

EAST BAY MUNICIPAL UTILITY DISTRICT

REQUEST FOR QUOTATION (RFQ) No. 2512 for LARGE DIAMETER STEEL PIPE

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For complete information regarding this project, see RFQ posted at <https://www.ebmud.com/business-center/materials-and-supplies-bids/current-requests-quotation-rfqs/> or contact the EBMUD representative listed above. Please note that prospective bidders are responsible for reviewing this site during the RFQ process, for any published addenda regarding this RFQ.

Bids Due
by
1:30 p.m.
on
February 26, 2025

All bid submissions hand delivered or mailed (USPS, FedEx, UPS, etc.) to the address or PO Box noted below and must be received no later than 1:30 p.m. on the bid due date.

RESPONSE DELIVERED BY SERVICE (UPS, FedEx, DHL, etc., during business hours: 8:00 AM – 4:00 PM only) to: EBMUD–Purchasing Division RFQ 2512 – LARGE DIAMETER STEEL PIPE 375 11th Street Oakland, CA 94607	RESPONSE DELIVERED BY MAIL (U.S. Postal Service) to: EBMUD–Purchasing Division RFQ 2512 – LARGE DIAMETER STEEL PIPE P.O. Box 24055 Oakland, CA 94623	RESPONSE HAND-DELIVERED (during business hours: 8:00 AM – 4:00 PM only) EBMUD–Purchasing Division RFQ 2512 – LARGE DIAMETER STEEL PIPE Purchasing Office 375-11 TH Street, 1 ST Floor Oakland, CA 94607
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EAST BAY MUNICIPAL UTILITY DISTRICT

RFQ No. 2512

for

LARGE DIAMETER STEEL PIPE

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ATTACHMENTS

EXHIBIT A – RFQ RESPONSE PACKET

EXHIBIT B – INSURANCE REQUIREMENTS

EXHIBIT C – GENERAL REQUIREMENTS

EXHIBIT D – IRAN CONTRACTING ACT CERTIFICATION

EXHIBIT E – TECHNICAL SPECIFICATIONS AND DRAWINGS

- 01 33 00 SUBMITTAL PROCEDURES
- 01 45 27 SHOP INSPECTION
- 33 11 03.01 MANUFACTURE OF AWWA STEEL PIPE CYLINDERS AND FABRICATION OF CIVIL STEEL PIPE SPECIALS
- 33 11 13.10 POLYWRAP
- 33 11 13.50 MORTAR LINING FOR STEEL PIPE
- 33 11 13.60 MORTAR COATING FOR STEEL PIPE
- W-24191-1 DRAWING
- W-24191-2 DRAWING
- W-24191-3 DRAWING

- W-24191-4 DRAWING
- W-24391-1 DRAWING
- W-24391-2 DRAWING
- W-24391-3 DRAWING
- W-24391-4 DRAWING
- 309-EA DRAWING
- 0323-EA DRAWING
- TP710 DRAWING

I. STATEMENT OF WORK

A. SCOPE

It is the intent of these specifications, terms, and conditions to describe requirement to manufacture, complete, and deliver mortar-lined and coated (ML&C) steel pipe, including all appurtenances such as flanges, bolts, gaskets, and buttstraps, for **two District projects** (shown below) by September 1, 2025:

Project 1: Olive Street (W-24191)

Pipe required: 14 feet of 36" diameter mortar lined and coated (ML&C) steel and 11 feet of 8" ML&C steel pipe fabricated per the attached specifications and drawings. Deliver to District's Oakport Storage Center, 5601 Oakport Street, Oakland, California 94621.

Project 2: San Pablo Ave (W-24391)

Pipe Required: 14 feet of 24" diameter mortar lined and coated (ML&C) steel pipe and 11 feet of 6" ML&C steel pipe fabricated per the attached specifications and drawings. Deliver to District's North Yard 3999 Lakeside Dr. Richmond 94806.

East Bay Municipal Utility District (District) intends to award a contract, **by Schedule**, to the lowest cost bidder(s) whose response meets the District's requirements.

B. BIDDER QUALIFICATIONS

1. Bidder Minimum Qualifications

- a. Bidder, bidder's principal, or bidder's staff shall have been regularly engaged in the business of providing steel pipe as described in this RFQ for at least five (5) years.
- b. Bidder shall possess all permits, licenses, and professional credentials necessary to supply product and perform services as specified under this RFQ.

C. SPECIFIC REQUIREMENTS

1. Technical Requirements

- a. The steel pipe products supplied and services provided shall comply with the requirements of the following specifications, drawings, and forms (located in Exhibit E of this RFQ):
 - 01 33 00 SUBMITTAL PROCEDURES
 - 01 45 27 SHOP INSPECTION

- 33 11 03.01 MANUFACTURE OF AWWA STEEL PIPE CYLINDERS AND FABRICATION OF CIVIL STEEL PIPE SPECIALS
- 33 11 13.10 POLYWRAP
- 33 11 13.50 MORTAR LINING FOR STEEL PIPE
- 33 11 13.60 MORTAR COATING FOR STEEL PIPE
- W-24191-1 DRAWING
- W-24191-2 DRAWING
- W-24191-3 DRAWING
- W-24191-4 DRAWING
- W-24391-1 DRAWING
- W-24391-2 DRAWING
- W-24391-3 DRAWING
- W-24391-4 DRAWING
- 309-EA DRAWING
- 0323-EA DRAWING
- TP710 DRAWING

All products shall be in new and unused condition and shall be of the most current and up to date model.

Materials in Contact with Drinking Water

1. All materials, equipment, or products that will be in contact with drinking water (potable water) shall be tested and certified as meeting the specifications of NSF/ANSI 61 Standard in accordance with California Code of Regulations, Title 22, Section 64591. Examples include, but are not limited to, valves, pumps, flow meters, protective materials (coatings, linings, liners), joining and sealing materials, pipes, tanks, pipe fittings, filters, cleaning chemicals, and lubricants.
2. All materials, equipment, or products that will be in contact with drinking water (potable water) shall be tested and certified as “lead-free” per California Health and Safety Code Section 116875 and NSF 61 Annex G or NSF 372.
3. All chemicals that will be in contact with drinking water shall be certified by NSF to NSF/ANSI Standard 60.

4. For materials:
- a. Documentation which demonstrates current NSF/ANSI Standard 61 certification shall be submitted by the bidder in their bid package.
 - b. If awarded, contractor is responsible for informing the District within 5 days, if and when their certification lapses or expires. Failure to inform the District within the allotted time will be sufficient grounds for immediate termination of the contract.

D. INSPECTION

The District will inspect material after its arrival at the delivery point. Contractor is solely responsible for ensuring the material arrives at the District's ship-to location free of defects and manufactured in strict conformance with the specifications.

In the case that an item or lot is rejected, District Inspectors will provide Contractor and the EBMUD Purchasing Division with an Inspectors Job Report which will itemize the product deficiencies and required corrective action.

The District reserves the right-of-access to the Contractor's facility to verify conformance to this specification at the District's expense.

E. FAILURE TO MEET SPECIFICATIONS

In the event any shipment or shipments of a Contractor's product do not meet the specification or delivery requirements, the District may reject the shipment or shipments and, at its option, may purchase this material from any supplier on the open market who can meet the District's specification requirements, or the District may demand immediate replacement by Contractor of the non-conforming product. Any costs over and above the original contract price will be charged back to the Contractor. In addition, Contractor shall bear the costs of removal and disposition for any delivery which fails to conform to the specifications.

II. CALENDAR OF EVENTS

EVENT	DATE/LOCATION
RFQ Issued	February 5, 2025
Deadline For Submission of Questions	February 14, 2025
Response Due	February 26, 2025 by 1:30 p.m. At this time all bids will be opened publicly in the EBMUD Board Room at 375 Eleventh St., Oakland, CA 94607*

Anticipated Contract Start Date	Purchase order to be issued within two weeks of April 8, 2025 Board approval
Delivery Date	September 1, 2025

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

Bidders are responsible for reviewing <https://www.ebmud.com/business-center/materials-and-supplies-bids/current-requests-quotation-rfqs/> for any published addenda. Hard copies of addenda will not be mailed out.

III. DISTRICT PROCEDURES, TERMS, AND CONDITIONS

A. RFQ ACCEPTANCE AND AWARD

1. RFQ responses will be evaluated to determine that they are responsive, responsible, and that they meet the specifications as stated in this RFQ.
2. The District reserves the right to award to a single or to multiple Contractors, dependent upon what provides the lowest overall cost to the District.
3. The District has the right to decline to award this contract or any part of it for any reason.
4. Any specifications, terms, or conditions, issued by the District, or those included in the bidder's submission, in relation to this RFQ, may be incorporated into any purchase order or contract that may be awarded as a result of this RFQ.
5. 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 bidder 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 bids have been opened.

B. BRAND NAMES, APPROVED EQUIVALENTS, DEVIATIONS, AND EXCEPTIONS

Any references to manufacturers, trade names, brand names, and/or catalog numbers are intended to be descriptive, but not restrictive, unless otherwise stated, and are intended to indicate the quality level desired. Bidders may offer an equivalent product that meets or exceeds the specifications.

The District reserves the right to be the sole judge of what shall be considered equal and/or acceptable and may require the bidder to provide additional information and/or samples. If the bidder does not specify otherwise, it is understood that the brand and/or product referenced in this RFQ will be supplied.

Taking exception to the RFQ, or failure on the part of the bidder to comply with all requirements and conditions of this RFQ, may subject the RFQ response to rejection. If no deviations are shown, the bidder will be required to furnish the material exactly as specified. The burden of proof of compliance with the specifications will be the responsibility of the bidder.

This RFQ is subject to acceptance only on the terms and conditions stated in this RFQ. Any additional or different terms and conditions proposed by the bidder are hereby rejected and shall be of no force or effect unless expressly assented to in writing by the District.

RFQ responses based on equivalent products must:

1. Use Exhibit A "Exceptions, Clarification and Amendments" to clearly describe the alternate offered and indicate specifically how it differs from the product specified in this RFQ.
2. Include complete descriptive literature and/or specifications as proof that the proposed alternate will be equal to or better than the product named in this RFQ.

C. PRICING

1. All prices are to be F.O.B. destination. Any freight/delivery charges are to be included.
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. Bidders 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 RFQ response evaluation process, all entities who submitted a bid package will be notified in writing by e-mail or USPS mail with the name of the Bidder being recommended for contract award. The document providing this notification is the Notice of Intent to Award.

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 bidders or potential bidders 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 RFQ protest period.

Bid 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 bid, 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 bid protest filed with any other District office shall be forwarded immediately to the Manager of Purchasing.

The bid 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 bid 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. METHOD OF ORDERING

1. Written POs may be issued upon approval of written itemized quotations received from the Contractor.
2. POs and payments for products and/or services will be issued only in the name of Contractor.

3. Any and all change orders shall be in writing and agreed upon, in advance, by Contractor and the District.

F. TERM / TERMINATION / RENEWAL

1. The term of the contract, which may be awarded pursuant to this RFQ, will be 1 year.
2. This Agreement may be terminated for convenience by the District provided the Contractor is given written notice of not less than 30 calendar days. Upon such termination, the District shall pay the Contractor the amount owing for the products ordered and satisfactorily received by the District. This shall be the sole and exclusive remedy to which the Contractor is properly entitled in the event of termination by the District.
3. This Agreement may be terminated for cause at any time, provided that the District notifies Contractor of impending action.

G. WARRANTY

1. For any contract awarded pursuant to this RFQ, Contractor expressly warrants that all goods furnished will conform strictly with the specifications and requirements contained herein and with all approved submittals, samples and/or models and information contained or referenced therein, all affirmations of fact or promises, and will be new, of merchantable quality, free from defects in materials and workmanship, including but not limited to leaks, breaks, penetrations, imperfections, corrosion, deterioration, or other kinds of product deficiencies. Contractor expressly warrants that all goods to be furnished will be fit and sufficient for the purpose(s) intended. Contractor expressly warrants that all goods shall be delivered free from any security interest, lien, or encumbrance of any kind, and free from any claim of infringement, copyright or other intellectual property violation, or other violation of laws, statutes, regulations, ordinances, rules, treaties, import restrictions, embargoes or other legal requirements. Contractor guarantees all products and services against faulty or inadequate design, manufacture, negligent or improper transport, handling, assembly, installation or testing, and further guaranties that there shall be strict compliance with all manufacturer guidelines, recommendations, and requirements, and that Contractor guaranties that it will conform to all requirements necessary to keep all manufacturer warranties and guarantees in full force and effect. These warranties and guarantees are inclusive of all parts, labor, and equipment necessary to achieve strict conformance, and shall take precedence over any conflicting warranty or guarantee. These warranties and guaranties shall not be affected, limited, discharged, or waived by any examination, inspection, delivery, acceptance, payment, course of dealing,

course of performance, usage of trade, or termination for any reason and to any extent. In the absence of any conflicting language as to duration, which conflicting language will take precedence as being more specific, Contractor's aforesaid warranties and guarantees shall be in full force and effect for a period of one year from the date of acceptance by the District but shall continue in full force and effect following notice from District of any warranty or guarantee issue, until such issue has been fully resolved to the satisfaction of District.

H. INVOICING

1. Following the District's acceptance of product(s) meeting all specified requirements, and/or the complete and satisfactory performance of services, the District will render payment within thirty (30) days of receipt of a correct invoice.
2. The District shall notify Contractor of any invoice adjustments required.
3. Invoices shall contain, at a minimum, District purchase order number, invoice number, remit to address, and itemized products and/or services description.
4. The District will pay Contractor in an amount not to exceed the total amount quoted in the RFQ response.

IV. RFQ 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 RFQ. The following persons are to be contacted only for the purposes specified below.

TECHNICAL SPECIFICATIONS:

Attn: Sanna Garcia, Associate Civil Engineer
EBMUD-Pipeline Infrastructure Div./Engineering Dept.
E-Mail: sanna.garcia@ebmud.com
PHONE: (510) 287-1679

CONTRACT EQUITY PROGRAM:

Attn: Contract Equity Office
PHONE: (510) 287-0114

AFTER AWARD:

Attn: Sanna Garcia, Associate Civil Engineer (Project Manager)
EBMUD-Pipeline Infrastructure Div./Engineering Dept.
E-Mail: sanna.garcia@ebmud.com
PHONE: (510) 287-1679

FOR SHOP INSPECTION:

Attn: Ron Monteforte, Supervising Plant Inspector

EBMUD-Construction Division/Engineering Dept.

E-Mail: ronald.monteforte@ebmud.com

PHONE: (510) 287-1132

B. SUBMITTAL OF RFQ RESPONSE

1. Responses must be submitted in accordance with Exhibit A – RFQ Response Packet, including all additional documentation stated in the “Required Documentation and Submittals” section of Exhibit A.
2. Late and/or unsealed responses will not be accepted.
3. RFQ responses submitted via electronic transmissions will not be accepted. Electronic transmissions include faxed RFQ responses or those sent by electronic mail (“e-mail”).
4. All RFQ responses must be SEALED and received by 1:30 p.m. on the due date specified in the Calendar of Events. Any RFQ response received after that time/date, or at a place other than the stated addresses, cannot be considered and will be returned to the bidder unopened. The EBMUD mailroom and Purchasing Division timestamp shall be considered the official timepiece for the purpose of establishing the actual receipt of RFQ responses.
5. RFQ responses are to be addressed/delivered as follows:

Mailed (USPS):

East Bay Municipal Utility District
LARGE DIAMETER STEEL PIPE
RFQ No. 2512
EBMUD–Purchasing Division
P.O. Box 24055
Oakland, CA 94623

Hand Delivered, delivered by courier or package delivery service (UPS, FedEx, DHL, etc.):

East Bay Municipal Utility District
LARGE DIAMETER STEEL PIPE
RFQ No. 2512
EBMUD–Purchasing Division
375 Eleventh Street, First Floor
Oakland, CA 94607

Bidder's name, return address, and the RFQ number and title must also appear on the mailing package.

6. All costs required for the preparation and submission of an RFQ response shall be borne by the bidder.
7. California Government Code Section 4552: In submitting an RFQ response to a public purchasing body, the bidder offers and agrees that if the RFQ 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 bidder for sale to the purchasing body pursuant to the RFQ response. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.
8. Bidder 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.
9. The RFQ response shall remain open to acceptance and is irrevocable for a period of one hundred eighty (180) days, unless otherwise specified in the RFQ documents.
10. It is understood that the District reserves the right to reject any or all RFQ responses.
11. RFQ responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFQ response or part thereof so marked. RFQ responses submitted in response to this RFQ may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.



EXHIBIT A
RFQ RESPONSE PACKET
RFQ No. 2512 – LARGE DIAMETER STEEL PIPE

To: The EAST BAY MUNICIPAL UTILITY District (“District”)

From: _____
(Official Name of Bidder)

RFQ RESPONSE PACKET GUIDELINES

- **BIDDERS ARE TO SUBMIT ONE (1) ORIGINAL HARDCOPY RFQ RESPONSE WITH ORIGINAL INK SIGNATURES, CONTAINING THE FOLLOWING IN THEIR ENTIRETY:**
 - **EXHIBIT A – RFQ RESPONSE PACKET**
 - **INCLUDING ALL REQUIRED DOCUMENTATION AS DESCRIBED IN “EXHIBIT A-REQUIRED DOCUMENTATION AND SUBMITTALS”**
- **ALL PRICES AND NOTATIONS MUST BE PRINTED IN INK OR TYPEWRITTEN; NO ERASURES ARE PERMITTED; ERRORS MAY BE CROSSED OUT AND CORRECTIONS PRINTED IN INK OR TYPEWRITTEN ADJACENT AND MUST BE INITIALED IN INK BY PERSON SIGNING THE RFQ RESPONSE.**
- **BIDDERS THAT DO NOT COMPLY WITH THE REQUIREMENTS, AND/OR SUBMIT AN INCOMPLETE RFQ RESPONSE MAY BE SUBJECT TO DISQUALIFICATION AND THEIR RFQ RESPONSE REJECTED IN TOTAL.**
- **IF BIDDERS ARE MAKING ANY CLARIFICATIONS AND/OR AMENDMENTS, OR TAKING EXCEPTION TO ANY PART OF THIS RFQ, THESE MUST BE SUBMITTED IN THE EXCEPTIONS, CLARIFICATIONS, AND AMENDMENTS SECTION OF THIS EXHIBIT A – RFQ RESPONSE PACKET. THE DISTRICT, AT ITS SOLE DISCRETION, MAY ACCEPT AMENDMENTS/EXCEPTIONS, OR MAY DEEM THEM TO BE UNACCEPTABLE, THEREBY RENDERING THE RFQ RESPONSE DISQUALIFIED.**
- **BIDDERS SHALL NOT MODIFY DISTRICT LANGUAGE IN ANY PART OF THIS RFQ OR ITS EXHIBITS, NOR SHALL THEY QUALIFY THEIR RFQ 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.”**



BIDDER INFORMATION AND ACCEPTANCE

1. The undersigned declares that all RFQ documents, including, without limitation, the RFQ, 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 RFQ documents.
3. The undersigned acknowledges acceptance of all addenda related to this RFQ.
4. The undersigned hereby certifies to the District that all representations, certifications, and statements made by the bidder, as set forth in this RFQ 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 bidder 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 RFQ and associated RFQ documents.
6. It is the responsibility of each bidder to be familiar with all of the specifications, terms, and conditions and, if applicable, the site condition. By the submission of an RFQ response, the bidder 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: Contractors 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 – RFQ Response Packet, the bidder agrees to meet the minimum insurance requirements stated in the RFQ. 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 RFQ.
9. The undersigned acknowledges that RFQ responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFQ response or part thereof so marked. RFQ responses submitted in response to this RFQ may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.
10. The undersigned bidder hereby submits this RFQ response and binds itself on award to the District under this RFQ to execute in accordance with such award a contract and to furnish the bond or bonds and insurance required by the RFQ. The RFQ, subsequent Addenda, bidder's Response Packet, and any attachments, shall constitute the Contract, and all provisions thereof are hereby accepted.

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

- Bidder is not an SBE and is ineligible for any bid preference; **OR**
- Bidder is an SBE or DVBE as described in the Contract Equity Program (CEP) and Equal Employment Opportunity (EEO) Guidelines, is requesting a 7% bid preference, and has completed the CEP and EEO forms at the hyperlink contained in the CEP and EEO section of this Exhibit A.

For additional information on SBE bid preference, please refer to the Contract Equity Program and Equal Employment Opportunity Guidelines at the above referenced hyperlink.

Official Name of Bidder (exactly as it appears on Bidder'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
- Limited Liability Partnership
- Limited Liability Corporation
- Other: _____
- Joint Venture
- Partnership
- Non-Profit / Church

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: _____

SIGNATURE: _____

Name and Title of Signer (printed): _____

Dated this _____ day of _____ 20 _____



SCHEDULE I BIDDING SHEET

Cost shall be submitted on this Bid 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 contractor, if licensed to collect, or otherwise directly to the State.

No alterations or changes of any kind to the Bid Form(s) are permitted. RFQ 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 RFQ 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.

SCHEDULE I (W24191 Olive Street):

Item	Quantity	Description	Unit Cost Per Lin. Ft.	Total or (Qty. x price per foot)
1	14 Lin. Ft.	36" diameter mortar lined and coated (ML&C) steel pipe and appurtenances, fabricated per the attached RFQ 2512 specifications and drawings. Deliver to District's Oakport Storage Center.	\$ _____	\$ _____
2	11 Lin. Ft.	8" diameter mortar lined and coated (ML&C) steel pipe and appurtenances, fabricated per the attached RFQ 2512 specifications and drawings. Deliver to District's Oakport Storage Center.	\$ _____	\$ _____
3	1	Lot	Other (please indicate)	\$ _____
TOTAL SCHEDULE I AMOUNT BID				\$ _____



SCHEDULE II BIDDING SHEET

Cost shall be submitted on this Bid 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 contractor, if licensed to collect, or otherwise directly to the State.

No alterations or changes of any kind to the Bid Form(s) are permitted. RFQ 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 RFQ 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.

SCHEDULE II (W24391 San Pablo Ave.):

Item	Quantity	Description	Unit Cost Per Lin. Ft.	Total or (Qty. x price per foot)
1	14 Lin. Ft.	24" diameter mortar lined and coated (ML&C) steel pipe and appurtenances, fabricated per the attached RFQ 2512 specifications and drawings. Deliver to District's North Yard.	\$ _____	\$ _____
2	11 Lin. Ft.	6" diameter mortar lined and coated (ML&C) steel pipe and appurtenances, fabricated per the attached RFQ 2512 specifications and drawings. Deliver to District's North Yard.	\$ _____	\$ _____
3	1	Lot	Other (please indicate)	\$ _____
TOTAL SCHEDULE II AMOUNT BID				\$ _____



REQUIRED DOCUMENTATION AND SUBMITTALS

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

1. **Evidence of current NSF 60 and/or 61 certification:**
2. **References:**
 - (a) Bidders must use the templates in the “References” section of this Exhibit A – RFQ Response Packet to provide references.
 - (b) References should have similar scope, volume, and requirements to those outlined in these specifications, terms, and conditions.
 - Bidders must verify the contact information for all references provided is current and valid.
 - Bidders 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 Bidder’s performance record on work similar to that described in this RFQ. The District reserves the right to contact references other than those provided in the RFQ response.
3. **Exceptions, Clarifications, Amendments:**
 - (a) The RFQ response shall include a separate section calling out all clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ documents, which shall be submitted with Bidder’s RFQ response using the template in the “Exceptions, Clarifications, Amendments” section of this Exhibit A – RFQ Response Packet.
 - (b) **THE DISTRICT IS UNDER NO OBLIGATION TO ACCEPT ANY EXCEPTIONS, AND SUCH EXCEPTIONS MAY BE A BASIS FOR RFQ RESPONSE DISQUALIFICATION.**
4. **Contract Equity Program:**
 - (a) Every bidder 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, “Contractor Employment Data and Certification”. Any bidder needing assistance in completing these forms should contact the District's Contract Equity Office at (510) 287-0114 prior to submitting an RFQ response.



REFERENCES

RFQ No. 2512 – LARGE DIAMETER STEEL PIPE

Bidder Name: _____

Bidder must provide a minimum of three (3) 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
RFQ No. 2512 – LARGE DIAMETER STEEL PIPE

Bidder Name: _____

List below requests for clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ Documents, and submit with bidder’s RFQ response. **The District is under no obligation to accept any exceptions and such exceptions may be a basis for RFQ response disqualification.**

Reference to:			Description
Page No.	Section	Item No.	
p. 23	D	1.c.	<i>Bidder takes exception to...</i>

*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 contractors 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 bid.

Non-compliance with the Guidelines may deem a bid 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 bid the appropriate forms.

The CEP guidelines and forms can also be downloaded from the District website at the following link:
<http://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

CONTRACTOR/COMPANY NAME: _____

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.

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, 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 by signing and submitting Exhibit B (“Insurance Requirements”) to the DISTRICT. The Insurance Requirements may be signed by the insurance broker or the insurance broker’s agent (Insurance Broker/Agent) for the CONTRACTOR, or by an officer of the CONTRACTOR (Officer), or by the CONTRACTOR’s risk manager (Risk Manager). The Notice to Proceed shall not be issued, and CONTRACTOR shall not commence Services until a signed Verification of Insurance evidencing the specific coverages and limits required by this Agreement has been received by the DISTRICT.
- C. CONTRACTOR shall carry and maintain the minimum insurance requirements as defined in this Agreement. CONTRACTOR shall require any contractor/subcontractor to carry and maintain the minimum insurance required in this Agreement to the extent the insurance applies to the scope of the services to be performed by contractor/subcontractor.
- D. Receipt of a signed Verification of Insurance by the DISTRICT shall not relieve CONTRACTOR of any of the insurance requirements, nor decrease liability of CONTRACTOR.
- E. Insurance must be maintained, and an updated Verification of Insurance must be provided to the DISTRICT before the expiration of insurance by having the Insurance Broker/Agent, Officer, or Risk Manager update, sign and return the Insurance Requirements to the DISTRICT’s contract manager. The updated Insurance Requirements shall become a part of the Agreement but shall not require a change order to the Agreement. It is the CONTRACTOR’s sole responsibility to provide or to ensure that an updated Verification of Insurance is provided to the DISTRICT. The DISTRICT has no obligation to solicit, remind, prompt, request, seek, or otherwise obtain any updated Verification of Insurance, and any actual or alleged failure on the part of the DISTRICT to obtain any updated Verification of Insurance 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.

- F. 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.
- G. Any deductibles, self-insurance, or self-insured retentions (SIRs) applicable to the required insurance coverage must be declared to and accepted by the DISTRICT.
- H. At the option and request of the DISTRICT, CONTRACTOR shall provide documentation of its financial ability to pay the deductible, self-insurance, or SIR.
- I. CONTRACTOR is responsible for the payment of any deductibles or SIRs pertaining to the policies required under this Agreement. In the event CONTRACTOR is unable to pay the required SIR, CONTRACTOR agrees that such SIR may be satisfied, in whole or in part, by the DISTRICT as the additional insured at the DISTRICT's sole and absolute discretion, unless to do so would terminate or void the policy(ies).
- J. 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.
- K. CONTRACTOR shall defend the DISTRICT and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier required by this Agreement.
- L. 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, must be before the date of this Agreement, and must be before the beginning of any Services related to this Agreement.
- M. For all claims-made policies the updated Verification of Insurance must be provided to the DISTRICT for at least three (3) years after expiration or termination of this Agreement.
- N. If claims-made coverage is canceled or is non-renewed and if the claims-made coverage is not replaced with another claims-made policy form with a retroactive date prior to the effective date of this Agreement and prior to 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 or termination of the Agreement.
- O. In the event of a claim or suit, and upon request by the DISTRICT, CONTRACTOR agrees to provide a copy of the pertinent policy(ies) within 10 days of such request to the DISTRICT for review. Any actual or alleged failure on the part of the DISTRICT to request a copy of the pertinent policy(ies) shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard. Additionally, the DISTRICT may, at any time during CONTRACTOR's performance under this Agreement, request a copy of the Declarations pages and Schedule of Forms and Endorsements of any policy required to be maintained by CONTRACTOR hereunder, whether or not a suit or claim has been filed. Premium details may be redacted from any such documents requested.
- P. The defense and indemnification obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained herein.
- Q. 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.
- R. 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 to 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(s) if the claim(s) is likely to involve the DISTRICT.

- S. It is the obligation of the CONTRACTOR to ensure all contractors/subcontractors performing services under this Agreement maintain the necessary coverages and limits. CONTRACTOR shall ensure that all contractors/subcontractors agree to the same indemnity obligation that CONTRACTOR agrees to in this Agreement based on the nature and scope of services being performed by each contractor/subcontractor. CONTRACTOR shall require that each contractor/subcontractor include the DISTRICT, its directors, officers, and employees as additional insureds on its liability policy(ies) (excepting Professional Liability and Workers' Compensation) for all ongoing and completed operations with coverage as broad as required of CONTRACTOR under this Agreement. Failure or inability to secure fully adequate insurance shall in no way relieve the CONTRACTOR or all contractors/subcontractors of the responsibility for its own acts or the acts of any contractors/subcontractors or any employees or agents of either. All contractors/subcontractors are to waive subrogation against the DISTRICT on all policies. CONTRACTOR shall be responsible for maintaining records evidencing contractors'/subcontractors' compliance with the necessary insurance coverages and limits, and such records shall be made available to the DISTRICT within 10 days upon request.
- T. 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.
- U. 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 Insurance Broker/ Agent, or Officer, or Risk Manager update, sign and return the Insurance Requirements.

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. If there is an onsite exposure of injury to CONTRACTOR, and/or contractor/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.
- C. If CONTRACTOR 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.

- D. 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 "E."
- E. 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.

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, Officer, or Risk Manager, 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 _____

Insurance Carrier Name: _____

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

Insurance Broker/Agent or Officer or Risk Manager'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 and be as broad as Insurance Services Office (ISO) form CG 00 01.
- 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 contractor/subcontractor under this Agreement.
- F. There will be no exclusion for explosions, collapse, or underground liability (XCU).
- G. 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 contractor/subcontractor on CONTRACTOR’s behalf.
- H. 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.”
- I. 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).
- J. 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.
- K. 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. Coverage for the Additional Insureds must be as broad as ISO forms CG 20 10 (ongoing operations) and CG 20 37 (completed operations) for liability arising in whole, or in part, from work performed by or on behalf of CONTRACTOR, or 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, Officer, or Risk Manager, 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 Retention: Amount: \$ _____

Policy Limit: _____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

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

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

III. Business Auto 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. 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
- D. 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").
- E. 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.
- F. 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 contractor's/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.
- G. 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.
- H. 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, Officer, or Risk Manager, 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 Retention: Amount: \$ _____

Policy Limit: \$ _____

Policy Number: _____

Policy Period: from _____ to _____

Insurance Carrier Name: _____

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

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

IV. 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

GENERAL REQUIREMENTS

Effective: June 9, 2021
Supersedes: September 1, 2020

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1. DEFINITIONS

The following terms shall be given the meaning shown, unless context requires otherwise, or a unique meaning is otherwise specified.

- a. **"Change Order"** A Change Order is a written instrument used for modifying the contract with regards to the scope of Work, contract sum, and/or Contract Time. An approved Change Order is a Change Order signed by the District. An executed Change Order is a Change Order signed by both the District and the Contractor.
- b. **"Contract"** means the agreement between the District and Contractor as memorialized in the Contract Documents.

- c. **“Business Entity”** means any individual, business, partnership, joint venture, corporation, sole proprietorship, or other private legal entity recognized by statute.
- d. **“Buyer”** means the District’s authorized contracting official.
- e. **“Contract Documents”** comprise the entire agreement between the District and the Contractor and can include the District’s contract form if used, any purchase order, RFP, RFQ or Contractor response packet, and any addenda, appendices and District approved changes or amendments. The Contract Documents are intended to be complementary and include all items necessary for the Contractor’s proper execution and completion of the Work. Any part of the Work not shown or mentioned in the Contract Documents that is reasonably implied or is necessary or usual for proper performance of the Work, shall be provided by the Contractor at its expense.
- f. **“Contractor”** means the Business Entity with whom the District enters into a contractual agreement. Contractor shall be synonymous with “supplier”, “vendor”, “consultant” or other similar term.
- g. **“Day”** unless otherwise specified, days are calendar days, measured from midnight to the next midnight.
- h. **“District”** means the East Bay Municipal Utility District, its employees acting within the scope of their authority, and its authorized representatives.
- i. **“Goods”** means off the shelf software and all types of tangible personal property, including but not limited to materials, supplies, and equipment.
- j. **“Project Manager”** shall be the District designated individual responsible for administering and interpreting the terms and conditions of the Contract Documents, for matters relating to the Contractor’s performance under the Contract with the District, and for liaison and coordination between the District and Contractor.
- k. **“Work”** means all labor, tasks, materials, supplies, and equipment required to properly fulfill the Contractor’s obligations as required in the Contract Documents.
- l. **“Work Day”** Unless otherwise specified, work day includes all days of the year except Saturdays, Sundays and District holidays.

2. BOND

- a. When required in the District’s bid or proposal solicitation documents, the Contractor to whom award is made shall furnish a good and approved faithful performance bond and/or payment bond within ten business days after receiving the forms for execution.
- b. The bonds shall be executed by a sufficient, admitted surety insurer (i.e.: as listed on website <https://www.cslb.ca.gov/OnlineServices/InsuranceSearch/INSRequest.aspx>) admitted to transact such business in California by the California Department of Insurance. After acceptance of the bond(s) by the District, a copy of the bond(s) will be returned to the Contractor.
- c. If, during the continuance of the Contract, any of the sureties, in the opinion of the District, are or become irresponsible, the District may require other or additional sureties, which the Contractor shall furnish to the satisfaction of the District within ten

days after notice. If the Contractor fails to provide satisfactory sureties within the ten-day period, the Contract may be terminated for cause under Article 18.

3. CONTRACTOR'S FINANCIAL OBLIGATION

The Contractor shall promptly make payments to all persons supplying labor and materials used in the execution of the contract.

4. SAMPLES OR SPECIMENS

The Contractor shall submit samples or prepare test specimens of such materials to be furnished or used in the work as the Project Manager may require.

5. MATERIAL AND WORKMANSHIP

- a. All goods and materials must be new and of the specified quality and equal to approved sample, if samples have been required. In the event any goods or materials furnished, or services provided by the Contractor in the performance of the Contract fail to conform to the requirements, or to the sample submitted by the Contractor, the District may reject the same, and it shall become the duty of the Contractor to reclaim and remove the item promptly or to correct the performance of services, without expense to the District, and immediately replace all such rejected items with others conforming to the Contract. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from these specifications or the drawings, and it shall be the duty of the Contractor to call attention to apparent errors or omissions and request instructions before proceeding with the work. The Project Manager may, by appropriate instructions, correct errors and supply omissions, which instructions shall be binding upon the Contractor as though contained in the original Contract Documents.
- b. All materials furnished and all Work must be satisfactory to the Project Manager. Work, material, or machinery not in accordance with the Contract Documents, in the opinion of the Project Manager, shall be made to conform.

6. DEFECTIVE WORK

The Contractor shall replace at its own expense any part of the work that has been improperly executed, as determined by the Project Manager. If Contractor refuses or neglects to replace such defective work, it may be replaced by the District at the expense of the Contractor, and its sureties shall be liable therefor.

