

EMWD GUIDELINES FOR WATER SYSTEM PLANS

Submittal Requirements

EMWD will require the documents identified below to start the plan check process:

- An Approved Design Conditions (DC) Summary Spreadsheet with all attachments
- Water Improvement Plans (2 sets)
- Street Improvement Plans (1 set)
- Storm Drain Plans (1 set)
- Grading Plans (1 set)
- Approved Tentative Tract Map (1 set), if applicable
- Parcel or Tract Map (1 set)
- Current Conditions of Approval (1 set)
- Cover letter signed with plan check list by registered civil engineer
- Plan Check Deposit
- Community Facilities District (CFD) Letter

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 system and sewer 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. Fire hydrants, blow-offs, ITC stations and fittings, etc.
 - d. Existing water lines with corresponding EMWD drawing number; shown dashed.
 - e. 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.
2. (Do not show storm drain facilities as part of the index map).
 3. General Notes and Requirements – County/City required notes only. (Do not include notes that conflict with EMWD required notes).
 4. Notifications – See page 13.
 5. EMWD Water Notes (only) – See attached pages 14 through 19.
 6. Water Certification (tracts only) – See attached page 19.
 7. Time Limitation – See attached page 19.
 8. Engineer's Declaration of Responsible Charge – See attached page 20.
 9. Water Legend
 10. Typical Lot
 11. Estimate of Quantities; items such as pipe, valves, air valves, fire hydrants, blow-offs and water services, etc. (on sheet with index map).
 12. EMWD Approval Block/Title Block (water and sewer, if applicable)
 13. Project Vicinity Map (on sheet with index map).
 14. List of Implementing Facilities (on sheet with index map).
 15. Pressure Zone (on sheet with index map).
 16. Minimum letter height is 0.08" (all sheets).
 17. Valves, hydrants, etc. should be a **large enough scale** so as to be clear & obvious.
 18. Index Sheet shall include a pressure table indicating the pressure for each lot, and whether the pressure is low, normal, or high.

B. **Water Plan and Profile**

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 with class of pipe, etc.
5. Pipe location – 7' off the curb face in the street on the south or west side of the street.
6. Pipe depth – 4' cover over the top of the pipe, drawn to scale in profile.
7. Pipe slopes and C.G. (center grade) elevations, and stationing at all grade breaks to be shown in profile view in decimal format (ex: S=0.0040). Show top and bottom of pipe in profile view 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. Minimum 10' horizontal clearance required between water and sewer mains (edge to edge).
10. Water pipeline crossings over non-potable mains must have 1' of vertical clearance between bottom of water and top of non-potable main. When there is no alternative except for non-potable to go over water, special conditions will be required per California Division of Drinking Water.

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 to be profiled, dashed and labeled.

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 EMWD.
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. **Fire Hydrants** – Show proper fire hydrant symbol in plan view only. Show stationing and standard drawing number for each hydrant on plan view only. For projects where EMWD fire hydrants are prone to being struck by vehicles, EMWD fire hydrants must include Clow LBIW400A Hydrant Check Valves. (i.e. in parking islands, adjacent to drive aisles/ways, non-standard width streets, fire hydrants 18-inches from curb face, etc.).

F. **Blow-offs**

1. Use a blow-off at the end of all lines that will not be extended in the future where no fire hydrant exists (such as cul-de-sacs).
2. A blow-off is required between two valves along a pipe length where no fire hydrant exists.
3. Use Temporary Blow-off B-561 for steel pipe and B-568 for PVC and ductile iron pipe at ends of lines that will be extended in the future.

G. **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 view. 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.

1. **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. 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 fire, domestic, and landscape irrigation services. For proposed water pipelines, individual connections are acceptable (see exhibits shown below).
 1. Hot taps shall be conducted by an EMWD-approved contractor. All materials shall be per EMWD’s approved material list, or as approved by EMWD (Submittals required for all materials used).

