



101 Lucas Valley Road, Suite 300
San Rafael, CA 94903
Tel.: 415-472-1734
Fax: 415-499-7715
www.LGVSD.org

MANAGEMENT TEAM
General Manager, Curtis Paxton
Plant Operations, Mel Liebmann
Collections/Safety/Maintenance, Greg Pease
Engineering, Michael P. Cortez
Administrative Services, Dale McDonald

DISTRICT BOARD
Megan Clark
Ronald Ford
Craig K. Murray
Gary E. Robards
Crystal J. Yezman

August 28, 2023

To: Interested Parties

Re: **Request for Proposals (RFP)**
Multipurpose Laboratory Building
Job No. 24600-01

Dear Prospective Consultants:

The Las Gallinas Valley Sanitary District (LGVSD) is seeking proposals from qualified firms to develop architectural design concepts, prepare bidding and construction documents, obtain necessary permits, and provide construction management and inspection services for the construction of a two-story Multipurpose Laboratory Building.

If you would like your firm to be considered, an electronic copy of your proposal in PDF format must be emailed to the attention of Michael P. Cortez at mcortez@lgsd.org cc: Irene Huang at ihuang@lgsd.org with the project name as subject heading, no later than **2:00 PM on October 5, 2023**. Proposer shall call the District Engineering Department at 415-472-1734 after submitting the proposal to confirm receipt prior to the deadline.

An interview process for the selection of a consultant, if deemed necessary by the District, is tentatively scheduled for the week of October 9, 2023. Award of a contract for this RFP is scheduled for November 2, 2023.

Please contact Irene Huang via email if you have any questions related to the contents and requirements of the RFP. Questions received after the inquiry deadline of September 28, 2023 may not be addressed.

Sincerely,

Michael P. Cortez, PE
District Engineer

**REQUEST FOR PROPOSALS
MULTIPURPOSE LABORATORY BUILDING
(JOB NO. 24600-01)**

1.0 BACKGROUND

Las Gallinas Valley Sanitary District (District) is located in the Las Gallinas Valley of Marin County, California between central San Rafael and Novato. It was established in April 1954 under the Sanitary District Act of 1923 and provides wastewater collection, treatment and recycling to more than 30,000 customers in the Santa Venetia, Terra Linda, San Rafael Meadows, Marinwood, Lucas Valley, and other communities of San Rafael. The District's jurisdiction spans approximately 50 square miles from Hamilton Field (a former air force base) to the north, San Pablo Bay to the east, central San Rafael to the south, and Marin County Open Space Reserves to the west.

In July 2023, the District Board authorized staff to proceed with the design of a Multipurpose Laboratory Building (Project) for FY 2023-2024 to replace the existing lab installed in 2000.

2.0 OBJECTIVE

The Project shall consist of three major components:

I. First Floor – Laboratory

At a minimum, the laboratory work area shall comply with the requirements for ventilation rates, temperature control, pressurization, compartment isolation, flume hoods, ducting, exhaust, etc., as outlined in one or more of the following:

- 1) California Building Code
- 2) California Mechanical Code
- 3) California Fire Code
- 4) CalOSHA
- 5) California Code of Regulations (CCR) Titles 8 and 24, as applicable for earthquake restraints, anchoring, illumination, and chemical storage.
- 6) National Fire Prevention Association (NFPA) 45, Standards on Fire Protection for Laboratories
- 7) Local, State, and Federal codes and regulations, as applicable.

The District is certified under the California State Environmental Laboratory Accreditation Program (ELAP) and performs the required compliance analyses using applicable Standard Methods (SM) for the Examination of Water and Wastewater. The proposed lab shall be designed to provide an environment to perform the analyses and generate reports consistent with State requirements. See Exhibit 1 for a copy of the District ELAP Certificate #2407 showing Fields of Accreditation and corresponding SM test methods.

In addition, the lab shall be designed to accommodate the following existing laboratory equipment with flexibility for future expansion, as may be required by more stringent regulations:

- 1) Refrigerators (1 large and 1 small)
- 2) BOD Incubator
- 3) Analytical Scale Table
- 4) Microscope Desk
- 5) Centrifuge
- 6) Drying Oven
- 7) Furnace
- 8) Autoclave
- 9) Coliform Incubator
- 10) Enterococcus Incubator (Countertop)

II. Second Floor – Education Center with Dual-Purpose Classroom and Boardroom

The District anticipates sponsoring public outreach programs by providing an interactive environment with hands-on learning opportunities for students and other interested parties. In addition, the District wishes to integrate a Boardroom that can be used as a classroom on the same floor. At a minimum, the second floor shall incorporate the following:

1. Education Center – An interactive center highlighting wastewater collection system and treatment processes, recycled water production, water conservation, and proper disposal of items such as sanitary wipes and expired medicines. See link for sample level of expectation for this feature:
<https://www.experienceolympia.com/directory/wet-science-center-lott/>.
2. Boardroom – An adequately sized room incorporating the latest information technology (IT) infrastructure with proper acoustics and lighting to conduct public Board meetings, which are currently being held at an office outside of the treatment plant.
3. Classroom – The District will utilize the Boardroom to hold regular full staff meetings, training sessions, and safety classes.

III. Parking Lot

The project shall include a dual-purpose parking lot to serve the public during Board meeting days, weekends, and holidays; however, it shall be limited to staff parking during weekdays. The parking lot shall incorporate solar canopies where feasible. Per City of San Rafael Ordinance, the parking lot shall feature designated parking for clean air vehicles. The Project shall include the design of Electric Vehicle (EV) charging stations.

3.0 DESIGN CONSIDERATIONS:

The Consultant shall discuss an approach to the following design considerations in their proposal:

1. **ADA Compliance:** This RFP aims to secure a consultant to scope and design a cost-effective, functional, fully integrated, safe, secure, and ADA accessible building and parking lot.
2. **City of San Rafael Planning Department Permits:** The District anticipates the need of obtaining entitlements (Environmental and Design Review Permit approval by the Planning Commission) and complying with similar requirements by other City agencies with jurisdiction, such as the Fire Department and Building Department.
3. **CEQA:** The Project site is adjacent to Miller Creek and within BCDC and County of Marin jurisdictional set-back lines. However, it is located within the treatment plant boundaries, and not jurisdictional under the Clean Water Act. It is anticipated that the District would not be required to obtain any permit authorizations from the Army Corps of Engineers, BCDC, and County of Marin; however, it is anticipated that the Project would require biological investigation and appropriate CEQA environmental assessment.
4. **Existing Lab:** The District anticipates maintaining operational capabilities of the existing lab during construction. Consultant shall develop construction phasing and sequencing in a manner that contractor activities will not impair lab function.
5. **Renewable Energy:** The District wishes to adhere to the California Energy Commission goal to reduce unnecessary energy consumption in newly constructed buildings. In addition to the solar canopies for the Parking Lot, the building shall feature rooftop solar panels. This RFP requires integration of renewable energy into the existing plant power distribution system including associated PG&E permitting.
6. **Sea Level Rise and Storm Surge:** Previous consultants hired by the District recommended a minimum elevation of EL 18.0 (NAVD 88) for proper treatment plant process operation as it relates to future sea level rise and storm surge, which is approximately 3 feet higher than the perimeter road adjacent to the existing lab. This RFP aims to hire a consultant to develop and implement a cost-effective site-specific building design criteria to address future sea level rise and storm surge.
7. **Site Constraints:** The proposed site is constrained by permanent existing structures such as an underground chlorine disinfection system consisting of a 60" pipe in serpentine configuration, aboveground access manholes, chemical dosing points, and concrete outfall structures, all of which shall be protected or supported in place during construction. See Exhibit 2 for as-built information.
8. **Geotechnical:** The general area is underlain with bay mud. The existing lab, built in 2000, with concrete slab-on-grade foundation constructed over engineered fill, has experienced noticeable uneven settlement due to soft bay mud and water saturation from Miller Creek. It is anticipated that the new building shall have a foundation

supported on piles connected by grade beams. See Exhibit 3 for geotechnical information.

9. **SF Bay Trail and Las Gallinas Wildlife Ponds:** The Project site is bounded by the SF Bay Trail and a dedicated parking lot for visitors of the Las Gallinas Wildlife Ponds, which has perimeter levees designated as independent segments of the SF Bay Trail. During the public posting phase of the previous Operations Control Center project, a group of birdwatchers expressed concerns about visual impacts of the building and its potential impacts to the bird population as it relates to glare and collisions. The building design shall have features conducive to a warm and welcoming environment for visitors of the SF Bay Trail and the Las Gallinas Wildlife Ponds.
10. **Light Pollution:** The District discourages excessive or poor use of artificial outdoor light at night and supports public concerns regarding disruption of natural patterns of wildlife, human sleep deprivation, or obscuring stars in the night sky as outlined in the Dark Sky Initiative of the U.S. Fish and Wildlife Service.
11. **PG&E Easement:** A PG&E easement runs across portions of the existing lab building and parking lot. PG&E has specific vertical and horizontal clearance requirements that must be considered during the design of the Project.
12. **LEED Certification:** To the extent possible, the District wishes to comply with LEED and Living Building Challenge (LBC) certifications. Consultant shall provide a generalized schedule indicating what such certification would include, along with a rough order of magnitude cost analysis that would reflect the general percentage increase to construction costs to achieve such certification.
13. **Sustainable Green Design:** As an option, the District envisions a building that will be a showcase for energy and green innovation.
14. **Potential Grant and Foundation Funding:** In order to reduce financial impacts, the District wishes to apply for any available grants to partially fund the Project. Proposals should identify grants and funding opportunities that the Project may receive.

4.0 CONSTRUCTION BUDGET

The District has allocated a preliminary budget of \$10 million for the construction of the Project.

5.0 SCOPE OF SERVICES AND DELIVERABLES

Consultant shall provide services for the following phases of the Project including construction management and inspection services.

- A. Conceptual Design (10% Submittal) – Consultant shall develop a minimum of three conceptual (3) design schemes incorporating cost effective approach to the Project objectives outlined above, including a budget level cost estimate for District review.

Deliverables:

1. Technical Memorandum outlining, at a minimum, the design criteria, space needs analysis, basis of design, and code compliance requirements.
 2. Three versions of architectural renderings and drawings for the proposed building and parking in PDF format.
 3. This phase shall include an initial presentation of the three alternatives to the District Ad Hoc Committee, in which the District staff and Ad Hoc Committee will select a preferred alternative.
 4. The initial presentation will be followed by a presentation of the chosen alternative to the District Board to be scheduled at a future date. Board meetings are typically held between 4:30 pm and 7:00 pm on the first and third Thursdays of each month.
 5. Miniature architectural building model of the chosen alternative for Board presentation.
- B. Schematic Design (30% Submittal) – Consultant shall perform site analysis and building programming, including initial permit application with the City of San Rafael Planning Department.

Deliverables:

1. Schematic plans.
 2. Completed application to City of San Rafael Planning Department.
 3. Responses to schematic plan review comments from the city.
 4. Presentation to the City of San Rafael Planning Department (Design Review Board) to be scheduled at a future date.
 5. Preliminary cost estimates.
 6. CEQA documents.
 7. This phase shall include an allowance for one (1) half-hour bi-weekly virtual meeting update with District staff.
 8. This phase shall include an allowance for providing grant writing assistance to a District Representative.
- C. Design Development (60% Submittal) – Consultant shall define and develop the important aspects of the project such as exterior and interior layouts, room sizes, and materials, including HVAC, plumbing, and electrical systems.

Deliverables:

1. Draft Contract Documents
 - a. Volume 1 – Contract Requirements
 - b. Volume 2 – Bidding Requirements
 - c. Volume 3 – Technical Specifications

- d. Volume 4 – 60% Drawings
 2. Preliminary Cost Estimate.
 3. Responses to other agencies having jurisdiction, including field meetings if necessary.
 4. Preliminary Project Schedule in MS Project format.
 5. This phase shall include an allowance for one (1) half-hour bi-weekly virtual meeting update with District staff.
- D. Construction Documents (95% Submittal) – Consultant shall finalize technical information and prepare the final set of drawings and specifications necessary to obtain a building permit from City of San Rafael Building Department and advertise the Project for public bids.

Deliverables:

1. Detailed Cost Estimate.
 2. Detailed Project Schedule in MS Project format.
 3. Building Permit
 4. This phase shall include an allowance for one (1) half-hour bi-weekly virtual meeting update with District staff.
 5. Final set of Contract Documents for bidding purposes.
 - a. Technical specifications shall be prepared utilizing the current Construction Specifications Institute (CSI) MasterFormat.
 - b. At a minimum, final drawings shall include demolition, electrical, mechanical, and other disciplines.
 - c. Technical specifications in CSI version provided in PDF and MS Word formats.
- E. Bidding Phase and Construction Phase Services for design related questions by bidders and contractors. This assistance shall include, but not be limited to:
1. Conduct pre-bid meeting with prospective bidders to answer contractor and supplier technical questions.
 2. Respond to contractor and supplier technical questions during bidding, maintain a log of bidder questions, and prepare any addenda required.
 3. Provide drawings, modifications, and clarifications during the bidding period.
 4. Attend bid opening and assist in the evaluation of bids.
 5. Prepare final bid summary and report for Board consideration.
 6. Assist District staff in awarding a contract to the apparent low bidder.
- F. Construction Management and Inspection Services
1. Attend pre-construction conference to ensure contractor's understanding of the Project.
 2. Prepare design clarifications to clarify the design intent.
 3. Prepare responses to contractor's Requests for Information (RFI) and Submittals.
 4. Assist the District staff in the analysis of Potential Change Orders.
 5. Assist the District staff in the preparation of Change Orders.

6. Assist the District representative in complying with prevailing wage and other DIR requirements.
7. Perform construction inspections.
8. Prepare O&M manuals and record drawings following construction from markups by the contractor.
9. General: All records (project reports, meeting notes, data files, project data, original tracings, maps, field sketches, design calculations, graphic originals, electronic files, etc.) generated shall be the property of the District and shall be turned over to the District upon completion or as directed.

6.0 PROPOSAL REQUIREMENTS AND CONTENTS

The Proposal shall be prepared in accordance with the following. Material submitted in addition to that specifically required will not be reviewed.

1. **General Firm Information:** This section shall include the following:
 - a. Firm Project References. Submit three (3) references for similar projects, including brief project description, current contact name and phone number.
 - b. Organizational chart for the consultant team committed to this project. Identify subconsultants proposed for the project, if any.
 - c. Resumes of key staff for the project.
 - d. Hourly Rate
2. **Project Understanding and Approach:** Demonstrate understanding of key issues and your approach to meet the design objectives and complete the Scope of Work outlined above. If applicable, include a description of tasks you feel should be added to the Scope of Work to better meet the project objective.
3. **Maximum Number of Pages:** 15 single-sided pages including resumes and list of sample projects. Fee schedule may be on a separate 11" x 17" sheet. Cover page, cover letter, and fee schedule are exempt from the maximum 10-page limit.
4. **Compensation:** Provide a matrix indicating an estimate of hours and fees to complete the services. Also, provide separate itemized time and materials fee adjustments, where appropriate, for additional tasks you feel should be added.

7.0 CONSULTANT SELECTION PROCESS

If deemed necessary, the District may invite up to three (3) firms for oral interviews.

The criteria that will be used in evaluating the proposals include, but are not limited to the following:

1. Knowledge and understanding of Project requirements and District needs.
2. Approach to Project and understanding of the Scope of Work.
3. Commitment of key personnel and their experience.

8.0 TENTATIVE CONSULTANT SELECTION AND OVERALL PROJECT SCHEDULE

- | | |
|---|---|
| 1. Request for Proposals Published | August 28, 2023 |
| 2. Pre-proposal Meeting | September 7, 2023 at 11am
Location: 300 Smith Ranch Rd, San Rafael |
| 3. Questions on the RFP no later than: | September 28, 2023 |
| 4. Proposal Deadline: | October 5, 2023 at 2:00 PM |
| 5. Oral Interviews (optional): | Week of October 9, 2023 |
| 6. Award of a Consultant Contract:
Architect Introduction to Board | November 2, 2023 |
| 7. Design Phase | 9 Months (Nov 2023 – Aug 2024) |
| 8. Bid Phase | 3 Months (Aug 2024 – Nov 2024) |
| 9. Construction Phase | 1 Year (Nov 2024 – Nov 2025) |

9.0 STANDARD CONSULTANT AGREEMENT

The Consultant selected to provide the Scope of Services shall use the attached District's standard consultant Agreement (*Exhibit 4*). By submitting a proposal for this work, the Consultant agrees to utilize this form for the contract. Contractually required insurance coverage and endorsement information is shown in the body of the document.

EXHIBIT 1 - LGVSD ELAP CERTIFICATE



CALIFORNIA STATE ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM Fields of Accreditation



Las Gallinas Valley Sanitary District

Wastewater
300 Smith Ranch Road
San Rafael, CA 94903
Phone: 4154721734

Certificate Number: 2407
Expiration Date: 2/28/2024

Field of Accreditation:101 - Microbiology of Drinking Water

101.050	003	Total Coliform (Enumeration)	SM 9223 B Colilert
---------	-----	------------------------------	--------------------

Field of Accreditation:107 - Microbiological Methods for Non-Potable Water and Sewage Sludge

107.001	001	Total Coliform (Enumeration)	SM 9221 B,C-2006
---------	-----	------------------------------	------------------

107.017	001	Enterococci	Enterolert
---------	-----	-------------	------------

Field of Accreditation:108 - Inorganic Constituents in Non-Potable Water

108.059	001	Turbidity	SM 2130 B-2011
---------	-----	-----------	----------------

108.069	001	Specific Conductance	SM 2510 B-2011
---------	-----	----------------------	----------------

108.071	001	Residue, Total	SM 2540 B-2011
---------	-----	----------------	----------------

108.075	001	Residue, Non-filterable TSS	SM 2540 D-2011
---------	-----	-----------------------------	----------------

108.105	001	Chlorine, Total Residual	SM 4500-Cl C-2011
---------	-----	--------------------------	-------------------

108.137	001	Hydrogen Ion (pH)	SM 4500-H+ B-2011
---------	-----	-------------------	-------------------

108.140	001	Ammonia (as N)	SM 4500-NH3 D-2011
---------	-----	----------------	--------------------

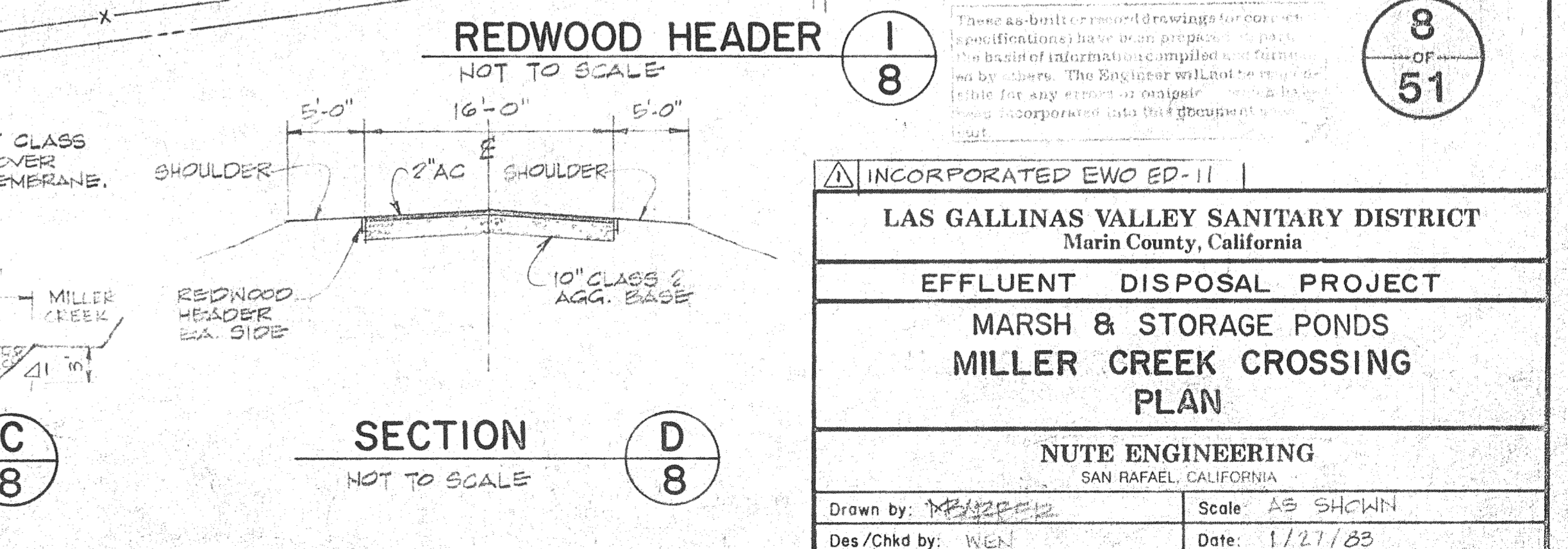
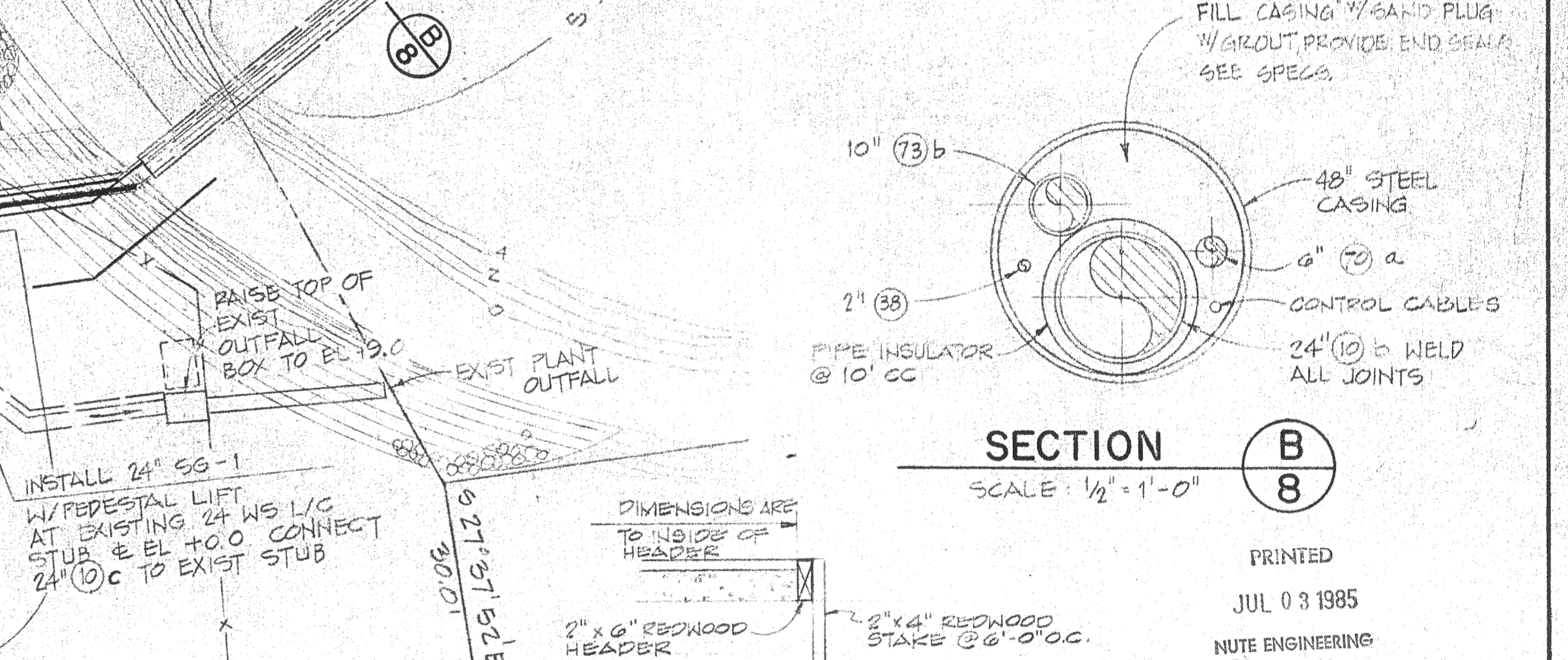
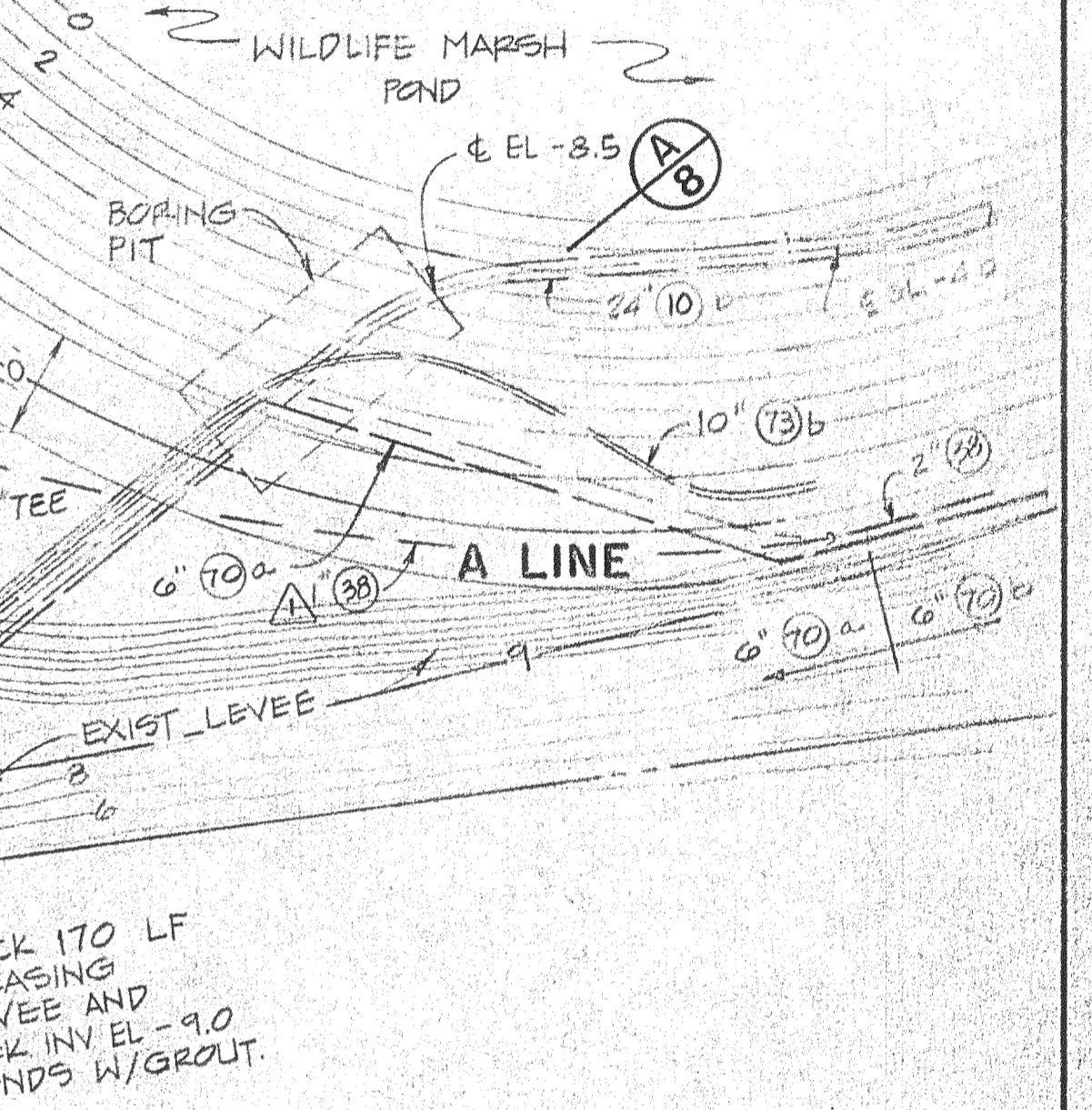
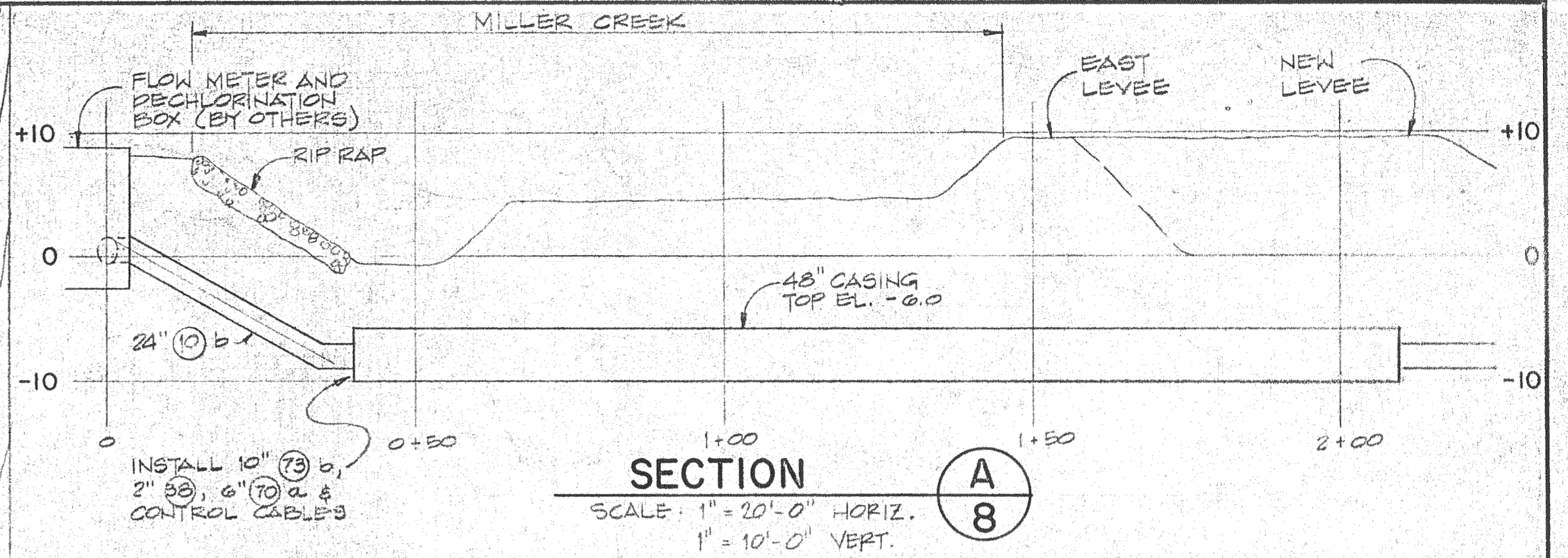
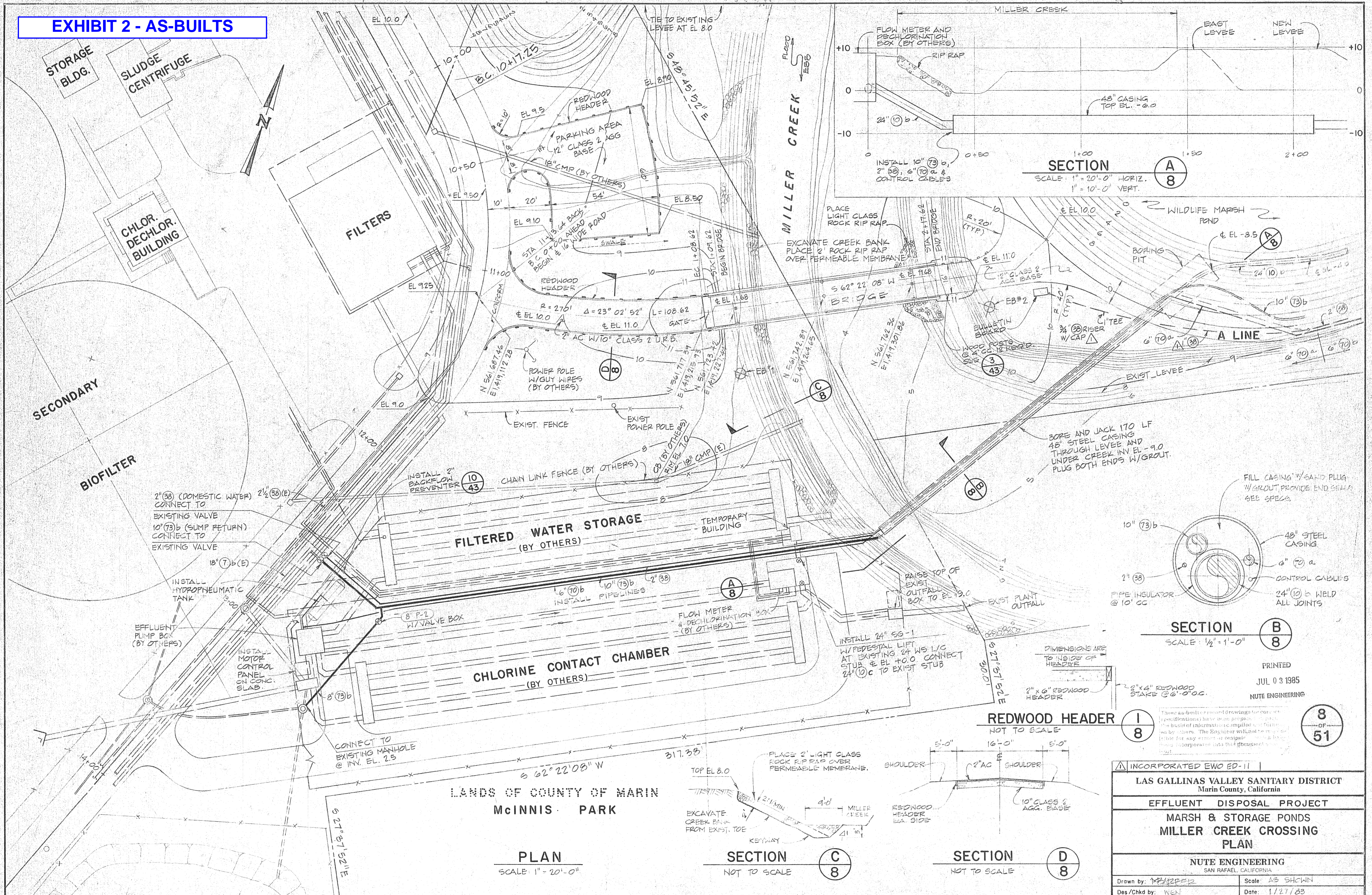
108.173	001	Oxygen, Dissolved	SM 4500-O G-2011
---------	-----	-------------------	------------------

108.207	001	Biochemical Oxygen Demand	SM 5210 B-2011
---------	-----	---------------------------	----------------

Field of Accreditation:113 - Environmental Toxicity Methods

113.013	003C	Rainbow trout (O. mykiss)	EPA 2019.0, Continuous Flow
---------	------	---------------------------	-----------------------------

EXHIBIT 2 - AS-BUILTS



LANDS OF COUNTY OF MARIN
McINNIS PARK

PLAN
SCALE: 1" = 20'-0"

