

GW - 31

INSPECTIONS & DATA

**National Pollutant Discharge Elimination System
Compliance Evaluation Inspection
Department of Energy, Fenton Hill Site
NM0028576
August 11, 1987**

Introduction

On August 11, 1987, a Compliance Evaluation Inspection was conducted at the Department of Energy, Fenton Hill Site by Ann M. Young, Mike Saladen, Shelda Sutton-Mendoza, and Michele Giese of the New Mexico Environmental Improvement Division. The purpose of this inspection was to determine compliance with the National Pollutant Discharge Elimination System (NPDES) permit. This written report and USEPA Form 3560-3 document the inspection.

General

The Department of Energy, Fenton Hill, is assigned NPDES Permit NM0028576. The permit became effective on October 15, 1979, and expired June 30, 1983. The Department of Energy has recently submitted an updated reapplication for the permit. The Fenton Hill site is located about 35 miles west of Los Alamos, New Mexico, on the western flank of the Valles Caldera, a huge inactive volcano. Research and development studies at the site are based on the concept of extracting heat from dry geothermal reservoirs by developing artificial hydrothermal systems. The system is based on the closed-loop circulation of pressurized water through a man-made fracture system created by hydraulically fracturing the hot rock between two well bores. The useful heat from the superheated water is recovered at the surface through heat exchangers, and the cooled water is reinjected to recirculate through the underground loop.

Drilling fluids and water from the circulation loop have been stored in two ponds at the site, GT2 and EE1. Periodically, but not frequently, when additional storage capacity is needed, water from these ponds is discharged under the NPDES permit system into Lake Fork Canyon. The discharge contains moderate concentrations of silica, sodium, sulfates, arsenic, and lithium with moderate to high amounts of fluoride. These chemicals can be from the drilling mud or dissolved from the geothermal reservoir by the circulating water. The NPDES permit has reporting requirements but no effluent limits for arsenic, boron, cadmium, fluoride, and lithium. The pH range is 6.0 to 9.0 S.U. This is an experimental project, the only one of its kind, and no one knew exactly what concentrations the discharge would contain when the first permit application was made.

The water gravity flows from EE1 pond through the discharge pipe to a dry canyon at the edge of the site. The discharge is controlled by a valve on the discharge pipe. At the time of the inspection, there was no discharge from this pipe. The pipe and valve had been temporarily covered over with dirt moved in to fill in pond GT2, which is in the process of being taken out of service.

This second pond, GT2, is currently not receiving any water from the wells. The permittee is in the process of filling in the pond with fill dirt from the perimeter of the pond to the center. The center of the pond consists of wet sludge and accumulated rainwater. This pond will eventually be

completely covered with fill dirt. On August 11, 1987, a discharge pipe was installed from GT2 pond to the Lake Fork drainage. The purpose of the pipe is to drain off rainwater to facilitate the drying of the sludge. The flow is controlled by a valve at the lower end of the discharge pipe.

At the time of this inspection, there was a very small amount of water being discharged from GT2 pond through this pipe. No samples had been taken of the discharge and no flow measurements were made. The inspectors considered this discharge to be a permitted discharge under the NPDES permit program. The permittee did not consider it a discharge, and therefore had not sampled the discharge nor measured the flow. In order to keep the discharge from leaving the site, the permittee built a berm around the outfall while the inspectors were still at the facility. This contained the discharge. In addition, the permittee closed off the valve, and the discharge ceased. In a further effort to hasten the drying of the sludge so the pond could be completely filled in, the permittee also started to construct a small earthen berm on the upstream side of the pond to deflect rainwater runoff from other areas of the site,

Please see the Further Explanations portion of this report for additional findings and details regarding the evaluation of the permittee's compliance with the NPDES permit.



United States Environmental Protection Agency
Washington, D.C. 20460

Facsimile of Form Approved

OMB No. 2040-0003
Approval Expires 7-31-85

NPDES Compliance Inspection Report

Section A: National Data System Coding

Transaction Code NPDES yr/mo/day Inspection Type Inspector Fac Type
1 **N** 2 **5** 3 **N M 0 0 2 8 5 7 6** 11 12 **8 7 0 8 1 1** 17 18 **C** 19 **S** 20 **4**

Remarks

Minor Federal facility

21 Reserved Facility Evaluation Rating B1 QA -----Reserved----- 66
51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99

Section B: Facility Data

Name and Location of Facility Inspected Department of Energy TA-57 Geothermal Site Fenton Hill, Los Alamos, NM		Entry Time 0900 ☒ AM ☐ PM	Permit Effective Date October 15, 1979
West of Los Alamos, 24 miles on HW 4 to La Cueva, then West 5 miles on Road 126 to TA-57		Exit Time / Date 870811 1720	Permit Expiration Date June 30, 1983
Name(s) of On-Site Representative Jim Phoenix * Charles Nylander	Title(s) Chief, Technical Program Branch Team Leader, Regulatory Compliance Section	Phone No(s) (505) 667-5288 (505) 665-0453	
Name, Address of Responsible Official Harold E. Valencia Department of Energy Los Alamos, NM 87544	Title Area Manager	Contacted ☒ Yes ☐ No	
Phone No. (505) 667-5105			

Section C: Areas Evaluated During Inspection

(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated)

S	Permit	U	Flow Measurement	N/A	Pretreatment	S	Operations & Maintenance
M	Records / Reports	M	Laboratory	N/A	Compliance Schedules	S	Sludge Disposal
S	Facility Site Review	S	Effluent / Recvg. Waters	M	Self-monitoring Program	M	Other: Sampling

Section D: Summary of Findings / Comments (Attach additional sheets if necessary)

1. Permittee is neither recording nor reporting a totalized flow. A rating of "Unsatisfactory" was assigned.
2. Discharge pipe from GT₂ pond was not being sampled when it was discharging, nor was its flow being totalized.
3. Records for Sampling need improvement.
4. pH is required to be analyzed immediately. The permittee was transporting the pH sample from Fenton Hill to Los Alamos and analyzing it at a later time.

Name(s) and Signature(s) of Inspector(s) Ann M. Young <i>Ann M. Young</i>	Agency / Office / Telephone NMEID - SWQB (505) 827- 2796	Date Sept 11, 1987
Mike Saladen <i>Mike Saladen</i>	NMEID-SWQB (505) 827-2798	Sept 11, 1987
Shelda Sutton-Mendoza <i>Shelda Sutton-Mendoza</i>	NMEID-SWQB (505) 827-2802	Sept 11, 1987
Signature of Reviewer	Agency / Office	Date

Regulatory Office Use Only

Action Taken	Date	Compliance Status ☐ ☐
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Sections F thru L: Complete on all inspections; as appropriate. N/A = Not Applicable		PERMIT NO. NM0028576
SECTION F - Facility and Permit Background		
ADDRESS OF PERMITTEE IF DIFFERENT FROM FACILITY (Including City, County and ZIP code) Department of Energy Albuquerque Operations Los Alamos Area Office Los Alamos, New Mexico 87544	DATE OF LAST PREVIOUS INVESTIGATION BY EPA/STATE No previous inspections FINDINGS N/A	
SECTION G - Records and Reports		
RECORDS AND REPORTS MAINTAINED AS REQUIRED BY PERMIT. ☒ YES ☐ NO ☐ N/A (Further explanation attached <u>yes</u>)		
DETAILS: Records for the pH parameter need improvement		
(a) ADEQUATE RECORDS MAINTAINED OF:		
(i) SAMPLING DATE, TIME, EXACT LOCATION <u>location not clear marginal</u>	☒ YES ☐ NO ☐ N/A	
(ii) ANALYSES DATES, TIMES <u>no time for field pH marginal</u>	☒ YES ☐ NO ☐ N/A	
(iii) INDIVIDUAL PERFORMING ANALYSIS <u>not clear for pH MARGINAL</u>	☒ YES ☐ NO ☐ N/A	
(iv) ANALYTICAL METHODS/TECHNIQUES USED	☒ YES ☐ NO ☐ N/A	
(v) ANALYTICAL RESULTS (e.g., consistent with self-monitoring report data)	☒ YES ☐ NO ☐ N/A	
(b) MONITORING RECORDS (e.g., flow, pH, D.O., etc.) MAINTAINED FOR A MINIMUM OF THREE YEARS INCLUDING ALL ORIGINAL STRIP CHART RECORDINGS (e.g., continuous monitoring instrumentation, calibration and maintenance records).		
		☒ YES ☐ NO ☐ N/A
(c) LAB EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS KEPT.		
		☒ YES ☐ NO ☐ N/A
(d) FACILITY OPERATING RECORDS KEPT INCLUDING OPERATING LOGS FOR EACH TREATMENT UNIT.		
		☐ YES ☐ NO ☒ N/A
(e) QUALITY ASSURANCE RECORDS KEPT.		
		☒ YES ☐ NO ☐ N/A
(f) RECORDS MAINTAINED OF MAJOR CONTRIBUTING INDUSTRIES (and their compliance status) USING PUBLICLY OWNED TREATMENT WORKS.		
		☐ YES ☐ NO ☒ N/A
SECTION H - Permit Verification		
INSPECTION OBSERVATIONS VERIFY THE PERMIT. ☒ YES ☐ NO ☐ N/A (Further explanation attached <u>No</u>)		
DETAILS:		
(a) CORRECT NAME AND MAILING ADDRESS OF PERMITTEE.		
		☒ YES ☐ NO ☐ N/A
(b) FACILITY IS AS DESCRIBED IN PERMIT.		
		☒ YES ☐ NO ☐ N/A
(c) PRINCIPAL PRODUCT(S) AND PRODUCTION RATES CONFORM WITH THOSE SET FORTH IN PERMIT APPLICATION.		
		☒ YES ☐ NO ☐ N/A
(d) TREATMENT PROCESSES ARE AS DESCRIBED IN PERMIT APPLICATION.		
		☐ YES ☐ NO ☒ N/A
(e) NOTIFICATION GIVEN TO EPA/STATE OF NEW, DIFFERENT OR INCREASED DISCHARGES.		
		☐ YES ☐ NO ☒ N/A
(f) ACCURATE RECORDS OF RAW WATER VOLUME MAINTAINED.		
		☐ YES ☐ NO ☒ N/A
(g) NUMBER AND LOCATION OF DISCHARGE POINTS ARE AS DESCRIBED IN PERMIT.		
		☒ YES ☐ NO ☐ N/A
(h) CORRECT NAME AND LOCATION OF RECEIVING WATERS.		
		☒ YES ☐ NO ☐ N/A
(i) ALL DISCHARGES ARE PERMITTED.		
		☒ YES ☐ NO ☐ N/A
SECTION I - Operation and Maintenance		
TREATMENT FACILITY PROPERLY OPERATED AND MAINTAINED. ☒ YES ☐ NO ☐ N/A (Further explanation attached <u>Yes</u>)		
DETAILS:		
(a) STANDBY POWER OR OTHER EQUIVALENT PROVISIONS PROVIDED.		
		☒ YES ☐ NO ☐ N/A
(b) ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES AVAILABLE.		
		☐ YES ☐ NO ☒ N/A
(c) REPORTS ON ALTERNATE SOURCE OF POWER SENT TO EPA/STATE AS REQUIRED BY PERMIT.		
		☐ YES ☐ NO ☒ N/A
(d) SLUDGES AND SOLIDS ADEQUATELY DISPOSED.		
		☒ YES ☐ NO ☐ N/A
(e) ALL TREATMENT UNITS IN SERVICE.		
		☐ YES ☐ NO ☒ N/A
(f) CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATION AND MAINTENANCE PROBLEMS. <u>Delta H. Engineering</u>		
		☒ YES ☐ NO ☐ N/A
(g) QUALIFIED OPERATING STAFF PROVIDED.		
		☒ YES ☐ NO ☒ N/A
(h) ESTABLISHED PROCEDURES AVAILABLE FOR TRAINING NEW OPERATORS. <u>on the job training</u>		
		☒ YES ☐ NO ☐ N/A
(i) FILES MAINTAINED ON SPARE PARTS INVENTORY, MAJOR EQUIPMENT SPECIFICATIONS, AND PARTS AND EQUIPMENT SUPPLIERS.		
		☐ YES ☐ NO ☒ N/A
(j) INSTRUCTIONS FILES KEPT FOR OPERATION AND MAINTENANCE OF EACH ITEM OF MAJOR EQUIPMENT.		
		☐ YES ☐ NO ☒ N/A
(k) OPERATION AND MAINTENANCE MANUAL MAINTAINED.		
		☐ YES ☐ NO ☒ N/A
(l) SPCC PLAN AVAILABLE.		
		☒ YES ☐ NO ☐ N/A
(m) REGULATORY AGENCY NOTIFIED OF BY PASSING. (Dates _____)		
		☐ YES ☐ NO ☒ N/A
(n) ANY BY-PASSING SINCE LAST INSPECTION.		
		☐ YES ☒ NO ☐ N/A
(o) ANY HYDRAULIC AND/OR ORGANIC OVERLOADS EXPERIENCED.		
		☐ YES ☒ NO ☐ N/A

PERMIT NO.
NM0028576

SECTION J - Compliance Schedules

PERMITTEE IS MEETING COMPLIANCE SCHEDULE.

☐ YES ☐ NO ☒ N/A (Further explanation attached No. 2)

CHECK APPROPRIATE PHASE(S):

- ☐ (a) THE PERMITTEE HAS OBTAINED THE NECESSARY APPROVALS FROM THE APPROPRIATE AUTHORITIES TO BEGIN CONSTRUCTION.
- ☐ (b) PROPER ARRANGEMENT HAS BEEN MADE FOR FINANCING (mortgage commitments, grants, etc.).
- ☐ (c) CONTRACTS FOR ENGINEERING SERVICES HAVE BEEN EXECUTED.
- ☐ (d) DESIGN PLANS AND SPECIFICATIONS HAVE BEEN COMPLETED.
- ☐ (e) CONSTRUCTION HAS COMMENCED.
- ☐ (f) CONSTRUCTION AND/OR EQUIPMENT ACQUISITION IS ON SCHEDULE.
- ☐ (g) CONSTRUCTION HAS BEEN COMPLETED.
- ☐ (h) START-UP HAS COMMENCED.
- ☐ (i) THE PERMITTEE HAS REQUESTED AN EXTENSION OF TIME.

SECTION K - Self-Monitoring Program

Part 1 - Flow measurement (Further explanation attached Yes)

PERMITTEE FLOW MEASUREMENT MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT.

☐ YES ☒ NO ☐ N/A

DETAILS:

(a) PRIMARY MEASURING DEVICE PROPERLY INSTALLED. 55 gallon drum and stop watch

☐ YES ☒ NO ☐ N/ATYPE OF DEVICE: ☐ WEIR ☐ PARSHALL FLUME ☐ MAGMETER ☐ VENTURI METER ☐ OTHER (Specify see explanation)

(b) CALIBRATION FREQUENCY ADEQUATE. (Date of last calibration)

☐ YES ☐ NO ☒ N/A

(c) PRIMARY FLOW MEASURING DEVICE PROPERLY OPERATED AND MAINTAINED.

☐ YES ☐ NO ☒ N/A

(d) SECONDARY INSTRUMENTS (totalizers, recorders, etc.) PROPERLY OPERATED AND MAINTAINED.

☐ YES ☐ NO ☒ N/A

(e) FLOW MEASUREMENT EQUIPMENT ADEQUATE TO HANDLE EXPECTED RANGES OF FLOW RATES.

☐ YES ☐ NO ☒ N/A

Part 2 - Sampling (Further explanation attached Yes)

PERMITTEE SAMPLING MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT.

☒ YES ☐ NO ☐ N/ADETAILS: No sampling at discharge from GT₂ pond

Marginal

(a) LOCATIONS ADEQUATE FOR REPRESENTATIVE SAMPLES.

☒ YES ☐ NO ☐ N/A

(b) PARAMETERS AND SAMPLING FREQUENCY AGREE WITH PERMIT.

☐ YES ☒ NO ☐ N/A

(c) PERMITTEE IS USING METHOD OF SAMPLE COLLECTION REQUIRED BY PERMIT.

☒ YES ☐ NO ☐ N/AIF NO, ☒ GRAB ☐ MANUAL COMPOSITE ☐ AUTOMATIC COMPOSITE FREQUENCY

(d) SAMPLE COLLECTION PROCEDURES ARE ADEQUATE.

marginal

☒ YES ☐ NO ☐ N/A

(i) SAMPLES REFRIGERATED DURING COMPOSITING

☐ YES ☐ NO ☒ N/A

(ii) PROPER PRESERVATION TECHNIQUES USED

☒ YES ☐ NO ☐ N/A

(iii) FLOW PROPORTIONED SAMPLES OBTAINED WHERE REQUIRED BY PERMIT

☐ YES ☐ NO ☒ N/A

(iv) SAMPLE HOLDING TIMES PRIOR TO ANALYSES IN CONFORMANCE WITH 40 CFR 136.3

☒ YES ☐ NO ☐ N/A

(e) MONITORING AND ANALYSES BEING PERFORMED MORE FREQUENTLY THAN REQUIRED BY PERMIT.

☐ YES ☒ NO ☐ N/A

(f) IF (e) IS YES, RESULTS ARE REPORTED IN PERMITTEE'S SELF-MONITORING REPORT.

☐ YES ☐ NO ☒ N/A

Part 3 - Laboratory (Further explanation attached Yes)

PERMITTEE LABORATORY PROCEDURES MEET THE REQUIREMENTS AND INTENT OF THE PERMIT.

☒ YES ☐ NO ☐ N/A

DETAILS: pH should be done immediately

marginal

(a) EPA APPROVED ANALYTICAL TESTING PROCEDURES USED. (40 CFR 136.3) marginal

☒ YES ☐ NO ☐ N/A

(b) IF ALTERNATE ANALYTICAL PROCEDURES ARE USED, PROPER APPROVAL HAS BEEN OBTAINED.

☐ YES ☐ NO ☒ N/A

(c) PARAMETERS OTHER THAN THOSE REQUIRED BY THE PERMIT ARE ANALYZED.

☐ YES ☒ NO ☐ N/A

(d) SATISFACTORY CALIBRATION AND MAINTENANCE OF INSTRUMENTS AND EQUIPMENT.

☒ YES ☐ NO ☐ N/A

(e) QUALITY CONTROL PROCEDURES USED.

☒ YES ☐ NO ☐ N/A

(f) DUPLICATE SAMPLES ARE ANALYZED. >10 % OF TIME.

☒ YES ☐ NO ☐ N/A

(g) SPIKED SAMPLES ARE USED. >10 % OF TIME.

☒ YES ☐ NO ☐ N/A

(h) COMMERCIAL LABORATORY USED.

☐ YES ☒ NO ☐ N/A

(i) COMMERCIAL LABORATORY STATE CERTIFIED.

☐ YES ☐ NO ☒ N/A

LAB NAME N/A

LAB ADDRESS

PERMIT NO.

NM0028576

SECTION L - Effluent/Receiving Water Observations (Further explanation attached no)

OUTFALL NO.	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	VISIBLE FLOAT SOL	COLOR	OTHER
001	discharge soaked into ground before leaving site						

(Sections M and N: Complete as appropriate for sampling inspections)

SECTION M - Sampling Inspection Procedures and Observations (Further explanation attached _____)

- ☐ GRAB SAMPLES OBTAINED
☐ COMPOSITE OBTAINED N/A
☐ FLOW PROPORTIONED SAMPLE
☐ AUTOMATIC SAMPLER USED
☐ SAMPLE SPLIT WITH PERMITTEE
☐ CHAIN OF CUSTODY EMPLOYED
☐ SAMPLE OBTAINED FROM FACILITY SAMPLING DEVICE

COMPOSITING FREQUENCY _____ PRESERVATION _____

SAMPLE REFRIGERATED DURING COMPOSITING: ☐ YES ☐ NO

SAMPLE REPRESENTATIVE OF VOLUME AND NATURE OF DISCHARGE _____

SECTION N - Analytical Results (Attach report if necessary)

N/A

Page 1 of 2

Date August 11, 1987

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NPDES Compliance Inspection Report
Further Explanations

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Section G Part Records and Reports

1. Permittee was not clear as to exact sampling location for NPDES samples. Part 1 Section C, 5, a, of the permit states that the permittee shall record "the exact place, date, and time of sampling."
2. Permittee did not record the time of the pH field analysis. It can not be determined if holding times were met as required by 40 CFR Part 136.3, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, Table II," which states the holding times as "analyze immediately." Part 1, Section G, 3, C of the permit states, "Test Procedures for the analysis of pollutants shall conform its regulations pursuant to Section 304 (g) of the Act.", which is referenced by 40 CFR Part 136.3.
3. Permittee did not record the name of person performing the pH field analysis. Part 1, Section C, 5, C of the permit states that the permittee shall record "The person who performed the analysis."

Page 2 of 4

Section I Part Operations and Maintenance

1. A guard is on duty on the site seven days a week, 24 hours a day.
2. There are no "treatment units" employed for the discharge, hence most questions were answered "not applicable."

Date August 11, 1987Permit No. NM0028576NPDES Compliance Inspection Report
Further ExplanationsPage 3 of 4Section K Part 1 - Flow Measurement

1. The flow at the outfall was being intermittently measured by a 55 gallon drum and a stop watch. The permit requires the permittee to record a totalized flow. An accurate totalized flow can not be calculated by occasional measurements using a 55 gallon drum and a stop watch. The permittee is not reporting a totalized flow.
2. In April, 1987 the distance the effluent flowed down the canyon was only recorded for one discharge day, the first day, even though there were 5 discharge days. Part III, Section 3 of the permit states, "Quantity of discharge from the outfall point shall be controlled such that no effluent travels beyond the point when the Lake Fork Canyon Road crosses the water course receiving the effluent; this point is approximately one mile downstream from the outfall." The distance that the effluent flows needs to be measured and recorded daily for each discharge.

Page 3 of 4Section K Part 2 - Sampling

1. On August 11, 1987 the permittee installed a discharge pipe from the GT₂ pond in order to drain off rainwater. During the inspection, August 11, 1987, this discharge pipe had a slow but steady discharge. Neither samples nor flow measurements had been taken of this discharge by the permittee. The permit requires samples to be taken daily and the flow to be totalized during the time of discharge.
2. The April, 1987 DMR and the permittee's records state that the permittee had five discharge days during the month of April. The permittee recorded the frequency of analysis on the DMR as 1/30 instead of the actual 5/30. The permit requires a sample to be taken daily during the time of discharge, which the permittee did, but did not record it under "Frequency of Analysis" on the DMR.

Page 3 of 4Section K Part 3 - Laboratory

The permittee was transporting a pH sample from the Fenton Hill site to the laboratory in Los Alamos, and recording this pH reading for the DMR. Proper holding times for pH were not being met as required by 40 CFR Part 136.3, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," Table II, which states that the pH must be analyzed immediately.

DMR Calculation Check
NM0028576

Reporting Period: From 87 04 01 To 87 04 30
year month day year month day

Parameter Checked: Cadmium

	<u>Quantity or Loading</u>	<u>Quality or Concentration</u>	
		<u>Avg.</u>	<u>Max.</u>
Reported Value:	N/A	.002	.003
Calculated Value:	N/A	.002	.003
Permit Value:	N/A	report	report

If calculated value does not equal reported value, explain: N/A.

intermittent discharge, sampled once per day during periods of discharge

<u>Date</u>	<u>Concentration</u>
4-22	.0026 mg/l
4-23	.0019 mg/l
4-27	.0013 mg/l
4-28	.0017 mg/l
4-29	<u>.0026 mg/l</u>
	avg = .002 mg/l

R6-70 (11-77)

SECTION B - Effluent Characteristics (Additional sheets attached No (Continued) NM0028576

PARAMETER/ OUTFALL		MINIMUM	AVERAGE	MAXIMUM	ADDITIONAL
Flow	SAMPLE MEASUREMENT		27.5*	27.5*	
	PERMIT REQUIREMENT				daily totalized
Arsenic mg/l	SAMPLE MEASUREMENT		0.050	0.067	
	PERMIT REQUIREMENT		report	report	1/day grab
Boron mg/l	SAMPLE MEASUREMENT		3.4	3.6	
	PERMIT REQUIREMENT				
Cadmium mg/l	SAMPLE MEASUREMENT		0.002	0.003	
	PERMIT REQUIREMENT		report	report	1/day grab
Fluoride mg/l	SAMPLE MEASUREMENT		0.662	0.690	
	PERMIT REQUIREMENT		report	report	1/day grab
Lithium mg/l	SAMPLE MEASUREMENT		1.07	1.10	
	PERMIT REQUIREMENT		report	report	1/day grab
pH S.U.	SAMPLE MEASUREMENT	8.2		8.5	
	PERMIT REQUIREMENT	6.0		9.0	1/day grab
	SAMPLE MEASUREMENT				
	PERMIT REQUIREMENT	Data from April, 1987 DMR			
	SAMPLE MEASUREMENT				
	PERMIT REQUIREMENT	* flow is reported on the DMR as an instantaneous gallons			
	SAMPLE MEASUREMENT	per minute rate instead of a totalized value in MGDs.			
	PERMIT REQUIREMENT				
	SAMPLE MEASUREMENT				
	PERMIT REQUIREMENT				
	SAMPLE MEASUREMENT				
	PERMIT REQUIREMENT				
	SAMPLE MEASUREMENT				
	PERMIT REQUIREMENT				
	SAMPLE MEASUREMENT				
	PERMIT REQUIREMENT				

RG-73 (3-78)



LAWZ - Kenton Hill

Drill Rig

11/9/87



LANL - Fenton Hill
Hypalon Pond
11/9/87

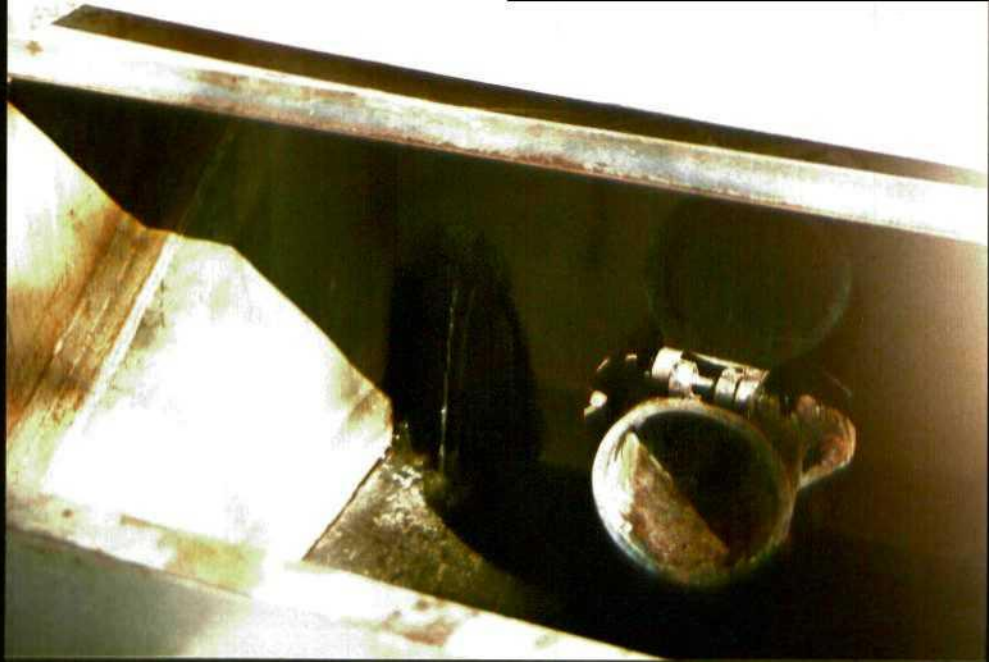


LANL - Fenton Hill

Leak Detection Sump

Hypalon Pond

11/9/87



LANL - Fenton Hill
Leak Detection Sump
Hypalon Pond
11/9/87



LANZ - Fenton Hill

SURFACE Water Drainage
below Service Pond outlet
showing Mud.

11/9/67



LANL - Fenton Hill
Forest Service Retention
Pond directly below
Service Pond outlet.

11/9/87



LANL - Fenton Hill
Service Pond 11/9/87



LANL - Kenton Hill
Service Pond 11/09/87



LANL - Fenton H. 11
Service Pond 11/9/83



LAWL - Fenton Hill
Service Pond

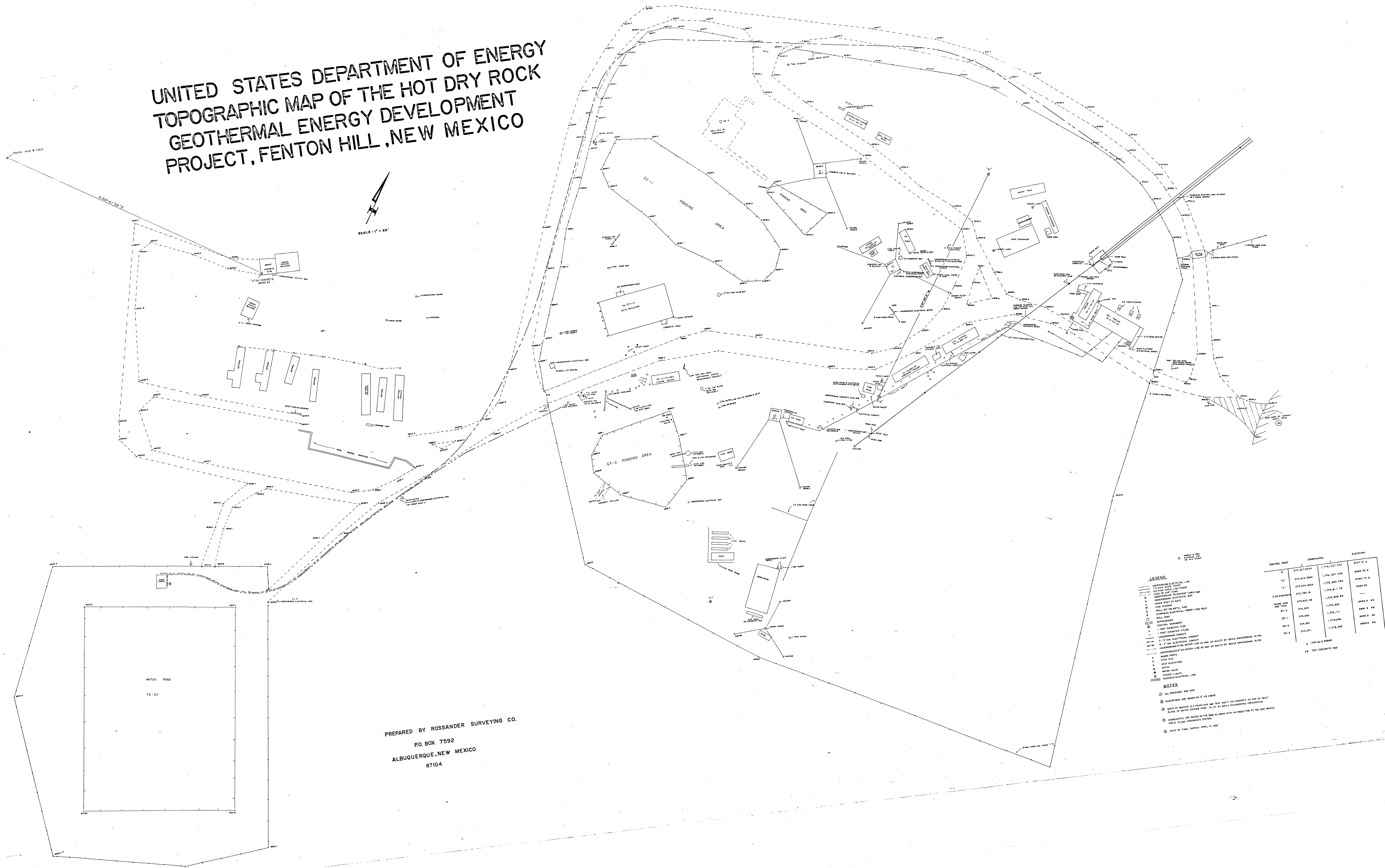
11/9/87



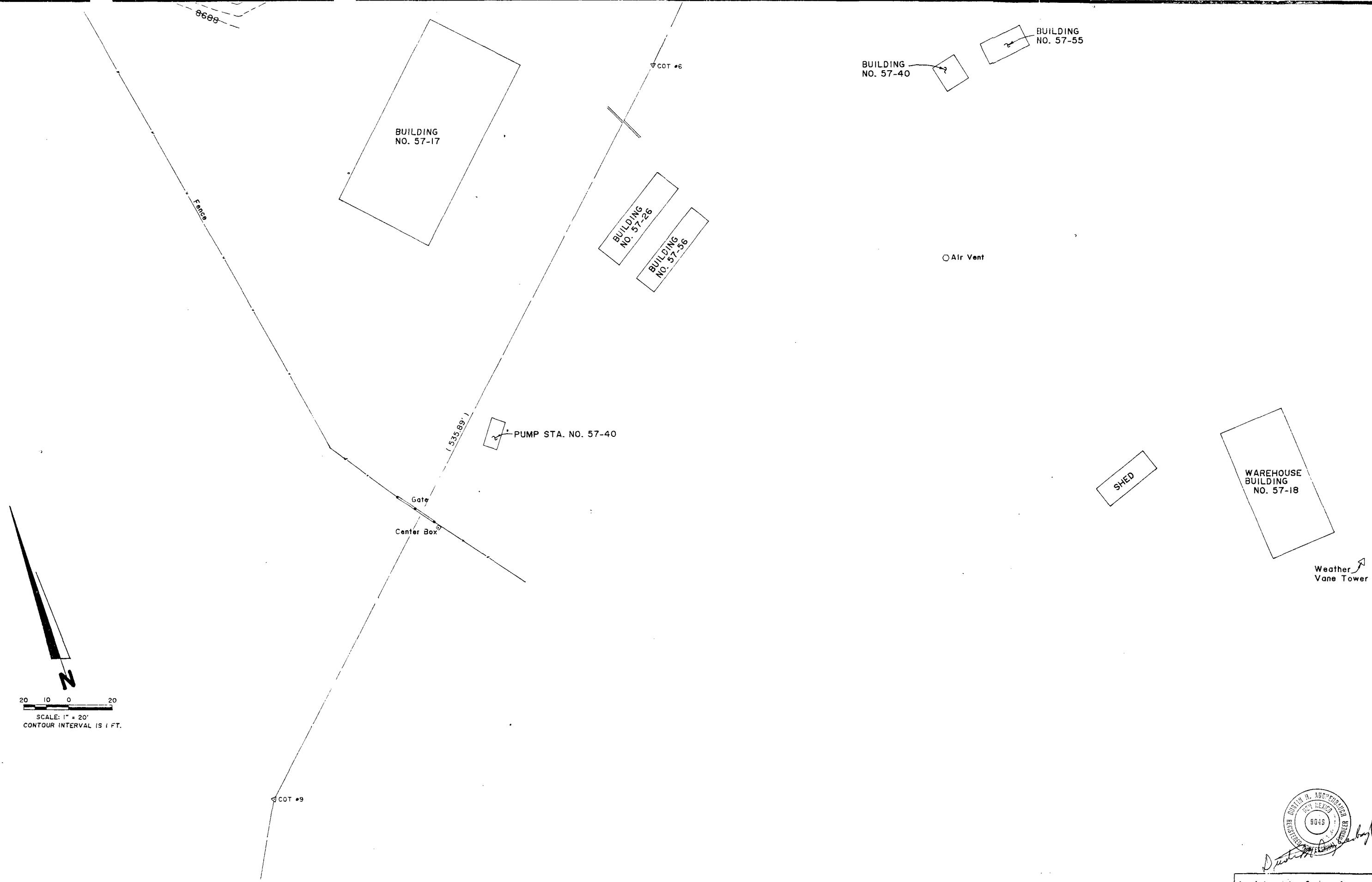
LANL - Fenton Hill
Surface DRAINAGE Below Pond^{Service}
outlet_n

11/9/87

UNITED STATES DEPARTMENT OF ENERGY
TOPOGRAPHIC MAP OF THE HOT DRY ROCK
GEOTHERMAL ENERGY DEVELOPMENT
PROJECT, FENTON HILL, NEW MEXICO

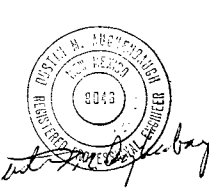
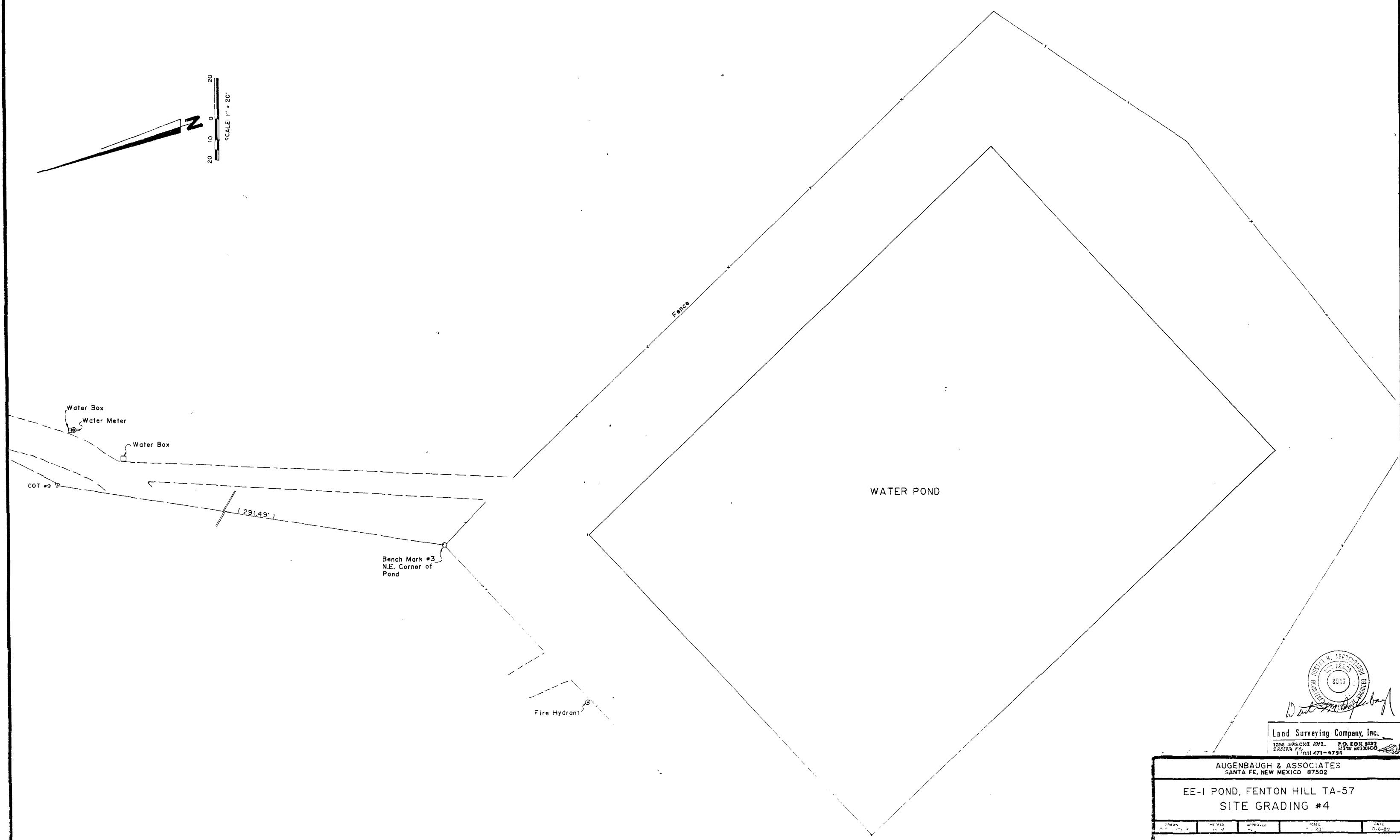
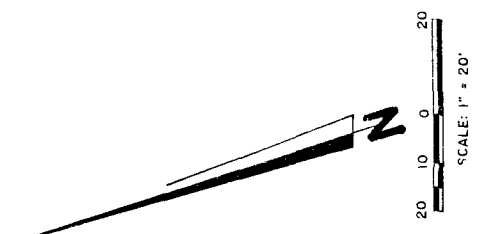


