Salmen
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7 March 2007

St. Tammany Parish School Board
Post Office Box 940
Covington, Louisiana 70434-0940

Attention Ms. Cameron Tipton

Ladies and Gentlemen:

Geotechnical Investigation
St. Tammany Parish School Board
Salmen High School
New School Facility
Slidell, Louisiana
Eustis Project No. 19615

Eustis Engineering Services, L.L.C., issued a report for the subject project dated 13 February 2007. We have revised the "Foundation Analyses" section of that report and added additional information regarding drainage. Please discard all reports dated 13 February and replace with the enclosed revised report.

We apologize for any inconvenience this may have caused.

Yours very truly,

EUSTIS ENGINEERING SERVICES, L.L.C.

GWENDOLYN PHILIPS SANDERS, P.E.

STATE OF LOUISIANA
GWENDOLYN P. SANDERS
REG. NO. 27104
REGISTERED
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Salmen High School
New School Facility
Slidell, Louisiana
Eustis Project No. 19615

Transmitted are two copies (one bound and one unbound) of our engineering report covering a geotechnical investigation for the subject project. One copy is being forwarded to Fauntleroy & Latham Architects, A.P.C., Covington, Louisiana, to the attention of Mr. Ken Sprague; Schrenk & Peterson Consulting Engineering, Inc., New Orleans, Louisiana, to the attention of Mr. John Endom; and Pinnacle Engineering, LLC, Covington, Louisiana, to the attention of Mr. Daniel Harper. Electronic copies of this report are also being forwarded.

Thank you for asking us to perform these services.

Yours very truly,

EUSTIS ENGINEERING SERVICES, L.L.C.

GWENDOLYN PHILIPS SANDERS, P.E.

STATE OF LOUISIANA
GWENDOLYN P. SANDERS
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GEOTECHNICAL INVESTIGATION

ST. TAMMANY PARISH SCHOOL BOARD

SALMEN HIGH SCHOOL

NEW SCHOOL FACILITY

SLIDELL, LOUISIANA

EUSTIS PROJECT NO. 19615

FOR
ST. TAMMANY PARISH SCHOOL BOARD
COVINGTON, LOUISIANA

FAUNTLEROY & LATHAM ARCHITECTS, A.P.C.
COVINGTON, LOUISIANA

SCHRENK & PETERSON CONSULTING ENGINEERS, INC.
NEW ORLEANS, LOUISIANA

PINNACLE ENGINEERING, LLC
COVINGTON, LOUISIANA

By
Eustis Engineering Services, L.L.C.
Metairie, Louisiana

7 MARCH 2007

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NEW SCHOOL FACILITY
SLIDELL, LOUISIANA
EUSTIS PROJECT NO. 19615

INTRODUCTION

1. This report contains the results of a geotechnical investigation performed for the new school facility for Salmen High School to be located near Spartan Drive in Slidell, Louisiana. The investigation was performed in general accordance with Eustis Engineering Services, L.L.C.'s proposal dated 29 November 2006. Written authorization to proceed was given in a letter dated 6 December 2006 from Ms. Cameron Tipton, Lead Construction Supervisor with the St. Tammany Parish School Board. Fauntleroy & Latham Architects, A.P.C., is the project architect, Pinnacle Engineering, LLC, is the civil engineer, and Schrenk & Peterson Consulting Engineers, Inc., is the structural engineer for the project.

2. This report has been prepared in accordance with generally accepted geotechnical engineering practice for the exclusive use of the St. Tammany Parish School Board, Fauntleroy & Latham, Pinnacle Engineering, Schrenk & Peterson, and their designated representatives for specific application to the subject site. In the event of any changes in the nature, design, or location of the proposed structures, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified and verified in writing. Should these data be used by anyone other than the St. Tammany Parish School Board, Fauntleroy & Latham, Pinnacle Engineering, Schrenk & Peterson, and their designated representatives, they should contact

Eustis for interpretation of data and to secure any other information pertinent to this project.

3. The analyses and recommendations contained in this report are based in part on data obtained from the soil borings and cone penetrometer tests. The nature and extent of variations in subsoil conditions between and away from the boring and CPT locations may not become evident until construction. If variations then appear, it will be necessary to reevaluate the recommendations contained in this report.

4. Recommendations and conclusions contained in this report are to some degree subjective and should only be used for design purposes. This report should not be included in the contract plans and specifications. However, the results of the soil borings, laboratory tests, and CPTs contained in the Appendices of this report may be included in the plans and specifications.

SCOPE

5. The investigation included the drilling of soil test borings to evaluate subsoil conditions and stratification, and to obtain samples of the various substrata. Our scope also included the performance of CPTs to augment the borings and further assess the subsurface conditions and stratigraphy. Soil mechanics laboratory tests, performed on samples obtained from the borings, were used to determine the physical properties of the subsoils. Engineering analyses, based on the soil borings, laboratory tests, and CPTs, were made to determine recommendations regarding site preparation, drainage, placement and compaction of fill, determinations of Site Class in accordance with the 2006 International Building Code, Table 1615.1.1, and components and thicknesses for flexible, rigid, and aggregate pavements. Analyses were made to estimate allowable soil bearing values, allowable pile load capacities, and settlement. Construction recommendations were also made relative to these evaluations.

6. It should be noted the scope of this work does not include the investigation or detection of biological pollutants at the site. The term "biological pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, viruses, and the byproducts of any such biological organisms.

FIELD INVESTIGATION

General

7. Seven undisturbed sample type soil test borings and six auger borings were made at the site between 3 and 6 January 2007. The undisturbed borings are designated as B-1 through B-7. These borings were made to a depth of 55 feet below the existing ground surface. The auger borings, designated as A-1 through A-5, were each 6 feet in depth. Twenty-five CPTs were also made at the site on 19 through 28 December 2006. Fourteen of the CPTs extended to depths of 55 feet and the other 11 to the 6-ft depth below the existing ground surface. The CPTs are designated as CPT-1 through CPT-25. The locations of the borings/CPTs were indicated on the site plan furnished by Fauntleroy & Latham. The approximate locations of the borings and CPTs are shown on Figure 1.

8. Detailed descriptive logs of the borings and laboratory tests are shown in both tabular and graphical form in Appendix I. The results of the CPTs were plotted graphically with depth and are provided in Appendix II. Upon completion of drilling the borings and performing the CPTs, the holes were backfilled in accordance with current regulatory requirements.

Undisturbed Borings

9. The undisturbed soil borings were made with a rotary type drill rig mounted on an all-terrain vehicle. Undisturbed samples of cohesive or semi-cohesive subsoils were

obtained at close intervals or changes in stratum using a 3-in. diameter thinwall Shelby tube sampler. The samples were immediately extruded from the sampler, inspected, and visually classified by Eustis' soil technician. Pocket penetrometer tests were performed on the soil samples to give a general indication of their shear strength or consistency. The results of these tests are shown on the boring logs under the column heading "PP." Representative samples were then promptly placed in moisture proof containers and sealed for preservation of their natural moisture content.

Auger Borings

10. The auger borings were made with either an auger attached to the rear of the drill rig or with hand equipment. The subsoils were sampled directly from the auger blades at close intervals or changes in strata. These samples were sealed in plastic bags to preserve their natural moisture content.

Cone Penetrometer Tests

11. Twenty-five static CPTs were performed using an electronic piezocone penetrometer having a 5-ton capacity. This piezocone has a 10-cm^2 cross-sectional area with a 60° apex angled tip and a 150-cm^2 friction sleeve area. The sleeve friction is measured directly using a tension load cell. The testing was carried out in accordance with methods and procedures outlined in ASTM D 5778-95 (2000). The penetrometer was hydraulically advanced into the ground at a rate of 2 cm/sec. During cone penetrometer testing, CPT parameters (tip resistance, friction resistance, and pore pressure) were recorded at 5-cm depth intervals.

LABORATORY TESTS

12. Soil mechanics laboratory tests, consisting of natural water content, unit weight, and either unconfined compression shear (UC) or undrained triaxial compression shear (OB), were performed on samples obtained from the undisturbed borings. Samples obtained from the auger borings were visually classified and tested for their natural water content. In addition, Atterberg liquid and plastic limits tests were performed on selected representative samples to aid in classification of the subsoils and to give an indication of their relative compressibility and swelling potential. The results of the laboratory tests are summarized on the boring logs in Appendix I.

DESCRIPTION OF SUBSOIL CONDITIONS

Stratigraphy

13. A graphical representation of the stratigraphy can be found on the boring logs and CPT logs in the Appendices. The interpreted stratigraphy at the CPT locations are generally consistent of the stratigraphy identified by the borings. Clayey sand and sandy silt deposits predominate the surficial soils. Similarly, an intermediate silty sand to clayey sand layer was encountered at most of the deep boring and CPT locations between the approximate 30 and 40-ft depths, although the thickness and relative density of this layer varies as shown on the individual logs.

Ground Water

14. In order to determine the ground water conditions at the time of the field investigation, observations were made during the drilling of Boring A-6. No free water was observed during drilling to the proposed 6-ft depth; therefore, the boring was extended to a depth of 9 feet where free water was initially encountered. After

a period of approximately 24 hours, ground water was observed at a depth of 7 feet below grade.

15. The depth to ground water will vary with climatic conditions, drainage improvements, water levels in nearby canals and bayous, and other factors. The depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.

FOUNDATION ANALYSES

Furnished Information

16. Salmen High School was severely damaged during Hurricane Katrina. Since the hurricane, grade supported buildings on the school campus have been demolished and temporary classrooms have been installed. The new school facility will comprise raised structures in addition to approximately 400 parking spaces for the students and staff. The proposed layout of the project features and parking lots was furnished by Fauntleroy & Latham and is shown on Figure 1.

17. The new structures will be raised using concrete piers with limited site grading. No filling is currently planned for the project. Maximum anticipated live and dead loads for the structures and columns are 100 and 140 kips, respectively. The site is located outside of the ABFE FEMA maps for Zones V and VE, thus wave heights of 3 feet or less are being considered in the design. Structures previously supported at grade performed poorly during the hurricane storm surge. New structures will be raised such that the lowest horizontal structural element is at least one foot above the design low velocity wave loads.

Foundation Recommendations

18. If scour is deemed applicable to this site, shallow foundations should not be considered. Furthermore, considering the potenital for the soils to become fully saturated under flood conditions, loss of support could occur in the surfical deposits. As such, allowable bearing values and settlement reported for a well drained site would not be applicable. Therefore, an assessment of the risk associated with innundation should be made and all structures which cannot tolerate potential movements associated with a loss of support should be supported on deep foundations comprising driven piles.

19. For deep foundations, all components of the structures (walls, floors, and columns) should be supported on piles having the same tip embedment below the existing ground surface. Flexible connections should be used for all utility connections going to and from the structures.

20. For structures where the risk of innundation is considered low, the proposed structures may be supported on shallow foundations provided the structures can be designed to accommodate the movements associated with such a foundation system. Movements estimated in this report assume the recommendations of this report regarding site preparation and drainage are followed. As noted above, additional movements may be associated with foundations subjected to innundation and loss of support. Such movements are not quantifiable. If a shallow foundation system is selected to support the structures, we recommend grade beams be poured integrally with the piers to increase structural rigidity and to minimize differential settlements. In addition to potential settlement of shallow foundations, surficial clay soils also have some shrink/swell potential as discussed herein.

Seismic Site Class

21. A seismic Site Class in accordance with the 2006 International Building Code (IBC) was requested for this project. Using Table 1615.1.1 of the IBC, this site may be categorized as Site Class D, a "stiff soil profile." Although the presence of soils having a plasticity index greater than 20, and a moisture content greater than 40%, were encountered, the average undrained shear strengths of these soils are above 500 psf. The average strengths over the entire boring/CPT depths are below 1,000 psf in limited zones, however, given our knowledge of the geologic conditions in the area, the anticipated average to a depth of 100 feet would result in a Site Class of D.

Ground Water Management

22. Drainage During Construction. The initial step to prepare the site for construction should be to establish adequate temporary and permanent drainage to prevent ponding of water and ensure immediate runoff of all rainfall. We strongly recommend the contractor maintain adequate surface drainage away from all foundation and pavement areas during and after construction. This may be accomplished by utilizing existing drainage features as well as installing ditches and swales, and by setting grades to ensure positive drainage of water away from the foundation areas. Sumps and pumps may be required to remove rainfall and ground water from ditches and shallow excavations. Throughout construction, the contractor should exercise caution during inclement weather to ensure subsoil support is not degraded by construction operations.

23. Permanent Drainage. The near surface soils are subject to a reduction in shear strength and excessive settlement if the moisture content of these soils increases (naturally or as a result of construction operations). We also strongly recommend adequate permanent drainage (including adequate surface and subsurface features

as required) be provided to collect all rainfall away from the building foundations and pavement areas after completion of construction. All downspouts draining rainfall from each building roof should be connected to pipes which discharge away from the building or into a drainage system. Water should not be allowed to collect near the building foundations and pavement areas.

24. For shallow foundations subjected to flood conditions and saturation (even for short durations), the loss of support and resulting movements should be assumed to be differential. The magnitude of the movements will depend on the degree and duration of saturation as well as the applied loads and load transfer through the structure and cannot be quantified. Therefore, any structures at risk of innundation that cannot be easily or economically repaired if affected should not be supported on shallow foundations.

25. Demolition. All existing pavements and structures located within the proposed construction areas should be demolished and removed from the site. Provisions should be made to locate any abandoned underground utilities and foundations which could impact new construction. Existing footings or abandoned pipes should be excavated and removed from the site. These structures could impact the performance of new foundations if not properly removed, proofrolled, and backfilled with structural fill material. Existing piles not incorporated into the new structure should not be removed. In general, these features should be cut off 5 feet below the proposed grade beams or below the existing ground surface, whichever is greater. However, Eustis should be consulted if existing piles are to be abandoned or reused. Removal and relocation of structures and obstructions should also conform to the requirements outlined in Section 202 of the Louisiana Standard Specifications for Roads and Bridges, 2000 edition (LSSRB).

26. Clearing and Stripping. Within the areas of the proposed building (including the building footprint and parking area), the existing ground surface should be stripped

to a depth necessary to remove pavements, vegetation, loose topsoil, debris, and organic matter. The exact depth of stripping should be determined during construction. The site should not be stripped until construction drainage measures have been provided.

27. Subgrade Preparation. After the demolition, stripping, and clearing operations, the exposed surface should be proofrolled with a bulldozer or tracked vehicle having a ground pressure between 10 and 15 psi. Alternative proofrolling techniques may be proposed, but these methods should be approved by Eustis prior to their use at the site. Any depressions or weak areas identified should be thoroughly cleaned out to the surface of firm undisturbed soil and backfilled with a select structural fill material placed and compacted under controlled conditions. ***All demolition, clearing, proofrolling, and compaction operations should be performed only during periods of dry weather.*** Motorized wheeled equipment should not be allowed within the foundation areas during periods of inclement weather to prevent rutting of the subgrade.

28. Structural Fill. A select granular material, such as locally available sand or clayey sand, should be used as backfill and structural fill. The material selected should be free of wood, roots, clay lumps, and other deleterious materials, and should have an organic content no greater than 5% by weight. If a sand fill is selected, the material should conform to the requirements for an A-3 material according to the AASHTO Soil Classification System. This material will expedite construction and drain freely after inclement weather. Clayey sand fill (classified as an A-2-4 material by the AASHTO Soil Classification System) may be considered as an alternate to sand fill. However, this material may delay construction, as it is moisture sensitive and may require greater efforts to process and compact at the site. Prior to transporting structural fill to the site, a sample of the borrow material should be tested to verify its conformance to the specifications.

29. Placement and Compaction. In general, the structural fill should be placed in lifts of 6 to 8 inches loose measure. Each lift within the uppermost 1 foot beneath the pavement, or within the uppermost 2 feet below footings, should be compacted to at least 95% of its maximum dry density within ±2% of optimum water content in accordance with ASTM D 1557. The initial lift of backfill placed in depressions or stump holes may be compacted to at least 92% of its maximum dry density near optimum moisture in accordance with ASTM D 1557 provided the top of this lift is more than 1 foot below the proposed pavement, and more than 2 feet below any proposed footings.

30. Quality Control. Density tests should be performed on each lift of the compacted structural fill to determine if the contractor has achieved the recommended density. We recommend a minimum of five inplace density tests be performed at randomly selected locations within each lift of structural fill beneath each building. Additional testing may be required in areas where there is an apparent change in quality of fill, effectiveness of compaction, or moisture levels in the compacted material.

Fill Settlement

31. Analyses were made to determine the estimated settlement near the center of a 2,000' x 2,000' filled area. Based on a uniform dead load pressure intensity of 120 psf from one foot of structural fill (at 120 pcf), the results of the analyses indicate settlement near the center of the filled area may range from approximately ¼ to ½ inch. This estimate of settlement can be taken as the total settlement that would occur when the fill was first placed. This estimate does not take into account settlement of the fill itself due to poor compaction. Settlement at the corners and midpoint of the sides is estimated to be one-quarter and one-half of these values, respectively. Surficial sands encountered at the boring and CPT locations are assumed to be preexisting fill. If site grades were raised subsequent to demolition operations, Eustis should be contacted to reevaluate settlement potential at this site.

Evaluation of Shrink/Swell Potential

32. Swell Potential. Based on the results of the Atterberg limits tests and our evaluation of the subsoils, the underlying soils have a low swell potential and should not affect shallow foundations.

33. Shrinkage Potential. Soils with swell potential will also experience shrinkage as their moisture contents are decreased. Foundation movements may be caused from shrinkage of the underlying subsoils. Soil shrinkage may occur during periods of dry weather, especially during prolonged periods of drought, and may be compounded by desiccation of the soil from tree roots near surface supported foundations. Based on the moisture content and percent saturation of the near surface soils in their present state, movements caused by soil shrinkage may be ¼ to ½ inch.

Landscaping Considerations

34. The root systems of trees may remove water from beneath the floor slab, footings, and pavements during periods of dry weather. The influence of a tree is usually limited to a distance equal to the normal radial spread of its branches. Removal of water from the soil could result in soil shrinkage and settlement of foundations and pavements. The location of trees in relation to the proposed building locations should be considered in the final landscaping plans.

Shallow Foundations

35. Depth of Footings. Based on the furnished information, continuous grade beam footings and isolated square footing foundations should be placed to bear at least 2 feet below finished grade on firm undisturbed soil or compacted structural fill. Precautions should be exercised so excavations for footings do not become wet prior to pouring concrete. Foundations should be poured immediately after the

completion of the excavations. All footing excavations should be carefully inspected by qualified personnel to verify footings will be placed to bear on firm undisturbed soil or compacted structural fill at the recommended depth, and the excavation is in a dry condition prior to pouring concrete. Eustis should be retained to observe the condition within footing excavations prior to concrete placement.

36. Allowable Soil Bearing Values. Analyses have been made to estimate the net allowable soil bearing values for continuous grade beam footing foundations and isolated square footing foundations. A shallow continuous footing foundation, placed to bear at least 2 feet below finished grade on firm undisturbed soil or compacted structural fill, and having a width of 1 to 3 feet, may be designed for a net allowable soil bearing value of 1,200 psf. A shallow isolated square footing foundation, placed to bear at the same depth and having a maximum width of 5 feet, may be designed for a net allowable soil bearing value of 1,400 psf. This value should be reduced to 1,200 psf for square footings between 6 and 15 feet in width. Larger footings should be evaluated further. These allowable soil bearing values contain an estimated factor of safety of 3 against a soil shear failure. A factor of safety of 2 may be used to evaluate transient loads such as wind.

