

**STANDARD REQUIREMENTS  
FOR THE  
DESIGN AND PROCESSING  
OF  
SANITARY SEWER PLANS**

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**SECTION 1**  
**INTRODUCTION**

These instructions set forth the standards for the preparation and processing of plans and all documents supplemental thereto for sanitary sewers and related structures intended to connect to or become part of the collection and trunk system of the East Valley Water District.

The word "District" used in these instructions hereafter refers to the East Valley Water District.

The word "District Engineer" used in these instructions shall mean a Civil Engineer registered as such in the State of California, appointed by the "District" Board of Directors acting either directly or through his properly authorized agents, engineers, assistants, inspectors and superintendents.

The word "Engineer" used in these instructions shall mean a Civil Engineer registered as such in the State of California and duly authorized representative of the party or parties requesting an extension of or addition to the District's sewer system.

The words "Standard Specifications" shall refer to "Standard Specifications for Furnishing of Materials and the Construction of Sanitary Sewers" East Valley Water District, October 1982.

Your cooperation in preparing plans in conformity with these instructions will expedite the work of checking the process these plans through the District office.

The District requires that plans and profiles be prepared and signed by a Civil Engineer, Registered in the State of California, and submitted for checking

and approval before any sewer construction is commenced either in public streets, alleys, easements, or private system connections thereto.

The plans and construction shall comply with the "East Valley Water District Sewer Regulations Ordinance No. 66", adopted by its Board of Directors on April 4, 1958, and all amendments thereto and with the "Standard Specifications for Furnishing of Materials and Construction of Sanitary Sewers" for the East Valley Water District:, dated March 1990 and all amendments thereto.

Any questions you may have on matters not covered herein will be answered by the District.

## **SECTION 2**

### **PLAN PREPARATION**

The following procedures are outlined for your general use in preparing plans for the District. Most of these procedures are illustrated on the sample plan (Plate X) attached hereto.

- a. Standard Plan and Profile sheets shall be 24" x 36" 4 mil mylar with Plate A profile grid.
- b. Engineers shall familiarize themselves with the General Notes prior to commencing plan preparation. The General Notes will be required only once for each set of plans and will appear on the right side of the first Plan and Profile sheet.
- c. All drafting shall be done in a manner that will produce a clear and legible reproduction. All symbols, weight of lines, size of letters, and the like shall conform to those shown on the Sample Plan (Plate X). For proper symbols and abbreviations see Plate I attached herein.
- d. North arrows must appear on all plans.
- e. A vertical scale of one inch equals four feet shall be used on the sewer profile. Elevations divisible by five shall be shown on the heavy horizontal lines.
- f. A horizontal scale of one inch equals forty feet shall be used. All even stations must fall on the heavy vertical lines of the profile. Stationing shall increase up-stream.
- g. Profiles shall be plotted directly above the plan.

- h. Show the location, description and elevation of at least one approved bench mark in the upper left corner of the first sheet. (See Section 3)
- i. The plans shall show Tract and Lot numbers together with all property lines adjacent to the sewer to be constructed. All property lines shall be shown as they exist on the current County Assessor's records.
- j. Show the limits and type of all existing and proposed pavement. Show all existing and proposed curbs, gutters and sidewalks and their relationship to the street centerline.
- k. Existing sewer facilities shall be delineated with a dashed line. All proposed sewer facilities shall be delineated with solid line.
- l. The general direction of slope of the land surface shall be designated on the plan by an arrow.
- m. Elevations for tops of manholes are not required on the profile except for new subdivisions or unpaved street.
- n. All proposed house connections shall extend to the street right-of-way line and shall be shown on the plan.
- o. All water wells located within a horizontal radius of 100 feet of a sewer shall be accurately plotted on the plan and labeled as to ownership.
- p. All existing and proposed water lines shall be accurately delineated on the plan together with all other existing or proposed underground facilities such as gas, telephone, electrical, irrigation or any other known facility.

- q. All necessary easements shall be shown on the plans, Natural ground surface in easements shall be shown in the profile.

