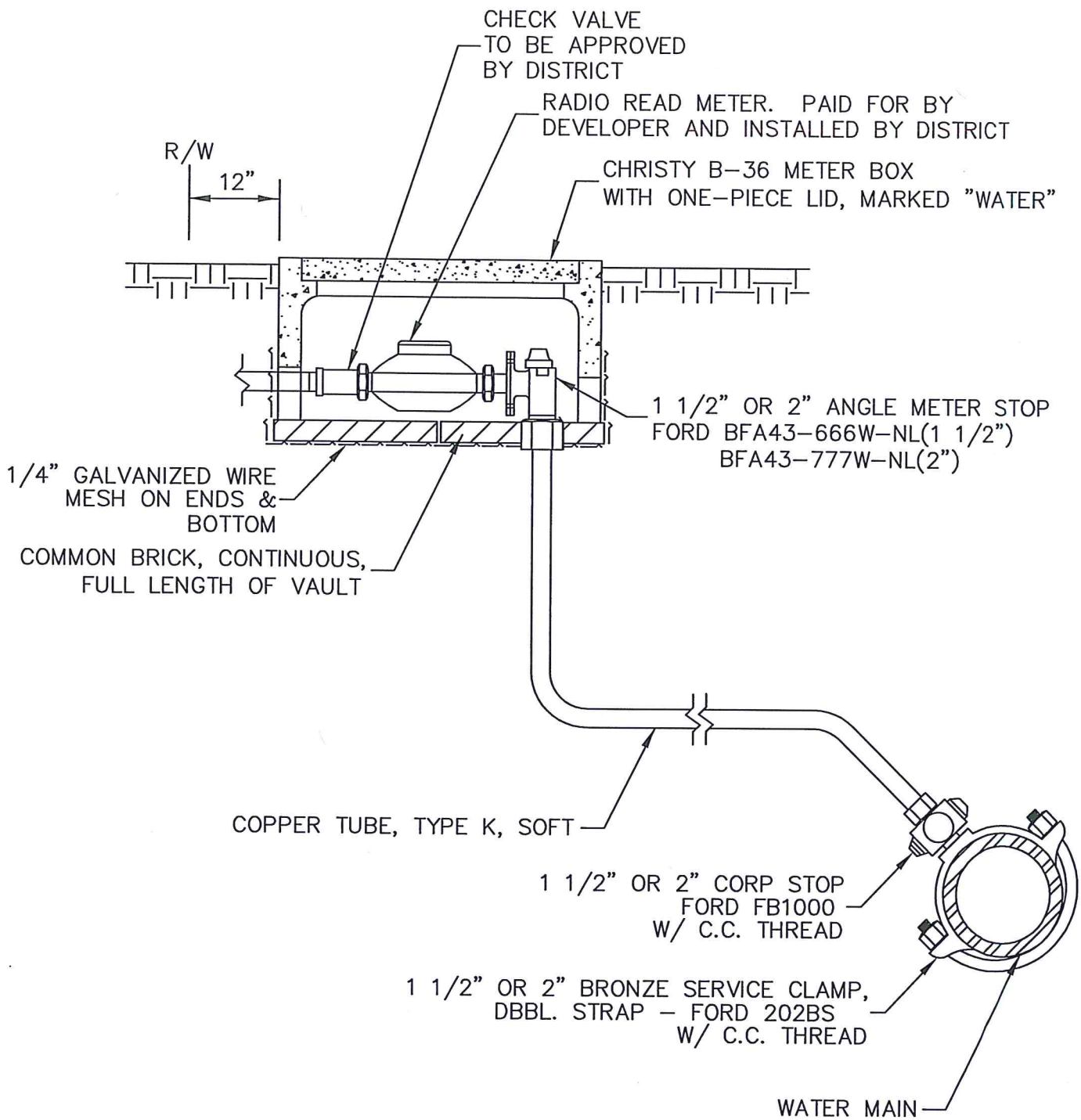
#### J. STANDARD DRAWINGS

- W-1 1" Water Service
- W-2 1 1/2" & 2" Water Services
- W-4 Air/Vac Relief Valve
- W-5 Fire Hydrant Assembly
- W-6 Thrust Blocks



NOTE: ALL THREADED FITTINGS SHALL BE LUBRICATED WITH BOSTIK INC. "NEVER-SEEZ" ANTI-SEIZE LUBRICATING COMPOUND.

REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	
<i>Gene M. Speer</i> APPROVED		1" WATER SERVICE	DWG. NO.
2/24/16	DATE		W-1
			1 OF 1



NOTE: ALL THREADED FITTINGS SHALL  
 BE LUBRICATED WITH BOSTIK INC.  
 "NEVER-SEEZ" ANTI-SEIZE  
 LUBRICATING COMPOUND.

REVISION

DATE

LOS ALAMOS  
 COMMUNITY SERVICES DISTRICT

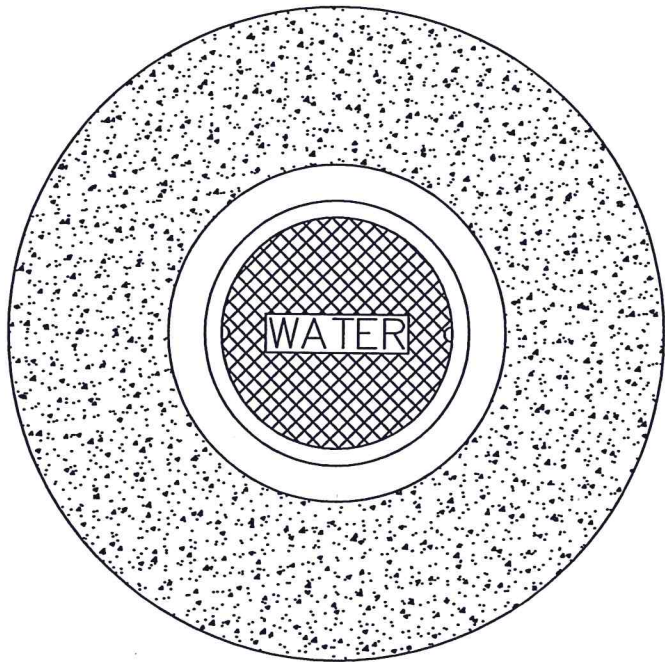
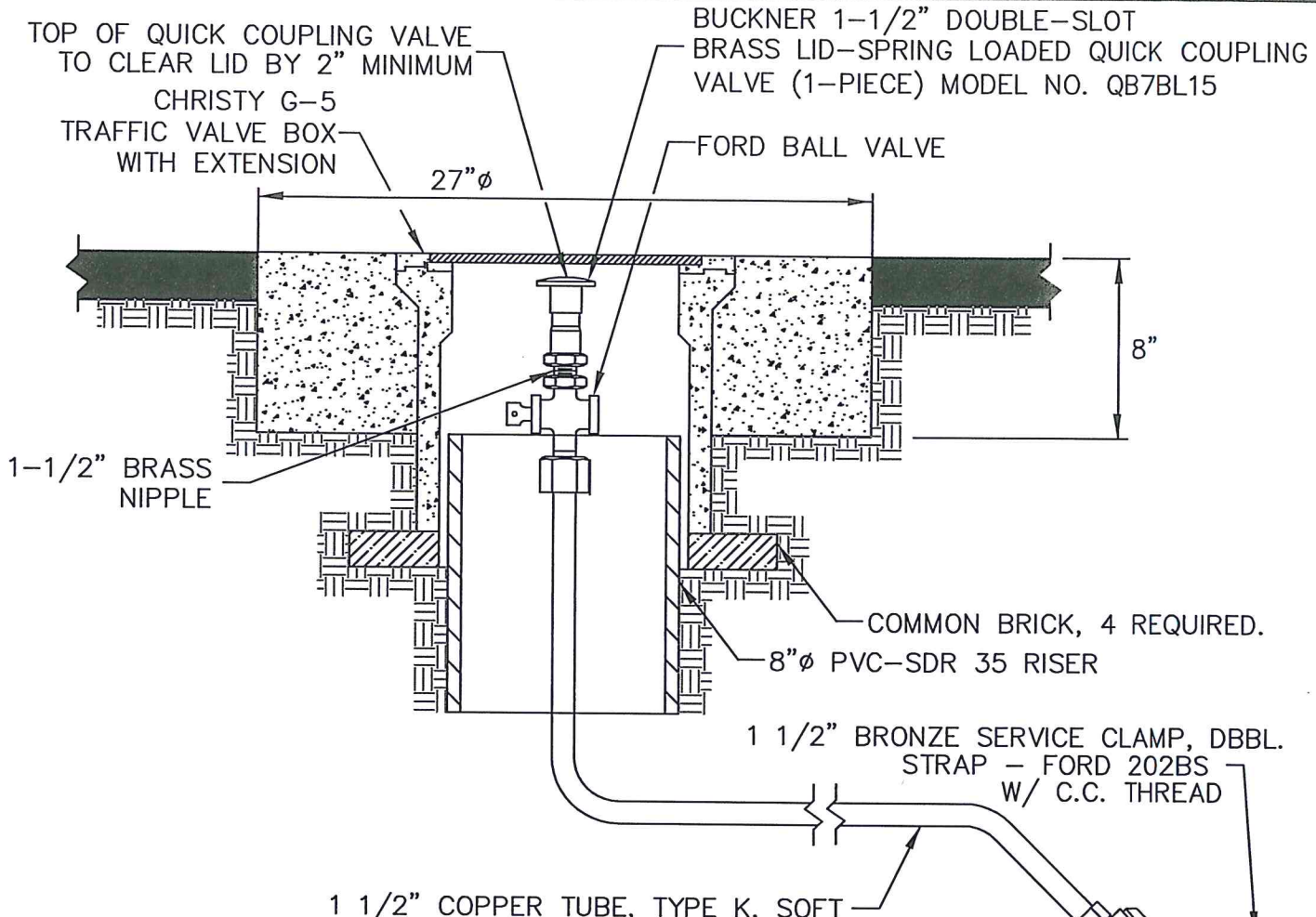
DWG. NO.

