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## Wastewater Feasibility Study

# WASTEWATER FEASIBILITY STUDY

## CONN CREEK WINERY

8711 Silverado Trail

St. Helena, California

APN 030-120-032

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Enclosure C:	As-Built Plans for Existing Sanitary Sewage System
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Enclosure F:	Process Wastewater Pond Water Balance

## **PROJECT OVERVIEW & SITE DESCRIPTION**

Conn Creek Winery, located at 8711 Silverado Trail in St. Helena (APN 030-120-032), is applying for a use permit modification to Use Permit 95532-MOD to increase the number of employees and allow pairing of food prepared offsite with wine tasting. There are no proposed changes to the approved wine production of 260,000 gallons per year of fruit crushed on site and 590,000 gallons of bulk wine processed, or additional changes to the marketing and visitation plan. The site is a 5.99-acre parcel in an agricultural area on Silverado Trail. Refer to Enclosure A for a vicinity map and Enclosure B for an overall site plan. The topography consists of gently sloping vineyards and the property is located wholly within the 100-year floodplain and partially within the 100-year floodway. The site plan in Enclosure B includes the floodway boundary. The existing sanitary sewage (SS) system is located to the north of the winery building, with a process wastewater (PW) treatment pond located to the east of the winery.

The SS system will be improved to accommodate additional SS flows from employees. Summit Engineering has prepared the following Wastewater Feasibility Study to assess the feasibility of treating and disposing of the increase in SS associated with the proposed increase in employees, visitation, and marketing events.

## **WINERY PROCESS WASTEWATER SYSTEM**

No changes are proposed to the existing PW system, land application area, or total vineyard onsite as approved per P18-00007-VMM, as the facility is not proposing any increase to the permitted wine production capacity. The pond water balance prepared to support Use Permit application P18-00007-VMM has been provided for reference. Note that the total outdoor processing area is reduced to 0.33 acres, rather than the original 0.39 acres estimated at that time. This leads to a net decrease in effluent land application from what was previously approved.

## **SANITARY SEWAGE TREATMENT AND DISPOSAL SYSTEM**

### **OVERVIEW**

Separate systems are used for sanitary sewage and process wastewater treatment. The existing SS treatment system at the site was approved via permits 92-12720 and 92-12721 with a design flow of 750 gallons per day (GPD). Refer to Enclosure C for the as-built wastewater disposal system plans of the existing SS treatment and system. Domestic wastewater from the winery flows via gravity into septic tanks prior to being pumped to the pressure distribution (PD) leachfield.

An existing, separate PW disposal PD leachfield is installed to handle treated PW effluent after the pond when it is not used for vineyard irrigation, designed for 9,300 GPD. A minor modification to the facility's use permit, P18-00007 allowed for the diversion of stormwater to the PW treatment pond, allowed by Napa County if the collected stormwater is beneficially reused for irrigation. This would require abandoning the existing 9,300 GPD PD leachfield for PW disposal.

To accommodate the increased SS generated from additional employees, and the increases in Napa County estimated SS associated with daily visitation and events, converting leachlines from the PW PD system is

proposed. The total proposed SS system, after improvements, will be sized for a peak daily flow of up to 1,290 GPD.

The existing system and proposed upgrades are discussed in greater detail in the subsequent sections of this wastewater feasibility study.

### **SANITARY SEWAGE CHARACTERISTICS**

SS will consist primarily of wastewater generated from restrooms and tasting room facilities. Typical SS characteristics are as summarized below:

<u>Characteristic</u>	<u>Units</u>	Raw Wastewater <sup>1</sup> <u>Range</u>
BOD <sub>5</sub>	mg/L	110 - 220
Grease	mg/L	50-100
Total Suspended Solids (TSS)	mg/L	100 - 220
Volatile Suspended Solids	mg/L	80 - 165
Total Dissolved Solids (TDS)	mg/L	250 - 500
Nitrogen	mg/L	20 - 40
Nitrate	mg/L	0
Phosphorous	mg/L	4 - 8
Alkalinity (CaCO <sub>3</sub> )	mg/L	50 - 100
Chloride	mg/L	30 - 50
Sulfate	mg/L	20 - 30

<sup>1</sup>Typical composition of untreated domestic wastewater, Metcalf & Eddy, "Wastewater Engineering, Third Edition", 1991

### **SANITARY SEWAGE DESIGN FLOWS**

Sanitary sewage at Conn Creek Winery will consist of typical wastewater generated from restrooms, tasting room, and hospitality functions. The estimated peak day flows associated with the proposed increase in employees, visitation and events are provided below.

<b>SANITARY SEWAGE</b>						
<u>Average Day w/o Major Event - Non-harvest</u>						
Employee (full-time)	20	x	15 gpcd	=	300	gal/day
Employee (part-time)	1	x	15 gpcd	=	15	gal/day
Tasting Visitors	70	x	3 gpcd	=	210	gal/day
Private Marketing Event w/ Meal	15	x	5 gpcd	=	75	gal/day
<b>Total</b>				=	600	gal/day
				=	<b>600</b>	<b>gal/day</b>
<u>Peak Tasting Day Harvest w/Event</u>						
Employee (full-time)	20	x	15 gpcd	=	300	gal/day
Employee (part-time)	1	x	15 gpcd	=	15	gal/day
Tasting Visitors	225	x	3 gpcd	=	675	gal/day
Garden Event	60	x	5 gpcd	=	300	gal/day
<b>Total</b>				=	1,290	gal/day
<b>DESIGN FLOW</b>				=	<b>1,290</b>	<b>gal/day</b>

The average daily visitation is assumed to be 70 wine tasting guests per day, estimated based on the 500 weekly guests allowed by previously approved Use Permits. Similarly, peak wine tasting visitation is assumed to be 225 guests per day based on earlier Use Permits. All food served at events is currently prepared offsite and catered, with minimal onsite handling of food or dishwashing. Any water use associated with plating or serving prepared food is expected to be captured within the 3 gallons per person estimate for wine tasting. The facility proposes to continue utilizing offsite catered food prep, so a total of 5 gallons of SS per person at special events with food is proposed. Therefore, the SS system will be designed to handle the peak daily SS flow of up to 1,290 gal/day.

**KITCHEN SS DESIGN FLOWS**

No onsite food prep is anticipated, therefore a grease interceptor should not be required.

**SITE EVALUATION RESULTS**

The original PD disposal system sizing was based on a site evaluation performed on March 16, 1999 by Summit Engineering and Napa County representative Christine Secheli. During the evaluation, acceptable soil to a depth of 66" below grade was observed, with a percolation rate of 1-3 minutes per inch (MPI). Based on Napa County Alternative Sewage Treatment System Standards, 1-3 MPI corresponds to an application rate of 1.2 gallons per square foot per day. This application rate was used to size the original PD system, and will be utilized in confirming the total acceptable trench sidewall area for the reconfigured SS disposal system.

**SANITARY SEWAGE CONVEYANCE, TREATMENT AND DISPOSAL**

Septic Tank Treatment

The existing and proposed winery SS treatment and disposal system improvements will have the components described below. Refer to Enclosures B & D for the Overall Site Plan and proposed SS system schematic.

- 1) Gravity Collection System – The existing gravity collection system is assumed to provide low maintenance and no infiltration or exfiltration. Piping is assumed to be compatible with sanitary sewage and satisfy Uniform Plumbing Code and local requirements.
- 2) Septic Tanks with Effluent Filter – The required septic tank size for the increased winery SS flows was determined by evaluating sizing recommendations based on the Uniform Plumbing Code (UPC) formula as shown below:

Uniform Plumbing Code Method:

$$Volume = 1,125 + 0.75 \times Flow\ Rate$$

$$Volume = 1,125 + 0.75 \times 1,290\ gpd$$

$$Volume = 2,092\ gallons$$

The existing 3,000-gallon septic tank will provide adequate tankage when sized per the UPC requirements. Removal of solids in the septic tank will help to reduce BOD loads on the system and minimize the frequency of sludge removal in aerobic systems. An effluent filter will also be provided on the outlet of the final septic tank to remove additional suspended solids which do not settle out in the tank.

- 3) Pressure Distribution Disposal – The existing SS dosing tank will be utilized, with pump operation and dosing settings confirmed prior to system expansion. The existing SS PD leachfield zone, along with a portion of the PW PD leachfield proposed to be abandoned will be utilized to provide a combined disposal capacity of a minimum 1,290 GPD.
- 4) Flow measurement – Either new or existing (if suitable) inline flow measurement devices will be utilized to measure flows from the dosing tank compartment to the PD leachfield.

PD Leachfield Disposal

The soil application rate, according to Napa County Alternative Sewage Treatment System Standards is 1.2 gal/SF/day based on the site evaluation results discussed above. The existing PD trench section included trenches that were 3.5 feet deep, with 18" of gravel below the distribution lateral. This corresponds to a sidewall area of 3.0 square feet/lineal foot (SF/LF). The minimum size of disposal field required for the 1,425 GPD design flow is calculated as follows:

$$\frac{1,290\ gpd}{1.2\ gal/SF/day * 3.0\ SF/LF} = 358\ LF$$

Therefore, a total of 400 LF of PD leachfield is anticipated to be required for SS disposal, which exceeds the existing 210 LF dedicated to SS disposal. It is proposed that 2 additional PD leachlines of 100 LF each be

removed from the PW system and connected to the SS system. An additional 100% reserve (400 LF) also needs to be identified. Approximately 1,400 LF total of PW PD leachfield is available, and it is recommended that the reserve area requirement be met with the an additional 400 LF of the PW PD leachfield. The enclosed overall site plan (Enclosure B) show the location of the existing disposal area.

## **OTHER CONSIDERATIONS**

### **ODOR CONTROL**

There should be no noxious odors from a properly designed and operated treatment system. See Alternative Courses of Action for operation alternatives.

### **GROUNDWATER CONTAMINATION**

The nearest existing or proposed water well to the SS treatment and disposal systems is approximately 100 feet. No disposal of wastewater effluent will occur within 100 feet of any existing or proposed wells.

### **PROTECTION**

Exposed wastewater treatment facilities should be posted with appropriate warning signs. The treatment areas will be protected to restrict access and potential damage to the system.

### **ALTERNATIVE COURSES OF ACTION**

For the SS system, should there be any unforeseen operational difficulties, the following additional courses of action would be available if necessary:

- Pumping and truck transfer of treated and diluted wastewater to an approved treatment plant would be used as additional courses of action
- Primary and reserve area expansion to accommodate additional SS disposal
- Additional treatment of SS for land disposal



Conn Creek Winery  
Wastewater Feasibility Study  
July 10, 2019  
Revised: November 17 2020

**SUMMIT ENGINEERING, INC.**  
Project No. 2019040

## **ENCLOSURE A**

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF SUMMIT ENGINEERING, INC. AND IS NOT TO BE USED IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF SUMMIT ENGINEERING, INC.

APN 030-120-030

PW REUSE AREAS:

- VINEYARD
- LANDSCAPE

**OWNER/APPLICANT:**  
**CONN CREEK WINERY**  
 8711 SILVERADO TRAIL  
 ST. HELENA, CA 94574  
 (707) 963-9100

APN 030-120-031

APN 030-120-014

APPROXIMATE LIMIT OF FLOODWAY

(E) PW PRESSURE DISTRIBUTION LATERALS TO BE CONVERTED TO SS RESERVE, TYP OF 4 - 400 LF

(E) PW PRESSURE DISTRIBUTION LATERALS TO BE CONVERTED TO SS, TYP OF 2 - 200 LF

(E) SANITARY SEWAGE PRESSURE DISTRIBUTION LATERALS, TYP OF 2 - 210 LF

(E) DISTRIBUTION LATERALS END, TYP

(E) PW PRESSURE DISTRIBUTION LATERALS TO BE ABANDONED IN PLACE ~ 1000 LF

SILVERADO TRAIL

SAGE CANYON ROAD

(E) ENTRANCE

(E) LANDSCAPE IRRIGATION REUSE AREA, TYP

(E) DRIVEWAY & PARKING

APN 030-120-032

(E) WINERY BUILDING

(E) WASTEWATER & IRRIGATION POND

APPROXIMATE LOCATION OF (E) PG&E SERVICE

LIMIT OF (E) VINEYARD, TYP

NAPA COUNTY BLUELINE CREEK

CONN CREEK ROAD

CONN CREEK

APN 030-120-015

(E) RECEIVING AREA

LIMIT OF (E) VINEYARD, TYP

APPROXIMATE PROPERTY LINE, TYP

(N) PUMP HOUSE  
(N) FIRE PROTECTION STORAGE TANK

(N) WATER STORAGE TANK

(E) BLDG

(N) RETAINING WALL

(E) WATER STORAGE TANK

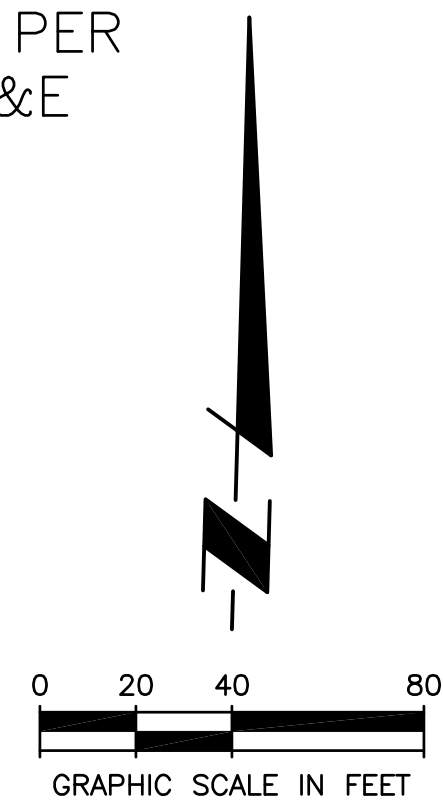
(E) CONCRETE PAD

APPROXIMATE LOCATION OF 4" PG&E CONDUIT, INSTALLED PER PG&E STANDARDS. SEE PG&E PLAN FOR EXACT LOCATION

APPROXIMATE LIMIT OF FLOODWAY

(E) FIRE PUMP HOUSE

APN 030-120-033



**SUMMIT**  
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**CONN CREEK WINERY**  
 8711 SILVERADO TRAIL  
 ST. HELENA, CA 94574  
 APN 030-120-032

USE PERMIT APPLICATION  
 WASTEWATER SITE PLAN

2019-07-12	PERMIT SUBMITTAL
2019-10-21	PLAN CHECK RESPONSE
2020-01-10	PLAN CHECK RESPONSE

DATE: 2019-07-12  
 JOB NO: 2018205  
 SCALE: AS SHOWN  
 DRAWN: JA  
 CHECKED: MS  
 SHEET

UP7

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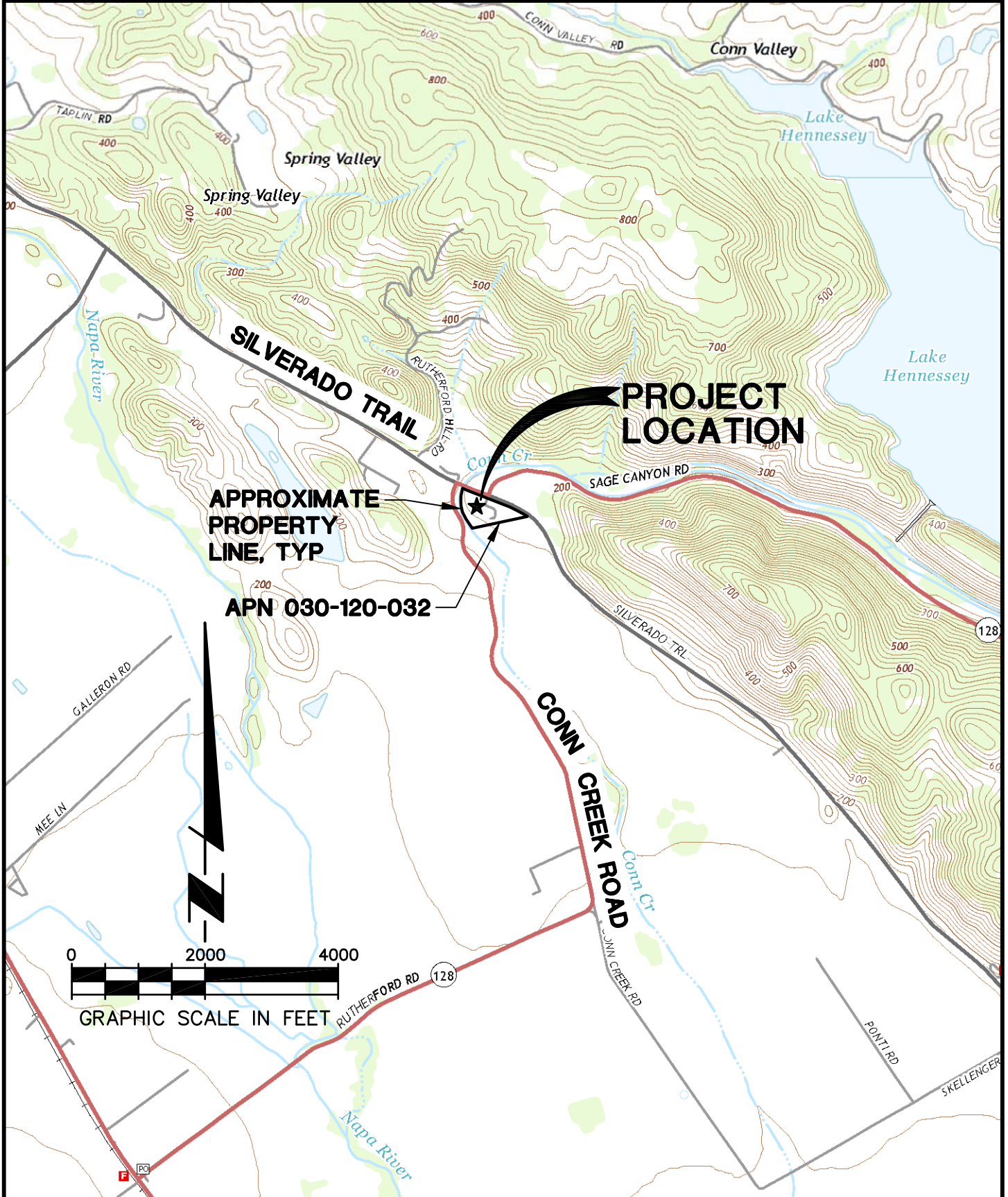
**ENCLOSURE B**



**CONN CREEK WINERY**  
**8711 SILVERADO TRAIL**  
**ST. HELENA, CA 94574**  
**APN 030-120-032**

PROJECT NO. 2018205  
 DATE 2019-07-12  
 SHT NO 1 OF 1  
 BY JA CHK MS

**VICINITY MAP**



PLOTTED ON: 7/10/2019 11:32 AM  
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Conn Creek Winery  
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## **ENCLOSURE C**

# ABBREVIATIONS

<	ANGLE	INT	INTERIOR
+	AND	IRR	IRRIGATION
@	AT	JB	JUNCTION BOX
○	CENTERLINE	JT	JOINT
° OR DIA.	DIAMETER	LD	LIGHT DUTY
⊖	DESIRE	LF	LINEAL FOOT
∥	FLOORLINE	LP	LOW POINT
∥∥	PARALLEL	LAT	LATERAL
∥	PERCENT	LT	LEFT
PL	PROPERTY LINE	MG	MILLION GALLON
AB	ANCHOR BOLT	MH	MANHOLE
AC	ASPHALT CONCRETE	M.H.W.L.	MAXIMUM HIGHWATER LINE
AD	AREA DRAIN	MAX	MAXIMUM
ADD1	ADDITIONAL	MFR	MANUFACTURER
AGG	AGGREGATE	MIN	MINIMUM
APPROX	APPROXIMATE	MISC	MISCELLANEOUS
AVG	AVERAGE	MPT	MALE PIPE THREADS
B	BASE CHANNEL WIDTH	N	NORTH
BC	BEGIN CURVE	NIC	NOT IN CONTRACT
BM	BENCH MARK	NTS	NOT TO SCALE
BLDS	BUILDING	NO. OR #	NUMBER
BLK	BLOCK	NOM	NOMINAL
BLKS	BLOCKING	OC	ON CENTERS
BM	BEAM	OD	OUTSIDE DIAMETER
BD	BOARD	OH	OVERHEAD
BOT	BOTTOM	PI	POINT OF INTERSECTION
CB	CATCH BASIN	PP	POWER POLE
CJ	CONSTRUCTION JOINT	PSD	PERFORATED SUBDRAIN
CMP	CORRUGATED METAL PIPE	FUE	PUBLIC UTILITIES EASEMENT
CO	CLEANOUT	PVC	POLYVINYL CHLORIDE
CSP	CORRUGATED STEEL PIPE	PH	PROCESS WASTEWATER
CKR	CHECKER	PN	PENETRATION
GL	GLASS	PLYND	PLYWOOD
CLR	CLEAR	PT	POINT
CO	COUNTY	PVMT	PAVEMENT
CONC	CONCRETE	R/W	RIGHT OF WAY
CONST	CONSTRUCTION	R OR RAD	RADIUS
CONT	CONTINUOUS	RCP	REINFORCED CONCRETE PIPE
CTR	CENTER	RED	REDUCER, REDUCING
D	DITCH DEPTH	REF	REFERENCE
DF	DOUGLAS FIR	REINF	REINFORCING
DBL	DOUBLE	REQD	REQUIRED
DIA	DIAMETER	RT	RIGHT
DIM	DIMENSION	RWD	RIGHT OF WAY
DNS	DRAWING	S	SCOUTH OR SLOPE
E	EAST	S	STORM DRAIN
EC	END OF CURVE	SF	SQUARE FEET
EF	EACH FACE	SS	SUBGRADE
EM	EACH WAY	SS	STAINLESS STEEL
EA	EACH	SSMH	SANITARY SEWER MANHOLE
EL OR (ELEV)	ELEVATION	SAN	SANITARY
ELEC	ELECTRICAL	SCH	SCHEDULE
EMBED	EMBEDMENT	SIM	SIMILAR
EQ	EQUAL OR EQUATION	SPEC	SPECIFICATION
EXC	EXCAVATION, EXCAVATE	SG	SQUARE
EXIST OR (E)	EXISTING	SS	SANITARY SEWER
EXP	EXPANSION	STA	STATION
FF	FINISH FLOOR	STD	STANDARD
FG	FINISH GRADE	STD	STEEL
FH	FIRE HYDRANT	T	TELEPHONE
FP	FIRE PROTECTION	TEM	TEMPORARY BENCH MARK
FIN	FINISH	TC	TOP OF CONCRETE
FLS	FLANSED	TCC	TOP OF CONCRETE CURB
FPT	FEMALE PIPE THREADS	TP	TOP OF PAVEMENT
FT	FOOT OR FEET	THK	THICK
FIS	FOOTING	TOT	TOTAL
FUT	FUTURE	TRANS	TRANSITION
GR	GRADE	TRAP	TRAPEZOIDAL
GB	GRADE BREAK	TYP	TYPICAL
GV	GATE VALVE	UG	UTILITY CHASE
GA	GAUGE	UNO	UNLESS NOTED OTHERWISE
GALV	GALVANIZED	VSD	VINEYARD SUBDRAIN
HC	HANDICAPPED	VERT	VERTICAL
HD	HEAVY DUTY	W	WITH
HP	HIGH POINT	W/O	WITHOUT
HW	HIGH WATER	W	WEST OR WATER
HDR	HEADER	HW	WASTEWATER
HORIZ	HORIZONTAL	W/F	WELDED WIRE FABRIC
ID	INSIDE DIAMETER	WD	WOOD
IE	INVERT ELEVATION	YD, YDS	YD., YARD, YARDS
IN	INCH	Z	DITCH SIDE SLOPE

# UTILITIES NOTES

- CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES WITHIN THE WORK AREA AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES FROM THAT SHOWN PRIOR TO PROCEEDING WITH THE WORK.
- COORDINATE INSTALLATION OF ELECTRICAL UTILITIES WITH OWNER'S ELECTRICAL CONTRACTOR.
- WHERE POSSIBLE AND WHERE SEPARATION STANDARDS CAN BE MET, UTILITIES CAN BE INSTALLED IN COMMON TRENCHES. THE CONTRACTOR SHALL VERIFY BEDDING AND BACKFILL DETAILS WITH THE ENGINEER WHERE COMMON TRENCHING IS DESIRED.
- PROVIDE THRUST BLOCKS AT ALL HORIZONTAL AND VERTICAL BENDS ON THE PROCESS WASTEWATER FORCE MAIN (PWFM).
- A COMPACTED CLAY OR SLURRY CEMENT PLUS (MIN 18" LONG X 18" THICK) SHALL BE PLACED IN THE TRENCH AND AROUND THE PWFM AT 30 FEET ON CENTER.
- UTILITY CHASES SHOWN ARE INTENDED TO BE SPARES AFTER THE WORK IS COMPLETE.
- PIPELINE DEPTH OF BURY:
 

