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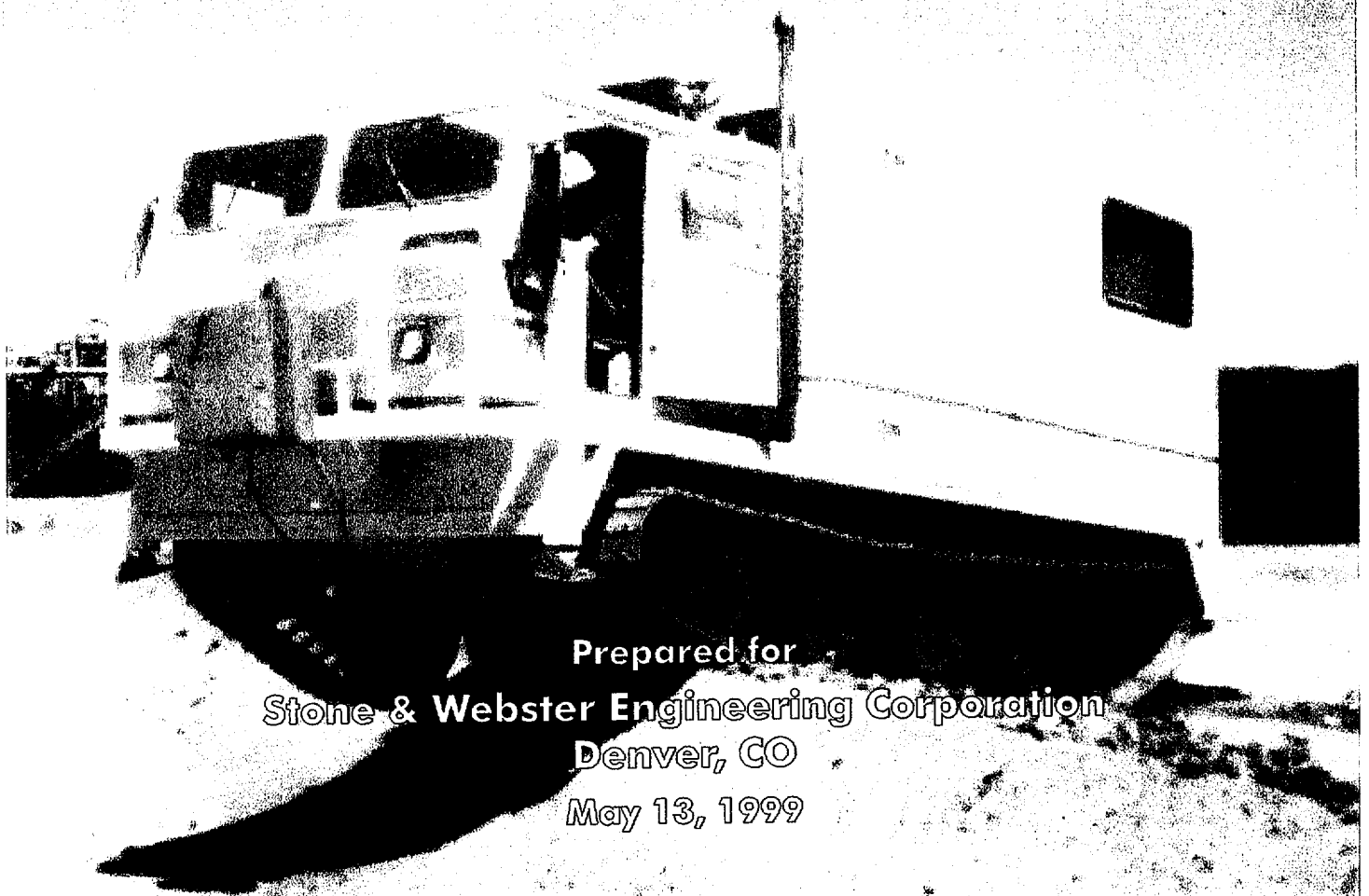
CONE PENTRATION TESTING REPORT

Private Fuel Storage Facility
Private Fuel Storage, LLC
Skull Valley, Utah
Volume I



Prepared for

Stone & Webster Engineering Corporation

Denver, CO

May 13, 1999

Geotechnical and Environmental Site Investigation Contractors

Salt Lake City • Vancouver • Edmonton • New Jersey • Los Angeles • San Francisco • Houston • Aiken, SC

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- Part 1

PRESENTATION OF CONE PENETRATION TESTING RESULTS

OF SOILS AT THE

PRIVATE FUEL STORAGE FACILITY
SKULL VALLEY, UTAH

Report No. 05996.02-G (P030) Rev. 1

Prepared for:

Stone & Webster Engineering Corporation

Prepared by:

ConeTec, Inc.
Salt Lake City, Utah

May 1999

Prepared by: _____ 5/27/99
ConeTec, Inc. Date

Reviewed by: _____ 5/27/99
ConeTec, Inc. Date

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1.0 INTRODUCTION

This report presents the results of an in situ testing program conducted at the proposed Private Fuel Storage Facility located in Skull Valley, Utah. The testing program consisted of dilatometer soundings (DMT) and cone penetration tests (CPT) to determine subsurface conditions at the proposed facility. At selected CPT locations resistivity, shear and compression wave velocities were also recorded. Due to the groundwater table being located approximately 100 feet below the maximum CPT depth, no pore pressure dissipations were performed in conjunction with this investigation.

The site investigation was conducted between April 23rd and April 30th, 1999, using ConeTec's track mounted CPT rig. Each of the CPT and DMT soundings was performed under the direction of Mr. Tom Annaratone of Stone & Webster Engineering Corporation. These services were performed in accordance with the requirements of Stone & Webster's Engineering Services Scope of Work (ESSOW) No. 05996.02-G005 (Rev. 0), as part of a detailed site investigation being conducted by Stone & Webster Engineering Corporation.

2.0 FIELD EQUIPMENT AND PROCEDURES

2.1 Electric Cone Testing

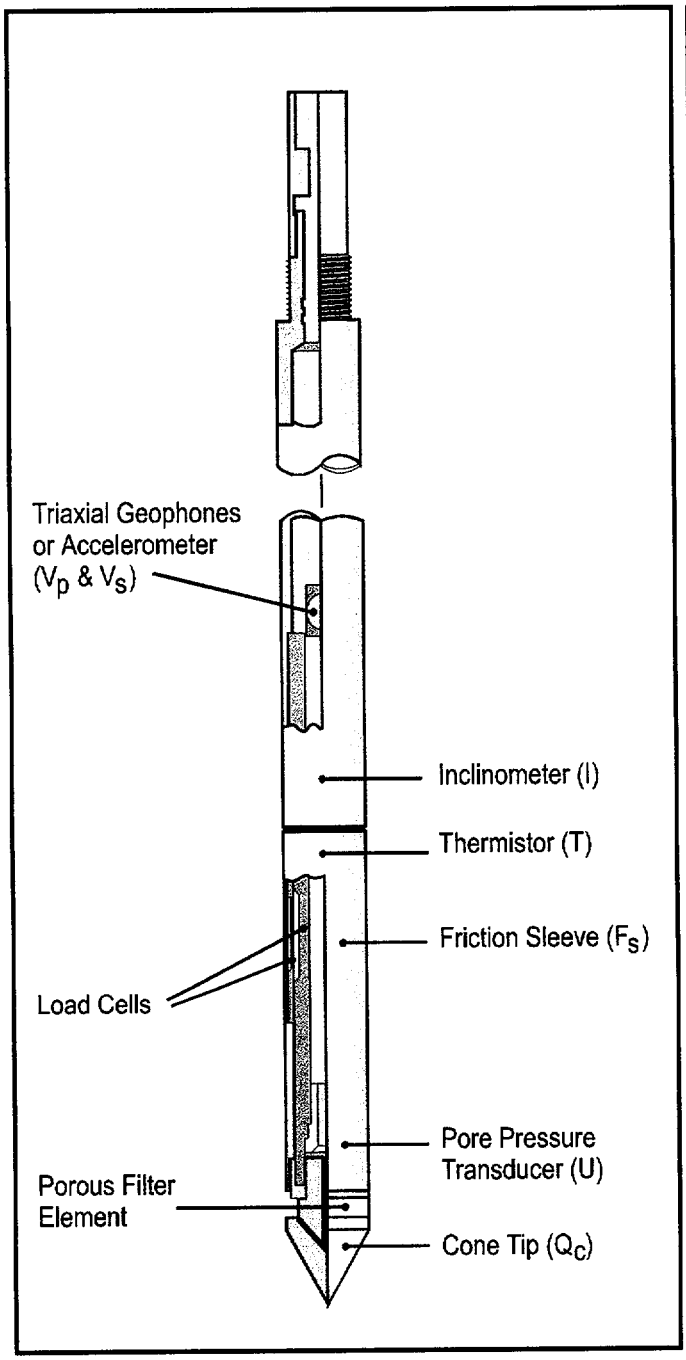
ConeTec, Inc. of Salt Lake City, Utah using an integrated electronic cone system, carried out the cone penetration tests (CPTUs). A 20-ton compression type cone, as shown in Figure 1, was used for all of the soundings. This cone has a tip area of 15-sq. cm. and friction sleeve area of 225-sq. cm. A piezometer element, 6 mm in thickness, is located immediately behind the cone tip. The compression cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85. The cone system used during the program was capable of recording the following parameters at 5-cm depth intervals:

- Tip Resistance (Qc)
- Sleeve Friction (Fs)
- Dynamic Pore Pressure (Ud)

The above parameters were printed simultaneously on a printer and stored on digital media for future analysis and reference.

The porous plastic pore pressure element was located directly behind the cone tip. Each of the elements was saturated in glycerin under vacuum pressure prior to penetration.

THE PIEZO CONE PENETROMETER



The electrical piezocone (CPTU) is the premier soil logging tool. The CPTU provides a rapid, reliable and economic means of determining soil stratigraphy, relative density, strength and equilibrium groundwater pressures.

ConeTec offers a choice of 2.5, 5, 10 and 15 ton tip (Qc) capacity cones. Our cones also have variable capacity friction sleeves (Fs) and pore pressure (U). The pore pressure can be measured at one of 2 locations, either on the face of the cone tip or behind the cone tip. Pore pressure dissipation data is recorded automatically.

All data is displayed in real time at the ground surface, facilitating the on site decision making process. Field data reduction, plotting and CPT interpretation can be carried out upon request.

Cone Dimensions

Cone Dimension	10 cm² Penetrometer	15 cm² Penetrometer
Diameter (cm)	35.7	43.7
Projected Tip Area (cm²)	10	15
Apex Angle (degrees)	60	60
Sleeve Surface Area (cm²)	150	225

Figure 1 - Cone Penetrometer

The CPT testing was performed in accordance with our standard operating procedures as contained within the quality assurance plan developed for this project. A copy of the Quality Assurance Plan is contained in Appendix L.

2.2 Seismic Cone Testing

At locations specified by SWEC, shear and compression wave measurements were conducted using the cone penetrometer. The seismic signals, monitored using a geophone mounted in the cone as shown in Figure 1, were recorded using a digital oscilloscope. The shear and compression wave measurements were recorded at 1-meter intervals. A schematic of the shear wave testing configuration is shown in Figure 2. A beam and sledge hammer was used for the seismic source. Normal reaction for the beam was provided by the dead weight of the rig, by placing the tires of the rig on the steel beam.

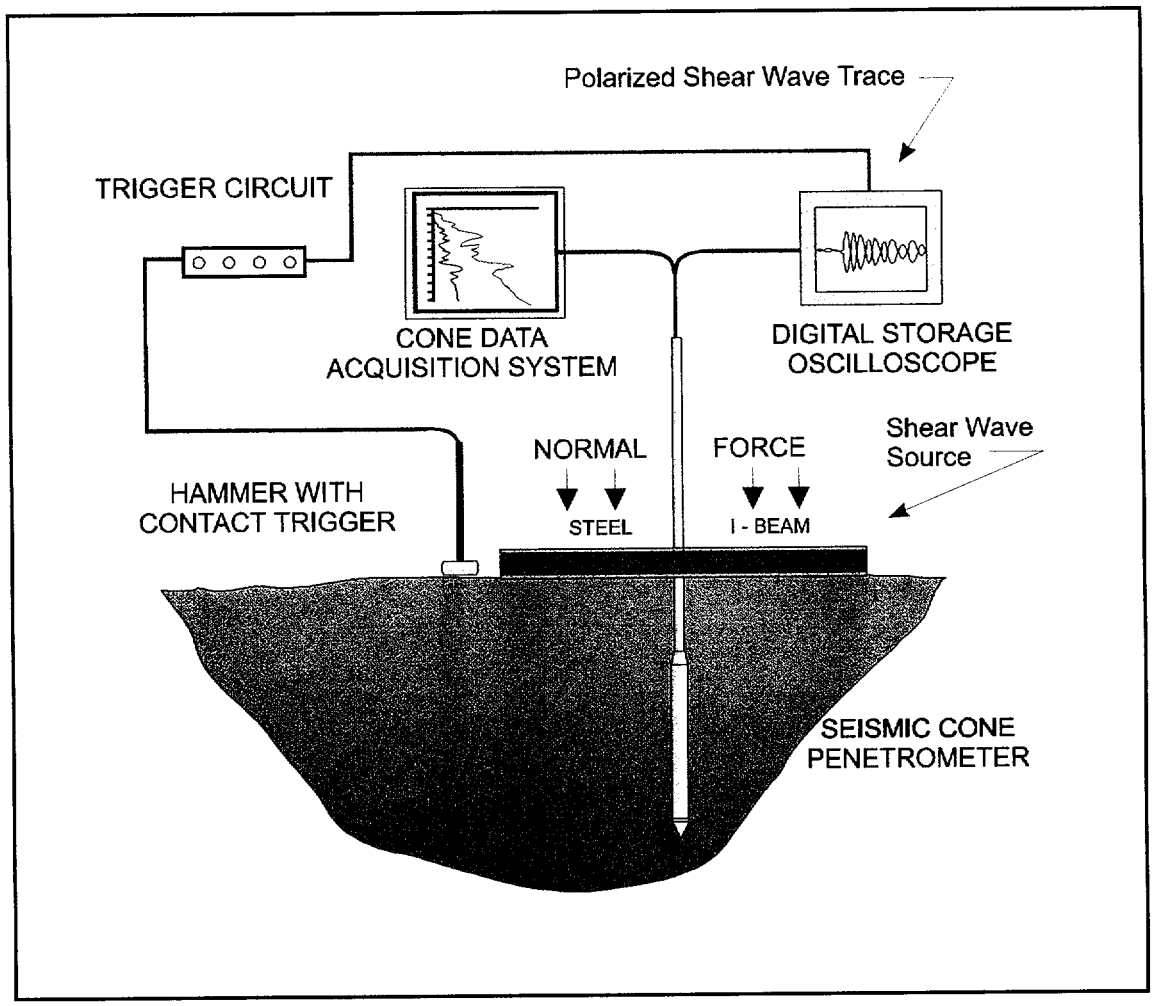
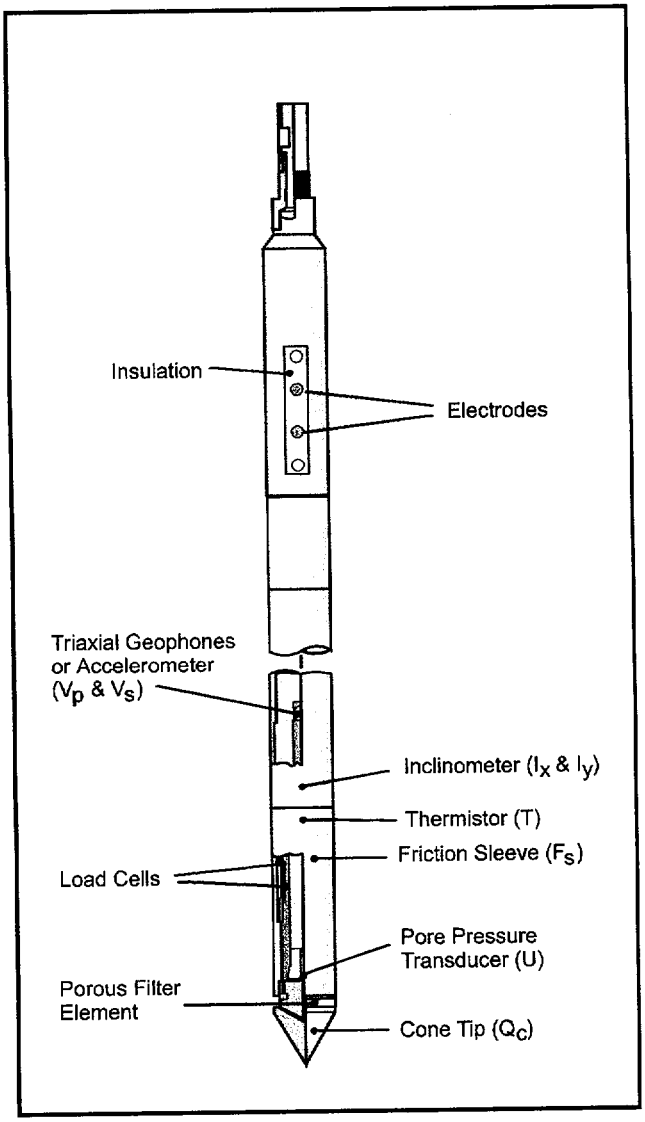


Figure 2 - Schematic of Shear Wave Testing Configuration

2.3 Resistivity Cone Testing

At locations CPT-37 and CPT-38, located within the canister transfer building, soil resistivity measurements were performed in conjunction with the cone penetration testing. The soil resistivity measurements are recorded using a separate resistivity component that attaches to the standard cone penetrometer. The resistivity module records the in situ soil resistivity up to a maximum resistivity of 273 ohm-meters. Figure 3 shows a schematic of the resistivity module connected to the cone penetrometer.

THE ELECTRICAL RESISTIVITY CONE



The resistivity cone penetration test (RCPTU) combines the downhole analysis of soil resistivity and the logging capabilities of the cone penetration test (CPTU). The RCPTU provides a rapid, reliable and economic means of determining soil permeability, stratigraphy, and strength in addition to providing relative measurements of electrical resistivity. The ability to determine groundwater and soil resistivity and various other soil parameters in one operation on a near continuous basis allows for the accurate profiling of contaminated groundwater plumes as well as some estimate of the rate and direction of groundwater flow through the soil. Identification of the lateral and vertical extent of contaminants enables the engineer/scientist to rapidly implement a remedial works or recovery program thereby mitigating the potential damage caused by contaminated groundwater seepage. To the left is an illustration of ConeTec s resistivity cone.

Figure 3 – Resistivity Cone Penetrometer

2.4 Dilatometer Testing

Dilatometer testing was performed at 18 locations specified by SWEC. Each dilatometer sounding was performed adjacent to a CPT sounding. Each of the dilatometer soundings was performed in accordance with our Standard Operation Procedures for Dilatometer Testing outlined within the Quality Assurance Plan, contained in Appendix L, and in accordance with Report No. FHWA–PA-87-024+84-24 "Guidelines for using the CPT, CPTU and Marchetti DMT for Geotechnical Design, Vol. 3 of 4 – DMT Test Methods and Data Reduction." The dilatometer consists of a thin, wedge-shaped probe, with a circular metal membrane situated on one face of the probe, as shown in Figure 4. The dilatometer is approximately 14 mm thick by 94 mm wide by 230 mm tall. The dilatometer used on this site investigation was manufactured by GPE, Inc. of Gainesville, Florida.

The DMT test procedure consists of pushing the dilatometer to the desired depth and then inflating the steel membrane to extend 1.1 mm into the surrounding soil. Pressure readings are recorded when the membrane moves from its seated position and just begins to move horizontally into the surrounding soil (A reading), at the point where the membrane moves horizontally 1.1 mm into the surrounding soil (B reading), and at the return of the membrane to the seated position (C reading). The conversion of the DMT field data for use in engineering analysis is a two step process. First, dilatometer indices are determined based on the A and B pressure readings combined with the estimated vertical soil stress and in situ pore water pressure. Second, common soil parameters are determined from the indices based on theoretical and empirical correlations. The soil parameters that are estimated from the DMT readings are undrained shear strength (Su), overconsolidation ratio (OCR), lateral earth pressure (Ko), friction angle (ϕ), tangent modulus (M) and soil type.

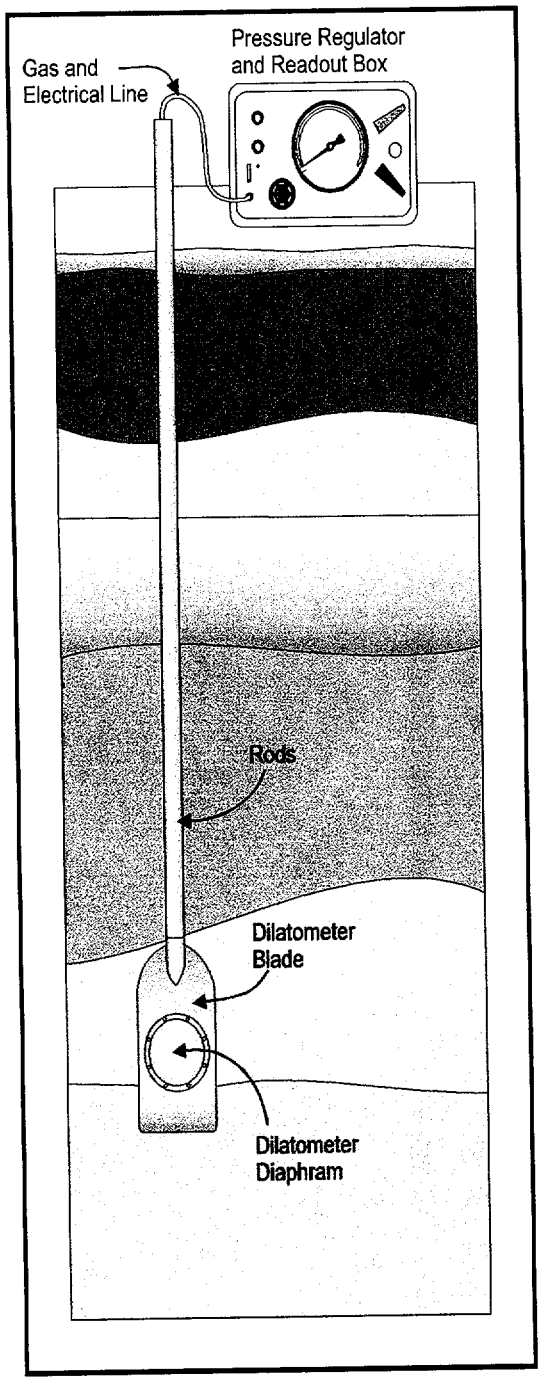
3.0 CONE PENETRATION TEST DATA AND INTERPRETATION

3.1 CPT Data

The cone penetration test data, referenced to the depth below ground surface, are presented in graphical form in Appendix A. Table 1 summarizes the CPT investigation program.

The stratigraphic interpretation shown in the plots is based on relationships between cone bearing Qc, sleeve friction Fs, and penetration pore pressure Ud. The friction ratio Rf (sleeve friction divided by cone bearing) is a calculated parameter that is used to infer soil behavior type. Generally, cohesive soils have high friction ratios, low cone bearing and generate large excess pore water

FLAT PLATE DILATOMETER



The flat plate dilatometer (DMT) is an in-situ test providing information about the soils's in-situ stratigraphy, stress, strength, compressibility, and pore water pressure for use in geotechnical design.

The test consists of pushing the dilatometer blade into the soil to the desired depth and measuring the pressure (gas) required to expand the circular steel membrane on the face of the blade 1.1mm into the surrounding soil. The instrument has an indicator to inform the operator when the membrane has been inflated to zero deflection and to the full 1mm deflection. The pressures at these two events are recorded. The membrane is then deflated with the operator recording the pressure when the membrane is at zero deflection again. The blade is then advanced to the next test depth where the test procedure is repeated. Tests are typically conducted at 20 cm to 30 cm (1 ft) intervals.

Interpretation of the Dilatometer Data is performed using the program DILLY developed by Schmertmann and Crapps, Inc. The program is based on the original interpretation methods developed by Marchetti.

Dilatometer Specifications

Dilatometer Detail	Dimension
Blade Height (mm)	229
Blade Width (mm)	94
Blade Thickness (mm)	14
Diaphram Diameter (mm)	60
Friction Reducer Diameter (mm)	46.7
Push Rod Diameter (mm)	38.1
Push Rod Weight (kg/m)	6.6

Figure 4 – Flat Plate Dilatometer

Table 1 – CPT Test Summary

Test Location	Test Date	Maximum Test Depth (ft.)	Other Tests
CPT-1	4/24/99	29.20	Seismic
CPT-2	4/24/99	26.41	
CPT-3	4/24/99	28.87	Seismic
CPT-4	4/24/99	27.89	
CPT-5	4/24/99	25.26	
CPT-6	4/24/99	24.28	Seismic
CPT-7	4/27/99	29.36	
CPT-8	4/27/99	27.39	
CPT-9	4/27/99	27.72	
CPT-10	4/27/99	26.74	
CPT-11	4/27/99	25.26	
CPT-12	4/27/99	25.59	
CPT-13	4/27/99	27.89	Seismic
CPT-14	4/27/99	27.07	
CPT-15	4/27/99	28.21	Seismic
CPT-16	4/27/99	26.57	Seismic
CPT-17	4/27/99	25.92	
CPT-18	4/27/99	26.74	Seismic
CPT-19	4/28/99	28.87	
CPT-20	4/28/99	28.21	Seismic
CPT-21	4/28/99	29.69	Seismic
CPT-22	4/27/99	28.21	Seismic
CPT-23	4/27/99	25.75	
CPT-24	4/27/99	24.77	
CPT-25	4/28/99	29.20	
CPT-26	4/28/99	28.54	
CPT-27	4/28/99	27.72	
CPT-28	4/28/99	27.89	
CPT-29	4/28/99	27.89	
CPT-30	4/28/99	26.08	
CPT-31	4/29/99	27.72	Seismic
CPT-32	4/29/99	30.18	
CPT-33	4/29/99	29.69	Seismic
CPT-34	4/29/99	28.54	Seismic
CPT-35	4/28/99	27.89	
CPT-36	4/28/99	26.41	Seismic
CPT-37	4/23/99	30.84	Seismic, Resistivity
CPT-38	4/23/99	32.15	Seismic, Resistivity
CPT-39	4/29/99	24.61	

pressures. Cohesionless soils have lower friction ratios, high cone bearing and generate little in the way of excess pore water pressures. The interpretation of soils encountered on this project was carried out using correlations developed by Robertson et al., 1988, as shown in Figure 5. It should be noted that it is not always possible to clearly identify a soil type based on Qc, Fs and Ud.

Occasionally soils will fall within different soil categories on the classification charts. In these situations, experience and judgment and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type.

3.2 CPT Data Interpretations

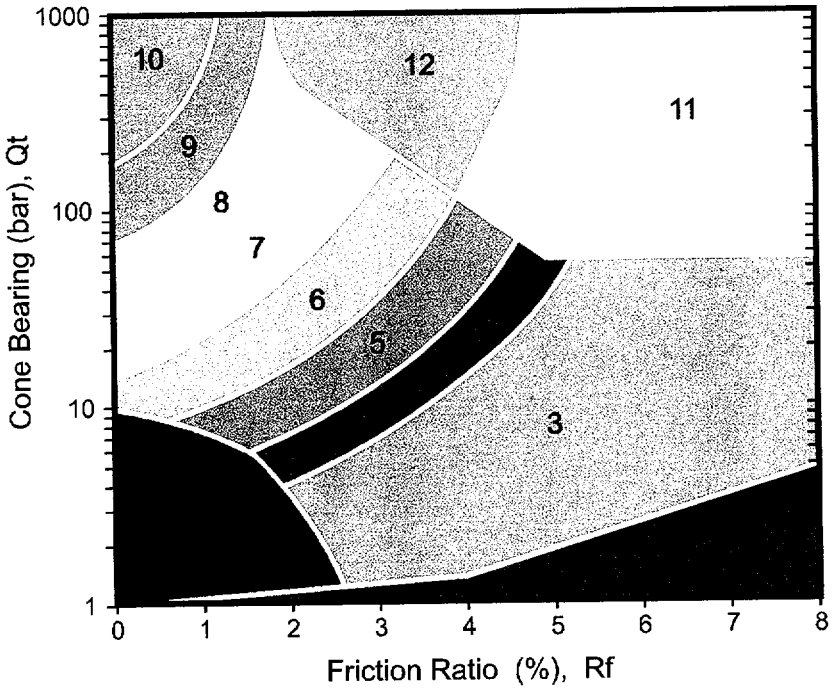
Many correlations have been developed for design parameters based on CPT data. The following parameters are presented in graphical form in Appendices A, B, C, D, and E.

- Corrected Total Cone Resistance (Qt)
- Sleeve Friction (Fs)
- Pore Pressure (Ud)
- Friction Ratio (Rf)
- Pore Pressure Parameter (Bq)
- Horizontal Permeability (k)
- Drained Friction Angle (ϕ)
- Overconsolidation Ratio (OCR)
- Undrained Shear Strength (Su)
- Compressibility (Y)
- Soil Behavior Type (SBT)
- Equivalent SPT Value (SPT N(60))
- Resistivity (R)

In addition to the graphical presentation of the above data, the data is presented in tabular format in Appendix F, with the exception of the resistivity data, which is presented in tabular format in Appendix B. A summary of the correlation methods and relevant references is provided in the Quality Assurance Manual, in Appendix L. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design.

Horizontal permeability and the Qt/N values are assigned to the individual soil behavior type zones based on typical values as published by Lunne, et al (1997).

CPT Classification Chart



Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

(after Robertson and Campanella, 1988)

Figure 5 - Soil Behavior Type Classification Chart

CONETEC

Soil stress calculations performed in the interpretations are based on a soil unit weight assigned to the specific soil behavior type zones. The soil unit weights used in the interpretations are based on laboratory tests performed by SWEC on borings CTB-N, CTB-S, CTB-5(OW) and CTB-4, which are located adjacent to CPT locations CPT-37 and CPT-38. The unit weights were determined by taking an average of the laboratory unit weights corresponding to the soil behavior type zone from the corresponding CPT test. Where soil behavior type zones do not correspond with laboratory data, unit weights were interpolated to correspond with the laboratory data, or are based on typical values published by Lunne, et al (1997). A summary of the values assigned to the soil behavior type zones is presented in Table 2.

Table 2 – SBT Assigned Values

Zone	SPT Qt/N	Unit Wt. (kN/m^3)	Unit Wt. (pcf)	K (cm/s)	Description
0	1.0	19.5	124.1	$1x10^{-15}$	Undefined
1	2.0	11.7	74.5	$1.7x10^{-7}$	Sensitive Fines
2	1.0	11.0	70.0	$5x10^{-6}$	Organic Soil
3	1.0	11.7	74.5	$5x10^{-8}$	Clay
4	1.5	12.5	79.6	$5x10^{-7}$	Silty Clay
5	2.0	13.4	85.3	$5x10^{-6}$	Clayey Silt
6	2.5	15.5	98.7	$5x10^{-5}$	Silt
7	3.0	15.5	98.7	$5x10^{-4}$	Sandy Silt
8	4.0	16.0	101.9	$5x10^{-3}$	Silty Sand/Sand
9	5.0	16.0	101.9	$5x10^{-2}$	Sand
10	6.0	20.0	127.3	5.0	Gravelly Sand
11	1.0	20.5	130.5	$1x10^{-6}$	Stiff Fine Grained
12	2.0	19.0	120.9	$1x10^{-5}$	Cemented Sand

The undrained shear strength calculations were determined based on an estimated N_{kt} value of 12.5. This N_{kt} factor was determined based on the average of the individual N_{kt} factors calculated from laboratory shear strength tests performed on samples from borings B-1, B-3, B-4, C-2, CTB-N and CTB-S , and corresponding Qt valued observed in the nearest CPT test. The laboratory shear strengths were determined from CU triaxial tests performed by SWEC. The N_{kt} factor is calculated using the following equation:

$$S_u = \frac{Q_t - \sigma_v}{N_{kt}}$$

where:

S_u = Undrained shear strength
Q_t = Corrected total cone resistance
σ_v = Total soil stress
N_{kt} = Correction Factor

The derivation of the N_{kt} factor used within the above equation is based on undrained shear strengths (Su) determined by vane shear tests. Therefore, an Su value determined from a triaxial test does not directly correspond to the Su value used to establish the above equation. However, the Su value determined by the triaxial test does give a general indication of the undrained shear strength that can be used to establish the N_{kt} factor.

3.3 Shear Wave Velocity Measurements

Shear and compression wave velocity measurements were conducted in 16 of the 39 CPT soundings. The shear and compression wave velocities results are presented in graphical and tabular format in Appendix C. Additionally, plots of the shear and compression wave amplitude versus time for each seismic sounding are presented in Appendix C.

As indicated in Robertson and Woeller (1994), compressibility of the soil can be inferred based on the relationship of normalized shear wave velocity and normalized cone resistance, as indicated in the following equation.

$$q_{c1} = \left(\frac{V_{s1}}{Y}\right)^4$$

where:

q_{c1} = Normalized cone resistance, in MPa
V_{s1} = Normalized shear wave velocity, in m/s
Y = Compressibility

The parameter Y is controlled by grain characteristics, sand compressibility, age and degree of cementation. For more compressible sands, the parameter Y will increase since the cone penetration resistance (q_{c1}) will decrease, while the shear wave velocity (V_{s1}) remains essentially constant. For aged or cemented sands, Y will also increase since shear wave velocity will increase faster than penetration resistance. Since sand compressibility has a strong influence on cone penetration resistance, but little effect on shear wave velocity, sand compressibility can be identified by comparing the cone resistance and the corresponding shear wave velocity. Figure 6 shows that soil compressibility increases with an increasing Y parameter. The Y parameter has been plotted in addition to the shear and compression velocities, in Appendix C.

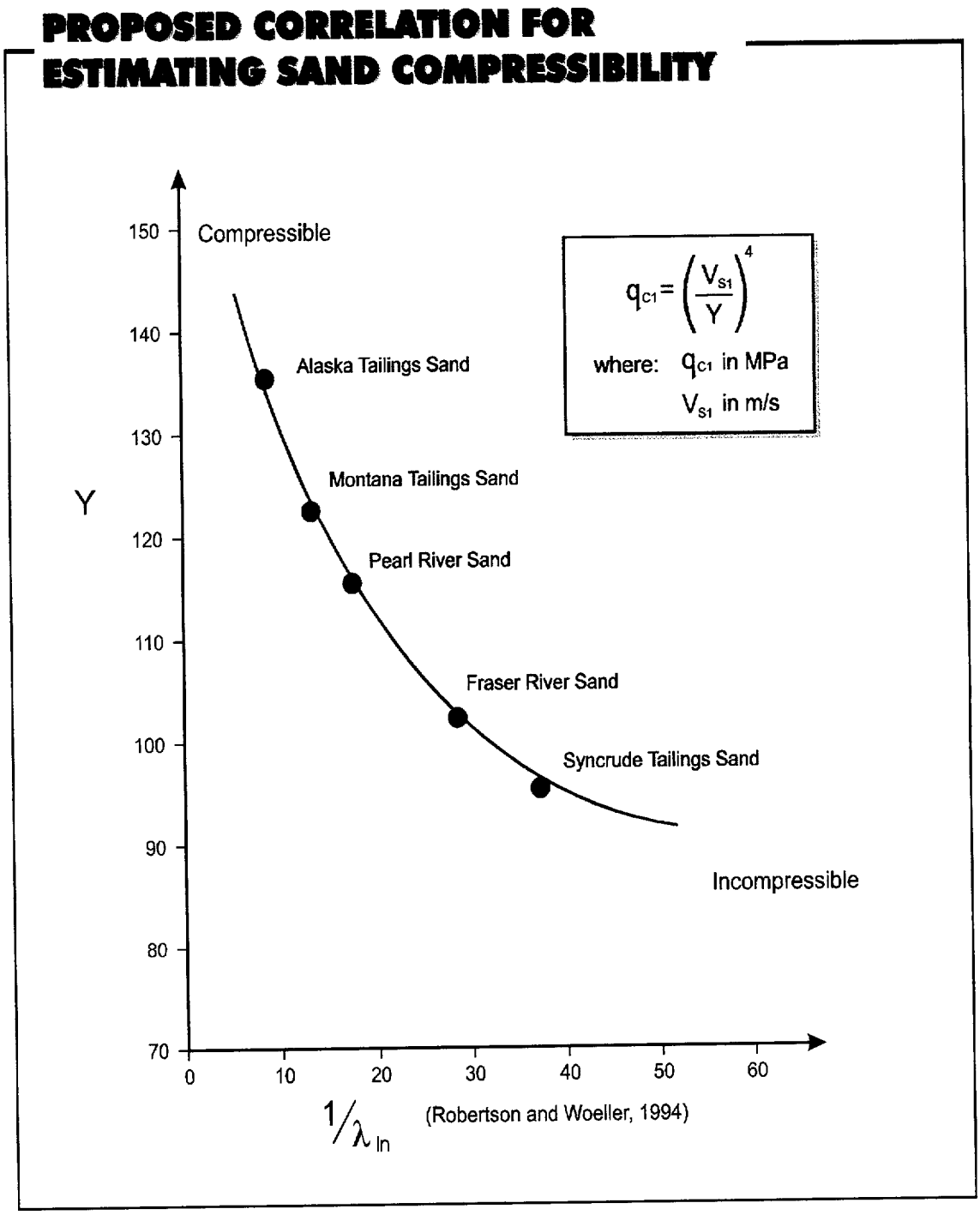


Figure 6 – Sand compressibility relationship

4.0 DILATOMETER TEST DATA AND INTERPRETATION

4.1 DMT Data

Dilatometer tests were performed at 18 of the 39 CPT locations. The Dilatometer tests were conducted within approximately 5 feet of the CPT sounding. In order to minimize any effects from performing the CPT sounding, the diaphram of the dilatometer was always pointed away from the CPT sounding location. Table 3 summarizes the DMT investigation program.

Table 3 – DMT Test Summary

DMT Location	Near CPT Location	DMT Test Date	Maximum Test Depth (ft)
DMT-1	CPT-38	4/23/99	31.00
DMT-2	CPT-37	4/24/99	30.01
DMT-3	CPT-1	4/29/99	28.04
DMT-4	CPT-4	4/29/99	28.04
DMT-5	CPT-5	4/29/99	25.09
DMT-6	CPT-8	4/30/99	27.07
DMT-7	CPT-10	4/30/99	27.07
DMT-8	CPT-12	4/30/99	25.26
DMT-9	CPT-39	4/29/99	12.79
DMT-10	CPT-18	4/30/99	26.41
DMT-11	CPT-20	4/30/99	27.56
DMT-12	CPT-22	4/30/99	26.57
DMT-13	CPT-24	4/30/99	24.61
DMT-14	CPT-31	4/30/99	27.07
DMT-15	CPT-34	4/30/99	29.04
DMT-16	CPT-36	4/30/99	27.07
DMT-17	CPT-27	4/30/99	27.07
DMT-18	CPT-29	4/30/99	27.89

4.2 DMT Data Interpretations

Correlations have been developed to determine design parameters based on the DMT pressure readings. The following parameters determined from the DMT testing are presented graphically in Appendix G.

- Undrained Shear Strength (Su)
- Overconsolidation Ratio (OCR)
- Lateral Earth Pressure (Ko)
- Friction Angle (ϕ)
- Tangent Modulus (M)

Dilatometer data interpretations were performed using a commercially available interpretation program produced by the University of British Columbia, called UBCDILLY. The program UBCDILLY is an enhanced version of the program DILLY, originally developed by Schmertmann and Crapps. A summary of the correlation methods and equations used within the DMT interpretations are contained in the FHWA guideline. In addition to the graphical output, the DMT interpretations are presented in tabular format in Appendix H. Within the tabular data, a value of 9e9 indicates that the parameter was not calculated due to the inappropriateness of the parameter for the given soil classification. For example, the undrained shear strength is not calculated in a sandy soil.

5.0 QUALITY ASSURANCE PROGRAM

5.1 Quality Assurance Manual

A quality assurance manual was developed specifically for this project. The manual outlines in detail the methods and practices that ConeTec performs to insure that data is collected in accordance with ASTM Standards. The manual also outlines our standard operating procedures for performing CPT and DMT testing. A copy of the Quality Assurance Manual is contained in Appendix L.

5.2 Calibration Records

The cone penetrometers and dilatometer pressure gauge were calibrated before and after completion of the site investigation. The cones were calibrated by Adara Systems, Ltd. of Vancouver, B.C. The dilatometer pressure gauge was calibrated by RUST Automation of Salt Lake City, Utah. The calibration records for both the cones and the pressure gauge indicate that the calibration changes were minimal and within the standards set forth in the ASTM. A copy of both the before and after calibration records are contained in Appendix K.

Baseline readings were recorded at the beginning and the ending of each CPT sounding. The baseline readings indicate that the cone penetrometers operated well within acceptable criteria established by the ASTM Standard. Copies of the baseline readings for each of the CPT location are contained in Appendix K.

Daily calibration of the dilatometer is performed by recording the ΔA and ΔB measurements before and after each DMT test. Any change in the ΔA and ΔB readings would indicate that the diaphram may have been overstressed during the performance of the test. The change in the ΔA and ΔB readings recorded at each DMT location was within the acceptable limits established within FHWA report guidelines. Copies of the DMT data sheets showing the beginning and ending ΔA and ΔB readings are contained in Appendix K.

5.3 Software Verification and Validation

The CPT plots and interpretations presented in this report have been produced using software developed by ConeTec. Each of the interpretation parameters determined by the software is based on published correlations. In order to verify that the parameters produced by the software are consistent with the published correlations, a separate software verification and validation report was prepared and sent to SWEC. The software verification and validation report is consistent with SWEC's quality assurance regulations. Additionally, standard operating procedures for CPT data processing are outlined in the Quality Assurance Plan, contained in Appendix L.

6.0 CLOSURE

We appreciate the opportunity of providing these services to you. If you have any questions regarding the contents of this report, please do not hesitate to contact our office.

Appendix A

Standard CPT Plots

Appendix A

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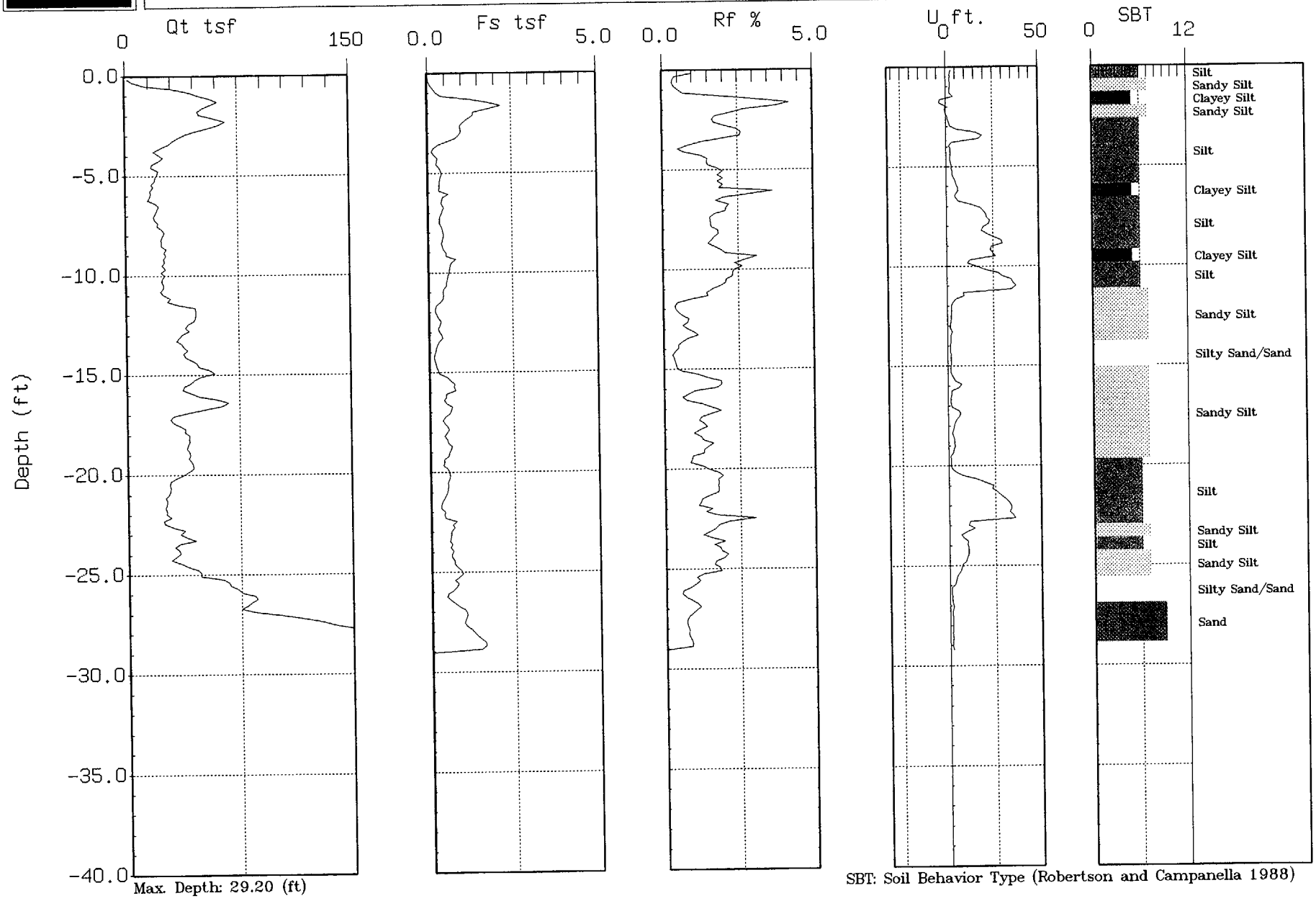
CONETEC

Stone & Webster

Site: CPT-1
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 09:26



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

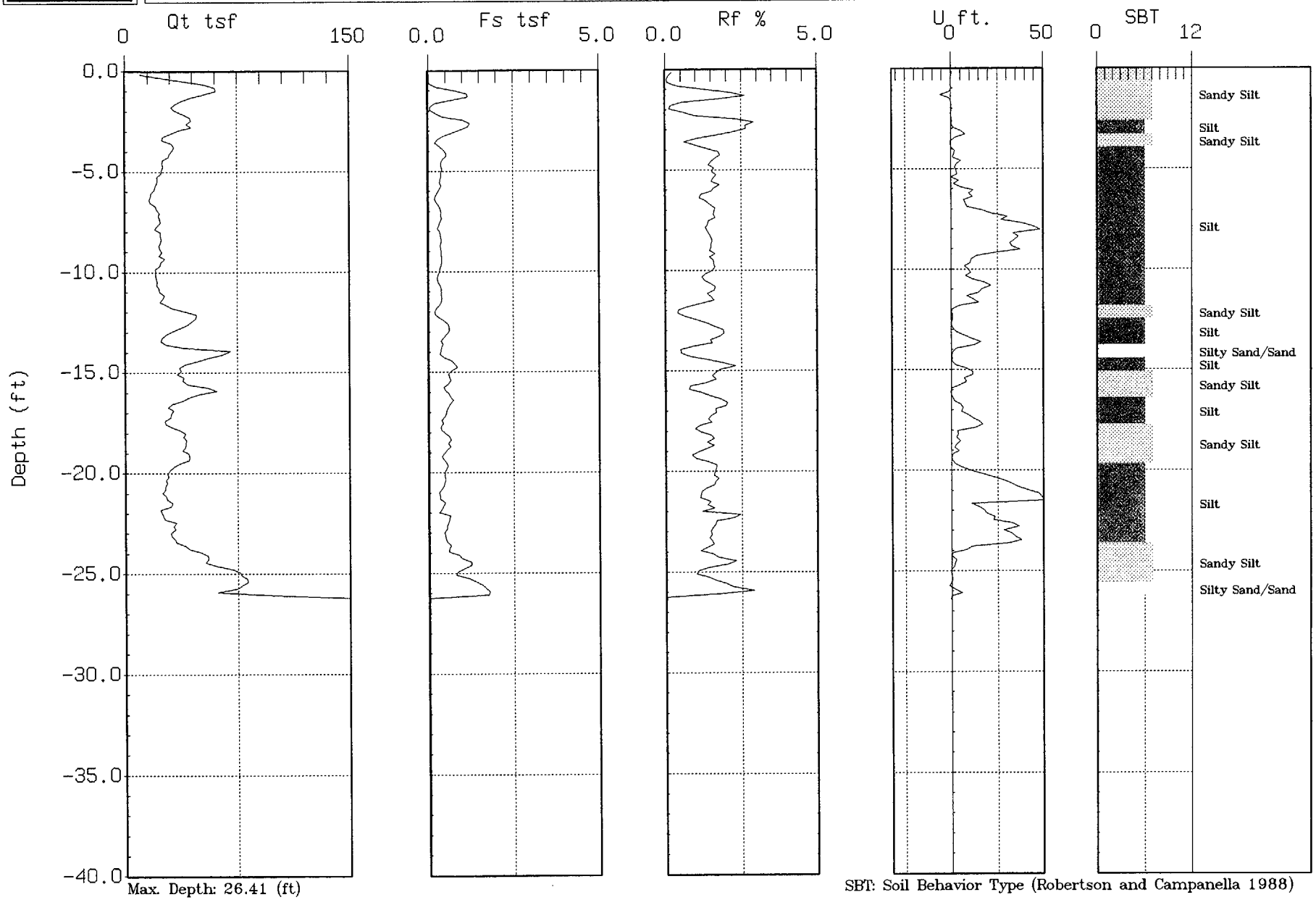
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-2
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 11:01



Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

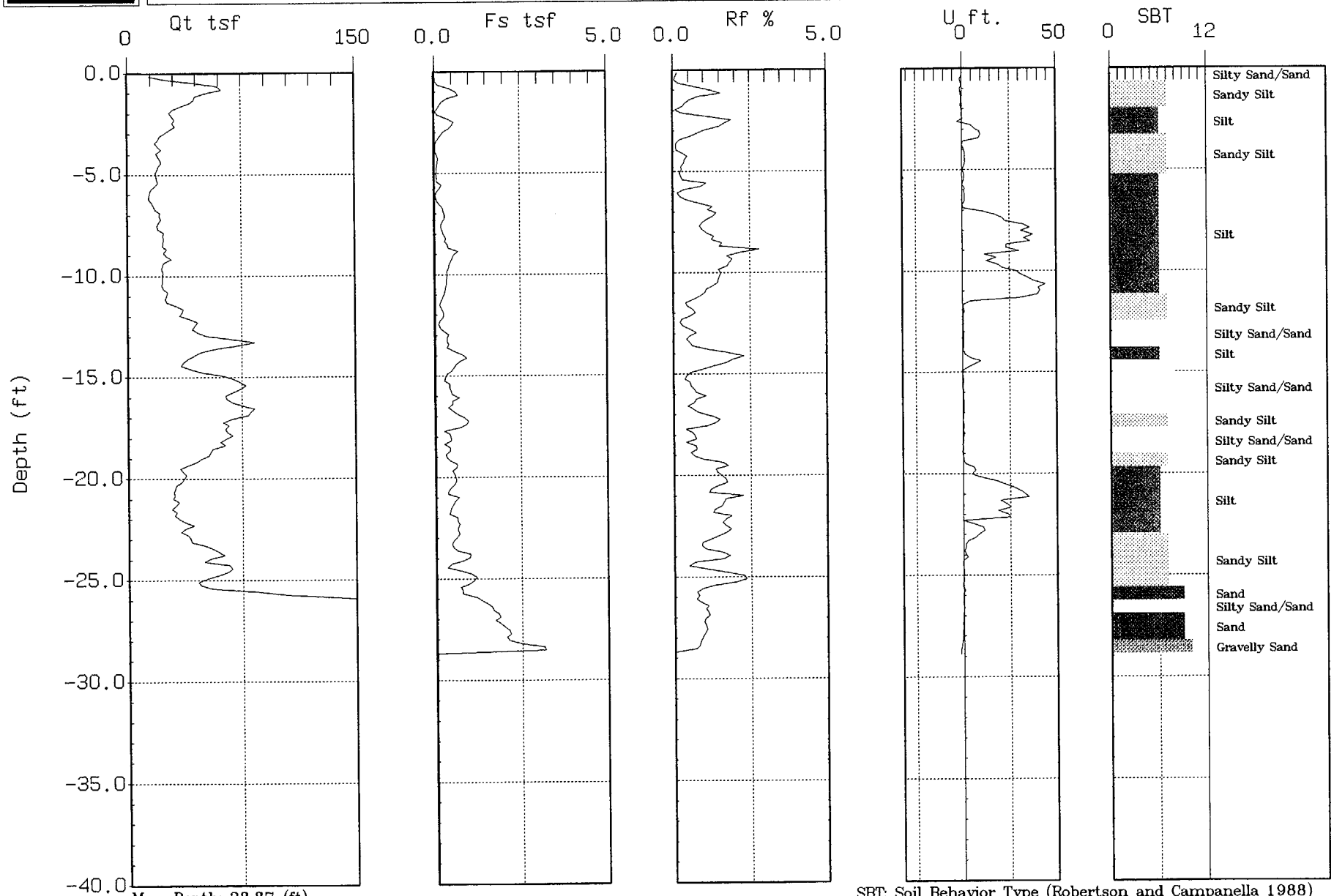
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-3
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 11:39



Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

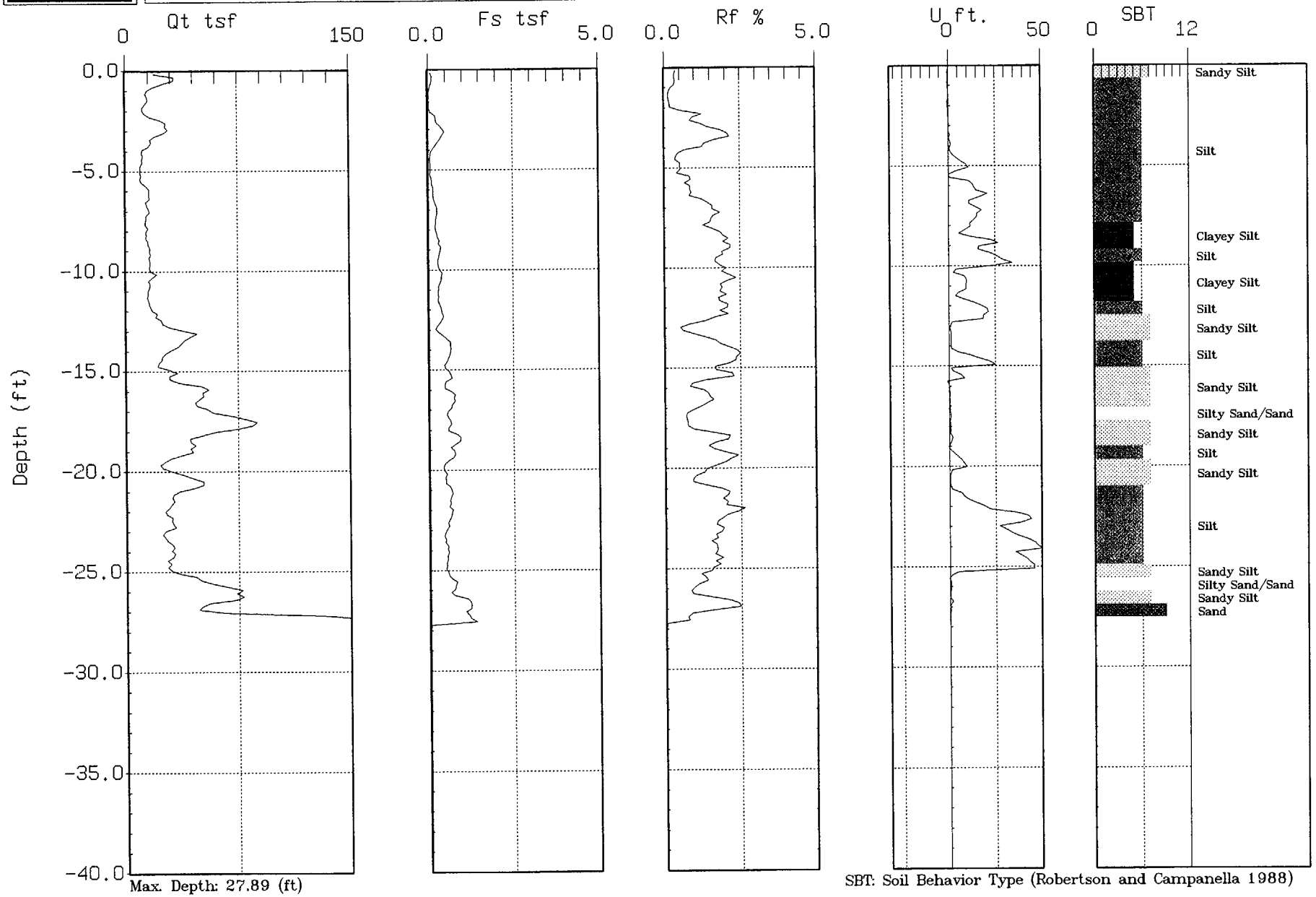
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-4
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 13:18



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

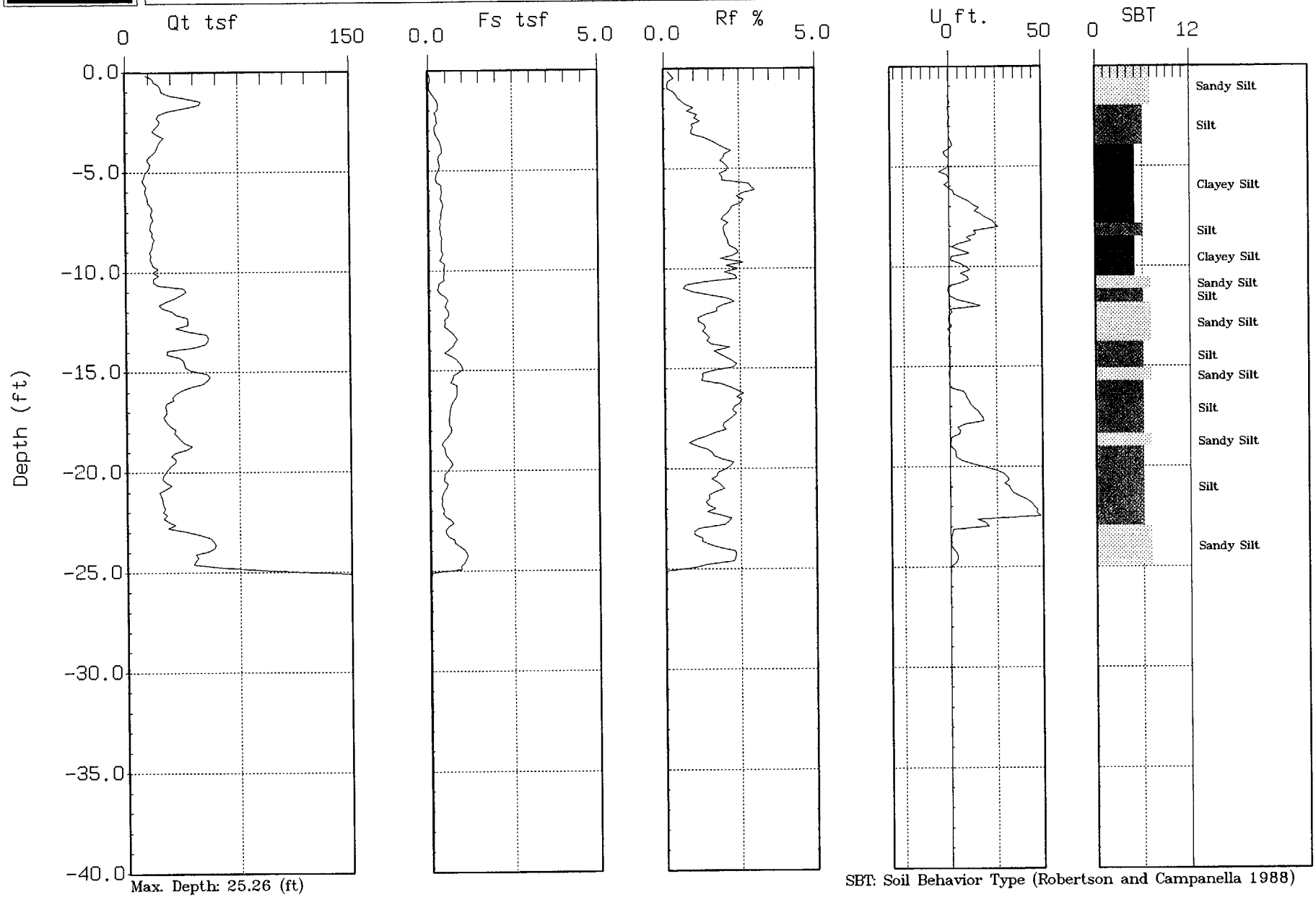
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-5
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:24:99 15:06



Max. Depth: 25.26 (ft)

Depth Inc.: 0.164 (ft)

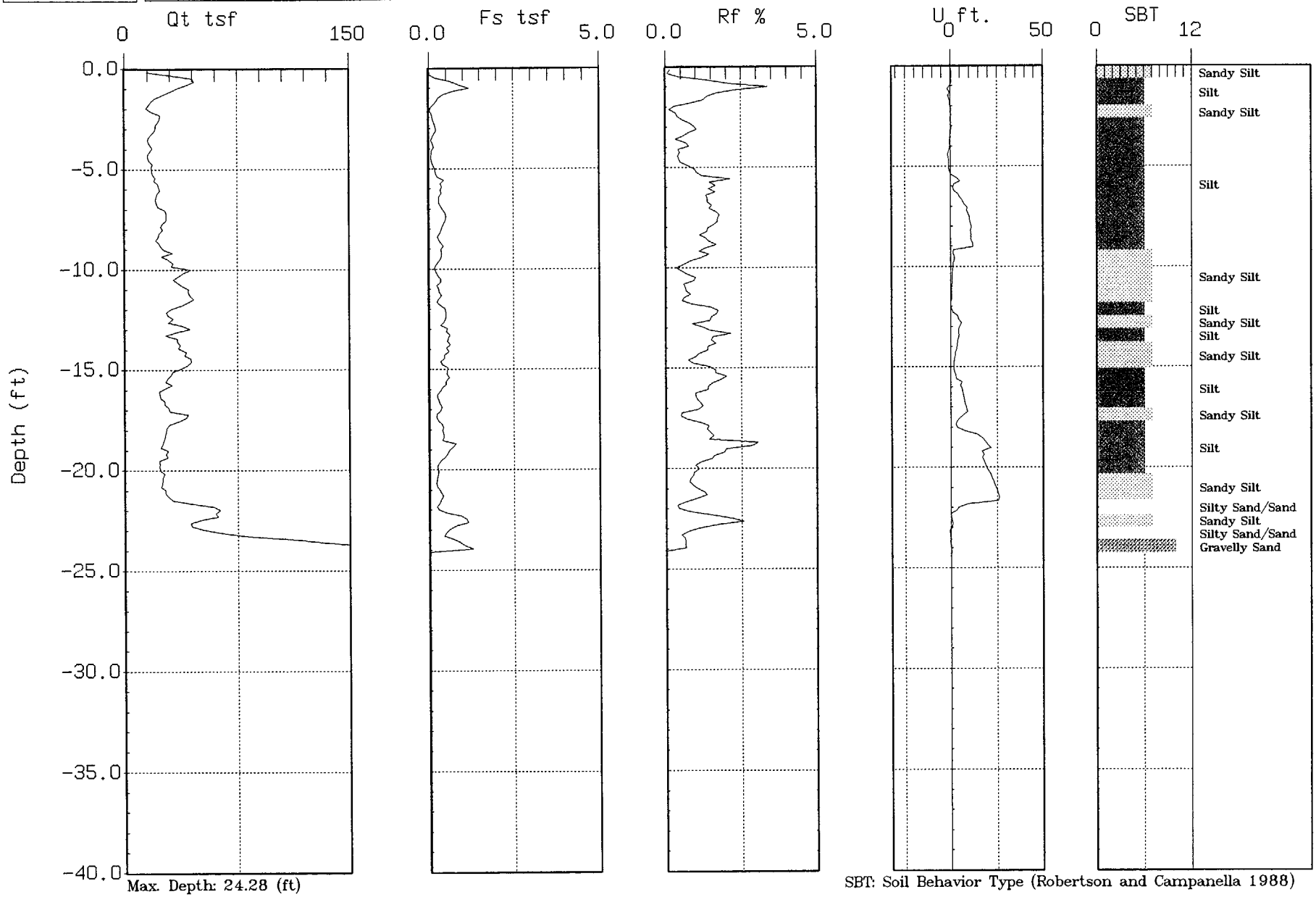
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-6
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 15:44



Max. Depth: 24.28 (ft)

Depth Inc.: 0.164 (ft)

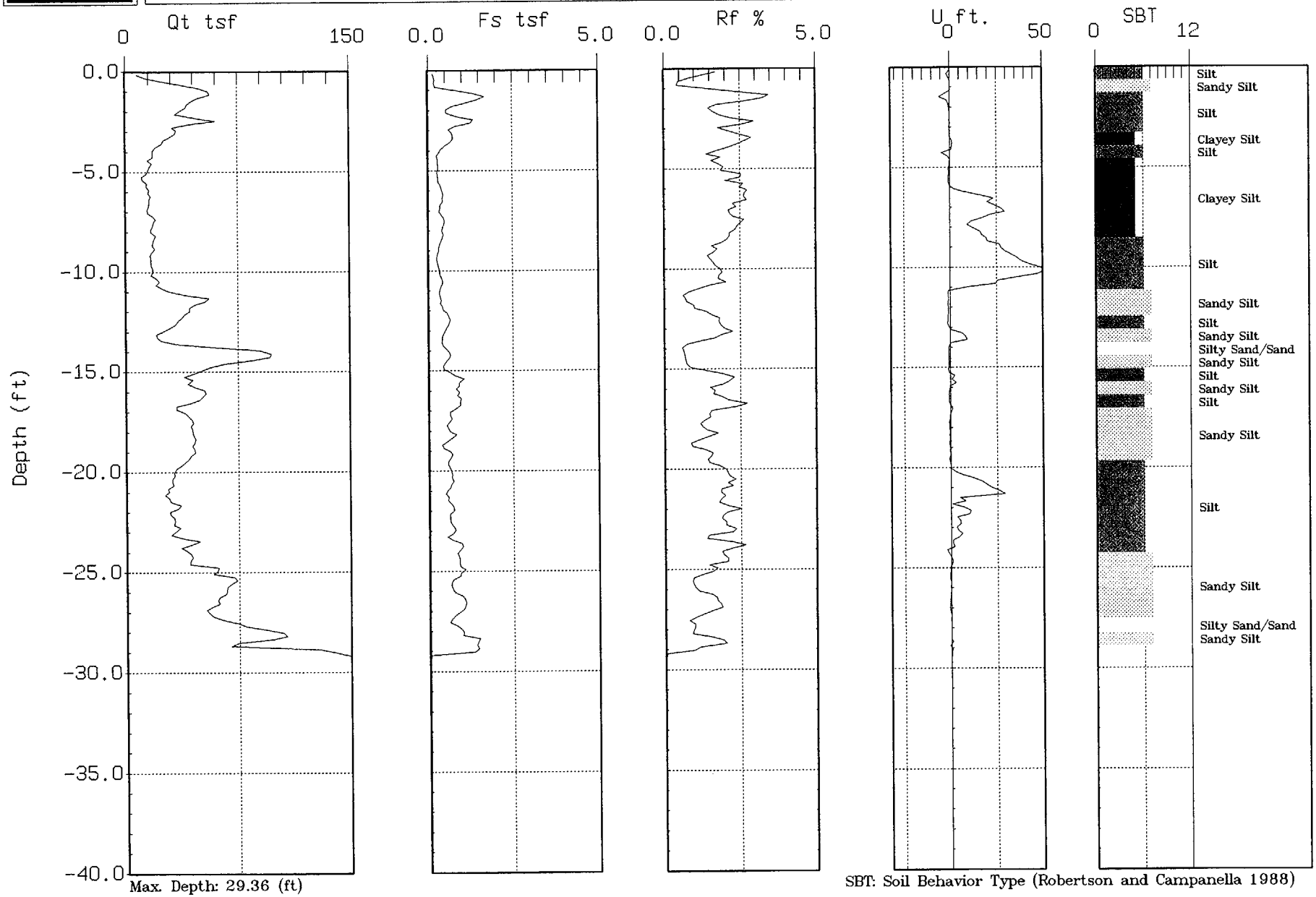
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-7
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 10:35



Max. Depth: 29.36 (ft)

Depth Inc.: 0.164 (ft)

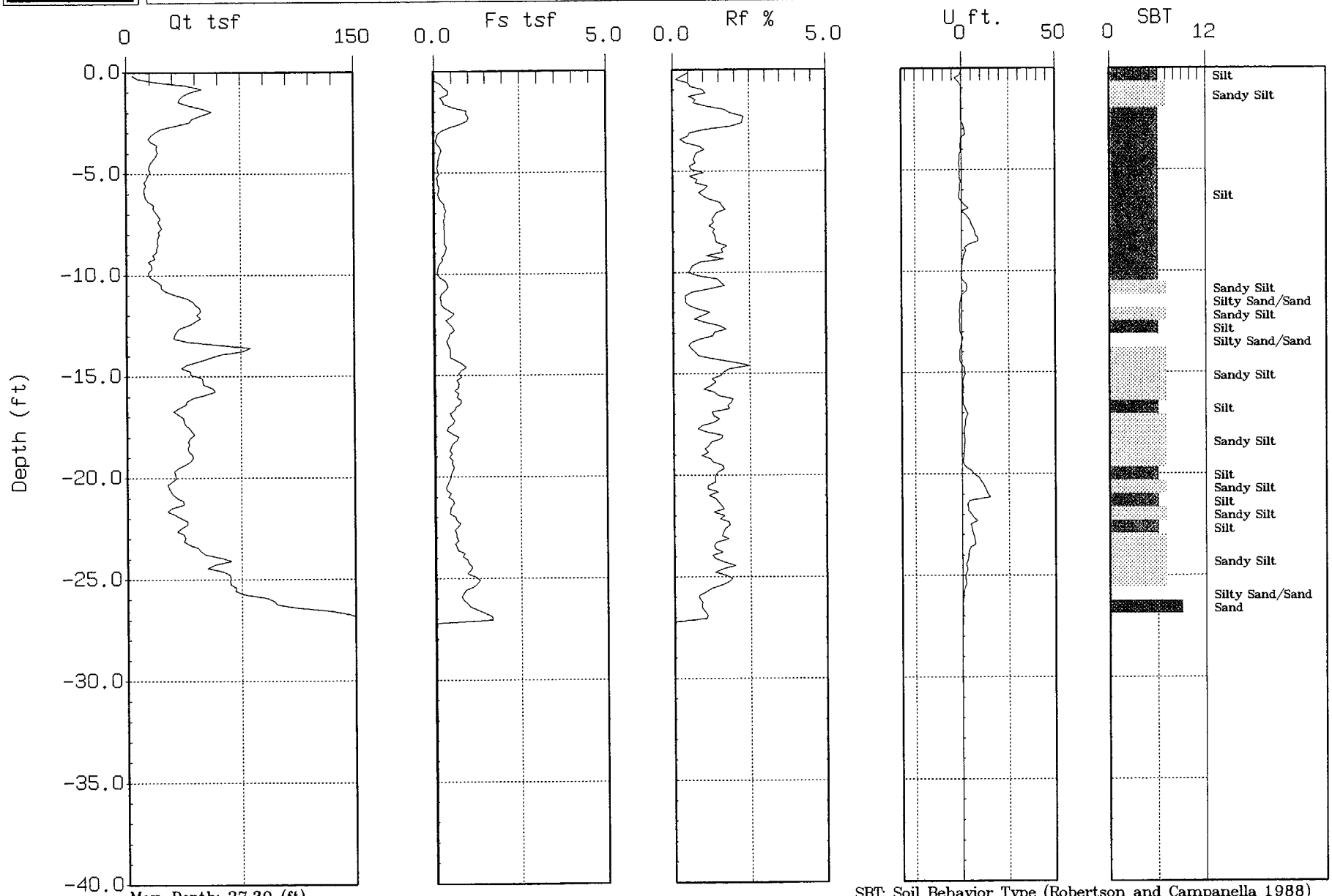
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-8
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 10:01



Max. Depth: 27.39 (ft)

Depth Inc.: 0.164 (ft)

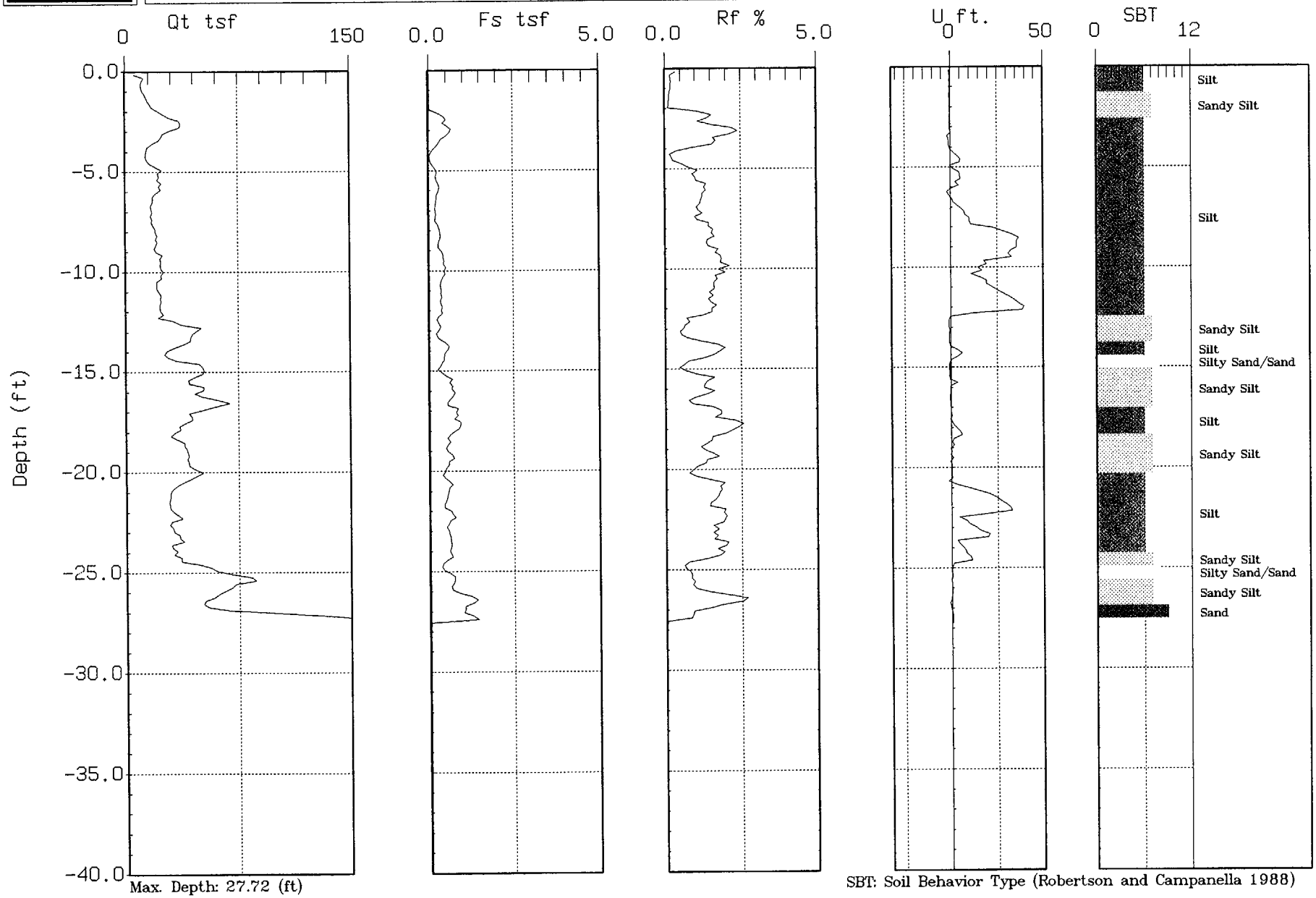
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-9
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 09:31



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

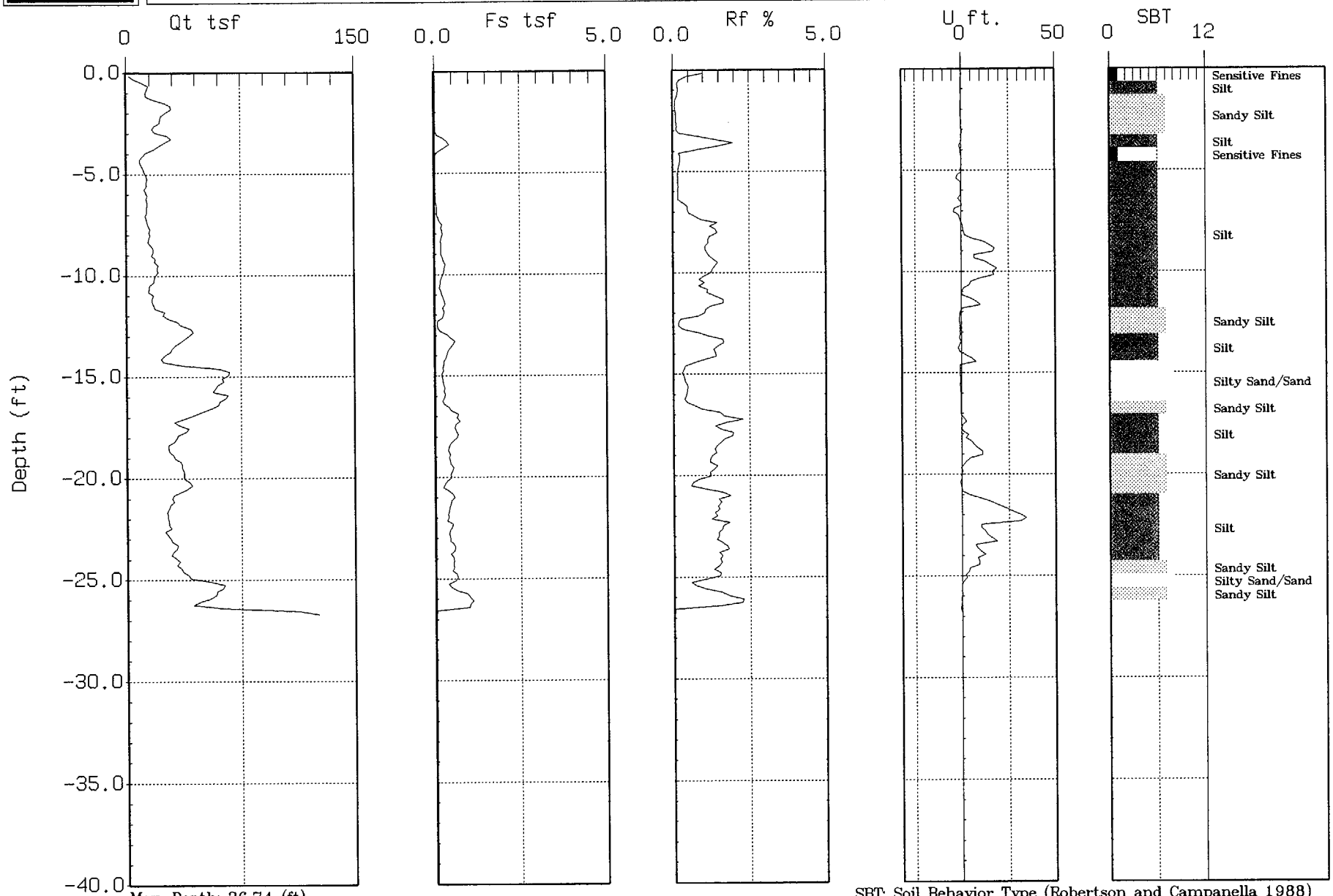
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-10
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 08:58



Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

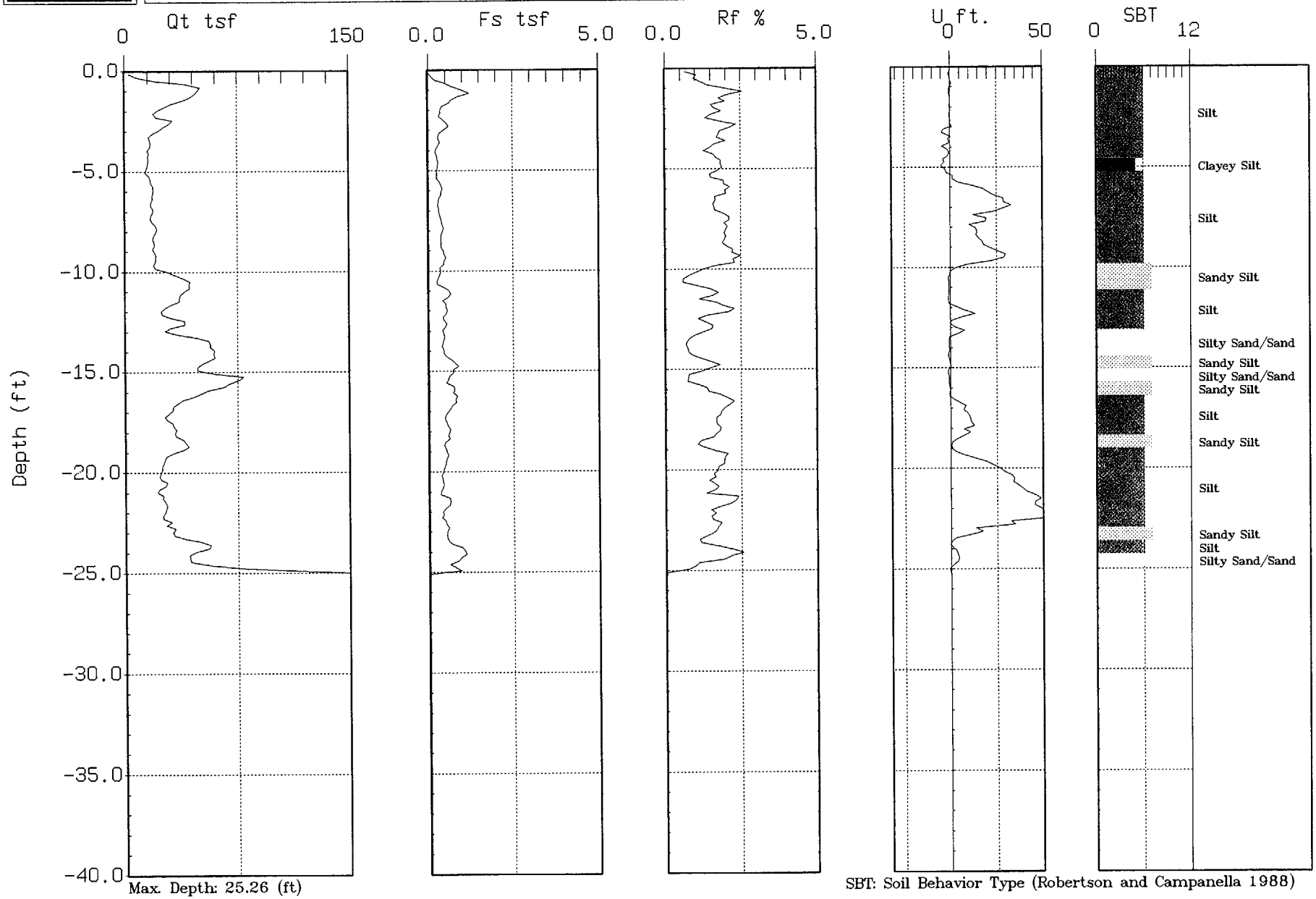
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-11
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 08:30



Max. Depth: 25.26 (ft)

Depth Inc.: 0.164 (ft)

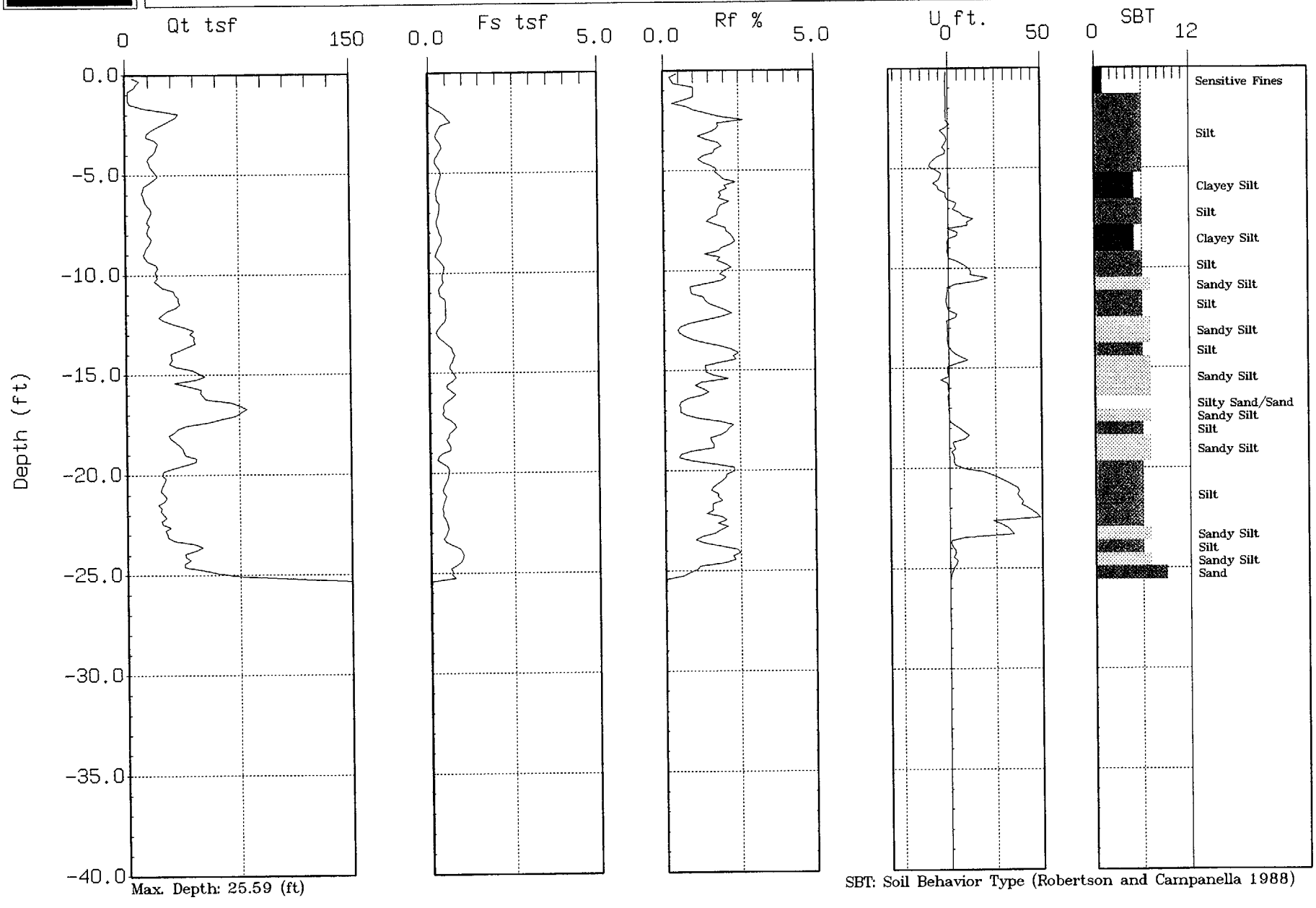
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-12
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 07:57



Max. Depth: 25.59 (ft)

Depth Inc.: 0.164 (ft)

