

EMWD GUIDELINES FOR RECYCLED WATER SYSTEM PLANS

Submittal Requirements

EMWD will require the documents identified below to start the plan check process:
(reference form NBD-063 Documents Required for Plan Check):

- An Approved Design Conditions (DC) Summary Spreadsheet with all attachments
- Water and Sewer Improvement Plans (2 sets)
- Street Improvement Plans (1 set)
- Storm Drain Plans (1 set)
- Grading Plans (1 set)
- Approved Tentative Tract Map (1 set)
- Parcel or Tract Map (1 set)
- Current Conditions of Approval (1 set)
- Plan Check Deposit
- Community Facilities District (CFD) Letter
- Work Order Request form (NBD-050)

This plan checklist is a general guide to assist Consulting Engineers in the design and drafting of water plans. Contact our Engineering Department concerning any exceptions; in order to prevent unnecessary plan revisions. Please note that if water, sewer, and recycled water are required, these are to be delineated on one set of 24" x 36" drawings.

- A. **Title or Cover Sheet** (For CAD examples and details access CAD Toolbox [HERE](#))
1. Index map that shows water, sewer, and recycled system, if any. 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.
 - b. Line valves and air valves.
 - c. Blow-offs, ITC stations and fittings, etc.
 - d. Existing recycled water lines with corresponding EMWD drawing number; shown dashed.
 - e. Recycled Water lines dashed and shown "proposed per Tract No. _____". Planned or constructed by other projects but not yet accepted by EMWD.

- f. Sheet number references to plan-profile drawing.
- g. Services schematically showing approximate location on lot frontage and to which line it is connected.
- h. All notes specifying work to be done by EMWD at developer's expense.

(Do not show storm drain facilities as part of the index map)

1. General Notes and Requirements – County/City required notes only. (Do not include notes that conflict with EMWD required notes).
2. Notifications – See page 14.
3. EMWD Notes (only) – See attached pages 15 through 19.
4. Recycled Water Certification (tracts only) – See attached page 19.
5. Time Limitation – See attached page 19.
6. Engineer's Declaration of Responsible Charge – See attached page 19.
7. Recycled Water Legend
8. Typical Lot
9. Estimate of Quantities; items such as pipe, valves, air valves, blow-offs and recycled water services, etc. (on sheet with index map).
10. EMWD Approval Block (water, sewer, and recycled water if applicable)
11. Project Vicinity Map (on sheet with index map).
12. List of Implementing Facilities (on sheet with index map).
13. Pressure Zone (on sheet with index map).
14. Minimum letter height is 0.08" (all sheets).
15. Valves, blow-offs, air release/air vacuum valves, etc. should be a **large enough scale** so as to be clear & obvious.

B. Recycled Water Plan and Profile Pipeline

1. Plan and Profile Drawing.
2. Stationing shall correspond with street centerline.
3. Pipe size – diameter in inches.
4. Pipe type – i.e., CML&C, DI, PVC C-900/905 with Dimension Ratio (DR).
5. Pipe location – 7' off the curb face in the street on the north or east side of the street.
6. Pipe depth – The top of recycled water transmission pipelines must be a minimum of 66-inches below the finished grade, unless otherwise approved. When recycled and potable water mains are to be installed in the same street or easement, the top of pipe of the recycled water main shall be 12-inches below the bottom of the potable water main. When crossing other utilities, including recycled water laterals, the designer shall indicate on the plans the elevation of the top of the recycled water pipe and the elevation of the bottom of the utility pipe or vice versa. When no other water facilities will be installed within the street right-of-way or no water laterals will cross the proposed recycled water pipeline, the recycled water pipeline shall be installed at 4-feet of cover.
7. Pipe slopes and C.G. (center grade) elevations, and stationing at all grade breaks to be shown in profile in decimal format (ex: s=0.0040). Show top and bottom of pipe in profile for sizes 16" and larger.
8. Show weld limits on CML&C steel pipe and restrained joint limits on PVC and Ductile Iron pipe by dimensions and stations in profile view at appropriate design locations.
9. Horizontal separation shall adhere to the State Water Resource Control Board Division of Drinking Water (DDW) "GUIDANCE CRITERIA FOR THE SEPARATION OF WATER MAINS AND NON-POTABLE PIPELINES".
 - a. A 4-foot horizontal clearance measured from outside of pipe barrel and/or sleeve shall be maintained at all times when a new recycled water pipeline is built parallel to an existing potable water pipeline. Common trench construction is not permitted. Horizontal separation of less than 4 feet is not allowed unless authorized in writing by the District and DDW.