PREPARED BY ROSSANDER SURVEYING CO.
P.O. BOX 7592
ALBUQUERQUE, NEW MEXICO
87104



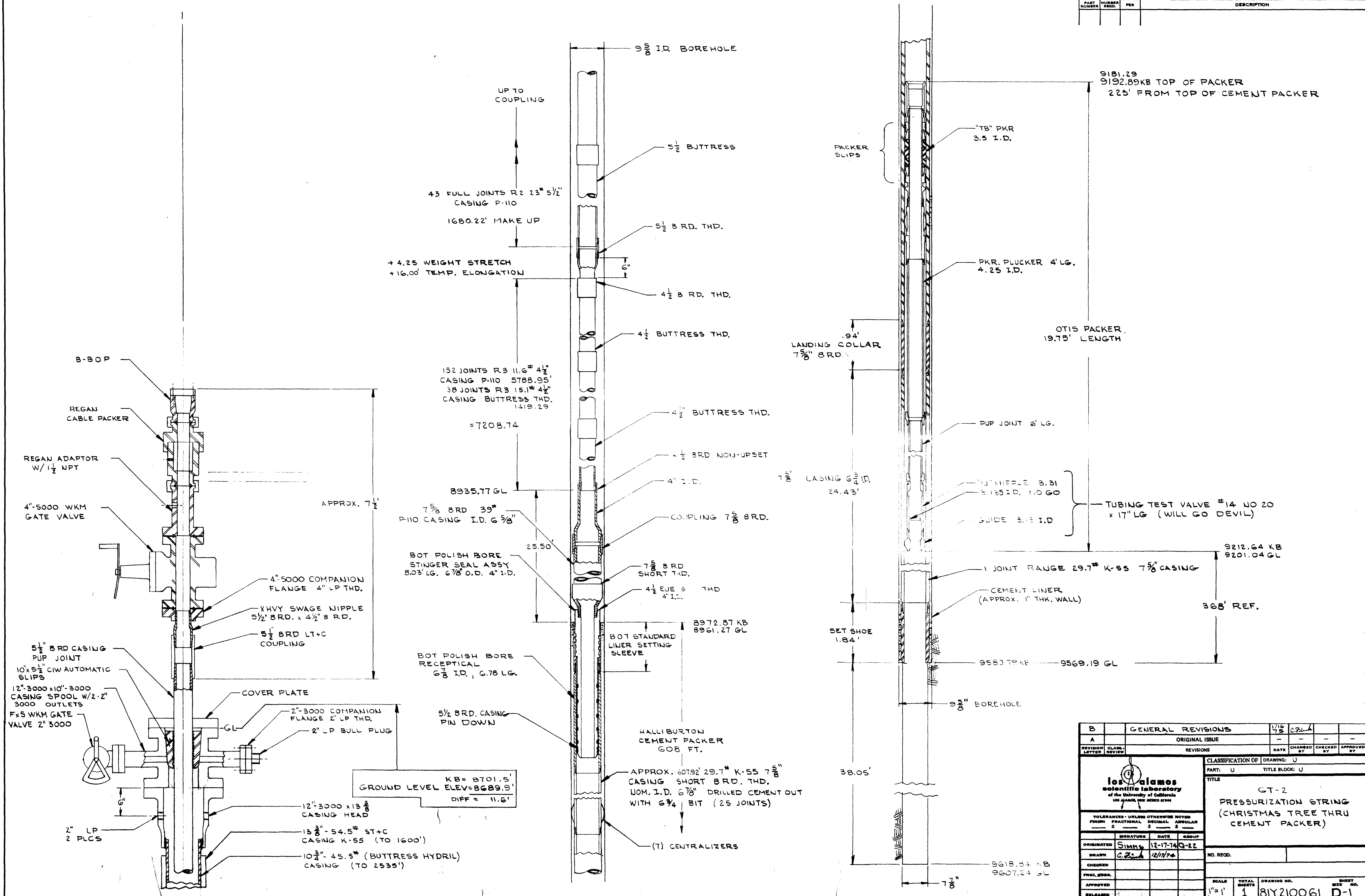
Land Surveying Company, Inc.
1316 ARCADE AVE. P.O. BOX 3122
SANTA FE, NEW MEXICO 87502
(505) 471-2723

AUGENBAUGH & ASSOCIATES SANTA FE, NEW MEXICO 87502				
EE-I POND, FENTON HILL TA-57 SITE GRADING #3				
DESIGNED BY	CHECKED BY	DATE	DATE	
		11-1-89	11-1-89	
DRAWING NO.			SHEET 4 OF 7	

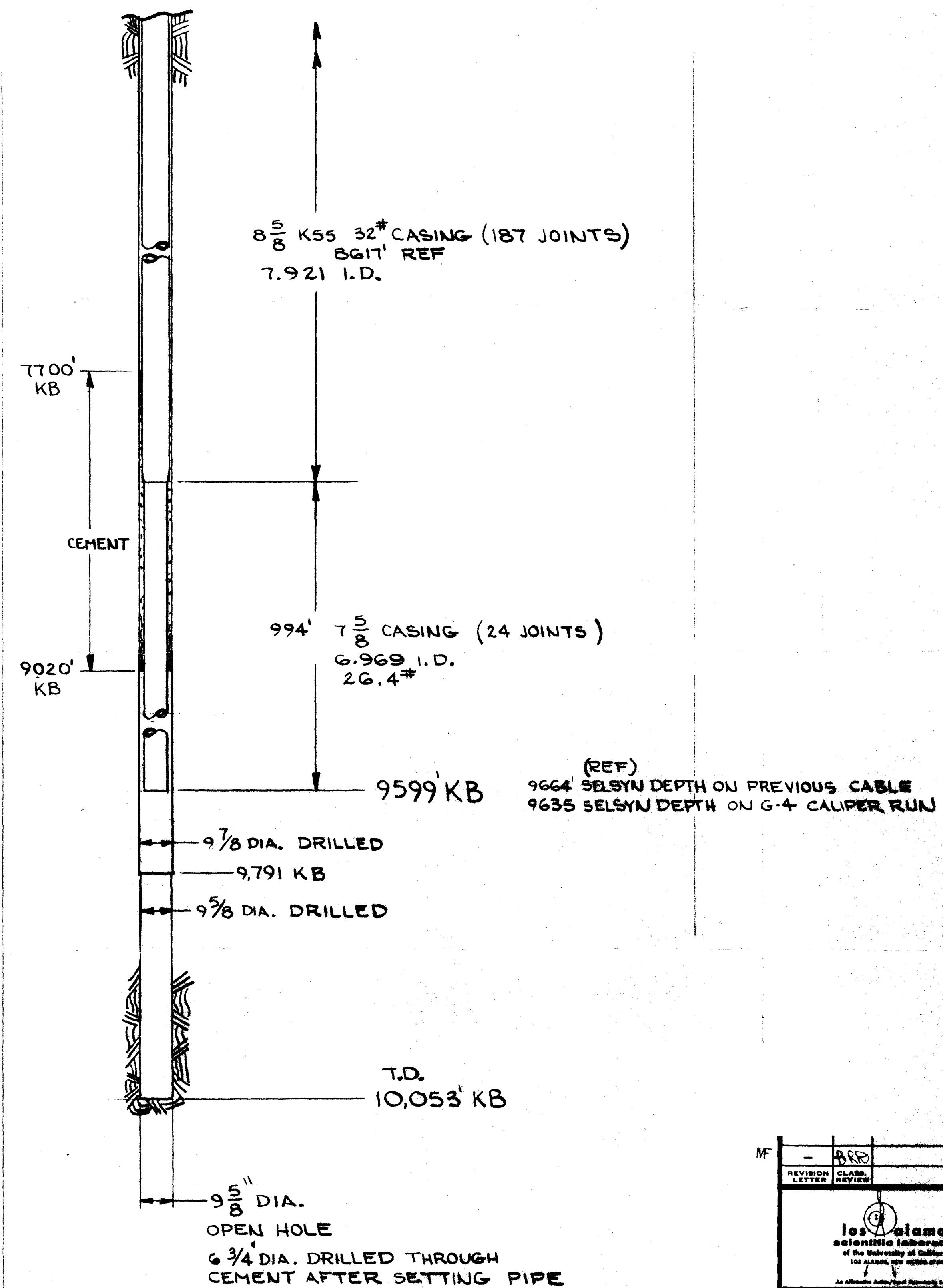
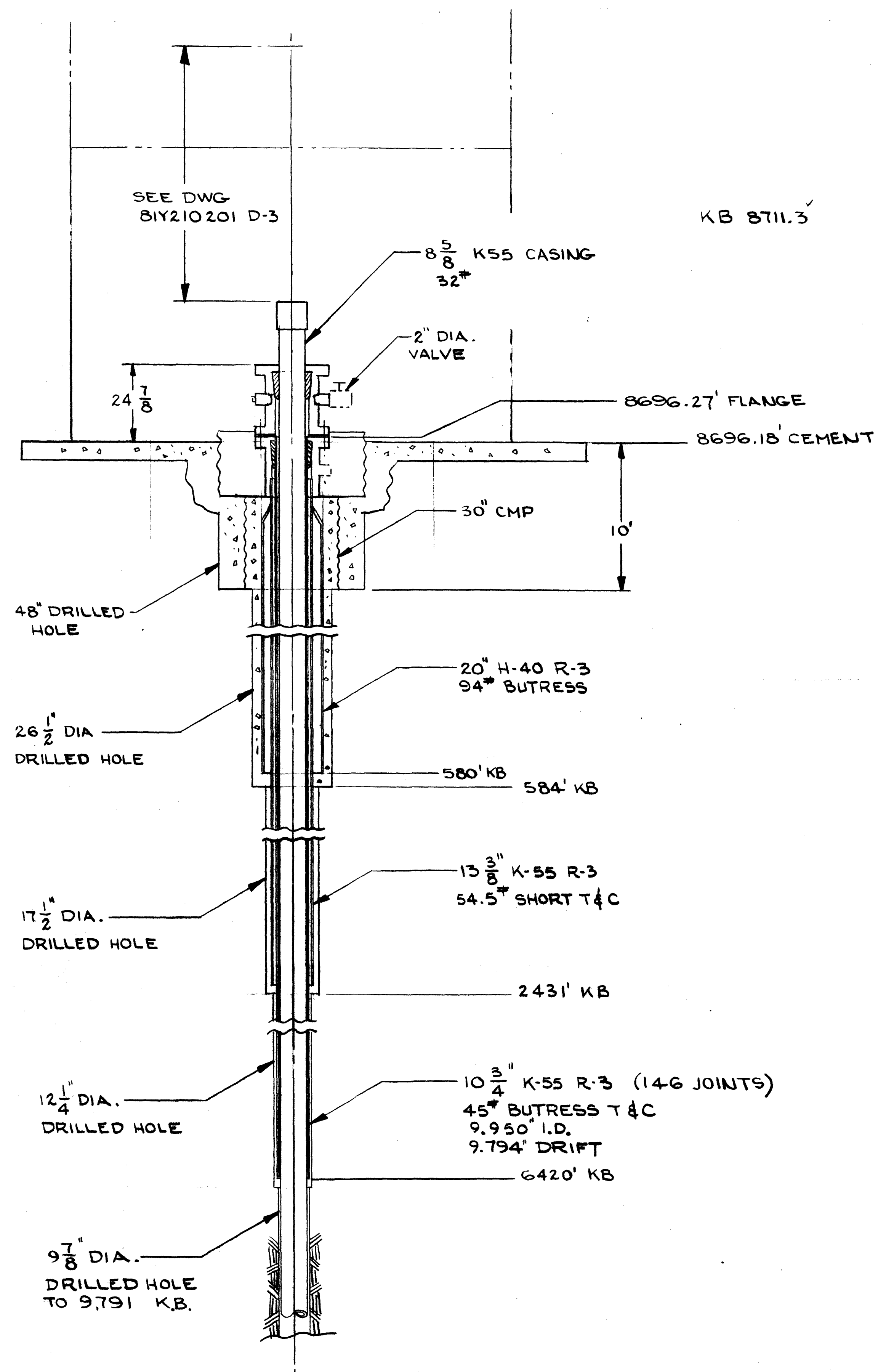


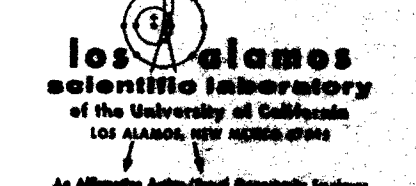
Land Surveying Company, Inc.
1018 ALABAMA AVE. P.O. BOX 5122
SANTA FE, NM 87502-0118

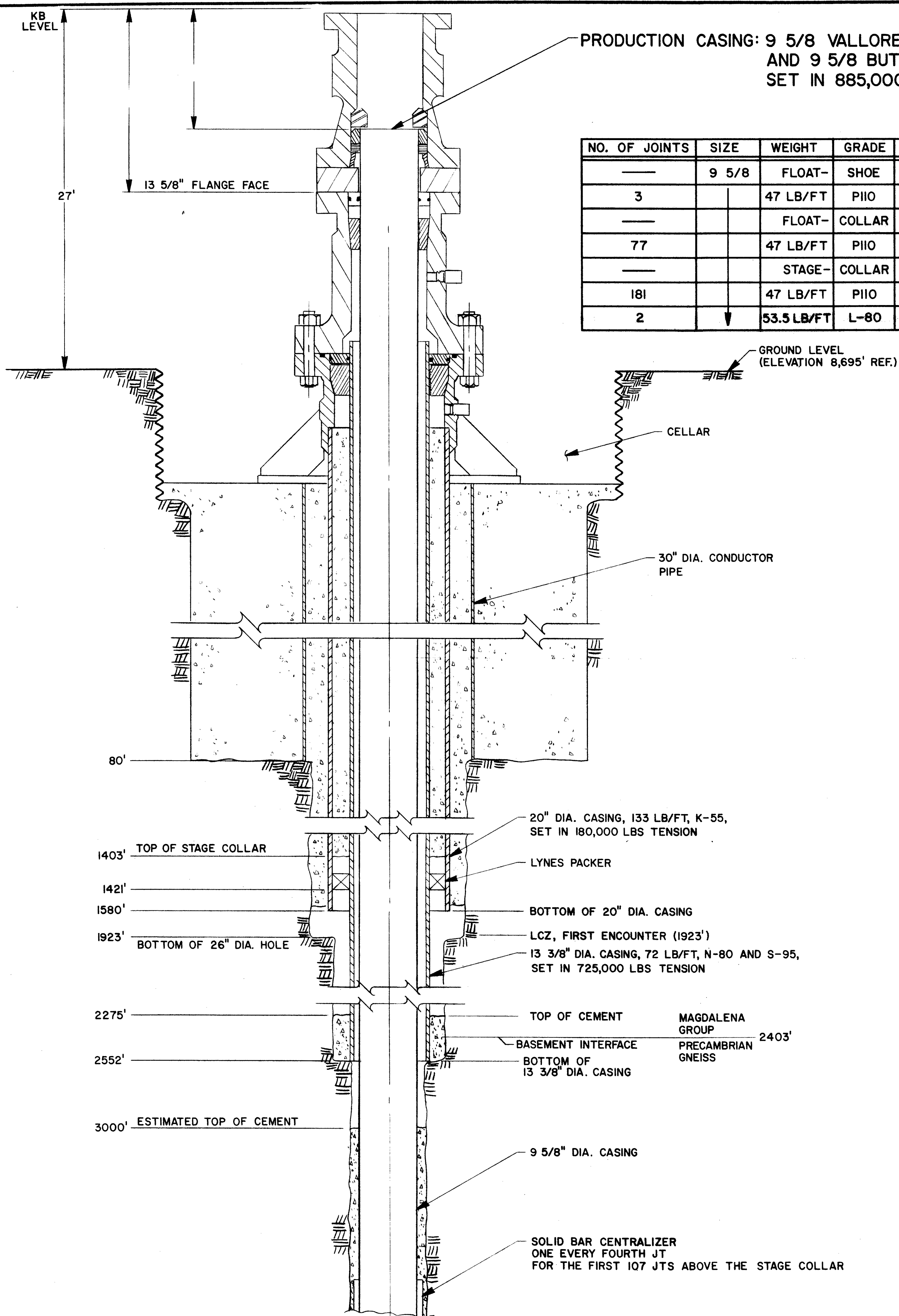
AUGENBAUGH & ASSOCIATES SANTA FE, NEW MEXICO 87502				
EE-1 POND, FENTON HILL TA-57 SITE GRADING #4				
DRAWN J. M. Buchan	CHECKED J. M. Buchan	APPROVED J. M. Buchan	SCALE 1" = 20'	DATE 3-6-84
DRAWING NO.				SHEET 5 OF 7



B	GENERAL REVISIONS				1/16 75	CFH		
A	ORIGINAL ISSUE				-	-	-	-
REVISION LETTER	CLASS. REVIEW	REVISIONS			DATE	CHANGED BY	CHECKED BY	APPROVED BY
					CLASSIFICATION OF DRAWING: U			
					PART: U		TITLE BLOCK: U	
					TITLE			
					GT-2 PRESSURIZATION STRING (CHRISTMAS TREE THRU CEMENT PACKER)			
TOLERANCES - UNLESS OTHERWISE NOTED								
FINISH		FRACTIONAL		DECIMAL		ANGULAR		
—		2		2		2		
		SIGNATURE		DATE		GROUP		
ORGANIZED		SIMMS		12-17-74		Q-22		
DRAWN		C. Z...		12/17/74				
CHECKED								
PROJ. ENGR.								
APPROVED								
RELEASED								
NO. REQD.								
SCALE		TOTAL SHEETS		DRAWING NO.		SHEET NO.		
1" = 1"		1		81Y210061		D-1		



PART NUMBER		PARTS LIST													
PREFIX NUMBER	ITEM NUMBER	NUMBER USED	DESCRIPTION												
<table border="1"> <tr> <td>REVISION LETTER</td> <td>CLASS. REVIEW</td> <td>DATE</td> <td>CHANGED BY</td> <td>CHECKED BY</td> <td>APPROVED BY</td> </tr> <tr> <td colspan="6">ORIGINAL ISSUE</td> </tr> </table>				REVISION LETTER	CLASS. REVIEW	DATE	CHANGED BY	CHECKED BY	APPROVED BY	ORIGINAL ISSUE					
REVISION LETTER	CLASS. REVIEW	DATE	CHANGED BY	CHECKED BY	APPROVED BY										
ORIGINAL ISSUE															
		CLASSIFICATION OF DRAWING: U PART: U TITLE BLOCK: U TITLE EE-1 PIPE STRING (COMPLETION 12-9-1975)													
TOLERANCE - (UNLESS OTHERWISE NOTED) X = ± .001 ANGULAR = ± .01 Y = ± .001 FINISH = ± .01		SCALE TOTAL NONE 1													
ORIGINATED ARCHULETA-D-178 G-4 DRAWN 23-6-1975 CHECKED PROJ. ENGR. APPROVED RELEASED		DRAWING NO. 81Y210250 SHEET NO. D-1													

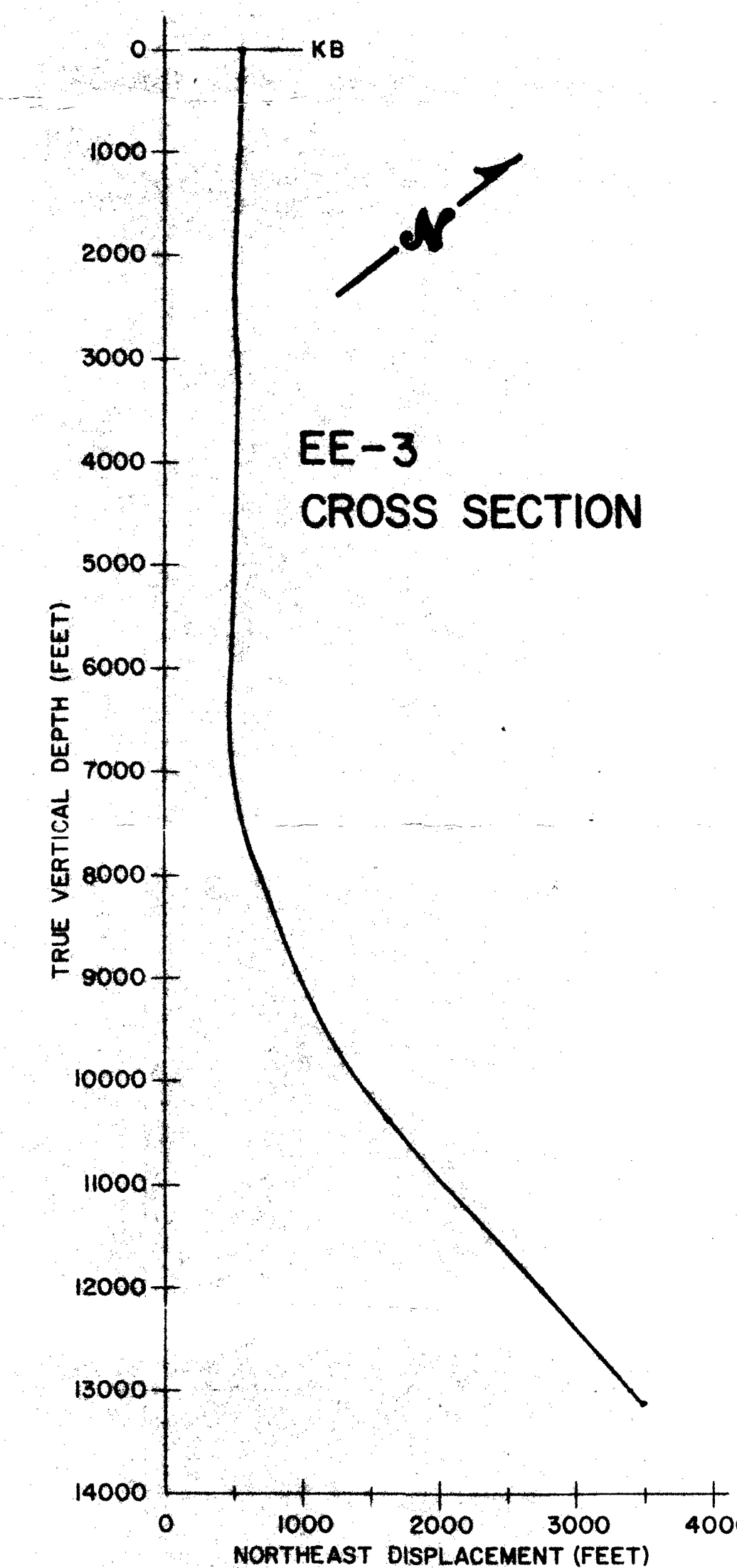
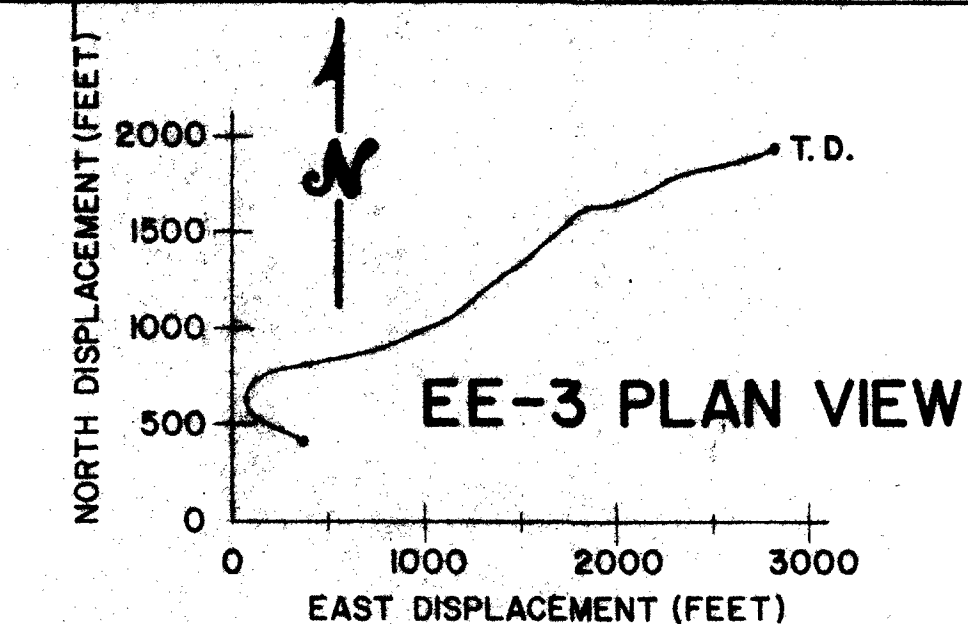
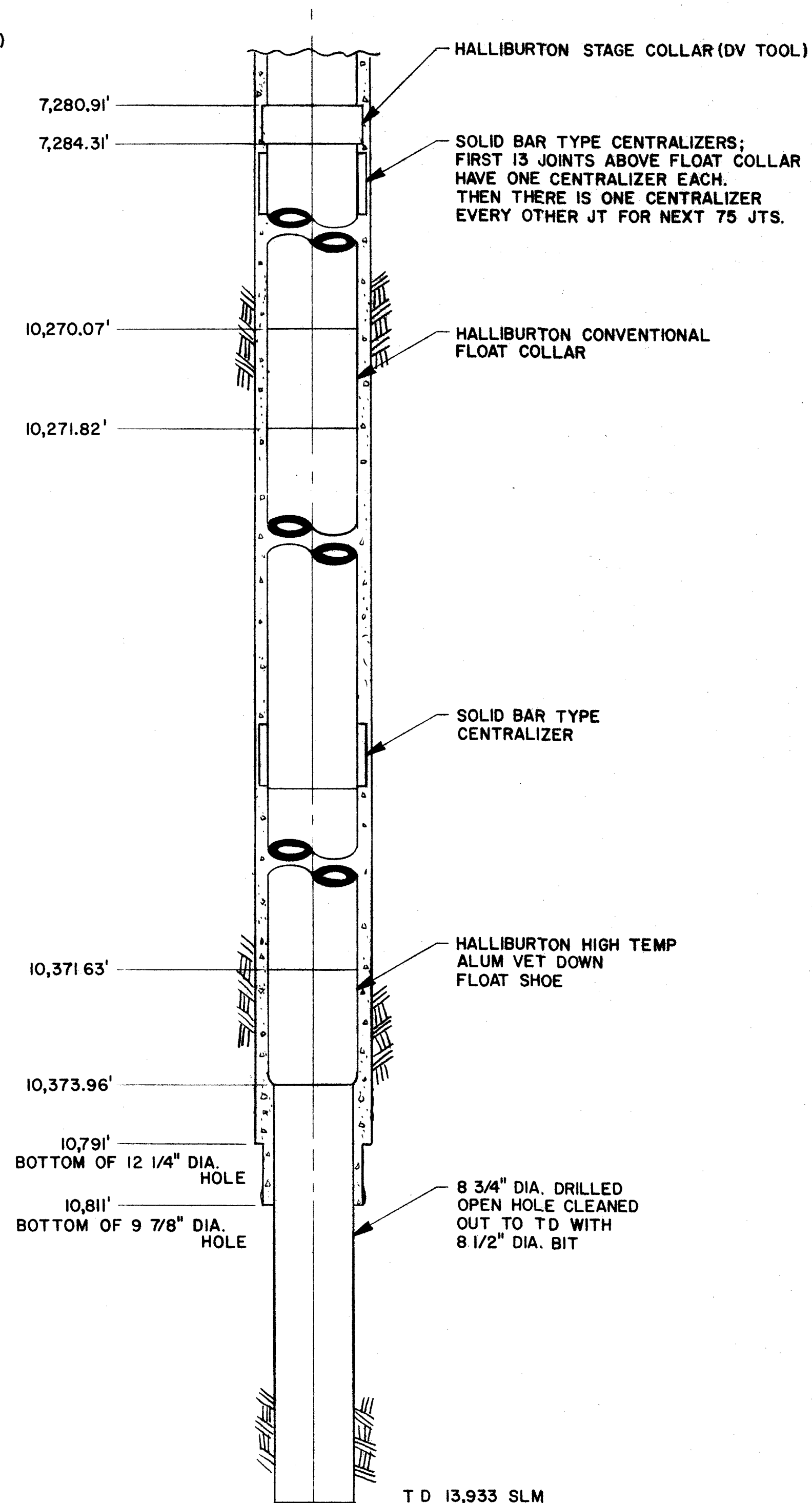


PRODUCTION CASING: 9 5/8 VALLOREC VAM THREAD P110 47 LB/FT AND 9 5/8 BUTTRESS THREAD L-80 53.5 LB/FT SET IN 885,000 LBS TENSION.

NO. OF JOINTS	SIZE	WEIGHT	GRADE	LENGTH	SLM		KB
					SET FROM	SET TO	
—	9 5/8	FLOAT-	SHOE	2.33'	10,371.63'	10,373.96'	
3		47 LB/FT	P110	99.81'	10,271.82'	10,371.63'	
—		FLOAT-	COLLAR	1.75'	10,270.07'	10,271.82'	
77		47 LB/FT	P110	2,985.76'	7,284.31'	10,270.07'	
—		STAGE-	COLLAR	3.40'	7,280.91'	7,284.31'	
181		47 LB/FT	P110	7,193.83'	87.08'	7,280.91'	
2		53.5 LB/FT	L-80	64.05'	23.03'	87.08'	

NOTES:

- 1.) KELLY BUSHING TO GROUND LEVEL EQUALS 27 FEET.
- 2.) KELLY BUSHING TO 13 5/8" DIA FLANGE FACE EQUALS 24 FEET.
- 3.) THREAD LOCK ON ALL CONNECTIONS BELOW AND INCLUDING FLOAT COLLAR.

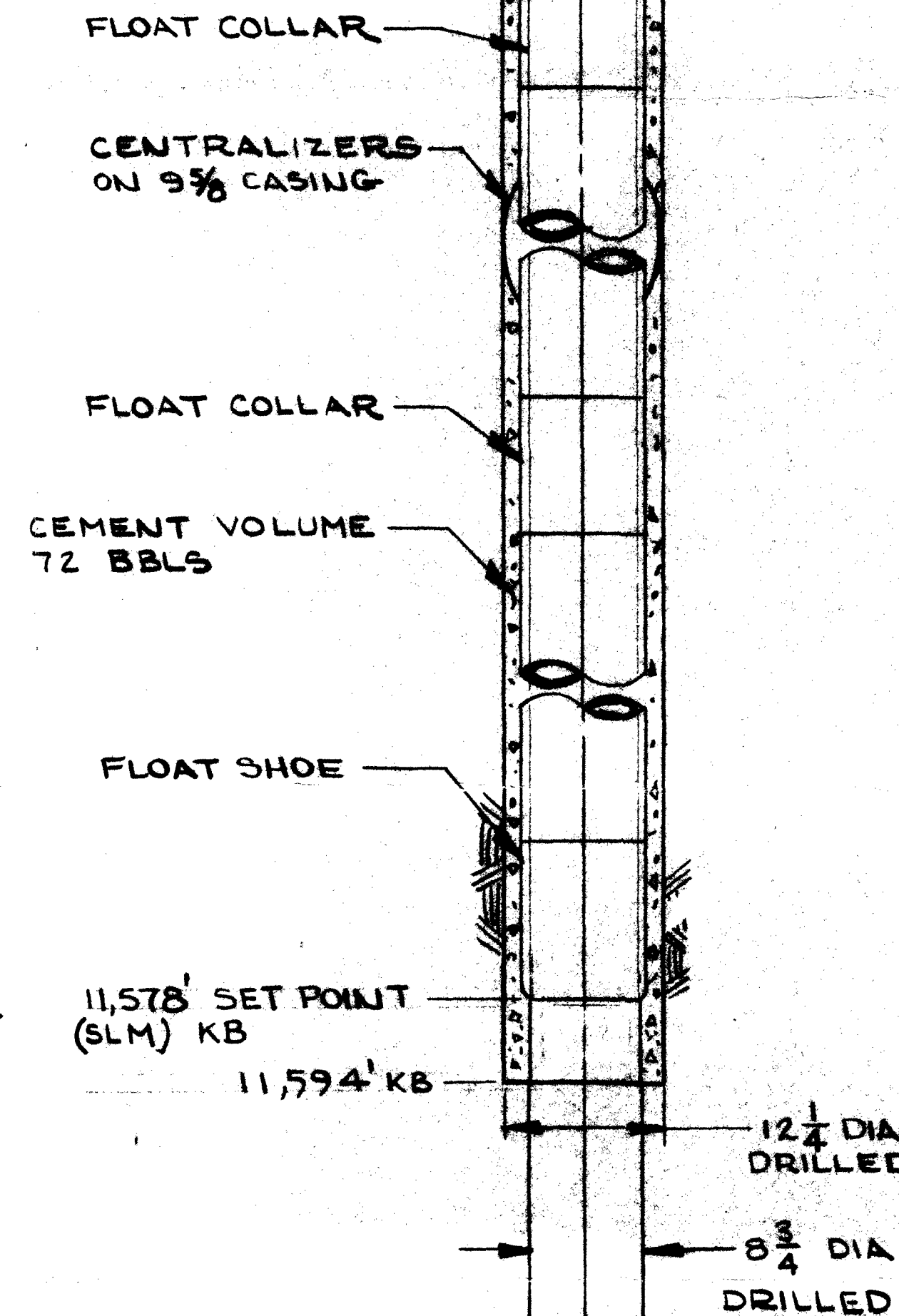
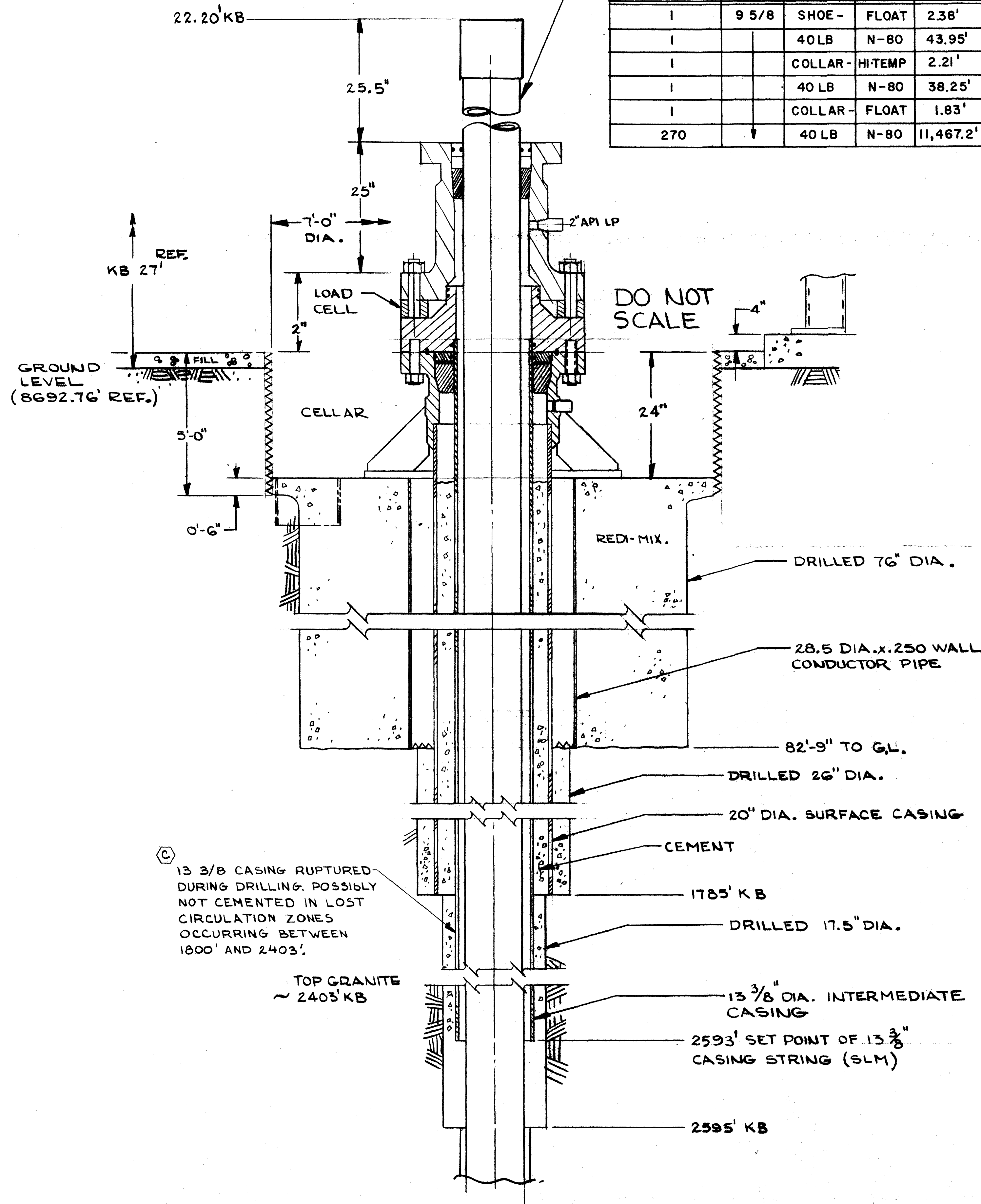


ORIGINAL ISSUE				REVISIONS				DATE				CHANGED BY				CHECKED BY				APPROVED BY			
Los Alamos				Los Alamos National Laboratory				Los Alamos, New Mexico 87545				CLASSIFICATION OF DRAWING: UNC				PART: UNC				TITLE BLOCK: UNC			
TITLE: EE-3				AS COMPLETED				TOLERANCE - (UNLESS OTHERWISE NOTED)				X = ±				O.XX = ±				ANGULAR = ±			
ORIGINATED				SIGNATURE				DATE				GROUP				DRAWN				CHECKED			
PROJ. ENGR.				J. R. SIMS				23 JAN 82				ESS-4				APPROVED				S. KOCZAN			
RELEASED				S. KOCZAN				ESS-6				SCALE				TOTAL SHEETS				DRAWING NO.			
81Y210363				D-1																			

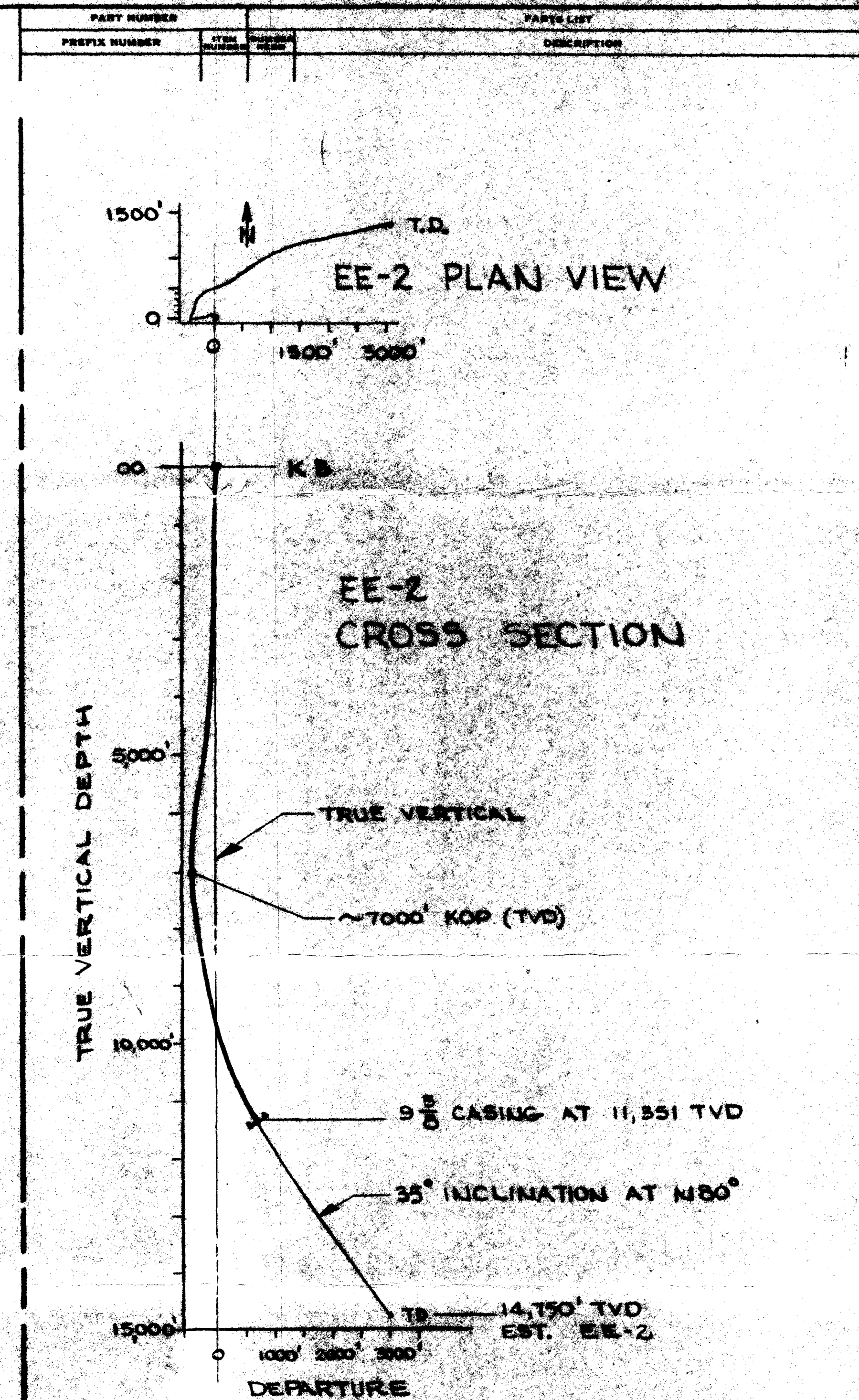
KB 8719.76 M.S.L. —

PRODUCTION CASING 9 5/8 BUTTRESS THREAD, N80
#40,395 WALL, 8.835 I.D.

