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<td>Update/Format EMWD Guidelines for Sewer Systems Plans</td>
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<tr>
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EMWD GUIDELINES FOR SEWER SYSTEM PLAN

This plan check list is a general guide to assist Consulting Engineers in the design and drafting of sewer plans. Contact our Engineering Department concerning any exceptions in order to prevent unnecessary plan revision. Please note that if both water and sewer are required, both are to be delineated on one set of 24" x 36" drawings. Engineer is to provide:

1. Approved plan of service summary spreadsheet.
2. Print of the record map (2 each). Note: If landbase is on a computer system, refer to specification for digital submission of plans.
3. Street improvements plans and grading plans (print 1 set each).
4. Conditions of approval (1 copy).
5. Sewer improvement plans – prepared by registered engineer (2 sets).
6. Copy of index map sheet with initial submittal.
7. 11" x 17" copy of index map sheet with submittal of final mylars.
8. Cover letter signed with plan check list by registered civil engineers. (See pages 14 & 15).
10. Authorization for overtime forms if applicable (See page 16).

A. Title or Cover Sheet

1. Index map that shows all sewer system facilities and any water system. (See page 13). Do not show storm drain facilities as part of the index map. Index map can be shown on sheet 2 if it will not fit on title sheet.
   a. Piping system; size and type. (See paragraph B.7, page 3).
   b. Manholes, temporary cleanouts, end plugs and backwater valves.
   c. Existing sewer must be shown dashed with corresponding EMWD drawing number.
   d. Sewer dashed and labeled “proposed per Tract No._____________” If planned or constructed by other projects but not yet accepted by EMWD.
   e. Sheet number references to plan-profile drawings.
f. Laterals schematically showing approximate location on lot frontage and to line it are connected.

g. Tie to existing cross street with distance.

2. General Notes and Requirements – County/City required notes only. (Do not include notes that conflict with EMWD required notes).

3. Estimate of Quantities; items such as pipe, pipe laterals, manholes and cleanouts.


5. EMWD Sewer Notes – See attached pages 6, 7 and 8.


10. EMWD Approval Block/Title Block – See attached page 10.

11. Minimum letter heights 0.08" (all sheets).

12. List of Implementing Facilities (on sheet with index map).

13. Project Vicinity Map (on sheet with index map).

14. Manholes, cleanout, etc. should be at a large enough scale so as to be clear and obvious.

B. Sewer Plan and Profile

1. Plan and Profile Example – See attached pages 11 and 12.

2. Stationing shall correspond with street centerline.


4. M.H. Location – 6' north or east of the centerline of street.

5. Pipe Depth – Minimum 7.5' cover over the top of pipe, drawn to scale in profile.

6. Scale & North Arrow – Pipe slopes and F.L. (flow line) elevations at all manholes to be shown in profile. Minimum slopes are as follows: Lateral: 4" & 6" - .0200; Main Lines: 8" - .0040, 10" - .0032, 12" - .0024, 15" - .0016 18" - .0014, 21" - .0012, 24" - .0010 for minimum accepted velocities of 2 f.p.s. at design flow depths of ½ full of 12" and less diameter, and ¾ full for 15" and larger diameter. Maximum slopes are as follows: 8" - .1200, 10" - .0850, 12" - .0660, 15" - .0500, 18" - .0370, 21" - .0300, 24" - .0250.
Slopes shall be shown in decimal form, not as a percentage. The recommended velocity at design flow is 3 fps. Sewer lines of different sizes connecting to the same manhole shall match soffits (top of pipes) at the center of the manhole. See note 11 sheet 3. Upsizing sewer size to obtain a flatter slope will not be allowed.

7. Pipe Type

a. **Force Main** - shall be AWWA C-900, class 150 pipe, unless otherwise stated or approved by the District.

b. **Gravity Sewer** - shall be EMWD approved plastic or VCP pipe.

c. **Gravity Sewer** – VCP is required when:

1. Serving industrial development.
2. On curved alignments (12” and above).
3. Sizes larger than 15” (unless otherwise approved by the District)
4. When pipe type is not dictated by above requirements, no pipe type shall be indicated on plan or profile.

d. **Gravity Sewer** - When VCP is required, it shall be indicated on plan and profile.

e. **Gravity Sewer** – Where existing grade goes cut to fill, use short joints 2.5’ max., 10’ each side for VCP pipe. Use flex couplings for plastic pipe. Note to be labeled on profile if applicable.