10. Vertical separation shall adhere to the State Water Resource Control Board Division of Drinking Water (DDW) "GUIDANCE CRITERIA FOR THE SEPARATION OF WATER MAINS AND NON-POTABLE PIPELINES".

- a. At crossings of potable water, recycled water, and/or sewer pipelines, pipelines shall be located from the ground surface in order of descending quality, with potable water above recycled water and recycled water above sewer. The minimum vertical separation shall be 12 inches between the outside top and bottom surfaces of pipes. If a 12-inch vertical separation is not possible, approval must be obtained from the District and DDW.

C. **Scale and North Arrow**

All sheets to have same scale: Horizontal @ 1" = 40' to have Vertical @ 1" = 4 ft.; 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.

1. Storm drain shall be shown in plan and profile, dashed and labeled.
2. Design Recycled water mains with service laterals perpendicular to the main. Identify service laterals with a purple sleeve or tape that visibly extends to the angle stop. Service laterals shall be a minimum of 2-inch in size unless authorized by the District. Larger sized laterals may be required. A service lateral shall be designed for each lot or area to be served with recycled water. A service lateral shall generally not be designed to serve opposite sides of a street or easement and shall not be located in street medians or center islands.
3. Public recycled water systems shall not be designed with fire hydrants, wharf heads, or other appurtenances which would allow recycled water to be used for other than the approved uses, unless the appurtenances are expressly approved by the District.
4. Public recycled water mains shall not be designed with temporary connections unless expressly approved by the District. When permitted, temporary connections shall be located, sized, and designed according to the requirements of the District.
5. Where purple PVC pipe cannot be used because of size, depth, or load restrictions, an alternative pipe must be installed, subject to approval by

the District. A purple identification tape shall be secured every 10 feet to the top of the pipe. Ductile iron pipe shall conform to Section 15057. Steel pipe shall conform to Section 15061.

D. **Valves**

1. RSGV valves must be used throughout the system (sizes 4" thru 18").
2. Show Valve symbols in plan view only.
3. Located at all branches or intersections of mainlines in each direction from such branches or intersections, unless otherwise approved by the District.
4. Butterfly valves shall be used for pipelines larger than 18".
5. The District shall reserve the right to request the use of butterfly valves for situations where pipe cover is a factor.
6. Valves will be placed at a minimum, every 2,500' of continuous mainline 12-inches and larger / every 1, 000' of continuous mainline 8-inches and smaller.

E. **Blow-offs**

Blow-off assemblies shall be installed at the end of all lines, at all low points (except where low point occur in drops under storm drains or other utilities), or as directed by the District's Representative. A minimum of two blow-off assemblies are required between mainline valves and as close as practical to each valve. Blow-off assemblies shall be per PB-18.

1. Use a blow-off at the end of all lines that will not be extended in the future (such as cul-de-sacs).
2. Use Temporary Blow-off PB-18 at ends of lines that will be extended in the future.
3. The discharge from blow-offs shall be designed to drain into a sewer. Discharge of recycled water to storm drains is restricted. If there is no sewer that can receive the discharge from a blow-off, the Santa Ana Regional Water Quality Control Board and DDW shall be consulted regarding acceptable alternatives.
4. If hot tap is required to install a blow-off, the assembly shall be no closer than 18 inches from a valve, coupling, joint, or fitting unless it is at the end of the pipeline.