SECTION C
NOT TO SCALE

SECTION D
NOT TO SCALE

INCORPORATED EWO ED-11

LAS GALLINAS VALLEY SANITARY DISTRICT
Marin County, California

EFFLUENT DISPOSAL PROJECT

MARSH & STORAGE PONDS

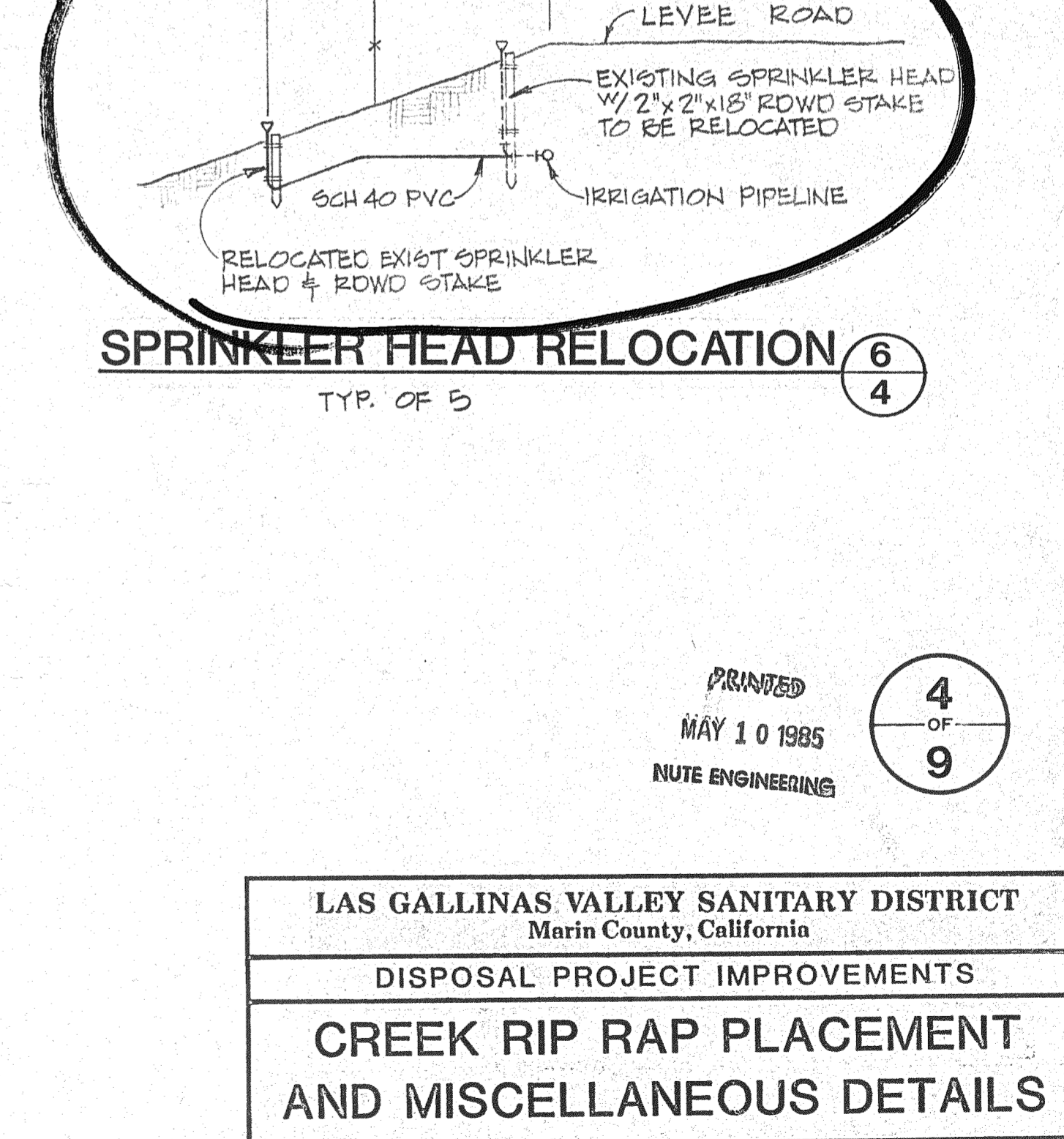
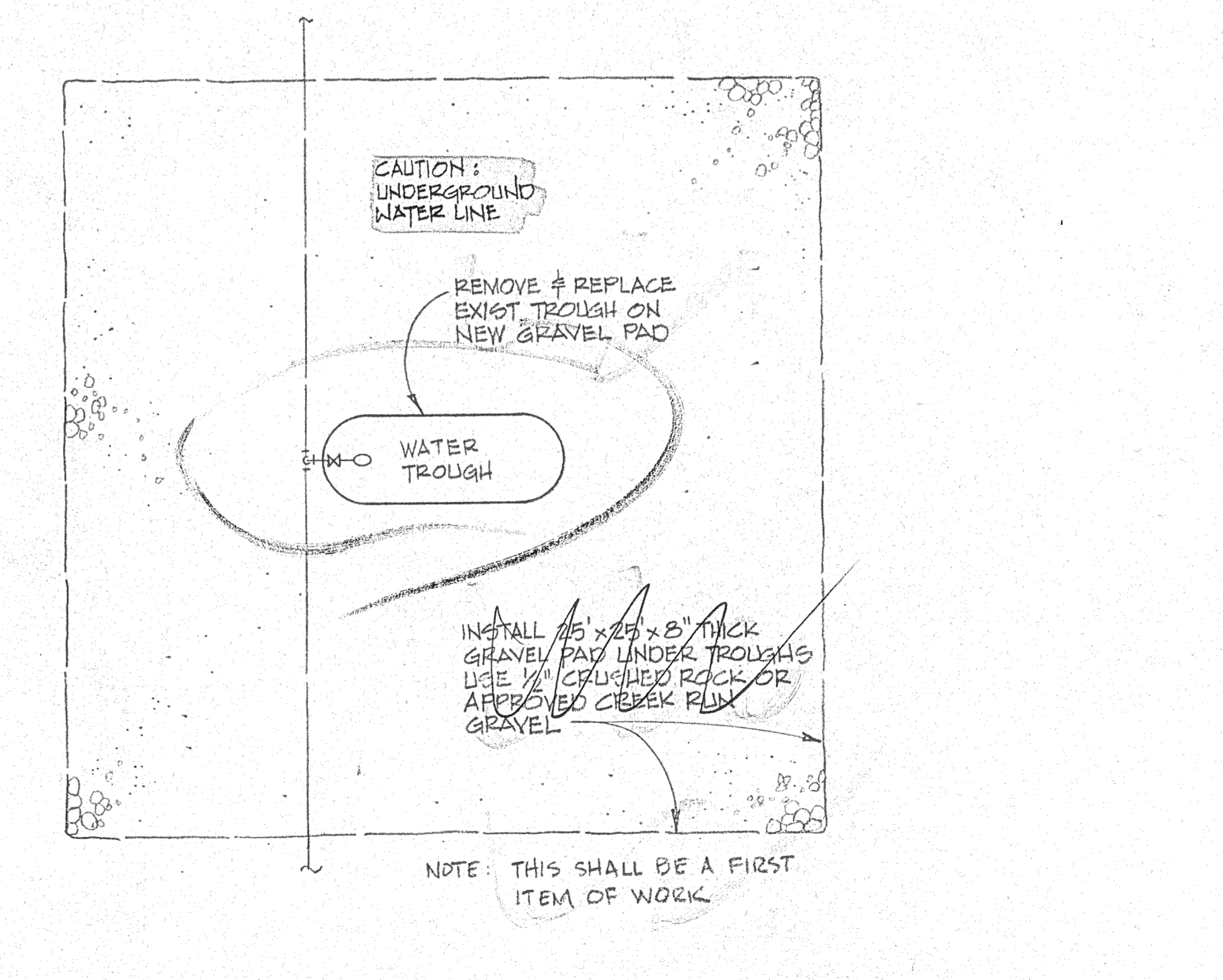
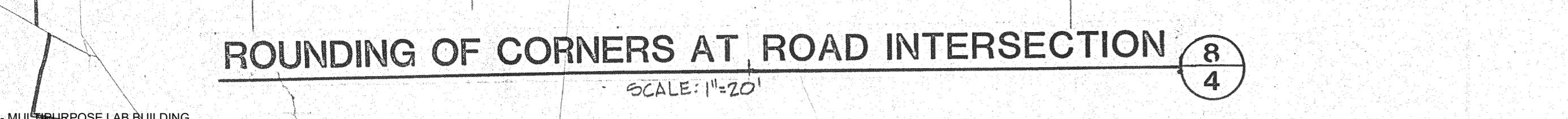
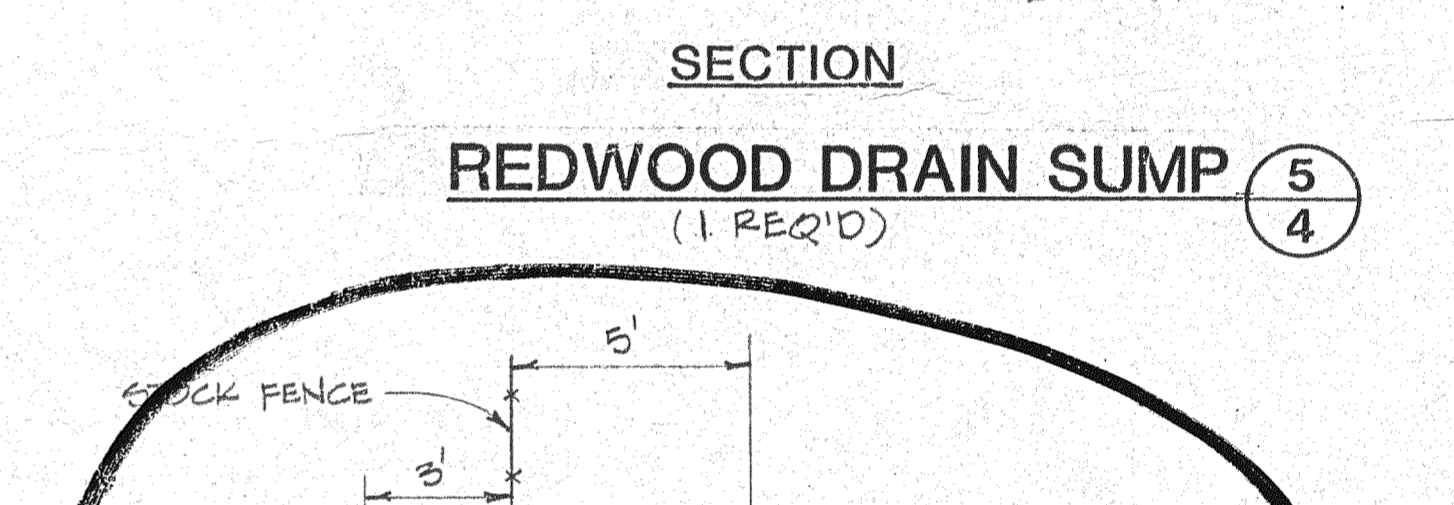
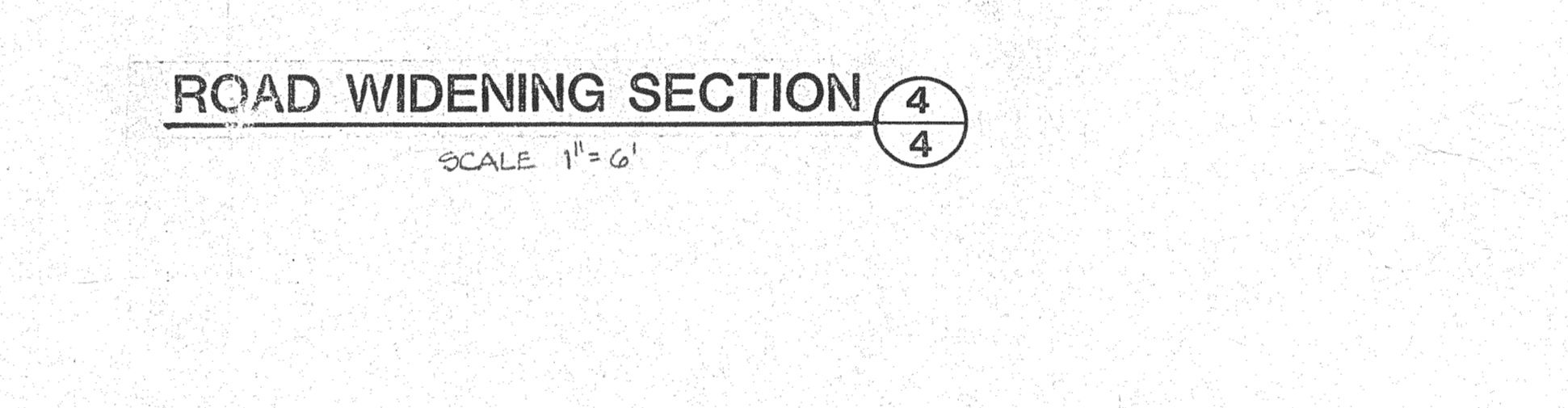
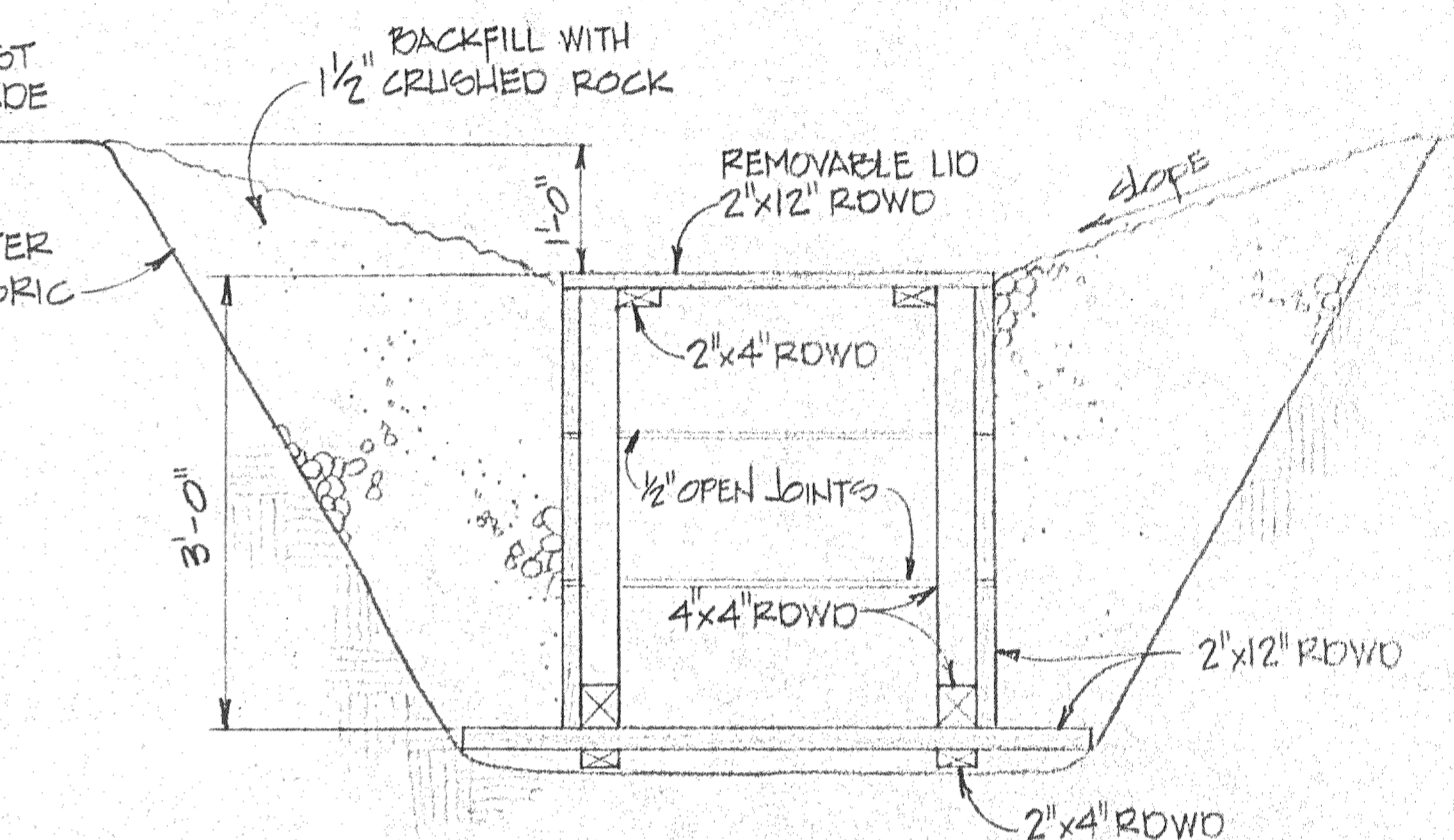
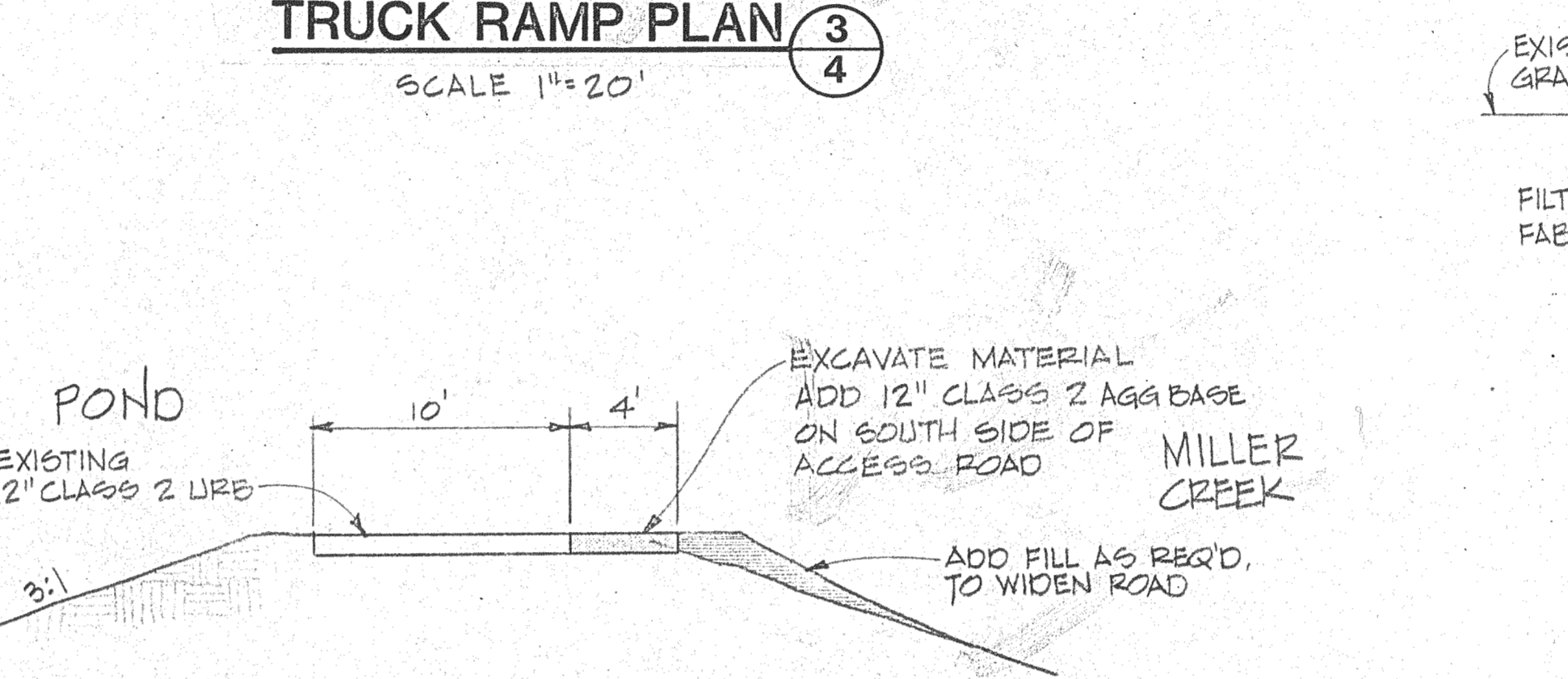
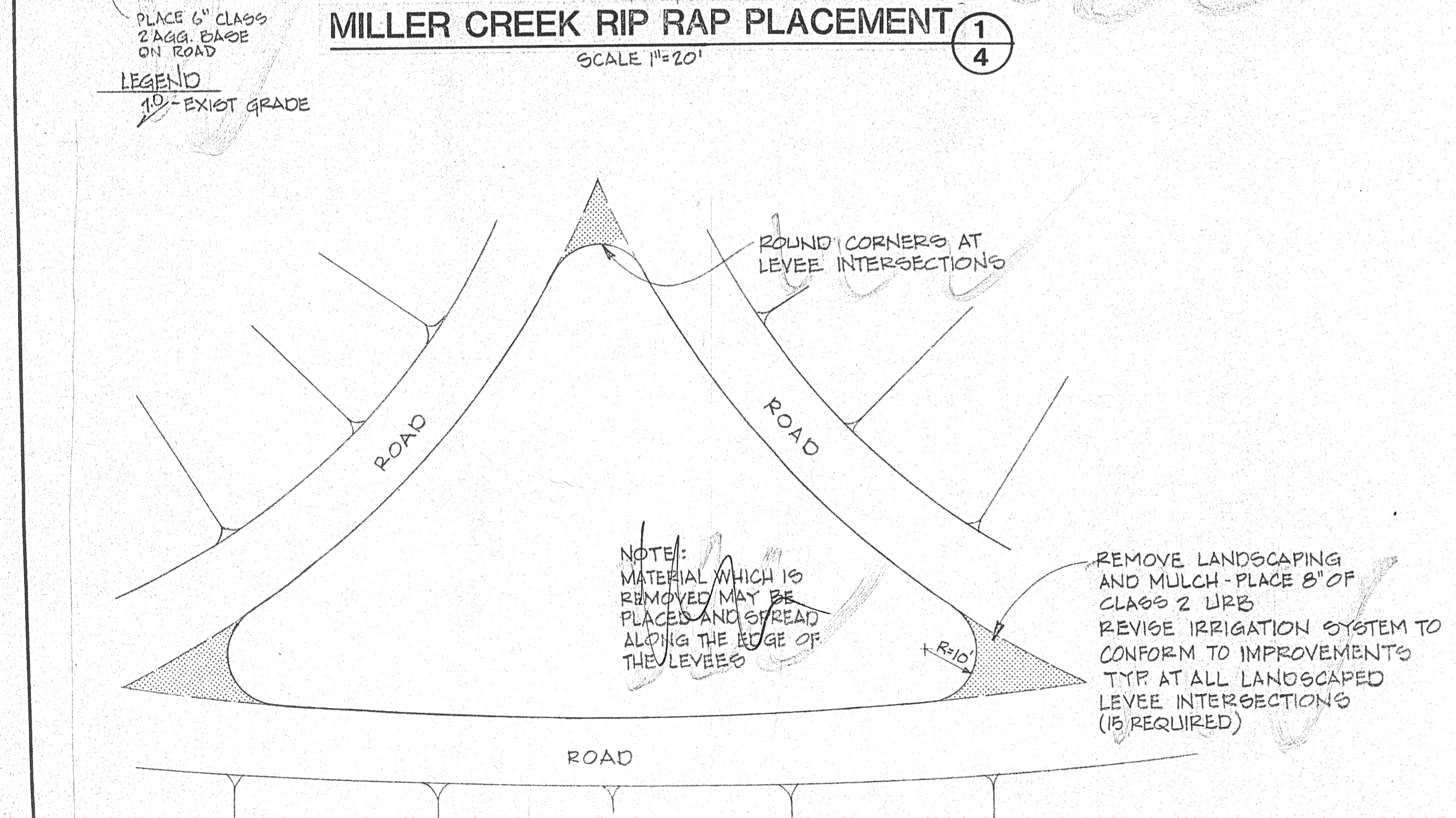
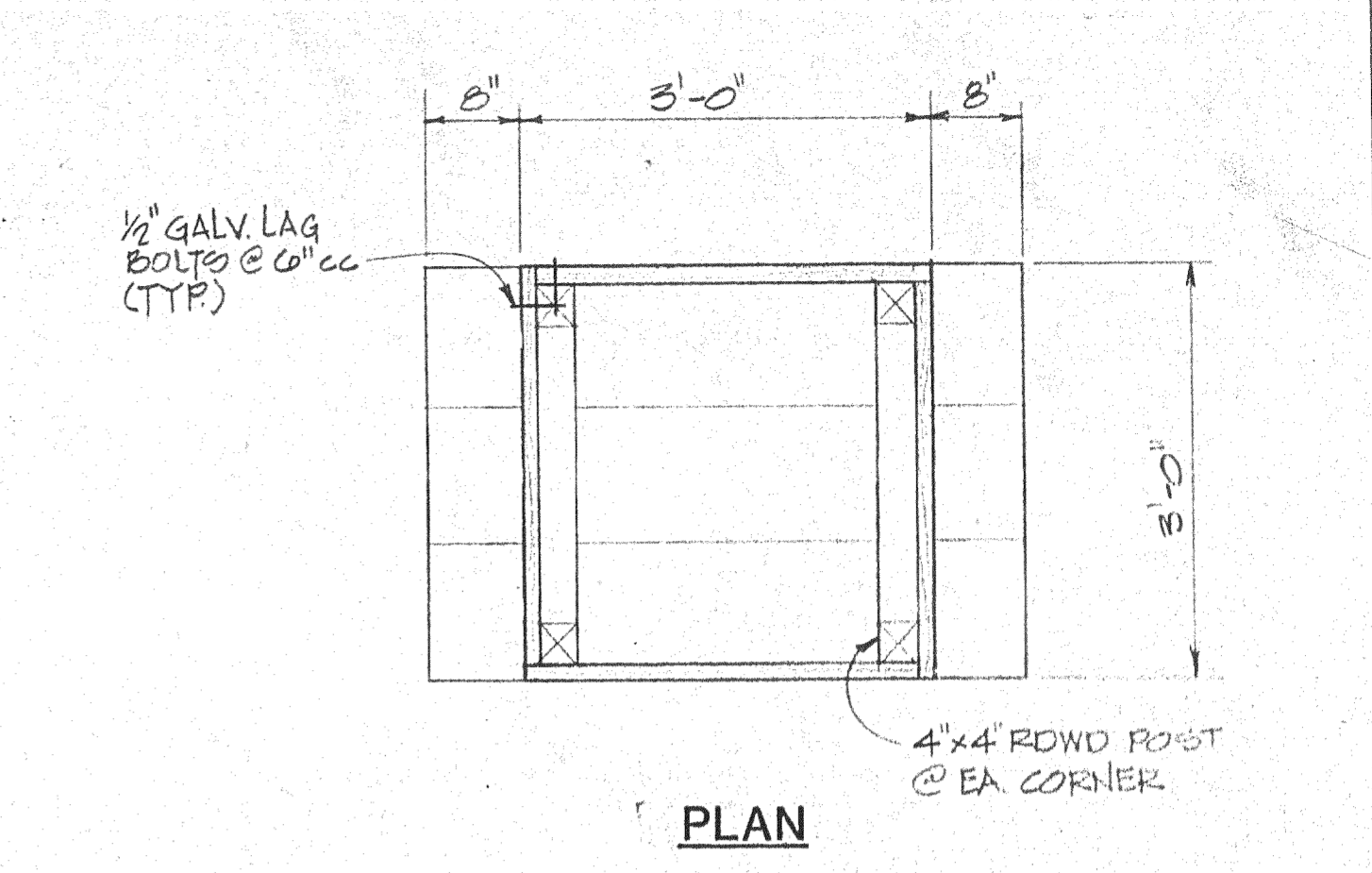
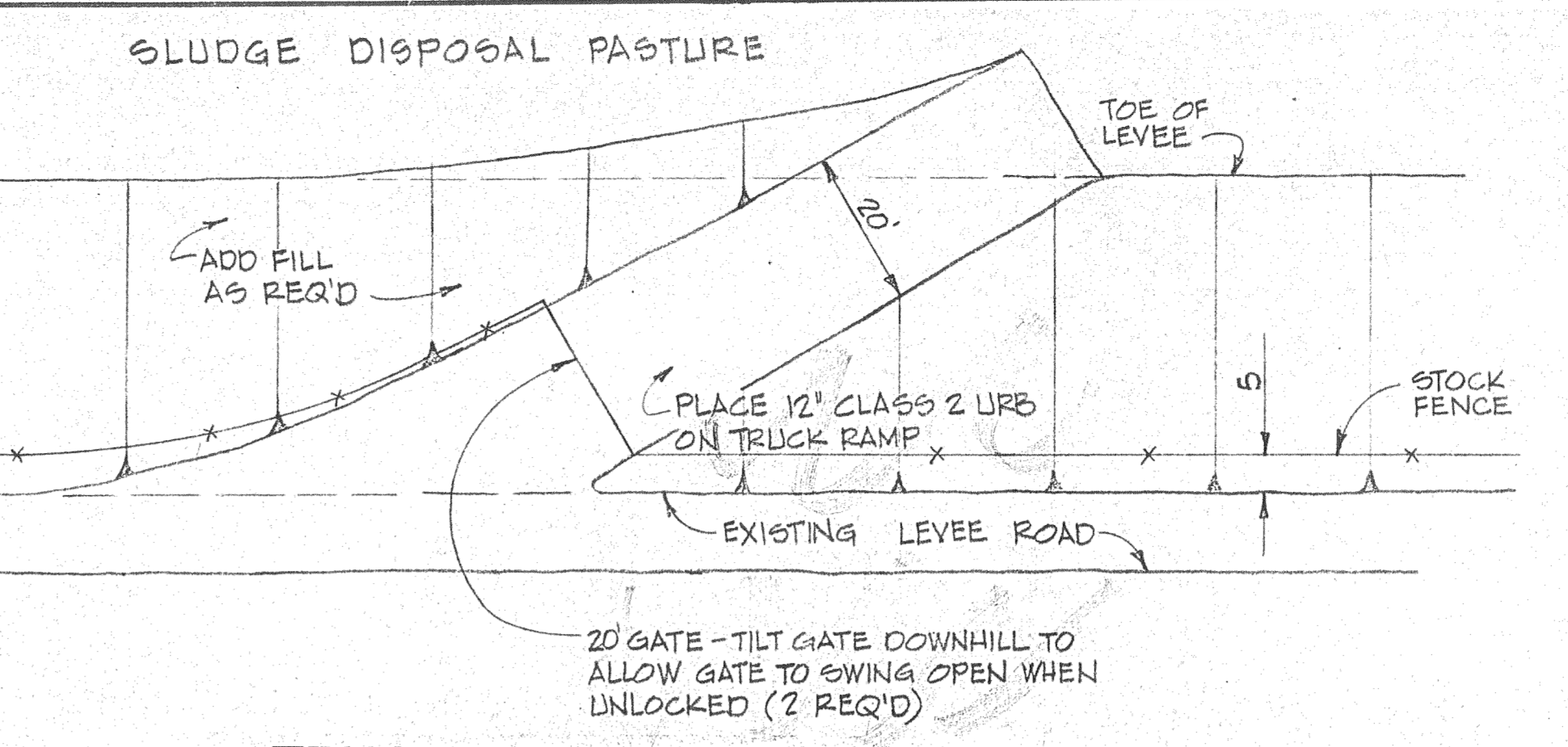
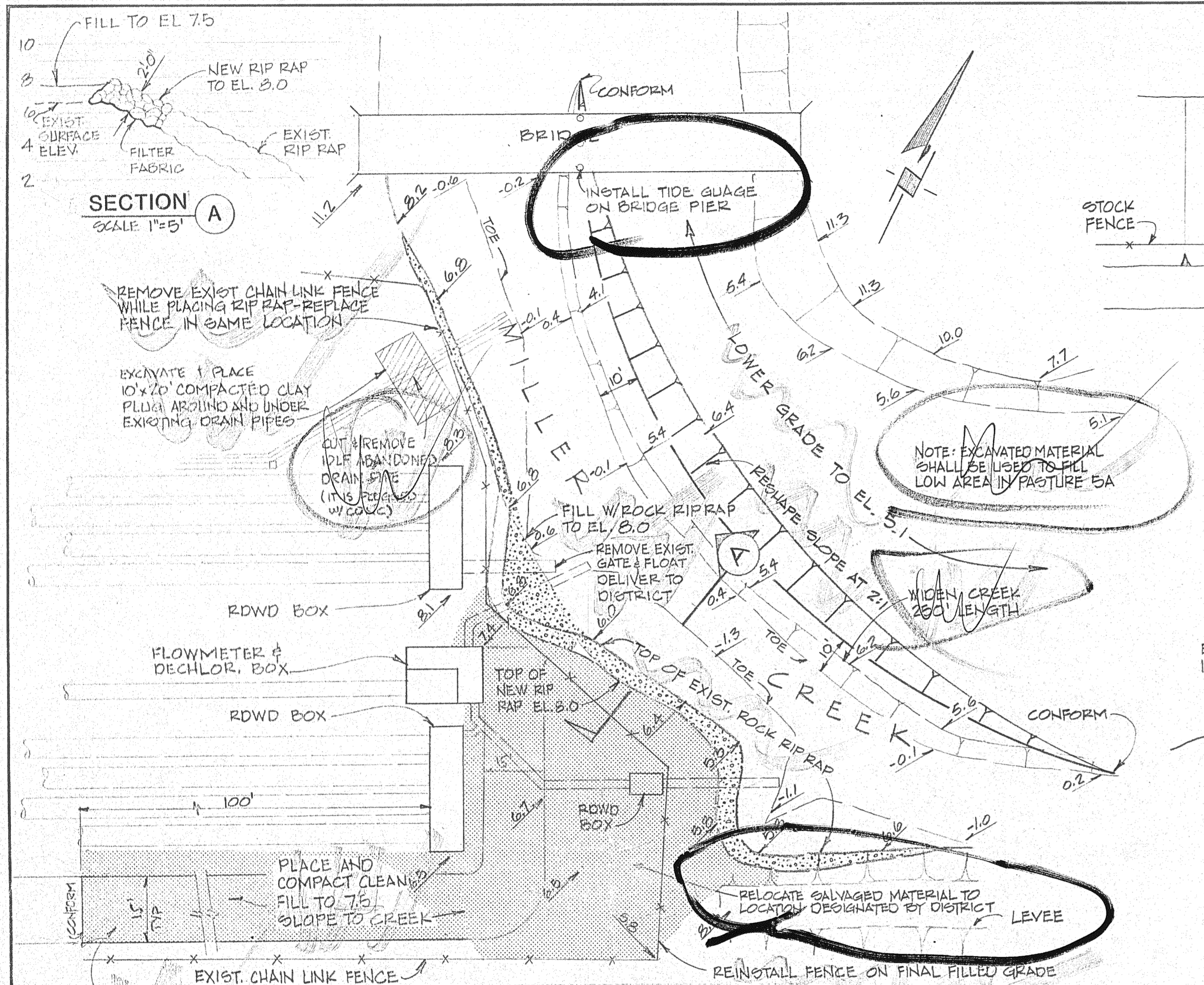
MILLER CREEK CROSSING PLAN

NUTE ENGINEERING
SAN RAFAEL, CALIFORNIA

Drawn by: [Signature] Scale: AS SHOWN
Des/Chkd by: WEN Date: 1/27/83

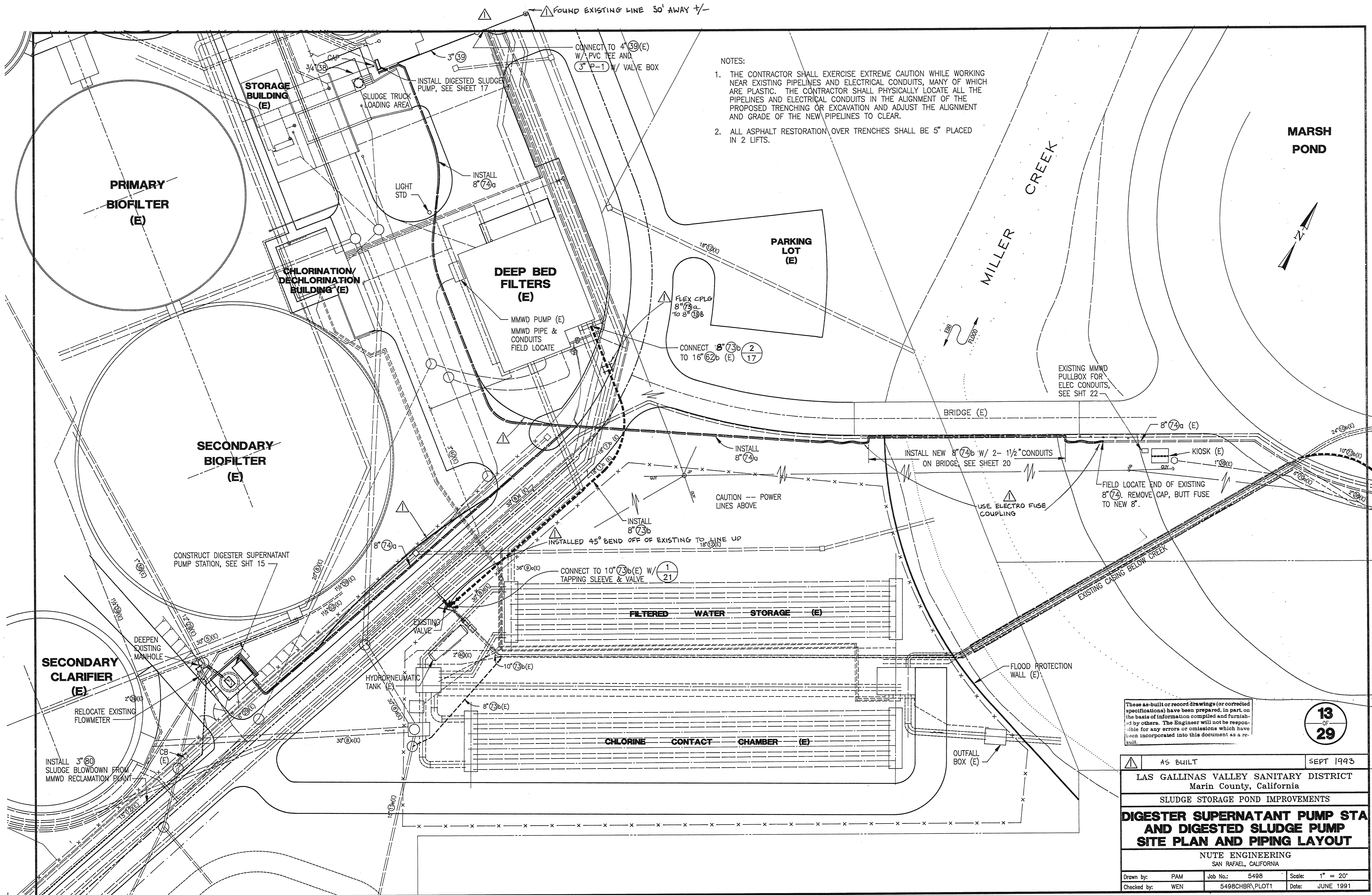
8 OF 51

PRINTED
JUL 03 1985
NUTE ENGINEERING



PRINTED 4 OF 9
MAY 10 1985
NUTE ENGINEERING

LAS GALLINAS VALLEY SANITARY DISTRICT
Marin County, California
DISPOSAL PROJECT IMPROVEMENTS
CREEK RIP RAP PLACEMENT AND MISCELLANEOUS DETAILS
NUTE ENGINEERING
SAN RAFAEL, CALIFORNIA
Drawn by: MARRER Scale: AS NOTED
Des/Chkd by: WEN Date: APRIL 1985

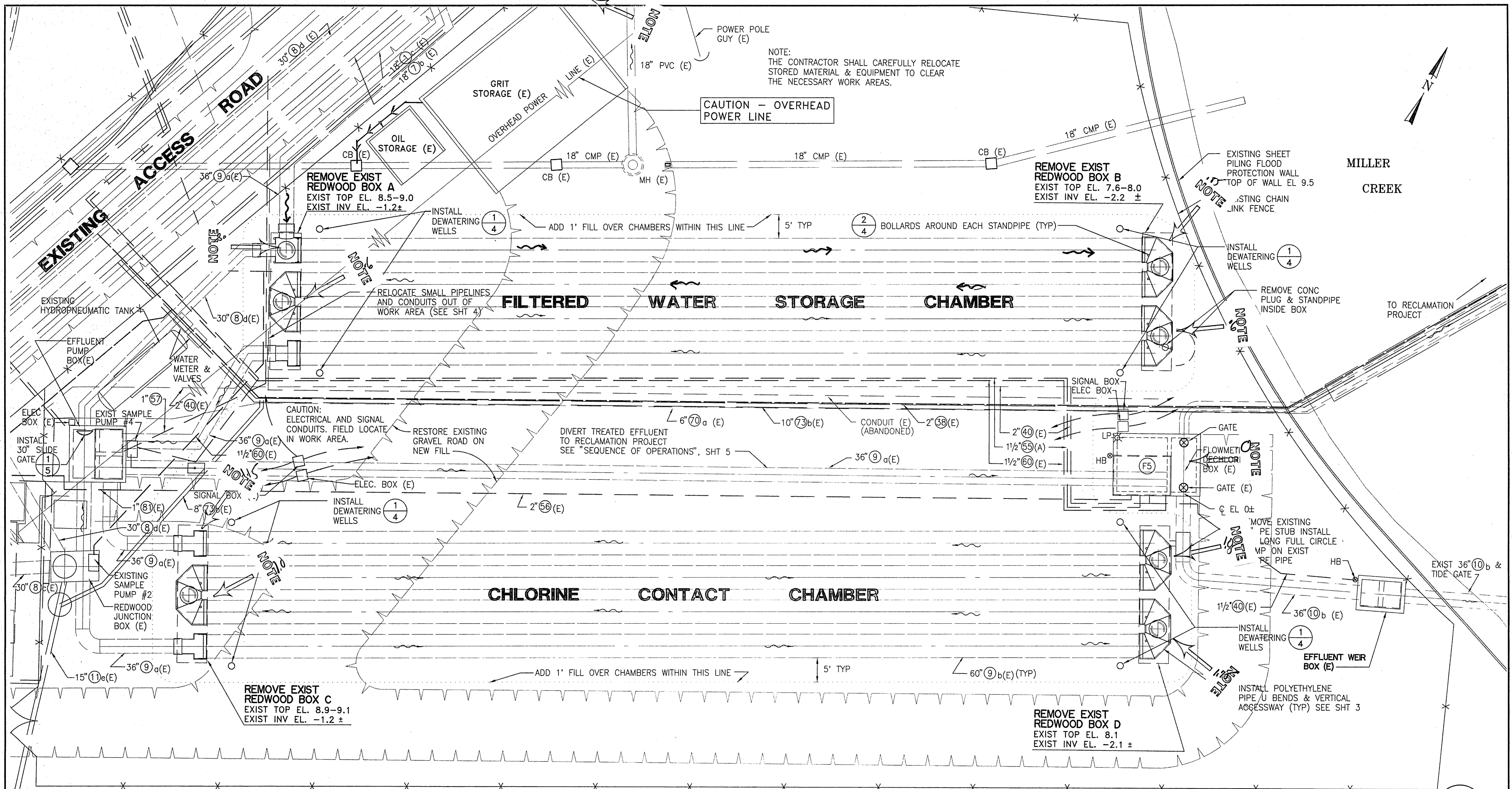


- NOTES:
1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHILE WORKING NEAR EXISTING PIPELINES AND ELECTRICAL CONDUITS, MANY OF WHICH ARE PLASTIC. THE CONTRACTOR SHALL PHYSICALLY LOCATE ALL THE PIPELINES AND ELECTRICAL CONDUITS IN THE ALIGNMENT OF THE PROPOSED TRENCHING OR EXCAVATION AND ADJUST THE ALIGNMENT AND GRADE OF THE NEW PIPELINES TO CLEAR.
 2. ALL ASPHALT RESTORATION OVER TRENCHES SHALL BE 5" PLACED IN 2 LIFTS.

These as-built or record drawings (or corrected specifications) have been prepared, in part, on the basis of information compiled and furnished by others. The Engineer will not be responsible for any errors or omissions which have been incorporated into this document as a result.

13
OF
29

AS BUILT	SEPT 1993
LAS GALLINAS VALLEY SANITARY DISTRICT Marin County, California	
SLUDGE STORAGE POND IMPROVEMENTS	
DIGESTER SUPERNATANT PUMP STA AND DIGESTED SLUDGE PUMP SITE PLAN AND PIPING LAYOUT	
NUTE ENGINEERING SAN RAFAEL, CALIFORNIA	
Drawn by: PAM	Job No.: 5498
Checked by: WEN	5498CHBR\ PLOT1
Scale: 1" = 20'	Date: JUNE 1991



PIPELINE SCHEDULE (EXIST PIPES)

LINE NO.	MATERIAL	DESCRIPTION
1c	Polyethylene (SDR=26)	Raw Sewage Influent
7b	Polyethylene (SDR=26)	Filter Feed
8c	RCP	Process Bypass
8d	Polyethylene	Process Bypass
9a	Polyethylene (SDR=26)	Effluent
9b	Polyethylene Spiral Wound	Effluent
10b	Polyethylene (SDR=26)	Outfall
11e	Corrugated ABS Bonded	Drain
38	PVC Sch 40	Domestic Water
40	PVC Sch 40	Effluent Water
53	PVC Sch 80	Hypochlorite Solution
55	PVC Sch 80	SO ₂ Gas (Abandoned)
56	PVC Sch 80	Bisulfite Dilution Water
57	PVC Sch 80	Caustic Soda
60	PVC Sch 40	Sample Line
70a	Welded Steel Cem Lined & Coated	Irrigation Water
73b	Polyethylene (SDR=26)	Sump Pump Return
81	PVC Sch 80	Bisulfite Solution

DIVERSION OF TREATED EFFLUENT DURING CONSTRUCTION

THE CONTRACTOR SHALL INSTALL TEMPORARY PLUGS TO DIVERT TREATED EFFLUENT AROUND WORK AREA --- SEE SHEET 5

NOTES

1. THE LOCATION OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL CAREFULLY FIELD LOCATE ALL EXISTING PIPELINES AND CONDUITS AND RELOCATE THEM OUT OF WORK AREA.
2. ALL EXISTING SYSTEMS MUST BE KEPT IN OPERATION AT ALL TIMES, INCLUDING SODIUM HYPOCHLORITE LINES, SODIUM BISULFITE LINES, CAUSTIC SODA LINES, SAMPLE LINES, WATER LINES, EFFLUENT LINES, ELECTRIC POWER & SIGNALS, ETC. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AT LEAST 24 HRS IN ADVANCE OF PERFORMING ANY RELOCATION WORK. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AND PROMPTLY REPAIR ANY PIPELINE OR ELECTRICAL LINES DAMAGED AS A RESULT OF THE WORK.
3. THE CONTRACTOR SHALL NOT OPEN OR CLOSE VALVES OR SHUT OFF ELECTRICAL SERVICES. THE CONTRACTOR SHALL NOTIFY THE DISTRICT OF NEED FOR SERVICE SHUTOFFS TO BE PERFORMED ONLY BY DISTRICT PERSONNEL.
4. THE CONTRACTOR SHALL ABIDE BY THE REQUIREMENTS OF THE LAS GALLINAS VALLEY SANITARY DISTRICT SAFETY MANUAL, WHICH INCLUDES REQUIREMENTS FOR WORKING IN CONFINED SPACES.
5. REDWOOD FROM EXISTING BOXES SHALL BE SALVAGED AND NEATLY STACKED AND SHALL REMAIN THE PROPERTY OF THE DISTRICT.
6. GROUNDWATER FROM THE DEWATERING WELLS SHALL BE PUMPED INTO MILLER CREEK.
NUTS - BOLTS, WASHERS, SCREWS - RCT - SHALL BE 316-SS.