NO. OF JOINTS	SIZE	WEIGHT	GRADE	LENGTH	SLM	KB
					SET FROM	SET TO
1	9 5/8	SHOE -	FLOAT	2.38'	11,578.02'	11,576.64'
1		40 LB	N-80	43.95'	11,576.64'	11,531.69'
1		COLLAR -	HI-TEMP	2.21'	11,531.69'	11,529.48'
1		40 LB	N-80	38.25'	11,529.48'	11,491.23'
1		COLLAR -	FLOAT	1.83'	11,491.23'	11,489.40'
270		40 LB	N-80	11,467.2'	11,489.40'	22.20'



NOTE:
T.D. = TOTAL DEPTH
TVD = TRUE VERTICAL DEPTH
KOP = KICK OFF POINT
SLM = STRAPPED LENGTH MEASUREMENT
KB = KELLY BUSHING



①	ADDED NOTE	1-10-80	SRP	SRP
B	ADDED CROSS SECT. & MISC.	6-8-80	SRP	SRP
A	ADDED 9 5/8 CASING	11-11-80	SRP	SRP
	ORIGINAL ISSUE			
REVISION	DATE	BY	CHECKED	APPROVED
1	11-11-80	SRP	SRP	SRP
CLASSIFICATION OF DRAWING: UNCL		PART: UNCL TITLE: UNCL		
TITLE: EE-2		AS COMPLETED ON MAY 12, 1980		
ORIGINATOR: MCDONALD		DRAWN: MCDONALD		
CHECKED: SRP		PROJ. ENGINEER: SRP		
APPROVED: SRP		RELEASED: SRP		
1		8Y210275 D-1		

NOTICE TO CONTRACTORS

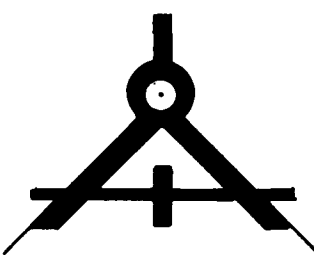
1. NEW MEXICO STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 1984 EDITION SHALL BE REFERRED TO HEREON AS THE "STANDARD SPECIFICATION". ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED UNDER CONTRACT SHALL, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS".
2. THE CONTRACTOR SHALL BE REQUIRED TO CONFINE HIS WORK WITHIN THE CONSTRUCTION LIMITS AND TO PRESERVE EXISTING VEGETATION AND PRIVATE PROPERTY. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAY OPENINGS OR DESIGNATED TRAFFIC LANE.
3. THE CONTRACTOR SHALL PROTECT AND MAINTAIN IN SERVICE ALL EXISTING UTILITIES.
4. ALL EXCAVATION SHALL BE GOVERNED BY THE CONSTRUCTION SAFETY AND HEALTH STANDARDS (TITLE 29, CODE OF FEDERAL REGULATIONS, PART NO'S 1910 AND 1926, PUBLISHED IN THE FEDERAL REGISTER, AND MODIFICATIONS THERETO).
5. A DISPOSAL SITE FOR ALL EXCESS UNDESIRABLE EXCAVATION MATERIAL, CONCRETE AND SO FORTH, SHALL BE OBTAINED BY THE CONTRACTOR, IN COMPLIANCE WITH ALL APPLICABLE ENVIRONMENTAL REGULATIONS. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE AND HAULING THERETO SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT SHALL BE MADE THEREFORE.
6. THE CONTRACTOR SHALL HAVE AT THE JOB SITE, AT ALL TIMES, AN APPROVED UP-TO-DATE SET OF CONSTRUCTION PLANS AND CONTRACT DOCUMENTS.
7. CONSTRUCTION STAKING SHALL BE BY THE CONTRACTOR. ALL COSTS INCURRED FOR CONSTRUCTION STAKING SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO SEPARATE PAYMENT SHALL BE MADE THEREFORE.
8. THE OWNER WILL MAKE AVAILABLE TO THE CONTRACTOR ANY INFORMATION THAT IS OBTAINED FROM THE OWNER'S INVESTIGATIONS AND ANY OTHER SUPPLEMENTAL INFORMATION OBTAINED FROM THE UTILITY COMPANIES, PIPELINE OWNERS, AND OTHER FACILITY OWNERS THAT HAVE BEEN IDENTIFIED. THE OWNER MAKES NO REPRESENTATION AS TO THE VALIDITY OR ACCURACY OF THE INFORMATION PROVIDED. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING LOCATIONS FROM UTILITY OWNERS AND FOR MAKING SUCH FURTHER INVESTIGATIONS AS NECESSARY IN ORDER TO LOCATE SUCH PERMANENT AND TEMPORARY UTILITY APPURTANCES PRIOR TO INITIATING EARTHWORK OPERATIONS.
9. THE CONTRACTOR SHALL NOT RECIEVE ADDITIONAL COMPENSATION FOR ANY DELAYS, INCONVENIENCE OR DAMAGE SUSTAINED DUE TO ANY INTERFERENCE FROM UTILITY APPURTANCES, OR THE OPERATION OF MOVING THEM RESULTING FROM THE CONTRACTOR'S NEGLIGENCE AS DETERMINED BY THE ENGINEER.

SCHEDULE OF BID ITEMS

ITEM #	DESCRIPTION	UNITS	Estimated Quantity
01	Unclassified Excavation, Tank & Well	Cu. Yds.	287
02	Unclassified Excavation, Pond & Site	Cu. Yds.	408
03	Embankment, Pond	Cu. Yds.	422
04	Stripping Tuff (Spoil)	Cu. Yds.	45
05	Subgrade Preparation, Pond	Sq. Yds.	2897
06	Trench Excavation, Piping and Culverts	Cu. Yds.	295
07	Trench Excavation, Drainage and Anchor Trenches	Lin. Ft.	1027
08	1/2" Rock Fill, Trench	Cu. Yds.	14
09	Backfill Trench	Cu. Yds.	48
10	Perimeter Berm, Pond	Lin. Ft.	734
11	Liner System	Sq. Yds.	3176
12	Bottom Fabric	Sq. Yds.	2890
13	Sand Tubes	Each	14
14	Sand Bags	Each	18
15	Remove 16" Overflow Pipe	Each	1
16	Rehab. Drain Pipe and Valve	Each	1
17	Set Coated Steel Tank 8' Dia.x17'	Each	1
18	Leak Detection, Well 16" Dia.x20'	Each	1
19	Leak Detection, Cleanout	Each	1
20	Concrete Drainage Inlet	Each	1
21	8" PVC Pipe Drain in 10" PVC Conduit, Leak Detection	Lin. Ft.	45
22	4" Perforated PVC Pipe, Leak Detection	Lin. Ft.	222
23	4" Solid PVC Pipe, Leak Detection	Lin. Ft.	61
24	4" PVC Pipe, Inlet	Lin. Ft.	84
25	4" PVC Pipe, Feed	Lin. Ft.	104
26	21"x15" C.M. Arch Pipe Overflow	Lin. Ft.	48
27	4" Gate Valve w/Valve Box	Each	1
28	8" Gate Valve w/Valve Box & Envelope	Each	1
29	Site Grading	Sq. Yds.	14,862

EE-1 POND
FENTON HILL

UNIVERSITY OF CALIFORNIA
LOS ALAMOS
LOS ALAMOS NATIONAL LABORATORY
LOS ALAMOS, NEW MEXICO 87545



AUGHENBAUGH & ASSOCIATES

Engineers & Surveyors
P.O. Box 5132
1314 Apache Ave.
Santa Fé, New Mexico

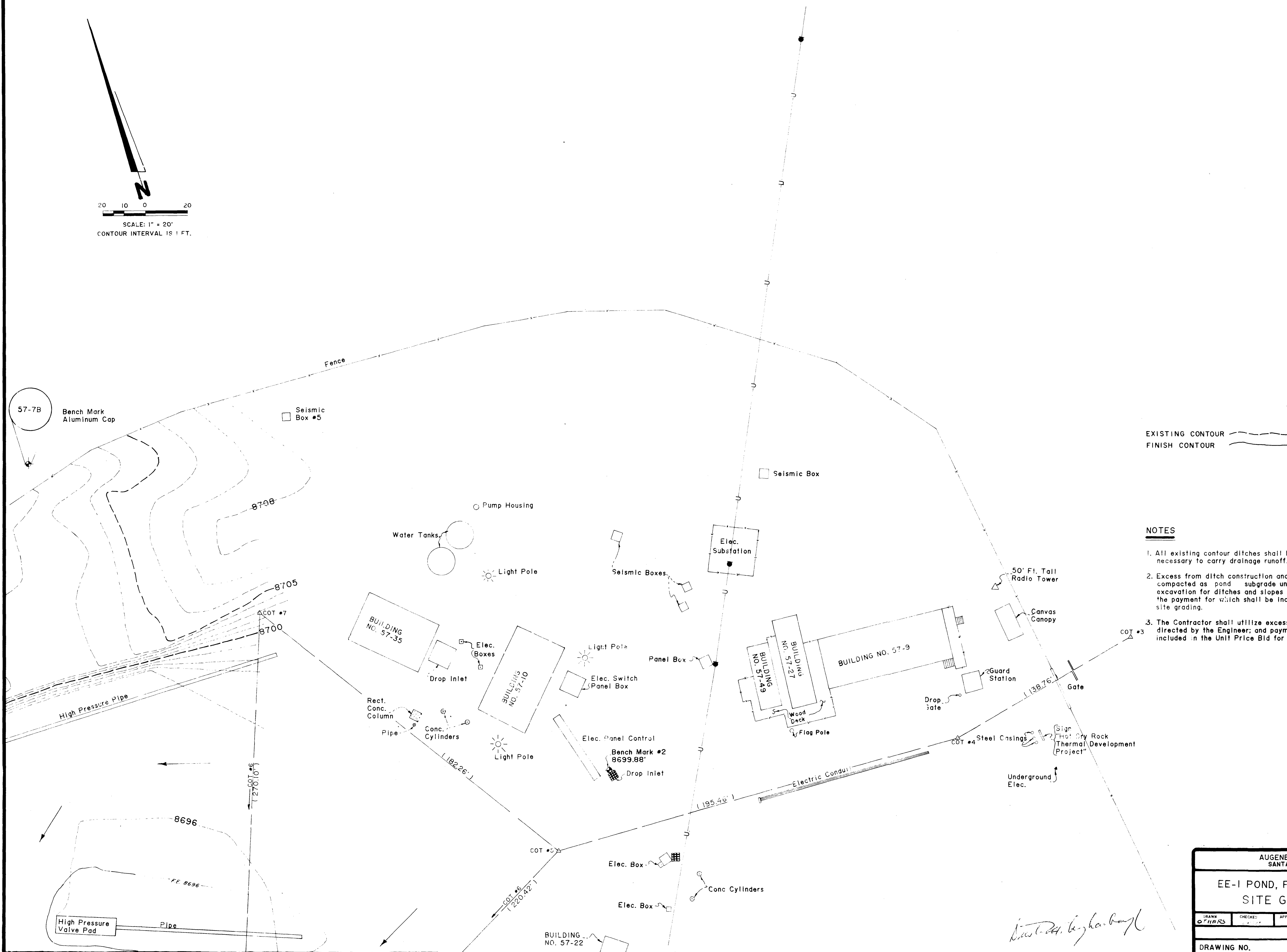
(505) 471 - 8784

INDEX TO DRAWINGS

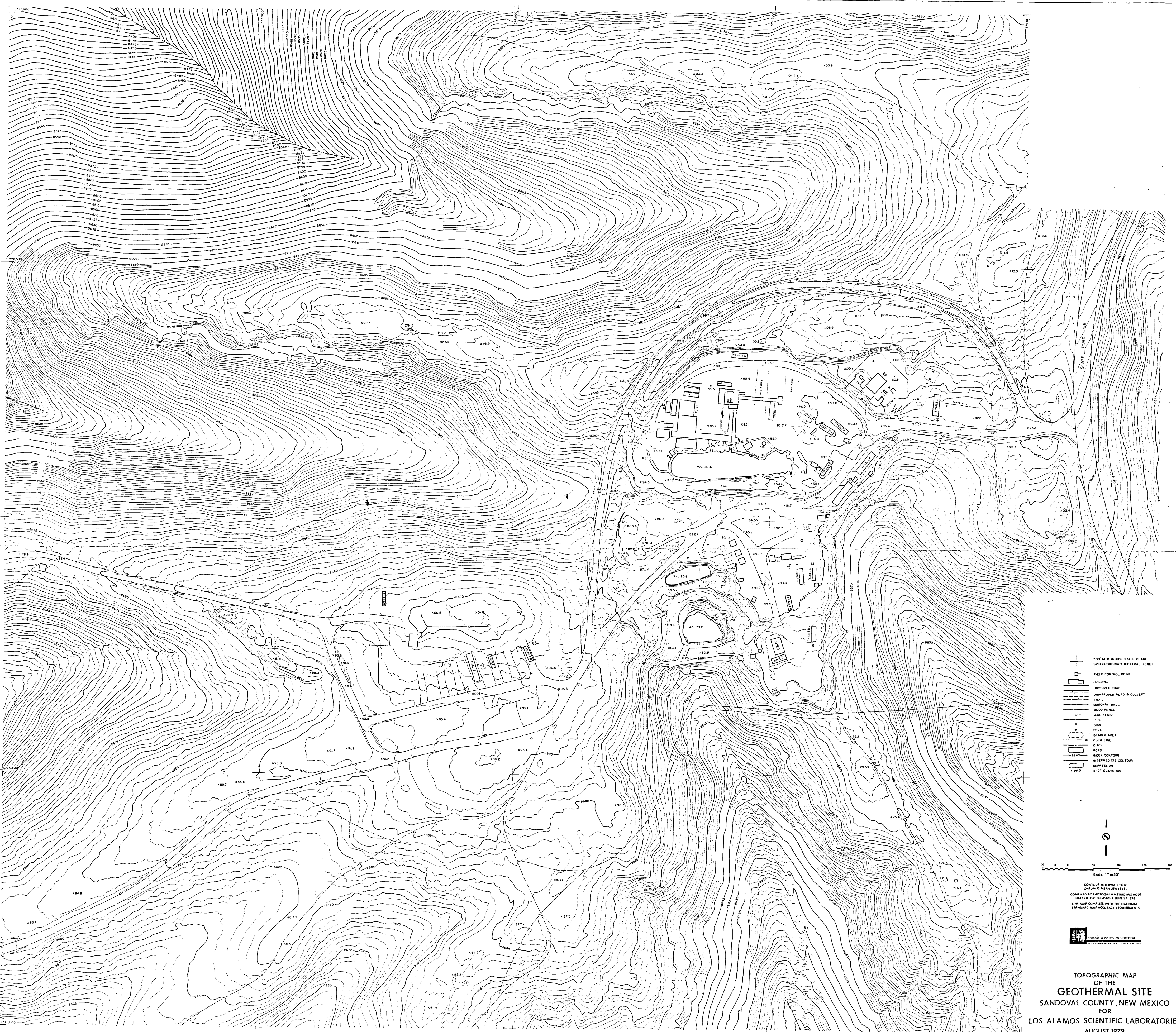
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TITLE SHEET	1
SITE GRADING #1	2
SITE GRADING #2	3
SITE GRADING #3	4
SITE GRADING #4	5
EE-1 POND	6
DETAILS	7

DRAWING NO. _____

SHEET NO. 1 of 7



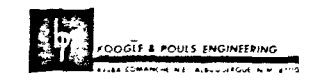
DRAWN <i>OTHERS</i>	CHECKED <i>OTHERS</i>	APPROVED	SCALE 1" = 20.0'	DATE 10-6-1989
DRAWING NO.				2 SHEET OF 7



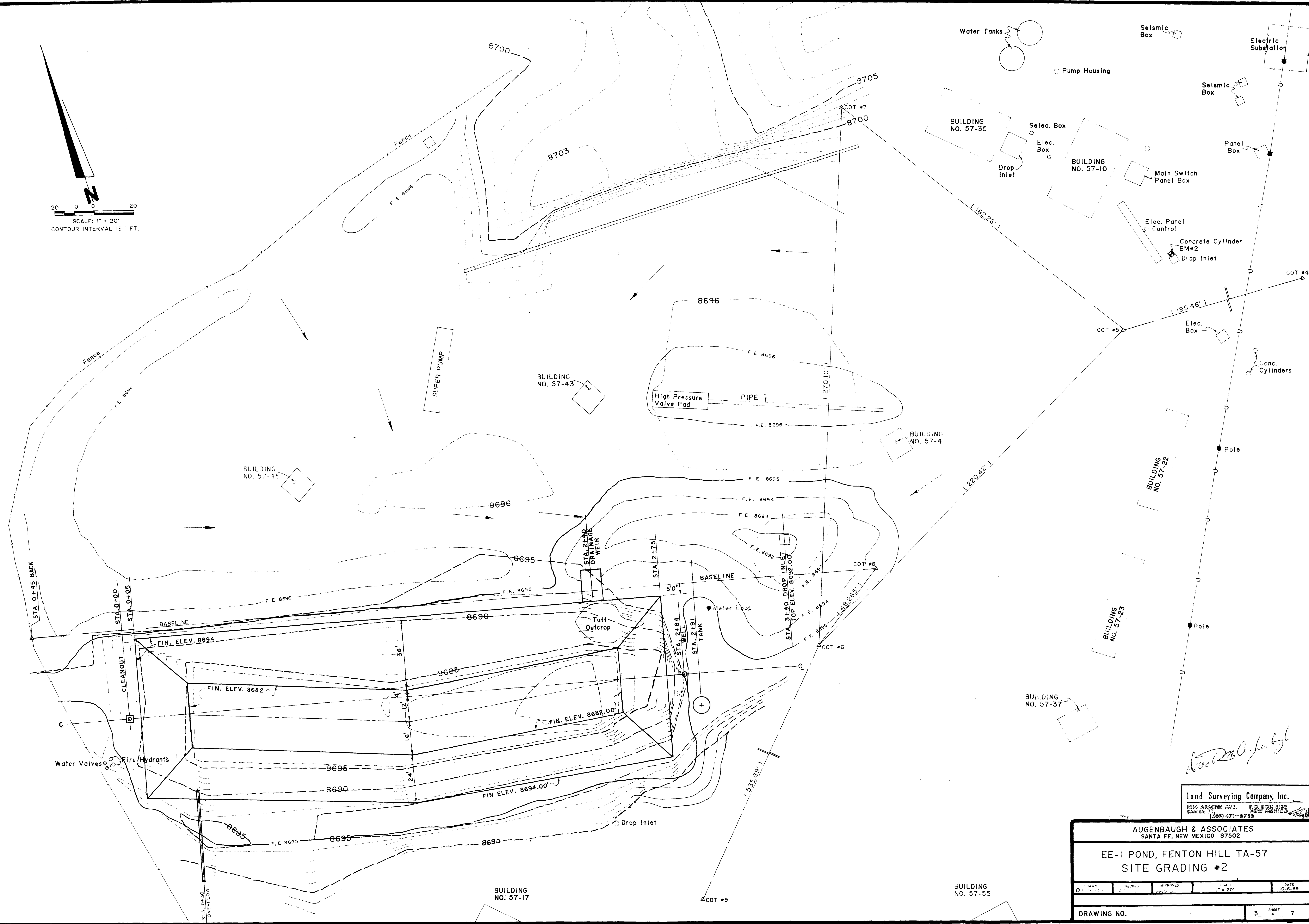
- 500 NEW MEXICO STATE PLANE GRID COORDINATE (CENTRAL ZONE)
- FIELD CONTROL POINT
- BUILDING
- IMPROVED ROAD
- UNIMPROVED ROAD & CULVERT
- TRAIL
- MASONRY WALL
- WOOD FENCE
- WIRE FENCE
- PIPE
- SIGN
- WELL
- GRADED AREA
- FLOW LINE
- DITCH
- POND
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- DEPRESSION
- SPOT ELEVATION

Scale: 1" = 50'

CONTOUR INTERVAL: 1 FOOT
DATUM IS MEAN SEA LEVEL
COMPILED BY PHOTOGRAMMETRIC METHODS
DATE OF PHOTOGRAPHY: JUNE 17, 1979
THIS MAP COMPLETES THE NATIONAL
STANDARD MAP ACCURACY REQUIREMENTS



TOPOGRAPHIC MAP
OF THE
GEOTHERMAL SITE
SANDOVAL COUNTY, NEW MEXICO
FOR
LOS ALAMOS SCIENTIFIC LABORATORIES
AUGUST 1979

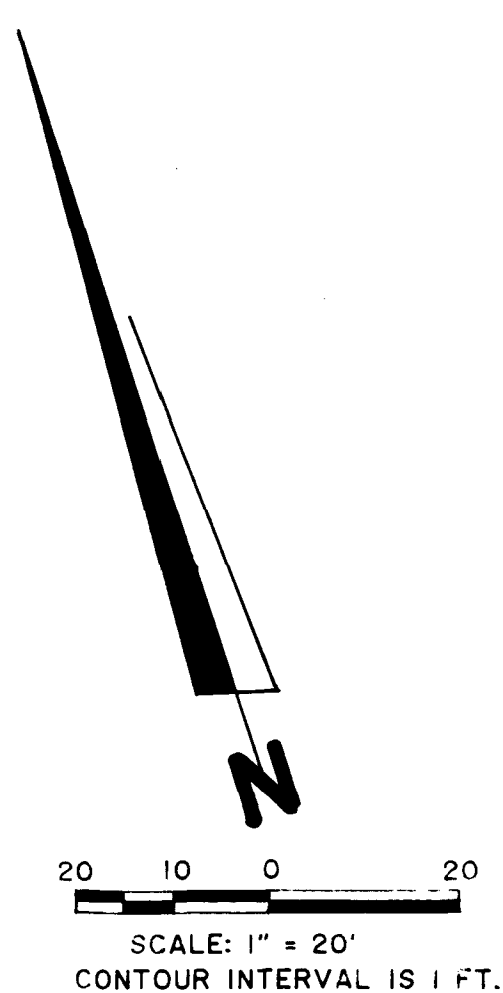


1314 APACHE AVE. P.O. BOX 5132
SANTA FE, NEW MEXICO
(505) 471-6783

EE-1 POND, FENTON HILL TA-57
SITE GRADING #2

DRAWING NO. 3 SHEET OF 3

3 SHEET OF



8688

BUILDING
NO. 57-17

COT #6

BUILDING
NO. 57-40

BUILDING
NO. 57-55

○ Air Vent

PUMP STA. NO. 57-40

(535.89')

Gate

Center Box

COT #9

SHED

WAREHOUSE
BUILDING
NO. 57-18

Weather
Vane Tower

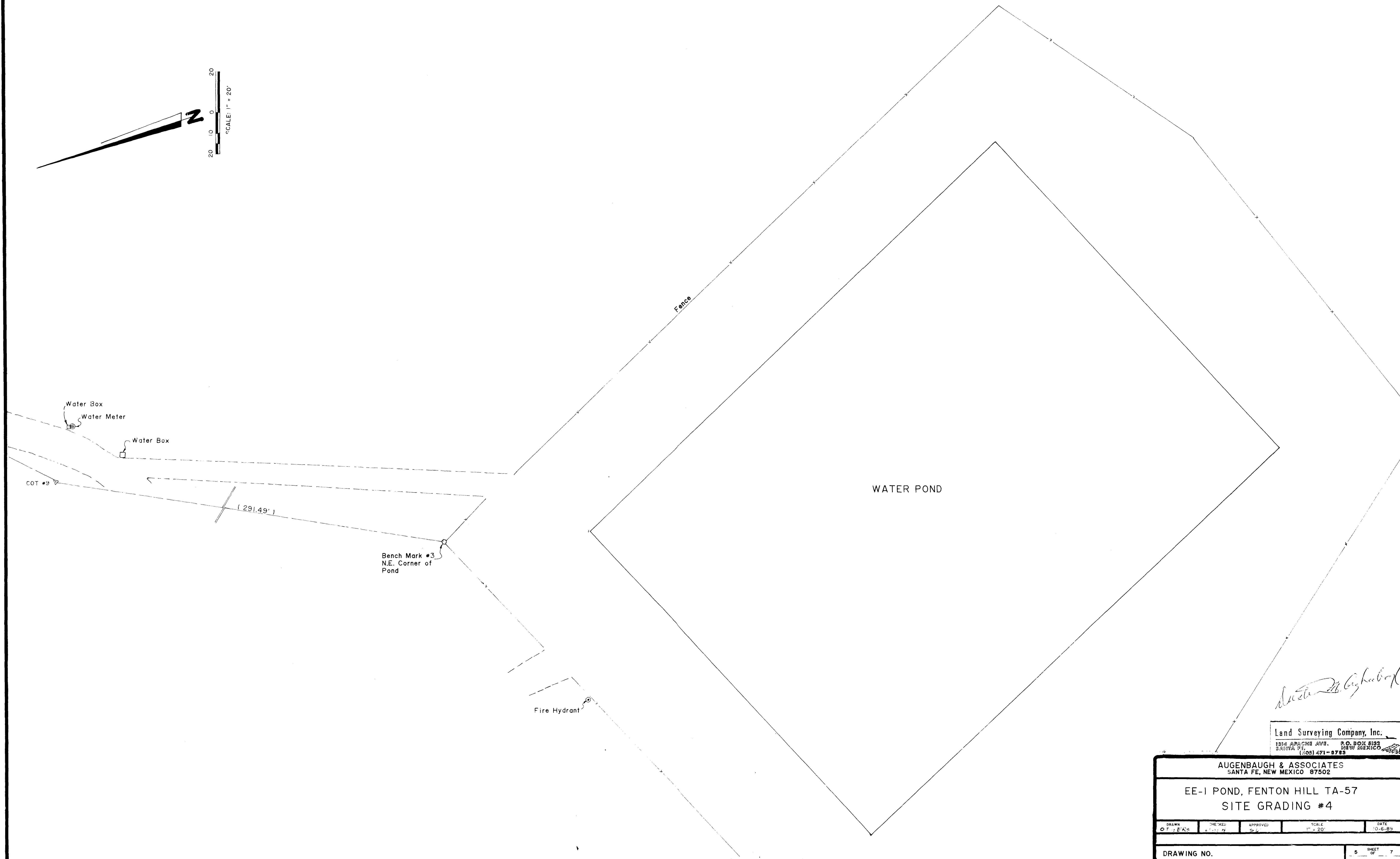
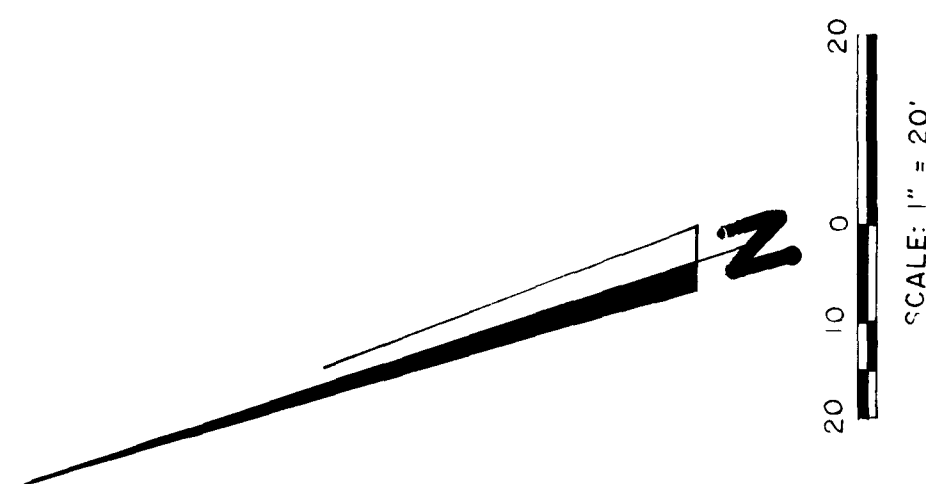
Land Surveying Company, Inc.
1316 AUSTIN AVE. P.O. BOX 8123
SANTA FE, NEW MEXICO
(505) 471-8783

AUGENBAUGH & ASSOCIATES
SANTA FE, NEW MEXICO 87502

EE-1 POND, FENTON HILL TA-57
SITE GRADING #3

DRAWN J. R. R.	CHECKED J. R. R.	APPROVED J. R. R.	SCALE 1" = 20'	DATE 10-6-89
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DRAWING NO. 4 SHEET OF 7



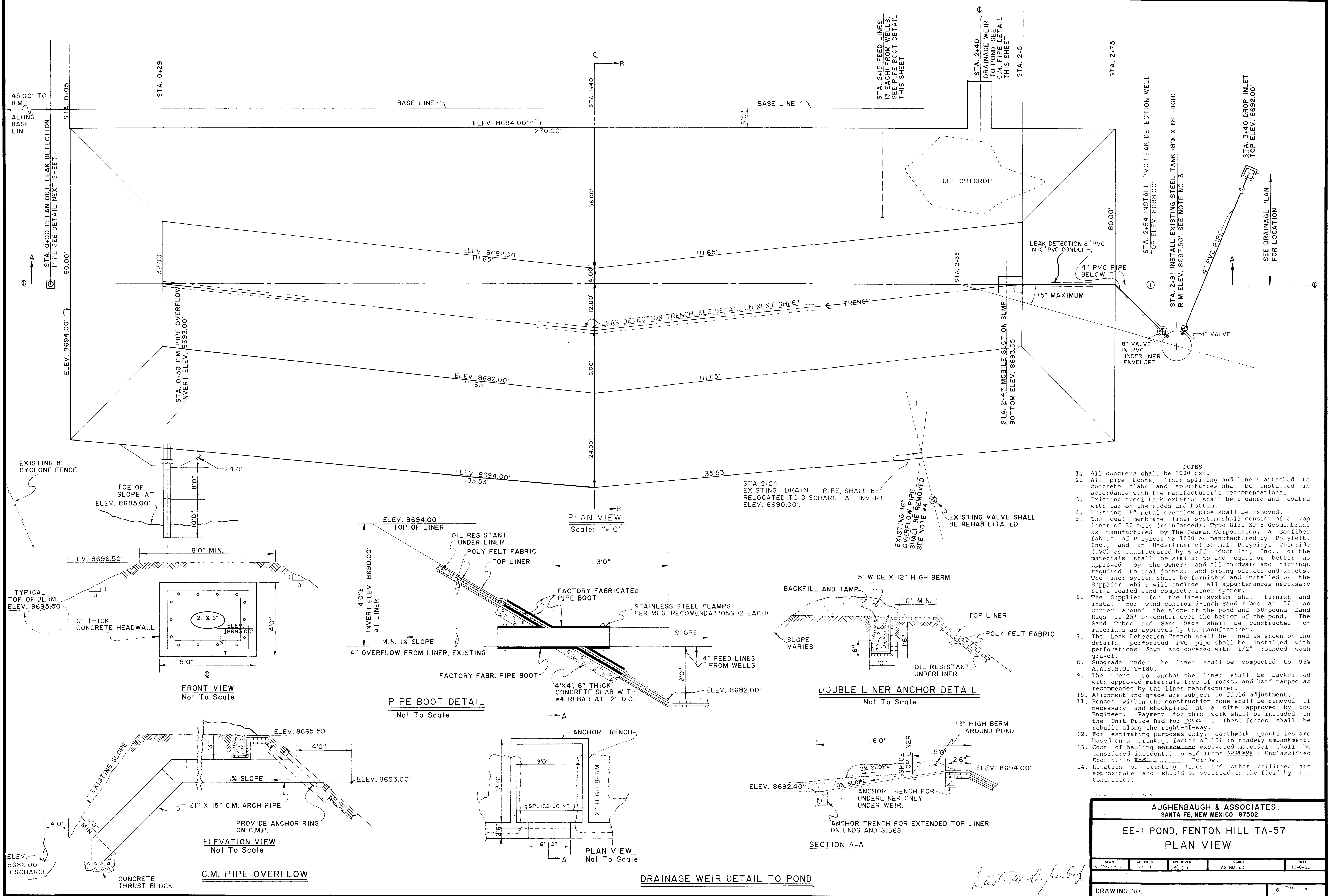
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1314 ALPINE AVE. P.O. BOX 8122
SANTA FE, NEW MEXICO
(505) 471-0703

