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F-Area Northeast Expansion

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F-Area Northeast Expansion Report (U)

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## 1. INTRODUCTION

A geotechnical program has been completed in F-Area at the Savannah River Site (SRS) in South Carolina. This program investigated the subsurface conditions for the area known as the "northeast expansion" located in the F-Area (Figure 1.0-1). The primary focus was to gather subsurface information within the expansion area and tie this information with the detailed studies completed for the Actinide Packaging and Storage Facility (APSF) located southwest and adjacent to the northeast expansion area (Figure 1.0-2) and the balance of F-Area.

Data acquired from the APSF investigation includes both field exploration and laboratory data, which are included within this report for summary and comparison purposes. Results of this investigation are intended to be used as baseline subsurface conditions for the siting of potential new mission facilities. Further, this data will augment specific foundation design investigations for the proposed new mission facilities to be constructed in this area. Specifically, the program consisted of a field exploration program consisting of Standard Penetration Test (SPT) borings and Seismic Piezocone Penetration Test (SCPTU) soundings; a laboratory testing program and an evaluation of subsurface conditions.

This geotechnical program was performed by SRS Projects Engineering and Construction Division (PE&CD), Site Geotechnical Services (SGS) Department, in conformance with DOE Order 420.1, Procedure Manual E7, (WSRC, 1996a), and SGS Procedure Manual E9 (WSRC, 1996b).

### 1.1 Purpose and Objectives

The purpose of the investigation was to obtain geotechnical information to characterize the subsurface conditions within the northeast expansion area and compare these conditions with the adjacent APSF area. Specific objectives included:

- define the engineering stratigraphy and compare the continuity, thickness and relative elevation of stratigraphic units across the study site respective to the APSF area;

- determine the index properties of each stratigraphic layer and make a direct comparison to properties determined for the APSF stratigraphy ;
- evaluate the presence, thickness and stratigraphic position of soft zones; and
- evaluate the subsurface conditions in terms of relative geotechnical and foundation capability.

## **1.2 Report Organization**

The text of this report includes five sections. These sections are: Section 1, Introduction; Section 2, Subsurface Exploration; Section 3, Subsurface Conditions; Section 4, Geotechnical and Foundation Assessment, Section 5, Conclusions and Recommendations; and Section 6, References. These sections are followed in succession by tables and figures.

Appendices to this report include: Appendix A, Boring Logs; Appendix B, Laboratory Test Data; and Appendix C, Seismic Piezocone Penetrometer Test Soundings.

This report is divided into two volumes: Volume 1 contains the text, tables, and figures, Volume 2 contains appendices A , B and, C.

## **1.3 Quality Assurance**

Quality related activities performed by WSRC/BSRI organizations during the Geotechnical Investigation were controlled in accordance with the WSRC QA Program as delineated in WSRC Procedure Manual 1Q. Activities were also controlled via compliance to the applicable administrative and technical procedures contained in WSRC Procedure Manual E9, "Site Geotechnical Services."

Cone Penetration Testing was conducted in accordance with the Quality Assurance Plan for WSRC Subcontract AA82276N, with Applied Research Associates, Inc. (ARA) and the ARA Quality Assurance Program for Cone Penetration Testing, Revision 3 (7/30/96). Subcontractor compliance with their implementing procedures and instructions (ARA-Q-101 through 107) also ensured the integrity of the CPT results and interpretations.

Soil testing performed by Law Engineering of Atlanta, Georgia (WSRC Subcontract No. AB80111N) was accomplished through compliance with the Law Engineering QA Program as delineated in the Law Engineering Quality Assurance Manual, Revision 1 (7/25/97), and applicable national/industry test standards (as specified in procurement specification K-SPC-G-00016, Revision 0).

SGS QA provided quality oversight over all quality related activities of the geotechnical investigation. SGS QA oversight activities included: the review and approval of all technical and quality procedures and instructions developed specifically for the investigation; monitoring field activities, sample handling, and soil testing laboratory activities; and providing direct QA oversight over seismic piezocone penetration testing activities.

QA/QC activities were also performed by Law Engineering and Applied Research & Associates personnel as prescribed in their respective QA plans, QA programs, and QA technical procedures.



## 2. SUBSURFACE EXPLORATION

Between August, 1995 and June, 1998, field exploration programs to support various design stages of the Actinide Packaging and Storage Facility (APSF) were completed. The information from both programs forms the basis for this report. The exploration program for the F-Area northeast expansion area was completed between February 1998 and April 1999. Within this time frame, the majority of the field investigation was completed between February 1998 and May 1998 after which work was suspended until the following fiscal year. Field work resumed in March of 1999 and was completed in April 1999.

The exploration programs consisted of a series of Standard Penetration Test (SPT) borings, Piezocone Penetration Test (CPTU) and Seismic Piezocone Penetration Test (SCPTU) soundings, both of which are referred to as CPT hereafter. Some SPT borings and CPT sounding locations were paired so that a site-specific comparison of results could be obtained. Figure 2.0-1 shows the locations of all borings and soundings.

The borings and soundings were advanced in a grid pattern, roughly 150 feet by 150 feet, covering the expansion area to the north and east of the APSF area. However, in heavily wooded areas, areas where site topography was too steep, or where access could not be obtained due to existing construction trailers, the exploration locations were not performed. This was limited to eight points in the northern and eastern most extent of the area (Figure 2.0-1). Exploration in these areas would be required as construction of new facilities is planned.

The SCPTU was used as the primary exploration technique. SPT borings were located adjacent to selected soundings to measure N-values and retrieve soil samples for laboratory classification testing. Test methods, equipment, and general field procedures, are summarized in the following sections. The following list summary field exploration completed for the northeast expansion investigation:

- 39 Seismic Piezocone Penetrometer Test (SCPTU) Soundings
- 4 Cone Penetrometer Samples
- 9 Standard Penetration Test (SPT) Borings (4 of which were continuous)

## 2.1 Field Test Location and Clearance

The selection of the boring locations, CPT soundings, and other field work was based primarily on the following criteria and factors:

- Existing Data;
- Data coverage;
- Site conditions (topography, wooded areas, etc.);
- Type of data required;
- Under-and-above ground interferences; and
- Presence of known soft zones.

Approval of the selected location for the field work was preceded by a series of work coordination steps as summarized below (the organization responsible for each step is noted in parentheses):

- Selection of general area based upon the factors listed above (SGS);
- Preliminary interference research (Construction Layout);
- Ground penetrating radar survey (Operations Department);
- Preparation of work package (SGS);
- Work Process Control (Operations Department); and
- Field survey (Construction Layout).

This detailed site clearance routine was essential for safe field operations. Any obstacles or restrictions encountered in any step during this process required the relocation of the proposed boring or sounding location, and therefore the re-initiation of the process.

## 2.2 Equipment and Field Test Methods

All equipment used in the field investigations met applicable ASTM standards and site standards and procedures as listed below:

- WSRC E9 SGS-GT-202 - Drilling Practices;
- WSRC E9 SGS-GT-203 - Sample Preparation, Handling and Storage;
- WSRC E9 SGS-GT-206 - Engineering Soil Descriptions;
- WSRC E9 SGS-GT-207 - Field Log Preparation;
- WSRC E9 SGS-GT-210 - Standard Penetration Test;

- WSRC E9 SGS-GT-211 - Cone Penetration Test Soundings;and
- WSRC 3Q5 Manual - Hydrogeologic Data Collection.

### ***2.2.1 Exploration Contractor(s) and Equipment***

One drilling contractor was utilized for the borings, SPT testing and undisturbed soil sampling (Shelby tubes) and one contractor was used for all SCPT soundings. A description of the scope of each contractor and the equipment used is provided below.

#### **Graves Environmental, Inc.**

Graves Environmental, Inc., of Jackson, South Carolina performed the drilling and sampling for SPT and undisturbed borings. All Graves Environmental drillers involved with the drilling and sampling activities were experienced with geotechnical investigations and performed the drilling and sampling for the APSF investigation. The drilling equipment utilized is described below.

#### **Failing 1500**

The Failing 1500 drill rig is gas-driven with a 40-foot mast. The rig has a 23-foot Kelly assembly which allows for a 20-foot stroke and is capable of mud rotary, augering, and rotary coring techniques. The drill string is controlled by the Kelly arrangement, as well as, by a mechanical winch. This rig was used for all deeper borings requiring mud rotary.

#### **Applied Research Associates (ARA)**

Applied Research Associates (ARA) of Royalton, Vermont performed all CPT field and data processing activities including the CPT soundings completed for the APSF investigation. The CPT rig used for this investigation is described below.

## Mac I

The Mac I CPT rig is a 22 ton rig capable of 30 ton mass push when fully ballasted. The push rod and piezocone utilized conformed with ASTM D5778 (ASTM 1995) consistent with WSRC E9 SGS-GT-211 - Cone Penetration Test Soundings. This rig was equipped with a hydraulic skid coupled to the surface beneath the rig for generating a shear wave source. Compressional waves were generated with a hydraulic vertical hammer located on the outside of the rig. All components were controlled by the operator.

### **2.2.2 Standard Penetration Test (SPT)**

Tests were performed in accordance with WSRC E9 SGS-GT-210 using a standard 24-inch long by 2-inch outside diameter (OD), split-spoon sampler with a 2-foot bleeder and check valve located above the sampler, NX drill stem, and a 140-lb safety hammer falling 30 inches. SPT N-values were determined by adding the number of blows required to drive the split-spoon sampler the last 12 inches of the standard 18-inch drive.

The general test procedure, as noted in sequence, is outlined below:

1. Split spoon is lowered into nominal 4-inch diameter borehole;
2. Depth is checked and any rod settlement noted;
3. Six-inch intervals, totaling 18 inches, are marked on the drill rod above the turntable;
4. Sampler is driven by blows applied using a 30-inch stroke with the rope wrapped twice over the cathead;
5. Sampler retrieved and recovery noted;
6. Sampled interval reamed and drilled out to next sample interval; and
7. Process repeated.

Prior to each SPT test, the Geotechnical Oversight professional verified that the spoon was properly assembled, making sure the bleeder and check valve were clean and the drive shoe was in good condition.

### **2.2.3 Undisturbed Sampling**

All undisturbed soil samples referenced within this report pertain to samples collected for the APSF investigation. No undisturbed samples were obtained specifically from the northeast expansion area.

Undisturbed (UD) soil samples were obtained for laboratory testing with direct push shelby tubes. The shelby tubes used were either brass or galvanized steel with a 3 inch OD, 0.065 inch wall thickness, and a length of 30 inches. Sampling was performed in accordance with ASTM D1587 (ASTM 1996).

The selection of the sampling interval was based on the results of previously pushed CPT soundings and/or SPT borings located within 10 to 15 feet from the UD boring. Prior to sampling, a sampling plan was developed for each UD boring. Generally, sampling was performed on the more cohesive soil layers encountered.

Drilling requirements for undisturbed sampling boreholes required that fluid pressures be kept as low as practical, while maintaining fluid return up the borehole. Drill bits with side discharge, or, in the case of tricone bits, with bottom deflectors, were required for reaming and advancing the borehole. Drilling was accomplished by mud rotary methods to the predetermined sampling depth. The drill stem was then tripped out and the bit removed. The Shelby tube head with a ball check valve was then attached and lowered to the bottom of the borehole. Borehole depth was checked against the drilled depth and noted. The maximum push length was marked on the drill stem and the rod hydraulically advanced a full 24 inches or until 600 psi hydraulic pressure was reached. Once the advance was made, the tube was allowed to sit for 5 minutes. When ready to retrieve the sample, the drill string was rotated about 90 degrees to shear the sample off the surrounding soil. When each sample was brought out of the borehole, the bottom and top were capped with plastic slip-on caps. If a gap was noted between the bottom tube edge and sample, a filler material was placed in the gap prior to placing the cap. Details of final sample preparation are provided in Section 2.3.

#### **2.2.4 Piezocone Penetration Soundings**

CPTU, including seismic (SCPTU) soundings, were performed in accordance with ASTM D5778. The CPT was used because of the relatively quick and clean operation and its ability to provide a continuous soil profile for determining stratigraphy and defining the extent of soft and/or loose soil zones. In general, all CPT soundings included shear wave velocity surveys at 3-foot intervals. Target depths were based upon the estimated elevation of the top of the Congaree formation (approximately El. 130 feet MSL), a dense sandy layer (see section 3) that is considered incompressible. However, actual depths varied, depending upon ground surface elevations and subsurface conditions.

#### **2.2.5 Borehole and Penetration Abandonment**

Abandonment of borings and soundings was performed per WSRC Manual 3Q5, Hydrogeologic Data Collection (WSRC, 1992). The standard grout mix consisted of the following:

- One sack Type 1 Portland Cement (94 lb sack);
- Two pounds of dry sodium bentonite; and
- 6.5 to 7.5 gallons of potable water.

All borings were abandoned immediately upon completion of testing. Grouting was accomplished via the tremie method. The grout pipe was lowered to the bottom of the boring and grout was injected until the boring fluid was displaced and grout returned to the surface. All borings were grouted to the surface and topped off until the column remained static.

Cone penetrometer soundings were abandoned by pressure grouting through a push rod which was re-pushed down to the bottom of the sounding. A grout tube extending to the bottom of the push rod was used to pump grout into the hole as the push rod was retracted. Holes were topped off until the column remained static.

### **2.3 Sample Preparation, Handling, Storage, Transportation, and Control**

Samples were prepared and handled in accordance with WSRC E9 SGS-GT-203 - Sample Preparation, Handling and Storage. Shelby tubes were checked for conformance with ASTM D1587-83 (ASTM 1996).

The undisturbed samples were maintained in vertical tube boxes capable of holding four tubes as prescribed by ASTM D 4220 (ASTM 1996). Once the samples were obtained, the samples were trimmed, measured, and sealed. Plastic caps were placed over both ends of each tube, then taped and each tube labeled. For SPT borings, a sample was collected from the top and bottom of the sample spoon. If a material change occurred within the sample, additional samples were collected, as appropriate. Samples were placed in 8-ounce glass jars. The tops were closed tightly, wrapped, sealed with electrical tape, and samples were labeled on both the jar and the lid. Prior to sample turnover to Law Engineering, all samples were stored in accordance with WSRC E9 Procedure SGS-GT-203.

All soil samples selected for testing were turned over to Law Engineering for transporting to their laboratory in Atlanta. All tube samples tested by Law Engineering in Atlanta were transported in tube boxes and were maintained in a vertical position. Once in Atlanta, the samples were maintained in a controlled area according to the Law Engineering Quality Assurance Program.

### 3. SUBSURFACE CONDITIONS

Information obtained from the field exploration program has been used to characterize the subsurface (surface to about 180 feet in depth) conditions in the F-Area northeast expansion area. This included establishing the engineering stratigraphy and soil index properties and making a direct comparison with the adjacent APSF subsurface soils. Further, the presence of soft sediments defined as zones with measured tip resistances less than 15 tons per square foot (tsf) or SPT N-values of 5 or less, were evaluated. Groundwater conditions were determined from nearby monitoring well information. Eight subsurface cross-sections (Figures 3.0-1 through 3.0-8) were developed to show the engineering stratigraphy across the northeast expansion area, as well as, the APSF area. These subsurface sections are based on presently available information. Some variation from these conditions can be expected.

#### 3.1 Engineering Stratigraphy

The subsurface engineering stratigraphy was determined from CPT measurements including tip resistance, sleeve resistance, friction ratio, and pore pressure signatures, shear wave velocity as well as correlations with adjacent soil boring data. The layering system is based on observed changes in the CPT measurements that are correlatable between soundings and nearby borings. The layer nomenclature was developed for mapping subsurface units across various parts of the SRS. For specific application to the APSF and F-Area northeast expansion area, it is only used to differentiate units based on similar engineering characteristics that can be mapped in the investigation area. Typical stratigraphic layering is shown on Figure 3.1-1.

The layer nomenclature follows an alphanumeric system with layer numbers increasing from top to bottom. Subdivided layers are identified with a letter designation (e.g., TR1A). Some layer boundaries correspond to geologic formations. Some upper portion of the layers TR1 and TR1A layers are most probably the Altamaha formation overlying the Tobacco Road formation, however, due to the similar material properties and an irregular erosional surface which separates these units, differentiating them is difficult. In some parts of the F-Area, the TR1 and TR2 layers have been subdivided to recognize sublayers with distinct soil properties (TR1A, TR2A, and TR2B). As described in the F-



Area Geotechnical Characterization Report (WSRC, 1996c), the TR3/4 layer was first correlated to the lower portion of the Tobacco Road formation but based on more recent geologic investigations in the area has been reassigned to the upper portion of the Dry Branch formation. Layers DB1 through DB3 were combined into a DB1/3 layer because of similar properties. Likewise, layers DB4 and DB5 were combined into a DB4/5 layer. The DB1/3 layer corresponds to the Dry Branch formation while the DB4/5 layer corresponds to the upper Santee/Tinker formation. The Santee/Tinker formation, is the most variable layer in the shallow subsurface. It has been further subdivided into the ST1 and ST2 layer where practical. The green clay, which is an informal stratigraphic interval at the SRS, is considered the basal unit for the shallow engineering stratigraphy and is labeled as GC. This geologic unit is locally continuous and provides a reliable marker bed. The Green Clay overlays the Congaree Formation which is predominantly dense silty sands and where applicable is labeled CG.

The following sections describe the physical attributes used to delineate each layer, as well as, depositional environment and lithologic variability with the exception of the CG layer.

### ***3.1.1 TR1 and TR1A Layers***

The TR1 and TR1A layers are most probably the Altamaha formation consisting of red, purple and brown poorly sorted sands ranging from fine to gravel size with the dominant soil classification being clayey to silty sands (SC to SM). The depositional environment of these sediments is characterized as high energy fluvial such as river and stream channels. The base of the Altamaha is distinguished by an irregular erosional surface and can reach thicknesses of up to 70 feet at the SRS. This layer ranges in thickness from roughly 7 feet to nearly 36 feet thick. The TR1 layer is characterized by moderate SCPTU tip resistances and relatively high friction ratios while the underlying TR1A layer is generally less dense (lower tip resistances).

### ***3.1.2 TR2A and TR2B Layers***

The TR2A and TR2B layers have been used to differentiate the Tobacco Road formation. Sediments of the Tobacco Road formation were deposited in low energy shallow marine transitional environments such as tidal flats. Much of the sediments are laminated or otherwise bioturbated (mixed by burrowing

organisms after deposition) red, purple and brown poorly sorted sands and clayey sands.

The TR2A, and TR2B layers are predominantly sands and clayey sands (SP-SM to SP-SC) as determined by laboratory classification tests. The TR2B layer is distinguished from the overlying TR1A layer by increased tip resistance and notably lower sleeve friction values resulting in a lower friction ratio. The TR2A ranges from about 20 feet to 40 feet thick while the TR2B layer ranges from about 10 to 27 feet thick.

### **3.1.3 TR3/4 and DB1/3 Layers**

The Dry Branch Formation consists of sands and clays deposited in a transitional sequence between near shore and bay or lagoon environments. The upper contact of the TR3/4 layer is defined by a marked decrease in CPT tip resistance and an increase in both the friction ratio and pore pressure measurements. As determined by laboratory classification tests, the TR3/4 layer is predominantly clays and sandy clays (SC). Thickness of this layer ranges from around 5 feet to around 10 feet thick over the balance of the area.

The DB1/3 layers correspond to the Irwinton Sands. On the CPT logs, the DB1/3 layer is a zone of variable, but generally high, CPT tip resistances and low friction ratios. In general, pore pressures are low or slightly above hydrostatic. The dominant unified soil classification for the DB1/3 is SP-SM with minor layers of CL material occurring as laminations. Thickness of this layer ranges from 25 to 35 feet thick.

### **3.1.4 DB4/5, ST1 and ST2 layers**

The Santee/Tinker Formations represent the most complex geologic unit in the shallow subsurface of F-Area. It is depositionally complex and highly variable in both its lithology and material properties. Soils in the Santee/Tinker range from sands to silty sands (SP-SM). The contact between the Santee/Tinker Formation and the overlying Dry Branch Formation is generally seen on the CPT logs as a sharp decrease in the pore pressure measurement. This layer is characterized by thin, alternating layers of low and high CPT tip resistances and friction ratios. Characteristically, CPT soundings in this layer show a pronounced sawtooth trace with large variations over relatively small vertical intervals. This

highly variable pattern suggests interfingering of alternating lenses of clayey and silty sands with more resistant, silica-cemented sediments and less resistant, calcareous sediments, and appears to be a result of rapid lateral and vertical changes in the nature of the materials originally deposited in this interval. The unit consists of complex sequences of limestones, carbonate muds, carbonate sands, and muddy sands.

The soils of the DB4/5 interval are much more plastic than the overlying Irwinton Sand (DB1/DB3) and the underlying ST1 layer. Soils of the DB4/5 typically classify as SM to CL materials. The DB4/5 layer has moderate to low tip resistances and moderate friction ratios. The DB4/5 layer has been subject to extensive characterization within the APSF area because of observed soft zones (tip resistances less than 15 tsf and N-values of 5 or less). The thickness of this layer ranges from about 6 to 10 feet thick. The ST1 layer is characterized by higher tip resistances than the overlying DB4/5 layer underlying ST2 layer. Although not all soundings penetrated this layer, the ST1 layer ranges in thickness from about 13 to 22 feet. Soils of the ST2 layer are generally characterized by lower tip resistances and sleeve resistances than the overlying ST1 layer. Soils of the ST1 and ST2 layers generally classify and SM to SP-SM materials. Based on the number of soundings that fully penetrated the ST2 layer, the thickness ranges from about 6 to 14 feet thick.

In F-Area and elsewhere at SRS, the Santee/Tinker formation has been a primary focus of foundation investigations. In fact, nearly all foundation remediation programs have targeted this unit because of drilling problems such as lost drill fluid circulation or rod drops.

### **3.1.5 GC Layer**

The "green clay" (GC) is an informal stratigraphic name at SRS for stiff, green to gray clays, silts, and clayey sands that are commonly found at the base of the Santee/Tinker Formation. In general, these soils classify as SM to ML with varying amounts of clay. This layer is locally continuous at F-Area and has been used to define the lower boundary of the shallow stratigraphy. Layer elevations and thicknesses have been determined from those borings and soundings that penetrate this layer. Most borings and CPT soundings do not reach or penetrate the GC layer. The top of the layer ranges from around El. 126 feet MSL in the

south and northwestern portions of the area to a high of around 140 feet MSL in the east-central part of the area. This is consistent with the correlating Gordon Confining Unit as mapped by Aadland (1995) which is correlatable to the "green clay" unit.

### **3.2 Groundwater Conditions**

Groundwater data was derived from water table monitoring wells located in various locations around and within F-Area as well as from WSRC-TR-98-00045, The Regional Water Table of the Savannah River Site and Related Coverages. Monitoring well NBG-5 is the nearest to the F-Area northeast expansion area (see Figure 1.0-2). As shown on Figure 3.2-1, the water table elevation from May, 1986 to May, 1997, ranges from about El. 214 feet MSL to about El. 221 MSL. The dominant water table gradient in the F-Area expansion area is oriented to the north and is largely controlled by Upper Three Runs Creek located immediately north of the F-Area. Groundwater Table contours are shown on Figure 2.0-1.

### **3.3 Engineering Soil Characteristics**

The engineering stratigraphy of the F-Area northeast expansion area was correlated with the APSF area and the engineering characteristics compared. This comparison was based on layer continuity and thickness, as well as, measured SPT N-values, CPT measurements and laboratory soil classification data. Layer continuity across the area is shown on eight subsurface cross-sections (Figures 3.0-1 through 3.0.8).

A summary of all CPT engineering layer picks for the F-Area northeast expansion area and APSF is given on Table 3.3-1, along with a generalized (average) stratigraphy for the area. Figures 3.3-1 through 3.3-3 show mean and standard deviations of shear wave velocities ( $V_s$ ), CPT tip resistance ( $q_t$ ) and CPT friction ratio ( $R_f$ ) with the generalized average engineering stratigraphy. SPT N-values are plotted on Figure 3.3-4 to show the range of values versus elevation, as well as, the generalized engineering stratigraphy. Laboratory test results are included in Appendix C.

A comparison of engineering soil properties between the F-Area northeast expansion area, APSF and the balance of F-Area is summarized in Table 3.3-2. As can be seen, the tabulated properties are very similar for all three areas.

### **3.3.1 Soft Zone Characteristics**

Weight of rod and occasional rod drops have been described in numerous drilling reports for monitoring wells and geotechnical borings located in the central part of the SRS. Early subsurface investigations performed by the United States Army Corps of Engineers (COE) frequently described these zones as soft zones, or even voids, and numerous subsequent subsurface investigations have described these same conditions at the SRS. These soft zones typically occur in the carbonate-bearing sediments of the Santee Limestone, Utley Limestone, and the Griffins Landing Member of the lower Dry Branch Formation. The prevailing assumption about the origin of these soft zones is dissolution of carbonate-rich, clastic sediments, resulting in vugular porosity (open pore space). When drilling these zones, the drill rod meets little shear resistance and drops (COE, 1951). However, much of the time, recovery of soil in the sampler precludes the zone from being characterized as a void.

Soft zones are defined by SPT-N values  $\leq 5$  or CPT tip resistance  $\leq 15$  tsf. Also, thickness should be considered as well. These zones are generally restricted to the lower Dry Branch Formation and the Santee/Tinker Formation. However, soft zones can be found in other horizons at the SRS. The following sections discuss soft zones found in the northeast expansion and APSF areas.

Soft zones in two different horizons were identified on CPT sounding profiles. Two CPT soundings in the APSF area also had soft zone hits at about El. 240 feet MSL however these were considered to be isolated. Nineteen CPT soundings and five SPT borings had tip resistances and N-values meeting soft zone criteria however thirteen of these CPT soundings were pushed to delineate a soft zone within the APSF area (Figure 3.3-1). Four of the remaining six represented isolated hits in the APSF area and the other two were within the northeast expansion area. Of the five SPT borings, one was located in the APSF area while the other four were located in the northeast expansion area. Soft zone intervals noted on all CPT soundings and SPT borings are summarized on Table 3.3-3.

### 3.3.1.1 Northeast Expansion Area Soft Zones

Soft zone intervals were noted in only two of the soundings pushed for the F-Area northeast expansion investigation (soundings 103 and 157). Sounding 103 had a soft zone between El. 177.6 and El. 171.2 feet MSL with a cumulative soft zone thickness in this interval of about 2.9 feet thick. Revisions made to the boundary of the northeast expansion area placed sounding 103 outside of the investigation area, therefore this area was not investigated further (see Figure 2.0-1). SPT boring FB-19 had measured soft zones from El. 189.6 to about El. 186.6 feet MSL. CPT Sounding 114 was pushed adjacent to FB-19 (prior to FB-19 being drilled) with no measured soft zones.

Sounding 157 had two soft zone intervals. The upper most interval was between El. 215.1 and 211.2 feet MSL with a cumulative soft zone thickness of about 3.4 feet thick. The lower soft zone interval was between El. 179.8 and El. 173.5 feet MSL with a cumulative soft zone thickness of about 6.2 feet thick. SPT boring FB-17 was drilled about ten feet away from sounding 157. The upper soft zone interval between El. 215.1 and 211.2 feet MSL was not encountered in the SPT boring. In fact, N-values of about 10 were measured through this interval. The lower soft zone interval was encountered in FB-17. An interval of low blow counts, including weight of rod, corresponding to the lower interval measured in sounding 157 was encountered between El. 183.1 to El. 176.1 feet MSL. In SPT boring FB-17, a lower interval with low blow counts and weight of rods was also encountered from El. 157.6 to 151.6 feet MSL. This interval corresponds to a low tip resistance interval in CPT sounding 157 however tip resistances are higher than 15 tsf (about 20 tsf).

Additional indications of soft zones were noted in SPT boring FB-20 and FB-20A. FB-20 was drilled adjacent to sounding 179 for the purpose of obtaining a paired sounding and SPT boring. At about El. 179, a weight of rod over 37 inches was measured in boring FB-20. Drill fluid circulation was lost and the hole was abandoned. FB-20A was drilled adjacent to FB-20 and the interval from El. 194.9 to El. 181.4 was sampled with measured N-values greater than 20. At El. 181.4 however, circulation was lost in FB-20A and the hole was abandoned. These intervals in FB-20 and FB-20A correspond to a low tip resistance interval in sounding 179 which has thin layers of tip resistances measuring less than 15 tsf but have a cumulative thickness less than 2 feet.

### 3.3.1.2 APSF Area Soft Zones

The APSF area was extensively investigated for the extent and thickness of soft zones. Boring FB-1 located in the APSF area had low SPT N-values and weight of rod drop from El. 155.5 feet MSL to about El. 146.6 feet MSL. Soils from this interval were described as tan very fine silty and clayey sand with traces of shell fragments. Further investigation around this area with CPT soundings provided a reasonable mapped geometry of this soft zone. As shown on Figure 3.1-1, the soft zone actually occurred in two distinct horizons. The lowermost horizon within the Santee formation was delineated as shown on Figure 3.3-5. The upper Santee formation soft zone as shown on Figure 3.3-6 was not as continuous as the lower zone. Based on this investigative work it was reasonable to estimate the size, thickness and stratigraphic position of these soft zone intervals. SPT boring FB-4 in the APSF area also had a noted soft zone with low blow counts and weight of rod measurements from about El. 177.8 to 172.1 feet MSL.

### 3.3.1.3 Soft Zone Samples and Analysis

Four CPT tubes were taken from the soft zones identified in the APSF area. From these tubes the following laboratory tests were performed to identify soil parameters:

- 5 unit weight and moisture content tests
- 2 consolidation tests
- 5 Atterberg Limit tests
- 7 hydrometer suites including grain size analysis
- 1 unconfined compression test

Additional CPT samples were acquired from the lower soft zone interval in the vicinity of sounding 157 for the purpose of measuring the unit weight and moisture content for comparison with results from the APSF investigation. Results of the unit weights and moisture content were consistent with those made for the APSF area samples. The results of these tests are provided in Appendix B and are summarized on Table 3.3-5. It is important to note that the sample size for this type of sampler is smaller than that obtained from a shelly tube or other standard sampler. Arguments can be made that due to the smaller

diameter (1.75 inches compared to 3 inches for a shelby tube), disturbances will be greater. Additionally there is no precedent or standardized procedure for testing these smaller size samples. Therefore, the consolidation and strength results are solely for interpretation and engineering judgement and may not be representative of the in-situ properties of the soils tested.



#### 4. GEOTECHNICAL AND FOUNDATION ASSESSMENT

The conditions encountered during this program are not unlike conditions found elsewhere at the SRS. In fact, they are very similar in terms of:

- Geology and soil classification;
- SPT N-values;
- CPT resistances;
- Shear wave velocity; and
- Presence of soft zones.

Figures 3.3-1 through 3.3-4 show the range of SPT N-values, the mean and range of CPT corrected tip resistance ( $q_t$ ), CPT friction ratio ( $R_f$ ) and shear wave velocity ( $V_s$ ) from this investigation. Based on these results, the soils encountered can support structure and foundation loads currently constructed at the SRS with no adverse consequences. Typical foundation loading for existing critical facilities at the SRS is in the range of 4 to 7 kips per square foot (ksf). Higher loads could be supported depending on the layout, geometry and foundation depths of the proposed facilities and the results of a structure specific geotechnical investigation program, which is required for the proposed new mission facilities.

The regional water table is approximately 60 to 70 feet below the ground surface, however, perched water should be expected. Construction cut slopes for the nearby APSF excavation have been stable since excavation in August and September of 1998, with slopes of one horizontal to one vertical. The slopes were benched and protected with a thin layer of emulsified asphalt. Heave markers placed within the excavation footprint measured heave between one-half to one inch for the 30 to 35 feet deep excavation. Thus, from a construction standpoint, there appears to be no apparent unusual issues.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The shallow stratigraphy and average engineering properties determined for the F-Area northeast expansion are directly comparable to those determined for the Actinide Packaging and Storage Facility (APSF) area as well as the balance of the F-Area. Geologic conditions are also directly comparable between these two areas.

Soft zone intervals detected in the F-Area northeast expansion area are consistent with soft zone sediments encountered at the APSF area. Siting and design of new facilities in this area should account for the presence of these soils either by avoiding the placement of critical facilities where these zones are known to exist, or determining the potential settlement and designing the facility to accommodate the estimated movement. A thorough review of the data included in this report is recommended for planning further investigations.

Design and construction of new PC-3 and higher facilities, heavily loaded structures or capital investment projects in the F-Area northeast expansion area should not require extensive geotechnical characterization. However, structure specific investigations for foundation design and construction, as well as, proper characterization of soft zone intervals are required. Foundation specific investigations should consider structure size, geometry, foundation type and depth, performance classification and functional classification, etc. A limited program of field testing to confirm dynamic soil properties may be required to obtain baseline subsurface information such that a site-specific comparison with results of this investigation can be made.

Heave monitoring is required for excavations greater than ten feet deep. Settlement monitoring is required for all major and/or critical new facilities throughout the construction phase until final turn-over or when operations commence. After operations commence, settlement monitoring is required on an established interval. Settlement results should be compiled and reviewed by competent geotechnical and structural engineers.

New critical facilities should consider seismic instrumentation in the structure design and facility operation. An SRS Engineering Standard for seismic

instrumentation is currently under development. This standard will provide specifications for seismic instrumentation installation and performance.

## 6. REFERENCES

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Layer Elevation (ft above MSL)												
	CPT-1	CPT-2	CPT-4	CPT-5	CPT-6	CPT-7	CPT-8	CPT-9	CPT-10	CPT-11	CPT-12	
SURFACE	290.50	290.50	292.18	291.29	289.66	282.74	285.08	285.30	287.16	288.59	288.89	
TR1	290.50	290.50	292.18	291.29	289.66	282.74	285.08	285.30	287.16	288.59	288.89	
TR1A	273.01	274.96	277.99	272.89	276.94	275.88	273.16	278.92	273.80	274.94	271.70	
TR2A	258.98	255.83	260.97	259.95	262.96	262.94	260.97	261.90	261.21	253.89	254.91	
TR2B	231.98	228.94	230.92	229.95	234.01	237.87	233.56	234.96	234.15	234.93	236.93	
TR3/TR4	209.01	203.45	210.00	209.93	210.99	213.87	209.04	211.89	209.94	211.90	215.29	
DB1/DB3	203.02	200.03	206.00	201.94	204.00	203.90	203.27	200.90	205.27	207.95	208.94	
DB4/DB5	172.02	176.62	178.00	175.98	175.96	176.93	173.37	172.90	172.98	176.90	177.22	
ST1	164.03	169.86	176.00	169.99	169.92	171.88	168.90	167.96	168.50	168.96	171.14	
ST2	151.96	152.01	151.99	152.93	151.99	152.88	149.90	149.90	151.88	151.89	149.00	
GC	141.93	139.24	-----	142.94	142.01	142.91	138.87	140.01	136.64	145.89	142.04	
CG	132.99	133.11	-----	136.00	133.93	133.88	132.72	-----	132.22	141.90	-----	
BASE	130.50	132.50	148.17	134.29	132.66	132.74	129.08	139.30	130.16	138.59	137.89	
Layer Thickness (ft)												
	CPT-1	CPT-2	CPT-4	CPT-5	CPT-6	CPT-7	CPT-8	CPT-9	CPT-10	CPT-11	CPT-12	
TR1	17.49	15.54	14.19	18.40	12.72	6.86	11.92	6.38	13.36	13.65	17.19	
TR1A	14.03	19.13	17.02	12.94	13.98	12.94	12.19	17.02	12.59	21.05	16.79	
TR2A	27.00	26.89	30.05	30.00	28.95	25.07	27.41	26.94	27.06	18.96	17.98	
TR2B	22.97	25.49	20.92	20.02	23.02	24.00	24.52	23.07	24.21	23.03	21.64	
TR3/TR4	5.99	3.42	4.00	7.99	6.99	9.97	5.77	10.99	4.67	3.95	6.35	
DB1/DB3	31.00	23.41	28.00	25.96	28.04	26.97	29.90	28.00	32.29	31.05	31.72	
DB4/DB5	7.99	6.76	2.00	5.99	6.04	5.05	4.47	4.94	4.48	7.94	6.08	
ST1	12.07	17.85	24.01	17.06	17.93	19.00	19.00	18.06	16.62	17.07	22.14	
ST2	10.03	12.77	-----	9.99	9.98	9.97	11.03	9.89	15.24	6.00	6.96	
GC	8.94	6.13	-----	6.94	8.08	9.03	6.15	-----	4.42	3.99	-----	
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1A Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)

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Layer Elevation (ft above MSL)													
	CPT-13	CPT-14	CPT-15	CPT-16	CPT-17	CPT-18	CPT-19	CPT-20	CPT-21	CPT-22	CPT-22A		
SURFACE	289.79	289.70	295.13	283.80	287.10	293.00	293.10	291.20	291.70	290.60	291.40		
TR1	289.79	289.70	295.13	283.80	287.10	293.00	293.10	291.20	291.70	290.60	291.40		
TR1A	280.02	271.70	277.94	270.65	271.95	278.03	278.00	279.99	279.08	276.70	274.98		
TR2A	264.96	254.91	257.97	259.93	259.00	264.07	260.11	262.01	261.03	258.50	258.03		
TR2B	238.91	236.93	222.93	232.86	230.99	236.99	233.04	234.00	235.03	230.02	227.96		
TR3/TR4	216.91	215.29	197.97	209.97	211.95	213.98	211.94	210.98	211.95	204.85	199.01		
DB1/DB3	208.98	208.94	195.02	203.15	202.90	208.00	204.04	204.96	205.00	200.90	196.02		
DB4/DB5	176.93	177.22	172.01	174.93	176.00	179.00	176.03	178.01	179.04	176.80	170.02		
ST1	171.93	171.14	163.02	169.00	169.99	172.98	170.95	173.96	171.04	168.73	167.03		
ST2	152.91	149.00	149.00	149.16	153.96	151.03	150.92	151.97	155.00	152.27	149.95		
GC	139.93	142.04	137.97	137.43	143.01	137.03	138.96	138.00	139.00	140.17	137.01		
CG	132.99	133.07	131.98	132.90	135.98	130.96	-----	-----	133.02	-----	-----		
BASE	129.79	102.70	128.13	129.80	133.10	129.48	130.18	129.54	130.96	138.96	130.88		
Layer Thickness (ft)													
	CPT-13	CPT-14	CPT-15	CPT-16	CPT-17	CPT-18	CPT-19	CPT-20	CPT-21	CPT-22	CPT-22A		
TR1	9.77	18.00	17.19	13.15	15.15	14.97	15.10	11.21	12.62	13.90	16.42		
TR1A	15.06	16.79	19.97	10.72	12.95	13.96	17.89	17.98	18.05	18.20	16.95		
TR2A	26.05	17.98	35.04	27.07	28.01	27.08	27.07	28.01	26.00	28.48	30.07		
TR2B	22.00	21.64	24.96	22.89	19.04	23.01	21.10	23.02	23.08	25.17	28.95		
TR3/TR4	7.93	6.35	2.95	6.82	9.05	5.98	7.90	6.02	6.95	3.95	2.99		
DB1/DB3	32.05	31.72	23.01	28.22	26.90	29.00	28.01	26.95	25.96	24.10	26.00		
DB4/DB5	5.00	6.08	8.99	5.93	6.01	6.02	5.08	4.05	8.00	8.07	2.99		
ST1	19.02	22.14	14.02	19.84	16.03	21.95	20.03	21.99	16.04	16.46	17.08		
ST2	12.98	6.96	11.03	11.73	10.95	14.00	11.96	13.97	16.00	12.10	12.94		
GC	6.94	8.97	5.99	4.53	7.03	6.07	8.78	8.46	5.98	-----	6.13		
CG	-----	30.37	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1B Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)

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Layer Elevation (ft above MSL)													
	CPT-23	CPT-24	CPT-25	CPT-26	CPT-27	CPT-28	CPT-29	CPT-30	CPT-31	CPT-32	CPT-32A		
SURFACE	290.90	290.00	290.10	289.50	290.30	289.80	288.10	288.80	290.70	289.50	288.00		
TR1	290.90	290.00	290.10	289.50	290.30	289.80	---	288.80	290.70	289.50	288.00		
TR1A	274.94	277.04	272.99	278.99	277.01	280.97	288.10	275.36	274.95	276.94	280.02		
TR2A	258.03	261.99	255.97	265.00	259.04	263.96	265.97	267.01	257.94	267.75	265.00		
TR2B	229.97	233.96	230.00	239.04	232.01	236.94	239.09	240.08	230.00	239.98	238.02		
TR3/TR4	209.02	207.03	207.02	217.01	205.04	213.03	217.95	215.92	206.98	217.10	213.88		
DB1/DB3	204.02	201.96	201.02	210.00	199.99	207.96	212.03	207.98	201.02	212.97	209.96		
DB4/DB5	177.00	174.94	176.09	179.05	174.01	176.94	181.04	180.01	176.05	182.10	181.03		
ST1	171.95	167.97	170.04	172.88	167.96	171.00	175.00	174.02	172.05	178.10	176.99		
ST2	150.01	147.04	153.98	152.12	150.13	154.03	150.94	155.98	148.98	153.94	154.99		
GC	137.94	134.99	139.97	143.03	137.03	138.03	144.98	146.00	135.97	140.89	139.94		
CG	133.19	-----	133.05	-----	131.98	-----	140.03	-----	-----	-----	-----		
BASE	131.92	128.31	132.04	139.34	131.73	131.05	138.91	143.33	131.96	133.51	133.86		
Layer Thickness (ft)													
	CPT-23	CPT-24	CPT-25	CPT-26	CPT-27	CPT-28	CPT-29	CPT-30	CPT-31	CPT-32	CPT-32A		
TR1	15.96	12.96	17.11	10.51	13.29	8.83	0.00	13.44	15.75	12.56	7.98		
TR1A	16.91	15.05	17.02	13.99	17.97	17.01	22.13	8.35	17.01	9.19	15.02		
TR2A	28.06	28.03	25.97	25.96	27.03	27.02	26.88	26.93	27.94	27.77	26.98		
TR2B	20.95	26.93	22.98	22.03	26.97	23.91	21.14	24.16	23.02	22.88	24.14		
TR3/TR4	5.00	5.07	6.00	7.01	5.05	5.07	5.92	7.94	5.96	4.13	3.92		
DB1/DB3	27.02	27.02	24.93	30.95	25.98	31.02	30.99	27.97	24.97	30.87	28.93		
DB4/DB5	5.05	6.97	6.05	6.17	6.05	5.94	6.04	5.99	4.00	4.00	4.04		
ST1	21.94	20.93	16.06	20.76	17.83	16.97	24.06	18.04	23.07	24.16	22.00		
ST2	12.07	12.05	14.01	9.09	13.10	16.00	5.96	9.98	13.01	13.05	15.05		
GC	4.75	6.68	6.92	-----	5.05	6.98	4.95	-----	-----	7.38	6.08		
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1C Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)

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Layer Elevation (ft above MSL)													
	CPT-33	CPT-34	CPT-35	CPT-36	CPT-37	CPT-38	CPT-39	CPT-40	CPT-41	CPT-42	CPT-43		
SURFACE	290.10	290.30	290.00	291.70	292.00	290.00	290.00	286.60	289.50	287.50	289.00		
TR1	290.10	290.30	290.00	291.70	292.00	290.00	290.00	-----	289.50	-----	289.00		
TR1A	275.99	274.97	275.96	276.94	278.35	274.97	272.01	286.60	270.97	287.50	270.00		
TR2A	260.02	256.01	262.98	263.01	259.99	256.01	254.92	266.04	252.97	264.02	250.91		
TR2B	232.04	229.97	236.06	236.16	232.21	238.00	233.92	240.04	232.97	237.05	234.94		
TR3/TR4	206.98	204.03	212.01	213.83	212.05	217.05	211.98	218.06	208.99	217.01	215.02		
DB1/DB3	201.97	199.97	205.94	205.85	204.81	210.02	204.95	211.08	205.04	210.08	210.03		
DB4/DB5	175.90	174.93	176.94	180.04	174.37	178.96	174.98	178.02	169.99	178.07	-----		
ST1	169.99	169.03	171.00	172.61	171.70	175.01	167.96	173.96	166.96	173.00	-----		
ST2	151.07	147.99	151.01	155.49	154.93	154.93	153.04	153.97	147.01	153.98	-----		
GC	138.10	137.00	136.95	139.08	137.36	-----	139.07	141.03	133.99	148.95	-----		
CG	133.00	-----	130.02	134.93	132.96	-----	-----	-----	-----	-----	-----		
BASE	132.83	131.73	129.91	134.81	132.10	147.02	133.32	136.78	130.85	145.66	206.13		
Layer Thickness (ft)													
	CPT-33	CPT-34	CPT-35	CPT-36	CPT-37	CPT-38	CPT-39	CPT-40	CPT-41	CPT-42	CPT-43		
TR1	14.11	15.33	14.04	14.76	13.65	15.03	17.99	0.00	18.53	0.00	19.00		
TR1A	15.97	18.96	12.98	13.93	18.36	18.96	17.09	20.56	18.00	23.48	19.09		
TR2A	27.98	26.04	26.92	26.85	27.78	18.01	21.00	26.00	20.00	26.97	15.97		
TR2B	25.06	25.94	24.05	22.33	20.16	20.95	21.94	21.98	23.98	20.04	19.92		
TR3/TR4	5.01	4.06	6.07	7.98	7.24	7.03	7.03	6.98	3.95	6.93	4.99		
DB1/DB3	26.07	25.04	29.00	25.81	30.44	31.06	29.97	33.06	35.05	32.01	-----		
DB4/DB5	5.91	5.90	5.94	7.43	2.67	3.95	7.02	4.06	3.03	5.07	-----		
ST1	18.92	21.04	19.99	17.12	16.77	20.08	14.92	19.99	19.95	19.02	-----		
ST2	12.97	10.99	14.06	16.41	17.57	7.91	13.97	12.94	13.02	5.03	-----		
GC	5.10	-----	6.93	4.15	4.40	-----	5.75	4.25	-----	3.29	-----		
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1D Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)



K-TRT-F-00001  
R/0

Layer Elevation (ft above MSL)													
	CPT-43A	CPT-44	CPT-45	CPT-46	CPT-48	CPT-51	CPT-52	CPT-53	CPT-103	CPT-104	CPT-113		
SURFACE	289.00	285.50	287.40	286.00	285.80	286.70	288.80	289.90	271.70	274.20	276.70		
TR1	289.00	285.50	-----	-----	-----	-----	288.80	289.90	-----	-----	-----		
TR1A	267.99	271.89	287.40	286.00	285.80	286.70	269.89	276.77	271.70	274.20	276.70		
TR2A	248.98	262.89	263.96	259.97	263.02	261.01	260.76	264.55	256.91	257.89	259.82		
TR2B	234.93	236.97	238.05	235.00	235.95	235.94	236.80	235.74	238.88	240.95	236.01		
TR3/TR4	213.95	217.93	217.04	213.01	212.96	215.04	216.81	215.48	209.90	211.89	210.03		
DB1/DB3	208.95	207.94	210.02	204.02	205.03	204.97	209.98	209.12	199.94	199.96	203.85		
DB4/DB5	-----	177.95	177.97	176.93	173.92	179.90	176.99	177.47	177.86	178.88	181.92		
ST1	-----	171.87	172.99	171.03	166.94	172.92	172.98	173.78	167.91	171.87	172.08		
ST2	-----	155.00	155.02	152.97	149.94	154.01	149.92	153.35	151.93	155.92	152.68		
GC	-----	148.96	142.00	-----	138.01	138.01	139.04	143.64	142.93	147.92	138.73		
CG	-----	145.01	-----	-----	-----	132.98	132.95	-----	132.89	-----	133.52		
BASE	204.71	144.30	136.46	139.70	130.71	132.10	132.44	139.90	115.85	143.08	130.76		
Layer Thickness (ft)													
	CPT-43A	CPT-44	CPT-45	CPT-46	CPT-48	CPT-51	CPT-52	CPT-53	CPT-103	CPT-104	CPT-113		
TR1	21.01	13.61	0.00	0.00	0.00	0.00	18.91	13.13	0.00	0.00	0.00		
TR1A	19.01	9.00	23.44	26.03	22.78	25.69	9.13	12.22	14.79	16.31	16.88		
TR2A	14.05	25.92	25.91	24.97	27.07	25.07	23.96	28.81	18.03	16.94	23.81		
TR2B	20.98	19.04	21.01	21.99	22.99	20.90	19.99	20.26	28.98	29.06	25.98		
TR3/TR4	5.00	9.99	7.02	8.99	7.93	10.07	6.83	6.36	9.96	11.93	6.18		
DB1/DB3	-----	29.99	32.05	27.09	31.11	25.07	32.99	31.65	22.08	21.08	21.93		
DB4/DB5	-----	6.08	4.98	5.90	6.98	6.98	4.01	3.69	9.95	7.01	9.84		
ST1	-----	16.87	17.97	18.06	17.00	18.91	23.06	20.43	15.98	15.95	19.40		
ST2	-----	6.04	13.02	-----	11.93	16.00	10.88	9.71	9.00	8.00	13.95		
GC	-----	3.95	5.54	-----	7.30	5.03	6.09	-----	10.04	4.84	5.21		
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1E Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APFS and Northeast Expansion)

K-TRT-F-00001  
R/0

Layer Elevation (ft above MSL)													
	CPT-114	CPT-115	CPT-116	CPT-126	CPT-127	CPT-128	CPT-129	CPT-143	CPT-147	CPT-148	CPT-149		
SURFACE	273.60	272.00	270.10	278.90	279.30	279.30	277.20	286.10	284.80	284.10	274.80		
TR1	273.60	272.00	-----	278.90	279.30	279.30	277.20	286.10	284.80	284.10	-----		
TR1A	267.64	266.26	270.10	265.32	267.78	262.88	265.95	265.85	267.88	274.16	274.80		
TR2A	259.83	260.15	258.03	258.49	259.91	250.83	253.90	246.90	252.67	252.56	256.92		
TR2B	236.66	236.94	238.06	230.15	231.85	227.91	236.94	234.98	235.70	235.35	245.89		
TR3/TR4	212.40	209.10	211.44	203.78	203.01	205.92	211.87	210.87	210.02	209.84	220.96		
DB1/DB3	203.28	202.01	202.94	199.16	196.88	196.88	203.90	202.92	204.58	204.93	214.93		
DB4/DB5	178.04	174.96	169.91	175.98	176.02	176.94	174.88	175.89	173.25	172.18	188.94		
ST1	170.06	167.77	-----	164.29	165.36	167.91	167.96	165.93	164.98	161.78	179.96		
ST2	149.81	148.01	149.95	147.13	148.53	148.94	149.95	152.94	148.88	149.57	158.92		
GC	142.45	140.91	140.72	140.83	135.07	141.88	140.88	141.91	135.60	137.01	149.94		
CG	136.15	133.47	-----	131.75	131.65	-----	131.89	131.91	129.73	128.58	136.90		
BASE	128.02	127.98	137.51	125.93	114.60	132.04	129.12	130.02	127.34	126.62	131.92		
Layer Thickness (ft)													
	CPT-114	CPT-115	CPT-116	CPT-126	CPT-127	CPT-128	CPT-129	CPT-143	CPT-147	CPT-148	CPT-149		
TR1	5.96	5.74	0.00	13.58	11.52	16.42	11.25	20.25	16.92	9.94	0.00		
TR1A	7.81	6.11	12.07	6.83	7.87	12.05	12.05	18.95	15.21	21.60	17.88		
TR2A	23.17	23.21	19.97	28.34	28.06	22.92	16.96	11.92	16.97	17.21	11.03		
TR2B	24.26	27.84	26.62	26.37	28.84	21.99	25.07	24.11	25.68	25.51	24.93		
TR3/TR4	9.12	7.09	8.50	4.62	6.13	9.04	7.97	7.95	5.44	4.91	6.03		
DB1/DB3	25.24	27.05	33.03	23.18	20.86	19.94	29.02	27.03	31.33	32.75	25.99		
DB4/DB5	7.98	7.19	19.96	11.69	10.66	9.03	6.92	9.96	8.27	10.40	8.98		
ST1	20.25	19.76	0.00	17.16	16.83	18.97	18.01	12.99	16.10	12.21	21.04		
ST2	7.36	7.10	9.23	6.30	13.46	7.06	9.07	11.03	13.28	12.56	8.98		
GC	6.30	7.44	-----	9.08	3.42	9.84	8.99	10.00	5.87	8.43	13.04		
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1F Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSPF and Northeast Expansion)

K-TRT-F-00001  
R/0

Layer Elevation (ft above MSL)													
	CPT-151	CPT-155	CPT-156	CPT-157	CPT-159	CPT-163	CPT-167	CPT-171	CPT-172	CPT-173	CPT-174		
SURFACE	290.10	289.10	289.20	283.10	293.70	293.90	296.70	298.50	295.40	297.60	301.50		
TR1	290.10	289.10	289.20	283.10	293.70	293.90	296.70	298.50	-----	297.60	301.50		
TR1A	269.57	276.66	278.85	273.38	277.77	278.97	280.31	284.98	295.40	287.49	292.68		
TR2A	254.70	260.61	261.87	260.20	259.97	265.96	265.38	269.96	265.99	262.56	269.97		
TR2B	232.48	232.44	233.47	239.80	232.20	237.99	239.72	232.80	239.98	241.93	241.63		
TR3/TR4	210.09	204.92	209.68	216.16	210.68	217.00	218.16	212.85	220.96	221.08	219.01		
DB1/DB3	203.10	199.95	204.57	207.35	204.09	213.62	211.86	204.59	215.03	214.07	212.00		
DB4/DB5	171.03	167.94	164.94	180.04	171.58	178.00	-----	180.05	189.03	186.01	184.19		
ST1	165.12	163.61	163.07	173.37	168.37	174.53	-----	173.57	185.00	177.57	171.52		
ST2	143.80	146.95	149.97	158.34	149.71	154.00	-----	-----	163.02	161.54	159.53		
GC	138.42	135.35	135.67	145.43	138.55	140.99	-----	-----	149.00	153.66	143.58		
CG	134.66	128.40	130.04	135.92	132.25	132.10	-----	-----	138.07	-----	135.63		
BASE	134.14	126.05	128.15	130.92	129.13	128.87	181.49	166.43	133.28	147.41	130.12		
Layer Thickness (ft)													
	CPT-151	CPT-155	CPT-156	CPT-157	CPT-159	CPT-163	CPT-167	CPT-171	CPT-172	CPT-173	CPT-174		
TR1	20.53	12.44	10.35	9.72	15.93	14.93	16.39	13.52	0.00	10.11	8.82		
TR1A	14.87	16.05	16.98	13.18	17.80	13.01	14.93	15.02	29.41	24.93	22.71		
TR2A	22.22	28.17	28.40	20.40	27.77	27.97	25.66	37.16	26.01	20.63	28.34		
TR2B	22.39	27.52	23.79	23.64	21.52	20.99	21.56	19.95	19.02	20.85	22.62		
TR3/TR4	6.99	4.97	5.11	8.81	6.59	3.38	6.30	8.26	5.93	7.01	7.01		
DB1/DB3	32.07	32.01	39.63	27.31	32.51	35.62	30.37	24.54	26.00	28.06	27.81		
DB4/DB5	5.91	4.33	1.87	6.67	3.21	3.47	-----	6.48	4.03	8.44	12.67		
ST1	21.32	16.66	13.10	15.03	18.66	20.53	-----	-----	21.98	16.03	11.99		
ST2	5.38	11.60	14.30	12.91	11.16	13.01	-----	-----	14.02	7.88	15.95		
GC	3.76	6.95	5.63	9.51	6.30	8.89	-----	-----	10.93	-----	7.95		
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1G Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)

K-TRT-F-00001  
R/O

Layer Elevation (ft above MSL)													
	CPT-175	CPT-176	CPT-177	CPT-178	CPT-179	CPT-180	CPT-181	CPT-182	CPT-183	CPT-185	CPT-186		
SURFACE	303.10	297.60	301.70	305.60	301.40	302.30	304.90	304.80	301.70	308.20	304.50		
TR1	303.10	297.60	301.70	305.60	301.40	302.30	304.90	-----	301.70	308.20	304.50		
TR1A	287.49	288.74	278.78	295.07	288.11	287.00	294.89	304.80	281.93	294.90	290.82		
TR2A	280.12	267.97	267.07	272.77	276.49	245.96	271.29	278.00	272.72	271.45	267.44		
TR2B	244.00	246.19	244.43	246.03	248.28	224.92	244.29	259.01	246.32	242.18	246.99		
TR3/TR4	220.02	221.70	225.62	219.93	225.11	213.99	212.65	219.00	228.60	217.08	222.31		
DB1/DB3	214.01	216.89	217.00	213.16	219.97	-----	202.88	208.97	220.00	202.02	211.96		
DB4/DB5	184.17	187.83	186.07	186.21	192.24	184.02	178.85	183.96	190.87	181.06	184.01		
ST1	173.01	179.91	179.84	173.30	188.46	-----	172.25	180.03	187.31	172.97	178.90		
ST2	157.58	160.86	-----	158.69	-----	-----	-----	-----	-----	-----	161.96		
GC	143.80	158.27	-----	144.96	-----	-----	-----	-----	-----	-----	153.98		
CG	137.70	-----	-----	140.93	-----	-----	-----	-----	-----	-----	-----		
BASE	136.17	150.95	169.10	137.25	177.46	181.45	166.17	164.70	186.74	171.34	149.52		
Layer Thickness (ft)													
	CPT-175	CPT-176	CPT-177	CPT-178	CPT-179	CPT-180	CPT-181	CPT-182	CPT-183	CPT-185	CPT-186		
TR1	15.61	8.86	22.92	10.53	13.29	15.30	10.01	0.00	19.77	13.30	13.68		
TR1A	7.37	20.77	11.71	22.30	11.62	41.04	23.60	26.80	9.21	23.45	23.38		
TR2A	36.12	21.78	22.64	26.74	28.21	21.04	27.00	40.01	26.40	29.27	20.45		
TR2B	23.98	24.49	18.81	26.10	23.17	10.93	31.64	10.03	17.72	25.10	24.68		
TR3/TR4	6.01	4.81	8.62	6.77	5.14	29.97	9.77	28.94	8.60	15.06	10.35		
DB1/DB3	29.84	29.06	30.93	26.95	27.73	0.00	24.03	3.93	29.13	20.96	27.95		
DB4/DB5	11.16	7.92	6.23	12.91	3.78	-----	6.60	3.56	3.56	8.09	5.11		
ST1	15.43	19.05	-----	14.61	-----	-----	-----	-----	-----	-----	16.94		
ST2	13.78	2.59	-----	13.73	-----	-----	-----	-----	-----	-----	7.98		
GC	6.10	-----	-----	4.03	-----	-----	-----	-----	-----	-----	-----		
CG	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-1H Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)

K-TRT-F-00001  
R/O

	Layer Elevation (ft above MSL)				AVG	STD DEV
	CPT-188	CPT-189	CPT-196			
SURFACE	310.40	309.20	290.10		290.08	8.24
TR1	310.40	-----	290.10		290.95	7.27
TR1A	296.70	309.20	273.07		278.42	8.71
TR2A	273.60	276.04	260.22		261.51	6.51
TR2B	246.28	242.99	235.74		236.46	5.59
TR3/TR4	221.38	219.99	212.36		213.08	5.63
DB1/DB3	210.87	212.96	208.42		206.30	5.26
DB4/DB5	186.99	187.98	173.50		177.99	5.13
ST1	181.00	179.95	168.87		171.72	5.13
ST2	-----	-----	-----		152.42	3.75
GC	-----	-----	-----		141.10	4.66
CG	-----	-----	-----		133.87	3.29
BASE	168.56	175.16	168.31			

	Layer Thickness (ft)				AVG	STD DEV
	CPT-188	CPT-189	CPT-196			
TR1	13.70	0.00	17.03		11.66	6.17
TR1A	23.10	33.16	12.85		16.90	5.79
TR2A	27.32	33.05	24.48		25.28	5.02
TR2B	24.90	23.00	23.38		23.05	3.22
TR3/TR4	10.51	7.03	3.94		7.23	3.97
DB1/DB3	23.88	24.98	34.92		27.72	5.37
DB4/DB5	5.99	8.03	4.63		6.44	2.74
ST1	-----	-----	-----		18.15	3.53
ST2	-----	-----	-----		11.24	3.15
GC	-----	-----	-----		6.65	2.06
CG	-----	-----	-----		30.37	-----

NOTE: ELEVATIONS ARE TO TOP OF LAYER

Table 3.3-11 Summary of CPT Layer Picks (Layer Tops and Layer Thicknesses for APSF and Northeast Expansion)

K-TRT-F-00001  
R/O

Source	F111	TR1	TR1A	TR2A	TR2B	TR3/4	DB1/3	DB4/5	ST*	GC
SPT N-Value (blows/foot)	23	25	25	28	36	18	33	15	47	21
APSF Data	-	33	27	34	38	19	50	21	46	49
NEC Data	N/A	31	31	37	39	27	37	29	43	39
qt/N	4.9	3.7	4.8	5.2	5.5	3.1	5.1	4.1	2.8	2.7
APSF Data	-	4.3	2.5	4.0	4.1	1.9	3.3	2.5	3.0	1.6
NEC Data	N/A	38	41	52	46	41	59	35	29	48
Shear Wave Velocity (ft/sec)	978	1455	1348	1256	1254	1074	1157	1140	1353	1675
APSF Data	-	1637	1464	1284	1215	1020	1197	1231	1223	1160
NEC Data	N/A	1544	1454	1257	1165	1056	1176	1160	1273	1319
Corrected Tip Resistance (tons/foot <sup>2</sup> )	112	91	120	147	201	55	172	61	131	58
APSF Data	-	142	68	136	154	37	166	52	137	79
NEC Data	N/A	95	103	146	164	73	194	97	168	97
F-Area Report	2	4	2	2	1	2	1	2	2	2
APSF Data	-	2	4	1	1	2	1	2	1	2
NEC Data	N/A	3	3	1	1	2	1	2	1	2
F-Area Report	25	33	30	17	19	64	14	22	29	39
APSF Data	-	25	37	16	11	34	9	21	18	52
NEC Data	N/A	34	30	14	10	35	11	20	19	33
F-Area Report	15	17	14	10	18	58	19	28	18	47
APSF Data	-	11	22	10	NP	19	NP	11	25	30
NEC Data	N/A	23	20	9	12	19	16	11	14	27
F-Area Report	32	38	36	33	41	96	44	48	40	83
APSF Data	-	30	46	33	NP	54	NP	45	49	57
NEC Data	N/A	43	35	23	24	54	11	45	23	42
F-Area Report	13	15	19	17	22	51	27	39	29	32
APSF Data	-	16	20	21	24	42	27	38	30	28
NEC Data	N/A	18	19	17	16	34	25	36	30	32

Notes

1. Data for the APSF Investigation includes CPTs 1-17, 36, 37, and 44 and Borings FB-3 through FB-12
2. The ST layer was not subdivided for analysis
3. Data for the Northeast Expansion included CPTs 103-196 and borings FB-17 through FB-30
4. Laboratory data for a portion of the DB1/3 layer from FB-22 (samples SS50-SS53 ) were omitted due to a significant material change considered to be localized in the vicinity of FB-22

Table 3.3-2 Summary of Engineering Soil Properties

CPT No.	Top Elv	Bot Elv	Appx. Thickness
2	150.68	144.47	5.97
	173.28	170.65	2.63
3	170.35	166.05	3.93
6	145.10	138.46	6.28
	175.86	170.43	5.04
18	138.70	136.51	2.19
20A	150.90	148.79	2.11
	146.05	139.70	5.44
23	208.90	204.25	4.65
24	174.27	169.56	4.71
25	142.87	138.35	4.52
27	147.08	144.87	2.21
29	151.08	146.66	3.45
	181.30	175.34	5.21
32	144.31	139.78	3.50
32A	144.00	140.15	3.36
33	140.18	138.77	1.41
	174.68	170.67	2.62
38	178.74	175.41	3.03
39	207.44	205.50	1.94
46	176.43	172.44	3.99
51	177.90	172.98	4.07
103	177.60	171.21	2.88
157	215.13	211.21	3.39
	179.80	173.46	6.19
SPT No.	Top Elv	Bot Elv	Appx. Thickness
FB-1	155.1	146.6	8.5
FB-4	177.8	172.1	5.70
FB-17	183.10	176.10	7.00
	157.60	151.60	6.00
FB-19	189.60	186.60	3.00
FB-20	179.00	172.90	6.10

**SOFT ZONE THICKNESS CRITERIA:**

- For a CPT to be labelled as a soft zone "hit" it must have a zone with a corrected tip stress of less than 15 tsf over a 2 ft thick (or greater) interval. Professional judgment may include a few zones that approach 2 ft in thickness. For a boring to be labelled as a soft zone "hit" it must have a WR, WH or N-value  $\leq 5$  over a 2 ft or greater interval.
- About two-thirds of the CPTs have soft zone thicknesses which consist of two or more intervals having  $< 15$  tsf tip stresses. The criteria for combining these separate soft intervals into a single zone is an intervening harder layer less than 1 foot in thickness. In these instances the Top Elv, Bot Elv, and appx. zone thickness were calculated excluding the harder layer as shown in the following example:

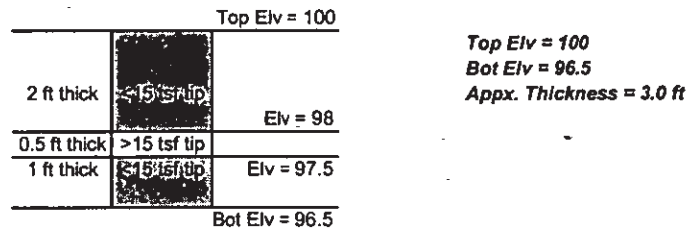


Table 3.3-3 Summary of Soft Zone Intervals

K-TRT-F-00001  
R/O

SAMPLE NUMBER	ADJACENT		TOP		BOTTOM		SOFT INTERVAL		LAB TESTING ASSIGNMENTS	
	CPT	ELEV.	DEPTH	DEPTH	DEPTH	DEPTH	UPPER ST	LOWER ST	UW, Cons, Hyd, AL, MC	UW, Cons, Hyd, AL, MC
F235 CSS38	38	177.5	112	114	114	114	UPPER ST	UPPER ST	UW, Cons, Hyd, AL, MC	UW, Cons, Hyd, AL, MC
F235 CSS38	38	175.5	114	116	116	116	UPPER ST	UPPER ST	UW, Cons, Hyd, AL, MC	UW, Cons, Hyd, AL, MC
F235 CSS53B	53	154.9	135	137	137	137	LOWER ST	LOWER ST	UW, Hyd, AL, MC	UW, Hyd, AL, MC
F235 CSS 53	53	154.9	135	139	139	139	LOWER ST	LOWER ST	UW, Hyd, AL, MC	UW, Hyd, AL, MC
F235 CSS32	32	141.5	148	148.8	148.8	148.8	LOWER ST	LOWER ST	Hyd, Cons, UCC, AL	Hyd, Cons, UCC, AL
F235 CSS32	32	140.7	148.8	150	150	150	LOWER ST	LOWER ST	Hyd	Hyd
F235 CSS32	32	139.5	150	150.5	150.5	150.5	LOWER ST	LOWER ST	Hyd	Hyd

SAMPLE NUMBER	Dry UW lb/ft^3	MC %	Wet UW lb/ft^3	%Sand	%Fines	%Clay	D50 mm	LL %	PI %	Class
F235 CSS38	65.2	61.56	105.3	61.8	38.2	29.5	0.14	44	20	SC
F235 CSS38	77.8	42.37	110.7	85.5	14.5	11.5	0.17	NL	NP	SM
F235 CSS53B	83	34.6	111.7	90.6	9.4	1.9	0.14	NL	NP	SP-SM
F235 CSS 53	75.1	42	106.7	90.9	9.1	1.7	0.13	NL	NP	SP-SM
F235 CSS32	97.9	25	122.4	48.3	51.7	24.2	0.07	44	24	CL
F235 CSS32				64.9	35.1	5.9	0.09			SM
F235 CSS32				62.6	37.4	6	0.08			SM

SAMPLE NUMBER	Cc	eo	SG	Pc ksf	Po' ksf	OCR	su ksf
F235 CSS38							
F235 CSS38	0.23	1.1954	2.65	0.71	11.3	0.1	
F235 CSS53B							
F235 CSS 53							
F235 CSS32	0.26	0.6902	2.65	10.7	13.3	0.8	3.4
F235 CSS32							
F235 CSS32							

Note: This data is presented solely for interpretation. Refer to Section 3.3.1.3 in the report text for more information.

Table 3.3-4 Summary of Soft Zone Soil Properties



K-TRT-F-00001  
R/0

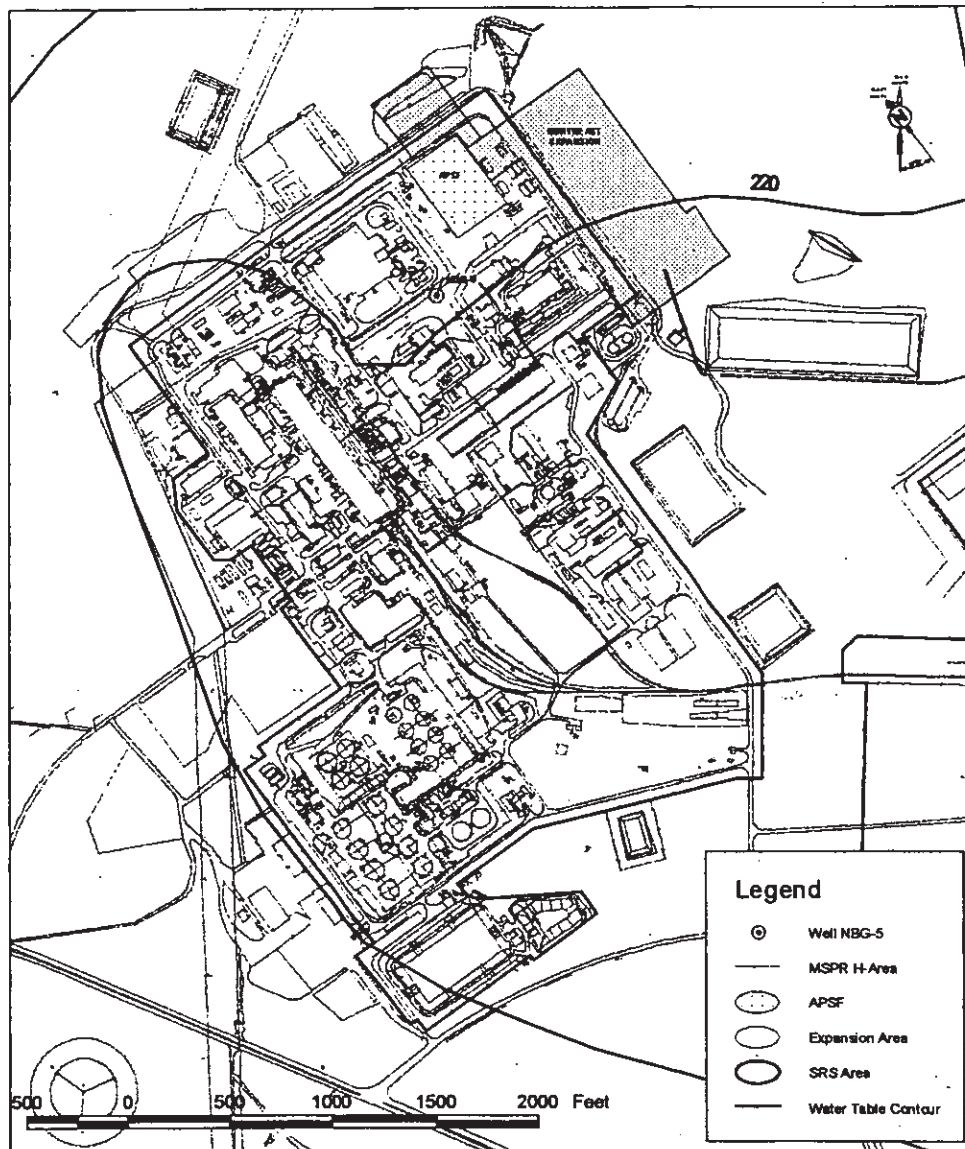


Figure 1.0-1 Location Map of F-Area and the Northeast Expansion Area

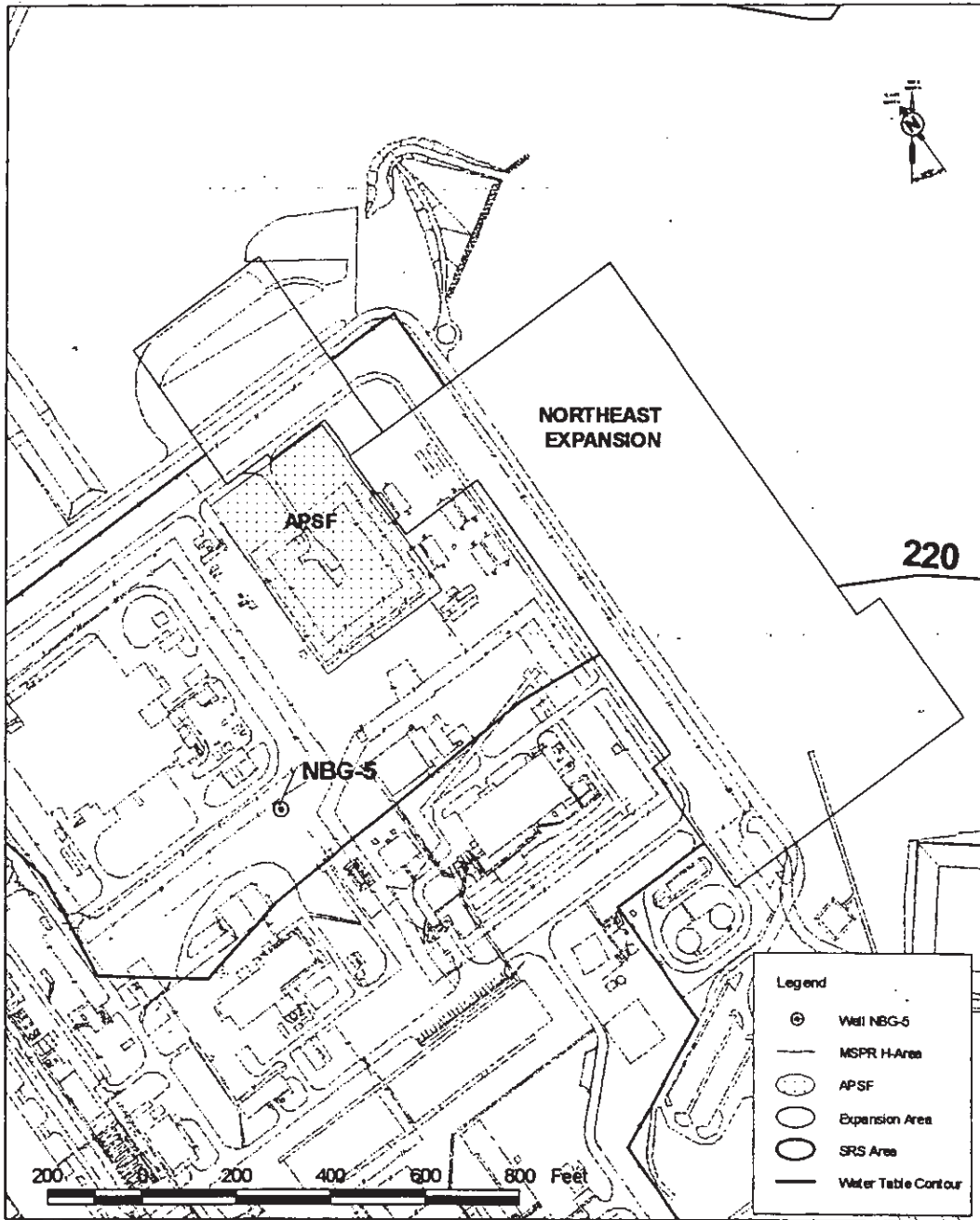


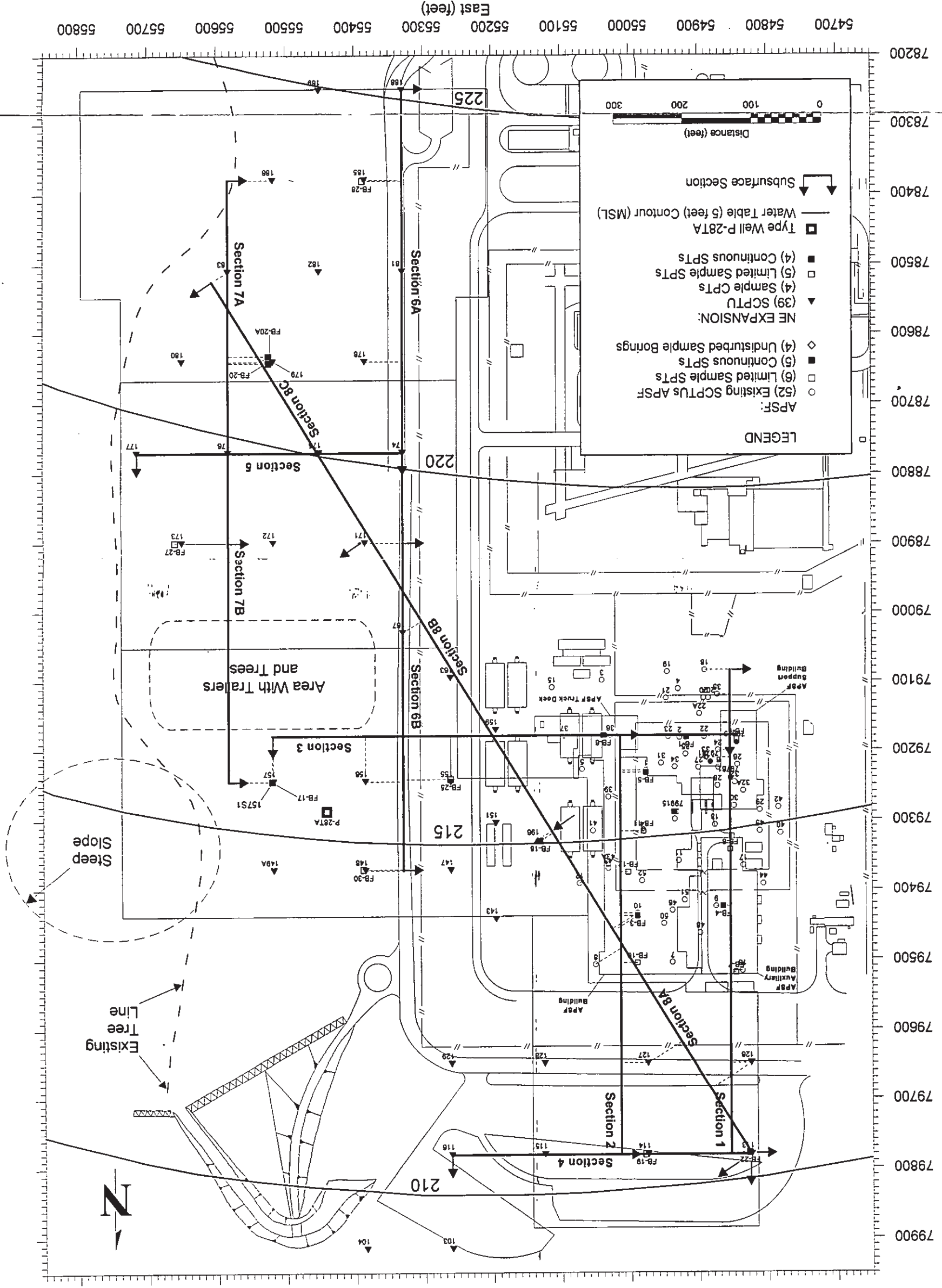
Figure 1.0-2 Location Map of the Northeast Expansion Area and APSF

K-TRT-F-00001  
R/D

Figure 2.0-1 Exploration Location Map

APSF structure/facility outline provided by project team (SRS Drawing C-CG-F-0042) and is considered approximate. F-Area facility boundaries obtained from SRS maps MSRP0884.DGN and MSRP0854.DGN.

d:\geinas\cpl\apstf\misc\figs\expanded\expand12.grf 08-01-99  
uses expanded\figs expansion



# APSF NE Expansion Section Line 1

## PRELIMINARY

Vertical Exaggeration = 2X

Prepared By: Robert Pelinas Checked By: FS.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99

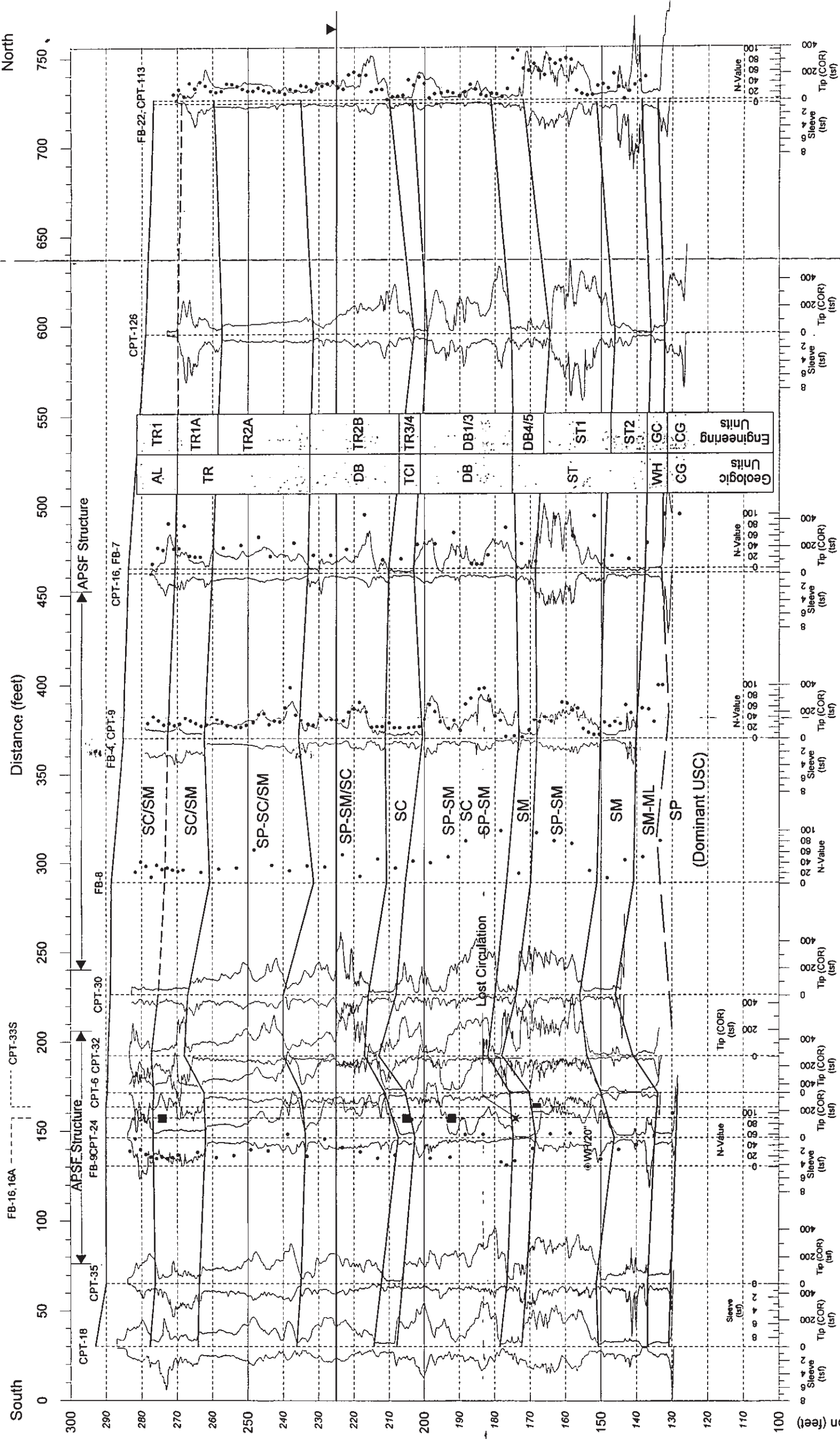


Figure 3.0-1 Subsurface Cross-section 1

**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**NOTES:**

- Scale for Hammer or Rod Weight
- Scale for CPT Sleeve Stress, Resistance in TSF
- Scale for SPT N-Value (note: refusal = 100)
- Scale for CPT Tip (COR) Stress, Resistance in TSF

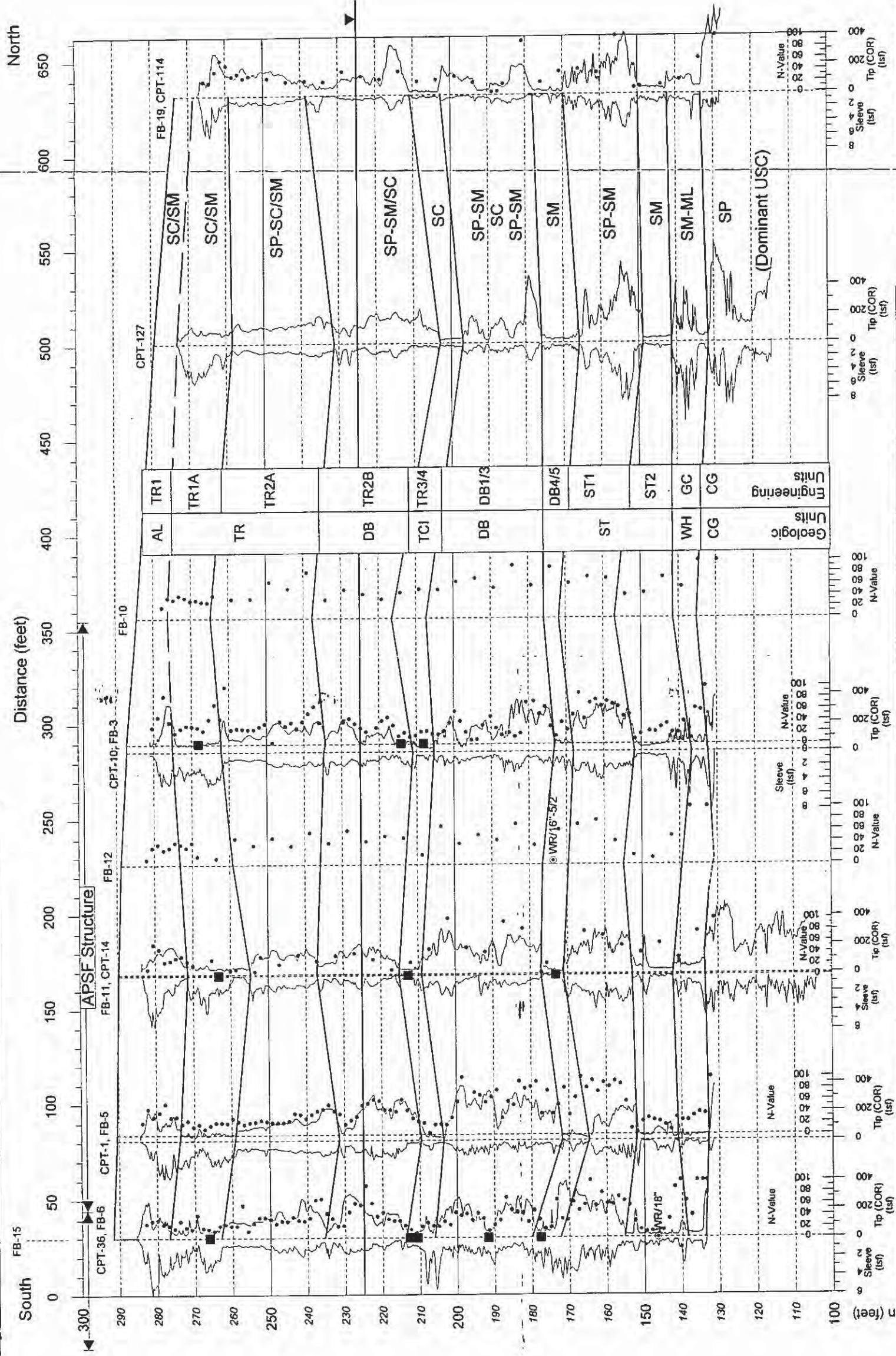
1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
4. Water table elevations shown represents an average high and generalized across the area. Refer to report for actual water table data.
5. USC = Unified Soil Classification.

