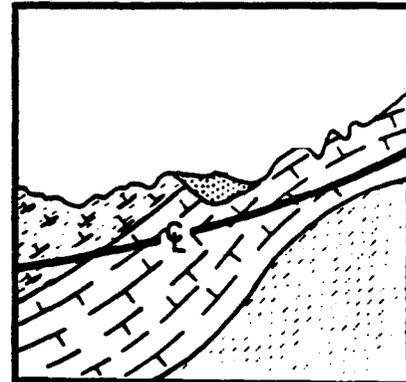
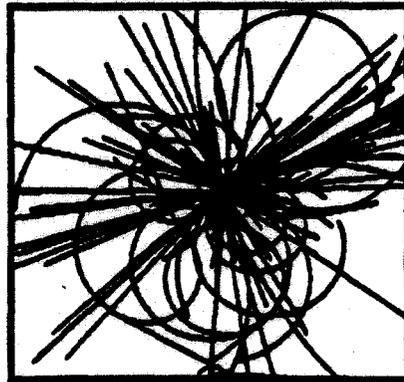


# Data Report for Vibration Monitoring Holes VE3.5 and VE3.5A



Prepared by:  **The Earth Technology Corporation**  
Long Beach, California

Prepared for:  **RTK** a joint venture  
Oakland, California

## FOREWORD

The goal of the geotechnical studies at the Texas Superconducting Super Collider (SSC) site is to allow the geologist and engineer to build their level of knowledge and confidence about the geologic structures and geotechnical properties of the site materials to the point at which there remains only a realistically small risk of encountering geotechnical conditions during construction that would significantly increase construction costs or delay construction schedules. To do this, a characterization program has been designed to meet the following objectives:

- To confirm the site's suitability and optimize the ring location (the "footprint") and hall positions on the ring
- To provide data for a preliminary structural design
- To provide a rational framework within which construction contracts and schedules can be formulated
- To maximize the use of the site-specific data already gathered by the proposer.

The geotechnical program to meet these objectives has been divided into the following three phases of study:

- Footprint location data (the present phase)
- Global data (planned)
- Structure-specific data (planned).

The primary purpose of the present footprint location phase is to quickly assess whether individual components of the collider footprint, or the entire footprint, need to be relocated because of geotechnical constraints. Accordingly, the following areas have been assessed:

- Areas on the western side of the footprint where the geologic structure brings the Eagle Ford Shale close to the depth of the tunnel and experimental halls, thus presenting potential constraints due to weak, deformable rock.
- Areas where the tunnel placement is shallow and/or there are nearby sources of vibration such as major highways and railroads that may represent a problem due to unacceptable vibrations at tunnel depth.
- Zones of potentially poor rock quality and high water inflow in the rock that should be avoided for the experimental hall excavations.

This is one in a series of data reports prepared for the footprint phase of geotechnical characterization at the SSC site. Each data report includes the results of both field and laboratory tests for a specific drilling and sampling site. Interpretations of these data will be covered in topical reports, including three planned reports, as follows:

- Train-, traffic-, and quarry-caused vibrations
- Geomechanical properties of the Eagle Ford Shale
- Structure and stratigraphy of the near-cluster.

Future planned program phases--global and structure-specific data collection--will concentrate on (1) evaluating ring areas where few geotechnical data are currently available and (2) conducting more detailed studies at the sites of the injector and experimental halls.

# DATA REPORT

**Site Designator: VE3.5**

**Objective:** drill and case a boring to be used for monitoring vibrations at tunnel depth due to traffic on the railroad.