A. PWFM & GRAVITY LINES	2'-0" MIN (UNO)
B. UTILITY CHASES	2'-0" MIN (UNO)
C. ELECTRICAL	2'-6" MIN (UNO)
D. WATER	2'-6" MIN (UNO)
- SLOPE FOR WASTEWATER LINES (PWSS) = 0.02 MIN (UNO)

# GENERAL NOTES

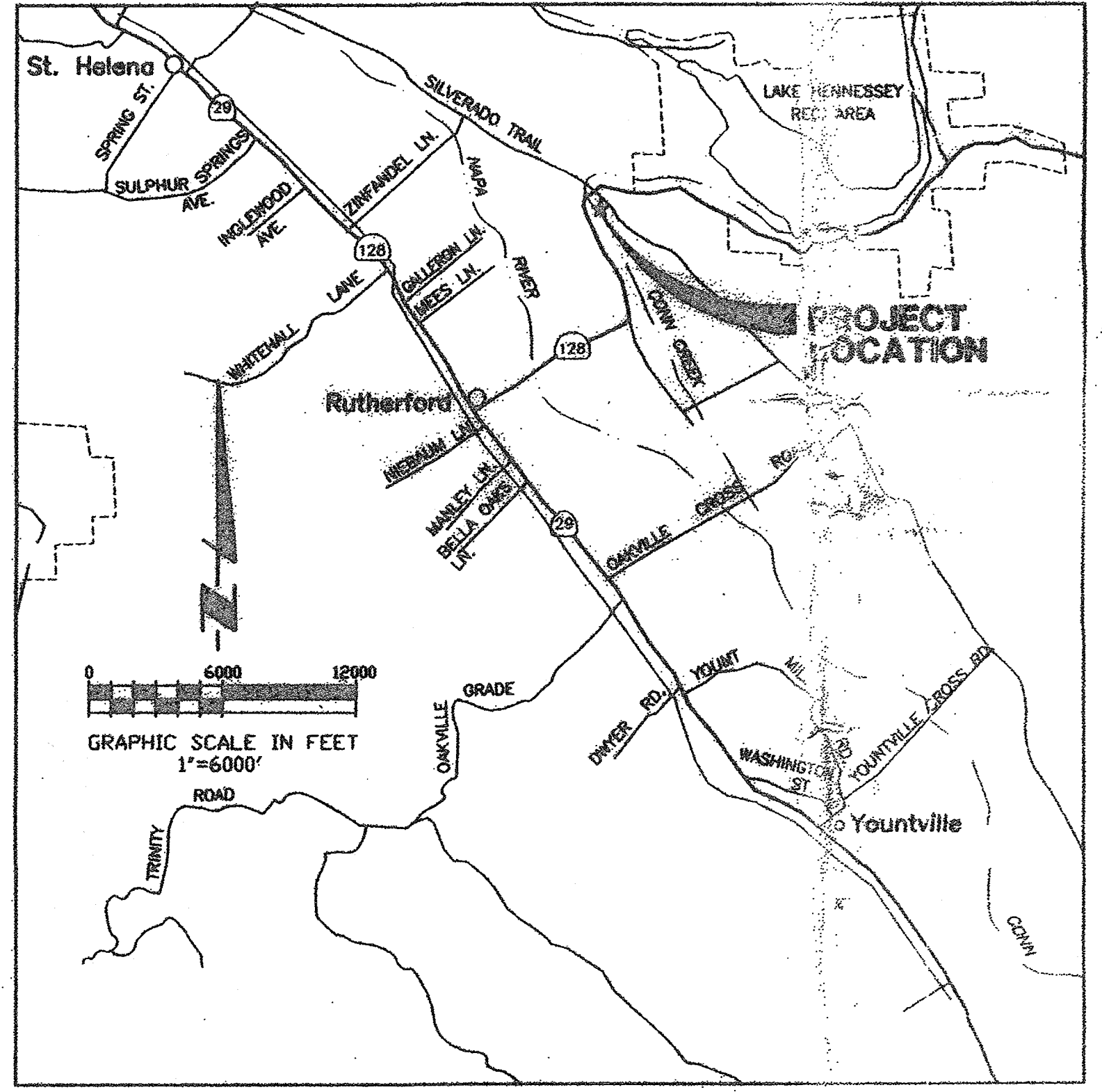
- ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE UNIFORM BUILDING CODE AND/OR APPLICABLE COUNTY OF NAPA CODES, ORDINANCES, ZONING AND PLANNING LAWS.
- ALL WORK SHALL BE IN COMPLIANCE WITH ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A.) STANDARDS AS SET FORTH BY THE FEDERAL DEPARTMENT OF LABOR AND/OR THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL SECURE A TRENCH PERMIT FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO EXCAVATION OF ANY TRENCH OVER FIVE FEET DEEP.
- ALL ONSITE SEWER, WATER AND GAS LINE CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE UNIFORM PLUMBING CODE (U.P.C.) AND ALL APPLICABLE REGULATIONS OF THE COUNTY OF NAPA AND COGNIZANT UTILITY COMPANIES.
- THE DRAWINGS SHALL NOT BE SCALED. ALL WORK SHALL BE GOVERNED BY THE DIMENSIONS SHOWN ON THE DRAWINGS. DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR ADJUSTMENT PRIOR TO PROCEEDING WITH THE WORK.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN AND BRING DISCREPANCIES TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
- DETAILS OF CONSTRUCTION NOT INDICATED OR NOTED SHALL BE CONSIDERED OF THE SAME CHARACTER SHOWN FOR SIMILAR OR EXISTING CONSTRUCTION.
- THIS DRAWING DOES NOT REPRESENT A PROPERTY SURVEY. PROPERTY LINES HAVE BEEN PLOTTED FOR INFORMATIONAL PURPOSES ONLY AND ARE APPROXIMATE.
- CONTRACTOR SHALL SECURE LETTERS OF PERMISSION FROM ADJACENT LAND OWNERS BEFORE ENTERING SUCH PROPERTIES.
- THE NAPA COUNTY CONSERVATION DEVELOPMENT & PLANNING DEPARTMENT (NCCDPD) SHALL BE NOTIFIED 48 HOURS PRIOR TO STARTING ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THESE AGENCIES INFORMED OF HIS SCHEDULE.
- CONTRACTOR SHALL PROVIDE 24 HOURS ADVANCE NOTICE TO THE ENGINEER FOR REQUESTED INSPECTIONS.
- THE OWNER SHALL PROVIDE FOR NECESSARY MATERIAL AND SOILS TESTING AND OBSERVATION. THE CONTRACTOR SHALL PROVIDE 48 HOURS MINIMUM NOTICE PRIOR TO REQUIRED OBSERVATION OR TESTING.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THE PLAN ARE BASED ON THE BEST INFORMATION AVAILABLE, HOWEVER, THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION SHOWN, OR THE INADVERTENT OMISSION OF ANY SUCH INFORMATION. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES, CONFLICTS AND/OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. UNLESS NOTED OTHERWISE, EXISTING UTILITIES SHALL BE PROTECTED AND MAINTAINED BY THE CONTRACTOR.
- THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES HAVE NOT BEEN INDICATED ON THESE DRAWINGS. GRADING OPERATIONS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE REGARDING EXISTING FEATURES. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE UTILITY LOCATIONS.
- UNDERGROUND SERVICE ALERT (U.S.A.) CALL TOLL FREE (800)642-2444 AT LEAST 48 HOURS PRIOR TO EXCAVATION.
- EXISTING UTILITIES SHALL BE KEPT IN SERVICE AT ALL TIMES. UTILITIES THAT INTERFERE WITH WORK TO BE PERFORMED UNDER THIS PROJECT SHALL BE PROTECTED AS REQUIRED IN ACCORDANCE WITH COUNTY OF NAPA, P.S. & E. AND PACIFIC BELL REQUIREMENTS.
- THE CONTRACTOR SHALL NOTIFY P.S. & E. AND PACIFIC BELL PRIOR TO STARTING ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THESE UTILITY COMPANIES INFORMED OF HIS SCHEDULE.
- THE CONTRACTOR SHALL PURCHASE AND MAINTAIN SUCH INSURANCE AS WILL PROTECT AND HOLD HIM, THE OWNER AND THE ENGINEER HARMLESS FROM CLAIMS WHICH MAY ARISE OUT OF OR RESULT FROM THE CONTRACTOR'S OPERATIONS UNDER THE CONTRACT, WHETHER SUCH OPERATIONS BE BY HIMSELF OR BY ANY SUBCONTRACTOR OR BY ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM, OR BY ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE.
- THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND INSPECTIONS FROM (NCCDPD). THE OWNER WILL MAKE APPLICATIONS AND PAY ALL PERMIT FEES.
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND OTHER SERVICES NECESSARY FOR PROPER EXECUTION OF THIS CONTRACT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DAILY RECORD OF DIFFERING CONDITIONS. THE AS-BUILT INFORMATION SHALL BE RECORDED ON SEPIA DRAWINGS PROVIDED BY THE OWNER. PRIOR TO FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE THE AS-BUILT DRAWINGS, SIGNED AND DATED BY THE CONTRACTOR.
- CONTRACTOR SHALL COORDINATE HIS WORK WITH EXISTING WINERY AND VINEYARD OPERATIONS. CONTRACTOR SHALL BE PREPARED TO PHASE PORTIONS OF THE WORK SO THAT IT DOES NOT INTERFERE WITH OR INHIBIT EXISTING WINERY OPERATIONS.
- CONTRACTOR SHALL PROVIDE FIRST AID FACILITIES AND OTHER TEMPORARY SERVICES SUCH AS WATER, POWER, TELEPHONE, TOILETS, ETC.
- OBTAINING OF CONSTRUCTION WATER AND UTILITIES SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.
- THE SCREENED CONTOURS AND TOPOGRAPHIC INFORMATION ON THESE DRAWINGS REPRESENT THE APPROXIMATE SURFACE CONDITIONS TO BE FOUND AT THE PROJECT LOCATION AS OF MAY, 1999. THIS INFORMATION HAS BEEN FURNISHED BY ALBION SURVEYS, INC. ST. HELENA, CA. FOR THE BASIS OF BEARINGS: THOMPSON & ASSOC. JOB NO. 448. DATUM ASSUMED.
- FOR INFORMATION ON GEOLOGY AND EARTHWORK REQUIREMENTS, REFER TO GEOTECHNICAL INVESTIGATION FOR WASTEWATER PONDS PREPARED BY BAUER ASSOCIATES.
- THE ENGINEER ASSUMES NO RESPONSIBILITY FOR SOIL CONDITIONS IN THE AREA OF CONSTRUCTION OPERATIONS.
- ALL EXISTING UTILITIES, FENCES AND GATES AT THE SITE SHALL BE LOCATED, PROTECTED AND MAINTAINED AT ALL TIMES.
- ONSITE GRADING SHALL NOT INHIBIT OFFSITE DRAINAGE.
- REMOVE ONLY THOSE TREES THAT ARE NECESSARY TO CLEAR THE NEW CONSTRUCTION. NO TREE SHALL BE REMOVED WITHOUT PRIOR REVIEW WITH THE OWNER'S REPRESENTATIVE.
- THE CONTRACTOR SHALL PROVIDE THE OWNER, AS A CONDITION OF COMPLETION AND RECEIPT OF FINAL PAYMENT, A WRITTEN GUARANTEE COVERING ALL MATERIALS AND WORKMANSHIP FURNISHED AND PERFORMED FOR THIS WORK AGAINST DEFECTS FOR A PERIOD ONE (1) YEAR AFTER THE DATE OF FILING THE NOTICE OF COMPLETION.
- SUBSTITUTIONS FOR MATERIALS OR EQUIPMENT INDICATED ON THE CONTRACT DRAWINGS SHALL BE REVIEWED BY THE ENGINEER. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR WORK AFFECTED BY SUCH CHANGES ACCOMPLISHED WITHOUT HIS REVIEW.
- AS THE RESPONSIBILITY FOR THE ENGINEERING DESIGN WORK DEPICTED ON THESE DRAWINGS RESTS WITH THE FIRM OF SUMMIT ENGINEERS, INC., CONSULTING CIVIL ENGINEERS, NO CHANGES ARE TO BE MADE TO THE WORK DURING OR PRIOR TO CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN PERMISSION OR ACKNOWLEDGMENT OF SUMMIT ENGINEERS, INC., CONSULTING CIVIL ENGINEERS.
- SEE DETAILED SPECIFICATIONS FOR FURTHER INFORMATION.

# VILLA MT. EDEN

8711 SILVERADO TRAIL  
ST. HELENA, CALIFORNIA

# WASTEWATER MANAGEMENT SYSTEM IMPROVEMENTS

APRIL, 2000



LOCATION MAP

### LIST OF DRAWINGS

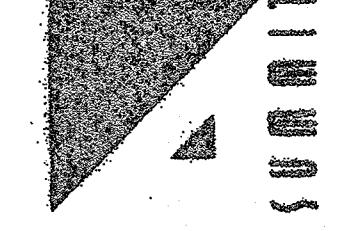
G1	GENERAL INFORMATION
C1	OVERALL SITE PLAN
C2	PW POND PLAN
C3	SECTIONS & DETAILS
C4	SECTIONS & DETAILS
C5	PLANS, SECTIONS AND DETAILS
C6	SANITARY SEWER, SECTIONS DETAILS AND NOTES
C7	PW POND LINER DETAILS
REF. C	REFERENCE C: EXISTING MOUND SYSTEM (6 SHEETS)

RECEIVED  
SEP 6 2000  
DEPT. OF ENVIRONMENTAL MANAGEMENT

PLANS APPROVED  
County of Napa  
Dept. of Environmental Management  
DATE 9/8/00  
w/ conditions  
9/8/00

original set of plans  
submitted 4/12/00  
RECEIPT # 12825  
AMT. PD. 213 + 35 = 258  
JOB # 92-12720 + 92-12721  
BY W.C.

SUMMIT ENGINEERING INC.  
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ST. HELENA, CALIFORNIA  
APR 02E-120-082

WASTEWATER MANAGEMENT  
SYSTEM IMPROVEMENTS  
GENERAL INFORMATION

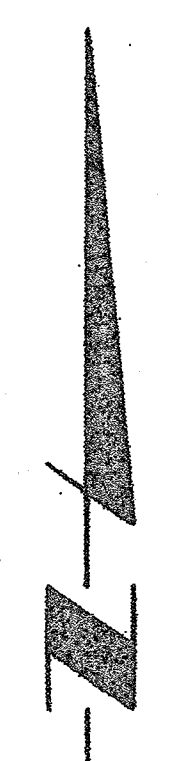
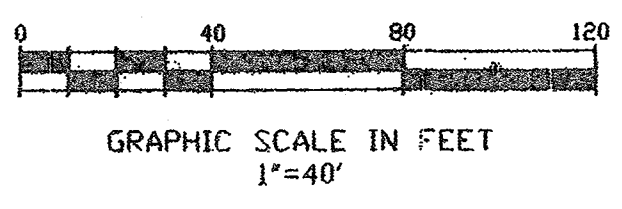
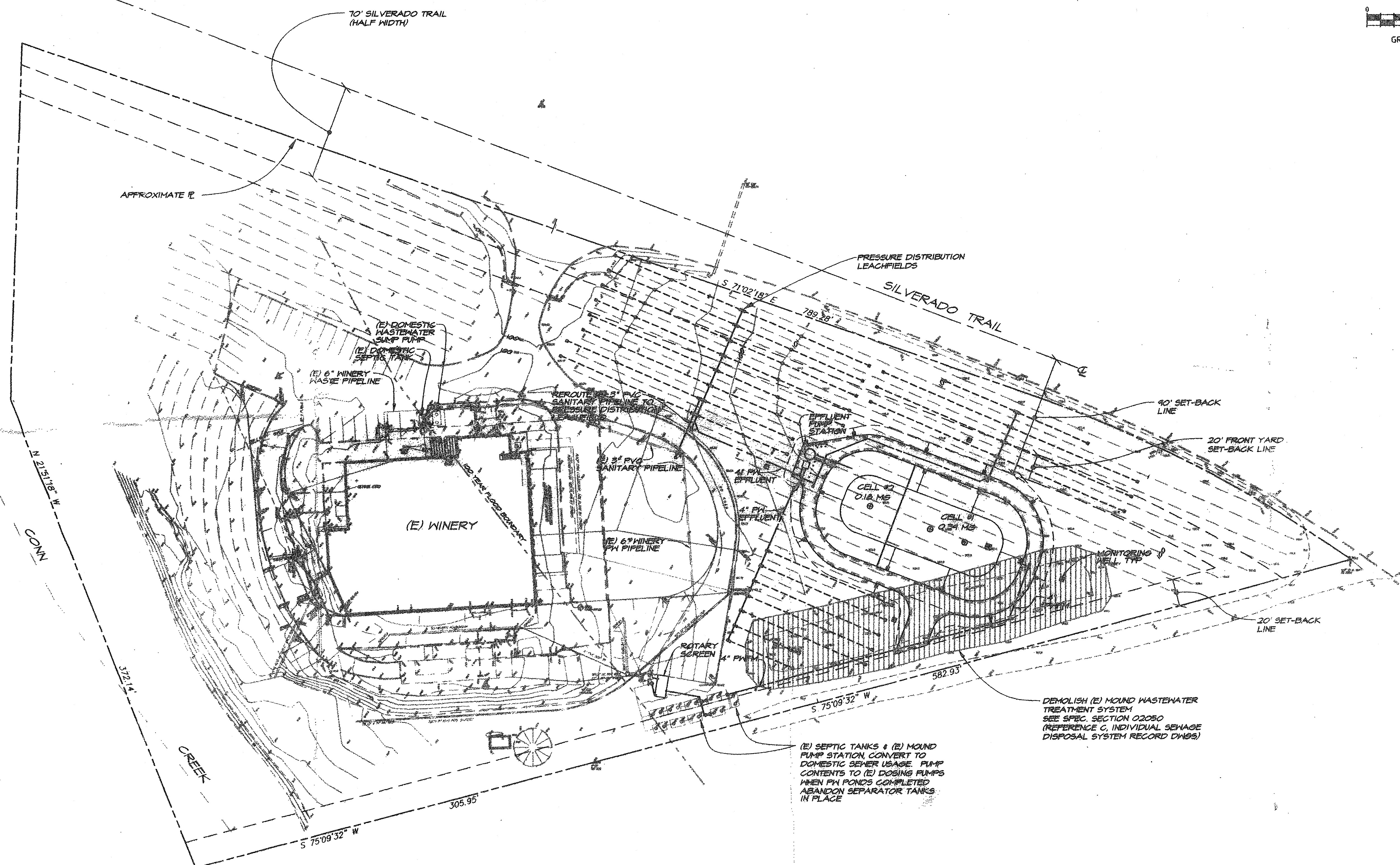
ISSUED FOR PERMITS  
04-12-00



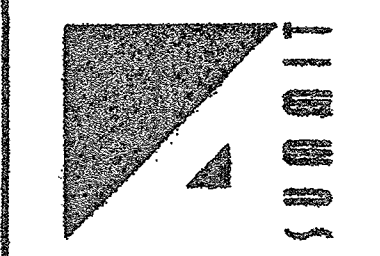
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JOB NO.: 9607  
SCALE: AS NOTED  
DRAWN: P.K.  
CHECKED: GR  
SHEET: G1

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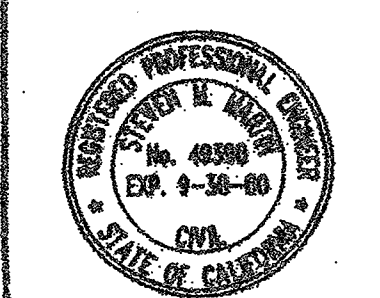


**VILLA MT. EDEN**  
8771 SILVERADO TRAIL  
ST. HELENA, CALIFORNIA  
APN 082-120-082

**WASTEWATER MANAGEMENT  
SYSTEM IMPROVEMENTS**

**OVERALL SITE PLAN**

ISSUED FOR PERMITS  
04-2-00



DATE: 1-17-00  
JOB NO.: 9907  
SCALE: 1" = 40'  
DRAWN: PJK  
CHECKED: GR  
SHEET:

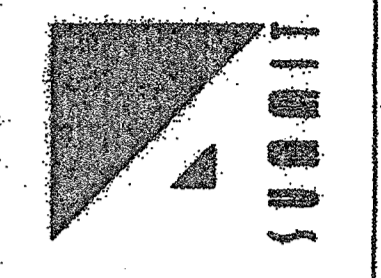
**C1**

9907/001

(E) SEPTIC TANKS & (E) MOUND PUMP STATION CONVERT TO DOMESTIC SEWER USAGE. PUMP CONTENTS TO (E) DOSING PUMPS WHEN PW PONDS COMPLETED. ABANDON SEPARATOR TANKS IN PLACE.

DEMOLISH (E) MOUND WASTEWATER TREATMENT SYSTEM. SEE SPEC. SECTION 022050 (REFERENCE C, INDIVIDUAL SEWAGE DISPOSAL SYSTEM RECORD DWGS).

- = Domestic waste m/w
- = Processed waste m/w
- = Pond M/w



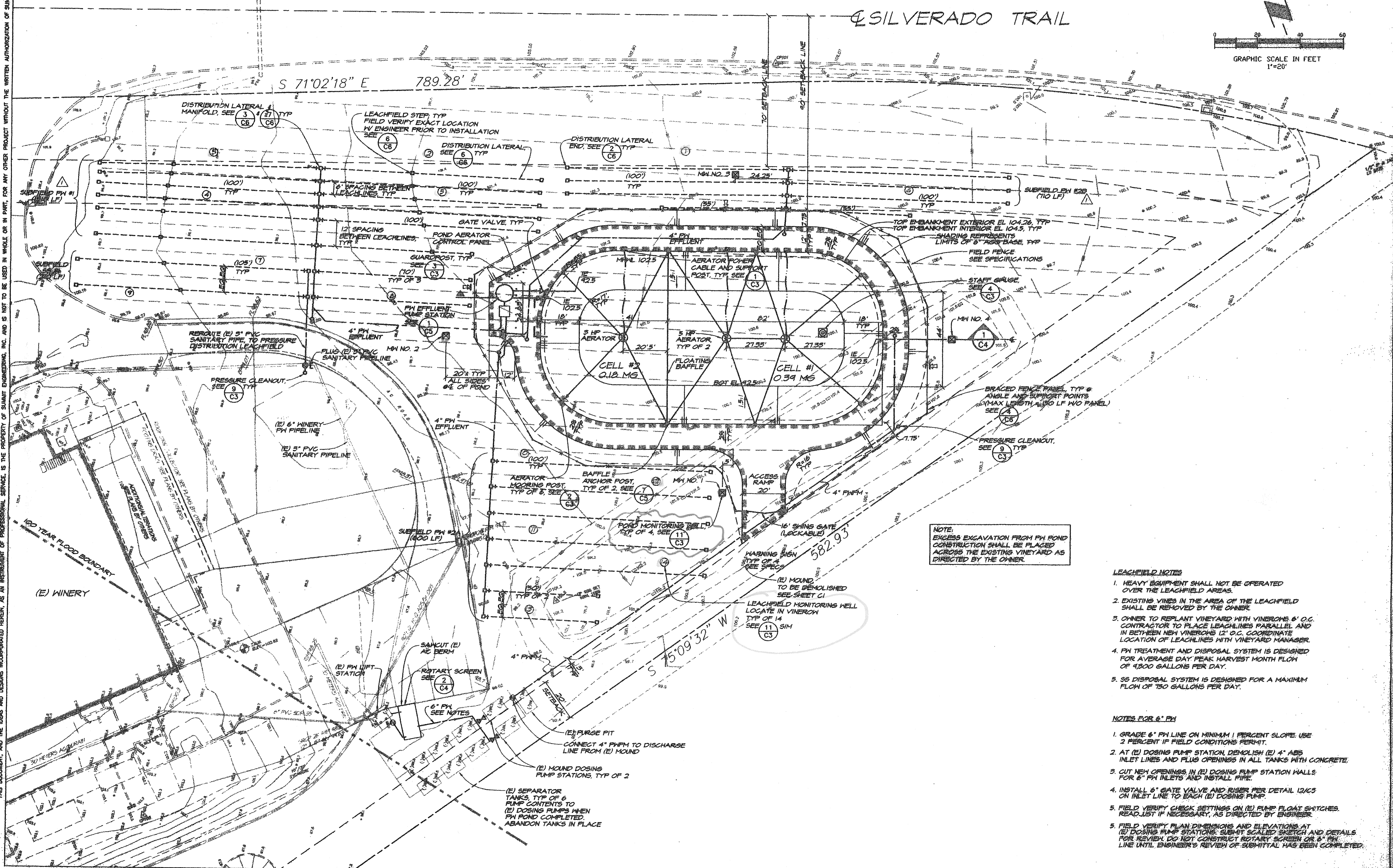
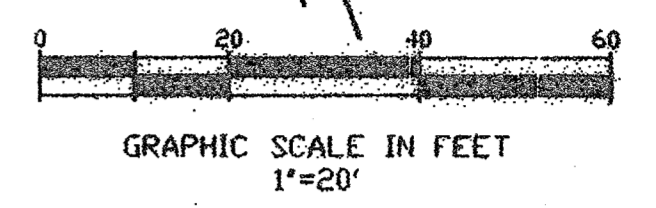
VILLA MT. EDEN  
 67th SILVERADO TRAIL  
 ST. HELENA, CALIFORNIA  
 APR 02-10-05

WASTEWATER MANAGEMENT  
 SYSTEM IMPROVEMENTS  
 SITE PLAN

ISSUED FOR PERMITS  
 04-20-05  
 DESIGN PER COUNTY  
 COMMENTS 08-24-05



DATE: 04-20-05  
 JOB NO.: 05017  
 SCALE: 1" = 20'  
 DRAWN: PJK  
 CHECKED: GR  
 SHEET: C2



NOTE:  
 EXCESS EXCAVATION FROM PW POND  
 CONSTRUCTION SHALL BE PLACED  
 ACROSS THE EXISTING VINEYARD AS  
 DIRECTED BY THE OWNER.