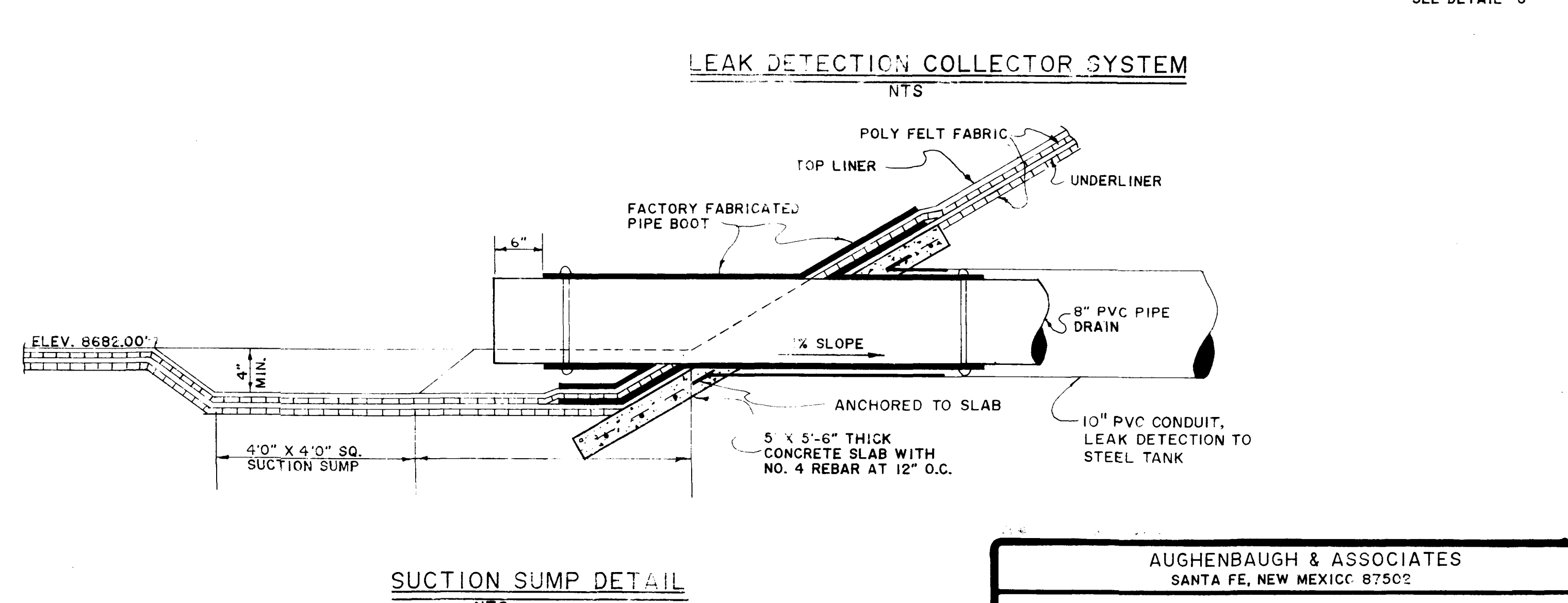
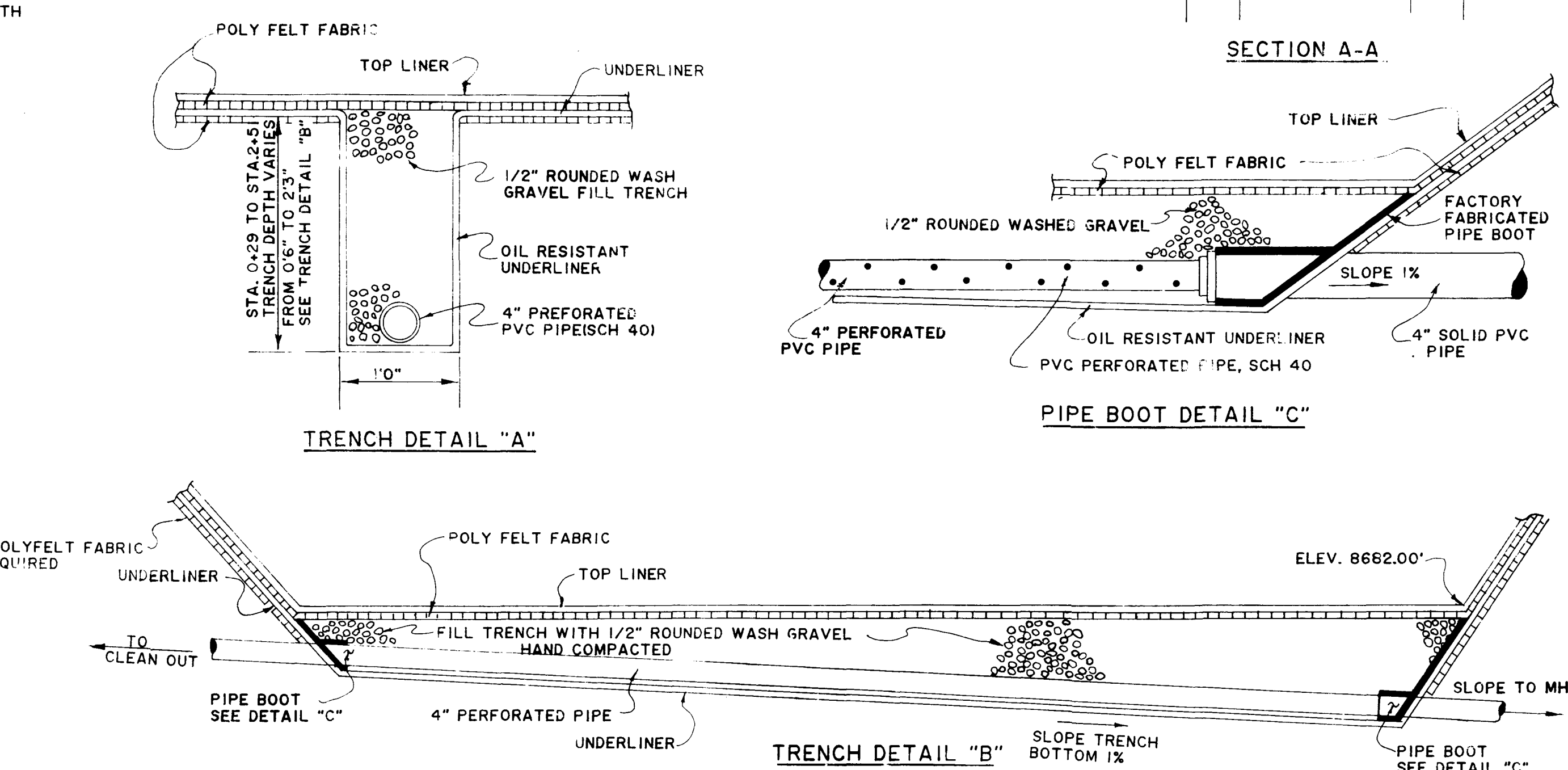
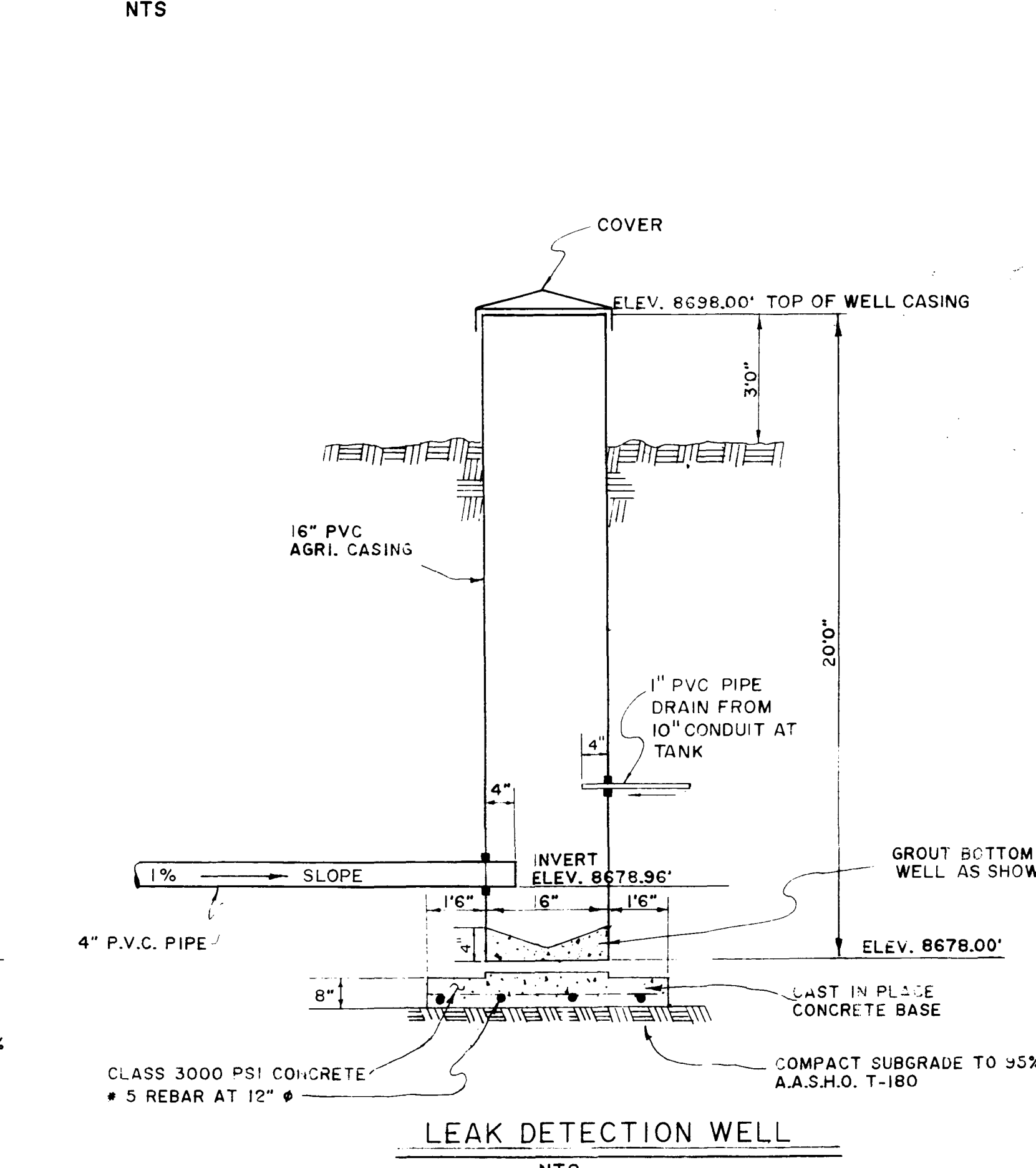
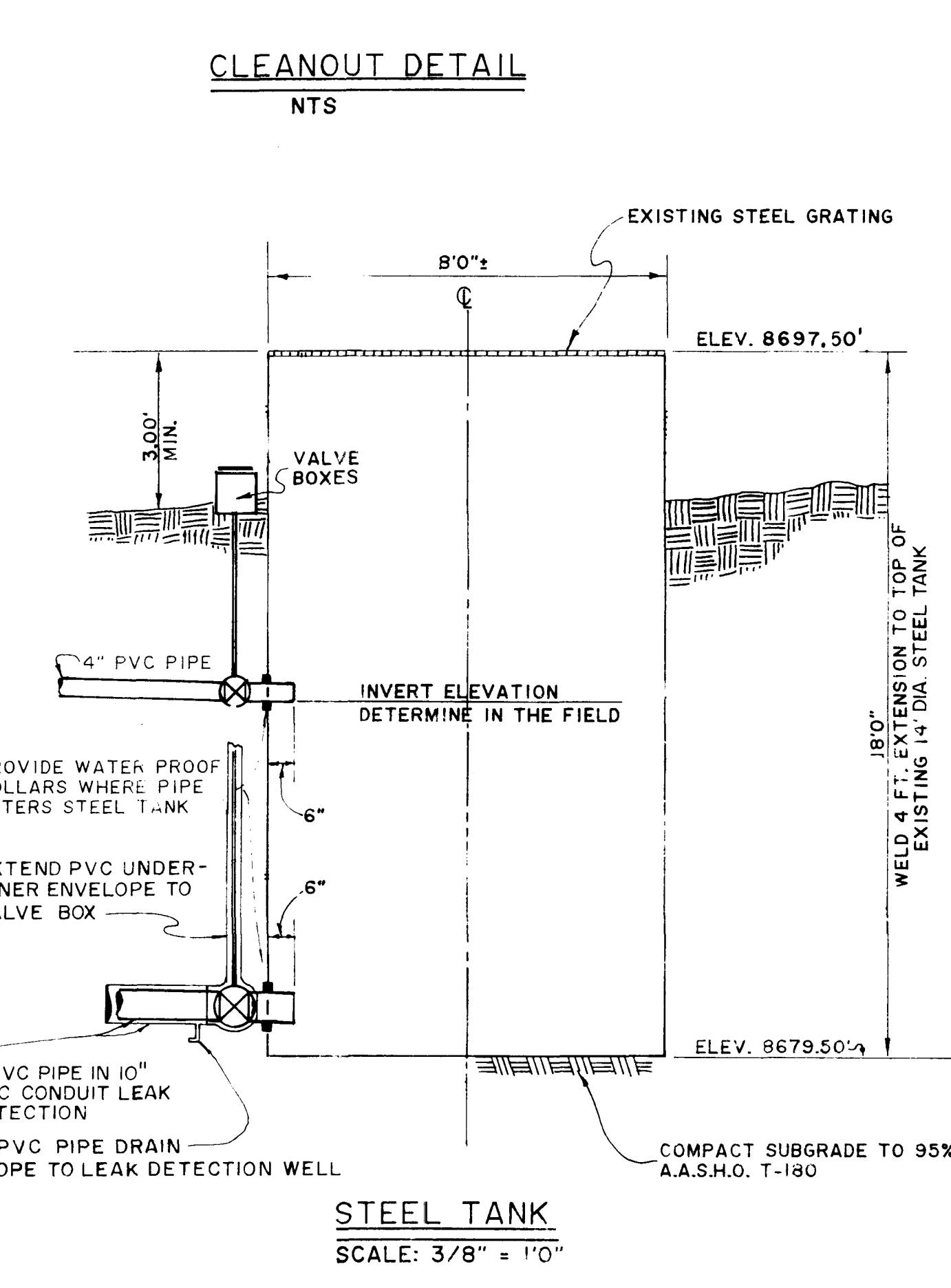
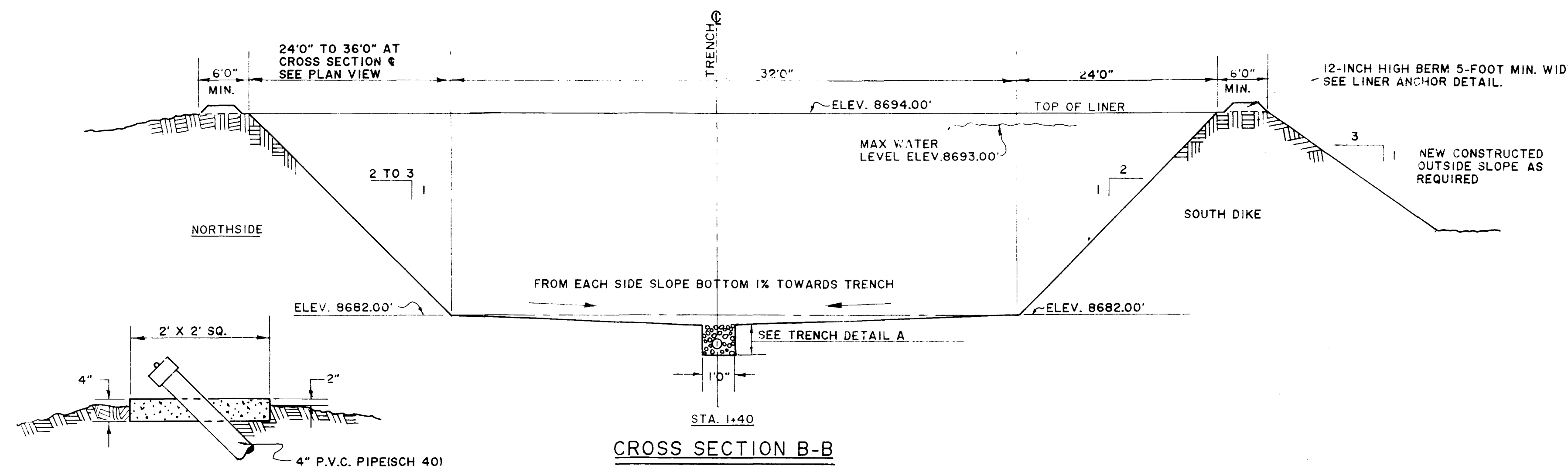
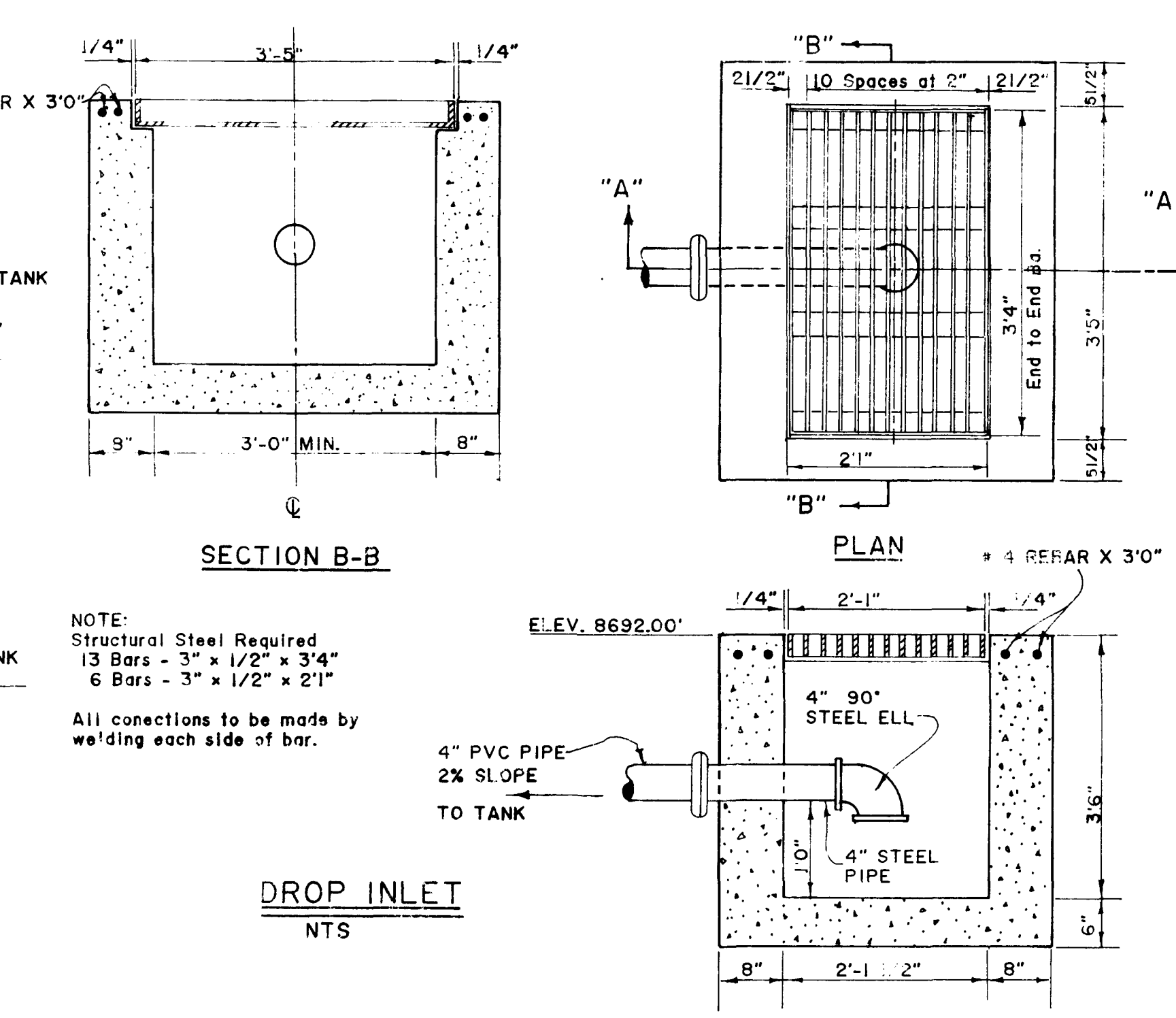
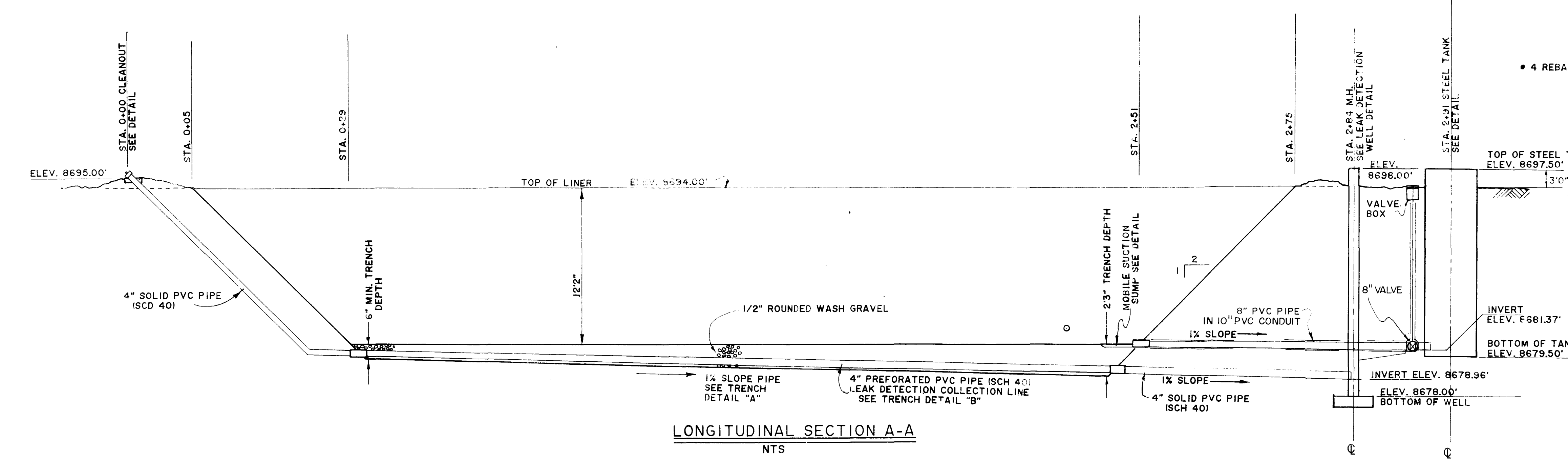
AUGENBAUGH & ASSOCIATES
SANTA FE, NEW MEXICO 87502

EE-1 POND, FENTON HILL TA-57
SITE GRADING #4

DRAWN	CHECKED	APPROVED	SCALE	DATE
OT: EKS			1" = 20'	10-6-85

DRAWING NO. 5 SHEET OF 7





AUGHENBAUGH & ASSOCIATES SANTA FE, NEW MEXICO 87502				
EE-1 POND, FENTON HILL TA-57 DETAILS				
DRAWN	CHECKED	APPROVED	SCALE	DATE
			AS NOTED	10-6-89
DRAWING NO.				7

[illegible]

P.O. BOX 7592
SANTA FE, NEW MEXICO
87104

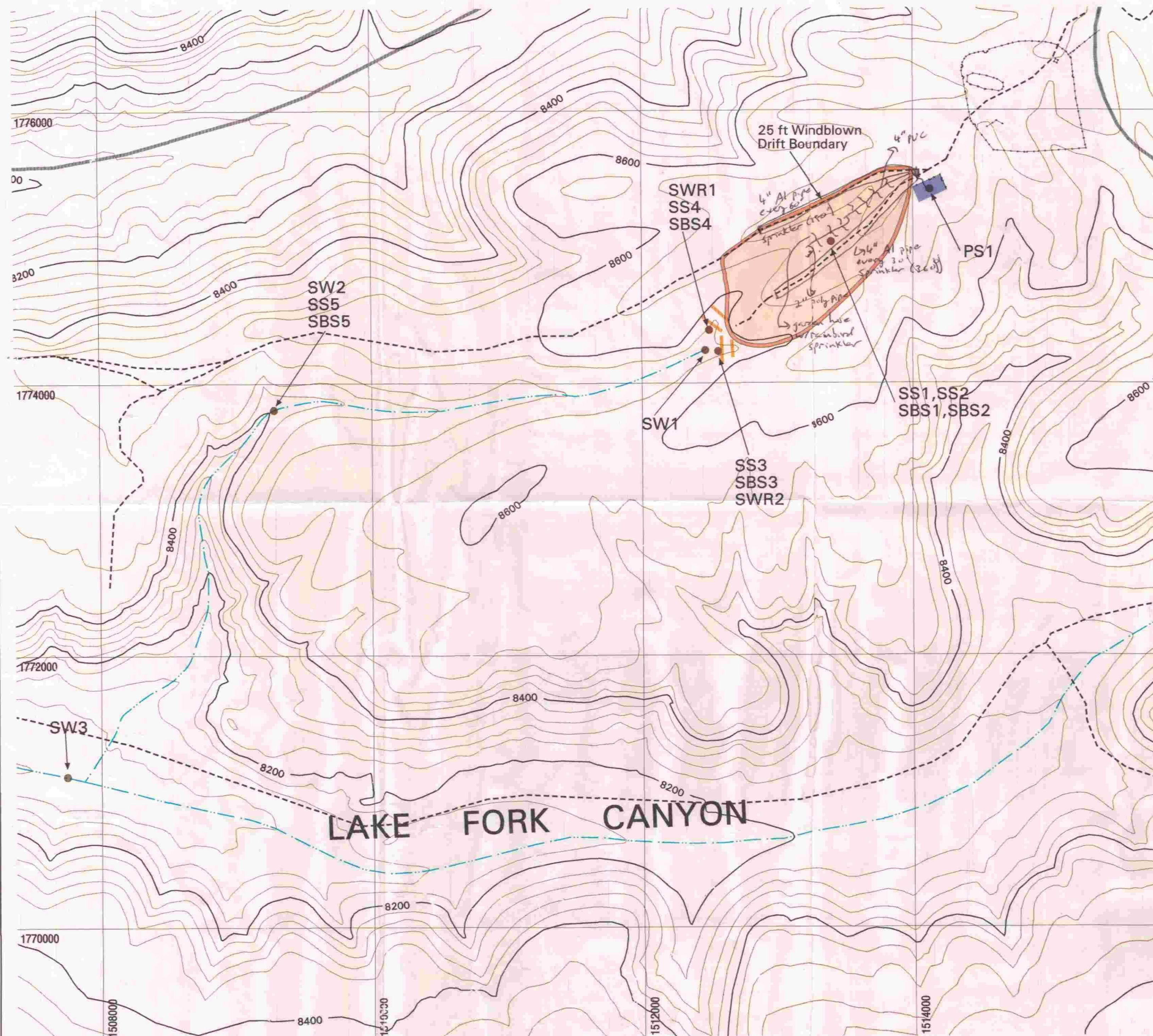
From 4-19-85
SUBMITTAL

- UNDERGROUND ELECTRICAL LINE
- 7 1/2 HIGH WOOD FENCE
- 8 1/2 HIGH CHAIN LINK FENCE
- 10 1/2 HIGH CHAIN LINK FENCE
- UNDERGROUND TELEPHONE CABLE
- UNDERGROUND ELECTRICAL BOX
- FENCE POST AT GATE
- FENCE MIDPOINT
- SMALL W/IN METAL PIPE
- OVERHEAD ELECTRICAL POWER LINE POLE
- WELL HEAD
- DEPRESSIONS
- CONTROL, MINOR
- 1 FOOT DRAINAGE TIER
- 1 FOOT DRAINAGE PILE
- UNDERGROUND CONDUIT
- 2 - 3" DI. ELECTRICAL CONDUIT
- 4" DI. ELECTRICAL CONDUIT
- UNDERGROUND WATER LINE AS PER AS BUILTS BY BOWLE ENGINEERING 12/80
- 8" DI. UNDERGROUND WATER LINE AS PER AS BUILTS BY BOWLE ENGINEERING 12/80
- QUARRY PITS
- STONE SIGN
- X STOP ELEVATIONS
- SLOPE
- WATER VALVE
- STREET LIGHTS
- OVERHEAD ELECTRICAL LINE

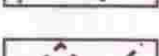
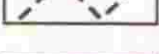
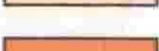
- ① ALL BEARINGS ARE GRID
- ② ELEVATIONS ARE BASED ON "X" AS ABOVE
- ③ BASIS OF BEARING IS FOUNDATION AND TACK AND "X" ON CONCRETE AS PER AS BUILT PLANS OF WATER STORAGE POND. TA-57 BY ROYLE ENGINEERING CORPORATION
- ④ COORDINATES ARE BASED ON THE SAME AS ABOVE WITH NO REDUCTION TO THE NEW NAD 83 STATE PLANE COORDINATE SYSTEM
- ⑤ DATE OF FINAL SURVEY APRIL 12, 1983

CONTROL POINT	COORDINATES		ELEVATION
	X	Y	
"a"	374,627.8049	1,776,537.372	8707.21 ft
"b"	374,616.3863	1,776,007.230	8808.33 ft
"c"	374,624.3248	1,775,883.388	8684.74 ft
"X" ON CONCRETE	373,783.16	1,775,811.79	8559.33
POUND HUB AND TACK	373,423.48	1,775,829.84	—
GT-2	374,300	1,775,925	8650.4 ft
EE-1	374,582	1,776,171	8695.4 ft
EE-2	374,481	1,776,246	8684.8 ft
EE-3	374,271	1,776,232	8656.8 ft

Fenton Hill (TA-57) Milagro Project Sampling Plan



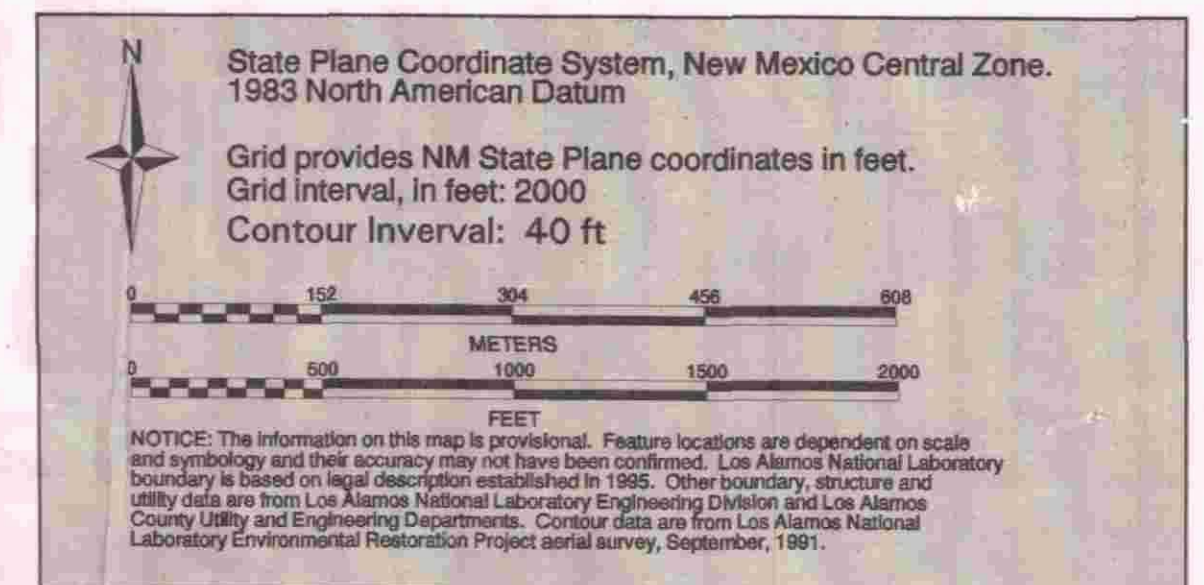
Fenton Hill (TA-57) Milagro Project Sampling Plan

- | | |
|---|-----------------------------------|
|  | Drainage |
|  | Fence, Industrial |
|  | Road, Dirt |
|  | Road, Paved |
|  | Silt Fence |
|  | Application Area (22.327 acres) |
|  | Application Area Buffer (25 ft) |
|  | General Location of Sample Points |

MILAGRO PROJECT SAMPLING PLAN

ANALYTES: Metals

OBJECTIVE	TYPE	LOCATION
Background Sampling		
pond sludge quality	sludge	PS1
soil-application area	soil: surface	SS1, SS2
soil-application area	soil: sub-surface	SBS1, SBS2
soil-adjacent down gradient	soil: surface	SS3, SS4
soil-adjacent down gradient	soil: sub-surface	SBS3, SBS4
soil-distant down gradient	soil: surface	SS5
soil-distant down gradient	soil: sub-surface	SBS5
surface water-adjacent down gradient	surface water	SW1
surface water-distant down gradient	surface water	SW2
surface water-Lake Fork Canyon	surface water	SW3
Sampling During Application		
stormwater runoff-down gradient	stormwater runoff	SWR1, SWR2
Post-Application Sampling		
soil-application area	soil: surface	SS1, SS2
soil-application area	soil: sub-surface	SBS1, SBS2
soil-adjacent down gradient	soil: surface	SS3, SS4
soil-adjacent down gradient	soil: sub-surface	SBS3, SBS4
soil-distant down gradient	soil: surface	SS5
soil-distant down gradient	soil: sub-surface	SBS5
surface water-adjacent down gradient	surface water	SW1
surface water-distant down gradient	surface water	SW2



University of California
Los Alamos National Laboratory
Earth and Environmental Sciences Division

FIMAD Facility for Information Management, Analysis and Display
FIMAD is the electronic data repository for the Environmental
Restoration Project at Los Alamos National Laboratory.

Produced by: Marcia Jones

Date: May 12, 1995

FIMAD Plot ID: 103419

IMPORTANT MESSAGE

FOR _____

DATE _____ TIME _____ A.M.
P.M.