LAS GALLINAS VALLEY SANITARY DISTRICT
Marin County, California

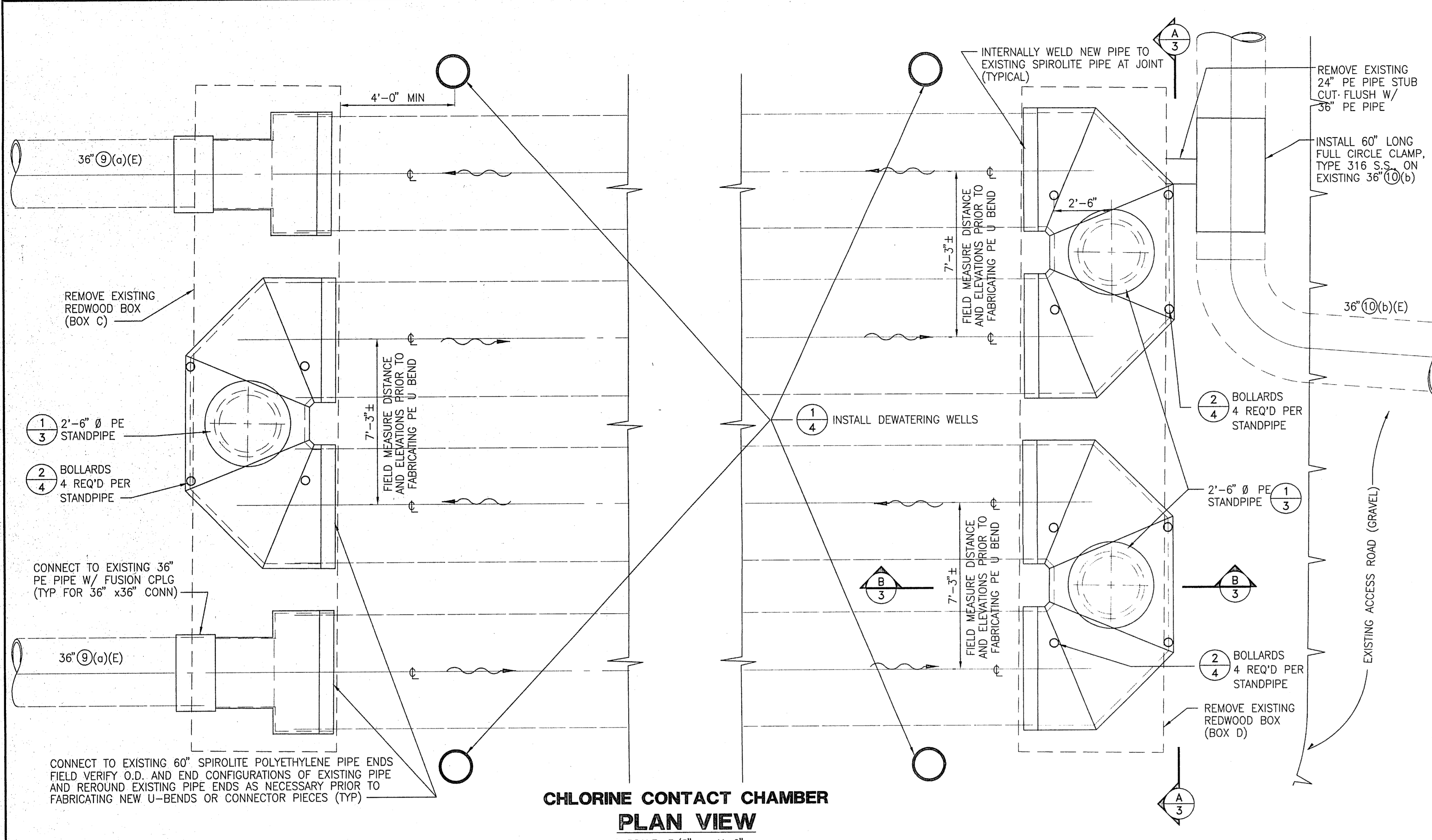
CHLORINE CONTACT CHAMBER IMPROVEMENTS

**CHLORINE CONTACT CHAMBER AREA
LAYOUT**

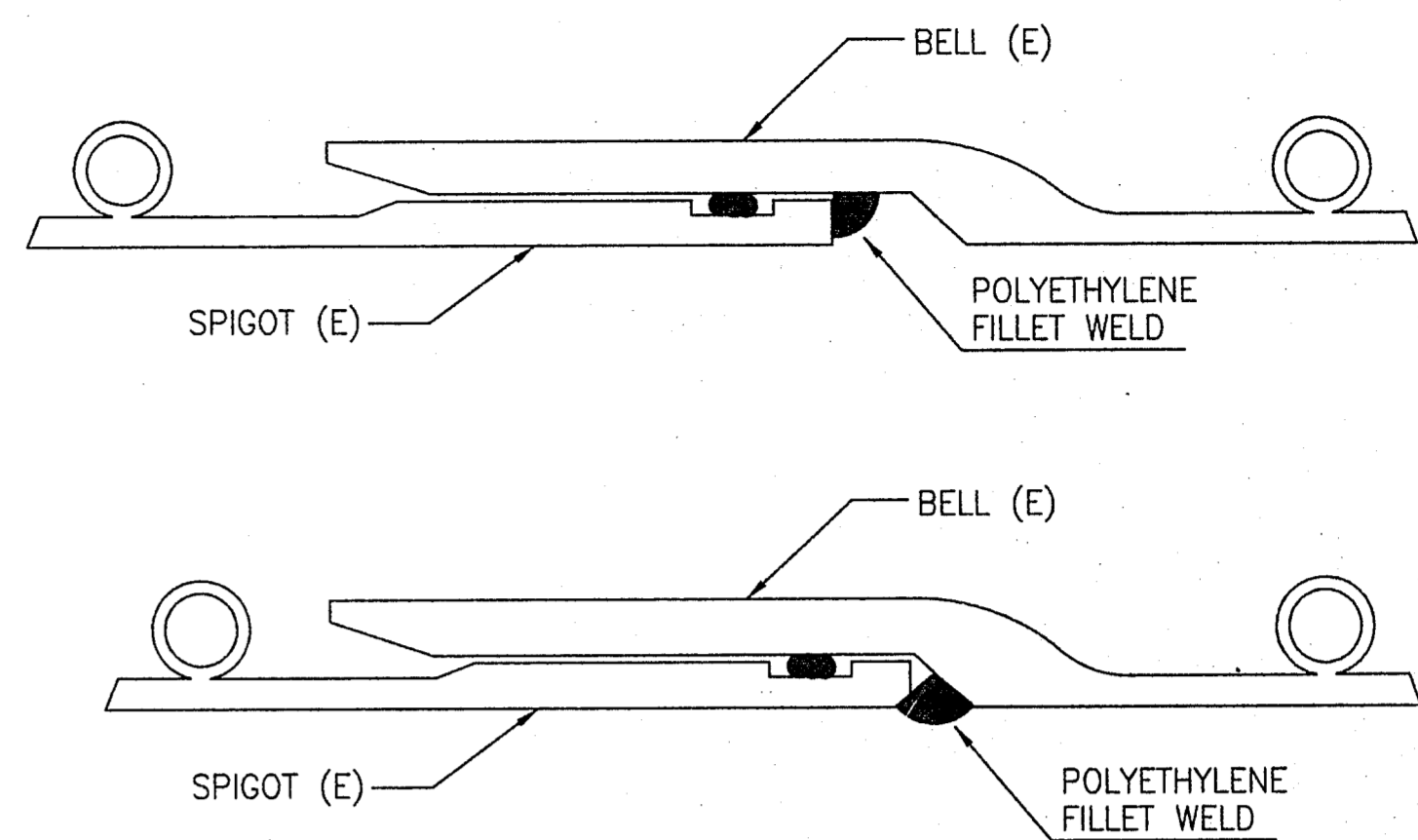
NUTE ENGINEERING
SAN RAFAEL, CALIFORNIA

Drawn by: PAM	Job No.: 599B	Scale: 1" = 10'
Checked by: WEN	5998CHLO\plot10sc	Date: FEBRUARY 1994

2
OF
5

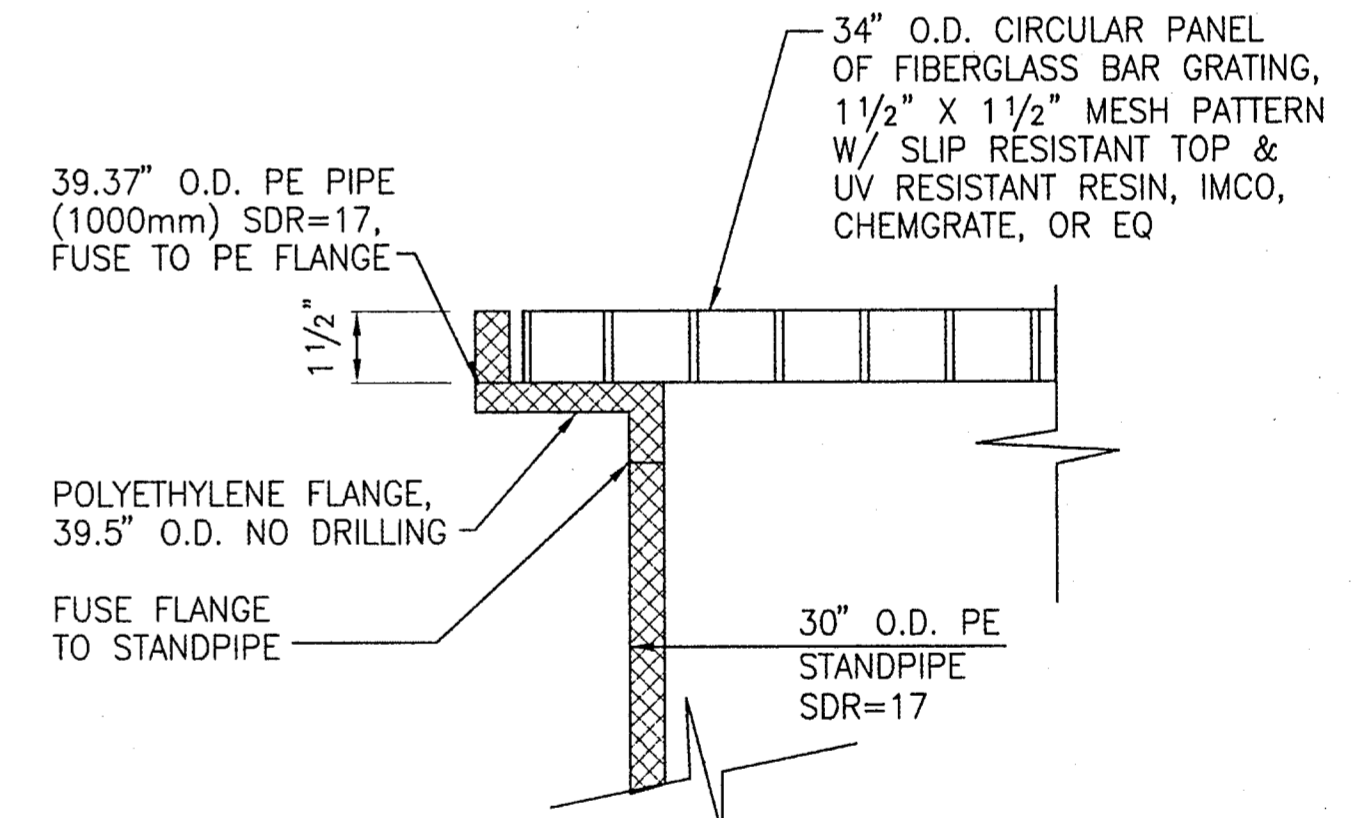


**CHLORINE CONTACT CHAMBER
PLAN VIEW**
SCALE: 3/8" = 1'-0"



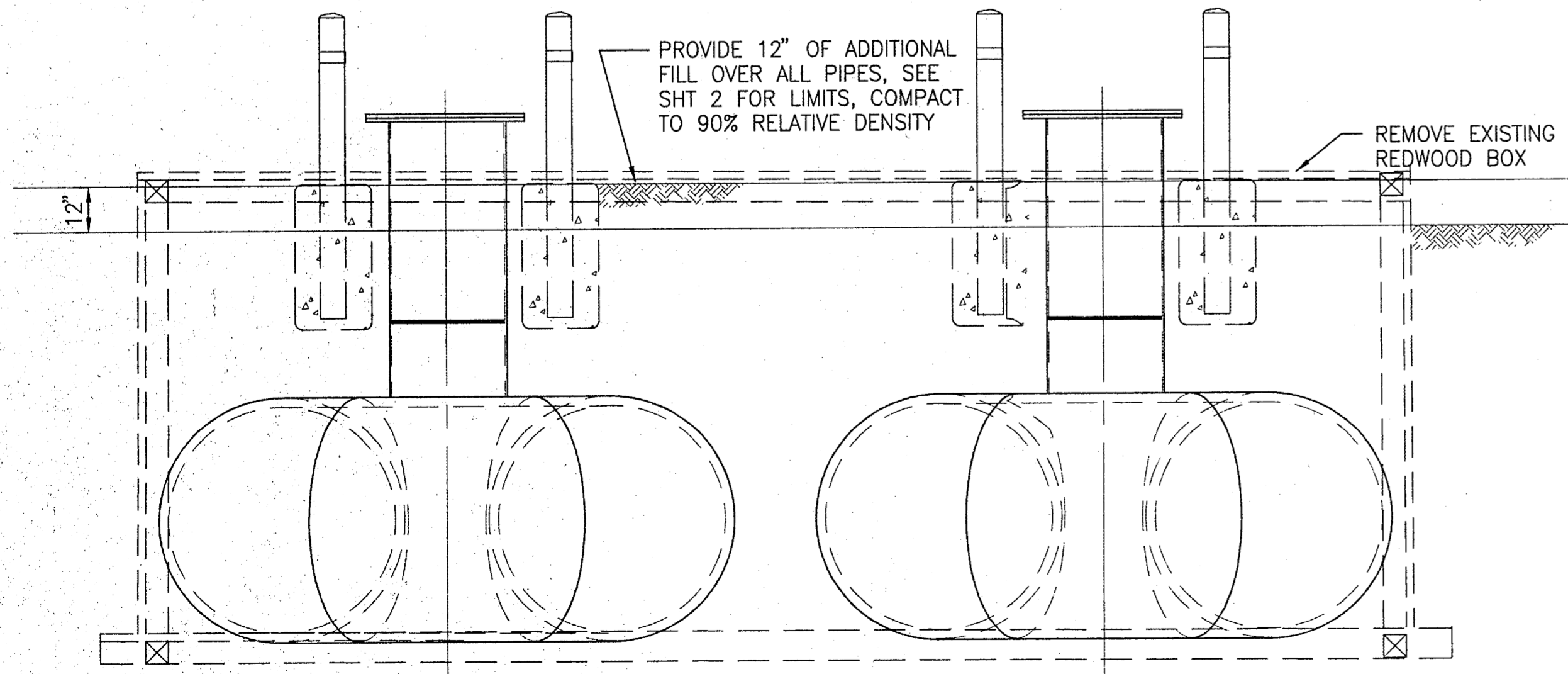
JOINT WELDING DETAIL
FOR EXISTING SPIROLITE PIPE
N.T.S.

- NOTES:
- EXISTING 60" SPIROLITE PIPE IS CL 100 PROFILE WALL.
 - AFTER NEW FITTINGS ARE INSTALLED AND BACKFILLED THE CONTRACTOR SHALL INSPECT THE INSIDE OF THE EXISTING AND NEW PIPELINES FOR LEAKS. (SEE SHT 5 FOR INSPECTION PROCEDURE)
 - ALL JOINTS OF THE NEW OR EXISTING POLYETHYLENE PIPE WHICH ARE FOUND TO LEAK SHALL BE WELDED AS SHOWN ABOVE. (SEE BID ITEM 2 FOR INTERNAL WELDING OF JOINTS OF EXISTING SPIROLITE PIPE ONLY)

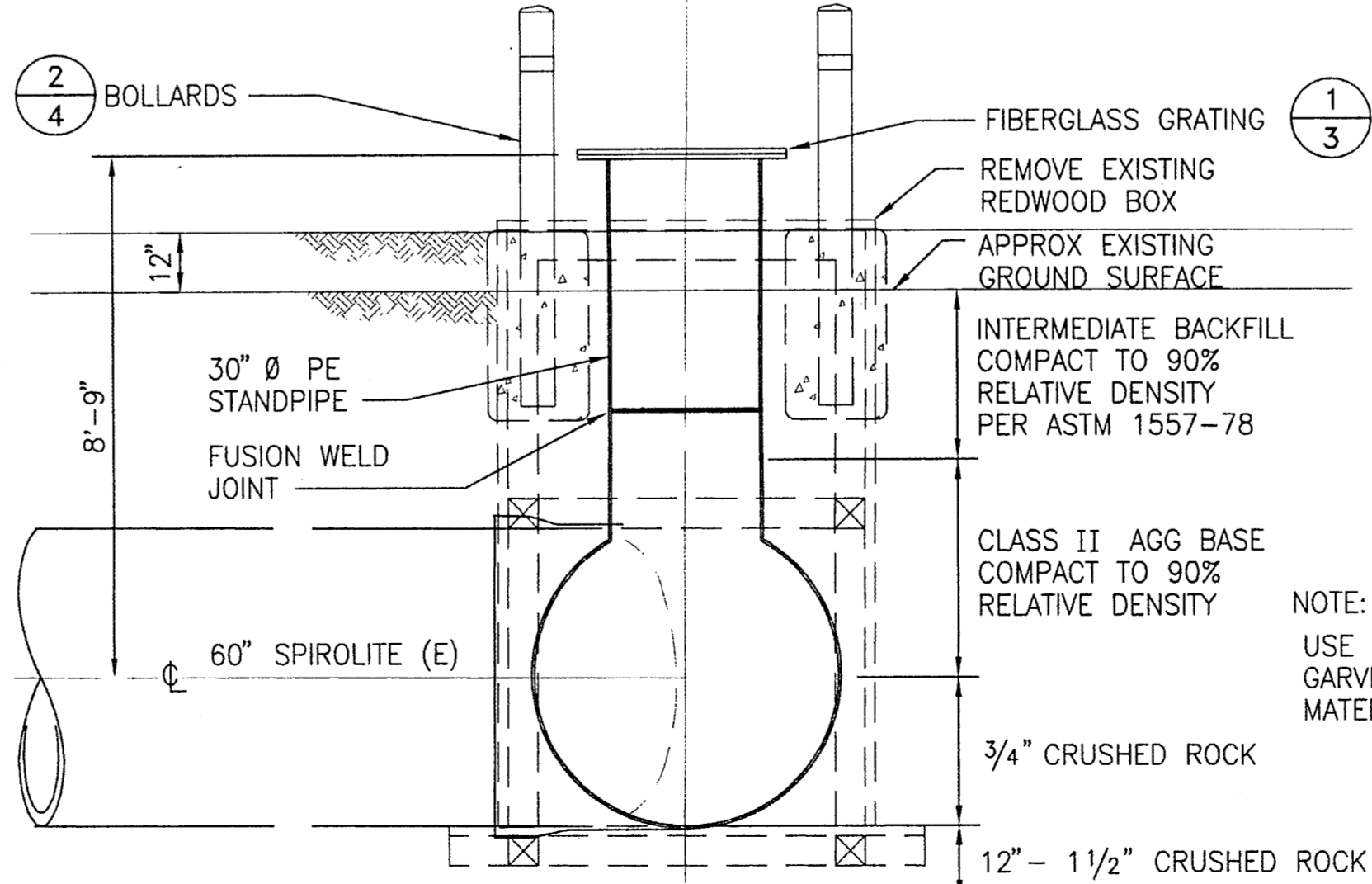


STANDPIPE AND GRATING 1/3
N.T.S.

3 OF 5



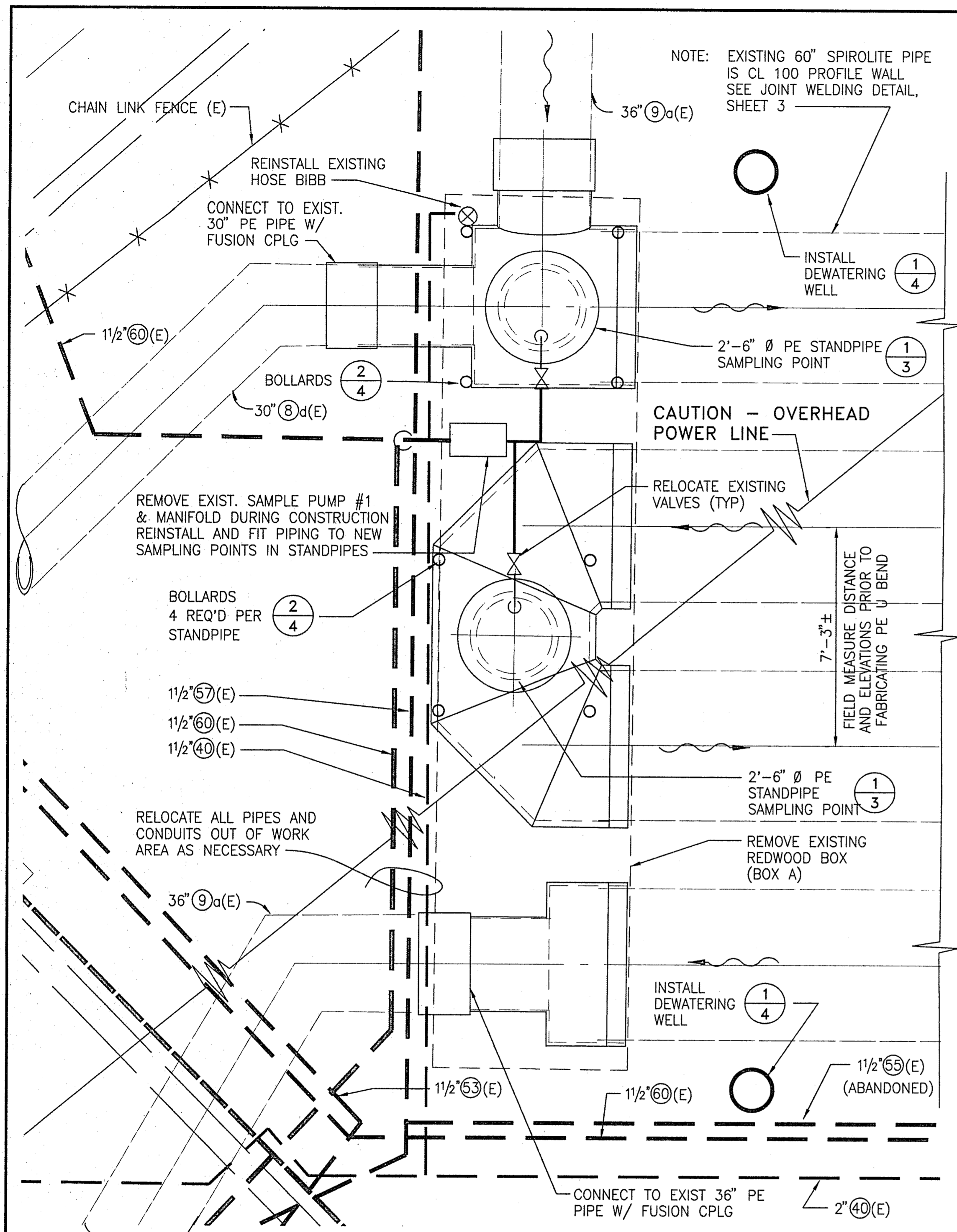
SECTION A 3
SCALE: 3/8" = 1'-0"



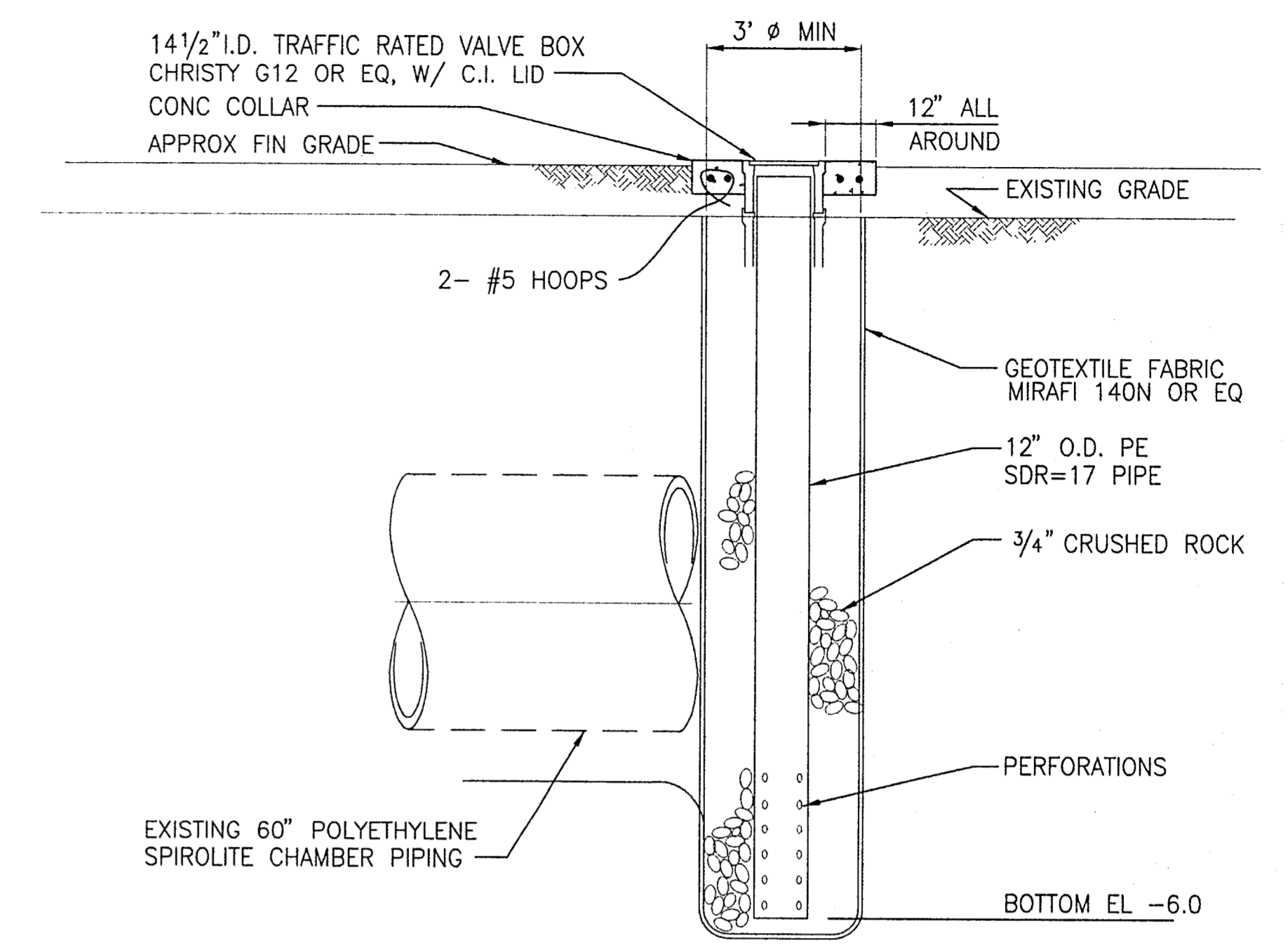
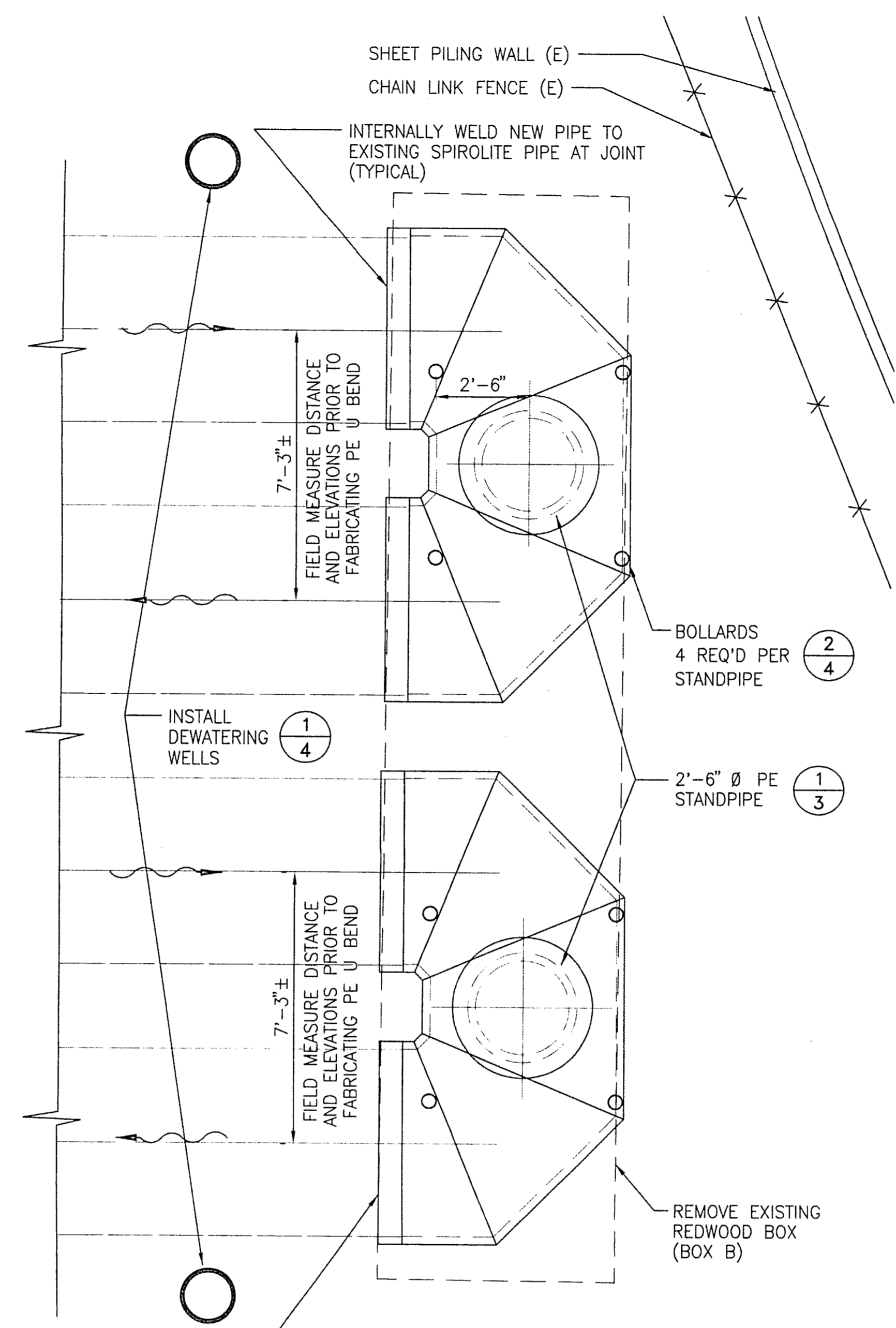
SECTION B 3
SCALE: 3/8" = 1'-0"

NOTE:
USE OF SAND OR PEA GRAVEL FOR BACKFILL MATERIAL IS NOT PERMITTED.

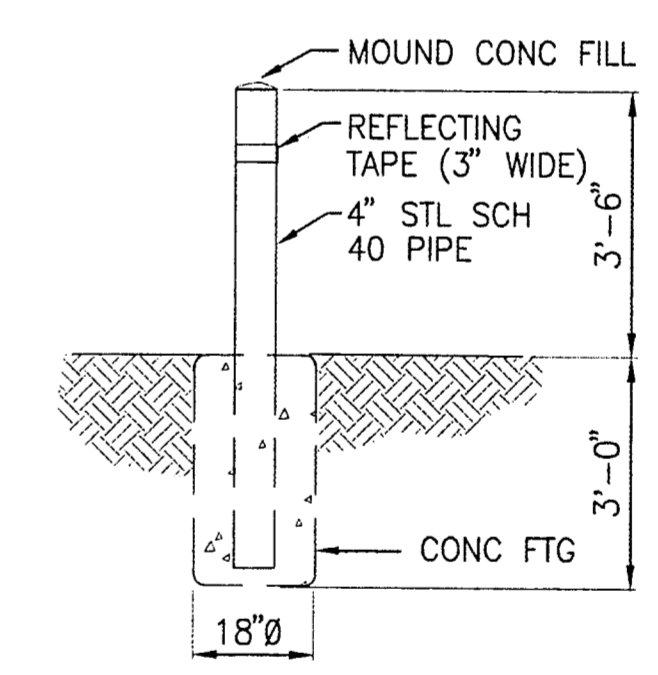
LAS GALLINAS VALLEY SANITARY DISTRICT Marin County, California		
CHLORINE CONTACT CHAMBER IMPROVEMENTS		
CHLORINE CONTACT CHAMBER PLAN, SECTIONS & DETAILS		
NUTE ENGINEERING SAN RAFAEL, CALIFORNIA		
Drawn by: PAM	Job No.: 5998	Scale: AS SHOWN
Checked by: WEN	5998CHLO\plotclo	Date: FEBRUARY 1994



**FILTERED WATER STORAGE CHAMBER
PLAN VIEW**
SCALE: 3/8" = 1'-0"

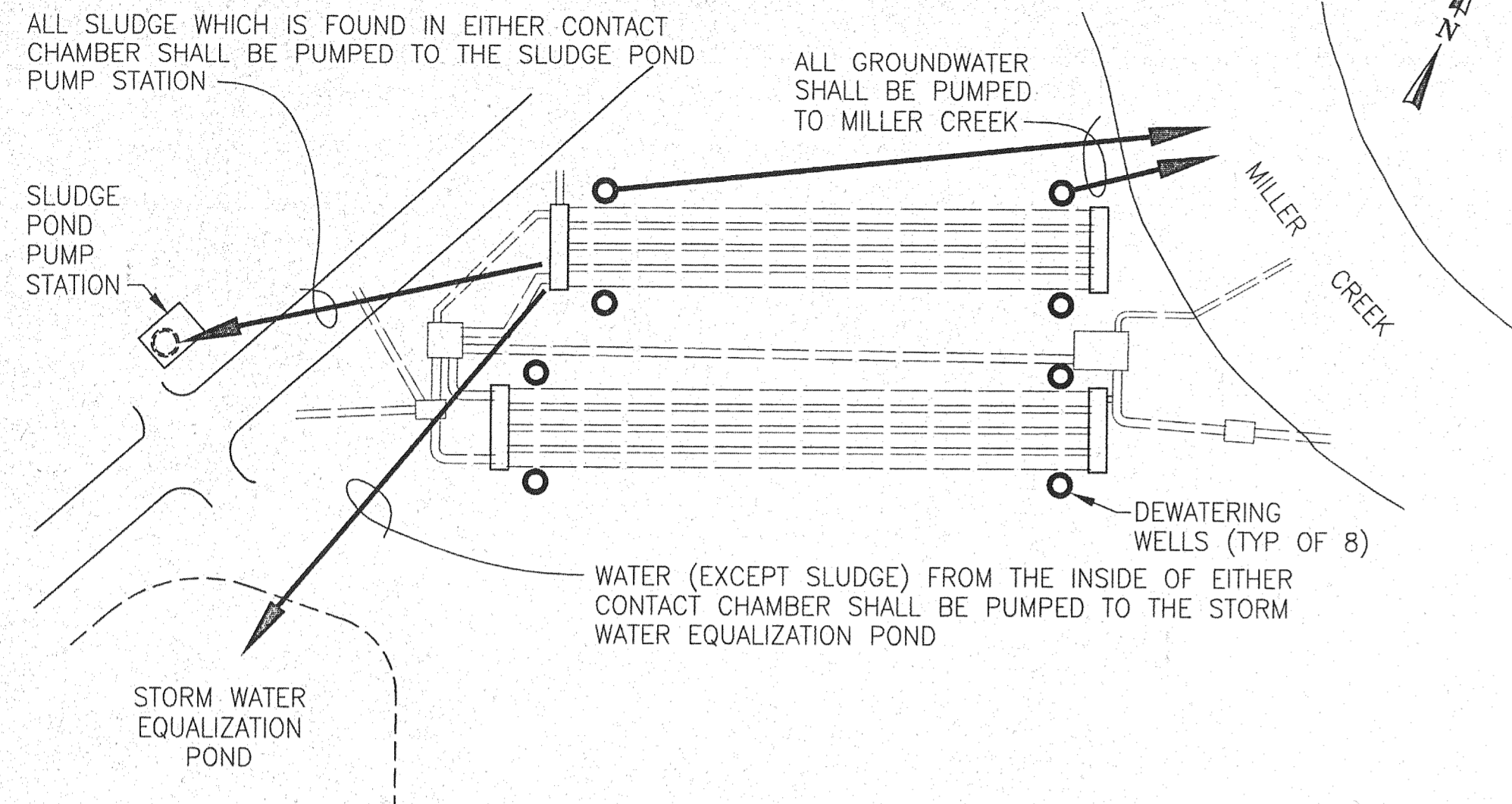


DEWATERING WELL 1/4
N.T.S.

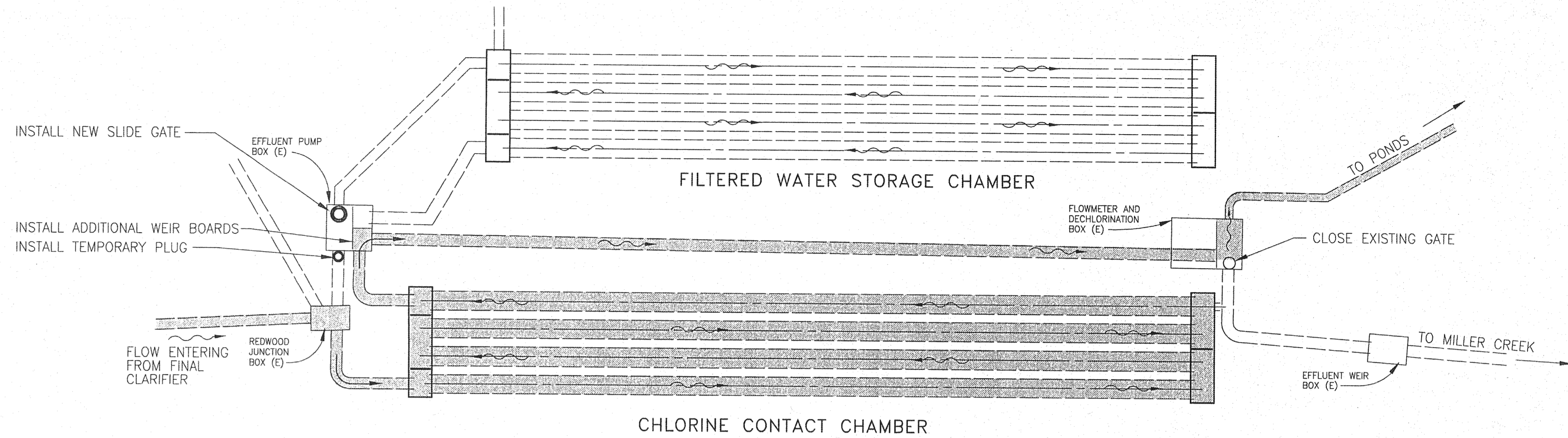


NOTE: ALL STEEL SHALL BE HOT DIP GALVANIZED.
METAL BOLLARD 2/4
N.T.S.