**SECTION 3**  
**DESIGN CRITERIA**

**3-01 Main Line Sewers**

- a. Horizontal Location. In general, main line sewers should be located six (6) feet North or East of the centerline of existing and proposed street; however, in cases where the street cross section is in cut and fill or totally in fill the sewer shall be placed in the side of the street permitting installation in natural ground to as great an extent as feasible. In curvilinear street patterns, the main line sewers shall not cross the center line of the street in which they are laid. The standard minimum horizontal distance between the main line sewer and existing and proposed water mains shall be ten (10) feet. The sewer main shall be in a straight line both in plan and profile between structures.
  
- b. Depths. The minimum depth of the invert of a main line sewer shall be seven (7) feet. (See Plate IX) However, in cases where existing outlet sewers are too shallow to obtain such a depth, a shallower depth may be approved by the District. Whenever the ground surface at the property line is lower than the proposed or existing street grade, or whenever the ground surface of adjacent property slopes away from a proposed or existing street or its prolongation in which a sewer line is to be constructed, the Engineer shall call such situation to the attention of the District prior to proceeding with final sewer design. The District may required greater depth for the main line sewers to serve other areas or adjacent properties. Any unusual topography features that may affect proposed or future sewer extension shall be brought to the attention of the District to show on the plans.
  
- c. Sizes and Grades. Pipes fifteen (15) inches and under in diameter shall be designed to flow at 1/2 depth at maximum rate of flow using

n=0.015 in the Manning Formula. Pipes eighteen (18) inches and over in diameter shall be designed to flow at 3/4 depth at maximum rate of flow using n=0.014.

**Minimum slopes for various sizes of pipe are listed below:**

8"	Pipe at s=0.0044 feet per foot
10"	Pipe at s=0.0033 feet per foot
12"	Pipe at s=0.0026 feet per foot
15"	Pipe at s=0.0019 feet per foot
18"	Pipe at s=0.0012 feet per foot
21"	Pipe at s=0.0010 feet per foot
24"	Pipe at s=0.0008 feet per foot

For determining the maximum rate of flow in a main line sewer, the following table shall be used with the designated zone or person per acre producing the greater rate of flow as the governing factor:

<b><u>Persons Per Acre</u></b>	<b><u>Maximum Rate of Flow (CFS per Acre)</u></b>
13	0.0040
19	0.0060
26	0.0080
37	0.0120

Those situations not covered by the above table shall require special study.

**3-02 Structures**

- a. Spacing. The maximum spacing allowable between manholes on eight (8) inch through eighteen (18) inch lines shall be 400 feet. For lines over eighteen (18) inches maximum spacing of 450 feet is allowable. Dead end structures may be used only with the consent of the District.
- b. Structure Details. See Section 6 for details.

**3-03 House Connections**

- a. Size and Depth. The minimum size house connection shall be four (4) inches in diameter. All house connections shall be laid on a uniform slope from the main line sewer to the property line with a minimum grade of 2% for a four (4) inch house connection and a minimum grade of 1% for a six (6) inch house connection. The minimum cover over a house connection shall be five (5) feet below the invert of the concrete curb and gutter. For multiple family dwellings, commercial lots, schools or the like, special consideration should be given to determining the correct size and depth of connection to meet the District's approval. (See Plate IX)
  
- b. Drainage Below Curb - Back Water Valve Required. As required by the Uniform Plumbing Code "Drainage pipe serving fixtures, the flood level rims of which, are located below the elevation of the curb or property line, at the point where the building sewer crosses under the curb or property line, and above the crown level of the main sewer, shall drain by gravity into the main sewer, and shall be protected from back flow of sewage by installing an approved type back water valve, and each such back water valve shall be installed only in that branch or section of the drainage system which received the discharge from fixtures located below the elevation of the curb or property line." Whenever the top of the upstream manhole is above the finished building pad level or any plumbing fixture, the building shall be protected by an approved type back water valve. Any parcel of land requiring back water valves shall be shown on the plans. For any parcel of land requiring such back water valves, it shall be the sole obligation of the property owner or his agent, to install and maintain such back water valve.

- c. Chimneys. Chimneys will be required whenever the depth of the main line sewer is greater than twelve (12) feet or at the discretion of the District in special cases. The chimney will be constructed to within eight (8) feet of the surface or as local conditions require. (See Plate VIII).