**LEACHFIELD NOTES**

1. HEAVY EQUIPMENT SHALL NOT BE OPERATED OVER THE LEACHFIELD AREAS.
2. EXISTING VINES IN THE AREA OF THE LEACHFIELD SHALL BE REMOVED BY THE OWNER.
3. OWNER TO REPLANT VINEYARD WITH VINIFEROUS 6' O.C. CONTRACTOR TO PLACE LEACHLINES PARALLEL AND IN BETWEEN NEW VINIFEROUS 12' O.C. COORDINATE LOCATION OF LEACHLINES WITH VINEYARD MANAGER.
4. PW TREATMENT AND DISPOSAL SYSTEM IS DESIGNED FOR AVERAGE DAY PEAK HARVEST MONTH FLOW OF 1,200 GALLONS PER DAY.
5. SS DISPOSAL SYSTEM IS DESIGNED FOR A MAXIMUM FLOW OF 750 GALLONS PER DAY.

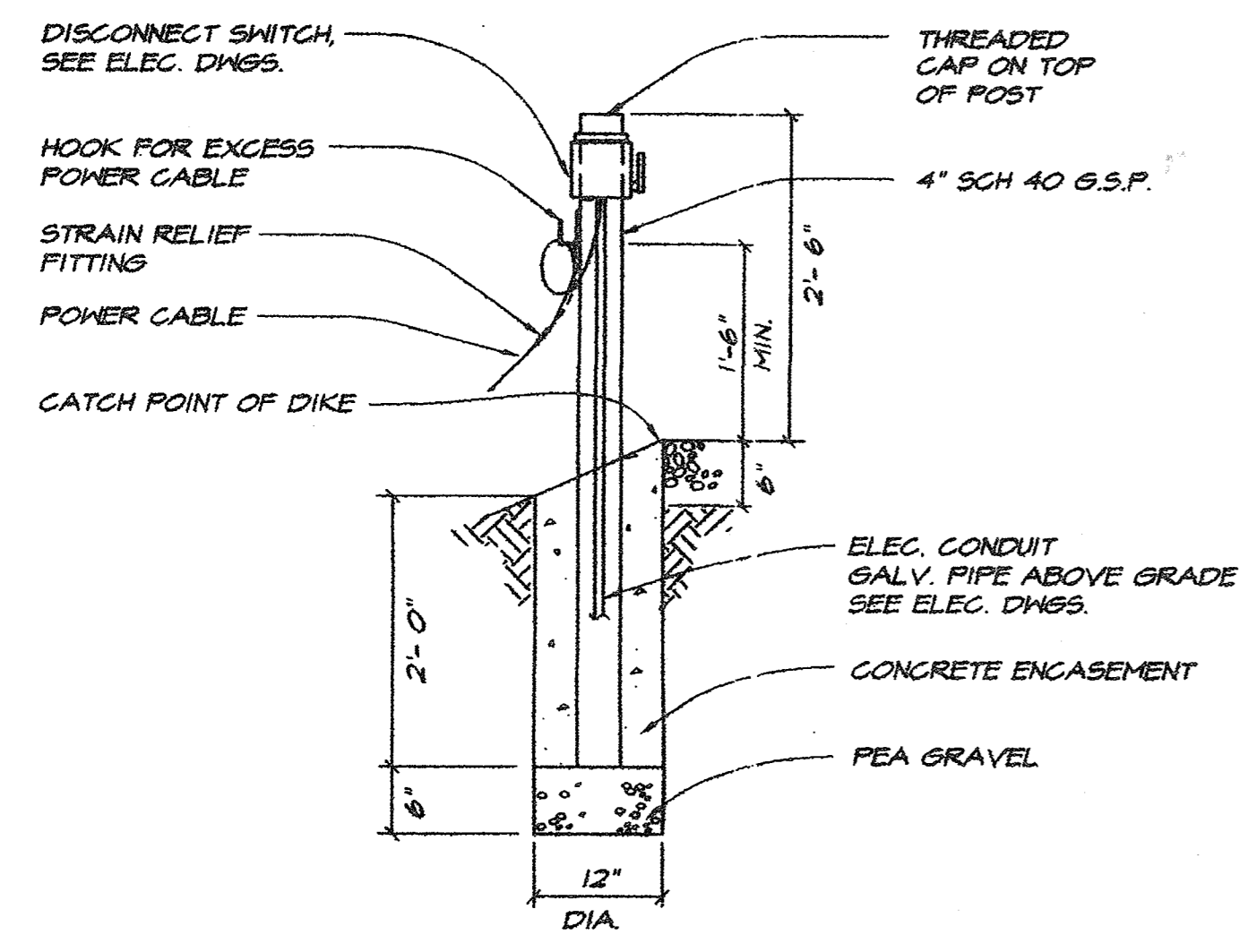
**NOTES FOR 6" PW**

1. GRADE 6" PW LINE ON MINIMUM 1 PERCENT SLOPE. USE 2 PERCENT IF FIELD CONDITIONS PERMIT.
2. AT (E) DOSING PUMP STATION, DEMOLISH (E) 4" ABS INLET LINES AND PLUS OPENINGS IN ALL TANKS WITH CONCRETE.
3. CUT NEW OPENINGS IN (E) DOSING PUMP STATION WALLS FOR 6" PW INLETS AND INSTALL PIPE.
4. INSTALL 6" GATE VALVE AND RISER PER DETAIL 12/C5 ON INLET LINE TO EACH (E) DOSING PUMP.
5. FIELD VERIFY CHECK SETTINGS ON (E) PUMP FLOAT SWITCHES. READJUST IF NECESSARY, AS DIRECTED BY ENGINEER.
6. FIELD VERIFY PLAN DIMENSIONS AND ELEVATIONS AT (E) DOSING PUMP STATIONS. SUBMIT SCALED SKETCH AND DETAILS FOR REVIEW. DO NOT CONSTRUCT ROTARY SCREEN OR 8" PW LINE UNTIL ENGINEER'S REVIEW OF SUBMITTAL HAS BEEN COMPLETED.

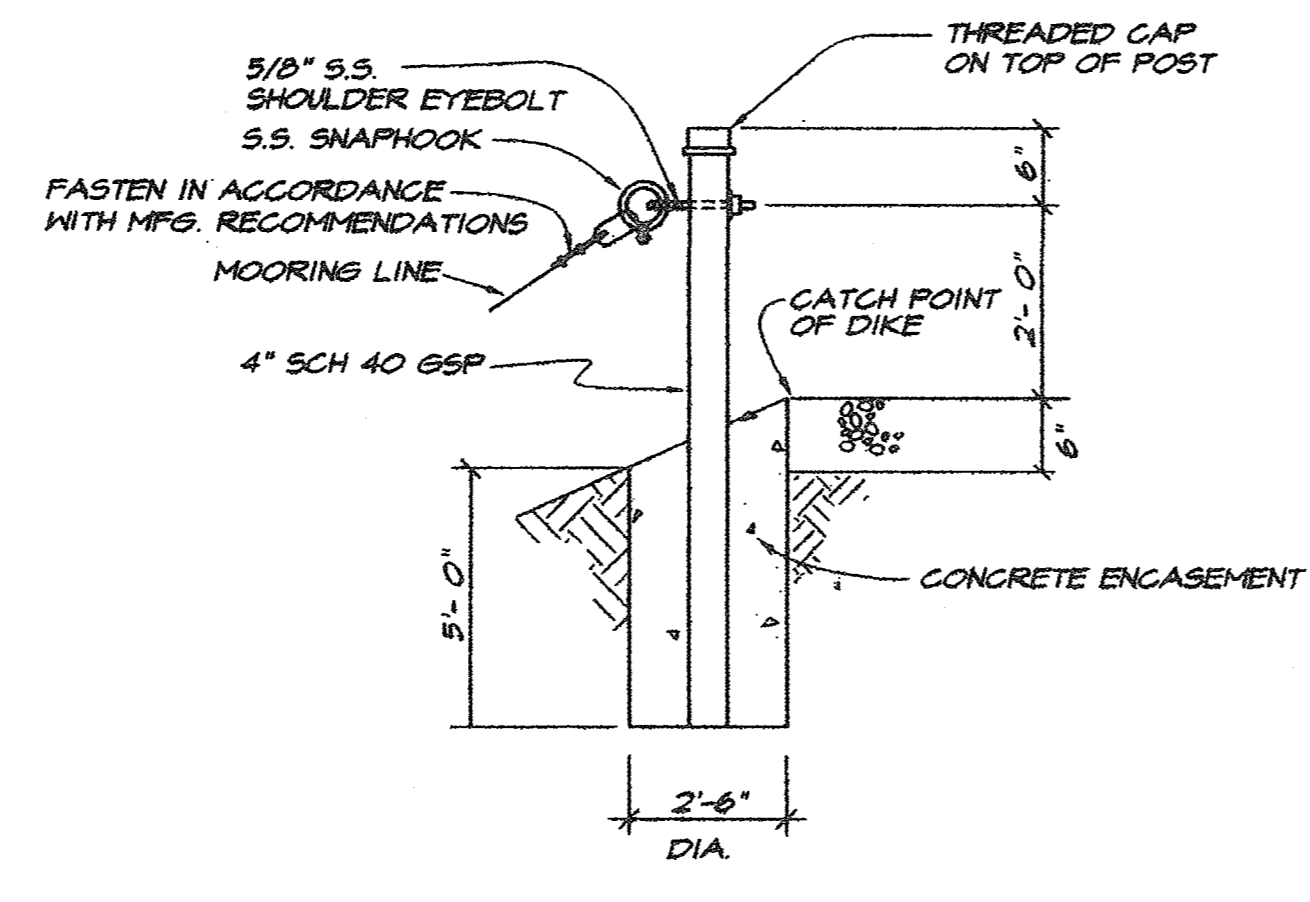
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 XREF: 98017TPO



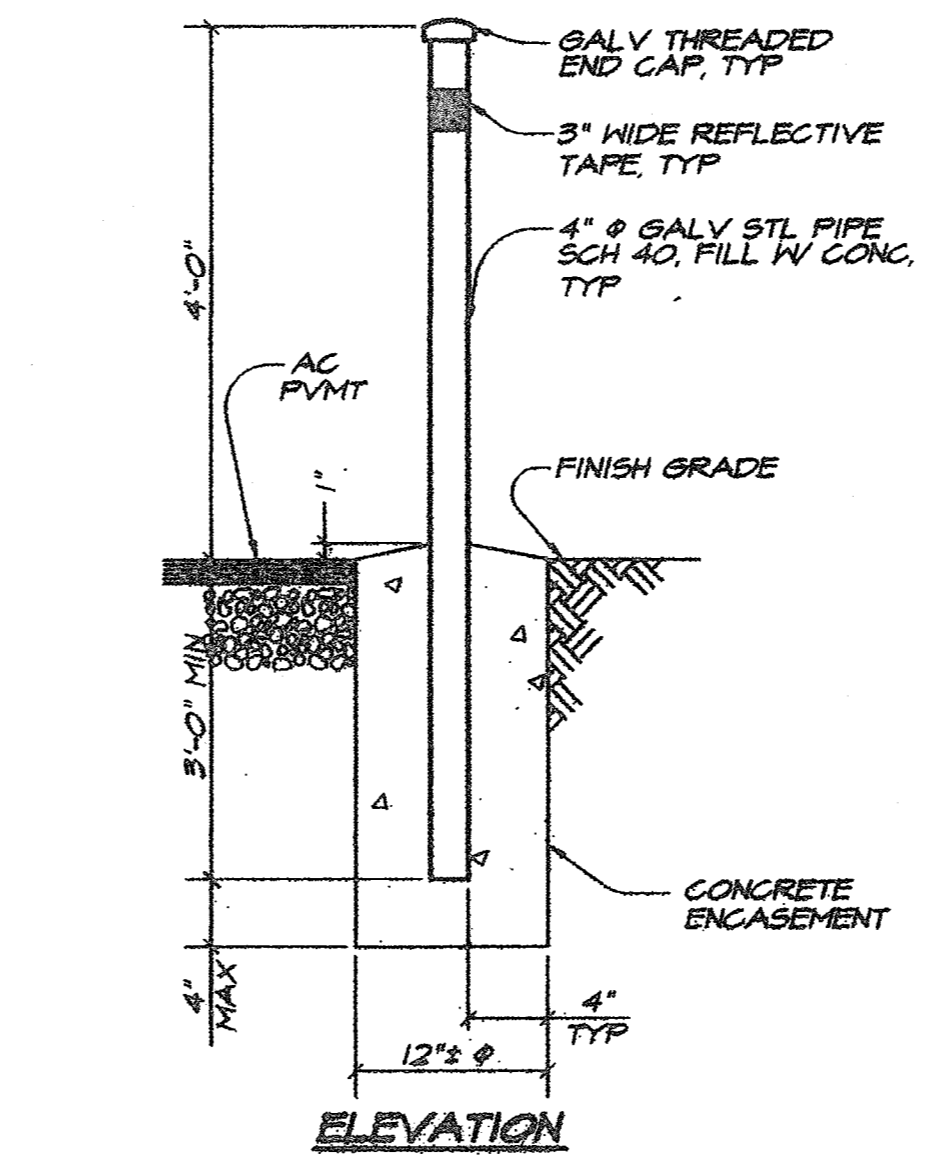
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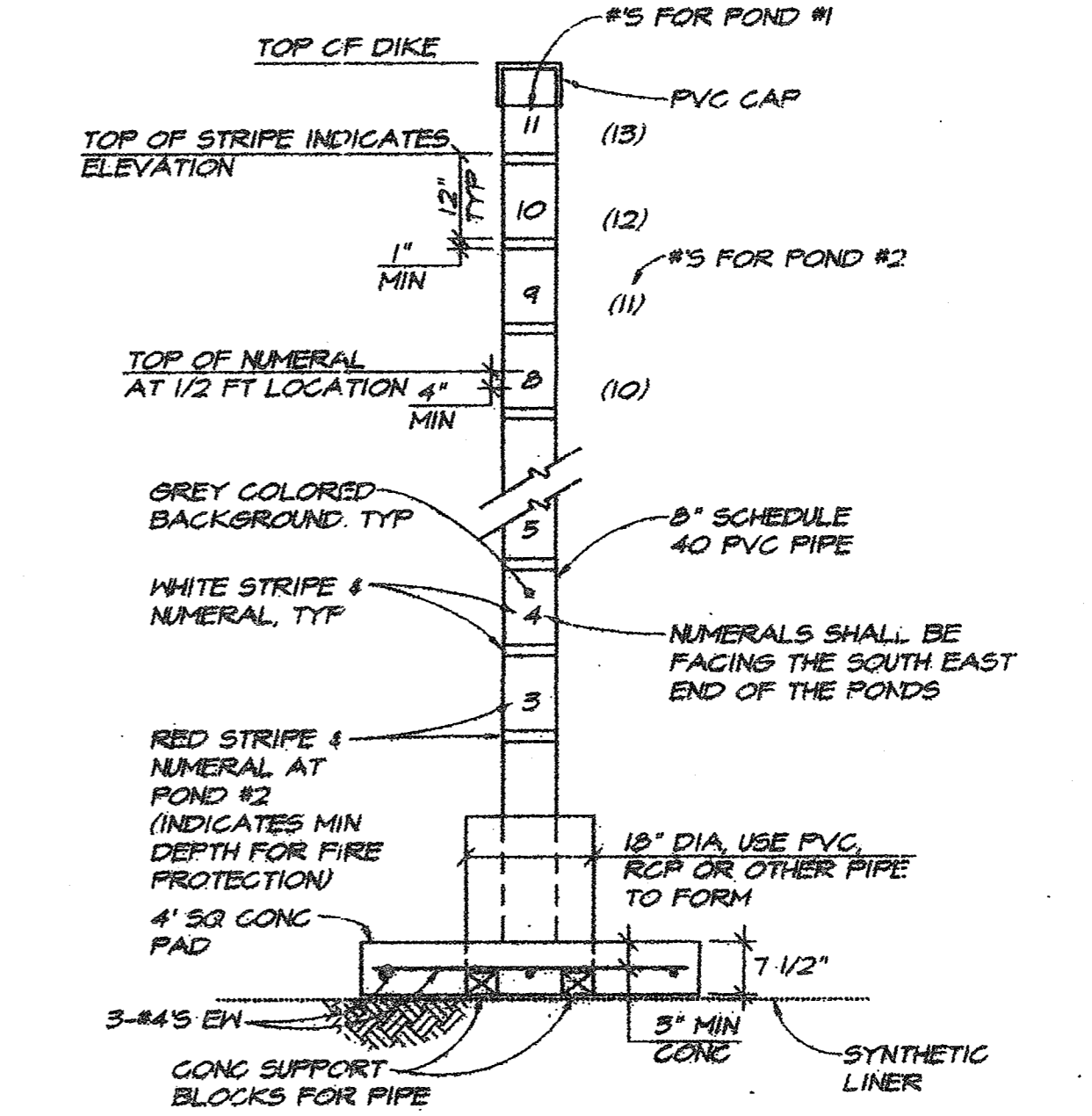
**POWER CABLE SUPPORT POST**  
3/4" = 1'-0" **1**



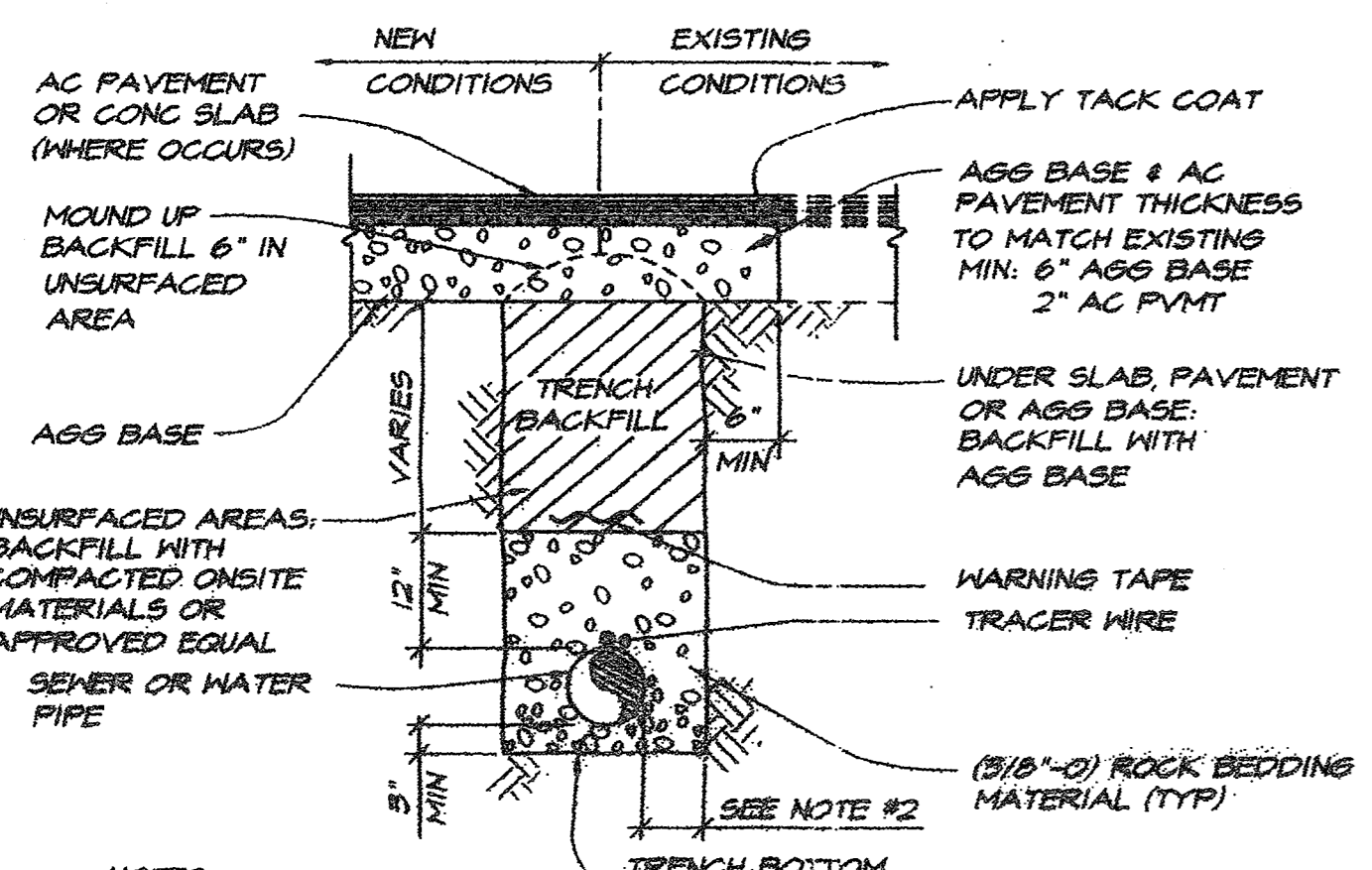
**AERATOR MOORING POST DETAIL**  
NO SCALE **2**