M Augenbough

OF _____

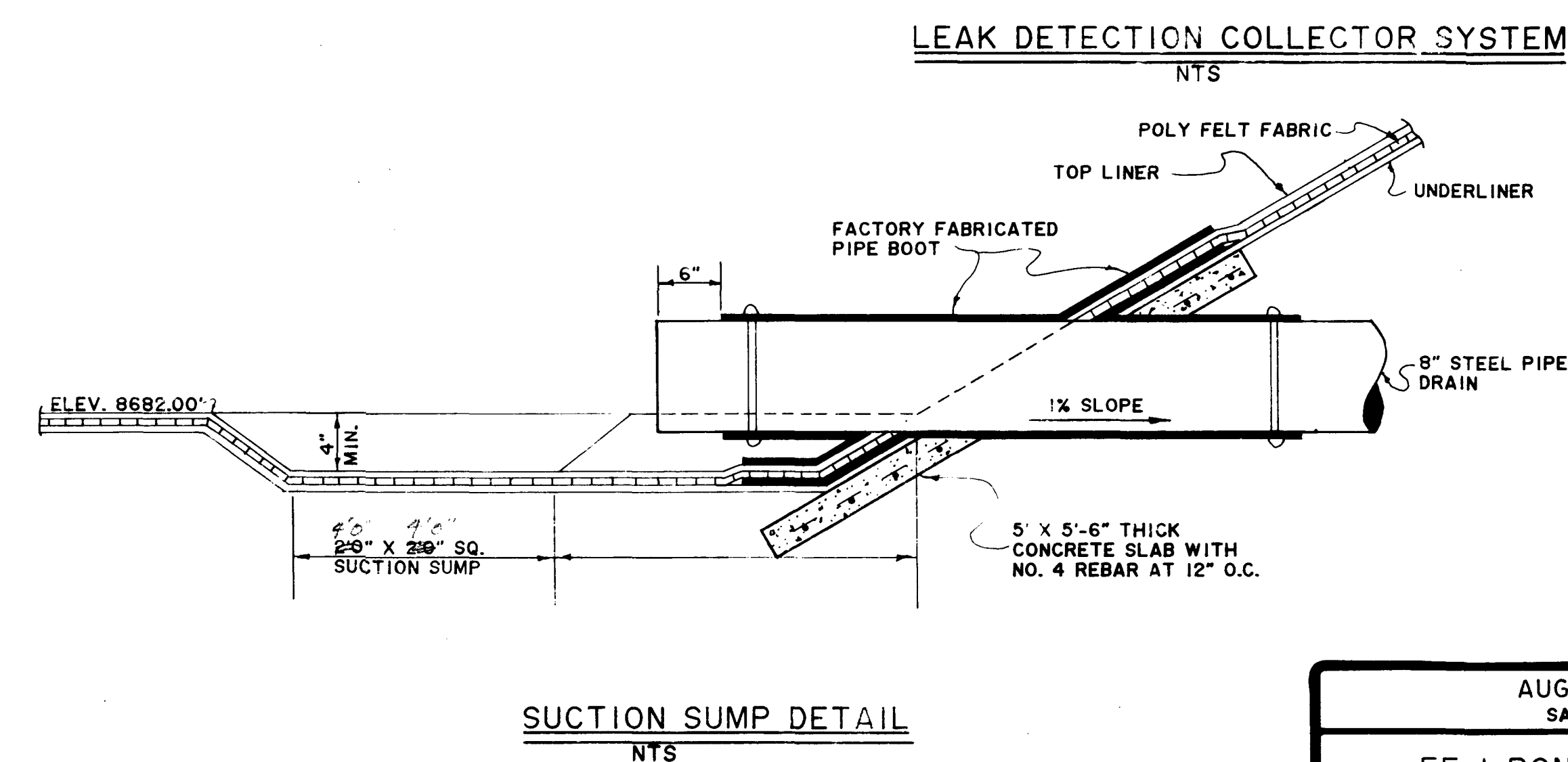
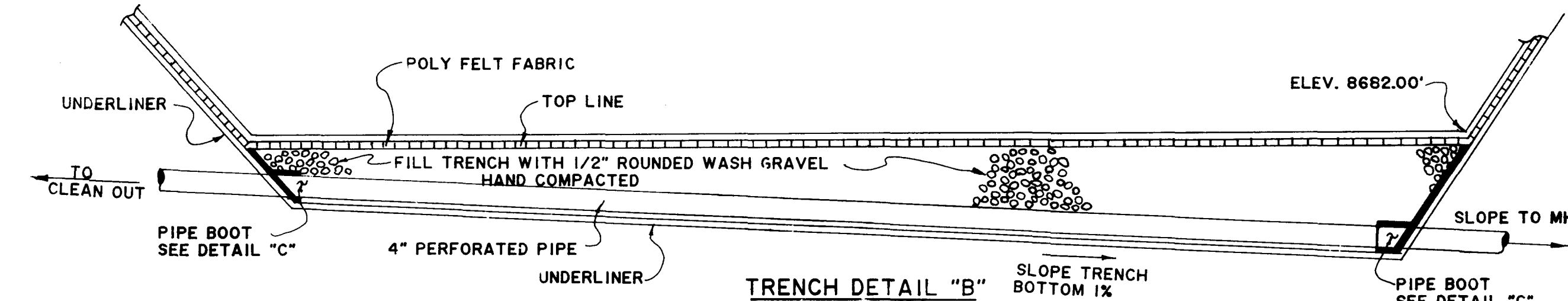
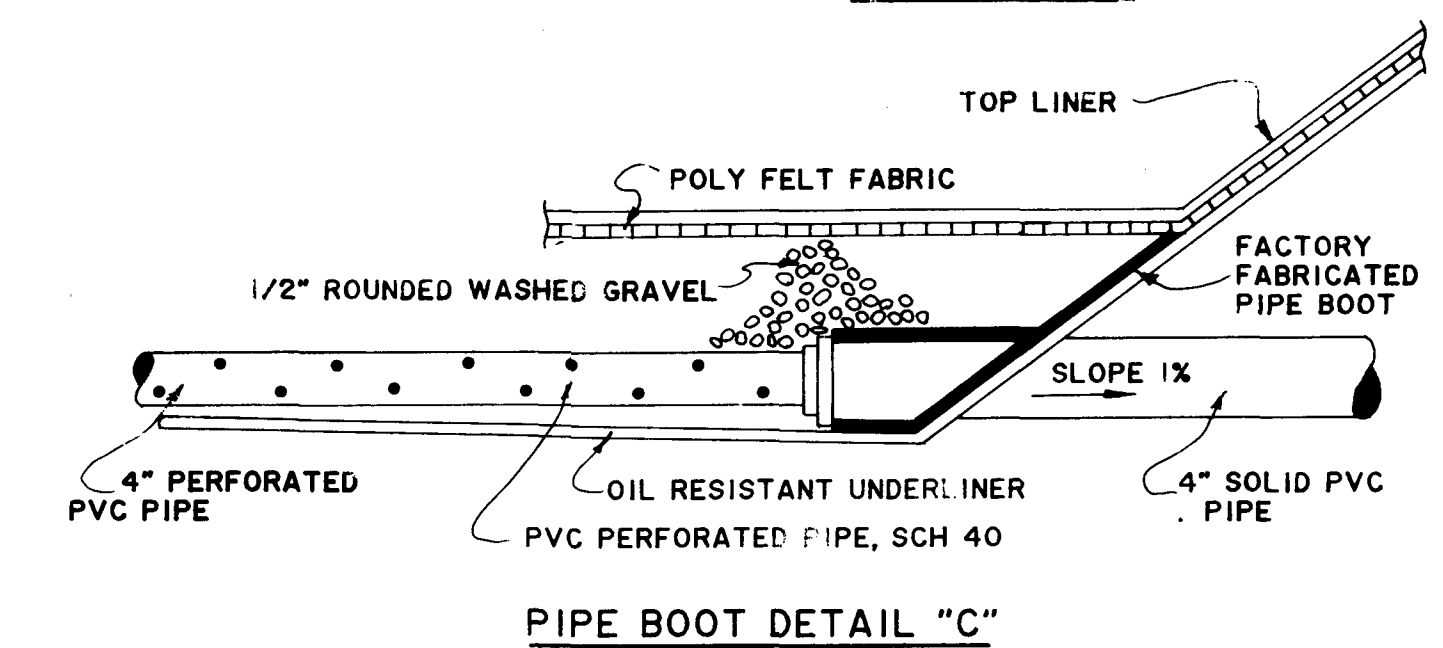
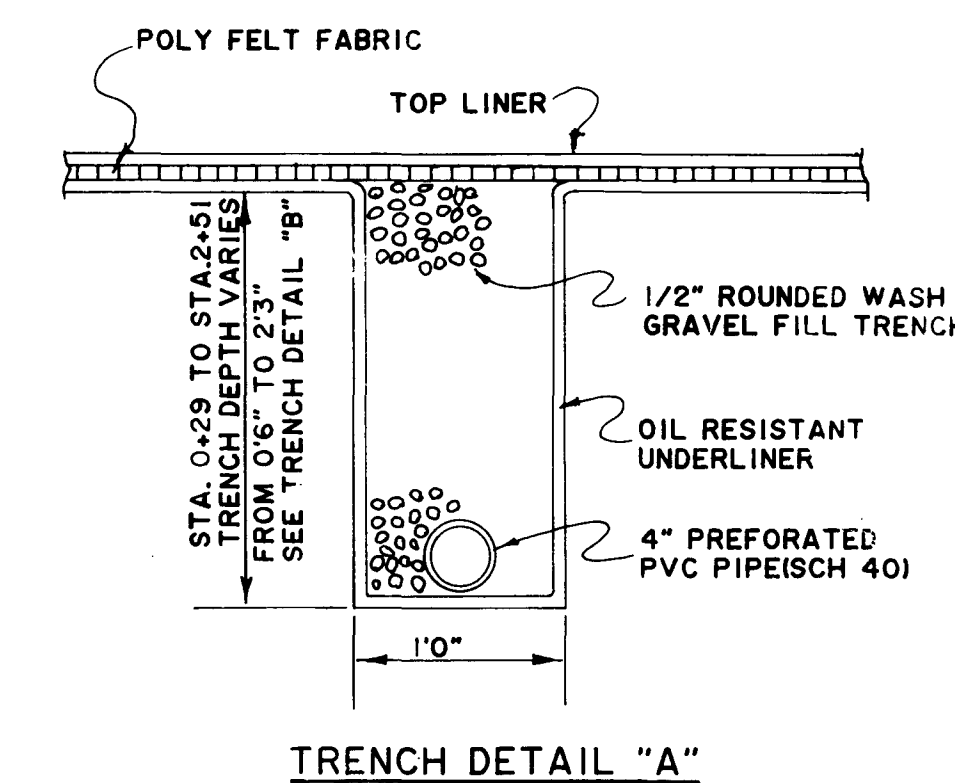
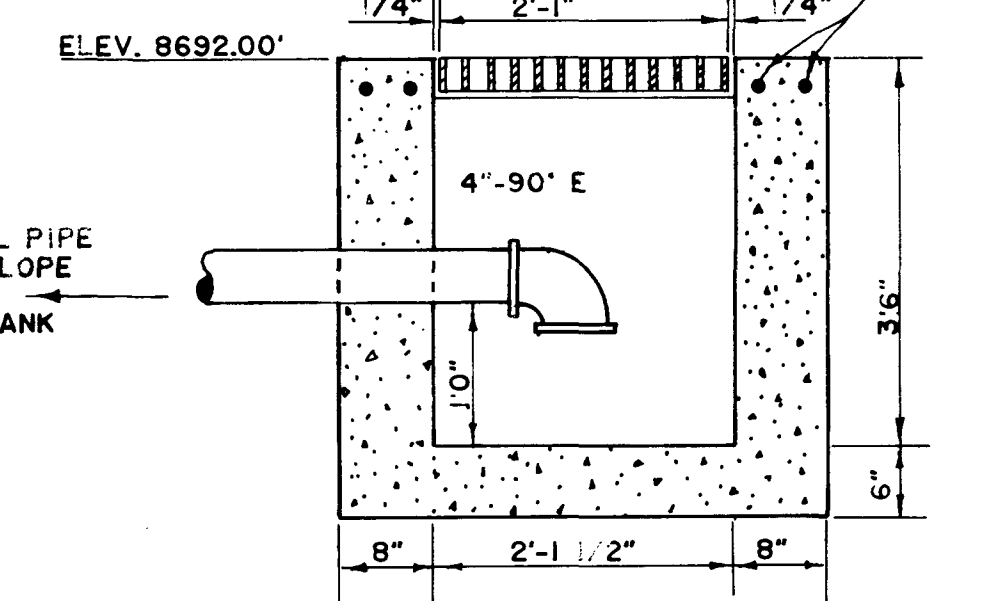
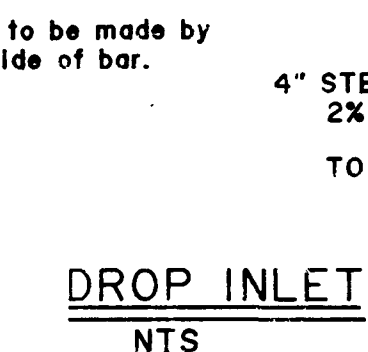
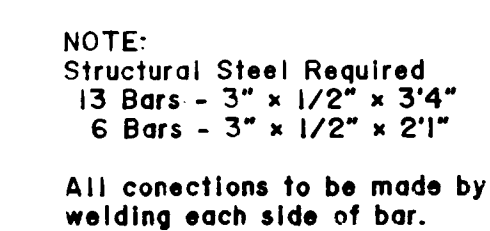
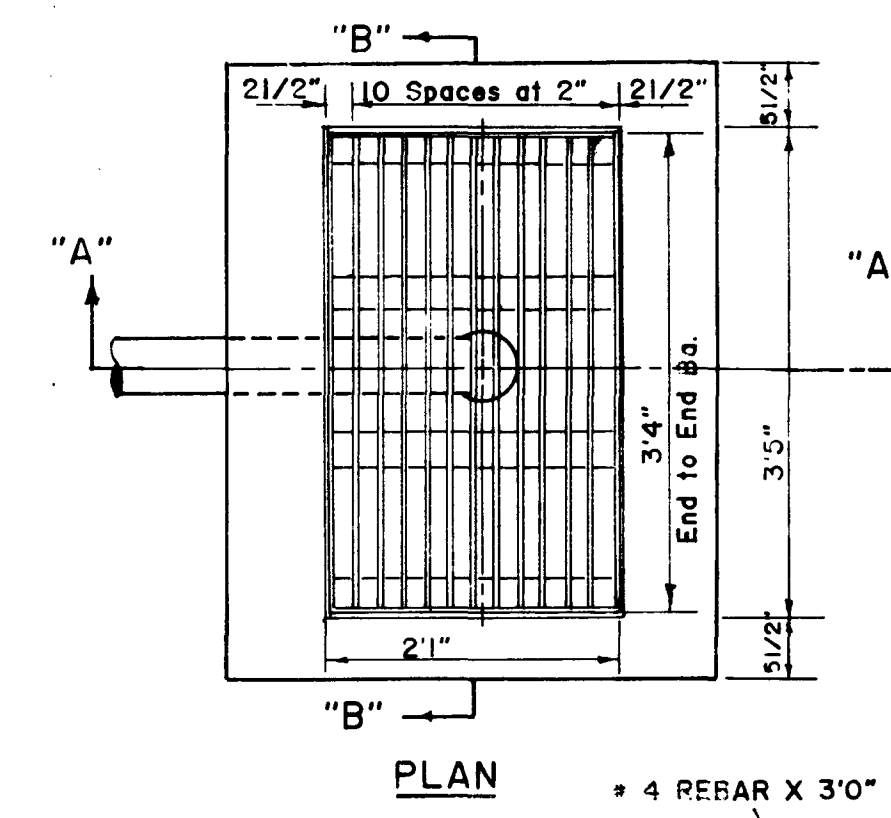
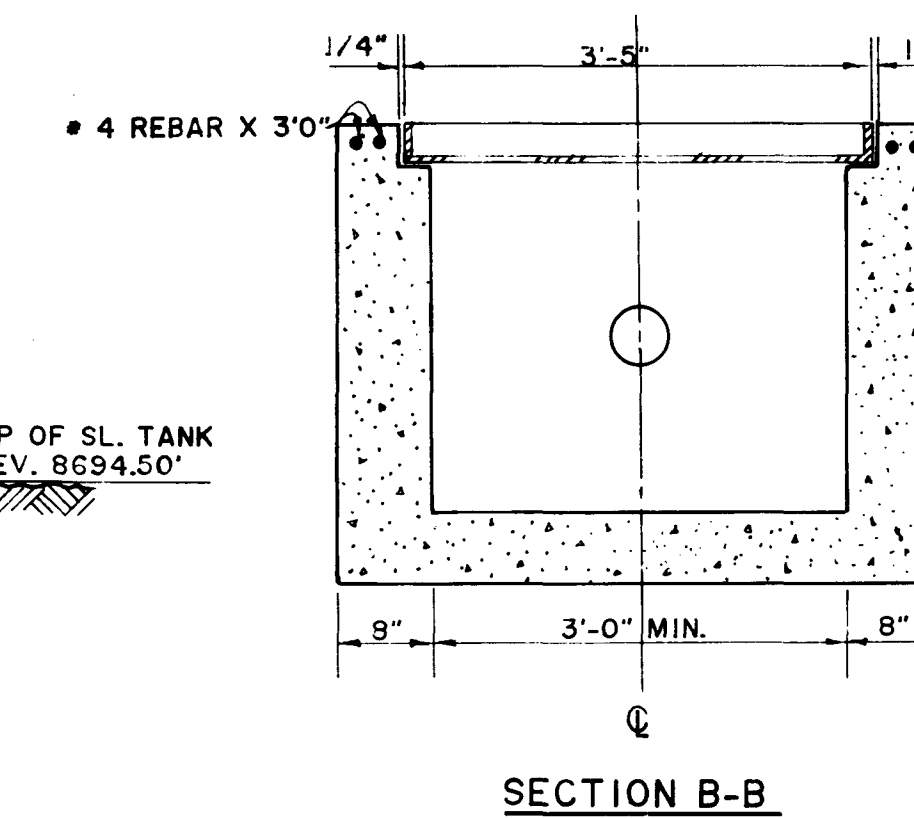
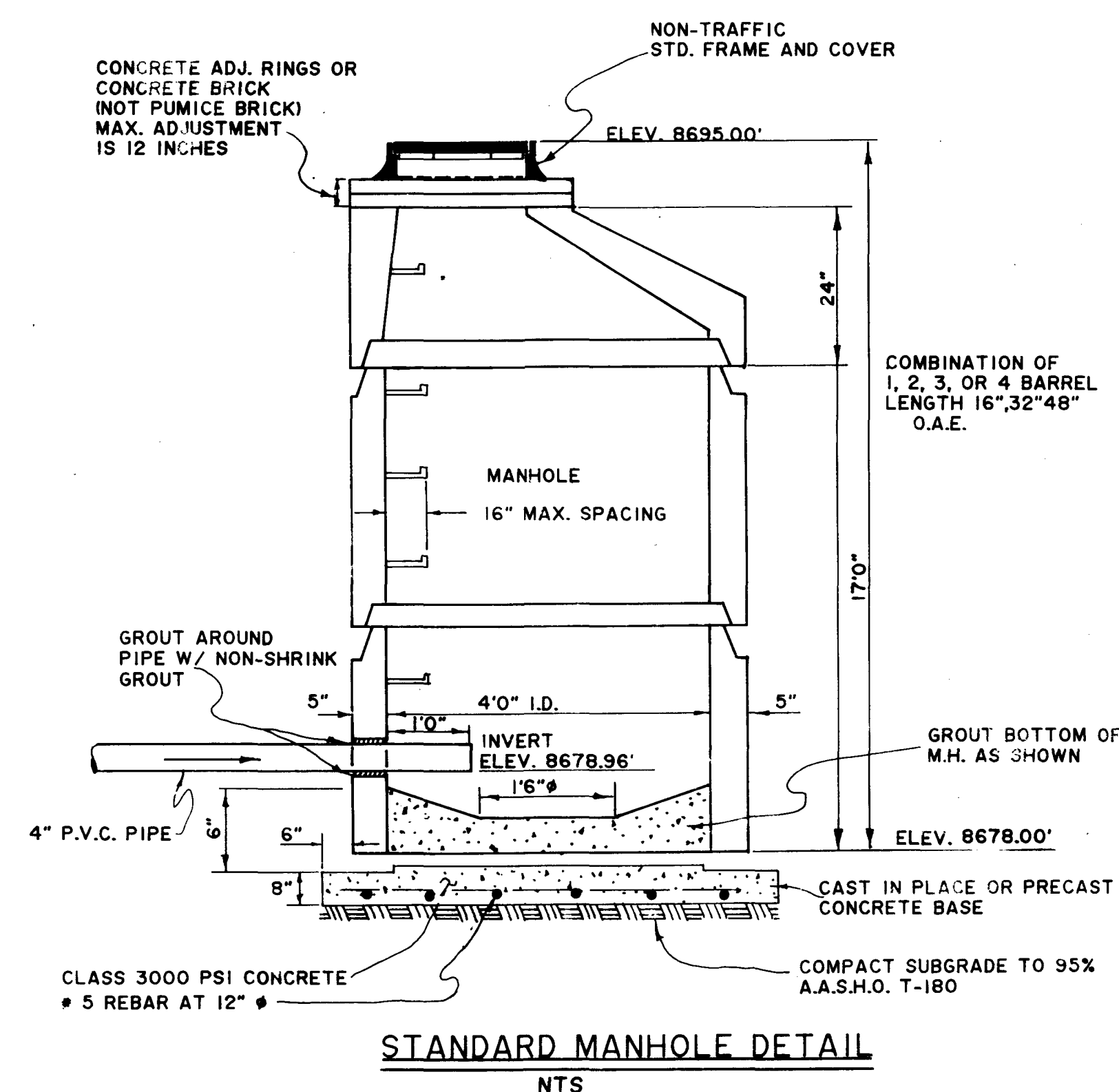
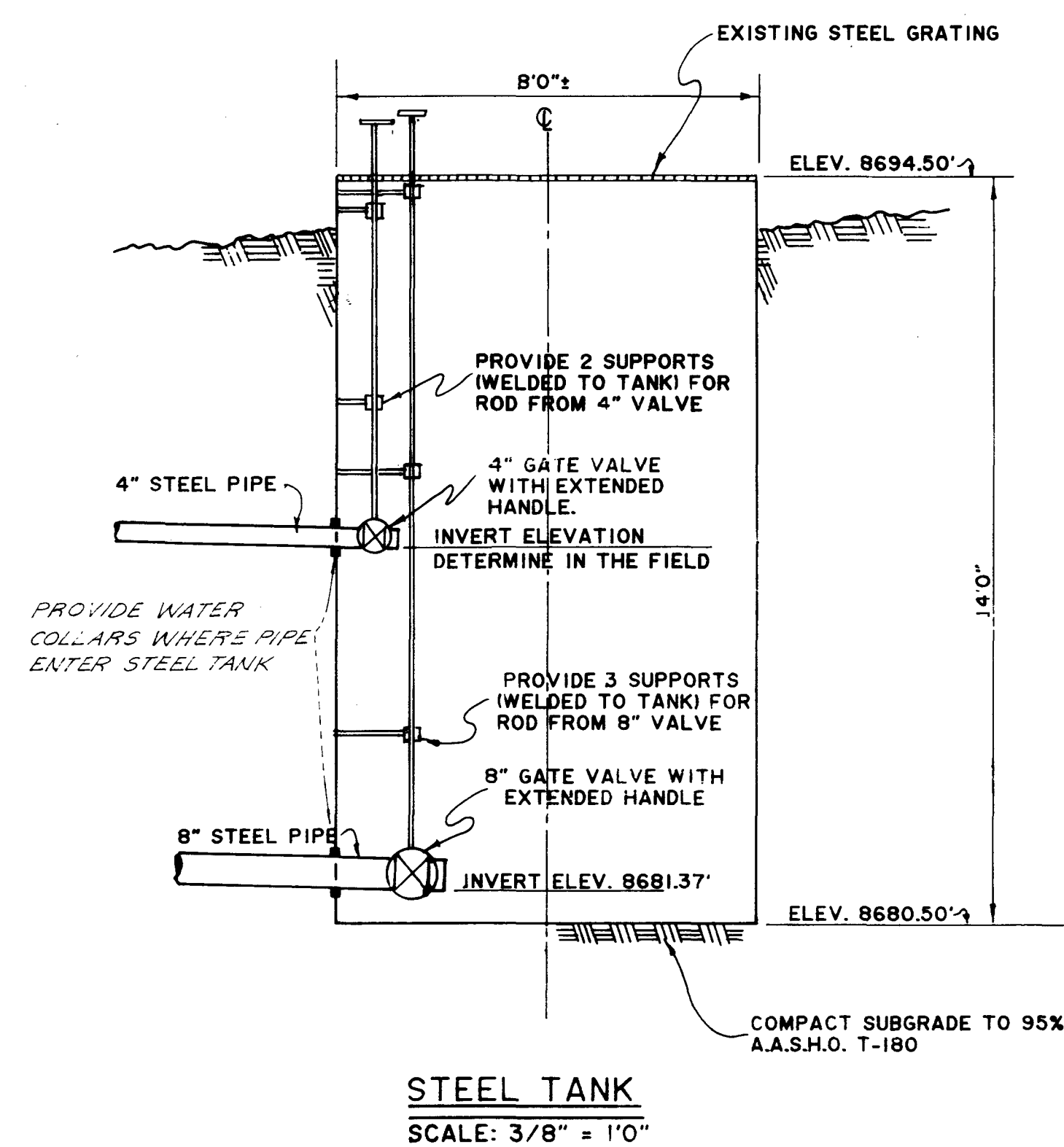
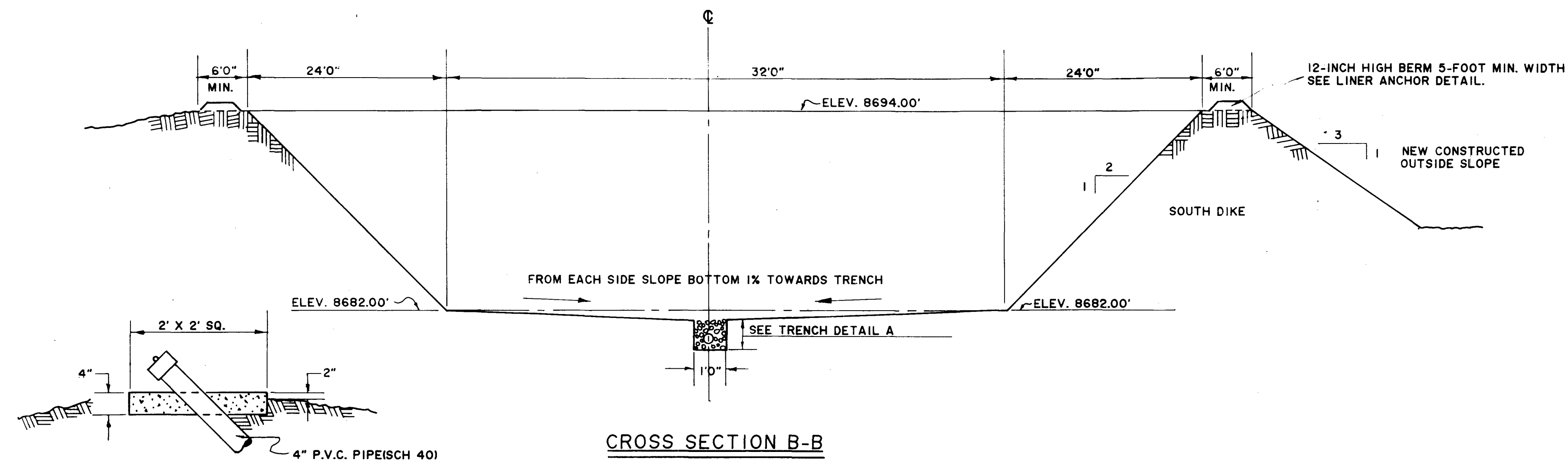
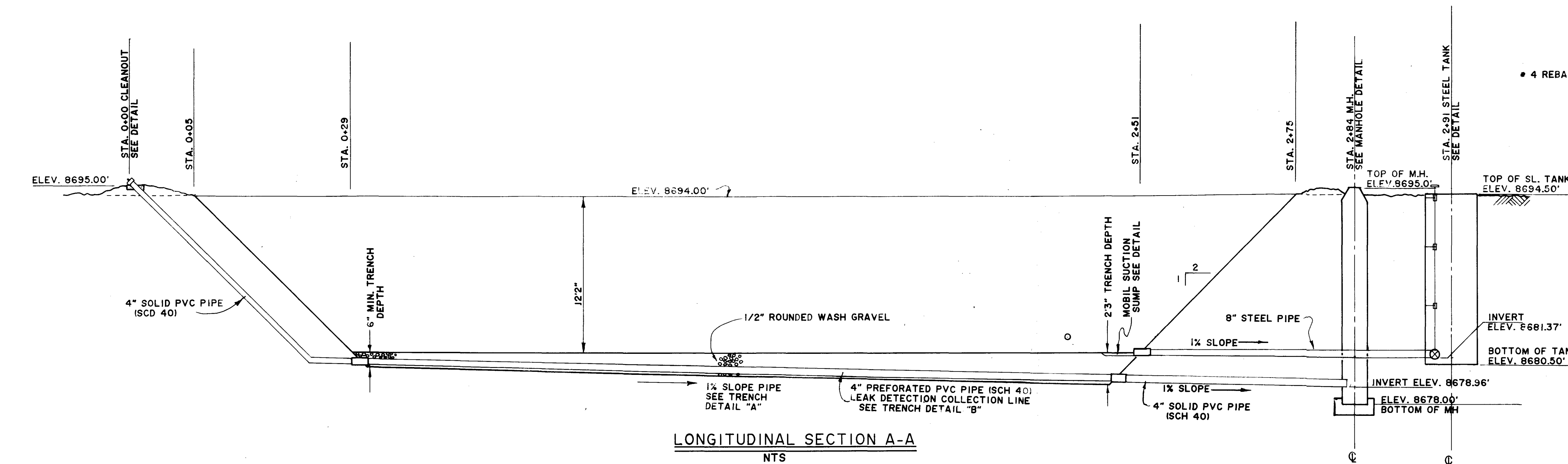
PHONE _____
AREA CODE NUMBER EXTENSION

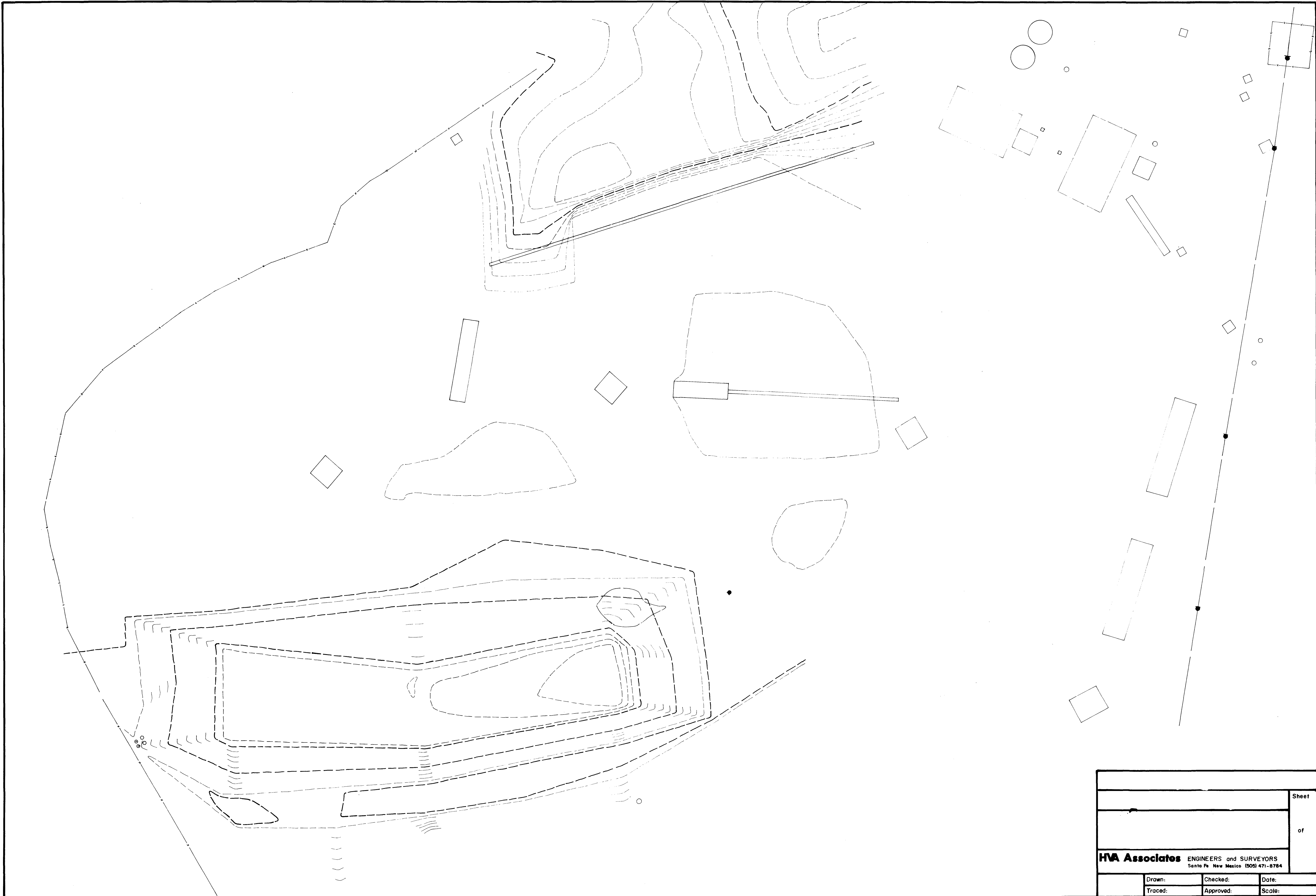
TELEPHONED		PLEASE CALL	
CAME TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL		SPECIAL ATTENTION	

MESSAGE Pond conform a little
more to existing taps - less
excavation (see map)
leak detection system - pipe
to steel tank changed from steel
8" pipe to "glued 8" PVC

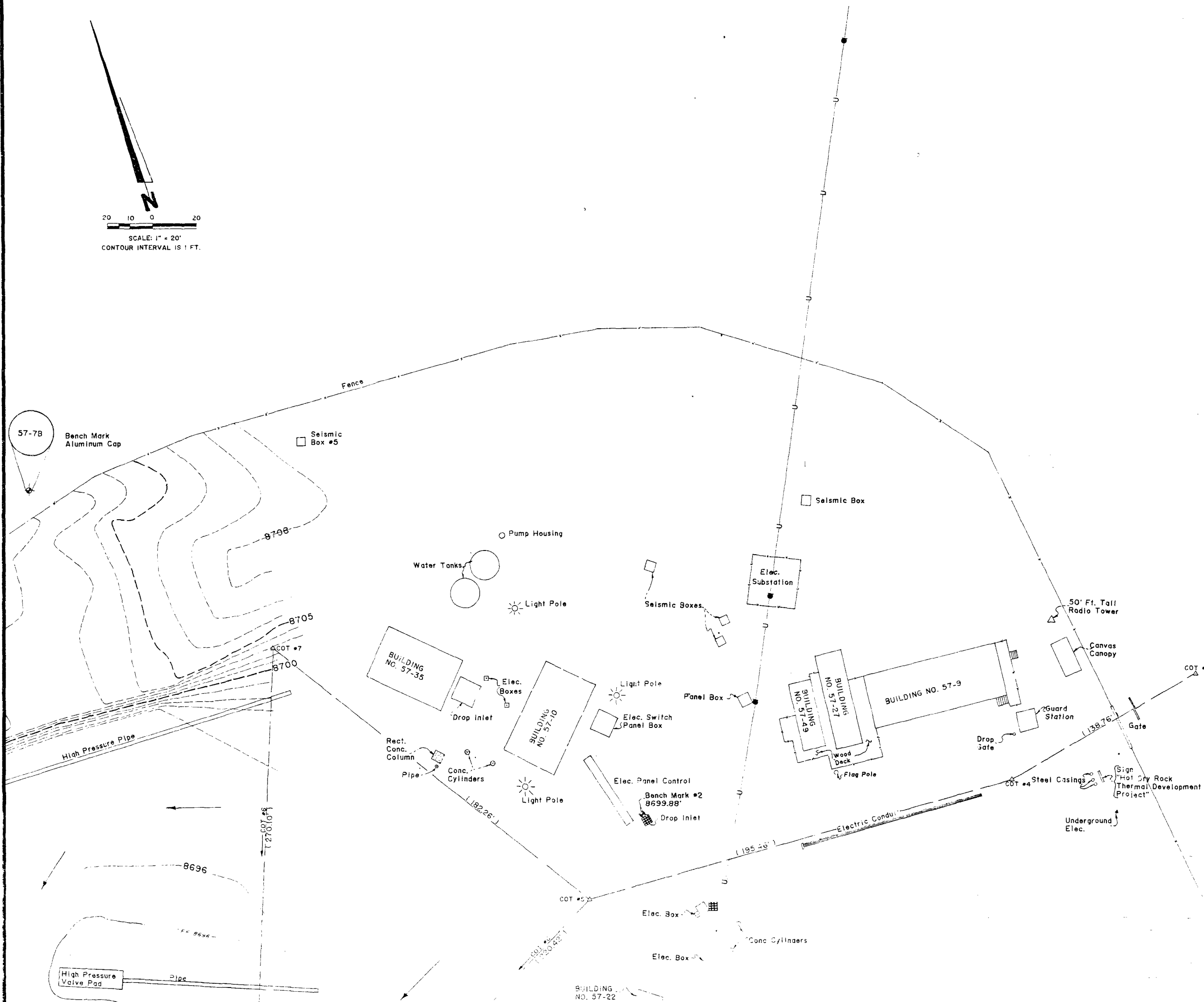
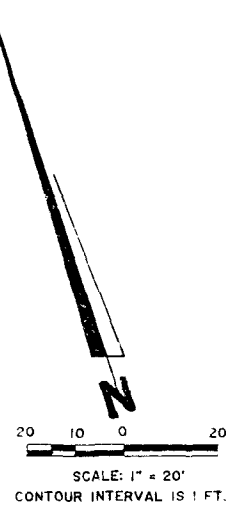
SIGNED _____

LITHO IN U.S.A.





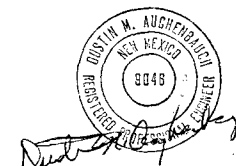
			Sheet
			of
HVA Associates ENGINEERS and SURVEYORS Santa Fe, New Mexico (505) 471-8784			
Drawn:	Checked:	Date:	
Traced:	Approved:	Scale:	



EXISTING CONTOUR
FINISH CONTOUR

NOTES

1. All existing contour ditches shall be cleaned and reshaped as necessary to carry drainage runoff.
2. Excess from ditch construction and grading shall be placed and compacted as pond subgrade unless otherwise specified. The excavation for ditches and slopes may exceed a depth of 24 inches, the payment for which shall be included in the Unit Price Bid for site grading.
3. The Contractor shall utilize excess materials to flatten slopes as directed by the Engineer; and payment for this work shall be included in the Unit Price Bid for site grading.



Land Surveying Company, Inc.
1314 APACHE AVE. P.O. BOX 5122
SANTA FE, NEW MEXICO 87502
(505) 471-4753

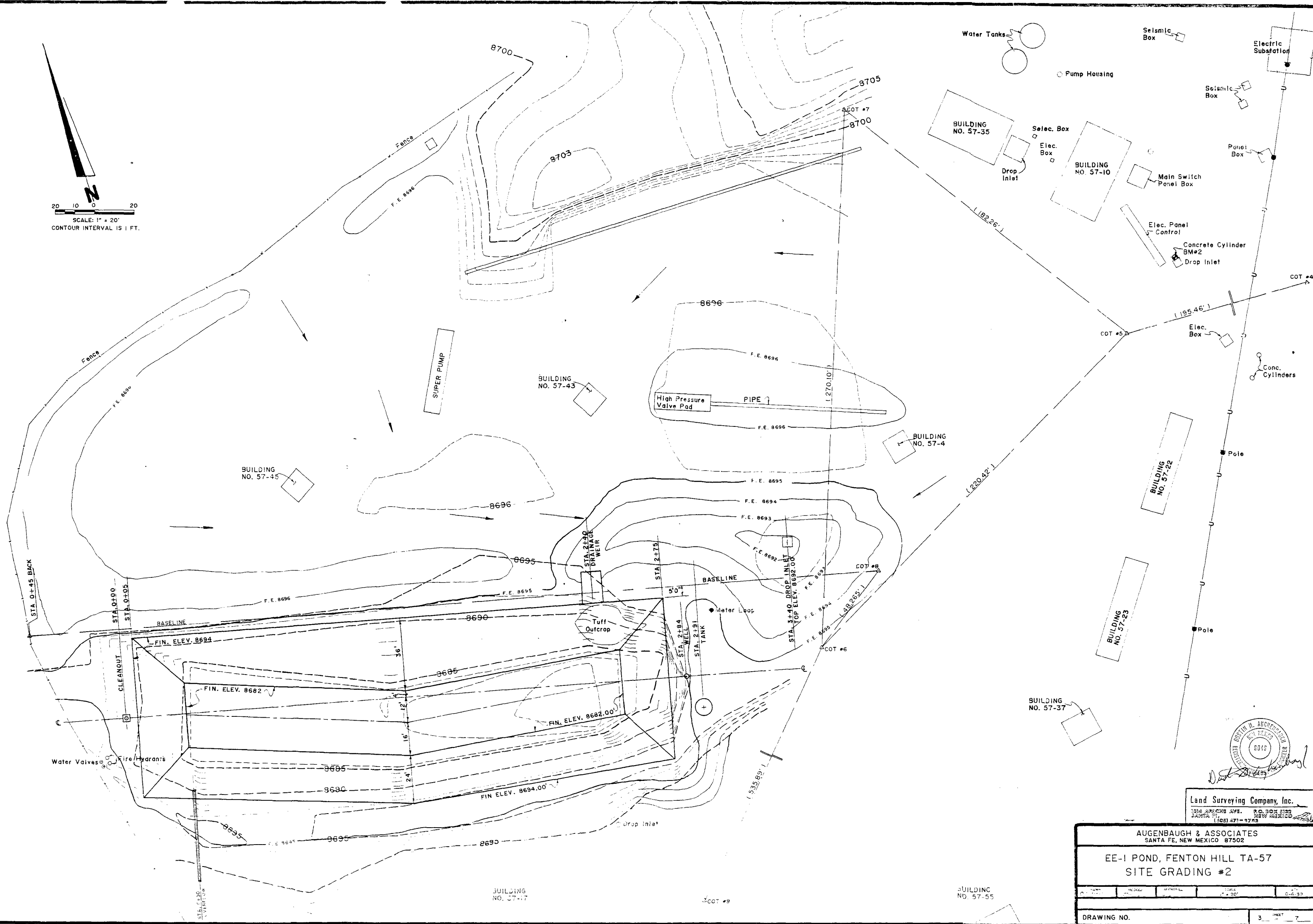
AUGENBAUGH & ASSOCIATES
SANTA FE, NEW MEXICO 87502

EE-1 POND, FENTON HILL TA-57
SITE GRADING #1

DATE	CHECKED	APPROVED	SCALE	DATE
07/12/85			1" = 20'	07/12/85

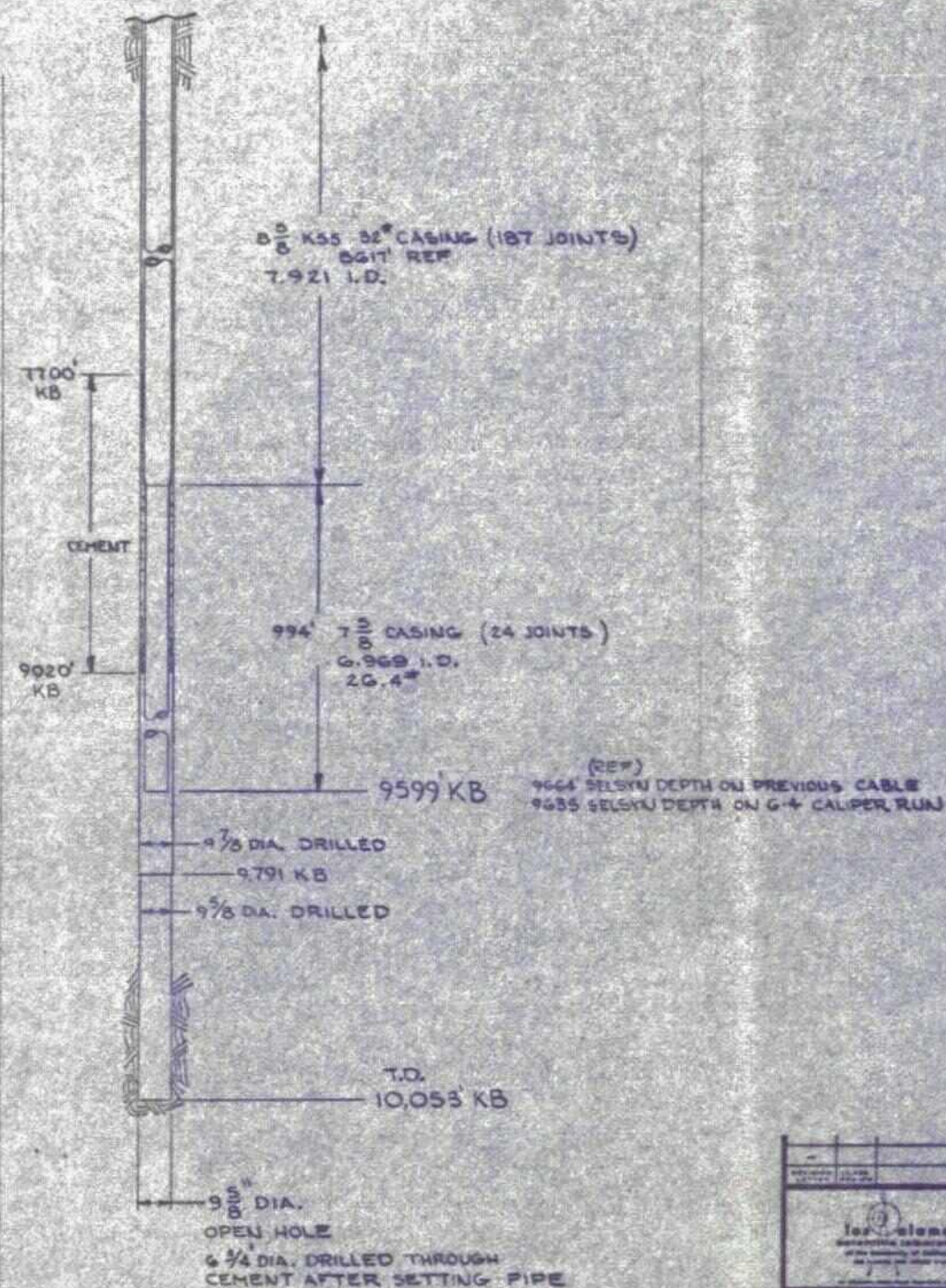
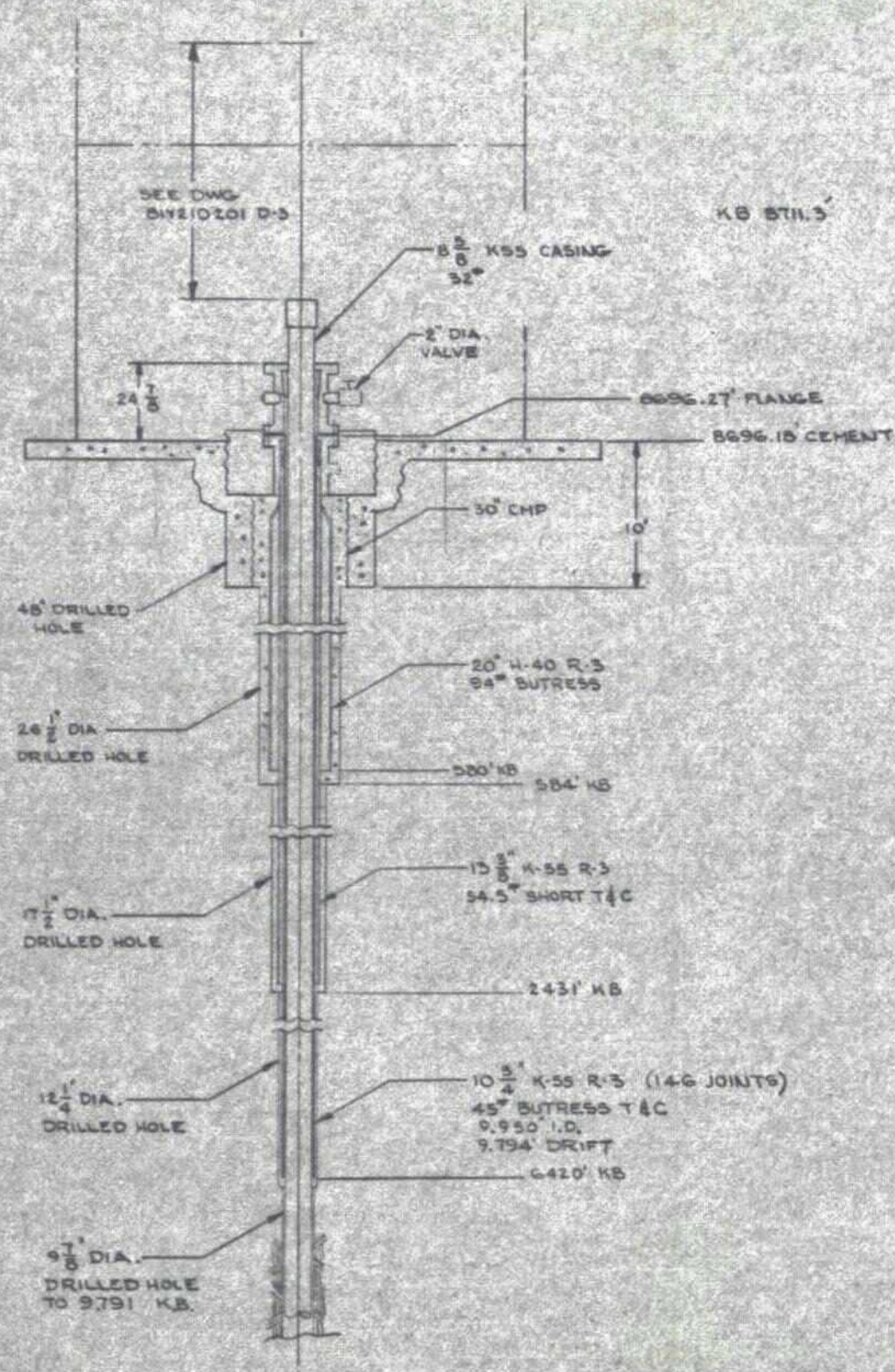
DRAWING NO.