- F. **Air Valves** – An air valve is required at high points in the water line wherever pipe grade changes from an “uphill” slope to a “downhill” slope. Show an air valve symbol in plan. Station air valve in plan and profile with standard drawing number; 1” AV for pipe sizes 8” thru 12”; 2” AV for pipe sizes larger than 12” thru 30”; pipe sizes above 30” must be calculated.
- G. **Fittings** – Call out all tees in plan view; specify size, type and stationing. Fittings for horizontal angle points to be called out in plan view. Fittings for vertical grade breaks to be called out in profile view.
1. Steel Bends – For bends 12-inches in diameter and smaller, flanged ends shall be used per EMWD standards. For bends larger than 12-inches in diameter, the bends shall be fabricated by an EMWD-approved manufacturer per EMWD specifications.
- H. **Restrained System** – When required, anchorage shall be provided by means of full welds (double pass) of all steel pipe joints, restraint fittings for plastic (PVC) pipe or ductile iron pipe. The use of concrete anchorage in lieu of restrained joints will not be allowed.
- I. **Connections to Existing and Proposed Water Pipelines** – To minimize the number of connections to existing water pipelines, a manifold shall be used to serve multiple landscape irrigation services. For proposed recycled water pipelines, individual connections are acceptable. Click [here](#) to access the EMWD Approved Material List. Click [here](#) to access the EMWD Approved Hot Tap Contractors List.
- J. **Utility Crossings** – Show caution note designating type, size and stationing of the utility line wherever it crosses a recycled water main. In note, also include top or bottom elevation of utility line and water main at minimum vertical crossing point. Where a minimum crossing separation is obtained, label on profile between utilities “CDF per EMWD specs”.
- K. **Connection of a Proposed Steel Recycled Water Line to an Existing Steel Recycled Water Line** - Has been in the ground longer than one year, requires an insulating test connection shown as ITC per EMWD standard B-660.
- L. **Future Use of Recycled Water** – In those areas where the District has determined that recycled water will be supplied in the future but is not currently available, recycled facilities shall be installed as detailed in this Section. Only landscape service laterals as identified on the RWIP shall be allowed unless otherwise authorized by the District and DDW. Provisions for future connection to the permanent recycled water system shall be included in the initial installation of the system as directed by the District. In the interim,

the new recycled system will be supplied with potable water via a temporary connection performed by the contractor and as directed by the District. This temporary service connection shall be provided in accordance with the Standard Drawings and shall incorporate a master RP backflow prevention device located and installed in accordance with Standard Drawing B-597. Connections between recycled water mains and potable water mains shall only be permitted when the recycled water main is to temporarily convey potable water. No connection of any other kind shall be permitted between the potable water and recycled water mains. In the future, the owner shall be responsible to remove and abandon the temporary interconnection. (See drawing below)

The developer shall make a cash deposit prior to the installation of temporary interconnections to ensure their removal and abandonment. Once facilities have been removed and abandoned, the cash deposit shall be returned to the developer. If the developer does not remove and abandon said facilities, EMWD shall use the cash deposit to conduct the work.

- M. **Recycled Water Service** – Show symbol on plans and station all meters. Show service on “Index Map”.
- N. **Pad Elevation** – Show the pad elevation of each lot on plan view.
- O. **Easements** – Recycled waterlines in easements are allowed only upon prior approval by District, prior to plan submittal. Provide easement description and plats where required. Minimum width is 30’ for 8” and smaller; 40’ minimum for 12” and larger with recycled water in center of easement. Show and label easements on index map and plan view of improvement plans. Provide ingress and egress to all appurtenances, or a 72-foot diameter turn around if egress is not provided, or an EMWD-approved hammerhead design. 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. For commercial and industrial projects, easements must be recorded before approval of plans.
 - 1. Easements within residential lots shall not be double-walled or double-fenced.
 - 2. Easements that contain water appurtenances (air release/air vacuum valves, blow-offs, valves, etc.) will require an access road within the easement, or alternate access/egress easement(s) to reach said appurtenances. Driveways and gates will be required to access and secure the easements, as necessary.