LAS GALLINAS VALLEY SANITARY DISTRICT Marin County, California		
CHLORINE CONTACT CHAMBER IMPROVEMENTS		
FILTERED WATER STORAGE CHAMBER PLAN AND DETAILS		
NUTE ENGINEERING SAN RAFAEL, CALIFORNIA		
Drawn by: PAM	Job No.: 5998	Scale: AS SHOWN
Checked by: WEN	5998CHLO\plotfit	Date: FEBRUARY 1994

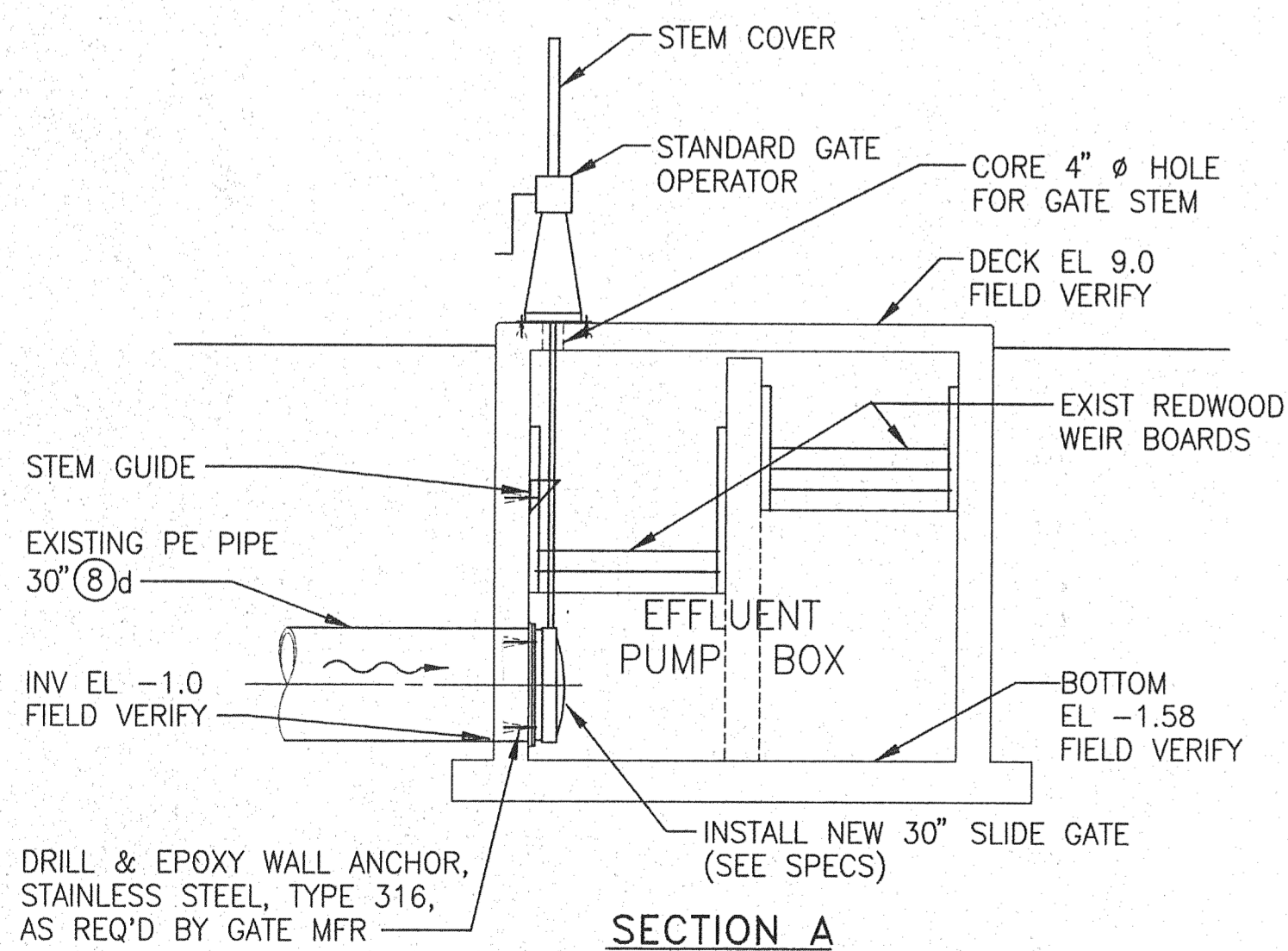
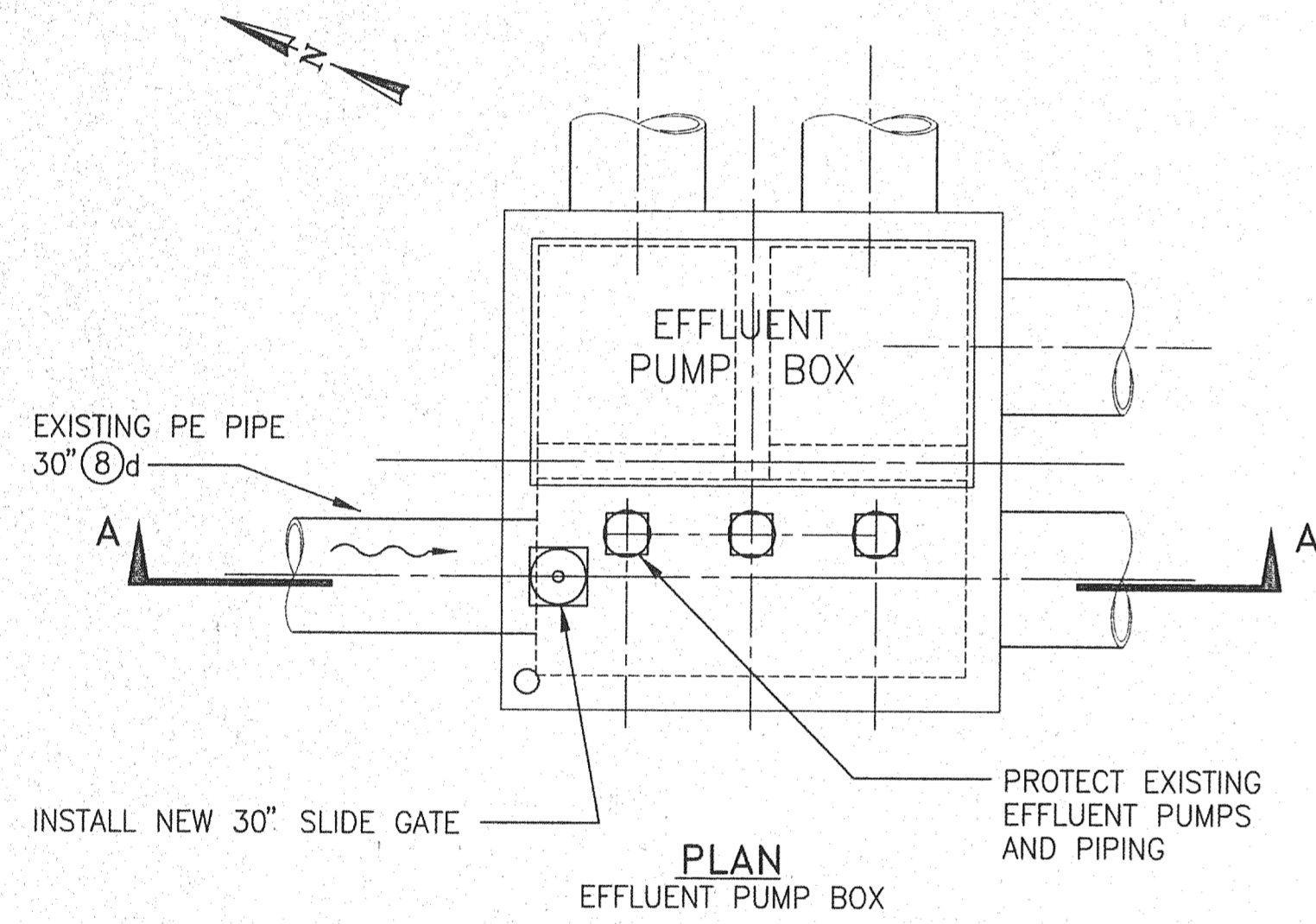


DEWATERING REQUIREMENTS



OPERATIONAL SEQUENCE "A"

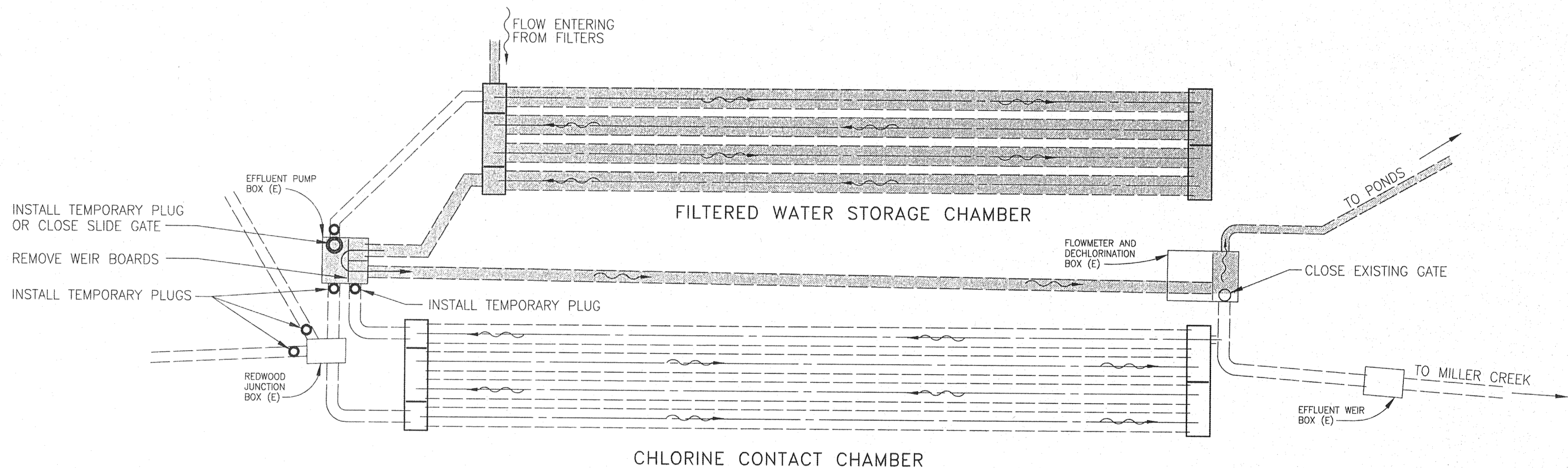
DIVERSION OF FLOW DURING REHABILITATION OF FILTERED WATER STORAGE CHAMBER



SLIDE GATE MOUNTING

SCALE: 1/4" = 1'-0"

1
5



OPERATIONAL SEQUENCE "B"

DIVERSION OF FLOW DURING REHABILITATION OF CHLORINE CONTACT CHAMBER

NOTES:

- OPERATIONAL SEQUENCE "A" OR "B" MAY BE DONE FIRST. IF SEQUENCE "B" IS DONE FIRST AND THE SLIDE GATE IS NOT IN PLACE IN THE EFFLUENT PUMP BOX, A TEMPORARY PLUG MUST BE INSTALLED IN ITS PLACE.
- THE OPERATIONAL SEQUENCES CANNOT BE STARTED UNTIL AFTER JUNE 1, 1994.
- THE EXISTING FILTERED WATER STORAGE CHAMBER AND CHLORINE CONTACT CHAMBER ARE BACKFILLED WITH PERMEABLE CRUSHED ROCK. THESE CHAMBERS LEAK AND ARE SUBJECT TO TIDAL INFLUENCE FROM MILLER CREEK. THE CONTRACTOR SHALL INSTALL THE DEWATERING WELLS AS A FIRST ITEM OF WORK AND USE THESE WELLS TO DEWATER THE WORK AREA. THE CONTRACTOR SHALL INSTALL ADDITIONAL DEWATERING WELLS AS MAY BE NECESSARY.
- AFTER THE END FITTINGS HAVE BEEN INSTALLED FOR EACH CHAMBER, AND AFTER BACKFILLING, THE CONTRACTOR SHALL ALLOW GROUNDWATER TO BUILD UP TO NO MORE THAN ONE FOOT ABOVE THE CROWN OF THE 60" PIPE. THE CONTRACTOR, WITH THE ENGINEER, SHALL MAKE AN INTERNAL INSPECTION OF THE ENTIRE CHAMBER TO LOCATE ANY LEAKS. IF ANY LEAKS ARE FOUND, THE CONTRACTOR SHALL DEWATER THE OUTSIDE OF THE CHAMBER AND INTERNALLY WELD THE JOINTS WITH LEAKAGE. (SEE BID ITEM 2 FOR PAYMENT FOR INTERNAL WELDING OF JOINTS OF EXISTING SPIROLITE PIPE.)

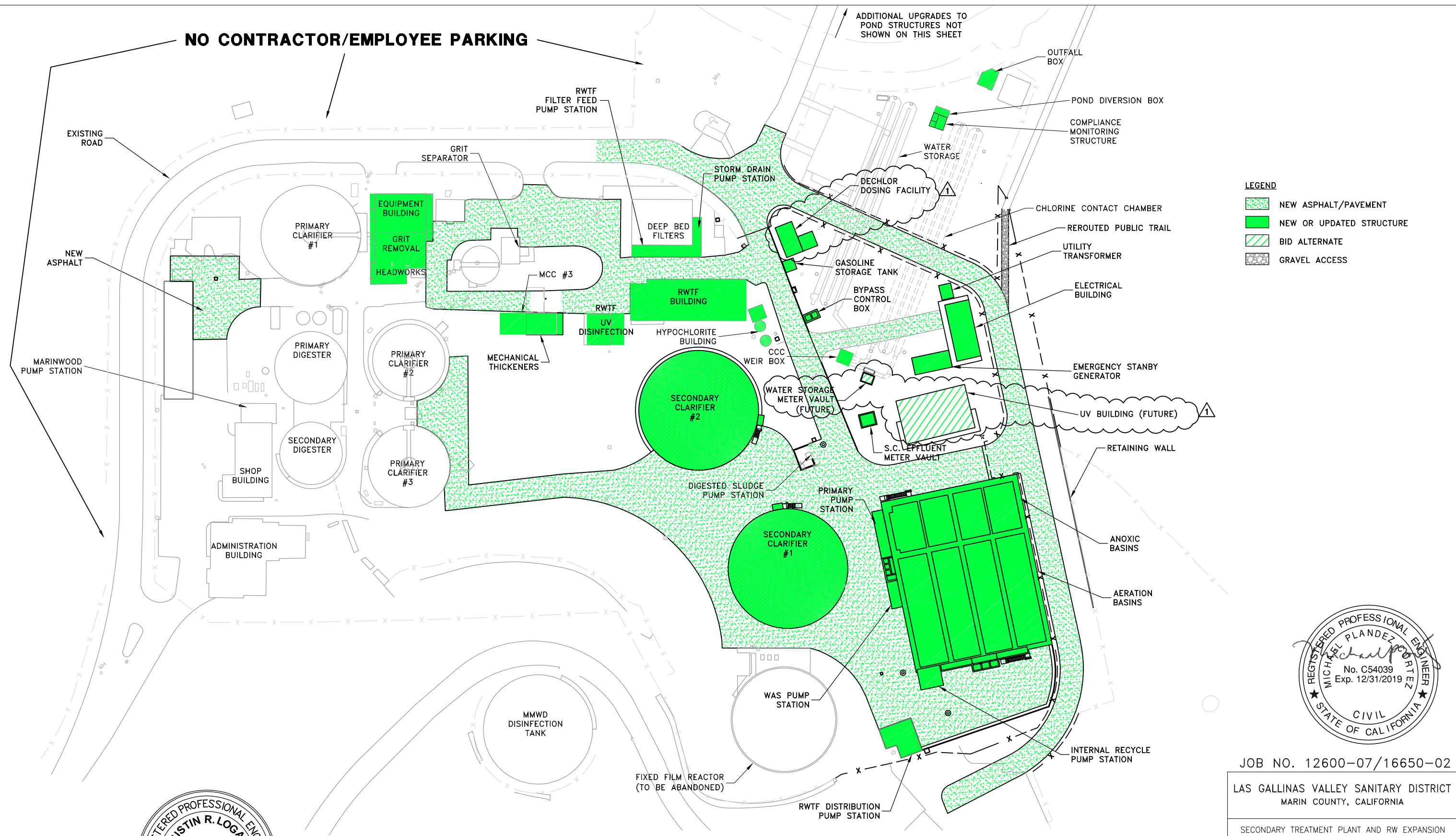
5
OF
5

LAS GALLINAS VALLEY SANITARY DISTRICT Marin County, California			
CHLORINE CONTACT CHAMBER IMPROVEMENTS			
SEQUENCE OF OPERATIONS			
NUTE ENGINEERING SAN RAFAEL, CALIFORNIA			
Drawn by: PAM	Job No.: 5998	Scale: NONE	
Checked by: WEN	5998SEQC\plot1	Date: FEBRUARY 1994	

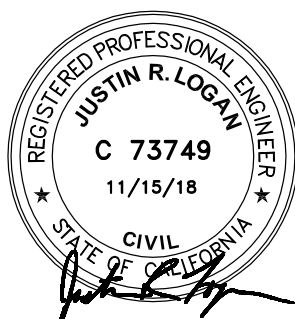
DCH_04/09/2019 X:\Las Gallinas\LASG150119-Secondary Treatment Upgrades\Drafting\Civil\G-19.dwg

NO CONTRACTOR/EMPLOYEE PARKING

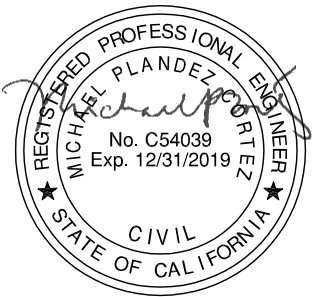
ADDITIONAL UPGRADES TO POND STRUCTURES NOT SHOWN ON THIS SHEET



- LEGEND**
- NEW ASPHALT/PAVEMENT
 - NEW OR UPDATED STRUCTURE
 - BID ALTERNATE
 - GRAVEL ACCESS



OVERALL SITE PLAN
 SCALE: 1"=40'-0"
 0 40 80
 Scale in Feet



JOB NO. 12600-07/16650-02
 LAS GALLINAS VALLEY SANITARY DISTRICT
 MARIN COUNTY, CALIFORNIA
 SECONDARY TREATMENT PLANT AND RW EXPANSION

GENERAL OVERALL SITE PLAN

WBS	CHECKED JRL	DRAWN DCH	SCALE AS SHOWN					
	APPROVED JRL	DESIGNED EES	DATE 11/15/18					
	GENERAL MANAGER Chris DeGabriele	DISTRICT ENGINEER Michael P Cortez						
		RCE # 54039						
NO.	DATE	DESCRIPTION	BY	APPR'D	SHEET	PLAN NO.	DRAWING NO.	REVISION NO.
1	4/1/19	REMOVE UV BID ALTERNATE	DCH	JRL	19 of 327		G-19	C
REVISIONS								

PLOT: EXTEND
 SCALE: 1:1
 BORDER: 22,34
 COLOR: No.
 RED 0.70MM
 YELLOW 0.20MM
 GREEN 0.25MM
 CYAN 0.40MM
 BLUE 0.50MM
 MAGENTA 0.20MM
 WHITE 0.35MM
 GRAY 0.15MM
 9 0.15MM
 10 1.00MM
 100 0.70MM
 210 0.60MM

LGVS-RFP - MULTIPURPOSE LAB BUILDING
 FD144793

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

DCH_04/22/2019 X:\Las Gallinas\LASG150119-Secondary Treatment Upgrades\Drafting\Civil\C-6.dwg

PLOTTED: EXTEND
SCALE: 1:1
BORDER: 22,34

COLOR: No. 0.70MM
RED 0.20MM
YELLOW 0.25MM
GREEN 0.40MM
CYAN 0.50MM
BLUE 0.50MM
MAGENTA 0.20MM
WHITE 0.35MM
GRAY 0.15MM
9 0.15MM
10 1.00MM
100 0.70MM
210 0.60MM

Table with 4 columns: PIPE #, SIZE, MATERIAL, DESCRIPTION. Title: LGVSD - SECONDARY TREATMENT UPGRADES YARD PIPING SCHEDULE (EX). Rows include various pipe materials like Welded Steel, Concrete Cylinder, Polyethylene, etc.

Table with 4 columns: PIPE #, SIZE, MATERIAL, DESCRIPTION. Title: LGVSD - SECONDARY TREATMENT UPGRADES YARD PIPING SCHEDULE (EX). Rows include materials like Galvanized Iron, Seamless Steel, PVC Sch 40, etc.

Table with 6 columns: PIPE #, SIZE, MATERIAL, DESCRIPTION, OPERATING PRESSURE, TEST PRESSURE. Title: LGVSD - SECONDARY TREATMENT UPGRADES YARD PIPING SCHEDULE (N). Rows include materials like DOUBLE WALL CPVC SCH80, HDPE, etc.



JOB NO. 12600-07/16650-02

LAS GALLINAS VALLEY SANITARY DISTRICT
MARIN COUNTY, CALIFORNIA

SECONDARY TREATMENT PLANT AND RW EXPANSION

CIVIL
YARD PIPING SCHEDULE

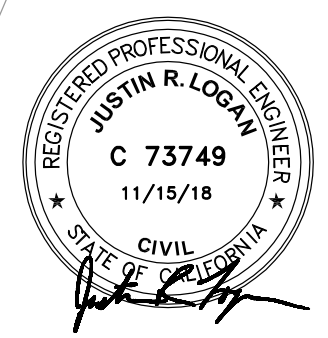
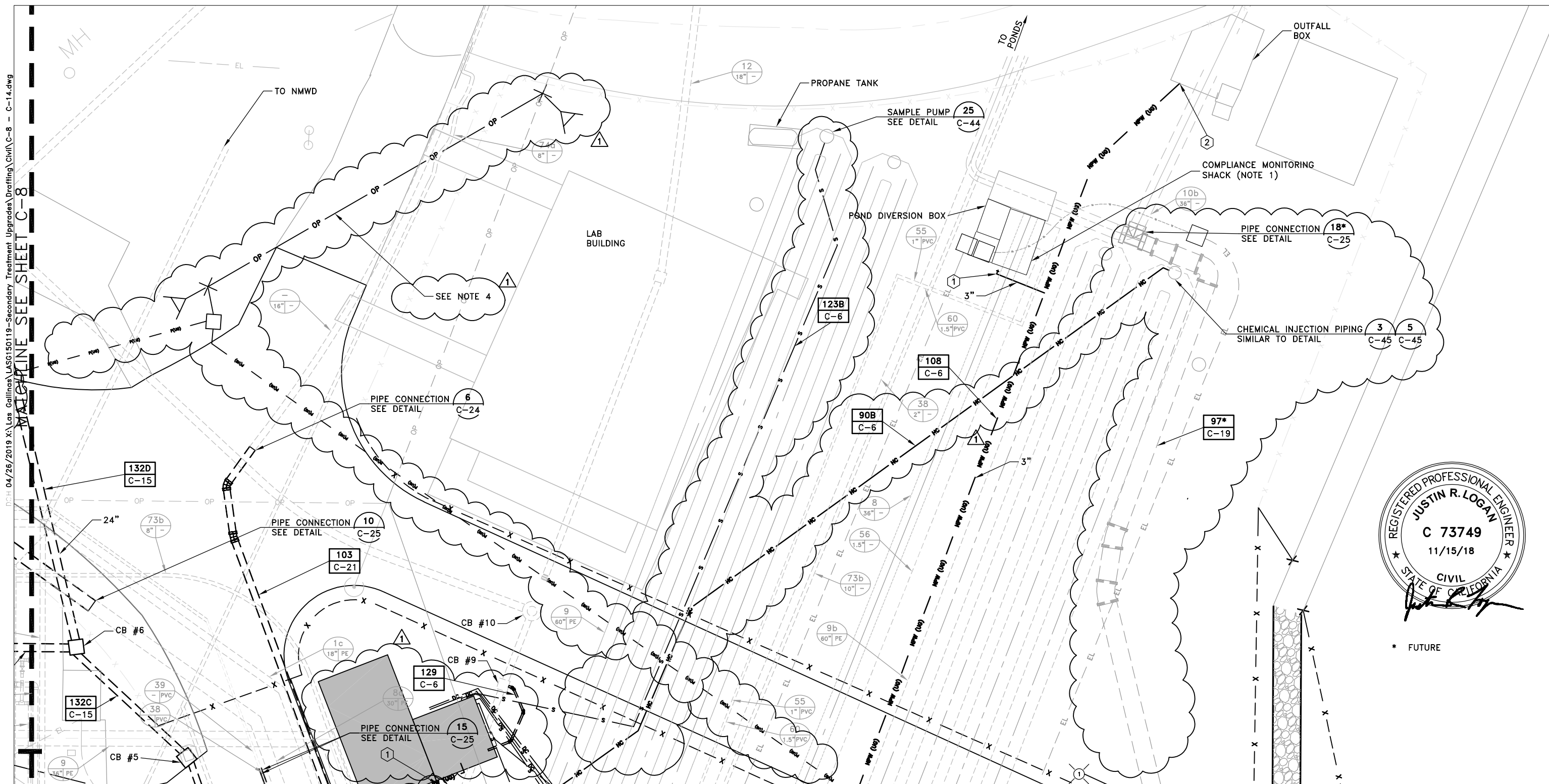
Table with columns: CHECKED, APPROVED, GENERAL MANAGER, DISTRICT ENGINEER, SCALE, AS SHOWN DATE. Includes names JRL, EES, Chris DeGabriele, Michael P Cortez and date 11/15/18.

Table with columns: NO., DATE, DESCRIPTION, BY, APPR'D. Includes revision 1: 4/1/19 REMOVE UV BID ALTERNATE.

DCH 04/26/2019 X:\Las Gallinas\ASGI50119-Secondary Treatment Upgrades\Drafting\Civil\C-8 - C-14.dwg

PLOTTED: EXTEND
SCALE: 1:1
BORDER: 22,34
COLOR: No. 0.70MM
RED 0.20MM
YELLOW 0.25MM
GREEN 0.40MM
CYAN 0.40MM
BLUE 0.50MM
MAGENTA 0.20MM
WHITE 0.35MM
GRAY 0.15MM
9 0.15MM
10 1.00MM
100 0.70MM
210 0.60MM

LRFP - MULTIPURPOSE LAB BUILDING
FD144793



* FUTURE

NOTES:

- 1- INSTALL ANALYZER 43-ME-1640 IN EXISTING STRUCTURE. SEE DETAIL 515/MD-4.
 - 2- PROVIDE MINIMUM 2' COVER FOR POTABLE, NPW, AND CHEMICAL LINES.
 - 3- PROVIDE MINIMUM 1% SLOPE ON 4" DRAIN AND PROVIDE PENETRATION INTO EXISTING MANHOLE. SEE DETAIL 332/SD-5.
 - 4- POWER ALIGNMENT IS PRELIMINARY & HAS NOT BEEN FINALIZED WITH THE DISTRICT OR PG&E.
- NPW HYDRANT LEGEND:
- ① - INSTALL NEW 3" YARD HYDRANT PER DETAIL 129/CD-5 WITH HOSE RACK PER DETAIL 513/MD-4.
 - ② - CONNECT NEW NPW TO EXISTING HOSE BIB OR YARD HYDRANT.
 - ③ - CONNECT NPW TO SEAL WATER SYSTEM FOR PUMPS.
 - ④ - CONNECT NPW TO ABOVE GROUND NPW LOOP.

MATCHLINE SEE SHEET C-12

YARD PIPING PLAN

SCALE: 1"=10'-0"
0 10 20
Scale in Feet

① SITE ELECTRICAL ITEMS RECONCILED WITH UPDATED SITE ELECTRICAL PLAN



JOB NO. 12600-07/16650-02

LAS GALLINAS VALLEY SANITARY DISTRICT
MARIN COUNTY, CALIFORNIA

SECONDARY TREATMENT PLANT AND RW EXPANSION

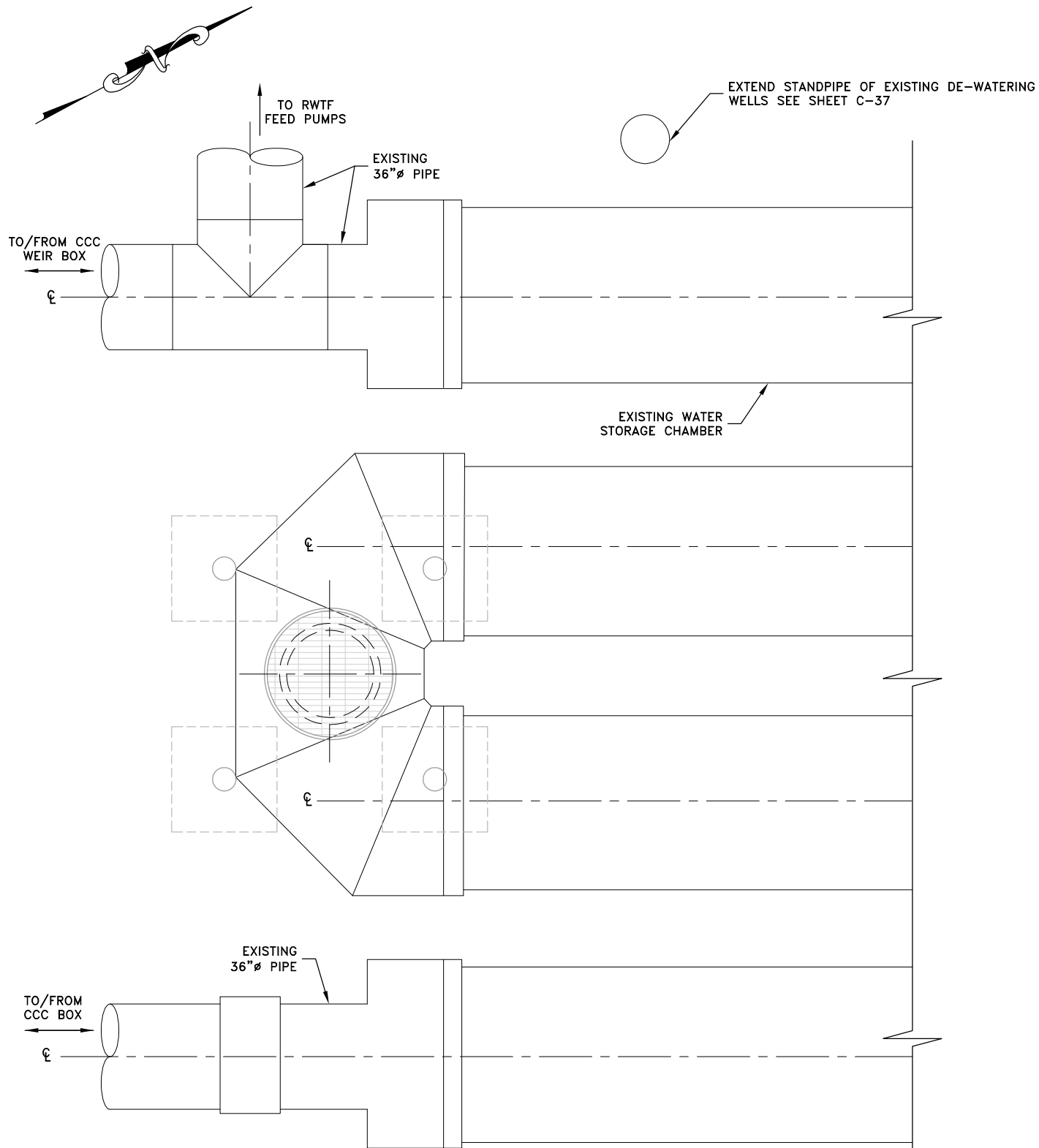
**CIVIL
YARD PIPING PLAN**

WBS 130		CHECKED JRL	DRAWN DCH	SCALE AS SHOWN
		APPROVED JRL	DESIGNED EES	DATE 11/15/18
		GENERAL MANAGER Chris DeGabriele		DISTRICT ENGINEER Michael P Cortez
		RCE # 54038		
NO.	DATE	DESCRIPTION	BY	APPR'D
1	4/1/19	REMOVE UV BID ALTERNATE	DCH	JRL
REVISIONS				
SHEET		PLAN NO.	DRAWING NO.	REVISION NO.
61 of 327			C-11	C

DCH 11/26/2018 X:\Las Gallinas\LASG150119-Secondary Treatment Upgrades\Drafting\CCB\C-34.dwg

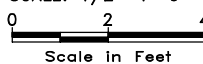
PLOTTED:
SAVED:

PLOT: EXTEND
SCALE: 1:1
BORDER: 22,34
COLOR: No.
RED 0.70MM
YELLOW 0.20MM
GREEN 0.25MM
CYAN 0.40MM
BLUE 0.50MM
MAGENTA 0.20MM
WHITE 0.35MM
GRAY 0.15MM
9 0.15MM
10 1.00MM
100 0.70MM
210 0.60MM



WEST PLAN

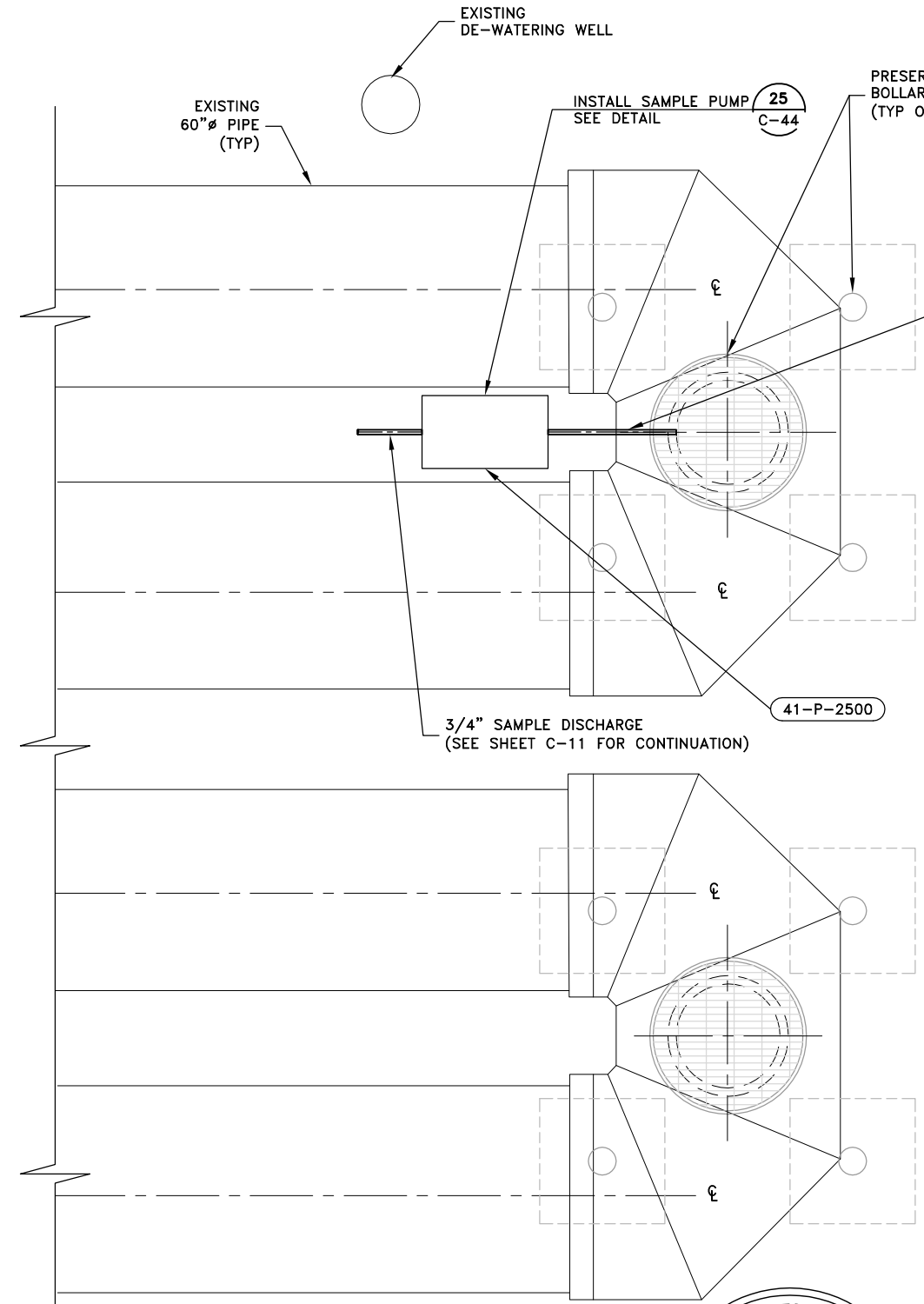
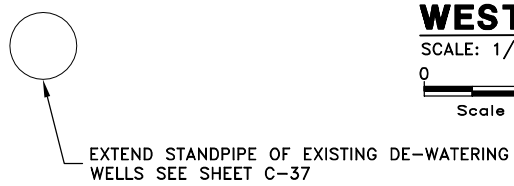
SCALE: 1/2"=1'-0"



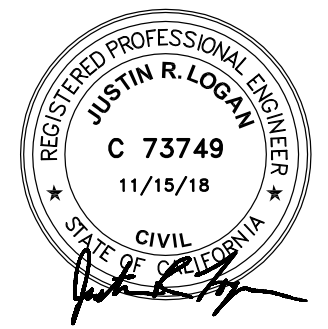
Scale in Feet

NOTES:

- 1- PRESERVE AND PROTECT ALL EXISTING PIPING AND DE-WATERING WELLS TO REMAIN.



533 W 2600 S, SUITE 275, BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153



JOB NO. 12600-07/16650-02

LAS GALLINAS VALLEY SANITARY DISTRICT
MARIN COUNTY, CALIFORNIA

SECONDARY TREATMENT PLANT AND RW EXPANSION

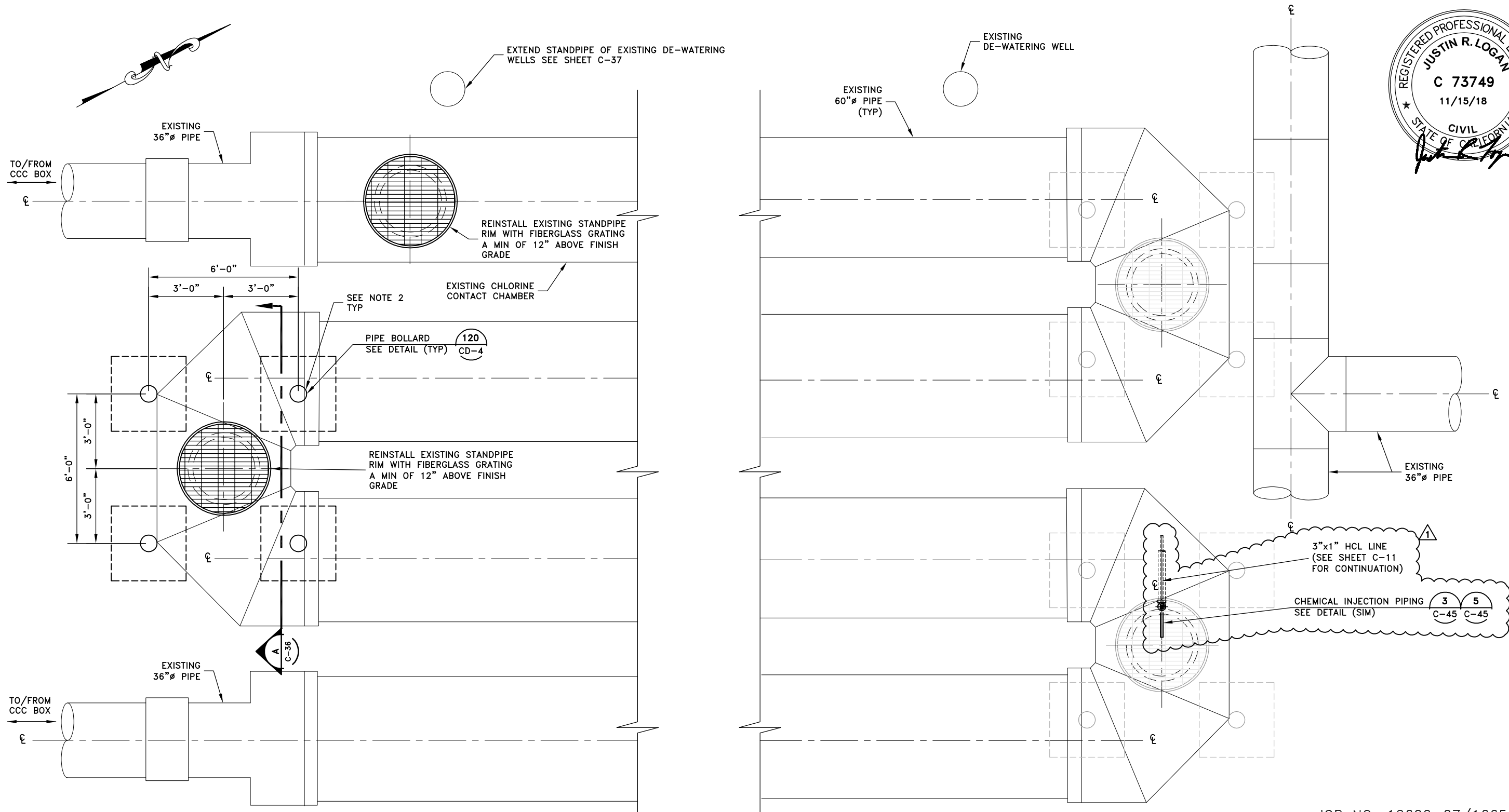
**WATER STORAGE
MODIFICATION PLAN**

WBS	140	CHECKED JRL	DRAWN HBK	SCALE AS SHOWN
		APPROVED JRL	DESIGNED EES	DATE 11/15/18
		GENERAL MANAGER Chris DeGabriele	DISTRICT ENGINEER Michael P Cortez	
			RCE # 54038	
NO.	DATE	DESCRIPTION	BY	APPRD
REVISIONS				
		SHEET	PLAN NO.	DRAWING NO.
		84 of 327		C-34
				REVISION NO. C

BDP_03/29/2019 X:\Las Gallinas\LASG150119-Secondary Treatment Upgrades\Drafting\CCB\C-35,36,37.dwg

PLOTTED:
SAVED:

PLOT: EXTEND
SCALE: 1:1
BORDER: 22,34
COLOR: No.
RED 0.70MM
YELLOW 0.20MM
GREEN 0.25MM
CYAN 0.40MM
BLUE 0.50MM
MAGENTA 0.20MM
WHITE 0.35MM
GRAY 0.15MM
9 0.15MM
10 1.00MM
100 0.70MM
210 0.60MM



EAST PLAN
SCALE: 1/2"=1'-0"
0 2 4
Scale in Feet

NOTES:

- 1- PRESERVE AND PROTECT ALL EXISTING PIPING AND DE-WATERING WELLS TO REMAIN.
- 2- REMOVE AND DISPOSE OF EXISTING BOLLARDS.
- 3- RELOCATE STANDPIPE RIM 1'-0" ABOVE FINAL FINISHED GRADE.