# PRELIMINARY

## APSF NE Expansion Section Line 2

Vertical Exaggeration = 2X

Prepared By: Robert Johnson Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for SPT N-Value**  
(note: refusal = 100)

**Scale for CPT Sleeve**  
Stress, Resistance in TSF

**Scale for CPT Tip (COR)**  
Stress, Resistance in TSF

**Scale for Hammer or Rod**  
Weight of Hammer or Rod

- NOTES:**
- The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
  - The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
  - The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
  - Water table elev shown represents an average high and generalized across the area. Refer to report for actual water table data.
  - USC = Unified Soil Classification.

Figure 3.0-2  
Subsurface Cross-section 2

# PRELIMINARY

## APSF NE Expansion Section Line 3

Vertical Exaggeration = 2X

Prepared By: Robert DeLong Checked By: FS. Date: 5-27-99  
 Approved By: [Signature] Revision: 0

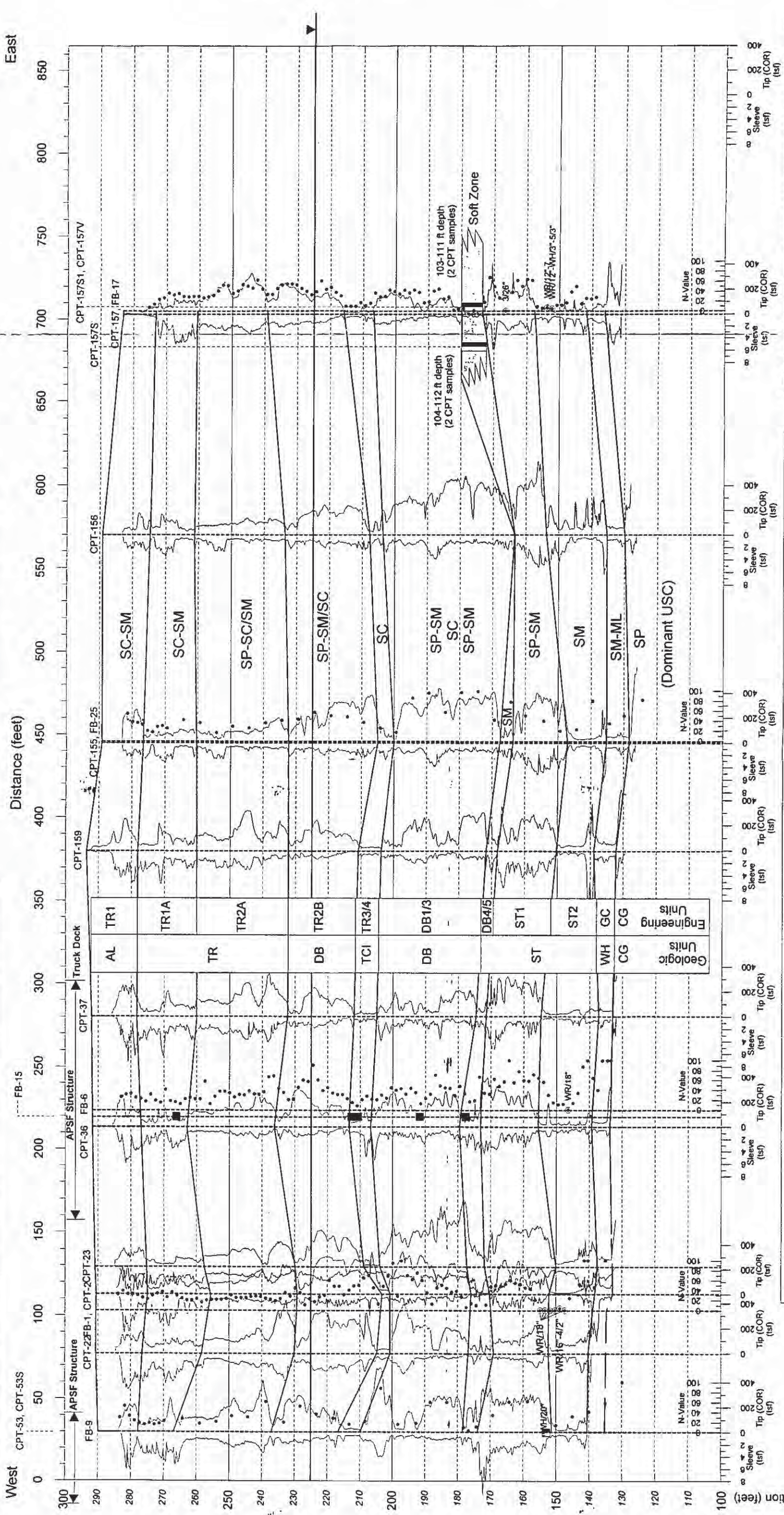


Figure 3.0-3 Subsurface Cross-section 3

### NOTES:

1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
4. Water table elevations shown represents an average high and generalized across the area. Refer to report for actual water table data.
5. USC = Unified Soil Classification.

**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for Hammer or Rod**  
 N-Value (tsf) / Tip (COR) (tsf)

**Scale for CPT Sleeve**  
 Stress, Resistance in TSF

**Scale for SPT N-Value**  
 (note: refusal = 100)

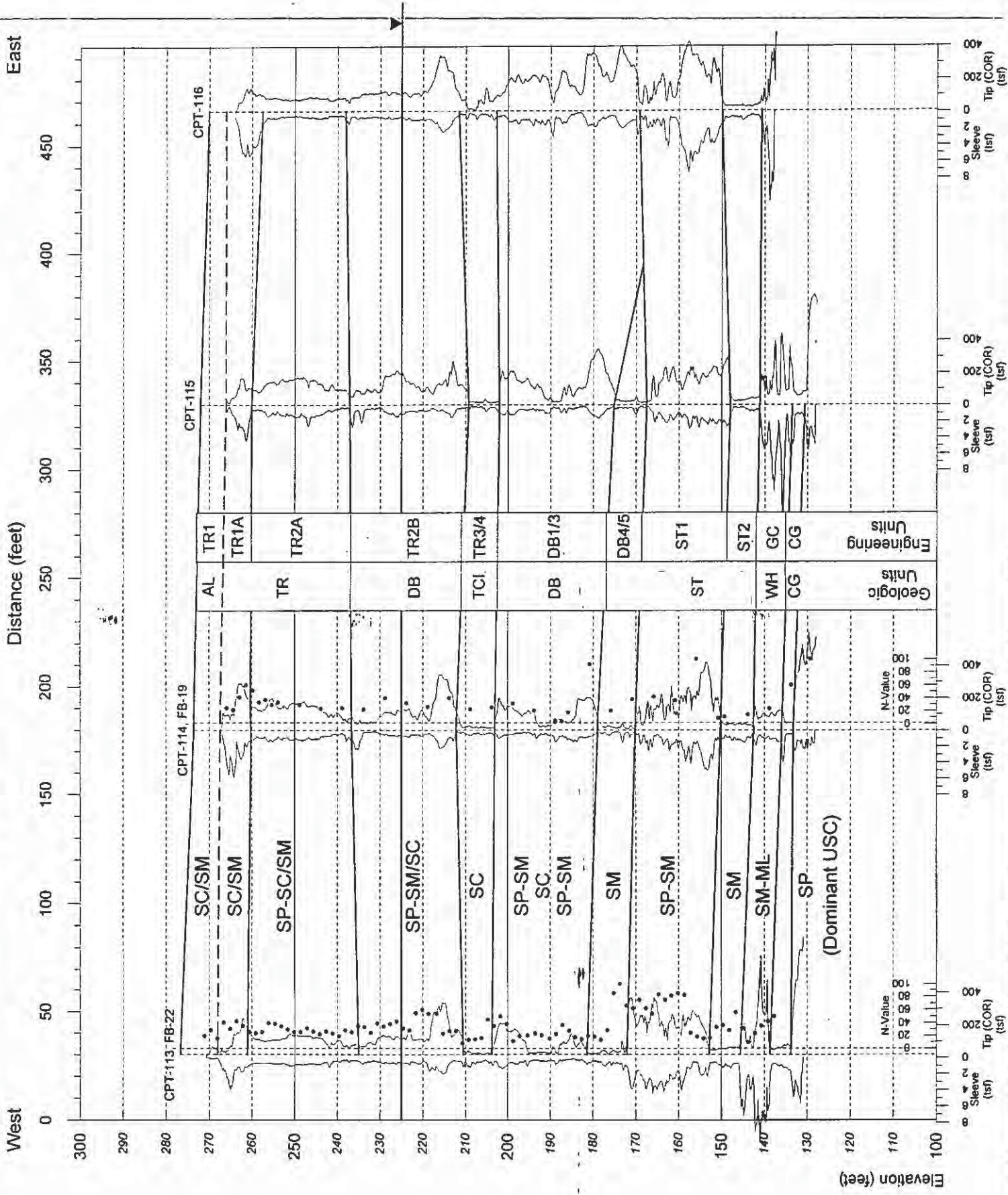
**Scale for CPT Tip (COR)**  
 Stress, Resistance in TSF

# PRELIMINARY

## APSF NE Expansion Section Line 4

Vertical Exaggeration = 2X

Prepared By: Robert Helms Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**NOTES:**

1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
4. Water table piez shown represents an average high and generalized across the area. Refer to report for actual water table data.
5. USC = Unified Soil Classification.

**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- ▣ CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for SPT N-Value (note: refusal = 100)**

**Scale for CPT Sleeve Stress, Resistance in TSF**

**Scale for CPT Tip (COR) Stress, Resistance in TSF**

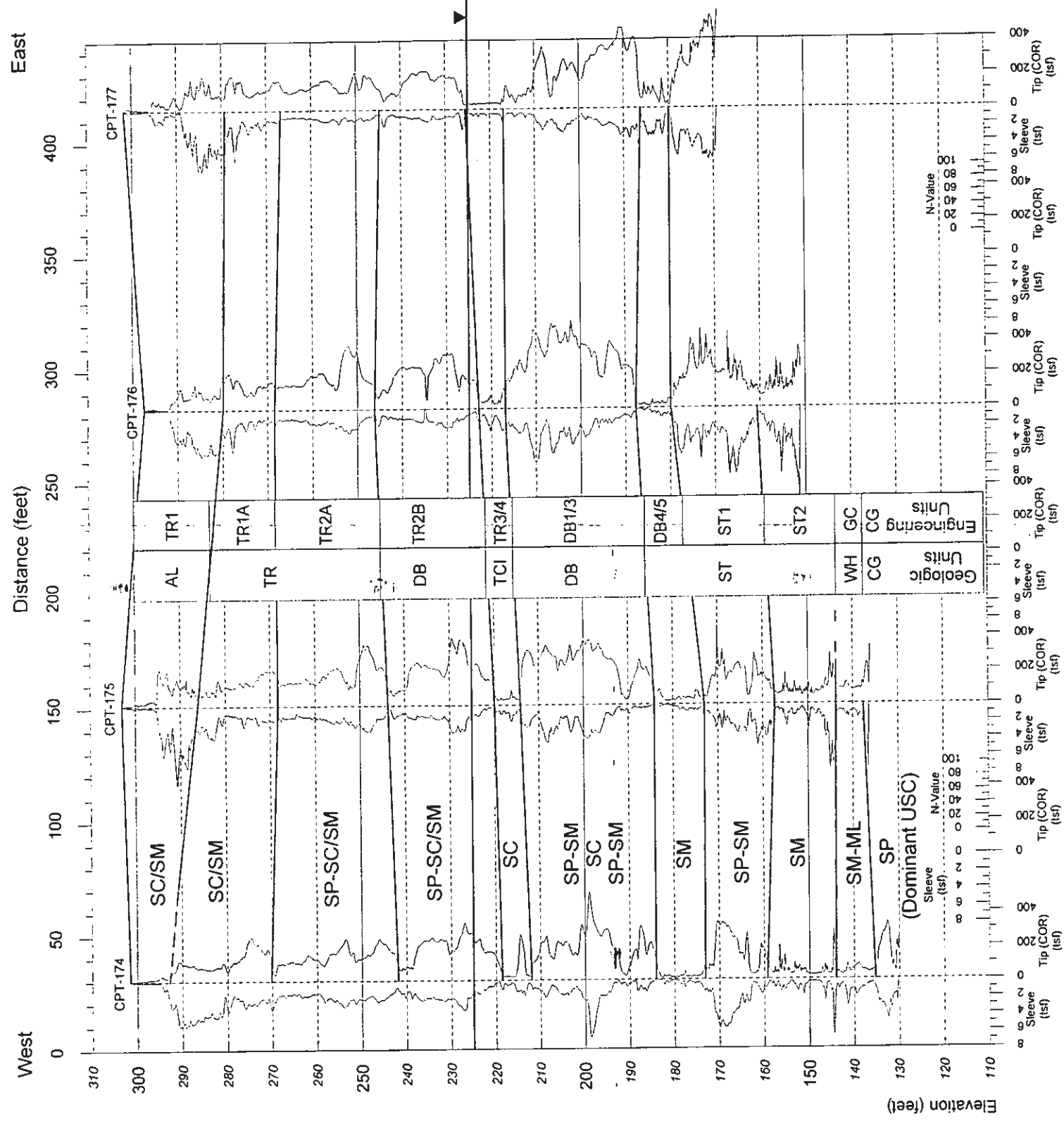
**Weight of Hammer or Rod**

Figure 3.0-4  
Subsurface Cross-section 4

# PRELIMINARY

## APSF NE Expansion Section Line 5 Vertical Exaggeration = 2X

Prepared By: Robert A. Kelly Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



- NOTES:**
1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
  2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
  3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
  4. Water table elevations shown represents an average high and generalized across the area. Refer to report for actual water table data.
  5. USC = Unified Soil Classification.

- KEY:**
- Shelby Tube Samples in Adjacent UD Borings
  - CPT Sample Location
  - SPT N-Value
  - ▼ Approximate Water Table
- Scale for SPT N-Value (note: refusal = 100)  
 Scale for CPT Tip (COR) Stress, Resistance in TSF  
 Scale for CPT Sleeve Stress, Resistance in TSF  
 Weight of Hammer or Rod  
 Scale for Hammer or Rod Stress, Resistance in TSF

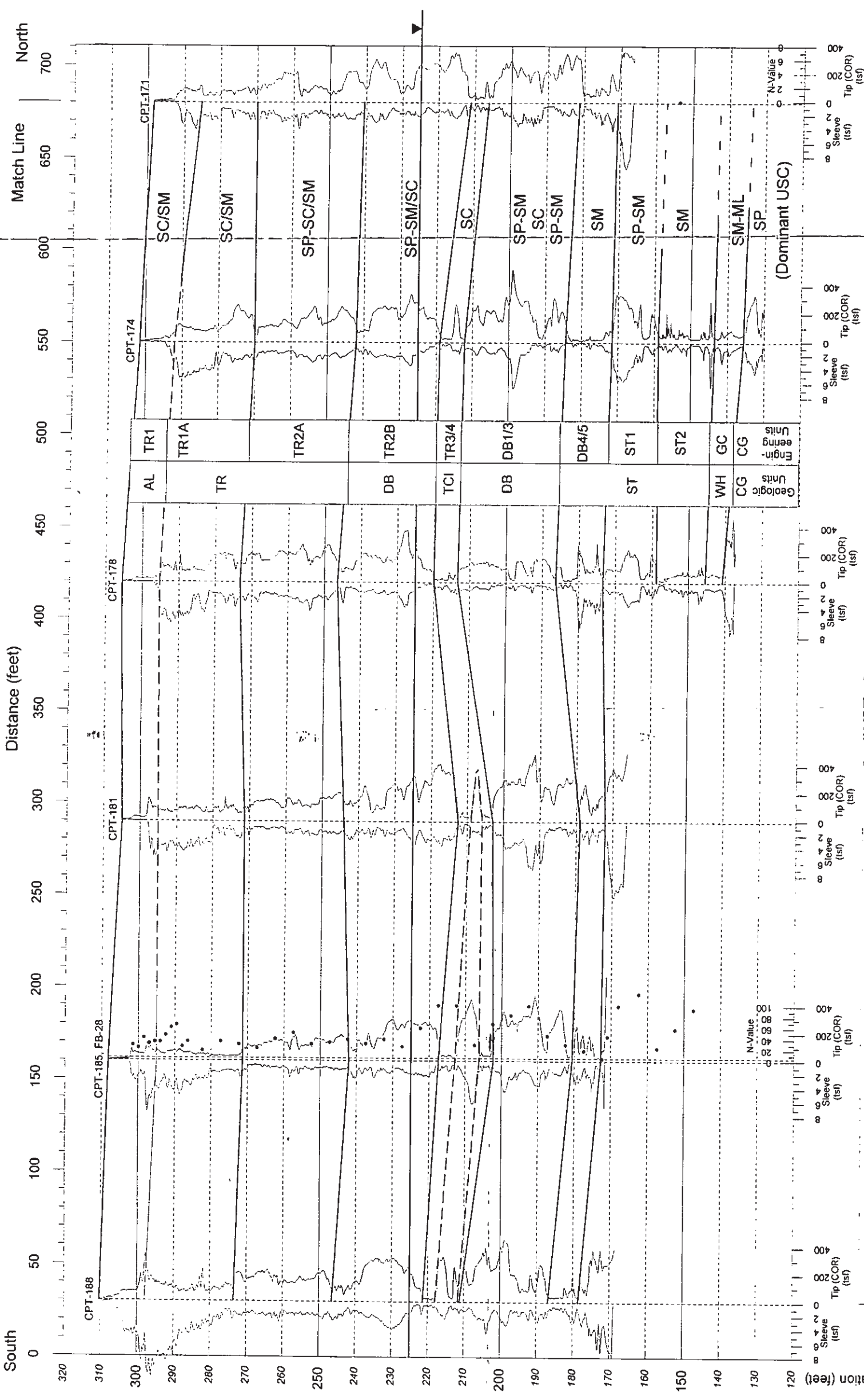
Subsurface Cross-section 5  
Figure 3.0-5



**APSF NE Expansion Section Line 6A**  
Vertical Exaggeration = 2X

**PRELIMINARY**

Prepared By: Robert Pelinas Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for SPT N-Value**  
(note: refusal = 100)

**Scale for CPT Sleeve Stress, Resistance in TSF**

**Scale for CPT Tip (COR) Stress, Resistance in TSF**

- NOTES:**
1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
  2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
  3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
  4. Water table elevations shown represent an average high and generalized across the area. Refer to report for actual water table data.
  5. USC = Unified Soil Classification.

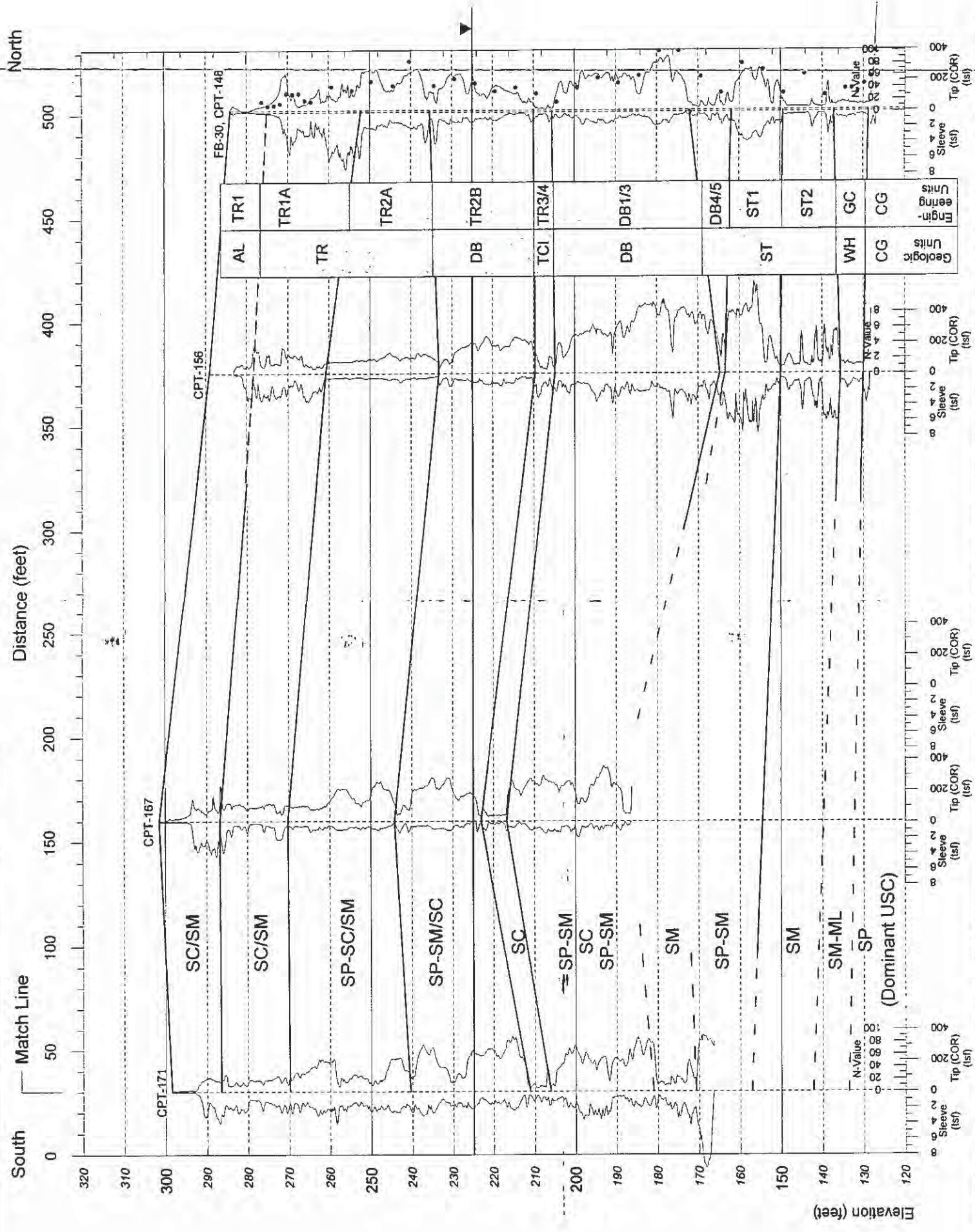
Figure 3.0-6 Subsurface Cross-section 6A

# PRELIMINARY

## APSF NE Expansion Section Line 6B

Vertical Exaggeration = 2X

Prepared By: Robert Adams Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**NOTES:**

- 1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
- 2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
- 3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
- 4. Water table elevations shown represent an average high and generalized across the area. Refer to report for actual water table data.
- 5. USC = Unified Soil Classification.

**Scale for SPT N-Value (note: refusal = 100)**

**Scale for CPT Tip (COR) Stress, Resistance in TSF**

**Scale for CPT Sleeve Stress, Resistance in TSF**

**Weight of Hammer or Rod**

Figure 3.0-6 Subsurface Cross-section 6B

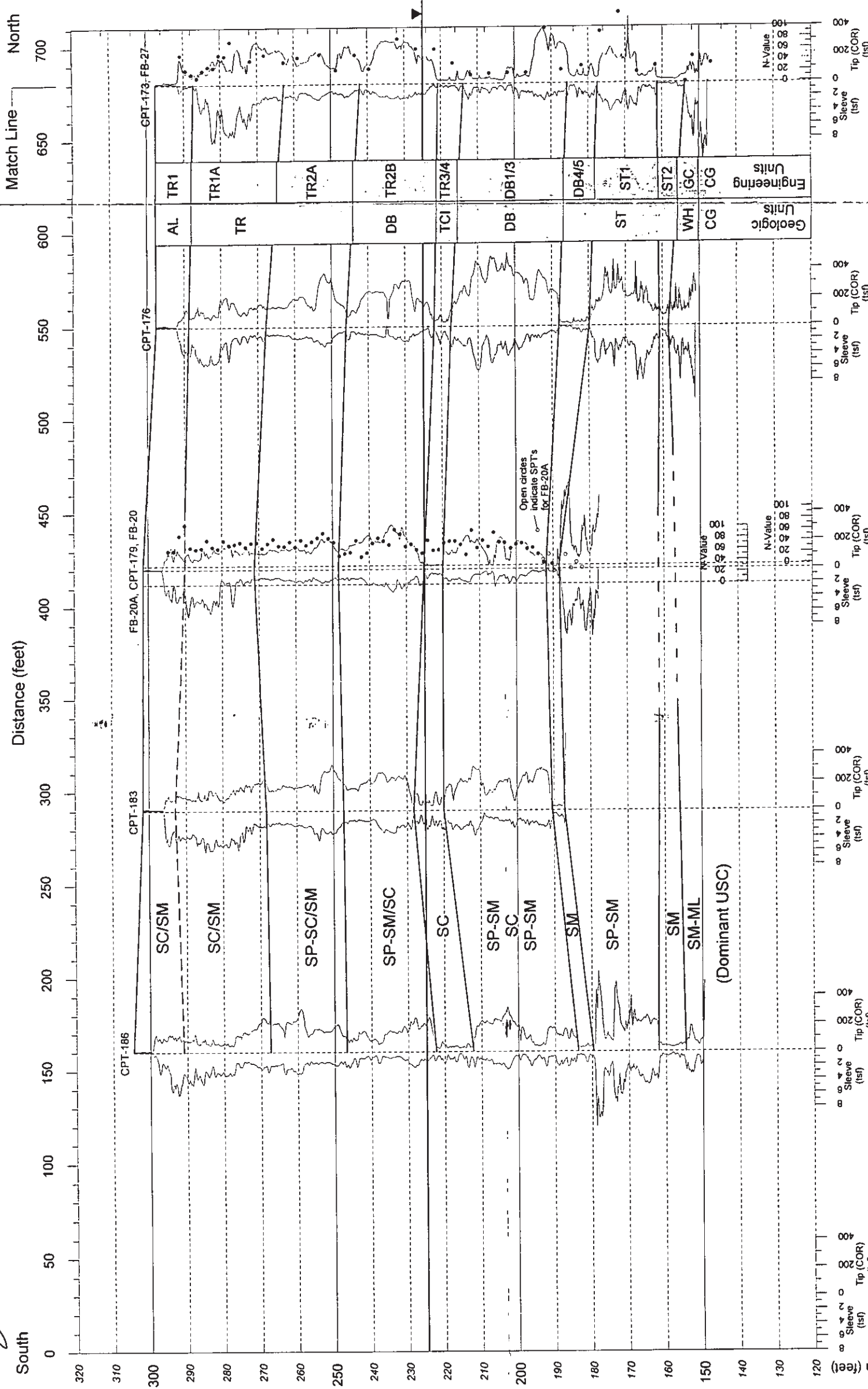
K-TRT-F-00001  
R/O

# PRELIMINARY

## APSF NE Expansion Section Line 7A

Vertical Exaggeration = 2X

Prepared By: Robert Johnson Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for Hammer or Rod**

- Sleeve (tsf)
- Tip (COR) (tsf)

**Scale for CPT Sleeve**

- Sleeve (tsf)
- Tip (COR) (tsf)

**Scale for SPT N-Value**

- N-Value (note: refusal = 100)

**Scale for CPT Tip (COR)**

- Stress, Resistance in TSF

- NOTES:**
1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
  2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
  3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
  4. Water table level shown represents an average high and generalized across the area. Refer to report for actual water table data.
  5. USC = Unified Soil Classification.

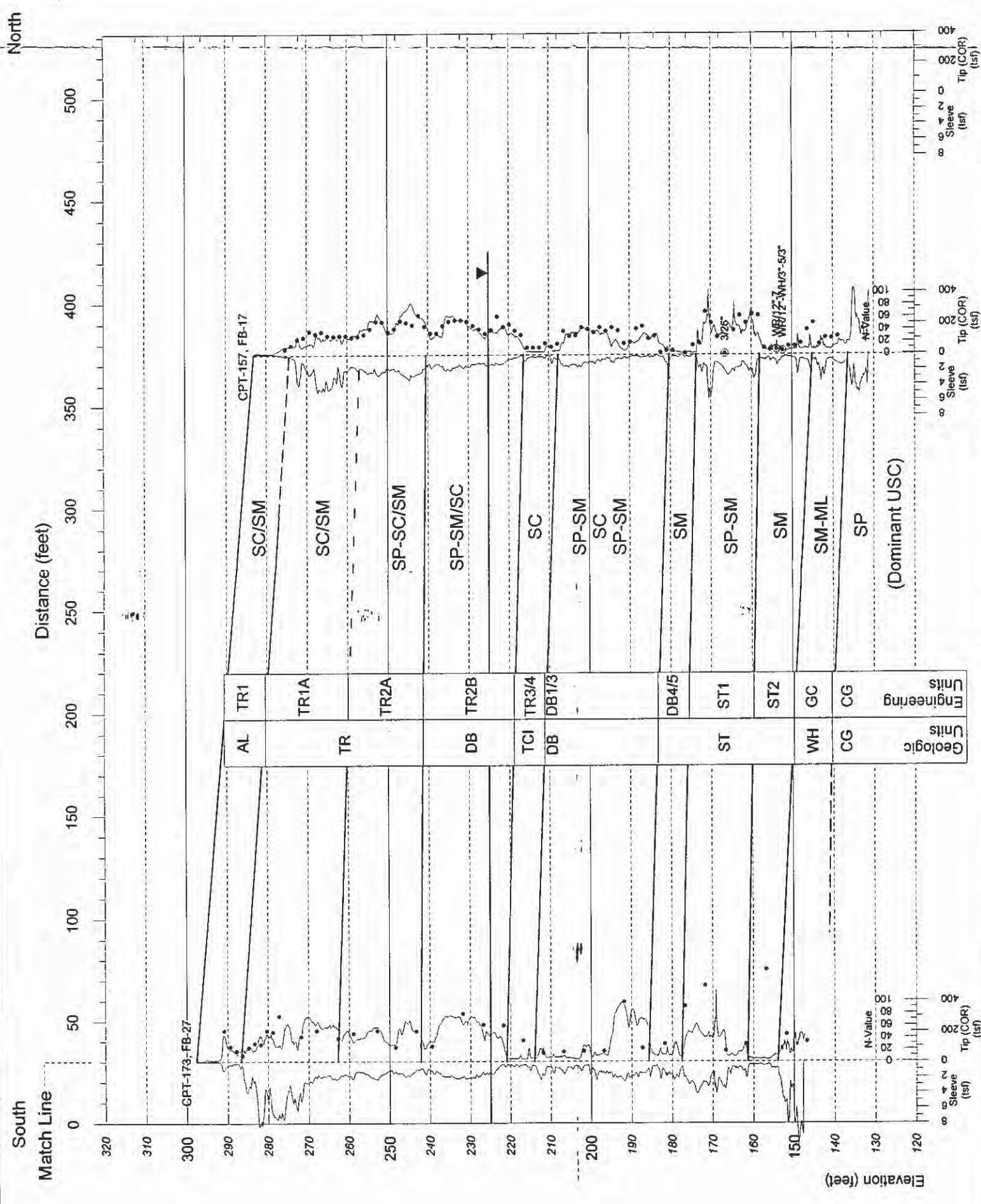
Figure 3.0-7 Subsurface Cross-section 7A

# PRELIMINARY

## APSF NE Expansion Section Line 7B

Vertical Exaggeration = 2X

Prepared By: Robert Felman Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for SPT N-Value**  
(note: refusal = 100)

**Scale for CPT Sleeve Stress, Resistance in TSF**

**Scale for CPT Tip (COR)**

**Scale for Hammer or Rod Weight**

**Scale for CPT Tip (COR) Stress, Resistance in TSF**

- NOTES:**
- The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
  - The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
  - The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
  - Water table elevations shown represent an average high and generalized across the area. Refer to report for actual water table data.
  - USC = Unified Soil Classification.

Figure 3.0-7 Subsurface Cross-section 7B

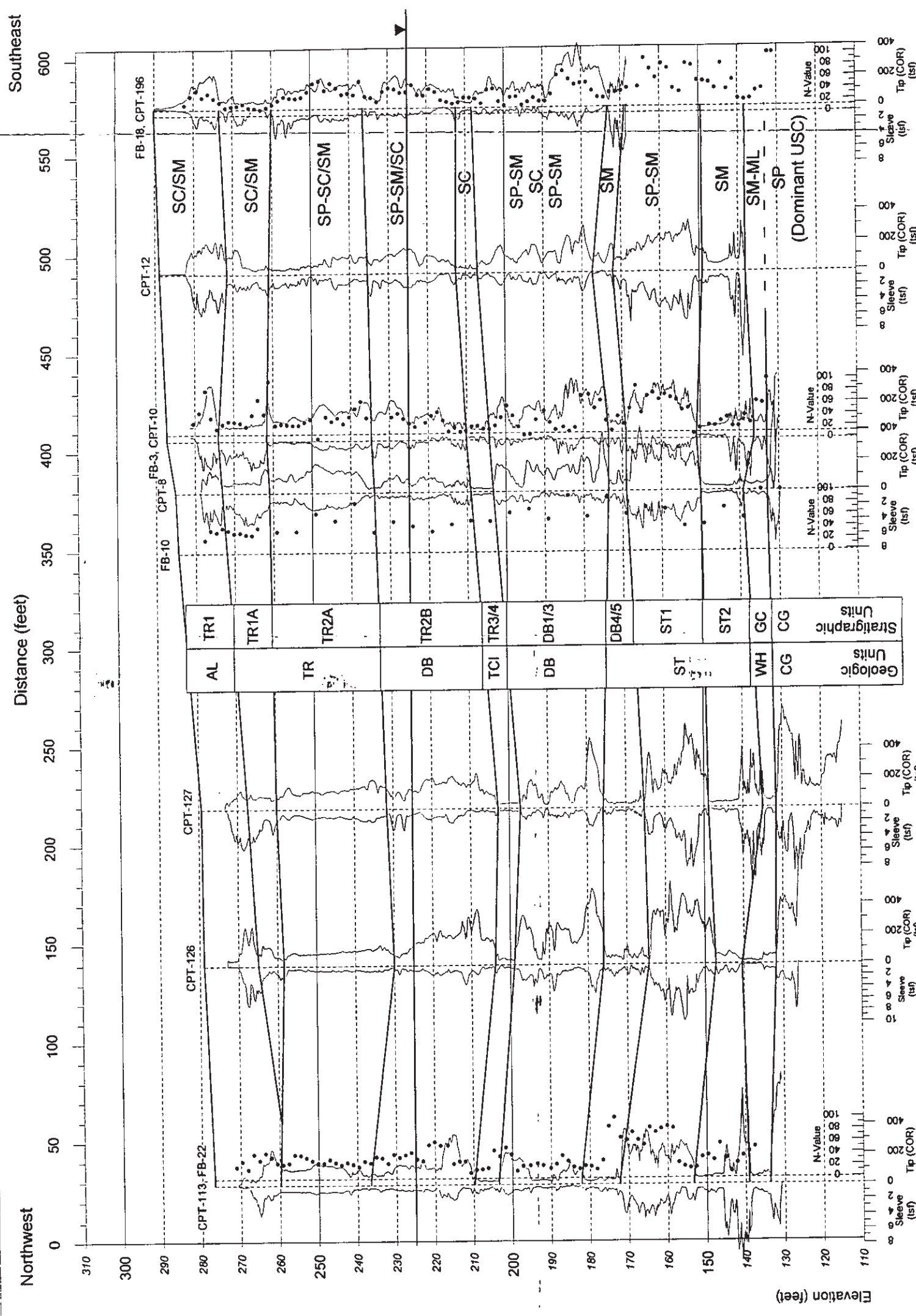
K-TRT-F-00001  
R/O

# PRELIMINARY

## APSF NE Expansion Section Line 8A

Vertical Exaggeration = 2X

Prepared By: Robert Johnson Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-11



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**Scale for CPT Sleeve Stress, Resistance in TSF**

**Scale for CPT Tip (COR) Stress, Resistance in TSF**

**Scale for SPT N-Value (note: refusal = 100)**

**Weight of Hammer or Rod**

### NOTES:

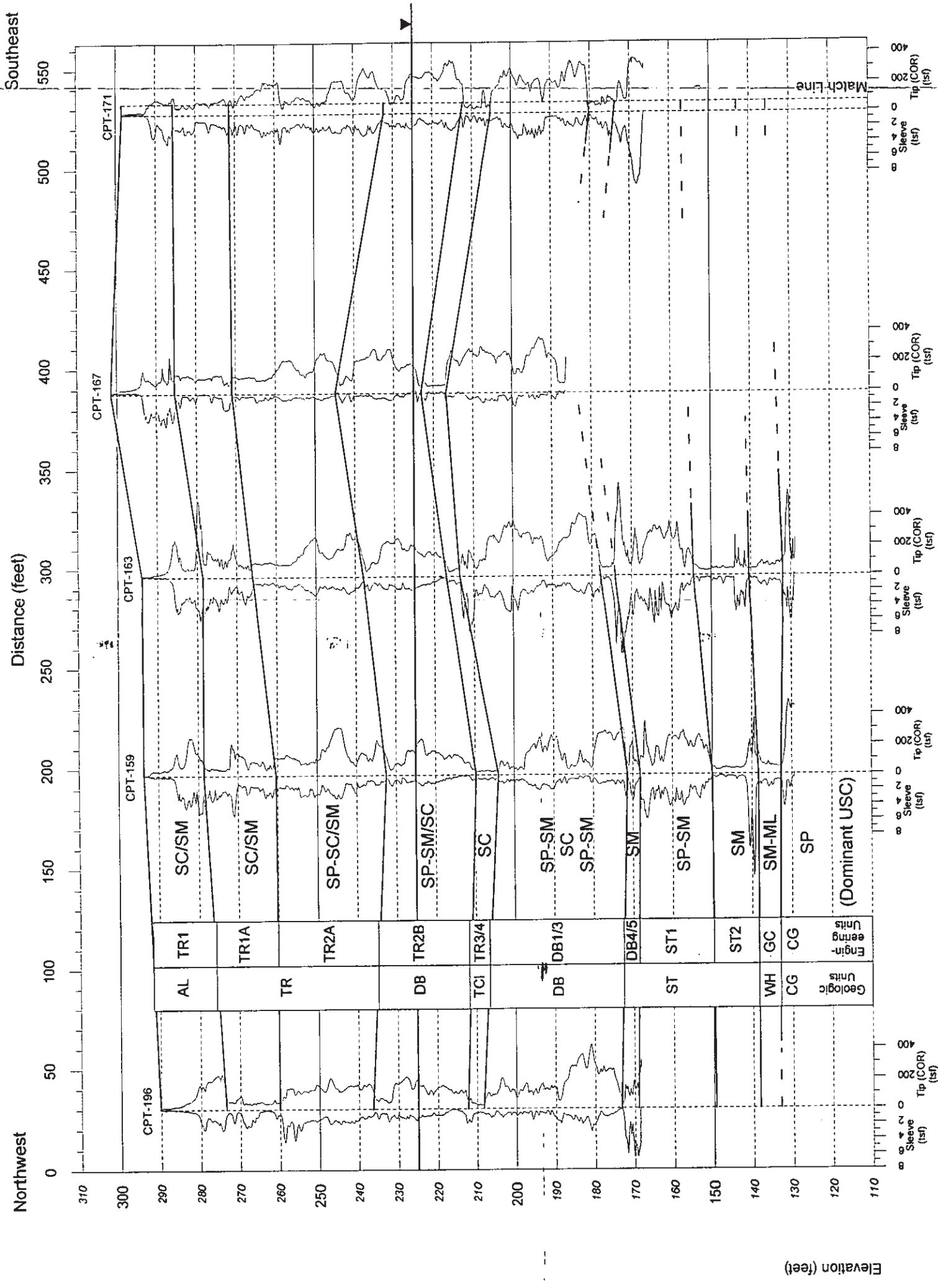
1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
4. Water table elevations shown represent an average high and generalized across the area. Refer to report for actual water table data.
5. USC = Unified Soil Classification.

Figure 3.0-8 Subsurface Cross-section 8A

**PRELIMINARY**

**APSF NE Expansion Section Line 8B**  
Vertical Exaggeration = 2X

Prepared By: Adrian Felicio Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-95



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table

**NOTES:**

- The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
- The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
- The use of the geologic formation designation of soils encountered is used for ease of descriptor and should not be interpreted as a textural or engineering description.
- Water table elevations shown represents an average high and generalized across the area. Refer to report for actual water table data.
- USC = Unified Soil Classification.

**Scale for SPT N-Value (note: refusal = 100)**

**Scale for CPT Tip (COR) Stress, Resistance in TSF**

**Scale for CPT Sleeve Stress, Resistance in TSF**

**Weight of Hammer or Rod**

Figure 3.0-8 Subsurface Cross-section 8B

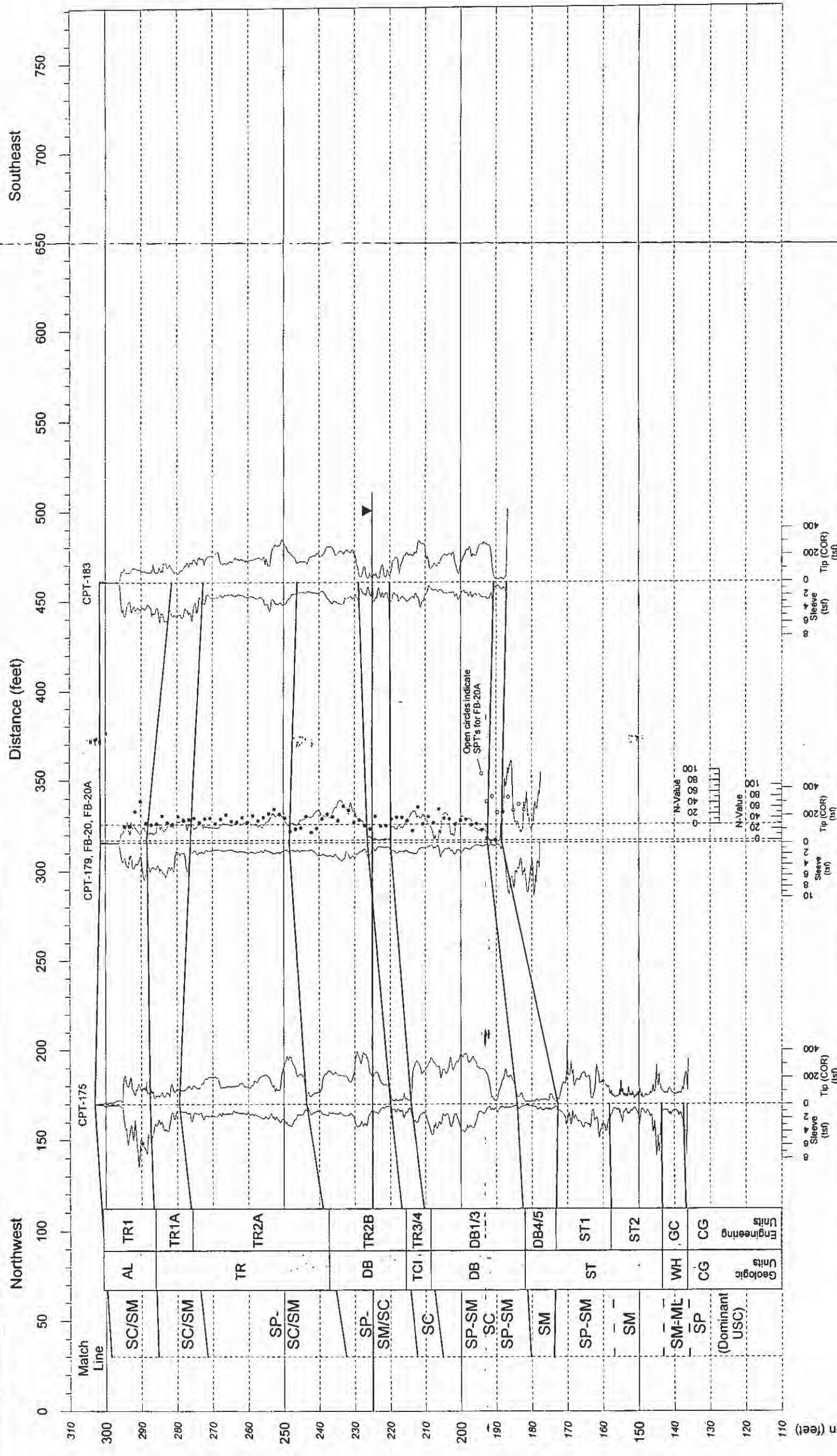
K-TRT-F-00001  
R/d

**PRELIMINARY**

**APSF NE Expansion Section Line 8C**

Vertical Exaggeration = 2X

Prepared By: Robert Bellman Checked By: F.S.  
 Approved By: [Signature] Revision: 0 Date: 5-27-99



**KEY:**

- Shelby Tube Samples in Adjacent UD Borings
- CPT Sample Location
- SPT N-Value
- ▼ Approximate Water Table
- Scale for SPT N-Value (note: refusal = 100)
- Scale for CPT Sleeve Stress, Resistance in TSF
- Scale for CPT Tip (COR) Stress, Resistance in TSF
- Weight of Hammer or Rod

**NOTES:**

1. The subsurface section shown represents our evaluation of the most probable conditions based upon interpretation of presently available data. Some variation from these conditions must be expected.
2. The discussion in the text of the report is necessary for a proper understanding of the nature of the subsurface material.
3. The use of the geologic formation designation of soils encountered is used for ease of description and should not be interpreted as a textural or engineering description.
4. Water table elevations shown represents an average high and generalized approximation; the area. Refer to report for actual water table data.
5. USC = Unified Soil Classification.

Figure 3.0-8 Subsurface Cross-section 8C

K-TRT-F-00001  
R/O

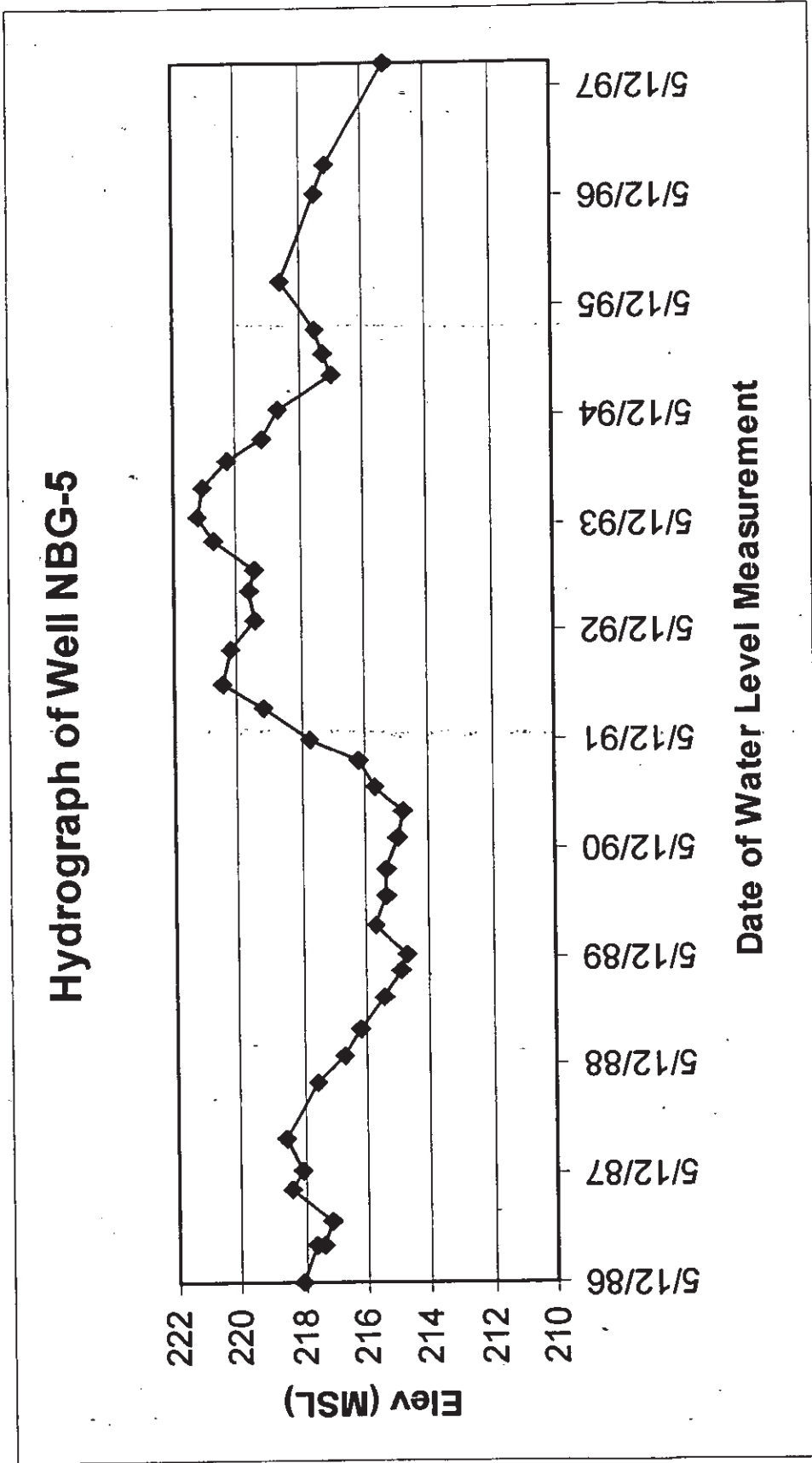


Figure 3.2-1 Hydrograph of Water Table Measurements for Well NBG-5



### Northeast Characterization

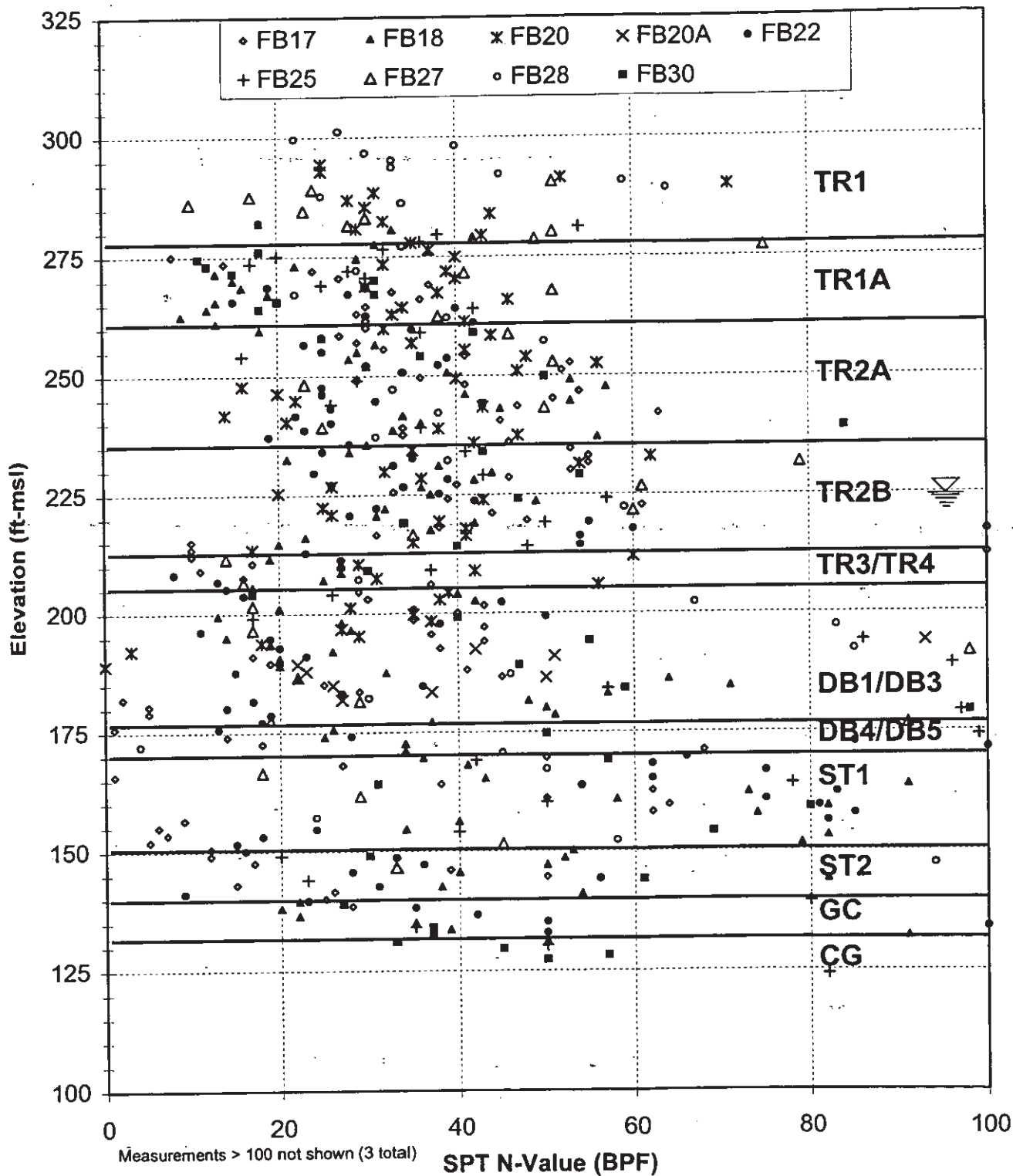


Figure 3.3-1 Range of SPT N-value Measurements

### Northeast Characterization

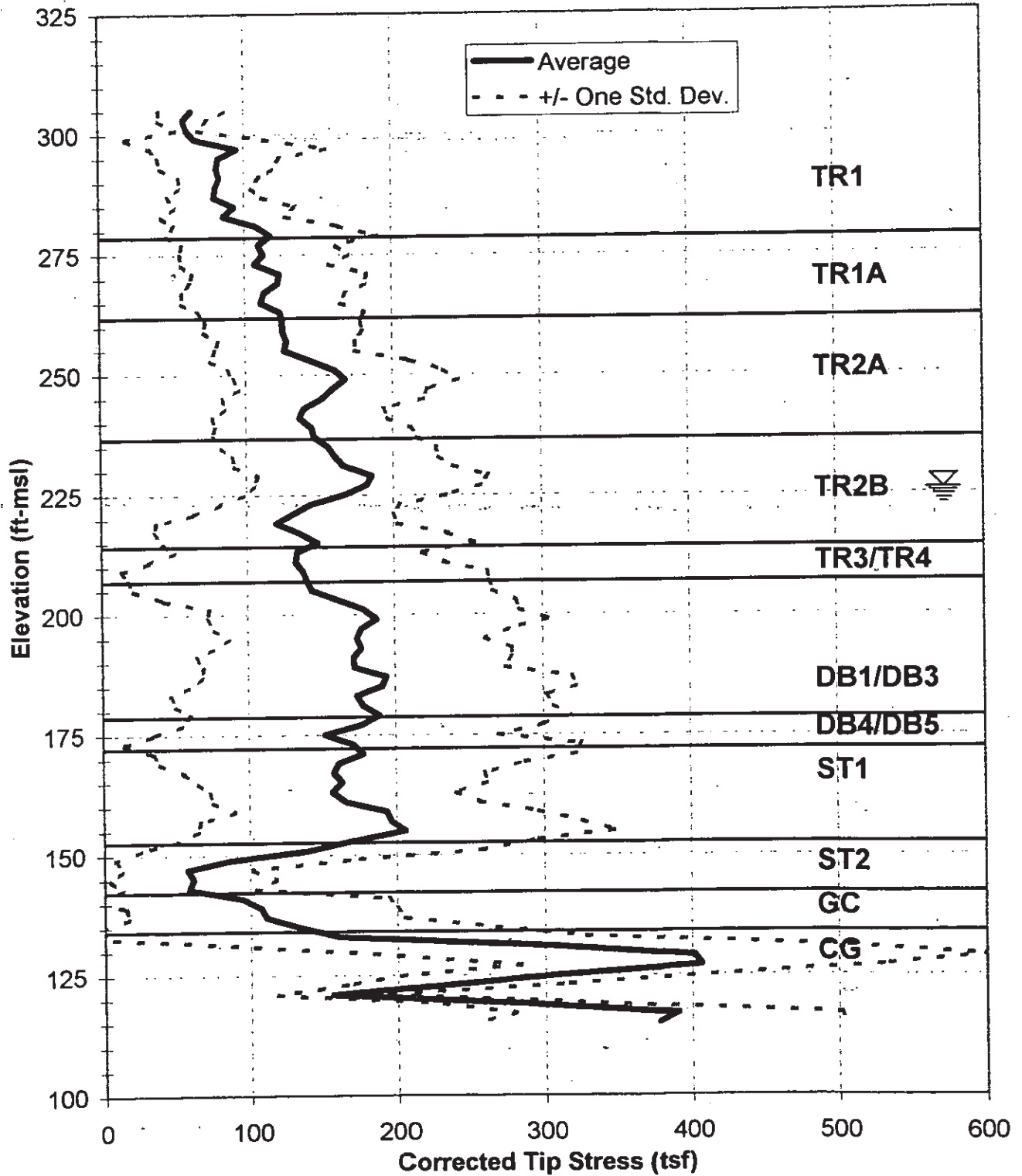


Figure 3.3-2 CPT Corrected Tip Resistance ( $q_t$ )

### Northeast Characterization

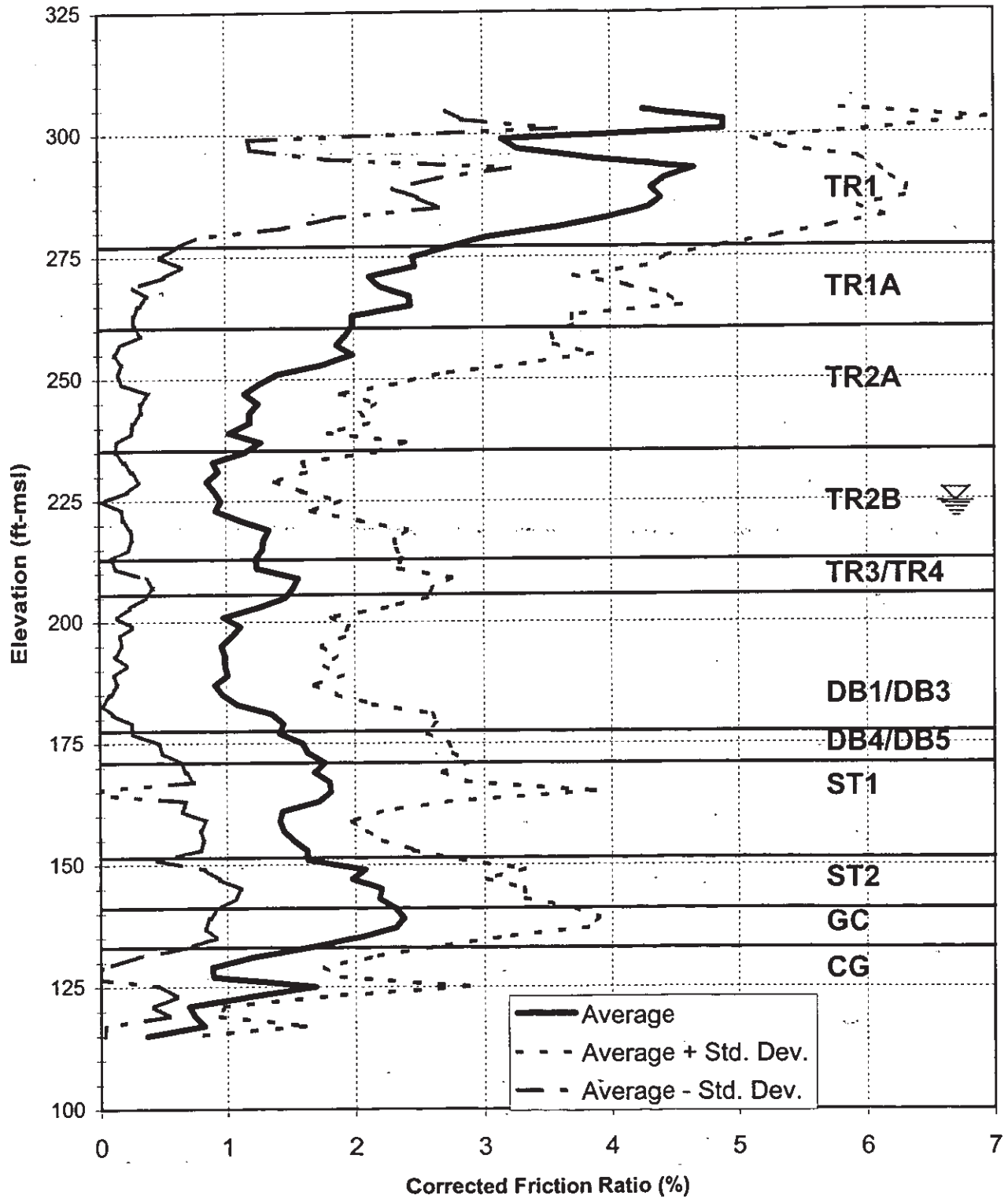


Figure 3.3-3 CPT Friction Ratio (Rf)

### Northeast Characterization

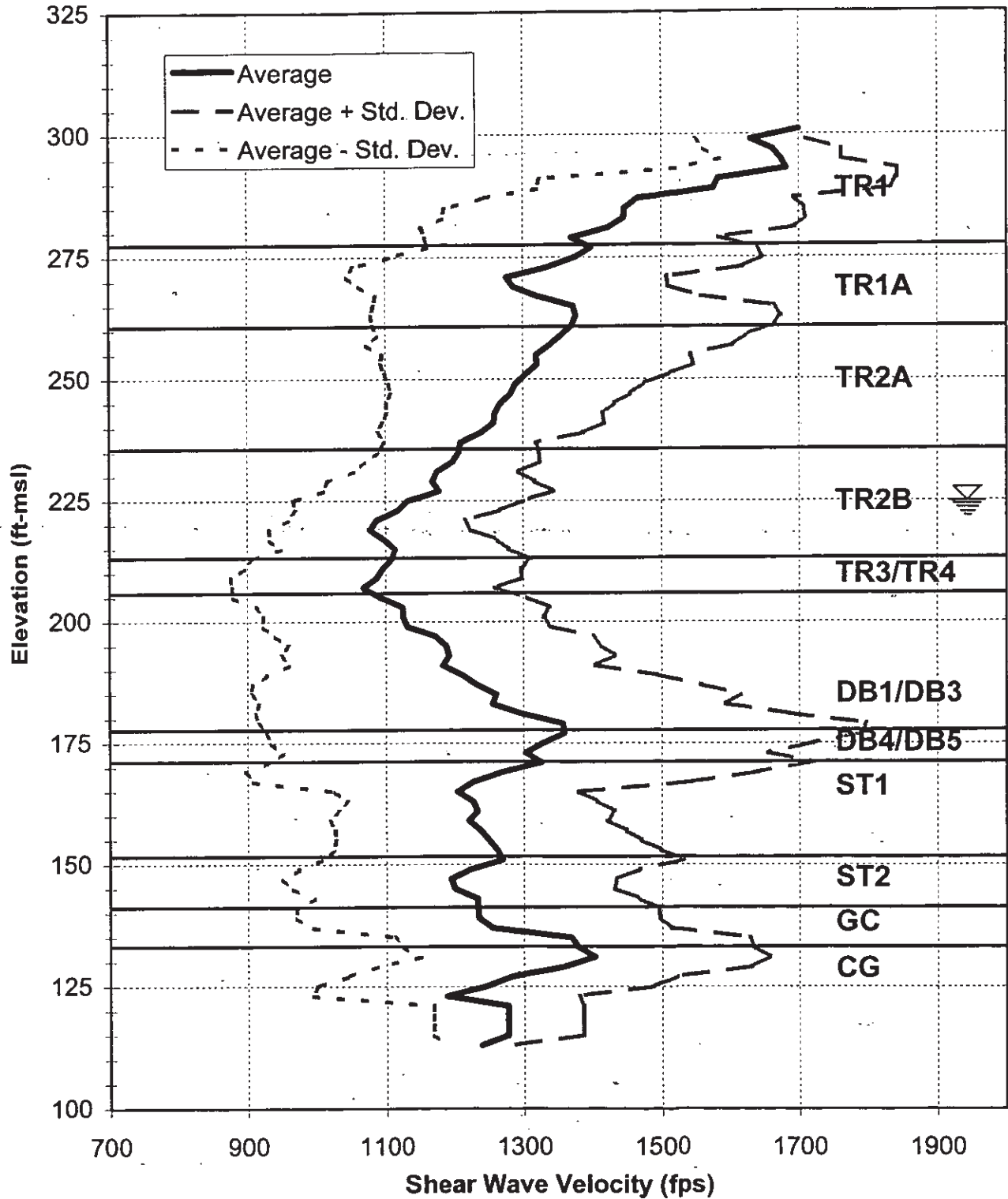
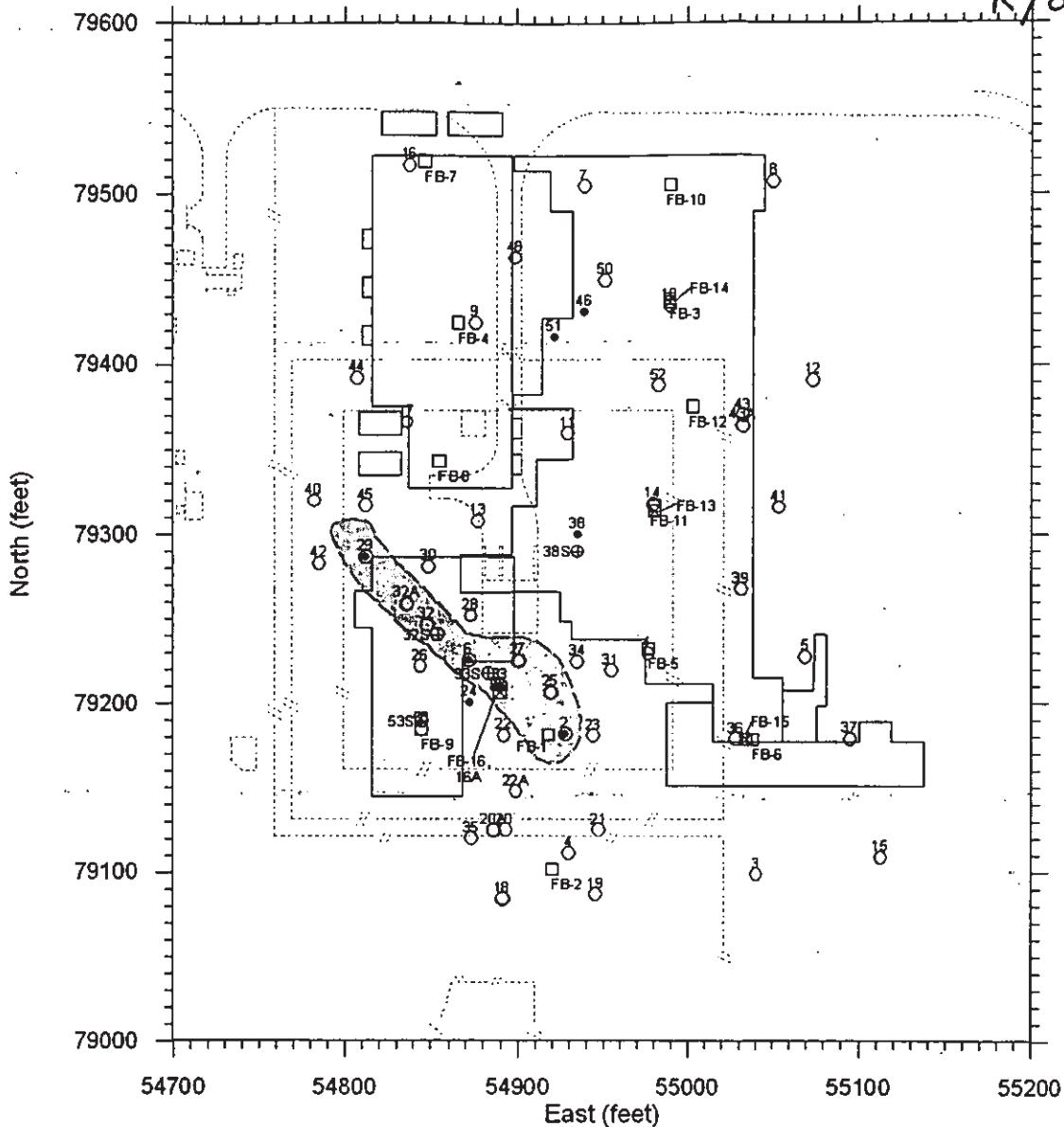


Figure 3.3-4 Average Shear Wave Velocity



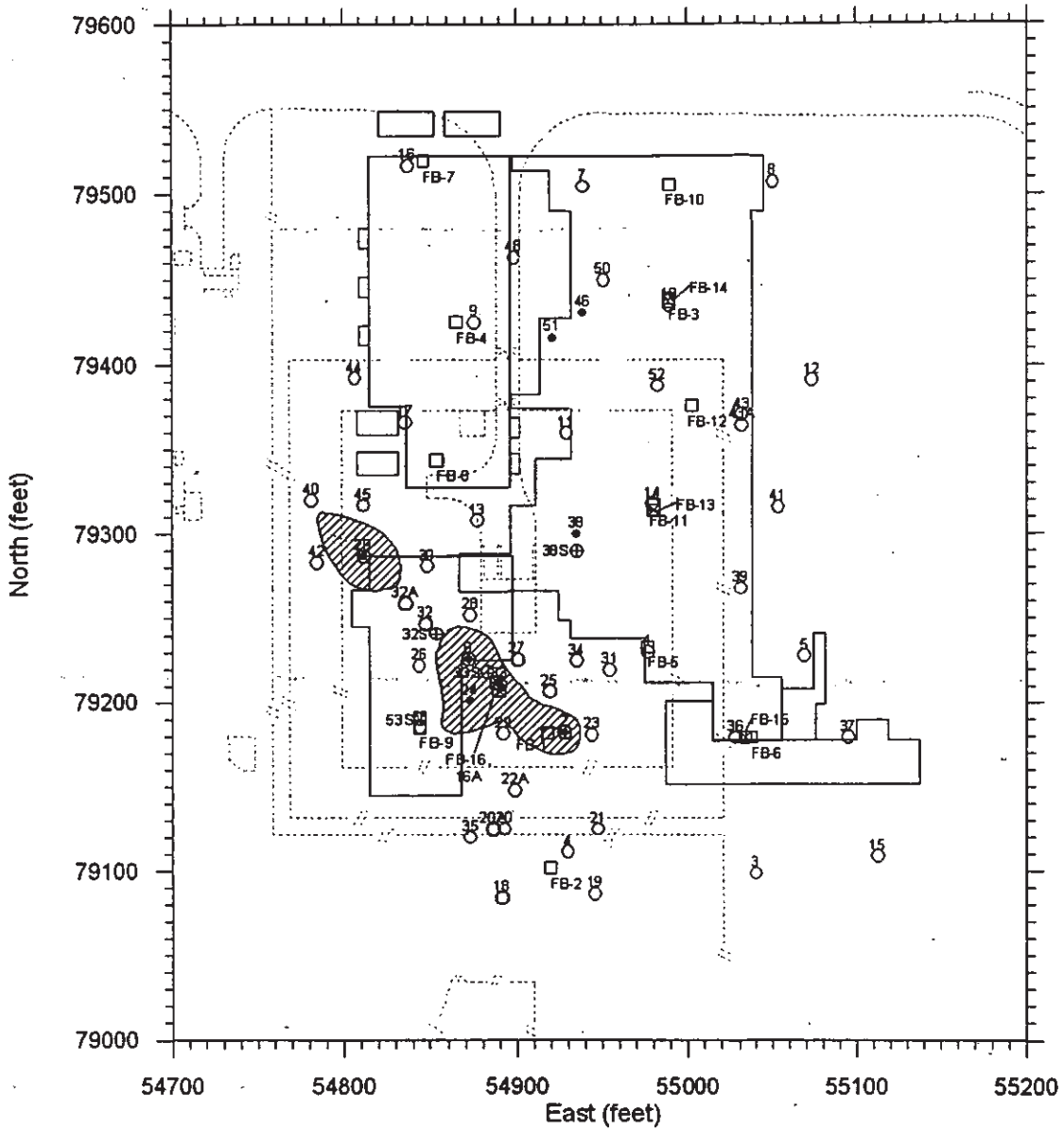
○	Soft zone near elevation 140; blue shaded areas postulated extent of soft zone(s)	⊕	CPT sample push
•	Soft zone near elevation 170	□	SPT Boring with soft zone
○	CPT with no soft zones or no soft zones in excess of 2.0 ft in thickness	□	SPT Boring with NO soft zone
		⊠	Undisturbed (Shelby Tube) Boring

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 uscd location.xls sheet softzone1

Figure modified from WSRC (1998a) APSF Confirmatory Drilling Program Results, June, 1998, PECD-SGS-98-0115

Figure 3.3-5 Map of APSF Area and Mapped Extent of Lower Soft Zone

K-TRT-F-0000/  
R/O



○	Soft zone near elevation 140	⊕	CPT sample push
•	Soft zone near elevation 170; blue shaded areas postulated extent of soft zone(s)	□	SPT Boring with soft zone
○	CPT with no soft zones or no soft zones in excess of 2.0 ft in thickness	□	SPT Boring with NO soft zone
		⊗	Undisturbed (Shelby Tube) Boring

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cccc locoben.xb sheet 0012001

Figure modified from WSRC (1998a) APSF Confirmatory Drilling Program Results, June, 1998, PECD-SGS-98-0115

Figure 3.3-6 Map of APSF Area and Mapped Extent of Upper Soft Zone



Appendix A  
K-TRT-F-00001  
R/O

<b>GEOTECHNICAL LOG</b>			PROJECT <b>F AREA INVESTIGATION</b>	JOB NO.	SHEET NO. <b>1 OF 6</b>	HOLE NO. <b>FB-1</b>
SITE <b>Pu Repackaging Facility F-Area</b>		COORDINATES <b>N 79,182 E 54,918</b>			ANGLE FROM HORIZONTAL <b>Vertical</b>	
BEGUN <b>8-22-95</b>	COMPLETED <b>9-8-95</b>	DRILLER <b>EEL</b>	DRILL MAKE AND MODEL <b>Mobile B-57</b>	HOLE SIZE <b>8"/5"</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 Lbs/30"</b>	TOTAL DEPTH <b>156.5</b>
GROUND EL. <b>290.6</b>	DEPTH/EL. GROUND WATER <b>69.0/221.6 69'</b>	LOGGED BY: <b>F.H. Syms</b>				

SAMP. TYPE AND NO.	SPT	N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						290.6					
						289.1			Red brown Clayey Sand (SC) with cobbles and quartz pebbles, dry.	Hole advanced using 8" od hollow stem augers from 0.0' to 70.5'.	
							5		Light brown Poorly Graded Sand (SP) mostly medium to fine sand, dry	Mud rotary drilling methods using a 5" drag bit was used from 70.5' to 156.5'. Aw rods were used for split spoon from 0.0' to 91.5'. "N" rods were used for split spoon sampling from 91.5' to 156.5'.	
SS 1	▲				8	284.1			similar to above material	Recovery 18"/18"	
SS 2	▲				11				Red brown Clayey Sand (SC) 70% fine sand, 30% fines, medium plasticity, dense, cohesive, mottled color.	Recovery 18"/18"	
SS 3	▲				13				similar to above material	Recovery 18"/18"	
SS 4	▲				12				similar to above material except, becoming less dense, less plastic	Recovery 12"/18"	
SS 5	▲				12				similar to above material	Recovery 14"/18"	
SS 6	▲				11				similar to above material except, grain size is increasing slightly to include very few medium sand.	Recovery 16"/18"	
SS 7	▲				8	276.1			Red brown Silty Sand (SM) 70% very fine sand, 30% fines, medium plasticity, medium dense	Recovery 12"/18"	
SS 8	▲				9	275.6			Light brown Clayey Sand (SC) 5% rounded coarse sand, 70% fine sand, 25% fines, medium plasticity, dense, slightly moist.	Recovery 13"/18"	
SS 9	▲				9				similar to above material	Recovery 12"/18"	
SS 10	▲				12				Red brown Clayey Sand (SC) ~65% fine sand, 5% medium sand, 30% fines, medium plasticity, slightly moist.	Recovery 12"/18"	
SS 11	▲				10				similar to above material except grain size increases to ~10% medium sand, slightly micaceous and high dry strength.	Recovery 15"/18"	
SS 12	▲				12				similar to above material	Recovery 15"/18"	
SS 13	▲				13	266.1			similar to above material except mottled purple brown color.	Recovery 14"/18"	
									Purple Silty Sand (SM) mostly fine to medium sand,		

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-1</b>
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K-TRT-F-00001

R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				F AREA INVESTIGATION		2 OF 6	FB-1				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 14	▲					15				nonplastic, low cohesion slightly moist, <1% mica flakes present. similar to above material	Recovery 13"/18"
SS 15	▲					9 11 13				similar to above material	Recovery 10"/18"
SS 16	▲					10 9 11				similar to above material except with wispy laminations	Recovery 10"/18"
SS 17	▲					6 9 11	260.8	30		Red brown Clayey Sand (SC) medium to low plasticity, soft, moist.	Recovery 18"/18"
SS 18	▲					8 11 12	260.4			Purple Silty Sand (SM) mostly very fine sand to silt size mica, low dry strength, wispy laminations.	Recovery 14"/18"
SS 19	▲					7 7 9	259.6			Poorly Graded Sand (SP-SM)	Recovery 17"/18"
SS 20	▲					6 9 11	259.1			Red brown, purple Silty Sand (SM) mostly very fine sand to silt size, laminated with up to 1/4" clay layers of medium to highly plasticity, soft. similar to above material	Recovery 14"/18"
SS 21	▲					9 10 11		35		similar to above material except, becoming light brown, nonplastic, less moisture.	Recovery 14"/18"
SS 22	▲					10 10 11				similar to above material	Recovery 14"/18"
SS 23	▲					8 11 10				similar to above material	Recovery 13"/18"
SS 24	▲					11 11 12	251.6			Red brown Poorly Graded Sand with Clay (SP-SC) 80% fine quartz sand, 20% fines, medium plasticity to nonplastic, medium dry strength, moist.	Recovery 12"/18"
SS 25	▲					11 15 15		40		similar to above material	Recovery 16"/18"
SS 26	▲					11 12 13				similar to above material except few wispy laminations of kaolin	Recovery 18"/18"
SS 27	▲					11 12 13				similar to above material	Recovery 13"/18"
SS 28	▲					10 11 14		45		similar to above material	Recovery 14"/18"
SS 29	▲					11 12 15	244.1			Red brown Clayey Sand (SC) 70% fine sand, trace medium sand, 30% fines.	Recovery 16"/18"
SS 30	▲					11 14 14				becoming light brown similar to above material	Recovery 12"/18"
SS 31	▲					11 12 15		50		similar to above material	Recovery 13"/18"
SS 32	▲					12 12 12				similar to above material	Recovery 12"/18"
SS 32	▲					10 10 12				similar to above material	Recovery 11"/18"