**Hole No. VE3.5**

**Location:** North ~ 302,080 feet

**East** ~ 2,210,160 feet

**Surface Elevation** ~ 550 feet

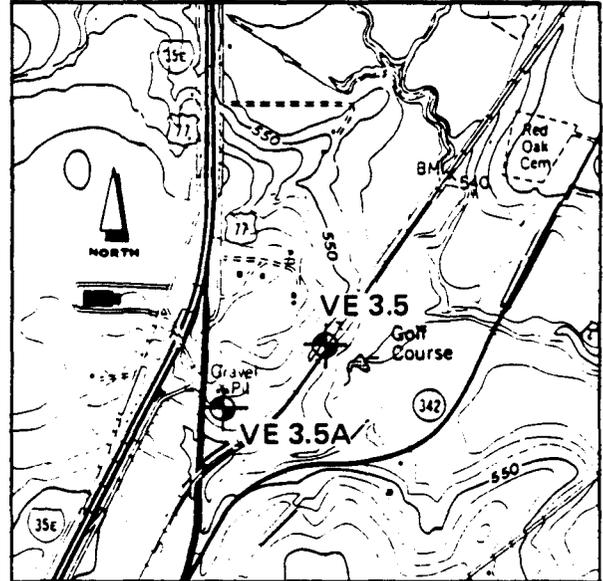
**Hole No. VE3.5A**

**Location:** North 301,759.1 feet

**East** 2,209,062.7 feet

**Surface Elevation** 569.4 feet

VE3.5 and VE3.5A are located on Red Oak Golf Course, adjacent to railroad track. The borings are located where the proposed collider tunnel passes beneath the Union Pacific (Missouri-Kansas-Texas Line) railroad tracks on the northern side of the site.



<b>Scope and Schedule VE3.5:</b>	<b>Air-Water Rotary Wash Boring</b>	June 2, 1989
	<b>Wire-line Logging</b>	June 2, 1989
	<b>Casing Installed</b>	June 2, 1989
	<b>Plugging and Abandonment</b>	(pending)
<b>VE3.5A:</b>	<b>Air-Water Rotary Wash Boring</b>	June 9, 1989
	<b>Wire-line Logging</b>	June 9, 1989
	<b>Casing Installed</b>	June 9, 1989
	<b>Plugging and Abandonment</b>	(pending)

## Hole No. VE3.5

### **Conditions Encountered:**

**Total Hole Depth** 83.0 feet

**Soil** 0.0 to 7.5 feet

**Austin Chalk** 7.5 to 83.0 feet  
(See lithologic log, Appendix A)

**Geophysical Logging:** (See wire-line logs, Appendix B)

Spontaneous Potential  
Normal Resistivity (short)  
Guarded Resistivity (long)  
Natural Gamma  
Compensated Density (caliper)  
Sonic Velocity (full wave)

**Hole Status:** Casing cemented in, but not yet plugged for abandonment.  
(See as-built drawing/cementing report, Appendix C)

**Hole No. VE3.5A**

**Conditions Encountered:**

**Total Hole Depth** 105.0 feet  
**Soil** 0.0 to 3.0 feet  
**Austin Chalk** 3.0 to 105.0 feet  
(see Lithologic Log, Appendix A)

**Geophysical Logging:** (See wire-line logs, Appendix B)

Spontaneous Potential  
Normal Resistivity (short)  
Guarded Resistivity (long)  
Natural Gamma  
Compensated Density (caliper)  
Sonic Velocity (full wave)

**Hole Status:** Casing cemented in, but not yet plugged for abandonment.  
(See as-built drawing/cementing report, Appendix C)

**APPENDIX A**  
**LITHOLOGIC LOGS**



## LOG OF BORING

**BORING NO:** VE 3.5 PG 2 OF 3

**PROJECT:** TEXAS SSC SITE

**LOCATION:** N~302,080 feet

**CLIENT:** The Earth Technology Corporation

E~2,210,160 feet

**TASK NO.:** 11

**GROUND EL:** ~550 feet

**DATE:** 6/2/89

**TYPE:** Air/Water Rotary **CASED TO:** N/A

**CONTRACTOR:**

SwL (89-192)

