

APPENDIX F
STANDARD SPECIFICATIONS

STANDARD SPECIFICATIONS

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RESOLUTION NO. 07.8.19

RESOLUTION ADOPTING REVISED STANDARD SPECIFICATIONS
FOR SANITARY SEWER CONSTRUCTION WITHIN
WEST VALLEY SANITATION DISTRICT
OF SANTA CLARA COUNTY, STATE OF CALIFORNIA

WHEREAS, Chapter 6, DESIGN AND CONSTRUCTION OF PUBLIC SEWERS of the Ordinance Code of West Valley Sanitation District, Santa Clara County, California, provides for adoption of specifications for the construction of sanitary sewers within said District; and

WHEREAS, Resolution No. 03.08.29, A RESOLUTION ADOPTING REVISED STANDARD SPECIFICATIONS FOR SANITARY SEWER CONSTRUCTION WITHIN WEST VALLEY SANITATION DISTRICT OF SANTA CLARA COUNTY, STATE OF CALIFORNIA, was adopted by the Board of Directors of said District on August 27, 2003; and,

WHEREAS, the Board of Directors of said District wishes to update said specifications;

NOW, THEREFORE, BE IT RESOLVED AND IT IS HEREBY ORDERED that:

1. Except as may otherwise be provided herein, the provisions of the 2006 Edition of the "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," prepared by the Southern California Chapter of the American Public Works Association and the Southern California District of the Associated General Contractors of America, are adopted and made applicable to all sanitary sewer construction undertaken within West Valley Sanitation District after the date of this resolution.

2. Since the said Standard Specifications are general in nature and contain references to processes, procedures and materials not applicable to all projects, sections of said Specifications may be modified, changed or superseded by Special Provisions, Addenda, or by written Change Orders signed by the District Engineer.


3. The Standard Specifications adopted by said Resolution No. 03.08.29 are hereby repealed.


PASSED AND ADOPTED by the Board of Directors of West Valley Sanitation District of Santa Clara County, State of California, this 08th day of August, 2007, by the following vote;

AYES: Directors Baxter, Burr, McNutt, Yeager

NOES: Directors None

ABSENT: Directors Page


Secretary


David Baxter
Chairperson of the Board of Directors
of West Valley Sanitation District
of Santa Clara County, California

2 Addenda to the Standard Specifications

In order to bring the "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" 2006 edition more closely in line with the current standards, practices and engineering requirements of West Valley Sanitation District, the following additions, deletions and changes have been adopted and made a part of these Standard Specifications by said Resolution No. _____ of the Board of Directors of West Valley Sanitation District:

2.1 Manhole Frame and Cover Sets.

Section 206-3.3 of the Standard Specifications shall be replaced by the following:

All manhole frames and covers shall be manufactured to the dimensions and features shown on Standard Drawing No. 4 and shall meet the following requirements:

1. The frame and cover shall be machined on 3 surfaces each, as noted, to insure uniform appearance, interchangeability and close, quiet fit.
2. Manufacturer is to certify that frame and cover meet all load requirements for H-20 highway loading. Manufacturer shall furnish proof that covers and frames have been load-tested in accordance with Federal Specification RR-F62lb, per Par. 4.4.1 and Par. 3.8.1 and certified to a minimum 40,000 lb. loading.
3. Covers shall have an A.S.T.M. grid pattern with the words, "WVSD" cast into a central clear area as noted on the drawing. The manufacturer's name may be cast around the rim at the manufacturer's option.
4. All materials used in manufacturing shall conform to A.S.T.M. Specifications A159-64T-7G000 or Federal Specification QQ1-653 Class G3000.
5. All castings shall be dipped in asphalt paint, as specified in Subsection 206-3.6.

2.2 Polyvinyl Chloride Pipe (PVC)

D-2.2.1 General. Polyvinyl Chloride Pipe and fittings shall conform to the requirements of A.S.T.M. Designation D-3033 of latest issue or A.S.T.M. Designation D-3034 of latest issue.

D-2.2.2 Joints. The joints shall be of the Bell and Spigot type, utilizing a continuous rubber ring to insure a water-tight seal.