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER; SITE

FINAL LOG

HOLE NO. FB-1





K-TRT-F-00001  
R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			F AREA INVESTIGATION		3 OF 6	FB-1		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ WATER CONTENT %						
		20 40 60 80						
SS 33		▲	8 7 12		55		similar to above material except moisture content is increasing	Recovery 13"/18"
SS 34		▲	12 10 13	233.6			similar to above material	Recovery 13"/18"
SS 35		▲	12 15 20				Brown red Poorly Graded Sand (SP) - 90% fine to medium sand, <10% fines, nonplastic, medium dense, low to no dry strength.	Recovery 15"/18"
SS 36		▲	13 13 15				similar to above material	Recovery 14"/18"
SS 37		▲	16 21 23		60		similar to above material	Recovery 18"/18"
SS 38		▲	11 16 19				similar to above material	Recovery 17"/18"
SS 39		▲	10 5 6	227.8			Light brown Clayey Sand (SC) medium plasticity, soft.	Recovery 13"/18"
SS 40		▲	9 11 12	226.4 226.1	65		Light brown Clay with sand (CH) kaolinitic, some medium sand, mostly fines, highly plastic, moist Light brown Clayey Sand (SC) mostly fine to medium sand, medium plasticity, kaolinitic laminations. similar to above material	Recovery 16"/18"
SS 41		▲	10 7 10					Recovery 17"/18"
SS 42		▲	7 11 16	223.1			Light brown Silty Sand (SM) 70% medium sand, 30% fines, medium plasticity to nonplastic, wet.	Recovery 15"/18"
SS 43		▲	10 13 17		70		similar to above material except becoming red brown.	Recovery 13"/18"
SS 44		▲	17 23 37	220.1			Red brown Well Graded Sand with Clay (SP-SC) mostly medium to coarse sand, medium plasticity, wet.	Recovery 8"/18"
SS 45		▲	21 27 21	218.6			Red brown Clayey Sand (SC) - 80% fine sand, 20% fines low plasticity.	Recovery 12"/18"
SS 46		▲	11 19 29				similar to above material	Recovery 8"/18"
SS 47		▲	15 14 17		75		similar to above material	Recovery 8"/18"
SS 48		▲	13 17 23	214.1			Light brown Poorly Graded Sand with Clay (SP-SC) mostly fine sand, medium plasticity to nonplastic, wet.	Recovery 8"/18"
SS 49		▲	15 20 29				similar to above material	Recovery 7"/18"
SS 50		▲	19 22 28		80		similar to above material	Recovery 6"/18"
SS 51		▲	18 28 37				similar to above material	Recovery 8"/18"

SS = SPLIT SPOON; ST = SHELBY TUBE; SITE  
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FINAL LOG

HOLE NO.  
FB-1



K-TRT-F-00001

R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			F AREA INVESTIGATION		4 OF 6	FB-1		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 52		▲	19 34 36	208.1			Brownish red Poorly Graded Sand (SP) 95% medium sand, <5% fines, nonplastic, dense.	Recovery 6"/18"
SS 53		▲	9 24 21		85		similar to above material except becoming coarser (medium to coarse sand)	Recovery 5"/18"
SS 54		▲	6 6 7	205.1			Yellow brown Clay (CH) highly plastic, laminated with silt and sand.	Recovery 14"/18" -HCI
SS 55		▲	13 22 26	203.9 203.4			Silty Sand (SM) Yellow brown Clay (CH) highly plastic, laminated with silt and sand.	Recovery 16"/18" -HCI
SS 56		▲	18 30 39	202.6 202.2			Yellow brown Clayey Sand (SC) mostly fine to coarse sand Light brown Poorly Graded Sand (SP) mostly fine to medium sand, dense.	Recovery 12"/18" -HCI
SS 57		▲	26 44 50		90		similar to above material	Recovery 12"/18" -HCI
SS 58		▲	8 9 19				similar to above material except with a 2" layer of clay highly plastic, laminated, kaolin.	Recovery 6"/18" -HCI
SS 59		▲	33 50/4"				similar to above material	Recovery 8"/10" -HCI
SS 60		▲	36 35 35		95		similar to above material	Recovery 7"/18" -HCI
SS 61		▲	25 28 34	194.6			Light brownish yellow Well Graded Sand with Clay (SW-SC) mostly well graded fine to coarse quartz sand, with fat clay layers up to 1/4" thick.	Recovery 10"/18" -HCI
SS 62		▲	27 37 38	193.6			Light brown Poorly Graded Sand (SP) mostly fine quartz sand, <5% fines, dense wet. similar to above material	Recovery 8"/18" -HCI
SS 63		▲	34 28 32	191.6			Light brown Poorly Graded Sand with Silt (SP-SM) mostly fine quartz sand, trace coarse quartz sand, laminated.	Recovery 11"/18" -HCL
SS 64		▲	17 23 12		100		similar to above material	Recovery 10"/18" -HCI
SS 65		▲	7 6 7	188.4			similar to above material Brownish yellow Clayey Sand (SC) ~20% coarse sand, 30% fine to medium sand, 30% fines, 20% lignite, soft to medium stiff	Recovery 18"/18" -HCI
SS 66		▲	14 21 24	186.3			similar to above material	Recovery 10"/18" -HCI
SS 67		▲	13 23 27		105		Light brown Poorly Graded Sand (SP) mostly medium sand trace lignite. similar to above material	Recovery 10"/18" -HCI
SS 68		▲	20 21 23				similar to above material	Recovery 16"/18" -HCI
SS 69		▲	8 15 21				similar to above material occasional rounded pebbles	Recovery 5"/18" -HCI
SS 70		▲	17 20 18		110		similar to above material except becoming well graded medium to coarse sand, dense, <5% fines.	Recovery 8"/18" -HCI

SS = SPLIT SPOON; ST = SHELBY TUBE; SITE  
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FINAL LOG

HOLE NO.  
FB-1

A-4



K-TRT-F-0000/  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				F AREA INVESTIGATION		5 OF 6	FB-1				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 71						13 16 11				similar to above material	Recovery 6"/18" -HCl
SS 72	▲					8 3 3	177.9			Light brownish red Clayey Sand (SC) mostly fine to coarse sand, medium plasticity, soft.	Recovery 6"/18" -HCl
SS 73	▲					7 6 8		115		similar to above material except becoming highly plastic.	Recovery 24"/18" -HCl, sample expanded
SS 74	▲					6 5 5				Similar to above material except becoming laminated with lignite and clay stringers, soft to medium stiff, highly plastic.	Recovery 20"/18" -HCl, sample expanded
											overdrilled from 117.0 to 118.5'
SS 75	▲					1/8" 4 7	171.1			similar to above material	Recovery 20"/18" -HCl, losing fluid stabilizing @ 20-25'
SS 76		▲				10 23 24		120		Yellowish brown Poorly graded Sand with Clay (SP-SC) 70% fine sand, 20% fines, 10% lignite, low plasticity, moist, clay wisps. similar to above material	Recovery 7"/18" -HCl
SS 77		▲				18 23 27				similar to above material	Recovery 12"/18" -HCl
SS 78		▲				19 21 27				similar to above material except lignite content decreasing and clay content increasing	Recovery 10"/18" -HCl
SS 79		▲				19 25 28		125		similar to above material	Recovery 13"/18" -HCl
SS 80		▲				28 34 26	164.6			Light brown Poorly Graded Sand (SP) 90% fine sand, trace medium to coarse sand, 10% fines dense, wet.	Recovery 8"/18" -HCl
SS 81		▲				17 27 28				similar to above material except fines content decreasing to <1%	Recovery 7"/18" -HCl
SS 82		▲				24 24 28		130		similar to above material	Recovery 8"/18" -HCl PP 1.25 TSP
SS 83		▲				20 21 24				similar to above material except becoming very fine sand	Recovery 10"/18" -HCl PP 1.00 TSP
SS 84		▲				22 22 21				similar to above material	Recovery 10"/18" -HCl PP 1.25 TSP
SS 85		▲				11 14 7				trace shell fragments in 1" layer, fragments <1/16". similar to above material	Recovery 6"/18" -HCl PP 0.75 TSP
SS 86		▲				WR/18"	155.1	135		similar to above material	Recovery 20"/18" sample expanded -HCl PP 0.50 TSP
SS 87		▲				WR/18"				Light brown Clayey Sand (SC) 70% very fine sand, 30% fines medium plasticity. similar to above material except becoming highly plastic	Recovery 19"/18" sample expanded -HCl PP 0.50 TSP
SS 88		▲				WR/18"	151.9			similar to above material	Recovery 0"/18"
										Light brown Silt with Sand (MH) some very fine	

SS = SPLIT SPOON; ST = SHELBY TUBE; SITE  
PS = STATIONARY PISTON; PB = PITCHER

FINAL LOG

HOLE NO.  
FB-1



K-TRT-F-00001

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				F AREA INVESTIGATION		6 OF 6	FB-1				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %				BLOM COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 89	▲					WR/18"		140		sand, mostly fines, highly plastic, soft, laminated with wispy layers of very thin clay, silicified shell fragments, low dry strength, slightly moist. similar to above material	Recovery 18"/18" -HCl PP 0.0 TSP
SS 90	▲					WR/16"				similar to above material except denser and possibly slight silicification	Recovery 18"/18" -HCl PP 0.0 TSP, PP 3.90 TSP (bottom)
SS 91	▲					WR/18"				similar to above material	Recovery 18"/18" -HCl PP 2.5 TSP
SS 92	▲					7 9 15		145.1		similar to above material	Recovery 81"/18" -HCl PP 3.5 TSP
SS 93	▲					17 23 29		142.3		similar to above material except becoming less plastic, less moist, and medium stiff.	Recovery 20"/18" sample expanded -HCl PP 3.5 TSP
SS 94	▲					24 34 50/4"		141.6 141.3		becoming mottled light olive and brown, appears burrowed, medium plasticity, stiff. Brown Poorly Graded sand (SP) mostly fine sand, cemented.	Recovery 10"/8" sample expanded -HCl PP +4.5 TSP
SS 95	▲					34 50/2"		150		Light olive green Silt with sand (ML) mottled, stiff some fine sand to pebble size, mostly fines, dry, highly plastic with water added. similar to above material. becoming Dark Green	Recovery 18"/18" -HCl PP 4.0 TSP
SS 96	▲					23 21 25					
SS 97	▲					24 43 50/4"		155 134.6 134.1			Recovery 16"/16" -HCl PP +4.5 TSP
										Congaree Brown Well Graded Sand (SW) mostly quartz sand, < 20% fines, dense, moist.	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

FINAL LOG

HOLE NO. FB-1

A-6



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
SITE				COORDINATES	ANGLE FROM HORIZONTAL						
Pu Repackaging Facility				N 79,102 E 54,920	Vertical						
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
9-11-95	9-18-95	EEI	Mobile B-57	6"	N/A	151.0					
GROUND EL.		DEPTH/EL. GROUND WATER		LOGGED BY:							
292.2		7 65.0/227.2 65'		F.H. Syms							
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ WATER CONTENT %									
		+ ATT. LIMITS %									
		20	40	60	80		292.2				
							289.2		Hand excavated from surface to 3.0' SP-SC type material with cobbles and road aggregate.	Hole was advanced using mud rotary drilling methods with a 5" drag bit from 0.0' to 156.5'. "N" rods were used for shelly tube sampling from 0.0' to 156.5'. Recovery 24"/24" Sample graphics are based on descriptions from tube trimmings.	
ST 1								5	Brown Sand (SP) 95% fine sand, 5% fines, medium dense to dense.		
ST 2									similar to above material	Recovery 24"/24"	
ST 3							285.4		similar to above material except Light brown color	Recovery 24"/24"	
ST 4							283.2		similar to above material except brown color	Recovery 24"/24"	
ST 5							281.3	10	Tan Silty Sand (SM)	Recovery 22"/12" slough in tube	
ST 6							279.3		Reddish brown and brown Clayey Sand (SC) 70% fine to medium sand, 30% fines, medium plastic.	Recovery 23"/24"	
ST 7								15	similar to above material except red brown	Recovery 24"/24"	
ST 8									grades to gray Sandy Clay	Recovery 0"/21"	
ST 9								20		Recovery 0"/12"	
ST 10										Recovery 16"/24"	
ST 11							267.8		Red Brown Clayey Sand (SC)	Recovery 24"/24"	
									grades into Light purple Silty Sand (SM)		

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER; SITE

FINAL LOG

HOLE NO. FB-2



K-TRT-F-00001

R/S

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
				F AREA INVESTIGATION		2 OF 6	FB-2	
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
ST 12				265.8			similar to above material	Recovery 15"/23"
ST 13							grades in to reddish brown Clayey Sand (SC)	Recovery 17.5"/24"
ST 14				261.2	30		similar to above material	Recovery 21"/24"
							similar to above material drilled to 35.0' without sampling	
ST 15				255.6	35		Clayey Sand (SC)	Recovery 14"/24"
							Drilled to 40.0' without sampling	
ST 16				250.8	40		Brownish red Clayey Sand (SC)	Recovery 17"/17"
							Drilled to 50.0' without sampling	
					45			Sampling intervals determined from adjacent CPT-2
ST 17				240.7	50		light brown and white Clayey Sand (SC)	Recovery 11"/18"
							Drilled to 60.0' without sampling	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-2

A-8



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET/NO.	HOLE NO.
				F AREA INVESTIGATION		3 OF 6	FB-2
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
				55			
ST 18			230.2	60		Light brown Sand (SP)	Recovery 10"/24"
						Drilled to 75.0' without sampling	
				65			
				70			
ST 19			215.8	75		Red brown Clayey Sand (SC) with coarse quartz sand	Recovery 17"/24"
						Drilled to 83.0' without sampling	
				80			

SS = SPLIT SPOON; ST = SHELBY TUBE;  
 PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-2

A-9



K-TRT-F-00001

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET/NO.	HOLE NO.	
				F AREA INVESTIGATION		4 OF 6	FB-2	
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING	
							20	40
ST 20				207.2	85		Red brown Clayey Sand (SC)	Recovery 24"/24"
							Drilled to 100.0' without sampling	
ST 21				191.2	100		Red Brown Clayey Sand (SC) fine to medium quartz sand.	Recovery 12"/12"
							Drilled to 120.0' without sampling	
					105			
					110			

SS = SPLIT SPOON; ST = SHELBY TUBE; SITE  
 PS = STATIONARY PISTON; PB = PITCHER

FINAL LOG

HOLE NO. FB-2

A-10





K-TRT-F-00001

2/0  
SHEET NO.

JOB NO.

5 OF 6

HOLE NO.

FB-2

# GEOTECHNICAL LOG

PROJECT

F AREA INVESTIGATION

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS % 20 40 60 80	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
ST 22				170.9	120		Light brown Poorly Graded Sand with Clay (SP-SC) mostly fine sand.	Recovery 16"/16"
							Drilled to 145.0' without sampling	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-2



K-TRT-F-00001

GEOTECHNICAL LOG				PROJECT F AREA INVESTIGATION		JOB NO.	SHEET NO. 6 OF 6	HOLE NO. FB-2			
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ WATER CONTENT % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
								140			
ST 23								145		Light brown Silt with Sand (ML)	Recovery 20"/24"
ST 24										similar to above material	Recovery 20"/24"
ST 25								150		similar to above material except yellow brown in color.	Recovery 19"/24"
							141.2			Total depth of boring 151.0 feet	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-2

A-12



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>APSF</b>	JOB NO. <b>APSF</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-3</b>
SITE <b>APSF</b>		COORDINATES <b>N 79439 E 54990</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>2/16/98</b>	COMPLETED <b>2/19/98</b>	DRILLER <b>Graves/S. Rodgers</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/ 30 in</b>	TOTAL DEPTH <b>154.5</b>
GROUND EL <b>287.2</b>	DEPTH/EL. GROUND WATER <b>287.2</b>	LOGGED BY: <b>R. Gelinis/SAIC</b>				

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						287.2					
SS 1						5-14-15	279.7		CLAYEY SAND (SC); medium grayish brown and medium red; medium dense; damp; subangular; poorly graded; fine to medium grained	Hand auger to 6 feet to check for underground interferences, then used 5 3/4 tricone for 1st 20 feet or so (19.5).  Shoe came off in hole.	
SS 2						9-26-21	278.2		same as above; medium reddish brown; very dense; moist		
SS 3						23-40-44	276.7		same as above; with some gray zones; dense		
SS 4						14-25-13	275.2		same as above; medium brownish red with some yellowish brown and gray zones; medium dense		
SS 5						6-8-11	273.7		SANDY LEAN CLAY (CL); with clayey sand interbeds; medium red; very stiff; damp; medium plasticity; sand fraction is fine to medium grained		
SS 6						11-12-15	272.2		same as above; with some yellowish gray oxidation zones; hard		
SS 7						10-15-17	270.7		same as above; dark red; sand fraction is fine grained		
SS 8						10-14-17	269.2		CLAYEY SAND (SC); with sandy lean clay portions; medium brownish red; medium dense; moist; subangular; poorly graded; fine to medium grained	Tobacco Road	
SS 9						6-10-13	267.7		SANDY LEAN CLAY (CL); with clayey sand portions; medium red; very stiff; moist; medium plasticity; sand is fine to medium grained		
SS 10						10-17-26	266.2		same as above; medium brownish red; hard		
SS 11						10-33-36	264.7		no recovery		
SS 12						15-23-21	263.2		CLAYEY SAND (SC); medium reddish brown; dense; moist; subangular; poorly graded; fine to medium grained		
SS 13						36-50/5in	261.7		same as above; very dense		
SS 14						11-13-12	260.8		same as above; medium yellowish brown; medium dense		
SS 15						9-13-14	258.7		SILTY SAND (SM); with clay; medium grayish brown and reddish brown; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 16						11-12-14	257.2		CLAYEY SAND (SC); medium yellowish brown and brownish red; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 17						14-13-12	255.7		same as above		
SS 18						18-13-12	254.2		same as above		
SS 19							252.7				

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

**FINAL LOG**

HOLE NO. **FB-3**



K-TRT-F-00001

R/0

# GEOTECHNICAL LOG

PROJECT

APSF

JOB NO.

APSF

SHEET NO.

2 OF 5

HOLE NO.

FB-3

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
SS 20					21-16-14	251.2			same as above; medium brownish yellow and yellowish brown	
SS 21		▲	○		16-18-17	249.7			SILTY SAND (SM); medium yellowish brown; dense; moist; subangular; poorly graded; fine to medium grained	
SS 22					2-2/24in				no recovery	
SS 23		▲	○		14-20-19	247.2	40		same as above; with clay; medium brownish red reddish brown and some yellowish brown; wet	
SS 24		▲	○		18-14-17	245.7			CLAYEY SAND (SC); medium reddish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 25		▲	○		24-20-17	244.2			same as above; medium yellowish brown and brownish red with few light gray zones	
SS 26		▲	○		19-14-13	242.7	45		POORLY GRADED SAND WITH SILT (SP-SM); some portions are silty sand; light brown to medium reddish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 27		▲	○		12-15-24	241.2			CLAYEY SAND (SC); with silty sand interbeds; medium brown; dense; wet; subangular; poorly graded; fine to medium grained with trace lower coarse	
SS 28		○	▲		22-29-24	239.7			POORLY GRADED SAND WITH SILT (SP-SM); medium yellowish brown; very dense; wet; angular; poorly graded; medium to lower coarse grained	
SS 29		▲	○		40-31-34	238.2			no recovery	
SS 30		▲	○		18-16-21	236.7	50		CLAYEY SAND (SC); dark red; dense; wet; subangular; poorly graded; fine to lower coarse grained	Dry Branch
						235.2				
							55			
SS 31		▲	○		12-16-22	228.7			SILTY SAND (SM); medium reddish brown; dense; wet; subangular; poorly graded; fine to medium grained	Driller overdrilled interval? (52).
SS 32		▲	○		19-20-24	227.2			same as above; medium brown; fine to lower coarse grained	
SS 33		▲	○		16-17-18	227.2	60		same as above; medium brown and yellowish brown	
SS 34		▲	○		8-15-12	225.7			CLAYEY SAND (SC); medium yellowish brown with light gray zones; medium dense; moist; subangular; poorly graded; very fine to fine grained	
SS 35		▲	○		10-10-11	224.2			same as above; wet; fine to medium grained	
						222.7				
							65			
SS 36		▲	○		15-12-16	220.0			same as above; medium brown; very fine to fine grained	Driller didn't clean out and took spoon over previous interval (13-16-12) bad blow count.
SS 37		▲	○		17-17-23	218.5			SILTY SAND (SM); medium brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 38		▲	○		20-22-24	217.0			CLAYEY SAND (SC); medium reddish brown; dense; wet; angular; well graded; fine to coarse grained	
SS 39		▲	○		26-19-13	216.0	70		same as above	
						215.5				
SS 40		▲	○		5-6-7	214.0			SILTY SAND (SM); light brown to medium brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 41		▲	○		9-10-9	213.2			CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace lower coarse	
						212.5			same as above; medium brown; moist; angular; well graded; fine to upper coarse grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

## FINAL LOG

HOLE NO.

FB-3

A-14



K-TRT-F-00001

R/O

# GEOTECHNICAL LOG

PROJECT

APSF

JOB NO.

SHEET NO.

HOLE NO.

APSF

3 OF 5

FB-3

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 42						8-7-5	211.0		same as above; wet; subangular; poorly graded; fine to med grained		
SS 43		▲	○			8-6-8	209.5		same as above; med yellowish brown; fine to lower med grained		
SS 44						9-11-10	208.0		same as above; fine to medium grained with some fine to coarse grained layers	Core catcher is good.	
SS 45		▲				6-9-13	207.6	80	same as above; fine to medium grained	Top Tan Clay	
SS 46		▲				3-9-8	206.9		SANDY LEAN CLAY (CL); lt yellowish brown with some dk gray patches; very stiff; moist; med plasticity; sand fraction is fine to med grained	Top Tan Clay	
SS 47		▲				5-5-11	206.5		same as 79.2-79.6; two jars	Bottom Tan Clay	
SS 48		▲				4-6-16	205.0		SANDY LEAN CLAY (CL); med yellowish brown; very stiff; moist; med plasticity; sand fraction is fine to upper med grained	Bottom Tan Clay	
SS 49		▲				10-13-23	203.5		SILTY SAND (SM); med yellowish brown; med dense; wet; subangular; poorly graded; fine to med grained		
SS 50		▲				19-24-32	202.0	85	POORLY GRADED SAND WITH SILT (SP-SM); light brown; medium dense; wet; subangular; poorly graded; fine to upper medium grained		
SS 51		▲				19-22-17	200.5		SILTY SAND (SM); light brown; dense; wet; subangular; poorly graded; fine to medium grained	Catcher is good.	
SS 52		▲				8-12-8	199.0		no recovery		
SS 53		▲				2-3-3	197.5	90	POORLY GRADED SAND WITH SILT (SP-SM); light brown; dense; wet; subangular; poorly graded; fine to medium grained	Driller overdrilled interval? (52')	
SS 54		▲				4-2-5	196.0		SILTY SAND (SM); portions with clay; medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained		
SS 55		▲				9-12-20	194.5		CLAYEY SAND (SC); medium yellowish brown; loose; wet; subangular; poorly graded; fine to medium grained		
SS 56		▲				9-21-26	193.0		same as above		
SS 57		▲				15-13-14	191.5	95	SILTY SAND (SM); portions are poorly graded sand with silt; medium brown; dense; wet; subangular; poorly graded; fine to medium grained	Catcher is good.	
SS 58		▲				2-6-9	189.4		no recovery		
SS 59		▲				6-7-12	187.9	100	SILTY SAND (SM); light brown to medium brown; medium dense; wet; subangular; poorly graded; fine to medium grained		
SS 60		▲				6-3-9	186.4		CLAYEY SAND (SC); some portions are silty sand; medium brown; medium dense; wet; subangular; poorly graded; fine to medium grained		
SS 61		▲				4-7-11	184.4		POORLY GRADED SAND WITH CLAY (SP-SC); some silty sand layers; med brown; med dense; wet; subangular; poorly graded; fine to lower cse grading down to fine to med		
SS 62		▲				13-31-41	182.9	105	CLAYEY SAND (SC); med yellowish brown; med dense; wet; subangular; poorly graded; fine to med grained		
SS 63		▲				14-30-44	181.4		same as above; some thin poorly graded sand with clay layers; medium brown	Catcher is good.	
SS 64		▲				17-22-29	179.9		no recovery		
SS 65		▲				18-32-32	177.9	110	POORLY GRADED SAND WITH SILT (SP-SM); medium brown; very dense; wet; subangular; poorly graded; fine to medium grained	Driller didn't clean out and took spoon over previous interval 65.7-67.2 ft. (13-16-12) bad blow count.	
SS 66		▲				15-16-14	176.4		same as above; with some silty sand and poorly graded sand with clay interbeds; light brown		
SS 67		▲				4-5-8	174.9		same as above; light brown to medium brown; angular; medium grained		
SS 67		▲				4-5-8	173.4		POORLY GRADED SAND (SP) trace silt; with some poorly graded sand with silt layers; light brown to medium brown; medium dense; wet; angular; poorly graded; fine to lower coarse grained	Santee? Changed to metal	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-3

A-15



K-TRT-F-00001

R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			APSF	APSF	4 OF 5	FB-3	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 68		8-14-23	171.9			CLAYEY SAND (SC); light grayish brown and yellowish brown; dense; moist; subangular; poorly graded; fine grained; distinctive thin laminations	catcher.
SS 69		6-10-14	170.4			same as above; medium yellowish brown and yellowish gray; medium dense; fine to medium grained	
SS 70		14-21-29	168.9			same as above; with shell fragments; dense; wet; angular; well graded; fine to coarse grained	
SS 71		15-40-48	167.4	120		same as above; medium yellowish brown and reddish brown; very dense; subangular; poorly graded; very fine to fine grained	
SS 72		18-24-19	165.9			SILTY SAND (SM); trace fine shell fragments; medium brownish yellow and light yellowish gray; dense; wet; subangular; poorly graded; very fine to fine grained	Metal catcher is good.
SS 73		22-32-39	164.4			same as above; medium yellowish brown; very dense; fine grained; trace upper medium	
SS 74		25-35-41	162.9			same as above; fine grained	
SS 75		26-21-44	161.4	125		no recovery	Plastic orange catcher has two teeth missing.
SS 76		17-31-42	159.9			POORLY GRADED SAND WITH SILT (SP-SM); medium yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 77		23-30-38	158.4			SILTY SAND (SM); portions are poorly graded sand with silt; medium yellowish brown; very dense; wet; subangular; poorly graded; fine to lower medium grained	
SS 78		17-33-31	156.9	130		same as above; with thin orangish brown clayey sand interbed; light gray; very fine to fine grained	
SS 79		19-21-26	155.4			same as above; few very thin light gray clay laminations; medium yellowish brown; dense; very fine grained	
SS 80		14-29-21	153.9			same as above; with light gray limestone fragments and some clayey sand interbeds; fine to lower coarse grained; limestone fragments to 0.5 inch diameter	
SS 81		6-3-4	152.4	135		same as above; trace turrítella shells; loose; very fine to fine grained	
SS 82		6-6-10	150.9			CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; very fine to fine grained	
SS 83		5-9-12	149.4			same as above; with turrítella shells; light yellowish brown and yellowish gray; moist	
SS 84		7-9-11	147.0	140		same as above; trace shell and limestone fragments; medium yellowish brown and light gray	
SS 85		8-12-16	145.5			same as above	
SS 86		12-10-24	144.0			same as above; with sandy lean clay interbeds; dense; wet; angular; fine to lower coarse grained	
SS 87		10-8-11	142.5	145		SANDY SILT (MH); medium yellowish brown; very stiff; wet; low plasticity; sand fraction is very fine to fine grained	Warley Hill
SS 88		2-7-12	141.0			no recovery	Plastic orange catcher is broken.
SS 89		3-18-20	139.5			no recovery	New catcher has several teeth broken off.
SS 90		13-8-17	138.0				
SS 91		11-21-40	136.5	150		SANDY LEAN CLAY (CL); silicified nodule at 149.7 ft; dark yellowish brown and yellowish gray; very stiff; moist; medium plasticity; sand fraction is very fine to fine grained	New catcher has several teeth missing.
SS 92		17-20-38	135.0			CLAYEY SAND (SC); medium reddish brown and grayish brown; very dense; moist; angular; poorly graded; fine to lower coarse grained	
SS 93		40-30/3in	133.6 133.5 132.7			same as above; dark grayish green; subangular; fine to medium grained	Congaree

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-3

A-16



K-TRT-F-00001

R/S

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	5 OF 5	FB-3				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %	+ ATT. LIMITS %								
		20	40	60	80						
										same as above; with lean clay and silty sand interbeds (highly variable); medium reddish brown, dark grayish red, and dark grayish green; wet; angular; fine to lower coarse grained Total depth of boring 154.5 feet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-3



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>APSF</b>	JOB NO. <b>APSF</b>	SHEET NO. <b>1 OF 4</b>	HOLE NO. <b>FB-4</b>
SITE <b>APSF</b>		COORDINATES <b>N 79425 E 54865</b>			ANGLE FROM HORIZONTAL <b>90</b>	
BEGUN <b>2/27/98</b>	COMPLETED <b>3/4/98</b>	DRILLER <b>Graves/S. Rodgers</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/ 30 in</b>	TOTAL DEPTH <b>152.4</b>
GROUND EL. <b>285.1</b>		DEPTH/EL. GROUND WATER <b>▽ /</b>		LOGGED BY: <b>R. Gelinus/SAIC</b>		

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
						285.1				
SS 1					10-14-14	277.6			CLAYEY SAND (SC); medium reddish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; <u>lost shoe in hole</u>	Hand auger to 6 feet to check for underground interferences.
SS 2					10-20-20	276.1			SANDY LEAN CLAY (CL); medium red; hard; moist; medium plasticity; sand fraction is fine to medium grained	Lost shoe down hole.
SS 3					9-13-20	274.6	10		same as above	
SS 4					6-12-13	273.1			same as above; medium brownish red; very stiff	
SS 5					9-13-15	271.6			CLAYEY SAND (SC); medium brownish red and yellowish brown; medium dense; moist; subangular; poorly graded; <u>fine to medium grained</u>	Tobacco Road
SS 6					7-11-13	270.1	15		same as above; medium red	
SS 7					8-13-14	268.6			same as above; medium brownish red; fine grained	
SS 8					18-19-19	267.1			same as above; dense; wet; fine to lower coarse grained	
SS 9					2-14-19	265.6			CLAYEY SAND WITH GRAVEL (SC); medium reddish brown; dense; wet; subangular; well graded; fine to coarse grained; <u>gravel to 2 inch diameter</u>	
SS 10					3-12-16	264.1	20		SANDY LEAN CLAY (CL); medium reddish brown, maroon, yellowish brown, and tan; very stiff; moist; medium plasticity; <u>sand fraction very fine to fine grained</u>	
SS 11					6-9-14	262.6			SANDY SILT (ML); with some clayey sand interbeds; medium red, maroon, medium gray, and grayish yellow; very stiff; moist; low plasticity; sand fraction is very fine grained	
SS 12					11-13-12	261.1			CLAYEY SAND (SC); medium yellowish brown with light yellowish gray blebs; medium dense; wet; subangular; <u>poorly graded; fine to medium grained</u>	
SS 13					13-18-21	259.6	25		same as above; portions silty; dense; moist	
SS 14					11-16-20	258.1			same as above	
SS 15					10-16-15	256.6			same as above	
SS 16					8-10-14	255.1	30		same as above; medium yellowish brown and reddish brown; medium dense	
SS 17					8-11-10	252.8			same as above; medium reddish brown	
SS 18					8-10-11	251.3			same as above; medium yellowish brown with some reddish brown and light gray zones	
SS 19					11-11-14				same as above; medium reddish brown	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-4</b>
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A-18





K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			APSF	APSF	2 OF 4	FB-4	
SAMP. TYPE AND NO.	N-VALUE (SPT) O RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 20	▲		249.8			same as above; some portions are silty; medium yellowish brown; wet	
SS 21	○		247.8			SILTY SAND (SM); medium reddish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 22	▲		246.3			same as above; few clayey portions; and streaks of light gray	
SS 23	▲		244.8	40		CLAYEY SAND (SC); medium yellowish brown and tan streaks; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 24	▲		243.3			same as above; portions silty; medium reddish brown; dense	
SS 25	▲		241.8			same as above	
SS 26	○		240.3	45		POORLY GRADED SAND WITH CLAY (SP-SC); dark red; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 27	○		238.8			POORLY GRADED SAND (SP) trace clay; medium reddish brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 28	○		237.3			POORLY GRADED SAND WITH CLAY (SP-SC); medium brown with reddish brown zones; dense; wet; subangular; poorly graded; fine to upper medium grained	
SS 29	○		235.8	50		same as above; medium brown to light brown	
SS 30	○		234.3				
SS 30'	▲		232.3			CLAYEY SAND (SC); medium brown; medium dense; wet; subangular; poorly graded; fine to medium grained	Dry Branch
SS 31'	▲		230.8			same as above; with a few sandy clay layers; some light gray blebs	
SS 32	▲		228.8	55		same as above; with two thin grayish brown layers; dense	
SS 33	▲		227.3			POORLY GRADED SAND (SP); trace clay; medium brown; dense; wet; subangular; poorly graded; fine to upper medium grained	
SS 34	▲		225.8			POORLY GRADED SAND WITH CLAY (SP-SC); medium grayish brown; dense; wet; subangular; poorly graded; fine to lower coarse grained	
SS 35	▲		224.3	60		POORLY GRADED SAND (SP); trace silt; medium brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 36	▲		222.3			SILTY SAND (SM); medium brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 37	○		220.8			CLAYEY SAND (SC); trace fine gravel; medium brown; dense; wet; subangular; well graded; fine to coarse grained	
SS 38	○		219.3	65		POORLY GRADED SAND WITH SILT (SP-SM); medium yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained trace coarse	
SS 39	○		217.8			same as above; one thin lean clay interbed	
SS 40	○		216.1			CLAYEY SAND (SC); medium yellowish brown; dense; wet; subrounded; well graded; fine to coarse grained	
SS 41	○		215.8	70		POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 42	○		214.3			CLAYEY SAND (SC); with interbeds of poorly graded sand with clay; medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 43	○		212.8			same as above; with sandy clay interbeds	Top Tan Clay
SS	○		211.3			LEAN CLAY WITH SAND (CL); a few clayey sand interbeds; med yellowish brown; very stiff, moist; med plasticity; sand is fine to med grained	
SS	○					LEAN CLAY (CL); trace sand; medium yellowish gray and	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-4

A-17



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 4	FB-4				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 44						7-8-12	209.4			yellowish brown; very stiff; moist; medium plasticity; sand fraction is very fine grained	Bottom Tan Clay Catcher has one tooth broken.
SS 45						6-8-12	207.9			same as above; abundant black Mn? staining; sand is fine grained	
SS 46							206.4			no recovery	
SS 47						5-8-12	80			CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace coarse grains	
SS 48						6-11-10	203.8			same as above; moist; very fine to fine grained	
SS 49						5-7-15	202.3			same as above; light gray, tan, and yellowish brown; wet; fine to medium grained; black Mn? staining	
SS 50						12-19-17	200.8			same as above; very light yellowish green with medium orange mottles; dense	
SS 51						15-28-36	199.3	85		POORLY GRADED SAND WITH CLAY (SP-SC); light brown and reddish brown; very dense; wet; subangular; poorly graded; medium grained; trace heavies	
SS 52						22-27-24	197.8			same as above with very light brown band of cleaner, finer material	
SS 53						11-14-17	196.3			same as above; some zones are borderline clayey sand; dense	
							194.8	90			
SS 54						7-7-12				CLAYEY SAND (SC); medium yellowish brown and grayish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 55						17-18-16	192.4			POORLY GRADED SAND (SP); trace silt; light brown; dense; wet; angular; poorly graded; medium to coarse grained	
							190.9				
SS 56						7-7-8		95		CLAYEY SAND (SC); light yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 57						15-26-39	189.1			POORLY GRADED SAND (SP); trace silt; light brown; very dense; wet; subangular; poorly graded; medium to coarse grained; tip of spoon as above but clayey	
SS 58						17-35-41	187.6			same as above	
							186.8				
							186.1			CLAYEY SAND (SC); light yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 59						21-48-45	184.5	100		POORLY GRADED SAND (SP); trace silt; light brown; very dense; wet; subangular; poorly graded; medium to coarse grained	
SS 60						18-44-51	183.8			CLAYEY SAND (SC); medium brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 61						20-35-36	182.3			POORLY GRADED SAND (SP); trace silt; light brown; very dense; wet; subangular; poorly graded; medium to coarse grading down to lower medium	
SS 62						16-18-24	180.8			same as above; trace silt and gravel; medium brown; fine to lower coarse grained	
SS 63						17-20-14	179.3	105		same as above; trace clay; light brown to medium brown; dense; medium to lower coarse grained	
SS 64						5-2-2	177.8			POORLY GRADED SAND WITH SILT (SP-SM); light brown to medium brown; dense; wet; subangular; poorly graded; fine to lower coarse grained	
							176.3			CLAYEY SAND (SC); medium yellowish brown, brown, and dark gray; very loose; wet; subangular; poorly graded; fine to lower-coarse grained; Mn? staining	
SS 65						1-2-3	174.5	110		same as above; loose	Santee
SS 66						1-2-1/9in	173.8			SANDY FAT CLAY (CH); light brownish gray, tan, and black; firm; moist; high plasticity; sand fraction is fine to medium grained; Mn? staining	
							172.1			same as above; jar #1; soft	
SS						7-7-9	171.5			CLAYEY SAND (SC); light grayish brown, tan, and yellowish brown; very loose; wet; subangular; poorly graded; fine to medium grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-4

A-20



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			APSF	APSF	4 OF 4	FB-4	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
67	SS		169.7			same as above; medium yellowish brown and yellowish gray; medium dense	
68	SS		168.2			same as above; dense	
69	SS		167.1			same as above; fine to lower coarse grained	
70	SS		166.7			POORLY GRADED SAND WITH SILT (SP-SM); medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
71	SS		165.2	120		CLAYEY SAND (SC); trace shell material; medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained; black Mn? staining	
72	SS		163.8			SILTY SAND (SM); med yellowish brown; dense; wet; subangular; poorly graded; fine grained	
73	SS		163.4			CLAYEY SAND (SC); med yellowish brown; dense; wet; subangular; poorly graded; fine to med grained trace lower coarse	
74	SS		161.9			SILTY SAND (SM); med yellowish brown; dense; wet; subangular; poorly graded; v. fine to fine grained; trace Mn? staining	
75	SS		160.4	125		same as above; lt yellowish brown; very dense	
76	SS		158.9			same as above; thin lt gray lean clay laminations; med yellowish brown	
77	SS		157.4			same as above; fine to lower medium grained	
78	SS		155.9			POORLY GRADED SAND WITH SILT (SP-SM); med brownish yellow with orange mottles; very dense; wet; subangular; poorly graded; fine to med grained; trace heavies	
79	SS		154.4	130		same as above; lt brownish white with med orange laminae; med dense; fine grained	At 130 feet depth check OK.
80	SS		152.9			POORLY GRADED SAND WITH CLAY (SP-SC); lt brownish white with lt orangish brown zones; med dense; wet; subangular; poorly graded; fine grained; trace heavies and mica	
81	SS		151.4			same as above; med yellowish brown with very lt brown wisps; loose	
82	SS		149.9	135		CLAYEY SAND (SC); med yellowish brown; loose; wet; subangular; poorly graded; fine grained; trace heavies and mica	
83	SS		148.4			same as above; slightly higher clay content and lt green wisps; med dense; black wisps (Mn?); turritella fragments	
84	SS		146.9			same as above; med reddish brown with lt green wisps and dk reddish orange mottles	
85	SS		145.4	140		same as above; with zones of poorly graded sand with clay; med yellowish brown; dense; fine to med grained	At 138 feet depth check OK.
86	SS		145.4			same as above; med dense; fine grained; black mottles (Mn?); turritella casts	
87	SS		143.9			same as above; very dense	
88	SS		142.4			FAT CLAY WITH SAND (CH); medium brownish yellow; hard; wet; high plasticity; sand is fine grained; trace mica; trace heavies; shoe lost downhole	Warley Hill
89	SS		140.9			same as above; very stiff; (material may be sloughed)	
90	SS		139.4	145			
91	SS		138.1			same as above; very hard; refusal caused by a silicified nodule lodged in the shoe	At 146 depth check off adjusted to 146.2.
92	SS		137.1			LEAN CLAY (CL); trace sand; with interlaminated sand; very light gray with orange mottles; hard; wet; medium plasticity; sand is fine grained; mottles are clayey sand no recovery; shoe lost downhole	
93	SS		135.9				
94	SS		134.4	150			
95	SS		133.6			CLAYEY SAND (SC); with gravel; very dark grayish green; very dense; wet; subangular; well graded; fine to coarse grained; 'green clay'	
96	SS		132.7			no recovery	
97	SS					Total depth of boring 152.4 feet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-4

A-21



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.			
APSF				APSF		APSF	1 OF 5	FB-5			
SITE			COORDINATES			ANGLE FROM HORIZONTAL					
APSF			N 79233 E 54977			'90					
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
2/12/98	2/20/98	Graves/A. Jackson	Failing 1500	3 7/8 in	140 lb/ 30 in	158.8					
GROUND EL.		DEPTH/EL. GROUND WATER		LOGGED BY:							
290.5		▽ / ▽ /		N. Kidd/SAIC							
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 1						4-8-13	283.0			POORLY GRADED SAND (SP) trace clay; light brown; medium dense; dry; subangular; poorly graded; fine to medium grained	Hand auger to 6 feet to check for underground interferences.
SS 2						12-18-27	281.5			CLAYEY SAND (SC); medium brownish red and light brown; dense; damp; subangular; poorly graded; fine to medium grained; black mottles (organic material?)	
SS 3						8-14-17	280.0	10		POORLY GRADED SAND WITH CLAY (SP-SC); medium red with light brown mottles; dense; damp; subangular; poorly graded; fine to medium grained	
SS 4						12-17-22	278.5			CLAYEY SAND (SC); light yellowish brown, light yellow, and light brown; dense; damp; subangular; poorly graded; fine to medium grained	
SS 5						16-28-26	277.0			same as above; medium red, light yellow, and white; very dense	
SS 6						10-13-17	275.5	15		same as above; medium red, medium dense; moist	
SS 7						12-16-15	274.0			same as above; damp	
SS 8						8-9-10	272.5			LEAN CLAY WITH SAND (CL); medium red with light yellow zones; very stiff; damp; medium plasticity; sand is fine to medium grained	
SS 9						6-10-14	271.0	20		same as above, coarse fraction is fine grained sand to fine gravel	
SS 10						6-8-6	269.5			same as above; stiff, with slightly more fine gravel	
SS 11						7-10-8	268.0			SANDY LEAN CLAY (CL); medium red; very stiff; damp; medium plasticity; sand fraction is fine to coarse grained	
SS 12						4-5-5	266.5			CLAYEY SAND (SC); medium red; loose; damp; subangular; poorly graded; fine to medium grained	
SS 13						4-7-9	265.0	25		same as above; medium dense; with occasional coarse grains	
SS 14						7-10-11	263.5			SILTY SAND (SM); medium red with white and yellow bands and sparse purple mottles; medium dense; damp; subangular; poorly graded; fine grained	
SS 15						8-9-12	262.0			same as above; trace mica; no mottles	
SS 16						8-9-11	260.5	30		SILT (ML) trace sand; medium red, purple, white, orange, and yellow; very stiff; damp; medium plasticity; sand fraction is fine grained	
SS 17						7-12-16	259.0			same as above; low plasticity	
SS 18						7-11-12	257.5			CLAYEY SAND (SC); silty in places; light yellow and med red; med dense; moist; subangular; poorly graded; fine to med grained; top of the interval is silt	
SS 19						8-9-9	256.0			POORLY GRADED SAND WITH CLAY (SP-SC); med yellowish brown and reddish brown; med dense; damp; subangular; poorly graded; fine to med grained	

Tobacco Road

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-5

A-22



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			APSF	APSF	2 OF 5	FB-5		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 20			8-10-11	254.5			same as above; light red, yellow, orange and white; moist	
SS 21			8-11-11	253.0			same as above	
SS 22			13-13-12	251.5			same as above; but clayey in places and more fine grained sand fraction	
SS 23			10-10-13	250.0	40		same as above; clayey in places	
SS 24			7-10-11	248.5			same as above; clayey in places; trace mica	
SS 25			11-10-11	247.0			same as above; fine to medium grained	
SS 26			9-10-11	245.5			same as above	
SS 27			9-12-12	244.0	45		same as above	
SS 28			12-16-21	242.5			CLAYEY SAND (SC); medium red, yellow, and orange with white mottles; dense; wet; subangular; poorly graded; fine to medium grained	
SS 29			14-17-18	241.0			POORLY GRADED SAND WITH CLAY (SP-SC); medium red and yellow with white mottles; dense; wet; subangular; poorly graded; fine to medium grained	
SS 30			12-13-15	239.5	50		CLAYEY SAND (SC); medium red, brownish yellow, and white; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 31			13-17-18	238.0			same as above; with white wisps; dense	
SS 32			17-20-21	236.5			POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish yellow with dark brown wisps and white wisps; dense; wet; subangular; poorly graded; fine to medium grained	
SS 33			17-20-24	235.0	55		same as above; medium red with brownish yellow bands	
SS 34			16-22-30	233.5			same as above; medium red and reddish yellow; very dense; few flattened quartz pebbles	
SS 35			20-19-22	232.0			POORLY GRADED SAND (SP) trace clay; medium yellow with red and orange zones and white wisps; dense; wet; subangular; poorly graded; fine to medium grained	Dry Branch
SS 36			18-17-19	230.5	60		POORLY GRADED SAND WITH CLAY (SP-SC); medium red with brownish yellow zones; dense; wet; subangular; poorly graded; medium grained	
SS 37			9-9-9	229.0			CLAYEY SAND (SC); medium brownish yellow and yellow with dark brown wisps and white wisps; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 38			8-11-14	227.5			same as above; less clayey in places; medium brownish yellow with light brown zones	
SS 39			8-16-15	226.0			POORLY GRADED SAND WITH CLAY (SP-SC); clayey in places; medium yellowish brown with white wisps; dense; wet; subangular; poorly graded; fine to medium grained	
SS 40			15-22-29	224.5	65		same as above; medium reddish yellow; very dense; black Mn <sup>2+</sup> pellets	
SS 41			19-24-30	223.0			POORLY GRADED SAND (SP) trace clay; with clay in places; medium reddish yellow; very dense; wet; subangular; poorly graded; medium grained with occasional coarse grains	
SS 42			22-30-31	221.5			same as above; brownish yellow	
SS 43			24-28-31	220.0	70		POORLY GRADED SAND WITH CLAY (SP-SC); medium red; very dense; wet; subangular; poorly graded; medium grained with occasional coarse grains	
SS 44			20-21-22	218.5			same as above; dense; fine to medium grained	
SS 45			18-17-26	217.0			CLAYEY SAND (SC); med red with med brownish yellow bands of sand trace clay; dense; wet; subangular; poorly graded; fine to med grained	
SS 46			19-21-19	215.5			POORLY GRADED SAND (SP) trace clay; lt brown, lt brownish yellow, and lt red; dense; wet; subangular; poorly	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-5

A-23



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
			APSF	APSF	3 OF 5	FB-5					
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %									
		+ ATT. LIMITS %									
		20	40	60	80						
SS 47						17-29-32				graded: fine to med grained POORLY GRADED SAND WITH CLAY (SP-SC); med reddish brown, lt brown, and brownish yellow; very dense; wet; subangular; poorly graded; fine to med grained	Sample fell out of the tube onto the ground.
SS 48						18-20-22	214.0			WELL GRADED SAND (SW) trace clay; lt brown and lt reddish brown; dense; wet; subrounded; well graded; fine to coarse grained	
SS 49						12-13-13	212.5			same as above; med dense.	
SS 50						10-11-12	211.0	80		POORLY GRADED SAND (SP) trace clay; lt brown few lt brownish yellow zones; med dense; wet; subrounded; poorly graded; fine to med grained and sltly more clay at top of interval; fine to cse grained at bottom of interval; black Mn <sup>2</sup> pellets	
SS 51						10-10-10	209.5			POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC); lt brown with lt yellowish brown zones; med dense; wet; subrounded; well graded; fine grained sand to gravel size; some zones less clayey; black Mn <sup>2</sup> pellets	
SS 52						2-1-2	208.0			SILTY SAND (SM); lt yellowish brown; very loose; wet; subangular; poorly graded; fine grained	Top Tan Clay
SS 53						5-7-10	206.5	85		LEAN CLAY (CL) trace sand; lt brownish yellow with orange sand stringers; very stiff; wet; medium plasticity; interlaminated orange fine sand	
SS 54						7-8-10	205.0			same as above; sand stringers are dk brown and black; Mn <sup>2</sup> pellets	
SS 55						6-8-9	203.5			same as above; with sand and interbedded clayey sand; sand is fine to coarse grained; black Mn <sup>2</sup> pellets	Bottom Tan Clay
SS 56						7-12-17	202.0			POORLY GRADED SAND (SP) trace clay; lt brown; med dense; wet; subangular; poorly graded; fine to med grained	
SS 57						21-27-30	200.5	90		same as above; very dense	
SS 58						38-50/5in	199.0			same as above; with a band of clayey sand	
SS 59						50-50/4in	198.1			same as above; very lt brown; trace heavy minerals	
SS 60						27-38-35	196.7			same as above; with a zone of poorly graded sand with clay	
SS 61						22-33-35	194.5	95		POORLY GRADED SAND WITH CLAY (SP-SC); lt red with very lt brown zone at top; very dense; wet; subangular; poorly graded; fine to med grained	
SS 62						20-22-34	193.0			same as above; clayey in places; med red with lt red zones	
SS 63						25-28-37	191.5			same as above; med red grades into lt brown zone at bottom of interval	
SS 64						39-36-41	190.0	100		POORLY GRADED SAND (SP) trace clay; med brown with a lt red band; very dense; wet; subangular; poorly graded; med grained	
SS 65						7-11-17	188.5			CLAYEY SAND (SC), some zones less clayey; lt yellowish brown with white wisps; med dense; wet; subangular; fine to coarse grained	
SS 66						21-24-33	187.0			POORLY GRADED SAND WITH CLAY (SP-SC); lt brownish yellow; very dense; wet; subangular; poorly graded; fine to med grained; black Mn <sup>2</sup> wisps	
SS 67						8-18-33	185.5	105		POORLY GRADED SAND (SP) trace clay; lt brown; very dense; wet; subangular; poorly graded; fine to med grained; black Mn <sup>2</sup> pellets	
SS 68						27-43-50	184.0			same as above; without black pellets	
SS 69						34-40-40	182.5			same as above; with occasional coarse grains; trace heavies	
SS 70						28-41-42	181.0	110		same as above	
SS 71						33-42-50	179.5			same as above; with sporadic clay pods	
SS 72						18-18-18	178.0			POORLY GRADED SAND WITH CLAY (SP-SC), and lt brownish yellow clay stringers; lt brown and lt yellow; dense; wet; subangular; poorly graded	
SS						12-34-42	176.5			CLAYEY SAND (SC), with less clayey zones and a clean	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-5

A-24



K-TRT-F-00001

R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	4 OF 5	FB-5				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 73						19-19-17	175.0			sand zone at top of interval; lt brown, lt brownish yellow, and red; very dense; wet; subangular; poorly graded; fine to med grained; few lt yellow clay balls	
SS 74						4-21-31	173.5			POORLY GRADED SAND WITH CLAY (SP-SC), clayey and trace clay zones; med yellowish brown and lt brown with lt yellow clay wisps; dense; wet; subangular; poorly graded; fine to med grained; black Mn? mottles	Santee
SS 75						25-44-37	172.8			same as above; very dense	
SS 76						7-12-22	172.0	120		SANDY FAT CLAY (CH); dk brown; hard; wet; high plasticity	
SS 77						14-24-40	170.5			POORLY GRADED SAND (SP) trace clay; lt brown; very dense; wet; subangular; poorly graded; fine to med grained same as above; occasional coarse sand	
SS 78						19-49-50/4in	169.0			POORLY GRADED SAND WITH CLAY (SP-SC); med yellowish brown with lt yellow clay laminae; dense; wet; subangular; poorly graded; fine to med grained; becomes iter colored and med grained at bottom of interval	
SS 79						21-33-48	167.5			SILTY SAND (SM); lt brown and lt yellowish brown with white wisps; very dense; wet; subangular; poorly graded; fine grained; black Mn? wisps	
SS 80						24-44-50	166.2	125		POORLY GRADED SAND (SP) trace clay; very lt brown becoming orange brown near the bottom of interval; very dense; wet; subangular; poorly graded; fine to med grained; clay content increases silty with depth	
SS 81						40-35-39	164.5			same as above; trace silt; lt brown and lt brownish yellow with lt yellow clay laminae; some zones contain sltly more silt	
SS 82						12-40-50	163.0			same as above; trace clay; fine to med grained	
SS 83						28-33-50	161.5	130		same as above; occasional clay stringers; fine grained; trace heavies	
SS 84						47-48-45	160.0			same as above; trace silt; occasional black Mn? mottles	
SS 85						31-38-50	158.5			same as above; with lt brown and white clayey bands and lt yellow clay laminae; trace mica; top 0.2 ft is clean lt brown sand; borderline with silt	
SS 86						26-29-28	157.0			same as above; no white zone and no brown sand	
SS 87						8-3-7	155.5	135		same as above; lt brown clean sand at very top of interval	
SS 88						1/5in-1/6in-2/9in	154.0			POORLY GRADED SAND WITH SILT (SP-SM); lt yellowish brown with lt brown zones; very dense; wet; subangular; poorly graded; fine to med grained; black Mn? pellets; trace mica	
SS 89						WR 9in-6/3in-16	152.5			CLAYEY SAND (SC), becomes less clayey toward bottom of interval; med yellowish brown with lt greenish brown mottles; loose; wet; subangular; poorly graded; fine grained; trace mica	
SS 90						7-13-15	151.0	140		same as above; no mottles; very loose; black Mn? pellets	
SS 91						4-11-13	149.5			same as above; med brownish yellow; med dense	
SS 92						7-10-12	148.0			same as above; white wisps	
SS 93						5-8-8	146.5			same as above; with lt greenish gray laminae; clay content increases with depth	
SS 94						7-10-14	145.0	145		same as above	
SS 95						WR 8in-11-8	143.5			POORLY GRADED SAND WITH CLAY (SP-SC); lt brown with med yellow clay balls; med dense; wet; subangular; poorly graded; fine to med grained	
SS 96						7-10-14	142.0			CLAYEY SAND (SC); med brownish yellow and lt brown; loose; wet; subangular; poorly graded; fine grained; trace heavy minerals	2/18/98 water level is @ 75-78' bls.
SS 97						7-10-14	140.5			same as above; interbedded clay with sand; med yellowish brown; med dense; fine to med grained	
SS 98						WR 6in-10-4	139.0	150		same as above; zones of interbedded lt brown sand with clay and sandy fat clay	
SS 99						11-15-17	137.5			SANDY FAT CLAY (CH); med brownish yellow with greenish yellow mottles; very stiff; wet; high plasticity; sand fraction is fine grained; trace heavy minerals	Warley Hill
							136.0			same as above; with interlaminated orange sand; med reddish brown with lt greenish gray laminations; hard; sand fraction is fine to coarse grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-5

A-25



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	5 OF 5	FB-5				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 100						12-15-23	134.5			<p>CLAYEY SAND (SC), interlaminated lean clay; lt brownish yellow with lt greenish gray laminations; dense; wet; subangular; poorly graded; fine to med grained; lower part of interval has thicker clay laminae</p> <p>POORLY GRADED SAND WITH CLAY (SP-SC); lt brown; dense; wet; subangular; poorly graded; fine to med grained with occasional coarse</p> <p>SANDY FAT CLAY (CH); med reddish yellow with lt greenish gray clay laminae; hard; wet; high plasticity (CH); fine to coarse grained</p> <p>same as above; very hard</p> <p>CLAYEY SAND (SC); med greenish brown and brownish orange; very dense; wet; subrounded; poorly graded; med to coarse grained (probable congarree); black Mn? mottles</p> <p>Total depth of boring 158.8 feet.</p>	Congarree Hole abandoned with grout mix per 3Q5.
SS 101		▲		○	16-17-19	133.8					
SS 102					13-48-50/41	133.0					
						131.9	131.7				

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-5

A-26





K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
APSF			APSF	APSF	1 OF 5	FB-6					
SITE		COORDINATES			ANGLE FROM HORIZONTAL						
APSF		N 79179 E 55038			'90						
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
2/2/98	2/11/98	Graves/A. Jackson & E. Plush	Failing 1500	3 7/8 in	140 lb/ 30 in	158.3					
GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:									
291.7	▽ / ▽ /	N. Kidd/SAIC									
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						291.7				Hand auger to 6 feet to check for underground interferences.	
							5			Drilled out from 6 to 8 feet.	
SS 1		▲			○	12-14-12			CLAYEY SAND (SC); light brown with red bands; medium dense; dry; subangular; poorly graded; fine to medium grained		
SS 2		▲			○	9-15-16	10		same as above; dark red with light brown mottles; dense; damp		
SS 3		▲			○	12-15-18			same as above; medium red with light yellow mottles		
SS 4		▲			○	9-14-11			same as above; no mottles; medium dense		
SS 5		▲			○	15-11-12			same as above		
SS 6		▲			○	7-7-10	15		SANDY LEAN CLAY (CL); light yellowish red; very stiff; damp; low plasticity; sand fraction is fine to medium grained		
SS 7		▲			○	6-13-18			no recovery		
SS 8		▲			○	6-9-10			LEAN CLAY (CL) trace sand and trace gravel; medium red; very stiff; moist; medium plasticity; thin layer of gravelly clay (<0.1 foot thick); sand fraction is fine to medium grained		
SS 9		▲			○	6-7-8	20		CLAYEY SAND (SC); medium red; medium dense; moist; subangular, poorly graded; fine to medium grained	Tobacco Road	
SS 10		▲			○	6-20-21			same as above; dense; well graded; fine sand to fine gravel grain size		
SS 11		▲			○	5-8-10			SILT WITH SAND (ML); medium reddish gray with medium grayish red zones; very stiff; dry; low plasticity; sand fraction is fine grained; trace mica		
SS 12		▲			○	5-7-9	25		same as above		
SS 13		▲			○	6-6-6			same as above; stiff		
SS 14		▲			○	5-10-12			same as above; with a plug of medium purple lean clay near the top of the interval; very stiff		
SS 15		▲			○	8-14-11			CLAYEY SAND (SC); medium brownish yellow with white mottles; medium dense; moist; subangular; poorly graded; fine to medium grained; plug of yellow clay (<0.1' thick) at top of interval		
SS 16		▲			○	10-10-12	30		same as above		
SS 17		▲			○	8-11-11			same as above		
SS 18		▲			○	10-32-25			same as above; with light red zones; very dense		
SS 18		▲			○						

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-6

A-25



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			APSF	APSF	2 OF 5	FB-6		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 19		▲	1-3-9				same as above; medium red; medium dense	
SS 20		▲	12-15-12	255.2			POORLY GRADED SAND WITH CLAY (SP-SC); medium red with white and medium brownish yellow streaks; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 21		▲	12-17-20	253.7			same as above; light red; dense	
SS 22		▲	12-17-20	252.2	40		POORLY GRADED SAND WITH SILT (SP-SM); light red; dense; moist; subangular; poorly graded; fine to medium grained	
SS 23		▲	12-15-19	250.7			POORLY GRADED SAND WITH CLAY (SP-SC); light red grading downward to light yellow; dense; moist; subangular; poorly graded; fine to medium grained	
SS 24		▲	10-13-13	249.2			same as above; light red and light orange; medium dense	
SS 25		▲	12-15-16	247.7			same as above; light brownish yellow with red zones; dense	
SS 26		▲	11-13-17	246.2	45		same as above; light yellow with white and dark brown mottles and some light brown wisps; medium dense; some zones are wet	
SS 27		▲	11-19-19	244.7			same as above; becomes clayey sand at the bottom of the interval; becomes red at bottom of interval; dense; wet	
SS 28		▲	13-16-16	243.2			CLAYEY SAND (SC); light red with an orange band; dense; wet; subangular; poorly graded; fine to medium grained	
SS 29		▲	12-13-18	241.7	50		same as above; moist	
SS 30		▲	15-18-18	240.2			same as above; light red	
SS 31		○	21-28-38	238.7			same as above; light red and orange; very dense; wet; medium grained	
SS 32		○	28-37-31	237.2	55		POORLY GRADED SAND WITH CLAY (SP-SC); medium reddish yellow; very dense; wet; subangular; poorly graded; medium grained; black Mn? pellets	Dry Branch
SS 33		○	15-20-24	235.7			same as above; light brown; dense	
SS 34		○	15-15-20	234.2			same as above; medium yellowish brown	
SS 35		○	7-9-12	232.7			CLAYEY SAND (SC); medium yellow; medium dense; wet; subangular; poorly graded; fine to medium grained; a thin, mostly medium grained, zone is more clayey than the rest	
SS 36		○	16-10-12	231.2	60		same as above; medium brownish yellow	
SS 37		○	12-16-30	229.7			same as above; dense	
SS 38		○	19-25-35	228.2			same as above; medium brown and brownish red; very dense	
SS 39		○	23-28-29	226.7	65		same as above; light reddish brown and red; subrounded; medium grained	
SS 40		○	36-41-50	225.2			POORLY GRADED SAND WITH CLAY (SP-SC); light reddish brown and red; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 41		○	19-26-34	223.7			POORLY GRADED SAND WITH SILT (SP-SM); light reddish brown with yellow and white wisps; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 42		○	17-19-20	222.2	70		POORLY GRADED SAND (SP) trace silt; medium yellowish brown with light brown zones; dense; wet; subangular; poorly graded; fine to medium grained	
SS 43		○	12-21-24	220.7			POORLY GRADED SAND WITH CLAY (SP-SC); light yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 44		○	13-17-17	219.2			same as above; light brown; trace heavy minerals	
SS		○	11-13-18	217.7			POORLY GRADED SAND WITH SILT (SP-SM); light	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-6

A-28



K-TRT-F-00001

R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
			APSF	APSF	3 OF 5	FB-6					
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 45						13-15-16	216.2			yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 46							214.7			same as above	
SS 47						10-11-12	213.2			POORLY GRADED SAND (SP) trace clay; light yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 48						9-7-8	211.7			CLAYEY SAND (SC); med brownish yellow with lt brown band at bottom and black band in middle of interval; med dense; wet; subangular; poorly graded; fine to med grained; black band and black pellets are Mn?; 0.1 ft thick med yellow sandy clay near middle of interval	
SS 49						2-2-6	210.2	80		same as above; with interbedded clay; loose	
SS 50						5-7-14	208.7			SILTY SAND (SM); with interbedded lean clay; lt brown with dk reddish brown bands; clay is med yellow and v. lt brown; med dense; wet; subangular; poorly graded; fine to med grained	Top Tan Clay
SS 51						8-12-16	207.2			LEAN CLAY (CL); few sand stringers; light brownish yellow with black and dark reddish brown wisps; very stiff; damp; medium plasticity; sand fraction is fine grained	
SS 52						7-10-12	205.7	85		same as above; sandy, with interbedded silt and sand; moist; sand fraction is fine to very coarse grained	
SS 53						4-8-13	204.2			same as above	Bottom Tan Clay
SS 54						6-11-19	202.7			CLAYEY SAND (SC); light brown with light yellowish brown and black mottles; medium dense; wet; subangular; poorly graded; fine to medium grained; top 0.1 foot is same as above	
SS 55						7-8-16	201.2	90		same as above; with interbedded sand, clay, and silty sand	
SS 56						12-20-25	199.7			POORLY GRADED SAND WITH CLAY (SP-SC); light brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 57						11-16-24	198.2			same as above; silty in places; light and medium brownish yellow	
SS 58						18-25-18	196.7			no recovery	
SS 59						10-15-17	195.2	95		CLAYEY SAND (SC); with silty zones and thin interlaminated clays; medium brown with light brownish yellow zones and thin black wisps; dense; wet; subangular; poorly graded; fine to medium grained; black Mn? wisps	
SS 60						16-25-19	193.7			POORLY GRADED SAND WITH CLAY (SP-SC); clayey sand in places; light brownish yellow; dense; wet; subangular; poorly graded; fine to medium grained	
SS 61						13-18-17	192.2			same as above; light brown with white wisps	
SS 62						9-6-7	190.7	100		CLAYEY SAND (SC); lt yellowish brown and lt brown with lt yellow zones and white wisps; med dense; wet; subangular; poorly graded; fine to med grained	
SS 63						8-11-13	189.2			same as above; with bands of sandy clay; fine to lower coarse grained	
SS 64						13-15-17	187.7			POORLY GRADED SAND WITH CLAY (SP-SC); with zones of clayey sand; light brown with light yellow and white wisps; dense; wet; subangular; poorly graded; fine to medium grained	
SS 65						22-30-40	186.2	105		same as above; very dense; trace coarse sand	
SS 66						25-25-24	184.7			WELL GRADED SAND WITH CLAY (SW-SC); light brown; dense; wet; subangular; well graded; fine to medium grained with some coarse sand and gravel; black Mn? pellets	
SS 67						16-19-26	183.2			same as above; with light yellow and white wisps; top 0.1 ft clayey	
SS 68						29-25-19	181.7	110		same as above; light brown; subrounded; fine to coarse grained with some fine gravel	
SS 69						14-12-17	180.2			POORLY GRADED SAND WITH CLAY (SP-SC); lt yellowish and lt brown with black and lt yellow clay stringers; med dense; wet; subangular; poorly graded; fine to med grained with trace cse and fine gravel; black wisps are Mn?	
SS 70						23-24-24	178.7			same as above; with dark brown mottles; dense; trace heavy minerals	
SS 71						10-18-15	177.2			CLAYEY SAND (SC); with sandy clay zones; very light brown with light orange and purple wisps; dense; wet;	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-6

A-29



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			APSF	APSF	4 OF 5	FB-6	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 72		3-5-12	175.7			subangular, well graded; fine to upper coarse grained with trace gravel	Santee
SS 73		6-10-9	175.4			SANDY LEAN CLAY (CL); with interbedded silt; lt gray, lt green, and lt purple; very stiff; wet; low plasticity; sand is fine to medium grained	
SS 74		5-21-45	174.2			same as above	
SS 75		14-19-15	172.7	120		POORLY GRADED SAND WITH CLAY (SP-SC); med brown with lt brown mottles; med dense; wet; subangular; poorly graded; fine to med grained	
SS 76		5-10-22	171.2			same as above; med to coarse grained trace gravel	
SS 77		15-29-33	169.7			same as above; grading to orange and yellow; very dense; fine to med grained; clay content increases downward	
SS 78		20-24-24	168.2			same as above; lt brown few dark brown wisps; dense; with sparse coarse sand and fine gravel	
SS 79		12-21-36	166.7	125		CLAYEY SAND (SC); med brownish yellow; dense; wet; subangular; poorly graded; fine to med grained, trace coarse sand and fine gravel	
SS 80		15-21-50/5.5in	165.2			POORLY GRADED SAND WITH CLAY (SP-SC); med yellowish red with lt brown mottles; very dense; wet; subangular; poorly graded; fine grained	
SS 81		30-27-28	163.7			same as above; med reddish yellow; dense	Catcher teeth broken off.
SS 82		22-36-42	162.2	130		CLAYEY SAND (SC); some places are silty; very lt greenish yellow with med reddish yellow speckles; very dense; wet; subangular; poorly graded; fine grained	
SS 83		23-23-36	160.7			POORLY GRADED SAND (SP); with clay in places; very lt greenish brown, lt brown, and lt yellow; very dense; wet; subangular; poorly graded; fine grained; upper 0.2 feet are fine to med grained	Catcher teeth broken off.
SS 84		25-27-31	159.2			POORLY GRADED SAND WITH CLAY (SP-SC); med brownish yellow; very dense; wet; subangular; poorly graded; fine grained; trace heavies	
SS 85		22-33-38	157.7			no recovery	
SS 86		20-27-37	156.2	135		same as above; with white bands and orange wisps	
SS 87		26-24-32	154.7			same as above; lt brownish yellow with lt brown zones	
SS 88		15-13-17	153.2			same as above; trace mica	
SS 89		7-9-6	151.7	140		same as above; lt brown; fine to med grained	
SS 90		4-5-6	150.2			same as above; lt yellowish brown with lt brown zones and orange wisps; fine grained; trace mica and heavy minerals	
SS 91		4-6-6	148.7			same as above; lt brown; fine to med grained	
SS 92		WR18in	147.2	145		same as above; med yellowish brown; med dense; fine grained; black Mn? mottles	
SS 93		4-5-9	145.7			same as above	
SS 94		WR24in-2-10-24	144.2			CLAYEY SAND (SC); med yellowish brown with interlaminated lt green wisps; med dense; wet; subangular; poorly graded; fine grained; black Mn? pellets	
SS 95		42-42-46	142.7	150		same as above; some zones of clay with sand; very loose; several silicified turritella casts	Wartley Hill
SS 96		20-27-50/4in	141.2			same as above; medium dense; no shells	
SS 97		18-30-34	139.9			same as above; med brown; abundant shell fragments and silicified casts	
SS 98		6-16-24	138.2			same as above; few clay pods; dense	
			136.7			FAT CLAY WITH SAND (CH); interbedded orange sand; med yellowish red and brownish yellow with green mottles; hard; wet; high plasticity; sand fraction is fine grained; interbedded sand is fine to med grained; turritella fragments present; silicified chips	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-6

A-30



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT			JOB NO.	SHEET NO.	HOLE NO.			
			APSF			APSF	5 OF 5	FB-6			
SAMP. TYPE AND NO.	SAMPLE	N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 99					22-20-50/4in	135.4				same as above: hard	Congaree
SS 100					26-50-50/2in	134.0			same as above; sandy; very hard; sand fraction fine to coarse grained	Hole abandoned with grout mix per 3Q5.	
SS 101					50/3in	133.4			WELL GRADED SAND WITH CLAY (SW-SC), clayey sand in places; lt brown; very dense; wet; subangular; well graded; fine to coarse grained; congaree? no recovery: congaree?		
									Total depth of boring 158.3 feet.		

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-6

A-31



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
SITE			COORDINATES	ANGLE FROM HORIZONTAL							
APSF			N 79520 E 54847	APSF	1 OF 5	FB-7					
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
2/20/98	2/23/98	Graves/S. Rodgers	Failing 1500	3 7/8 in	140 lb/ 30 in	156.0					
GROUND EL.	DEPTH/VEL.	GROUND WATER	LOGGED BY:								
283.8	2 / 1	2 / 1	R. Gelinas/SAIC								
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %									
		+ ATT. LIMITS %									
		20	40	60	80		283.8				
SS 39						50/4 in					Hand auger to 6 feet to check for underground interferences.
SS 1						2-2-7	276.3			CLAYEY SAND (SC); medium reddish brown; loose; moist; subangular; poorly graded; fine to medium grained	Shoe lost down hole.
SS 2						3-16-23	274.8			no recovery	
SS 3						11-19-16	273.3	10		SANDY LEAN CLAY (CL); medium reddish brown and yellowish brown; hard; damp; medium plasticity; sand fraction is fine to medium grained	Tobacco Road
SS 4						29-43-41	271.8			CLAYEY SAND (SC); medium brownish red; very dense; wet; subangular; poorly graded; fine to upper medium grained	
SS 5						13-18-19	270.3			same as above; medium reddish brown and brownish gray; dense; moist; fine to medium grained	
SS 6						14-20-18	268.8	15		same as above; with sandy clay portions; medium reddish brown and yellowish brown	
SS 7						37-40-40	267.3			same as above; very dense; wet; fine to upper medium grained	
SS 8						11-13-11	265.8			SILTY SAND (SM); medium brown; medium dense; moist; subangular; poorly graded; very fine to lower medium grained	
SS 9						13-12-10	264.3			same as above; portions are sandy silt; micaceous	
SS 10						10-11-11	262.8	20		SANDY LEAN CLAY (CL); medium reddish brown and grayish brown; very stiff; moist; low plasticity; sand fraction is very fine grained	
								25			
SS 11						17-19-20	256.3			SILTY SAND (SM); with clay; light yellowish brown and light gray; dense; moist; subangular; poorly graded; fine to medium grained	
								30			
SS 12						18-24-20	251.3			same as above; with clayey sand interbeds	Had driller pull spoon and clean out wash/cave material back down to 31 feet.
SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER			SITE	HOLE NO.							
				FINAL LOG							
				FB-7							

A-39



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	2 OF 5	FB-7				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
+ ATT. LIMITS %											
SS 13				○▲		50-34-25	246.3			same as above; portions with clay; medium brown, orangish brown, and light brownish gray; very dense	First two blow count intervals in washed/caved material.
SS 14		▲	○			2-3-20	243.0	40		same as above; with clay; medium dense; wet.	
SS 15				▲		22-21-27	236.3	45		POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; dense; wet; subangular; poorly graded; fine to medium grained	Dry Branch?
SS 16		▲		○		9-11-14	230.8	50		SILTY SAND (SM); with clay; medium reddish brown and light gray; medium dense; moist; subangular; poorly graded; fine to upper medium grained	
SS 17		▲		○		9-12-13	225.9	55		POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 18			▲	○		13-18-18	221.4	60		CLAYEY SAND (SC); medium brown; dense; moist; subangular; poorly graded; fine to medium grained	
SS 19				○		103 39-30-53/31	216.3	65		POORLY GRADED SAND WITH CLAY (SP-SC); light brown to medium brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 20		▲		○		2-8-8	211.2	70		same as above; medium yellowish brown; medium dense	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-7

A-30



K-TRT-F-00001

R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 5	FB-7				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
+ ATT. LIMITS %											
SS 21		▲			○	5-10-8	206.0	80		ELASTIC SILT WITH SAND (MH); medium yellowish brown; very stiff; moist; low plasticity; sand fraction is very fine to fine grained	Tan Clay Interval
SS 22			▲		○	8-19-26	201.4			CLAYEY SAND (SC); grading down to poorly graded sand with clay; medium brown with a few black Mn zones; dense; wet; subangular; poorly graded; fine to medium grained; trace coarse sand	
SS 23		○		▲		40-28-18	196.3			POORLY GRADED SAND WITH SILT (SP-SM); light brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 24					▲○	21-34-33	191.0			same as above; very dense	
SS 25		▲			○	3-5-4	186.0			CLAYEY SAND (SC); medium brown and grayish brown; loose; wet; angular; poorly graded; fine to lower coarse grained	
SS 26		▲			○	2-3-5	184.5			same as above; medium yellowish brown, dark brown, and light grayish brown; subangular; fine to medium grained	
SS 27		▲			○	2-4-4	183.0	100		same as above; trace black charcoal fragments; medium yellowish brown; angular; fine to lower coarse grained	
SS 28			▲		○	5-7-18	181.3			same as above; grading to poorly graded sand with silt at bottom of interval; medium dense; subangular; fine to medium grained	
SS 29					○	20-35-41	176.3	105		POORLY GRADED SAND (SP) trace silt; grading down to poorly graded sand with clay; medium brown; very dense; wet; subangular; poorly graded; fine to upper medium grained	Santee
SS 30				▲	○	12-13-33	171.8	110		POORLY GRADED SAND WITH SILT (SP-SM); medium brown; dense; wet; subangular; poorly graded; fine to lower coarse grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-7

A-34





K-TRT-F-00001

R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	4 OF 5	FB-7				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 31					5-4-9	167.8				CLAYEY SAND (SC); with a 0.05 ft shell hash layer at 115 ft and few thin sandy lean clay interbeds; dark yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	1/23/98 water level 22, this must be bad (artificially high reading).
SS 32				○	21-43-31	162.3	120			SILTY SAND (SM); some layers with clay; medium yellowish brown; very dense; wet; subangular; poorly graded; very fine to fine grained	
SS 33			▲	○	14-25-35	157.3	125			same as above	
SS 34				○	29-50-47	151.3	130			same as above; medium yellowish brown and light brown	
SS 35		▲		○	5-13-10	146.3	135			same as above; with clay; medium yellowish brown; medium dense; moist; fine to lower medium grained	
SS 36		▲		○	6-8-9	141.5	140			CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; very fine to fine grained	Warley Hill
SS 37			▲	○	13-26-21	136.3	145			same as above; dense; fine to lower medium grained, trace lower coarse	
SS 38			▲	○	25-30/3in	131.8	150			SILTY SAND (SM); with thin gray clay laminae; light brown to yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained	Congaree

SS = SPLIT SPOON; ST = SHELBY TUBE;  
 PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-7

A-35



K-TRT-F-00001

R/0

GEOTECHNICAL LOG					PROJECT	JOB NO.	SHEET NO.	HOLE NO.			
					APSF	APSF	5 OF 5	FB-7			
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %	+ ATT. LIMITS %								
		20	40	60	80						
						127.8				same as above; medium brown; angular; fine to lower coarse grained Total depth of boring 156 feet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
**FB-7**

A-36



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>APSF</b>		JOB NO. <b>APSF</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-8</b>
SITE <b>APSF</b>			COORDINATES <b>N 79344 E 54855</b>		ANGLE FROM HORIZONTAL <b>'90</b>		
BEGUN <b>2/23/98</b>	COMPLETED <b>2/24/98</b>	DRILLER <b>Graves/A. Jackson</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/ 30 in</b>	TOTAL DEPTH <b>155.8</b>	
GROUND EL. <b>288.5</b>		DEPTH/EL. GROUND WATER <b>▽ /</b>		LOGGED BY: <b>N. Kidd/SAIC</b>			

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						288.5					
SS 1						281.0	5		CLAYEY SAND (SC); medium red with orange band; medium dense; dry; subangular; poorly graded; fine to medium grained	Hand auger to 6 feet to check for underground interferences.	
SS 2						279.5			SANDY LEAN CLAY (CL); medium red with brownish yellow mottles; hard; dry; medium plasticity; sand fraction is fine to medium grained		
SS 3						278.0	10		same as above		
SS 4						276.5			same as above; stiff; bentonite present in tube		
SS 5						275.0			LEAN CLAY (CL) with sand; medium red; hard; damp; medium plasticity; sand fraction is fine to medium grained		
SS 6						273.5	15		same as above; very stiff		
SS 7						272.0			same as above		
SS 8						270.5			same as above; with brownish yellow mottles and slightly more sand		
SS 9						269.0			SANDY LEAN CLAY (CL); medium red; very stiff; damp; medium plasticity; sand is fine to medium grained		
SS 10						267.5	20		CLAYEY SAND (SC); medium red with brownish yellow mottles; medium dense; damp; subangular; poorly graded; fine to medium grained		
SS 11						262.5	25		same as above; light brownish yellow with white wisps; trace mica		
SS 12						257.5	30		same as above; with red zones		

SS = SPLIT SPOON; ST = SHELBY TUBE;	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-8</b>
PS = STATIONARY PISTON; PB = PITCHER			

A-37



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	2 OF 5	FB-8				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 13						22-14-16	252.5			same as above; slightly less clay	
SS 14			○	▲		22-30-34	247.5	40		POORLY GRADED SAND WITH CLAY (SP-SC), clayey in places; light brownish yellow with red bands and white wisps; very dense; moist; subangular; poorly graded; fine to medium grained	
SS 15			▲	○		9-13-22	242.5	45		same as above; medium brownish yellow with a medium yellowish brown band; with band of clayey sand; dense	
SS 16			▲			9-11-14	237.5	50		POORLY GRADED SAND (SP) trace clay, with clay in places; medium brown and dark brown; medium dense; wet; subrounded; poorly graded; medium grained with some lower coarse	Dry Branch
SS 17			▲	○		10-13-19	232.5	55		POORLY GRADED SAND WITH CLAY (SP-SC), with band of clayey sand; light brown with dark brown and white wisps; dense; wet; subangular; poorly graded; fine to medium grained; black Mn? pellets	
SS 18			▲	○		6-14-18	227.5	60		same as above; light brown and light red; black Mn? mottles	
SS 19			○	▲		27-29-26	222.5	65		no recovery	Catcher is good.
SS 20			▲			6-7-7	217.5	70		CLAYEY SAND (SC); medium brownish yellow; medium dense; wet; subangular; poorly graded; fine to medium grained; black Mn? mottles	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-8

A-38



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
			APSF	APSF	3 OF 5	FB-8					
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
+ ATT. LIMITS %											
SS 21						13-18-29	212.5			LEAN CLAY WITH SAND (CL), interlaminated sand stringers; very light yellowish green with medium brown bands and medium yellowish red wisps; hard; wet; medium plasticity; sand is fine to medium grained; black Mn? wisps	Tan Clay Interval
SS 22		▲			○	9-10-20	207.5	80		POORLY GRADED SAND (SP) trace clay, some zones with clay; light brown with light yellowish brown zones; medium dense; wet; subangular; poorly graded; fine to medium grained; black Mn? mottles	
SS 23		▲			○	12-23-20	202.5	85		same as above; some zones with clay; dense	
SS 24		▲				24-16-24	197.5	90		POORLY GRADED SAND WITH CLAY (SP-SC), with sand trace clay interbeds; light brown and light yellowish brown with white wisps; dense; wet; subangular; poorly graded; fine to medium grained	
SS 25		○▲				13-21-30	192.5	95		POORLY GRADED SAND (SP) trace clay, light brown with light yellow mottles; very dense; wet; subrounded; poorly graded; fine to medium grained; trace heavy minerals	
SS 26		○			▲	26-31-50	187.5	100		WELL GRADED SAND (SW) trace clay, with clay in places; light brown with light red mottles; very dense; wet; subangular; well graded; fine to coarse grained	
SS 27		○			▲	31-50-47	182.5	105		POORLY GRADED SAND (SP), trace clay; light brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 28					○	5-50-50/4m	177.7	110		WELL GRADED SAND WITH CLAY (SW-SC), some bands of clayey sand; light brown with white wisps; very dense; wet; subangular; well graded; fine to coarse grained; trace heavy minerals	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-8

A-37



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	4 OF 5	FB-8				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 29						13-8-12	172.5		[diagonal lines]	CLAYEY SAND (SC), medium brownish yellow with very light green mottles; medium dense; wet; subangular; poorly graded; fine to medium grained	Santee
SS 30					○	▲ 43-49-47	167.5	120	[stippled]	POORLY GRADED SAND (SP), trace clay; medium brownish yellow; very dense; wet; subangular; poorly graded; fine to lower medium grained; trace mica	
SS 31				○		▲ 24-31-50	162.5	125	[stippled]	same as above; with a <0.1 ft layer of medium yellow lean clay	
SS 32				○	▲	22-39-37	157.5	130	[stippled]	same as above; with yellow bands and yellow clay pods; black Mn? pellets	
SS 33		▲				○ 13-12-13	152.5	135	[diagonal lines]	POORLY GRADED SAND WITH CLAY (SP-SC), clayey sand in places; medium brownish yellow; medium dense; wet; subangular; poorly graded; fine to medium grained; trace heavy minerals	
SS 34		▲				○ 3-4-7	147.5	140	[diagonal lines]	CLAYEY SAND (SC), some zones contain less clay; medium brownish yellow with very light brown zones; medium dense; wet; subangular; poorly graded; fine grained; trace heavy minerals	
SS 35				▲		11-17-28	142.5	145	[diagonal lines]	FAT CLAY (CH), trace sand; very light brown with medium orange flecks; hard; wet; high plasticity; sand fraction is fine grained; trace heavy minerals	Warley Hill
SS 36				○	▲	28-25-26	137.5	150	[diagonal lines]	CLAYEY SAND (SC), with light brown clean sand layer at top of interval; medium brownish yellow; very dense; wet; subangular; poorly graded; fine to medium grained; most of interval is composed of silicified chips	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-8