7. WARRANTY

Contractor expressly warrants that all goods furnished will conform strictly with the specifications and requirements contained herein and with all approved submittals, samples and/or models and information contained or referenced therein, all affirmations of fact or promises, and will be new, of merchantable quality, free from defects in materials and workmanship, including but not limited to leaks, breaks, penetrations, imperfections, corrosion, deterioration, or other kinds of product deficiencies. Contractor expressly warrants that all goods to be furnished will be fit and sufficient for the purpose(s) intended. Contractor expressly warrants that all goods shall be delivered free from any security interest, lien or encumbrance of any kind, and free from any claim of infringement, copyright or other intellectual property violation, or other violation of laws, statutes, regulations, ordinances, rules, treaties, import

restrictions, embargoes or other legal requirements. Contractor guarantees all products and services against faulty or inadequate design, manufacture, negligent or improper transport, handling, assembly, installation or testing, and further guaranties that there shall be strict compliance with all manufacturer guidelines, recommendations, and requirements, and that Contractor guaranties that it will conform to all requirements necessary to keep all manufacturer warranties and guarantees in full force and effect. These warranties and guarantees are inclusive of all parts, labor and equipment necessary to achieve strict conformance, and shall take precedence over any conflicting warranty or guarantee. These warranties and guarantees shall not be affected, limited, discharged or waived by any examination, inspection, delivery, acceptance, payment, course of dealing, course of performance, usage of trade, or termination for any reason and to any extent. In the absence of any conflicting language as to duration, which conflicting language will take precedence as being more specific, Contractor's aforesaid warranties and guarantees shall be in full force and effect for a period of one year from the date of acceptance by the District but shall continue in full force and effect following notice from District of any warranty or guarantee issue, until such issue has been fully resolved to the satisfaction of District.

8. NOT USED

9. SAFETY AND ACCIDENT PREVENTION

In performing work under the Contract on District premises, Contractor shall conform to any specific safety requirements contained in the Contract or as required by law or regulation. Contractor shall take any additional precautions as the District may reasonably require for safety and accident prevention purposes. Any violation of such rules and requirements, unless promptly corrected, shall be grounds for termination of this Contract or Contractor's right to precede in accordance with the default provisions of the Contract Documents.

10. CHARACTER OF WORKFORCE

The Contractor shall employ none but skilled competent qualified personnel to perform the Work and shall maintain discipline and order in the conduct of the Work at all times.

11. PREVAILING WAGES & DIR REGISTRATION

- a. Please see www.dir.ca.gov for further information regarding the below.
- b. All Contractors and Subcontractors of any tier bidding on or offering to perform 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).
- c. 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
- d. to post job site notices, "as prescribed by regulation" (LC § 1771.4).
- e. To the extent applicable, 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. Pursuant to Section

1773.2 of the Labor Code, 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.

- f. The holidays upon which such rates shall be paid shall be all holidays recognized in the collective bargaining agreement applicable to the particular craft, classification, or type of worker employed on the Work.
- g. 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.
- h. 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.
- i. As set forth with more specificity in Section 1773.1 of the Labor Code, "per diem" wages include employer payments for health and welfare, pension, vacation, travel, subsistence and, in certain instances, apprenticeship or other training programs, and shall be paid at the rate and in the amount spelled out in the pertinent prevailing wage determinations issued by the Director of Industrial Relations.
- j. 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.
- k. The specified wage rates are minimum rates only and the District will not consider and shall not be liable for any claims for additional compensation made by the Contractor because of its payment of any wage rate in excess of the general prevailing rates. All disputes in regard to the payment of wages in excess of those specified herein shall be adjusted by the Contractor at its own expense.
- l. General prevailing wage determinations have expiration dates with either a single
- m. 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.

12. PAYROLL RECORDS & ELECTRONIC SUBMISSION

If prevailing wages apply, Contractor and each Subcontractor, as appropriate, shall comply with the following:

- a. 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.

- b. The Contractor shall submit for each week in which any contract Work is performed a copy of all payroll records to the Project Manager. The Contractor shall be responsible for submission of copies of payroll records of all Subcontractors.
- c. The Contractor or Subcontractor shall certify the payroll records as shown on the DIR form. In addition, the records shall be accompanied by a statement signed by the Contractor or Subcontractor certifying that the classifications truly reflect the Work performed and that the wage rates are not less than those required to be paid.
- d. 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.
- e. 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.
- f. 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>.

13. HOURS OF LABOR

Pursuant to the provisions of Sections 1810, et seq. of the Labor Code and any amendments thereof:

- a. Eight hours of labor constitutes a legal day's Work under the contract.
- b. 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 except as provided in Article 13.iv below.
- c. 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 in the execution of the contract 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 this Article and the provisions of Labor Code, Sections 1810, et seq.

- d. 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.
- e. 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.

14. EMPLOYMENT OF APPRENTICES

- a. In the performance of the 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.
- b. In the event the Contractor or any Subcontractor willfully fails to comply with the aforesaid section, such Contractor or Subcontractor shall be subject to the penalties for noncompliance in Labor Code, Section 1777.7.

15. CHANGES

- a. Changes in the Work can only be made in writing signed by an authorized employee of the District. If the change causes an increase or decrease in the contract sum, or a change in the time for performance under the Contract, an adjustment may be made as determined by the Project Manager.
- b. The District reserves the right to make changes in the design of materials, equipment, or machinery, to make alterations or additions to or deviations or subtractions from the Contract and any specifications and drawings, to increase or decrease the required quantity of any item or portion of the Work or to omit any item or portion of the Work, as may be deemed by the Project Manager to be necessary or advisable and to order such extra work as may be determined by the Project Manager to be required for the proper execution and completion of the whole Work contemplated. Any such changes will be ordered in writing by the Project Manager. The determination of the Project Manager on all questions relating to changes, including extra work, shall be conclusive and binding.
- c. Prior to issuing an amendment or change to the Contract, the Project Manager may request that the Contractor submit a proposal covering the changes. Within 10 business days of receiving the request, the Contractor shall submit its proposal to the Project Manager of all costs associated with the proposed amendment or change and any request for an extension of Contract time. Contractor's proposal shall include detailed estimates with cost breakdowns, including labor, material, equipment, overhead, and profit. Labor shall be broken down into hours and rate per hour. If applicable, the proposal shall include a breakdown for off-site labor (including factory labor, engineering, etc.). The Contractor's proposal shall include an analysis of schedule impact when the Contractor is requesting an adjustment in contract time. The

Contractor shall be responsible for any delay associated with its failure to submit its change proposal within the time specified. If the Project Manager decides not to issue an amendment or change after requesting a proposal from the Contractor, the Contractor will be notified in writing. The Contractor is not entitled to reimbursement for Change Order preparation costs if the Contractor's proposal is not accepted by the Project Manager.

- d. If the Contractor agrees with the terms and conditions of the approved Change Order, the Contractor shall indicate its acceptance by signing the original copy and returning it to the Project Manager within 10 Work Days after receipt or with reasonable promptness and in such sequence as to not delay the Work or activities of the District or of separate contractors, whichever is sooner. If notice of any change is required to be given to a surety by the provisions of any bond, the Contractor shall provide notice and the amount of each applicable bond shall be adjusted separately. Payment in accordance with the terms and conditions set forth in the executed Change Order shall constitute full compensation for all Work included in the Change Order and the District will be released from any and all claims for direct, indirect, and impact expenses and additional time impact resulting from the Work. If the Contractor disagrees with the terms and conditions of the approved Change Order, the Contractor shall indicate specific areas of disagreement and return the approved Change Order to the Project Manager with a detailed written dispute. No payment will be made on the disputed work until the approved Change Order is returned to the Project Manager. However, whether or not the Contractor agrees with the terms and conditions of an approved Change Order, the Contractor shall immediately revise its sequence of operations as required to facilitate timely completion of the changed work and shall proceed with the revised work sequence.
- e. The Project Manager may, after having received a written cost quotation from the Contractor, order the Contractor, in writing, to proceed with the work prior to issuance of an approved Change Order through a change directive. The change directive will authorize the Contractor to proceed with the work subject to the cost quotation submitted by the Contractor. Within five days following receipt of the change directive, the Contractor shall submit a detailed change proposal documenting the amount of compensation. The Project Manager will review the change proposal and, at its option, will either issue an approved Change Order for the work or direct the Contractor to perform the work through Force Account. Until the method of compensation is determined, and the approved Change Order is received, the Contractor shall keep full and complete time and material records of the cost of the ordered work and shall permit the Project Manager to have access to such records. An approved Change Order shall supersede any previously issued written change directive covering the same Work.

16. EFFECT OF EXTENSIONS OF TIME

The granting, or acceptance, of extensions of time to complete the Work or furnish the labor, supplies, materials or equipment, or any one of the aforementioned, will not operate as a release of Contractor or the surety on Contractor's faithful performance bond.

17. DELAYS

- a. The Contractor shall take reasonable precautions to foresee and prevent delays to the Work. When the Contractor foresees a delay event, and upon the occurrence of a delay

event, the Contractor shall immediately notify the Project Manager of the probability or the actual occurrence of a delay, and its cause. With respect to all delays (compensable, excusable or inexcusable), the Contractor shall reschedule the Work and revise its operations, to the extent possible, to mitigate the effects of the delay. Within 15 days from the beginning of a delay the Contractor shall provide the Project Manager with a detailed written description of the delay, its cause, its impact and the Contractor's mitigation plans. Failure to provide the notification required above waives the Contractor's right to any additional time or compensation resulting from the delay for whatever cause. The Project Manager will investigate the facts and ascertain the extent of the delay, and the Project Manager's findings thereon shall be final and conclusive, except in the case of gross error. An extension of time must be approved by the Project Manager to be effective, but an extension of time, whether with or without consent of the sureties, shall not release the sureties from their obligations, which shall remain in full force until the discharge of the contract.

- b. For inexcusable delays (delays caused by circumstances within the Contractor's control, the control of its subcontractors or supplies of any tier, or within the scope of the Contractor's contract responsibilities) the Contractor shall not be entitled to an extension of time or additional compensation for any loss, cost, damage, expense or liability resulting directly or indirectly from the inexcusable delay.
- c. For excusable delays (delays to completion of the Work within the time limits set forth in the Contract Documents directly caused by events beyond the control of both the Contractor and the District, which delay is not concurrent with an inexcusable delay and which could not have been avoided by the Contractor through reasonable mitigation measures the Project Manager will grant the Contractor an extension of time in an amount equal to the period of Excusable Delay based on the analysis of schedule impact and delay analysis diagram, which shall be the Contractor's sole and exclusive remedy for such delay. Excusable Delays shall include labor strikes, adverse weather, and Acts of God.
- d. For compensable delays (delays to completion of the Work within the time limits set forth in the Contract Documents that could not be avoided by Contractor mitigation, caused directly and solely by the District or by causes within the exclusive control of the
- e. District, and which were not concurrent with any other type of delay) the Project
- f. Manager will grant the Contractor an extension of the time to perform under the Contract and compensation in an amount that represents the Contractor's actual direct costs incurred as a direct result of the compensable delay. The Contractor may recover its direct costs only and may not recover (and waives) all other types of indirect, consequential, special and incidental damages.
- g. For concurrent delays (two or more independent causes of delay directly preventing the Contractor from completing the Work within the time limits set forth in the Contract Documents where the delays occur at the same time during all or a portion of the delay period being considered, and where each of the delays would have caused delay to the Contractor even in the absence of any of the other delays, and none of the delays could have been avoided by Contractor mitigations) the following rules apply:

- i. One or more of the concurrent delays are excusable or compensable, then the period of concurrent delay will be treated as an excusable delay; and
- ii. All of the concurrent delays are inexcusable, then the period of concurrent delay will be inexcusable.

18. TERMINATION

a. Termination by the District for Cause:

- i. District may terminate the Contractor's right to proceed under the Contract, in whole or in part, for cause at any time after the occurrence of any of the following events, each of which constitutes a default:
 - 1. The Contractor becomes insolvent or files for relief under the bankruptcy laws of the United States.
 - 2. The Contractor makes a general assignment for the benefit of its creditors or fails to pay its debts as the same become due.
 - 3. A receiver is appointed to take charge of the Contractor's property.
 - 4. The Contractor fails to supply skilled supervisory personnel, an adequate number of properly skilled workers, proper materials, or necessary equipment to prosecute the Work in accordance with the Contract Documents.
 - 5. The Contractor fails to make progress so as to endanger performance of the Work within the contractually required time.
 - 6. The Contractor disregards legal requirements of agencies having jurisdiction over the Work, the Contractor, or the District.
 - 7. The Contractor fails to provide the District with a written plan to cure a District identified default within five business days after the District's request for a plan to cure; the District does not accept the Contractor's plan for curing its default; or the Contractor does not fully carry out an accepted plan to cure.
 - 8. The Contractor abandons the Work. Abandonment is conclusively presumed when the District requests a written plan to cure a default and the Contractor does not submit the plan within five business days of the District's request.
 - 9. The Contractor materially fails to meet its obligations in accordance with the Contract Documents.
 - 10. The Contractor is in default of any other material obligation under the Contract Documents.
- ii. If any of the above events occur, the District may, in its discretion, require that the Contractor submit a written plan to cure its default, which plan must be provided to the District within 5 business days of the request and must include a realistic, executable plan for curing the noted defaults.

- iii. Upon any of the occurrences referred to in Article 18.a.i. above, the District may, at its election and by notice to the Contractor, terminate the Contract in whole or in part; accept the assignment of any or all of the subcontracts; and then complete the Work by any method the District may deem expedient. If requested by the District, the Contractor shall remove any part or all of the Contractor's materials, supplies, equipment, tools, and machinery from the site of the Work within seven days of such request; and, if the Contractor fails to do so, the District may remove or store, and after 90 days sell, any of the same at the Contractor's expense.
- iv. No termination or action taken by the District after termination shall prejudice any other rights or remedies of the District provided by law or by the Contract Documents.
- v. Conversion: If, after termination for other than convenience, it is determined that the Contractor was not in default or material breach, or that the default or material breach was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for convenience pursuant to Article 18.b. below.

b. Termination by the District for Convenience:

- i. The District may, at its option, and for its convenience, terminate the Contract at any time by giving written notice to the Contractor specifying the effective date of termination. Upon such termination, the Contractor agrees to comply with the notice and further agrees to waive any claims for damages, including loss of anticipated profits, on account of the termination; and, as the sole right and remedy of the Contractor, the District shall pay the Contractor as set forth below.
- ii. Upon receipt of a notice of termination for convenience, the Contractor shall, unless the notice directs otherwise, do the following:
 - 1. Immediately discontinue its performance of the Contract to the extent specified in the notice.
 - 2. Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of a portion of the Work that is not discontinued or that is necessary for an orderly cessation of the Work.
 - 3. Promptly cancel, on the most favorable terms reasonably possible, all subcontracts to the extent they relate to the performance of the discontinued portion of the Work.
 - 4. Thereafter, do only such Work as may be necessary to preserve and protect Work already in progress and to protect materials, plants, and equipment in transit to or on the site of performance.
- iii. Upon such termination for convenience, the District will pay to the Contractor the sum of the following:

1. The amount of the contract sum allocable to the portion of the Work properly performed by the Contractor as of the effective date of termination, less sums previously paid to the Contractor.
 2. Previously unpaid costs of any items delivered to the project site that were already fabricated for subsequent incorporation into the Work.
 3. Any proven losses with respect to materials and equipment directly resulting from the termination.
 4. Reasonable demobilization costs.
- iv. The above reimbursement is the sole and exclusive remedy to which the Contractor is entitled in the event the contract is terminated for convenience; and the Contractor expressly waives any other claims, damages, demands, compensation or recovery related to this contract or project. The Contractor agrees to sign a general release incorporating this waiver.
- c. Effect of Termination: Upon termination, the obligations of the Contract shall continue as to portions of the Work already performed and, subject to the Contractor's obligations under Article 18.b.ii, as to bona fide obligations assumed by the Contractor prior to the date of termination.
- d. Force Majeure: If the contract is suspended or terminated by the District because Contractor's performance is prevented or delayed by an event including an irresistible, superhuman cause, or by the act of public enemies of the State of California or of the United States ("Force Majeure"), the Contractor will be paid for Work performed prior to the Force Majeure event at either (i) the unit prices named in the Contract; or (ii) in the event no unit prices are named, a sum equal to the percentage of the total contract amount that matches the percentage of the total contract Work performed prior to the Force Majeure event.

19. DAMAGES

All losses or damages to material or equipment to be furnished pursuant to the Contract Documents occurring prior to receipt and final acceptance of the Work shall be sustained by the Contractor. The Contractor shall sustain all losses arising from unforeseen obstructions or difficulties, either natural or artificial, encountered in the prosecution of the Work, or from any action of the elements prior to final acceptance of the work, or from an act or omission on the part of the Contractor not authorized by the Contract Documents.

20. ORDER OF PRECEDENCE

- a. In the case of conflicts, errors, or discrepancies in any of the Contract Documents, the order of precedence is as follows. Within the same order of precedence, specific requirements shall take precedence over general requirements.
 - i. Approved Change Orders.
 - ii. Addenda.
 - iii. RFQ or RFP.
 - iv. Referenced Standard Specifications and Drawings.
 - v. Contractor's Response Packet.

- b. With reference to drawings:
 - i. Numerical dimensions govern over scaled dimensions.
 - ii. Detailed drawings govern over general drawings.
 - iii. Addenda/Change Order drawings govern over contract drawings.
 - iv. Contract drawings govern over standard drawings.
 - v. Notes apply only to the drawing where the notes appear, unless classified as “typical” or intended to apply elsewhere in which case they apply to all drawings where the conditions or circumstance noted occurs.
 - vi. Typical details apply to all drawings unless a specific different detail is shown.

21. INDEMNIFICATION

Contractor 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 Contractor'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.

22. PROHIBITION OF ASSIGNMENT

The Contractor shall not assign, transfer, or otherwise dispose of any of its rights, duties or obligations under this Contract. This prohibition does not apply to the District. The District retains the right to assign this Contract in whole or in part at any time upon reasonable terms.

23. NEWS RELEASES

The Contractor, its employees, subcontractors, and agents shall not refer to the District, or use any logos, images, or photographs of the District for any commercial purpose, including, but not limited to, advertising, promotion, or public relations, without the District's prior written consent. Such written consent shall not be required for the inclusion of the District's name on a customer list.

24. SEVERABILITY

Should any part of the Contract 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 the Contract, which shall continue in full force and effect, provided that the remainder of the Contract can be interpreted to give effect to the intentions of the parties.

25. COVENANT AGAINST GRATUITIES

The Contractor warrants that no gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the District with a view toward securing the Contract or securing favorable treatment with respect to any determinations concerning the performance of the Contract. For breach or violation of this warranty, the District shall have the right to terminate the Contract, either in whole or in part, and any loss or damage sustained by the District in procuring on the open market any items which Contractor agreed to supply shall be borne and paid for by the Contractor. The rights and remedies of the District provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or in equity.

26. RIGHTS AND REMEDIES OF THE DISTRICT

The rights and remedies of the District provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Contract.

27. WAIVER OF RIGHTS

Any action or inaction by the District or the failure of the District on any occasion, to enforce any right or provision of the Contract, shall not be construed to be a waiver by the District of its rights and shall not prevent the District from enforcing such provision or right on any future occasion. Rights and remedies are cumulative and are in addition to any other rights or remedies that the District may have at law or in equity.

28. CONFIDENTIALITY

Contractor agrees to maintain in confidence and not disclose to any person or entity, without the District's prior written consent, any trade secret or confidential information, knowledge or data relating to the products, process, or operation of the District. Contractor 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 Contractor during the term of the Contract. The covenants contained in this paragraph shall survive the termination of this Contract for whatever cause.



EXHIBIT D

IRAN CONTRACTING ACT CERTIFICATION

Pursuant to Public Contract Code (PCC) § 2204, an Iran Contracting Act Certification is required for solicitations of goods or services of \$1,000,000 or more.

To submit a bid or proposal to East Bay Municipal Utility District (District), you must complete **ONLY ONE** of the following two paragraphs. To complete paragraph 1, check the corresponding box **and** complete the certification for paragraph 1. To complete paragraph 2, check the corresponding box and attach a copy of the written permission from the District.

1. We are not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services (“DGS”) pursuant to PCC § 2203(b), and we are not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

CERTIFICATION FOR PARAGRAPH 1:

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY, that I am duly authorized to legally bind the BIDDER/bidder to the clause in paragraph 1. This certification is made under the laws of the State of California.

Firm: _____

By: _____ Date: _____
(Signature of Bidder)

Title: _____

Signed at: _____ County, State of: _____

OR

2. We have received written permission from the District to submit a bid or proposal pursuant to PCC § 2203(c) or (d). *A copy of the written permission from the District is included with our bid or proposal.*

EXHIBIT E
TECHNICAL SPECIFICATIONS AND DRAWINGS

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. The requirements of this section apply to all submittals in the Contract Documents.
2. Submit samples, drawings, and data for the Engineer's review which demonstrate fully that the construction, and the materials and equipment to be furnished will comply with the provisions and intent of this Specification. All submittals shall be written in Standard American English and all numerical data, whether in drawings, test reports, engineering calculations, manufacturer's literature, or maintenance manuals, shall be in United States Customary System (USCS) measuring units (foot, pound, gallons, etc). If original design work was completed in metric units, their equivalent USCS dimension and unit shall be indicated. All submittals, in printed or electronic format, shall be original quality and completely legible. Any obfuscation or loss of clarity of original which may result in ambiguous interpretation is not acceptable.
3. Specific items to be covered by the submittals shall include, as a minimum, the following:
 - a. For pipelines, submit a detailed layout of the pipeline with details of bends and fabricated specials and furnish any other details necessary. Show location of shop welds.
 - b. Substitutions

1.2 PRODUCT HANDLING

- A. Submittals shall be accompanied by a cover page and shall be in strict accordance with the provisions of this section.
- B. Submit priority of processing when appropriate.
- C. Submit materials to the EBMUD Materials Testing Laboratory when so specified. Submit other submittals to Construction Division, EBMUD, in accordance with Article 3.1 unless specified otherwise.
- D. Proposals for "or equal" substitutions made prior to bid opening, pursuant to PCC Section 3400 , shall be delivered after coordinating the delivery with the District.

Material Supplier shall coordinate with the District's Purchasing Division at the following telephone numbers: (510) 287-1253, or (510) 287-2017.

1.3 SUBMITTALS

- A. Submittals shall include the following information:
 - 1. A copy of the applicable section(s), with addendum updates included as appropriate, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
 - 2. A check mark shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Material Supplier, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer is the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Material Supplier with the specifications.
- B. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
- C. Any deviation from the contract documents not specifically requested and clearly identified, although accepted through oversight, may be rejected at any stage of the Work. The Material Supplier shall, at its own expense, reconstruct all work affected by the later rejection of a contract deviation that was not specifically called out and explained for review and acceptance by the District as detailed above.

PART 2 - PRODUCTS

2.1 SCHEDULE OF SUBMITTALS

- A. Schedule of Submittals shall be in the form of a submittal log similar to that shown in Appendix A.

2.2 SHOP DRAWINGS

- A. Scale required:
 - 1. Make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the work.
- B. Type of prints required:

1. Make all shop drawing prints in blue or black line on white background. Reproductions of District drawings are not acceptable.

C. Size of drawings required:

1. The overall dimensions of each drawing submitted to the Engineer shall be equal to one of the District's standard sheet sizes as listed below. The title block shall be located in the lower right hand corner of each drawing and shall be clear of all linework, dimensions, details, and notes.

Sheet Sizes
Height x Width

11" x 8-1/2"
11" x 17"
22" x 34"

- D. Stamp or permanently print on each drawing "Reference EBMUD Drawing _____" and enter the pertinent drawing number.

2.3 MANUFACTURERS' LITERATURE

- A. Where contents of submitted literature from manufacturers include data not pertinent to the submittal, clearly show which portions of the contents are being submitted for review.
- B. Clearly mark the literature with the materials and options being provided to illustrate conformance with the specification details.
- C. Provide the complete part number and include the legend containing the descriptive details that define the meaning of each digit of the number.

2.4 SUBSTITUTIONS

- A. Engineer's approval required:
 1. The contract is based on the materials, equipment, and methods described in the Contract Documents. Any Material Supplier proposed substitutions are subject to the Engineer's approval.
 2. The Engineer will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data, and all other information required by the Engineer to evaluate the proposed substitution.
 3. Where substitutions are proposed for consideration, Material Supplier shall submit a written request for the substitution and shall show that it is equal to the specified item. The proposed substitution shall be identified separately and

included with the required submittal for the item. When submitting a variation or substitution the Material Supplier warrants that:

- a. The contract has been reviewed to establish that the substitution, when incorporated, will be compatible with other elements of work.
 - b. The Material Supplier shall perform all necessary work for making substitutions workable and shall bear any additional cost necessary because of the proposed substitution.
4. Substitutions not specifically requested, although accepted through oversight, may be rejected at any stage of the work. The Material Supplier shall, at its own expense, reconstruct all work affected by the later rejection of a substitution that was not specifically requested.

2.5 SUBMITTAL QUANTITIES

- A. Submit four (4) copies of all hard-copy (printed) items as identified herein unless specified otherwise.
- B. Submit one (1) electronic copy of the scanned data and drawings in searchable PDF (compatible with Adobe Acrobat version XI).
- C. Submit three (3) of each sample, unless specified otherwise.
- D. Submit quantity specified of materials submitted to the EBMUD Materials Testing Laboratory.

2.6 ELECTRONIC SUBMITTALS

- A. Provide electronic submittals in searchable PDF (compatible with Adobe Acrobat version XI). All portions of the electronic submittals shall be legible and shall be in full color identical to the original material. Provide manufacturer's literature in original electronic file, if available.
- B. Provide one electronic submittal file for each submittal except as noted hereinafter. The electronic submittal file name shall use the following format: submittal number – specification section number - description (e.g.: “001.1-01 33 00-Coating of Widgets”). Providing multiple electronic files for a single submittal (except as noted hereinafter) is not acceptable. The Material Supplier shall merge multiple files into a single electronic file.

PART 3 - EXECUTION

3.1 GENERAL

- A. Prepare and use a transmittal form for submittals that includes the following information:

1. "To: Purchasing Division, Contract Supervisor, MS #102
East Bay Municipal Utility District
P.O. Box 24055
Oakland, CA 94623-1055
2. *"From:" Name and address of Material Supplier
3. *Spec. Section, Article Number, Paragraph and Subparagraph Number and/or drawing number and detail references
4. Location of use
5. *Submittal number
6. *Signature and title of transmitter
7. *Original submittal or resubmittal

Note: All transmittals shall include asterisked items as a minimum to be acceptable for review.

- B. Use the "Item Number" on the Schedule of the Submittal for the corresponding submittal number. On a resubmittal, add a numerical suffix to the original submittal number. For example, 6.1 indicates the first resubmittal of submittal Number 6.
- C. Use a separate transmittal form for each specific item or class of material or equipment within a division for which a submittal is required. Transmittal of a submittal of multiple items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or when items are so functionally related that review of the group as a whole is appropriate.
- D. If a submittal contains multiple items, then each item shall be clearly labeled throughout the submittal or indexed in a manner eliminating confusion in identifying how each item relates to the whole. When submittal items have been assigned a "District equipment tag number" in the contract documents, each tag number shall be included throughout the submittal to clearly associate the specific submittal information to specific tag numbers.
- E. Stamp or permanently print on each submittal the following certification statement.

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into **Error! Reference source not found.** RFQ No. XXX, is in compliance with the Contract drawings and specifications, can be installed in the allocated spaces, and is submitted for District (record/review).

Certified by _____ Date _____"

3.2 COORDINATION OF SUBMITTALS

A. General:

1. Prior to submittal for Engineer's review, use all means necessary to fully coordinate all material, including the following procedures:
 - a. Determine and verify all field dimensions and conditions, materials, catalog numbers, and similar data.
 - b. Coordinate as required with all trades and with all public agencies involved.
 - c. Secure all necessary approvals from agencies having jurisdiction and signify with agency stamp, or other means, that approvals have been secured.
 - d. Clearly indicate all deviations from the Contract Documents.

B. Grouping of submittals:

1. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items; the Engineer may reject partial submittals as not complying with the provisions of the Contract Documents.

C. Resubmittals:

1. The Material Supplier shall include a Comment and Response sheet with each resubmittal. The Comment and Response sheet shall be the first item after the submittal transmittal form. The Comment and Response sheet shall include each review comment (word for word) from the previous submittal cycle, followed by the Material Supplier's response clarifying how the comment has been addressed in the resubmittal. All responses shall at a minimum have a general description of what new information in the resubmittal addresses the review comment; and where in the resubmittal this new information can be located (tab number, page number, etc).
2. Resubmittals that do not comply with the requirements set forth in subparagraph C.1 above will be returned to the Material Supplier without review. The Material Supplier shall resubmit with an appropriate Comment and Response sheet as specified herein.

3.3 TIMING OF SUBMITTALS

- A. Article 3.3 – Timing of Submittals, is not applicable for proposals for “or equal” substitutions made prior to bid opening pursuant to PCC Section 3400 (see Instructions to Bidders, Article 3).

B. General:

1. Make all submittals far enough in advance of scheduled dates of installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.
2. In scheduling, unless otherwise noted, allow at least twenty (20) work days for the Engineer's review. No time extension will be allowed for the Contract due to time loss in the review process.

3.4 REVIEW BY ENGINEER

- A. Acceptance of each submittal by the Engineer will be general only and shall not be construed as:
 1. Permitting any departures from the contract requirements.
 2. Relieving the Material Supplier of the responsibility for any errors and omissions in details, dimensions, or of other nature that may exist.
 3. Approving departures from additional details or instructions previously furnished by the Engineer.
- B. Submittals (excluding manuals and asbuilt drawings) will be returned to the Material Supplier marked "No Exceptions Taken", "Make Corrections Noted", "Revise and Resubmit", "Acknowledged Receipt", or "Rejected", except that in some cases, all copies of a submittal may be returned to the Material Supplier marked "Returned Without Review". See paragraph 3.4 .E for proposals for "or equal" substitutions made prior to bid opening pursuant to PCC Section 3400 (see Instructions To Bidders, Article 3).
 1. "No Exceptions Taken" indicates that item covered by the submittal may proceed provided it complies with requirements of the specifications. Final acceptance will depend upon that compliance.
 2. "Make Corrections Noted" indicates that item covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the specifications. Final acceptance will depend on that compliance.
 3. "Revise and Resubmit" indicates that the Material Supplier shall not proceed with any phase of the item covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations and requirements of the specifications.
 4. "Acknowledged Receipt" indicates that the item is required to be submitted to the Engineer primarily for information or record purposes, and is not subject to Engineer's review.

5. "Returned Without Review" indicates that the submittal was not reviewed by the Engineer due to the submittal being incomplete, illegible, inadequate, or otherwise failing to conform to the requirements of the specification. Material Supplier shall prepare a new submittal for this item.
 6. "Rejected" indicates that the submittal proposes an action of which the Engineer does not approve, makes an assertion with which the Engineer disagrees, appears to show intent to violate the terms of the Contract, or is otherwise objectionable to the Engineer and is returned to the Material Supplier with prejudice.
- C. Resubmit revised drawings or data as indicated unless otherwise specified.
 - D. Work requiring the Engineer's review and acceptance shall not begin until the submittals for that work have been returned as "No Exceptions Taken" or "Make Corrections Noted".
 - E. Proposals for "or equal" substitutions made prior to bid opening pursuant to PCC Section 3400 will be evaluated by the Engineer, and if accepted, bidders will be notified by addenda.

3.5 CHANGES TO ACCEPTED SUBMITTALS

- A. A resubmittal is required for any proposed change to a submittal that has been marked "No Exceptions Taken" or "Make Corrections Noted". Changes which require resubmittal include, but are not limited to, drawing revisions, changes in materials and equipment, changes to installation procedures and test data. All resubmittals shall include an explanation of the necessity for the change.
- B. Minor corrections to an accepted submittal may be accomplished by submitting a "Corrected Copy".

END OF SECTION

SECTION 01 45 27

SHOP INSPECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Work includes:

1. Provide the District's Plant Inspection Section with advanced notification for Short Term (three consecutive weeks or less at one facility), and Long Term (more than three consecutive weeks at one facility) inspection assignments, and reimburse the District for travel expenses described in this Section.
2. Provide notification to the District's Plant Inspection Section of all work performed off the project site in fabrication, assembly, and coating plants; provide safe access to all areas where work is being performed.
3. The District reserves the right to use Third Party Inspectors in lieu of District personnel. All aspects of this section shall also apply to District contracted Third Party Inspectors.
4. For Long Term assignments provide the following:
 - a. Adequate office space including desk, office chair, lighting, and climate control;
 - b. A large format (up to 11 X 17 paper size) printer/scanner/copier and paper and printer supplies for the duration of the assignment;

B. Material Suppliers shall ensure that there shall be adequate lighting, ventilation, and safety procedures in place to permit safe and thorough inspection at all times.

C. All inspection and measurement tools and equipment employed by Material Suppliers shall be made available to the District and remain in the area for inspection, and shall be subject to regular inspection and verification by the District that such tools and equipment are properly calibrated and in an operable condition.

D. Material Suppliers shall identify in writing the person responsible for the receipt and coordination of all Inspector communications. A representative from the Material Supplier responsible for Quality Control shall be present and available to the Engineer at all times during the course of inspections.

- E. Material Suppliers shall respond promptly to address and correct all fabrication and inspection processes to comply with the Contract Documents. Corrective measures undertaken by the Material Supplier shall be documented and the documentation made available for review, inspection and photocopying by the Engineer, at all times.
- F. See individual sections, listed in Article 1.4, for specific processes requiring shop inspection.

1.2 WITNESS NOTIFICATION

- A. The Material Supplier shall provide advanced written notification including the following information:
 - 1. The related specification section(s);
 - 2. Details of materials, parts or components to be inspected/tested;
 - 3. Name and location of shop to be visited;
 - 4. Shop's contact information;
 - 5. Approved submittal number; and,
 - 6. Proposed dates for those processes described in this and related Sections (Quality Control) for each shop location.
- B. The shop where the inspections and tests will occur shall contact the District Plant Inspection Section at (510) 287-1132 to schedule all shop inspections. Visits will be scheduled based on Engineer's availability.
- C. Notification Schedule:

ONE-WAY DISTANCE FROM OAKLAND	SHORT TERM ASSIGNMENTS	LONG TERM ASSIGNMENTS
less than 75 miles	5 work days in advance	15 work days in advance
75 to 200 miles	10 work days in advance	15 work days in advance
greater than 200 miles	15 work days in advance	20 work days in advance
International	30 work days in advance	30 work days in advance

- D. Shift work outside of standard first shift work hours (7 AM to 5 PM), including changes to previously staffed shift work (excluding cancelation of shift work), require advanced approval by the Engineer. Following approval by the Engineer, shift work shall start no sooner than the first Monday following 10 work days' notice for locations up to 200 miles from Oakland, and the first Monday following 15 work days' notice for locations over 200 miles from Oakland.
- E. If the required notification is not given, the District will schedule the witness inspection at its convenience and the activity to be witnessed shall not proceed until the Engineer arrives or the Engineer notifies the Material Supplier that it is choosing to waive its witness inspections. In the event that the required notification is not given and the activity has occurred in the absence of the Engineer, the Engineer may reject the processes completed to date and require the activity to be redone.
1. Delays resulting from failure to provide the required notification will be non-excusable. Expenses incurred by delays; repeat of the work process; or to correct unacceptable work shall be borne by the Material Supplier.
- F. Out of Country Inspection and Witnessing
1. Equipment and items of supply that are subject to witness inspection by the District as identified in Article 1.4, "Witness Schedule" and other contractually required work and all places to be used for their production or testing, shall be available to District personnel. The District's decision that such equipment, items, or work cannot be safely inspected or observed, including a decision that the country, area, or facility in which production or testing is to occur may not be safe for District personnel shall be final. The District will consult the US Department of State

website (<https://travel.state.gov/content/passports/en/alertswarnings.html>) for “Travel Advisories” to countries and regions to determine the safety of international travel. Areas with travel advisories shall not be considered for procurement of items that require District inspection.

