EAST BAY MUNICIPAL UTILITY DISTRICT

REQUEST FOR PROPOSAL (RFP) No. 531-25-01

On-Call Pipeline Engineering Design Support

ADDENDA

Prospective bidders are responsible for reviewing any published addenda regarding this bid at ebmud.com/business-center

CONTACT

Hank Williams, Associate Civil Engineer
(510) 287-1063
Hank.williams@ebmud.com

RESPONSE DUE

February 18, 2025
4:00 p.m. PST

*SUBMIT ELECTRONICALLY TO**

Hank Williams, Associate Civil Engineer EBMUD
Hank.williams@ebmud.com
**Hardcopy proposals will not be accepted*

EAST BAY MUNICIPAL UTILITY DISTRICT

RFP No. 531-25-01

On-Call Pipeline Engineering Design Support

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I. STATEMENT OF WORK

A. BACKGROUND

The East Bay Municipal Utility District (District) prepares water pipeline designs for approximately 40 miles of pipeline each year. The water pipeline designs guide the installation by either a contractor or District construction crew and are used by the District's Construction Inspectors to generate a record of facilities placed in the ground. District water pipeline designs adhere to applicable District Engineering Standard Practices, State Department of Drinking Water standards, District Drawing Standards Manual, and the District's AutoCAD Manual.

At times, the volume of work exceeds the District resources available and the District cannot complete the design work in a timely fashion resulting in increased project timelines. The purpose of this contract is for a Proposer to assist the District in the preparation of pipeline design drawings during peak workload periods. It is the expectation of this contract that the Proposers have sufficient staff to prioritize the District's pipeline designs.

B. SCOPE

The scope of work is listed below, which is described in further details in Section D.

- Proposer shall review the AutoCAD Manual and the Drawings Standards Manual and provide feedback on the usefulness of the manuals. Once Proposer is familiar with District process, the District and Proposer will establish expectations of pipeline design work products and timelines.
- Proposer will provide on-call design support for water pipeline projects. This service will be used during high-volume periods when there is a District backlog.
- When the District requests a design, the District will reach out to the Proposer by email with the scope of work and deadline. The Proposer will review the information and provide the District an email response within 24 hours with the following information:
  - Can the deadline be met – YES or NO
  - If the response is YES, provide an estimated cost to complete the work.
  - If the response is NO, provide an alternative schedule and an estimated cost to complete the work. Note that if the response is NO, the District may not utilize the Proposer.

  The District will review the timeline and cost, and if approved give the Proposer a written notice to proceed by email with the design package.
    - The District expects the Proposer to complete designs within the following timeline after notice to proceed:

- Projects ½ mile or less should be completed within 10 weeks.
- For each ½ mile increment, Proposer should add an additional five weeks (e.g., 15 weeks for 1 mile, 20 weeks for 1.5 mile, 25 weeks for 2 miles, etc.)

The District intends to award a contract to two Proposers who best meet the District's requirements. Each contract will be a three-year contract with one option to renew for one two-year term. The District estimates the contract amount at approximately $250,000 per year for a total of $750,000 per contract. Actual quantity and frequency of requested services may vary.

All in-person meetings shall occur at the District Administration Building, 375 11th Street, Oakland, CA, and all virtual meetings shall occur on Microsoft Teams. A site visit is mandatory for each project and the District will not reimburse out of town travel expenses.

C. PROPOSER QUALIFICATIONS

1. Proposer Minimum Qualifications

a. Project Manager:

(1) A minimum of five (5) years of leading role experience in project management in underground utility design.

(2) A minimum of five (5) years managing similar projects in complexity and nature that require coordination between the Proposer's design team, contractor or a developer, and a utility's engineering staff.

(3) Registered as a professional Civil Engineer in California.

b. Lead Engineer:

(1) A minimum of five (5) years of underground utility design experience.

(2) Registered as a professional Civil Engineer in California.

c. CAD Designer/Operator

(1) A minimum of (5) years of AutoCAD Civil 3D Utility Design Experience

d. Proposer shall possess all permits, licenses, and professional credentials necessary to perform services as specified under this RFP.

D. SPECIFIC REQUIREMENTS

The scope of work is described in the task items listed below. The Proposer shall provide the necessary technical expertise, staffing and services to complete these tasks after the contract is awarded.

Task 1 Review Existing Documents

Review the Drawing Standards Manual and AutoCAD manual and become familiar with District standard drawings and specifications, and other documents necessary to complete the tasks of the project. A complete list of the documents which shall be reviewed is listed in Exhibit D. Prepare detailed comments and questions on the two manuals. Lead a virtual meeting with the District (up to 3 hours) to review questions and comments on the documents.

Task 1 Deliverables (Review Existing Documents)

1. Meeting minutes
2. Project schedule to complete the review of the AutoCAD and Drawing Standards Manuals
3. Written Feedback on the AutoCAD and Drawing Standards as marked up PDF documents.

Task 2 On-call Pipeline Design Process Development

Work with the District to establish expectations and timelines for the on-call pipeline design process. Proposer to participate in one, three-hour workshop to be led by the District. The workshop shall be held at the District Administration Building. The topics to be discussed, include:

1. Project expectations
2. A (design) schedule for an example project
3. Turnaround times
4. Process for sharing information
5. Project handoffs
6. Anticipated obstacles
7. Potential concerns related to applicant work
8. Rate schedule

If the District and Proposer cannot come to terms during the workshop the Proposer may opt out of the contract.

Task 2 Deliverables (Expectations and Kickoff Meeting)

1. Written document detailing the terms and expectations for on-call pipeline design process

Task 3 Work (Project Management and District Coordination)

Proposer will provide project management for the Contract, which includes at a minimum the tasks listed below.

1. Track schedule and budget.
2. Ensure a project manager is assigned to each design project and there are sufficient staff to complete the project in the agreed upon timeframe.
    a. Submit resumes for any staff working on the project if their resumes were not included with this proposal response.
3. Complete project coordination with District and non-District stakeholders on the project as needed. Non-District stakeholders can include Consulting Engineers, Caltrans, Cities, Counties, sanitation districts, PG&E, State Water Board, etc.
4. Submit a written status update for each project on a weekly basis and participate in a weekly coordination meeting while there are projects in progress.
5. Communicate with the District as needed to resolve issues by email, phone, or video conference.
6. Communicate with applicant applying for water service as needed and document this communication and other non-District communication in the form of a spreadsheet with, at a minimum, the date of communication and summary of what was discussed, the outcome, and any action items. Submit this communication log with the weekly project update to the District.
7. Resolve utility conflicts, District utility clearance issues, and/or other conflicts that prevent a pipeline design from meeting District and State standards.
8. Ensure designs conform with California Water Resource Control Board Code of Regulations Title 22 requirements (Title 22).
    a. If Title 22 clearance requirements cannot be met, the Proposer will submit a "variance application" to the State and include the approval letter in the final design package to the District. District will provide examples of the variance application package as needed.
9. Conduct a 30-minute project summary meeting with the District to review lessons learned from each design. Meetings will be virtual.

Task 3 Deliverables (Project Management and District Coordination)

1. Weekly email updates with written project status
2. Staff resumes as needed
3. Monthly invoices
4. Communication log
5. Variance documentation as needed
6. Project summary meeting (virtual)

Task 4 Work (Design)

The Proposer shall complete the Pre-Design and Design work noted in this section.

Pre-design work, such as, topographic surveys (if needed), existing utility information and record drawing research, improvement plan, and survey review to confirm water main clearances and District standards are being met, soil and environmental documentation review and coordination with District Environmental Compliance Division.

Design work, such as, base map, plan and profile design, and completion of associated documents, such as, hydrant sketches, removal of service (RFS) drawings, traffic control plans (TCPs), and material estimates.

The final products will include detailed utility information, 100% constructable design drawings, material estimate sheets, hydrant sketches, RFS, and TCP drawings as needed.

1. Review improvement plans, survey, as-builts, existing utility data, and any other pre-design information for conformance with District standards and Title 22 requirements. Complete additional utility research as needed.
2. Conduct a minimum of one site visit prior to starting the design and additional site visits as needed. During the site visit the Proposer shall perform the following tasks and document:
    a. Take pictures of the site and document anything else that might be relevant to the project.
    b. Identify areas of potential conflict or concern that may not have been shown on improvement plans, such as, creeks, culverts, geohazards, trees, structures, and any other potential hazards.
3. Complete a pipeline project:
    a. Plan (profile – as needed) design
    b. RFS drawings (as needed)
    c. Hydrant sketches (as needed)
    d. TCP (as needed)
    e. Material estimates
4. Submit 90% draft designs for District review.
5. Incorporate edits as needed based on coordination with all District and non-District stakeholders on the project.
6. Resolve any utility conflicts, other conflicts, clearance issues, or Title 22 requirements.
7. If changes occur after the drawings have been signed and stamped, complete a drawing revision to incorporate changes.

Task 4 Deliverables (Design)

1. Water pipeline project plan (profile – as needed) design, RFS drawings, hydrant sketches, and TCPs completed in AutoCAD Civil 3D 2023 per District standards and in .dwg and .pdf formats.
2. Material Estimates completed in Excel and submitted in Excel and/or Word formats.
3. Drafts of all documents submitted to the District for review. Feedback shall be incorporated prior to providing final copies in the same formats.
4. A stamp by a registered Civil engineer in the State of California on the water pipeline design.

Task 5 Additional Meetings

1. Additional in-person or virtual meetings as necessary.
2. At the end of the contract the Proposer will meet with the District for a final Contract closeout meeting to discuss the results of the Contract and all the projects.

Task 5 Deliverables (Additional Meetings)

1. Meet with District to discuss Contract closeout and results. This meeting will review lessons learned from the Contract and how to make future designs more efficient. The meeting will take place at the District Administration Building.
2. Proposer shall prepare a memorandum or PowerPoint presentation with any lessons learned. The memorandum or PowerPoint shall be presented during the meeting and a digital copy shall be provided to the District after the meeting.

E. REFERENCE ITEMS TO BE PROVIDED BY EBMUD

Items Provided with the RFP

- PID AutoCAD Manual
- PID Drawing Standards Manual

Items Provided after Contract

- Improvement plans, survey topo, or other pre-design files as applicable
- Sample EBMUD applicant designs
- Material estimate excel sheet

II. CALENDAR OF EVENTS

EVENT	DATE/LOCATION
RFP Issued	February 3, 2025
Response Due	February 18, 2025 by 4:00 p.m.

District Board Approval	March 25, 2025
Anticipated Contract Start Date	April 15 , 2025

Note: All dates are subject to change **by District**.

Proposers are responsible for reviewing **https://www.ebmud.com/business-center/requests-proposal-rfps/** for any published addenda. Hard copies of addenda will not be mailed out.

III. DISTRICT PROCEDURES, TERMS, AND CONDITIONS

A. RFP ACCEPTANCE AND AWARD

1. RFP responses will be evaluated by the Selection Committee and will be scored and ranked in accordance with the RFP section entitled "Evaluation Criteria/Selection Committee."

2. The Selection Committee will recommend award to the Proposer who has submitted the RFP response that best serves the overall interests of the District. Award may not necessarily be made to the Proposer with the lowest overall cost.

3. The District reserves the right to award to a single or to multiple General or Professional Service Providers, dependent upon what is in the best interest of the District.

4. The District has the right to decline to award this contract or any part of it for any reason.

5. Any specifications, terms, or conditions issued by the District, or those included in the Proposer's submission, in relation to this RFP, may be incorporated into any purchase order or contract that may be awarded as a result of this RFP.

6. Award of contract. The District reserves the right to reject any or all proposals, to accept one part of a proposal and reject the other, unless the proposer stipulates to the contrary, and to waive minor technical defects and administrative errors, as the interest of the District may require. Award will be made, or proposals rejected by the District as soon as possible after proposals have been opened.

B. EVALUATION CRITERIA/SELECTION COMMITTEE

All proposals will be evaluated by a Selection Committee. The Selection Committee may be composed of District staff and other parties that have expertise or experience in this type of procurement. The Selection Committee will select a Proposer in accordance with

the evaluation criteria set forth in this RFP. The evaluation of the RFP responses shall be within the sole judgment and discretion of the Selection Committee.

The Selection Committee will evaluate each RFP response meeting the qualification requirements set forth in this RFP. Proposer should bear in mind that any RFP response that is unrealistic in terms of the technical or schedule commitments, or unrealistically high or low in cost, will be deemed reflective of an inherent lack of technical competence or indicative of a failure to comprehend the complexity and risk of the District's requirements as set forth in this RFP.

RFP responses will be evaluated and scored according to the Evaluation Criteria below and scored according to a zero to five-point scale. The scores for all Evaluation Criteria will then be added to arrive at a weighted score for each RFP response. An RFP response with a high weighted total will be ranked higher than one with a lesser-weighted total.

The Evaluation Criteria are as follows:

	Evaluation Criteria
A.	**Cost:** The points for Cost will be computed by dividing the amount of the lowest responsive RFP response received by each Proposer's total proposed cost. While not reflected in the Cost evaluation points, an evaluation may also be made of: 1. Reasonableness (i.e., does the proposed pricing accurately reflect the Proposer's effort to meet requirements and objectives?); 2. Realism (i.e., is the proposed cost appropriate to the nature of the products and services to be provided?); and 3. Affordability (i.e., the ability of the District to finance this project). Consideration of price in terms of overall affordability may be controlling in circumstances where two or more RFP responses are otherwise judged to be equal, or when a superior RFP response is at a price that the District cannot afford.
B.	**Key Personnel and Organization Chart:** 1. Project Team Qualifications: A. Water utility design experience of similar size and scope B. Involvement and time commitment of key personnel C. Meet minimum qualifications outlined in Section I.C D. Sufficient staff to be able to prioritize projects 2. Project Team Organization: Proposer should provide an organizational chart that indicates the team structure.

C.	**Implementation Plan and Schedule:** An evaluation will be made of the likelihood that the Proposer's implementation plan and schedule will meet the District's schedule. Additional credit will be given for the identification and planning for mitigation of schedule risks which the Proposer believes may adversely affect any portion of the District's schedule.
D.	**Relevant Experience:** An evaluation will be made of the proposed level of effort in all areas, as to whether it is appropriate to the project needs. The proposals will not be scored according to lowest cost. RFP responses will also be evaluated against the RFP specifications and the questions below: 1. Do the individuals assigned to the project have experience on similar projects? 2. Do the résumés demonstrate backgrounds that support the design work the project requires? 3. How extensive is the applicable education and experience of the personnel designated to work on the project?
E.	**References (See Exhibit A – RFP Response Packet):** If a short list process is used for a solicitation, references are only performed on the shortlisted Proposers and the score for reference checks is not included in the preliminary short list score.
	Oral Presentation and Interview: The oral interview may consist of standard questions asked of each of the Proposers and specific questions regarding the specific RFP response.
F.	**Understanding of the Project:** RFP responses will be evaluated against the RFP specifications and the questions below: 1. Has the Proposer demonstrated a thorough understanding of the purpose and scope of the project? 2. How well has the Proposer identified pertinent issues and potential problems related to the project? 3. Has the Proposer demonstrated that it understands the deliverables the District expects it to provide? Has the Proposer demonstrated that it understands the District's time schedule and can meet it?
G.	**Contract Equity Program:** As described in the guidelines contained in Exhibit A-Contract Equity Program, PROPOSER Information and Acceptance. Points will be given for local businesses, small businesses, and diversity of subconsultants/team members for up to a total of 10 points.

C. PRICING

1. Prices quoted shall be firm for the first 12 months of any contract that may be awarded pursuant to this RFP.

2. All prices quoted shall be in United States dollars.

3. Price quotes shall include any and all payment incentives available to the District

4. Proposers are advised that in the evaluation of cost, if applicable, it will be assumed that the unit price quoted is correct in the case of a discrepancy between the unit price and extended price.

D. NOTICE OF INTENT TO AWARD AND PROTESTS

At the conclusion of the RFP response evaluation process, all entities who submitted a proposal package will be notified in writing by e-mail or USPS mail with the name of the Proposer being recommended for contract award. The document providing this notification is the Notice of Intent to Award.

Negotiations for a Consulting Services Agreement with a "not to exceed" contract price (for time and expenses) will be scheduled shortly after the Notice of Intent to Award. If an Agreement cannot be achieved, the District will proceed to negotiate with the next highest ranked Proposer.

Protests must be in writing and must be received no later than seven (7) workdays after the District issues the Notice of Intent to Award. The District will reject the protest as untimely if it is received after this specified time frame. Protests will be accepted from proposers or potential proposers only.

If the protest is mailed and not received by the District, the protesting party bears the burden of proof to submit evidence (e.g., certified mail receipt) that the protest was sent in a timely manner so that it would be received by the District within the RFP protest period.

Proposal protests must contain a detailed and complete written statement describing the reason(s) for protest. The protest must include the name and/or number of the proposal, the name of the firm protesting, and include a name, telephone number, email address and physical address of the protester. If a firm is representing the protester, they shall include their contact information in addition to that of the protesting firm.

Protests must be mailed, hand delivered, or emailed to the Manager of Purchasing, Mailstop 102, East Bay Municipal Utility District, 375 Eleventh Street, Oakland, CA 94607 or P.O. Box 24055, Oakland, California 94623. Facsimile and electronic mail protests must be followed by a mailed or hand delivered identical copy of the protest and must arrive within the seven workday time limit. Any proposal protest filed with any other District office shall be forwarded immediately to the Manager of Purchasing.

In the event that the protest is denied, the protester can appeal the determination to the requesting organization's Department Director. The appeal must be submitted to the Department Director no later than five workdays from the date which the protest determination was transmitted by the District, to the protesting party. The appeal shall focus on the points raised in the original protest, and no new points shall be raised in the appeal.

Such an appeal must be made in writing and must include all grounds for the appeal and copies of the original protest and the District's response. The proposal protester must also send the Purchasing Division a copy of all materials sent to the Department Director.

The Department Director will make a determination of the appeal and respond to the protester by certified mail in a timely manner. If the appeal is denied, the letter will include the date, time, and location of the Board of Directors meeting at which staff will make a recommendation for award and inform the protester it may request to address the Board of Directors at that meeting.

The District may transmit copies of the protest and any attached documentation to all other parties who may be affected by the outcome of the protest. The decision of the District as to the validity of any protest is final. This District's final decision will be transmitted to all affected parties in a timely manner.

E.

F. CONFLICT OF INTEREST

Proposer shall notify the District immediately if they are providing services for the job, or are in any other way associated with the applicant they will be providing designs for in Task 1 or 2. The District will review the association and determine if there is a conflict of interest.

G. INVOICING

1. Following the Districts acceptance of product(s) meeting all specified requirements, the District will render payment within thirty (30) days of receipt of a correct invoice.

2. The District will notify the General or Professional Service Provider of any invoice adjustments required.

3. Invoices shall contain, at a minimum, District purchase order number, invoice number, remit to address, and itemized services description including any project names and agreement numbers.

4. The District will pay General or Professional Service Provider in an amount not to exceed the negotiated amount(s) which will be referenced in the agreement signed by both parties.

H.

IV. RFP RESPONSE SUBMITTAL INSTRUCTIONS AND INFORMATION

A. DISTRICT CONTACTS

All contact during the competitive process is to be through the contact listed on the first page of this RFP. The following persons are to be contacted only for the purposes specified below:

FOR INFORMATION REGARDING TECHNICAL SPECIFICATIONS:
Attn: Hank Williams, Associate Civil Engineer
EBMUD- Pipeline Infrastructure Division
E-Mail: Hank.williams@ebmud.com
PHONE: 510- 287-1063

FOR INFORMATION ON THE CONTRACT EQUITY PROGRAM:
Attn: Contract Equity Office
PHONE: (510) 287-0114

AFTER AWARD:
Attn: Hank Williams, Associate Civil Engineer
EBMUD Pipeline Infrastructure Division
E-Mail: hank.williams@ebmud.com
PHONE: 510-287-1063

B. SUBMITTAL OF RFP RESPONSE

1. At this time, no hardcopy proposals will be accepted. Upload your RFP response in pdf format and prior to the bid due date/time RFP submittals, in their entirety, shall be emailed to Hank.williams@ebmud.com. The District's email has limitations on attachment size. Make sure your response is less than 25 megabytes. If the file exceeds the limit, you will need to send multiple emails. Proposers are solely responsible for ensuring timely delivery of the proposals. The District shall not be responsible for any issues related to transfer of files through email. You may call at (510) 287-1063 to check receipt of the proposal.

2. All costs required for the preparation and submission of an RFP response shall be borne by the Proposer.

3. California Government Code Section 4552: In submitting an RFP response to a public purchasing body, the Proposer offers and agrees that if the RFP response is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the Proposer for sale to the purchasing body pursuant to the RFP response. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the Proposer.

4. Proposer expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act.

5. The RFP response shall remain open to acceptance and is irrevocable for a period of one hundred eighty (180) days, unless otherwise specified in the RFP documents.

6. It is understood that the District reserves the right to reject any or all RFP responses.

C. RESPONSE FORMAT

1. **Proposers shall not modify the existing text for any part of Exhibits A, B, C, D or qualify their RFP responses. Proposers shall not submit to the District a re-typed or otherwise re-created version of these documents or any other District-provided document.**

2. RFP responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFP response or part thereof so marked. RFP responses submitted in response to this RFP may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.

EXHIBIT A
RFP RESPONSE PACKET
RFP No. 531-24-01 – On-Call Pipeline Engineering Design Support

To: The EAST BAY MUNICIPAL UTILITY District ("District")

From: _____
(Official Name of Proposer)

RFP RESPONSE PACKET GUIDELINES

- **SUBMITTAL SHALL CONTAIN THE FOLLOWING:**
  - **EXHIBIT A – RFP RESPONSE PACKET**
    - **INCLUDING ALL REQUIRED DOCUMENTATION AS DESCRIBED IN "EXHIBIT A-REQUIRED DOCUMENTATION AND SUBMITTALS"**

- **PROPOSERS THAT DO NOT COMPLY WITH THE REQUIREMENTS, AND/OR SUBMIT AN INCOMPLETE RFP RESPONSE MAY BE SUBJECT TO DISQUALIFICATION AND THEIR RFP RESPONSE REJECTED IN WHOLE.**

- **IF PROPOSERS ARE MAKING ANY CLARIFICATIONS AND/OR AMENDMENTS, OR TAKING EXCEPTION TO ANY PART OF THIS RFP, THESE MUST BE SUBMITTED IN THE EXCEPTIONS, CLARIFICATIONS, AND AMENDMENTS SECTION OF THIS EXHIBIT A – RFP RESPONSE PACKET. THE DISTRICT, AT ITS SOLE DISCRETION, MAY ACCEPT AMENDMENTS/EXCEPTIONS, OR MAY DEEM THEM TO BE UNACCEPTABLE, THEREBY RENDERING THE RFP RESPONSE DISQUALIFIED.**

- **PROPOSORS SHALL NOT MODIFY DISTRICT LANGUAGE IN ANY PART OF THIS RFP OR ITS EXHIBITS, NOR SHALL THEY QUALIFY THEIR RFP RESPONSE BY INSERTING THEIR OWN LANGUAGE OR FALSE CLAIMS IN THEIR RESPONSE. ANY EXCEPTIONS AND CLARIFICATIONS MUST BE PLACED IN THE "EXCEPTIONS/ CLARIFICATIONS" PAGE, NOT BURIED IN THE PROPOSAL ITSELF.**

PROPOSER INFORMATION AND ACCEPTANCE

1. The undersigned declares that all RFP documents, including, without limitation, the RFP, Addenda, and Exhibits, have been read and that the terms, conditions, certifications, and requirements are agreed to.

2. The undersigned is authorized to offer, and agrees to furnish, the articles and services specified in accordance with the RFP documents.

3. The undersigned acknowledges acceptance of all addenda related to this RFP. List Addenda for this RFP on the line below:

Addendum #	Date

4. The undersigned hereby certifies to the District that all representations, certifications, and statements made by the Proposer, as set forth in this RFP Response Packet and attachments, are true and correct and are made under penalty of perjury pursuant to the laws of California.

5. The undersigned acknowledges that the Proposer is, and will be, in good standing in the State of California, with all the necessary licenses, permits, certifications, approvals, and authorizations necessary to perform all obligations in connection with this RFP and associated RFP documents.

6. It is the responsibility of each Proposer to be familiar with all of the specifications, terms, and conditions and, if applicable, the site condition. By the submission of an RFP response, the Proposer certifies that if awarded a contract it will make no claim against the District based upon ignorance of conditions or misunderstanding of the specifications.

7. Patent indemnity: General or Professional Service Providers who do business with the District shall hold the District, its Directors, officers, agents, and employees harmless from liability of any nature or kind, including cost and expenses, for infringement or use of any patent, copyright or other proprietary right, secret process, patented or unpatented invention, article, or appliance furnished or used in connection with the contract or purchase order.

8. Insurance certificates are not required at the time of submission. However, by signing Exhibit A – RFP Response Packet, the Proposer agrees to meet the minimum insurance requirements stated in the RFP. This documentation must be provided to the District prior to execution of an agreement by the District

and shall include an insurance certificate which meets the minimum insurance requirements, as stated in the RFP.

9. The undersigned acknowledges that RFP responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFP response or part thereof so marked. RFP responses submitted in response to this RFP may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.

10. The undersigned Proposer hereby submits this RFP response and binds itself to the District. The RFP, subsequent Addenda, Proposers Response Packet, and any attachments, shall be used to form the basis of a Contract, which once executed shall take precedence.

11. The undersigned acknowledges ***ONE*** of the following (please check only one box)*:

☐ Proposer is not an SBE nor a DVBE and is ineligible for any Proposal preference; **OR**

☐ Proposer is an SBE or DVBE as described in the Contract Equity Program (CEP) and Equal Employment Opportunity (EEO) Guidelines, and has completed the CEP and EEO forms at the hyperlink contained in the CEP and EEO section of this Exhibit A.

*If no box is checked it will be assumed that the Proposer is ineligible for Proposal preference, and none will be given. For additional information on SBE/DVBE Proposal preference please refer to the Contract Equity Program and Equal Employment Opportunity Guidelines at the above referenced hyperlink.

Official Name of Proposer (exactly as it appears on Proposer's corporate seal and invoice): _____

Street Address Line 1: _____

Street Address Line 2: _____

City: _____ State: _____ Zip Code: _____

Webpage: _____

Type of Entity / Organizational Structure (check one):

☐ Corporation ☐ Joint Venture

☐ Limited Liability Partnership ☐ Partnership

☐ Limited Liability Corporation ☐ Non-Profit / Church

☐ Other: _____

Jurisdiction of Organization Structure: _____

Date of Organization Structure: _____

Federal Tax Identification Number: _____

Department of Industrial Relations (DIR) Registration Number: _____

Primary Contact Information:

Name / Title: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

Street Address Line 1: _____

City: _____ State: _____ Zip Code: _____

Does proposer or any employee/representative/service provider have any relatives currently employed with EBMUD? (This does not impact award of a qualified proposal; required reporting purposes only.)

☐ YES ☐ NO

If so, please list :

CONTRACTOR OR CONTRACTOR EMPLOYEE FIRST AND LAST NAME	DISTRICT EMPLOYEE FIRST AND LAST NAME	RELATIONSHIP

SIGNATURE: _____

Name and Title of Signer (printed): _____

Dated this _____ day of _____ 20_____

PROPOSAL FORM

Cost shall be submitted on this Proposal Form as is. The prices quoted shall not include Sales Tax or Use Tax; said tax, wherever applicable, will be paid by the District to the General or Professional Service Provider, if licensed to collect, or otherwise directly to the State.

No alterations or changes of any kind to the Proposal Form(s) are permitted. RFP responses that do not comply may be subject to rejection in total. The cost quoted below shall be the cost the District will pay for the term of any contract that is a result of this RFP process.

Quantities listed herein are annual estimates based on past usage and are not to be construed as a commitment. No minimum or maximum is guaranteed or implied. On-call services will be based on based on complexity and volume of work.

Award will be based on qualifications, not cost. See RFP Section III. B for evaluation criteria.

Description	**Unit of Measure (Hourly Rate)**	**Percentage of staff time required for Task* (%)**
Task 1: Review Existing Documents		
Principal in Charge		
Project Manager		
Project Engineer II		
Project Engineer I		
Drafter		
Admin/Technical Staff		
Task 2: On-call Pipeline Design Process Development		
Principal in Charge	*Same as Above*	
Project Manager	*Same as Above*	
Project Engineer II	*Same as Above*	

Project Engineer I	*Same as Above*	
Drafter	*Same as Above*	
Admin/Technical Staff	*Same as Above*	
Task 3: Work (Project Management and District Coordination)		
Principal in Charge	*Same as Above*	
Project Manager	*Same as Above*	
Project Engineer II	*Same as Above*	
Project Engineer I	*Same as Above*	
Drafter	*Same as Above*	
Admin/Technical Staff	*Same as Above*	
Task 4: Work (Design)		
Principal in Charge	*Same as Above*	
Project Manager	*Same as Above*	
Project Engineer II	*Same as Above*	
Project Engineer I	*Same as Above*	
Drafter	*Same as Above*	
Admin/Technical Staff	*Same as Above*	
Task 5: (Additional Meetings)		
Principal in Charge	*Same as Above*	
Project Manager	*Same as Above*	
Project Engineer II	*Same as Above*	
Project Engineer I	*Same as Above*	
Drafter	*Same as Above*	
Admin/Technical Staff	*Same as Above*	

***Total should equal 100%**

REQUIRED DOCUMENTATION AND SUBMITTALS

All of the specific documentation listed below is required to be submitted with the Exhibit A – RFP Response Packet. Proposers shall submit all documentation, in the order listed below, and clearly label each section of the RFP response with the appropriate title (i.e., Table of Contents, Letter of Transmittal, Key Personnel, etc.).

1. **Letter of Transmittal**: RFP response shall include a description of the Proposer's capabilities and approach in providing its services to the District, and provide a brief synopsis of the highlights of the RFP response and overall benefits to the District. This synopsis should not exceed three (3) pages in length and should be easily understood.

2. **Description of the Proposed Services:** RFP response shall include a description of the terms and conditions of services to be provided during the contract term including response times. The description shall contain a basis of estimate for services including its scheduled start and completion dates, the number of Proposer's and District personnel involved, and the number of hours scheduled for each person. The description shall demonstrate understanding of the project and outline a clear approach to achieving the project goals. Finally, the description must: (1) specify how the services in the RFP response will meet or exceed the requirements of the District; (2) explain any special resources or approaches that make the services of the Proposer particularly advantageous to the District; and (3) identify any limitations or restrictions of the Proposer in providing the services that the District should be aware of in evaluating its RFP response to this RFP.

3. **Key Personnel**: In addition to the minimum qualification presented in Section I.C, RFP response shall include a complete list of all key personnel associated with the RFP. Provide a one (1) page chart showing how you would organize the project, key personnel (indicate discipline, function, firm name) and reporting structure for each person on the list, the following information shall be included:

   (a) The person's relationship with the Proposer, including job title and years of employment with the Proposer;
   (b) The role that the person will play in connection with the RFP;
   (c) The person's telephone number and e-mail address;
   (d) The person's educational background; and
   (e) The person's relevant experience, certifications, and/or merits

4. **Implementation Plan and Schedule**: The RFP response shall include an implementation plan and schedule. The plan shall include a detailed schedule indicating how the Proposer will ensure adherence to the timetables for the services and final deliverables.

5. **References:**

(a) Proposers must use the templates in the "References" section of this Exhibit A – RFP Response Packet to provide references.

(b) References should have similar scope, volume, and requirements to those outlined in these specifications, terms, and conditions.

- Proposers must verify the contact information for all references provided is current and valid.
- Proposers are strongly encouraged to notify all references that the District may be contacting them to obtain a reference.

(c) The District may contact some or all of the references provided in order to determine Proposer's performance record on work similar to that described in this RFP. The District reserves the right to contact references other than those provided in the RFP response and to use the information gained from them in the evaluation process.

6. **Exceptions, Clarifications, Amendments:**

(a) The RFP response shall include a separate section calling out all clarifications, exceptions, and amendments, if any, to the RFP and associated RFP documents, which shall be submitted with the proposer's RFP response using the template in the "Exceptions, Clarifications, Amendments" section of this Exhibit A – RFP Response Packet.

(b) **THE DISTRICT IS UNDER NO OBLIGATION TO ACCEPT ANY EXCEPTIONS, AND SUCH EXCEPTIONS MAY BE A BASIS FOR RFP RESPONSE DISQUALIFICATION.**

7. **Contract Equity Program:**

(a) Every proposer must fill out, sign, and submit the appropriate sections of the Contract Equity Program and Equal Employment Opportunity documents located at the hyperlink contained in the last page of this Exhibit A. Special attention should be given to completing Form P-25, "Employment Data and Certification". Any proposer needing assistance in completing these forms should contact the District's Contract Equity Office at (510) 287-0114 prior to submitting an RFP response.

REFERENCES
RFP No. 531-25-01
On-Call Pipeline Engineering Design Support

Proposer Name: ______________________________

Proposer must provide a minimum of three references.

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

EXCEPTIONS, CLARIFICATIONS, AMENDMENTS

RFP No. 531-25-01
On-Call Pipeline Engineering Design Support

Proposer Name:_____

List below requests for clarifications, exceptions, and amendments, if any, to the RFP and associated RFP documents, and submit with your RFP response.

The District is under no obligation to accept any exceptions and such exceptions may be a basis for RFP response disqualification.

Reference to:			**Description**
Page No.	Section	Item No.	
p. 23	**D**	**1.c.**	***Proposer takes exception to…***

*Print additional pages as necessary

CONTRACT EQUITY PROGRAM & EQUAL EMPLOYMENT OPPORTUNITY

The District's Board of Directors adopted the Contract Equity Program (CEP) to enhance equal opportunities for business owners of all races, ethnicities, and genders who are interested in doing business with the District. The program has contracting objectives, serving as the minimum level of expected contract participation for the three availability groups: white-men owned businesses, white-women owned businesses, and ethnic minority owned businesses. The contracting objectives apply to all contracts that are determined to have subcontracting opportunities, and to all General or Professional Service Providers regardless of their race, gender, or ethnicity.

All Contractors and their subcontractors performing work for the District must be Equal Employment Opportunity (EEO) employers and shall be bound by all laws prohibiting discrimination in employment. There shall be no discrimination against any person, or group of persons, on account of race, color, religion, creed, national origin, ancestry, gender including gender identity or expression, age, marital or domestic partnership status, mental disability, physical disability (including HIV and AIDS), medical condition (including genetic characteristics or cancer), genetic information, or sexual orientation.

Contractor and its subcontractors shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin in the performance of this contract. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

All Contractors shall include the nondiscrimination provisions above in all subcontracts.
Please include the required completed forms with your proposal. Non-compliance with the Guidelines may deem a proposal non-responsive, and therefore, ineligible for contract award. Your firm is responsible for:

1) Reading and understanding the CEP guidelines.

2) Filling out and submitting with your proposal the appropriate forms.

   The CEP guidelines and forms can be downloaded from the District website at the following link:
   https://www.ebmud.com/business-center/contract-equity-program

If you have questions regarding the Contract Equity Program, please call (510) 287-0114.

EXHIBIT B
INSURANCE REQUIREMENTS

PROPOSER shall take out and maintain during the life of the Agreement all insurance required and PROPOSER shall not commence work until such insurance has been approved by DISTRICT. The proof of insurance shall be on forms provided by DISTRICT directly following these Insurance Requirements.

PROPOSERS are not required to submit completed insurance verification documents with their bid but will be required to submit them upon notification of award. By signing Exhibit A – RFP Response Packet, the Proposer agrees to meet the minimum insurance requirements stated in the RFP.

<u>The following provisions applicable to all required insurance:</u>

A. Prior to the beginning of and throughout the duration of Services, and for any additional period of time as specified below, CONTRACTOR shall, at its sole cost and expense, maintain insurance in conformance with the requirements set forth below.

B. CONTRACTOR shall provide Verification of Insurance as required by this Agreement by providing the completed Verification of Insurance as requested below signing and submitting this Exhibit B to the DISTRICT. The Exhibit B may be signed by an officer of the CONTRACTOR (Agent) or by the Insurance Broker for the CONTRACTOR. CONTRACTOR shall update Exhibit B throughout the specified term of the insurance required by this Agreement by resubmitting the completed Exhibit B prior to the expiration date of any of the required insurance. The updated Exhibit B shall become a part of the Agreement but shall not require a change order to the Agreement. The Notice to Proceed shall not be issued, and CONTRACTOR shall not commence Services until such insurance has been accepted by the DISTRICT.

C. CONTRACTOR shall carry and maintain the minimum insurance requirements as defined in this Agreement. CONTRACTOR shall require any subcontractor to carry and maintain the minimum insurance required in this Agreement to the extent they apply to the scope of the services to be performed by subcontractor.

D. Acceptance of verification of Insurance by the DISTRICT shall not relieve CONTRACTOR of any of the insurance requirements, nor decrease liability of CONTRACTOR.

E. The insurance required hereunder may be obtained by a combination of primary, excess and/or umbrella insurance, and all coverage shall be at least as broad as the requirements listed in this Agreement.

F. Any deductibles, self-insurance, or self-insured retentions (SIRs) applicable to the required insurance coverage must be declared to and accepted by the DISTRICT.

G. At the option and request of the DISTRICT, CONTRACTOR shall provide documentation of its financial ability to pay the deductible, self-insurance, or SIR.

H. Any policies with a SIR shall provide that any SIR may be satisfied, in whole or in part, by the DISTRICT or the additional insured at its sole and absolute discretion.

I. Unless otherwise accepted by the DISTRICT, all required insurance must be placed with insurers with a current A.M. Best's rating of no less than A- V.

J. CONTRACTOR shall defend the DISTRICT and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier.

K. For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified) the retroactive date must be shown and must be before the date of this Agreement, and before the beginning of any Services related to this Agreement.

L. Insurance must be maintained, and updated Verification of Insurance be provided to the DISTRICT before the expiration of insurance by having CONTRACTOR's insurance broker or agent update, sign and return Exhibit B to the DISTRICT's contract manager. For all claims-made policies the updated Verification of Insurance must be provided to the DISTRICT for at least three (3) years after expiration of this Agreement.

M. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the effective date of this Agreement or the start of any Services related to this Agreement, CONTRACTOR must purchase an extended reporting period for a minimum of three (3) years after expiration of the Agreement.

N. If requested by the DISTRICT, a copy of the policies' claims reporting requirement must be submitted to the DISTRICT for review.

O. Where additional insured coverage is required, the additional insured coverage shall be "primary and non-contributory," and will not seek contribution from the DISTRICT's insurance or self-insurance.

P. CONTRACTOR agrees to provide immediate Notice to the DISTRICT of any loss or claim against CONTRACTOR arising out of, pertaining to, or in any way relating to this Agreement, or Services performed under this Agreement. The DISTRICT assumes no obligation or liability by such Notice but has the right (but not the duty) to monitor the handling of any such claim or claims if they are likely to involve the DISTRICT.

Q. CONTRACTOR agrees, upon request by the DISTRICT, to provide complete, certified copies of any policies and endorsements within 10 days of such request (copies of policies may be redacted to eliminate premium details.)

R. It is CONTRACTOR's responsibility to ensure its compliance with the insurance requirements. Any actual or alleged failure on the part of the DISTRICT to obtain proof of insurance required under this Agreement shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard.

S. Notice of Cancellation/Non-Renewal/Material Reduction The insurance requirements hereunder are mandatory, and the DISTRICT may, at its sole and absolute discretion, terminate the services provided by CONTRACTOR, should CONTRACTOR breach its obligations to maintain the required coverage and limits set forth in this Agreement. No coverage required hereunder shall be cancelled, non-renewed or materially reduced in coverage or limits without the DISTRICT being provided at least thirty (30) days

prior written notice, other than cancellation for the non-payment of premiums, in which event the DISTRICT shall be provided ten (10) days prior written notice. Replacement of coverage with another policy or insurer, without any lapse in coverage or any reduction of the stated requirements does not require notice beyond submission to the DISTRICT of an updated Verification of Insurance which shall be met by having the CONTRACTOR's insurance broker or agent update, sign and return this EXHIBIT B.

I. Workers' Compensation and Employer's Liability Insurance Coverage

A. Workers' Compensation insurance including Employer's Liability insurance with minimum limits as follows:

Coverage A.	Statutory Benefits Limits	
Coverage B.	Employer's Liability of not less than:	
	Bodily Injury by accident:	$1,000,000 each accident
	Bodily Injury by disease:	$1,000,000 each employee
	Bodily Injury by disease:	$1,000,000 policy limit

B. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

C. If there is an onsite exposure of injury to CONTRACTOR, subcontractor, and/or subcontractor's employees under the U.S. Longshore and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations or statutes applicable to maritime employees, coverage is required for such injuries or claims.

D. If CONTRACTOR is self-employed, a sole proprietorship or a partnership, with no employees, and is exempt from carrying Workers' Compensation Insurance, CONTRACTOR must return the completed Verification of Insurance confirming that CONTRACTOR has no employees and is exempt from the State of California Workers' Compensation requirements.

E. If CONTRACTOR is self-insured with respect to Workers' Compensation coverage, CONTRACTOR shall provide to the DISTRICT a Certificate of Consent to Self-Insure from the California Department of Industrial Relations. Such self-insurance shall meet the minimum limit requirements and shall waive subrogation rights in favor of the DISTRICT as stated below in section "F."

F. Waiver of Subrogation. Workers' Compensation policies, including any applicable excess and umbrella insurance, must contain a waiver of subrogation endorsement providing that CONTRACTOR and each insurer waive any and all rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers. CONTRACTOR shall defend and pay any and all damages, fees, and costs, of any kind arising out of, pertaining to, or in any way relating to CONTRACTOR's failure to provide waiver of subrogation from the insurance carrier.

INSURANCE VERIFICATION DOCUMENTS

Verification of Workers' Compensation and Employer's Liability Insurance Coverage

☐ **By checking the box and signing below, I hereby verify that the CONTRACTOR is exempt from the State of California's requirement to carry workers' compensation insurance.**

As the CONTRACTOR's insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries workers' compensation insurance as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured Retention Amount: $_____

Policy Limit: $_____

Policy Number: _____

Policy Period: from:_____ to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature: _____

II. Commercial General Liability Insurance ("CGL") Coverage

A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

C. Minimum Requirements. CGL insurance with minimum per occurrence and aggregate limits as follows:

Bodily Injury and Property Damage	$2,000,000 per occurrence & aggregate
Personal Injury/Advertising Injury	$2,000,000 per occurrence & aggregate
Products/Completed Operations	$2,000,000 per occurrence & aggregate

D. Coverage must be on an occurrence basis.

E. Coverage for Products, and Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any "prior work" coverage limitation or exclusion applicable to any Services performed by CONTRACTOR and/or subcontractor under this Agreement.

F. Insurance policies and Additional Insured Endorsement(s) Coverage shall be included for all premises and operations in any way related to this Agreement.

G. There will be no exclusion for explosions, collapse, or underground liability (XCU).

H. Insurance policies and Additional Insured Endorsement(s) shall not exclude liability and damages to work arising out of, pertaining to, or in any way relating to services performed by Subcontractor on CONTRACTOR's behalf.

I. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONTRACTOR under this Agreement as an "insured contract."

J. Waiver of Subrogation. The policy shall be endorsed to include a Waiver of Subrogation ensuring that the CONTRACTOR and its insurer(s) waive any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, agents, volunteers, and employees. CONTRACTOR shall defend and pay any and all damages, fees, and costs, of any kind, arising out of, pertaining to, or in any way resulting from CONTRACTOR's failure to provide the waiver of subrogation from its insurance carrier(s).

K. "Independent CONTRACTOR's Liability" shall not limit coverage for liability and/or damages arising out of, pertaining to, or in any way resulting from Services provided under this Agreement.

To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying, excess and umbrella policies that shall be evidenced in each case by an endorsement. The Additional Insureds must be covered for liability arising in whole, or in part, from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONTRACTOR, in any way related to Services performed under this Agreement.

L. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made, or suit is brought, except with respect to the policies' limit(s).

Verification of Commercial General Liability (CGL) Insurance Coverage

As the CONTRACTOR'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Commercial General Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance:

Self-Insured: Amount: $_____

Policy Limit: Per Occurrence: $_____ **Aggregate: $**_____

Policy Number: _____

Policy Period: from:_____**to:**_____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature: _____

III. Business Auto Liability Insurance Coverage

CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

A. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

B. Minimum Requirements. Auto insurance with minimum coverage and limits as follows:

Each Occurrence Limit (per accident) and in the Aggregate:	$2,000,000
Bodily Injury and Property Damage:	$2,000,000

C. Coverage must include either "owned, non-owned, and hired" autos or "any" automobile

This provision ensures the policy covers losses arising out of use of company-owned vehicles ("owned autos"), employee's personal autos ("non-owned autos" meaning not owned by company/insured) or autos that are rented or leased ("hired autos").

D. If CONTRACTOR is transporting hazardous materials or contaminants, evidence of the Motor Carrier Act Endorsement-hazardous materials clean-up (MCS-90, or its equivalent) must be provided.

E. If CONTRACTOR's Scope of Services under this Agreement exposes a potential pollution liability risk related to transport of potential pollutants, seepage, release, escape or discharge of any nature (threatened or actual) of pollutants into the environment arising out of, pertaining to, or in any way related to CONTRACTOR's and/or Subcontractor's performance under this Agreement, then Auto Liability Insurance policies must be endorsed to include Transportation Pollution Liability insurance. Alternatively, coverage may be provided under the CONTRACTOR's Pollution Liability Policies if such policy has no exclusions that would restrict coverage under this Agreement. Coverage shall also include leakage of fuel or other "pollutants" needed for the normal functioning of covered autos.

F. To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying and excess and umbrella policies. The Additional Insureds must be covered for liability arising in whole, or in part, from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONTRACTOR, in any way related to Services performed under this Agreement.

G. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made, or suit is brought, except with respect to the insurer's limits of liability.

Verification of Business Auto Liability Insurance Coverage

As the CONTRACTOR'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Business Automobile Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance:

Self-Insured: Amount: $_____

Policy Limit: Per Accident/Occurrence $_____Aggregate: $ _____

Policy Number: _____

Policy Period: from:_____to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature: _____

IV. Professional Liability (also known as Errors and Omissions) Insurance Coverage

A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

C. Minimum Requirements: Professional Liability Insurance with minimum limits as follows:

Each Claim or Occurrence Limit:	$2,000,000
Aggregate Limit:	$2,000,000

D. If Coverage is written on a claims-made form, the following shall apply:

1. The retroactive date must be shown and must be before the date of the Agreement or the beginning of the Services.

2. Insurance must be maintained, and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.

3. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policies form with a retroactive date prior to the effective date of the Agreement, CONTRACTOR must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

E. Insurance shall include prior acts coverage sufficient to cover the services under this Agreement.

F. Coverage shall be included for all premises and operations in any way related to this Agreement.

Verification of Professional Liability (Errors and Omissions) Insurance Coverage

As the CONTRACTOR'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Professional Liability insurance as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured: Amount: $_____

Policy Limit: Per Claim $_____ Aggregate: $ _____

Policy Number: _____

Policy Period: from:_____ to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature: _____

V. Pollution Liability Insurance Coverage

A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

C. Minimum Requirements: Pollution Liability Insurance with minimum limits, as follows:
Each Claim or Occurrence Limit: $2,000,000;
Aggregate Limit: $2,000,000.

D. Coverage must be included for bodily injury and property damage, including coverage for loss of use and/or diminution in property value, and for clean-up costs arising out of, pertaining to, or in any way related to the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of contaminants or pollutants, arising out of, pertaining to, or in any way resulting from any Services performed by CONTRACTOR under this Agreement; including any transportation of hazardous wastes, hazardous materials, or contaminants.

E. If Coverage is written on a claims-made form, the following shall apply:

1. The retroactive date must be shown and must be before the date of the Agreement or the beginning of the Services.

2. Insurance must be maintained, and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.

3. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the effective date of the Agreement, CONTRACTOR must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

F. Insurance shall include prior acts coverage sufficient to cover the services under this Agreement.

Verification of Pollution Liability Insurance Coverage

As the CONTRACTOR'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Pollution Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured Amount: $_____

Policy Limit: Per Claim $_____ Aggregate: $ _____

Policy Number: _____

Policy Period: from:_____ to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature: _____

VI. Excess and/or Umbrella Liability Insurance Coverage (Optional – See Paragraph A below)

A. The insurance requirements set forth above may be satisfied by a combination of primary and excess or umbrella policies. Where excess or umbrella policies are used the following shall apply:

B. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

C. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

D. Minimum Requirements: It is expressly understood by the parties that CONTRACTOR's Excess and/or Umbrella Liability policies shall, at minimum, comply with all insurance requirements set forth within this Agreement, and shall be at least as broad as coverage required of the underlying policies required herein.

1. Coverage for Products, Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any "prior work" coverage limitation or exclusion applicable to any Services performed under this Agreement and, if it is a claims-made policy, it must be maintained for a minimum of three (3) years following final completion of the Services.

2. There will be no exclusion for explosions, collapse, or underground damage (XCU).

3. Insurance policies and Additional Insured Endorsements shall not exclude coverage for liability and damages from services performed by contractor/subcontractor on CONTRACTOR's behalf.

4. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONTRACTOR under this Agreement as an "insured contract."

5. Independent Contractor's Liability shall not limit coverage for liability and/or damage arising out of, pertaining to, or in any way related to Services provided under this Agreement.

6. To the fullest extent permitted by law, the DISTRICT, its directors, officers, officials, agents, volunteers, and employees must be covered as Additional Insureds on a primary and noncontributory basis on all excess and umbrella policies. The Additional Insureds must

be covered for liability arising in whole or in part from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONTRACTOR, in any way related to Services performed under this Agreement.

7. A severability of interest provision must apply for all the Additional Insureds, ensuring that the CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the policy's limits.

8. CONTRACTOR and its excess and/or umbrella Liability insurance coverage must waive any rights of subrogation against the DISTRICT, its directors, officers, officials, employees, agents, and volunteers, and CONTRACTOR shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier(s).

Verification of Excess and/or Umbrella Liability Insurance Coverage

As the CONTRACTOR'S Insurance Broker/Agent, Officer, or Risk Manager, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Excess and/or Umbrella Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance.

Excess/Umbrella Limits: Amount $ _____ _____

Policy Limit: $_____

_____

Policy Number: _____

Policy Period: from _____ to _____

Insurance Carrier Name: _____

Underlying Policy(ies) listed above to which Excess/Umbrella applies:

_____

Insurance Broker/Agent or Officer or Risk Manager - Print Name: _____

Insurance Broker/Agent or Officer or Risk Manager's Signature: _____

EXHIBIT C
CONSULTING AND PROFESSIONAL SERVICES AGREEMENT

(Standard Consulting Agreement for
Contracts Greater than $80,000 - Revised 6/2/2021)
(Note: Reference District Procedure No. 451)

CONSULTING AND PROFESSIONAL
SERVICES AGREEMENT FOR
EAST BAY MUNICIPAL UTILITY DISTRICT
(Project Title)

THIS Agreement is made and entered into this _____ day of ***(month)***, 201_, by and between **EAST BAY MUNICIPAL UTILITY DISTRICT**, a public entity, hereinafter called "DISTRICT," and ***(CONSULTANT'S FULL LEGAL NAME, BOLD, ALL CAPS followed by type of entity [corporation, etc.])***, hereinafter called "CONSULTANT."

WITNESSETH

WHEREAS, DISTRICT requires consulting services for ***(need for project)***; and

WHEREAS, DISTRICT has completed ***(completed projects that pertain to this project - optional)***; and

WHEREAS, CONSULTANT has submitted a proposal to provide consulting services for ***(state type -"preparation of planning documents", "preparation of design documents", or "construction management support services")*** for the ***(project title)*** and CONSULTANT represents that it has the experience, licenses, qualifications, staff expertise and where necessary the required Department of Industrial Relations (DIR) registration to perform said services in a professional and competent manner; and

IF OVER $80,000:

WHEREAS, DISTRICT Board of Directors has authorized the contract by Motion Number _____;

-OR- IF BETWEEN $30,000 AND $80,000:

WHEREAS, DISTRICT has authorized the contract by approval of the General Manager.

NOW, THEREFORE, it is mutually agreed by DISTRICT and CONSULTANT that for the considerations hereinafter set forth, CONSULTANT shall provide said services to DISTRICT, as set forth in greater detail herein.

ARTICLE 1 - SCOPE OF WORK

1.1 CONSULTANT agrees to furnish services set forth in Exhibit A, Scope of Services, attached hereto and incorporated herein. The services authorized under this Agreement shall also include all reports, manuals, plans, and specifications as set forth in Exhibit A.

1.2 CONSULTANT's work products shall be completed and submitted in accordance with DISTRICT's standards specified, and according to the schedule listed, in Exhibit A. The completion dates specified herein may be modified by mutual agreement between DISTRICT and CONSULTANT provided that DISTRICT's Project Manager notifies CONSULTANT of modified completion dates by letter. CONSULTANT agrees to diligently perform the services to be provided under this Agreement. In the performance of this Agreement, time is of the essence.

1.3 It is understood and agreed that CONSULTANT has the professional skills necessary to perform the work agreed to be performed under this Agreement, that DISTRICT relies upon the professional skills of CONSULTANT to do and perform CONSULTANT's work in a skillful and professional manner, and CONSULTANT thus agrees to so perform the work. CONSULTANT represents that it has all the necessary licenses to perform the work and shall maintain them during the term of this Agreement. CONSULTANT agrees that the work performed under this Agreement shall follow practices usual and customary to the ***(state type - for example "engineering")*** profession and that CONSULTANT is the engineer in responsible charge of the work for all activities performed under this Agreement. Acceptance by DISTRICT of the work performed under this Agreement does not operate as a release of CONSULTANT from such professional responsibility for the work performed.

1.4 CONSULTANT agrees to maintain in confidence and not disclose to any person or entity, without DISTRICT's prior written consent, any trade secret or confidential information, knowledge or data relating to the products, process, or operation of DISTRICT. CONSULTANT further agrees to maintain in confidence and not to disclose to any person or entity, any data, information, technology, or material developed or obtained by CONSULTANT during the term of this Agreement. The covenants contained in this paragraph shall survive the termination of this Agreement for whatever cause.

1.5 The originals of all computations, drawings, designs, graphics, studies, reports, manuals, photographs, videotapes, data, computer files, and other documents prepared or caused to be prepared by CONSULTANT or its subconsultants in connection with these services shall be delivered to and shall become the exclusive property of DISTRICT. DISTRICT is licensed to utilize these documents for DISTRICT applications on other projects or extensions of this project, at its own risk. CONSULTANT and its subconsultants may retain and use copies of such documents, with written approval of DISTRICT.

1.6 CONSULTANT is an independent contractor and not an employee of DISTRICT. CONSULTANT expressly warrants that it will not represent that it is an employee or servant of DISTRICT.

1.7 CONSULTANT is retained to render professional services only and all payments made are compensation solely for such services as it may render and recommendations it may make in carrying out the work.

1.8 It is further understood and agreed by the parties hereto that CONSULTANT in the performance of its obligations hereunder is subject to the control or direction of DISTRICT as to the designation of tasks to be performed, the results to be accomplished by the services hereunder agreed to be rendered and performed, and not the means, methods, or sequence used by the CONSULTANT for accomplishing the results.

1.9 If, in the performance of this agreement, any third persons are employed by CONSULTANT, such person shall be entirely and exclusively under the direction, supervision, and control of CONSULTANT. All terms of employment, including hours, wages, working conditions, discipline, hiring, and discharging, or any other terms of employment or requirements of law, shall be determined by CONSULTANT, and DISTRICT shall have no right or authority over such persons or the terms of such employment.

1.10 It is further understood and agreed that as an independent contractor and not an employee of DISTRICT, neither the CONSULTANT nor CONSULTANT's assigned personnel shall have any entitlement as a DISTRICT employee, right to act on behalf of DISTRICT in any capacity whatsoever as agent, nor to bind DISTRICT to any obligation whatsoever. CONSULTANT shall not be covered by DISTRICT's worker's compensation insurance; nor shall CONSULTANT be entitled to compensated sick leave, vacation leave, retirement entitlement, participation in group health, dental, life or other insurance programs, or entitled to other fringe benefits payable by DISTRICT to employees of DISTRICT.

ARTICLE 2 - COMPENSATION

2.1 For the Scope of Services described in Exhibit A, DISTRICT agrees to pay CONSULTANT actual costs incurred, subject to a Maximum Cost Ceiling of $***(dollars)***. Compensation for services shall be in accordance with the method and amounts described in Exhibit B, attached hereto and incorporated herein. CONSULTANT acknowledges that construction work on public works projects requires DIR registration and is subject to prevailing wage rates and includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work. CONSULTANT certifies that the proposed cost and pricing data used herein reflect the payment of prevailing wage rates where applicable and are complete, current, and accurate.

2.2 In case of changes affecting project scope resulting from new findings, unanticipated conditions, or other conflicts or discrepancies, CONSULTANT shall promptly notify DISTRICT of the identified changes and advise DISTRICT of the recommended

solution. Work shall not be performed on such changes without prior written authorization of DISTRICT.

ARTICLE 3 - NOTICE TO PROCEED

3.1 This Agreement shall become effective upon execution of the second signature. CONSULTANT shall commence work upon receipt of DISTRICT's Notice to Proceed, which shall be in the form of a letter signed by DISTRICT's Project Manager. DISTRICT's Notice to Proceed will authorize the Contracted Services described in Exhibit A with ceiling prices described in ARTICLE 2 – COMPENSATION. No work shall commence until the Notice to Proceed is issued.

(Include the following paragraph only if your scope of services includes Optional Services.)

3.2 DISTRICT may at its option issue a Notice to Proceed for some or all of the Optional Services tasks described in Exhibit A. Compensation for Optional Services shall be in accordance with the method and amounts described in Exhibit B.

ARTICLE 4 - TERMINATION

4.1 This Agreement may be terminated by DISTRICT immediately for cause or upon 10 days written notice, without cause, during the performance of the work.

4.2 If this Agreement is terminated CONSULTANT shall be entitled to compensation for services satisfactorily performed to the effective date of termination; provided however, that DISTRICT may condition payment of such compensation upon CONSULTANT's delivery to DISTRICT of any and all documents, photographs, computer software, videotapes, and other materials provided to CONSULTANT or prepared by CONSULTANT for DISTRICT in connection with this Agreement. Payment by DISTRICT for the services satisfactorily performed to the effective date of termination, shall be the sole and exclusive remedy to which CONSULTANT is entitled in the event of termination of the Agreement and CONSULTANT shall be entitled to no other compensation or damages and expressly waives same. Termination under this Article 4 shall not relieve CONSULTANT of any warranty obligations or the obligations under Articles 1.4 and 7.1.

(Optional)

4.3 This Agreement may be terminated by CONSULTANT upon 10 days written notice to DISTRICT only in the event of substantial failure by DISTRICT to fulfill its obligations under this Agreement through no fault of the CONSULTANT.

ARTICLE 5 - PROJECT MANAGERS

5.1 DISTRICT designates ***(District Project Manager's name)*** as its Project Manager, who shall be responsible for administering and interpreting the terms and conditions of this Agreement, for matters relating to CONSULTANT's performance under this Agreement, and for liaison and coordination between DISTRICT and CONSULTANT. CONSULTANT may be requested to assist in such coordinating activities as necessary as part of the services. In the event DISTRICT wishes to make a change in the DISTRICT's representative, DISTRICT will notify CONSULTANT of the change in writing.

5.2 CONSULTANT designates ***(Consultant Project Manager's name)*** as its Project Manager, who shall have immediate responsibility for the performance of the work and for all matters relating to performance under this Agreement. Any change in CONSULTANT designated personnel or subconsultant shall be subject to approval by the DISTRICT Project Manager. ***(The following sentence is optional.)*** CONSULTANT hereby commits an average of ***(1 to 100)*** percent of ***(Consultant Project Manager's name)*** time on this project for the duration of the project.

ARTICLE 6 - CONTRACT EQUITY PROGRAM COMPLIANCE

6.1 CONSULTANT expressly agrees that this Agreement is subject to DISTRICT's Contract Equity Program ("CEP"). CONSULTANT is familiar with the DISTRICT's CEP and Equal Opportunity Guidelines, and has read and understood all of the program requirements. CONSULTANT understands and agrees to comply with the CEP and all requirements therein, including each of the Good Faith Efforts. CONSULTANT further understands and agrees that non-compliance with the CEP requirements may result in termination of this Agreement.

(Paragraph 6.2 to be used when there is subcontracting/subconsulting opportunities. See CEP office for details.)

6.2 Designated CEP compliance for the duration of this Agreement is listed in Exhibit C, which is attached hereto and incorporated herein. CONSULTANT shall maintain records of the total amount actually paid to each subconsultant. Any change of CONSULTANT'S listed subconsultants shall be subject to approval by the DISTRICT'S Project Manager.

ARTICLE 7 - INDEMNIFICATION AND INSURANCE

(IF DEPT. WANTS TO MODIFY INDEMNITY LANGUAGE, PLEASE SUBMIT JUSTIFICATION IN WRITING TO LEGAL, CC: RISK MANAGER.)