A-40



K-TRT-F-00001

R/10

GEOTECHNICAL LOG					PROJECT	JOB NO.	SHEET NO.	HOLE NO.			
					APSF	APSF	5 OF 5	FB-8			
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 37					28-31-30/3in	132.9 132.7				<p>same as above; very dark greenish gray; 'green clay'</p> <p>POORLY GRADED SAND (SP) trace clay; medium yellowish red; very dense; wet; subangular; poorly graded; fine to medium grained; overlying 'green clay' grades into this interval; the transition is darker orange than the sand and includes some light gray lean clay</p> <p>Total depth of boring 155.8 feet.</p>	Congaree Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-8

A-4



K-TRT-F-00001

R/10

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.			
APSF				APSF		APSF	1 OF 5	FB-9			
SITE			COORDINATES			ANGLE FROM HORIZONTAL					
APSF			N 79185 E 54845			90					
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL		HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL		TOTAL DEPTH			
2/24/98	2/26/98	Graves/S. Rodgers	Failing 1500		3 7/8 in	140 lb/ 30 in		160.3			
GROUND EL.		DEPTH/EL. GROUND WATER		LOGGED BY:							
290.0		▽ 70.1/219.9 2/26/98		R. Gelinas/SAIC							
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						290.0					
							287.5		Some asphaltic fill.	Hand auger to 6 feet to check for interferences.	
							5				
SS 1		▲			○	6-14-15					
SS 2			▲		○	9-26-26	282.5		SILTY SAND (SM), trace clay; medium brown, reddish brown, and grayish brown; medium dense; damp; subangular, poorly graded; fine to medium grained		
SS 3			▲		○	14-16-16	281.0		same as above; with clay; medium brownish red; very dense; moist		
SS 4		▲			○	9-11-12	279.5	10	same as above; with two thin light brown layers; dense		
SS 5		▲			○	5-8-10	278.0		SANDY LEAN CLAY (CL); medium brownish red and some light brown; very stiff; moist; low plasticity; sand fraction is very fine to fine grained		
SS 6		▲			○	7-7-8	276.5		same as above; wet; sand fraction is fine to medium grained		
SS 7		▲			○	6-9-9	275.0	15	same as above; stiff; moist		
SS 8		▲			○	5-7-8	273.5		CLAYEY SAND (SC); medium reddish brown; medium dense; moist; subangular; poorly graded; fine to medium grained	Tobacco Road	
SS 9		▲			○	7-7-10	272.0		same as above; medium brown		
SS 10		▲			○	1-10-12	270.5	20	same as above; medium brown and reddish brown		
							269.0		same as above; medium brownish red, yellowish brown, and light gray		
SS 11		▲			○	9-12-15	263.5	25	SANDY LEAN CLAY (CL), with clayey sand interbeds; medium yellowish brown with light gray and maroon zones; very stiff; moist; medium plasticity		
SS 12		▲			○	7-9-8	258.2	30	CLAYEY SAND (SC), with some sandy clay interbeds; medium brownish red; medium dense; moist; subangular; poorly graded; fine to medium grained		

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-9

A-42





K-TRT-F-00001  
R/O

GEOTECHNICAL LOG		PROJECT		JOB NO.	SHEET NO.	HOLE NO.	
		APSF		APSF	2 OF 5	FB-9	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 13			10-9-12 253.2			same as above	
SS 14			12-16-16 248.4	40		same as above; medium yellowish brown; dense	
SS 15			13-15-15 243.5	45		same as above; medium dense	
SS 16			13-24-37 238.0	50		SILTY SAND (SM); medium brown, light brown, and some red oxidation spots; very dense; wet; angular; poorly graded; fine to lower coarse grained	Dry Branch
SS 17			8-9-11 232.5	55		CLAYEY SAND (SC); medium yellowish brown; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 18			15-17-35 227.5	60		SILTY SAND (SM); medium brown; very dense; wet; subangular; well graded; fine to coarse grained trace fine water rounded gravel	
SS 19			14-17-19 222.5	65		CLAYEY SAND (SC), with some thin clayey sand portions; light brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 20			11-13-15 217.4	70		SILTY SAND (SM), with thin clayey sand layers; light brown to medium brown; medium dense; wet; subangular; poorly graded; fine to lower coarse grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-9



K-TRT-F-00001

R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 5	FB-9				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 21		▲				4-6-10	212.5	80		LEAN CLAY (CL), with sand and highly variable sandy clay and clayey sand layers; medium yellowish gray and yellowish brown; very stiff; wet; medium plasticity; sand fraction is fine to medium grained trace coarse	Tan Clay Interval
SS 22		▲				3-8-14	207.6	85		CLAYEY SAND (SC), with sandy clay layers; medium yellowish gray and yellowish brown; subangular; medium dense; wet; poorly graded; fine to medium grained	
SS 23			○	▲		38-50/5in	203.1	90		POORLY GRADED SAND WITH SILT (SP-SM); light brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 24		▲				5-6-10	197.5	95		CLAYEY SAND (SC), with sandy clay interbeds; medium yellowish brown; medium dense; wet; subangular; poorly graded; very fine to fine grained; with black Mn? staining	
SS 25		▲				10-9-9	191.9	100		same as above; medium yellowish brown and grayish brown; fine to medium grained	
SS 26			○	▲		18-30-30	187.6	105		POORLY GRADED SAND WITH SILT (SP-SM); light brown to medium brown; very dense; wet; subangular; poorly graded; fine to upper medium grained	
SS 27			○	▲		18-30-30	182.5	110		same as above	
SS 28		▲				4-4-5	177.4			CLAYEY SAND (SC); medium yellowish brown; loose; wet; subangular; poorly graded; fine to medium grained; with black Mn? staining	Santee
SS 29		▲				1-1-2	175.9			same as above; dark yellowish brown; very loose	Overdrill

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-9

A-44



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			APSF	APSF	4 OF 5	FB-9	
SAMP. TYPE AND NO.	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 30	▲ 20 40 60 80	4-3-8	173.5			SILTY SAND (SM), portions with clay; medium reddish brown and brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 31	▲	16-16-18	168.5	120		same as above; with a few thin gray clay laminations; medium yellowish brown; dense; very fine to fine grained	
SS 32	○ ▲	22-29-32	163.5	125		POORLY GRADED SAND WITH SILT (SP-SM), with interbeds of lean clay and clayey sand; light brown, yellowish grayish brown, and light gray; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 33	○ ▲	18-27-35	157.9	130		same as above; light brown grading to yellowish brown; very fine to medium grained	
SS 34	○	WH/20in	152.8	135		CLAYEY SAND (SC); medium yellowish brown; very loose; wet; subangular; poorly graded; very fine to fine grained; very uniform	Overdrill on clean out.
SS 35	▲	5-6-8	149.2	140		same as above; light yellowish brown; medium dense; moist; trace turritella shells	
SS 36	▲ ○	12-13-19	144.2	145		SANDY LEAN CLAY (CL), with clayey sand interbeds; medium brownish gray and yellowish brown; hard; wet; medium plasticity; sand fraction is very fine to fine grained	Warley Hill
SS 37	○ ▲	17-20-21	139.2	150		same as above; medium yellowish brown; sand is fine grained; with silicified chips	
SS	▲	13-29-29				CLAYEY SAND (SC); dark yellowish red with light green	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-9

A-45



K-TRT-F-00001

R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	5 OF 5	FB-9				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
38							134.2			wispy laminae; very dense; wet; subangular; well graded; fine to coarse grained	1/26/98 water level @ 710.1 feet.
SS 39		▲	○			50/3in	129.7	160		SILTY SAND (SM); light brown to medium brown; very dense; wet; subrounded; well graded; fine to coarse grained	Congaree Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-9

A-46



K-TRT-F-00001

R/O

GEOTECHNICAL LOG			PROJECT APSF		JOB NO. APSF	SHEET NO. 1 OF 5	HOLE NO. FB-10				
SITE APSF			COORDINATES N 79506 E 54990			ANGLE FROM HORIZONTAL 90					
BEGUN 2/26/98	COMPLETED 2/27/98	DRILLER Graves/A. Jackson	DRILL MAKE AND MODEL Failing 1500	HOLE SIZE 3 7/8 in	SAMPLE HAMMER WEIGHT/FALL 140 lb/ 30 in	TOTAL DEPTH 154.8					
GROUND EL. 284.4			DEPTH/EL. GROUND WATER 284.4		LOGGED BY: N. Kidd/SAIC						
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 1						5-7-13				SANDY LEAN CLAY (CL); medium red with light yellow and white mottles; very stiff, dry, medium-plasticity; sand is fine to medium grained	Hand auger to 6 feet to check for interferences.           Tobacco Road
SS 2						15-14-22	276.9			same as above; hard	
SS 3						8-13-20	275.4			same as above; moist; no mottles	
SS 4						11-17-23	273.9	10		same as above	
SS 5						9-16-20	272.4			CLAYEY SAND (SC); medium red; dense; damp; subangular; poorly graded; fine to coarse grained	
SS 6						7-14-17	270.9			same as above; fine to medium grained; fragment of typical Altamaha cobble in spoon	
SS 7						8-13-19	269.4	15		LEAN CLAY WITH SAND (CL); medium red; hard; damp; medium plasticity; sand is fine to medium grained	
SS 8						7-12-17	267.9			SANDY LEAN CLAY (CL); medium red; very stiff, moist; medium plasticity; sand is fine to medium grained	
SS 9						6-12-16	266.4			LEAN CLAY WITH SAND (CL); medium red with light yellow and light purple mottles; very stiff, moist; medium plasticity (CL); sand is fine grained; trace mica	
SS 10						9-14-26	264.9	20		SILT (ML), sandy in places; red, white, yellow, multicolored; hard; moist; sand fraction is fine grained; trace mica	
SS 11						10-14-20	258.4	25		SILTY SAND (SM); light red with white mottles and occasional medium yellow bands; dense; moist; subangular; poorly graded; fine to medium grained	
SS 12						9-14-20	253.4	30		same as above; sand is mostly fine grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-10

A-44



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
			APSF	APSF	2 OF 5	FB-10					
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 13						15-27-37	248.4			POORLY GRADED SAND WITH SILT (SP-SM); light red and medium orange; very dense; moist; subangular; poorly graded; fine to medium grained	
SS 14			○	▲		14-24-28	243.4	40		POORLY GRADED SAND WITH CLAY (SP-SC), portions silty; light brownish yellow with white laminae; very dense; moist; subangular; poorly graded; fine to medium grained	
SS 15			○		▲	20-32-49	238.4	45		same as above; light yellowish brown with light reddish purple zones; wet; subrounded	
SS 16			▲		○	9-15-17	233.4	50		CLAYEY SAND (SC); medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	Dry Branch
SS 17			○	▲		16-20-30	228.4	55		WELL GRADED SAND WITH CLAY (SW-SC); medium yellowish brown with medium reddish brown and medium brownish yellow zones; very dense; wet; subangular; well graded; fine to coarse grained	
SS 18				○	▲	12-19-23	223.4	60		POORLY GRADED SAND WITH CLAY (SP-SC), clayey in places; medium brownish yellow with white wisps and light reddish brown zones; dense; wet; subangular; poorly graded; fine to medium grained	
SS 19			▲		○	10-14-19	218.4	65		same as above; occasional coarse sand grains; black Mn? pellets	
SS 20				▲	○	6-16-29	213.4	70		same as above; with interlayered medium yellow clay and dark orange sand; black Mn? wisps; trace heavy minerals; flattened quartz pebbles at top of interval	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-10

A-418



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			APSF	APSF	3 OF 5	FB-10		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 21			16-23-28	208.4			LEAN CLAY (CL), trace sand; light brownish yellow with dark orange laminae; hard; moist; medium plasticity; sand is fine to coarse grained; black Mn? pellets	Tan Clay Interval
SS 22		▲	8-19-31	203.4	80		POORLY GRADED SAND WITH CLAY (SP-SC); light brown; dense; wet; subangular; poorly graded; fine to medium grained; trace heavy minerals; top half of the interval is light yellow sandy clay	
SS 23		○	15-25-39	198.4	85		same as above; clayey in places; medium yellowish brown; very dense; black Mn? wisps; light yellow interlaminated clay	
SS 24		○	25-39-31	193.4	90		POORLY GRADED SAND (SP), trace clay; light brown with very light brown zones; very dense; wet; subrounded; poorly graded; fine to medium grained; black Mn? pellets; almost no clay in the top of the interval; trace heavy minerals	
SS 25		○	26-23-30	188.4	95		same as above; with clay at the bottom of the interval; light brownish yellow; light brown at the top of the interval	
SS 26		○	26-42-50	183.4	100		same as above; trace clay; light brown; black Mn? wisps	
SS 27		○	17-24-33	178.4	105		POORLY GRADED SAND WITH CLAY (SP-SC); light brown and light yellow; very dense; wet; subangular; poorly graded; fine to medium grained; black Mn? wisps; also heavy mineral stringers	
SS 28		○	25-41-48	173.4	110		no recovery	Plastic catcher is good.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-10

A-49



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	4 OF 5	FB-10				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 29						20-31-30	168.4			POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish yellow; very dense; wet; subangular; poorly graded; fine grained; black Mn? mottles; trace heavy minerals	Santee
SS 30	○			▲		26-36-36	163.4	120		same as above; with interlaminated very light green clay wisps	
SS 31	○			▲		34-33-36	158.4	125		same as above; color grades downward to light yellow; dark reddish brown; iron cemented sand nodule at top of interval	
SS 32		▲				9-16-24	153.4	130		same as above; no light yellow zones; medium dense	
SS 33			▲		○	17-21-22	148.4	135		CLAYEY SAND (SC), with clay stringers; very light brown, light yellowish brown, and orange with light green stringers; dense; wet; subangular; poorly graded; fine grained; trace heavy minerals; trace mica; silicified turritella shells	
SS 34				▲		19-31-40	143.4	140		same as above; with no light green clay stringers; very dense	
SS 35			▲		○	7-18-36	138.4	145		CLAYEY SAND (SC), with interbedded lean clay, trace fine to coarse sand layers; medium yellowish brown with orange zones and light brownish yellow mottles; very dense; wet; subangular; poorly graded; fine grained; trace mica; trace heavy minerals; silicified turritella shells	
SS 36			▲			5075in	134.5	150		SANDY FAT CLAY (CH); very dark grayish green with very light green band; hard; wet; high plasticity; sand is fine to coarse grained; green clay	Warley Hill
							129.6				

1/27/98 water level @ 36.68 ft. Water level not consistent with other water level readings in the area.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-10

A-50





K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	5 OF 5	FB-10				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 37						50/4in				no recovery Total depth of boring 154.8 feet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-10

A-51



K-TRT-F-0000/  
R/O

<b>GEOTECHNICAL LOG</b>		PROJECT <b>APSF</b>	JOB NO. <b>APSF</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-11</b>
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SITE <b>APSF</b>		COORDINATES <b>N 79317 E 54981</b>		ANGLE FROM HORIZONTAL <b>90</b>	
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BEGUN <b>2/19/98</b>	COMPLETED <b>2/20/98</b>	DRILLER <b>Graves/A. Jackson</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/ 30 in</b>	TOTAL DEPTH <b>158.7</b>
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GROUND EL. <b>289.8</b>	DEPTH/EL. GROUND WATER <b>▽ /</b>	LOGGED BY: <b>N. Kidd/SAIC</b>
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SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
						289.8				
SS 1	○				1-2-9	281.3		▨	CLAYEY SAND (SC); dark brown; medium dense; dry; subangular; poorly graded; fine to medium grained; some cement in interval (from nearby CPT push?); no soil recovery; cement in shoe (from nearby CPT push?); very dense	Hand auger to 6 feet to check for underground interferences.
SS 2	○				19-26-29	279.8				
SS 3			▲		15-22-25	278.3	10	▨	CLAYEY SAND (SC); medium red with light brown mottles; dense; damp; subangular; poorly graded; fine to medium grained	
SS 4		▲			2-4-20	276.8		▨	same as above; medium dense; bentonite is present within the interval; actual soil recovery is less (about 0.3 feet)	
SS 5		▲			9-13-13	275.3		▨	same as above with no bentonite	
SS 6		▲			11-15-16	273.8	15	▨	same as above; dense	
SS 7		▲			11-16-18	272.3		▨	same as above	
SS 8		▲			10-13-12	270.8		▨	same as above; slightly higher clay content; medium dense	
SS 9		▲			6-8-10	269.3	20	▨	same as above; sand is fine grained	
SS 10		▲			7-12-16	264.3	25	▨	SANDY LEAN CLAY (CL); medium red; very stiff; damp; medium plasticity; sand fraction is fine to coarse grained	
SS 11	▲				4-4-5	259.3	30	▨	CLAYEY SAND (SC); medium red; loose; damp; subangular; poorly graded; fine to medium grained	
SS 12	▲				4-5-6	257.8		▨	same as above; medium dense; moist	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-11</b>
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S-52



K-TRT-F-00001

R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			APSF	APSF	2 OF 5	FB-11	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 13	▲		3-2-5			same as above; loose	
SS 14	▲		6-15-18	252.8		same as above; medium red, medium purple, and medium yellow; dense	
				251.3			
				40			
SS 15	▲		6-9-11	246.3		same as above; some zones contain less clay; medium brownish yellow with white wisps; medium dense; moist; subangular; poorly graded; fine to medium grained	
				45			
SS 16	▲		11-16-20	241.3		POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown with dark brown wisps; medium dense; moist; subrounded; poorly graded; medium grained	
				50			
SS 17	▲		5-11-14	236.3		CLAYEY SAND (SC); medium brownish yellow; medium dense; wet; subangular; poorly graded; fine to medium grained	Dry Branch
				55			
SS 18	▲		12-18-17	231.3		same as above; with medium gray zones; dense	
				60			
SS 19	▲		16-22-17	226.3		POORLY GRADED SAND WITH CLAY (SP-SC); clayey in places; very light brown and very light brownish yellow with white wisps; dense; wet; subangular; poorly graded; fine to medium grained	
				65			
SS 20	▲		9-15-13	221.3		same as above; medium dense; trace mica	
				70			
SS 21	▲		3-5-5	216.3		CLAYEY SAND (SC); some zones contain less clay; interbedded clay layer at bottom of interval; medium red grading downward to grayish red; loose; wet; subangular; poorly graded; fine to medium grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
 PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-11

A-39



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
				APSF	APSF	3 OF 5	FB-11					
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING	
		20	40	60	80							○ RECOVERY %
SS 22						8-11-12	211.3	80		same as above; interbedded sandy lean clay, medium brownish yellow with white wisps and dark brown and dark gray mottles; medium dense	Tan Clay Interval?	
SS 23						10-24-22	206.3	85		POORLY GRADED SAND WITH CLAY (SP-SC); light brown with light brownish yellow zones; dense; wet; subangular; poorly graded; fine to medium grained		
SS 24						27-30-30/51h	201.4	90		POORLY GRADED SAND (SP) trace clay; light brown; very dense; wet; subrounded; poorly graded; fine to medium grained		
SS 25						15-23-26	196.3	95		same as above; dense; trace heavies		
SS 26						6-14-27	191.3	100		CLAYEY SAND (SC); some zones are clay with sand; medium brownish yellow with white wisps; dense; wet; subangular; poorly graded; fine to medium grained; black pellets (Mn?)		
SS 27						26-50-44	186.3	105		POORLY GRADED SAND (SP) trace clay; some zones contain slightly more clay; light brown and brownish yellow; very dense; wet; subrounded; poorly graded; fine to medium grained		
SS 28						19-37-45	181.3	110		same as above except no brownish yellow color		
SS 29						2-2-3	176.3			FAT CLAY (CH) with interlaminated sand; clay becomes sandy in places; white and very light brown; firm; wet; high plasticity; sand is fine to coarse grained; possible weathered shell fragments; black pellets (Mn?)		Santee
SS 30						7-8-13	174.8			SANDY FAT CLAY (CH); with interlaminated sand and		

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-11

A-54



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	4 OF 5	FB-11				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %									
		+ ATT. LIMITS %									
		20	40	60	80						
SS 31		○		▲		12-24-33	169.8	120		CLAYEY SAND (SC); very light brown and medium brownish yellow; very dense; wet; subangular; poorly graded; fine grained; black pellets (Mn?)	
SS 32			○	▲		18-34-43	164.8	125		POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish yellow; very dense; wet; subangular; poorly graded; fine grained; trace heavies	
SS 33			○	▲		22-26-44	159.8	130		same as above with wisps of light green clay	
SS 34		○		▲		24-28-24	154.8	135		same as above; medium yellowish brown with light yellow mottles	
SS 35			○	▲		20-23-17	149.8	140		same as above; light yellowish brown with dark brown clay laminae; dense; the very top of the interval is medium orange clayey sand, which grades downward into the interval (color and clay content); turtitella shell at very top of interval	
SS 36				▲	○	11-26-30	144.8	145		FAT CLAY (CH); sandy in places; light brownish yellow; hard; wet; high plasticity; sand fraction is fine grained; turtitella shell fragments	Warley Hill
SS 37				▲	○	13-11-20	139.8	150		SANDY FAT CLAY (CH); medium yellowish red and brownish yellow with light green wisps; hard; damp; high plasticity; sand is fine to coarse grained	
SS 38			○	▲		28-37-40	134.8			POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown; very dense; wet; subrounded;	Congaree

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-11

A-55



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	5 OF 5	FB-11				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 39	○		▲			50-50/2m	131.1			poorly graded; medium to coarse grained (congarce ?)	
										A small amount of clayey and sandy/gravelly material was pulled from the shoe. this material is probably sloughed	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-11

A-56



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>APSF</b>	JOB NO. <b>APSF</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-12</b>
SITE <b>APSF</b>		COORDINATES <b>N 79376 E 55003</b>			ANGLE FROM HORIZONTAL <b>90</b>	
BEGUN <b>2/27/98</b>	COMPLETED <b>3/3/98</b>	DRILLER <b>Graves/A. Jackson</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/ 30 in</b>	TOTAL DEPTH <b>156.3</b>
GROUND EL. <b>288.9</b>	DEPTH/WEL. <b>▽ /</b>	GROUND WATER	LOGGED BY: <b>N. Kidd/SAIC</b>			

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						288.9					
SS 1		▲			○	1-2-6			CLAYEY SAND (SC); medium red; loose; moist; subangular; poorly graded; fine to medium grained	Hand auger to 6 feet to check for interferences.	
SS 2		▲			○	8-12-17	281.4		same as above; medium dense		
SS 3		▲			○	8-13-22	279.9		same as above; dense		
SS 4		▲			○	8-12-13	278.4	10	same as above; medium dense; clay content increases with depth		
SS 5		▲			○	7-12-17	276.9		same as above; clay content is consistent through the interval		
SS 6		▲			○	8-18-20	275.4		POORLY GRADED SAND WITH CLAY (SP-SC); light red; dense; moist; subangular; poorly graded; fine to medium grained		
SS 7		▲			○	14-15-20	273.9	15	same as above; fine to lower medium grained		
SS 8		▲			○	12-12-17	272.4		same as above; medium dense; fine to medium grained		
SS 9		▲			○	11-19-19	270.9		same as above; dense; borderline clayey sand		
SS 10		▲			○	12-7-7	269.4	20	same as above; medium dense		
							267.9				
SS 11		▲			○	4-5-5	262.9	25	CLAYEY SAND (SC); medium red; loose; moist; subangular; poorly graded; fine grained; occasional medium to coarse grains		
SS 12		▲			○	12-18-27	257.9	30	same as above; dense; damp; fine to medium grained with occasional coarse sand and fine gravel		

Tobacco Road

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

**FINAL LOG**

HOLE NO.  
**FB-12**

A-57

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K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	2 OF 5	FB-12				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 13						10-15-18	252.9			same as above; light reddish yellow; moist; fine to lower medium grained	
SS 14			▲	○		14-21-25	247.9	40		POORLY GRADED SAND WITH CLAY (SP-SC); borderline trace clay; light reddish yellow with medium red bands; dense; damp; subangular; poorly graded; fine to medium grained	
SS 15			▲	○		8-14-18	242.9	45		CLAYEY SAND (SC); light reddish yellow with light yellowish red zones and white wisps; dense; moist; subangular; poorly graded; fine to medium grained	
SS 16		○		▲		18-30-25	237.9	50		POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish yellow; very dense; moist; subrounded; poorly graded; fine to medium grained	Dry Branch
SS 17			▲	○		9-14-23	232.9	55		CLAYEY SAND (SC); medium yellow with dark yellowish brown zones; dense; moist; subangular; poorly graded; medium grained	
SS 18			○	▲		15-25-34	227.9	60		POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish red; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 19			▲			25-19-21	222.9	65		same as above; clayey in places; medium brownish yellow; dense	
SS 20		○		▲		18-21-28	217.9	70		same as above; trace heavies	

Water level 16.92 ft. This water level reading is inconsistent with the water level measurements from other borings in the area.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-12

A-59



K-TRT-F-00001

R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 5	FB-12				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 21						19-25-21	212.9			CLAYEY SAND (SC); light brownish yellow; dense; wet; subangular; poorly graded; fine to medium grained; black mottles (Mn?); flat quartz pebbles at top of interval; trace heavies	Tan Clay Interval
SS 22		▲				3-6-10	207.9	80		SANDY LEAN CLAY (CL); medium brownish yellow, white, and medium orange, very stiff; wet; medium plasticity sand is fine to medium grained; trace heavies	
SS 23				▲		32-35-31	202.9	85		No recovery	
SS 24			▲			9-18-18	197.9	90		POORLY GRADED SAND WITH CLAY (SP-SC); borderline clayey sand; light brownish yellow; dense; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS 25		○	▲			16-21-30	192.9	95		same as above; some areas have trace clay; light brown and light reddish brown with areas of light brownish yellow; very dense	
SS 26		○	▲			16-20-22	187.9	100		same as above; light brownish yellow and light yellow; dense; moist; black pellets (Mn?)	
SS 27		○	▲			28-29-41	182.9	105		POORLY GRADED SAND (SP) trace clay; light brown; very dense; wet; subrounded; poorly graded; fine to medium grained; trace heavies; black pellets (Mn?)	
SS 28		○	▲			18-16-17	177.9	110		POORLY GRADED SAND WITH CLAY (SP-SC); light brown; dense; wet; subrounded; poorly graded; fine to medium grained with occasional coarse grains; trace heavies	
		▲									

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-12

A-60



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	4 OF 5	FB-12				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 29						WR16in-5/2in	172.9			CLAYEY SAND (SC); medium yellowish brown; loose; wet; subangular; poorly graded; fine grained; trace heavies	Santee
SS 30				●		38-24-36	171.4			same as above; zone of very sticky sandy fat clay; very dense; fine to medium grained	
SS 31			○	▲		17-27-42	166.4			POORLY GRADED SAND WITH CLAY (SP-SC); light yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained; trace heavies; trace mica	Warley Hill
SS 32			○	▲		26-37-39	161.4			same as above	
SS 33			▲	○		17-12-28	156.4			same as above with white bands; dense; fine to lower medium grained	
SS 34		▲				5-7-8	151.4			CLAYEY SAND (SC); medium reddish brown with very light brown zones; medium dense; wet; subangular; poorly graded; fine grained; black mottles (Mn?); trace heavies	
SS 35		▲				4-3-7	146.4			same as above; loose; clay content is slightly higher	
SS 36				▲		12-19-30	141.4			SANDY FAT CLAY (CH); very light green and light brownish yellow with medium orange wisps; color grades downward to dark orange; hard; wet; high plasticity; sand is fine to medium grained; trace heavies	
SS 37			○	▲		11-34-50/3in	136.6			same as above; medium brownish red with light green wisps; very hard	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-12

A-Gli



K-TRT-F-00001

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	5 OF 5	FB-12				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %	+ ATT. LIMITS %								
		20	40	60	80						
SS 38	●			▲		50/4in	132.6			no recovery Total depth of boring 156.3 feet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
**FB-12**

A-62



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.				
				APSF		APSF	1 OF 3	FB-13				
SITE:			COORDINATES			ANGLE FROM HORIZONTAL						
APSF			N 79314 E 54981			90						
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH						
3/5/98	3/6/98	Graves/S. Rodgers	Failing 1500	3 7/8 in	140 lb/ 30 in	117.5						
GROUND EL.		DEPTH/VEL. GROUND WATER		LOGGED BY:								
289.7		▽ / ▽ /		N. Kidd/SAIC								
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING	
		○ RECOVERY %	+ ATT. LIMITS %									
		20	40	60	80		289.7					
								5			Hand auger to 6 feet to check for underground interferences	
								10				
								15				
								20				
								25				
ST 1						262.2		25		SANDY LEAN CLAY (CL); borderline clay with sand; medium red; damp; medium plasticity; sand fraction is fine to medium grained		250 psi, rest 15 min.
								30				
								35				

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

HOLE NO. **FB-13**

**FINAL LOG**



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
				APSF	APSF	2 OF 3	FB-13		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING	
									20
					45				
					50				
					55				
					60				
					65				
					70				
					75				
ST 2				212.7			POORLY GRADED SAND WITH CLAY (SP-SC); medium reddish brown with light yellow, purple, and white clay stringers; wet; subangular; poorly graded; fine to medium grained	200 psi, rest 15 min.	
				211.7			LEAN CLAY WITH SAND (CL); sandy in places; black, light tan, white, and brown; wet; medium plasticity; sand fraction is fine grained; trace heavies		
					80				
					85				
SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER				SITE				HOLE NO.	
FINAL LOG						FB-13			

A-64



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 3	FB-13				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
								90			
								95			
								100			
								105			
								110			
								115			
ST 3								173.2		CLAYEY SAND (SC); (may be sloughed material); medium brown with white wisps; wet; subangular; poorly graded; fine to medium grained	900 psi, rest, 10 min.
								172.2		SANDY LEAN CLAY (CL); light greenish yellow; wet; medium plasticity; sand fraction is fine grained Total depth of boring 117.5 feet.	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-13

A-65



K-TRT-F-00001  
R/O

<b>GEOTECHNICAL LOG</b>			PROJECT <b>APSF</b>		JOB NO. <b>APSF</b>	SHEET NO. <b>1 OF 1</b>	HOLE NO. <b>FB-14</b>
SITE <b>APSF</b>			COORDINATES <b>N 79437 E 54990</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>3/6/98</b>	COMPLETED <b>3/6/98</b>	DRILLER <b>Graves/S. Rodgers</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/ 30 in</b>	TOTAL DEPTH <b>80.0</b>	
GROUND EL. <b>287.2</b>	DEPTH/EL. GROUND WATER <b>▽ / ▽ /</b>	LOGGED BY: <b>N. Kidd/SAIC</b>					

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						287.2					
ST 1							20		SANDY LEAN CLAY (CL); medium red; damp; low plasticity; sand fraction is fine to medium grained	700 psi, rest 15 min.	
ST 2						214.2 213.2	75		POORLY GRADED SAND WITH CLAY (SP-SC); medium red; wet; subangular; poorly graded; medium grained; could be washed out material	300 psi, rest 15 min.	
ST 3						208.2 207.2	80		same as above; some zones are clayey; medium brownish yellow; fine to medium grained SANDY LEAN CLAY (CL); with interbedded light yellow clay; medium red, white, and medium brownish yellow; wet; medium plasticity; sand fraction is coarse grained CLAYEY SAND (SC); medium brownish yellow; wet; subangular; poorly graded; fine to medium grained; trace mica; trace heavies Total depth of boring 80 feet	300 psi, rest 15 min. Hole abandoned with grout mix per 3Q5.	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-14</b>
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A-66





K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.			
SITE				COORDINATES		ANGLE FROM HORIZONTAL					
APSF				N 79179 E 55034		'90					
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
3/6/98	3/9/98	Graves/S. Rodgers	Failing 1500	3 7/8 in	140 lb/ 30 in	115.0					
GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:									
291.7	291.7	N. Kidd/SAIC									
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
ST 1						266.2 265.2	25		POORLY GRADED SAND WITH CLAY (SP-SC); clayey in places; medium red; moist; subangular; poorly graded; medium to coarse grained; may be washed out material SILT (ML); dark red, very light red, and white with very light purple wisps of clay; moist; low plasticity	400 psi, rest 15 min.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-15



<b>GEOTECHNICAL LOG</b>	<b>PROJECT</b>	<b>JOB NO.</b>	<b>SHEET NO.</b>	<b>HOLE NO.</b>
	<b>APSF</b>	<b>APSF</b>	<b>2 OF 3</b>	<b>FB-15</b>

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	○ RECOVERY %									
	+ ATT. LIMITS %									
	20	40	60	80						
ST 2						211.7	80		POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish yellow; wet; subangular; poorly graded; fine to coarse grained; sample was falling out of tube when withdrawn from the hole	500 psi, rest 15 min.
ST 3						210.7			CLAYEY SAND (SC); medium brownish yellow; wet; subangular; poorly graded; fine to medium grained with occasional coarse grains	500 psi, rest 15 min.
						209.7			LEAN CLAY (CL); interlaminated sands; light brownish yellow with medium brownish yellow zones and black wisps; wet; medium plasticity; sand is fine to medium grained; black wisps (Mn?)	
							85			

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE **FINAL LOG**

HOLE NO. **FB-15**



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 3	FB-15				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
ST 4						190.7	100		CLAYEY SAND (SC); some zones are sand with clay; light brown with white and very light yellow mottles; wet; subangular; poorly graded; fine to medium grained; black mottles (Mn?)	350 psi, rest 15 min.	
ST 5						176.7	115		same as above; zones of sandy clay; medium reddish brown with light gray and white zones.	700 psi, rest 15 min. Tube is crushed at th bottom.	
									Total depth of boring 115 feet.	Hole abandoned with grout mix per 3Q5.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-15



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.			
SITE				COORDINATES		ANGLE FROM HORIZONTAL					
APSF				N 79212 E 54889		90					
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
3/9/98	3/11/98	Graves/S. Rodgers	Failing 1500	3 7/8 in	140 lb/ 30 in	120.0					
GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:									
290.1	▽ / ▽ /	N. Kidd/SAIC									
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						290.1					Hand auger to 6 feet to check for underground interferences.
ST 1						274.1 273.1	15		CLAYEY SAND (SC); medium red; damp; subangular; poorly graded; fine grained same as above; medium brownish yellow; fine to medium grained; trace heavies	500 psi, 15 min.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-16

A-70



K-TRT-F-00001

R/O

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.			
				APSF		APSF	2 OF 3	FB-16			
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
								45			
								50			
								55			
								60			Lost 800 gallons of water. See *
								65			
								70			
								75			
								80			
ST 2								85		LEAN CLAY WITH SAND (CL); sandy in places; interbedded sand stringers; medium brownish yellow,	350 psi, rest 15 min.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-16

A-71



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				APSF	APSF	3 OF 3	FB-16				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
							204.1			white, and light red; wet; medium plasticity; sand is fine to medium grained; this zone is highly variable with respect to sand content	
ST 3							191.1			CLAYEY SAND (SC); medium brownish yellow with light yellow and white zones; wet; subangular, poorly graded; fine to medium grained; black wisps (Mn?)	250 psi, rest 15 min.
							120			Total depth of boring 120 feet,	Lost circulation at 118 ft., could not recover. Lost over 1000 gallons of water. After loss of circulation two buckets of bentonite pellets were placed in the hole and allowed to hydrate for approximately 1 hour. Tried to resume drilling and after 60 feet, rods got stuck in the hole. The hole took an additional 800 gallons of water. Hole finally abandoned with gro. mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-16

A-72



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.			
SITE				COORDINATES		ANGLE FROM HORIZONTAL					
APSF				N 79207 E 54890		90					
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
3/11/98	3/12/98	Graves/S. Rodgers	Failing 1500	3 7/8 in	140 lb/ 30 in	116.0					
GROUND EL.	DEPTH/EL. GROUND WATER	LOGGED BY:									
290.1	∇ / ∇ /	N. Kidd/SAIC									
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %	+ ATT. LIMITS %								
		20	40	60	80		290.1				
								5			<p>Hand auger to 6 feet to check for underground interferences.</p> <p>Advance hole with mude rotary method to resume sampling at 118 ft, because of lost circulation at that depth in hole FB-16.</p>
								10			
								15			
								20			
								25			
								30			
								35			
								40			
								45			
								50			
								55			
								60			
								65			
								70			
								75			
								80			
								85			
								90			
								95			
								100			
								105			
								110			
								115			
Total depth of boring 116 feet.										Lost circulaion at 116 feet. Hole abandoned with grout mix per 3Q5.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-16A



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 4</b>	HOLE NO. <b>FB-17</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 79244 E 55520</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>4/13/98</b>	COMPLETED <b>4/20/98</b>	DRILLER <b>B. Cunningham/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>145.0</b>
GROUND EL. <b>283.1</b>		DEPTH/VEL. GROUND WATER <b>∅ / ∅</b>		LOGGED BY: <b>N. Kidd/SAIC</b>		

SAMP TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						283.1					
SS 1		▲		○	3-4-4	274.6			POORLY GRADED SAND (SP) trace clay; light brown; loose; wet; subangular; poorly graded; fine to medium grained; trace heavies	Hand auger to 7 feet to check for underground interferences.	
SS 2		▲		○	3-5-9	273.1			POORLY GRADED SAND WITH CLAY (SP-SC); medium brown with medium yellowish red mottles; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 3		▲		○	9-9-15	271.6	10		CLAYEY SAND (SC); light red with yellowish red, brownish yellow, and gray zones; medium dense; damp; subangular; poorly graded; fine to medium grained		
SS 4		▲		○	7-14-13	270.1			same as above; medium red with light yellow and white mottles		
SS 5		▲		○	10-15-22	268.6			LEAN CLAY WITH SAND (CL); light brownish red, brownish yellow, and gray; hard; damp; medium plasticity; sand is fine to medium grained		
SS 6		▲		○	9-14-19	267.1	15		SANDY LEAN CLAY (CL) with clayey sand zones; medium brownish yellow with medium red zones; hard; damp; medium plasticity; sand is fine to medium grained		
SS 7		▲		○	12-15-21	265.6			CLAYEY SAND (SC); light brownish yellow with white wisps and medium red zones; dense; damp; subangular; poorly graded; fine to medium grained		
SS 8		▲		○	10-14-16	264.1			same as above; light red with white flecks and medium yellowish brown zones; medium dense; fine to lower medium grained; trace mica		
SS 9		▲		○	10-12-17	262.6	20		same as above; light red; no mica observed		
SS 10		▲		○	10-13-17	261.1			SILTY SAND (SM) some areas are clayey; medium red with brownish yellow, brown, and white bands; medium dense; damp; subangular; poorly graded; fine to lower medium grained		
SS 11		▲		○	9-14-16	259.6			CLAYEY SAND (SC); medium red; medium dense; damp; subangular; poorly graded; fine to lower medium grained		
SS 12		▲		○	10-12-15	258.1	25		same as above; silty in places; medium red with white and brownish yellow zones		
SS 13		▲		○	11-13-16	256.6			same as above; light yellowish brown with light red zones; fine to medium grained		
SS 14		▲		○	13-15-17	255.1			same as above; with white wisps; dense		
SS 15		▲		○	12-19-22	253.6			POORLY GRADED SAND WITH CLAY (SP-SC); some areas trace clay; light brownish yellow with light red and light brown zones; dense; wet; subangular; poorly graded; medium grained		
SS 16		▲		○	17-24-29	252.1	30		POORLY GRADED SAND (SP) trace clay; some areas with clay; light red with light reddish brown zones and dark yellowish brown wisps; very dense; damp; subangular; poorly graded; medium grained		
SS 17		▲		○	20-31-21	250.6			same as above; light red with very light orange and white zones		
SS 18		▲		○	12-17-19	249.1			CLAYEY SAND (SC) some zones are less clayey; light reddish yellow with light red zones and white pellets; dense; damp; subangular; poorly graded; fine to medium		

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

**FINAL LOG**

HOLE NO.  
**FB-17**

A-74





K-TRT-F-00001  
R/O

GEOTECHNICAL LOG		PROJECT		JOB NO.	SHEET NO.	HOLE NO.	
		Northeast Expansion		NEX	2 OF 4	FB-17	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 20			247.6			grained same as above; medium yellowish brown with light yellowish brown zones and white wispy striations; moist	
SS 21			246.1			POORLY GRADED SAND WITH CLAY (SP-SC) some areas trace clay; medium brownish yellow with dark brown pods; very dense; damp; subangular; poorly graded; medium grained	
SS 22			244.6			same as above; clayey in places; medium yellowish brown; moist	
SS 23			243.1	40		same as above; dense; wet same as above; clayey in places; very dense; moist	
SS 24			241.6			same as above; borderline clayey sand; dense	
SS 25			240.1			CLAYEY SAND (SC); medium brownish red with dark yellowish brown zones and wispy white striations; dense; moist; subangular; poorly graded; fine to medium grained	
SS 26			238.6	45		same as above; medium red	
SS 27			237.1			POORLY GRADED SAND WITH CLAY (SP-SC) some areas clayey; medium reddish brown; very dense; damp; subangular; poorly graded; fine to medium grained	
SS 28			235.6			same as above; light reddish brown with white zones; moist; poorly graded	
SS 29			234.1			same as above	
SS 30			232.6	50		POORLY GRADED SAND (SP) trace clay; some areas with clay; light brown with light brownish yellow and white mottles; very dense; damp; subangular; poorly graded; fine to medium grained	
SS 31			231.1			same as above; light brownish yellow	
SS 32			229.6			same as above; some zones with clay; dense	
SS 33			228.1	55		POORLY GRADED SAND WITH CLAY (SP-SC) some areas trace clay; medium reddish yellow; dense; moist; subangular; poorly graded; fine to medium grained	
SS 34			226.6			same as above; light brownish yellow; trace heavies	
SS 35			225.1			same as above; some zones clayey; medium yellowish brown; fine to lower coarse grained	
SS 36			223.6	60		same as above; very dense	
SS 37			222.1			same as above; dense	
SS 38			220.6			same as above; medium brownish yellow; fine to medium grained; trace lower coarse	
SS 39			219.1			same as above; light brown	
SS 40			217.6	65		same as above; some zones are clayey sand; medium brownish yellow	
SS 41			216.1			SANDY LEAN CLAY (CL) with interlaminated sand and lean clay; lt brownish yellow with med reddish brown zones; stiff; wet; med plasticity; sand is fine to med grained; black staining (Mn?); trace heavies; flattened quartz pebbles	
SS 42			214.6				
SS 43			213.1	70		SANDY FAT CLAY (CH) some zones are lean clay; interlaminated cse sand; med yellowish brown with med reddish brown and white zones; stiff; wet; high plasticity; sand is fine to med grained with some cse sand; black staining (Mn?); trace heavies	
SS 44			211.6			CLAYEY SAND (SC) with lean clay pods; med yellowish brown with lt brownish yellow zones; loose; wet; subangular; poorly graded; fine to lwr med grained; trace heavies; black staining (Mn?)	
SS 45			210.1			same as above; interbedded lt brownish yellow lean clay	
			208.6				

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-17

A-75



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			Northeast Expansion	NEX	3 OF 4	FB-17	
SAMP TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 46		5-7-9	207.1			and med brownish yellow sand; med brownish yellow with v lt yellow and dk reddish brown laminae; med dense; fine to med grained; clay content varies widely	
SS 47		8-14-23	205.6			same as above; with lt brownish yellow lean clay laminae; med reddish yellow with dk brown zones; moist; heavy black staining (Mn?)	
SS 48		12-14-13	204.1			LEAN CLAY (CL); lt brownish yellow with dk reddish brown and black fracture coatings (Mn?); v stiff; wet; med plasticity; sand is fine grained and sparse	
SS 49		8-14-16	202.6	80		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; lt brownish yellow clay at top of sample; med yellowish brown with v lt yellow zones; dense; wet; subangular; poorly graded; fine to med grained; black pellets (Mn?); trace heavies	
SS 50		10-18-25	201.1			same as above; med dense	
SS 51		14-20-20	199.6			same as above; lt yellowish brown	
SS 52		12-18-17	198.1			same as above; dense	
SS 53		14-22-21	196.6	85		POORLY GRADED SAND WITH SILT (SP-SM) with v lt yellow clay wisps; lt yellowish brown; dense; wet; subangular; poorly graded; fine to med grained; abundant black (Mn?) and dk brown staining	
SS 54		13-16-21	195.1			same as above with white streaks	
SS 55		17-16-27	193.6			same as above with some clayey zones	
SS 56		13-20-18	192.1	90		CLAYEY SAND (SC); lt reddish brown; dense; wet; subangular; well graded; fine to lwr cse grained; black zone within interval is Mn?	
SS 57		10-10-7	190.6			same as above; some zones are sand with clay; lt brown with white zones; Mn? staining	
SS 58		4-6-13	189.1			same as above; interbedded white clayey sands; lt reddish brown with white zones; med dense; poorly graded; fine to med grained	
SS 59		13-20-21	187.6	95		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey sand; lt reddish brown with white zones; med dense; wet; subangular; poorly graded; fine to med grained; trace lwr cse	
SS 60		16-23-22	186.1			same as above; some zones are sandy clay; lt brown with v lt yellow zones; dense; Mn? staining	
SS 61		9-10-15	184.6			POORLY GRADED SAND (SP) trace clay; lt brown; dense; wet; subrounded; poorly graded; med to cse grained; trace heavies	
SS 62		12-13-16	183.1	100		WELL GRADED SAND WITH CLAY (SW-SC) bottom of interval is sand trace clay; lt brown with white zones; med dense; wet; subrounded; well graded; trace heavies; fine to coarse grained	
SS 63		1/2 in-1/15 in-1/1 in	181.6			same as above; med brown and lt brown with dk reddish brown mottles; subangular; fine to cse grained; black pellets (Mn?)	Possible location of a soft zone @ 100 ft. Losing drilling fluid.
SS 64		1/10 in-1/2 in-4	180.1			CLAYEY SAND (SC) clay content varies; med brown with lt brown and white zones and dk brown wisps; v loose; wet; subangular; poorly graded; fine to med grained; black stains (Mn?)	
SS 65		3-3-2	178.6			same as above; few interlaminated lt yellowish brown clay wisps; lt reddish brown with lt brown and white zones; loose; trace heavies	
SS 66		1/21 in	175.4	105		same as above; med reddish brown with v lt green clay laminae; fine grained	Overdrilled
SS 67		7-6-8	173.6			same as above; with silty zones; white, v lt green, and lt brown; v loose; v fine to lwr med grained; weathered shell fragments?; silicified zone at top of interval; trace heavies	
SS 68		5-9-9	172.1	110		same as above; interlayered with sand with clay; white and lt brown with v lt green zone at top of interval; med dense; fine to med grained; pelecypod fragments	
SS 69		19-36-32	170.6			WELL GRADED SAND WITH CLAY (SW-SC) bands of clayey sand; lt brown and lt yellow with white clayey sand bands; med dense; wet; subangular; well graded; fine to lwr cse grained; trace heavies; pelecypod fragment	
SS 70		15-26-24	169.1			POORLY GRADED SAND (SP) trace clay; lt brown with v lt brown and v lt green zones; v dense; wet; subangular; poorly graded; fine to med grained; abundant heavies; shell fragments; calcareous nodules	
SS		9-14-13				SILTY SAND (SM); lt yellowish brown with white clayey zones; dense; wet; subangular; poorly graded; fine grained;	Circulation good but

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-17

A-76



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	4 OF 4	FB-17				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %									
		+ ATT. LIMITS %									
		20	40	60	80						
71 SS 72						3/26 in	167.6			calcareous nodules; pelecypod fragments POORLY GRADED SAND WITH SILT (SP-SM); lt brown and lt yellowish brown; med dense; wet; subangular; poorly graded; fine grained; trace heavies same as above; lt brown; v loose; v fine grained; dk purple mottle	continuing to lose drilling fluid. Rod drop @ 115.5-117.67 ft.
73 SS						8-14-24	165.4			SILTY SAND (SM); v lt yellowish brown with orange mottles and lt green zones; dense; wet; subangular; poorly graded; v fine grained; trace heavies	Lost over 1000 gallons of water from 116.67-122 ft.
74 SS						10-27-35	163.6	120		same as above; borderline sand with silt; v lt greenish brown and v lt brown; some zones have lt orange mottles; v dense	
75 SS						12-20-30	162.1			same as above; v lt brown to lt brown; dense	
76 SS						13-28-36	160.6			POORLY GRADED SAND (SP) trace silt; v lt brown with white zones; v dense; wet; subangular; poorly graded; v fine grained; trace heavies	
77 SS						13-30-32	159.1			same as above	Lost 1000 gallons of fluid betwewn 124 and 134.5 feet.
78 SS						8-5-4	157.6	125		SILTY SAND (SM); lt greenish brown; med dense; wet; subangular; poorly graded; v fine grained; trace heavies	
79 SS						19 in-1/3 in-5	156.1			same as above; with white clay wisps; loose; fine grained	
80 SS						WR/12 in-7	154.6				
81 SS						WR/12 in-WH/3 in-5/3 in	153.1	130		CLAYEY SAND (SC) some zones are silty; lt greenish brown with v lt gray zones; loose; wet; subangular; poorly graded; v fine grained	
82 SS						WR/6 in-4-8	151.6			same as above; lt yellowish brown with lt orange mottles; med dense; silicified turritella shells; trace heavies	
83 SS						3-5-7	150.1			same as above; lt brown with lt orange mottles	
84 SS						4-8-9	148.6	135		same as above	Continuing to lose fluid.
85 SS						8-14-25	147.1			POORLY GRADED SAND WITH SILT (SP-SM) some zones are same as above; lt greenish brown; dense; wet; subangular; poorly graded; fine grained; silicified turritella shells; trace heavies	
86 SS						5-12-38	145.6			CLAYEY SAND (SC) with wispy lt greenish gray clay; lt grayish brown with lt orange mottles; dense; wet; subangular; poorly graded; fine to med grained; silicified chips and shells	
87 SS						5-7-8	144.1	140		same as above; some zones silty; lt greenish brown; med dense; v fine grained; silicified nodules and pelecypod shells; trace heavies; trace mica	
88 SS						WR/3 in-2/3 in-8-18	142.6			same as above; sandy clay in places; white and dk brownish red; dense; fine to med grained; clay content varies. some material calcareous mud? shell fragments	
89 SS						4-13-12	141.1			same as above; with interlaminated lt green clays; med green and dk reddish orange with white pellets and lt green clay laminae and dk green at tip of interval; med dense	
90 SS						9-12-16	139.6			same as above; intermixed with lean clay; dk greenish gray; fine grained; abundant mica; green clay	Hole caved in over weekend 4/18,19. Had to be cleaned out before grouting.  Hole abandoned with grout mix per 3Q5.
							138.1	145		Total depth of boring 145 feet.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-17

A-77



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>		PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-18</b>
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SITE <b>APSF-NE</b>	COORDINATES <b>N 79331 E 55131</b>	ANGLE FROM HORIZONTAL <b>'90</b>
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BEGUN <b>4/20/98</b>	COMPLETED <b>4/27/98</b>	DRILLER <b>B Cunningham/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>159.3</b>
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GROUND EL. <b>290.1</b>	DEPTH/EL. GROUND WATER <b>2 / 1</b>	LOGGED BY: <b>N. Kidd/SAIC</b>
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SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						290.1					
SS 1		▲	○			5-7-11	281.6			POORLY GRADED SAND (SP) trace clay; light reddish brown; medium dense; damp; subangular; poorly graded; fine to medium grained; trace heavies	Hand auger to 7 feet to check for underground interferences.
SS 2		▲	○			6-13-20	280.1			same as above; light yellowish red with light brown zones; dense	
SS 3		▲	○			11-19-23	278.6			CLAYEY SAND (SC); medium red; dense; damp; subangular; poorly graded; fine to medium grained	
SS 4		▲	○			12-14-17	277.1			same as above; wet	
SS 5		▲	○			12-14-23	275.6			POORLY GRADED SAND WITH CLAY (SP-SC); medium reddish brown; dense; moist; subangular; poorly graded; fine to medium grained	
SS 6		▲	○			12-13-16	274.1			CLAYEY SAND (SC); medium red; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 7		▲	○			10-12-10	272.6			same as above; trace mica	
SS 8		▲	○			5-6-7	271.1			SILTY SAND (SM); medium red with light brown wisps; medium dense; moist; subangular; poorly graded; fine grained; trace mica; trace heavies	
SS 9		▲	○			4-7-8	269.6			CLAYEY SAND (SC); medium reddish brown; medium dense; moist; subangular; poorly graded; fine to medium grained with lower coarse grains	
SS 10		▲	○			6-8-8	268.1			SANDY LEAN CLAY (CL); medium reddish brown; very stiff; moist; medium plasticity; sand is fine to coarse grained	
SS 11		▲	○			7-10-9	266.6			CLAYEY SAND (SC); medium red; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 12		▲	○			6-6-7	265.1			same as above; trace coarse grains	
SS 13		▲	○			5-6-6	263.6			POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown with dark red mottles; medium dense; moist; subangular; poorly graded; fine to lower medium grained; trace mica	
SS 14		▲	○			3-4-5	262.1			CLAYEY SAND (SC); medium yellowish brown; loose; wet; subangular; poorly graded; fine to lower medium grained; trace mica	
SS 15		▲	○			4-5-8	260.6			same as above; medium brown; medium dense; moist; fine to medium grained	
SS 16		▲	○			6-9-9	259.1			SANDY LEAN CLAY (CL); medium reddish brown; very stiff; moist; low plasticity; sand is fine to lower coarse grained	
SS 17		▲	○			6-9-16	257.6			CLAYEY SAND (SC); medium reddish brown; medium dense; moist; subangular; poorly graded; fine to medium grained; trace mica	
SS 18		▲	○			12-16-13	256.1			POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; light brownish yellow with light red bands and white wisps; dense; moist; subangular; poorly graded; fine to medium grained	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-18</b>
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A-78



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			Northeast Expansion	NEX	2 OF 5	FB-18		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
19	SS	▲	8-14-14	254.6			CLAYEY SAND (SC); light yellowish brown with medium red bands; medium dense; moist; subangular; poorly graded; fine to medium grained	
20	SS	▲		253.1			same as above; light brownish yellow with light red bands and white wisps; trace heavies	
21	SS	▲	10-15-15	251.6			same as above; some zones are sand with clay; light brownish yellow with light orange bands; trace mica	
22	SS	▲	11-19-20	250.1	40		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; light yellowish brown with light red zones and white wisps; dense; moist; subangular; poorly graded; fine to medium grained; some zones are wet	
23	SS	○	17-24-29	248.6			same as above; light red and light brownish yellow with white wisps; very dense	
24	SS	○	17-30-27	247.1			POORLY GRADED SAND (SP) trace clay; some zones with clay; medium red with light brownish yellow zones and white wisps; very dense; wet; subangular; poorly graded; fine to medium grained; trace coarse grains	
25	SS	○	20-17-24	245.6			same as above; dense	
26	SS	○	22-22-31	244.1	45		POORLY GRADED SAND WITH CLAY (SP-SC); light brownish yellow and light red with white spots; very dense; moist; subangular; poorly graded; fine to medium grained; trace mica	
27	SS	○	13-22-23	242.6			same as above; dense	
28	SS	○	14-14-20	241.1			CLAYEY SAND (SC) borderline sand with clay; light red and light brownish yellow; dense; moist; subangular; poorly graded; fine to medium grained; trace mica	
29	SS	○	16-18-18	239.6	50		POORLY GRADED SAND (SP) trace clay; upper part of the interval is sand with clay (as above); medium brown with light red and light brownish yellow zones and white wisps; dense; wet; subrounded; poorly graded; fine to medium grained; trace mica; trace heavies	
30	SS	○	10-13-20	238.1			CLAYEY SAND (SC); light brownish yellow; dense; wet; subangular; poorly graded; fine to medium grained	
31	SS	○	20-26-30	236.6			POORLY GRADED SAND (SP) trace clay; medium brown; very dense; wet; subrounded; poorly graded; medium to lower coarse grained	
32	SS	○	17-14-16	235.1	55		POORLY GRADED SAND WITH CLAY (SP-SC); medium brown with light red zones; medium dense; wet; subrounded; poorly graded; medium to lower coarse grained; trace heavies	
33	SS	○	11-13-15	233.6			CLAYEY SAND (SC); medium red; medium dense; wet; subangular; poorly graded; fine to medium grained; black spots	
34	SS	○	10-9-12	232.1			same as above; medium yellowish brown with dark brown zones and white wisps; trace heavies	
35	SS	○	12-16-22	230.6	60		POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; dense; moist; subangular; poorly graded; fine to medium grained; trace heavies	
36	SS	○	14-19-25	229.1			same as above	
37	SS	○	16-20-22	227.6			POORLY GRADED SAND (SP) trace clay; some zones with clay; light brown; dense; wet; subrounded; poorly graded; fine to lower coarse grained	
38	SS	○	16-17-19	226.1			same as above; medium yellowish brown with medium brown bands; moist; subangular; fine to medium grained; trace coarse grains; trace heavies	
39	SS	○	14-15-22	224.6	65		same as above; wet	
40	SS	○	20-22-27	223.1			same as above	
41	SS	○	16-14-18	221.6			POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish yellow; dense; wet; subangular; poorly graded; fine to medium grained; trace coarse; trace heavies	
42	SS	○	12-13-18	220.1	70		same as above; light brownish yellow; moist; black motiles (Mn?)	
43	SS	○	16-19-23	218.6			same as above; some zones trace clay; wet	
44	SS	○	16-16-21	217.1			POORLY GRADED SAND (SP) some zones with clay; medium brown with white wisps; dense; wet; subangular; poorly graded; fine to medium grained; trace coarse; trace heavies	
45	SS	○	12-10-13	215.6			WELL GRADED SAND WITH CLAY (SW-SC) clay content varies widely from trace clay to clayey in places;	

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SITE

FINAL LOG

HOLE NO.

FB-18

A-29



K-TRT-F-00001

R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	3 OF 5	FB-18				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 46		▲				7-9-11	214.1			medium brown with white and very light yellow zones; medium dense; wet; subangular; well graded; fine to coarse grained; black mottles (Mn?); trace heavies	
SS 47		▲				7-8-9	212.6			same as above; trace clay in places; med brown; subrounded	
SS 48		▲				7-9-10	211.1			POORLY GRADED SAND WITH CLAY (SP-SC); clayey sand at base of interval; med brownish yellow with lt tan clay balls; med dense; wet; subangular; poorly graded; fine to med grained; trace cse	
SS 49		▲				10-12-13	209.6	80		LEAN CLAY (CL) trace sand; lt brownish yellow with dk orange wisps; v stiff; wet; med plasticity; sand is fine grained; black zones (lignite?); zones of med orange fine sand	
SS 50		▲				WFL/6 in-10-17	208.1			LEAN CLAY WITH SAND (CL) sandy lean clay in places; med brown with white clay laminae; v stiff; wet; med plasticity; sand is fine to cse grained	
SS 51		▲				10-13-12	206.6			CLAYEY SAND (SC); med yellowish brown with lt yellow and white streaks; med dense; wet; subangular; well graded; fine to cse grained	
SS 52		▲				8-8-9	205.1	85		POORLY GRADED SAND WITH CLAY (SP-SC) some clayey zones; lt brownish yellow; med dense; wet; subangular; poorly graded; fine to med grained; trace heavies	
SS 53		▲				10-16-24	203.6			same as above; med yellowish brown with white clayey sand wisps	
SS 54		○				13-20-22	202.1			same as above; some clayey zones; lt brown with lt brownish yellow bands; dense	
SS 55		▲				11-10-10	200.6	90		POORLY GRADED SAND (SP) trace clay; lt brown with lt brownish yellow wisps; dense; wet; subangular; poorly graded; fine to med grained; trace heavies	
SS 56		▲				8-6-7	199.1			POORLY GRADED SAND WITH CLAY (SP-SC) some clayey zones; lt brown; med dense; wet; subangular; poorly graded; fine to med grained; trace heavies	
SS 57		▲				6-10-17	197.6			CLAYEY SAND (SC) interlayered sand with clay; lt brownish yellow; med dense; wet; subangular; poorly graded; fine to med grained	
SS 58		▲				11-13-15	196.1			same as above; lt brownish yellow and lt brown with white and lt yellow wisps; trace heavies	
SS 59		▲				6-8-6	194.6	95		same as above; with interlaminated clay; med brown and lt brownish yellow with lt tan clay wisps	
SS 60		▲				5-5-14	193.1			POORLY GRADED SAND WITH CLAY (SP-SC) some clayey zones; lt brownish yellow; med dense; wet; subangular; poorly graded; fine to med grained	
SS 61		▲				10-12-14	191.6			CLAYEY SAND (SC); lt brown and lt yellowish brown with reddish brown zones; med dense; wet; subangular; poorly graded; fine to med grained; black wisps (Mn?)	
SS 62		▲				6-9-11	190.1	100		POORLY GRADED SAND WITH CLAY (SP-SC); with a clayey zone; lt brown with a lt reddish brown zone; med dense; wet; subangular; poorly graded; fine to med grained; trace heavies	
SS 63		▲				6-7-13	188.6			CLAYEY SAND (SC); some sand with clay zones; lt brown with lt brownish yellow zones; med dense; wet; subangular; poorly graded; fine to med grained; trace heavies	
SS 64		▲				10-15-17	187.1			same as above; med yellowish brown with v lt yellow zones; black pellets (Mn?)	
SS 65		○				18-30-34	185.6			POORLY GRADED SAND WITH CLAY (SP-SC) some clayey zones; lt brown and lt yellowish brown; dense; wet; subangular; poorly graded; fine to med grained; trace cse	
SS 66		○				18-29-42	184.1	105		POORLY GRADED SAND (SP) trace clay; lt brown; v dense; wet; rounded; poorly graded; fine to med grained; trace heavies	
SS 67		○				19-23-34	182.6			same as above with few lt orange clay pods; subrounded; abundant black staining (Mn?)	
SS 68		○				10-22-26	181.1			same as above with some med brown zones; some zones with clay; subangular	
SS 69		○				16-21-29	179.6	110		same as above; dense; subrounded; abundant heavies	
SS 70		○				15-25-26	178.1			same as above; with lt orange clay pods; v dense; subangular; trace heavies	
SS 71		○				11-18-19	176.6			POORLY GRADED SAND WITH CLAY (SP-SC); clayey sand at base of sample; lt brown and lt brownish yellow; dense; wet; subangular; poorly graded; fine to lwr cse grained; trace heavies; black wisps (Mn?)	
SS 72		○				8-11-15	175.1			same as above; interbedded clayey sand zones; lt brown;	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-18

A-80



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG		PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
		Northeast Expansion	NEX	4 OF 5	FB-18		
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 73		10-12-13	173.6			med dense; fine to med grained; black staining (Mn?)	
SS 74		8-20-14	172.1			CLAYEY SAND (SC) with sandy clay bands; lt brown with v lt greenish brown bands; med dense; wet; subangular; well graded; fine to cse grained; larger grains are subrounded to rounded	
SS 75		7-14-20	170.6	120		SANDY LEAN CLAY (CL) with clayey sand zones; med reddish brown with v lt brown zones; hard; wet; med plasticity; fine to med grained; trace mica; trace heavies	
SS 76		7-14-22	169.1			CLAYEY SAND (SC); lt reddish brown with v lt brown zones; dense; wet; subangular; poorly graded; fine grained	
SS 77		12-16-25	167.6			same as above; med yellowish brown with black Mn spots; fine to lwr med grained with Mn staining	
SS 78		8-17-26	164.8	125		SILTY SAND (SM); med yellowish brown; dense; wet; subangular; poorly graded; fine to lwr cse grained	
SS 79		18-43-48	163.3			POORLY GRADED SAND WITH SILT (SP-SM); med yellowish brown; v dense; wet; subangular; poorly graded; fine to lwr med grained	
SS 80		23-30-43	161.8			CLAYEY SAND (SC); med yellowish brown and lt greenish gray with brownish orange mottles; v dense; moist; subangular; poorly graded; fine to lwr med grained	
SS 81		26-27-31	160.3	130		POORLY GRADED SAND WITH CLAY (SP-SC); med yellowish brown with some lt yellowish gray zones; v dense; wet; subangular; poorly graded; fine to lwr med grained	
SS 82		13-32-50	158.8			CLAYEY SAND (SC); med yellowish brown with some lt greenish gray zones; v dense; wet; subangular; poorly graded; v fine to fine grained	
SS 83		30-32-42	157.3			same as above; with some lt gray zones	
SS 84		19-22-18	155.8			POORLY GRADED SAND WITH SILT (SP-SM); lt greenish brown and lt grayish brown; dense; wet; subangular; poorly graded; v fine to fine grained	
SS 85		9-11-23	154.1	135		SILTY SAND (SM); med yellowish brown and whitish brown; dense; wet; subangular; poorly graded; v fine to fine grained	
SS 86		26-35-47	152.6			same as above; med brown to orangish brown; v dense; v fine to lwr med grained	
SS 87		37-37-42	151.1			same as above; med yellowish brown with some lt gray zones; v fine to fine grained	
SS 88		26-23-30	149.6	140		POORLY GRADED SAND (SP) trace silt; lt gray clayey sand layer at 140 ft; med yellowish brown; v dense; wet; subangular; poorly graded; fine to lwr med grained	
SS 89		16-23-29	148.1			CLAYEY SAND (SC); med yellowish brown; v dense; wet; subangular; poorly graded; v fine to fine grained	
SS 90		19-20-30	146.6			POORLY GRADED SAND WITH SILT (SP-SM) some zones have clay; lt reddish brown with white bands; dense; wet; subangular; poorly graded; fine grained; trace mica; trace heavies	
SS 91		16-18-22	145.1	145		same as above; lt reddish brown with lt brownish yellow zones; med dense	
SS 92		13-39-43	143.6			same as above; some zones are silty; lt reddish brown with lt brown zones; v dense	
SS 93		18-13-25	142.1			CLAYEY SAND (SC) some zones have less clay; lt reddish brown; dense; wet; subangular; poorly graded; fine grained; trace mica; trace heavies	
SS 94		15-21-33	140.6	150		POORLY GRADED SAND (SP) trace silt; lt yellowish brown; v dense; wet; subangular; poorly graded; fine grained; trace mica; trace heavies	
SS 95		12-8-14	139.1			CLAYEY SAND (SC); med brownish red with v lt green wisps; med dense; wet; subangular; poorly graded; fine to lwr med grained; trace mica; trace heavies	
SS 96		6-9-11	137.6			same as above; med brownish yellow with med reddish brown zones and v lt green clay wisps	
SS 97		7-9-13	136.1			same as above; clayey at base of sample; med reddish brown with v lt green wisps; occasional rounded cse grains	
SS		10-16-19				LEAN CLAY WITH SAND (CL) with interbedded clayey	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-18

A-51



K-TRT-F-00001  
R/0

# GEOTECHNICAL LOG

PROJECT

Northeast Expansion

JOB NO.

NEX

SHEET NO.

5 OF 5

HOLE NO.

FB-18

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
SS 98		▲			14-20-19	134.6			<p>sand; v lt green with med and dk orange zones; hard; wet; med plasticity; sand is fine to lwr med grained; trace mica</p> <p>SANDY LEAN CLAY (CL); med reddish brown with dk orange zones and v lt green wisps; hard; wet; med plasticity; sand is fine to cse grained</p> <p>CLAYEY SAND (SC) sandy lean clay at top of sample; med reddish brown with lt yellow and dk orange zones and lt green clay wisps; v dense; wet; subangular; poorly graded; fine to med grained</p> <p>WELL GRADED SAND (SW) trace clay to clayey; lt yellow and orange with med to dk orange zones; v dense; wet; subrounded; well graded; fine to cse grained; probable Congaree</p> <p>Total depth of boring 159.33.</p>	Hole abandoned with grout mix per 3Q5.
SS 99					133.1					
SS 100					41-50/5.5 in	131.6				
SS 101	○	▲			41-50/4 in	130.8				

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-18

A-82





K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 4</b>	HOLE NO. <b>FB-19</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 79781 E 54979</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>4/27/98</b>	COMPLETED <b>4/29/98</b>	DRILLER <b>M Rizer/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>144.5</b>
GROUND EL. <b>273.6</b>	DEPTH/EL. GROUND WATER <b>7 / 7</b>	LOGGED BY: <b>N. Kidd/SAIC</b>				

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
						273.6				
							5			Hand auger to 7 feet to check for interferences.
SS 1	▲			○	6-10-14				CLAYEY SAND (SC); light reddish yellow; medium dense; damp; subangular, poorly graded; fine to medium grained	
SS 2	▲			○	7-8-13	265.1			same as above; light yellow, light red, and light orange	
SS 3		▲		○	14-16-25	263.6	10		same as above; medium yellowish red with light yellow and white mottles; dense	
SS 4			▲	○	15-31-29	262.1			same as above; medium yellowish red with light reddish purple bands; very dense	
SS 5			▲	○	17-27-25	260.6			same as above; medium yellow with light to medium red zones and light gray mottles	
SS 6	▲			○	12-16-17	259.1	15		same as above; light brownish yellow with white wisps; dense	
SS 7	▲			○	7-14-23	257.6			same as above; with light red	
SS 8	▲			○	11-13-16	256.1			same as above; medium dense; moist	
SS 9	▲			○	11-14-19	254.6			same as above; with zones of sand with clay; light brownish yellow; dense	
						253.1	20			
SS 10	▲			○	9-14-15	248.1	25		POORLY GRADED SAND WITH CLAY (SP-SC) some areas are clayey; light brownish yellow with light brown bands and white wisps; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 11	▲			○	7-11-12	243.1	30		same as above; light brownish yellow with white wisps and light reddish bands; trace mica; some zones are wet	
SS	▲			○	7-10-14				same as above; with two bands of clayey sand; various	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-19</b>
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A-53



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			Northeast Expansion	NEX	2 OF 4	FB-19		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
12				238.1			shades of yellowish brown; wet	
SS 13		▲ 35 ○ 55	6-11-11	233.1	40		CLAYEY SAND (SC); light brownish yellow; medium dense; moist; subangular; poorly graded; fine to coarse grained; black wisps (Mn?); trace mica	
SS 14		▲ 45	11-16-24	228.1	45		POORLY GRADED SAND (SP) trace clay; some zones with clay; light brown; dense; moist; subangular; poorly graded; fine to medium grained with some lower coarse; trace heavies	
SS 15		▲ 35 ○ 55	9-14-18	223.1	50		same as above; clay content varies from trace to clayey; light brown with light yellow pods; medium grained	
SS 16		▲ 35 ○ 55	11-12-14	218.1	55		POORLY GRADED SAND WITH SILT (SP-SM); light brown with very light brown zones; medium dense; moist; subangular; poorly graded; fine to medium grained trace coarse; some zones are wet	
SS 17		▲ 45	16-17-23	213.1	60		WELL GRADED SAND WITH CLAY (SW-SC); light brown; dense; moist; subrounded; well graded; fine to coarse grained; trace heavies; some zones are wet	
SS 18		▲ 35 ○ 55	7-9-13	208.1	65		SANDY LEAN CLAY (CL); light yellow with medium reddish brown zones; very stiff; moist; medium plasticity; sand is fine to medium grained with some coarse grains; trace heavies	
SS 19		▲ 35 ○ 55	4-6-19	203.1	70		CLAYEY SAND (SC); light yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace heavies; top 0.4' of this spoon was the same as the last sample (tan clay); contact is sharp	
SS		▲ 35 ○ 55	13-15-16				POORLY GRADED SAND (SP) trace clay; light brown;	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-19

A-84



K-TRT-F-00001

R/10

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	3 OF 4	FB-19				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
							198.1			dense; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS 21		▲			○	5-6-14	193.1	80		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; light yellowish brown with white wisps; medium dense; wet; subangular; poorly graded; fine to medium grained; black zones (Mn?)	
SS 22		▲				4-10 in-1/2 in-2	188.1	85		same as above; white zones are clayey sand; light brownish yellow with light yellow and white zones; very loose; trace heavies	
SS 23		▲				WR/2 in-3/6 in-1/4 in-3	186.6			CLAYEY SAND (SC); light yellow with very light brown zones; very loose; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS 24		▲				3-4-13	185.1			same as above; interbedded sand with clay and sandy lean clay; light yellow; medium dense; fine to coarse grained; black wisps (Mn?)	
								90			
SS 25			○		▲	18-42-50	180.1	95		POORLY GRADED SAND (SP) trace clay; light brown with a light reddish brown wisp; very dense; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS 26		▲				9-9-11	175.1	100		CLAYEY SAND (SC); light reddish brown with very light brown zones; medium dense; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS 27		▲			○	10-13-25	170.1	105		same as above; light reddish brown with very light greenish yellow clay wisps; dense; black pellets (Mn?)	
SS 28		▲			○	9-20-22	165.1	110		POORLY GRADED SAND (SP) trace clay; yellow zones contain more clay; light brown with light yellow wisps; dense; wet; subrounded; poorly graded; fine to lower medium grained; trace heavies	
SS 29		▲			○	11-9-27	160.1			POORLY GRADED SAND WITH CLAY (SP-SC) intermixed with clayey sand; medium yellowish red with light brown zones and light yellow clay wisps; dense; wet; subangular; poorly graded; fine grained; trace heavies	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-19

A-85



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	4 OF 4	FB-19				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 30						24-50-50/4 m	155.3			POORLY GRADED SAND (SP) trace clay; yellowish red bands are sand with clay; light brown with medium yellowish red wispy bands; very dense; wet; subrounded; poorly graded; fine grained; trace heavies; trace mica	
SS 31		▲				10-5-4	150.1			SILTY SAND (SM) some zones are sand with silt; med yellowish red; loose; wet; subangular; poorly graded; fine grained; black speckles (Mn?); trace heavies; silicified turritella shell	
SS 32		▲				WR 2 in-1/4 in-5-6	148.6	125		CLAYEY SAND (SC) some zones appear to be silty; med yellowish red with v lt green clay wisps; med dense; wet; subangular; poorly graded; fine grained; trace heavies	
SS 33		▲				4-7-7	143.1	130		same as above	
SS 34		▲				6-8-13	138.1	135		SILTY SAND (SM); light greenish brown; medium dense; wet; subangular; poorly graded; fine grained; black zones (Mn?); trace heavies; trace mica	
SS 35				○		9-20-40	133.1	140		CLAYEY SAND (SC); medium reddish brown with very light green wisps; very dense; wet; subangular; well graded; fine to coarse grained	
SS 36						100/6"	129.1			WELL GRADED SAND (SW) trace clay; light brown; very dense; wet; subrounded; well graded; fine to medium grained; trace heavies; trace mica Total depth of boring 144.5 feet	Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-19

A-86



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 3</b>	HOLE NO. <b>FB-20</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 78642 E 55518</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>4/29/98</b>	COMPLETED <b>5/13/98</b>	DRILLER <b>J Corbitt/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>112.7</b>
GROUND EL. <b>301.4</b>		DEPTH/EL. GROUND WATER <b>2 /</b> <b>1 /</b>		LOGGED BY: <b>C. Rothammer/WSRC</b>		

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
					301.4					
SS 1	▲			○	9-11-14	293.9			SILTY SAND (SM); with clay; medium reddish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; lithic fragments	Hand auger to 6 feet to check for underground interferences and then switch to mud rotary.
SS 2	▲			○	7-10-15	292.4			CLAYEY SAND (SC); dark yellowish brown and red with tan; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 3		▲		○	9-21-31	290.9			CLAYEY SAND WITH GRAVEL (SC); very dense; same as above	
SS 4			▲	○	18-31-40	289.4			CLAYEY SAND (SC); dark brownish yellow with tan; very dense; moist; subangular; poorly graded; fine to medium grained; lithic fragments	
SS 5	▲			○	24-17-14	287.9			CLAYEY SAND WITH GRAVEL (SC); medium purple, orange, and yellow; dense; moist; subangular; well graded; fine to medium grained	
SS 6	▲			○	6-12-16	286.4			SANDY FAT CLAY (CH); medium purple with white; very stiff; moist; high plasticity	
SS 7	▲			○	6-11-19	284.9			CLAYEY SAND WITH GRAVEL (SC); medium white, yellow, orange, and purple; medium dense; wet; subangular; well graded; fine to coarse grained	
SS 8	▲			○	10-14-30	283.4			SILTY SAND (SM) with clay; medium reddish brown; dense; wet; subangular; poorly graded; fine to medium sand	
SS 9	▲			○	10-15-17	281.9			same as above; reddish brown with yellow	
SS 10	▲			○	7-12-17	280.4			same as above; medium dense	
SS 11	▲			○	12-23-20	278.9			same as above; dense	
SS 12	▲			○	12-18-17	277.4			POORLY GRADED SAND WITH SILT (SP-SM); medium brownish red; dense; wet; subangular; poorly graded; fine to medium grained	
SS 13	▲			○	11-15-22	275.9			CLAYEY SAND (SC); medium brownish red with white; dense; wet; subangular; poorly graded; fine to medium grained	
SS 14	▲			○	15-19-21	274.4			POORLY GRADED SAND WITH SILT (SP-SM); medium brownish red, yellow, and orange; dense; wet; subangular; poorly graded; fine to medium grained	
SS 15	▲			○	12-14-18	272.9			SILTY SAND (SM); medium brownish red, white, and yellow; banded; dense; moist; subangular; poorly graded; fine to very fine grained	
SS 16	▲			○	10-18-21	271.4			same as above; light reddish brown and red	
SS 17	▲			○	17-19-21	269.9			same as above; light brown with yellow and orange; subrounded; well graded; fine to medium grained	
SS 18	▲			○	11-14-16	268.4			same as above; with clay; medium red, white, yellow, purple, and orange; some mottling; medium dense; subangular; poorly graded	
SS 19	▲			○	10-17-21	266.9			same as above; dense	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-20</b>
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A-87



K-TRT-F-00001

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GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	2 OF 3	FB-20				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 20						16-18-28	265.4			same as above; dark brownish red with white and yellow	
SS 21						10-16-18	263.9			same as above; with clay; dark red with yellow	
SS 22						14-14-19	262.4			same as above; dark red, white, and yellow	
SS 23						9-19-22	260.9	40		same as above	
SS 24						15-16-16	259.4			same as above; medium brownish yellow with red and white	
SS 25						12-19-25	257.9			CLAYEY SAND (SC); medium brownish yellow with white; dense; moist; subangular; poorly graded; fine to medium graded	
SS 26						9-16-19	256.4	45		SILTY SAND (SM) with clay; medium dark red, white, and yellow; mottled; dense; moist; subangular; poorly graded; fine to medium graded	
SS 27						14-15-26	254.9			CLAYEY SAND (SC); medium dark red, white, and yellow; mottled; dense; moist; subangular; poorly graded; fine to medium graded	
SS 28						20-22-26	253.4			same as above; dark red; wet; trace coarse sand	
SS 29						19-30-26	251.9			SILTY SAND (SM); dark red, white, yellow, and purple; very dense; wet; subangular; poorly graded; fine to medium graded; trace coarse sand	
SS 30						12-20-27	250.4	50		POORLY GRADED GRAVEL WITH SILT (GP-GM); medium red, yellow, and tan; dense; wet; subangular; poorly graded; fine to coarse graded	
SS 31						6-15-25	248.9			POORLY GRADED SAND WITH SILT (SP-SM); medium reddish brown with yellow; dense; wet; subrounded; poorly graded; fine to medium graded, trace gravel	
SS 32						10-10-6	247.4			CLAYEY SAND (SC); medium brownish white and yellow; mottled; medium dense; moist; subangular; well graded; fine to coarse graded	
SS 33						8-10-10	245.9	55		SILTY SAND (SM) with clay; medium brownish red; medium dense; moist; subangular; well graded; fine to medium graded	
SS 34						6-10-12	244.4			same as above; medium brownish yellow	
SS 35						16-20-23	242.9			WELL GRADED SAND WITH SILT (SW-SM); medium orange; dense; wet; subrounded; well graded; fine to coarse graded	
SS 36						6-6-8	241.4	60		CLAYEY SAND (SC); medium brownish orange with white; medium dense; wet; subangular; well graded; fine to coarse graded	
SS 37						3-8-13	239.9			SILTY SAND (SM) with clay; medium brownish yellow; medium dense; wet; subangular; well graded; fine to coarse graded	
SS 38						16-20-18	238.4			POORLY GRADED SAND WITH SILT (SP-SM); medium brownish orange; dense; wet; angular; poorly graded; fine to coarse graded	
SS 39						19-21-26	236.9			no recovery	Catcher broken
SS 40						12-20-22	235.4	65		SILTY SAND (SM); medium orange; dense; moist; subangular; poorly graded; fine to medium graded	
SS 41						10-11-24	233.9			CLAYEY SAND (SC); medium brownish orange; dense; moist; subangular; poorly graded; fine to medium graded	
SS 42						17-28-34	232.4			SILTY SAND (SM) with clay; medium brownish orange with pink and white; very dense; wet; subangular; well graded; fine to coarse graded; lenses of moist clayey sand	
SS 43						10-26-28	230.9	70		POORLY GRADED SAND WITH SILT (SP-SM); medium brownish orange with medium gray; very dense; wet; subangular; poorly graded; medium to coarse graded	
SS 44						10-11-21	229.4			SILTY SAND (SM); medium brownish orange; dense; wet; subangular; poorly graded; fine to medium graded	
SS 45						21-24-12	227.9			no recovery	
SS 46						13-13-13	226.4			CLAYEY SAND (SC); medium brownish orange; medium dense; moist; subangular; well graded; fine to coarse	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-20

A-88



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
			Northeast Expansion	NEX	3 OF 3	FB-20		
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 47			6-10-10	224.9			grained, trace gravel same as above; with silt; medium brownish yellow with black; wet; lithic fragment; Mn present; lenses of fat clay	
SS 48			12-21-22	223.4			SANDY LEAN CLAY (CL); medium brownish yellow with white, black, and brown; mottled; hard; moist; medium plasticity; Mn present	
SS 49			7-10-15	221.9			same as above; with orange and tan zones; very stiff; lenses of fat clay	
SS 50			19-16-10	220.4	80		FAT CLAY (CH); light yellowish brown with black streaks; very stiff; moist; high plasticity	
SS 51			10-17-21	218.9			CLAYEY SAND (SC); medium yellowish brown with black, white, and brown; mottled; dense; moist; subangular; poorly graded; fine to medium grained; Mn present; clay lenses	
SS 52			13-19-22	217.4			same as above; with silt; wet	
SS 53			17-19-22	215.9	85		SILTY SAND (SM) with clay; medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 54			10-15-20	214.4			CLAYEY SAND (SC); medium yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 55			18-7-10	212.9			POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish orange; medium dense; wet; subangular; poorly graded; fine to medium grained; trace gravel	
SS 56			14-24-36	211.4			WELL GRADED SAND WITH CLAY (SW-SC); medium brownish orange; very dense; wet; subangular; well graded; fine to coarse grained	
SS 57			29-15-14	209.9	90		POORLY GRADED SAND WITH SILT (SP-SM); light brown with tan; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 58			10-19-23	208.4			POORLY GRADED SAND (SP) trace silt; light brown; dense; moist; subangular; poorly graded; fine to medium-grained; trace coarse sand	
SS 59			10-16-15	206.9			SILTY SAND (SM); brownish orange; dense; moist; subangular; poorly graded; fine to medium grained	
SS 60			19-25-31	205.4	95		same as above (top 0.6 ft.); remaining portion is yellowish brown fat clay with sand (CH); hard; moist; high plasticity	
SS 61			16-18-21	203.9			same as above; medium brownish orange with black; wet; Mn present	
SS 62			8-13-25	202.4			CLAYEY SAND WITH GRAVEL (SC); medium brown; dense; moist; subangular; well graded; fine to very coarse grained	
SS 63			4-9-19	200.8	100		CLAYEY SAND (SC) with 0.4 ft thick grayish brown lean clay layer at 100.0 ft; medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium-grained	Loas circulation (5/6/98).
SS 64			13-16-19	199.3			same as above; medium yellowish brown to grayish brown; dense; some Mn staining	
SS 65			17-18-19	197.8			POORLY GRADED SAND (SP) trace clay; medium grayish brown; dense; wet; subangular; poorly graded; fine to medium grained	Lost circulation on 5/12/98 while attempting to redrill to 180 feet for geophysical logging.
SS 66			12-12-15	196.3	105		same as above; trace silt; medium dense; with black Mn staining	
SS 67			9-14-15	194.8			POORLY GRADED SAND WITH SILT (SP-SM); medium grayish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace Mn staining	
SS 68			10-9-9	193.3			POORLY GRADED SAND WITH CLAY (SP-SC); medium grayish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 69			1-2-1	191.8			LEAN CLAY WITH SAND (CL); light grayish white, light brown, and black; soft; wet; medium plasticity; sand fraction is very fine to fine grained	Lost circulation and could not regain. Pumped two mud tubs into hole with 500 gallons water will take one more spoon (5/7/98).
SS 70			WR/37 in	188.7	110		CLAYEY SAND (SC); medium grayish brown; very loose; wet; subangular; poorly graded; fine to medium grained	Hole abandoned with grout mix per 3Q5.
							Total depth of boring 112.7 feet.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-20