G. Confidentiality or Non-Disclosure Agreements

1. Facilities that require execution of a Confidentiality or Nondisclosure Agreement (NDA) shall submit a copy of the agreement for review to the District through the submittal process for the project or purchase agreement prior to requesting District inspection. The NDA will be considered an agreement between the District (not individual inspectors) and the requesting company. The requirements of the California Public Records Act shall supersede the terms of any NDA and language to that effect will be included in the NDA by the District.

1.3 TRAVEL EXPENSES

- A. The Material Supplier shall include in the bid price all travel expenses for the Engineer to conduct the witness inspections noted if any of the inspections are to be performed at a locality exceeding 125 miles one way from Oakland, CA.
- B. Travel expenses include hotel lodging at an establishment rated three diamond or better by American Automobile Association (AAA), or comparable listing, and a minimum \$92 meal and incidental expenses allowance per day, or at the rate established by US General Services Administration (for domestic) or US Department of State (for international), whichever is greater, for the duration of the trip.
- C. If travel exceeds 200 miles one way from Oakland, CA, in addition to the expenses described in 1.3.B, travel expenses shall also include round trip direct route coach airfare from Oakland, CA; San Francisco, CA; Sacramento, CA; or San Jose, CA Airports to manufacturer's plant or testing facility, mid-sized car rental or taxi services, fuel, tolls, ground transportation to and from the airport, and airport parking at the departing airport; the following expenses shall apply as determined by the Engineer:
 1. For international or travel outside the continental United States, per diem rates are those established by the US Department of State for the specific location and dates of travel. Travel expenses may include the direct cost of securing passports, visas, language interpreters, document translators, communications, and internet access.
 2. If weekend stays are requested to defray transportation costs, reimbursement for the Engineers' stay over the weekend will include meal allowance, hotel expenses, phone and internet access charges, rental car or transportation charges to and from eating establishments, laundry service, language interpreters, or other necessary business expenses or services.

- 3. Reimburse the District for any inspection that has to be repeated due to repair or rework of unacceptable work. Reimbursement shall include District Engineers' wages, or if done by a District agent, the agent's complete invoice for the needed inspection.
- D. All fees incurred such as airline reservation change fees, loss of fare due to purchase of nonrefundable tickets, hotel cancellation/rebooking fees, etc., due to Material Supplier-requested changes to the inspection schedule after the initial notification shall be borne by the Material Supplier.

1.4 WITNESS SCHEDULE

- A. The District will witness the following processes as specified in the applicable specification sections listed below or as required elsewhere in the Contract Documents. For purposes of estimating, anticipate that one Engineer will cover only one shift of shop inspection work per plant site. The costs for additional inspection required by the operation of more than one work shift per day or by more than one shop inspection site per day shall be included in the bid costs.
- B. For pipeline projects, one additional Engineer is required at pipe manufacturing facilities for the sole purpose of reviewing radiographs.

Spec. Section	Section Title and Description
33 11 03.01	Fabrication of Steel Pipe – All phases of pipe fabrication
33 11 13.50	Mortar Lining Steel Pipe
33 11 13.60	Mortar Coating of Steel Pipe

PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION

SECTION 33 11 03.01

MANUFACTURE OF AWWA STEEL PIPE CYLINDERS AND FABRICATION OF CIVIL STEEL PIPE SPECIALS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Manufacture steel pipe cylinders in compliance with AWWA C200-05, including referenced standards therein, with emphasis and exceptions as provided in this section and on the drawings. Shop coat and shop line pipe cylinders as shown on the drawings, and in accordance with Article 1.5, Quality Assurance, and as described in related sections.
2. Fabricate steel pipe fittings and special sections in compliance with AWWA C208. Shop coat and shop line specials sections as shown on the drawings, and in accordance with Article 1.5, Quality Assurance, and as described in related sections.

B. For procurement and fabrication of commercial ASTM/API steel pipe cylinders for buried civil water pipe, see Section 33 05 24.45 – Commercial Steel Civil Pipe.

C. For procurement and fabrication of mechanical pipe and special sections, see Section 40 20 20 – Mechanical Piping.

D. Related Sections:

1. Section 01 33 00 – Submittal Procedures
2. Section 01 45 27 – Shop Inspection
3. Section 33 11 13.50 – Mortar Lining for Steel Pipe
4. Section 33 11 13.60 – Mortar Coating for Steel Pipe

1.2 REFERENCES

A. Standards:

1. ASNT Recommended Practice SNT-TC-1A (latest edition)

2. ANSI B16.9 – Factory-made Wrought Buttwelding Fittings
3. ASME Boiler and Pressure Vessel Code (2019) – Sections V, VIII, and IX
4. ASTM A106 – Seamless Carbon Steel Pipe for High-Temperature Service
5. AWS D1.1-2020 – Structural Welding Code
6. AWWA C200-05 – Steel Water Pipe, 6 in. (150 mm) and Larger
7. AWWA C208 – Dimensions for Fabricated Steel Water Pipe Fittings
8. NACE SP0178-2007 – Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service
9. NSF-61 – Drinking Water System Components

1.3 DEFINITIONS

- A. Manufacturer: Facility that forms and welds steel into straight pipe sections. The Manufacturer may also be the fabricator.
- B. Fabricator: Entity that fabricates special sections including fabricated bends, tees, and manhole sections. For the purposes of this Section, Fabricator may also fabricate appurtenant welded steel elements including nozzles, skirted flanges, and manhole risers for the use of the Manufacturer.
- C. Lead Supplier: Entity that assumes overall direction of the work of this Section. The Lead Supplier may be either the Manufacturer or the Fabricator.

1.4 SUBMITTALS

- A. See Section 01 33 00 – Submittals
- B. The Lead Supplier, on behalf of the Pipe Manufacturer and Pipe Fabricator, shall submit the following:
 1. NSF-61 certificate of compliance for any product that will be in contact with potable water
 2. Statement of qualifications, record, and references showing required 5 years of experience
 3. Written quality control plans
 4. Certifications of visual inspection personnel, NDE examiners, and welding inspectors

5. Welding Procedure Specifications (WPS) and welding Procedure Qualification Records (PQR) prior to the start of welding
6. Qualifications of welders
7. Mill certificates, or certificates from approved testing laboratory or other source, for the steel used for cylinders and specials, showing conformance to appropriate ASTM/API standards including chemistry and mechanical properties.
8. Coating and lining materials called for on the drawings and listed in the Related Sections.
9. Temporary removable coating with manufacturer's application and removal instructions
10. Shop drawings, including electronic format of both PDF and CAD (AutoCAD, AutoCAD Civil 3D, or MicroStation) copies for the Engineer's approval prior to fabrication. Shop drawings shall show the details of fabrication of fittings, weld symbols in accordance with AWS A2.4 for all joints to be welded, NDE symbols, and assembly of pipe and fittings for the completed pipeline. Shop drawings shall show field location number of each fitting and piece of pipe.
11. A list of field location numbers for each pipe and special with the cylinder manufacturing number of all cylinders used in the fabrication of the pipe or special prior to shipment
12. Calculations for special sections designed by the Fabricator for review prior to fabrication
13. Pipe cylinder manufacturing test reports, hydrostatic test reports, and NDE welding test reports with the appropriate information to ensure compliance with these specifications

1.5 QUALITY ASSURANCE

A. Manufacturer, Fabricator, Lead Supplier

1. The Lead Supplier shall be responsible for compliance with contract documents; to prepare and submit shop drawings; and to certify that all pipes and special sections have been constructed in accordance with contract documents.
2. Manufacturer and Fabricator shall each have at least five years' experience manufacturing pipe and specials sections of the same or larger diameter,

length, and thickness required for the Work, including application of lining and coating as specified herein and in related sections of this specification.

3. All aspects of manufacture, fabrication, linings, coatings, and testing are to take place at the facilities of the Fabricator or Manufacturer.
4. Manufacturers and Fabricators shall maintain written quality programs to ensure that all referenced codes, standards, and specification requirements will be consistently met. This program shall be submitted prior to start of work. As a minimum, the quality program shall describe the quality control systems including a description of the organization; reporting lines of all departments within the organization; inspection and test controls for each process; company minimum job qualifications for each inspector and non-destructive examination (NDE) tester; inspector and NDE tester certifications and the basis for those certifications; calibration of measuring and test equipment; documentation requirements; nonconformance reporting; and disposition and corrective action requirements.
5. Manufacturer and Fabricator shall provide NDE testers and inspectors needed for the work, including ASNT TC-1A Level II certification for the test method used or AWS certified radiographic interpreter. The Engineer will review and approve NDE and inspection reports prior to further processing of the pipe.

B. Engineer

1. The Engineer may perform and witness inspections and tests, and review inspection reports during all phases of fabrication. See Section 01 45 27 – Shop Inspection, for advance notification requirements and reimbursement of District travel expenses.
2. The Engineer may reject any pipe or special sections that do not conform to the prescribed test results and tolerances set forth in this specification, the drawings, and referenced standards.
3. The Engineer may inspect all materials, and if materials do not meet specification, will reject them and the Lead Supplier will be notified.

C. Tensile, bend and material chemistry tests:

1. Samples of coil, sheet, or weld may be taken by the Engineer for testing by an independent laboratory.

D. Qualification of welding procedures, welders, and welding operators

1. Manufacturers and Fabricators shall have qualified welding procedures, repair weld procedures, welders, and welding operators in accordance with the

provisions of Part QW of Section IX of the ASME Boiler and Pressure Vessel Code or AWS D1.1 Structural Welding Code, Clause 6. In addition, welders and welding operators for fillet welds shall be qualified by the fillet weld break test according to AWS D1.1 Section 6.13.

2. When the material includes toughness requirements, welding procedure test plates shall include these same toughness requirements for the weld metal and heat-affected zone. The toughness specimens shall be transverse to the weld seam.
3. When the material is to be heat treated, welding procedure test plates shall be heat treated after welding in the same manner as the material.
4. Welding procedures and welder qualifications shall be provided at no cost to the District.

E. Cylinder welding tests

1. The Manufacturer shall cut tension and bend test coupons from pipe cylinders for testing of welded seams. Manufacturer shall test in accordance with AWWA C200-05 Paragraph 4.11.5 and ASTM E8. Welded seam samples shall test at not less than 100 percent of the minimum tensile strength of the specified steel.
 - a. Strain data and yield strength shall be provided with all tensile test results.
 - b. Frequency of production weld tests: At least one set of test coupons taken from each heat of steel, from each shift, from each welding machine, and from each operator.
 - c. Lead Supplier shall pay for all tension tests and bend tests of welded seams.

F. Radiographic examination (Required for Pipe Diameters 24-inch and Larger)

1. Full seam radiographic examination by the Manufacturer
 - a. Spiral seams on spiral welded pipe, longitudinal seams on straight-seam pipe, and full-penetration groove welds on specials and fittings shall be radiographed for the complete length of each seam on each pipe. All weld seams shall be visually accepted, and results documented by Manufacturer's Quality Control prior to initial radiography.
 - b. Real Time Radiographic (RTR) examination shall be used for spiral and long-seam welds on pipe standards; film radiography or digital

fluoroscopy shall be used for specials or fittings. RTR examination of pipe welds shall comply with ASME (2019) Section V Article 2 Mandatory Appendix II utilizing hole-type IQI revealing 2T sensitivity per Table T-276 in addition to IQI placement per Section T-277.1-C placed on or adjacent to the weld a minimum of three locations, approximate center of weld run and one at each end or termination of weld. Welds shall conform to ASME Section VIII Paragraph UW-51.b.1 through 4. The Engineer has sole authority to make final determination of conformance to ASME Section V for film or radiographic image sensitivity and ASME Section VIII for weld acceptability.

- c. Results of radiographic examinations shall be reviewed by the Fabricator's ASNT TC-1A Level II or AWS certified radiographic interpreter. The Engineer will review radiographic film and inspection reports. Welds shall be verified as being acceptable based on ASME Section VIII criteria prior to further processing of the cylinder. Lead Supplier shall pay for all film radiographic examinations.
- d. Final determination of conformance to ASME Section V for film sensitivity and ASME Section VIII for weld acceptability will be made by the Engineer.
- e. Lead supplier shall pay for all radiographic examinations.

G. Radiograph records (Required for Pipe Diameters 24-inch and Larger)

- 1. All radiographs, including information only examinations, shall become the property of the District.
 - a. The Manufacturer shall provide to the District all hardware and software necessary to review the radiographs, at no cost to the District. For the review of radiographic film, the Manufacturer shall provide the District with one new film viewer as follows: LC NDT FV-2010-T-PLUS High Intensity Portable LCD Film Viewer with Built-in Densitometer and Electronic Masking, or equal as approved by the Engineer.
 - b. In cases where the radiographs are not recorded on standard radiographic film, the Manufacturer shall provide one set of hardware and software to the District prior to the start of radiography for retention by the District. The software shall provide equivalent viewing capabilities to the software used by the Manufacturer. For example: GE digital fluoroscopy systems shall include GE hardware loaded with GE Rhythm Review software suite including optional thickness and area measurement tools. Sufficient training of EBMUD inspectors on the use of the software shall also be provided.

H. Repair welding and cylinder evaluation

1. Cylinders will be evaluated by the Engineer for overall quality at the time of weld examination, using the percentage of seam weld to be repaired as criterion. Cylinders requiring more than allowable percentage of seam weld repair shall be reported to the Engineer for review and approval prior to repair. The Manufacturer shall provide documentation and radiographs to the Engineer sufficient to evaluate all known defects on these cylinders.
 - a. The Engineer may at its sole discretion reject any cylinder requiring more than the allowable percentage of seam weld repair.
 - b. The allowable percentage of seam weld repair for spiral seam pipe is 3 percent.
 - c. The allowable percentage of seam weld repair for other welds is 12 percent.
2. Repair all weld defects using an approved weld repair procedure and qualified welders.
 - a. Weld defect repairs shall be examined using the same NDE method that originally identified the defect. The repair of weld defects originally identified using real time radiographic (RTR) may be examined using RTR, film or digital radiography.
 - b. Completed repair weld surface shall comply with NACE SP0178, Appendix C, Designation C prior to testing.

I. Hydrostatic tests by the Manufacturer:

1. Shop-test each steel cylinder prior to lining or coating. Test to develop a circumferential tensile stress equal to 75 percent of the minimum yield for the specified steel.
2. The test pressure shall be held for sufficient time to observe the weld seams, but not less than 2 minutes. All surfaces shall be dry during inspection.
3. Repair by chipping, grinding, or air-arcing and then re-weld. Completed repair weld surface shall comply with NACE SP0178, Appendix C, Designation C prior to testing.
4. Retest hydrostatically all repaired pipe.
5. Cylinders requiring more than 3 percent of any seam to be repaired as a result of hydrostatic testing shall be rejected.

- J. Welding tests for special sections by the Manufacturer or Fabricator:
1. Pipe cylinders used for fabrication of special sections will meet all the requirements for pipe, including passing all tests and quality inspections, contained herein.
 2. Hydrostatically test the special sections if indicated on the drawings.
 3. Test welded seams in the shop by NDE methods in accordance with AWWA C200, Paragraph 5.2.2.1. NDE shall be radiography for all circumferential groove welds. NDE for fillet welds and groove welds that cannot be radiographed due to weld configuration shall be approved by the Engineer.
 4. All double-welds that contain small volumes shall be tested with air.
 - a. No pipe, valve body, or other large volume shall be air tested.
 - b. Air tests require separate air inlet and monitoring ports.
 - c. Test at 40 psi for at least 5 minutes.

1.6 HANDLING, DELIVERY, AND STORAGE

- A. Prevent damage to and maintain round shape of pipe and specials by proper padding, bracing, and stulling:
1. See Drawings.
 2. Do not drag, skid, roll, or drop pipe sections.
 3. Lower trucking saddles shall be rigid, shaped, and cushioned to provide uniform bearing. Block pipes to prevent shifting when transporting. Blocking, nylon slings, and belts for securing the pipes shall be suitably padded.
 4. Cap both ends of each pipe section after application of lining and maintain caps in place until the pipe segment is ready to be installed. A cover over the entire front end of the truck load shall be provided during transit.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials in contact with potable water shall be NSF-61 approved.
- B. When Submerged Arc Welding (SAW) is performed, only new flux shall be used. Reprocessed flux slag is not allowed.

2.2 STEEL FOR MANUFACTURED PIPE CYLINDERS AND FABRICATED CIVIL PIPE SPECIALS

- A. Pipe shall be fabricated from coils for spiral welded pipe or plate for straight seam pipe manufactured to fully killed, fine grain practice per AWWA C200 Table 1 (including notes) and:
1. Minimum yield strength: 36,000 psi
 2. Minimum tensile strength: 45,000 psi
 3. Minimum elongation in 2-inch sample: 20 percent
 4. Minimum thickness: As shown on the drawings. No part of steel plate or coil shall be thinner than stated thickness.
 5. Toughness
 - a. Test steel for notch toughness using the Charpy V-notch test for:
 - 1) All unlisted materials including modifications to ASTM A36 and A572 Grade 42
 - 2) For unmodified ASTM A36 and A572 Grade 42 materials, test materials with wall thickness 0.40 inch and greater.
 - b. The steel shall withstand a minimum impact of 25 ft-lb at a temperature of 30 degrees F. Specimen size per ASTM A370, Figure 11 and Table 9. Specimen shall be transverse to rolling direction. Test each heat by taking one specimen from any two coils per heat number and test in accordance with ASTM A370.
- B. Steel plate for collars, wrappers, and crotch plates used in fabrication of special sections shall conform to these requirements.

2.3 USE OF PIPE FROM STOCK

- A. Quote shall be based on all new pipe made in conformance with this section. Manufacturer or Fabricator may propose substituting stock pipe subject to the provisions of this article:
1. Use of stock pipe is at the sole discretion and approval of the Engineer.
 - a. A change order request detailing the cost savings to the District shall be presented to the Engineer for consideration and action.

2. Pipe shall comply with all applicable requirements of this specification, including witness inspections. All inspections of stock pipe shall be performed at the original pipe manufacturer's facility. The Lead supplier shall ensure that the Engineer has rights of access to the manufacturer's facility and all records related to manufacturing of the subject stock pipe.
 - a. Steel shall comply with Article 2.2.
 - b. No circumferential welds or coil splices are allowed.
 - c. The Engineer will visually inspect and approve pipe prior to radiographic weld examination. The pipe shall be suitably cleaned to allow for a thorough visual inspection.
 - d. Required for Pipe Diameters 24-inch and Larger: Each seam on each pipe shall be inspected by radiography for the complete length of the weld in the presence of the Engineer, including re-examination of repairs. Real Time Radiographic (RTR) examination or Film Radiography shall be used.
 - 1) RTR examination of pipe welds shall comply with ASME (2010) Section V Article 2 Mandatory Appendix II utilizing hole-type IQI revealing 2T sensitivity per Table T-276 in addition to IQI placement per Section T-277.1-C placed on weld a minimum of three locations, approximate center of weld run and one at each end or termination of weld.
 - 2) Film radiography shall comply with ASME (2010) Section V Article 2 Mandatory Appendix II utilizing hole-type IQI revealing 2T sensitivity per Table T-276 in addition to IQI placement per Section T-277.1-C placed on weld. Each film shall be identified with unique numbering as a minimum with the EBMUD Spec Number, date, and cylinder number. Welds shall conform to ASME Section VIII Paragraph UW-51.b.1, 2, 3 and 4. Final determination of conformance to ASME Section V for film sensitivity and ASME Section VIII for weld acceptability will be made by the Engineer.
 - e. Hydrostatic testing per Article 1.5.I shall be performed in the presence of the Engineer.
 - f. The Engineer will witness lining and coating of pipe.
 - g. The Engineer will provide final inspection and approval before shipping.

2.4 FLANGES FOR PIPE CYLINDERS

- A. Flanges, unless otherwise indicated, are AWWA C207 ring flanges of the appropriate class as shown on the drawings and on Standard Drawings 323-EA, 324-EA, and 325-EA.
 - 1. The Lead supplier is responsible for ensuring that flanges match to the connecting valves or fitting.
 - 2. Gasket and bolting requirements are shown on the Standard Drawings 323-EA, 324-EA, and 325-EA.
 - 3. Flanges shall be stamped AWWA with the class designation, size and manufacturer's mark.

2.5 SMALL DIAMETER CONNECTIONS

- A. Pipe: Small-diameter pipe for nozzles (including manholes up to 30 inches) and bypass shall conform to ASTM A53 Type E or S, Grade B, or ASTM A106 Grade B. Unless otherwise noted on drawings, pipe shall be Standard Weight.
- B. Wrought fittings: Fittings for butt welding shall conform to ASME B16.9 and ASTM A234, Grade WPB. Unless otherwise noted on drawings, fittings shall be Standard Weight.

PART 3 - EXECUTION

3.1 FABRICATION OF STEEL CYLINDERS

- A. Cylinders shall be manufactured such that:
 - 1. Cylinders shall be substantially true right cylinders, formed from plate or coils.
 - 2. The difference between major and minor axes shall not exceed 1 percent of the diameter of the pipe.
 - 3. Flat spots, as measured with a template over an arc of 30 degrees, shall not exceed 1/8-inch.
 - 4. Straightness of cylinders shall be such that no point on the surface of the cylinder shall deviate more than 1/8-inch as measured by a 10-foot long straight edge held against the pipe.
 - 5. Circumferential welds are not acceptable except on bends and special sections, or as approved by the Engineer. Coil splices are not allowed.

6. Seams at adjoining pipes (for field welding) or at adjoining segments for shop welded bends and special sections shall be offset at least 4 inches.
 7. Pipe end treatments, clearances, and tolerances are shown on the drawings. Bells shall be formed per the requirements of AWWA C200.
 8. Mill sheets, plates, or coils shall contain no welded seams or splices.
 - a. Exception: For pipe formed with longitudinal seams, there shall be no more than three longitudinal seams in the cylinder. Long seams shall be offset at least 45 degrees or 18 inches, whichever is greater.
- B. Type of welding shall be limited to the following methods unless approved otherwise by the Engineer prior to use:
1. Submerged arc welding (SAW)
 2. Shielded metal arc welding (SMAW)
 3. Flux cored arc welding (FCAW)
 4. Resistance seam welding (RSEW)
 5. Manual welding is permitted on bends and special sections not suitable for automatic welding.
- C. Welding shall conform to:
1. Complete penetration groove welds shall be used for fabricating cylinders and shall have an efficiency of at least 100 percent of the specified minimum strength of the adjacent sheet. Weld bead shall be central to the seam and free from depressions, undercut edges, burrs, irregularities, and valleys.
 2. Automated welds in spiral seam and longitudinal seam pipe shall be continuous for the full length of the seam. Additional manual or automated welding performed after the initial seam weld to correct for defects or discontinuities including but not limited to offset, undercut, weld skip and burn-through will be considered repair welding.
 3. Before welding, edges shall be thoroughly cleaned and properly formed. Forming of material shall not be performed by means of hammering. Surfaces shall be cleaned at least 1/2-inch from the weld joint in addition to the surface to be welded. Remove any sharp edges and points on surfaces to be coated.
 4. Weld bead height:

- a. The height of weld bead above the plate surface, interior and exterior, shall be nominal 1/8-inch, $\pm 1/32$ -inch.
 - 1) Exception: When pipes are to be coated with Tape Wrap or Extruded Polyolefin, the exterior weld bead height shall not exceed 1/32-inch.
 - b. All ground weld seams shall be smooth and free of burrs. Do not grind or gouge the adjacent pipe wall material. Overgrinding of the base material is considered a discontinuity per AWWA C200 4.2.2 and is limited to 12.5 percent. Overgrinding shall be reported to the Engineer for repair approval.
5. Unacceptable defects and discontinuities shall be chipped or air-gouged, ground to sound metal, and then re-welded by either manual or automatic welding as approved by the Engineer.
 6. Restart the welding operation on clean and sound metal.
 7. Welding technique shall ensure uniform distribution of residual stresses in the weld or adjacent metal. Undercuts are not permitted and must be repaired by welding or by grinding where feasible.
 8. Weld beads on the outside of plain or spigot ends and on the inside of bell ends shall be ground flush for the distance of the stab dimension indicated on the drawing plus one inch from the end of the cylinder.
 9. Groove welds made by RSEW shall have no buildup either internally or externally. Pipe made by this method shall be cleaned of all material formed during the welding process beyond the outside circumference of the cylinder.
 10. Inspection of cylinder welds shall conform to Article 1.2.G, Radiographic Examination by the Manufacturer.

3.2 SHOP FABRICATION OF SPECIAL SECTIONS

A. General requirements:

1. Lead supplier shall design reinforcement for all fittings and special sections, unless otherwise shown on the drawings.
 - a. Lead supplier designs shall be in accordance with AWWA M-11, AWWA C200, AWWA C208, and these specifications.
 - b. Special sections designed by the lead supplier shall be at least as strong as adjacent straight pipe sections. Submitted calculations to include the

District's Design Working Pressure (P) back calculated from the specified minimum yield stress (Sy), wall thickness (t) and the steel pipe external diameter (D) according to:

$$P = t * Sy / D$$

The calculated value of P shall be used in the Lead supplier's designs.

2. Fabricate from shop drawings submitted and approved by the Engineer.
3. Fabricated pipe cylinders used for special sections shall be of the same quality as specified herein for the straight pipe and shall have passed the hydrostatic test and welding inspection (including radiographic) required herein.
4. Special sections may be fabricated from cylinders that are lined, coated, lined and coated, or bare. Exception:
 - a. Mortar lined special sections are to be constructed of lined cylinders where the mortar is placed centrifugally according to the requirements of Section 33 11 13.60 – Mortar Lining for Steel Pipe.
5. All steel components of fabrication shall meet the requirements of Article 2.2, Steel for Manufactured Pipe Cylinders and Fabricated Civil Pipe Specials OR 33 05 24.45 for ASTM/API steel pipe.
6. Before cutting pipe, remove any lining and coating from the line of cut as needed for cutting, welding, and weld NDE, but at least 2 inches on each side. Use care to avoid damage to the lining and coating beyond the area removed. Tack-weld any loose ends of mortar reinforcement as needed.
7. Adjacent spiral or long weld seams shall be offset no less than 4 inches.
8. Apply linings and coatings as shown on the drawings and described in the Related Sections for those materials.
9. See the drawings for any requirements of air-test ports on reinforcing plates and flanges.

B. Welding:

1. Conform to the quality assurance requirements of Article 1.5.J, Welding tests for Special Sections.
2. Conform to the applicable requirements of Article 3.1, Fabrication of Steel Cylinders.

C. Bends:

1. Deflections up to 5 degrees may be made by factory-mitering one end of the pipe. Deflections up to 15 degrees may be made by equal factory-mitering the ends of two adjacent sections. Deflections greater than 15 degrees shall be made by use of fabricated bends, see drawings.

D. Fabricated branch fittings and nozzles:

1. Grind pipe seam-welds flush in area of collars and wrappers and fit reinforcing plates snugly against pipe.
2. Stress relieve all tees and wyes having girder reinforcement plates 1-inch or greater in thickness. Stress relieving shall conform to Paragraphs UW-40 and UCS-56 of Section VIII of the ASME Code.

E. Flanged Sections:

1. Conform to Standard Drawings 323-EA, 324-EA, and 325-EA and as indicated on the drawings.
2. Flanges fabricated from segments of plate shall be stress relieved before machining. Stress relieving shall conform to Paragraphs UW-40 and UCS-56 of Section VIII of the ASME Code.

3.3 IDENTIFICATION OF PIPE AND FITTINGS

A. Manufacturer's mark:

1. Each cylinder shall be plainly stamped in two locations with the District specification number followed by a unique, sequential manufacturing number.
2. Each cylinder shall be metal stamped 1 inch from the bell end located 1 inch adjacent to the weld on the outside and 1 inch from the spigot end located 1 inch adjacent to the weld on the inside. For double bells and plain-end pipe, each end shall be marked with one end outside and one end inside located 1 inch from the weld.
3. This number shall be used in the manufacturing of cylinders, straight pipes, and special sections. This number shall be used for NDE of pipe cylinders, welding, coating/lining, and hydrostatic tests to trace the materials throughout fabrication.
4. Transfer the unique identification number by metal stamping to all pieces cut from cylinder, located 1 inch from end of cut and 1 inch from the weld, prior to

cut. Add additional numbers as required to provide material traceability throughout fabrication.

B. Pipe marks:

1. Straight pipe and special sections shall be marked as indicated on the contract and/or shop drawings. Mark shall be stamped on the inside of the spigot end and spray-painted on the coating near the bell end. Pipe marks include:
 - a. Date of final coating
 - b. Identification to show proper location in the pipeline, by reference to layout drawings or schedules
 - c. Beveled pipe shall be marked to show degree of bevel and point of maximum pipe length at the spigot end.
 - d. Field top of pipe
 - e. Other marks needed for construction

3.4 REPAIR OF DAMAGED PIPE

- A. Obtain approval of Engineer before performing repair work.
- B. Repair in presence of Engineer or replace all pipe sections damaged during manufacturing, handling, transporting, or storing.
- C. Reshaping of cylinders, pipes, and fittings shall be accomplished by rolling or pressing. Reshaping by hammering shall be prohibited.

END OF SECTION

SECTION 33 11 13.10

POLYWRAP

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Furnish and install protective wrapping for mortar coated pipe, specials, fittings and valves.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General purpose polyvinyl chloride adhesive tape:
 - 1. Two inches wide by 10 mils thick, minimum
 - 2. Scotchrap No. 50, Polyken No. 900, Denso Utility Tape, Calpico Pipe Wrapping Tape, or equal as approved by the Engineer
- B. Polywrap:
 - 1. AWWA C105, linear low-density polyethylene film, black, 8-mil minimum thickness.
 - 2. Minimum polywrap length shall be:
 - a. Olive Street – 20 feet
 - b. San Pablo Ave. - 20 feet
 - 3. Minimum polywrap tube size shall be:

<u>Nominal Pipe Diameter</u> <u>(Inches)</u>	<u>Polywrap Flat Tube Width (Inches)</u> <u>Steel Pipe, Mortar Coated</u>
4	14
6	17
8	21
12	29
16	37
20	41
24	54
30	67
36	81
42	81
48	95

54
60
72

108
108
108

END OF SECTION

SECTION 33 11 13.50

MORTAR LINING FOR STEEL PIPE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Mortar lining of steel pipe, special sections, and fittings.
- B. Work shall conform to AWWA C205-12, including referenced standards therein, with emphasis and exceptions as provided in this Section.
 - 1. Shop-applied lining shall be applied in conjunction with requirements of Section 33 11 03.01 – Manufacturer of AWWA Steel Pipe Cylinders and Fabrication of Civil Steel Pipe Specials
- C. Related sections:
 - 1. Section 01 33 00 – Submittal Procedures
 - 2. Section 01 45 27 – Shop Inspection
 - 3. Section 33 11 03.01 – Manufacturer of AWWA Steel Pipe Cylinders and Fabrication of Civil Steel Pipe Specials
- D. References:
 - 1. American Concrete Institute (ACI) 506.2-90 – Specification for Materials, Proportioning, and Application of Shotcrete
 - 2. AWWA C205-12 – Cement-Mortar Protective Lining and Coating for Steel Water Pipe 4 In. and Larger—Shop Applied
 - 3. AWWA C652-11 – Disinfection of Water-Storage Facilities
 - 4. International Concrete Repair Institute (ICRI) No. 03732 – Selecting and Specifying Concrete Surface Preparations for Sealers, Coatings, and Polymer Overlays (including placards)
 - 5. NSF-61 – Drinking Water System Components

1.2 QUALITY ASSURANCE FOR SHOP APPLIED LINING

- A. Also see Article 1.5 of Section 33 11 03.01 – Manufacturer of AWWA Steel Pipe Cylinders and Fabrication of Civil Steel Pipe Specials

1. Application of linings, and required testing discussed herein, shall be performed at the same facility where the straight and special pipe sections are manufactured or fabricated.
 2. The Manufacturer and/or Fabricator applying the linings shall have at least 5 years' experience with the specified materials, pipeline diameters, and application methods specified herein.
- B. Compressive strength testing and certification of the lining process and testing method is required in advance of the work. Manufacturer and/or Fabricator shall prepare, no more than 90 days in advance of the work, at least ten samples for each application process to be used for the work.
1. Samples shall be tested according to AWWA C205 and the certified results submitted to the District.
 2. Provide a description of each lining application and testing method to be used.
- C. The Engineer will inspect all phases of lining and testing.

1.3 SUBMITTALS

- A. Submit the following items:
1. NSF-61 certificates of compliance of all materials that will be in contact with water
 2. A statement of qualifications, record, and references demonstrating required experience
 3. Descriptions of lining and testing methods; certified pre-production compressive strength test results
 4. Sand samples
 5. Certified Material and Test Reports from an approved testing laboratory showing conformance to the appropriate ASTM specifications and the requirements of this Section for all materials, including Portland cement
 6. Shop drawings showing lining dimensions, tolerances, reinforcement, and application method. Indicate surface preparation on the shop drawings

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials furnished that are in contact with water shall be NSF-61 certified.

2.2 CEMENT MORTAR

A. Portland cement:

1. ASTM C150, Type II or Type V
2. Shall contain no more than 0.60 percent alkalis calculated as the percentage of sodium oxide plus 0.658 percent times the percentage of potassium oxide.

B. Sand: ASTM C33 and as follows:

1. Fineness modulus: 2.50 to 3.00
2. Average sand equivalent of three successive samples tested by the test method California Test 217 shall be not less than 75, and no individual sample shall have a sand equivalent of less than 70.
3. Furnish sand samples from each source for District testing a minimum of 30 calendar days prior to start of fabrication. Samples shall be sent to:

EBMUD Materials Testing Lab
1100 21st Street
Oakland, CA 94607

4. Sand samples shall be identified by District Specification number, manufacturer, origin of sand and product type, and labeled as LINING SAND.

C. Lining reinforcement shall be flat welded-wire fabric, 2-inch x 4-inch, W0.5 x W0.5, galvanized, conforming to ASTM A1064.