(FOR DESIGN PROFESSIONAL CONTRACTS (ENGINEERS, ARCHITECTS, LANDSCAPE ARCHITECTS, LAND SURVEYORS OR THEIR FIRMS), USE 7.1 BEL0W:

7.1 Indemnification

CONSULTANT expressly agrees to defend, indemnify and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expenses, claims, suits, and damages, including attorneys' fees, arising out of or pertaining to, or relating to CONSULTANT's, its associates', employees', subconsultants', or other agents' negligence, recklessness or willful misconduct in the operation and/or performance under this Agreement.

Where applicable by law, the duty to indemnify, including the cost to defend is limited in accordance with California Civil Code § 2782.8.

(OR if contract is <u>NOT</u>* with a design professional (engineers, architects, landscape architects, land surveyors or their firms) *USE THIS PARAGRAPH 7.1 INSTEAD:

7.1 <u>Indemnification</u>

CONSULTANT expressly agrees to defend, indemnify, and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expense, claims, suits, and damages, including attorneys' fees, arising out of or resulting from CONSULTANT's, its associates', employees', subconsultants', or other agents' negligent acts, errors or omissions, or willful misconduct, in the operation and/or performance under this Agreement.

7.2 ***(For construction management support Agreements only)***
CONSULTANT shall perform part of the work at sites where the DISTRICT's facilities are to be constructed, and which may contain unknown working conditions and contaminated materials. CONSULTANT shall be solely responsible for the health and safety of CONSULTANT's employees. CONSULTANT shall designate in writing to DISTRICT the field employee who is responsible for the health and safety of its employees. The responsible employee shall have experience and knowledge of all Federal, State and local health and safety regulation requirements. All CONSULTANT personnel on construction sites shall have received all OSHA required health and safety training.

7.3 ***(For construction management support Agreements only)***
In the event that any hazardous materials are encountered during the services provided by CONSULTANT or the work undertaken by construction contractors, DISTRICT shall sign any and all manifests relating to the generation, treatment, disposal or storage of all wastes associated with the work. Additionally, nothing contained in this Agreement shall be construed or interpreted as requiring CONSULTANT to assume the status of a generator, storer, treater, transporter, or disposal facility as those terms appear within the Resource Conservation and Recovery Act, 42 USCA, Section 6901, et seq. (RCRA), or within any state statute of similar effect governing the generation, storage, treatment, transportation, or disposal of wastes.

7.4 **(*For construction management support Agreements only - include only if design consultant and CM consultant are not the same)***
It is agreed and understood by CONSULTANT and DISTRICT that the design services have been completed by ***(design consultant's name)*** and therefore, CONSULTANT did not undertake any design activity or have design responsibility of the facilities to be constructed prior to execution of this Agreement.

7.5 Insurance Requirements

Insurance Requirements are as stated in Exhibit D, Insurance Requirements.

ARTICLE 8 - NOTICES

Any notice which DISTRICT may desire or is required at any time to give or serve CONSULTANT may be delivered personally, or be sent by United States mail, postage prepaid, addressed to:

(consulting firm's name)
(address)
Attention: ***(contact, usually the consultant's project manager)***,

or at such other address as shall have been last furnished in writing by CONSULTANT to DISTRICT.

Any notice which CONSULTANT may desire or is required at any time to give or serve upon DISTRICT may be delivered personally at EBMUD, 375 - 11th Street, Oakland, CA 94607-4240, or be sent by United States mail, postage prepaid, addressed to:

Director of ***(Wastewater Department or Engineering and Construction Department)***
P.O. Box 24055
Oakland, CA 94623-1055

or at such other address as shall have been last furnished in writing by DISTRICT to CONSULTANT.

Such personal delivery or mailing in such manner shall constitute a good, sufficient and lawful notice and service thereof in all such cases.

ARTICLE 9 - MISCELLANEOUS

9.1 This Agreement represents the entire understanding of DISTRICT and CONSULTANT as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may only be modified by amendment in writing signed by each party.

9.2 This Agreement is to be binding on the successors and assigns of the parties hereto. The services called for herein are deemed unique and CONSULTANT shall not assign, transfer or otherwise substitute its interest in this Agreement or any of its obligations hereunder without the prior written consent of DISTRICT.

9.3 Should any part of this Agreement be declared by a final decision by a court or tribunal of competent jurisdiction to be unconstitutional, invalid or beyond the authority of either party to enter into or carry out, such decision shall not affect the validity of the remainder of this Agreement, which shall continue in full force and effect, provided that the remainder of this Agreement can be interpreted to give effect to the intentions of the parties.

9.4 Multiple copies of this Agreement may be executed by the parties and the parties agree that the Agreement on file at the DISTRICT is the version of the Agreement that shall take precedence should any differences exist among counterparts of the Agreement.

9.5 This Agreement and all matters relating to it shall be governed by the laws of the State of California.

9.6 The District's waiver of the performance of any covenant, condition, obligation, representation, warranty or promise in this agreement shall not invalidate this Agreement or be deemed a waiver of any other covenant, condition, obligation, representation, warranty or promise. The District's waiver of the time for performing any act or condition hereunder does not constitute a waiver of the act or condition itself.

9.7 There shall be no discrimination in the performance of this contract, against any person, or group of persons, on account of race, color, religion, creed, national origin, ancestry, gender including gender identity or expression, age, marital or domestic partnership status, mental disability, physical disability (including HIV and AIDS), medical condition (including genetic characteristics or cancer), veteran or military status, family or medical leave status, genetic information, or sexual orientation. CONSULTANT shall not establish or permit any such practice(s) of discrimination with reference to the contract or any part. CONSULTANTS determined to be in violation of this section shall be deemed to be in material breach of this Agreement.

Consultant shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin in the performance of this contract. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

CONSULTANT shall include the nondiscrimination provisions above in all subcontracts.

9.8 CONSULTANT affirms that it does not have any financial interest or conflict of interest that would prevent CONSULTANT from providing unbiased, impartial service to the DISTRICT under this Agreement.

(If this Agreement is to be executed using digital signatures via DocuSign instead of wet signatures, use the following paragraph. Otherwise, delete it.)

9.9 Digital Signatures. The Parties agree that this Agreement may be executed using digital signatures.

(If this Agreement is to be executed by having each party wet sign a separate signature page and submitting all signed pages in original format or via scanning for compilation with the final Agreement, use the following paragraph. Otherwise, delete it.)

9.10 Execution in Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed to be an original but all of which taken together shall constitute one and the same Agreement.

ARTICLE 10 - TERM

Unless terminated pursuant to Article 4 herein, this Agreement shall expire when all tasks have been completed and final payment has been made by DISTRICT.

(NOTE: do not have a page break leaving signatures by themselves—must have at least the "in witness whereof" paragraph on signature page)

IN WITNESS WHEREOF, the parties hereto each herewith subscribe the same in duplicate.

EAST BAY MUNICIPAL UTILITY DISTRICT

By: _____ Date _____

(Name),
(Insert title - Director of Engineering and Construction or Manager of Support Services)

Approved As To Form

By:_____
for the Office of the General Counsel

(CONSULTING FIRM'S NAME, ALL CAPS & BOLD)

By:_____ Date _____

(Name),
(Title)

Rev. 6/2/2021

EXHIBIT A

East Bay Municipal Utility District
(Project Title)

SCOPE OF SERVICES

I. CONSULTANT SERVICES

CONSULTANT shall provide the following:

Contracted Services

(State each task with associated task number; specifically call out any survey work)

Optional Services

(State each task with associated task number)

II. PROJECT SCHEDULE

(List schedule milestones and completion dates)

EXHIBIT B

East Bay Municipal Utility District
(Project Title)

COMPENSATION

Compensation for services provided in Exhibit A, SCOPE OF SERVICES, shall be in accordance with the methods and specific amounts described in this Exhibit.

1. DISTRICT shall pay CONSULTANT only the actual costs incurred, subject to the Maximum Cost Ceiling. CONSULTANT certifies that the cost and pricing information used herein are complete, current and accurate. CONSULTANT acknowledges that it will expend public funds and hereby agrees to use every appropriate method to contain its fees and minimize costs under this Agreement.

2. Compensation for CONSULTANT services authorized shall be on a cost reimbursement basis and include Direct Labor, Indirect Costs, Subconsultant Services and Other Direct Costs. Costs to be paid comprise the following:

   2.1 Direct Labor

   Direct labor costs shall be the total number of hours worked on the job by each employee times the hourly rate for the employee's labor. Hours worked shall be rounded-up to the nearest quarter-hour (0.25) increment. Labor rates shall be based on a normal 8-hour day, 40-hour week.

   2.2 Indirect Costs

   DISTRICT shall pay CONSULTANT an overhead expense equal to ***(insert overhead rate)*** percent of labor costs incurred by CONSULTANT. CONSULTANT acknowledges and agrees that this overhead compensation is in lieu of itemized payments for indirect and overhead expenses which includes, but is not limited to:

   - Clerical, word processing and/or accounting work.
   - Vehicle usage and mileage between CONSULTANT's office and DISTRICT offices or work locations within DISTRICT service area. For work outside of the DISTRICT's services area, DISTRICT approval to charge for vehicle usage and mileage and other travel expenses must be obtained prior to the expenses being incurred.
   - Parking (DISTRICT does NOT provide parking to CONSULTANT in the DISTRICT Administration Building, located at 375 11th Street, Oakland, California. CONSULTANT shall be responsible for parking elsewhere).

- Postage, or for certified or registered mail. Extraordinary postage, overnight delivery, or messenger delivery charges must be approved in advance.
- Routine copying costs for in-house copying.
- Local telephone charges, including cellular phone, modem and telecopier/FAX charges.
- Office space lease.
- Office supplies.
- Computer equipment.
- Computer usage charges.
- Books, publications and periodicals.
- Insurance.
- Miscellaneous hand tools or equipment rental.
- Safety training, seminars or continuing education.
- Utilities.
- Local meals, transportation or other travel charges.
- Inadequately described or miscellaneous expenses.

The above items are illustrative, rather than exhaustive.

2.3 Subconsultant Services

Subconsultant services shall be billed at cost (plus a ***(insert rate)*** percent markup).

2.4. Other Direct Costs

Other Direct Costs shall be approved by DISTRICT in advance in writing, and shall be billed at cost, without markup. These costs include, but are not limited to the following:

2.4.1. Automobile expenses at ***(insert rate)*** cents per mile when CONSULTANT is required to travel outside of the DISTRICT's service area. Mileage will NOT be reimbursed for rental car expenses, where the rental agreement specifies unlimited mileage.

2.4.2. DISTRICT will pay for necessary and reasonable travel expenses provided the travel is approved in advance by DISTRICT Project Manager, and providing that:

- Each expense is separately identified (air fare, hotel, rental car) with an amount and date incurred. Confirming documents may be requested.
- Charged mileage for vehicle mileage shall not exceed the current allowable Internal Revenue Service rate.

- Air travel is coach or economy rate for refundable tickets. Business and first class rates will not be reimbursed.
- Lodging accommodations are moderately priced.
- Meal charges are reasonable. (Reimbursement for meals will only be made in conjunction with out-of-town travel.)
- Taxis or shuttles are used rather than rental cars whenever cost effective.
- Rental cars are intermediate or compact class only.

2.6 Budget Amounts

Contracted Services	Optional Services	Maximum Cost Ceiling*
$***(dollars)***	$***(dollars)***	$***(dollars)***

**** (Maximum Cost Ceiling is the sum of Contracted and Optional Services. If your scope has no Optional Services, delete the Contracted and Optional Services columns.)***

The Maximum Cost Ceiling shown above is based upon the cost estimate and labor hours attached hereto as Exhibit B-1 and Exhibit B-2. Costs described above, comprising Direct Labor, Indirect Costs, Subconsultant Services and Other Direct Costs shall be payable up to the Maximum Cost Ceiling as specified herein.

2.7 Billing and Payment

CONSULTANT shall invoice DISTRICT monthly for the actual costs incurred for work performed during the previous month. Actual costs shall include Direct Labor, Indirect Costs, Subconsultant Services, and Other Direct Costs as specified herein. Actual costs shall be invoiced by task as described in Exhibit A. Invoices shall set forth a description of the actual costs incurred and the services performed, the date the services were performed and the amount of time spent rounded to the nearest quarterly hour increment (.25) on each date services were performed and by whom. Supporting documentation for the invoice shall be organized to clearly identify the task charged and shall be supported by such copies of invoices, payroll records, and other documents as may be required by DISTRICT to authenticate invoiced costs. Copies of all invoices from any subconsultant(s) and outside service(s) shall be attached. ***(Insert the following sentence if paragraph 2.9 below applies and is included in agreement. "Where CONSULTANT is required by law to pay prevailing wage rates, supporting documentation for such work shall be in accordance with guidelines set forth below and shall include certified payroll reports. ")*** DISTRICT shall pay CONSULTANT within thirty (30) days, upon receipt of a proper CONSULTANT invoice, ***(Optional insert - include the following words here only if retention will***

be accumulated: "the amount invoiced less a ten percent (10%) retention amount,"), provided that all invoices are accompanied by sufficient cost documentation, and DISTRICT Form P-47 (Subcontractor Payment Report - CEP Participation), to allow the determination of the reasonableness and accuracy of said invoice. ***(Optional insert - include the following sentence here only if retention will be accumulated: "The retention accumulated to date shall be paid by DISTRICT upon DISTRICT's acceptance of the final version of all documents specified in ARTICLE 1 - SCOPE OF WORK, paragraph 1.6.")***

The Maximum Cost Ceiling is in effect for the entire Scope of Services. If the authorized Maximum Cost Ceiling is reached, CONSULTANT shall complete the agreed-upon work for the authorized Maximum Cost Ceiling. Labor hours may be reallocated within the tasks without renegotiation of the Agreement with written approval from the DISTRICT Project Manager in such a manner so as not to exceed the Maximum Cost Ceiling. In no event shall the Maximum Cost Ceiling be increased unless there is a written amendment of this Agreement.

2.8 Budget Status Reports

For the duration of this Agreement, the CONSULTANT shall provide DISTRICT with ***("bi-weekly" or "monthly" depending on duration of project)*** budget status reports that include, in tabular or graphical format, for each report period: (1) the original cumulative projected cash flows for the duration of the project (prepared at the start of the project), (2) the actual cash flows for the work completed to date, (3) the current projected cash flows to complete the project, and (4) the earned value (the amount of work actually completed to date compared to the budget expended). Current projected cash flows shall be based on all CONSULTANT and subconsultant time sheets up to a date within 3 weeks of the date of the budget status report.

2.9 Prevailing Wages and Other Requirements for Construction Inspection, and Construction Related Work During Design and Preconstruction Phases of Construction. ***(Optional Insert – include this paragraph 2.9 and all its subparagraphs if your Scope of Services includes construction, alteration, demolition, installation, maintenance, repair work, or other construction related work during the design or preconstruction phases of construction including but not limited to inspection and land surveying.)***

2.9.1 All Contractors and Subcontractors of any tier bidding on, or offering to performing work on a public works project shall first be registered with the State Department of Industrial Relations (DIR) pursuant to Section 1725.5 of the Labor Code. No bid will be accepted nor any contract entered into without proof of the Contractor and Subcontractors' current registration with the DIR (LC § 1771.1).

2.9.2 All public works projects awarded after January 1, 2015, are subject to compliance monitoring and enforcement by the DIR (LC § 1771.4) and all Contractors are required post job site notices, "as prescribed by regulation" (LC § 1771.4).

2.9.3 Pursuant to Section 1773 of the Labor Code, the District has obtained from the Director of Industrial Relations of the State of California, the general prevailing rates of per diem wages and the general prevailing rates for holiday and overtime work in the locality in which the Work is to be performed, for each craft, classification, or type of worker needed to execute the contract. A copy of the prevailing wage rates is on file with the District and available for inspection by any interested party at www.dir.ca.gov.

2.9.4 The Contractor shall post a copy of the general prevailing rate of per diem wages at the jobsite pursuant to Section 1773.2 of the Labor Code.

2.9.5 Pursuant to Section 1774 of the Labor Code, the Contractor and any of its Subcontractors shall not pay less than the specified prevailing rate of wages to all workers employed in the execution of the contract.

2.9.6 The Contractor shall, as a penalty to the State or the District, forfeit not more than the maximum set forth in Section 1775 of the Labor Code for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for the work or craft in which the worker is employed under the contract by the Contractor or by any Subcontractor under him. The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which such worker was paid less than the stipulated prevailing wage rate shall be paid to such worker by the Contractor.

2.9.7 General prevailing wage determinations have expiration dates with either a single asterisk or a double asterisk. Pursuant to California Code of Regulations, Title 8, Section 16204, the single asterisk means that the general prevailing wage determination shall be in effect for the specified contract duration. The double asterisk means that the predetermined wage modification shall be paid after the expiration date. No adjustment in the Contract Sum will be made for the Contractor's payment of these predetermined wage modifications.

2.9.8 The Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the Work. The payroll records shall be certified and shall be available for inspection in

accordance with the provisions of Section 1776 of the Labor Code. Certified payroll records shall be on the forms provided by the DIR or contain the same information required on the Department's form

2.9.9 For public works projects awarded on or after April 1, 2015, or that are still ongoing after April 1, 2016, no matter when awarded, each Contractor and Subcontractor shall furnish the certified payroll related records as more specifically described above and in Labor Code section 1776 directly to the Labor Commissioner (see LC § 1771.4). These records shall be provided to the Labor Commissioner at least monthly or more frequently if required by the terms of the Contract. For exception on projects covered by collective bargaining agreements like a PLA, please see Labor Code section 1771.4.

2.9.10 In the event of noncompliance with the requirements of Section 1776 of the Labor Code, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with said Section. Should noncompliance still be evident after such 10-day period, the Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1776 of the Labor Code for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due.

2.9.11 Pursuant to the provisions of Sections 1810, et seq. of the Labor Code the time of service of any worker employed upon the work shall be limited and restricted to eight hours during any one calendar day, and forty hours during any one calendar week, unless work performed by employees of the Contractor in excess of eight hours per day, and forty hours during any one calendar week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one half times the basic rate of pay.

2.9.12 The Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1813 of the Labor Code for each worker employed by the Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any calendar day and forty hours in any one calendar week in violation of the provisions of Labor Code, Sections 1810, et seq.

2.9.13 The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by him in connection with the Work; the record shall be kept open at all reasonable hours to the

inspection of the District and to the Division of Labor Standards Enforcement of the State of California.

2.9.14 In the performance of a public works contract, the Contractor and any Subcontractor shall comply with the provisions concerning the employment of apprentices in Section 1777.5 of the Labor Code and any amendments thereof. In the event the Contractor or any Subcontractor willfully fails to comply with this requirement the Contractor or Subcontractor shall be subject to the penalties for noncompliance in Labor Code section 1777.7.

2.9.15 The Contractor and every Subcontractor shall post at the workplace and comply with all required wage related workplace postings. Copies of the required postings may be downloaded or ordered electronically from the Department of Industrial Relations website at http://www.dir.ca.gov/wpnodb.html.

(Note: this table is prepared by the consultant. The following is provided to show format.)

EXHIBIT B-1

East Bay Municipal Utility District
(Project Title)

COST DISTRIBUTION

	Consultant						**Subconsultants****						
	Direct Labor						**Subconsultant # 1**			**Subconsultant # 2**			
	Project Manager	Project Engineer	Drafting				Project Engineer	Assist. Engineer		Project Engineer	Assist. Engineer		
Hourly Rate ($/hr.)	(***)	(***)	(***)	Total	Indirect Costs	ODCs*	(***)	(***)	Total Cost	(***)	(***)	Total Cost	Total
I. Contracted Services													
Task 1.1:													
Task 1.2:													
Task 2.1:													
Task 2.2:													
Subtotal I.													
II. Optional Services													
Task 3:													
Task 4:													
Subtotal II.													
TOTAL of Subtotals I. & II													

* ODCs = Other Direct Costs.
** Includes any prime consultant markup in subconsultant hourly rates.
****** Insert hourly rate.***

(Note: this table is prepared by the consultant. The following is provided to show format.)

EXHIBIT B-2

East Bay Municipal Utility District
(Project Title)

LABOR DISTRIBUTION*

	Consultant				**Subconsultants*** **						
					Subconsultant # 1			**Subconsultant # 2**			
	Project Manager	Project Engineer	Drafting	Subtotal	Project Engineer	Assist. Engineer	Subtotal	Project Engineer	Assist. Engineer	Subtotal	Total
I. Contracted Services											
Task 1.1:											
Task 1.2:											
Task 2.1:											
Task 2.2:											
Subtotal I.											
II. Optional Services											
Task 3:											
Task 4:											
Subtotal II.											
TOTAL											

(* Include both consultant and subconsultant hours. Also, include the percent time commitment for key personnel if a critica l issue for success of the project.)

EXHIBIT C

East Bay Municipal Utility District
(Project Title)

CEP COMPLIANCE

FIRMS UTILIZED	MINIMUM AMOUNT*	MINIMUM PERCENT**
(Name of Subconsultant's firm)	$***(dollars)***	***(1 to 99)***
(Name of Subconsultant's firm)	$***(dollars)***	***(1 to 99)***
TOTAL	$***(dollars)***	***(1 to 99)***

* Does not include consultant's markup. ***(Include this footnote only if your contract includes markup on subconsultants.)***

** Based on a Maximum Cost Ceiling amount of $***(dollars)***.

EXHIBIT D
INSURANCE REQUIREMENTS

(Insurance requirements may vary based on the nature of the Agreement. Always make sure these Insurance terms are reviewed by Risk Management for your contract.)

(Change the word "CONSULTANT" if necessary to match the term in the Agreement)

I. Provisions Applicable to All Required Insurance

A. Prior to the beginning of and throughout the duration of Services, and for any additional period of time as specified below, CONSULTANT shall, at its sole cost and expense, maintain insurance in conformance with the requirements set forth below.

B. CONSULTANT shall provide Verification of Insurance as required by this Agreement by providing the completed Verification of Insurance as requested below signing and submitting this Exhibit D to the DISTRICT. The Exhibit D may be signed by an officer of the CONSULTANT (Agent) or by the Insurance Broker for the CONSULTANT. CONSULTANT shall update Exhibit D throughout the specified term of the insurance required by this Agreement by resubmitting the completed Exhibit D prior to the expiration date of any of the required insurance. The updated Exhibit D shall become a part of the Agreement but shall not require a change order to the Agreement. The Notice to Proceed shall not be issued, and CONSULTANT shall not commence Services until such insurance has been accepted by the DISTRICT.

C. CONSULTANT shall carry and maintain the minimum insurance requirements as defined in this Agreement. CONSULTANT shall require any subcontractor to carry and maintain the minimum insurance required in this Agreement to the extent they apply to the scope of the services to be performed by subcontractor.

D. Acceptance of verification of Insurance by the DISTRICT shall not relieve CONSULTANT of any of the insurance requirements, nor decrease liability of CONSULTANT.

E. The insurance required hereunder may be obtained by a combination of primary, excess and/or umbrella insurance, and all coverage shall be at least as broad as the requirements listed in this Agreement.

F. Any deductibles, self-insurance, or self-insured retentions (SIRs) applicable to the required insurance coverage must be declared to and accepted by the DISTRICT.

G. At the option and request of the DISTRICT, CONSULTANT shall provide documentation of its financial ability to pay the deductible, self-insurance, or SIR.

H. Any policies with a SIR shall provide that any SIR may be satisfied, in whole or in part, by the DISTRICT or the additional insured at its sole and absolute discretion.
I. Unless otherwise accepted by the DISTRICT, all required insurance must be placed with insurers with a current A.M. Best's rating of no less than A- V.

J. CONSULTANT shall defend the DISTRICT and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier.

K. For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified) the retroactive date must be shown and must be before the date of this Agreement, and before the beginning of any Services related to this Agreement.

L. Insurance must be maintained and updated Verification of Insurance be provided to the DISTRICT before the expiration of insurance by having CONSULTANT's insurance broker or agent update, sign and return Exhibit D to the DISTRICT's contract manager. For all claims-made policies the updated Verification of Insurance must be provided to the DISTRICT for at least three (3) years after expiration of this Agreement.

M. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the effective date of this Agreement or the start of any Services related to this Agreement, CONSULTANT must purchase an extended reporting period for a minimum of three (3) years after expiration of the Agreement.

N. If requested by the DISTRICT, a copy of the policies' claims reporting requirement must be submitted to the DISTRICT for review.

O. Where additional insured coverage is required, the additional insured coverage shall be "primary and non-contributory," and will not seek contribution from the DISTRICT's insurance or self-insurance.

P. CONSULTANT agrees to provide immediate Notice to the DISTRICT of any loss or claim against CONSULTANT arising out of, pertaining to, or in any way relating to this Agreement, or Services performed under this Agreement. The DISTRICT assumes no obligation or liability by such Notice, but has the right (but not the duty) to monitor the handling of any such claim or claims if they are likely to involve the DISTRICT.

Q. CONSULTANT agrees, upon request by the DISTRICT, to provide complete, certified copies of any policies and endorsements within 10 days of such request (copies of policies may be redacted to eliminate premium details.)

R. It is CONSULTANT's responsibility to ensure its compliance with the insurance requirements. Any actual or alleged failure on the part of the DISTRICT to obtain proof of insurance required under this Agreement shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard.

S. **Notice of Cancellation/Non-Renewal/Material Reduction** The insurance requirements hereunder are mandatory and the DISTRICT may, at its sole and absolute discretion, terminate the services provided by CONSULTANT, should CONSULTANT breach its obligations to maintain the required coverage and limits set forth in this Agreement. No coverage required hereunder shall be cancelled, non-renewed or materially reduced in coverage or limits without

the DISTRICT being provided at least thirty (30) days prior written notice, other than cancellation for the non-payment of premiums, in which event the DISTRICT shall be provided ten (10) days prior written notice. Replacement of coverage with another policy or insurer, without any lapse in coverage or any reduction of the stated requirements does not require notice beyond submission to the DISTRICT of an updated Verification of Insurance which shall be met by having the CONSULTANT's insurance broker or agent update, sign and return this *Exhibit D*

II. Workers' Compensation and Employer's Liability Insurance Coverage

A. Workers' Compensation insurance including Employer's Liability insurance with minimum limits as follows:

Coverage A. Statutory Benefits Limits

Coverage B. Employer's Liability of not less than:

Bodily Injury by accident: $1,000,000 each accident

Bodily Injury by disease: $1,000,000 each employee

Bodily Injury by disease: $1,000,000 policy limit

B. CONSULTANT's insurance shall be primary and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

C. If there is an onsite exposure of injury to CONSULTANT, subcontractor, and/or subcontractor's employees under the U.S. Longshore and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations or statutes applicable to maritime employees, coverage is required for such injuries or claims.

D. If CONSULTANT is self-employed, a sole proprietorship or a partnership, with no employees, and is exempt from carrying Workers' Compensation Insurance, CONSULTANT must return the completed Verification of Insurance confirming that CONSULTANT has no employees and is exempt from the State of California Workers' Compensation requirements.

E. If CONSULTANT is self-insured with respect to Workers' Compensation coverage, CONSULTANT shall provide to the DISTRICT a Certificate of Consent to Self-Insure from the California Department of Industrial Relations. Such self-insurance shall meet the minimum limit requirements and shall waive subrogation rights in favor of the DISTRICT as stated below in section "F."

F. Waiver of Subrogation. Workers' Compensation policies, including any applicable excess and umbrella insurance, must contain a waiver of subrogation endorsement providing that CONSULTANT and each insurer waive any and all rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers. CONSULTANT shall defend and pay any and all damages, fees, and costs, of any kind arising out of, pertaining to, or in any way relating to CONSULTANT's failure to provide waiver of subrogation from the insurance carrier.

Verification of Workers' Compensation and Employer's Liability Insurance Coverage

☐ **By checking the box and signing below, I hereby verify that the CONSULTANT is exempt from the State of California's requirement to carry workers' compensation insurance.**

As the CONSULTANT's insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONSULTANT carries workers' compensation insurance as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured Retention:Amount: $_____

Policy Limit: $_____

Policy Number: _____

Policy Period: from:_____ to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature:_____

III. Commercial General Liability Insurance ("CGL") Coverage

A. CONSULTANT's insurance shall be primary and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

C. Minimum Requirements. CGL insurance with minimum per occurrence and aggregate limits as follows:

Bodily Injury and Property Damage	$2,000,000 per occurrence & aggregate
Personal Injury/Advertising Injury	$2,000,000 per occurrence & aggregate
Products/Completed Operations	$2,000,000 per occurrence & aggregate

D. Coverage must be on an occurrence basis.

E. Coverage for Products, and Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any "prior work" coverage limitation or exclusion applicable to any Services performed by CONSULTANT and/or subcontractor under this Agreement.

F. Insurance policies and Additional Insured Endorsement(s) Coverage shall be included for all premises and operations in any way related to this Agreement.

G. There will be no exclusion for explosions, collapse, or underground liability (XCU).

H. Insurance policies and Additional Insured Endorsement(s) shall not exclude liability and damages to work arising out of, pertaining to, or in any way relating to services performed by Subcontractor on CONSULTANT's behalf.

I. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONSULTANT under this Agreement as an "insured contract."

J. Waiver of Subrogation. The policy shall be endorsed to include a Waiver of Subrogation ensuring that the CONSULTANT and its insurer(s) waive any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, agents, volunteers, and employees. CONSULTANT shall defend and pay any and all damages, fees, and costs, of any kind, arising out of, pertaining to, or in any way resulting from CONSULTANT's failure to provide the waiver of subrogation from its insurance carrier(s).

K. "Independent CONSULTANT's Liability" shall not limit coverage for liability and/or damages arising out of, pertaining to, or in any way resulting from Services provided under this Agreement.

To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying, excess and umbrella policies that shall be evidenced in each case by an endorsement. The Additional Insureds must be covered for liability arising in whole, or in part, from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONSULTANT, in any way related to Services performed under this Agreement.

L. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONSULTANT's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the policies' limit(s).

Verification of Commercial General Liability (CGL) Insurance Coverage

As the CONSULTANT'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONSULTANT carries Commercial General Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance:

Self-Insured: Amount: $_____

Policy Limit: Per Occurrence: $_____ **Aggregate: $**_____

Policy Number: _____

Policy Period: from:_____ **to:** _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature:_____

IV. Business Auto Liability Insurance Coverage

CONSULTANT's insurance shall be primary and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

A. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

B. Minimum Requirements. Auto insurance with minimum coverage and limits as follows:
Each Occurrence Limit (per accident) and in the Aggregate: $2,000,000

Bodily Injury and Property Damage: $2,000,000

C. Coverage must include either "owned, non-owned, and hired" autos or "any" automobile

This provision ensures the policy covers losses arising out of use of company-owned vehicles ("owned autos"), employee's personal autos ("non-owned autos" meaning not owned by company/insured) or autos that are rented or leased ("hired autos").

D. If CONSULTANT is transporting hazardous materials or contaminants, evidence of the Motor Carrier Act Endorsement-hazardous materials clean-up (MCS-90, or its equivalent) must be provided.

E. If CONSULTANT's Scope of Services under this Agreement exposes a potential pollution liability risk related to transport of potential pollutants, seepage, release, escape or discharge of any nature (threatened or actual) of pollutants into the environment arising out of, pertaining to, or in any way related to CONSULTANT's and/or Subcontractor's performance under this Agreement, then Auto Liability Insurance policies must be endorsed to include Transportation Pollution Liability insurance. Alternatively, coverage may be provided under the CONSULTANT's Pollution Liability Policies if such policy has no exclusions that would restrict coverage under this Agreement. Coverage shall also include leakage of fuel or other "pollutants" needed for the normal functioning of covered autos.

F. To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying and excess and umbrella policies. The Additional Insureds must be covered for liability arising in whole, or in part, from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONSULTANT, in any way related to Services performed under this Agreement.

G. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONSULTANT's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the insurer's limits of liability.

Verification of Business Auto Liability Insurance Coverage

As the CONSULTANT'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONSULTANT carries Business Automobile Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance:

Self-Insured: Amount: $_____

Policy Limit: Per Accident/Occurrence $_____**Aggregate: $** _____

Policy Number: _____

Policy Period: from:_____**to:** _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature:_____

V. Professional Liability (also known as Errors and Omissions) Insurance Coverage

A. CONSULTANT's insurance shall be primary and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

C. Minimum Requirements: Professional Liability Insurance with minimum limits as follows:

Each Claim or Occurrence Limit: $2,000,000
Aggregate Limit: $2,000,000

D. If Coverage is written on a claims-made form, the following shall apply:

1. The retroactive date must be shown, and must be before the date of the Agreement or the beginning of the Services.
2. Insurance must be maintained and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.
3. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policies form with a retroactive date prior to the effective date of the Agreement, CONSULTANT must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

E. Insurance shall include prior acts coverage sufficient to cover the services under this Agreement.

F. Coverage shall be included for all premises and operations in any way related to this Agreement.

Verification of Professional Liability (Errors and Omissions) Insurance Coverage

As the CONSULTANT'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONSULTANT carries Professional Liability insurance as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured: Amount: $_____

Policy Limit: Per Claim $_____ Aggregate: $ _____

Policy Number: _____

Policy Period: from:_____ to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature:_____

VI. Pollution Liability Insurance Coverage

A. CONSULTANT's insurance shall be primary and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

C. Minimum Requirements: Pollution Liability Insurance with minimum limits, as follows:
Each Claim or Occurrence Limit: $2,000,000;
Aggregate Limit: $2,000,000.

D. Coverage must be included for bodily injury and property damage, including coverage for loss of use and/or diminution in property value, and for clean-up costs arising out of, pertaining to, or in any way related to the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of contaminants or pollutants, arising out of, pertaining to, or in any way resulting from any Services performed by CONSULTANT under this Agreement; including any

transportation of hazardous wastes, hazardous materials, or contaminants.

E. If Coverage is written on a claims-made form, the following shall apply:

1. The retroactive date must be shown, and must be before the date of the Agreement or the beginning of the Services.
2. Insurance must be maintained and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.
3. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the effective date of the Agreement, CONSULTANT must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

F. Insurance shall include prior acts coverage sufficient to cover the services under this Agreement.

Verification of Pollution Liability Insurance Coverage

As the CONSULTANT'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONSULTANT carries Pollution Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured: Amount: $ _____

Policy Limit: Per Claim $ _____ Aggregate: $ _____

Policy Number: _____

Policy Period: from: _____ to: _____

Insurance Carrier Name: _____

Insurance Broker or Agent: Print Name: _____

Insurance Broker or Agent's Signature: _____

VII. Excess and/or Umbrella Liability Insurance Coverage

A. CONSULTANT's insurance shall be primary and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is

broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

C. Minimum Requirements: It is expressly understood by the parties that CONSULTANT's Excess and/or Umbrella Liability policies shall, at minimum, comply with all insurance requirements set forth within this Agreement.

1. Coverage for Products, Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any "prior work" coverage limitation or exclusion applicable to any Services performed under this Agreement and, if it is a claims-made policy, it must be maintained for a minimum of three (3) years following final completion of the Services.

2. Coverage shall be included for all premises and operations in any way related to this Agreement.

3. There will be no exclusion for explosions, collapse, or underground damage (XCU).

4. Insurance policies and Additional Insured Endorsements shall not exclude coverage for liability and damages from services performed by Subcontractor on CONSULTANT's behalf.

5. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONSULTANT under this Agreement as an "insured contract."

6. "Independent CONSULTANT's Liability" shall not limit coverage for liability and/or damage arising out of, pertaining to, or in any way related to Services provided under this Agreement.

7. To the fullest extent permitted by law, the DISTRICT, its directors, officers, officials, agents, volunteers, and employees must be covered as Additional Insureds on a primary and noncontributory basis on all excess and umbrella policies. The Additional Insureds must be covered for liability arising in whole or in part from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONSULTANT, in any way related to Services performed under this Agreement.

8. A severability of interest provision must apply for all the Additional Insureds, ensuring that the CONSULTANT's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the policy's limits.

9. CONSULTANT and its excess and/or umbrella Liability insurance coverage must waive any rights of subrogation against the DISTRICT, its directors, officers, officials, employees, agents, and volunteers, and CONSULTANT shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier(s).

D. CONSULTANT shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier(s).

Verification of Excess and/or Umbrella Liability Insurance Coverage

As the CONSULTANT'S insurance broker/agent, I hereby verify that I have reviewed and confirmed that the CONSULTANT carries Excess and/or Umbrella Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured: Amount: $_____

Policy Number: _____

Policy Period: from:_____ to: _____

Insurance Carrier Name:_____

Insurance Broker or Agent: Print Name:_____

Insurance Broker or Agent's Signature:_____

EXHIBIT D
AUTOCAD AND STANDARD DRAWING MANUALS

EBMUD AutoCAD Standards

Pipeline Infrastructure Division

Version 1.1

EAST BAY MUNICIPAL UTILITY DISTRICT

Table of Contents

1. INTRODUCTION

This document defines the current AutoCAD Standards for East Bay Municipal Utility District (District) Pipeline Infrastructure Division (PID) design drawing files and plan sheets. Please note as AutoCAD continues to update so will PID AutoCAD Standards. Current versions of the PID AutoCAD standards are available at the CAD Resource Center SharePoint Site. If you have additional questions regarding the PID AutoCAD Standards contact:

Carlos Urenda – CAD-BIM Coordinator
East Bay Municipal Utility District • Engineering Administration
375 11th Street
Oakland, CA 95601
Office: 510-287-0105
carlos.urenda@ebmud.com

2. STATEMENT

The EBMUD PID AutoCAD Standards manual will define program settings for AutoCAD Civil 3D when creating design drawings. Program settings include items such as file names, folder structure, print settings, text styles, line types, layers, etc. It will also contain support files and locations necessary to create your design drawing, such as tool palettes, block library, line type file, color table file, etc. Design guides, District procedures, and AutoCAD how-to's will be documented outside of this manual.

It is assumed the user(s) of this manual possess basic understanding of Autodesk AutoCAD Civil 3D software and terminology.

3. PIPELINE PROJECT TYPES

Pipeline Infrastructure Division (PID) produces drawings for various project types. Descriptions of the type of projects are listed below. Each project type may require different drawing formats depending on the scope and client (see **5.2.4 Sheet File: Drawing Types**). If you have questions regarding the different pipeline project types and drawing composition, please contact Pipeline Design Support:

Pongsiri Prachya – Senior Civil Engineer / Drafting Supervisor
East Bay Municipal Utility District • Pipeline Infrastructure Division • Pipeline Design Support
375 11th Street
Oakland, CA 95601
Office: 510-287-1322
pongsiri.prachya@ebmud.com

Extension Agreements

Projects that involve the design of new water mains for private development projects to extend the water system to serve new customers. District installed main extensions are proposed pipelines under 1,000 feet while applicant installed extensions are those that are greater than 1,000 feet.

Infrastructure Renewals

Infrastructure renewal (IR) projects involve renewal of the District's distribution system pipelines (20-inch diameter and smaller). IR projects aim to replace deteriorated pipelines when it becomes more cost effective to replace them than to make frequent repairs.

Pipeline Relocations

Pipeline relocation projects are completed to accommodate outside agency projects such as street improvements, utility capital improvement projects, freeway extensions, rail system upgrades, and private development. Pipeline relocations are categorized as reimbursable or non-reimbursable relocations depending on the driver of the pipe relocation.

System Improvements

Pipeline system improvement projects are part of an on-going program to improve water quality, system performance, capacity, reliability, and maintainability of the distribution system. Pipeline system improvements are categorized as miscellaneous system improvement projects and 4-inch pipe replacement projects. Miscellaneous system improvements include projects aimed at relocating or abandoning pipelines in hard to access right-of-ways or easements, improving water quality, and improving the reliability and maintainability of the distribution system.

Transmission Pipelines and Tunnels (Large Diameter Pipelines)

Large Diameter Pipeline (LDP) projects involve the replacement and upgrade of District's transmission mains and tunnels and include pipelines 24-inches and larger in diameter. These projects typically involve the installation, renewal, and upgrade of the District's transmission mains and aqueducts.

Facility Support Projects

Facility support projects include inlet and outlet piping for reservoirs, suction and discharge piping for pumping plants, connections to distribution system regulators, and pipeline connections to water treatment plants. For facility support projects, PID's pipeline design drawings are typically packaged with the Design Division's multi-discipline design drawings.

Hydrant Sketches

Hydrant sketches are required for any new stand-alone fire hydrants or fire hydrants that are relocated or installed greater than 5 feet from their original location. Hydrant sketches are also required for any applicant hydrant agreements. Refer to Procedure 712 for detailed information about hydrant sketches.

Recycled Water Projects

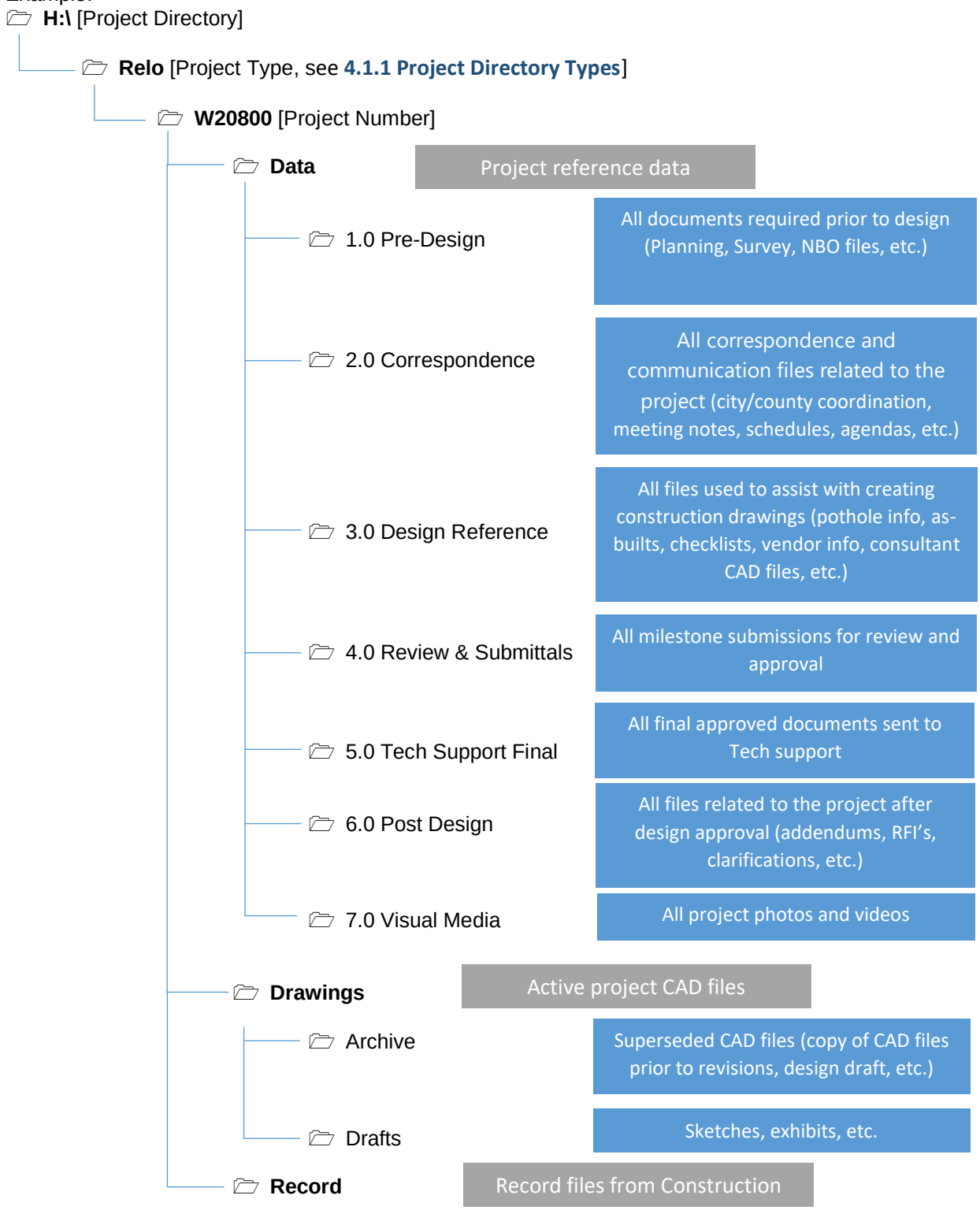
Recycled water projects include recycled water pipelines that are installed under contract or by District forces.

4. DIRECTORY STRUCTURE

See **4.1 Main Project Directory** on the next page for the typical pipeline design project folder structure. Design staff should follow these guidelines and practice good housekeeping procedures to keep file directories organized. Well-maintained directories will help communication and save time.

4.1. Main Project Directory

Example:



4.1.1 Project directory types

Project CAD files are saved in five main folder directories based on the project type. The five folder types are listed below:

agre = Extension Agreements

impr = System Improvements

relo = Pipeline Relocations

repl = Pipeline Replacements (Infrastructure Renewals)

hydr = Hydrant agreements and stand-alone hydrant sketches

> **Hydrant Agreements =** This folder is used for the preparation of hydrant sketches that are part of applicant hydrant agreements.
>
> **Hyd_Sketch** = This folder is used for the preparation of stand-alone hydrants that are not part of applicant hydrant agreements.

General = This folder contains various subfolders for legacy MicroStation standard drawings, general notes, station notes, traffic control plans, and general reference information.

Signatures = This is the folder where electronic signature files are saved. Organization (Org) 533, Pipeline Design Support, coordinates the creation and updates of electronic signatures for PID staff and saves the files in this folder.

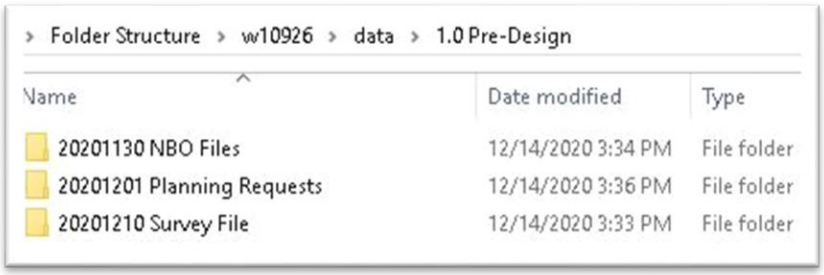
4.2. Sub-folder naming convention

When placing sub-folders under any standard category, the following format shall be used:

YYYY MM DD "Description"

- **Short description of folder contents**
- **(Space)**
- **Two-digit day**
- **Two-digit month**
- **Four-digit year**

Example:



5. FILE TYPES AND FILE NAMING

Design projects consist of multiple drawing files that require file naming management. All current electronic CAD design files will reside in the "Drawings" folder. See section **4.1 Main Project Directory** for example file structure**.**

Most electronic drawing files can be classified as master files or sheet files Sections **5.1 Master Files** and **5.2 Sheet Files** provide additional information on these file types**.**

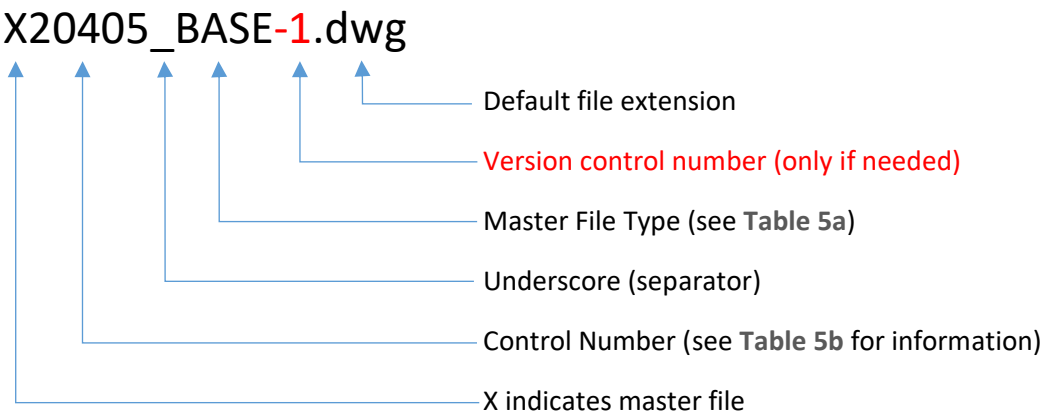
5.1. Master Files

Master files contain elements or features that are main components of the design. Master files represent multiple features that are referenced to an established coordinate system. Any commands that will alter the origin, rotation, or scale of the line work or the applied coordinate system should not be used within these drawings.

The PID CAD designer will create the base master file from plans provided by other internal departments or outside agencies, applicants, and consultants (e.g., Survey will provide topographic survey files). All CAD project files shall be prepared in accordance with the coordinate system provided by (or approved by) the District Survey Section (see section **5.1.5 Survey Master File and Coordinate System**).

5.1.1 Master File Name

Master files are prefixed with an "X" and a control number before the master file type definition (e.g. X12345_BASE.dwg). Once a project is started, the master files should not be renamed. In the following example, the control number is 20405 for a project with W20405 as the assigned W number.



Example: X20405_BASE.dwg

5.1.2 Master File Type

Table 5a provides Master File type, name, and description:

Table 5a: Master File Types

Master file type	Master file name	Description
Base master file	BASE	Existing and proposed utilities, topographic and survey information, surface features, existing and proposed District pipe networks. See **5.1.4 "BASE" Master File Contents** for detailed content information.
Points master file	PNTS	Topographic survey point data only

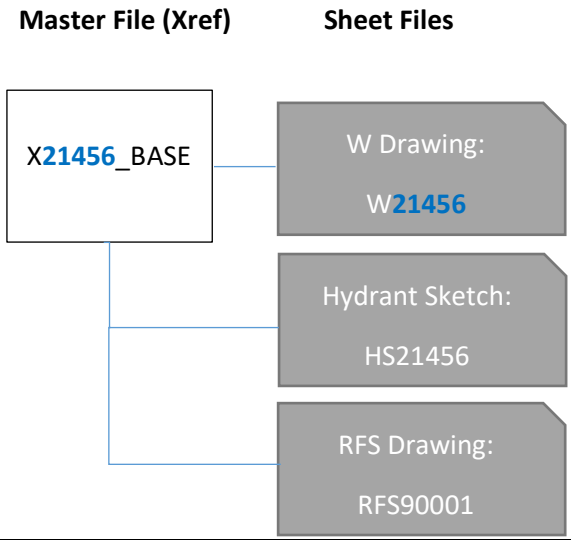
5.1.3 Master File Control Number

A single master file can be referenced into different sheet file types across the same project (see example diagrams below). Since control numbers vary for all sheet file types, the control number for the master files shall use the number of the sheet file type in the order shown in **Table 5b**. For instance, the W number (i.e., W21456) for a project will be the parent control number for the master file. If the project is a hydrant agreement (HA), the master file will use the HA number (e.g., 23-042) as the parent control number. The figures below show sheet file names as examples only. See section **5.2.1 Sheet Files: Drawing Type File Names** for sheet file name standards.

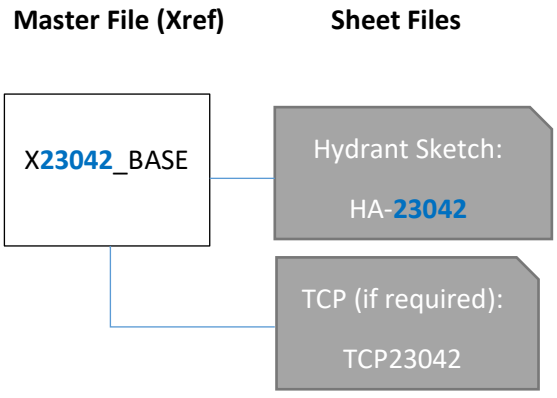
Table 5b: Master file control number order

Master file control number order
1. W number
2. Hydrant agreement number
3. Hydrant sketch number
4. P number
5. Remove from service number

Ex: W Drawing project (fig. 1)



Ex: Hydrant Agreement (fig. 2)



5.1.4 "BASE" Master File Contents

"BASE" may include:

- Existing and proposed surface elements:
  - Survey control points
  - Station lines, station information (see **18.4.1 Alignments**)
  - Curb, edge of pavement lines
  - Manholes, inlets
  - Joint poles, guy anchors
  - Valve pots
  - Fire hydrants
  - Utility boxes
  - Right of ways
  - Walls
  - Ditches
  - Railroad tracks
  - Other topographic features
- Existing and proposed subsurface utilities:
  - Sanitary sewer lines, manholes, cleanouts
  - Recycled water lines and appurtenances
  - Storm drainage lines, manholes, inlets
  - Gas lines, appurtenances
  - Electric lines (overhead and underground)
  - Telecom, TV, fiber optics (overhead and underground)
  - Joint trenches
  - Non-District water lines, appurtenances, and fittings
- Existing and proposed District pipe networks
  - District water transmission and distribution lines, appurtenances, and fittings
  - Remove From Service (RFS) District water lines appurtenances, and fittings
  - Profile views, if required. See **18.4.2 Profiles** for additional information

Best practice:

- ❖ Never put elements on Layer 0. Layer 0 (zero) cannot be manipulated in an XREF.

5.1.5 Survey Master File and Coordinate System

The District Survey department will often provide survey files to be used for creation of the PID "Base" master file. On extension agreement projects, survey files are often provided by the applicant. Files provided by others may be in different coordinate systems. It is important to confirm the geolocation of external files for compliance with the correct coordinate system.

When requested, the District Surveying section may review external provided CAD files to confirm adequate survey control. The following link provides access to the request form: Survey request form link

Files supplied internally by the District or generated outside by an agency or applicant will use the NAD 83 (US Survey Foot) coordinate system as a basis for the XY coordinate plane. Any variation to NAD 83 requires District Survey Supervisor approval. **All master files must be checked for compliance with the NAD 83 coordinate system prior to beginning design (NAD 83 California State Planes, Zone III, US Foot).**

For additional information refer to Engineering Standard Practice (ESP) 310.1 Horizontal Control Datum for District Projects and ESP 320.1 Official Vertical Datum, Vertical Control Standards, And Historic Comparison Of Datum Planes.

5.1.6 Master File Working Units

Working units define the unit of measure in each master file. The District uses the following AutoCAD drawing unit settings:

Length Type: Decimal

Angle Type: Decimal Degrees

Insertion Scale: Unitless

5.2. Sheet Files

Sheet files are the drawings that are plotted as part of the design plan sheet set (i.e., W drawings, Pipeline extension drawings, RFS drawings, Hydrant Sketches, and TCPs). Each sheet file is a compilation of notes, annotations, and reference master files.

5.2.1 Sheet File: Drawing Type File Names

The standard file naming convention for sheet files is as follows: **Letter Prefix** followed by a **Control Number**. All sheet files will use a format of letter(s) before their control number. Below is a W drawing type example.

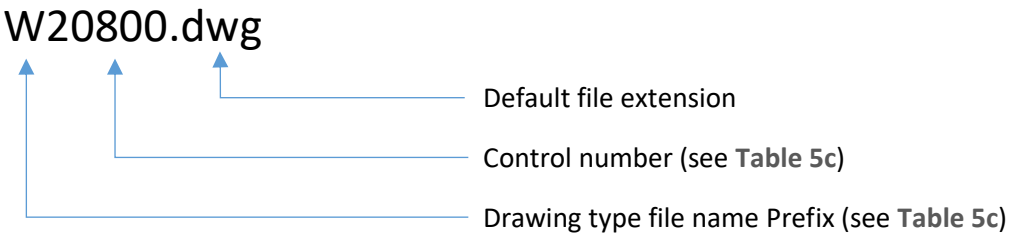


Table 5c: Drawing type file names

Drawing Type	Filename Prefix	Control Number	Sheet File Sample Name
W drawings	W	[Assigned by Infrastructure Project Tracker]	W20800.dwg
Hydrant Sketch (as part of a Hydrant Agreement)	HA	[HA Number assigned by New Business Office]	HA23-025.dwg
Hydrant Sketch (No Hydrant Agreement)	HS	[Assigned by User]	HS[user defined].dwg
Pipeline Extension Drawing	P	[Pipe Extension number assigned by Engineering Technical Support]	P45640.dwg
Remove From Service Drawing	RFS	[RFS number assigned by Technical Support]	RFS900001.dwg
Traffic Control Plan	TCP	[Assigned by User]	TCP[user defined].dwg

All sheets of the same drawing type should be included on individual layout tabs within a single DWG file. Each individual sheet will reside on its own layout tab, and the layout tab shall use the sheet count as its name. Layout tabs that are not part of the plan shall be deleted.

5.2.2 Sheet File: Model Space

Model space will include:

- Master files
- Callouts and annotations (as needed)

Master File Attachment Guidelines:

- ❖ Attach master files using “No Path” path type. Never use “Full Path” path type.
- ❖ All master files to be attached on its own layer (layer name:_XREF). This allows the user to easily LOCK that XREF by locking the layer. Once locked it is impossible to accidentally move or delete that master file(s).
- ❖ Master files are to be attached using the OVERLAY option instead of the attachment option. Using this option will prevent master files nesting yet allow users to attach master files to a sheet file without having to detach it before exiting. Nested master files are not allowed.
- ❖ All master files to be attached in Model Space.
- ❖ Once attached, master files can be LOCKED by locking the associated _XREF layer.
- ❖ All Viewports are to be created on a layer called _VPORT. Once the Viewport limits are set, LOCK the Viewport by right clicking on it and select Display Locked → Yes
- ❖ Do not force or use property overrides to set elements to another color or linetype in a file to be referenced (any master file). Unload reference files instead of detaching when a file needs to be temporarily “turned off.”

5.2.3 Sheet File: Drawing Types

PID creates various drawing types. Each project may have one or a combination of the drawing types. Sections **5.2.3.1** through **5.2.3.5** provide brief descriptions of each drawing type, content, titleblock sample, and respective template to be used. This section only covers elements of the sheet file, it is assumed the balance of information will be provided by the BASE master file (**5.1.4 “BASE” Master File Contents**)

5.2.3.1 W Drawing

Full size multi-sheet extension agreements, infrastructure renewals, pipeline relocations, system improvements, transmission pipelines and tunnels, recycled water, and facility support projects.

W Drawing Contents

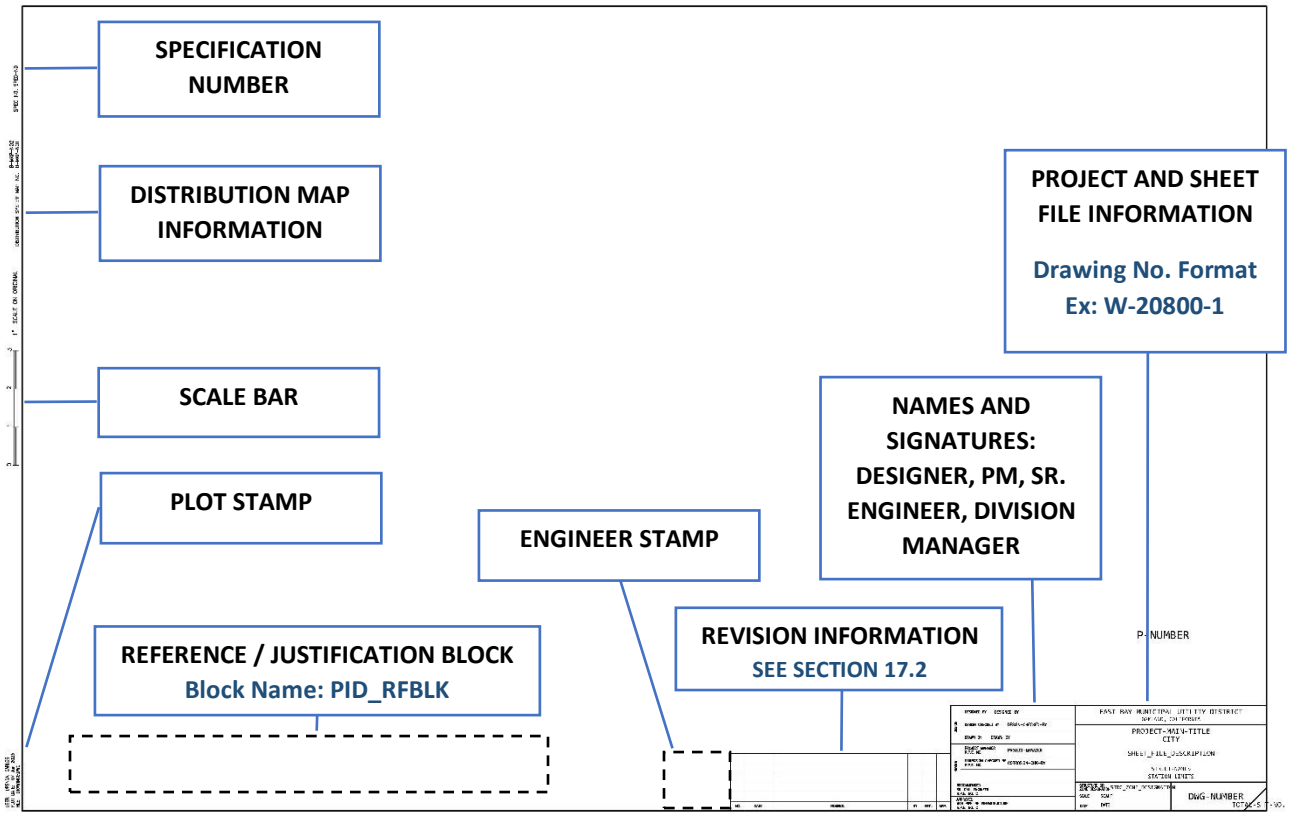
- Title block
- North Arrow
- Nearest Cross Street
- Street Names
- Vicinity Map (first sheet only)
- Profile Drawings (as required, see **18.4.2 Profiles**)
- "USA" block (required only on first sheet)
- Pipe Extension Numbers
- General Notes (on first sheet only, when there is no cover sheet)
- Station Notes
- Viewports (as needed)
- Sheet cut lines (as needed)
- Reference / Justification Block (required only on first sheet)

Cover Sheet Contents (required for 2 or more W drawings)

- Title block
- Arrow
- Right-of-Way
- Vicinity Map
- Plan View
- Proposed and existing pipelines and appurtenances
- Reference / "Justification" Block
- "USA" Block
- "Pipe Required" Block
- Pipe Table
- General Notes and Other Notes
- Pipe extension Number(s)
- Drawing Index (as required)
- Abbreviations and symbol (as required for specification jobs)
- Viewports (as needed)

W drawing title block

Refer to the PID Drawing Standards Manual for detailed information of the title block content.