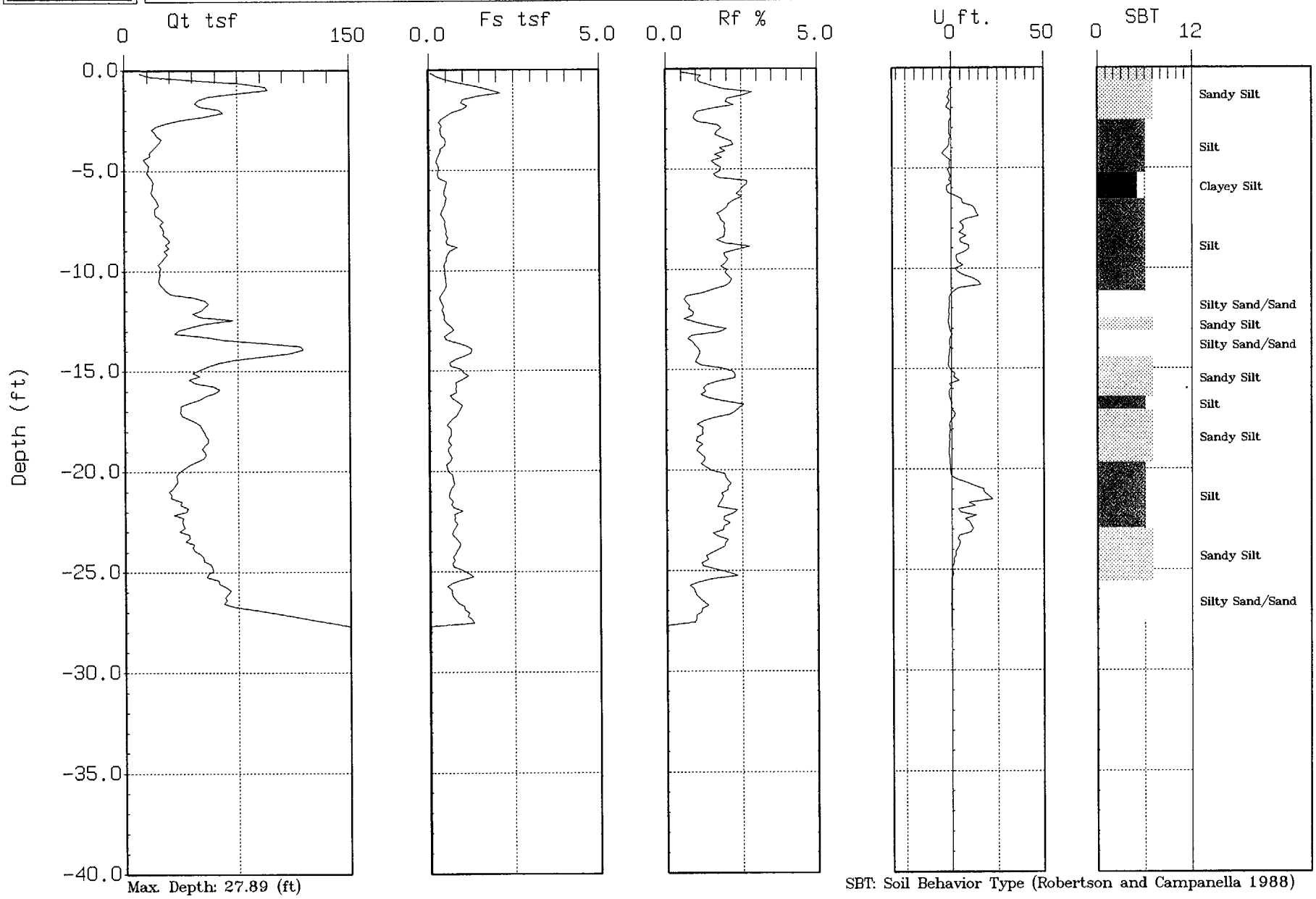
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-13
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 11:19



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

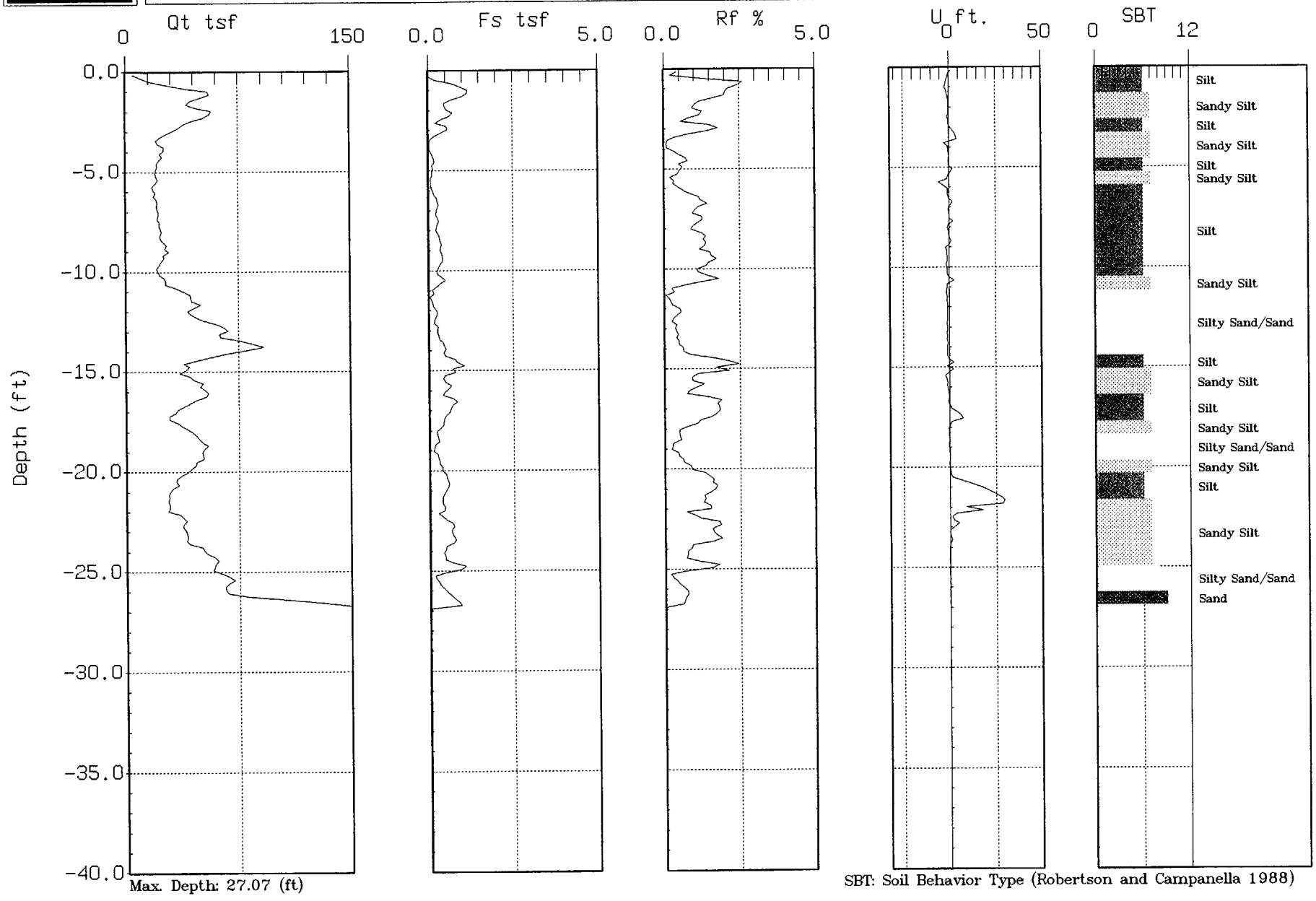
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-14
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 12:35



Max. Depth: 27.07 (ft)

Depth Inc.: 0.164 (ft)

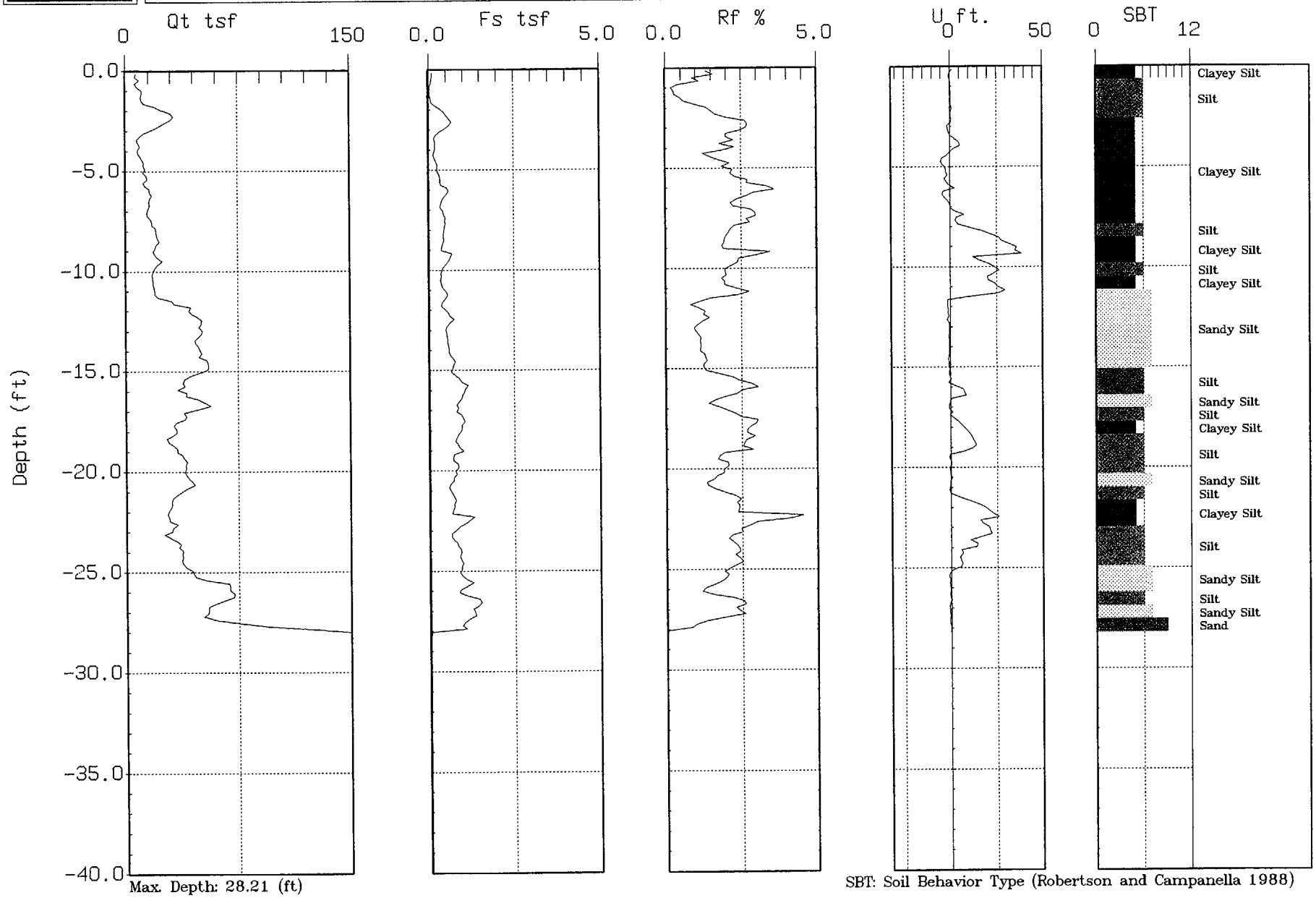
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-15
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 13:11



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

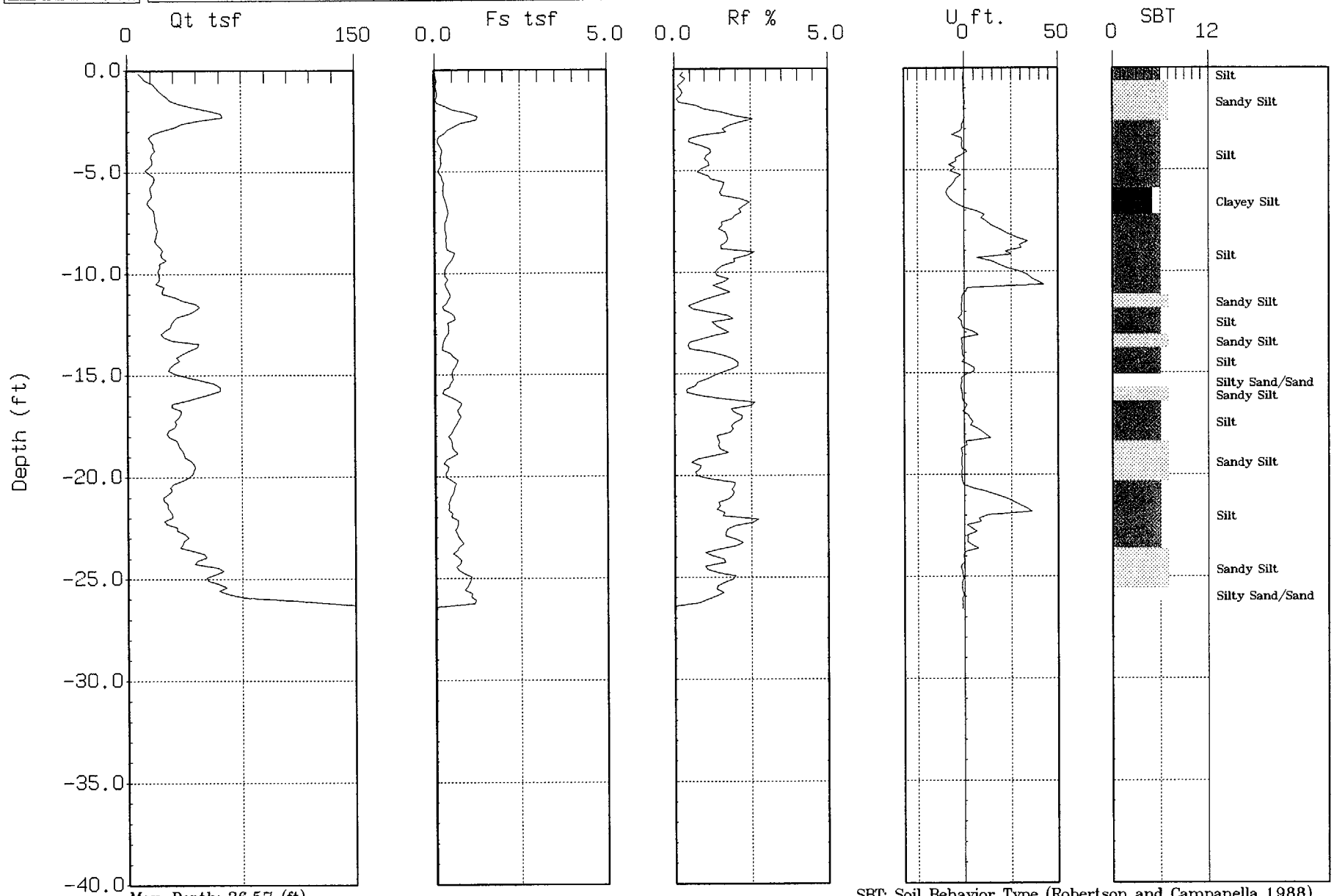
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-16
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 14:30



Max. Depth: 26.57 (ft)

Depth Inc.: 0.164 (ft)

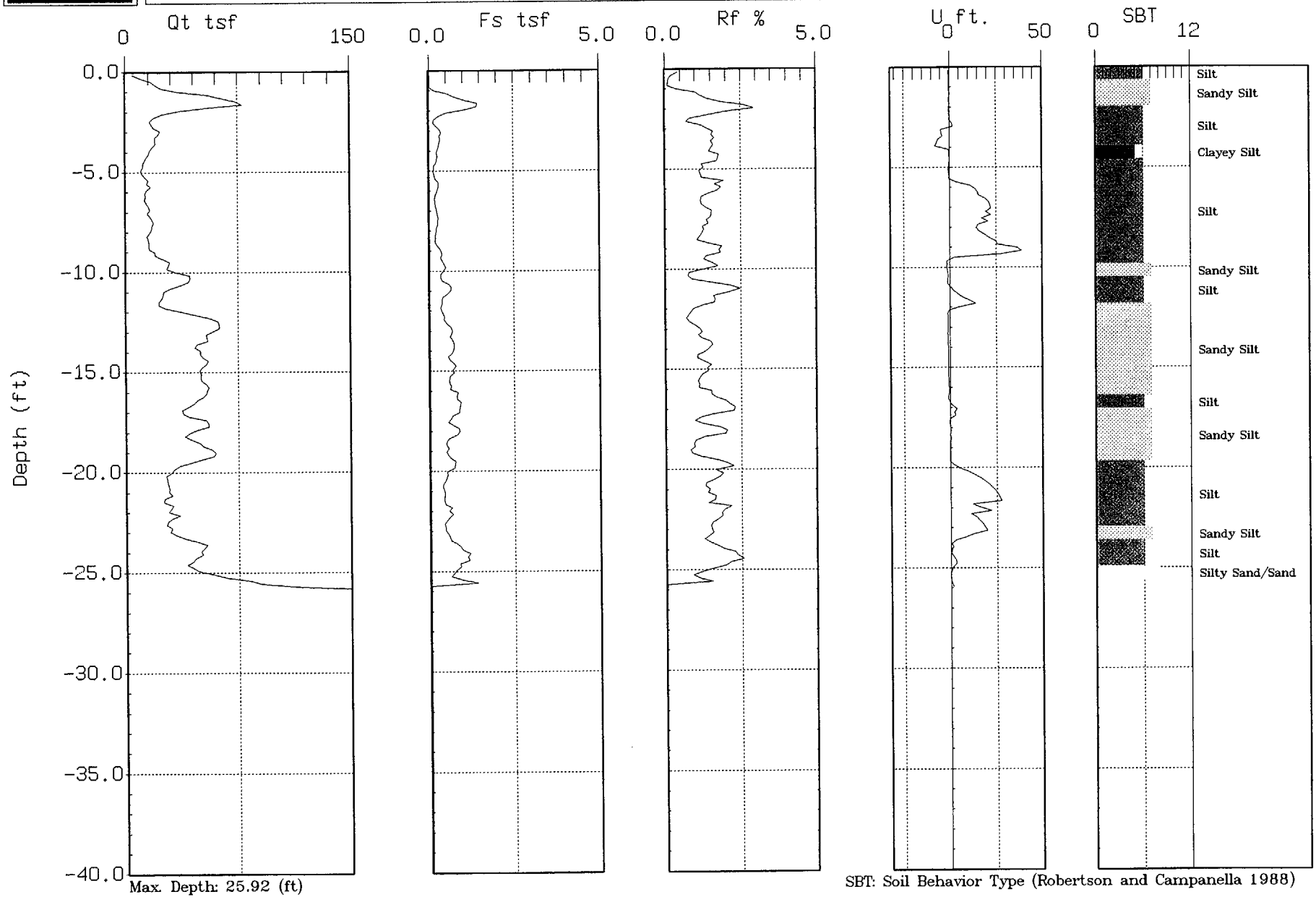
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-17
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 15:39



Max. Depth: 25.92 (ft)

Depth Inc.: 0.164 (ft)

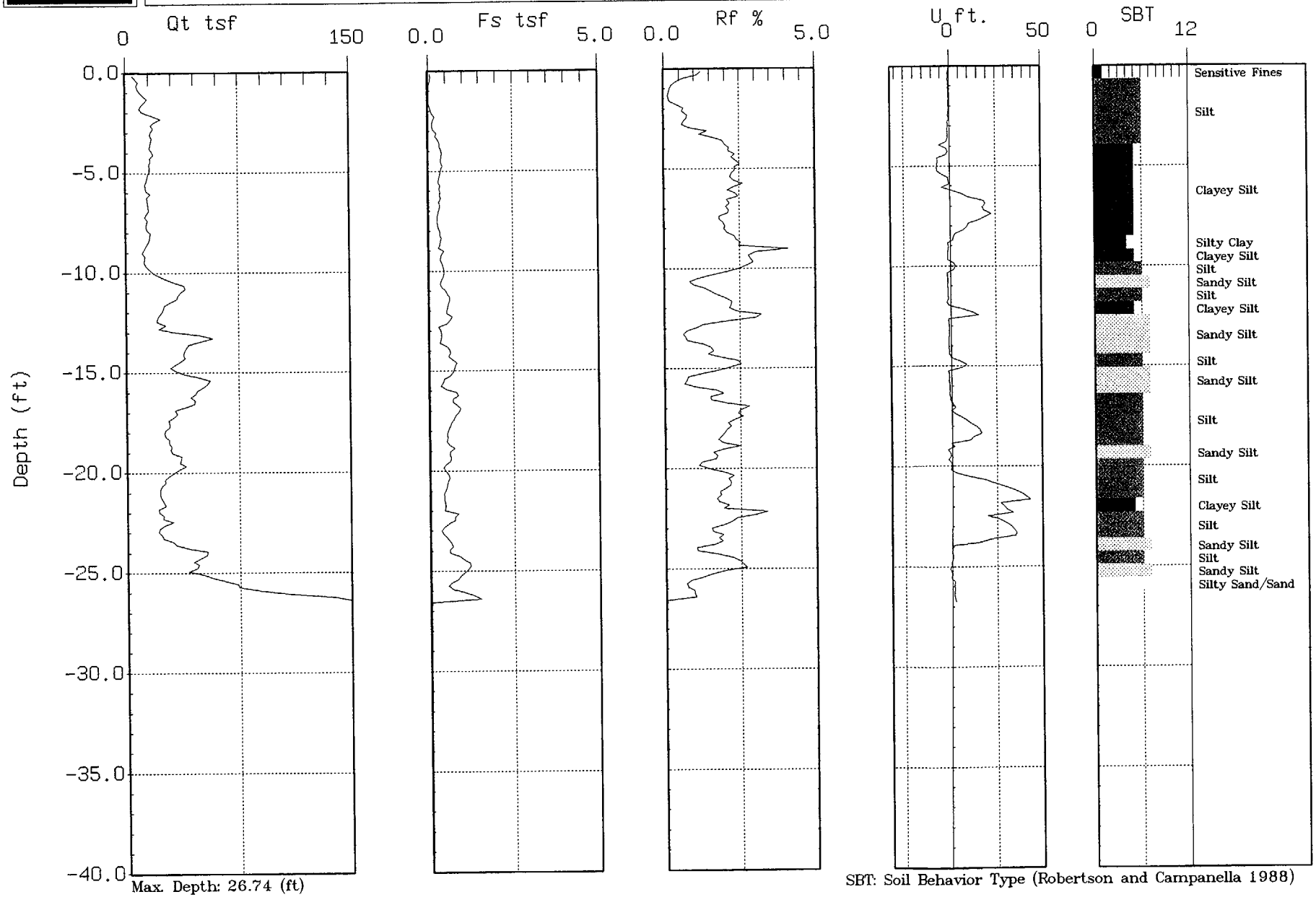
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-18
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 16:19



Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

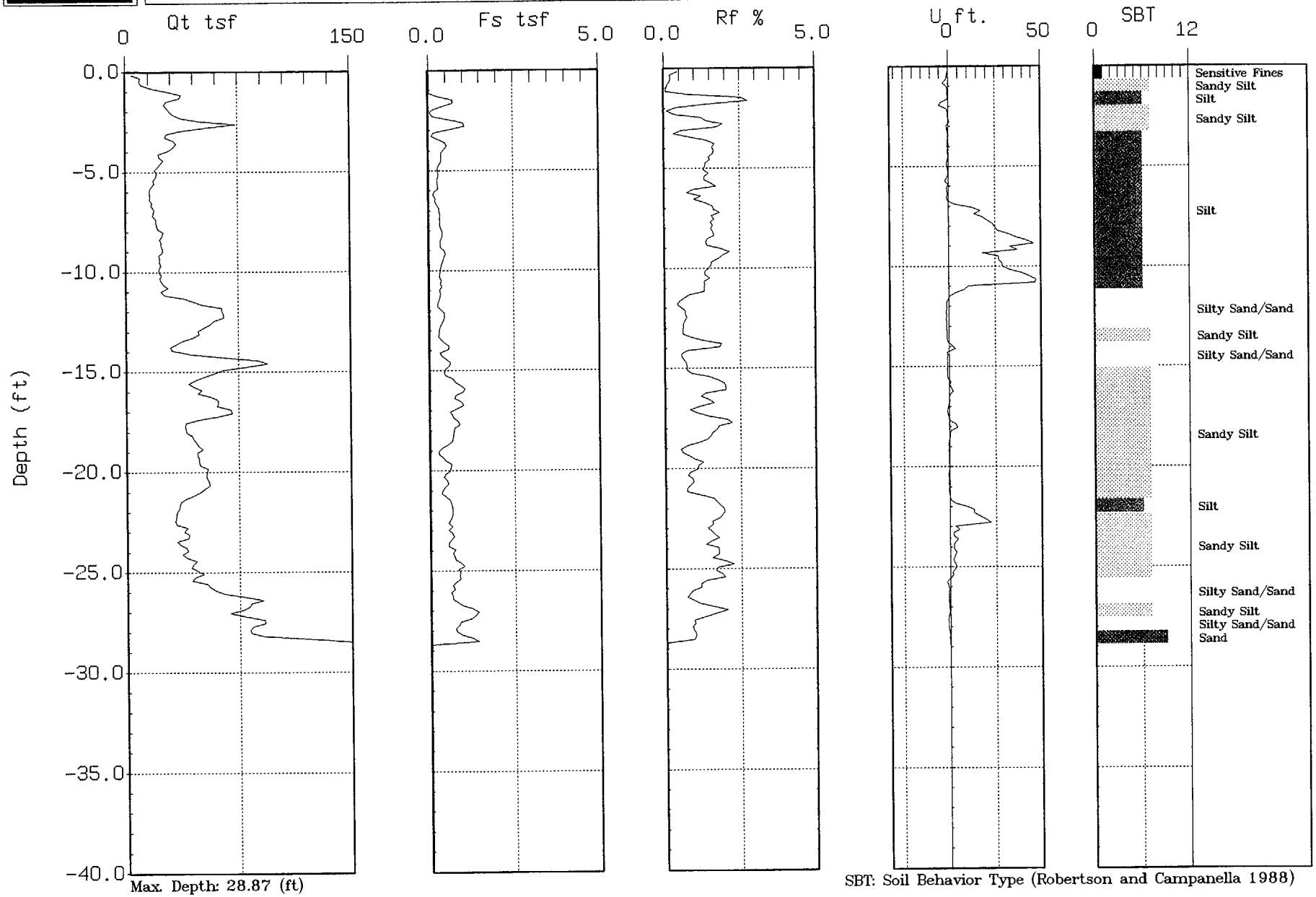
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-19
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 11:03



Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

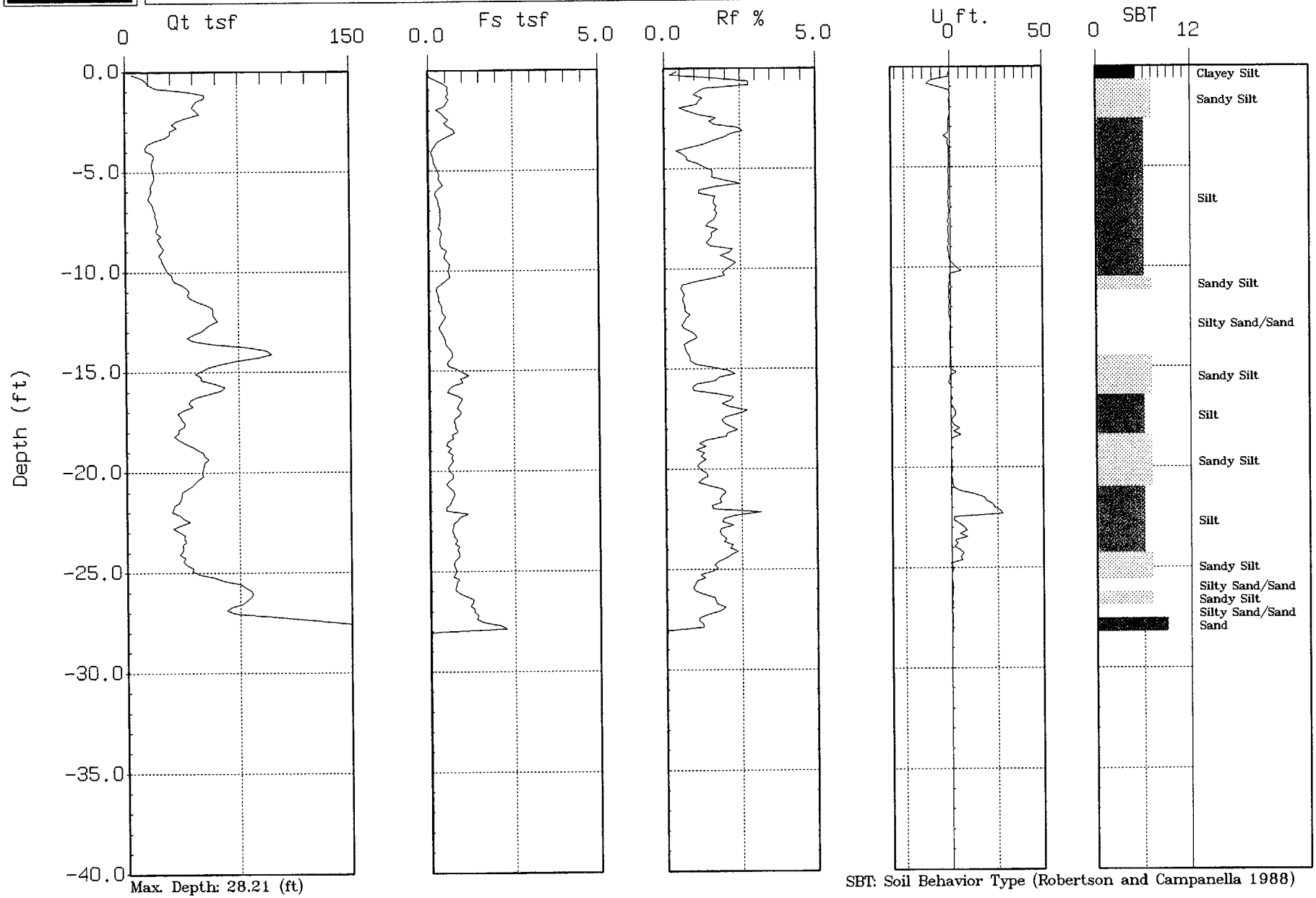
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-20
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 09:47



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

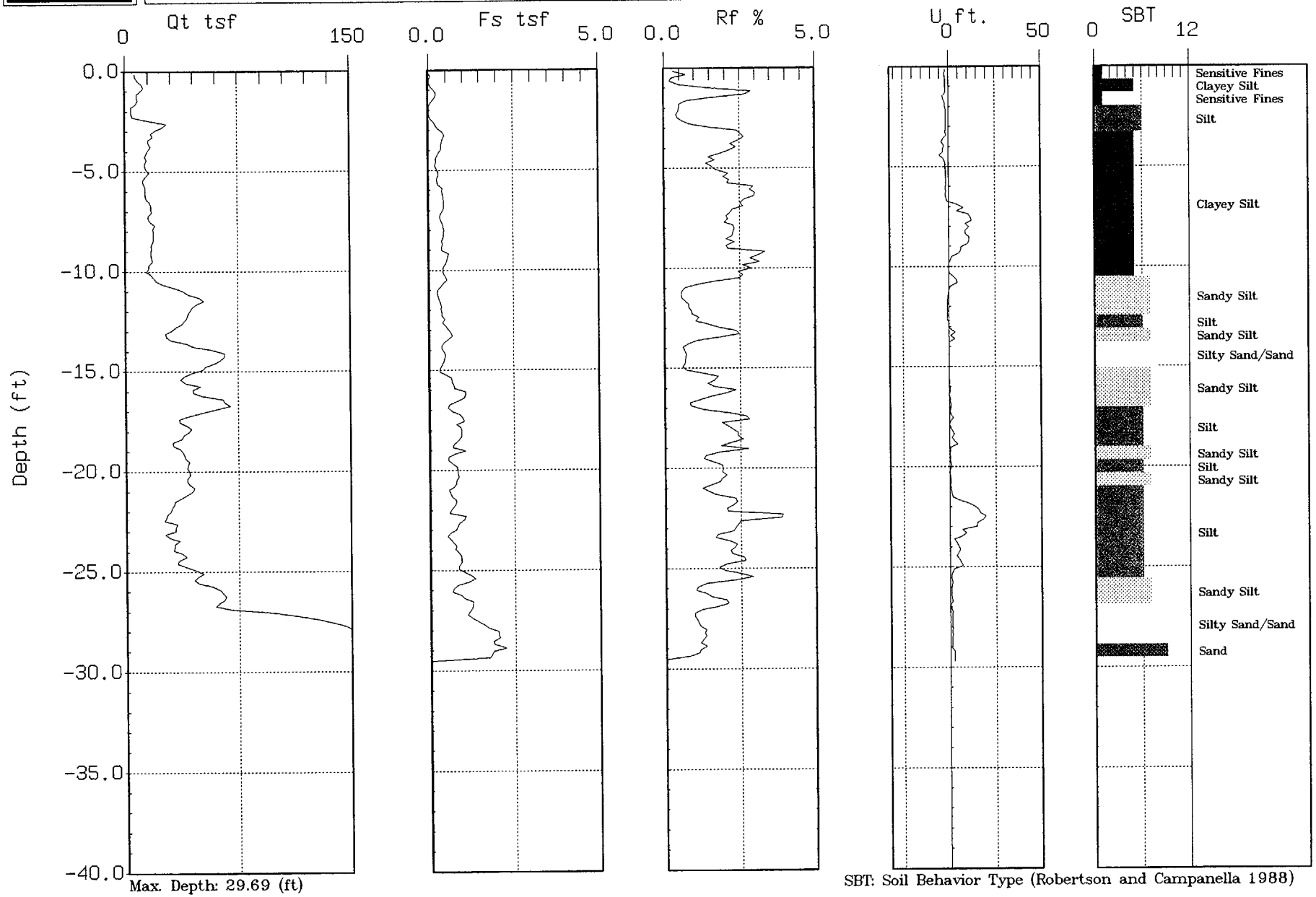
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-21
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 08:18



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

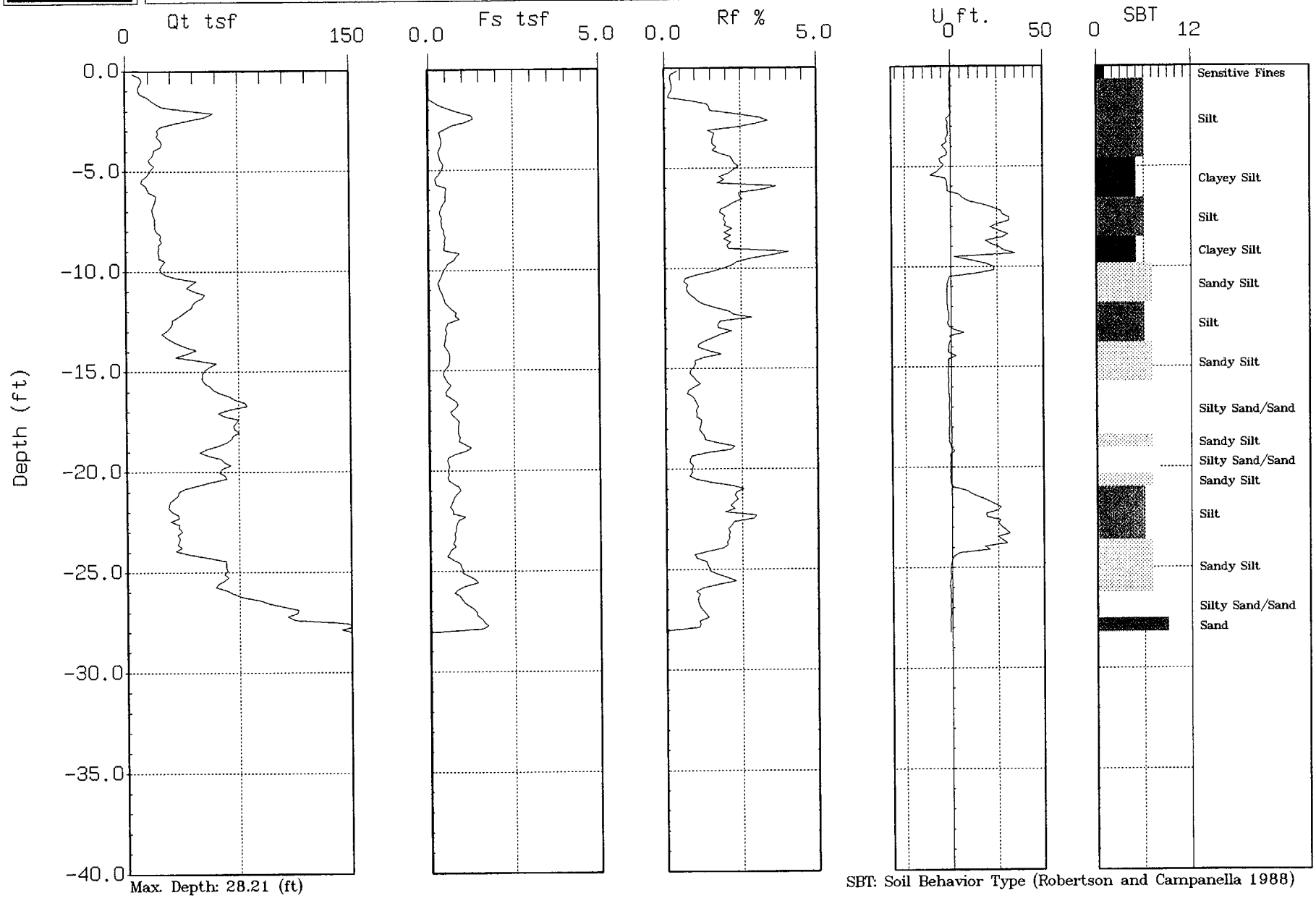
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-22
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 18:33



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

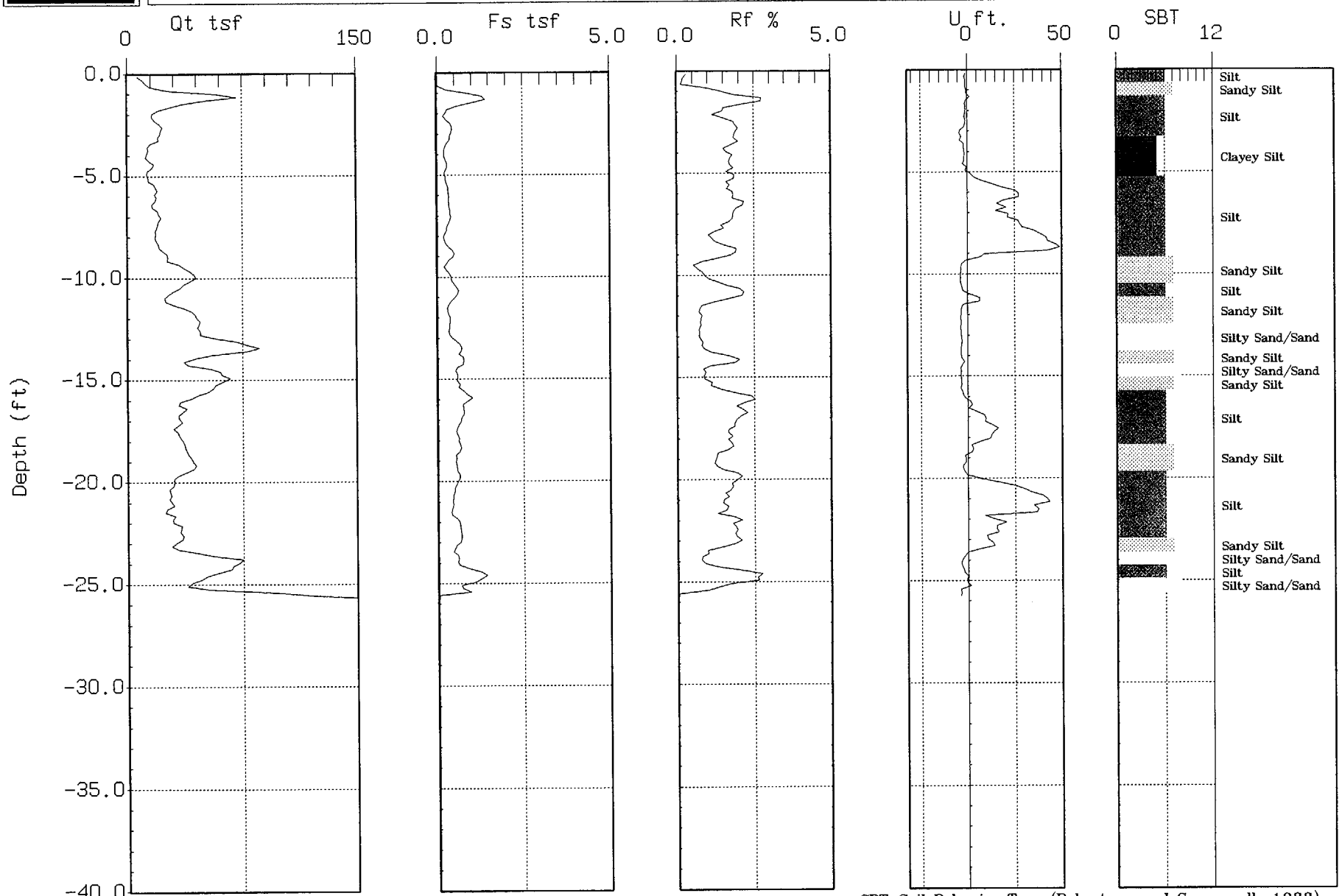
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-23
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 17:58



Max. Depth: 25.75 (ft)

Depth Inc.: 0.164 (ft)

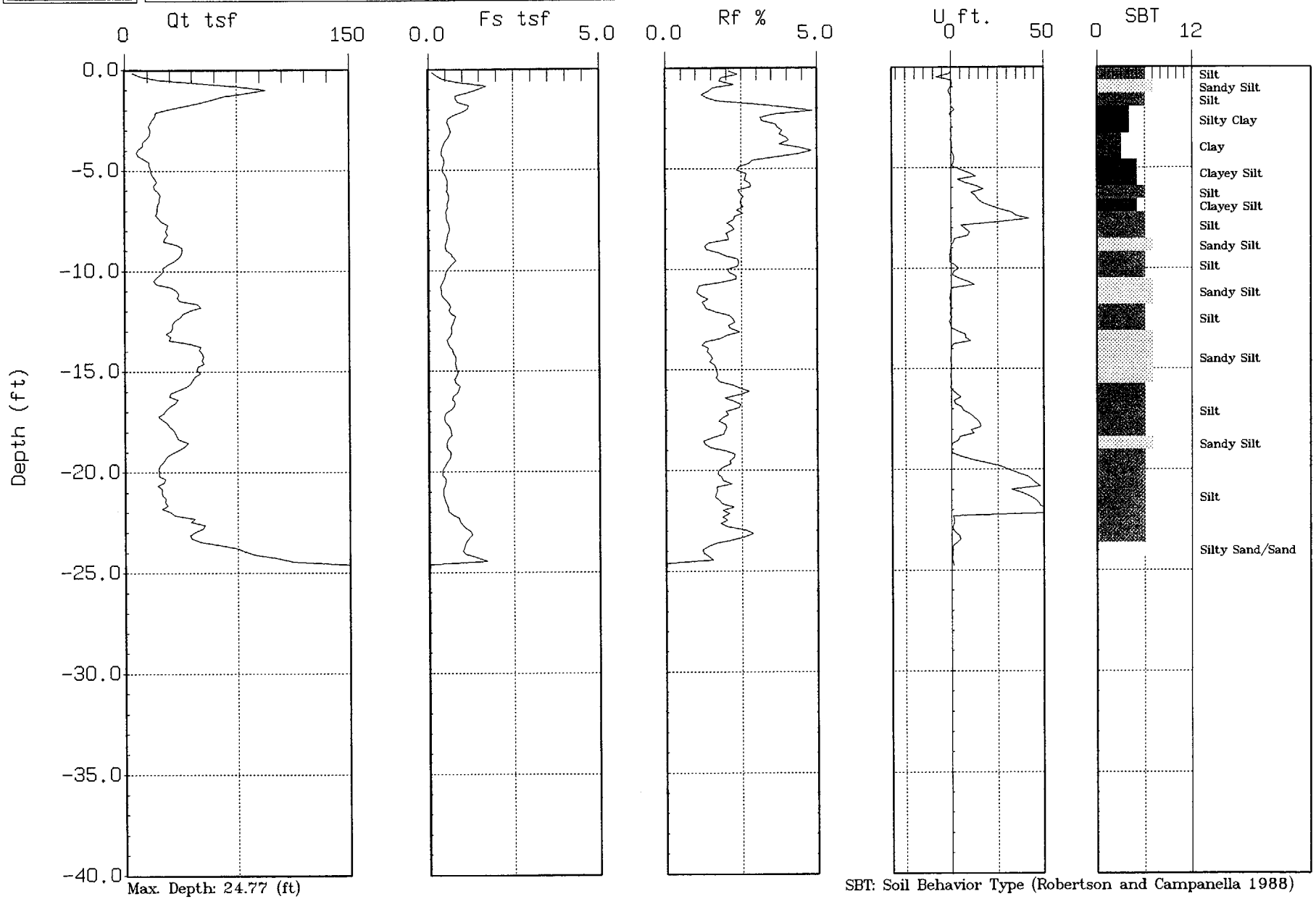
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-24
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 17:31



Max. Depth: 24.77 (ft)

Depth Inc.: 0.164 (ft)

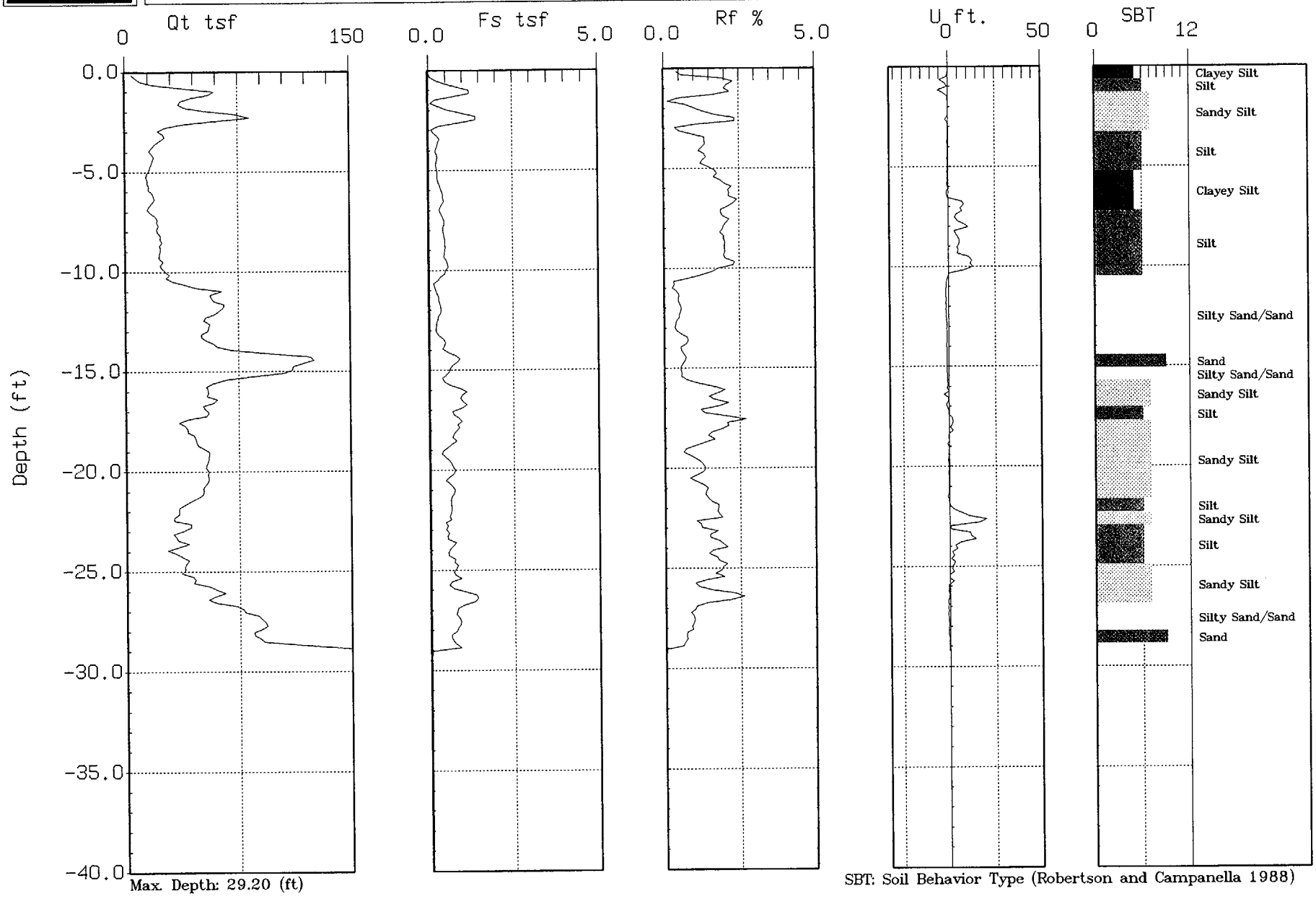
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-25
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 11:31



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

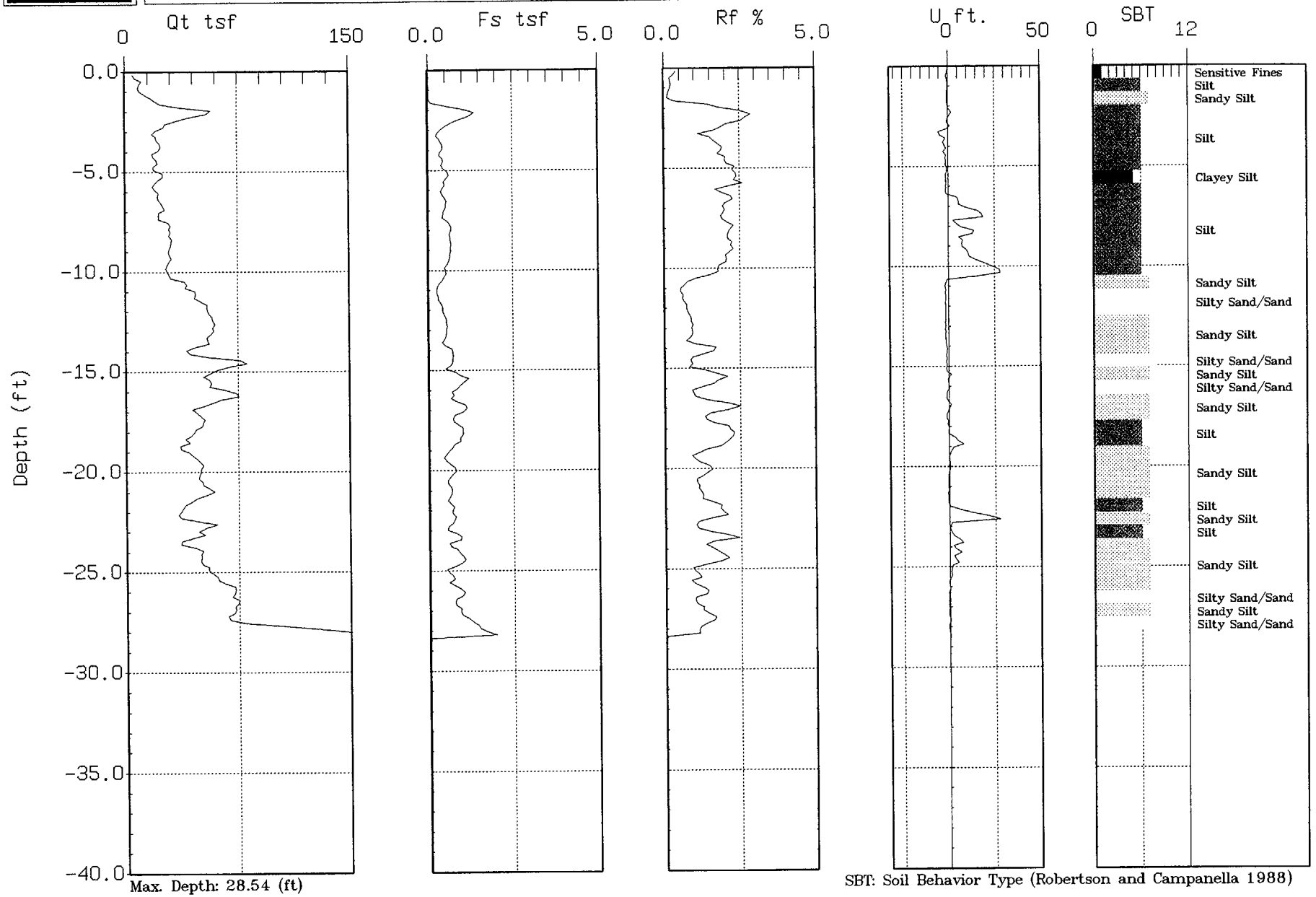
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-26
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:02



Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

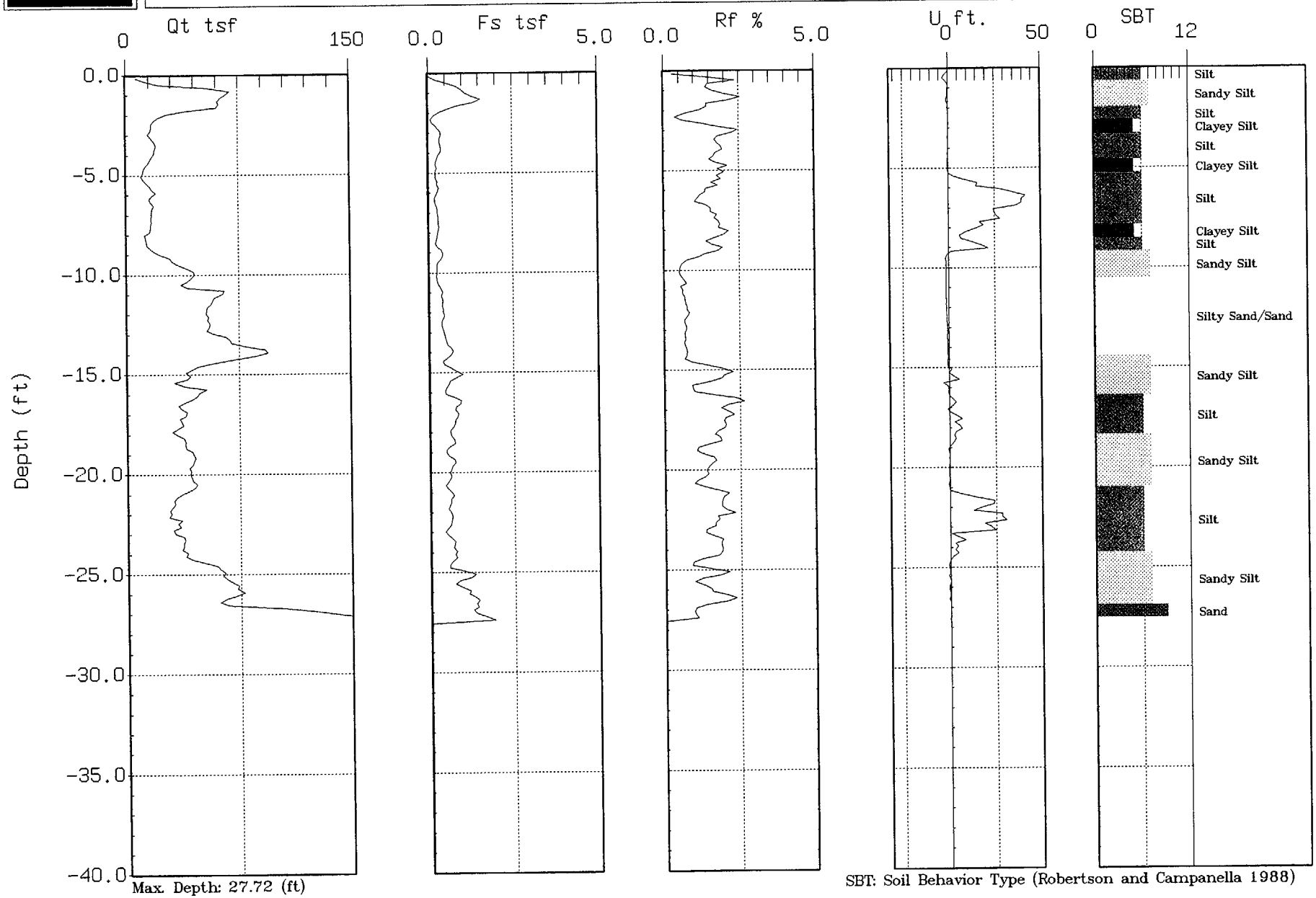
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-27
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:30



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

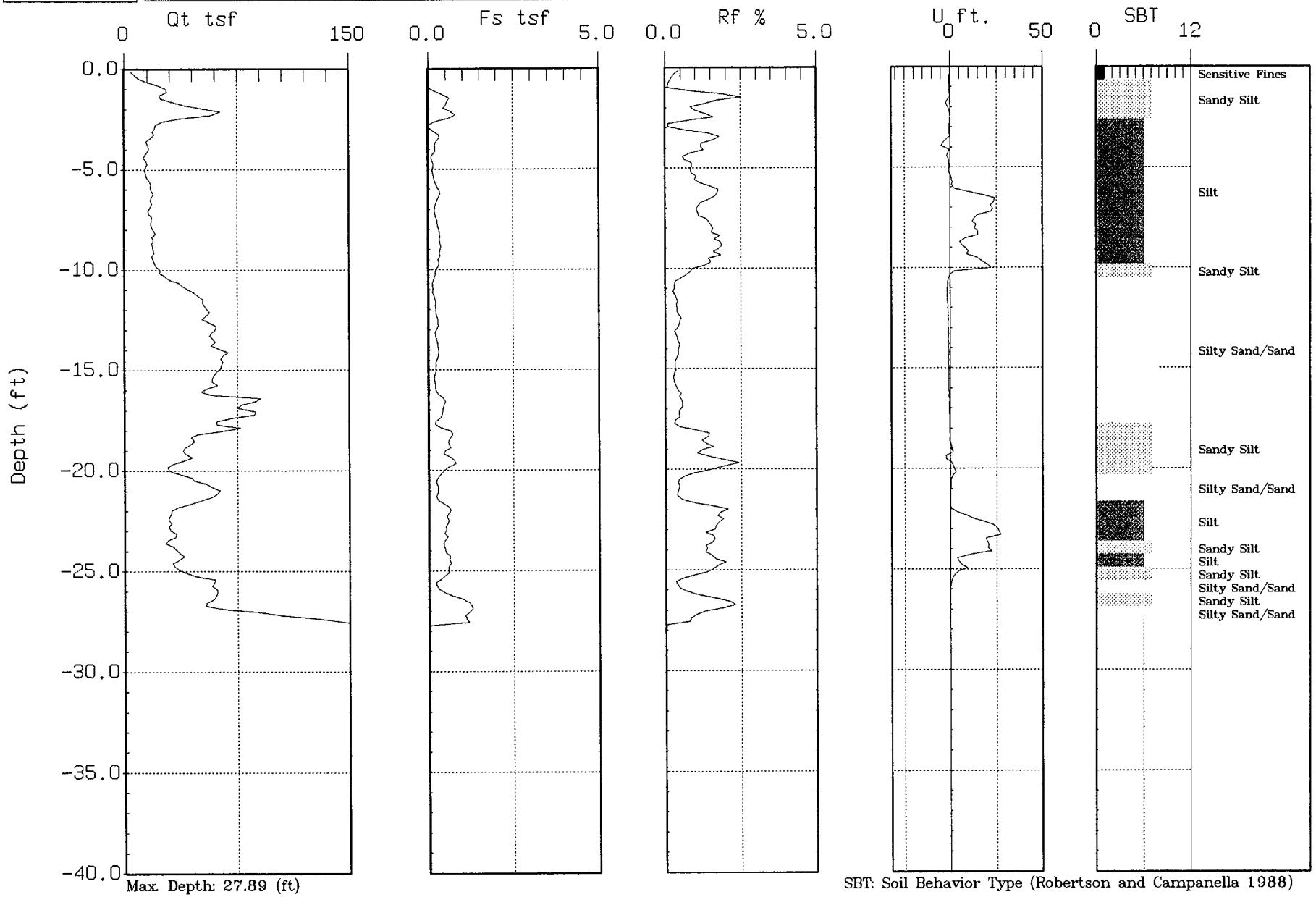
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-28
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:58



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

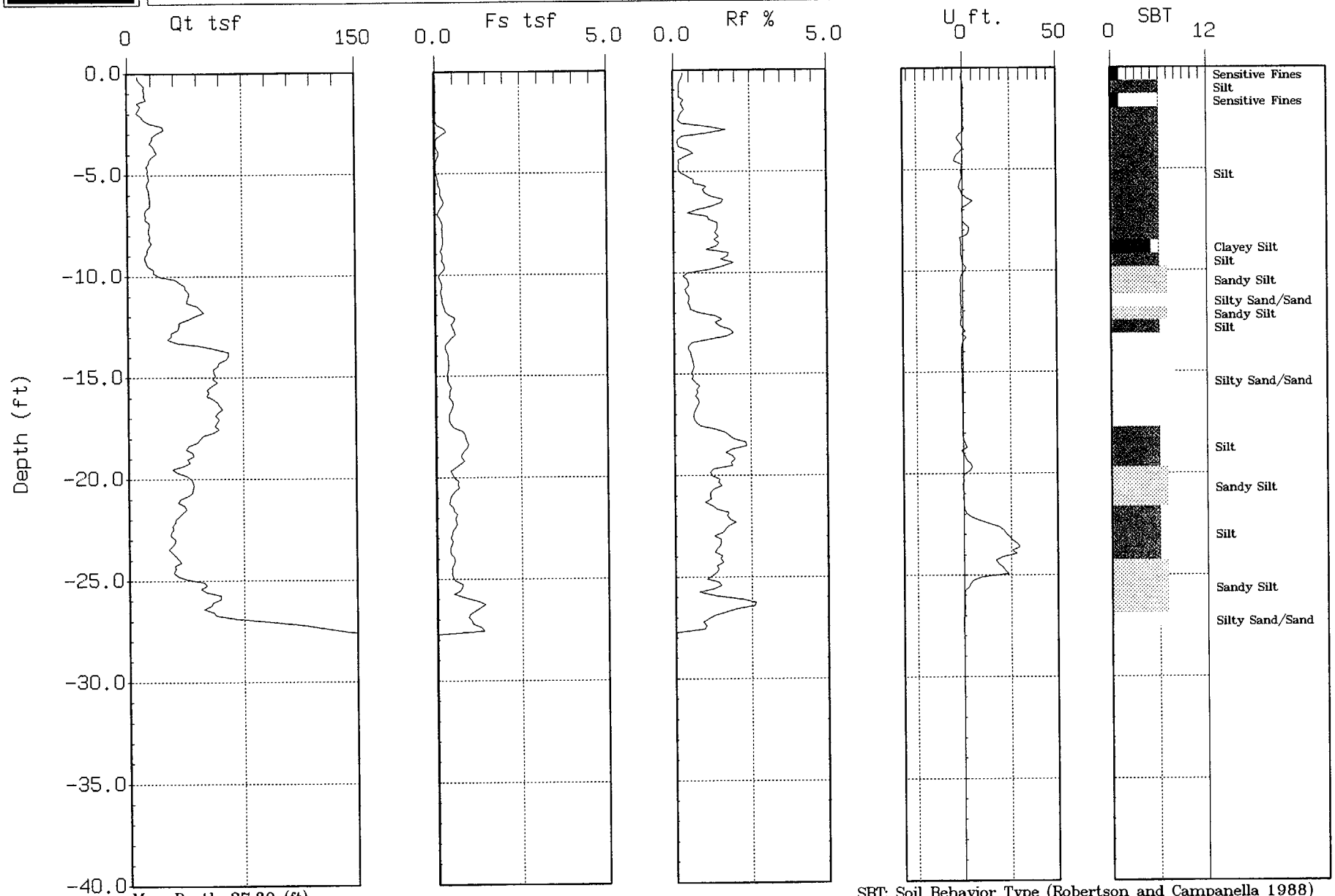
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-29
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 13:26



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

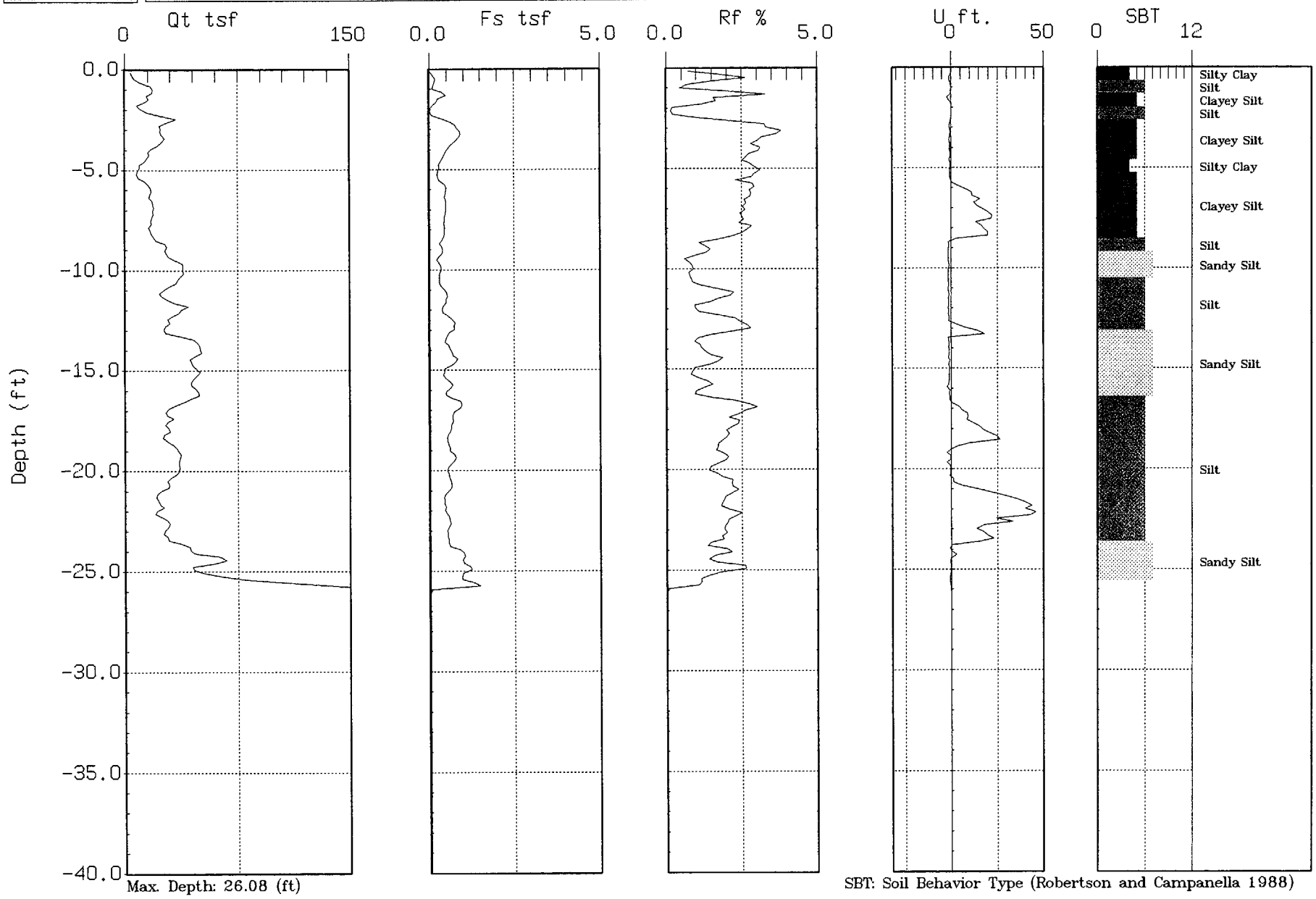
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-30
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 13:56



Max. Depth: 26.08 (ft)

Depth Inc.: 0.164 (ft)

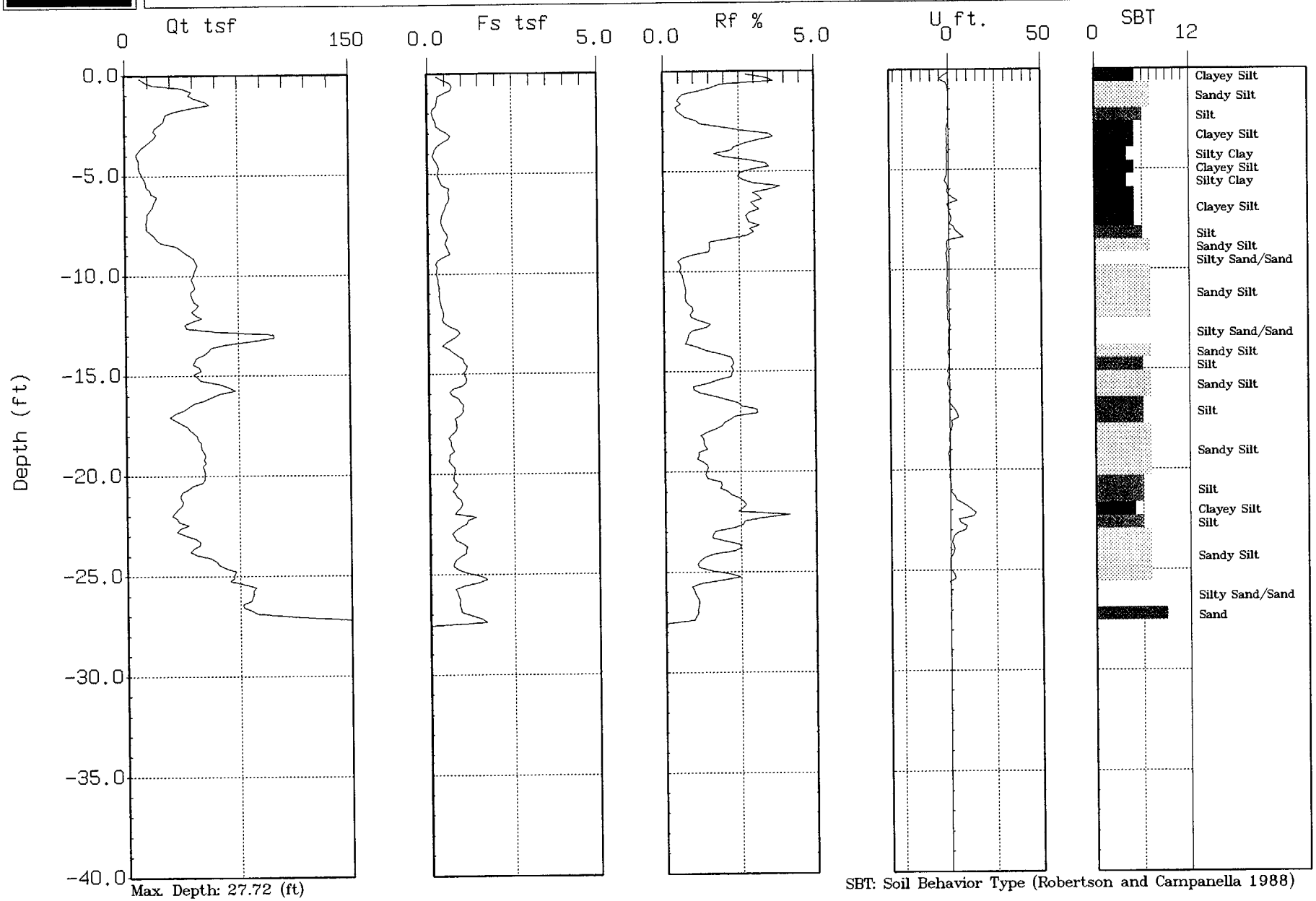
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-31
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 11:22



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

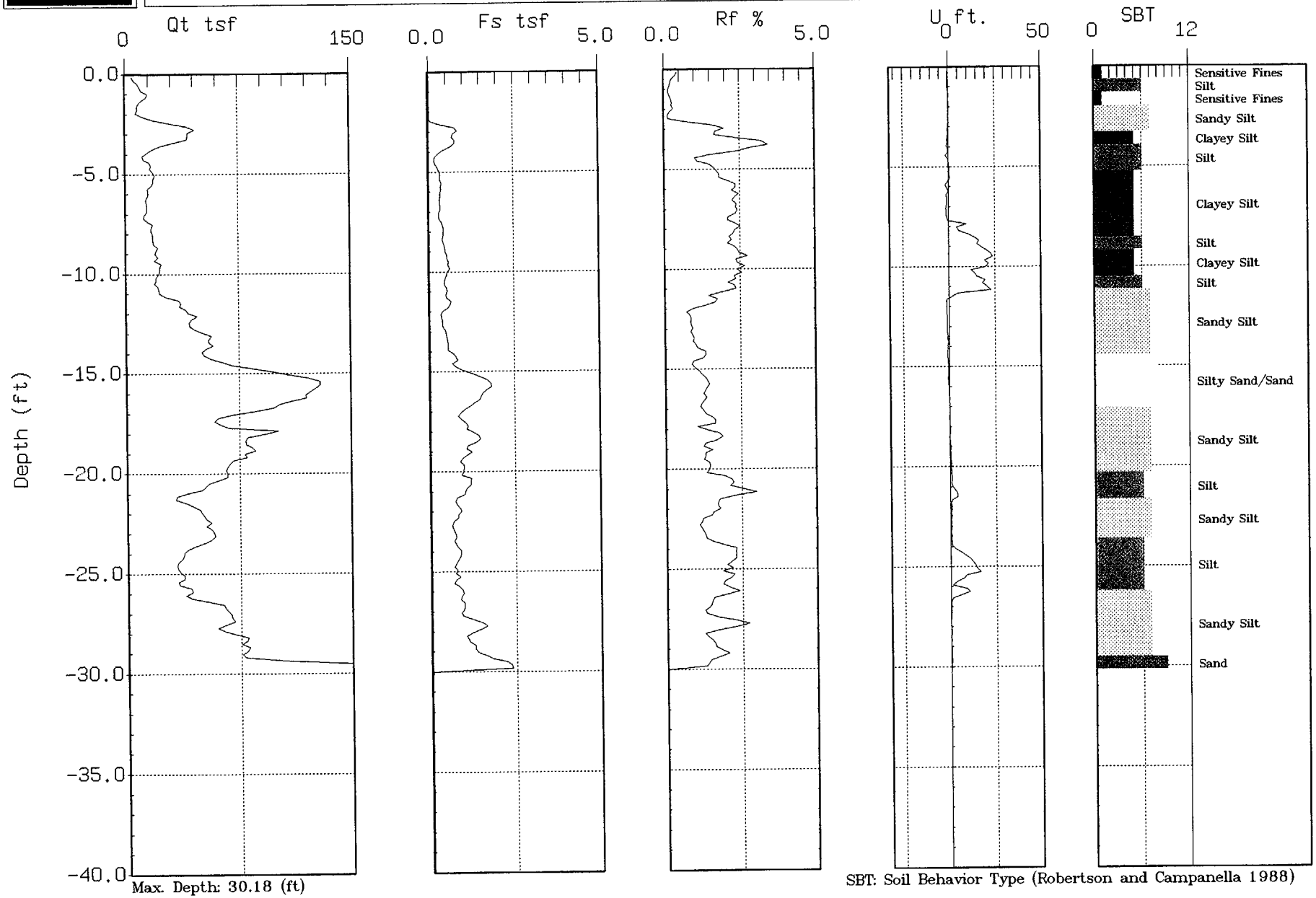
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-32
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 10:43



Max. Depth: 30.18 (ft)

Depth Inc.: 0.164 (ft)

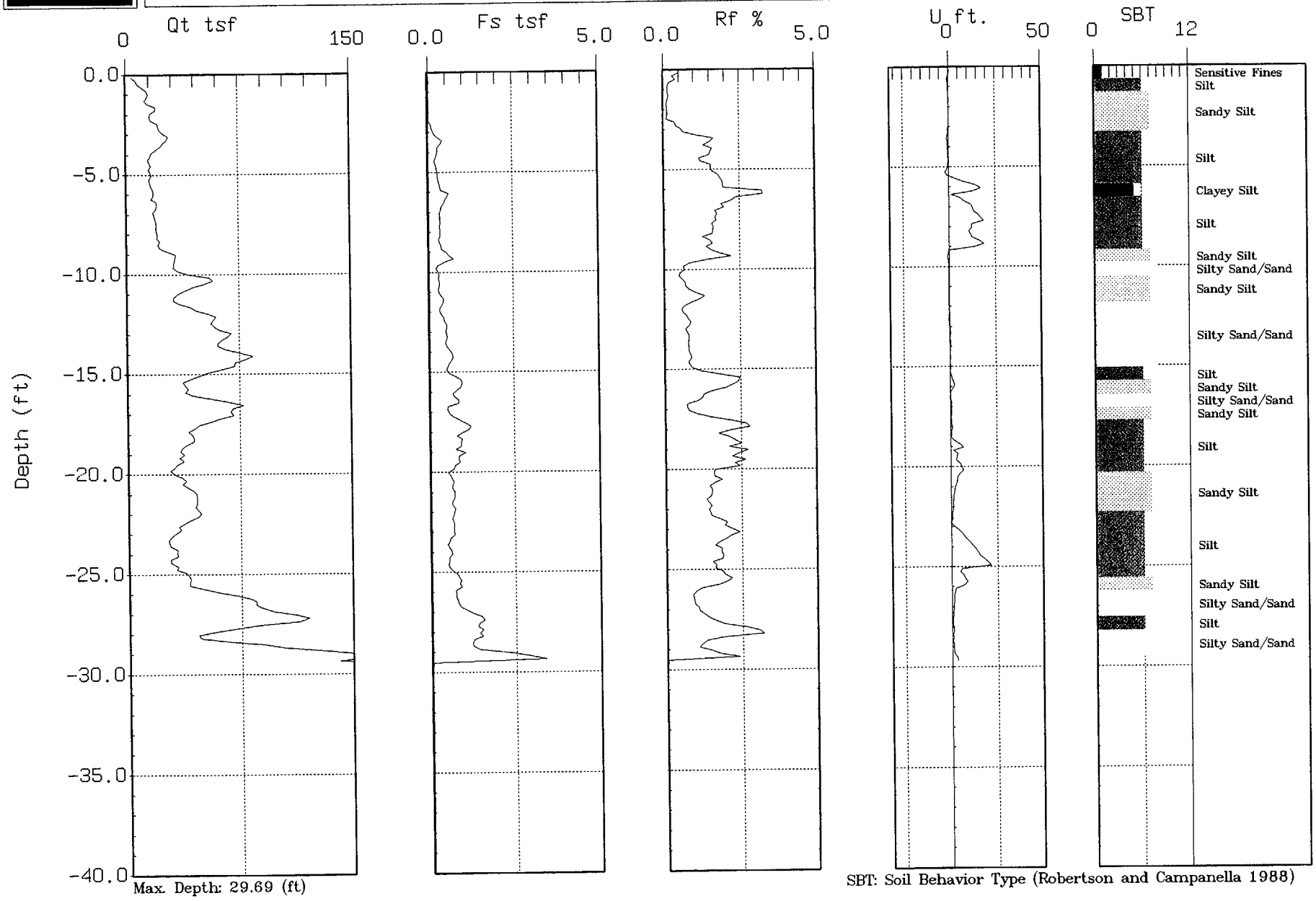
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-33
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 09:30



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

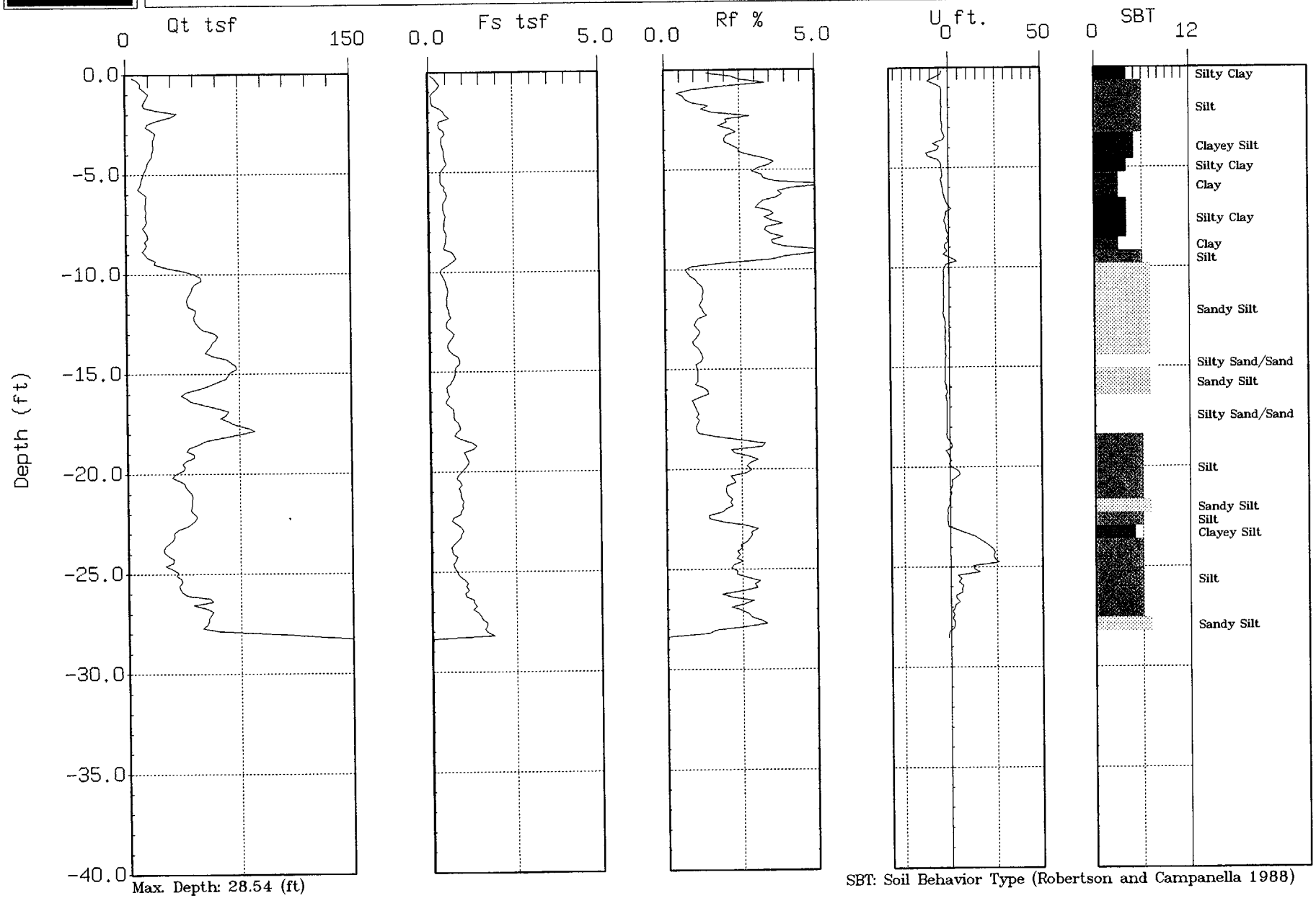
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-34
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 08:09



Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

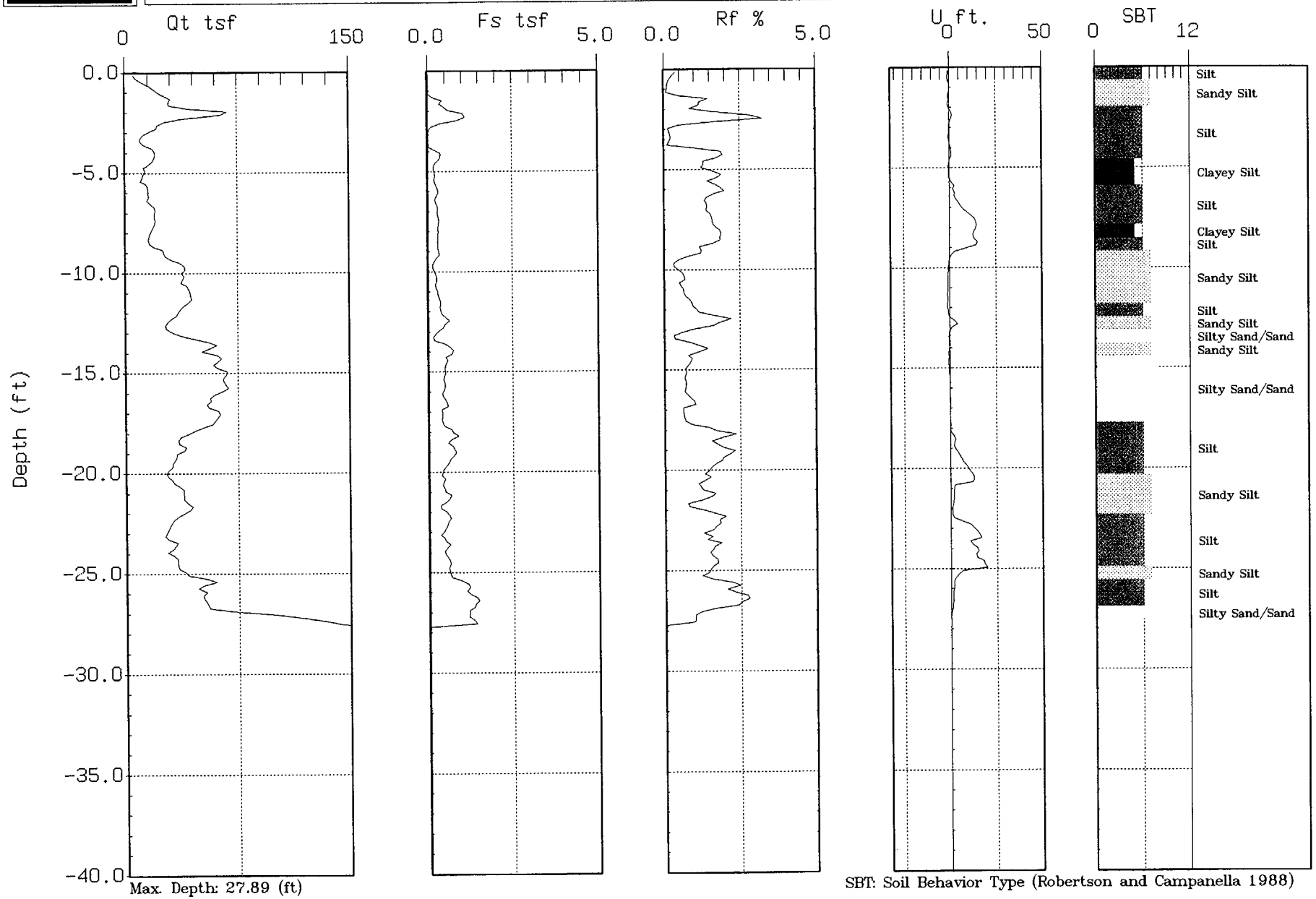
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-35
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 16:07



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

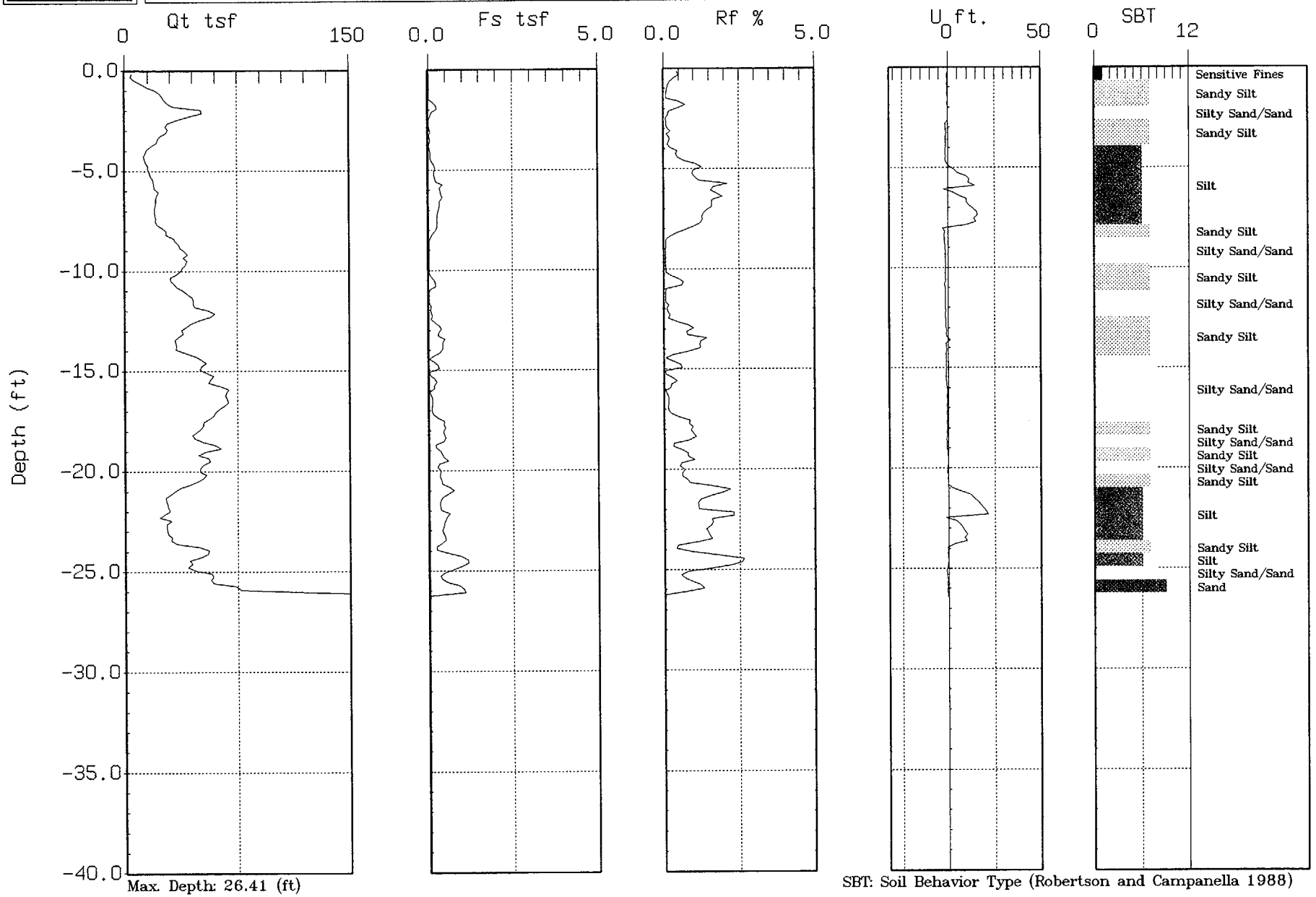
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-36
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 14:32



Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

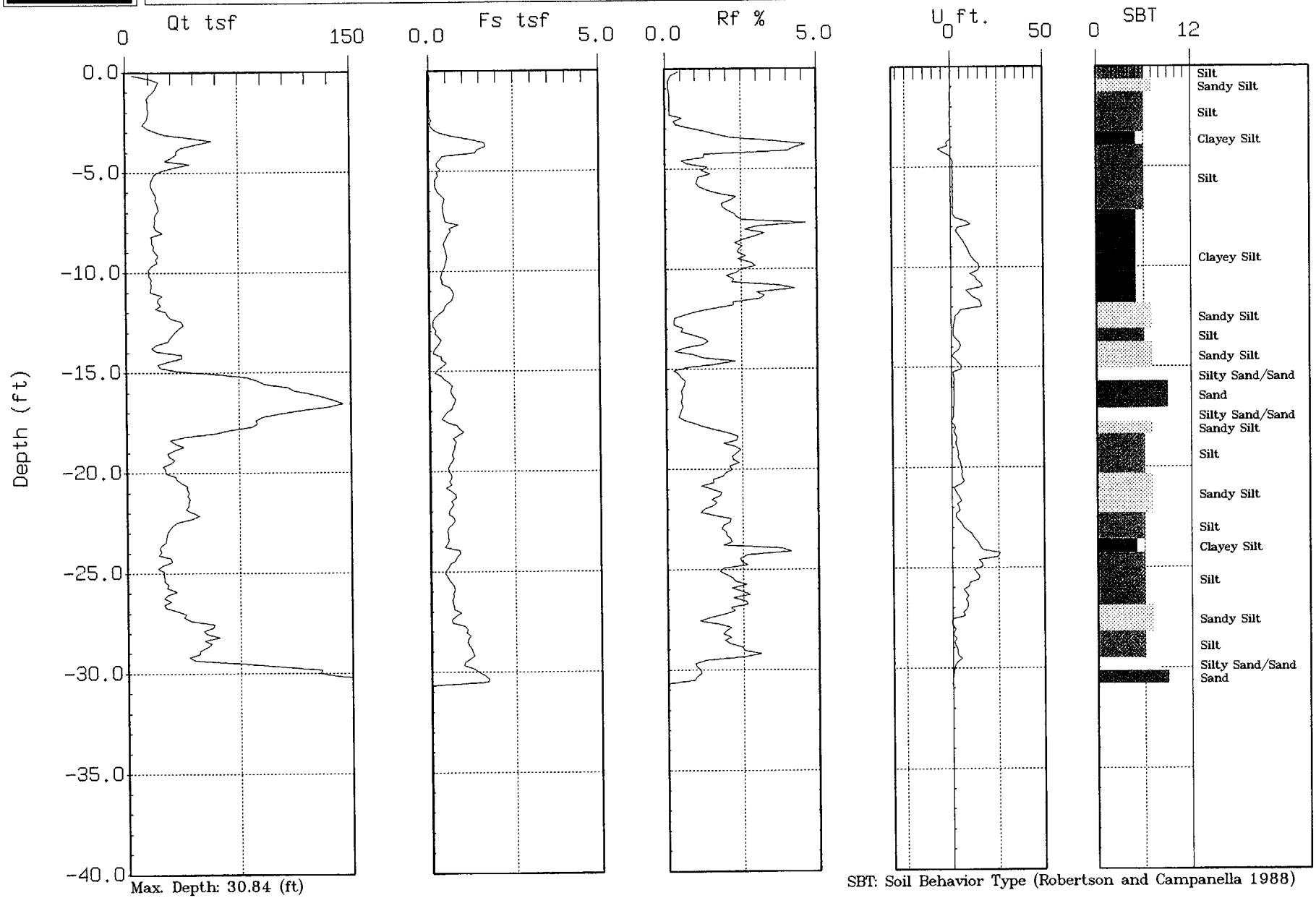
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-37
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 11:36



Max. Depth: 30.84 (ft)

Depth Inc.: 0.164 (ft)

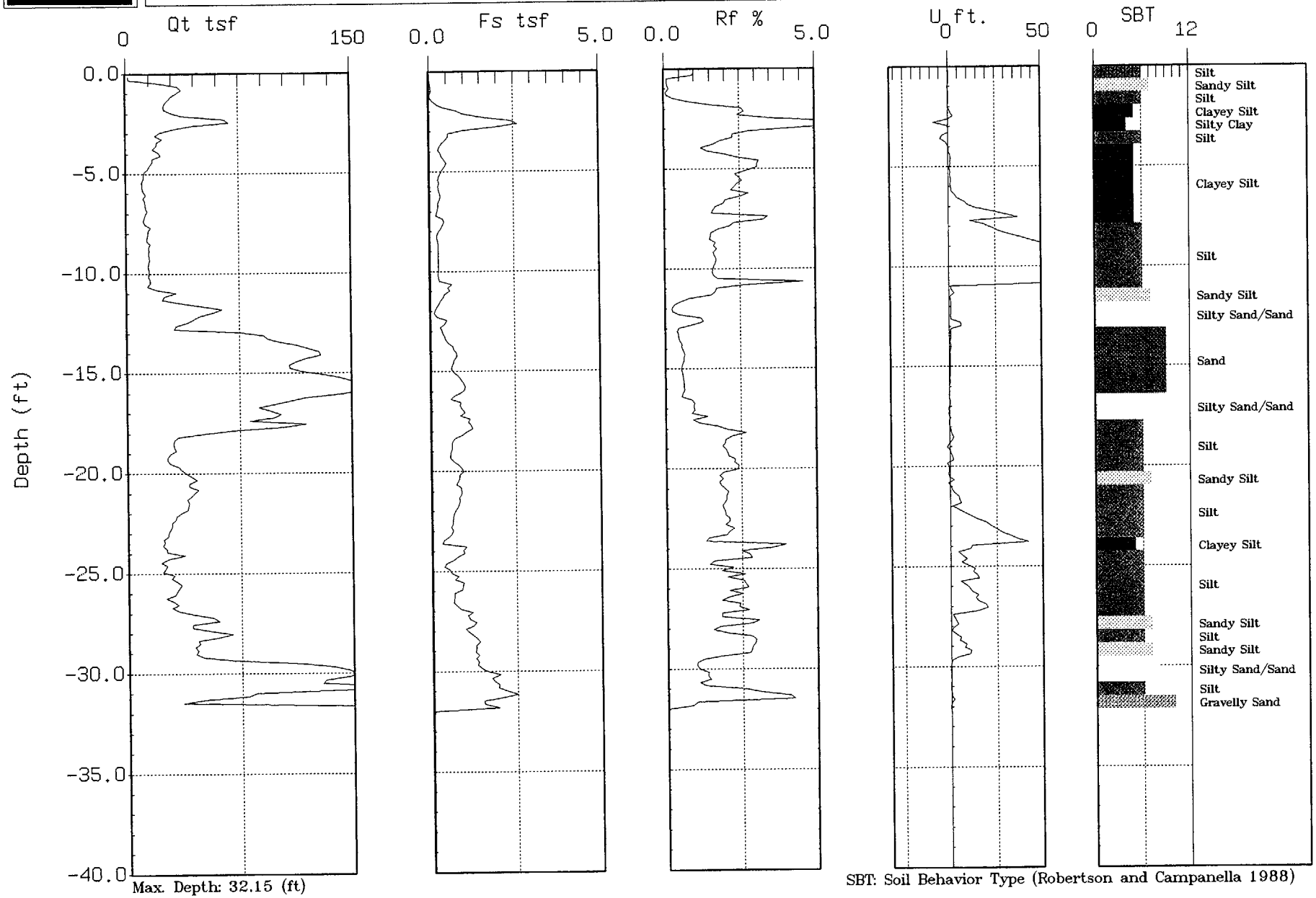
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-38
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 15:06



Max. Depth: 32.15 (ft)

Depth Inc.: 0.164 (ft)

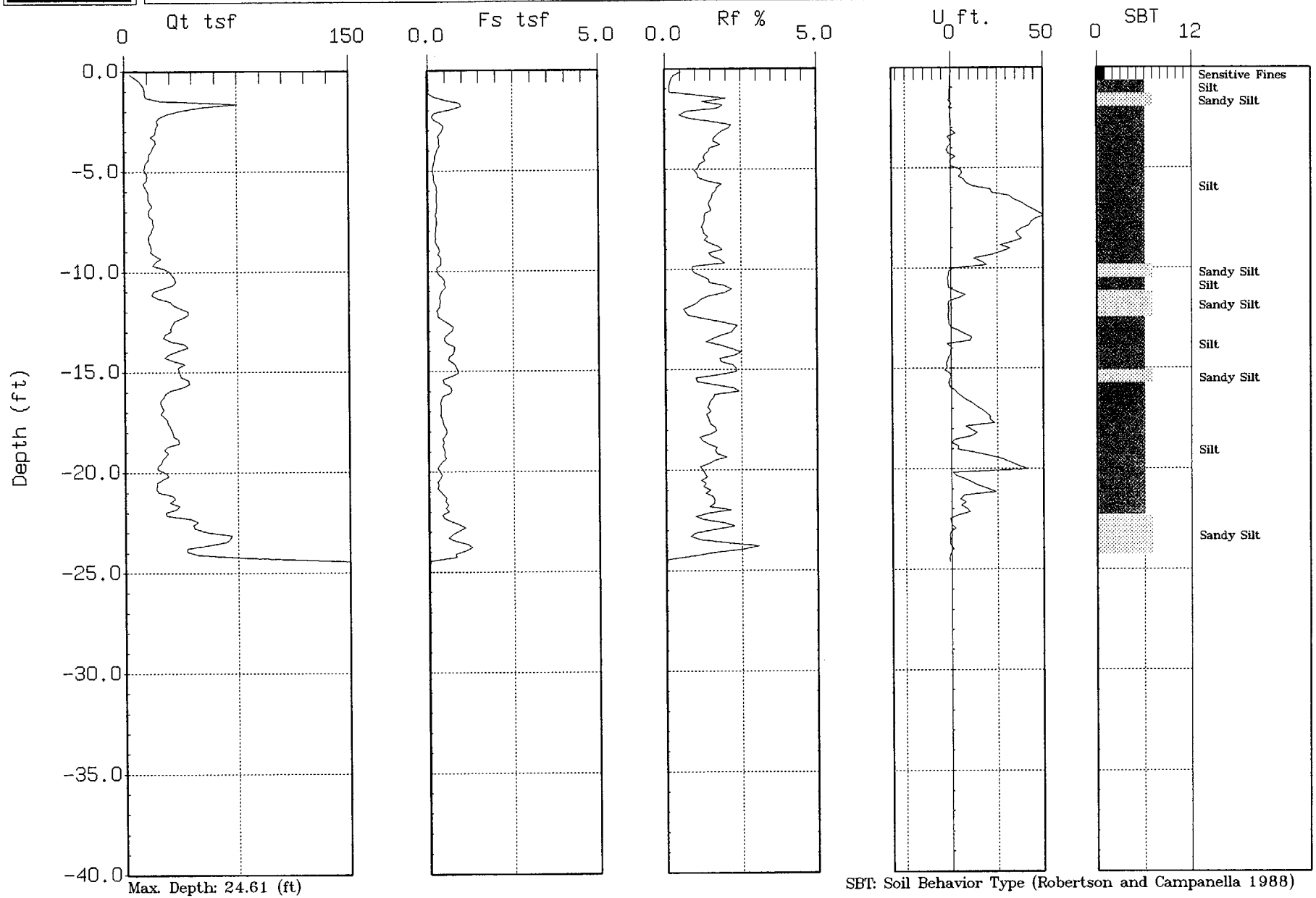
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-39
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 16:12



Max. Depth: 24.61 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

Appendix B

Resistivity CPT Plots

and

Tabular Data

Appendix B

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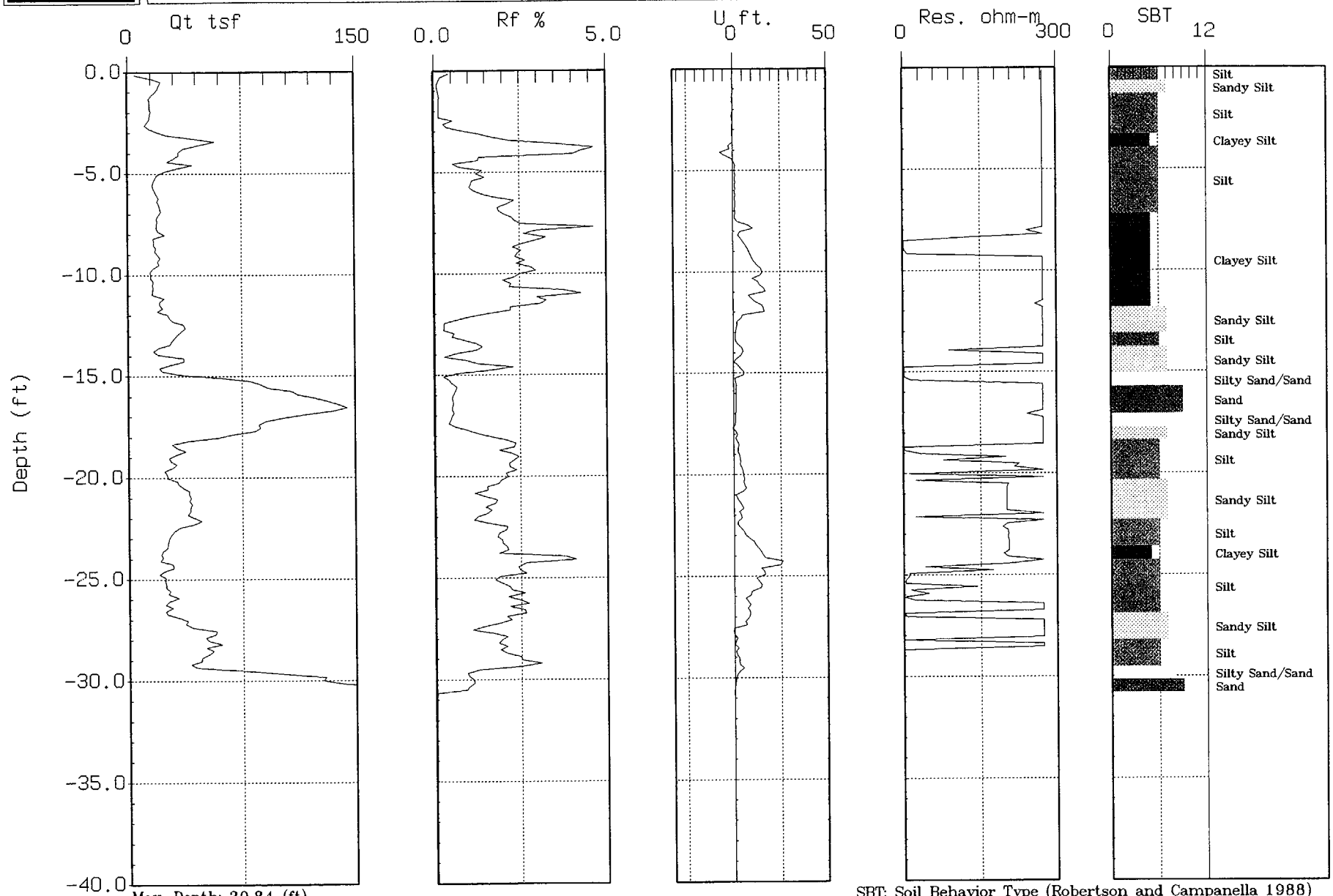
CONETEC

Stone & Webster

Site: CPT-37
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 11:36



Max. Depth: 30.84 (ft)

Depth Inc.: 0.164 (ft)

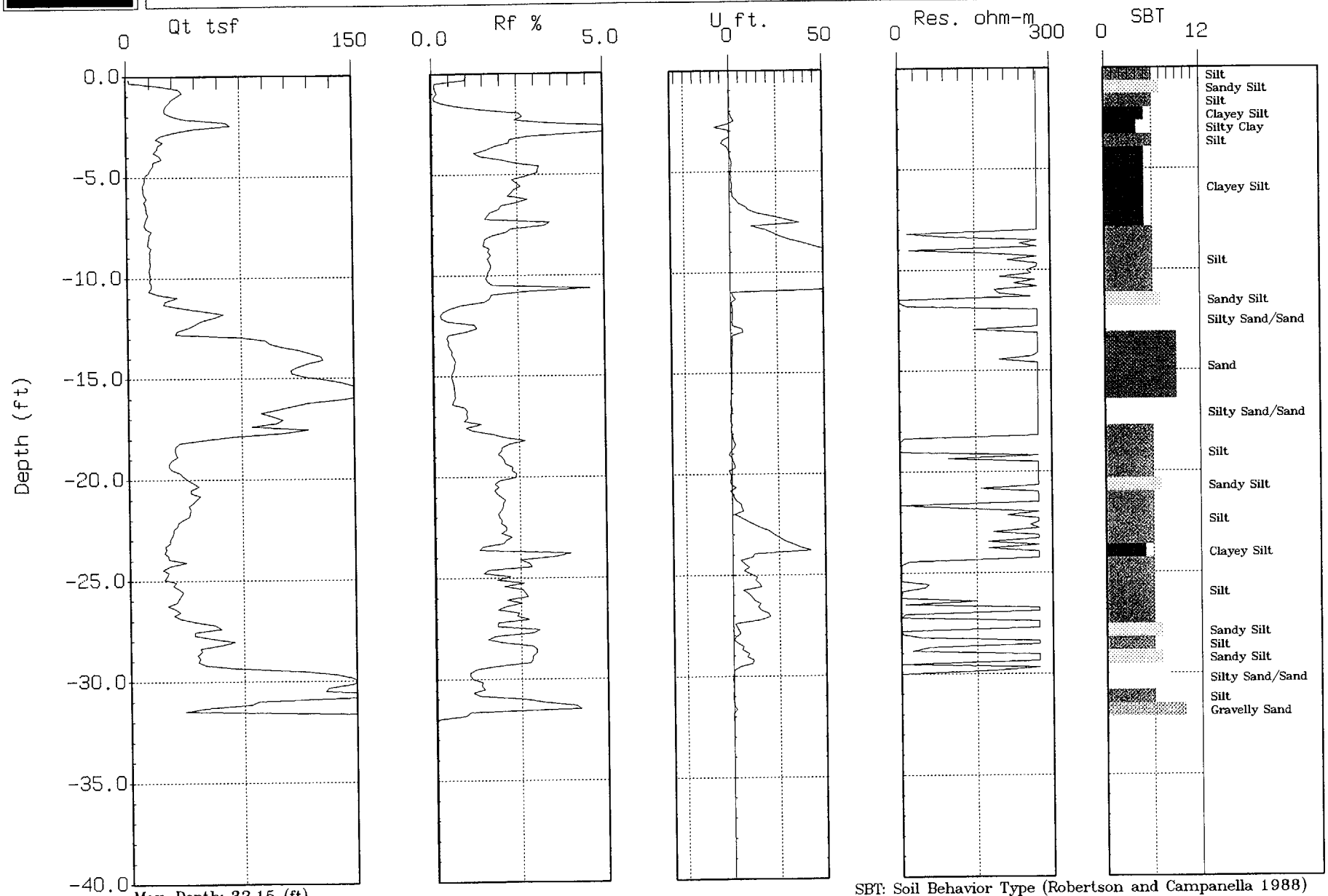
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-38
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 15:06



Max. Depth: 32.15 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Resistivity Data File

Job No.: 99-315
Client: Stone & Webster
Location: Private Fuel Storage Facility
Date: 4/23/99
CPT No.: CPT-37

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
0.05	4.72	0.02	0.14	273.00
0.10	15.49	0.03	-0.09	273.00
0.15	21.92	0.03	-0.23	273.00
0.20	20.90	0.02	-0.09	273.00
0.25	19.69	0.02	-0.05	273.00
0.30	18.03	0.02	0.14	273.00
0.35	15.42	0.02	-0.14	273.00
0.40	14.02	0.02	-0.19	273.00
0.45	14.66	0.02	-0.23	273.00
0.50	14.72	0.02	-0.23	273.00
0.55	14.59	0.02	0.19	273.00
0.60	15.10	0.02	0.00	273.00
0.65	14.59	0.02	-0.09	273.00
0.70	14.21	0.02	-0.61	273.00
0.75	12.81	0.07	-0.19	273.00
0.80	11.02	0.03	0.00	273.00
0.85	13.89	0.05	-0.28	273.00
0.90	19.31	0.15	-0.19	273.00
0.95	25.62	0.33	-0.19	273.00
1.00	42.82	0.72	-0.38	273.00
1.05	57.23	1.25	-0.14	273.00
1.10	47.09	1.65	-0.09	273.00
1.15	36.26	1.68	-2.25	273.00
1.20	33.39	1.42	-1.74	273.00
1.25	33.46	1.35	-6.90	273.00
1.30	30.14	0.39	-4.36	273.00
1.35	26.00	0.33	-0.52	273.00
1.40	42.38	0.23	0.38	273.00
1.45	31.80	0.23	1.08	273.00
1.50	23.71	0.33	0.99	273.00
1.55	19.12	0.23	0.99	273.00
1.60	17.52	0.26	1.13	273.00
1.65	16.63	0.18	0.89	273.00

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
1.70	16.06	0.17	1.22	273.00
1.75	16.63	0.17	0.99	273.00
1.80	17.78	0.20	1.13	273.00
1.85	18.93	0.26	1.03	273.00
1.90	20.01	0.35	1.13	273.00
1.95	19.31	0.45	0.89	273.00
2.00	20.39	0.44	1.13	273.00
2.05	20.97	0.39	1.08	273.00
2.10	21.79	0.41	1.03	273.00
2.15	19.76	0.40	1.08	273.00
2.20	19.05	0.43	0.99	273.00
2.25	19.18	0.45	0.99	273.00
2.30	18.99	0.48	2.35	273.00
2.35	18.54	0.86	8.07	273.00
2.40	19.88	0.60	10.51	273.00
2.45	24.02	0.63	3.38	242.20
2.50	16.31	0.53	2.72	273.00
2.55	17.08	0.50	3.99	117.60
2.60	16.76	0.43	5.30	0.55
2.65	18.35	0.42	6.52	0.60
2.70	17.72	0.45	7.60	0.73
2.75	19.44	0.47	8.45	2.94
2.80	21.03	0.50	9.20	8.36
2.85	19.63	0.52	10.00	273.00
2.90	20.39	0.49	11.12	273.00
2.95	16.25	0.46	12.72	273.00
3.00	14.47	0.43	14.69	273.00
3.05	14.78	0.37	15.30	273.00
3.10	14.85	0.35	14.45	273.00
3.15	16.38	0.33	10.23	273.00
3.20	16.00	0.36	13.09	273.00
3.25	16.38	0.36	13.98	273.00
3.30	15.93	0.60	16.38	273.00
3.35	15.61	0.67	17.13	273.00
3.40	23.64	0.71	7.93	273.00
3.45	20.84	0.68	9.86	273.00
3.50	20.65	0.64	11.59	273.00
3.55	22.43	0.50	15.39	257.80
3.60	19.25	0.43	16.00	273.00
3.65	25.87	0.41	16.66	273.00
3.70	26.83	0.27	5.02	273.00
3.75	29.19	0.18	4.04	272.00
3.80	36.39	0.10	1.97	273.00
3.85	37.47	0.10	1.92	273.00

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
3.90	34.67	0.09	1.55	273.00
3.95	32.25	0.18	1.13	273.00
4.00	30.27	0.15	1.03	273.00
4.05	28.42	0.24	0.99	273.00
4.10	27.40	0.33	1.13	273.00
4.15	19.50	0.27	2.77	273.00
4.20	16.38	0.20	4.46	273.00
4.25	19.25	0.12	5.07	89.33
4.30	36.64	0.10	4.04	273.00
4.35	36.58	0.33	1.78	273.00
4.40	27.66	0.34	0.19	273.00
4.45	20.52	0.47	2.30	273.00
4.50	22.30	0.37	3.52	0.67
4.55	33.52	0.22	5.12	0.62
4.60	60.80	0.15	5.16	0.66
4.65	80.30	0.32	0.70	0.78
4.70	87.11	0.41	0.99	14.37
4.75	92.34	0.57	1.50	272.27
4.80	108.21	0.65	1.31	273.00
4.85	111.46	0.61	1.08	272.67
4.90	123.18	0.61	1.22	273.00
4.95	131.72	0.66	1.17	273.00
5.00	138.48	0.73	1.22	272.93
5.05	144.85	0.72	1.17	273.00
5.10	135.87	0.67	1.22	272.60
5.15	118.40	0.64	1.08	273.00
5.20	101.84	0.48	1.03	241.87
5.25	90.62	0.41	0.94	273.00
5.30	86.22	0.34	0.99	273.00
5.35	87.11	0.49	0.66	273.00
5.40	83.74	0.77	-0.56	273.00
5.45	68.82	0.84	1.13	273.00
5.50	59.01	0.96	1.92	273.00
5.55	39.19	0.81	0.94	273.00
5.60	28.49	0.67	1.97	273.00
5.65	31.93	0.74	2.77	273.00
5.70	37.60	0.71	2.30	0.74
5.75	30.84	0.70	2.25	1.27
5.80	26.70	0.65	2.91	32.17
5.85	27.72	0.64	3.33	199.27
5.90	31.35	0.68	3.52	76.93
5.95	28.80	0.63	3.29	225.00
6.00	23.58	0.56	4.18	216.27
6.05	25.04	0.52	4.79	273.00

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
6.10	25.36	0.54	4.97	12.16
6.15	31.61	0.61	5.54	273.00
6.20	32.88	0.61	5.16	22.87
6.25	35.69	0.54	5.58	204.73
6.30	39.51	0.61	6.57	201.47
6.35	39.64	0.45	4.60	201.60
6.40	40.85	0.60	0.94	201.60
6.45	40.08	0.72	1.78	201.73
6.50	41.49	0.73	2.82	201.67
6.55	40.72	0.60	4.04	201.67
6.60	40.72	0.67	5.02	201.87
6.65	38.87	0.59	2.72	201.93
6.70	43.21	0.53	3.75	273.00
6.75	47.67	0.53	3.90	22.17
6.80	42.38	0.66	2.02	273.00
6.85	32.82	0.69	1.88	201.27
6.90	29.89	0.62	3.43	193.33
6.95	27.91	0.52	5.07	203.47
7.00	26.45	0.48	5.87	204.60
7.05	25.55	0.50	7.93	203.60
7.10	25.43	0.50	10.56	205.13
7.15	24.92	0.52	11.26	204.80
7.20	21.99	0.47	12.76	205.00
7.25	20.90	0.39	14.31	205.33
7.30	21.79	0.83	15.11	195.40
7.35	20.46	0.84	16.57	203.60
7.40	28.36	0.75	25.90	273.00
7.45	28.93	0.70	24.97	204.13
7.50	22.69	0.56	14.31	41.73
7.55	19.63	0.52	16.10	173.53
7.60	23.64	0.44	16.33	9.79
7.65	23.52	0.41	11.78	9.06
7.70	24.15	0.47	13.14	3.09
7.75	24.09	0.52	14.55	3.01
7.80	26.51	0.59	13.94	142.87
7.85	25.68	0.67	9.24	12.69
7.90	32.18	0.68	8.63	48.20
7.95	26.00	0.64	5.87	0.33
8.00	23.96	0.65	7.32	20.71
8.05	28.10	0.61	8.45	273.00
8.10	23.83	0.62	6.95	273.00
8.15	24.66	0.65	8.17	273.00
8.20	32.18	0.67	8.35	1.14
8.25	38.55	0.85	7.41	4.56

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
8.30	36.83	0.70	5.77	273.00
8.35	42.00	0.58	6.38	273.00
8.40	57.35	0.61	-0.19	273.00
8.45	56.78	0.96	-0.56	273.00
8.50	50.22	1.05	-0.05	273.00
8.55	52.45	1.01	1.50	273.00
8.60	61.18	1.12	0.33	0.86
8.65	50.73	1.06	0.19	273.00
8.70	55.12	1.04	1.97	273.00
8.75	52.77	1.08	0.75	0.00
8.80	47.29	1.17	1.22	0.00
8.85	47.41	1.19	2.49	0.00
8.90	40.59	1.25	2.53	0.00
8.95	44.23	1.10	2.82	0.00
9.00	77.11	0.96	4.69	0.00
9.05	103.24	0.93	2.58	0.00
9.10	129.94	1.22	1.27	0.00
9.15	128.41	1.37	0.80	0.00
9.20	141.41	1.55	0.38	0.00
9.25	182.19	1.70	0.19	0.00
9.30	190.99	1.66	-0.09	0.00
9.35	182.19	0.02	-0.19	0.00
9.40	190.86	0.02	-0.19	0.00

CONETEC

Resistivity Data File

Job No.: 99-315
Client: Stone & Webster
Location: Private Fuel Storage Facility
Date: 4/23/99
CPT No.: CPT-38

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
0.05	2.00	0.02	0.14	273.00
0.10	2.10	0.02	0.28	273.00
0.15	22.11	0.02	0.23	273.00
0.20	34.54	0.03	0.19	273.00
0.25	36.90	0.04	0.19	273.00
0.30	33.39	0.05	-0.23	273.00
0.35	30.21	0.02	0.00	273.00
0.40	28.29	0.02	0.14	273.00
0.45	26.00	0.08	0.14	273.00
0.50	25.24	0.20	0.19	273.00
0.55	25.36	0.39	0.09	273.00
0.60	29.70	0.76	-0.38	273.00
0.65	36.96	0.98	0.33	273.00
0.70	65.26	1.59	1.08	273.00
0.75	68.63	2.41	2.58	273.00
0.80	42.89	2.61	-0.52	273.00
0.85	30.65	1.96	-8.21	273.00
0.90	22.18	0.99	-0.33	273.00
0.95	19.18	0.54	-0.14	273.00
1.00	23.77	0.54	-0.09	273.00
1.05	20.33	0.46	-3.52	273.00
1.10	20.01	0.37	-4.41	273.00
1.15	17.52	0.28	-1.22	273.00
1.20	21.41	0.26	-0.19	273.00
1.25	22.94	0.32	0.19	273.00
1.30	17.40	0.35	0.23	273.00
1.35	17.27	0.42	0.99	273.00
1.40	15.61	0.49	1.13	273.00
1.45	14.59	0.45	1.03	273.00
1.50	11.98	0.37	0.94	273.00
1.55	11.60	0.32	0.47	273.00
1.60	11.53	0.27	0.84	273.00
1.65	10.13	0.25	0.80	273.00

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
1.70	10.45	0.27	1.22	273.00
1.75	10.39	0.25	1.17	273.00
1.80	11.22	0.26	1.03	273.00
1.85	12.68	0.28	1.41	273.00
1.90	11.09	0.31	1.41	273.00
1.95	12.04	0.30	3.24	273.00
2.00	12.36	0.25	4.46	273.00
2.05	12.81	0.25	8.54	273.00
2.10	13.57	0.23	10.04	273.00
2.15	12.30	0.20	14.59	273.00
2.20	11.53	0.18	23.14	273.00
2.25	10.96	0.38	30.50	273.00
2.30	12.04	0.40	37.50	273.00
2.35	15.68	0.36	11.54	273.00
2.40	14.21	0.31	18.68	273.00
2.45	14.02	0.25	22.53	273.00
2.50	13.57	0.21	26.84	16.45
2.55	13.06	0.20	32.10	96.73
2.60	15.29	0.23	38.81	273.00
2.65	14.21	0.24	44.68	239.20
2.70	14.53	0.24	52.00	273.00
2.75	14.34	0.25	58.10	20.13
2.80	14.59	0.24	64.57	176.67
2.85	14.85	0.25	71.05	273.00
2.90	14.34	0.25	77.62	215.40
2.95	13.83	0.24	83.16	273.00
3.00	14.34	0.24	85.41	272.80
3.05	14.59	0.24	88.84	253.13
3.10	14.27	0.23	93.48	261.67
3.15	15.10	0.25	97.28	199.40
3.20	15.04	0.27	103.20	268.73
3.25	13.06	0.62	99.11	227.33
3.30	19.25	0.52	83.67	273.00
3.35	32.69	0.56	0.70	188.80
3.40	24.66	0.41	1.13	197.80
3.45	23.64	0.36	2.63	259.80
3.50	35.30	0.28	0.52	0.70
3.55	49.52	0.24	0.75	0.67
3.60	63.34	0.18	0.94	14.37
3.65	57.35	0.12	0.99	273.00
3.70	48.50	0.11	1.03	273.00
3.75	44.61	0.19	0.94	273.00
3.80	40.59	0.48	0.70	273.00
3.85	32.69	0.41	0.99	273.00

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
3.90	31.42	0.29	6.15	273.00
3.95	74.94	0.33	6.48	146.07
4.00	91.19	0.35	0.80	273.00
4.05	93.55	0.40	0.70	273.00
4.10	101.33	0.43	0.80	273.00
4.15	113.05	0.52	0.75	273.00
4.20	120.44	0.64	0.42	273.00
4.25	127.84	0.66	0.61	273.00
4.30	129.24	0.75	0.70	273.00
4.35	119.36	0.75	0.42	262.60
4.40	112.67	0.67	0.42	196.73
4.45	108.14	0.65	0.38	273.00
4.50	108.34	0.60	0.47	273.00
4.55	116.17	0.60	0.47	273.00
4.60	131.47	0.68	0.33	273.00
4.65	143.00	0.78	0.33	273.00
4.70	150.78	0.86	0.42	273.00
4.75	160.65	0.93	0.23	273.00
4.80	165.24	0.99	0.33	273.00
4.85	161.23	0.97	0.00	273.00
4.90	141.22	0.87	-0.05	273.00
4.95	118.98	0.66	-0.14	273.00
5.00	108.65	0.57	-0.23	273.00
5.05	98.58	0.85	-0.33	273.00
5.10	87.82	0.83	0.56	273.00
5.15	95.27	0.88	0.33	273.00
5.20	102.28	0.98	-0.47	273.00
5.25	98.14	0.84	-0.28	273.00
5.30	81.38	1.12	-0.52	273.00
5.35	119.30	1.08	0.56	273.00
5.40	103.56	1.16	-0.19	273.00
5.45	70.04	1.20	-0.19	273.00
5.50	49.90	1.02	0.19	273.00
5.55	33.27	0.89	0.75	273.00
5.60	30.78	0.68	0.99	7.67
5.65	30.40	0.60	2.06	0.00
5.70	30.53	0.60	0.99	0.90
5.75	31.99	0.60	-0.66	0.12
5.80	28.23	0.56	-1.45	0.12
5.85	26.45	0.54	0.19	273.00
5.90	26.00	0.54	0.38	94.87
5.95	27.98	0.64	1.45	273.00
6.00	33.52	0.76	1.74	273.00
6.05	35.37	0.85	-1.55	273.00

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
6.10	38.75	0.92	-0.66	273.00
6.15	42.31	0.80	-0.47	273.00
6.20	45.44	0.80	-0.89	273.00
6.25	40.59	0.76	-0.52	273.00
6.30	40.59	0.71	2.02	273.00
6.35	46.39	0.84	-1.13	159.27
6.40	43.91	0.85	0.33	272.73
6.45	41.87	0.86	1.03	273.00
6.50	39.13	0.78	2.30	273.00
6.55	40.15	0.80	4.65	273.00
6.60	39.64	0.77	5.02	0.60
6.65	39.32	0.73	6.05	123.87
6.70	35.11	0.66	1.13	273.00
6.75	31.86	0.62	4.36	211.87
6.80	31.35	0.61	7.65	273.00
6.85	28.80	0.60	10.98	273.00
6.90	28.68	0.60	14.69	257.00
6.95	27.72	0.54	19.29	273.00
7.00	26.26	0.59	22.01	183.20
7.05	26.38	0.55	25.01	273.00
7.10	23.01	0.46	27.78	273.00
7.15	23.64	0.33	32.29	173.07
7.20	22.43	0.29	36.51	273.00
7.25	24.85	0.99	42.14	173.93
7.30	25.36	0.90	11.87	273.00
7.35	37.09	0.92	10.84	273.00
7.40	26.64	0.73	4.32	273.00
7.45	21.22	0.60	6.48	16.47
7.50	25.11	0.39	8.63	0.63
7.55	24.02	0.34	5.96	0.59
7.60	22.37	0.49	9.43	0.64
7.65	29.89	0.54	12.95	0.85
7.70	28.10	0.73	12.39	1.08
7.75	31.80	0.64	14.31	1.28
7.80	34.79	0.89	15.35	54.60
7.85	33.27	0.87	5.58	47.27
7.90	31.42	0.85	8.54	0.33
7.95	30.40	0.63	10.37	0.83
8.00	24.53	0.62	11.54	0.00
8.05	29.51	0.61	14.69	148.53
8.10	32.44	0.59	13.47	8.58
8.15	28.42	0.69	14.92	273.00
8.20	33.01	0.79	18.96	273.00
8.25	42.95	1.17	19.80	7.29

Depth (m)	Qc (tsf)	Fs (tsf)	Ud (ft)	R (ohm-m)
8.30	55.76	1.01	14.50	0.00
8.35	59.71	1.08	0.94	273.00
8.40	42.19	1.28	1.92	273.00
8.45	42.06	1.19	2.96	273.00
8.50	54.68	0.95	3.75	0.85
8.55	68.89	1.05	1.17	1.17
8.60	59.39	1.18	0.19	39.00
8.65	46.01	1.30	2.53	273.00
8.70	46.84	1.38	5.16	273.00
8.75	43.59	1.28	4.69	55.13
8.80	45.37	1.28	8.35	21.13
8.85	44.42	1.25	7.56	273.00
8.90	49.13	1.35	10.79	273.00
8.95	70.23	1.26	10.14	273.00
9.00	114.77	1.34	3.52	1.65
9.05	136.18	1.31	0.42	273.00
9.10	146.57	1.42	-0.09	183.47
9.15	152.18	1.58	-0.23	0.00
9.20	148.29	1.98	-0.47	0.00
9.25	130.96	1.73	-0.09	0.00
9.30	129.36	1.82	-0.23	0.00
9.35	183.15	1.94	0.00	0.00
9.40	155.49	1.92	-0.33	0.00
9.45	84.76	2.20	-0.33	0.00
9.50	79.34	2.50	-0.23	0.00
9.55	50.03	2.04	0.23	0.00
9.60	35.62	1.50	0.28	0.00
9.65	157.79	1.52	1.50	0.00
9.70	239.68	1.94	-0.38	0.00
9.75	264.40	0.02	-0.33	0.00
9.80	332.97	0.02	-0.42	0.00

Appendix C

Seismic CPT Plots

and

Tabular Data

Appendix C

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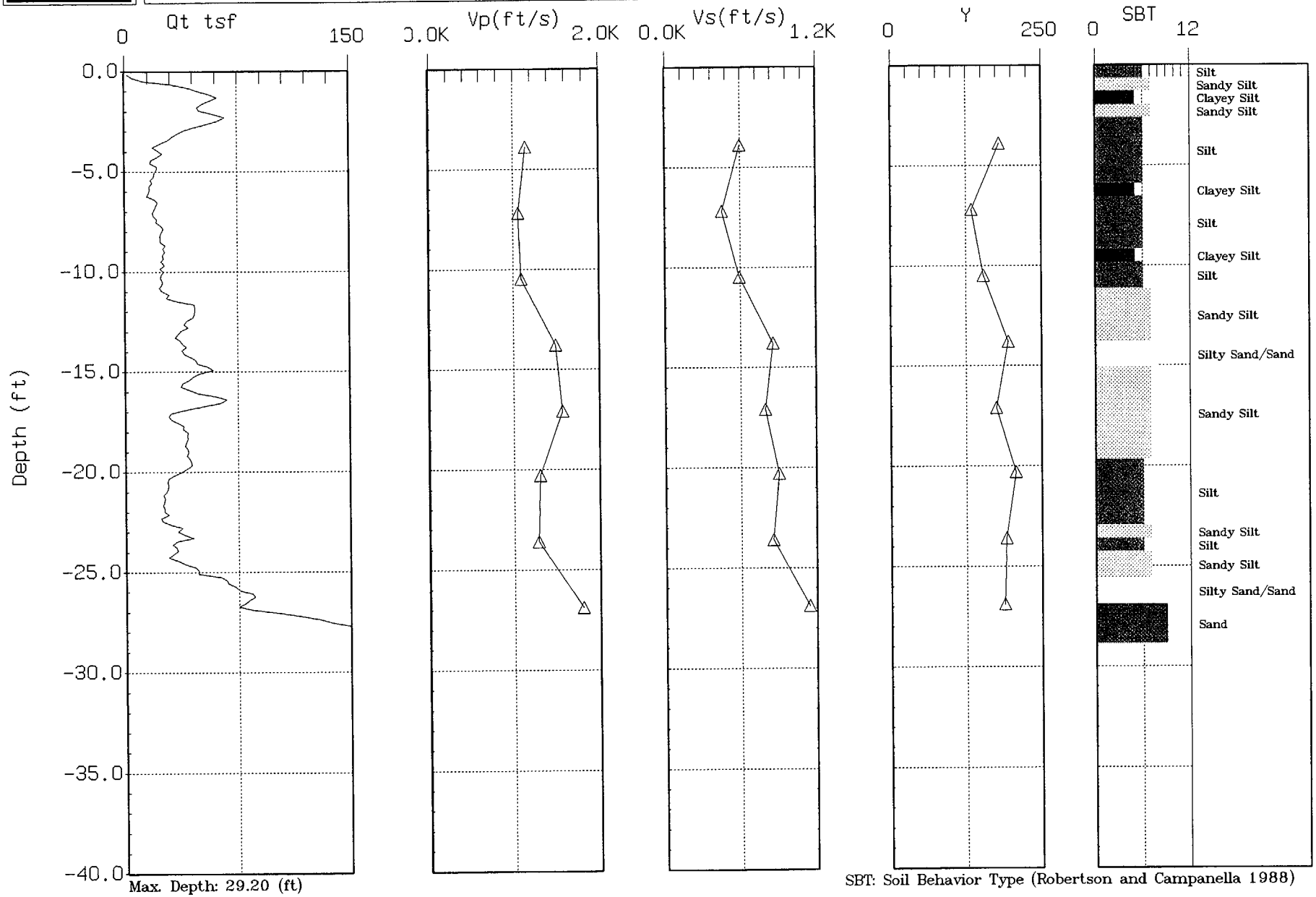
CONETEC

Stone & Webster

Site: CPT-1
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 09:26



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

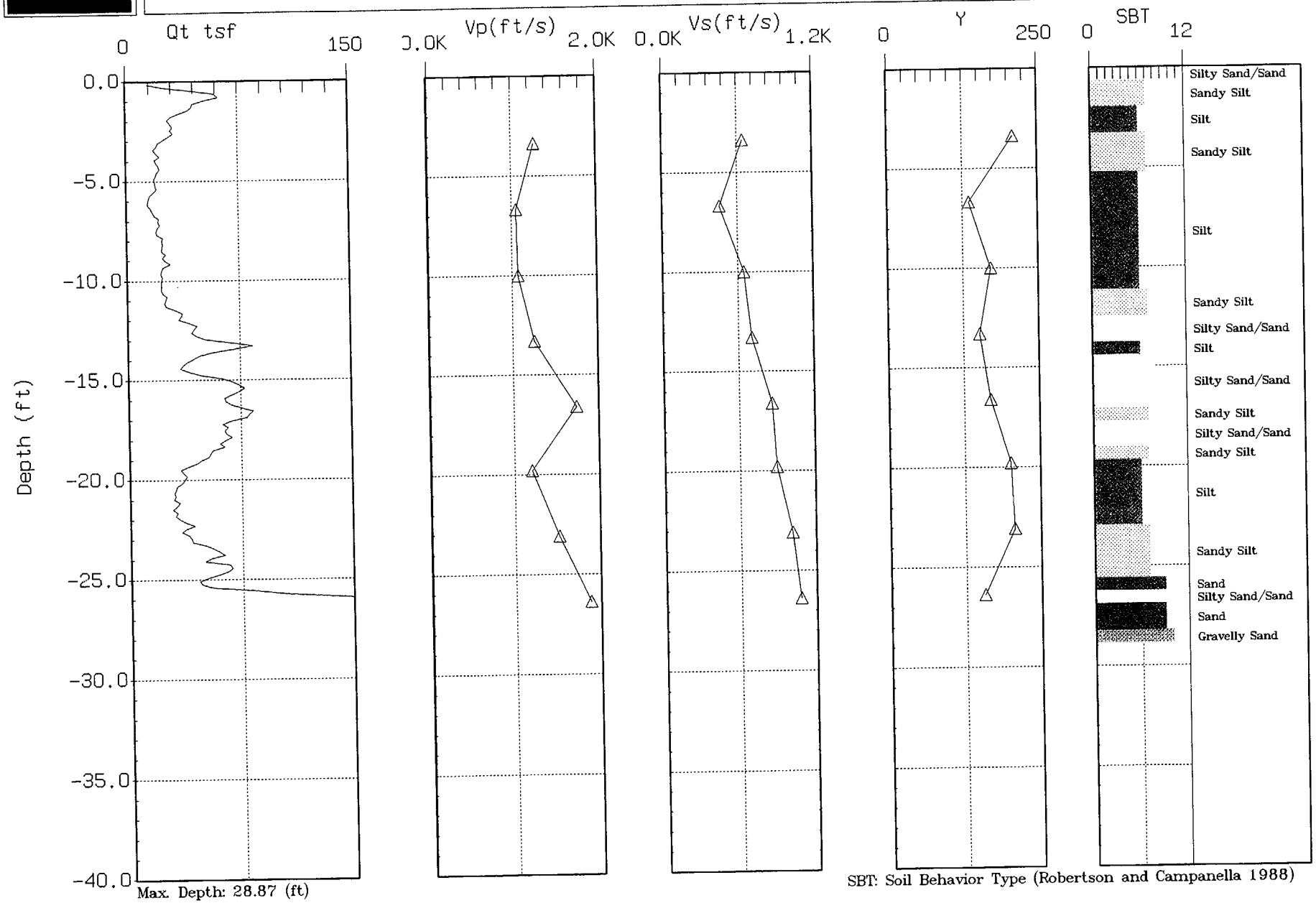
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-3
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 11:39



Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

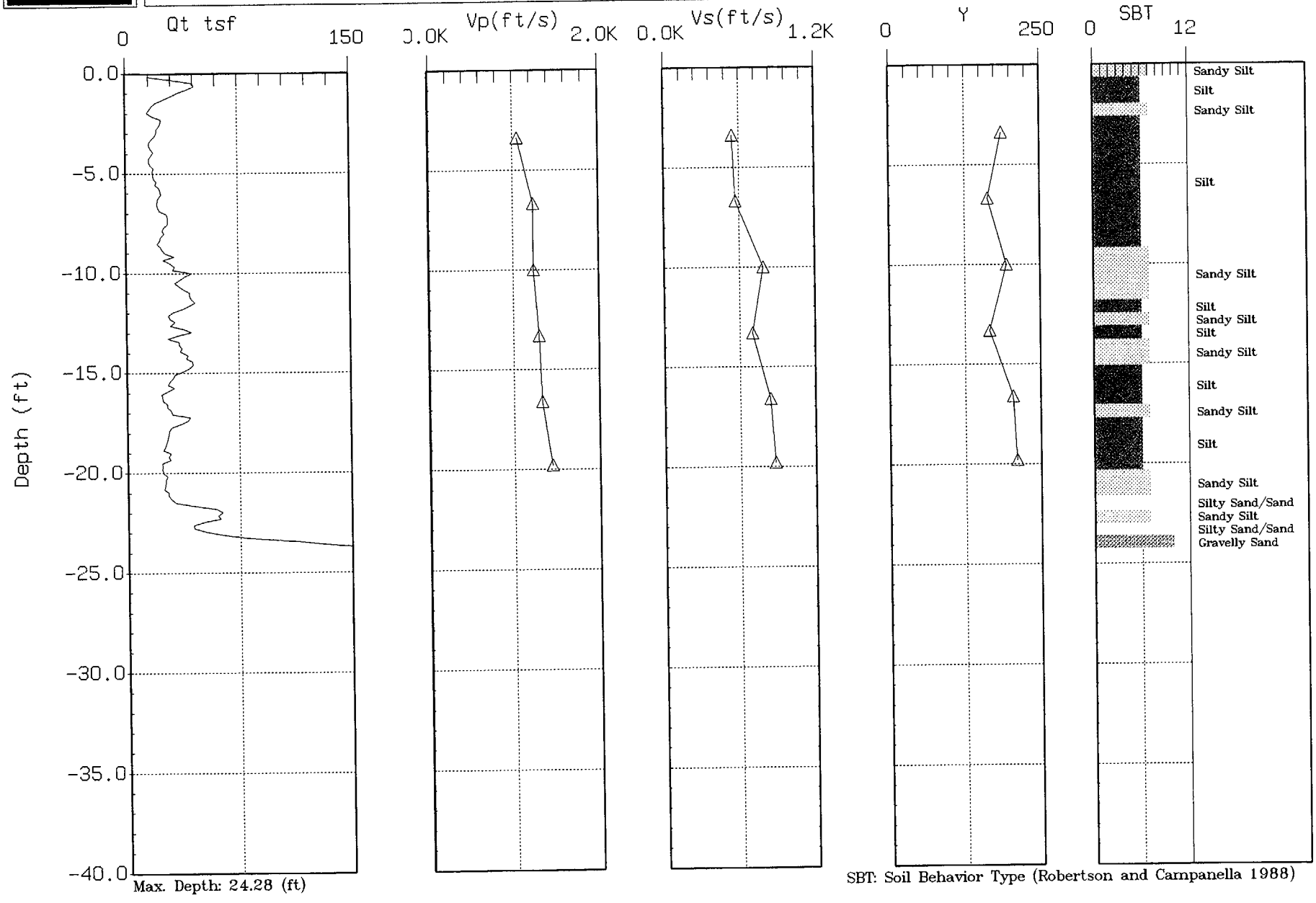
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-6
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 15:44



Max. Depth: 24.28 (ft)

Depth Inc.: 0.164 (ft)

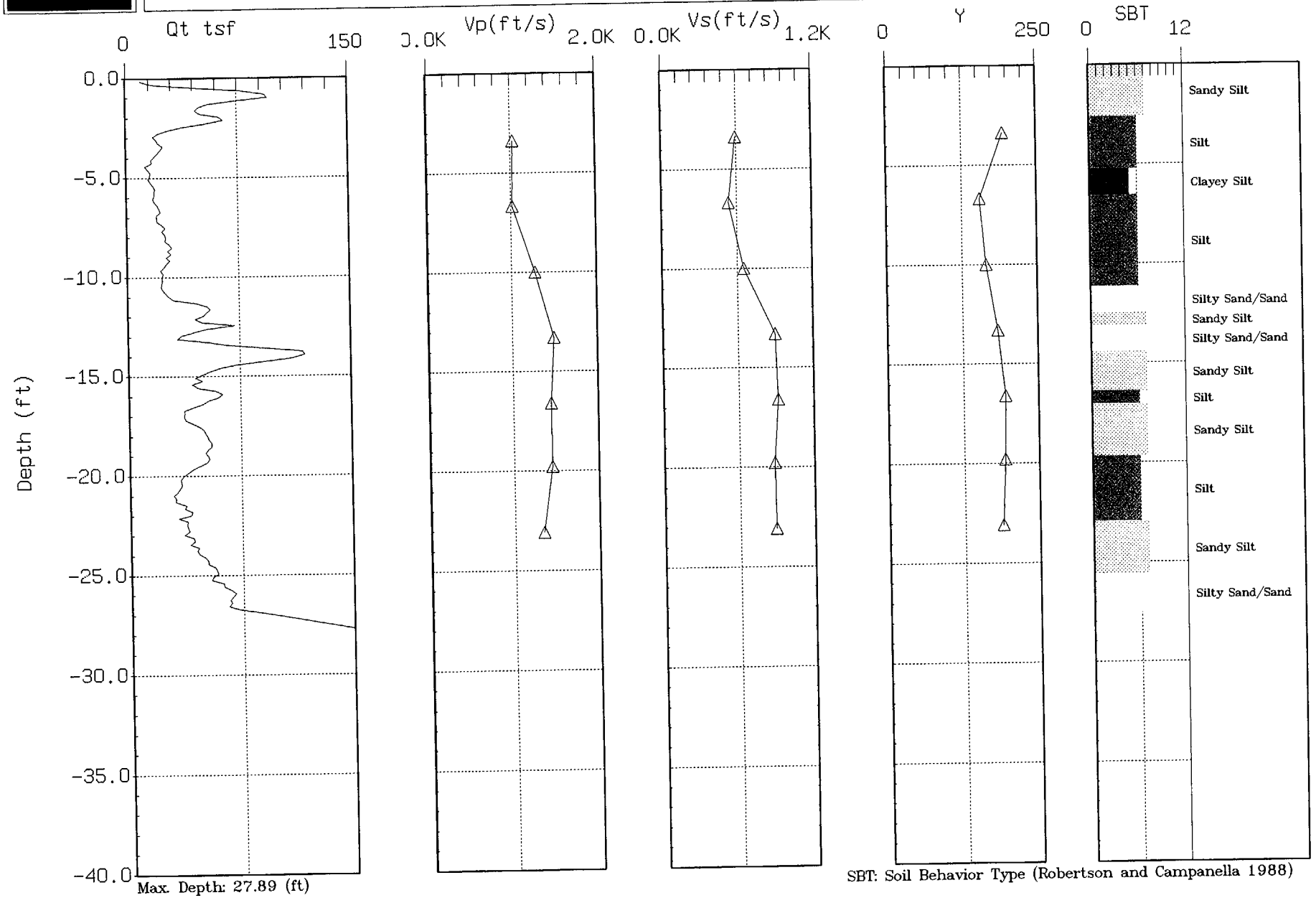
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-13
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 11:19



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

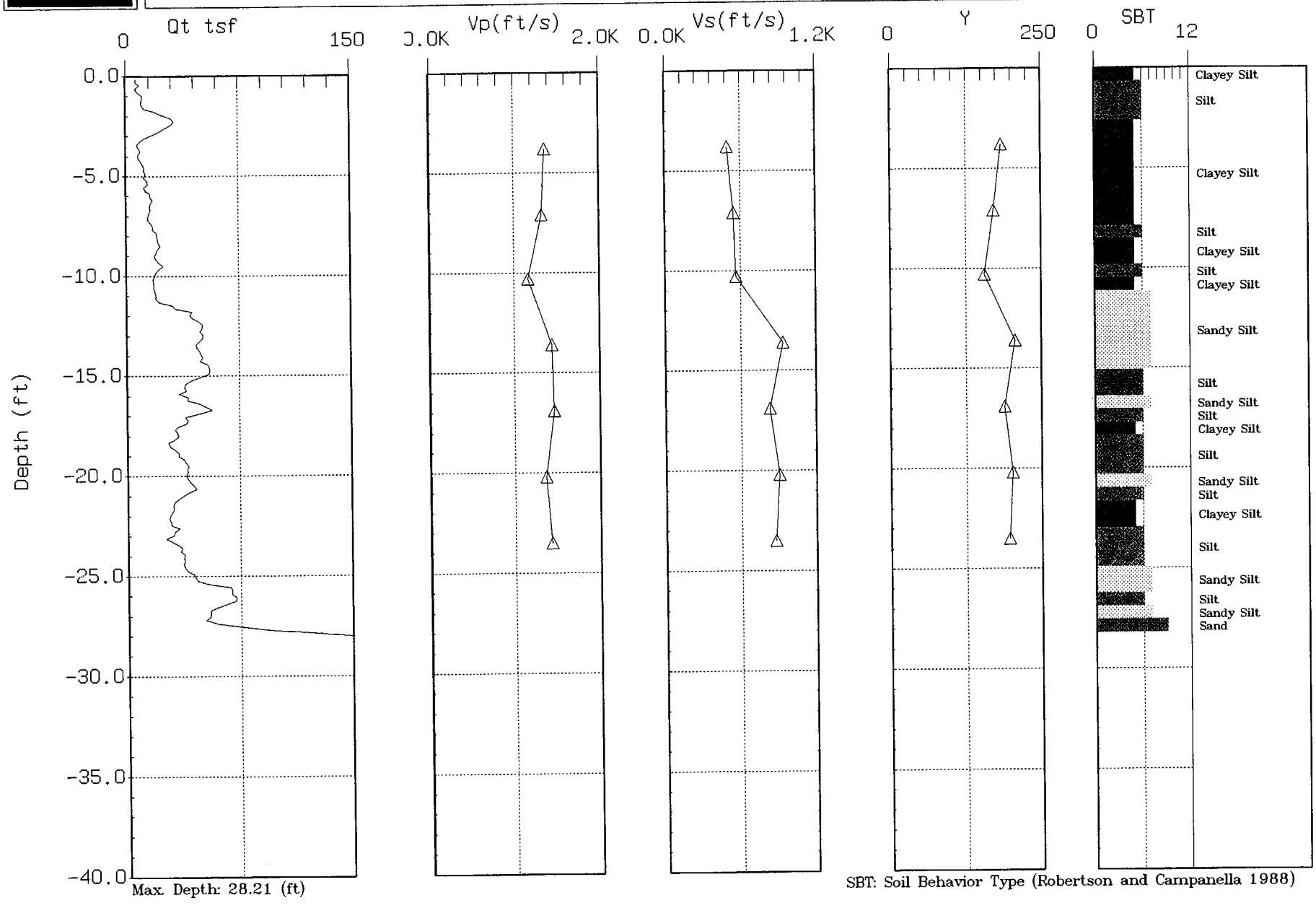
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-15
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 13:11



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

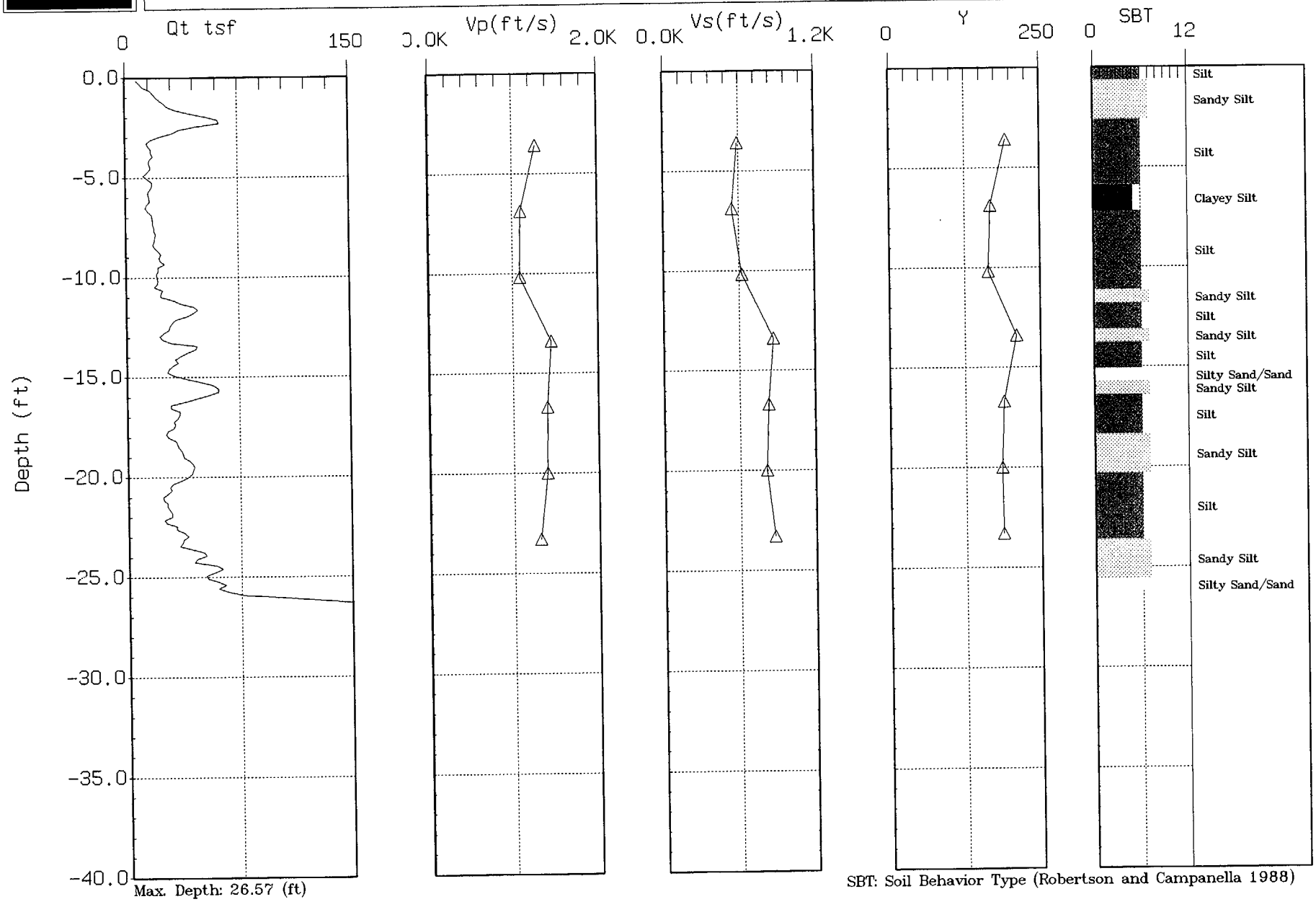
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-16
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 14:30



Max. Depth: 26.57 (ft)

Depth Inc.: 0.164 (ft)

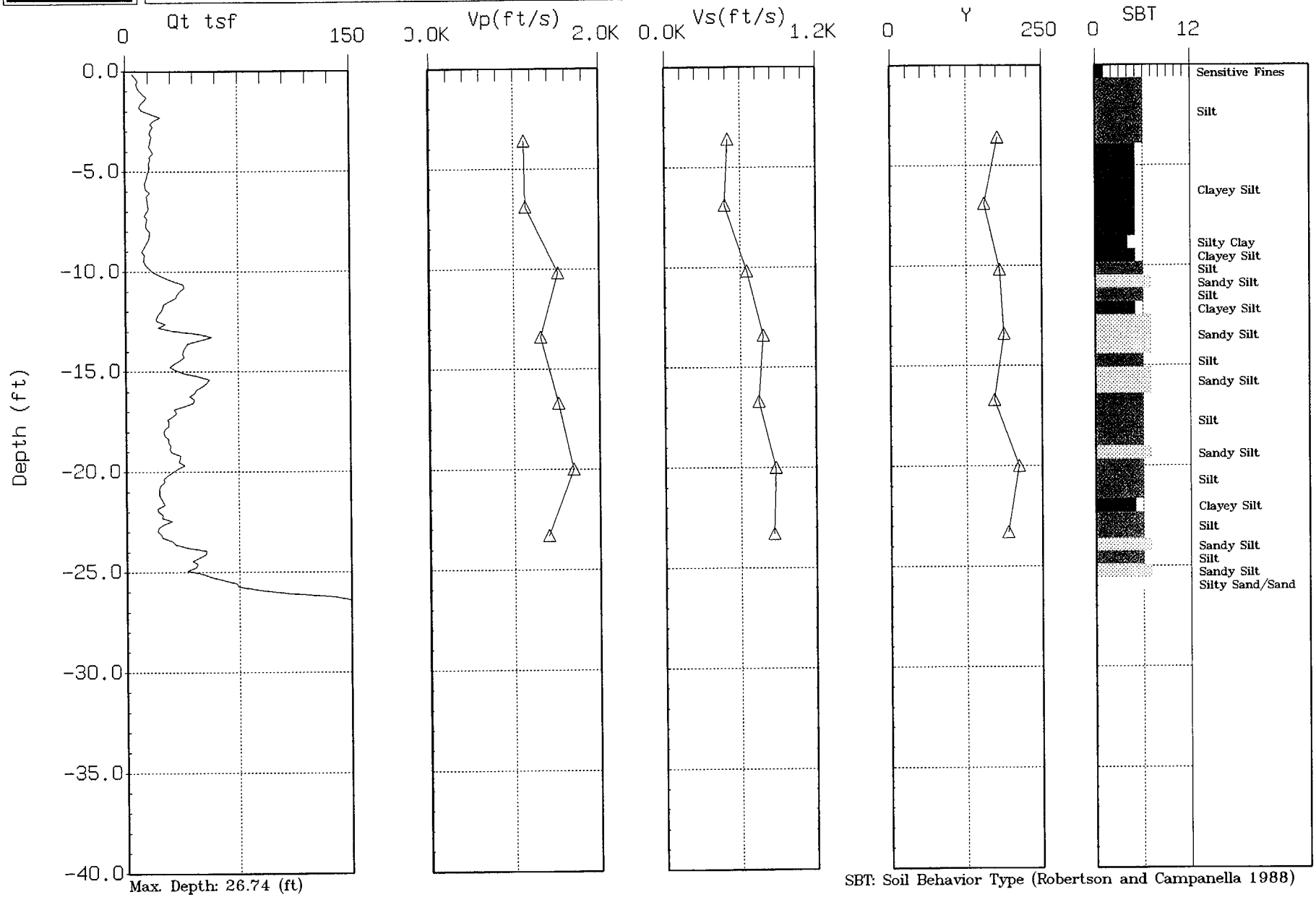
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-18
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 16:19



Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

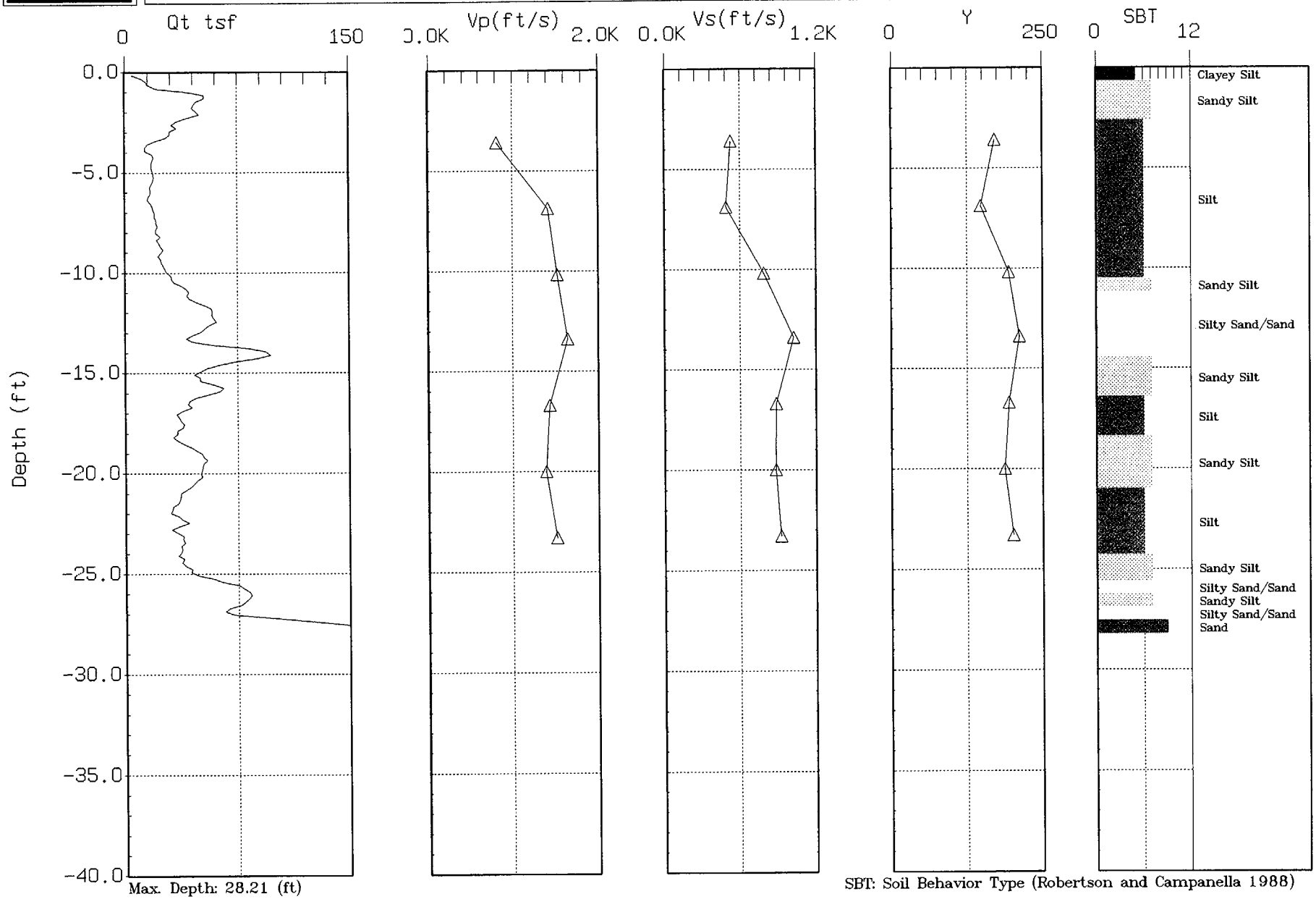
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-20
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 09:47



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

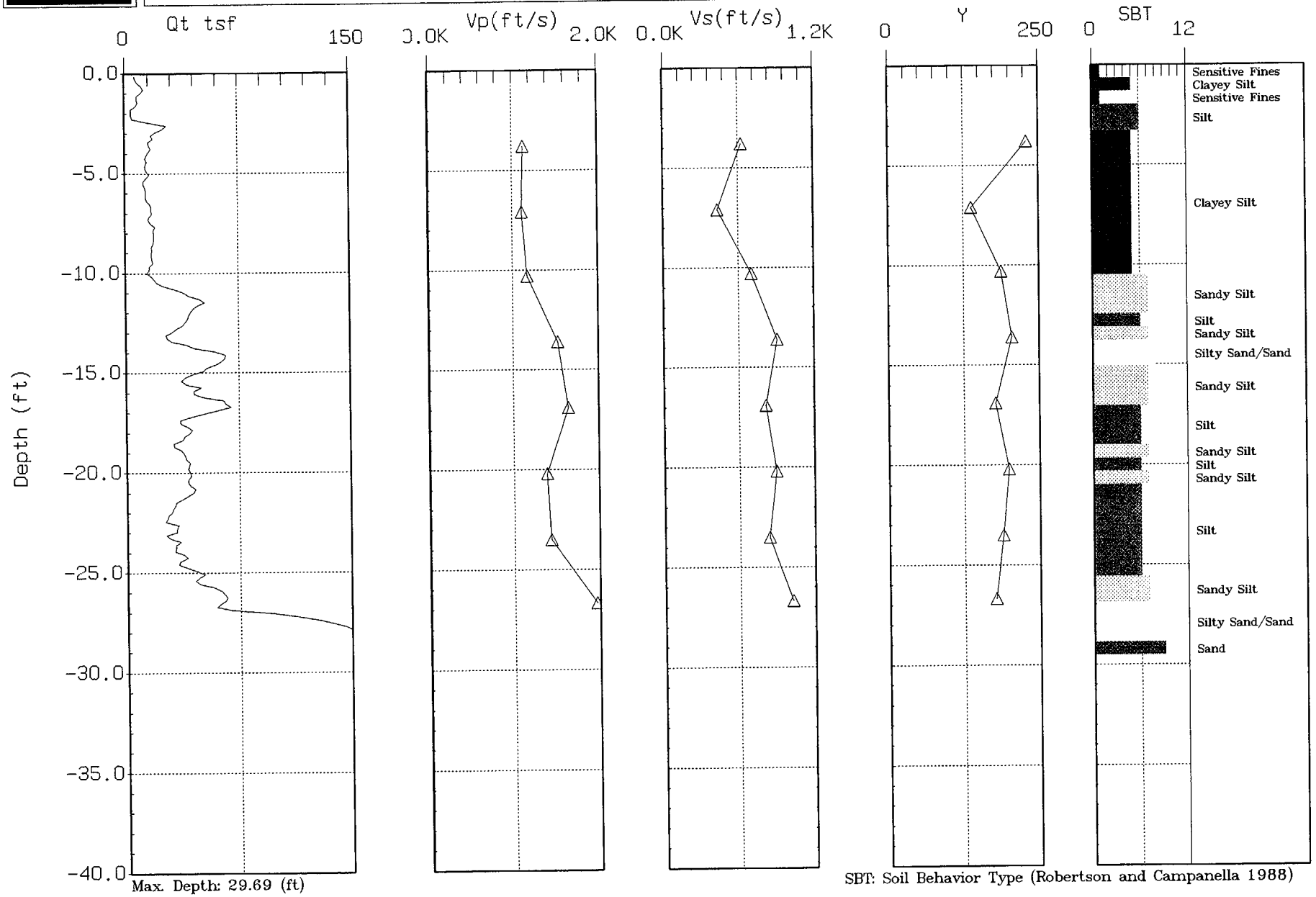
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-21
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 08:18



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

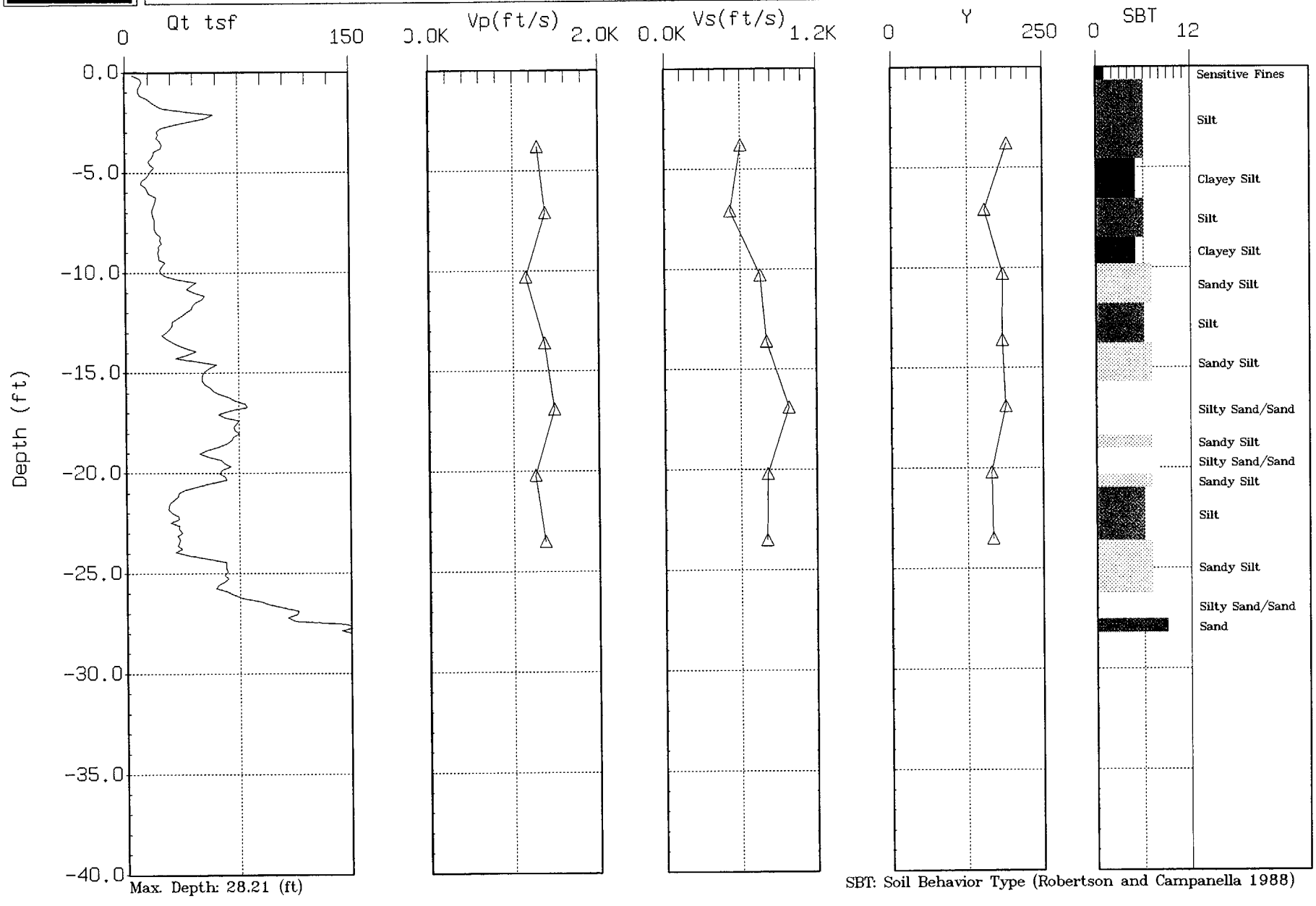
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-22
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 18:33



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

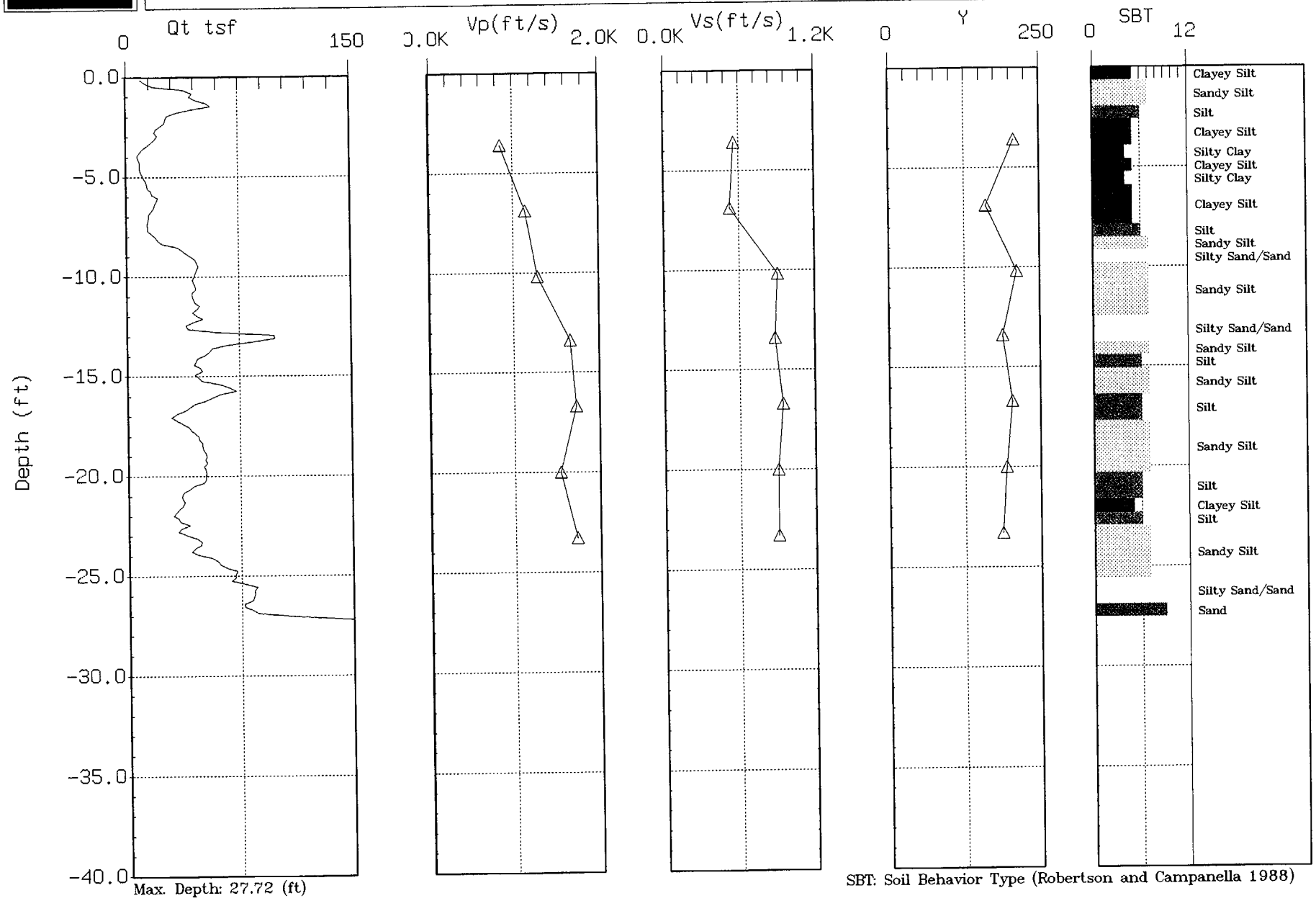
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-31
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 11:22



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

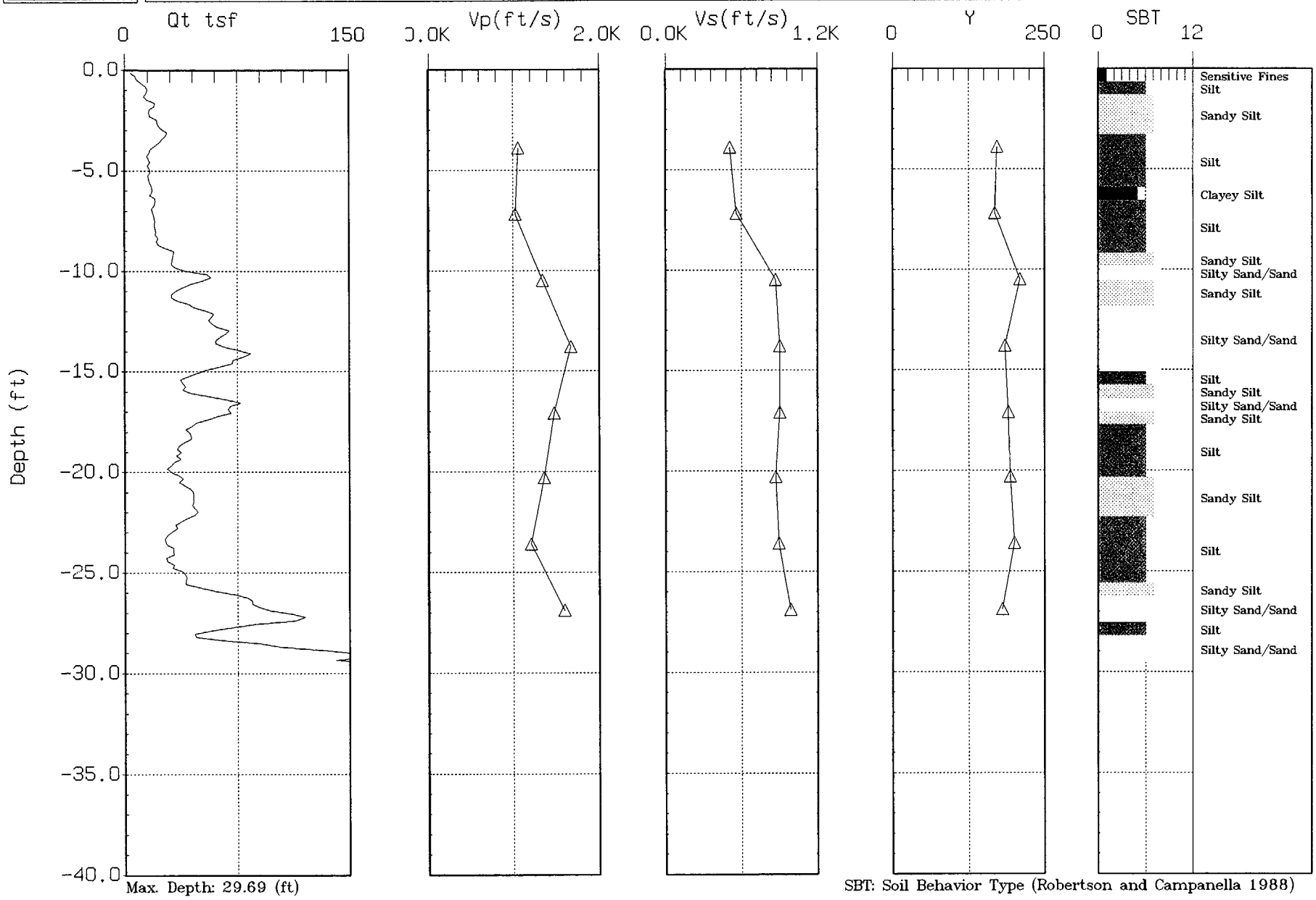
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-33
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 09:30



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

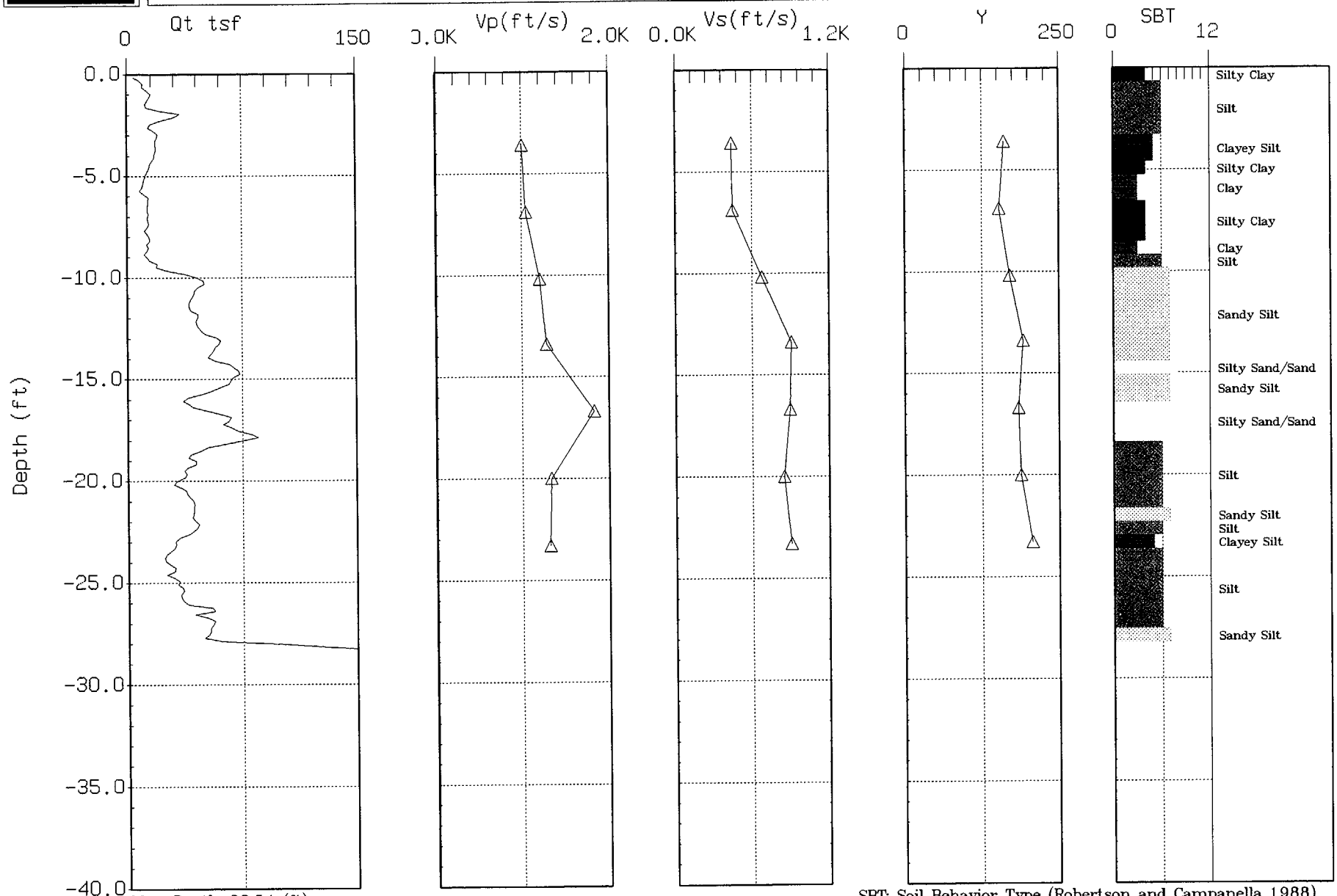
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-34
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 08:09



Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-36
Location: PFSF (05996.02)