8. Special bedding for sewer pipe: Refer to standard drawings SB-157, SB-158 and SB-159 for specific type of bedding.

9. 10’ horizontal clearance required between water and sewer mains (edge to edge; 8’ horizontal clearance required between edge of sewer main and curb face).

10. Sewer main pipeline crossing under water pipelines must have 1’ of vertical clearance between top of sewer main and bottom of water pipe; otherwise, special conditions will be required per California Department of Health Services requirements. Give crossing elevations (top of sewer, bottom of water).

When there is no alternative except for sewer to go over water, special conditions will be required per California Department of Health Services requirements.
11. Scale & North Arrow:
All sheets to have same scale: Horizontal @ 1" = 40' to have Vertical @ 1" = 4'; Horizontal @ 1" = 50' to have Vertical @ 1" = 5'; exceptions must have EMWD approval prior to submission of plans for review. Vertical scale 1"= 8' is not acceptable. North arrow pointing down is not acceptable.

C. **Manholes** – The manholes shall be stationed, numbered and shown in the plan and profile. Terminus manholes are required at permanent ends of sewer mains. Number manholes starting with No. 1.

D. **Shallow Manholes** - Required for all manholes of depths less than 5' from finished street grade to sewer pipe shelf.

E. **Manhole Spacing** – The maximum distance between manholes on tangent sections is 500’. Manholes are required at beginning and end of curves.

F. **Horizontal Curves** – The minimum radius is 144’ for VCP (4" to 12", 6' length), 200” for 8” PVC and 250’ for 10” PVC. For radius equal to or greater than 500’, maximum manhole spacing is 450’; for radius less than 500’, maximum manhole spacing is 150’. Reverse curves and/or combination curve/tangent are not allowed between manholes.

G. **Mainline Cleanouts** – The use of a temporary cleanout is permitted in lieu of a manhole at the end of a sewer main with a length of 150’ or less and is to be extended in the future. Cleanout or stub shall extend 10’ or the depth (whichever is greater) past the tract boundary. Temporary end of a sewer line that exceeds 150’ will require a manhole.

H. **Lateral Cleanouts** – Cleanouts shall be placed on each lateral just inside of the property line or edge of easement per SB-52.

I. **Utility Crossings** – Show a caution note designating type, size and stationing of the utility line wherever it crosses a sewer main or lateral. In note, also include top or bottom edge elevation of utility line and sewer main/lateral at minimum vertical crossing point. Where a minimum crossing separation is obtained, label on profile between utilities “C.D.F. per EMWD specs.”

J. **Sewer Laterals** – Show all sewer laterals on the plan and on the index map. Locate laterals to miss driveways. Design lateral grades, per SB-177, to accommodate water system construction. Maximum number of laterals into terminus manhole not to exceed four. The maximum length of laterals shall be 55 feet from lateral cleanouts (see sub-paragraph H) to centerline of manhole or pipeline connection.

K. **Backwater Valves** – Section 710.1 of the Uniform Plumbing Code states that “…Fixtures which have flood level rims located below the elevation of the next upstream manhole cover…shall be protected…by installing an approved type backwater valve.” EMWD will require lots with pad elevation below the elevation of the next upstream manhole cover to have a
backwater valve. Show the backwater valve symbol on each protected lot in the plan view and on index map.

L. **Pad Elevations** – Show the pad elevation of each lot on plan view. Any revisions to the grading plans should be reflected on the sewer plans.

M. **Easements** – Sewers to be located in easements will not be allowed except upon approval by the EMWD Engineering Department. Provide easement description and plats where required, with widths typically twice the depth; rounded up to the nearest 10' increment; 20' minimum. Show and label easements on the index map and plan view of improvement plans. Provide ingress and egress to all manholes or a 75 foot diameter turn around if egress is not provided. Sewers are to be in the center of the easement unless otherwise directed. For commercial and industrial projects, easement must be recorded before approval of plans. For residential projects easement documents must be submitted before approval of plans.