37. Estimated Settlement of Footings. Assuming a long term dead load pressure intensity equal to 80% of the allowable soil bearing values, estimates of settlement were made for continuous grade beam footing foundations and isolated square footing foundations. The estimated settlement for continuous grade beam footings having widths of 1 to 3 feet, and for isolated square footings with widths of 3 to 5 feet, may range from ¼ to ½ inch. Estimated settlement for larger footings with widths of 15 feet or less may range from ½ to 1 inch. ***These settlement estimates should be considered additive to the settlement estimated for fill.***

38. Our estimates of settlement assume the center to center spacing between continuous strip footings is not less than three times the footing width, and the

center to center spacing between adjacent square footings is not less than twice the largest footing side dimension. We have also assumed the site has been prepared as recommended in this report, the foundation soils are not degraded or exposed to excess moisture prior to placing concrete for the footings, and no more than 12 inches of fill above the existing ground surface will be required to reach finished grade at the site. To decrease the potential of differential movements, concrete for footings should be placed integrally with grade beams and piers. If any of our assumptions are not met, Eustis should be notified to reevaluate potential settlement.

Deep Foundations

39. Estimated Pile Load Capacities. Based on the soil borings, laboratory tests, and CPT data, engineering analyses have been made to determine estimates of the allowable compressive load capacities for treated ASTM D 25 quality timber piles for support of the proposed structures. Our estimated capacities neglect the skin friction along the top 2 feet of the pile for embedment within the pile cap and assume the piles are driven vertically. The results of these analyses are shown on Figure 2. If the tapered timber piles extend above grade to raise the structures, Eustis should evaluate our estimated capacities for the reduced pile dimensions for the embedded pile.

40. Factors of Safety. The allowable pile load capacities provided on Figure 2 contain an estimated factor of safety of 2 against failure of a single pile through the soil. To utilize the estimated capacities based on a factor of safety of 2, a pile load test should be performed.

41. Structural Capacity. The estimated load capacities provided are only based on a soil-pile relationship. The structural capacity of the individual piles to transmit these loads, and any connections between the piles and the structure, should be determined by a structural engineer.

42. Timber Piles. We recommend the treatment of timber piles meet the current American Wood Preservers Association Standards as outlined in Section 1014 of the LSSRB for both preservative and quality assurance. Treatment should also follow Section 812.06 where applicable. Furthermore, we recommend the timber piles meet the quality (clean peeled, straightness, etc.) requirements outlined in ASTM D 25 and size requirements outlined in Table X1.5 of ASTM D 25 for minimum pile butt circumferences for a specified tip. The pile dimensions assumed in our analyses are provided on Figure 2.

43. Pile Group Capacity and Spacing. The timber piles considered will derive the majority of their supporting capacity from skin friction; therefore, it is necessary to consider the effect of group action. In this regard, the supporting value of the friction piles driven in groups should be investigated on the basis of group perimeter shear by the formula shown on Figure 3. The minimum spacing between individual timber piles should be at least 3 feet. The minimum spacing between rows or groups of piles should also meet the assumptions for settlement provided in the following paragraphs.

44. Estimated Settlement due to Structural Loads. If piles are used in small isolated groups or rows, we estimate settlement of foundations, due to sustained structural loads supported on vertical piles embedded a minimum of 30 feet below existing grade, will be ¼ inch or less. This estimate of settlement is based on the assumptions that the largest group dimension will be no greater than 20% of the pile embedment, the center to center spacing between groups will be no closer than

twice the largest group dimension, and the center to center spacing between rows of piles will be no closer than 8 feet.

45. These estimates do not include elastic deformation of the piles which should be added to the settlement estimates. Elastic deformation of the piles may be estimated as 67% to 75% of the static column strain of a pile acting as a column. These estimates of settlement are due to structural loads only.

46. All piles for the proposed structures should be driven to the same approximate tip elevation, and concrete for the pile caps should be structurally integrated with the concrete for the grade beams and piers. These recommendations are made to minimize the potential for differential movements. Eustis should be contacted to reevaluate pile settlement if any of our assumptions are not met.

47. <u>Estimated Settlement of Piles due to Fill Placement.</u> Assuming no more than 12 inches of fill is placed beneath the structure, additional pile settlement may be considered negligible. If our assumptions are not met, Eustis should be contacted to reevaluate potential settlement of pile foundations. These estimates of settlement would be considered additive to settlement due to structural loads.

48. <u>Differential Settlement.</u> Your design should recognize the potential for differential settlement between pile supported features and grade supported features, including pavements. Therefore, appropriate architectural or structural features should be incorporated in your design to accommodate differential settlement. In addition, the structures should be designed as rigidly as possible to minimize the potential for differential settlements.

49. Utilities. We recommend flexible type connections be specified for all piping and utilities going to and from the proposed structure if supported by deep foundations. These connections should be designed to accommodate the settlements and differential settlements described in the previous paragraphs.

Installation of Driven Piles

50. Quality Control. All pile driving operations should be supervised by experienced personnel to ensure proper procedures are followed and accurate records are kept during all pile driving operations. The driving records should include the date, type of pile, pile tip and butt diameters, overall pile length, depth and diameter of prepunch/predrill, hammer model, driving energy, and number of blows per foot of penetration for the full embedment of the pile. An accurate driving record is especially important to verify piles are installed to the required tip embedment and to give an indication of any unusual driving characteristics which may include pile breakage. We strongly recommend Eustis be retained to observe, record, and evaluate all pile driving operations with respect to the recommendations presented in this report.

51. Hammers. Small treated ASTM D 25 quality timber piles with minimum tip diameters of 6 inches and butt diameters of at least 8 inches may be driven with a drop hammer or a single acting air hammer having a manufacturer's rated energy of 7,250 ft-lbs per blow. If a drop hammer is used, the ram weight should not exceed 3,000 pounds and the drop should not exceed 3 feet. Larger treated ASTM D 25 quality timber piles with minimum tip diameters of 8 inches and butt diameters of at least 12 inches may be driven with a single acting air hammer having a rated energy of 15,000 ft-lbs per blow.

52. Prepunching or Predrilling. Prepunching or predrilling to a depth of 6 feet may be required to assist pile driving through surficial stiff clay, sandy clay, and silty clay deposits and very loose to medium dense sand, clayey sand, and silty sand deposits. A pilot hole has the potential of minimizing vibrations resulting from pile driving operations or reducing the potential damage to timber piles. The prepunch or predrill bit should be no larger than the tip diameter for timber piles. Predrilling through surficial materials may be by dry auger methods. Actual requirements should be determined during the test pile program. Eustis should be contacted if a deeper pilot hole is necessary.

53. Pile Refusal. Refusal criteria for the timber piles may be taken as 25 blows per foot with the recommended hammers to minimize damage to these piles. If the piles are driven with the aid of a follower, or if the pile driving helmet is allowed to impact the ground surface, Eustis should be consulted to adjust these refusal criteria.

Test Piles and Load Tests

54. Eustis considers a test pile program and load test as an extension of our geotechnical investigation. Therefore, Eustis should be retained to perform these services. We recommend at least five probe piles be installed for the project within the footprint of the proposed structures. The probe piles may be installed at job pile locations. The probe piles should be the same type and embedment anticipated for the job piles and installed with the same equipment and techniques proposed for the job piles. These probe piles can be used to evaluate installation methods. Driven probe piles will provide more definitive information regarding the anticipated driving resistance and vibrations from pile driving.

55. At least one of these probe piles should be selected by Eustis in conjunction with the structural engineer for performance of a static load test. The test pile should be allowed to set for at least 14 days subsequent to the installation of the reaction

system. The test pile should then be load tested to failure in accordance with ASTM D 1143. The results should be evaluated by Eustis to verify the estimated pile load capacities presented in this report.

Pavements

56. Traffic. Information and drawings furnished by Fauntleroy & Latham Architects and Pinnacle Engineering indicates the parking areas will each have several hundred parking spaces. We have assumed the parking areas will experience 500 passenger cars and 500 pickup trucks, vans, and sports utility vehicles per day. We estimate driveways and serviceways will experience two times this amount of traffic with 20 school buses per day and two garbage trucks per week. We have also assumed traffic loading for the pavement areas will conform to St. Tammany Parish's regulations. Based on the St. Tammany Parish Code of Ordinances, we have assumed 7,000 repetitions of a 32-kip single axle load for a 20-year design period. The assumed axle weights are tabulated below.

TYPE OF VEHICLE	SINGLE AXLE LOAD IN KIPS	
	FRONT	REAR
Passenger Cars	2	2
Pickup Trucks, Vans, or Sports Utility Vehicles	2	5
School Buses	12	20
Garbage Trucks	24	30 (Tandem)

57. Our assumed traffic intensities should be verified prior to implementation in the design. If traffic conditions are different than those presented, Eustis should be contacted to reevaluate the pavement recommendations contained in this report. These traffic data assumptions were converted to equivalent 18-kip single axle loads (E_{18}) using AASHTO equivalency factors for flexible and rigid pavements. A 20-year

design life and a terminal serviceability index (P_t) of 2.0 were used for the analyses of rigid and flexible pavements.

58. Method of Analysis. The pavement components and thicknesses for rigid and flexible pavements were determined using methods presented in the 1986 AASHTO Guide for Design of Pavement Structures. The resilient soil modulus (M_r) of the subgrade was estimated based on the type of soil, probable drainage conditions, and engineering experience. We have assumed the subgrade is properly drained during construction and adequate permanent drainage is installed that does not allow the subgrade to become saturated. Our analyses assume all paving materials will conform to the LSSRB.

59. Flexible Pavement. For the parking areas, we recommend 3 inches of hot mix asphaltic surface course consisting of at least 1.5 inches of Type 3 wearing course and 1.5 inches of Type 3 binder course. In addition, we recommend 6 inches of stone base course and 12 inches of sand subbase. For the driveways and serviceways, we recommend 4 inches of hot mix asphaltic surface course consisting of at least 1.5 inches of Type 3 wearing course and 2.5 inches of Type 3 binder course. In addition, we recommend 8 inches of stone base course and 12 inches of sand subbase.

60. The asphaltic surface course should conform with Section 501 of the LSSRB. The material for the crushed stone base course should conform to the requirements of Section 1003.03(d) of the LSSRB. The stone base course should be placed and compacted in accordance with Section 302 of the LSSRB for a Class II base course. Sand subbase should be non-plastic and free of roots, clay lumps, and other deleterious materials with no more than 10% by weight of material passing a U.S. Standard No. 200 mesh sieve (AASHTO A-3). This select structural sand fill should have a maximum organic content of 5% by weight. Structural fill used as subbase

should be placed in loose lifts no greater than 8 inches in thickness and compacted to 95% of its maximum dry density in accordance with ASTM D 1557.

61. Grades should provide for adequate drainage to prevent saturation of the subgrade and base course materials. If the type and thickness of pavement components are changed, Eustis should be consulted to determine the suitability of these materials and the structural number of the pavement.

62. Rigid Pavement. Using the same soil and traffic conditions, Eustis recommends rigid pavement for the parking lot comprise 5 inches of Portland Cement Concrete. The driveways and serviceways should comprise 7 inches of Portland Cement Concrete. We recommend trash container pads be at least 8 inches in thickness. Portland Cement Concrete should conform to the material requirements for pavement Type B concrete as specified in Section 901 of the LSSRB. The concrete should have a specified 28-day compressive strength of 4,000 psi to give the pavement adequate flexural strength. The concrete pavement should also be reinforced against temperature and shrinkage where applicable and should be constructed in accordance with the provisions of the LSSRB, Section 601. The concrete should be underlain by at least 6 inches of compacted sand fill. The sand fill should conform to the material requirements given above for select sand subbase. The sand subbase should be compacted to 95% of its maximum dry density near ±2% optimum water content using ASTM D 1557.

63. Grades should provide for adequate drainage to prevent saturation of sand fill beneath the pavement. All joints should be sealed to prevent infiltration of water. All pavement details, such as wire mesh, reinforcement, dowels, joints, curbs, etc., should be designed by a pavement design engineer.

64. Aggregate Paving. For the parking areas, we recommend a minimum of 9 inches of crushed stone aggregate underlain by 12 inches of sand subbase. We recommend driveways comprise rigid or flexible pavement sections. Our component thicknesses assume an approximate three to five year life and routine maintenance to fill rutting subsequent to that period.

65. We recommend the sand be placed in lifts not to exceed 6 inches and a biaxial geogrid be placed on the surface of the sand. The geogrid should be a Tensar BX-1100 or equivalent. The aggregate surface road will require maintenance to maintain and fill ruts. Ruts should be filled with new aggregate rather than regraded. Grading without fill may damage displaced geogrid.

66. The material for the crushed stone surface course should conform to the requirements of Section 1003.04(a) of the LSSRB. The stone surface course should be placed and compacted in accordance with Section 302 of the LSSRB for a Class II base course. Sand subbase should follow the recommendations given above for select sand subbase. Structural fill used as subbase should be compacted to 95% of its maximum dry density in accordance with ASTM D 1557.

67. Grades should provide for adequate drainage to prevent saturation of the subgrade, subbase, and base course materials. If the types and thicknesses of pavement components are changed, Eustis should be consulted to determine the suitability of these materials and the structural number of the pavement.

Vibrations

68. General. Pile driving operations, hauling fill materials, movements of heavy equipment, and other construction operations will cause vibrations that may affect nearby structures, pavements, and underground utilities. Vibrations associated with

vehicular construction traffic are dependent on the size and speed of individual vehicles as well as frequency.

69. Measurement. If vibrations are a concern, we recommend peak particle velocities due to construction operations be monitored at critical structures or pavements with a seismograph during all construction operations that have a potential to cause vibrations. The record of peak particle velocities will provide information in assessing potential damage and the types of changes best suited to the project requirements.

70. Generally, peak particle velocities of 1.5 to 2.0 in./sec are considered to be threshold levels for structural damage. Low peak particle velocity levels can also be a problem for poorly constructed buildings or structures that have been previously stressed by settlement or other movements. In such cases, vibrations on the order of 0.5 in./sec can initiate cosmetic damage or further cosmetic damage that has already taken place in the structure. Peak particle velocities between 0.25 and 0.5 in./sec may be sensed as being detrimental by human perception. In addition, peak particle velocities of 0.25 in./sec may densify cohesionless or semi-cohesive deposits (such as fill materials) and result in settlement of structures founded in these materials. Considering the potential for cosmetic damage and the adverse perception to human response, we recommend a level of 0.5 in./sec be set as a construction tolerance for transient construction activities. This level is generally achievable with current construction methods. However, for sustained peak particle velocities in excess of 0.25 in./sec at a pavement, utility, or structure of concern, Eustis should be notified.

71. Mitigation Techniques. Mitigation techniques to dampen the effects of vibrations on structures are generally associated with decreasing the energy exciting vibrations through the soil. For construction traffic, tight speed controls can greatly reduce the vibrations imparted to adjacent structures.

ADDITIONAL GEOTECHNICAL SERVICES

72. To provide continuity between the investigation, design, and construction phases, Eustis should be retained to provide additional services during completion of the project. These services may include consultation during design and construction, providing inspection of excavations, reviewing site drainage plans and construction sequences proposed by the contractor, testing and approval of proposed fill and pavement materials, and compaction and density tests on the fill materials. We can also log the installation of test piles and job piles; perform load tests and evaluate their results; test and inspect asphalt, concrete, and steel; and perform many other soils and materials testing services. Eustis offers a complete range of materials testing services which will provide quality control during construction and conformance to design specifications.

73. In summary, Eustis should be retained to monitor all geotechnical related work performed by the contractor. If construction problems arise, Eustis should be notified to participate in the development of solutions. This participation permits the geotechnical engineer to evaluate the effects of unanticipated conditions and propose solutions on the geotechnical design assumptions particular to the project. The design geotechnical engineer may also be able to judge how site specific soil and ground water conditions will affect the success of a proposed construction alternative.

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA
EUSTIS PROJECT NO. 19615

ESTIMATED ALLOWABLE SINGLE PILE LOAD CAPACITIES
TREATED ASTM D 25 QUALITY TIMBER PILES

PILE SIZE	PILE TIP EMBEDMENT BELOW EXISTING GROUND SURFACE IN FEET	ESTIMATED ALLOWABLE SINGLE PILE LOAD CAPACITY IN TONS FACTOR OF SAFETY ≈ 2[1]
6-In. Tip 8-In. Butt	30 35	11 12½
8-In. Tip 12-In. Butt	30 35	15½ 18

[1]Assumes a static pile load test will be performed.