W drawing template

Title blocks are included with their respective template files (.dwt) and should not need retrieval from the library. When beginning a W drawing, use the corresponding template below.

Table 5d: W drawing template

Template file name	Border size
W00001.dwt	34” x 22”

5.2.3.2 Hydrant Sketch

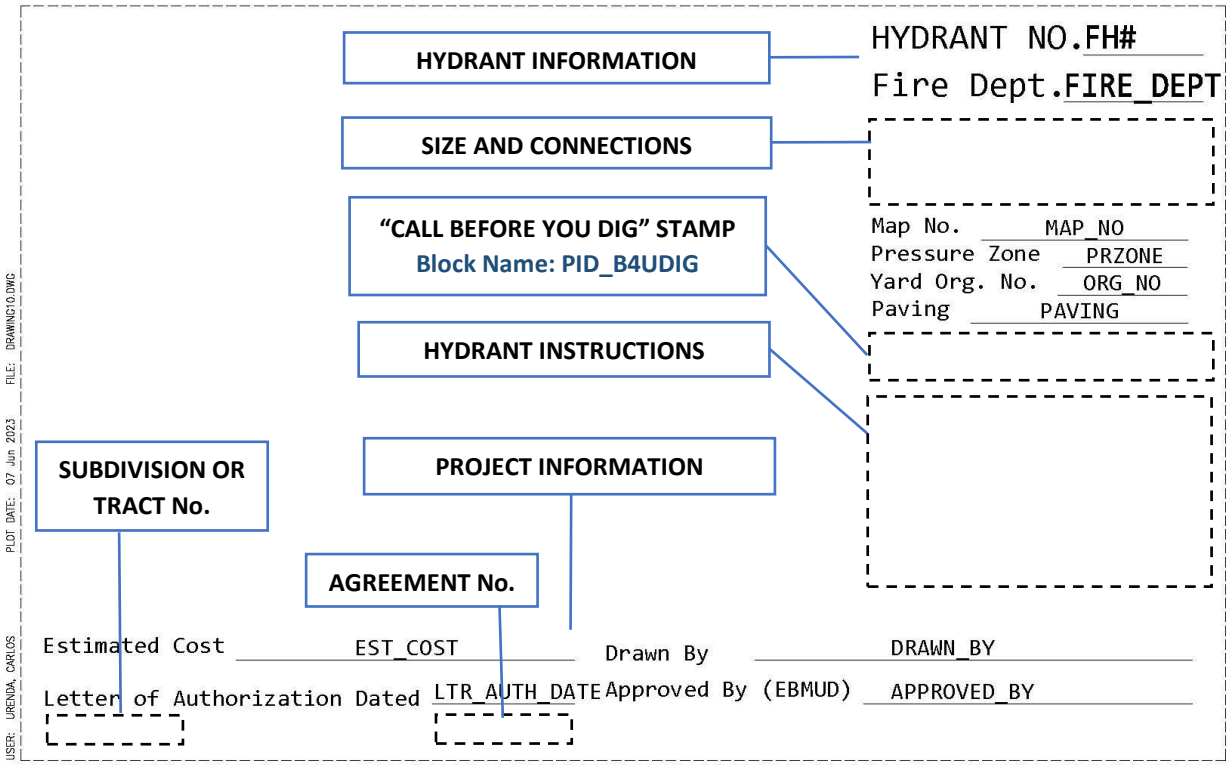
Enlarged plan drawing showing hydrant, lateral, and appurtenances.

Hydrant Sketch Contents

- Title block
- North Arrow
- Right-of-Way
- Nearest Cross Street
- Dimension Data
- "USA" block (required only on first sheet)
- Pipe Extension Numbers
- Viewports (as needed)
- Hydrant agreement number (for hydrant agreements)
- Estimate Number (for hydrant agreements)

Hydrant Sketch Title Block

Refer to the PID Drawing Standards Manual for detailed information of the title block content.



Hydrant sketch template

Title blocks are included with their respective template files (.dwt) and should not need retrieval from the library. When beginning a sheet file, use the corresponding template file noted below.

Table 5e: Hydrant sketch template

Template file name	Border size
HYD0000.dwt	5” x 8”

5.2.3.3 Remove From Service

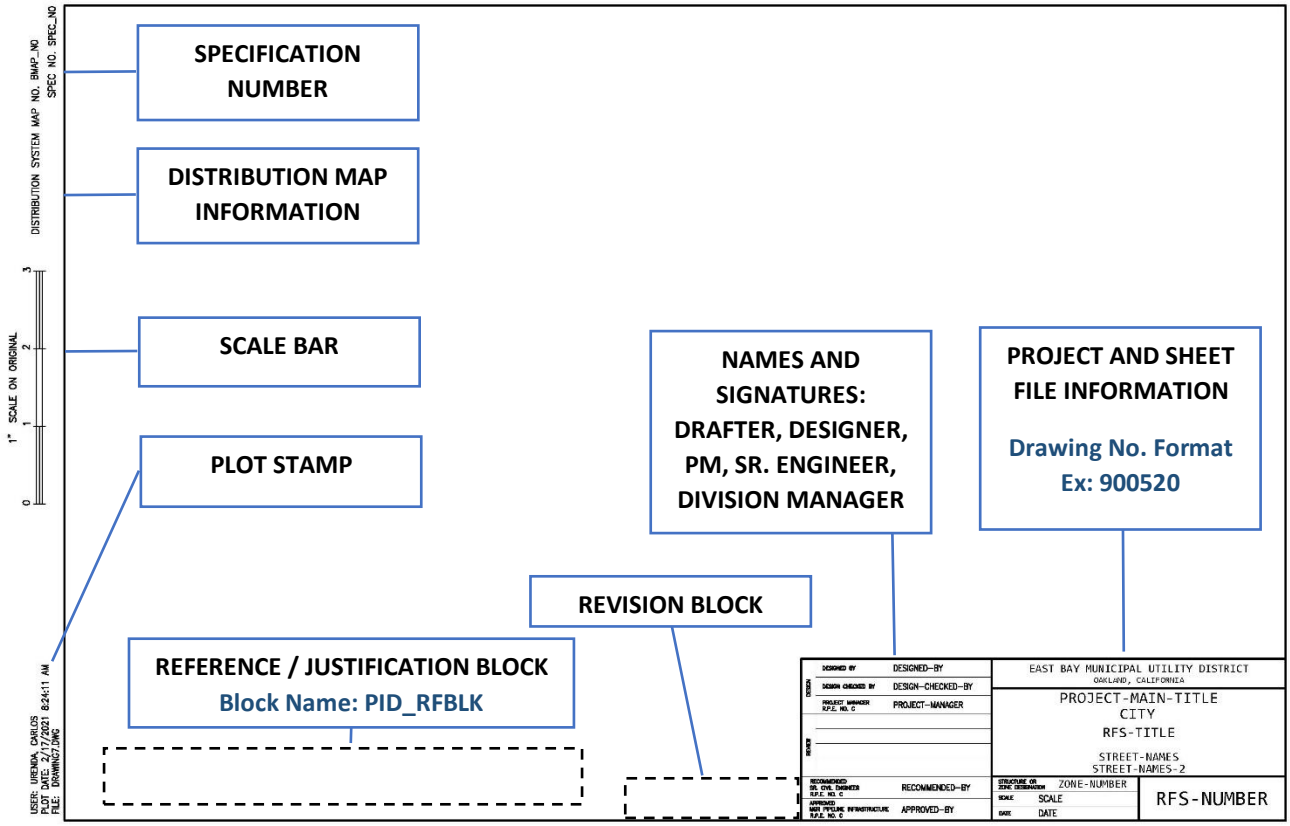
Plan drawing showing pipe and appurtenances to be removed from service or abandoned in place.

Remove From Service (RFS) Contents

- Title block
- North Arrow
- Right-of-Way
- Nearest Cross Street
- Dimension to Nearest Cross Street
- Pipeline and Appurtenances to be Removed from Service
- Existing Pipelines
- Call Outs for Pipelines to Remain and Pipelines RFS
- Dimension Data
- “USA” block (required only on first sheet)
- Reference / “Justification” Block
- Viewports (as needed)

Remove From Service (RFS) title block

Refer to the PID Drawing Standards Manual for detailed information of the title block content.



RFS drawing template

Title blocks are included with their respective template files (.dwt) and should not need retrieval from the library. When beginning a sheet file, use the corresponding template file noted below.

Table 5f: RFS drawing template

Template file name	Border size
RFS9000.dwt	11” x 17”

5.2.3.4 Pipeline Extension Drawing

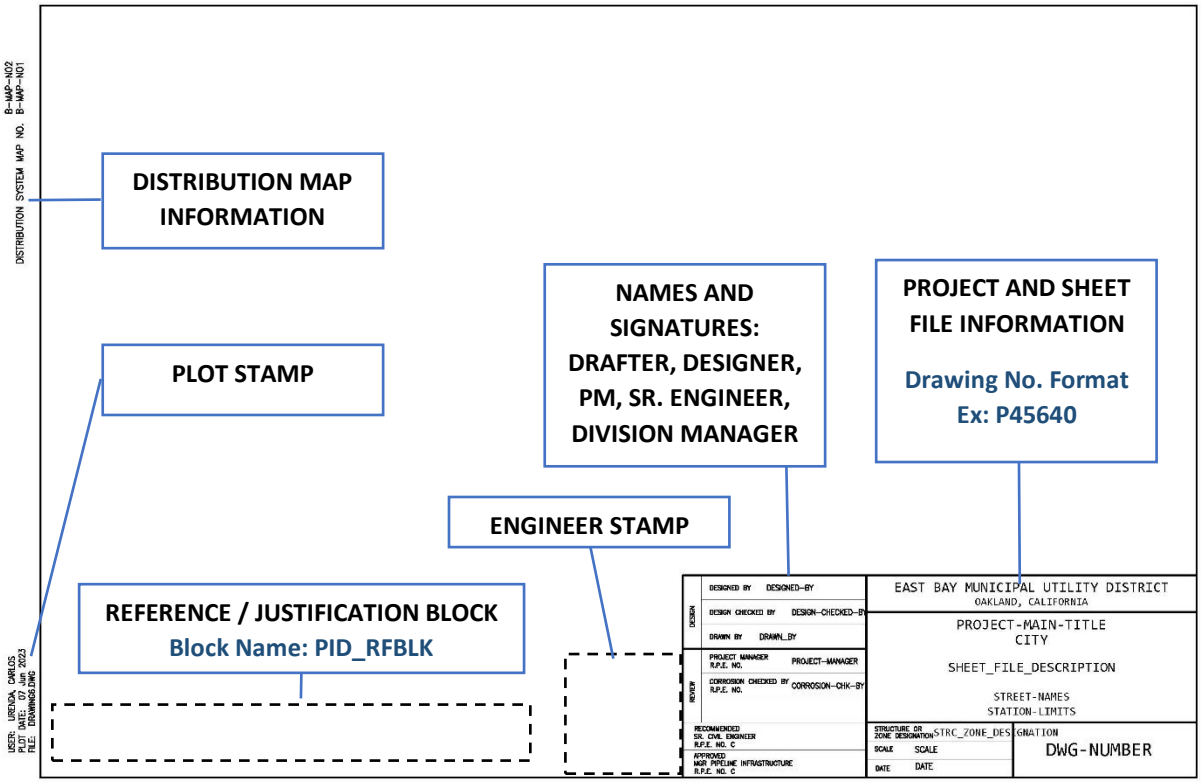
Pipeline or appurtenance design that does not require a full-size drawing or the issuance of a W number.

Pipeline Extension Drawing Contents

- Title block
- Vicinity Map
- North Arrow
- Right-of-Way
- Border
- Reference / “Justification” Block
- Nearest Cross Street
- Street Names
- Dimension Data
- “USA” block
- Pipe Extension Numbers
- General Notes
- Station Notes
- Viewports (as needed)

Pipeline extension drawing title block

Refer to the PID Drawing Standards Manual for detailed information of the title block content.



Pipeline extension drawing template

Title blocks are included with their respective template files (.dwt) and should not need retrieval from the library. When beginning a sheet file, use the corresponding template file noted below.

Table 5g: Pipeline extension drawing template

Template file name	Border size
P00001.dwt	11” x 17”

5.2.3.5 Traffic Control Plan

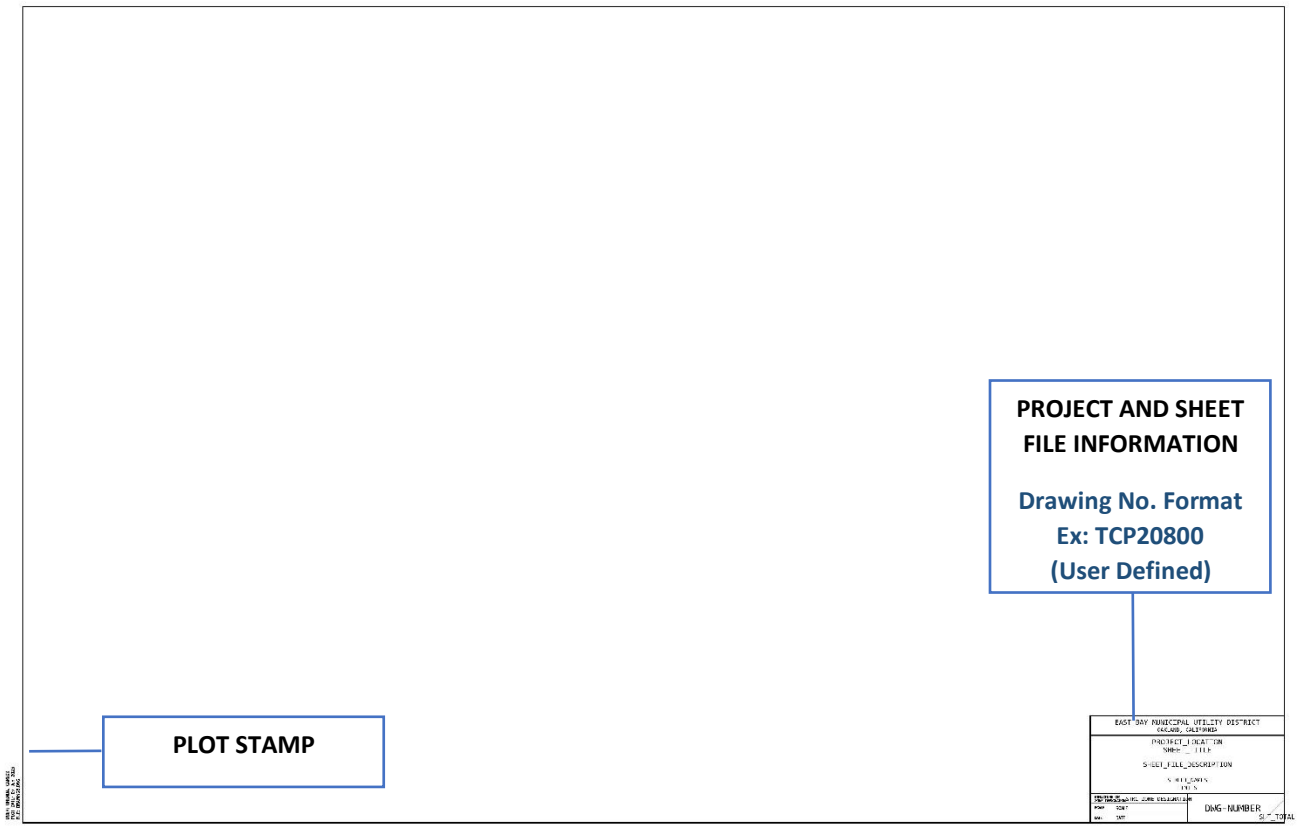
Traffic control plan drawing only. No design or utility information shown.

Traffic Control Plan (TCP) Contents

- Title block
- North Arrow
- Right-of-Way
- Nearest Cross Street
- Street Names
- Dimension Data
- Viewports (as needed)

Traffic Control Plan (TCP) title block

Refer to the PID Drawing Standards Manual for detailed information of the title block content.



TCP drawing template

Title blocks are included with their respective template files (.dwt) and should not need retrieval from the library. When beginning a sheet file, use the corresponding template file noted below.

Table 5h: TCP drawing template

Template file name	Border size
TCP00000.dwg	34” x 22”

5.2.3.6 Consultant W Drawing

Full size multi-sheet extension agreements, infrastructure renewals, pipeline relocations, system improvements, transmission pipelines and tunnels, recycled water, and facility support projects.

Consultant W Drawing Contents

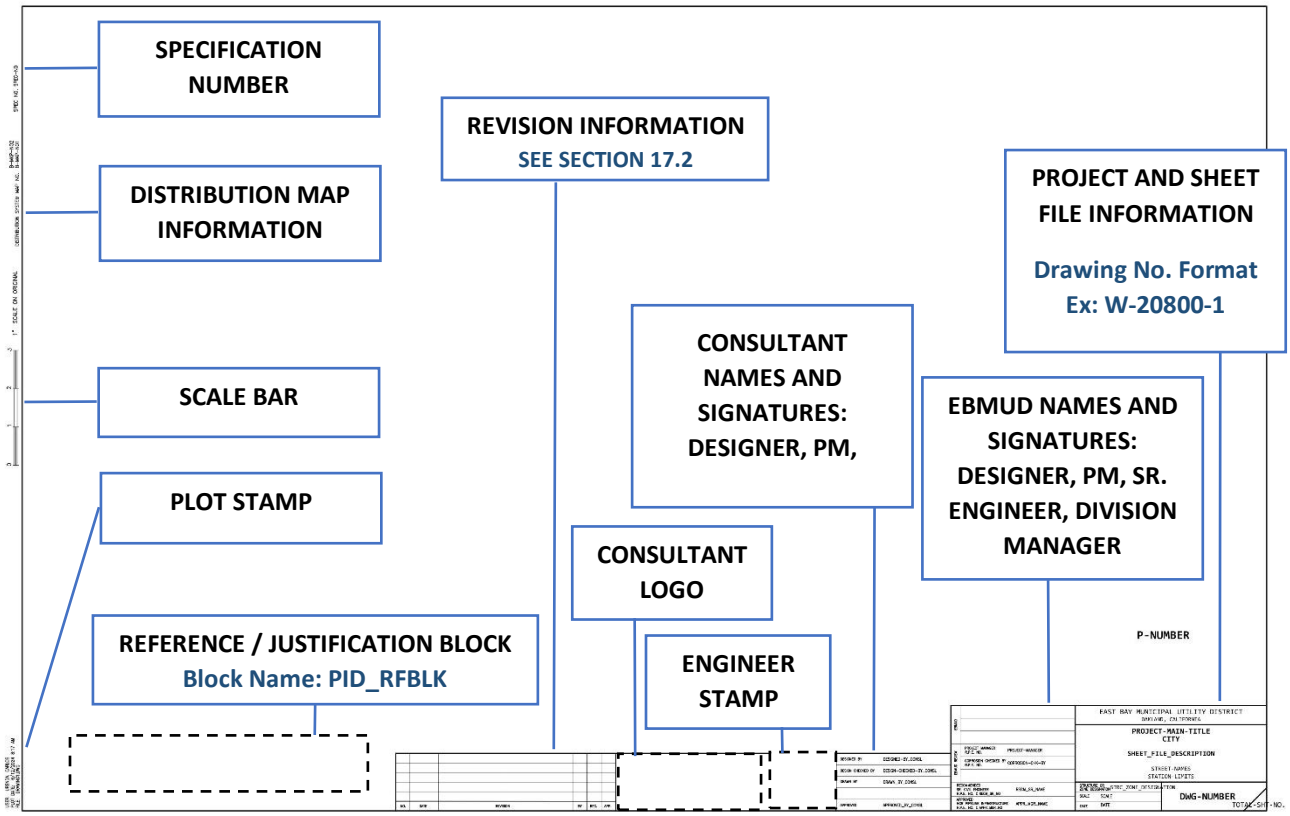
- See **5.2.3.1 W Drawing Contents**

Consultant Cover Sheet Contents (required for 2 or more W drawings)

- See **5.2.3.1 Cover Sheet Contents**

Consultant W drawing title block

Refer to the PID Drawing Standards Manual for detailed information of the title block content.



Consultant W drawing template

Title blocks are included with their respective template files (.dwt) and should not need retrieval from the library. When beginning a W drawing, use the corresponding template below.

Table 5d: W drawing template

Template file name	Border size
W00001c.dwt	34” x 22”

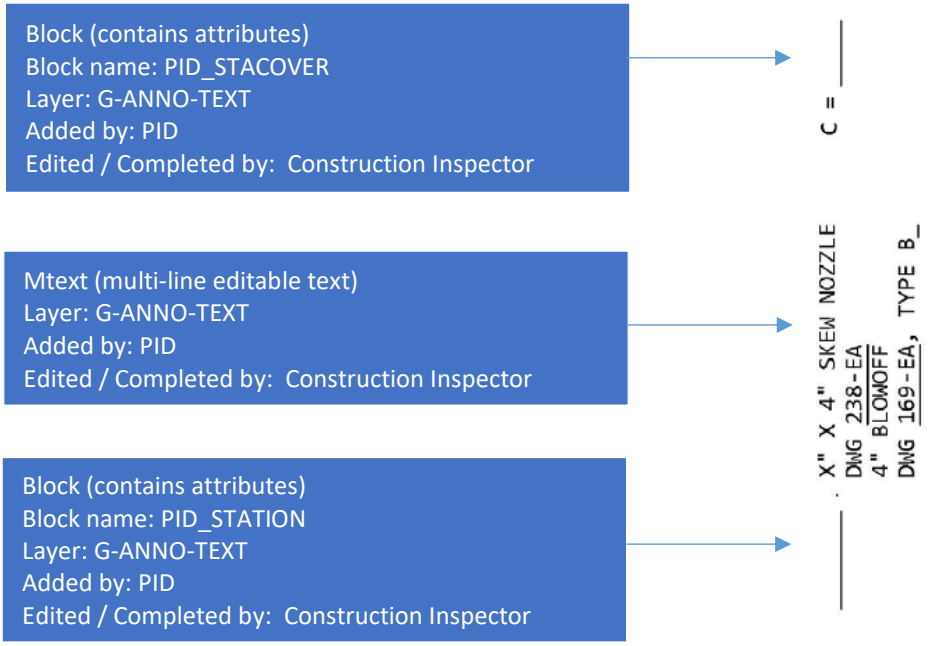
5.2.4 General Notes

For District installed projects, general notes are to be included on all pipeline project drawings. General notes cover information and requirements for construction surveys, as-built recording, pipeline and appurtenance installation, trench spoils handing instructions, and other project related notes as needed. The general notes for these projects are listed in section **19 RESOURCE FILES, Table 19a**.

For specification or applicant installed projects, the general notes include additional requirements and information for outside contractor installation. A template of general notes for specification or applicant installed are listed in section **19 RESOURCE FILES, Table 19a**.

5.2.5 Station Notes

Station notes appear along the lower margin of the drawing, at a 90-degree angle to the sheet. For proposed pipe that is vertically shown on the plan drawing, station notes appear along the left or right margin of the drawing, at a 0-degree angle to the sheet (unrotated). When possible, each note should align with the pipe fitting or appurtenance it describes. Below is an example station note.



5.2.6 Title Blocks

All standard District title blocks are inserted as a block in each layout tab of a sheet file on Layer 0 at the 0,0,0 insertion point in their respective template. The user can add stamps and signatures to the block via block editor, but native lines, text, attributes, and layers should not be altered. Each drawing type has its own title block (see **5.2.3 Sheet File: Drawing Types** for more information).

Tip:

- To edit specific title block attributes globally across your project drawings, use the UPDATETITLEBLOCK command and follow the command line prompts. If the command UPDATETITLEBLOCK does not work, please contact the system administrator.

6. TEXT STYLES

Specific text sizes have been established for use on pipeline design drawings. All text shall follow these parameters. Text should never be scaled up or down, stretched, or compressed, to fit a specific situation.

Table 6a: Text Style Settings

Name	**CONS01 (Text < 0.125 in)**			**CONSLRG (Text >0.125 in)**		
Font	Consolas	H	W	Consolas	H	W
USED FOR	CONNECTION	0.1	1	EXTENSION	0.2	1
	STATION LINE CALLOUT	0.1	1	STREET NAMES	0.2	1
	RIM/INV CALLOUT	0.1	1	LENGTH/SIZE/MATERIAL	0.17	1
		0		ALIGNMENT DIMS	0.15	1
	GENERAL/STATION NOTES	0.12	1	STATION OFFSET	0.15	1
	MATCHLINE CALLOUT	0.12	1	ZONE CALLOUT	0.11	1

Name	**RomanS**			**SWIS01_ANNO**			**LT_FONT**		
Font	RomanS	H	W	Swis721 BdOul BT	H	W	RomanS	H	W
USED FOR	BLOCK TEXT	VARIES	0.9	LOT NUMBER	0.2	1	LINE TYPE ABBREVIATIONS	0.08	0.95

6.1 Text Height Scale Factor

The above chart shows the desired plotted text height in paper space. With the utilization of model space, a scale factor may need to be applied to achieve the desired results. Below is a reference chart of scale factors for commonly used text heights. This assumes the annotative feature is not applied to the text style.

Table 6.1.1 Text Height Scale Factors

Table 6b: Text Height Scale Factors

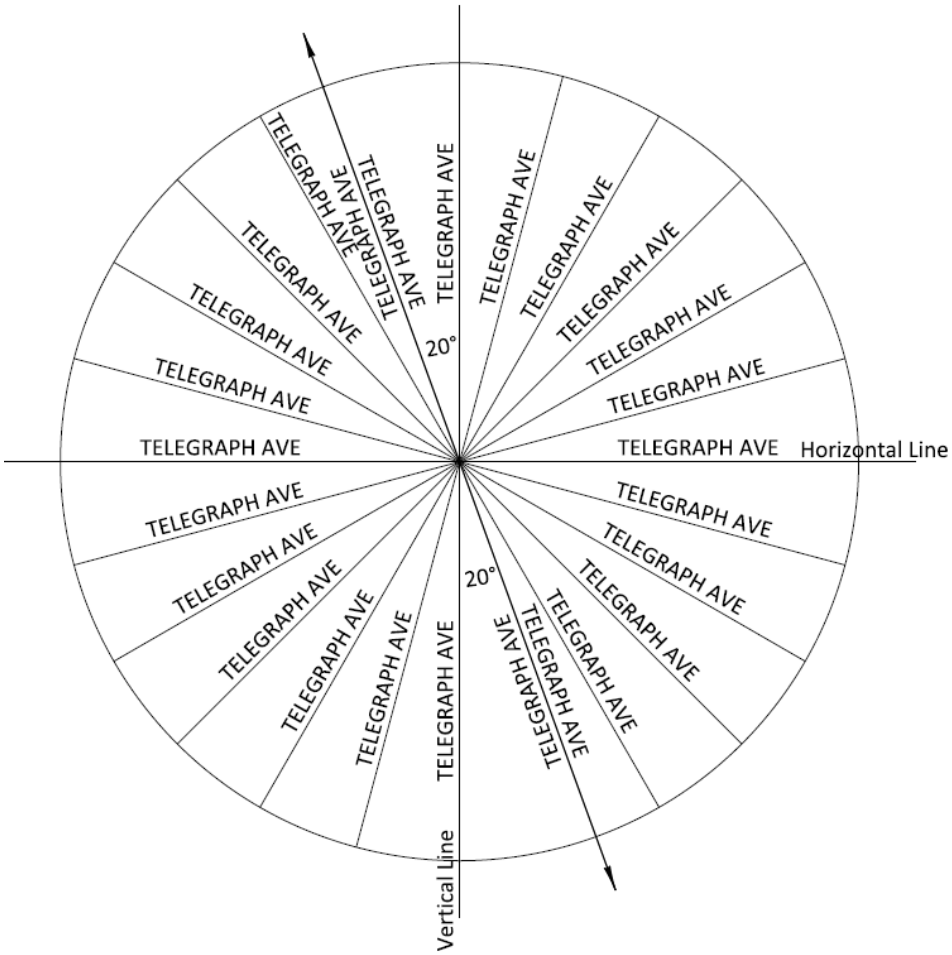
Scale Factor		Desired Plotted Text Height				
		0.10	**0.12**	**0.15**	**0.1875**	**0.20**
		Model Space Text Height				
1:	**1**	0.1	0.12	0.15	0.1875	0.2
1:	**2**	0.2	0.24	0.3	0.375	0.4
1:	**5**	0.5	0.6	0.75	0.9375	1
1:	**10**	1	1.2	1.5	1.875	2
1:	**20**	2	2.4	3	3.75	4
1:	**30**	3	3.6	4.5	5.625	6
1:	**40**	4	4.8	6	7.5	8
1:	**50**	5	6	7.5	9.375	10
1:	**60**	6	7.2	9	11.25	12
1:	**70**	7	8.4	10.5	13.125	14
1:	**80**	8	9.6	12	15	16
1:	**90**	9	10.8	13.5	16.875	18
1:	**100**	10	12	15	18.75	20
1:	**110**	11	13.2	16.5	20.625	22
1:	**120**	12	14.4	18	22.5	24
1:	**130**	13	15.6	19.5	24.375	26
1:	**140**	14	16.8	21	26.25	28
1:	**150**	15	18	22.5	28.125	30
1:	**160**	16	19.2	24	30	32

6.2 Text Direction on Plans

Text on any design drawings should follow the criteria listed below. Section **6.2.1 Text Directions on Plan Views** provides a figure to illustrate text direction at different angles.

- Lettering should always be read from the bottom of the right-hand edge of the page.
- Allowances may be made to go beyond the 90-degree limit for drawing clarity and consistency.
- Always keep lettering in the same direction wherever possible.
- At 90-100 and 270-280 degree axis, the direction of lettering is at the drafter's discretion.

6.2.1 Text Directions on Plan Views



6.3 Labels

6.3.1 Multileader

Multileader (command: MLEADER) is an AutoCAD leader line with text or block attachment. Below are predefined multileader styles for use on drawings.

Table 6c: Multileader Settings

Multileader Style Name (MLeader)	**Text Style**	**Annotative**	**Use Case**
ALIGNMENT	CONS01	Yes	Beginning and end of station line
NOTES	CONS01	No	Standard call-outs
NOTES_ANNO	CONS01	Yes	Standard call-outs
NOTES_PROF	CONS01	Yes	Standard call-outs in profile view
PIPELINE	CONSLRG	Yes	Pipe extension call-out
PIPELINE_PROF	CONSLRG	Yes	Pipe extension call-out in profile view
RIM_INV	CONS01	Yes	Rim and invert elevations
ROW	CONSLRG	Yes	Right of way label
STATION_OFF	CONSLRG	Yes	Station and offset of pipe
ZVALVE	CONSLRG	Yes	Zone valve close call-out

7. DIMENSION STYLES

Dimension styles will be imported as a block and should not need to be created from scratch. However, below are general guidelines for presentation. Choose the correct dimension according to the scale needed. Dimension style names are based on scale factor, i.e., for a dimension style of 1"=10'-0", the scale factor is 10, and therefore the corresponding dimension style name would be "PDIMS_10".

7.1 Dimension Style Settings

Table 7a below provides a list of commonly used Dimension Styles and parameters.

Table 7a: Dimension Style Settings

Dimension Style Name	Scale Factor	Paper Space Scale	Text Height	Tolerance	Use Case
PDIMS_10	1:10	1"=10'-0"	0.10"	0.0'	Reference
PDIMS_20	1:20	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_30	1:30	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_40	1:40	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_50	1:50	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_60	1:60	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_70	1:70	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_80	1:80	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_90	1:90	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_100	1:100	1"=20'-0"	0.10"	0.0'	Reference
PDIMS_ANNO	Annotative	VP Scale	0.10"	0.0'	Reference
PDIMS_PIPE	Annotative	VP Scale	0.15"	0.0'	Pipe to object
PDIMS_STREET	Annotative	VP Scale	0.10"	0' with +/- suffix	Street to object
PDIMS_ROW	Annotative	VP Scale	0.10"	0.0'	Right-of-way to Righ-of-way
PDIMS_DETL	User Defined	User Defined	0.10"	0.0'	Dimensions for details

Dimensions shall use text style CONS01, and all settings set to BYLAYER. Text style height shall be 0.1" unless otherwise noted in the chart above.

7.2 Dimension Format

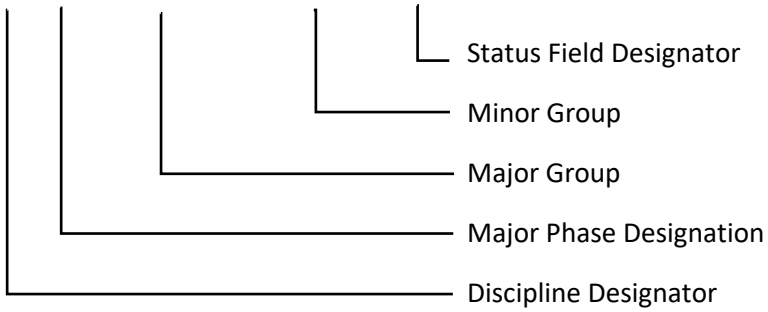
Notations and abbreviations related to the dimension shall be placed under the dimension line, i.e., TYP, MAX, MIN, etc. Consistency and uniformity are the key to good dimensioning.

8. LAYERS AND NAMING CONVENTION

The District layering guidelines will follow the sample format shown below. The digital CAD files will not have the status field designation defined. That will be defined by the CAD user at the time of developing the working CAD files, if necessary.

8.1 Layering Format Sample

WE-WATR-PIPE-1



Discipline Designator – 1 Character: This is the first identifier and main category in which the layer is divided according to its discipline in the industry. See **8.2 Discipline Designator and Major Phases**.
Major Phase Designator – A major phase designator may be placed after the discipline designator. Major phases include E (existing to remain), D (existing to demolish), and R (as constructed/verified). A layer name absent of a phase designation equates a proposed layer. See **8.2 Discipline Designator and Major Phases**.
Major Group – 4 Characters: This second identifier names a major system using a four-character abbreviation and is always followed by a dash separating it from the minor group. Refer to Layer Naming Convention.
Minor Group – 4 Characters: This categorization is optional and subdivides Major Groups on the basis of construction system or type of information. Refer to Layer Naming Convention.
Status Field Designator – 1 Character: This is the fourth identifier that distinguishes the layer name to its corresponding work or construction phase. It is a single character that is always followed by the major group name and does not require a space in between.

8.2 Discipline Designators and Major Phases

Table 8b: Discipline Designators – Major Phases

Discipline	Proposed	Existing	Demolish	Record
General	G	---	---	---
Civil	C	CE	CD	CR
Survey	V	VE	VD	VR
Water Distribution System (District Owned)	W	WE	WD	WR

8.3 Layer Fields: Major Group

Table 8c: Layer Field Designators – Major Groups

Designator	Description of designator
ALGN	Alignments
ANNO	Sheet annotation
BLDG	Buildings and primary structures
BLIN	Baseline
BNDY	Political Boundaries
BORE	Test borings
BRDG	Bridges
BRKL	Break / fault lines
CABL	Cable
CHAN	Water bodies (channels and lakes)
COMM	Communications
CSWR	Combined sewers
CTRL	Control points
DATA	Data (Survey)
DETL	Details
DIAG	Diagrams
DRIV	Driveways
DTCH	Ditches or washes
EROS	TESC (temporary erosion and sediment control)
ESMT	Easements
FENC	Fencing
FIRE	Fire protection system
FLHA	Flood hazard area
FNDN	Foundations
FUEL	Fuel gas
GRND	Ground systems
HVAC	Heating, ventilation, and air conditioning
INTR	Interference
INVT	Inventory

Designator	Description of designator
IRRG	Irrigation
LITE	Light poles, Light
LOCN	Limits of construction
MATL	Material section
NBLT	As-Built and Record drawing: Crossed out features that were *not built*
NGAS	Natural gas
NODE	Point
PIPE	Pipes
PLNT	Plant and landscape material
POND	Ponds
POWR	Power
PRKG	Parking
PROF	Profiles
PROP	Property
PVMT	Pavement (non-roadway paving, i.e., conc pads)
PZRN	Pressure Zone
RAIL	Railway
RBAR	Rebar
RIVR	Rivers and Creeks
ROAD	Roadways
ROCK	Rocks and Rockery
RRAP	Riprap
RWAY	Right-of-Way
SECT	Sections
SGHT	Sight distance
SIGL	Traffic signals
SITE	Site features
SOIL	Soils
SSWR	Sanitary sewer
STEM	Steam
STRM	Storm sewer
SURV	Survey
SWLK	Sidewalks
TINN	Triangulated irregular network
TOPO	Topography
TRAL	Trails or paths
VIEW	Viewports
WALL	Walls
WATR	Water supply systems
WETL	Wetlands

WTZN	Water pressure zone

8.4 Layer Fields: Minor Group

Table 8c: Layer Field Designators – Minor Groups

Designator	Description of designator
025Y	Flood: 25-year mark
050Y	Flood: 50-year mark
100Y	Flood: 100-year mark
200Y	Flood: 200-year mark
ABDN	Abandoned
ACCS	Easements: Access (pedestrian only)
ANNO	Annotation
ASPH	Pavement: Asphalt
ASSM	Corridors: Assemblies
BACK	Pavement: Back
BARR	Barriers (jersey barriers, noise barriers, etc.)
BARS	Sheets: Bar scales
BERM	Berms
BIKE	Bike racks
BNCH	Benches
BNDY	Topography: Boundaries (surface boundaries)
BOLD	Details: Thick lines
BOTD	Ditches: Bottom of ditch
BRCK	Brick
BRDR	Border
BRNG	Annotation, Alignments: Bearing and distance (survey coordinates)
BUFF	Wetlands: Buffers
CASE	Pipe Casing
CATV	Utilities: Cable television
CIPR	TESC: Culvert inlet protection
CITY	City Boundaries
CNTE	TESC: Drainage divides
CNTR	All: Center lines
CNTY	County Boundaries
CODE	Code compliance plan
COLS	Columns
CONC	Pavement: Concrete
CONS	Easements: Conservation
CORR	Corridors
CSTG	Easements: Construction / grading

CTLJ	Walls: Control joints
Designator	**Description of designator**
CURB	Pavement: Curbs
DATA	Data (Survey)
DATM	Datum notes
DAYL	Grading: Daylight lines
DBLL	Double
DECK	Buildings: Outdoor decks (no roof)
DEPR	Topography: Depression (depression contours)
DIMS	Dimensions
DRAN	Grading: Drainage slope
DVDK	TESC: Diversion dike
EDGE	Channels, major water bodies, ponds, creeks, and rivers: edge of water
ELEC	Utilities: Electrical
EQPM	Utilities: Equipment (pumps, motors, etc.)
ESMT	Easement Lines
EVAC	Evacuation plan
EWAT	Ditches: Edge of water
FACE	Pavement: Face (front)
FALT	Topography: Fault / break lines
FDPL	Flood plain
FEAT	Grading: Feature lines
FIBR	Fiber Optic
FINE	Details: Thin lines
FIXT	All: Fixtures (wheel stops, parking meters, hardware, etc.)
FLNE	Channelization: Fire lane
FRME	Sheets: Frame
FTTG	Fitting
GRAL	Fencing: Guard rails
GRID	Profiles: Profile grid
GRVL	Pavement: Gravel
HID1	Details: Thick hidden lines
HID2	Details: Thin hidden lines
HRAL	Handrail
HVIS	High-visibility construction fencing
HYDR	Water: Fire hydrants
IDEN	Identifier
IMGS	Images and photos
INEG	Easements: Ingress / egress (vehicles only)

INPR	TESC: Inlet protection
Designator	**Description of designator**
INST	Utilities/Electrical: Instrumentation (meters, valves, traffic signal hardware, electrical, etc.)
INTR	Interference
JTCH	Joint Trench
KEYN	Sheets: Keynotes
LABL	Annotation: Labels
LANE	Channelization: lane
LATL	Utilities: Laterals (sewer & drainage connections)
LEGN	Sheets: Legends, symbol keys
LIDR	LIDAR Data
LINE	All: Lines (property lines, etc.)
LOGO	Logos
LOGS	Logs
LOOP	Traffic: Loops
LRGE	Utilities: Large piping (>/= 12”)
LSCP	Misc.: Landscape
MAIL	Mailboxes
MAJR	All: Major lines
MARK	Channelization: directional arrow
MATC	Sheets: Match lines
MEDM	Details: Medium-weight lines
MHOL	Utilities: Maintenance hole castings/openings
MINR	All: Minor lines
MISC	Miscellaneous
MRKG	All: Markings
NATL	National Boundaries
NBLT	As-Built and Record drawing: Feature not built
NOTE	Sheets: Notes
NPLT	Misc.: Non-plotting graphic information
NRTH	Sheets: North arrows
NSBR	Walls: Noise Barriers
OTLN	Buildings: Outline
OVHD	Buildings: Overhead (overhang)
PATT	All: Hatch Patterns
PAVR	Pavement: pavers
PERM	All: Permanent
PHON	Utilities: Telephone lines

PIPE	Utilities: Pipes
Designator	**Description of designator**
PLAN	Floor Plan
PLSS	Public Land Survey System
POLE	Utilities: Boxes / poles
POST	Fencing: Posts
PRCH	Buildings: Porch (attached, roof overhead)
PROF	Profiles
PROJ	Grading: Projection lines
PUMP	TESC: Bypass pumping
RAMP	Channelization: curb ramp
RDME	Misc.: Read-me layer (not plotted)
RECY	Recycle Water Service
REDL	Misc.: Redlines
REFR	Annotation: reference boxes (PHANTOM2 linetype)
REPL	Wetlands: Replacement
RETN	Return
REVC	Misc.: Revision clouds
REVS	Sheets: Revisions
RFS	Remove From Service
ROAD	Pavement: Roadways
ROCK	Rockery/rocks
RTWL	Walls: Retaining walls
RWAY	Easements: Right-of-way (public access)
SAMP	Sections: Sample lines
SAND	TESC: sandbags
SBCK	Property: Setback lines
SCHD	Sheets: Schedules
SCUT	Sawcut
SECT	Sections
SEGM	Channelization: segment
SERV	Utilities: water services
SHEA	Walls: Structural bearing or shear walls
SIGL	Traffic Signals
SIGN	All: Signs
SILT	TESC: Silt fence
SLID	Channelization: solid
SLNE	Channelization: stop line
SLOP	Grading: Slope patterns
SMAL	Utilities: Small piping (< 12”)

SPOT	Topography: Spot elevations
SSLT	TESC: Super silt fence
Designator	**Description of designator**
STAN	Alignments: Stationing
STEL	Fencing: Steel
STEP	Stairs/steps
STRC	Utilities: Structures
STRP	Channelization: Striping
STRS	Stair treads, escalators, ladders
SUBA	Corridors: Sub-assemblies
SUBT	Annotation: Sub-titles
SUPP	Supply
SURF	Surface
SWAY	Utilities: Spillway
SWMT	Utilities: Storm water management
SYMB	Sheets: Reference symbols
TABL	Sheets: Tables
TANK	Utilities: Storage tanks
TEXT	Text
TITL	Annotation: Titles
TOEB	Topography: Toe of bank
TOPB	Topography: Top of bank
TOPD	Ditches: Top of ditch
TPIT	Topography: Test pits
TRAF	Traffic
TRAK	Channelization: track
TRAL	Pavement: Trail or path (public access)
TRAV	Traverse (Survey)
TRCT	Tract Lines
TTLB	Sheets: Border and title blocks
UGND	Utilities: Underground
UKNW	Unknown
UPVD	Pavement: Unpaved surface
UTIL	Utilities
VEGE	Vegetation
VIEW	View frames/boxes
WELL	Utilities: Wells
WHIT	Channelization: White paint lines
WOOD	Fencing: Wood
XWLK	Channelization: crosswalk
YELO	Channelization: Yellow paint lines

ZONE	Channelization: zone

8.5 Layer Names

See Appendix A for District standard layer name, color, linetype and description settings.

9. PRINTING AND PLOTTING

All prints and plots are to be done to scale, 1:1 for full size and 1:2 for half size. The District standard pen styles are defined in "EBMUD.ctb."

9.1 EBMUD Defined Pens

The following shows the defined pen assignments and weights. Colors not shown use the object line weight by default.

Table 9a: Defined Pen Settings

PEN	WEIGHT (MM)	SCREEN
1	0.18	
2	0.35	
3	0.35	
4	0.50	
5	0.70	
6	1.00	
7	0.35	
8	0.35	50%
9	0.35	40%
10	0.35	
11	0.35	40%
15	0.70	40%
21	0.18	40%
23	0.35	
31	0.35	40%

PEN	WEIGHT (MM)	SCREEN
50	1.00	
51	0.35	40%
55	0.18	
60	0.18	
91	0.35	40%
110	1.00	
121	0.70	40%
130	0.70	
131	0.35	40%
140	0.10	15%
150	1.00	
151	0.35	
157	0.50	40%
158	0.70	40%
159	1.00	40%
160	0.35	
161	0.35	40%
171	0.35	
190	0.35	
191	0.35	40%
201	0.35	40%
211	0.35	40%
220	0.35	
223	0.50	
224	0.70	
225	0.70	
240	1.00	

TRUE COLOR
12
22
32
42
52
62
72
82
92
102
112
122
132
142
152
162
172
182
192
202
212
222
232
242

TRUE COLOR
250
251
252
253
254
255

Table 9b: Quick Reference Guide

Drawing Type					
	W-Drawing	**Pipeline Ext. Drawing**	**Hydrant Sketch**	**RFS Drawing**	**TCP**
Layer (objects)	**Pen no., color, line type, and line weight sample**				
WE-WATR-PIPE-RFS (RFS pipe)	2	2	2	5	N/A
WE-WATR-PIPE-FTTG (RFS fittings)	2	2	2	2	N/A
WE-WATR-PIPE-ABDN (abandoned district pipe and fittings)	23	23	23	23	N/A
WE-WATR-PIPE (existing district pipe)	151	151	151	151	N/A
WE-WATR-PIPE-FTTG (existing district fittings)	151	151	151	151	N/A
W-WATR-PIPE (proposed district pipe)	150	150	150	N/A	N/A
W-WATR-PIPE-FTTG (proposed district pipe)	134	134	134	N/A	N/A
W-WATR-HYD-* (proposed hydrant, fittings, and lateral)	134	134	134	N/A	N/A

10. LINETYPES

District includes pre-defined linetypes within template (.dwt) files for consistency in drafting standards. Custom linetype definitions are contained in the supplemental Pipeline.lin file.

10.1 District Custom Linetypes

See Apendix B for Custom Linetype Examples

10.2 Multiline

Multiline styles in **Table 10a** were created to assist drawing both outside lines and center lines for projects that require double line pipes. Users will be required to add a dot pattern fill on all proposed double line pipes.

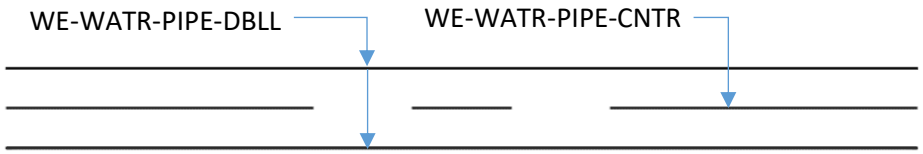
Table 10a: Multiline Linetypes

Multiline Style Name	Use Case	Content	Default width
LDE	Existing pipe 24” and larger	Outside pipe w/ centerline no fill	2.0’
LDN	New pipe 24” and larger	Outside pipe w/ centerline and internal dotted fill	2.0’

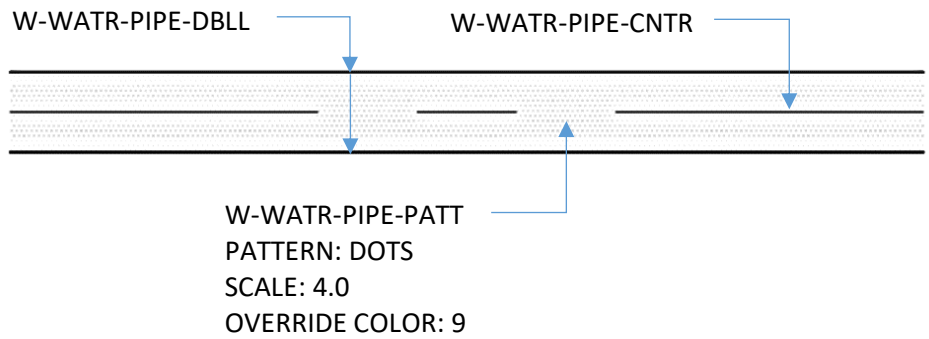
User guide:

- To change the width of LDN or LDE, increase the MLINE scale in decimal feet units when prompted at the command line.

Example LDE (existing)



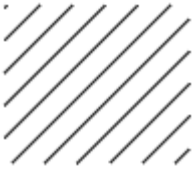
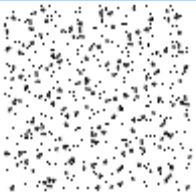
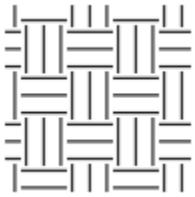
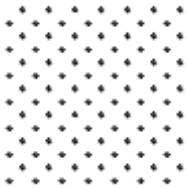
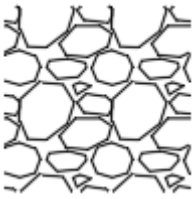
Example LDN (proposed)



11. HATCH PATTERNS

Common hatch patterns and their use.

Table 11a: Hatch Patterns

Hatch Patterns		
Hatch Image	**Name**	**Use**
	ANSI131	Key plan and vicinity map plan extents fill
	AR-CONC	Concrete (section view)
	DOTS	Proposed large diameter pipe fill
	EARTH	Earth (section view; apply 45 deg rotation)
	GRASS	Grass area (plan view)
	GRAVEL	Gravel (section view)

12. BLOCK LIBRARY

See Appendix B for Block Library Examples

13. WORKFLOWS

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14. ROLES AND RESPONSIBILITIES

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15. ELECTRONIC TRANSMITTALS

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16. SUBMITTALS

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17. REVISIONS

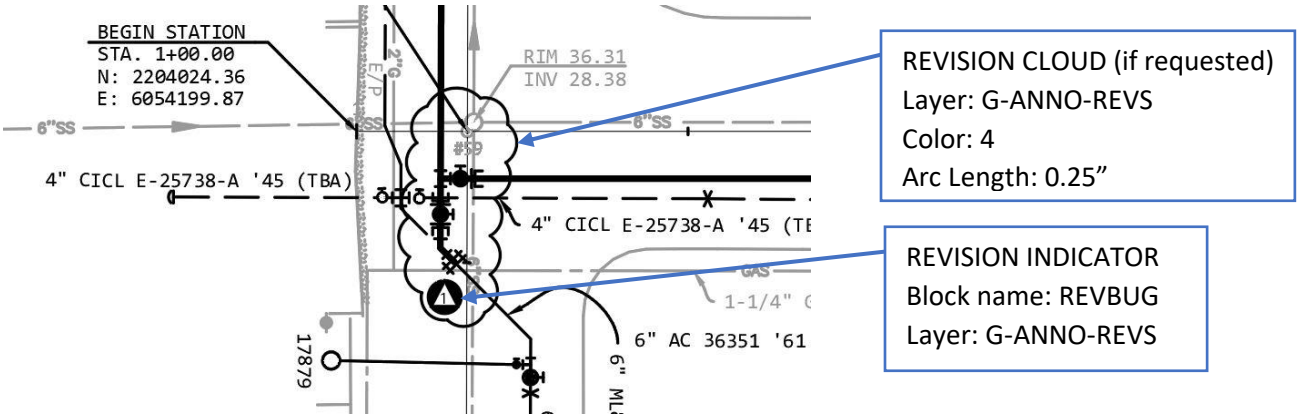
Prior to making a revision to a drawing, copy all sheet file and related master references to the "Archive" folder under a sub-folder with the proper naming format (see **4.1 Main File Directory**). The active file names in the main directory do not change. The main file directory shall always contain the latest version of the drawing(s).

Revisions to the design drawing after final submission shall be captured using revision indicators, revision information blocks, and follow procedures and requirements similar to the 100% submittal. Revision clouds are only added if requested.

Revisions indicators, and block updates only apply to sheet(s) affected by the change. The sheet file receiving the change will receive the following updates:

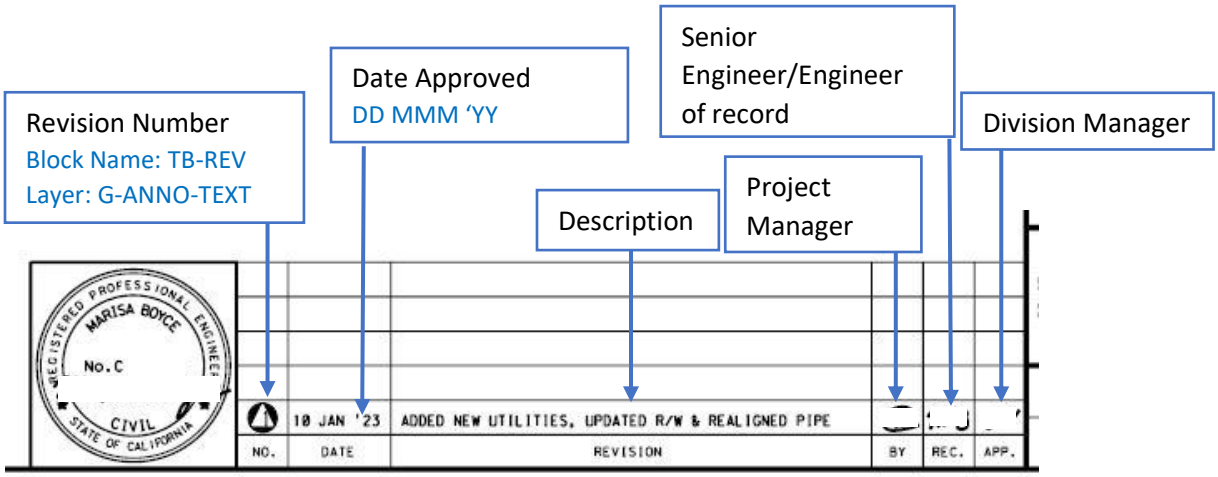
17.1 Sheet File

Table 17a: Sheet File Example



17.2 Revision Information Block

Table 17b: Revision Block Example



18. REFERENCE

18.1 Internal Reference Guides

Below are references to help ensure the design conforms with District guidelines. It is the responsibility of the project engineers, designers, and drafters to ensure that the final design of a water main follows the necessary procedures.

East Bay Municipal Utility Districts, Standard Drawings for Installation of Water Mains 20" and Smaller, October 2022

SplashPad Location: Work Center > Departments > Engineering: Pipeline Infrastructure Division > Pipeline Design Support > Design Support > Resources > Pipeline Drafting and Design Standards Development > Pipeline Design Resources

East Bay Municipal Utility Districts, Standard Specifications, Installation of Water Mains 20" and Smaller, October 2022

SplashPad Location: Work Center > Departments > Engineering: Pipeline Infrastructure Division > Pipeline Design Support > Design Support > Resources > Pipeline Drafting and Design Standards Development > Pipeline Design Resources

Pipeline Infrastructure Division, Design Support and Resources

SplashPad Location: Work Center > Departments > Engineering: Pipeline Infrastructure Division > Pipeline Design Support > Design Support

Pipeline Infrastructure Division, Drawing Standards Manual

SplashPad Location: Work Center > Departments > Engineering: Pipeline Infrastructure Division > Pipeline Design Support > Design Support > PID Drawing Standards Manual

Engineering Standard Practice (ESP)

The District's Engineering Standard Practices (ESPs) present the basic information to assist staff in carrying out various policies, procedures, technical standards, and available services. You can find the District ESP's on the District's intranet web page (Splashpad):https://splashpad.ebmud.com/work-center/departments/engineering/engineering-services/engineering-standard-practices

You can also access the ESP's in your AutoCAD software using the General tab tool palette.

Below is list of all of the District's ESP for quick reference.

Table 18a: Engineering Standard Practices

ESP No.	Title
ESP 001	INDEX
ESP 002	ESP UPDATE SCHEDULE
ESP 010.1	ENGINEERING STANDARD PRACTICE
ESP 020.1	LIFE CYCLE COSTS ANALYSIS

ESP No.	Title
ESP 020.2	TOTAL PROJECT COSTS ESTIMATES
ESP 020.3	COST ESTIMATING FOR CONSTRUCTION
ESP 020.6	CONSTRUCTION INSPECTION DAILY REPORTS, DIARIES AND RELATED RECORDS
ESP 030.1	DEVELOPING AND MAINTAINING PROFESSIONAL ENGINEERING QUALIFICATIONS
ESP 034.1	PARTICIPATION IN PROFESSIONAL ORGANIZATIONS
ESP 080.1	PERMANENT DISTRIBUTION FACILITY REMOVAL
ESP 120.1	DRAWING CONTROL: ASSIGNING STRUCTURE NUMBERS TO DISTRICT FACILITIES
ESP 120.2	REFERENCE CODINGS FOR DRAWINGS AND RELATED DOCUMENTS ARCHIVED BY THE ENGINEERING SERVICES DIVISION
ESP 120.4	DRAWING CONTROL: ISSUING NEW DRAWING NUMBERS
ESP 120.5	DRAWING CONTROL - DRAWING DISPOSAL
ESP 120.6	DRAWING NUMBERING SYSTEM FOR STRUCTURE-RELATED PROJECTS
ESP 130.0	EQUIPMENT TAG NUMBERING SYSTEM
ESP 130.0 FLOWCHART	ESP 130.0 EQUIPMENT TAG NUMBERING SYSTEM TAG NUMBERING FLOWCHART
ESP 130.0 FLOWCHART	ESP 130.0 EQUIPMENT TAG NUMBERING SYSTEM TAG NUMBERING FLOWCHART
ESP 130.0 TABLE 1	GENERAL TAG NUMBERING SYSTEM - EXAMPLES
ESP 130.0 TABLE 1	GENERAL TAG NUMBERING SYSTEM - EXAMPLES
ESP 144.1	CORRESPONDENCE: FORMAT, SIGNATURE, AND ROUTING
ESP 201.0	DRAWING SIGNATURES
ESP 201.1	ELECTRONIC SIGNATURES FOR FACILITY AND PIPELINE DRAWINGS
ESP 207.1	ABBREVIATIONS FOR SURVEYING AND MAPPING
ESP 208.1	TITLE BLOCK FORMAT GENERAL
ESP 208.2	DESIGNATION OF SECTIONS AND DETAILS
ESP 208.3	COVER SHEET FORMAT
ESP 209.1	COLOR CODE FOR MARKING DRAWINGS
ESP 209.2	AS-BUILT DRAWINGS - FACILITIES
ESP 209.3	AS-BUILT DRAWINGS: SIGNATURES
ESP 209.4	DRAWING REVISIONS
ESP 209.41	PRE-CONSTRUCTION DRAWING REVISIONS
ESP 209.5	MEASURING AND RECORDING LOCATION OF SERVICES
ESP 210.1	AS-BUILT PIPELINE DRAWINGS
ESP 250.1	HIGH VOLTAGE DANGER WARNING SYMBOL
ESP 251.1	DISTRIBUTION SYSTEM MAPS -- PIPE DESIGNATIONS
ESP 251.2	DISTRIBUTION AND SERVICE MAPS PIPE AND FITTING SYMBOLS

ESP No.	Title
ESP 251.3	DISTRIBUTION SYSTEM MAPS - SERVICES
ESP 251.4	DISTRIBUTION AND SERVICE MAPS SYMBOLS, TAPS TO MULTIPLE MAINS
ESP 251.5	100' SCALE DISTRIBUTION AND SERVICE MAP LINES AND SYMBOLS
ESP 260.1	COLOR CODE FOR PRESSURE ZONES
ESP 301.1	FIELD BOOK INDEXING
ESP 310.1	HORIZONTAL CONTROL DATUM FOR DISTRICT PROJECTS
ESP 320.1	OFFICIAL VERTICAL DATUM, VERTICAL CONTROL STANDARDS, AND HISTORIC COMPARISON OF DATUM PLANES
ESP 320.1	OFFICIAL VERTICAL DATUM, VERTICAL CONTROL STANDARDS, AND HISTORIC COMPARISON OF DATUM PLANES
ESP 450.1	ANNUALLY INFORMING LOCAL JURISDICTIONS OF UPCOMING CAPITAL PROJECTS
ESP 462.1	AVERAGE USEFUL LIFE OF WATER WORKS FACILITIES
ESP 480.1	DESIGNATION OF AREAS, PRESSURE ZONES AND DISTRIBUTION FACILITIES
ESP 480.2	NAMES OF DISTRICT WATER FACILITIES
ESP 490.0	WATER SYSTEM FACILITY SITE SELECTION AND DEVELOPMENT
ESP 492.1	PLANNING CRITERIA FOR DISTRIBUTION WATER MAINS AND INLET/OUTLET PIPELINES FOR WATER STORAGE FACILITIES
ESP 492.2	DISTRIBUTION RESERVOIR AND PUMPING PLANT PLANNING CRITERIA
ESP 494	MITIGATION GUIDELINES FOR MAJOR CAPITAL PROJECTS
ESP 495	ARCHAEOLOGICAL AND PALEONTOLOGICAL RESOURCE MANAGEMENT
ESP 510.1	PIPE, STANDARD SIZES
ESP 510.2	STEEL PIPE NOMENCLATURE
ESP 512.1	WATER MAIN DESIGN CRITERIA
ESP 512.2	PIPELINE MATERIAL ESTIMATE
ESP 512.3	WIRE TRACERS AND IDENTIFICATION
ESP 512.4	EVALUATING PIPELINE MATERIALS AND PRACTICES
ESP 512.5	DESIGN STANDARDS FOR RECYCLED WATER FACILITIES
ESP 512.6	WATER MAIN RELOCATION STANDARDS
ESP 512.7	WATER SERVICE DESIGN CRITERIA
ESP 512.8	WATER MAIN VALVES AND APPURTENANCES
ESP 512.9	WATER MAIN ABANDONMENT
ESP 513	MATERIALS THAT MAY AFFECT WATER QUALITY
ESP 514	IDENTIFYING BURIED CONFLICTS
ESP 516.1	VALVE OPENING ROTATION DIRECTION AND COLOR CODING
ESP 517.1	PIPELINE RIGHTS OF WAY
ESP 521.2	EQUIVALENT METER SIZES
ESP 521.2	EQUIVALENT METER SIZES
ESP 521.3	ACCELERATED-WEAR TESTING OF REVENUE WATER METERS

ESP No.	Title
ESP 531.1	IDENTIFICATION - PLANT PIPE, CONDUIT AND WIRE
ESP 550.1	SEISMIC DESIGN REQUIREMENTS
ESP 552.0	ACCESS ROADS
ESP 553.0	ENERGY DISSIPATORS
ESP 554.1	CULVERTS AND RESERVOIR DRAINS
ESP 571.2	CORROSION CONTROL - METAL PARTIALLY IN/ CONCRETE
ESP 572.1	CORROSION CONTROL - PIPELINES
ESP 572.3	CORROSION CONTROL - INSULATED FLANGES ON LARGE SERVICES
ESP 573.1	MAJOR DISTRIBUTION FACILITIES OUTAGE PLANNING - PROCEDURES AND GUIDELINES
ESP 573.2	TEMPORARY REMOVAL FROM SERVICE OF RESERVOIRS - PROCEDURES AND GUIDELINES
ESP 610.1	SPECIFICATION AND CONTRACT PROCESSING
ESP 610.2	ADDENDA TO SPECIFICATIONS
ESP 611.0	CONSTRUCTION CONTRACT PREPARATION AND ADMINISTRATION
ESP 612.0	REJECTING ALL BIDS
ESP 615.1	BID PROTEST PROCESSING
ESP 740.0	DISTRICT RESPONSE TO INJURY OF CONTRACTOR PERSONNEL
ESP 760.1	SUBMITTAL PROCESSING
ESP 772.0	CHARGES FOR RESERVOIR TESTING WATER DURING CONSTRUCTION

18.2 Autodesk Connector for ArcGIS (ACA)

The Autodesk Connector for ArcGIS is a tool developed by Autodesk that allows connectivity to ArcGIS content. This tool is recommended to import graphical information from our GIS data base into CAD files.