### **3-04 Special Conditions**

- a. Jacking or Machine Boring. Where it is necessary to construct a sewer beneath railroad tracks, across State or Federal Highways, or beneath a large obstruction where tunneling is not feasible, jacking or machine boring is required. All jacking or machine boring shall be approved by the governing body having jurisdiction.
  
- b. Well Protection. Whenever a sewer passes within a horizontal radius of one hundred (100) feet of a water well, installation shall be in accordance with the requirements of the State Department of Public Health or any other governmental agency having jurisdiction.

### **3-05 Miscellaneous**

If other design problems occur which are not covered herein, such as pump stations, siphons, industrial waste treatment facilities, or the like, consult the District.

## **SECTION 4**

### **REQUIRED ELEVATIONS**

All elevations used in preparation of standard plans shall be on District datum. The Engineer preparing the plans shall secure the locations and elevations of the District Bench Marks nearest to the proposed site of work from the District. Elevations are in feet above U.S.C. & G.S. Seal Level Datum of 1929 leveled in 1935 and releveled in 1943.

Where the proposed sewer connects to an existing manhole, the elevation of the inlets and outlets shall be shown in profile as determined by actual survey. In the event an existing sewer is straddled by a new junction structure, the elevations of the existing sewer in the first manhole on each side of the proposed junction structure shall be determined by actual survey and shall be shown on the proposed plans. The Engineer shall be prepared to submit the filed notes if requested to do so.

An approved Bench Mark bearing a District number shall be shown in the upper left corner of the first plan and profile sheet. (See Plate X). If no District Bench Mark is close to the actual work to be done, the District will provide a Bench Mark or the Engineer may set a Bench Mark and tie it to two (2) Bench Marks acceptable to the District and submit the level notes making the tie for checking, along with the plans.

## **SECTION 5**

### **SURFACES IN PROFILE**

It is very important that the elevation of the existing ground surface and the proposed finished surface be shown on the profile. These surfaces serve to determine the elevations at which the main line sewer and the house connections are designed. The following sub-sections indicate when, and how, to use the various surface profiles.

#### **5-01 Surface Over Sewer**

This is used to indicate a paved surface over the sewer. The profile of existing paved surface over sewer shall be indicated as a solid ruled line as shown on Plate X and designed as "Surface over Sewer".

#### **5-02 Proposed Surface Over Sewers and Existing Ground Surface.**

If sewer is to be constructed in a new tract or in a proposed street, finished grade shall be indicated by a solid ruled line and designed as "Proposed Surface over Sewer". The existing ground surface shall be indicated by a free hand long dashed line and designated as "Natural Ground Surface".

#### **5-03 Natural Ground Surface.**

This is used to indicate an unsurfaced condition over the sewer. This condition is generally encountered when the sewer is located off the paved surface of a street, in an unimproved right-of-way or in an easement. The profile of the existing ground surface over the sewer shall be indicated as a solid free-hand line and designated as "Natural Ground Surface".

#### **5-04 Top Manhole Elevations.**

Elevations for tops of manholes shall be required on all profiles except when the sewer is to be constructed under existing pavement.

**5-05 Ground Surface at Property Line.**

Whenever the elevation of the ground surface at the property line is lower than the proposed or existing street grade, the ground surface at such property line shall be shown in profile as a short dashed line and designed by a note "Ground Surface at (right or left) Property Line".

## **SECTION 6**

### **UNDERGROUND PIPES AND UTILITIES**

One of the most important design requirements of a sewer plan is the study of existing, and in some cases, proposed underground pipes and utilities. These will effect both the location and depth of the main line sewer and house connections.

Before beginning the sewer layout, data of existing or proposed pipes and utilities shall be obtained from the District or the private or public entities involved.

All existing underground pipes and utilities that cross or parallel the sewer, the size of pipe or conduit shall be shown and labeled on the Plan and Profile.

In the event any proposed underground work , such as a large storm drain, necessitates a special design of the sewer, the proposed work shall be shown by dashed lines in both Plan and Profile and designated as in the following example: "County of San Bernardino Proposed 48+ inch storm drain".

The District is not responsible for the accuracy of the location of any underground facilities and the following note is required on the first page of each Plan:

"Approval of this Plan by the District does not constitute a representation as to the accuracy of the location or the existence or non-existence of any utility or structure within the limits of this project".