- J. **Utility Crossings** – Show caution note designating type, size and stationing of the utility line wherever it crosses a 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 view between utilities “CDF per EMWD specs”.

- K. **Connection of a Proposed Steel Water Line to an Existing Steel Water Line** that has been in the ground longer than one year, requires an insulating test connection shown as ITC per EMWD standard B-660.

- L. **Water Service** – Show symbol on plans and station any meter that is not to be installed as typical. Alternative is to designate as “field-located”. Show service on “Index Map”.
 1. Typical size of residential water services shall be 1-inch in diameter.
 2. For residential water services with less than 50 psi of pressure, the water service shall be increased to 1½-inch in diameter.

- M. **Pressure Regulators** – Private pressure regulators are required for all residential lots.

- N. **Pad Elevation** – Show the pad elevation of each lot on plan view.

- O. **Easements** – Waterlines in easements are allowed only upon prior approval by EMWD, 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 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.
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, fire hydrants, 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, shrubs, irrigation pipelines, 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** – A means of access and egress to 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 38 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).
1. 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.
 2. Driveways – A means of entry to access roads from public right-of-way will be required. EMWD will consider the following:
 - a. Driveway – Install 16-foot wide commercial driveway per the local land agency’s standards.
 - b. 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.
 - c. 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.

3. 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.
4. Horizontal Curves – Horizontal curves within access roads shall not have a radius of less than 50-feet.
5. Vertical Curves – Vertical angle points shall not be allowed in access roads. Vertical curves shall be introduced to avoid ground clearance “bottoming out” conditions.
6. Drainage Crossings – EMWD will consider the following for access roads drainage crossings:
 - d. Grouted rounded river rock 6-inches in diameter or smaller.
 - e. AC pavement.
 - f. Subsurface structures as approved by EMWD.

Q. **Abandonment of Existing Water Facilities**

1. Abandonment of 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 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 Intertie – 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 Fire Hydrants and Blow-offs - Remove and dispose of valve at main. Install blind flange at main. Remove and dispose of vertical riser and blow-off or fire hydrant head. Install concrete plugs at pipe ends. Fill with grout per EMWD Standard Detailed Provision Section 03604 or Cellcrete.
5. Abandonment of 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. **Fire Pump Assemblies**

1. For projects requiring onsite fire pumps, the project proponent shall submit fire pump plans that include a return line that will allow for recirculation of flow during the pump tests. In addition the project proponent shall include necessary isolation valves to operate the pump during the pump tests without discharge.
2. For sample pump assemblies see Toolbox.

T. **Index to Commonly Referenced Water Standard Drawings**

Pipelines

- | | |
|--------|--|
| B-563 | Steel Pipeline - Pipe Pad or Coupling for Cast Iron Fittings |
| 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-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 Valve
- B-668 Valve Cap & Riser Detail
- B-665 Guard and Marker Posts

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

- B-590A 1" Service Connection
- B-965 1" Residential Meter Service Connection 1" Copper Tubing
- B-342A 1 1/2" Copper Service Connection
- B-344A 2" Copper Service Connection
- B-993 4" & Larger Service Connection
- B-658 Service Connections 1" through 4" on Water Appurtenance Lateral or Watermain 16" or Larger
- B-976 Read Hole for Meter Vaults

Meters

B-590	5/8" & 3/4" Meter Installation
B-591	1" Meter Installation
B-342	1-1/2" Meter Installation
B-344	2" Meter Installation
B-633	3" Meter Installation
B-634	4" Meter Installation
B-635	6" Meter Installation
B-636	8" Meter Installation
B-994	Meter Cage – Flange Mount

Backflow Preventers

B-657	4", 6", 8" or 10" Double Check Detector Assembly & Reduced Pressure Detector Assembly
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"
B-597A	Reduced Pressure Backflow Preventer Assy. for 3/4" - 2"
B-597B	Reduced Pressure Backflow Preventer Assy. for 2 1/2" - 3"
B-597C	Reduced Pressure Backflow Preventer Assy. for 4" - 10"