Command: ARCGISCONNECTOR
ArcGIS Portal: https://gis.ebmud.com/portal

18.2.1 ACA Content

Below is a list of content you can find to import into your design master file. GIS content will import on the active layer. Refer to the Import Layer column for the layer which to import the features.

Table 18b: ACA Content Information

Map Service Name	Content	Feature Name	Import as	Import Layer
BMapLayers	Abandoned	+ Abandoned (Group)		
	Includes abandoned control valves, system valves,	Abandoned Control Valve	COGO Points	WE-WATR-INST-ABDN
		Abandoned System Valve	COGO Points	WE-WATR-INST-ABDN

	hydrants, service connections, pumping plants, reservoirs, main pipelines and lateral lines.	Abandoned Hydrant	COGO Points	WE-WATR-HYDR-ABDN
		Abandoned Service Connection	COGO Points	WE-WATR-INST-ABDN
		Abandoned Lateral	Feature Lines	WE-WATR-PIPE-ABDN
		Abandoned Potable Main	Feature Lines	WE-WATR-PIPE-ABDN
		Abandoned Pumping Plant	COGO Points	WE-WATR-STRC-ABDN
		+ Abandoned Reservoir (Group)		WE-WATR-STRC-ABDN
		Abandoned Drain Line	Feature Lines	WE-WATR-PIPE-ABDN
		Abandoned Reservoir	COGO Points	WE-WATR-STRC-ABDN
	Potable Distribution	+ Potable Distribution (Group)		
	Includes control valves, system valves, zone gate valves, fittings, corrosion control, flow meters, hydrants, service connections, manholes, drain lines and valves, regulators, pumping plants, water quality stations, reservoirs, aqueducts, main pipelines and lateral lines.	Control Valve	COGO Points	WE-WATR-INST
		Valve Lateral	Feature Lines	WE-WATR-PIPE
		System Valve (OL = Opens Left)	COGO Points	WE-WATR-INST
		Turnout Valve	COGO Points	WE-WATR-INST
		Zone Gate	COGO Points	WE-WATR-INST
		Fitting	COGO Points	WE-WATR-FTTG
		Corrosion Control	COGO Points	WE-WATR-INST
		Emergency Bypass Connection	COGO Points	WE-WATR-INST
		"G" Flow Meter	COGO Points	WE-WATR-INST
		+ Drain System (Group)		
		Drain Valve	COGO Points	WE-WATR-INST
		Drain Line	Feature Lines	WE-WATR-PIPE
		Hydrant	COGO Points	WE-WATR-HYDR
		Hydrant Lateral	Feature Lines	WE-WATR-PIPE

		Service Connection	COGO Points	WE-WATR-PIPE
		Service Connection Lateral	Feature Lines	WE-WATR-PIPE
		Manhole	COGO Points	WE-WATR-MHOL
		Regulator	COGO Points	WE-WATR-INST
		+ Reservoir (Group)		
		Reservoir	COGO Points	WE-WATR-STRC
		Structure	Feature Lines	WE-WATR-STRC
		Pumping Plant	COGO Points	WE-WATR-STRC
		Water Quality Station	COGO Points	WE-WATR-STRC
		Proposed Potable Main	Feature Lines	W-WATR-PIPE
		Pressurized Main (District)	Feature Lines	WE-WATR-PIPE
		Pressurized Main (Other)	Feature Lines	CE-WATR-PIPE
		Pipe Protection	Feature Lines	WE-WATR-INST
	Recycled Distribution	+ Recycled Distribution (Group)		
	Includes recycled control valves, system valves, zone gate valves, fittings, corrosion control, flow meters, hydrants, service connections, regulators, reservoirs, recycled pipelines and laterals.	Control Valve	COGO Points	WE-RECY-INST
		System Valve	COGO Points	WE-RECY-INST
		Zone Gate	COGO Points	WE-RECY-INST
		Fitting	COGO Points	WE-RECY-FTTG
		Corrosion Control	COGO Points	WE-RECY-INST
		"G" Flow Meter	COGO Points	WE-RECY-INST
		Hydrant	COGO Points	WE-RECY-HYDR
		Hydrant Lateral	Feature Lines	WE-RECY-HYDR
		Service Connection	COGO Points	WE-RECY-HYDR

		Service Connection Lateral	Feature Lines	WE-RECY-HYDR
		Recycled Mains	Feature Lines	WE-RECY-HYDR
		Regulator	COGO Points	WE-RECY-INST
		Recycled Structure	COGO Points	WE-RECY-STRC
	Supply System	+ Supply System (Group)		
	Includes supply control valves, system valves, corrosion control, flow meters, service connections, pumping plants, manholes, reservoirs, and gravity mains.	Control Valve	COGO Points	WE-WATR-INST
		System Valve	COGO Points	WE-WATR-INST
		Turnout Valve	COGO Points	WE-WATR-INST
		Corrosion Control	COGO Points	WE-WATR-INST
		"G" Flow Meter	COGO Points	WE-WATR-INST
		Service Connection	COGO Points	WE-WATR-PIPE
		Service Connection Lateral	Feature Lines	WE-WATR-PIPE
		Manhole	COGO Points	WE-WATR-MHOL
		Supply Mains	Feature Lines	WE-WATR-PIPE
		Supply Structure	COGO Points	WE-WATR-STRC
		Pumping Plant	COGO Points	WE-WATER-STRC
	Wastewater Collection	+ Wastewater Collection System (Group)		
	Includes wastewater facilities, manholes, and interceptor pipelines.	Wastewater Facilities	COGO Points	C-SSWR-STRC
		Wastewater Manhole	COGO Points	C-SSWR-MHOL
		Wastewater Interceptor	Feature Lines	C-SSWR-STRC
	Landbase	+ Landbase (Group)		
	Includes District properties, rights-of-way, distribution	District Property	Feature Lines	C-PROP-LINE
		Right Of Way	Feature Lines	C-RWAY-DIST

	aqueducts, backbone distribution mains, and the B-map grid.	Distribution Aqueduct	Feature Lines	WE-WATR-PIPE-LRGE
		Backbone Pipeline	Feature Lines	WE-WATR-PIPE
		B-Map Grid	Feature Lines	G-ANNO-GRID
AlamedaContraCosta	Parcels		Feature Lines	

18.3 Tool Palettes

Tool palettes help users add content in accordance with the CAD standards. **Table 18c** shows the palette groups with description of the content.

Table 18c: Tool Palettes and Content

Palette Group	Palette Tool	Content	Phases
Pipeline	General	Non plot lines, Vicinity Map, Vicinity Map Labels, Forms, Resources	N/A
	Pipeline	Pipeline lines, text,	Existing, Remove from service, Proposed
	W Pipeline Blocks	Fittings, Valves, Symbols	Proposed
	WE Pipeline Blocks	Fittings, Valves, Symbols	Existing, Remove from service
	Profile	Grade line, Utilities, Structures, Manholes, Symbols, Fittings, Text	Existing, Proposed
	Paper Space	Vicinity maps, stamps, revisions, labels, symbols	General
	Control/Survey	Boundary lines, easement line, street name text, property lines, Right-of-way line, service boundary	Existing, Proposed
	Site Topo	Fence, ditch, structures, RR tracks, retaining wall, guardrail, etc.	Existing, Proposed
	Roadway	Edge of pavement, face of curb, sidewalk, driveway	Existing, Proposed

Palette Group	Palette Tool	Content	Phases
Pipeline	Trees	Evergreen, deciduous, palm	Existing, Proposed
	Elec Power	Electrical power lines and text	Existing, Proposed
	Elec Communication	Electrical comm. lines and text	Existing, Proposed
	Natural Gas	Natural gas lines and text	Existing, Proposed
	Storm Util	Storm drain lines and text	Existing, Proposed
	Sewer Util	Sanitary sewer lines and text	Existing, Proposed
	Joint Trench	Joint trench lines and text	Existing, Proposed
	Water (Non-District)	Water lines and text	Existing, Proposed
	Recycled Water	Recycled water lines and text	Existing, Proposed
	Irrigation	Irrigation lines and text	Existing, Proposed
	Fire Service	Fire service lines and text	Existing, Proposed

18.4 Civil 3D Content

Autodesk AutoCAD Civil 3D is a civil engineering design aid as well as a drafting tool. The platform will be assessed and developed according to its contribution to the design process. Below are standard adopted tools.

18.4.1 Alignments (Station Line)

Civil 3D alignments will be used for the design drawing station lines. Civil 3D Alignments will be in model space of the BASE master file.

Civil 3D alignment style name: Basic [EB]

Below are guidelines for placing station lines in relation to the pipe design.

Table 18d: Alignment (station line) placement

Diameter	Location of Station Line
20-inches and smaller	Station line is the center of a R/W (i.e., Road Centerline).
24-inch and larger	Pipe Centerline

Best practice:

- Use street name or other identifiable reference for the alignment name.
- Station lines should read from left to right on their respective plan sheets.
- Extend alignments that cross each other, do not trim or end at their intersection.
- Field crews cannot record negative values. Start alignment station at 1+00 or greater.
- Use gentle curves or large radii to avoid angle points on alignment lines.
- Use an additional alignment line if needed to avoid sharp angles.

Alignment Labels

Civil 3D alignment labels are formatted to dynamically display information on your plan drawing.

Table 18e: Alignment labels

Alignment Label Style Name	Use Case
Curve Label [EB]	Curve data
Beg Station [EB]	Beginning of station line
End Station [EB]	End of station line
Equation [EB]	Intersecting alignment lines
Station Offset Const Insp [EB]	Station Offset label for record phase
Station Offset Pipeline [EB]	Station Offset for pipeline callouts in design phase
Alignment Label Set [EB]	Alignment label for alignment style
Geo Points [EB]	Geometry points (BC, EC, PRC)
Parallel with Tick [EB]	Major station tick for alignment style
Tick [EB]	Minor station tick for alignment style

18.4.2 Profiles

Civil 3D profiles views will typically be used for 12 inch and larger pipeline designs. The profile view will show at a minimum the existing grade and proposed pipeline profile. Profile views will be in model space of the master file and created from the Civil 3D alignment.

Profile View Settings

Profile View Style Name: Design [EB]
Data Band: No Bands [EB]
Vertical Scale (custom): 4
Vertical Exaggeration: 5

Profile View Contents

- Existing grade lines
- Proposed grade lines
- Existing storm drains and manholes including stations
- Existing sewers and manholes including stations
- Existing water lines (if any)
- Proposed/designed water lines, fittings and appurtenances (double line using pipe OD)
- Proposed/design water line callout
- Stations and existing utility crossings
- Proposed/design connections
- Stations and Elevations
- Vertical datum reference on the left side of the grid

In the absence of projected 3D pipe networks, the designer may choose to create a 2D “profile block”. This “profile block” will contain all utilities needed to complete the profile view. The “profile block” would be created at 1:1, exaggerated in the vertical position by a value of five, and placed over the Civil 3D profile view. To assist with overlaying the 2D “profile block” onto the Civil 3D profile view, it is recommended to include reference lines for vertical and horizontal positions within the block.

Profile View Labels

Civil 3D profile view labels are formatted to dynamically display information for profile views.

Table 18f: Profile view labels

Profile View Label Style Name	Use Case
Standard [EB]	Standard profile view label for utility
Standard Cover [EB]	Standard profile view label for utility with cover (user input)
Standard Invert [EB]	Standard profile view label for utility with invert (dynamic)

Best practice:

- ❖ Profile views should reside in the same file as your Civil 3D alignment.

18.4.4 Labels

Civil 3D label styles will be used to take advantage of displaying Civil 3D object data dynamically. Most Civil 3D tools and objects have their own label sets and only work on their related tools. For instance, point labels only work on points. Below is a list of current PID Civil 3D label styles and their application.

Table 18g: Label styles

Object Style Name	Civil 3D label object	Civil 3D label object	Use
Drain Inlet [EB]	Point	Point	Grate and Invert label. GRATE rim is auto labeled, INVERT is manual input
Monument [EB]	Point	Point	Monument point number
SDMH [EB]	Point	Point	RIM is auto labeled; INVERT is manual input
SSMH [EB]	Point	Point	RIM is auto labeled; INVERT is manual input

18.4.5 Markers

Table 18h: Marker Styles

Object Style Name	Use
CI Mark [EB]	No-plot marker for station offsets
Pipeline Mark [EB]	No-plot marker for station offsets

18.5 Annotative Scales

Annotative scaling is the process in which you select a scale for a drawing and all the annotative text, dimensions, blocks, and hatches change to reflect the scale. This can also be set independently for each viewport so multiple scales can show on one sheet file.

For annotative scales to work, the objects must be defined as annotative when created.

18.5.1 Commands

SCALELISTEDIT: Add, Edit, or Delete annotative scales in your drawing file.

OBJECTSCALE: Add or Delete annotative scales to annotative objects you select.

18.6 Load Manager

Load manager is a legacy program to help locate District project CAD files with a key word search. Load Manager is typically accessed natively in the MicroStation environment. In the AutoCAD environment, Load Manager will need to be accessed externally using the command prompt or tool palette. Load Manager search terms include description (project name, city), project type (improvement, relocation, etc.), drafter, or specification number.

Location: \\w-ecdappdata\esdapps\Load Manager_Test\PipelineAndFacilities.exe

Command: You can access from the General tool palette tab

It is a requirement for CAD staff to send project information to the Pipeline Design Support Section for upload into Load Manager. Contact Pipeline Design Support for information on the process of sending project information (see **3 Pipeline Project Types** for contact information).

19. RESOURCE FILES

Below is a list of resource files with file names, description, and location. The location of resource files resides on SharePoint and begin with the following SharePoint start path: "C:\Users\[username]\East Bay Municipal Utility District\....". The start path is omitted from the location column in **Table 19a**.

Table 19a: Resource Files

Filename	Description	Location
EBMUD.ctb	AutoCAD pen settings	\ECD - CBOL\01_CAD\02_LIBRARY\District\Printing\PlotStyles
EBMUDctb_defined.pdf	AutoCAD pen settings chart - defined pens only	\ECD - CBOL\01_CAD\02_LIBRARY\District\Printing
EBMUDctb_overall.pdf	AutoCAD pen settings chart - defined pens only	\ECD - CBOL\01_CAD\02_LIBRARY\District\Printing
C3D 2023 Pipeline V1	PID Civil 3D software shortcut (pre-loads profile)	\ECD - CBOL\01_CAD\03_SOFTWARE\Autodesk\DtShortcuts
C3D 2023 Survey V1	Survey Civil 3D software shortcut (pre-loads profile)	\ECD - CBOL\01_CAD\03_SOFTWARE\Autodesk\DtShortcuts
C3D 2023 CI V1	Const. Insp. Civil 3D software shortcut (pre-loads profile)	\ECD - CBOL\01_CAD\03_SOFTWARE\Autodesk\DtShortcuts
FONTS.dwg	AutoCAD Fonts and text styles	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Content
[EB] Survey State - Black 2022-11-15.las	AutoCAD layer state - B/W Survey plot	\ECD - CBOL\01_CAD\02_LIBRARY\Survey\Apps\Translators\LayerStates
[EB] Survey State - Civil Existing Export 2022-11-15	AutoCAD layer state - Monochrome PID plot	\ECD - CBOL\01_CAD\02_LIBRARY\Survey\Apps\Translators\LayerStates
[EB] Survey State - Color 2022-11-15	AutoCAD layer state - Color Survey Plot	\ECD - CBOL\01_CAD\02_LIBRARY\Survey\Apps\Translators\Layer States

Filename	Description	Location
mapindex.dwg	AutoCAD Map index. NAD29 to NAD83	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Content
PID_Blocks.dwg	PID AutoCAD blocks	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Content
PID_Signatures_and_Stamps.dwg	PID signatures and stamps	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Content
PID_Station Notes.dwg	PID Station Notes	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Content
PID_QuickSample.dwg	Labels, annotations, blocks, etc.	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Content
EBMUD_General Layers.dwg	General layers (G discipline)	\ECD - CBOL\01_CAD\02_LIBRARY\District\Layers
Pipeline.lin	PID custom line styles	\ECD - CBOL\01_CAD\02_LIBRARY\District\LineStyles
ebmud-pid.lsp	PID custom LSP routines	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Apps\LSP
set-pid.lsp	PID settings LSP	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Apps\LSP
acaddoc.lsp	PID start-up LSP	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Apps\LSP
set-survey.lsp	Survey settings LSP	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Apps\LSP
acaddoc.lsp	Survey start-up LSP	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Apps\LSP
Survey_PID.dws	AutoCAD layer translator - Survey to PID (VE to CE)	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Apps\Translators
RFS900000.dwt	Remove from Service template	\ECD - CBOL\01_CAD\02_LIBRARY\PID\Templates
HS0000.dwt	Hydrant Sketch Template	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates
W00001.dwt	W drawing template	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates
W00001c.dwt	W drawing template for consultant use	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates

Filename	Description	Location
X00000_BASE.dwt	Master file template (PID)	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates
X00000_TOPO.dwt	Master file template (Survey)	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates
TCP00000.dwg	TCP drawing template	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates
P00001.dwt	P drawing template	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Templates
AcTpCatalog.atc	Pipeline Tool Palette Catalog	\ECD – CBOL\01_CAD\02_LIBRARY\PID\TP\W
AcTpCatalog.atc	Pipeline Record Tool Palette Catalog	\ECD – CBOL\01_CAD\02_LIBRARY\PID\TP\WR
AcTpCatalog.atc	Survey Tool Palette Catalog	\ECD – CBOL\01_CAD\02_LIBRARY\Survey\TP\V
TCP NOTES.txt	City required notes for TCP's	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Content\GenNotes\TCP_City Notes
CORROSION_CTRL.dwg, ERDIP.dwg, FBEPCS.dwg, GENERAL.dwg, HDPE.dwg, IPVC.dwg, MLCS.dwg, MLPCS.dwg, MLZCDI.dwg, PVC.dwg, TRENCH_SPOILS.dwgTCP NOTES.txt	Pipeline sheet file project notesCity required notes for TCP's	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Content\GenNotes\ECD – CBOL\01_CAD\02_LIBRARY\PID\Content\GenNotes\TCP_City Notes
CORROSION_CTRL.dwg, ERDIP.dwg, FBEPCS.dwg, GENERAL.dwg, HDPE.dwg, IPVC.dwg, MLCS.dwg, MLPCS.dwg, MLZCDI.dwg, PVC.dwg, TRENCH_SPOILS.dwgTCP NOTES.txt	Pipeline sheet file project notesCity required notes for TCP's	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Content\GenNotes\ECD – CBOL\01_CAD\02_LIBRARY\PID\Content\GenNotes\TCP_City Notes
CORROSION_CTRL.dwg, ERDIP.dwg, FBEPCS.dwg, GENERAL.dwg, HDPE.dwg, IPVC.dwg, MLCS.dwg, MLPCS.dwg, MLZCDI.dwg, PVC.dwg, TRENCH_SPOILS.dwg	Pipeline sheet file project notes	\ECD – CBOL\01_CAD\02_LIBRARY\PID\Content\GenNotes

19.1 Custom AutoCAD LSP Commands

Below are custom AutoCAD LSP commands to help users create and modify their design drawings. If the commands are not available, please contact your administrator.

Table 19b: Custom AutoCAD Lisp Commands

Command	Description
AT	Add text label on line
ADDLEADER	Add a leader to text
B2VPN	Align North arrow block with viewport orientation
BMAPIMPORT	Import legacy Bmap CAD files from the N:/ drive
CLIPVIEWPORT	Clip viewport by selecting a polyline in model space
RFS	Moves existing water lines and block to RFS /TBA layer
RT	Rotate text and blocks to common orientation
UPDATETITLEBLOCK	Update titleblock attributes globally
VA	Rotate view angle in model space
WPAL	Load pipeline tool palette
WRPAL	Load pipeline record tool palette
VPAL	Load survey tool palette

Appendix A: EBMUD Layers

Table A.1 below lists the most used Pipeline layers. Please refer to the master layer list before creating or requesting a new layer.

Table A.1: District Layers

Default			
Name	**Color**	**Linetype**	**Description**
_CONST	white	Continuous	Construction Lines: Non Plot
_VPORT	9	Continuous	Viewport: Non Plot
_XREF	white	Continuous	Reference file
Alignments			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-ALGN	red	Continuous	Civil: Alignment – New
C-ALGN-ANNO	60	Continuous	Civil: Alignment Annotation
C-ALGN-IDEN	60	Continuous	Civil: Alignment: Text (Alignment labels)
Existing			
CE-ALGN	9	Continuous	Civil: Alignment – Existing
CE-ALGN-ANNO	21	Continuous	Civil: Alignment: text, dimensions, leaders, etc. – Existing
CE-ALGN-IDEN	60	Continuous	Civil: Alignment: Text (Alignment labels)
Buildings			
Name	**Color**	**Linetype**	**Description**
Existing			
CE-BLDG	9	Continuous	Civil: Buildings and primary structures - Existing
CE-BLDG-OTLN	9	Continuous	Civil: Buildings: Outline – Existing
CE-BLDG-ANNO	21	Continuous	Civil: Buildings: ANNO Text, dimensions, leaders, etc. – Existing
CE-BLDG-DECK	9	Continuous	Civil: Buildings: Outdoor decks (no roof) - Existing
CE-BLDG-OTLN	9	Continuous	Civil: Buildings: Outline - Existing
CE-BLDG-OVHD	9	Continuous	Civil: Buildings: Overhead (overhang) - Existing
CE-BLDG-PATT	9	Continuous	Civil: Buildings: hatch patters - Existing
CE-BLDG-PRCH	9	Continuous	Civil: Buildings: Porch (attached, roof overhead) - Existing
Proposed			
C-BLDG	white	Continuous	Civil: Buildings and primary structures - New
C-BLDG-OTLN	white	Continuous	Civil: Buildings: Outline

Name	Color	Linetype	Description
C-BLDG-ANNO	60	Continuous	Civil: Buildings: ANNO Text, dimensions, leaders, etc. – New
C-BLDG-DECK	white	Continuous	Civil: Buildings: Outdoor decks (no roof) - New
C-BLDG-OTLN	white	Continuous	Civil: Buildings: Outline - New
C-BLDG-OVHD	white	Continuous	Civil: Buildings: Overhead (overhang) - New
C-BLDG-PRCH	white	Continuous	Civil: Buildings: Porch (attached, roof overhead) - New
Boundaries			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-BNDY	white	Continuous	Civil: Boundary
C-BNDY-CITY	white	EB_CITY	Civil: Boundary-CITY
C-BNDY-CNTY	white	EB_COUNTY	Civil: Boundary-CNTY
C-BNDY-FALT	white	EB3_DASHED	Civil: Boundary-FALT
Existing			
CE-BNDY-FALT	15	EB3_DASHED	Civil: Boundary-FALT
CE-BNDY	9	Continuous	Civil: Boundaries - Existing
CE-BNDY-CITY	9	Continuous	Civil: Boundaries: City boundaries - Existing
CE-BNDY-CNTY	9	Continuous	Civil: Boundaries: County boundaries - Existing
Electrical: Communication			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-COMM-ANNO	60	Continuous	Civil: Communications annotation
C-COMM-FIBR	30	EBMUD_FO	Civil: Communications: Fiber Optic – New
C-COMM-MHOL	30	Continuous	Civil: Communications: maintenance hole casting – New
C-COMM-OVHD	30	EBMUD_TOH	Civil: Communications: Overhead
C-COMM-POLE	30	Continuous	Civil: Communications: Box / pole - New
C-COMM-STRC	30	Continuous	Civil: Communications: Structure
C-COMM-UGND	30	EBMUD_TEL	Civil: Communications: Underground
Existing			
CE-COMM-ANNO	21	Continuous	Civil: Communications: annotation – Existing
CE-COMM-FIBR	31	EBMUD_FO	Civil: Communications: Fiber Optic – Existing
CE-COMM-MHOL	31	Continuous	Civil: Utility Joint Trench: maintenance hole casting – Existing

Name	Color	Linetype	Description
CE-COMM-OVHD	31	EBMUD_TOH	Civil: Communications: Overhead – Existing
CE-COMM-POLE	31	Continuous	Civil: Communications: Box / pole - Existing
CE-COMM-STRC	31	Continuous	Civil: Communications: Structure – Existing
CE-COMM-UGND	31	EBMUD_TEL	Civil: Communications: Underground – Existing
Civil Control			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-CTRL-ANNO	60	Continuous	Civil: (P) Sanitary Sewer Pipe
C-CTRL-BMRK	white	Continuous	Civil: Control points: benchmarks – New
C-CTRL-FLYS	white	Continuous	Civil: Control points: fly station – New
C-CTRL-GRID	white	Continuous	Civil: Control points: grid lines – New
C-CTRL-HCPT	white	Continuous	Civil: Control points: horizontal – New
C-CTRL-HVPT	white	Continuous	Civil: Control points: horizontal / vertical – New
C-CTRL-PNPT	white	Continuous	Civil: Control points: panel points – New
C-CTRL-TRAV	white	Continuous	Civil: Control points: traverse – New
C-CTRL-VCPT	white	Continuous	Civil: Control points: vertical – New
Existing			
CE-CTRL-BMRK	white	Continuous	Civil: Control points: benchmarks – Existing
CE-CTRL-ANNO	60	Continuous	Civil: Control points – Text, dimensions, leaders, etc. – Existing
CE-CTRL-FLYS	white	Continuous	Civil: Control points: fly station – Existing
CE-CTRL-GRID	white	Continuous	Civil: Control points: grid lines – Existing
CE-CTRL-HCPT	white	Continuous	Civil: Control points: horizontal – Existing
CE-CTRL-HVPT	white	Continuous	Civil: Control points: horizontal / vertical – Existing
CE-CTRL-PNPT	white	Continuous	Civil: Control points: panel points – Existing
CE-CTRL-TRAV	white	Continuous	Civil: Control points: traverse – Existing
CE-CTRL-VCPT	white	Continuous	Civil: Control points: vertical – Existing
Driveways			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-DRIV	10	Continuous	Civil: Driveways: linework
C-DRIV-ANNO	21	Continuous	Civil: Driveways: Text, dimensions, leaders, etc. – New
C-DRIV-ASPH-OTLN	red	Continuous	Civil: Driveways: asphalt hatch outline - New

Name	Color	Linetype	Description
C-DRIV-ASPH-PATT	60	Continuous	Civil: Driveways: asphalt surface - New
C-DRIVE-CONC-OTLN	red	Continuous	Civil: Driveways: concrete hatch outline - New
C-DRIV-CONC-PATT	60	Continuous	Civil: Driveways: concrete surface - New
C-DRIV-GRVL-OTLN	red	Continuous	Civil: Driveways: gravel hatch outline - New
C-DRIV-GRVL-PATT	60	Continuous	Civil: Driveways: gravel surface - New
C-DRIV-SIGN	red	Continuous	Civil: Driveways: signs - New
C-DRIV-UPVD-OTLN	red	Continuous	Civil: Driveways: unpaved hatch outline - New
C-DRIV-UPVD-PATT	60	Continuous	Civil: Driveways: unpaved surface - New
Existing			
CE-DRIV	9	Continuous	Civil: Driveways - Existing
CE-DRIV-ANNO	21	Continuous	Civil: Driveways: Text, dimensions, leaders, etc. – Existing
CE-DRIV-ASPH-OTLN	9	Continuous	Civil: Driveways: asphalt hatch outline - Existing
CE-DRIV-ASPH-PATT	9	Continuous	Civil: Driveways: asphalt surface - Existing
CE-DRIV-CONC-OTLN	9	Continuous	Civil: Driveways: concrete hatch outline - Existing
CE-DRIV-CONC-PATT	9	Continuous	Civil: Driveways: concrete surface - Existing
CE-DRIV-GRVL-OTLN	9	Continuous	Civil: Driveways: gravel hatch outline - Existing
CE-DRIV-GRVL-PATT	9	Continuous	Civil: Driveways: gravel surface - Existing
CE-DRIV-SIGN	9	Continuous	Civil: Driveways: signs - Existing
CE-DRIV-UPVD-OTLN	9	Continuous	Civil: Driveways: unpaved hatch outline - Existing
CE-DRIV-UPVD-PATT	9	Continuous	Civil: Driveways: unpaved surface - Existing
Ditches			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-DTCH	white	DITCH_FLOW	Civil: Ditches: linework
C-DTCH-ANNO	60	Continuous	Civil: Ditches: Text, dimensions, leaders, etc. – New
C-DTCH-BOTD	white	Continuous	Civil: Ditches: bottom – New
C-DTCH-EWAT	white	Continuous	Civil: Ditches: edge of water - New
C-DTCH-TOPD	white	Continuous	Civil: Ditches: top - New
Existing			
CE-DTCH	9	Continuous	Civil: Ditches or washes - Existing
CE-DTCH-ANNO	21	Continuous	Civil: Ditches: Text, dimensions, leaders, etc. – Existing
CE-DTCH-BOTD	9	Continuous	Civil: Ditches: bottom – Existing

Name	Color	Linetype	Description
CE-DTCH-EWAT	9	Continuous	Civil: Ditches: edge of water - Existing
CE-DTCH-TOPD	9	Continuous	Civil: Ditches: top - Existing
Easements			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-ESMT	green	EBMUD_EASEMENT	Civil: Easements: linework
C-ESMT-ACCS	green	EBMUD_EASEMENT	Civil: Easements: access (pedestrian only- private access) – New
C-ESMT-ANNO	60	Continuous	Civil: Easements: Text, dimensions, leaders, etc. – New
C-ESMT-CONS	green	EBMUD_EASEMENT	Civil: Easements: conservation - New
C-ESMT-RWAY	green	EBMUD_EASEMENT	Civil: Easements: right-of-way (public access) - New
C-ESMT-WATR	green	EBMUD_EASEMENT	Civil: Easements: water supply – New
Existing			
CE-ESMT	green	EBMUD_EASEMENT	Civil: CE-ESMT
CE-ESMT-ACCS	9	EBMUD_EASEMENT	Civil: Easements: access (pedestrian only- private access) – Existing
CE-ESMT-ANNO	21	Continuous	Civil: Easements: Text, dimensions, leaders, etc. – Existing
CE-ESMT-CONS	9	EBMUD_EASEMENT	Civil: Easements: conservation - Existing
CE-ESMT-RWAY	9	EBMUD_EASEMENT	Civil: Easements: right-of-way (public access) - Existing
CE-ESMT-WATR	9	EBMUD_EASEMENT	Civil: Easements: water supply – Existing
Fences			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-FENC	green	EBMUD_FENCE	Civil: Fences: linework
C-FENC-GRAL	green	GUARD_RAIL	Civil: Fences: Guardrails
C-FENC-POST	green	Continuous	Civil: Fences: posts - New
C-FENC-ANNO	60	Continuous	Civil: Fences: Text, dimensions, leaders, etc. – New
C-FENC-HRAL	green	EBMUD_FENCE	Civil: Fences: hand rail - New
C-FENC-STEL	green	EBMUD_FENCE	Civil: Fences: steel (barbed wire and/or chain link) - New

Name	Color	Linetype	Description
C-FENC-WOOD	green	EBMUD_FENCE	Civil: Fences: wood - New
Existing			
CE-FENC	9	EBMUD_FENCE	Civil: Fences: linework - Existing
CE-FENC-GRAL	9	GUARD_RAIL	Civil: Fences: Guardrails - Existing
CE-FENC-POST	9	Continuous	Civil: Fences: posts - Existing
CE-FENC-ANNO	21	Continuous	Civil: Fences: Text, dimensions, leaders, etc. – Existing
CE-FENC-HRAL	9	EBMUD_FENCE	Civil: Fences: hand rail - Existing
CE-FENC-STEL	9	EBMUD_FENCE	Civil: Fences: steel (barbed wire and/or chain link) - Existing
CE-FENC-WOOD	9	EBMUD_FENCE	Civil: Fences: wood - Existing
Irrigation			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-IRRG-ANNO	60	Continuous	Civil: Irrigation: text
C-IRRG-PIPE	cyan	EBMUD_WATER	Civil: Irrigation: pipes
Existing			
CE-IRRG-SPKL	9	Continuous	Civil: Irrigation: sprinklers (rotors, heads) - Existing
CE-IRRG-VALV	9	Continuous	Civil: Irrigation: valves - Existing
CE-IRRG-ANNO	21	Continuous	Civil: Irrigation: text – Existing
CE-IRRG-PIPE	9	EBMUD_WATER	Civil: Irrigation: pipes – Existing
CE-IRRG-SPKL	9	Continuous	Civil: Irrigation: sprinklers (rotors, heads) - Existing
CE-IRRG-VALV	9	Continuous	Civil: Irrigation: valves - Existing
Joint Trench			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-JTCH-ANNO	60	Continuous	Civil: Joint Trench: text
C-JTCH-STRC	200	Continuous	Civil: Joint Trench: Structure
C-JTCH-UGND	200	EBMUD_JT-TRENCH	Civil: Joint Trench: Underground
Existing			
CE-JTCH-ANNO	21	Continuous	Civil: Joint Trench: text – Existing
CE-JTCH-STRC	201	Continuous	Civil: Joint Trench: Structure – Existing
CE-JTCH-UGND	201	EBMUD_JT-TRENCH	Civil: Joint Trench: Underground – Existing

Natural Gas			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-NGAS-ANNO	60	Continuous	Civil: Natural Gas: text
C-NGAS-PIPE	yellow	EBMUD_GAS	Civil: Natural Gas: Pipes
C-NGAS-INST	yellow	Continuous	Civil: Natural Gas: meters, valves, etc. – New
C-NGAS-STRC	yellow	Continuous	Civil: Natural Gas: structures - New
C-NGAS-TANK	yellow	Continuous	Civil: Natural Gas: tanks - New
Existing			
CE-NGAS-ANNO	21	Continuous	Civil: Natural Gas: text – Existing
CE-NGAS-PIPE	51	EBMUD_GAS	Civil: Natural Gas: Pipes – Existing
CE-NGAS-INST	51	Continuous	Civil: Natural Gas: meters, valves, etc. – Existing
CE-NGAS-STRC	51	Continuous	Civil: Natural Gas: structures - Existing
CE-NGAS-TANK	51	Continuous	Civil: Natural Gas: tanks - Existing
Plant and Landscape			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-PLNT-ANNO	60	Continuous	Civil: Plant and landscape: text
C-PLNT-PALM	65	Continuous	Civil: Plant and landscape: palm trees - New
C-PLNT-TREE	65	Continuous	Civil: Plant and landscape: trees – New
C-PLNT-BUSH	65	Continuous	Civil: Plant and landscape: bushes and shrubs - New
C-PLNT-GRND	65	Continuous	Civil: Plant and landscape: ground covers - New
Existing			
CE-PLNT-ANNO	21	Continuous	Civil: Plant and landscape: text – Existing
CE-PLNT-PALM	9	Continuous	Civil: Plant and landscape: palm trees - Existing
CE-PLNT-TREE	9	Continuous	Civil: Plant and landscape: trees – Existing
CE-PLNT-BUSH	9	Continuous	Civil: Plant and landscape: bushes and shrubs - Existing
CE-PLNT-GRND	9	Continuous	Civil: Plant and landscape: ground covers - Existing

Electrical: Power			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-POWR-ANNO	60	Continuous	Civil: Power: text
C-POWR-INST	10	Continuous	Civil: Power: instrumentation (meters, hand holes, transformers, etc.) - New
C-POWR-MHOL	10	Continuous	Civil: Power: castings/openings - New
C-POWR-OVHD	red	EBMUD_EOH	Civil: Power: Overhead
C-POWR-POLE	10	Continuous	Civil: Power: box / pole – New
C-POWR-STRC	red	Continuous	Civil: Power: Structure
C-POWR-UGND	red	EBMUD_ELECT	Civil: Power: Underground
Existing			
CE-POWR-ANNO	21	Continuous	Civil: Power: text – Existing
CE-POWR-INST	11	Continuous	Civil: Power: instrumentation (meters, hand holes, transformers, etc.) - Existing
CE-POWR-MHOL	11	Continuous	Civil: Power: castings/openings - Existing
CE-POWR-OVHD	11	EBMUD_EOH	Civil: Power: Overhead – Existing
CE-POWR-POLE	11	Continuous	Civil: Power: box / pole – Existing
CE-POWR-STRC	11	Continuous	Civil: Power: Structure – Existing
CE-POWR-UGND	11	EBMUD_ELECT	Civil: Power: Underground – Existing
Properties			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-PROP	cyan	Continuous	Civil: Property: Parcel lines - New
C-PROP-ANNO	60	Continuous	Civil: Property: text
C-PROP-LINE	white	Continuous	Civil: Property: Property lines
C-PROP-SUBD	white	EB_TRACT	Civil: Property:-Subdivision
Existing			
CE-PROP	9	Continuous	Civil: Property: Parcel lines - Existing
CE-PROP-ANNO	21	Continuous	Civil: Property: Text, dimensions, leaders, etc. – Existing
CE-PROP-LINE	9	Continuous	Civil: Property: interior lot lines, survey benchmarks, property, corners - Existing
CE-PROP-SUBD	9	Continuous	Civil: Property: boundary subdivision (interior) lines – Existing

Railroads			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-RAIL-TRCK	203	RAILROAD	Civil: Railways: Tracks -New
Name	**Color**	**Linetype**	**Description**
C-RAIL-ANNO	60	Continuous	Civil: Railways: Text, dimensions, leaders, etc. – New
C-RAIL-BARR	203	Continuous	Civil: Railways: barriers - New
C-RAIL-EQPM	203	Continuous	Civil: Railway: equipment (gates, signals, etc.) – New
Existing			
CE-RAIL-TRCK	9	RAILROAD	Civil: Railways: Tracks – Existing
CE-RAIL-ANNO	21	Continuous	Civil: Railways: Text, dimensions, leaders, etc. – Existing
CE-RAIL-BARR	9	Continuous	Civil: Railways: barriers - Existing
CE-RAIL-EQPM	9	Continuous	Civil: Railway: equipment (gates, signals, etc.) – Existing
Roads			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-ROAD-ANNO	60	Continuous	Civil: Roadways: Text
C-ROAD-ASPH-OTLN	220	Continuous	Civil: Roadways: Asphalt Outline
C-ROAD-CNTR	red	CENTER2	Civil: Roadways: Centerline
C-ROAD-CURB	220	Continuous	Civil: Roadways: Curb
C-ROAD-CURB-FACE	220	Continuous	Civil: Roadways: Face of Curb
C-ROAD-SIGL-LOOP	220	Continuous	Civil: Roadways: traffic signals: loops - New
C-ROAD-ASPH-PATT	60	Continuous	Civil: Roadways: asphalt hatch - New
C-ROAD-CONC-OTLN	220	Continuous	Civil: Roadways: concrete hatch outline - New
C-ROAD-CONC-PATT	60	Continuous	Civil: Roadways: concrete hatch - New
C-ROAD-GRVL-OTLN	220	Continuous	Civil: Roadways: gravel hatch outline - New
C-ROAD-GRVL-PATT	60	Continuous	Civil: Roadways: gravel hatch - New
C-ROAD-PLNT-OTLN	220	Continuous	Civil: Roadways: median/planting strip hatch outline - New
C-ROAD-PLNT-PATT	60	Continuous	Civil: Roadways: median/planting strip - New
C-ROAD-SIGL	220	Continuous	Civil: Roadways: traffic signals - New
C-ROAD-SIGL-FIXT	220	Continuous	Civil: Roadways: traffic signals: pedestrian push buttons, etc. – New

Name	Color	Linetype	Description
C-ROAD-SIGL-INST	220	Continuous	Civil: Roadways: traffic signals: hand holes, cabinets, etc. – New
C-ROAD-SIGN	220	Continuous	Civil: Roadways: signs - New
C-ROAD-UPVD-OTLN	220	Continuous	Civil: Roadways: unpaved surface hatch outline - New
C-ROAD-UPVD-PATT	60	Continuous	Civil: Roadways: unpaved surface - New
Existing			
CE-ROAD-ANNO	21	Continuous	Civil: Roadways: Text – Existing
CE-ROAD-ASPH-OTLN	211	Continuous	Civil: Roadways: Asphalt Outline – Existing
CE-ROAD-CNTR	211	CENTER2	Civil: Roadways: Centerline – Existing
CE-ROAD-CURB	211	Continuous	Civil: Roadways: Curb – Existing
CE-ROAD-CURB-FACE	211	Continuous	Civil: Roadways: Face of Curb – Existing
CE-ROAD-SIGL-LOOP	211	Continuous	Civil: Roadways: traffic signals: loops - Existing
CE-ROAD-ASPH-PATT	9	Continuous	Civil: Roadways: asphalt hatch - Existing
CE-ROAD-CONC-OTLN	211	Continuous	Civil: Roadways: concrete hatch outline - Existing
CE-ROAD-CONC-PATT	9	Continuous	Civil: Roadways: concrete hatch - Existing
CE-ROAD-GRVL-OTLN	211	Continuous	Civil: Roadways: gravel hatch outline - Existing
CE-ROAD-GRVL-PATT	9	Continuous	Civil: Roadways: gravel hatch - Existing
CE-ROAD-PLNT-OTLN	211	Continuous	Civil: Roadways: median/planting strip hatch outline - Existing
CE-ROAD-PLNT-PATT	9	Continuous	Civil: Roadways: median/planting strip - Existing
CE-ROAD-SIGL	211	Continuous	Civil: Roadways: traffic signals - Existing
CE-ROAD-SIGL-INST	211	Continuous	Civil: Roadways: traffic signals: hand holes, cabinets, etc. – Existing
CE-ROAD-UPVD-OTLN	211	Continuous	Civil: Roadways: unpaved surface: hatch outline - Existing
CE-ROAD-UPVD-PATT	9	Continuous	Civil: Roadways: unpaved surface: hatch pattern - Existing
Right-of-Ways			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-RWAY-ANNO	60	Continuous	Civil: Right-of-way: Text, dimension, leaders, etc. – New
C-RWAY-DIST	130	EBMUD_RW	Civil: Right-of-way: District
C-RWAY-ROAD	130	Continuous	Civil: Right-of-way: Road
Existing			
CE-RWAY-ANNO	21	Continuous	Civil: Right-of-way: Text, dimension, leaders, etc. – Existing
CE-RWAY-DIST	121	EBMUD_RW	Civil: Right-of-way: district – Existing
CE-RWAY-ROAD	121	Continuous	Civil: Right-of-way: Road – Exist

Site			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-SITE-ANNO	60	Continuous	Civil: Site: text
C-SITE-CONC	white	Continuous	Civil: Site: Concrete
C-SITE-POLE	white	Continuous	Civil: Site: light poles - New
C-SITE-POST	white	Continuous	Civil: Site: posts - New
Existing			
CE-SITE-ANNO	21	Continuous	Civil: Site: text – Existing
CE-SITE-CONC	9	Continuous	Civil: Site: Concrete – Existing
CE-SITE-POLE	9	Continuous	Civil: Site: light poles - Existing
CE-SITE-POST	9	Continuous	Civil: Site: posts - Existing
Sanitary Sewer			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-SSWR-ANNO	60	Continuous	Civil: Sanitary sewer: text
C-SSWR-MHOL	green	Continuous	Civil: Sanitary sewer: maintenance hole casting - New
C-SSWR-PIPE	green	EBMUD_SS	Civil: Sanitary sewer: Pipe
C-SSWR-STRC	green	Continuous	Civil: Sanitary sewer: structures - New
Existing			
CE-SSWR-ANNO	21	Continuous	Civil: Sanitary Sewer: piping – Existing
CE-SSWR-MHOL	91	Continuous	Civil: Sanitary Sewer: Manhole – Existing
CE-SSWR-PIPE	91	EBMUD_SS	Civil: Sanitary Sewer: Pipe – Existing
CE-SSWR-STRC	91	Continuous	Civil: Sanitary Sewer: Structure – Existing
Storm Drains			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-STRM-ANNO	60	Continuous	Civil: Storm drains: text
C-STRM-MHOL	green	Continuous	Civil: Storm drains: maintenance hole casting - New
C-STRM-PIPE	green	EBMUD_SD	Civil: Storm drains: Pipe
C-STRM-STRC	green	Continuous	Civil: Storm drains: Structure

Name	Color	Linetype	Description
Existing			
CE-STRM-ANNO	21	Continuous	Civil: Storm drains: text – Existing
CE-STRM-MHOL	91	Continuous	Civil: Storm drains: maintenance hole casting – Existing
CE-STRM-PIPE	91	EBMUD_SD	Civil: Storm drains: Pipe – Existing
CE-STRM-STRC	91	Continuous	Civil: Storm drains: Structure – Existing
Side Walks			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-SWLK	40	Continuous	Civil: Sidewalk
Existing			
CE-SWLK	9	Continuous	Civil: Sidewalk – Existing
Topography			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-TOPO-ANNO	60	Continuous	Civil: Surfaces: Surface annotation - New
C-TOPO-GRAD	white	Continuous	Civil: Surfaces - Profile grade – New
C-TOPO-MAJR	cyan	Continuous	Civil: Surfaces: Major contour lines - New
C-TOPO-MINR	55	Continuous	Civil: Surfaces: Minor contour lines - New
C-TOPO-TOEB	yellow	Continuous	Civil: Surfaces: Toe of bank - New
C-TOPO-TOPB	yellow	Continuous	Civil: Surfaces: Top of bank - New
Existing			
CE-TOPO	9	Continuous	Civil: Surfaces
CE-TOPO-ANNO	21	Continuous	Civil: Surfaces: Surface annotation - Existing
CE-TOPO-BRKL	9	Continuous	Civil: Surfaces: Breakline - Existing
CE-TOPO-GRAD	9	HIDDEN2	Civil: Surfaces - Profile grade – Exist
CE-TOPO-MAJR	15	Continuous	Civil: Surfaces: Major contour lines - Existing
CE-TOPO-MINR	9	Continuous	Civil: Surfaces: Minor contour lines - Existing
CE-TOPO-TOEB	9	Continuous	Civil: Surfaces: Toe of bank - Existing
CE-TOPO-TOPB	9	Continuous	Civil: Surfaces: Top of bank - Existing

Walls			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-WALL-RTWL	cyan	RET_WALL	Civil: Retaining Wall – New
Existing			
CE-WALL-RTWL	9	RET_WALL	Civil: Retaining Wall – Existing
Water (Non-District)			
Name	**Color**	**Linetype**	**Description**
Proposed			
C-WATR-PIPE	blue	EBMUD_WATER	Civil: Water: Pipe
C-WATR-ANNO	60	Continuous	Civil: Water: annotation
C-WATR-EQPM	7	Continuous	Civil: Water: equipment (pumps, motors) - New
C-WATR-INST	cyan	Continuous	Civil: Water: instrumentation (meters, valves, etc.) - New
C-WATR-MHOL	blue	Continuous	Civil: Water: castings/openings - New
C-WATR-MISC	blue	Continuous	Civil: Water: Miscellaneous – New
C-WATR-STRC	white	Continuous	Civil: Water: water structures (casings, tiebacks, vaults, etc.) - New
Existing			
CE-WATR-ANNO	21	Continuous	Civil: Water: annotation - Existing
CE-WATR-PIPE	151	EBMUD_WATER	Civil: Water: Pipe - Existing
CE-WATR-EQPM	151	Continuous	Civil: Water: equipment (pumps, motors) - Existing
CE-WATR-INST	151	Continuous	Civil: Water: instrumentation (meters, valves, etc.) - Existing
CE-WATR-MHOL	151	Continuous	Civil: Water: castings/openings - Existing
CE-WATR-MISC	151	Continuous	Civil: Water: Miscellaneous – Existing
CE-WATR-STRC	151	Continuous	Civil: Water: water structures (casings, tiebacks, vaults, etc.) - Existing
CE-UTIL-UKNW	white	Continuous	Civil Utility: Unknown Existing
Record			
CR-UTIL-UKNW	white	Continuous	Civil Utility: Unknown Record
General			
Name	**Color**	**Linetype**	**Description**
G-ACCS	white	Continuous	General: Easements: Access (pedestrian only)
G-ANNO	60	Continuous	General: Sheet annotation
G-ANNO-DIMS	60	Continuous	General: Sheet annotation: Dimensions: Proposed

Name	Color	Linetype	Description
G-ANNO-KEYN	white	Continuous	General: Sheet annotation: Sheets: Keynotes
G-ANNO-LEGN	green	Continuous	General: Sheet annotation: Sheets: Schedules and tables
G-ANNO-NOTE	60	Continuous	General: Sheet annotation: Sheets: Notes
G-ANNO-NPLT	93	Continuous	General: Sheet annotation: Misc.: Non-plotting graphic information
G-ANNO-PATT	60	Continuous	General: Sheet annotation: All: Hatch Patterns
G-ANNO-REDL	10	Continuous	General: Sheet annotation: Misc.: Redlines
G-ANNO-REVS	cyan	Continuous	General: Sheet annotation: Sheets: Revisions
G-ANNO-SYMB	green	Continuous	General: Sheet annotation: Sheets: Reference symbols
G-ANNO-TEXT	60	Continuous	General: Sheet annotation: Text: Proposed
G-CODE	white	Continuous	General: Code compliance plan
G-EVAC	white	Continuous	General: Evacuation plan
G-FIRE	white	Continuous	General: Fire protection system
G-PLAN	white	Continuous	General: Floor Plan
G-SITE	white	Continuous	General: Site features
Recycled Water			
Name	**Color**	**Linetype**	**Description**
Proposed			
W-RECY-ANNO	60	Continuous	Civil: Recycled water: annotation
W-RECY-PIPE	190	EBMUD_RECY	Civil: Recycled water: Pipe
W-RECY-HYDR	190	Continuous	Civil: Recycled water: hydrant – New
W-RECY-INST	190	Continuous	Civil: Recycled water: instrumentation (meters, valves, etc.) - New
W-RECY-MHOL	190	Continuous	Civil: Recycled water: castings/openings - New
W-RECY-PIPE-FTTG	190	Continuous	Civil: Recycled water: pipe fittings only - New
W-RECY-PIPE-LRGE	190	EBMUD_RECY	Civil: Recycled water: pipes and fittings: >/= 12” - New
W-RECY-PIPE-PATT	60	Continuous	Civil: Recycled water: hatch patterns - New
W-RECY-PIPE-SMAL	190	EBMUD_RECY	Civil: Recycled water: pipes and fittings: < 12” - New
W-RECY-SERV	190	EBMUD_RECY	Civil: Recycled water: water services - New
W-RECY-STRC	190	Continuous	Civil: Recycled water: water structures (casings, tiebacks, vaults, etc.) - New
W-RECY-WPZN	190	Continuous	Civil: Recycled water: pressure zone - New

Name	Color	Linetype	Description
Existing			
WE-RECY	191	EBMUD_RECY	Civil: Recycled water: supply systems - Existing
WE-RECY-ANNO	21	Continuous	Civil: Recycled water: Text, dimensions, leaders, etc. – Existing
WE-RECY-CNTR	191	CENTER2	Civil: Recycled water: centerline - Existing
WE-RECY-HYDR	191	Continuous	Civil: Recycled water: hydrant – Existing
WE-RECY-INST	191	Continuous	Civil: Recycled water: instrumentation (meters, valves, etc.) - Existing
WE-RECY-MHOL	191	Continuous	Civil: Recycled water: castings/openings - Existing
WE-RECY-PIPE	191	EBMUD_RECY	Civil: Recycled water: pipe and fittings - Existing
WE-RECY-PIPE-FTTG	191	Continuous	Civil: Recycled water: pipe fittings only - Existing
WE-RECY-PIPE-LRGE	191	EBMUD_RECY	Civil: Recycled water: pipes and fittings: >/= 12” - Existing
WE-RECY-PIPE-PATT	191	Continuous	Civil: Recycled water: hatch patterns - Existing
WE-RECY-PIPE-SMAL	191	EBMUD_RECY	Civil: Recycled water: pipes and fittings: < 12” - Existing
WE-RECY-SERV	191	EBMUD_RECY	Civil: Recycled water: water services - Existing
WE-RECY-STRC	191	Continuous	Civil: Recycled water: water structures (casings, tiebacks, vaults, etc.) - Existing
WE-RECY-WPZN	191	Continuous	Civil: Recycled water: pressure zone - Existing
Water (District Owned)			
Name	**Color**	**Linetype**	**Description**
Proposed			
W-WATR-ANNO	60	Continuous	Civil: District Water: Text, dimensions, leaders, etc. – New
W-WATR-DBLL	cyan	Continuous	Civil: District Water: Double line – New
W-WATR-HYDR	134	Continuous	Civil: District Water: Hydrant
W-WATR-INST	134	Continuous	Civil: District Water: instrumentation (meters, valves, etc.)
W-WATR-PIPE	150	Continuous	Civil: District Water: Pipe
W-WATR-PIPE-0G	110	Continuous	Civil: District Water: Pipe: Green
W-WATR-PIPE-0P	magenta	Continuous	Civil: District Water: Pipe: Purple
W-WATR-PIPE-0R	240	Continuous	Civil: District Water: Pipe: Red
W-WATR-PIPE-0Y	50	Continuous	Civil: District Water: Pipe: Yellow
W-WATR-PIPE-CASE	cyan	DASHED2	Civil: District Water: Casing
W-WATR-PIPE-FTTG	134	Continuous	Civil: District Water: pipe fittings only - New

Name	Color	Linetype	Description
W-WATR-STRC	134	Continuous	Civil: District Water: water structures (casings, tiebacks, vaults, etc.) - New
W-WATR-WPZN-ANNO	white	Continuous	Civil: District Water: Water pressure zone annotation – New
W-WATR-EQPM	134	Continuous	Civil: District Water: equipment (pumps, motors) - New
W-WATR-MHOL	134	Continuous	Civil: District Water: castings/openings - New
W-WATR-MISC	blue	Continuous	Civil: District Water: Miscellaneous – New
W-WATR-NBLT	210	Continuous	Civil: District Water: Features/linework designed, but not constructed in the as designed location – New
W-WATR-PIPE-LRGE	150	Continuous	Civil: District Water: pipes and fittings: >/= 12” - New
W-WATR-PIPE-PATT	60	Continuous	Civil: District Water: hatch patterns - New
W-WATR-PIPE-SMAL	150	Continuous	Civil: District Water: pipes and fittings: < 12” - New
W-WATR-SERV	blue	Continuous	Civil: District Water: water services - New
W-WATR-WPZN	blue	Continuous	Civil: District Water: Water pressure zone - New
Existing			
WE-WATR	151	Continuous	Civil: District Water: supply systems – Existing
WE-WATR-ANNO	60	Continuous	Civil: District Water: Text, dimensions, leaders, etc. – Existing
WE-WATR-ANNO-RFS	yellow	Continuous	Civil: District Water: Text, dimensions, leaders, etc. – Existing – Remove From Service
WE-WATR-CNTR	151	CENTER2	Civil: District Water: centerline - Existing
WE-WATR-DBLL	151	Continuous	Civil: District Water: Double line – Existing
WE-WATR-DBLL-RFS	yellow	EB2_HIDDEN	Civil: District Water: Double line – Existing – Remove From Service
WE-WATR-EQPM	151	Continuous	Civil: District Water: equipment (pumps, motors) - Existing
WE-WATR-EQPM-RFS	yellow	EB2_HIDDEN	Civil: District Water: equipment (pumps, motors) - Existing – Remove From Service
WE-WATR-HYDR	151	Continuous	Civil: District Water: Hydrant
WE-WATR-HYDR-ABDN	23	EB2_HIDDEN	Civil: District Water: hydrants – Abandoned – Existing
WE-WATR-HYDR-RFS	yellow	EB2_HIDDEN	Civil: District Water: hydrants – Remove From Service – Existing
WE-WATR-INST	151	Continuous	Civil: District Water: instrumentation (meters, valves, etc.) Existing
WE-WATR-INST-ABDN	23	EB2_HIDDEN	Civil: District Water: instrumentation (meters, valves, etc.) - Existing – Abandoned

Name	Color	Linetype	Description
WE-WATR-INST-RFS	yellow	EB2_HIDDEN	Civil: District Water: instrumentation (meters, valves, etc.) - Existing – Remove From Service
WE-WATR-MHOL	151	Continuous	Civil: District Water: castings/openings - Existing
WE-WATR-MISC	151	Continuous	Civil: District Water: Miscellaneous – Existing
WE-WATR-NBLT	151	Continuous	Civil: District Water: Features/linework designed, but not constructed in the as designed location – Existing
WE-WATR-PIPE	151	Continuous	Civil: District Water: pipe and fittings - Existing
WE-WATR-PIPE-ABND	23	EB2_HIDDEN	Civil: District Water: pipe and fittings - Existing – Abandoned
WE-WATR-PIPE-CASE	151	DASHED2	Civil: District Water: pipe and fittings: casing - Existing
WE-WATR-PIPE-FTTG	151	Continuous	Civil: District Water: pipe fittings only - Existing
WE-WATR-PIPE-FTTG-RFS	yellow	EB2_HIDDEN	Civil: District Water: pipe fittings only - Remove from service
WE-WATR-PIPE-LRGE	151	Continuous	Civil: District Water: pipes and fittings: >/= 12” - Existing
WE-WATR-PIPE-PATT	151	Continuous	Civil: District Water: hatch patterns - Existing
WE-WATR-PIPE-RFS	yellow	EB2_HIDDEN	Civil: District Water: pipe fittings - Existing – Remove From Service
WE-WATR-PIPE-SMAL	151	Continuous	Civil: District Water: pipes and fittings: < 12” - Existing
WE-WATR-RFS	yellow	EB2_HIDDEN	Civil: District Water: Existing – Remove From Service
WE-WATR-SERV	151	Continuous	Civil: District Water: water services - Existing
WE-WATR-STRC	151	Continuous	Civil: District Water: water structures (casings, tiebacks, vaults, etc.) - Existing
WE-WATR-STRC-ABDN	23	EB2_HIDDEN	Civil: District Water: water structures (casings, tiebacks, vaults, etc.) - Existing – Abandoned
WE-WATR-WPZN	151	Continuous	Civil: District Water: Water pressure zone - Existing
WE-WATR-WPZN-ANNO	60	Continuous	Civil: District Water: Water pressure zone: Text and labels - Existing
Record			
WR-WATR-ANNO	10	Continuous	Civil: District Water: Text, dimensions, leaders, etc. – Record
WR-WATR-ANNO-RFS	10	Continuous	Civil: District Water: Annotation Remove From Service – Record
WR-WATR-DBLL	10	Continuous	Civil: District Water: DBLL – Record
WR-WATR-HYDR	10	Continuous	Civil: District Water: Hydrant – Record
WR-WATR-INST	10	Continuous	Civil: District Water: instrumentation (meters, valves, etc.) – Record

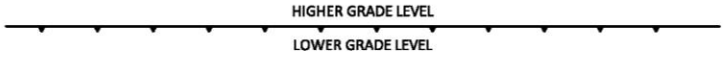
Name	Color	Linetype	Description
WR-WATR-PIPE	240	Continuous	Civil: District Water: pipe and fittings – Record
WR-WATR-PIPE-CASE	10	DASHED2	Civil: District Water: pipe and fittings: casing - Record
WR-WATR-PIPE-FTTG	10	Continuous	Civil: District Water: pipe fittings only – Record

Appendix B: EBMUD Linetype Examples

Table B.1 below provides visual examples of District standard linetype definitions.