A-39



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>		JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 3</b>	HOLE NO. <b>FB-20A</b>
SITE <b>APSF-NE</b>			COORDINATES <b>N 78642 E 55518</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>4/29/98</b>	COMPLETED <b>5/13/98</b>	DRILLER <b>J Corbitt/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>120.0</b>	
GROUND EL. <b>301.4</b>	DEPTH/EL. GROUND WATER <b>∇ / ∇</b>	LOGGED BY: <b>C. Rothammer/WSRC</b>					

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						301.4					Hand auger to 6 feet to check for underground interferences. Then switch to mud rotary.  Straight drill to 106.5 feet to begin sampling.
							5				
							10				
							15				
							20				
							25				
							30				
							35				

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-20A</b>
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A-90





K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT Northeast Expansion		JOB NO. NEX	SHEET NO. 2 OF 3	HOLE NO. FB-20A			
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		○ RECOVERY %	+ ATT. LIMITS %								
		20	40	60	80						
								45			
								50			
								55			
								60			Adding quick gel.
								65			
								70			
								75			
								80			
								85			

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-20A

A-71



K-TRT-F-00001

R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	3 OF 3	FB-20A				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 1						18-48-45	193.4			POORLY GRADED SAND WITH SILT (SP-SM); medium yellowish brown; very dense; wet; subangular; poorly graded; fine to medium grained	Lost circulation at 102 feet. Mixed two batches OF grout. Or 3/11/98 tagged grout at 75 feet. Continue drilling down to 106.5 feet and started sampling.
SS 2						17-20-22	191.9			same as above; dense	
SS 3						17-21-30	190.4	110		POORLY GRADED SAND (SP) trace silt; medium yellowish brown; very dense; wet; subangular; poorly graded; fine to coarse grained	
SS 4						9-10-12	188.9			WELL GRADED SAND WITH CLAY (SW-SC); medium yellowish brown; medium dense; wet; subangular; well graded; fine to coarse grained. Mn present	
SS 5						8-10-13	187.4			FAT CLAY (CH); med yellowish brown with red and black streaks; v stiff; moist; high plasticity; upper 6 inches are clayey sand; black is Mn	
SS 6						16-25-25	185.9	115		POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown; dense; wet; subangular; poorly graded; very fine to fine grained	
SS 7						10-12-14	184.4			CLAYEY SAND (SC); medium yellowish brown with tan, white, and black; medium dense; wet; subangular; well graded; fine to coarse grained	
SS 8						4-16-21	182.9			same as above; dense	
SS 9						13-14-13					
Total depth of boring 120 feet.										Lost circulation, never recovered. Hole abandoned with grout mix per 3Q5.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-20A

A-92



K-TRT-F-0000/  
R/O

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 4</b>	HOLE NO. <b>FB-22</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 79779 E 54828</b>		ANGLE FROM HORIZONTAL <b>'90</b>		
BEGUN <b>5/1/98</b>	COMPLETED <b>5/7/98</b>	DRILLER <b>M Rizer/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>144.3</b>
GROUND EL. <b>276.7</b>		DEPTH/EL. GROUND WATER <b>▽ /</b>		LOGGED BY: <b>N. Kidd/SAIC</b>		

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						276.7					
SS 1		▲	○			6-7-12			POORLY GRADED SAND (SP) trace clay; light brown with dark reddish bands; medium dense; moist; subangular; poorly graded; fine to medium grained; trace heavies; probable fill no recovery	Hand auger to 7 feet to check for underground interferences.  The shoe was plugged with crusher run that fell in from the surface.  Catcher looks normal, traces of medium sand (cave material? or sample?). Catcher looks normal, bottom of shoe has been slightly deformed in places.	
SS 2		▲				7-14-14	268.2				
SS 3		▲				6-7-8	266.7		CLAYEY SAND (SC); light yellow with dark red zones; medium dense; damp; subangular; poorly graded; fine to medium grained		
SS 4		▲				8-17-23	265.2		LEAN CLAY (CL) with interlayered silt and very fine grained sand zones; medium red, white, and dark yellowish orange; hard; damp; medium plasticity; sand is very fine grained; abundant mica		
SS 5		▲				9-14-16	263.7		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; light reddish yellow grading downward to light red; medium dense; damp; subangular; poorly graded; fine to medium grained		
SS 6		▲				10-20-22	262.2	15	same as above; light yellowish brown with white wisps; dense; dry		
SS 7		▲				12-15-20	260.7		same as above; light brownish yellow with white wisps; trace mica		
SS 8		▲				6-11-14	259.2		CLAYEY SAND (SC); light brownish yellow with white wisps; medium dense; dry; subangular; poorly graded; fine to medium grained; trace mica		
SS 9		▲				8-11-12	257.7		same as above		
SS 10		▲				8-12-13	256.2	20	same as above; light yellow with light red and white bands; damp; trace mica		
SS 11						14-19-20	254.7		no recovery		
SS 12						14-19-19	253.2		no recovery		
SS 13		▲				12-17-17	251.7	25	CLAYEY SAND (SC); light brownish yellow with white wisps; dense; damp; subangular; poorly graded; fine to medium grained; bottom of the interval is less clayey		
SS 14		▲				11-14-15	250.2		POORLY GRADED SAND WITH CLAY (SP-SC) some bands of clayey sand; light brownish yellow with white wisps; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 15		▲				10-12-13	248.7		CLAYEY SAND (SC); light brownish yellow with white wisps; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 16		▲				10-11-14	247.2	30	POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; light yellowish brown with light red bands and white wisps; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 17		▲				13-15-16	245.7		same as above; light brownish yellow with white wisps; dense		
SS 18		▲				12-12-14	244.2		same as above; light yellowish brown with white wisps and dark orange bands; medium dense; trace mica		
SS		▲				9-10-12	242.7		same as above; clay content increases with depth; grain size		

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-22</b>
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A-92



K-TRT-F-00001

R/10

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	2 OF 4	FB-22				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
19						241.2				decreases; medium brownish red with white wisps; wet; subrounded; trace lower coarse grains	
SS 20						239.7				same as above; medium brownish red	
SS 21						238.2				no recovery; catcher looks normal	
SS 22						236.7	40			CLAYEY SAND (SC); light yellow and medium yellowish brown; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 23						235.2				same as above; interlayered with sand with clay; light brown, medium orange, and medium yellow; black wisps (Mn?); trace heavies	
SS 24						233.7				POORLY GRADED SAND WITH CLAY (SP-SC); light yellowish brown; medium dense; moist; subangular; poorly graded; fine to medium grained; trace lower coarse grains	
SS 25						232.2				WELL GRADED SAND WITH CLAY (SW-SC); light brown; dense; moist; subangular; well graded; fine to coarse grained	
SS 26						230.7	45			POORLY GRADED SAND WITH CLAY (SP-SC); light brown; dense; wet; subangular; poorly graded; fine to medium grained; trace lower coarse grains	
SS 27						229.2				POORLY GRADED SAND WITH SILT (SP-SM); medium brown; medium dense; wet; subangular; poorly graded; fine to upper lower coarse grained	
SS 28						227.7				POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; dense; wet; subangular; poorly graded; fine to coarse grained	
SS 29						226.2	50			same as above; fine to medium grained	
SS 30						224.7				POORLY GRADED SAND (SP) trace clay; medium brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 31						223.2				same as above; trace silt; fine to upper medium grained	
SS 32						221.7	55			POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; dense; wet; subangular; poorly graded; fine to lower medium grained	
SS 33						220.2				CLAYEY SAND (SC); medium brown; medium dense; wet; subangular; poorly graded; fine to medium coarse grained; some caved crushed stone	
SS 34						218.7				POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 35						217.2				POORLY GRADED SAND (SP) trace clay; medium brown; very dense; wet; subangular; poorly graded; fine to lower coarse grained	
SS 36						215.7	60			same as above; trace silt; fine to coarse grained; trace fine gravel	
SS 37						213.8				same as above; fine to medium grained	
SS 38						212.3				POORLY GRADED SAND WITH CLAY (SP-SC); medium brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 39						210.8	65			CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 40						209.3				same as above	
SS 41						207.8				same as above; with a few thin sandy clay interbeds and grayish brown zones; loose; fine to upper medium grained	
SS 42						206.3	70			same as above; medium dense; angular; fine to lower coarse grained	
SS 43						204.8				LEAN CLAY WITH SAND (CL); medium brownish yellow and reddish brown; stiff; wet; medium plasticity; sand fraction is fine grained	
SS 44						203.3				CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 45						201.8				POORLY GRADED SAND WITH CLAY (SP-SC); medium yellowish brown; dense; wet; subangular; poorly graded; fine to lower medium grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-22

A-94



K-TRT-F-00001  
2/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.					
			Northeast Expansion	NEX	3 OF 4	FB-22					
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 46						12-16-19	200.3			same as above; fine to medium grained	
SS 47						16-23-27	198.8			same as above	
SS 48						25-22-16	197.3			same as above; fine to upper medium grained	
SS 49						4-5-6	195.8	80		CLAYEY SAND (SC) with 0.2 ft thick lean clay interbeds; medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; clay layers have charcoal fragments	
SS 50						7-9-10	194.3			LEAN CLAY (CL) trace sand with sandy clay interbeds; med brownish yellow; v stiff; wet; med plasticity; sand fraction is fine grained	
SS 51						6-10-10	192.4			LEAN CLAY WITH SAND (CL); med brownish yellow; v stiff; moist; med plasticity; sand fraction is v fine to fine grained	
SS 52						9-11-12	190.6	85		same as above; portions are sandy; med grayish yellow to brownish yellow	
SS 53						7-10-10	189.1			LEAN CLAY (CL) trace sand with few thin layers with sand; med brownish yellow; v stiff; moist; med plasticity; sand is v fine to fine grained	
SS 54						3-6-9	187.2			CLAYEY SAND (SC); lt brown with v lt brown zones; med dense; wet; subangular; poorly graded; fine to med grained	
SS 55						6-8-14	185.7	90		POORLY GRADED SAND WITH CLAY (SP-SC); lt brown with lt orange zones; med dense; wet; subangular; poorly graded; fine to med grained; trace cse	
SS 56						8-12-24	184.2			CLAYEY SAND (SC); med reddish brown; dense; wet; subangular; well graded; fine to lwr cse grained	
SS 57						13-13-14	182.7			POORLY GRADED SAND WITH CLAY (SP-SC); some zones are clayey; lt yellowish brown with med brown zones; med dense; wet; subangular; poorly graded; fine to med grained	
SS 58						6-8-9	181.2	95		CLAYEY SAND (SC); some zones are sand with clay; med reddish brown with v lt brown zones; med dense; wet; subangular; poorly graded; fine to med grained; trace cse; black mottles (Mn?)	
SS 59						7-6-8	179.7			same as above; med reddish brown with lt brown zones; well graded; fine to lwr cse grained; black zones (Mn?); trace heavies	
SS 60						5-8-11	178.2			same as above; med reddish brown with v lt brown zones; poorly graded; fine to med grained; trace mica	
SS 61						5-7-11	176.7	100		same as above; med reddish brown with v lt brown clay wisps	
SS 62						6-5-8	175.2			POORLY GRADED SAND WITH SILT (SP-SM); lt reddish brown with v lt brown zones; med dense; wet; subangular; poorly graded; fine to med grained; trace heavies; trace mica	
SS 63						8-13-15	173.7			SILTY SAND (SM); sand with silt zones; lt reddish brown with v lt brown zones; med dense; wet; subangular; poorly graded; fine to med grained; trace heavies; some zones contain silicified chips	
SS 64						12-35-50	172.2			POORLY GRADED SAND (SP) trace clay; some zones with clay; lt brown with lt orange zones; v dense; wet; subangular; poorly graded; fine grained; trace heavies; trace mica	
SS 65						22-50-50/4 in	170.9	105		same as above	no recovery; catcher looks normal
SS 66						20-29-37	169.2			POORLY GRADED SAND (SP) trace clay; some zones with clay; lt brown with lt orange zones; v dense; wet; subangular; poorly graded; fine grained; trace heavies; trace mica	
SS 67						25-33-29	167.7			same as above with lt gray lean clay wisps	
SS 68						12-34-41	166.2	110		POORLY GRADED SAND WITH SILT (SP-SM) some zones trace silt; with lt greenish gray lean clay wisps; lt orange with lt brown zones; v dense; wet; subangular; poorly graded; fine grained; trace heavies; trace mica	
SS 69						17-27-35	164.7			same as above	
SS 70						13-16-38	163.2			same as above; with some clayey zones	
SS 71						28-34-49	161.7				

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-22

A-95



K-TRT-F-00001

R/L

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
			Northeast Expansion	NEX	4 OF 4	FB-22				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)			BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60						
		○ RECOVERY %								
		+ ATT. LIMITS %								
SS 72					19-35-40	160.2			POORLY GRADED SAND (SP) trace silt; some zones with silt; lt brown with lt orange zones; v dense; wet; subangular; poorly graded; fine grained; trace mica	
SS 73					11-31-50/4 in	158.9			same as above; trace clay; some zones with clay; trace heavies; most of the sample is slough	
SS 74					14-35-50	157.2			same as above with lt yellow clay wisps	
SS 75					21-33-49	155.7	120		POORLY GRADED SAND (SP) trace clay; sand with clay band and wisps of gray clay; lt orange with lt brown zones; v dense; wet; subangular; poorly graded; fine grained; trace heavies; trace mica	
SS 76					6-9-15	154.2			POORLY GRADED SAND WITH CLAY (SP-SC); med reddish brown with lt brown zones; med dense; wet; subangular; poorly graded; fine grained; trace heavies; sloughed material contains shell fragments	
SS 77					8-8-10	152.7			CLAYEY SAND (SC) some zones are sand with clay; med reddish brown; med dense; wet; subangular; poorly graded; fine grained; trace heavies; trace mica	
SS 78					6-6-9	151.2	125		same as above; med yellowish brown; black wisps (Mn?); turritella shell fragments	
SS 79					WR 9 in-5/3 in-11	149.7			same as above; med reddish brown; trace mica	
SS 80					10-14-19	148.2			same as above; with lt greenish gray clay wisps; dense; black pellets (Mn?)	
SS 81					11-16-20	146.7	130		same as above; abundant turritella shells	
SS 82					7-10-18	145.2			same as above; med dense	
SS 83					6-15-41	143.7			same as above; v dense; fine to med grained; no turritella shells	
SS 84					13-17-14	142.2			LEAN CLAY WITH SAND (CL); lt greenish brown with lt greenish gray mottles; hard; wet; low plasticity; sand is fine grained; trace med grains	
SS 85					WR 9 in-1/3 in-8	140.7	135		SILTY SAND (SM); lt brownish yellow; loose; wet; subangular; poorly graded; fine grained; trace mica	
SS 86					17-9-14	139.2			POORLY GRADED SAND WITH SILT (SP-SM) and silicified sand chips; lt yellowish brown; med dense; wet; subangular; poorly graded; fine grained; trace mica	
SS 87					4-12-23	137.7			LEAN CLAY WITH SAND (CL); med reddish brown with lt grayish green wisps; hard; wet; med plasticity; sand is fine grained; trace med grains; trace mica	
SS 88					12-19-23	136.2	140		CLAYEY SAND (SC); lt orange with dark orange bands and lt green interlaminated clay; dense; wet; subangular; poorly graded; fine grained; trace mica	
SS 89					14-21-29	134.7			same as above; med reddish brown with lt green interlaminated clay; fine to med grained; trace cse grains	
SS 90					11-50-50/3 in	133.5			same as above; bottom 0.1 ft is sand (Congaree?); med reddish brown and med brown with lt brown and yellowish brown; v dense; 0.3 ft from bottom of interval is a 0.1 ft thick silicified fine to med sand	
SS 91					49-50/4 in				WELL GRADED SAND (SW) trace clay; lt orange and lt brown; v dense; wet; subrounded; well graded; fine to lwr cse grained; trace mica; Congaree	Hole grouted with grout mix per 3Q5
									Total depth of boring 144.3 feet.	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-22

A-96



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-25</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 79242 E 55261</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>5/26/98</b>	COMPLETED <b>5/28/98</b>	DRILLER <b>J Corbitt/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>165.5</b>
GROUND EL. <b>289.1</b>	DEPTH/EL. GROUND WATER <b>2 / 1</b>	LOGGED BY: <b>N. Kidd/SAIC</b>				

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60	80						
						289.1				
							5			Hand auger to 7 feet to check for interferences.
SS 1					9-20-34	280.6			CLAYEY SAND (SC); light red and light orange with white mottles; very dense; damp; subangular; poorly graded; fine to medium graded	
SS 2					15-17-21	279.1			same as above; light red; dense	
SS 3					11-16-20	277.6	10		POORLY GRADED SAND WITH CLAY (SP-SC); light red and light orange with a white, very clean band of sand; dense; damp; subangular; poorly graded; fine to medium graded; trace heavies	
SS 4					10-16-16	276.1			CLAYEY SAND (SC); with sand with clay zones; light red with very light yellow band; dense; damp; subangular; poorly graded; fine to medium graded	
SS 5					8-10-10	274.6			same as above; some zones are silty; light red; medium dense; fine graded; trace medium; trace mica	
SS 6					5-7-10	273.1	15		POORLY GRADED SAND WITH CLAY (SP-SC); light red with dark brown mottles; medium dense; moist; subangular; poorly graded; fine to medium graded	
SS 7					6-11-17	271.6			CLAYEY SAND (SC) trace gravel; light orange and red with light brownish yellow zones and white wispy clays; medium dense; damp; subangular; poorly graded; medium to coarse graded; trace gravel; silicified chips	
SS 8					10-15-15	270.1			SILTY SAND (SM) with interlaminated clayey sand; light red, light yellow, and light purplish gray; medium dense; moist; subangular; poorly graded; fine to medium graded; trace mica	
SS 9					9-10-15	268.6	20		same as above; light red with very light pinkish brown zones	
SS 10					17-19-23	263.6	25		CLAYEY SAND (SC) with silty sand laminae; light red and light brownish orange; dense; moist; subangular; poorly graded; fine to medium graded; trace mica	
SS 11					12-18-18	258.6	30		SILTY SAND (SM) with clayey sand zones and a layer of light red lean clay with sand; light red, light purple, light grayish yellow, and light orange with light purple clay wisps; dense; damp; subangular; poorly graded; fine to medium graded	
SS					7-7-9				same as above; some zones are clayey; some zones are	

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-25</b>
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K-TRT-F-00001

R/10

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	2 OF 5	FB-25				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
12						253.6				sandy silt; multicolored bands with red, yellow, orange, brown, and light gray; medium dense; wet; fine grained; trace mica	
SS 13		▲	○			248.6	40	▨		CLAYEY SAND (SC); light brownish yellow with white wisps; medium dense; damp; subangular; poorly graded; fine to medium grained	
SS 14		▲	○			243.6	45	▨		SILTY SAND (SM) some zones are silty; occasional sand with clay stringers; light red and light orange with light yellow and white mottles; medium dense; damp; subangular; poorly graded; fine to medium grained; trace mica	
SS 15		▲	○			238.6	50	▨		CLAYEY SAND (SC) with silty zones; medium red, light red, medium yellowish brown, and white; dense; moist; subangular; poorly graded; fine to medium grained; trace mica; bottom of interval is wet	
SS 16		▲	○			233.6	55	▨		same as above; light orange, medium red, light brownish yellow, and medium yellowish brown with white wispy clay; wet; no mica observed	
SS 17		▲	○			228.6	60	▨		POORLY GRADED SAND WITH CLAY (SP-SC) and clay laminae; light brown, light yellow, and light purple; dense; wet; subangular; poorly graded; fine to medium grained	
SS 18		○	▲			223.6	65	▨		CLAYEY SAND (SC) with a band of sand with clay; medium orange with white clay pellets; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 19		▲	○			218.6	70	▨		POORLY GRADED SAND WITH CLAY (SP-SC) some very thin clay stringers; medium reddish brown; dense; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS		○	▲					▨		same as above; medium red and light brown	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-25

A-98





K-TRT-F-00001

R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	3 OF 5	FB-25				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
							213.6				
SS 21		▲		○		16-21-16	208.6	80		WELL GRADED SAND WITH CLAY (SW-SC) some zones are clayey; light brown and light brownish yellow with white clay wisps; dense; wet; subangular; well graded; fine to medium grained; trace heavies	
SS 22		▲		○		6-12-14	203.6	85		CLAYEY SAND (SC) with light brownish yellow lean clay stringers; medium orange, light brown, and dark yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace coarse grains; trace heavies	
SS 23		▲		○		7-6-11	198.6	90		same as above; with lean clay laminae; medium brownish yellow with light brownish yellow lean clay wisps; well graded; fine to coarse grained	
SS 24			○		▲	41-41-45	193.6	95		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are borderline clayey sand; light red and light brown with a white band; very dense; wet; subangular; poorly graded; fine to medium grained	
SS 25			○		▲	30-47-49	188.6	100		same as above; light red and light brown with light yellow bands	
SS 26			▲	○		18-28-29	183.6	105		CLAYEY SAND (SC); light brownish yellow with light brown zones; very dense; wet; subangular; well graded; fine to coarse grained	
SS 27				○	▲	24-47-50	178.6	110		WELL GRADED SAND (SW) trace clay; light brown; very dense; wet; subrounded; well graded; fine to coarse grained; trace heavies	
SS			○		▲	32-49-50				same as above	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-25

A-99



K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>	PROJECT	JOB NO.	SHEET NO.	HOLE NO.
	Northeast Expansion	NEX	4 OF 5	FB-25

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
28							173.6				
SS 29			▲		○	8-15-27	168.6	120		CLAYEY SAND (SC); dark brown with medium yellow zones; dense; wet; subangular; poorly graded; fine to medium grained; lignite present; trace heavies	
SS 30				▲	○	11-28-50	163.6	125		POORLY GRADED SAND WITH CLAY (SP-SC) borderline clayey sand; light to dark brown and medium orange; very dense; wet; subangular; poorly graded; fine to lower medium grained; lignite present; trace heavies; trace mica	
SS 31		○	▲			50/4 in	159.8	130		same as above (slough?); not enough sample to jar; light brown and medium orange	
SS 32			▲		○	24-18-22	153.6	135		CLAYEY SAND (SC) with zones of sand with clay; light brownish yellow and light orange with light green wisps of clay; dense; wet; subangular; poorly graded; fine to lower medium grained; trace heavies	
SS 33			▲		○	6-7-13	148.6	140		SILTY SAND (SM) some zones are clayey; medium orange with light green wisps; dense; wet; subangular; poorly graded; fine grained; trace heavies; trace mica	
SS 34			▲		○	8-10-13	143.6	145		CLAYEY SAND (SC); medium orange with light green wispy clays; medium dense; wet; subangular; poorly graded; fine grained	
SS 35				▲	○	10-30-50/3 in	138.9	150		same as above; light yellowish brown and light brown with light green wispy clays; very dense; very fine grained; trace mica; trace black staining (Mn?)	
SS			▲		○	8-16-19				LEAN CLAY (CL) with interbedded sand; light green with	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

**FINAL LOG**

HOLE NO. **FB-25**

A-100



K-TRT-F-00001

R/0

# GEOTECHNICAL LOG

PROJECT  
Northeast Expansion

JOB NO.  
NEX

SHEET NO.  
5 OF 5

HOLE NO.  
FB-25

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
36						133.6			medium orange sand stringers; hard; wet; medium plasticity; sand is fine grained; black mottling (Mn?)		
SS 37			▲	○	50/5 in	129.7	160		CLAYEY SAND (SC) with clean sand laminae; medium orange and medium yellow with light brown wisps; very dense; wet; subangular; well graded; fine to coarse grained; clayey slough at top of recovered interval; probable Congaree		
SS 38				○	37-41-41	123.6	165		POORLY GRADED SAND WITH CLAY (SP-SC); medium brown with dark brown wisps; very dense; wet; subangular; poorly graded; fine to medium grained; trace heavies; trace mica; Congaree Total depth of boring 165.5 feet.	Hole abandoned with grout mix per 3Q5.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-25

A-101



K-TRT-F-00001

GEOTECHNICAL LOG				PROJECT: Northeast Expansion		JOB NO. NEX	SHEET NO. 1 OF 5	HOLE NO. FB-27			
SITE: APSF-NE		COORDINATES: N 78900 E 56660			ANGLE FROM HORIZONTAL: 90						
BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE	SAMPLE HAMMER WEIGHT/FALL	TOTAL DEPTH					
4/28/98	4/29/98	J Corbitt/Graves	Failing 1500	3 7/8 in	140 lb/30 in	155.5					
GROUND EL. 297.6		DEPTH/VEL. GROUND WATER		LOGGED BY: B. Gelinas/SAIC; C. Rothhammer/WSRC							
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 1					15-25-26	290.1			POORLY GRADED SAND WITH SILT (SP-SM); light brown to medium brown; very dense; moist; subangular; poorly graded; fine to lower medium grained	Hand auger to 6 feet to check for interferences.	
SS 2					14-12-12	288.6			same as above; light brown with some black zones; medium dense; fine to medium grained		
SS 3					11-9-8	287.1	10		same as above; medium brown; wet		
SS 4					8-5-5	285.6			SILTY SAND (SM); medium brown to light brown; loose; wet; subangular; poorly graded; fine to medium grained		
SS 5					3-8-15	284.1			CLAYEY SAND (SC) trace medium gravel; medium red, light brown, and grayish orange; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 6					4-13-17	282.6	15		same as above; with fine to medium gravel; medium red, light brown, and gray		
SS 7					21-19-9	281.1			same as above; trace fine gravel; medium brownish red and medium grayish brown		
SS 8					10-25-26	279.6			same as above; trace coarse sand and fine gravel; medium brownish red with some light gray to white zones; very dense; wet		
SS 9					21-29-20	278.1			same as above; medium brownish red; dense		
SS 10					12-29-46	276.6	20		same as above; with fine to medium silt and few sandy clay layers; medium brownish red with light gray to white zones; very dense; fine to upper medium grained; joint at 20 ft depth		
SS 11					21-21-20	271.1	25		POORLY GRADED SAND WITH CLAY (SP-SC); medium brownish red; dense; moist; subangular; poorly graded; fine to upper medium grained		
SS 12					17-22-29	267.3	30		same as above; with some light gray layers; very dense; wet; fine to medium grained		
SS					14-18-20				CLAYEY SAND (SC) with lean clay layer in tip of spoon;		

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO. FB-27

A-102



K-TRT-F-00001

R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	2 OF 5	FB-27				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
13						262.0				light yellowish brown to reddish brown and light gray to purple clay layer in tip of spoon; dense; wet; subangular; poorly graded; fine to medium grained	
SS 14			▲	○		13-23-23 258.2	40			same as above; few clay laminae; medium yellowish brown with light gray clay laminae	
SS 15			▲	○		18-21-30 252.3	45			same as above; portions silty sand; medium yellowish brown and reddish brown; very dense	
SS 16		▲			○	11-12-11 247.8	50			same as above; medium yellowish brown; medium dense	
SS 17			▲		○	30-26-24 242.7	55			POORLY GRADED SAND (SP) trace clay; light yellowish brown; dense; wet; subangular; poorly graded; fine to medium grained	
SS 18		▲			○	10-10-15 238.8	60			CLAYEY SAND (SC); dark yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 19				○	▲	24-39-40 231.1	65			same as above; medium yellowish brown; very dense	
SS 20				○	▲	27-29-32 226.1	70			same as above; dark yellowish brown with black specks; well graded; fine to coarse grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-27

A-103



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG		PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
		Northeast Expansion	NEX	3 OF 5	FB-27		
SAMP. TYPE AND NO.	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 21	▲ 60 ○ 75	30-28-32	221.1			POORLY GRADED SAND WITH SILT (SP-SM); dark orange; very dense; wet; subangular; poorly graded	
SS 22	▲ 40 ○ 75	15-17-18	216.1	80		WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM); dark yellowish brown; dense; wet; subangular; well graded; fine to very coarse grained	
SS 23	▲ 20 ○ 75	3-5-9	211.1	85		SANDY LEAN CLAY (CL); dark yellowish brown; stiff; wet; medium plasticity; trace of coarse sand	
SS 24	▲ 20 ○ 75	6-7-9	206.1	90		SANDY FAT CLAY (CH); dark yellowish brown; mottled with black; very stiff; moist; high plasticity; Mn present	
SS 25	▲ 20 ○ 75	4-7-10	201.1	95		SILTY SAND (SM); medium yellowish brown; medium dense; wet; subangular; well graded; fine to coarse grained	
SS 26	▲ 20 ○ 75	6-8-9	196.1	100		CLAYEY SAND WITH GRAVEL (SC); medium yellowish brown with white mottles; medium dense; wet; subrounded; well graded; fine sand to granule sized grains	
SS 27	○ 75	25-42-56	191.1	105		WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM); medium yellowish brown; very dense; wet; subangular; well graded; medium to very coarse grained with gravel	
SS 28	▲ 20 ○ 75	6-7-15	186.1	110		CLAYEY SAND WITH GRAVEL (SC); light yellowish brown with tan and white mottles; medium dense; moist; subrounded; well graded; fine to very coarse grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-27

A-104



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			Northeast Expansion	NEX	4 OF 5	FB-27	
SAMP. TYPE AND NO.	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 29	▲ 20	15-12-17	181.1			SILTY SAND (SM) with clay; medium yellowish brown; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 30	○ 60	25-36-55	176.1	120		POORLY GRADED SAND (SP) trace clay; white; very dense; moist; rounded; poorly graded; fine to very fine grained	
SS 31	○ 60	86-70-55	171.1	125		POORLY GRADED SAND WITH SILT (SP-SM); light tannish white; very dense; moist; rounded; poorly graded; fine to very fine grained	
SS 32	▲ 20	10-7-11	166.1	130		same as above; light yellowish brown with white; medium dense	
SS 33	▲ 20	8-11-18	161.1	135		ELASTIC SILT WITH SAND (MH); light yellowish brown with white; very stiff; moist; medium plasticity	
SS 34	○ 60	19-81-70	156.1	140		SILTY SAND (SM); medium yellowish brown with white; very dense; moist; subrounded; poorly graded; fine to very fine grained; silts are elastic	
SS 35	○ 60	20-22-23	151.1	145		same as above; with clay; dense	
SS 36	▲ 20	12-14-19	146.1	150		CLAYEY SAND (SC); very dark greenish black; dense; moist; subangular; poorly graded; very fine grained, micaceous, green clay	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-27

A-105



K-TRT-F-00001

GEOTECHNICAL LOG				PROJECT Northeast Expansion		JOB NO. NEX	SHEET NO. 5 OF 5	HOLE NO. FB-27			
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
					27-34-55					Total depth of boring 155 feet.	Broke down spoon but did not bottle sample.  Hole abandoned with grout mix per 3Q5.

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-27

A-106





K-TRT-F-00001  
R/0

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-28</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 78382 E 55388</b>		ANGLE FROM HORIZONTAL <b>90</b>		
BEGUN <b>4/29/98</b>	COMPLETED <b>5/4/98</b>	DRILLER <b>J Corbitt/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>161.5</b>
GROUND EL. <b>308.2</b>	DEPTH/EL. GROUND WATER <b>▽ /</b>	LOGGED BY: <b>C. Rothammer/WSRC</b>				

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN/FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						308.2					
SS 1		▲			○	6-12-15			CLAYEY SAND (SC); dark brownish red; medium dense; wet; subangular; well graded; fine to coarse grained, trace gravel	Hole offset 2 feet to the east of CPT.  Hand auger to 6 feet to check for interferences.	
SS 2		▲			○	6-10-12	300.7		same as above; with yellow		
SS 3			▲		○	10-17-23	299.2		same as above; dense		
SS 4		▲			○	10-13-17	297.7	10	same as above; medium dense; trace gravel and very coarse sand		
SS 5		▲			○	8-14-19	296.2		same as above; dense		
SS 6		▲			○	9-14-19	294.7		same as above; dark reddish brown with yellow and white; fine to very coarse grained; sandy clay lenses		
SS 7			▲		○	13-18-27	293.2	15	same as above		
SS 8				▲	○	12-22-37	291.7		same as above; very dense		
SS 9					○	15-27-37	290.2		same as above; with gravel		
SS 10		▲			○	9-10-15	288.7	20	same as above; dark brownish red with white; medium dense; lithic fragments, trace gravel		
SS 11		▲			○	6-12-22	287.2		no recovery		
							285.7				
SS 12		▲			○	6-7-11	281.7	25	CLAYEY SAND (SC); dark red with white and yellow; medium dense; wet; subangular; well graded; medium sand to gravel, lithic fragments		
SS 13		▲			○	9-13-21	276.7	30	FAT CLAY (CH); medium purple; hard; wet; high plasticity		

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-28</b>
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A-107



K-TRT-F-00001

R/O

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			Northeast Expansion	NEX	2 OF 5	FB-28	
SAMP. TYPE AND NO.	SAMPLE	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 14		7-6-23	271.7			same as above; with white; very stiff; moist	
SS 15		7-10-12	266.7	40		POORLY GRADED SAND WITH CLAY (SP-SC); medium yellow with white; medium dense; moist; subangular; poorly graded; fine to medium grained	
SS 16		10-20-19	261.7	45		POORLY GRADED SAND WITH SILT (SP-SM); light to medium yellow, white, tan, and black; dense; moist; subangular; poorly graded; fine to medium grained	
SS 17		10-14-36	256.7	50		CLAYEY SAND (SC); light to medium yellow, white, purple, and tan; dense; moist; subangular; poorly graded; fine to medium grained, lenses of fat clay	
SS 18		12-14-16	251.7	55		same as above; medium brownish yellow with white; medium dense; wet	
SS 19		12-15-18	246.7	60		same as above; dense	
SS 20		13-18-20	241.7	65		same as above	
SS 21		10-12-19	236.7	70		same as above; medium red, white, and yellow; mottled; well graded; fine to coarse grained, trace gravel	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.

FB-28

A-108



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG			PROJECT	JOB NO.	SHEET NO.	HOLE NO.	
			Northeast Expansion	NEX	3 OF 5	FB-28	
SAMP. TYPE AND NO.	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %	BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
SS 22		16-21-18	231.7			same as above	
SS 23	▲	WR/3 in 9/3 in-10-16	226.7	80		SILTY SAND (SM) with clay; medium dark brownish yellow; medium dense; wet; subrounded; well graded; medium to very coarse grained, trace gravel, Mn present	
SS 24	▲	28-25-34	221.7	85		same as above; medium yellowish brown; very dense; subangular; poorly graded; fine to medium grained	
SS 25	○	34-30-30/4 in	216.7	90		same as above; with gravel; with white; well graded; fine to very coarse grained	Cement in the hole from surface, attempted to ream it out to correct situation.
SS 26	○	27-30-30	211.7	95		same as above; medium brownish yellow with orange, white, and black streaks; poorly graded; fine to medium grained, Mn present	
SS 27	▲	15-14-15	206.7	100		same as above; medium dense	
SS 28	▲	126 28-38-29	201.7	105		same as above; medium yellowish brown with white; very dense; well graded; lithic fragments	
SS 29	○	30-43-40	196.7	110		POORLY GRADED SAND WITH SILT (SP-SM); dark yellowish orange; very dense; wet; subangular; poorly graded; fine to medium grained	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-28

A-109



K-TRT-F-00001  
R/O

# GEOTECHNICAL LOG

PROJECT

Northeast Expansion

JOB NO.

NEX

SHEET NO.

4 OF 5

HOLE NO.

FB-28

SAMP. TYPE AND NO. SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %			BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
	20	40	60						
SS 30				29-35-50/4 in	191.7			same as above; with coarse sand	
SS 31		▲		22-24-22	186.7	120		SILTY SAND (SM); dark yellowish orange; dense; wet; subangular; poorly graded; fine to medium grained	
SS 32		▲		12-14-16	181.7	125		CLAYEY SAND (SC); dark yellowish orange; medium dense; wet; subangular; poorly graded; fine to medium grained	
SS 33		▲		8-9-10	176.7	130		same as above; medium yellowish brown	
SS 34		▲		WR 8 in-1/4 in-3	171.7	135		ELASTIC SILT (MH); medium yellowish brown with white; soft; moist; medium plasticity	
SS 35		▲		6-16-29	170.2			SILTY SAND (SM); light medium brown with white and red; dense; wet; subrounded; poorly graded; very fine grained, silts are elastic	
SS 36		▲		50/4 in	166.7	140		no recovery	
SS 37			○	35-60-62	161.7	145		WELL GRADED SAND WITH GRAVEL (SW); light yellowish brown; very dense; wet; subrounded; well graded; medium to very coarse grained	
SS 38		▲		10-12-12	156.7	150		SILTY SAND (SM); light greenish yellow with orange; medium dense; moist; subangular; poorly graded; very fine to fine grained, silts are elastic	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-28

A-110



K-TRT-F-00001  
R/O

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	5 OF 5	FB-28				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT) ○ RECOVERY % + ATT. LIMITS %				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT.	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 39				▲		19-20-38	151.7			same as above; light yellowish brown; very dense	Hole abandoned with grout mix per 3Q5.
SS 40				▲		19-43-51	146.7	160		same as above	
										Total depth of boring 161.5 feet.	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-28



K-TRT-F-00001  
R/O

<b>GEOTECHNICAL LOG</b>			PROJECT <b>Northeast Expansion</b>	JOB NO. <b>NEX</b>	SHEET NO. <b>1 OF 5</b>	HOLE NO. <b>FB-30</b>
SITE <b>APSF-NE</b>		COORDINATES <b>N 79371 E 55388</b>			ANGLE FROM HORIZONTAL <b>90</b>	
BEGUN <b>5/7/98</b>	COMPLETED <b>5/12/98</b>	DRILLER <b>M Rizer/Graves</b>	DRILL MAKE AND MODEL <b>Failing 1500</b>	HOLE SIZE <b>3 7/8 in</b>	SAMPLE HAMMER WEIGHT/FALL <b>140 lb/30 in</b>	TOTAL DEPTH <b>179.4</b>
GROUND EL. <b>284.1</b>	DEPTH/EL. GROUND WATER <b>284.1</b>	LOGGED BY: <b>N. Kidd/SAIC</b>				

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
						284.1					
SS 1		▲				7-9-9	275.6		POORLY GRADED SAND WITH CLAY (SP-SC); light brown; medium dense; wet; subangular; poorly graded; fine to medium grained; trace heavies; trace mica	Hand auger to 6 feet to check for interferences.	
SS 2		▲				2-3-8			POORLY GRADED SAND (SP) trace clay; some zones with clay; light reddish brown; medium dense; moist; subangular; poorly graded; fine to medium grained; much bentonite in tube; no useful sample recovered; trace heavies/		
SS 3		▲				5-6-6	274.1	10	same as above; light brown; wet; no bentonite observed		
SS 4		▲				5-6-9	272.6		same as above; moist; some zones are wet		
SS 5		▲				7-12-19	271.1		same as above; very light brown with light brown areas; dense; trace mica		
SS 6		▲				13-15-15	269.6	15	CLAYEY SAND (SC); light orange and light red with light brown bands; medium dense; moist; subangular; poorly graded; fine to medium grained		
SS 7		▲				7-12-19	268.1		same as above; with sandy lean clay zones; medium red and medium orange with light yellow and white zones; dense; trace lower coarse		
SS 8		▲				7-9-11	266.6		same as above; medium red with light yellow and white zones; medium dense		
SS 9		▲				6-8-10	265.1		same as above; with sandy lean clay zones; medium brownish red; fine to lower coarse grained; trace mica		
SS 10		▲				16-16-26	263.6	20	same as above; medium brownish yellow with medium red zones; dense; fine to medium grained with coarse grains		
SS 11		▲				13-15-21	258.6	25	same as above; medium red with white wisps; fine to medium grained		
SS		▲				47-50/4 in	249.3		same as above; medium brownish red with white wisps;		

SS = SPLIT SPOON; ST = SHELBY TUBE; PS = STATIONARY PISTON; PB = PITCHER	SITE	<b>FINAL LOG</b>	HOLE NO. <b>FB-30</b>
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A-112



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	2 OF 5	FB-30				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
12										very dense	
SS 13			▲	○	17-21-22	243.6	40		same as above; with interlaminated clean sands; medium brownish yellow with white wispy clays; dark yellowish brown zones and light red zones; dense		
SS 14				○	27-42-42					same as above; dark red; very dense; wet; trace coarse grains	Drillers depth for the 44-45.5 ft. interval was shallow (43-44.5 ft.)
SS 15			▲	○	17-21-22	233.6	50		WELL GRADED SAND WITH CLAY (SW-SC) borderline clayey sand; medium brown; dense; moist; subangular; well graded; fine to coarse grained		
SS 16			▲	○	18-27-27	228.6	55		same as above; some zones are clayey sand; medium brown and medium purplish brown with light brown zones; very dense; some zones are wet		
SS 17			▲	○	14-22-25	223.6	60		same as above; medium brownish yellow with occasional white wisps; dense; wet; trace heavies		
SS 18			▲	○	8-14-20	218.6	65		CLAYEY SAND (SC) with interlayered sand with clay; medium brownish yellow; dense; wet; subangular; well graded; fine to coarse grained		
SS 19			○	▲	14-18-22	213.6	70		WELL GRADED SAND WITH CLAY (SW-SC) some zones are clayey; medium brownish yellow; dense; wet; subangular; well graded; fine to coarse grained		
SS			○		12-16-14				CLAYEY SAND (SC); medium brownish yellow; medium		

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-30

A-113



K-TRT-F-00001  
R/0

GEOTECHNICAL LOG				PROJECT	JOB NO.	SHEET NO.	HOLE NO.				
				Northeast Expansion	NEX	3 OF 5	FB-30				
SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
							208.6			medium dense; wet; subangular; well graded; fine to coarse grained; trace heavies	
SS 21		▲				5-8-9	203.6	80		same as above; bottom 0.3' have tan lean clay interbeds; light yellowish brown with light yellow (tan) clay at the bottom of the interval; poorly graded; fine to medium grained; top of tan clay is about 0.3 ft above bottom of interval	
SS 22			▲		○	8-16-24	198.6	85		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey; light brownish yellow; dense; wet; subangular; poorly graded; fine to medium grained; black stains (Mn?)	
SS 23				▲	○	18-28-27	193.6	90		same as above; very dense; no black stains	
SS 24			▲		○	18-23-24	188.6	95		same as above; medium yellowish brown clayey sand zones; dense; moist	
SS 25				▲	○	17-27-32	183.6	100		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are clayey sand; light yellowish brown and light brown with occasional white wisps; very dense; wet; subangular; poorly graded; fine to medium grained; black motiles (Mn?)	
SS 26					○	48-50/5 in	178.7	105		POORLY GRADED SAND (SP) trace clay; light brown with very light brown and light red zones; very dense; wet; subangular; poorly graded; fine to medium grained; trace heavies	
SS 27				▲	○	39-50/5 in	174.2	110		POORLY GRADED SAND WITH CLAY (SP-SC) some zones are trace clay; light brown with very light brown and light reddish brown zones; very dense; wet; subangular; poorly graded; fine to medium grained; black motiles (Mn?); trace heavies	
SS				▲	○	30-34-23				WELL GRADED SAND WITH CLAY (SW-SC)	

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-30

A-114





K-TRT-F-00001  
R/O

# GEOTECHNICAL LOG

PROJECT  
Northeast Expansion

JOB NO.  
NEX

SHEET NO.  
4 OF 5

HOLE NO.  
FB-30

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
28						168.6			clay content varies from trace to clayey; light red and light orange with light brown bands; very dense; wet; subrounded; well graded; fine to coarse grained; black motiles (Mn?)		
SS 29		▲			○	20-16-15 163.6	120		CLAYEY SAND (SC); medium reddish brown with light brown wisps; dense; wet; subangular; poorly graded; fine to medium grained; black wisps (Mn?)		
SS 30				○	▲	25-39-41 158.6	125		POORLY GRADED SAND WITH SILT (SP-SM); light brownish yellow; very dense; wet; subangular; poorly graded; fine grained		
SS 31					▲	18-30-39 153.6	130		no recovery; catcher torn out of spoon		
SS 32		▲			○	14-14-16 148.6	135		CLAYEY SAND (SC); medium yellowish brown; medium dense; wet; subangular; poorly graded; fine to medium grained		
SS 33		○			▲	21-29-32 143.6	140		POORLY GRADED SAND WITH SILT (SP-SM); medium yellow with medium orange and light brown zones and very light green clay wisps; very dense; wet; subangular; poorly graded; fine grained		
SS 34		▲			○	11-12-15 138.6	145		CLAYEY SAND (SC); medium brownish yellow; medium dense; wet; subangular; poorly graded; fine grained		
SS 35		▲			○	10-15-22 133.6	150		LEAN CLAY WITH SAND (CL) some zones are sandy; light green with medium to dark orange zones; hard; wet; medium plasticity; sand is fine to coarse grained		
SS 36		▲			○	8-13-24 132.1			SANDY LEAN CLAY (CL) with interbedded sand; light green and reddish brown with medium orange sands; hard; wet; medium plasticity; fine to medium grained		
SS 37		▲			○	12-14-19 130.6			CLAYEY SAND (SC) with sandy lean clay zones; medium reddish brown with light green clay wisps; dense; wet; subangular; well graded; fine to coarse		
SS 38		▲			○	17-20-25 129.1					

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

FINAL LOG

HOLE NO.  
FB-30

A-115



K-TRT-F-00001  
R/O

# GEOTECHNICAL LOG

PROJECT

Northeast Expansion

JOB NO.

NEX

SHEET NO.

5 OF 5

HOLE NO.

FB-30

SAMP. TYPE AND NO.	SAMPLE	▲ N-VALUE (SPT)				BLOW COUNT	ELEVATION IN FEET	DEPTH IN FT	GRAPHICS	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, CHARACTER OF DRILLING AND LABORATORY TESTING
		20	40	60	80						
SS 39			○			18-21-36				grained same as above; dark brown; poorly graded; fine to medium	
SS 40			○	▲		25-30/4 in	127.6 126.8			grained WELL GRADED SAND WITH CLAY (SW-SC) clay content varies widely with depth; light brown, light gray, and light orange; very dense; wet; subangular; well graded; fine to coarse grained; larger grains are subrounded; probable Congaree at bottom of spoon	
							160			same as above; some zones are trace clay; light brown with dark red zones; subrounded; fine to lower coarse grained; trace heavies; red zones are iron cemented; Congaree	
							165				
							170				
							175				

SS = SPLIT SPOON; ST = SHELBY TUBE;  
PS = STATIONARY PISTON; PB = PITCHER

SITE

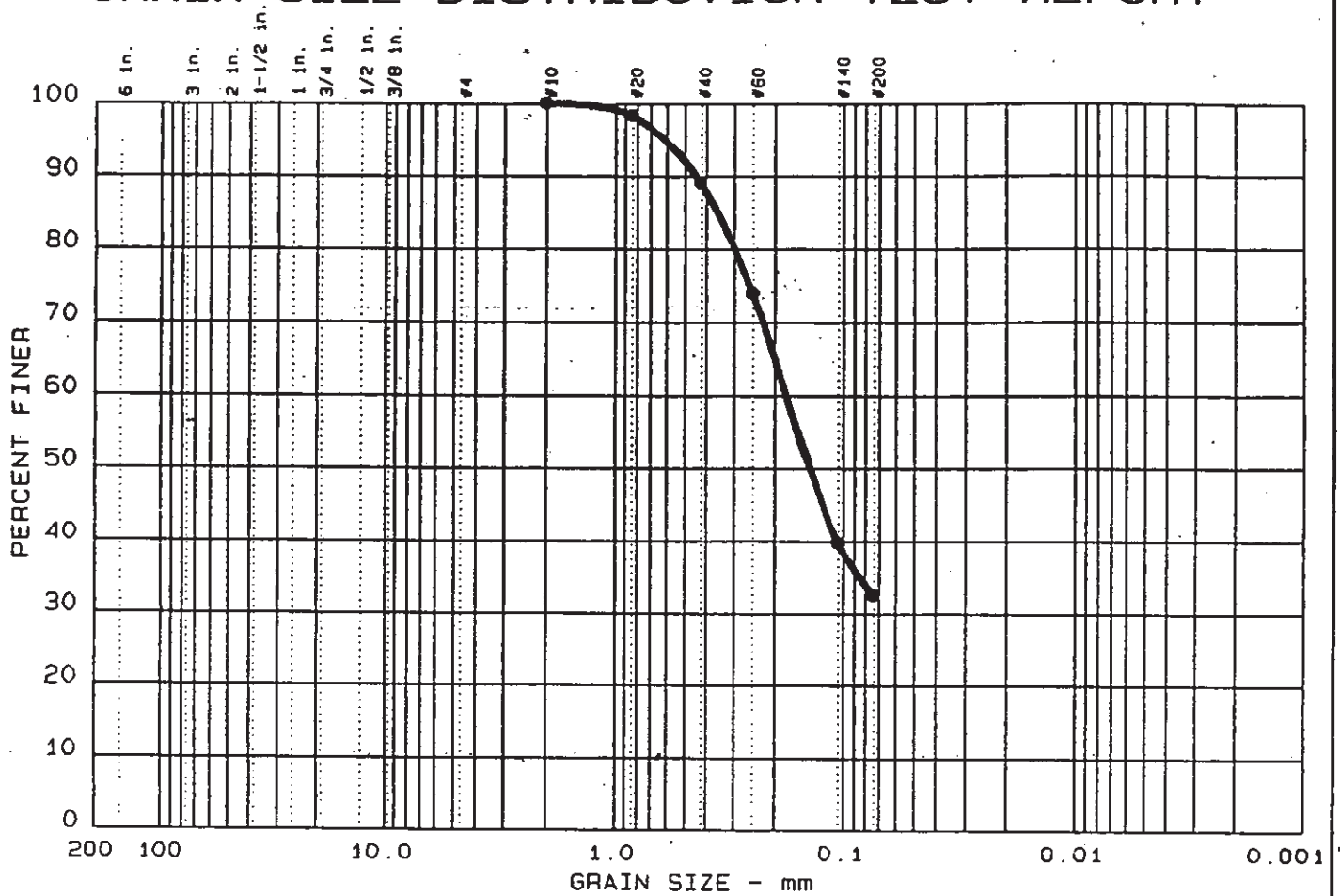
FINAL LOG

HOLE NO.

FB-30

A-116

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	67.5	32.5	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.35	0.18	0.14					

MATERIAL DESCRIPTION	USCS	AASHTO
● Reddish Brown Silty Sand		

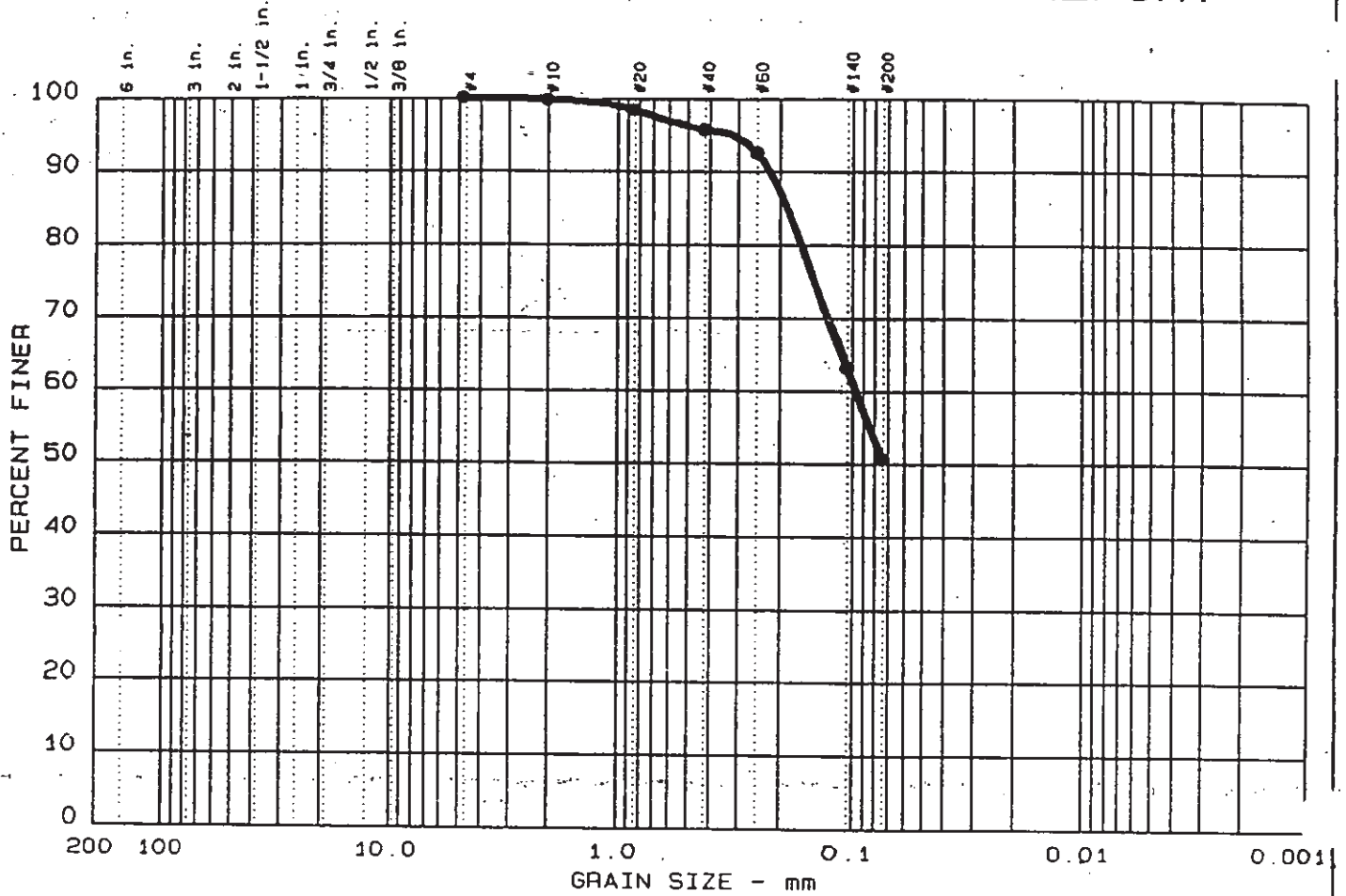
Project No.: 50161-5-5755  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-7 @ 16 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 2	0.0	0.0	49.4	50.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.19	0.10						

MATERIAL DESCRIPTION	USCS	AASHTO
• Reddish Brown & Tan Sandy Silt		

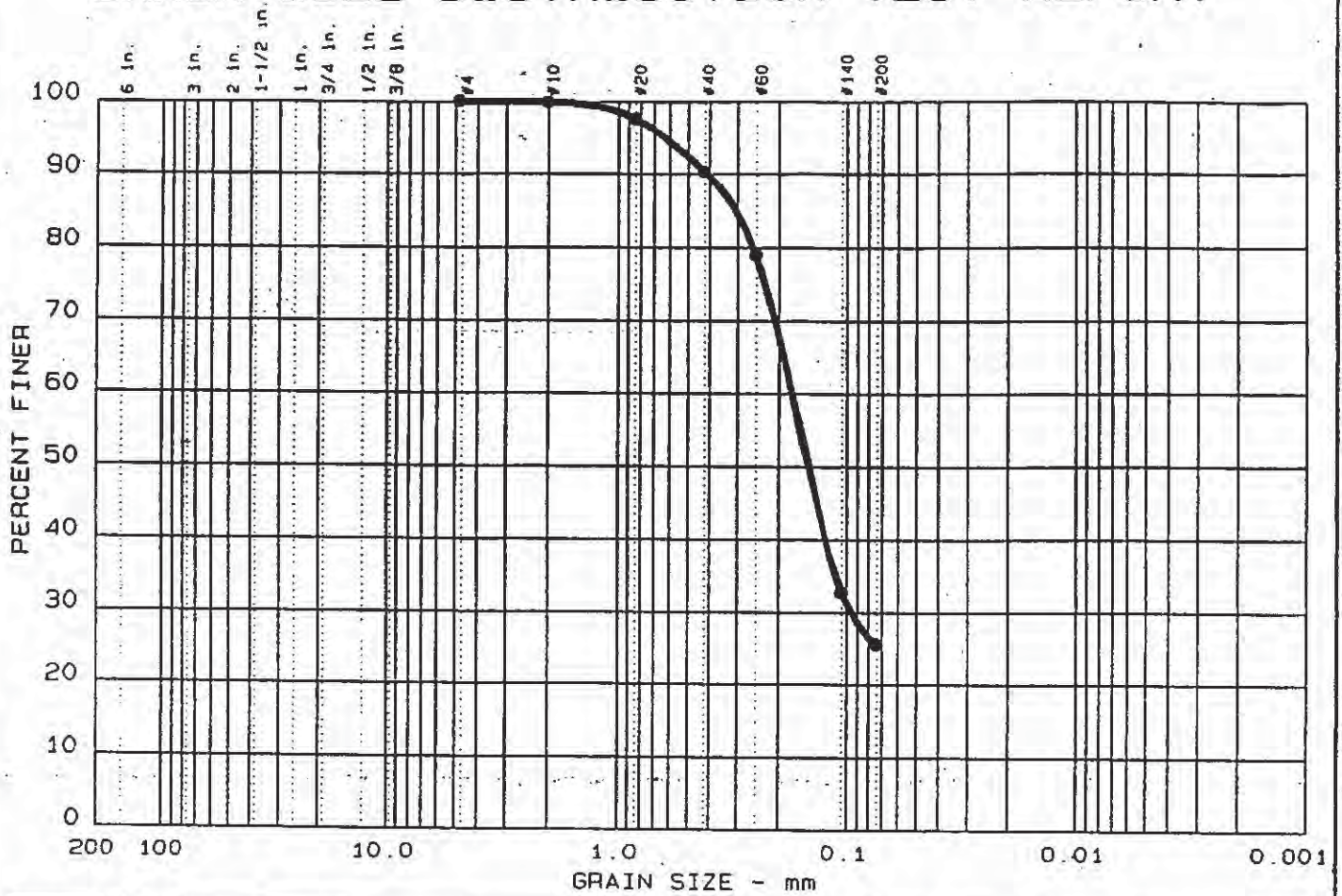
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-10 @ 20 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 7	0.0	0.0	74.4	25.6	

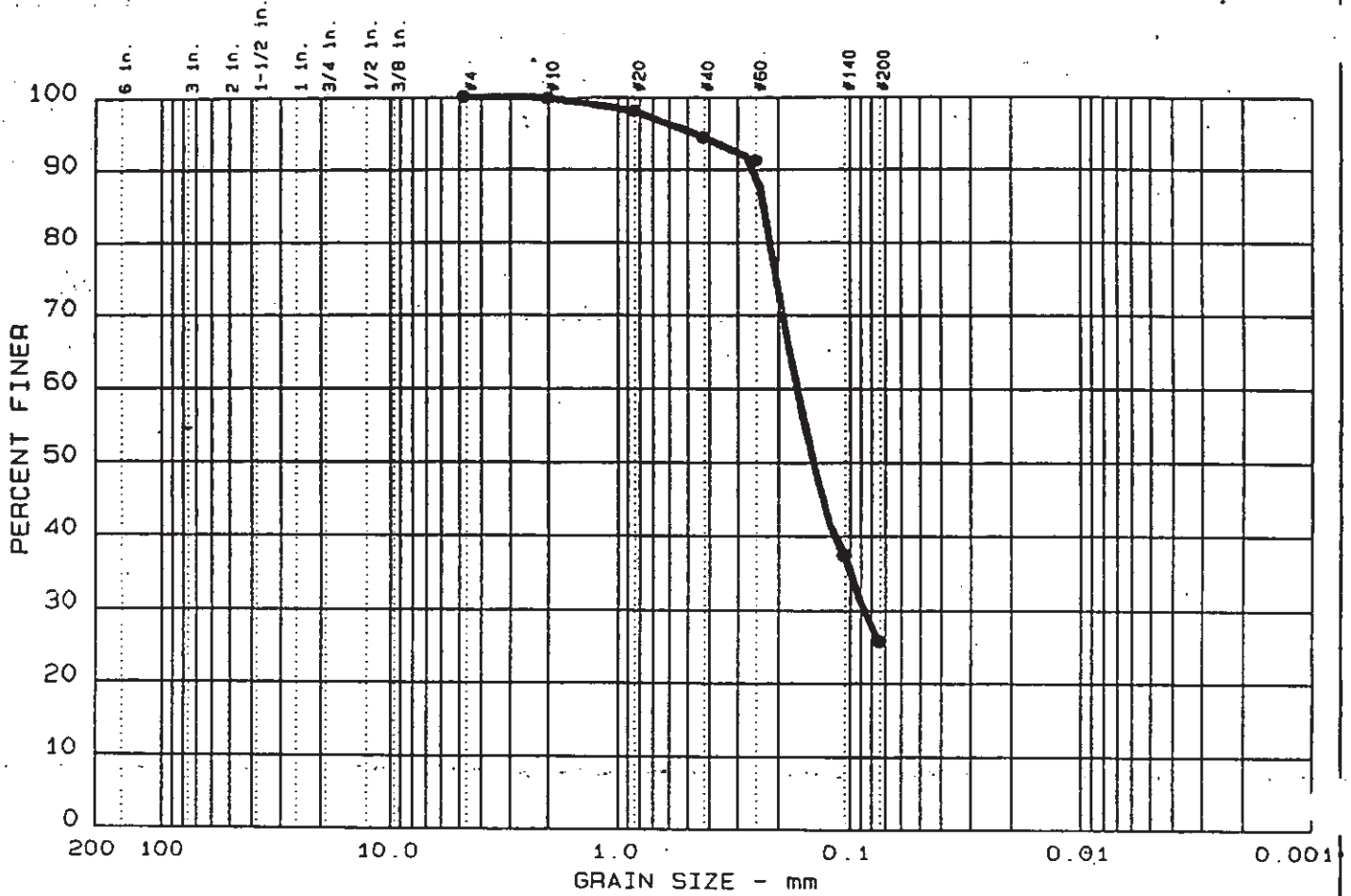
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.30	0.17	0.15	0.096				

MATERIAL DESCRIPTION	USCS	AASHTO
• Purplish-Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-13 @ 25 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	74.2	25.8	

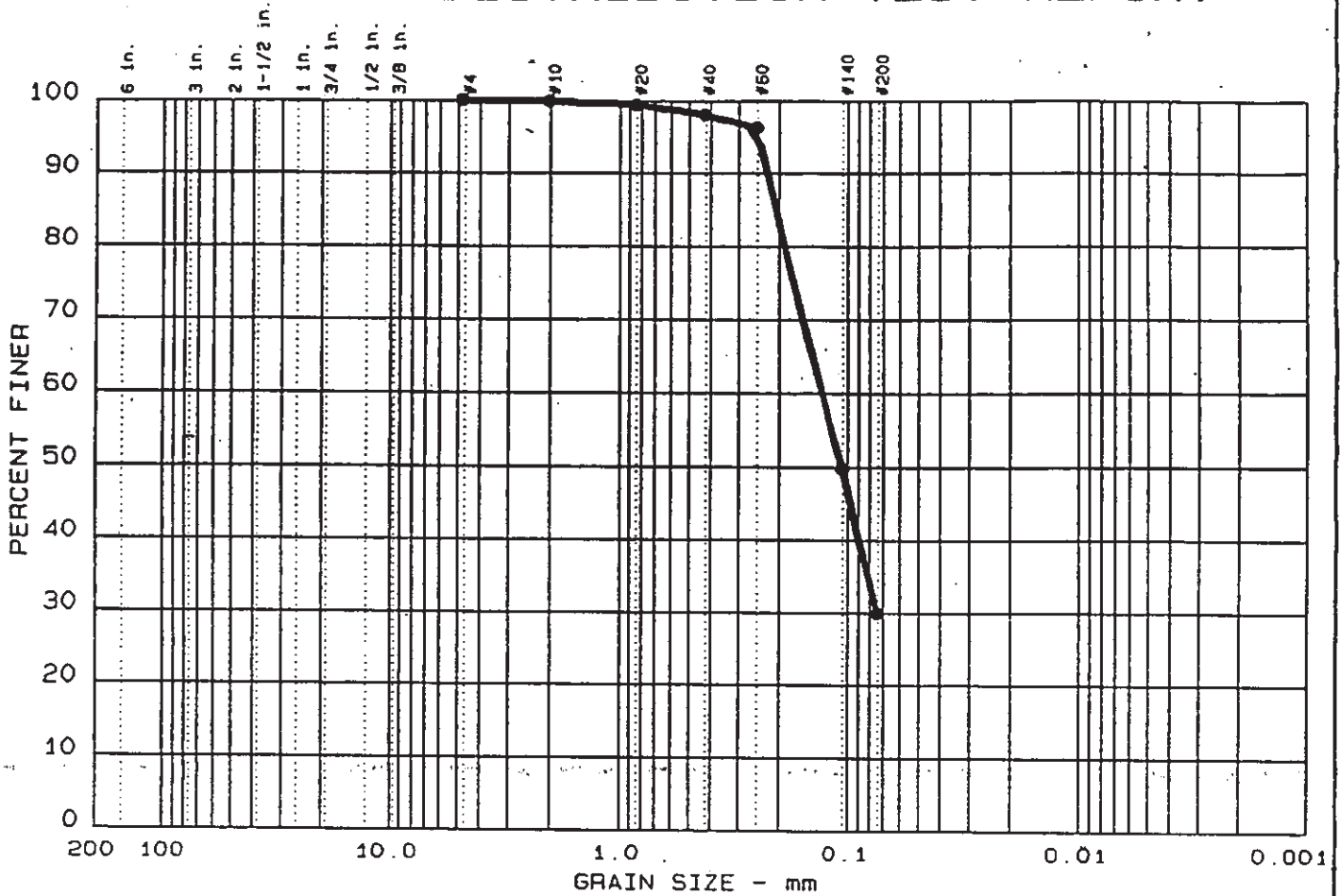
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.23	0.17	0.14	0.087				

MATERIAL DESCRIPTION	USCS	AASHTO
● Light Grey Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-15 @ 28 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	70.2	29.8	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.21	0.13	0.11					

MATERIAL DESCRIPTION	USCS	AASHTO
● Light Brown Silty Sand		

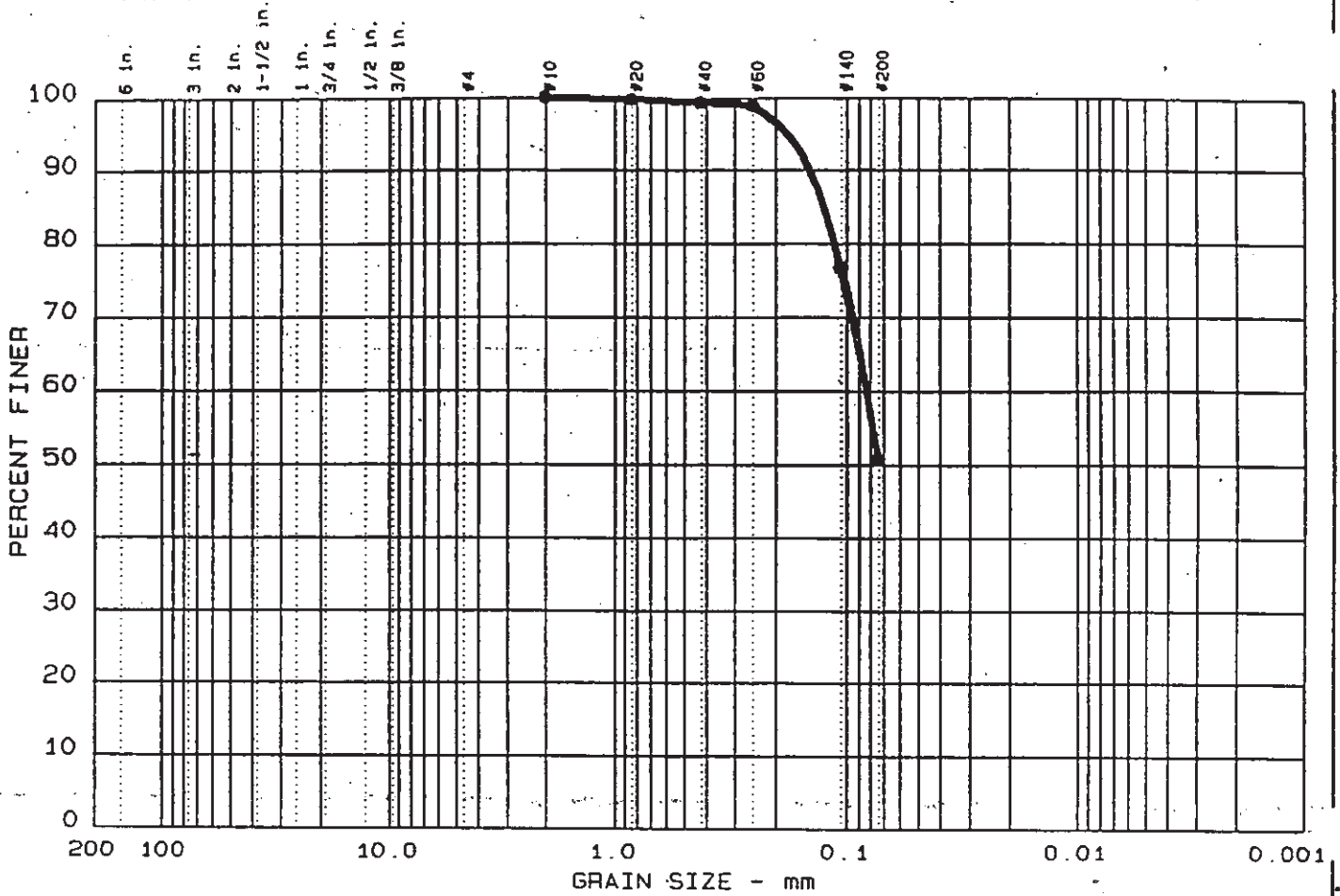
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-17 @ 31 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLK

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.0	49.2	50.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.12	0.08	0.075					

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown Sandy Silt		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-18 @ 32 Ft.  
 Date: November 3, 1995

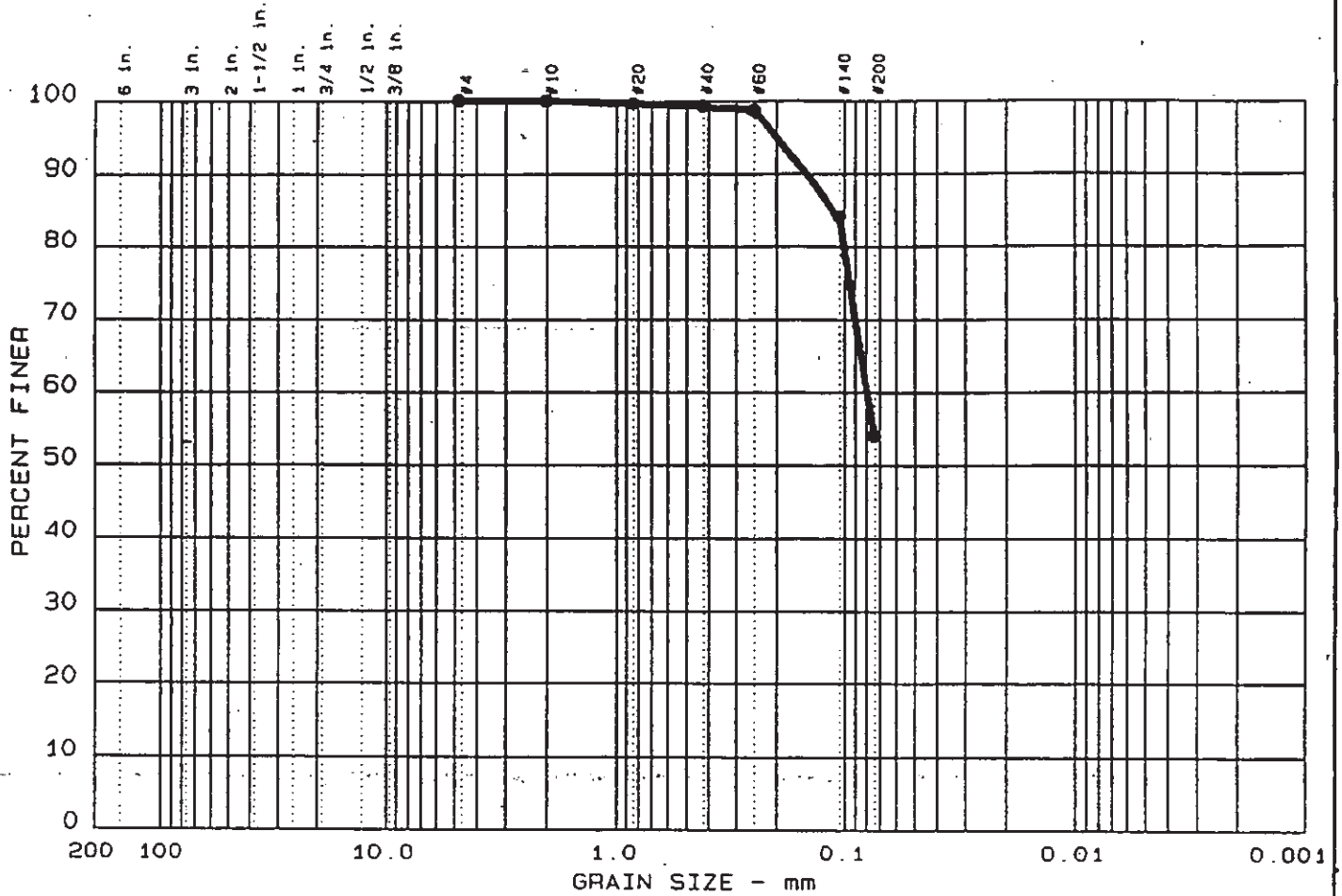
Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	0.0	46.0	54.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.11	0.08						

MATERIAL DESCRIPTION	USCS	AASHTO
● Purple & Brown Sandy Silt		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-19 @ 34 Ft.  
 Date: November 3, 1995

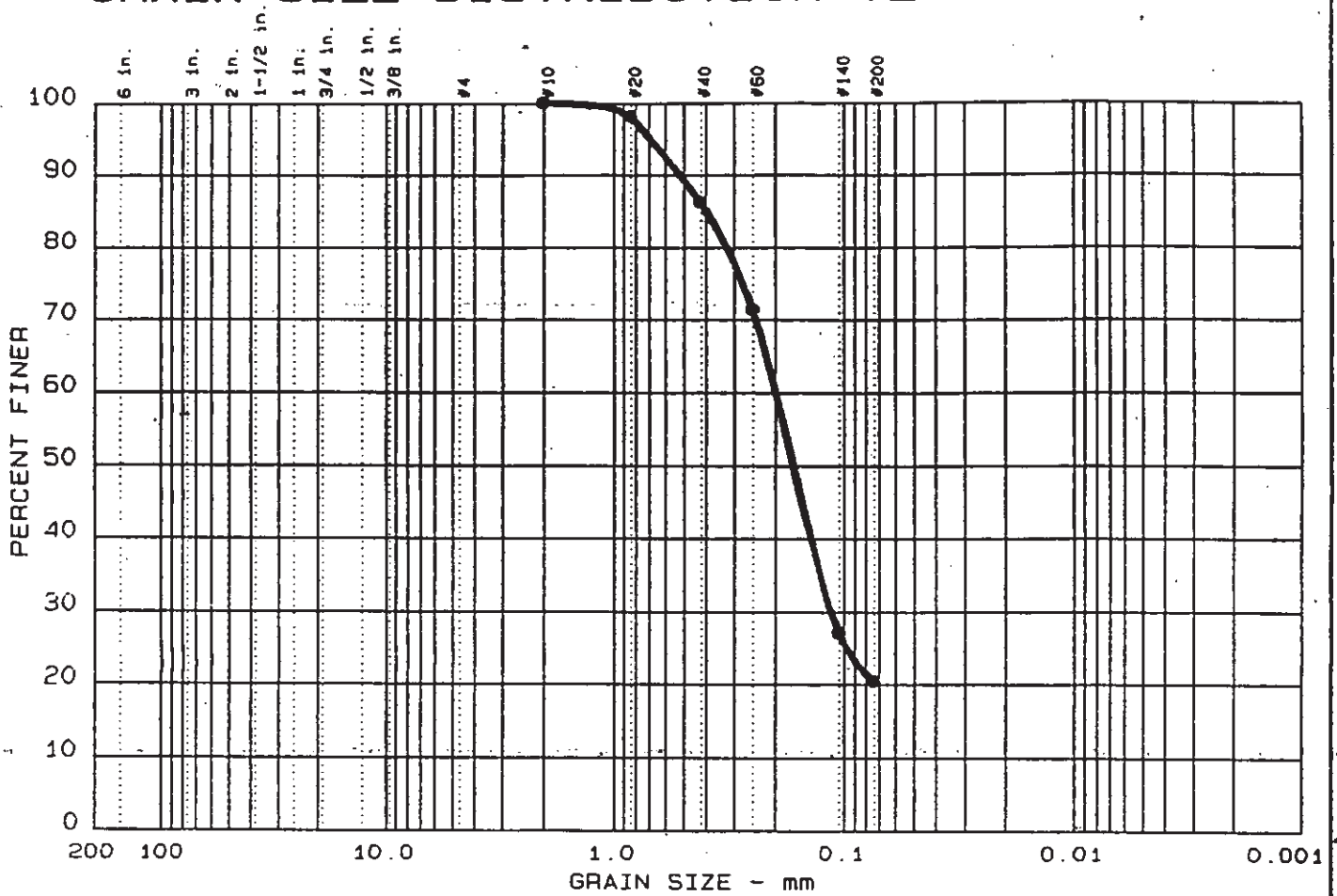
Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	79.5	20.5	

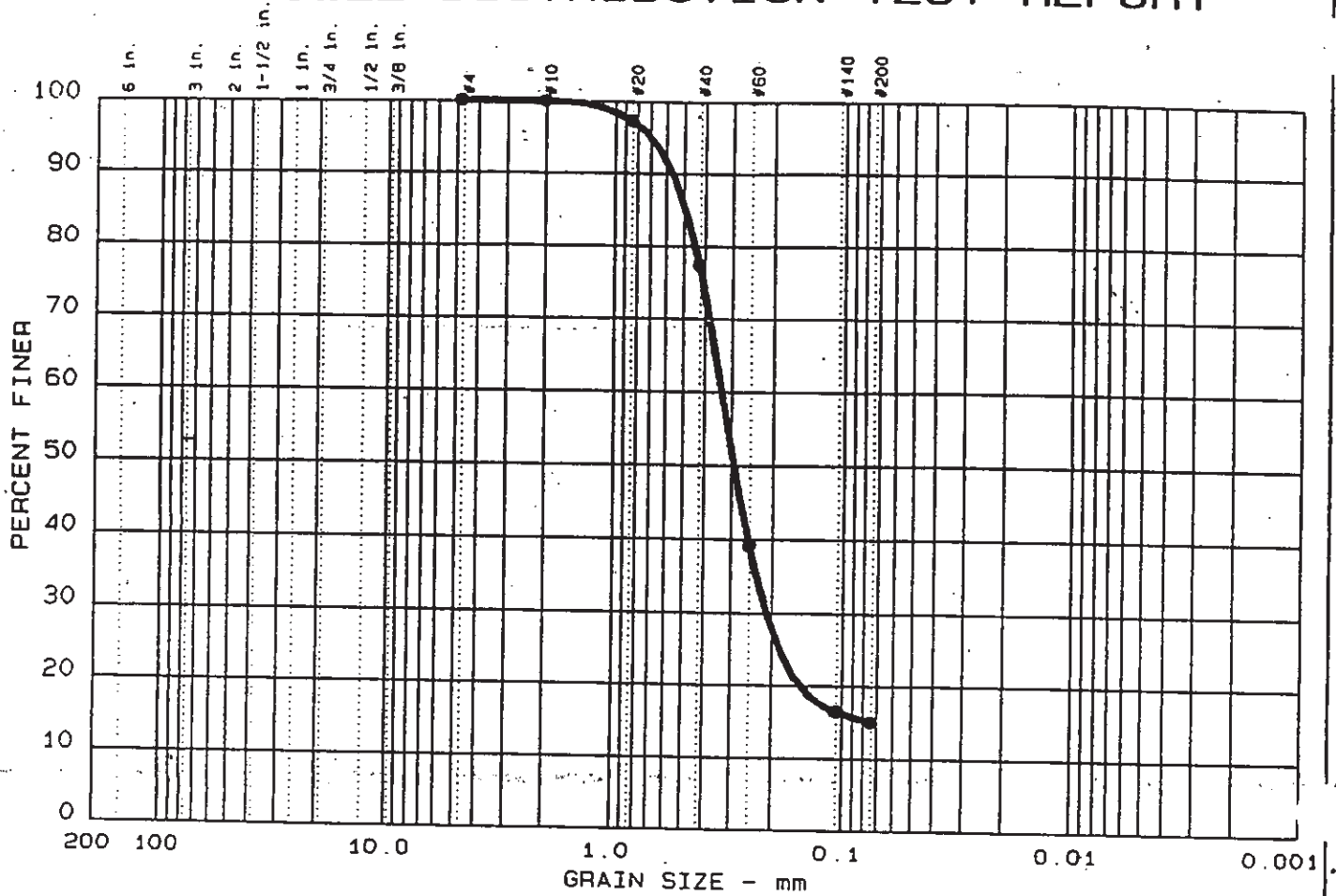
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.39	0.20	0.17	0.114				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-27 @ 46 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HEJ  
 Reviewed by: RLS