3. For residential developments, the preference by EMWD is to hold easements within lettered lots, which are maintained by an HOA, land agency, or other maintaining entity.
4. The preferred surfaces for access roads within easements shall be the following: Class II Aggregate Base and Gravel. Other surface materials may be used upon EMWD approval.
5. The following improvements are not allowed within proposed EMWD easements: trees, ribbon gutters, curb, reinforced and non-reinforced concrete pavement, stamped concrete, pavers, grouted and non-grouted river rock, rip-rap, water basins, and other structural improvements.
6. Encroachment into existing EMWD easements may only be allowed upon review and acceptance of the proposed improvements through an EMWD encroachment license.
7. Easements shall not straddle properties longitudinally, encompass longitudinal slopes or water quality basins, contain structures, and have restricted access.
8. For temporary easements, existing facilities shall be either removed or abandoned as required by EMWD, prior to the quit claim of said easements. The developer shall make a cash deposit prior to the installation of facilities within temporary easements to ensure their removal or abandonment. Once facilities have been removed or abandoned, the cash deposit shall be returned to the developer. If the developer does not remove or abandon said facilities, EMWD shall use the cash deposit to conduct the work.

P. Access Roads

1. A means of access and egress to recycled water facilities shall be provided. When a separate point of egress is not provided, the project proponent shall provide a cul-de-sac with a radius of 35 feet, or a hammer head design to allow for service vehicles to make a three-point turn. The project engineer shall provide a truck-turning wheel design to prove the design will be adequate (use a bus wheel template).
2. Surface Material - EMWD will consider the following materials for the access road:
 - a. Class II Base (95% Relative Compaction) – 8-inches in depth minimum (or as required by Geotechnical Report to support fully loaded service vehicles). Use HS-20 vehicle to determine Class II Base section.

- b. 2-inch Angular Gravel – 8-inches in depth.
 - c. Asphalt Concrete Pavement with Class II Base (95% Relative Compaction) – 6-inches over 8-inches (or as required by Geotechnical Report to support fully loaded service vehicles). Use HS-20 vehicle to determine AC pavement with Class II Base section.
3. Driveways – A means of entry to access roads from public right-of-way will be required. EMWD will consider the following:
- d. Driveway – Install 16-foot wide commercial driveway per the local land agency’s standards.
 - e. Rolled Curb – Install 16-foot wide section of rolled curb per the local agency’s standards. Increase the depth of the sidewalk to 8-inches and upgrade the base to account for the additional load.
 - f. Access/Egress Easements – If direct entry or exit from public right-of-way cannot be provided to access road, developer shall allow entry or exit through its property by means of an access/egress easement.
4. Gates – a means of limiting access to access roads shall be provided. Acceptable means of limiting access are: Pipe gates, chain link fence gates, and wrought iron gates. EMWD’s construction and safety inspector shall provide the locks to be used on these gates.
5. Horizontal Curves – Horizontal curves within access roads shall not have a radius of less than 50-feet.
6. Vertical Curves – Vertical angle points shall not be allowed in access roads. Vertical curves shall be introduced to avoid ground clearance “bottoming out” conditions.
7. Drainage Crossings – EMWD will consider the following for access roads drainage crossings:
- g. Grouted rounded river rock 6-inches in diameter or smaller.
 - h. AC pavement.
 - i. Subsurface structures as approved by EMWD.

Q. **Abandonment of Existing Recycled Water Facilities**

1. Abandonment of Recycled Water Services (2-inches in diameter and smaller) – Salvage meter, if any. Remove and dispose of meter box. Remove and dispose of corporation stop. Install threaded plug at main.
2. Abandonment of Recycled Water Services (4-inches in diameter and larger) – Salvage meter, if any. Remove and dispose of meter box/vault. Remove and dispose of valve at main. Install blind flange at main. Remove and dispose of vertical riser at meter box and install concrete plugs at both ends. Fill with grout per EMWD Standard Detailed Provision Section 03604 or Cellcrete.
3. Abandonment of Potable Water & Recycled Water Interconnection – Remove and dispose of above-grade assembly. Remove and dispose of potable and recycled water valves at mains. Install blind flanges at mains. Remove and dispose of vertical risers and install concrete plugs at pipe ends. Fill with grout per EMWD Standard Detailed Provision Section 03604 or Cellcrete.
4. Abandonment of Recycled Water Blow-offs - Remove and dispose of valve at main. Install blind flange at main. Remove and dispose of vertical riser and blow-off camlock. Install concrete plugs at pipe ends. Fill with grout per EMWD Standard Detailed Provision Section 03604 or Cellcrete.
5. Abandonment of Recycled Water Air Release/Air Vacuum valves (2-inches in diameter and smaller) – Remove and dispose air release/air vacuum valve. Remove and dispose of corporation stop. Install threaded plug at main.
6. Remove and dispose of excess materials in accordance to local, state, and federal regulations.