Cone: 20 TON A 070
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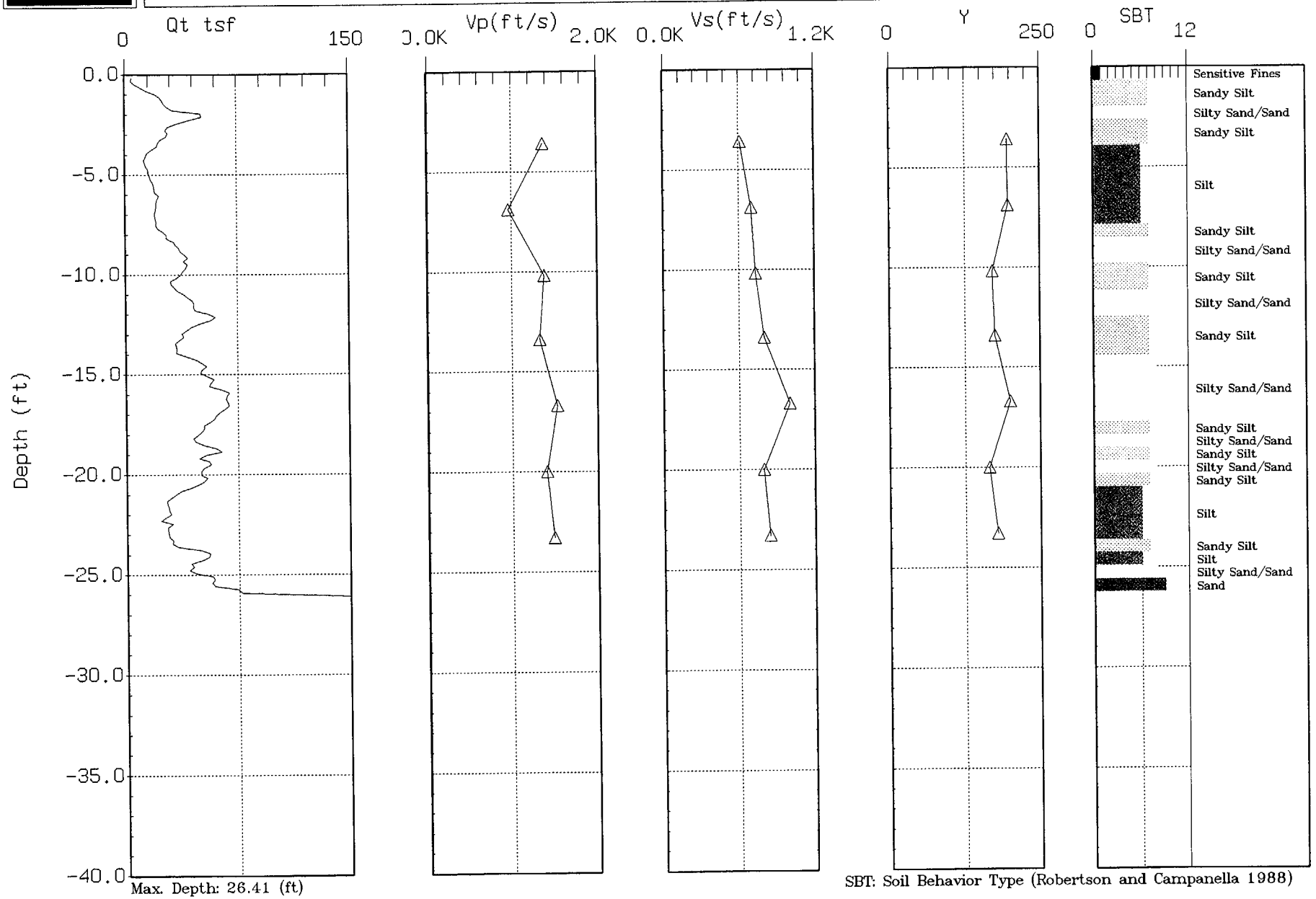


Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

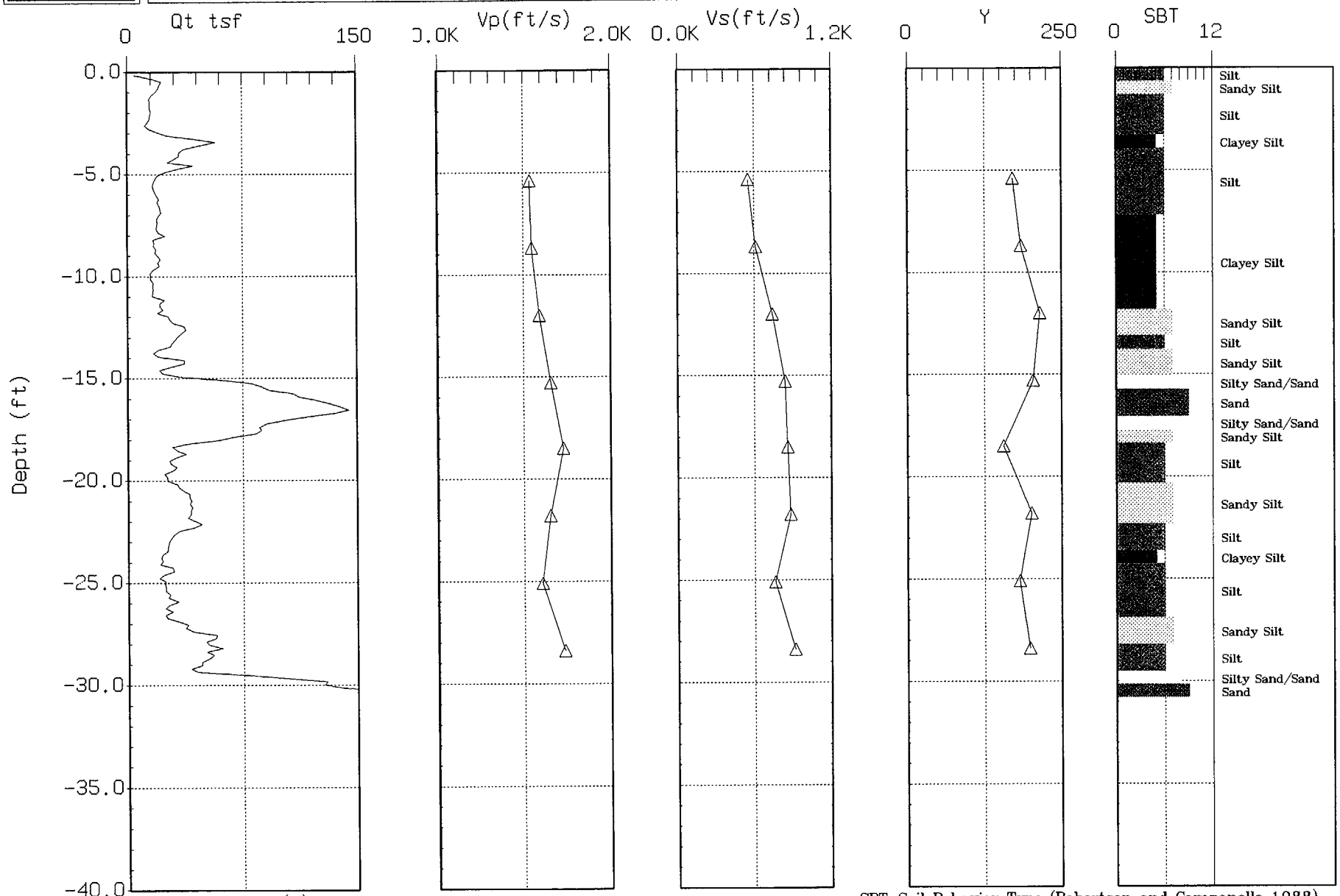
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-37
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 11:36



Max. Depth: 30.84 (ft)

Depth Inc.: 0.164 (ft)

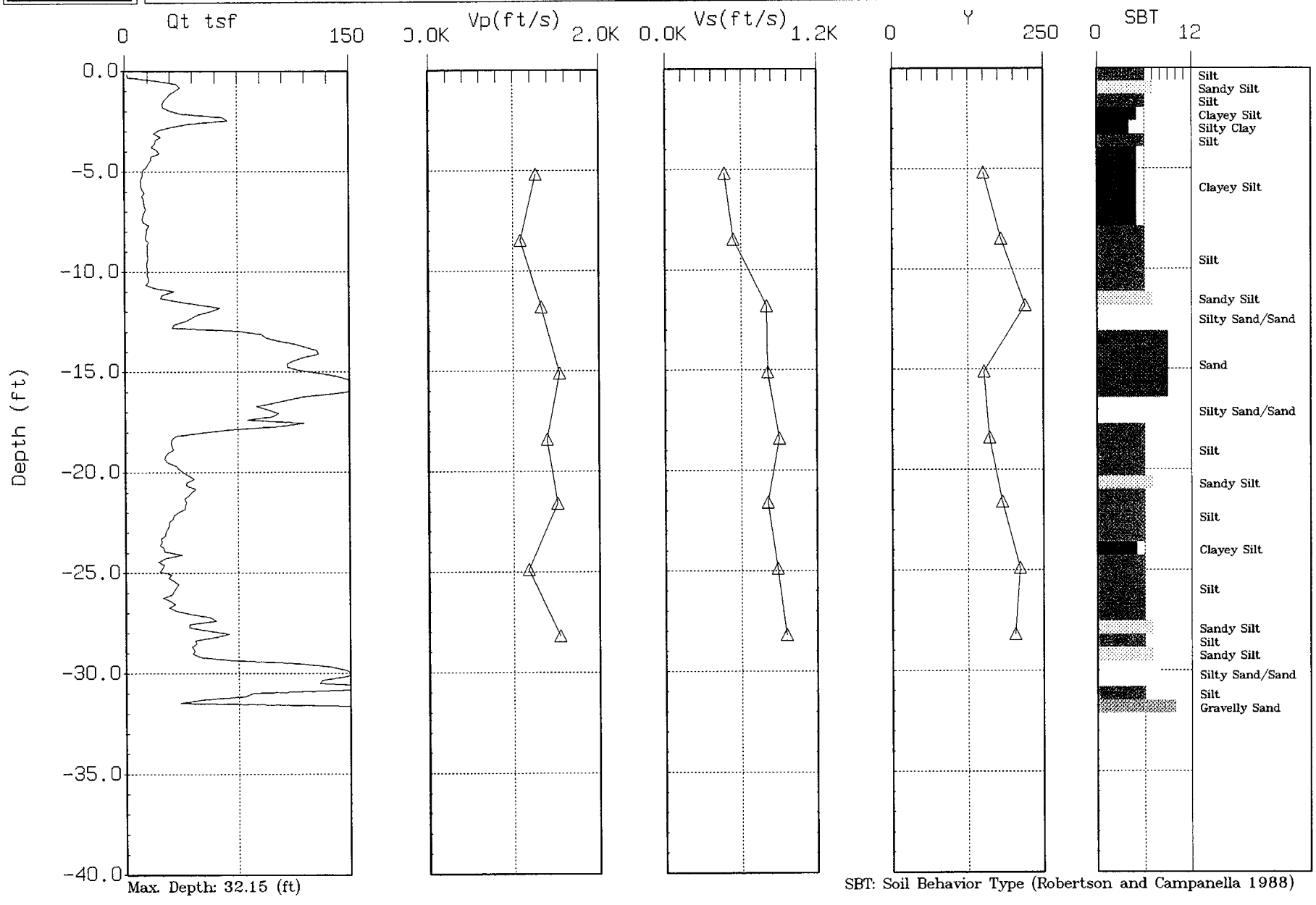
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-38
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 15:06



Max. Depth: 32.15 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/24/99
CPT No.: CPT-1

Geophone Offset (m): 0.20
Source Offset (m): 0.56

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.90	0.90						
1.90	1.79	0.89	1.2	4.92	181.6	2.56	349.0
2.90	2.76	0.97	2.2	7.02	137.8	3.00	322.5
3.90	3.74	0.98	3.2	5.44	181.0	2.97	331.5
4.90	4.73	0.99	4.2	3.79	261.5	2.18	454.6
5.90	5.73	0.99	5.2	4.10	242.5	2.08	478.0
6.90	6.72	1.00	6.2	3.62	275.1	2.51	396.8
7.90	7.72	1.00	7.2	3.83	260.3	2.56	389.4
8.90	8.72	1.00	8.2	2.87	347.6	1.82	548.2

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.9	596	1145	180
7.2	452	1058	134
10.5	594	1087	154
13.8	858	1491	195
17.1	795	1568	175
20.3	902	1301	207
23.6	854	1277	191
26.9	1140	1798	188

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/24/99
CPT No.: CPT-3

Geophone Offset (m): 0.20
Source Offset (m): 0.63

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.75	0.84						
1.75	1.67	0.84	1.05	4.26	196.4	2.16	387.4
2.75	2.63	0.95	2.05	6.85	139.2	2.97	321.1
3.75	3.61	0.98	3.05	4.96	197.3	3.00	326.3
4.75	4.59	0.99	4.05	4.59	215.2	2.59	381.4
5.75	5.59	0.99	5.05	3.77	263.2	1.87	530.6
6.75	6.58	0.99	6.05	3.64	273.2	2.71	367.0
7.75	7.58	1.00	7.05	3.23	308.4	2.15	463.3
8.75	8.57	1.00	8.05	3.04	327.9	1.74	573.0

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.4	644	1271	209
6.7	457	1053	136
10.0	647	1070	171
13.3	706	1251	152
16.6	863	1740	169
19.8	896	1204	201
23.1	1011	1519	206
26.4	1076	1879	156

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/24/99
CPT No.: CPT-6

Geophone Offset (m): 0.20
Source Offset (m): 0.63

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.75	0.84						
1.75	1.67	0.84	1.05	5.04	166.0	2.61	320.6
2.75	2.63	0.95	2.05	5.48	174.0	2.53	376.9
3.75	3.61	0.98	3.05	4.07	240.5	2.60	376.5
4.75	4.59	0.99	4.05	4.63	213.4	2.50	395.2
5.75	5.59	0.99	5.05	3.88	255.7	2.45	405.0
6.75	6.58	0.99	6.05	3.72	267.4	1.55	641.7

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.4	545	1052	186
6.7	571	1236	163
10.0	789	1235	194
13.3	700	1296	166
16.6	839	1328	204
19.8	877	2105	210

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/27/99
CPT No.: CPT-13

Geophone Offset (m): 0.20
Source Offset (m): 0.74

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.75	0.92						
1.75	1.72	0.80	1.05	4.41	180.4	2.54	313.2
2.75	2.66	0.94	2.05	5.76	162.8	3.03	309.4
3.75	3.63	0.97	3.05	4.88	199.0	2.50	388.4
4.75	4.61	0.98	4.05	3.60	273.2	2.17	453.2
5.75	5.60	0.99	5.05	3.55	278.7	2.25	439.7
6.75	6.59	0.99	6.05	3.70	268.3	2.25	441.1
7.75	7.59	0.99	7.05	3.68	270.2	2.44	407.6

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.4	592	1027	194
6.7	534	1015	155
10.0	653	1274	165
13.3	896	1487	183
16.6	914	1442	195
19.8	880	1447	193
23.1	886	1337	189

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/27/99
CPT No.: CPT-15

Geophone Offset (m): 0.20
Source Offset (m): 0.56

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.85	0.86						
1.85	1.74	0.88	1.15	5.85	151.2	2.13	415.2
2.85	2.71	0.97	2.15	5.81	166.3	2.40	402.5
3.85	3.69	0.98	3.15	5.74	171.5	2.78	354.0
4.85	4.68	0.99	4.15	3.48	284.7	2.26	438.4
5.85	5.68	0.99	5.15	3.93	252.9	2.24	443.8
6.85	6.67	1.00	6.15	3.63	274.3	2.40	414.9
7.85	7.67	1.00	7.15	3.75	265.8	2.29	435.3

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.8	496	1362	184
7.1	545	1320	171
10.3	562	1161	156
13.6	934	1438	206
16.9	830	1456	189
20.2	900	1361	202
23.5	872	1428	196

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/27/99
CPT No.: CPT-16

Geophone Offset (m): 0.20
Source Offset (m): 0.76

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.80	0.97						
1.80	1.77	0.80	1.1	4.48	179.2	2.07	387.9
2.80	2.71	0.94	2.1	5.66	165.6	2.81	333.6
3.80	3.68	0.97	3.1	5.11	189.9	2.94	330.1
4.80	4.66	0.98	4.1	3.72	264.3	2.23	440.8
5.80	5.65	0.99	5.1	3.91	252.9	2.32	426.3
6.80	6.64	0.99	6.1	4.03	246.2	2.34	424.1
7.80	7.64	0.99	7.1	3.73	266.6	2.50	397.7

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.6	588	1272	193
6.9	543	1094	168
10.2	623	1083	164
13.4	867	1446	210
16.7	830	1398	189
20.0	808	1391	185
23.3	874	1305	186

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/27/99
CPT No.: CPT-18

Geophone Offset (m): 0.20
Source Offset (m): 0.61

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.80	0.86						
1.80	1.71	0.86	1.1	5.63	152.2	2.50	342.7
2.80	2.67	0.96	2.1	6.63	144.5	2.76	347.2
3.80	3.65	0.98	3.1	4.95	198.1	2.12	462.6
4.80	4.64	0.99	4.1	4.15	238.3	2.47	400.4
5.80	5.63	0.99	5.1	4.39	226.2	2.15	461.8
6.80	6.63	1.00	6.1	3.72	267.5	1.93	515.5
7.80	7.62	1.00	7.1	3.79	262.9	2.34	425.8

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.6	499	1124	177
6.9	474	1139	155
10.2	650	1517	180
13.4	782	1313	187
16.7	742	1515	171
20.0	877	1691	212
23.3	862	1397	193

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/28/99
CPT No.: CPT-20

Geophone Offset (m): 0.20
Source Offset (m): 0.71

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.80	0.93						
1.80	1.75	0.82	1.1	5.13	160.0	3.31	248.0
2.80	2.70	0.94	2.1	6.31	149.7	2.19	431.4
3.80	3.67	0.97	3.1	4.05	240.5	2.10	463.9
4.80	4.65	0.99	4.1	3.16	311.7	1.97	500.1
5.80	5.64	0.99	5.1	3.68	269.1	2.27	436.3
6.80	6.64	0.99	6.1	3.71	267.7	2.35	422.7
7.80	7.63	1.00	7.1	3.55	280.3	2.16	460.7

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.6	525	813	171
6.9	491	1415	148
10.2	789	1522	194
13.4	1023	1640	212
16.7	883	1431	194
20.0	878	1386	187
23.3	919	1511	201

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/28/99
CPT No.: CPT-21

Geophone Offset (m): 0.20
Source Offset (m): 0.41

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.85	0.77						
1.85	1.70	0.93	1.15	4.89	190.5	2.71	343.8
2.85	2.68	0.98	2.15	7.42	132.3	2.90	338.4
3.85	3.67	0.99	3.15	4.63	214.1	2.78	356.6
4.85	4.67	1.00	4.15	3.61	275.6	2.14	465.0
5.85	5.66	1.00	5.15	4.02	248.0	1.99	500.9
6.85	6.66	1.00	6.15	3.66	272.6	2.36	422.8
7.85	7.66	1.00	7.15	3.92	254.7	2.29	436.0
8.85	8.66	1.00	8.15	3.21	311.1	1.67	598.0

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.8	625	1128	230
7.1	434	1110	138
10.3	702	1170	187
13.6	904	1525	205
16.9	813	1643	177
20.2	894	1387	199
23.5	835	1430	189
26.7	1021	1962	176

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/28/99
CPT No.: CPT-22

Geophone Offset (m): 0.20
Source Offset (m): 0.69

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.85	0.95						
1.85	1.79	0.84	1.15	4.56	184.3	2.15	390.9
2.85	2.74	0.95	2.15	6.01	158.1	2.26	420.3
3.85	3.71	0.98	3.15	4.22	231.3	2.79	349.9
4.85	4.70	0.99	4.15	4.02	245.3	2.37	416.1
5.85	5.69	0.99	5.15	3.31	299.4	2.20	450.5
6.85	6.69	0.99	6.15	4.00	248.4	2.60	382.2
7.85	7.68	1.00	7.15	4.05	245.8	2.39	416.5

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.8	605	1282	191
7.1	518	1379	154
10.3	759	1148	184
13.6	805	1365	183
16.9	982	1478	189
20.2	815	1254	165
23.5	806	1366	167

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/29/99
CPT No.: CPT-31

Geophone Offset (m): 0.20
Source Offset (m): 0.41

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.80	0.73						
1.80	1.65	0.92	1.1	5.43	170.3	3.56	259.8
2.80	2.63	0.98	2.1	6.11	160.5	2.82	347.7
3.80	3.62	0.99	3.1	3.59	276.1	2.54	390.2
4.80	4.62	0.99	4.1	3.69	269.6	1.97	505.1
5.80	5.61	1.00	5.1	3.47	287.2	1.90	524.6
6.80	6.61	1.00	6.1	3.63	274.9	2.13	468.4
7.80	7.61	1.00	7.1	3.63	275.0	1.90	525.4

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.6	559	852	208
6.9	526	1140	161
10.2	906	1280	212
13.4	884	1657	188
16.7	942	1721	203
20.0	902	1536	193
23.3	902	1723	186

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/29/99
CPT No.: CPT-33

Geophone Offset (m): 0.20
Source Offset (m): 0.79

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.90	1.06						
1.90	1.87	0.82	1.2	5.29	154.8	2.54	322.5
2.90	2.81	0.94	2.2	5.51	170.3	3.01	311.8
3.90	3.78	0.97	3.2	3.66	265.1	2.38	407.6
4.90	4.77	0.98	4.2	3.57	275.2	1.93	509.1
5.90	5.75	0.99	5.2	3.59	275.4	2.20	449.3
6.90	6.75	0.99	6.2	3.74	265.2	2.40	413.3
7.90	7.74	0.99	7.2	3.65	272.3	2.71	366.8
8.90	8.74	1.00	8.2	3.31	300.7	2.05	485.5

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.9	508	1058	172
7.2	559	1023	168
10.5	869	1337	209
13.8	903	1670	185
17.1	903	1474	190
20.3	870	1356	193
23.6	893	1203	200
26.9	986	1593	180

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/29/99
CPT No.: CPT-34

Geophone Offset (m): 0.20
Source Offset (m): 0.86

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.80	1.05						
1.80	1.82	0.77	1.1	5.68	135.2	2.51	305.9
2.80	2.74	0.92	2.1	6.73	137.0	2.89	319.1
3.80	3.70	0.96	3.1	4.65	207.0	2.62	367.5
4.80	4.68	0.98	4.1	3.55	275.6	2.51	389.8
5.80	5.67	0.99	5.1	3.62	272.4	1.77	557.0
6.80	6.66	0.99	6.1	3.84	257.8	2.45	404.1
7.80	7.65	0.99	7.1	3.61	275.0	2.48	400.3

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.6	443	1003	161
6.9	449	1046	153
10.2	679	1205	170
13.4	904	1279	192
16.7	893	1827	184
20.0	846	1326	188
23.3	902	1313	206

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/29/99
CPT No.: CPT-36

Geophone Offset (m): 0.20
Source Offset (m): 0.58

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
0.80	0.83						
1.80	1.70	0.87	1.1	4.65	186.5	2.08	417.0
2.80	2.66	0.96	2.1	4.51	213.3	3.29	292.4
3.80	3.65	0.98	3.1	4.41	222.8	2.34	419.9
4.80	4.64	0.99	4.1	4.06	243.8	2.46	402.4
5.80	5.63	0.99	5.1	3.25	305.7	2.14	464.3
6.80	6.63	1.00	6.1	4.12	241.6	2.33	427.2
7.80	7.62	1.00	7.1	3.89	256.2	2.21	451.0

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
3.6	612	1368	196
6.9	700	959	197
10.2	731	1377	171
13.4	800	1320	175
16.7	1003	1523	200
20.0	793	1401	165
23.3	840	1479	179

CONETEC

Seismic Wave Velocity Calculations

Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/29/99
CPT No.: CPT-37

Geophone Offset (m): 0.20
Source Offset (m): 0.58

Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
1.35	1.29						
2.35	2.23	0.94	1.65	5.57	168.6	2.87	327.1
3.35	3.20	0.98	2.65	5.24	186.3	2.93	333.1
4.35	4.19	0.99	3.65	4.37	225.9	2.74	360.4
5.35	5.18	0.99	4.65	3.88	255.7	2.48	400.1
6.35	6.18	0.99	5.65	3.81	261.1	2.25	442.1
7.35	7.17	1.00	6.65	3.72	267.8	2.51	396.9
8.35	8.17	1.00	7.65	4.31	231.4	2.70	369.3
9.35	9.17	1.00	8.65	3.59	277.9	2.24	445.4

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
5.4	553	1073	171
8.7	611	1093	184
12.0	741	1182	215
15.3	839	1312	204
18.5	856	1450	156
21.8	878	1302	201
25.1	759	1211	182
28.4	912	1461	198

CONETEC

Seismic Wave Velocity Calculations

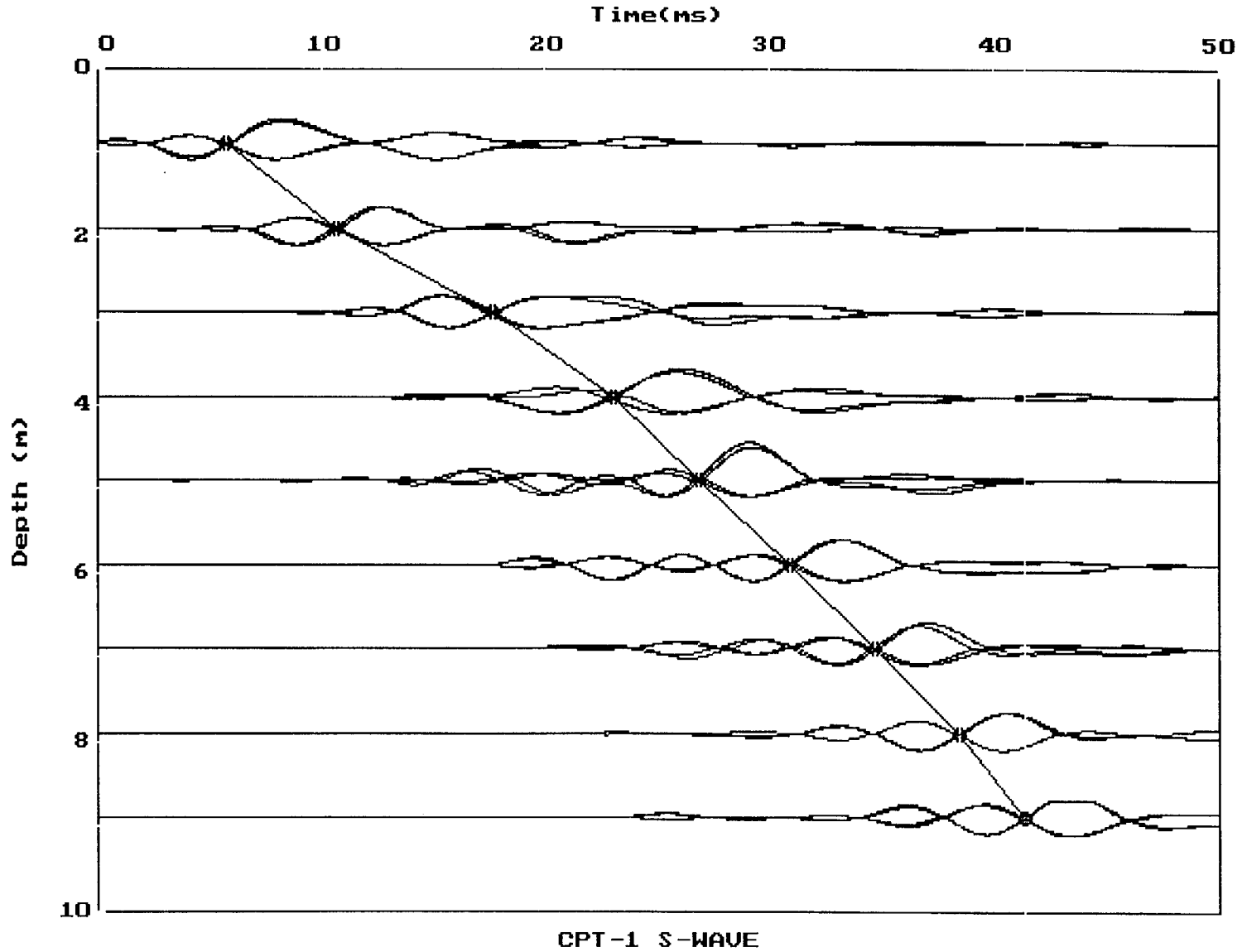
Job No.: 99-315
Client: Stone & Webster
Location Private Fuel Storage Facility
Date: 4/29/99
CPT No.: CPT-38

Geophone Offset (m): 0.20
Source Offset (m): 0.53

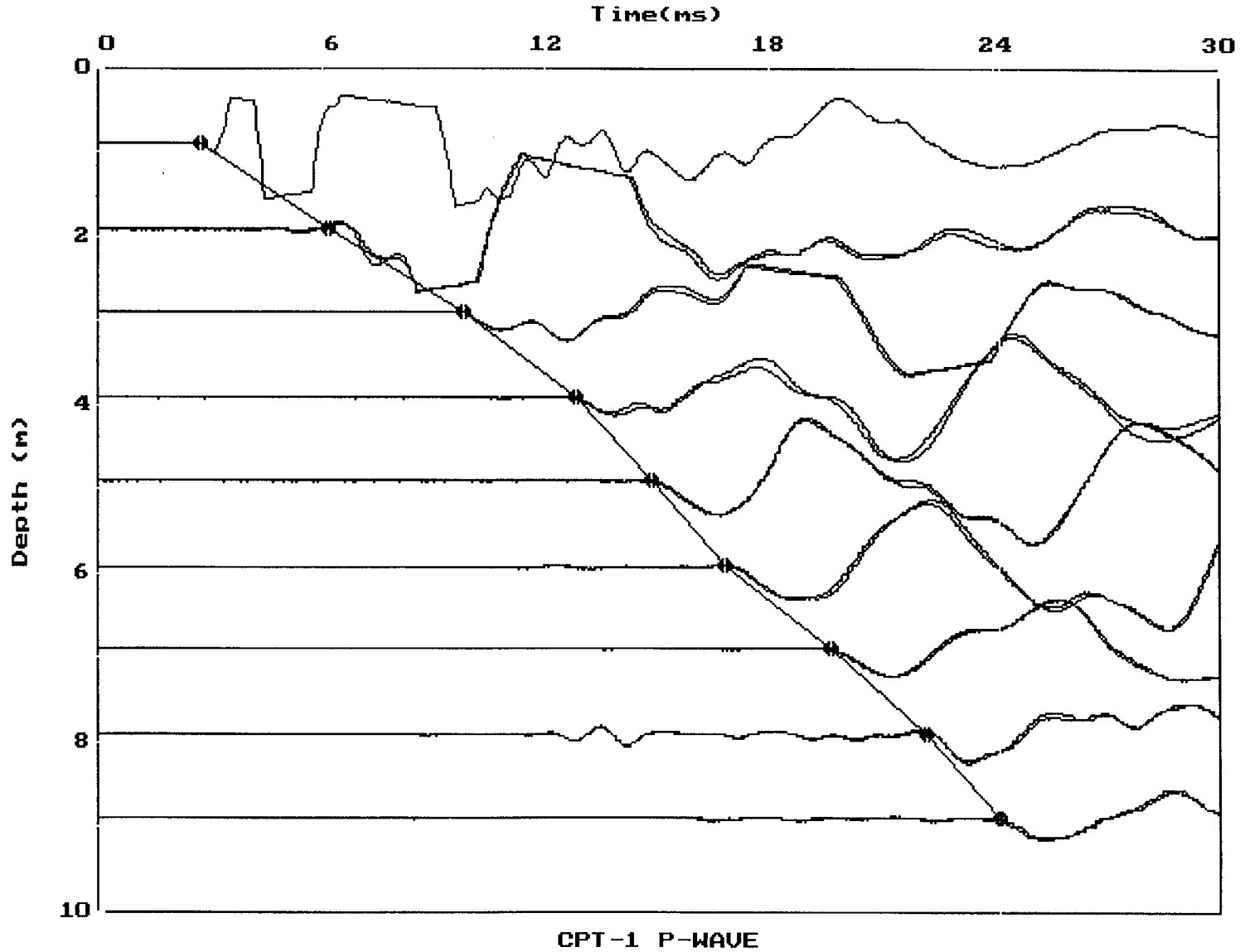
Test Depth (m)	Ray Path (m)	Incremental Distance (m)	Interval Depth (m)	Vs Interval Time (ms)	Vs Interval Velocity (m/s)	Vp Interval Time (ms)	Vp Interval Velocity (m/s)
1.30	1.22						
2.30	2.17	0.94	1.6	6.63	142.5	2.45	385.6
3.30	3.14	0.98	2.6	5.99	163.5	2.96	330.8
4.30	4.13	0.99	3.6	4.04	244.8	2.44	405.4
5.30	5.13	0.99	4.6	4.03	246.5	2.12	468.6
6.30	6.12	1.00	5.6	3.62	275.0	2.34	425.4
7.30	7.12	1.00	6.6	4.03	247.3	2.16	461.5
8.30	8.12	1.00	7.6	3.69	270.3	2.79	357.6
9.30	9.12	1.00	8.6	3.42	291.8	2.13	468.6

Interval Depth (ft)	Vs Interval Velocity (ft/s)	Vp Interval Velocity (ft/s)	Y Parameter
5.2	467	1265	151
8.5	536	1085	180
11.8	803	1330	220
15.1	808	1537	152
18.4	902	1395	161
21.6	811	1514	182
24.9	887	1173	211
28.2	957	1537	203

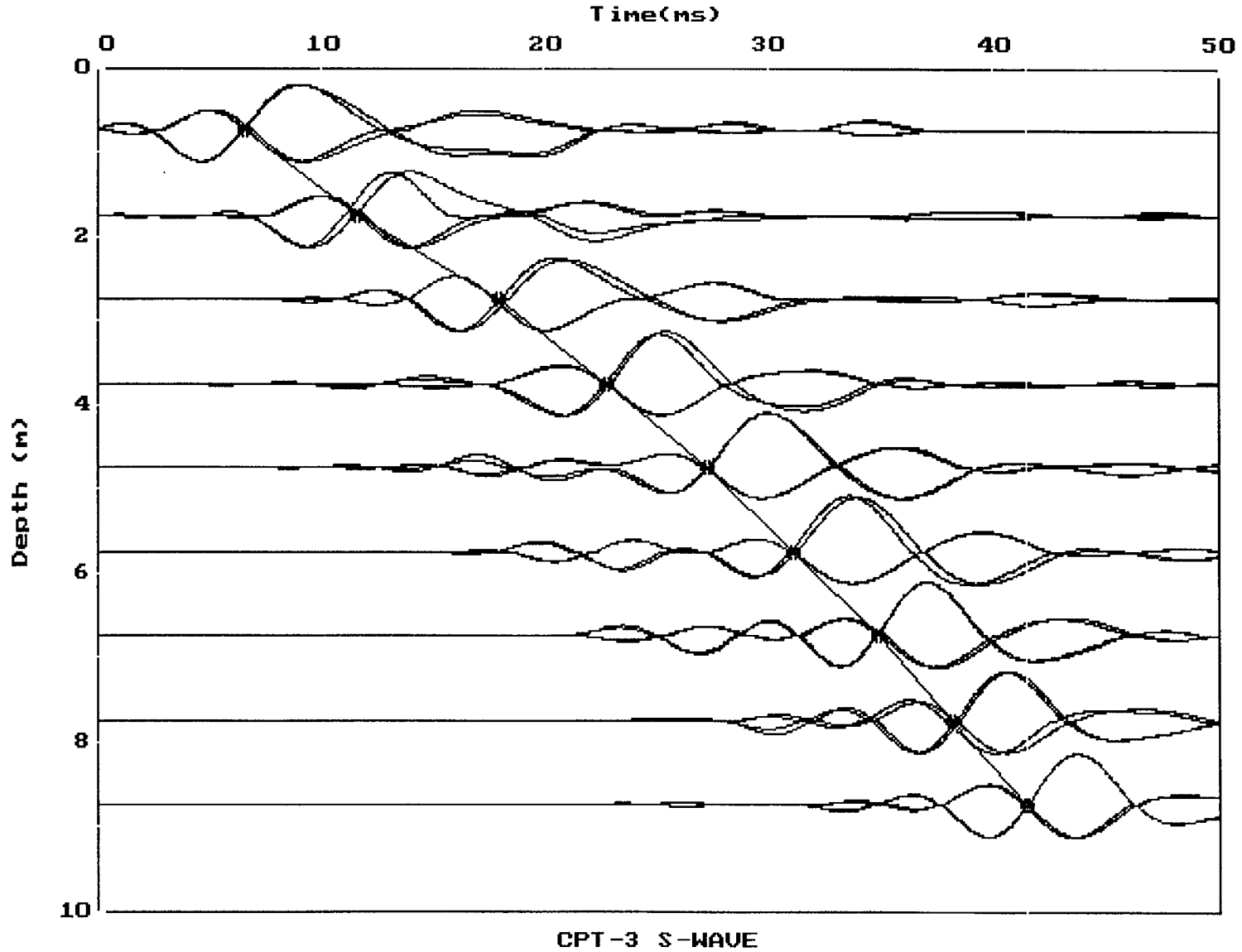
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



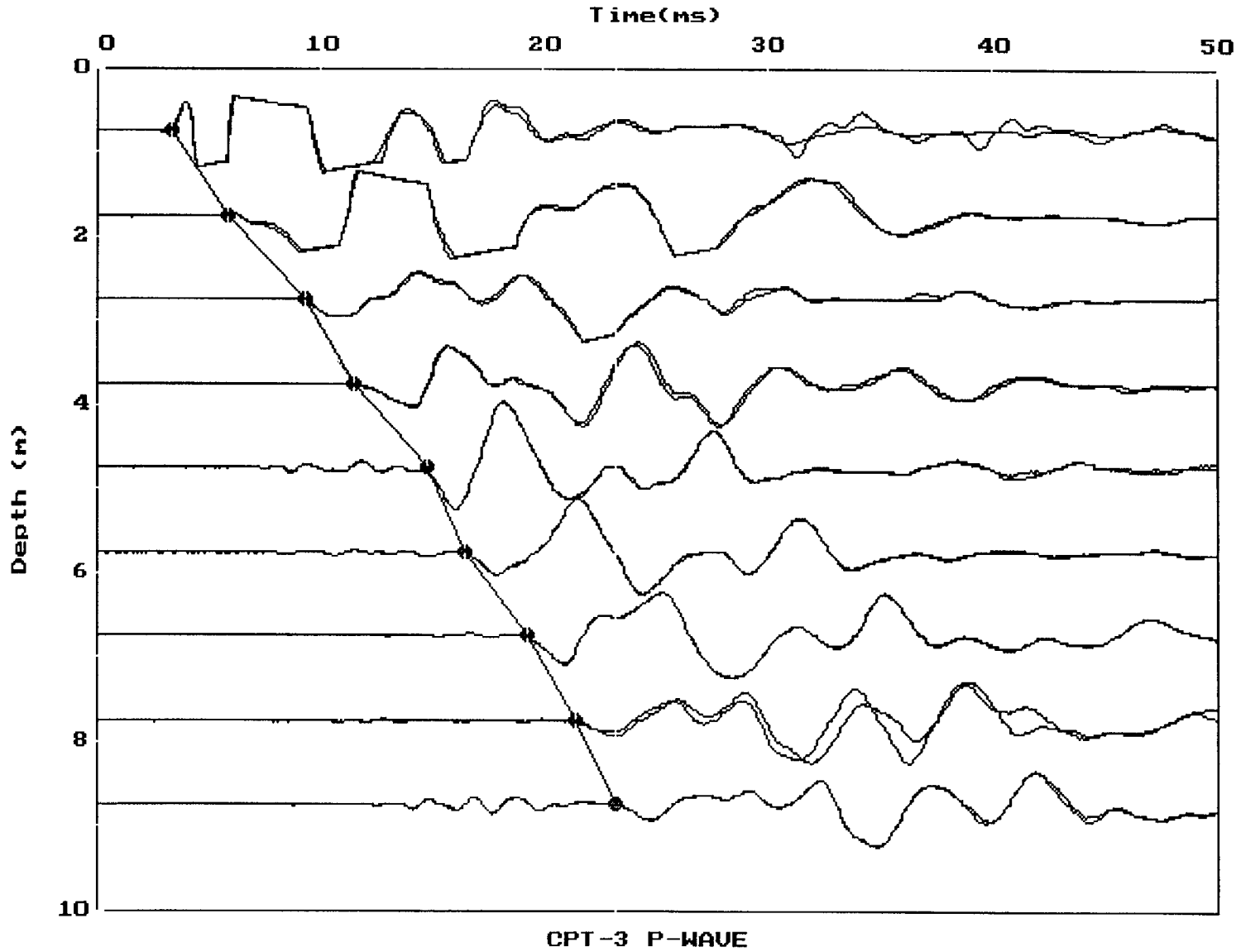
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



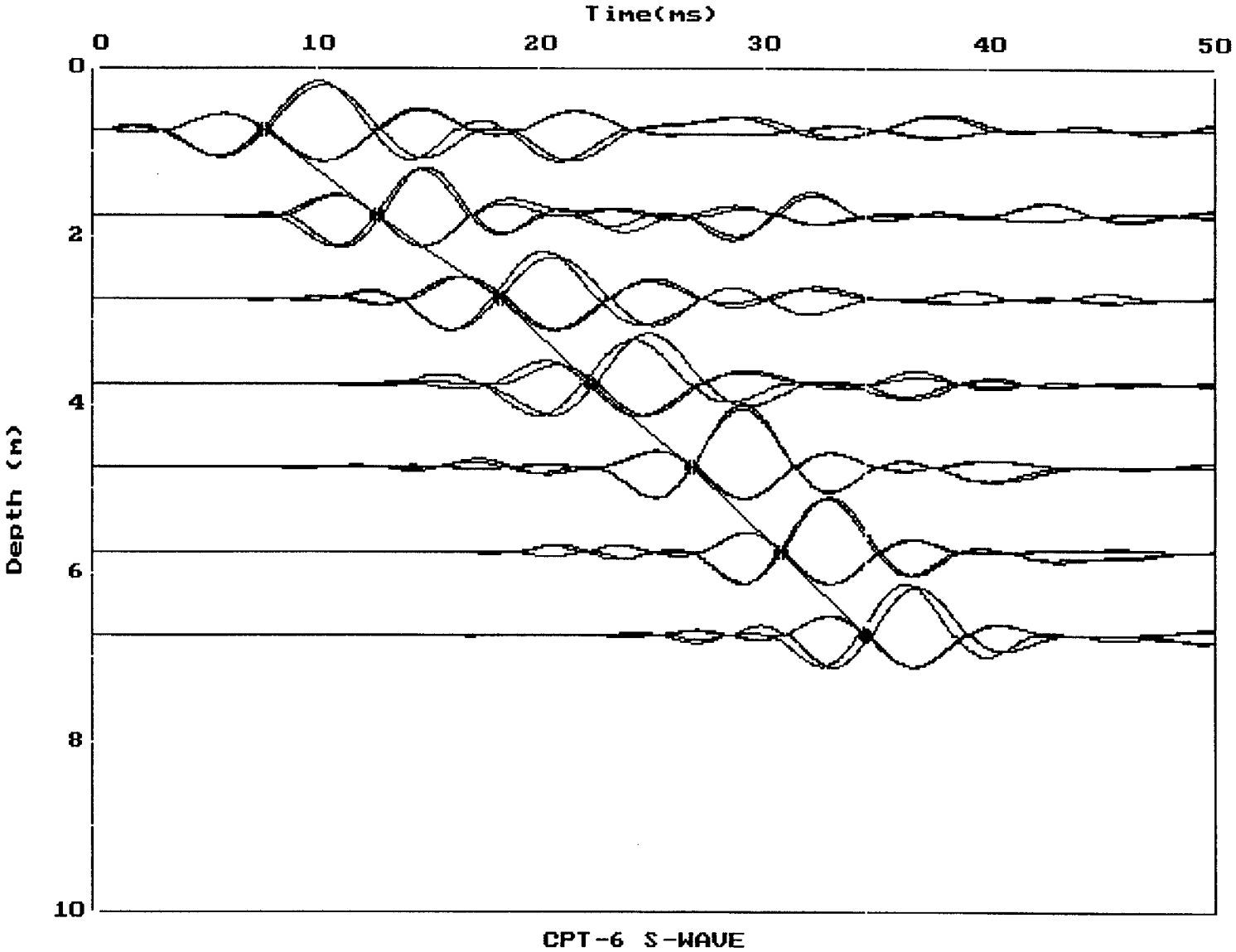
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



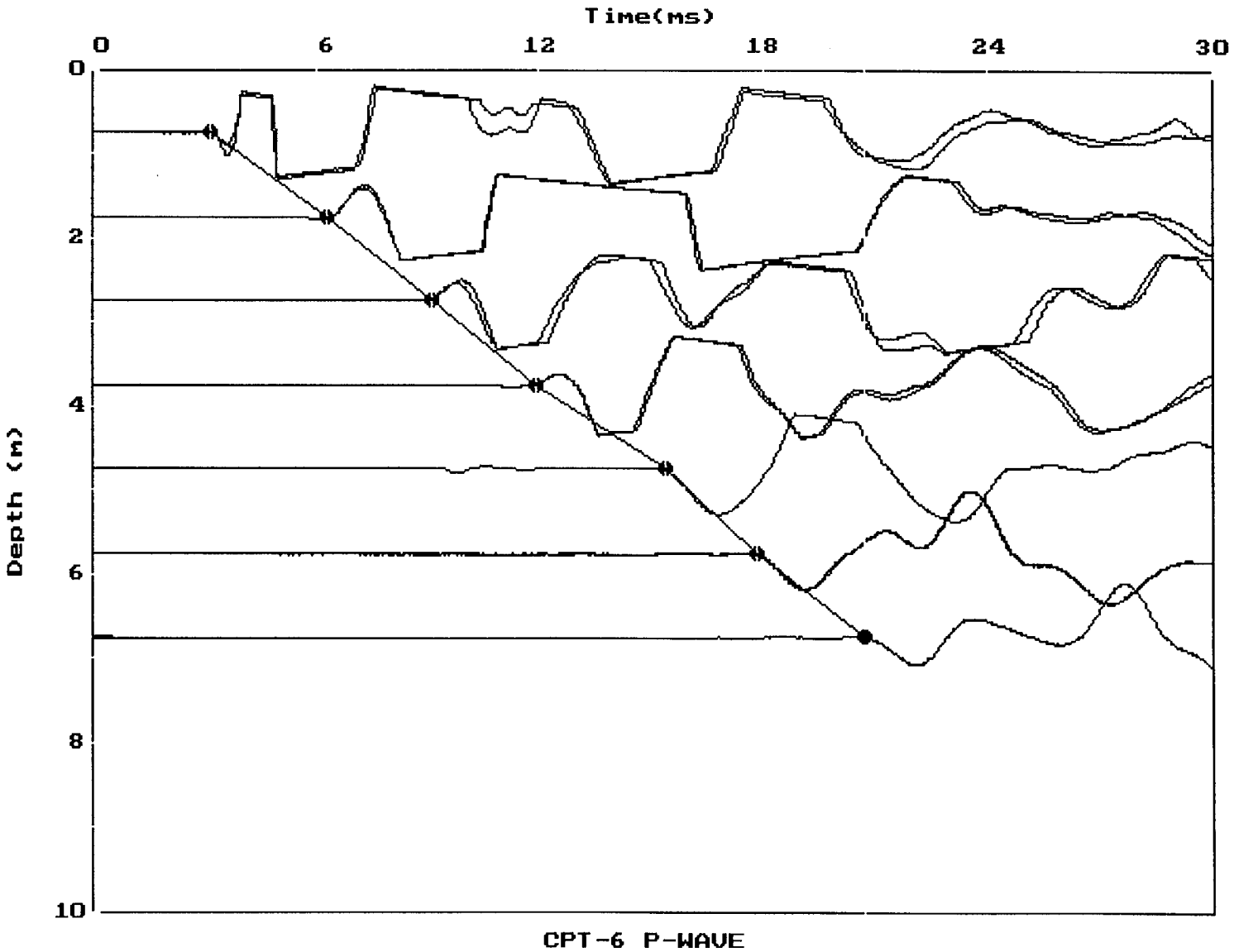
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



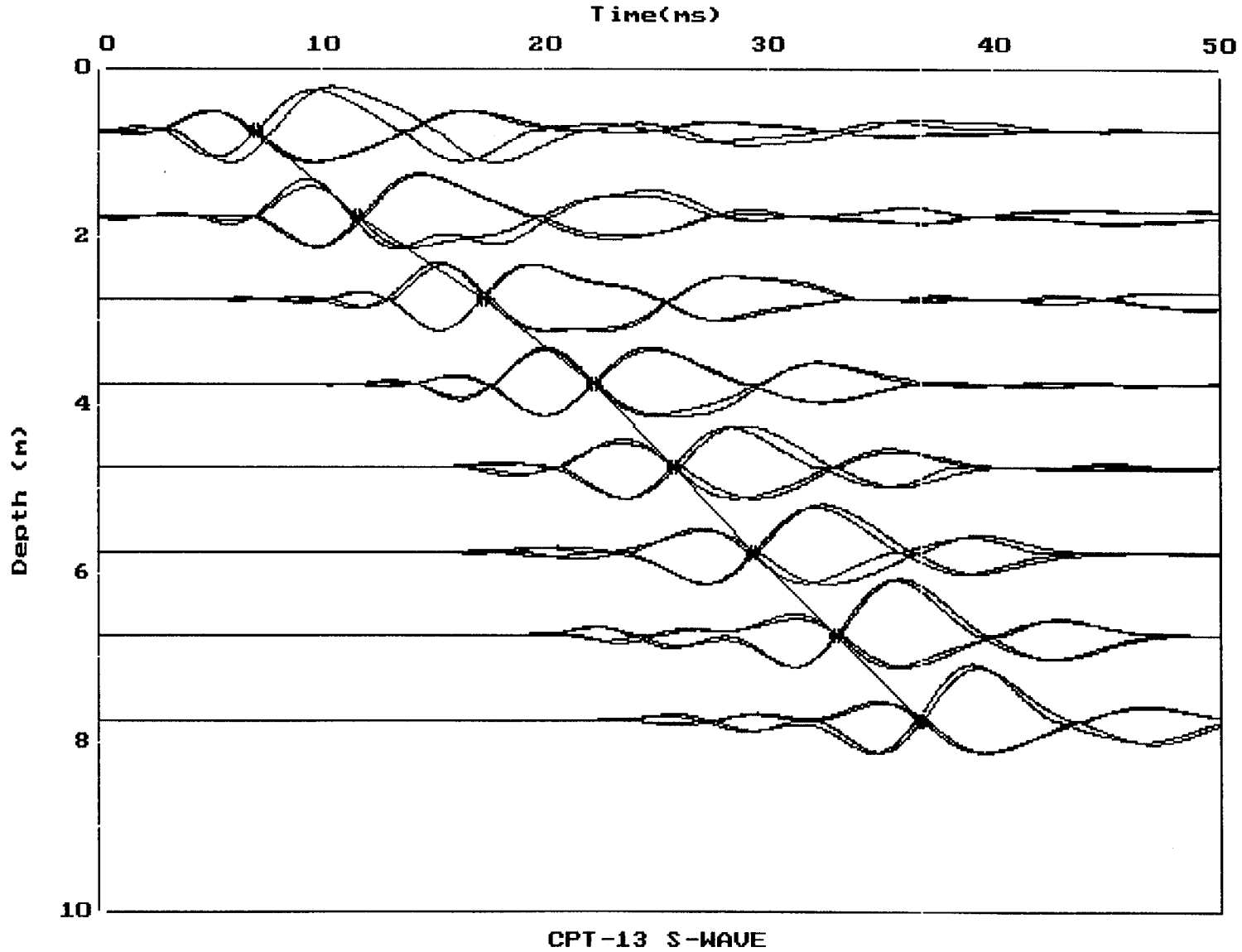
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



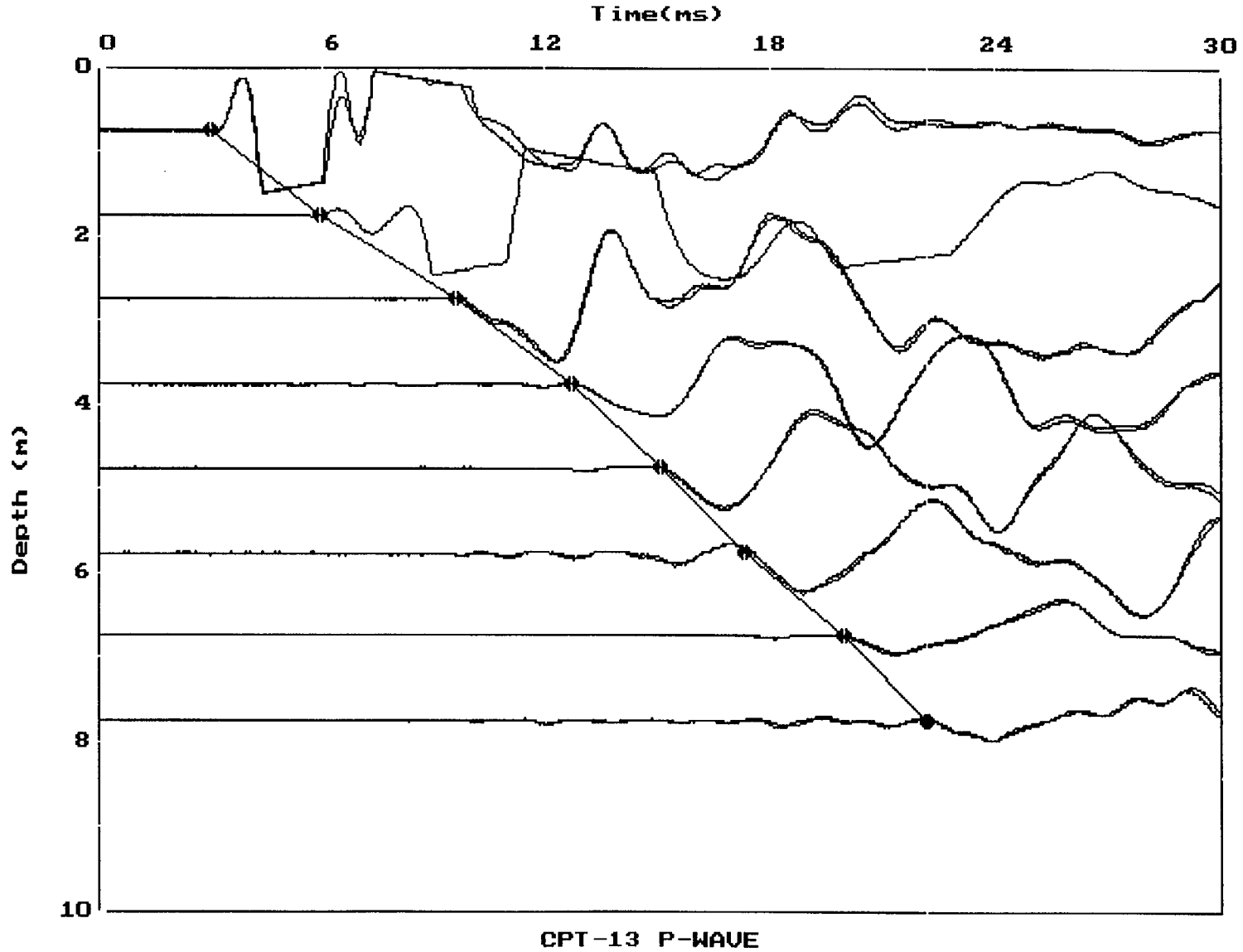
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



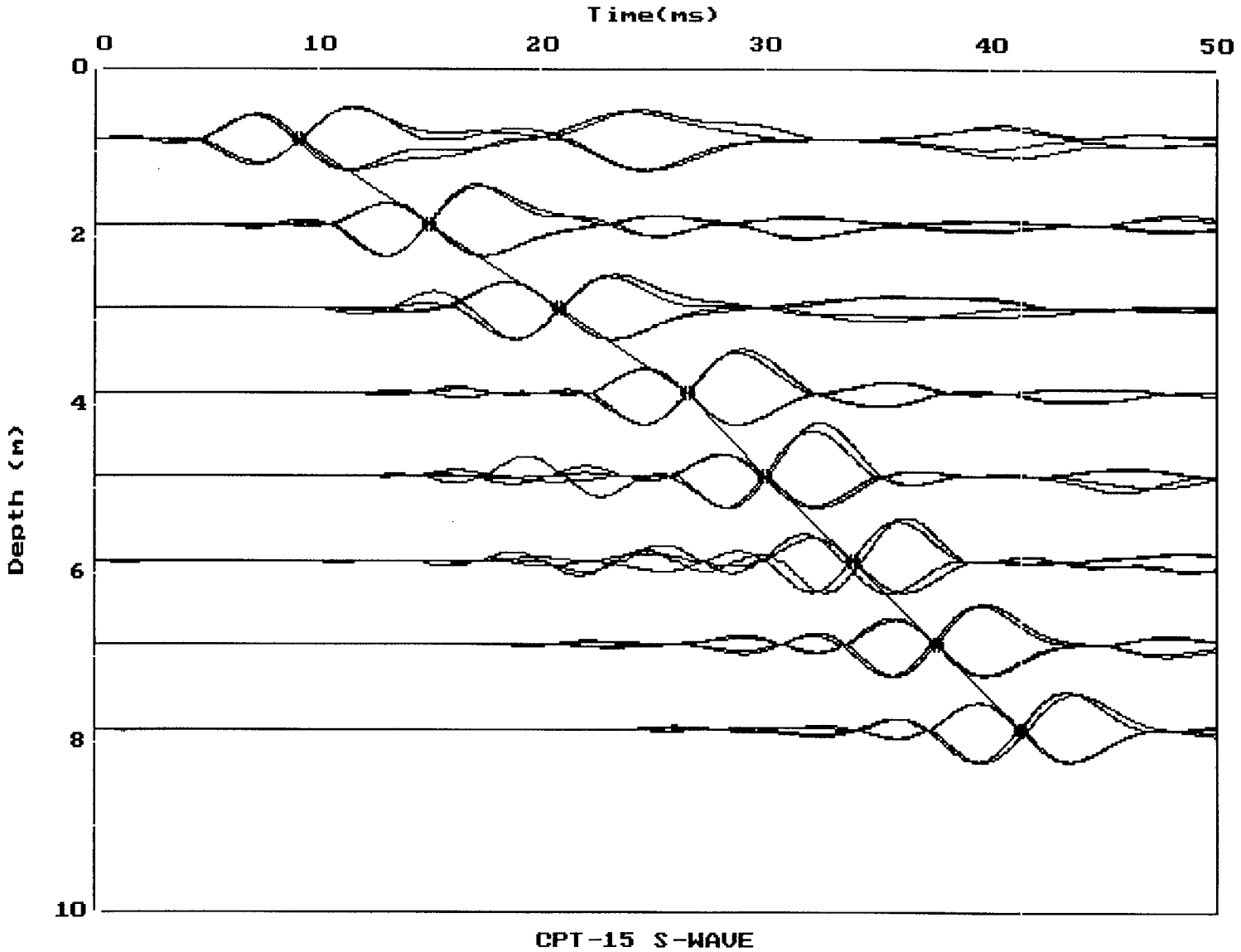
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



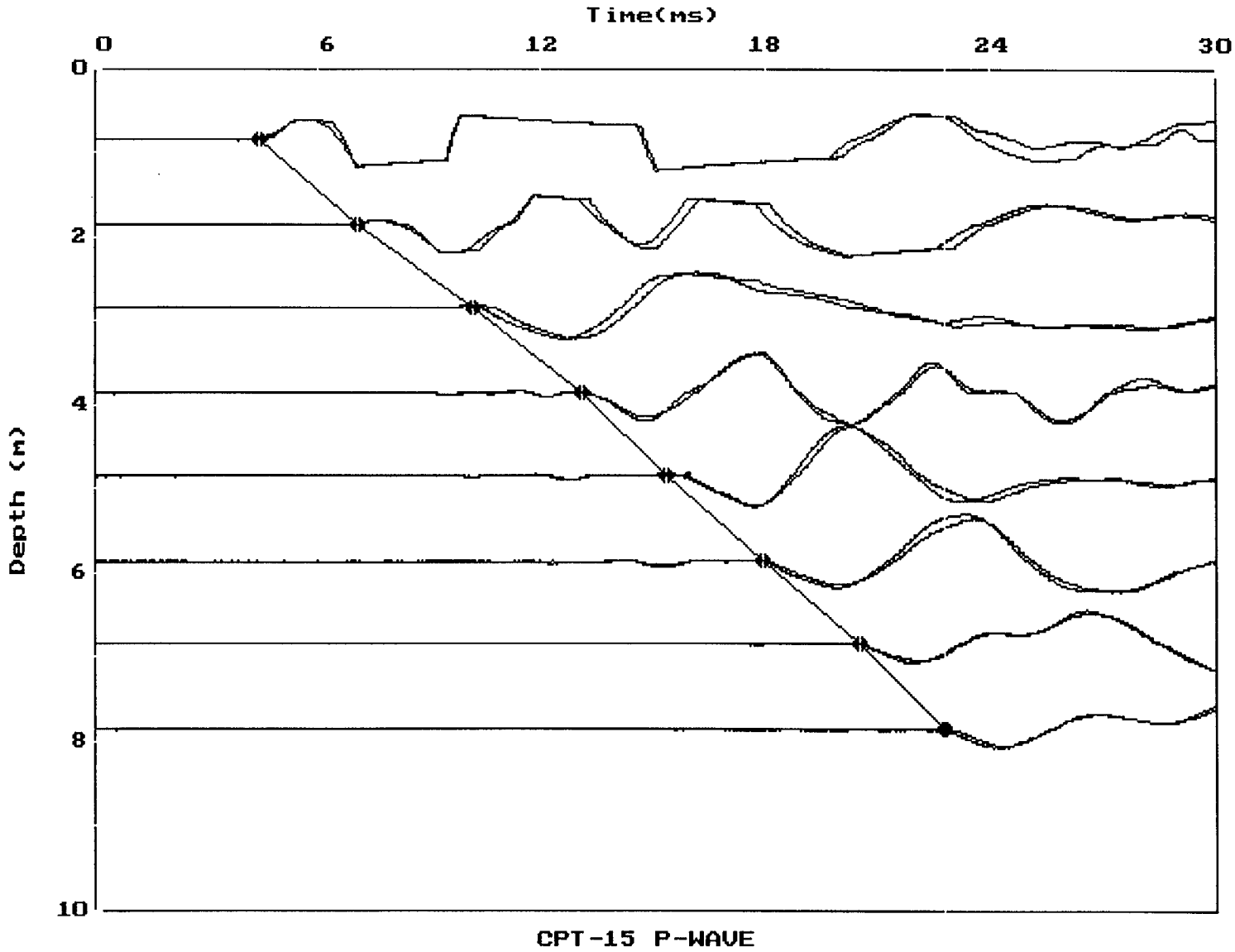
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



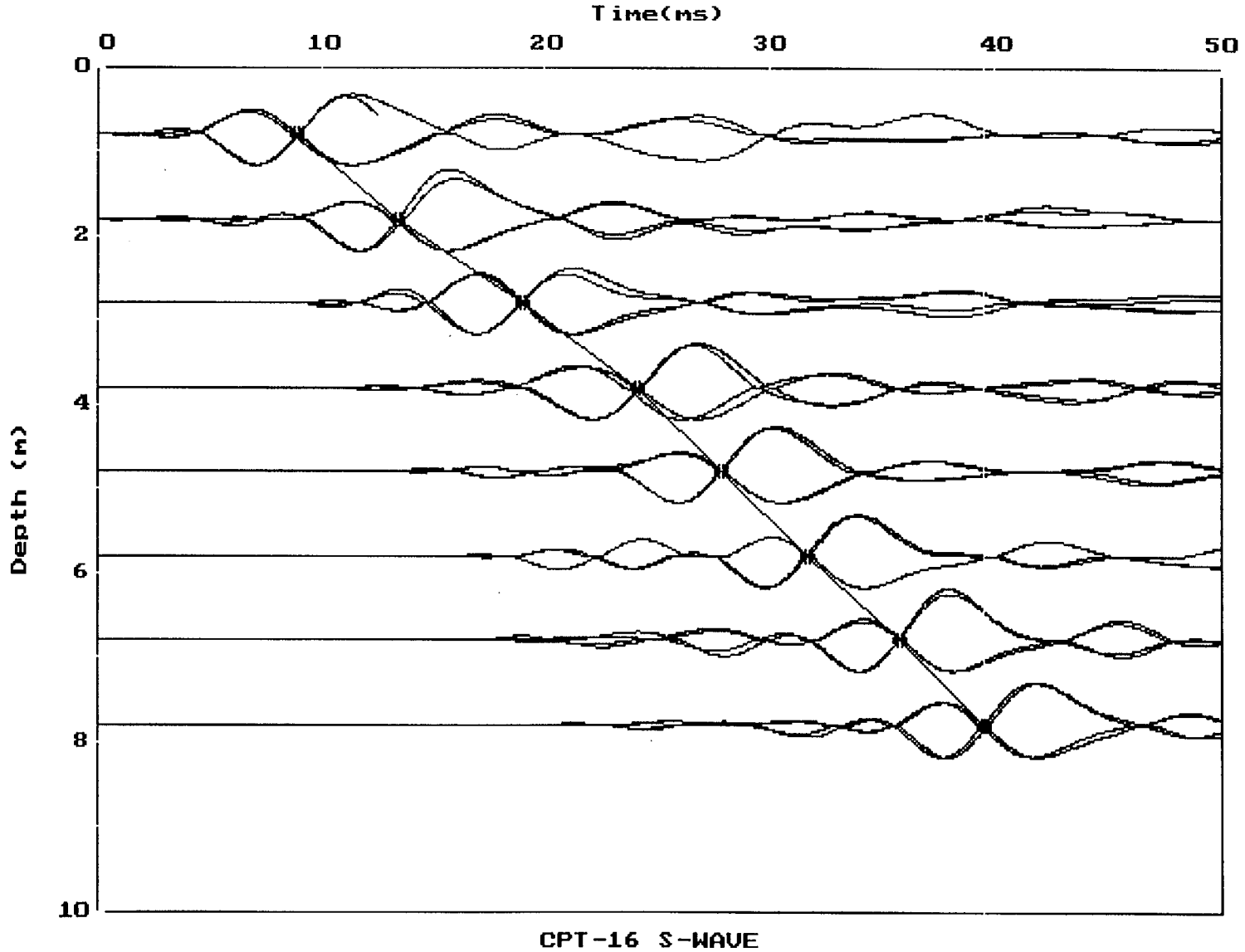
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



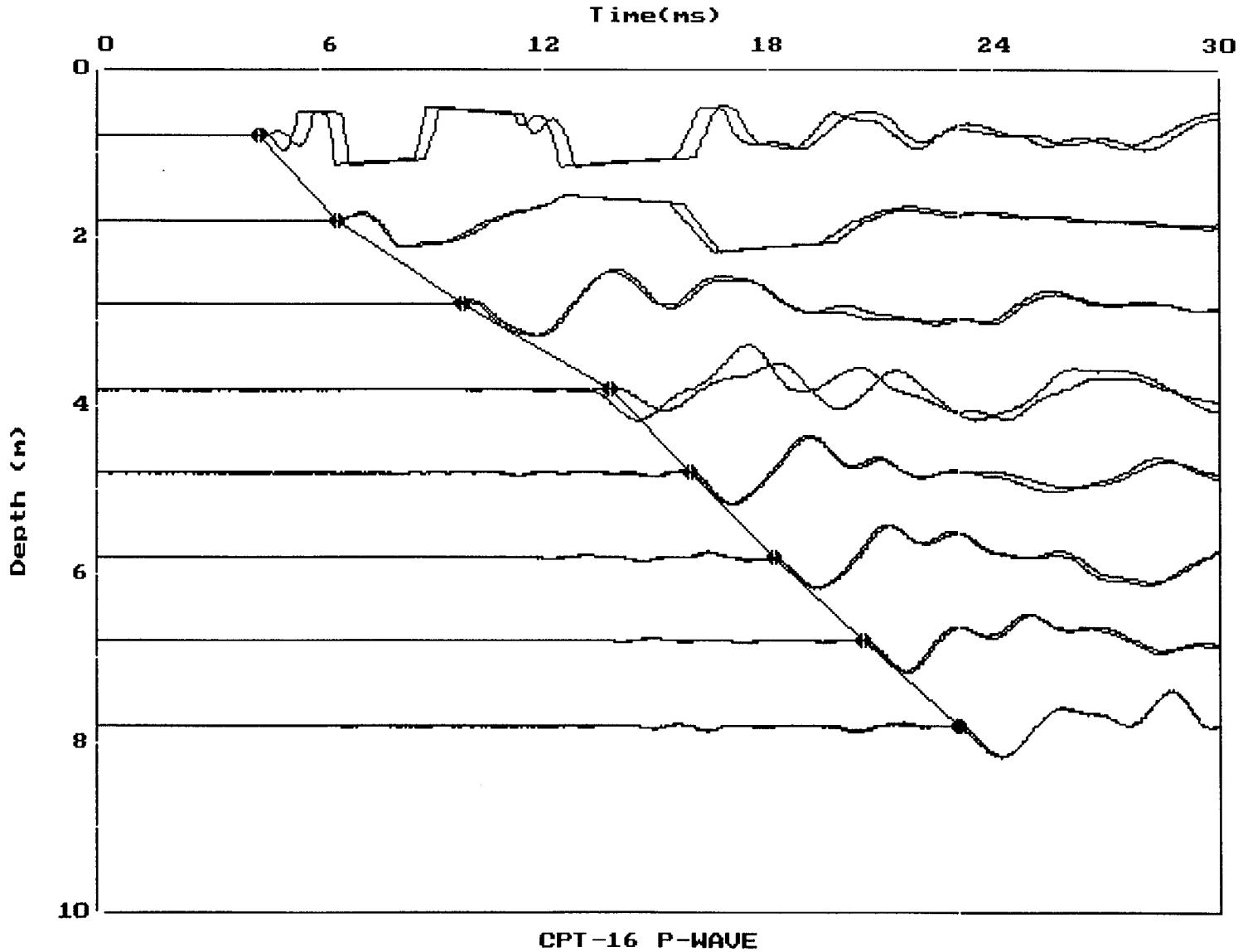
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



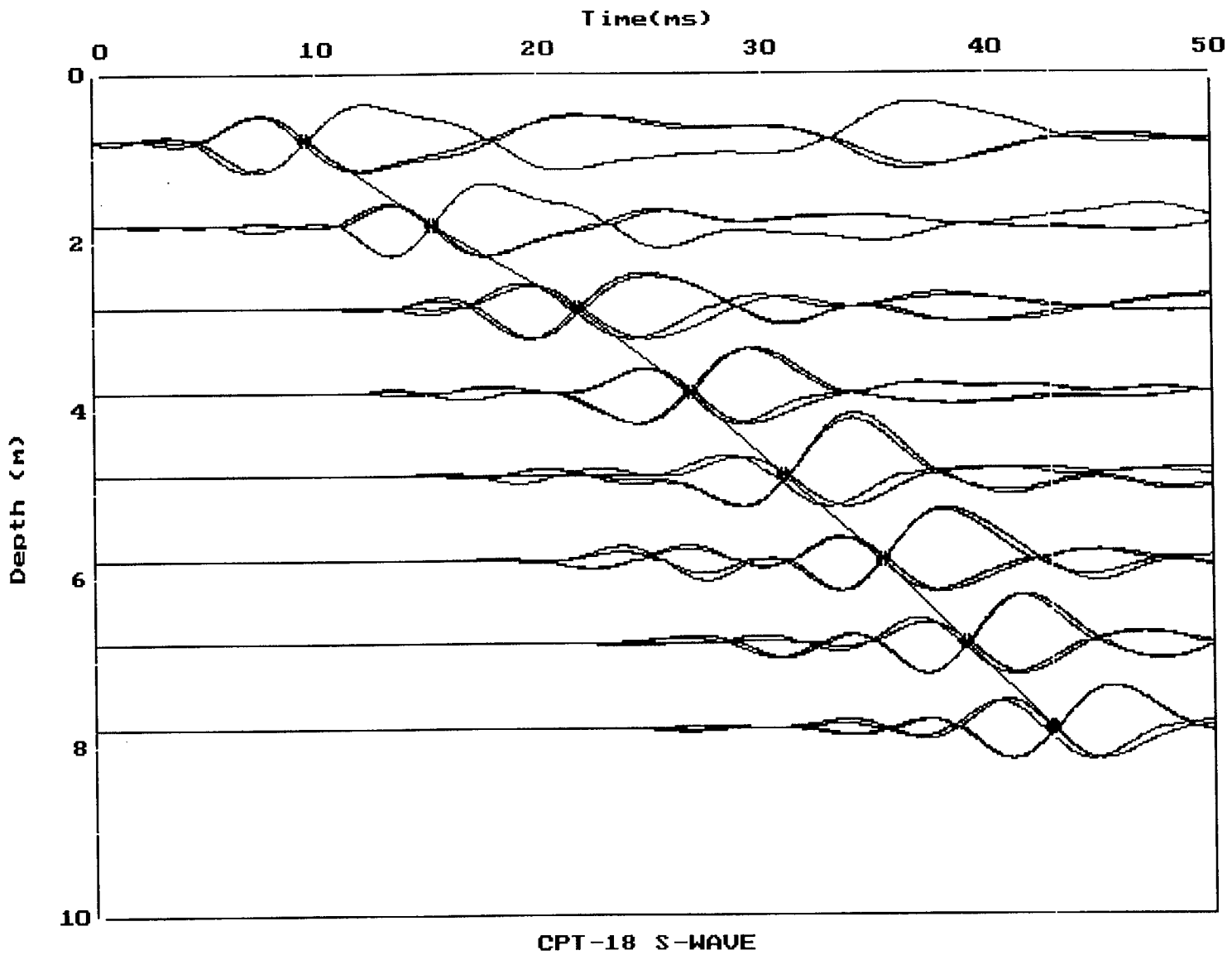
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



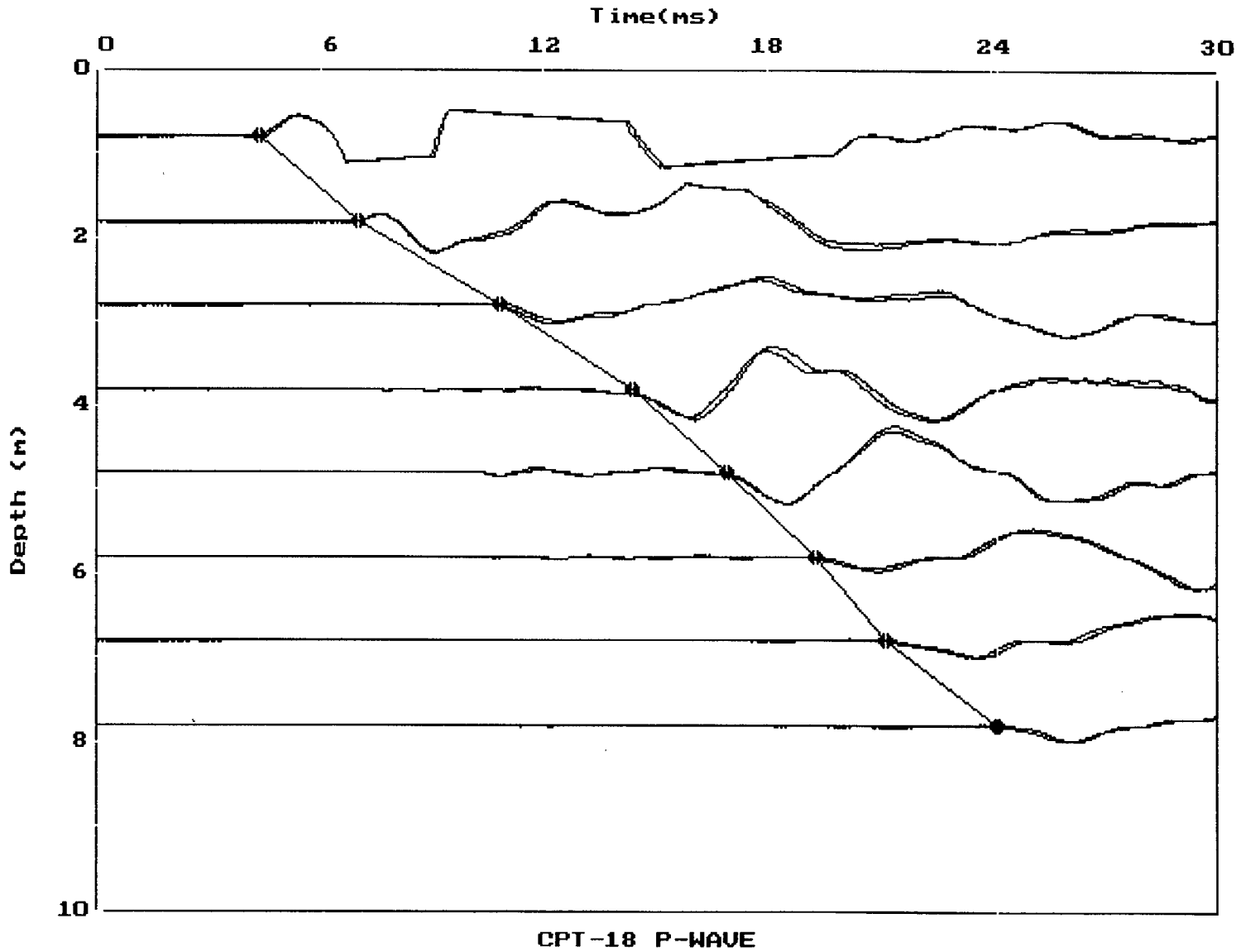
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



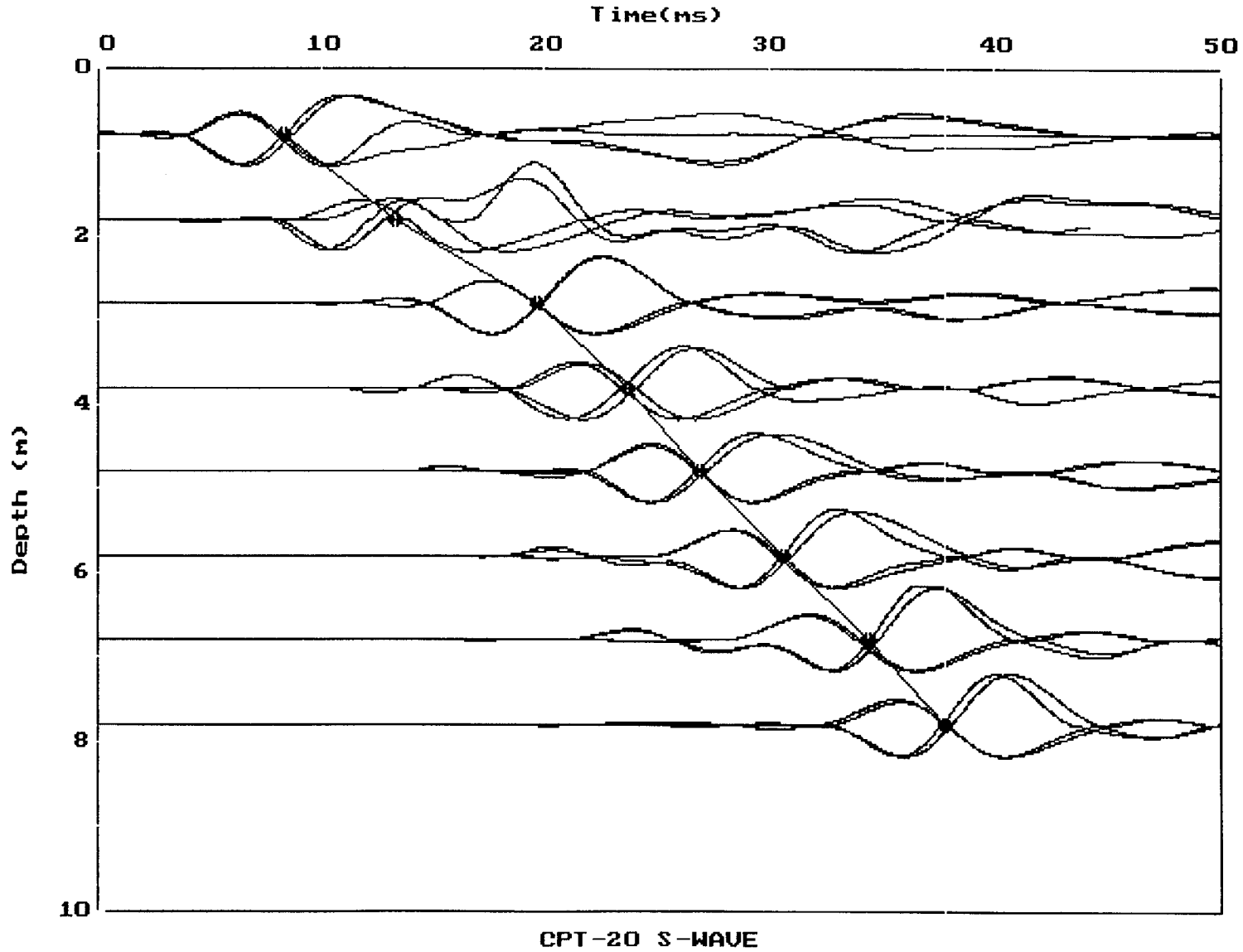
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



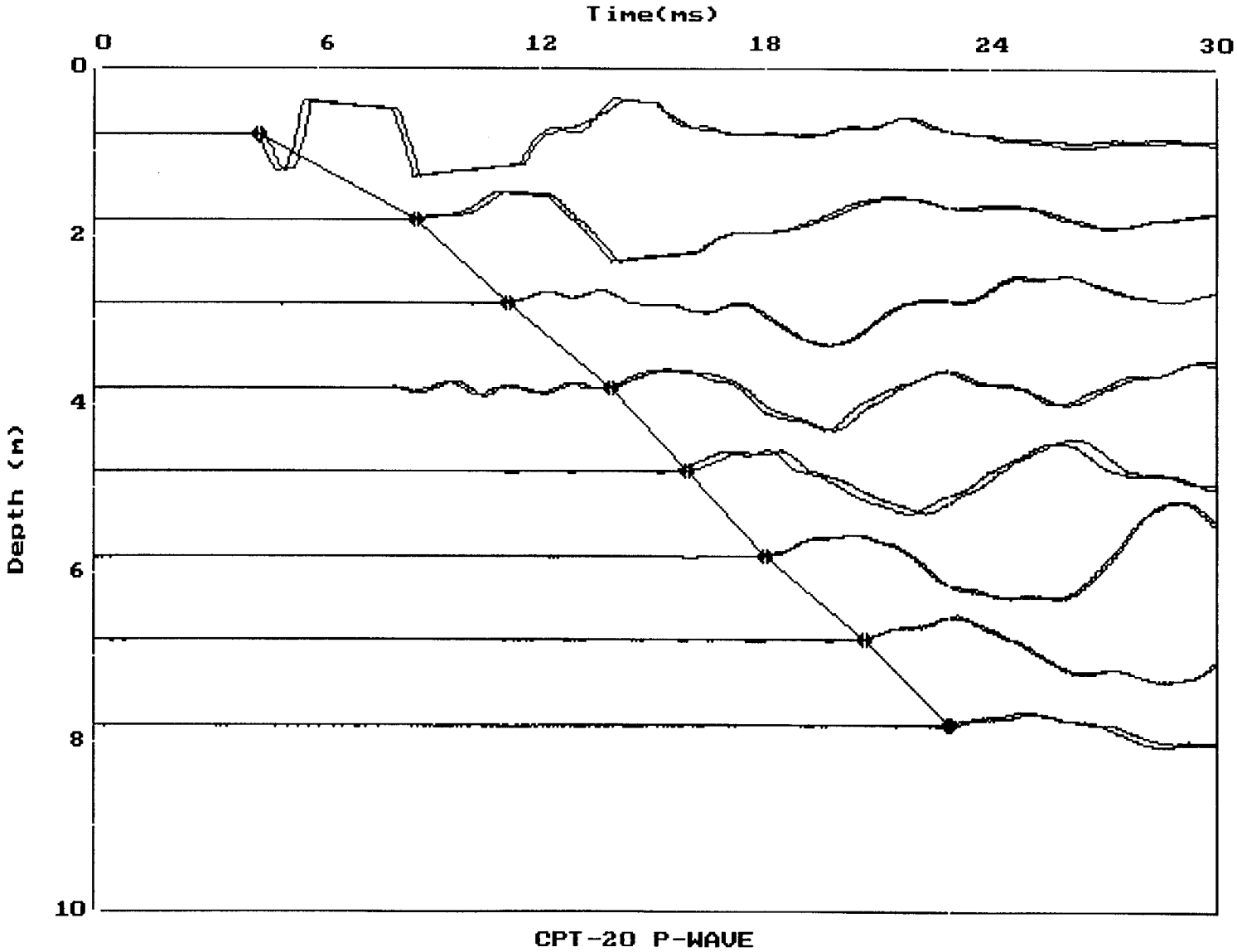
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



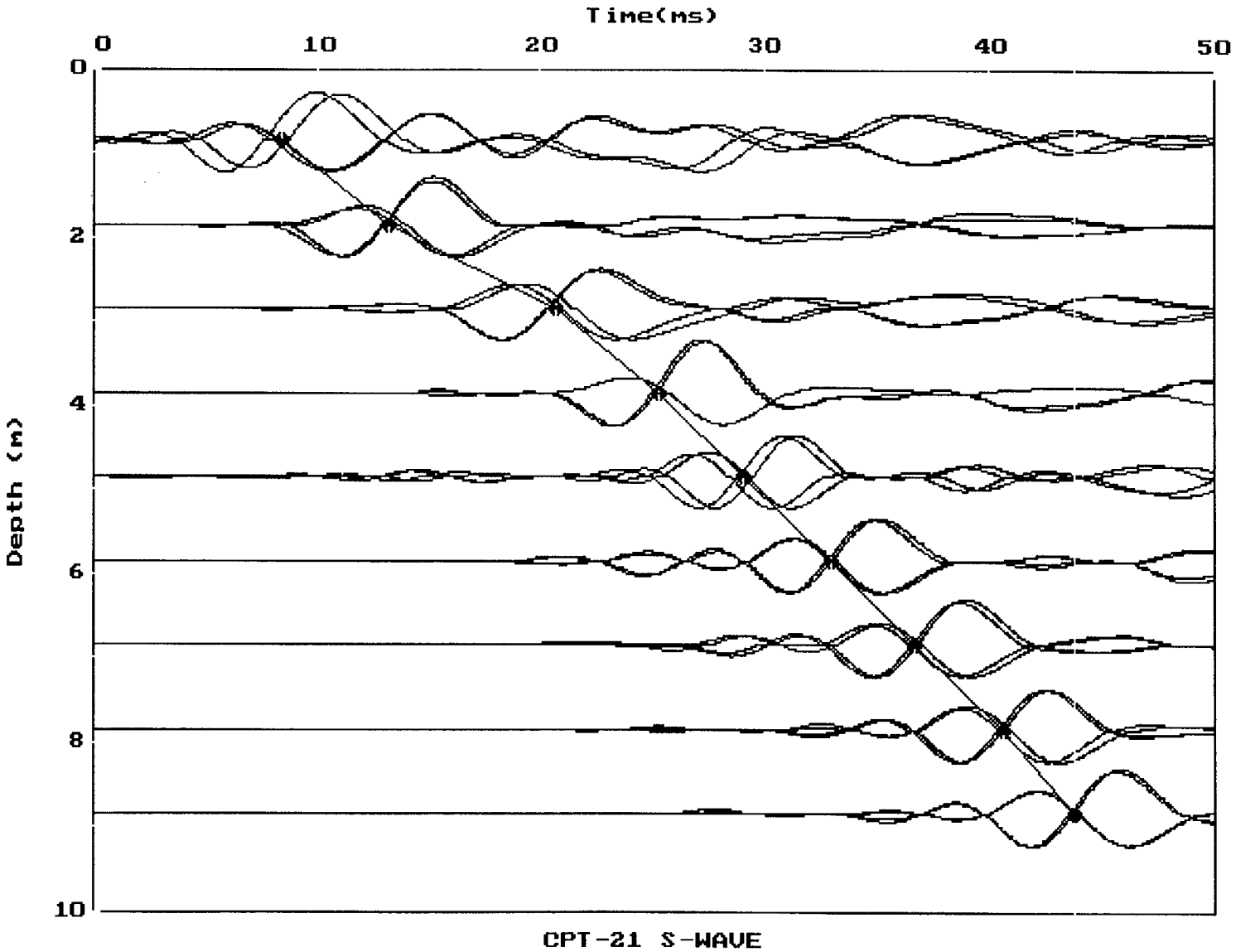
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