EXTEND STANDPIPE OF EXISTING DE-WATERING WELLS SEE SHEET C-37



533 W. 2600 S, SUITE 275, BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153



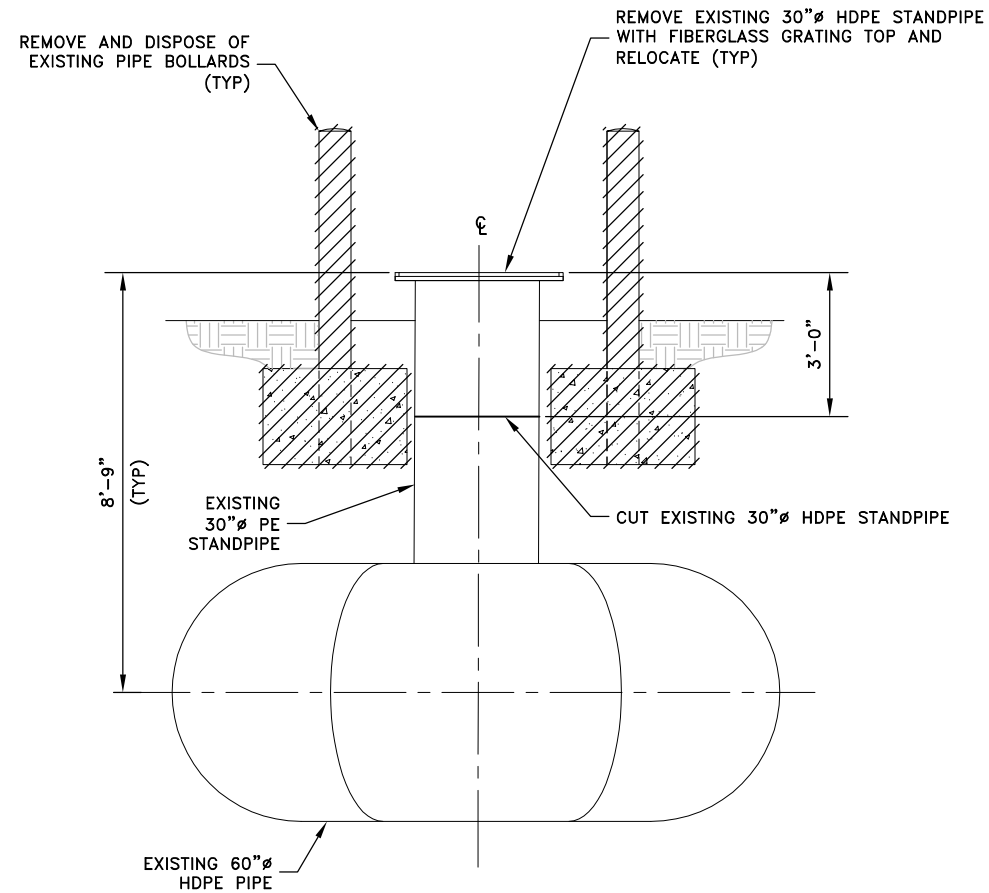
JOB NO. 12600-07/16650-02

LAS GALLINAS VALLEY SANITARY DISTRICT
MARIN COUNTY, CALIFORNIA

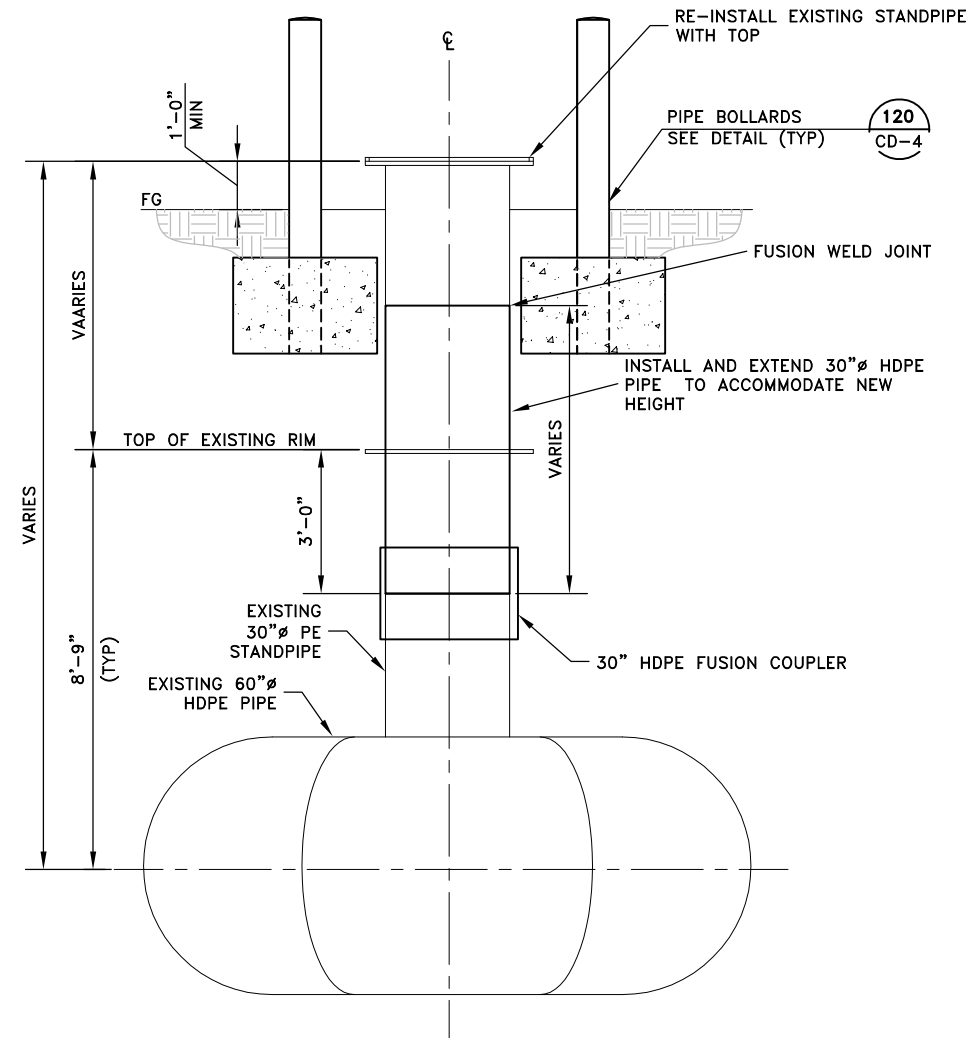
SECONDARY TREATMENT PLANT AND RW EXPANSION

**CHLORINE CONTACT CHAMBER
MODIFICATION PLAN**

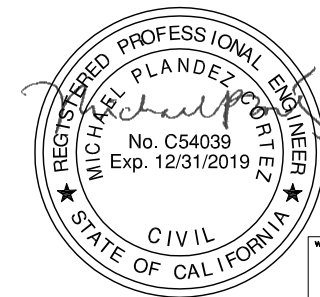
WBS 140	CHECKED JRL	DRAWN HBK	SCALE AS SHOWN
	APPROVED JRL	DESIGNED EES	DATE 11/15/18
	GENERAL MANAGER Chris DeGabriele	DISTRICT ENGINEER Michael P Cortez	
		RCE # 54038	
NO.	DATE	DESCRIPTION	BY
1	4/1/19	REMOVE UV BID ALTERNATE	BDP JRL
REVISIONS			
SHEET 85 of 327		PLAN NO.	DRAWING NO. C-35
			REVISION NO. C



**STAND PIPE
REMOVAL SECTION** A
SCALE: 1/2"=1'-0"
C-35
Scale in Feet



**STAND PIPE
EXTENSION SECTION** A
SCALE: 1/2"=1'-0"
C-35
Scale in Feet



JOB NO. 12600-07/16650-02

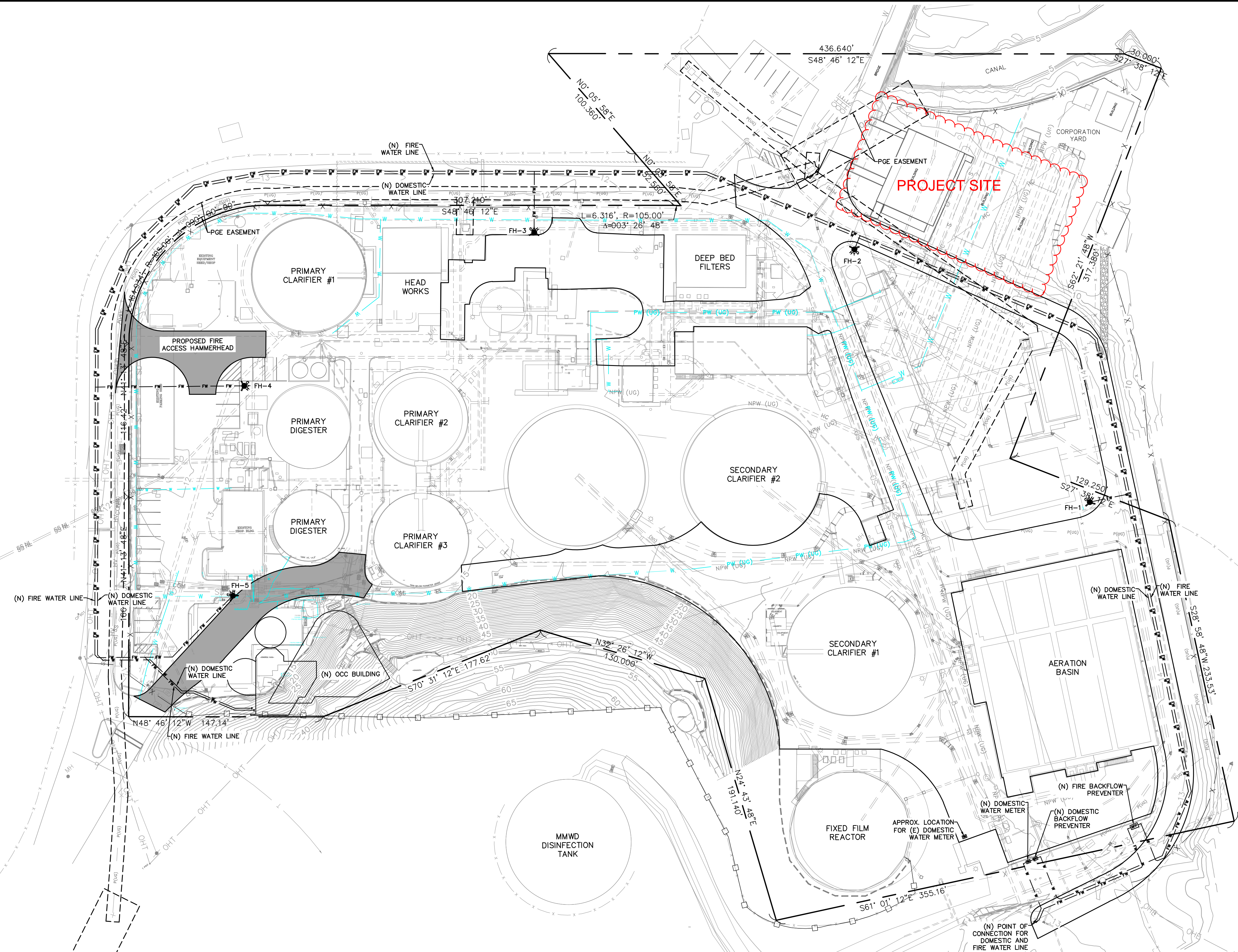
LAS GALLINAS VALLEY SANITARY DISTRICT
MARIN COUNTY, CALIFORNIA

SECONDARY TREATMENT PLANT AND RW EXPANSION

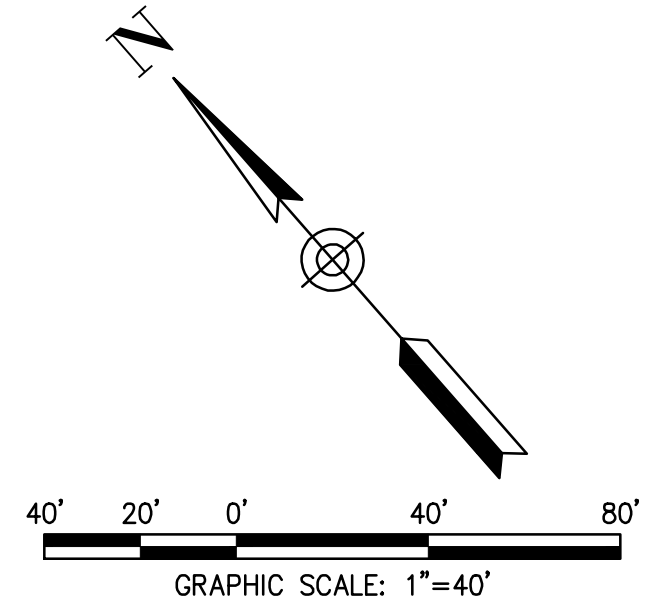
**WATER STORAGE AND CCC
MODIFICATION SECTIONS**

WBS	140	CHECKED JRL	DRAWN HBK	SCALE AS SHOWN
		APPROVED JRL	DESIGNED EES	DATE 11/15/18
		GENERAL MANAGER Chris DeGabriele	DISTRICT ENGINEER Michael P Cortez	
			RCE # 54038	
NO.	DATE	DESCRIPTION	BY	APPR'D
REVISIONS				
		SHEET	PLAN NO.	DRAWING NO.
		86 of 327		C-36
				REVISION NO. C

\\INFO\Documents\Jobs\2021\21-143_LGVSD - OCC and New Corp Yard\DWG\WATERLINE DESIGN\21-143 WATERLINE CIVIL PLANS.dwg, 2/18/2022 8:15:49 AM



- LEGEND**
- PROPERTY LINE
 - 50 — (E) ELEVATION CONTOURS
 - X — (E) CHAIN LINK FENCE
 - □ — (E) SPEAR TOP METAL FENCE
 - W — (E) DOMESTIC WATER LINE
 - PG (UG) — (E) DOMESTIC POTABLE WATER LINE
 - FW — (N) FIRE WATER LINE
 - W — (N) DOMESTIC WATER LINE
 - ☼ (N) HYDRANT



PRELIMINARY - NOT FOR CONSTRUCTION

LAS GALINAS VALLEY SANITARY DISTRICT
 MARIN COUNTY, CALIFORNIA
 300 SMITH RANCH ROAD, SAN RAFAEL, CA 94903 APN # 155-121-27

FIRELINE AND WATERLINE OVERALL PLAN LAYOUT

SURVEY & CIVIL ENGINEER OVERKAMPER & ASSOCIATES CIVIL ENGINEERS INC. 7202 REDWOOD BLVD, SUITE 308, NOVATO, CA 94945 PH: 415.897.2800		ARCHITECT DHA DANADJIEVA HANSEN ARCHITECTS, INC. 801 8th St, SAN RAFAEL, CA 94903 PH: 415.451.9707 FAX: 415.451.6149		COPYRIGHT © 2022
CHECKED: JDC	DRAWN: BM	SCALE: As indicated		
APPROVED: JDC / BM	DESIGNED: JDC / BM	DATE: 02/17/2022		
GENERAL MANAGER: MICHAEL P. CORTEZ		DISTRICT ENGINEER: MICHAEL P. CORTEZ		
SHEET: 1 OF 1	JOB NO. 21-143	DRAWING NUMBER: C4.0	REVISION NO.	

THESE DOCUMENTS ARE SOLE PROPERTY OF THE ARCHITECT. DUPLICATING AND USE OF THESE DOCUMENTS FOR ANY PURPOSE THAN CONSTRUCTION OF THIS PROJECT WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT IS PROHIBITED.



**GEOTECHNICAL INVESTIGATION
LAS GALLINAS VALLEY SANITARY DISTRICT
ADMINISTRATION BUILDING
300 SMITH RANCH ROAD
SAN RAFAEL, CALIFORNIA**

March 31, 2017

Project No. 1009.092

Prepared for:
Las Gallinas Valley Sanitary District
300 Smith Ranch Road
San Rafael, California 94903

CERTIFICATION

This document is an instrument of service, prepared by or under the direction of the undersigned professionals, in accordance with the current ordinary standard of care. The service specifically excludes the investigation of radon, asbestos, toxic mold and other biological pollutants, and other hazardous materials. The document is for the sole use of the client and consultants on this project. Use by third parties or others is expressly prohibited without written permission. If the project changes, or more than two years have passed since issuance of this report, the findings and recommendations must be reviewed by the undersigned.

MILLER PACIFIC ENGINEERING GROUP
(a California corporation)

REVIEWED BY:

A handwritten signature in black ink that reads 'Monica Thornton'.

Monica Thornton
Staff Engineer



Eric Dabanian
Geotechnical Engineer No. 2526
(Expires 6/30/17)

**GEOTECHNICAL INVESTIGATION
LAS GALLINAS VALLEY SANITARY DISTRICT
ADMINISTRATION BUILDING
300 SMITH RANCH ROAD
SAN RAFAEL, CALIFORNIA**

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	PROJECT DESCRIPTION.....	1
3.0	SITE CONDITIONS.....	1
3.1	Regional Geology	1
3.2	Surface Conditions	2
3.3	Field Exploration and Laboratory Testing.....	2
3.4	Subsurface Conditions	2
3.5	Seismicity	2
4.0	GEOLOGIC HAZARDS EVALUATION.....	3
4.1	General.....	3
4.2	Fault Surface Rupture	4
4.3	Seismic Shaking	4
4.4	Liquefaction Potential and Related Impacts	5
4.5	Seismically Induced Ground Settlement.....	6
4.6	Lurching and Ground Cracking.....	6
4.7	Erosion	6
4.8	Seiche and Tsunami.....	6
4.9	Flooding.....	6
4.10	Expansive Soil.....	7
4.11	Settlement/Subsidence.....	7
4.12	Slope Instability/Landsliding	7
5.0	CONCLUSIONS AND RECOMMENDATIONS	8
5.1	Conclusions	8
5.2	Seismic Design.....	8
5.3	Site Grading.....	8
5.3.1	Site Preparation.....	9
5.3.2	Site Preparation.....	9
5.3.3	Fill Materials and Compaction	9
5.3.4	Fill Slope Construction	10
5.3.5	Temporary and Permanent Cut Slopes.....	10
5.4	Foundation Design	11
5.5	Retaining Wall Design Criteria.....	13
5.6	Site and Foundation Drainage.....	14
5.7	Utility Trench Backfills	15
5.8	Exterior Concrete Slabs.....	15
5.9	Asphalt Pavements.....	16
6.0	SUPPLEMENTAL GEOTECHNICAL SERVICES.....	16
7.0	LIST OF REFERENCES.....	17

FIGURES

Site Location Map.....Figure 1
Site Plan 2
Regional Geologic Map 3
Active Fault Map..... 4
Historic Fault Map 5
Retaining Wall Backdrain 6

APPENDIX A – SUBSURFACE EXPLORATION AND LABORATORY TESTING

Soil Classification Chart..... Figure A-1
Rock Classification Chart Figure A-2
Boring LogsA-3 through A-7

REFERENCE SUBSURFACE EXPLORATION

1.0 INTRODUCTION

This report summarizes Miller Pacific Engineering Group's (MPEG) Geotechnical Investigation for the planned new Administration Building at the Las Gallinas Valley Sanitary District (LGVSD) located at 300 Smith Ranch Road in San Rafael, California. A Site Location Map is shown on Figure 1. The purpose of our Geotechnical Investigation is to aid in the design and construction of the geotechnical portions of the project.

In accordance with our proposal dated December 22, 2016, we are providing our geotechnical engineering services in three phases: 1) geotechnical investigation for the proposed improvements, 2) supplemental consultation, and 3) construction observation and testing. This report completes our Phase 1 services and includes the following:

- Review of readily available published geologic and geotechnical reference data;
- Exploration of subsurface conditions with four-exploratory soil borings;
- Laboratory testing of select samples to determine the pertinent engineering properties of the soil layers;
- Evaluation of geologic hazards and development of conceptual mitigation measures;
- Development of geotechnical recommendations and design criteria (i.e., site grading, seismic, foundation, retaining walls, etc.) for the project; and,
- Preparation of this report summarizing our findings.

2.0 PROJECT DESCRIPTION

As shown on the Site Plan, Figure 2, the project includes constructing a 3-story, approximately 15,000 square foot building on a northeast facing cut slope located immediately southeast of the existing administration building. We understand the building will require stepped excavations into the hillside which will be supported by retaining walls up to about 14-feet in height. The pavement area at the base of the hillside on the east side of the new building will be expanded by excavating the hillside and constructing an approximately 12-foot high soil nail and shotcrete retaining wall. Building column loads are anticipated to be moderate and moderate uplift forces and lateral loads may be exerted on the foundations due to wind and/or seismic loading. The project Architect is Danadjieva Hansen Architects.

3.0 SITE CONDITIONS

3.1 Regional Geology

The project site lies within the Coast Ranges geomorphic province of California. Regional topography within the Coast Ranges province is characterized by northwest-southeast trending mountain ridges and intervening valleys that parallel the major geologic structures, including the San Andreas Fault System. The province is also generally characterized by abundant landsliding and erosion, owing in part to its typically high levels of precipitation and seismic activity.

Bedrock geology within Marin County is dominated by sedimentary, igneous, and metamorphic rocks of the Jurassic-Cretaceous age Franciscan Complex. Sandstone and shale comprise the majority of Franciscan rock types, while less common rocks include chert, serpentinite, basalt, greenstone, and exotic low- to high-grade metamorphic rocks, including phyllite, schist, and eclogite. Regional geologic mapping (Blake and Graymer, 2000) indicates the project site is

underlain by melange bedrock (map symbol fsr), as shown on Figure 3. Melange is defined as a tectonic mixture of resistant rock types, including sandstone, greenstone, chert, and serpentinite, among others, embedded in a pervasively sheared shale matrix. The area immediately north of the site is a former marsh mapped as Bay Mud.

3.2 Surface Conditions

The site is located at the LGVSD treatment plant which is located at the end of Smith Ranch Road in San Rafael, California. McInnis Park is located immediately south of the site. The building site is located on a northeast-facing, relatively steep cut slope with an inclination of about 1.25:1 (horizontal to vertical). Above the cut slope there are flatter natural slopes and a concrete pathway and stairs that extend to the base of slope. The cut slope is covered with vegetation and exposes rock in some areas. We did not observe any obvious signs of slope instability within the cut slope or natural slope. Immediately northeast of the building site there are digester and clarifier tanks and asphalt pavement areas. Landscaping and lawn areas are located between the existing administration building and the cut slope.

3.3 Field Exploration and Laboratory Testing

We explored subsurface conditions in the general vicinity of the planned building on January 19 and February 15, 2017, with 4 exploratory soil borings utilizing track-mounted and portable drilling equipment to the maximum explored depth of 25.5-feet below the ground surface. The approximate boring locations are shown on the Site Plan, Figure 2. Our Engineer logged the borings in the field and collected soil samples at select intervals for laboratory testing. Our subsurface exploration program is discussed in more detail in Appendix A. Soil and rock classification charts and the boring logs are presented on Figures A-1 through A-7.

Laboratory testing of select soil samples included determination of moisture content, dry density, and unconfined compressive strength. The results of the moisture content, dry density, and unconfined compressive strength tests are presented on the boring logs. The laboratory testing program is discussed in further detail in Appendix A.

Additionally, we previously performed a subsurface exploration in 2013 immediately south of the existing administration building. The approximate location of our pertinent previous boring is shown on Figure 2 and the boring log is presented in Appendix B.

3.4 Subsurface Conditions

Our subsurface exploration generally confirms the regionally-mapped geologic conditions at the site. Borings 1, 3 and 4 encountered 2 to 3-feet of clayey soil over weak to moderately hard sandstone and shale bedrock to the depths explored, 15 to 25½ -feet. Boring 2 encountered 2-feet of clayey fill over 2-feet of clay residual soil over weak shale bedrock to the depth explored, 9½ feet. All borings encountered rock that gradually became harder with increasing depth and Borings 1 and 2 encountered drilling refusal on harder bedrock. Our borings did not encounter groundwater during our exploration. Because the borings were not left open for an extended period of time, a stabilized depth to groundwater was not observed. The test boring excavated in 2013 encountered similar conditions with drilling refusal noted at 5-feet.

3.5 Seismicity

Active Faults in the Region – The project site is located within a seismically active region that includes the Central and Northern Coast Mountain Ranges. Several active faults are present in

the area including the San Andreas and Hayward Faults, among others. An “active” fault is defined as one that shows displacement within the last 11,000 years and, therefore, is considered more likely to generate a future earthquake than a fault that shows no evidence of recent rupture. The California Department of Conservation, Division of Mines and Geology has mapped various active and inactive faults in the region (CDMG, 1972 and 2000). These faults, defined as either California Building Code Source Type “A” or “B,” are shown in relation to the project site on the attached Active Fault Map, Figure 4. The Hayward Fault is the nearest known active fault and is located approximately 11.2 kilometers (7.0-miles) southeast of the site (Caltrans ARS, 2016).

Historic Fault Activity – Numerous earthquakes have occurred in the region within historic times. Earthquakes (magnitude 2.0 and greater) that have occurred in the San Francisco Bay Area since 1985 have been plotted on a map shown on Figure 5.

Probability of Future Earthquakes – The site will likely experience moderate to strong ground shaking from future earthquakes originating on any of several active faults in the San Francisco Bay region. The historical records do not directly indicate either the maximum credible earthquake or the probability of such a future event. To evaluate earthquake probabilities in California, the USGS has assembled a group of researchers into the “Working Group on California Earthquake Probabilities” (USGS 2003 & 2008; Field 2013) to estimate the probabilities of earthquakes on active faults. These studies have been published cooperatively by the USGS, CGS, and Southern California Earthquake Center (SCEC) as the Uniform California Earthquake Rupture Forecast, Versions 1, 2, and 3 (aka UCERF, UCERF2, and UCERF3, respectively). In these studies, potential seismic sources were analyzed considering fault geometry, geologic slip rates, geodetic strain rates, historic activity, micro-seismicity, and other factors to arrive at estimates of earthquakes of various magnitudes on a variety of faults in California.

The 2003 study UCERF specifically analyzed fault sources and earthquake probabilities for the seven major regional fault systems in the Bay Area region of northern California. The 2008 study UCERF2 applied many of the analyses used in the 2003 study to the entire state of California and updated some of the analytical methods and models. The most recent 2015 study UCERF3 further expanded the database of faults considered and allowed for consideration of multi-fault ruptures, among other improvements.

Conclusions from the most recent UCERF3 and USGS (Aagaard, et. al., 2016) indicate the highest probability of a $M > 6.7$ earthquake on any of the active faults in the San Francisco Bay region by 2043 is assigned to the Hayward Creek Fault, located approximately 11.2-kilometers southeast of the site, at 33%. The second nearest known active fault, the San Andreas Fault; located 18.8-kilometers southwest, is assigned an 22% probability of a $M > 6.7$ earthquake by 2043. Additional studies by the USGS regarding the probability of large earthquakes in the Bay Area are ongoing. These current evaluations include data from additional active faults and updated geological data.

4.0 GEOLOGIC HAZARDS EVALUATION

4.1 General

The principal geologic hazards which could potentially affect the project site are strong seismic shaking from future earthquakes in the San Francisco Bay Region and slope instability. Other

hazards, such as fault rupture, expansive soils, tsunami inundation, and others, are not considered significant at the site. More detailed discussion of each geologic hazard considered, their anticipated impacts, and recommended mitigation measures are discussed below.

4.2 Fault Surface Rupture

Under the Alquist-Priolo Earthquake Fault Zoning Act, the California Geological Survey (CDMG)/California Geologic Survey (CGS) (1972, 2000) produced 1:24,000 scale maps showing all known active faults and defining zones within which special fault studies are required. Based on currently available published geologic information, the project site is not located within an Alquist-Priolo Earthquake Fault Zone (CGS, 2000). The potential for fault surface rupture at the project site is therefore considered to be low.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.3 Seismic Shaking

The site will likely experience seismic ground shaking from future earthquakes in the San Francisco Bay Area. Earthquakes along several active faults in the region, as shown on Figure 4, could cause moderate to strong ground shaking at the site.

Deterministic Seismic Hazard Analysis – Deterministic Seismic Hazard Analysis (DSHA) predicts the intensity of earthquake ground motions by analyzing the characteristics of nearby faults, distance to the faults and rupture zones, earthquake magnitudes, earthquake durations, and site-specific geologic conditions. Empirical relations (Campbell and Borzognia, Chiou and Youngs, (2008)) for the stiff subsurface conditions were utilized to provide approximate estimates of median peak site accelerations. A summary of the principal active faults affecting the site, their closest distance, moment magnitude of characteristic earthquake, and peak ground accelerations (PGA) which an earthquake on the fault could generate at the site are shown in Table A.

TABLE A
DETERMINISTIC PEAK GROUND ACCELERATION
Las Gallinas Valley Sanitary District
Administration Building
San Rafael, California

<u>Fault</u>	<u>Approx. Fault Distance¹</u>	<u>Max. Moment Magnitude¹</u>	<u>Median PGA^{1,2,3,4}</u>
Hayward	11.2 km	7.3	0.26 g
San Andreas	18.8 km	8.0	0.23 g
Rodgers Creek	17.2 km	7.3	0.19 g
San Gregorio	19.8 km	7.4	0.18 g
West Napa	28.0 km	6.6	0.09 g

Reference:

1. Caltrans ARS (2016)
2. Campbell and Borzogna (2008)
3. Chiou and Youngs (2008)
4. Values determined using $V_s^{30} = 760$ m/s for Site Class "B". See Section 5.2 of this report for additional discussion regarding site classification.

The potential for strong seismic shaking at the project site is high. Due to their close proximity, and probability of future rupture, the Rodgers Creek and Hayward Faults present the highest potential for strong ground shaking. The most significant adverse impact associated with strong seismic shaking is potential damage to structures and improvements.

Evaluation: Less than significant with mitigation.

Mitigation: Minimum mitigation measures should include designing the structures and foundations in accordance with the most recent version (2016) of the California Building Code. Recommended seismic coefficients are provided in Section 5.2 of this report.

4.4 Liquefaction Potential and Related Impacts

Liquefaction refers to the sudden, temporary loss of soil shear strength during strong ground shaking. Liquefaction-related phenomena include liquefaction-induced settlement, flow failure, and lateral spreading. These phenomena can occur where there are saturated, loose, granular deposits. Recent advances in liquefaction studies indicate that liquefaction can occur in granular materials with a high, 35 to 50%, fines content (soil particles that pass the #200 sieve), provided the fines exhibit a plasticity less than 7. Saturated granular layers were not observed during our subsurface exploration below the ground surface as shallow bedrock was encountered. Therefore, it is our opinion that liquefaction presents low risk of damage to the planned improvements.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.5 Seismically Induced Ground Settlement

Seismic ground shaking can induce settlement of unsaturated, loose, granular soils. Settlement occurs as the loose soil particles rearrange into a denser configuration when subjected to seismic ground shaking. Varying degrees of settlement can occur throughout a deposit, resulting in differential settlement of structures founded on such deposits. Our subsurface exploration encountered shallow bedrock at the project site. Therefore, it is our opinion the risk of seismically induced ground settlement occurring under the proposed structures is low.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.6 Lurching and Ground Cracking

Lurching and associated ground cracking can occur during strong ground shaking. The ground cracking generally occurs along the tops of slopes where stiff soils are underlain by soft deposits or along steep slopes or channel banks. These conditions do not exist at the site, therefore the risk of lurching and ground cracking at the project site is low.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.7 Erosion

Sandy soils on moderate slopes or clayey soils on steep slopes are susceptible to erosion when exposed to concentrated water runoff. These conditions do not exist at the site. However, there is always some potential for localized erosion due to concentrated surface water flows.

Evaluation: Less than significant with mitigation.

Mitigation: Mitigation measures include designing a site drainage system to collect surface water and discharging it into an established storm drainage system. The project Civil Engineer of Architect is responsible for designing the site drainage system and, an erosion control plan could be developed prior to construction per the current guidelines of the California Stormwater Quality Association's Best Management Practice Handbook (2003).

4.8 Seiche and Tsunami

Seiche and tsunamis are short duration, earthquake-generated water waves in large enclosed bodies of water and the open ocean, respectively. The extent and severity of a seiche or tsunami would be dependent upon ground motions and fault offset from nearby active faults. The project site is located on a cut slope above low-lying marsh lands adjacent to San Pablo Bay. The site is not mapped as being immediately within a tsunami inundation zone. Therefore, seiche and tsunami events are not considered significant geologic hazards for the planned improvements.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.9 Flooding

The project site is located immediately south of FEMA 100-year and 500-year flood zones (ABAG, 2016) however, the first floor of the building will be elevated and set at elevation +20.

Therefore, flooding does not present a significant hazard to the project. However, the project Civil Engineer or Architect is responsible for site drainage, and should evaluate localized flooding potential and provide appropriate mitigation.

Evaluation: Less than significant with mitigation.

Mitigation: The project Civil Engineer or Architect should evaluate the risk localized flooding and provide appropriate storm drain design.

4.10 Expansive Soil

Expansive soils will shrink and swell with fluctuations in moisture content and are capable of exerting significant expansion pressures on building foundations, interior floor slabs, and exterior flatwork. Distress from expansive soil movement can include cracking of brittle wall coverings (stucco, plaster, drywall, etc.), racked door and/or window frames, and uneven floors and cracked slabs. Flatwork, pavements, and concrete slabs-on-grade are particularly vulnerable to distress due to their low bearing pressures. Our subsurface exploration encountered shallow bedrock throughout the project site. Therefore, the risk of expansive soil affecting the proposed improvements is low.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.11 Settlement/Subsidence

Significant settlement can occur when new loads are placed at sites due to consolidation of soft compressible clays (i.e., Bay Mud) or compression of loose granular soils. Soft compressible materials were not observed during our subsurface exploration, therefore, the risk of long term settlement to the proposed administration building is low.

Evaluation: No significant impact.

Mitigation: No mitigation measures are required.

4.12 Slope Instability/Landsliding

As described in previous sections, the topography of the site includes relatively steep cut slopes with inclinations towards the northeast. Active landslides were not observed in the immediate area of the project site during our site observations. Slope instability is common where steep slopes are underlain by weak geologic materials, and is often exacerbated by soil saturation due to rainfall. Human grading activities, such as excavations at the base of slope or placement of fill above steep slopes, can also contribute to instability. Considering the shallow depth to bedrock the potential for slope instability is low.

Evaluation: Less than significant with mitigation.

Mitigation: Site grading and allowable slope inclination recommendations presented in Section V of this report should be incorporated into the project planning and design.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Based on the results of our site investigation, we judge that the proposed project is feasible from a geotechnical perspective. The primary geotechnical issues to be considered during project design are strong anticipated seismic ground shaking, providing uniform foundation support for the new structure, possible localized hard rock excavation, and providing effective retaining systems to reduce the risk of slope instability. Geotechnical recommendations to address these and other concerns are presented in the following sections.

5.2 Seismic Design

Based on interpreted subsurface conditions and proximity to the San Andreas and Hayward Faults, we recommend the CBC coefficients and site values shown in Table B to calculate the design base shear of the new construction. To determine site seismic coefficients, we used the USGS DesignMaps web application (2015) using the latitude and longitude shown on Figure 4. The intent of the CBC is to design structures to prevent collapse and protect life safety. Significant structural damage can still occur under very high levels of ground shaking.

TABLE B
SEISMIC DESIGN CRITERIA
Las Gallinas Valley Sanitary District
Administration Building
San Rafael, California

2016 CALIFORNIA BUILDING CODE

<u>Factor Name</u>	<u>Coefficient</u>	<u>2010 CBC Site Specific Value¹</u>
Site Class ²	S _{A,B,C,D,E, or F}	S _B
Site Coefficient	F _a	1.0
Site Coefficient	F _v	1.0
Spectral Acc. (short)	S _s	1.500 g
Spectral Acc. (1-sec)	S ₁	0.600 g

- (1) Values determined in accordance with 2016 California Building Code and 2010 ASCE-7.
 - (2) Site Class B Description: “Rock” profile with shear wave velocities between 2,500 and 5,000 fps.
-

5.3. Site Grading

Site grading will consist mostly of excavation which will be supported by retaining walls up to 14-foot tall. Site grading should be performed in accordance with the following recommendations.

5.3.1 Site Preparation

Clear all trees, brush, roots, over-sized debris, and organic material from areas to be graded. Trees that will be removed (in structural areas) must also include removal of stumps and roots larger than four inches in diameter. Excavated areas (i.e., excavations for stump removal) should be restored with properly moisture conditioned and compacted fill as described in the following sections. Any loose soil or rock at subgrade will need to be excavated to expose firm natural soils or bedrock. Debris, rocks larger than six inches and vegetation are not suitable for structural fill and should be removed from the site. Alternatively, vegetation strippings may be used in landscape areas.

Where fills or other structural improvements are planned on level ground, the subgrade surface should be scarified to a depth of about eight inches, moisture conditioned to above the optimum moisture content, and compacted to a minimum of 90 percent relative compaction (ASTM D-1557). Relative compaction should be increased to a minimum of 95% where new pavements are planned. Relative compaction, maximum dry density, and optimum moisture content of fill materials should be determined in accordance with ASTM Test Method D 1557, "Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using a 10-lb. Rammer and 18-in. Drop." If soft, wet or otherwise unsuitable materials are encountered at the subgrade elevation during construction, we will provide supplemental recommendations/field directives to address the specific condition.

5.3.2 Site Preparation

Site excavations for new foundations, underground utilities, and other improvements will generally encounter about 1 to 3 feet of clayey soil over weak to moderately hard sandstone and shale bedrock that grades harder with depth. Based on our subsurface exploration, we judge the majority of site excavation can be reasonably performed with "traditional" grading equipment, such as medium-size dozers and excavators. Localized hard rock may be encountered during construction that will require jack hammers and/or hoe ramming. As such, the contract document should include a line item for "hard rock excavation".

5.3.3 Fill Materials and Compaction

Fill should be placed on a prepared subgrade as described above. The fill material shall be non-expansive materials free of organic matter, have a Liquid Limit of less than 40, a Plasticity Index of less than 20, minimum R-value of 20, and conform to the gradation limits shown below in Table C. Onsite excavations will generally yield clayey to sandy mixtures that should be suitable for re-use as fill. Excavations into bedrock, depending on the equipment and methods used, may yield cobbles or boulders that require processing to meet the gradation requirements shown in Table C.

TABLE C
IMPORTED FILL GRADATION LIMITS
Las Gallinas Valley Sanitary District
Administration Building
San Rafael, California

<u>Particle Size</u>	<u>Percent Finer by Dry Weight</u>
4 inch	100
No. 4 sieve	20 - 100
No. 200 sieve	0 - 50

Fill materials should be placed in loose horizontal lifts no greater than eight inches thick. Structural fills less than five feet thick should be moisture conditioned above the optimum moisture content and uniformly compacted to a minimum of 90 percent relative compaction. Structural fills in excess of five feet should be moisture conditioned above the optimum moisture content and uniformly compacted to a minimum of 92 percent relative compaction to reduce the potential for significant settlements. The upper eight inches of pavement subgrade (i.e., access roads and driveways) should be compacted to a minimum of 95 percent relative compaction to provide a smooth, uniform, and unyielding surface when proof-rolled with heavy rubber-tire construction equipment.

5.3.4 Fill Slope Construction

Fills placed on sloping surfaces steeper than 10:1 (horizontal; vertical) should be founded on keyways and benches excavated into stable soil and bedrock. Fill slopes should be inclined no steeper than 2:1. Fill slopes steeper than 2:1 will require internal reinforcement and need to be specifically designed. If fill slopes steeper than 2:1 are planned, we should be consulted to provide additional recommendations and design criteria.