CAPACITY OF PILE GROUPS

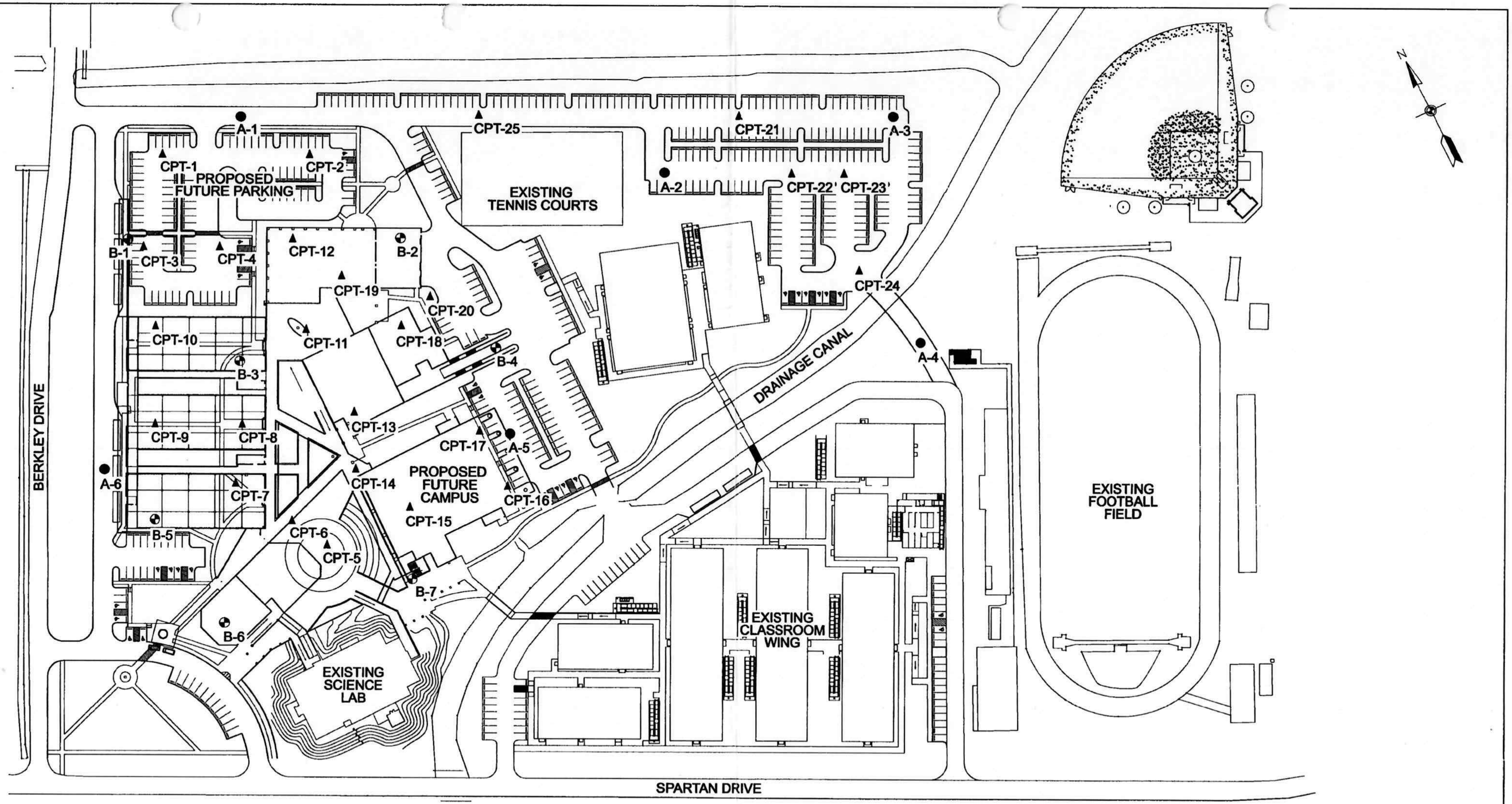
The maximum allowable load carrying capacity of a pile group is no greater than the sum of the single pile load capacities, but may be limited to a lower value if so indicated by the result of the following formula.

$$Q_a = \frac{P \times L \times c}{(FSF)} + \frac{2.6\, q_u \left(1 + 0.2\, \frac{w}{b}\right) A}{(FSB)}$$

In Which:

Q_a	=	Allowable load carrying capacity of pile group, lb
P	=	Perimeter distance of pile group, ft
L	=	Length of pile, ft
c	=	Average (weighted) cohesion or shear strength of material between surface and depth of pile tip, psf
q_u	=	Average unconfined compressive strength of material in the zone immediately below pile tips, psf (unconfined compressive strength = cohesion x 2)
w	=	Width of base of pile group, ft
b	=	Length of base of pile group, ft
A	=	Base area of pile group, sq ft
(FSF)	=	Factor of safety for the friction area = 2
(FSB)	=	Factor of safety for the base area = 3

The values of c and q_u used in this formula should be based on applicable soil data shown on the Log of Boring and Test Results for this report. In the application of this formula, the weight of the piles, pile caps and mats, considering the effect of buoyancy, should be included.



DENOTES UNDISTURBED SOIL BORINGS DRILLED 4 - 6 JANUARY 2007

DENOTES AUGER BORINGS DRILLED 3 JANUARY 2007

DENOTES CONE PENETROMETER TESTS PERFOMED 19 - 28 DECEMBER 2006

NOT TO SCALE

EUSTIS ENGINEERING SERVICES, L.L.C. GEOTECHNICAL ENGINEERS 3011 28TH STREET METAIRIE, LOUISIANA		
LOCATION OF BORINGS AND CONE PENETROMETER TESTS ST. TAMMANY PARISH SCHOOL BOARD SALMEN HIGH SCHOOL NEW SCHOOL FACILITY SLIDELL, LOUISIANA STPSB PROJECT NO. 0606		
DRAWN BY: J.L.S.	PLOT DATE: 12 JAN 07	CADD FILE: FIGURE1.DGN
CHECKED BY: D.J.I.	JOB NO.: 19615	FIGURE 1

APPENDIX I

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/05/07 **Boring:** 1 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Very loose brown silty sand w/roots	SM	1	0-0.5											
					Soft gray silty clay w/roots & gravel	CL													
	0.50						2	2-3	36										
					Medium stiff gray & brown silty clay	CL													
	2.00						3	5-6	21	100	122	UC	--	771					
					Soft to medium stiff tan & gray silty clay	CL													
	0.50						4	8-9											
					Very stiff tan & gray clay w/silt pockets	CH													
10	3.00						5	11-12	26	95	120	UC	--	2126	60	15	45		
	4.00						6	14-15											
					Stiff to very stiff light gray clay w/silt pockets	CH													
20	3.00						7	19-20	35	84	114	UC	--	981					
					Stiff light gray & tan clay w/silt pockets & lenses	CH													
	2.00						8	24-25	36	82	112	UC	--	246					
					Medium stiff to stiff gray & tan clay w/silt pockets & lenses	CH													
30	1.75						9	29-30	34	84	112	UC	--	955					
					Medium stiff gray sandy clay	CL													
	1.00						10	34-35											
					Loose to medium dense gray silty sand	SC													
40	1.50						11	39-40	26	97	122	OB	--	688					
					Medium stiff gray clay	CH													
	0.75						12	44-45											
50	1.00				w/silt pockets & shell frag		13	49-50	51	69	104	UC	--	638					

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/05/07 **Boring:** 1 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50					Medium stiff gray clay	CH													
	1.00						14	54-55											
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/05/07 **Boring:** 2 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Medium compact gray & tan clayey silt w/shell fragments & roots	ML	1	0-0.5	16										
	1.50				Loose brown silty sand w/shell fargments	SM	2	2-3											
	1.50				Stiff tan & gray silty clay	CL	3	4-5											
					Soft gray & tan silty clay	CL													
	1.00						4	8-9	29	92	119	UC	--	490					
10					Very stiff light gray clay	CH													
	3.00						5	11-12											
					Stiff gray & tan silty clay	CL													
	1.50						6	14-15	26	94	118	UC	--	1889	62	18	44		
					Stiff gray silty clay	CL													
	2.00						7	18-19											
20					Stiff to very stiff gray & tan clay	CH													
	2.50						8	23-24	38	76	105	UC	--	1233					
					Very stiff gray & tan clay	CH													
	2.50						9	28-29											
30					Stiff to very stiff gray & tan clay	CH													
	4.50						10	33-34	39	78	108	UC	--	1088					
					Loose gray silty sand	SM													
							11	38-39											
40					Medium stiff gray clay w/shell fragments	CH													
	1.25						12	43-44	54	66	101	UC	-	538	83	25	58		
	1.25						13	48-49											
50																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/05/07 **Boring:** 2 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50	1.00				Medium stiff gray clay w/shell fragments & silt pockets	CH	14	53-54	57	66	103	OB	0	614					
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/06/07 **Boring:** 3 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density Dry	Density Wet	Shear Tests Type	Shear Tests ø	Shear Tests C	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI		Other Tests
0					Very loose brown sand w/roots & gravel	SP	1	0-0.04											
					Loose to medium dense brown clayey sand w/shell fragments	SC	2	2-3	11										
					w/wood & gravel		3	5-6											
	3.50				Stiff tan & light gray clay w/silt pockets & roots	CH	4	8-9	29	93	120	UC	--	1892	63	18	45		
10					Loose to medium dense tan & gray silty sand	SM	5	11-12											
	2.75				Stiff light gray & tan clay w/silt pockets	CH	6	14-15	28	95	121	OB	0	1384					
	3.00				Very stiff gray & brown silty clay	CL	7	18-19											
20	2.00				Medium stiff to stiff tan & gray clay w/silt pockets & lenses	CH	8	23-24	42	78	111	UC	--	645					
	1.50				Stiff gray clay w/silt lenses	CH	9	28-29											
30	1.50				w/shell fragments		10	33-34	46	74	108	UC	--	1187					
	1.25				Medium stiff gray clay w/silty sand pockets	CH	11	38-39	52										
40	0.75				Medium stiff gray clay	CH	12	43-44											
50	0.75				Medium stiff gray silty clay	CL	13	48-49											

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/06/07 **Boring:** 3 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50	0.50				Soft gray clay w/silt pockets & shell fragments	CL	14	53-54	47	74	108	UC	--	428					
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/06/07 **Boring:** 4 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density Dry	Density Wet	Shear Tests Type	Shear Tests ø	Shear Tests C	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI		Other Tests
0					Very loose brown sand w/roots & gravel	SP	1	0-0.5											
	0.25				Loose brown sand w/shell fragments	SP	2	2-3											
	1.25				Medium stiff gray & tan clay w/silty sand pockets	CH	3	5-6	24	98	121	UC	--	828					
					Stiff gray silty clay w/gravel	CL													
	1.25						4	8-9											
10	1.25				Stiff tan & brown silty clay	CL	5	11-12	27	96	122	UC	--	463					
	2.00				Medium stiff to stiff tan & gray silty clay	CL	6	14-15	28	92	118	UC	--	634					
					Stiff tan & gray clay w/silt pockets & lenses	CH													
20	2.50						7	19-20	33	85	113	UC	--	1192					
					Very stiff gray & brown silty clay	CL													
	2.75						8	24-25											
					Medium stiff gray clay w/shell fragments	CH													
30	0.50						9	29-30	54	67	103	UC	--	627					
					Very stiff gray clay w/silt lenses	CH													
	2.50						10	34-35											
					Soft gray clay w/silty sand lenses & layers	CH													
40	1.00						11	39-40	48	72	106	UC	--	394					
					Stiff gray sandy clay	CL													
	1.00						12	44-45											
					Medium stiff gray clay w/silt pockets & lenses	CH													
50	1.25						13	49-50	48	73	107	UC	--	911					

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/06/07 **Boring:** 4 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50	0.50				Medium stiff gray clay	CH	14	53-54											
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/04/07 **Boring:** 5 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Very loose gray sandy silt w/roots	ML	1	0-0.5											
	1.00				Stiff brown & tan sandy clay w/shell fragments & roots	CL	2	2-3	20										
	2.00				Medium stiff gray & reddish-brown silty clay w/concretions	CL	3	5-6	24	99	123	UC	--	723					
	4.50				Stiff light gray silty clay	CL	4	8-9	22	102	124	UC	--	1072					
10	0.75				Soft light brown & tan silty clay	CL	5	11-12	27	97	123	UC	--	305					
	1.00				Medium stiff light gray silty clay	CL	6	14-15											
	1.50				Stiff gray & tan silty clay	CL	7	18-19	30	91	119	UC	--	1382					
20	2.00				Stiff tan sandy clay	CL	8	23-24											
					Stiff gray & tan silty clay	CL	9	29-30	27	94	120	UC	--	1346					
30					Loose to medium dense stiff gray clayey sand	SC													
	1.00						10	34-35											
					Soft gray clay	CH													
40	0.75						11	39-40	54	67	104	UC	--	462					
	2.00						12	44-45											
	1.00				w/shell fragments & silty sand lenses		13	47.5-48.5	46	74	108	UC	--	305					
50																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/04/07 **Boring:** 5 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50					Medium stiff gray clay w/silt lenses	CH													
	0.75						14	54-55											
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/04/07 **Boring:** 6 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Very loose brown sand w/shell fragments	SP	1	0-0.5											
	2.00				Soft gray silty clay w/concretions	CL	2	2-3	24										
					Loose gray silty sand	SM	3	5-6											
					Soft gray & tan silty clay	CL													
	3.50						4	8-9	25	96	119	UC	--	239					
10					Stiff gray & tan silty clay	CL													
	2.00						5	11-12											
	1.50						6	14-15	32	88	117	UC	--	1161					
					Very stiff gray sandy clay	CL													
20	2.50						7	19-20											
					Medium stiff to stiff gray & tan clay w/silt pockets	CH													
	1.75						8	24-25	47	73	107	UC	--	728					
					Stiff gray clay	CH													
30	1.50						9	29-30											
					Medium stiff to stiff greenish-gray silty clay	CL													
	3.50						10	34-35	29	92	119	UC	--	678					
					Loose to medium dense gray clayey sand	SC													
40	1.75						11	39-40											
					Medium stiff gray clay w/shell fragments	CH													
	1.50						12	44-45	63	61	100	UC	--	570					
50	1.00						13	49-50											

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/04/07 **Boring:** 6 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50	1.00				Medium stiff gray clay w/sand pockets & shell fragments	CH	14	54-55	54	68	104	UC	--	607					
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/05-06/07 **Boring:** 7 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Very loose brown sand w/roots	SP	1	0-0.5											
	0.75				Medium dense tan & light brown clayey sand	SC	2	2-3	13										
					Stiff to very stiff silty clay	CL													
	4.00						3	5-6	19	107	127	UC	--	1482	27	14	13		
					Stiff gray silty clay	CL													
	1.75						4	8-9											
10					Medium stiff to stiff gray & light brown silty clay	CL													
	2.00						5	11-12	27	94	119	UC	--	787					
					Stiff tan & light gray silty clay	CL													
	3.00						6	14-15	28	92	118	UC	--	1080					
					Medium stiff to stiff gray & tan clay w/silt pockets	CH													
	2.50						7	18-19	39	79	110	UC	--	769					
20					Stiff gray clay	CH													
	3.00						8	23-24											
					Medium stiff to stiff gray & tan clay w/silt pockets & lenses	CH													
	2.25						9	28-29	37	82	112	UC	--	672					
30					Medium stiff greenish-gray sandy clay w/shell fragments	CL													
	1.00						10	33-34	24										
	1.00						11	38-39	26										
40					Medium stiff gray clay	CH													
	1.25						12	43-44											
	1.50				w/shell fragments		13	48-49	59	64	102	UC	--	628					
50																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/05-06/07 **Boring:** 7 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
50					Medium stiff gray silty clay	CL													
	1.00						14	53-54											
60																			
70																			
80																			
90																			
100																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/03/07 **Boring:** A-1 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Loose brown clayey sand w/shell fragments & gravel	SC	1	0-1											
					Very stiff brown & gray silty clay w/shell fragments	CL	2	1-2	17						28	15	13		
							3	2-3											
					Stiff brown & gray silty clay	CL	4	3-4	19										
					Very stiff light gray silty clay	CL	5	4-5											
5					Very stiff tan silty clay	CL	6	5-6	20										
10																			
15																			
20																			
25																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** **Job No.:** 19615 **Date Drilled:** 1/03/07 **Boring:** A-2 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Very stiff brown sandy clay w/roots	CL	1	0-1	15						23	11	12		
					Medium stiff tan & gray silty clay w/silt pockets	CL	2	1-2											
							3	2-3	25										
					Stiff tan & gray clay w/silt pockets	CH	4	3-4											
					Medium stiff light gray silty clay	CL	5	4-5	26										
5							6	5-6											
10																			
15																			
20																			
25																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/03/07 **Boring:** A-3 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Medium stiff tan silty clay	CL	1	0-1	23										
					Medium stiff to stiff tan & gray silty clay	CL	2	1-2	24						47	15	32		
							3	2-3											
							4	3-4	23										
							5	4-5											
5					Very stiff light gray clay	CH	6	5-6											
10																			
15																			
20																			
25																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/03/07 **Boring:** A-4 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density		Shear Tests			Atterberg Limits				Other Tests
										Dry	Wet	Type	ø	C	LL	PL	PI		
0					Medium stiff brown & gray silty clay w/roots	CL	1	0-1	23						36	18	18		
					Loose to medium stiff tan & gray clay w/silt pockets	CH	2	1-2	23										
					Soft tan & gray silty clay	CL	3	2-3	25										
					Very stiff light gray silty clay	CL	4	3-4											
					Very stiff light gray clay	CH	5	4-5											
5							6	5-6											
10																			
15																			
20																			
25																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/03/07 **Boring:** A-5 **Refer to "Legends & Notes"**

Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density Dry	Density Wet	Shear Tests Type	Shear Tests ø	Shear Tests C	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI		Other Tests
0					Very stiff reddish-brown sandy clay w/roots	CL	1	0-1	13										
					Very stiff brown & tan silty clay	CL	2	1-2	8						19	10	9		
							3	2-3											
							4	3-4	10										
					Loose light gray clayey silt	ML	5	4-5											
5							6	5-6											
10																			
15																			
20																			
25																			

Comments:

EUSTIS ENGINEERING COMPANY, INC.

LOG OF BORING AND TEST RESULTS

ST. TAMMANY PARISH SCHOOL BOARD
SALMEN HIGH SCHOOL
NEW SCHOOL FACILITY
SLIDELL, LOUISIANA

Ground Elev.: **Datum:** **Gr. Water Depth:** See Text **Job No.:** 19615 **Date Drilled:** 1/03/07 **Boring:** A-6 **Refer to "Legends & Notes"**

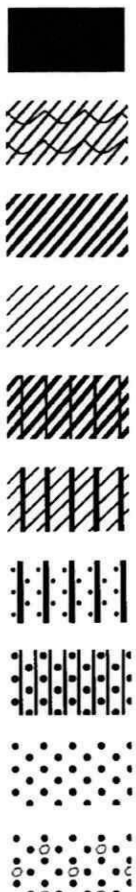
Scale In Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth In Feet	Water Content Percent	Density Dry	Density Wet	Shear Tests Type	Shear Tests ø	Shear Tests C	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI		Other Tests
0					Very stiff brown sandy clay w/shell fragments & roots	CL	1	0-1	13										
					Stiff gray silty clay	CL	2	1-2	18						29	12	17		
					Stiff light gray & brown silty clay	CL	3	2-3											
							4	3-4	18										
							5	4-5											
5					Very stiff light gray silty clay w/trace of organic matter	CL	6	5-6											
10																			
15																			
20																			
25																			

Comments:

APPENDIX II

LEGEND AND NOTES FOR LOG OF CONE PENETROMETER TEST RESULTS

SYMBOL — SOIL TYPE (Robertson, 1986)



SENSITIVE FINE GRAINED (1)

ORGANIC MATERIAL (2)

CLAY (3)

SILTY CLAY TO CLAY (4)

CLAYEY SILT TO SILTY CLAY (5)

SANDY SILT TO CLAYEY SILT (6)

SILTY SAND TO SANDY SILT (7)