**SECTION 7**  
**PROCESSING OF PLAN CHECK AND CONSTRUCTION PERMIT**

**7-01 Submission of Plan to District**

- a. Complete and submit application for Sewer Plan Check.
- b. Pay required Sewer Plan Checking Fees (See Section 8).
- c. Submit three (3) sets of blue line prints for checking, signed by a Registered Civil Engineer.
- d. All improvement (street, grading, drainage, water, etc) plans and the tract map or development plan shall be submitted with the required prints for checking.

**7-02 Checking Plan**

- a. Checking will begin upon receipt of Sewer Plan Check Fee and required prints.
- b. In cases where the District is required to obtain permits from or approval of other agencies, it will be the Engineer's responsibility to determine the requirements and furnish all data and material necessary to enable the District to obtain the permits or approval of such other agencies.

**7-03 Signing and Approval of Plan**

- a. After required changes and corrections are made, the original checkprint and the corrected tracing shall be submitted to the District.
- b. Upon approval of the plans by the District Engineer and after receipt by the District of all necessary documents and required fees, the District

will notify the Engineer of the approval of the project and will return an approved tracing to said Engineer.

- c. It should be clearly understood that the approval of the project by the District is based upon the improvement plans and the tract map submitted by the Engineer. In the event there are any changes between the documents as originally presented and the approved improvement plans and/or the recorded tract map, it shall be the responsibility of the Engineer to notify the District of such changes. In such event, the original approval of the project by the District shall be of no force and effect and further approval by the District will be required.

#### **7-04 Construction Permit**

- a. Construction permit will not be issued until the subdivision map has been properly recorded and/or easements for all proposed sewer installations have been deeded to and accepted by the District.
- b. Complete and submit application for sewer construction permit.
- c. Pay required inspection fees in accordance with Section 8 hereof, or as the same may be modified or exist from time to time.
- d. The Engineer will furnish the required prints to the sewer contractor, subdivider or inspector, and all other agencies requesting prints prior to and during construction.
- e. Obtain County or City Permits and other permits as required.

- f. It shall be the responsibility of the Applicant to arrange for inspection by the District. A minimum of twenty-four (24) hours notice shall be required.

#### **7-05 Completion**

- a. Applicant shall notify the District by letter when sewer construction is completed and meets the requirements set forth in all permits issued by governing bodies having jurisdiction. Copies of approval letters from the Governing Bodies shall be forwarded with the applicants notification together with copies of all compaction test results.
  
- b. Where sewers are installed in easements, applicant shall notify the District when construction is complete and shall furnish District with results of all compaction tests together with a report from an accredited soil testing laboratory approved by the District, certifying that all compaction meets the Standard Specifications and that the compaction in easements in areas which ultimately will be dedicated for public use, meets the requirements of the Governing Body which will have jurisdiction.
  
- c. Upon receipt of the information required in paragraphs a. and b. above, District will conduct tests as set forth in Section 3-11 of the Standard Specifications. The applicant, whether a corporation, individual, partnership or otherwise, causing the construction of a sewage collection system and appurtenances shall, upon notification from the District that he said sewerage system has been constructed to District Specifications and is acceptable to the District, forthwith cause to file a Notice of Completion with the County Recorder's office of San Bernardino County and forthwith provide a certified copy of said recorded Notice of Completion to District.

- d. Upon receipt of the Dedication of Sewers specified in Section 9 and the bond specified in Section 4, “Standard Specifications for the Furnishing of Materials and the Construction of Sanitary Sewers”, the documents and Dedication of Sewers will be presented to the Board of Directors for acceptance.
  
- e. Applicant will be notified in writing that Dedication of Sewers has been accepted by the District.

**SECTION 8  
FEES**

**8-01 Preliminary Study Fees**

For those requests requiring special studies by the District, the applicant shall pay the actual costs incurred by the District.

The applicant shall deposit with the District, an estimate of cost for said preliminary study as predetermined by the District.

Upon completion of the study, the remaining money upon deposit for the study shall be forwarded to the applicant or, if costs for the study are in excess of the deposit, the applicant shall pay such costs.