Table B.1: District Linetype Examples

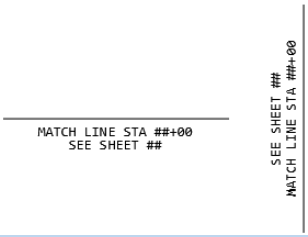
DESCRIPTION	EXAMPLE	NAME
DISTRICT WATER, PROPOSED		CONTINUOUS
DISTRICT WATER , EXISTING		CONTINUOUS
DISTRICT WATER TO BE REMOVED		EB2_HIDDEN
DISTRICT WATER, PROPOSED, >20"		MLINE STYLE = LDN
DISTRICT WATER, EXISTING, >20"		MLINE STYLE = LDE
ABANDONED GAS	GAS (ABD) GAS (ABD)	AB_GAS
ABANDONED GAS W/ SIZE (1"-24")	1"G (ABD) 1"G (ABD)	AB_GAS-1 THRU AB_GAS-24
ABANDONED WATER W/ SIZE (2"-8")	2"W (ABD) 2"W (ABD)	AB_WATER-2 THRU AB_WATER-8
DITCH FLOW		DITCH_FLOW
AT&T	AT&T AT&T	EBMUD_AT&T
CABLE TV	CTV CTV	EBMUD_CTV
DASHEDX2		EBMUD_DASHEDX2
EASEMENT		EBMUD_EASEMENT
EDGE OF PAVEMENT	LINE (INSIDE OF ROAD) / PATTERN (OUTSIDE OF ROAD)	EBMUD_EDGE _PAVEMENT
ELECTRICAL	E E	EBMUD_ELECT
ELECTRICAL (NO TEXT)		EBMUD_ELECT-NOTXT
ELECTRICAL OVERHEAD	E/OH E/OH	EBMUD_EOH
FENCE		EBMUD_FENCE
FIBER OPTIC	FO FO	EBMUD_FO
FUEL	FUEL FUEL	EBMUD_FUEL
NATURAL GAS	GAS GAS	EBMUD_GAS
NATURAL GAS	1"G 1"G	GAS-1 THRU GAS-30
JOINT TRENCH	JT	EBMUD_JT-TRENCH
RECYCLED WATER	RECY RECY	EBMUD_RECY
RIGHT OF WAY		EBMUD_RW
STORM DRAIN	SD SD	EBMUD_SD

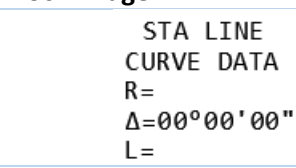
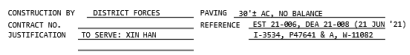
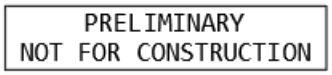
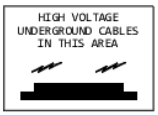
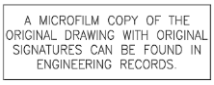
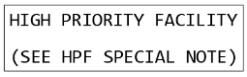
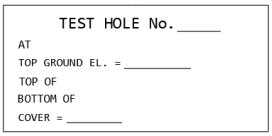
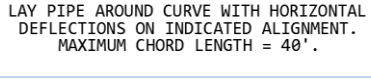
DESCRIPTION	EXAMPLE	NAME
SANITARY SEWER		EBMUD_SS
SANITARY SEWER W/ SIZE (4"-36")		SEW-4 THRU SEW-36
TELECOMMUNICATIONS		EBMUD_TEL
TELECOMMUNICATIONS OVERHEAD		EBMUD_TOH
WATER W/ SIZE (2"-48", NON-DISTRICT)		WATER-1 THRU WATER-48
WATER (NON-DISTRICT)		EBMUD_WATER
GUARD RAIL		GUARD_RAIL
RETAINING WALL		RET_WALL
CHANNELIZERS		CHANNELIZERS
16" OIL		OIL-16
RAILROAD TRACKS		RAILROAD
STORM DRAIN (8"-72")		SD-8 THRU SD-72
CITY BOUNDARY		EB_CITY
COUNTY BOUNDARY		EB_COUNTY
TRACT / PARCEL BOUNDARY		EB_TRACT
DOTTED		EB1_DOTTED
HIDDEN		EB2_HIDDEN
DASHED		EB3_DASHED
DASHDOT		EB4_DASHDOT
HIDDENX2		EB5_HIDDEN
PHANTOM		EB6_PHANTOM
CENTER		EB7_CENTER

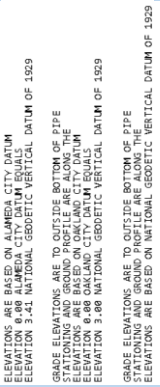
Appendix C: District Block Library Examples

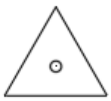
Table C.1 below provides visual samples of District PID block definitions. Examples are not to scale.

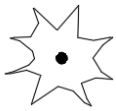
Table C.1: District PID Block Library Examples

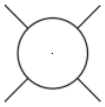
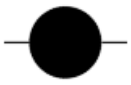
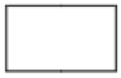
General and Vicinity Map Blocks		
Block Image	**Block Name**	**Description**
	PID_VICINITY	Vicinity Map Border
	PID_VICARO	Vicinity Arrow
	PID_NORTHG	North Arrow (G size drawing)
	PID_NORTHB	North Arrow (B size drawing)
	PID_HWYINT	Interstate Highway Symbol
	PID_HWYSTA	California Highway Symbol
	PID_HWYUS	US Highway Symbol
	MATCHLINE LBL_MATCHLINE	Match Line Text
	PID_LOGO	District Logo

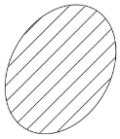
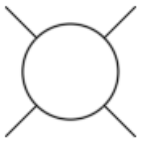
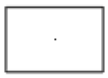
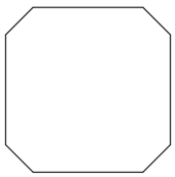
Block Image	Block Name	Description
	PID_CRVTXT	Station Line Curve Data (Note: Civil 3D label = Curve Label [EB])
	PID_RFBLK	Justification Stamp (Reference Block)
	PID_CHECK	Checkmark
	PID_DETLABEL	Detail Label
	PID_STAMP_NFC	Not For Construction Stamp
	PID_HIVOLT	High Voltage Stamp
	PID_MICRO	Microfilm Stamp
	PID_MICRO2	Microfilm Stamp
	PID_HPFCN	High Priority Facility Contact Note
	PID_HPFM	High Priority Facility Callout
	PID_THOLED	Test Hole Data
	PID_B4UDIG	Call Before You Dig
	PID_PROREC	Profile As Per Recorder Stamp
	PID_LAYCRV	Lay Pipe Curve Note

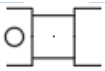
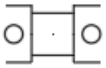
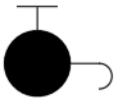
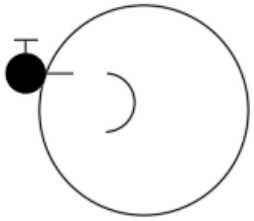
Block Image	Block Name	Description
	PID_DATALA PID_DATOAK PID_DATUSG	Datum Notes (Alameda, Oakland, USGS)
REBUILD	PID_LOGO_REBUILD	Rebuild Logo
1"=50'H.(1:600),1"=5'V.(1:60) 1"=40'H.(1:480),1"=4'V.(1:48) 1"=20'H.(1:240),1"=4'V.(1:48)	PID_SCALE5 PID_SCALE4 PID_SCALE2	Scale Texts (20, 40, 50)
	PID_GRASCA	Graphic Scale Bar
	PID_DIRSIG1	Director of Engineering Signature Line
R/W NO._____ DWG. NO._____	PID_RTOWAY	Right-Of-Way Note
	REVBUG	Revision Bug
	TB-REV	Revision Info Block
NOTE RIGHT OF WAY LINES ARE APPROXIMATE AND FOR DISPLAY PURPOSES ONLY.	ROW_APPROX_NOTE	Approximate Right-of-Way Note
TP###	PID_TPNUMBER	TP Number block

Control / Survey Blocks		
Block Image	**Block Name**	**Description**
	PID_MON	Monument
	PID_MONTRI	Triangular Monument
	PID_CUTX	Survey Cut X/+
	PID_HT	Hub and Tack
	PID_IP	Iron Pipe
	PID_LOTLINE	Lot Line
	PID_STCHG	Street Name Change

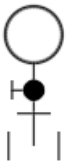
Site Topo / Trees		
Block Image	**Block Name**	**Description**
	PID_TREBAS	Tree Base
	PID_TREED	Deciduous Tree
	PID_TREEE	Evergreen Tree
	PID_TREEP	Palm Tree

Utilities Topo Blocks		
Block Image	**Block Name**	**Description**
	PID_MHELEC	Electrical Manhole
	PID_MHMIS	Miscellaneous Manhole
	PID_MHSD	Storm Drainage Manhole
	PID_MHSEW	Sanitary Sewer Manhole
	PID_MHP	Pipe Manhole
	PID_DI	Drainage Inlet (w/ rotation grip)
	PID_CO	Sewer Cleanout
	PID_LIGHT	Street Light
	PID_JP	Joint Pole (w/ rotation grip)
	PID_GA	Guy Anchor (w/ rotation grip)
	PID_CB	Catch Basin (w/ rotation grip)
	PID_ARRSEW	SS Flow Arrow (w/ rotation grip)
	PID_FLODIR	SD Flow Arrow (w/ rotation grip)
	PID_POLE	Pole

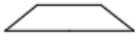
Block Image	Block Name	Description
	PID_POSTC	Circular Fence Post
	PID_POSTS	Square Fence Post (w/ rotation grip)
	PID_POSTC_GATE	Round Gate Post (w/ rotation grip)
	PID_POSTS_GATE	Square Gate Post
	PID_POT HOLE	Pothole
	PID_THOLE	Test Hole
	PID_EMBYP	Emergency Bypass
	PID_ELECTROLIER	Electrolier
	PID_BOXM	Miscellaneous Box
	PID_VALVM	Miscellaneous Valve
	PID_LOOP	Traffic Loop (not annotative because this is to scale)

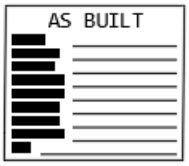
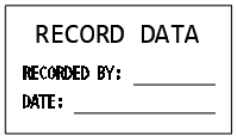
Fittings and Appurtenances Blocks		
Block Image	**Block Names**	**Description**
	PID_JTSE	Expansion Joint
	PID_JTSBE	Single Ball Expansion Joint
	PID_JTDBE	Double Ball Expansion Joint
	PID_VALTBA	TBA Valve
	PID_VALVEX	Existing Valve
	PID_VALVE	Proposed Valve
	PID_VALVR	Valve w/ Riser
	PID_VALVR2	Valve w/ Blowoff Killed
	PID_ADAPT-R	Pipe Flange Adapter
	PID_CROSS	Cross
	PID_ELL	Elbow
	PID_FLEX	Flexible Coupling
	PID_X	Pipe Change
	PID_ELLV	Vertical Elbow
	PID_ADAPT-BR	HDPE Ring Adapter
	PID_ADAPT	Pipe Adapter

Block Image	Block Name	Description
	PID_ANCHOR	Pipe Anchor
	PID_JUMP	Pipe Jump
	PID_ZVALTBA	TBA Zone Valve
	PID_ZVALVE	Existing Zone Valve
	PID_ZVALVP	Proposed Zone Valve
	PID_TURNO	Turnout
	PID_TS	Test Station
	PID_TSL	Test Station w/ Lateral
	PID_INSJT	Insulating Joint
	PID_AV	Air Valve
	PID_AVL	Air Valve w/ Lateral
	PID_LINE2	Perpendicular to Line
	PID_NOZZL	Saddle Nozzle
	PID_NOZZLEV	Saddle Nozzle w/ valve
	PID_SLEEVE	Sleeve
	PID_SFC	Single Field Cut
	PID_BUMPH	Bump Head or Dish
	PID_GATS	Galvanic Anode and Test Station

Block Image	Block Name	Description
	PID_GATSL	Galvanic Anode and Test Station w/ Lateral
	PID_BOL	Blowoff w/Lateral
	PID_BO	Blowoff
	PID_HYDRFS	Hydrant Assembly (remove from service)
	PID_HYDP	Hydrant Assembly (proposed)
	PID_HYD	Hydrant Assembly (existing)
	PID_HYDBASRFS	Hydrant Tee and Valve (remove from service)
	PID_HYDBASP	Hydrant Tee and Valve (proposed)
	PID_HYDBAS	Hydrant Tee and Valve (existing)

Block Image	Block Name	Description
	PID_REDCR	Reducer or Taper
	PID_HYDPL	Hydrant Body w/Lateral (proposed)
	PID_HYDL	Hydrant Body w/Lateral (existing)
	PID_TEE	Tee
	PID_HYDBOP	Hydrant Body (proposed)
	PID_HYDBOD	Hydrant Body (existing)

Profile Blocks		
Block Image	**Block Name**	**Description**
	PID_MHPROF	Pipe Manhole
	PID_MHSSPR	Sanitary Sewer Manhole
	PID_COPRF	Cleanout
	PID_BREAKP	Pipe End Break
	PID_PRODIA	Storm Crossing
	PID_BOPRPE	Blowoff
	PID_VALPR	Valve
	PID_UTILXPROF	Utility Crossing (profile)
	PID_UTILXPROFE	Elec (profile)
	PID_UTILXPROFCM	Comm (profile)
	PID_UTILXPROFNG	Gas (profile)
	PID_UTILXPROFGR	Gravity (profile)
	PID_UTILXPROFWA	Water (profile)

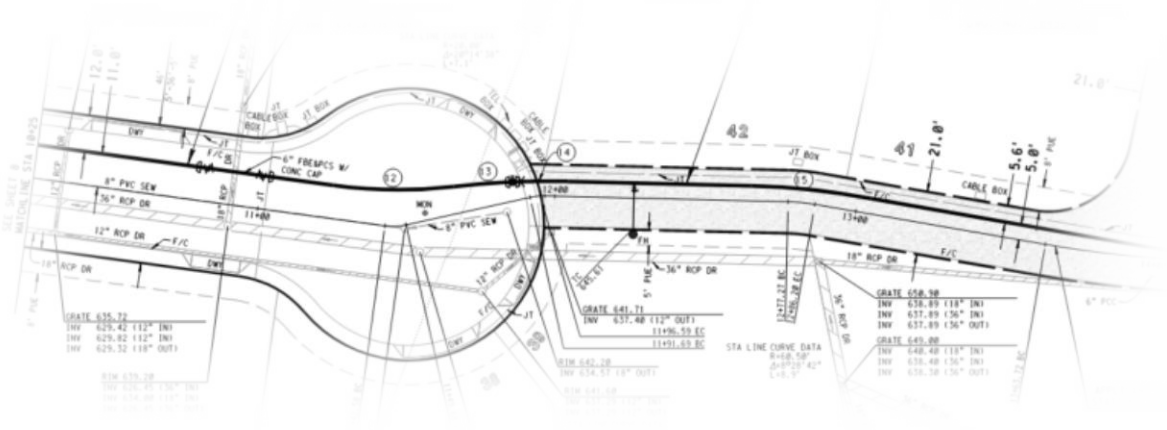
Construction Inspection Blocks		
Block Image	**Block Names**	**Description**
	PID_CI_OUTSERV	Out of Service Stamp
	PID_CISTAMP	CI Mark-Up Stamp
	PID_STAMPAB	As Built Stamp
	PID_RECDAT	Record Data Stamp

Miscellaneous Blocks		
Block Image	**Block Names**	**Description**
	PID_BRKCRV	
	PID_BREAKC	
	PID_GRDTOE	
	PID_BRDTOP	
	PID_ARROWB	Arrowhead, large
	PID_ARROWS	Arrowhead, small

INTENTIONALLY LEFT BLANK

Pipeline Infrastructure Division

Drawing Standards Manual



EBMUD

Updated November 2023

Table of Contents

EBMUD

1.0 Introduction

This Pipeline Drawing Standards Manual (Manual) outlines the formats and standards for pipeline design drawings to ensure that drawings prepared by District staff and consultants follow the same standards to maintain consistency. Requirements and information related to AutoCAD standards (i.e. text styles, line types, file directory structures, blocks, etc.) can be found in the **PID AutoCAD Standards Manual** located on the Engineering and Construction Department Sharepoint site. This Manual should be used in conjunction with the PID AutoCAD Manual to prepare pipeline design drawings for installation by both District forces and outside contractors. This Manual will be updated as changes to drawing standards are implemented and approved. The Pipeline Design Support Section (Org 533) will maintain and update this manual as needed.

2.0 Pipeline Project Types

PID prepares design drawings for various types of projects including applicant main extensions, hydrant agreements, infrastructure renewals, relocations, system improvements, large diameter pipelines, facility improvement projects, and recycled water projects. Descriptions of these project types are provided below.

2.1 Applicant Main Extensions and Hydrant Agreements

Applicant main extensions include new water mains for private development projects to extend the water system to serve new customers. These projects involve agreements based on the scope of work performed by District forces or applicants. Hydrant agreements involve the installation, modification, or removal of District owned fire hydrants for applicant projects. Hydrant sketches are prepared as part of hydrant agreements to document the proposed location of the hydrant(s). Applicant main extensions and hydrant agreements are managed and designed by the Pipeline Design Section, Org 531.

2.2 Infrastructure Renewals (IR)

IR projects involve renewal of the District's distribution system pipelines (20-inches in diameter and smaller), a network of nearly 4,000 miles of pipe. IR projects aim to replace deteriorated pipelines when it becomes more cost effective to replace them than to make frequent repairs. IR projects are managed and designed by the Pipeline Rebuild Section, Org 535. Projects are selected based on the Pipeline Replacement Program risk model which takes into account the pipeline leak history and likelihood of failure.

2.3 Pipeline Relocations

Pipeline relocation projects are generally performed to accommodate outside agency projects such as street improvements, utility capital improvement projects, freeway extensions, rail system upgrades, and private development. Pipeline relocations are categorized into non-reimbursable and reimbursable projects. Non-reimbursable pipeline relocations are generally required to accommodate local city projects in public right-of-ways (i.e. streets) owned and maintained by local cities or agencies. Reimbursable pipeline relocations are generally required to accommodate private development. Relocation projects are managed and designed by the Distribution System Engineering Section, Org 532.

2.4 Pipeline System Improvements (SI)

Pipeline system improvement projects are part of an on-going program to improve water quality, system performance, capacity, reliability, and maintainability of the distribution system. Pipeline system improvements are categorized miscellaneous system improvements projects and 4-inch replacement projects. Miscellaneous system improvements include projects aimed at relocating or abandoning pipelines in hard to

access right-of-ways (RWs) or easements, improving water quality, and improving the reliability and maintainability of the distribution system. SI projects are managed and designed by the Distribution System Engineering Section, Org 532.

2.5 Large Diameter Pipelines (LDP)

LDP projects involve the replacement and upgrade of the District's transmission mains and include pipelines 24-inches and larger in diameter. The drawing sets for these projects are typically part of a set of contract documents including technical specifications and general conditions. LDP projects are managed and designed by the Transmission Pipelines and Tunnels Section, Org 534.

2.6 Facility Support Projects

Facility support projects include inlet and outlet piping for reservoirs, pumping plants, water treatment plants, and regulators. PID typically creates W-drawing packages to capture proposed distribution and transmission piping outside of the facility. The W-drawing packages are included with the Design Division's facility design drawings. These projects are typically put out to bid and performed by outside contractors managed by the Construction Division. Facility support projects are managed and designed by the Pipeline Design Section, Org 531.

2.7 Recycled Water Projects

Recycled water projects include pipeline projects to support the East Bayshore Recycled Water Project (EBRWP) and the San Ramon Valley Recycled Water Program (SRRWP). These projects are designed in coordination with the Water Supply Improvements Section. These projects are typically put out to bid and performed by outside contractors managed by the Construction Division. Recycled water projects are managed and designed by the Pipeline Design Section, Org 531, in coordination with the Water Supply Improvements Section, Org 455.

3.0 Pipeline Drawing Types

Pipeline project drawing sets generally include W-drawings, Remove From Service (RFS) drawings, hydrant sketches, and traffic control plans (TCPs). Pipeline extension drawings (also known as P-drawings) are generally used for standalone appurtenance installations that don't require a full-size W-drawing. Below is a description of these drawing types and how they are used.

3.1 W-Drawings

Water pipeline drawings or W-drawings are the primary design document used for District pipeline designs. W-drawings are 22 inches x 34 inches (G size) drawings that present the existing site features (topography, existing utilities, etc.), any proposed site features, and proposed pipeline design information including plan views, profiles, details, and notes. W-drawings are distinguished by the number assigned to them in the format "W-XXXXX," (i.e. W-10509). Section 4.0 provides additional detail on the components of W-drawings and W-drawing sets for small and large diameter pipeline projects.

3.2 Pipeline Extension Drawings (P-Drawings)

P-Drawings are 11-inch x 17-inch (B size) drawings utilized for standalone appurtenance or valve installations that don't require the space of a W-drawing. P-drawings are labeled with the pipe extension rather than a W-number (i.e. P45646). Section 5.0 provides additional detail on the components of P-drawings.

3.3 Remove from Service (RFS) Drawings

RFS drawings show the existing water system pipelines and appurtenances, such as fire hydrants, blowoff valves, and air valves that will be completely disconnected, removed, or abandoned from the water system. Section 6.0 provides additional detail on the components of RFS drawings.

3.4 Hydrant Sketches

Hydrant sketches show the location of new or relocated fire hydrants. Hydrant sketches are prepared on a hydrant sketch template that is 5 inches x 8 inches in size. Section 7.0 provides additional detail on the components of hydrant sketches.

3.5 Traffic Control Plans

Traffic control plans (TCPs) are prepared by District engineering designers and District contracted consultants. TCPs are generally required to obtain City or County encroachment permits. Section 8.0 provides additional detail on the components of TCPs.

4.0 W-Drawings

W-drawings are the primary design document used for District pipeline designs. W-drawings are created on a 22 inch x 34 inch drawing border and title block that includes project specific information such as project notes, vicinity maps, alignment plan and profiles, potholing information, and project specific details.

4.1 W-Drawing Border with Title Block

The W-drawing border template should be used for all project types described in Section 2.0. The W-drawing border template can be accessed through the AutoCAD Civil 3D application (file "W00001.dwt"). Figure 4.1.1 highlights some of the main features of a W-drawing border and title block.

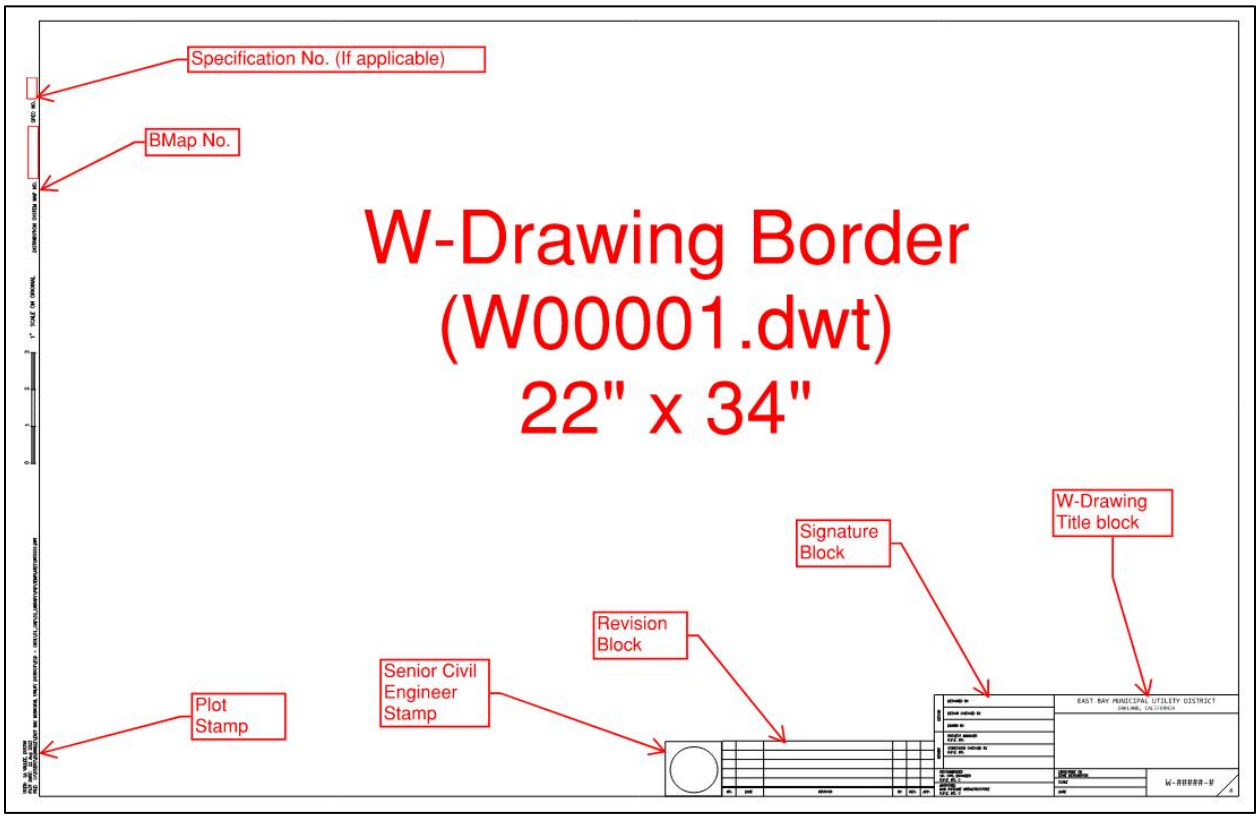


Figure 4.1.1 W-Drawing Border and Title block Template

4.1.1 Title Block

The title block includes project specific information such as project name, location, W-drawing number, drawing scale, pressure zone designation (of the proposed pipe), and sheet number. Figures 4.1.2 and 4.1.3 provide examples of this information filled in for a small diameter and large diameter project.

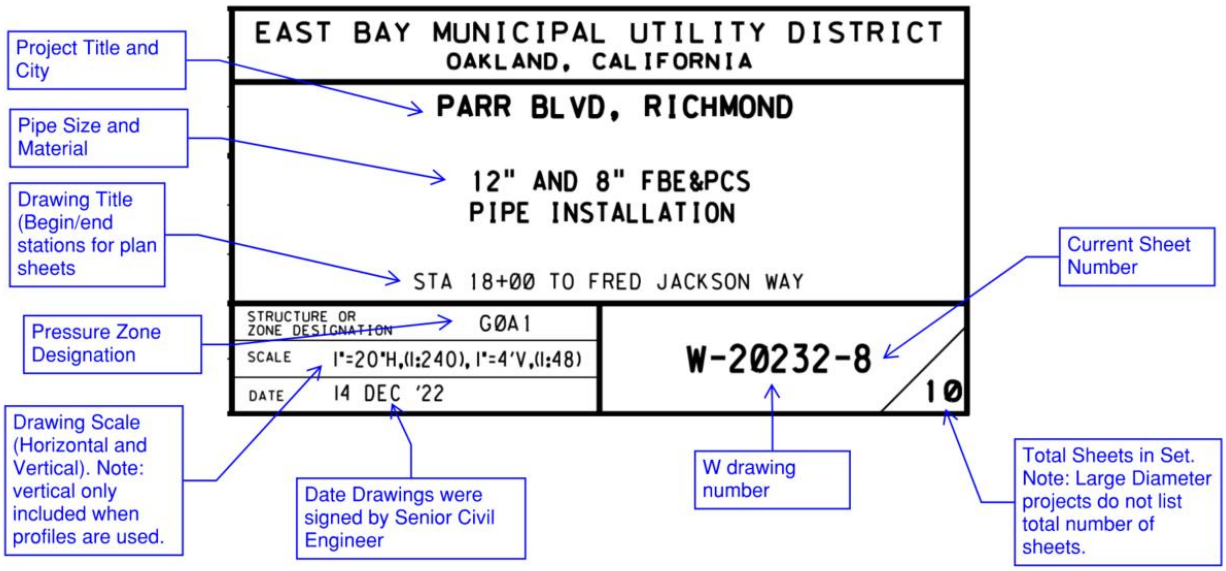


Figure 4.1.2 W-Drawing Title Block (Small Diameter)

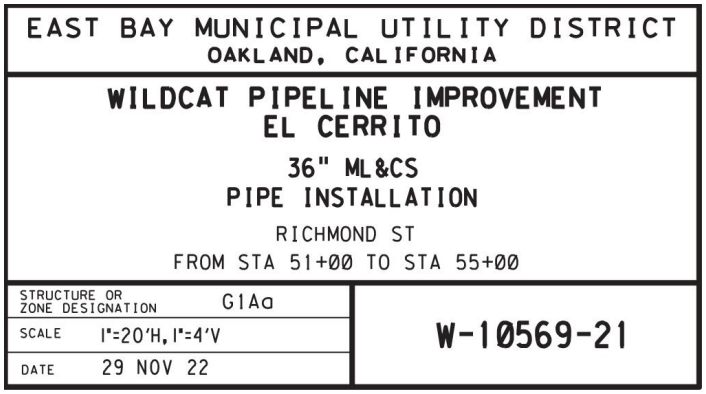


Figure 4.1.3 W-Drawing Title Block (Large Diameter)

4.1.2 Signature Block

The signature block includes the names and electronic signatures of the project designer, design checker, designer/drafter(s) who prepared the drawings, project manager, corrosion control engineer, senior civil engineer, and PID Division Manager. If staff are acting for the Section Senior Civil Engineer or Division Manager, “Acting” should be included in front of the position title. Electronic signatures are placed on the project drawings after the drawing set has been routed for approval and all electronic signature approvals have been received. Engineering Standard Practice 201.0 contains the requirements for drawing signatures.

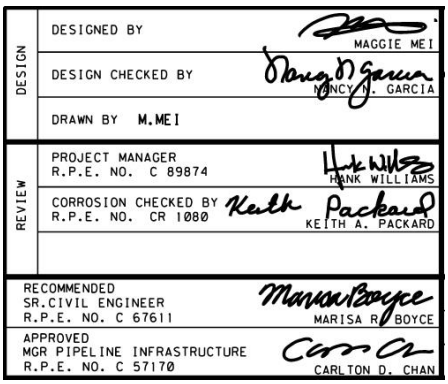


Figure 4.1.4 Signature Block on W-Drawing title block

4.1.3 Director Signature

Projects over 1,000 feet require the signature of the Director of Engineering and Construction (as required by ESP 201.0). The Director's electronic signature is added after the electronic signature authorization form has been routed and approved. The Director's electronic signature and signature line should be added only on the first page or cover sheet just above the title block.

Figure 4.1.5 Director's signature on W-Drawing title block

4.1.4 Revision Block

The revision block notates changes to the project plans that are made after the drawing has been signed and issued. As revision(s) are made to the drawing(s), entries are placed in the revision block starting on the bottom line. The entry will provide the revision number, a title or summary of the revision, the date of the revision, and initials of the project manager, engineer of record, and division manager. As the component or system is modified and the drawing is updated to reflect the changes, the revision number is increased by one and the revision number in the revision block is changed to indicate the new revision number. The revision number or "revision bug" is placed on the drawings next to the revision. Revision clouds are not used on W-drawings.

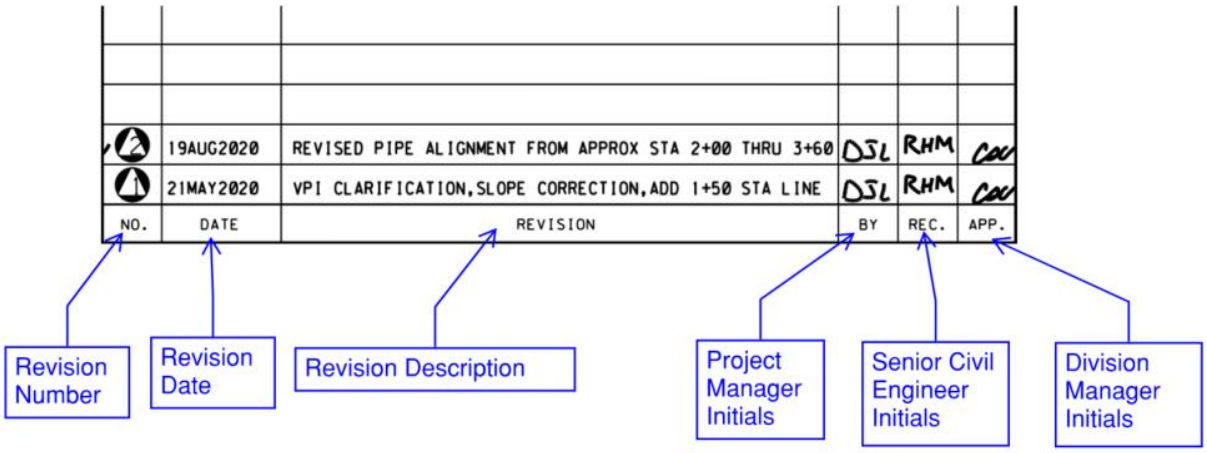


Figure 4.1.6 Revision Block on W-Drawing title block

4.1.5 Senior Civil Engineer Stamp

The electronic professional engineer stamp of the Senior Civil Engineer signing the project drawings is placed to the left of the revision block. The Senior Civil Engineer's signature is placed on the stamp once the drawing or drawing set has been routed for approval and the Senior Civil Engineer has authorized their electronic signature to be placed on the drawings.

Figure 4.1.7 Senior Civil Engineer Stamp on W-Drawing title block

4.1.6 Consultant Prepared Designs

Some projects may require design support from an engineering consultant such as certain trenchless projects or bridge crossings. For these types of projects where an outside consultant prepares the design, a separate title block is required which includes information for the consultant. The W-drawing template for consultant prepared drawings can be accessed through the AutoCAD Civil 3D application (file "W00001c.dwt"). Figure 4.1.8 below highlights some of the main features of a W-drawing title block.

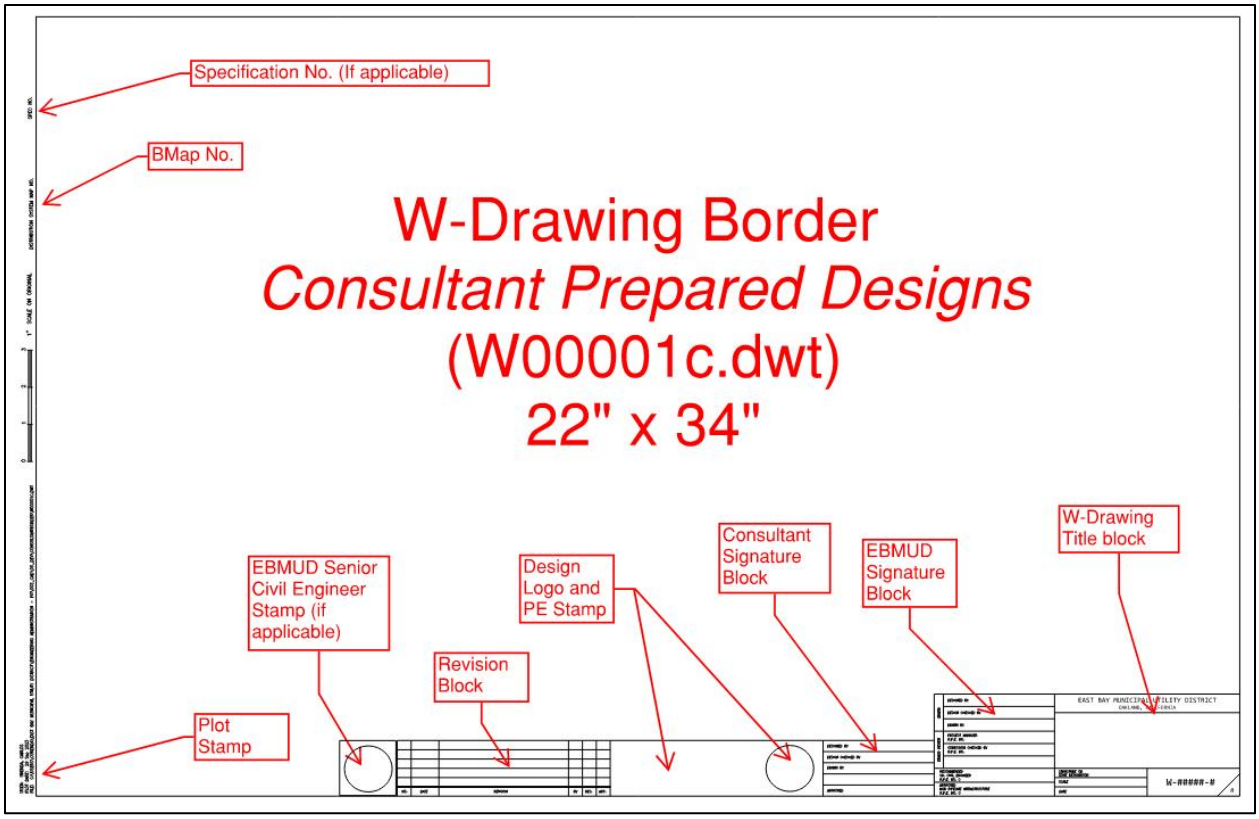


Figure 4.1.8 W-drawing title block for consultant prepared design

4.2 W-Drawings for 20-Inch & Smaller Pipelines

W-drawing sets for small diameter pipeline projects (20 inches and smaller) are typically composed of W-drawings (cover sheet, plan and profile sheets, and detail sheets, as required), remove from service (RFS) drawings, hydrant sketches, and traffic control plans (as required). W-drawing cover sheets showing an overview of the project alignment are required for projects with more than one drawing. A cover sheet is not required for projects with just one plan sheet; however, the single plan sheet will include a majority of the information that is on a cover sheet. Below are tables outlining what's included in W-drawing sets with multiple sheets and with a single plan sheet.

Table 4.1 Pipeline Project Drawing Sets with Multiple Plan Sheets

DRAWING NO	TITLE	CONTENT
W-XXXXX-1	Cover Sheet	Vicinity map, general notes, reference block, and alignment overview. See Figure 4.2.1
W-XXXXX-2, -X	Plan / Profile Sheets	Plan, Profile, Station Notes, and sheet specific notes, as needed.
W-XXXXX-X, -X	Details (If required)	Project details as required
9XXXXXX	Remove from Service (RFS) Drawing	See Section 6.0
HSXXXXX	Hydrant Sketch (if required)	See Section 7.0
TCP	Traffic Control Plans (if required)	See Section 8.0

Table 4.2 Pipeline Drawing Sets with Single Plan Sheet

DRAWING NO	TITLE	CONTENT
W-XXXXX-1	Cover / Plan Sheet	Vicinity map, general notes, reference block, plan view, profile view (if required), and Station Notes. See Figure 4.2.2
W-XXXXX-2, -X	Details (if required)	Project details as required
9XXXXXX	Remove from Service (RFS) Drawing	See Section 6.0
HSXXXXX	Hydrant Sketch (if required)	See Section 7.0
TCP	Traffic Control Plans (if required)	See Section 8.0

4.2.1 W-Drawing Cover Sheets

W-drawing cover sheets provide important project information about the project location, pipe material, installation instructions, trench spoils handling instructions, job numbers, agreement numbers, and pipe footage. Below are examples of cover sheets for a project with multiple W -drawing plan sheets and a project with just one plan sheet.

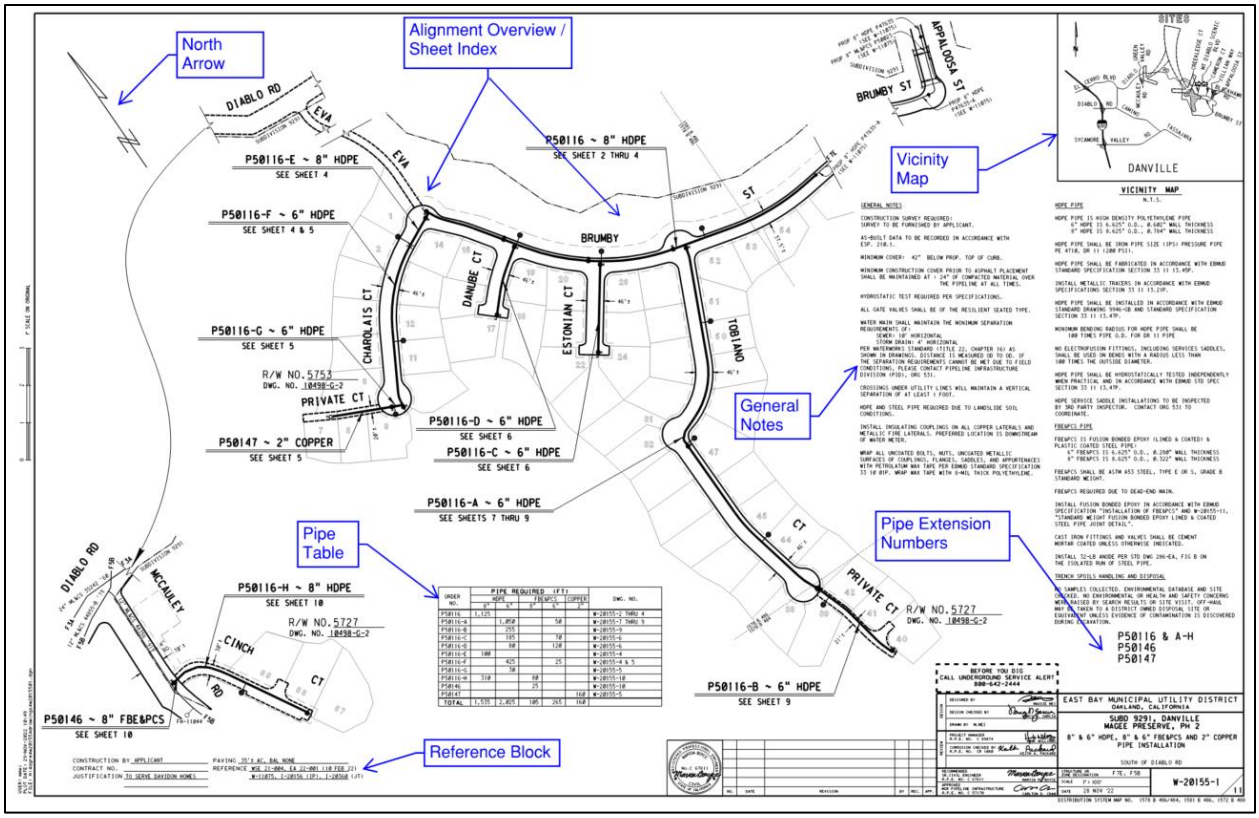


Figure 4.2.1 Cover Sheet for Applicant Main Extension Project with Multiple Plan Sheets

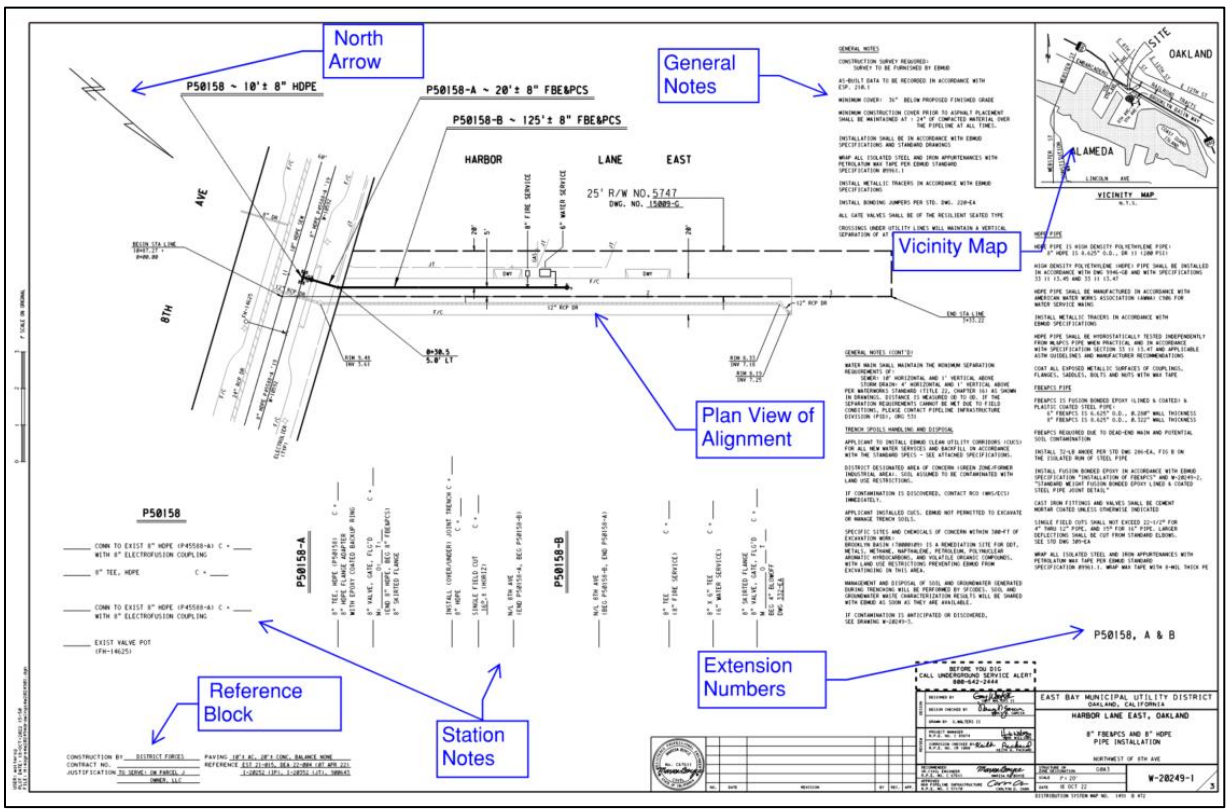


Figure 4.2.2 Cover /Plan Sheet for Applicant Main Extension Project with one Plan Sheet

North Arrow

The north arrow should be placed in the upper left-hand corner of the cover sheet or plan view and should point in the north direction when possible.

Alignment Overview / Sheet Index

The alignment overview provides a plan view of the entire proposed pipeline alignment. The overview shows the proposed pipelines, proposed appurtenances (valves, hydrants, blowoffs, air valves, ETS, GA/TS, etc), reference to sheets, existing pipelines and appurtenance that the new pipeline will tie into, street labels, and approximate right-of-way lines (with disclaimer if RW lines have not been resolved by survey). This alignment overview should be shown to scale. Figure 4.2.3 below provides an example of a cover sheet alignment overview.

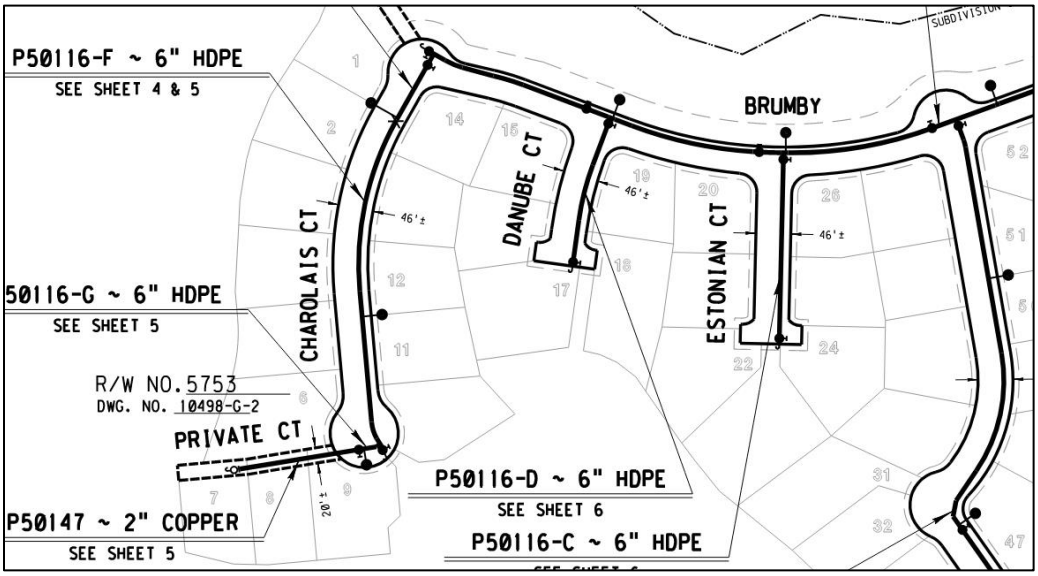


Figure 4.2.3 Example Alignment Overview on Cover Sheet

Right-of-Way Disclaimer (if applicable)

A disclaimer is placed on the cover sheet when a boundary survey is not performed for a project and the Bmap right-of-way lines are shown on the alignment overview. Below is an example of the disclaimer indicating that the right-of-way lines are for reference only.

PROPERTY AND RIGHT OF WAY LINES ARE NOT RESOLVED FOR THIS PROJECT AND ARE TO BE CONSIDERED FOR REFERENCE ONLY.

Figure 4.2.4 Example RW Disclaimer

Vicinity Map

The vicinity map provides the location of the project and includes some of the major streets near the project along with the approximate alignment location. The vicinity map is always placed in the top right-hand corner of the W-drawing cover sheet.

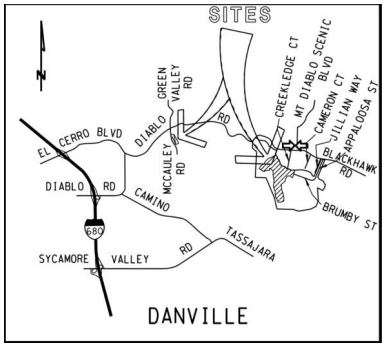


Figure 4.2.5 Example Vicinity Map

Pipe Table

The Pipe Table is included on the cover sheet for projects with multiple extension numbers. The Pipe Table summarizes the length, materials, and diameter of pipes related to each extension number. The footage for all connections associated with pipeline extensions should be added to the pipelines extension number in the pipe table. Infrastructure Renewal (IR) projects also included the number of services transfers, hydrant transfers, and main connections that are required for each pipeline extension number. Figures 4.2.6 and 4.2.7 provide examples of pipe tables.

ORDER NO.	PIPE REQUIRED (FT)					DWG. NO.
	HDPE		FBE&PCS		COPPER	
	8"	6"	8"	6"	2"	
P50116	1,125					W-20155-2 THRU 4
P50116-A		1,050		50		W-20155-7 THRU 9
P50116-B		255				W-20155-9
P50116-C		185		70		W-20155-6
P50116-D		80		120		W-20155-6
P50116-E	100					W-20155-4
P50116-F		425		25		W-20155-4 & 5
P50116-G		30				W-20155-5
P50116-H	310		80			W-20155-10
P50146			25			W-20155-10
P50147					160	W-20155-5
TOTAL	1,535	2,025	105	265	160	

Figure 4.2.6 Pipe Table

ORDER NO.	PIPE REQUIRED (FT) ML&ZCDI				TOTAL (FT)	TAPS & CONNS (EA)			DWG. NO.
	8"					CONN	HYD	SVC	
P50049	2005				2005		4	33	W-20061-2 THRU 5
P50049-A	380				380		1	9	W-20061-6
TOTAL	2385				2385		5	42	

Figure 4.2.7 IR Project Pipe Table

General Notes / Material Notes

The General notes are included on all District installed pipeline projects. The general notes provide information related to survey data, as-built requirements, water main separation variance requirements, service transfers or improvements, and material specific information. General notes for District forces installed pipeline projects are pulled from PID's general notes template located on the H drive (**H:\general\data\General Notes**). If the General Notes for a project do not all fit on the cover sheet, they may be moved to a separate sheet 2 for the drawing set.

Engineering Designers and Project Managers should include all notes that are pertinent to their project. Contracted out projects such as large diameter pipeline projects or small diameter projects to be installed by applicants or contractors will utilize project specific notes on a separate notes, legend, and abbreviation sheet (see **Section 4.6.4**). Figure 4.2.8 below provides an example of general notes on a District installed project.

GENERAL NOTES

CONSTRUCTION SURVEY REQUIRED:
SURVEY TO BE FURNISHED BY APPLICANT.

AS-BUILT DATA TO BE RECORDED IN ACCORDANCE WITH ESP. 210.1.

MINIMUM COVER: 42" BELOW PROP. TOP OF CURB.

MINIMUM CONSTRUCTION COVER PRIOR TO ASPHALT PLACEMENT SHALL BE MAINTAINED AT : 24" OF COMPACTED MATERIAL OVER THE PIPELINE AT ALL TIMES.

HYDROSTATIC TEST REQUIRED PER SPECIFICATIONS.

ALL GATE VALVES SHALL BE OF THE RESILIENT SEATED TYPE.

WATER MAIN SHALL MAINTAIN THE MINIMUM SEPARATION REQUIREMENTS OF:
SEWER: 10' HORIZONTAL
STORM DRAIN: 4' HORIZONTAL
PER WATERWORKS STANDARD (TITLE 22, CHAPTER 16) AS SHOWN IN DRAWINGS. DISTANCE IS MEASURED OD TO OD. IF THE SEPARATION REQUIREMENTS CANNOT BE MET DUE TO FIELD CONDITIONS, PLEASE CONTACT PIPELINE INFRASTRUCTURE DIVISION (PID), ORG 531.

FBE&PCS PIPE

FBE&PCS IS FUSION BONDED EPOXY (LINED & COATED) & PLASTIC COATED STEEL PIPE:
6" FBE&PCS IS 6.625" O.D., 0.280" WALL THICKNESS
8" FBE&PCS IS 8.625" O.D., 0.322" WALL THICKNESS

FBE&PCS SHALL BE ASTM A53 STEEL, TYPE E OR S, GRADE B STANDARD WEIGHT.

FBE&PCS REQUIRED DUE TO DEAD-END MAIN.

INSTALL FUSION BONDED EPOXY IN ACCORDANCE WITH EBMUD SPECIFICATION "INSTALLATION OF FBE&PCS" AND W-20155-11, "STANDARD WEIGHT FUSION BONDED EPOXY LINED & COATED STEEL PIPE JOINT DETAIL".

CAST IRON FITTINGS AND VALVES SHALL BE CEMENT MORTAR COATED UNLESS OTHERWISE INDICATED.

INSTALL 32-LB ANODE PER STD DWG 286-EA, FIG B ON THE ISOLATED RUN OF STEEL PIPE.

Figure 4.2.8 General Notes and Materials Notes for District installed project

Trench Spoils Notes

Trench spoils handling and disposal instructions are included as the last section of the general notes on the cover sheet. These notes instruct the pipeline crews how to dispose of trench spoils generated from the pipeline installation. The Regulatory Compliance Office (RCO) determines if the soil samples need to be tested for any soil contamination. The directions to be included on the cover sheet are contained on the “Trench Spoils Directions to Design – District Installed Jobs” or “Trench Spoils Directions to Design – Non-District Installed Jobs.” An example of these notes is show in Figure 4.2.9.

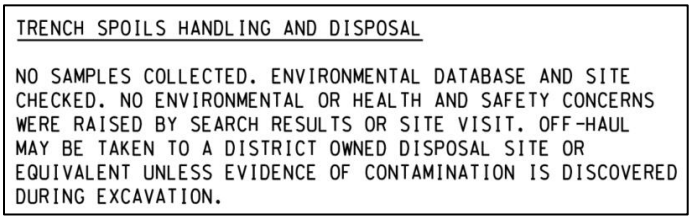


Figure 4.2.9 Example Trench Spoils Notes

Corrosion Control Notes

Corrosion control notes are listed under a separate heading in the general notes template file on the H drive. These notes are specific to certain materials and alignment crossing conditions. The Pipeline Design Support Section (Org 533) is responsible for determining what corrosion control notes should be included on all W-drawings.

Pipe Extension Numbers

The pipeline extension numbers (PXXXXX and Alphas) are listed below the general notes on the cover sheet. Some projects also include the job number if one is provided. The job number should be listed above the pipeline extension numbers if provided. Pipeline extension numbers should be requested by the project manager or engineering designer through **Infrastructure Project Tracker (IPT)**.

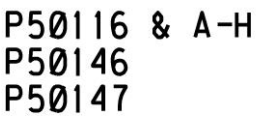


Figure 4.2.10 Example Pipeline Extension Numbers on W-drawing

Reference Block

The reference block is included only on the first sheet of a drawing set and identifies who is performing the installation, the contract number (applicant agreement number or specification number, if applicable), the project justification or type, how much paving is required, and references to associated

drawings or agreements. Below is a list of the information included in the Reference Block along with examples for various types of projects.

1. **Construction By**: District Forces, Contractor, or Applicant
2. **Paving**: Details on paving length, type, and balance
3. **Contract No.**: (RFQ or Spec numbers for SI, Relocation, LDP projects)
4. **Justification**: Type of Project (Infrastructure renewal, System Improvement, PZ Imprv, Relocation, To Serve____)
5. **Reference**: (Project Authorization number, WSE Estimate No, Agreement No and Date, RFS number, Improvement Number(s), Field Book numbers)

Figure 4.2.11 Infrastructure Renewal Project Example

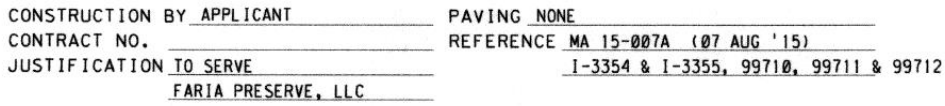


Figure 4.2.12 Applicant Main Extension Project Example

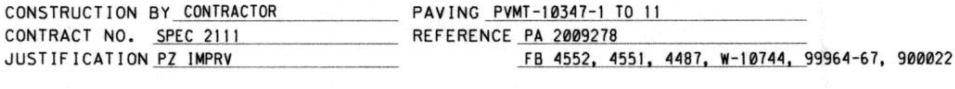


Figure 4.2.13 Large Diameter Pipeline Project Example

4.2.2 W Drawing Plan Sheets

W-drawing plan sheets for pipelines 20-inches and smaller include a plan view of the alignment, a profile of the alignment (if the pipeline is 12-inches or greater or the project benefits from a profile) and station notes within a W-drawing title block. Below is an example plan view of a project with details on what information should be shown.