Pressure Regulators

B-932	4" & 6" Pressure Regulator above Ground Installation
B-933	8" Pressure Regulator above Ground Installation

Air Valves

B-598	1" Air Valve Installation
B-367	2" Air Valve Installation

B-578 3" Thru 10" Air Valve Installation

Blow-offs

B-561 4" x 1-2 ½" Blow-Off Temporary End Installation (Steel Pipe)

B-568 6" x 1 - 2 1/2" Blow Off Temporary End Installation for ACP, PVC & DI Pipe

B-351 6" x 1-2 ½" Blow Off Installation (Steel Pipe)

B-357 6" x 1-2 ½" Blow-off Installation for ACP, PVC & DI Pipe

B-653 6" x 1 - 4" Blow-Off Installation - Saddle Tangent Outlet - Steel Pipe

Fire Hydrants

B-356 6" x 2-1/2" & 1-4" Fire Hydrant Installation (Steel Pipe)

B-362 6" x 1-2 ½" & 1-4" Fire Hydrant Installation for ACP, PVC & DI Pipe.

B-387 6" x 1-2 ½" & 1-4" Fire Hydrant Installation (City of Hemet Steel Pipe)

B-388 6" x 1-2 1/2" & 1-4" Fire Hydrant Installation (City of Hemet – ACP, PVC & DI Pipe)

B-516 6" x 2-2 ½" x 1-4" Fire Hydrant Installation (Steel Pipe)

B-517 6" x 2-2 ½" x 1-4" Fire Hydrant Installation for ACP, PVC & DI Pipe

B-566 6" x 2-2 ½" x 1-4" Fire Hydrant Installation (City of Hemet, ACP, PVC & DI Pipe)

B-567 6" x 2-2 ½" x 1-4" Fire Hydrant Installation (City of Hemet – Steel Pipe)

B-645 6" x 1 - 2 1/2" & 1 - 4" Fire Hydrant Installation (City of San Jacinto, ACP, PVC & DI Pipe)

B-650 6" x 2 - 2 1/2" x 1 - 4" Fire Hydrant Installation (City of San Jacinto, ACP, PVC & DI Pipe)

B-651 6" x 2 1/2" x 1 - 4" Fire Hydrant Installation (City of San Jacinto, Steel Pipe)

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

Tanks

B-977 Typical Steel Tank Circumferential Stairway (sheet 1 of 2)

B-978 Typical Steel Tank Circumferential Stairway (sheet 2 of 2)

B-979 Steel Tank Roof Access Platform and Hatch

B-984 Steel Tank Roof Hatch

Miscellaneous

B-666 Formed Sealant Groove Detail and Typical Crack Repair

B-934 Recessed Trench Plate Detail

B-935 Potable Water Sample Station

B-987 EMWD Facility Monument Sign

B-1042 Emergency Shower & Eyewash

U. 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 4372

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).

V. **Plotting of Mylars** – Mylars to be plotted mirrored on HP Matte Film (51642B) 5 mil.

W. **EMWD Water Notes** - Use only those notes and standards determined appropriate by EMWD.

X. **Detailed Requirements:**
(List on title sheet of construction plans. **List only those notes that are applicable to the project.**)

1. Water pipeline and appurtenant construction shall be in accordance with EMWD standards and specifications.

2. Prior to construction of pipeline, contractor shall expose existing water system and verify its existing elevation and location.