N. **Index to Commonly Used Sewer Standard Drawings**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>SA-47</td>
<td>Paving Detail Around Manholes</td>
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<tr>
<td>SA-79</td>
<td>Connecting Dissimilar Sewer Pipes</td>
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<tr>
<td>SA-87</td>
<td>Sewer Chimney Lateral</td>
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<td>SB-8</td>
<td>Locking Manhole Cover &amp; Frame</td>
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<td>SB-30</td>
<td>Shallow Manhole</td>
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<td>SB-49</td>
<td>Pipe Casing</td>
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<td>SB-52</td>
<td>Sewer Cleanout (mainline &amp; on-site)</td>
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<td>SB-52A</td>
<td>Sewer Tree Laterals &amp; Cleanouts</td>
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<td>SB-53</td>
<td>Manhole (reinforced concrete)</td>
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<td>Manhole Flat Top</td>
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<td>SB-57</td>
<td>Non-Manhole Flat Top</td>
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<td>Terminus Manhole</td>
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<td>SB-61</td>
<td>Manhole Frame and Cover</td>
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<td>Sewer Connection at Concrete Encasement</td>
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<td>Grease Interceptor</td>
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<td>SB-73</td>
<td>Precast Manhole (reinforced concrete)</td>
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<td>SB-75</td>
<td>Oil Interceptor</td>
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<td>Pipe Zone Bedding for Sewer Pipe</td>
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<td>Trench Backfill for Sewer Pipe</td>
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<td>SB-159</td>
<td>Classification of Pipe Zone Bedding for Sewer Pipe</td>
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<td>SB-176</td>
<td>Sewer Lateral Connections</td>
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<td>SB-177</td>
<td>Sewer Laterals</td>
</tr>
<tr>
<td>SB-179</td>
<td>Manhole Installation for HDPE Sewer Main</td>
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</tbody>
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O. **Notifications** – Engineering Shall include the following notes:

At least 48 hours prior to commencing construction, contractor shall notify:
1. Eastern Municipal Water District,  
   Field Engineering Department, (951) 928-3777, ext 4830

2. Permit Agency (Engineering to select agency).
   
a. Riverside County Road Department  
   (951) 955-6885

b. City of Hemet  
   (951) 765-2360

c. City of San Jacinto  
   (951) 654-7337

d. City of Moreno Valley  
   (951) 413-3350

e. City of Temecula  
   (951) 694-6400

f. City of Perris  
   (951) 943-5003

g. City of Murrieta  
   (951) 698-1040

3. Underground Service Alert (USA)  
   1- (800) 227-2600 or 811

4. All other affected agencies that are not members of USA. (Engineer to  
   provide names and phone numbers of agencies).

P. **EMWD Sewer Notes** – Use only those notes and standards determined  
   appropriate by EMWD. Detailed Requirements: (List on front sheet of  
   construction plans. This may or may not be the Sewer Line Layout for  
   Subdivision Improvements. List only those notes that are applicable to  
   the project),

1. Sewer system construction and materials shall be in accordance with  
   EMWD’s standards and specifications.

2. Gravity sewer profile elevations are to flow line (conduit invert). Force-  
   Main profile elevations are to centigrade (C.G.).

3. Contractor has the option to install plastic or VCP sewers except where  
   specifically designated on plans per EMWD standards and specifications.
4. Manholes shall be constructed in accordance with standard drawings SB-53, SB-58 and SB-61, as applicable. Sewer mains may be laid through the manholes and used as a form for the invert.

5. Manholes of depths less than five feet from finish street grade to sewer pipe shelf are to be constructed in accordance with standard drawing SB-30.

6. All laterals shall have an on-site cleanout in accordance with standard drawings SB-52. In addition, for laterals serving industrial and/or commercial developments, the requirements for sampling and/or pretreatment facilities shall be determined by contacting EMWD’s Source Control Division at (951) 928-3777, ext. 6203.

7. Mainline cleanouts, where called for on the plans, shall be constructed in accordance with standard drawing SB-52.

8. Prior to construction of sewer, contractor shall expose existing sewer and verify its existing elevation and location. Where connecting to existing manholes and inlet stub of proper size exists, no alterations shall be made to existing manhole base or stub except as specifically authorized by EMWD.

9. All sewer inlets at the manhole shall be such that its crown shall be level with the crown of the outlet pipe, at their projections to the manhole centerline.

10. Reconstruction of existing manholes shall be scheduled at the convenience of EMWD and shall be completed within five working days following its commencement.