PART 3 - EXECUTION

3.1 SHOP APPLIED LINING FOR STRAIGHT SECTIONS

- A. Unless otherwise noted on the drawings, the lining is to be installed by rotating the pipe section and centrifugally applying the mortar.
- B. Mix proportions shall consist of one part Portland cement to not more than three parts fine aggregate by weight. The free (added) water content of the cement-mortar lining mix shall not exceed 7-1/2 gallons per one 94 pound sack of cement.
- C. The water-soluble chloride ion content of the mortar shall not exceed 150 milligrams in 1,000 grams of mortar.
- D. The mortar of Portland cement, sand, and water shall provide a compressive strength of 4,500 psi at 28 days.
 1. Compressive strength shall be determined using centrifugal test cylinders, per AWWA C205 Paragraph 5.1.3, and,

2. Rates and durations of rotation of the pipe and of the sample shall be approved by the Engineer before testing. The density of the lining sample shall be representative of the lining of the pipe.
- E. Application of lining:
1. Before placing linings:
 - a. Clean the interior of loose rust, scale, oil, or foreign matter.
 - b. Complete all shop testing and inspections.
 - c. Install round-up rings at each end of pipe exterior ring beams. Rings and beams shall remain in place until the lined pipe section is supported for curing. The number and spacing of ring beams shall be adequate to maintain a rigid and round pipe section within the specified tolerance.
 2. Place the mortar lining evenly and uniformly throughout the length of pipe. Minimum allowable and maximum allowable lining thicknesses are shown on the drawings.
 - a. The cured lining thickness shall be measured at various locations as indicated by the Engineer using a calibrated instrument.
 - b. Finished lining shall have a hard, dense, non-gritty surface free from defects. Smoothness shall meet or exceed ICRI profile CSP-1.
 3. Damaged and/or defective lining shall be removed and the area relined.
 - a. Voids and areas of poor adhesion, as evidenced by drumming when sounded, are considered defective lining.
- F. Curing:
1. Moist curing:
 - a. Cure for not less than 96 hours.
 - b. Surface must be kept continuously wet by sealing the pipe ends airtight or by a method approved by the Engineer.
 2. Accelerated curing:
 - a. Steam curing may be used to shorten curing duration. Each 1 hour of steam curing will reduce the required 96 hour moist cure by 4 hours.
 - b. Start accelerated curing 3 to 6 hours after lining has been applied.

- c. Curing steam shall be saturated vapor at 90°F to 125°F maximum and not less than 85 percent humidity as measured adjacent to the mortar being cured.
 - d. Steam curing chambers shall protect pipe from drafts.
 - e. Recording devices for temperature and humidity shall be used in a sufficient number of locations to verify that the altered environment is in direct contact with the mortar being cured. The duration of accelerated curing for each cylinder shall be documented and available for review by the Engineer.
- G. Cap both ends of the pipe.
- H. Handling and protecting lined cylinders shall be per requirements of Article 3.3.

3.2 MORTAR LINING FOR SPECIAL SECTIONS

- A. Special sections shall be fabricated from lined cylinders as described in this Section.
- 1. Upon proper review and approval, the Fabricator may use unlined cylinders for fabrication of specials when the use of lined cylinders is not possible. The use of unlined cylinders is at the sole discretion of the Engineer.
- B. The materials, quality testing, curing, handling, and protection of the finished lining for special sections shall conform to the requirements for straight pipe of this Section.
- C. Lining thickness for special sections shall be at least the same as specified for the straight pipe sections unless otherwise shown on the drawings. Lining of special sections should provide a smooth transition to adjacent lined sections.
- D. When the strip of exposed cylinder is 12 inches or more wide, reinforce lining with welded-wire fabric tack overlapped 4 inches and welded to the cylinder.
- E. Use an epoxy bonding agent to bond new mortar to existing mortar.
- F. Apply mortar lining by hand plastering or by a machine method approved by the Engineer.

Where allowed, lining may be placed pneumatically per the requirements of ACI 506.2-90.

- 1. No method of application is allowed where the dry mortar components and water are separately introduced at the nozzle.
- 2. Pneumatic systems that do not have a weight system or pre-measured material ratio of sand and cement shall be verified per ASTM C136 and C117.

3.3 HANDLING AND PROTECTING LINED PIPES AND SPECIALS

- A. Lined pipes and specials shall be supported by belt slings or shaped rubber pads providing at least 120-degree support during all handling and shipping operations. Use a two-point lifting system at the approximate quarter points. Dropping or rolling of lined pipe and specials is not permitted.
- B. Protect from rapid temperature changes after curing.
- C. Protect against being heated by the atmosphere or direct sunlight to above 100°F by covering with burlap or other suitable material. Keep cover continuously wet.
- D. Maintain end caps in place until the pipe is ready to be installed.

END OF SECTION

SECTION 33 11 13.60

MORTAR COATING FOR STEEL PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mortar coating of steel pipe, special sections and fittings

B. Work shall conform to AWWA C205, including referenced standards therein, with emphasis and exceptions as provided in this Section.

1. Shop-applied coating shall be applied in conjunction with requirements of Section 33 11 03 – Fabrication of Steel Pipe - 24-inch and Larger.
2. Field repair coating and joint mortaring shall be applied in conjunction with requirements of Section 33 11 13.05 – Installation of Steel Pipe.

C. Related sections:

1. Section 01 33 00 – Submittal Procedures
2. Section 01 45 27 – Shop Inspection
3. Section 33 11 03.01 – Manufacturer of AWWA Steel Pipe Cylinders and Fabrication of Civil Steel Pipe Specials

D. References:

1. American Concrete Institute (ACI) 506.2-90 – Specification for Materials, Proportioning, and Application of Shotcrete
2. ASTM A615/A615M-12 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
3. ASTM C117-04 – Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
4. ASTM C136-06 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
5. ASTM C1107-91 – Standard Specification for Packaged Hydraulic-Cement Grout (Nonshrink)
6. AWWA C205-07 – Cement-Mortar Protective Lining and Coating for Steel Water Pipe 4 In. and Larger—Shop Applied

1.2 QUALITY ASSURANCE FOR SHOP-APPLIED COATING

- A. Also see Article 1.5 of Section 33 11 03.01 – Manufacturer of AWWA Steel Pipe Cylinders and Fabrication of Civil Steel Pipe Specials
 - 1. Application of all coatings, and required production testing discussed herein, will be performed at the same facility where the straight and special pipe sections are manufactured or fabricated.
 - 2. The Pipe Manufacturer and/or Fabricator may apply the coatings shall have at least 5 years' experience with the specified materials, pipeline diameters, and application methods specified herein.
- B. Absorption testing and certification of the coating process is required in advance of the work. The Manufacturer and/or Fabricator shall prepare, no more than 90 days in advance of the work, at least ten samples for each application process to be used for the work.
 - 1. Samples shall be tested according to AWWA C205 and the certified results submitted to the District.
 - 2. Provide a description of each coating application and testing method to be used.
- C. The Engineer will inspect all phases of coating and testing.

1.3 SUBMITTALS

- A. Submit the following:
 - 1. A statement of qualifications, record and references showing required experience
 - 2. Certified Material and Test Reports from an approved testing laboratory showing conformance to the appropriate ASTM specifications and the requirements of this section for all materials, including Portland cement
 - 3. Descriptions of coating and testing methods; certified pre-production absorption test results
 - 4. Sand samples
 - 5. Sacked mortar cut sheets
 - 6. Flexible-form cut sheet and dimensioned drawing
 - 7. Shop drawings showing coating dimensions, tolerances, reinforcement, and application method. Indicate surface preparation on the shop drawings

PART 2 - PRODUCTS

2.1 SHOP-APPLIED MORTAR COATING

A. Portland cement:

1. ASTM C150, Type II or Type V
2. Shall contain not more than 0.60 percent alkalis calculated as the percentage of sodium oxide plus 0.658 percent times the percentage of potassium oxide.

B. Sand: ASTM C33 and as follows:

1. Fineness modulus of 2.70 to 3.20
2. Average sand equivalent of three successive samples tested by the test method California Test 217 shall be not less than 75, and no individual sample shall have a sand equivalent of less than 70.
3. Furnish sand samples from each source for District testing a minimum of 30 calendar days prior to start of fabrication. Samples shall be sent to:

EBMUD Materials Testing Lab
1100 21st Street
Oakland, CA 94607

4. Sand samples shall be identified by District Specification number, manufacturer, origin of sand and product type, and labeled as COATING SAND.

C. Reinforcement for cement mortar coating:

1. Straight sections:
 - a. Reinforcement for cement mortar coating shall be wire or wire fabric as specified in AWWA C205 and as shown on the Drawings.
 - b. If shown on the drawings, the Manufacturer may also elect to use spiral bar reinforcement as specified below:
 - 1) Spiral bar reinforcement, 7/32-inch minimum diameter, Grade 40, conforming to ASTM A615. Bars shall be plain, smooth, and round.
2. Special sections:
 - a. Welded Wire Fabric, ASTM A1064, 2-inch x 4-inch, W0.5 x W0.5, galvanized, self-furring.

PART 3 - EXECUTION

3.1 MORTAR COATING OF STRAIGHT SECTIONS

A. Preparation for coating:

1. Remove all loose or foreign substances that could interfere with adhesion of the cement mortar to the cylinder.
 - a. The Engineer, at its sole discretion, may require rusted steel to be blasted clean.

B. Coating reinforcement:

1. Reinforcement options are shown on the drawings.
2. Optional spiral bar reinforcement, when shown on the drawings:
 - a. Wrap bar reinforcement on the lined steel cylinder at a tensile stress of 8,000 to 10,000 psi at a maximum spacing of 2 inches. Bar spacing shall be uniform.
 - b. Weld bar to the cylinder at ends of pipe section and at points where splices are made. At splices, the bars shall be butt welded and the weld shall develop the full strength of the bar.
 - c. Coating reinforcement shall end at a point 4 inches from the end of the steel cylinder.

C. Application of mortar coating:

1. Cement mortar shall consist of not more than three parts sand to one part Portland cement, by weight. The moisture content of the mixture shall not be less than 7 percent of the total dry weight of the mix.
2. Absorption testing shall be conducted in accordance with AWWA C205 Paragraph 5.2.1., with sampling taken at equal intervals of the work shift. Test results shall be provided to the Engineer for review. Test results that do not comply with specified requirements shall be reported to the Engineer for review and determination of acceptability of the coating within 24 hours of test completion.
3. The water-soluble chloride ion content of the mortar shall not exceed 150 milligrams in 1,000 grams of mortar.
4. Any method in which the components of the mortar, including water, are mixed at the nozzle will not be permitted.
5. Rebound material shall be discarded.

6. The finished mortar coating shall be dense, firm, and shall adhere tightly to the surface of the cylinder. Required coating thicknesses are shown on the drawings.

D. Curing:

1. Start curing as soon as the coating has set.
2. Keep continuously wet for not less than four days.
 - a. If cured under a waterproof membrane, do not remove membrane until ready to ship.
3. Protect the mortar against being heated above 100°F by covering with wet burlap or other suitable cover material. Keep the cover continuously wet.

E. See Article 3.3 for protection and handling.

3.2 MORTAR COATING FOR SPECIAL SECTIONS

- A. Special sections may be made from coated pipe where feasible or from uncoated pipe.
- B. The materials, quality testing, curing, handling, and protection of the finished coating for special sections shall conform to the requirements for straight pipe of this Section.
- C. Coating shall be reinforced with welded-wire fabric tack welded to the cylinder or tied.
- D. Apply mortar coating to special sections by hand plastering or by using an approved pneumatic system that meets the requirements of ACI 506.2-90.
 1. For special sections and touch-up work only, mortar coating may be applied with pneumatic equipment where water is mixed at the nozzle.
 2. Pneumatic systems that do not have a weight system or pre-measured material ratio of sand and cement shall be verified per ASTM C136 and C117.
- E. The thickness of coating shall be at least the same as the coating thickness requirements for straight pipe unless otherwise shown on the drawings.
- F. Use an epoxy bonding agent to bond new mortar with existing mortar.

3.3 HANDLING AND PROTECTING COATED PIPES AND SPECIALS

- A. Coated pipes and specials shall be supported by belt slings or shaped rubber pads providing at least 120-degree support during all handling and shipping operations.

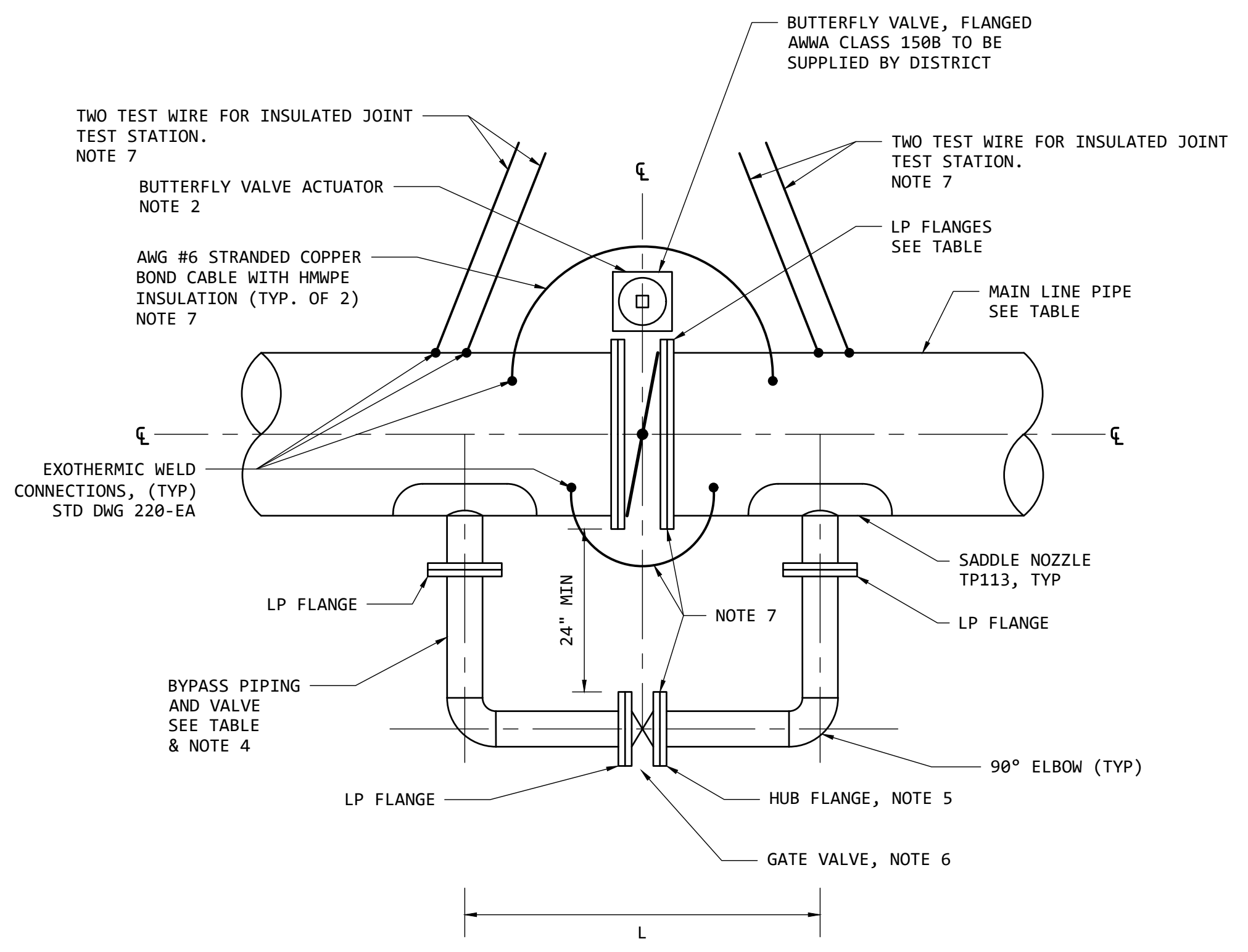
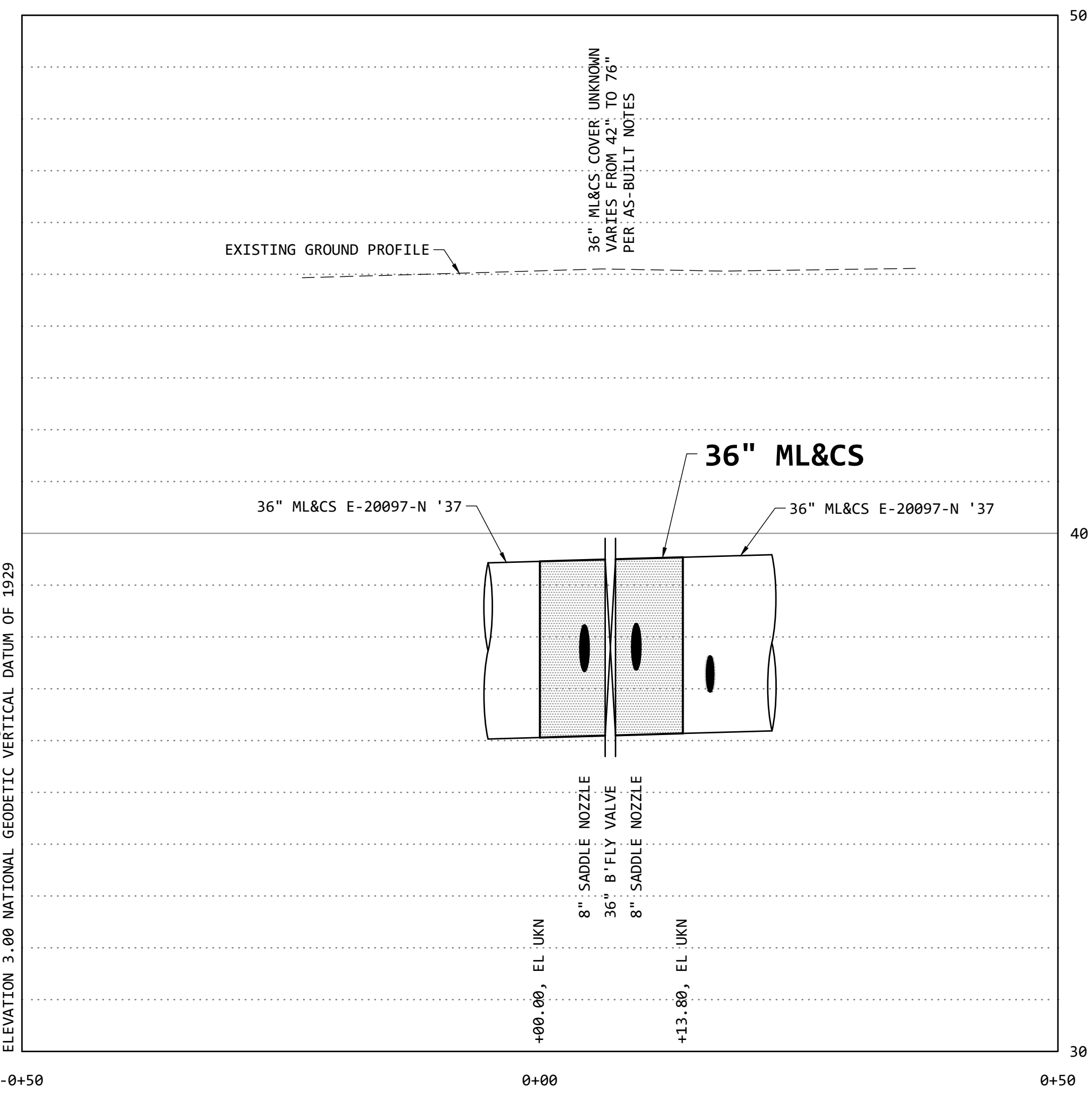
Use a two-point lifting system at the approximate quarter points. Dropping or rolling of coated pipe and specials is not permitted.

- B. Protect from rapid temperature changes after curing.
- C. Protect against being heated by the atmosphere or direct sunlight to above 100°F by covering with burlap or other suitable material. Keep cover continuously wet.

END OF SECTION

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 SPEC. NO. DISTRIBUTION SYSTEM MAP NO. 1515 B 462 1" SCALE ON ORIGINAL

GRADE ELEVATIONS ARE TO OUTSIDE BOTTOM OF PIPE STATIONING AND GROUND PROFILE ARE ALONG THE STATION LINE ELEVATIONS ARE BASED ON OAKLAND CITY DATUM ELEVATION 0.00 OAKLAND CITY DATUM EQUALS ELEVATION 3.00 NATIONAL GEODETIC VERTICAL DATUM OF 1929



- NOTES:
1. LINING AND COATING NOT SHOWN ON DETAIL FOR CLARITY.
 2. THE BUTTERFLY VALVE OPERATOR AND BYPASS MAY BE FLIPPED AS NEEDED TO CLEAR OBSTRUCTIONS. VALVE OPERATOR AND BYPASS SHALL ALWAYS BE ON OPPOSITE SIDES OF PIPELINE AS SHOWN.
 3. ALL PIPE, VALVES AND FITTINGS SHALL BE MORTAR COATED.
 4. STD WT PIPE, STD DWG 323-EA AND 309-EA FOR SMALL DIAMETER FLANGES AND PIPING. WELD BUTT JOINTS PER TP120.
 5. THIS IS A HUB TYPE FLANGE AND SHALL BE SHIPPED LOOSE FOR FIT-UP IN THE FIELD.
 6. RESILIENT SEATED GATE VALVE, FLANGED.
 7. FOR VALVE FLANGES BETWEEN ML&CS AND ML&PCS PIPE, INSTALL AN INSULATING FLANGE SET AND OMIT THE BOND CABLES. TWO TEST WIRES SHALL ONLY BE INSTALLED WHEN JOINING ML&CS AND ML&PCS PIPELINES.
- TO BE SUPPLIED BY DISTRICT

DRAWING	LOCATION € VALVE ON STA LINE	MAIN LINE		BYPASS		INSULATING JOINT?	
		NOM DIAM (IN)	PIPE	NOM DIAM (IN)	PIPE		
W-24191	0+07.00	36	ML&CS	8	ML&CS	5'-0"	NO

TYPICAL BUTTERFLY VALVE AND BYPASS
NTS

P53248

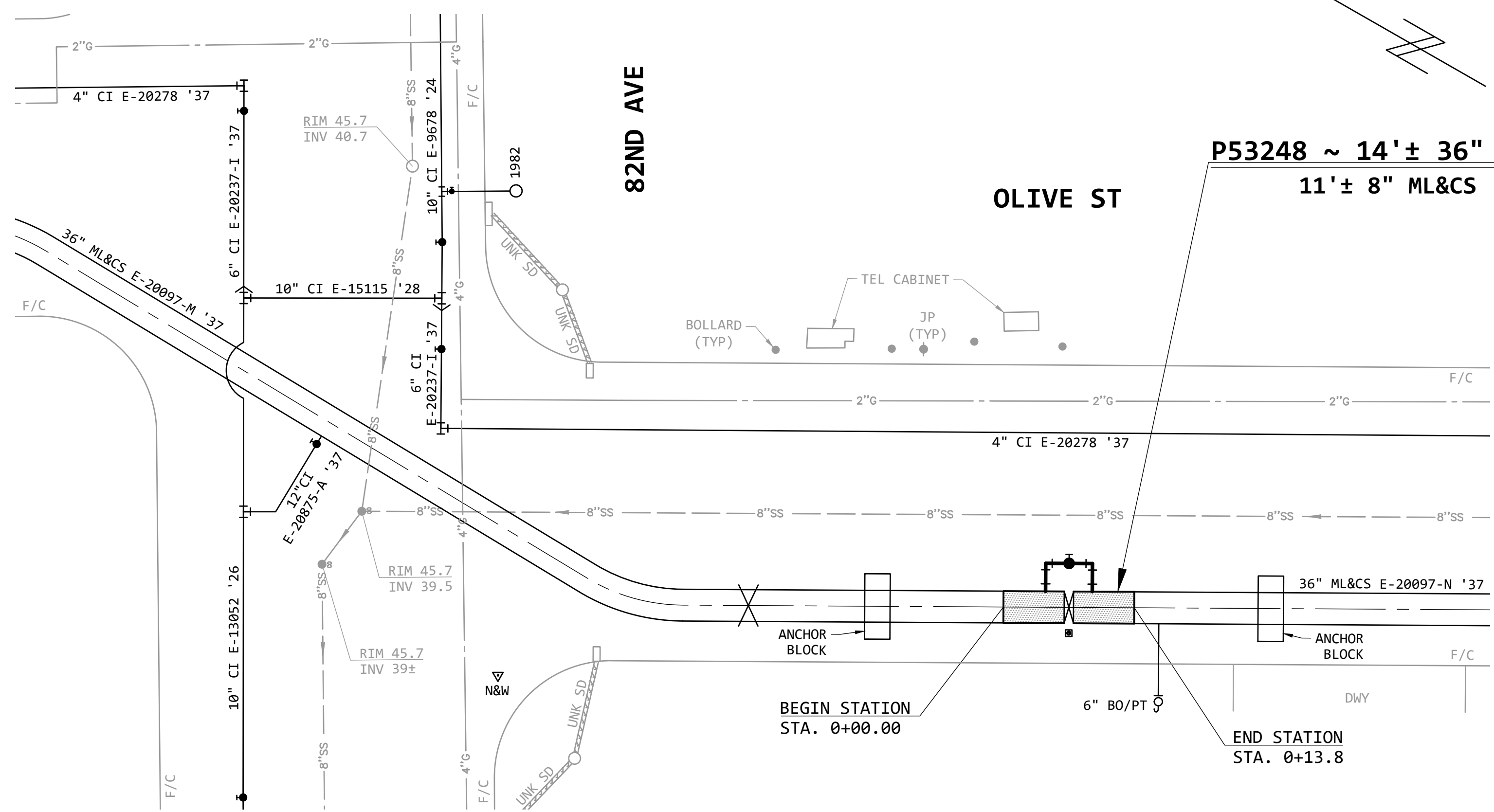
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WITH 36" BUTT STRAP WITH HAND HOLES TP120

36" X 8" SADDLE NOZZLE TP113 (BEGIN 8" BYPASS)

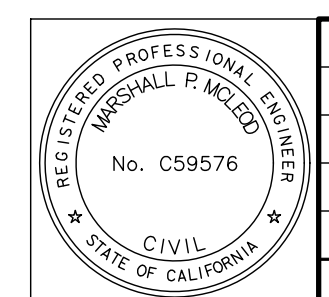
36" FLANGE 36" VALVE, B'FLY, FLG'D M: T: 36" FLANGE

36" X 8" SADDLE NOZZLE TP113 (END 8" BYPASS)

CONN TO EXIST 36" ML&CS (E-20097-N) C =
WITH 36" BUTT STRAP WITH HAND HOLES TP120



CONSTRUCTION BY DISTRICT FORCES PAVING AC
 CONTRACT NO. REFERENCE 900906
 JUSTIFICATION FB 4710/28-31



NO.	DATE	REVISION	BY	REC.	APP.

P53248

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

OLIVE ST
OAKLAND

36" ML&CS PIPE INSTALLATION

BETWEEN 82ND AND 83RD AVE

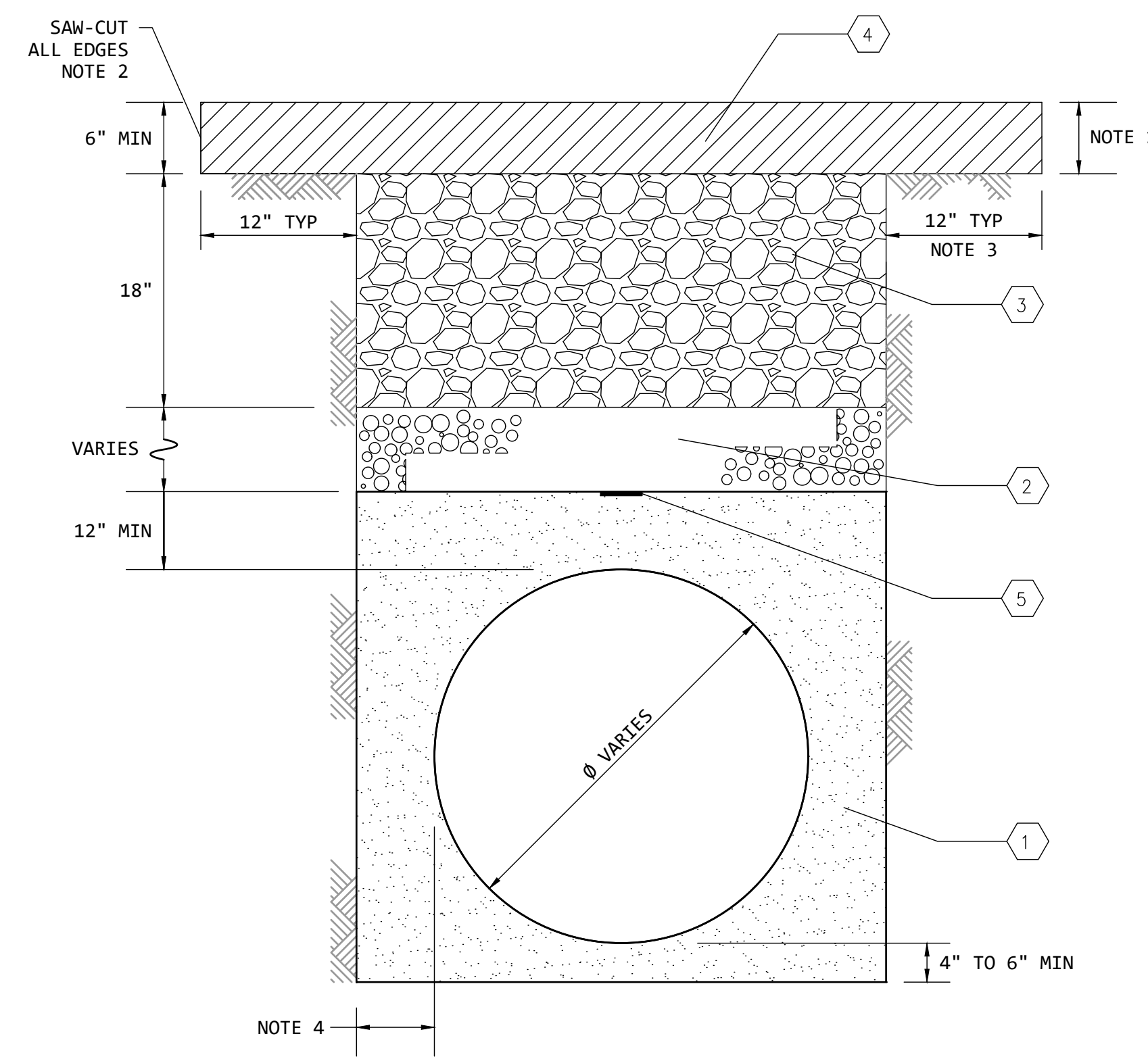
STRUCTURE OR ZONE DESCRIPTION G0A6
 SCALE 1"=10'H. 1"=2'V.
 DATE

W-24191-1

4

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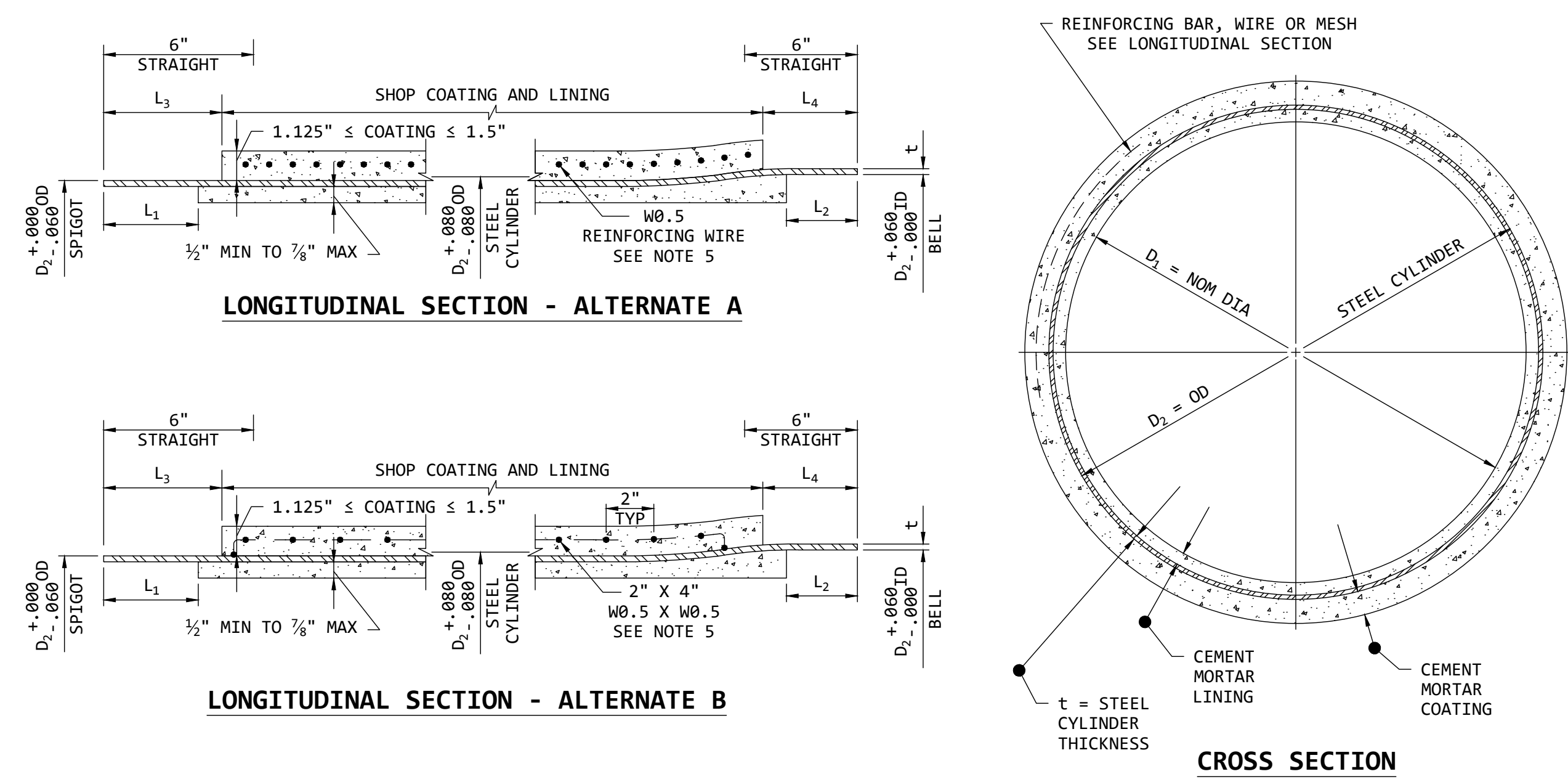
SPEC NO. DISTRIBUTION SYSTEM MAP NO. 1515 B 462 1" SCALE ON ORIGINAL



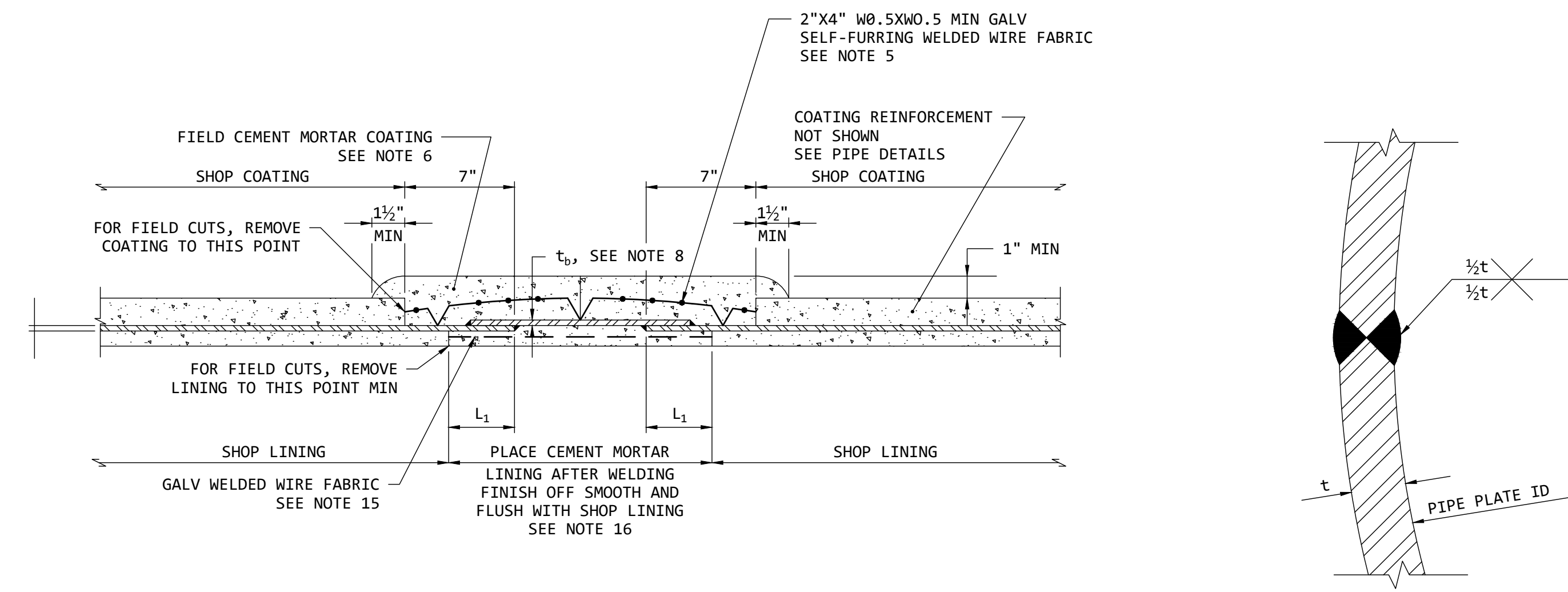
CITY OF OAKLAND TRENCH SECTION
NTS

- MATERIALS:**
SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
- ① EMBEDMENT SHALL BE IMPORTED CLASS I BACKFILL COMPACTED TO 90% RELATIVE COMPACTION (RC).
 - ② BACKFILL SHALL MATCH ROAD BASE AND COMPACTED TO 90% RC
 - ③ ROAD BASE SHALL BE 3/4" CSS CLASS 2 AGGREGATE BASE COMPACTED TO 95% RC.
 - ④ SURFACE RESTORATION SHALL BE HOT MIX ASPHALT CONCRETE.
 - ⑤ PIPELINE IDENTIFICATION TAPE.