**GUARD POST DETAIL**  
N.T.S. **3**

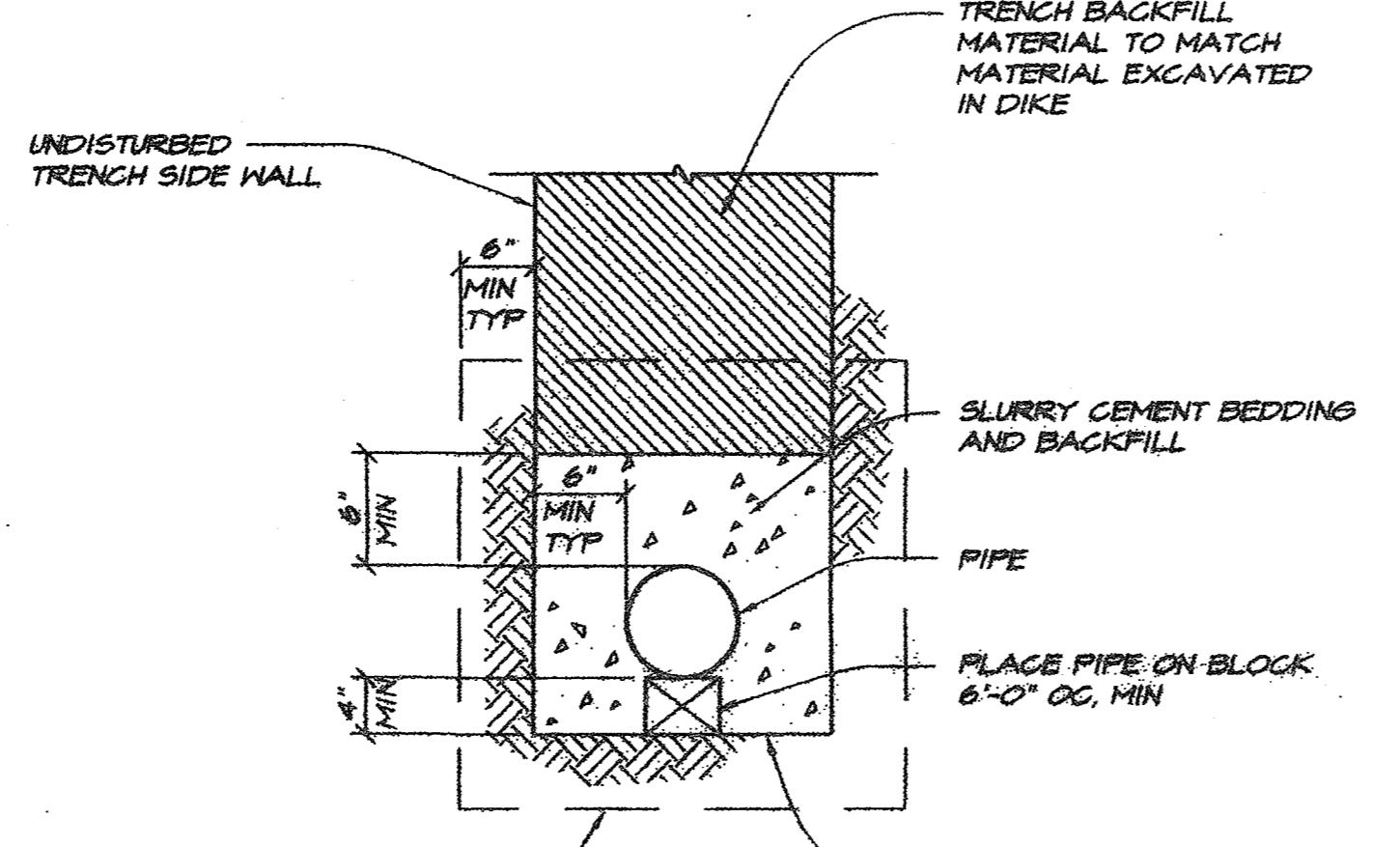


**STAFF GAUGE**  
N.T.S. **4**



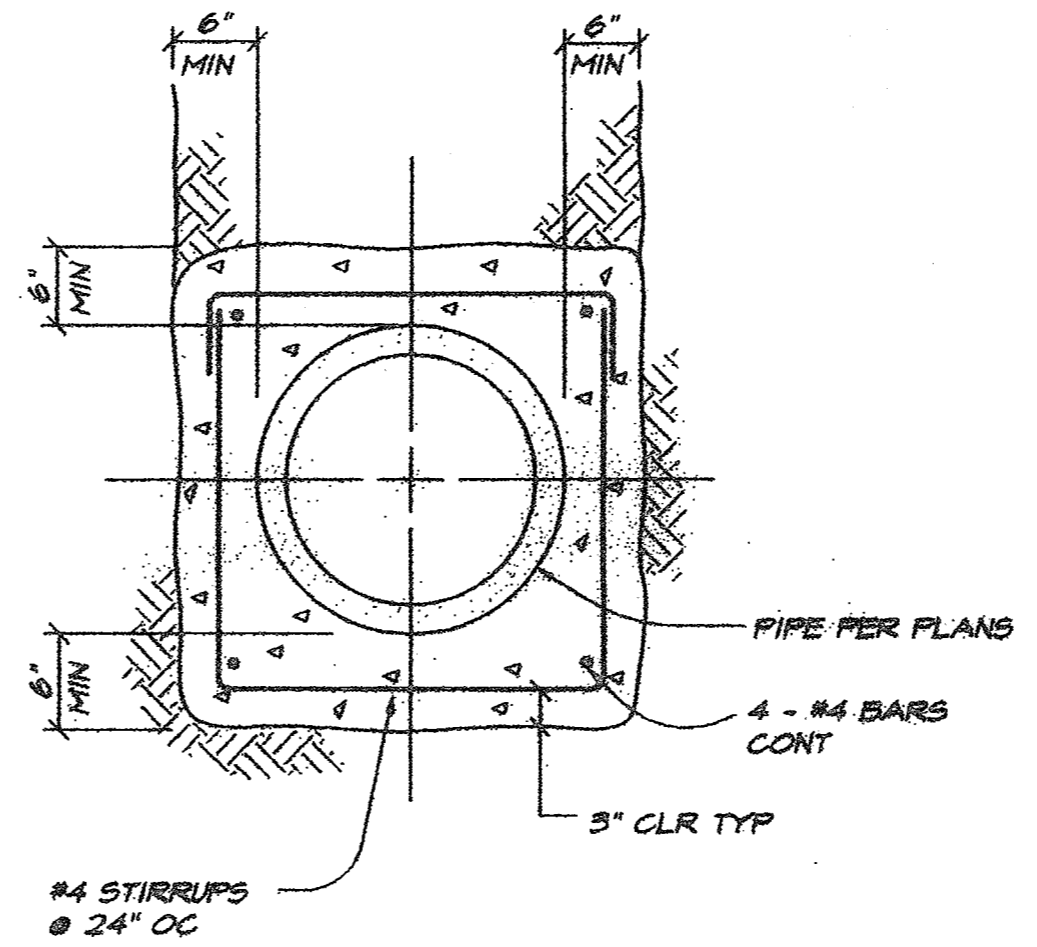
- NOTES:**
1. WHEN TRENCH BOTTOM IS UNSTABLE, OVER EXCAVATE AND INSTALL ADDITIONAL BEDDING MATERIAL AS INDICATED IN SPECS.
  2. PIPE DIAMETER 18" OR LESS, 6" MIN, 4" MAX  
PIPE DIAMETER GREATER THAN 18", 9" MIN, 12" MAX

**TYPICAL UTILITY PIPE TRENCH SECTION**  
3/4" = 1'-0" **5**

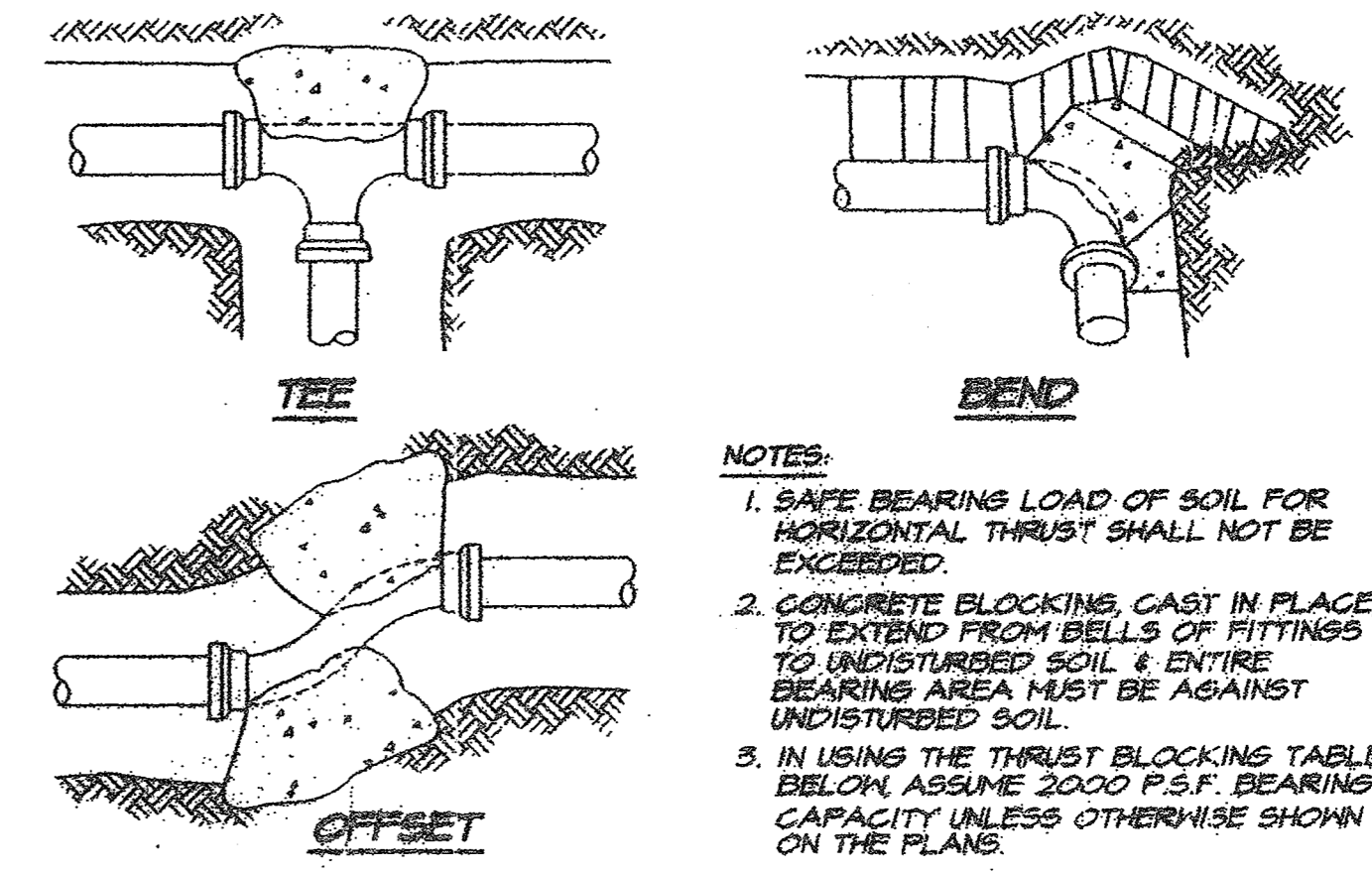


- LIMITS OF 36" X 36" X 12" WIDE CONG CUT-OFF (WHERE OCCURS)**
- REMOVE LOOSE MATERIAL FROM BOTTOM OF TRENCH**

**SLURRY CEMENT TRENCH BACKFILL**  
N.T.S. **6**



**CONCRETE ENCASEMENT**  
NO SCALE **7**

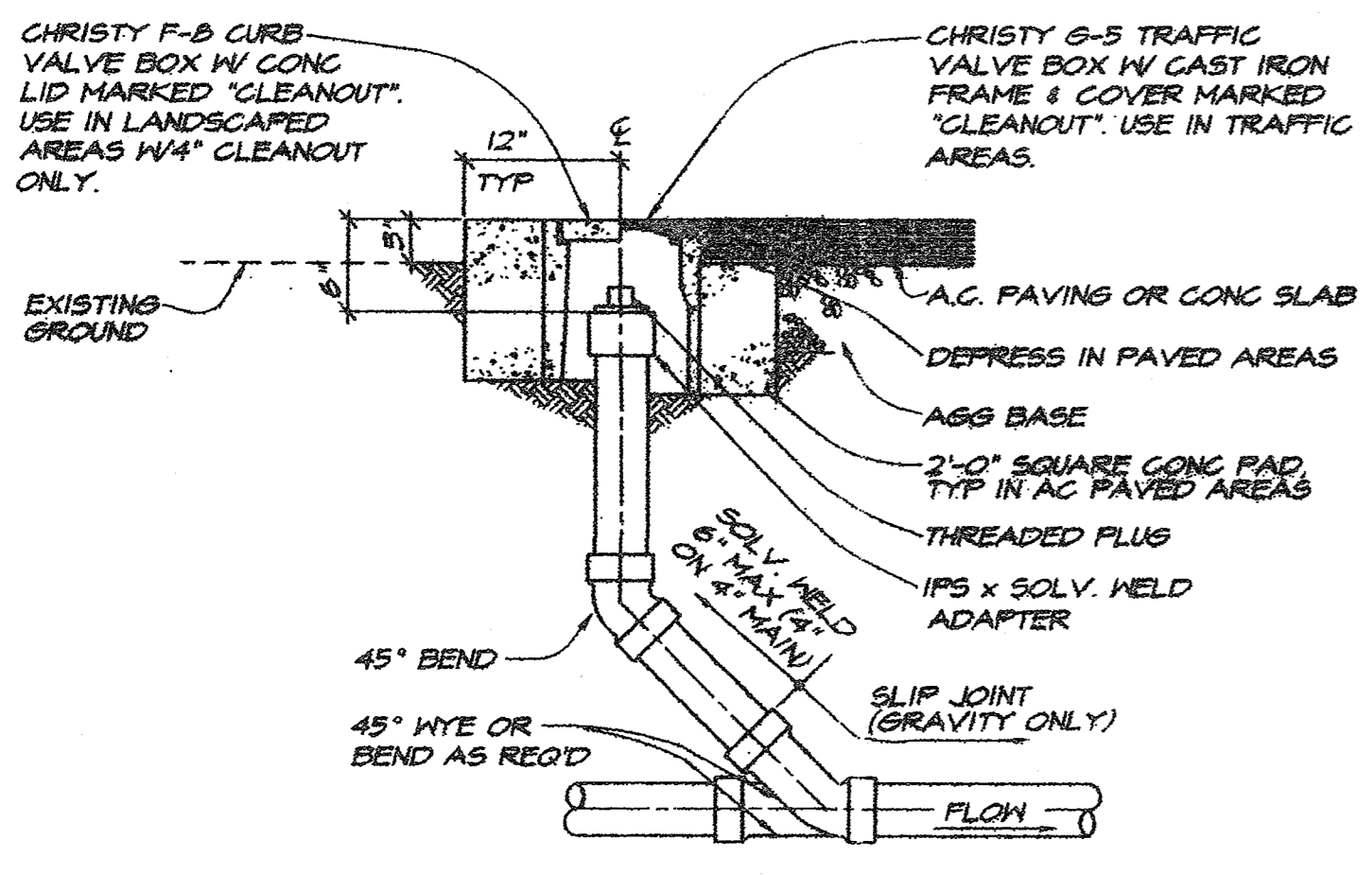


- NOTES:**
1. SAFE BEARING LOAD OF SOIL FOR HORIZONTAL THRUST SHALL NOT BE EXCEEDED.
  2. CONCRETE BLOCKING, CAST IN PLACE TO EXTEND FROM BELLS OF FITTINGS TO UNDISTURBED SOIL & ENTIRE BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
  3. IN USING THE THRUST BLOCKING TABLE BELOW, ASSUME 2000 P.S.F. BEARING CAPACITY UNLESS OTHERWISE SHOWN ON THE PLANS.

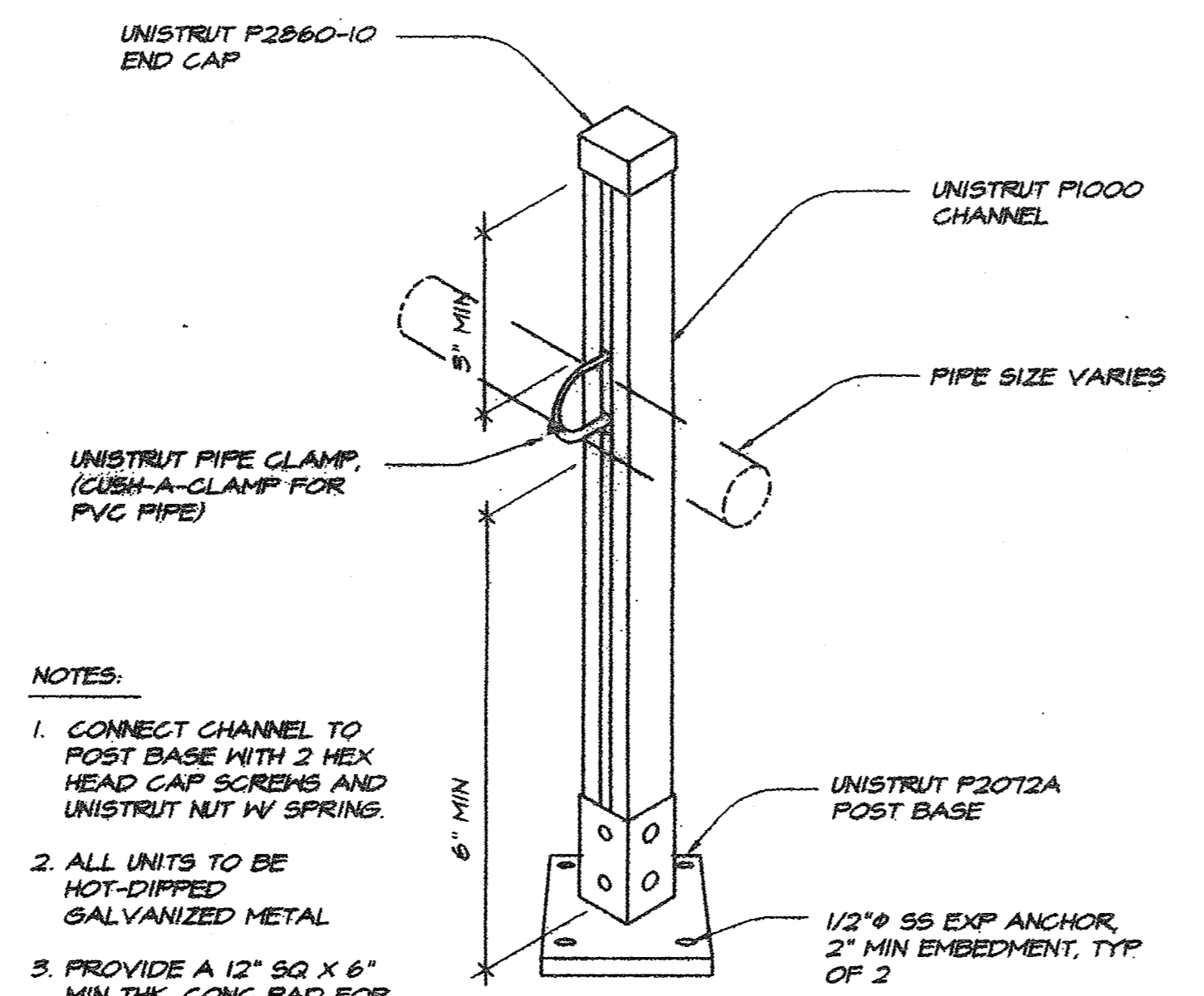
PIPE SIZE	SOIL BEARING CAPACITY	HARNESSE BLOCKS	TEES AND DEAD ENDS	90° BENDS	45° BENDS	22 1/2° BENDS
3'-4"	1000 2000	2 1	2 1	5 2	2 1	1 1
6"	1000 2000	4 2	4 2	6 3	3 2	1 1
8"	1000 2000	7 4	7 4	10 5	5 3	2 1
12"	1000 2000	16 8	16 8	22 11	12 6	6 3

\* MULTIPLY NO. IN TABLE BY TEST PRESSURE & DIVIDE BY 100

**THRUST BLOCK DETAIL**  
NO SCALE **8**

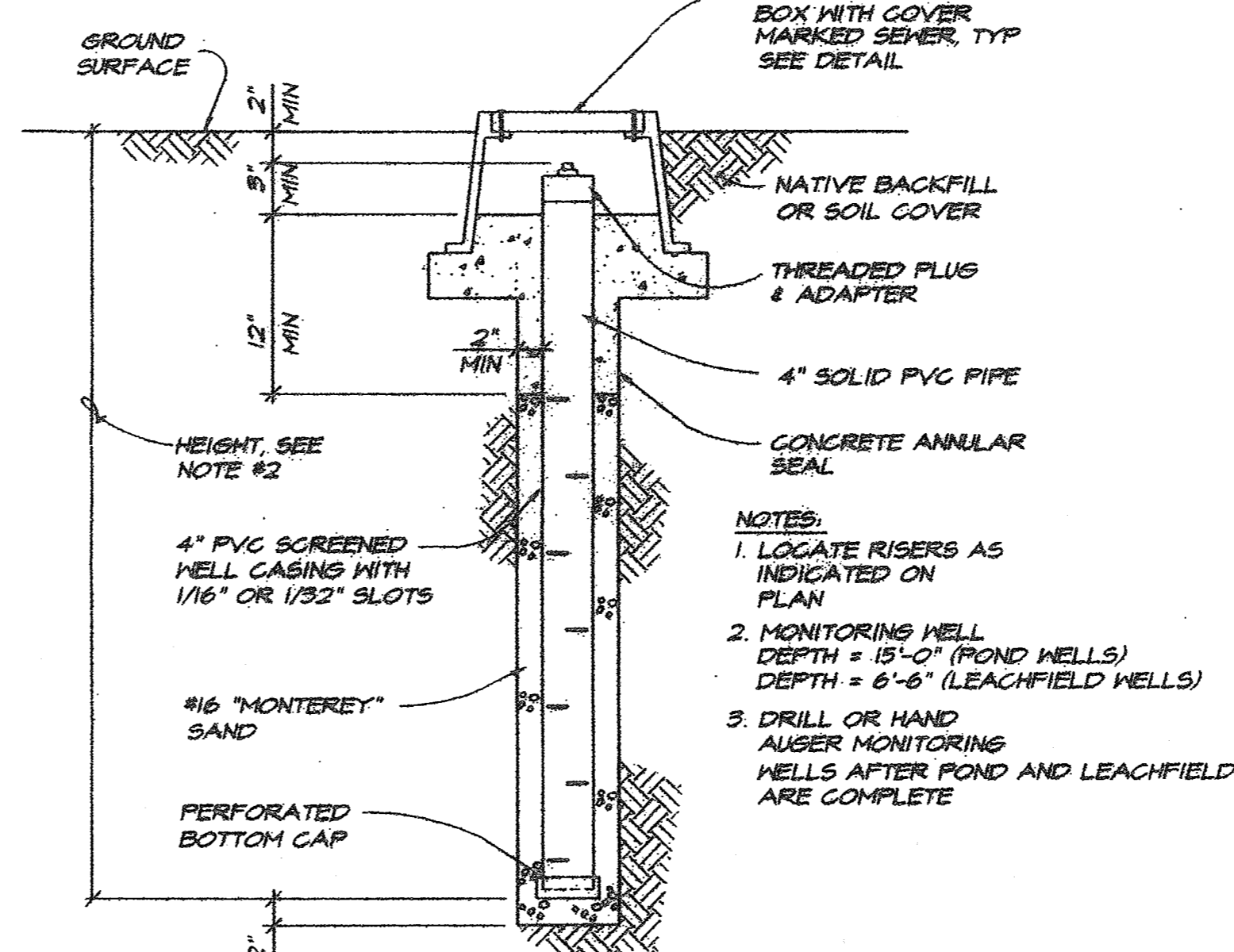


**GRAVITY & PRESSURE CLEANOUT**  
(GCO & PCO) 1" = 1'-0" **9**

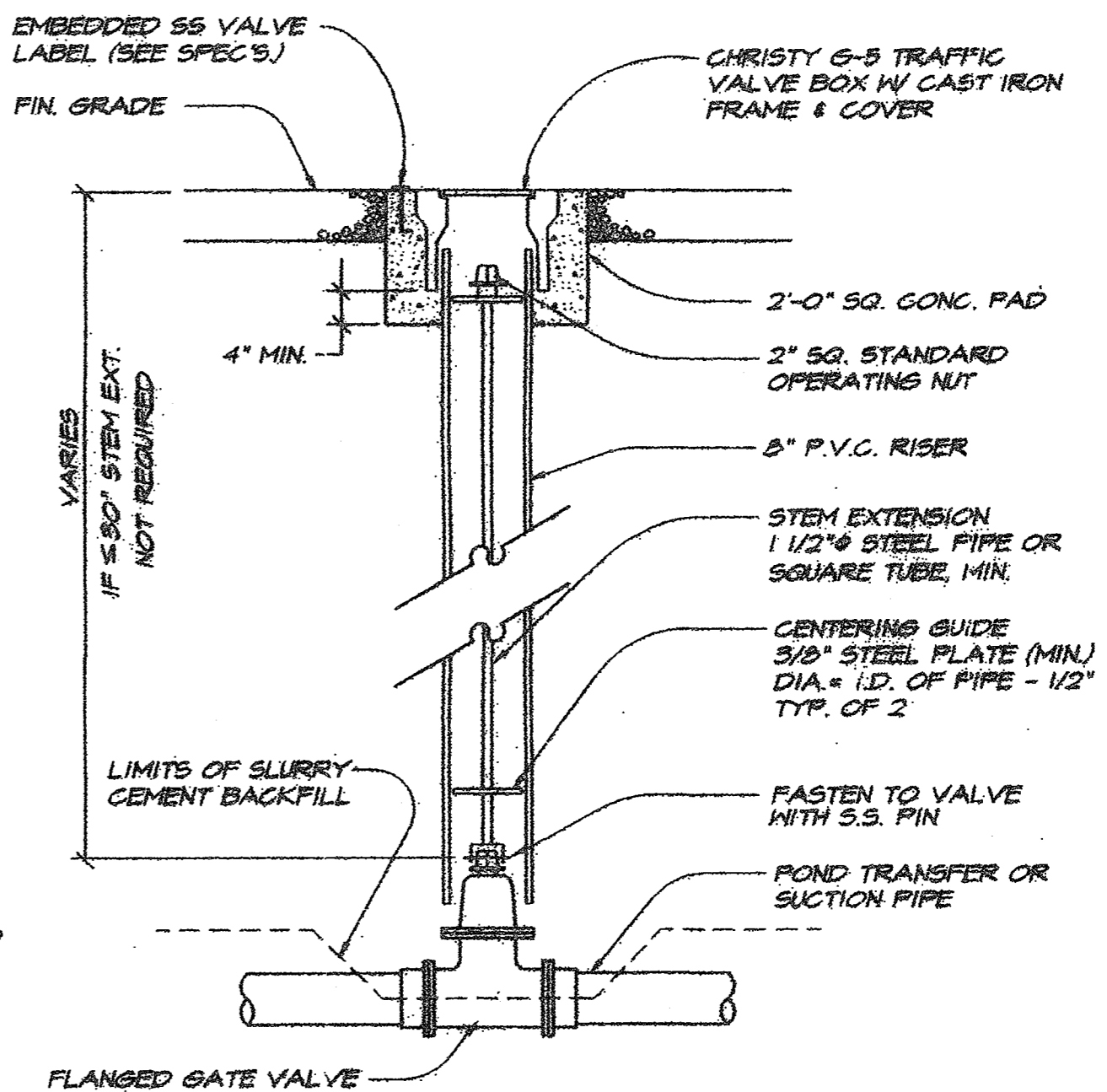


- NOTES:**
1. CONNECT CHANNEL TO POST BASE WITH 2 HEX HEAD CAP SCREWS AND UNISTRUT NUT W/ SPRINGS.
  2. ALL UNITS TO BE HOT-DIPPED GALVANIZED METAL
  3. PROVIDE A 12" SQ X 6" MIN THK CONG PAD FOR PIPE SUPPORTS WHERE REQUIRED.