3. Where sewers have been constructed by agencies other than EMWD, contractor shall verify sewer lateral locations prior to excavation for water pipeline. In the event sewer laterals are found to be at a depth less than in accordance with EMWD sewer standards, (for City of Hemet, refer to City of Hemet Std. No. 201) water pipeline contractor shall adjust water pipeline depth as directed by the Engineer to cross over the sewer lateral if possible, to provide 36" minimum cover to finish road grade; otherwise, cross under the lateral, which requires special construction.
4. All service connections shall be 1" services x 1" meters, unless otherwise noted; and shall be located as shown on the plans and adjusted as necessary to miss driveways. Water service assemblies shall be installed in accordance with Std. Dwg. B-591 & B-590A, type "A", "B" or "C" (select appropriate). (Engineer shall list other sizes and drawings when appropriate). Adjoining lot meter boxes shall be placed together at property line. EMWD RECOMMENDS B-965 FOR DOMESTIC WATER SERVICE WITH A RESIDENTIAL FIRE SPRINKLER SYSTEM.
5. Air valve assemblies shall be installed in accordance with Std. Dwg. B-598 (Select appropriate Type "A", "B", "C" or "D").
6. Water system profile elevations are to centerline (center grade) of pipe.
7. Approved Reduction Pressure Backflow Prevention Device (B-597 A, B, C) required for all industrial, commercial, apartment complexes and landscape services.
8. Install locator wire over water main per Std. Dwg. B-656.
9. Contractor shall coordinate 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.

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

1. Blow-off Assemblies shall be installed in accordance with Std. Dwg. B-351.
2. Temporary Blow-off Assemblies shall be installed in accordance with Std. Dwg. B-561.

3. Fire hydrant Assemblies shall be installed in accordance with Std. Dwgs. (Select appropriate standard drawing)

B-356 (6" x 1 - 2 ½" x 1 - 4")

B-387 (6" x 1 - 2 ½" x 1 - 4") City of Hemet

B-516 (6" x 2 - 2 ½" x 1 - 4")

B-567 (6" x 2 - 2 ½" x 1 - 4") City of Hemet

B-651 (6" x 2 - 2 ½" x 1 - 4") City of San Jacinto

4. Steel flanged bends (8-inch to 20-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.
5. All steel cylinder pipes shall be bonded at rubber gasket joints in accordance with Std. Dwg. B-638.
6. All designated pipeline welds shall be full weld double passes at each pipe joint within designated weld length limits.
7. Shop drawings for CML&C shall be submitted and approved by EMWD prior to fabrication.
8. All CML&C Steel pipe shall be Class 150 except where noted otherwise. Pipe shall conform to AWWA specifications.
9. Add appropriate notes for corrosion protection per corrosion report. Galvanic anode cathodic protection systems shall be designed for a minimum of 40 years.

Z. **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 blue as manufactured.
2. Fire Hydrant Assemblies shall be installed in accordance with Std. Dwg's. (Select appropriate standards)

B-362 (6" x 1 - 2 ½" x 1 - 4")

B-388 (6" x 1 - 2 ½" x 1 - 4") City of Hemet

B-517 (6" x 2 - 2 ½" x 1 - 4")

B-566 (6" x 2 - 2 ½" x 1 - 4") City of Hemet

B-645 (6" x 1 - 2 ½" x 1 - 4") City of San Jacinto

B-650 (6" x 2 - 2 ½" x 1 - 4") City of San Jacinto

3. Blow-off Assemblies shall be installed in accordance with Std. Dwg. B-357.
4. Temporary Blow-off Assemblies shall be installed in accordance with Std. Dwg. B-568.
5. Fittings for PVC pipe shall be Ductile or Cast 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.
6. 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.
7. 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.
8. Add appropriate notes for corrosion protection (for metal fittings and copper services) per corrosion report.

AA. **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.

BB. 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.

CC. Add for Potable Sampling Station:

Potable sampling station (PSS) shall be installed in accordance with STD. DWG. B-935.

DD. Add for Steel Casings with Blown Sand:

(Blown sand shall only be used in steel casings with a length of 100 linear feet or less)

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

4. 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.

5. 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.

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

EE. **Water Certification**

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

EASTERN MUNICIPAL WATER DISTRICT

By: _____

Principal Engineer of Development Services

Date:

FF. **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.