SHEET 7




 Land Surveying Company, Inc.
 1016 APRICOT AVE. P.O. BOX 2122
 SANTA FE, NEW MEXICO
 (505) 871-1763

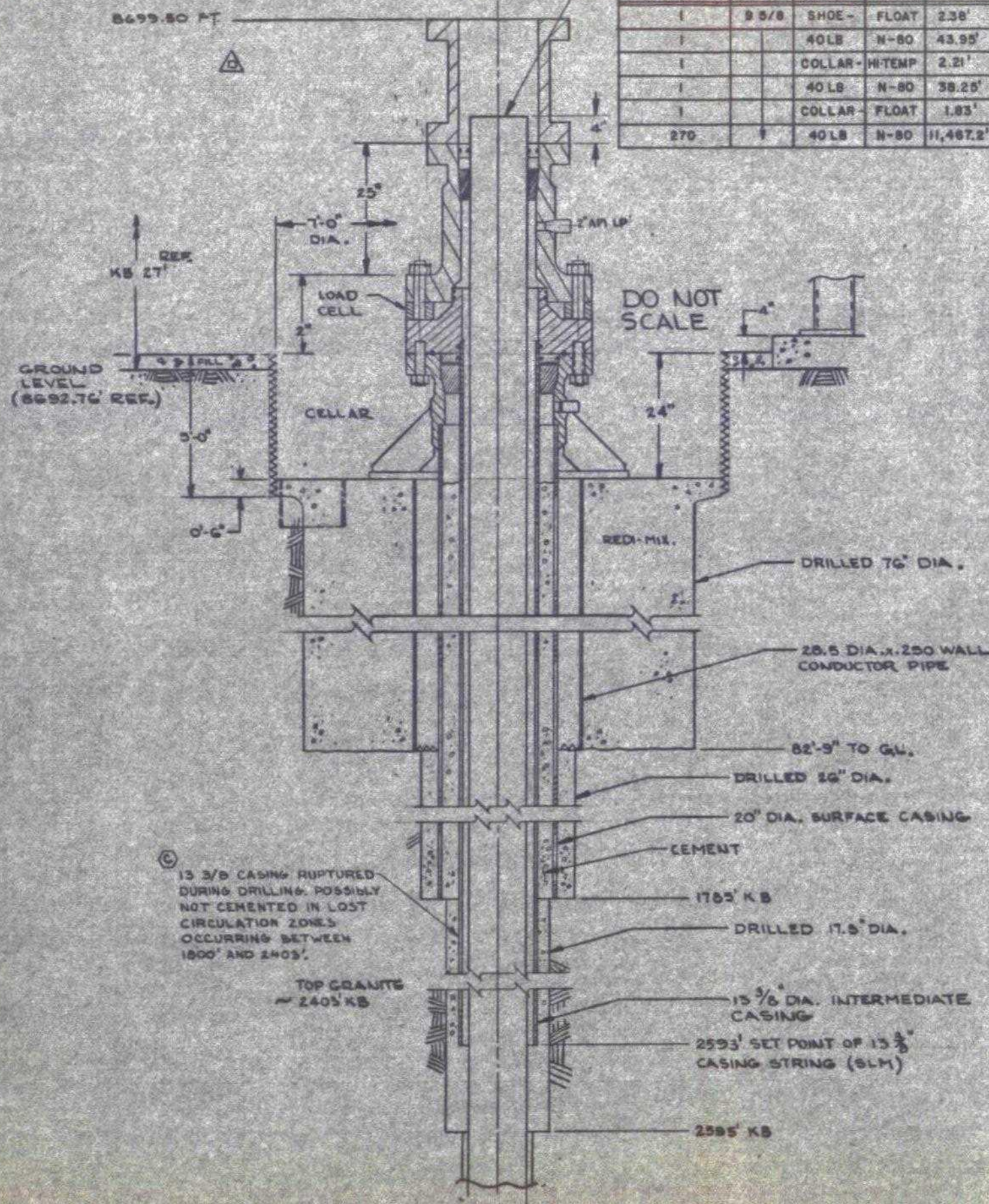
AUGENBAUGH & ASSOCIATES SANTA FE, NEW MEXICO 87502			
EE-1 POND, FENTON HILL TA-57 SITE GRADING #2			
DATE 12-1-78	REVISION 1	APPROVAL [Signature]	SCALE 1" = 20'
			0-6-33
DRAWING NO.		3 SHEET 7	



PART NUMBER		PARTY LIST	
PROJECT NUMBER	DATE	NAME	DESCRIPTION
		CLASSIFICATION OF DRAWING: U PART: U TITLE BLOCK: U TITLE: EE-1 PIPE STRING (COMPLETION 12-9-1975) PROJECT: 81Y210250 D-T DRAWN: [Signature] CHECKED: [Signature] APPROVED: [Signature] DATE: 12-9-1975	

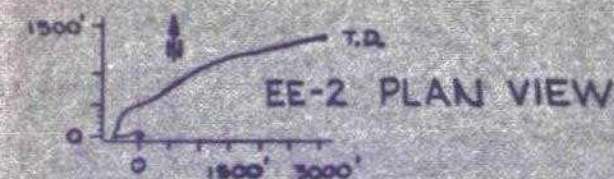
- PRODUCTION CASING 9 5/8 BUTTRESS THREAD, N80
40, 395 WALL, 8.835 I.D.

NO. OF JOINTS	SIZE	WEIGHT	GRADE	LENGTH	SLM	K8
					SET FROM	SET TO
1	8 5/8	SHOE -	FLOAT	2.38'	11,578.02'	11,576.64'
1		40LB	N-80	43.95'	11,576.64'	11,531.69'
1		COLLAR -	HI-TEMP	2.21'	11,531.69'	11,529.48'
1		40 LB	N-80	38.25'	11,529.48'	11,491.23'
1		COLLAR -	FLOAT	1.83'	11,491.23'	11,489.40'
270		40 LB	N-80	11,467.2'	1,489.40'	22.20'

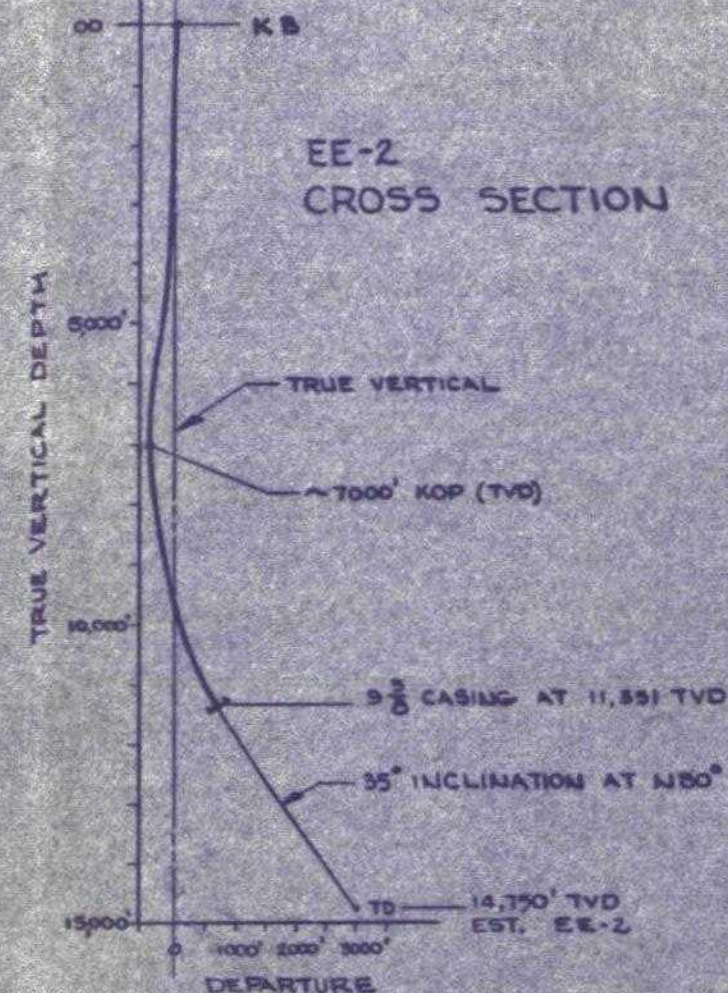


—L.D. 15,289²(SLM)

NOTE:
T.D. = TOTAL DEPTH
TVD = TRUE VERTICAL DEPTH
KOP = KICK OFF POINT
SLM = STRAPPED
LENGTH
MEASUREMENT
KB = KELLY BUSHING



EE-2
CROSS SECTION



	ADDED ELEV. AND SPOOL	248.14	1.00	1.00
	ADDED ELEV.	148.14	1.00	1.00
	ADDED CROSS SECT. & MISC.	6.28 C2.1	1.00	1.00
	ADDED 3/8" CASING	1.00 C2.1	1.00	1.00
	ORIGINAL ISSUE			
REVISION LETTER	CLARK REVISION	REVISION	DATE	FOUNDED BY



JAMES L. CLARK
 LORAIN ROAD SCIENTIFIC LABORATORY
 P.O. Box 100, 1000 N. Highway, New York 10000

CLASSIFICATION OF DRAWING: UNCL

PART: UNCL TITLE BLOCK: UNCL

TITLE: **EE-2**

AS COMPLETED

ON MAY 12, 1980

	OPERATIONS	DATE	GROUP
INITIATED:	KOCZAN	6-21-79	G-2
DESIGN:	C3.1	6-21-79	G-3
REVISION:	SPK	6-25-79	G-2
FINAL REVIEW:	SPK	6-27-79	G-2
APPROVED:	SPK	6-27-79	G-2
PREPARED:	KocZan	6-27-79	G-2

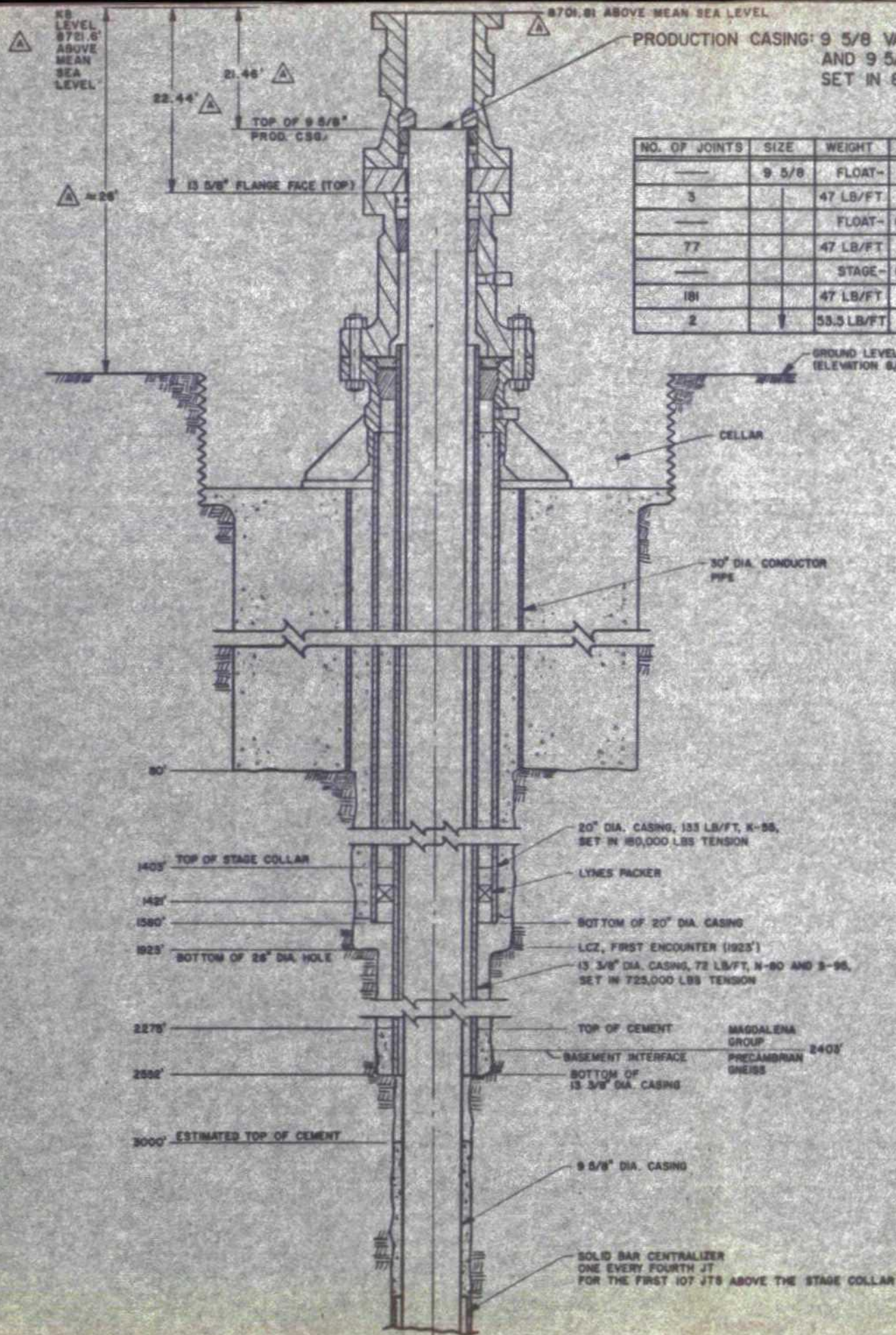
TOLERANCES - UNLESS OTHERWISE NOTED:

$\pm .1$ $\pm .05$ $\pm .02$ $\pm .01$ $\pm .005$ $\pm .002$ $\pm .001$ $\pm .0005$

$\pm .0002$ $\pm .0001$ $\pm .00005$ $\pm .00002$ $\pm .00001$ $\pm .000005$ $\pm .000002$ $\pm .000001$

SCALE: **1" = 8'**

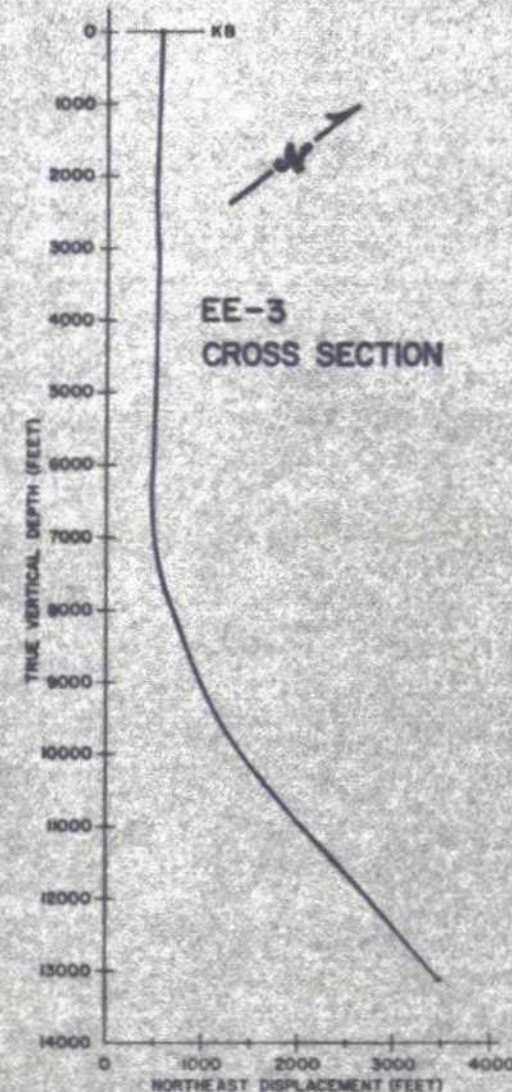
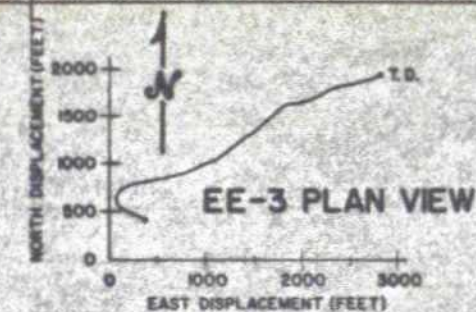
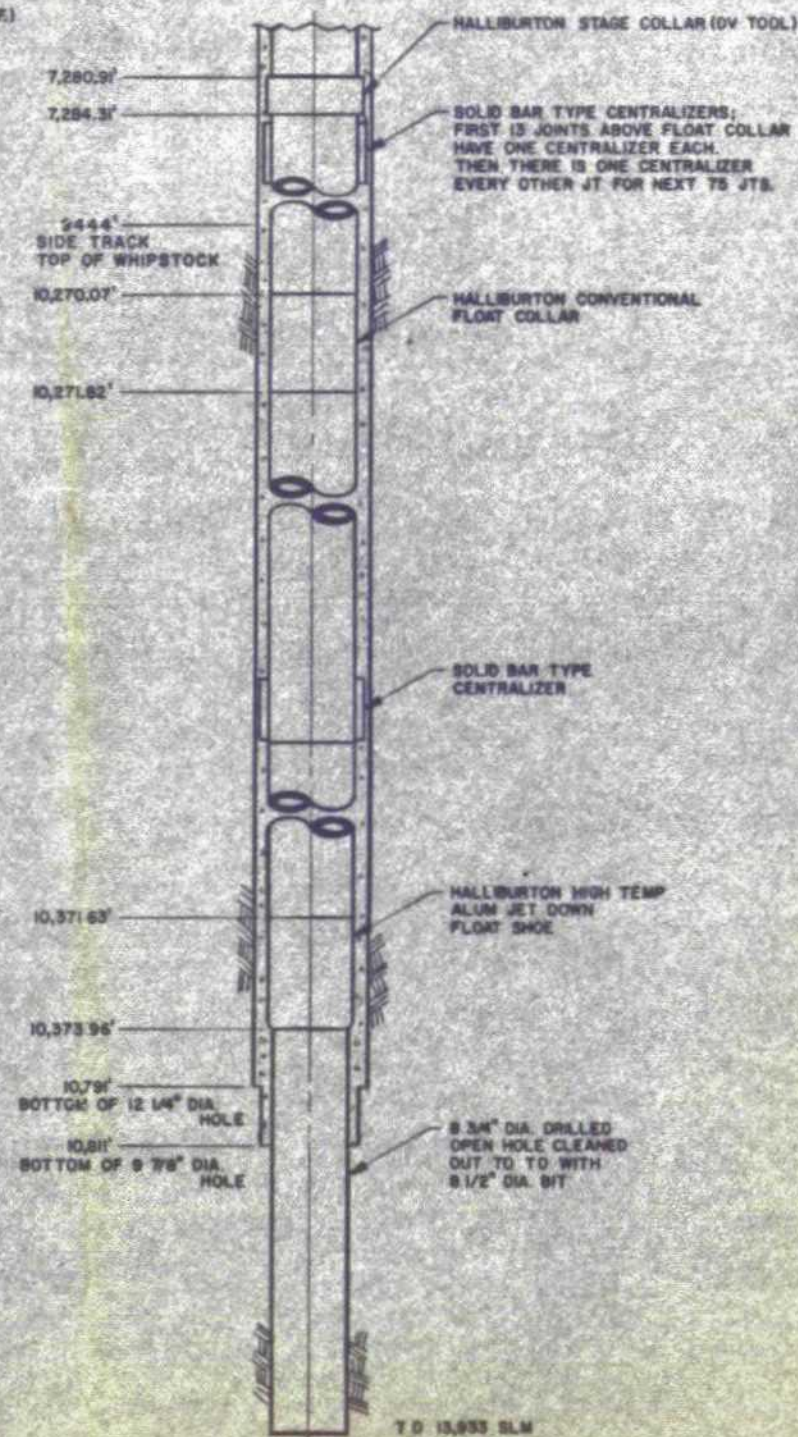
DATE: **8/12/2025**



NO. OF JOINTS	SIZE	WEIGHT	GRADE	LENGTH	SLM KB	
					SET FROM	SET TO
—	9 5/8"	FLOAT- SHOE	2.33'	2.33'	10,371.63'	10,373.96'
3	—	47 LB/FT P110	99.8'	99.8'	10,271.82'	10,371.63'
—	—	FLOAT- COLLAR	1.75'	1.75'	10,270.07'	10,271.82'
77	—	47 LB/FT P110	2,985.76'	2,985.76'	7,284.31'	10,270.07'
—	—	STAGE- COLLAR	3.40'	3.40'	7,280.91'	7,284.31'
181	—	47 LB/FT P110	7,193.83'	7,193.83'	87.08'	7,280.91'
2	—	53.5 LB/FT L-80	64.05'	64.05'	23.03'	87.08'

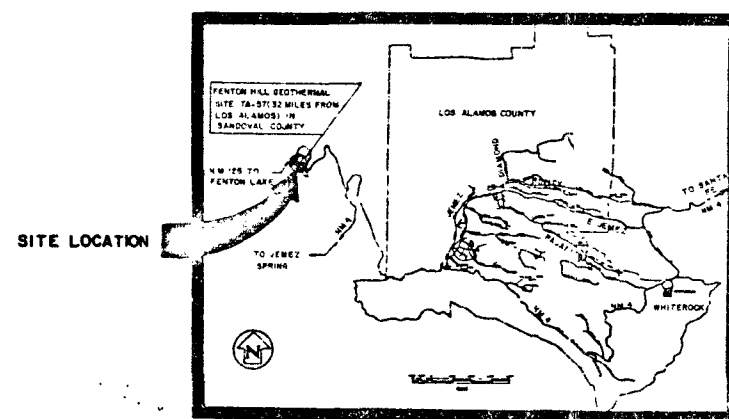
NOTES:

- 1) KELLY BUSHING TO GROUND LEVEL EQUALS APPROX. 26 FEET.
- 2) KELLY BUSHING TO 13 5/8" DIA FLANGE FACE EQUALS 22.44 FEET.
- 3) THREAD LOCK ON ALL CONNECTIONS BELOW AND INCLUDING FLOAT COLLAR.
- 4) ALL DEPTHS ARE REFERENCED FROM KELLY BUSHING.



A		DIMENSION CHANGES & ADDITIONS		2-18-82	W.D.	W.D.	W.D.
REVISION		ORIGINAL ISSUE					
DATE	CLASS.	DATE	CLASS.	DATE	CLASS.	DATE	CLASS.
1-18-82	2-18-82	1-18-82	2-18-82	1-18-82	2-18-82	1-18-82	2-18-82
				CLASSIFICATION BY: DRAWING: UNC PART: UNC TITLE BLOCK: UNC TITLE: EE-3 AS COMPLETED			
TOLERANCE (UNLESS OTHERWISE NOTED) X = 1/16" DEC = 1/32" ANGULAR = 1/2" D.E. = 1/16" D.E. = 1/32" FINISH = 1/16"				TOTAL: 1 81Y210363 D-1			

100



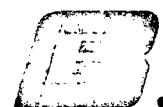
VICINITY MAP

INDEX OF DRAWINGS

- 1 TITLE SHEET
- 2 SITE PLAN
- 3 STORAGE POND GRADING PLAN
- 4-7 PLAN & PROFILE SHEETS
- 8 PUMP HOUSE PLAN
- 9 ELECTRICAL DIAGRAM
- 10-11 PUMP HOUSE PIPING DETAILS
- 12 SECTIONS & DETAILS
- 13 FENCE DETAILS
- 14 STORAGE POND GRADING PROFILE

ACULT

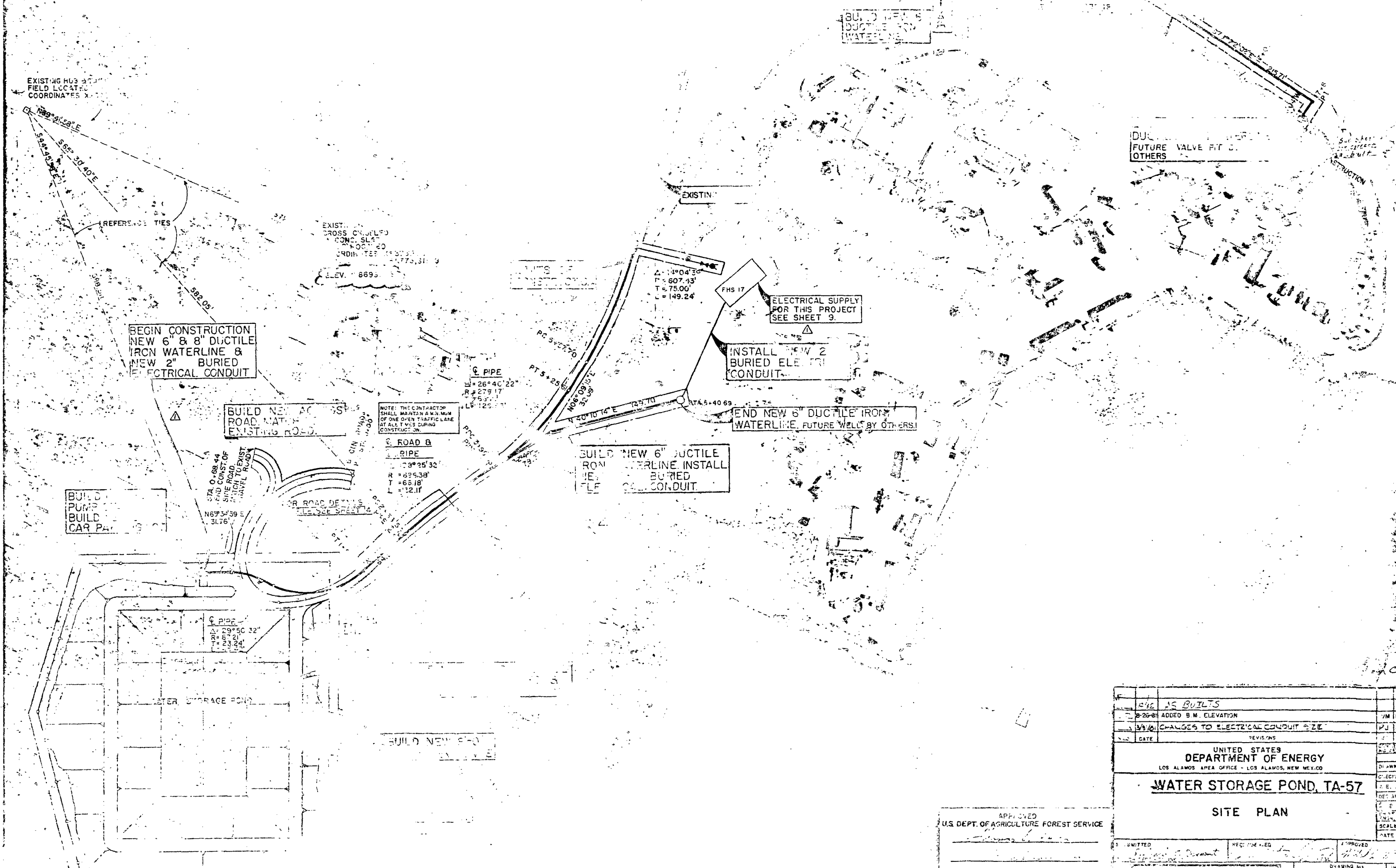
1/1/79 <u>AS-BUILT</u> 23 8-26-81 CHANGED POND BOTTOM & OUTLET NND DATE REV.S/RS		7A FDL 7Y OK 9408 ENGR JOE CONTRACT NO. 45 DRAWN VS CHECKED S.C. APPROVED	
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO			
<u>WATER STORAGE POND, TA-57</u>			
TITLE SHEET			
SUBMITTED 1/1/79		RECOMMENDED 1/1/79	
APPROVED 1/1/79		DATE 1/26/80	
DRAWN NO. L.A.-UU-1.0		SHEET 1	



Bolte Engineering Corporation

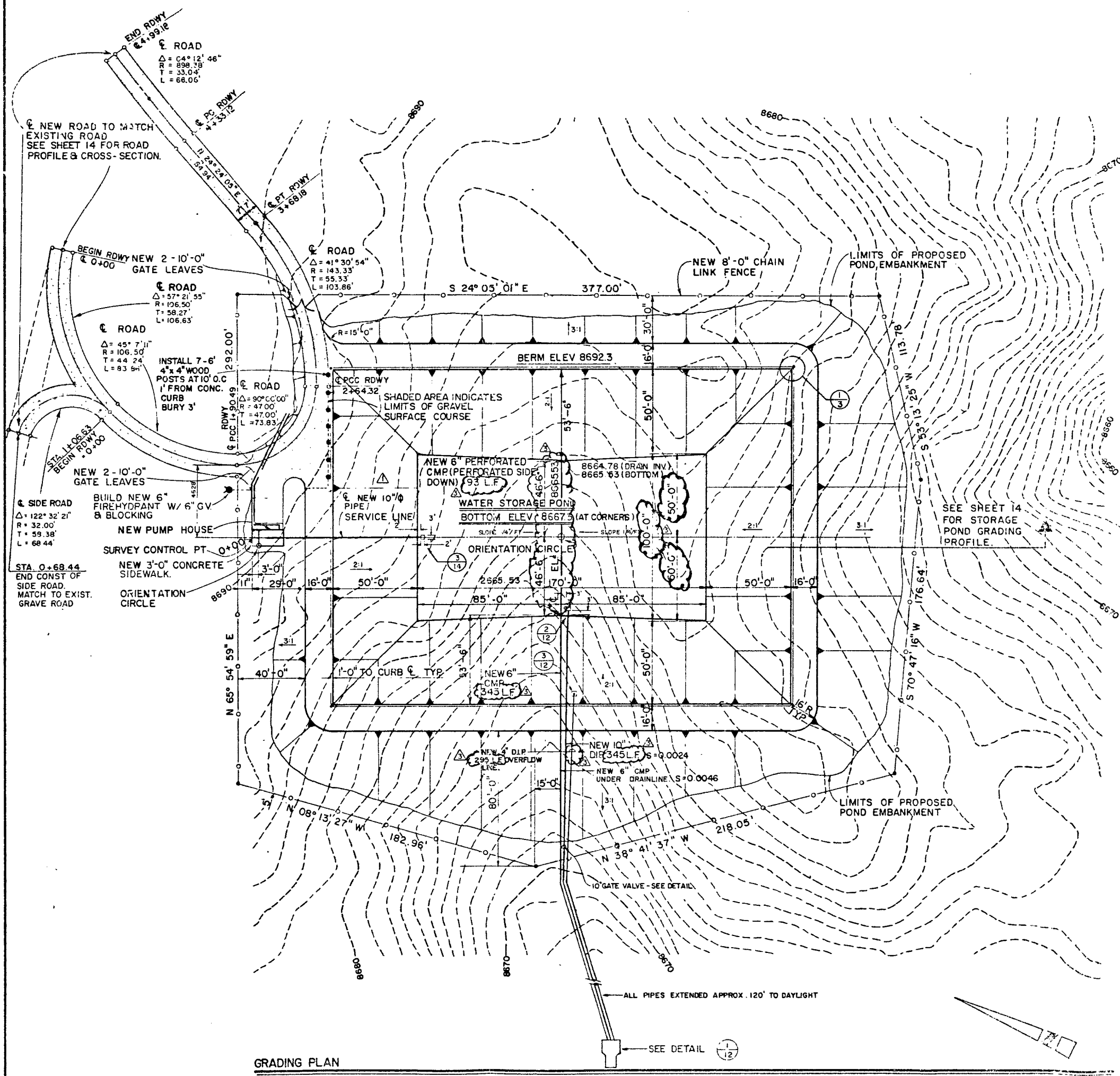
APPROVED
U.S. DEPT. OF AGRICULTURE, FOREST SERVICE

DATE _____

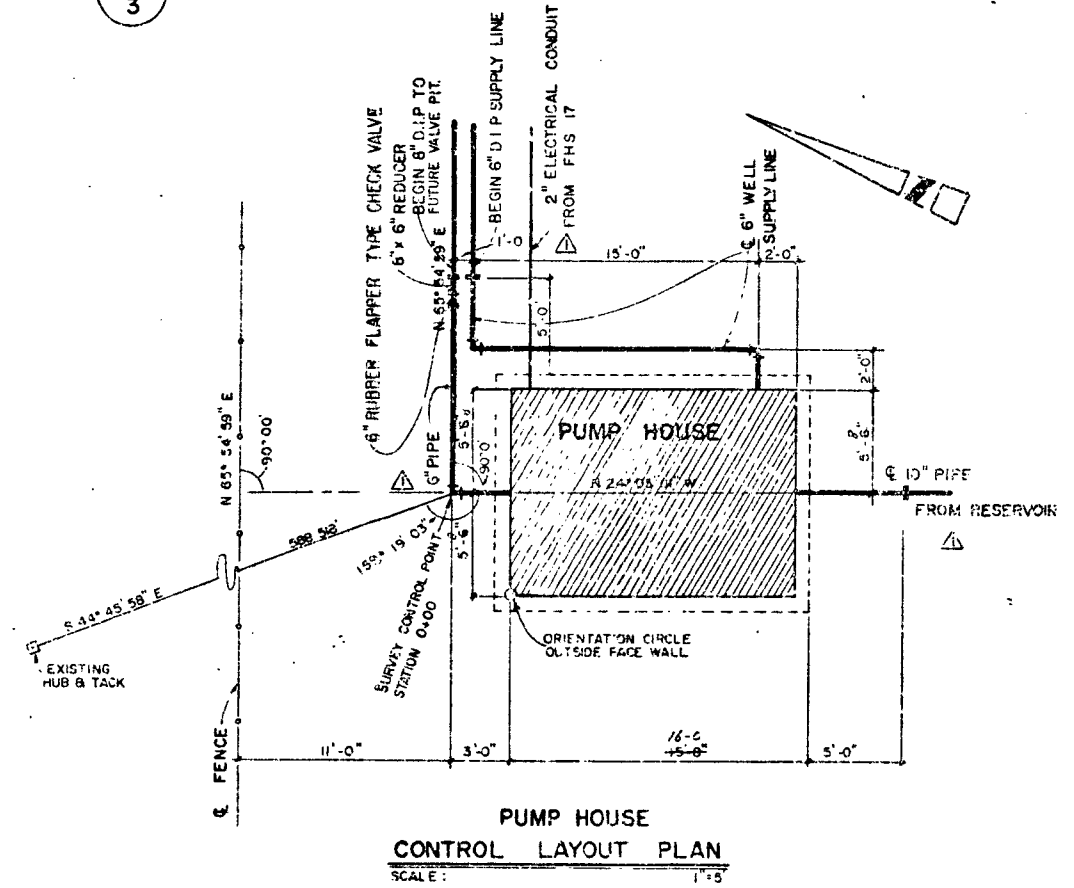
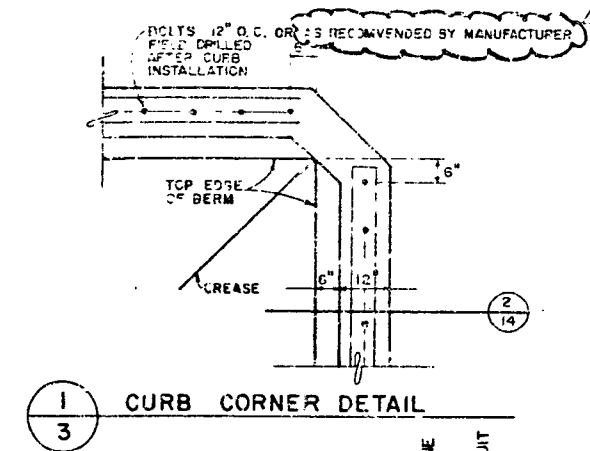


APPROVED
U.S. DEPT. OF AGRICULTURE FOREST SERVICE

DATE		AS BUILTS			
8-25-81		ADDED B.M. ELEVATION		J.M. FOL	
11-10-81		CHANGES TO ELECTRICAL CONDUIT SIZE		J.M. LV	
DATE		REVISIONS		DATE	
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO					
WATER STORAGE POND, TA-57				DRAWN RAM	
SITE PLAN				CHECKED J.E. APPROVED	
DATE				SCALE 1"=20'	
SUBMITTED J. C. Broughton		REVIEWED J. C. Broughton		APPROVED J. C. Broughton	
DRAWING NO. LA-UU-2.0		SHEET 2		DATE 1/28/80	



GRADING PLAN

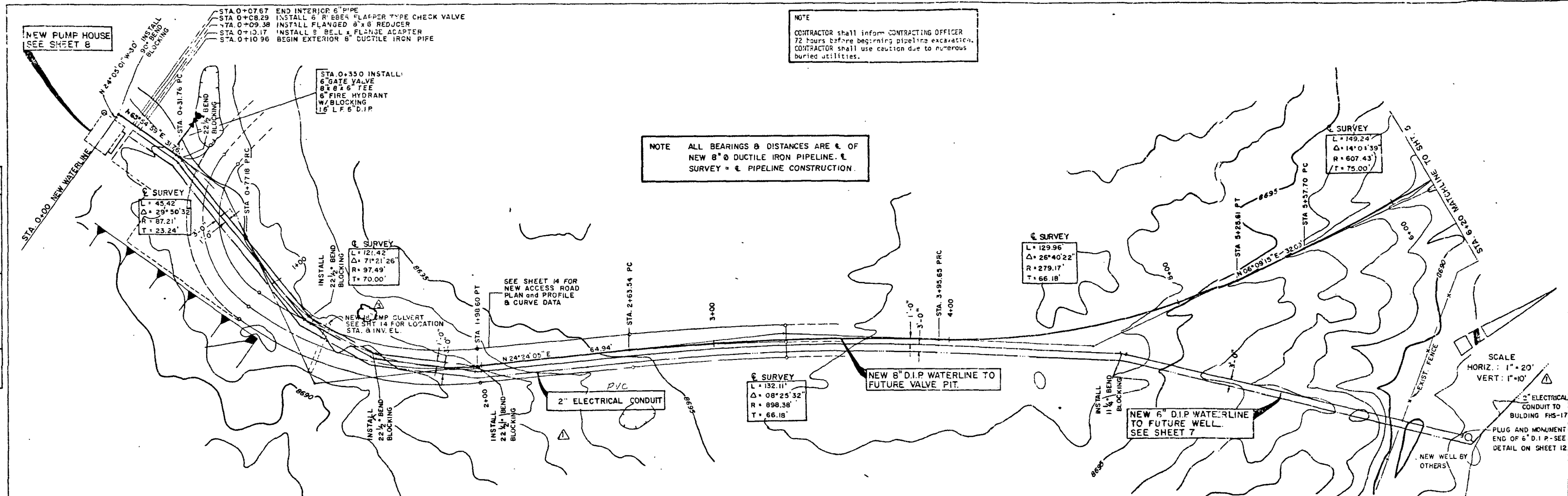


- GENERAL NOTES:
1. Remove 8" of topsoil inside limits of proposed pond embankment and stockpile in an area as designated on Sheet 2.
 2. All denuded areas including outer berm of Reservoir shall be covered with a layer of topsoil and reseeded with native grasses.
 3. Additional Borrow Material is available on site if required by Contractor.

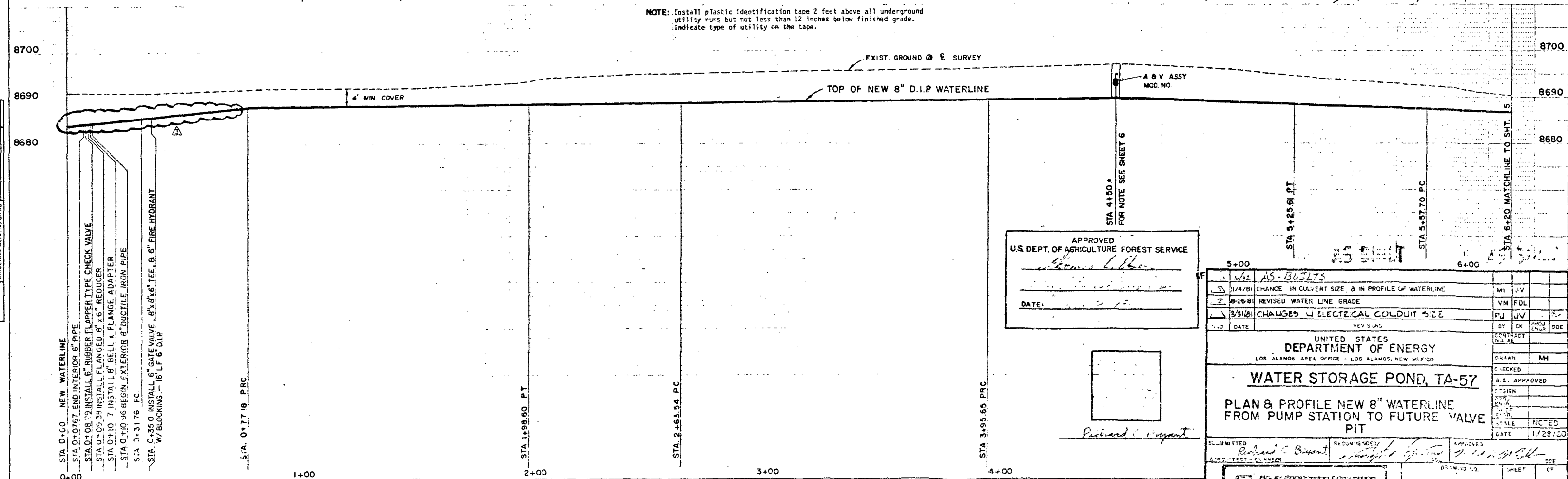
11/4/21 CHANGES TO DIM. OF POND BOT. NOTE @ DET. 1. & DRAIN PIPES LENGTHS. AM. JV 11/26/21 CHANGED POND BOTTOM & OUTLET 11/26/21 CHANGES TO DET. 1. & 2.		REVISIONS BY: [initials] DATE: [blank]
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO		
WATER STORAGE POND, TA-57		
STORAGE POND GRADING PLAN		
DRAWN BY: [initials] CHECKED: [initials] DATE: 11/29/21	DESIGNED BY: [initials] APPROVED BY: [initials] DATE: 11/29/21	DRAWING NO.: LA-UU-30 SHEET: 5 OF 14

PLAN	DATE
SURVEYED	
NOTED	
ADJUSTMENT CHECKED	
BY	
NO.	