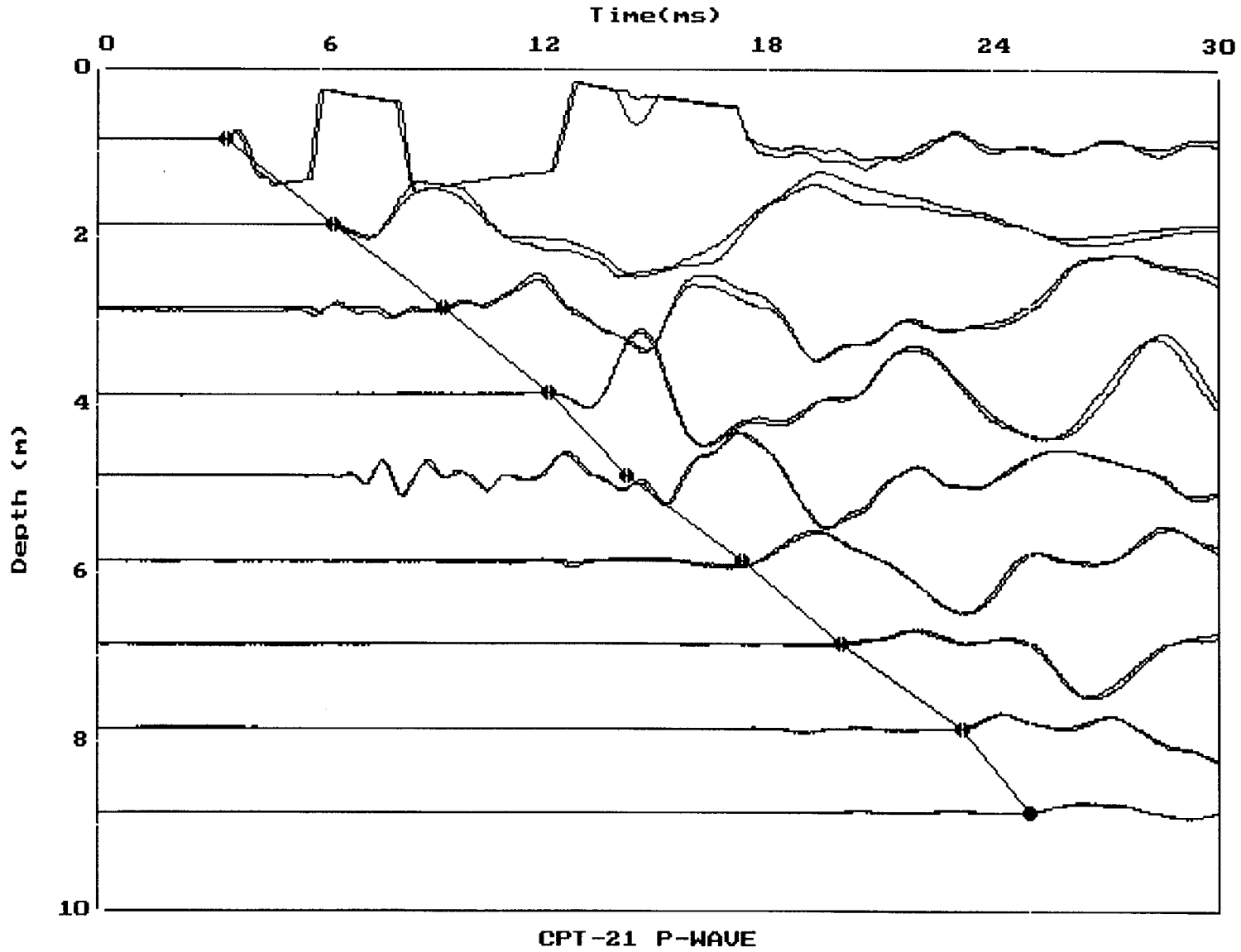
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



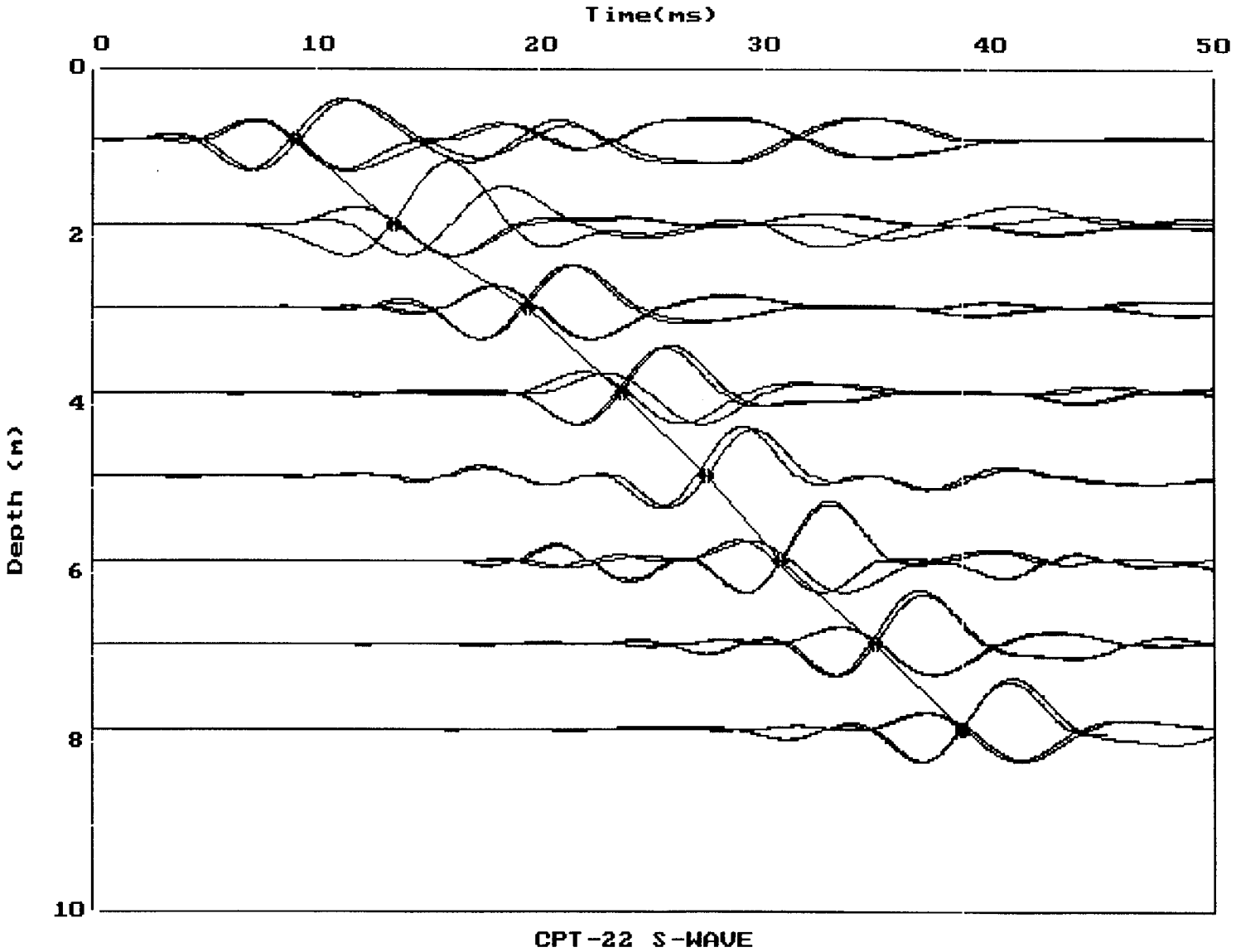
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



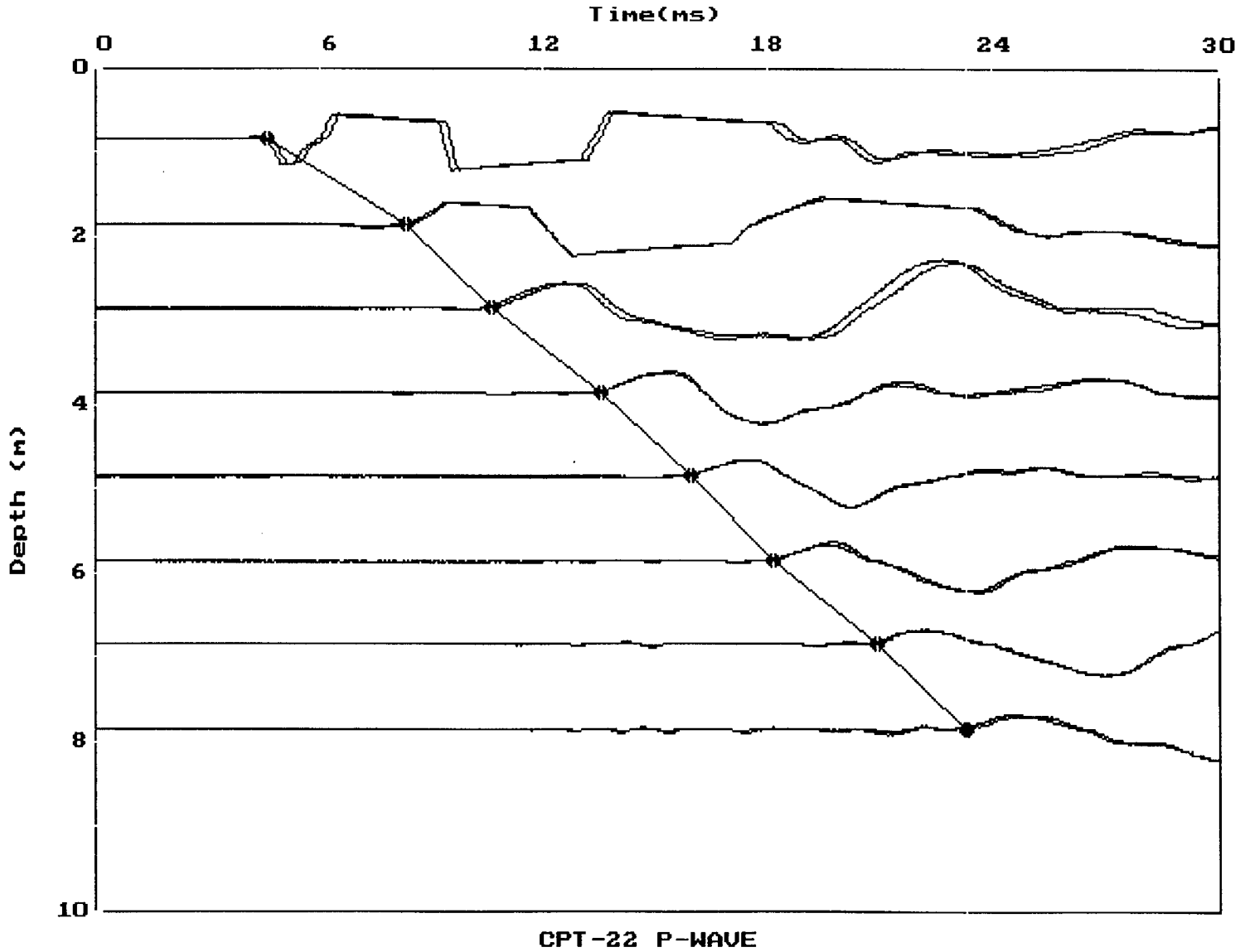
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



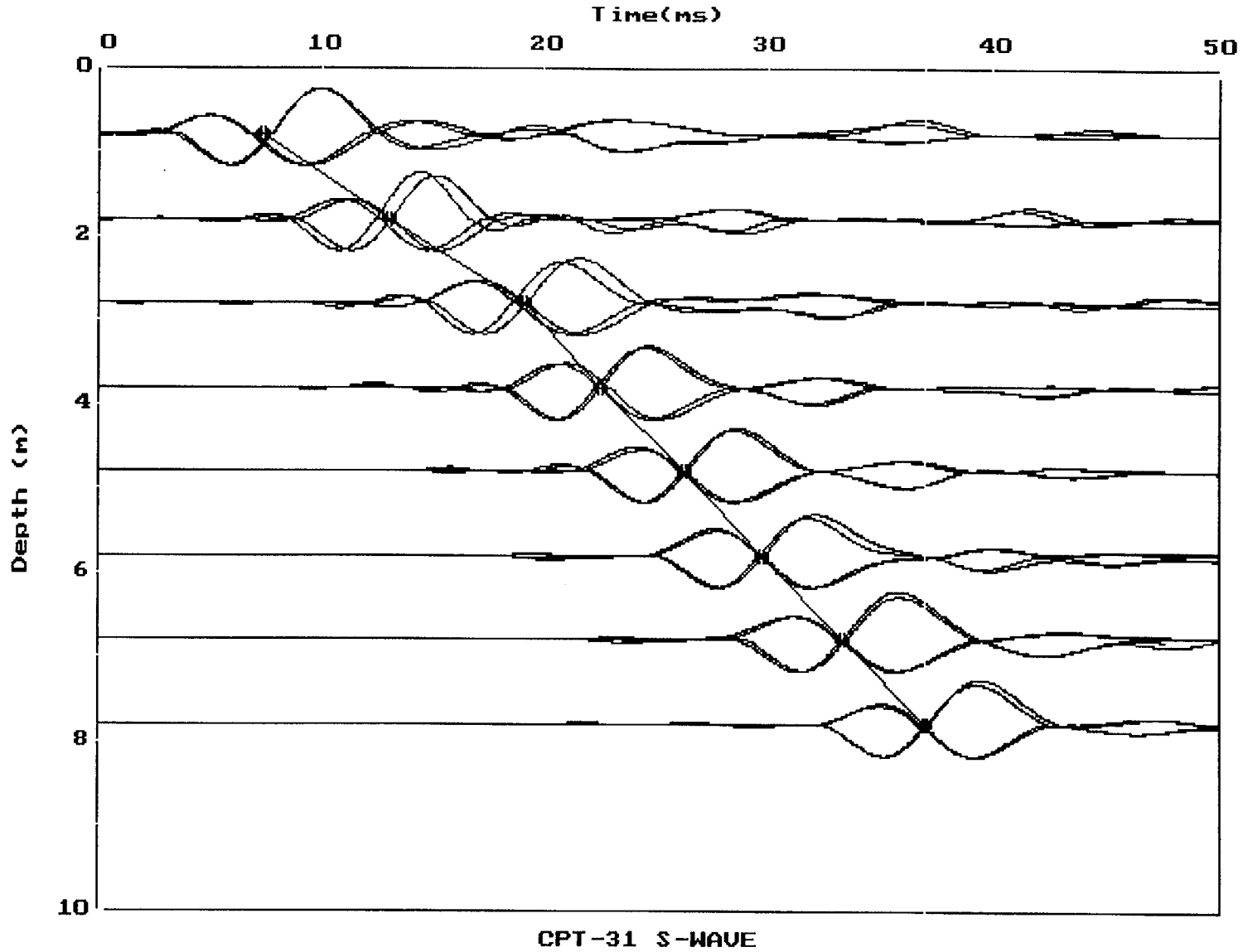
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



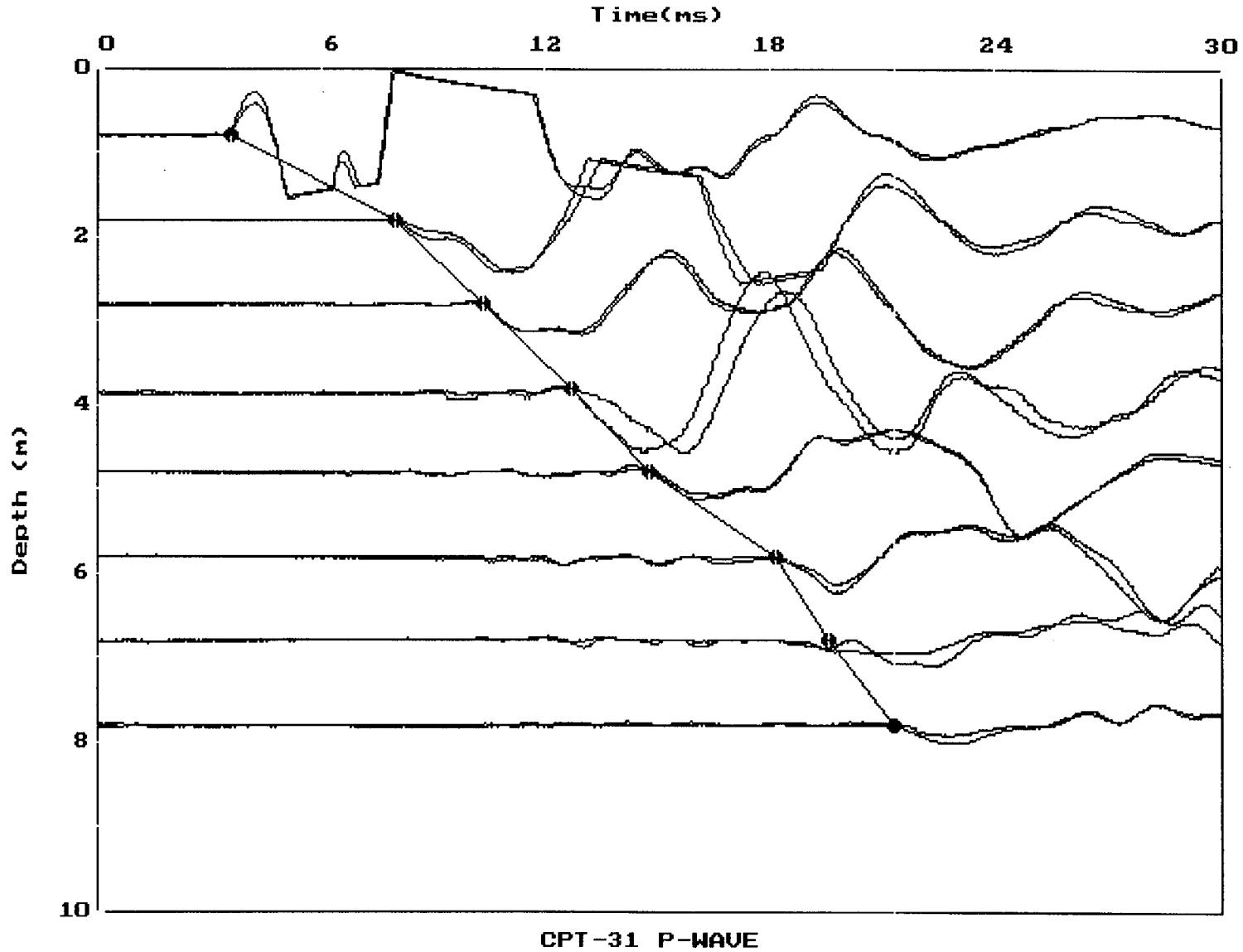
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



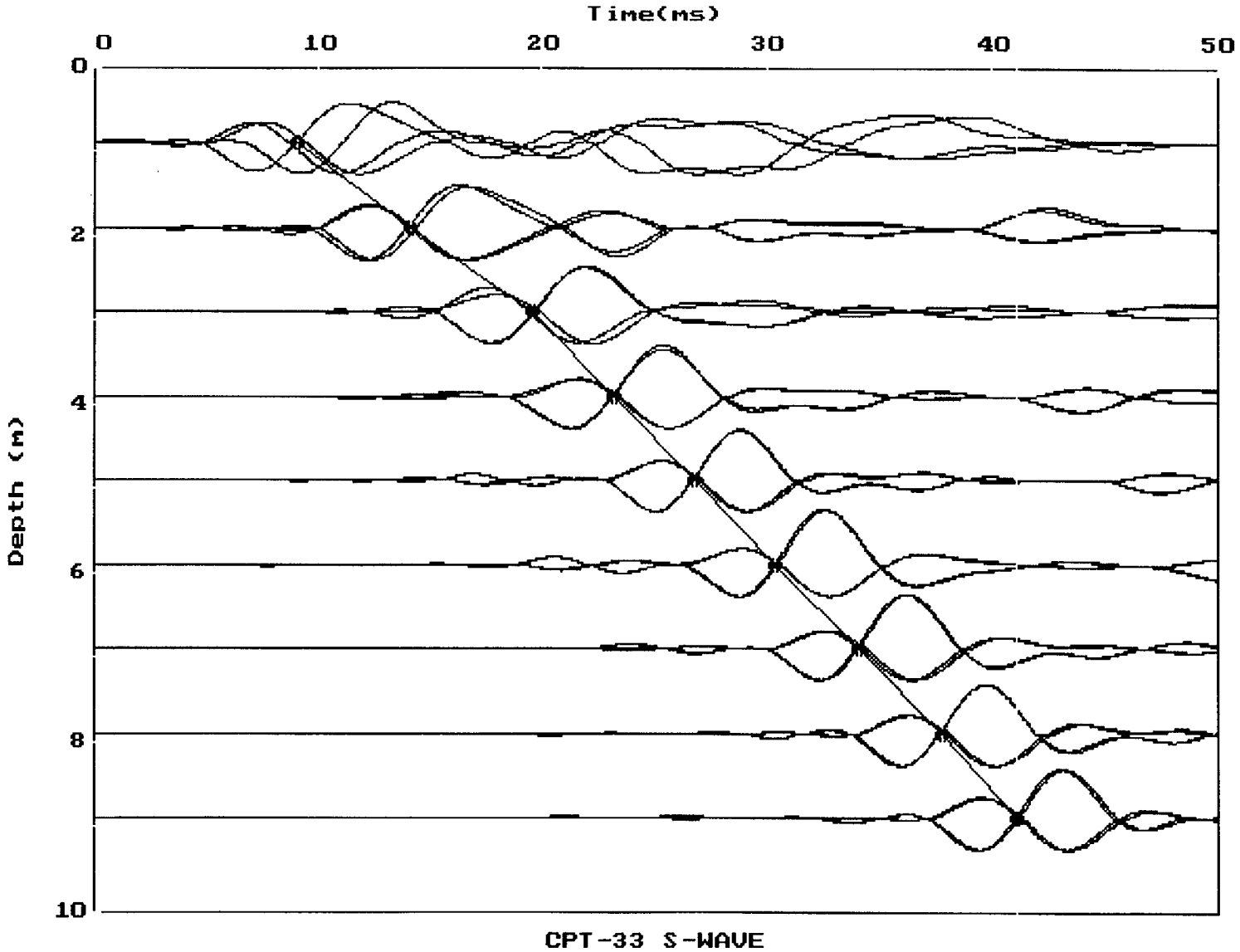
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



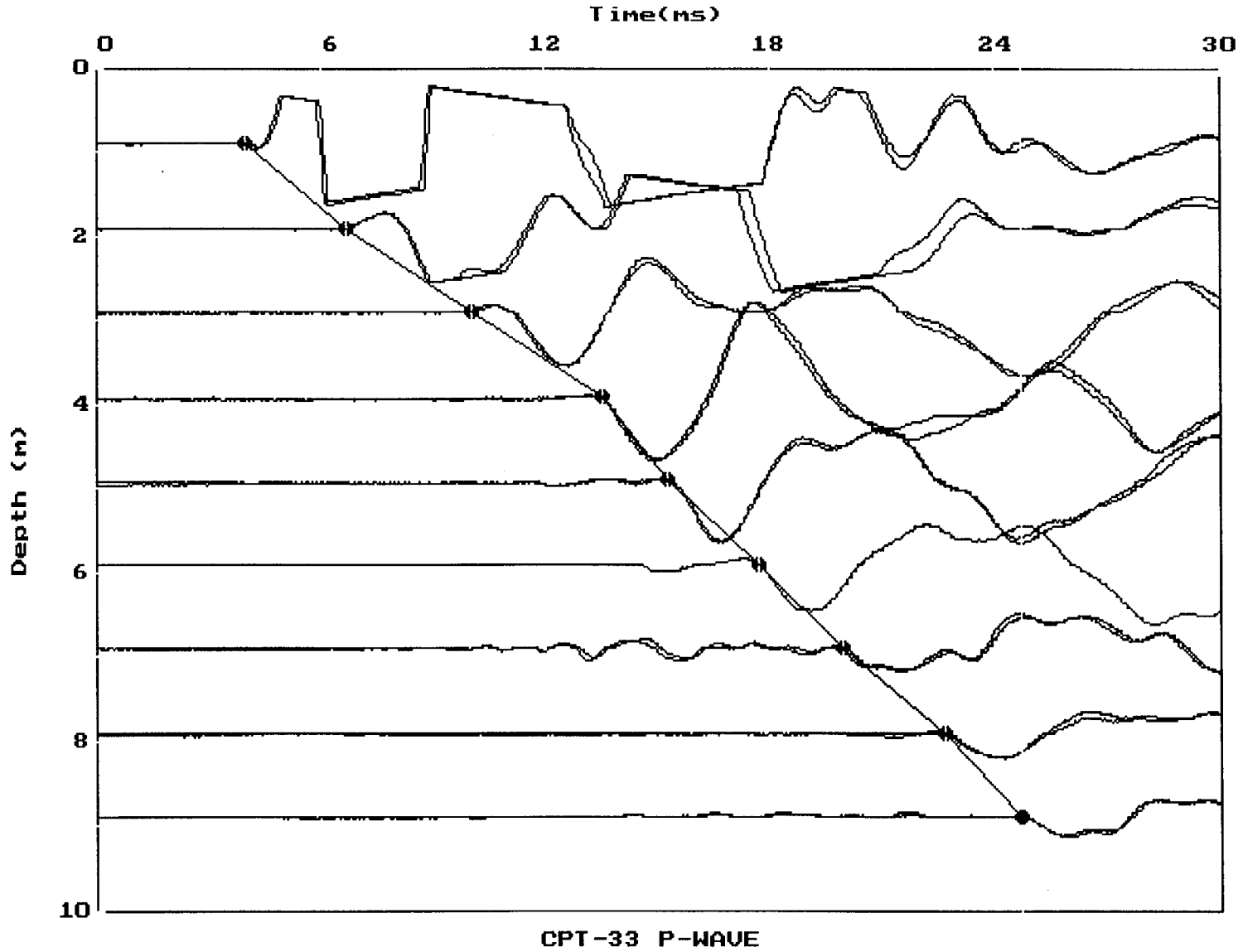
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



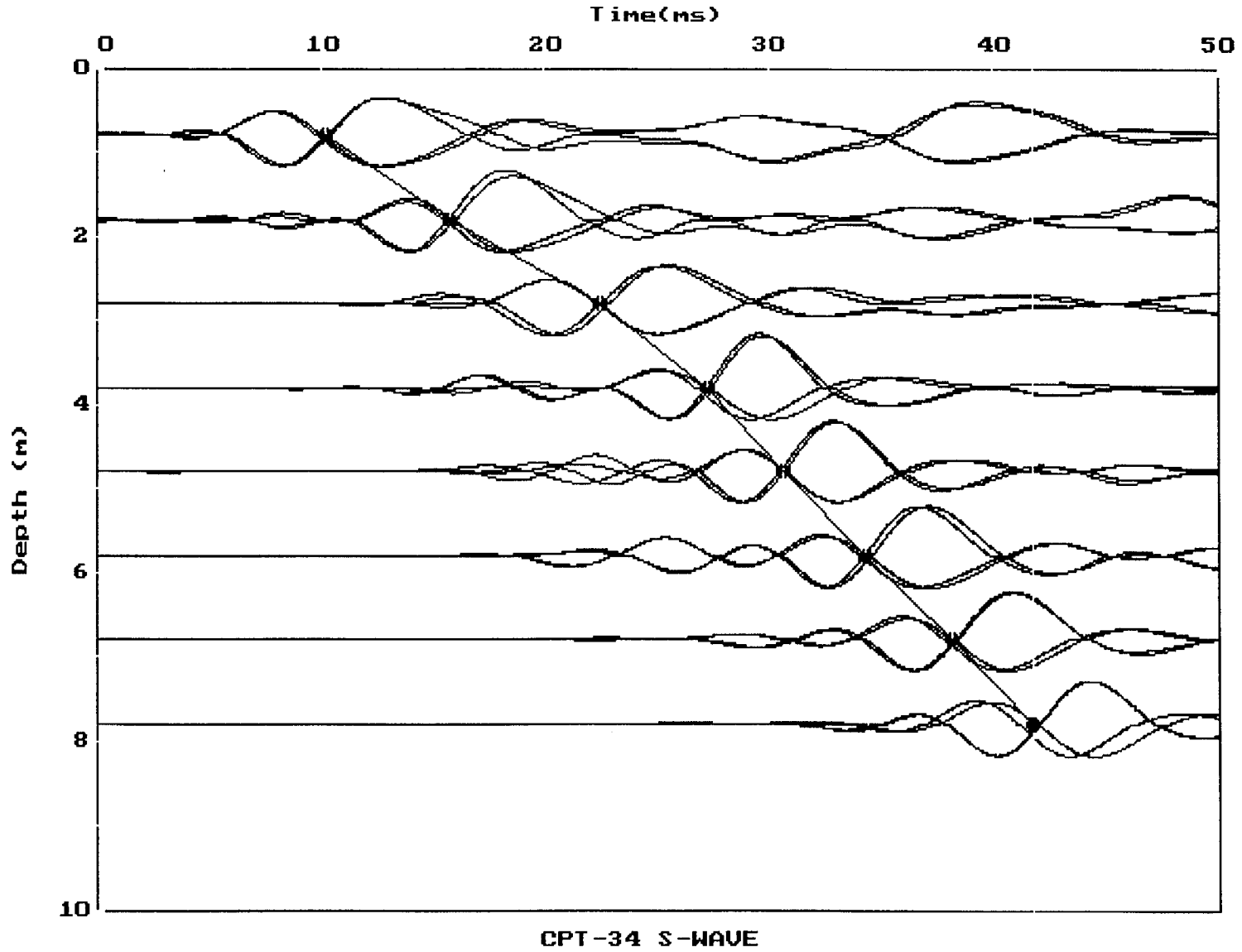
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



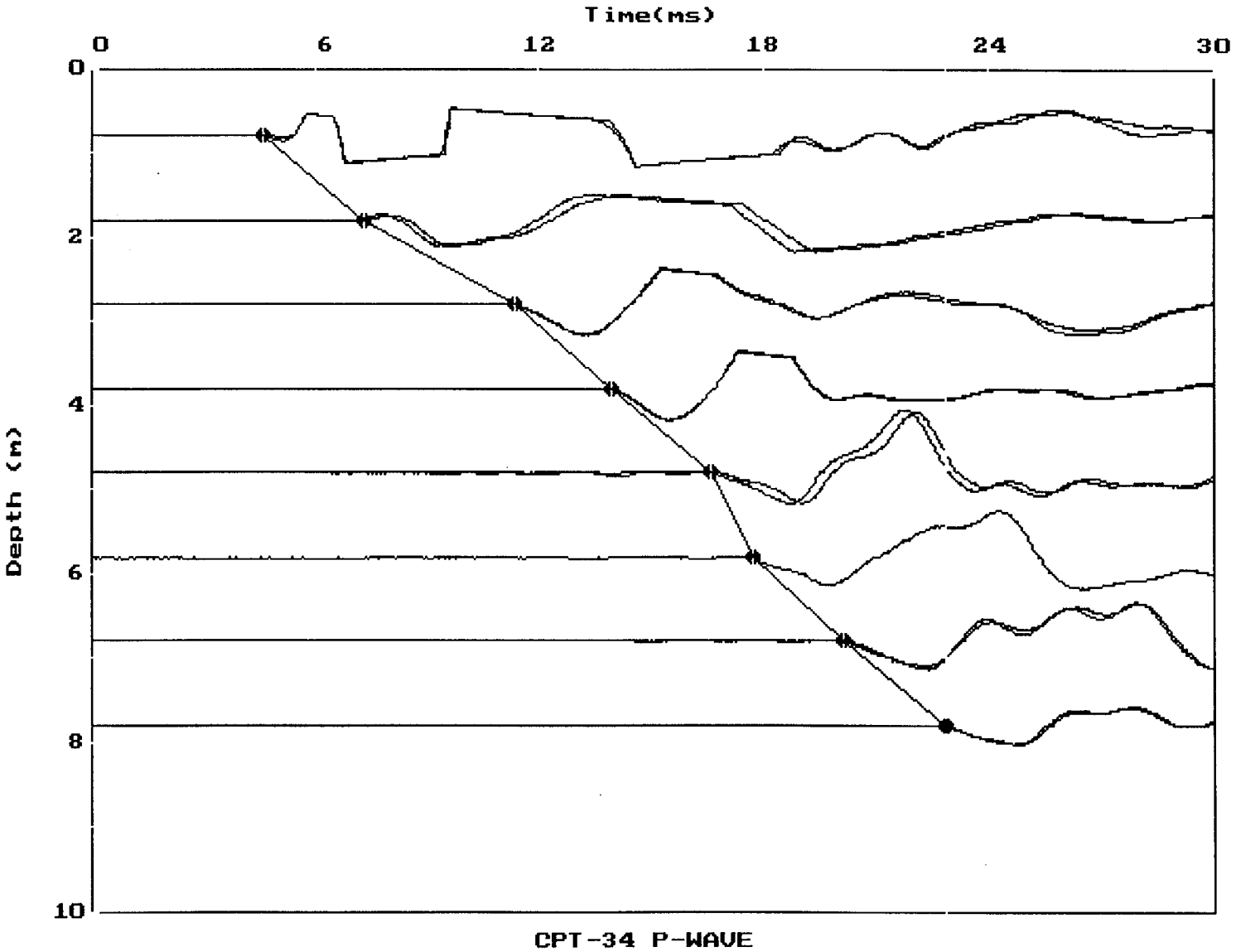
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



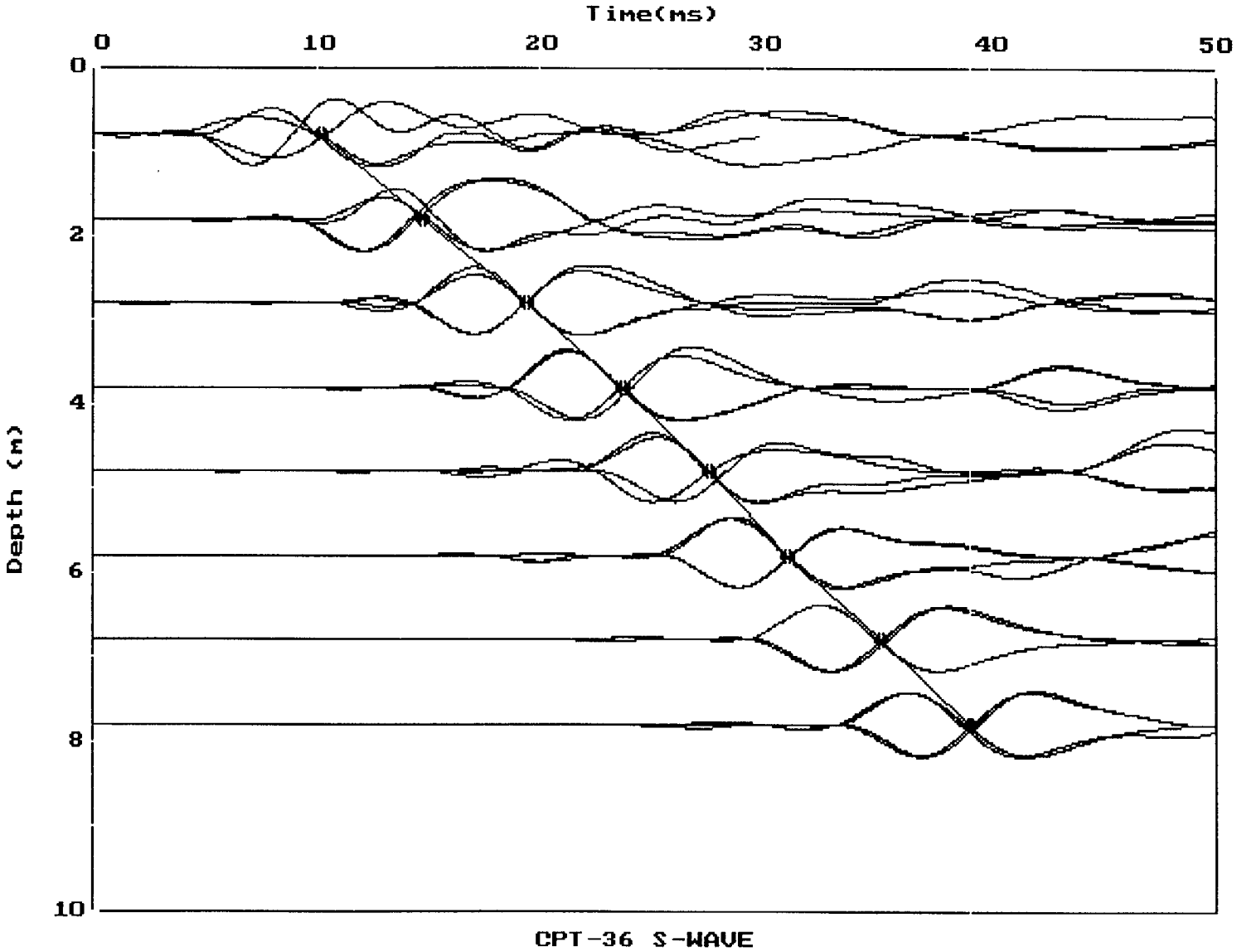
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



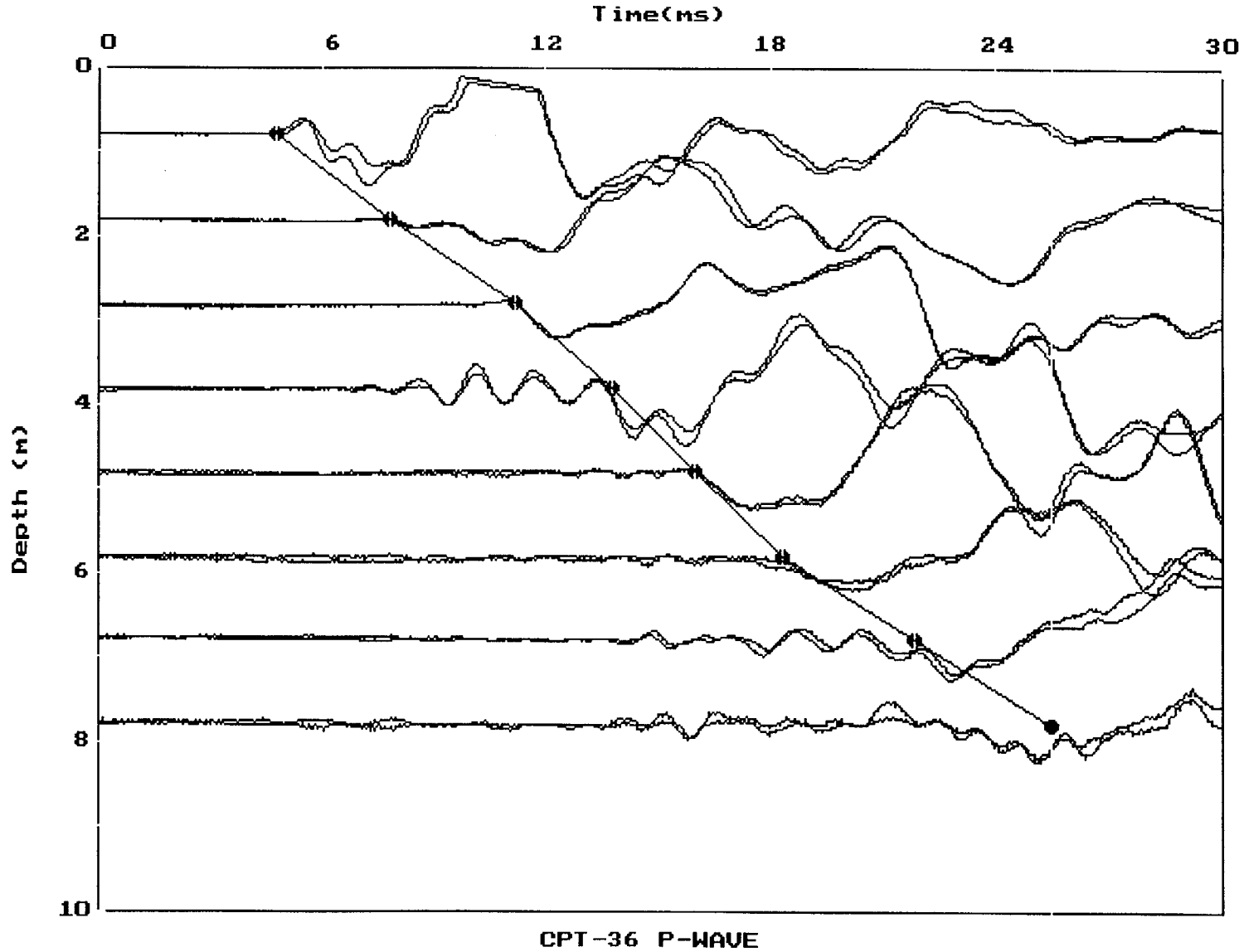
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



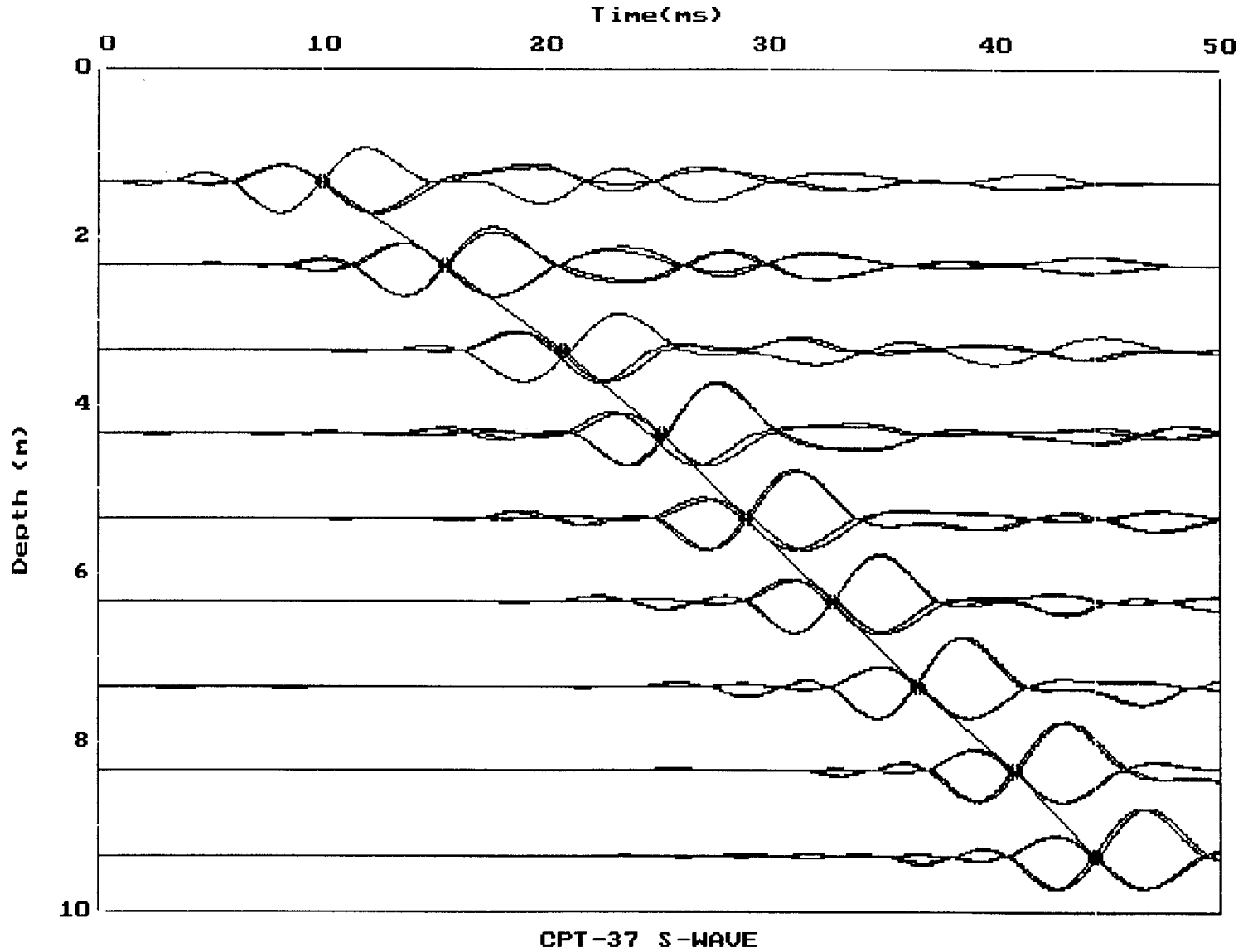
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



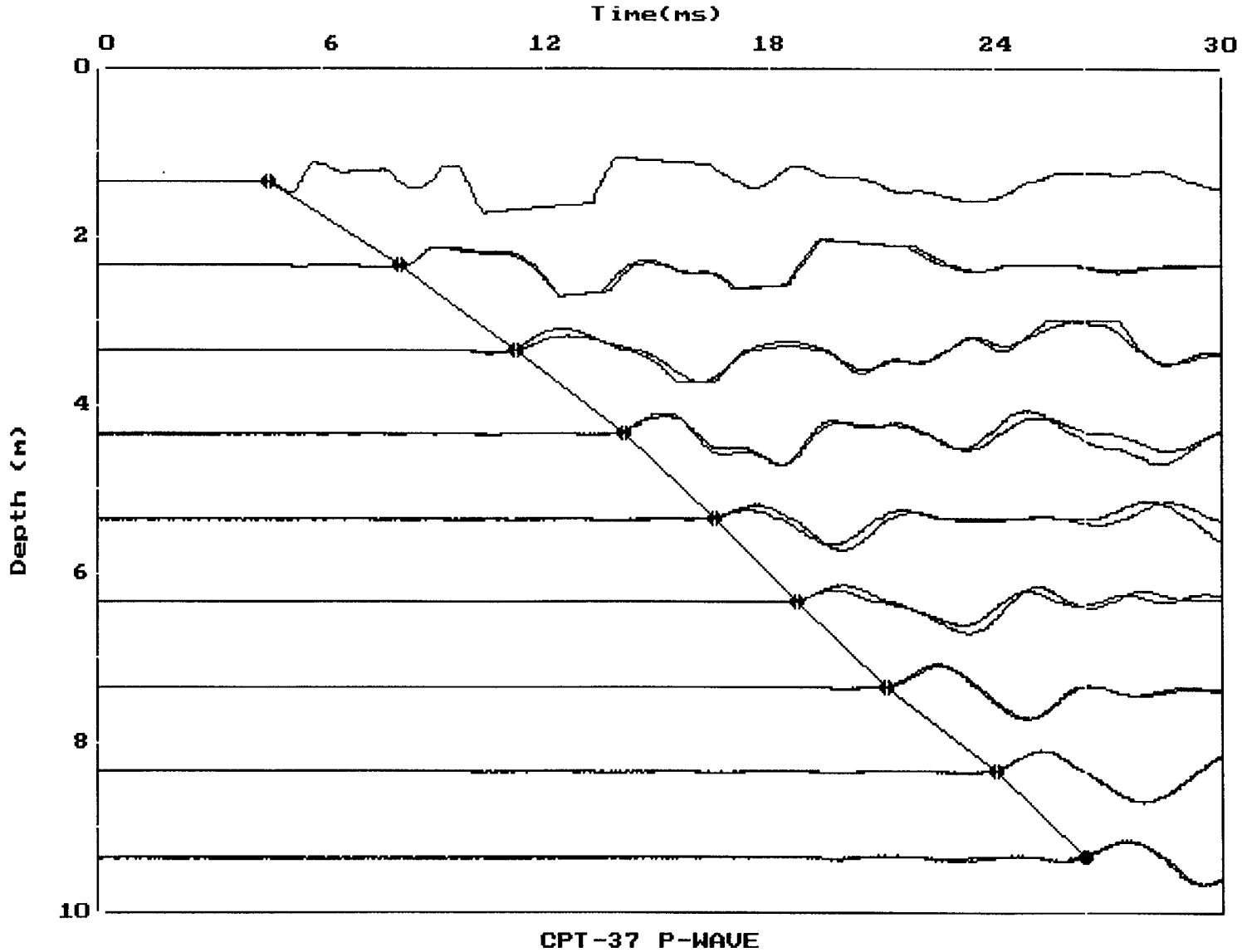
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



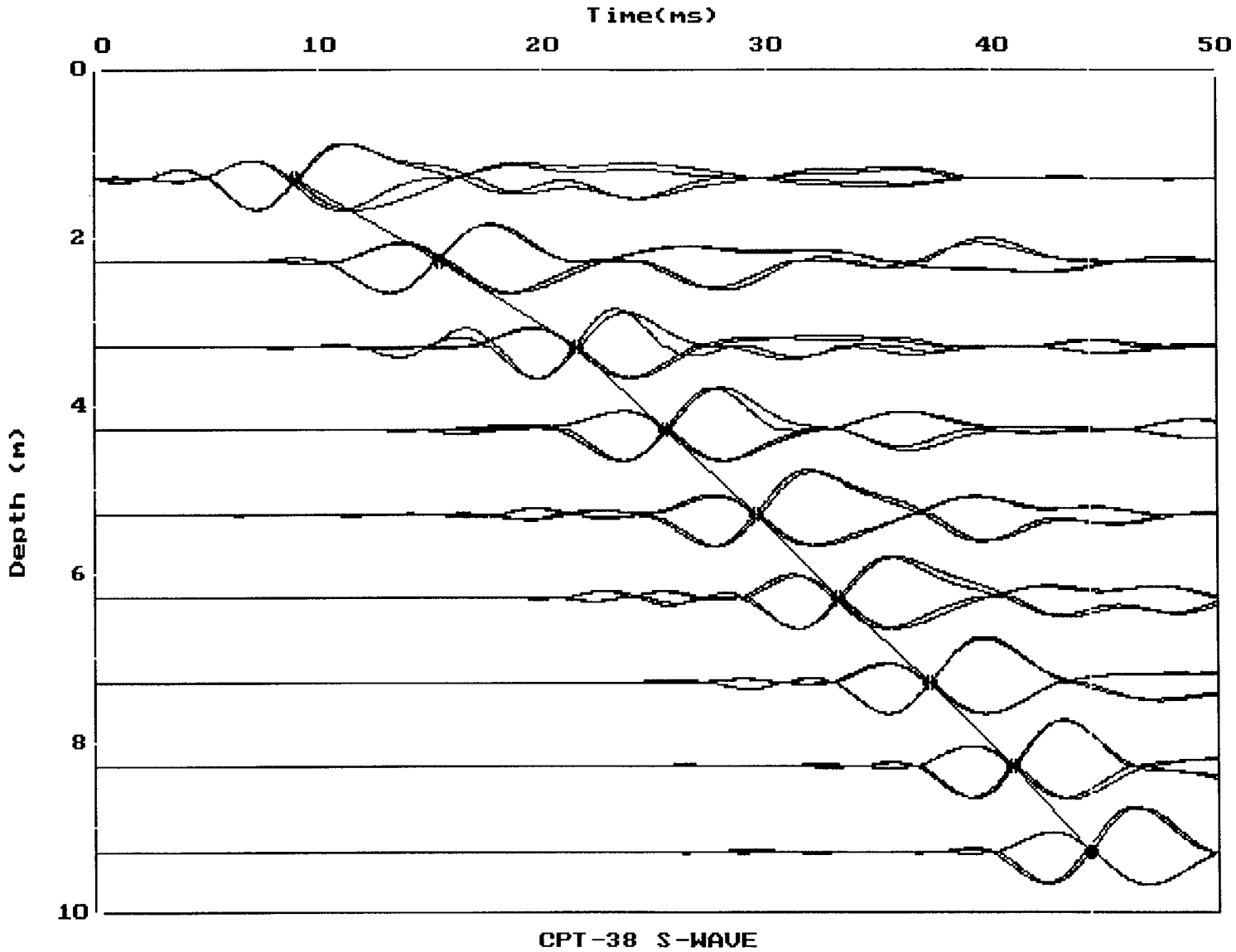
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



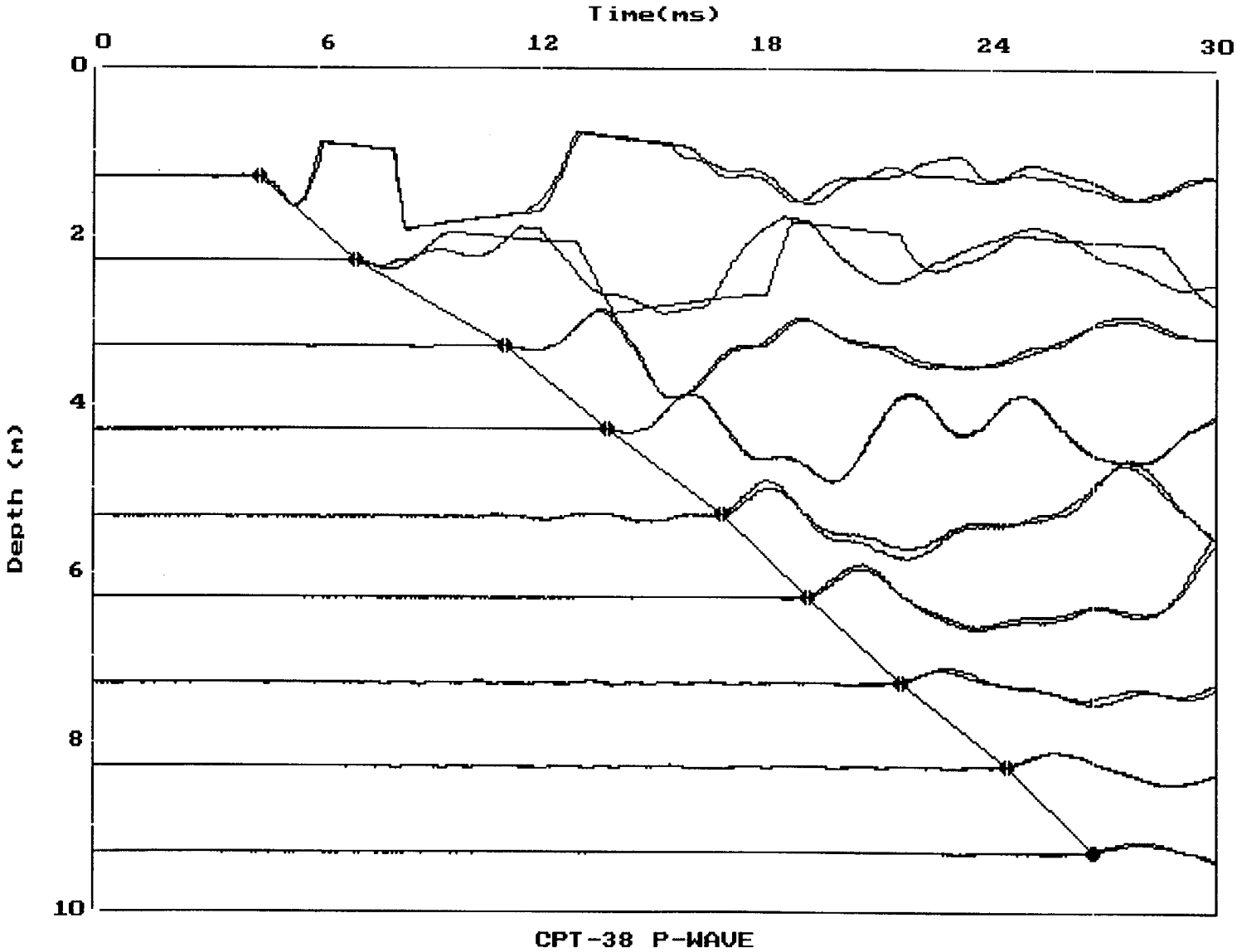
Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



Job No.: 99-315 Client: Stone & Webster Location: Private Fuel Storage Facility



Appendix D

CPT Interpretation Plots

Set 1

Appendix D

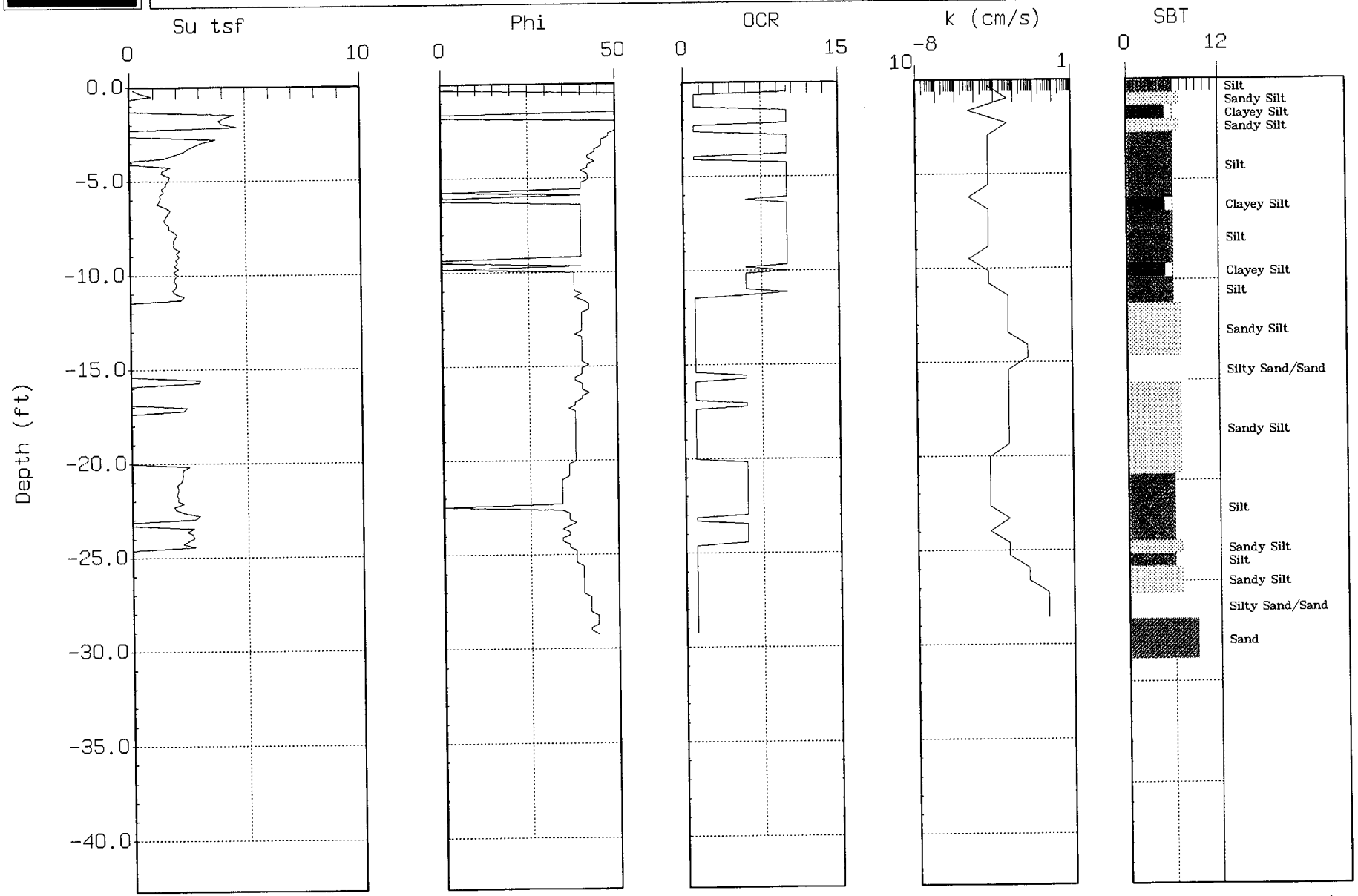
TABLE OF CONTENTS

CONETEC

Stone & Webster

Site: CPT-1
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 09:26



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-2
Location: PFSF (05996.02)

Cone: 20 TON A 041
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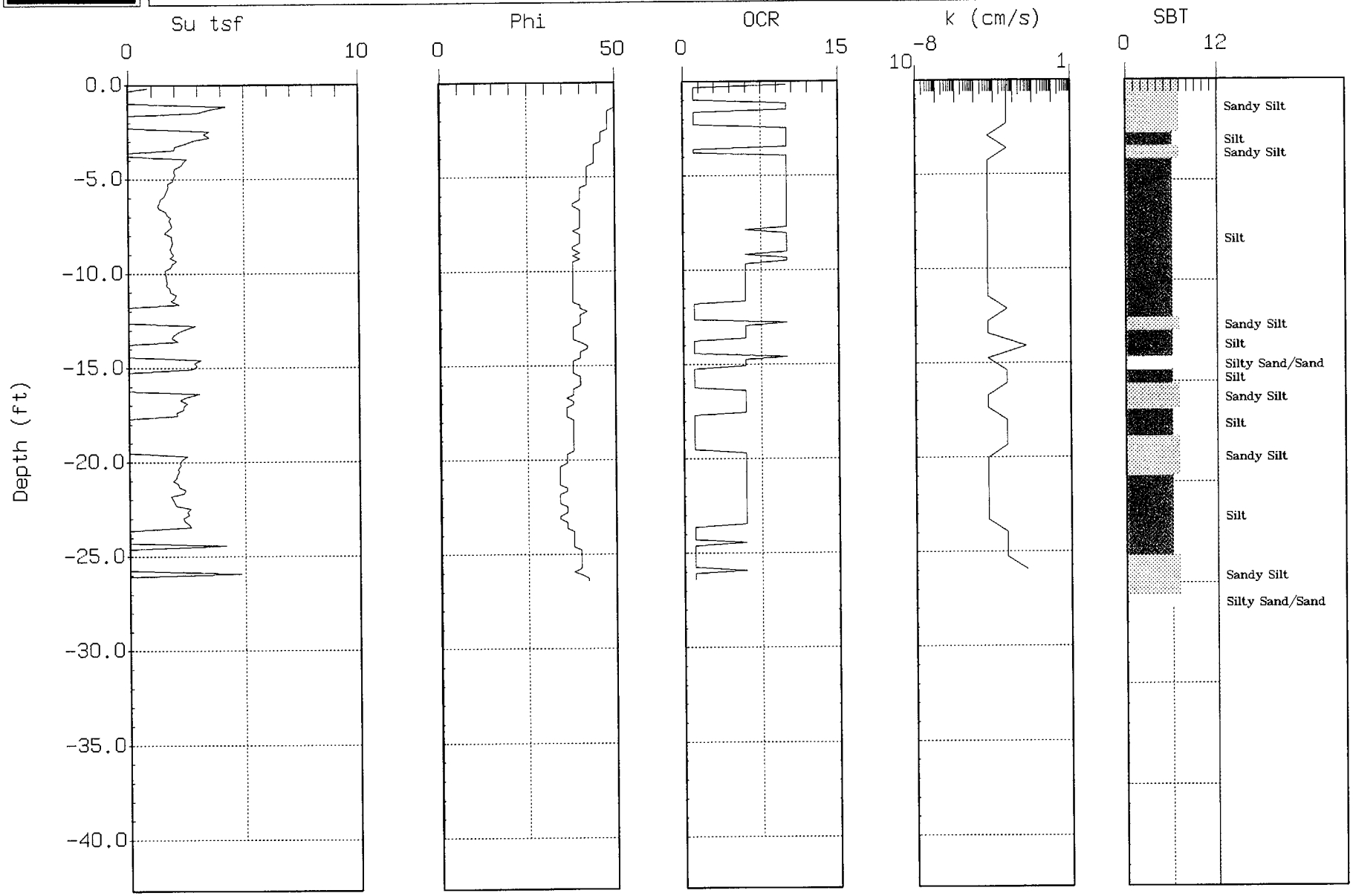


Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

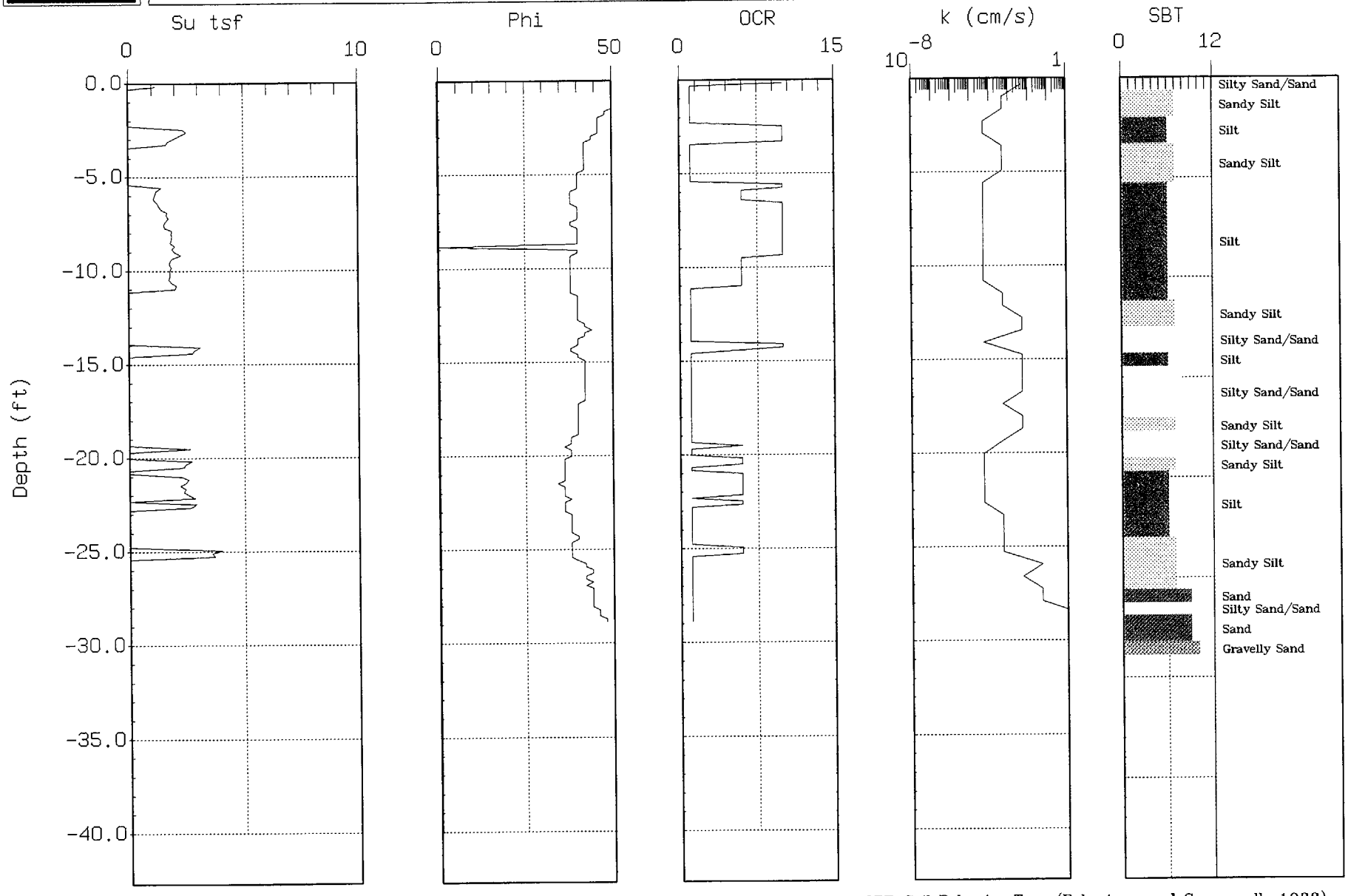
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-3
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 11:39



Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

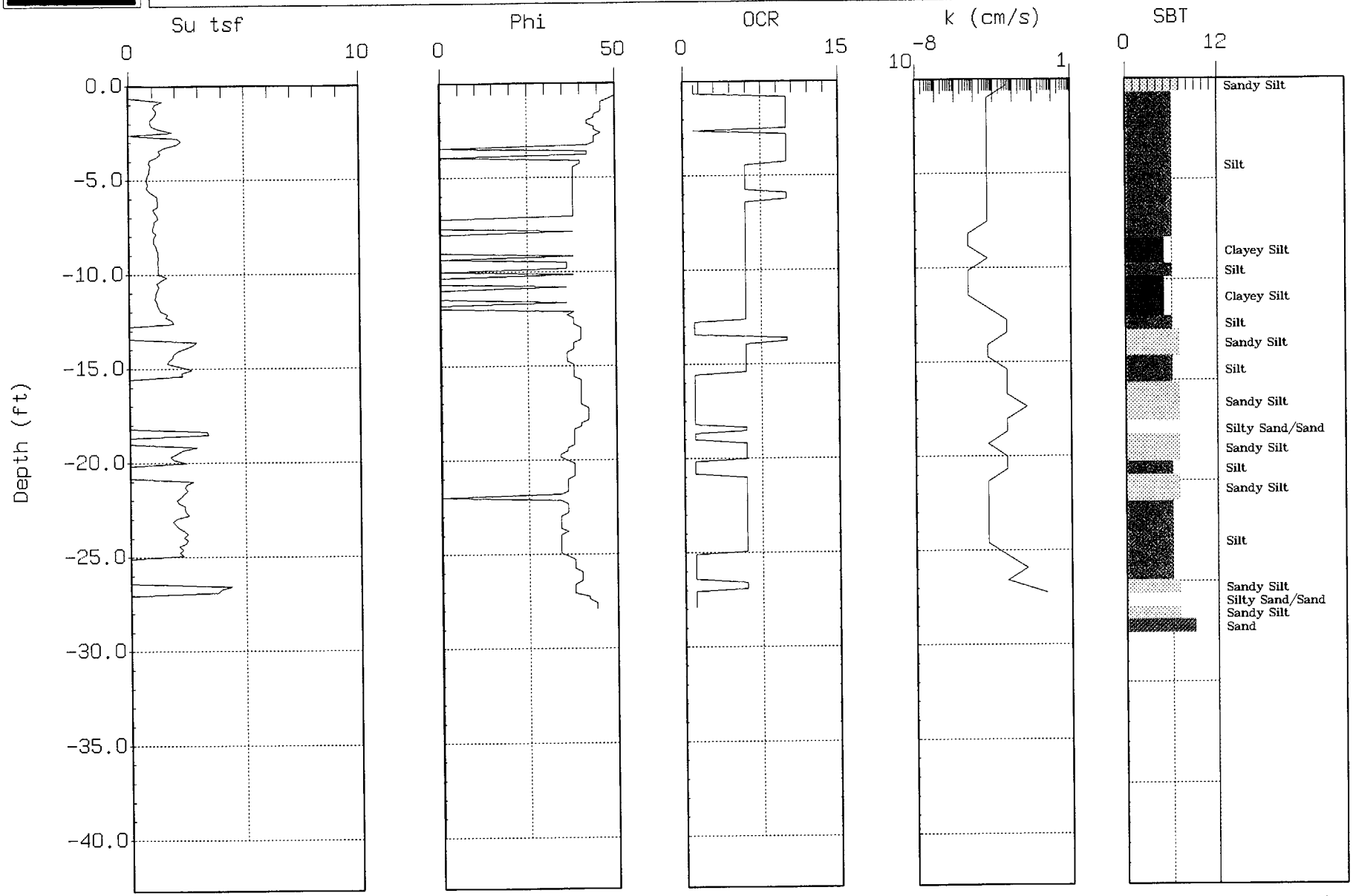
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-4
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 13:18



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

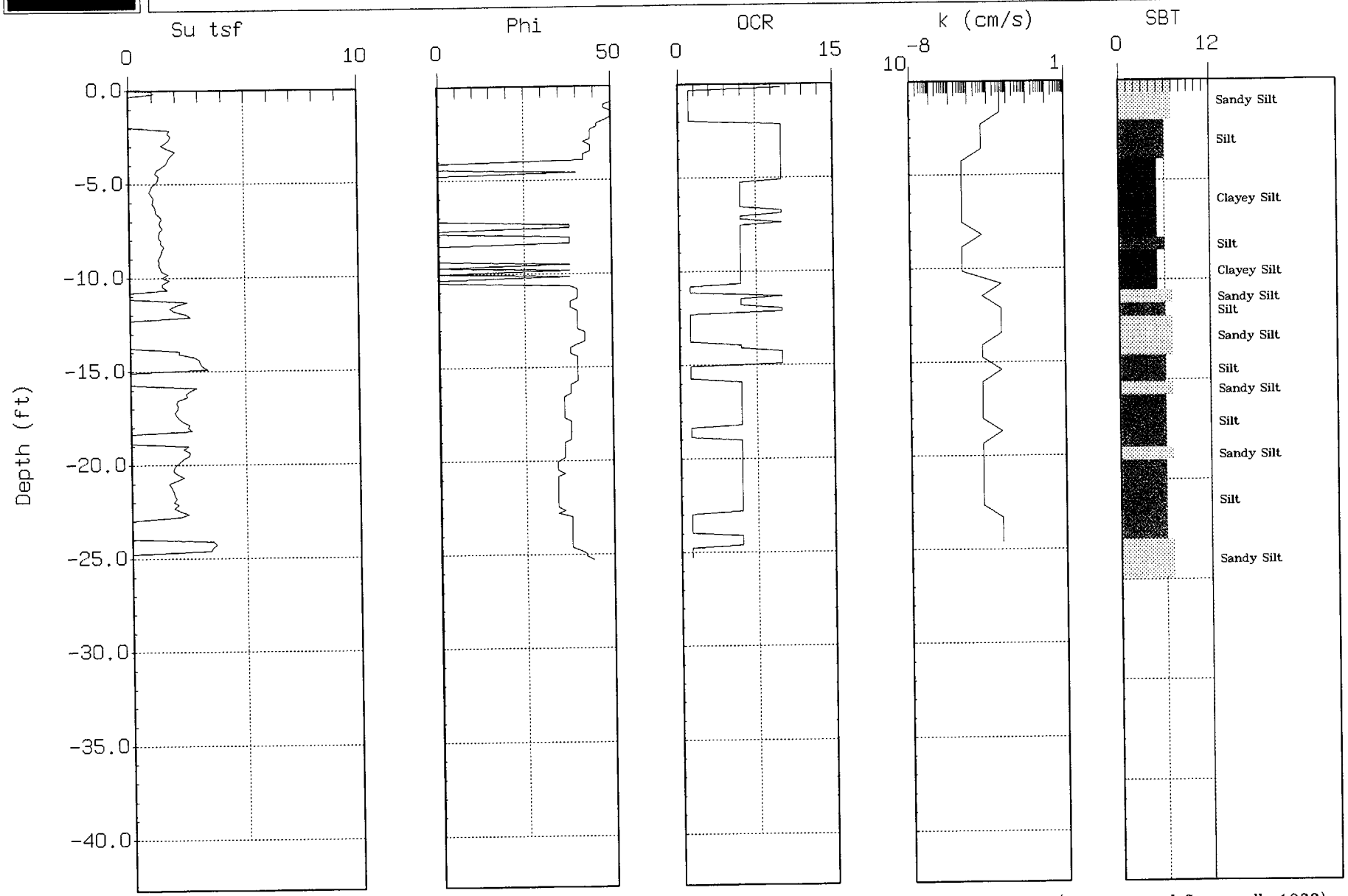
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-5
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:24:99 15:06



Max. Depth: 25.26 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-6
Location: PFSF (05996.02)

Cone: 20 TON A 041
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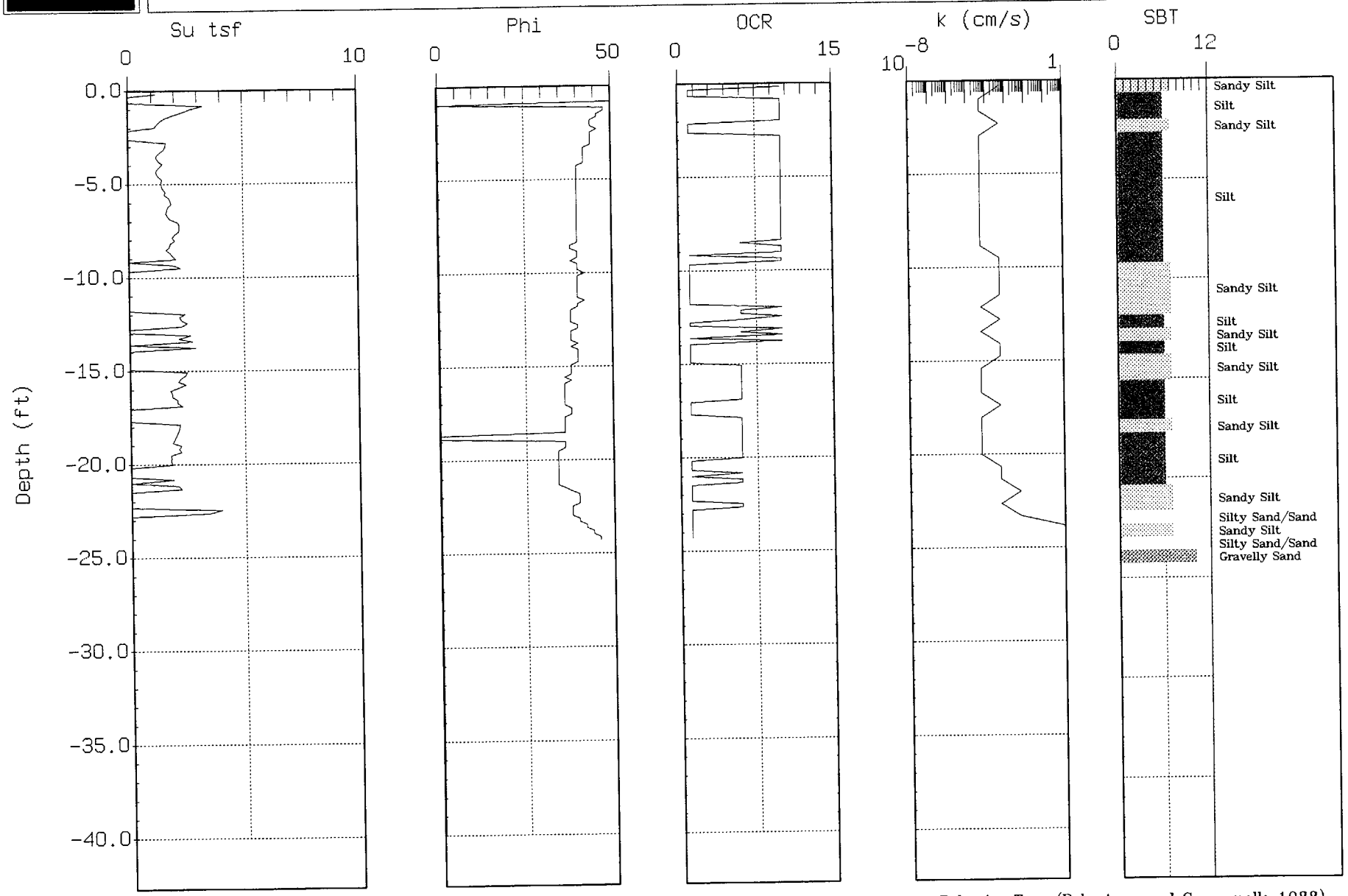


Max. Depth: 24.28 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

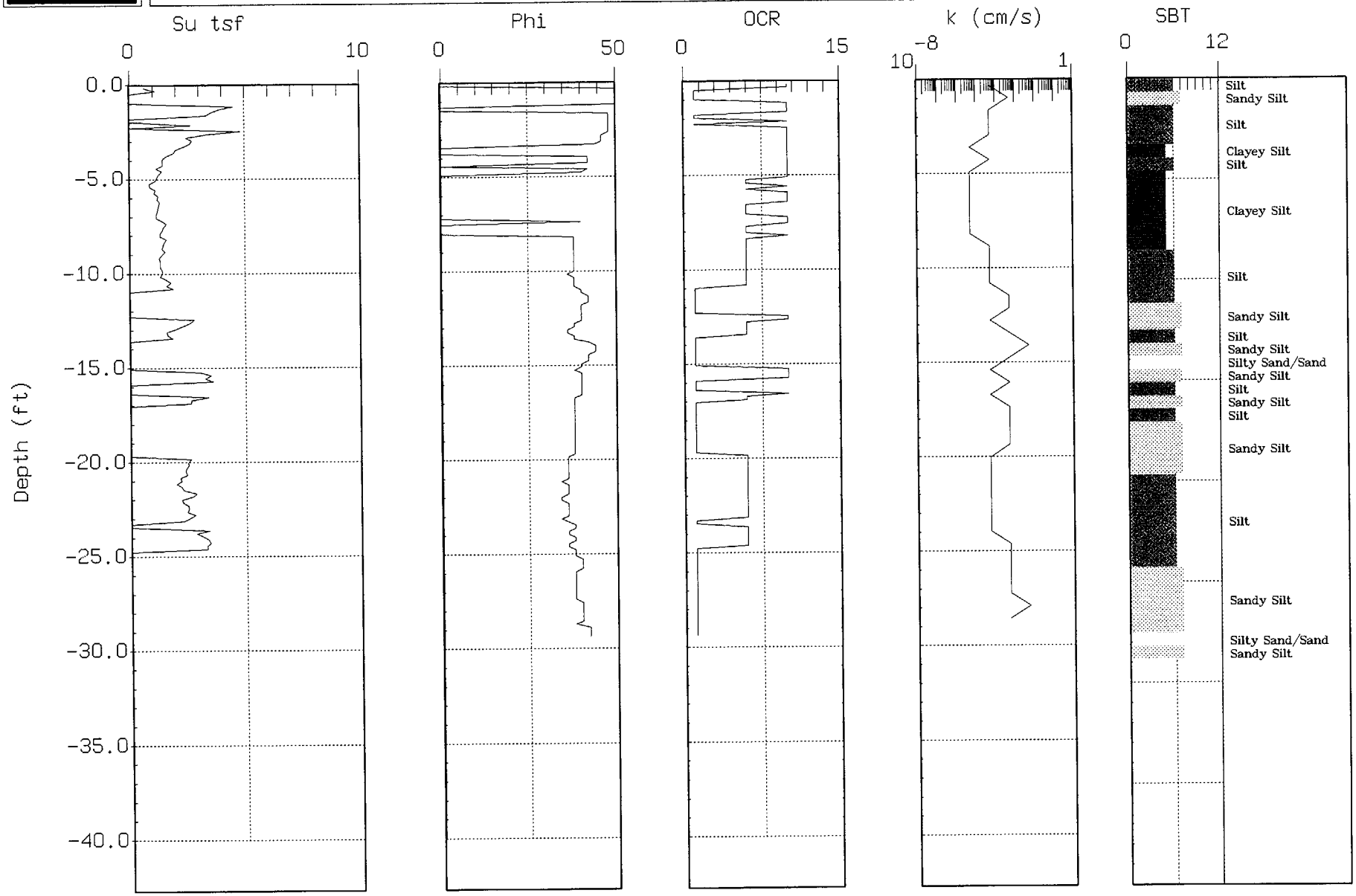
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-7
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 10:35



Max. Depth: 29.36 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-8
Location: PFSF (05996.02)

Cone: 20 TON A 070
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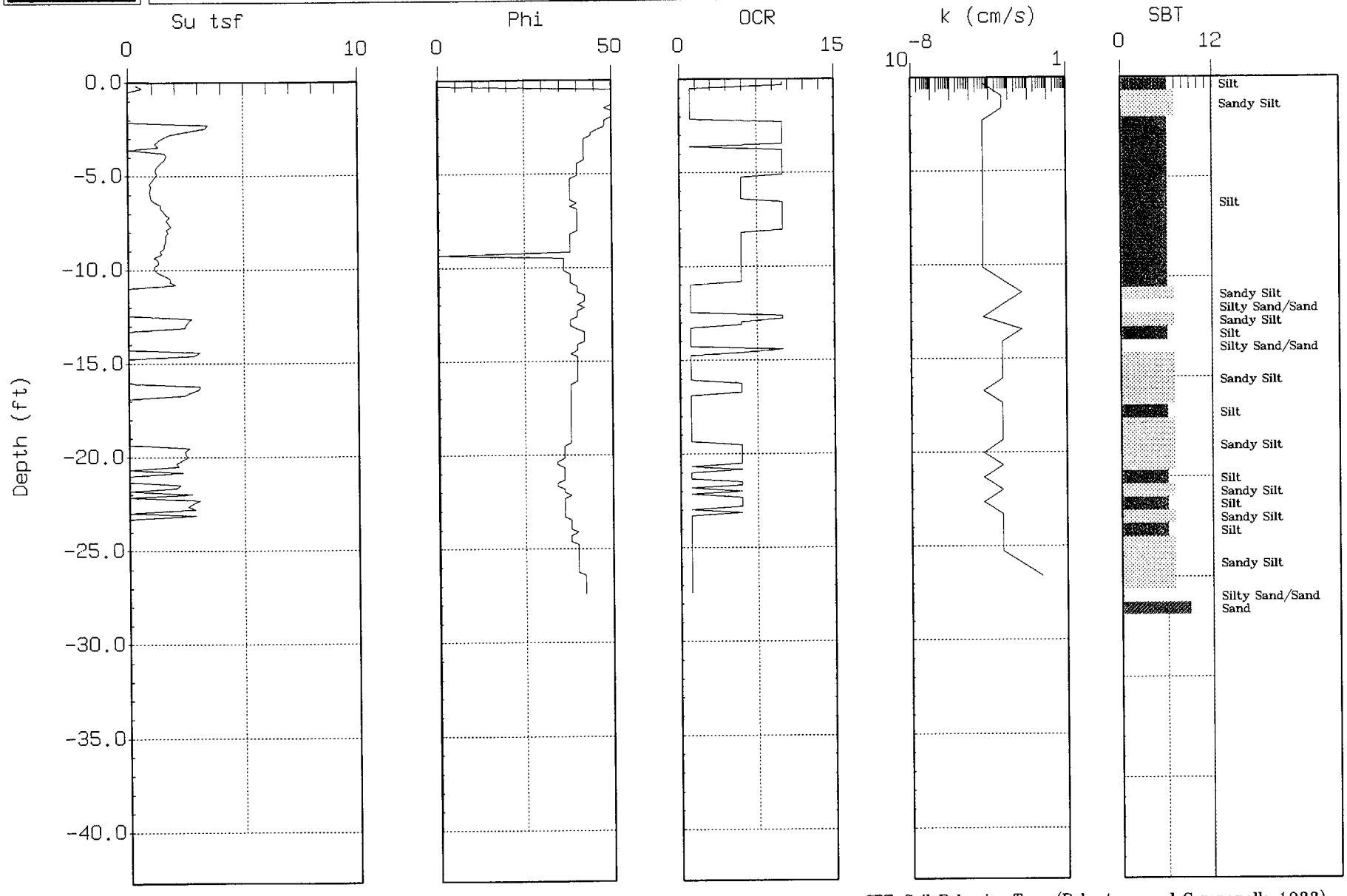

Max. Depth: 27.39 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-9
Location: PFSF (05996.02)

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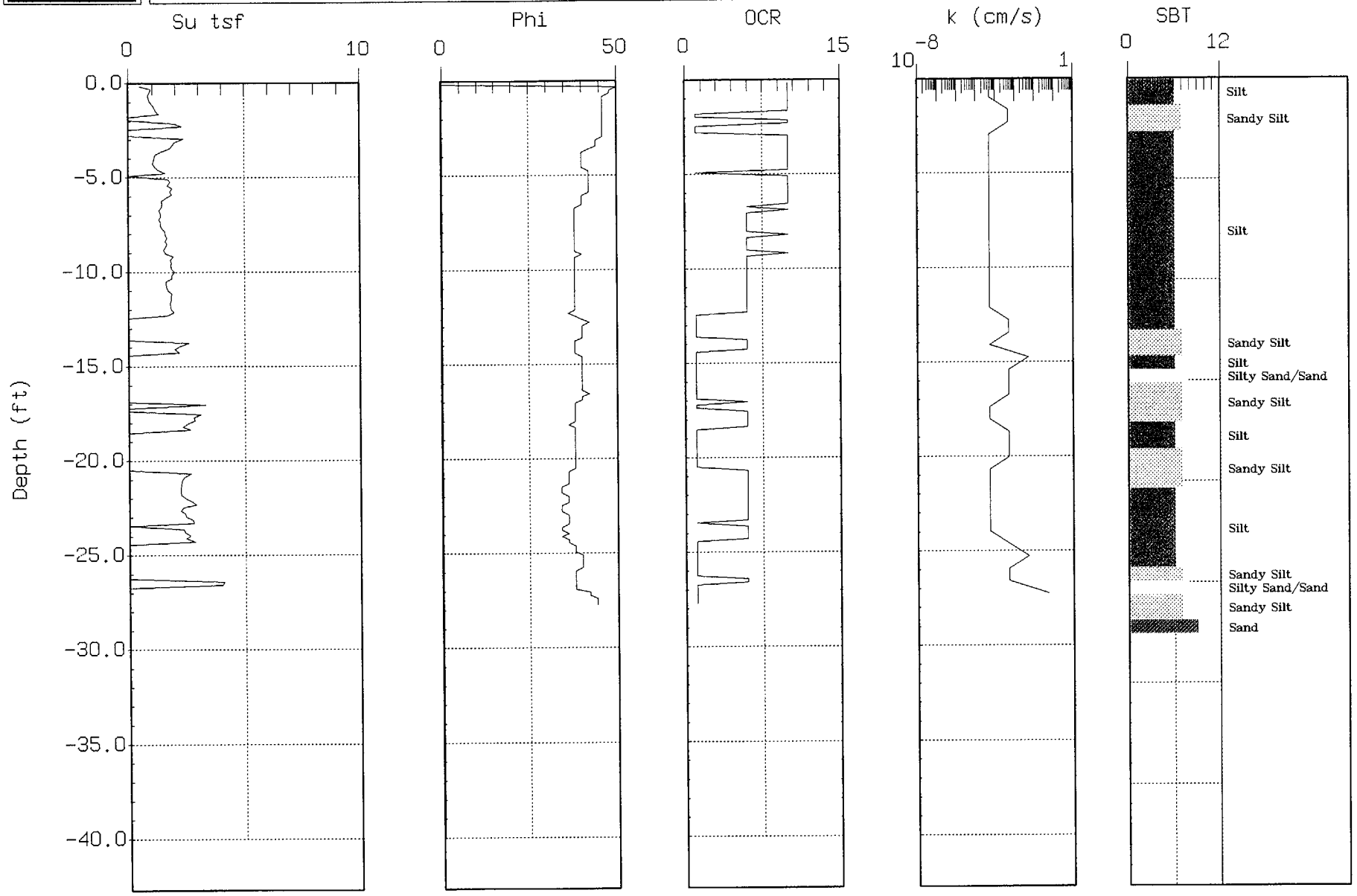


Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

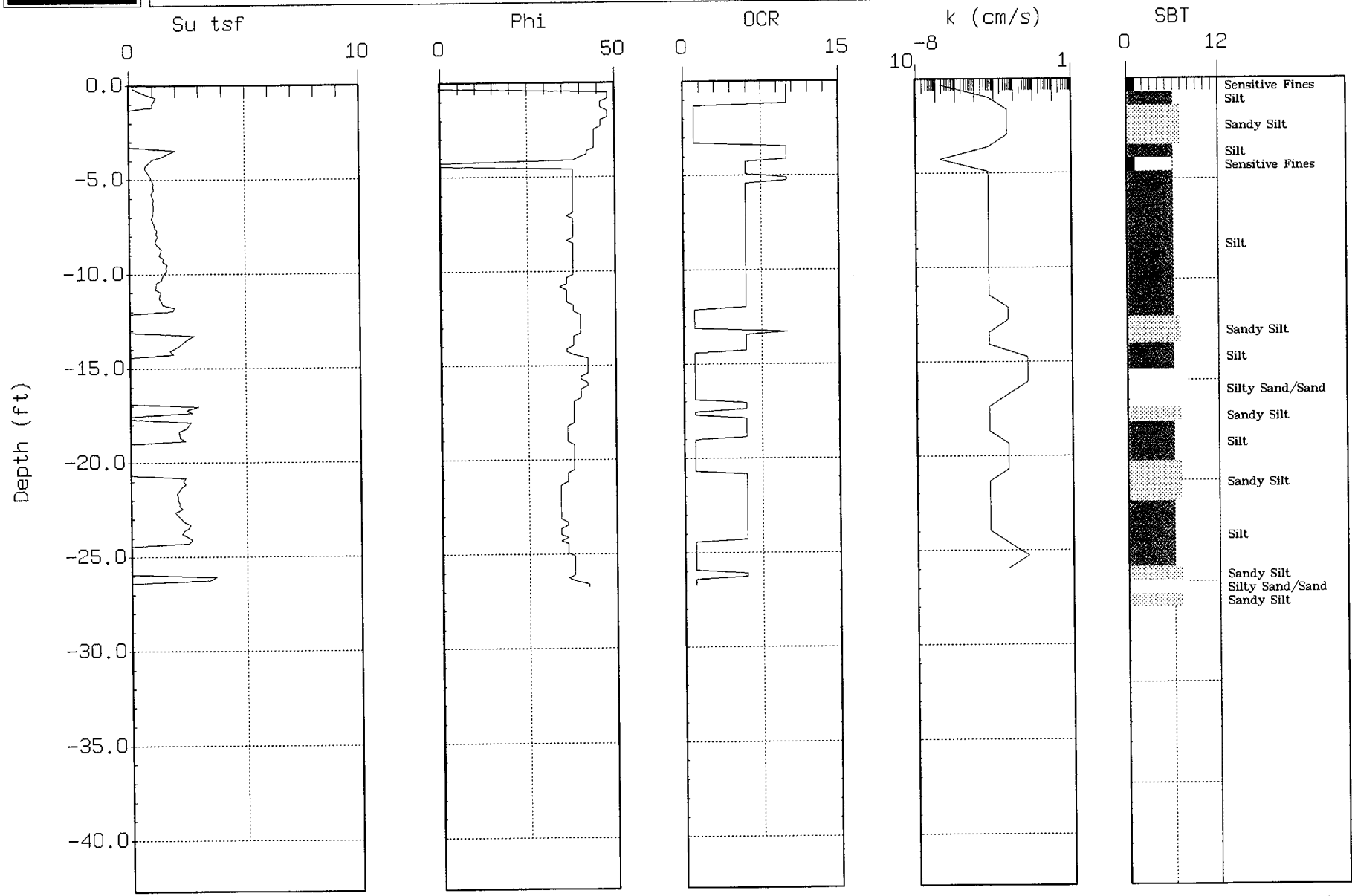
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-10
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 08:58



Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

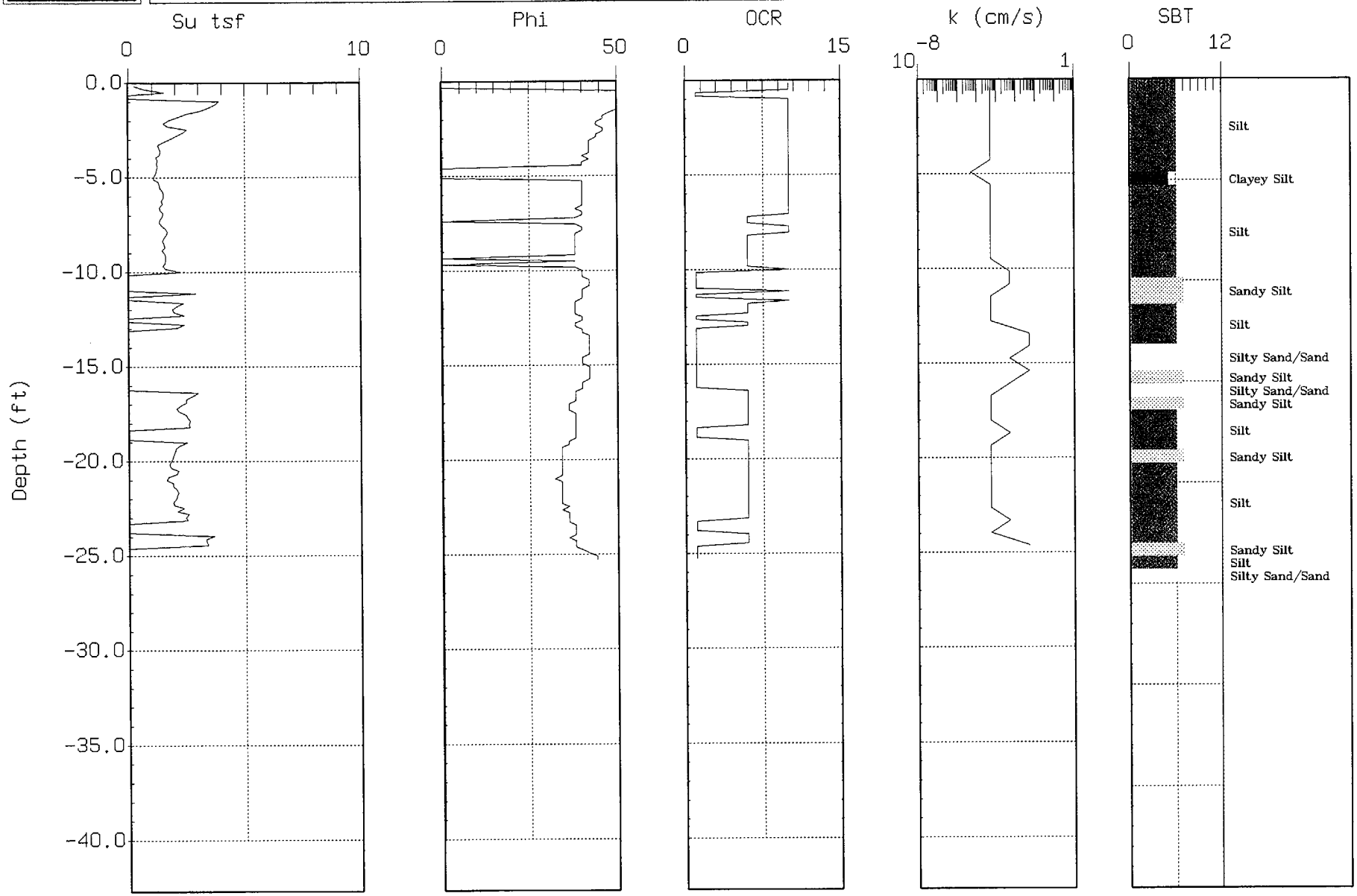
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-11
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 08:30



Max. Depth: 25.26 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-12
Location: PFSF (05996.02)

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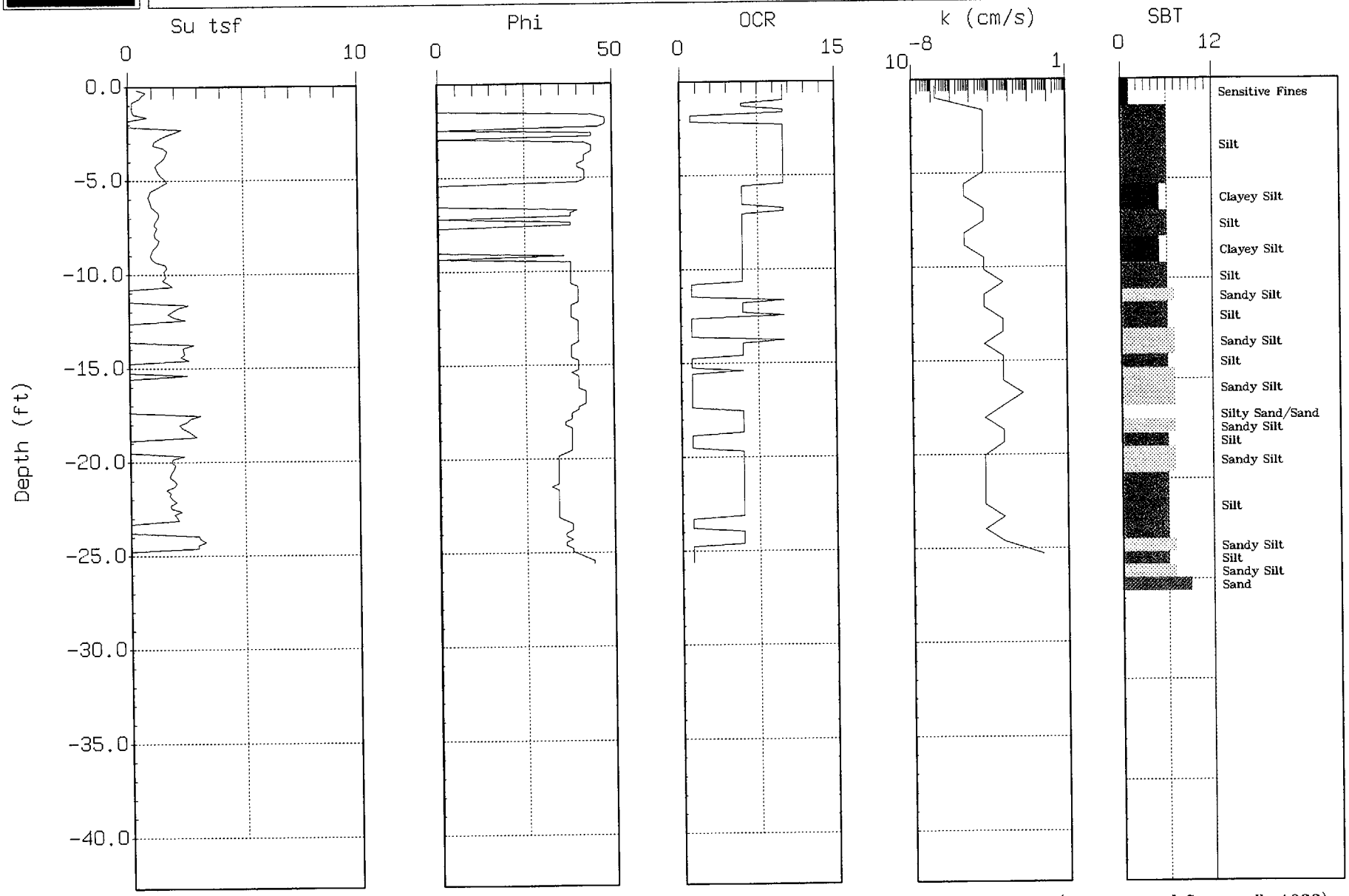

Max. Depth: 25.59 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-13
Location: PFSF (05996.02)

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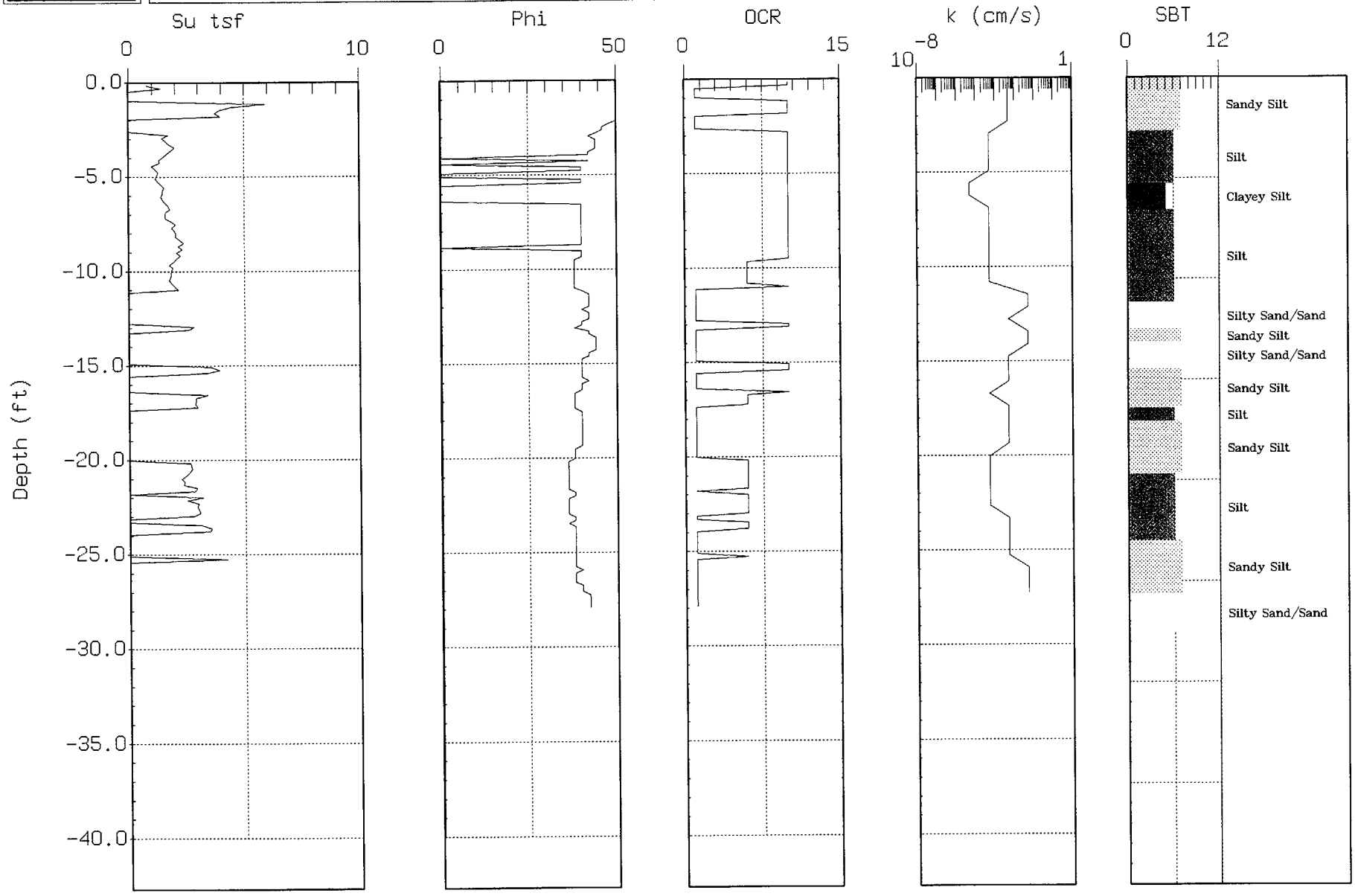

Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-14
Location: PFSF (05996.02)

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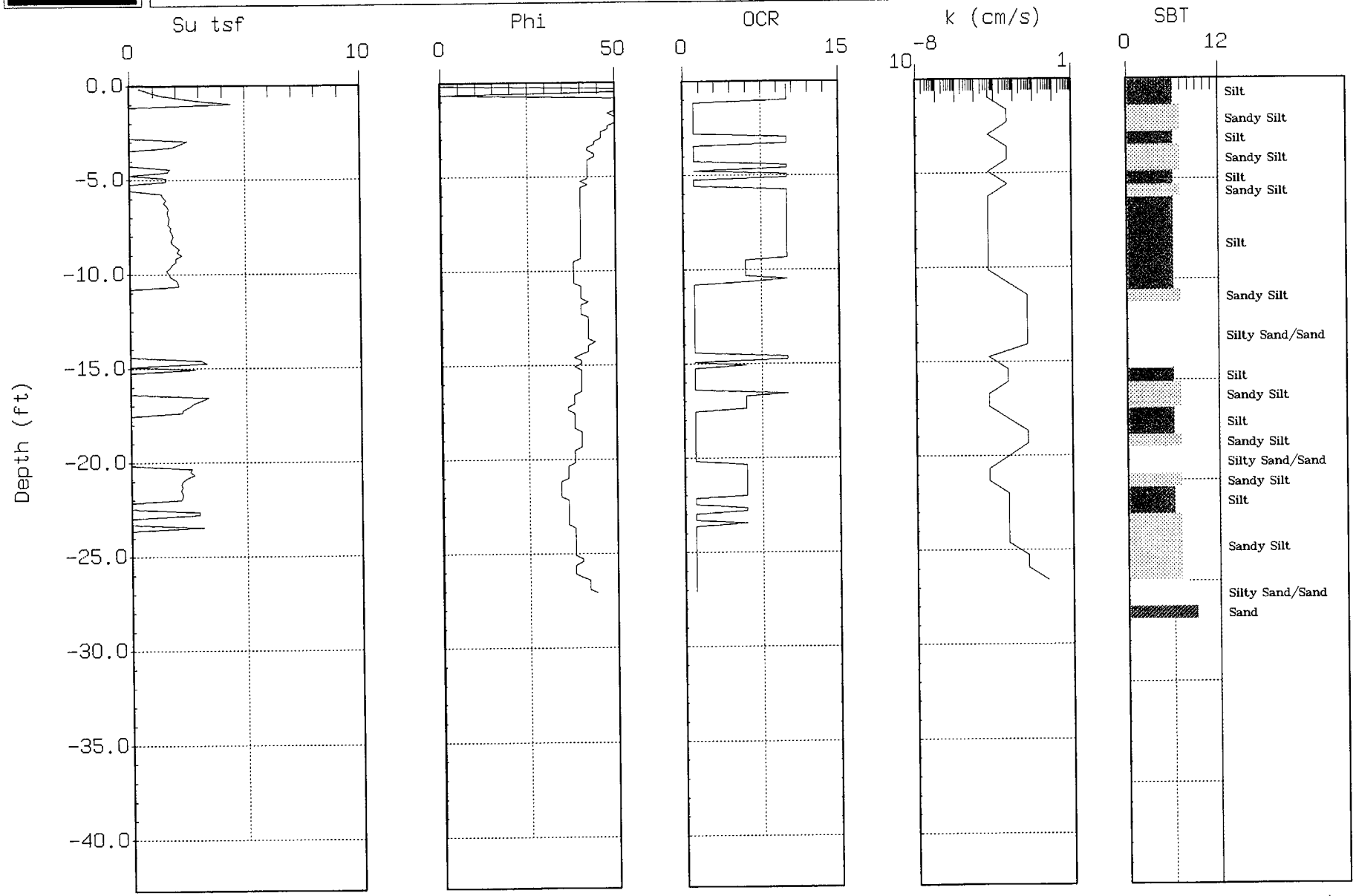
Date: 04:27:99 12:35



Max. Depth: 27.07 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

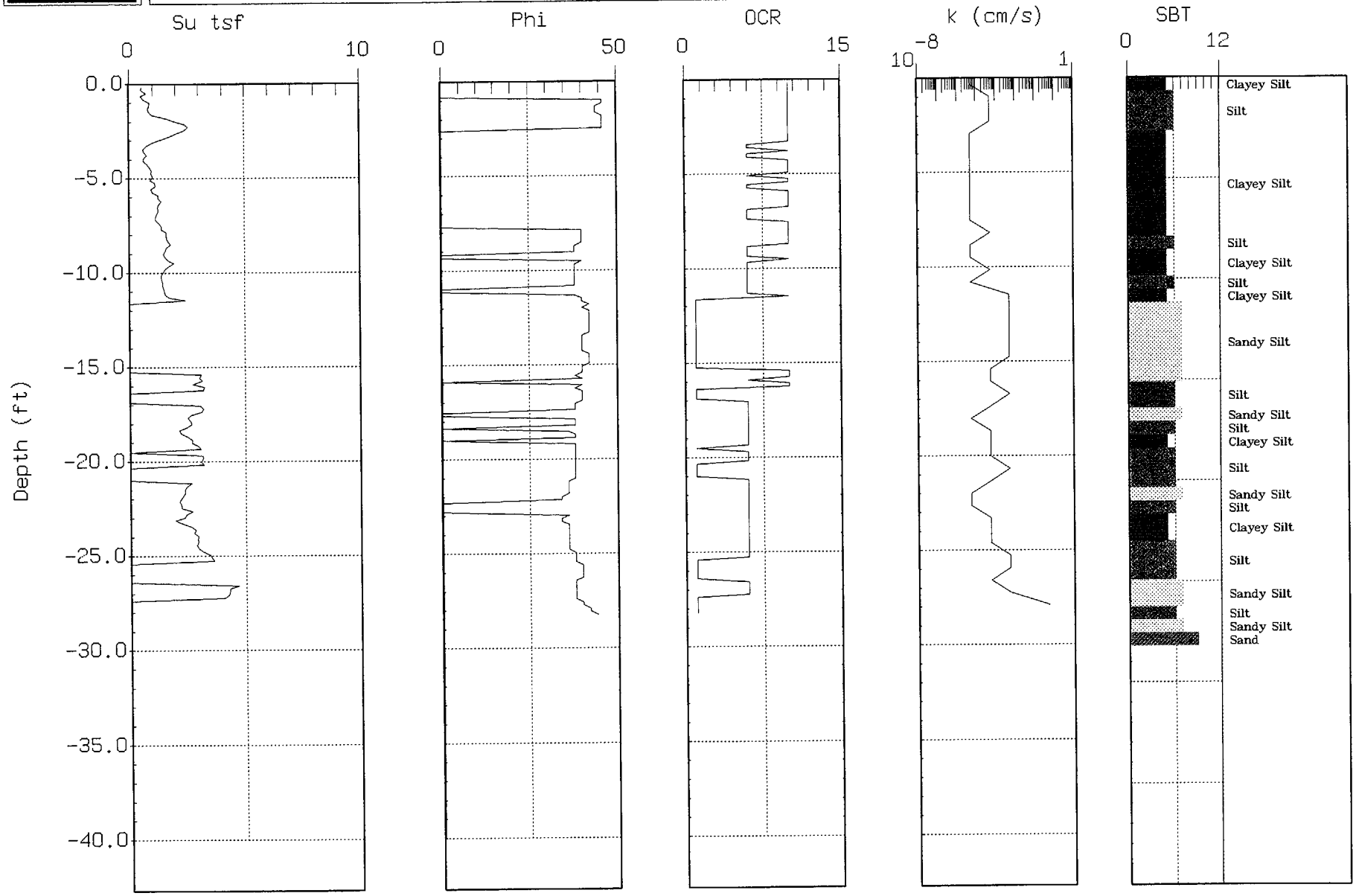
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-15
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 13:11



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-16
Location: PFSF (05996.02)

Cone: 20 TON A 070
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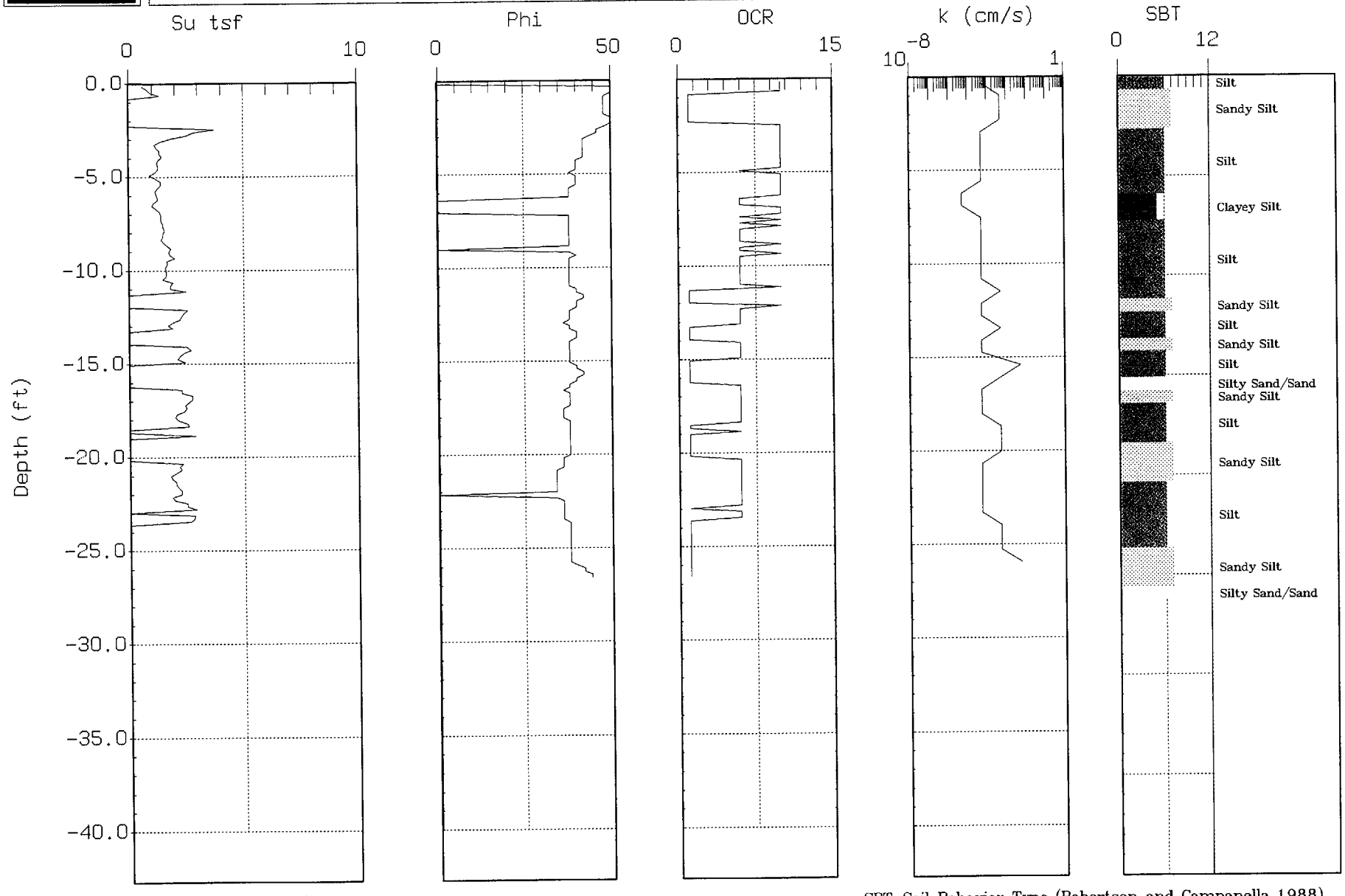

Max. Depth: 26.57 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-17
Location: PFSF (05996.02)

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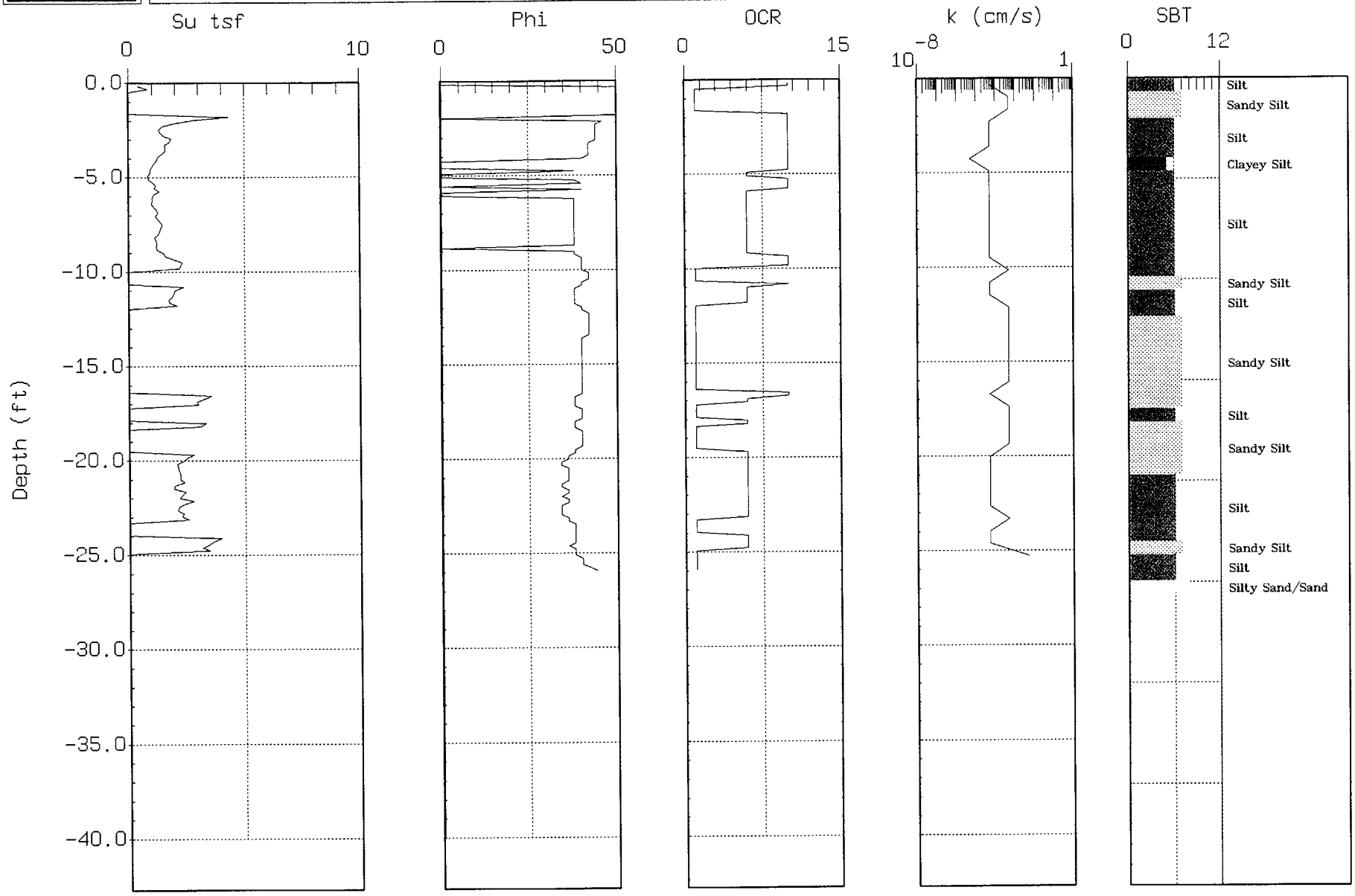

Max. Depth: 25.92 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-18
Location: PFSF (05996.02)

Cone: 20 TON A 070
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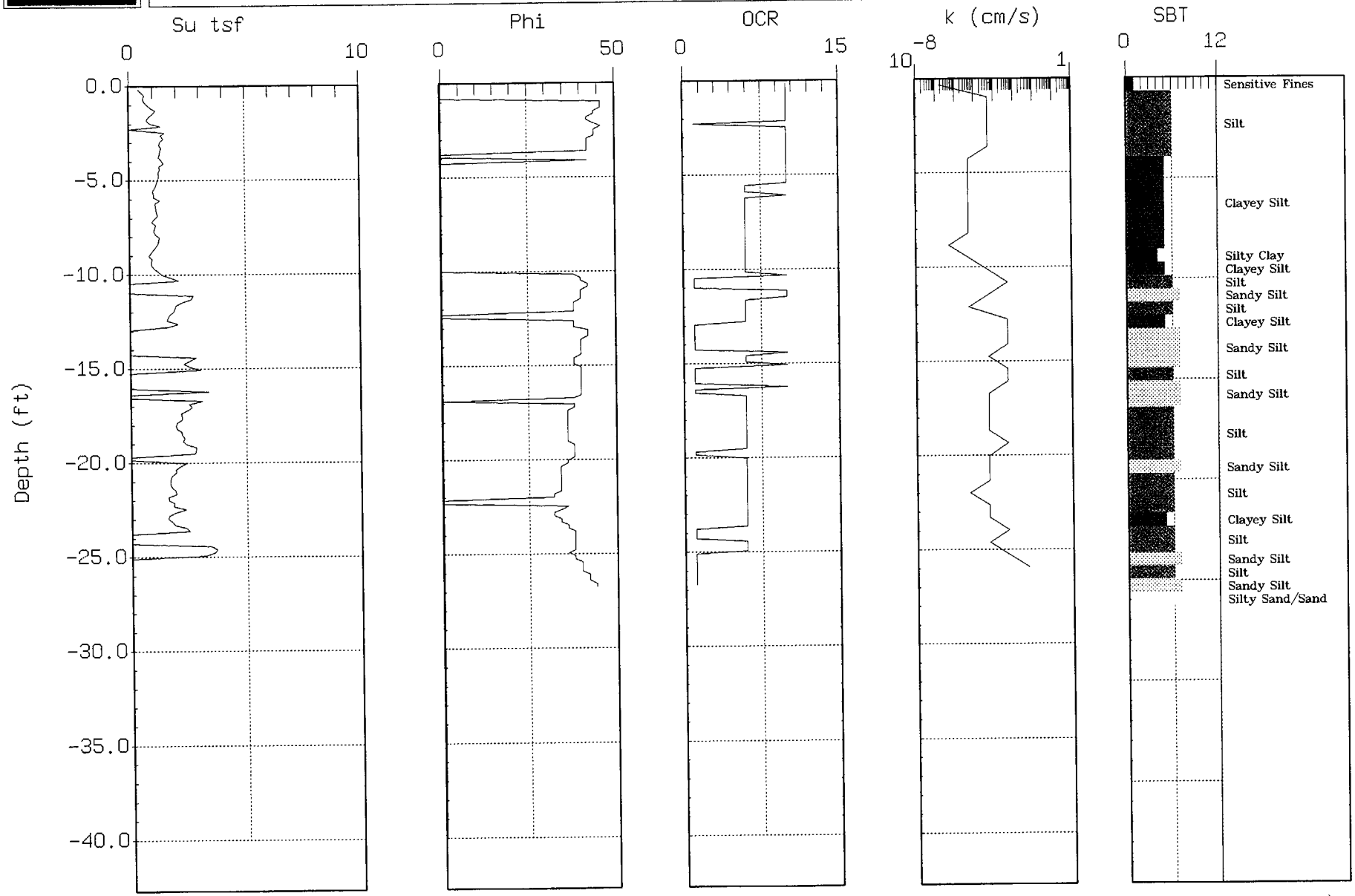

Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-19
Location: PFSF (05996.02)

Cone: 20 TON A 070
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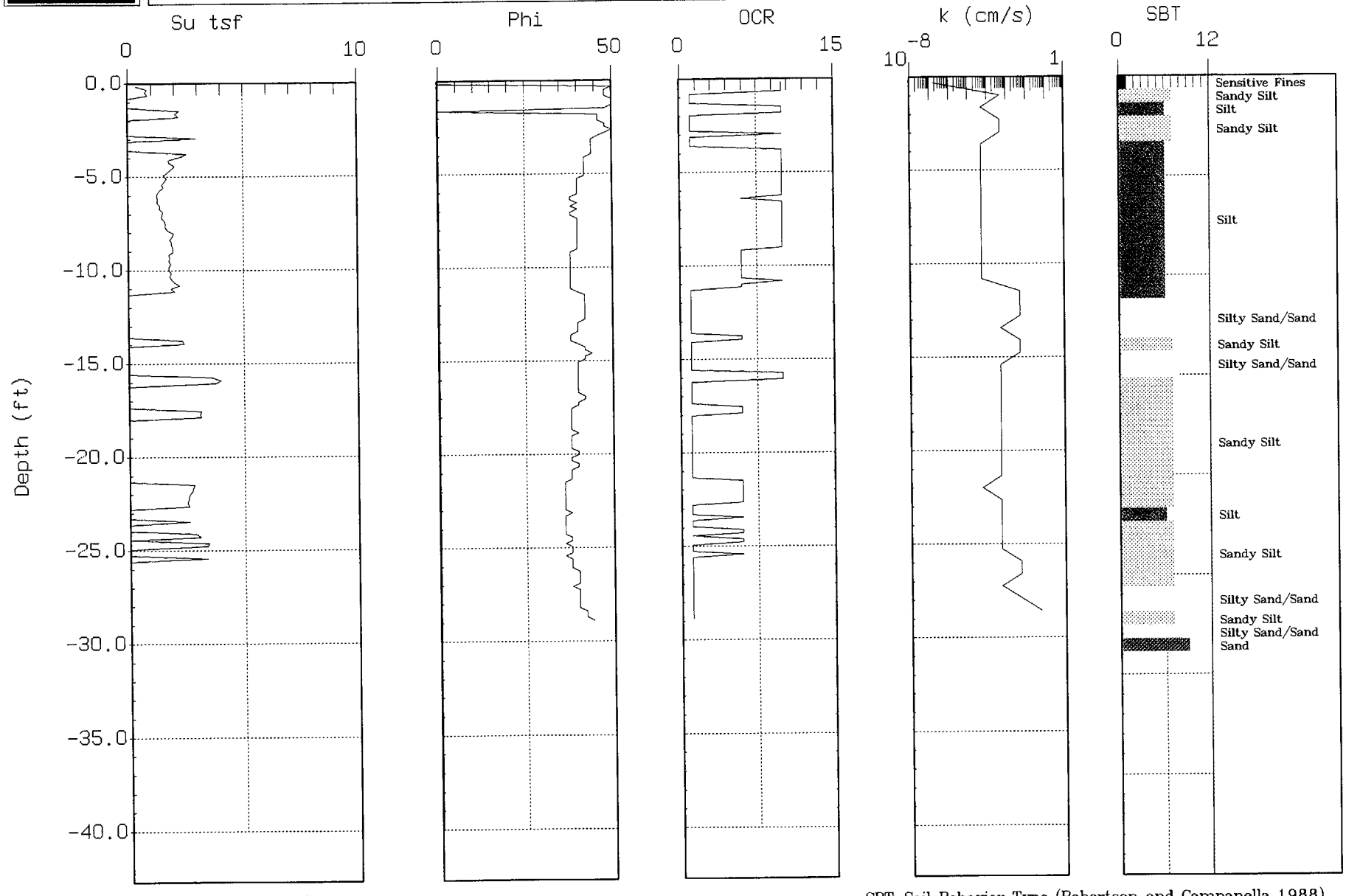


Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

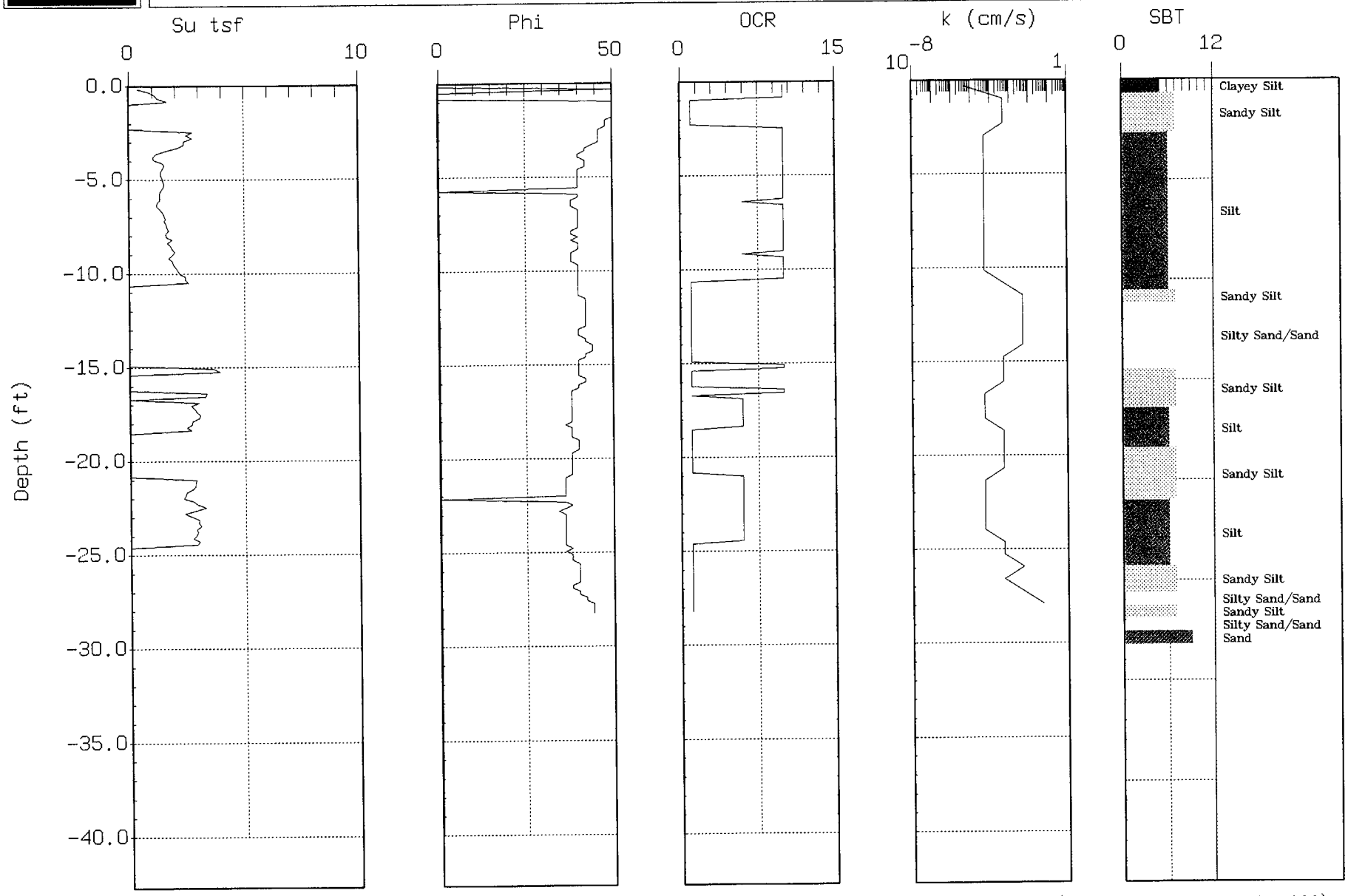
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-20
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 09:47



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

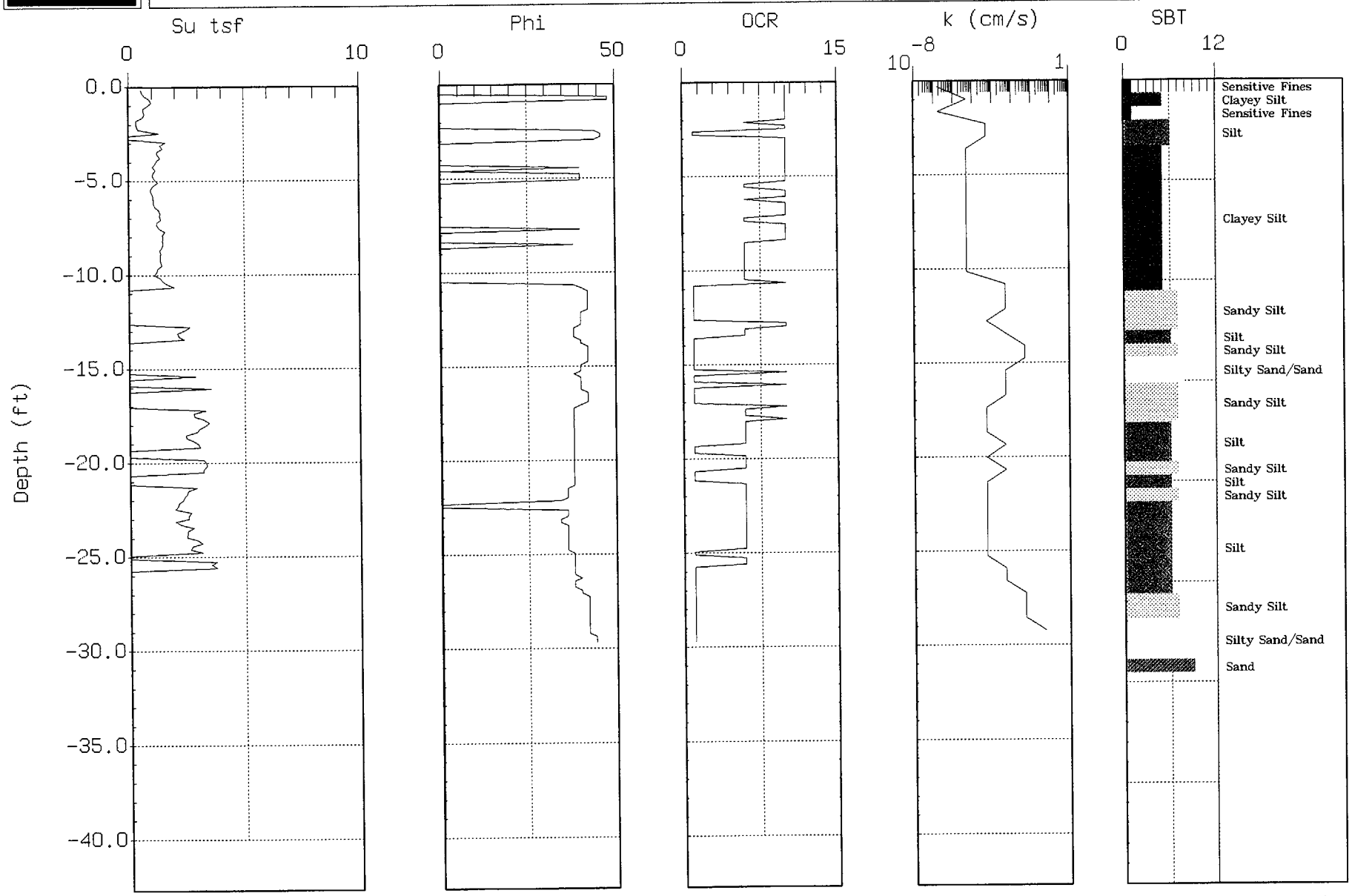
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-21
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 08:18



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

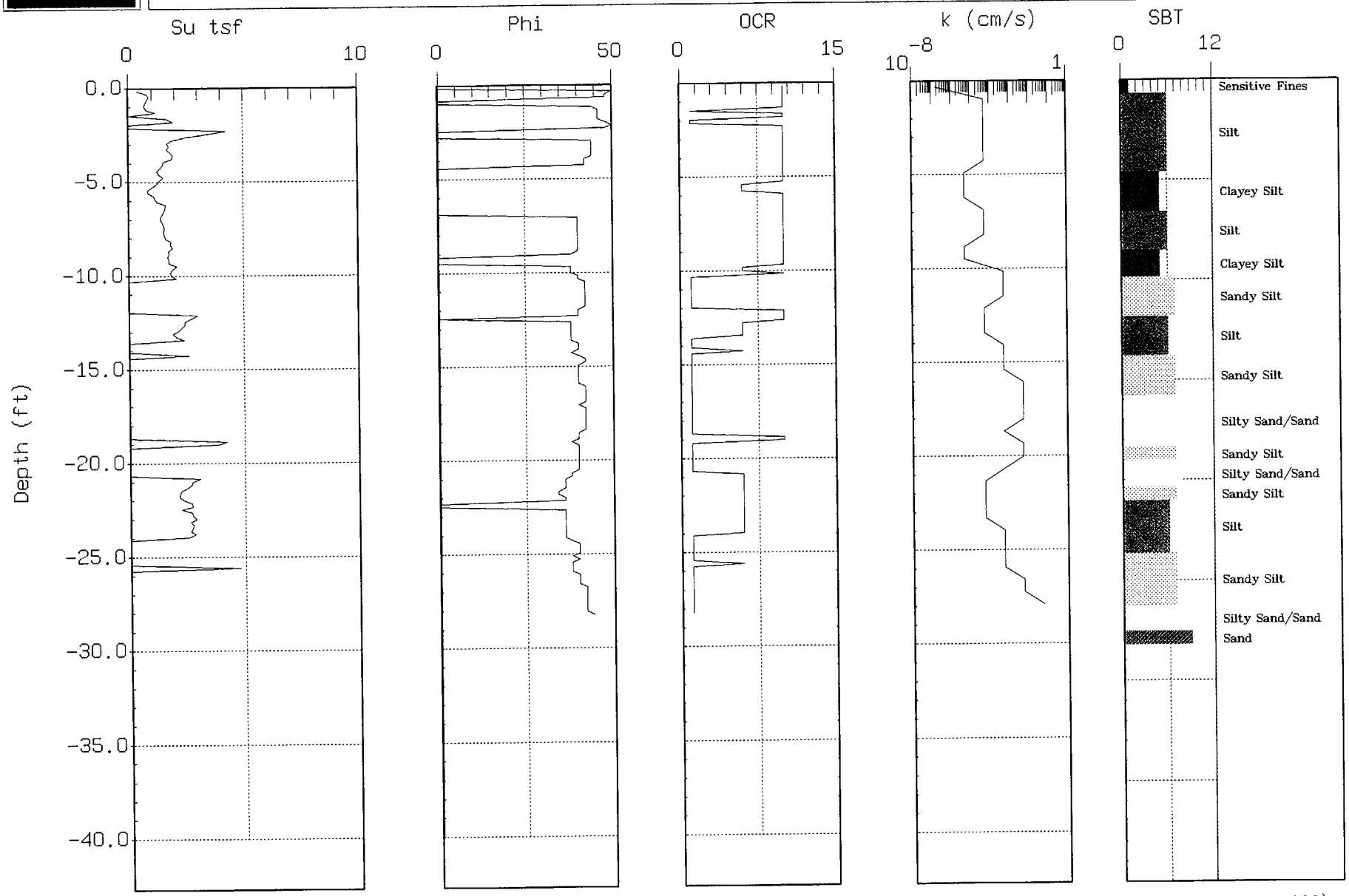
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-22
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 18:33



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

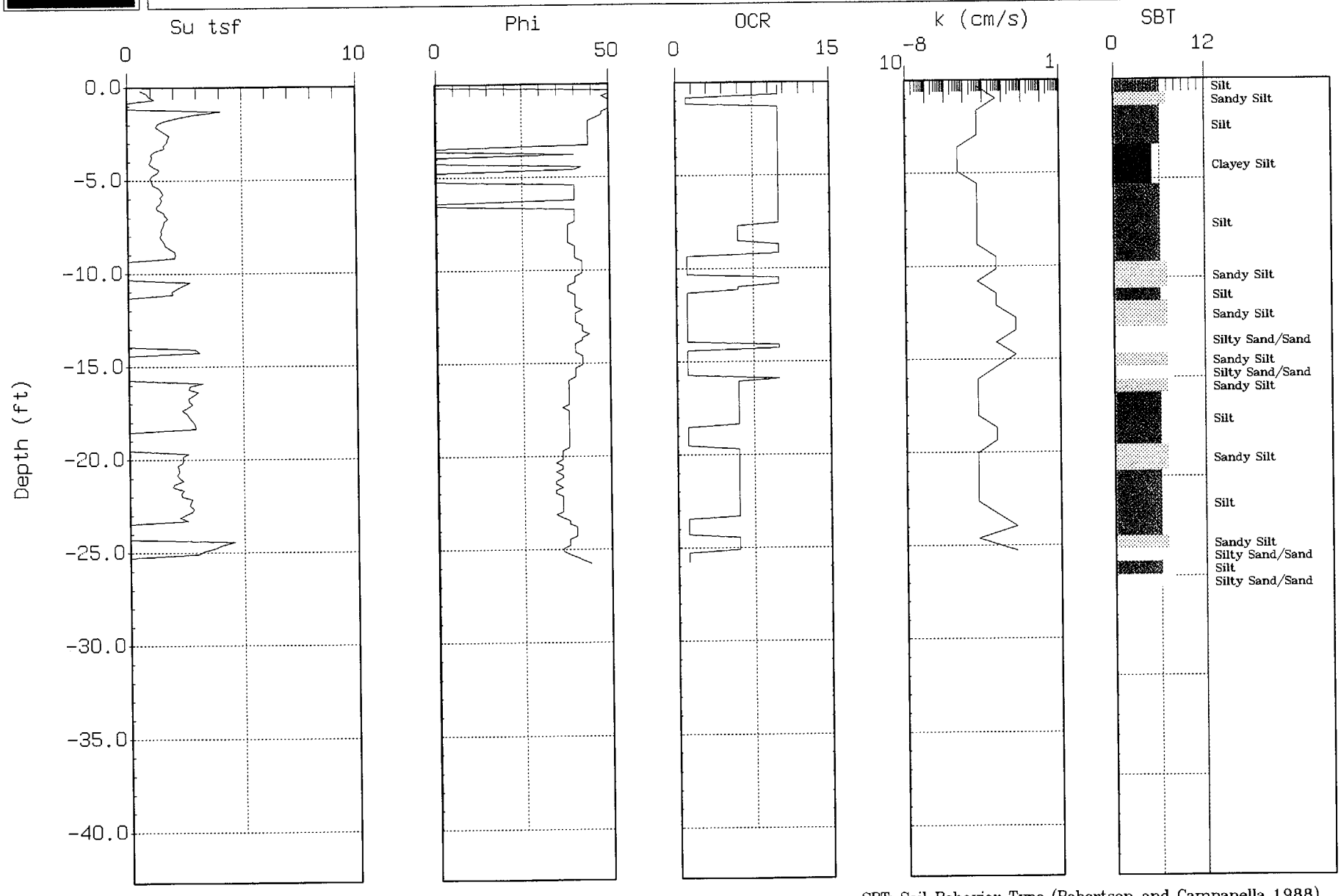
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-23
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 17:58



Max. Depth: 25.75 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

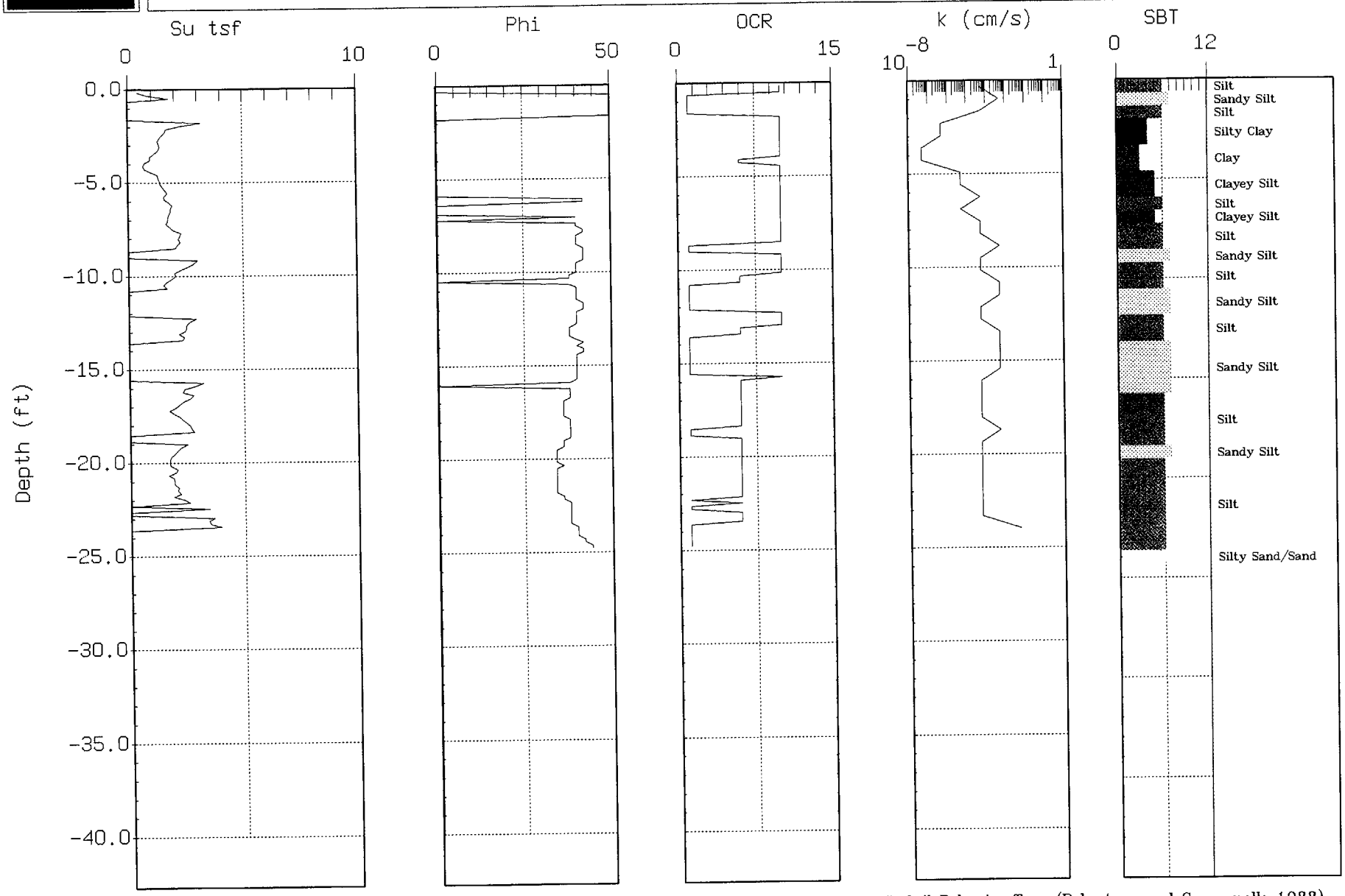
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-24
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 17:31



Max. Depth: 24.77 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

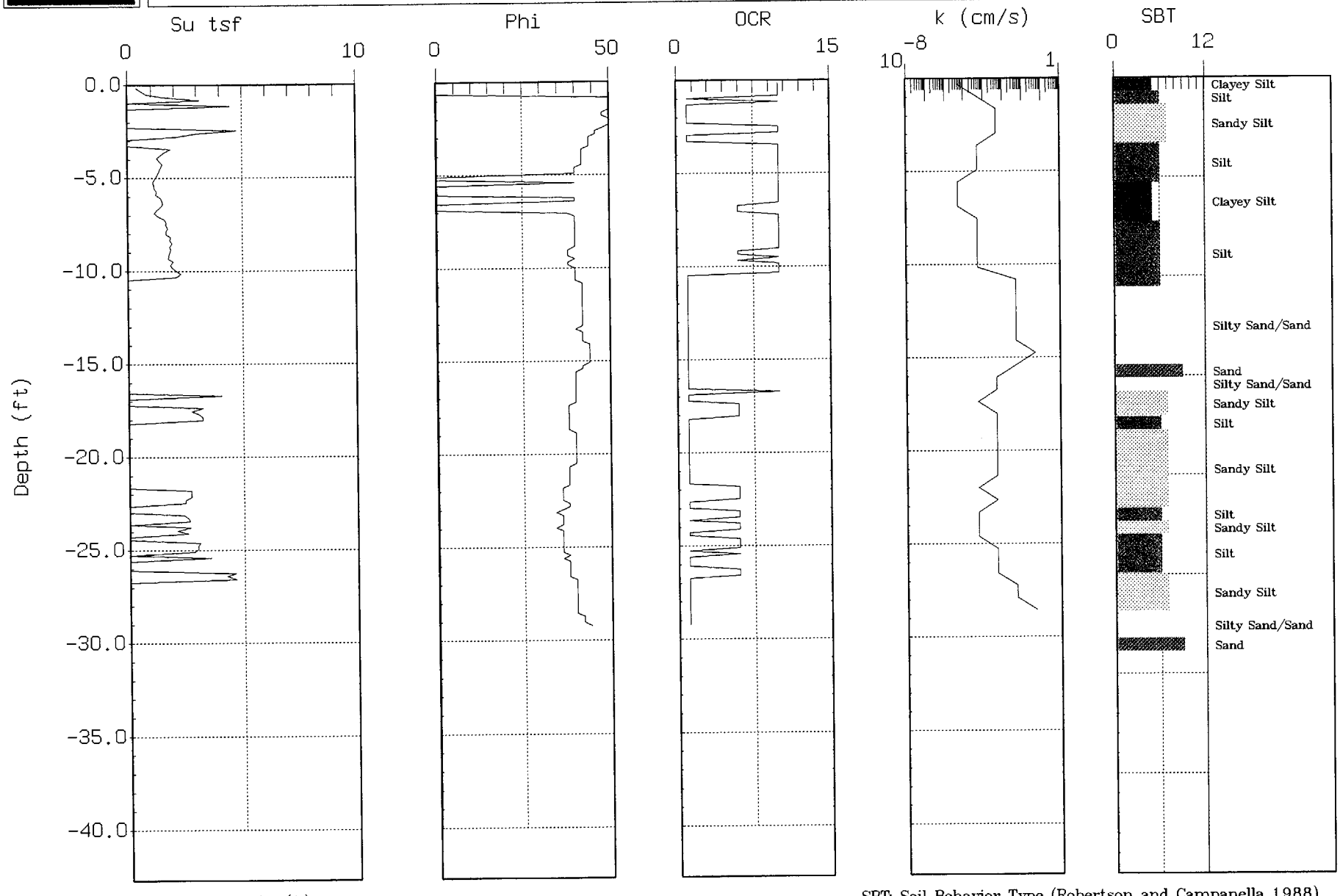
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-25
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 11:31



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-26
Location: PFSF (05996.02)

Cone: 20 TON A 070
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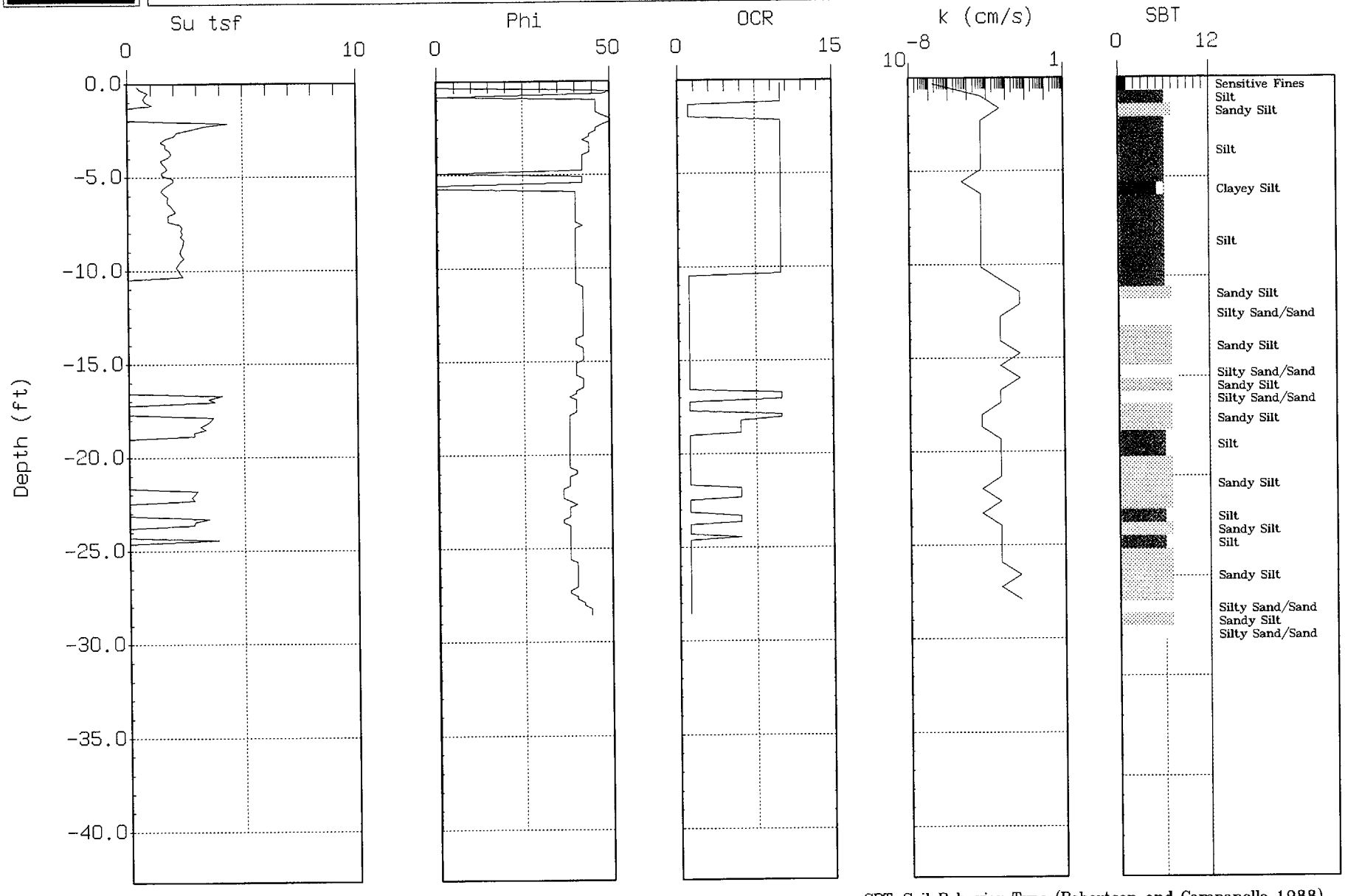

Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-27
Location: PFSF (05996.02)

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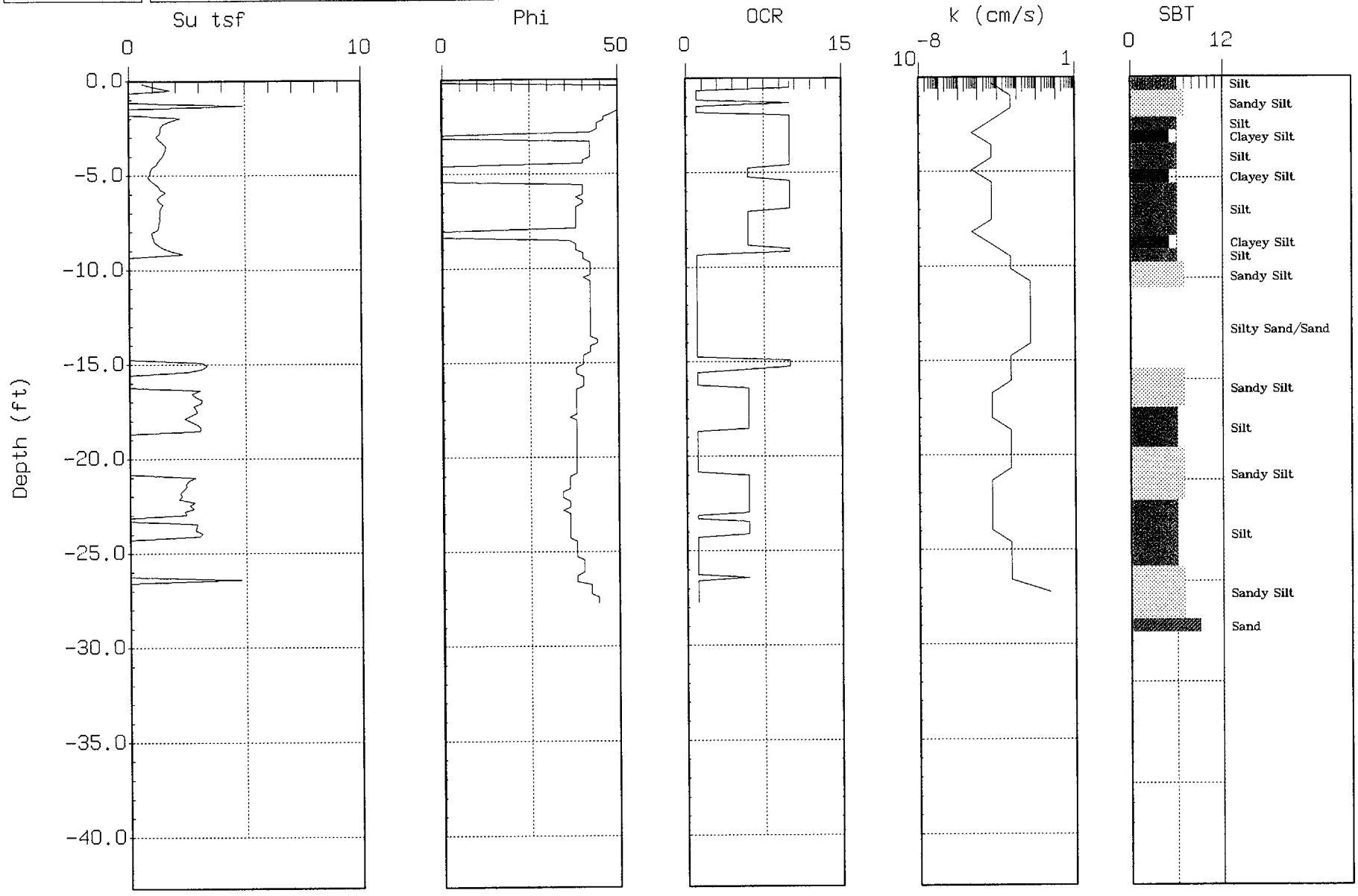


Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

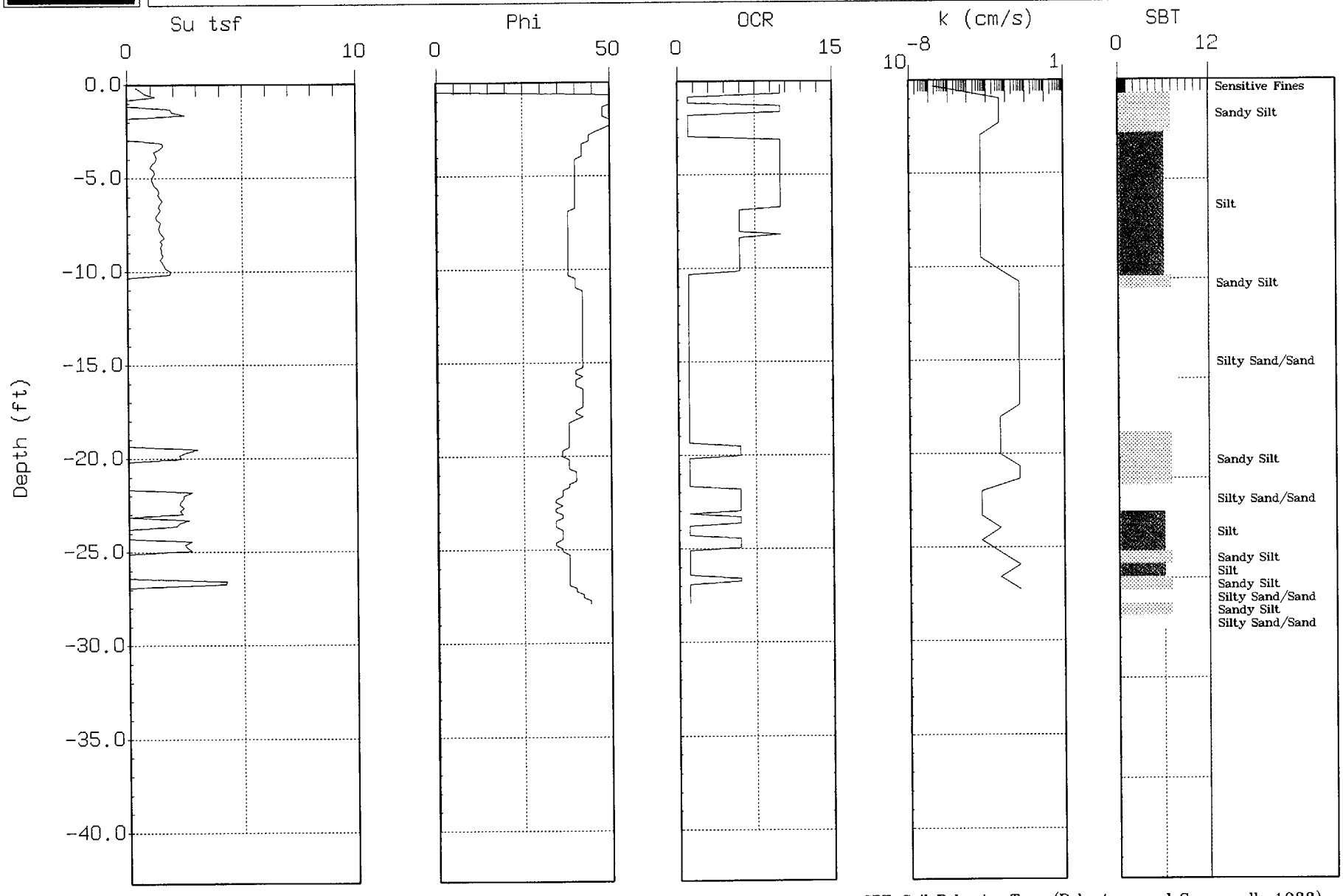
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-28
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:58



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

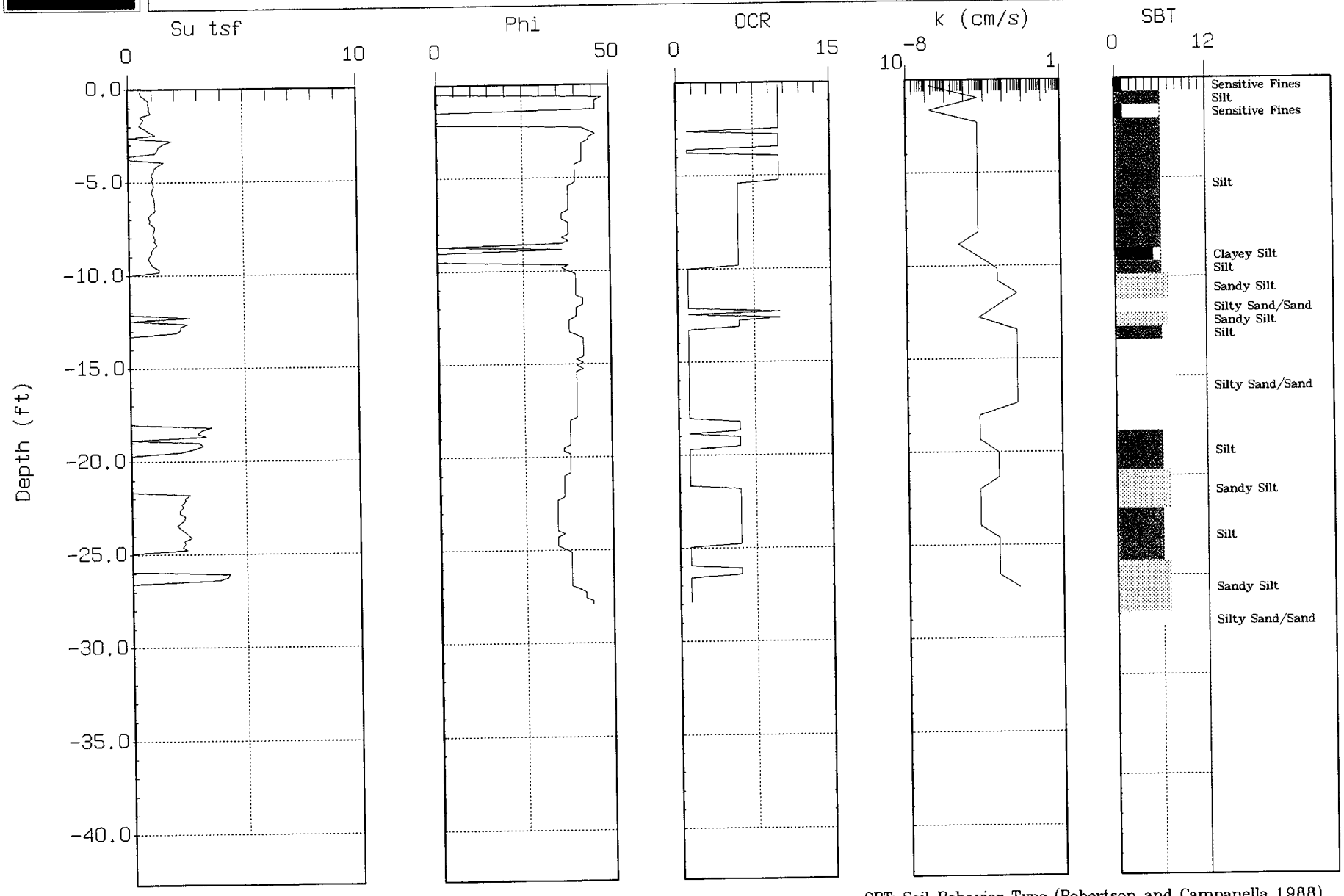
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-29
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 13:26



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

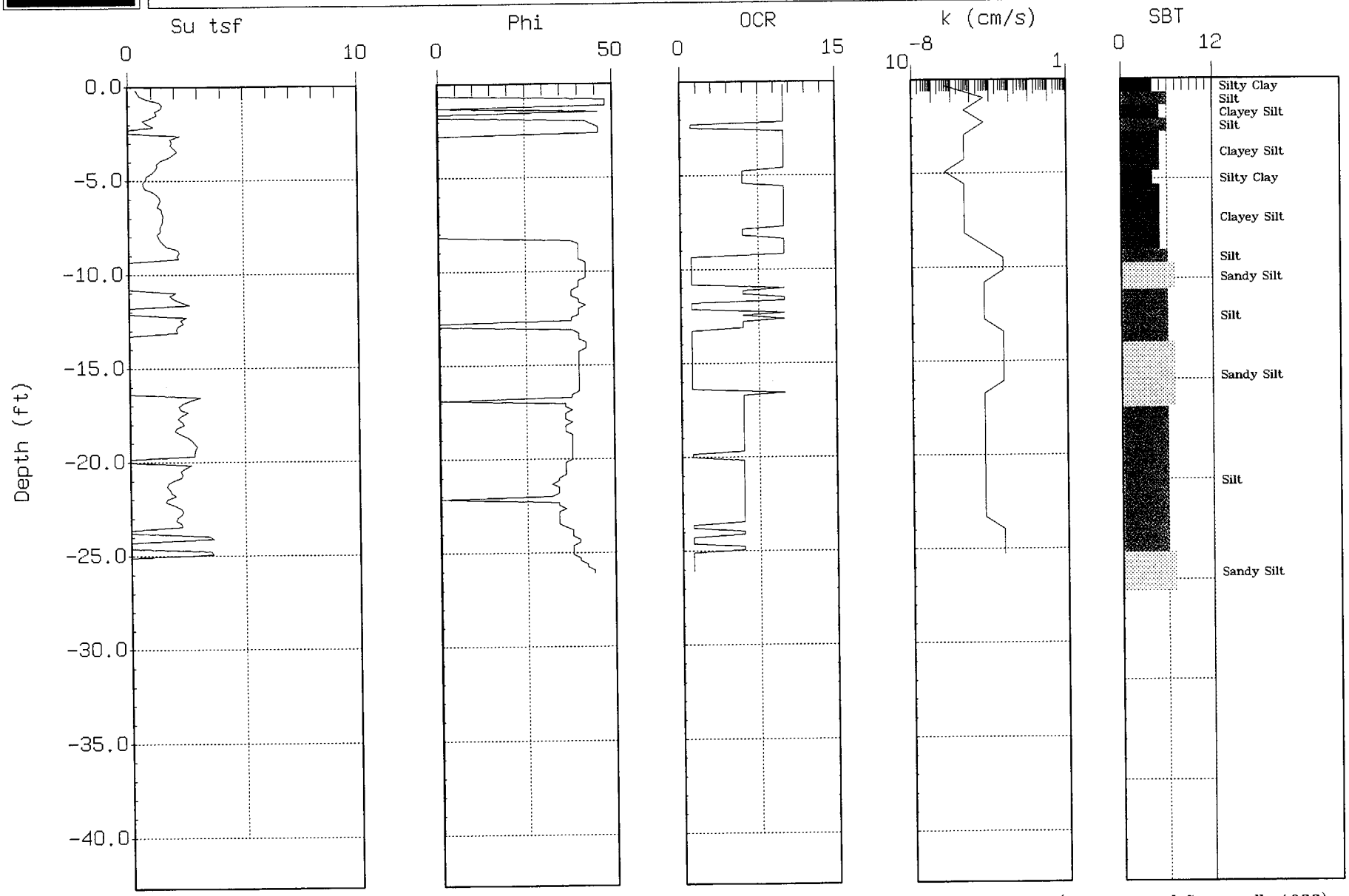
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-30
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 13:56



Max. Depth: 26.08 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

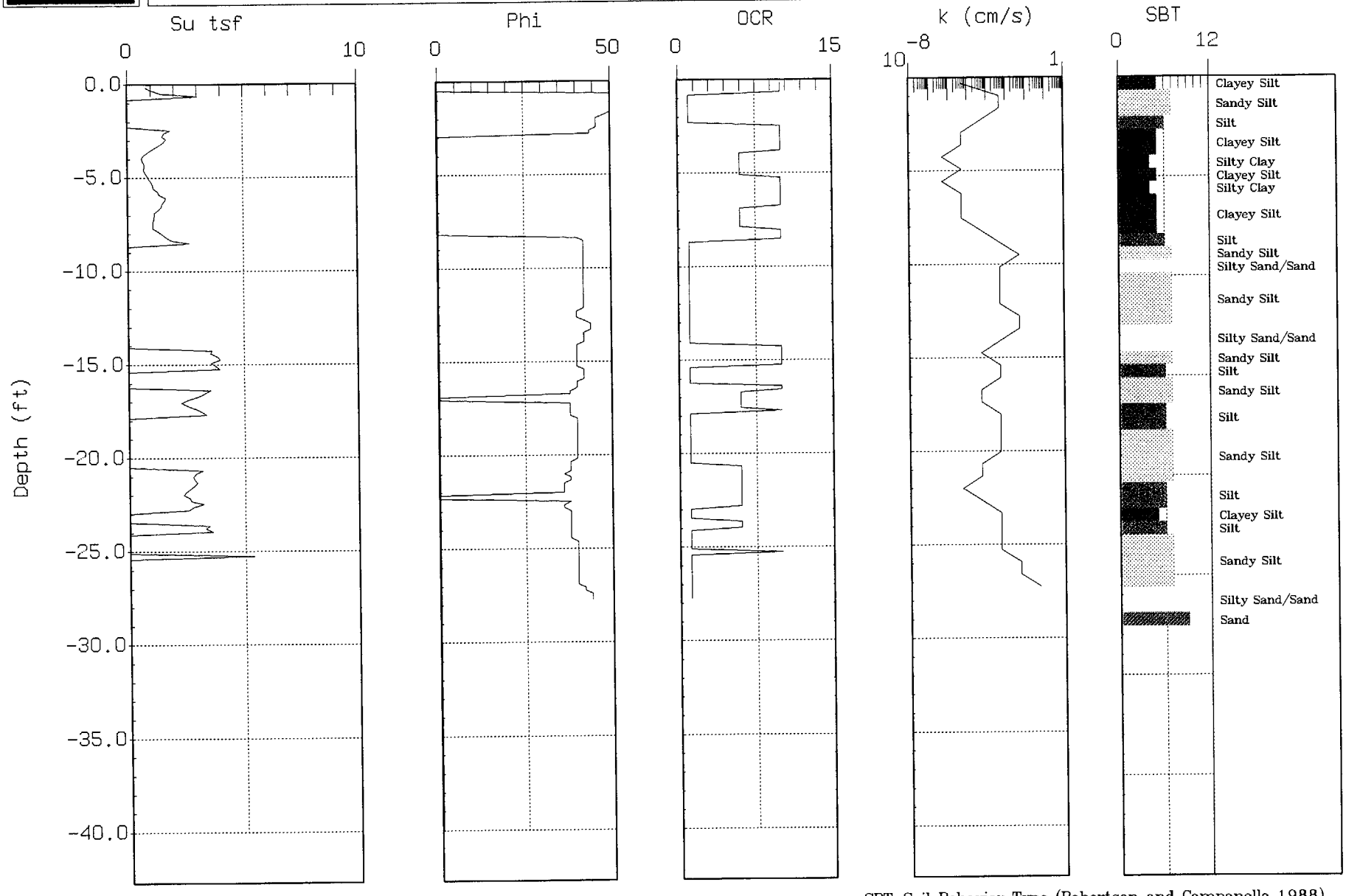
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-31
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 11:22



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

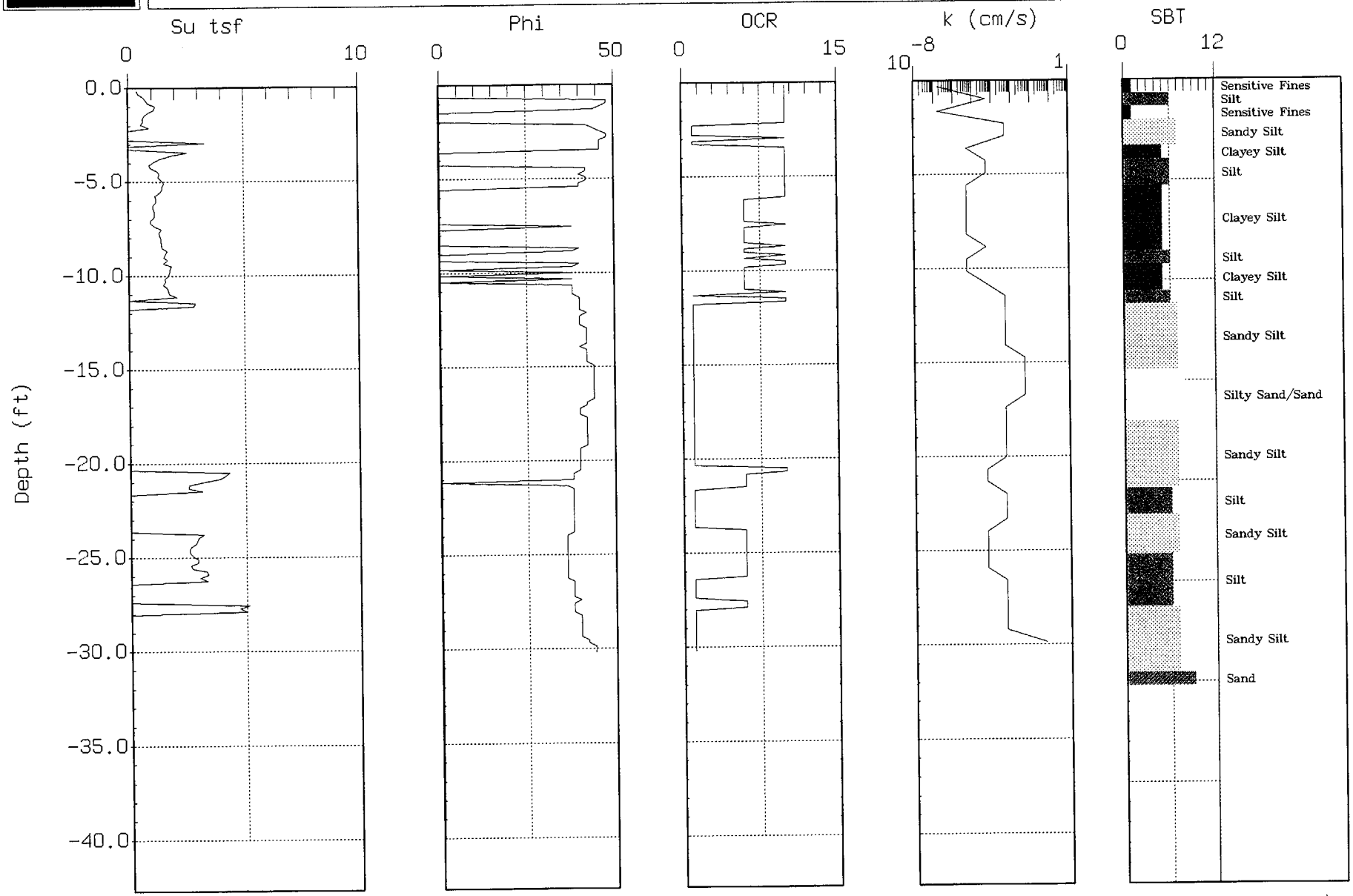
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-32
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 10:43