2.3 Joints for Clay Pipe

Section 208-2.1 of the Standard Specifications, "Joints for Clay Pipe," shall be amended by the insertion of the following at the beginning of the Section:

Clay pipe for use within the District shall have types C, D, F or G, Joints only.

2.4 Bedding

The first paragraph of Section 306-1.2.1 of the Standard Specifications shall be replaced by the following:

Bedding shall be defined as that material supporting, surrounding and extending, to 6 inches around the pipe.

Bedding shall extend to 6 inches radially from the largest outside diameter of the pipe. Bedding shall be crushed rock 3/4" maximum particle size conforming to the gradation for 3/4" crushed rock, set forth in Section 200-1.2. The cost of bedding will be included in the unit price bid for the pipe.

2.5 Separate Jetting of Bedding Not Required

The requirement in the 3rd paragraph of section 306-1.2.1 that bedding be jetted prior to the placement of the backfill is hereby waived.

2.6 Pipe Laying (Flexible Pipes)

Add the following to the end of Subsection 306-1.2.2 "Pipe Laying":

All flexible sewer pipes, i.e., PVC and ABS, are to be laid according to A.S.T.M. Designation D 2321-72 "Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe." In addition to the requirements of the above "Recommended Practice," the "Required Bedding" shall be 3/4" crushed rock extending to at least the level of the tops of the pipe as shown on Standard Drawing No. 6.

2.7 Manhole Backfill May Proceed Immediately

Manhole bases are exempt from the requirement of Sections 300-3.5 and 306-1.3.1. Backfilling of the trench may proceed as soon as channels are finished and barrel sections have been placed.

2.8 Testing Pipelines for Leakage

Subparagraph 2 of Paragraph 2 of Subsection 306-1.4.1 of the Standard Specifications is amended to read as follows:

All Gravity Sanitary Sewers – Air pressure test.

2.8.1 Air Pressure Test.

- a. Plastic Pipe. Contractor shall perform air pressure test in accordance with Section 306-1.4.4 of the Standard Specifications.

b. Vitrified Clay Pipe. Contractor shall perform air pressure test in accordance with ASTM C 829 "Test Method for Low Pressure Air Test for Vitrified Clay Pipe Lines."

2.9 Permanent Resurfacing

Section 306-1.5.2 of the Standard Specifications shall be amended by inserting the following at the beginning of the Section:

Permanent resurfacing may be commenced as soon as the Engineer determines that the trench has stabilized or a maximum of 30 days after trench backfill has been placed. If the trench is not sufficiently stable at the end of 30 days, the Engineer may grant an extension of time, or he may direct the contractor to take action to accelerate the stabilization process. Paving shall be restored per specifications outlined on the encroachment permit. Where no such specifications apply, paving shall be restored to a minimum thickness equal to the existing pavement or 3 inches, whichever is greater.

2.10 Standard Sanitary Sewerage Structures

2.10.1 Manholes

2.10.1.1 General.

Manholes shall be sound water-tight structures constructed where called for on the Plans and in accordance with these Specifications. They shall be constructed of pre-cast concrete sections upon a cast-in-place concrete base or upon an approved pre-cast manhole base.

2.10.1.2 Materials.

Pre-cast concrete manhole sections shall conform to A.S.T.M. Designation C-478. Eccentric cone sections shall be used unless other types are specified on the Plans or are requested by the Engineer.

Concrete for the base shall be Class 560-C-3250 with 3-inch slump allowed as designated in Section 201-1.1.2 of the Specifications.

Manhole steps shall be installed at time of manufacture of the pre-cast section. Steps shall conform to Drawing PS2-PFS by M. A. Industries, Inc., or approved equal, and A.S.T.M. C-478.

Mortar shall be Class "C" Mortar as designated in Section 201-5 of the Specifications.

2.10.1.3 Construction. The excavation for the manhole shall have a flat bottom on undisturbed earth. The excavation shall be of sufficient depth to insure a minimum of 8" of concrete below the lowest pipe in the manhole. The width of

the excavation will be great enough for the base to be a minimum of 3" wider than the outside wall of the barrel section at any point. No reinforcement is required except by order of the Engineer.

The concrete shall be placed in a continuous pour, care being taken that segregation of materials does not occur. Consolidation shall be by spading and working to achieve a dense watertight mass. The depth of concrete shall be sufficient to provide 3 inches of concrete above the top of the highest pipe in the base.