R. **District Financial Participation**

1. For projects that require District financial participation, the project proponent shall obtain a minimum of three bids to determine the District's cost. EMWD staff will provide the developer with instructions and necessary documents on how to bid the work starting at the design conditions. Please refer to the Policy Highlights of Facility Oversizing and Reimbursement Form in the Development Services process section within EMWD's web site.
2. The developer shall provide the plan checker with copies of all the bids. The information will be used to prepare the standard facilities agreement between the District and the developer.

S. **Index to Commonly Referenced Recycled Water Standard Drawings**

Pipelines

PB-5	Reclaimed Water Steel Pipeline Installation (B-563 to replace?)
B-286B	Trench Backfill
B-407	Thrust Block Installation for Hub-End Pipe
B-408	Water Pipe Installation and concrete Cap Detail for ACP, PVC & DI Pipe
B-563	Steel Pipeline - Pipe Pad or Coupling for Cast Iron Fittings
B-575	Steel Pipe Casing Water Pipeline
B-638	Steel Cylinder Pipe - Field Joint Details Welded & Bonded Rubber Gasket
B-663	Standard Restraint Tee, Dead End, Bend for PVC C-900 & C-905

Valves

B-255	Installation of Vertical Gate Valves (Steel Pipe 14" & Larger; ACP, PVC & DI Pipe 4" & Larger)
B-577	Installation of Butterfly Valves
B-665	Guard and Marker Posts
B-668	Valve Cap & Riser Detail

Specials

B-271	Saddle Outlets – ¾ to 36"
B-288	Steel Flanges, 4" to 54"
B-304	Butt Strap Details
B-659	Air Test Details

Services

PB-10A	2" Recycled Service Connection
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- PB- 1 4" & Larger Recycled Service Connection
- B-658 Service Connections 1" through 4" on Water Appurtenance Lateral or Water main 16" or Larger
- B-976 Read Hole for Meter Vaults

Meters

- PB-10 2" Recycled Meter Installation
- PB-11 1-1/2" Recycled Meter Service Connection
- PB-12 1" Recycled Water Meter Installation
- PB-13 3" Recycled Meter Installation
- PB-14 4" Recycled Meter Installation
- PB-15 6" Recycled Meter Installation
- PB-16 8" Recycled Meter Installation
- PB-17 Agricultural Above Ground Metered Service – Potable & Recycled Water
- B-994 Meter Cage – Flange Mount

Backflow Preventers

- B-966 Double Check Backflow Preventer Assy for sizes 3/4" - 2"
- B-967 Double Check Backflow Preventer Assy for sizes 2 1/2" - 3"
- B-968 Double Check Backflow Preventer Assy for sizes 4" - 10"

Air Valves

- B-598 1" Air Valve Installation
- B-367 2" Air Valve Installation
- B-578 3" Thru 10" Air Valve Installation

Blow-offs

PB-18 4"-8" Recycled Water Blow Off

Pressure Regulators

B-932 4" & 6" Pressure Regulator above Ground Installation

B-933 8" Pressure Regulator above Ground Installation

Electrical

B-533 Telemetry Wire & Terminal

B-656 Locator Wire Installation

B-660 Test Stations: Insulated Joint and Insulated Joint at Valve

B-661 Thermite Weld Details

B-662 Test Stations: Line Current, Basic & Pipe with Casing

Miscellaneous

B-666 Formed Sealant Groove Detail and Typical Crack Repair

B-934 Recessed Trench Plate Detail

B-408 Pipe Installation for PVC & DIP

T. **Notifications**

1. Engineer shall include the following notes:

At least 48 hours prior to commencing construction, Contractor shall notify:

Eastern Municipal Water District.

Field Engineering Department, (951) 928-3777, ext 4291

2. Permit Agency (Engineer to select agency).

Riverside County Road Department

(951) 955-6885

City of Hemet

(951) 765-2360

City of San Jacinto
(951) 654-7337

City of Moreno Valley
(951) 413-3350

City of Temecula
(951) 694-6400

City of Perris
(951) 943-5003

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).