11. Sewer laterals shall be constructed in accordance with SB-177. Locations of wyes and laterals, where not shown on the plans, are to be determined in the field prior to construction to miss driveways. All laterals are to be 4” in diameter unless otherwise shown on plans. Connections of new laterals to existing sewer are to be per standard drawing SB-176.

12. The contractor is advised that the work on this project may involve working in a confined air space. Contractor shall be responsible for “confined air space” Article 108, Title 8, California Administrative Code.

13. Where groundwater is encountered, all VCP pipe shall be treated for absorption resilience per EMWD’s specifications.

14. Backwater valves shall be installed per Section 710.1 of the Uniform Plumbing Code.

15. All pipe zone bedding & trench backfill are to be per standard drawing SB-157, SB-158 and SB-159.
List other specific requirements as appropriate.

Q. **Sewer Certification**

I certify that the design of the sewer system in Tract No.____________ is in accordance with the Eastern Municipal Water District's Sewer System Master Plan, and the District has programmed adequate capacity to treat wastes from the proposed tract.

EASTERN MUNICIPAL WATER DISTRICT

By: 

Civil Engineer of Subdivisions Date

R. **Time Limitation**

The time limit on drawing approval shall be six (6) months from the date on the certification. If construction has not commenced within stated time, EMWD requires drawings to be reviewed by the Developer/Design Engineer and resubmitted to EMWD for possible changes in Master Planned sizing and changes in specifications and standards.
SEWER LEGEND  (USE APPROPRIATE SYMBOLS)

- - - - EXISTING OR PROPOSED SEWER LINE (BY OTHERS)

SEWER LINE

SEWER LINE WITH LATERALS

○ MANHOLE

○ ○ EXISTING MANHOLE

○ ○ ○ CLEANOUT

BW BACKWATER VALVE

□ SHALLOW MANHOLE

- - - - EXISTING SEWER LINE WITH NEW TAPPING LATERAL

TYPICAL LOT EXAMPLE

P

R/W

5' MIN.

WATER

SEWER

P

0' MAX.

TYPICAL LOT

N.T.S.
NOTE: PLEASE MAKE BLOCKS LARGE
ENOUGH THAT THE APPROPRIATE
INFORMATION WILL FIT WHEN FILLED IN

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<td>C.O</td>
<td>COORD.</td>
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<td>SHT. OF</td>
<td>D-</td>
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**TITLE BLOCK**

WATER / SEWER / RECLAIMED WATER APPROVED BY:
EASTERN MUNICIPAL WATER DISTRICT

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**APPROVAL BLOCK**

REV 07/09/97
D STANDARDS/TTLBLOCK.DGN
EXAMPLE OF INDEX MAP WITH CALL OUTS AND SYMBOLS LEGIBLE

(EXHIBIT SHOWN IS NOT TO SCALE)

INDEX MAP

SCALE 1" = 100'

(MINIMUM SCALE 1" = 100')

* PROVIDE FIVE (5) SPACES FOR HAND DRAFTING OF PIPE MATERIALS DURING THE AS-BUILT PHASE

STA. 10+00.00
HOT TAP EXIST. 12" PVC WL W/12" X 8" SADDLED OUTLET
CONN. W/8" FXF RSGV BY EMWD AT DEV. EXPENSE
INSTALL 8" FXH ADAPTER
1" CORP STOP RESTRRAIN
JOINTS PER B-663

EX. F.H.
Date: ________________

Eastern Municipal Water District  
P.O. Box 8300  
2270 Trumble Road  
Perris, CA  92572-8300  

Attention:  Engineering Department  

Subject:  Initial Water and Sewer Plans Submittal

I certify that the water and/or sewer plans prepared on ________________ are being submitted for plan check using the Eastern Municipal Water District water and sewer guidelines and the attached checklist. The plans are complete and meet EMWD criteria.