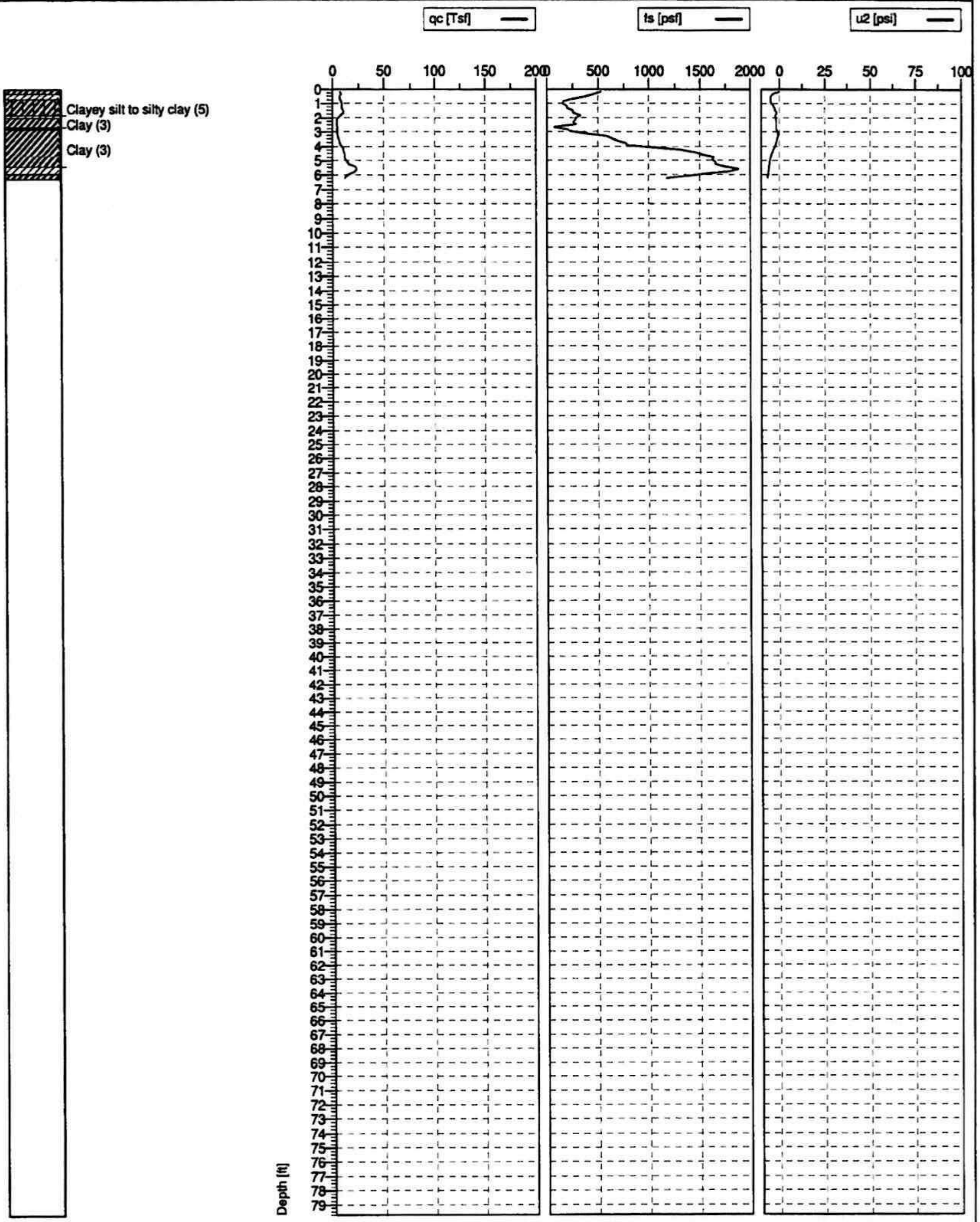
SAND TO SILTY SAND (8)

SAND (9)

GRAVELLY SAND TO SAND (10)

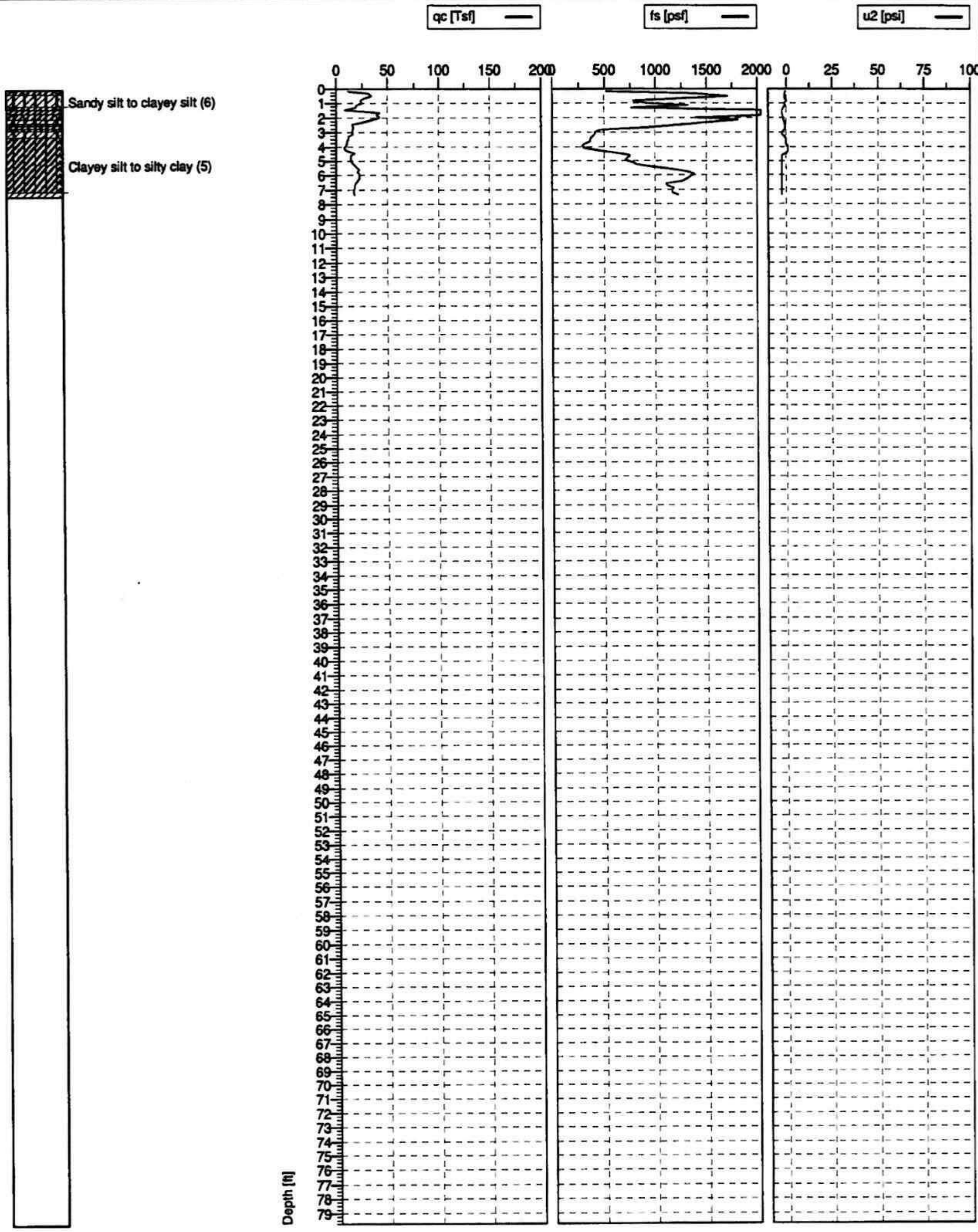
CPT Parameters

qc	Tip resistance in tons per square foot
fs	Sleeve friction resistance in pounds per square foot
u2	Pore pressure in pounds per square inch measured behind the cone tip



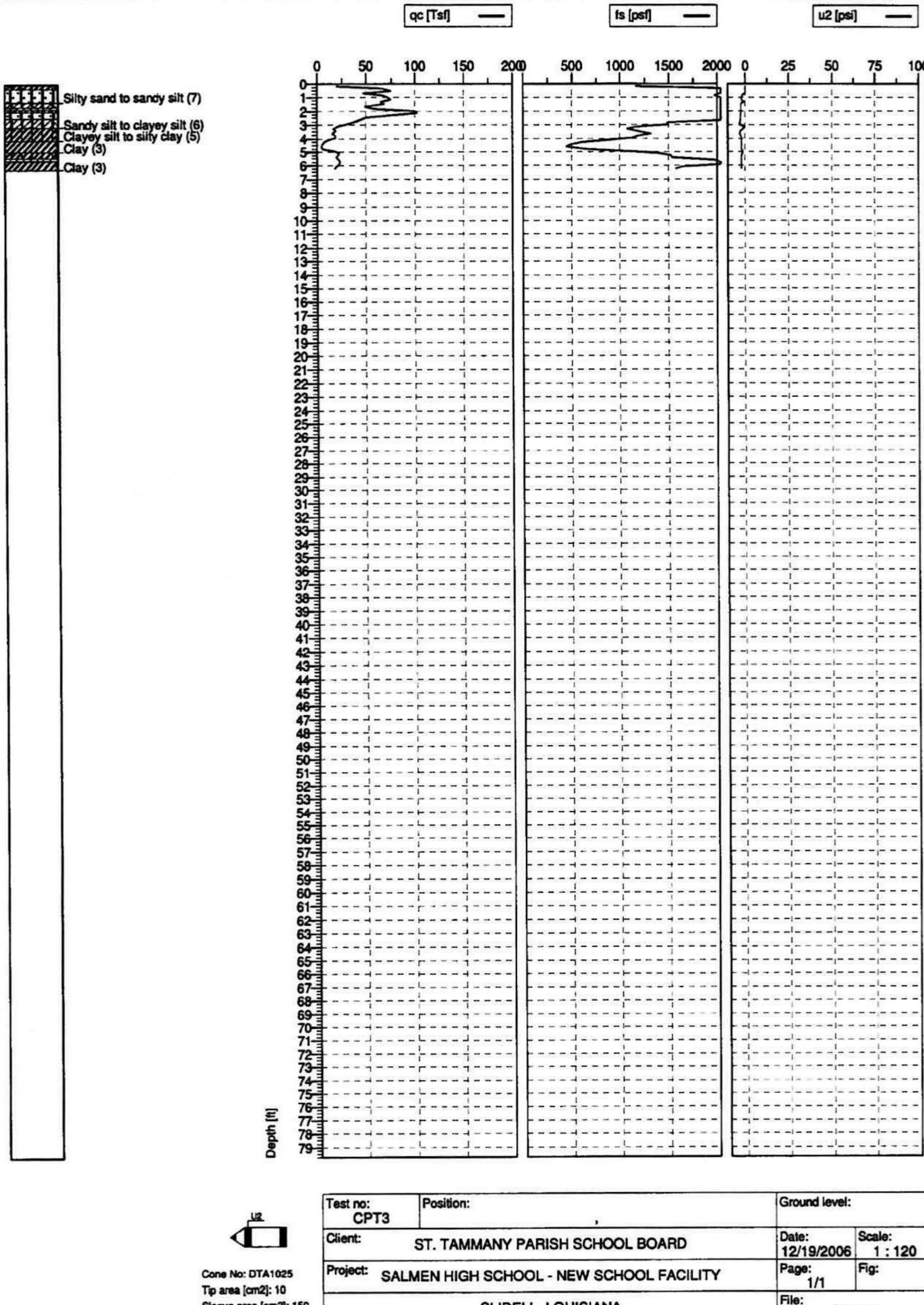
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT1	Position:	Ground level:
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/19/2006 / Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1 / Fig:
	SLIDELL, LOUISIANA	File: h1.cpd

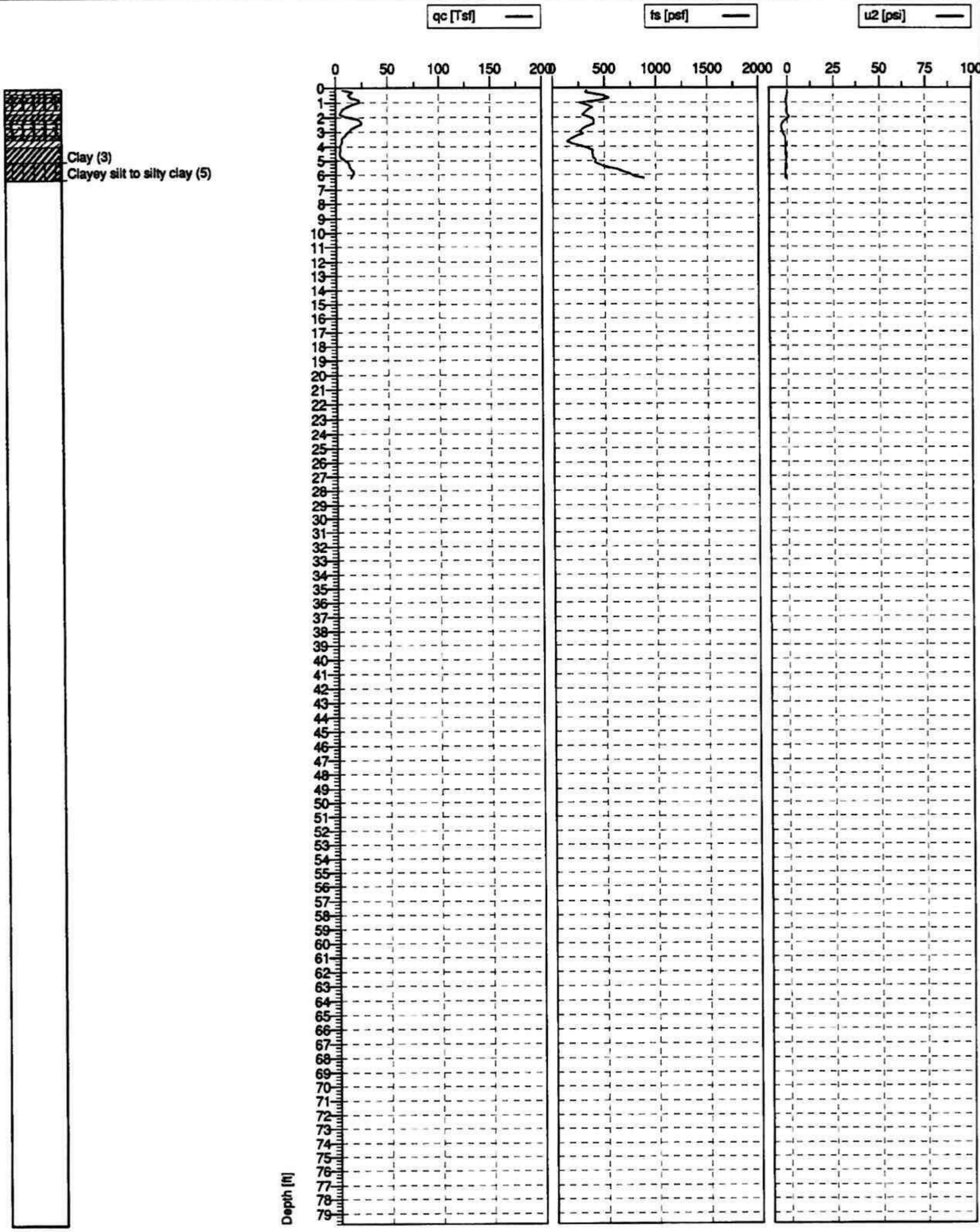


Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT2	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/19/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h2.cpd	

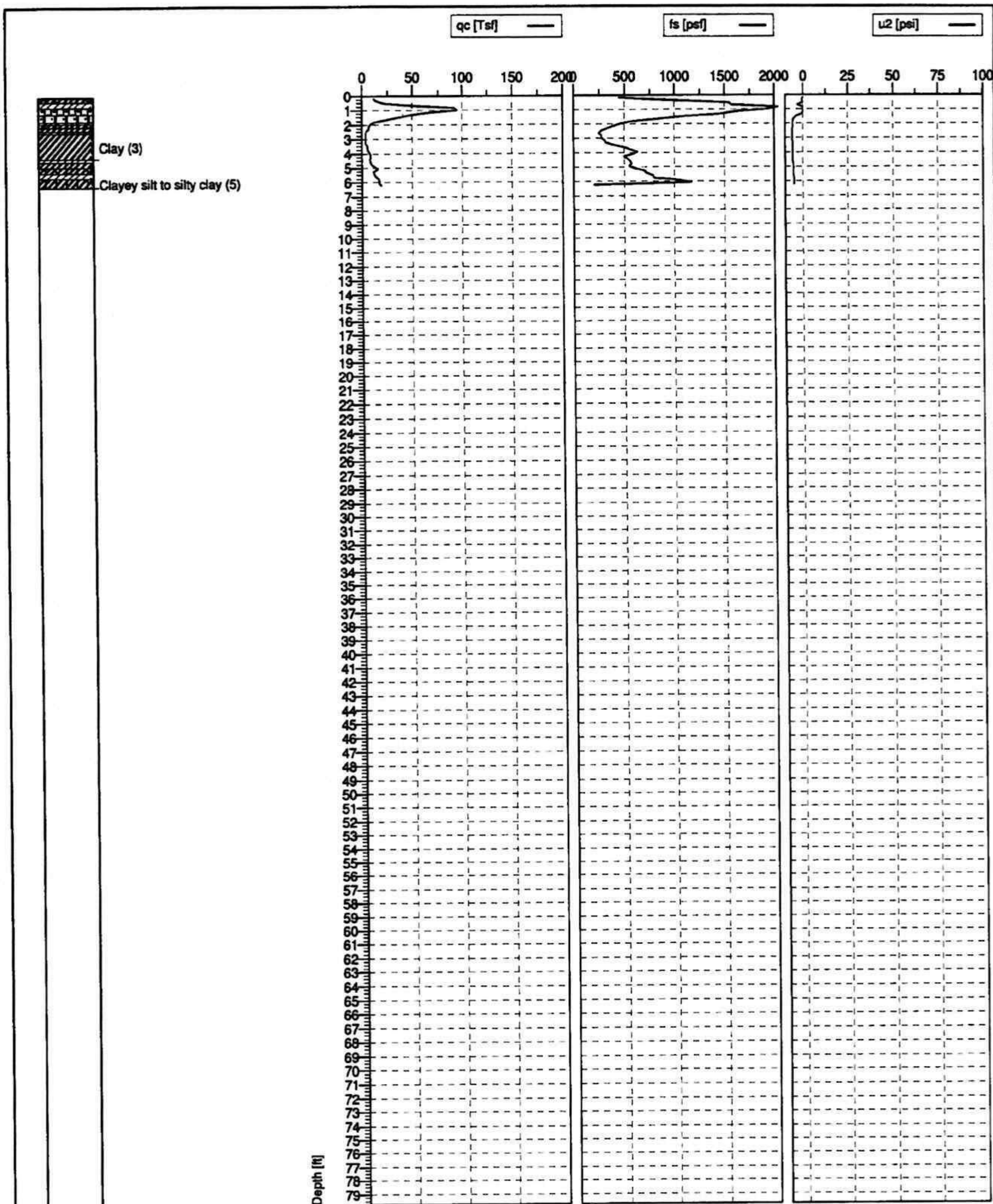


Test no: CPT3	Position:	Ground level:	
Client: ST. TAMMANY PARISH SCHOOL BOARD		Date: 12/19/2006	Scale: 1 : 120
Project: SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY		Page: 1/1	Fig:
SLIDELL, LOUISIANA		File: h3.cpd	



Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

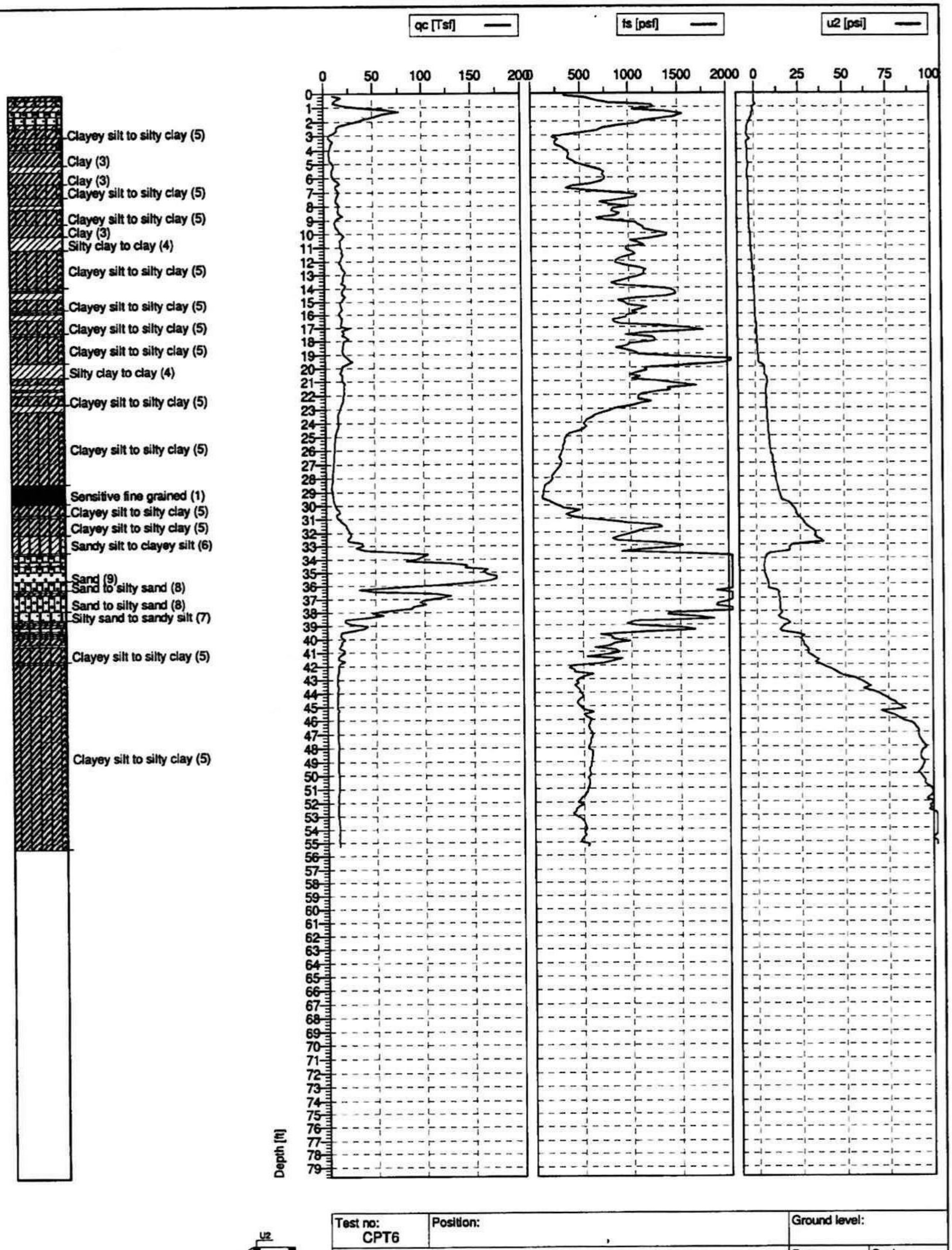
Test no: CPT4	Position:	Ground level:	
Client: ST. TAMMANY PARISH SCHOOL BOARD		Date: 12/19/2006	Scale: 1 : 120
Project: SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY		Page: 1/1	Fig:
SLIDELL, LOUISIANA		File: h4.cpd	



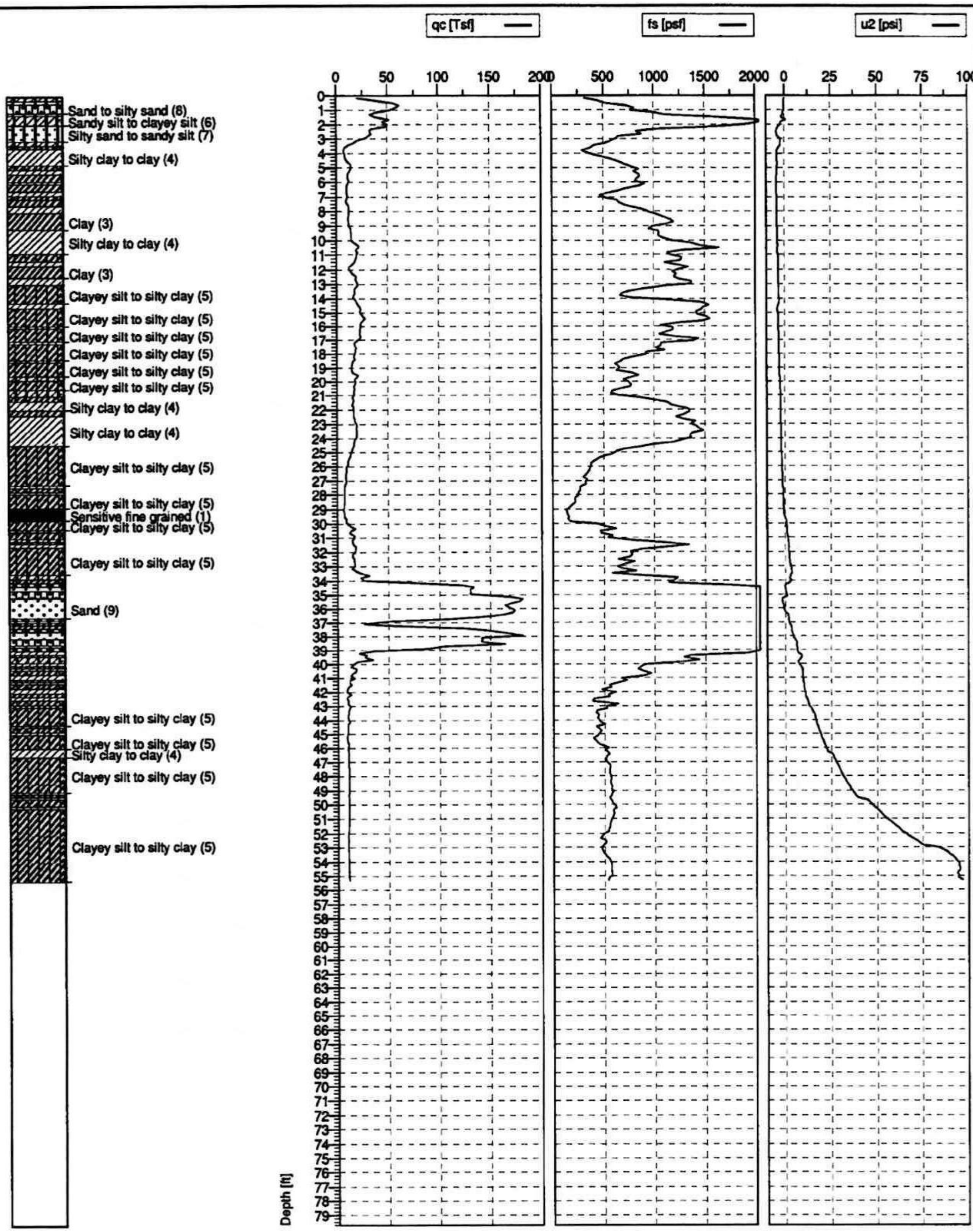
u2

Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

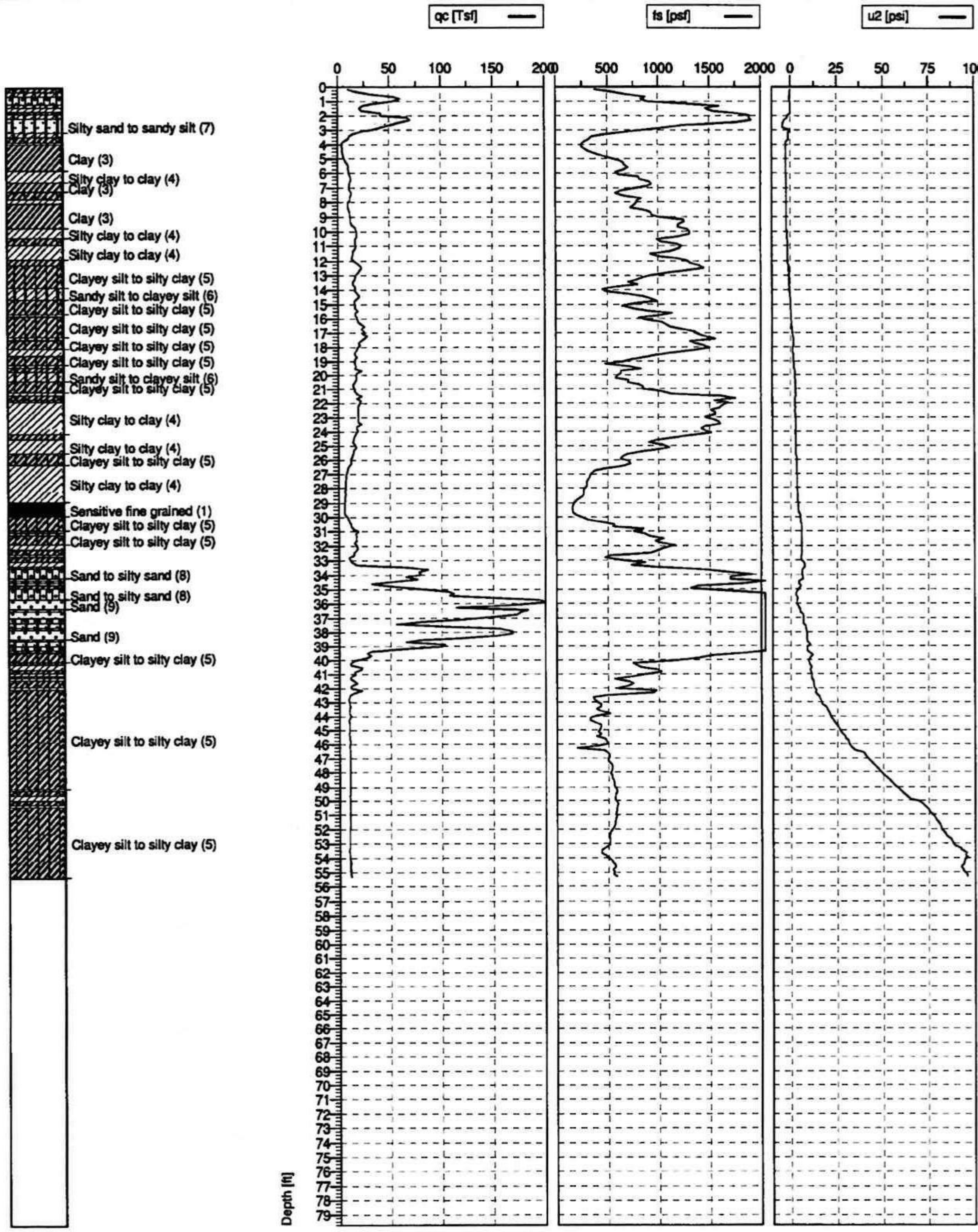
Test no: CPT5	Position: , Y-Coord: m	Ground level:	
Client: ST. TAMMANY PARISH SCHOOL BOARD		Date: 12/19/2006	Scale: 1 : 120
Project: SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY		Page: 1/1	Fig:
SLIDELL, LOUISIANA		File: h5.cpd	



Test no: CPT6	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/20/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h6.cpd	

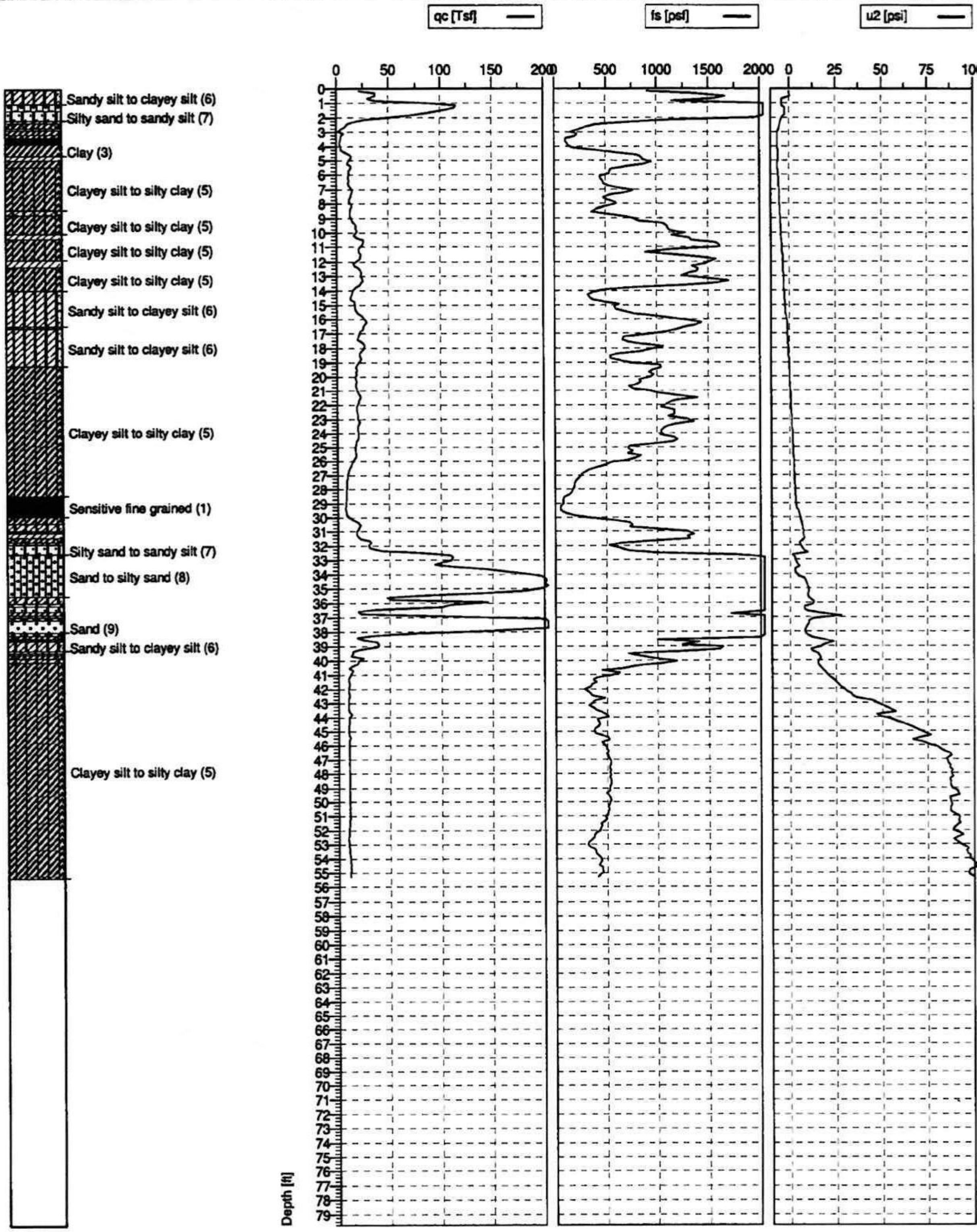


Test no: CPT7	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/20/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h7.cpd	



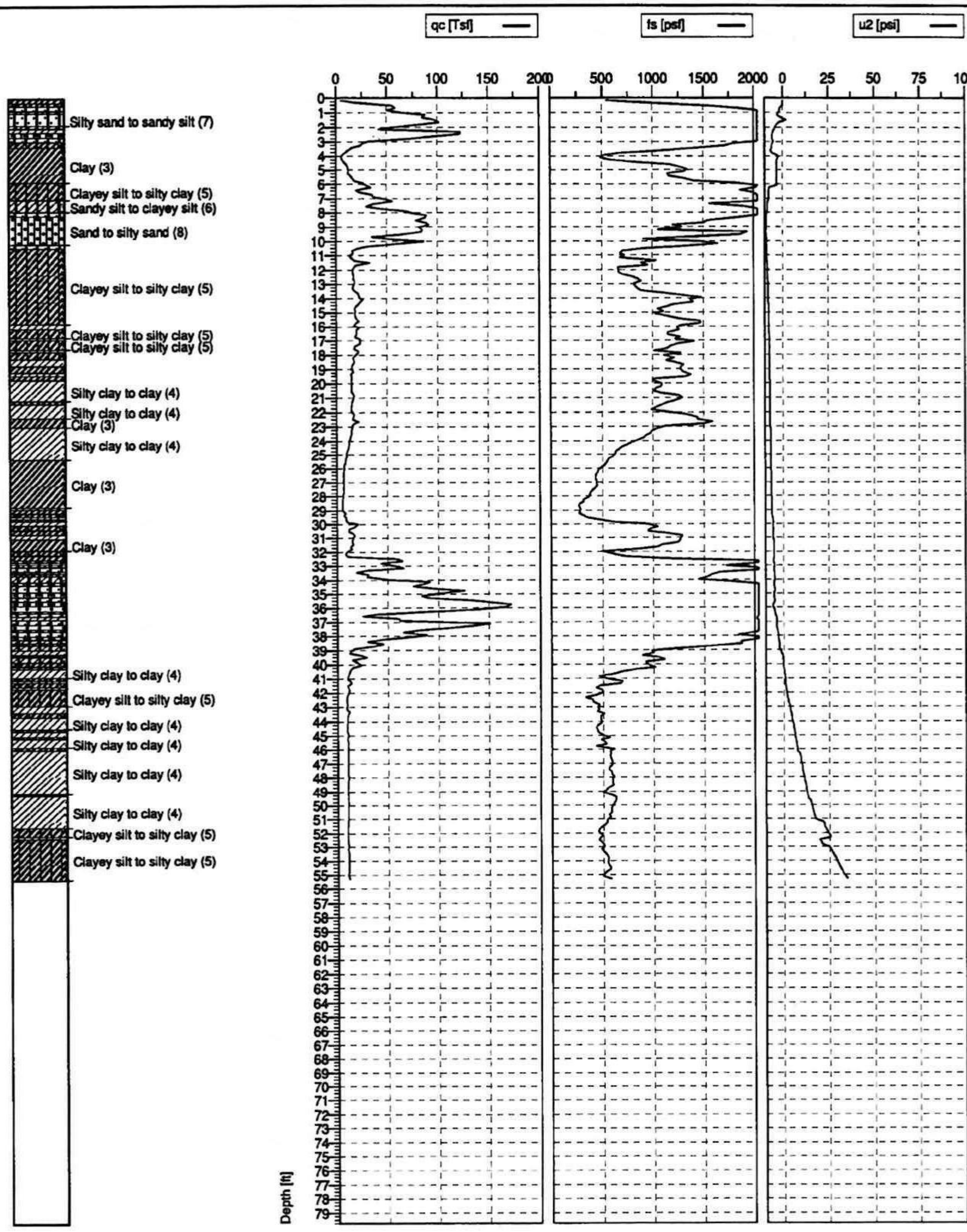
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT8	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/20/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h8.cpd	



Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

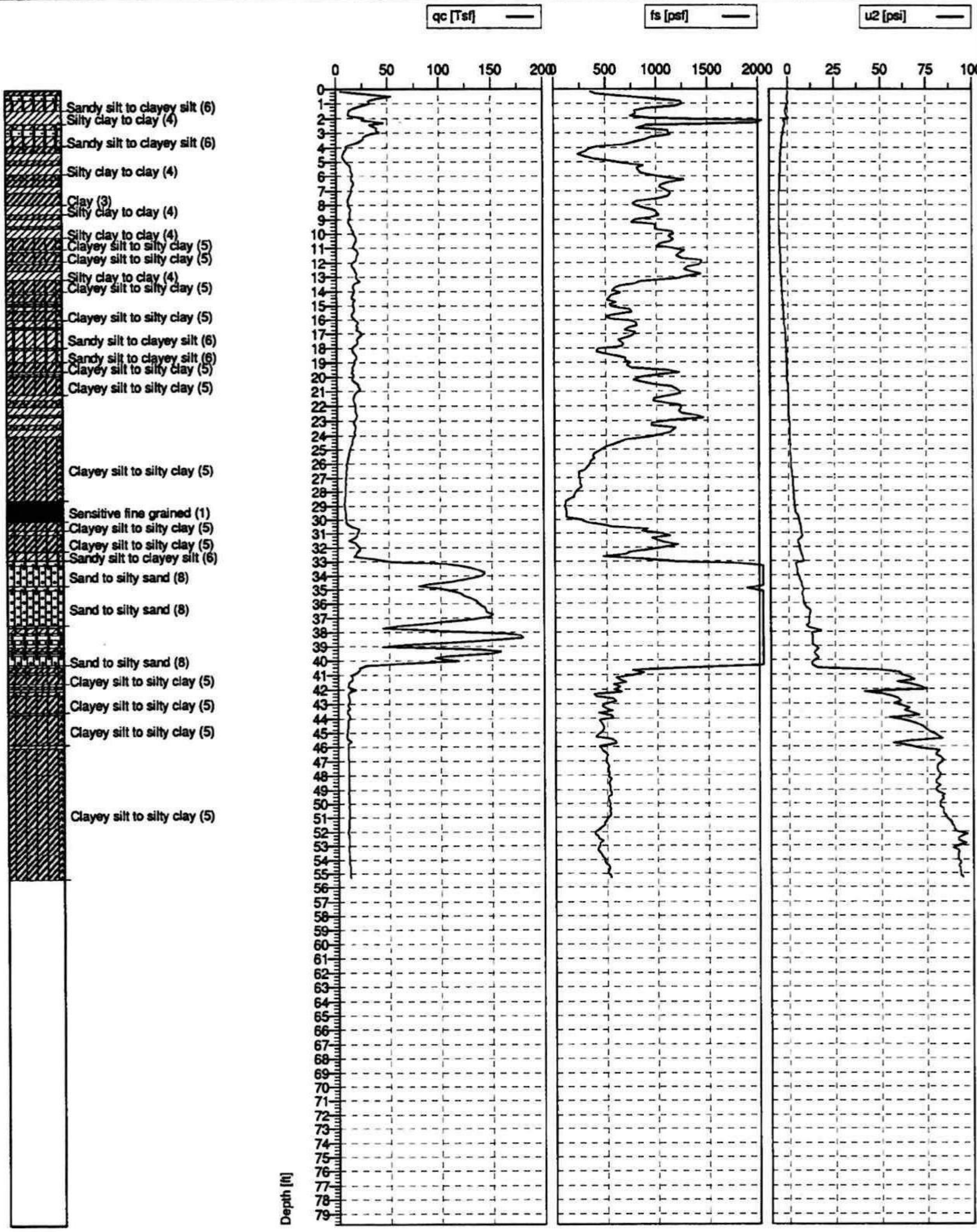
Test no: CPT9	Position:	Ground level:
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/20/2006 — Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1 — Fig:
	SLIDELL, LOUISIANA	File: h9.cpd



u2

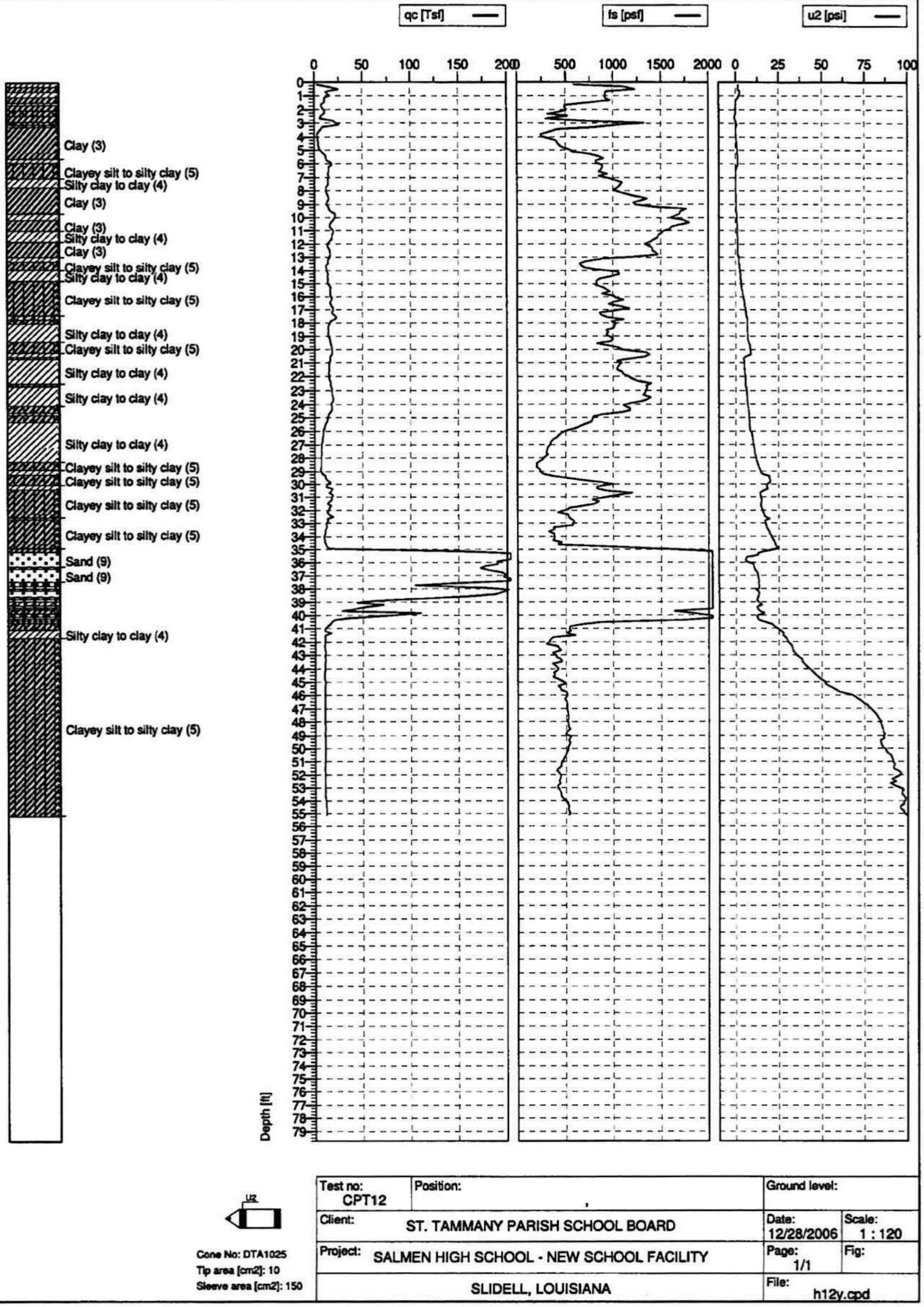
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT10	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/20/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h10.cpd	

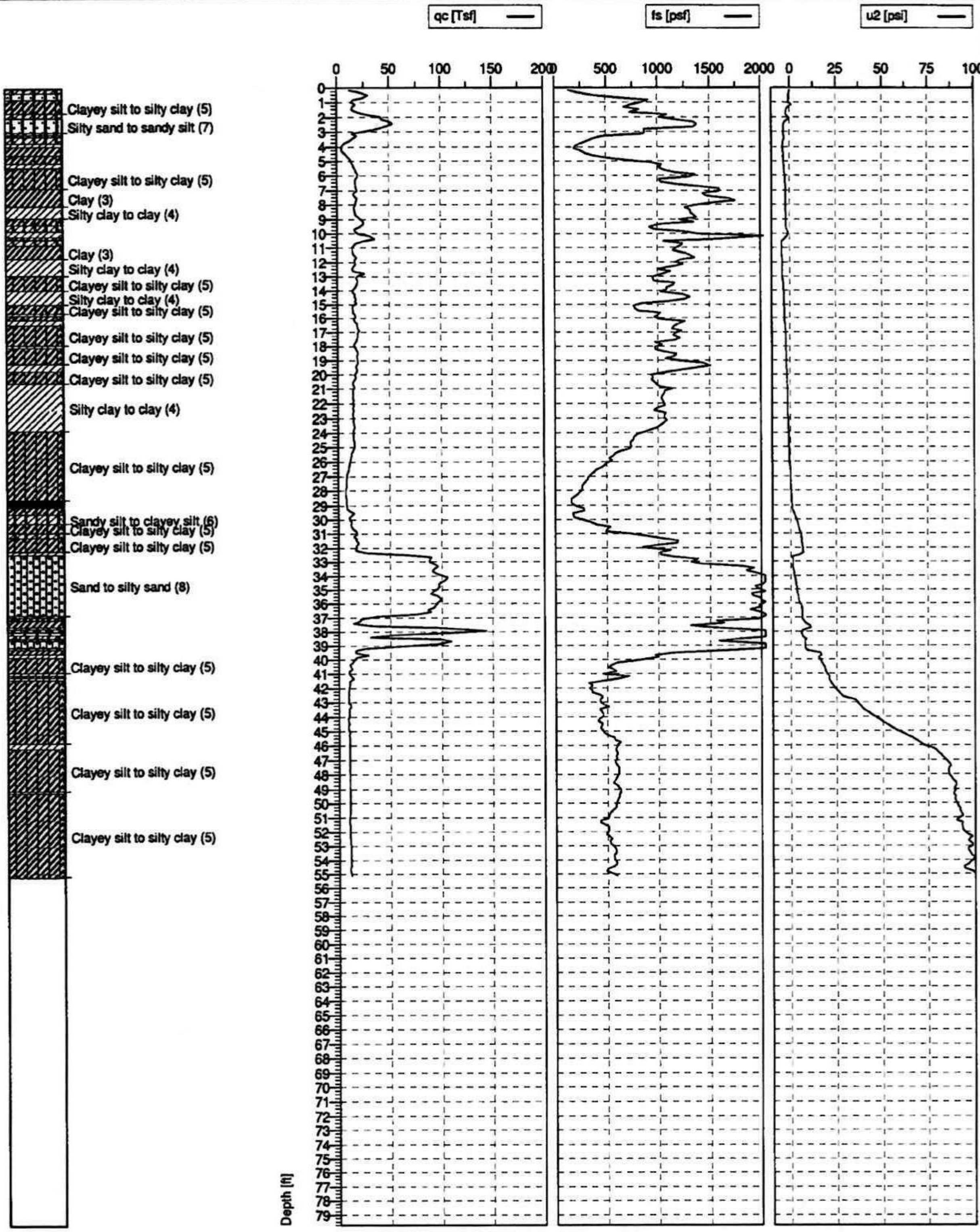


Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT11	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/20/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h11.cpd	

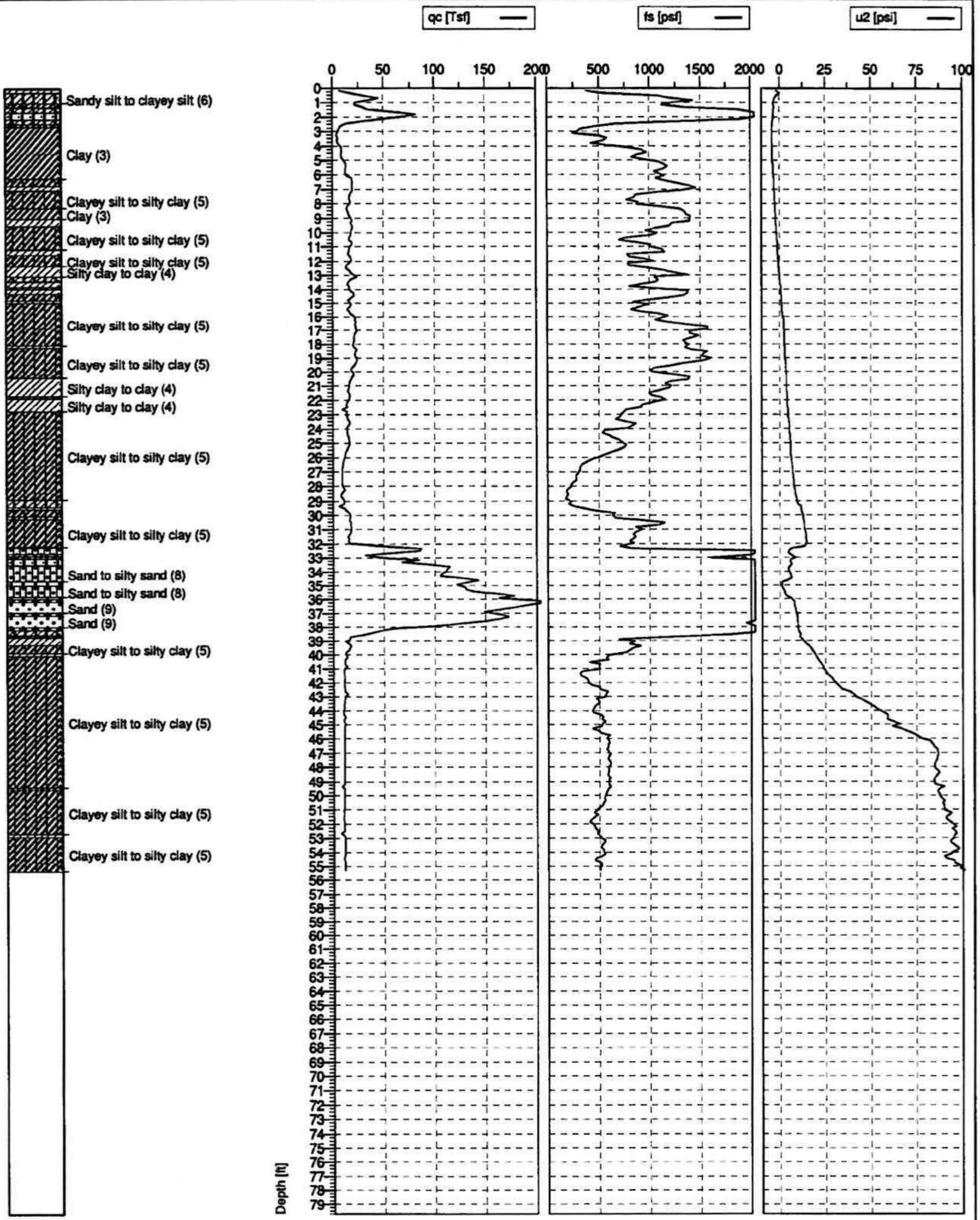


Test no: CPT12	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/28/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h12y.cpd	



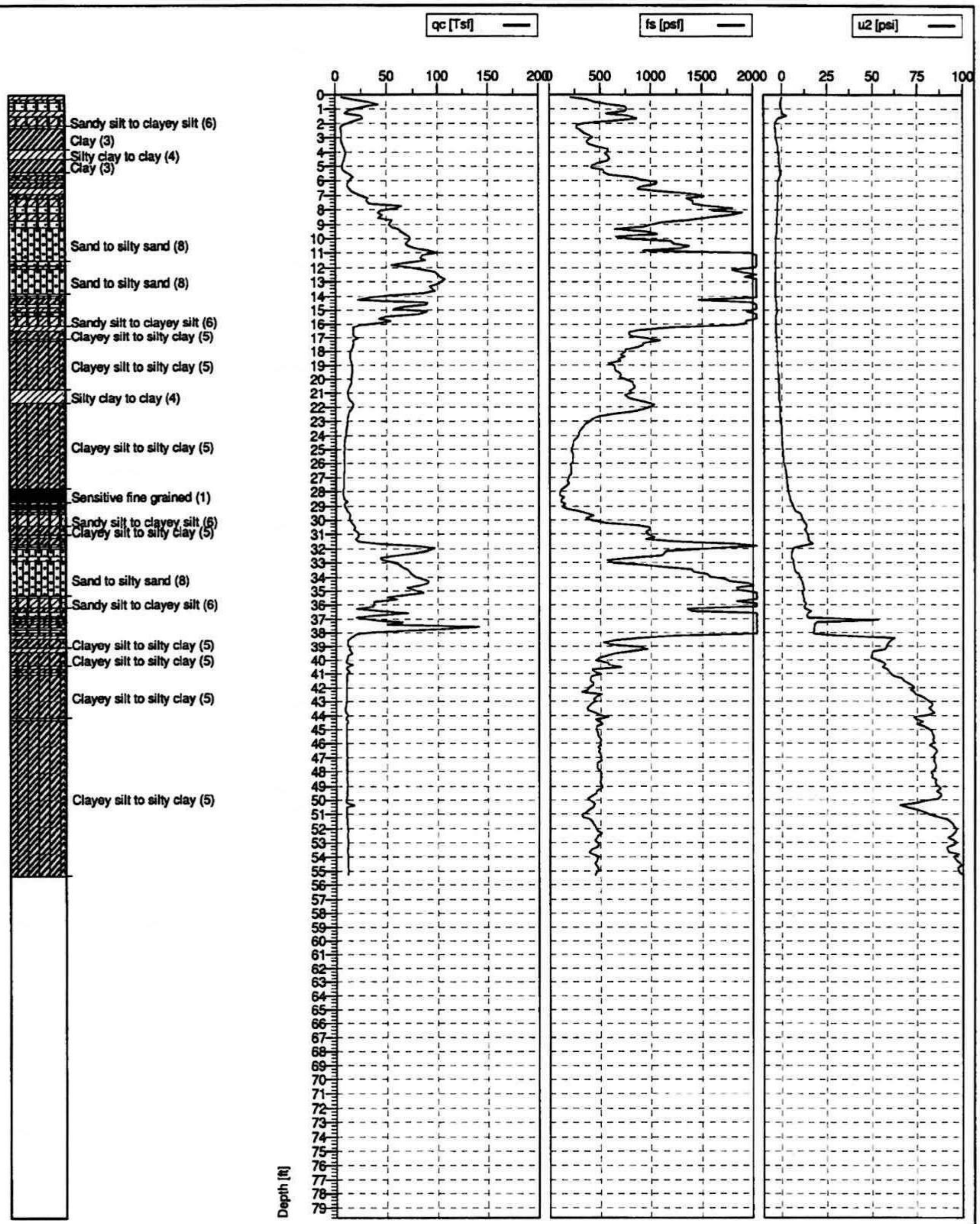
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT13	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/27/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h13.cpd	