- TRENCH SECTION NOTES:**
- 1. ASPHALT THICKNESS SHALL BE 6" MIN OR EQUAL TO ORIGINAL THICKNESS, WHICHEVER IS GREATER.
 - 2. CLEAN AND TACKCOAT SIDES OF EXCAVATION AND BETWEEN PAVING COURSES WITH SPRAY APPLICATION OF SS-1 EMULSION BEFORE PLACING ASPHALT T-CONCRETE PAVING SECTION.
 - 3. 12" TYPICAL ON ALL SIDES OUTSIDE THE EXTENT OF THE EXCAVATION.
 - 4. EXCAVATION WILL BE THE WIDTH REQUIRED TO INSTALL MAIN VALVE AND BYPASS.



PIPE DETAILS



FIELD LINING/COATING AT BUTT STRAP GIRTH JOINT

SEAM WELD (SHOP ONLY)

NOM DIA, D ₁	OD, D ₂	THICKNESS, t
36"	37 7/8"	0.25"

TABLE 1 - STEEL CYLINDER DESIGN
NOTE 12

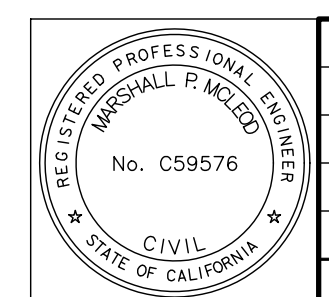
	NOMINAL LAP	SPIGOT LINING	BELL LINING	SPIGOT COATING	BELL COATING
EXTERNAL SINGLE WELD	3"	L ₁	L ₂	L ₃	L ₄

TABLE 2 - LINING AND COATING HOLDBACKS

- NOTES:**
- TO DETERMINE IF A DIAMETER IS WITHIN THE TOLERANCE SPECIFIED, THE CIRCUMFERENCE WILL BE MEASURED AND THE DIAMETER CALCULATED FROM THE CIRCUMFERENCE. THE DIFFERENCE BETWEEN MINOR AND MAJOR AXES SHALL NOT EXCEED 1% OF THE DIAMETER OF THE PIPE.
 - BUTT WELDED GIRTH JOINT BENDS SHALL BE FABRICATED FROM TESTED PIPE SECTIONS. THE STEEL CYLINDER THICKNESSES SHALL BE AS SHOWN IN THE TABLE ON THIS DRAWING.
 - BUTT WELDED GIRTH JOINTS WILL BE PERMITTED ONLY IF MADE IN THE SHOP.
 - THE DISTANCE BETWEEN ADJACENT GIRTH JOINTS SHALL BE 1'-0" MINIMUM.
 - COATING REINFORCEMENT ON ALTERNATE A SHALL BE CONTINUOUS, SPIRALLY WOUND WIRE W0.5 MINIMUM, CONFORMING TO ASTM A1064, AT 1" PITCH, EMBEDDED IN MIDDLE THIRD OF COATING. WELD BOTH ENDS OF WIRE TO STEEL CYLINDER.
 - COATING REINFORCEMENT ON ALTERNATE B SHALL BE 2"x4" W0.5xW0.5 MINIMUM, ASTM A1064 GALVANIZED SELF-FURRING WELDED WIRE FABRIC, EMBEDDED IN THE MIDDLE THIRD OF THE COATING. LONGITUDINAL AND CIRCUMFERENTIAL JOINTS SHALL BE LAPPED A MINIMUM OF 4". ADJACENT LONGITUDINAL JOINTS SHALL BE STAGGERED. THE MESH SHALL BE TACK WELDED TO THE STEEL CYLINDER AT ONE POINT AT EACH END OF THE PIPE AND AT ALL CIRCUMFERENTIAL LAPS BETWEEN ADJACENT PIECES OF MESH.
 - SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 - FOR REQUIREMENTS ON LINING, COATING, AND LINING AND COATING REPAIR AT JOINTS INCLUDING THE REQUIRED WIDTH OF CLOTH BANDS, SEE SPEC SECTIONS 33 11 13.50, 33 11 13.60.
 - PIPE SECTIONS GENERALLY SHALL BE JOINED IN THE FIELD BY WELDED BELL AND SPIGOT GIRTH JOINTS.
 - WELDED BUTT STRAP GIRTH JOINTS WILL BE PERMITTED ONLY IN STRAIGHT SECTIONS OF PIPELINE TO CONNECT SHOP SPECIALS OR CLOSURE SECTIONS, OR TO FACILITATE THE USE OF FIELD CUT SECTIONS. THE THICKNESS OF THE BUTT STRAP, t_b, SHALL BE THE THICKNESS (t) SHOWN IN THE PIPE DESIGN TABLE ON THIS DRAWING, OR 3/16", WHICHEVER IS GREATER.
 - FOR FIELD WELDING DETAILS, SEE DETAIL TP120.
 - NOT MORE THAN 50% OF THE MAXIMUM DEFLECTION ANGLE SHALL BE USED FOR GIRTH JOINT DEFLECTION ANGLES ON PIPELINE LAYOUT.
 - FOR STANDARD STEEL PIPE FLANGE DETAIL SEE DRAWING 323-EA.
 - STEEL FOR PIPE CYLINDERS & SPECIALS: MINIMUM YIELD STRENGTH: 36,000 PSI. SEE SPEC. 33 11 03. THICKNESS (t) IN TABLE 1 'STEEL CYLINDER DESIGN' IS A MINIMUM VALUE. PIPE WALL MAY BE THICKER AS REQUIRED BY THE MANUFACTURING PROCESS.
 - WALL THICKNESS CALCULATIONS ASSUME NO CONTRIBUTIONS FROM REINFORCING STEEL. ΔY/D LIMITED TO 2%.
 - POLYWRAP ML&CS PIPE AS PER SPECIFICATION SECTION 33 11 13.10.
 - SEE SPECIFICATION 33 11 13.50 FOR REQUIREMENTS.
 - WHEN USING HAND HOLES, LINING HOLDBACK ON SPIGOT SHALL EQUAL ZERO AND WIRE MESH MAY BE OMITTED. SEE TP120.

PIPE & GIRTH JOINT DETAILS

NTS

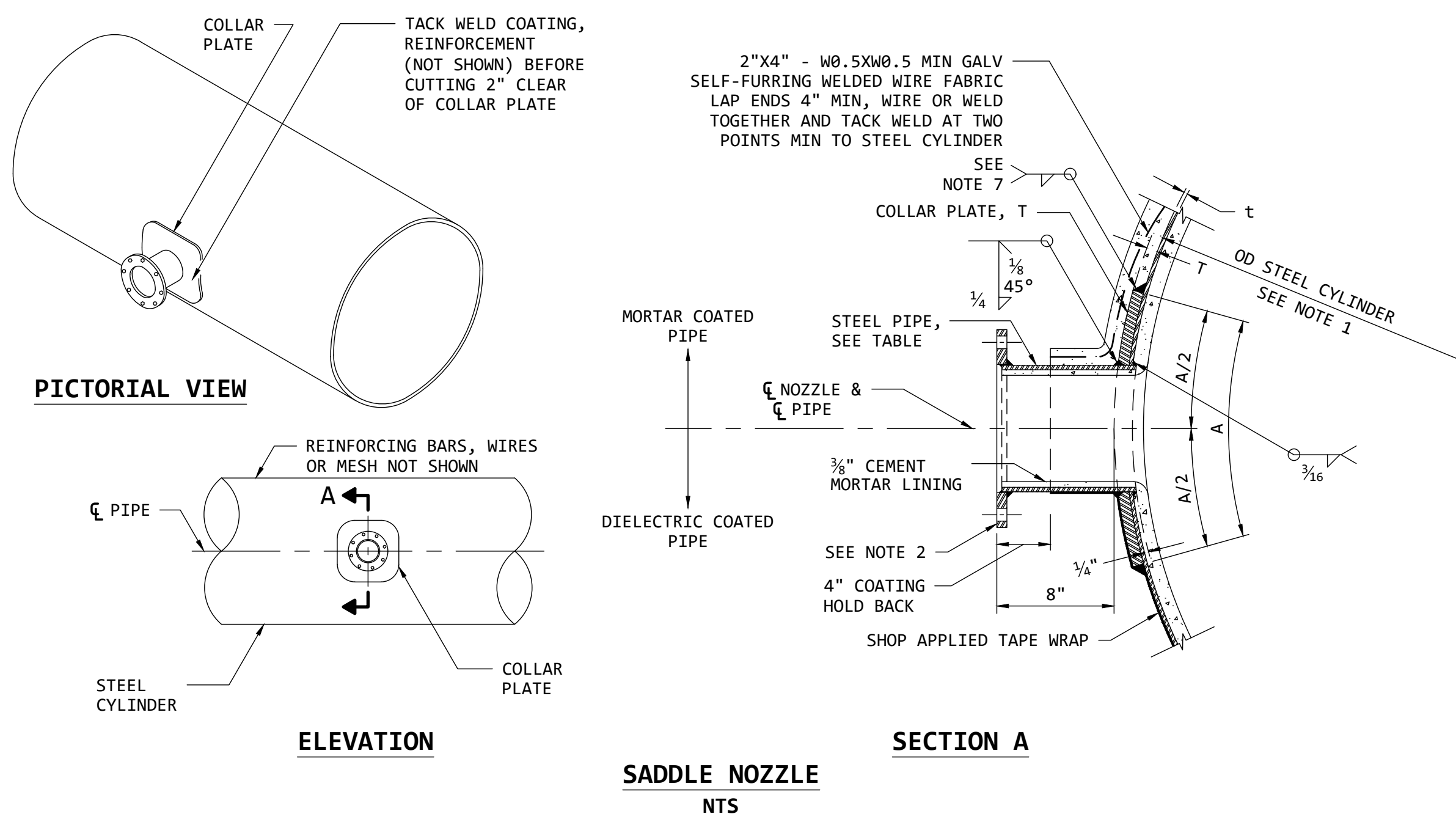


NO.	DATE	REVISION	BY	REC.	APP.

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	DESIGN CHECKED BY	
REVIEW	DRAWN BY A. BAUMANN	OLIVE ST OAKLAND
	PROJECT MANAGER	
	CORROSION CHECKED BY	36" ML&CS PIPE INSTALLATION
	RECOMMENDED SR. CIVIL ENGINEER	CITY OF OAKLAND TRENCH SECTION
	APPROVED MGR PIPELINE INFRASTRUCTURE	TP110 - PIPE & GIRTH JOINT DETAILS PIPE GREATER THAN 20"
		STRUCTURE OR ZONE DESIGNATION G0A6
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		DATE
		W-24191-2

TP110

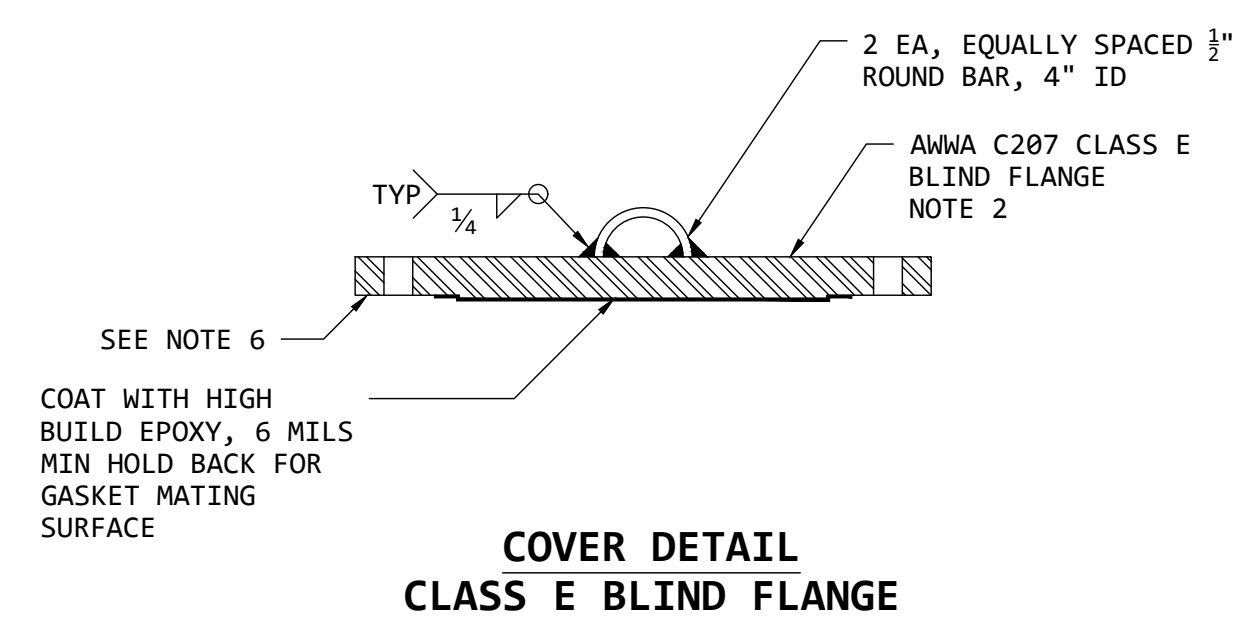
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 SPEC. NO. DISTRIBUTION SYSTEM MAP NO. 1515 B 462 1" SCALE ON ORIGINAL



SADDLE NOZZLE
NTS

PIPE SIZE	NOZZLE DIMENSIONS		MIN COLLAR PLATE DIMENSIONS	
	SIZE	NOZZLE THICKNESS (SEE NOTE 5)	THICKNESS T	A
24	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
30	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
36	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
42	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
48	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32

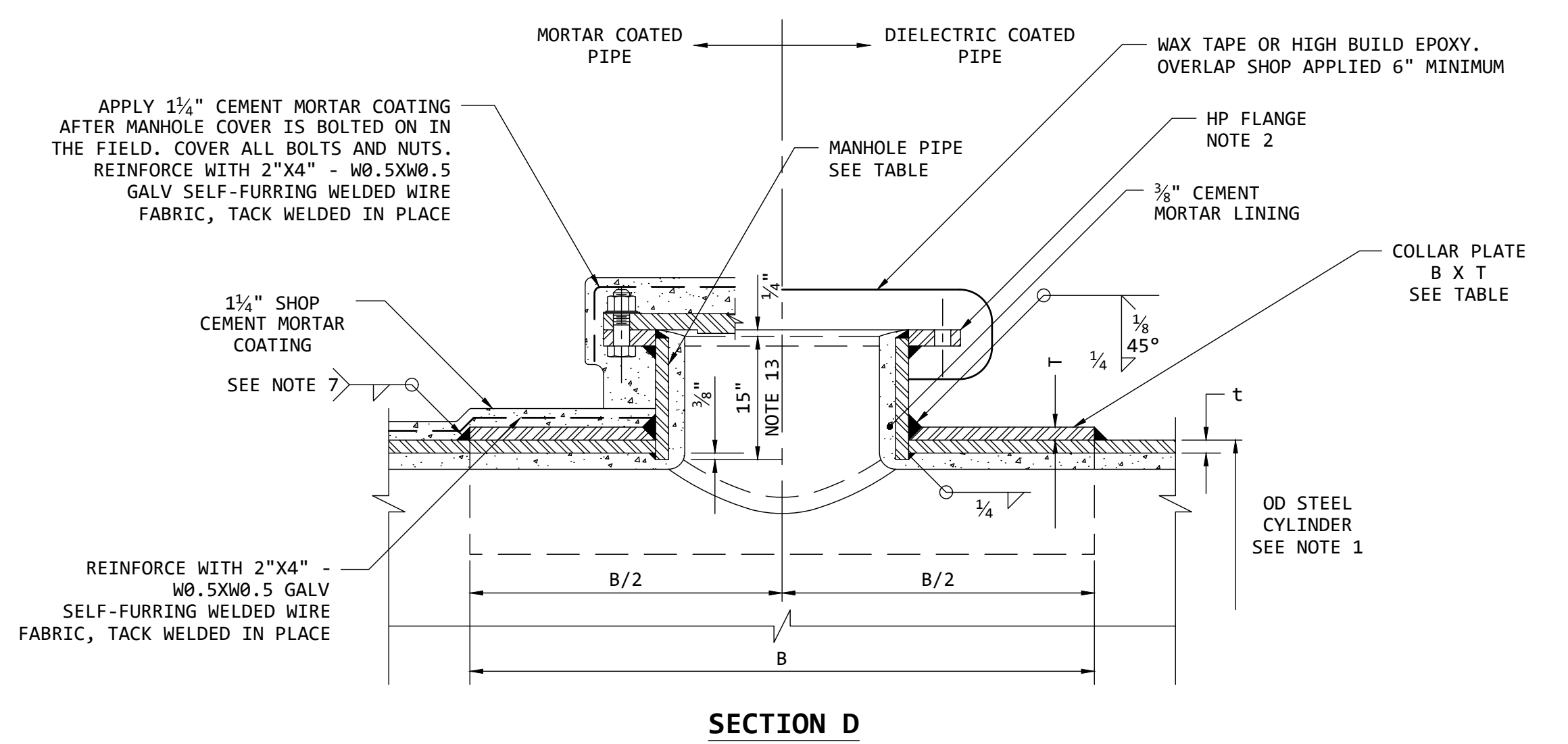
- NOTES**
- "t" INDICATES STEEL THICKNESS OF MAIN PIPE. FOR PIPE DETAILS, SEE DETAIL TP101 & TP102.
 - FOR STD STEEL FLANGE DETAIL SEE DWG 323-EA AND 324-EA.
 - DETAILS SHOWN ON THIS SHEET ARE FOR BOTH SHOP AND FIELD INSTALLATIONS.
 - DRILL AND TAP AIR TEST HOLES, IF ANY, BEFORE WELDING. AIR TEST PER SPEC 33 11 13.05 AND WELD HOLES AFTER SUCCESSFUL COMPLETION.
 - STEEL PIPE FOR NOZZLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-53 TYPE E OR S, GRADE B, OR ASTM A106 GRADE B.
 - FINISH AND COAT FLANGE MATING SURFACE IN ACCORDANCE WITH DRAWING 324-EA PRIOR TO SHIPPING OR STORAGE.
 - THICKNESS OF FILET WELD (INCH) TO BE SMALLER OF t OR T, BUT NOT LESS THAN 1/4".
 - ROUND ALL CORNERS OF COLLAR PLATE, MIN RADIUS = 20 X T.
 - PERMANENTLY IMPRINT OD OF PIPE AND NOZZLE ON EDGE OF COLLAR PLATE.
 - LOCATION OF THE PASS HOLES SHALL BE SELECTED BY THE CONTRACTOR AND APPROVED BY ENGINEER. PASS HOLE SHALL BE 1'-0" BACK OF BELL END ON FIELD TOP OF THE PIPE. STENCIL "P.H." ON LINING AND COATING AT BELL END OF THE PIPE HAVING PASS HOLE.
 - IN COLLAR PLATE AREAS GRIND WELD SEAMS REINFORCEMENT FLUSH BEFORE FITTING PLATES.
 - LINING AND COATING SHALL MATCH PIPE. SEE SPECIFICATIONS:
 09 96 56.05 HIGH BUILD EPOXY
 33 11 13.60 MORTAR COATING
 33 11 13.62 DIAELETRIC COATING
 33 10 01 PROTECTION FROM CORROSION
 - MANHOLE RISER HEIGHT = 15" UNLESS SHOWN OTHERWISE IN ANOTHER DETAIL.
 - THE DISTANCE BETWEEN EDGE OF GIRTH JOINT AND EDGE OF COLLAR/WRAPPER SHALL BE 1'-0" MIN.



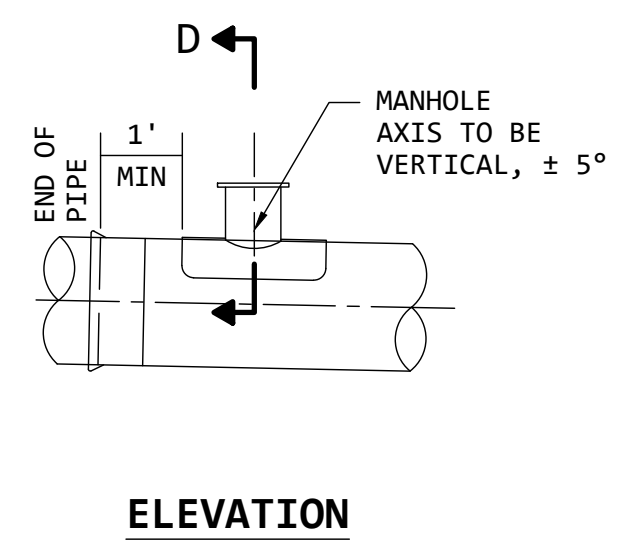
COVER DETAIL
CLASS E BLIND FLANGE

PIPE SIZE	MANHOLE PIPE		MIN COLLAR PLATE DIMENSIONS	
	OD	THICKNESS T	THICKNESS T	B
42	24.0	0.375	t	48
48	24.0	0.375	t	48

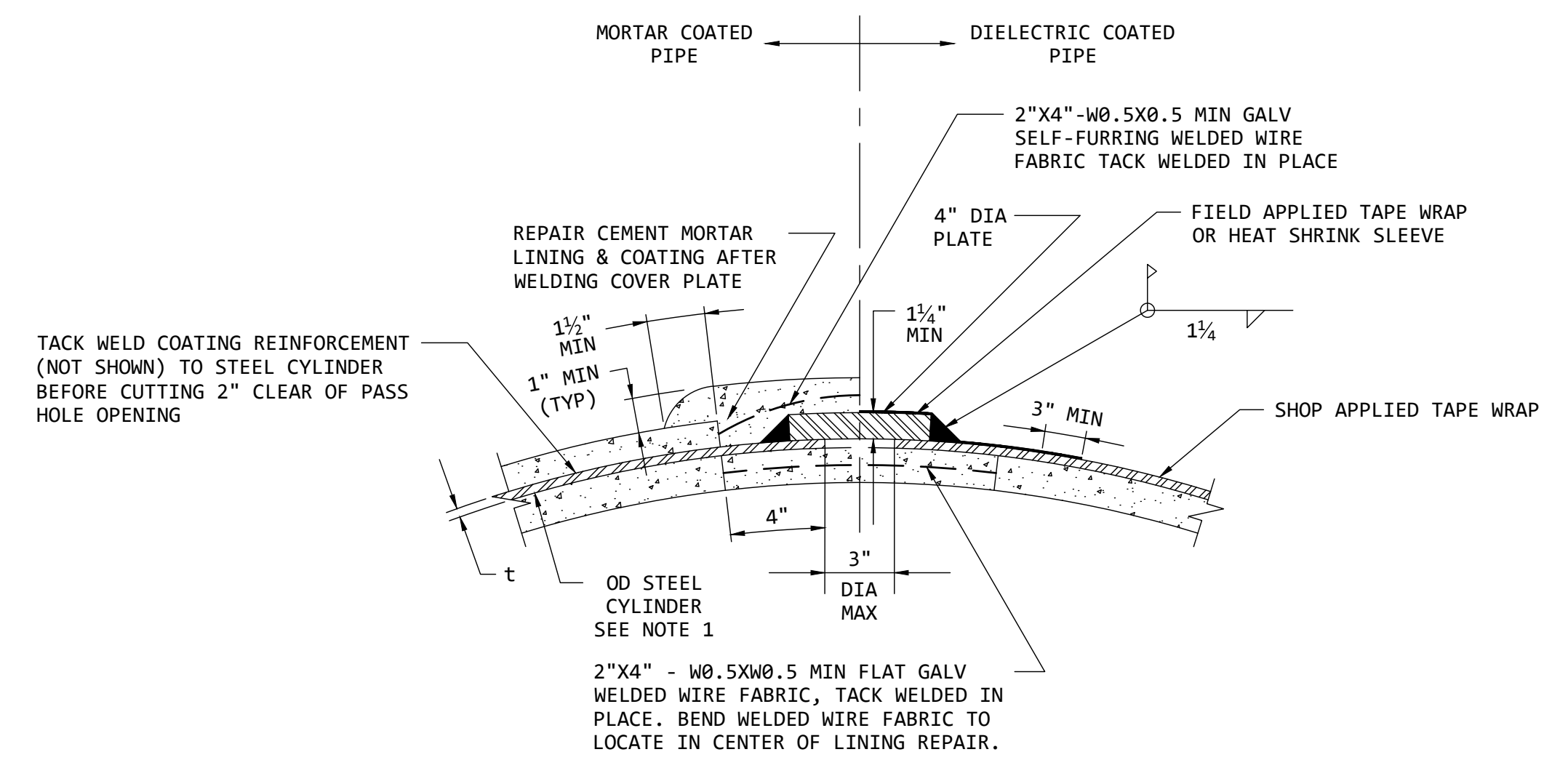
MANHOLE DIMENSIONS



24" MANHOLE FOR PIPE 24" DIA & LARGER
NTS

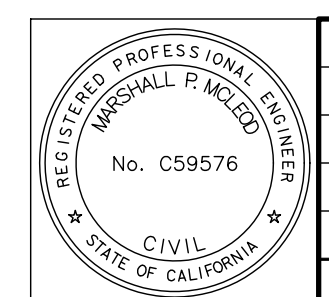


ELEVATION



PASS HOLE
FOR 24" PIPE & LARGER
NTS
(SEE NOTE 10)

NOZZLES, MANHOLES, & PASSHOLE DETAILS
NTS

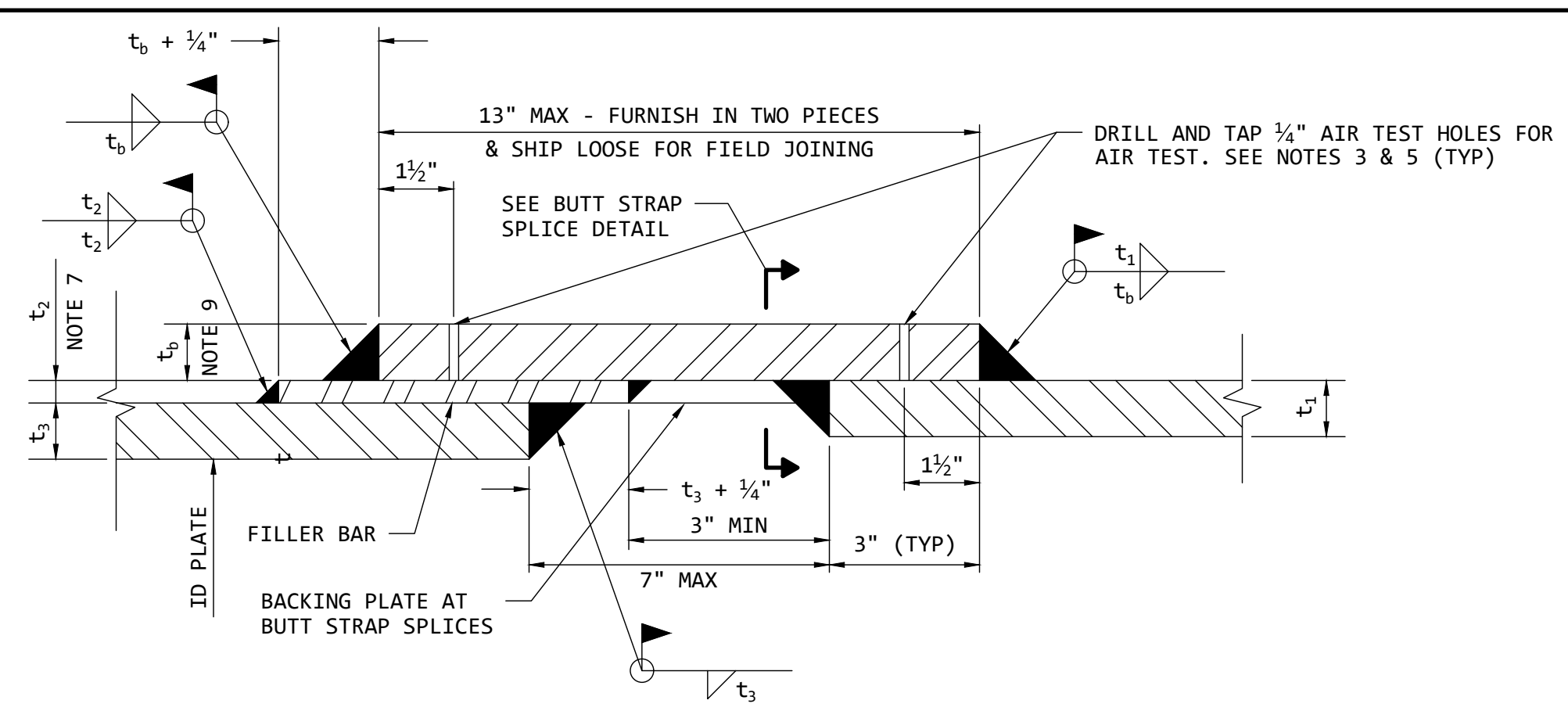


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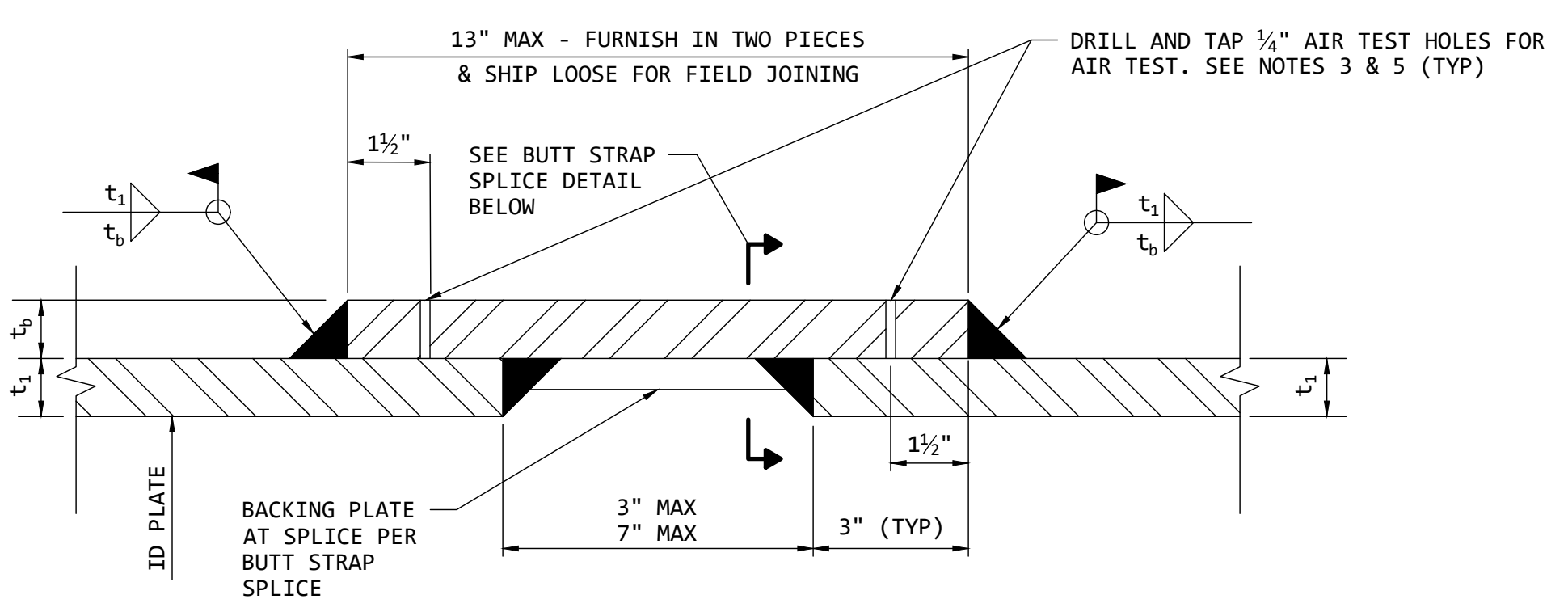
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DESIGN CHECKED BY		OLIVE ST OAKLAND
DRAWN BY	A. BAUMANN	
PROJECT MANAGER		36" ML&CS PIPE INSTALLATION
CORROSION CHECKED BY		
RECOMMENDED SR. CIVIL ENGINEER		TP113 - NOZZLE, MANHOLE, & PASSHOLE DETAILS
APPROVED MGR PIPELINE INFRASTRUCTURE		STRUCTURE OR ZONE DESIGNATION: G0A6
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		DATE:
		W-24191-3