**PIPE SUPPORT**  
NO SCALE **10**



**MONITORING WELL**  
3/4" = 1'-0" **11**



**VALVE & STEM EXTENSION DETAIL**  
**12**

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**MT. VILLA EDEN**  
8771 SILVERADO TRAIL  
ST. HELENA, CALIFORNIA  
APN 032-120-032

**WASTEWATER MANAGEMENT SYSTEM IMPROVEMENTS**

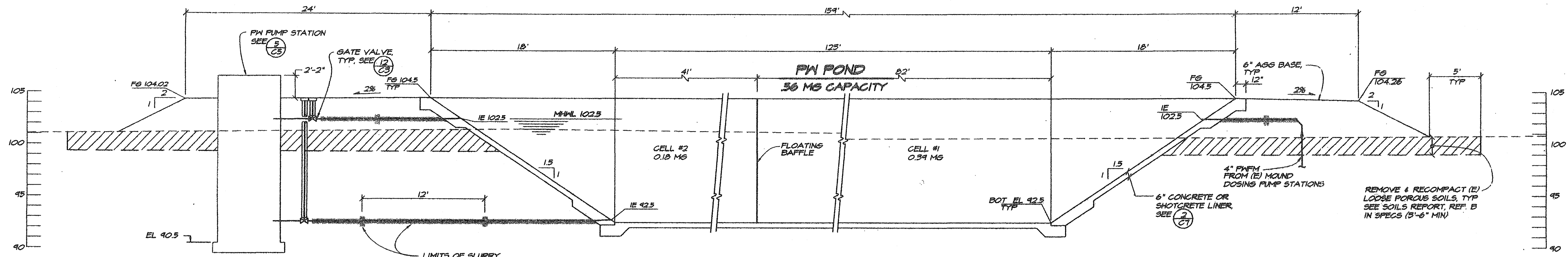
**SECTIONS AND DETAILS**

ISSUED FOR PERMITS 04-02-00



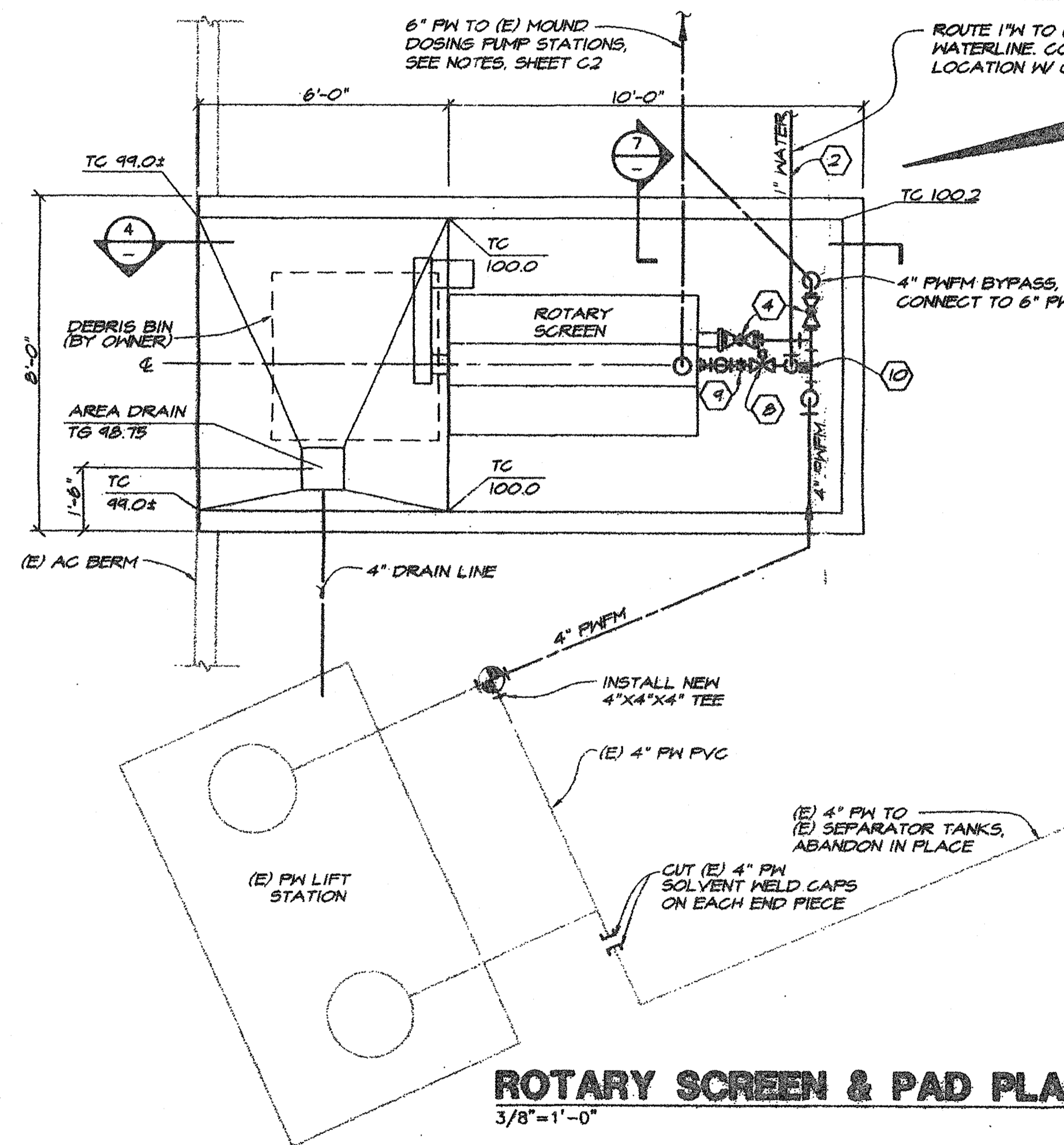
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JOB NO.: 9907  
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DRAWN: PJK  
CHECKED: GR  
SHEET: **C3**

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**POND SECTION**  
SCALE: 1"=5'

NOTE:  
REFER TO THE "REPORT SOILS INVESTIGATION PROPOSED WASTEWATER TREATMENT PONDS" BY BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS, FOR EARTHWORK GRADING AND DRAINAGE REQUIREMENTS, REFERENCE "B" IN SPECIFICATIONS

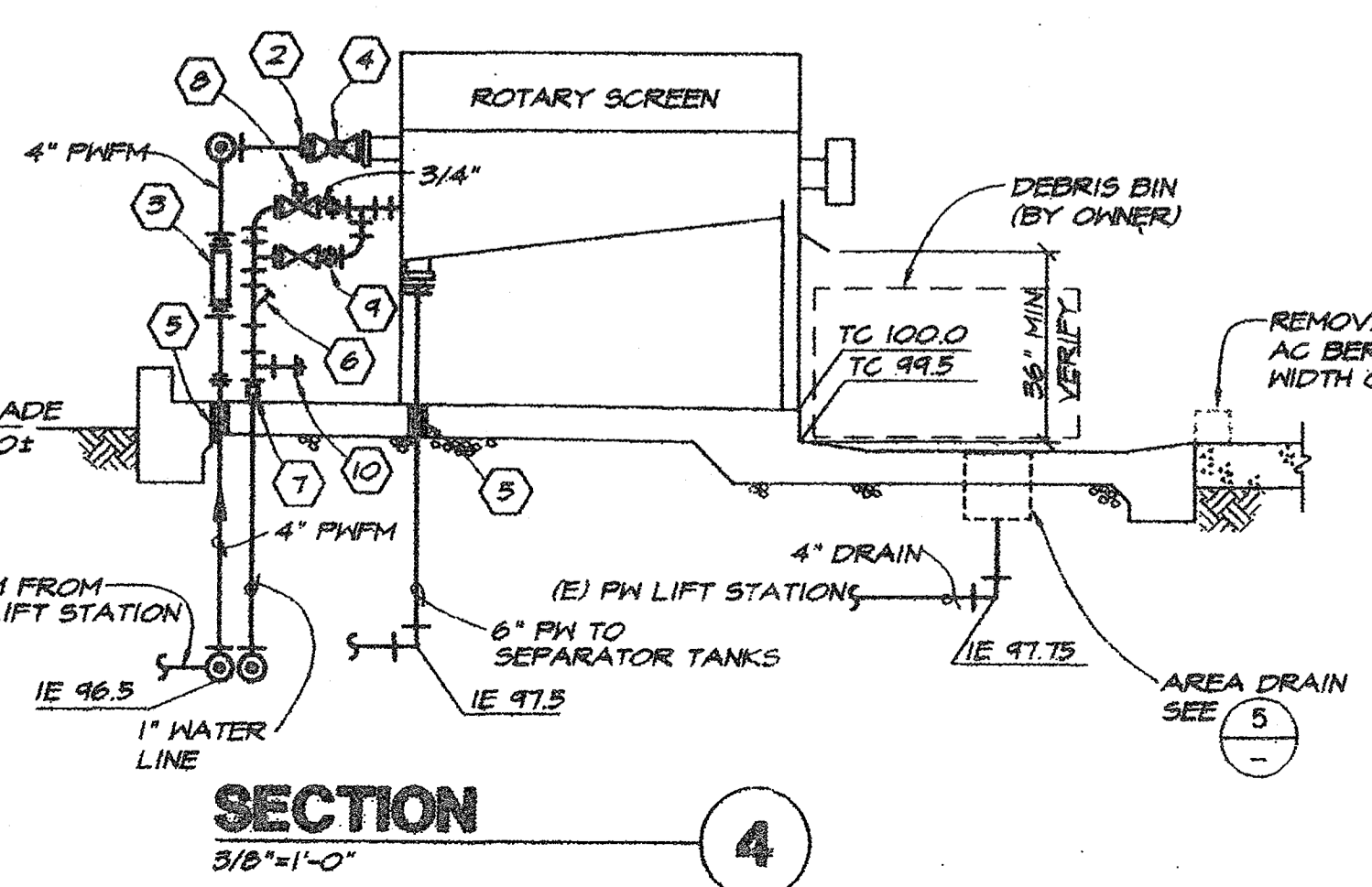


**ROTARY SCREEN AREA FITTING & EQUIP. SCHEDULE**

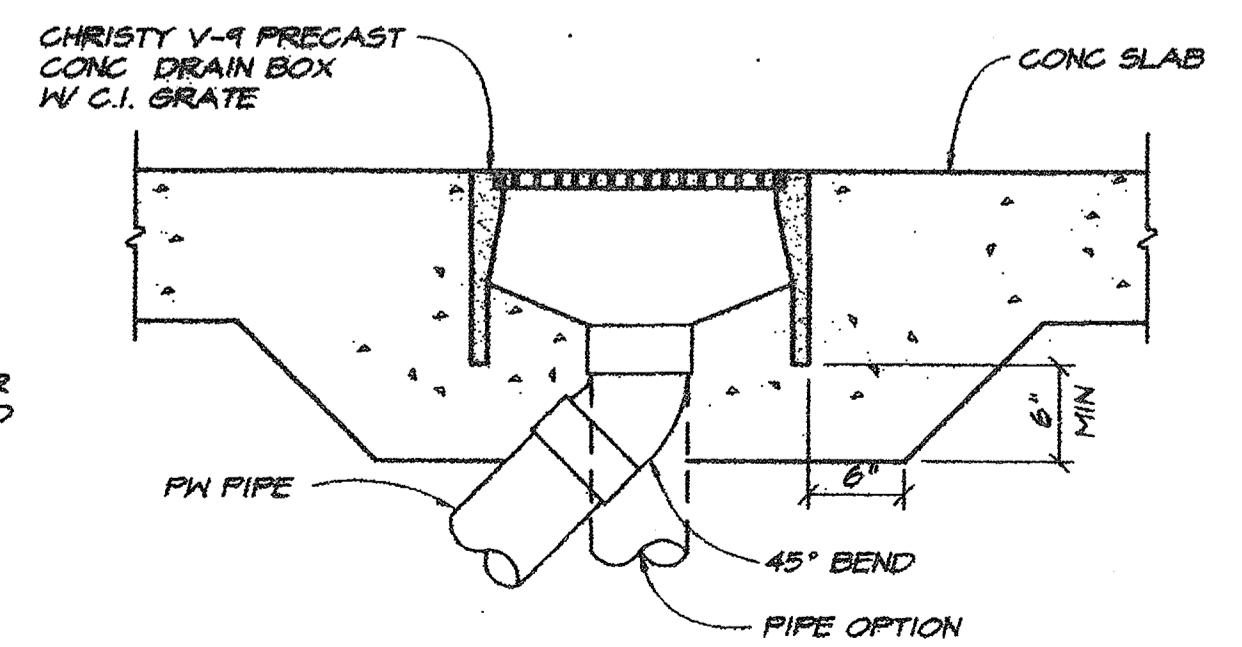
DESCRIPTION
1 REDUCER BUSHING (SIZE AS REQUIRED)
2 FLANGED CONNECTION (SIZE AS REQUIRED)
3 MAGNETIC FLOWMETER
4 PLUG VALVE
5 PVC PIPE SLEEVE, SEE DETAIL 6/4
6 3/4" WYE STRAINER
7 1 1/2" X 3/4" REDUCER (SOC X NPT)
8 SOLENOID VALVE
9 UNION, TYP
10 PIPE SUPPORT, SEE DETAIL 10/13
11 BALL CHECK VALVE

**PIPING SYMBOLS**

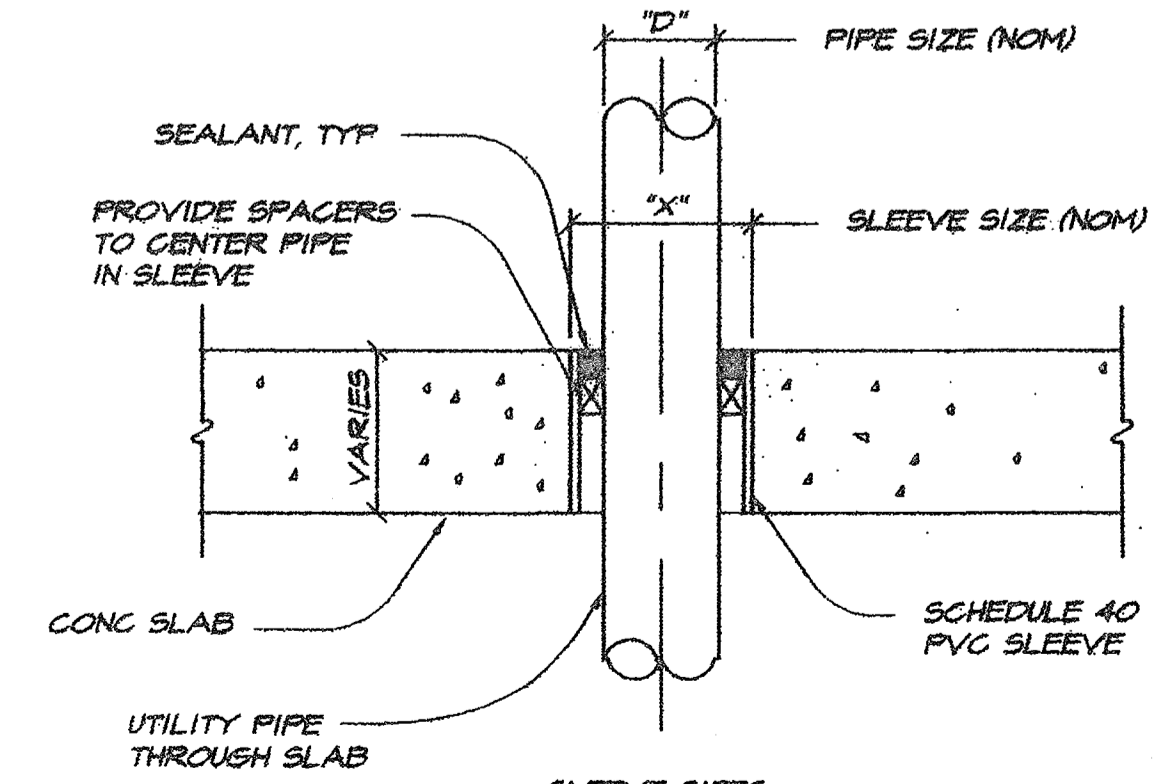
	JOINT - FLANGED		FLEXIBLE CONNECTOR (FLANGED)
	JOINT - THREADED OR SOLVENT WELD (SOCKET)		REDUCING ELBOW
	90° BEND - TURNED DOWN		MAGNETIC FLOW METER
	90° BEND - TURNED UP		FLOW SWITCH (IN TEE)
	45° BEND		REDUCER
	45° BEND - TURNED UP		CAP OR PLUG
	45° BEND - TURNED DOWN		UNION
	TEE		COUPLING (DRESSER TYPE)
	TEE - TURNED UP		VICTAULIC COUPLING
	TEE - TURNED DOWN		PIPE SUPPORTS - UNISTRUT TYPE
	WYE		PIPE SUPPORTS - FLOOR MOUNT
	GATE VALVE		WALL MOUNT
	PLUG VALVE		- GRINNELL TYPE
	BALL VALVE		- CONCRETE PIER
	CHECK VALVE		PRESSURE SWITCH OR VALVE MOTOR
	FLANGED CONNECTION THREADED OR SOLVENT WELD		PRESSURE GAUGE



**SECTION**  
3/8"=1'-0"

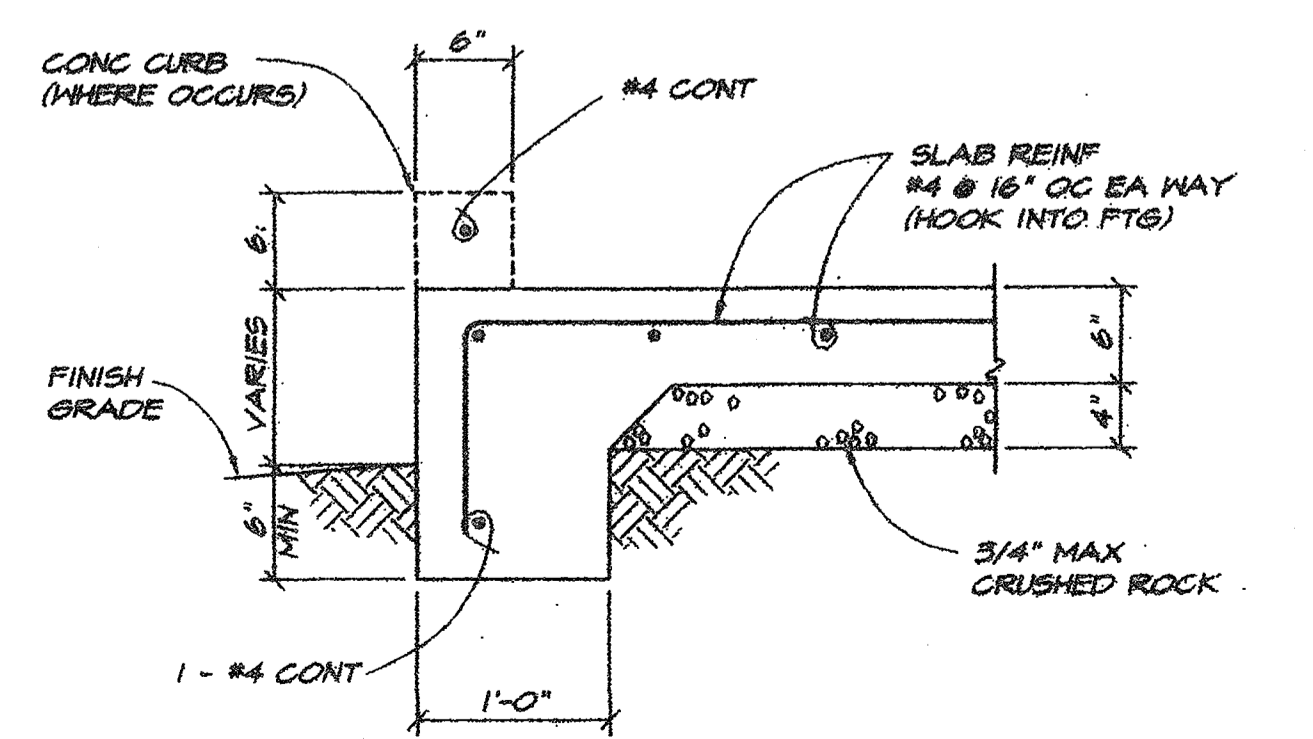


**AREA DRAIN DETAIL**  
N.T.S.



SLEEVE SIZES	
"D"	1" 1 1/2" 2" 2 1/2" 3" 4" 6" 8"
"X"	1 1/2" 2" 2 1/2" 3" 4" 6" 8" 10"

**PIPE SLEEVE DETAIL**  
N.T.S.



**SECTION**  
1"=1'-0"

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ST. HELENA, CALIFORNIA  
APN 032-120-092