5.3.5 Temporary and Permanent Cut Slopes

Temporary (steeper) cut slopes may be required during construction until retaining walls are constructed and backfilled. For planning purposes, these cut slopes in onsite soils and weathered bedrock should be inclined no steeper than 1:1 (horizontal:vertical), based on an OSHA Type “B” soil profile. Cut slopes in bedrock may be steeper where competent rock is encountered. Geologic inspection during excavation will be required to verify that the above recommendations are appropriate for the conditions encountered.

Performance of temporary cut slopes will be heavily dependent on the amount of time the cut is unsupported, seepage and surface runoff over the face, bedding and fracture planes of rock and soil materials, and other factors. The steeper (temporary) cut slopes may exhibit some sloughing, especially during wet weather conditions, and cleanup of soil and rock debris at the base of slopes may be required. We recommend the project grading contractor be responsible for the performance of temporary cut slopes, and we should be present intermittently during construction to verify that the above recommendations remain appropriate for actual conditions encountered.

Permanent cut slopes excavated into soil and competent bedrock should be inclined no steeper than 2:1 and 1½:1, respectively. Concrete lined v-ditches should be provided 5-foot back from the top of the cut slope. Additionally, the top of the cut slope should be trimmed and rounded to reduce the potential of minor sloughing at the grade break.

Properly designed and constructed cut slopes should perform as well as adjacent slopes. However, rock conditions in this geologic area are variable, not totally predictable and may therefore need modification during construction. Periodic slope maintenance after construction, such as the cleanup of rock debris, may be required.

5.4 Foundation Design

Based on our subsurface investigation, it is our opinion that the new administration building should be supported on foundations that bears on the weathered bedrock. Where new improvements are planned in “cut” areas, we judge that shallow foundations, consisting of conventional spread or continuous footings, are appropriate provided they bear directly on weathered bedrock. Shear keys or drilled piers can also be added to the foundation to resist lateral loads. Design criteria for new foundations are presented in Table D.

TABLE D
FOUNDATION DESIGN CRITERIA
Las Gallinas Valley Sanitary District
Administration Building
San Rafael, California

Shallow Footings¹:

Minimum Width:	15 inches
Minimum Embedment ² :	18 inches
Allowable Bearing Pressure ³ :	
Weathered Bedrock:	3,000 psf
Base Friction Coefficient:	0.30
Lateral Passive Resistance ⁴	
Weathered Bedrock:	400 pcf

Drilled Piers:

Minimum Diameter:	18 inches
Minimum Embedment into Weathered Bedrock ⁵ :	6 feet
Skin Friction ⁶	
Weathered Bedrock:	2,000 psf
Lateral Passive Resistance ^{4,7} :	
Weathered Bedrock:	400 pcf

Notes:

- (1) In weathered bedrock ("cut") areas, load all shallow foundations to similar bearing pressures, i.e., size footing widths to design loads instead of uniform foundation widths.
- (2) Maintain minimum 7-foot horizontal confinement from the face of adjacent slopes.
- (3) Dead plus live loads. May increase by 1/3 for total design loads (including wind and seismic).
- (4) Equivalent Fluid Pressure, not to exceed 10 times value in psf.
- (5) Minimum depth may be reduced if hard rock is encountered, to be determined by the Geotechnical Engineer during construction.
- (6) Uplift resistance is equal to 80% of the total skin friction. Ignore upper 3-feet for uplift.
- (7) Apply values over effective width of 2 pier diameters.

Reinforced concrete slab-on-grade interior floors are also judged to be appropriate for the site conditions. The concrete slabs-on-grade may be poured monolithically to the foundations or separated with a cold joint. We generally recommend interior concrete slabs be a minimum of 5-inches thick. Concrete slabs should be reinforced with steel rebar, not wire mesh, and rebar should extend through crack control joints. The project Structural Engineer should design the new concrete slabs.

Where interior spaces are sensitive to moisture conditions (i.e., where floor coverings or material storage would be adversely affected by water vapor migrating up through the slab), a minimum 4-inch layer of clean, free draining, 3/4-inch angular gravel should be placed beneath the interior concrete slabs to form a capillary moisture break. The rock must be placed on a properly moisture-conditioned and compacted subgrade that has been approved by the Geotechnical

Engineer. A plastic membrane vapor barrier, 15 mils or thicker, should be placed over the rock layer. The vapor retarder should meet the ASTM E 1745 Class A requirements and be installed per ASTM 1643. Given the relatively high concentration of groundwater observed at the site during mass grading activities, an underslab drainage system could be considered to further improve interior moisture conditions and overall site drainage.

Eliminating the gravel (capillary moisture break) and/or plastic vapor retarder may result in excess moisture intrusion through the floor slabs resulting in poor performance of floor coverings, mold growth or other adverse conditions. For slabs that are not sensitive to moisture vapor, we recommend at least four inches of Class 2 Aggregate Base compacted to 95 percent below the slab.

5.5 Retaining Wall Design Criteria

Retaining walls will be needed to retain new cuts up to about 14-feet high. Many retaining wall options are available, including soldier-pile and timber lagging, reinforced, cast-in-place concrete, and soil-nail and shotcrete. For cut areas, reinforced concrete, soldier-pile and timber lagging, or soil nail and shotcrete walls are often the most cost-efficient.

Retaining walls that can deflect a small amount at the top, such as site or landscape walls, can be designed using the unrestrained criteria shown in Table E. Walls that are structurally connected at the top and not allowed to deflect, such as basement or tied-back walls, are considered restrained. Restrained conditions are commonly designed using a uniform earth pressure distribution rather than an equivalent fluid pressure. Lateral support can be obtained from either passive soil resistance (i.e. keyways) or frictional sliding resistance of footings or from tiebacks. In addition to the soil loads, the retaining walls should be designed to resist temporary seismic loads.

TABLE E
RETAINING WALL DESIGN CRITERIA
Las Gallinas Valley Sanitary District
Administration Building
San Rafael, California

Foundation

Refer to the foundation design criteria in Table D.

<u>Lateral Earth Pressure</u>	<u>Unrestrained^{1,2}</u>	<u>Restrained^{1,3}</u>	
Level Ground	35 pcf	25 X H psf	
2:1 Slope	55 pcf	35 X H psf	
 <u>Seismic Surcharge^{3,4}</u>	15 X H psf		
 <u>Soil Nails⁵</u>			
	<u>Phi⁶</u>	<u>C (psf)⁷</u>	<u>Gamma (pcf)⁸</u>
Weathered Bedrock	38	750	135
Min. Soil Nail/Tieback Diameter:			6 inches
Skin Friction:			
Weathered Bedrock	2,000 psf		

Notes:

- (1) Interpolate earth pressures for intermediate slopes.
- (2) Equivalent fluid pressure.
- (3) Rectangular uniform pressure distribution (H = height of wall).
- (4) Use minimum factor of safety of 1.0 for seismic design.
- (5) Design soil nails for load testing up to 150% of design load. Load testing to be performed in accordance with procedures per Post-Tensioned Institute (1996).
- (6) Angle of Internal Friction, effective stress, unitless
- (7) Apparent (effective) Cohesion, for seismic conditions 250 psf of additional cohesion may be included.
- (8) Unit Weight of Soil

All walls higher than 3-feet require drainage to prevent the build-up of hydrostatic pressure. A typical retaining wall drain detail is shown on Figure 6. Retaining wall backfill should be compacted in accordance with the recommendations presented in Section 5.0 of this report. The project Architect should design a water-proofing system for walls adjacent to living space or consult with a waterproofing specialist.

5.6 Site and Foundation Drainage

The project site currently contains slopes that will drain; however, future site grading may result in adverse drainage patterns. We recommend that the project Civil Engineer be responsible for design of site drainage systems, and that site drainage be carefully considered during design of

finished grades. As discussed previously, the site is noted to have a relatively high concentration of groundwater, and effective site drainage will be paramount to ensuring good future performance of the planned improvements.

Significant surface water flow is anticipated on the upslope side of the development. Surface water runoff should be collected on the upslope side of the property by use of concrete v-ditches and routed around the structure. To convey surface water away from the building, flatwork adjacent to the foundations should be sloped at least 0.20 feet in the first 5 feet. All roofs should be provided with gutters and solid pipe downspouts discharging into a solid pipe system that connects into the storm drainage system or other appropriate location. The gutter downspout discharge should be designed as an independent system and should not be connected to foundation or other subdrain discharge systems.

Roof gutter downspouts may discharge onto the pavements, but should not discharge onto landscaped areas adjacent to foundations. Provide area drains for landscape planters if these are adjacent to the building and collect downspout discharges into a tight pipe collection system if possible. Site drainage should be discharged away from the building area, preferably into an existing storm drainage system.

5.7 Utility Trench Backfills

Excavations for utilities will generally be performed in clayey soils and weak to moderately strong bedrock, and groundwater could be encountered depending on the time of year and amount of recent rainfall. Trench excavations having a depth of 5-feet or more must be excavated and shored in accordance with OSHA regulations. Pursuant to OSHA classifications, on-site soils may be considered as Type B. Bedding materials for utility pipes should be well graded sand with 90 to 100 percent of particles passing the No. 4 sieve and no more than 5 percent finer than the No. 200 sieve. Provide the minimum bedding beneath the pipe in accordance with the manufacturer's recommendation, typically 3 to 6-inches.

Trench backfill may consist of on-site soils, processed in accordance with the recommendations provided in Section 5.0, moisture-conditioned to above-optimum, placed in thin lifts and compacted to at least 90 percent relative compaction. The upper 12-inches of backfill for trenches within areas of asphalt or concrete paving should consist of properly moisture-conditioned Caltrans Class 2 Aggregate Base compacted to at least 95 percent relative compaction. Use equipment and methods that are suitable for work in confined areas without damaging utility conduits.

5.8 Exterior Concrete Slabs

Exterior concrete walkway or patio slabs should be underlain with 4-inches or more of Class 2 Aggregate Base (Caltrans Standard Specifications, 2010). The aggregate base should be moisture conditioned and compacted to at least 95 percent relative compaction. The upper 8-inches of subgrade on which aggregate base is placed should be prepared as described above in Section 5.0, Site Grading.

We recommend the slabs be at least 4-inches thick and reinforced with steel reinforcing bars (not welded wire mesh). We recommend crack control joints no farther than 6 feet apart in both directions and that the reinforcing bars, if used, extend through the control joints. If "superior" performance is desired, slabs could be thickened to 5-inches.

5.9 Asphalt Pavements

For new asphalt-paved areas, the subgrade should be prepared as described in Section 5.0 and compacted to at least 95% relative compaction. For typical driveway loads, we recommend a pavement section consisting of 3-inches of asphalt concrete over 6-inches of Caltrans Class 2 aggregate baserock. For improved performance and a longer lifespan, or if “heavier than normal” traffic loads are anticipated (such as vector trucks, emergency vehicles, etc.), the baserock could be thickened to 8-inches and the asphalt surface increased to 4-inches. Aggregate baserock and asphalt concrete materials should conform to the latest edition of the Caltrans Standard Specifications (2010) and be compacted to a minimum of 95% relative compaction per ASTM D 1557.

6.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

We should review the project plans as they near completion to ensure that the intent of our geotechnical recommendations has been suitably incorporated, and to provide a summary letter to the City of San Rafael as typically required for issuance of grading and building permits.

During construction, we should observe and/or test the geotechnical portions of the work, including site preparation and grading, foundation construction, retaining wall construction, site drainage construction, backfill of utility trenches in structural areas, driveway preparation and other geotechnical items to verify that our recommendations remain appropriate for actual conditions encountered and to provide supplemental field direction as needed.

7.0 LIST OF REFERENCES

American Society of Civil Engineers (ASCE) (2010), "Minimum Design Loads for Buildings and Other Structures" (2010 ASCE-7), Structural Engineering Institute of the American Society of Civil Engineers.

American Society for Testing and Materials, (2009) "2009 Annual Book of ASTM Standards, Section 4, Construction, Volume 4.08, Soil and Rock; Dimension Stone; Geosynthetics," ASTM, Philadelphia.

Association of Bay Area Governments (ABAG)(2015), "Interactive Flood Maps" (interactive web viewer with source data from FEMA Digital Flood Insurance Rate Maps, updated 2009), <http://gis.abag.ca.gov/website/Hazards/?hlyr=femaZones>, accessed March 1, 2017.

California Building Code, 2013 Edition, California Building Standards Commission/International Conference of Building Officials, Whittier, California.

California Department of Conservation, Division of Mines and Geology (1972), Special Publication 42, "Alquist-Priolo Special Studies Zone Act," (Revised 1988).

California Department of Conservation, Division of Mines and Geology (2000), "Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Central Coast Region", DMG CD 2000-004.

California Department of Transportation (Caltrans),(2010), 2010 Standard Specifications.

California Department of Conservation (Caltrans) (2014), "Caltrans ARS Online, V 2.3.06" (web-based deterministic acceleration response spectra calculator tool), http://dap3.dot.ca.gov/ARS_Online/, accessed March 1, 2017.

California Emergency Management Agency (2009), "Tsunami Inundation Map for Emergency Planning, State of California, County of Marin, San Rafael Quadrangle and San Quentin Quadrangle", Map Scale 1:24,000, dated July 1, 2009.

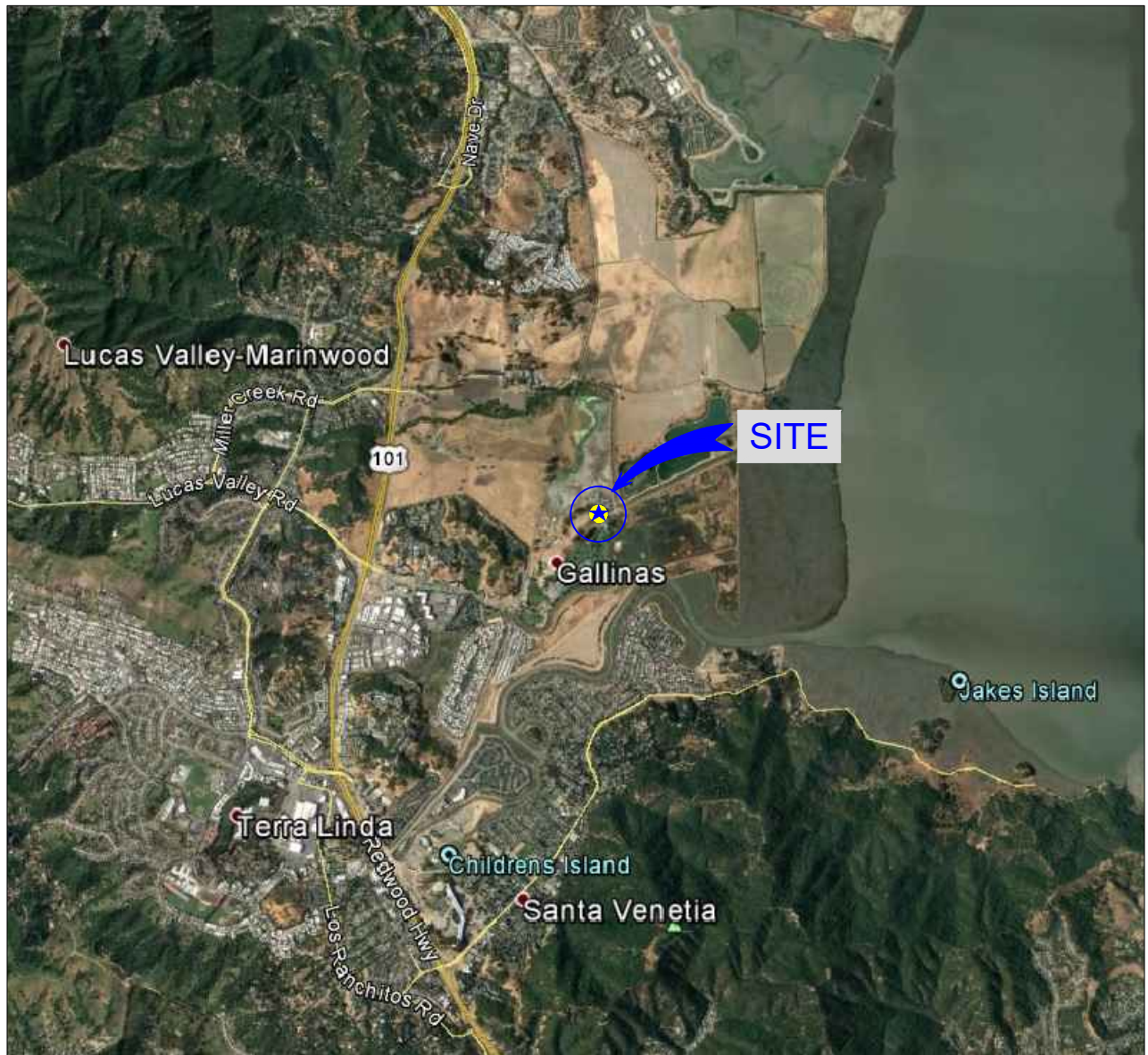
California Regional Water Quality Control Board, San Francisco Bay Area Region (2002), "Erosion and Sediment Control Field Manual", Fourth Edition, Oakland, August 2002.

Field, E.H. et al (2015), "Long-Term Time-Dependent Probabilities for the Third Uniform California Earthquake Rupture Forecast (UCERF3)", Bulletin of the Seismological Society of America, Volume 105, No. 2A, 33pp., April 2015, doi: 10.1785/0120140093

Miller Pacific Engineering Group, Geotechnical Investigation, Las Gallinas Valley Sanitary District Administration Building Addition, January 8, 2013.

Occupational Safety and Health Administration (OSHA), (2005), Title 29 Code of Federal Regulations, Part 1926, 2005.

United States Geological Survey (2008), "The Uniform California Earthquake Rupture Forecast, Version 2," The 2007 Working Group on California Earthquake Probabilities, Open File Report 2007-1437, 2008



SITE: LATITUDE, 38.0253°
 LONGITUDE, -122.5193°

SITE LOCATION
 N.T.S.



REFERENCE: Google Earth, 2017



MILLER PACIFIC
ENGINEERING GROUP

A CALIFORNIA CORPORATION, © 2015, ALL RIGHTS RESERVED
 FILE: 1009.092 Figures.dwg

504 Redwood Blvd.
 Suite 220
 Novato, CA 94947
 T 415 / 382-3444
 F 415 / 382-3450
 www.millerpac.com

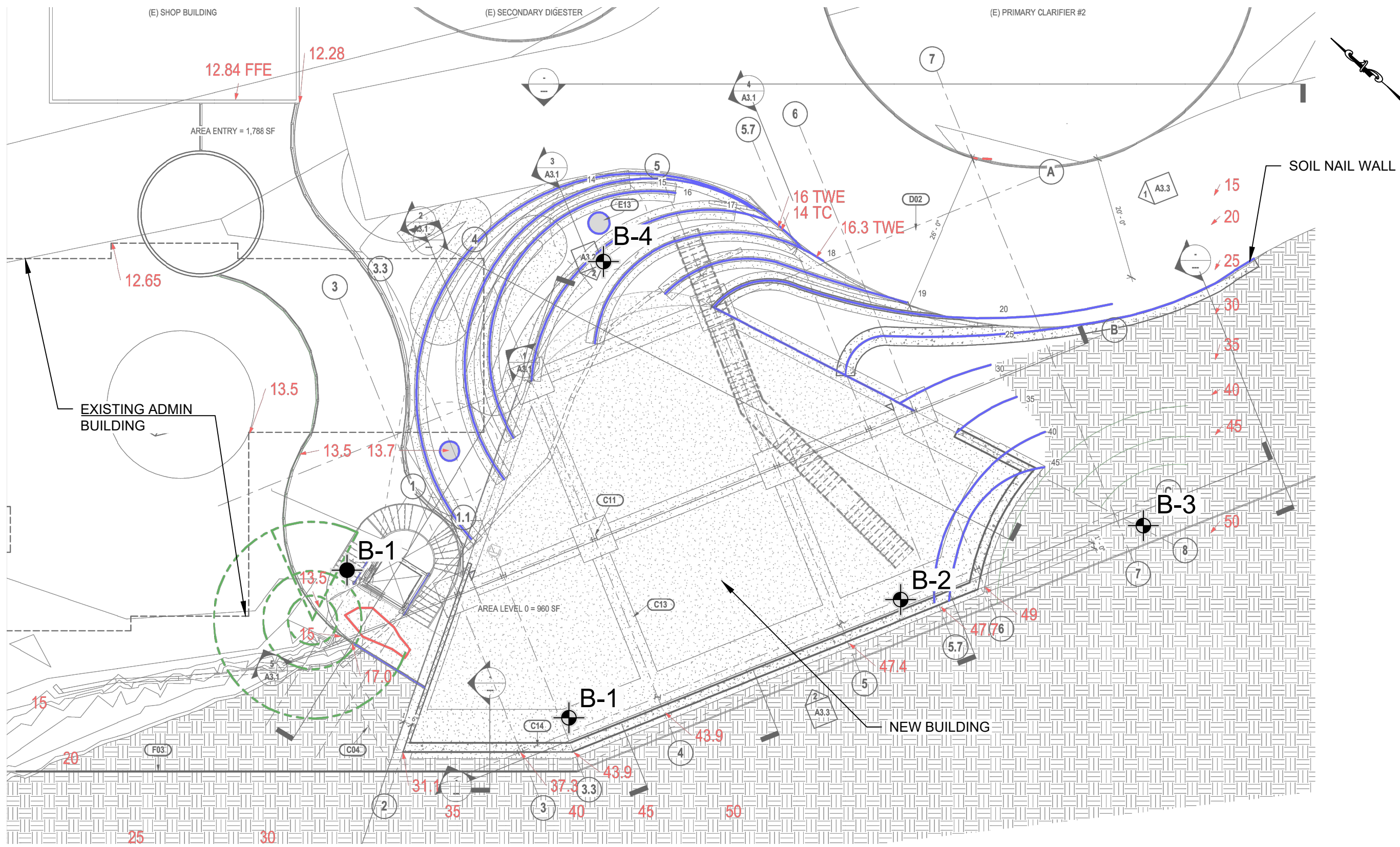
SITE LOCATION MAP



Las Gallinas Valley Sanitary Dist.
 Administration Building
 San Rafael, California

Project No. 1009.092 Date: 1/10/17

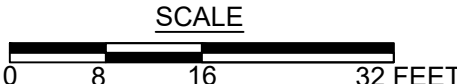
Drawn NGK
 Checked

1
FIGURE



-  Approximate location of boring completed by MPEG, 2013
-  Approximate location of boring completed by MPEG, 2017

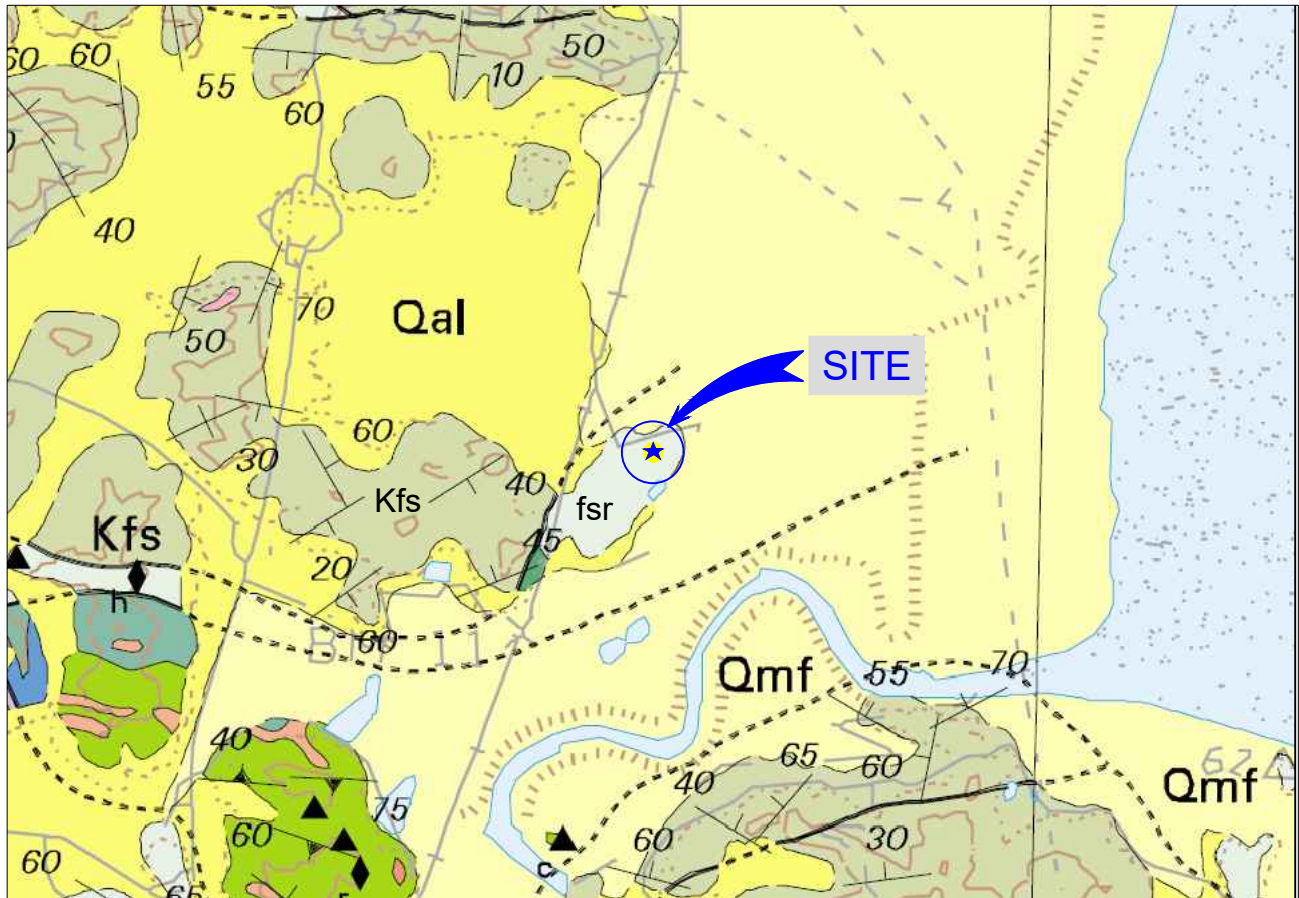
REFERENCE: DHA Architects, INC., Las Gallinas Valley Sanitary, Floor Plan, February 20, 2017.



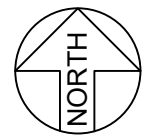

A CALIFORNIA CORPORATION, © 2010, ALL RIGHTS RESERVED
FILE: 1009.092 Figures.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

SITE PLAN		2 FIGURE
Las Gallinas Valley Sanitary Dist. Administration Building San Rafael, California		
Project No. 1009.092	Date: 3/7/17	Drawn: MMT Checked:



REGIONAL GEOLOGIC MAP
(NOT TO SCALE)

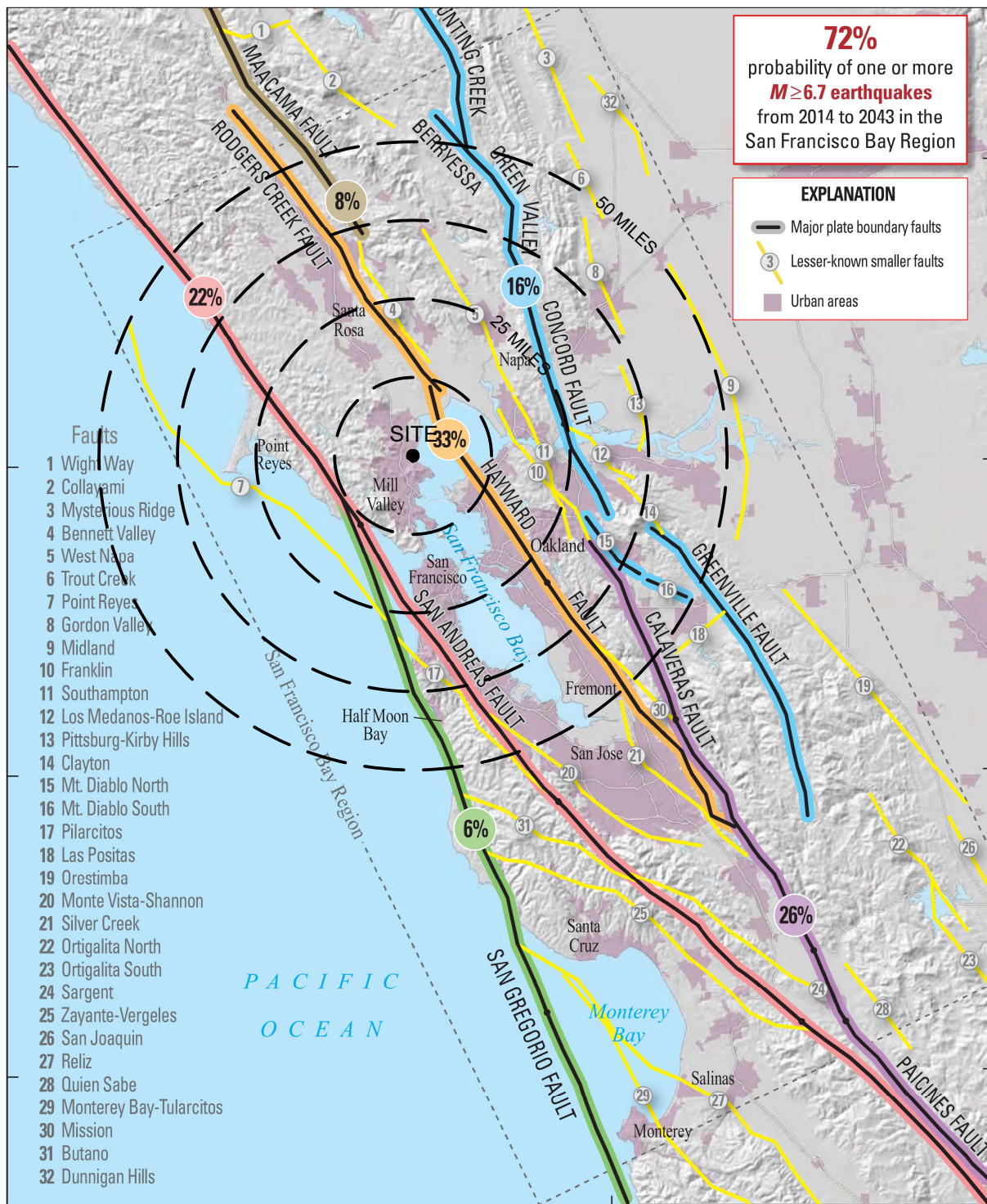


LEGEND

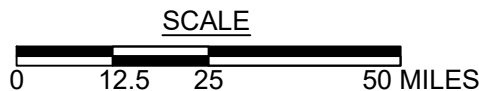
- Qmf Artificial Fill over marine and marsh deposits (Quaternary).
- Qal Alluvium (Quaternary)
- Kfs Franciscan Complex - Sandstone and Shale
- fsr Franciscan Melange

REFERENCE: Blake, M.C., Graymer, R.W., Jones, D.L., and Soule, Adam, 2000, "Geologic map and map database of parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma Counties, California": U.S. Geological Survey, Miscellaneous Field Studies Map MF-2337, scale 1:75000.

 MILLER PACIFIC ENGINEERING GROUP	504 Redwood Blvd. Suite 220 Novato, CA 94947 T 415 / 382-3444 F 415 / 382-3450 www.millerpac.com	REGIONAL GEOLOGIC MAP Las Gallinas Valley Sanitary Dist. Administration Building San Rafael, California Project No. 1009.092 Date: 1/10/17	Drawn <u>NGK</u> Checked
	<div style="font-size: 2em; font-weight: bold; margin: 0;">3</div> <div style="font-weight: bold; margin: 0;">FIGURE</div>		



SITE COORDINATES: LAT. 38.0253° LON. -122.5193°



DATA SOURCE:

1) U.S. Geological Survey, U.S. Department of the Interior, "Earthquake Outlook for the San Francisco Bay Region 2014-2043", Map of Known Active Faults in the San Francisco Bay Region, Fact Sheet 2016-3020, Revised August 2016 (ver. 1.1).



A CALIFORNIA CORPORATION, © 2013, ALL RIGHTS RESERVED
FILE: 1009.092 FM.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

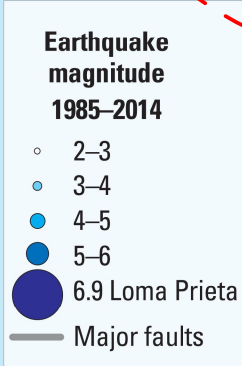
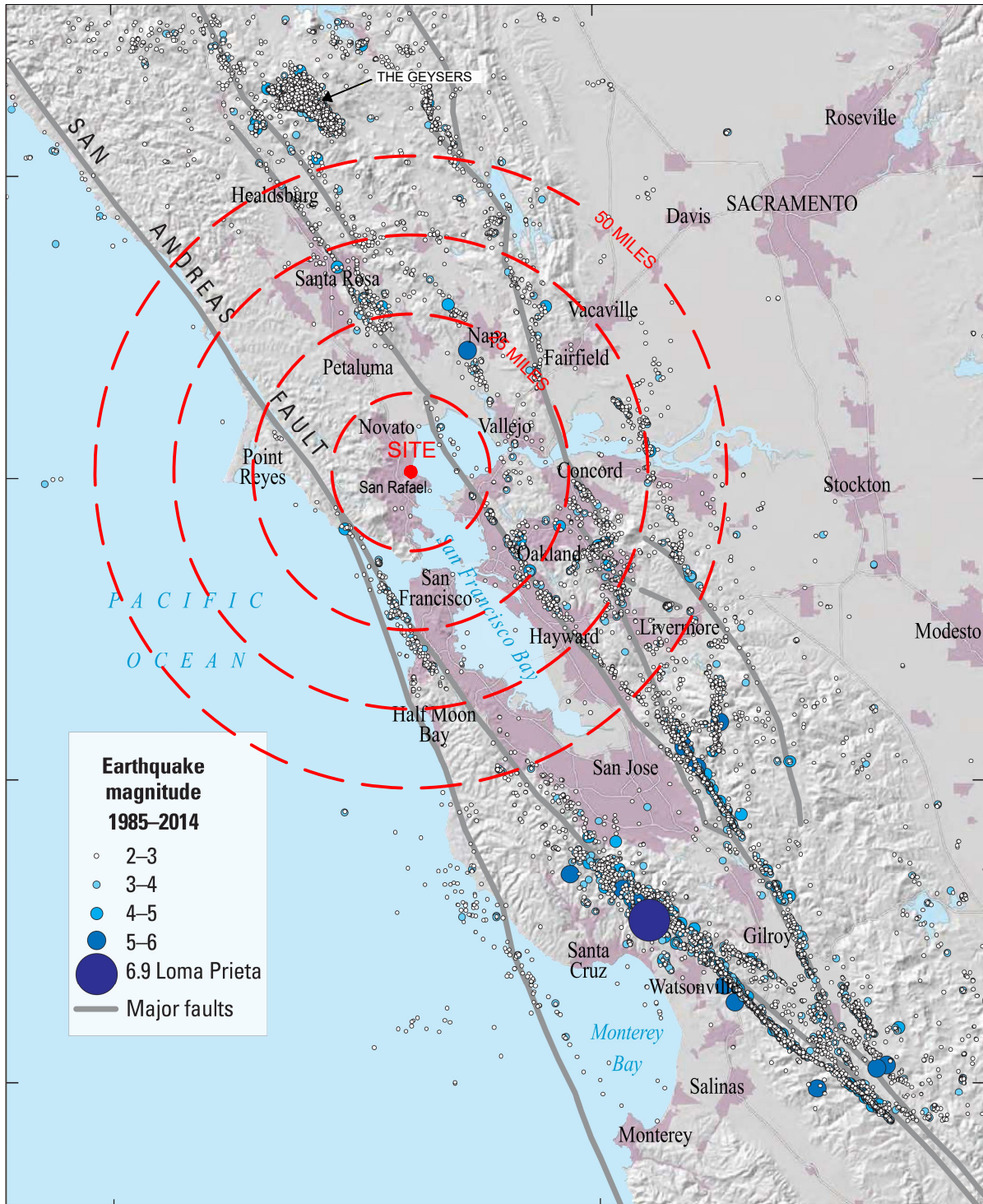
ACTIVE FAULT MAP
Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California

Project No. 1009.092

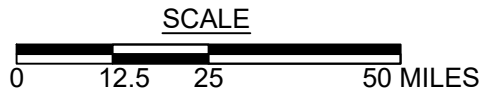
Date: 3/1/17

Drawn _____
Checked _____
MMT

4
FIGURE



SITE COORDINATES: LAT. 38.0253° LON. -122.5193°



DATA SOURCE:

1) U.S. Geological Survey, U.S. Department of the Interior, "Earthquake Outlook for the San Francisco Bay Region 2014-2043", Map of Earthquakes Greater Than Magnitude 2.0 in the San Francisco Bay Region from 1985-2014, Fact Sheet 2016-3020, Revised August 2016 (ver. 1.1).

MILLER PACIFIC ENGINEERING GROUP

A CALIFORNIA CORPORATION, © 2013, ALL RIGHTS RESERVED
 FILE: 1009.092 FH.dwg

504 Redwood Blvd.
 Suite 220
 Novato, CA 94947
 T 415 / 382-3444
 F 415 / 382-3450
 www.millerpac.com

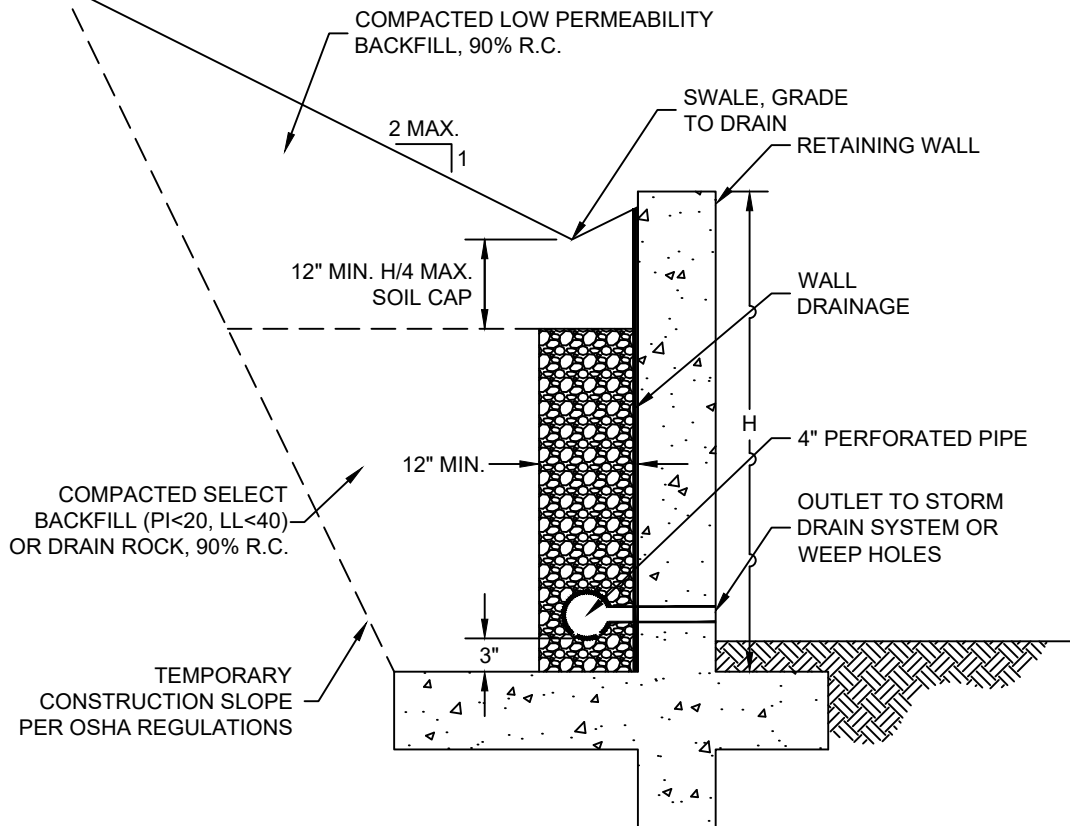
HISTORIC FAULT ACTIVITY

Las Gallinas Valley Sanitary Dist.
 Administration Building
 San Rafael, California

Project No. 1009.092 Date: 3/1/17

Drawn _____
 Checked _____
 MMT

5
 FIGURE



NOTES:

1. Wall drainage should consist of clean, free draining 3/4 inch crushed rock (Class 1B Permeable Material) wrapped in filter fabric (Mirafi 140N or equivalent) or Class 2 Permeable Material. Alternatively, pre-fabricated drainage panels (Miradrain G100N or equivalent), installed per the manufacturers recommendations, may be used in lieu of drain rock and fabric.
2. All retaining walls adjacent to interior living spaces shall be water/vapor proofed as specified by the project architect or structural engineer.
3. Perforated pipe shall be SCH 40 or SDR 35 for depths less than 20 feet. Use SCH 80 or SDR 23.5 perforated pipe for depths greater than 20 feet. Place pipe perforations down and slope at 1% to a gravity outlet. Alternatively, drainage can be outlet through 3" diameter weep holes spaced approximately 20' apart.
4. Clean outs should be installed at the upslope end and at significant direction changes of the perforated pipe. Additionally, all angled connectors shall be long bend sweep connections.
5. During compaction, the contractor should use appropriate methods (such as temporary bracing and/or light compaction equipment) to avoid over-stressing the walls. Walls shall be completely backfilled prior to construction in front of or above the retaining wall.
6. Refer to the geotechnical report for lateral soil pressures.
7. All work and materials shall conform with Section 68, of the latest edition of the Caltrans Standard Specifications.