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<th>We are providing you with the following:</th>
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<tr>
<td>1 set of grading plans</td>
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<tr>
<td>1 set of street plans</td>
<td></td>
<td></td>
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<tr>
<td>1 print of the record map</td>
<td></td>
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</tr>
<tr>
<td>1 set of conditions of approval, including fire flow requirements</td>
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Sincerely,

[Signature]  
Registered Civil Engineer
## Plan Check Checklist

### Title Sheet
- Water/Sewer Notes
- Time Limitation
- Notifications
- Certification
- Engineer's Stamp & Signature
- Typical Lot

### Index Map
- Scale, North Arrow, Sheet Ref.
- Vicinity Map
- Implementing Facilities
- Quantities
- Legend
- Street Names, Lot Numbers
- Services, Laterals, Appurtenances
- Backwater Valves/Prs. Regulator Check
- Distance to Existing Cross Street
- Water & Sewer Facilities
- Force Account 'Work'
- Pressure Zone

### Plan & Profile
(Water & Sewer)
- Scale, North Arrow, Sheet Ref. (No 1" = 8' vertical scale allowed.)
- Utility Crossing Data
- Curve Data, Bearings, Tables
- Existing/Future Utility Reference

### Water
- Valving
- Air Valves, Blow-offs, Fire Hydrants
- Joint Restrained Limits (on profile)
- Grade Breaks/Deflection Angles
- Backflow Devices (if required)
- High Deflection Coupling (if required)

### Sewer
- Manhole Spacing
- Manhole Inverts (match soffits), Rim El.
- Manhole Numbering
- Lateral Clearances
- Special Bedding
- Backwater Valves (BW)
- Cut-to-Fill Note

---

**Project:**

**Date:**

**Engineer:**
EASTERN MUNICIPAL WATER DISTRICT

OVERTIME AUTHORIZATION FORM
DEVELOPMENT PROJECT

Date: ____________________

I authorize EMWD’s project engineer to work overtime to complete:

☐ Plan of Service ☐ Plan Check

For the following project: ________________________________

I understand that this authorization doesn’t mean that my project will be moved ahead of other projects already assigned to the project engineer or that the Plan Check process will be completed in a specific amount of time.

________________________
Developer’s Representative
Name:
Title:
Company:

cc: Finance Dept
Attachments
GENERAL NOTES:

1. THE MINIMUM MANHOLE DIAMETER SHALL BE 48" PER SB-53.

<table>
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<tr>
<th>SEWER MAIN (inches)</th>
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<th>MH SIZE (inches)</th>
<th>CLEAR OPENING (inches)</th>
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</table>

* UNLESS OTHERWISE APPROVED BY EMWD ENGINEER

2. FOR SEWER MAINS GREATER THAN 42" IN DIAMETER OR WITH A DEPTH THAT EXCEED 25 FEET IN DEPTH, SPECIAL DESIGN AND STRUCTURAL DETAILS FOR THE MANHOLES SHALL BE SHOWN ON THE PLANS.

3. STANDARD DRAWINGS:
   a. SB-53 - PRECAST REINFORCED CONCRETE STANDARD 48" & 60" I.D. MH
   b. SB-54 - PRECAST REINFORCED CONCRETE 60" & 72" ID FLAT TOP MH

4. T-LOCK LINED MANHOLES
   a. IF THE SEWER HAS A SLOPE OF 7% OR GREATER, ALL THE MANHOLES WILL BE LINED WITH T-LOCK.
   b. WHERE THERE IS A CHANGE IN SLOPE, FROM STEEP TO FLAT IN THE DIRECTION OF FLOW, OF 5% OR GREATER, THE MANHOLE AT THE GRADE CHANGE AND THE NEXT MANHOLE UPSTREAM WILL BE LINED WITH T-LOCK.
   c. AS REQUIRED, FORCE MAIN TERMINAL MANHOLES WILL BE LINED WITH T-LOCK.
   d. PREMOLDED PLASTIC SHEET LININGS SHALL BE AMER-PLATE "T-LOCK", NOT LESS THAN 0.065 INCH THICK, AS MANUFACTURED BY AMERON, CORROSION CONTROL DIVISION, BREA, CALIFORNIA, OR APPROVED EQUAL. WELDING STRIP SHALL BE AMER-PLATE "T-LOCK" WELDING STRIP OR APPROVED EQUAL PER SECTION 06400 PLASTIC LINING FOR CONCRETE STRUCTURES.
   e. TYPICAL BASE CHANNELIZATION DETAILS (SEE DETAIL DRAWING)
18" SEWER
60" DIA MH
15.87 IN DIA
12" SEWER
24" SEWER

36" SEWER
60" DIA MH
13.29 IN DIA
36" SEWER

24" SEWER
60" DIA MH
13.11 IN DIA
12" SEWER
24" SEWER

24" SEWER
60" DIA MH
16.6 IN DIA
24" SEWER

3 OF 4
60-IN DIA MH