An approved metal impression ring shall be used to produce a level keyed slot for the barrel section. The concrete shall be worked under and around the impression ring so that a continuous smooth impression results.

Where possible the main sewer pipe shall be laid through the manhole so that the pipe can serve as the bottom of the channel. After the concrete has set and at a time approved by the Engineer, the top half of the pipe shall be removed to the inside wall of the manhole and the cuts smoothed with mortar.

In manholes where it is not practical to lay the pipe through the manhole (such as at angle points and at intersections), the pipes shall end at the inside wall of the manhole barrel. Channels will be formed in the concrete base joining the pipes with smooth curves. The walls of the channels shall be vertical above the center line of the pipes. The bottoms of channels so formed shall conform to the bottom halves of the pipes being joined.

When a change in elevation or slope is called for across the manhole, the bottoms of the channels shall be warped to achieve a smooth curve resulting in an even flow without turbulence.

The top of the base shall be troweled smooth with a slope of approximately 1/2" to the foot toward the main channel.

The shaft sections shall be installed plumb and aligned so that the steps are in a straight vertical line. Unless otherwise required by the Engineer, the steps shall be aligned horizontally 45 degrees away from the direction of the flow of the sewer main on the upstream side.

Joints between pre-cast sections and between the base and the first pre-cast section shall be made using a pre-formed flexible plastic joint sealing compound such as "Ram Nek" or "Quick Seal" installed according to the manufacturer's recommendations, to insure a watertight joint. Grade rings shall be installed on a continuous bed of Class C mortar.

The sections shall be combined in such a manner that the maximum height of neck section is 9 inches measured from top of cone to bottom of casting. Exception to this criterion shall be when the future final elevation of manhole rim

is known, the manhole cone may be constructed in accordance with the corrected future elevation and the rim constructed to above existing grade by use of grade rings.

When steps are required in the pre-cast sections, they shall be installed at the plant by the manufacturer. They shall be installed so that center of the step, measured at right angles from the inside wall of the pre-cast section, is six inches from the wall. They shall be installed in vertical alignment 12 inches apart.

Manhole steps in addition to factory-installed steps will be required when the distance from the manhole rim to the first factory-installed step is greater than 24 inches. In such a case the contractor will install steps as required to preserve the 12-inch maximum spacing between steps.

The steps shall be installed according to the manufacturer's specifications. The steps so installed shall be in alignment with the steps in the pre-cast sections and installed so that the center of the step, measured at right angles from the inside wall of the pre-cast section, is three inches from the wall. The installation holes shall be thoroughly packed with mortar to securely anchor the step in place. The mortar shall be neatly struck, and the step shall not be disturbed until the mortar has completely set.

When a drop connection is shown on the plans, it shall be included as part of the manhole construction. The engineer shall decide whether the drop shall be inside or outside of the manhole. If an outside drop is called for, the drop shall be made with the approved fittings outside the manhole shaft. The lower pipe shall be constructed into the base by aforementioned channeling procedures. The base shall be enlarged to encase the lower fittings. Drop connections are to be avoided if at all possible, by laying the first 50 feet of pipe in a vertical curve to the manhole base. If an inside drop is called for, a detail will be provided for the manhole construction.

Particular care must be taken to protect the manhole from damage and to keep rock, dirt or debris from getting into the sewer. A steel cover of adequate strength, close-fitted and well secured, shall be kept over the manhole opening until the frame and cover are permanently installed. A wooden cover shaped to completely cover the bottom of the manhole shall be installed and left in place until the frame and cover are installed.

The manhole frame and cover shall be permanently set when so authorized by the Engineer. The frame shall be centered on the manhole neck and set on a layer of mortar to final grade. The mortar shall be neatly struck. A concrete block shall be formed vertically and poured around the manhole neck from a point two inches below the top of the casting to the top of the cone section to securely anchor the frame to the manhole neck. The block shall be centered on the manhole and have a diameter of four feet. The frames of manholes in non-traveled areas shall be

secured to the cone or grade ring with a concrete collar as shown on Standard Drawing No. 1.

