

SECTION III

GENERAL DESIGN REQUIREMENTS

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III. GENERAL DESIGN REQUIREMENTS

A. GENERAL

The sewerage systems shall be designed in accordance with the Edgemont Community Services District's Master Plans, Rules and Regulations, Ordinances, Standards, Specifications, and Standard Drawings, under the direction of a civil engineer licensed in the State of California. Abbreviations are used in the following commentary hence we refer the reader to Section G entitled "Abbreviations" for a description of the abbreviations. All District fees and facilities charges associated with the proposed sewer system shall be paid for by the Developer.

B. PLAN CHECK PROCEDURAL GUIDELINES

1. Processing Sequence. Refer to "General Procedure" in Section I.

After an Availability Letter has been issued and prior to Developer's Engineer commencing with development design engineering, it is **recommended** that the Developer's Engineer and the Developer's Representative meets with District Engineering personnel. The following plan check procedures will be followed:

- a. Developer's Engineer submits first plan check package to District; District transmits to District's Engineer.
- b. The District's Engineer conducts plan check, makes redline changes and transmits redline plans back to Developer's Engineer. **Note: If, at second plan check, the amount of redlines is excessive, the District will request the Developer's Engineer to meet to discuss any problems or deficiencies. The Developer will also be made aware of this meeting and is welcome to attend.**
- c. Developer's Engineer makes revisions and transmits back all subsequent plan checks to the District's Engineer along with the redline copy; Item b. above is then repeated etc. **Note: Redline set must accompany revised set, or plans will be returned to the Developer's Engineer.**
- d. Once all revisions are complete to the satisfaction of the District and District's Engineer, a recommendation that Mylars be printed will be submitted. This will be in the form of a written request from the District to the Developer's Engineer.

At the time the District receives the plans from the Developer's Engineer, if the changes have not been made, the plans are returned to the Developer's Engineer with a request to complete the redline changes.

If the Developer's Engineer is adhering to the District's standards and specifications outlined in this manual, and the above is followed, it is expected that the number of plan checks should not exceed four.

Approximate timing for each plan check turn-around, between the District and the District's Engineer, is three weeks for all submittals.

Note: Any changes to the original intent of the plans (such as adding phases to a tract) may be considered as a "new" plan check.

2. Format of Plans. Sewer plans shall be formatted as follows:
 - a. All sheets shall be 24" x 36" (see Appendix M of Section VII for title block format), ink on reproducible mylar. Scale shall be 1" = 40' horizontal and 1" = 4' vertical.
 - b. Index sheet shall include an overall layout of the sewerage system at a scale that clearly delineates the following: streets, lots, manholes, and any existing facilities involved; sewer certifications, general notes, legend, estimate of quantities and a location map.
 - c. Plan and profile sheets shall include all proposed and existing utility lines, both plan view and elevation; existing ground surface and proposed street grade, existing and proposed sewer lines, with the flowline plotted in the profile, and the slope indicated between each vertical point of intersection. Sewer lines and appurtenances shall have stationing with respect to the center line street stationing.
 - d. Self-adhesive or add on labels, certifications, details, etc. are not acceptable on final plans.

3. Requirements for First Plan Check^{*}
 - a. RESIDENTIAL AND COMMERCIAL/INDUSTRIAL DEVELOPMENTS
 1. Executed Project Identification Form (Appendix N of Section VII) signed and stamped by the Registered Engineer of Record
 2. All applicable plan check attachments outlined in the Plan Check Submittal Checklist (Appendix N of Section VII) with the appropriate number of copies.

4. Subsequent Plan Checks

When the initial plan check is complete, the Developer's Engineer will be notified to pick up "red-lined" prints from the District Engineer's office at **3788 McCray**

* Incomplete submittals will not be accepted. If any of the above items are not applicable to the project, please note the reason in the transmittal letter.

Street, Riverside, California 92506. Whenever changes other than District corrections are made, these changes shall also be indicated on the check print in order to expedite the processing of the plans. Additionally, Developer shall resubmit all street plan, storm drain plan, etc., wherever revisions to these drawings occur.