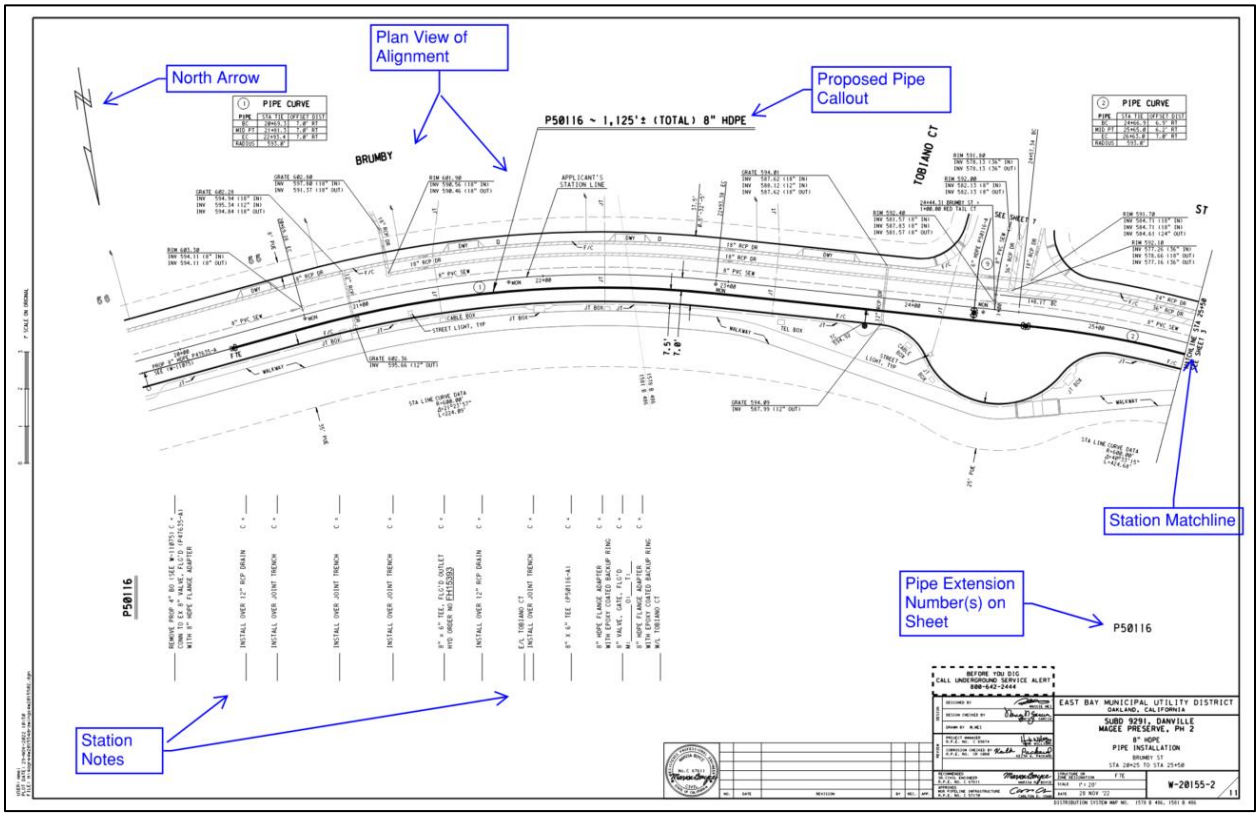


Figure 4.2.14 Applicant Main Extension Project Example

Plan View of Proposed Alignment

The plan view on the W-drawing is composed of a base drawing that includes existing topographic features, existing utilities, any proposed street or development related improvements, and the proposed pipeline design alignment and features. The base drawing is prepared on the base drawing template (X0000_BASE.dwt) and referenced into the W-drawing template model space (template W0001.dwt). The base drawing is then shown in the paper space of the W-drawing layout tabs using viewports. The preferred horizontal scale of the plan view on W-drawings is 1" = 20'. See the **AutoCAD manual** for additional information on the base drawing and how it's referenced into W-drawing sheet files. Figure 4.2.15 shows an example alignment plan view along with some of the information that is displayed.

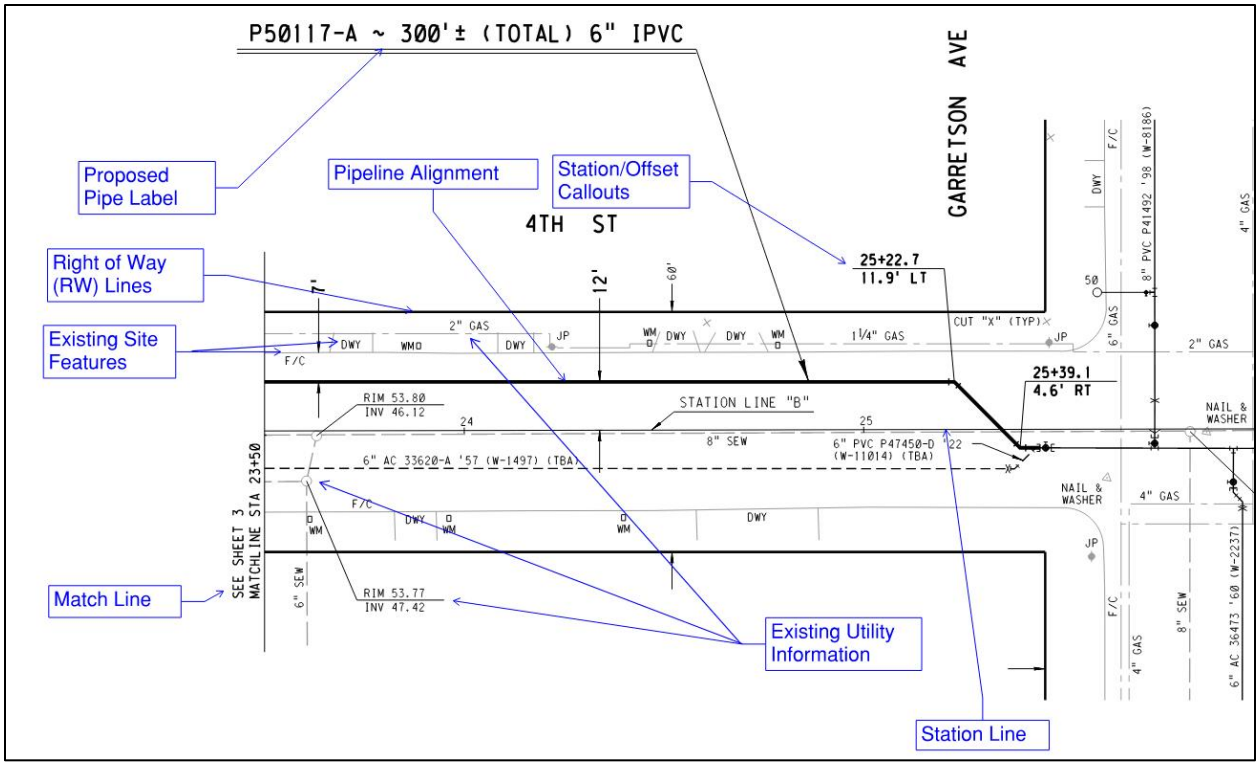


Figure 4.2.15 Example Plan View

Existing Site Features / Topography

The District's Surveying section will often provide topographic survey files in AutoCAD format to create the base drawing for District projects. For applicant main extension projects, survey files and development design drawings are often provided by the applicant. Survey files provided from applicants or outside consultants should always be reviewed by the District's survey team to verify there is adequate survey control and the drawing is in the correct coordinate system (NAD83 for horizontal datum and NAVD29 for vertical datum).

Topographic survey files generally include manholes, vaults, curbs, valves, fences, trees, driveways, sidewalk, decorative paving, easements, and right-of-way (RW) boundaries. Contour lines are generally not included on District pipeline drawings unless the engineer of record or project manager requests them to be included in the survey request.

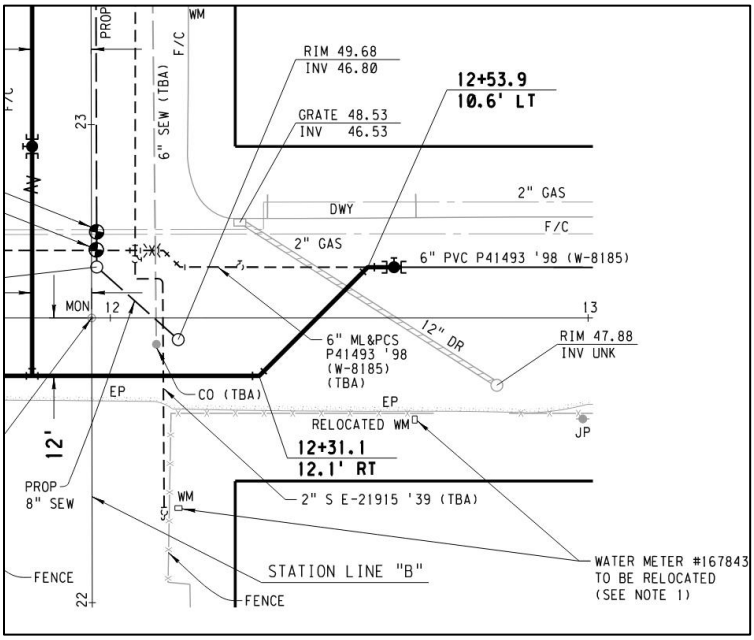
Existing Utility Information

Underground utilities on base drawings can include communication lines, electric lines, gas lines, sanitary sewer mains, storm drains, oil or fuel supply lines, and existing water lines. The location of existing utilities shown on the plan view is generally obtained from utility maps or as-builts provided by utility owners. Survey files provided by the District or outside applicants may also have existing utility information that may help to confirm location of the utilities. If it is

unclear what utilities may be in the project vicinity, the PM or designer may fill out the USA North 811 form which will provide a list of utilities in the project vicinity. Below is a link to this form.

- North 811 USA - **Form**

All existing utility line work and text should be shown screened back on the plan view with the exception of the existing District water utilities and text. This provides additional clarity on existing water distribution and transmission mains and highlights where connections to the existing system should be made. Rim and invert (or grate and invert for drain inlets) information is included for all manholes and drainage inlets. If rim or invert elevations are unknown, they are displayed as “RIM UNK” or “INV UNK.” Figure 4.2.16 below shows an example of how existing utilities are displayed on alignment plan views.



4.2.16 Example Plan View with Existing Utilities

High Priority Facility

“High Priority” facilities are utility lines that would pose a greater risk to workers and the public should an accident occur during construction, and therefore warrant special consideration. Refer to ESP 514 for the identification of high priority facilities for additional information. The facility should be potholed and identified in the drawings. Also, a special notes should be added on the drawing as show in Figure 4.2.17.

Utility contact information is sometimes added to the first page of the pipeline drawing (or Cover sheet).

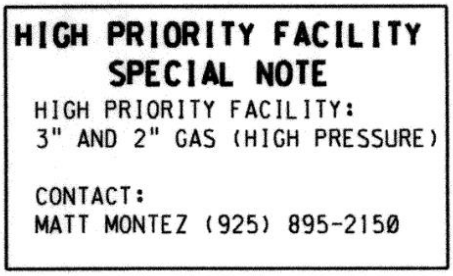


Figure 4.2.17 High Priority Facility Call out

Station Lines

The station line for small diameter pipeline projects (20-inches & smaller) is generally located on the road centerline. The station line should always read from left to right or up to down on W-drawings, regardless of the orientation of the North Arrow. When determining the direction of the station line for the alignment, the following criteria should be considered:

1. North arrow: The Station Line can be set up so that North is the prevailing direction for the pipeline sheets.

2. Traffic direction: On multiple-lane streets, if the pipeline is predominately on one side of the street, it is preferable to lay the pipe in the direction of the flow of traffic to facilitate work vehicle entry and exit from the site. Therefore, the Station Line can be set up in the direction of traffic flow.

3. Uphill direction: If the pipeline is on a slope, it is preferable to lay the pipe in the uphill direction, so that gravity helps to keep the joints together. Therefore, the Station Line can be set up to start on the downhill connection and end at the uphill connection.

4. Flow direction: If the prevailing flow direction of a pipeline is known usually from larger pipe to the smaller pipes, then it is preferable to orient the station line with direction of flow.

The station line should be labeled with call outs for the beginning and ending of the station line as well as curve data (if applicable) including radius, delta, and arc length.

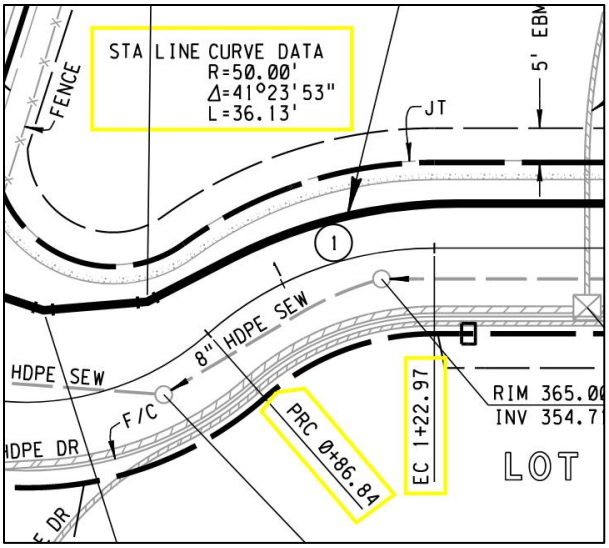


Figure 4.2.18 Station Line Curve Callouts

Station Match Lines

Match lines are used when a designed pipeline alignment is shown across multiple plan sheets. Match lines indicate the sheet & station numbers on the pipeline plan view. Below are a list of criteria that should be followed when placing match lines on plan sheets:

- Match lines should be placed at half or full station points.
- Match lines should be perpendicular to the design alignment at the station referenced as the match mark point.
- Place match lines outside of street intersections, highway crossings, railroad crossings and areas of proposed construction by others, if possible.
- Place match lines to maximize the use of the available plan and profile space while considering any space requirements of location maps, general notes, construction details, etc.
- Dimensioning between features shown on separate sheets should be shown with double arrow-heads at the match line.
- Analyze the profile section at the proposed match lines and ensure that the location of the match lines will not create any confusion in the profile view.

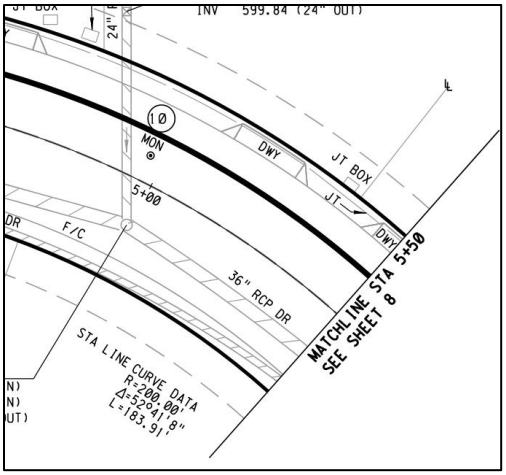


Figure 4.2.19 Example Match Line

Station Equations

A station equation in a centerline measurement is used when the station is not continuous throughout a project or when the station numbers of one system change to the station numbers of another system. Figure 4.2.20 and 4.2.21 provide examples of this.

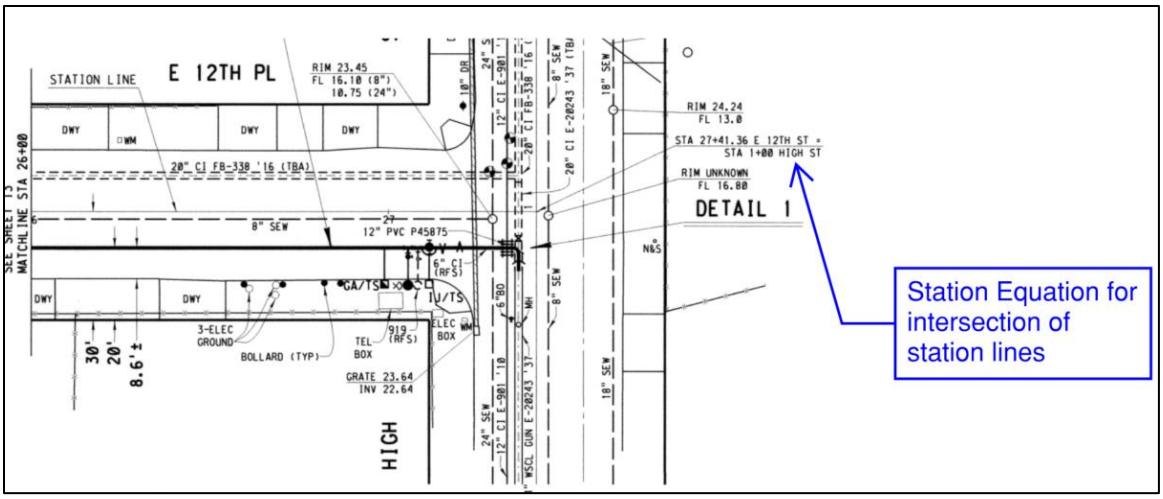


Figure 4.2.20 Station Equation

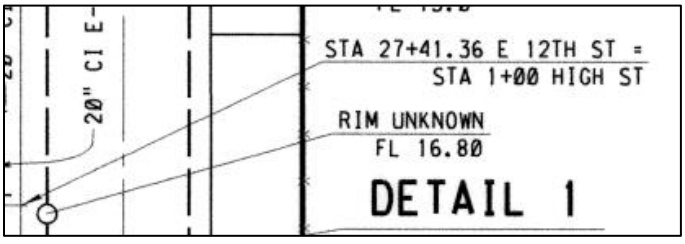


Figure 4.2.21 Station Equation

Alignment Plan View

The proposed design alignment shows the horizontal location of the proposed pipeline along with the pipeline diameter(s), fittings, changes in direction, and appurtenances including isolation valves, air valves, blowoffs, test stations, and hydrants. The proposed design alignment is shown on the W-WATR-PIPE layer in AutoCAD which is displayed bolder than the existing water mains. Water services are not shown on the W-drawings. Below are examples of information that should be included on the alignment plan view.

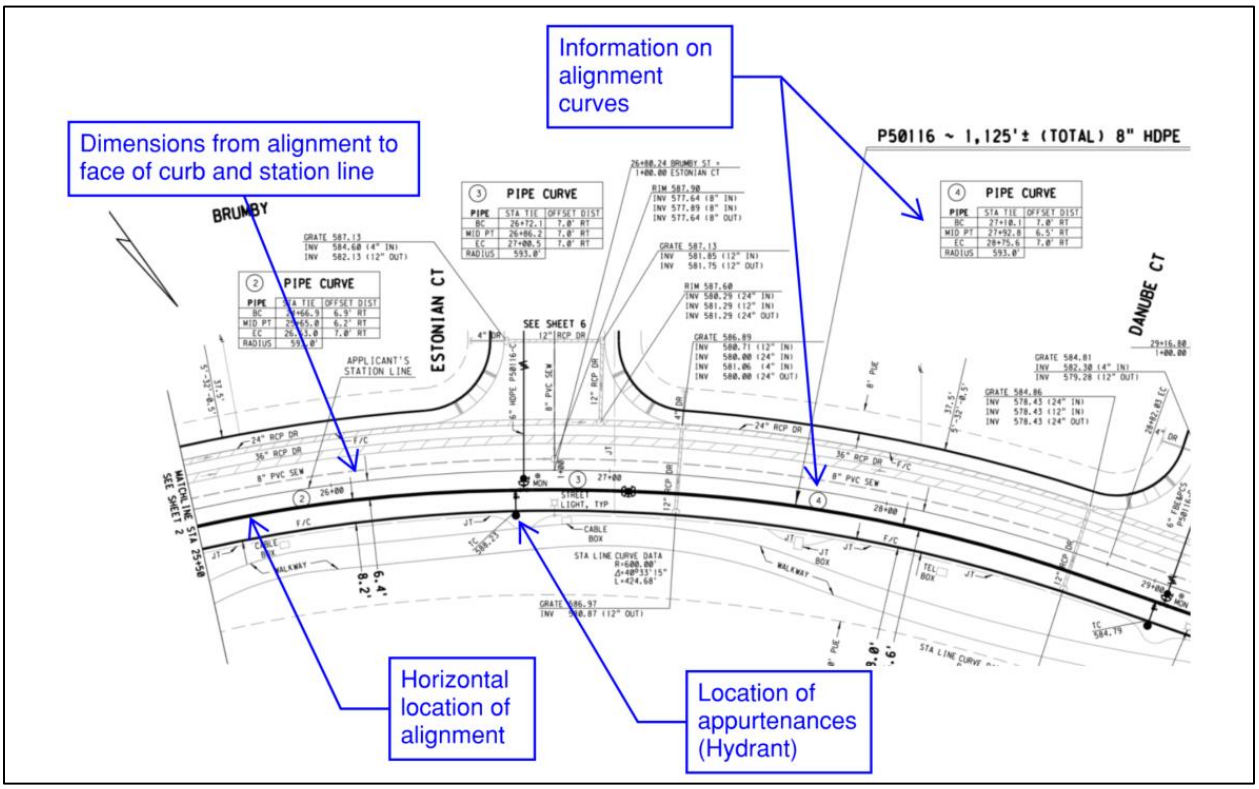


Figure 4.2.22 Proposed HDPE alignment

When setting up plan sheets, there may be perpendicular streets along the alignment or intersections with proposed pipelines. In situations where the perpendicular pipe will carry onto another sheet, the station notes and design information for that pipe should be included on a separate sheet to keep it all together. In this case, the current plan view should show the perpendicular pipe as thin and move all of the associated station notes to another sheet. The proposed pipe of focus with station notes on the sheet should be bold with the perpendicular pipe thin with a reference to the sheet it's included on. The Figures below provides examples of this situation.

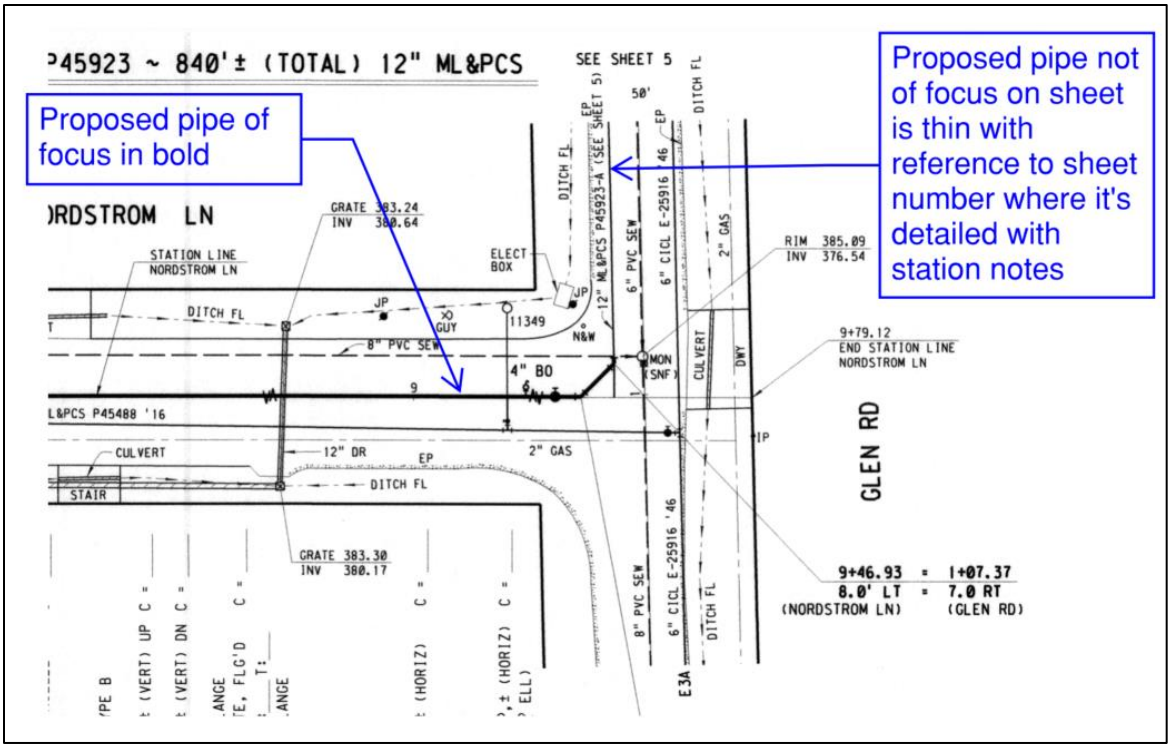


Figure 4.2.23 Proposed alignment with perpendicular main on separate sheet

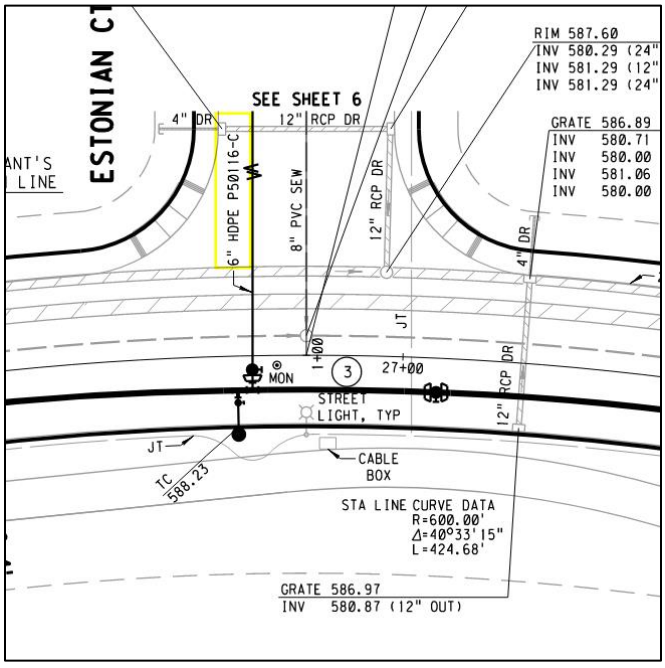


Figure 4.2.23A Proposed alignment with perpendicular main on separate sheet

Proposed Pipe Dimensioning

The proposed pipeline alignment should include reference dimensions from the station line, RW lines, and existing features such as the face of curb. These dimensions allow for the pipeline design to be located in the field.

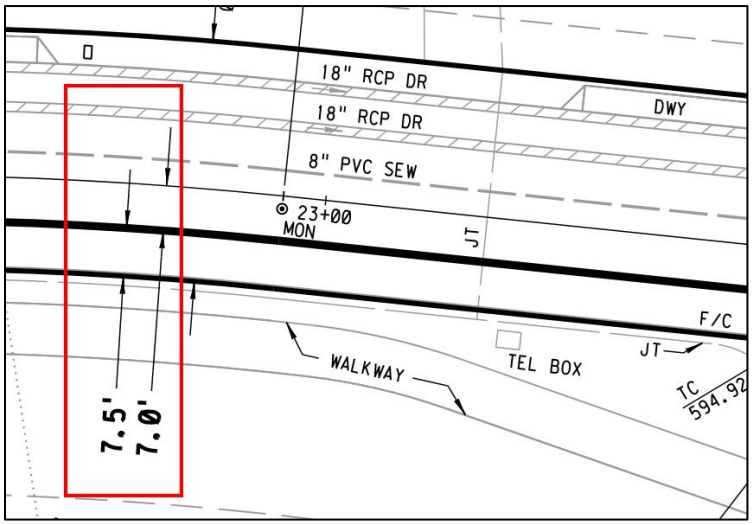


Figure 4.2.24 Proposed alignment dimensioning from RW and Face of Curb

Point of Intersection (PI) Callouts

Horizontal changes in alignment direction are called points of intersection (PI) and are labeled with the station, distance from the station line, and relative direction from the station line - either left (LT) or right (RT). These callouts help to define the horizontal location of the proposed pipeline alignment. These callouts are generally included at fittings (45, 22.5, or 11.25 degree elbows) or trimmed elbows for steel.

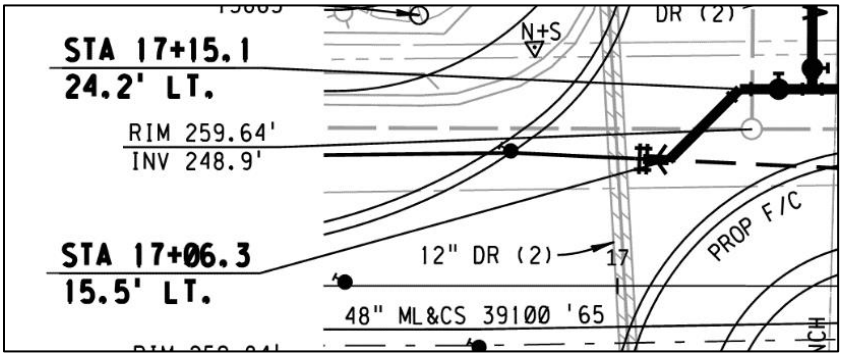


Figure 4.2.25 Station Offset Callout

Horizontal Curve Data

Horizontal alignment curves can be accomplished with HDPE pipe (which has fused joints). Horizontal curves on drawings should provide information including the curve radius, deflection used for any joints, and arc length. Figure 23 provides an example HDPE alignment with a pipe curve table.

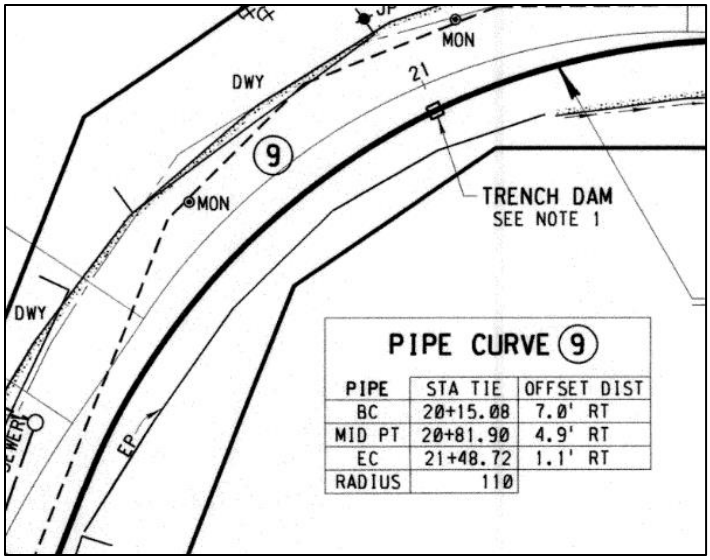


Figure 4.2.26 Pipe Curve Table for HDPE Pipe

Pipe Call Outs

Pipe call outs for the proposed pipelines should be included on all plan sheets. The pipe callout identifies the proposed pipeline and includes the pipe extension number (PXXXXX), length, diameter and material. When pipeline alignments extend more than one sheet, the total length is shown with "(Total)" next to it. If a P-number includes a small segment of different pipe material (no greater than 50 feet), the smaller pipe is called out below the main pipe callout as shown in the Figure below. The smaller pipe diameter, footage, and material should only be listed under the pipe callout on the sheet it is presented on.

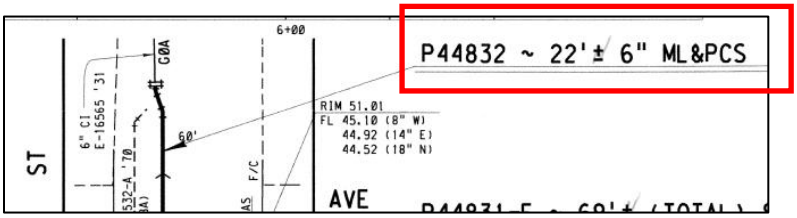


Figure 4.2.27 Example Pipe Call out

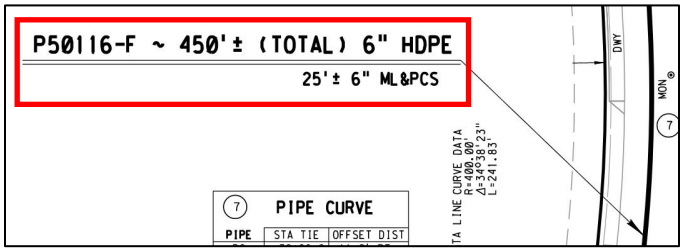


Figure 4.2.28 Example Pipe Callout with additional Pipe Material below

Pipeline Connections

Side connections along the proposed pipeline should be labeled as “CONN” if the length of new pipe connection to the existing pipe is less than 75 feet or 10% of the main pipe extension it is connecting to. If the side connection pipe is greater than this, it should receive a pipeline extension number with its own alpha. Connections should be called out separately from the main pipe callout discussed in the section above. The footage of the connection should be added to the footage of the main pipe in the pipe table under the pipes extension number.

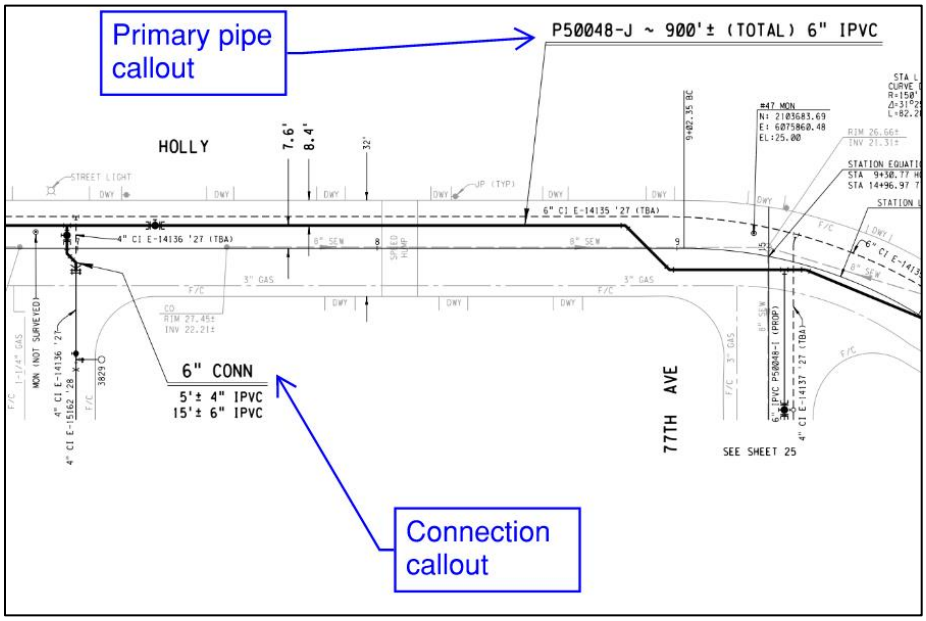


Figure 4.2.28A Connection Callout

Station Notes

Station notes provide details of the proposed alignment with regards to fittings, appurtenances, utility crossings, valves, as well as a location for the construction inspector or recorder to document where along the station line the installation occurred and at what depth. Station notes generally appear along the lower margin of the drawing, at a 90-degree angle to the sheet. When possible, each note should align, approximately, with the pipe fitting or appurtenance it describes. Station Notes templates are included in the W drawing template for AutoCAD Civil 3D.

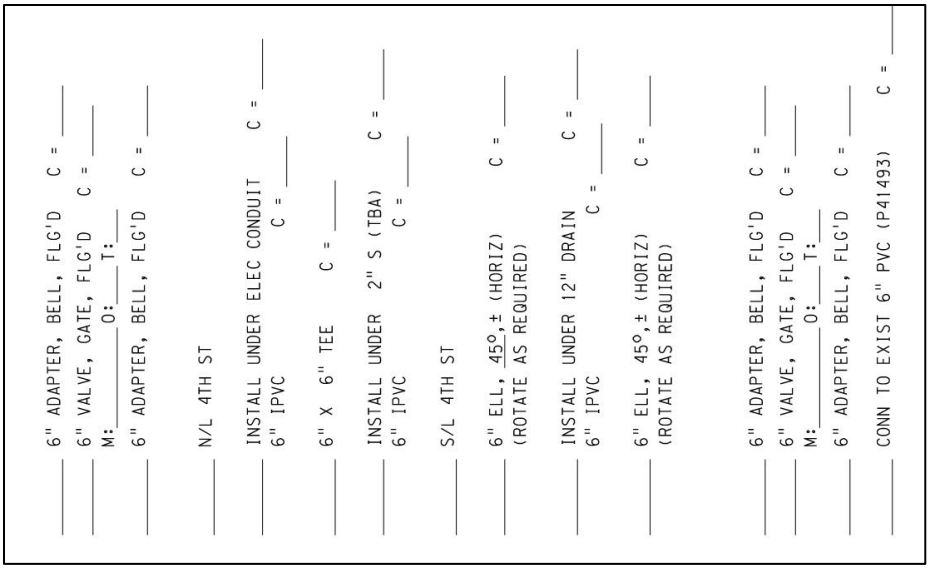


Figure 4.2.29 Station Notes on Drawing

Pipeline Appurtenances

The primary appurtenances shown on the plan view can include in-line isolation valves (butterfly and gate valves), blowoffs, air valves, test stations (for galvanic anodes and insulating joints), and fire hydrants. These appurtenances are shown and labeled on the plan and profile view and also called out in the station notes. Below is a description of the various pipeline appurtenances and some of the requirements associated with them.

Isolation Valves

Placement of isolation valves on the proposed alignment should follow the requirements of ESP 512.8 – Water Main Valves and Appurtenances. Below are a few key requirements from ESP 512.8:

- Valve spacing on pipelines less than 12-inches should be no greater than 600 feet.
- Valve spacing for pipelines 12-inches and greater should be no greater than 1,000 feet.
- Valves 12 inches and larger shall be butterfly valves except when used for making a wet tap or as a feed valve for a new water main installation. Use gate valves for wet taps.
- Avoid placing valves in bike lanes and crosswalks
- On water mains 8 inches and smaller, valves shall be the same size as the water main. On water mains 12 inches and larger, valves shall normally be the same size as the water main, but smaller sizes may be used when the water main is reduced for incorporation of smaller in-line flow meters or control valves.

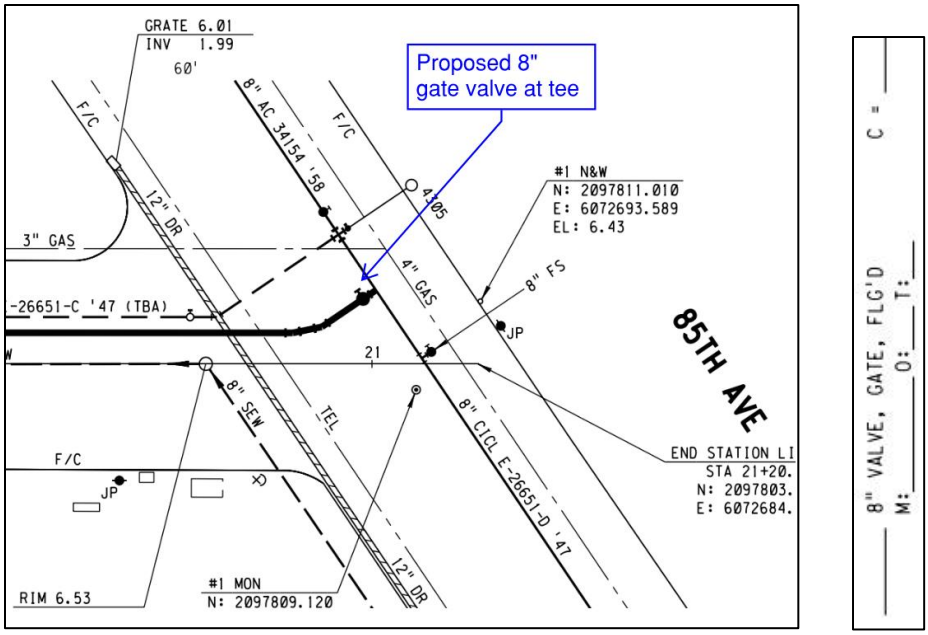


Figure 4.2.30 Valve on plan view and Station Note

Fire Hydrants

Pipeline projects may include the installation, modification, or removal of District owned fire hydrants. Modifications can include adjustments (setback/set forward or vertical adjustment), relocations (hydrant moved more than 5 feet from original location), reconnections (existing hydrant and lateral connection to new water main), and renewals (new hydrant and lateral installed within 5 feet of existing hydrant as part of an infrastructure renewal project). Any hydrant that is moved more than 5 feet horizontally from its original location will receive a new hydrant number. **Procedure 712** provides additional requirements for fire hydrants. Below are examples of how hydrants should be shown on coversheets and plan sheets depending on what action is required.

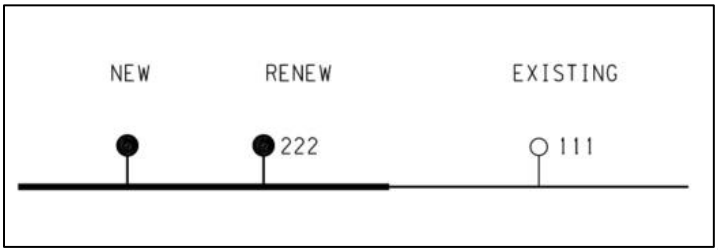


Figure 4.2.31 Hydrant Examples for Cover Sheets

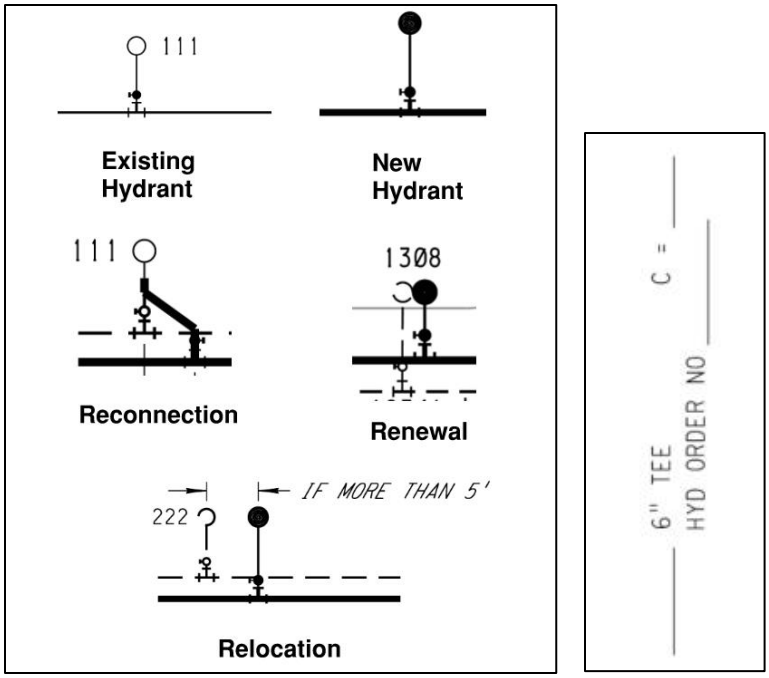


Figure 4.2.32 Hydrants on Plan Sheets and Station Note Example

Corrosion Control Test Stations

Corrosion control test stations can include galvanic anode test stations, insulating joint test stations, and standalone test stations. The corrosion control section (Org 533) is responsible for determining when and where corrosion control test stations should be included on pipeline designs. Below is a description of the types of test stations along with examples of how they are shown on the plan view of the alignment.

Galvanic Anode Test Stations (GA/TS) are typically installed on steel pipelines (mortar lined and plastic coated pipes) and consist of pair of wires attached to the steel pipeline, a single 32-pound anode, and a test station as shown on Standard Drawing 286-EA. Figure 4.2.33 below shows an example of how a GA/TS in shown on a pipeline design drawing.

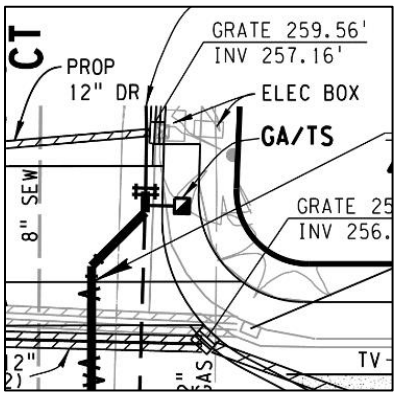


Figure 4.2.33 GA/TS on Pipeline

Insulating Joint Test Stations (IJ/TS) are generally installed on steel pipe where an insulating joint is required between two dissimilar metals. The most common location is between mortar lined and plastic coated steel (ML&PCS) and mortar lined and coated steel (ML&CS). Standard Drawing 285-EA provides the requirements for an IJ/TS installation. Figure 4.2.34 below provides an example of an IJ/TS on a project plan view.

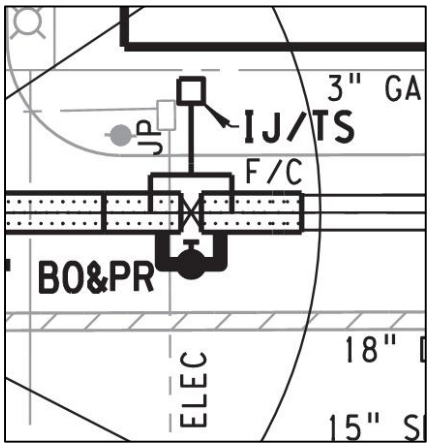


Figure 4.2.34 IJ/TS on Large Diameter Pipeline

Stand Alone Test Stations (TS) are generally installed on mortar lined and coated pipe where future measurements for current and potential may be beneficial for monitoring. Standalone test stations are typically installed on large diameter pipelines. Figure 4.2.35 provides an example of a test station on a large diameter pipeline.

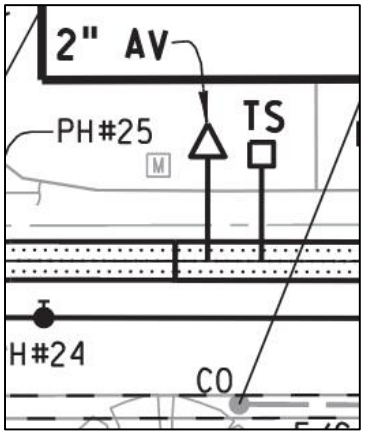


Figure 4.2.35 Test Station on large diameter pipeline

Air / Vacuum Relief Valves (AVs)

AVs are typically located at the highpoint of pipeline alignments to allow entrained air to escape. AVs also allow for de-watering of pipelines by allowing air to enter the pipeline and avoiding a vacuum scenario. See ESP 512.8 and **AWWA Manual M51** for additional guidelines on selecting AVs for pipeline al

ignments. Figure 4.2.35 above provides an example of a 2” AV on a large diameter pipeline.

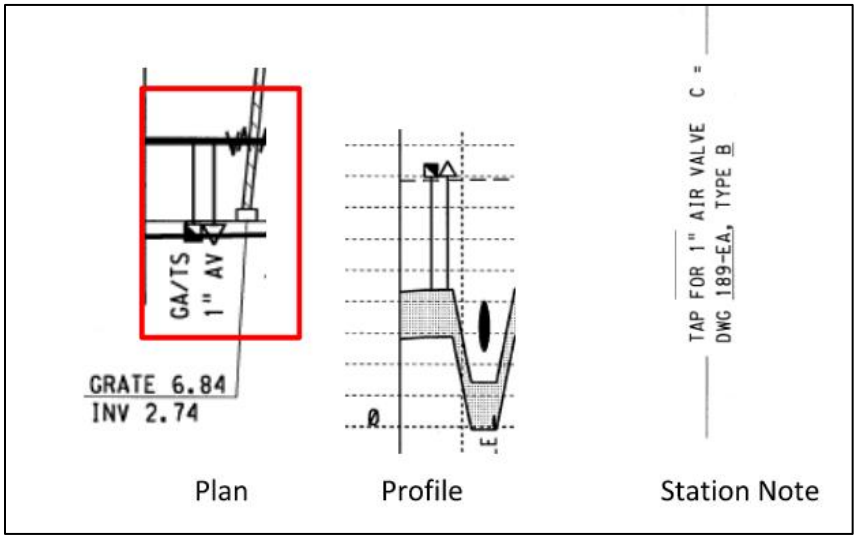


Figure 4.2.36 1-inch AV on 12-inch pipeline

Blowoffs and Blowoff Pumping Tees

Blowoffs typically located at the low points of alignments and dead-ends to allow for dewatering or flushing the pipeline.

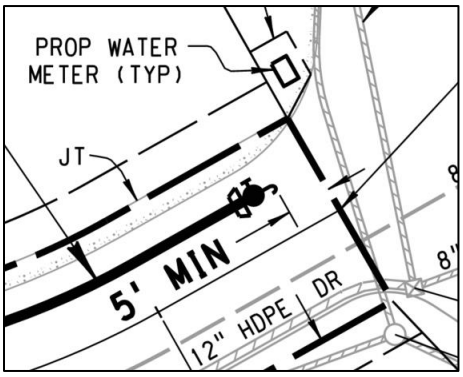


Figure 4.2.37 4-inch blowff at dead-end

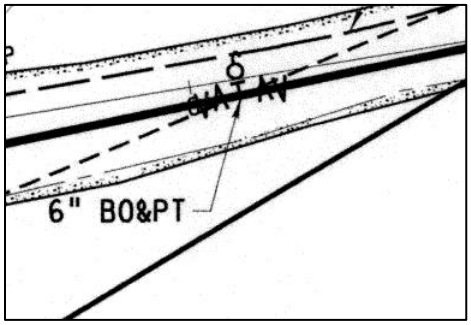


Figure 4.2.38 6-inch blowoff pumping tee on 12-inch main low point (offset return)

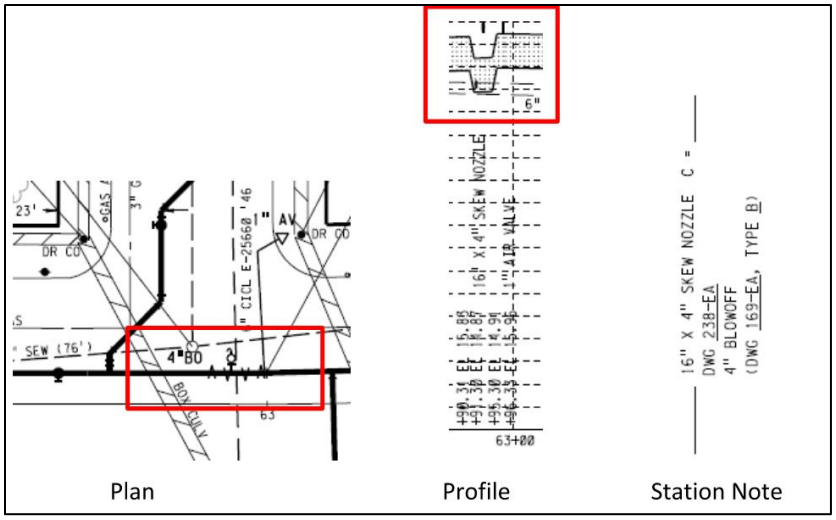


Figure 4.2.39 6-inch blowoff pumping tee on 12-inch main low point (offset return)

Potholing Information

Potholes are utilized to expose underground utilities to determine the horizontal and vertical location of utilities. Pothole (PH) information and locations are shown on drawings to aid design and construction work. This information includes diameter verification, depth of cover, location, soil type, and thickness of AC. In addition to improving the design, pothole data related to AC thickness can help with negotiating encroachment permit conditions with the cities. Figures 4.2.40 through 4.2.42 provide examples of a pothole table on a plan sheet along with pothole location on the plan view.

POTHOLE DATA TABLE *

PH #	UTILITY	PIPE DIAMETER	MATERIAL	EXIST GROUND EL	TOP OF UTILITY EL	DEPTH TO TOP OF UTILITY
1	WATER	12"	AC	8.62	4.54	49"
2	ELEC	3 - 4"	PVC	8.38	3.71	56"
3	TELECOMM	N/A	SLURRY ENCASEMENT	8.23	7.56	8"
4	SEWER	12"	PLASTIC	8.47	1.80	80"
5	GAS	2"	STEEL	8.72	5.80	35"
6	SD	24"	CONC	8.81	1.98	82"
7	SD	12"	N/A	8.94	N/A	DRY HOLE

* POTHOLE DATA PROVIDED BY EXARO

Figure 4.2.40 Example Pothole Table

POTHOLE DATA

POTHOLE#	UTILITY	DIAMETER/MATERIAL	SOIL	PAVING	THICKNESS	DEPTH	NOTES
2	WATER	NONE	CLAY	ASPHALT	10"	NONE	NONE
2A	WATER	NONE	SAND	ASPHALT	6"	NONE	SUB PAVEMENT 6" BASE ROCK
3	WATER	12" IRON	SAND	ASPHALT	12"	33"	SUB PAVEMENT 9" BASE ROCK
3A	WATER	NONE	SAND	ASPHALT	12"	NONE	SUB PAVEMENT 9" BASE ROCK

Figure 4.2.41 Example Pothole Table

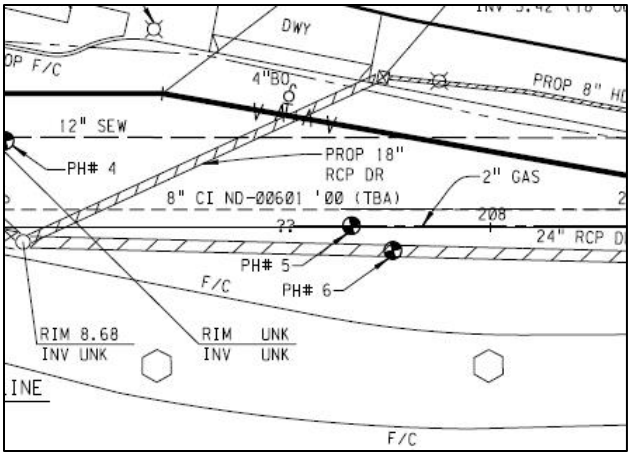


Figure 4.2.42 Potholes on Plan View (PH#5 and PH #6)

Right of Way (RW) Labels

Some projects involve pipelines in defined right-of-ways (RWs) with specific numbers and drawings. This is most common for applicant main extension projects where the proposed pipeline is within a new District RW that is part of a private development. When RWs are shown on drawings, they should be shown and labeled on drawings as shown in Figure 4.2.43 below. The call out includes the RW number and drawing number.

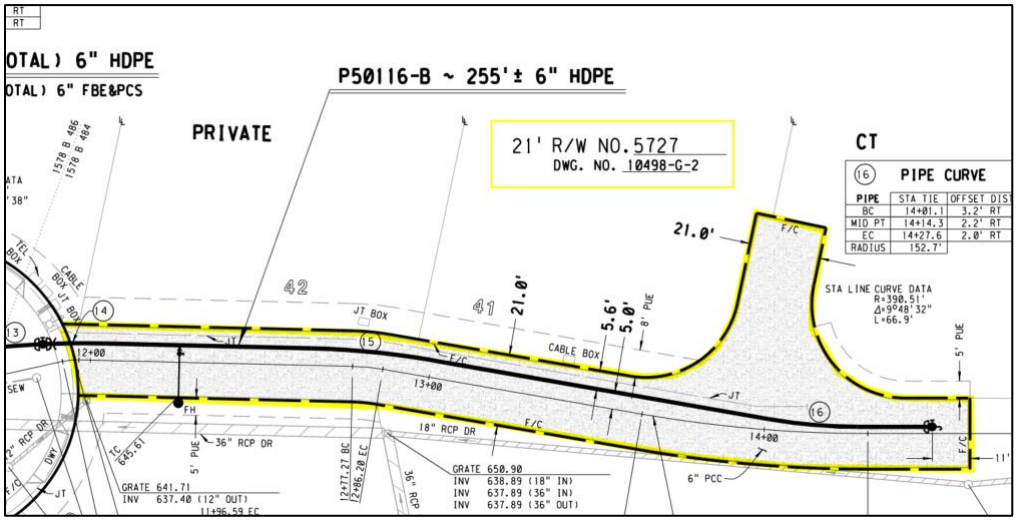


Figure 4.2.43 RW Label Example

Pressure Zone Information

The pressure zone designation should be included on the title block of every W drawing. The pressure zone(s) to be included are the zones that will be impacted by the proposed pipelines and/or appurtenances. When projects show pipelines within different pressure zones, pressure zone designations should be added on each pipe. Figure 4.2.44 through 4.2.46 show examples of how pressure zone

designations should be labeled on the title block, cover sheet alignment overview, and plan sheets.

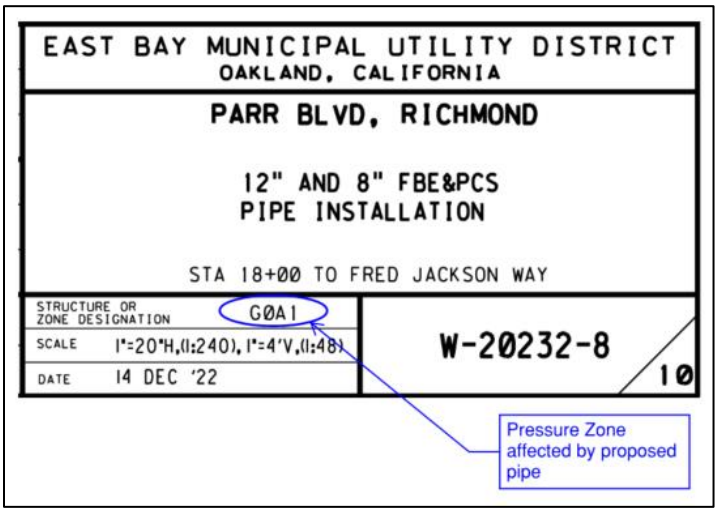


Figure 4.2.44 Pressure zone designation on title block

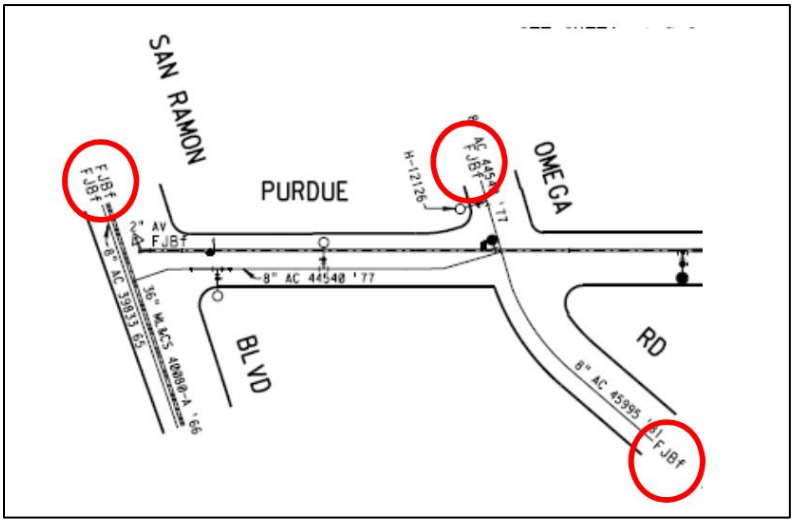


Figure 4.2.45 Pressure Zone Labels on Cover Sheet Alignment Overview

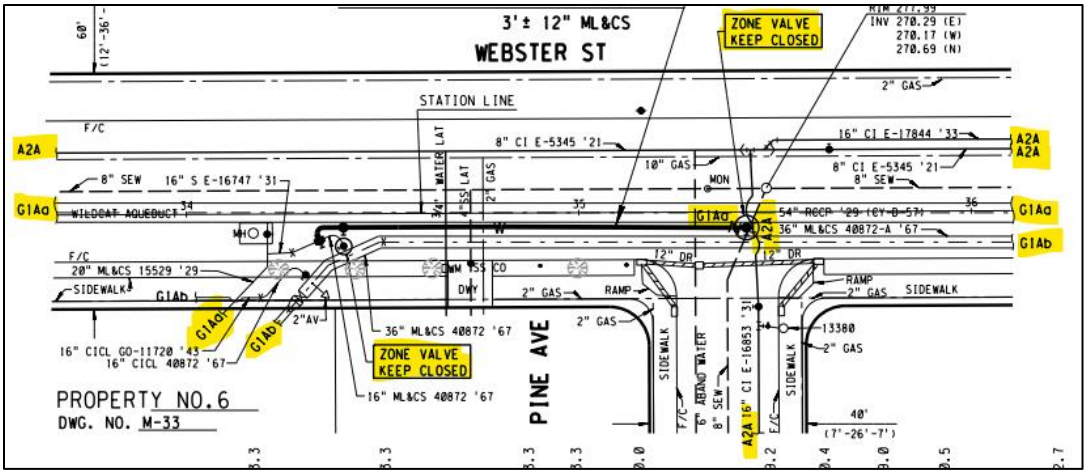


Figure 4.2.46 Pressure Zone Labels on Plan Sheets

4.2.3 W-Drawing Plan and Profile Sheets (20-inch & Smaller)

Projects with pipelines 12-inches in diameter and larger require both plan and profile on the drawings. Pipeline profiles help in determining hydraulic grade lines, locations of air valves, locations of blowoffs, and areas of steep alignment slopes. Some projects with pipelines smaller than 12-inches in diameter also require profiles at the discretion of the Engineer of Record. Below are examples of pipeline projects that may benefit from a pipeline profile along with an example plan and profile sheet:

- Project alignments with congested utilities and multiple crossings (i.e., intersection crossings)
- Projects that are being put out to bid for contract installation
- Special project conditions that warrant a profile at the discretion of the Engineer of Record

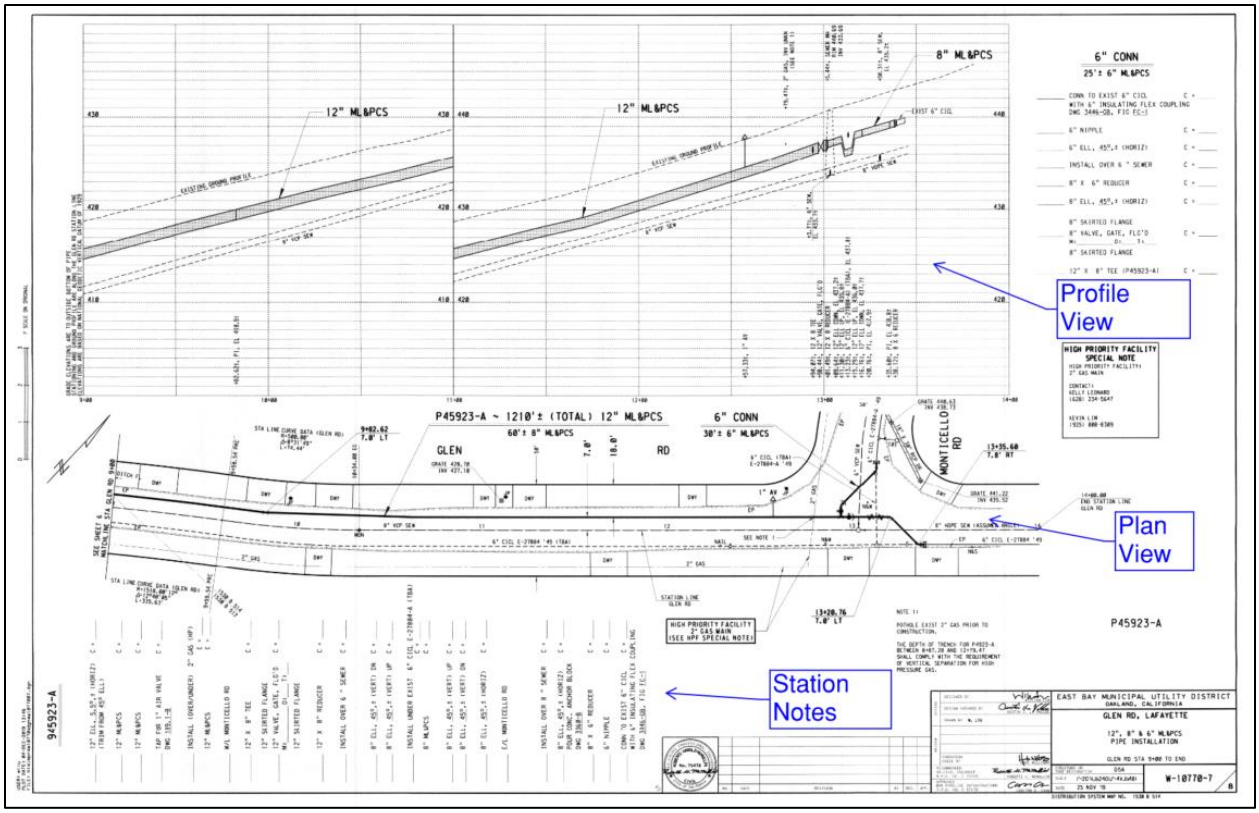


Figure 4.2.47 Example Plan and Profile Sheet

Profile View

Profiles are prepared on template grids within AutoCAD. The profiles are generally prepared at a 1" = 20' horizontal scale and 1" = 4' vertical scale. The profile view includes the vertical grade elevation (using National Geodedic Vertical Datum of 1929, NGVD29) on the Y axis and station line on the X axis. The proposed pipeline alignment is shown on the profile along with the existing grade profile and/or proposed grade depending on where the site is and what type of project it is. The existing grade shown is along the station line which is typically the center of road for most small diameter projects.