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE		PERCENT REC.	PERCENT ROD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	SAMPLE LEGEND	WATER INFORMATION	
			TOP	BOT.					S = SPLIT SPOON T = 2" THIN WALL TUBE U = 3" THIN WALL TUBE C = NX ROCK CORE	(see page 1 of 3)	
									DESCRIPTION OF STRATUM		
-45	[Brick Pattern]								LIMESTONE (Austin Chalk), soft to medium, fresh, occasional shale layers, light gray to dark gray		
-50	[Brick Pattern]										
-55	[Brick Pattern]										
-60	[Brick Pattern]										
-65	[Brick Pattern]										
-70	[Brick Pattern]										
-75	[Brick Pattern]										
-80	[Brick Pattern]										
											Bottom of Exploration at 83.0'

**DRILLING GEOLOGIST**     S. Wood     **ASSISTANT**     N/A

## LOG OF BORING

<b>PROJECT:</b> TEXAS SSC SITE <b>CLIENT:</b> The Earth Technology Corporation <b>TASK NO.:</b> 11	<b>BORING NO:</b> VE 3.5 PG 3 OF 3 <b>LOCATION:</b> N~302,080 feet E~2,210,160 feet <b>GROUND EL:</b> ~550 feet
--	--

**DATE:** 6/2/89    **TYPE:** Air/Water Rotary CASED TO: N/A    **CONTRACTOR:** SwL (89-192)

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE		PERCENT REC.	PERCENT ROD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	SAMPLE LEGEND	WATER INFORMATION
			TOP	BOT.					S = SPLIT SPOON T = 2" THIN WALL TUBE U = 3" THIN WALL TUBE C = NX ROCK CORE	(see page 1 of 3)
			DESCRIPTION OF STRATUM							
- 85										
- 90										
- 95										
- 100										
- 105										
- 110										
- 115										
- 120										
									NOTES:  1. Grouted in 4" diameter PVC casing with protective cover  2. Plugged PVC casing with cement grout on	

**DRILLING GEOLOGIST**           S. Wood                **ASSISTANT**           N/A

# LOG OF BORING

PROJECT: TEXAS SSC SITE CLIENT: The Earth Technology Corporation TASK NO.: 11	BORING NO: VE3.5A PG 1 OF 3 LOCATION: N 301,759.1 feet E 2,209,062.7 feet GROUND EL: 569.4 feet
---	--

DATE: 6/9/89    TYPE: Air/Water Rotary CASED TO: N/A    CONTRACTOR: SwL (89-192)

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE		PERCENT REC.	PERCENT ROD.	STANDARD PENETRATION TEST PER 6 INCHES		HAND PEN. TSF.	SAMPLE LEGEND	WATER INFORMATION
			TOP	BOT.						S = SPLIT SPOON T = 2" THIN WALL TUBE U = 3" THIN WALL TUBE C = NX ROCK CORE	Air rotary to 20', no ground water encountered, started water rotary at 20'
DESCRIPTION OF STRATUM											
	S1	0.0	1.5	100	-	5	10	-		CLAY, stiff, silty, embedded calcareous fragments, trace gravel, brown	
- 5										3.0	
										5.0	LIMESTONE (Austin Chalk), soft to medium, occasional clay layers, tan
- 10											LIMESTONE (Austin Chalk), soft to medium, fresh, occasional shale layers, light gray to dark gray
- 15											
- 20											
- 25											
- 30											
- 35											
- 40											
											SHALE, soft, traces of bentonite, light gray to dark gray 15.0'-15.5'

DRILLING GEOLOGIST S. Wood                      ASSISTANT N/A



# LOG OF BORING

PROJECT: TEXAS SSC SITE  
 CLIENT: The Earth Technology Corporation  
 TASK NO.: 11

BORING NO: VE3.5A PG 3 OF 3  
 LOCATION: N 301,759.1 feet  
 E 2,209,062.7 feet  
 GROUND EL: 569.4 feet

DATE: 6/9/89 TYPE: Air/Water Rotary CASED TO: N/A CONTRACTOR: SwL (89-192)