5. Plan Approval

Upon approval, the original shall be submitted to the District for the signature of the General Manager or his agents.

- a. When the original has been signed by all agencies involved, send four (4) complete sets of prints along with one mylar reproducible transparency to the District office.

C. SEWERAGE PLAN CERTIFICATIONS

The following certifications shall be placed on the first sheet of the plans as appropriate:

Sewerage Certification

EDGEMONT COMMUNITY SERVICES DISTRICT

I certify that the design of the sewerage system in Tract/Plot Plan/Parcel Map No. _____ is in accordance with the sewerage system expansion plans of the Edgemont Community Services District, and that the waste disposal system is adequate at this time to treat the anticipated wastes from the proposed tract/plot plan/parcel map. This certification does not constitute a guarantee the sewerage system can transport or treat flows that exceed the District estimated flows for the specific type of land use proposed for this development.

General Manager

Date

CERTIFICATION VOID AFTER TWENTY-FOUR (24) MONTHS FROM ABOVE DATE.

Edgemont Community Services District Engineer
Recommended by:

District Engineer

Date

The following certification shall be placed on the first sheet of the plans for on-site sewerage plans:

Private Certification

The Edgemont Community Services District has reviewed the sewerage facilities within the public right-of-way for this project, said facilities are in conformance with District standards and are approved. Said approval does not include any on-site/private facilities.

Edgemont Community Services District
General Manager

Date

CERTIFICATION VOID AFTER TWENTY-FOUR (24) MONTHS FROM ABOVE DATE

D. GENERAL NOTES AND REQUIREMENTS

1. The Contractor shall notify ECSD at least two working days prior to construction.
2. Separation requirements between sewer lines horizontally (10' minimum, 5' for laterals) shall conform to the County of Riverside Health Department and the California Department of Public Health (CDPH) Requirements. The Agency's specifications that are more restrictive shall govern in all cases.
3. All construction and materials shall comply with ECSD standards and specifications. Any construction and/or materials not covered in ECSD standards shall be approved by the District prior to construction.
4. Prior to construction of the sewer lines, the Contractor shall expose the existing sewer lines where connections will occur and verify their elevation and location. Approval of ECSD of a proposed connection to an ECSD facility does not imply approval of the correctness of the elevation and/or location shown on the Developer's sewer plans.
5. Contractor shall not backfill trench until the District's Inspector has obtained as-built stationing on all structures. It shall be the Contractor's responsibility to provide accurate record drawings to the District immediately after construction.
6. Approval by ECSD implies no permission other than that within the District's jurisdiction. All permits required by law shall be acquired by the applicant or his Contractor. Requirements of ECSD shall take precedence over requirements of other agencies only where ECSD requirements are more stringent.

7. Contractor shall shore all trenches and conduct all construction and operations in accordance with CAL-OSHA requirements and have all encroachment and excavation permits prior to the start of work.
8. Pipe joints **shall not** be pulled at any angle greater than the maximum angle recommended by the pipe manufacturer.
9. The proposed work shall be subordinated to any operations ECSD may conduct, and shall be coordinated with such operations as directed by ECSD
10. A pre-job meeting shall occur prior to construction. Attendees shall include the District's Engineer, the District's Inspector, Tract Superintendent, City of Moreno Valley representative and the Contractor who will perform the work. "Cut-Sheets" shall be provided to the District prior to this meeting for its review.
11. The Contractor shall notify Underground Service Alert (U.S.A.) and have all underground utilities marked two (2) working days prior to construction, per U.S.A. requirements.
12. Contractor shall furnish and install all facilities in accordance with the District's Standard Specifications and Standard Drawings for Sanitary Sewer Facilities (latest revision). The Specifications and Standard Drawings are available from the District. Contractor shall be in possession of District's Specifications and Standard Drawings on the job site at all times.
13. All permits required by law shall be acquired by the Applicant or their Contractor. Copies of the excavation and encroachment permits will be given to ECSD prior to the pre-job.
14. All construction shall conform to current CAL-OSHA safety requirements.
15. Contractor shall designate a qualified superintendent with full authority to act on behalf of the Contractor. Said superintendent shall be on the job site at all times during construction.
16. The District's ability to provide sewerage services to this tract may depend on the developers of other tracts completing the construction of facilities. The District assumes no responsibility for the construction of the facilities, which are to be constructed by such developers.
17. If District facilities are located on land which are private (i.e., outside public rights-of-way) legal descriptions and plats (easement documents) shall be prepared in accordance with District standards by the Engineer or Land Surveyor of Record. The easement documents shall be reviewed and approved by the District prior to final acceptance of the facilities by the District.