2.10.1.4 Manhole Stubs. Stubs out of manholes will be laid to the lines and grades called for on the Plans. Stubs shall have a water-tight plug at each end. Payment for stubs 5 feet or less in length will be included in the unit price bid for the manhole.

2.10.1.5 Water Stop (Flexible Pipe Only).

When flexible pipes are being installed in a manhole base, a "water-stop" of a type recommended by the manufacturer of the particular pipe shall be installed at the manhole wall.

2.10.1.6 Flexible Joint at Manhole Wall (Rigid Pipes Only).

When rigid pipes (except Ductile Iron Pipe) are being installed in a manhole base, the pipe shall be snapped off 6" from the point of support, and a flexible joint such as "Band-Seal" Coupling, installed to allow for possible differential settlement of the manhole base and the pipe.

2.10.1.7 Manhole Repair and Adjustment.

The following is an addition to section 306-6 of the Standard Specification. Unless otherwise permitted by the Engineer, existing manholes shall be repaired or adjusted by use of pre-cast concrete sections or cast iron raising rings.

When the adjustment required would necessitate lowering the manhole by cutting into the cone section more than one inch or raising the manhole to the extent of making the throat longer than 24 inches, the adjustment shall be made by removing a sufficient portion of the manhole so that it may be constructed in accordance with the requirements for new construction. (The manhole throat shall be considered as the two-foot diameter portion including frame.)

Before any work is started on adjusting or repairing an existing manhole, the channel in the base shall be covered with a wooden cover fitted to prevent debris from entering the sewer line. This cover shall be kept in place during all work. Upon completion of the work, the cover shall be carefully removed from the manhole, allowing no debris to fall into the channels or to remain in the manhole.

2.10.2 Sewer Risers

2.10.2.1 General.

Risers shall be constructed at the locations and to the lines and grades shown on the Plans or as directed by the Engineer.

2.10.2.2 Materials.

The riser barrel shall be of the same material and in the same diameter as the main sewer to which it connects. Frame and cover castings shall conform to the requirements of Subsection 206-3 of the Standard Specifications.

2.10.2.3 Construction.

The riser shaft shall be a straight piece of pipe joined to the main by means of two one-eighth bend fittings separated by a 12-inch minimum to 24-inch maximum length section of pipe, with all fittings joined in the same manner as required in the pipe-laying section of these Specifications. The one-eighth bend fittings shall be encased in 3/4-inch crushed rock bedding material to the highest point of the highest one-eighth bend.

The shaft shall be installed vertically, so positioned that the one-eighth bend fittings are located at the station shown on the Plans.

The shaft will be cut smoothly at right angles so that it will extend to within two inches of the casting cover. The exposed end of the shaft shall be temporarily sealed until such time as the frame and cover are permanently installed. The riser frame and cover shall be permanently set when so authorized by the Engineer. The frame shall be centered on the riser shaft so that the pipe does not touch the frame.

When the frame has been set to final grade, a concrete block shall be poured around the frame, not touching the pipe, to support the frame on the adjoining ground. The block shall be rectangular, the width of the riser trench plus 3 inches on each side, and of such length that it extends eight inches to the rear of the frame and eight inches to the front of the frame. The block shall be the depth of the frame and extend to within two inches of the top of the frame.

A double layer of felted paper shall be placed around the pipe to separate it from the concrete and the frame.

2.11 Wye and Tee Branches

2.11.1 General.

Wye or tee branches shall be installed as shown on the Plans and as located in the field by the Engineer. The fittings and plugs shall be the same material as the sewer with which they are installed.

Plugs shall be installed to withstand pressure testing of the line and still be removable for future connection without damage to the fittings.

2.12 Building Sewers

2.12.1 General.

Building sewers shall be constructed of materials conforming to Section 207 of the Standard Specifications. All requirements for the construction of sewer mains shall apply to Building Sewers.

2.12.2 Location.

Building sewers to be installed with new sewer main construction shall be as indicated on the Plans, at locations determined and marked in the field by the Engineer.

Building sewers being connected to existing sewer mains shall be to wyes or tees when previously installed with the main sewer. The locations of the wyes or tees are available at the District office. When a wye or tee was not previously installed at the location where a building sewer connection is to be made, a connection can be made by either tapping the sewer main or by cutting in a wye.