A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
 FILE: 1009.092 Wall Backdrain.dwg

504 Redwood Blvd.
 Suite 220
 Novato, CA 94947
 T 415 / 382-3444
 F 415 / 382-3450
 www.millerpac.com

RETAINING WALL BACKDRAIN

Las Gallinas Valley Sanitary Dist.
 Administration Building
 San Rafael, California

Project No. 1009.092 Date: 3/1/17

Drawn _____
 Checked MMT

6
 FIGURE

APPENDIX A SUBSURFACE EXPLORATION AND LABORATORY TESTING

A. SUBSURFACE EXPLORATION

We explored subsurface conditions with two exploratory borings drilled with track-mounted equipment on January 19, 2017 at the approximate locations shown on the Site Plan, Figure 2. We drilled two additional borings utilizing portable hydraulic drilling equipment on February 15, 2017. The exploration was conducted under the technical supervision of our Field Geologist who examined and logged the soil materials encountered and obtained samples. The subsurface conditions encountered in the test borings are summarized and presented on the boring logs, Figures A-3 through A-7. The depth to groundwater, if encountered, was noted during the drilling and measured before backfilling the borings.

“Undisturbed” samples were obtained using a 3-inch diameter, split-barrel Modified California Sampler with 2.5 by 6-inch tube liners or a Standard Penetration Test (SPT) Sampler. The samplers were driven by a 140-pound hammer at a 30-inch drop. The number of blows required to drive the samplers 18 inches was recorded and is reported on the boring logs as blows per foot for the last 12 inches of driving. The samples obtained were examined in the field, sealed to prevent moisture loss, and transported to our laboratory

B. LABORATORY TESTING

We conducted laboratory tests on selected intact samples to classify soils and to estimate engineering properties. The following laboratory tests were conducted in general accordance with the ASTM standard test method cited:

- Laboratory Determination of Water (Moisture Content) of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216
- Density of Soil in Place by the Drive-Cylinder Method, ASTM D 2937
- Unconfined Compressive Strength of Cohesive Soil, ASTM D 2166

The moisture content, dry density and unconfined compression test results are shown on the exploratory boring logs.

The exploratory boring logs, description of soils encountered and the laboratory test data reflect conditions only at the location of the boring at the time they were excavated or retrieved. Conditions may differ at other locations and may change with the passage of time due to a variety of causes including natural weathering, climate and changes in surface and subsurface drainage.

MAJOR DIVISIONS		SYMBOL	DESCRIPTION
COARSE GRAINED SOILS over 50% sand and gravel	CLEAN GRAVEL	GW	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
	GRAVEL with fines	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	CLEAN SAND	SW	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
	SAND with fines	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS over 50% silt and clay	SILT AND CLAY liquid limit <50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	SILT AND CLAY liquid limit >50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS	PT	Peat, muck, and other highly organic soils	
ROCK		Undifferentiated as to type or composition	

KEY TO BORING AND TEST PIT SYMBOLS







CLASSIFICATION TESTS

PI	PLASTICITY INDEX
LL	LIQUID LIMIT
SA	SIEVE ANALYSIS
HYD	HYDROMETER ANALYSIS
P200	PERCENT PASSING NO. 200 SIEVE
P4	PERCENT PASSING NO. 4 SIEVE

STRENGTH TESTS

TV	FIELD TORVANE (UNDRAINED SHEAR)
UC	LABORATORY UNCONFINED COMPRESSION
TXCU	CONSOLIDATED UNDRAINED TRIAXIAL
TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL
	UC, CU, UU = 1/2 Deviator Stress

SAMPLER TYPE


	MODIFIED CALIFORNIA		HAND SAMPLER
	STANDARD PENETRATION TEST		ROCK CORE
	THIN-WALLED / FIXED PISTON		DISTURBED OR BULK SAMPLE

SAMPLER DRIVING RESISTANCE

Modified California and Standard Penetration Test samplers are driven 18 inches with a 140-pound hammer falling 30 inches per blow. Blows for the initial 6-inch drive seat the sampler. Blows for the final 12-inch drive are recorded onto the logs. Sampler refusal is defined as 50 blows during a 6-inch drive. Examples of blow records are as follows:

- 25 sampler driven 12 inches with 25 blows after initial 6-inch drive
- 85/7" sampler driven 7 inches with 85 blows after initial 6-inch drive
- 50/3" sampler driven 3 inches with 50 blows during initial 6-inch drive or beginning of final 12-inch drive

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the excavation location during the time of exploration. Subsurface rock, soil or water conditions may vary in different locations within the project site and with the passage of time. Boundaries between differing soil or rock descriptions are approximate and may indicate a gradual transition.



MILLER PACIFIC ENGINEERING GROUP

A CALIFORNIA CORPORATION, © 2016. ALL RIGHTS RESERVED
FILENAME: 1009.092 BL.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

SOIL CLASSIFICATION CHART

Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California

Drawn _____
Checked MMT

A-1
FIGURE

Project No. 1009.092

Date: 1/31/17

FRACTURING AND BEDDING

Fracture Classification

Crushed
Intensely fractured
Closely fractured
Moderately fractured
Widely fractured
Very widely fractured

Spacing

less than 3/4 inch
3/4 to 2-1/2 inches
2-1/2 to 8 inches
8 to 24 inches
2 to 6 feet
greater than 6 feet

Bedding Classification

Laminated
Very thinly bedded
Thinly bedded
Medium bedded
Thickly bedded
Very thickly bedded

HARDNESS

Low
Moderate
Hard
Very hard

Carved or gouged with a knife
Easily scratched with a knife, friable
Difficult to scratch, knife scratch leaves dust trace
Rock scratches metal

STRENGTH

Friable
Weak
Moderate
Strong
Very strong

Crumbles by rubbing with fingers
Crumbles under light hammer blows
Indentations <1/8 inch with moderate blow with pick end of rock hammer
Withstands few heavy hammer blows, yields large fragments
Withstands many heavy hammer blows, yields dust, small fragments

WEATHERING

Complete	Minerals decomposed to soil, but fabric and structure preserved
High	Rock decomposition, thorough discoloration, all fractures are extensively coated with clay, oxides or carbonates
Moderate	Fracture surfaces coated with weathering minerals, moderate or localized discoloration
Slight	A few stained fractures, slight discoloration, no mineral decomposition, no affect on cementation
Fresh	Rock unaffected by weathering, no change with depth, rings under hammer impact

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the location and time of exploration. Subsurface rock, soil and water conditions may differ in other locations and with the passage of time.



**MILLER PACIFIC
ENGINEERING GROUP**

A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
FILE: 1009.092 BL.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

ROCK CLASSIFICATION CHART

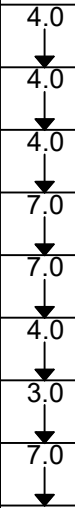
Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California
Project No. 1009.092 Date: 1/31/17

Drawn _____
Checked MMT

A-2

FIGURE

DEPTH meters feet	SAMPLE	SYMBOL (4)	BORING 1		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	DRILL RATE (MIN/FT)
			EQUIPMENT: Portable Hydraulic Drill Rig with 4.0-inch Solid Flight Auger DATE: 2/15/17 ELEVATION: 43 - feet* *REFERENCE: Oberkamper & Associates, Las Gallinas Valley Sanitary District Topographic Survey							
0			Clayey SAND with Gravel (SC) Medium brown, moist, loose, fine to coarse grained sand, ~30% medium plasticity clay, ~10-15% angular gravel. [Fill]		12	115	14.7			
1			SANDSTONE Light red brown mottled black, crushed, low hardness, friable to weak, completely weathered. [Bedrock]		37	118	14.4			
5			Grades more competent with depth.		42/6"	129	7.5			
15			Boring terminated at 15 feet 3 inches due to auger and sampler refusal. No groundwater encountered during exploration.		60/3"					
20										



NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
 (2) METRIC EQUIVALENT DRY UNIT WEIGHT $\text{kN/m}^3 = 0.1571 \times \text{DRY UNIT WEIGHT (pcf)}$
 (3) METRIC EQUIVALENT STRENGTH (kPa) = $0.0479 \times \text{STRENGTH (psf)}$
 (4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
 A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
 FILE: 1009.092.dwg

504 Redwood Blvd.
 Suite 220
 Novato, CA 94947
 T 415 / 382-3444
 F 415 / 382-3450
 www.millerpac.com


BORING LOG
 Las Gallinas Valley Sanitary Dist.
 Administration Building
 San Rafael, California
 Project No. 1009.092 Date: 1/31/17

Drawn MMT
 Checked

A-3
 FIGURE

DEPTH		BORING 2				BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	DRILL RATE (MIN/FT)
meters	feet	EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger	DATE: 1/19/17	ELEVATION: 49 - feet*	*REFERENCE: Oberkamper & Associates, Las Gallinas Valley Sanitary District Topographic Survey						
SAMPLE		SYMBOL (4)									
0	0	Sandy CLAY (CL) Dark brown, wet, stiff, medium plasticity clay, ~30-35% fine grained sand. [Fill]									
1	1	Sandy CLAY with Gravel (CL) Medium brown, moist, stiff, medium plasticity clay, ~20-25% fine grained sand, ~10-15% angular gravel. [Residual Soil]				20	113	17.0	1650		
2	2	SHALE Dark gray and brown, crushed, low hardness, friable, highly weathered. [Bedrock]				52	122	14.1	1500		
3	10	Boring terminated at 9 feet 8 inches due to auger and sampler refusal. No groundwater encountered during exploration.				50/2"					18.0 ↓
4	15										
5	20										
6	20										

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT $\text{kN/m}^3 = 0.1571 \times \text{DRY UNIT WEIGHT (pcf)}$
(3) METRIC EQUIVALENT STRENGTH (kPa) = $0.0479 \times \text{STRENGTH (psf)}$
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY



MILLER PACIFIC ENGINEERING GROUP
A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
FILE: 1009.092.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

BORING LOG
Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California
Project No. 1009.092 Date: 1/31/17

Drawn MMT
Checked

A-4
FIGURE

DEPTH		BORING 3			BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	DRILL RATE (MIN/FT)	
meters	feet	EQUIPMENT: Track-Mounted Drill Rig with 4.0-inch Solid Flight Auger	DATE: 1/19/17	ELEVATION: 48 - feet*							
		SAMPLE SYMBOL (4)	*REFERENCE: Oberkamper & Associates, Las Gallinas Valley Sanitary District Topographic Survey								
0	0		Sandy CLAY with Gravel (CL) Medium gray brown, dry to moist, stiff, medium plasticity clay, ~20-25% fine to coarse grained sand, ~15-20% angular gravel. [Fill]			19	130	9.7			
1			SHALE Medium brown, crushed, low hardness, friable, completely weathered. [Bedrock]			50/6"	123	7.6			
2											
3	10		Grades to moderate hardness, weak, highly weathered.			57/6"	131	5.2			
4											
5	15					50/6"					
6	20					40/6"					

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT $\text{kN/m}^3 = 0.1571 \times \text{DRY UNIT WEIGHT (pcf)}$
(3) METRIC EQUIVALENT STRENGTH (kPa) = $0.0479 \times \text{STRENGTH (psf)}$
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

MILLER PACIFIC ENGINEERING GROUP
A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
FILE: 1009.092.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

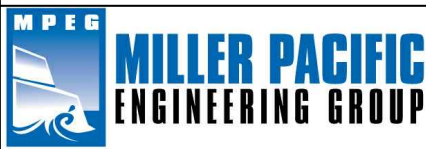
BORING LOG
Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California
Project No. 1009.092 Date: 1/31/17

Drawn MMT
Checked

A-5
FIGURE

DEPTH		BORING 3 (CONTINUED)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	DRILL RATE (MIN/FT)
meters	feet	SAMPLE	SYMBOL (4)						
20			SHALE Medium brown, crushed, moderate hardness, weak, highly weathered. [Bedrock]						
7									
25		☐		56/6"					
8			Boring terminated at 25 feet 6 inches. No groundwater encountered during exploration.						
9	30								
10									
35									
11									
12	40								

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT $\text{kN/m}^3 = 0.1571 \times \text{DRY UNIT WEIGHT (pcf)}$
(3) METRIC EQUIVALENT STRENGTH $(\text{kPa}) = 0.0479 \times \text{STRENGTH (psf)}$
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY



A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
FILE: 1009.092.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com


BORING LOG
Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California
Project No. 1009.092 Date: 1/31/17

Drawn _____
Checked MMT

A-6
FIGURE

DEPTH		BORING 4			BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	DRILL RATE (MIN/FT)
meters	feet	SAMPLE	SYMBOL (4)	EQUIPMENT: Portable Hydraulic Drill Rig with 4.0-inch Solid Flight Auger						
0	0			DATE: 2/15/17						
				ELEVATION: 13 - feet*						
				*REFERENCE: Oberkamper & Associates, Las Gallinas Valley Sanitary District Topographic Survey						
				Clayey SAND with Gravel (SC) Dark brown, moist, medium dense, fine to medium grained sand, ~35% medium plasticity clay, ~10-15% subangular gravel. [Fill]						
1				SHALE Medium brown mottled black and orange, crushed, moderately strong, moderately hard, highly weathered. [Bedrock]	46	4.5				
5										3.0
										4.0
2										4.0
										5.0
3	10				46					6.0
				Boring terminated at 11 feet 6 inches due to auger and sampler refusal. No groundwater encountered during exploration.						
4										
15										
5										
6	20									

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT $\text{kN/m}^3 = 0.1571 \times \text{DRY UNIT WEIGHT (pcf)}$
(3) METRIC EQUIVALENT STRENGTH $(\text{kPa}) = 0.0479 \times \text{STRENGTH (psf)}$
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY



MILLER PACIFIC ENGINEERING GROUP
A CALIFORNIA CORPORATION, © 2016, ALL RIGHTS RESERVED
FILE: 1009.092.dwg

504 Redwood Blvd.
Suite 220
Novato, CA 94947
T 415 / 382-3444
F 415 / 382-3450
www.millerpac.com

BORING LOG
Las Gallinas Valley Sanitary Dist.
Administration Building
San Rafael, California
Project No. 1009.092 Date: 1/31/17

Drawn MMT
Checked

A-7
FIGURE

APPENDIX B
REFERENCE SUBSURFACE EXPLORATION

OTHER TEST DATA	OTHER TEST DATA	UNDRAINED SHEAR STRENGTH psf (1)	BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT pcf (2)	DEPTH meters feet	SAMPLE	SYMBOL (3)	<p align="center">BORING 1</p> <p>EQUIPMENT: Portable hydraulic drill rig with 6 inch solid flight augers</p> <p>DATE: 1/3/13</p> <p>ELEVATION: 13-Feet*</p> <p>*REFERENCE: Google Earth used for Elevation</p>
		2500 UC	53/6"	7.9	134	0 -0			<p>Sandy CLAY with gravel (CL) Dark brown, moist to wet, low to medium plasticity clay, ~15-25% sand, ~10% gravel. [Fill]</p>
						1			<p>SHALE MELANGE Dark gray, low to moderate hardness, friable to moderate strength, complete to moderate weathering. [Bedrock]</p>
			100/0"			-1			<p>Harder drilling at 5'-0".</p>
						-2			<p>Bottom of boring at 5'-1". No groundwater observed during drilling. No advancement of auger after 1.5 hrs of drilling at 5'-0".</p>
						-3			
						10			

NOTES: (1) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m³ = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY


Miller Pacific ENGINEERING GROUP	504 Redwood Blvd.	BORING LOG		
	Suite 220 Novato, CA 94947 T 415 / 382-3444 F 415 / 382-3450 www.millerpac.com	Las Gallinas Valley Sanitary Dist. Administration Building Addition San Rafael, California Project No. 1009.09 Date: 1/8/13	Drawn _____ Checked <u>NGK</u>	

EXHIBIT 4 - STANDARD AGREEMENT

AGREEMENT
FOR CONSULTATION AND PROFESSIONAL ENGINEERING SERVICES

SERVICES for
PROJECT

(JOB NO.)

THIS AGREEMENT made this day of , by and
between the LAS GALLINAS VALLEY SANITARY DISTRICT (hereinafter referred to as
"District"), and , whose address is,
hereinafter referred to as
"Consultant");

WITNESSETH:

IN CONSIDERATION of the mutual covenants and conditions herein contained, the
parties do hereby agree as follows:

1. General

DISTRICT engages CONSULTANT to furnish the services hereinafter mentioned upon
the covenants and conditions of this Agreement, at the compensation herein stipulated, and
CONSULTANT accepts said engagement upon said terms.

2. Duties of Consultant; Services to be Performed by Consultant

CONSULTANT shall perform such duties and services as are listed on Exhibit A
attached hereto, and is hereby referred to and made a part hereof by reference. Said services
shall be completed according to the time schedule contained in Exhibit A.

3. Services or Materials to be Performed or Furnished by District

DISTRICT shall perform such services or furnish such materials to CONSULTANT in
connection with this Agreement as are set forth on Exhibit B. If there are no entries on said
Exhibit B, DISTRICT, shall not be required to provide any services or furnish any materials to
CONSULTANT. Unless otherwise provided on Exhibit B, all said services and materials to be
furnished by DISTRICT will be without cost to CONSULTANT.

4. Payment by District: Time and Manner of Payment

DISTRICT shall pay CONSULTANT, for all services to be rendered and all materials to
be furnished under this Agreement, the amount specifically set forth and in the manner
specifically set forth on Exhibit C. CONSULTANT agrees to accept said sum as full
compensation for all services due under this Agreement. Notwithstanding any other language in
the Agreement or any exhibits, CONSULTANT agrees that it will perform all tasks for a sum not
to exceed (\$ U.S.
Dollars). This is an Agreement for a specific task as defined in Exhibit A, Consultant Services
(Scope of Work), for Project,
and CONSULTANT has accurately determined the price of those tasks.

5. Authorization To Perform Services

The CONSULTANT is not authorized to perform any services, or incur any costs whatsoever under the terms of this Agreement until receipt of written authorization from the DISTRICT.

6. Additional Work

CONSULTANT shall be entitled to extra compensation for services or materials not otherwise required under this Agreement or described in **Exhibit A**, provided that DISTRICT shall first have identified the services or materials as extra, and requested such extra services or materials in writing, but in no event shall DISTRICT be liable for payment unless the amount of such extra compensation shall first have been agreed to in writing by DISTRICT.

7. Professional Skill

CONSULTANT represents that it is skilled in the professional calling necessary to perform the work agreed to be done by it under this Agreement. CONSULTANT represents and warrants to DISTRICT that it has all licenses, permits, qualifications that are legally required for CONSULTANT to practice its profession and that CONSULTANT shall, at its sole cost and expense, keep all such licenses, permits, and approvals which are legally required for CONSULTANT to practice its profession in effect. DISTRICT relies upon the skill of CONSULTANT to do and perform its work in a skillful manner, and CONSULTANT agrees to thus perform its work, and the acceptance of its work by DISTRICT shall not operate as a release of CONSULTANT from said Agreement. For purposes of this Agreement, "skillful manner" shall mean the standard of care prevailing in the industry in the San Francisco Bay Area during the term of this Agreement.

8. Equal Employment Opportunity

CONSULTANT shall not discriminate against any employee or applicant for employment and shall comply with the provisions of Section 12940 of the Government Code.

9. Compliance with Laws

CONSULTANT shall comply with all federal, state and District laws, statutes, ordinances, rules and regulations and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of the Agreement. Any suit or action by either party shall be brought in the Superior Court for the County of Marin, California. The laws of the State of California shall govern this Agreement.

10. Labor Compliance

This project is subject to the requirements of Section 1720 et seq. of the California Labor Code requiring the payment of prevailing wages, the training of apprentices and compliance with other applicable requirements. Contractors and all subcontractors who perform work on the project are required to comply with these requirements. Prevailing wages apply to all projects over \$1,000 which are defined as a "public work" by the State of California.

The applicable California prevailing wage rate can be found at www.dir.ca.gov and are on file with the Agency's principal office, which shall be available to any interested party upon request.

Specifically, contractors are reminded of the need for compliance with Labor Code Section 1774-1775 (the payment of prevailing wages and documentation of such), Section 1776 (the keeping and submission of accurate certified payrolls) and 1777.5 in the employment of apprentices on public works projects. Further, overtime must be paid for work in excess of 8 hours per day or 40 hours per week pursuant to Labor Code Section 1811-1813.

No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project, unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

All contractors/subcontractors and related construction services subject to prevailing wage, including but not limited to: trucking, surveying and inspection work must be registered with the Department of Industrial Relations as a “public works contractor”. Those you fail to register and maintain their status as a public works contractor shall not be permitted to perform work on the project.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The Agency shall withhold any portion of a payment; including the entire payment amount, until certified payroll forms and related documentation are properly submitted, reviewed and found to be in full compliance. In the event that certified payroll forms do not comply with the requirements of Labor Code Section 1720 et seq., the Agency may continue to hold sufficient funds to cover estimated wages and penalties under the contract.

11. Independent Contractor; Not An Agent

CONSULTANT, at all times during the term of this Agreement is acting as an independent contractor in furnishing the services or materials and performing the work required by this Agreement and is not an agent, servant or employee of DISTRICT. Notwithstanding any other DISTRICT, state or federal policy, rule, regulation, law, or ordinance to the contrary, CONSULTANT and any of its employees, agents, and subcontractors providing services under this Agreement shall not qualify for or become entitled to, and hereby agree to waive any and all claims to, any compensation, benefit, or any incident of employment by DISTRICT, including but not limited to eligibility to enroll in the California Public Employees Retirement System (PERS) as an employee of DISTRICT and entitlement to any contribution to be paid by DISTRICT for employer contributions and/or employee contributions for PERS benefits.

Except as DISTRICT may specify in writing, CONSULTANT shall have no authority, express or implied, to act on behalf of DISTRICT in any capacity whatsoever as an agent or pursuant to this Agreement to bind DISTRICT to any obligation whatsoever.

12. Time

CONSULTANT shall devote such time to the performance of services pursuant to this Agreement as may be reasonably necessary for satisfactory performance of CONSULTANT'S obligations pursuant to this Agreement.

13. Indemnity

CONSULTANT agrees to indemnify and save harmless and defend with counsel acceptable to DISTRICT, the DISTRICT, its officials, officers, employees, agents, and volunteers from and against any and all losses, liability, suits, actions, costs, expenses, claims, causes of action and damages (including costs of defense) arising out of any personal injury, bodily injury, loss of life, or damage to property, or any violation of any federal, state, or municipal law or ordinance to the extent caused, in whole or in part, by recklessness, the willful misconduct or negligent acts or omissions of CONSULTANT, its officers, employees, agents, consultants, subcontractors or any officer, agent or employee thereof but excluding liabilities due to the active negligence of the DISTRICT. By execution of this Agreement, CONSULTANT acknowledges and agrees that CONSULTANT has read and understands the provisions hereof and that this paragraph is a material element of consideration. DISTRICT and CONSULTANT agree that this Agreement is consistent with Section 2782.8 of the Civil Code.

14. Insurance: Public Liability, Workers' Compensation, Errors and Omissions

CONSULTANT shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the CONSULTANT, its officers, subcontractors, agents, representatives, or employees.

CONSULTANT shall be required to meet all District Insurance Requirements. See **Exhibit D** for District Insurance Requirements.

15. Consultant Professional Team

CONSULTANT shall provide and maintain the professional team to perform and furnish the materials in connection with this Agreement whose names and capacities are set forth on **Exhibit E**. In the event that any member of said team shall leave the employ of CONSULTANT or be transferred to another office of CONSULTANT, CONSULTANT shall so advise DISTRICT and replace that member with a new member who is competent to perform the required work and who shall be satisfactory to DISTRICT. Such other agents or employee contractors or subcontractors not listed on **Exhibit E** as may be required to perform any portion of this Agreement shall be competent and shall be suitably experienced in the function which they perform.

16. Notices

Unless otherwise provided herein, all notices required hereunder shall be given by certified mail, postage prepaid and addressed to the party at the address indicated in the opening

paragraph of this Agreement provided, however, that in lieu thereof, notice may be given by personal delivery to the party at said address.

17. Title to Documents

All original calculations, photographs, maps, drawings, plans, design notes and other material or documents developed or used in connection with the performance of this Agreement shall be the property of DISTRICT provided, however, that CONSULTANT may provide DISTRICT with legible photostatic copies thereof in lieu of the originals upon approval by DISTRICT representative. All such material and documents shall remain confidential and may not be divulged, published or shared by CONSULTANT without the prior written consent of DISTRICT. Any plans and specifications shall bear the name of the CONSULTANT together with his certificate number, if any. If CONSULTANT'S working papers or product includes computer generated statistical material, CONSULTANT shall provide the material including the data base upon which it is based to DISTRICT in a mutually agreed upon computer machine-readable format and media.

18. Assignment

Neither party shall assign or sublet any portion of this Agreement without the written consent of the other party in writing.

19. Termination

Without limitation to such rights or remedies as DISTRICT shall otherwise have by law, DISTRICT shall also have the right to terminate this Agreement for any reason upon seven (7) days' written notice to CONSULTANT. This Agreement may also be terminated by either party upon seven (7) days' written notice should the other party fail substantially to perform in accordance with this agreement through no fault of the other or if the project is stopped by conditions beyond the control of the DISTRICT.

In addition to terminating this Agreement if CONSULTANT materially breaches any of the terms of this Agreement, DISTRICT'S remedies shall include, but not be limited to:

- Retain the plans, specifications, drawings, reports, design documents, and any other work product prepared by CONSULTANT pursuant to this Agreement;
- Retain a different consultant to complete the work described in **Exhibit A** not finished by CONSULTANT; and/or

This description of DISTRICT's remedies does not otherwise limit DISTRICT's remedies at law or equity.

20. Consultant Nondisclosure

CONSULTANT will not directly or indirectly use (other than for the DISTRICT), publish, or otherwise disclose at any time (except as CONSULTANT'S duties may require), either during or subsequent to the performance of consulting services, any of DISTRICT'S confidential information (whether or not conceived, originated, discovered, or developed in whole or in part by CONSULTANT) as defined below.

“Confidential information” means information or material that is not generally available to or used by others, or the utility or value of which is not generally known or recognized as

standard practice whether or not the underlying details are in the public domain, including without limitation:

- a. Information or material that relates to DISTRICT'S inventions, technological developments, "know how", purchasing, accounting, merchandising or licensing;
- b. Trade secrets;
- c. Software in various stages of development (source code, object code, documentation, diagrams, flow charts), designs, drawings, specifications, models, data and customer information; and
- d. Any information of the type described above that DISTRICT obtained from another party and that the DISTRICT treats as proprietary or designates as confidential, or is obligated to do so by virtue of a third-party agreement, whether or not owned or developed by the DISTRICT.

The obligations of confidentiality imposed herein will not apply to confidential information that:

- a. Is or has been generally available to the public by any means, through no fault of CONSULTANT and without breach of these provisions.
- b. Is or has been lawfully disclosed to CONSULTANT by a third party without an obligation of confidentiality being imposed upon CONSULTANT.
- c. Has been disclosed without restriction by the DISTRICT or by a third party owner of confidential information.
- d. Was required to be disclosed pursuant to law.

CONSULTANT agree to deliver to DISTRICT promptly on request, or on the date of termination of CONSULTANT'S services, all documents, software, including any copies, and other materials in CONSULTANT'S possession pertaining to the business of DISTRICT and originating with the DISTRICT that came into CONSULTANT'S possession.

The disclosure of confidential information shall not be construed as granting either a license under any patent, patent application or any right of ownership in said confidential information.

CONSULTANT acknowledges and agrees that in the event of a breach or threatened breach of any provisions of this Agreement, the DISTRICT shall have no adequate remedy at law and shall therefore be entitled to enforce any such provision by temporary or permanent injunctive or mandatory relief obtained in any court without the necessity of proving damages, posting any bond or other security, and without prejudice or diminution of any other rights or remedies which may be available at law or in equity.

21. No-Waiver; Construction

Failure on the part of either party to enforce any provisions of this Agreement shall not be construed as a waiver of the right to compel enforcement of such provisions or any other provision. The singular number shall include the plural, and the masculine gender shall include the feminine gender and neuter gender whenever the context of this Agreement permits.

22. Mediation

Should any dispute arise out of this Agreement, the parties shall meet in mediation and attempt to reach a resolution with the assistance of a mutually acceptable mediator. Neither party shall be permitted to file a legal action without first meeting in mediation and making a good faith attempt to reach a mediated resolution. The costs of the mediator, if any, shall be shared equally by the parties. If a mediated settlement is reached, neither party shall be deemed the prevailing party for purposes of the settlement and each party shall bear its own legal costs.

23. Attorney's Fees

If a party brings any action, including an action for declaratory relief, to enforce or interpret the provisions of this Agreement, the prevailing party is entitled to reasonable attorneys' fees in addition to any other relief to which that party may be entitled. Such fees may be set by the court in the same action or in a separate action brought for that purpose.

24. Survival

All obligations arising prior to the termination of this Agreement and all provisions of this Agreement allocating liability between DISTRICT and CONSULTANT survive the termination of this Agreement.

25. Conflict of Interest

CONSULTANT may serve other clients, providing that activities in the service of other clients do not place CONSULTANT in a "conflict of interest" as that term is defined in the Political Reform Act codified at California Government Code § 81000 *et seq.* or Section 1090 *et seq.* of the Government Code.

26. Severability

If a court of competent jurisdiction finds or rules that any provision of this Agreement is invalid, void, or unenforceable, the provisions of this Agreement not so adjudged shall remain in full force and effect. The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any other provision of this Agreement.

27. Additional Provisions, Exhibits

Additional provisions of this Agreement are set forth on **Exhibits A through Exhibit F**. All Exhibits shall be attached to, and are hereby referred to and made a part hereof by reference.

28. Entire Agreement: Amendment

This contract supersedes any and all other agreements, whether oral or in writing, between the parties with respect to the subject of this contract. Except as to those documents specifically incorporated by reference into this contract, this contract contains all of the covenants and agreements between the parties with respect to the subject of this contract, and each party acknowledges that no representations, inducements, promises, or agreements have been made by or on behalf of any party except the covenants and agreements embodied in this contract. No agreement, statement, or promise not contained in this contract shall be valid or binding on the parties with respect to the subject of this contract. No modifications hereof shall be effective unless such modification is in writing signed by all parties to this Agreement.

IN WITNESS WHEREOF, the parties have hereunto set their hands the day and year first above written.

LAS GALLINAS VALLEY SANITARY DISTRICT

By _____
General Manager Date

CONSULTANT/SERVICE NAME

Signature Date

By _____
Print Name Title

NOTE: The following exhibits are hereby incorporated into this agreement by this reference:

- Exhibit A: Consultant Services (Scope of Work)
- Exhibit B: Services or Materials to be Performed or Furnished by District
- Exhibit C: Payment Schedule
- Exhibit D: District Insurance Requirements
- Exhibit E: Consultant Team
- Exhibit F: District Safe Work Requirements
 - 1. Contractor/Consultant Safe Work Requirements
 - 2. Confined Space Entry Program

Exhibit A

Consultant Services (Scope of Work)

Exhibit B

Services or Materials to be Performed or Furnished by District

Exhibit C
Payment Schedule

Exhibit D

District Insurance Requirements

Insurance Requirements for Professional Services

Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the Consultant, his agents, representatives, employees or subcontractors.

MINIMUM SCOPE OF INSURANCE

Coverage shall be at least as broad as:

1. **Commercial General Liability (CGL):** Insurance Services Office Form CG 00 01 covering CGL on an “occurrence” basis, including products and completed operations, property damage, bodily injury and personal & advertising injury with limits no less than **\$2,000,000** per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice the required occurrence limit.
2. **Automobile Liability:** ISO Form Number CA 00 01 covering any auto (Code 1), or if Consultant has no owned autos, covering hired, (Code 8) and non-owned autos (Code 9), with limit no less than **\$1,000,000** per accident for bodily injury and property damage.
3. **Workers’ Compensation:** as required by the State of California, with Statutory Limits, and Employer’s Liability Insurance with limit of no less than **\$1,000,000** per accident for bodily injury or disease. (Not required if consultant provides written verification it has no employees)
4. **Professional Liability (Errors and Omissions):** Insurance appropriate to the Consultant’s profession, with limit no less than \$1,000,000 per occurrence or claim, \$2,000,000 aggregate. *(If applicable – see footnote next page)*

If the consultant maintains broader coverage and/or higher limits than the minimums shown above, the Entity requires and shall be entitled to the broader coverage and/or higher limits maintained by the contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Entity.

Other Insurance Provisions

The insurance policies are to contain, or be endorsed to contain, the following provisions:

Additional Insured Status

The Entity, its officers, officials, employees, and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Consultant including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Consultant’s insurance (at least as broad as ISO Form CG 20 10 11 85 or **both** CG 20 10, CG 20 26, CG 20 33, or CG 20 38; **and** CG 20 37 forms if later revisions used).

Primary Coverage

For any claims related to this contract, the **Consultant’s insurance coverage shall be primary** insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the Entity, its officers,

officials, employees, and volunteers. Any insurance or self-insurance maintained by the Entity, its officers, officials, employees, or volunteers shall be excess of the Consultant's insurance and shall not contribute with it.

Notice of Cancellation

Each insurance policy required above shall provide that **coverage shall not be canceled, except with notice to the Entity.**

Waiver of Subrogation

Consultant hereby grants to Entity a waiver of any right to subrogation which any insurer of said Consultant may acquire against the Entity by virtue of the payment of any loss under such insurance. Consultant agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not the Entity has received a waiver of subrogation endorsement from the insurer.

Self-Insured Retentions

Self-insured retentions must be declared to and approved by the Entity. The Entity may require the Consultant to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorse to provide, that the self-insured retention may be satisfied by either the name insured or Entity.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the Entity.

Claims Made Policies (note – should be applicable only to professional liability, see below)

If any of the required policies provide claims-made coverage:

1. The Retroactive Date must be shown, and must be before the date of the contract or the beginning of contract work.
2. Insurance must be maintained and evidence of insurance must be provided **for at least five (5) years after completion of the contract of work.**
3. If coverage is canceled or non-renewed, and not replaced **with another claims-made policy form with a Retroactive Date prior to** the contract effective date, the Consultant must purchase "extended reporting" coverage for a minimum of **five (5) years** after completion of work.

Verification of Coverage

Consultant shall furnish the Entity with original certificates and amendatory endorsements or copies of the applicable policy language effecting coverage required by this clause. All certificates and endorsements are to be received and approved by the Entity before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the Consultant's obligation to provide them. The Entity reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by these specifications, at any time.

Special Risks or Circumstances

Entity reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

Sub Contractors

Consultant shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and Consultant shall ensure that Entity is an additional insured on insurance required from subcontractors.

Note: Professional liability insurance coverage is normally required if the Consultant is providing a professional service regulated by the state. (Examples of service providers regulated by the state are insurance agents, professional architects and engineers, doctors, certified public accountants, lawyers, etc.). However, other professional Consultants, such as computer or software designers, technology services, and services providers such as claims administrators, should also have professional liability. If in doubt, consult with your risk management or insurance advisor.

Exhibit E
Consultant Team

Exhibit F
1. Safe Work Requirements

LAS GALLINAS VALLEY SANITARY DISTRICT

CONTRACTOR SAFE WORK REQUIREMENTS

Revised June 8, 2017

SAFETY POLICY

Contractors and their subcontractors working for the Las Gallinas Valley Sanitary District shall comply with all applicable federal, state, and local safety orders in the performance of any work on District projects. In addition, Contractors and their subcontractors shall comply with all safety regulations and procedures listed in this Safe Work Requirements. Contractors shall take any additional precautions necessary to prevent injury or damage to persons, property, or interference with District operations.

Contractors shall be responsible for notifying employees, subcontractors, and invitees of these District Safe Work Requirements. No work within District facilities or on District contract work sites shall begin prior to such notification. Contractor shall not allow a new employee or new subcontractor to begin work on District projects without having conducted a full and proper safety orientation.

Contractors doing work at the Treatment Plant facility, lift stations or sewage conveyance systems shall schedule a safety orientation session for their site Superintendent and other Contractor-designated personnel with the Authorized District Representative prior to commencing work. The orientation session shall include emergency procedures, an explanation of applicable District safety policies, and any unique and inherent hazards of District facilities. It is then the responsibility of the Contractor's Superintendent or designated personnel to orient and so inform all personnel under the Contractor's supervision.

The District may, in its sole discretion, either temporarily or permanently remove a Contractor's employee from District work and/or terminate the Contractor's right to proceed for any violation of applicable Cal/OSHA Construction Safety Orders or these District Safe Work Requirements.

DEFINITIONS

As used in this Safe Work Requirement, the following definitions are applicable:

A. PARTS AND MATERIALS:

All products, materials, devices, systems, or installations installed by Contractor shall have been approved, listed, labeled, or certified as conforming to applicable governmental or other nationally recognized standards, or applicable scientific principles. The listing, labeling, or certification of conformity shall be based upon an evaluation performed by a person, firm, or entity with appropriate registered engineering

competence; or by a person, firm, or entity, independent of the manufacturer or supplier of the product, with demonstrated competence in the field of such evaluation.

- B. CONTRACTOR**
Designates “Contractor”, “Contractors”, “Sub-Contractors”, “Suppliers”, and all employees of each.
- C. AUTHORIZED DISTRICT REPRESENTATIVE**
The District’s Authorized Representatives shall be the employee(s) designated by the District to be responsible for communicating with the Contractor.
- D. DISTRICT JURISDICTION**
For the purposes of these regulations, “District” Shall mean the Las Gallinas Valley Sanitary District.
- E. TREATMENT PLANT AND FACILITIES**
For the purposes of these regulations, “Treatment Plant & Facilities” shall include the District's Wastewater Treatment Plant, lift stations and sewage conveyance systems located within the boundaries of the District.

EMERGENCY PROCEDURES

- A. FIRST AID**
Contractors shall be responsible for providing first aid and medical treatment for their employees and for compliance with the first aid requirements of all applicable Cal/OSHA Construction Safety Orders.

Contractors shall be responsible for making prior arrangements for emergency medical care and for transportation of injured Contractor personnel.

- B. FIRE**
When work is being performed which generates sparks or open flames, the Contractor will provide a fire watch, a person trained in the use of appropriate fire fighting equipment, whose only task is to observe and extinguish fires. A District “Hot Works” permit must be filled out and turned into the Collection System / Safety Manager, or General Manager when the Safety Manager is not available, when work is completed. Contractor shall ensure that appropriate fire extinguisher(s) are available at the specific work site for use in case of a fire. All Contractor’s employees shall be properly trained to use them.

In the event of a fire, Contractor shall immediately notify the nearest District employee and if possible, call emergency (911) and give the location of the plant, which is 300 Smith Ranch Rd. San Rafael. A map of the wastewater plant is included in this policy. Refer to Attachment A.

BASIC SAFETY RESPONSIBILITIES AT DISTRICT FACILITIES

A. COMMUNICATION

Contractor shall maintain close communication with the Authorized District Representative. Contractors should sign-in at the office at the beginning and end of each day along with a headcount of crew members.

B. RESPONSIBILITY

Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss, to:

1. All employees on the work site and other persons and organizations who may be affected thereby.
2. All the work, materials, and equipment to be incorporated therein, whether in storage or off the site.
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation, or replacement in the course of construction.

Contractor shall comply with all applicable laws and regulations (whether referred to herein or not) of any public agency having jurisdiction over the safety of persons or property, or the protection of persons from damage, injury, or loss, and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and facilities when performance of the work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property and facilities.

Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent unless otherwise designated in writing by the Contractor to the District.

C. GENERAL SAFETY REGULATIONS

Basic Rules:

- Work shall not begin until the Contractor's personnel have been informed of the District's Safe Work Requirements and potential hazards. The District employee responsible for the project is responsible for advising the Contractor of the District's Safe Work Requirements and potential hazards.
- All safety procedures applicable to the job being performed, including use of appropriate protection equipment, shall be followed.
- The Contractor's personnel shall **never** operate, use, adjust, modify or relocate any District equipment, switches, valves, or other controls. The Authorized

District Representative must be contacted should operation, adjustment, modification, or relocation of District equipment be necessary.