18. The construction of the sewer main, manholes, and laterals, and a successful first air test shall be completed prior to the commencement of the waterline installation.
19. Immediately upon completion of construction of the sewer pipelines, the Developer shall hire a District approved video company to video the pipelines in DVD format (video file format to be viewable on a standard DVD player/computer and/or as approved by the District). District or District representative shall review said DVD's for potential construction defects prior to acceptance of the project. Payment for all such services shall be borne by the Developer. Final DVD submitted to the District shall be edited, if necessary, to include only accepted reaches of the pipeline.
20. Inscribe an "S" on the face of the curb to indicate where sewer laterals services cross the curb line.
21. Compaction tests for sewer facilities shall be performed by a qualified geotechnical firm and paid for by the Developer. All compaction tests shall be made in accordance with District's specifications. Soils testing results shall be given to the District Inspector on a daily basis. At the conclusion of the project, a final compaction report shall be given to the District. The report shall be signed and stamped by a registered geotechnical engineer and shall certify all compaction results met the most stringent Agency's requirements.

E. SEWER NOTES

1. The sewer line shall be installed by a Private Contractor in accordance with ECSD Standards, Plans and Specifications. The Contractor shall be approved by ECSD
2. Type of sewer pipe used shall be vitrified clay pipe, (extra strength) and shall have Type "G" joints (bell and spigot) for sizes 4-inch diameter through 42-inch diameter pipe per Section 207-8, Standard Specifications for Public Works Construction, Latest Edition.
3. Upon review and approval by ECSD an alternate material, PVC plastic sewer pipe for 8-inch to 12-inch diameter, may be utilized. PVC plastic sewer pipe shall be SDR 35, minimum wall thickness per Section 207-17 of the Standard Specifications for Public Works Construction, latest edition.
4. All work and materials shall conform to requirements of City of Moreno Valley Standards and Specifications for the Improvements of Streets and subsequent amendments.
5. Grading over sewer mains shall be done in such a manner as to prevent the ponding of water.
6. The top of all manholes located in pavement shall be raised to pavement grade (within 5 working days) after streets are paved and/or capped.

7. House connections, wyes, and laterals shall be located in the field at the direction of the subdivider.
8. The minimum class bedding for VCP sewer shall be Class "B-2" in accordance with ECSD Std. Dwg. No. S-1, Section VI.
9. The minimum class bedding for PVC plastic sewer pipe shall be Class "1" in accordance with ECSD Std. Dwg. No. S-1A, Section VI.
10. Sewer Contractor shall successfully perform two air tests. The first air test shall be completed immediately after installation, backfill and compaction of the sewerage system. The second air test shall be conducted after installation of all the other utilities and prior to paving of the streets. All air tests shall be paid for by the Developer.
11. Sewer laterals crossing existing curb and gutter shall be backfilled with a 1 sack cement, sand slurry backfill.
12. Connections to existing pipelines shall only be made with District inspector present. Test plugs shall only be removed upon direction of the District.
13. Should modification and/or reconstruction (including raising manholes to grade) of an existing manhole be required, prior to the removal of the frame of the sewer manhole, the channel of the manhole shall be completely covered with planking or other suitable material as approved by the District so as to prevent debris from entering the channel. After the manhole reconstruction has been completed, all debris shall be removed from within the manhole and the cover over the channel shall be removed.
14. Sewer plug(s) shall be installed prior to commencement of sewer construction and shall be inspected on a weekly basis by the Contractor to ensure that sewer plug(s) are in place. In addition, the location of the sewer plug(s) shall be identified on the plans by the Contractor. The location of all test plugs and their removal shall be coordinated with the District Inspector.