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 4	0.0	0.0	84.9	15.1	

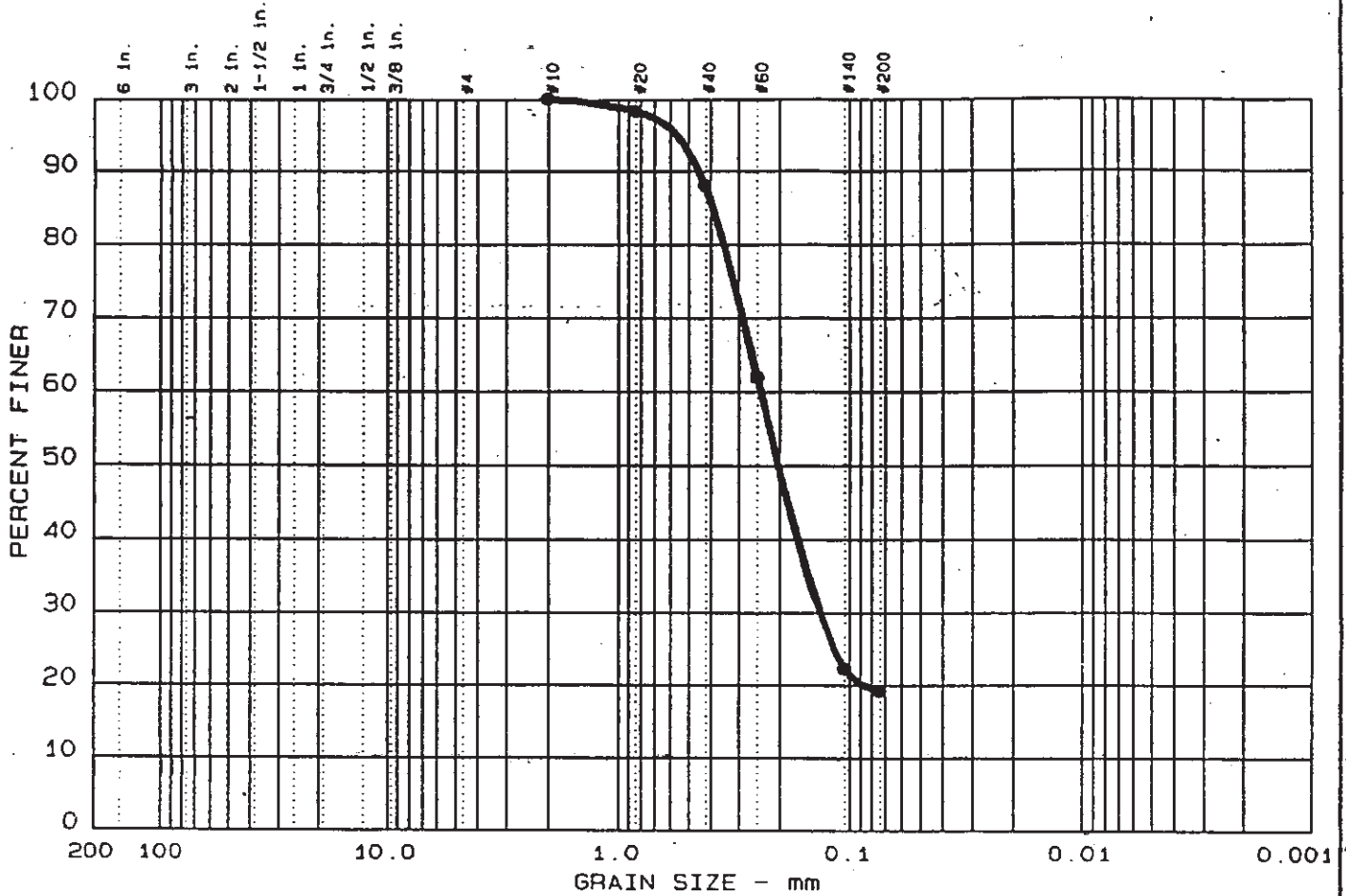
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.48	0.33	0.29	0.211				

MATERIAL DESCRIPTION	USCS	AASHTO
• Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1, SS-31 @ 52 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: KLB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.0	80.8	19.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.39	0.24	0.20	0.135				

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan-Brown Silty Sand		

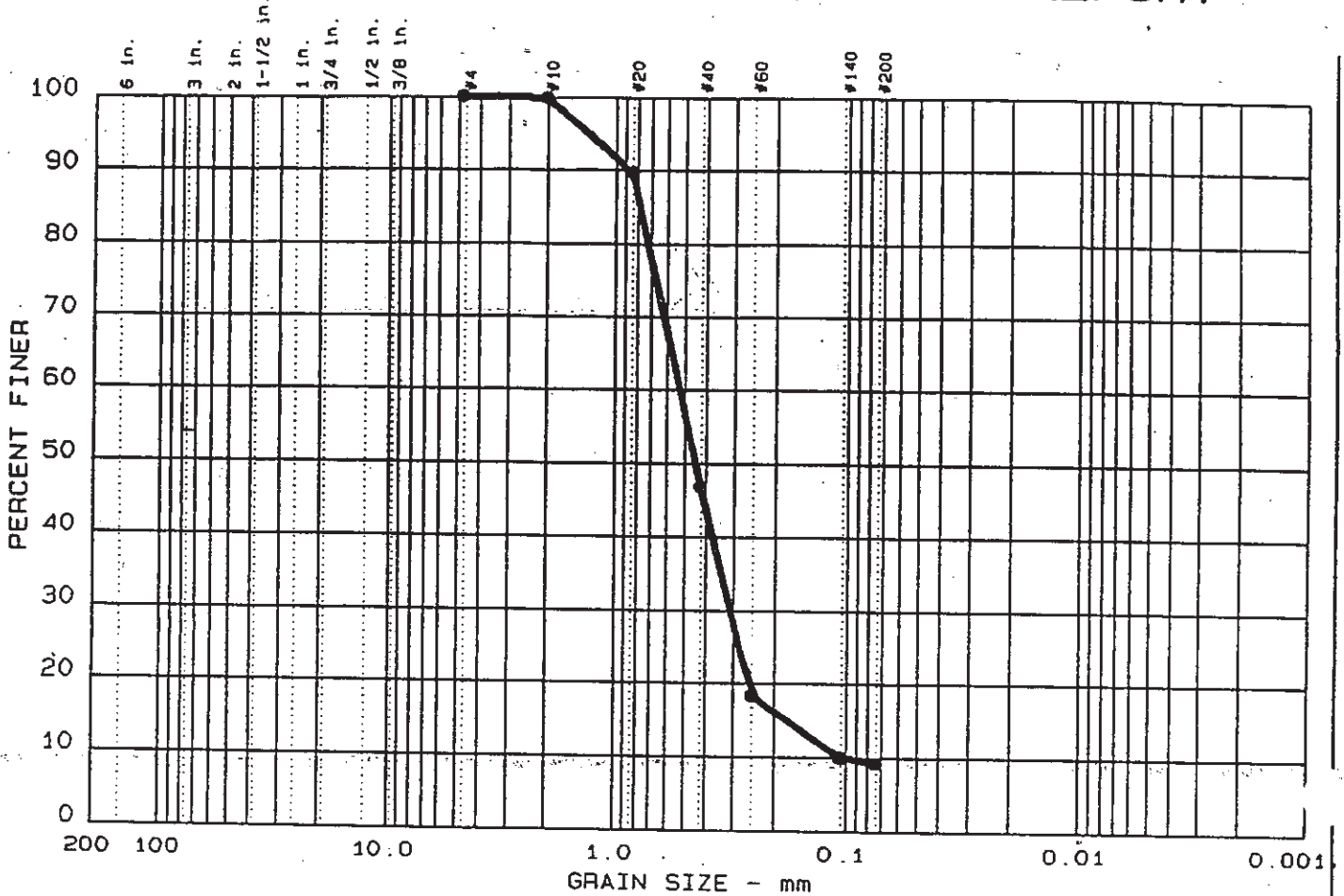
Project No.: 50161-5-5755  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-34 @ 56 Ft.  
  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RUB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 13	0.0	0.0	90.8	9.2	

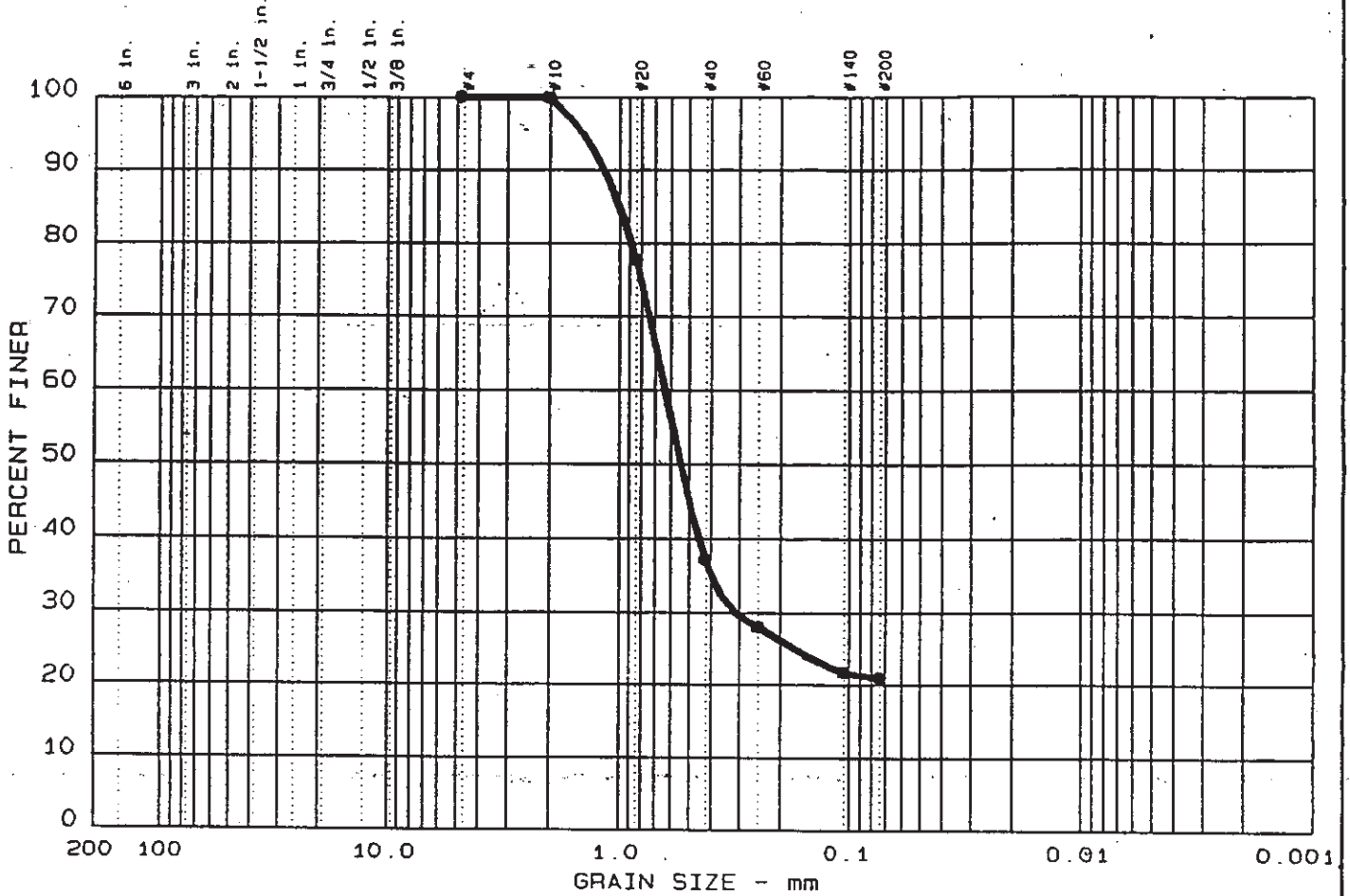
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.78	0.52	0.44	0.309	0.1758	0.1035	1.77	5.0

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-35 @ 58 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	79.0	21.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.99	0.63	0.54	0.310				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand		

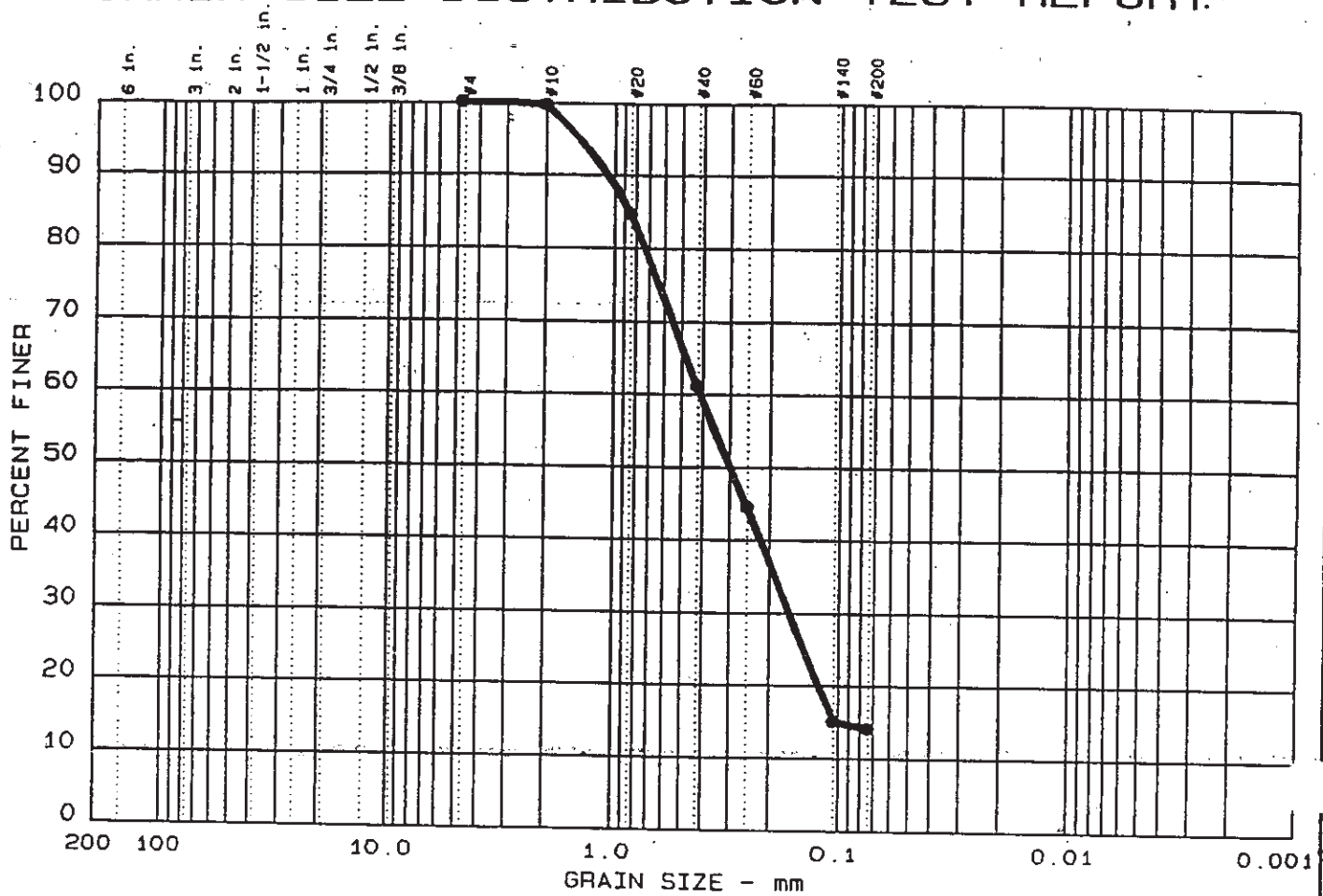
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-39 @ 64 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: *HEJ*  
 Reviewed by: *RLP*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	85.9	14.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.85	0.41	0.30	0.163	0.0993			

MATERIAL DESCRIPTION	USCS	AASHTO
● Yellow-Tan Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-42 @ 68 Ft.  
 Date: November 3, 1995

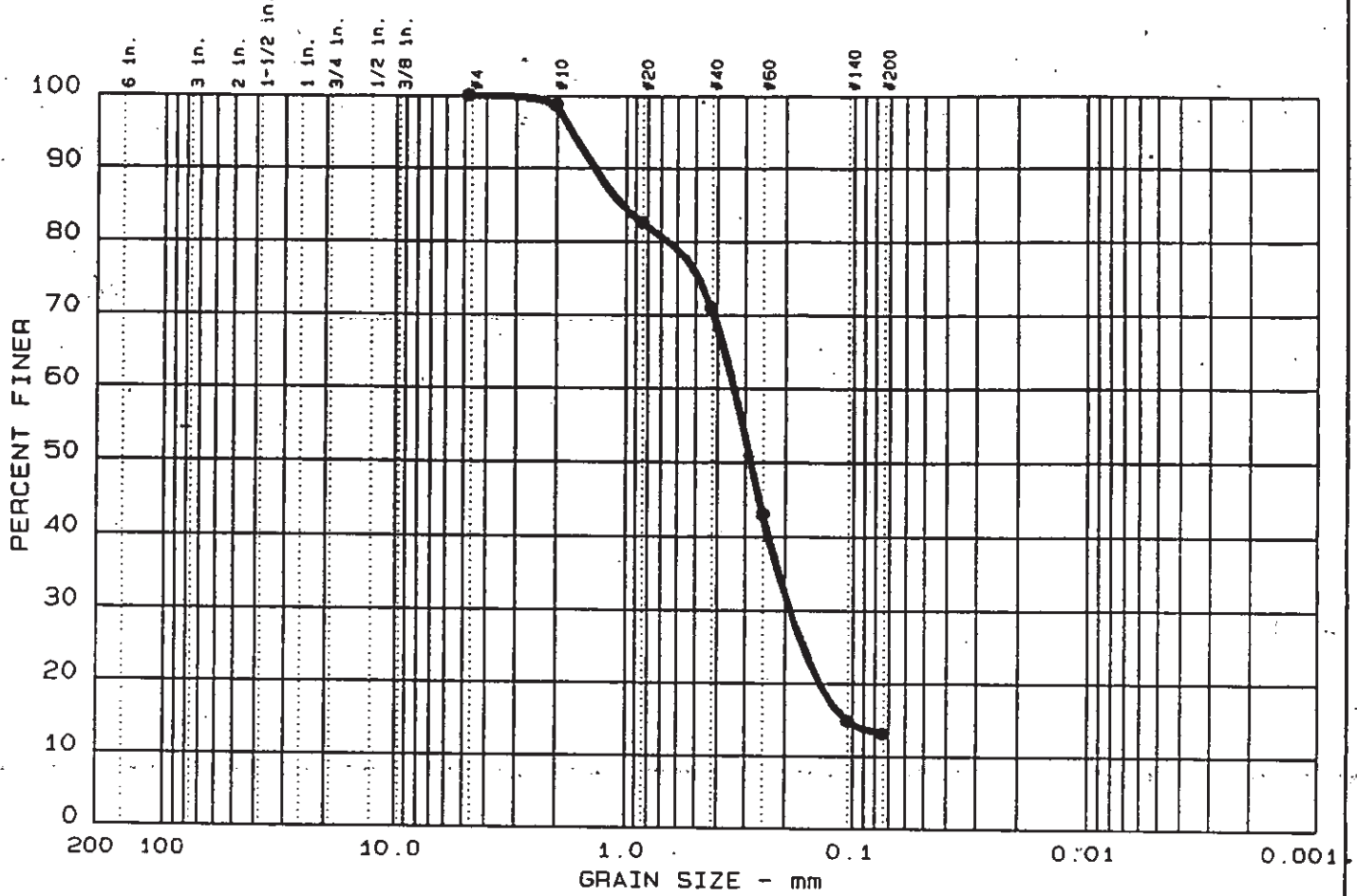
Remarks:  
 Tested by: HET  
 Reviewed by: RUB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND		% SILT	% CLAY
• 15	0.0	0.0	86.9		13.1	

LL	PI	D85	D60	D50	D30	D15	D10	C <sub>c</sub>	C <sub>u</sub>
		1.02	0.33	0.28	0.190	0.1058			

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown Silty Sand		

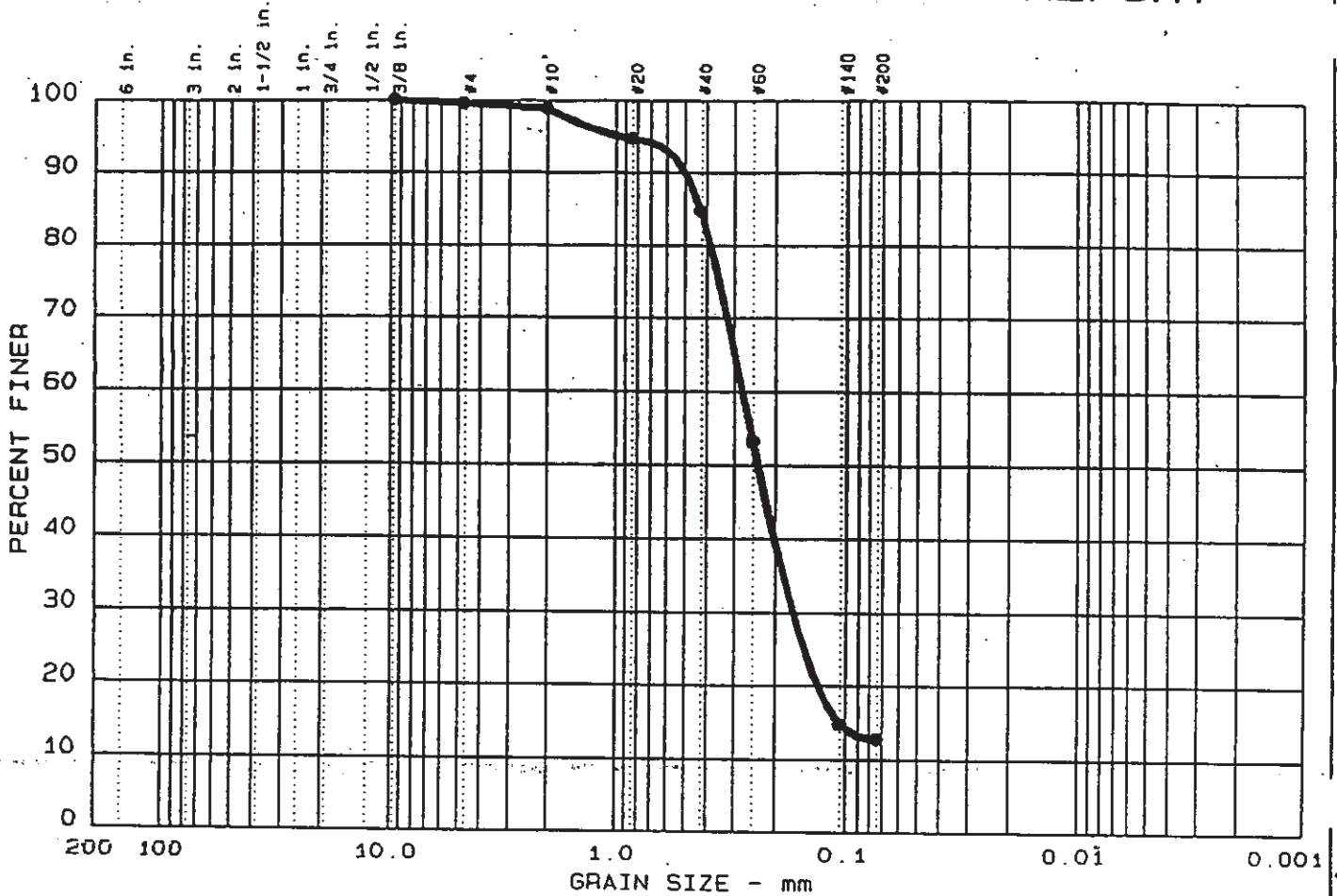
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-44 @ 71 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: *HES*  
 Reviewed by: *RLB*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.5	86.7	12.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.42	0.28	0.24	0.167	0.1052			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand		

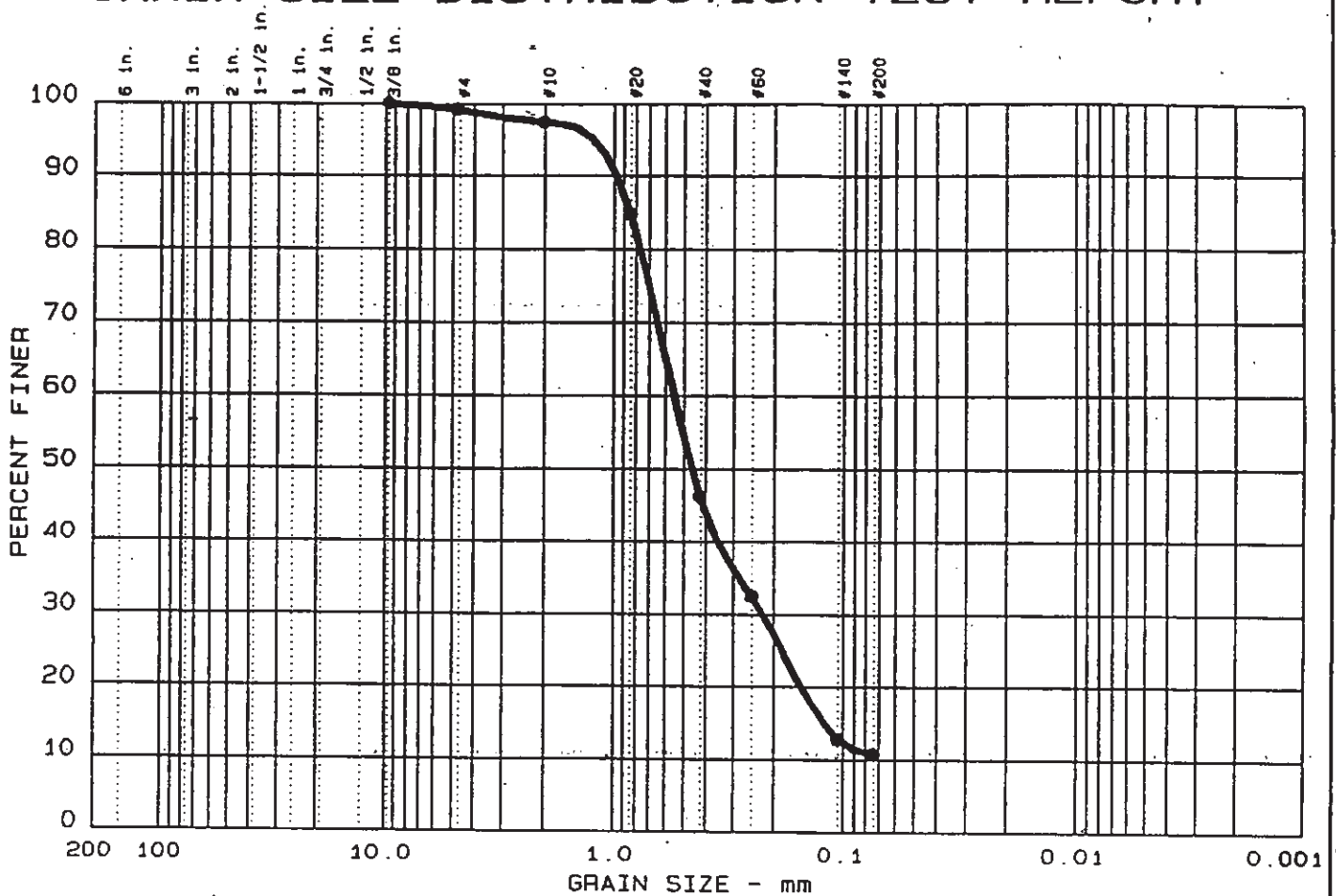
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: Fb-1 SS-48 @ 77 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RUS

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	0.8	88.4	10.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.84	0.54	0.46	0.225	0.1209			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand		

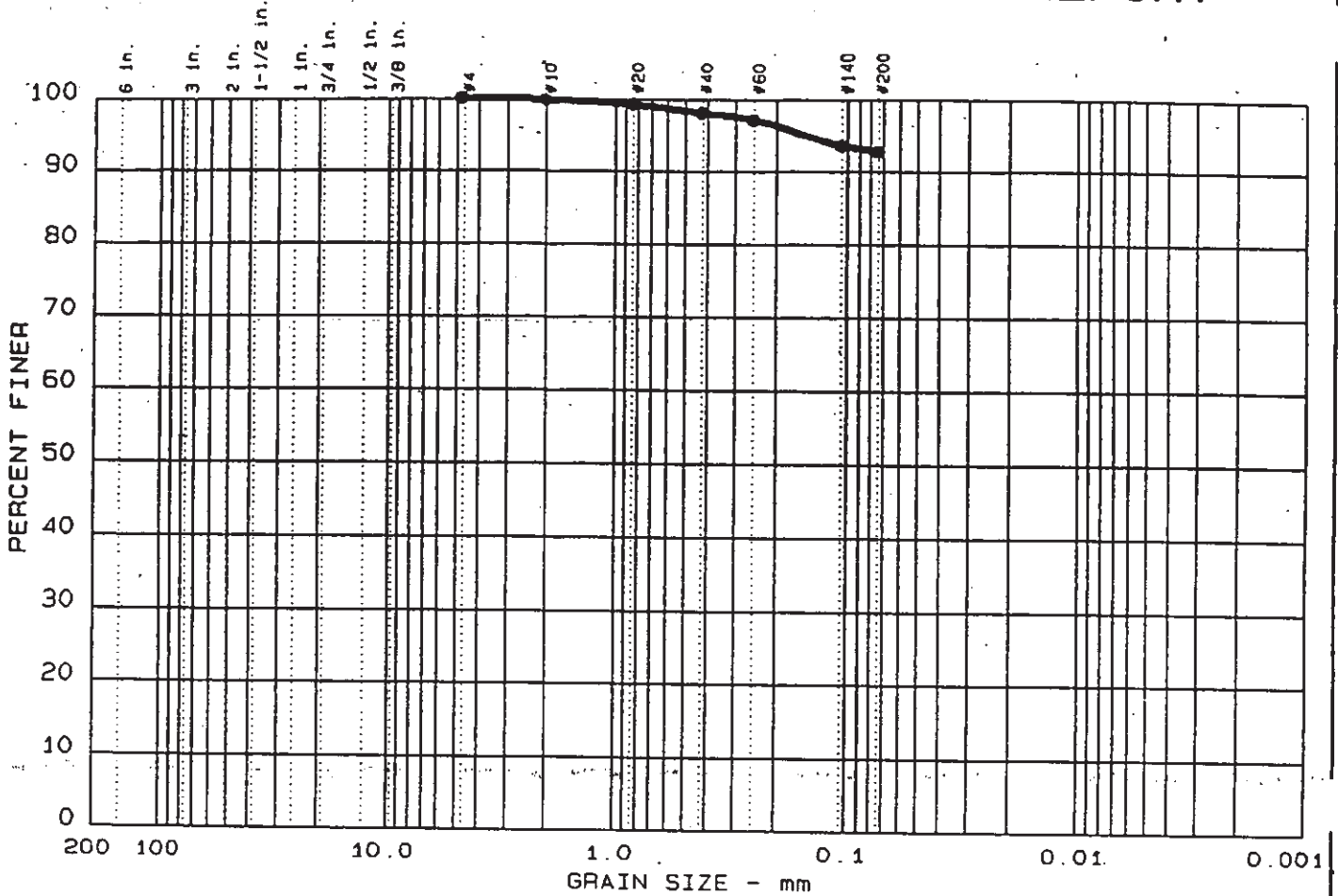
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-52 @ 83 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HEJ  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• -10	0.0	0.0	7.3	92.7	

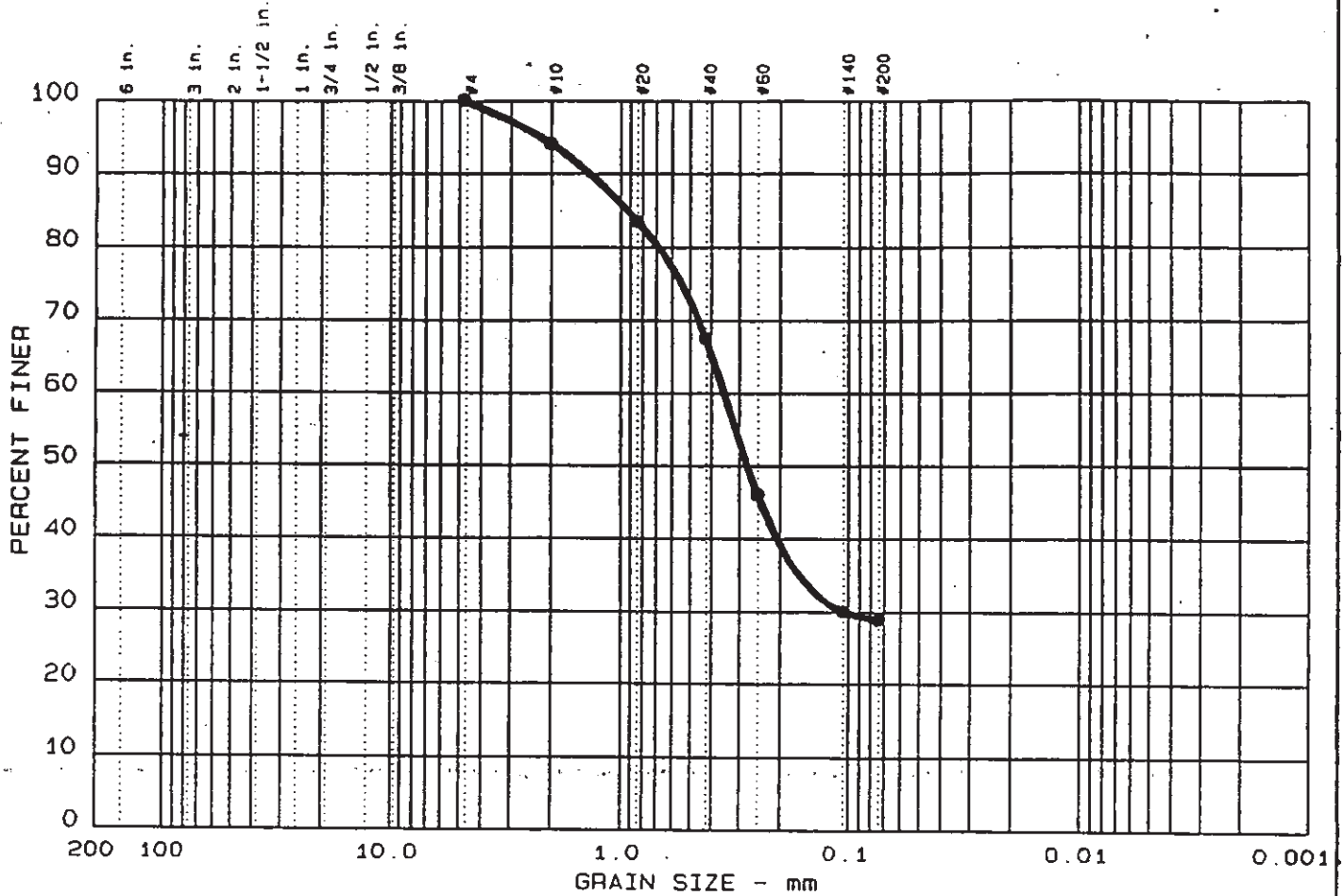
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Sandy Clay		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1SS-54 @ 54 FT.  
 Date: November 3, 1995

Remarks:  
 Tested by: HET  
 Reviewed by: RLB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 13	0.0	0.0	71.1	28.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.92	0.35	0.28	0.105				

MATERIAL DESCRIPTION	USCS	AASHTO
• Brown Silty Sand		

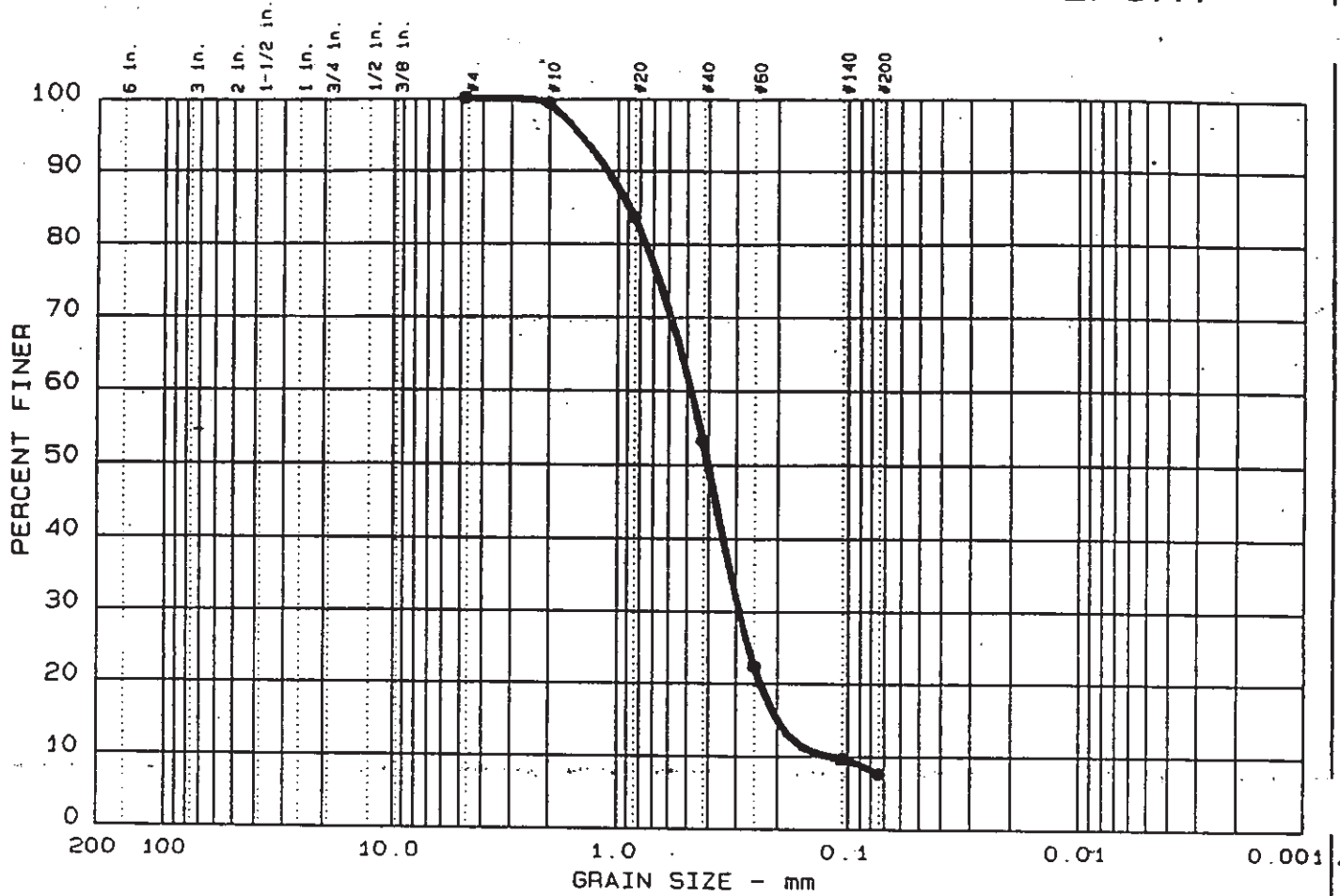
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-55 @ 88 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HEJ  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	92.4	7.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.88	0.47	0.40	0.289	0.1998	0.1123	1.58	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand		

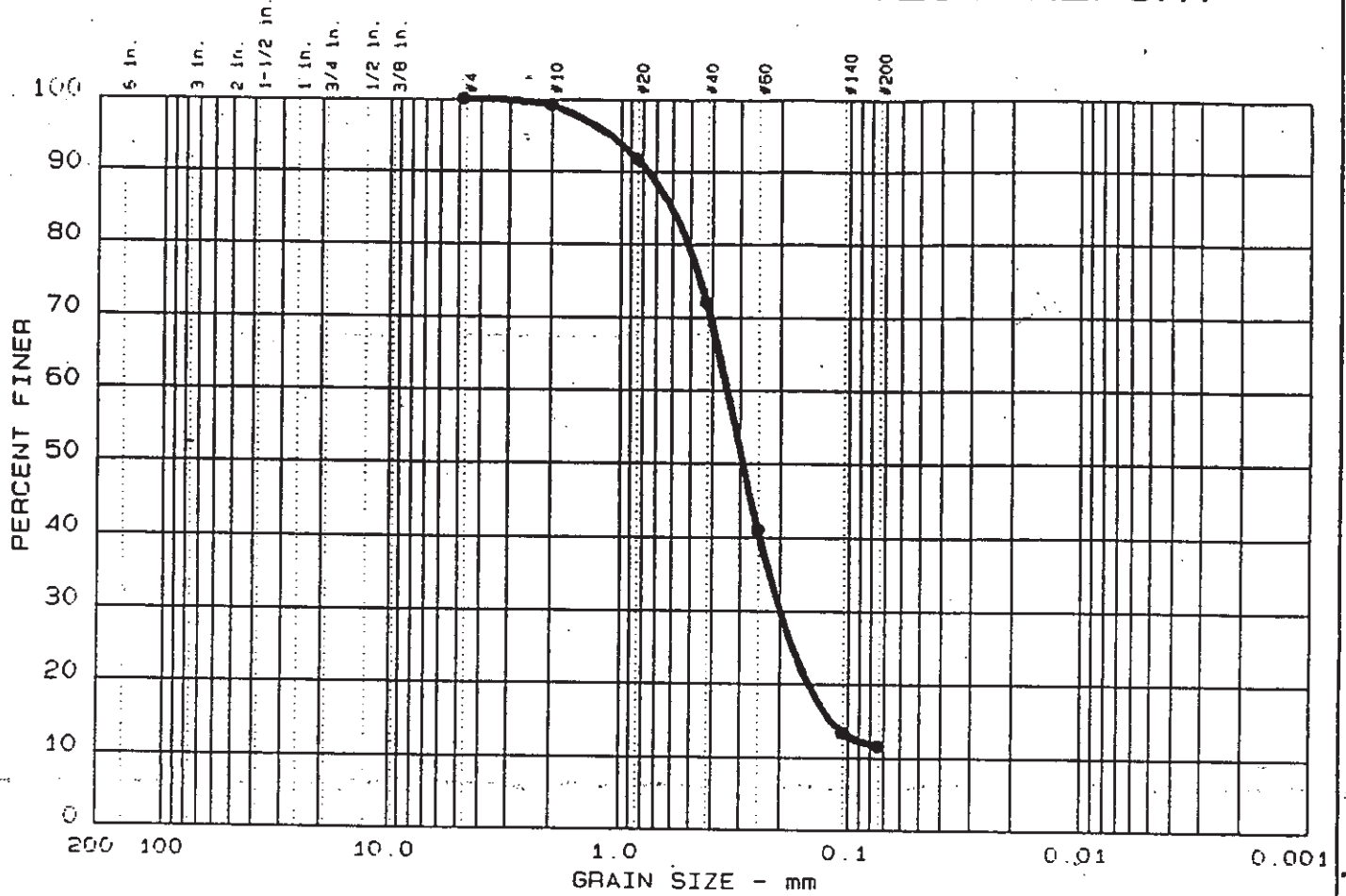
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-57 @ 91 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.0	88.4	11.6	

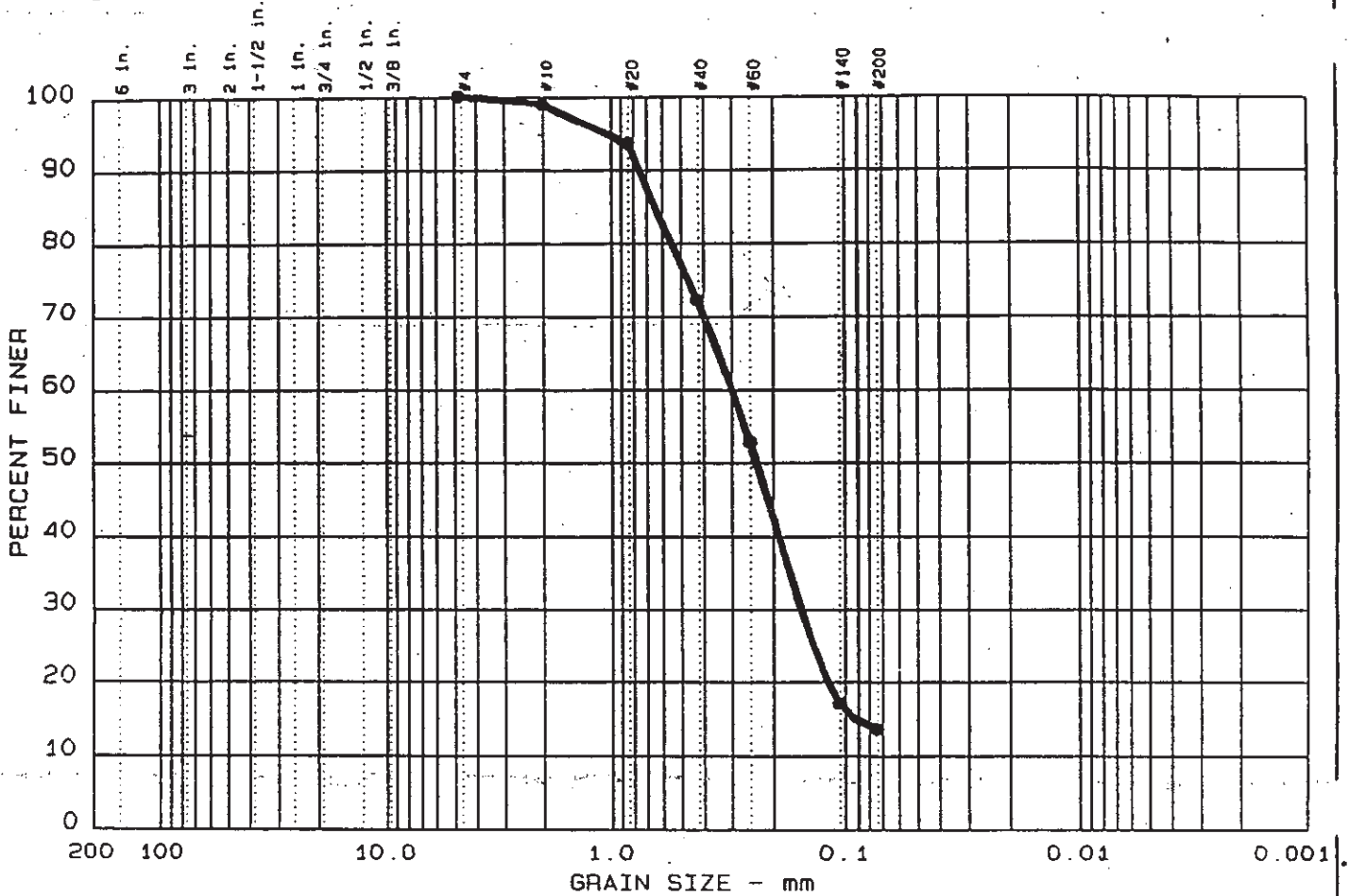
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.59	0.34	0.29	0.200	0.1179			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-60 @ 95 ft.  
  
 Date: November 3, 1995

Remarks:  
 Tested by: HET  
 Reviewed by: RUB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 18	0.0	0.0	86.4	13.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.64	0.30	0.23	0.153	0.0910			

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1.SS-63 @ 100 Ft.  
  
 Date: November 3, 1995

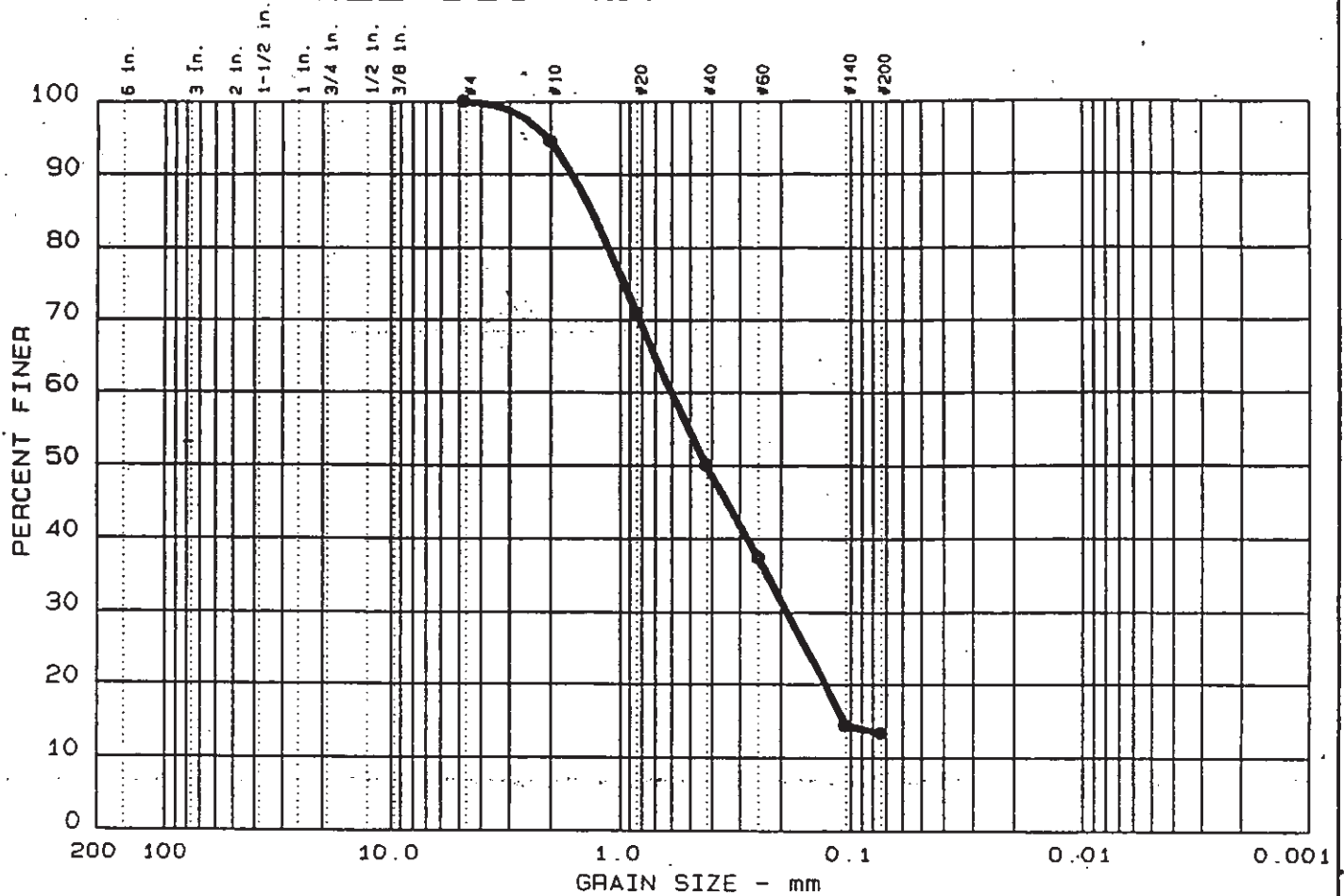
Remarks:  
 Tested by: *HEJ*  
 Reviewed by: *RUB*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 1	0.0	0.0	86.6	13.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.32	0.59	0.42	0.188	0.1070			

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Silty Sand		

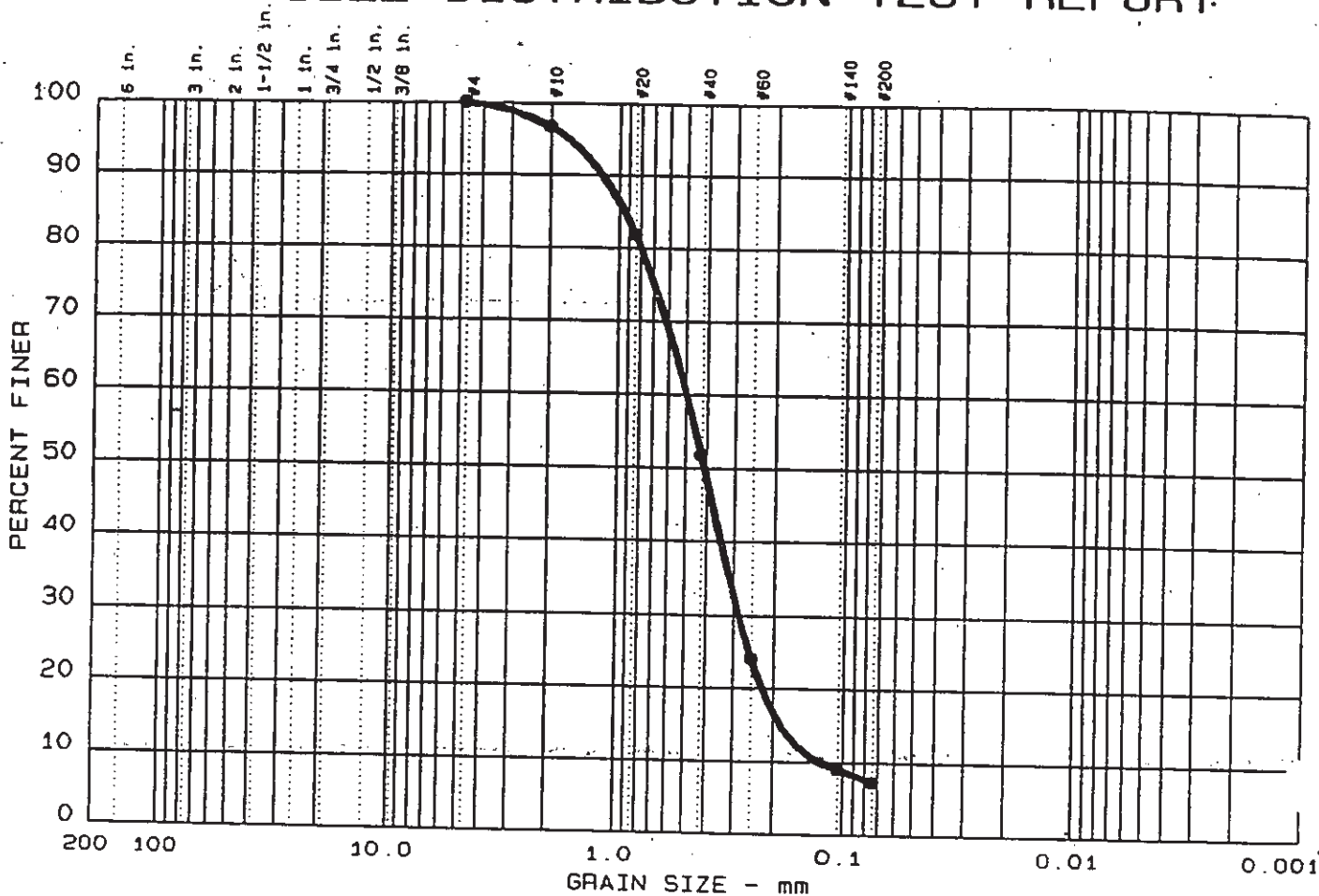
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-65 @ 103 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: *HEJ*  
 Reviewed by: *RLB*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 20	0.0	0.0	92.7	7.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.93	0.49	0.41	0.284	0.1856	0.1240	1.33	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Silty Sand		

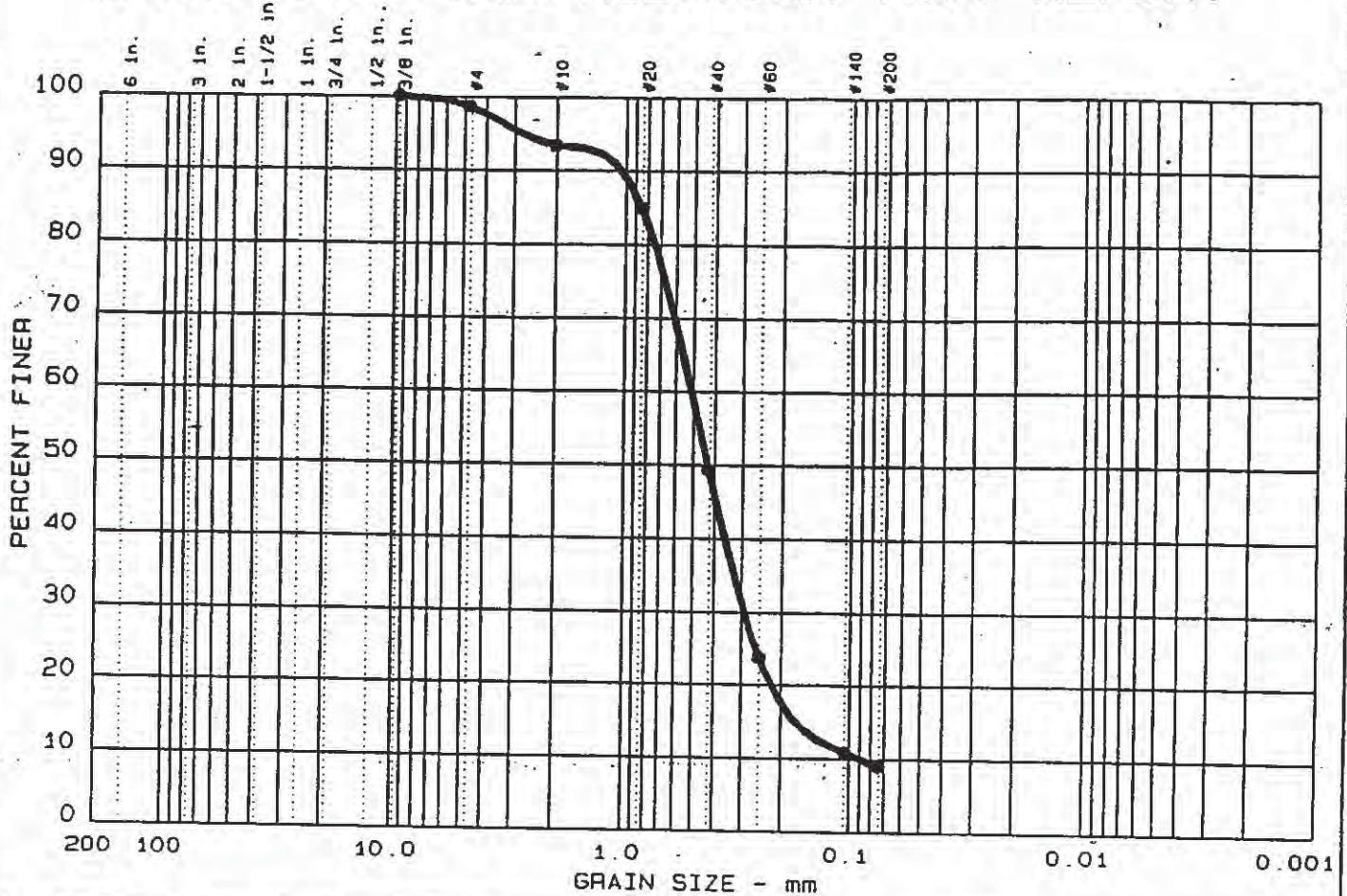
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-67 @ 106 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: *HEJ*  
 Reviewed by: *RLB*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 3	0.0	1.4	89.6	9.0	

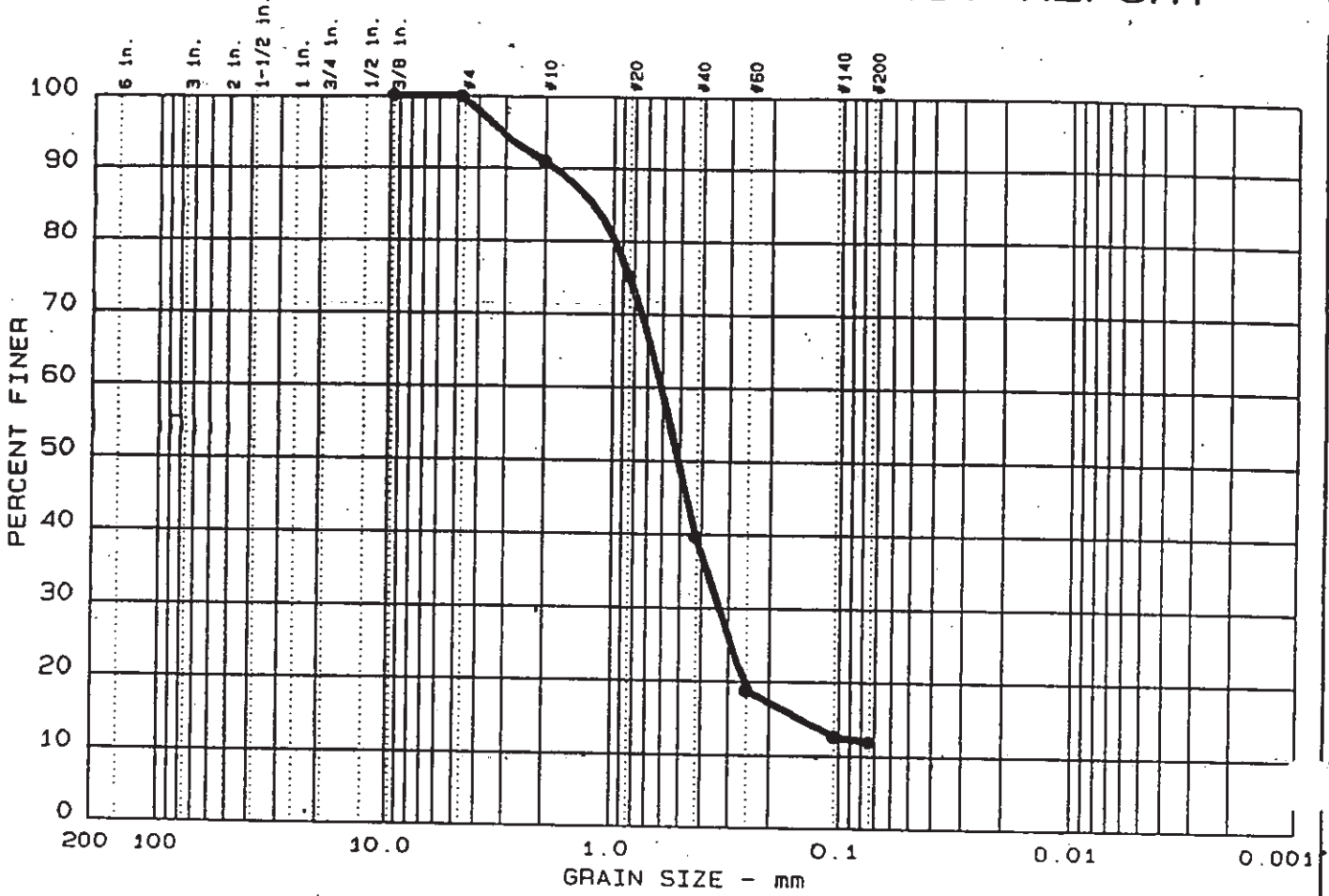
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.84	0.50	0.42	0.290	0.1730	0.0877	1.91	5.8

MATERIAL DESCRIPTION	USCS	AASHTO
• Light Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-71 @ 112 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HET  
 Reviewed by: RLB

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.2	87.9	11.9	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		1.20	0.60	0.50	0.329	0.1454			

MATERIAL DESCRIPTION	USCS	AASHTO
● Light Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-72 @ 113 Ft.  
 Date: November 3, 1995

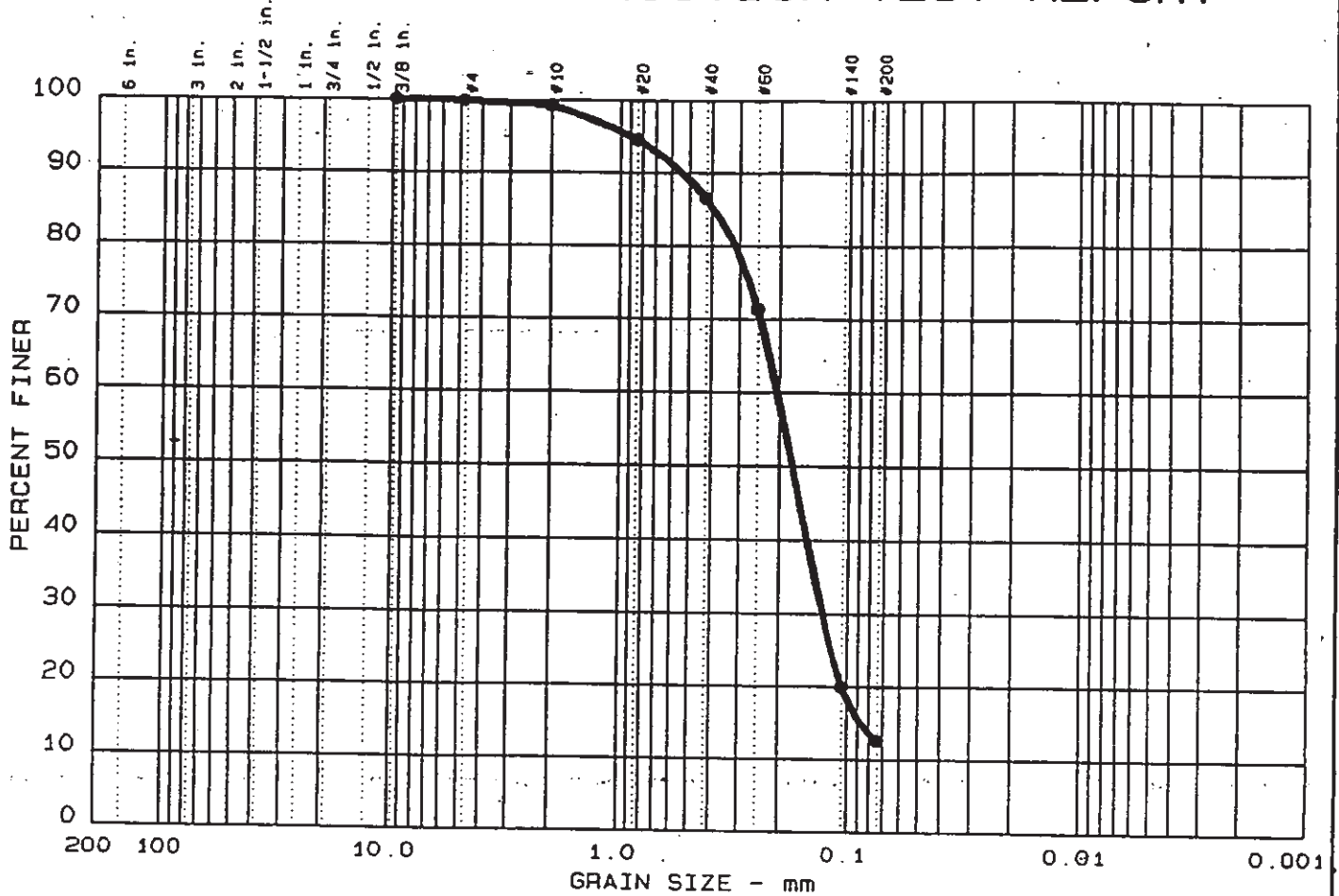
Remarks:  
 Tested by: HES  
 Reviewed by: RLB

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

K-TRT-F-00001  
R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.2	87.2	12.6	

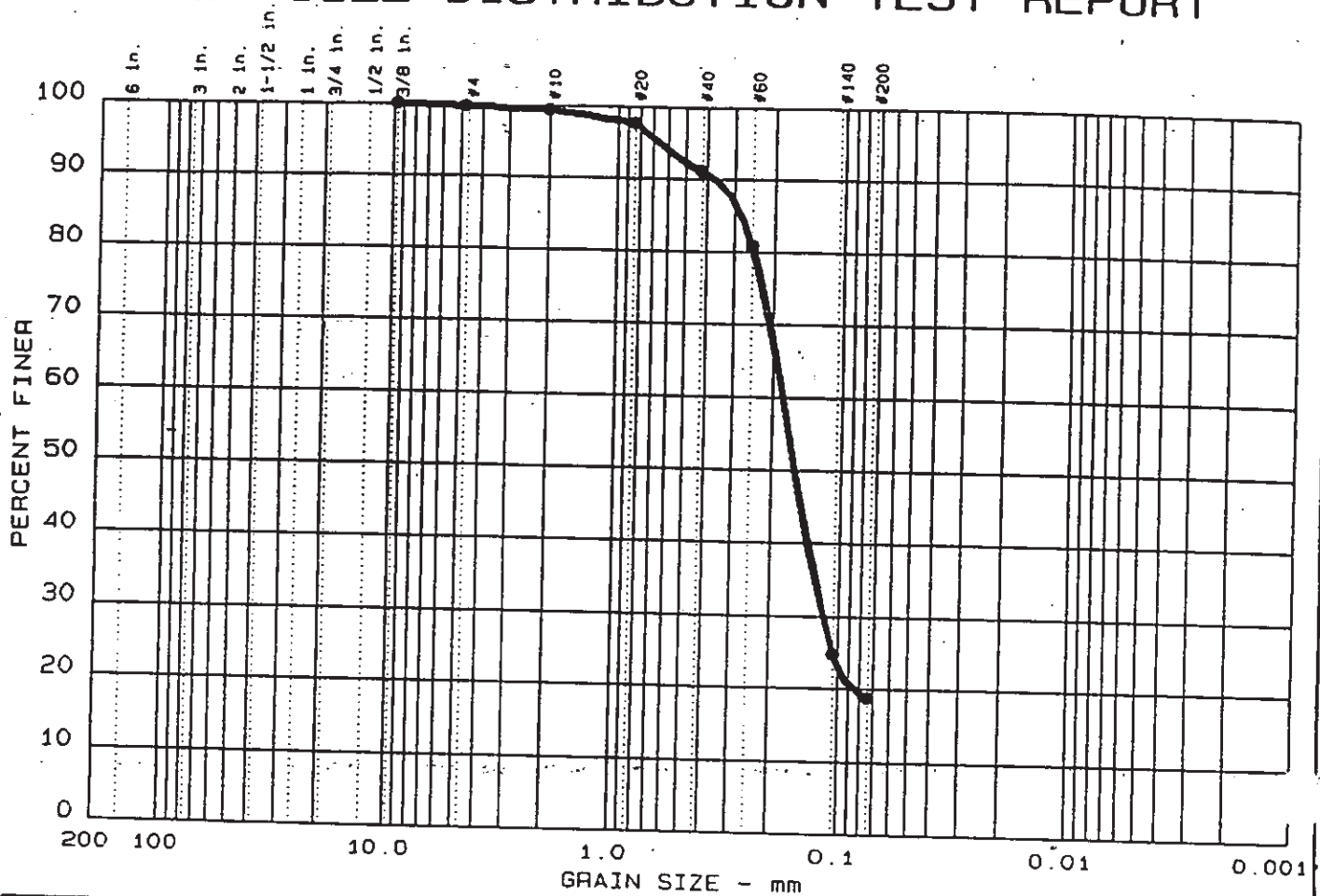
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.38	0.20	0.18	0.129	0.0863			

MATERIAL DESCRIPTION	USCS	AASHTO
• Yellow-Tan Silty Sand		

Project No.: 50161-5-5755  
 Project: Savannah River Site Task 12  
 • Location: FB-1 SS-75 @ 118 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

# GRAIN SIZE DISTRIBUTION TEST REPORT

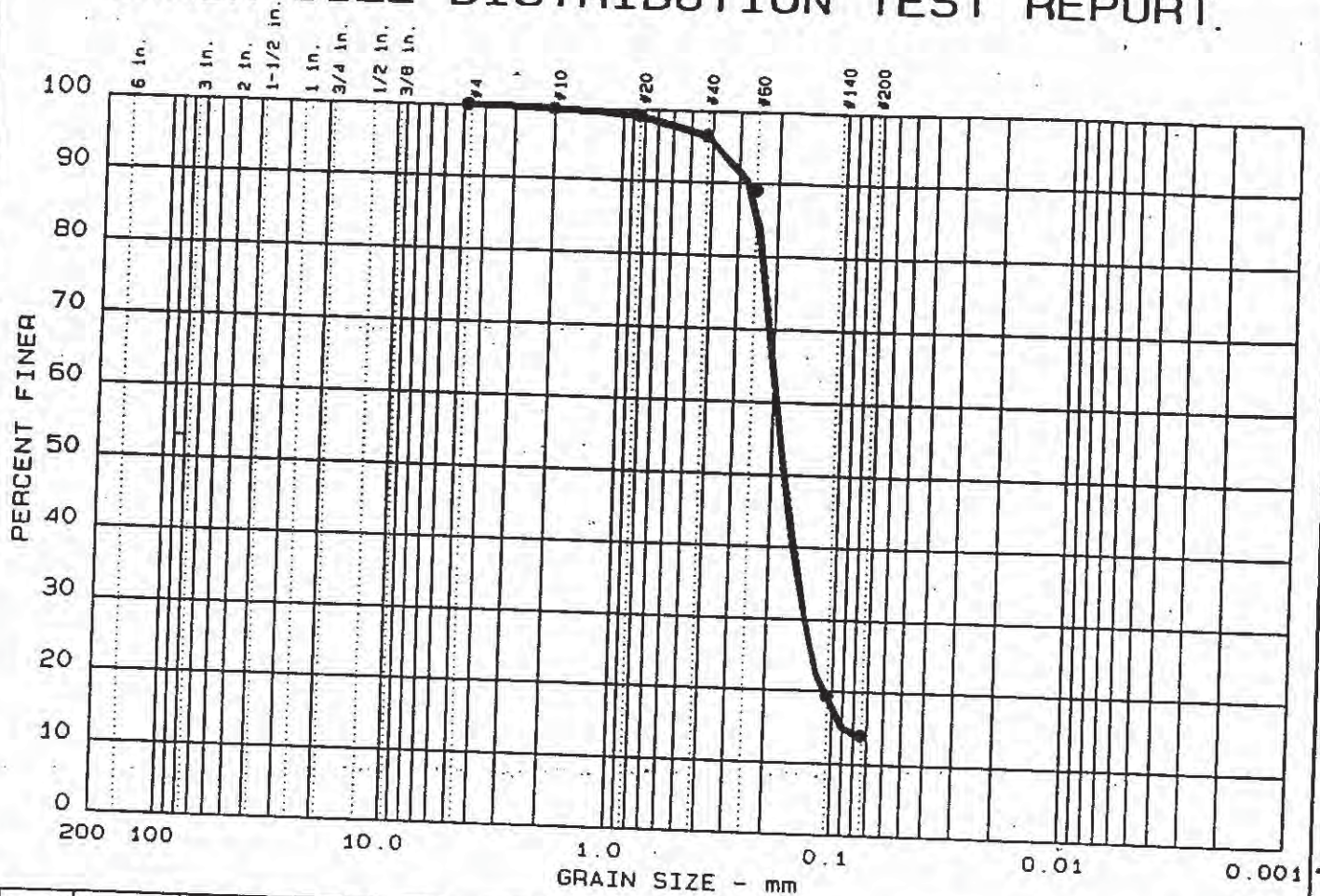


Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 4	0.0	0.4	80.8	18.8	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.28	0.18	0.16	0.118				

MATERIAL DESCRIPTION		USCS	AASHTO
• Yellow-Tan Silty Sand			
Project No.: 50161-5-5756 Project: Savannah River Site Task 12 • Location: FB-1 SS-79 @ 125 Ft. Date: November 3, 1995		Remarks: Tested by: HET Reviewed by: RLP	
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>		Figure No.	

# GRAIN SIZE DISTRIBUTION TEST REPORT.



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
7	0.0	0.0	86.0	14.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.24	0.19	0.17	0.137	0.0884			

MATERIAL DESCRIPTION	USCS	AASHTO
● Yellow Silty Sand.		