- Contractor's use of District instruments, tools, ladders, scaffolding or other equipment is not permitted except in cases of emergency as determined by a District supervisor or by permission from a senior Manager of the District.
- Drinking water shall be supplied by Contractor. **Do Not Drink Water from Hose Connections at any District Facility.**
 1. Hose bib connections are located throughout the treatment plant. Most of these supply treated wastewater and may or may not be posted with signs reading "Do Not Drink." In any case, **never** drink water from hose bibs or hoses.
 2. Water lines throughout the treatment plant are color coded (when not stainless steel) and labeled as follows:

Recycle Water Piping	Purple
Domestic Water Piping	Blue
Service Water Piping (Plant Effluent)	Gray
 3. Hose connections may be used to wash down equipment. Never hose down electrical or heated equipment of any kind. If an employee has used a gray or purple water hose for wash down, he/she should immediately wash their hands in domestic water with soap.
- NEVER make any connection to any water line without first verifying with the Authorized District Representative that contamination of the water lines will not occur.
- Use of alcoholic beverages and/or illegal drugs by Contractor or any employee is strictly prohibited. Smoking within the plant is prohibited. Use of prescription or non-prescription drugs which interfere with the individual's ability to work safely is also prohibited.
- Contractor shall advise the Authorized District Representative of any employee with any medical conditions that could put the employee in danger.

Personal Protection Equipment:

- Contractor shall be responsible for providing and assuring use by employees of all OSHA required protective equipment.
- Approved respiratory equipment shall be worn when the possibility of exposure to hazardous dusts, vapors, fumes, mists, or gases exists. In addition to all other safety regulations, pipes or conduit should be mechanically BLOCKED off when being worked on. District safety procedures shall be followed when working on, but not limited to, the following systems:
 - 1) Natural gas and sludge gas (Methane)

- 2) Ferrous Chloride
 - 3) Polymer
 - 4) Hypochlorite
 - 5) Compressed Air
 - 6) Sodium Bisulfite
- Contractor shall be responsible for determining the existence and location of such systems prior to commencement of work.

Power Tools and Welding Equipment:

- Gasoline and electrical powered hand tools shall be protected by approved ground fault circuit interrupters, or shall be double insulated. Cords shall be inspected daily prior to use. Damaged cords shall not be used on District work.
- Pneumatic driven power tools shall be disconnected from air lines when not in use. Hoses shall be inspected daily prior to use. Damaged hoses shall not be used on District work.
- Power tools shall be used only by trained personnel who have a valid license (when applicable, i.e, welding) in their possession. Proper warning signs shall be posted when these tools are in use.
- Electric and gas welding and cutting tools, including cords and gas hoses, shall be inspected daily prior to use. Damaged cords and gas hoses shall not be used on District work.
- Contractor and Contractor employees' tools and equipment used on District work sites shall be in safe operating condition and shall conform to the requirements of Cal/OSHA regulations. All personnel using such tools shall be properly trained.

D. BARRICADES AND SIGNS FOR TRAFFIC CONTROL

All Contractors, permittees, or agencies doing work for District which requires traffic control shall:

- 1) Install and maintain required traffic devices.
- 2) Provide appropriately equipped flag persons when required.
- 3) Provide adequate safeguards for workers and District personnel.
- 4) Maintain access for District personnel to all District facilities.

All work on streets, roadways, or similar thoroughfares shall comply with the Federal Highway Administration's "Manual on Uniform Traffic Control Devices for Streets and Highways" and any local ordinances. District Plant speed is *maximum* 10 mph.

SPECIAL PROCEDURES AND UNIQUE HAZARDS

A. **CONFINED SPACE ENTRY**

Confined spaces of all types exist throughout the District and throughout the plant and range from open trenches and manholes, to tanks, clarifiers and digesters. Contractors are required to meet Cal/OSHA safety standards for CONFINED SPACE ENTRY OPERATIONS, Title 8 Article 108 (Sections 5156-5159), or the most current CAL/OSHA applicable standards, and to provide a safe working environment for their employees. All Contractors directing or working in confined spaces are required to notify the Authorized District Representative. Contractors are responsible for all operations, testing, equipment calibration, ventilation, and entry per the Cal/OSHA standards. Contractors are responsible for all confined space permits and all appropriate equipment. Completed confined space permits are to be turned in to the District's safety manager.

B. **ELECTRICAL SUPPLY SYSTEMS**

The treatment plant's Electrical Supply System consists of two 65kW Gas Microturbine Generators, one 500kW diesel oil engine driven standby generator and one 380 KW trailer mounted standby generator, and solar power. All electrical power generated in the plant and PG&E power (beyond their transformer) is 480 volt, 3 phase, 60 Hz electricity and is delivered to one 480 volt switchgear panel. This panel is interconnected by cables and protected by breakers, relays and monitoring devices.

Electricity is dispersed from the switchgear through breakers and cables to motor control centers (MCC's), to power panels, to transformers (voltage reducers), to lighting panels and to motor driven pumps and equipment. Lockable control stations are located at each piece of equipment. 480 volt, 208 volt and 120 volt electricity is used in the plant. Contact the duty operator prior to working on any piece of electrical equipment. Electricity is hazardous and can burn or kill people.

All work on electrical systems shall be done in accordance with the State of California, CAL/OSHA, Article 33, Electrical Requirements for construction work, Low Voltage Electrical Safety Orders.

C. **FERROUS CHLORIDE SYSTEMS -**

The Ferrous Chloride System consists of a positive displacement pump with feed rate adjustment. Shut-off valves are located before and after the pump. Before working on this system, close all valves and disconnect the pump from electricity.

Ferrous Chloride is a dangerous chemical which will attack the skin, eyes and the mucous membranes of the mouth, throat and lungs. Contact the plant duty operator prior to working on this system.

D. DIGESTER GAS SYSTEM

The Digester Gas System consists of one steel tank, associated piping, compressors, flare, etc. Sludge is bacterially reduced in the tanks creating principally methane (CH₄) and other combustible hazardous gases, including hydrogen sulfide (H₂S). Hydrogen sulfide is toxic at very low concentrations. These gases are contained by the tank covers and piping which is located on overhead racks, in pipe trenches and buried throughout the plant. The gases are burned in large engines driving generators to make electricity for the plant. Heat from the engines is captured and piped to the digesters to heat the sludge, speeding up the digestion process.

Digesters and the stored gases within them are hazardous. No smoking, cutting, or spark-generating equipment is allowed on or within ten feet of any digester. Contact the duty operator prior to working on digesters.

E. HYPOCHLORITE SYSTEM

Hypochlorite, or concentrated chlorine bleach (12.5%), is used to disinfect, or kill bacteria and virus in the final effluent (water) discharged from the plant. Two tanks, each 7,000 gallons are used to store hypochlorite. Piping, valves, pumps, strainers (filters) and flow measuring and control equipment make up the system. Hypochlorite will attack clothing, skin, eyes and mucous membranes of the nose, mouth, throat and lungs. Contact the duty operator prior to working on the hypochlorite system.

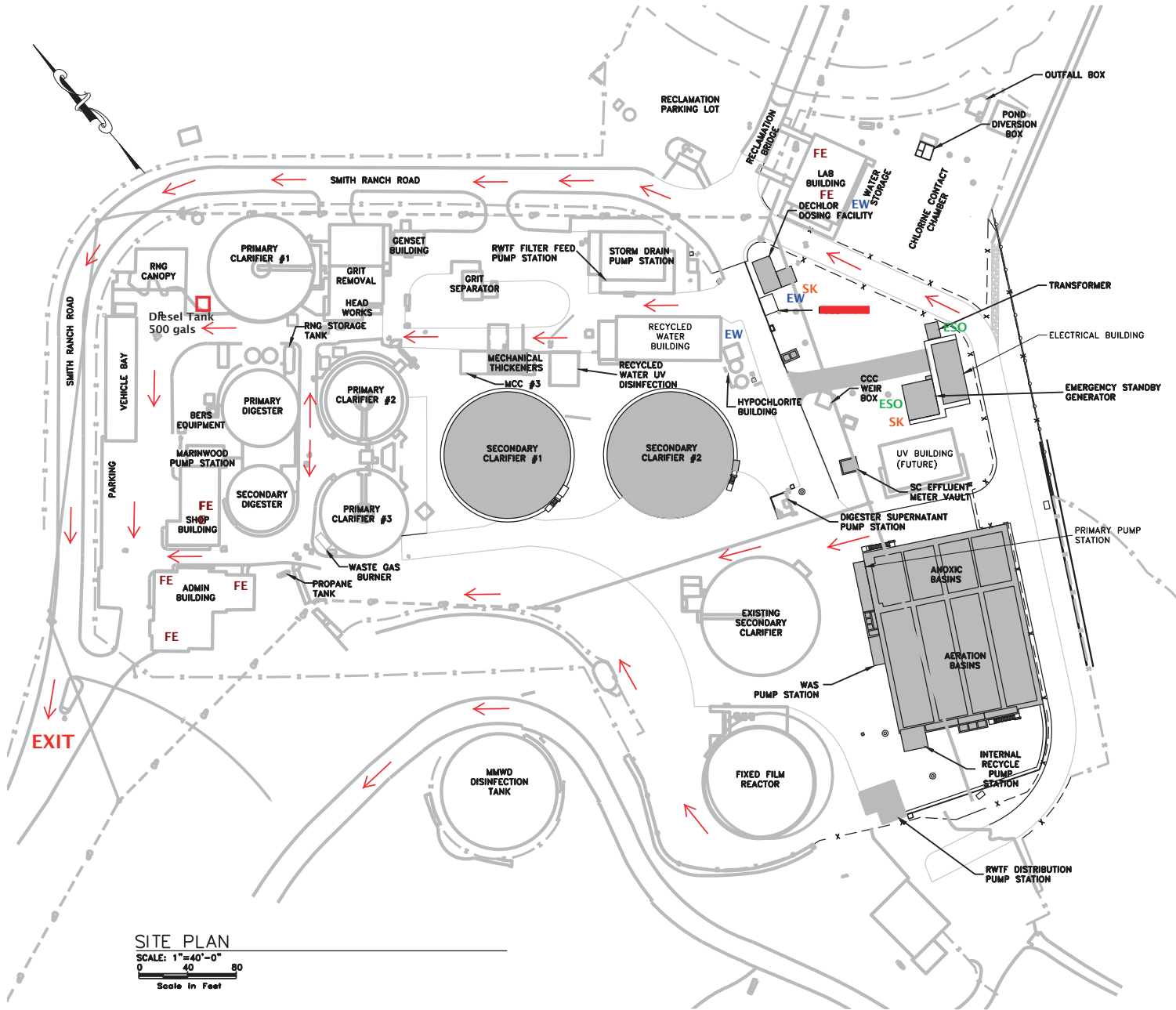
F. SODIUM BISULFITE

Sodium bisulfite is used when neutralizing sodium hypochlorite. Two tanks, each 4,000 gallons and one 2,500 gallons are used to store sodium bisulfite. Piping, valves, pumps, strainers (filters) and flow measuring and control equipment make up the system. Sodium bisulfite is an irritant to eyes, skin and mucous membranes. Inhalation of mist may cause irritation to respiratory tract. Contact the duty operator prior to working on the sodium bisulfite system.

G. GENERAL HAZARDS

Throughout District's treatment plant and facilities there are a number of extremely hazardous elements that are dangerous. They include, but are not limited, to:

- Flammable gas and petroleum.
- H₂S (hydrogen sulfite)
- Deep pools of liquid sewage which are rarely patrolled, and for which self-rescue is unlikely.
- Automatic start equipment.
- HBV (Hepatitis B Virus)



Legend

- EW = Eyewash/Shower Station
- SK = Spill Kit
- FE = Fire Extinguisher
- ESO = Emergency Shutoff

Attachment A. Map of Wastewater Plant
EMERGENCY EVACUATION ROUTES

Exhibit F
2. Confined Space Entry Program

Las Gallinas Valley
Sanitary District

Confined Space
Entry
Program

THIS PAGE INTENTIONALLY BLANK

SAMPLE

**LAS GALLINAS VALLEY SANITARY DISTRICT
Confined Space Entry Program**

INTRODUCTION	5
PERMIT-REQUIRED CONFINED SPACES	6
ALTERNATE ENTRY PROCEDURES	6
SPECIAL ENTRY PROCEDURES	7
THE ENTRY PERMIT SYSTEM	7
HOT WORK PERMIT	7
Table 1: Main Plant PRCS	8
Table 2: Reclamation, Collection System, and Pump Stations PRCS	9
DUTIES OF ENTRY TEAM	10
Entry Supervisor	
Entrant	
Attendant	
ENTRY PROCEDURES	11
Pre-Entry	
Entry	
Post-Entry	
RESCUE PROCEDURES	12
Self-Rescue	
Non-Entry Rescue	
Entry Rescue	
Outside Rescue Services	
NON-PERMIT CONFINED SPACES	12
CONTRACTORS	13
TRAINING	13
ENTRY PERMIT FORM	14
ALTERNATE PROCEDURES FORM	16
HOT WORK PERMIT	17
SUMMARY OF PROCEDURES	18

THIS PAGE INTENTIONALLY BLANK

SAMPLE

LGVS D CONFINED SPACE ENTRY PROGRAM

INTRODUCTION

The purpose of Las Gallinas Valley Sanitary District's confined space entry program is to protect employees who work in manholes, pump stations, tanks, or any other confined space that could expose employees to hazardous conditions or substances. The program establishes an entry permit system and procedures to ensure that potential hazards of each confined space are identified and evaluated and that appropriate safety precautions are taken before an employee enters the space.

Employees will be given an opportunity to participate in the development and implementation of LGVS D's confined space procedures. The program will be revised or procedures will be modified whenever suggestions or recommendations from employees would improve confined space safety.

The policies and procedures in this program are consistent with the requirements of Cal/OSHA General Industry Safety Orders, Title 8, Sections 5156 and 5157 and supersede previous confined space policies and procedures. The program applies to all employees who work in, or in connection with LGVS D confined spaces.

Confined spaces at LGVS D have been identified based on the definitions in Section 5157 as follows:

Confined Space is a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and
2. Has limited or restricted means for entry or exit; and
3. Is not designed for continuous employee occupancy.

Permit-Required Confined Space is a space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; or
4. Contains any other recognized serious safety or health hazard.

Non-Permit Confined Space is a space that does not contain (or with respect to atmospheric hazards, has no potential to contain) any hazard capable of causing death or serious physical harm.

Employees who work in or in connection with confined spaces are required to follow the procedures described in this program and to take all the appropriate precautions to ensure that the work is performed safely. At no time should an employee enter a confined space or perform work in the space unless it can be done safely.

PERMIT-REQUIRED CONFINED SPACES

The tables on pages 4 and 5 list confined spaces at LGVSD that require a permit to enter. Potential hazards associated with these spaces include engulfment, toxic gases, explosive or flammable gases, oxygen deficiency, electrical and mechanical hazards, and may under certain circumstances involve heat stress. Warning signs will be posted at wet wells and similar locations to inform employees that the space requires a permit to enter. To prevent unauthorized entry, each of these spaces will be secured.

Using the entry permit, a non-entry evaluation must be done so that potential hazards can be identified and the appropriate safety precautions taken. The types of hazards that may be encountered, pre-entry safety checks, and the types of safety equipment that will be used are entered on the permit. Only the person designated as the entry supervisor has the authority to authorize the entry permit. At least three employees are required for a permit-required confined space entry which would include an attendant and a standby rescuer.

The tables on pages 4 and 5 that list permit-required confined spaces at LGVSD are not all-inclusive. Other spaces may be determined to be permit-required after evaluating the conditions or circumstances of the entry. The type of work to be performed in the space could introduce hazards to an otherwise safe space. Working with flammable or toxic substances, welding or other hot work, or drifting vapors from outside sources would make a space hazardous or potentially hazardous and therefore require a permit to enter.

ALTERNATE ENTRY PROCEDURES

Alternate procedures are allowed in permit-required spaces where it can be demonstrated and documented that the only hazard or potential hazard is an atmospheric one, and that continuous forced air ventilation alone will maintain the space safe for entry. A trained, qualified employee may enter these confined spaces without an attendant or rescue preparations provided the following conditions are met.

1. All unsafe conditions are eliminated before the confined space cover is removed.
2. The entrance to the space is guarded with a railing or other type of barrier to prevent an accidental fall through the opening and to protect employee in the space.
3. The atmosphere is tested before entry in the following order: O₂, LEL/LFL, H₂S.
4. No entrance is made until hazardous atmosphere is eliminated.
5. There is no hazardous atmosphere when employees are in the space.
6. Continuous forced ventilation is used.
7. The air supply is clean and will not increase hazards.
8. The air supply is directed to area where employees are working.
9. The atmosphere is tested every 15 minutes to ensure a hazardous atmosphere is not developing.
10. Records of pre-entry and entry monitoring data and inspection data are maintained.
11. The entrant certifies, in writing, that the required pre-entry measures have been taken.
12. Monitoring and inspection data, and the certification information are made available to each employee entering the space.

If a hazardous atmosphere develops in the space, or other hazards arise, alternate procedures can no longer be used and the space must be reclassified as a fully permitted space.

SPECIAL ENTRY PROCEDURES

There are a few confined spaces at LGVSD that are not considered permit-required confined spaces. As far as can be determined, these spaces do not contain any known hazard. However, as a precautionary measure, employees are required to follow certain special procedures before entering these spaces.

1. Test the atmospheric conditions prior to entry.
2. If atmospheric conditions are acceptable, entry can be made.
3. If atmospheric conditions are not acceptable, use alternate procedures.
4. If any other hazardous condition exists, follow permit-required confined space procedures.

THE ENTRY PERMIT SYSTEM

Confined space entry permits are to be issued for a specific purpose, a specific work crew, and for a specified period of time. The entry permit is a written authorization of the location and type of work to be done. It also authorizes the personnel assigned to the job, and verifies that potential hazards have been evaluated and controlled or eliminated, that proper safety precautions have been taken, and it is safe for workers to enter. The permit must be kept at the work site (outside the space) for the duration of the work and cancelled after the work is completed.

HOT WORK PERMIT

A hot work permit must be issued for any work that produces heat, sparks or flame in a permit-required confined space. This includes but not limited to brazing, cutting, grinding, soldering, and welding.

Table 1: Main Plant Permit-Required Confined Spaces

MAIN PLANT	Permit-Required	Alternate or Special Procedure	MAIN PLANT	Permit-Required	Alternate or Special Procedure
Marinwood Pump Station			Deep Bed Filter		
Pre Wet Well Structure	•		Bypass Channel	•	
Wet Well	•		Wet Well/Supply Pumps	•	
Valve Pit		SP	Valve Pit		SP
Flow Meter Pit (F1)		SP	Tanks	•	
Primary Clarifier			Weir Overflow Pit	•	
Tank	•		Underdrain	•	
Scum Pit	•		Inlet Channel	•	
Weir Overflow Pit	•		Center Column	•	
Chemical Tank	•		F8 Flow Meter Manhole	•	
Sodium Hydroxide Tank	•		Effluent Channel	•	
Methane Tank	•		Backwash Return Wet Well	•	
Methane Scrubber Tank	•		Hypochlorite Storage Tank	•	
Primary Digester			Digester Supernatant Pump Station		
Tank	•		Wet Well	•	
Valve Pit			Valve Pit		SP
Secondary Digester			Secondary Clarifier		
Tank	•		Tank	•	
Valve Pit		SP	Flow Meter (F4)	•	
Intermediate Flow Meter Pit (F3)	•		Effluent Box	•	
Aerated Grit			Scum Pit	•	
Tank	•		Fixed Film Reactor		
Scum Pit	•		Tank	•	
Outlet Channel	•		Underdrain	•	
Inlet Channel	•		Center Column	•	
Clarifier Return Pit			F4 Diversion Box	•	
Wet Well	•		Influent and Effluent Wet well	•	
Influent Flow Meter Pit		SP	Filter Water Storage Tank	•	
Grease Storage Tank	•		Chlorine Sample Pump #2		
Intermediate Clarifier East			Wet Well	•	
Diversion Structure	•		Valve Pit	•	
Tank	•		Chlorine Contact Chamber/DBF Backwash		
Scum Pit	•		Tank	•	
Weir Overflow Pit (2)	•				
Intermediate Clarifier West			Pipe Inspection Manhole	•	
Tank	•		Plant Effluent Water Pump Wet Well	•	
			Bisulfite		
Scum Pit	•		Wet Well	•	
Weir Overflow Pit	•		Tanks	•	
Sludge Thickener			White Shack Effluent Box		
Influent Pit	•		Wet Well	•	
Tank	•		Flow Meter Pit (F5)		SP
Scum Pit	•		Effluent Pipe Inspection Manhole	•	
Primary Biofilter			Stormwater Pump Station		
Valve Pit			Wet Well	•	
Pump Pit Dry Well		SP	Flow Metet Pit (F9)		SP
Underdrain	•		Miller Creek Plant Effluent Box Wet Well	•	
Prim/Sec Biofilter Diversion Vault	•		Storm Ponds Pump Pit Wet Wells	•	
Secondary Biofilter			Centrifuge Pit Tank	•	
Effluent Box	•		Gardener's Building (ventilate before entry)		
Underdrain	•		F4 - DBF Effluent Box	•	
Pump Pit	•		DBF Effluent Weir Box/Plant Water Pump	•	
			MMWD Backwash Return Wet Wells (2)	•	

Table 2: Reclamation, Collection System, and Pump Stations Permit-Required Confined Spaces

Location	Permit-Required	Alternate Procedure	Location	Permit-Required	Alternate Procedure
RECLAMATION			PUMP STATIONS		
Diversion box			McInnis Park		
Wet Well	•		Wet Well	•	
Valve Pit	•		Valve Pit		•
Underdrain	•		Smith Ranch		
Transfer Box			Wet Well	•	
Wet Well	•		Valve Pit		•
Valve Pit	•		Flow Meter Pit		•
Underdrain	•		Industrial Park		
Meter Pit (F7)		•	Wet Well	•	
Reclamation Pump Station			Valve Pit		•
Wet Well	•		John Duckett		
Flow Meter Pit (F6)			Wet Well	•	
Sludge Supernatant Pump Station			Valve Pit		•
Wet Well	•		Flow Meter Pit		•
Dry Well	•		Comminutor Deck		•
Valve Pit		•	Civic Center North		
Pond Diversion Gate Boxes	•		Wet Well	•	
Pond Inflow/Effluent Boxes	•		Valve Pit		•
Sludge Ponds (3)	•		Marin Lagoon (9)		
			Wet Well	•	
			Valve Pit		•
COLLECTION SYSTEM			Mulligan		
All Manholes	•		Wet Well	•	
Air Release Valves		•	Valve Pit		•
Valve Boxes	•		Venetia Harbor		
			Wet Well	•	
			Valve Pit		•
			Hawthorne		
			Wet Well	•	
			Dry Well		•
			Adrian Way		
			Wet Well	•	
			Valve Pit		•
			Descanso Way		
			Wet Well	•	
			Valve Pit		•
			McPhail		
			Wet Well	•	
			Valve Pit		•
			San Rafael Meadows		
			Wet Well	•	
			Valve Pit		•
SPECIAL ENTRY PROCEDURES (SP)					
1. Test atmospheric conditions prior to entry.					
2. If atmospheric conditions are acceptable, entry can be made.					
3. If atmospheric conditions are not acceptable, use alternate procedures.					
4. If any other hazardous condition exists, follow permit-required confined space procedures.					

DUTIES OF ENTRY TEAM

A permit-required confined space entry team will include an entry supervisor, entrant(s), and at least one attendant. Before an employee begins confined space work, the work must be authorized by the District Manager or Plant Superintendent. In the absence of the District Manager and Plant Superintendent, the designated employee-in-charge may authorize the work.

As long as each individual can fully perform his/her duties, an entry supervisor may be the same person as the entrant or the attendant. The safety precautions that should be taken with a permit-required confined space entry will vary depending on the types of hazards or potential hazards involved. Regardless of the types of hazards, it is the District's policy that in addition to an attendant, a standby rescuer must be part of the entry team.

Duties of Entry Supervisor

1. Verifies that acceptable entry conditions exist.
2. Ensures acceptable entry conditions are maintained.
3. Verifies that the information and procedures on the entry permit are accurate and complete.
4. Verifies that the equipment specified on the permit is in place and in good condition.
5. Reviews permit conditions and procedures with entrants and attendants.
6. Ensures unauthorized persons do not enter the space.
7. Signs the permit to authorize entry.
8. Cancels and files permit.

Duties of Entrant

1. Properly uses the safety equipment and tools supplied.
2. Promptly notifies the attendant if any prohibited condition exists or any warning signs or symptoms appear.
3. Quickly evacuates space if an order is given by the attendant or entry supervisor, if any prohibited condition is detected, or if an alarm is activated.
4. Maintains communication with the attendant to enable attendant to monitor status of space conditions and the entrants.
5. Adheres to the procedures and precautions indicated on the permit and provided in training.

Duties of Attendant

1. Remains outside the permit space until relieved by another attendant.
2. Maintains communication with entrants.
3. Maintains accurate count and identification of entrants.
4. Monitors activities inside and outside the space.
5. Orders entrants to evacuate if a prohibited condition exists, or behavioral effects of hazardous exposure are detected, or activities outside space could endanger entrants, or attendant cannot effectively perform all required duties.
6. Ensures unauthorized persons stay away from the space.
7. Performs non-entry rescue procedures or initiates on-site rescue operations.
8. Summons additional rescue services, when needed.

ENTRY PROCEDURES

Pre-Entry

1. Notify other work groups or employees who may be affected by any interruption in service.
2. Determine (by entry supervisor or other qualified person) what hazards or potential hazards are within the confined space.
3. Check that all safety equipment is available and in good working condition.
4. Check that atmosphere monitoring equipment has been calibrated as recommended by manufacturer.
5. Without entering space:
 - a) Test atmosphere and record readings on permit.
Acceptable atmospheric conditions: Oxygen not less than 19.5% or more than 23.5%, LEL/LFL not more than 10%, H2S not more than 10 ppm, CO not more than 25 ppm.
 - b) Ventilate the space or check that ventilation system is operating properly.
6. Ensure that all affected employees observe pre-entry atmospheric testing.
7. Set up barrier around entrance to prevent accidental falls and to protect employees from vehicles, or falling objects.
8. Check for physical hazards such as poor footing, structures and equipment that hinder movement, and extreme temperatures or humidity that could affect worker safety.
9. Secure and lock out all energy sources (electrical, mechanical, hydraulic, pneumatic, chemical) that are potentially hazardous to confined space workers. Follow lockout/tagout procedures.
10. Disconnect, blind, or block lines to prevent development of hazardous conditions.
11. Use continuous forced air ventilation. Ensure that there is no recirculation of exhausted air from blowers or the introduction of contaminants from the outside, such as traffic exhaust, or vapors or toxic substances from other areas. Place blowers at least 10 feet away from opening of space.
12. Entry supervisor reviews and authorizes entry permit if the space is safe to enter, and all preparatory steps required for safe entry have been taken.

Entry

1. Only employees who have been trained on LGVSD's confined space entry and work procedures are allowed to work in or around confined spaces.
2. Only the work activity specified on the authorized permit is to be performed in the confined space.
3. At least one attendant is required for confined space work.
4. If at any time during the performance of confined space work, dangerous atmospheric conditions develop, work must stop and the space evacuate immediately.
5. An attendant must be stationed outside the space at all times during the confined space operations and remain in constant communication with workers in the space.
6. The attendant must order evacuation of the space whenever:
 - a) a condition not allowed on the permit is observed
 - b) unusual behavior is observed
 - c) an outside situation endangers the confined space workers
 - d) the attendant must leave the work station

7. The permit must be cancelled if the air becomes hazardous after entry.
8. Respiratory equipment must be worn whenever a safe atmosphere cannot be assured after implementing pre-entry procedures.

Post-Entry

The entry supervisor:

1. Cancels the permit by entering date and time of cancellation and signature.
2. On the reverse side of the permit, makes note of any problems encountered during entry operations.
3. Places the cancelled permit in the safety files.
4. Notifies the Plant Superintendent if any equipment, safety gear or tools need to be repaired or replaced.

RESCUE PROCEDURES

It is the District's policy that all employees who work in or in connection with confined spaces must be trained in rescue procedures. Members of a permit space entry team must be knowledgeable of the hazards or potential hazards, be able to recognize the signs and symptoms of exposure, be trained in the selection and use of personal protective equipment, and be certified in first-aid and cardiopulmonary resuscitation. Prior to each entry the team will plan and prepare for non-entry and entry rescues and ensure that at least one standby is immediately available to provide rescue services.

Self-Rescue

If possible, entrants should immediately leave the confined space:

1. When an alarm sounds.
2. At the first sign of any exposure symptoms.
3. When ordered to evacuate by attendant or entry supervisor.

Non-Entry Rescue

If entrants cannot immediately evacuate the space at the first sign of trouble, the attendant should attempt a non-entry rescue by retrieving the entrant using a harness and hoisting equipment. The attendant must not enter the space unless relieved by another attendant. Retrieval systems must be used in vertical permit spaces more than 5 feet deep.

Entry Rescue

Rescuers are to assume that a hazardous atmosphere exists if an entrant has slurred speech, appears dizzy, disoriented, confused, unconscious, or displays any unusual behavior, or if communication with the entrant is lost. A self-contained breathing apparatus must be worn for entry rescues if a hazardous atmosphere is suspected or if there is any chance that it can develop. Call 911 for assistance or if specialized equipment is needed to remove a worker.

Outside Rescue Services

Although outside rescue services may be present at the time of the entry or summoned to give assistance and support in an emergency, members of the entry team must be prepared to give immediate assistance to any of the entrants who may need it.

NON-PERMIT CONFINED SPACES

All confined spaces are considered permit-required until pre-entry procedures demonstrate otherwise. A confined space may be designated a non-permit space, or a permit-required confined space may be reclassified a

non-permit space if all hazards have been eliminated. Because atmospheric hazards are controlled with ventilation and not eliminated in spaces, these spaces cannot be classified as non-permit spaces.

CONTRACTORS

Contractors and subcontractors who plan to work in LGVSD confined spaces will be given all available information on LGVSD confined space hazards, the permit system, and entry procedures. Contractors are required to use a permit system for entry into LGVSD permit-required confined spaces. Contractors are also required to coordinate work and entry activities whenever LGVSD employees and contractor employees will be working in or near the permit spaces.

At the conclusion of the contractor's work, the LGVSD supervisor in charge will debrief the contractor to determine if any hazards were encountered or created during entry.

TRAINING

All employees who work in or around confined spaces must be trained before performing any confined space work. At a minimum, the training will include:

1. Hazards of confined spaces.
2. Signs and symptoms of hazard exposure.
3. Duties of entrant, attendant, and entry supervisor.
4. Pre-entry and entry procedures.
5. LGVSD confined space permit system.
6. Selection and use of personal protective equipment.
7. Atmosphere test equipment.
8. Rescue procedures and equipment.
9. CPR/First Aid.

In addition, employees involved in confined space work will participate in simulated rescue operations at least once per year. Review training will be provided whenever the need is indicated, such as changes in procedures, introduction of new equipment, the hiring of new employees or whenever deficiencies in implementing the program are observed.

Training records will be maintained which will include names and signatures of trainees and trainers, dates and content of training. These records will be made available for inspection to employees or their representatives

LGVSD CONFINED SPACE ENTRY PERMIT

Date issued: _____ Permit Expiration Date/Time: _____ Location/Description of Space: _____ Street Address of Entry _____ Reason for Entry: _____	Work Site Permit: Authorized entry permit and monitoring data must remain at the work site until the job is complete.
	Fire Dept. Notified 472-0911 Before entry _____ initials After exiting _____ initials

Entry Supervisor: _____	
Authorized Attendants and Initials	Authorized Entrant and Initials:
_____	_____
_____	_____
_____	_____

Note: Indicate which attendant is assigned standby rescue duties. Initial of attendants and entrants indicate they understand their assignments, responsibilities and duties.

Pre-Entry Checks (complete before obtaining work authorization): <input type="checkbox"/> Notified other work groups. N/A _____ <input type="checkbox"/> Notified office personnel. N/A _____ <input type="checkbox"/> Checked that entry team training is current. N/A _____ <input type="checkbox"/> Reviewed entry procedures with team. N/A _____ <input type="checkbox"/> Set up barrier at entrance to space. N/A _____ <input type="checkbox"/> Checked that gas detection equipment calibration is current. N/A _____ <input type="checkbox"/> Performed pre-entry atmosphere tests. N/A _____ <input type="checkbox"/> Checked ventilation system. N/A _____ <input type="checkbox"/> Checked for physical hazards. N/A _____ <input type="checkbox"/> Secured and locked out energy sources. N/A _____ <input type="checkbox"/> Blocked or disconnected lines. N/A _____ <input type="checkbox"/> Discussed potential hazards with team. N/A _____ <input type="checkbox"/> Reviewed emergency response procedures. N/A _____ <input type="checkbox"/> Checked condition of safety equipment. N/A _____ <input type="checkbox"/> Obtained work authorization signatures. N/A _____	Potential Hazards: <input type="checkbox"/> Oxygen deficiency N/A _____ <input type="checkbox"/> Oxygen enrichment N/A _____ <input type="checkbox"/> Flammable gases or vapors N/A _____ <input type="checkbox"/> Toxic gases or vapors N/A _____ <input type="checkbox"/> Mechanical hazards N/A _____ <input type="checkbox"/> Electrical hazards N/A _____ <input type="checkbox"/> Engulfment/entrapment N/A _____ <input type="checkbox"/> Noise N/A _____ <input type="checkbox"/> Heat/Cold N/A _____ <input type="checkbox"/> Falls N/A _____ <input type="checkbox"/> Falling objects N/A _____ <input type="checkbox"/> Other N/A _____ Safety Equipment: <input type="checkbox"/> Gas detection equipment N/A _____ <input type="checkbox"/> Safety harness N/A _____ <input type="checkbox"/> Safety line N/A _____ <input type="checkbox"/> Wristlets N/A _____ <input type="checkbox"/> Hoisting equipment N/A _____	<input type="checkbox"/> Manhole hook N/A _____ <input type="checkbox"/> Barricades, cones, tape N/A _____ <input type="checkbox"/> Portable blower and hose N/A _____ <input type="checkbox"/> Explosion-proof lighting N/A _____ <input type="checkbox"/> Non-sparking tools N/A _____ <input type="checkbox"/> Tool bucket and line N/A _____ <input type="checkbox"/> Ladder N/A _____ <input type="checkbox"/> First aid kit N/A _____ <input type="checkbox"/> Fire extinguisher N/A _____ <input type="checkbox"/> Radio communication equipment N/A _____ <input type="checkbox"/> Cell phone N/A _____ <input type="checkbox"/> SCBA N/A _____ <input type="checkbox"/> Hard hat N/A _____ <input type="checkbox"/> Goggles, face shield N/A _____ <input type="checkbox"/> Gloves N/A _____ <input type="checkbox"/> Rain suit N/A _____ <input type="checkbox"/> Rubber boots N/A _____ <input type="checkbox"/> Other _____ _____
--	---	---

Hot Work:
 Does the entry involve hot work? Yes No If Yes, complete and attach a hot work permit.

Special Instructions:

Monitoring Data: Record monitoring data at 15-minute intervals on the reverse side of this permit.
Acceptable Atmospheric Conditions: Oxygen not less than 19.5% or more than 23.5%, LEL/LFL/not more than 10%, H₂S not more than 10 ppm.

Work Authorization Signatures All confined space work must be authorized by the General Manager, Plant Manager or Collection Crew Manager Work authorized by: _____ Date/Time: _____	Entry Authorization I certify that the confined space work authorized by this permit has been reviewed with the entry team and that acceptable entry conditions exist and the necessary equipment for safe entry has been provided. Entry supervisor signature: _____	Permit Cancellation Date: _____ Time: _____ Entry supervisor signature: _____
---	---	--

Monitoring Data: Monitor continuously and record data at 15-minute intervals.								
Time	LEL <10%	O₂ > 19.5%, <23.5%	H₂S <10 ppm	CO <25 ppm	Initials			
Record the time when a worker(s) initially enters the space and each exit and entry thereafter.								
Name	Time							
	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit

ConfinedSpace Permit Back

LGVSD CONFINED SPACE ALTERNATE PROCEDURES

Location/Description of Confined Space: _____

Entry into this confined space without an entry permit is allowed if the only potential hazard posed by the space is a hazardous atmosphere and the following measures are taken:

1. Any condition making it unsafe to remove the entrance cover is eliminated before the cover is removed.
2. The atmosphere is tested prior to entry.
3. No entry is made if there is a hazardous atmosphere.
4. Continuous forced ventilation is used.
5. The opening of the space is guarded by a railing or other temporary barrier.
6. The air supply is clean and is directed to where employees will be working.
7. The atmosphere is periodically tested and monitoring data is recorded.
8. Employees will immediately evacuate the space if a hazardous atmosphere is detected.

Certification: *I certify that on the date indicated, the conditions and pre-entry measures described above existed or were implemented and this space was determined to be safe for entry.*

<i>Signature</i>	<i>Date</i>	<i>Signature</i>	<i>Date</i>

Monitoring Data: Record the pre-entry test data, monitor the space continuously and record the readings every 15 minutes.

Date	Time	%O ₂	CO	%LEL	H ₂ S	Initials	Date	Time	%O ₂	CO	%LEL	H ₂ S	Initial

P:\Safety\Alternate Permit
 Revised September 2008

LGVSD HOT WORK PERMIT

This form is to be filled out by employee before performing hot work.

Name: _____

Date: _____ Time: _____ Location of job: _____

Detailed description of job: _____

	YES	NO
1. If the job is planned to be done indoors, can it be done outdoors or in the welding shop? If yes, move to one of these locations.	<input type="checkbox"/>	<input type="checkbox"/>
2. Have all combustible materials (solids, liquids, gases) been removed from the work area?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are there any gas lines or other lines carrying combustible/flammable materials?	<input type="checkbox"/>	<input type="checkbox"/>
4. If yes, have all lines be disconnected, blanked or otherwise protected?	<input type="checkbox"/>	<input type="checkbox"/>
5. Has atmospheric test data been collected in the work area?	<input type="checkbox"/>	<input type="checkbox"/>
6. Is a fire watch needed for this job?	<input type="checkbox"/>	<input type="checkbox"/>
7. Is a fire extinguisher or water hose available and ready to use at the job site?	<input type="checkbox"/>	<input type="checkbox"/>
8. Can flame or sparks ignite materials in work area or on lower floors or levels?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are non-flammable tarps used to cover combustibles in the work area?	<input type="checkbox"/>	<input type="checkbox"/>
10. Have affected employees reviewed or given specific safety instructions?	<input type="checkbox"/>	<input type="checkbox"/>
11. Have screens been set up in the work area?	<input type="checkbox"/>	<input type="checkbox"/>

Special precautions to be taken: _____

I have reviewed and approved this permit: Date: _____ Time: _____ _____ Signature of District Manager	Please make note of any actions taken based on the above responses.
--	---

Revision: February 2006

P:\Safety\Hot Work Permit

LGVSD CONFINED SPACE ENTRY PROCEDURES SUMMARY

Pre-Entry

1. Obtain work authorization from the District Manager or District Superintendent.
1. Perform non-entry evaluation of the space to identify potential hazards.
2. Test atmosphere, check ventilation system and check for physical hazards in and around work area.
3. Ensure affected employees observe pre-entry testing.
4. Gather appropriate safety equipment and check that all of it is in good working condition.
5. Without entering the space, secure and lockout energy sources and disconnect or block lines.
6. Place barricade or railing around opening to space.
7. Make sure there are no ignition sources near the confined space.
8. Complete pre-entry checks.
9. Have the Entry Supervisor authorize the entry permit.
10. Test atmosphere of space again. If there is no air contamination or O2 deficiency, entry may proceed provided permit conditions and appropriate safety procedures are in effect.
11. If there is contamination or O2 deficiency, ventilate 10 minutes and test again. If contamination persists, do not enter. Notify the Entry Supervisor.
12. Prior to entry, ventilate manholes and other confined spaces known or suspected to be hazardous.
13. Maintain continuous ventilation. Existing ventilation must be augmented whenever there is a potential for hazardous atmosphere or initial tests indicate contamination.
14. Keep the entry permit and monitoring data at the work site until the job is complete. Entry permits are valid only for the duration indicated on the permit.

Entry

1. Do not work in or around confined spaces if you are not properly trained or experienced in safe entry and rescue procedures.
2. Wear respiratory equipment whenever a safe atmosphere cannot be ensured.
3. Attendant must be in constant communication and visual contact with entrant and must monitor activities inside and outside of space.
4. Attendant must order evacuation if he/she observes any activity not on the permit, unusual behavior, or an outside situation that endangers the entrant.
5. Perform only the work authorized on the permit.

Rescue

1. Attendant never performs entry rescue unless relieved by another attendant.
2. Perform rescue from outside the space whenever possible.
3. Use respiratory equipment if entry rescue is performed.
4. Call 911 for rescue assistance.

Post-Entry

1. Note on back of permit and notify the District Superintendent of any unsafe or unusual conditions encountered during the confined space work.
2. Have Entry Supervisor cancel and file the permit.
3. Submit the cancelled permit to the Safety chairperson for review and filing.
3. Notify the Plant Superintendent if any equipment, safety gear or tools need to be repaired or replaced.