**WASTEWATER MANAGEMENT SYSTEM IMPROVEMENTS**  
SECTIONS AND DETAILS

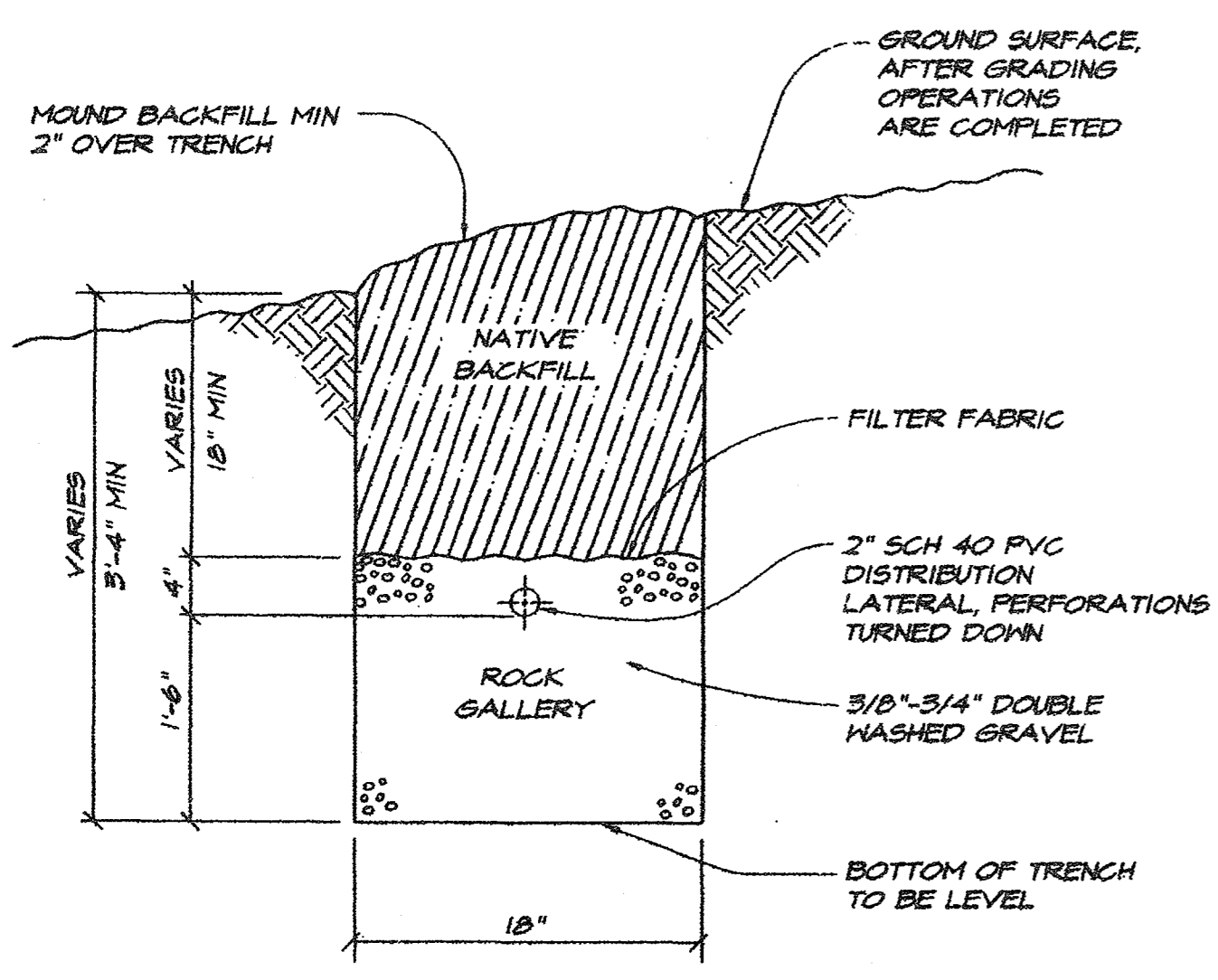
ISSUED FOR PERMITS 04-2-00



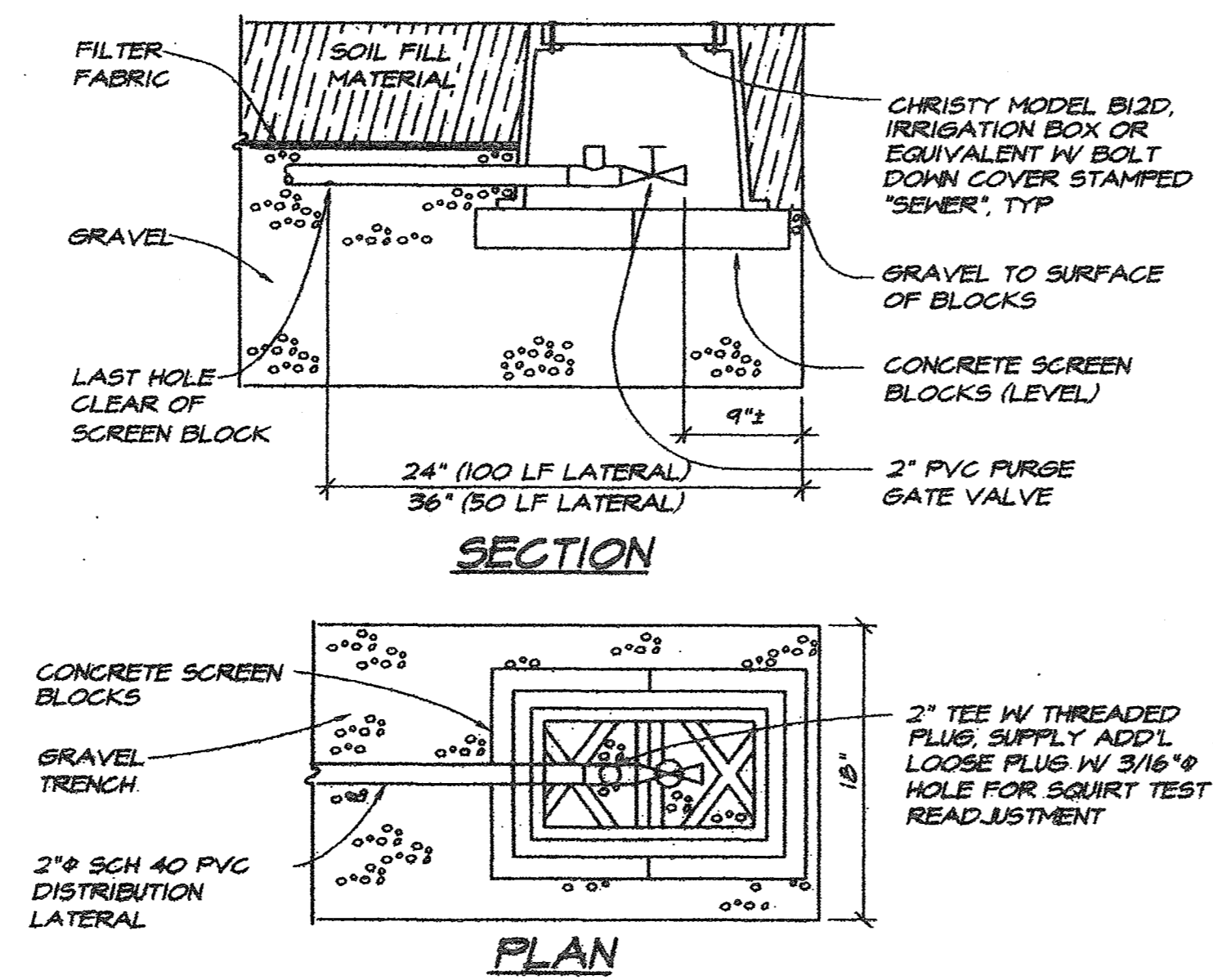
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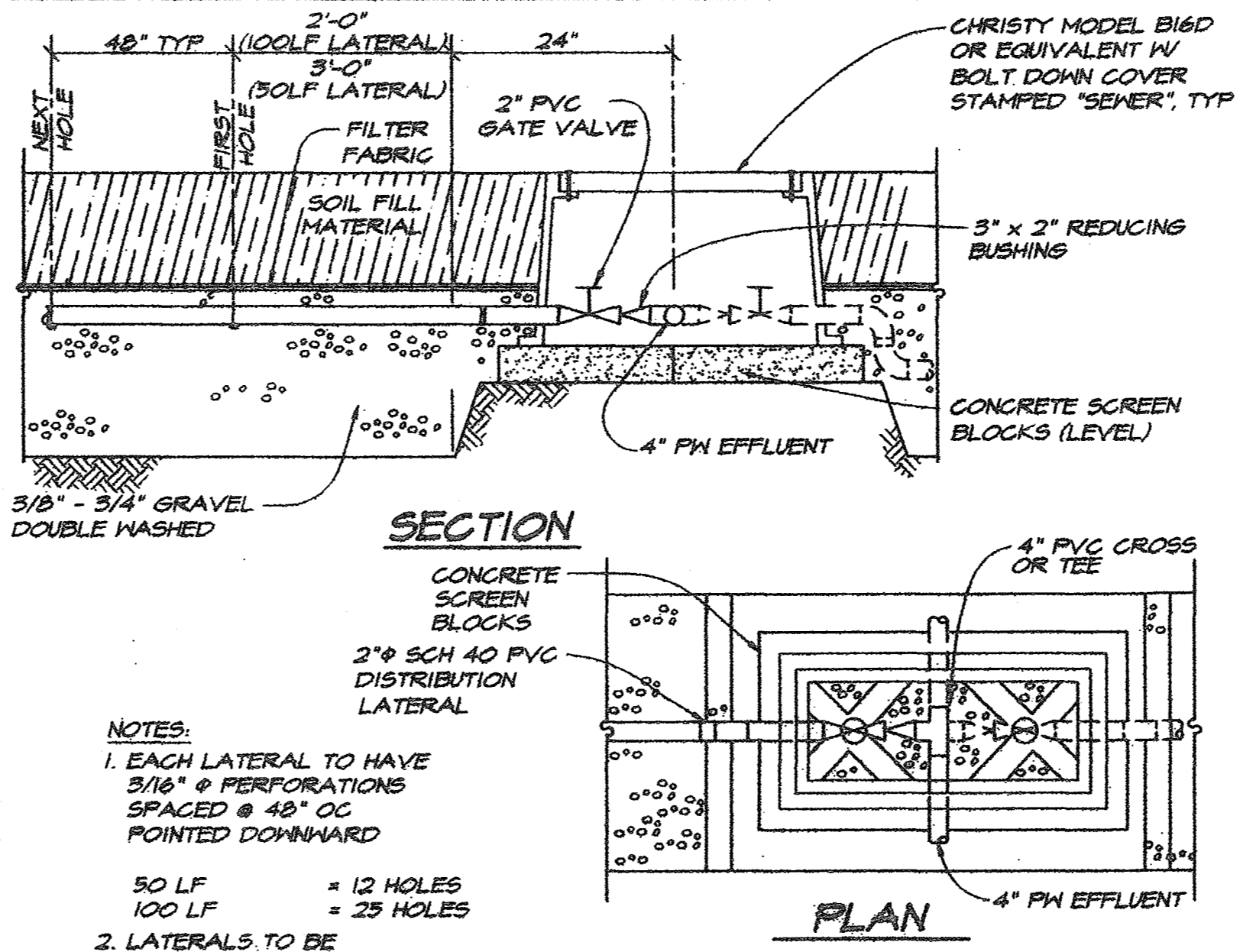
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**DISTRIBUTION LATERAL TRENCH SECTION**  
N.T.S. ①

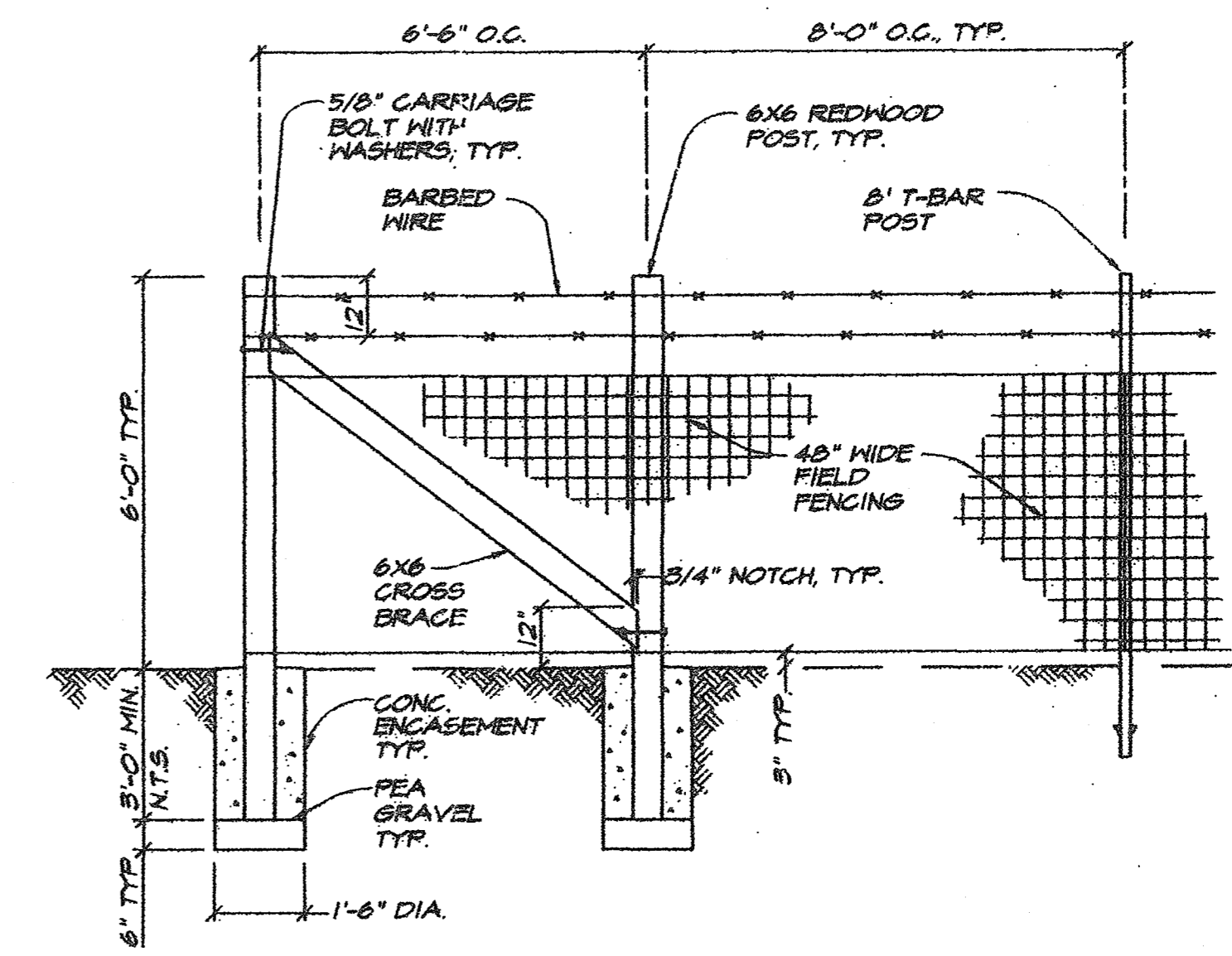


**DISTRIBUTION LATERAL END DETAIL**  
N.T.S. ②

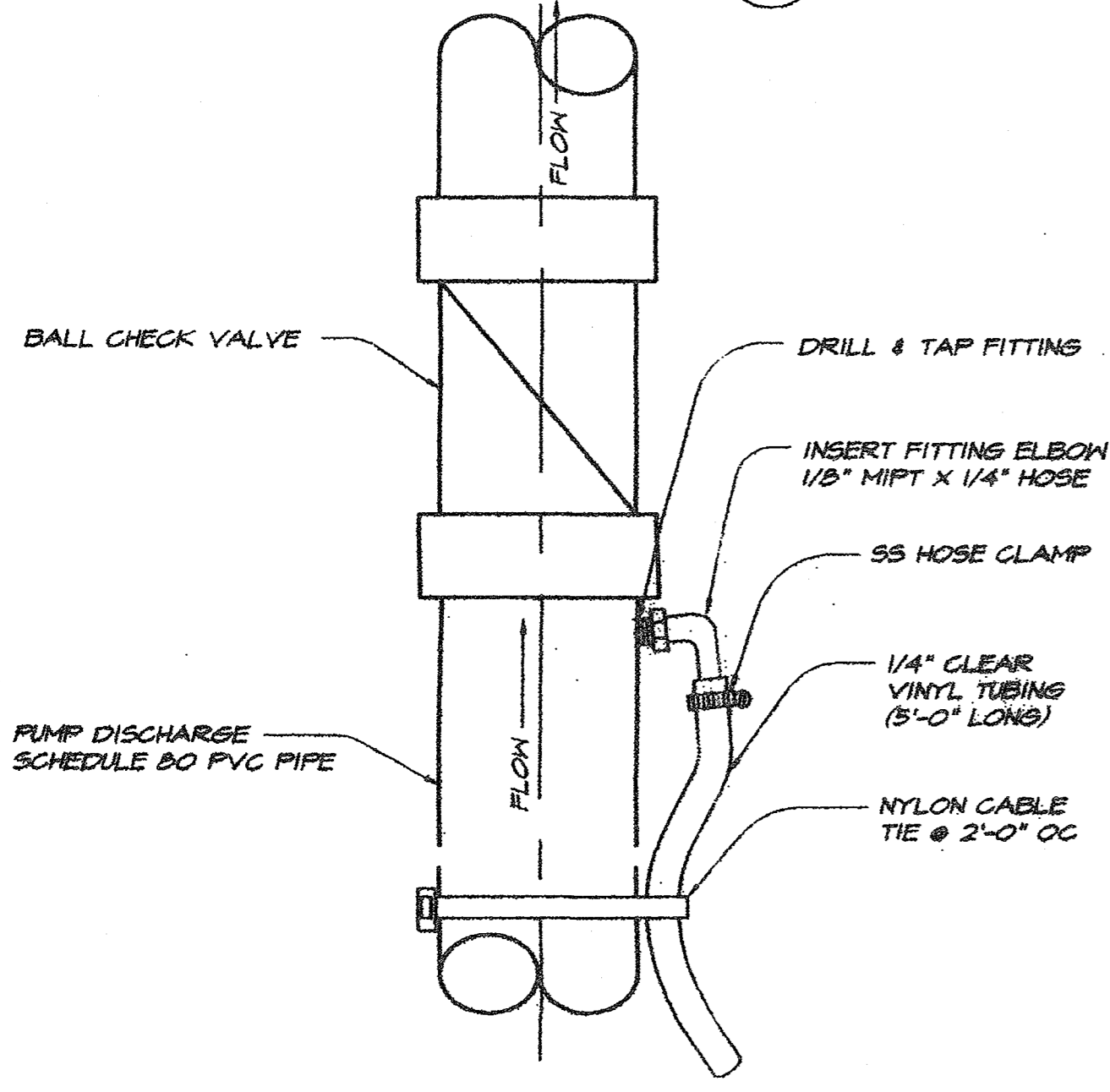


- NOTES:**
- EACH LATERAL TO HAVE 3/16" PERFORATIONS SPACED @ 48" O.C. POINTED DOWNWARD
  - LATERALS TO BE CLEANED PRIOR TO FINAL INSTALLATION.
  - FOR DETAILS NOT SHOWN, SEE ②

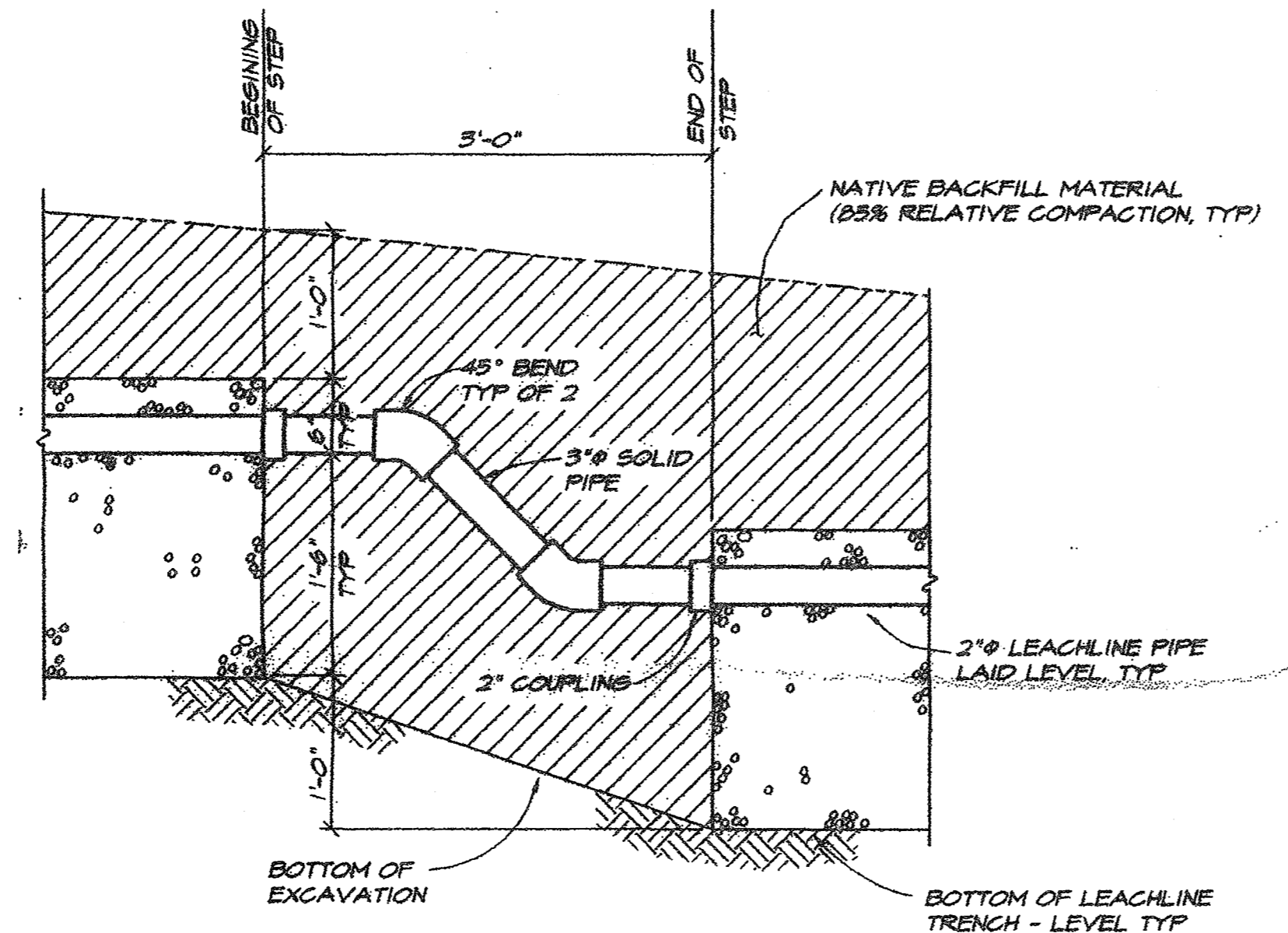
**DISTRIBUTION LATERAL AND MANIFOLD**  
NO SCALE ③



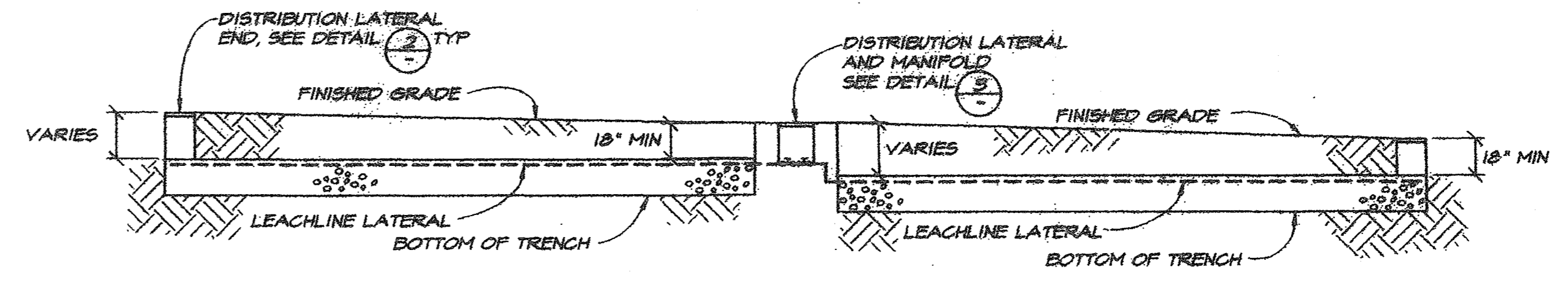
**BRACE PANEL DETAIL**  
3/8" = 1'-0" ④



**AIR RELEASE TUBE**  
NO SCALE ⑤

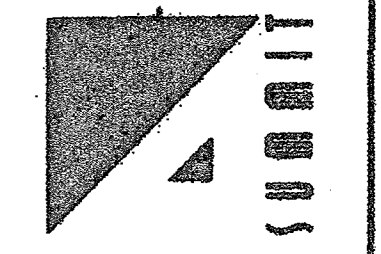


**LEACHLINE STEP**  
1" = 1'-0" ⑥



**LEACHLINE PROFILE**  
1" = 10" HORIZ.  
1" = 5" VERT. ⑦

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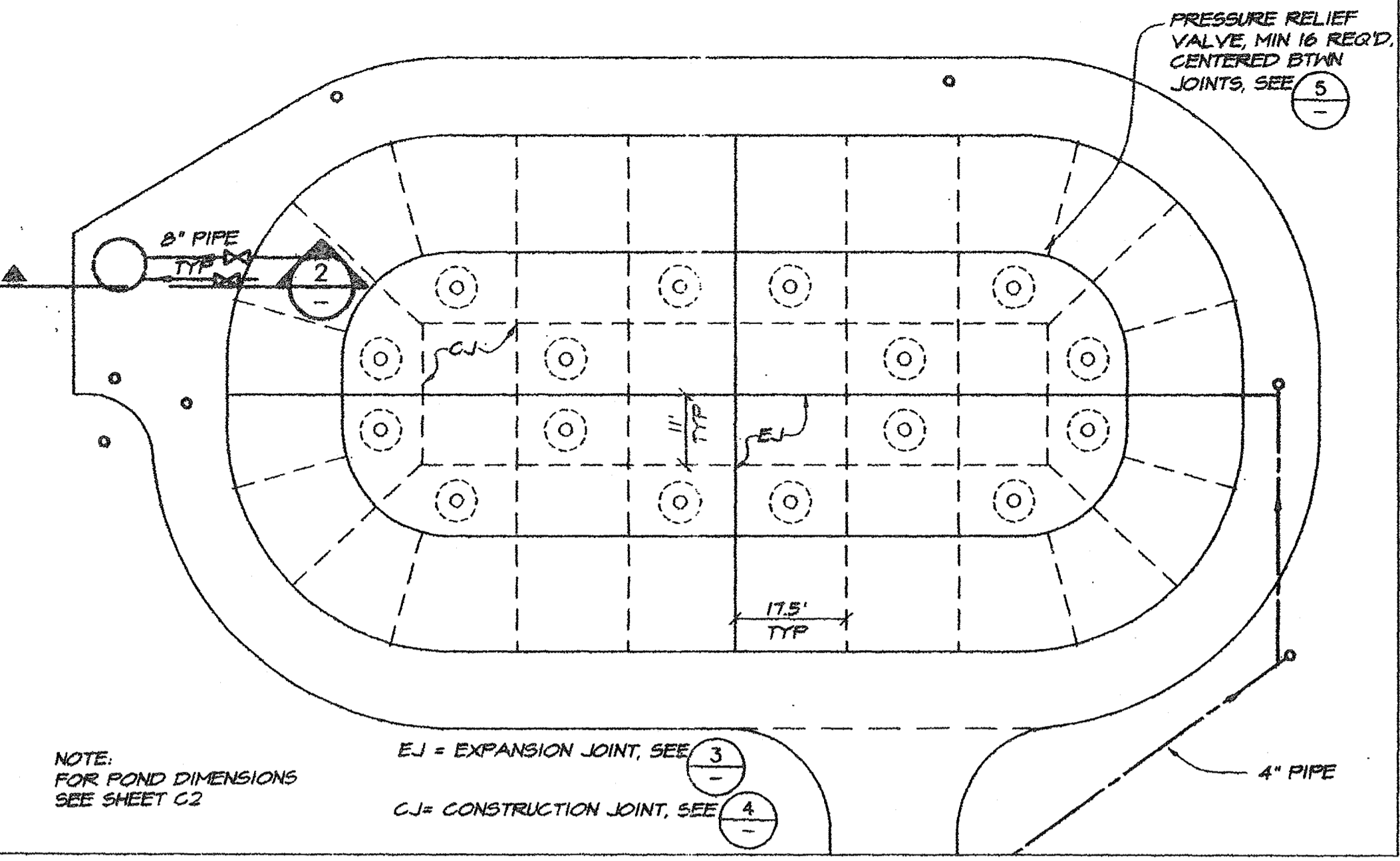
**WASTEWATER MANAGEMENT SYSTEM IMPROVEMENTS**  
**SANITARY SEWER SECTIONS, DETAILS AND NOTES**