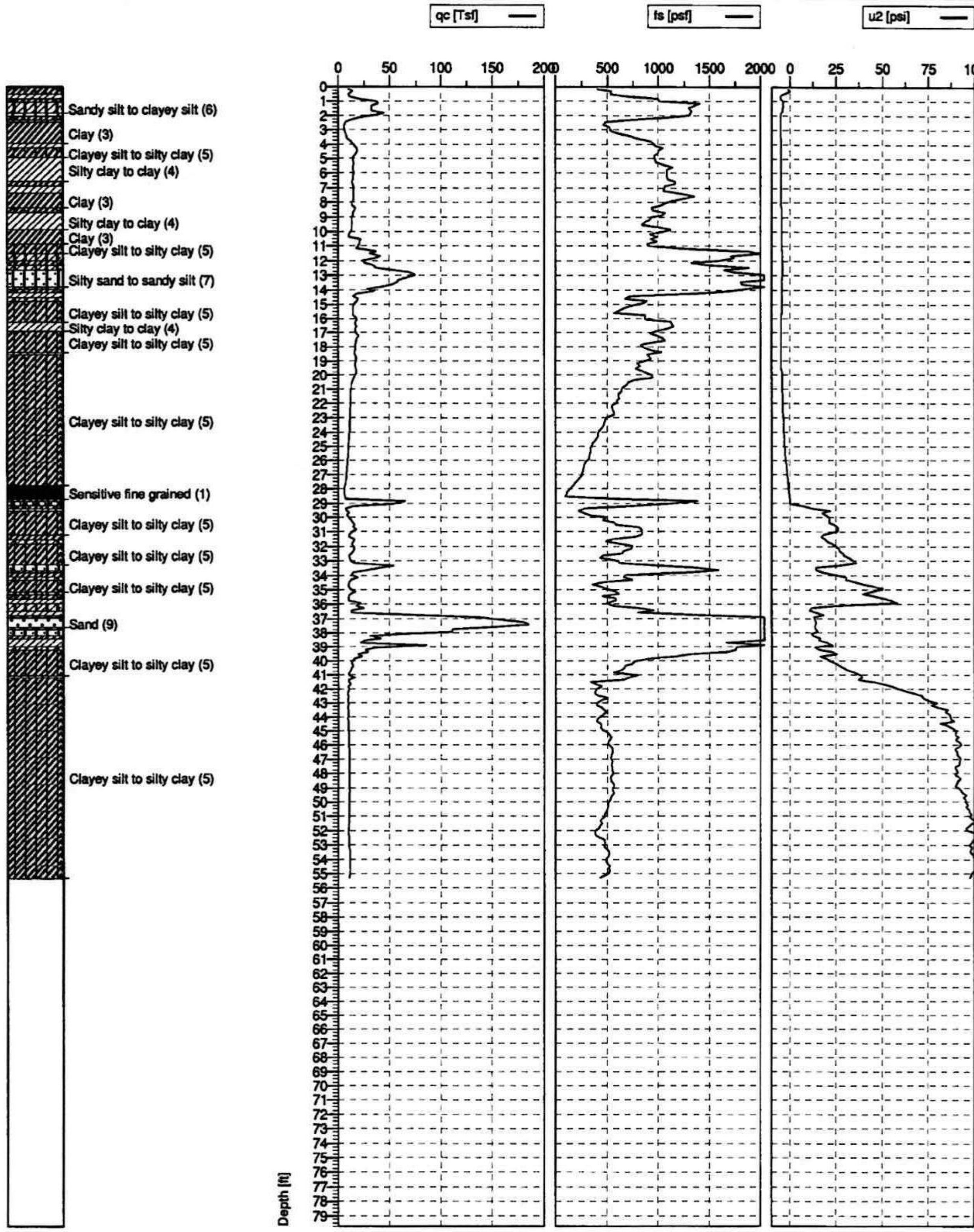
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT14	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/27/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h14.cpd	



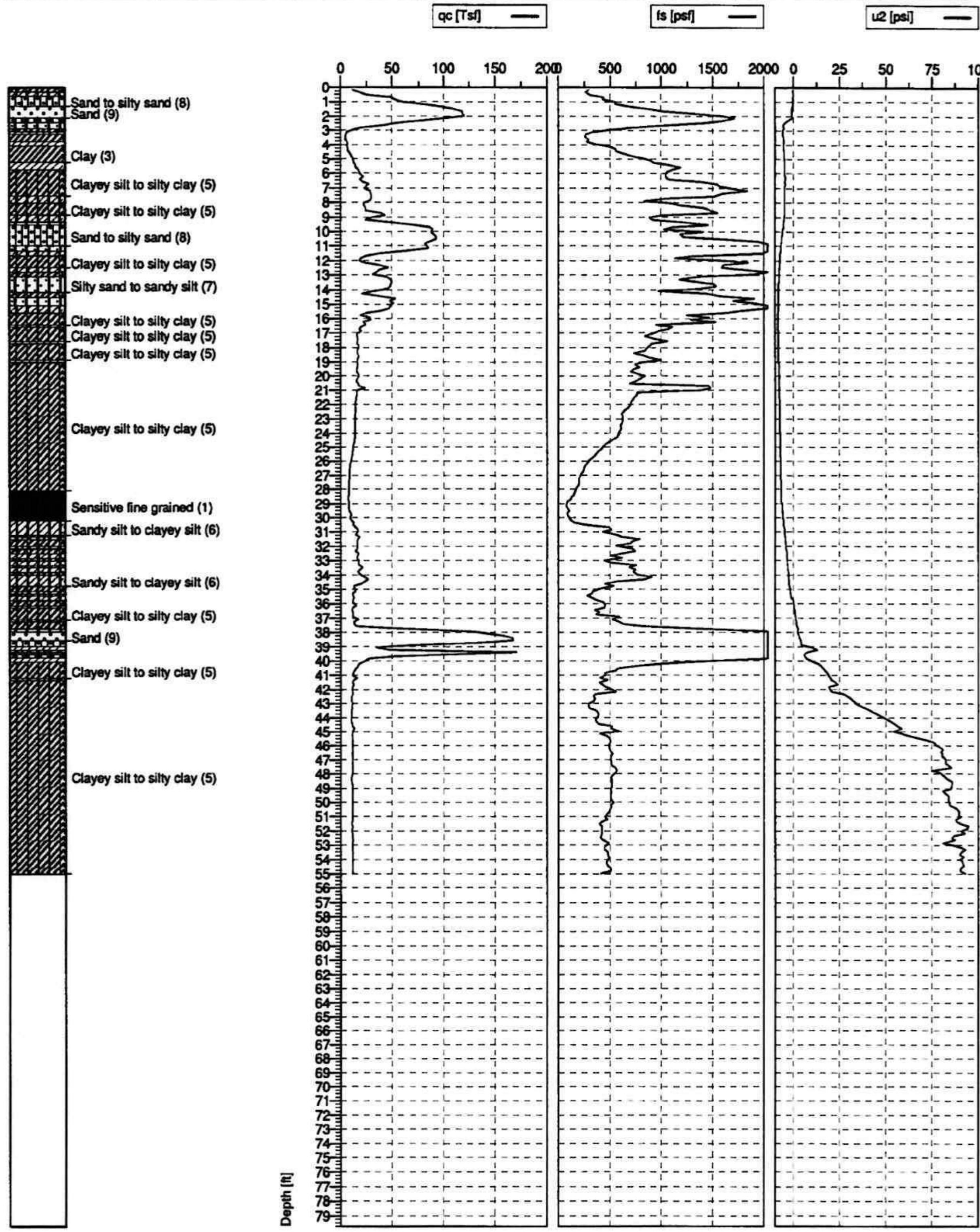
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT15	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/27/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h15.cpd	



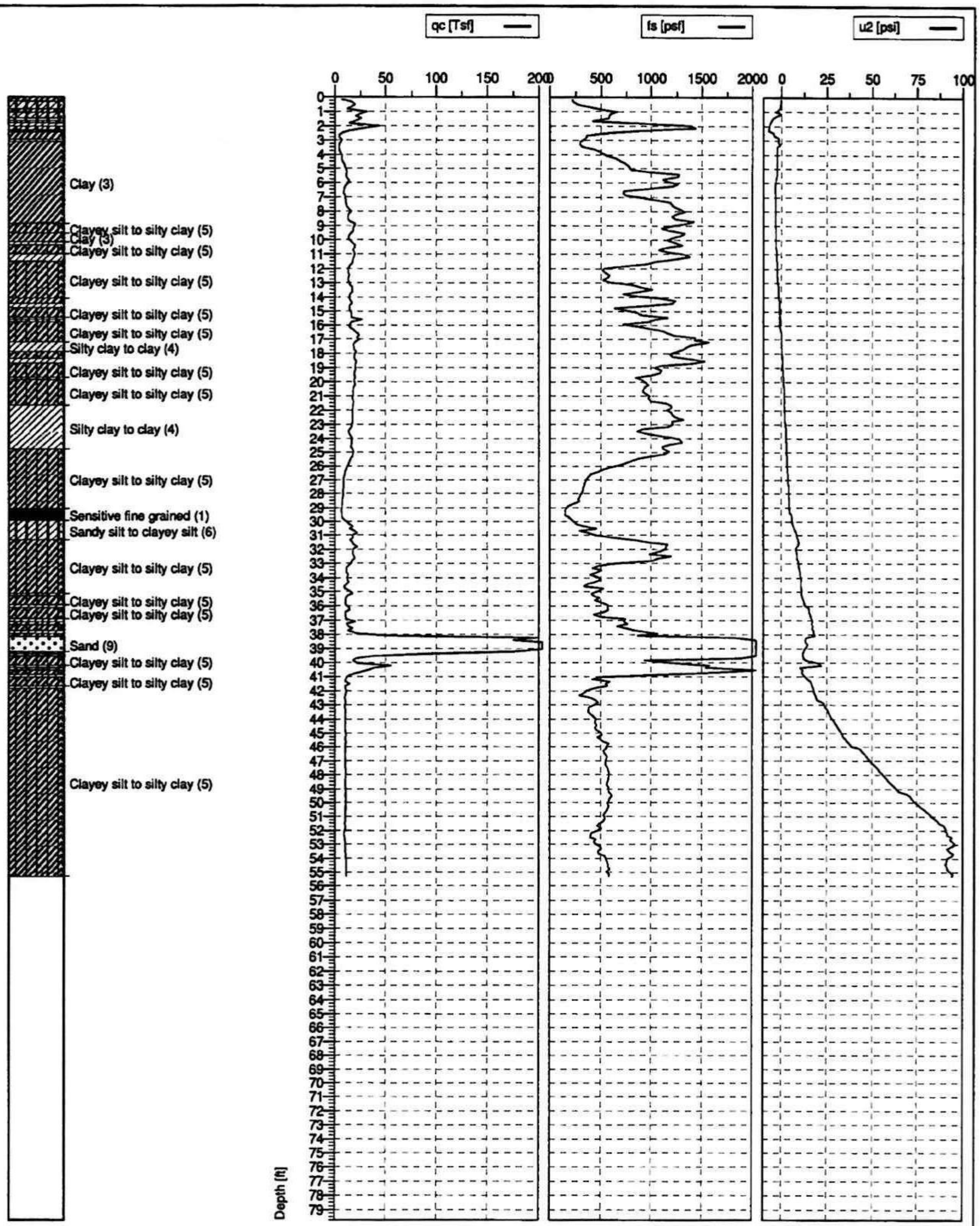
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT16	Position:	Ground level:
Client: ST. TAMMANY PARISH SCHOOL BOARD		Date: 12/27/2006 — Scale: 1 : 120
Project: SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY		Page: 1/1 — Fig:
SLIDELL, LOUISIANA		File: h16.cpd



Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

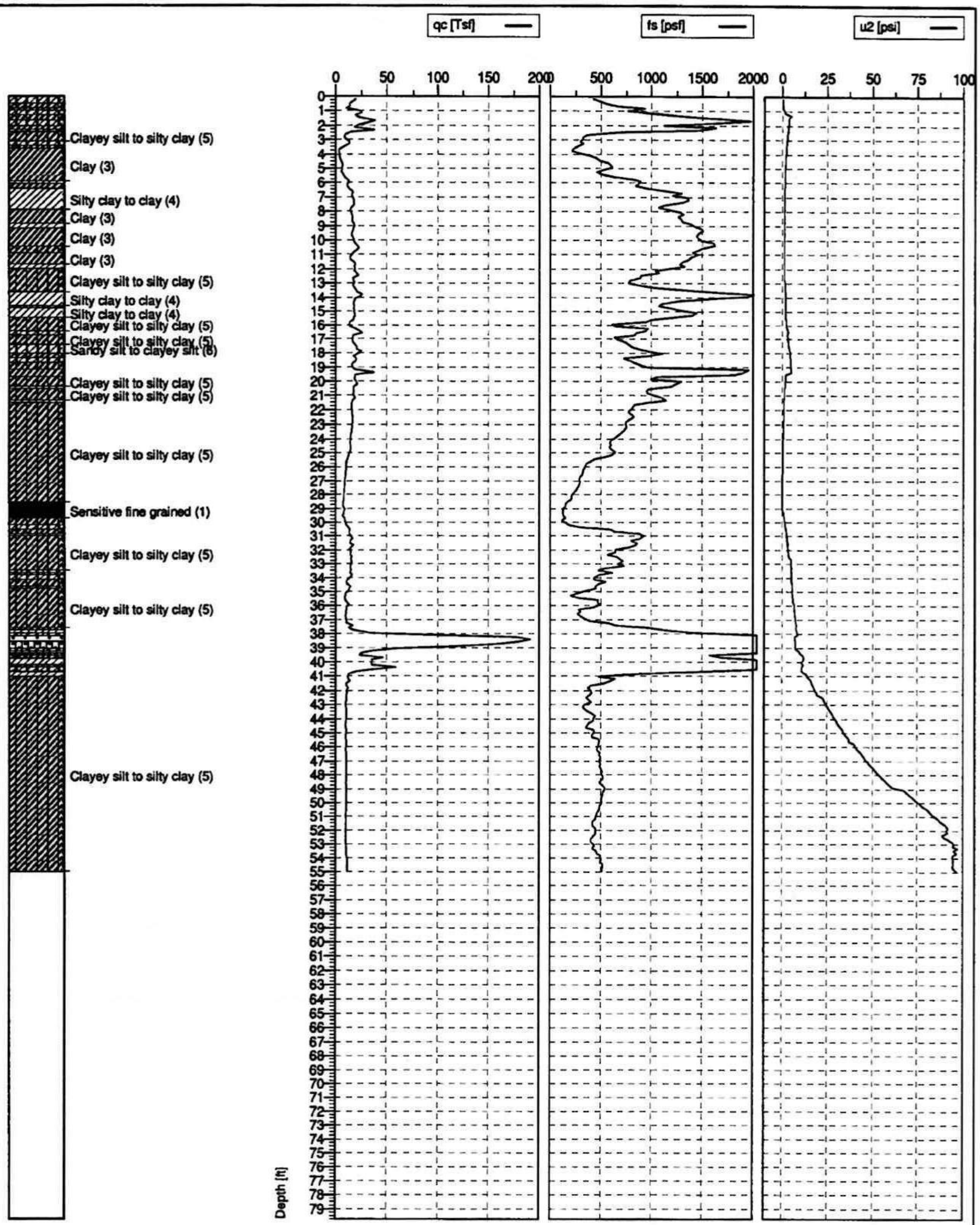
Test no: CPT17	Position:	Ground level:
Client: ST. TAMMANY PARISH SCHOOL BOARD		Date: 12/27/2006 / Scale: 1 : 120
Project: SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY		Page: 1/1 / Fig:
SLIDELL, LOUISIANA		File: h17.cpd



u2

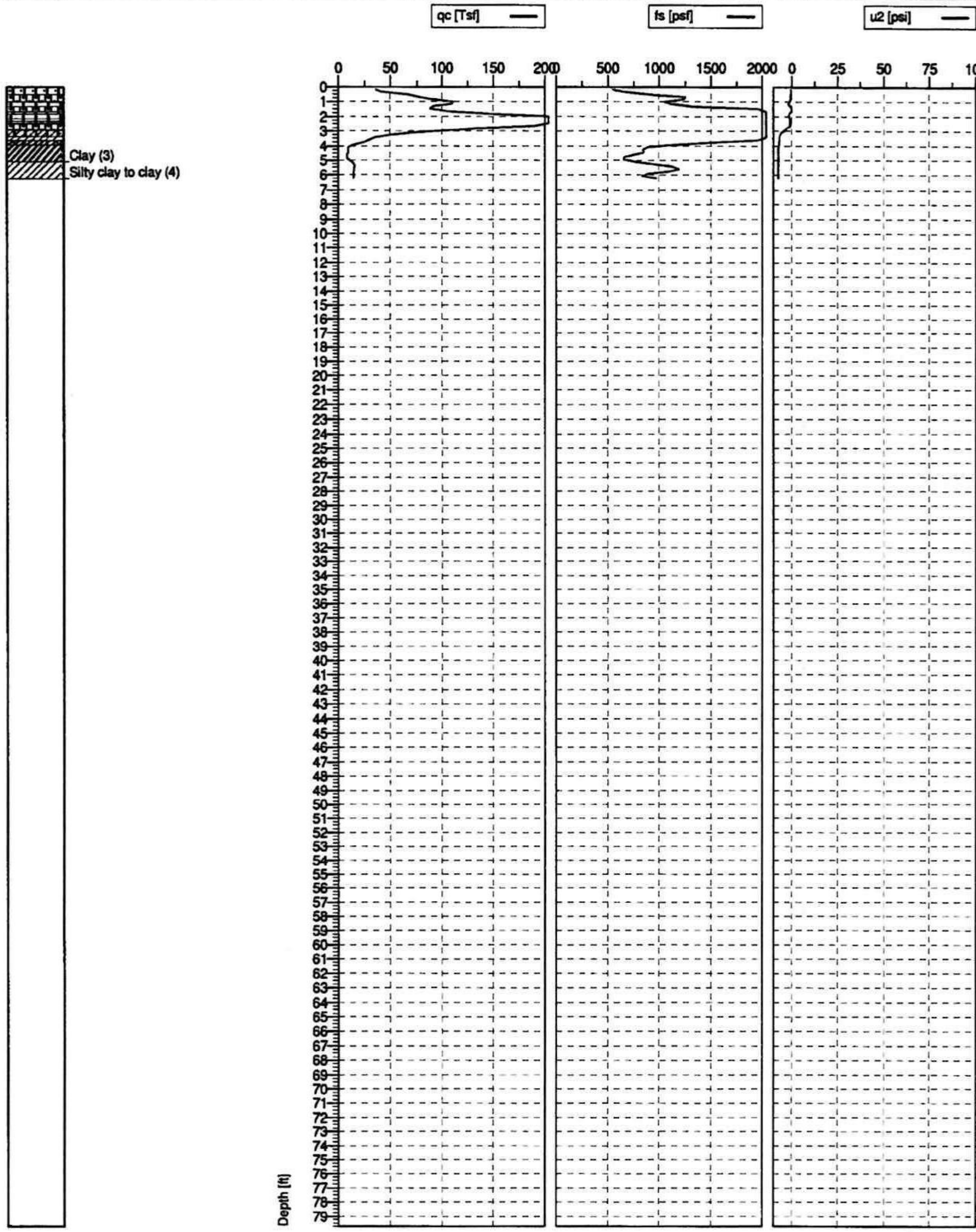
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT18	Position: ,	Ground level:
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/27/2006 · Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1 · Fig:
	SLIDELL, LOUISIANA	File: h18.cpd