TP113

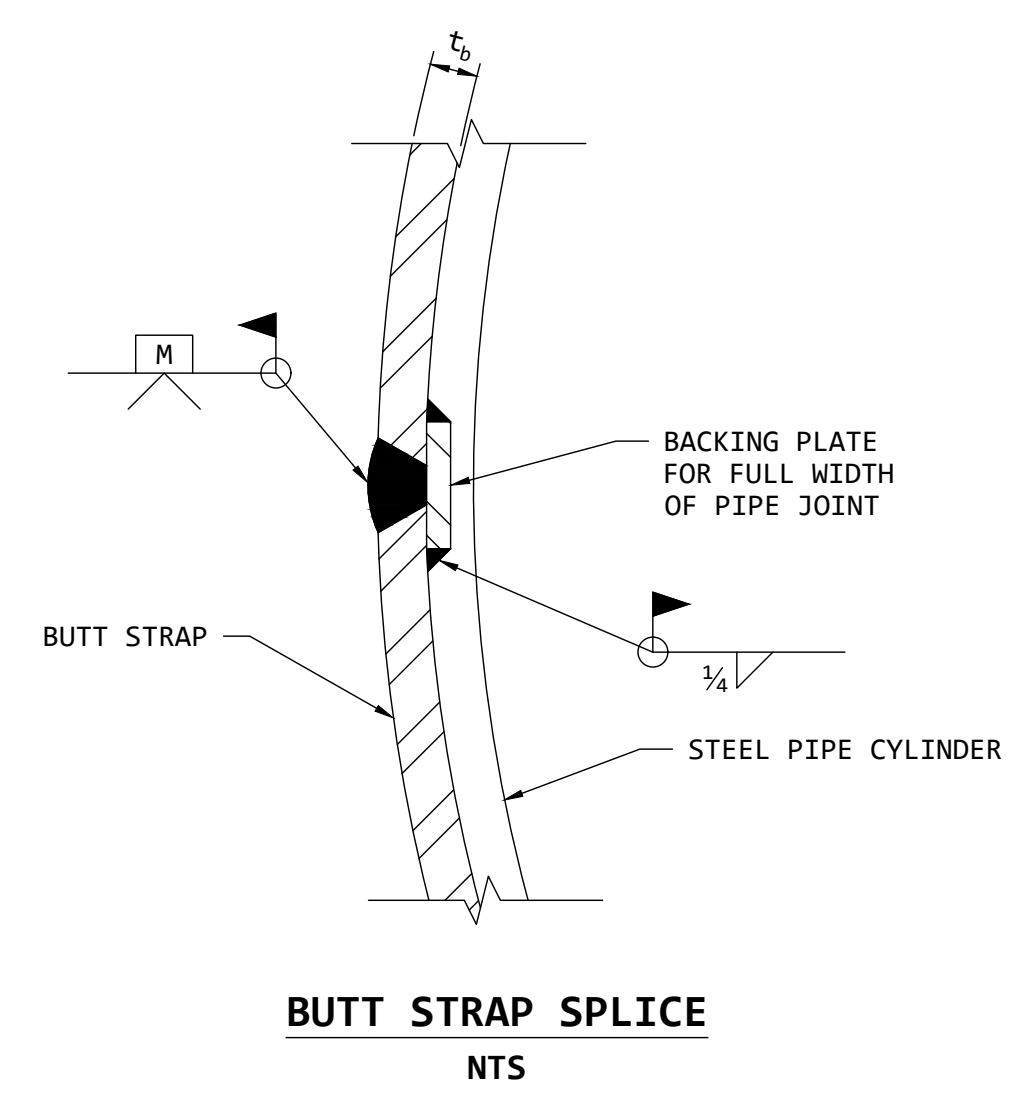
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 SPEC NO. DISTRIBUTION SYSTEM MAP NO. 1515 B 462 1" SCALE ON ORIGINAL



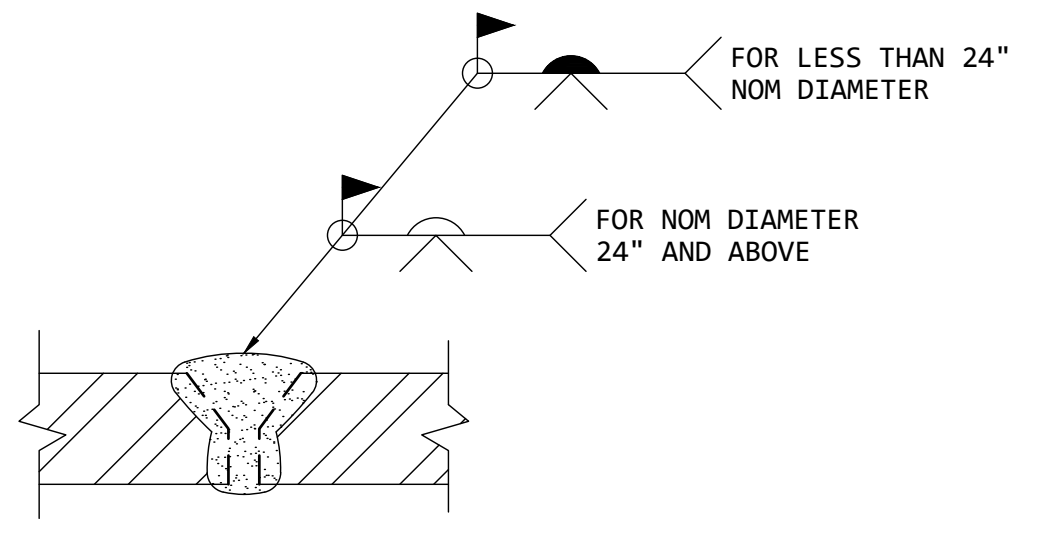
**DISSIMILAR CYLINDERS TYPE I
BUTT STRAP JOINT**
NTS



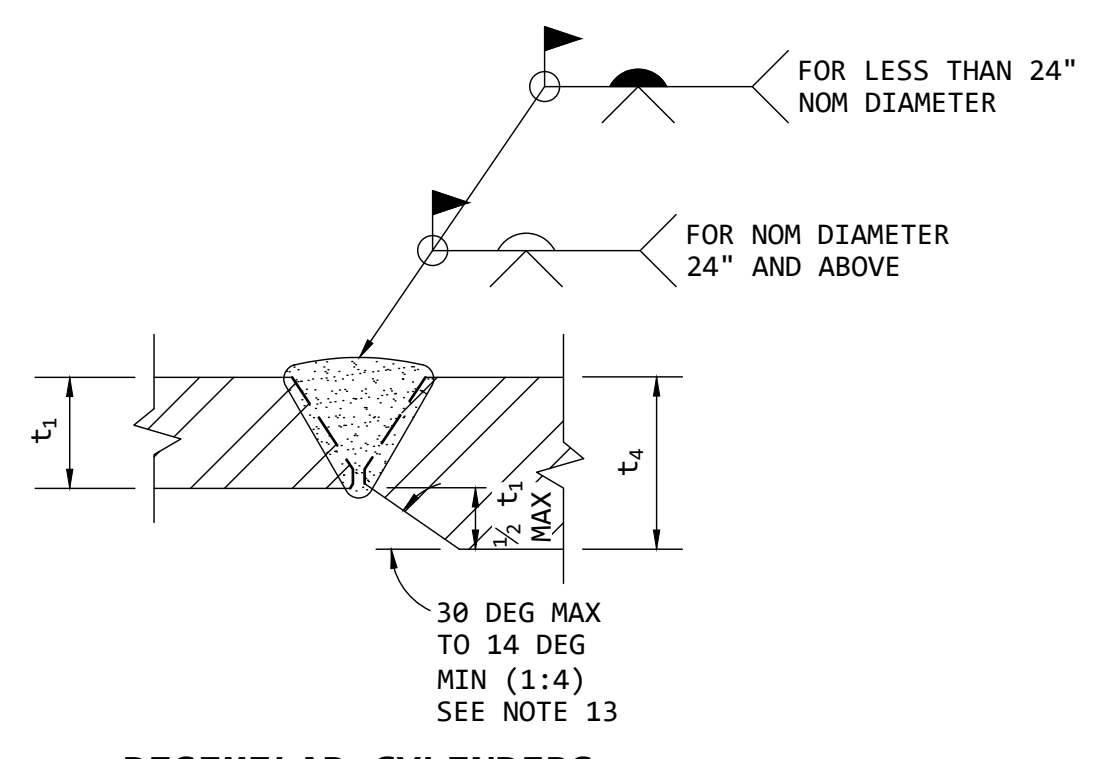
**SIMILAR CYLINDERS TYPE II
BUTT STRAP JOINT**
NTS (NOTE 10)



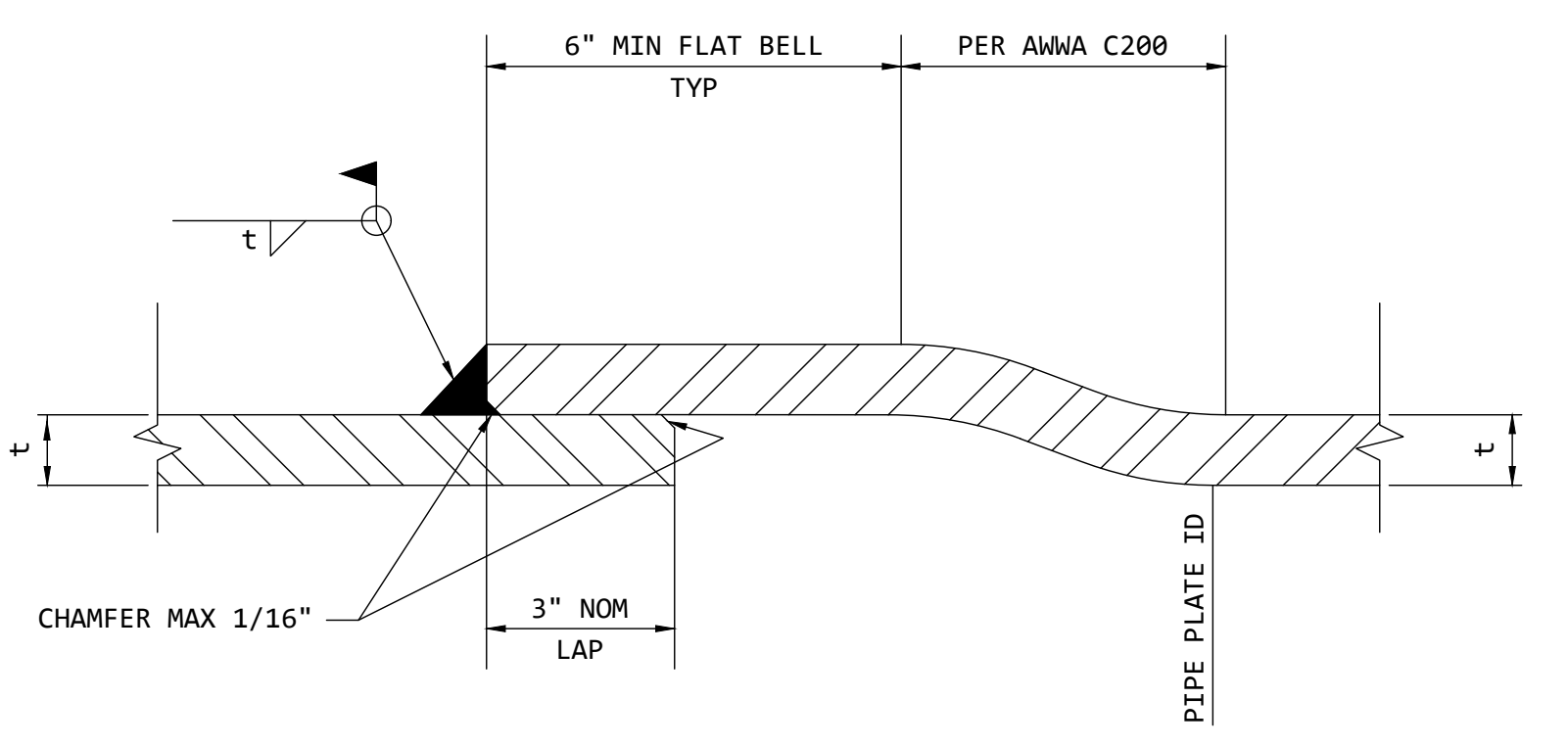
BUTT STRAP SPLICE
NTS



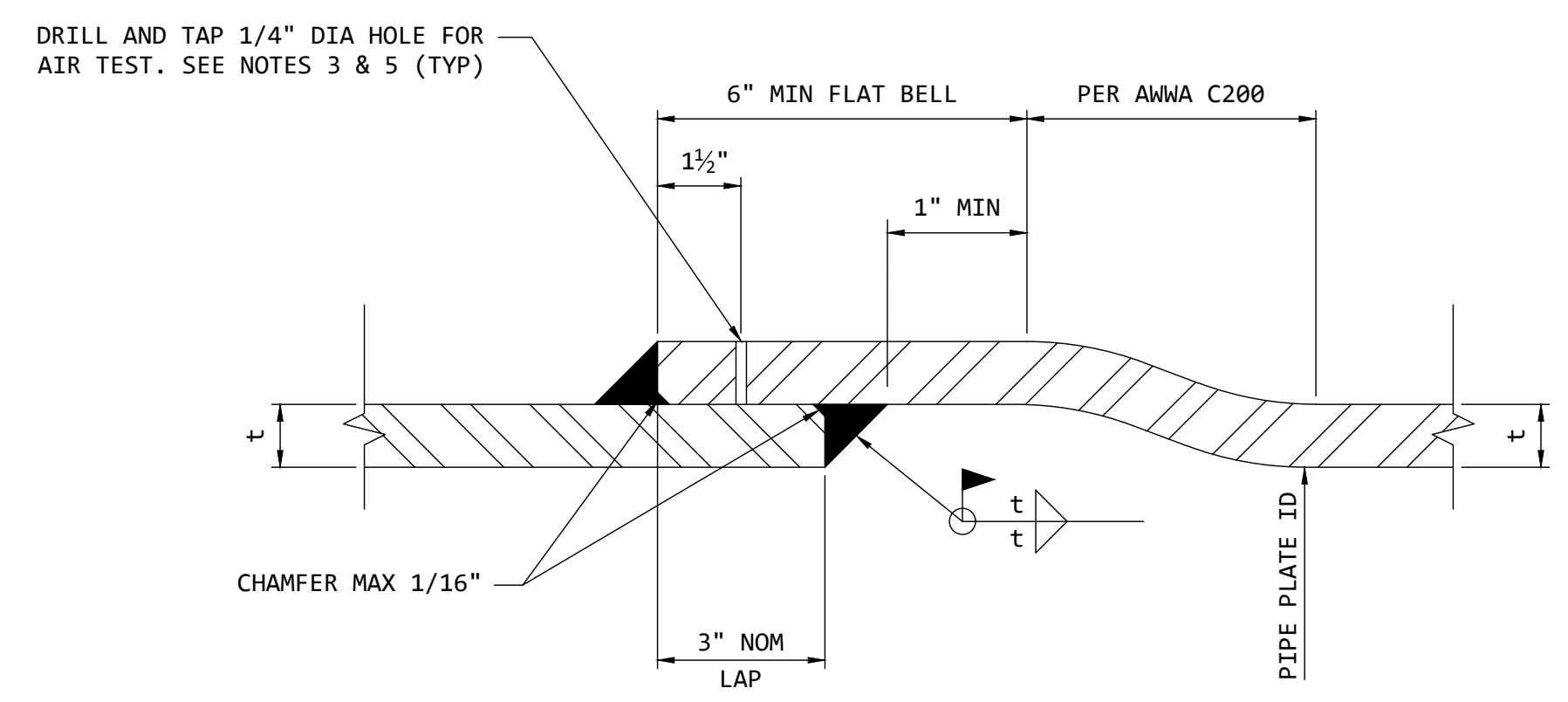
**SIMILAR CYLINDERS
BUTT JOINT**
NTS (NOTE 2)



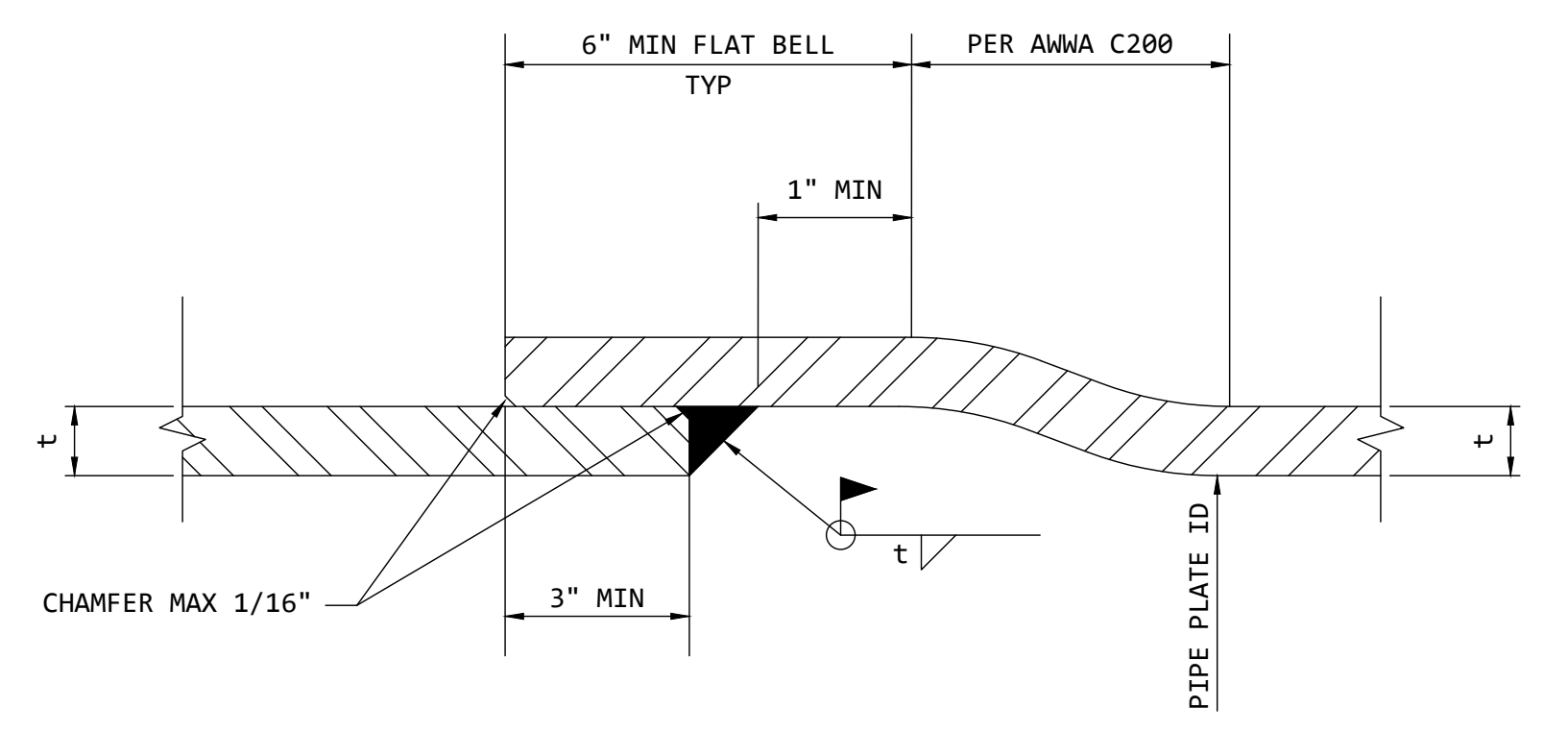
**DISSIMILAR CYLINDERS
BUTT JOINT**
NTS (NOTE 2 & 11)



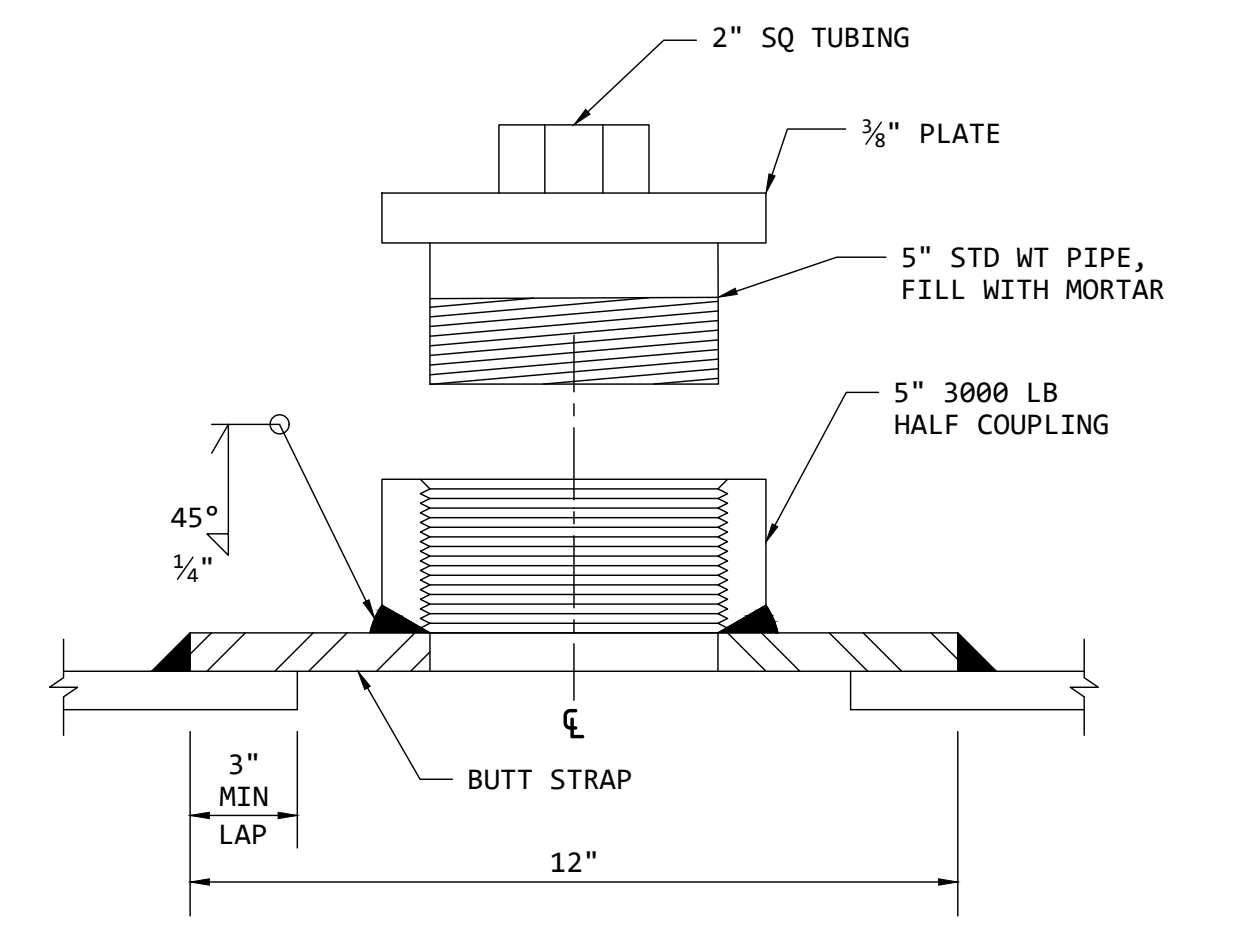
EXTERNAL SINGLE WELDED LAP JOINT
NTS (NOTE 8)



DOUBLE WELDED LAP JOINT
NTS (NOTE 8)



INTERNAL SINGLE WELDED LAP JOINT
NTS (NOTE 8)



HAND HOLE ON BUTT STRAP NOTES:

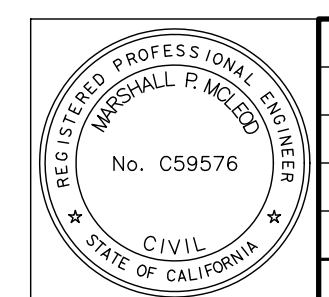
- USE OF HAND HOLES FOLLOW THESE STEPS:
 - FABRICATION SHOP SHALL MAKE HAND HOLE-EQUIPPED BUTT STRAPS FROM AN APPROVED SUBMITTAL.
 - FABRICATED PIPE PLUG SHALL BE FILLED WITH MORTAR.
 - THE CONTRACTOR SHALL TEST FIT THE PLUG TO THE HAND HOLE AND MARK THE DESIRED STAB INSIDE AND OUT.
 - APPLY FIELD MORTAR LINING THROUGH THE HAND HOLE UP TO THE DESIRED STAB, LESS 1/2-INCH.
 - ALLOW TIME FOR THE LINING TO REACH INITIAL STRENGTH.
 - A BEAD 3/4-INCH THICK OF MORTAR IS APPLIED WITHIN THE HAND HOLE AND THE PLUG IS SET TO THE DESIRED STAB - DO NOT OVER-INSERT THE PLUG.
 - ALLOW ONE DAY FOR FINAL MORTAR TO REACH INITIAL SET AND DRY OUT.
 - FILLET WELD THE PLUG TO THE HALF-COUPLING ALL AROUND.

HAND HOLE ON BUTT STRAP
NTS

NOTES:

- "t" INDICATES THE STEEL THICKNESS OF THE PIPE OR BUTT STRAP.
- FULL PENETRATION GIRTH WELDS MADE IN THE FIELD ALLOWED ONLY WHERE SHOWN ON PLANS OR WITH APPROVAL OF THE ENGINEER.
- JOINTS THAT RECEIVE HYDROSTATIC PRESSURE TESTING DO NOT REQUIRE AIR TESTING ALSO.
- SEE TP102 FOR LINING/COATING HOLD BACK DIMENSIONS AND LINING/COATING REPAIR AT FIELD JOINTS.
- FOR PIPE DIAMETERS GREATER THAN 30", DRILL AND TAP TEST 2 HOLES IN SHOP FOR EACH SEGMENT TESTED. AIR TEST AFTER WELDING IS COMPLETED. WELD HOLES AFTER SUCCESSFUL COMPLETION OF JOINT TESTS. SEE SPECIFICATION 33 11 13.05 - INSTALLATION OF STEEL PIPE. SHOP DRILL AND TAP SPIGOT FOR AIR TEST INSIDE PIPE AT CONTRACTOR'S OPTION.
- SEE SPECIFICATION 05 05 24 - PIPE WELDING FOR FIELD WELDING REQUIREMENTS. SEE SPECIFICATION 33 11 13.05 - INSTALLATION OF STEEL PIPE AND DETAIL TP102 FOR FIELD JOINTS AND REPAIRS.
- "t₂" INDICATES OFFSET OF O.D. OF STEEL CYLINDERS. USE BUTT STRAP JOINT TYPE I IF "t₂" IS 3/4" OR MORE.
- ONLY SINGLE FIELD WELDS ARE REQUIRED AT LAP JOINTS, EXCEPT WHERE DOUBLE WELDED LAP JOINTS ARE SPECIFICALLY CALLED FOR ON THE PROJECT DRAWINGS. ONLY EXTERNAL FIELD WELDS ARE REQUIRED AT GIRTH JOINTS FOR 24" PIPE AND SMALLER.
- t/b = t/1, OR 3/16", WHICHEVER IS GREATER.
- THE PIPELINE SHALL BE FINISHED WITH UNBROKEN, CONTINUOUS LINING AND COATING. CONTRACTOR SHALL USE HAND HOLES AS REQUIRED TO COMPLETE THE FIELD LINING WHERE SHOWN ON THE DRAWINGS. SEE HAND HOLE ON BUTT STRAP DETAIL, THIS SHT.
- MAXIMUM THICKNESS t₂ SHALL BE NO GREATER THAN 1.5 X t₁.
- BEVEL SHALL BE FABRICATED IN THE SHOP.

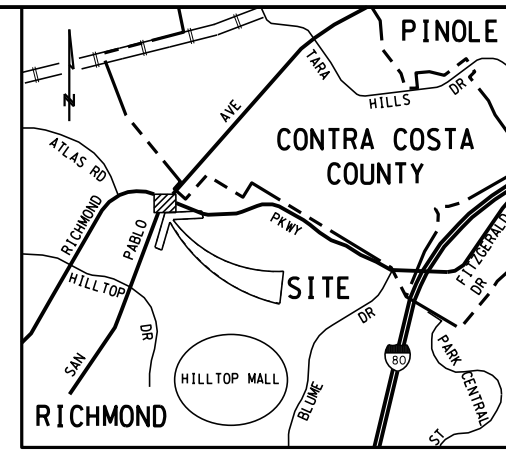
WELDED STEEL PIPE FIELD GIRTH JOINT DETAILS
NTS



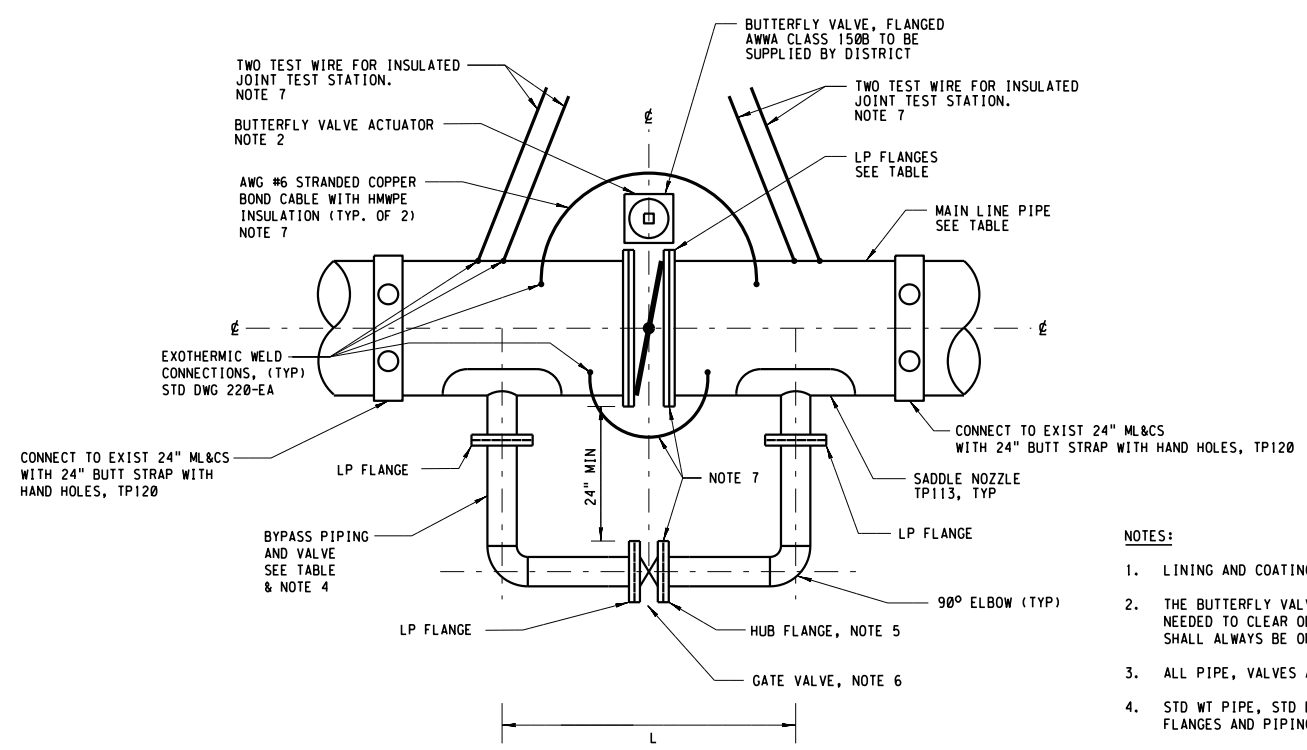
NO.	DATE	REVISION	BY	REC.	APP.

DESIGNED BY	EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA
DESIGN CHECKED BY	
DRAWN BY A. BAUMANN	
PROJECT MANAGER	
CORROSION CHECKED BY	OLIVE ST OAKLAND
RECOMMENDED SR. CIVIL ENGINEER	
APPROVED MGR PIPELINE INFRASTRUCTURE	36" ML&CS PIPE INSTALLATION
	TP120 - WELDED STEEL PIPE FIELD GIRTH JOINT DETAILS
	STRUCTURE OR ZONE DESIGNATION G0A6
	SCALE NONE
	DATE
	W-24191-4

TP120



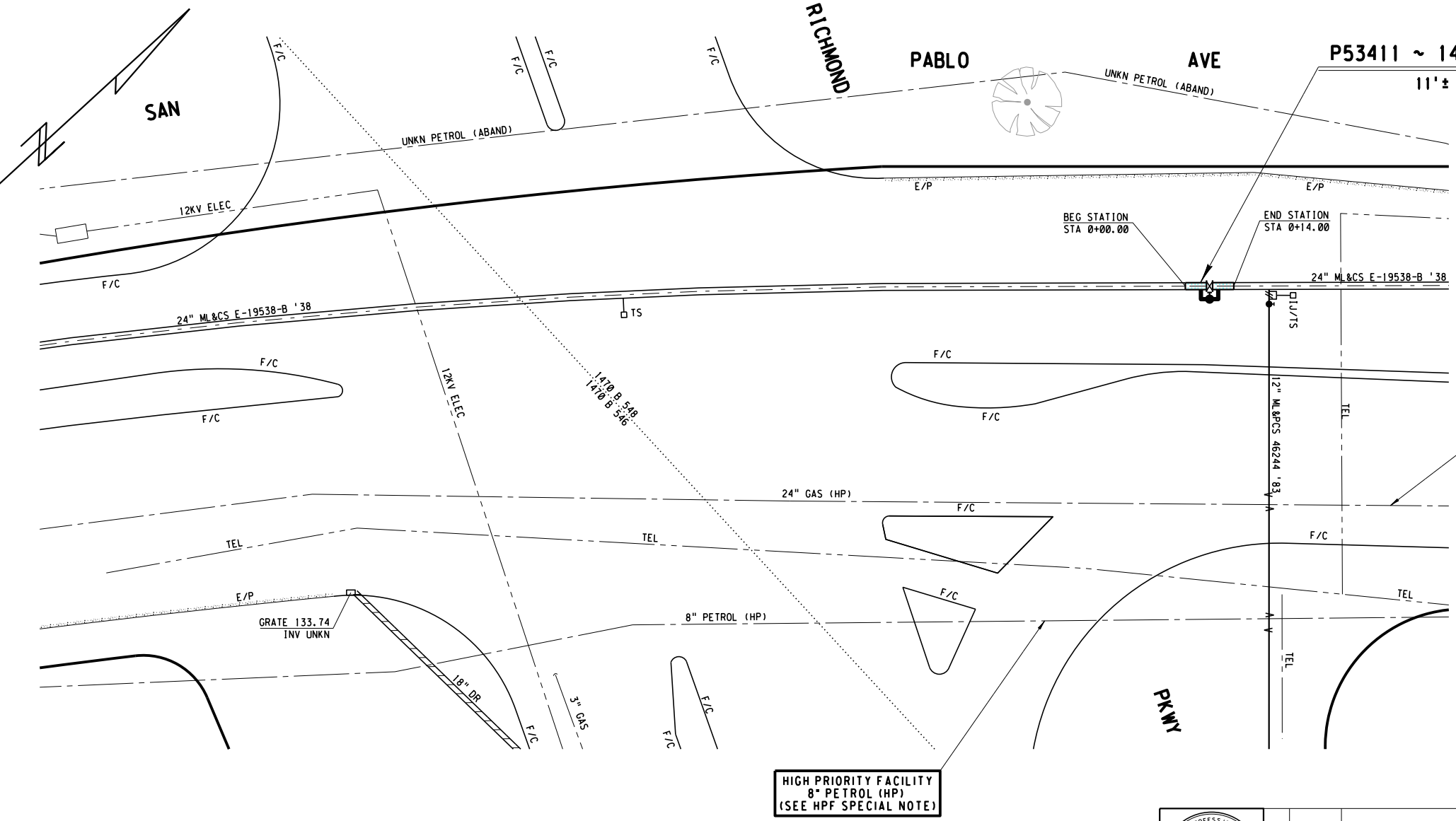
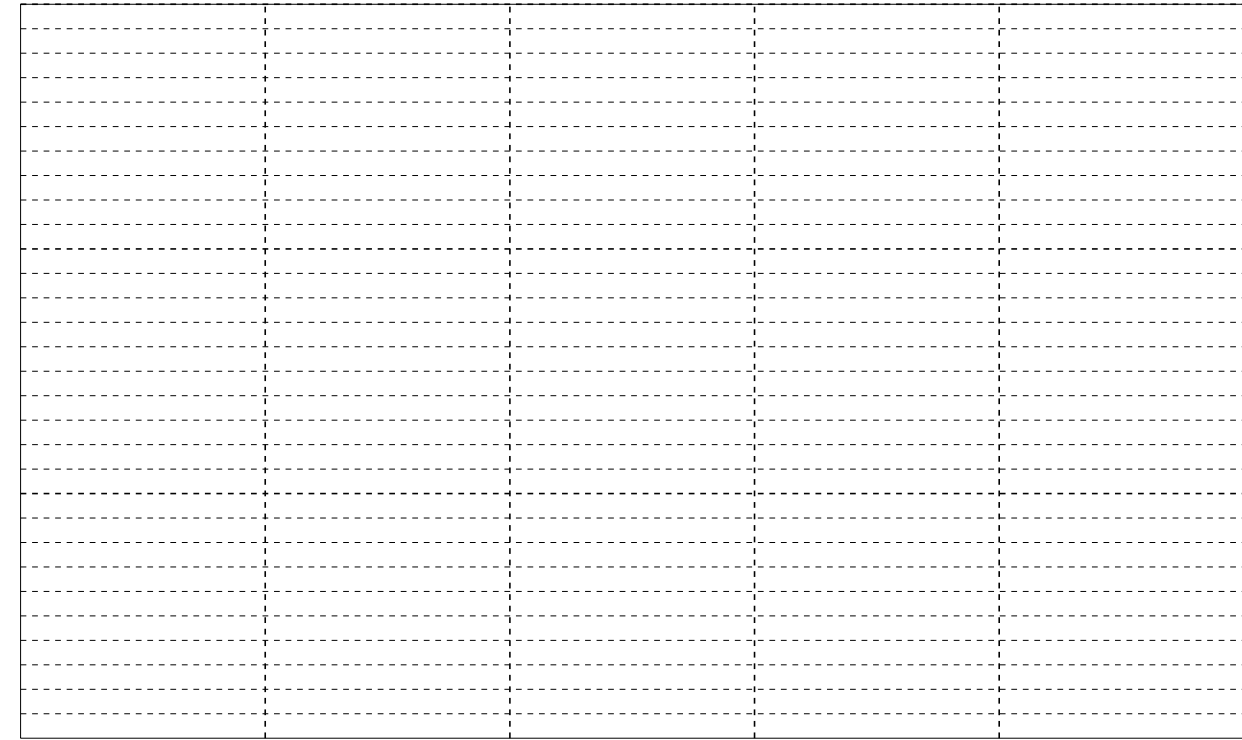
VICINITY MAP
N.T.S.