ISSUED FOR PERMITS  
04-2000

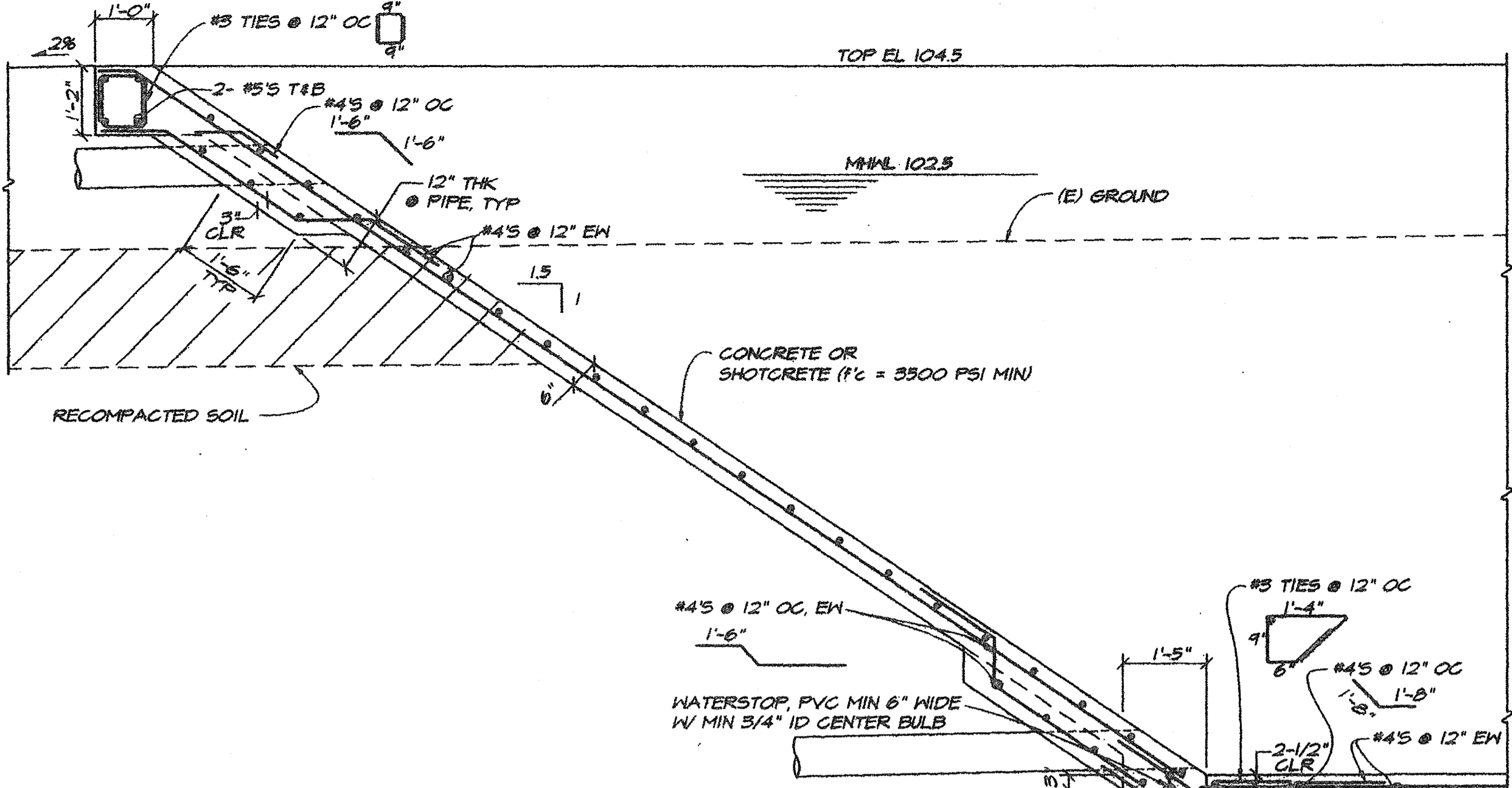


DATE: 1-17-00  
JOB NO.: 99017  
SCALE: AS NOTED  
DRAWN: P.J.K.  
CHECKED: GR  
SHEET: 06

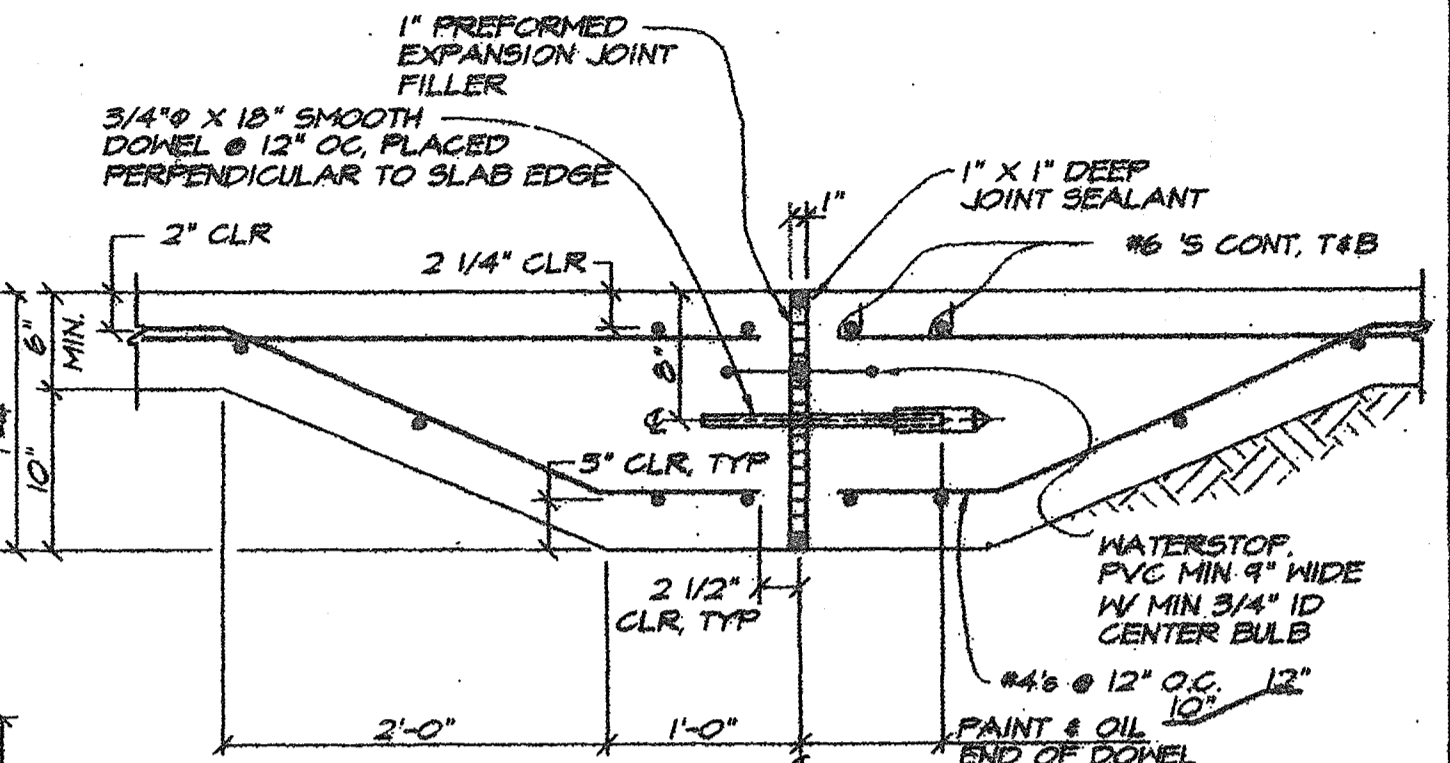
THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF SUMMIT ENGINEERING, INC. AND IS NOT TO BE USED IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF SUMMIT ENGINEERING, INC.



**CONC LINER PLAN**  
1" = 20'



**SECTION**  
1/2" = 1'-0"

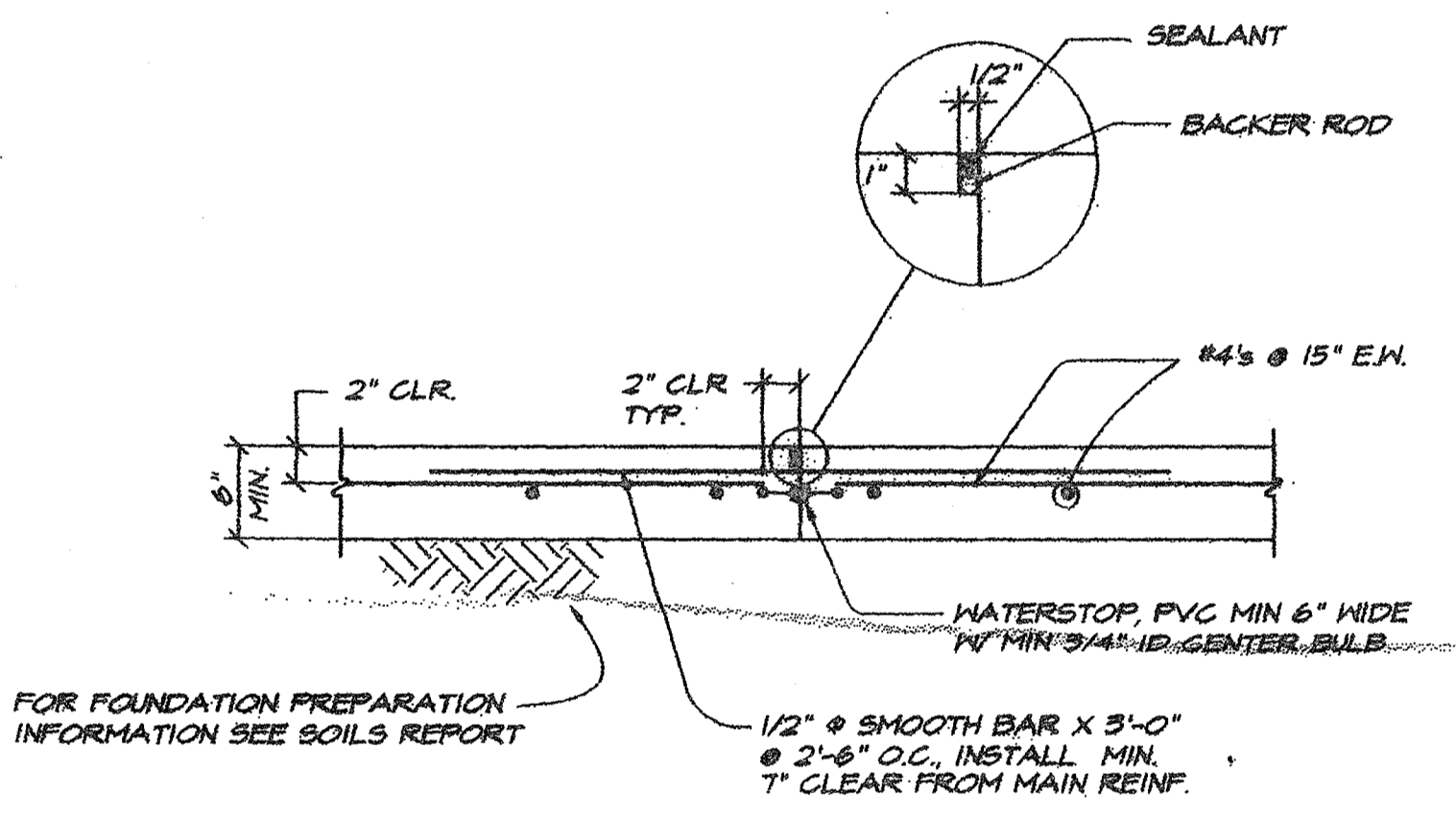


**EXPANSION JOINT DETAIL**  
1" = 1'-0"

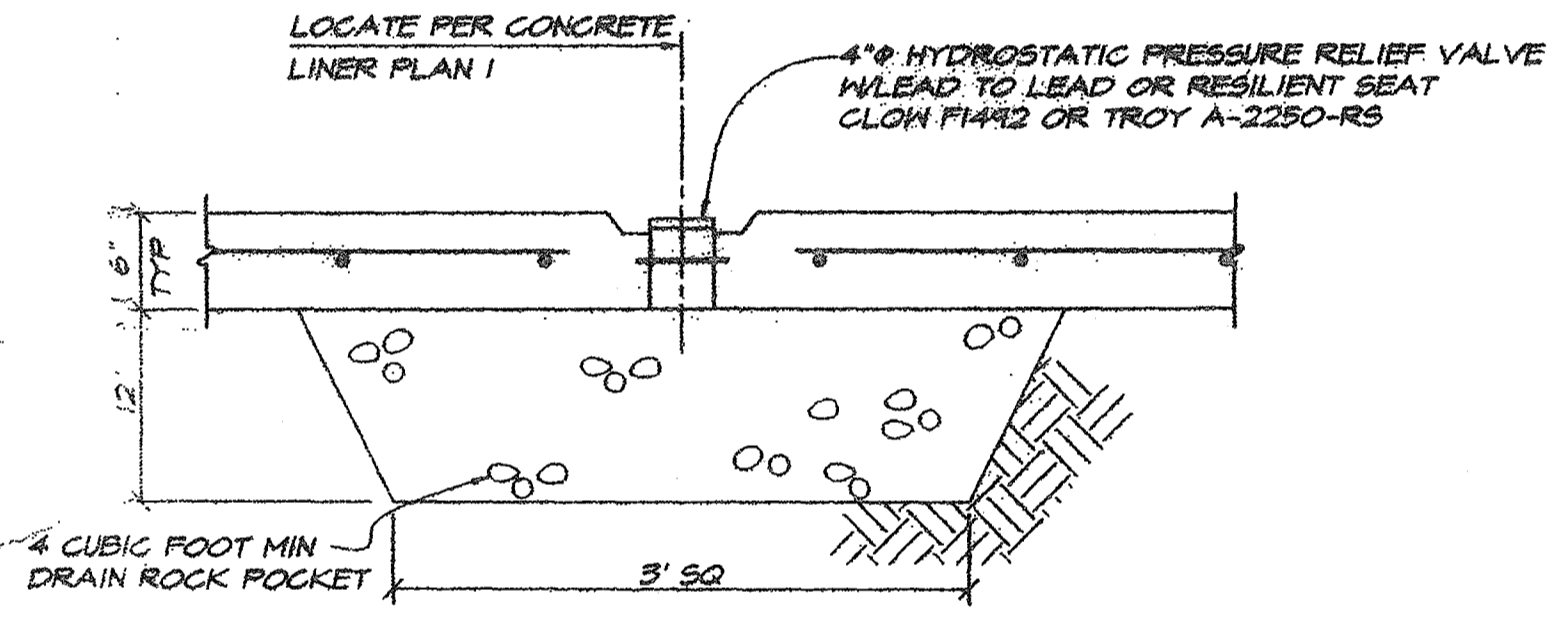
- GENERAL NOTES**
- ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE UNIFORM BUILDING CODE AND/OR APPLICABLE NAPA COUNTY ZONING AND PLANNING LAWS.
  - THE DRAWINGS SHALL NOT BE SCALED. ALL WORK SHALL BE GOVERNED BY THE DIMENSIONS SHOWN ON THE DRAWINGS. DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR ADJUSTMENT PRIOR TO PROCEEDING WITH THE WORK.
  - DETAILS OF CONSTRUCTION NOT INDICATED OR NOTED SHALL BE CONSIDERED OF THE SAME CHARACTER SHOWN FOR SIMILAR OR EXISTING CONSTRUCTION.
  - ALL WORK SHALL BE IN COMPLIANCE WITH ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A.) STANDARDS AS SET FORTH BY THE FEDERAL DEPARTMENT OF LABOR AND/OR STATE OF CALIFORNIA.
  - THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN AND BRING DISCREPANCIES TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
  - SUBSTITUTIONS FOR MATERIALS OR EQUIPMENT INDICATED ON THE CONSTRUCTION DRAWINGS SHALL BE REVIEWED BY THE ENGINEER. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR WORK AFFECTED BY SUCH CHANGES ACCOMPLISHED WITHOUT HIS REVIEW.
  - AS THE RESPONSIBILITY FOR THE ENGINEERING DESIGN WORK DEPICTED ON THESE DRAWINGS RESTS WITH THE FIRM OF SUMMIT ENGINEERING, INC., CONSULTING CIVIL ENGINEERS, NO CHANGES ARE TO BE MADE TO THE WORK DURING OR PRIOR TO CONSTRUCTION WITHOUT THE EXPRESSED WRITTEN PERMISSION OR ACKNOWLEDGEMENT OF SUMMIT ENGINEERING, INC., CONSULTING CIVIL ENGINEERS.

**CONCRETE, REINFORCING AND MATERIAL NOTES**

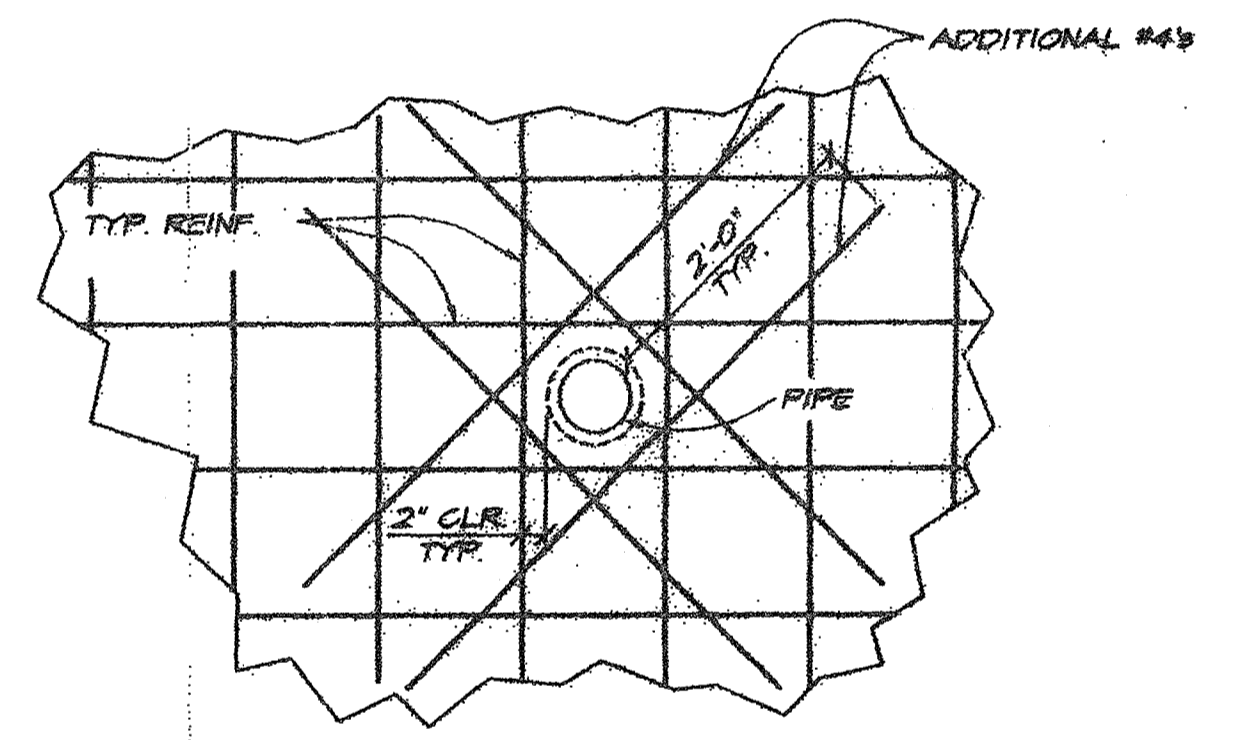
- ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF ACI-318.
  - PORTLAND CEMENT SHALL BE A STANDARD BRAND CONFORMING TO ASTM C-150, TYPE II.
  - CONCRETE SHALL HAVE THE FOLLOWING: MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, MAXIMUM AGGREGATE SIZE SHALL BE 1", MINIMUM 5.5 SACK MIX.
- | LOCATION   | COMPRESSIVE STRENGTH | SPECIAL INSPECTION REQUIRED     |
|------------|----------------------|---------------------------------|
| POND LINER | 5500 PSI             | NO - DESIGN BASED UPON 2500 PSI |
- MAXIMUM SLUMP SHALL BE 4".
  - MAXIMUM WATER CEMENT RATIO SHALL BE .55.
  - REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
  - ALL REINFORCING HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH ACI 318.
  - ALL BAR SPLICES SHALL BE LAPPED 40 BAR DIAMETERS, MINIMUM.
  - ALL CONCRETE SHALL BE TRANSIT MIXED IN ACCORDANCE WITH ASTM C94.
  - ALL CONCRETE EXCEPT THOSE SURFACES TO RECEIVE SEALANTS SHALL BE COATED WITH CURING COMPOUND CONFORMING TO ASTM C309, NON-STAINING AND CONTAINING A FUGITIVE DYE.
  - CONTRACTOR SHALL SUBMIT MIX DESIGN FOR REVIEW BY ENGINEER PRIOR TO INCORPORATION INTO THE WORK.
  - CONSTRUCTION JOINTS SHALL BE LOCATED FOR THE CONVENIENCE OF THE CONTRACTOR. JOINTS INDICATED ON THE CONSTRUCTION DRAWINGS ARE THE MINIMUM JOINTS REQUIRED. IF ADDITIONAL JOINTS ARE PROVIDED, COORDINATE WITH THE ENGINEER TO VERIFY ADEQUACY OF REINFORCING.
  - WATERSTOPS SHALL BE PVC, CENTER BULB TYPE, MINIMUM 6" LENGTH WITH MINIMUM 3/4" DIAMETER CENTER BULB CONFORMING TO CORPS OF ENGINEERS CRD-C-572, BURKE DB14-6 OR EQUAL.
  - EXPANSION JOINT MATERIALS SHALL BE NEOPRENE SPONGE RUBBER CONFORMING TO CORPS OF ENGINEERS CRD-C504 TYPE I.
  - JOINT SEALANT SHALL BE BURKE U-SEAL 3204 HAND GRADE (GRAY).
  - PRESSURE RELIEF VALVES SHALL BE TROY A2550 RS 6" DIA. FLOOR RELIEF VALVES AS MANUFACTURED BY TROY VALVE, P.O. BOX 187, TROY, PENNSYLVANIA.