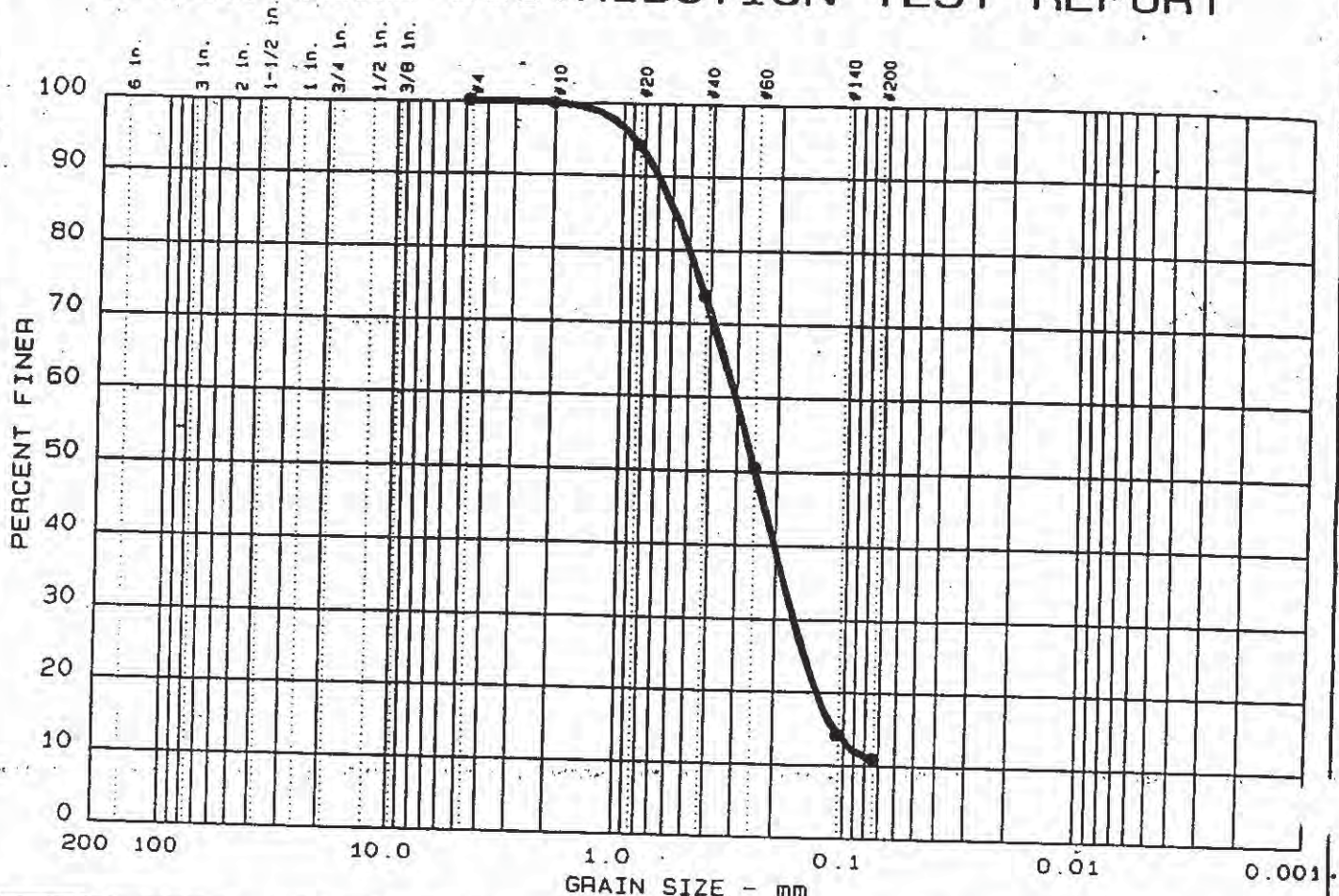
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-80 @ 127 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: *HEJ*  
 Reviewed by: *RLB*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• E	0.0	0.0	89.0	11.0	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.58	0.30	0.25	0.165	0.1091			

MATERIAL DESCRIPTION	USCS	AASHTO
• Yellow-Tan Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 • Location: FB-1.SS-81 @ 128 Ft.  
 Date: November 3, 1995

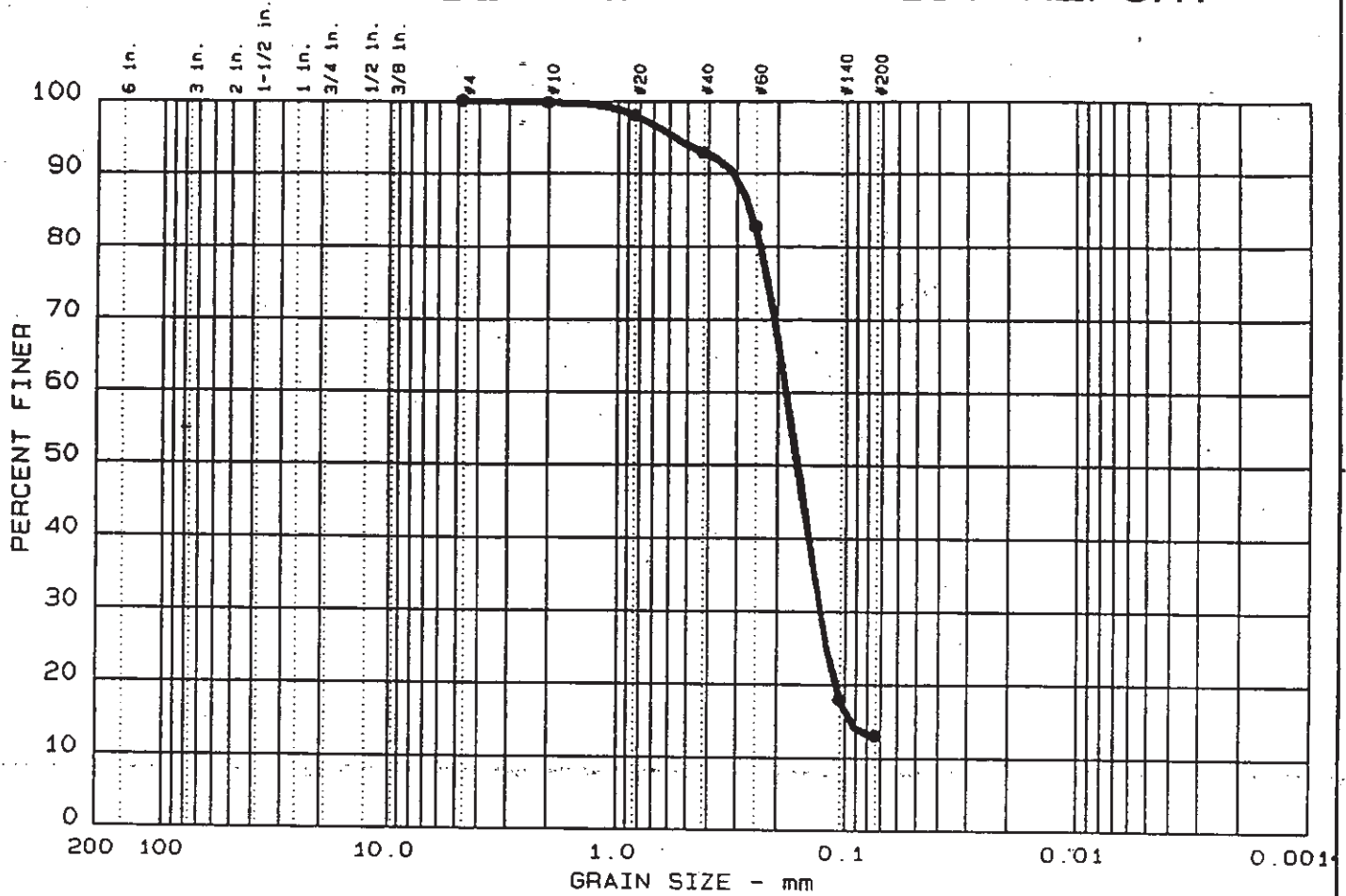
Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	B6.9	13.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.26	0.18	0.16	0.129	0.0944			

MATERIAL DESCRIPTION	USCS	AASHTO
● Yellow-Tan Silty Sand		

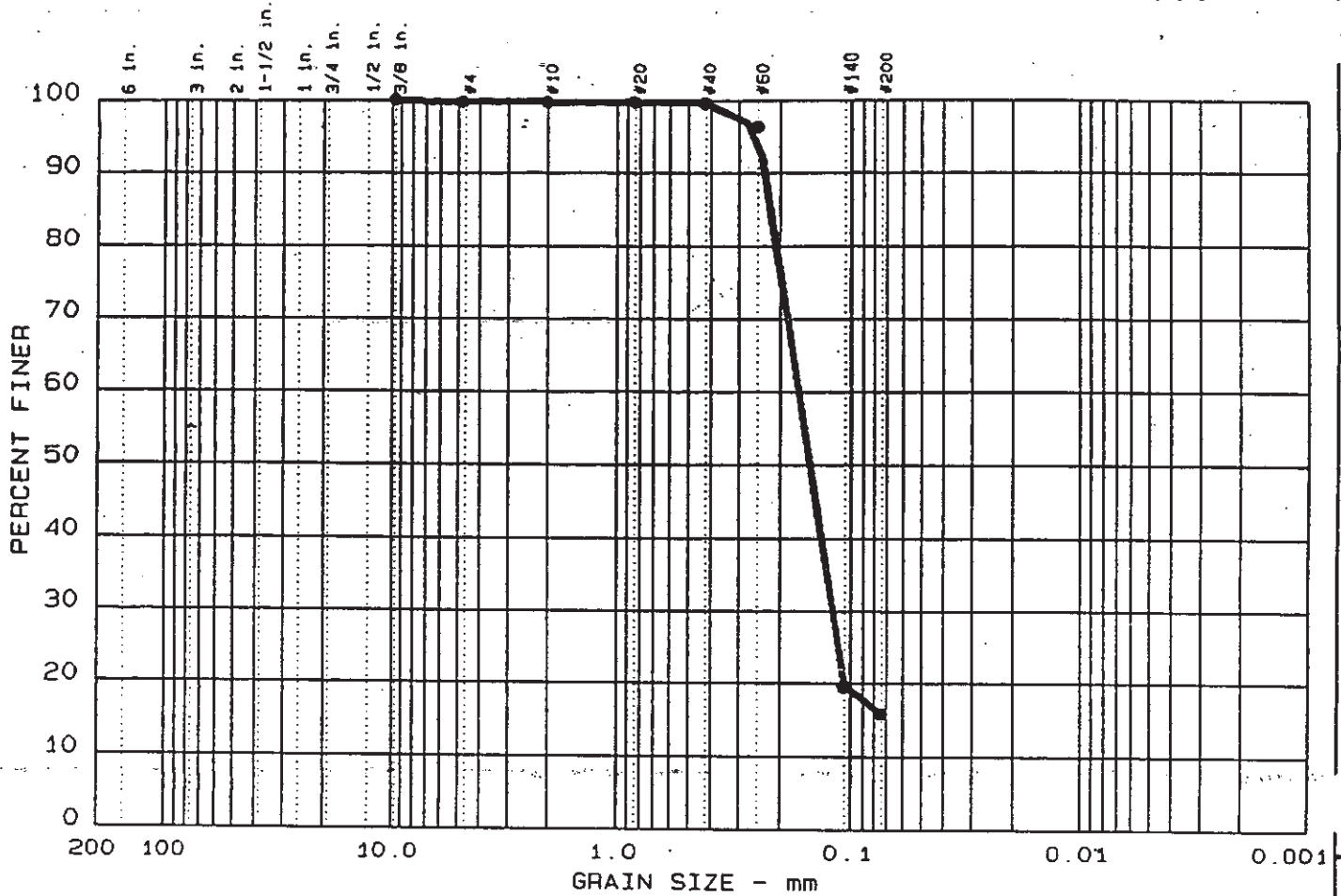
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-85 @ 134 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HET  
 Reviewed by: RUS

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.3	83.9	15.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.22	0.17	0.15	0.118				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand		

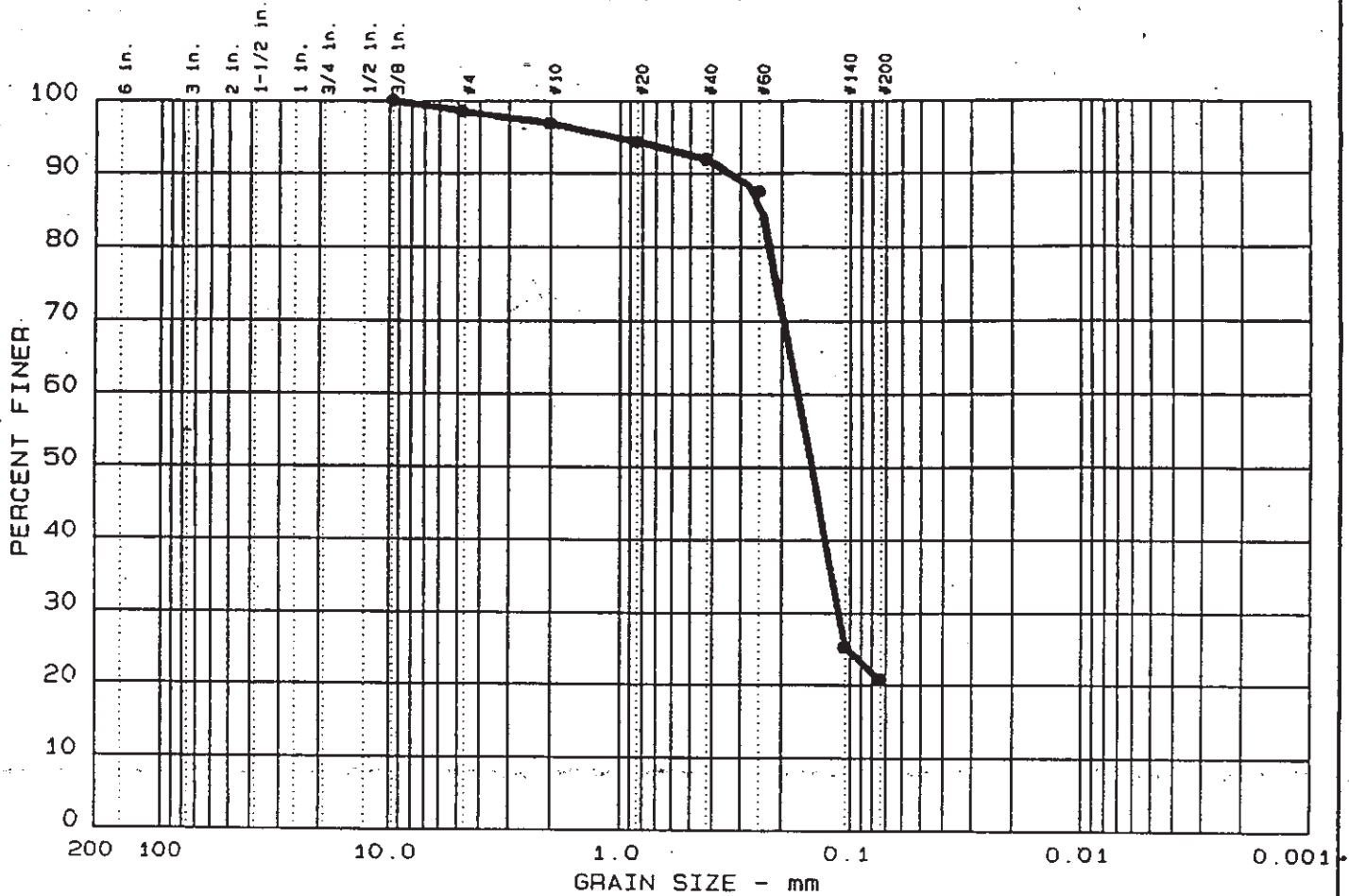
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-86 @ 135 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HEJ  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	1.5	77.7	20.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.24	0.17	0.15	0.112				

MATERIAL DESCRIPTION	USCS	AASHTO
● Yellow Silty Sand		

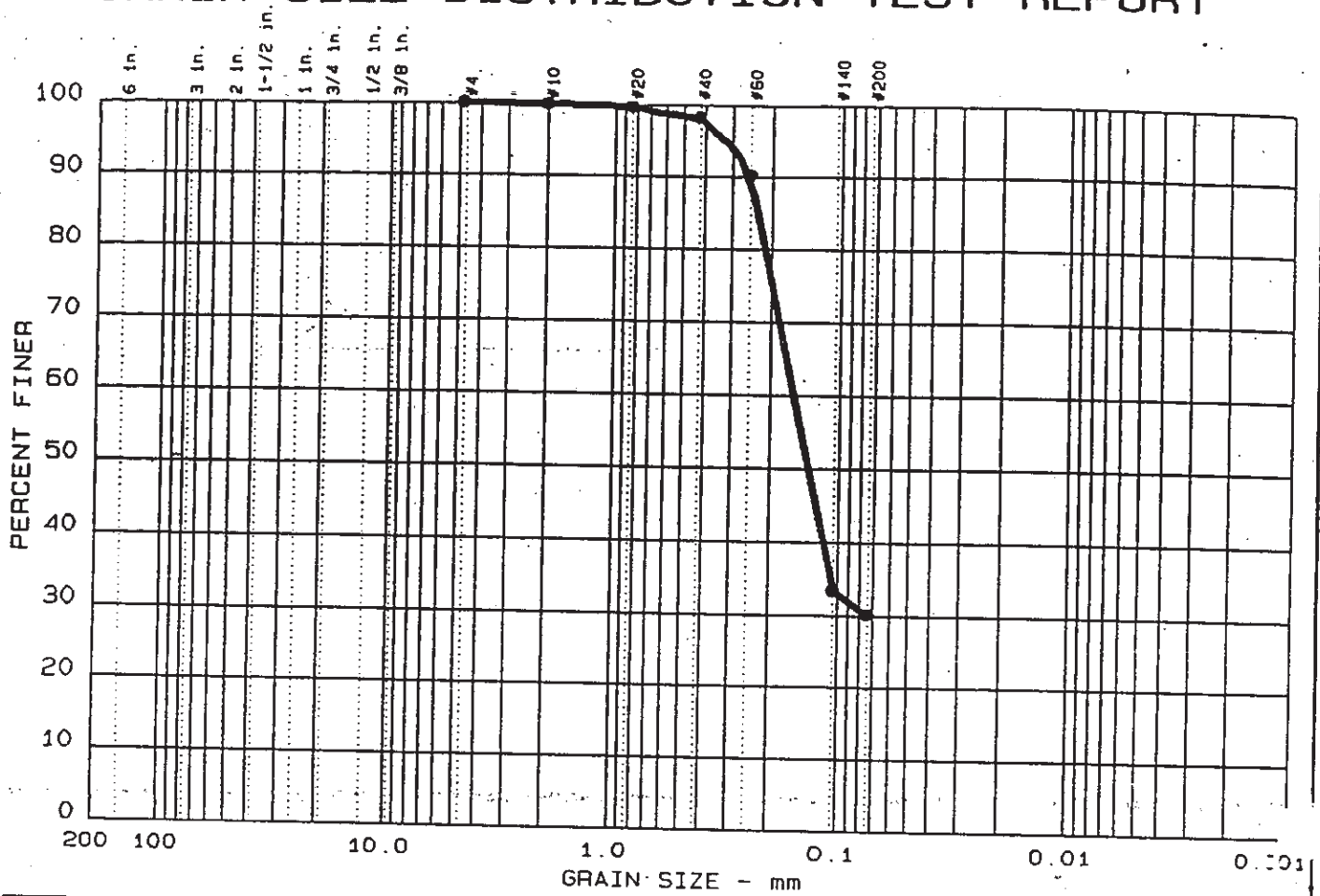
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-89 @ 140 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HET  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	69.9	30.1	

LL	PI	D85	D60	D50	D30	D15	D10	C <sub>c</sub>	C <sub>u</sub>
●		0.23	0.16	0.14					

MATERIAL DESCRIPTION	USCS	AASHTO
● Yellow-Tan Silty Sand		

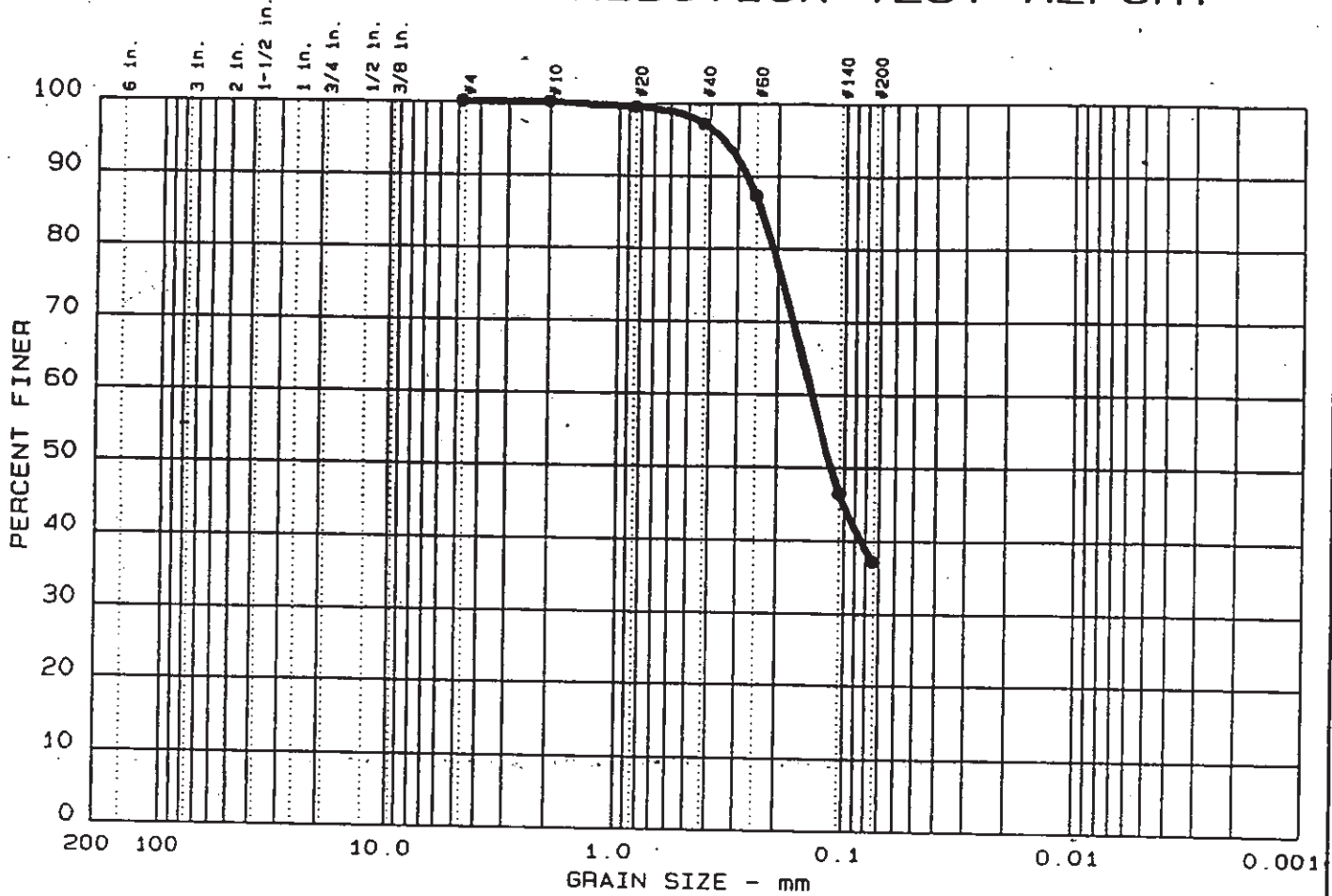
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-91 @ 143 Ft.  
  
 Date: November 3, 1995

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	62.9	37.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.23	0.14	0.11					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand		

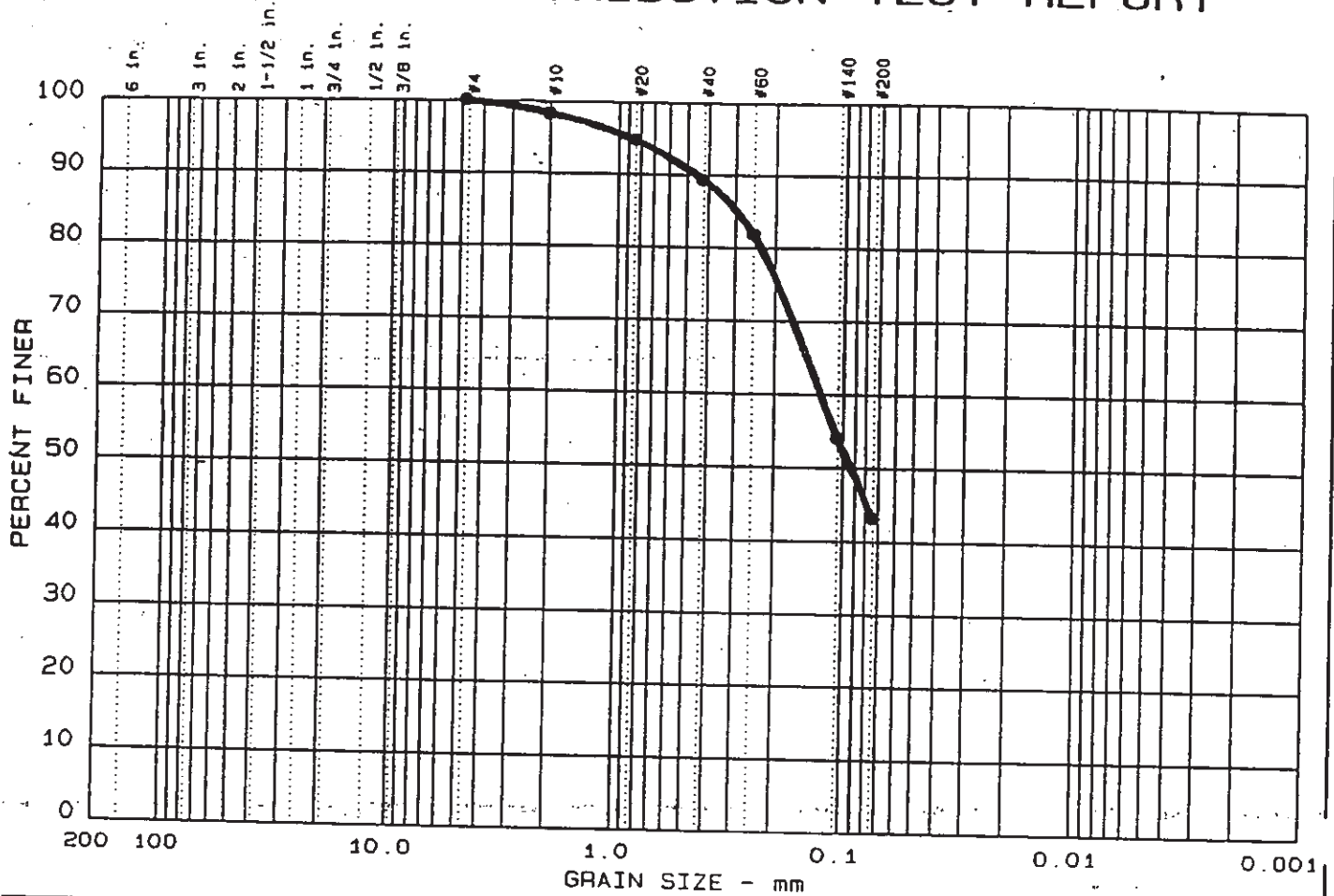
Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-92 @ 145 Ft.  
 Date: November 3, 1995

Remarks:  
 Tested by: HET  
 Reviewed by: RUB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/S</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	56.8	43.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.29	0.13	0.09					

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand		

Project No.: 50161-5-5756  
 Project: Savannah River Site Task 12  
 ● Location: FB-1 SS-96 @ 151 Ft.

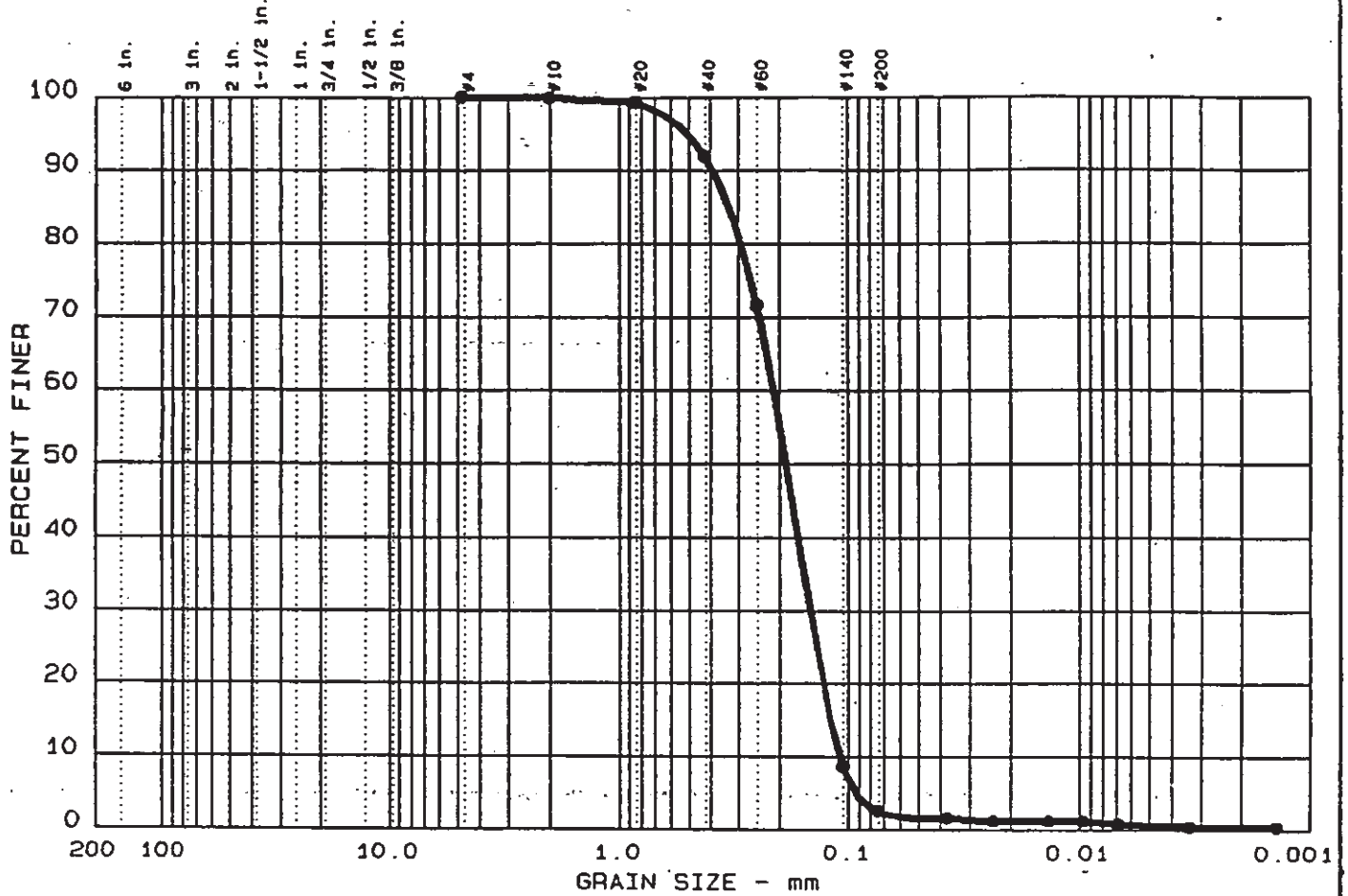
Date: November 3, 1995

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

Figure No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	0.0	97.4	1.9	0.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.33	0.21	0.19	0.148	0.1194	0.1084	0.95	2.0

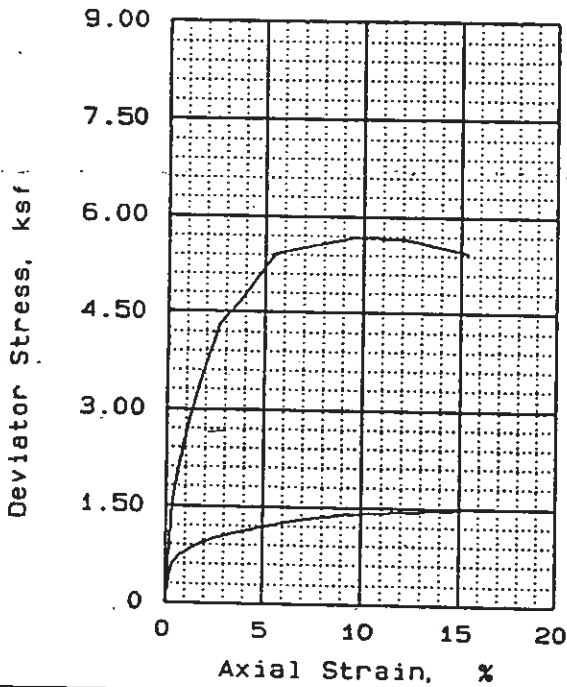
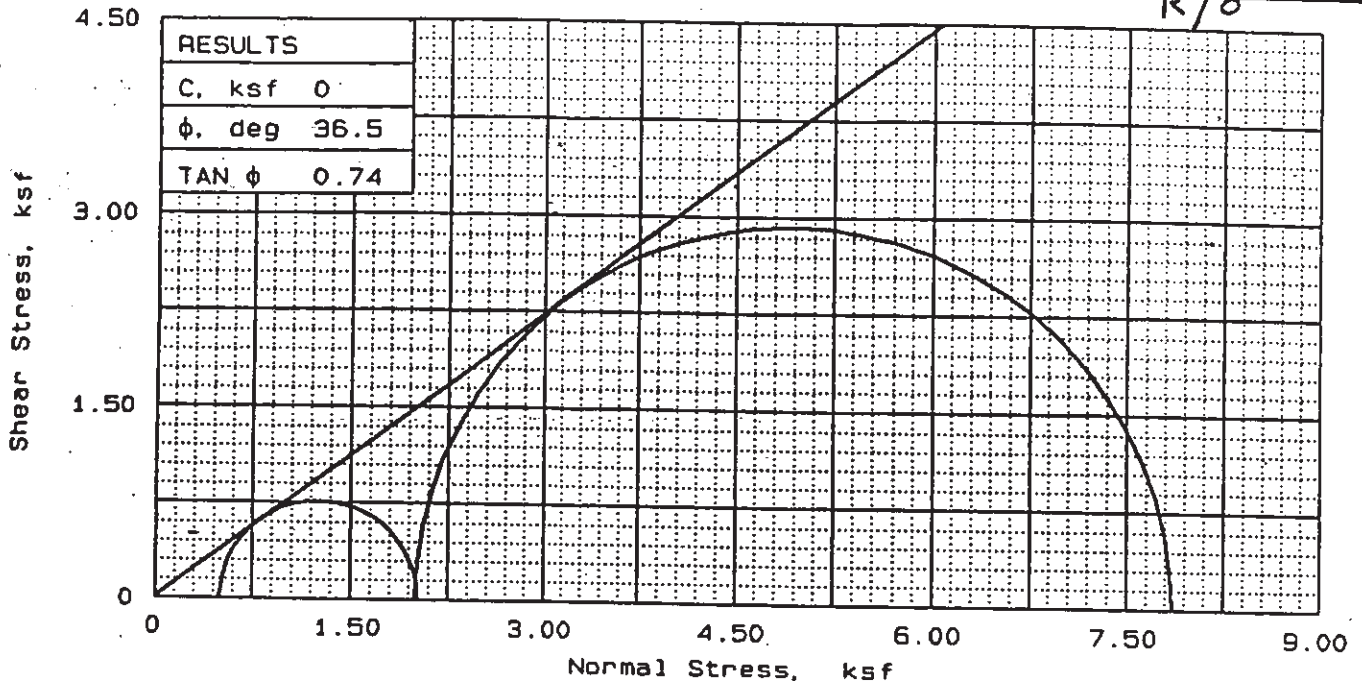
MATERIAL DESCRIPTION	USCS	AASHTO
● Light Tan Poorly Graded Sand	SP	A-3

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 ST-3 @ 7 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: EM  
 Reviewed by: HS

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	3.2	5.6
	DRY DENSITY, pcf	91.8	93.4
	SATURATION, %	11.1	20.4
	VOID RATIO	0.735	0.705
	DIAMETER, in	2.87	2.86
	HEIGHT, in	6.00	6.00
AT TEST	WATER CONTENT, %	30.8	29.2
	DRY DENSITY, pcf	89.1	91.2
	SATURATION, %	100.0	100.0
	VOID RATIO	0.786	0.745
	DIAMETER, in	2.91	2.90
	HEIGHT, in	5.98	5.99
BACK PRESSURE, ksf		4.32	4.32
CELL PRESSURE, ksf		4.82	6.32
FAILURE STRESS, ksf		1.52	5.85
PORE PRESSURE, ksf			
STRAIN RATE, %/min.		0.100	0.100
ULTIMATE STRESS, ksf			
PORE PRESSURE, ksf			
$\sigma_1$ FAILURE, ksf		2.02	7.85
$\sigma_3$ FAILURE, ksf		0.5	2

TYPE OF TEST:  
Consolidated drained

SAMPLE TYPE: Undisturbed

DESCRIPTION: Light Tan Poorly Graded Sand

LL= NL      PL= NP      PI=

SPECIFIC GRAVITY= 2.55

REMARKS: Tested by: *HS*

CLIENT: Savannah River Site

PROJECT: SRS Task 12

SAMPLE LOCATION: FB-2 St-3 @ 7 Ft.

PROJ. NO.: 5016155756      DATE: 12/19/95

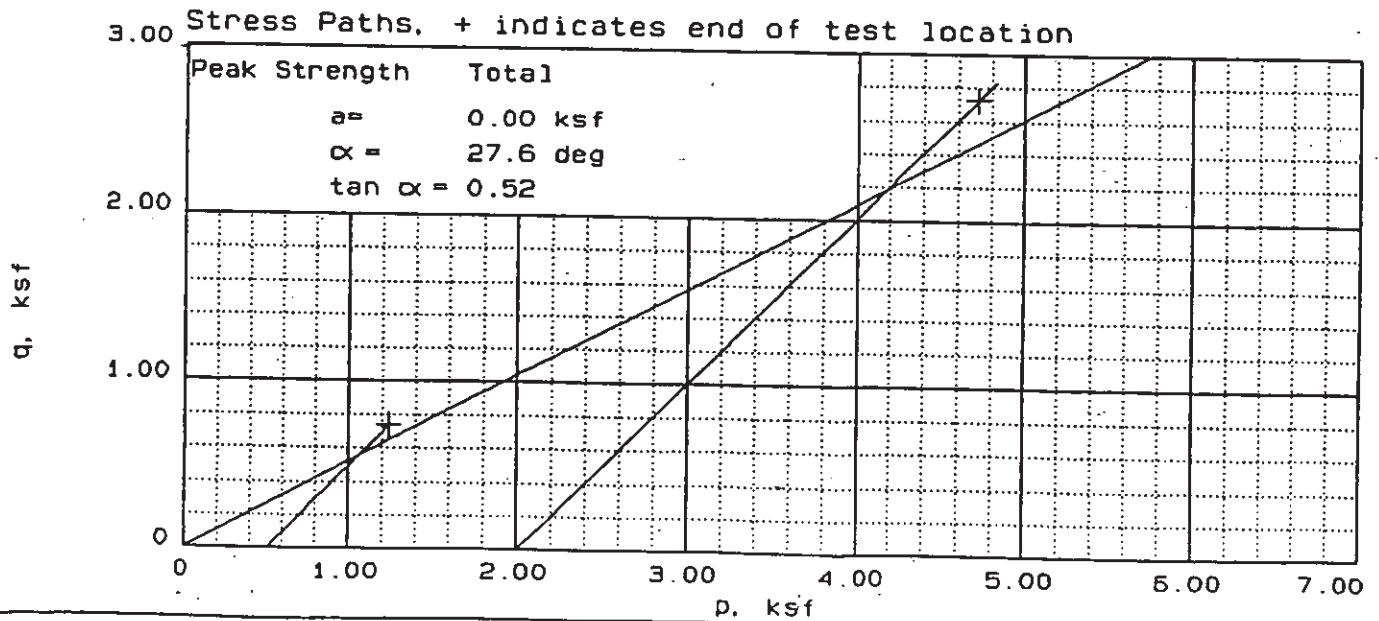
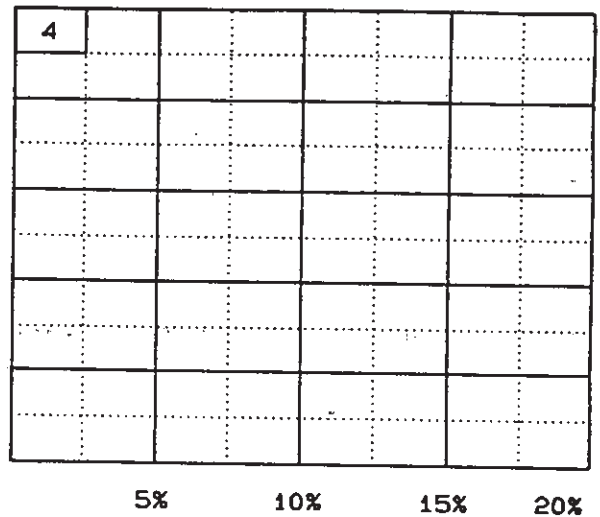
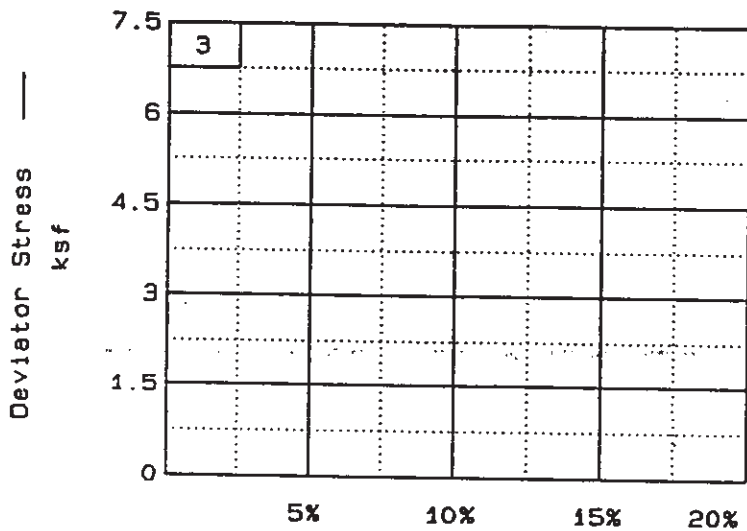
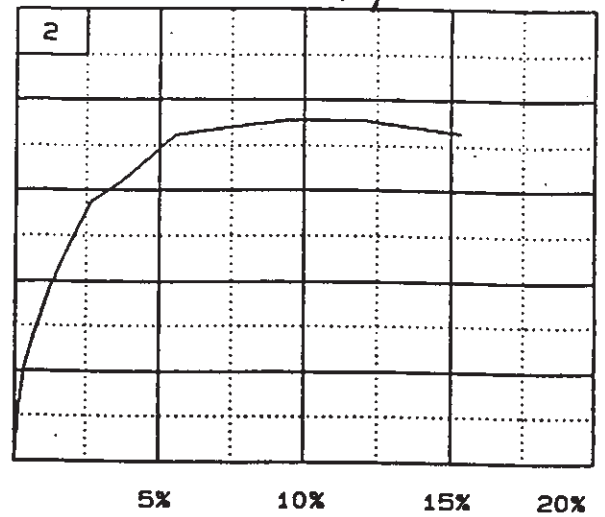
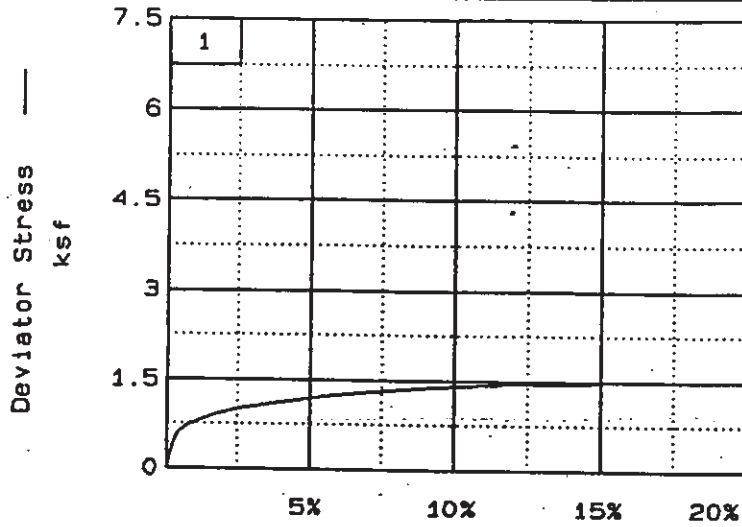
Reviewed by: *RLB*

TRIAxIAL COMPRESSION TEST

**LAW ENGINEERING, INC.**

FIG. NO.





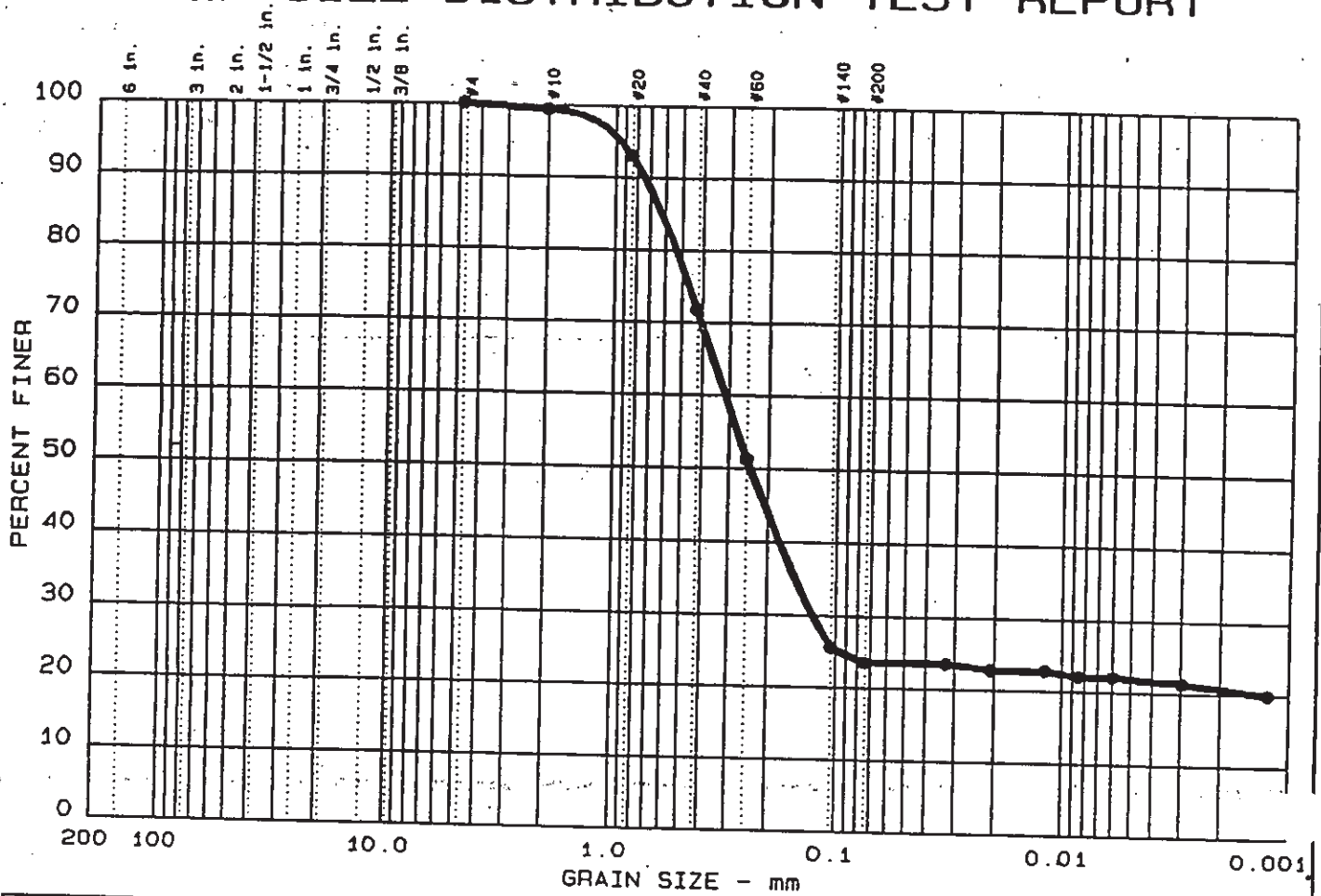
Client: Savannah River Site  
 Project: SRS Task 12  
 Location: FB-2 St-3 @ 7 Ft.  
 File: 5756C

Project No.: 5016155756

Page 2/2

Fig. No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• .20	0.0	0.0	76.5	1.6	21.9

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
• 35	19	0.61	0.31	0.24	0.126				

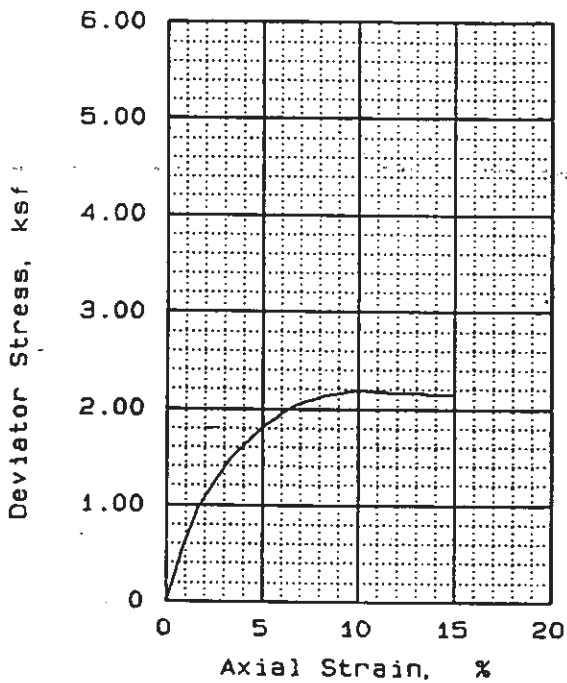
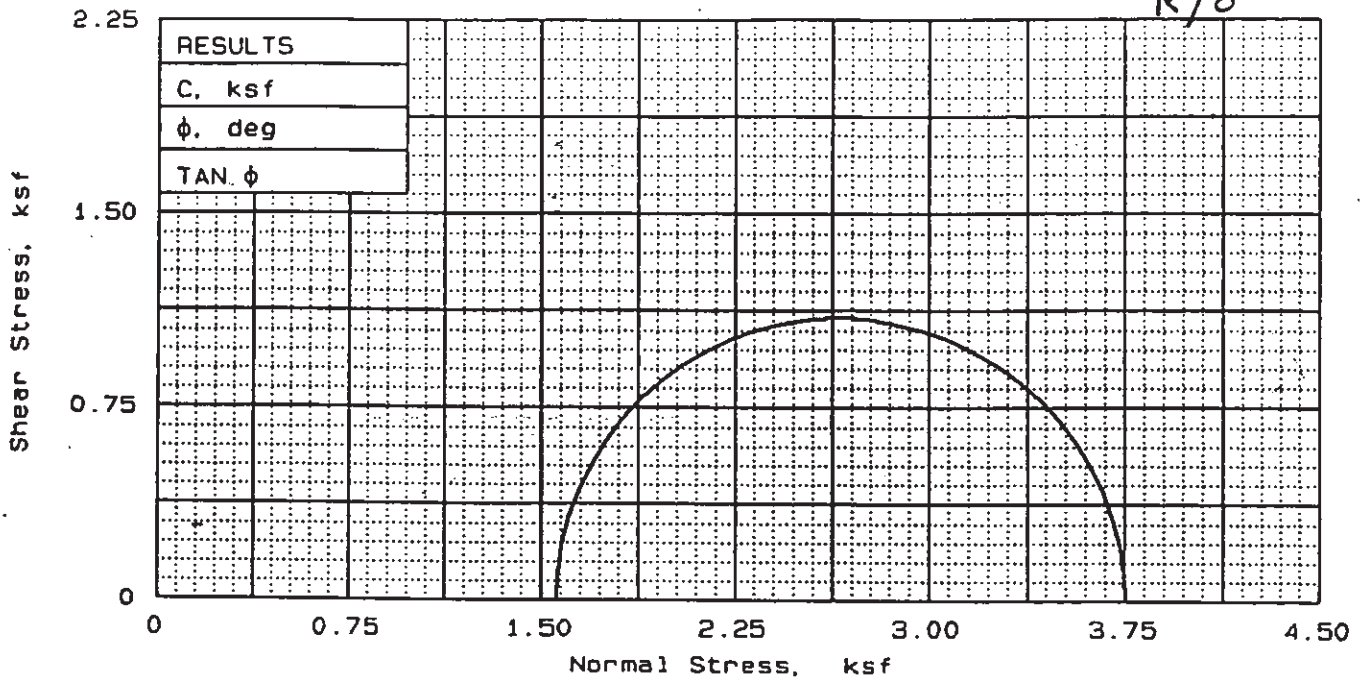
MATERIAL DESCRIPTION	USCS	AASHTO
• Reddish Brown Clayey Sand	SC	A-7-6 (0.8)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 • Location: FB-2 ST-6 @ 13 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: EM  
 Reviewed by: H

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



SAMPLE NO.		1
INITIAL	WATER CONTENT, %	15.4
	DRY DENSITY, pcf	114.8
	SATURATION, %	87.5
	VOID RATIO	0.479
	DIAMETER, in	2.86
HEIGHT, in	6.00	
AT TEST	WATER CONTENT, %	15.4
	DRY DENSITY, pcf	114.8
	SATURATION, %	87.5
	VOID RATIO	0.479
	DIAMETER, in	2.86
HEIGHT, in	6.00	
BACK PRESSURE, ksf		0.00
CELL PRESSURE, ksf		1.56
FAILURE STRESS, ksf		2.19
PORE PRESSURE, ksf		
STRAIN RATE, %/min.		1.000
ULTIMATE STRESS, ksf		
PORE PRESSURE, ksf		
$\sigma_1$ FAILURE, ksf		3.75
$\sigma_3$ FAILURE, ksf		1.56

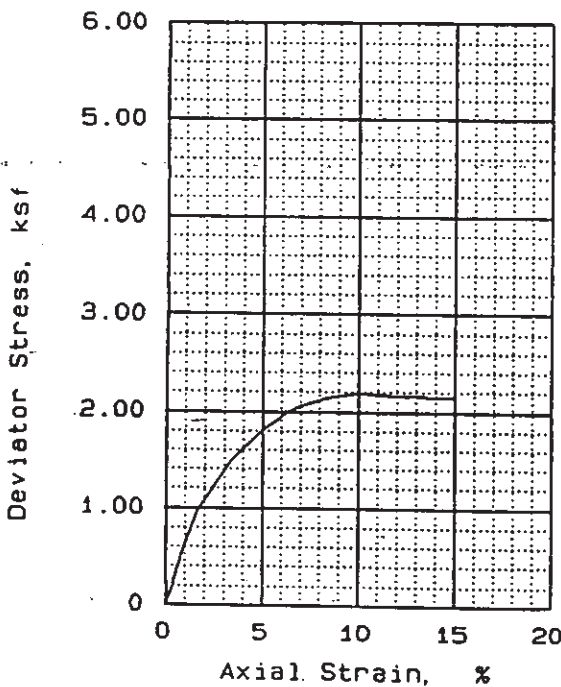
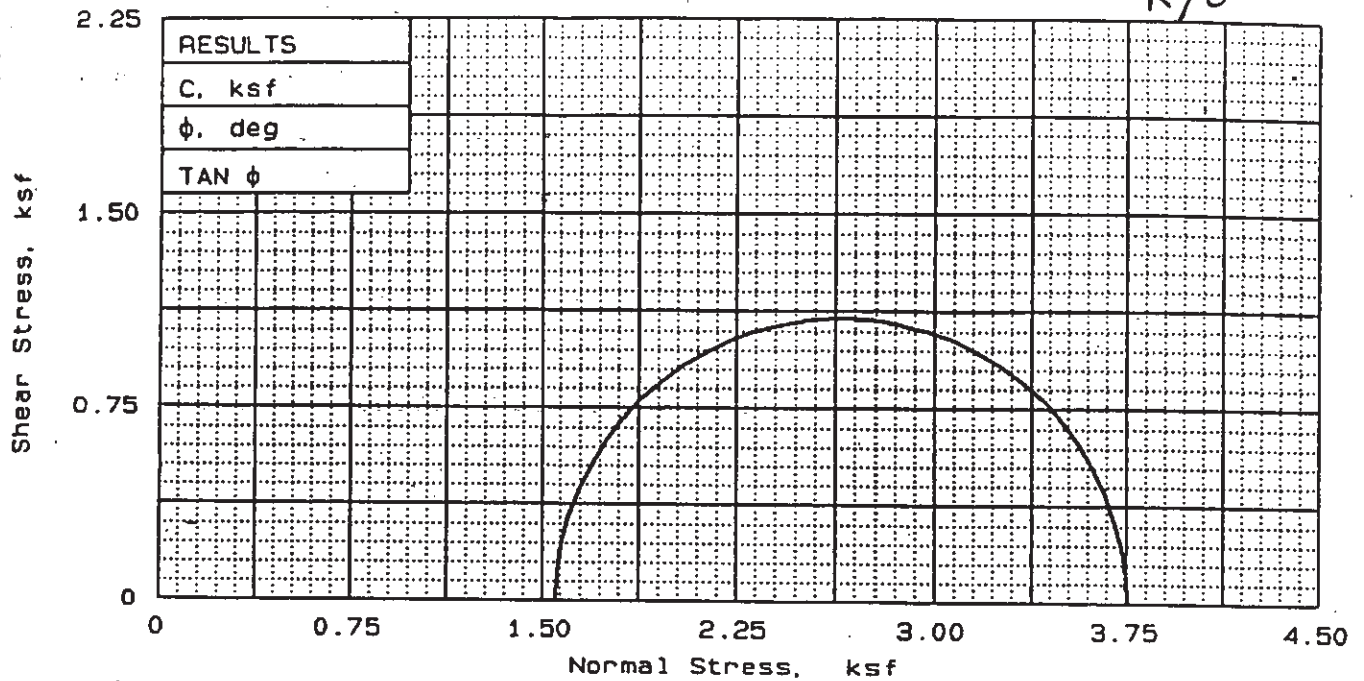
TYPE OF TEST:  
 Unconsolidated undrained  
 SAMPLE TYPE: Undisturbed  
 DESCRIPTION: Reddish Brown  
 Clayey Sand  
 LL= 35      PL= 16      PI= 19.0  
 SPECIFIC GRAVITY= 2.72  
 REMARKS: Tested by: *HS*

Reviewed by: *RUB*

FIG. NO.

CLIENT: Savannah River Site  
 PROJECT: SRS Task 12  
 SAMPLE LOCATION: FB-2 St-6 @ 13 Ft.  
 PROJ. NO.: 5016155756      DATE: 12/19/95

TRIAxIAL COMPRESSION TEST  
**LAW ENGINEERING, INC.**



SAMPLE NO.		1
INITIAL	WATER CONTENT, %	15.4
	DRY DENSITY, pcf	114.8
	SATURATION, %	87.5
	VOID RATIO	0.479
	DIAMETER, in	2.86
	HEIGHT, in	6.00
AT TEST	WATER CONTENT, %	15.4
	DRY DENSITY, pcf	114.8
	SATURATION, %	87.5
	VOID RATIO	0.479
	DIAMETER, in	2.86
	HEIGHT, in	6.00
BACK PRESSURE, ksf		0.00
CELL PRESSURE, ksf		1.56
FAILURE STRESS, ksf		2.19
PORE PRESSURE, ksf		
STRAIN RATE, %/min.		1.000
ULTIMATE STRESS, ksf		
PORE PRESSURE, ksf		
$\sigma_1$ FAILURE, ksf		3.75
$\sigma_3$ FAILURE, ksf		1.56

TYPE OF TEST: Unconsolidated undrained  
 SAMPLE TYPE: Undisturbed  
 DESCRIPTION: Reddish Brown Clayey Sand  
 LL= 35      PL= 16      PI= 19.0  
 SPECIFIC GRAVITY= 2.72  
 REMARKS: Tested by: *HB*

Reviewed by: *RUB*

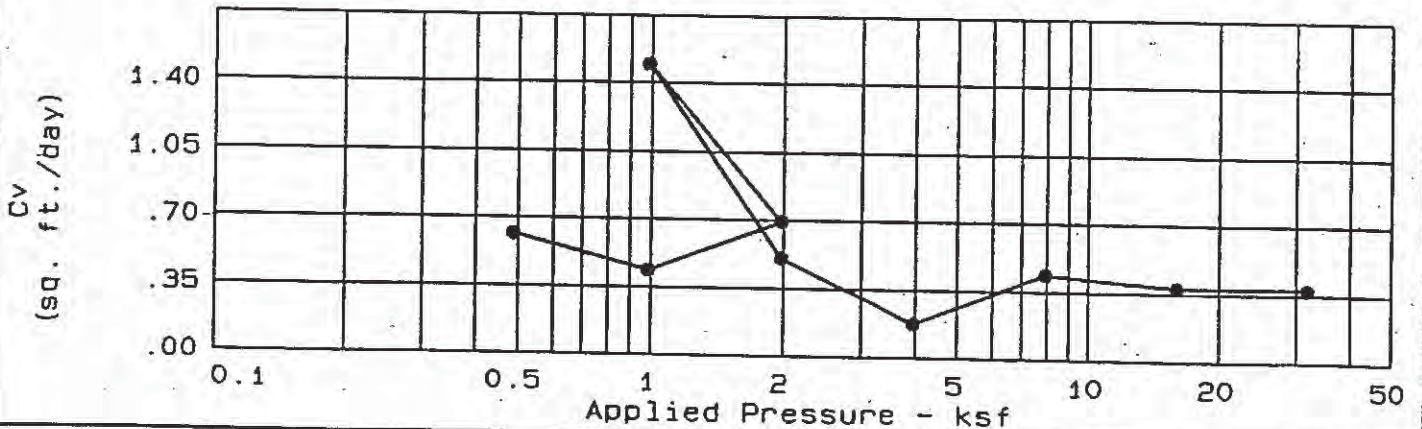
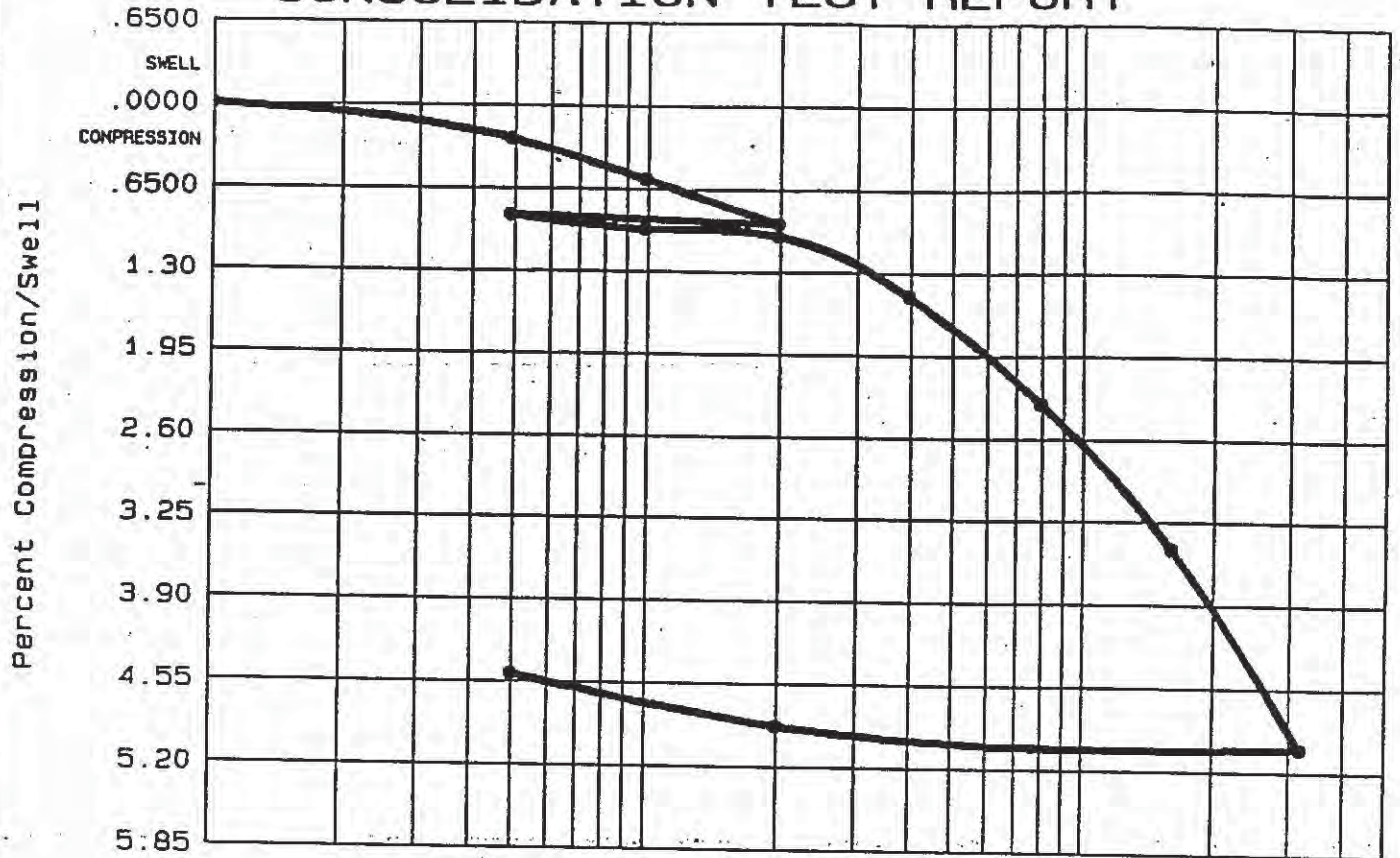
FIG. NO.

CLIENT: Savannah River Site  
 PROJECT: SRS Task 12  
 SAMPLE LOCATION: FB-2 St-6 @ 13 Ft.  
 PROJ. NO.: 5016155756      DATE: 12/19/95

TRIAxIAL COMPRESSION TEST

**LAW ENGINEERING, INC.**

# CONSOLIDATION TEST REPORT



Natural Saturation	Natural Moisture	Dry Density	LL	PI	Sp. Gr.	Precons. press.	C <sub>c</sub>	e <sub>0</sub>
81.4 %	15.9	110.7	35	19	2.720	14.67	0.08	0.5321

### TEST RESULTS

Compression Index = 0.08

Project No.: 50161-5-5756  
Project: Savannah River Site  
Location: FB-2 ST-6 @ 13 Ft.

Date: 1/22/96

### MATERIAL DESCRIPTION

Reddish Brown Clayey Sand

Class: SC

Remarks:

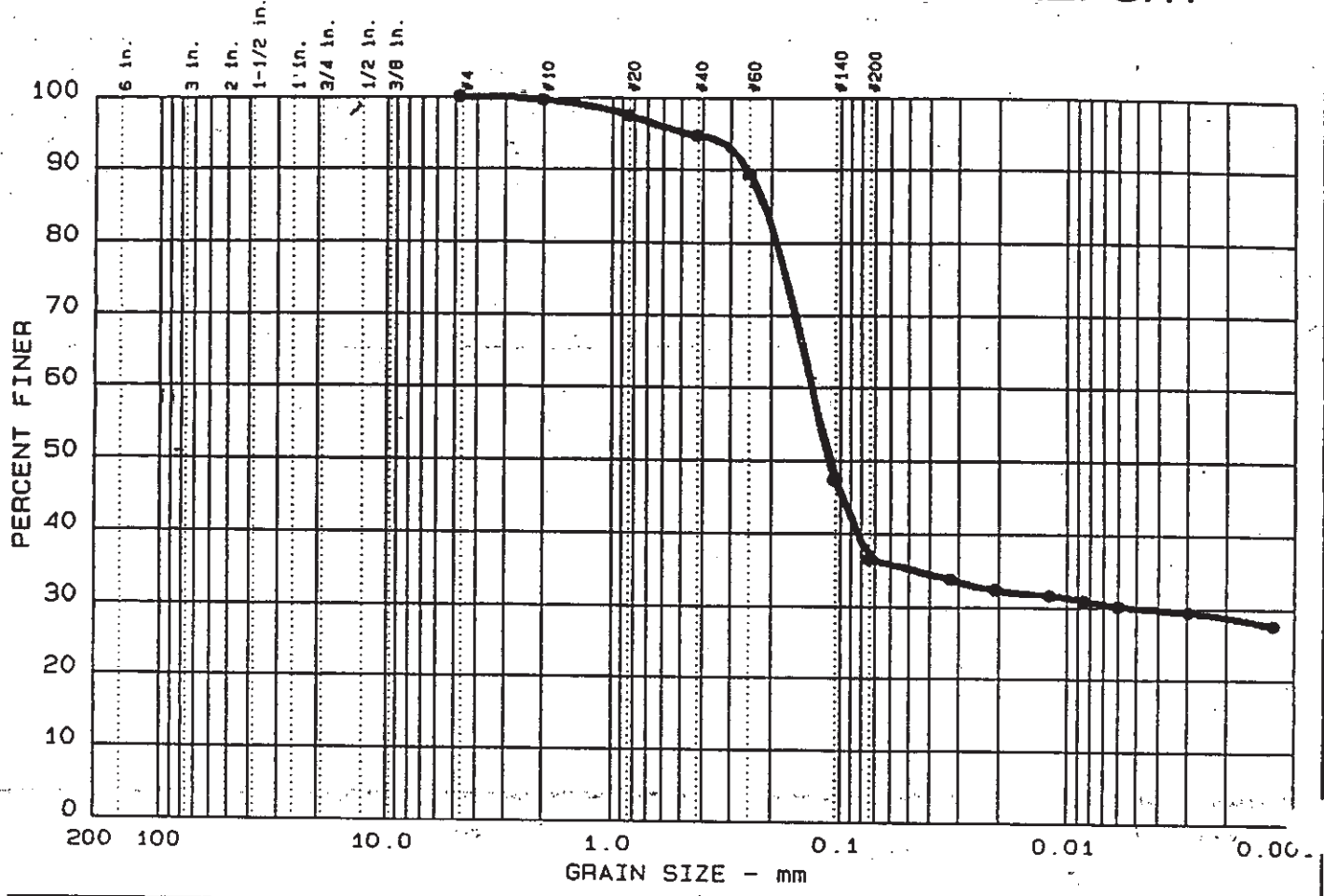
Tested by: *HB*

Reviewed by: *RUB*

Fig. No. \_\_\_\_\_

CONSOLIDATION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>B/O</sup>



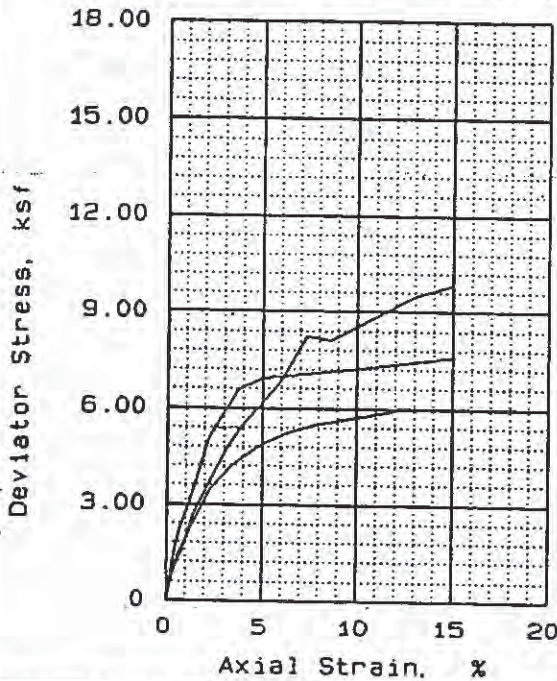
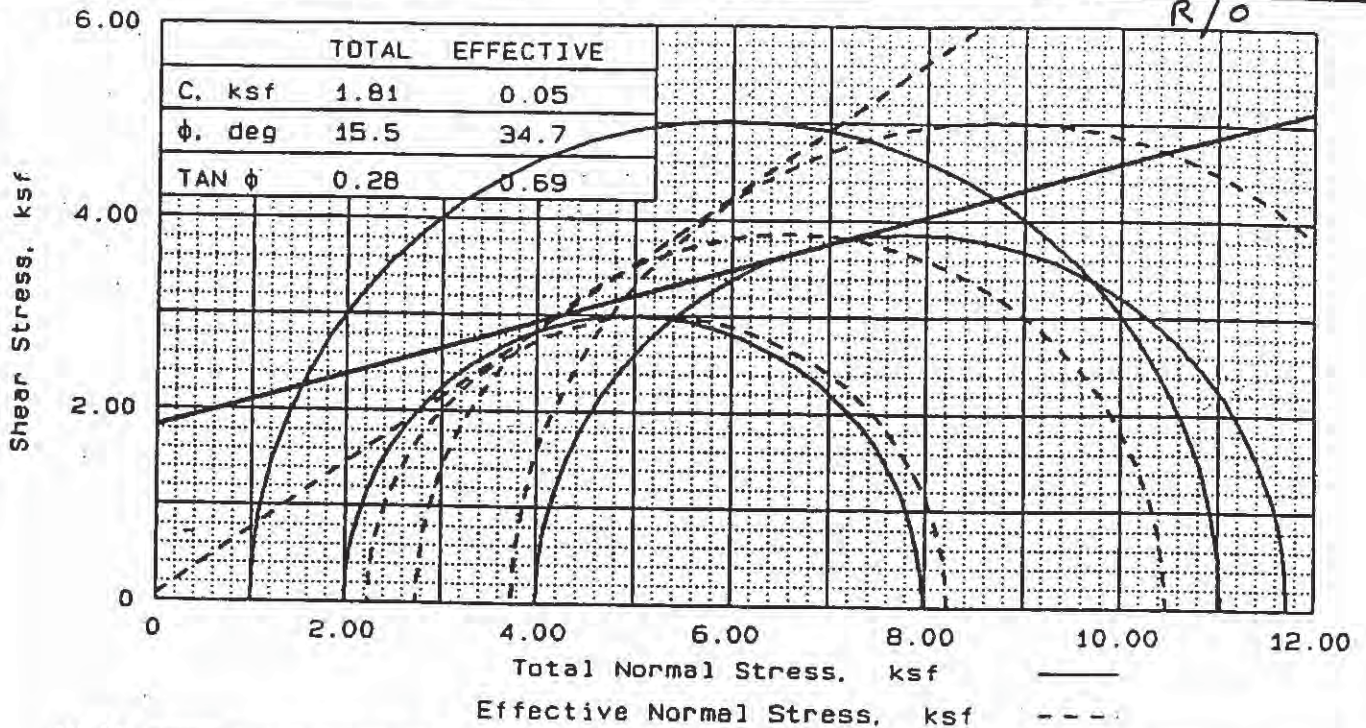
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.0	63.5	6.6	29.9

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 44	27	0.21	0.13	0.11	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-7-6 (3.8)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 ST-7 @ 15 Ft.  
  
 Date: Dec. 11, 1995

Remarks:  
 Tested by: *JCR*  
 Reviewed by: *HS*



	1	2	3
<b>INITIAL</b>			
SAMPLE NO.	1	2	3
WATER CONTENT, %	17.4	19.0	20.5
DRY DENSITY, pcf	113.7	108.3	103.5
SATURATION, %	103.1	97.0	91.9
VOID RATIO	0.444	0.516	0.586
DIAMETER, in	2.86	2.87	2.84
HEIGHT, in	6.00	6.00	6.00
<b>AT TEST</b>			
WATER CONTENT, %	17.1	18.0	19.2
DRY DENSITY, pcf	113.2	111.4	109.1
SATURATION, %	100.0	100.0	100.0
VOID RATIO	0.450	0.474	0.505
DIAMETER, in	2.86	2.83	2.78
HEIGHT, in	6.00	5.98	5.94
BACK PRESSURE, ksf	2.89	2.88	2.88
CELL PRESSURE, ksf	3.89	4.88	6.88
FAILURE STRESS, ksf	10.03	5.99	7.72
PORE PRESSURE, ksf	0.14	2.64	4.13
STRAIN RATE, %/min.	0.100	0.100	0.100
ULTIMATE STRESS, ksf			
PORE PRESSURE, ksf			
$\bar{\sigma}_1$ FAILURE, ksf	13.78	8.23	10.47
$\bar{\sigma}_3$ FAILURE, ksf	3.75	2.24	2.75

TYPE OF TEST:  
 CU with pore pressures  
 SAMPLE TYPE: Undisturbed  
 DESCRIPTION: Tan Clayey Sand

LL= 44      PL= 17      PI= 27.0  
 SPECIFIC GRAVITY= 2.63  
 REMARKS: Tested by: *HJ*

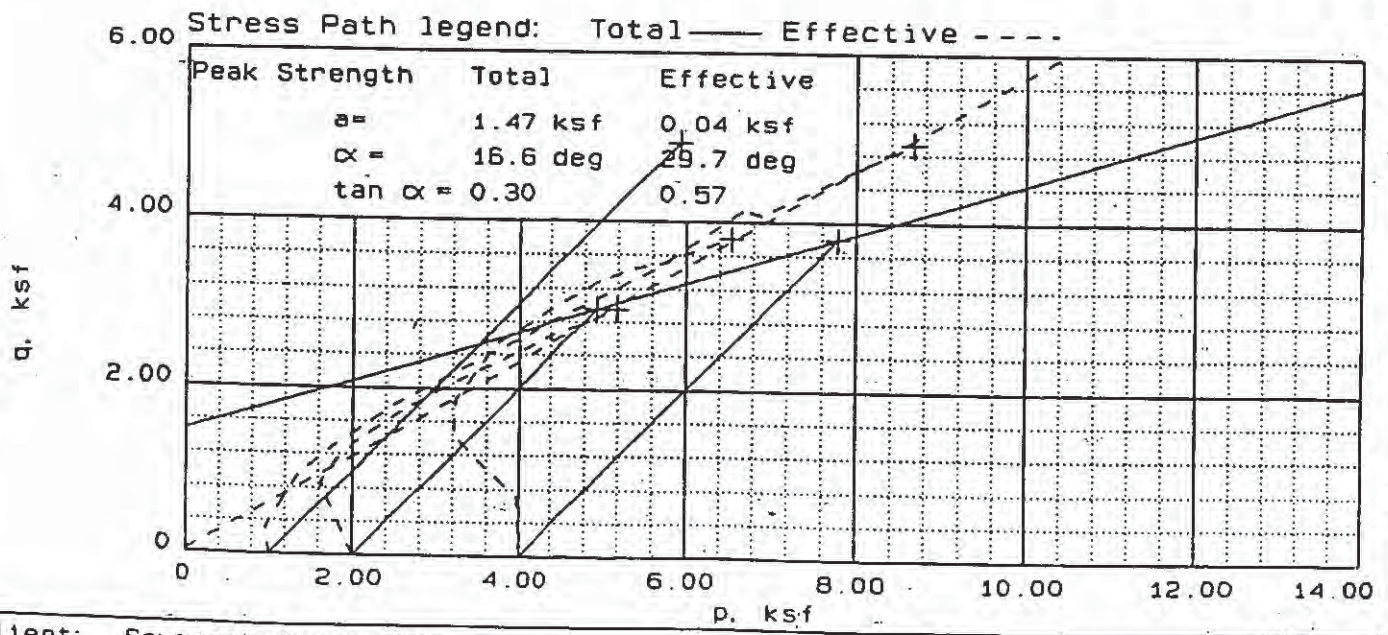
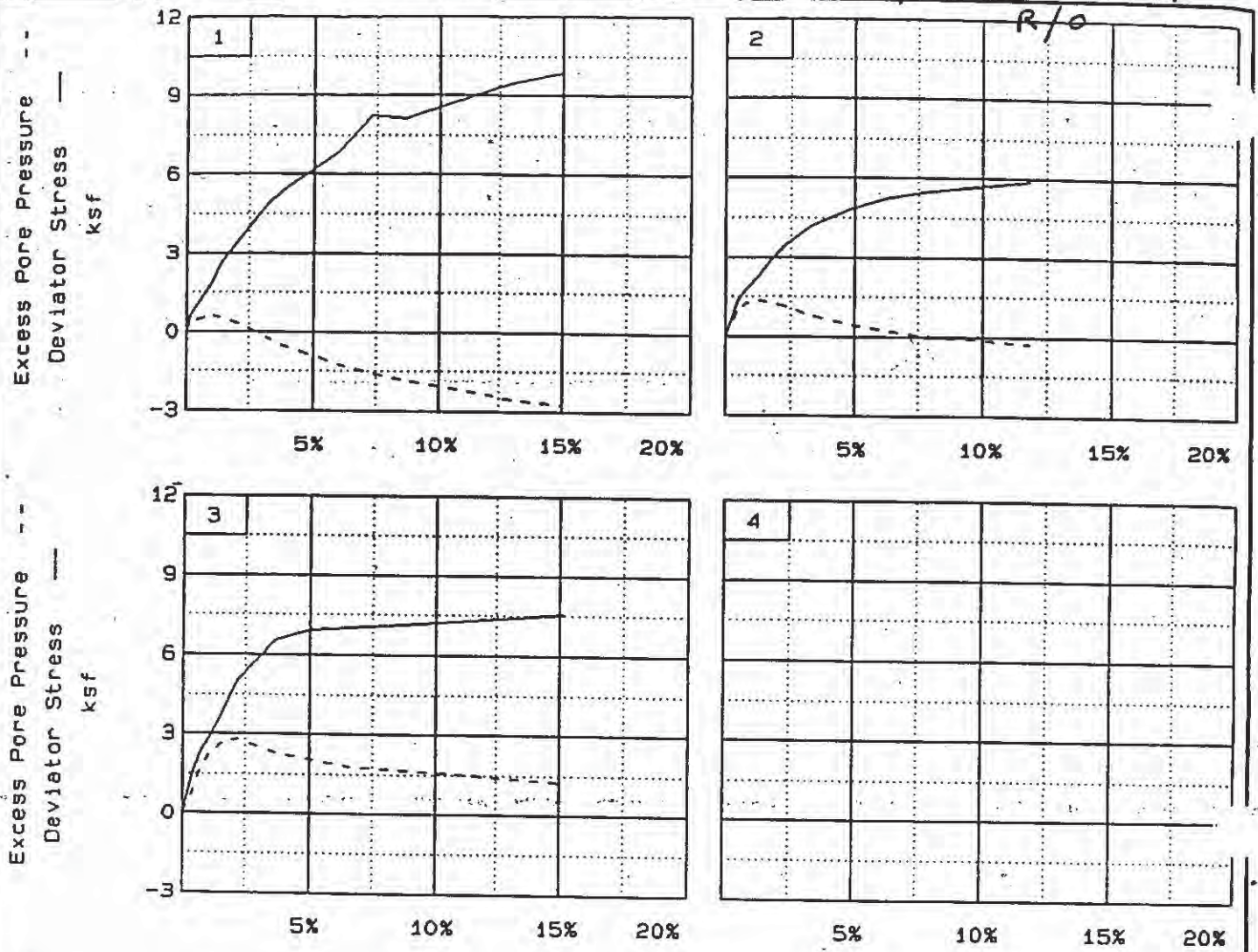
Reviewed by: *RLB*

FIG. NO.

CLIENT: Savannah River Site  
 PROJECT: SRS Task 12  
 SAMPLE LOCATION: FB-2 St-7 @ 15 Ft.  
 PROJ. NO.: 5016155756      DATE: 12/18/95

TRIAxIAL COMPRESSION TEST  
**LAW ENGINEERING, INC.**

R/O



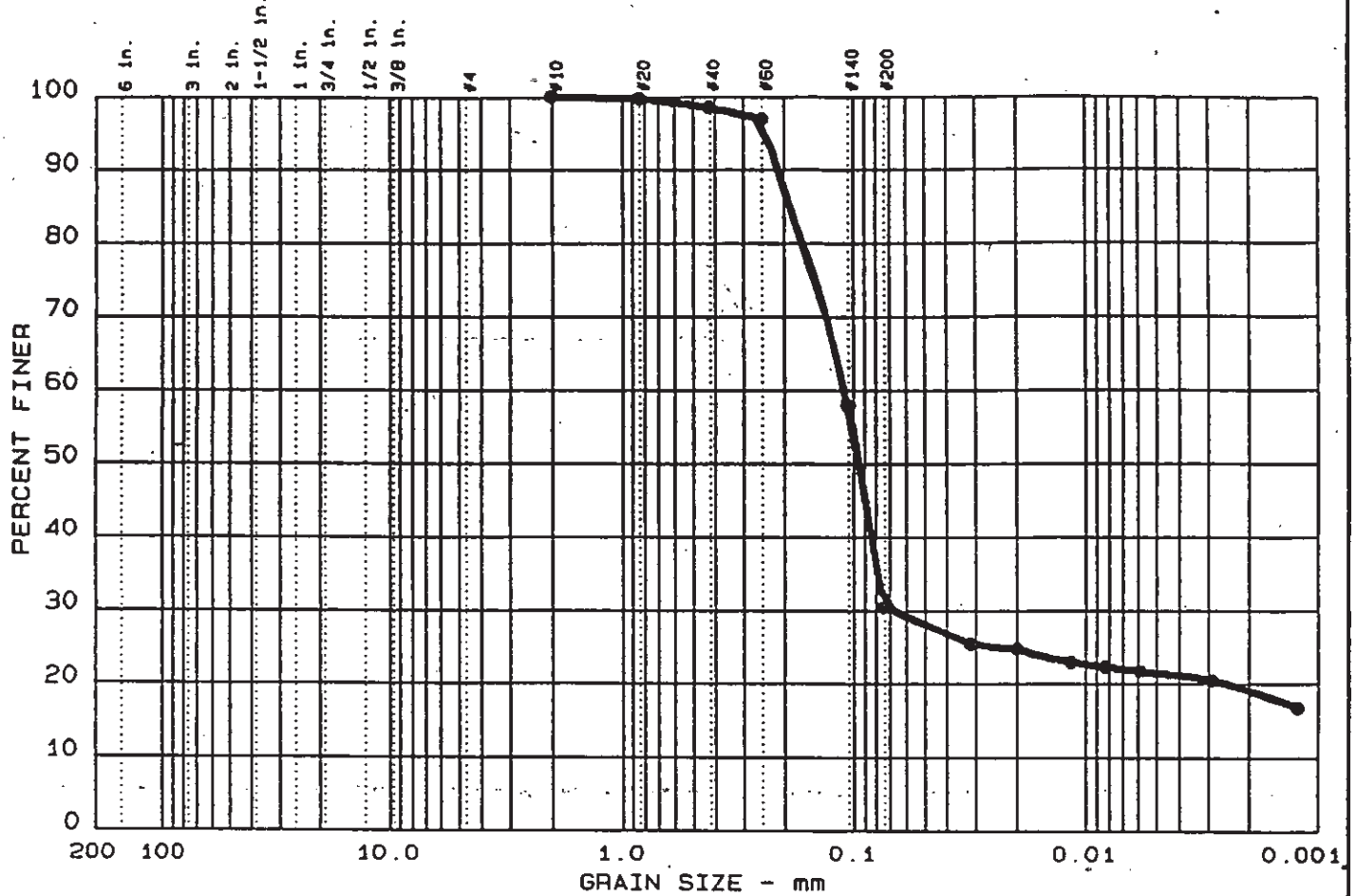
Client: Savannah River Site  
 Project: SRS Task 12  
 Location: FB-2 St-7 @ 15 Ft.  
 File: 5756

Project No.: 5016155756

B-46



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● .18	0.0	0.0	69.6	8.9	21.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 38	16	0.19	0.11	0.09	0.069				

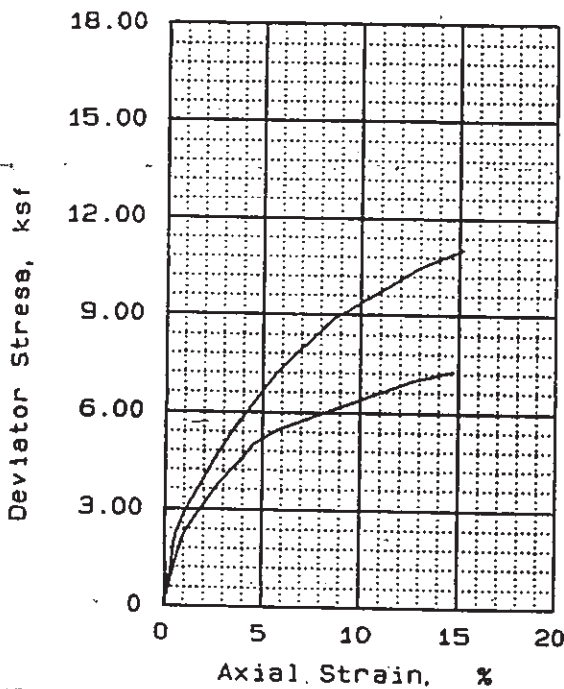
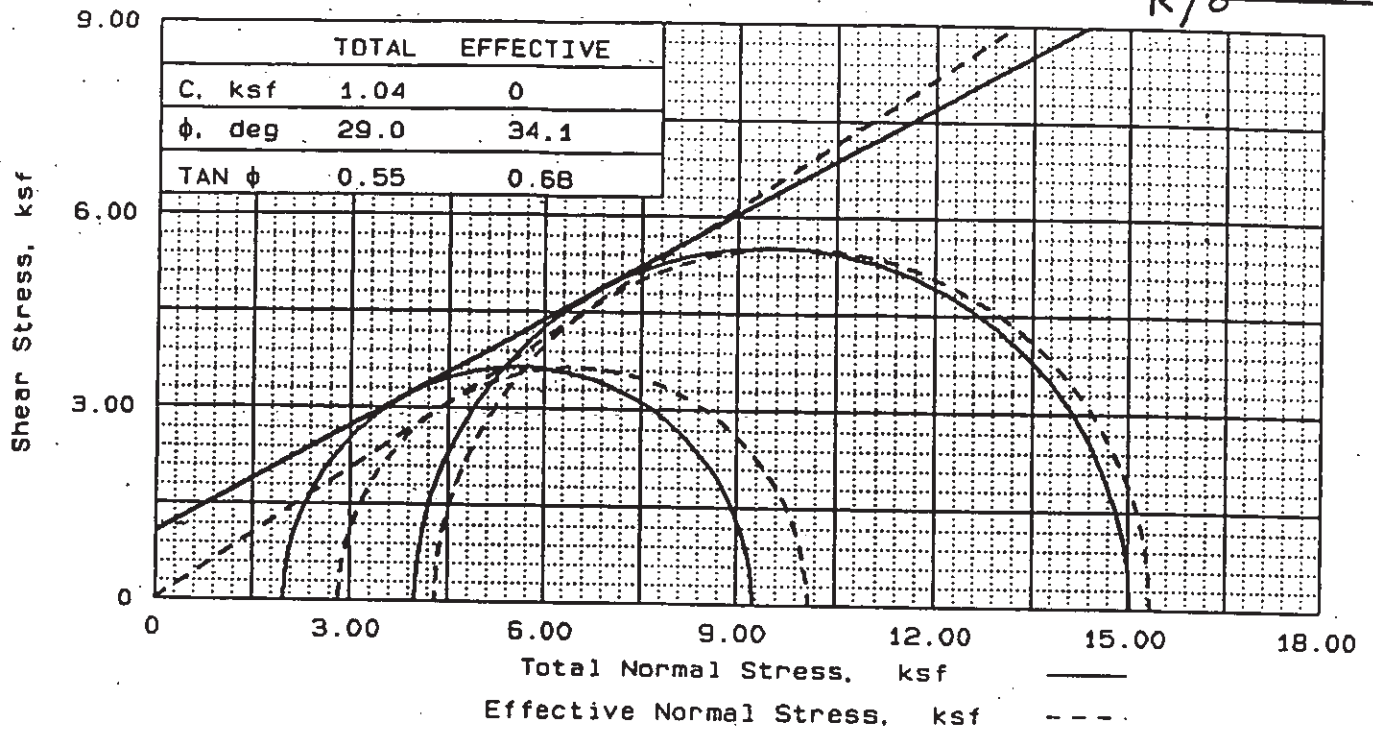
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-6 (0.9)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 ST-11 @ 25 Ft.  
  