F. IMPROVEMENT PLAN CHECK LIST

The following is a list of District requirements regarding sewerage improvement plan preparation. The Developer's Engineer should review this list prior to each plan check submittal to ensure conformance with the District's requirements.

The District's review of Plans and Engineering data will cover only general conformity of the design with the Standards and Specifications outlined herein. The District's approval of Plans and Engineering data will not constitute a blanket approval of all dimensions, quantities, physical properties, materials, equipment, devices, or items shown, and does not relieve the Developer's Engineer from any responsibility for errors, deviations, or defects in design therefor.

General

1. Project Identification Form (Appendix N of Section VII) must be completed, signed and stamped by the California Registered Engineer of Record for every plan submittal.
2. All sheets must be 24" x 36" and have the District's standard title block. Scale is 1" = 40' horizontal and 1" = 4' vertical.
3. The first sheet of the improvement plan set is an index sheet that includes an overall layout of the sewerage system at a scale that clearly delineates the following: streets, lots, manholes and any existing facilities involved. Additionally, the first sheet must include sewer certifications, general notes, legend, estimate of quantities and a location map.
4. Plan and profile sheets must show all proposed and existing utility lines, both plan view and elevation; existing ground surface (if facilities are to be constructed prior to mass grading) and proposed street grade, existing and proposed sewer lines, with the flowline plotted in the profile, and the slope indicated between each vertical point of intersection. Sewer lines and appurtenances shall have stationing with respect to the center line street stationing. Label all pipeline centerlines with bearings and distances.
5. Self-adhesive or add on labels, certifications, details, etc. are not acceptable on final plans (mylars).
6. Construction notes with reference to District standards shall be provided on each individual plan sheet
7. Plans must be in conformance with all District standards and specifications.
8. Proposed improvements must conform to State and County health separation requirements (horizontal and vertical). In case of conflict, the most stringent requirement shall prevail.
9. Show laterals to each lot.
10. Check that minimum cover is achieved for all pipelines (plot existing & proposed ground profiles where necessary).
11. Check to make sure quantity estimates are correct.
12. Each construction note should reference a ECSD Standard.
13. Prior to District approval, a California Registered Civil Engineer's signature and stamp is required.
14. Check master plans for proper pipeline sizing

15. Easements need to be shown on the Improvement Plans and on the Final Map. Additionally, submittal of a separate easement document (description and plat) conforming to District format is required.
16. North arrow orientation shall be to the upper half of the plan sheet; and stationing shall increase left to right across the plan street.
17. Topography with contours shall be provided by field survey or aerial photography in areas where pipelines are to be constructed in existing conditions (i.e., no proposed grading).
18. Provide USA notification note on each sheet.
19. Use private on-site certification wording for private sewerage systems.
20. Plot the locations (horizontal and vertical) of all existing utilities and agency facilities.
21. Check the effects of proposed cuts/fills over existing pipelines. Provide profile over existing pipeline where requested by the District.
22. Make sure curve radii are acceptable (allowable joint pulls).
23. Check centerline lengths from record maps.
24. Vertical curves for the pipelines are not allowed.
25. Provide support for existing utilities where sewerlines cross below.
26. Check grading, street, storm drain, and erosion control plans for possible affects to District facilities.
27. Check environmental clearances.
28. Review soils report.
29. Provide profiles of "stubbed" mainlines.
30. Provide definitive match lines between sheets.
31. Field check site
32. Identify "Master Planned" improvements on plans.