1 1/2" & 2" WATER SERVICE

W-2

*Don M. Speer*  
 APPROVED DATE 2/24/16

1 OF 1



NOTE: ALL THREADED FITTINGS SHALL BE LUBRICATED WITH BOSTIK INC. "NEVER-SEEZ" ANTI-SEIZE LUBRICATING COMPOUND.

**PLAN VIEW**

NO SCALE

REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	
		1 1/2" BLOW OFF	DWG. NO.
			W-3
<i>Gore M. Speer</i> APPROVED	2/24/16 DATE		1 OF 1

AIR VAC VALVE  
COVER VC-324D

1" COMBINATION AIR &  
VACUUM RELIEF VALVE.  
PRIMER CORP. NO. 143C

1" BRASS  
BALL VALVE  
FORD B11-  
444W-NL

1" UNION

FINISHED  
SURFACE

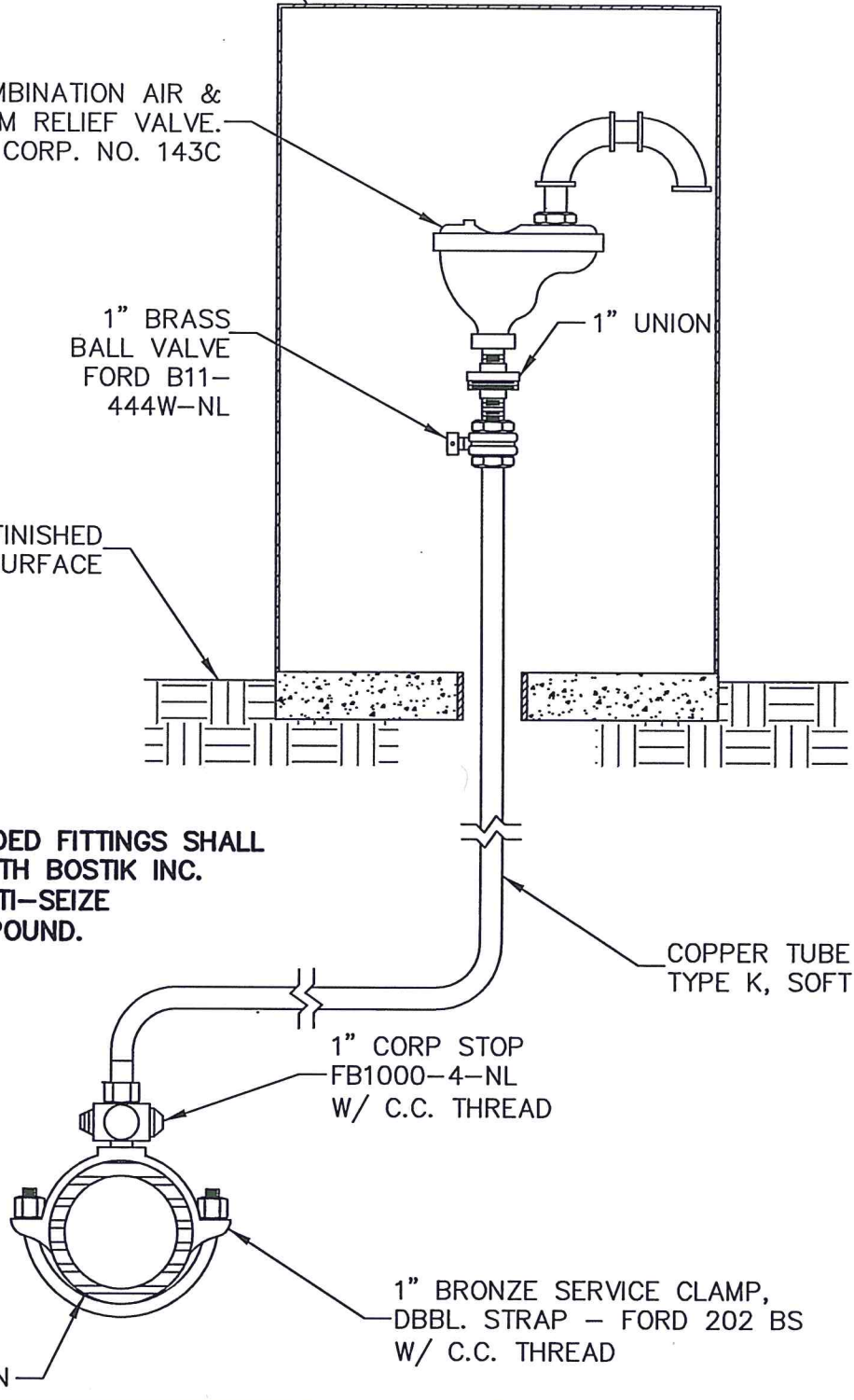
NOTE: ALL THREADED FITTINGS SHALL  
BE LUBRICATED WITH BOSTIK INC.  
"NEVER-SEEZ" ANTI-SEIZE  
LUBRICATING COMPOUND.

COPPER TUBE  
TYPE K, SOFT

1" CORP STOP  
FB1000-4-NL  
W/ C.C. THREAD

1" BRONZE SERVICE CLAMP,  
DBBL. STRAP - FORD 202 BS  
W/ C.C. THREAD

WATER MAIN



REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	
<i>John M. Speer</i> APPROVED		AIR VAC RELIEF VALVE	
2/24/16 DATE		DWG. NO. W-4 1 OF 1	

CLOW MODEL 860 DUCTILE IRON  
FIRE HYDRANT

APPROVED GALV. OR CADMIUM  
PLATED BREAK-AWAY BOLTS  
BREAK-AWAY C.I.  
FLANGED SPOOL

CHRISTY G-5 TRAFFIC  
VALVE BOX

FINISHED  
SURFACE

27"φ

FxMJ  
BURY  
6" CL 150 PIPE,  
AS SPECIFIED

MECHANICAL  
JOINT

COMMON BRICK,  
4 REQUIRED.