2.12.3 Installation.

Installing a building sewer at a point not served by a previously installed wye or tee:

A) Tapping. A hole will be drilled into the main sewer with a power-driven cutter producing a clean hole of a diameter compatible with the fitting being installed.

The fitting shall be either:

1. A neoprene rubber tee fitting held in place by a tapered plastic insert. The building sewer pipe in turn held into the neoprene tee with a mechanically tightened stainless steel band meeting ASTM C 594-72 Type A Specification.
2. A tap saddle of cast iron or high impact ABS plastic, meeting ASTM Designation D 2751, bonded to the main sewer pipe with an epoxy cement. The building sewer pipe shall be fastened to the saddle fitting with a banded elastomeric coupling, meeting ASTM C 594-72 Type A Specification.

B) Cutting In. A section of the main sewer shall be removed and a standard tee fitting inserted in its place. The tee shall be fastened into the main sewer using elastomeric couplings having corrosion-resistant tightening bands, meeting ASTM C 594-72 Type A Specification. The building sewer pipe shall be connected to the tee with compatible joints or with a similar coupling. Contractor shall provide bypass pumping in accordance with the provision set forth in Article 11 "Flow Diversion/Bypass Pumping" of the Special Provisions.

2.12.4 Testing.

Building sewers connecting to main sewers which are to be pressure-tested shall be installed before the test is made. They shall be plugged at the upper terminus with a plug capable of withstanding the air test and which can be removed without damage to the building sewer pipe.

2.13 Flushing and Cleaning Sewer Lines

After all backfilling, and before testing and final pavement replacement, the contractor shall flush and clean all sanitary sewer mains and trunks in the following manner:

2.13.1 Sewers Up To and Including 21 Inches in Diameter.

A) Balling. A heavy rubber ball, such as "Wayne Ball" manufactured by Sidu Company, Long Beach, California, or approved equal, inflated with air and having an outside diameter equal to the interior diameter of the pipe to be cleaned, shall be furnished by the contractor. The ball shall be inflated so that it will fit snugly into the sewer line. The ball shall be placed in the last (upper) structure on the main line and water introduced into the structure back of the ball. The ball shall pass through the pipe with only the pressure of the water behind it. The rate at which the ball is allowed to pass through the pipe shall be controlled by a rope at all times.

A sand trap and debris screen shall be used at the downstream manhole to prevent loosened material from being flushed into the next reach of pipe. Debris flushed out ahead of the ball shall be removed at each manhole. Cleaning shall be conducted on each section of pipe installed. Care shall be exercised not to feed the ball too rapidly in order that all debris can be removed at each manhole.

B) High-Velocity Hydraulic Equipment. All high-velocity hydraulic cleaning equipment shall carry a water tank, auxiliary engines, pumps, and a hydraulically driven hose reel. The equipment shall have a selection of two or more high velocity nozzles capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. The cleaning units shall have high-velocity nozzles for washing and scouring manhole walls and floors. The nozzles shall be capable of producing flows from a fine spray to a solid stream.

A sand trap and debris screen shall be used at the downstream manhole to prevent loosened material from being flushed into the next reach of pipe. Debris flushed out ahead of the nozzle shall be removed at each manhole. Cleaning shall be conducted on each section of pipe installed.

2.13.2 Sewers 24 Inches and Over in Diameter. Contractor shall manually clean all sewers 24 inches or over in diameter in such a manner as to leave the sewer free of all debris.

2.14 Bank Protection & Erosion Control.

2.14.1 Sacked Concrete Bank Protection. Sacked concrete bank protection shall be

placed as shown on the plans or as required by the Engineer or by the agency having jurisdiction over the location.

2.14.1.1 Material. The materials used shall conform to Section 72-3.02 of the State of California Department of Transportation Standard Specifications. Concrete shall have a minimum of 4 sacks of cement per cubic yard.

2.14.1.2 Placement. Bags shall be placed according to the details on the Plans. If no details are shown, placement shall be according to Section 72.3.03, of the above cited Standard Specifications.

2.14.2 Redwood Erosion Control Structures. Redwood structures for the deflection of moving surface runoff away from the sewer trench shall be installed at the location shown on the Plans or as required by the Engineer.

--- END OF SECTION ---