**8-02 Plan Checking Fees**

All sewer plans shall be submitted to and checked by the District and the fee for such checking shall be as follows:

**a. Main Line Sewers and Appurtenances**

<u>Total Lineal Feet</u>	<u>Fees</u>
1,000 feet or less	\$ 490.00 minimum
1,001 feet - 3,000 feet	\$ 490.00 + \$0.38 per foot over 1,000 feet
3,001 feet and over	\$1250.00 + \$0.33 per foot over 3,000 feet

**b. Sewage Pumping Station**

1. Package - \$700.00 per unit
2. Special Design - On a cost basis at Prevailing Hourly Rates

**8-03 Plan Rechecking Fees**

If any portion of the plans, after the first check, are required to be rechecked as a result of additional main line sewer footage, change in line or grade of sewer main redesign of a subdivision or development plan, there shall be a minimum rechecking fee of \$100.00. No plan rechecking will be done until the

minimum rechecking fee is paid. The total rechecking fee will be on a cost basis at Prevailing Hourly Rates and must be paid prior to approval of plans.

#### **8-04 Easement Checking Fees**

For each sewer project requiring the checking of easements, the District shall collect from the applicant a fee of \$160.00 for the first parcel and \$110.00 for each additional parcel through when an easement is required. Sewer plans shall not be approved until necessary instruments or conveyance have been deposited with the District. See sample for “Application for Easement Processing” attached.

#### **8-05 Inspection Fees**

The applicant shall provide an estimate of the number of days anticipated to install the sewage works. On the basis of this estimate, the District will estimate the amount of the inspection fee using a daily rate of \$270.00 the applicant shall deposit with the District. In no event shall the deposit be less than \$270.00. A minimum charge of one-half the daily inspection rate will be made for each inspection which is less than four hours in duration. Prior to acceptance of the sewage works the District will determine the final fee amount on a cost basis and refund the unused portion of the deposit to the applicant. Should the amount of the deposit be insufficient to cover the inspection cost, the applicant will make payment to the District to provide for the deficit. The above inspection rate is for a normal working day of 8 hours. Should the applicant desire to work overtime beyond the normal working hours or work days, he must make arrangements with the District one week in advance and pay the additional overtime salary cost.

#### **8-06 Construction Deposits**

The applicant shall deposit with the District the sum of \$250.00 for each manhole and for each dead end structure to be constructed in areas in which paving is required. If each structure is adjusted to finish grade within thirty days after completion of paving operations, the District will refund each deposit

accordingly. If not, the District shall retain such deposits and cause such structures to be adjusted as required.

**SECTION 9**  
**DEDICATION OF SEWERS**

**9-01 General**

The District will prepare the necessary forms for dedication of sewers to the District. The necessary forms to complete the dedication of sewers shall be executed, notarized and delivered to the District for ultimate acceptance.

**SECTION 10**  
**INSTRUCTIONS FOR PROCESSING EASEMENTS**

**10-01 Policy**

It is the policy of the District to have all sewer lines placed within dedicated rights-of-way whenever practicable. Where installation of sewer mains not within dedicated rights-of-way is requested or required, the applicant shall obtain approval of the District regarding necessity, location and dimensions of said easements.

**10-02 Procedure**

The applicant shall take the following procedure when there is a determination of necessity by the District:

- a. Prepare a plat that will produce a clear and legible reproduction. Show all dimensions and necessary data including the vested ownership of each parcel and a legal description thereof. A separate sheet shall be used for the description of each parcel.
  
- b. Submit two prints and the original of the easement plat and two copies of each easement description along with a title report FROM a Title Company acceptable to the District showing the vested ownership of record and the Application for Easement Processing together with the required fees.
  
- c. After the plat, legal descriptions and title reports have been reviewed by the District and found to be in order, and the fee deposited, the District will then prepare the easement documents and forwarded to the applicant for the purposed of obtaining the required execution. The easement documents shall be executed and acknowledged in strict conformance with the form as presented.

- d. After proper execution, the documents shall be returned to the District for final approval, acceptance and recordation.
  
- e. Sewer plans shall not be approved until necessary executed instruments of conveyance have been received and approved by the District.

## **SECTION 11 REIMBURSEMENT**

### **11-01 General**

The District may reimburse an applicant for a portion of the cost of sewer installation if the District requires the sewer installation within the development to be oversized to provide for additional capacity for extensions beyond the development, other than what would be normally necessary to serve the development.