Sewer Checking Criteria by Developer's Engineer

1. Make sure each lot can be served by gravity flow.
2. Check cover (7.0' minimum to top of pipe) unless otherwise approved by the District.
3. In general, sewer lines should be located per City of Moreno Valley Standard Plan No. MVSI-180A, Normal Location of Underground Utilities.
4. Stationing should be provided on all manholes.
5. Maximum manhole spacing is 350'; unless otherwise approved.
6. Manholes should be located near all BC's, EC's and PCC's. Manholes are mandatory at PRC's.
7. Make sure sewer line is deep enough to serve adjacent properties by gravity flow (3' drop out of building + (length from building to main x 2%) + 1' drop for wye).
8. Verify proper lateral size (4" diameter for single family residential, 6" diameter minimum for all other uses).
9. Manhole Fall: 0.1' on all bends 45° or greater; run "in-line" grades through manholes for grades of at least 2.5% (provide 0.1' fall on grades less than 2.5%).
10. Provide crossing elevations on plans for service laterals where they must cross storm drain facilities.
11. Whenever possible, in commercial and industrial areas, sewer laterals shall connect directly into a manhole.
12. Plot parallel storm drain profiles (dash) and make sure sewer laterals do not conflict.
13. Check street improvement plans where existing sewer lines occur for sewer lateral additions, relocations, manhole adjustments to grade, etc.
14. Check effects of proposed cuts/fills over existing pipelines.
15. Check to make sure system is set-up for future extensions and tributary drainage areas.
16. Check the effects of additional flow on downstream facilities.
17. Check manhole rim elevations from street plans.
18. For commercial and industrial developments, establish a flowline elevation of the lateral at property line.

19. Check for industrial waste provisions for all commercial and industrial projects.
20. Use as steep a slope as possible where the number of tributary dwelling units may not achieve 2 fps velocity in the pipe.
21. Check for potential lateral conflicts with other facilities. Plot unusual or critical crossings in profile.
22. Check bedding for sewer pipe depth per district standards. Prepare pipe loading calculations where required.
23. Encase the sewer for load carrying capability when top of sewer is within 3 feet of surface of street. (Ductile iron pipe as alternative).
24. Check pipeline alignment for future extensions, both vertically and horizontally.
25. Where pipe slope is at minimum, conduct a field survey to verify the location and elevation of point of connection.
26. Check the on-site system for the need of any required industrial waste clarifier, grease interceptor, or oil/sand separator.
27. Check to make sure the proposed and/or existing sewer has proper cover.
28. Curved sewers must meet the District's/manufacturer's requirements (minimum radius or maximum joint pull).
29. Backwater valves should be provided where required per Section 409 of the Uniform Plumbing Code.
30. Check that the design pipe slope (i.e., along pipe centerline) is based upon actual sewer main length and is greater than minimum.
31. When sewer is located in an easement, the manholes must be readily accessible by maintenance trucks. Bolt-down manhole covers are required when manholes occur on private property.
32. A detail or construction note should be provided for manholes the bottom of which need to be re-contoured for flow when sewer line joins existing manhole.
33. Sewer lines should be stubbed for future extension where required.
34. Manholes must be provided on the mainline where sewer laterals are 8" in diameter and larger.
35. Soffits must be matched where sewer mains of different diameters connect.

36. Rim elevations should be shown to the nearest 0.1' at all structures.
37. Make sure the street profile agrees with street plans and any revisions thereto.
38. Alternate pipe material or a protection encasement detail should be provided for VCP that will be crossed by proposed storm drains or other structures where clearance is within 18" of bottom of crossing.
39. Where possible, a minimum slope of 1% should be used on cul-de-sacs.
40. Check if plumbing fixtures are to be installed on a floor level that is lower than the next upstream manhole cover of the public sewer. If so, such drainage piping shall be protected from backflow of sewage by installing an approved type of backwater valve. Refer to Section 710 of the California Plumbing Code, Latest Addition for details. Also refer to Section IV, Sewer System Design Criteria, Paragraph I, Backwater Valves for additional requirements.