DEPTH IN FEET	SYMBOL	SAMPLE TYPE & NUMBER	DEPTH RANGE		PERCENT REC.	PERCENT ROD.	STANDARD PENETRATION TEST PER 6 INCHES	HAND PEN. TSF.	SAMPLE LEGEND	WATER INFORMATION
			TOP	BOT.					S = SPLIT SPOON T = 2" THIN WALL TUBE U = 3" THIN WALL TUBE C = NX ROCK CORE	see page 1 of 3
DESCRIPTION OF STRATUM										
-85	[Pattern]								LIMESTONE (Austin Chalk), soft to medium, fresh, occasional shale layers, light gray to dark gray	
-90	[Pattern]									
-95	[Pattern]									
-100	[Pattern]									
-105	[Pattern]									
-110	[Pattern]									
-115	[Pattern]									
-120	[Pattern]									
										Bottom of Exploration at 105.0'

DRILLING GEOLOGIST S. Wood ASSISTANT N/A

**APPENDIX B**

**WIRE-LINE LOGS**

## WIRE-LINE LOGGING PARAMETERS

Hole No. VE3.5

Log Measured From: Ground level

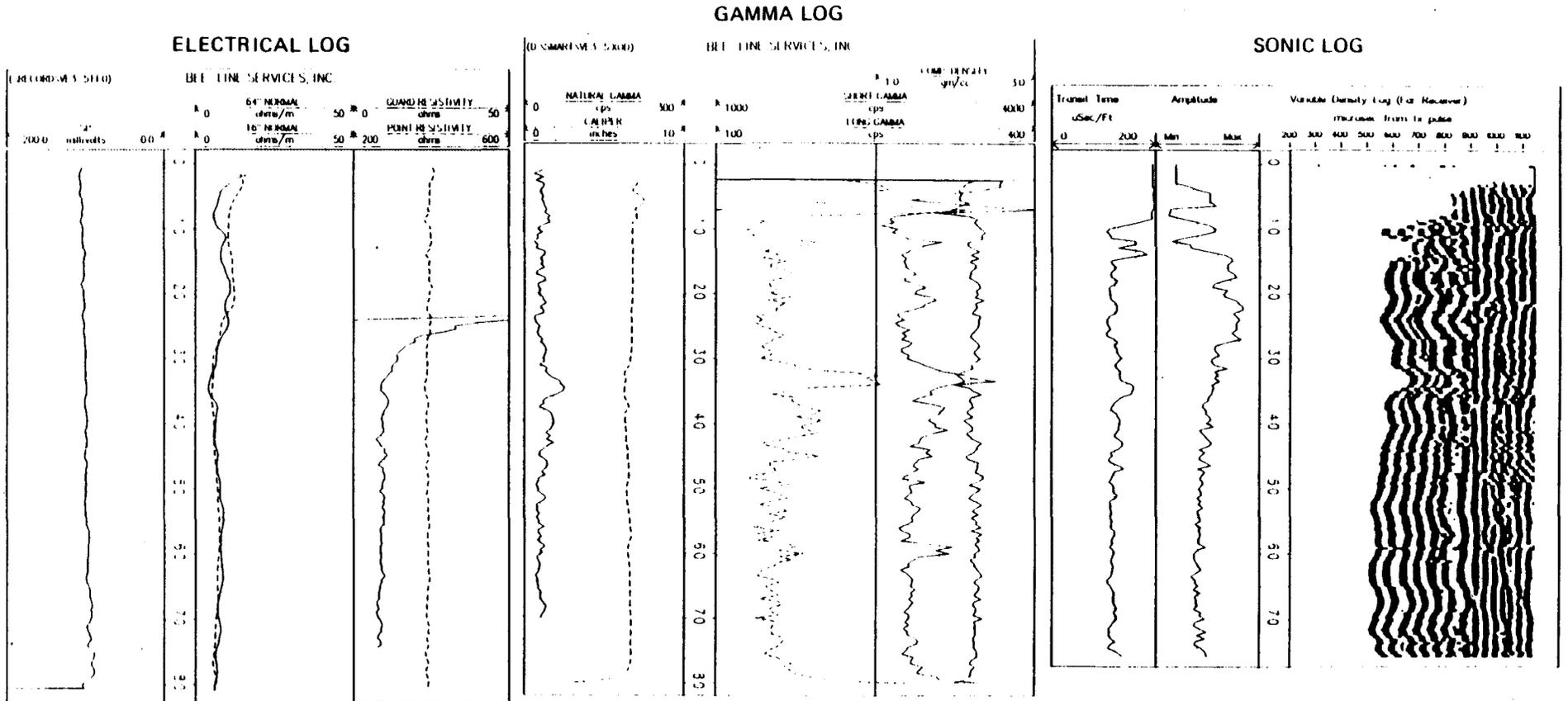
### Drilling Parameters

Depth 83 feet  
Bit Diameter 6.75 inches

<u>Logging Parameters</u>	<u>Electrical Log</u>	<u>Gamma Log</u>	<u>Sonic Log</u>
Date	June 2, 1989	June 2, 1989	June 2, 1989
Bottom Log Interval	81 feet	80 feet	75.8 feet
Top Log Interval	surface	surface	surface
Type of Fluid in Hole	boring fluid	boring fluid	boring fluid
Time Since Circulation Stop	30 minutes	30 minutes	30 minutes
Probe Type/S.N.	ALP-4979	XAP-4383	CLP-4877A
Module Type/S.N.	ALM-4979	XAM-4383	CLM-4877A
Logging Speed	30 feet/min.	15 feet/min.	7 feet/min.
Sample Interval	0.5 feet	0.5 feet	0.5 feet

Logged by: BEE-LINE SERVICES, INC.  
P.O. Box 2096  
Corsicana, TX 75151

VE 3.5 Wire-line logs run June 2, 1989. Surface elevation approximately 550 feet.