Max. Depth: 30.18 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

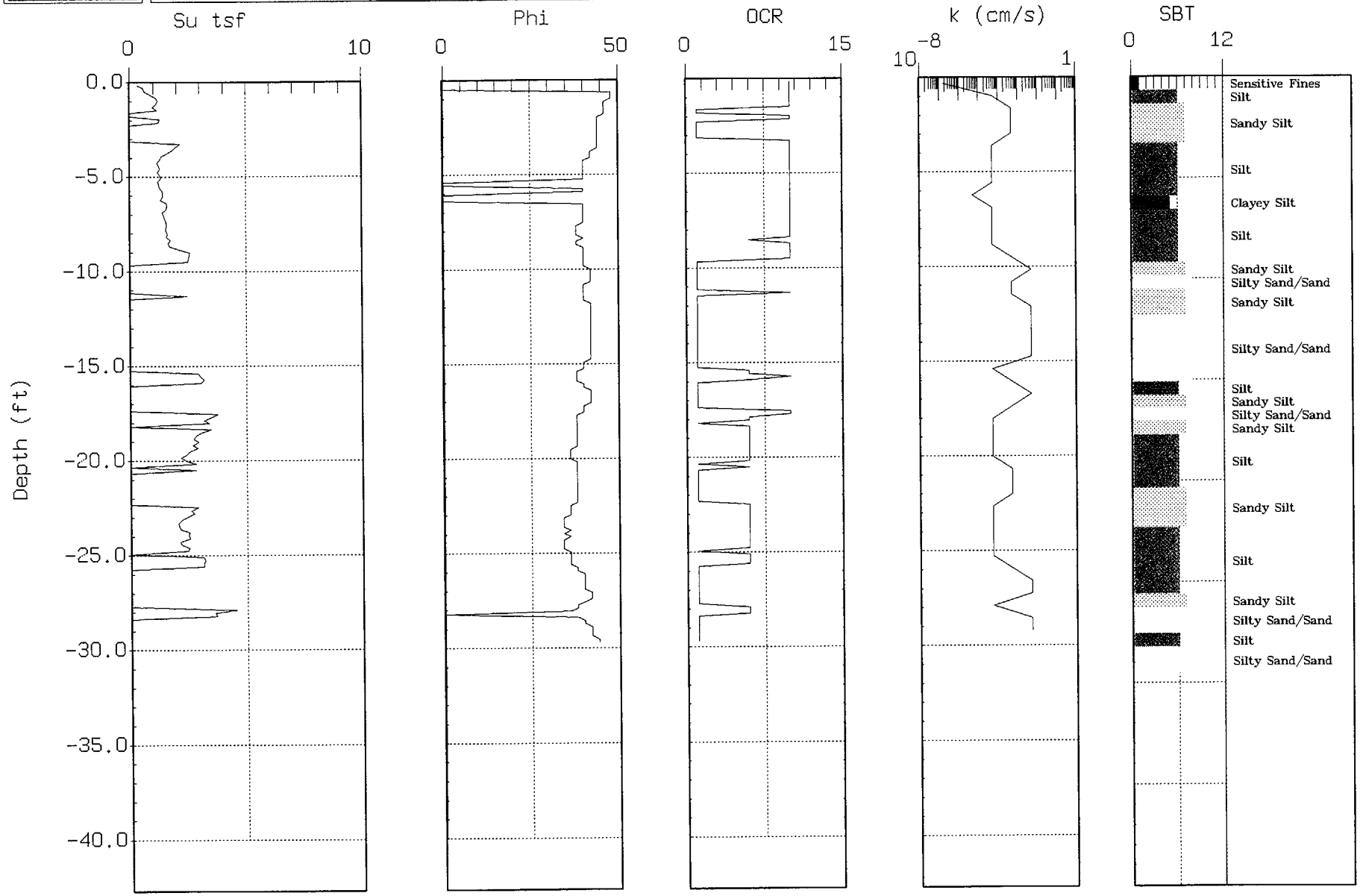
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-33
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 09:30



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

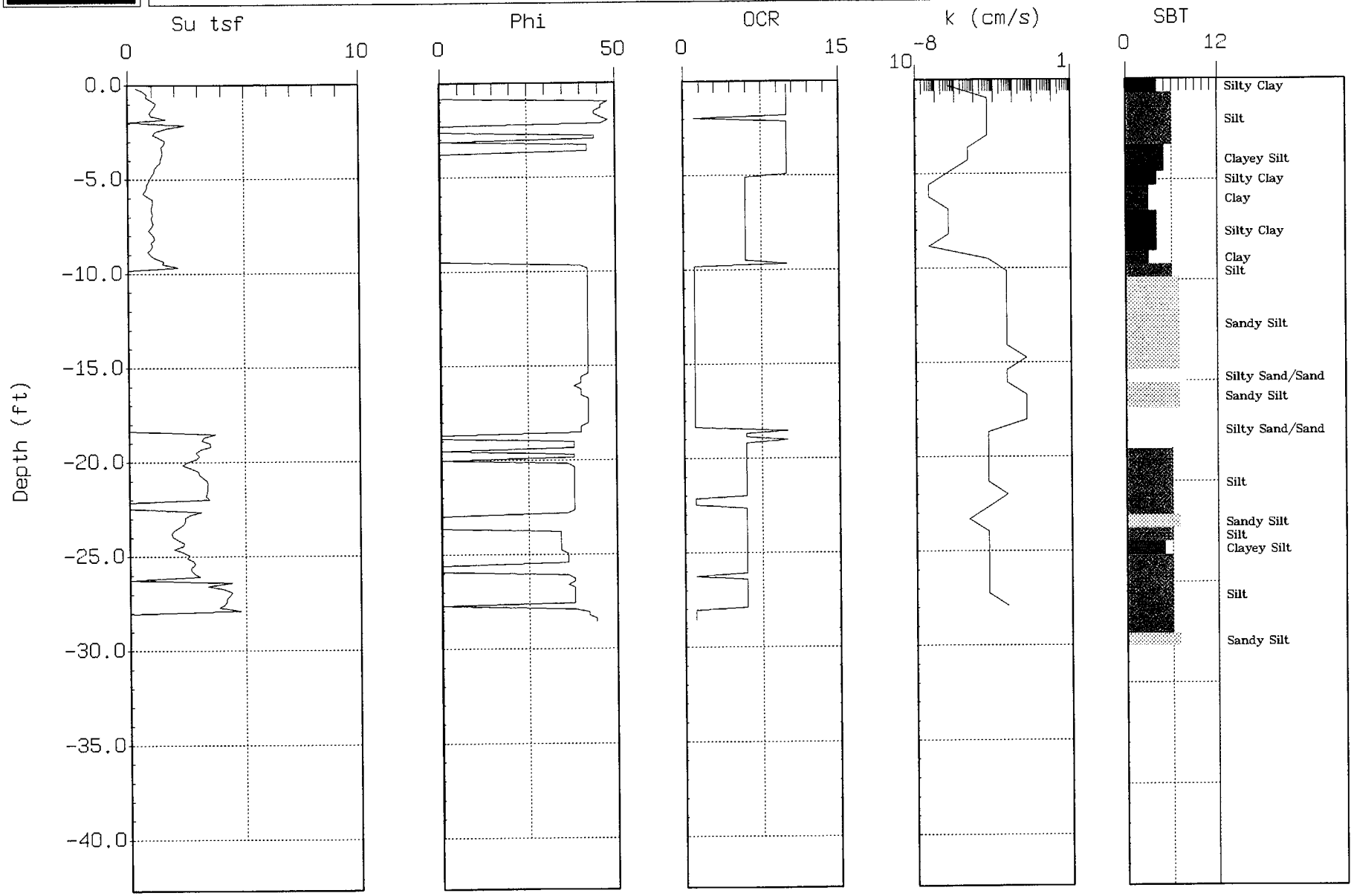
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-34
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 08:09



Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

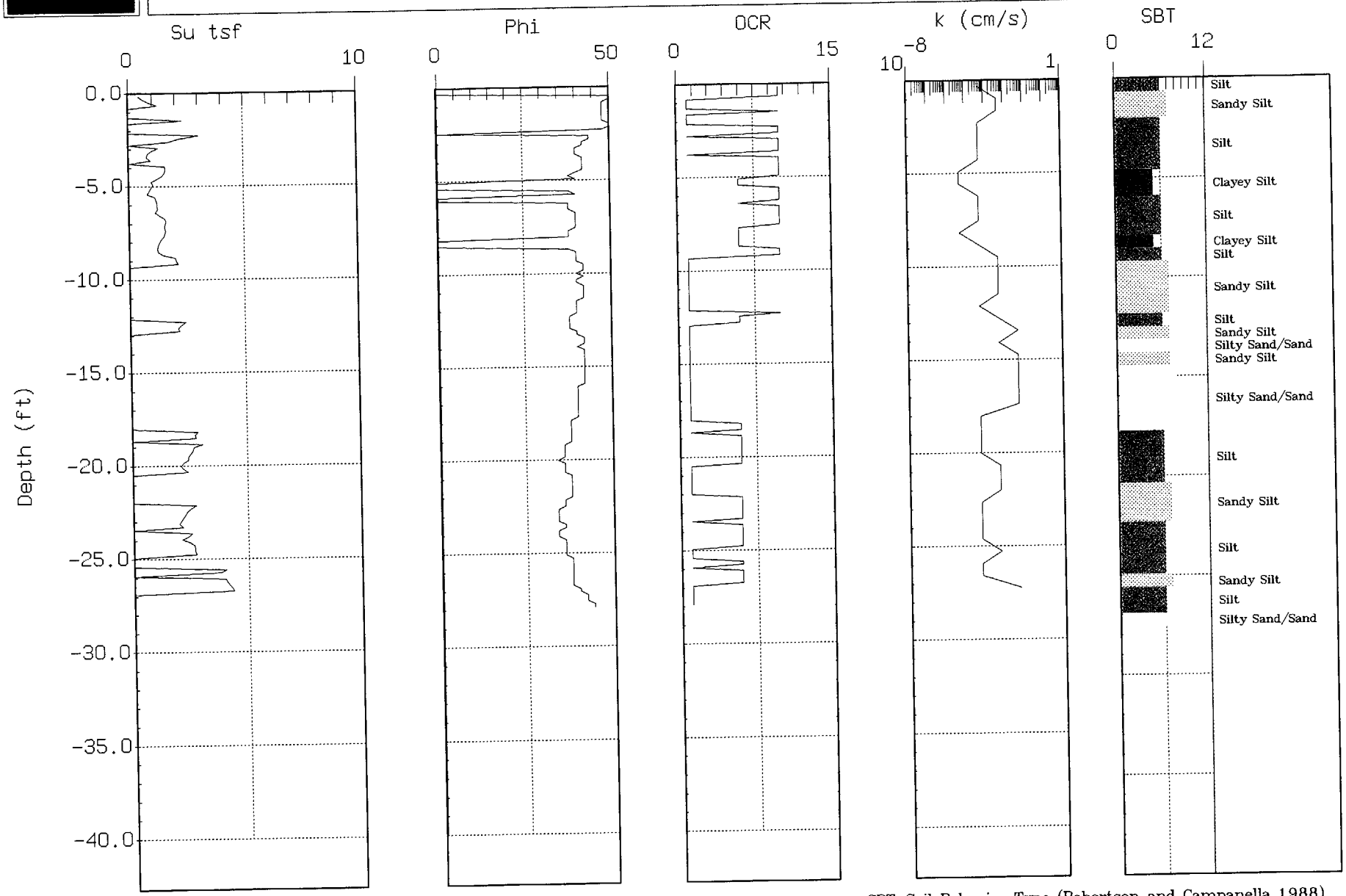
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-35
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 16:07



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

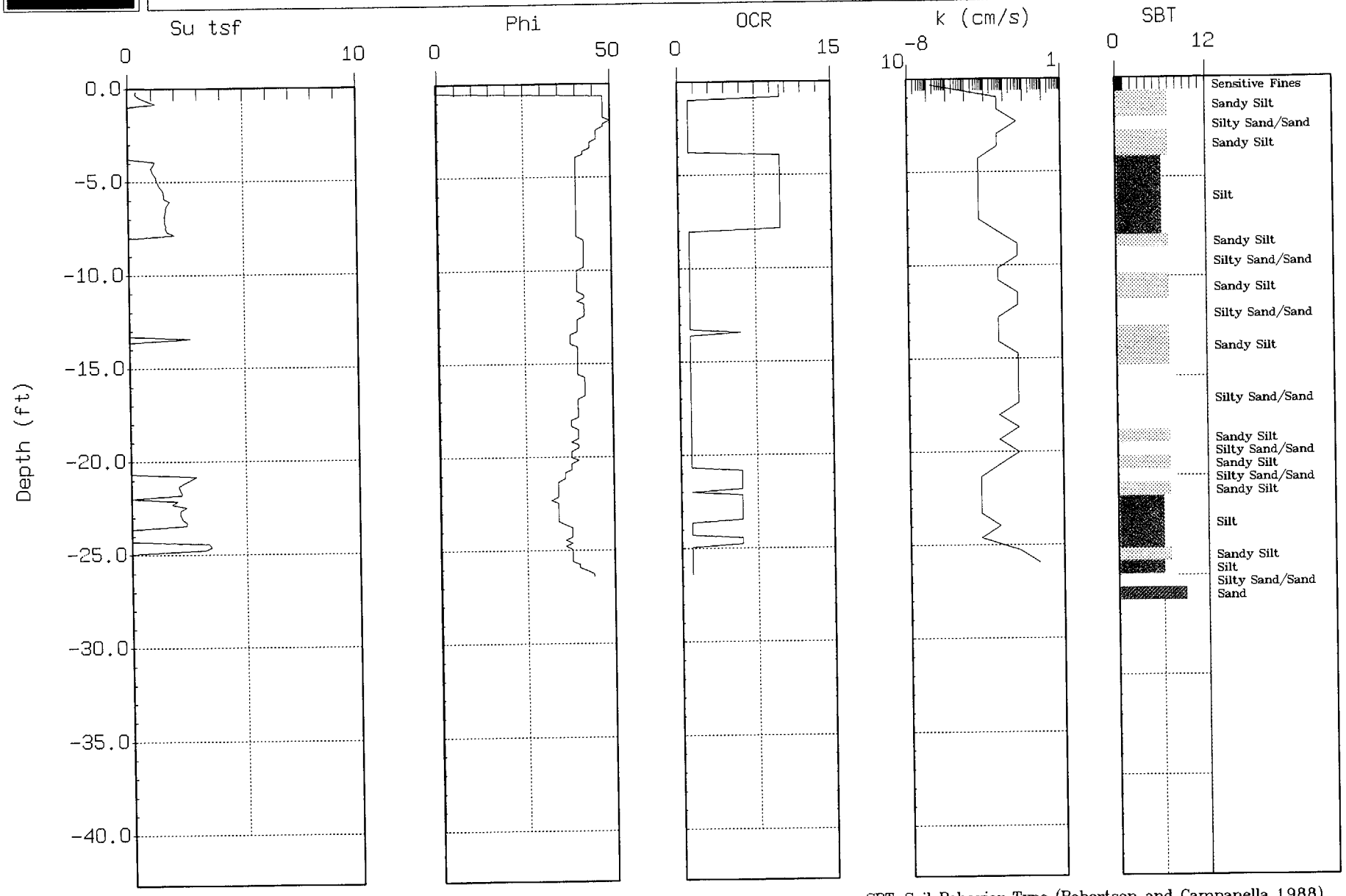
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-36
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 14:32



Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

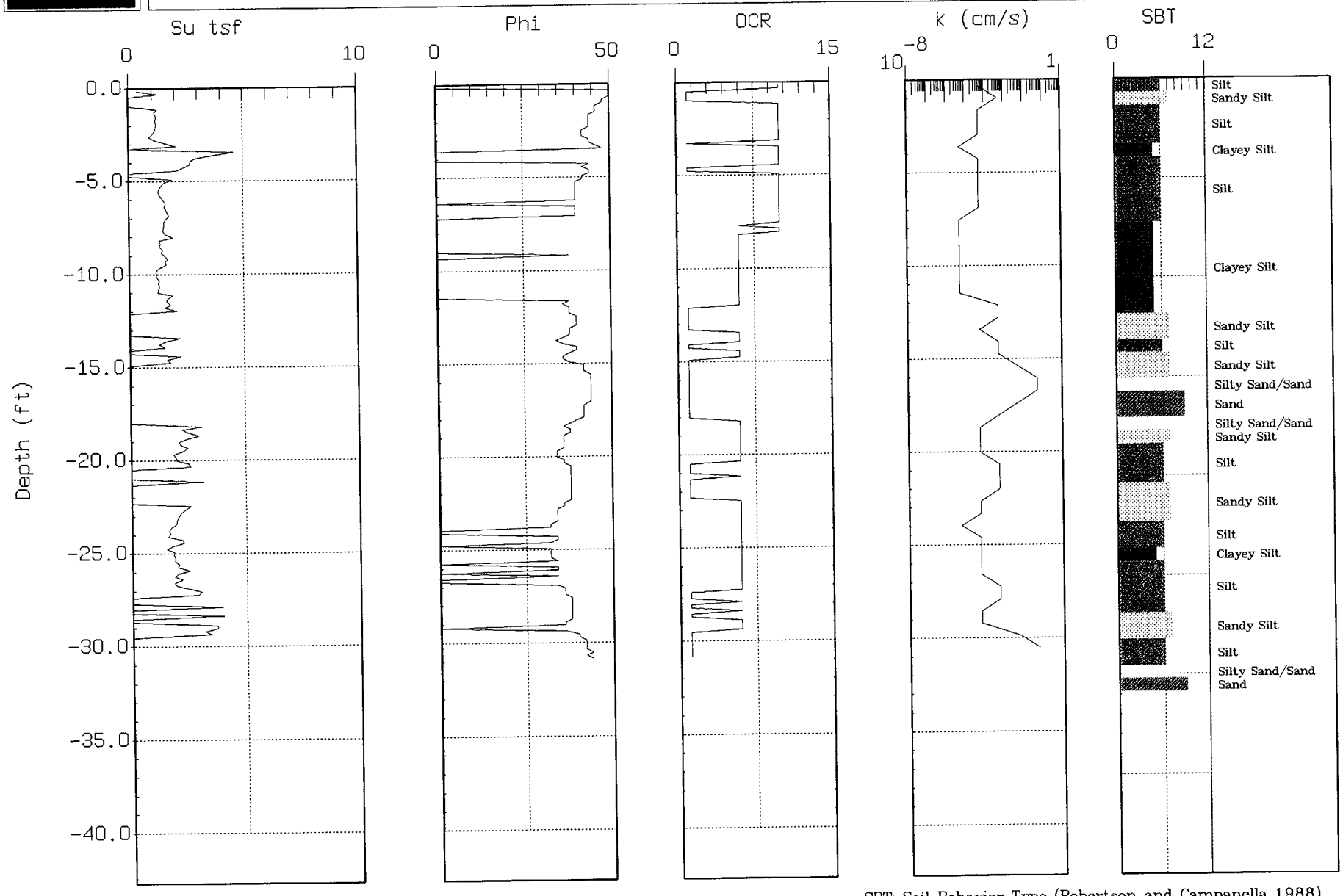
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-37
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 11:36



Max. Depth: 30.84 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

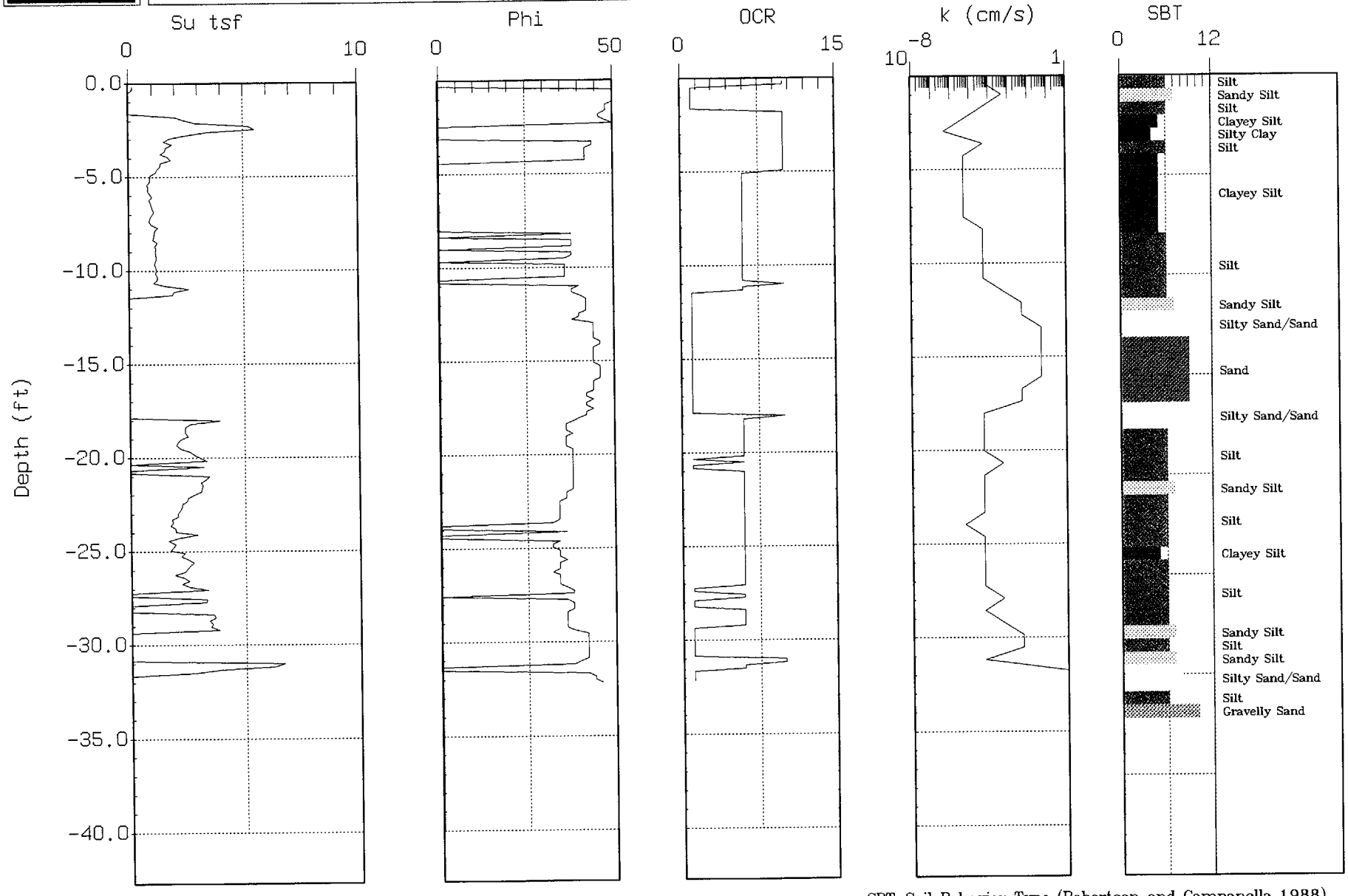
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-38
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 15:06



Max. Depth: 32.15 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

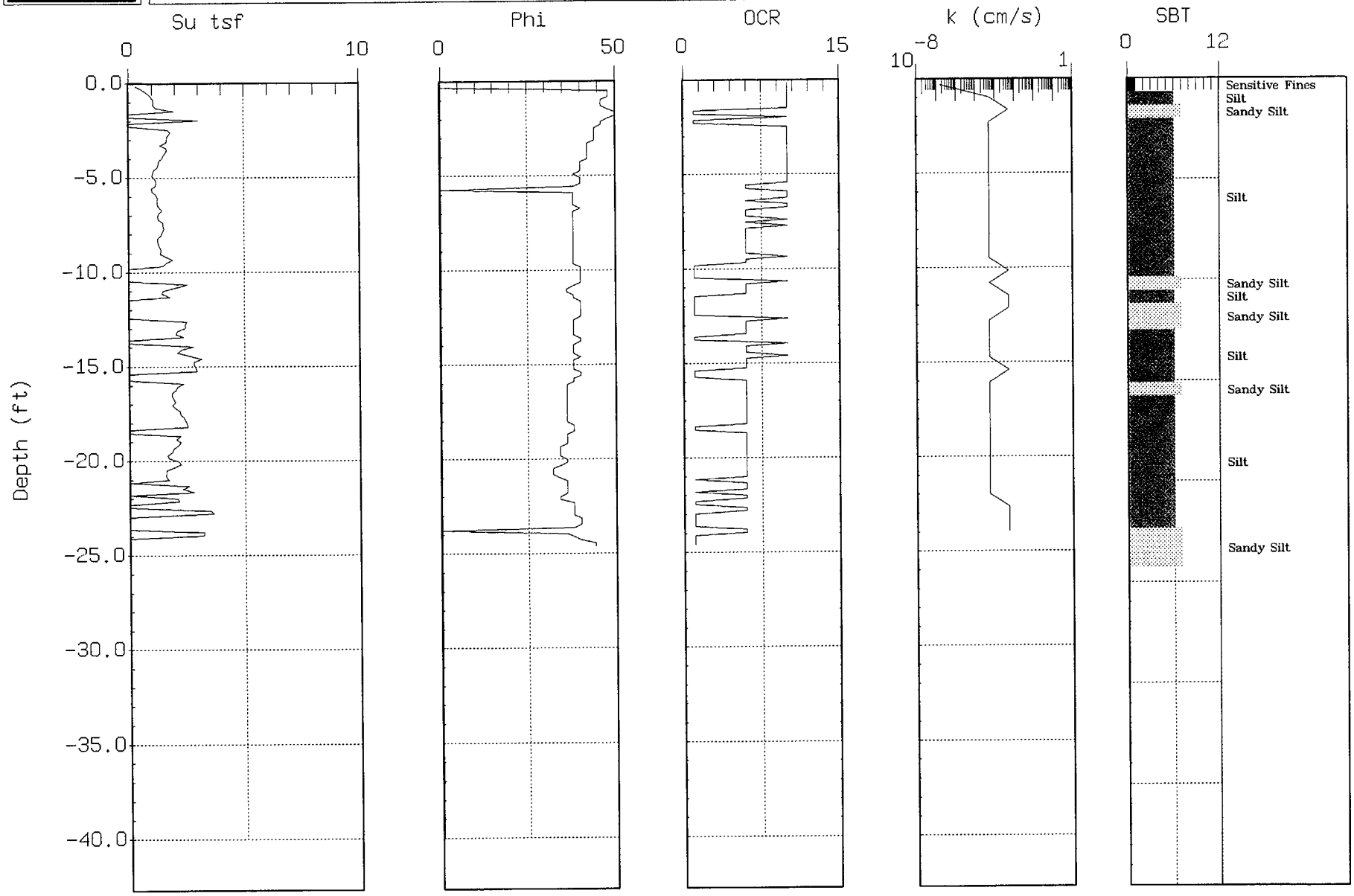
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-39
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 16:12



Max. Depth: 24.61 (ft)

Depth Inc.: 0.164 (ft)

Permeability k: estimated from soil type

SBT: Soil Behavior Type (Robertson and Campanella 1988)

Appendix E

CPT Interpretation Plots

Set 2

Appendix E

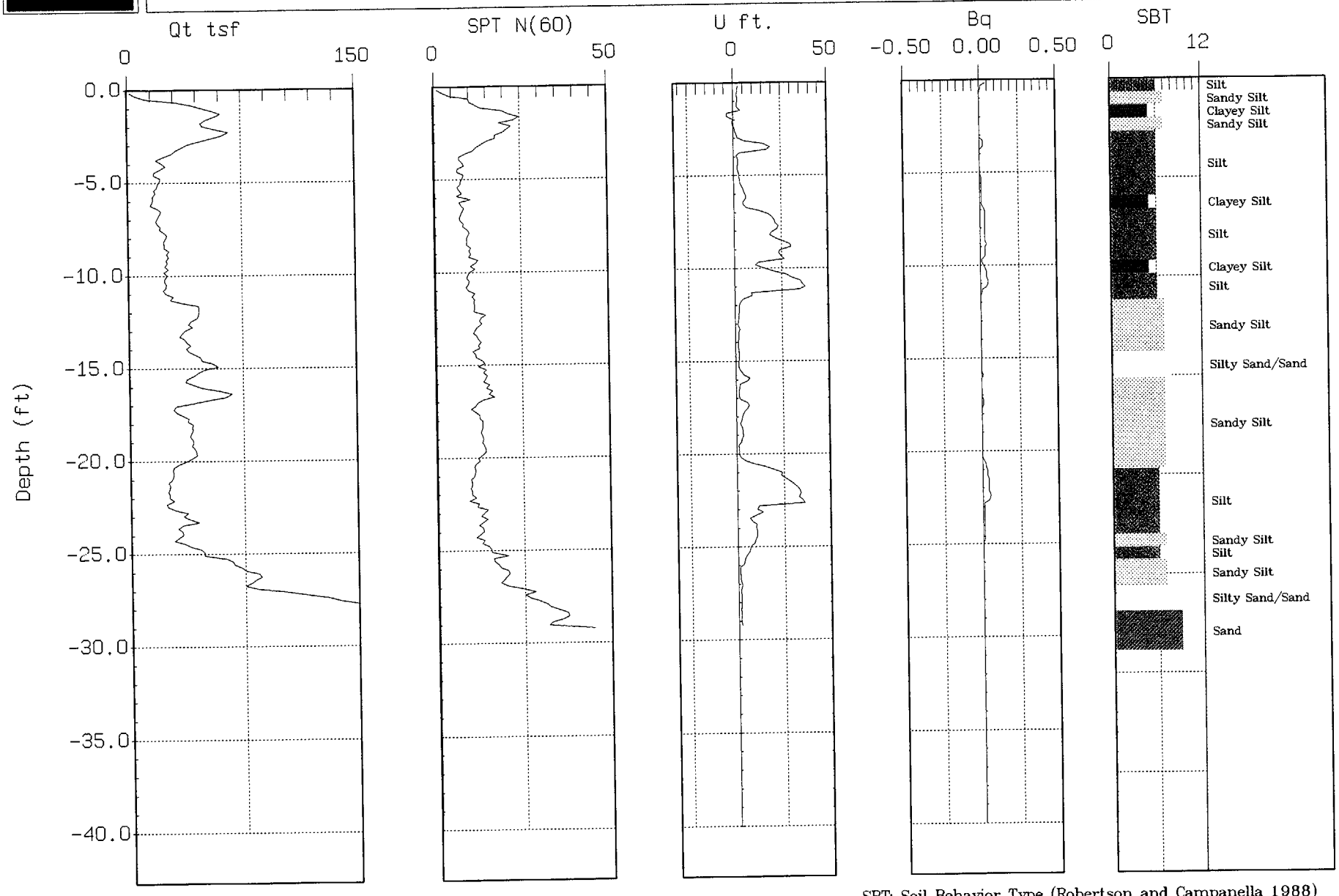
TABLE OF CONTENTS

CONETEC

Stone & Webster

Site: CPT-1
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 09:26



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

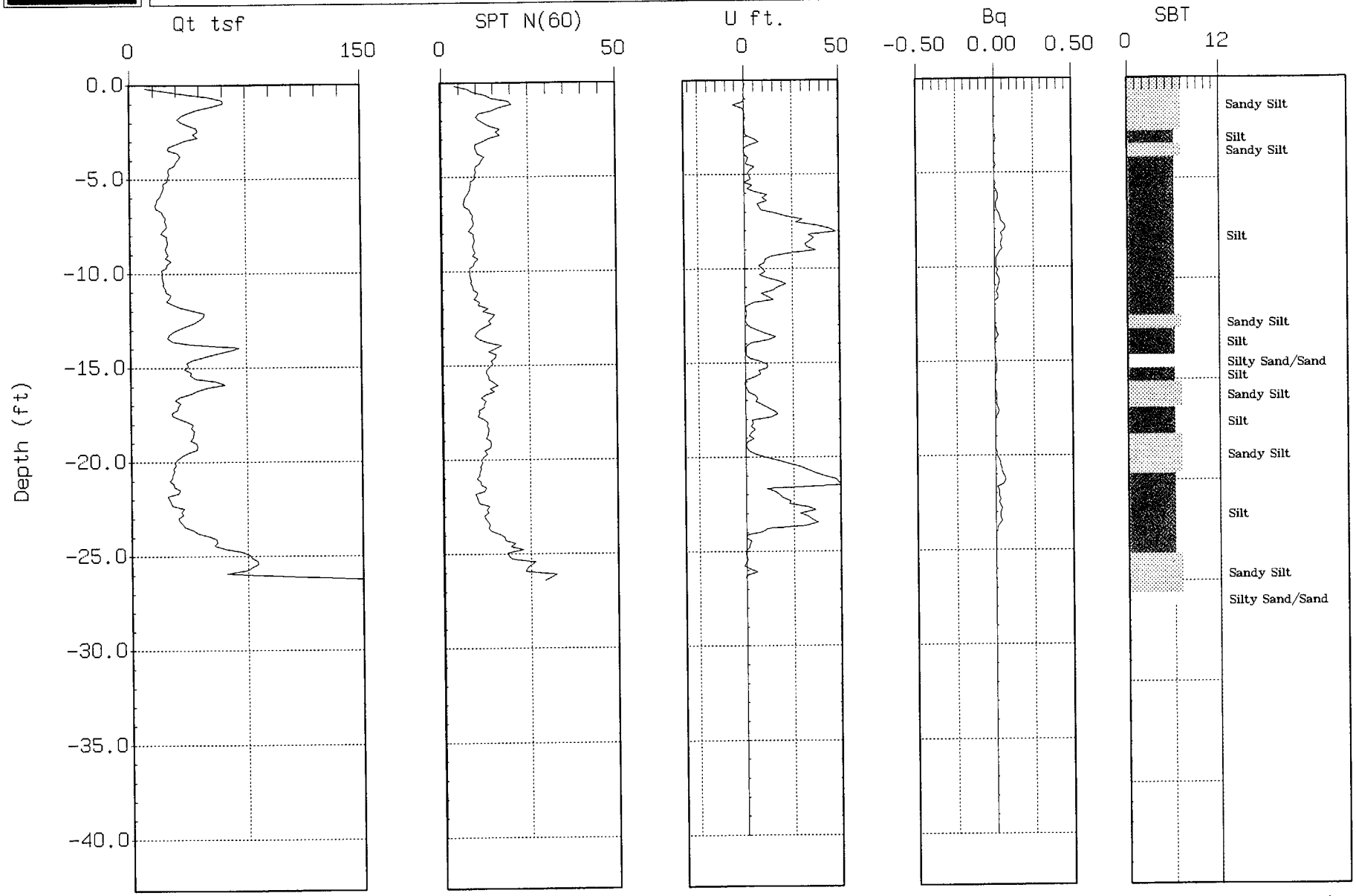
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-2
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 11:01



Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

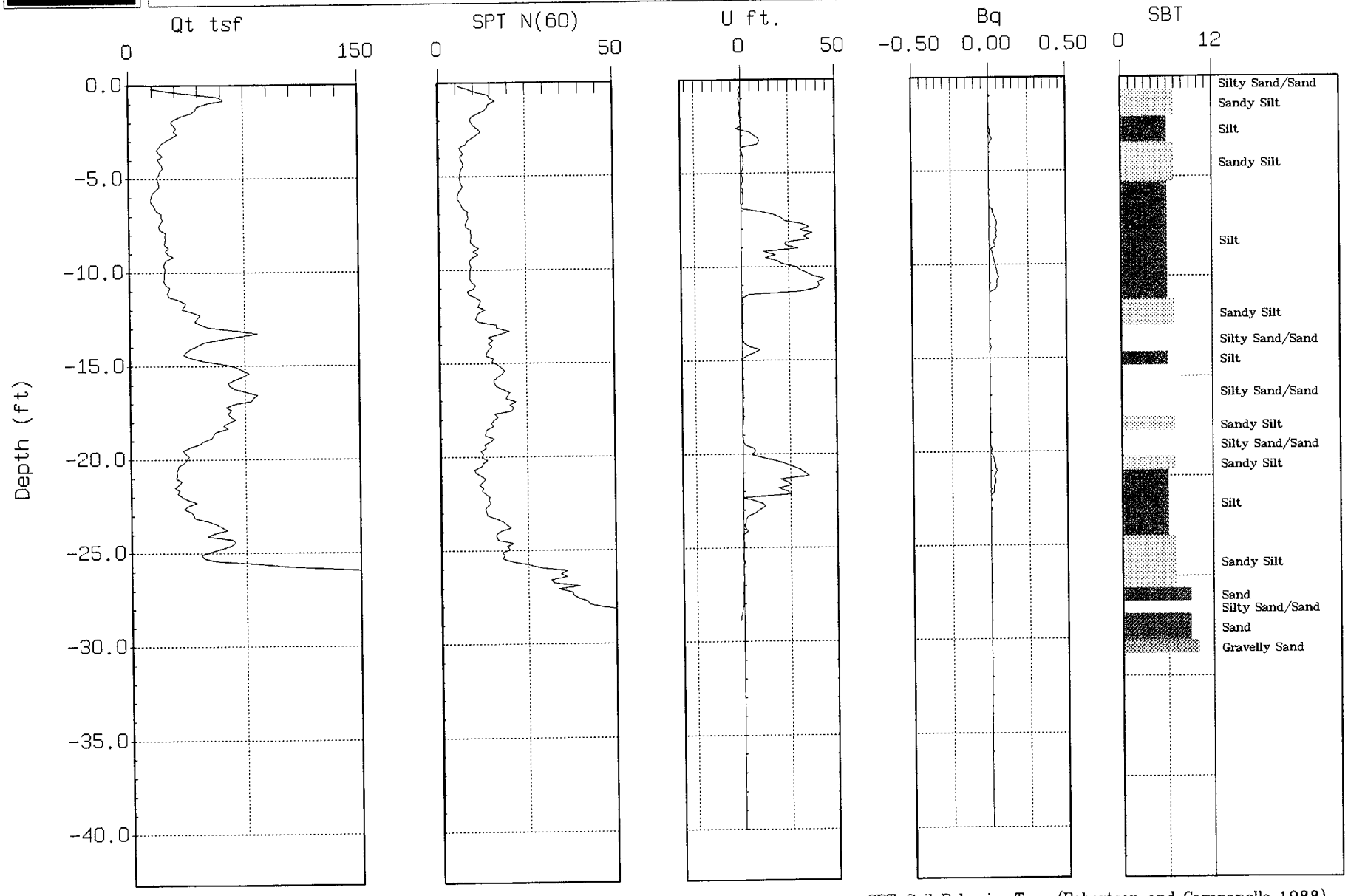
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-3
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 11:39



Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

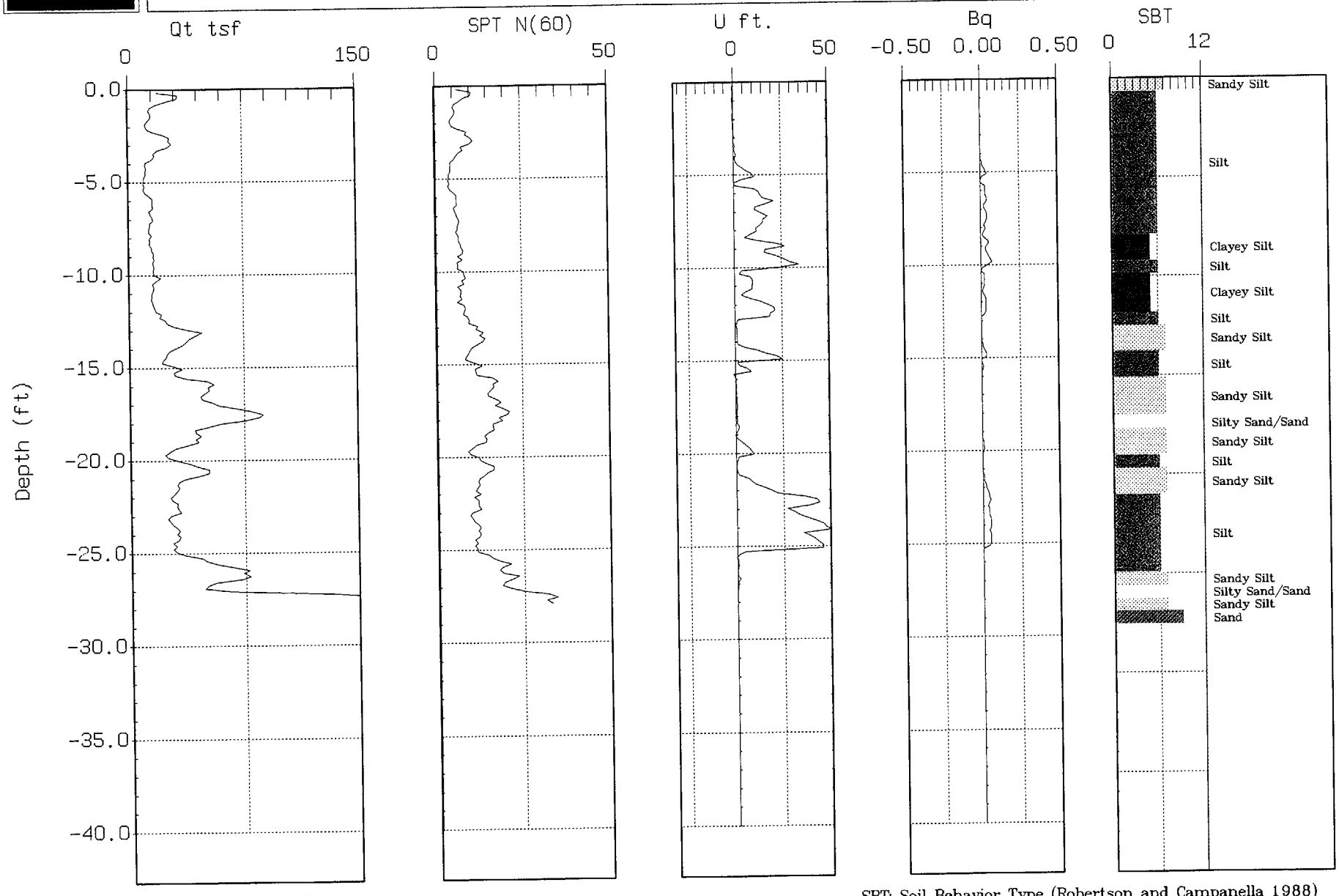
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-4
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 13:18



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

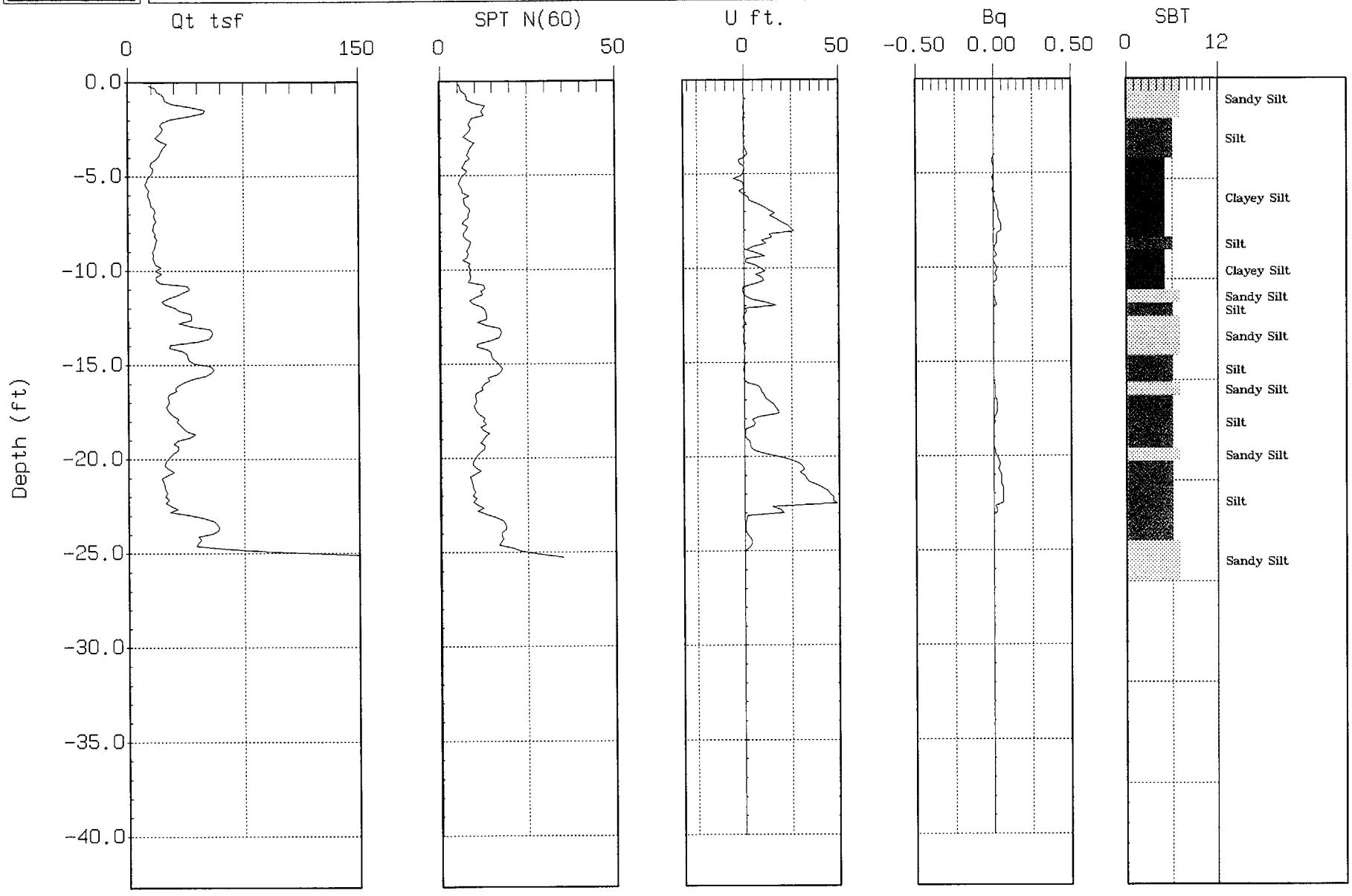
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-5
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:24:99 15:06



Max. Depth: 25.26 (ft)

Depth Inc.: 0.164 (ft)

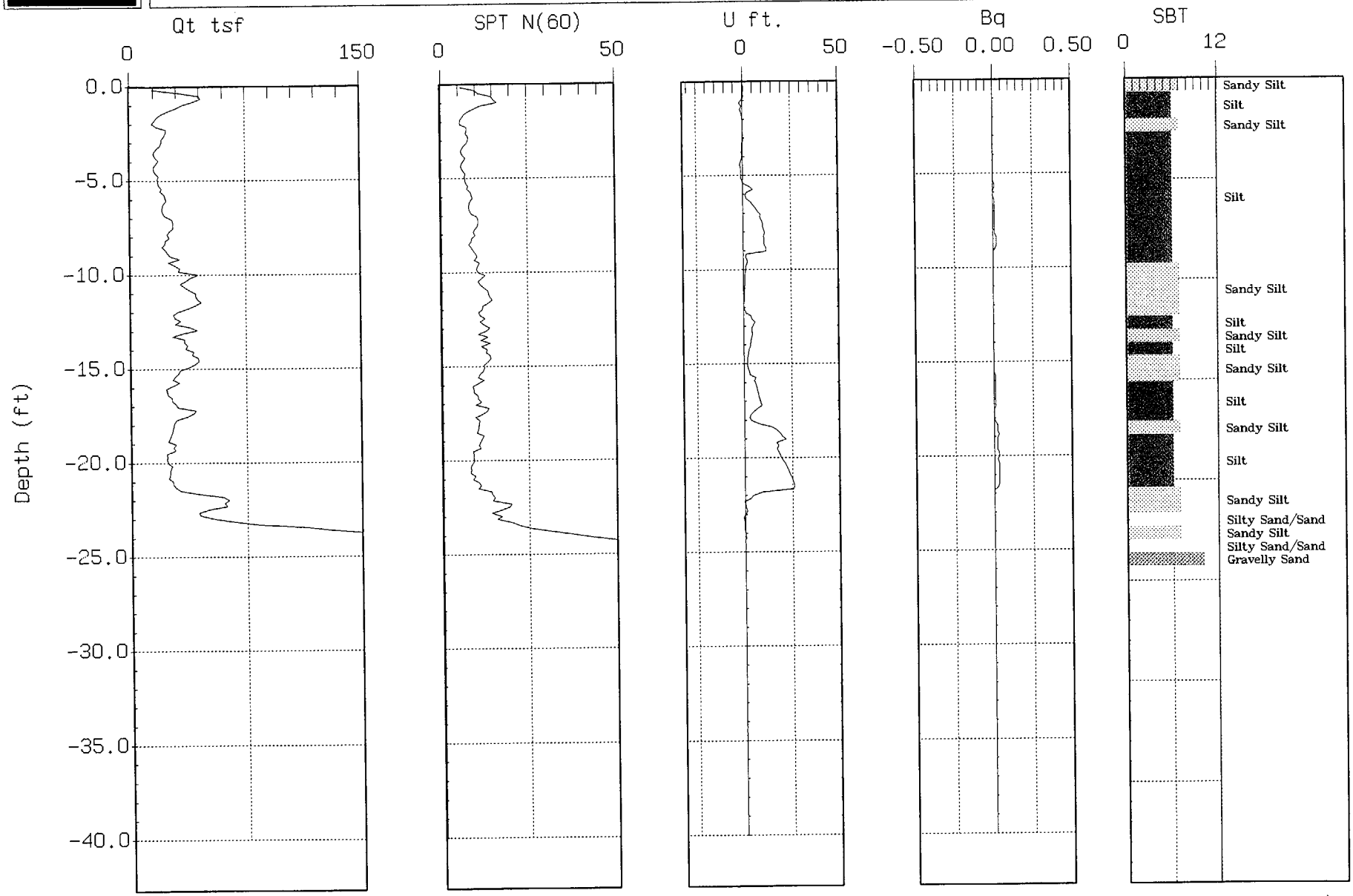
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-6
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:24:99 15:44



Max. Depth: 24.28 (ft)

Depth Inc.: 0.164 (ft)

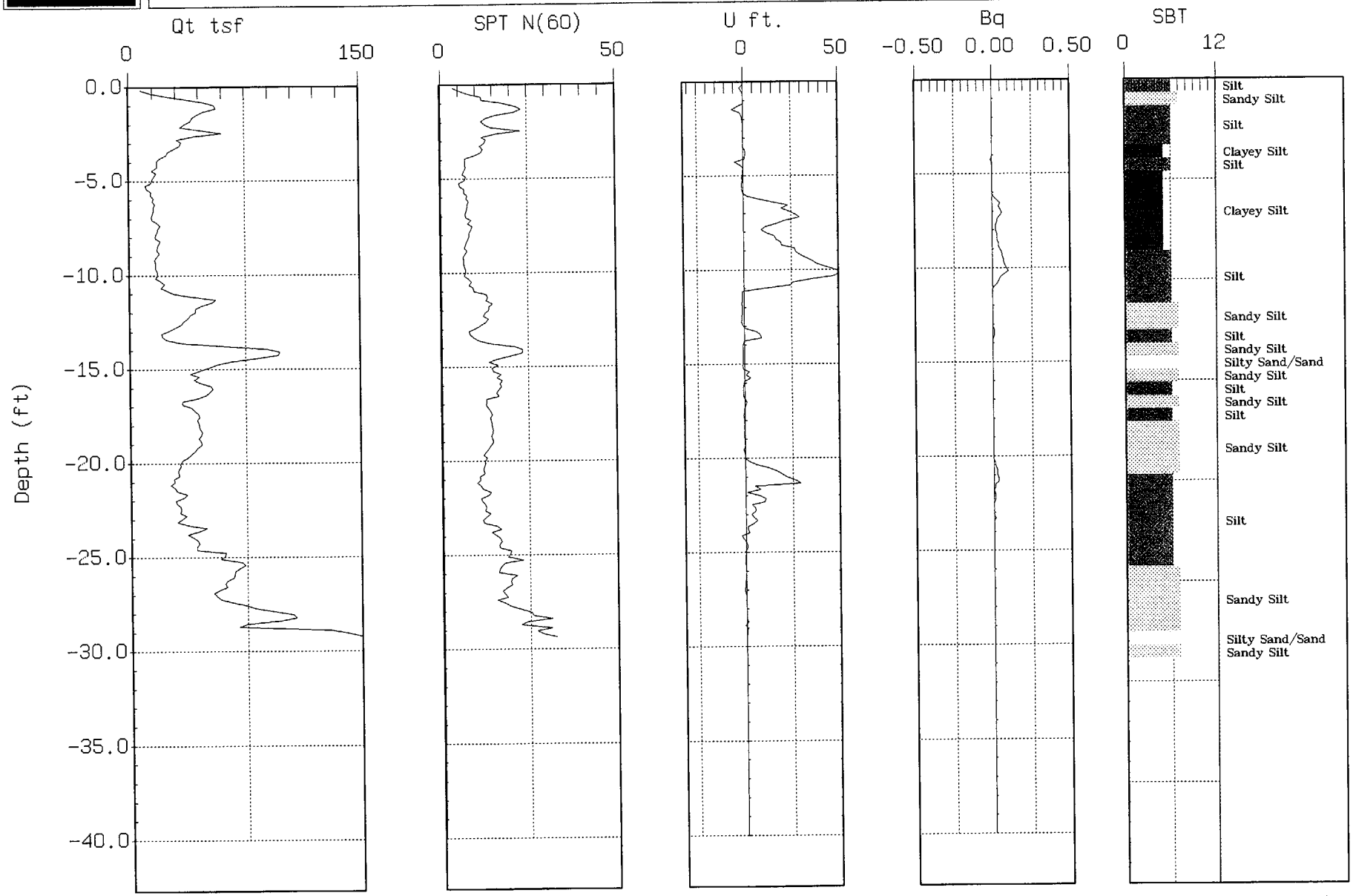
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-7
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 10:35



Max. Depth: 29.36 (ft)

Depth Inc.: 0.164 (ft)

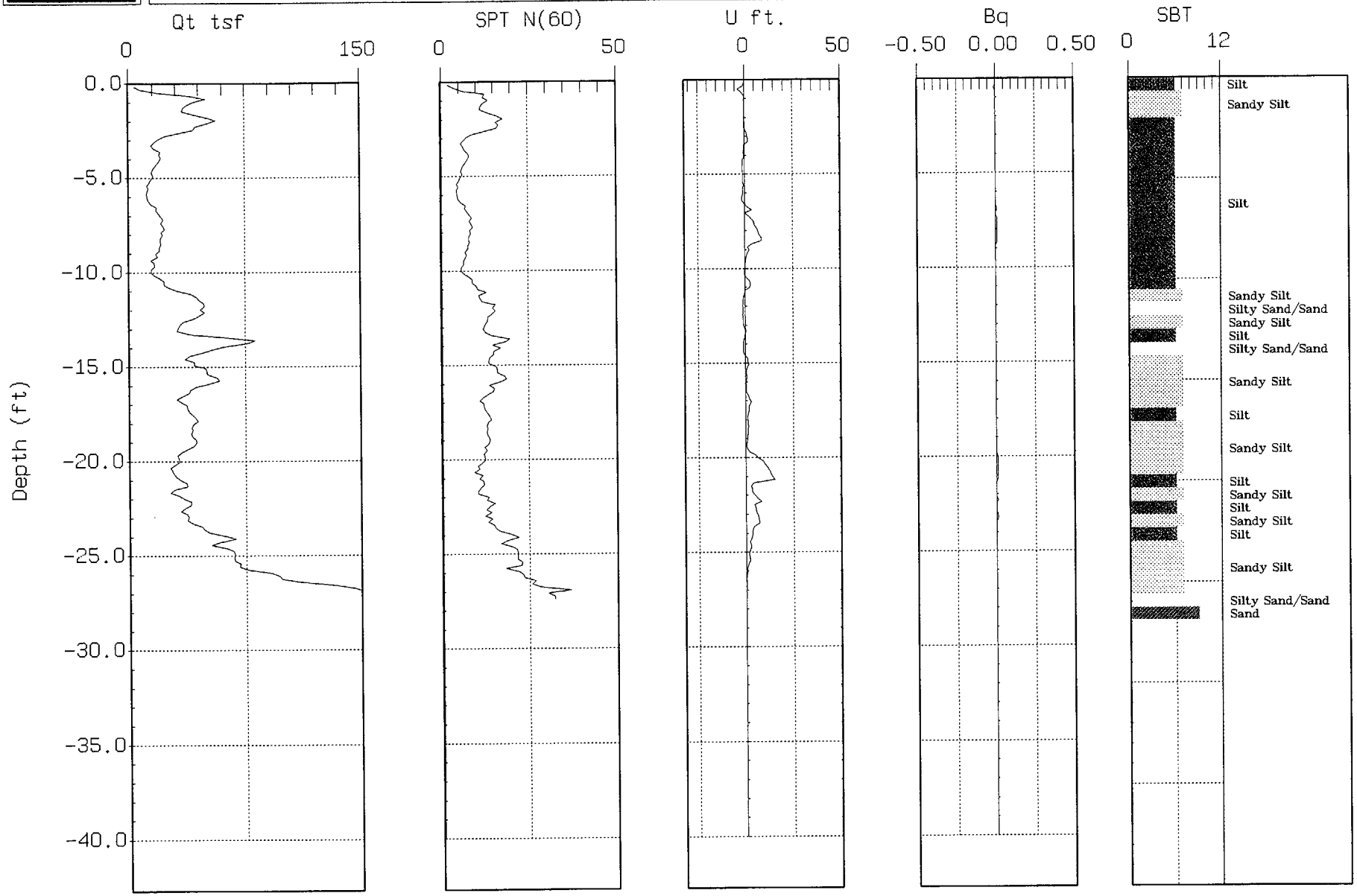
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-8
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 10:01



Max. Depth: 27.39 (ft)

Depth Inc.: 0.164 (ft)

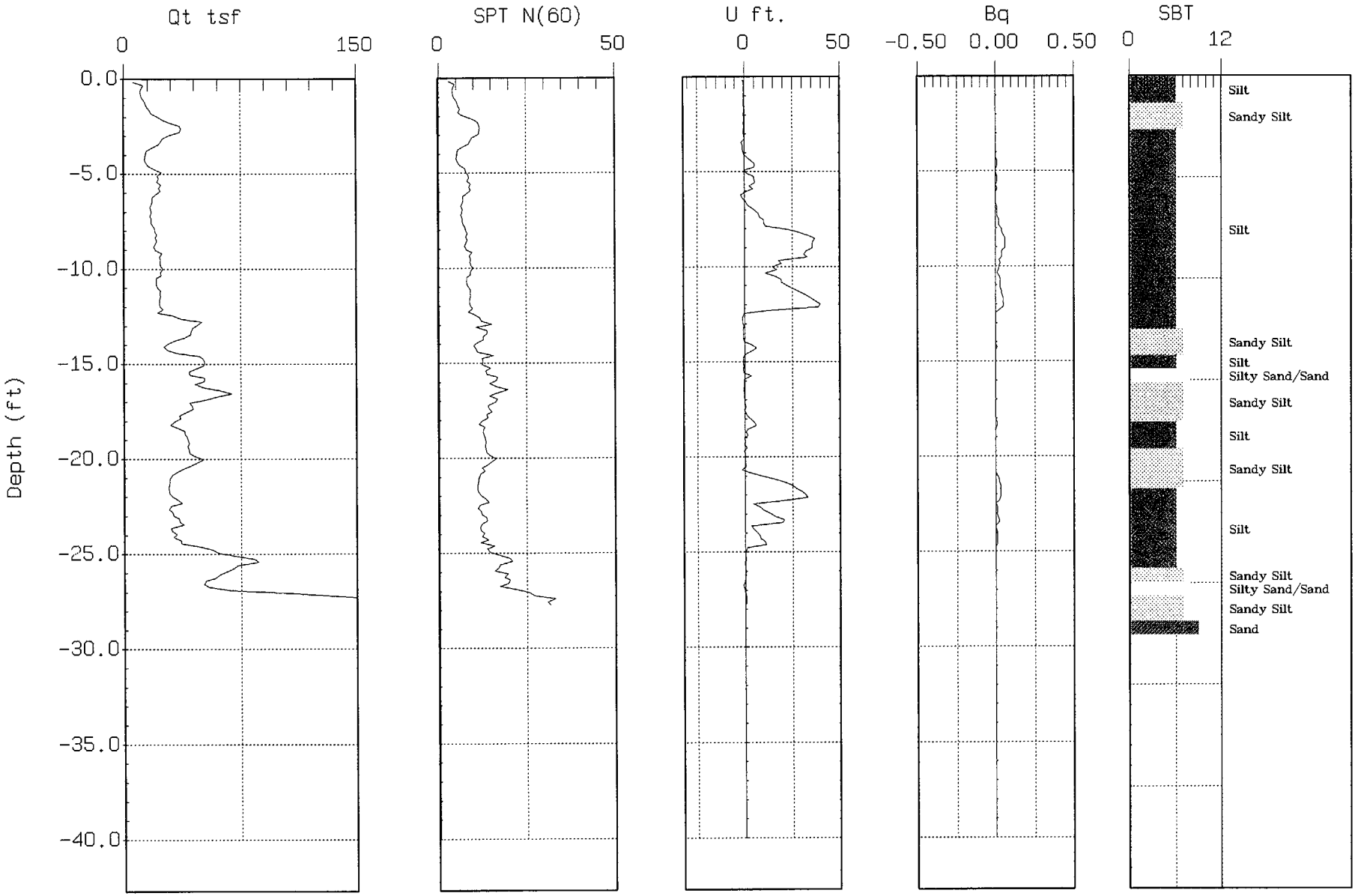
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-9
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 09:31



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

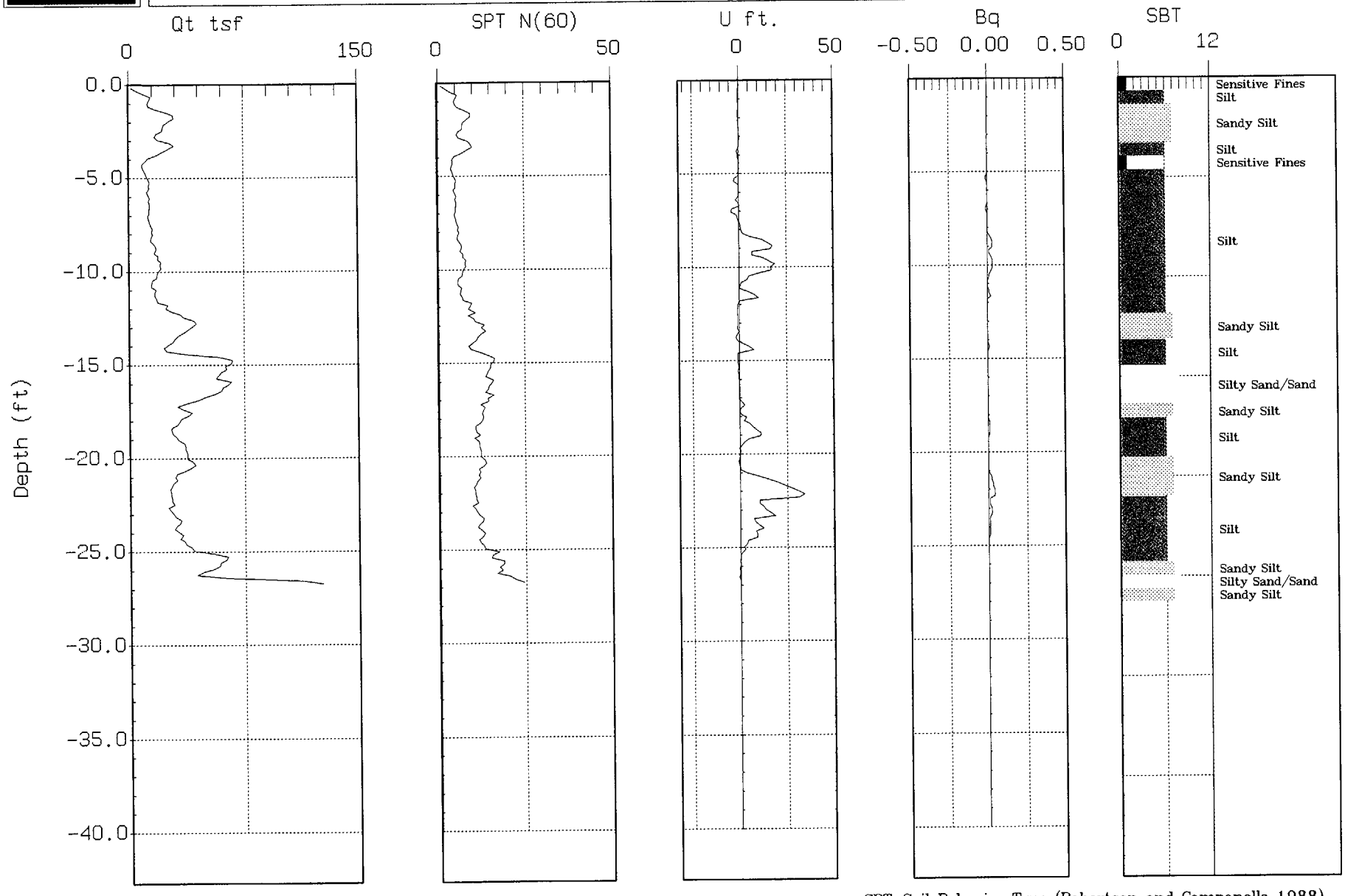
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-10
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 08:58



Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

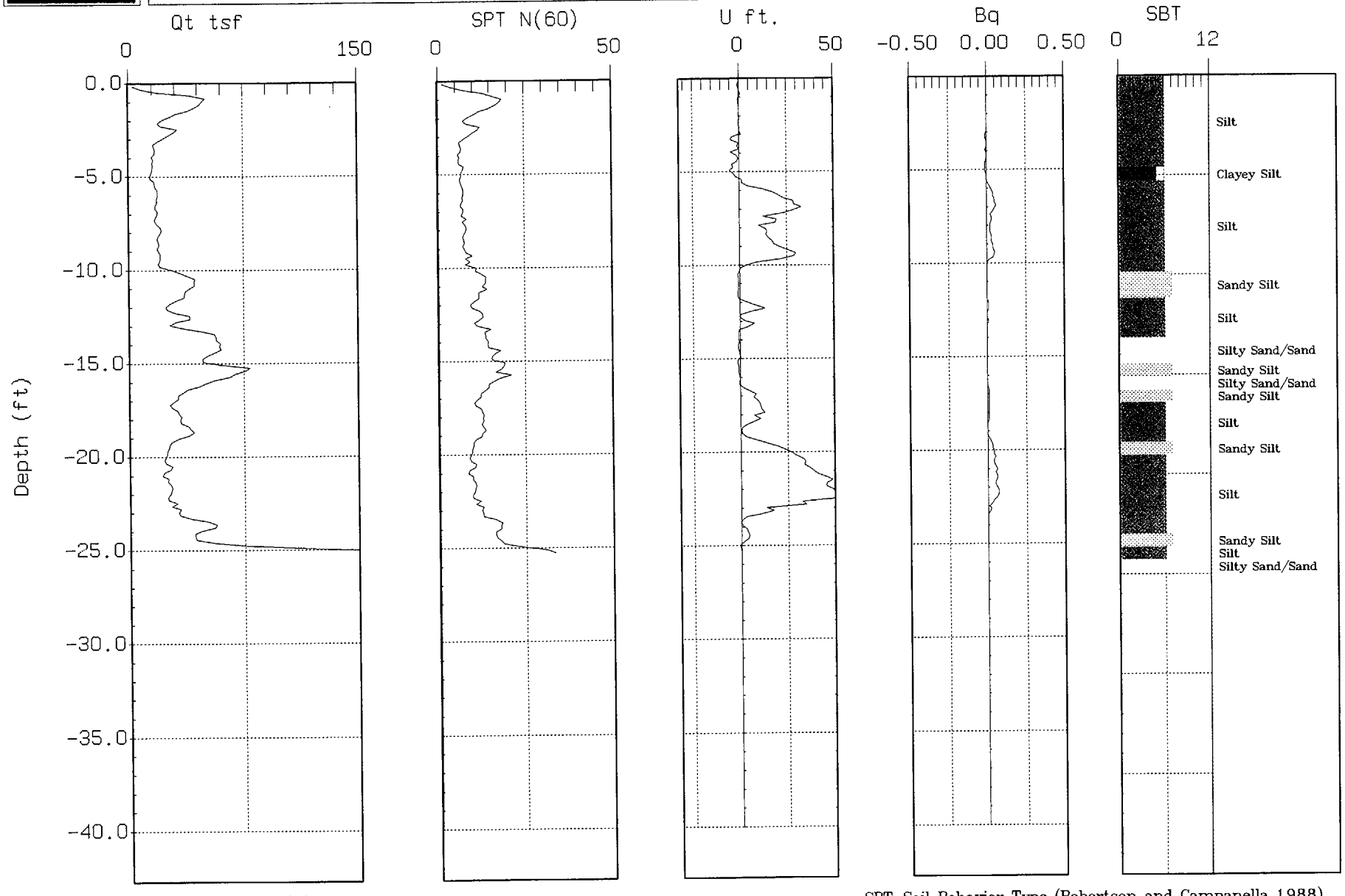
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-11
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 08:30



Max. Depth: 25.26 (ft)

Depth Inc.: 0.164 (ft)

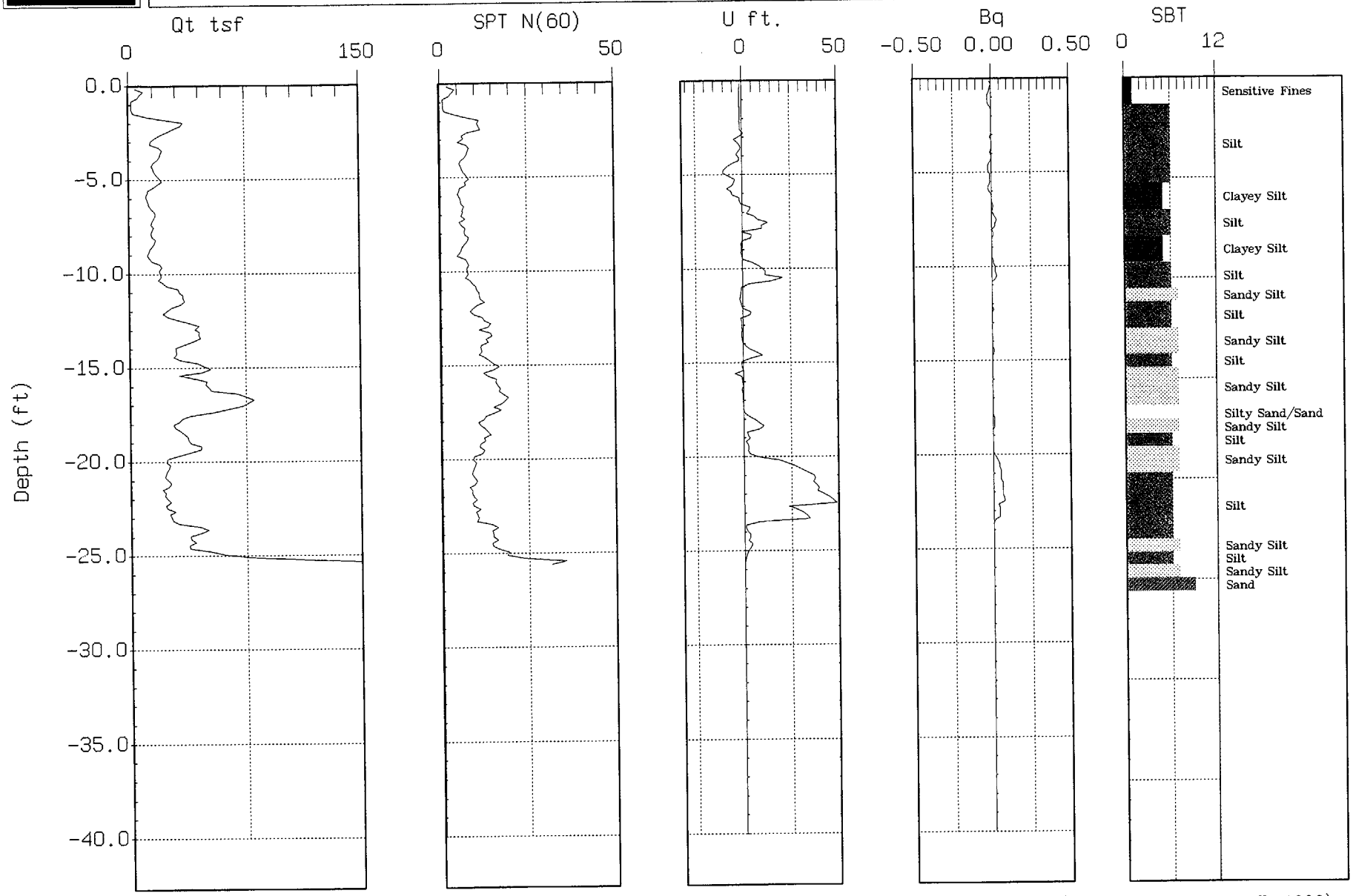
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-12
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 07:57



Max. Depth: 25.59 (ft)

Depth Inc.: 0.164 (ft)

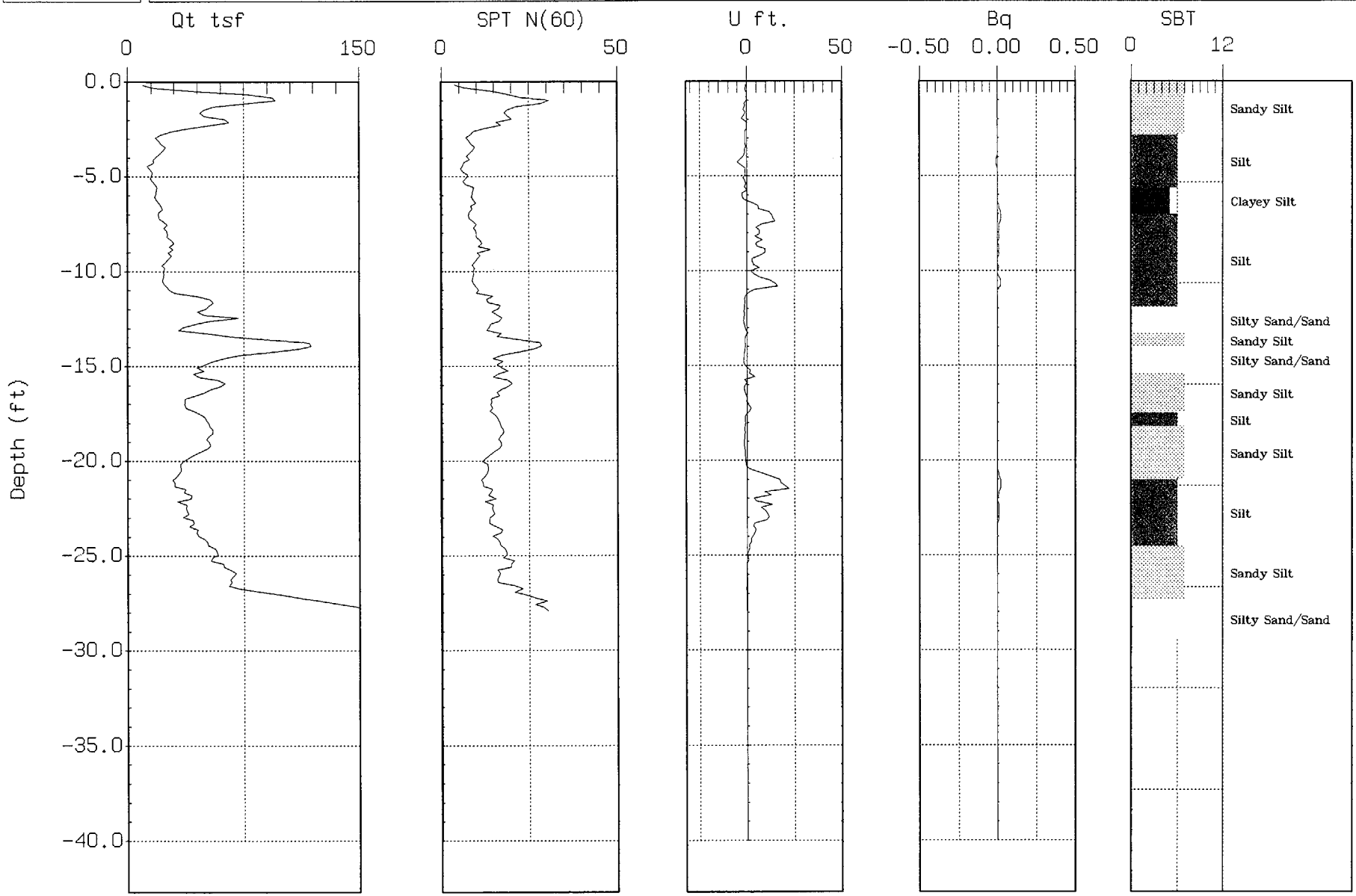
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-13
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 11:19



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

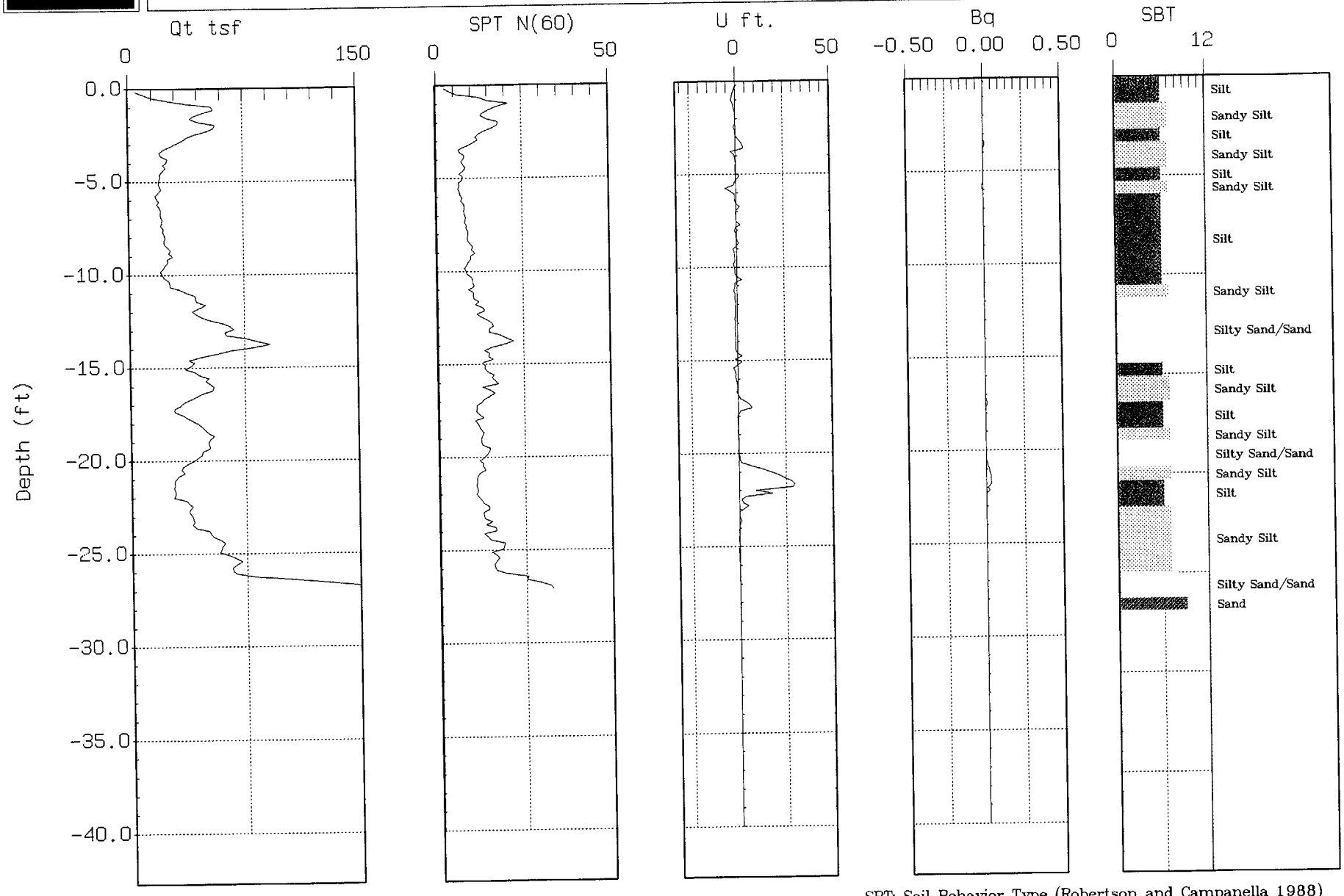
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-14
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 12:35



Max. Depth: 27.07 (ft)

Depth Inc.: 0.164 (ft)

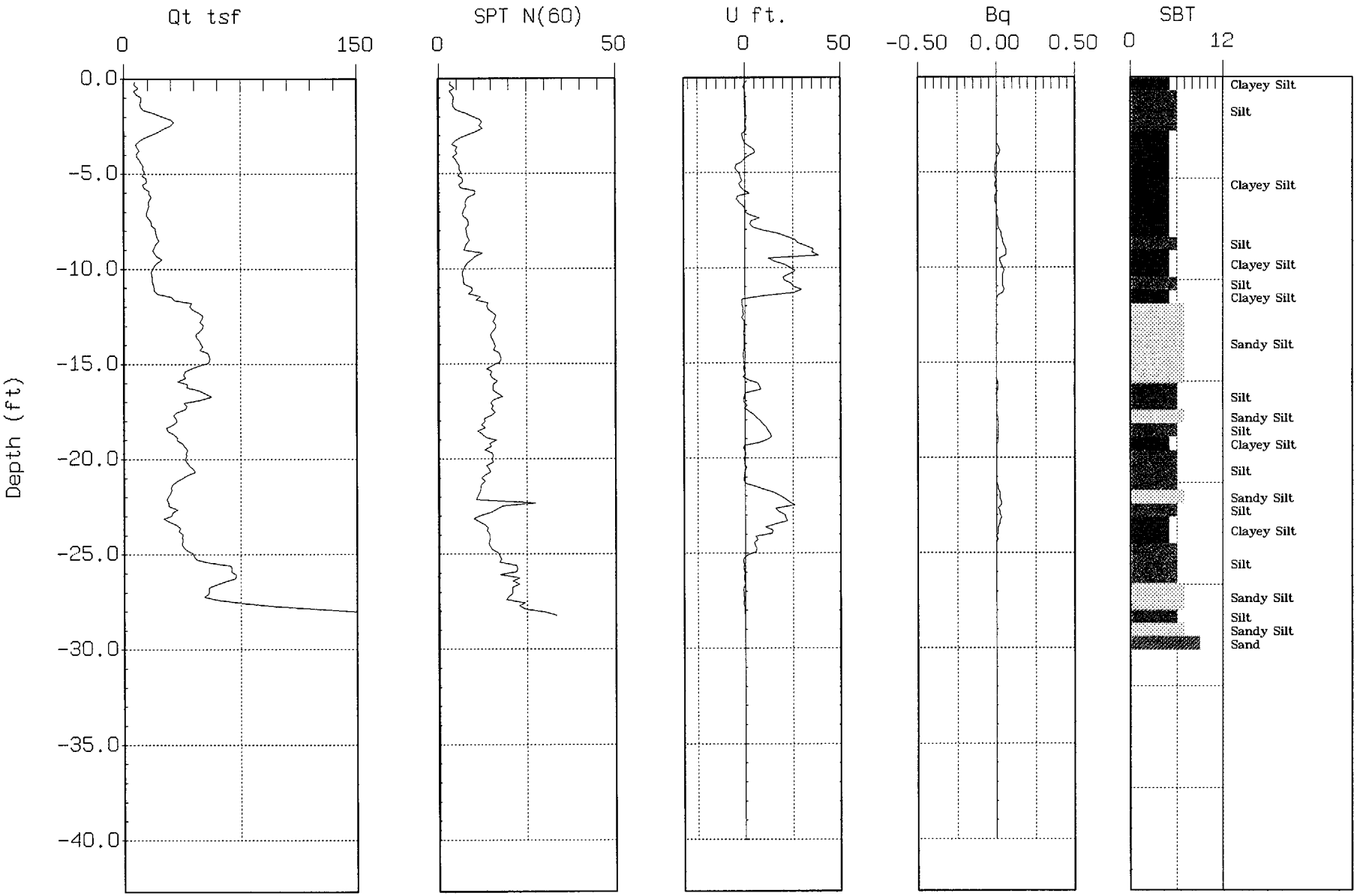
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-15
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 13:11



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

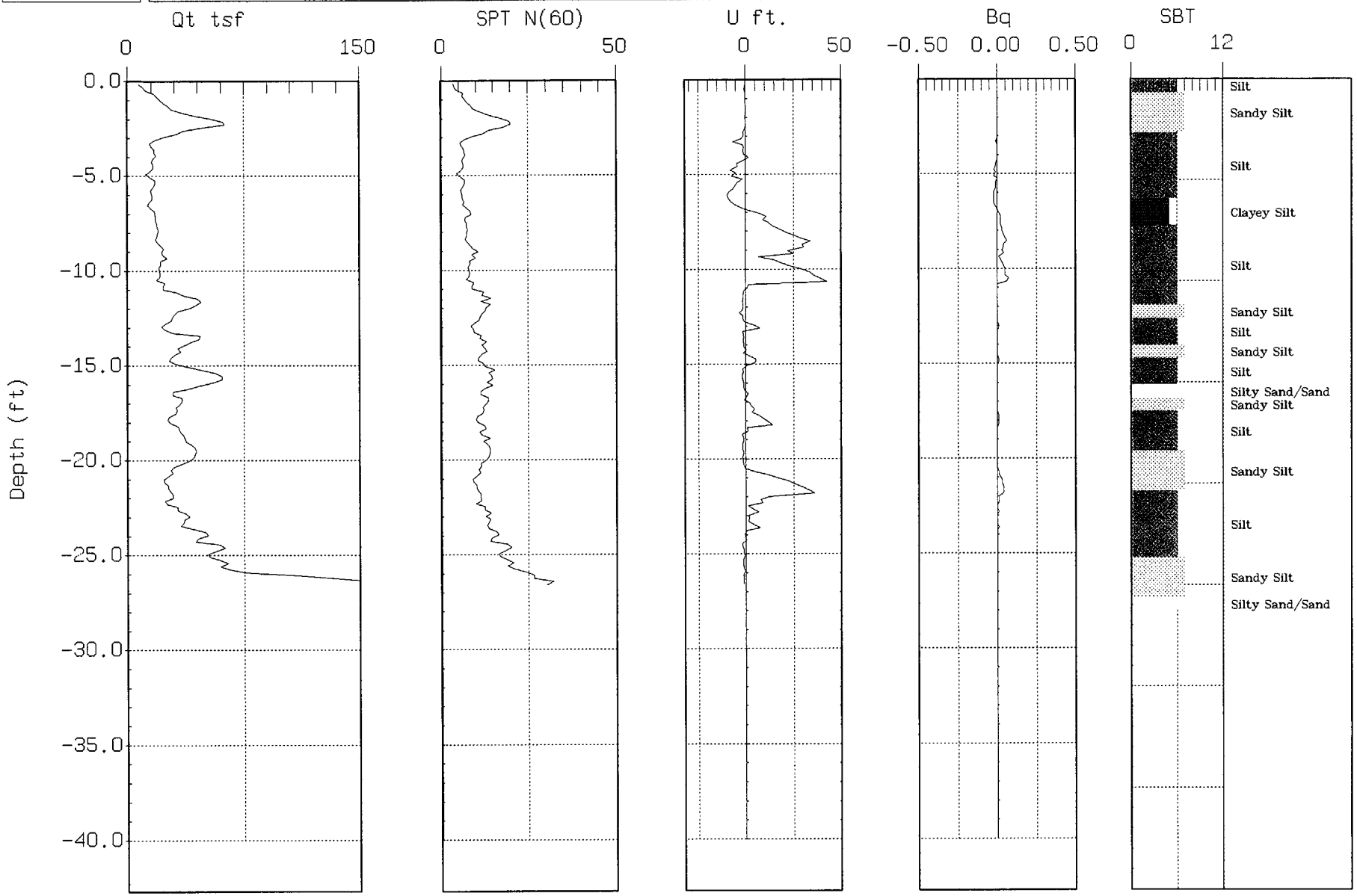
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-16
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 14:30



Max. Depth: 26.57 (ft)

Depth Inc.: 0.164 (ft)