- NOTES:
- LINING AND COATING NOT SHOWN ON DETAIL FOR CLARITY.
 - THE BUTTERFLY VALVE OPERATOR AND BYPASS MAY BE FLIPPED AS NEEDED TO CLEAR OBSTRUCTIONS. VALVE OPERATOR AND BYPASS SHALL ALWAYS BE ON OPPOSITE SIDES OF PIPELINE AS SHOWN.
 - ALL PIPE, VALVES AND FITTINGS SHALL BE MORTAR COATED.
 - STD WT PIPE, STD DWG 323-EA AND 309-EA FOR SMALL DIAMETER FLANGES AND PIPING. WELD BUTT JOINTS PER TP120.
 - THIS IS A HUB TYPE FLANGE AND SHALL BE SHIPPED LOOSE FOR FIT-UP IN THE FIELD.
 - RESILIENT SEATED GATE VALVE, FLANGED.
 - FOR VALVE FLANGES BETWEEN ML&CS AND ML&PCS PIPE, INSTALL AN INSULATING FLANGE SET AND OMIT THE BOND CABLES. TWO TEST WIRES SHALL ONLY BE INSTALLED WHEN JOINING ML&CS AND ML&PCS PIPELINES.

DRAWING	LOCATION ± VALVE ON STA LINE	MAIN LINE		BYPASS		L	INSULATING JOINT?
		NOM DIAM (IN)	PIPE	NOM DIAM (IN)	PIPE		
W-24391-1	0+07.00	24	ML&CS	6	ML&CS	5'-0"	NO

TYPICAL BUTTERFLY VALVE AND BYPASS
NTS



HIGH PRIORITY FACILITY
24" GAS (HP)
(SEE HPF SPECIAL NOTE)

HIGH PRIORITY FACILITY
SPECIAL NOTE
HIGH PRIORITY FACILITY:
CONTACT:

BEFORE YOU DIG
CALL UNDERGROUND SERVICE ALERT
800-642-2444

DESIGNED BY	EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA
DESIGN CHECKED BY	
DRAWN BY	
PROJECT MANAGER R.P.E. NO.	
CORROSION CHECKED BY R.P.E. NO.	CROCKETT AQU VALVE IMPROVEMENT RICHMOND 24" ML&CS PIPE INSTALLATION
RECOMMENDED SR. CIVIL ENGINEER R.P.E. NO. C 59576	
APPROVED MGR PIPELINE INFRASTRUCTURE R.P.E. NO. C 57170	STRUCTURE OR ZONE DESIGNATION A0A
	SCALE 1"=20'H, 1"=4'V
	DATE
SAN PABLO AVE & RICHMOND PKWY	
W-24391-1	

HIGH PRIORITY FACILITY
8" PETROL (HP)
(SEE HPF SPECIAL NOTE)

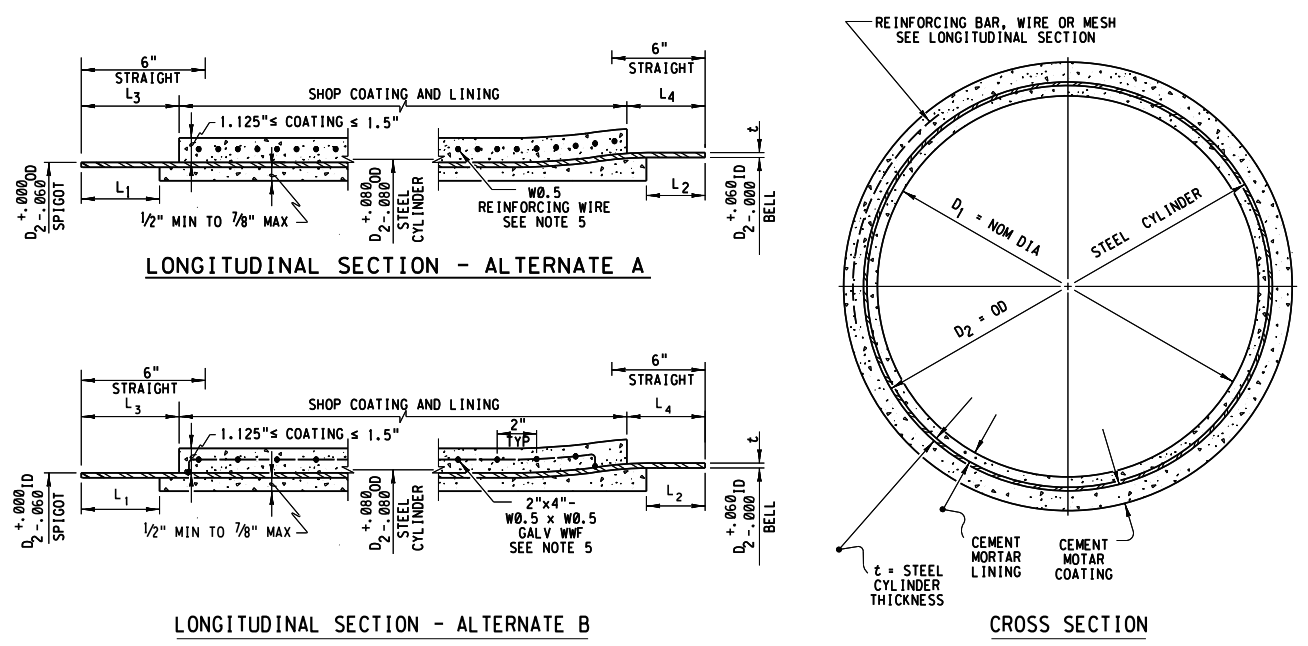
CONSTRUCTION BY DISTRICT FORCES
CONTRACT NO. _____
JUSTIFICATION _____

PAVING AC
REFERENCE 900922

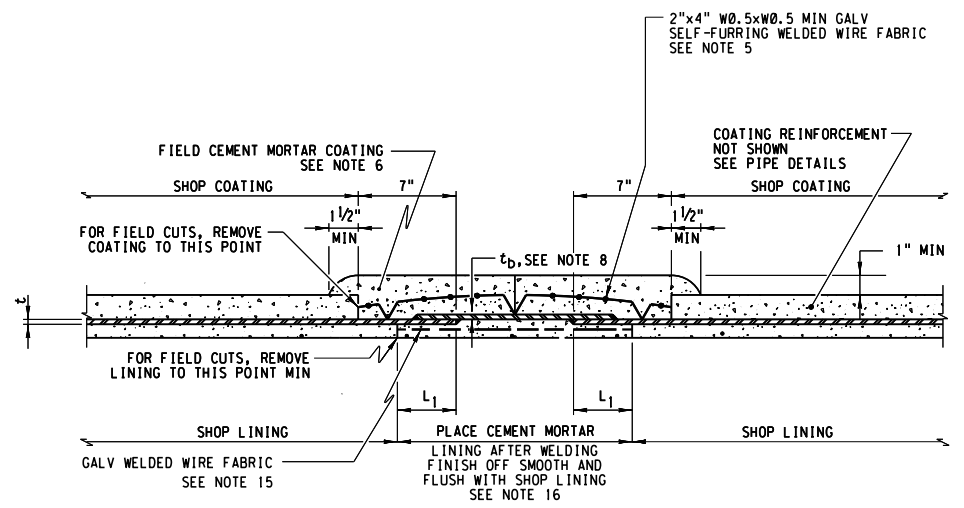


NO.	DATE	REVISION	BY	REC.	APP.

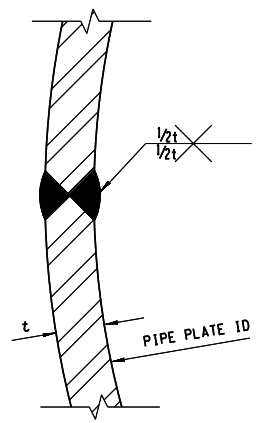
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 3
 2
 0



PIPE DETAILS



SEAM WELD (SHOP ONLY)



NOTES:

- TO DETERMINE IF A DIAMETER IS WITHIN THE TOLERANCE SPECIFIED, THE CIRCUMFERENCE WILL BE MEASURED AND THE DIAMETER CALCULATED FROM THE CIRCUMFERENCE. THE DIFFERENCE BETWEEN MINOR AND MAJOR AXES SHALL NOT EXCEED 1% OF THE DIAMETER OF THE PIPE.
- BUTT WELDED GIRTH JOINT BENDS SHALL BE FABRICATED FROM TESTED PIPE SECTIONS. THE STEEL CYLINDER THICKNESSES SHALL BE AS SHOWN IN THE TABLE ON THIS DRAWING.
- BUTT WELDED GIRTH JOINTS WILL BE PERMITTED ONLY IF MADE IN THE SHOP.
- THE DISTANCE BETWEEN ADJACENT GIRTH JOINTS SHALL BE 1'-0" MINIMUM.
- COATING REINFORCEMENT ON ALTERNATE A SHALL BE CONTINUOUS, SPIRALLY WOUND WIRE W0.5 MINIMUM, CONFORMING TO ASTM A1064, AT 1" PITCH, EMBEDDED IN MIDDLE THIRD OF COATING. WELD BOTH ENDS OF WIRE TO STEEL CYLINDER.

COATING REINFORCEMENT ON ALTERNATE B SHALL BE 2"x4" W0.5xW0.5 MINIMUM, ASTM A1064 GALVANIZED SELF-FURRING WELDED WIRE MESH, EMBEDDED IN THE MIDDLE THIRD OF THE COATING. LONGITUDINAL AND CIRCUMFERENTIAL JOINTS SHALL BE LAPPED A MINIMUM OF 4". ADJACENT LONGITUDINAL JOINTS SHALL BE STAGGERED. THE MESH SHALL BE TACK WELDED TO THE STEEL CYLINDER AT ONE POINT AT EACH END OF THE PIPE AND AT ALL CIRCUMFERENTIAL LAPS BETWEEN ADJACENT PIECES OF MESH.

SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- FOR REQUIREMENTS ON LINING, COATING, AND LINING AND COATING REPAIR AT JOINTS INCLUDING THE REQUIRED WIDTH OF CLOTH BANDS, SEE SPEC SECTIONS 33 11 13.50, 33 11 13.60.
- PIPE SECTIONS GENERALLY SHALL BE JOINED IN THE FIELD BY WELDED BELL AND SPIGOT GIRTH JOINTS.
- WELDED BUTT STRAP GIRTH JOINTS WILL BE PERMITTED ONLY IN STRAIGHT SECTIONS OF PIPELINE TO CONNECT SHOP SPECIALS OR CLOSURE SECTIONS, OR TO FACILITATE THE USE OF FIELD CUT SECTIONS. THE THICKNESS OF THE BUTT STRAP, t_b , SHALL BE THE THICKNESS (t) SHOWN IN THE PIPE DESIGN TABLE ON THIS DRAWING, OR 3/16", WHICHEVER IS GREATER.
- FOR FIELD WELDING DETAILS, SEE DETAIL TP120.
- NOT MORE THAN 50% OF THE MAXIMUM DEFLECTION ANGLE SHALL BE USED FOR GIRTH JOINT DEFLECTION ANGLES ON PIPELINE LAYOUT.
- FOR STANDARD STEEL PIPE FLANGE DETAIL SEE DRAWING 323-EA.
- STEEL FOR PIPE CYLINDERS & SPECIALS:
MINIMUM YIELD STRENGTH: 36,000 PSI. SEE SPEC. 33 11 03.
THICKNESS (t) IN TABLE 1 'STEEL CYLINDER DESIGN' IS A MINIMUM VALUE. PIPE WALL MAY BE THICKER AS REQUIRED BY THE MANUFACTURING PROCESS.
- WALL THICKNESS CALCULATIONS ASSUME NO CONTRIBUTIONS FROM REINFORCING STEEL. $\Delta y/D$ LIMITED TO 2%.
- POLYWRAP ML&CS PIPE AS PER SPECIFICATION SECTION 33 11 13.10.
- SEE SPECIFICATION 33 11 13.50 FOR REQUIREMENTS.
- WHEN USING HAND HOLES, LINING HOLDBACK ON SPIGOT SHALL EQUAL ZERO AND WIRE MESH MAY BE OMITTED. SEE TP120.

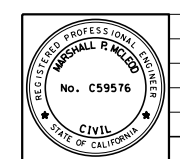
NOM DIA, D ₁	OD, D ₂	THICKNESS, t
24"	25 3/4"	1/4"

TABLE 1 - STEEL CYLINDER DESIGN
NOTE 12

	NOMINAL LAP	SPIGOT LINING	BELL LINING	SPIGOT COATING	BELL COATING
EXTERNAL SINGLE WELD	3"	L ₁	L ₂	L ₃	L ₄

TABLE 2 - LINING AND COATING HOLDBACKS

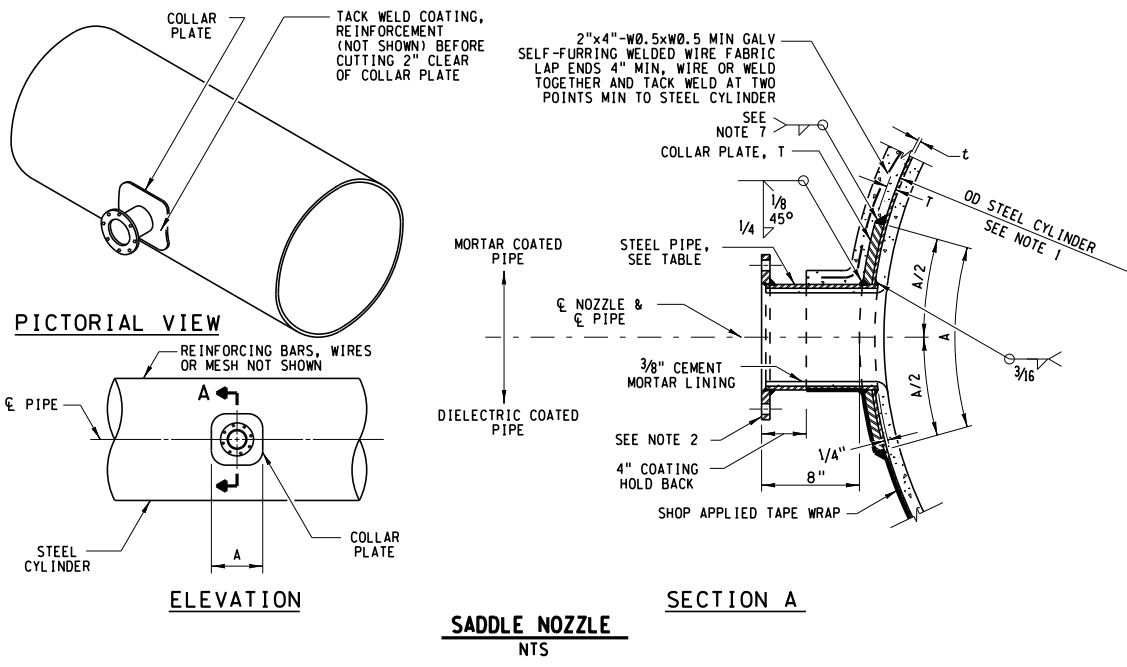
PIPE & GIRTH JOINT DETAILS
NTS



NO.	DATE	REVISION	BY	REC.	APP.

DESIGN	DESIGNED BY	EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA
	DESIGN CHECKED BY	
	DRAWN BY	
	PROJECT MANAGER R.P.E. NO.	
REVIEW	CORROSION CHECKED BY R.P.E. NO.	CROCKETT AQU VALVE IMPROVEMENT RICHMOND
	RECOMMENDED SR. CIVIL ENGINEER R.P.E. NO. C 59576	
APPROVED MGR PIPELINE INFRASTRUCTURE R.P.E. NO. C 57170		PIPE DETAILS
		TP110 - PIPE AND GIRTH JOINT DETAILS
		STRUCTURE OR ZONE DESIGNATION
		SCALE
		DATE
		W-24391-2
DISTRIBUTION SYSTEM MAP NO.		

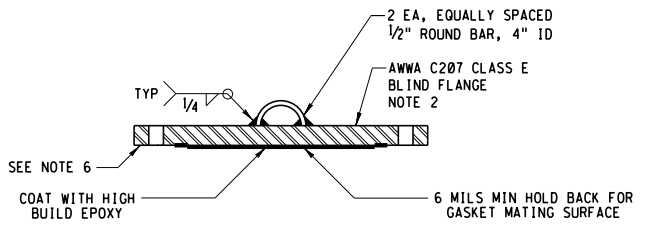
TP110



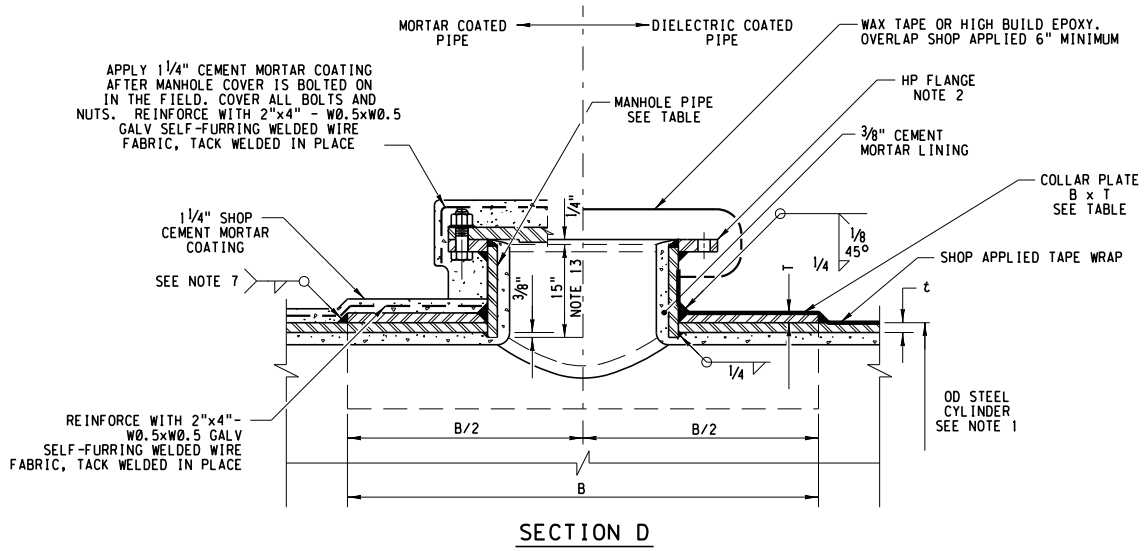
DIMENSIONS OF NOZZLE INSTALLATIONS

PIPE SIZE	NOZZLE DIMENSIONS		MIN COLLAR PLATE DIMENSIONS	
	SIZE	NOZZLE THICKNESS (SEE NOTE 5)	THICKNESS T	A
24	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
30	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
36	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
42	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32
48	4	0.237	t	9
	6	0.280		14
	8	0.322		18
	12	0.375		26
	16	0.375		32
	20	0.375		32

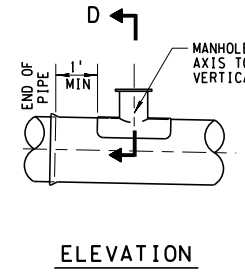
- NOTES**
- "t" INDICATES STEEL THICKNESS OF MAIN PIPE. FOR PIPE DETAILS, SEE DETAIL TP101 & TP102.
 - FOR STD STEEL FLANGE DETAIL SEE DWG 323-EA AND 324-EA.
 - DETAILS SHOWN ON THIS SHEET ARE FOR BOTH SHOP AND FIELD INSTALLATIONS.
 - DRILL AND TAP AIR TEST HOLES, IF ANY, BEFORE WELDING. AIR TEST PER SPEC 33 11 13.05 AND WELD HOLES AFTER SUCCESSFUL COMPLETION.
 - STEEL PIPE FOR NOZZLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-53 TYPE E OR S, GRADE B, OR ASTM A106 GRADE B.
 - FINISH AND COAT FLANGE MATING SURFACE IN ACCORDANCE WITH DRAWING 324-EA PRIOR TO SHIPPING OR STORAGE.
 - THICKNESS OF FILET WELD (INCH) TO BE SMALLER OF t OR T, BUT NOT LESS THAN 1/4".
 - ROUND ALL CORNERS OF COLLAR PLATE, MIN RADIUS = 20 X T.
 - PERMANENTLY IMPRINT OD OF PIPE AND NOZZLE ON EDGE OF COLLAR PLATE.
 - LOCATION OF THE PASS HOLES SHALL BE SELECTED BY THE CONTRACTOR AND APPROVED BY ENGINEER. PASS HOLE SHALL BE 1'-0" BACK OF BELL END ON FIELD TOP OF THE PIPE. STENCIL "P.H." ON LINING AND COATING AT BELL END OF THE PIPE HAVING PASS HOLE.
 - IN COLLAR PLATE AREAS GRIND WELD SEAMS REINFORCEMENT FLUSH BEFORE FITTING PLATES.
 - LINING AND COATING SHALL MATCH PIPE. SEE SPECIFICATIONS:
09 96 56.05 HIGH BUILD EPOXY
33 11 13.60 MORTAR COATING
33 11 13.62 DIELECTRIC COATING
33 10 01 PROTECTION FROM CORROSION
 - MANHOLE RISER HEIGHT = 15" UNLESS SHOWN OTHERWISE IN ANOTHER DETAIL.
 - THE DISTANCE BETWEEN EDGE OF GIRTH JOINT AND EDGE OF COLLAR/WRAPPER SHALL BE 1'-0" MIN.



**MANHOLE COVER DETAIL
CLASS E BLIND FLANGE**

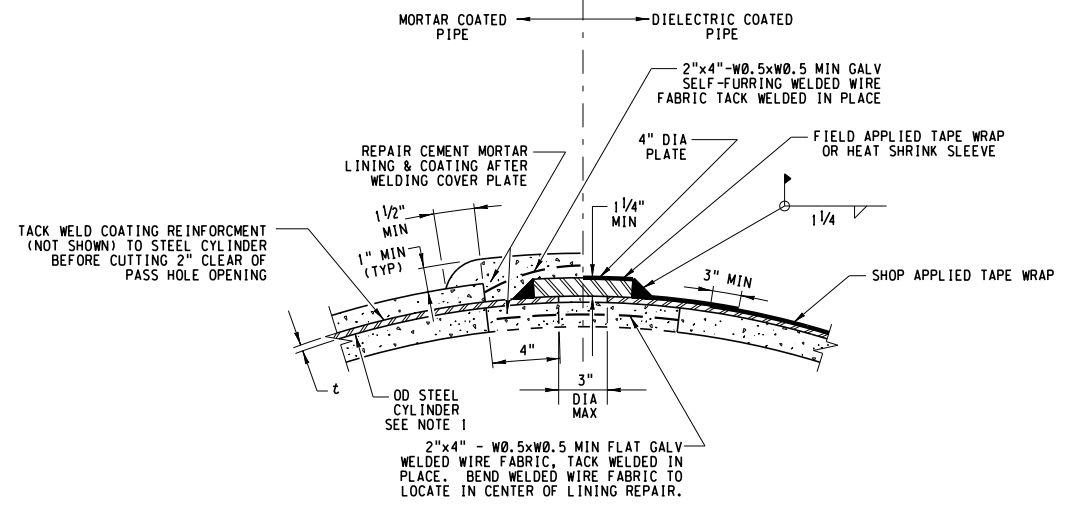


24\"/>



MANHOLE DIMENSIONS

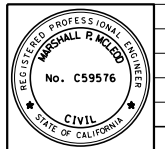
PIPE SIZE	MANHOLE PIPE		MIN COLLAR PLATE DIMENSIONS	
	OD	THICKNESS T	THICKNESS T	B
42	24.0	0.375	t	48
48	24.0	0.375	t	48



**PASS HOLE
FOR 24\"/>**

NOZZLES, MANHOLES, & PASSHOLE DETAILS

NTS

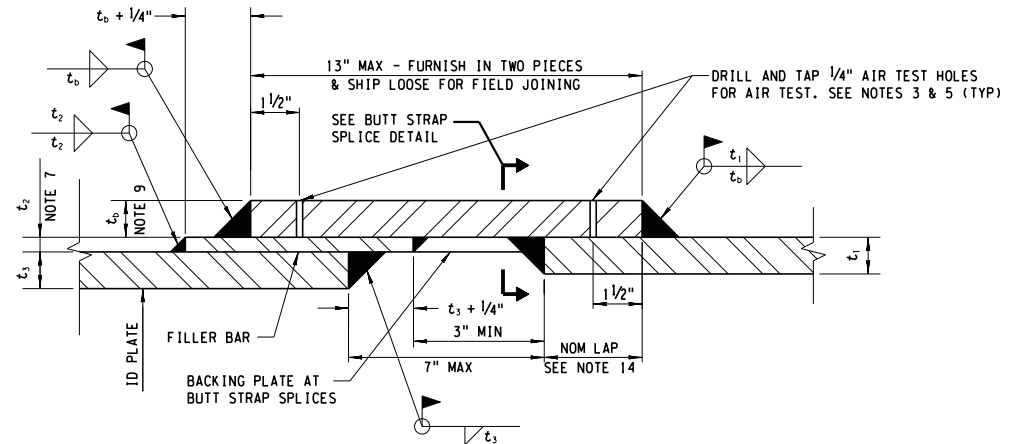


NO.	DATE	REVISION	BY	REC.	APP.

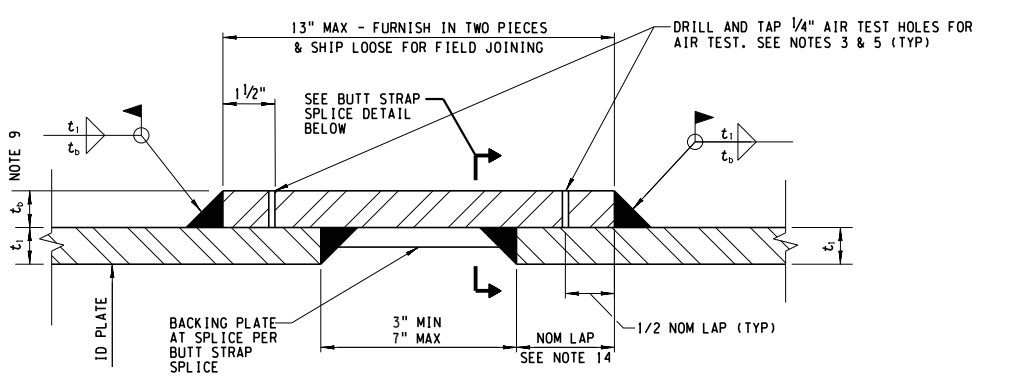
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	CROCKETT AQU VALVE IMPROVEMENT RICHMOND	
	PIPE DETAILS	
	TP113 - NOZZLE, MANHOLE, & PASSHOLE DETAILS	
RECOMMENDED SR. CIVIL ENGINEER R.P.E. NO. C 59576	STRUCTURE OR ZONE DESIGNATION	W-24391-3
APPROVED MGR PIPELINE INFRASTRUCTURE R.P.E. NO. C 57170	SCALE DATE	
DISTRIBUTION SYSTEM MAP NO.		

TP113

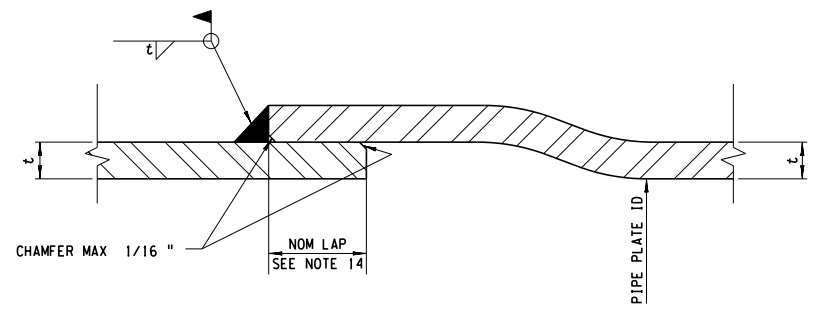
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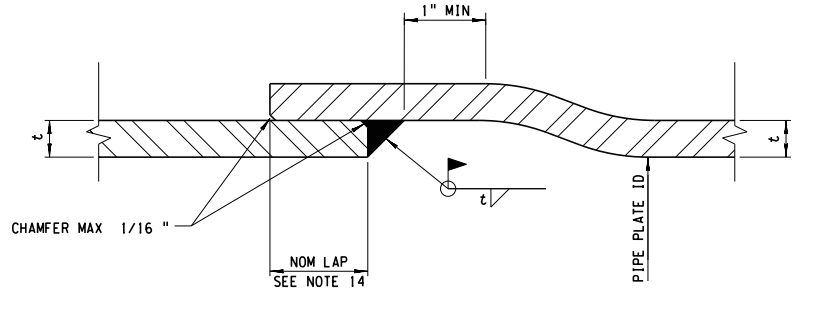
**DISSIMILAR CYLINDERS TYPE I
BUTT STRAP JOINT**
NTS



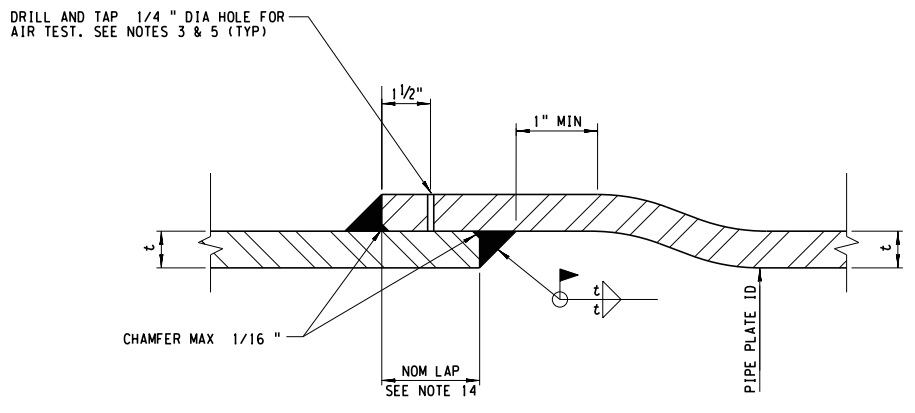
**SIMILAR CYLINDERS TYPE II
BUTT STRAP JOINT**
NTS (NOTE 10)



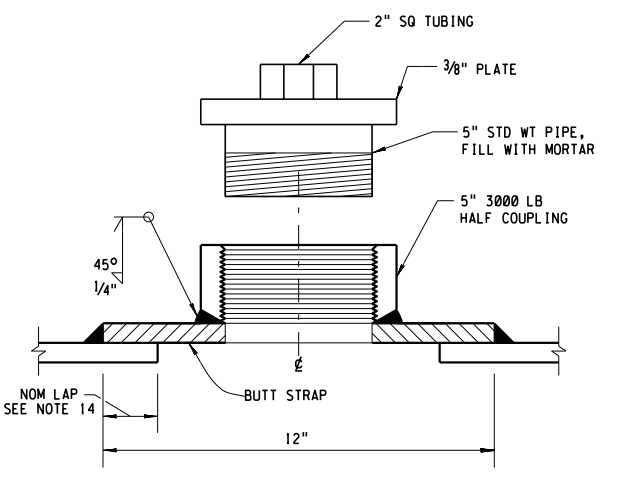
EXTERNAL SINGLE WELDED LAP JOINT
NTS (NOTE 8)



INTERNAL SINGLE WELDED LAP JOINT
NTS (NOTE 8)

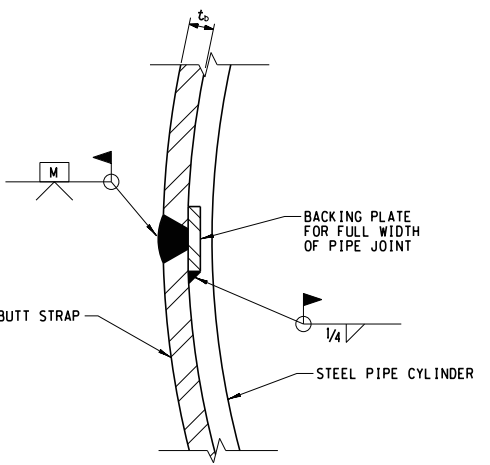


DOUBLE WELDED LAP JOINT
NTS (NOTE 8)

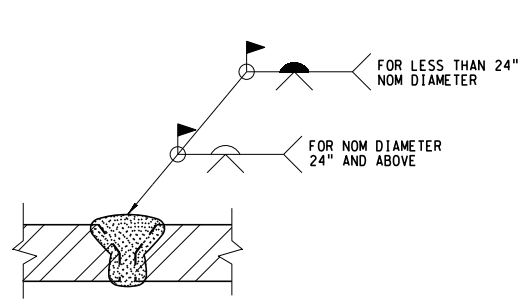


- HAND HOLE ON BUTT STRAP NOTES:**
- CONTRACTOR MAY ONLY USE HAND HOLES WHERE CALLED FOR ON THE PROJECT DRAWINGS.
 - USE OF HAND HOLES FOLLOW THESE STEPS:
 - FABRICATION SHOP SHALL MAKE HAND HOLE-EQUIPPED BUTT STRAPS FROM AN APPROVED SUBMITTAL.
 - FABRICATED PIPE PLUG SHALL BE FILLED WITH MORTAR.
 - THE CONTRACTOR SHALL TEST FIT THE PLUG TO THE HAND HOLE AND MARK THE DESIRED STAB INSIDE AND OUT.
 - APPLY FIELD MORTAR LINING THROUGH THE HAND HOLE UP TO THE DESIRED STAB, LESS 1/2-INCH.
 - ALLOW TIME FOR THE LINING TO REACH INITIAL STRENGTH.
 - A BEAD 3/4-INCH THICK OF MORTAR IS APPLIED WITHIN THE HAND HOLE AND THE PLUG IS SET TO THE DESIRED STAB - DO NOT OVER-INSERT THE PLUG.
 - ALLOW ONE DAY FOR FINAL MORTAR TO REACH INITIAL SET AND DRY OUT.
 - FILLET WELD THE PLUG TO THE HALF-COUPLING ALL AROUND.