Existing information such as pipeline crossings are called out above the proposed pipeline with proposed information about the pipeline alignment being called out below the alignment profiled (PI, PVI, appurtenances, etc). The Figures below show an example of a profile view and some of the information that is included.

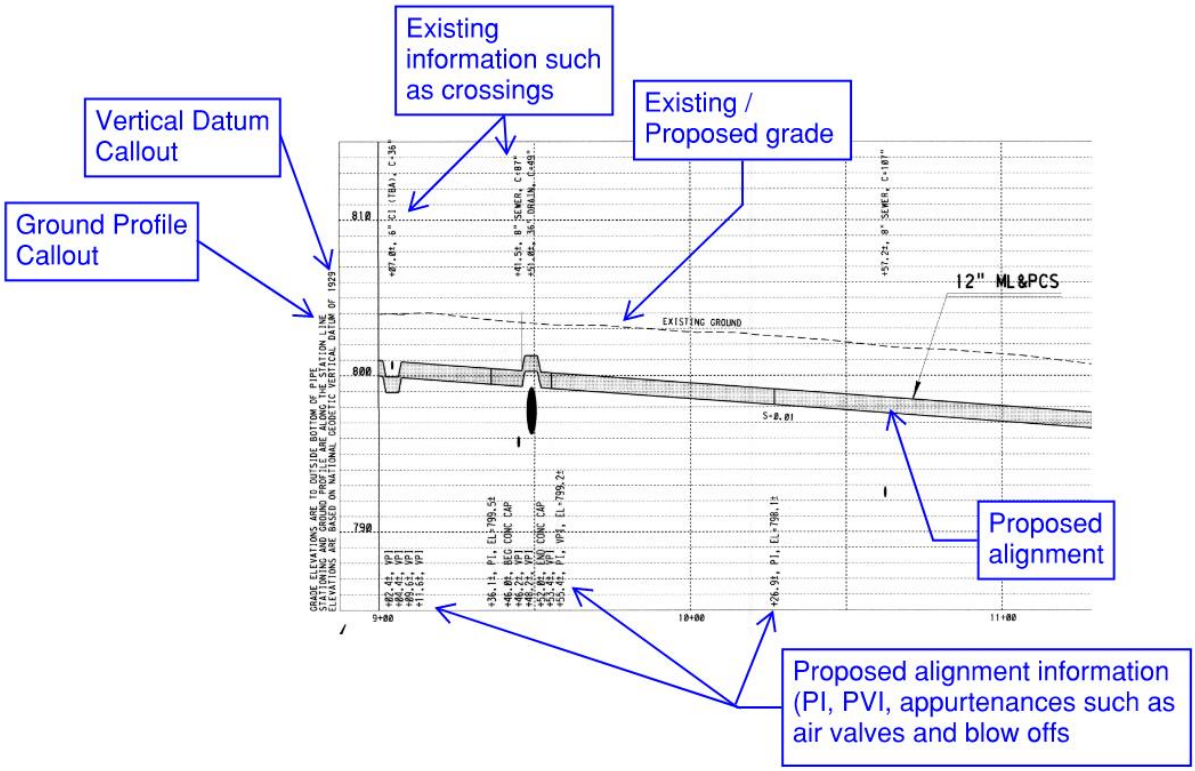


Figure 4.2.48 Profile View

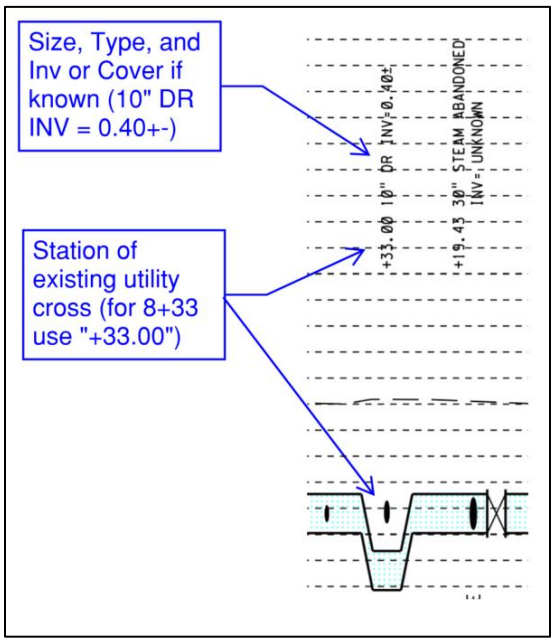


Figure 4.2.49 Existing information included on Profiles

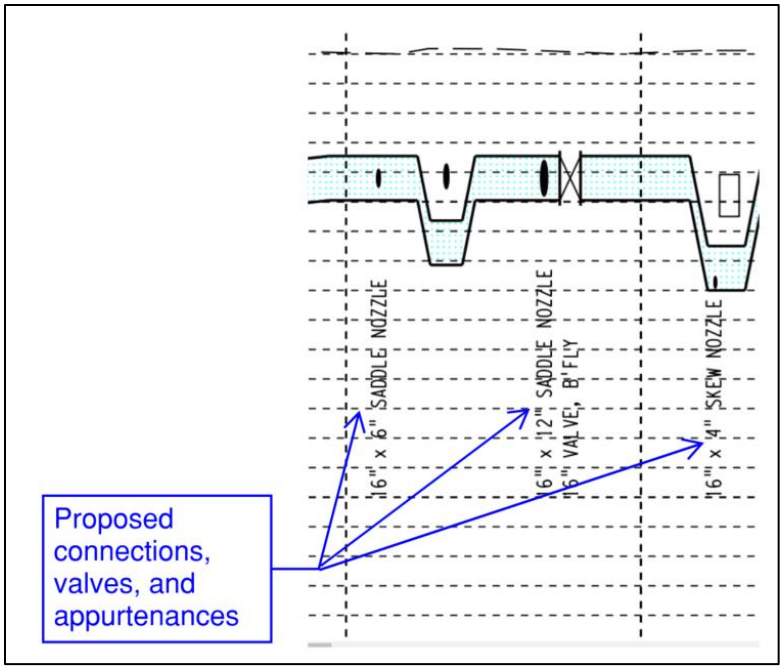


Figure 4.2.50 Proposed Information on Profiles

Profile Vertical Shifts

When an extensive vertical drop occurs in the profile view, a profile vertical shift match line may be required so it can fit into the profile view. The profile vertical shift match line should be placed at full station point (i.e. 7+00.00) and the elevations clearly indicated in each shift area.

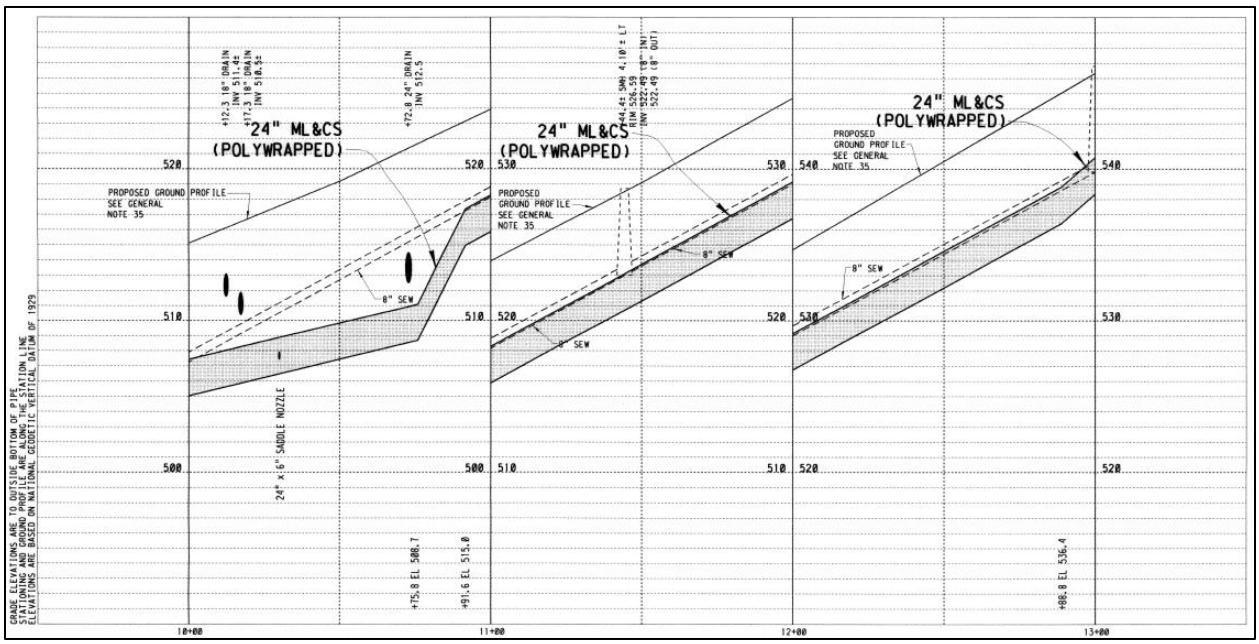


Figure 4.2.51 Vertical Profile Shift

Station Equation on Profiles

As discussed previously, Station equations are used when the station is not continuous throughout a project or when the station numbers of one system change to the station numbers of another system. Figure 4.2.52 and 4.2.53 provide examples of how station equations should be presented on profiles and plan views.

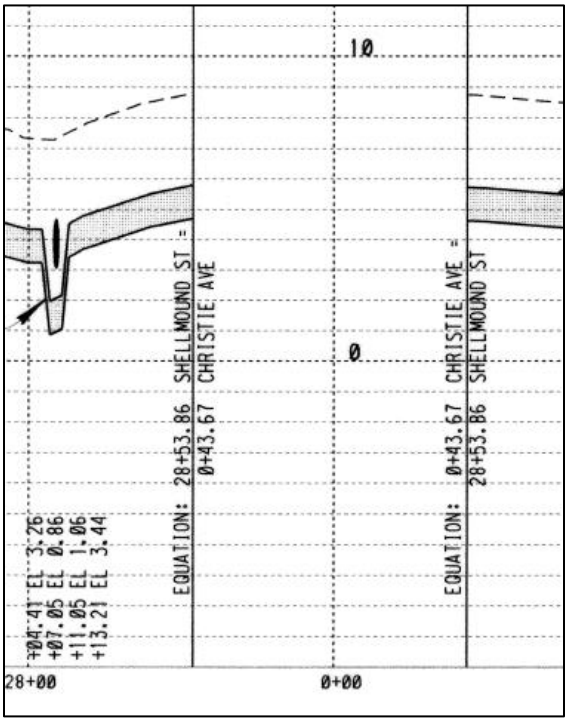


Figure 4.2.52 Station Equation on Profile

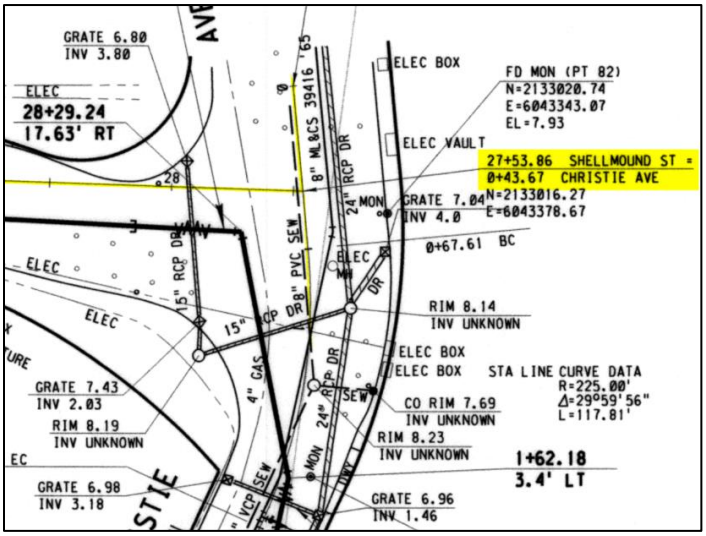


Figure 4.2.53 Station Equation on Plan View

4.3 W-Drawings for 24-Inch & Larger Pipelines

W-drawings for large diameter pipelines contain much of the same information that is included on W-drawings for small diameter pipelines. W-drawings for these large diameter pipelines projects are typically prepared as part of specification packages which are put out for competitive bid for third party installation. W-drawing sets for large diameter pipeline projects consist of the drawings listed in Table 4.3 below.

Table 4.3 – Large Diameter Pipeline Project Sheet Sets

DRAWING NO	TITLE	CONTENT
	Cover Sheet	Project name and Spec number
W-XXXXX-1	Location Map and Vicinity Map	Alignment overview, vicinity map, pipe table
W-XXXXX-2	List of Drawings, Pipe Index Map	List of all drawings
W-XXXXX-3	General Notes, Legend, & Abbreviations	
W-XXXXX-4	Survey Control & Alignment Tables	Survey control point table, control point map, pipeline station line table
W-XXXXX-5, -X	Design Drawings	Plan, Profile, Station Notes, and sheet specific notes, as needed. Station Line is the Pipe Centerline and the Profile is cut accordingly.
W-XXXXX-X	Non-Typical Details	The details are project specific. The detail drawing shows dimensions and fittings. For example, a complicated connection at an intersection.
W-XXXXX-X	Typical Pipeline (TP) Details	These TP-XXX details are used at multiple locations and require minor modifications from project to project and require review by the Engineer.

4.3.1 Cover Sheet of Large Diameter Project

The cover sheet includes the project name, specification number, and volume number of the drawing set. The template for this cover sheet is managed by the Engineering Specifications section and can be found in Microsoft Word format. The cover sheet for the Wildcat Improvements Berkeley project is shown below in Figure 4.3.1.

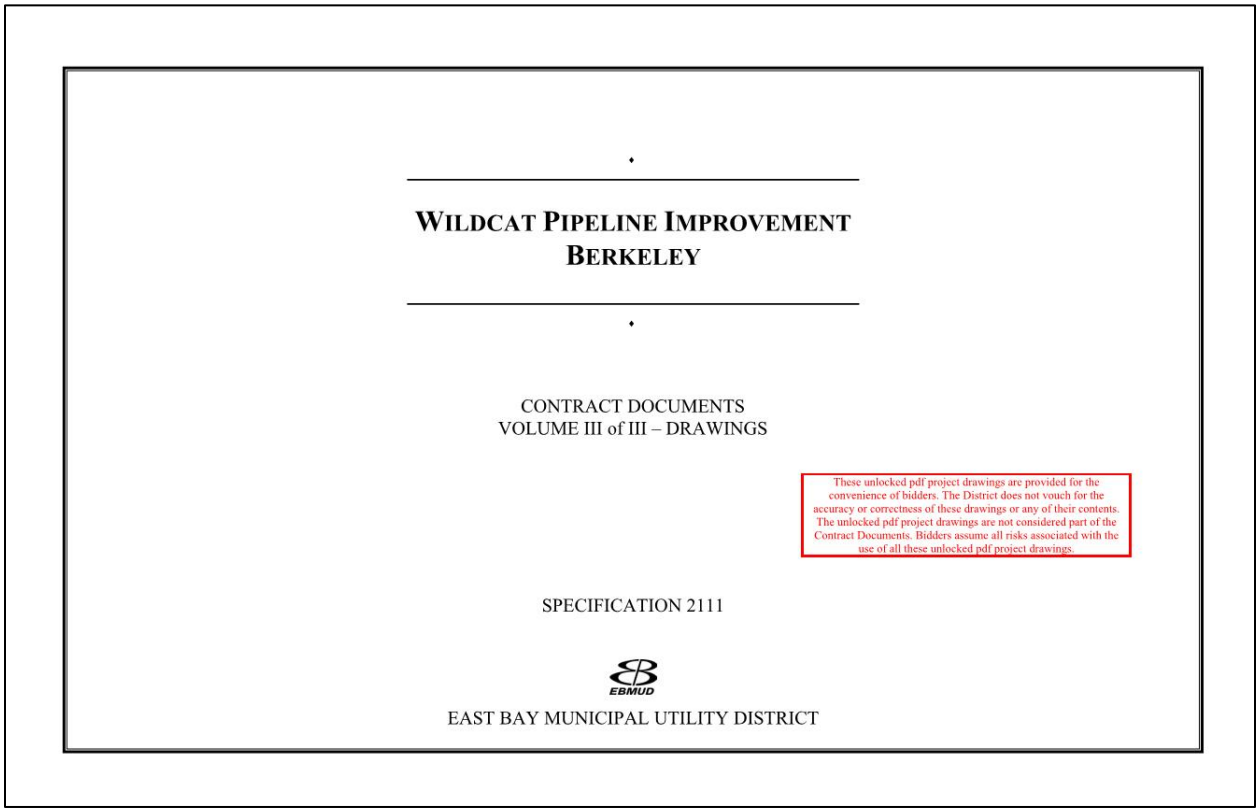


Figure 4.3.1 Cover Sheet for Spec 2111 – Wildcat Pipeline Berkeley Improvement Project

4.3.2 Location and Vicinity Map (Sheet 1)

The first sheet of a large diameter pipeline drawing set includes the location map, vicinity map, pipeline table, reference block, alignment overview, and pipeline extension numbers of the project. These items are also included on small diameter cover sheets. Descriptions of these items can be found in Section 4.0. Figure 4.3.2 below provides an example of the Location and Vicinity Map sheet for the Wildcat Improvements Berkeley project.

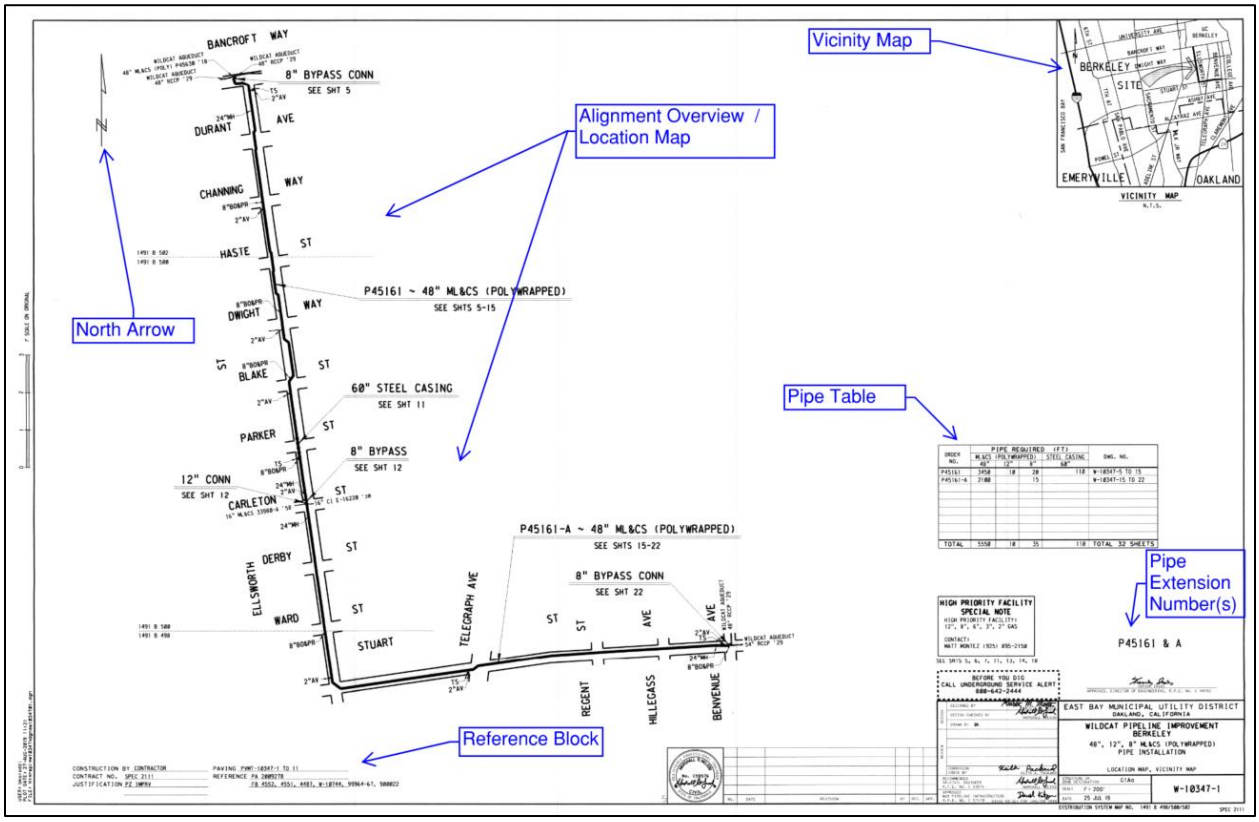


Figure 4.3.2 Sheet 1 - Location Map, Vicinity Map

4.3.3 List of Drawings and Sheet Index (Sheet 2)

The second sheet of a LDP project includes a list of all drawings included in the set (pipeline design drawings, traffic control drawings, standard drawings, reference drawings, etc.) as well as a sheet index map indicating what portion of the alignment are on what sheets. Figure 4.3.3 provides an example of sheet 2 for the Wildcat Improvements Berkeley Project.

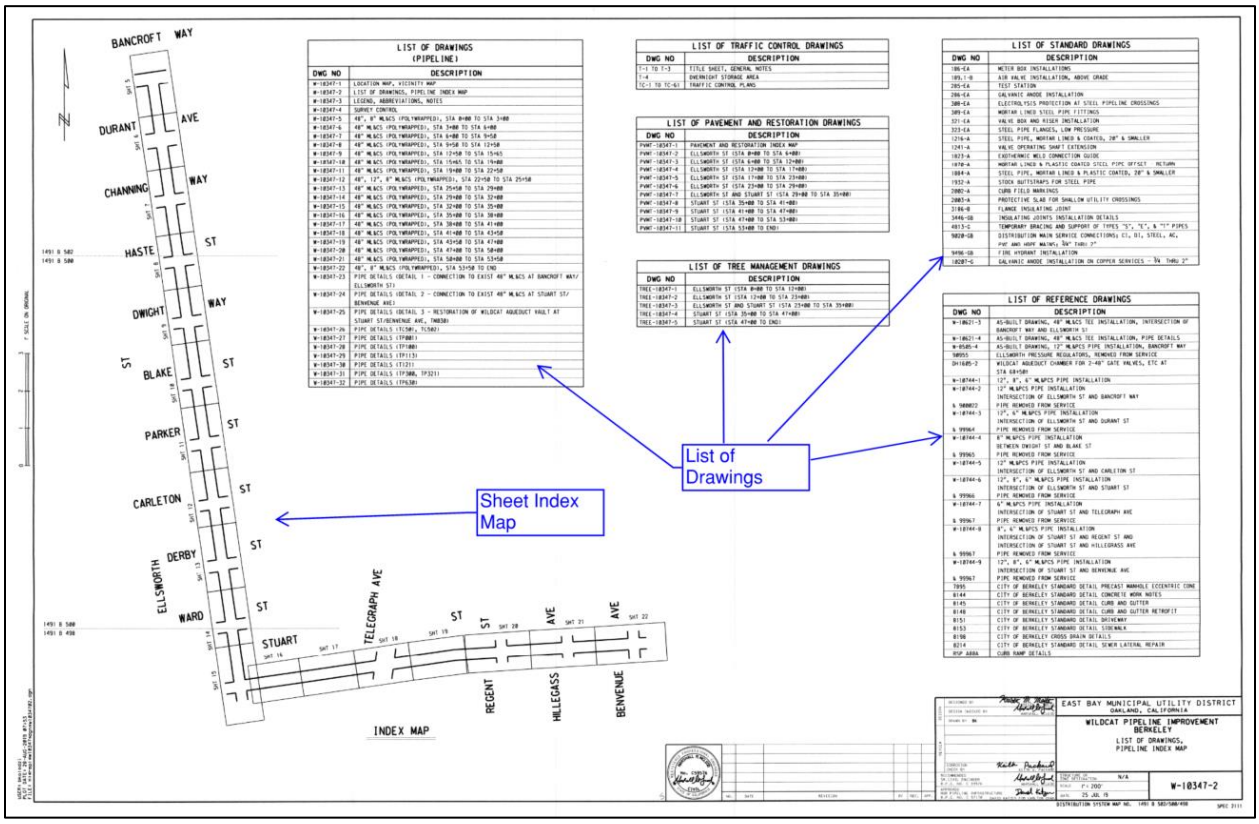


Figure 4.3.3 Sheet 2 - List of Drawings, Pipeline Index Map

4.3.4 Legend, Abbreviations, and Notes Sheet (Sheet 3)

The third sheet of a LDP project includes a legend for line-types and appurtenances along with a list of abbreviations and notes for the project. The notes include general notes, survey notes, existing condition notes, pipeline installation notes, material specific notes, and trench spoils handling notes. Figure 4.3.4 provides an example of sheet 3 for the Wildcat Improvements Berkeley Project.

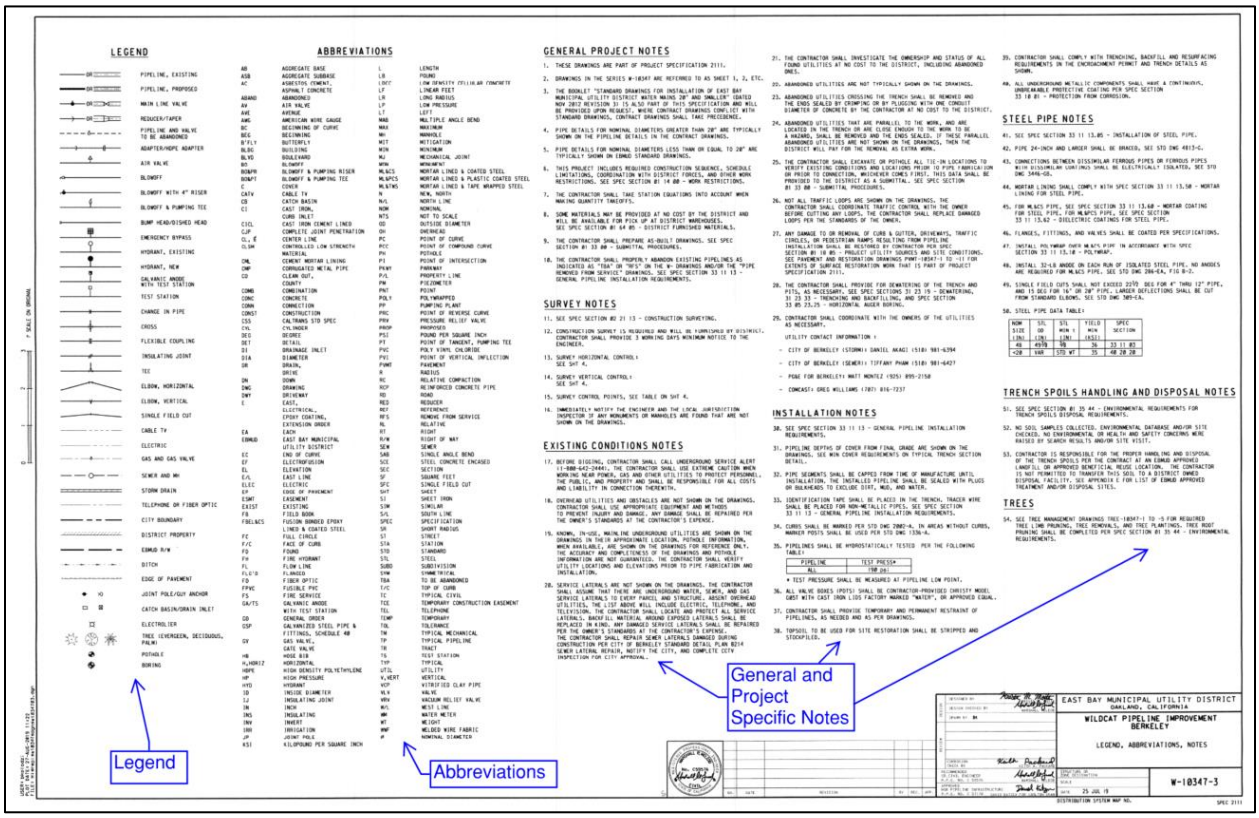


Figure 4.3.4 Sheet 3 - Legend, Abbreviations, Notes

4.3.5 Survey Control (Sheet 4)

The fourth sheet of a large diameter pipeline project contains the survey control point map for the project and table of the survey control points. Figure 4.3.5 provides an example of sheet 4 for the Wildcat Improvements Berkeley Project.

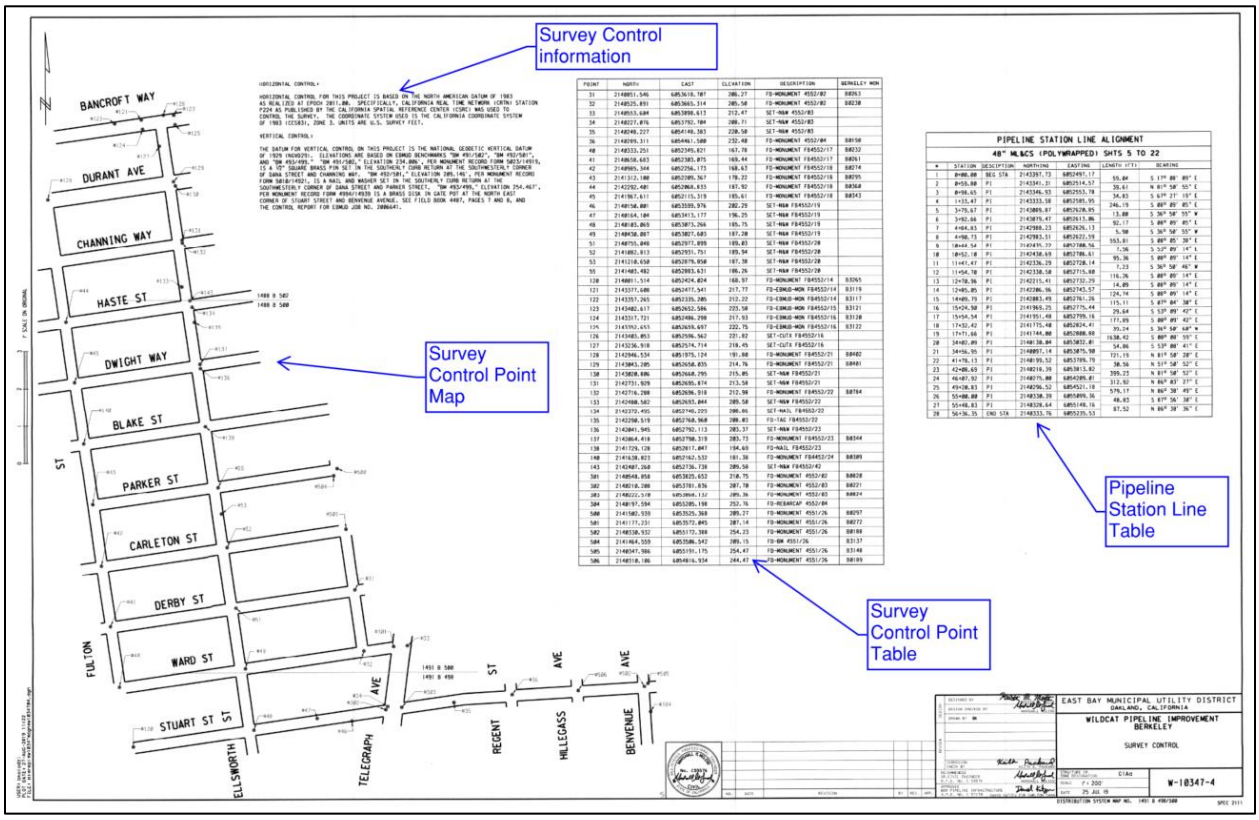


Figure 4.3.5 Sheet 4 - Survey Control

The survey control point table includes the point number, coordinates, elevation, description, and monument number. This information is provided by the District's survey department.

POINT	NORTH	EAST	ELEVATION	DESCRIPTION	BERKELEY MON
31	2140851.546	6053618.707	206.27	FD-MONUMENT 4552/02	B0263
32	2140525.891	6053665.314	205.50	FD-MONUMENT 4552/02	B0230
33	2140553.604	6053898.613	212.47	SET-N&W 4552/03	
34	2140227.076	6053792.704	208.71	SET-N&W 4552/03	
35	2140248.227	6054148.383	220.50	SET-N&W 4552/03	
36	2140289.311	6054461.500	232.40	FD-MONUMENT 4552/04	B0190
40	2140333.251	6052349.821	167.78	FD-MONUMENT FB4552/17	B0232
41	2140658.683	6052303.075	169.44	FD-MONUMENT FB4552/17	B0261

Figure 4.3.6 Sheet 4 - Survey Control Table

The pipeline station line alignment table lists all direction changes of the alignment and coordinates. These changes in direction generally list all of the points of intersection

with coordinates, the bearing of the station line, and the length of the line. Figure 4.3.7 provides an example of the pipeline station line alignment table for the Wildcat Berkeley Improvement Project.

PIPELINE STATION LINE ALIGNMENT

48" ML&CS (POLYWRAPPED) SHTS 5 TO 22

#	STATION	DESCIPTION	NORTHING	EASTING	LENGTH (FT)	BEARING
1	0+00.00	BEG STA	2143397.73	6052497.17	59.04	S 17° 08' 09" E
2	0+59.80	PI	2143341.31	6052514.57	39.61	N 81° 50' 55" E
3	0+98.65	PI	2143346.93	6052553.78	34.83	S 67° 27' 19" E
4	1+33.47	PI	2143333.58	6052585.95	246.19	S 08° 09' 05" E
5	3+79.67	PI	2143089.87	6052620.85	13.00	S 36° 50' 55" W
6	3+92.66	PI	2143079.47	6052613.06	92.17	S 08° 09' 05" E
7	4+84.83	PI	2142988.23	6052626.13	5.90	S 36° 50' 55" W
8	4+90.73	PI	2142983.51	6052622.59	553.81	S 08° 05' 38" E
9	10+44.54	PI	2142435.22	6052700.56		

Figure 4.3.7 Sheet 4 – Station Line Alignment Table

4.3.6 W-Drawing Plan and Profile Sheets

W-drawings for Large Diameter pipeline always include an alignment plan, profile, and station notes. Specific sheets may also include a potholing table and sheet specific notes if applicable. Figure 4.3.8 below provides an example W drawing for the Wildcat Pipeline Improvements – El Cerrito Project.

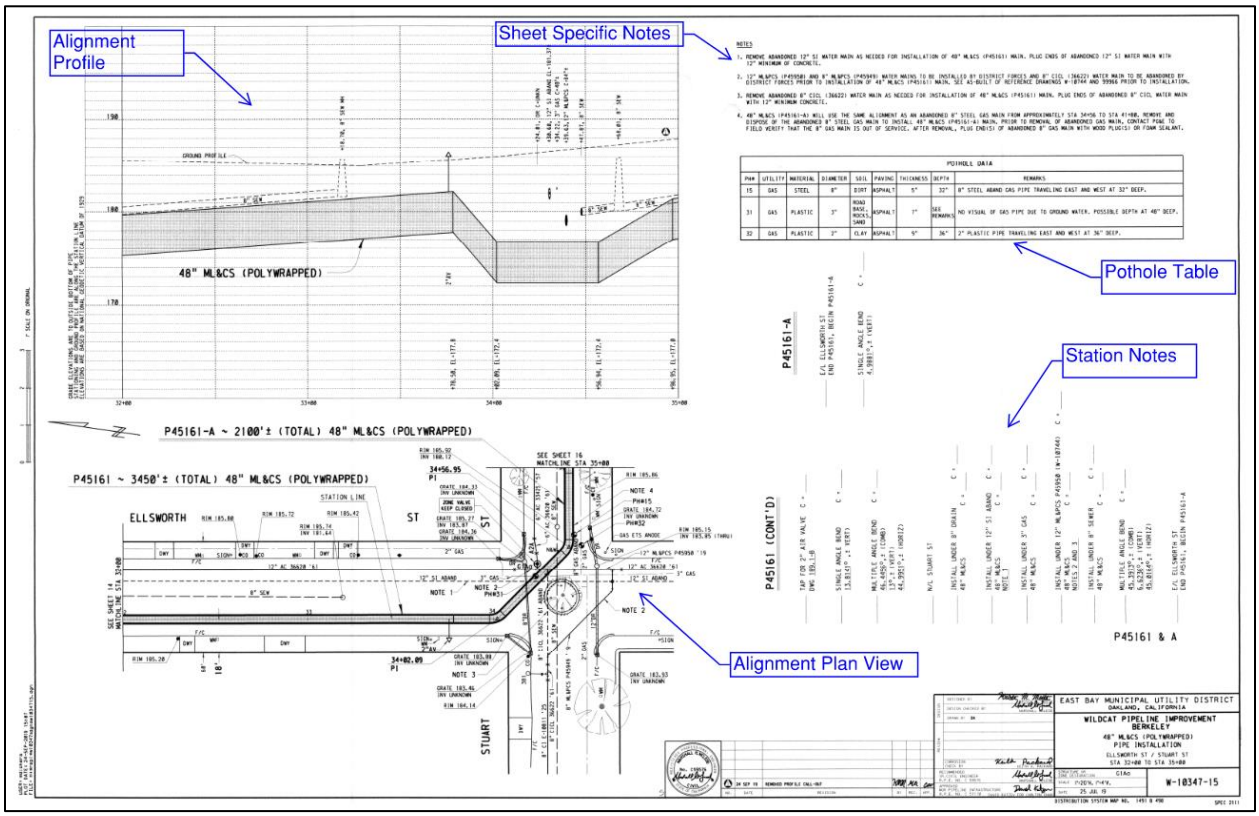


Figure 4.3.8 Plan and Profile Sheet

Plan View of Proposed Alignment

The alignment plan view for large diameter projects is very similar to the plan view for small diameter pipeline projects. The plan view is typically shown at 1" = 20' and includes various information as described below and shown in Figure 4.3.9.

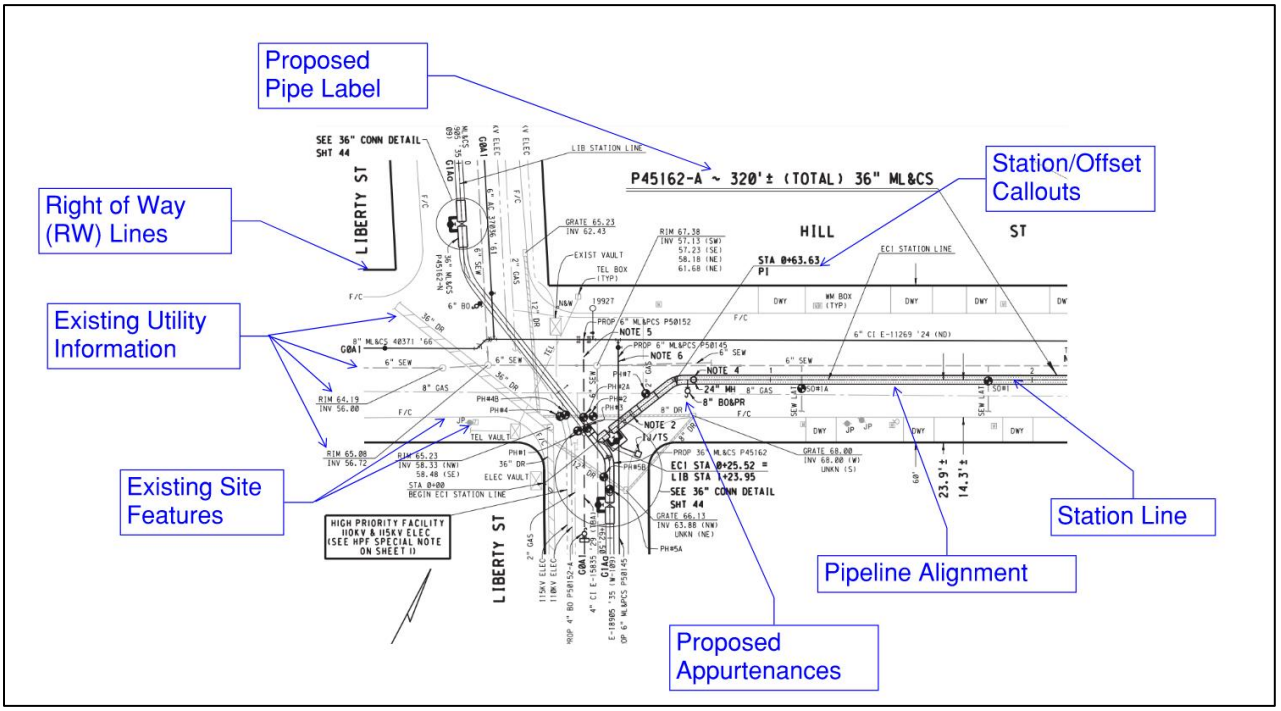


Figure 4.3.9 Sheet 4 – Alignment Plan View

Plan View Existing Information

Existing plan view information for large diameter drawings is similar to what is included for small diameter projects. Existing plan information includes topographic features including face of curb, vaults, utility poles, driveways, etc. Existing underground utilities including sanitary sewer, storm drain, gas, electric, communication lines (cable TV, telephone, fiberoptic, etc.). Rim and invert elevations are called out for manholes when known. Right of Way (RW) lines for public streets – District survey provides a full boundary survey for large diameter pipeline projects so the RW lines can be accurately shown.

Proposed Design Alignment

Similar to small diameter pipeline alignments, the proposed design alignment for large diameter pipelines shows the horizontal location of the proposed pipeline along with the pipeline diameter(s), fittings, changes in direction, and appurtenances including isolation valves, air valves, blowoffs, test stations, and hydrants. One primary difference between large and small diameter W-drawings, is the way the large diameter pipeline is displayed. Large diameter

pipelines are presented as a dual line with a hatch in the center as opposed to a bold single line for small diameter pipelines.

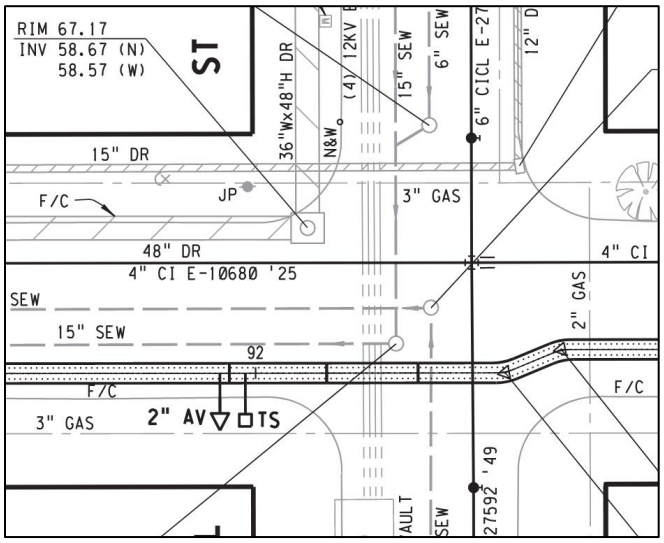


Figure 4.3.10 Large Diameter Alignment Plan View

Proposed Pipe Dimensioning

The proposed pipeline alignment should include reference dimensions from the station line, RW lines, and existing features such as the face of curb. These dimensions allow for the pipeline design to be located in the field.

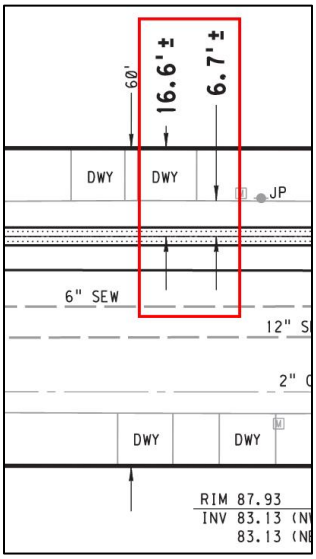


Figure 4.68 Pipe Dimensioning

Point of Intersection (PI) Callouts

Angle points or points of intersection (PI) along the alignment are labeled with the station only as the station line is along the pipe alignment with no offset. Details of this PI information is included on the survey control sheet.

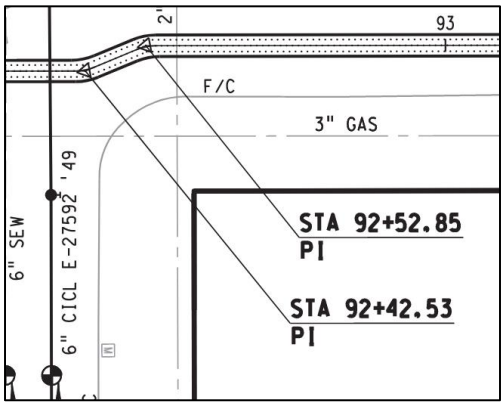


Figure 4.3.11 Point of Intersection (PI) Callouts

Proposed Appurtenances

The primary appurtenances shown on the plan view include in-line isolation valves, blow offs, air valves, test stations (for galvanic anodes and insulating joints), and fire hydrants. These appurtenances are labeled on the plan view and also called out in the station notes. See Section 4.2.2 for additional information on appurtenances.

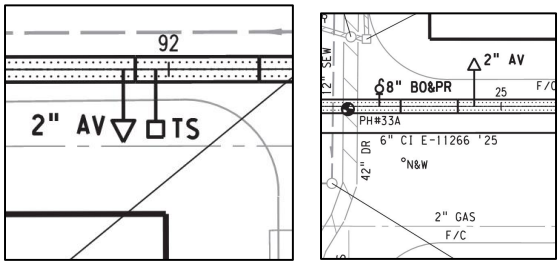


Figure 4.3.12 Proposed Appurtenances

Pipe Callouts

Pipe callouts should be included on all plan sheets. The pipe callout identifies the proposed pipeline and includes the pipe extension number (PXXXXX), length, diameter and material. When pipeline plan extends more than one sheet, the total length is shown with “(Total)” next to it.

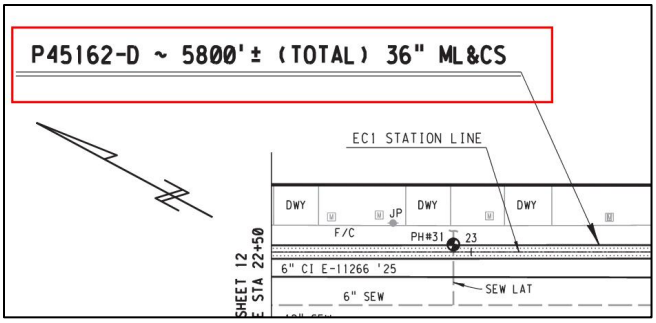


Figure 4.3.13 Pipe Callouts

Station Line

For LDP projects (24-inch diameter and larger), the Station Line is always along the pipe Centerline. This provides an easier analysis of clearances at utility crossings for profiles cut at the pipe Centerline. The Station line on the W drawings should always read from left to right or up to down, regardless of the orientation of the North Arrow.

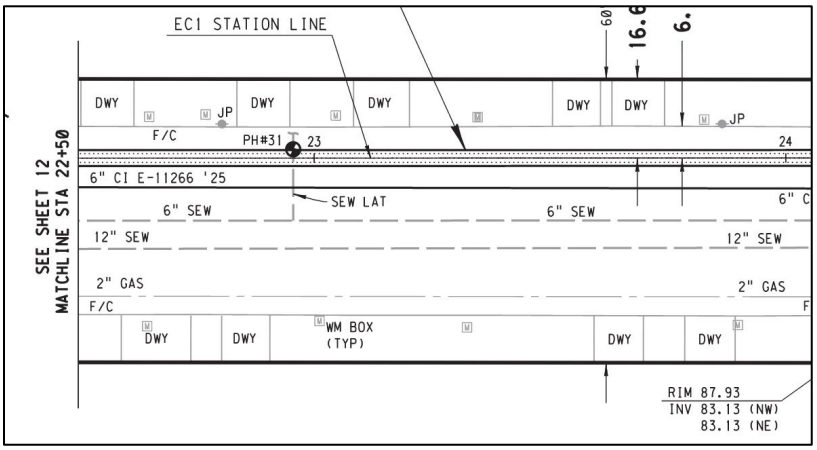


Figure 4.3.14 Station Line along pipe alignment

Alignment Profile View

The alignment profile is prepared on a grid template with a 1” = 4’ vertical scale and included on all large diameter pipeline projects. The profile helps to identify utility crossing conflicts and shows high and low points of the alignment where air valves and blowoffs should be considered. Figure 4.3.15 provides a screenshot of an alignment profile and some of the typical components that are included.

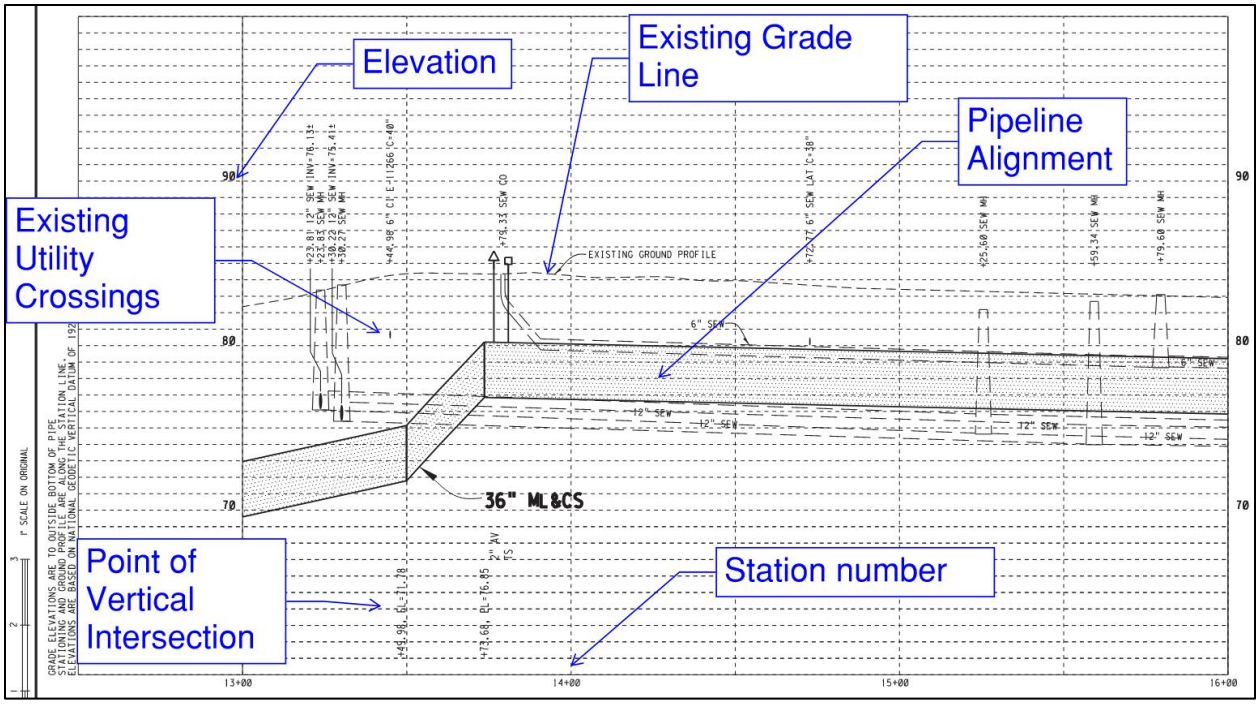


Figure 4.3.15 Alignment Profile View

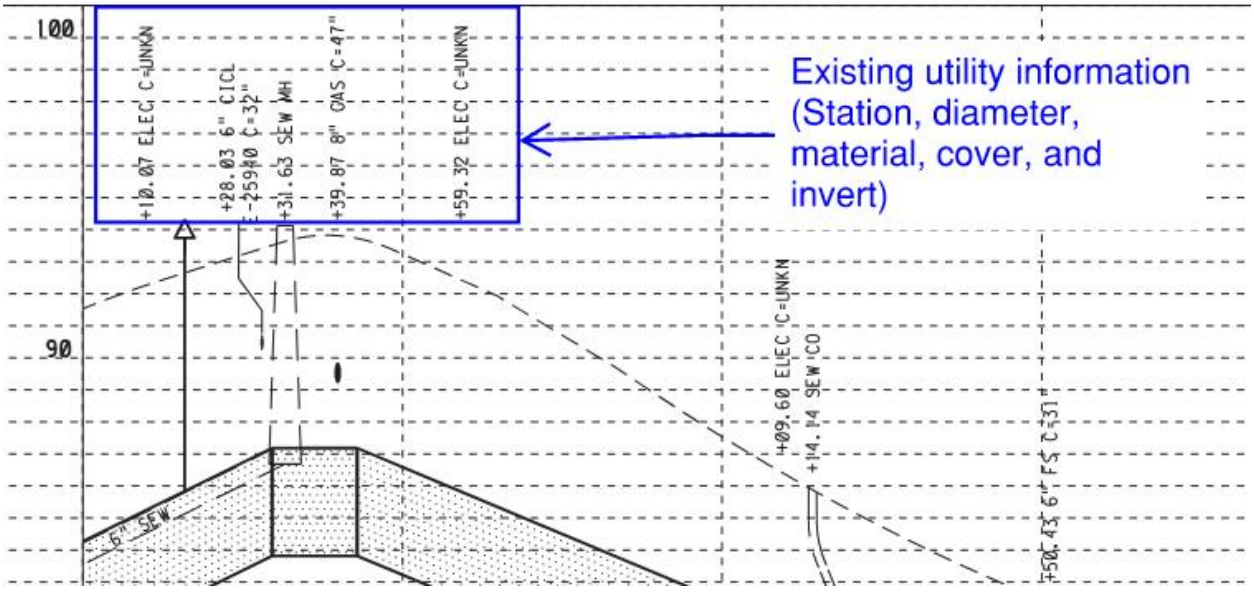


Figure 4.3.16 Existing crossing information

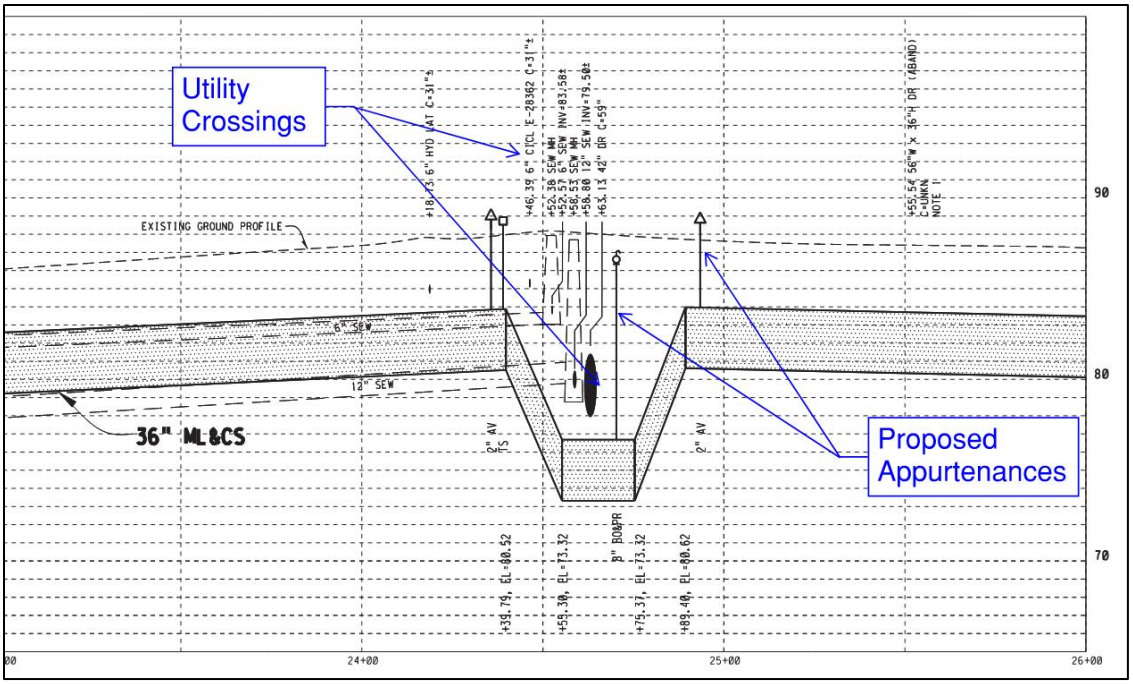


Figure 4.3.17 Profile Information

Station Notes

Station notes for large diameter pipelines projects are placed on W drawings the same way as small diameter pipelines projects (90 degrees to plan view, below profile). The primary difference is the size of pipes and fittings or appurtenances and reference to Typical Pipe details (TP). Figure 4.3.18 provides examples of station notes on a large diameter pipeline project.

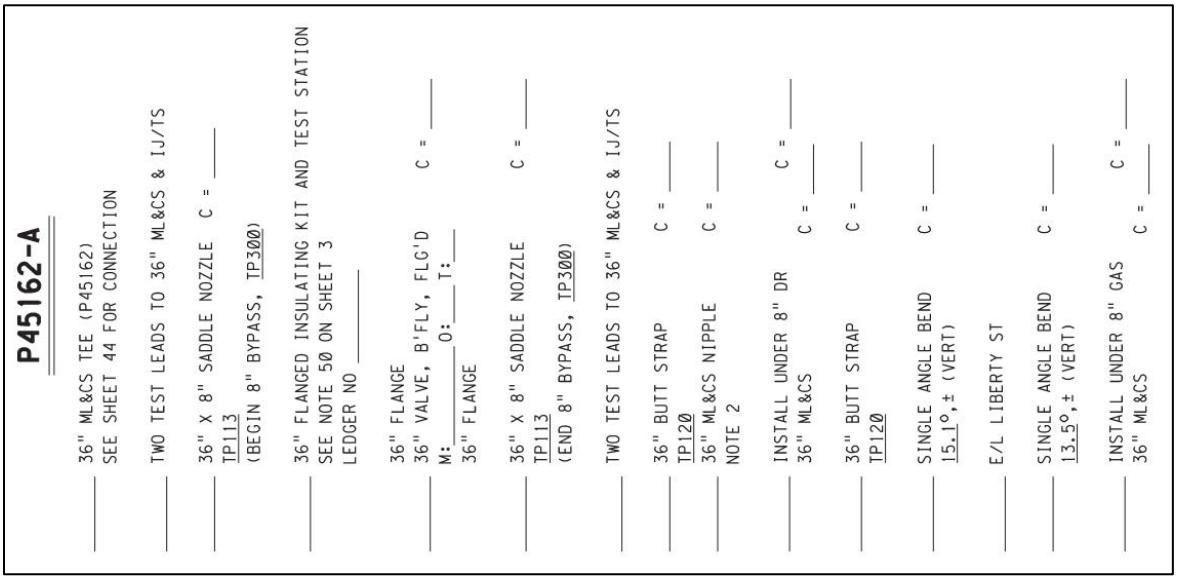
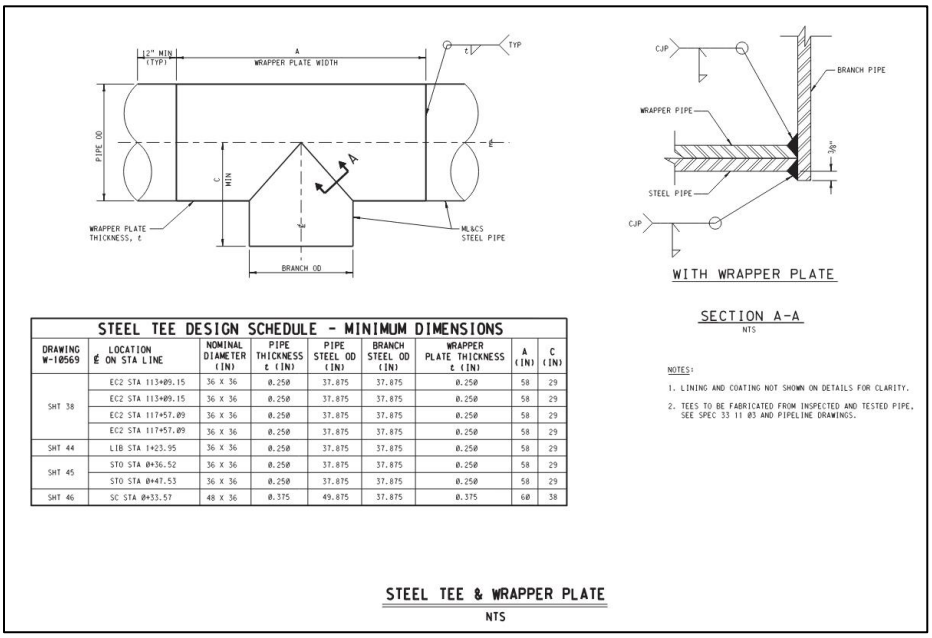


Figure 4.3.18 Large Diameter Station Notes Example

Typical Pipe Details (TP)

Typical pipe details provide dimensions and standards for the materials to be used for the project. TP details are located on Sharepoint in the CAD resource center. Figures 4.3.19 and 4.3.20 provide examples of TP's that are available.