U. **Plotting of Mylars**

Mylars to be plotted mirrored on HP Matte Film (51642B) 5 mil.

V. **EMWD Recycled Water Notes**

Use only those notes and standards determined appropriate by EMWD.

W. **Detailed Requirements**

(List on recycled waterline layout for subdivision improvements and on front sheet of the construction plans where they are not the same).

1. Recycled water pipeline and appurtenant construction shall be in accordance with EMWD standards and specifications and Division of Drinking Water (DDW). Minimum recycled water pipeline diameter shall be 8" within offsite streets and 6" within dead end tracts (upon EMWD approval).
2. Prior to construction of pipeline, contractor shall expose existing recycled water system and verify its existing elevation and location.

3. Where sewer and potable water pipelines have been constructed by agencies other than EMWD, contractor shall verify sewer and water lateral locations prior to excavation for recycled water pipeline. In the event water laterals are found to be at a depth greater than in accordance with EMWD water standards, recycled water pipeline contractor shall adjust recycled water pipeline depth as directed by the Engineer to cross under the water lateral.
4. All service connections shall be 2-inch in diameter or greater, unless otherwise noted, and shall be located as shown on the plans and adjusted as necessary to miss driveways. Irrigation services will be installed in accordance with Std. Dwg. PB-10A or PB-1.
5. Fire hydrants assemblies or hose bib connections are **NOT** allowed on a recycled water system.
6. Install locator wire over recycled water main per Std. Dwg. B-656.
7. Recycled water valve cap shall have triangular shape insert and shall be constructed in accordance with Std. Dwg. B-668.
8. A minimum 4-ft. separation horizontal clearance (outside pipe to outside pipe) is required between potable and recycled water pipelines.
9. A minimum 1-ft. vertical clearance is required between proposed recycled water pipeline and crossing existing or proposed utilities or services, unless otherwise approved by EMWD engineer.
10. All recycled water appurtenances shall have a minimum separation of 4 ft. from potable water fire hydrants, blow-offs, air valves, and services.
11. Recycled water system profile elevations are to centerline (center grade) of pipe.
12. The contractor shall be responsible for paying any and all fines by the Regional Water Quality Control Board for any unpermitted recycled water discharges associated with the contractor's operations. The contractor shall immediately notify the inspector of any unpermitted discharges.
13. Air valve assemblies shall be installed in accordance with Std. Dwg. B-367 & B-598 (Select appropriate Type "A", "B", "C" or "D").
14. Recycled Water system profile elevations are to centerline (center grade) of pipe.

15. Approved Double check Backflow Prevention Device per standard drawings B-966, B-967, & B-968 is required when private recycled water irrigation system has any form of chemical injection.
16. Permanent and temporary blow-offs shall be installed in accordance with Std. Dwg. PB-18.
17. Contractor shall coordinate recycled water system shutdowns with EMWD Operations Department (through the construction inspector) at a minimum 10 days prior to the actual work. In addition, a second notice at 48 hours shall be given to confirm that work will take place as scheduled.

X. **Add for CML&C Pipe Systems:**

1. All steel cylinder pipes shall be bonded at rubber gasket joints in accordance with Std. Dwg. B-563.
2. All designated pipeline welds shall be full weld double passes at each pipe joint within designated weld length limits.
3. Shop drawings for CML&C shall be submitted and approved by EMWD prior to fabrication.
4. All CML&C Steel pipe shall be Class 150 except where noted otherwise. Pipe shall conform to AWWA specifications.
5. Steel flanged bends (6-inch to 12-inch diameter) conforming to AWWA standards C207 and C208, shall be used for instances where there are no regulatory constraints/separation requirements. Fabricated bends shall be used for all other conditions.
6. Add appropriate notes for corrosion protection per corrosion report. Galvanic anode cathodic protection systems shall be designed for a minimum of 40 years.

Y. **Add for PVC Pipe Systems:**

1. All PVC pipe through 12-inch shall be type C-900, DR 18, except where noted otherwise. Pipe shall conform to AWWA specifications. All PVC pipe 18-inch and larger should be C-905, DR 18. PVC pipe shall be colored purple as manufactured.
2. Fittings for PVC pipe shall be Ductile or Gray iron. Fittings shall be flanged, bolted mechanical joints, or push-on joints, and shall be cement mortar lined and tar (seal) coated per EMWD standards and specifications.