8"φ PVC SDR 35 RISER

VARIES  
28" MIN. FOR  
TURNING HYD.-KEY

6" VALVE,  
AS SPECIFIED

D.I. TEE  
(BxBxF)

THRUST BLOCK, TYP.  
CLASS "C" CONCRETE (5 SK)

NOTE: ALL THREADED FITTINGS SHALL  
BE LUBRICATED WITH BOSTIK INC.  
"NEVER-SEEZ" ANTI-SEIZE  
LUBRICATING COMPOUND.

REVISION

DATE

LOS ALAMOS  
COMMUNITY SERVICES DISTRICT

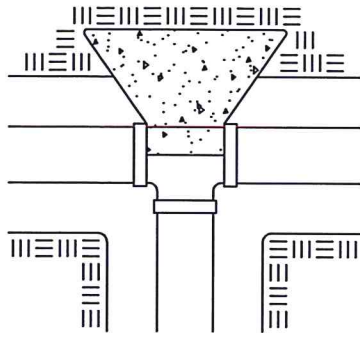
DWG. NO.

*John M. Speer* 2/24/16  
APPROVED DATE

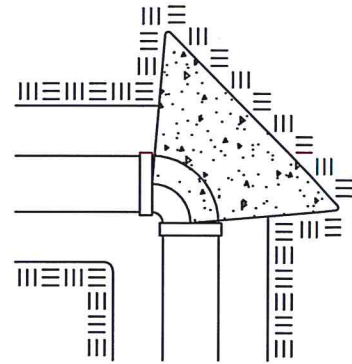
FIRE HYDRANT ASSEMBLY

W-5

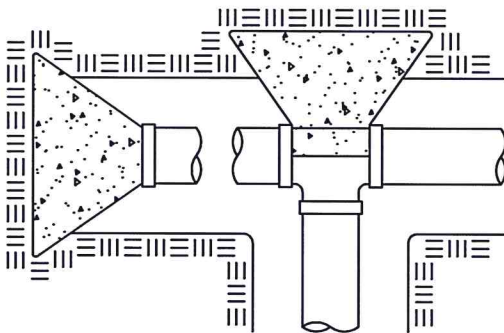
1 OF 1



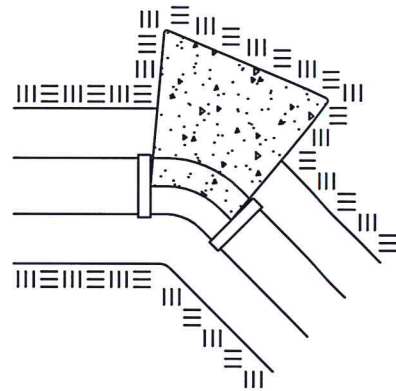
TEE



90° ELBOW



TEE w/CAP



45° OR 22 1/2° ELBOW

THRUST BLOCK AREAS  
(IN SQUARE FEET)

PIPE SIZE	DEAD END OR TEE	90° ELBOW	45° ELBOW	22 1/2° ELBOW
4"	2	4	2	2
6"	4	6	4	2
8"	8	10	6	2
10"	12	16	10	6
12"	18	24	14	8
14"	24	34	18	10
16"	30	42	24	12
18"	40	54	30	16
20"	48	68	36	18
24"	70	96	54	26

GENERAL NOTES:

1. AREA SHOWN IS VERTICAL SURFACE AGAINST UNDISTURBED EARTH.
2. AREA SHOWN IS FOR 225 psi AGAINST 2000 psi EARTH RESISTANCE. THRUST BLOCKS FOR OTHER CONDITIONS WILL BE SHOWN ON PLANS.
3. CONCRETE USED SHALL BE 5 SK./C.Y., MIN. 2000 psi IN 28 DAYS.
4. ALL FITTINGS SHALL BE PROTECTED FROM CONCRETE WITH 6 MIL WRAP OF POLYETHYLENE (VIS-QUEEN).

REVISION	DATE	LOS ALAMOS COMMUNITY SERVICES DISTRICT	DWG. NO. W-6 1 OF 1
		THRUST BLOCKS	
<i>Joni M. Speer</i> APPROVED	2/24/16 DATE		