PROFILE	DATE
SURVEYED	
NOTED	
ADJUSTMENT CHECKED	
BY	
NO.	



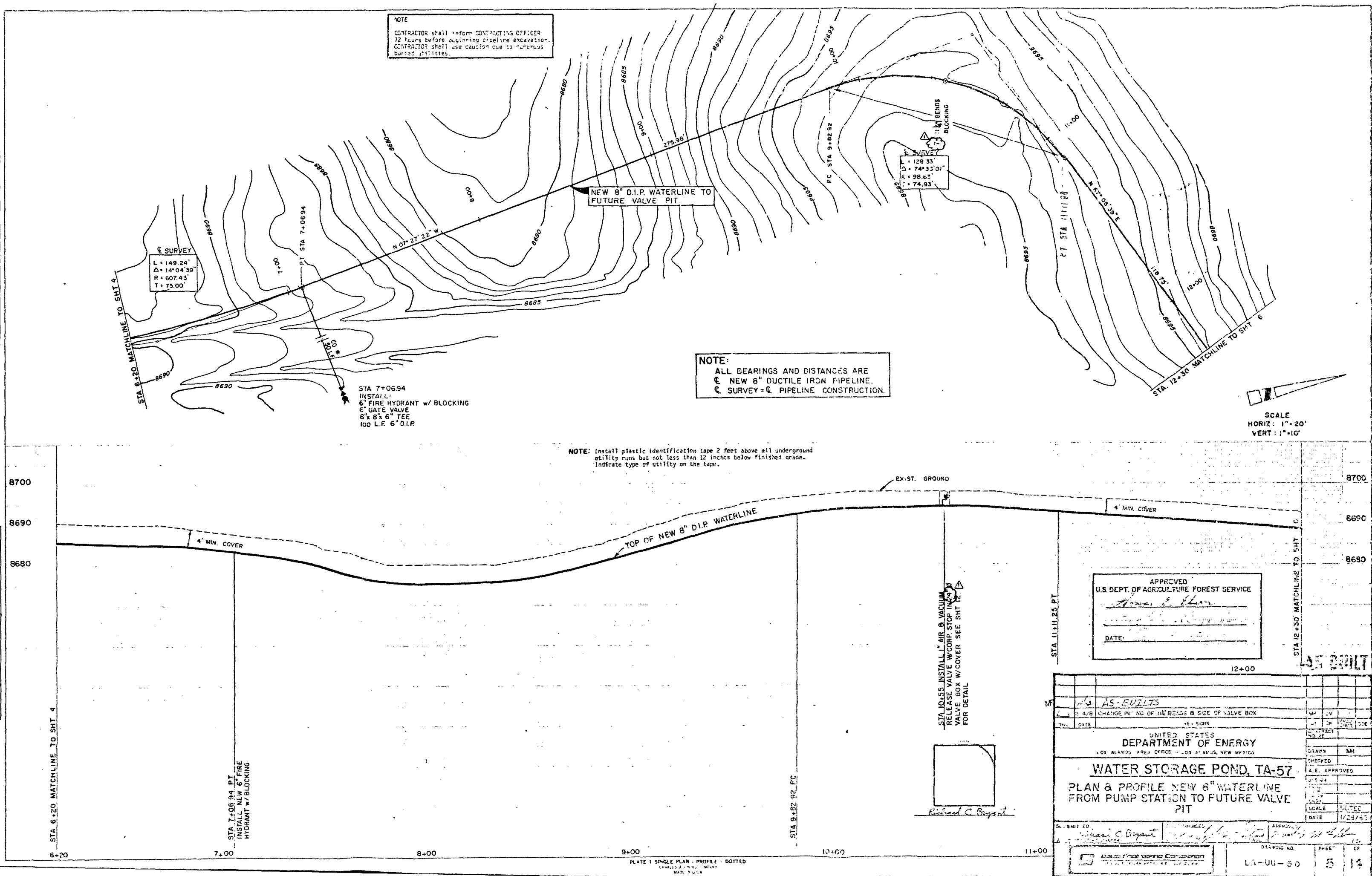
NOTE: Install plastic identification tape 2 feet above all underground utility runs but not less than 12 inches below finished grade. Indicate type of utility on the tape.



APPROVED
U.S. DEPT. OF AGRICULTURE FOREST SERVICE
[Signature]
DATE: *[Date]*

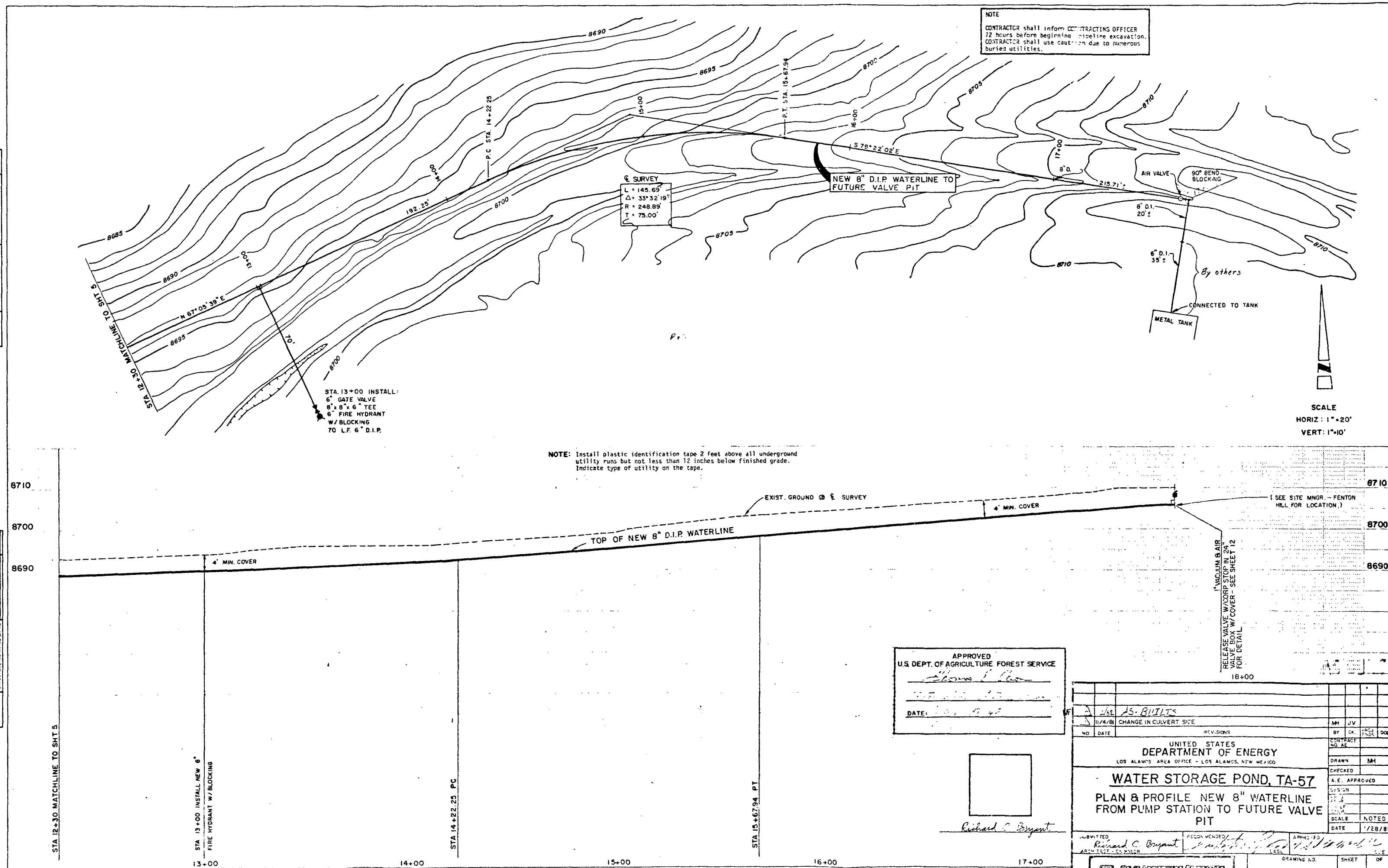
1. 4/12 AS-BUILTS		MH	JV
2. 01/4/81 CHANGE IN CULVERT SIZE, & IN PROFILE OF WATERLINE		VM	FDL
3. 02/26/81 REVISED WATER LINE GRADE		PJ	JV
4. 3/31/81 CHANGES IN ELECTRICAL CONDUIT SIZE		BY	CK
DATE		REV	DATE
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO WATER STORAGE POND, TA-57 PLAN & PROFILE NEW 8" WATERLINE FROM PUMP STATION TO FUTURE VALVE PIT SUBMITTED: <i>[Signature]</i> RECOMMENDED: <i>[Signature]</i> APPROVED: <i>[Signature]</i> DRAWN: <i>[Signature]</i> CHECKED: <i>[Signature]</i> DATE: 1/28/80 SHEET 4 OF 14 LA-UU-40			

PROFILE	SURVIVED	BY	DATE
NOTED	PLOTTED		
NOT BOOK	GRANES CHECKED		
NO	B. M. NOTED		
	STRUCTURE NOTATIONS CH'ND		



PLAN	DATE	
	BY	
	SUBMITTED	
	NOTE BOOK	

PROFILE	DATE	
	BY	
	SUBMITTED	
	NOTE BOOK	



APPROVED	
U.S. DEPT. OF AGRICULTURE FOREST SERVICE	
DATE: 10/15/80	

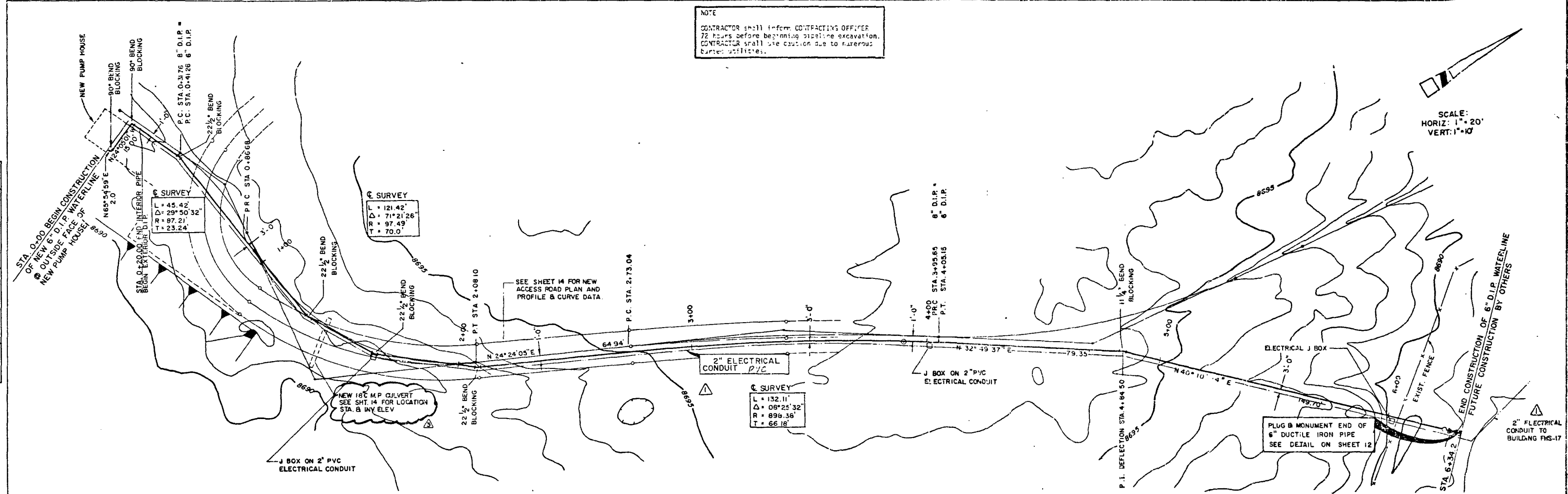
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO	
WATER STORAGE POND, TA-57 PLAN & PROFILE NEW 8" WATERLINE FROM PUMP STATION TO FUTURE VALVE PIT	
REVISIONS	NO. DATE
1. 11/4/81 CHANGE IN CULVERT SIZE	1 11/4/81
CHECKED	BY
A.E. APPROVED	DATE
DATE	1/28/80
DRAWING NO. LA-UU-6.0	
SHEET 6 OF 14	

PLAN	DATE	BY	DATE
SURVEYED			
NOTED			
ALIGNED			
CHECKED			
NO			

PROFILE	DATE	BY	DATE
SURVEYED			
NOTED			
ALIGNED			
CHECKED			
NO			

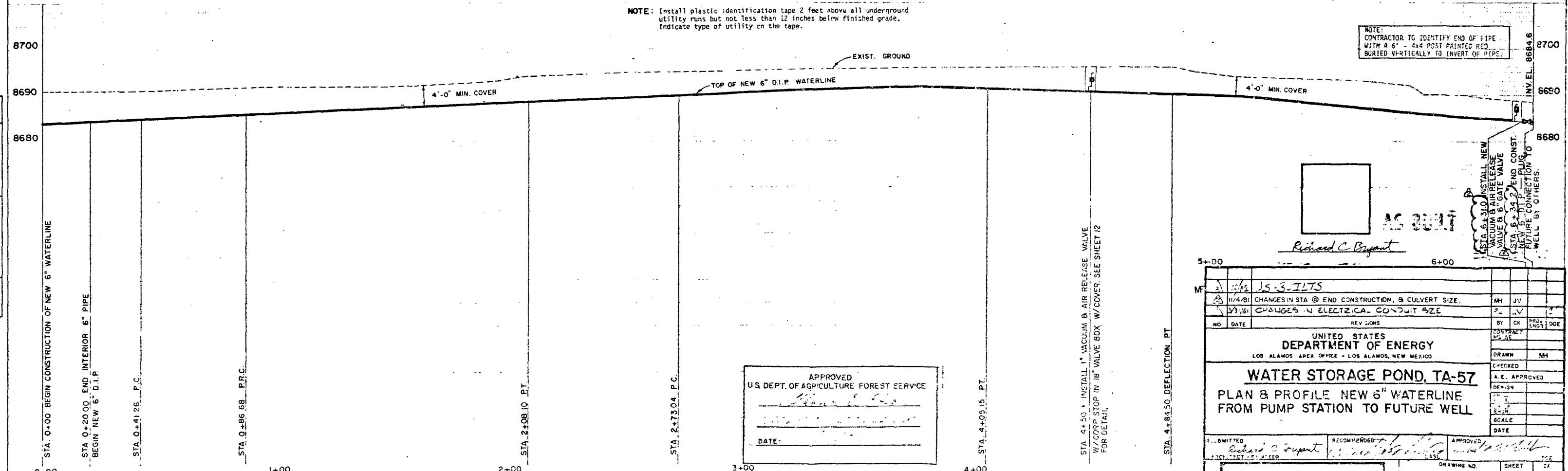
NOTE
CONTRACTOR shall inform CONTRACTING OFFICE
72 hours before beginning pipeline excavation.
CONTRACTOR shall use caution due to numerous
buried utilities.

SCALE:
HORIZ: 1"=20'
VERT: 1"=10'



NOTE: Install plastic identification tape 2 feet above all underground
utility runs but not less than 12 inches below finished grade.
Indicate type of utility on the tape.

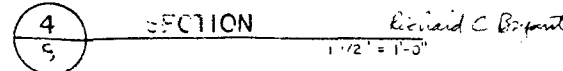
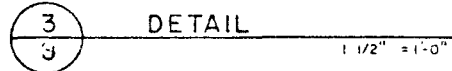
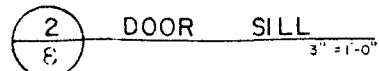
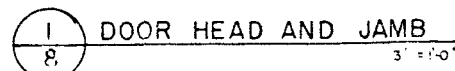
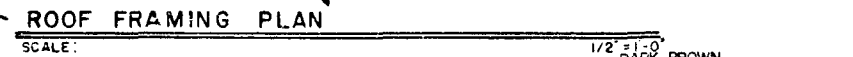
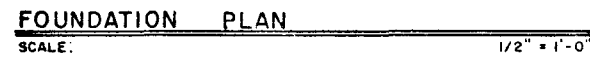
NOTE:
CONTRACTOR TO IDENTIFY END OF PIPE
WITH A 6" - 4x4 POST PAINTED RED
BURIED VERTICALLY TO INVERT OF PIPE.

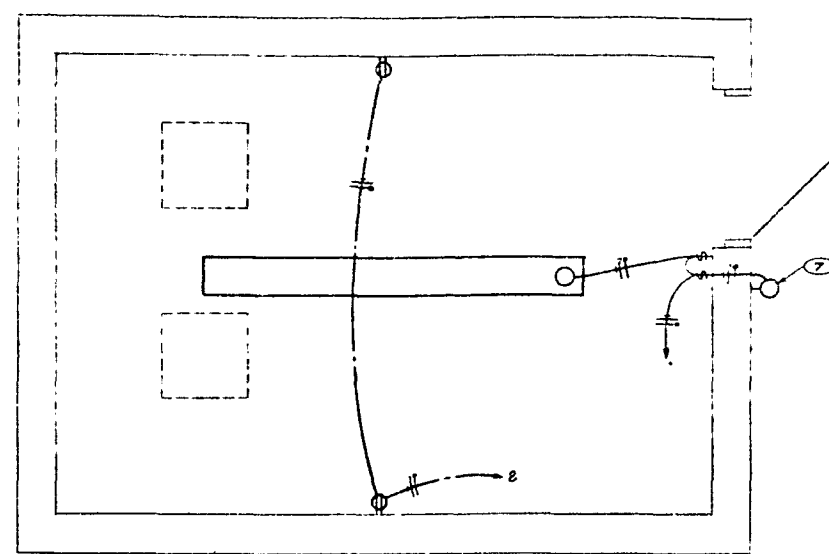


APPROVED
U.S. DEPT. OF AGRICULTURE FOREST SERVICE
DATE: _____

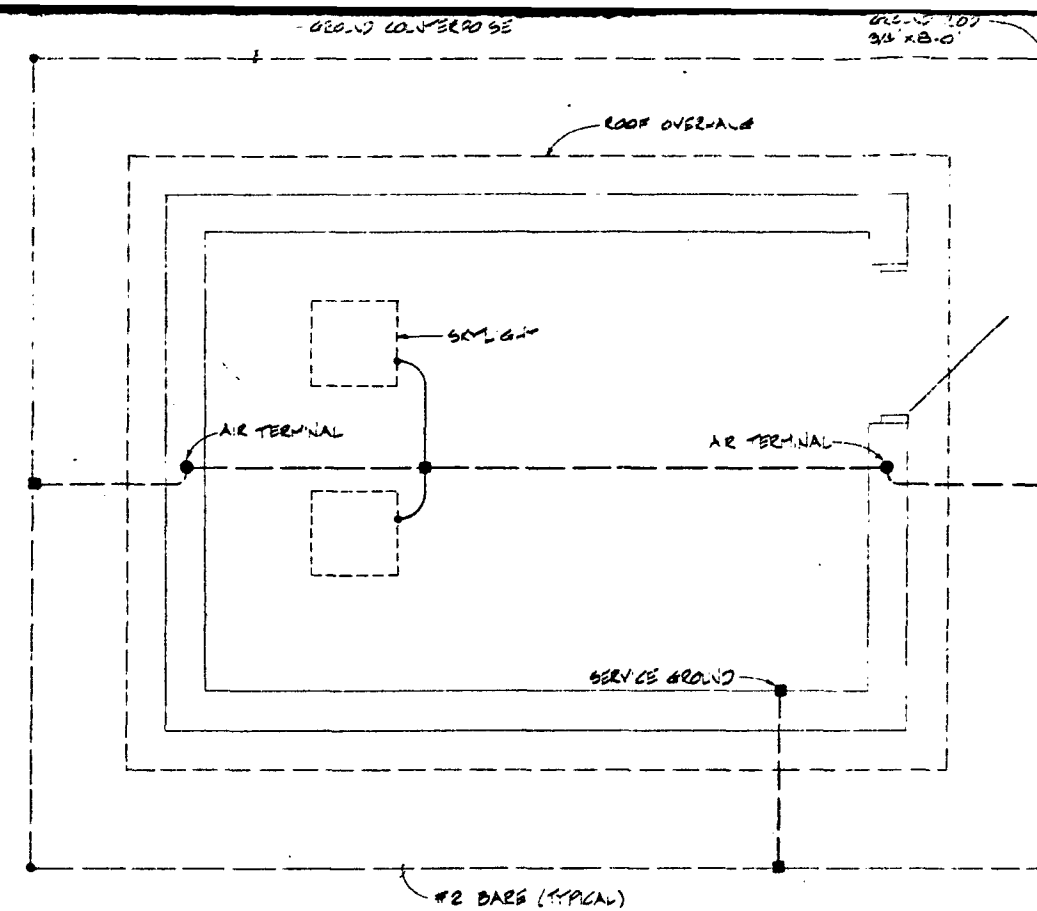
15-3-ILTS		11/4/81		CHANGES IN STA @ END CONSTRUCTION, & CULVERT SIZE.		11/4/81		CHANGES IN ELECTRICAL CONDUIT SIZE	
NO		DATE		REV		NO		DATE	
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO WATER STORAGE POND, TA-57 PLAN & PROFILE NEW 6" WATERLINE FROM PUMP STATION TO FUTURE WELL									
DESIGNED BY		CHECKED BY		APPROVED BY		DRAWN BY		DATE	
Richard C. Bryant		[Signature]		[Signature]		MH		11/4/81	
DRAWING NO.		SHEET		OF		DATE		SCALE	
LA-UU-70		7		14					

PLATE 1 SINGLE PLAN - PROFILE - DOTTED
CHARLES E. HUNTER
MAY 1984

[illegible]

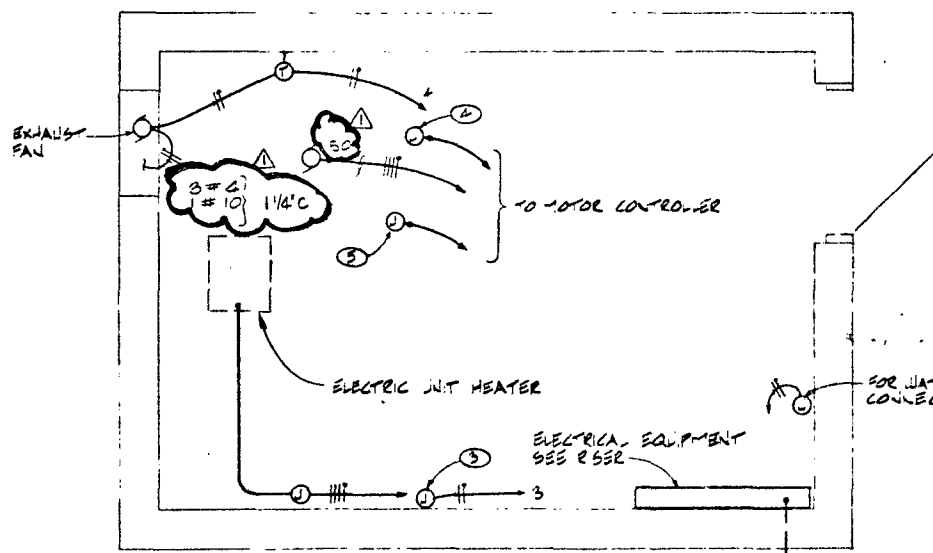


LIGHTING & RECEPTACLE PLAN
SCALE: 1/2" = 1'-0"

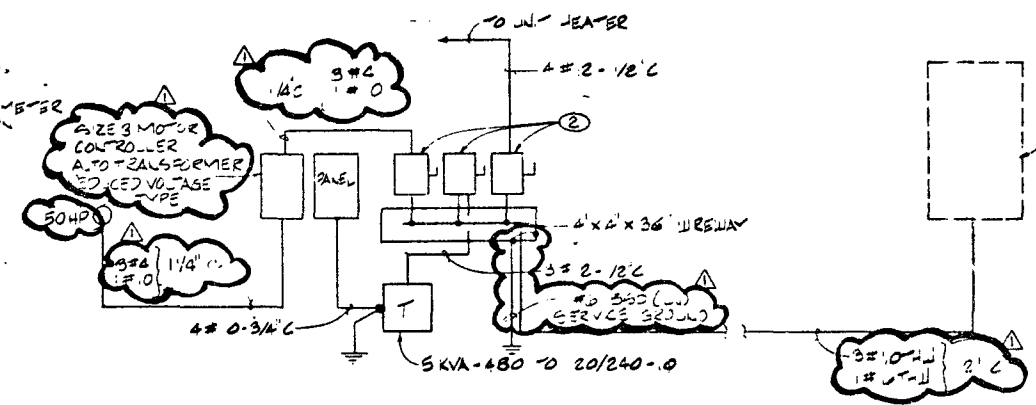


GROUNDING PLAN
SCALE: 1/2" = 1'-0"

NOTE: Lightning protection system shall be furnished with Master Label "C". All splicing on the counterpoise shall be Cadweld.

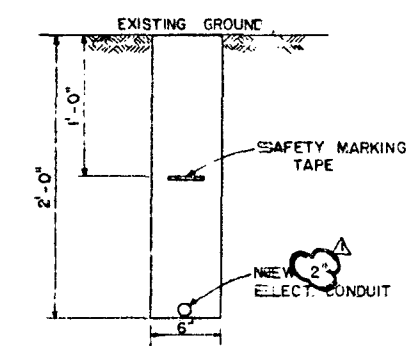


POWER & CONTROL PLAN
SCALE: 1/2" = 1'-0"

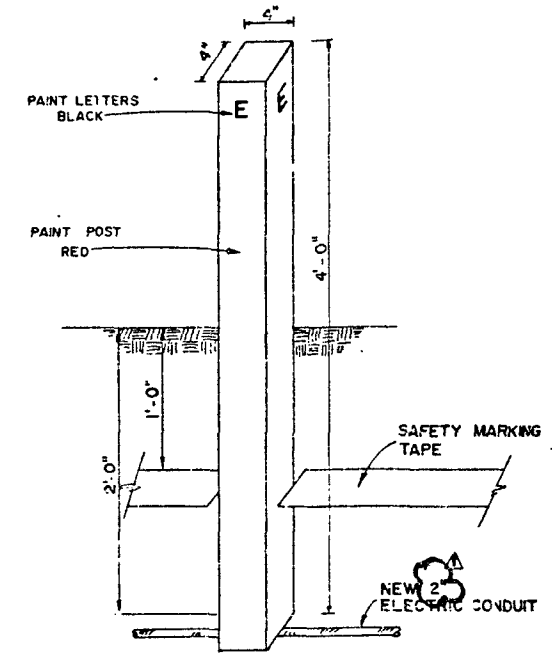


RISER DIAGRAM
NO SCALE

- NOTES:
1. INSTALL 150 AMP 3 POLE PLUG-IN CIRCUIT BREAKER IN EXISTING PANEL "PP-A" BLDG. FHS-17, TA-57.
 2. 600 VOLT, 3 POLE 150 AMP CIRCUIT BREAKER FUSED AND LABELED AS INDICATED BELOW.
 3. 120/240 VOLT 3 PHASE 4 WIRE DUAL ELEMENT FUSE.
 4. FOR CONNECTION TO BATTERY CHARGER.
 5. CONNECTION FOR VALVE CONTROLS.
 6. CONNECTION FOR PUMP SAFETY CONTROLS.
 7. BENJAMIN FL-100-10 INDUSTRIAL FIXTURE W/296" UL LAMPS.
 8. BENJAMIN 11W-150-10 WALL MOUNTED FIXTURE UP 8'-6".



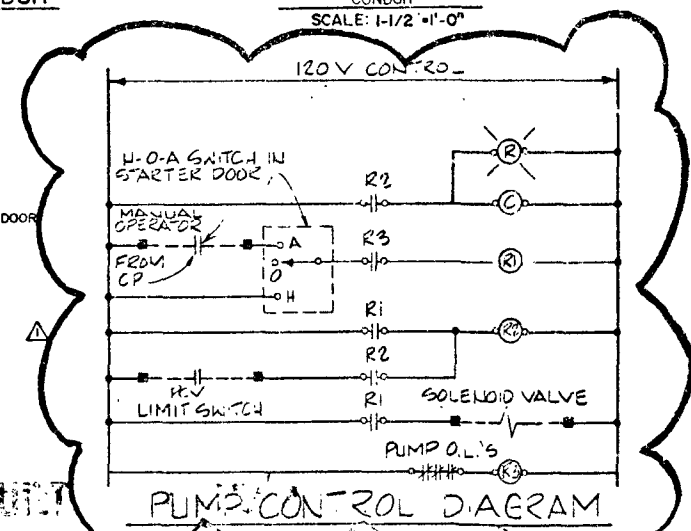
TYPICAL TRENCH DETAIL FOR BURIED ELECTRIC CONDUIT
SCALE: 1-1/2" = 1'-0"



4' x 4' x 4'-0" ELECTRIC MARKER
WOOD POST BURIED @ 300' OC TO ELECTRIC CONDUIT
SCALE: 1-1/2" = 1'-0"

GENERAL NOTES:
PANEL BOARD SHALL BE "DOOR IN, DOOR TYPE" W/ BOTH DOORS HINGED.

AS BUILT



PUMP CONTROL DIAGRAM

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	OUTLET AND BRACKET MOUNTED FIXTURE.
	OUTLET AND FLUORESCENT FIXTURE.
	SINGLE POLE WALL SWITCH, UP 52".
	JUNCTION BOX, HEIGHT AS NOTED OR INDICATED WITH CONNECTION TO EQUIPMENT.
	DUPLEX CONVENIENCE OUTLET, UP 12' OR 15' NOTED, WP DENOTES WEATHERPROOF.
	THERMOSTAT, UP 5'-6".
	SPECIAL CABINET, TELEPHONE TYPE OR AS NOTED.
	ELECTRICAL PANEL - SEE SCHEDULE.
	MOTOR CONTROLLER, SIZE AND POLES FOR MOTOR FURNISHED.
	MOTOR CONNECTION WITH H.P. INDICATED.
	SAFETY SWITCH, SWITCH TO HAVE NUMBER OF POLES AND RATING REQUIRED, SWITCH TO BE NEW OR AS INSTALLED INDICATED.
	BRANCH CIRCUIT IN WALLS OR CEILING WITH CONDUCTORS INDICATED.
	BRANCH CIRCUIT IN WALLS OR UNDER FLOOR WITH CONDUCTORS INDICATED.
	CONNECTION TO PANEL WITH BRANCH CIRCUIT IN WALLS INDICATED.

PANEL SCHEDULE			
PANEL 120/240 VOLT 3 PHASE 4 WIRE MAIN C/B & BREAK MOUNTED			
CIRCUIT NO.	WIRE SIZE	TYPE	USE
1-4	20A/1P		BRANCH CIRCUITS
5-9	20A/1P		SPARES

APPROVED
U.S. DEPT. OF AGRICULTURE FOREST SERVICE

Richard C. Bryant

DATE: _____

AS BUILT

REVISIONS

NO.	DATE	REVISIONS	BY	CHK	APP	ENG	ICE
1	4/1/51	Revise Main Pump Size					

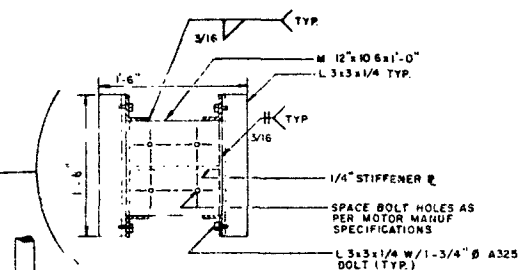
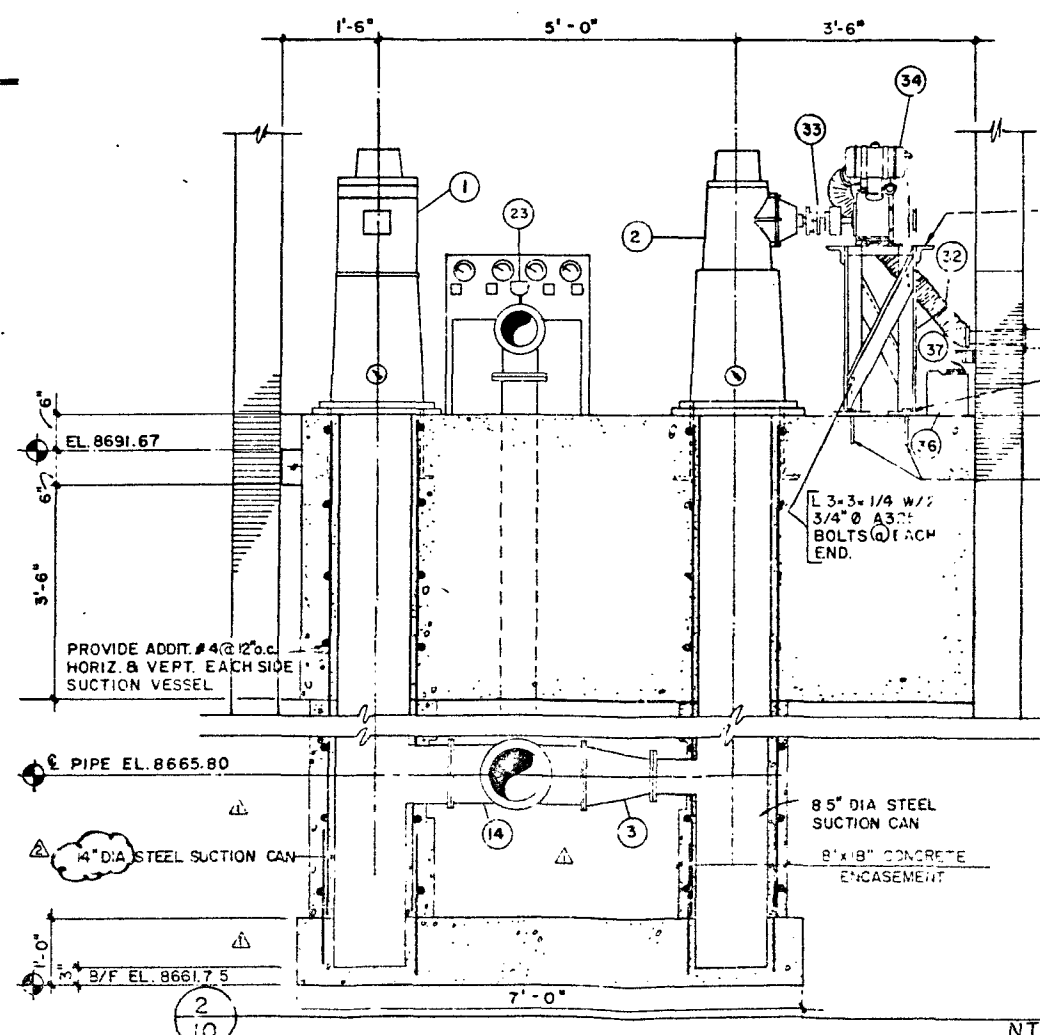
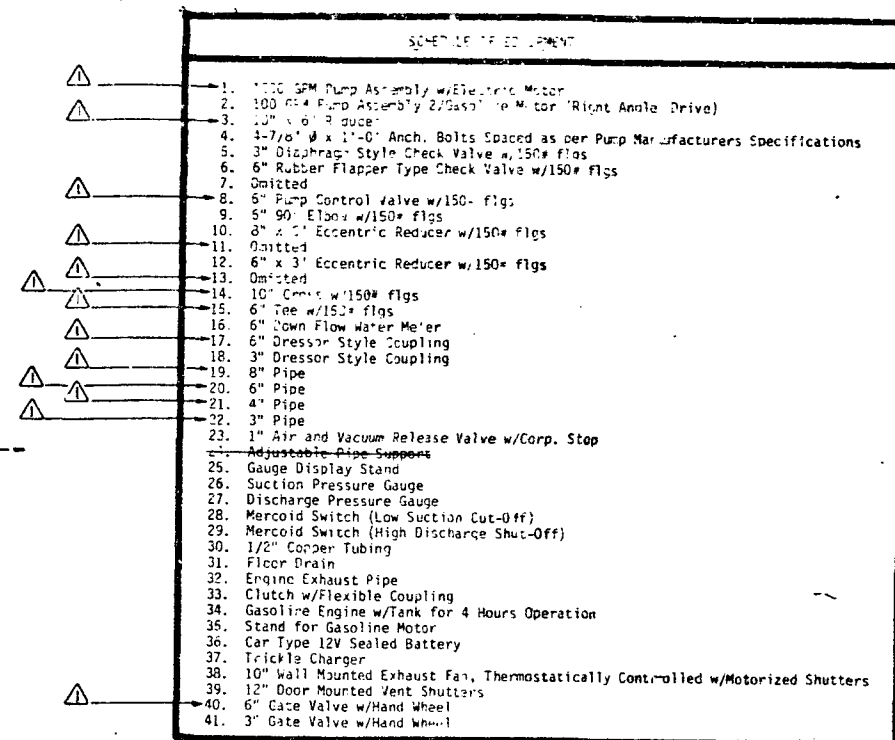
UNITED STATES
DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO