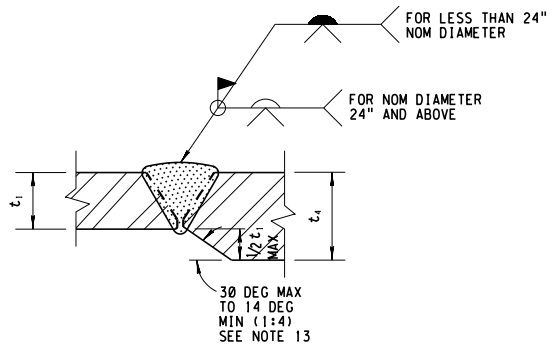
HAND HOLE ON BUTT STRAP
NTS



BUTT STRAP SPLICE
NTS



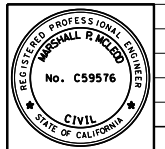
**SIMILAR CYLINDERS
BUTT JOINT**
NTS (NOTE 2)



**DISSIMILAR CYLINDERS
BUTT JOINT**
NTS (NOTE 2 & 11)

WELDED STEEL PIPE FIELD GIRTH JOINT DETAILS
NTS

- NOTES:**
- "t" INDICATES THE STEEL THICKNESS OF THE PIPE OR BUTT STRAP.
 - FULL PENETRATION GIRTH WELDS MADE IN THE FIELD ALLOWED ONLY WHERE SHOWN ON PLANS OR WITH APPROVAL OF THE ENGINEER.
 - JOINTS THAT RECEIVE HYDROSTATIC PRESSURE TESTING DO NOT REQUIRE AIR TESTING ALSO.
 - SEE TPXXX FOR LINING/COATING HOLD BACK DIMENSIONS AND LINING/COATING REPAIR AT FIELD JOINTS.
 - FOR PIPE DIAMETERS GREATER THAN 30", DRILL AND TAP TEST 2 HOLES IN SHOP FOR EACH SEGMENT TESTED. AIR TEST AFTER WELDING IS COMPLETED. WELD HOLES AFTER SUCCESSFUL COMPLETION OF JOINT TESTS. SEE SPECIFICATION 33 11 13.05 - INSTALLATION OF STEEL PIPE. SHOP DRILL AND TAP SPIGOT FOR AIR TEST INSIDE PIPE AT CONTRACTOR'S OPTION.
 - SEE SPECIFICATION 05 05 24 - PIPE WELDING FOR FIELD WELDING REQUIREMENTS. SEE SPECIFICATION 33 11 13.05 - INSTALLATION OF STEEL PIPE AND DETAIL TPXXX FOR FIELD JOINTS AND REPAIRS.
 - "t2" INDICATES OFFSET OF O.D. OF STEEL CYLINDERS. USE BUTT STRAP JOINT TYPE I IF "t2" IS 1/4" OR MORE.
 - ONLY SINGLE FIELD WELDS ARE REQUIRED AT LAP JOINTS, EXCEPT WHERE DOUBLE WELDED LAP JOINTS ARE SPECIFICALLY CALLED FOR ON THE PROJECT DRAWINGS. ONLY EXTERNAL FIELD WELDS ARE REQUIRED AT GIRTH JOINTS FOR 24" PIPE AND SMALLER.
 - t_b = t₁ , OR 3/16", WHICHEVER IS GREATER.
 - THE PIPELINE SHALL BE FINISHED WITH UNBROKEN, CONTINUOUS LINING AND COATING. WHERE BUTT STRAPS WITH HAND HOLES ARE SHOWN ON THE PROJECT DRAWINGS, CONTRACTOR MAY OMIT INTERNAL WELDS AND USE HAND HOLES. SEE HAND HOLE ON BUTT STRAP DETAIL, THIS SHEET.
 - MAXIMUM THICKNESS t₃ SHALL BE NO GREATER THAN 1.5 x t₁ .
 - NOT USED.
 - BEVEL SHALL BE FABRICATED IN THE SHOP.
 - SEE TP120 FOR NOM LAP.



NO.	DATE	REVISION	BY	REC.	APP.

DESIGNED BY	EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA
DRAWN BY	CROCKETT AQU VALVE IMPROVEMENT RICHMOND
PROJECT MANAGER R.P.E. NO.	PIPE DETAILS
CORROSION CHECKED BY R.P.E. NO.	TP120 - WELDED STEEL PIPE FIELD GIRTH JOINT DETAILS
RECOMMENDED SR. CIVIL ENGINEER R.P.E. NO. C 59576	STRUCTURE OR ZONE DESIGNATION
APPROVED MGR PIPELINE INFRASTRUCTURE R.P.E. NO. C 57170	SCALE
	DATE

TP120

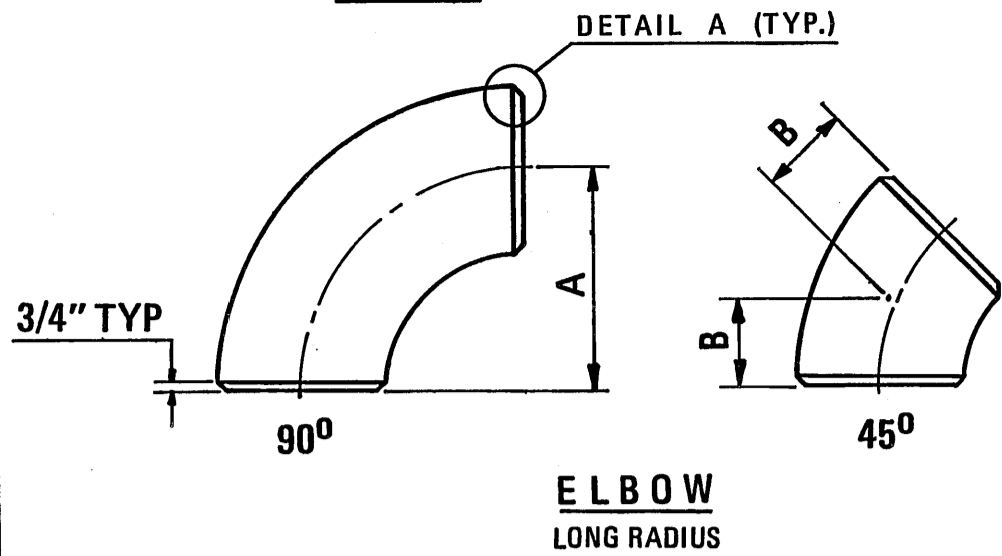
W-24391-4

DISTRIBUTION SYSTEM MAP NO.

1" SCALE ON ORIGINAL

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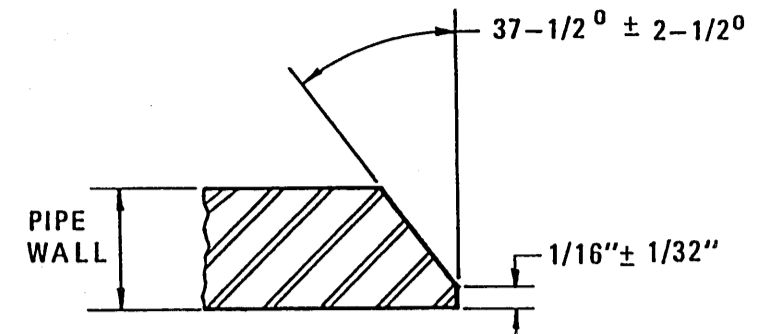
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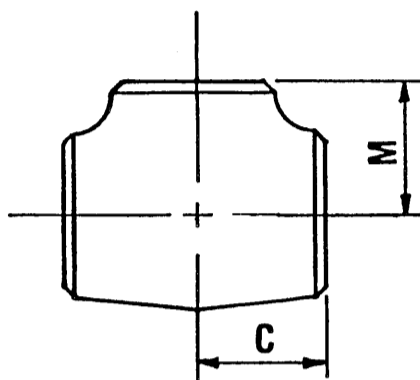
ELBOW
LONG RADIUS

DIMENSIONS

SIZE	90° A	45° B
4"	6"	2-1/2"
6"	9"	3-3/4"
8"	12"	5"
12"	18"	7-1/2"
16"	27"	11-1/4"
20"	33"	13-1/2"

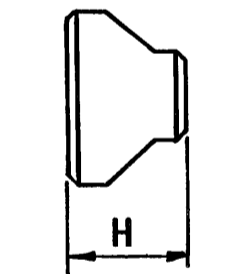


WELDING BEVEL EDGE
DETAIL A



TEE

SIZE	C	M
4" x 4"	4-1/8"	4-1/8"
6" x 4"	5-5/8"	5-1/8"
6" x 6"	5-5/8"	5-5/8"
8" x 4"	7"	6-1/8"
8" x 6"	7"	6-5/8"
8" x 8"	7"	7"
12" x 6"	10"	8-5/8"
12" x 8"	10"	9"
12" x 12"	10"	10"
16" x 16"	13-1/2"	13-1/2"
20" x 20"	16-1/2"	16-1/2"



REDUCER

SIZE	H
6" x 4"	5-1/2"
8" x 4"	6"
8" x 6"	6"
12" x 4"	8"
12" x 6"	8"
12" x 8"	8"
16" x 8"	15"
16" x 12"	15"
20" x 12"	20"
20" x 16"	20"



DISHED HEAD

SIZE	E
4"	2-1/2"
6"	3-1/2"
8"	4"
12"	6"
16"	8"
20"	10"

NOTES

- FITTINGS SHALL CONFORM TO ANSI B 16.9, STANDARD WEIGHT, AND ARE FOR USE WITH 4.500", 6.625", 8.625", 12.75", 18.0" AND 22.0" O.D. PIPE.
- FOR JOINT DETAILS, SEE STD. DWGS. 237-EA OR 310-EA.
- FOR WET TAPS USE STEEL PIPE TEES, STD. DWG. 282-EA OR STEEL PIPE NOZZLE, STD. DWG. 238-EA.
- FOR STEEL PIPE FLANGES, SEE STD. DWGS. 323-EA AND 324-EA.
- FITTINGS SHALL BE SUPPLIED UNCOATED.
- FITTINGS SHALL BE LINED IN ACCORDANCE WITH AWWA C-104 WITH LINING THICKNESS INDICATED ON DWG'S. 1216-A OR 1884-A. PRIOR TO MORTAR LINING, ABRASIVE BLAST INTERIOR OF FITTINGS TO A "COMMERCIAL BLAST CLEANING" SSPC-SP-6.
- ELBOWS MAY BE TRIMMED TO THE REQUIRED ANGLE IN THE FIELD.

REVISED 17 MAY 93 C.A.D. *WJ*
REVISED 18 NOV 87 NTN *WJ*

APPROVED *WJ*
ASST. GEN. MGR. & CHIEF ENGINEER, R.P.E. NO. C 13447

NO.	DATE	REVISION	BY	REC.	APP.
3	30 JUNE 08	REVISED (PER PIPE COMMITTEE)	<i>WJ</i>	87	<i>WJ</i>

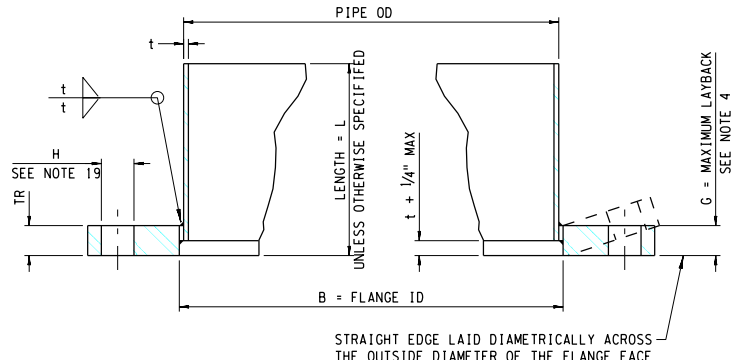
DESIGN BY	E.B.M.U.D.	
DESIGN CHECK BY	<i>WJ</i>	
DRAWN BY	WADSWORTH & J.J.G.	
MECH	ELECT	STRUCT
PIPELINE	CORR	FNDN
REVIEW		
RECOMM.	SUPVR. PIPELINE ENG'G. <i>WJ</i> R.P.E. NO. C-18774 MANAGER DIST. ENG'G. <i>WJ</i> R.P.E. C-13325	

EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA	
STANDARD DRAWING	
MORTAR LINED STEEL PIPE FITTINGS	
4" THRU 20"	
STRUCTURE OR ZONE DESIGNATION	309-EA
SCALE NONE	
DATE	21 NOV 73

- THIS DRAWING IS APPLICABLE FOR LOW PRESSURE SERVICES UP TO:
 - 175 PSI FOR FLANGES 12" AND SMALLER
 - 150 PSI FOR FLANGES 16" AND LARGER
 - SEE DRAWING 324-EA FOR HIGHER PRESSURES

FLANGES

- FLANGES SHALL BE IN ACCORDANCE WITH AWWA C207 CLASS D FLAT FACED RING OR HUB FLANGES. AWWA C207 CLASS E RING OR HUB FLANGES ARE ACCEPTABLE ALTERNATIVES WITH PRIOR APPROVAL OF THE DISTRICT. IN CASE OF CONFLICT BETWEEN THIS DRAWING AND AWWA C207, AWWA C207 SHALL GOVERN. THE MINIMUM FLANGE THICKNESS, NUMBER OF BOLTS AND BOLT DIAMETER FOR AWWA C207 CLASS D FLANGES ARE LISTED IN THE TABLE ON THIS DRAWING.
- ASME B16.5 CLASS 150 SLIP-ON AND WELDING NECK TYPE OR B16.47, SERIES A, CLASS 150 FLANGES ARE ACCEPTABLE ALTERNATIVES. USE TYPE AS CALLED OUT ON REFERRING DRAWING.
 - RAISED FACE ASME FLANGES MAY BE USED ONLY IF THE MATING FLANGE IS STEEL, STAINLESS STEEL OR DUCTILE IRON.
 - ASME FLANGES THAT ARE FLAT FACED WITHOUT PROJECTION MAY BE USED IN ALL INSTALLATIONS.
 - ASME FLANGES SHALL BE FLAT FACED IF THE MATING FLANGE IS CAST IRON OR IF THE MATERIAL OF THE MATING FLANGE IS UNCERTAIN.
 - NOTE THAT ASME FLANGES WERE PREVIOUSLY REFERRED TO AS ANSI FLANGES.
- IN ACCORDANCE WITH AWWA C207, THE FLANGE LAYBACK, AFTER WELDING PIPE SECTION TO THE FLANGE AND BEFORE BOLTING THE FLANGE, SHALL NOT EXCEED 1° FOR A SINGLE FLANGE OR 1.5° FOR TWO MATING SURFACES. THE LAYBACK "G" FOR A SINGLE FLANGE IS SHOWN IN INCHES IN THE TABLE FOR 0.75°.
- ALL FLAT FACED FLANGES SHALL HAVE EITHER A SERRATED CONCENTRIC OR SPIRAL FINISH HAVING FROM 24 GROOVES/IN TO 40 GROOVES/IN SHALL BE USED. THE CUTTING TOOL SHALL HAVE AN APPROXIMATE 0.06 IN OR LARGER RADIUS. THE RESULTING SURFACE SHALL HAVE A 125 TO 500 MICRO-INCH ROUGHNESS.
- COAT FLANGE FACES WITH A RUST INHIBITOR OR OTHER REMOVABLE PROTECTIVE COATING AFTER WELDING PIPE TO FLANGE OR AFTER FLANGE FACE MACHINING. REMOVE PROTECTIVE COATING PRIOR TO FINAL ASSEMBLY OF FLANGES.



LP FLANGE & PIPE SECTION ASSEMBLY

PIPE SIZE	MIN. FLANGE THICKNESS TR		BOLTS		BOLT TORQUE		MAXIMUM FLANGE LAYBACK G
	RING	HUB	#	DIAM	RUBBER	FIBER	
4	0.625	0.500	8	5/8	35	120	0.029
6	0.688	0.562	8	3/4	56	200	0.028
8	0.688	0.562	8	3/4	70	220	0.031
10	0.688	0.688	12	7/8	87	300	0.034
12	0.812	0.688	12	7/8	104	350	0.040
16	1.000	0.750	16	1	119	450	0.048
20	1.125	0.750	20	1 1/8	137	600	0.048
24	1.250	1.000	20	1 1/4	205	700	0.051
30	1.375	1.000	28	1 1/4	207	800	0.056
36	1.625	1.125	32	1 1/2	304	1000	0.064
42	1.750	1.25	36	1 1/2	359	1000	0.071
48	1.875	1.375	44	1 1/2	362	1000	0.074
54	2.125	1.375	44	1 3/4	516	1500	0.079
60	2.250	1.500	52	1 3/4	526	1500	0.084
66	2.500	1.500	52	1 3/4	625	1500	0.090
72	2.625	1.500	60	1 3/4	625	1500	0.094
78	2.750	1.750	64	2	761	2000	0.097
84	2.875	1.750	64	2	877	2000	0.102
90	3.000	2.000	68	2 1/4	1036	3000	0.107
96	3.250	2.000	68	2 1/4	1252	3000	0.112
102	3.250	-	72	2 1/2	1458	4000	0.117
108	3.375	-	72	2 1/2	1820	4000	0.121

TABLE DIMENSIONS ARE IN INCHES, TORQUE IS FT-LBS

BOLTING

- BOLTS SHALL HAVE REGULAR HEXAGONAL HEADS IN ACCORDANCE WITH ASME B18.2.1. NUTS SHALL HAVE HEAVY HEXAGONAL HEADS IN ACCORDANCE WITH ASME B18.2.2.
- ALL BOLTS AND NUTS SHALL BE THREADED IN ACCORDANCE WITH ASME B1.1 FOR SCREW THREADS, COARSE THREAD SERIES (UNC), CLASS 2A OR 2B FIT. FOR BOLTS LARGER THAN 1", UN-8 SERIES THREADS WITH 8 THREADS/INCH ARE ALSO ACCEPTABLE.
- BOLTING SHALL MEET ONE OF THE FOLLOWING AS REQUIRED BY PROJECT DRAWINGS AND SPECIFICATIONS:
 - CARBON STEEL: BOLTS SHALL CONFORM TO SAE J429, GRADE 5, ASTM A325, ASTM A449, TYPE 1 OR ASTM A193 GRADE B7. NUTS UP TO 1-1/2" SHALL BE ASTM A563, GRADE B OR SAE J995 STANDARD HEXAGONAL FLAT NUTS. NUTS GREATER THAN 1-1/2" SHALL BE ASTM A563, GRADE A HEAVY HEXAGONAL FLAT NUTS.
 - STAINLESS STEEL WITH RUBBER GASKETS: THE BOLTS SHALL BE ASTM A193, CLASS 1, B8 (TYPE 304) OR B8M (TYPE 316). NUTS SHALL BE ASTM A194, GRADE 8 (TYPE 304) OR GRADE 8M (TYPE 316) STANDARD HEX. WASHERS SHALL MATCH.
 - STAINLESS STEEL WITH FIBER GASKETS: THE BOLTS SHALL BE ASTM A193, CLASS 2, B8 (TYPE 304) OR N8N (TYPE 304N), CARBIDE SOLUTION TREATED AND STRAIN HARDENED. NUTS SHALL BE ASTM A194, GRADE 1 STD HEX OR GRADE 8-S1 HEAVY HEX AND STRAIN HARDENED. WASHERS SHALL MATCH.

ANTI-SEIZE COMPOUND

- THREAD ANTI-SEIZE COMPOUND SHALL BE USED ON ALL BOLT THREADS. SEE SECTION 05 05 26 FOR ACCEPTABLE PRODUCTS. FAILURE TO LUBRICATE THE BOLTING THREADS WITH ANTI-SEIZE COMPOUND PRIOR TO NUT INSTALLATION WILL RESULT IN LOW BOLT TENSION AND INSUFFICIENT GASKET PRESSURE.

GASKETS

- FLAT FACED FLANGES SHALL USE RUBBER OR NON-ASBESTOS FIBER GASKETS. RAISED FACE FLANGES SHALL USE NON-ASBESTOS FIBER GASKETS.
- FIBER GASKETS SHALL BE USED WITH HIGH STRENGTH STAINLESS STEEL BOLTING.
- RUBBER GASKETS SHALL BE FULL-FACED PEROXIDE CURED EPDM WITH A THICKNESS OF 1/16" OR 1/8".
- NON-ASBESTOS FIBER GASKETS SHALL MEET THE REQUIREMENTS OF AWWA C207. FACES SHALL BE LUBRICATED ON BOTH SIDES WITH FOOD GRADE ANTI-SEIZE COMPOUND.
- FLANGES 24" AND SMALLER SHALL USE FULL FACED GASKETS. FLANGES OVER 24" SHALL USE RING GASKETS.

DIMENSIONS

- THE FLANGE ID "B" SHALL BE 1/8" LARGER THAN THE PIPE OUTSIDE DIAMETER FOR PIPES UP TO 16" AND 3/16" LARGER FOR PIPES 20" AND LARGER. NOTE THAT DISTRICT STANDARD PIPELINE PIPE DIAMETERS ARE DIFFERENT FROM ASME B36.10 AND B36.19 PIPE. VERIFY ACTUAL PIPE DIAMETER BEFORE FABRICATING FLANGES. SEE APPLICABLE PIPE DRAWINGS (SUCH AS 1884-A, 7830-GB-1 AND 9499-GB) FOR PIPE OUTSIDE DIAMETER.
- NOTE THAT FLANGE DRILLING FOR AWWA C207 CLASS D FLANGES, ASME B16.1 CLASS 125 FLANGES, ASME B16.5 CLASS 150 FLANGES, AND ASME B16.47 SERIES A CLASS 150 FLANGES ARE IDENTICAL.
- THE OVERALL LENGTH "L" SHALL BE 12" FOR FLANGES UP TO 18" FOR FLANGES 24" AND LARGER.
- THE BOLT HOLE DIAMETER "H" SHALL BE 1/8" LARGER THAN THE BOLT DIAMETER.

BOLTING PROCEDURES

- INITIAL BOLTING: HAND TIGHTEN EACH, THEN "SNUG" EACH TO 10% OF FINAL TORQUE AND CHECK GAP AROUND CIRCUMFERENCE FOR UNIFORMITY. SELECTIVELY TIGHTEN WHERE GAP IS LARGER.
- FLANGE BOLTS FOR RUBBER GASKETS SHALL BE TIGHTENED TO FINAL TORQUE WITH MINIMUM PASSES AS FOLLOWS:

PASS	PERCENT OF FINAL TORQUE	PATTERN
1	20 TO 30	CROSS
2	50 TO 70	CROSS
3	100	CROSS
4	100	CIRCULAR CLOCKWISE

 AFTER HYDROTESTING, REPEAT PASSES 3 & 4.

- FLANGE BOLTS FOR NON-ASBESTOS COMPOSITION GASKETS SHALL BE TIGHTENED WITH MINIMUM PASSES AS FOLLOWS:

PASS	PERCENT OF FINAL TORQUE	PATTERN
1	20 TO 30	CROSS
2	50 TO 70	CROSS
3	100	CROSS
4	100	CIRCULAR CLOCKWISE

 ALLOW MINIMUM 4 HR FOR GASKET TO UNDERGO RELAXATION, THEN:

5	100	CROSS
6	100	CIRCULAR CLOCKWISE

- BOLTS SHALL IN ALL PASSES BE TIGHTENED IN DIAMETRICAL PAIRS AND IN A CROSS PATTERN AS RECOMMENDED BY THE GASKET MANUFACTURER OR ASME PCC-1, TABLES 4 OR 4.1.
- A CALIBRATED TORQUE WRENCH SHALL BE USED ON ALL PASSES TO ENSURE UNIFORM BOLTING. TORQUE MULTIPLIERS ARE REQUIRED FOR HIGHER TORQUE VALUES.

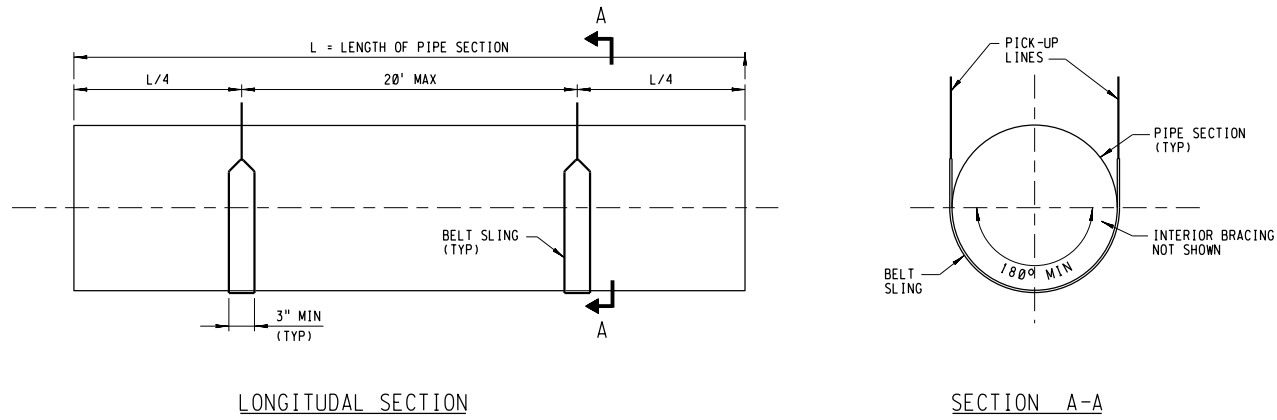
C. T. WAY
APPROVED, DIRECTOR OF ENGINEERING, R.P.E. NO. C26724

REVISED AND REDRAWN 14 JAN 99 DLH

NO.	DATE	REVISION	BY	REC.	APP.
7	10-15-20	REVISED NOTE	JC	MR	CAV
6	03-10-20	REVISED VALUES	DSB	DSB	CAV
5	02-01-17	REVISED NOTES	MR	DSB	CAV
4	06-30-08	REVISED NOTES	JH	ST	AST

DESIGN	DESIGNED BY EMDU	EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA STANDARD DRAWING STEEL PIPE FLANGES LOW PRESSURE WITH ATTACHED PIPE SECTION
	DESIGN CHECKED BY HUBERT LAI	
DRAWN BY dlh		
CORROSION CHECK BY K. CHAPMAN		
SR. CIVIL ENG. R.P.E. NO. C 2714	W. BODE	STRUCTURE OR ZONE DESIGNATION SCALE NONE DATE IFEB 81
RECOMMENDED MGR. OF DESIGN R.P.E. NO. C 16814	J. M. HILLIARD/W. BODE	
APPROVED, DIRECTOR OF ENGINEERING R.P.E. NO. C 31966	D. M. DIEMER	0323-EA

USER: jpp062
 PLOT DATE: 04-NOV-2021 15:34
 P-FILE: s:\m\cadd\21\12\tp710\mgt\kgr\p05\des\lign\proj\tp710 - Lifting, Handling, Storage, and Bracing of 20" and Larger Pipe.dgn
 SCALE: 1/8" = 1'-0"
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 2
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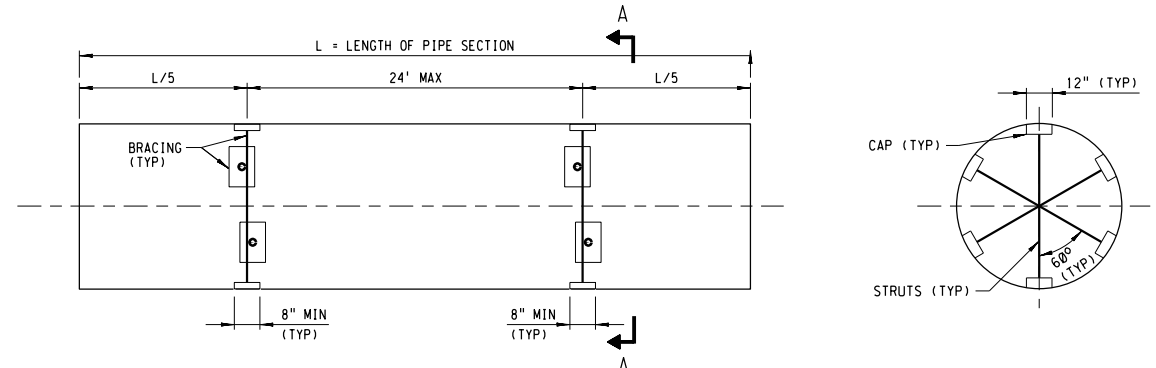


LONGITUDINAL SECTION

SECTION A-A

LIFTING POINTS AND METHOD OF HANDLING 20" AND LARGER PIPE

NTS

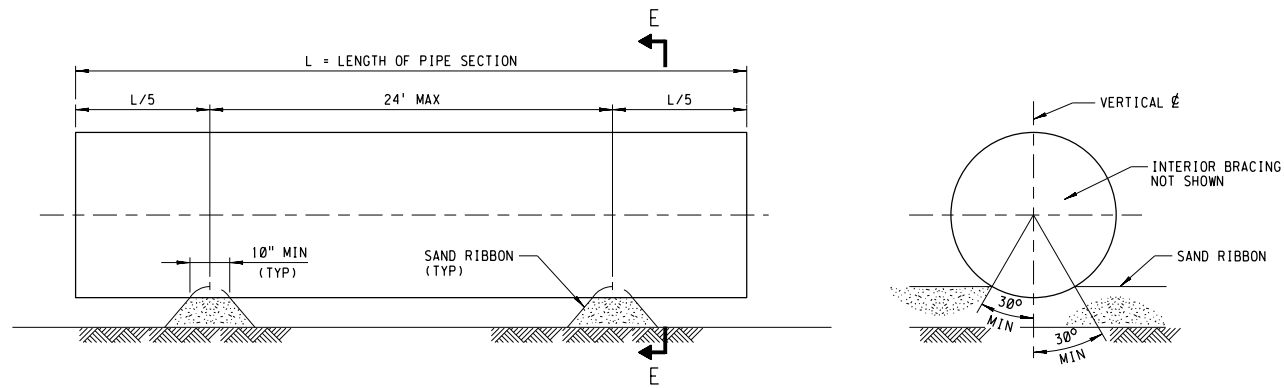


LONGITUDINAL SECTION

SECTION A-A

INTERIOR BRACING DURING COATING AND STORAGE OF 42" AND LARGER PIPE

NTS

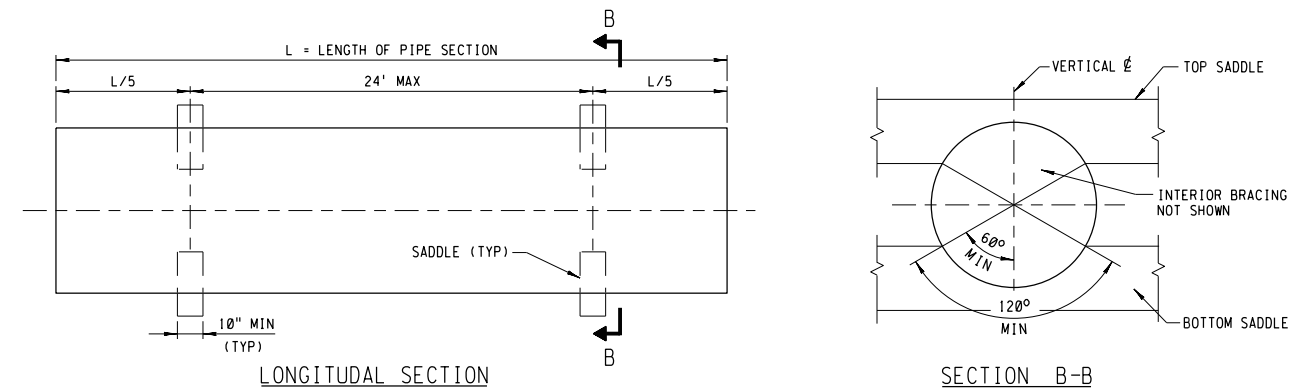


LONGITUDINAL SECTION

SECTION E-E

YARD STORAGE OF 20" AND LARGER PIPE

NTS

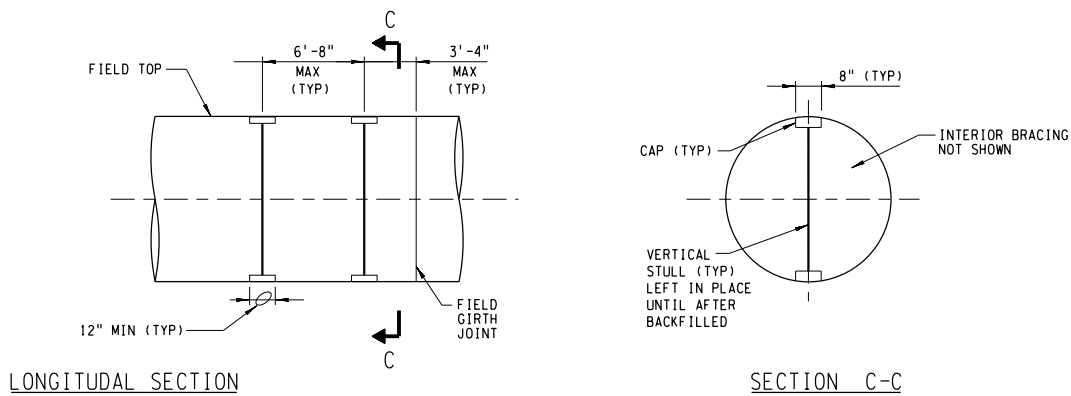


LONGITUDINAL SECTION

SECTION B-B

SUPPORT POINTS AND SADDLES FOR HAULING 20" AND LARGER PIPE

NTS



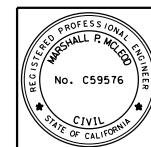
LONGITUDINAL SECTION

SECTION C-C

INSTALLING 42" AND LARGER PIPE

NTS

**APPROVED FOR USE
LAST UPDATED: 05/10/2022**



NO.	DATE	REVISION	BY	REC.	APP.

DESIGNED BY	EAST BAY MUNICIPAL UTILITY DISTRICT OAKLAND, CALIFORNIA	
DESIGN CHECKED BY		
DRAWN BY		
REVIEW	PROJECT TITLE CITY/COUNTY	
CORROSION CHECK BY		
RECOMMENDED SR CIVIL ENGINEER R.P.E. NO. C 59576		
APPROVED MGR PIPELINE INFRASTRUCTURE R.P.E. NO. C 57170	PIPE DETAILS	
	STRUCTURE OR ZONE DESIGNATION	W-XXXX-XX
	SCALE NTS	
	DATE	