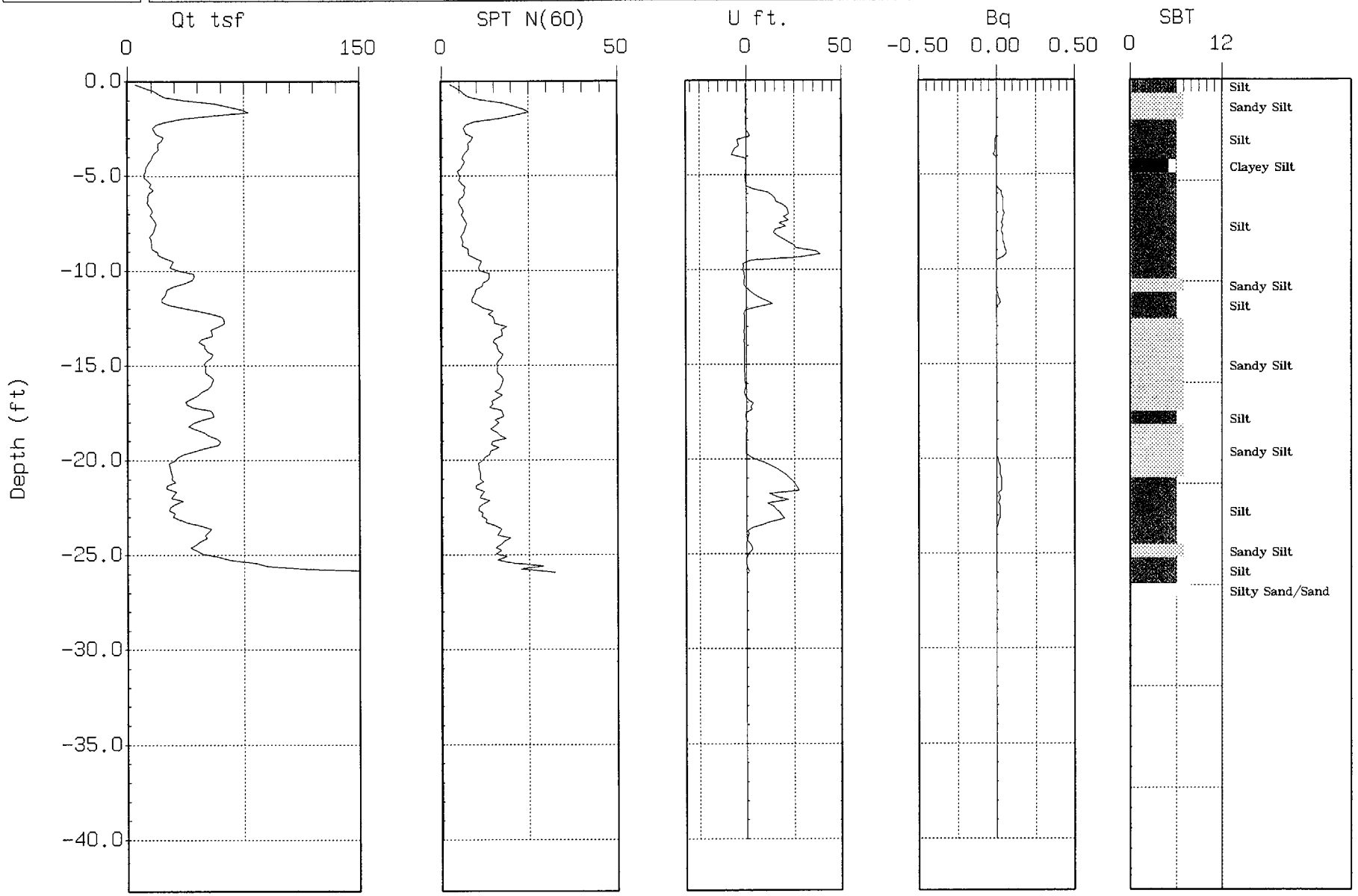
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-17
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 15:39



Max. Depth: 25.92 (ft)

Depth Inc.: 0.164 (ft)

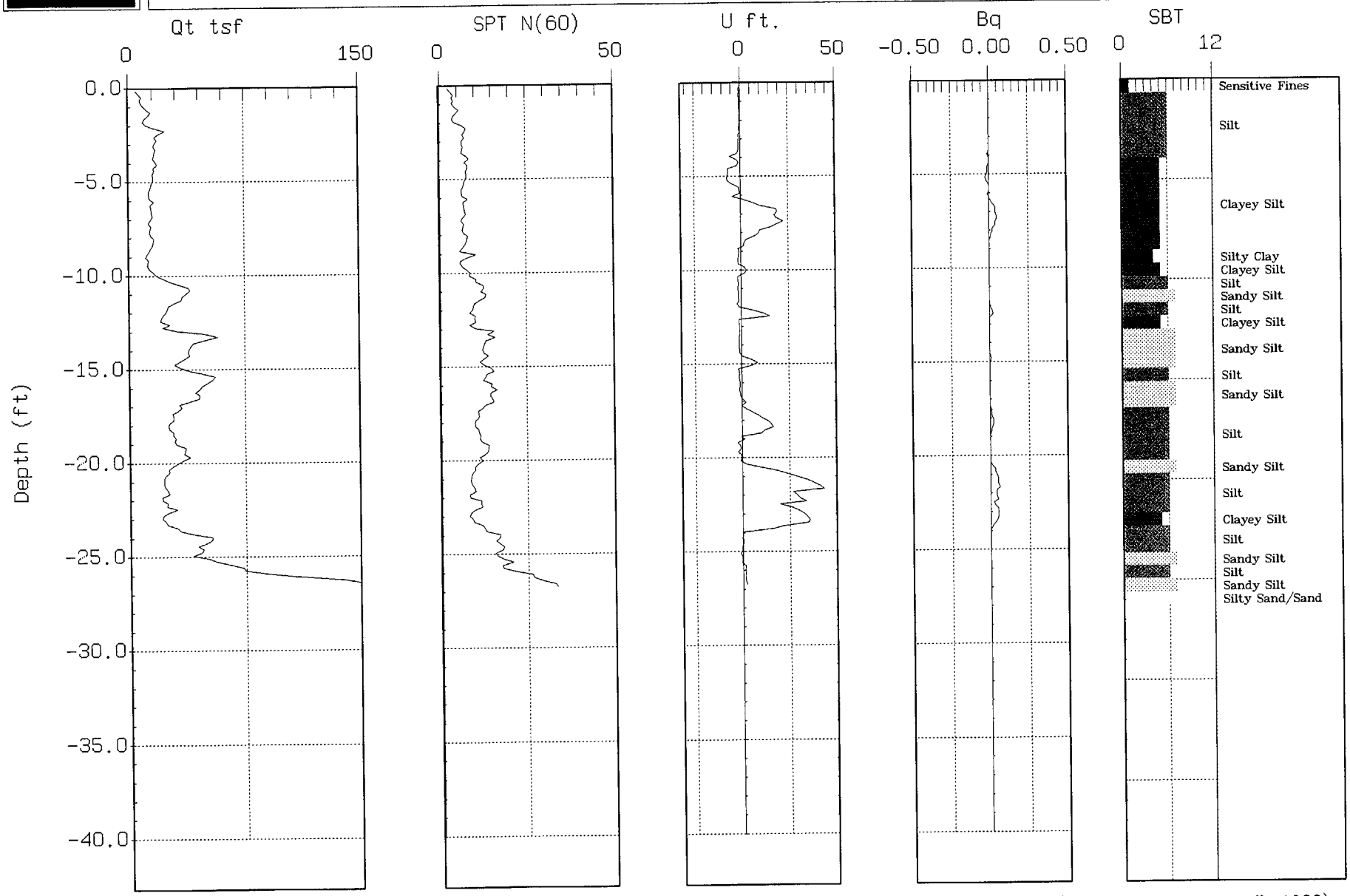
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-18
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 16:19



Max. Depth: 26.74 (ft)

Depth Inc.: 0.164 (ft)

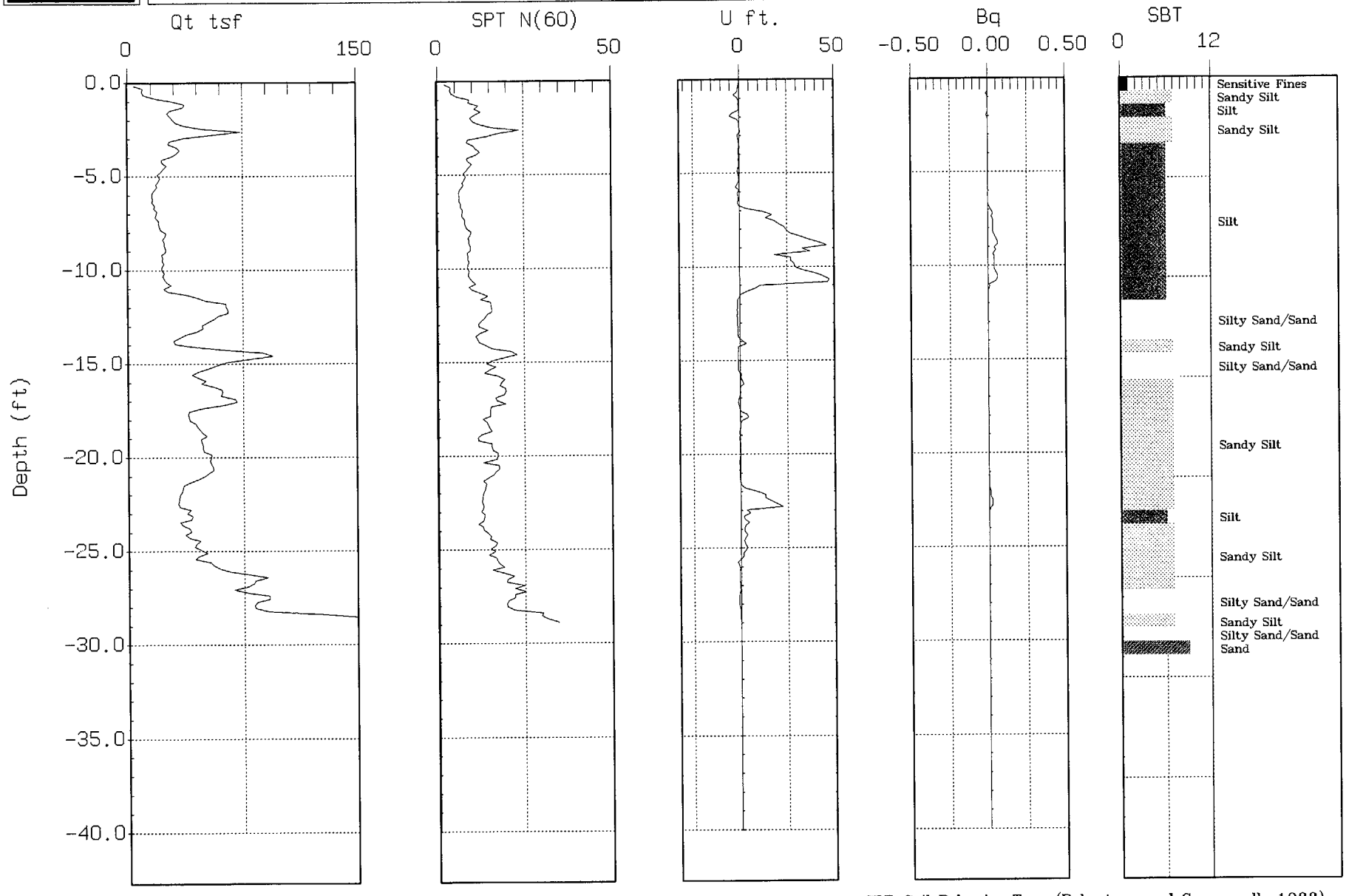
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-19
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 11:03



Max. Depth: 28.87 (ft)

Depth Inc.: 0.164 (ft)

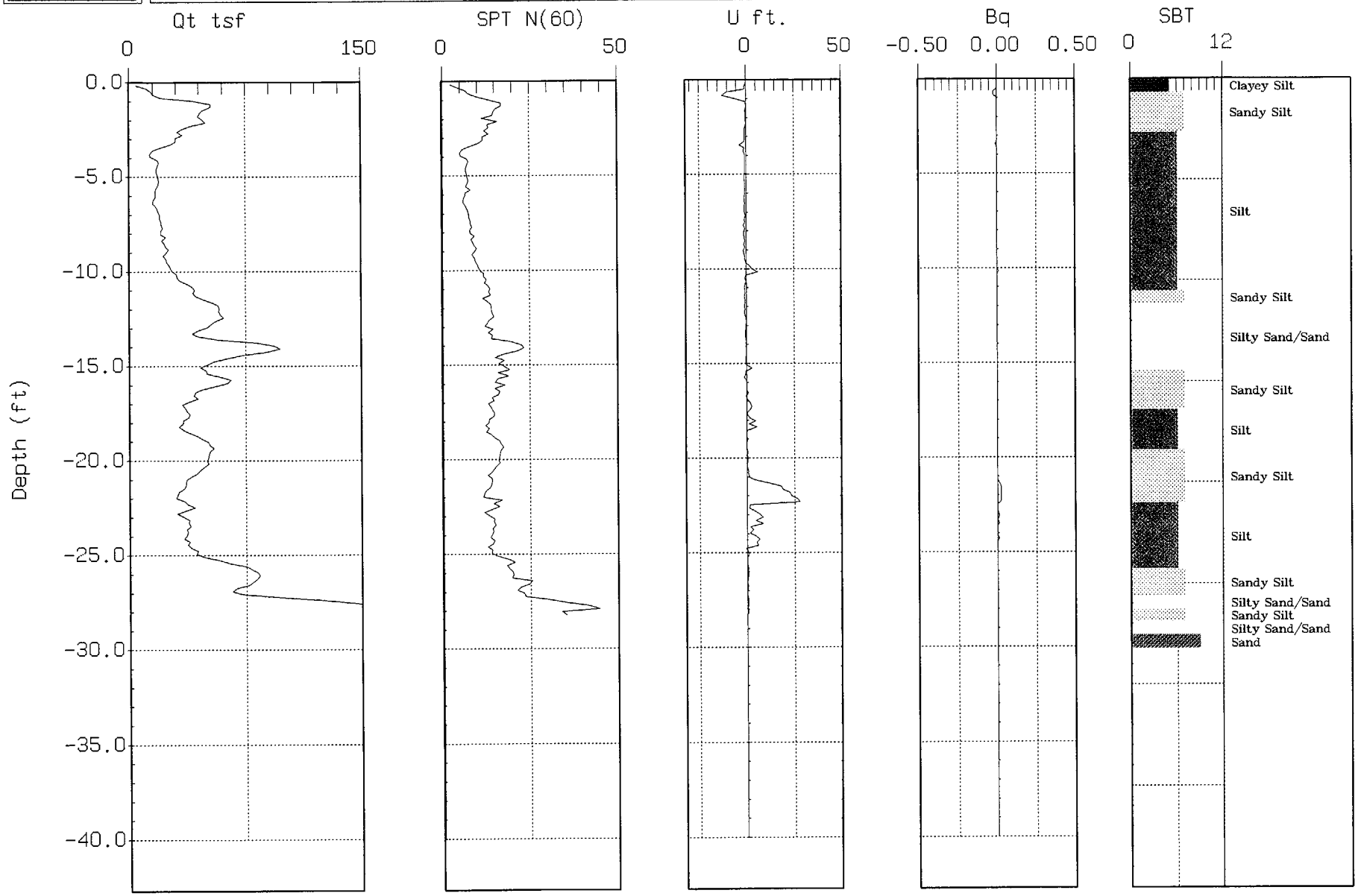
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-20
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 09:47



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

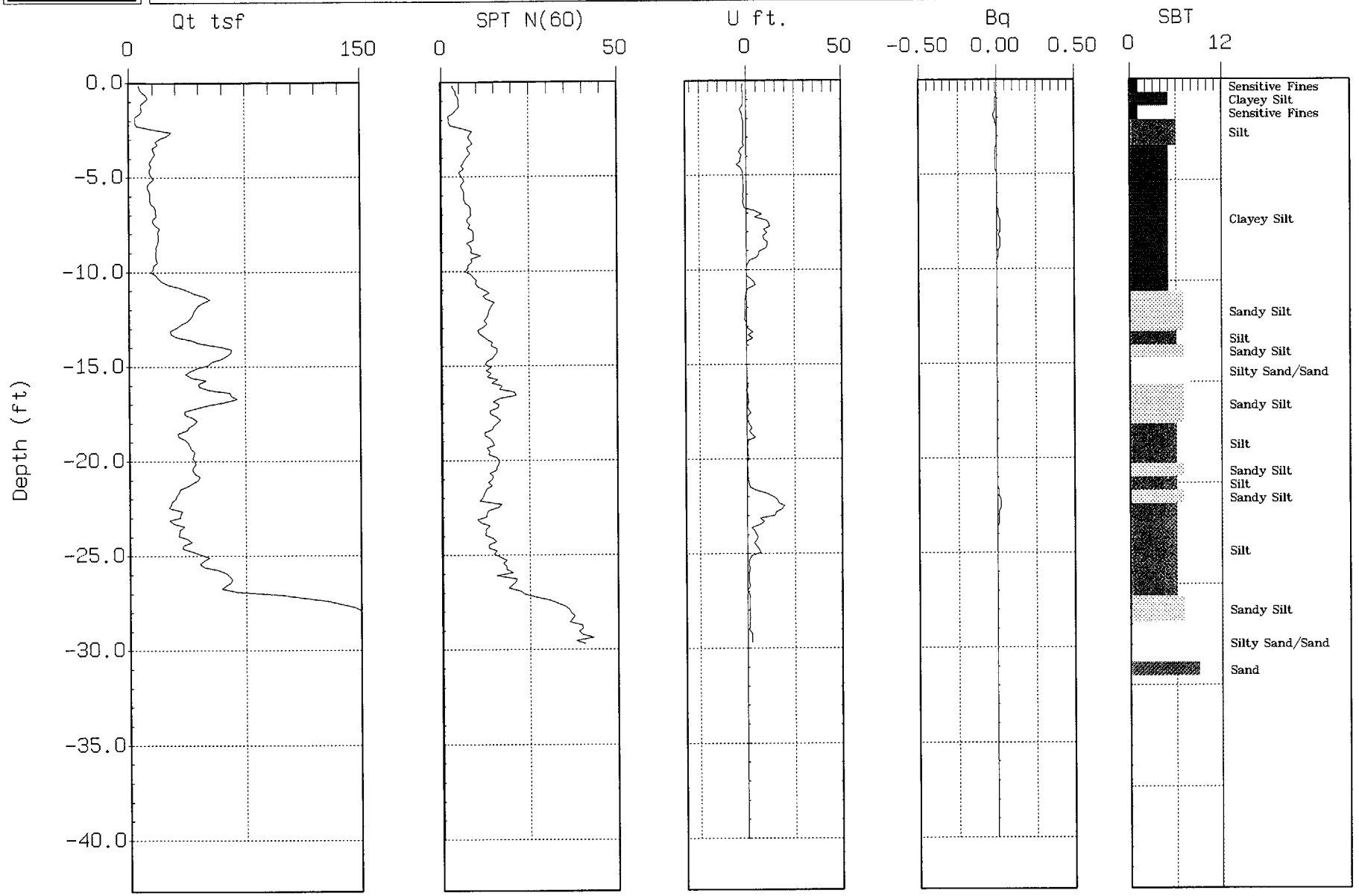
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-21
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 08:18



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

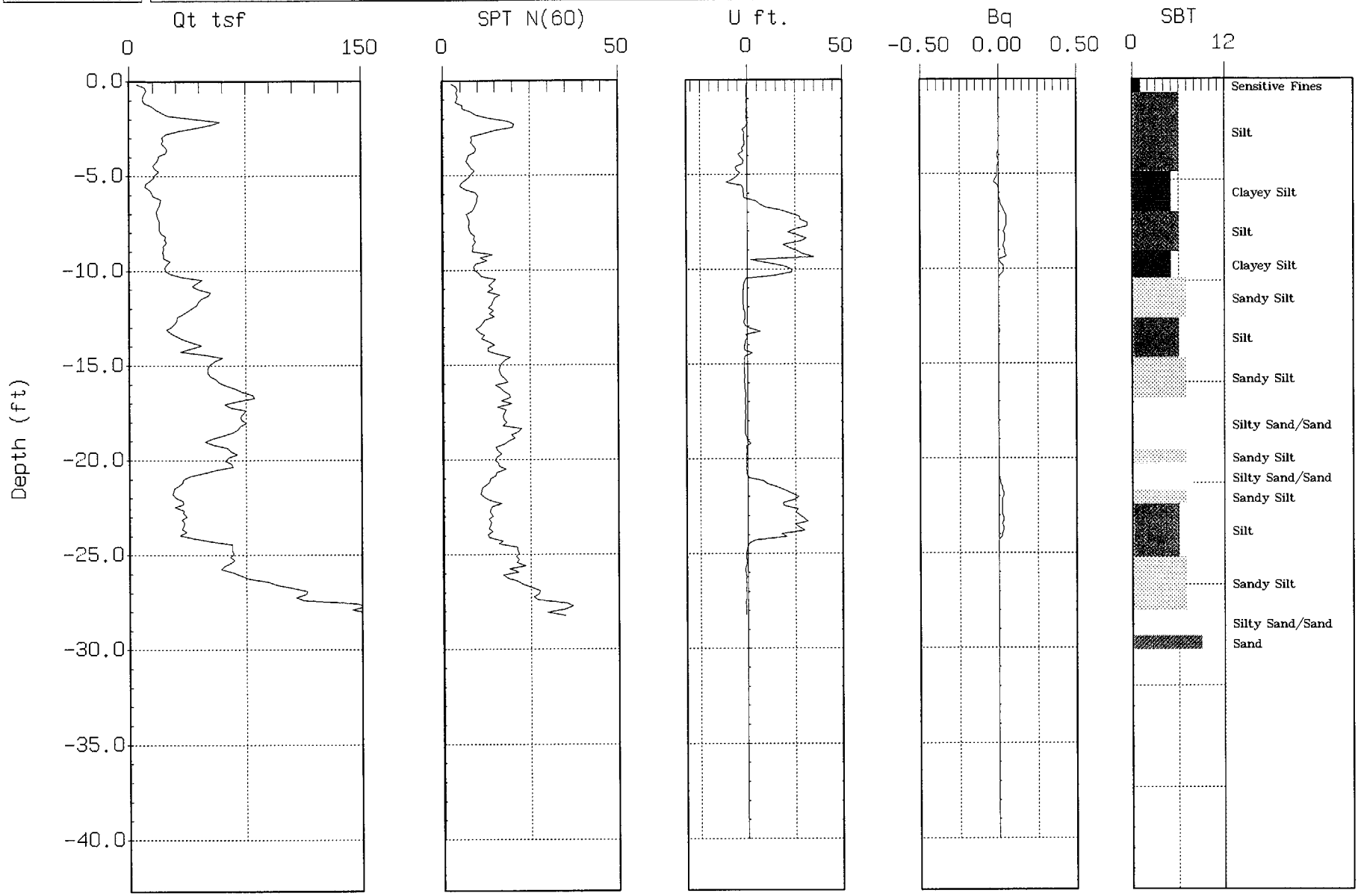
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-22
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 18:33



Max. Depth: 28.21 (ft)

Depth Inc.: 0.164 (ft)

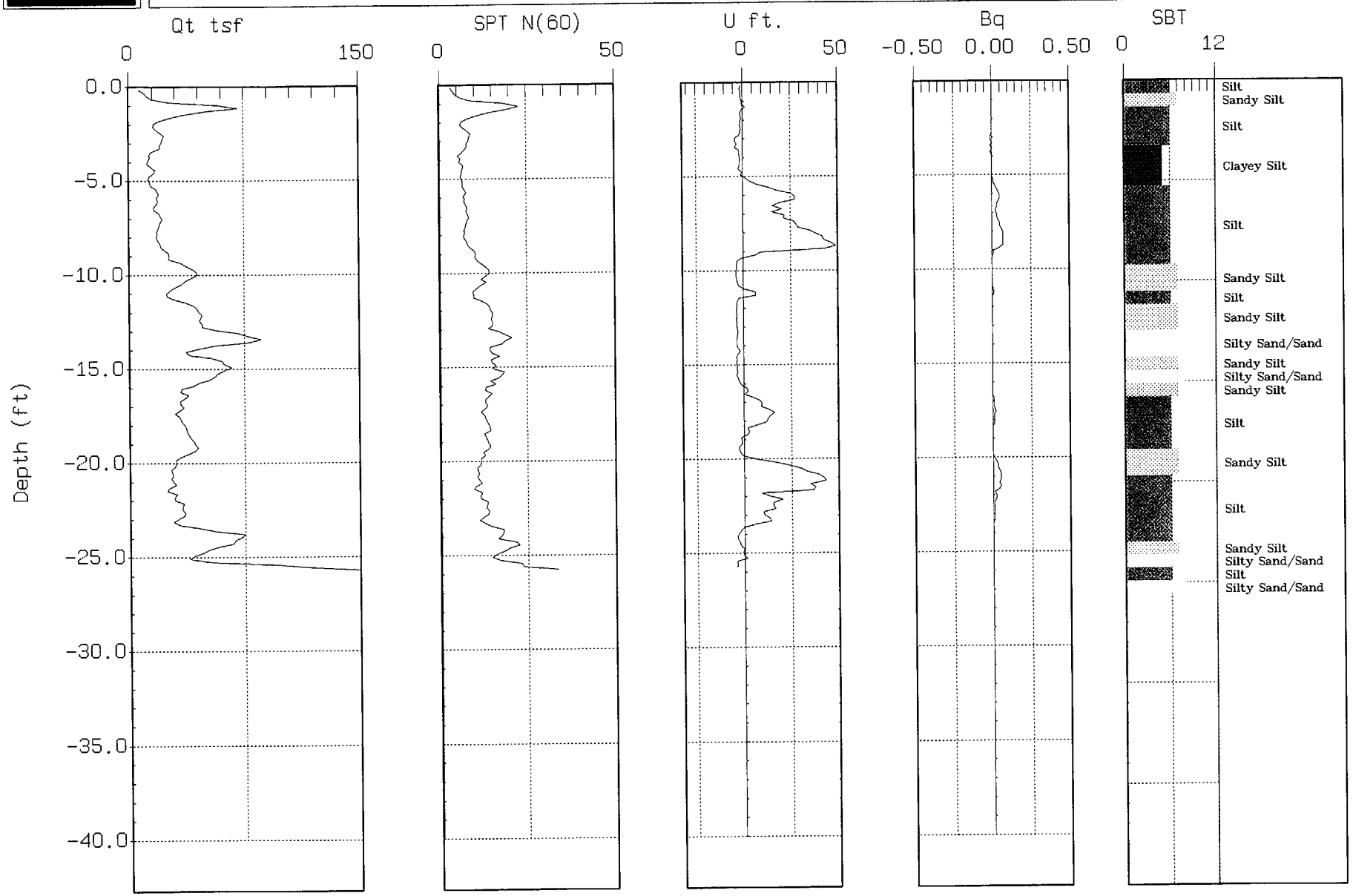
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-23
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 17:58



Max. Depth: 25.75 (ft)

Depth Inc.: 0.164 (ft)

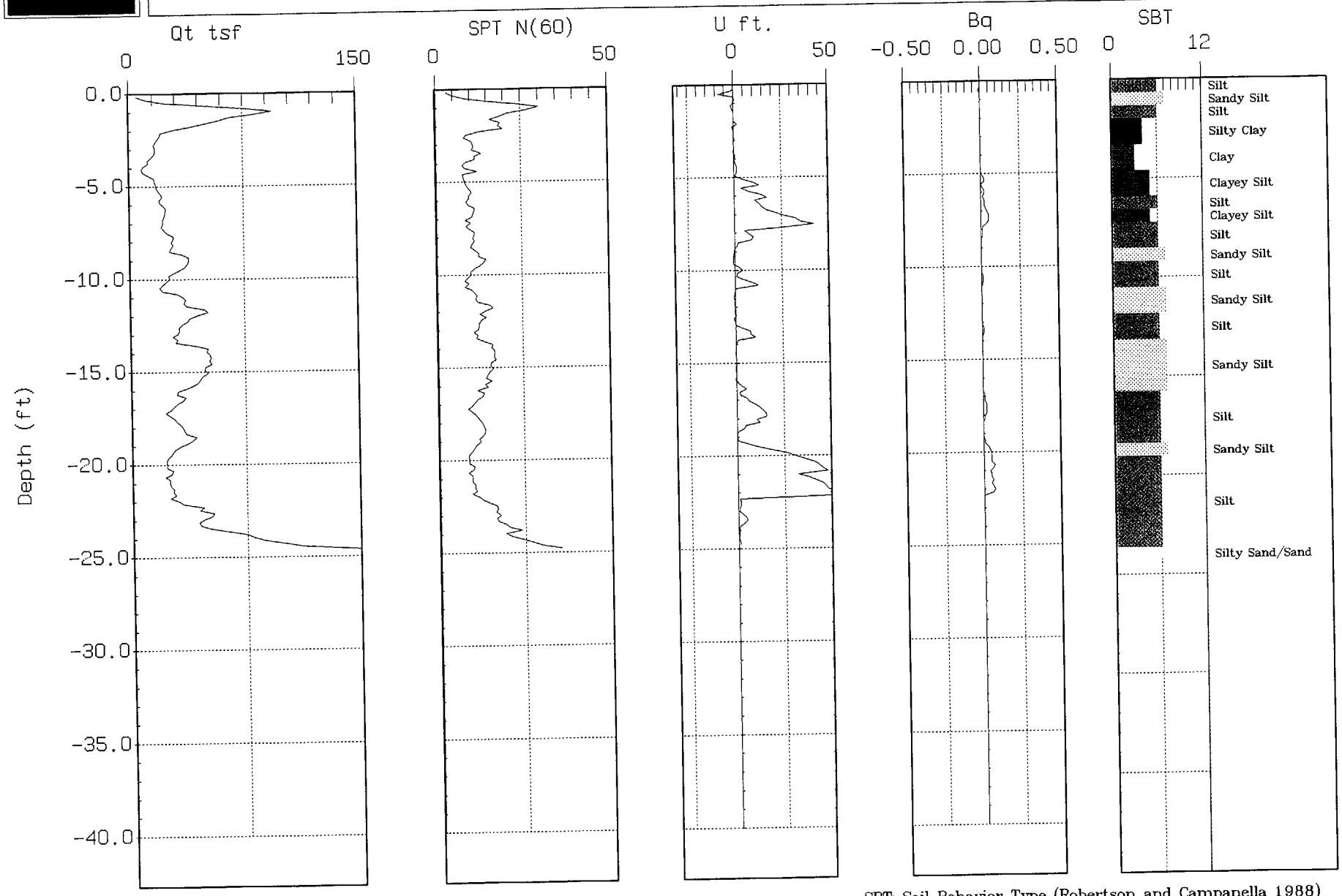
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-24
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:27:99 17:31



Max. Depth: 24.77 (ft)

Depth Inc.: 0.164 (ft)

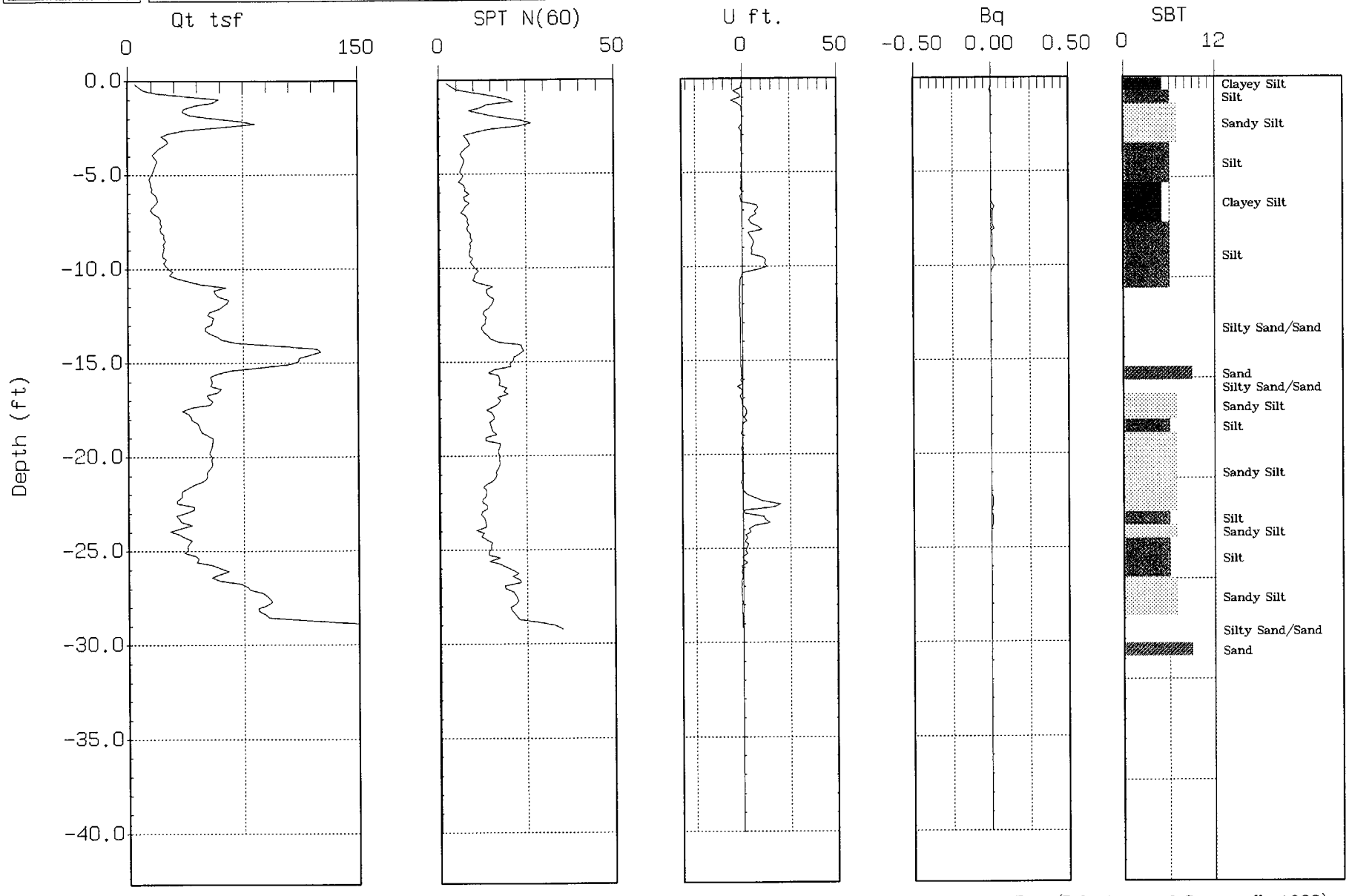
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-25
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 11:31



Max. Depth: 29.20 (ft)

Depth Inc.: 0.164 (ft)

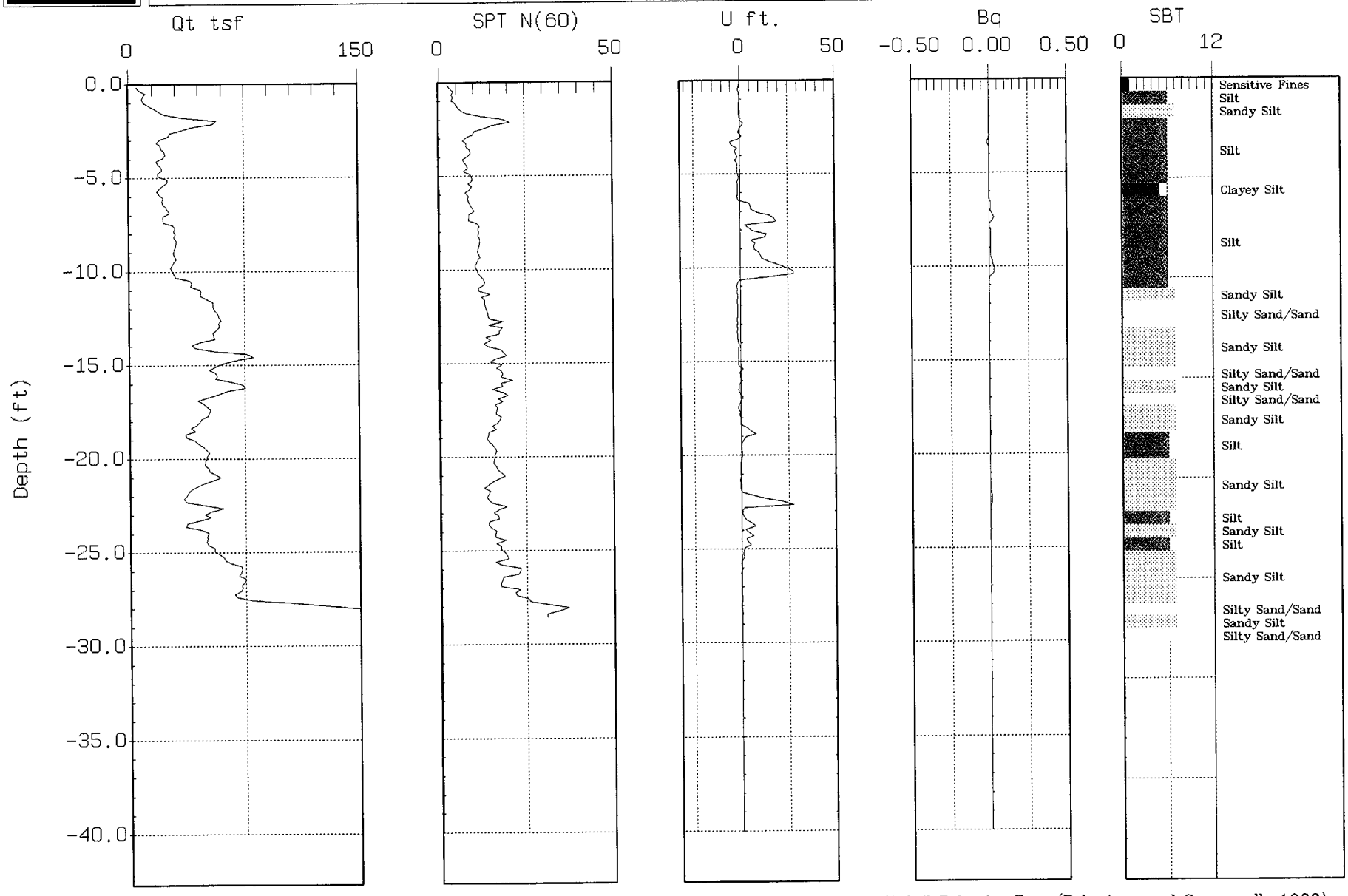
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-26
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:02



Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

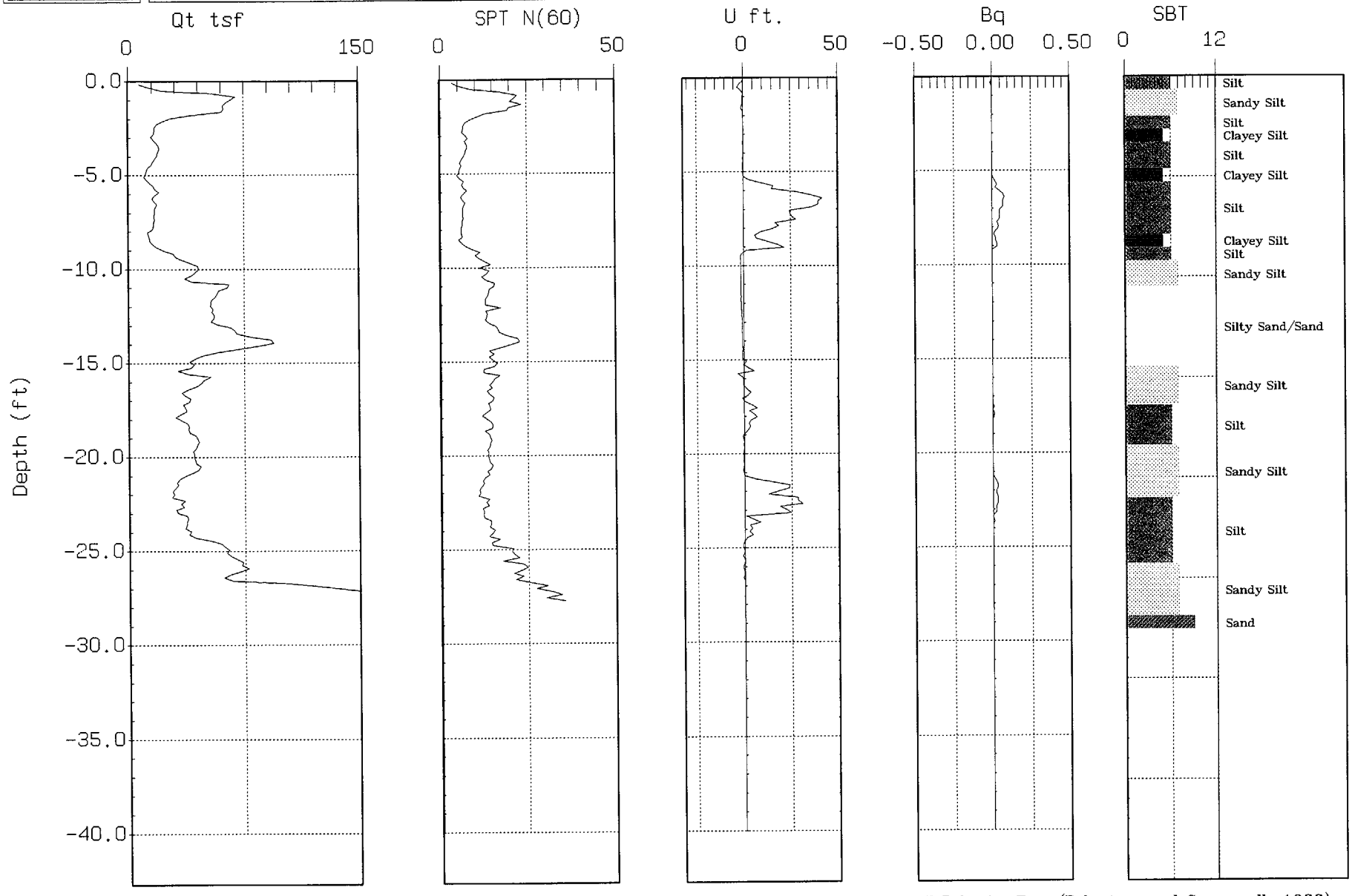
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-27
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:30



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

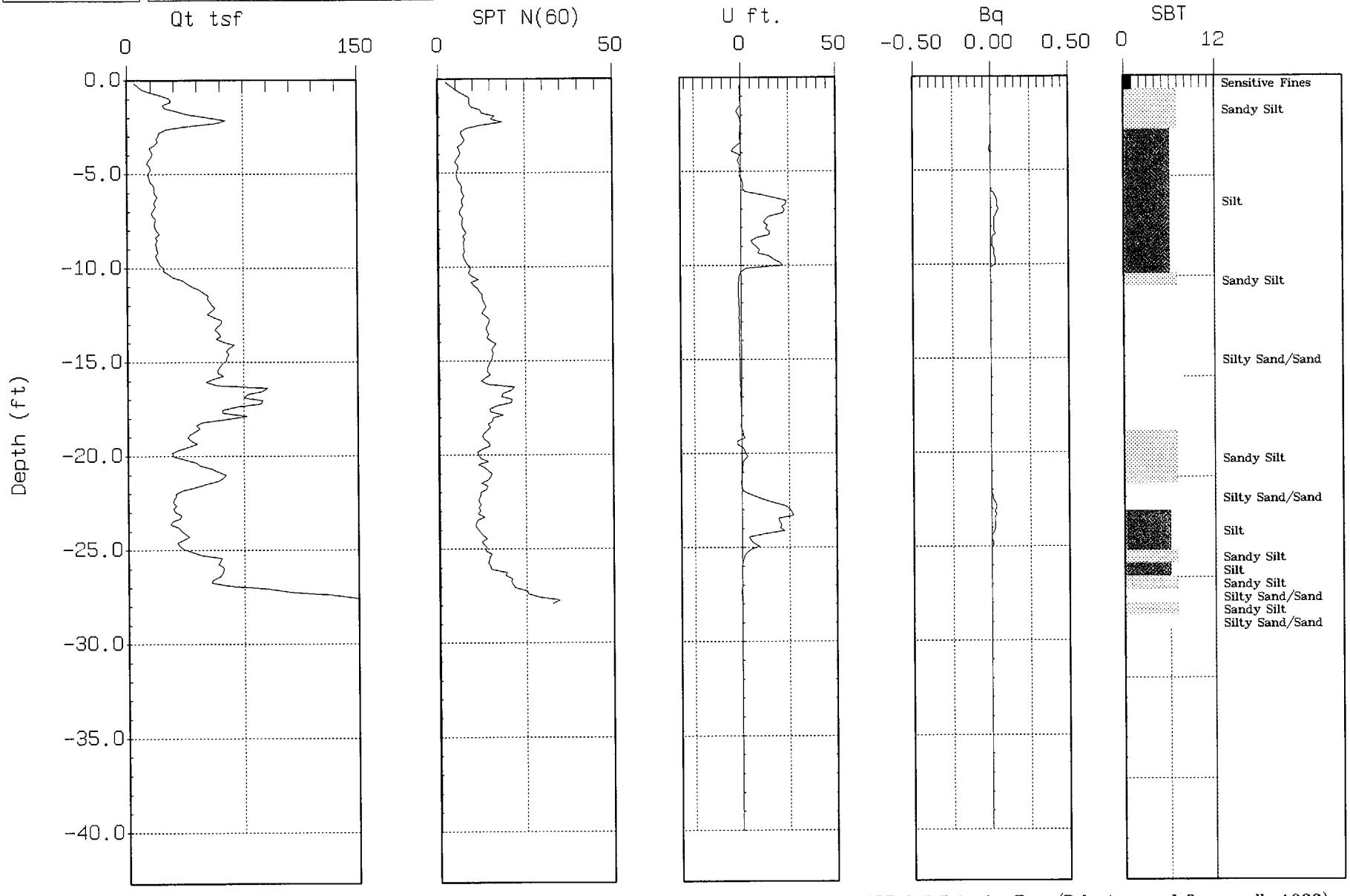
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-28
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 12:58



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

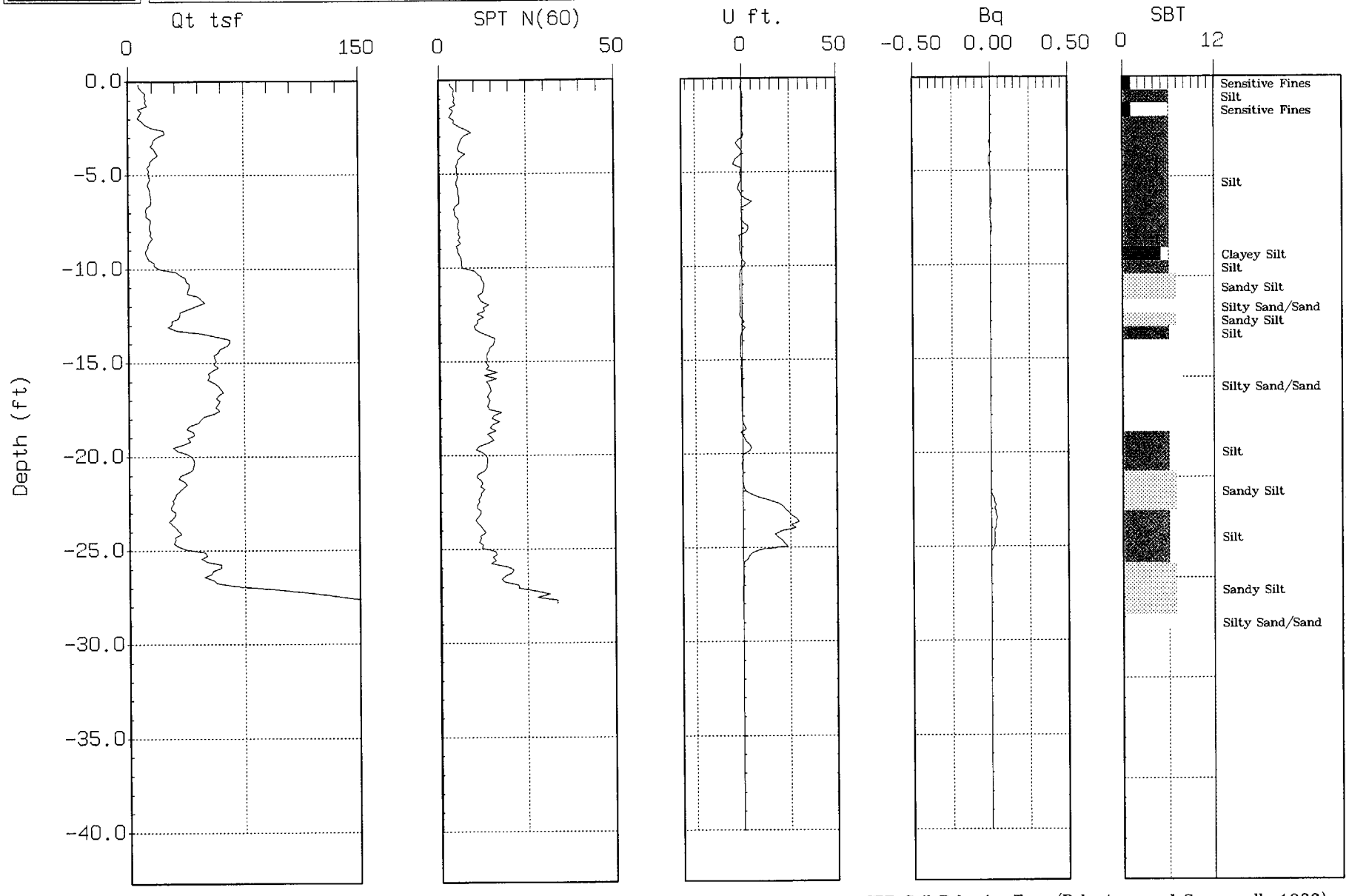
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-29
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 13:26



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

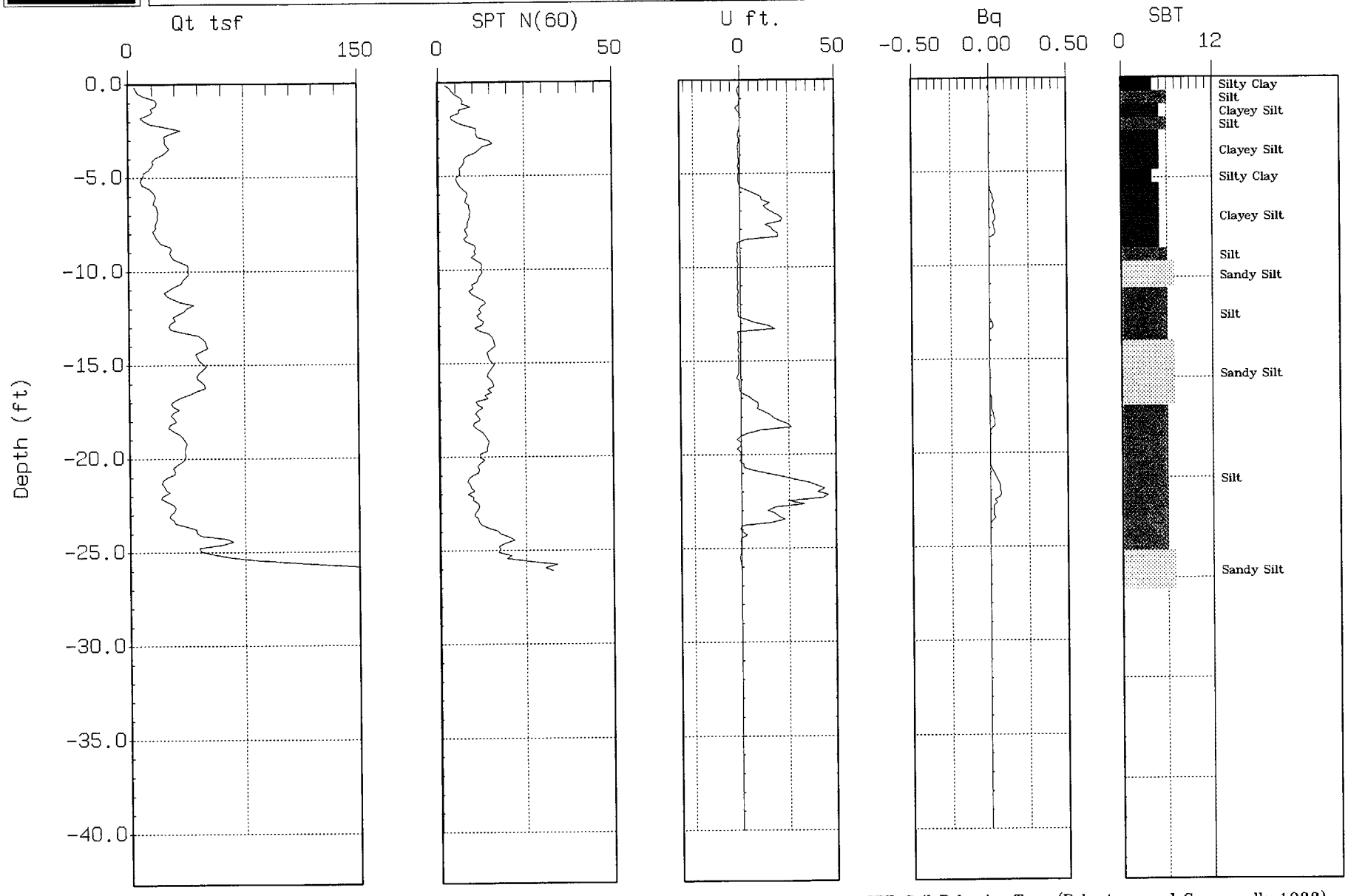
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-30
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 13:56



Max. Depth: 26.08 (ft)

Depth Inc.: 0.164 (ft)

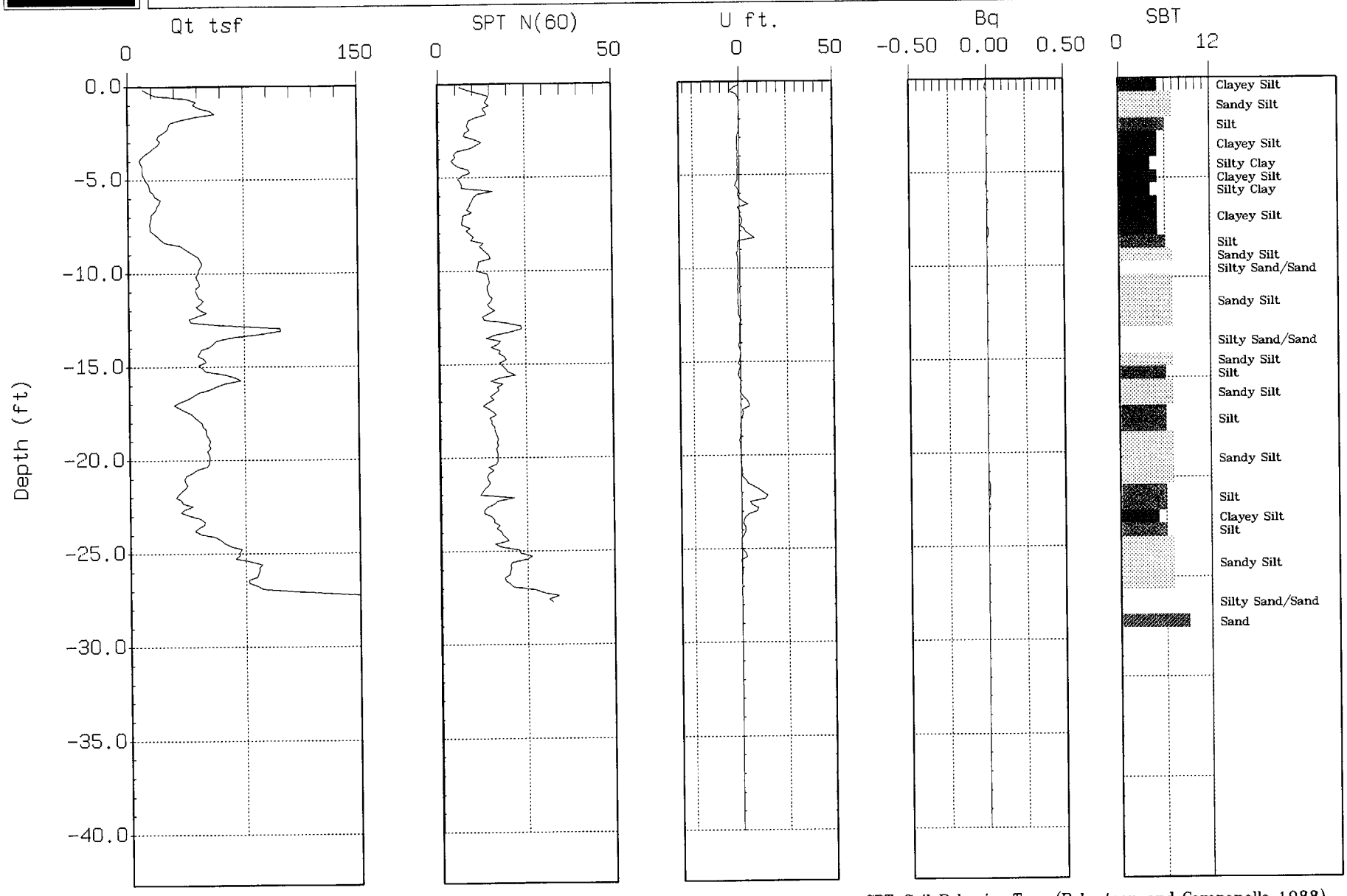
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-31
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 11:22



Max. Depth: 27.72 (ft)

Depth Inc.: 0.164 (ft)

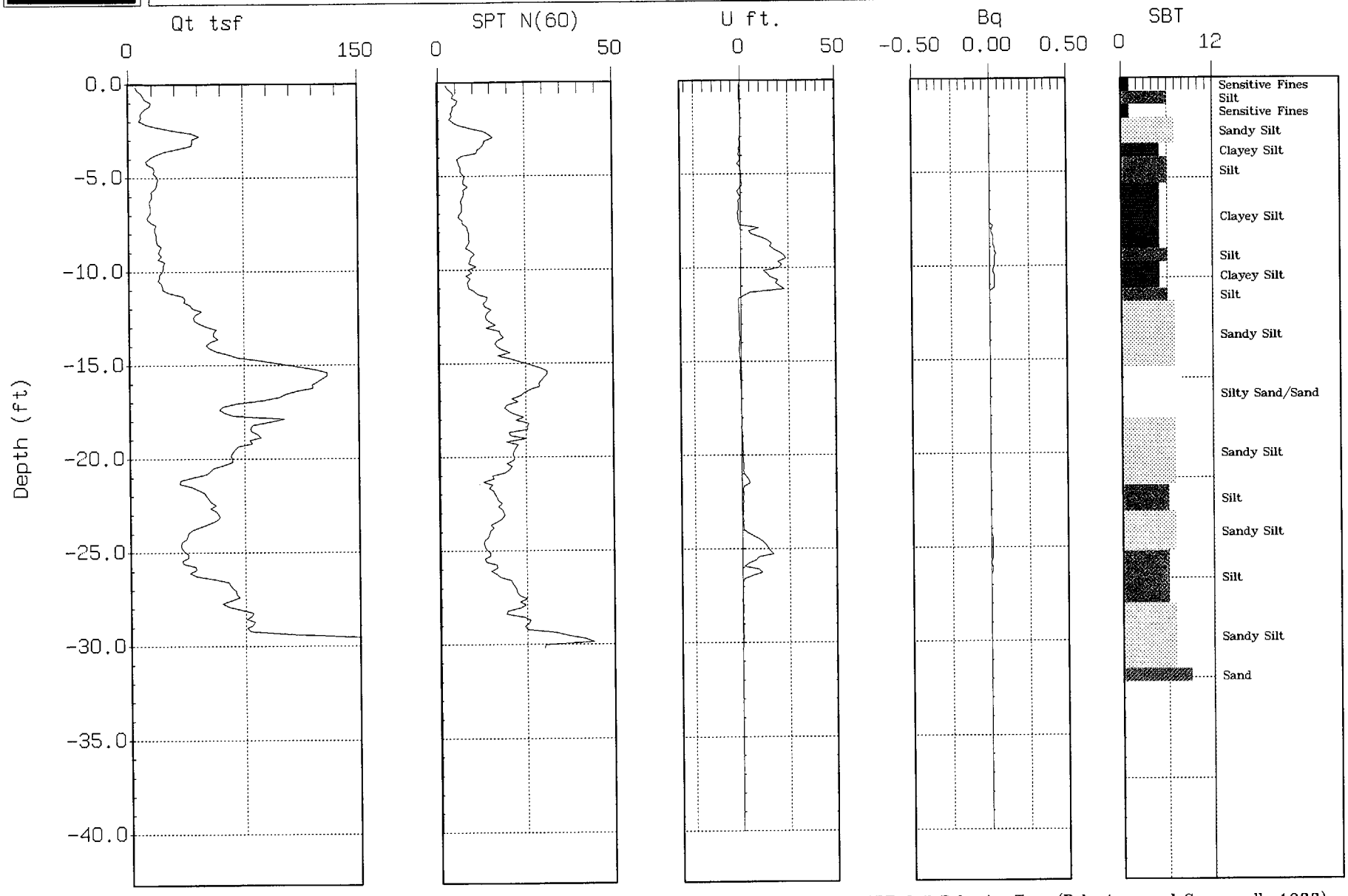
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-32
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 10:43



Max. Depth: 30.18 (ft)

Depth Inc.: 0.164 (ft)

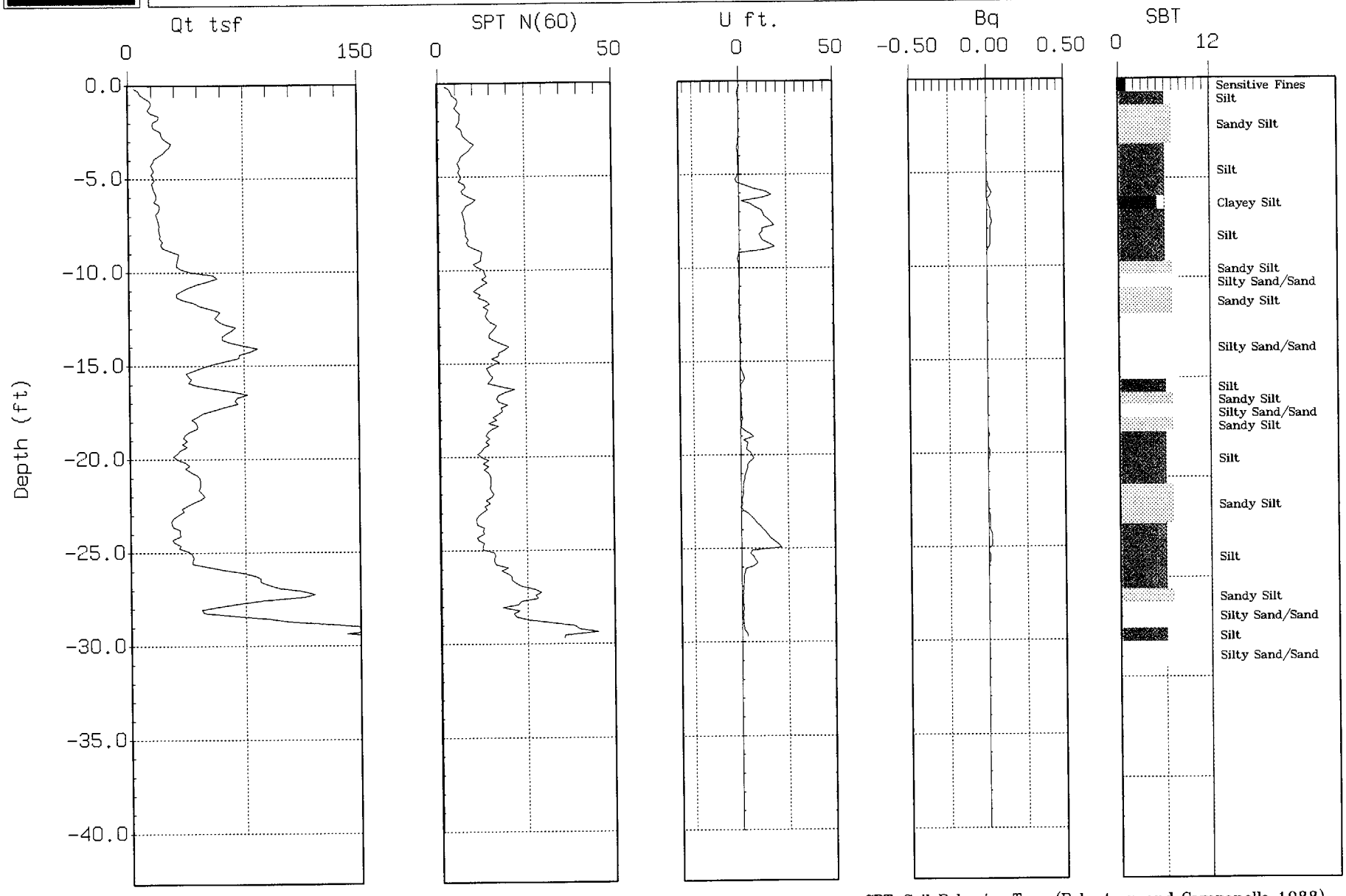
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-33
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 09:30



Max. Depth: 29.69 (ft)

Depth Inc.: 0.164 (ft)

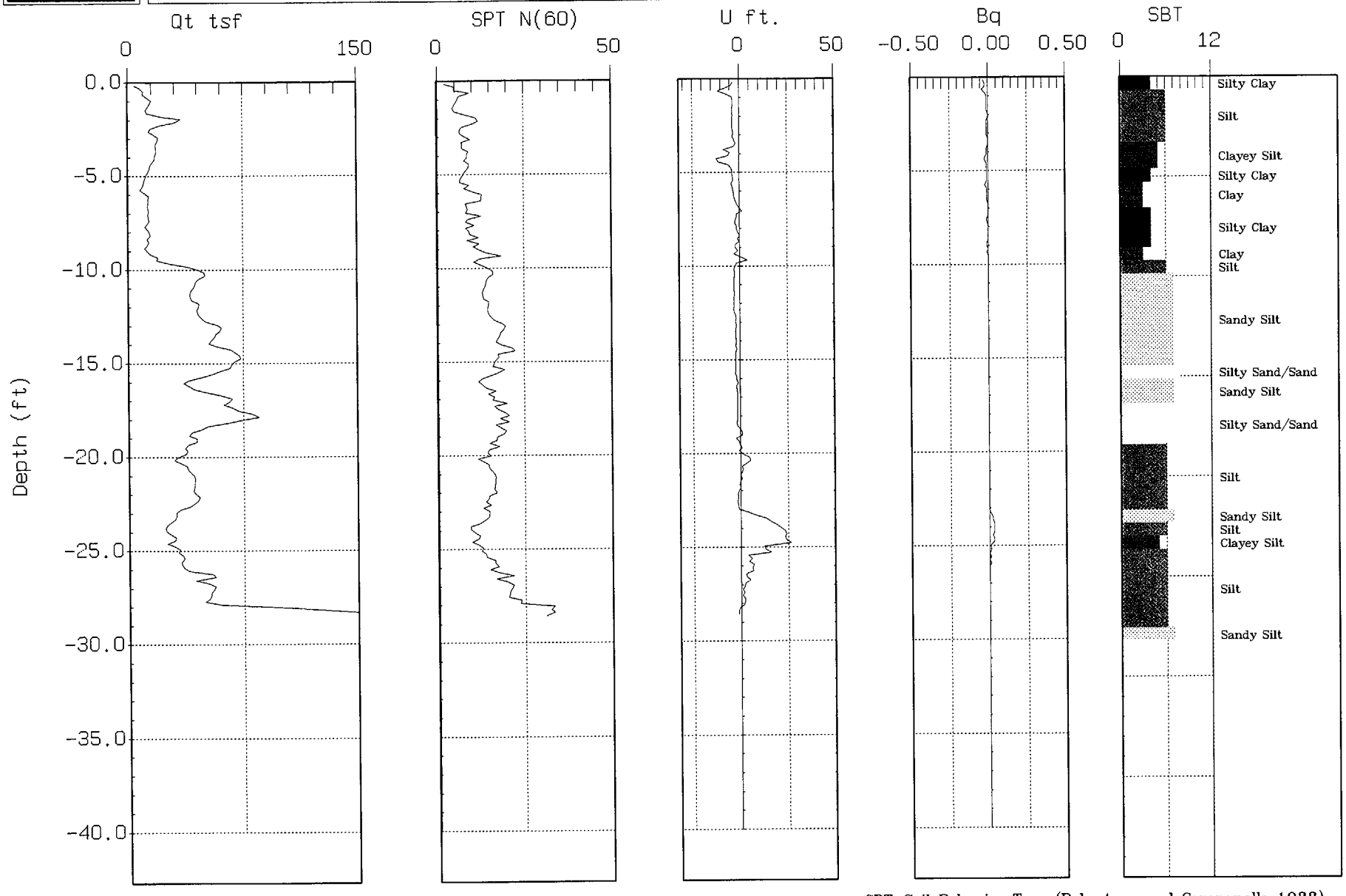
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-34
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 08:09



Max. Depth: 28.54 (ft)

Depth Inc.: 0.164 (ft)

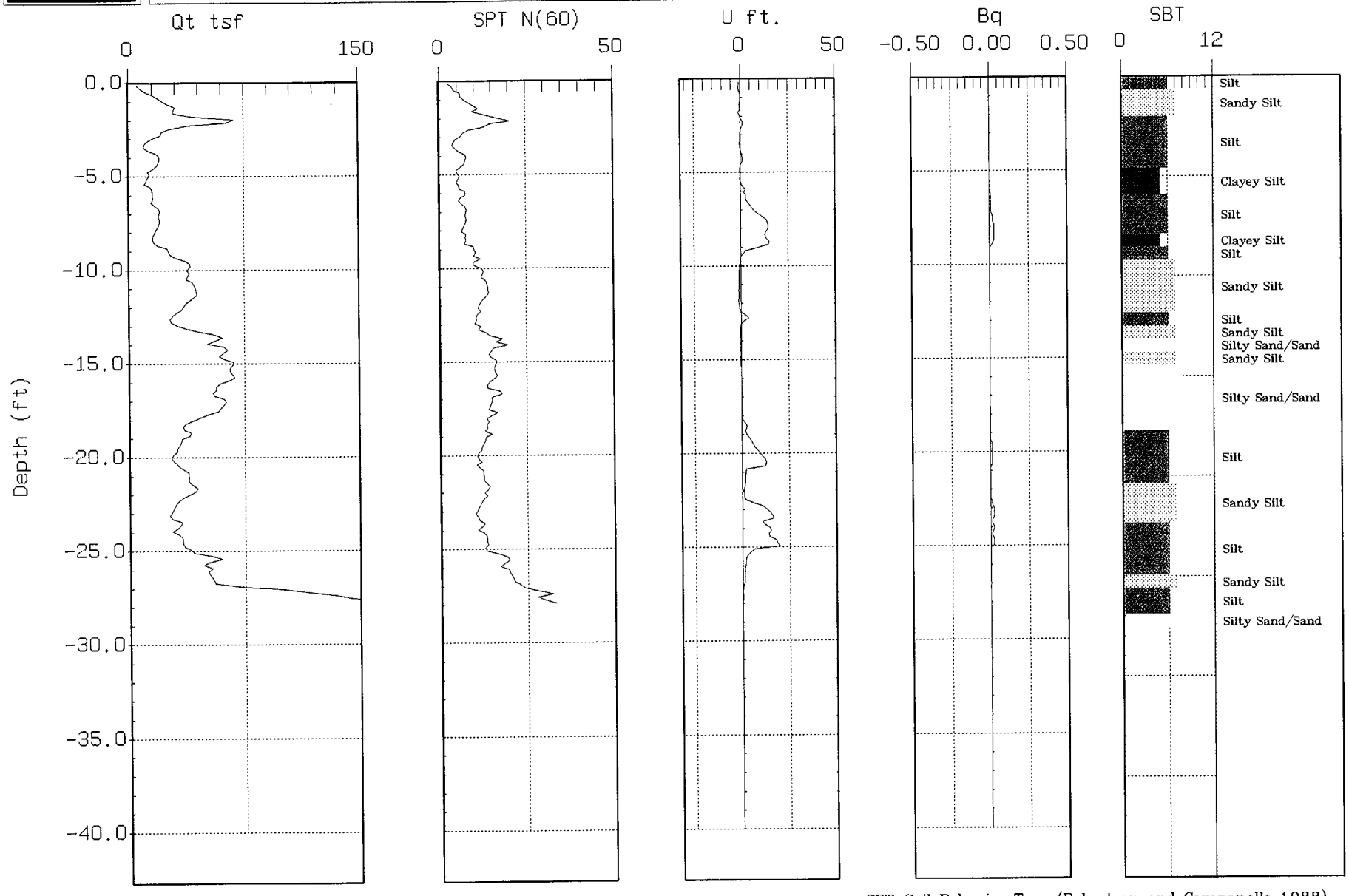
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-35
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 16:07



Max. Depth: 27.89 (ft)

Depth Inc.: 0.164 (ft)

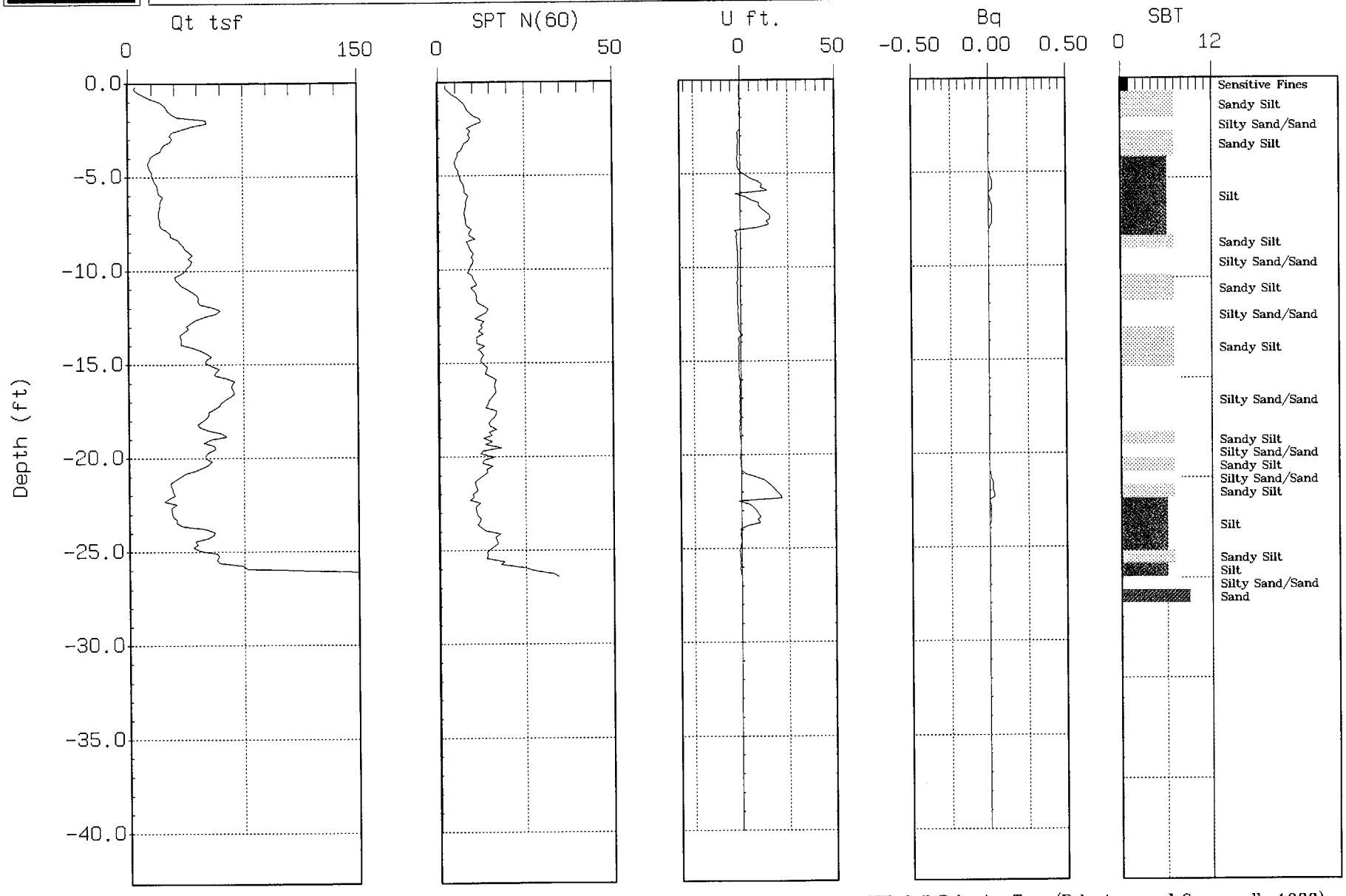
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-36
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:28:99 14:32



Max. Depth: 26.41 (ft)

Depth Inc.: 0.164 (ft)

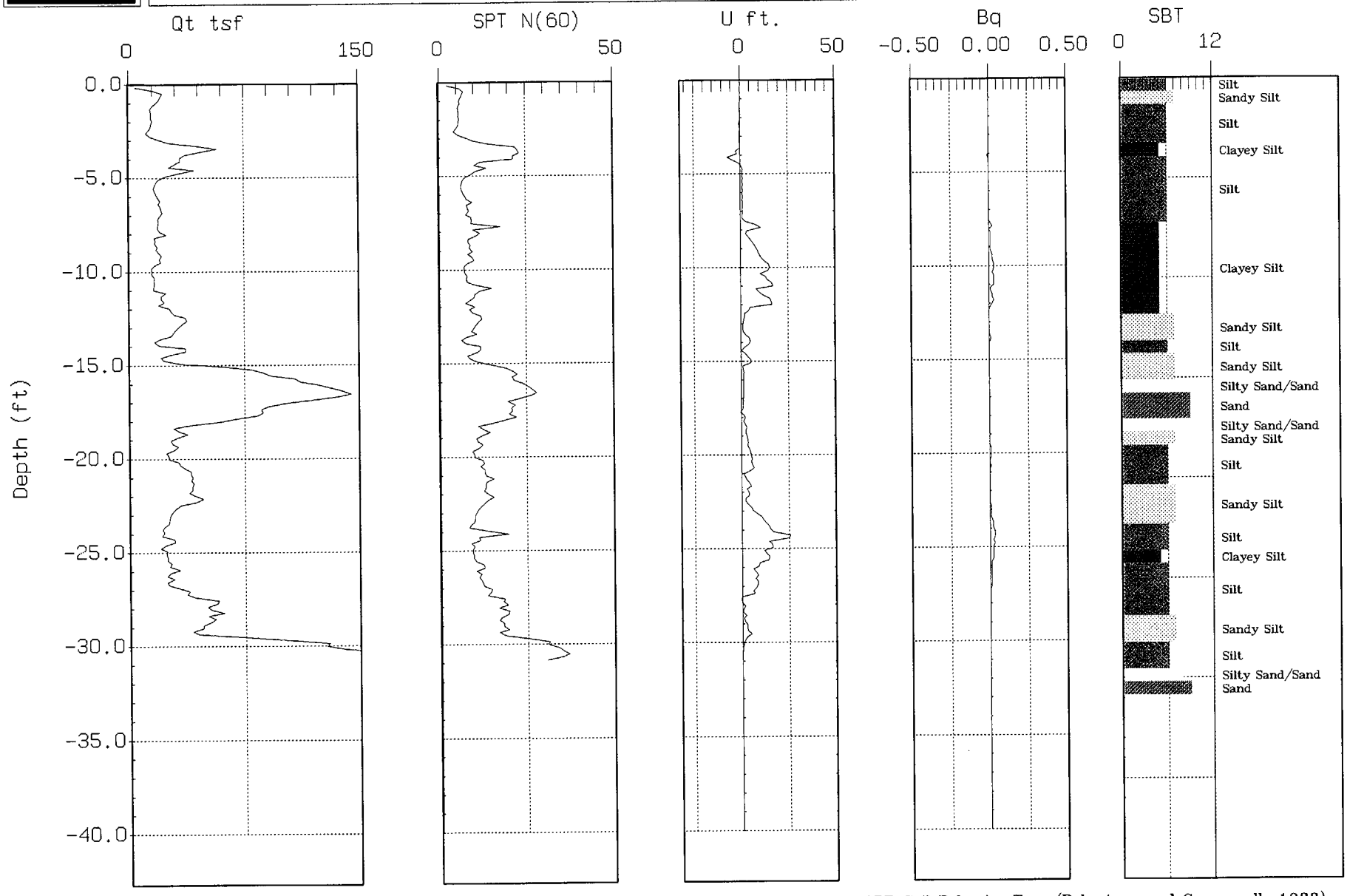
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-37
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 11:36



Max. Depth: 30.84 (ft)

Depth Inc.: 0.164 (ft)

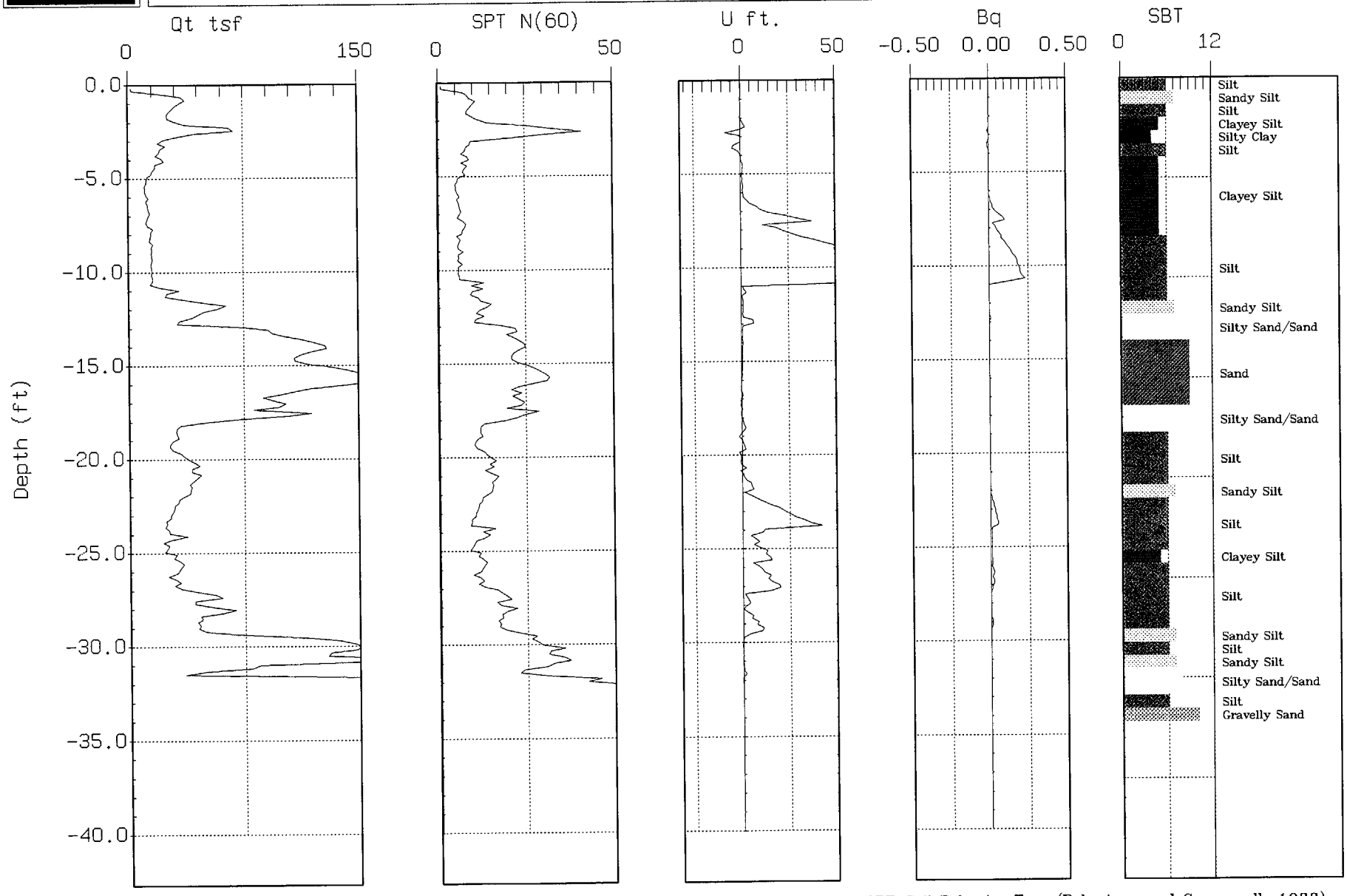
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-38
Location: PFSF (05996.02)

Cone: 20 TON A 041
Date: 04:23:99 15:06



Max. Depth: 32.15 (ft)

Depth Inc.: 0.164 (ft)

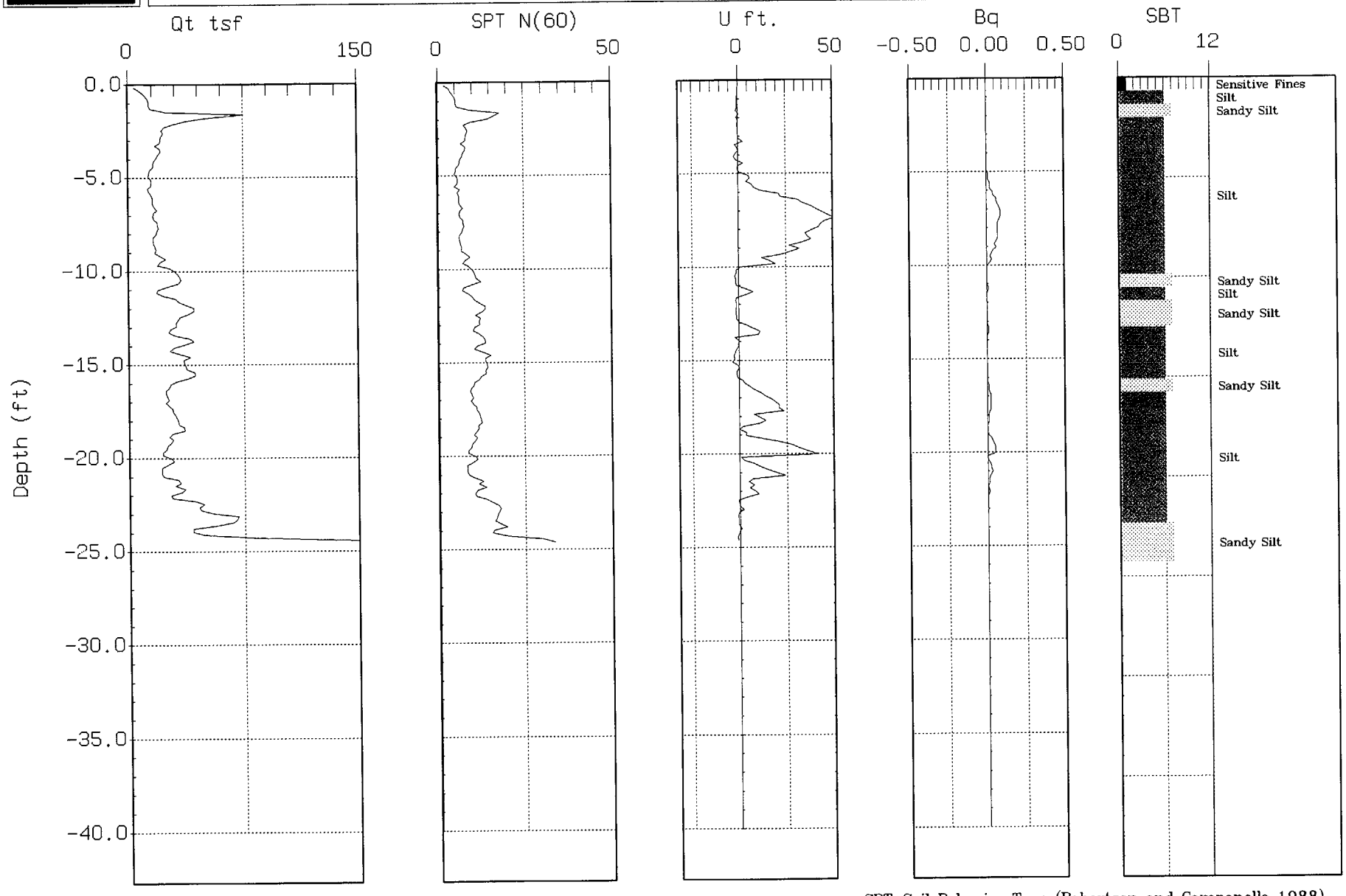
SBT: Soil Behavior Type (Robertson and Campanella 1988)

CONETEC

Stone & Webster

Site: CPT-39
Location: PFSF (05996.02)

Cone: 20 TON A 070
Date: 04:29:99 16:12



Max. Depth: 24.61 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)