STEEL TEE DESIGN SCHEDULE - MINIMUM DIMENSIONS

DRAWING W-10569	LOCATION ℄ ON STA LINE	NOMINAL DIAMETER (IN)	PIPE THICKNESS t (IN)	PIPE STEEL OD (IN)	BRANCH STEEL OD (IN)	WRAPPER PLATE THICKNESS t (IN)	A (IN)	C (IN)
SHT 38	EC2 STA 113+09.15	36 X 36	0.250	37.875	37.875	0.250	58	29
	EC2 STA 113+09.15	36 X 36	0.250	37.875	37.875	0.250	58	29
	EC2 STA 117+57.09	36 X 36	0.250	37.875	37.875	0.250	58	29
	EC2 STA 117+57.09	36 X 36	0.250	37.875	37.875	0.250	58	29
SHT 44	LIB STA 1+23.95	36 X 36	0.250	37.875	37.875	0.250	58	29
SHT 45	STO STA 0+36.52	36 X 36	0.250	37.875	37.875	0.250	58	29
	STO STA 0+47.53	36 X 36	0.250	37.875	37.875	0.250	58	29
SHT 46	SC STA 0+33.57	48 X 36	0.375	49.875	37.875	0.375	60	38

4.3.19 Sheet 4 – Example Typical Pipe (TP) Detail

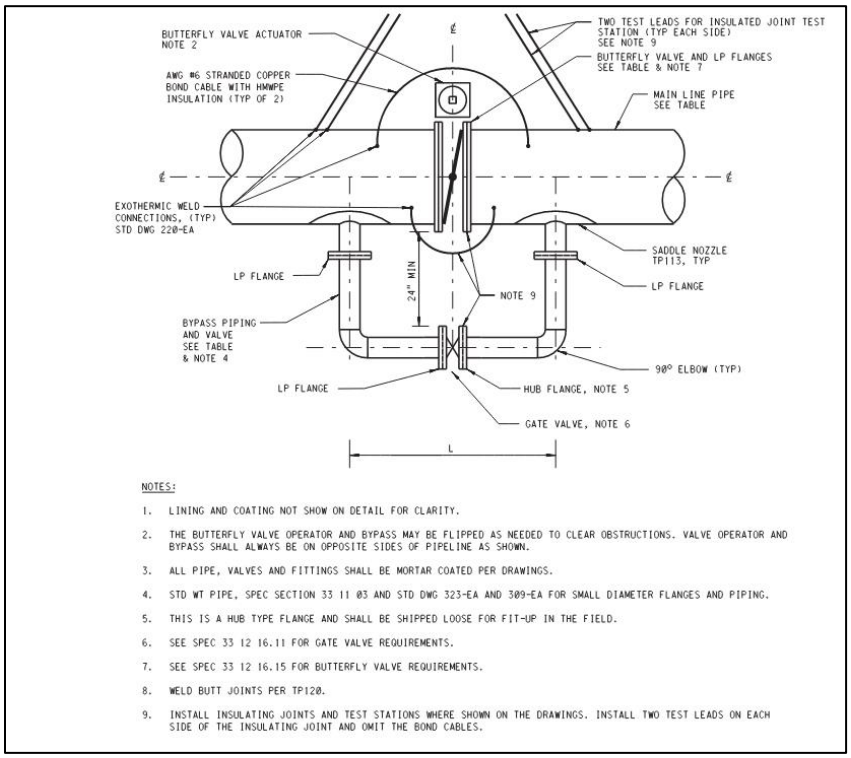


Figure 4.3.20 Sheet 4 – Example Typical Pipe (TP) Detail

5.0 Pipeline Extension Drawing (P-Drawings)

Pipeline extension drawings are 11 x 17 inch drawings used for valve or appurtenance installations that don't require the room of a W size drawing. P drawings are titled with the pipeline extension number or "P" number rather than a W number. Examples of design projects that may require a P drawing are valves installations, blowoff or appurtenance installations, and installations of small lengths of pipe. P drawings are generally prepared at 1" = 40' as opposed to W drawings which are prepared at 1" = 20'. Below is an example of a P drawing. The P-drawing template can be accessed through the AutoCAD Civil 3D application (file "P00001.dwt").

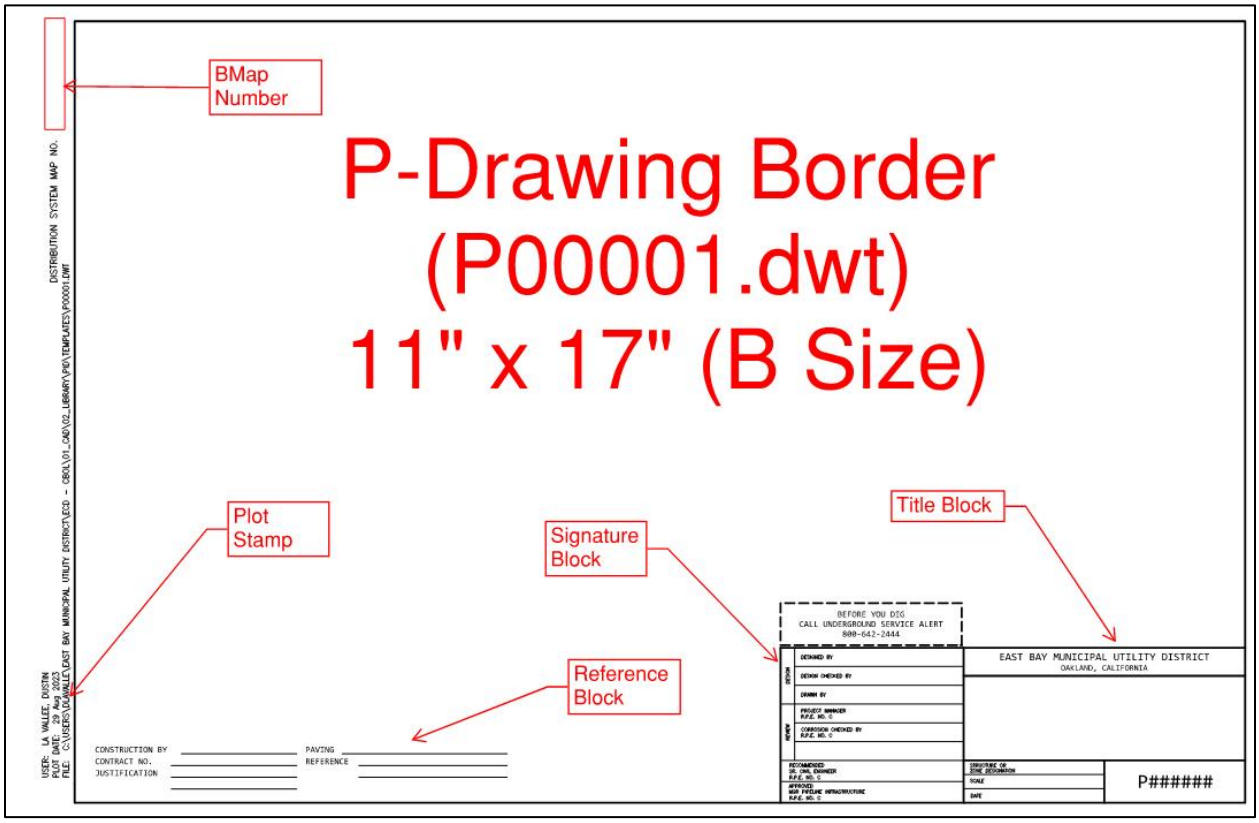


Figure 5.1.1 Example P Drawing Border and Title block

5.1 P-Drawing Contents

P Drawings include much of the same information that is included on a W drawing. Below is the list of the components of a P-drawings as labeled on Figure 5.1.2 below.

1. North Arrow – located on the upper left-hand corner of the drawing.
2. Vicinity Map – located in the upper right-hand corner of the drawing.
3. General Notes – Prepared using the general notes template file maintained by PID
4. Station Notes - Prepared using the station notes template file maintained by PID
5. Plan view of design – Similar to W drawing plan view (see Section 4.0)

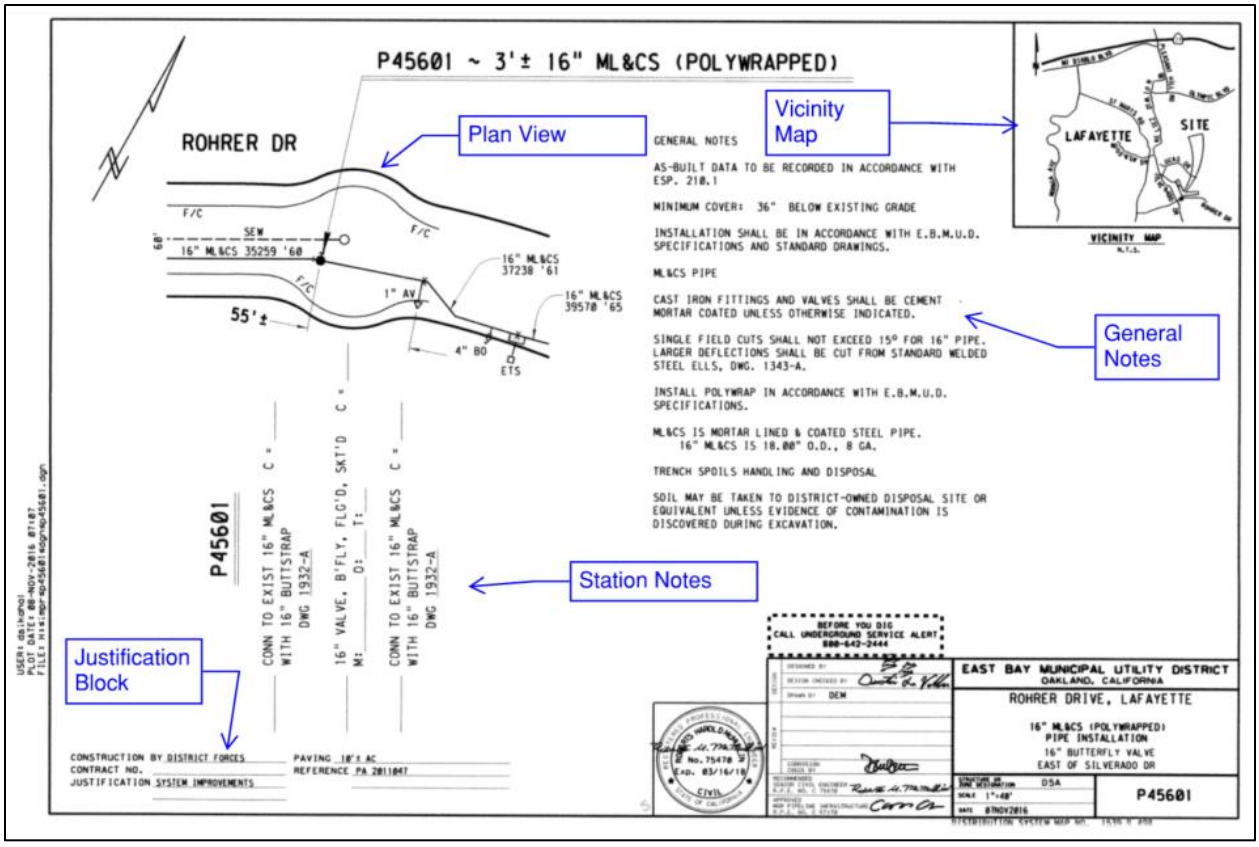


Figure 5.1.2 Example P Drawing

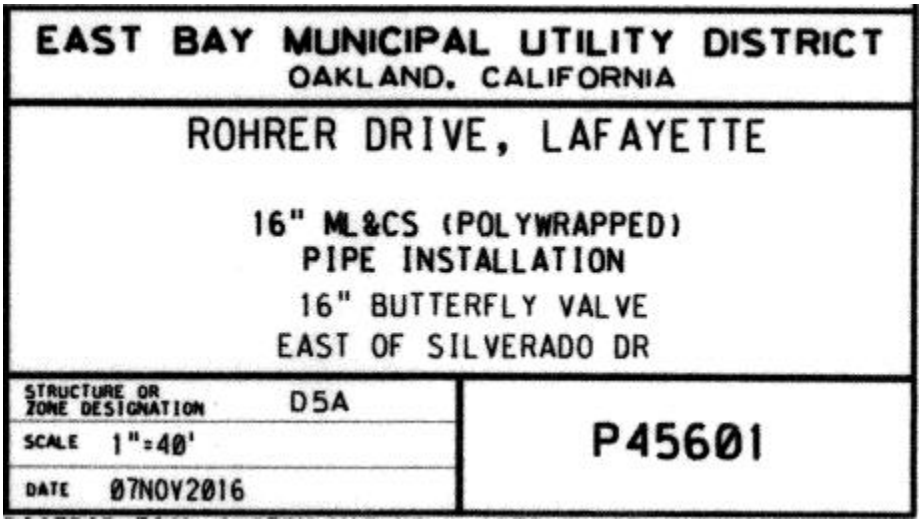


Figure 5.1.3 P-Drawing Title Block

6.0 Remove From Service Drawings (RFS Drawings)

Remove from Services (RFS) Drawings are required for any pipeline or appurtenance that is removed from service or abandoned in place. RFS drawings show the existing water system pipelines and appurtenances such as fire hydrants, blow-off valves, and air valves that are to be removed from service (service laterals are not shown on the RFS drawings). RFS drawings do not show any of the proposed pipeline improvements which are shown on the W drawings. RFS drawings are prepared on an 11 x 17 inches template and generally prepared at 20 scale but scales are not typically included on the final drawing sets. Below is an example of an RFS drawing that highlights the primary information that is included. The RFS template can be accessed through the AutoCAD Civil 3D application (file "RFS00000.dwt").

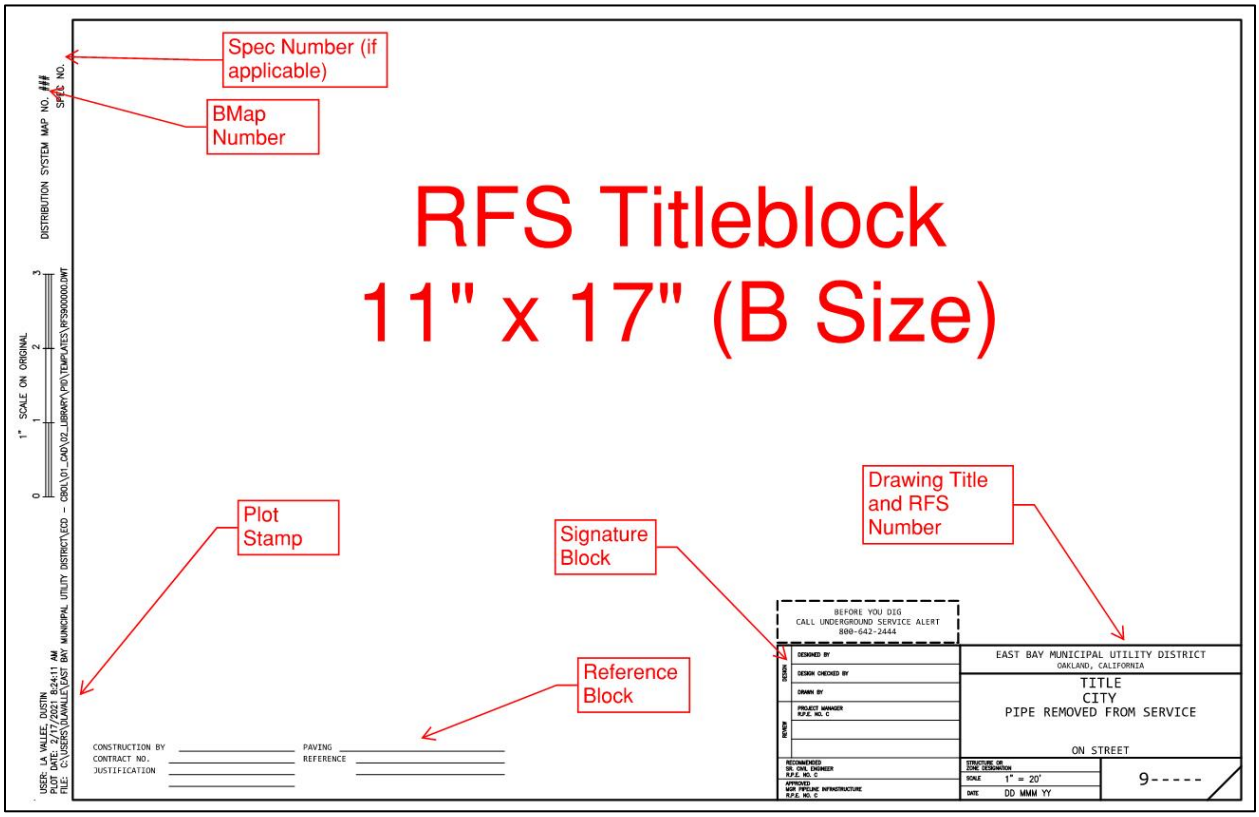


Figure 6.0 Example RFS drawing

6.1 RFS Drawing Contents

The RFS drawing should include the following information as shown on Figure 6.1.1:

1. Title block including reference block, signature block, drawing title and RFS number (see Section 4.0)
2. North Arrow
3. Plan view showing the following information:
    a. Existing pipelines and appurtenances to be Removed from Service (RFS) shown bold and dashed
    b. Existing Pipelines and appurtenances that will remain

c. RW Lines and street names
d. Reference Block (See Section 4.0 for additional information)
e. RFS number listing footage of pipe to be removed and list of appurtenances to be removed
f. Brief instructions on how pipe should be abandoned / RFS at connections to existing system (i.e. RFS @ tee, RFS X' +/- E/O valve, etc)

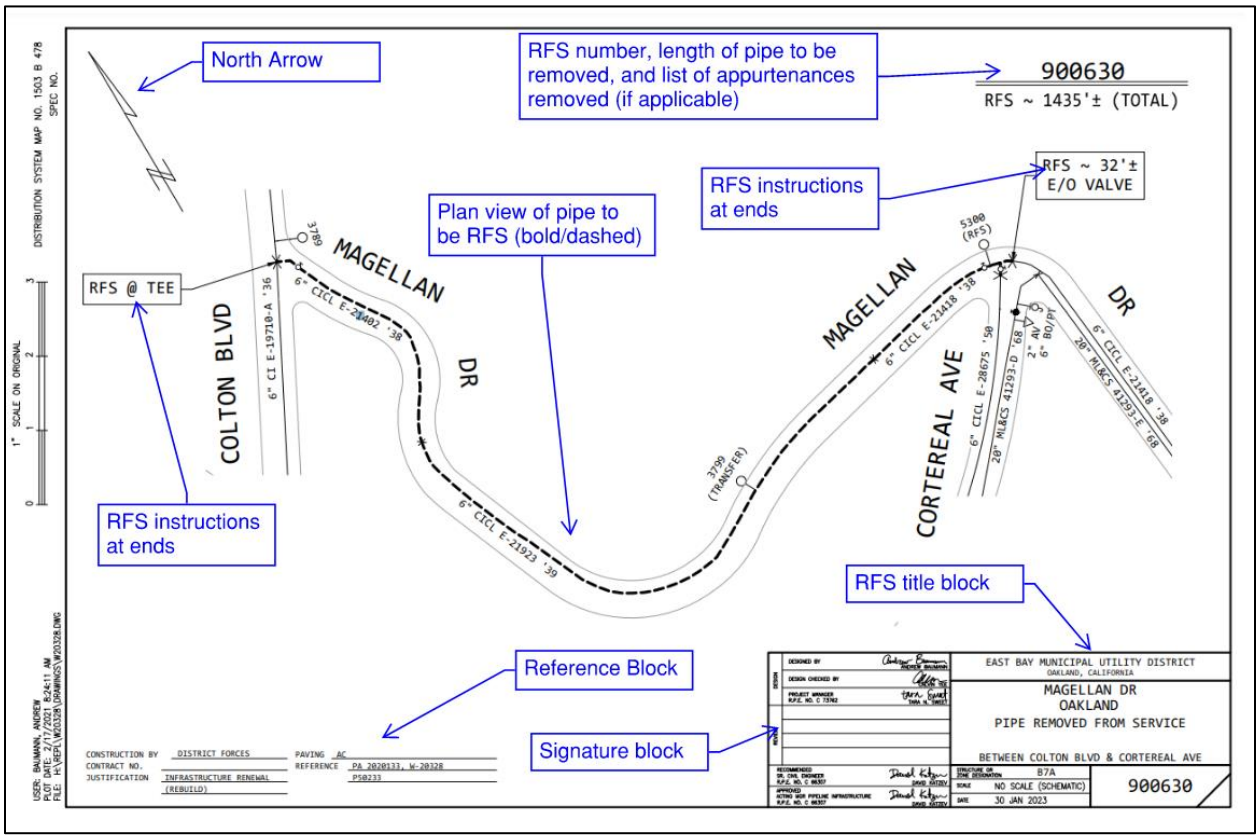


Figure 6.1.1 Example RFS drawing

6.2 Additional Resources for RFS Drawings

Certain standard practices and procedures should be followed when preparing a Remove from Services Drawing. Below are some of the key documents that should be referenced when creating a Remove from Services Drawing:

- Engineering Standard Practice (ESP) 512.09 – Water Main Abandonment

7.0 Hydrant Sketches

Hydrant Sketches are required for new stand-alone fire hydrants or fire hydrants that are relocated or installed greater than 5 feet from their original location. The Hydrant Sketch shows the location of the new or relocated fire hydrant in relation to existing features including street centerline, distance from face of curb, and distance from the existing hydrant. Hydrant sketches are generally prepared for applicant hydrant agreements (HA's) where an outside developer or applicant is paying the District to have a new fire hydrant installed or relocated as well as for hydrant relocations on District projects. A Hydrant Sketch is prepared on a 5-inch x 8-inch template that can be accessed through the AutoCAD Civil 3D application (file "HS000.dwt")

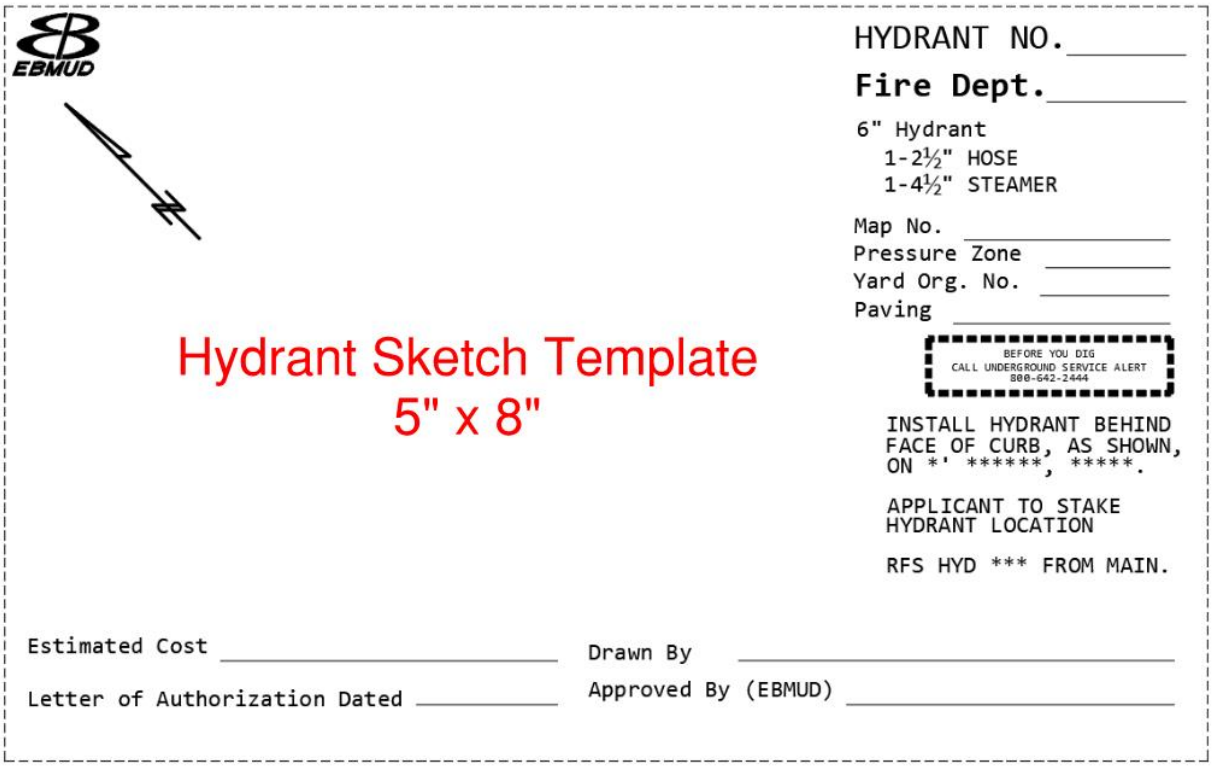


Figure 7.0 Hydrant Sketch Title block Template

7.1 Hydrant Sketch Contents

Hydrant sketches provide information regarding the proposed hydrant and a plan view of the hydrant location. The plan view of a hydrant sketch should include the following information as show in Figure 7.1.1:

- *Existing features* such as face of curb, center line of the street of right of way, public right of way lines, private easement lines, and existing utilities including existing water line and existing fire hydrant location.
- *Proposed features* such as street improvements or development improvements (planting strips, curb ramps, new sidewalk, etc).
- *Proposed Hydrant Location* including the following dimensions:

- Distance from closest street center line to the new hydrant.
- Distance from existing main to face of curb where hydrant is being installed.
- Distance from hydrant to an identifiable feature on the street (e.g., tree, edge of driveway, joint pole) OR distance from the new hydrant to the existing hydrant.

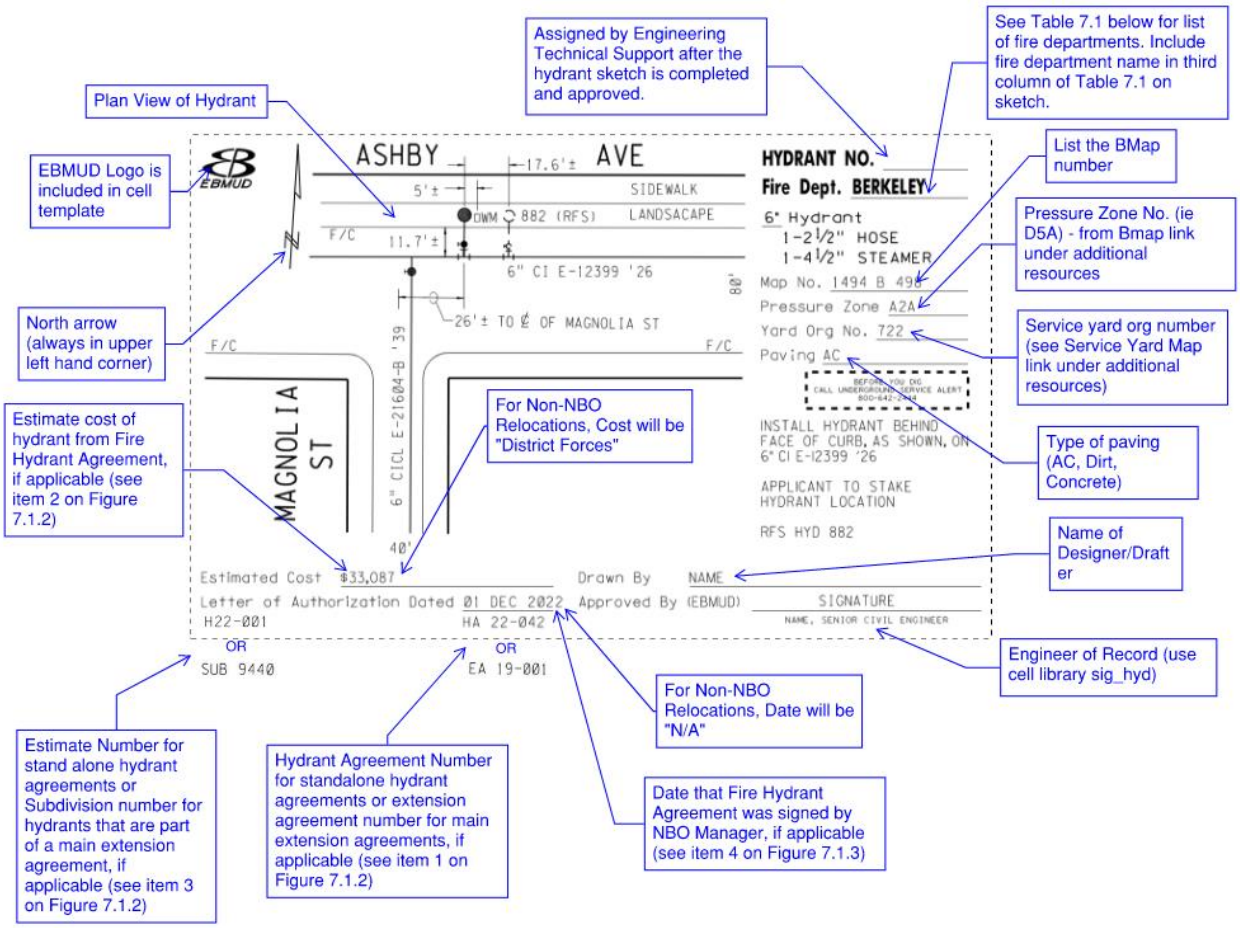


Figure 7.1.1 Example Hydrant Sketch

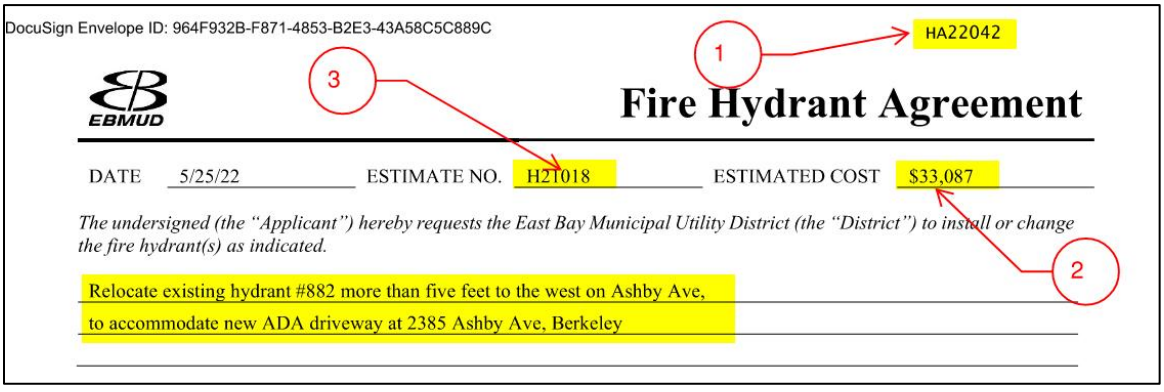


Figure 7.1.2 Example Hydrant Agreement

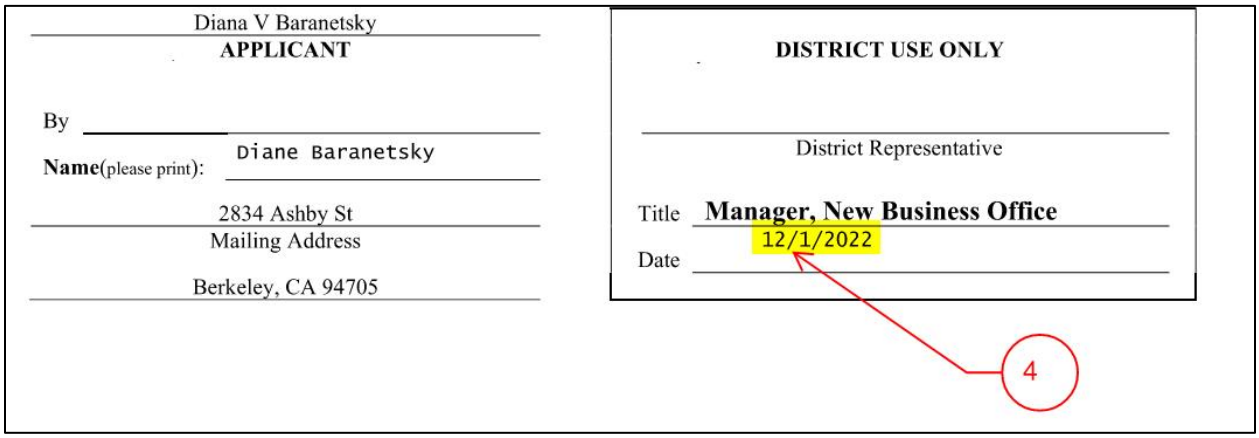


Figure 7.1.3 Example Hydrant Agreement

Table 1 below provides a list of the various Fire Departments within the District's service area along with the abbreviation that can be used on the Hydrant Sketch.

Table 7.1 Fire Departments and Names for Hydrant Sketch

Fire Department	Area Served	Fire Department Name for Sketch
Alameda Fire	City of Alameda	ALAMEDA
Alameda County Fire Protection District	Castro Valley San Leandro San Lorenzo	ALACOFPD
Albany Fire	City of Albany	ALBANY
Berkeley Fire	City of Berkeley	BERKELEY
California Dept. of Forestry	Portions of Southern Alameda County	CDF
Contra Costa County Fire Protection District	Unincorporated areas of CCCO (Except Alamo) City of Lafayette City of Pleasant Hill City of San Pablo City of Walnut Creek El Sobrante	CCCOFPD
Crockett Fire	City of Crockett	CROCKETT
El Cerrito Fire	City of El Cerrito	EL CERRITO
Emeryville Fire	City of Emeryville	EMERYVILLE
City of Hayward Fire Protection District	City of Hayward	HAYWARD
Kensington Fire	City of Kensington	KENSINGTON

Moraga Orinda Fire District	Town of Moraga City of Orinda	MOFD
Oakland Fire Prevention Bureau	City of Oakland	OAKLAND
Piedmont Fire	City of Piedmont	PIEDMONT
Pinole Fire	City of Pinole	PINOLE
Richmond Fire	City of Richmond	RICHMOND
Rodeo Hercules Fire Protection District	City of Hercules Rodeo	RHFPD
San Ramon Valley Fire Protection District	Town of Danville City of San Ramon Alamo	SRVFPD

7.2 Additional Fire Hydrant Resources

Certain standard practices and procedures should be followed when preparing a Hydrant Sketches. Below are some of the key documents that should be referenced when determining the location of fire hydrants:

- Service Yard Map
- ArcGIS Bmap Viewer
- Procedure 712 – Hydrant Installation, Modification, or Removal
- Standard Specification Section 33 11 13.21P, Article 3.3 – Installation of Fire Hydrants
- Standard Drawing 9496-GB – Fire Hydrant Installation, Steel, DI, & IPVC
- Standard Drawing 9496-GB-1 - Fire Hydrant Installation Details
  Engineering Standard Practice (ESP) 512.8 - Water Main Valves and Appurtenances

8.0 Traffic Control Plans (TCPs)

Traffic Control Plans (TCPs) are required for most projects within the public right of way. TCPs are also required in order to obtain an encroachment, obstruction, or excavation permit from outside agencies. PID designers prepare TCPs for pipelines installed by District forces. All TCPs must be prepared in accordance with the traffic control application instructions (governed by cities and Caltrans – depending on the project locations) and the California Manual on Uniform Traffic Control (MUTCD), Chapter 6 latest edition). Most of the TCPs prepared by PID for District installed projects utilize existing MUTCD templates that are modified to fit specific project conditions. TCPs that are more complex and require a registered traffic engineer to sign and stamp them are prepared by contracted consultants.

8.1 TCPs for Small Projects or Intersections

Single page TCPs similar to the example in Figure 8.0 below are utilized for small projects or work in intersections. The advance warning sign spacing table and taper length tapers do not need to be modified as they include spacing and taper lengths for various speeds as required by the MUTCD. The Project notes in the upper right of the TCP should be updated for the specific project.

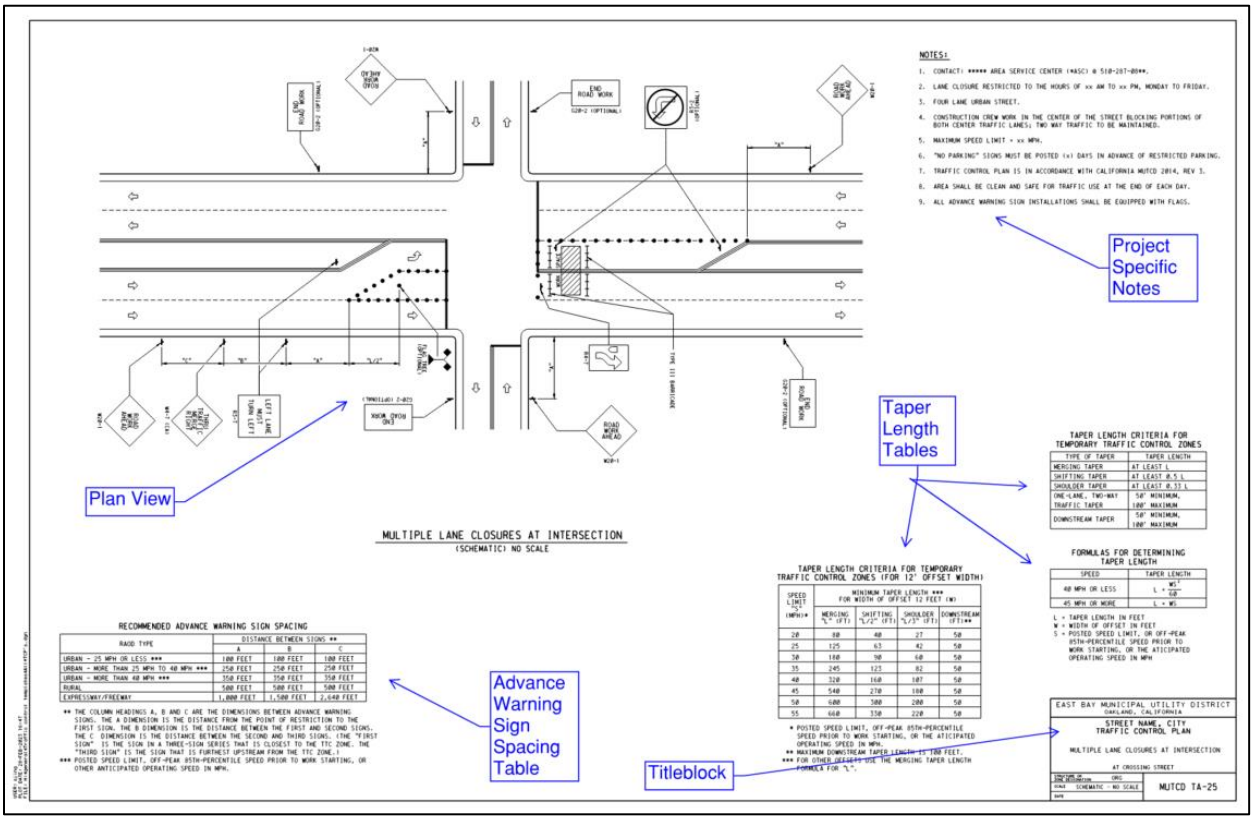


Figure 8.1.1 TCP Template Sheet (Small Projects or Intersections)

RECOMMENDED ADVANCE WARNING SIGN SPACING

RAOD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
URBAN - 25 MPH OR LESS ***	100 FEET	100 FEET	100 FEET
URBAN - MORE THAN 25 MPH TO 40 MPH ***	250 FEET	250 FEET	250 FEET
URBAN - MORE THAN 40 MPH ***	350 FEET	350 FEET	350 FEET
RURAL	500 FEET	500 FEET	500 FEET
EXPRESSWAY/FREEWAY	1,000 FEET	1,500 FEET	2,640 FEET

** THE COLUMN HEADINGS A, B AND C ARE THE DIMENSIONS BETWEEN ADVANCE WARNING SIGNS. THE A DIMENSION IS THE DISTANCE FROM THE POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "FIRST SIGN" IS THE SIGN IN A THREE-SIGN SERIES THAT IS CLOSEST TO THE TTC ZONE. THE "THIRD SIGN" IS THE SIGN THAT IS FURTHEST UPSTREAM FROM THE TTC ZONE.)

*** POSTED SPEED LIMIT, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR OTHER ANTICIPATED OPERATING SPEED IN MPH.

Figure 8.1.2 Advance Warning Sign Spacing Table

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES (FOR 12' OFFSET WIDTH)

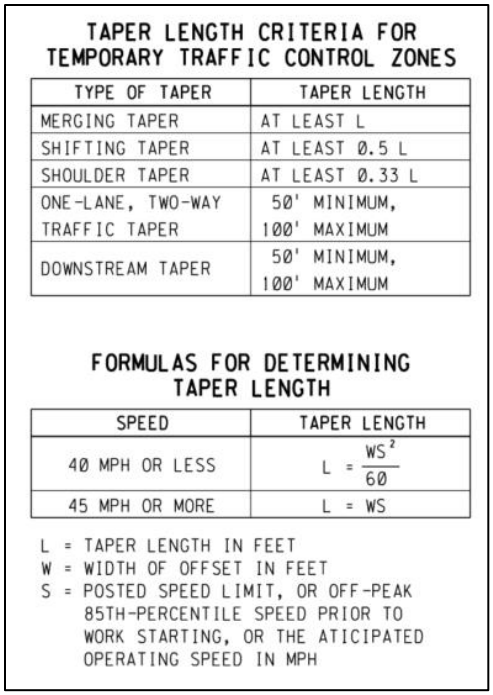
SPEED LIMIT "S" (MPH)*	MINIMUM TAPER LENGTH *** FOR WIDTH OF OFFSET 12 FEET (W)			
	MERGING "L" (FT)	SHIFTING "L/2" (FT)	SHOULDER "L/3" (FT)	DOWNSTREAM (FT)**
20	80	40	27	50
25	125	63	42	50
30	180	90	60	50
35	245	123	82	50
40	320	160	107	50
45	540	270	180	50
50	600	300	200	50
55	660	330	220	50

* POSTED SPEED LIMIT, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ATICIPATED OPERATING SPEED IN MPH.

** MAXIMUM DOWNSTREAM TAPER LENGTH IS 100 FEET.

*** FOR OTHER OFFSETS USE THE MERGING TAPER LENGTH FORMULA FOR "L".

Figure 8.1.3 Taper Length Table



TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5 L
SHOULDER TAPER	AT LEAST 0.33 L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50' MINIMUM, 100' MAXIMUM
DOWNSTREAM TAPER	50' MINIMUM, 100' MAXIMUM

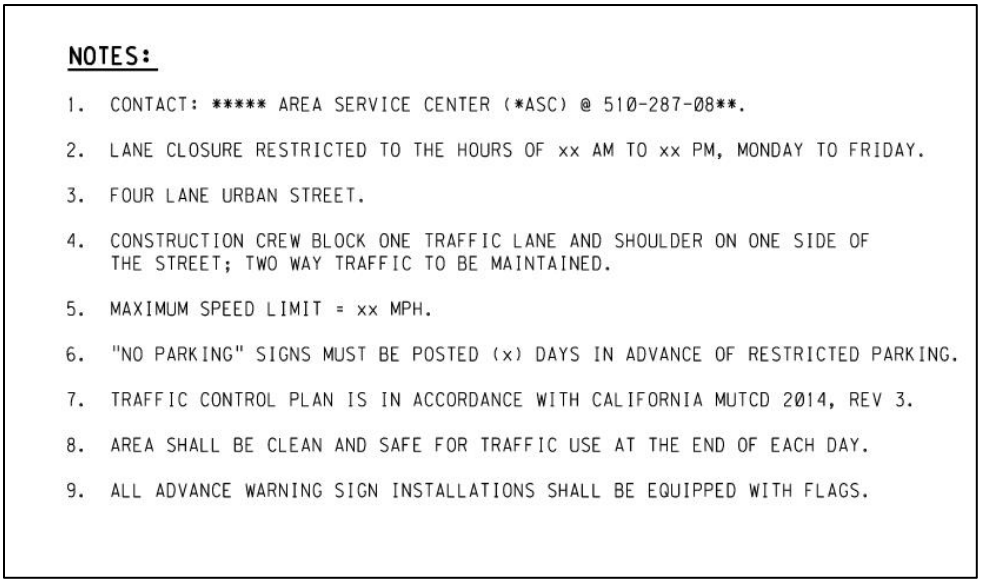
FORMULAS FOR DETERMINING TAPER LENGTH

SPEED	TAPER LENGTH
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	L = WS

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ATICIPATED OPERATING SPEED IN MPH

Figure 8.1.4 Taper Length Tables

The notes that should be updated as part of the TCP include note 1 (indicate North, East, Central, or South Yard), note 2 (list lane closure restrictions if known, otherwise this information may be listed on the permit after the TCP is submitted, note 3 (indicated what type of street it is), note 4 (provide information on how many lanes are being blocked and what's being maintained), and note 5 (list max speed limit).



NOTES:

1. CONTACT: ***** AREA SERVICE CENTER (*ASC) @ 510-287-08**.
2. LANE CLOSURE RESTRICTED TO THE HOURS OF xx AM TO xx PM, MONDAY TO FRIDAY.
3. FOUR LANE URBAN STREET.
4. CONSTRUCTION CREW BLOCK ONE TRAFFIC LANE AND SHOULDER ON ONE SIDE OF THE STREET; TWO WAY TRAFFIC TO BE MAINTAINED.
5. MAXIMUM SPEED LIMIT = xx MPH.
6. "NO PARKING" SIGNS MUST BE POSTED (x) DAYS IN ADVANCE OF RESTRICTED PARKING.
7. TRAFFIC CONTROL PLAN IS IN ACCORDANCE WITH CALIFORNIA MUTCD 2014, REV 3.
8. AREA SHALL BE CLEAN AND SAFE FOR TRAFFIC USE AT THE END OF EACH DAY.
9. ALL ADVANCE WARNING SIGN INSTALLATIONS SHALL BE EQUIPPED WITH FLAGS.

Figure 8.1.5 TCP Project Specific Notes

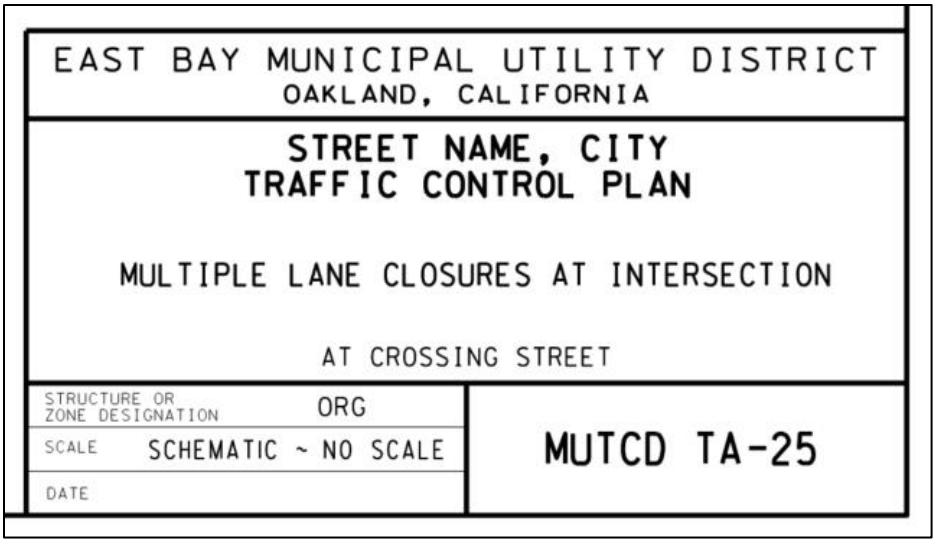


Figure 8.1.6 TCP Title block

8.2 TCPs for Larger Cluster Projects (Infrastructure Renewals)

TCP templates for larger projects such as IR clusters utilize a TCP template consisting of a coversheet, notes sheet including taper length and sign distance tables, a plan overview sheet, and individual TCP sheets for specifics streets. This TCP template can be accessed through the AutoCAD Civil 3D application (file “TCP0000.dwt”). Below are examples of these TCP template sheets.

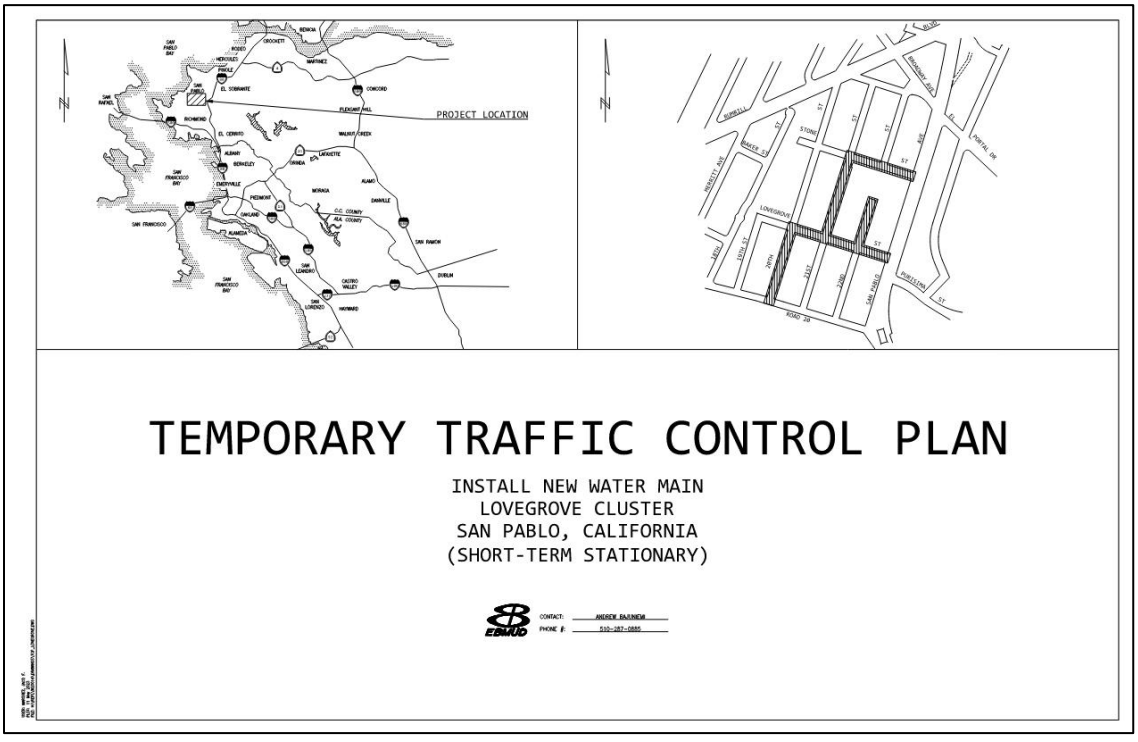


Figure 8.2.1 TCP Cover Sheet for Cluster Projects

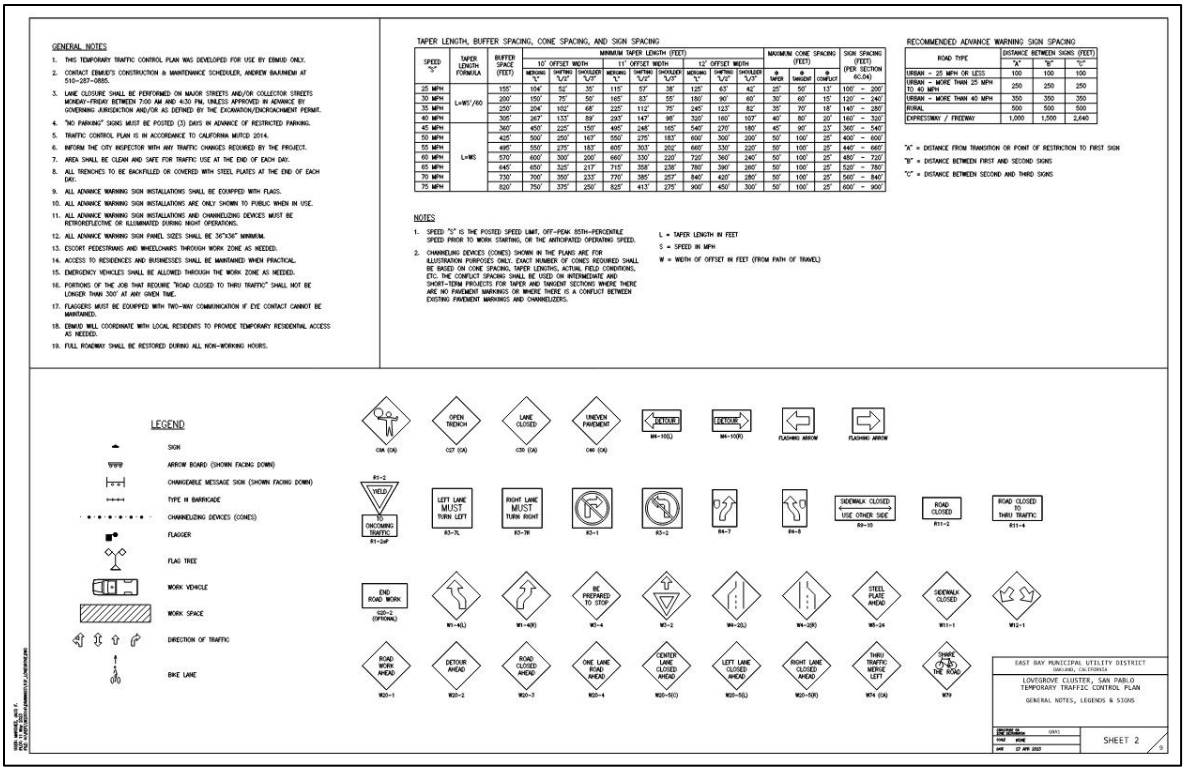


Figure 8.2.2 TCP Legend and Notes Sheet

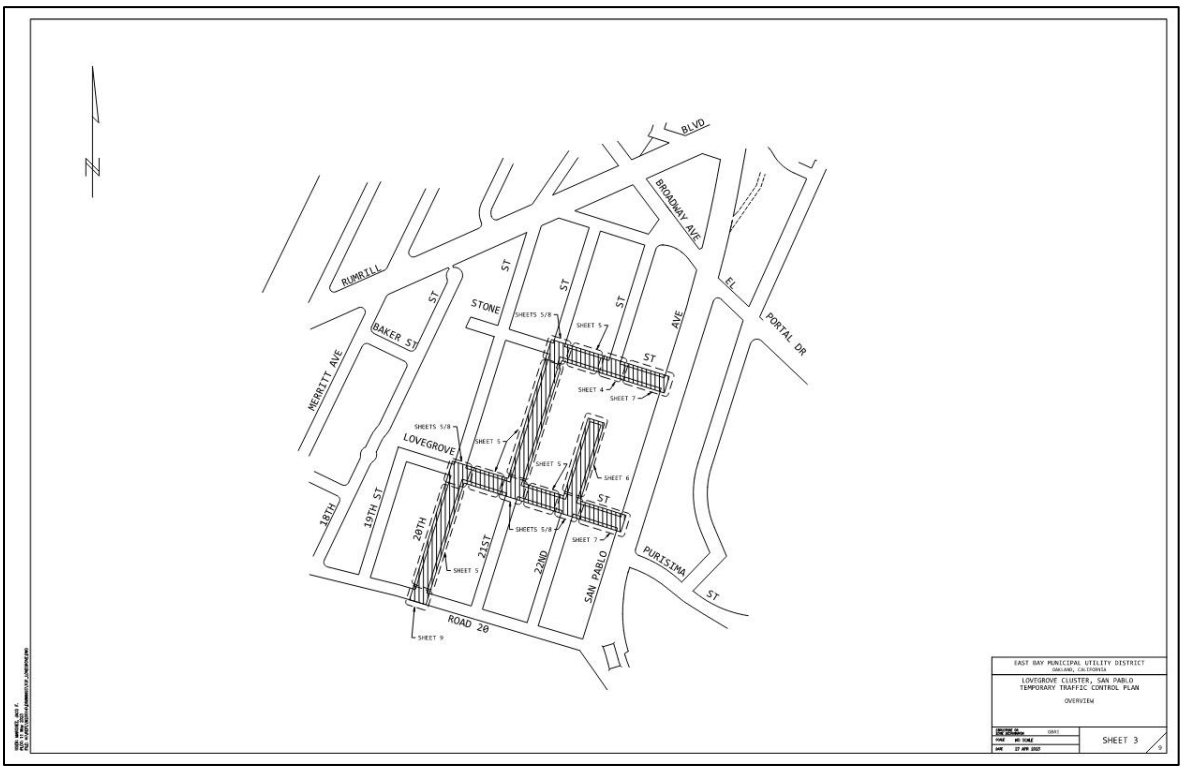


Figure 8.2.3 TCP Legend and Notes Sheet

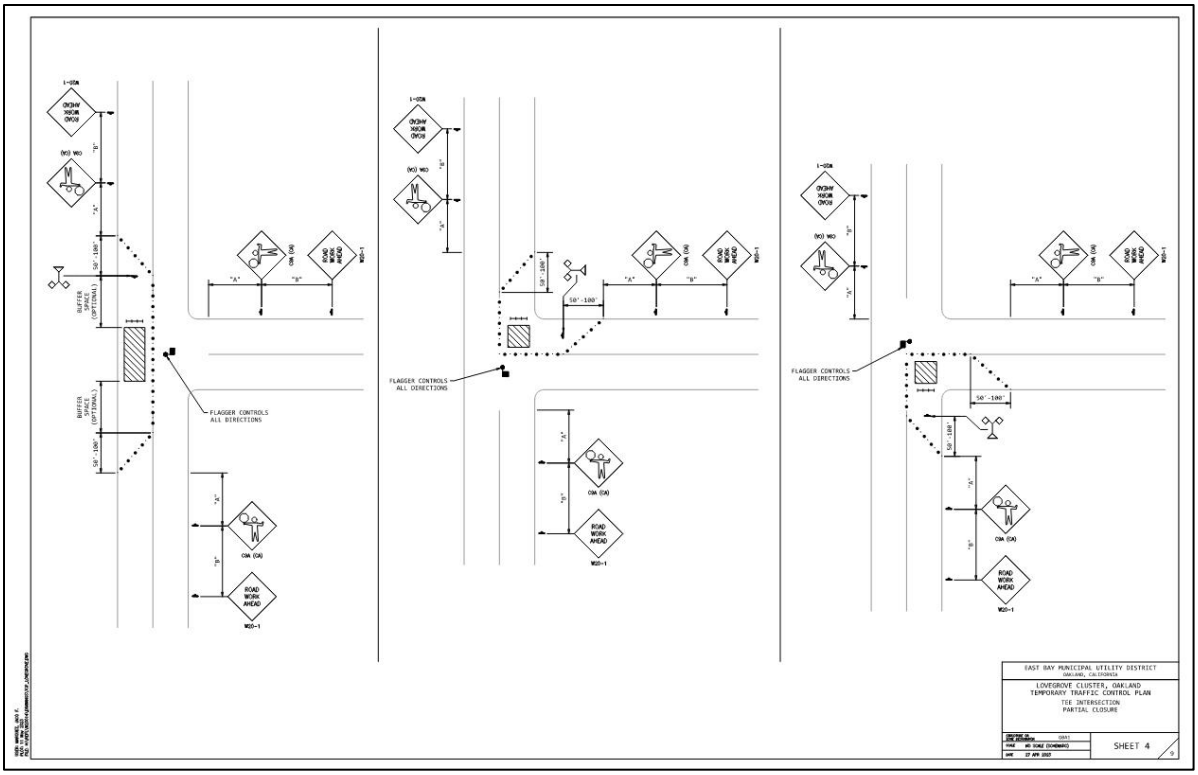


Figure 8.2.4 TCPs for Individual Streets

9.0 References

The references listed below provide additional information and requirements that should be considered when preparing pipeline design drawings.

9.1 CAD Resources

- **CAD Resource Center**
- **EBMUD AutoCAD Standards – Pipeline Infrastructure Division – Version 1.0**

9.2 EBMUD Standards and Procedures

- **Engineering Standard Practices (ESPs)**
- **Standard Drawings for 20” & Smaller Pipelines**
- **Standard Specifications for 20” & Smaller Pipelines**
- **Master Specification Templates**
- **District Procedures**

9.2 Industry Manuals and Documents

- **AWWA Manuals for pipelines and appurtenances**
- **Manual on Uniform Traffic Control Devices (MUTCD)**