**CONST JOINT DETAIL**  
1/2" = 1'-0"

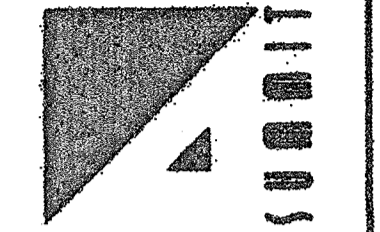


**DETAIL**  
1" = 1'-0"



**PIPE THROUGH CONC LINER**  
NO SCALE

**SUMMIT ENGINEERING INC.**  
CONSULTING ENGINEERS  
1400 BAKER DRIVE, AVE. 024  
SARASOTA, FLORIDA 34231  
781.557.0775 FAX 781.557.0712



VILLA MT. EDEN  
87th SILVERADO TRAIL  
ST. HELENA, CALIFORNIA  
APN 052-180-062

WASTEWATER MANAGEMENT  
SYSTEM IMPROVEMENTS  
SITE PLAN

ISSUED FOR PERMITS  
04-2-00



DATE: 1-7-00  
JOB NO.: 98017  
SCALE: 1" = 10'  
DRAWN: JEB  
CHECKED: GR  
SHEET: C7

Conn Creek Winery  
Wastewater Feasibility Study  
July 10, 2019  
Revised: November 17 2020

**SUMMIT ENGINEERING, INC.**  
Project No. 2019040

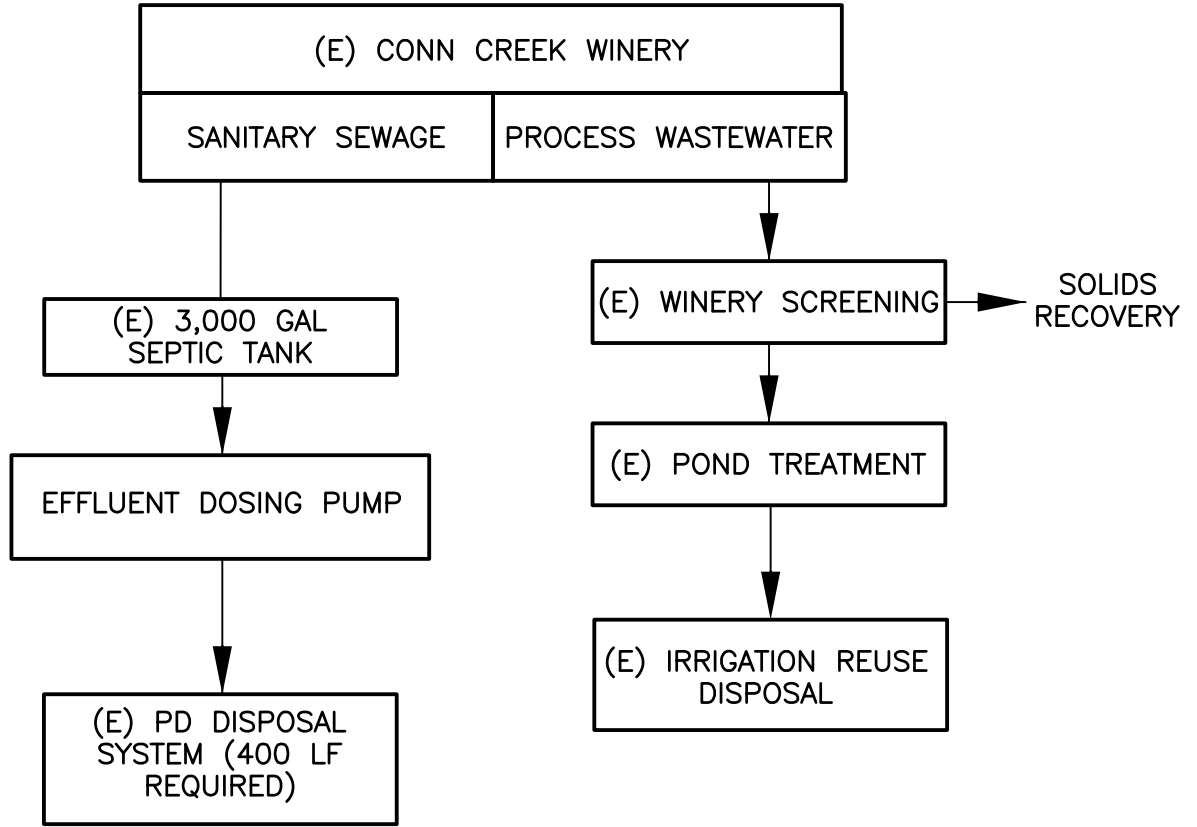
**ENCLOSURE D**



**CONN CREEK WINERY**  
8711 Silverado Trail  
ST. HELENA, CA  
APN 030-120-032

PROJECT NO. 208205  
DATE 2019-05-07  
SHT NO 1 OF 1  
BY SW CHK GG

**SANITARY SEWAGE FLOW SCHEMATIC**



PLOTTED ON: 5/7/2019 1:07 PM  
P:\2018\2018205 CONN CREEK UP MAJOR MOD\CAD\WWW\18205 -SS FLOW SCHEMATIC.DWG

Conn Creek Winery  
Wastewater Feasibility Study  
July 10, 2019  
Revised: November 17 2020

**SUMMIT ENGINEERING, INC.**  
Project No. 2019040

**ENCLOSURE E**



SUMMIT ENGINEERING, INC.	CONN CREEK WINERY Wastewater Feasibility Study Existing Sanitary Sewage Flows	PROJECT NO. BY: CHK:	2018205 SW GG
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**SANITARY SEWAGE**

Average Day w/o Event - Non-harvest

Employee (full-time)	15 x	15 gpcd	=	225 gal/day
Employee (part-time)	1 x	15 gpcd	=	15 gal/day
Tasting Visitors	70 x	3 gpcd	=	210 gal/day
Wine Tasting w/ Meal	15 x	5 gpcd	=	75 gal/day
<b>Total</b>			=	525 gal/day
			=	<b><u>530 gal/day</u></b>

Peak Tasting Day Harvest

Employee (full-time)	15 x	15 gpcd	=	225 gal/day
Employee (part-time)	1 x	15 gpcd	=	15 gal/day
Tasting Visitors	225 x	3 gpcd	=	675 gal/day
Private Promo Meal & Tasting	60 x	5 gpcd	=	300 gal/day
<b>Total</b>			=	1,215 gal/day
			=	<b><u>1,220 gal/day</u></b>

**DESIGN FLOW** = **1,220 gal/day**

SUMMIT ENGINEERING, INC.	CONN CREEK WINERY Wastewater Feasibility Study Proposed Sanitary Sewage Flows	PROJECT NO. BY: CHK:	2018205 SW GG
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**SANITARY SEWAGE**

Average Day w/o Major Event - Non-harvest

Employee (full-time)	20 x	15 gpcd	=	300 gal/day
Employee (part-time)	1 x	15 gpcd	=	15 gal/day
Tasting Visitors	70 x	3 gpcd	=	210 gal/day
Private Marketing Event w/ Meal	15 x	5 gpcd	=	75 gal/day
<b>Total</b>			=	600 gal/day
			=	<b>600 gal/day</b>

Peak Tasting Day Harvest w/Event

Employee (full-time)	20 x	15 gpcd	=	300 gal/day
Employee (part-time)	1 x	15 gpcd	=	15 gal/day
Tasting Visitors	225 x	3 gpcd	=	675 gal/day
Garden Event	60 x	5 gpcd	=	300 gal/day
<b>Total</b>			=	1,290 gal/day

**DESIGN FLOW** = **1,290 gal/day**

Conn Creek Winery  
Wastewater Feasibility Study  
July 10, 2019  
Revised: November 17 2020

**SUMMIT ENGINEERING, INC.**  
Project No. 2019040

## **ENCLOSURE F**

SUMMIT ENGINEERING, INC. Consulting Civil Engineers	CONN CREEK WINERY	PROJECT NO.	2016030
	PW System Review	BY:	SW
	Process Wastewater Design Criteria	CHK:	GG

### FLOW CRITERIA AT PERMITTED PRODUCTION

#### FULL PRODUCTION

Annual Harvest	1,575	ton/year
Wine Generation Rate	165	gal wine/ton
Production	260,000	gal wine/year
PW Generation Rate	4.8	gal PW/gal wine
Annual PW Flow (crushed onsite)	1,248,000	gal PW/year
Bulk Wine bottled onsite	590,000	gal
Generation Rate	0.5	gal PW/gal wine
Annual PW Flow (bottled)	295,000	gal PW
Total Annual Volume	1,543,000	gal PW
Months of Harvest	Aug-Sept	
Average Day Harvest Flow	4,100	gal PW/day
Average Day Peak Harvest Month Flow	8,450	gal PW/day

Pond Volume 0.603 Mgal

Pond HRT (at peak flow, without stormwater) 71.4 days  
Pond HRT (at peak PW + SW inflow) 63.7 days  
Pond HRT (average flow, with stormwater) 97.4 days

#### DESIGN PROCESS WASTEWATER FLOWS

Month	Monthly Percentage of Annual Flow <sup>a</sup> (%)	Monthly Flow (Mgal)	Monthly Storm Inflow (Mgal)	Monthly Total Inflow (Mgal)	Average Daily Flow (gal)
August	8.1%	0.125	0.002	0.127	4,103
September	11.8%	0.182	0.007	0.189	6,306
October	16.4%	0.253	0.040	0.293	9,463
November	10.7%	0.166	0.089	0.255	8,485
December	6.5%	0.100	0.144	0.244	7,887
January	7.0%	0.108	0.175	0.284	9,150
February	7.6%	0.117	0.129	0.246	8,774
March	5.6%	0.086	0.107	0.193	6,212
April	6.5%	0.101	0.049	0.150	4,993
May	6.4%	0.099	0.016	0.115	3,707
June	7.2%	0.111	0.005	0.115	3,848
July	6.1%	0.095	0.000	0.095	3,065
<b>Total</b>	<b>100%</b>	<b>1.543</b>	<b>0.763</b>	<b>2.306</b>	

<sup>a</sup> Monthly percentage of flow based on PW distribution from flow data received from client. (2007-2015)

<p align="center"><b>SUMMIT ENGINEERING, INC.</b> Consulting Civil Engineers</p>	<p align="center"><b>CONN CREEK UP ASSISTANCE</b> PW System Review Aeration Requirements</p>	<p><b>PROJECT NO.</b>      2016030 <b>BY:</b>                    SW <b>CHK:</b>                  GG</p>
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**DESIGN CRITERIA - EXISTING**

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**Sizing Parameters**

BOD Concentration	7,700 mg/L
Average Day, Peak Harvest Month Flow	8,450 gal PW/day
Oxygen Requirement	1.5 lbs O <sub>2</sub> /lb BOD
Oxygen Transfer Rate (Submersible Aspirator)	2.0 lbs O <sub>2</sub> /HP - hr
Power/ Volume Ratio, Pond No. 1	0.10 - 0.20 Hp/ 1,000 cu ft
Power/ Volume Ratio, Pond No. 2	0.05 - 0.10 Hp/ 1,000 cu ft
Pond No. 1 Volume	0.60 Mgal

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**Aeration Pond No. 1**

BOD Mass Loading	543 lbs BOD/day
Aerator Run Time	24 Hrs/day
Oxygen Requirement	34 lbs O <sub>2</sub>
Aerator Horsepower Required	17 Hp
Aerator Horsepower Recommended	20 Hp
Check Power-to-Volume Ratio	0.42 Hp/ 1,000 CF

PV range desired is 0.10 to 0.20, this will enable oxygen transfer and mixing to occur within the upper 3-4 feet of the pond as required in a facultative aerated lagoon system.

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<b>SUMMIT ENGINEERING, INC.</b> Consulting Civil Engineers	<b>CONN CREEK UP ASSISTANCE</b> PW System Review Climate Data	<b>PROJECT NO.</b> 2016030 <b>BY:</b> SW <b>CHK:</b> GG
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Month	Days	Average	Reference	Pan Evaporation <sup>c</sup>	Lake Evaporation <sup>d</sup>	Average Precipitation <sup>e</sup>	10-Year Precipitation <sup>f</sup>	100-Year Precipitation <sup>f</sup>	100-year
		Temp <sup>a</sup>	Evapotranspiration <sup>b</sup>						Stormwater Inflow <sup>g</sup>
		(F)	(in)	(in)	(in)	(in)	(in)	(in)	(gal)
August	31	70.7	5.9	7.2	5.5	0.1	0.2	0.3	2,443
September	30	67.6	5.2	6.4	4.9	0.3	0.5	0.7	6,884
October	31	61.7	3.3	3.9	3.0	1.8	2.9	4.2	39,973
November	30	52.3	1.1	1.9	1.5	4.0	6.5	9.3	88,829
December	31	46.6	1.2	1.4	1.1	6.5	10.6	15.1	144,347
January	31	46.0	0.8	1.5	1.2	7.9	12.9	18.4	175,438
February	28	50.2	2.3	2.0	1.5	5.8	9.5	13.5	128,802
March	31	52.3	3.6	3.4	2.6	4.8	7.8	11.2	106,595
April	30	56.3	5.2	4.2	3.2	2.2	3.6	5.1	48,856
May	31	62.4	6.7	5.9	4.5	0.7	1.2	1.7	15,767
June	30	68.0	7.0	6.5	5.0	0.2	0.3	0.5	4,664
July	31	71.1	6.9	8.9	6.9	0.0	0.0	0.0	222
<b>Total</b>	<b>365</b>	<b>58.8</b>	<b>49.2</b>	<b>53.2</b>	<b>41.0</b>	<b>34.4</b>	<b>56.2</b>	<b>80.0</b>	<b>762,821</b>

<sup>a</sup> Average monthly temperature observed between 1961 and 1995, for St. Helena, CA. See <http://www.worldclimate.com>

<sup>b</sup> Average monthly reference evaporation rates for Zone 8, Inland San Francisco Bay Area, typical rainfall year, CIMIS, DWR, 2001. See [www.itrc.org](http://www.itrc.org).

<sup>c</sup> Average monthly pan evaporation rates observed at Yountville, CA between 1962 and 1969.

<sup>d</sup> Pan evaporation rates adjusted by a factor of 0.77 to determine lake evaporation.

<sup>e</sup> Average monthly rainfall observed between 1931 and 1995, for St. Helena, CA. See <http://www.worldclimate.com>

<sup>f</sup> Average monthly rainfall adjusted by the ratio of 10-yr and 100-yr wet year return storm identified by Pearsons Log III Distribution.

<sup>g</sup> Assumed runoff area equal to 0.39 acres.

<b>SUMMIT ENGINEERING, INC.</b> Consulting Civil Engineers	<b>CONN CREEK UP ASSISTANCE</b> PW System Review Pond Worksheet	<b>PROJECT NO.</b> 2016030 <b>BY:</b> SW <b>CHK:</b> GG
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**Pond No. 1**

Bottom Width	35.0'	Bottom Radius	17.0'	Start Month	August
Bottom Length	135.0'	Top Radius	35.0'	Min. Depth	3.0'
Interior Side Slope (x:1)	2.0	Depth	10.0'	Annual PW	1.54 Mgal
Length:Width	0.3	Freeboard	2.0'	Initial Depth	10.0'

Depth (ft)	Length (ft)	Width (ft)	Radius (ft)	Surface Area (ft <sup>2</sup> )	Total Volume (Mgal)
0	135	35	17	4,478	0.000
1	139	39	19	5,119	0.036
2	143	43	21	5,787	0.077
3	147	47	22	6,480	0.123
4	151	51	24	7,201	0.174
5	155	55	26	7,948	0.230
6	159	59	28	8,721	0.293
7	163	63	30	9,521	0.361
8	167	67	31	10,347	0.435
9	171	71	33	11,200	0.516
<b>10</b>	<b>175</b>	<b>75</b>	<b>35</b>	<b>12,079</b>	<b>0.603</b>
11	179	79	35	13,095	0.697
12	183	83	35	14,143	0.799

<b>SUMMIT ENGINEERING, INC.</b> Consulting Civil Engineers	<b>CONN CREEK UP ASSISTANCE</b> PW System Review Pond Summary	<b>PROJECT NO.</b> 2016030 <b>BY:</b> SW <b>CHK:</b> GG
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Pond No. 1													
Month	Initial Volume	Pond Evaporation	PW Inflow	10 Year Precipitation	Proposed Storm Inflow	Volume Change	Total Volume	Divert Volume	Final Volume	Final Pond Depth	Volume Check	Surface Area	Infiltration <sup>a</sup>
	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(ft)	(Mgal)	(ft <sup>2</sup> )	(Mgal)
August	0.603	-0.042	0.125	0.001	0.002	0.087	0.690	0.087	0.603	10.0	0.087	12,079	-0.001
September	0.603	-0.037	0.182	0.004	0.007	0.156	0.759	0.156	0.603	10.0	0.156	12,079	-0.001
October	0.603	-0.022	0.253	0.021	0.040	0.292	0.894	0.292	0.603	10.0	0.292	12,079	-0.001
November	0.603	-0.011	0.166	0.046	0.089	0.289	0.892	0.289	0.603	10.0	0.289	12,079	-0.001
December	0.603	-0.008	0.100	0.074	0.144	0.310	0.913	0.310	0.603	10.0	0.310	12,079	-0.001
January	0.603	-0.009	0.108	0.090	0.175	0.365	0.968	0.365	0.603	10.0	0.365	12,079	-0.001
February	0.603	-0.012	0.117	0.066	0.129	0.300	0.903	0.300	0.603	10.0	0.300	12,079	-0.001
March	0.603	-0.020	0.086	0.055	0.107	0.228	0.831	0.228	0.603	10.0	0.228	12,079	-0.001
April	0.603	-0.024	0.101	0.025	0.049	0.150	0.753	0.150	0.603	10.0	0.150	12,079	-0.001
May	0.603	-0.034	0.099	0.008	0.016	0.089	0.692	0.089	0.603	10.0	0.089	12,079	-0.001
June	0.603	-0.038	0.111	0.002	0.005	0.080	0.683	0.080	0.603	10.0	0.080	12,079	-0.001
July	0.603	-0.052	0.095	0.000	0.000	0.044	0.646	0.044	0.603	10.0	0.044	12,079	-0.001
<b>Total</b>		<b>-0.309</b>	<b>1.543</b>	<b>0.392</b>	<b>0.763</b>	<b>2.389</b>		<b>2.389</b>			<b>2.389</b>		<b>-0.012</b>

Pond water balance was evaluated as a single unit (not per cell) since the cells are separated by a baffle and water level in the pond will change uniformly for all cells.

<sup>a</sup> Infiltration rate 1.0 x 10<sup>-6</sup> cm/s through the pond liner

Pond Liner Permeability 1.00E-06 cm/s



<b>SUMMIT ENGINEERING, INC.</b> Consulting Civil Engineers	<b>CONN CREEK UP ASSISTANCE</b> PW System Review Irrigation & Effluent Application Rates	<b>PROJECT NO.</b> BY: CHK:	2016030 SW GG
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<b>Applied Irrigation Area</b>	Vineyard	2.0	acres
	Pasture	0.5	acres
<b>Total Area Available for Irrigation</b>	Vineyard		acres
	Pasture		acres

Month	Reference ET <sup>a</sup>	Pasture Crop Coefficient <sup>b</sup>	Vineyard Crop Coefficient <sup>c</sup>	Pasture ET <sup>d</sup>	Vineyard ET <sup>d</sup>	Precipitation <sup>e</sup>	Irrigation Demand <sup>f</sup>		Operating Days per Month <sup>g</sup>	Percolation Capacity <sup>h</sup>		Assimilative Capacity <sup>i</sup>		Effluent Applied		Excess Capacity
	(in)			(in)	(in)	(in)	(in)	(Mgal)	(d)	(in)	(Mgal)	(in)	(Mgal)	(Mgal)	(in)	(Mgal)
August	5.9	0.9	0.5	5.3	2.6	0.2	3.0	0.203	31	29.76	2.022	32.8	2.225	0.087	1.28	2.14
September	5.2	0.9	0.3	4.7	1.3	0.5	1.5	0.102	30	28.80	1.956	30.3	2.058	0.156	2.29	1.90
October	3.3	0.9	0.1	3.0	0.2	2.9	0.0	0.000	16	15.36	1.043	15.4	1.043	0.292	4.29	0.75
November	1.1	0.8	0.0	0.8	0.0	6.5	0.0	0.000	14	13.44	0.913	13.4	0.913	0.289	4.26	0.62
December	1.2	0.8	0.0	1.0	0.0	10.6	0.0	0.000	5	4.80	0.326	4.8	0.326	0.310	4.57	0.02
January	0.8	0.8	0.0	0.6	0.0	12.9	0.0	0.000	6	5.76	0.391	5.8	0.391	0.365	5.38	0.03
February	2.3	0.8	0.0	1.8	0.0	9.5	0.0	0.000	5	4.80	0.326	4.8	0.326	0.300	4.42	0.03
March	3.6	0.8	0.0	2.9	0.0	7.8	0.0	0.000	12	11.52	0.783	11.5	0.783	0.228	3.35	0.55
April	5.2	0.9	0.2	4.7	0.8	3.6	0.0	0.000	13	12.48	0.848	12.5	0.848	0.150	2.22	0.70
May	6.7	0.9	0.6	6.0	3.9	1.2	3.2	0.215	16	15.36	1.043	18.5	1.259	0.089	1.31	1.17
June	7.0	0.9	0.7	6.3	5.0	0.3	4.9	0.334	17	16.32	1.109	21.2	1.442	0.080	1.18	1.36
July	6.9	0.9	0.6	6.2	4.4	0.0	4.8	0.324	30	28.80	1.956	33.6	2.281	0.044	0.64	2.24
<b>Total</b>	<b>49.2</b>			<b>43.4</b>	<b>18.4</b>	<b>56.2</b>	<b>17.3</b>	<b>1.2</b>	<b>195.0</b>	<b>187.2</b>	<b>12.7</b>	<b>204.5</b>	<b>13.9</b>	<b>2.4</b>	<b>35.2</b>	<b>11.51</b>

- (a) Average monthly reference evapotranspiration rates, see Climate Data Worksheet.
- (b) Kc coefficients for pasture from Table 5-1, "Irrigation with Reclaimed Municipal Wastewater-A Guidance Manual"- California State Water Resources Control Board, July 1984 (San Joaquin Valley).
- (c) Kc coefficients for vineyards from Table 5-12, Irrigation with Reclaimed Municipal Wastewater - A Guidance Manual, 84-1 wr, SWRCB.
- (d)  $ET = ET_o \times K_c$ . A weighted value is determined on the basis of the available irrigated acreage of vineyard and pasture.
- (e) Precipitation, 10-year rainfall event, see Climate Data Worksheet.
- (f) Irrigation Demand =  $ET - Precipitation$ , inches. A weighted value is determined on the basis of the available irrigated acreage of vineyard and pasture.
- (g) Number of operating days per month based on estimated irrigation days available based on 24-hr post storm criteria for a 100-year return period. Summit Engineering, NBRID Capacity Study, April 1996.
- (h) Design percolation rate is a maximum of 0.96 inches per day for the number of operating day per month. Design perc rate based on USDA soil survey data for the site, adjusted by a 0.04 safety factor to account for typical slow rate land application design methodology.
- (i) Assimilative capacity is the sum of irrigation demand and percolation applied.

Conn Creek Winery  
Wastewater Feasibility Study  
July 10, 2019  
Revised: November 17 2020

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