G. ABBREVIATIONS

ABAND	Abandon	FUT	Future
AH	Ahead Station	FLG	Flange or Flanged
ANSI	American National Standards Institute	G	Gas line or service
ASTM	American Society for Testing Materials	GPM	Gallons per minute
AV	Air Valve	GV	Gate Valve
AWWA	American Water Works Association	HPI	Horizontal Point of Intersection
BC	Begin Curve	MH	Manhole
BF	Blind Flange	PCC	Point of Compound Curve
BFV	Butterfly Valve	PE	Polyethylene
BK	Back Station	PRC	Point of Reverse Curve
BO	Blow Off	PROP	Proposed
BOT	Bottom	PVC	Polyvinyl Chloride
CL	Centerline	RED	Reducer
CML/CMC	Cement Mortar Lined/Cement Mortar Coated	RJ	Restrained Joint
CO	Clean Out	R/W	Right-of-way
CPLG	Coupling	S	Sewer main or house lateral
CTS	Cathodic Test Station	SD	Storm Drain
DIA	Diameter	STA	Station
DIP	Ductile Iron Pipe	ST. LT.	Street Light
DWG	Drawing	STD	Standard
EC	End Curve	SWR	Sewer
ECSD	Edgemont Community Services District	T	Telephone cable or conduit
ELEC	Electrical	UG	Underground
ESMT	Easement	VCP	Vitrified Clay Pipe
EX	Existing	VPI	Vertical Point of Intersection
FH	Fire Hydrant	W	Water main or service
FL	Flowline	WSP	Welded Steel Pipe

H. GUIDE FOR EASEMENT DRAWINGS

Maps for easements over private lands should contain sufficient information to reflect every call-out as it is recited in the description.

1. Required Information
 - a. North Arrow (orientation to upper half of plat)
 - b. Scale
 - c. Tract Numbers
 - d. Lot Numbers
 - e. Lot lines
 - f. Ownership Lines
 - g. Section Corner or Rancho Corner Data
 - h. Street R/W and Street Names
 - i. Section, Township & Range and Base & Meridian Data or Rancho Data
 - j. Call out of Easement
 - k. Parcel Numbers
 - l. Dimensions
 - m. Title Block
 - n. Drawing Number
 - o. Signature of General Manager

2. Additional Information When Bearings are Used
 - a. Basis of Bearings
 - b. T.P.O.B. (True Point of Beginning)
 - c. Bearing and Distances
 - d. Curve Data
 - e. Designated Point
 - f. Existing Easement Data

3. Right-of-Way Width Requirements for Easements are as follows: The minimum required width for all easements shall be 20 feet. Generally, all pipelines shall be installed at the centerline of the easement. When approved by the District, pipeline may be installed no less than 5 feet from either easement boundary.

4. Tract Maps

- a. Construction prior to Tract Map recordation will require acquisition of rights-of-way description. The description shall be originated by the tract engineer.
- b. Public Utility easements are not acceptable.

5. Areas Not Included in Tracts

Rights-of-way acquisition shall be completed prior to construction, and prior to Tract recordation where associated with Tract development.

6. Easements Within Subdivisions

- a. Public Streets - no separate easements are required.
- b. Private Streets or Easements across Private Lands - Easements shall be acquired by separate instrument.

7. District Acceptance of Permanent Easement

All easements offered to the District for acceptance shall be formally acknowledged by a "Certificate of Acceptance" as shown in Appendix B of Section VII.

The Certificate of Acceptance, which is required for the County Recorder of Riverside, will require the ECSD's Board of Director's authorization and be signed and notarized by the District.

I. ESTABLISHMENT OF LINE AND GRADE

The line and grade of the improvements shall be per the District approved drawings. Survey control ("staking") shall be necessary for all sewerline improvements and "cut sheets" shall be submitted to the District prior to pre-construction conference.

J. CONTRACTOR'S DATA SHEET

Owners, Developers and Developers' Engineers are advised that any contractors who intend to construct facilities for the District submit to the District a Contractor's Data Sheet before they may engage in construction. The data sheet must be submitted at least 10 working days prior to bidding on a project. A Contractor's Data Sheet is included for reference in Appendix D of Section VII.

K. CONSTRUCTION AGREEMENT

A sewer Construction Agreement must also be signed by Developer, Contractor, and District representative prior to the pre-construction meeting. A blank agreement form is included for reference in Appendix C of Section VII.

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