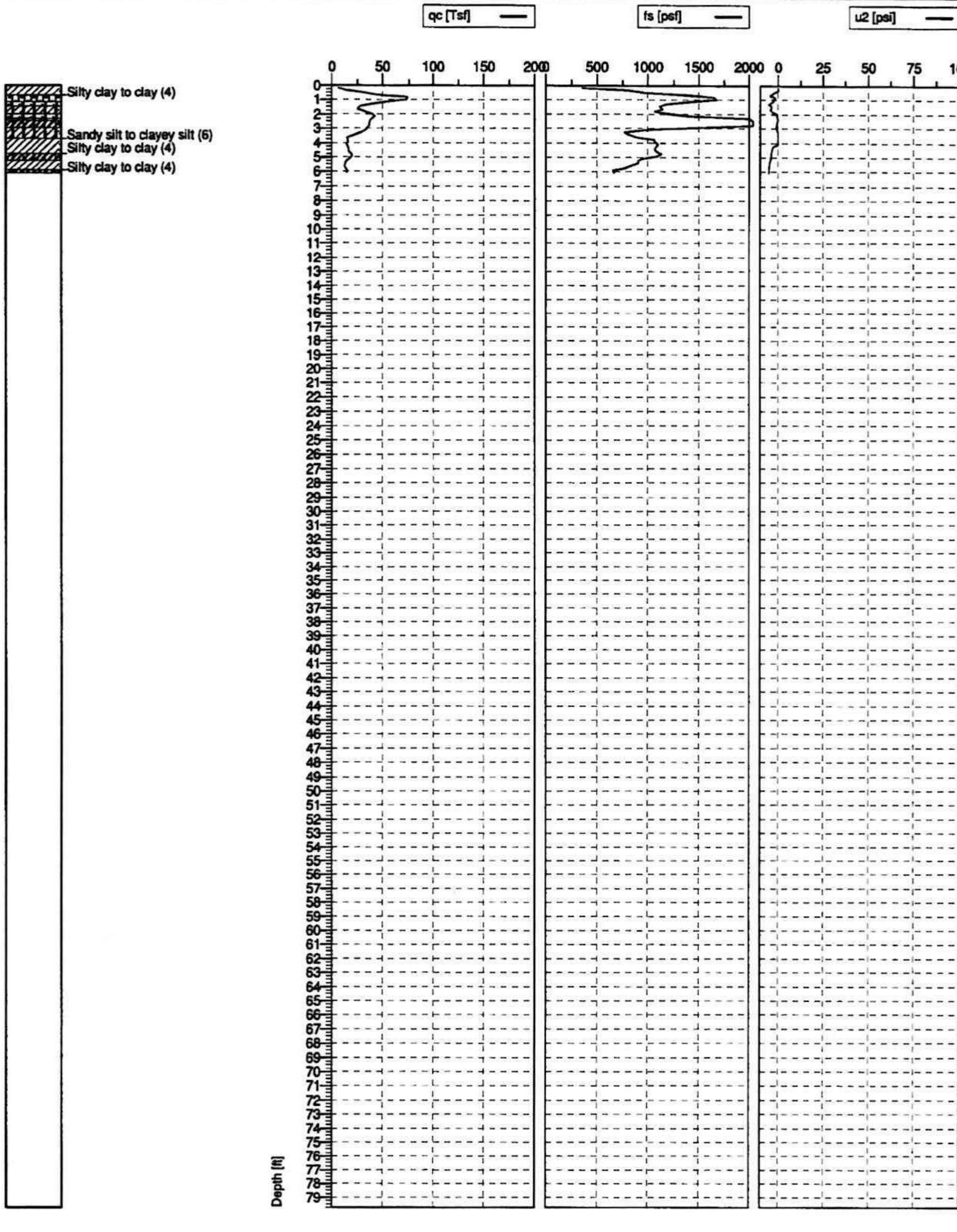
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT19	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/27/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h19.cpd	



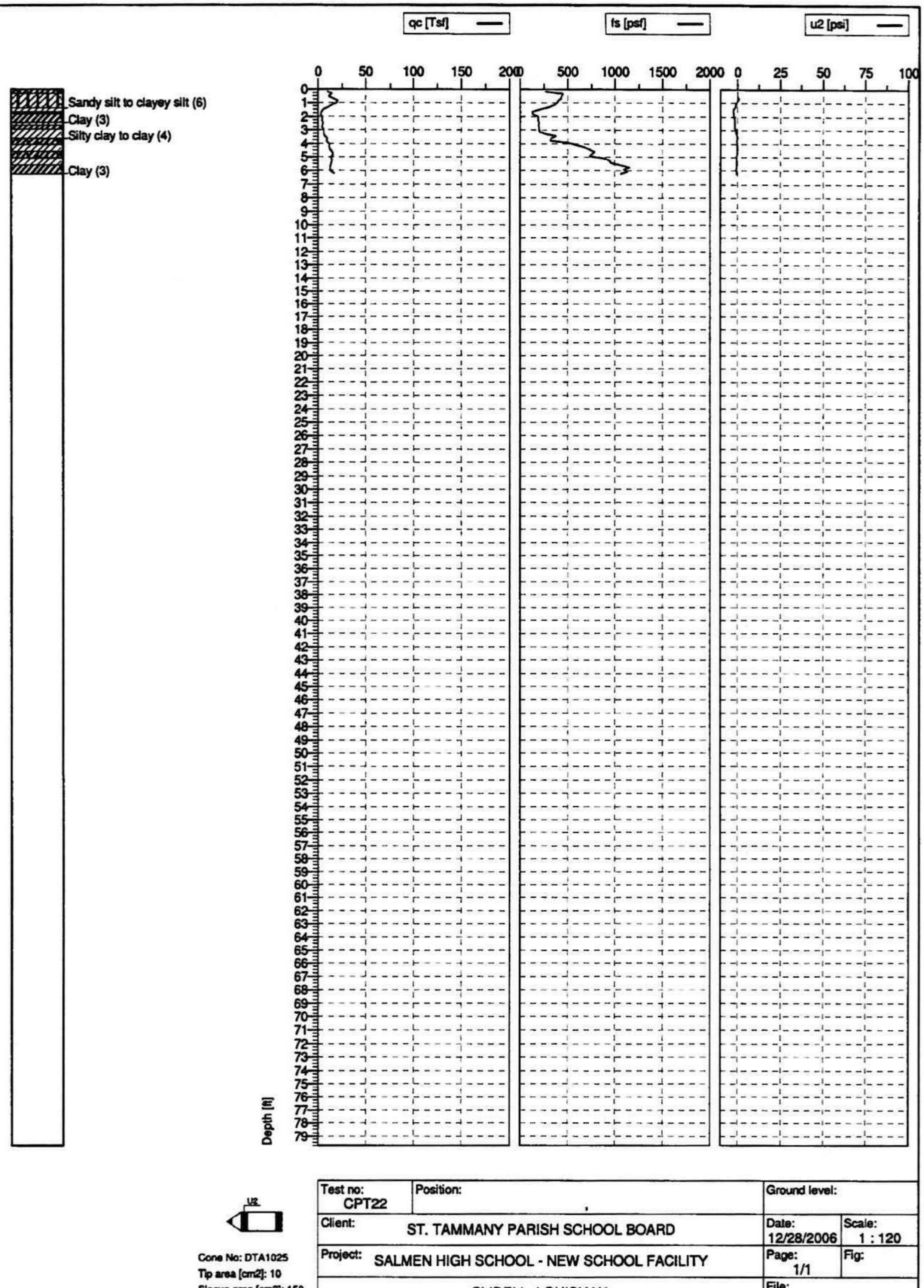
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT20	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/27/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h20.cpd	

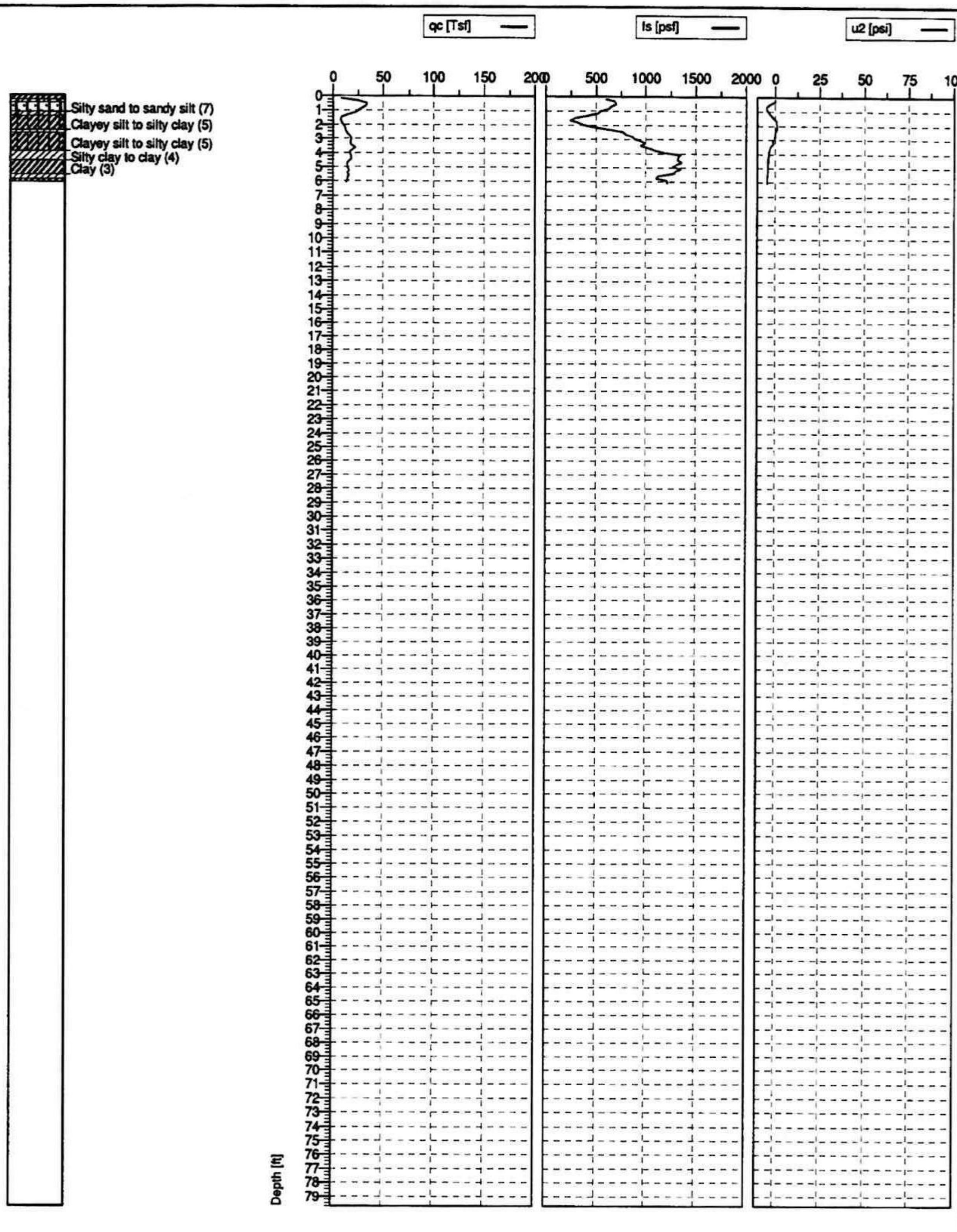


Test no: CPT21	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/28/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h21.cpd	

Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

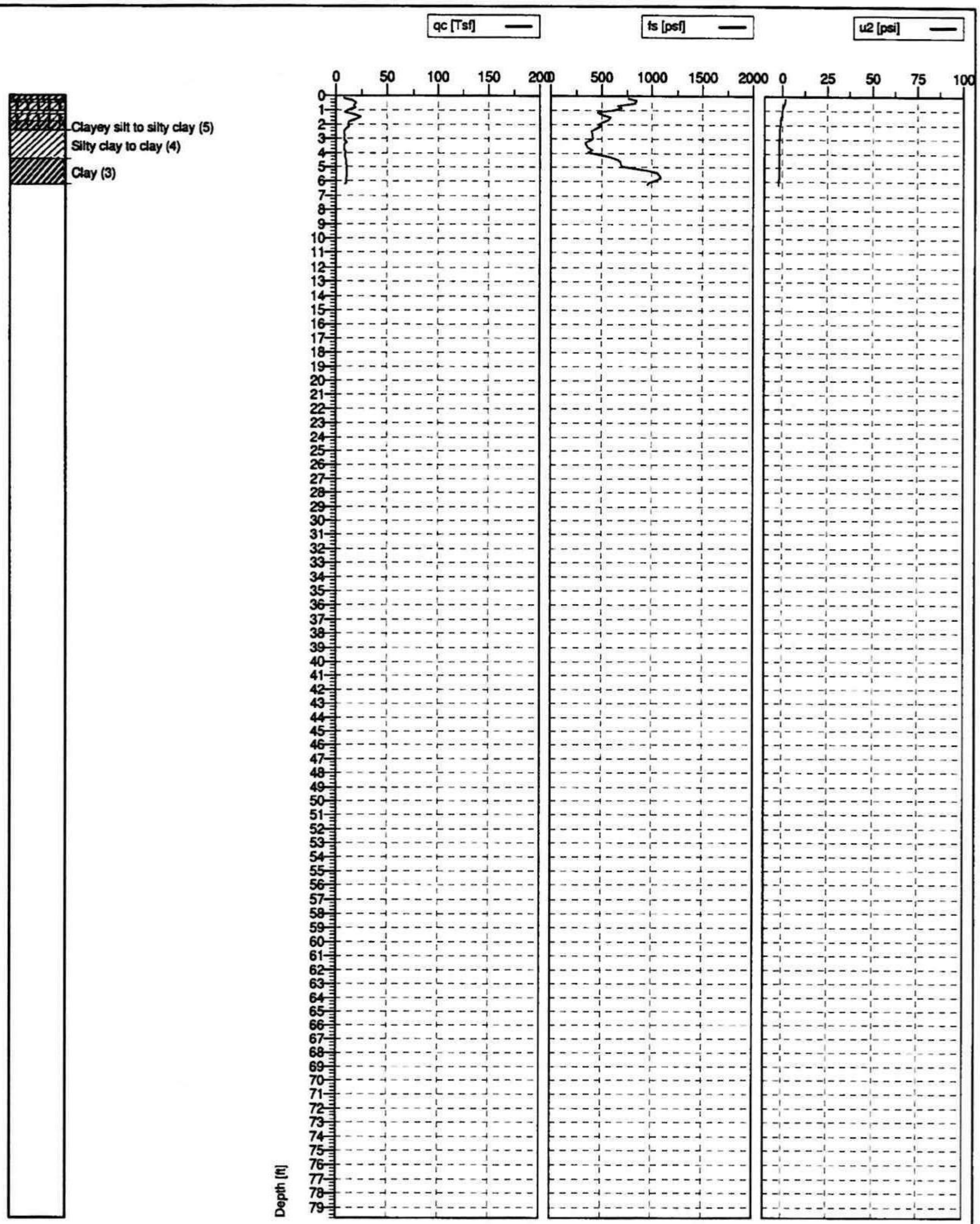


Test no: CPT22	Position:	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/28/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h22.cpd	



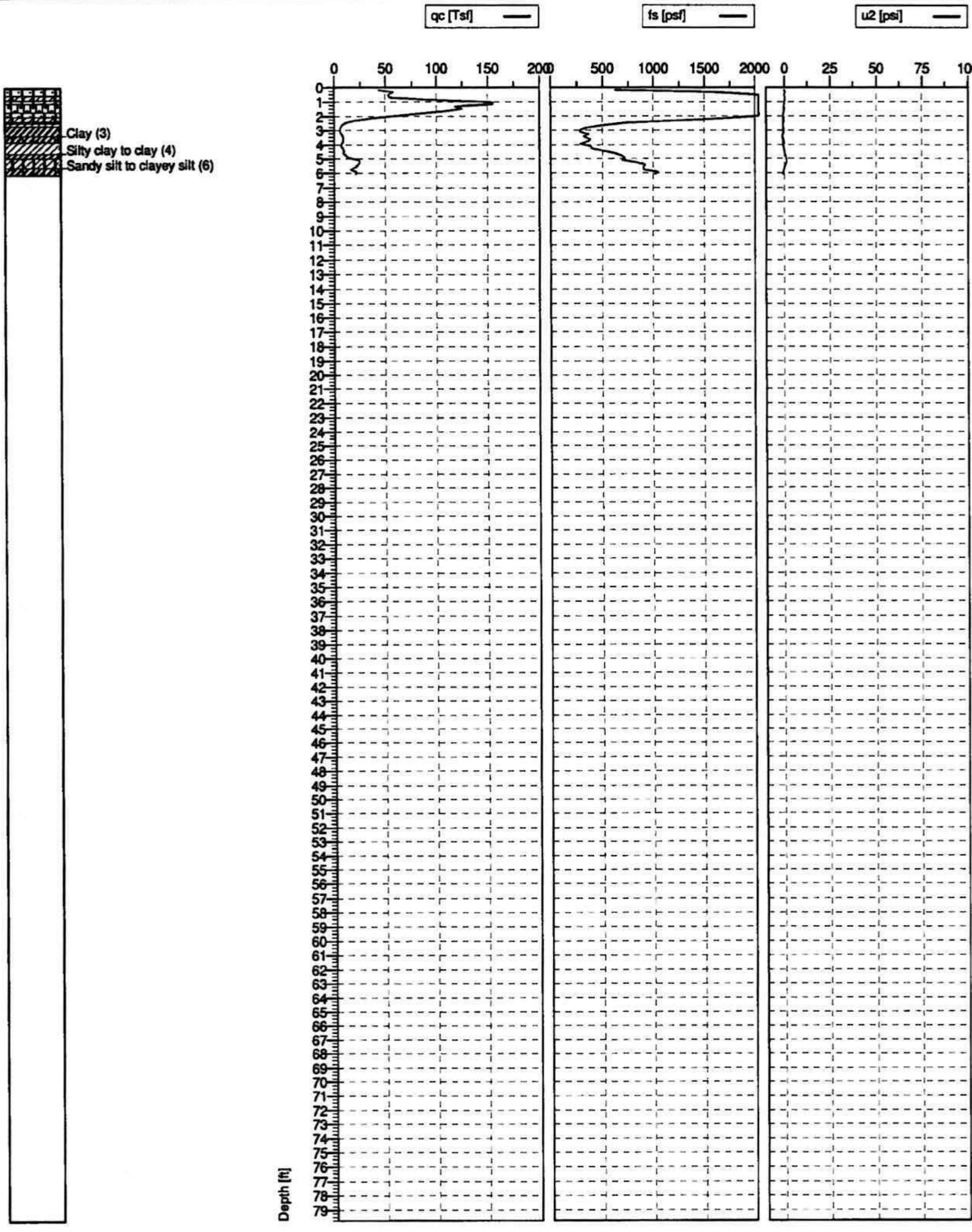
Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT23	Position:	Ground level:
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/28/2006 Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1 Fig:
	SLIDELL, LOUISIANA	File: h23.cpd



Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT24	Position:	Ground level:
Client: ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/28/2006	Scale: 1 : 120
Project: SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
SLIDELL, LOUISIANA	File: h24.cpd	



Cone No: DTA1025
Tip area [cm2]: 10
Sleeve area [cm2]: 150

Test no: CPT25	Position: ,	Ground level:	
Client:	ST. TAMMANY PARISH SCHOOL BOARD	Date: 12/28/2006	Scale: 1 : 120
Project:	SALMEN HIGH SCHOOL - NEW SCHOOL FACILITY	Page: 1/1	Fig:
	SLIDELL, LOUISIANA	File: h25.cpd	