WATER STORAGE POND, TA-57

ELECTRICAL DIAGRAM

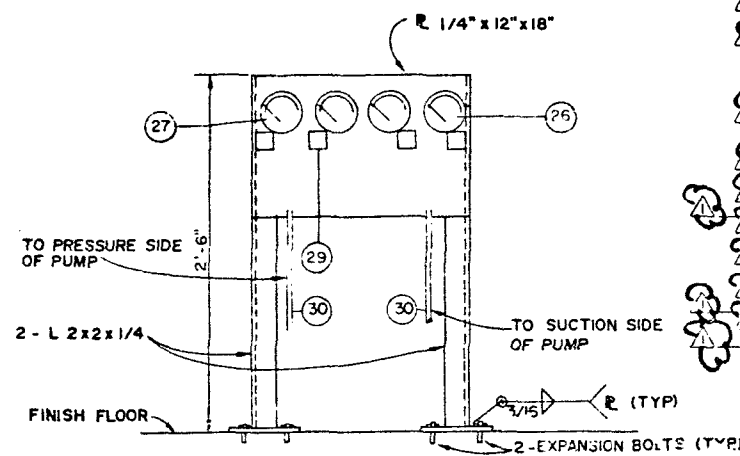
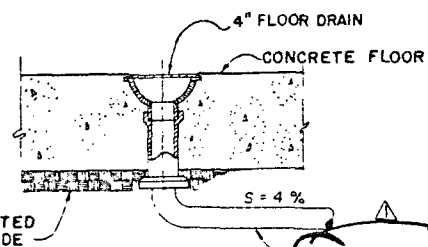
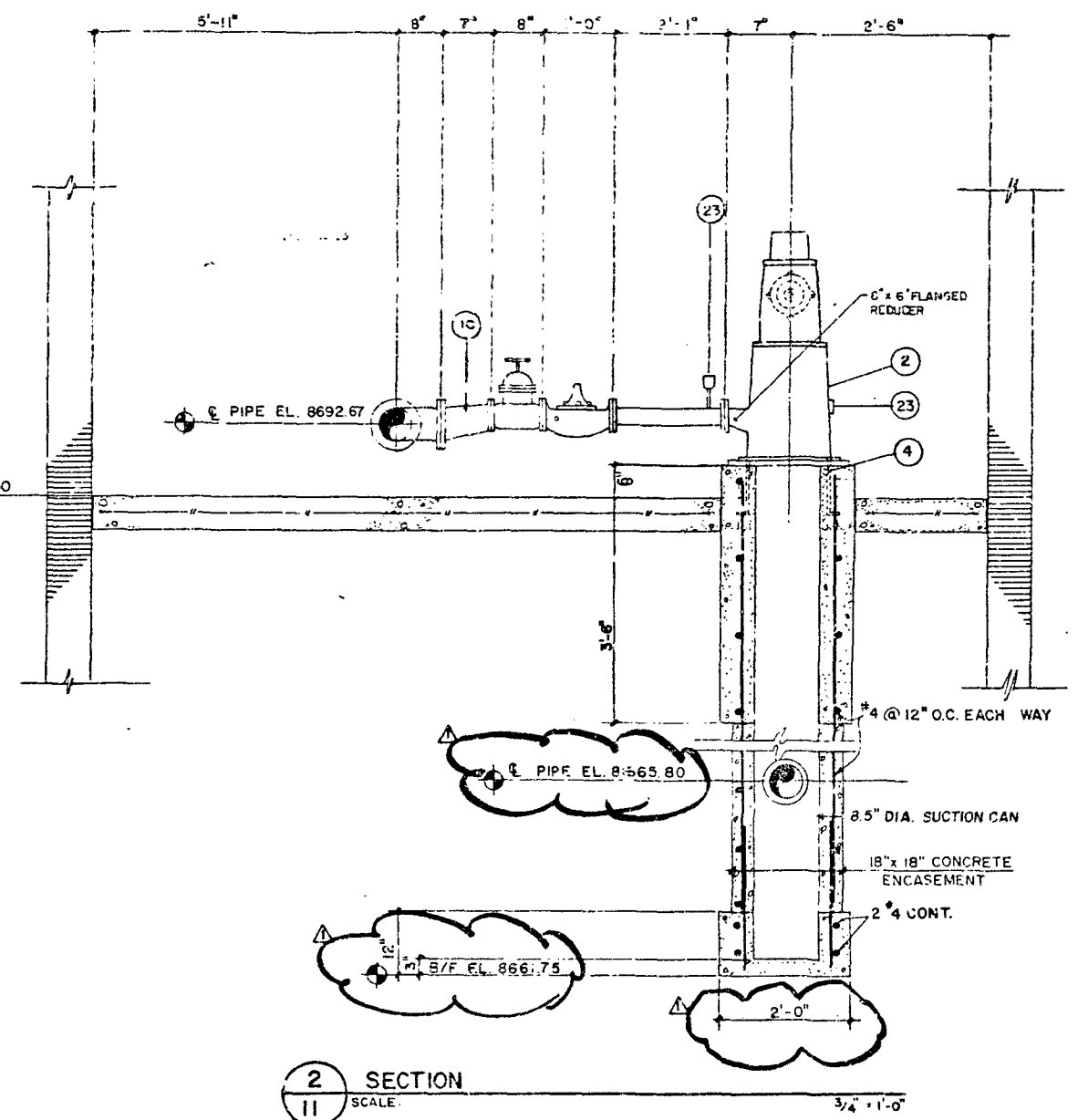
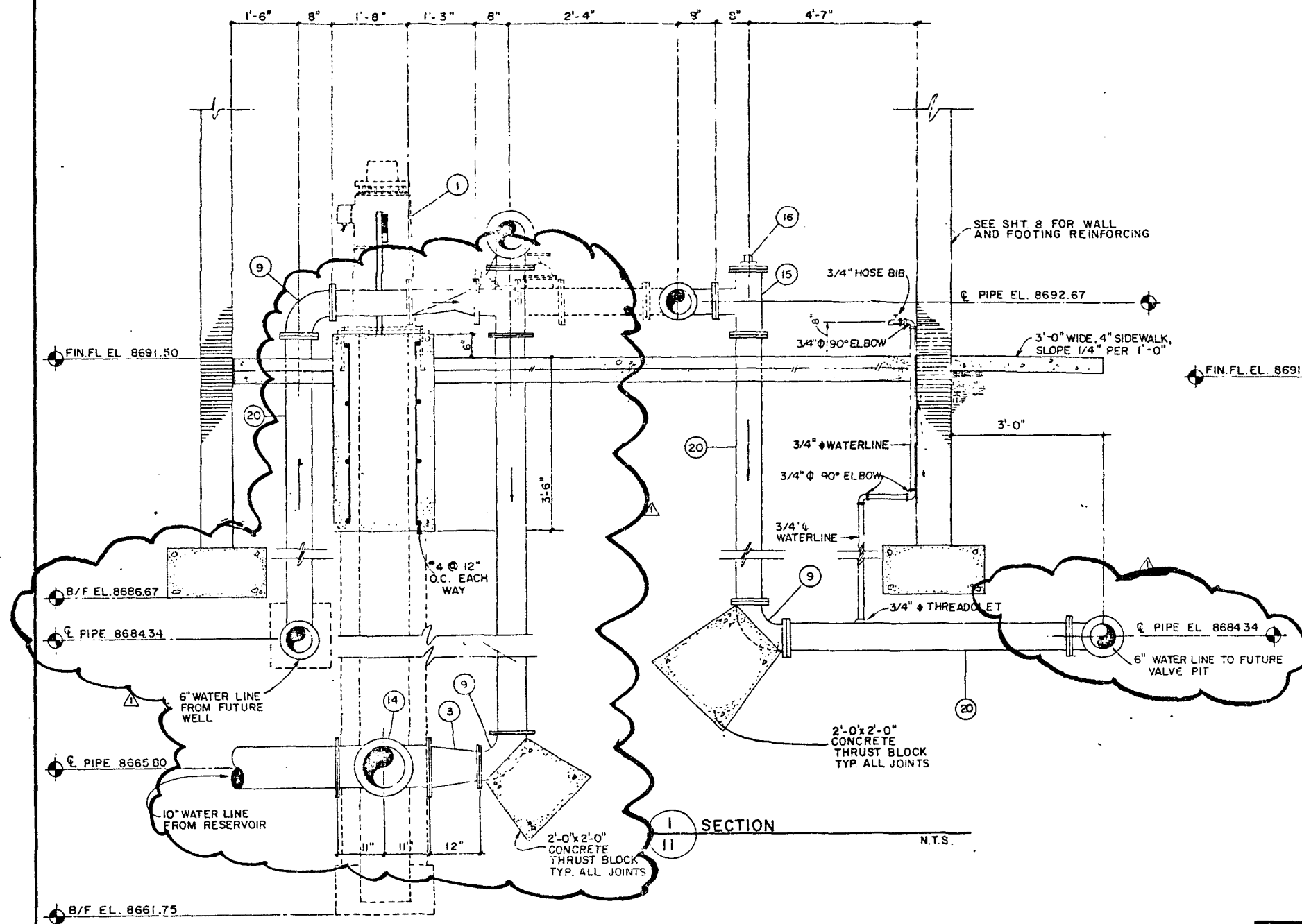
CHECKED: _____
A.E. APPROVED: _____
DATE: _____

LA-UU-R-0 9 14



DATE: 11.16.2011

[illegible]



SCHEDULE OF EQUIPMENT	
1.	1000 GPM Pump Assembly w/Electric Motor
2.	100 GPM Pump Assembly w/In-line Motor (Right Angle Drive)
3.	10" x 6" Reducer
4.	4-7/8" x 1'-0" Anch. Bolts Spaced as per Pump Manufacturers Specifications
5.	3" Diaphragm Style Check Valve w/150# flgs
6.	6" Rubber Flapper Type Check Valve w/150# flgs
7.	Omitted
8.	5" Pump Control Valve w/150# flgs
9.	6" 90° Elbow w/150# flgs
10.	8" x 6" Eccentric Reducer w/150# flgs
11.	Omitted
12.	6" x 5" Eccentric Reducer w/150# flgs
13.	Omitted
14.	10" Cross w/150# flgs
15.	6" Tee w/150# flgs
16.	6" Down Flow Water Meter
17.	6" Pressure Style Coupling
18.	3" Pressure Style Coupling
19.	2" Pipe
20.	4" Pipe
21.	3" Pipe
22.	1" Air and Vacuum Release Valve w/Co'd. Stop
23.	Adjustable Pipe Support
24.	Gauge Display Stand
25.	Suction Pressure Gauge
26.	Discharge Pressure Gauge
27.	Manual Switch (Low Suction Cut-Off)
28.	Manual Switch (High Discharge Shut-Off)
29.	1/2" Copper Tubing
30.	Flange
31.	Engine Exhaust Pipe
32.	Clutch w/Adjustable Coupling
33.	Gunline Engine w/1000 GPM
34.	Start for Gunline Engine
35.	Gunline Engine w/1000 GPM
36.	Gunline Engine w/1000 GPM
37.	Gunline Engine w/1000 GPM
38.	Gunline Engine w/1000 GPM
39.	Gunline Engine w/1000 GPM
40.	Gunline Engine w/1000 GPM
41.	Gunline Engine w/1000 GPM
42.	Gunline Engine w/1000 GPM
43.	Gunline Engine w/1000 GPM
44.	Gunline Engine w/1000 GPM
45.	Gunline Engine w/1000 GPM
46.	Gunline Engine w/1000 GPM
47.	Gunline Engine w/1000 GPM
48.	Gunline Engine w/1000 GPM
49.	Gunline Engine w/1000 GPM
50.	Gunline Engine w/1000 GPM

Richard C. Bryant

APPROVED
U.S. DEPT. OF AGRICULTURE FOREST SERVICE

DATE: 11/29/30

AS-BUILTS

CHANGES TO INLET PIPING & SCHEDULE OF EQUIPMENT

REVISIONS

BY: CK

DATE: 11/29/30

UNITED STATES
DEPARTMENT OF ENERGY
LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO

WATER STORAGE POND, TA-57
PUMP HOUSE PIPING DETAILS

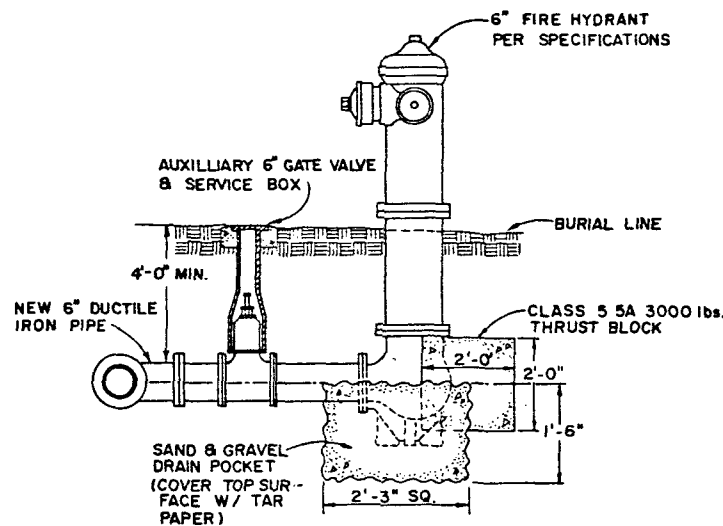
SCALE: 1/2" = 1'-0"

DATE: 11/29/30

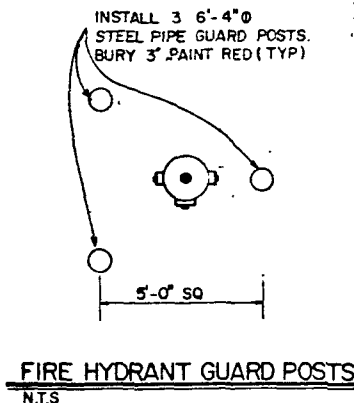
DRAWING NO. 11

14

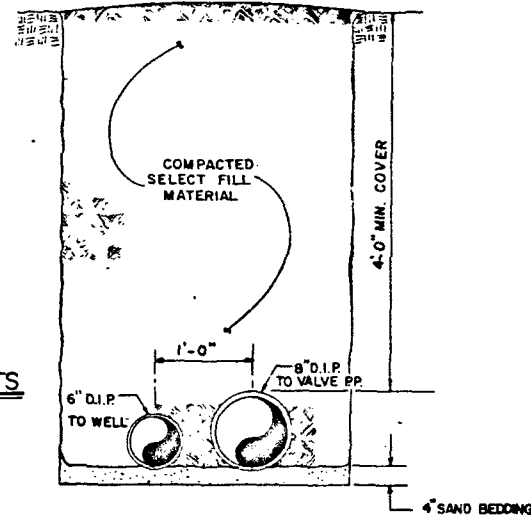
NOTE: 3 POST ON 2 FIREHYDRANTS
2 POST ON 1 FIREHYDRANT
EXTRA POST USED TO PROTECT
J BOX AND AIR VENT BOX.



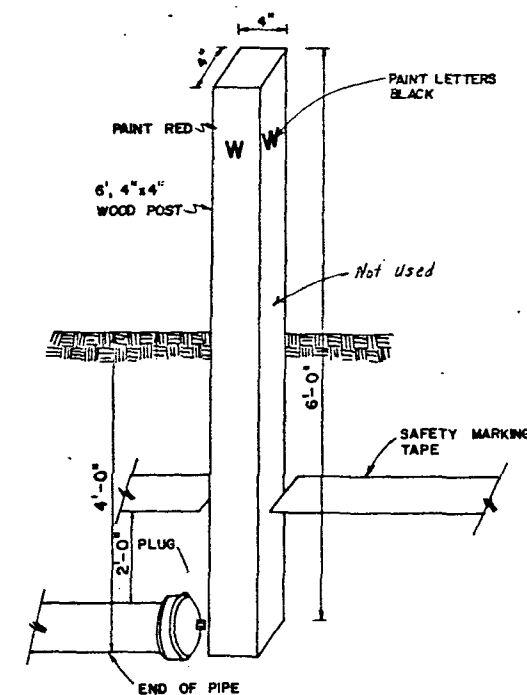
FIRE HYDRANT SETTING WITH BLOCKING
N.T.S.



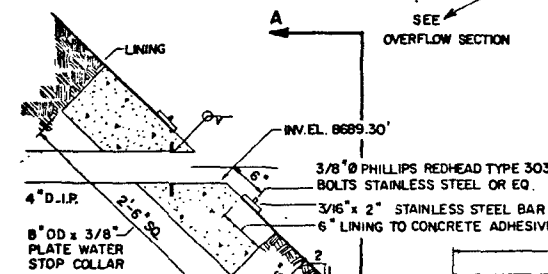
FIRE HYDRANT GUARD POSTS
N.T.S.



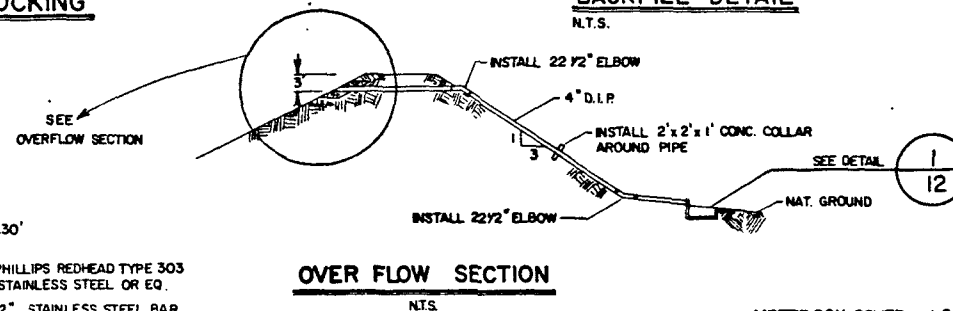
**PIPE BEDDING
BACKFILL DETAIL**
N.T.S.



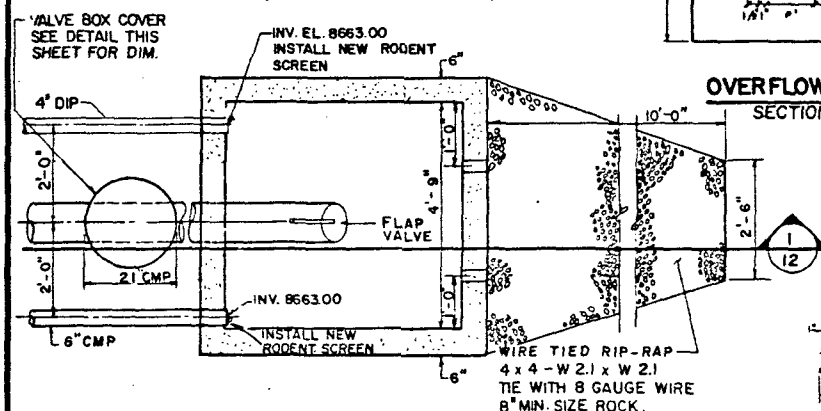
4"x4"x6'-0" END OF PIPE MONUMENT
WOOD POST BURIED TO INVERT
SCALE: 1 1/2" = 1'-0"



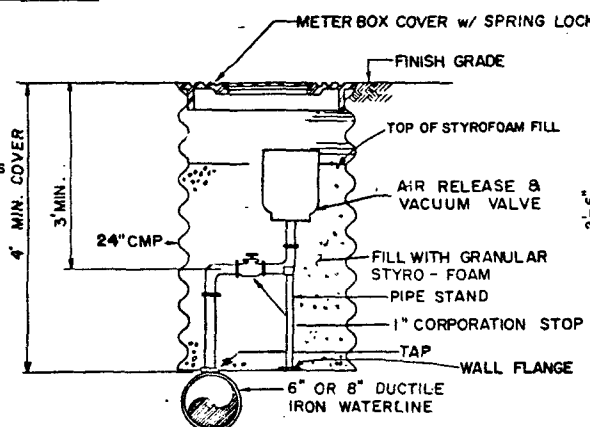
3 OVERFLOW SECTION
1" = 1'



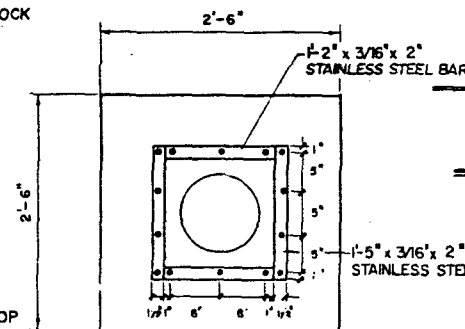
OVER FLOW SECTION
N.T.S.



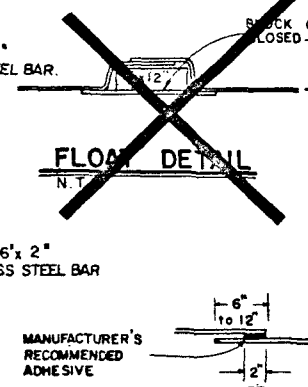
**OVERFLOW PLAN
SECTION A-A**



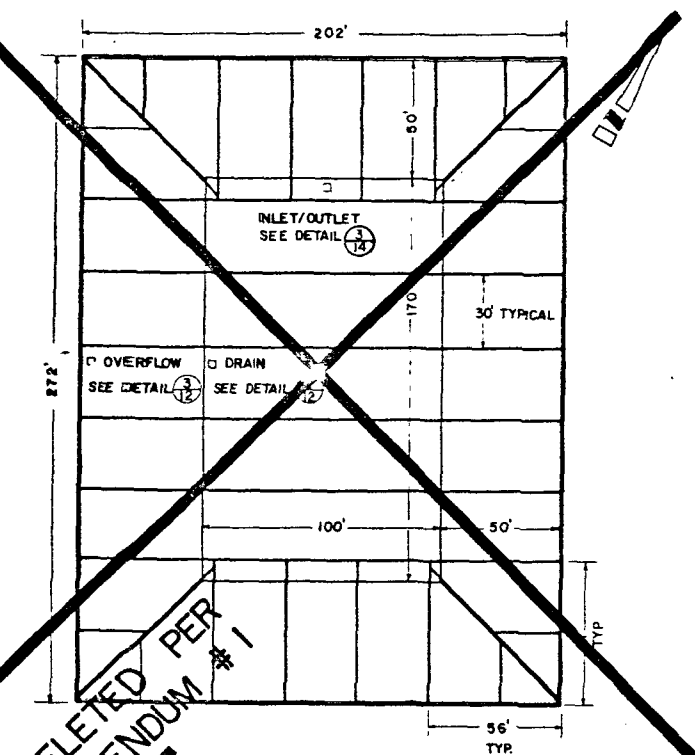
1" AIR RELEASE & VACUUM VALVE
N.T.S.



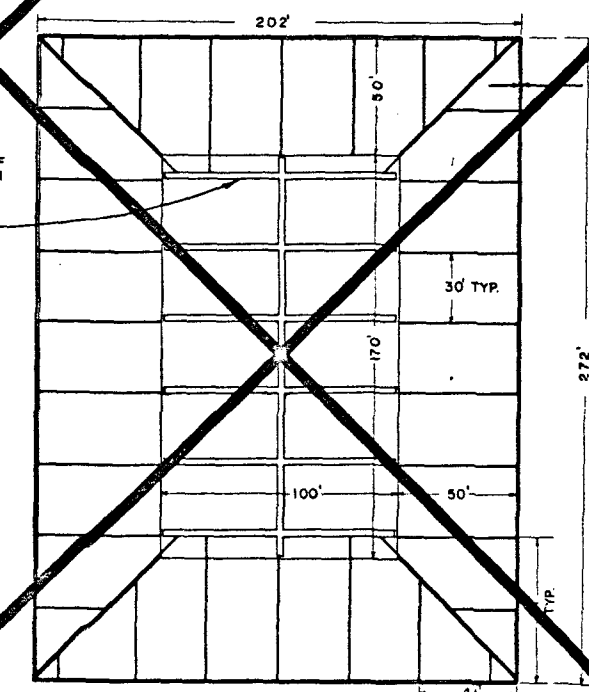
EMERGENCY DRAIN PLAN
1" = 1'



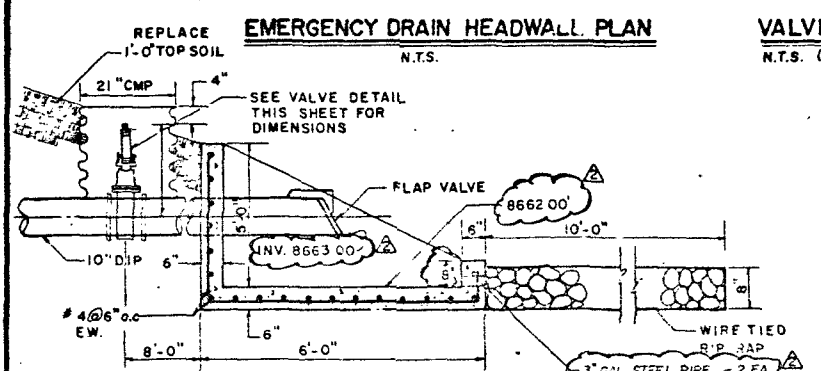
TYPICAL SPLICES
N.T.S.



**DELETED PER
ADDENDUM #1**
POND LINER SPLICE PATTERN
SCALE: 1" = 40'

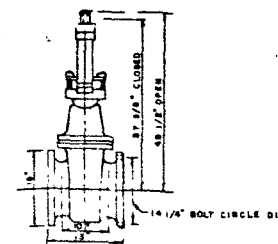


POND ROOF FLotation PATTERN
SCALE: 1" = 40'

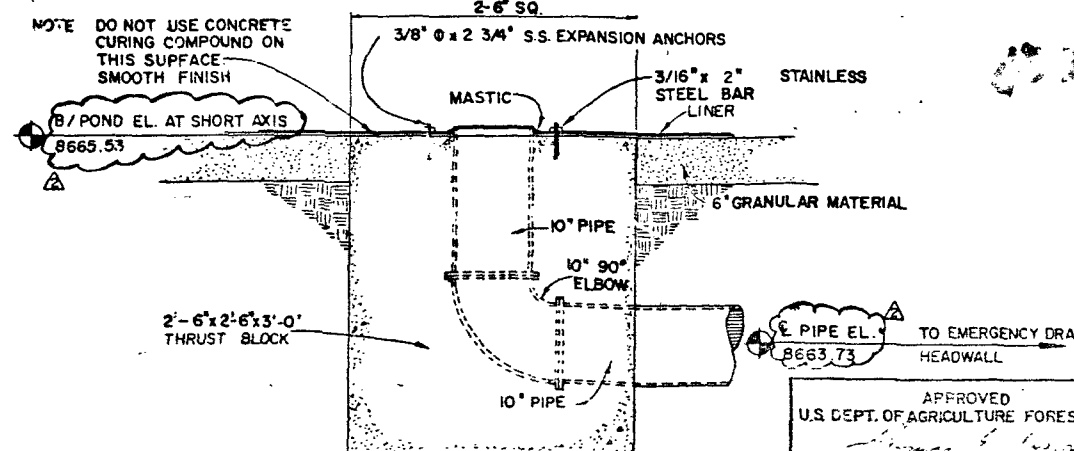


EMERGENCY DRAIN HEADWALL PLAN
N.T.S.

VALVE BOX COVER DETAIL
N.T.S. (NEENAH TYPE R-1693 OR EQUAL)

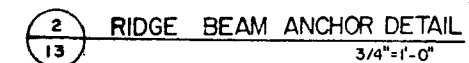
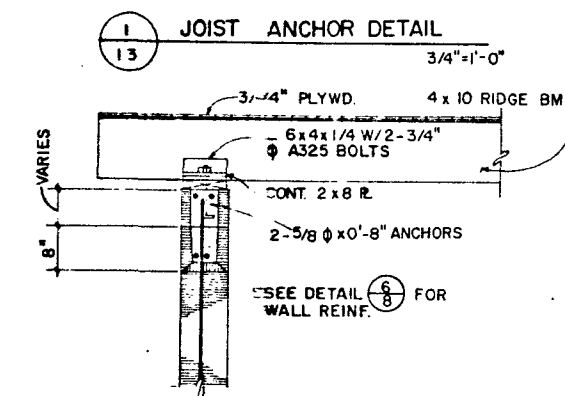
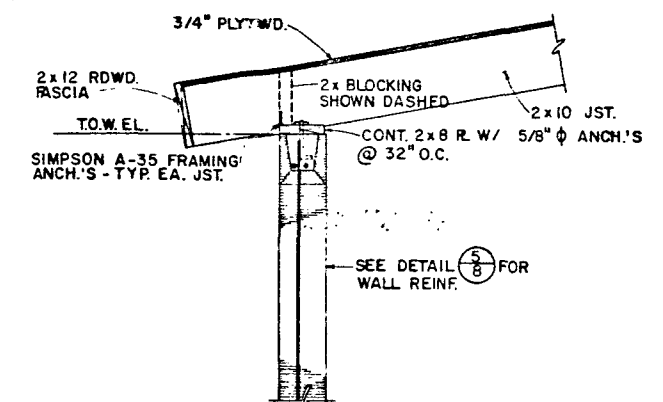


GATE VALVE DETAIL
N.T.S.

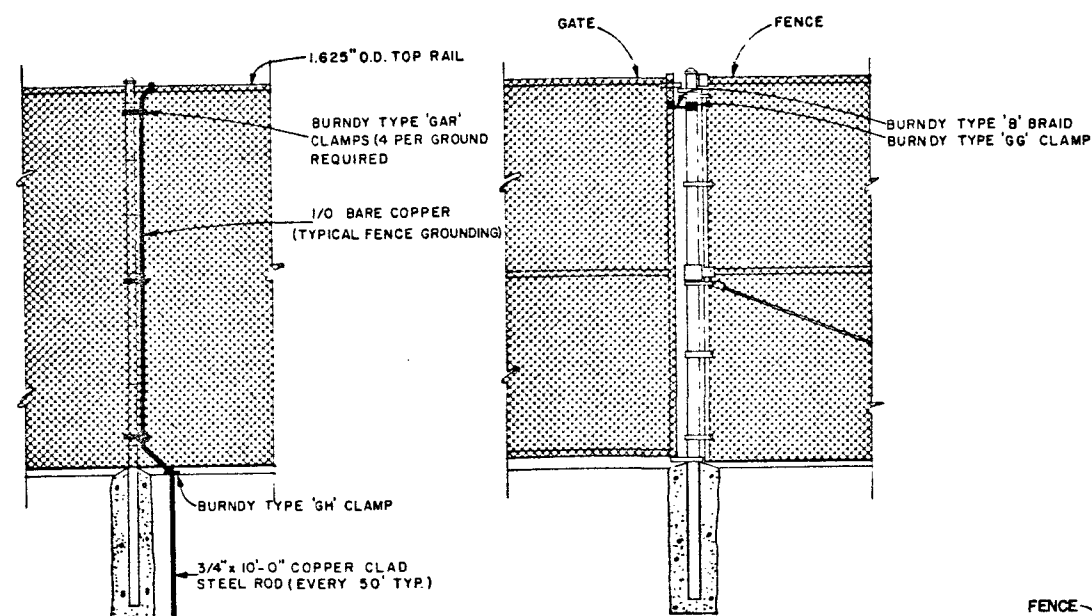


2 EMERGENCY DRAIN SECTION
N.T.S.

AS-BUILTS		MH JV	
CHANGES: INV. EL. BADD STL PIPE @ 1' POND & PIPE EL. @ 2'		VH FDL	
REVISED DETAILS 1/12 AND 2/12		BY CK	
NO. DATE		REVISIONS	
UNITED STATES DEPARTMENT OF ENERGY LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO			
WATER STORAGE POND, TA-57			
SECTIONS & DETAILS			
APPROVED U.S. DEPT. OF AGRICULTURE FOREST SERVICE		APPROVED	
DATE		DATE	
DRAWING NO.		SHEET	
LA-UU-120		12	



N.T.S.



N.T.S.

10'-0" ON CENTER

TWO 10'-0" GATE LEAVES

10'-0" ON CENTER

LOCKING DEVICE

HAND HOLE

550 O.D. PIPE

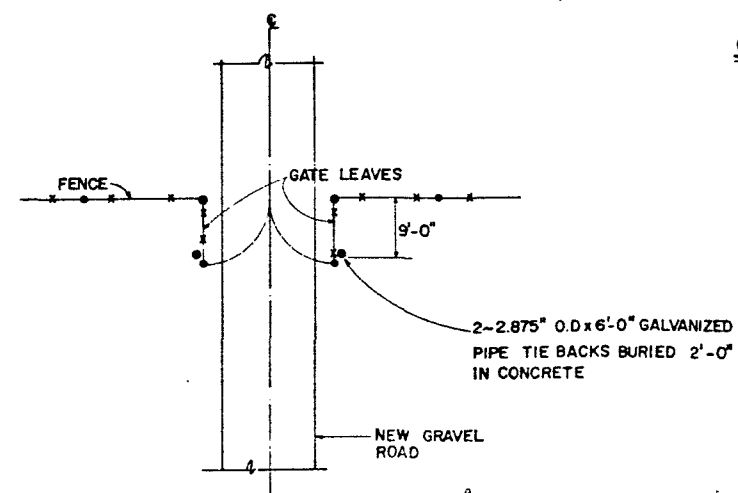
190" O.D. GALVANIZED PIPE

18"

3'-6"

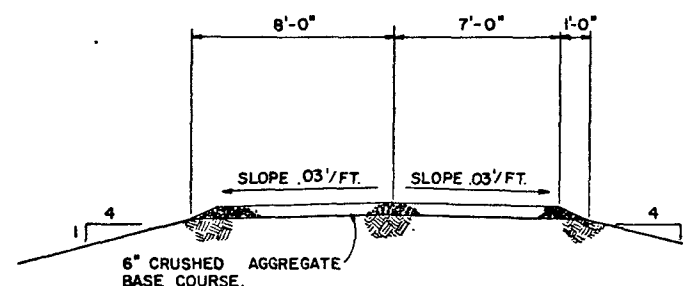
18"

N.T.S.

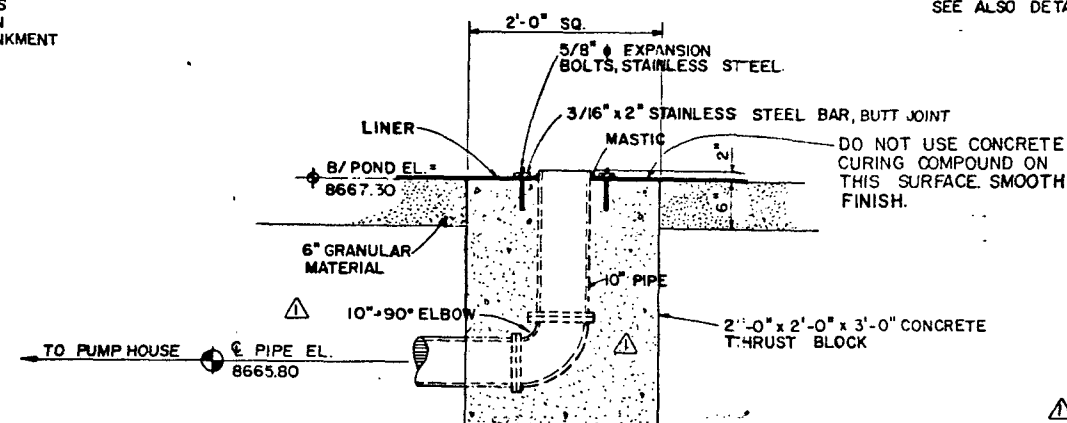
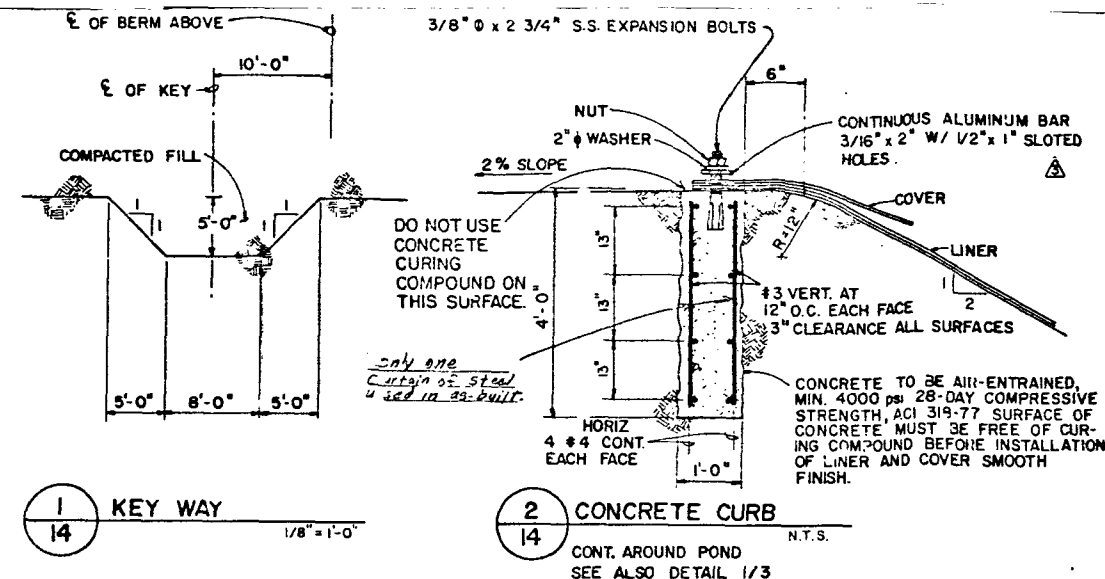
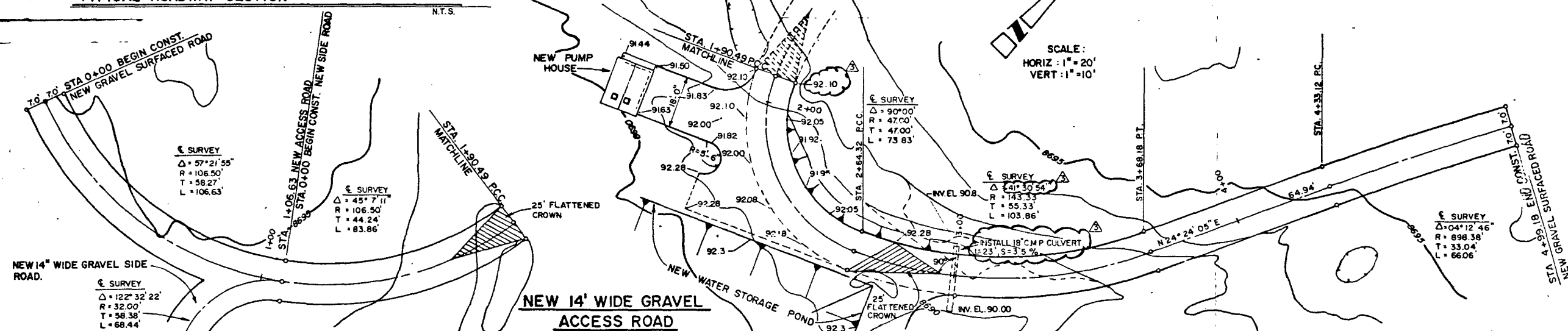


NTS

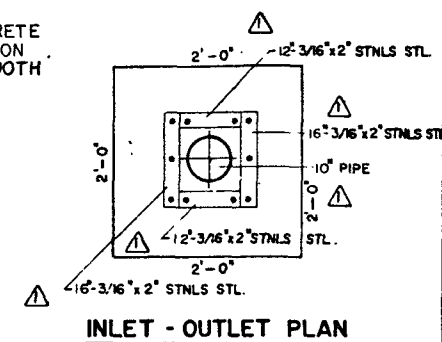
[illegible]



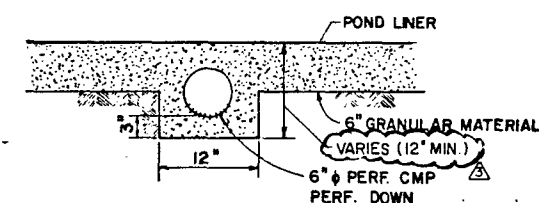
TYPICAL ROADWAY SECTION



3 INLET / OUTLET SECTION



INLET - OUTLET PLAN



4 UNDERDRAIN
14 NTS

ASBEST

Richard C Bryant

APPROVED
U.S. DEPT. OF AGRICULTURE FOREST SERVICE
Thomas E. Elton
Special Agent in Charge
DATE: *June 15, 1964*

1	2	3	4	5	6	7	8	9	10	11	12	
AS - <u>QUILTS</u>												
1	2	3	4	5	6	7	8	9	10	11	12	
1/4/81	CHANGES IN NOTES @ 2-4 B & 4-12 : EL & DELTA @ GRAVEL RD, CULV SIZE							MM	JV			
2-26-81	REVISED DETAILS 2/4 AND 4/4 AND CORRECTED ROAD GRADE							VM	FDL			
3/3/81	CHANGES TO INLET/OUTLET P.P.I.N.G							PJ	JV			
NO	DATE		REVISIONS									
UNITED STATES DEPARTMENT OF ENERGY												
LOS ALAMOS AREA OFFICE - LOS ALAMOS, NEW MEXICO												
DRAWN								BLS		MM		
CHECKED												
A.E. APPROVED												
DESIGN												
PROJ. ENGR.												
CHIEF ENGR.												
SCALE								NOTED				
DATE								1/28/80				
SUBMITTED				RECOMMENDED				APPROVED				
<i>Richard C. Boyant</i>				<i>[Signature]</i>				<i>[Signature]</i>				
- PROJECT ENGINEER				- PROJECT ENGINEER				- PROJECT ENGINEER				
 SOUTH ENGINEERING CORPORATION SOUTH ENGINEERING CORPORATION SOUTH ENGINEERING CORPORATION DRAWING NO. LA-UU-140 SHEET 14 OF 14												