3. All ductile or gray iron fittings shall be polyethylene encased at the time of installation in accordance with ANSI/AWWA C105 and EMWD standards and specifications.
4. A Joint Restraint Device shall be used on all main line pipe joints within specified limits and all joints or water appurtenance laterals off main line, per EMWD Std. Dwg. B-663.
5. Add appropriate notes for corrosion protection (for metal fittings and copper services) per corrosion report.

Z. **Add for Ductile Iron Pipe Systems:**

1. Ductile iron pipe shall be tar (seal) coated [for underground installations] or painted per EMWD specifications [for above grade installations], and cement mortar lined with bolted mechanical or push-on joints.
2. Fittings for PVC pipe shall be Ductile or Gray iron. Fittings shall be flanged, bolted mechanical joints, or push-on joints, and shall be cement mortar lined and tar (seal) coated per EMWD standards and specifications.
3. All ductile or gray iron fittings shall be polyethylene encased at the time of installation in accordance with ANSI/AWWA C105 and EMWD standards and specifications.
4. Joint Restraint Devices shall be used on all main line pipe joints within specified limits and all joints of water appurtenance laterals off main line, per EMWD standards and specifications.
5. Add appropriate notes for corrosion protection per corrosion report.

AA. **Add for AC Pipe:**

Removal of ACP pipe and appurtenances shall be done by contractor licensed to handle hazardous material. Disposal shall be in accordance with State and Federal Law.

BB. **Add for Steel Casings with Blown Sand:**

(Job site air quality management will adhere to Cal OSHA regulations and EMWD's Respirable Crystalline Silica: Exposure Control Plan.)

1. Use air-blown sand to fill the annular space between the casing and the carrier pipe unless otherwise required by the agency having jurisdiction over the road or railroad crossing.

2. Furnish the necessary sand, air compressor, hoses, pressure gauges, valves, and fittings for the filling operation.
3. Air blown sand shall conform with the following gradation requirements:

<u>Sieve Size</u>	<u>% Passing</u>
No. 4	100
No. 8	90-100
No. 16	70-90
No. 30	30-70
No. 50	0-30
No. 100	0-5
No. 200	0

Certification that the sand meets this requirement shall be provided. Sand shall be free of lumps when put into the hopper. Sand shall be of a consistency to flow unimpeded and completely fill all voids.

4. Place a bulkhead for retaining the sand in the annular space between the casing and the carrier pipe at each end of the jacked casing. At the start of the sand fill operation, extend the sand discharge pipe from the placing equipment, through the inside of the casing, and to the bulkhead at the remote end of the casing. The method used to place the sand shall be such to ensure complete filling of the annular space. During placement, position the sand discharge pipe so that its discharge end shall be kept well buried in the sand at all times after the sand has been built up over the crown of the pipe at the remote end of the section being filled. Install a riser pipe suitable for a vent in the casing adjacent to the bulkhead at the near end of the casing. Plug the vent pipe with grout upon completion of sand filling.
5. Job site air quality management will adhere to Cal OSHA regulations and EMWD's Respirable Crystalline Silica: Exposure Control Plan.

CC. **Recycled Water Certification**

I certify that the design of the recycled water system is in accordance with the recycled water system expansion plans of the Eastern Municipal Water District, and that the recycled water service, storage and distribution system will be adequate to provide recycled water. This certification does not constitute a guarantee that it will supply recycled water at any specific quantities, flows or pressure.

EASTERN MUNICIPAL WATER DISTRICT

By: _____

Principal Engineer of Development Services

Date:

DD. **Time Limitations**

The time limit on drawing(s) approval shall be six (6) months from the date on the certification. If construction has not commenced within stated time, EMWD requires drawing(s) 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.

EE. **Engineer's Declaration of Responsible Charge**

I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over design of this project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with current standards.

I understand that the check of project drawings and specifications by Eastern Municipal Water District is confined to a review only and does not relieve me, as Engineer of Work, of my responsibilities for project design.

Name P.E. #

Date