# WIRE-LINE LOGGING PARAMETERS

Hole No. VE3.5A

Log Measured From: Ground level

## Drilling Parameters

Depth 105 feet  
Bit Diameter 6.75 inches

## Logging Parameters

## Electrical Log

## Gamma Log

## Sonic Log

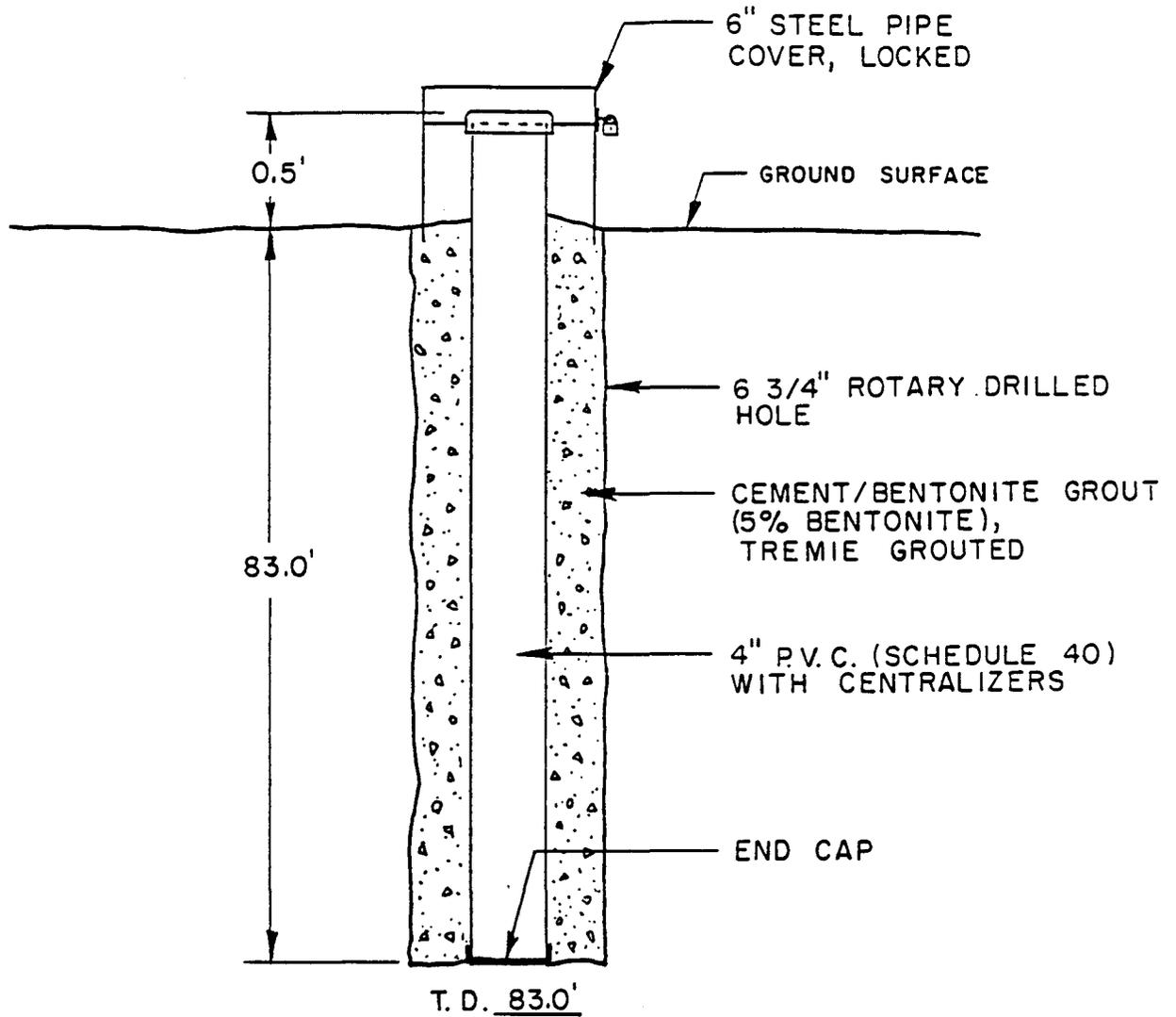
Date	June 9, 1989	June 9, 1989	June 9, 1989
Bottom Log Interval	103.5 feet	103 feet	96.9 feet
Top Log Interval	surface	surface	surface
Type of Fluid in Hole	boring fluid	boring fluid	boring fluid
Time Since Circulation Stop	30 minutes	30 minutes	30 minutes
Probe Type/S.N.	ALP-4979	XAP-4383	CLP-4877A
Module Type/S.N.	ALM-4979	XAM-4383	CLM-4877A
Logging Speed	15 feet/min.	15 feet/min.	8 feet/min.
Sample Interval	0.5 feet	0.5 feet	0.5 feet

Logged by: BEE-LINE SERVICES, INC.  
P.O. Box 2096  
Corsicana, TX 75151



**APPENDIX C**

**AS-BUILT DRAWING AND BOREHOLE PLUGGING REPORTS**

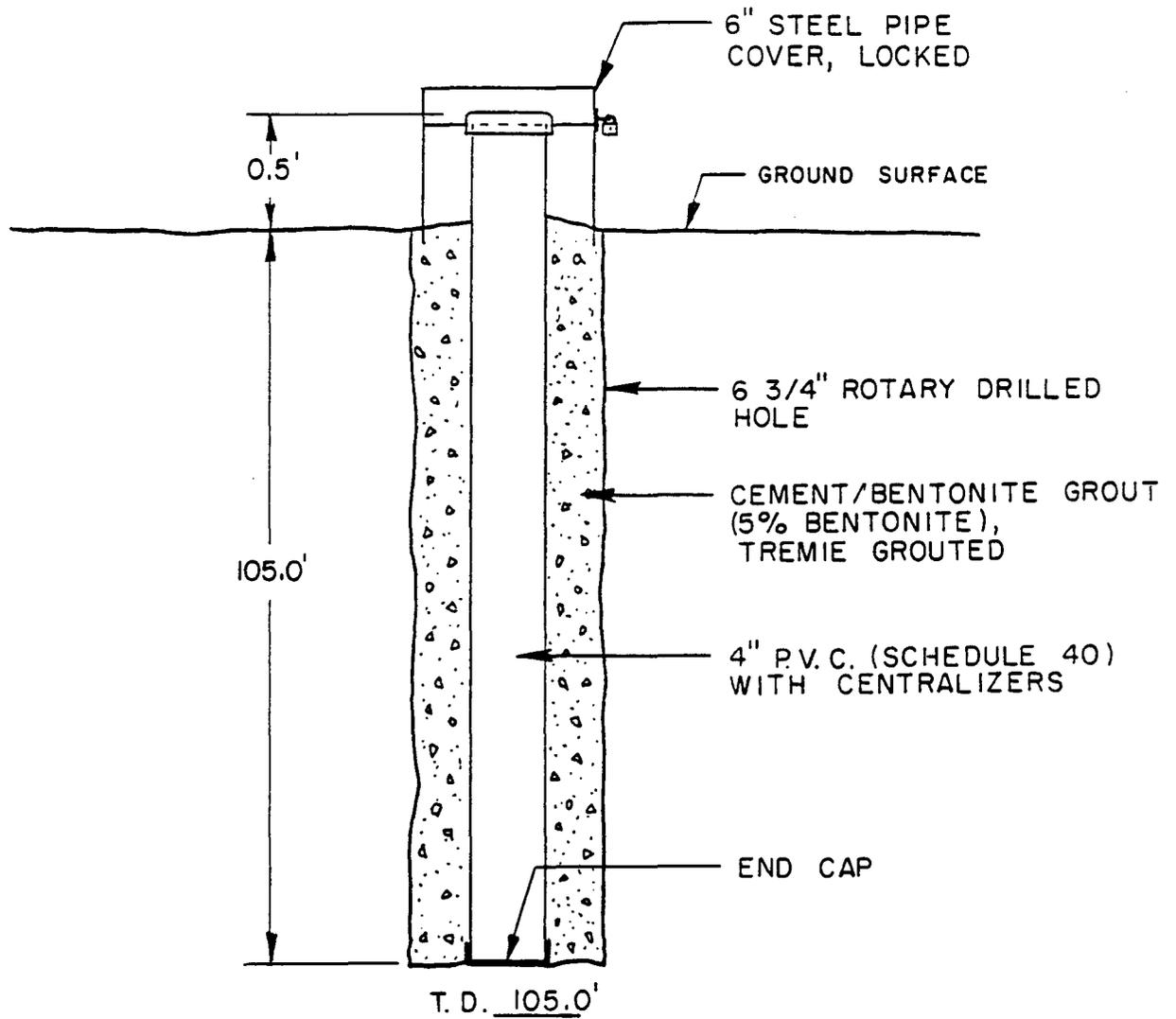


BORING NO. VE 3.5

AS-BUILT  
CASING INSTALLATION  
DIAGRAM

SWL 89 - 192 (R)





BORING NO. VE 3.5A

AS-BUILT  
CASING INSTALLATION  
DIAGRAM

SWL 89 - 192 (R)

## SSC BOREHOLE PLUGGING REPORT

TETC Project No. 87-888-0011

Task No. 11

Boring No. VE 3.5A

Texas Coordination Location:

N 301,759.1 feet

E 2,209,062.7 feet

Surface Elevation: 569.4 feet

Total Boring Depth: 105.0'

Date Drilled: 6-9-89

Date Plugged: (Pending)

Time Completed:

Remarks:

Drilling Geologist: Shawn D. Wood  
SwL Coordinator: Bruce Bailey  
SwL Report No. 89-192