 Date: January 23, 1996

Remarks:  
 Tested by: *EM*  
 Reviewed by: *HD*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



SAMPLE NO.		1	2
INITIAL	WATER CONTENT, %	17.9	18.7
	DRY DENSITY, pcf	100.7	99.8
	SATURATION, %	69.7	71.5
	VOID RATIO	0.705	0.720
	DIAMETER, in	2.84	2.85
AT TEST	HEIGHT, in	6.00	6.00
	WATER CONTENT, %	24.6	24.1
	DRY DENSITY, pcf	102.3	103.3
	SATURATION, %	100.0	100.0
	VOID RATIO	0.678	0.661
BACK PRESSURE, ksf	DIAMETER, in	2.83	2.82
	HEIGHT, in	5.97	5.92
CELL PRESSURE, ksf	2.95	2.85	
FAILURE STRESS, ksf	4.95	6.85	
PORE PRESSURE, ksf	7.27	11.03	
STRAIN RATE, %/min.	2.12	2.53	
ULTIMATE STRESS, ksf	0.100	0.100	
PORE PRESSURE, ksf			
$\bar{\sigma}_1$ FAILURE, ksf	10.11	15.35	
$\bar{\sigma}_3$ FAILURE, ksf	2.83	4.32	

TYPE OF TEST:  
 CU with pore pressures  
 SAMPLE TYPE: Undisturbed  
 DESCRIPTION: Tan Brown Clayey Sand  
 LL= 38      PL= 22      PI= 16.0  
 SPECIFIC GRAVITY= 2.75  
 REMARKS: Tested by: *HP*

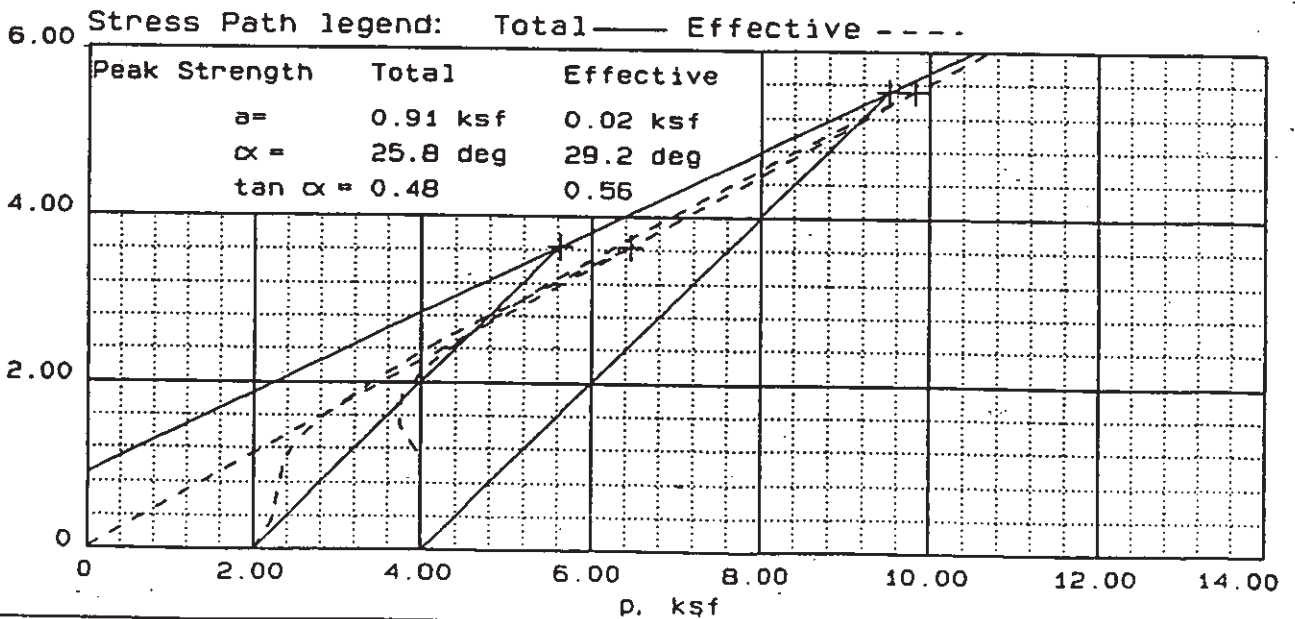
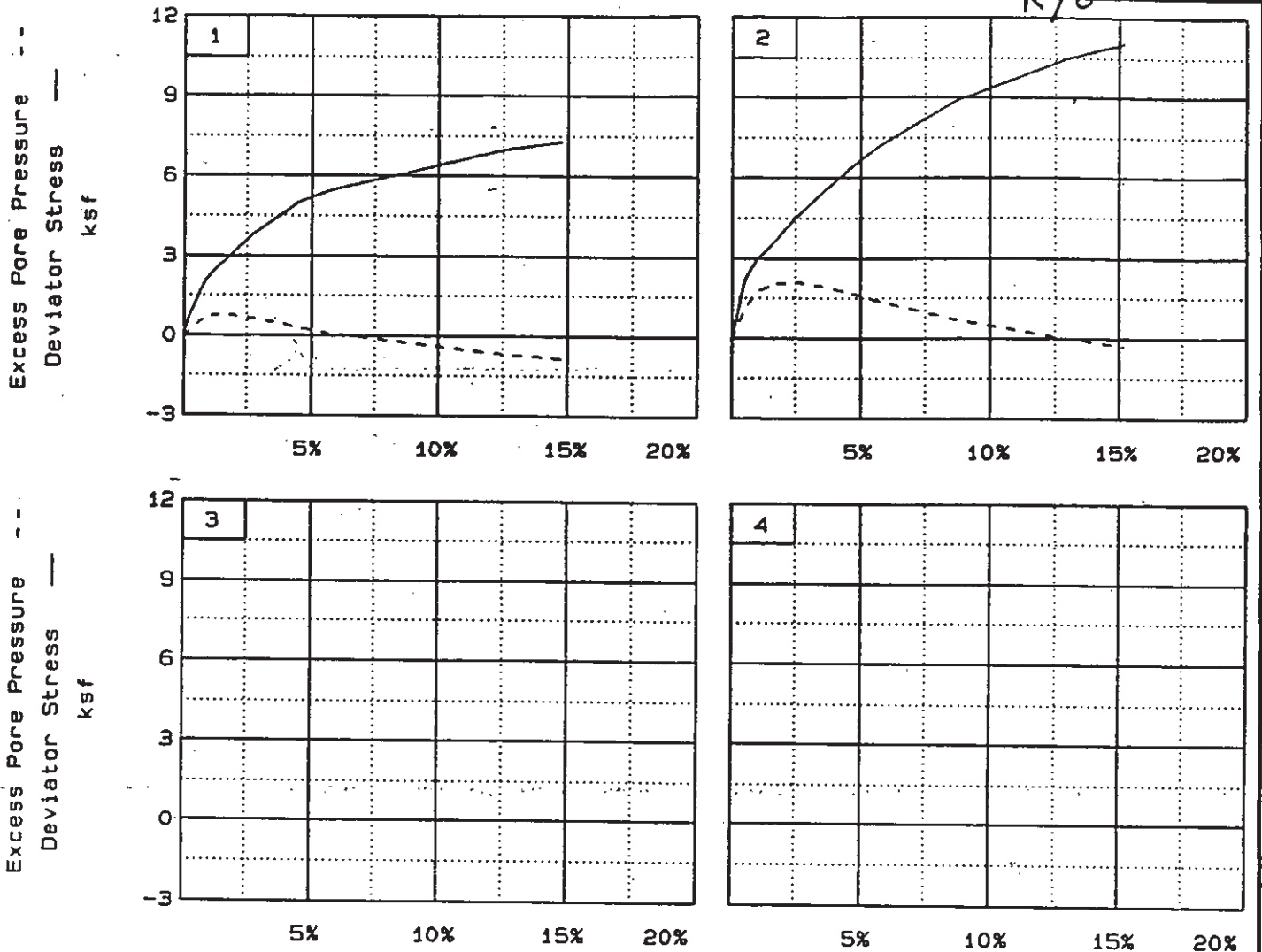
Reviewed by: *RLB*

FIG. NO.

CLIENT: Savannah River Site  
 PROJECT: SRS Task 12  
 SAMPLE LOCATION: FB-2 St-11 @ 25 Ft.  
 PROJ. NO.: 5016155756      DATE: 1/26/96

TRIAxIAL COMPRESSION TEST

**LAW ENGINEERING, INC.**



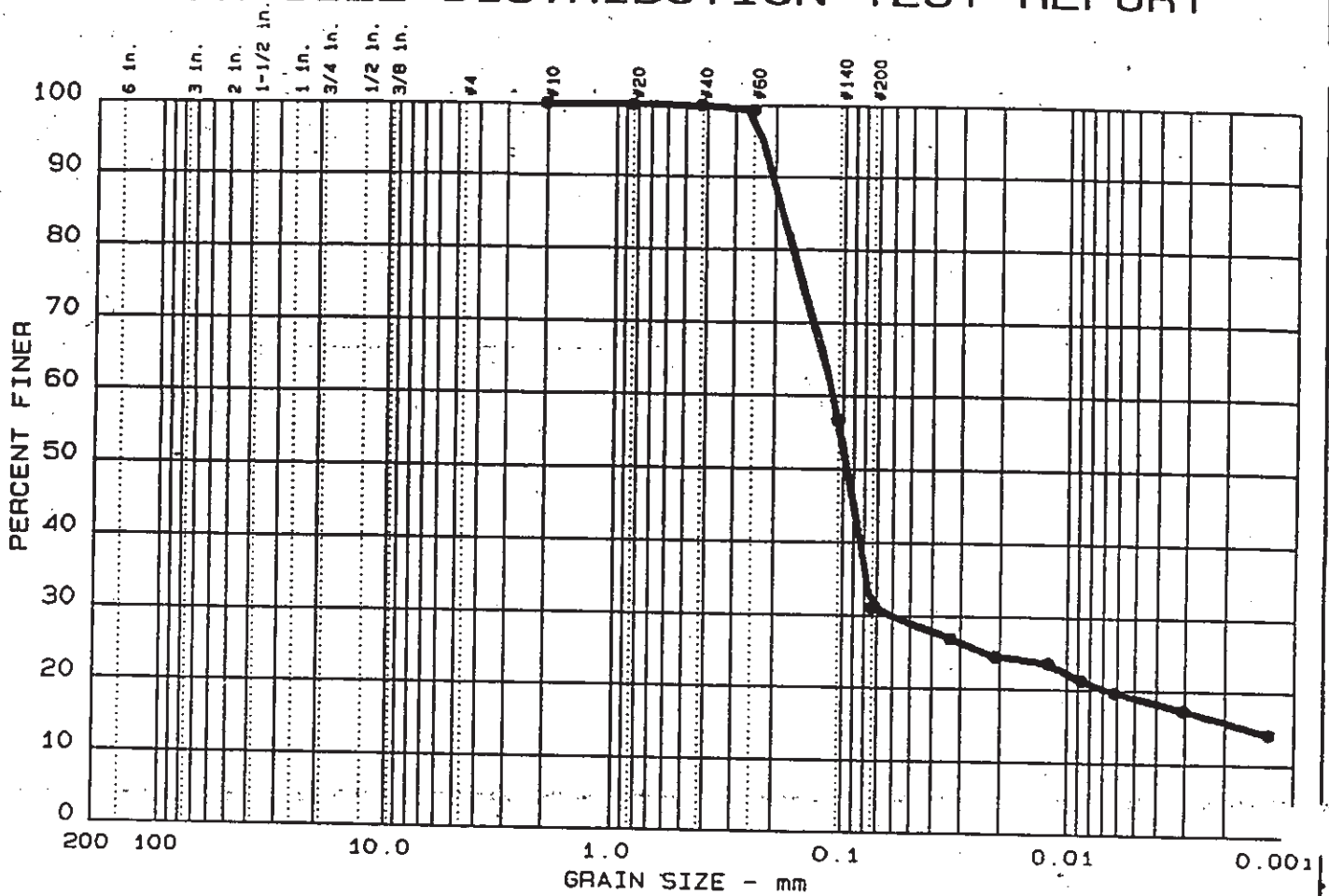
Client: Savannah River Site  
 Project: SRS Task 12  
 Location: FB-2 St-11 @ 25 Ft.  
 File: 5756E

Project No.: 5016155756

Page 2/2

Fig. No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT R/O



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	69.1	11.9	19.0

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 30	7	0.18	0.11	0.10	0.061	0.0015			

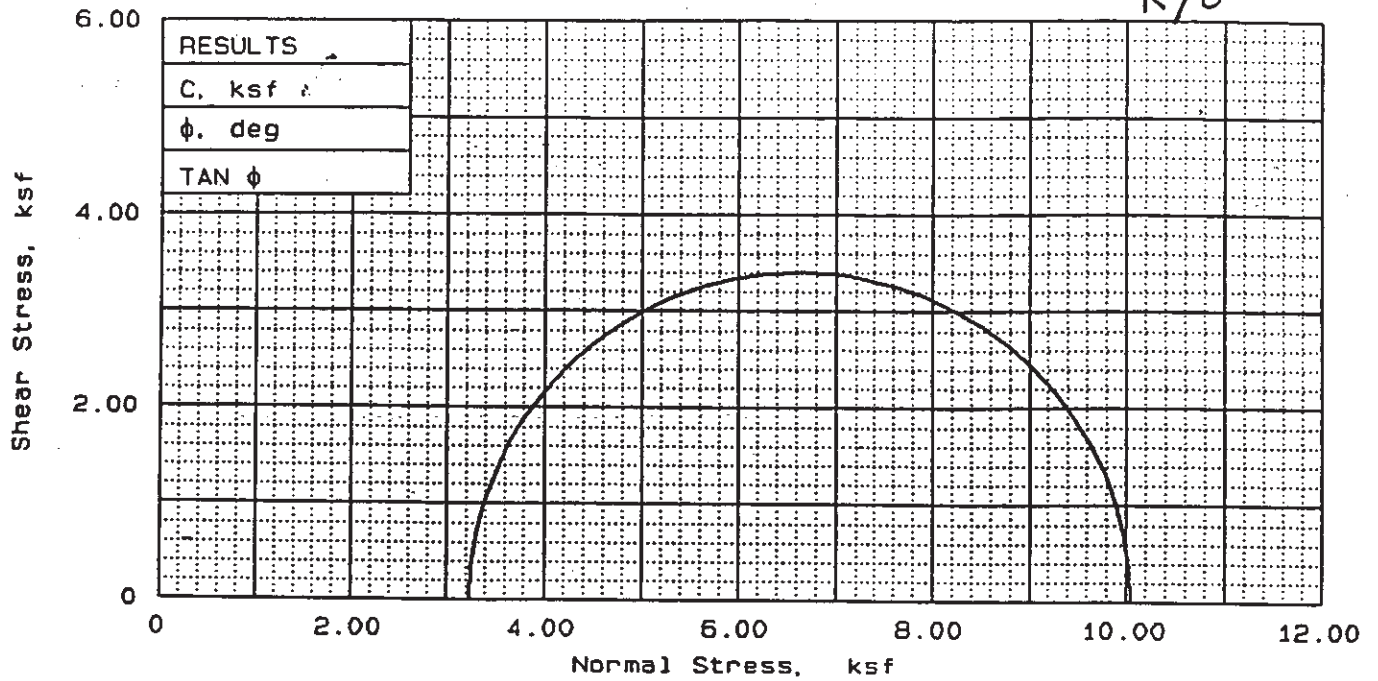
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan & Pink Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 ST-13 @ 27 Ft.  
 Date: January 23, 1996

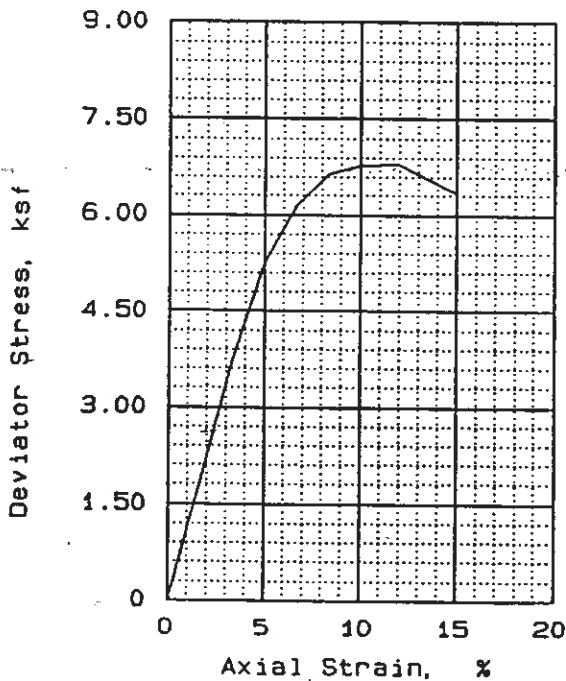
Remarks:  
 Tested by: EM  
 Reviewed by: HB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



RESULTS
C, ksf
$\phi$ , deg
TAN $\phi$



SAMPLE NO.		1
INITIAL	WATER CONTENT, %	21.3
	DRY DENSITY, pcf	98.8
	SATURATION, %	82.4
	VOID RATIO	0.694
	DIAMETER, in	2.86
AT TEST	HEIGHT, in	6.00
	WATER CONTENT, %	21.3
	DRY DENSITY, pcf	98.8
	SATURATION, %	82.4
	VOID RATIO	0.694
	DIAMETER, in	2.86
	HEIGHT, in	6.00
	BACK PRESSURE, ksf	0.00
	CELL PRESSURE, ksf	3.24
	FAILURE STRESS, ksf	6.81
PORE PRESSURE, ksf		
STRAIN RATE, %/min.		1.000
ULTIMATE STRESS, ksf		
PORE PRESSURE, ksf		
$\sigma_1$ FAILURE, ksf	10.05	
$\sigma_3$ FAILURE, ksf	3.24	

TYPE OF TEST:  
Unconsolidated undrained  
SAMPLE TYPE: Undisturbed  
DESCRIPTION: Tan & Pink Silty Sand  
LL= 30      PL= 23      PI= 7.0  
SPECIFIC GRAVITY= 2.68  
REMARKS: Tested by: *HS*

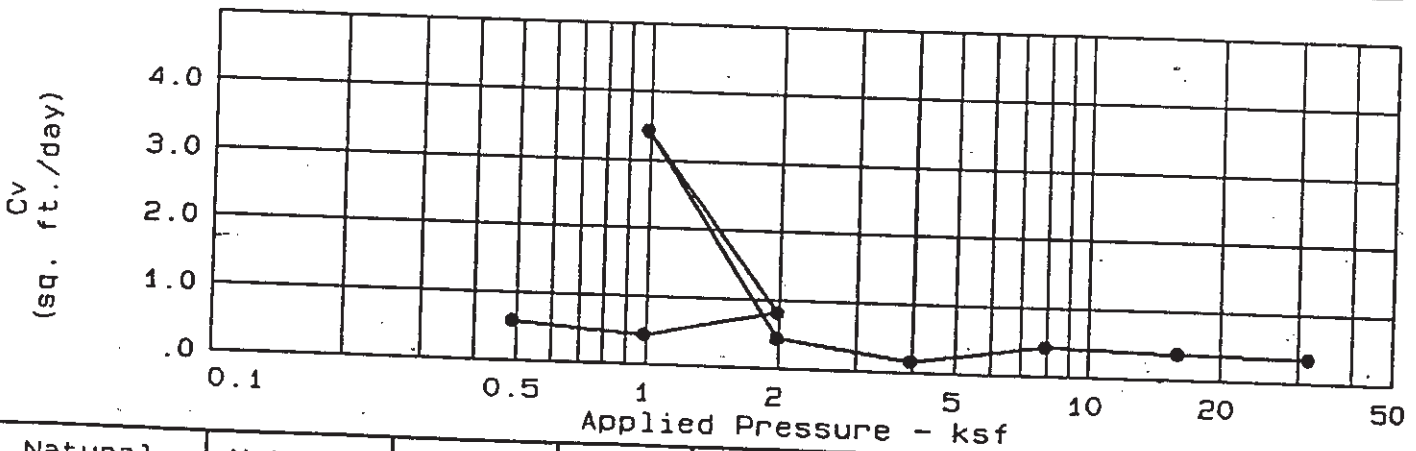
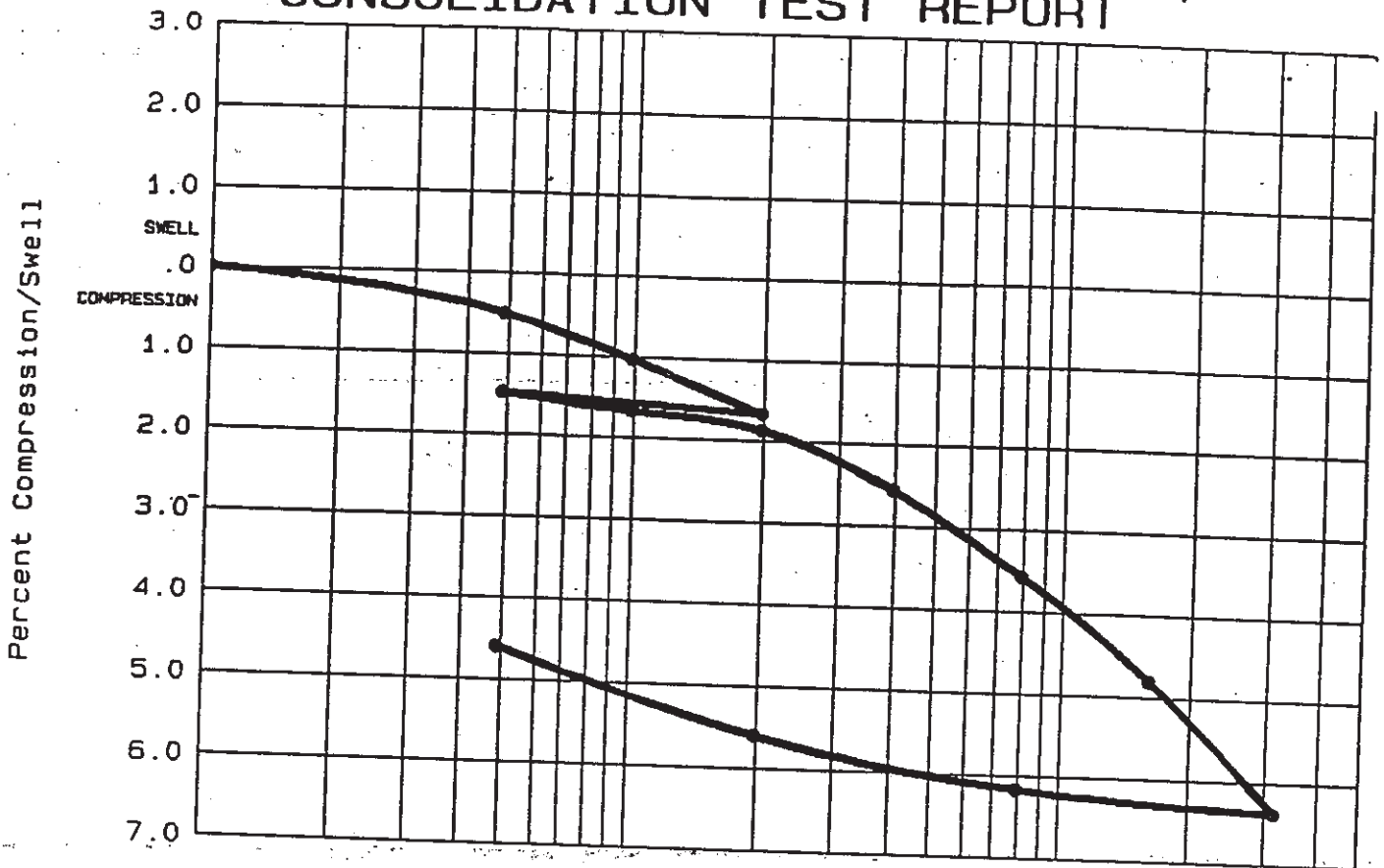
Reviewed by: *RLB*

CLIENT: Savannah River Site  
PROJECT: SRS Task 12  
SAMPLE LOCATION: FB-2 St-13 @ 27 Ft.  
PROJ. NO.: 5016155756      DATE: 12/19/95

TRIAxIAL COMPRESSION TEST  
**LAW ENGINEERING, INC.**

FIG. NO.

# CONSOLIDATION TEST REPORT



Natural Saturation	Natural Moisture	Dry Density	LL	PI	Sp. Gr.	Precons. press.	C <sub>c</sub>	e <sub>0</sub>
64.0 %	18.0	95.4	30	7	2.680	5.16	0.09	0.7540

**TEST RESULTS**

Compression Index = 0.09

**MATERIAL DESCRIPTION**

Tan & Pink Silty Sand

Class: SM

Remarks:

Tested by: *HJ*

Reviewed by: *RLB*

Project No.: 50161-5-5756  
 Project: Savannah River Site  
 Location: FB-2 ST-13 @ 27 Ft.

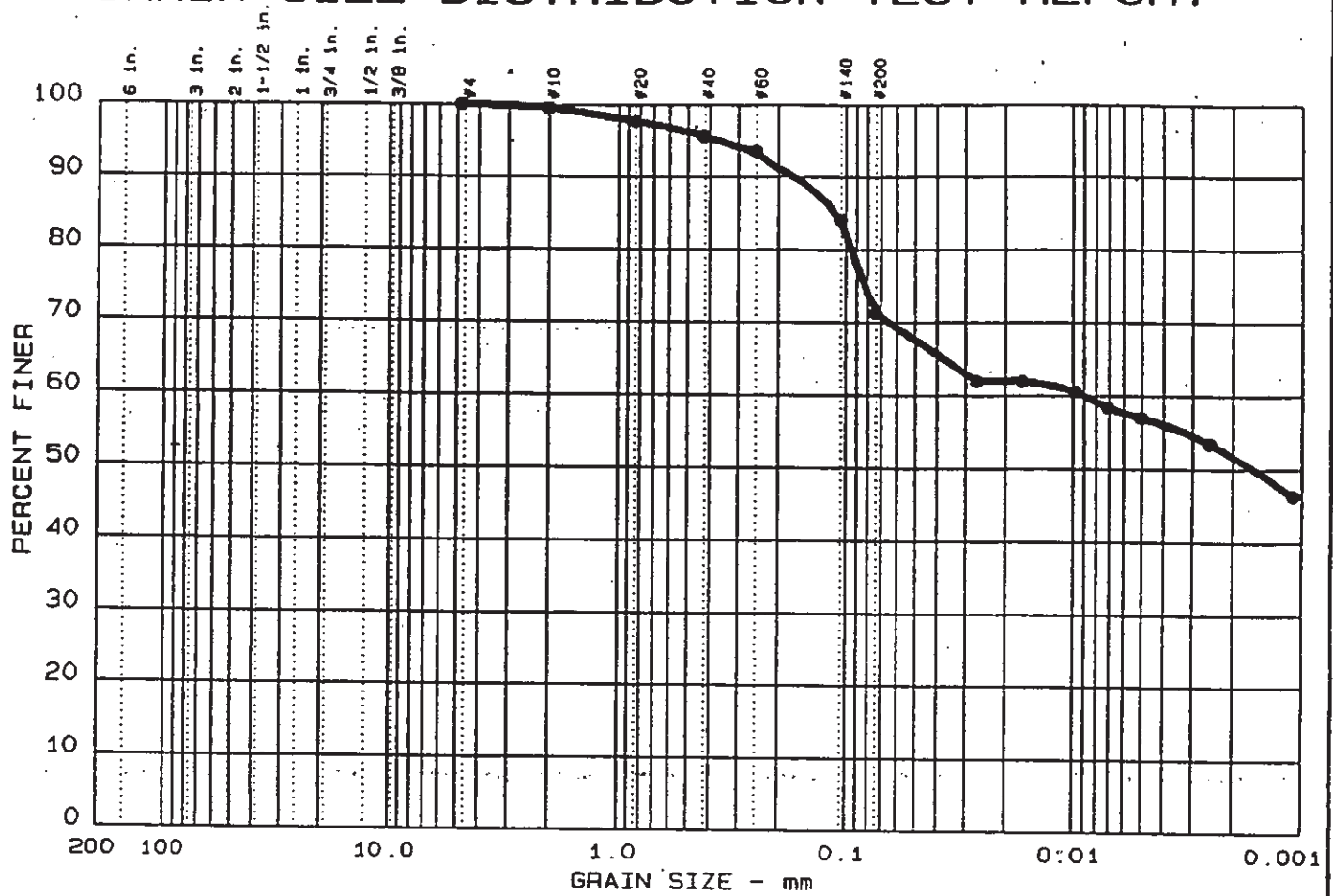
Date: 1/22/96

CONSOLIDATION TEST REPORT

**LAW ENGINEERING, INC.**

Fig. No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.0	28.7	14.3	57.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 82	54	0.11		0.00					

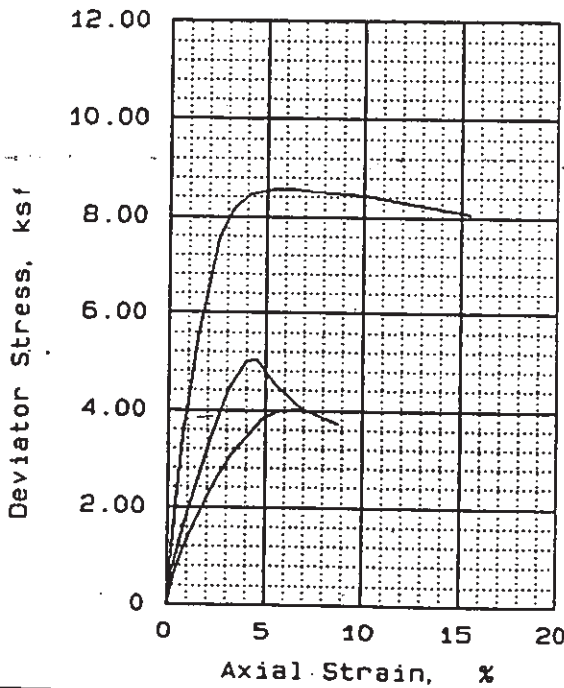
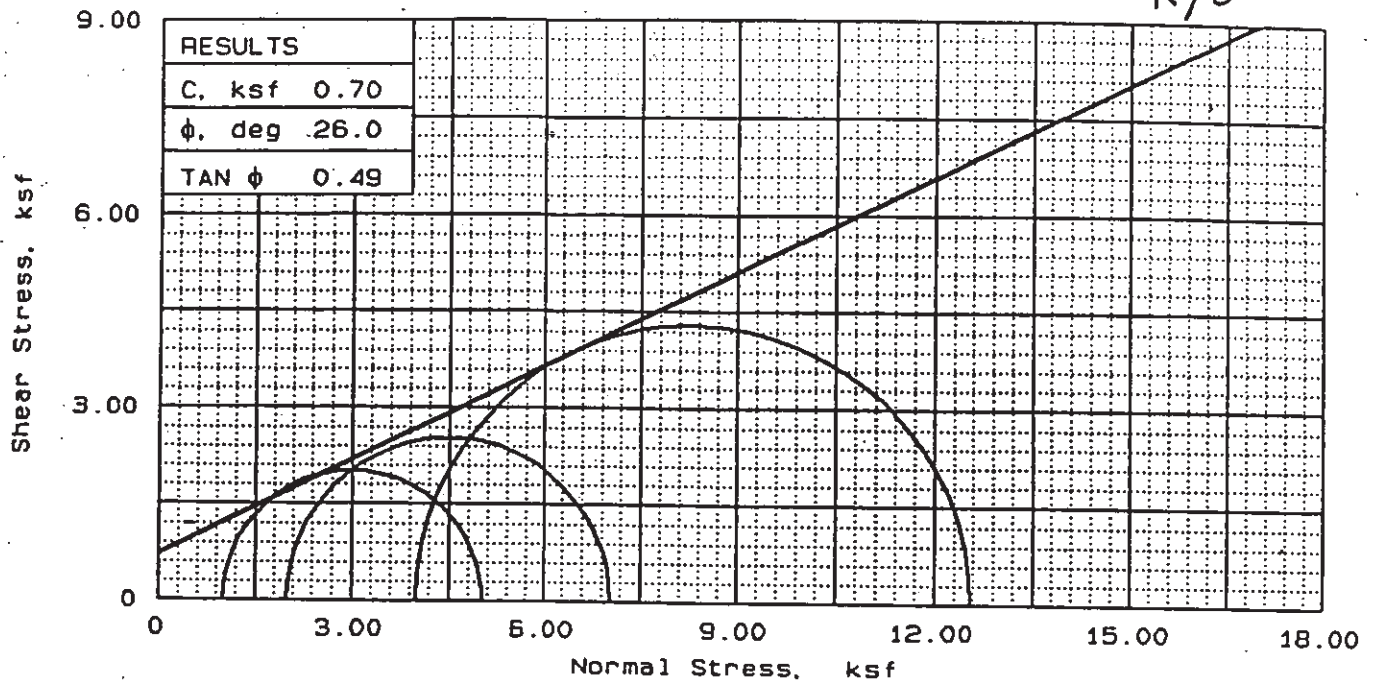
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan & Pink Sandy Fat Clay	CH	A-7-6 (39.4)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 ST-14 @ 29 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: *EM*  
 Reviewed by: *HS*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



SAMPLE NO.		1	2	3
INITIAL	WATER CONTENT, %	24.5	22.2	19.9
	DRY DENSITY, pcf	97.1	94.4	92.2
	SATURATION, %	90.4	76.6	65.2
	VOID RATIO	0.730	0.779	0.822
	DIAMETER, in	2.86	2.84	2.86
	HEIGHT, in	5.60	5.60	5.60
AT TEST	WATER CONTENT, %	26.7	27.5	29.0
	DRY DENSITY, pcf	97.7	96.6	94.3
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.719	0.739	0.780
	DIAMETER, in	2.85	2.82	2.84
	HEIGHT, in	5.59	5.55	5.56
BACK PRESSURE, ksf		2.88	3.60	2.88
CELL PRESSURE, ksf		3.88	5.60	6.88
FAILURE STRESS, ksf		4.02	5.04	8.58
PORE PRESSURE, ksf				
STRAIN RATE, %/min.		0.100	0.100	0.100
ULTIMATE STRESS, ksf				
PORE PRESSURE, ksf				
$\sigma_1$ FAILURE, ksf		5.02	7.04	12.58
$\sigma_3$ FAILURE, ksf		1	2	4

TYPE OF TEST:  
Consolidated drained  
SAMPLE TYPE: Undisturbed  
DESCRIPTION: Tan & Pink Sandy Fat Clay  
LL= 82      PL= 28      PI= 54.0  
SPECIFIC GRAVITY= 2.69  
REMARKS: Tested by: *HS*

Reviewed by: *RLB*

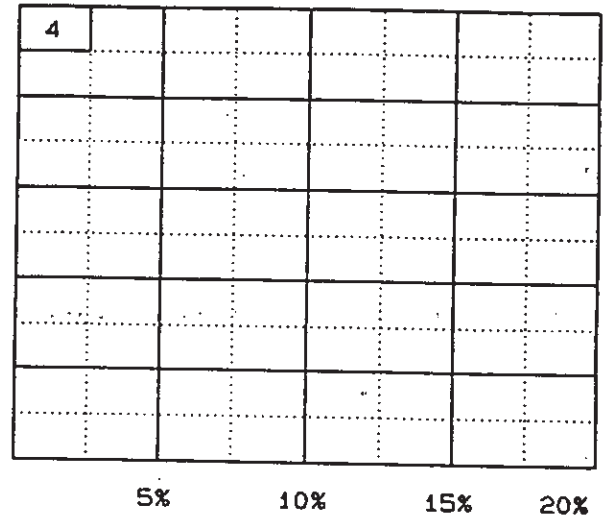
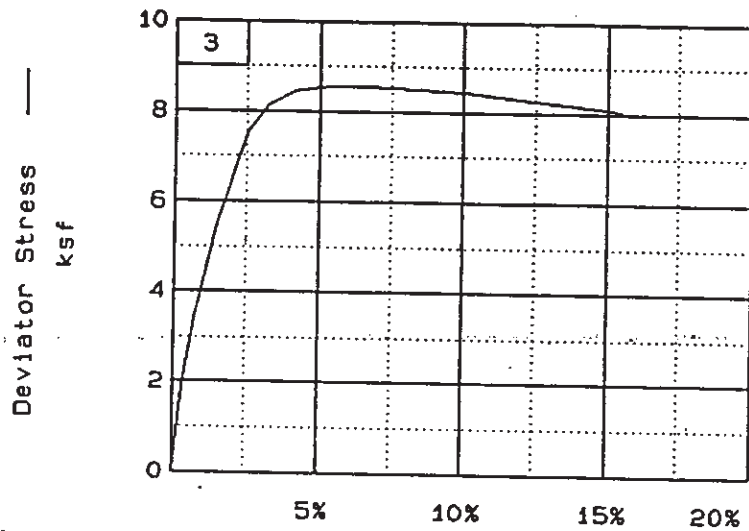
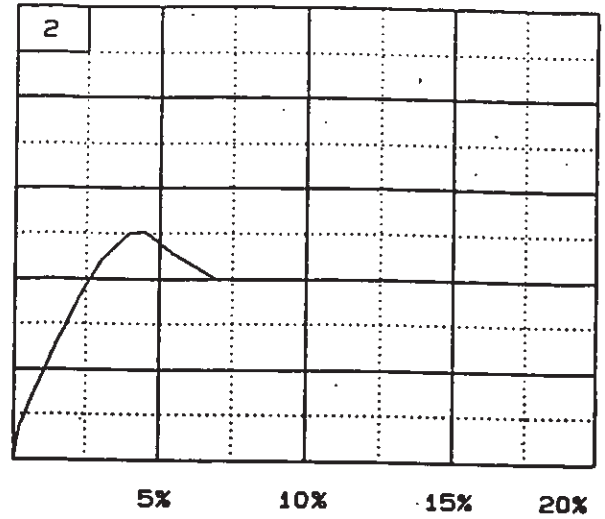
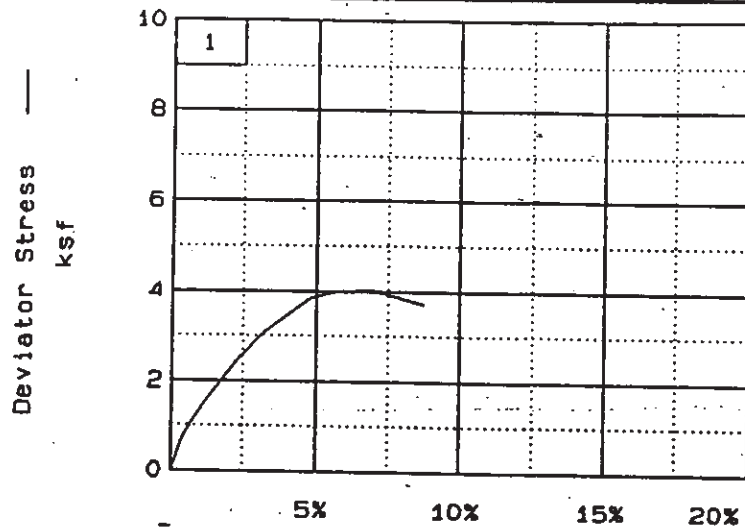
FIG. NO.

CLIENT: Savannah River Site  
PROJECT: SRS Task 12  
SAMPLE LOCATION: FB-2 St-14 @ 29 Ft.  
PROJ. NO.: 5016155756      DATE: 1/26/96

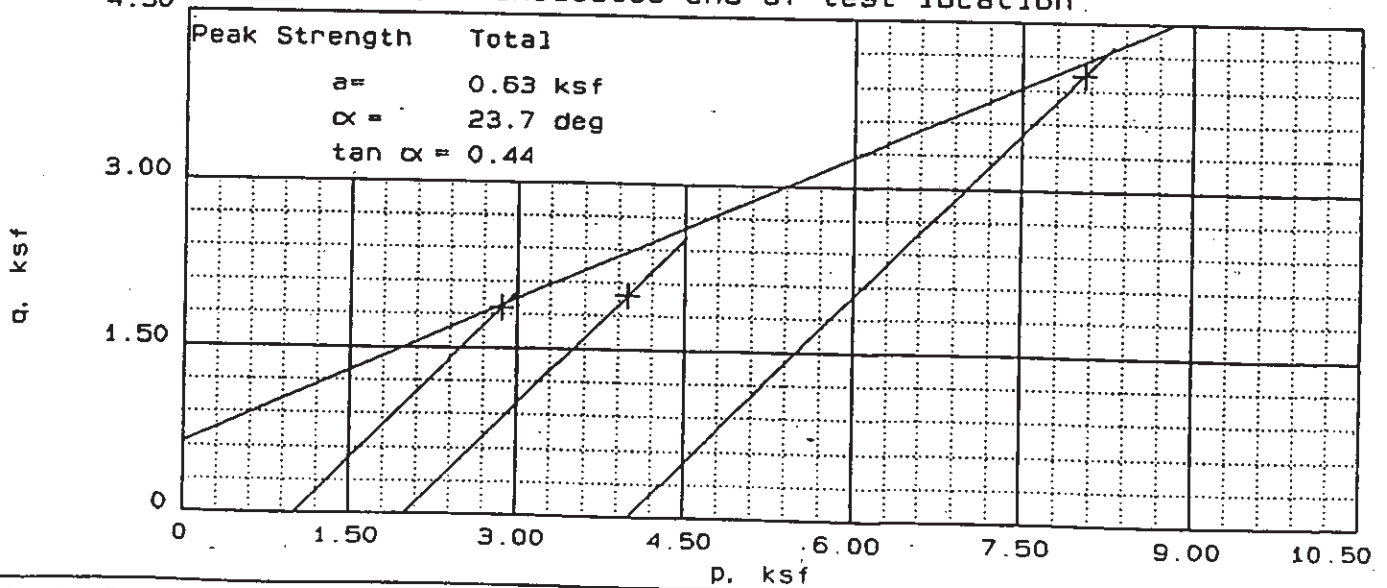
TRIAXIAL COMPRESSION TEST

LAW ENGINEERING, INC.





Stress Paths. + indicates end of test location.



Client: Savannah River Site

Project: SAS Task 12

Location: FB-2 St-14 @ 29 Ft.

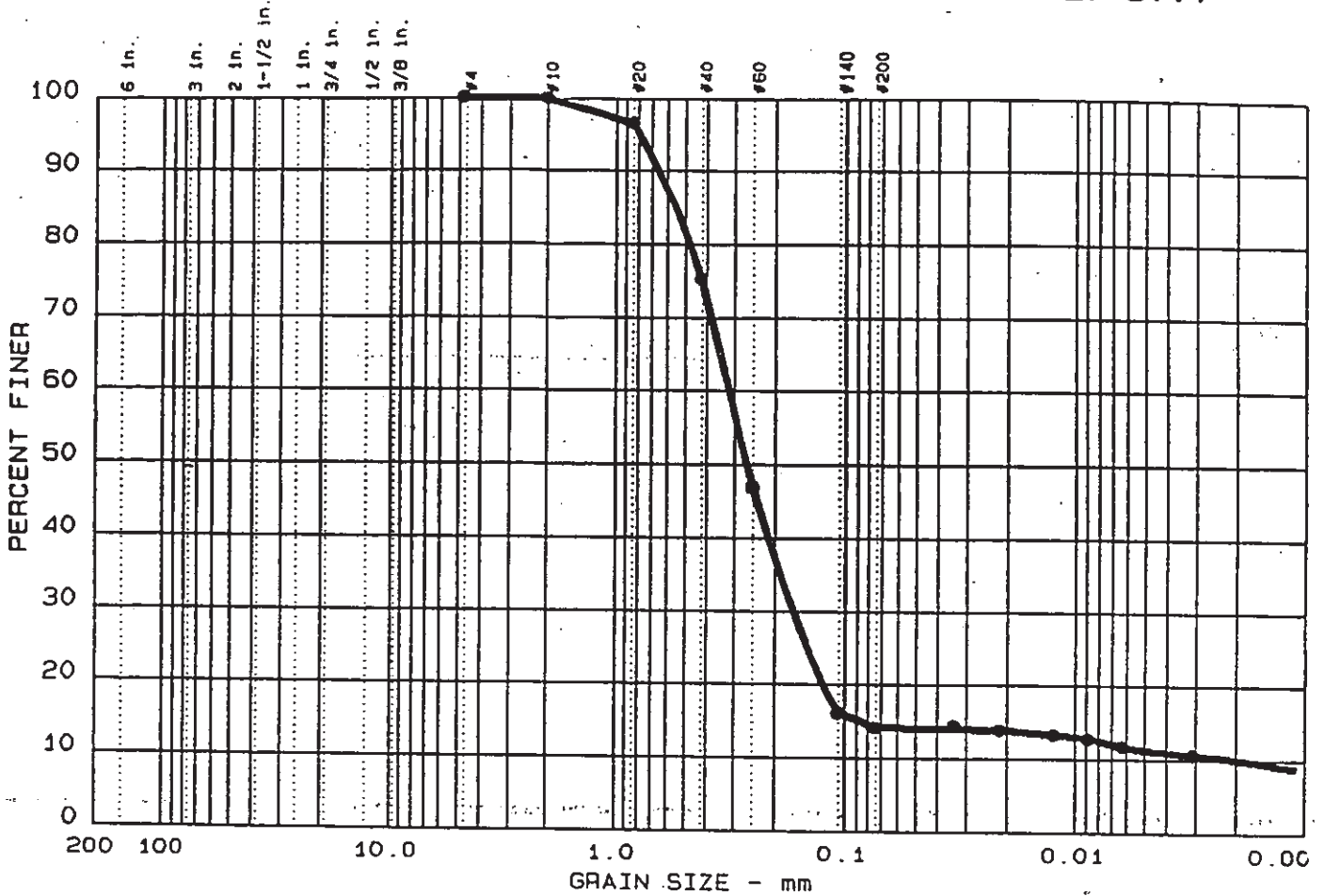
File: 5756D

Project No.: 5016155756

Page 2/2

Fig. No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	85.8	2.9	11.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 31	10	0.54	0.32	0.26	0.167	0.0854	0.0019	45.45	163.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Clayey Sand	SC	A-2-4 (0.0)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 St-17 @ 50 Ft.  
 Date: January 29, 1996

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: *DMJ*  
 Reviewed by: *HS*

Figure No.

ATTACHMENT 3

K-TRT-F-00001  
R/O

Tested by: CS  
Date: 11/08/95

Reviewed by: RLB  
Date: 01/30/96

Law Job No. 50161-5-5756  
Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE**  
**"TYPICAL"**

Sample: Boring No.: FB-2  
Depth: 50-52 ft.  
Sample ID: ST-17

MEASUREMENTS (Nominal 6-inch cut sample height):

TOTAL SAMPLE HEIGHT (inches)		INSIDE DIAMETER OF CUT TUBE (inches)	
1	<u>7.625</u>		
2	<u>7.625</u>	top	<u>2.865</u>
3	<u>7.625</u>	bottom	<u>2.865</u>
Avg.	<u>7.625 (H)</u>	Avg.	<u>2.865 (D)</u>

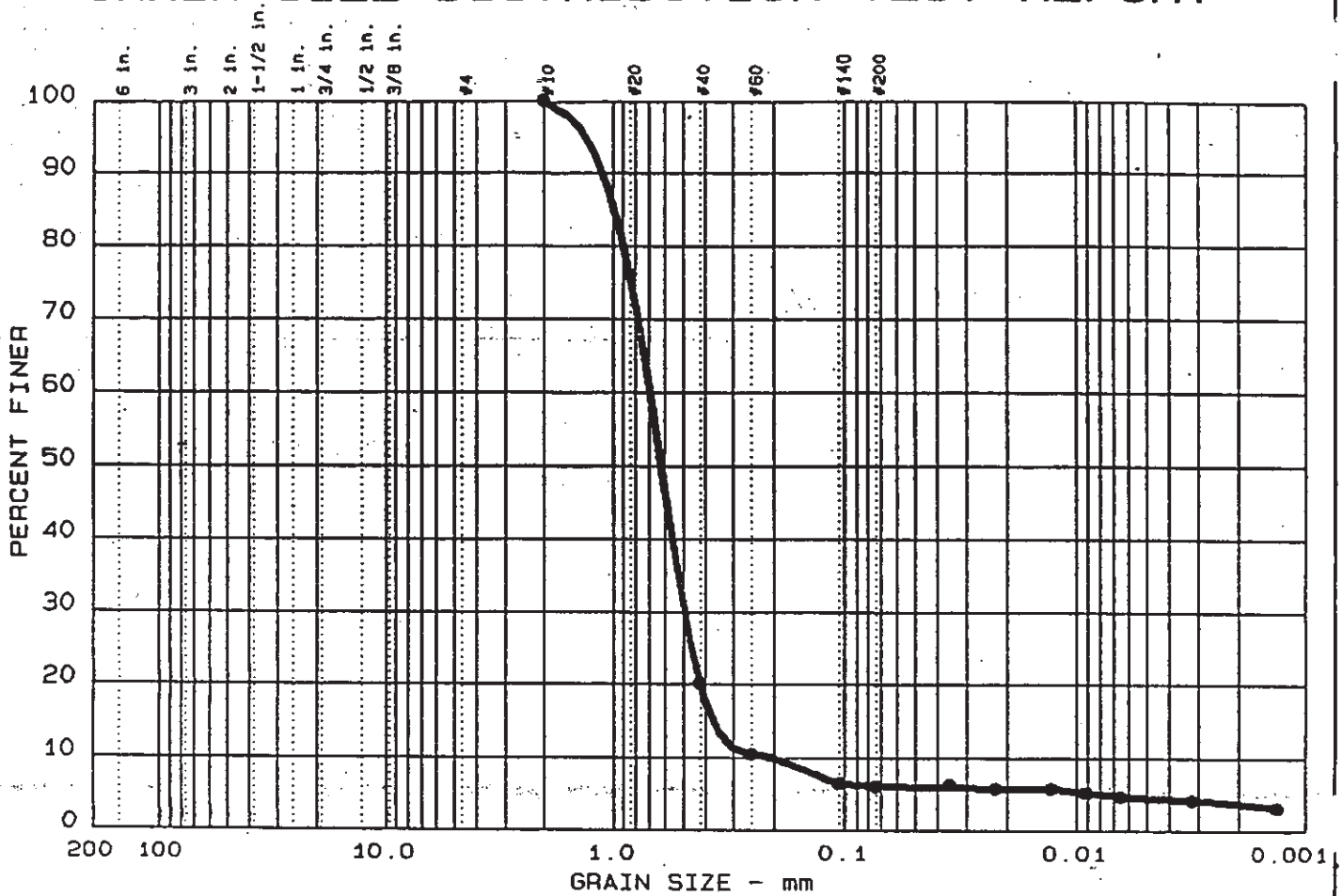
MOISTURE CONTENT DETERMINATION

MOISTURE CONTENT	
Tare No.	<u>T-8</u>
Tare Weight	<u>52.40 gm</u>
Wet Wt. + Tare	<u>422.30 gm</u>
Dry Wt. + Tare	<u>351.00 gm</u>
Wt. of Water	<u>71.30 gm</u>
Dry Weight	<u>298.60 gm</u>
Moisture Content, w	<u>23.9 %</u>

TOTAL WEIGHT OF SOIL + TUBE SECTION  
WEIGHT OF CLEAN, DRY TUBE SECTION  
WET WEIGHT OF SOIL, [(W<sub>st</sub> - W<sub>t</sub>)/454]  
VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
WET DENSITY, [W<sub>s</sub>/V]  
DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

W<sub>st</sub> = 2062.4 gm  
W<sub>t</sub> = 548.85 gm  
W<sub>s</sub> = 3.334 lbs  
V = 0.028 ft<sup>3</sup>  
D<sub>w</sub> = 117.2 pcf  
D<sub>s</sub> = 94.6 pcf

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	93.9	1.6	4.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 30	10	0.97	0.69	0.62	0.489	0.3698	0.2056	1.69	3.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Yellow Tan Poorly Graded Sand with Clay	SP-SC	A-2-4(0.0)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 ST-18 @ 60 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: EM  
 Reviewed by: HJ

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

**ATTACHMENT 3**

K-TRT-F-00001  
R/O

Tested by: DMJ

Reviewed by: RLB

Law Job No. 50161-5-5756

Date: 01/30/96

Date: 01/30/96

Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE  
"TYPICAL"**

Sample: Boring No.: FB-2  
Depth: 60-62 ft.  
Sample ID: ST-18

***MEASUREMENTS (Nominal 6-inch cut sample height):***

TOTAL SAMPLE HEIGHT (inches)		INSIDE DIAMETER OF CUT TUBE (inches)	
1	3.939		
2	3.917	top	2.859
3	3.918	bottom	2.848
Avg.	3.925 (H)	Avg.	2.854 (D)

***MOISTURE CONTENT DETERMINATION***

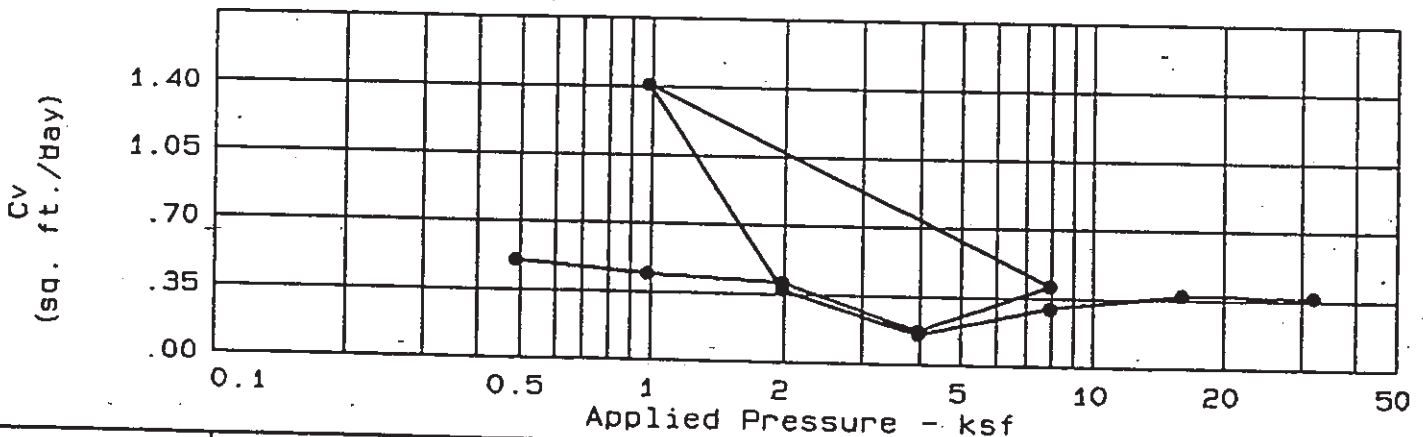
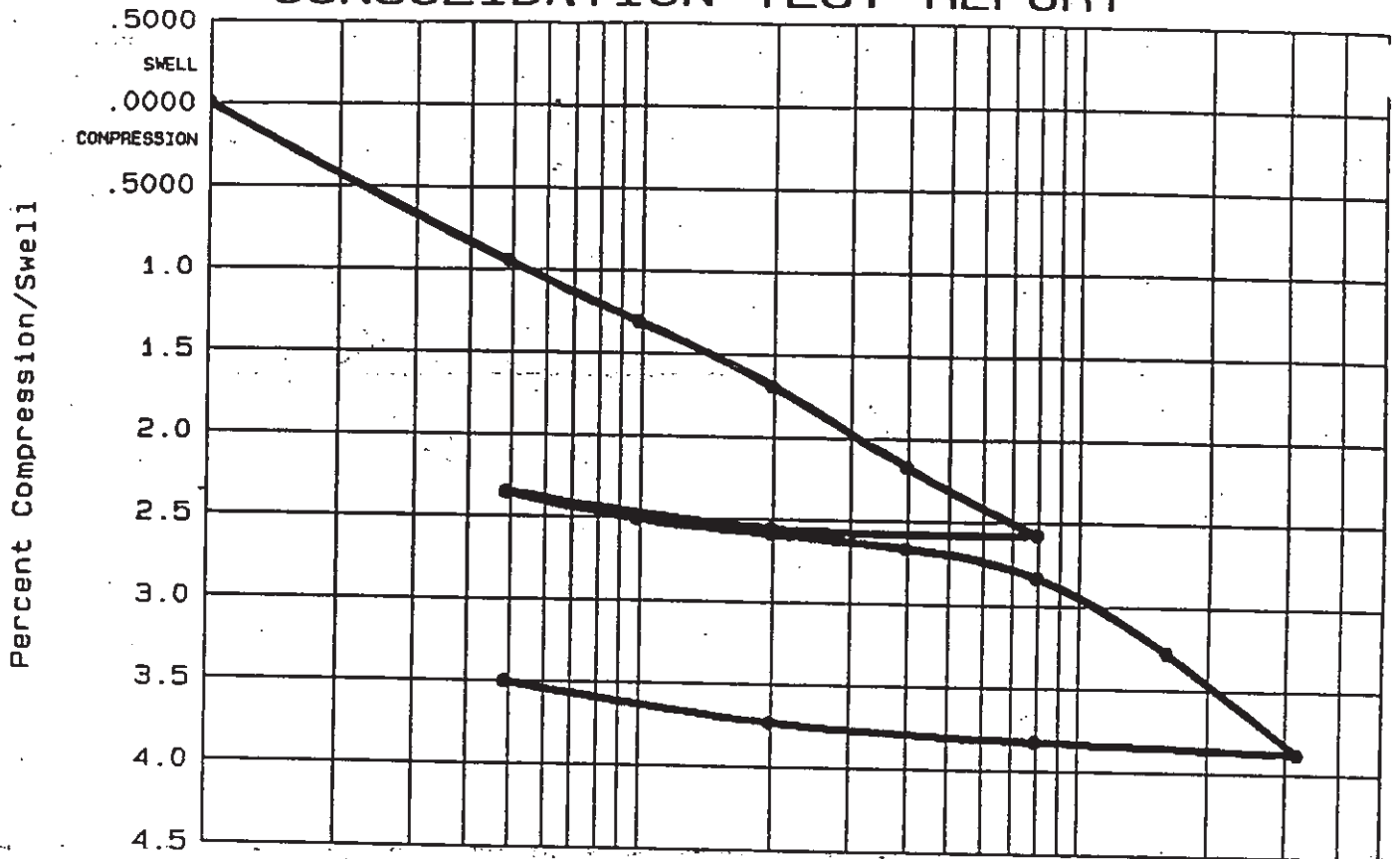
MOISTURE CONTENT	
Tare No.	
Tare Weight	218.56 gm
Wet Wt. + Tare	339.24 gm
Dry Wt. + Tare	319.61 gm
Wt. of Water	19.63 gm
Dry Weight	101.05 gm
Moisture Content, w	19.4 %

TOTAL WEIGHT OF SOIL + TUBE SECTION  
WEIGHT OF CLEAN, DRY TUBE SECTION  
WET WEIGHT OF SOIL, [(W<sub>st</sub> - W<sub>t</sub>)/454]  
VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
WET DENSITY, [W<sub>s</sub>/V]  
DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

W<sub>st</sub> = 1106.56 gm  
W<sub>t</sub> = 282.52 gm  
W<sub>s</sub> = 1.815 lbs  
V = 0.015 ft<sup>3</sup>  
D<sub>w</sub> = 125.0 pcf  
D<sub>s</sub> = 104.6 pcf

h:\users\lab\soil\program\lamps\pdens.wk3

# CONSOLIDATION TEST REPORT



Natural Saturation	Natural Moisture	Dry Density	LL	PI	Sp. Gr.	Precons. press.	$C_c$	$e_0$
74.8 %	19.4	98.2	30	10	2.650	10.47	0.03	0.6886

**TEST RESULTS**

**MATERIAL DESCRIPTION**

Compression Index = 0.03

Yellow Tan Poorly Graded Sand w/ Clay

Project No.: 50161-5-5756  
 Project: Savannah River Site  
 Location: FB-2 ST-18 @ 60 Ft.

Remarks:

Date: 1/22/96

Tested by: *HS*

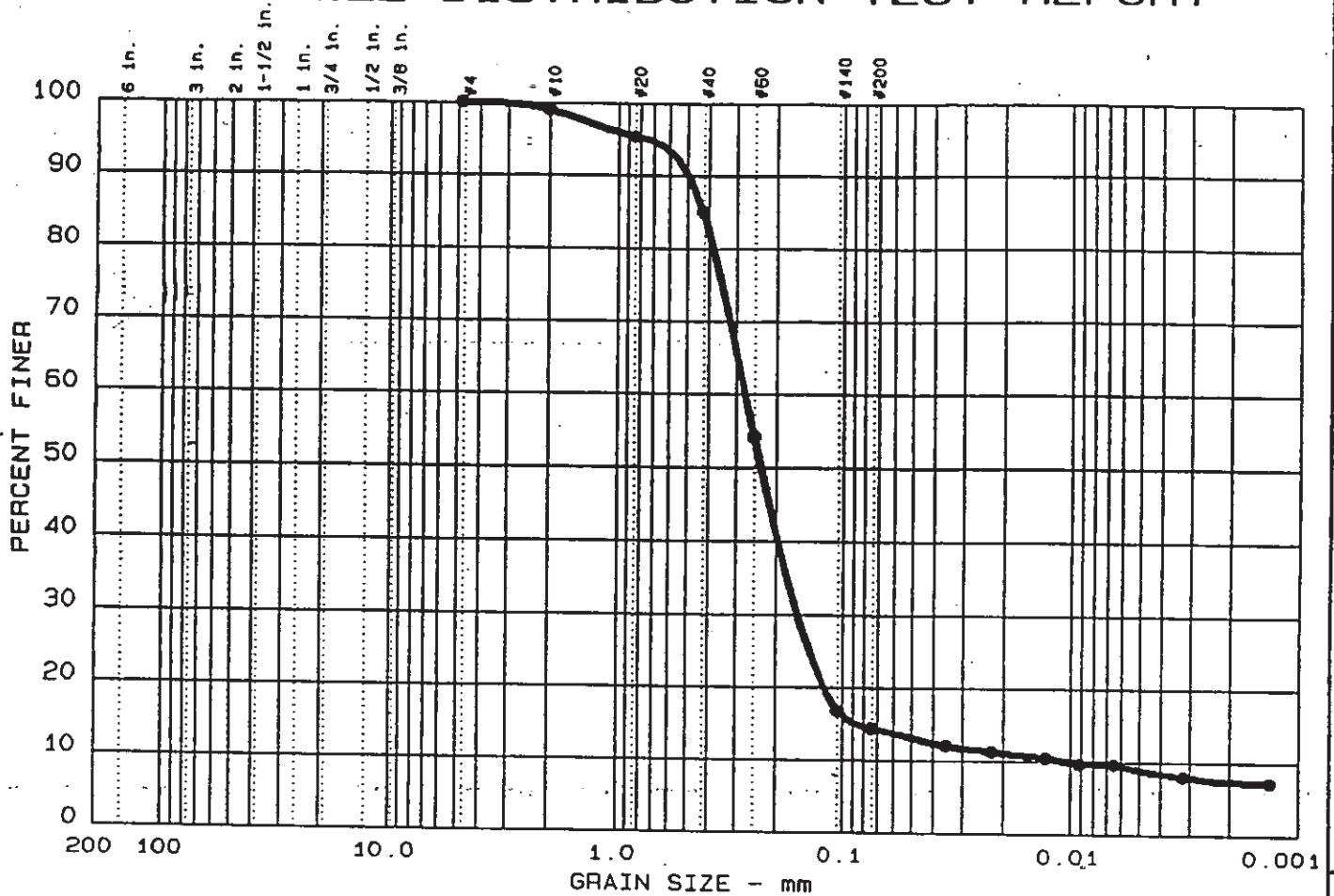
Reviewed by: *RLB*

CONSOLIDATION TEST REPORT

LAW ENGINEERING, INC.

Fig. No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• -5	0.0	0.0	85.6	5.4	9.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
• 30	7	0.42	0.27	0.23	0.161	0.0874	0.0102	9.33	26.9

MATERIAL DESCRIPTION	USCS	AASHTO
• Reddish Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 • Location: FB-2 ST-19 @ 75 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: *EM*  
 Reviewed by: *HP*

**ATTACHMENT 3**

K-TRT-F-0000/  
R/O

Tested by: CS  
Date: 11/08/95

Reviewed by: RLB  
Date: 01/30/96

Law Job No. 50161-5-5756  
Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE  
"TYPICAL"**

Sample: Boring No.: FB-2  
Depth: 75-77 ft.  
Sample ID: ST-19

**MEASUREMENTS (Nominal 6-inch cut sample height):**

TOTAL SAMPLE HEIGHT (inches)	INSIDE DIAMETER OF CUT TUBE (inches)
1 <u>10.750</u>	
2 <u>10.750</u>	top <u>2.865</u>
3 <u>10.750</u>	bottom <u>2.865</u>
Avg. <u>10.750 (H)</u>	Avg. <u>2.865 (D)</u>

**MOISTURE CONTENT DETERMINATION**

MOISTURE CONTENT	
Tare No.	<u>K-49</u>
Tare Weight	<u>50.10 gm</u>
Wet Wt. + Tare	<u>559.20 gm</u>
Dry Wt. + Tare	<u>459.40 gm</u>
Wt. of Water	<u>99.80 gm</u>
Dry Weight	<u>409.30 gm</u>
Moisture Content, w	<u>24.4 %</u>

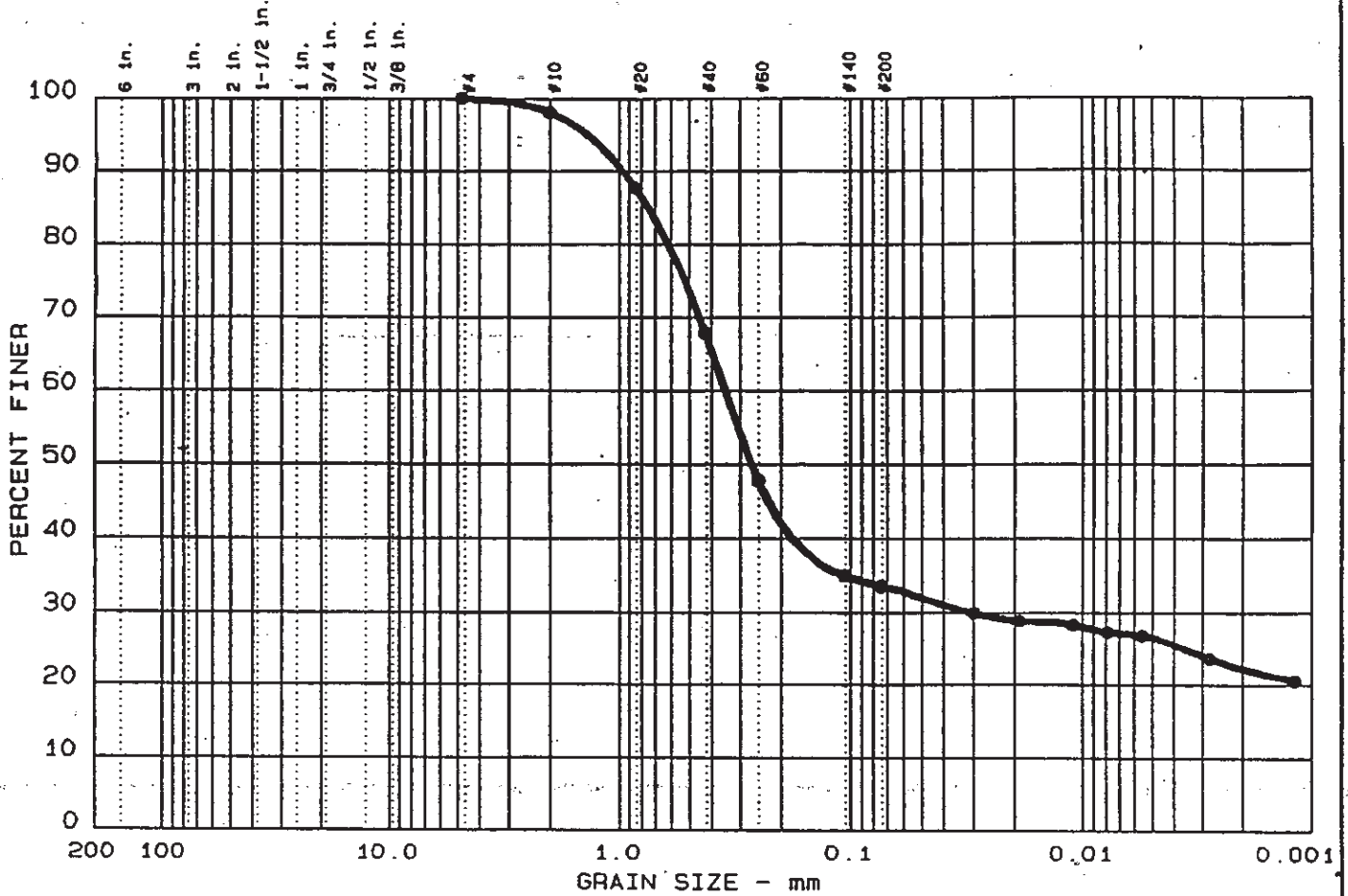
TOTAL WEIGHT OF SOIL + TUBE SECTION  
WEIGHT OF CLEAN, DRY TUBE SECTION  
WET WEIGHT OF SOIL, [(W<sub>stt</sub> - W<sub>t</sub>)/454]  
VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
WET DENSITY, [W<sub>s</sub>/V]  
DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

W<sub>stt</sub> = 2975.8 gm  
W<sub>t</sub> = 773.79 gm  
W<sub>s</sub> = 4.850 lbs  
V = 0.040 ft<sup>3</sup>  
D<sub>w</sub> = 120.9 pcf  
D<sub>s</sub> = 97.2 pcf

h:\users\lab\soil\program\saampdens.wk3



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● .17	0.0	0.0	66.5	7.1	26.4

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 59	40	0.74	0.35	0.27	0.031				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-7 (5.7)

Project No.: 50161-5-5755  
 Project: SRS Task 12  
 ● Location: FB-2 ST-20 @ 83 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: EM  
 Reviewed by: HB

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

Tested by: DMJ  
Date: 01/30/96

Reviewed by: RLB  
Date: 01/30/96

Law Job No. 50161-5-5756  
Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE**  
**"TYPICAL"**

Sample: Boring No.: FB-2  
Depth: 83-85 ft.  
Sample ID: ST-20

**MEASUREMENTS (Nominal 6-inch cut sample height):**

TOTAL SAMPLE HEIGHT (inches)		INSIDE DIAMETER OF CUT TUBE (inches)	
1	<u>18.250</u>		
2	<u>18.250</u>	top	<u>2.833</u>
3	<u>18.250</u>	bottom	<u>2.812</u>
Avg.	<u>18.250 (H)</u>	Avg.	<u>2.823 (D)</u>

**MOISTURE CONTENT DETERMINATION**

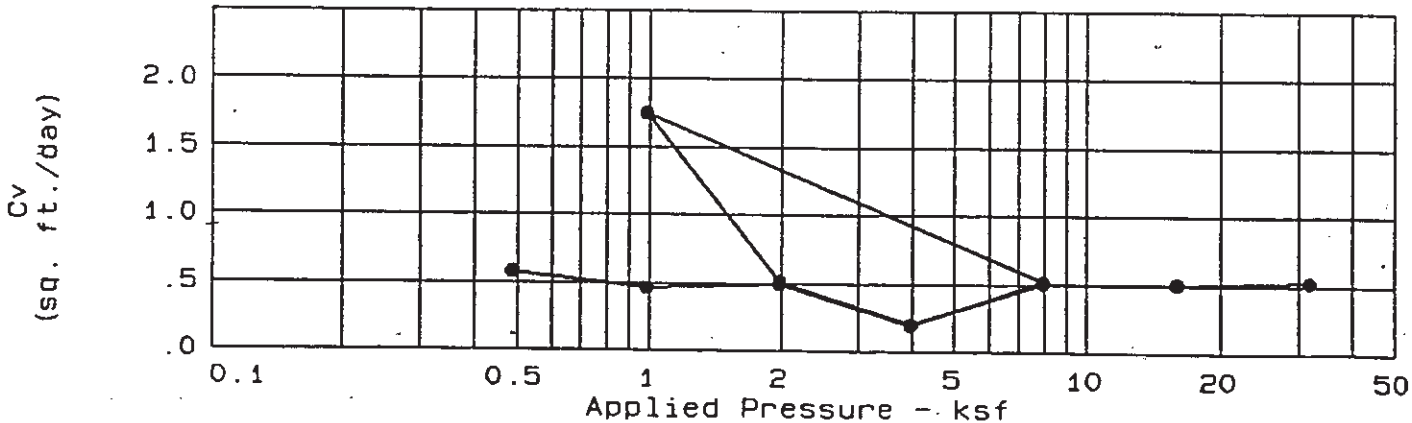
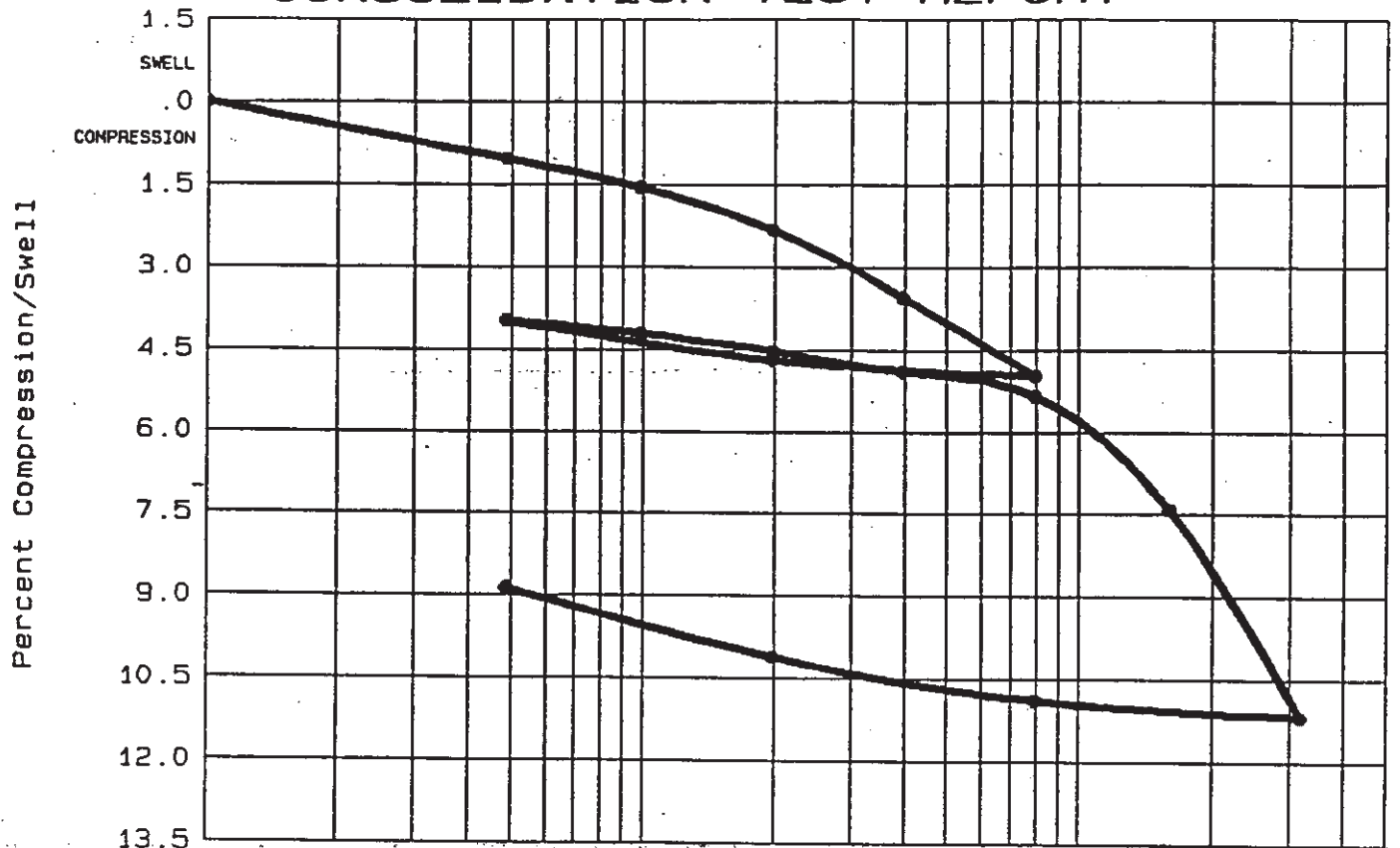
MOISTURE CONTENT	
Tare No.	
Tare Weight	<u>218.20 gm</u>
Wet Wt. + Tare	<u>341.28 gm</u>
Dry Wt. + Tare	<u>317.68 gm</u>
Wt. of Water	<u>23.60 gm</u>
Dry Weight	<u>99.48 gm</u>
Moisture Content, w	<u>23.7 %</u>

TOTAL WEIGHT OF SOIL + TUBE SECTION  
WEIGHT OF CLEAN, DRY TUBE SECTION  
WET WEIGHT OF SOIL, [(W<sub>st</sub> - W<sub>t</sub>)/454]  
VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
WET DENSITY, [W<sub>s</sub>/V]  
DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

W<sub>st</sub> = 4540.6 gm  
W<sub>t</sub> = 1313.64 gm  
W<sub>s</sub> = 7.108 lbs  
V = 0.066 ft<sup>3</sup>  
D<sub>w</sub> = 107.6 pcf  
D<sub>s</sub> = 86.9 pcf

h:\users\lab\soil\programs\sampledens.xls

# CONSOLIDATION TEST REPORT

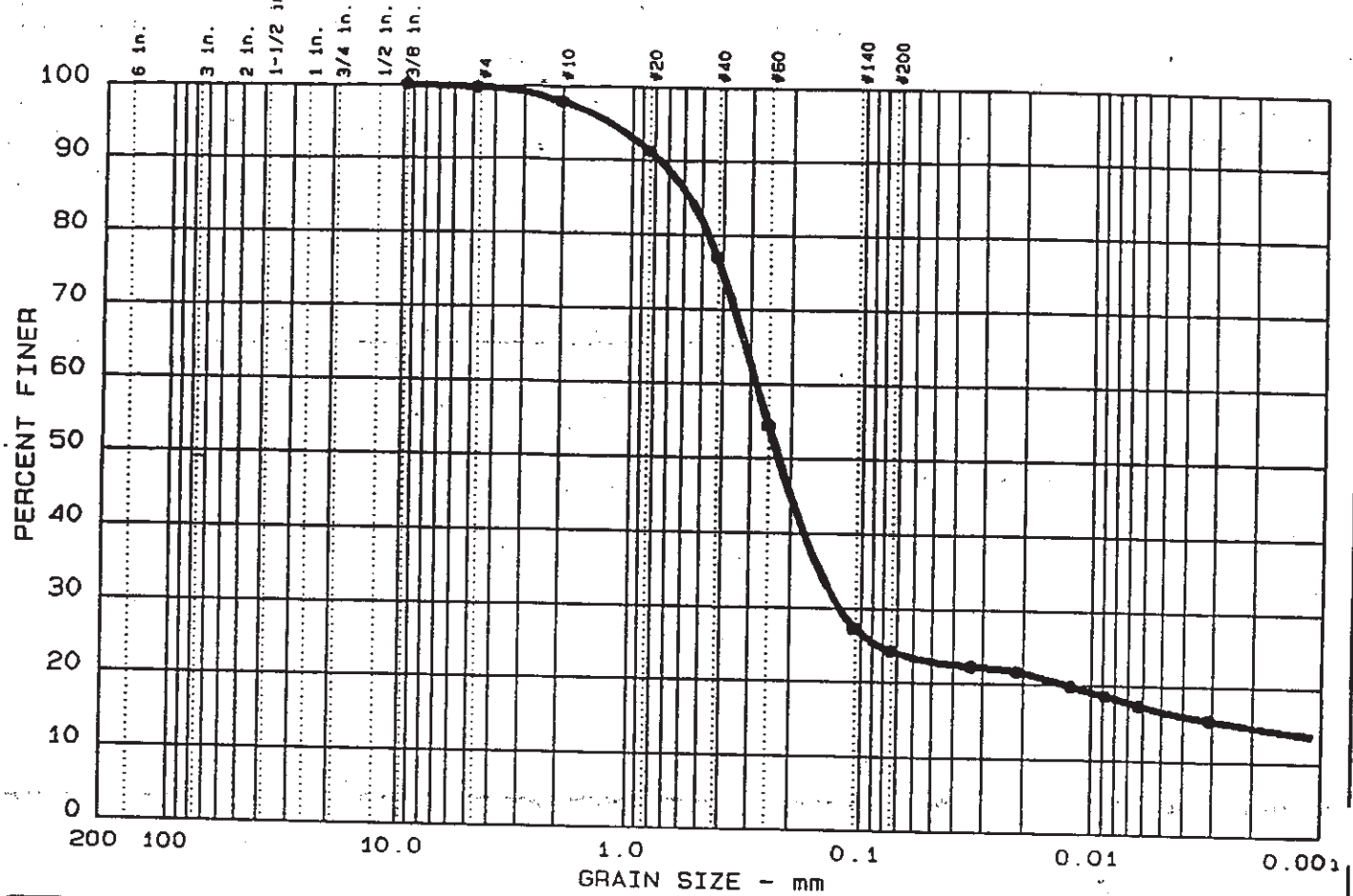


Natural Saturation	Natural Moisture	Dry Density	LL	PI	Sp. Gr.	Precons. press.	C <sub>c</sub>	e <sub>0</sub>
85.1 %	23.7	96.8	59	40	2.730	11.71	0.22	0.7606

TEST RESULTS
Compression Index = 0.22
Project No.: 50161-5-5756 Project: Savannah River Site Location: FB-2 ST-20 @ 83 Ft. Date: 1/22/96
CONSOLIDATION TEST REPORT <b>LAW ENGINEERING, INC.</b>

MATERIAL DESCRIPTION
Tan Brown Clayey Sand
Class: SC
Remarks:
Tested by: <i>HS</i>
Reviewed by: <i>RUB</i>
Fig. No. _____

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.3	75.4	7.6	16.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 37	18	0.56	0.28	0.23	0.123	0.0024			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Clayey Sand	SC	A-2-60.7

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 St-21 @ 100 Ft.  
 Date: January 23, 1996

Remarks:  
 Tested by: *DMJ*  
 Reviewed by: *HS*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

**ATTACHMENT 3**

K-TRT-F-00001  
R/O

Tested by: CS  
Date: 11/08/95

Reviewed by: RLB  
Date: 01/30/96

Law Job No. 50161-5-5756  
Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE  
"TYPICAL"**

Sample: Boring No.: FB-2  
Depth: 100-102 ft.  
Sample ID: ST-21

**MEASUREMENTS (Nominal 6-inch cut sample height):**

TOTAL SAMPLE HEIGHT (inches)		INSIDE DIAMETER OF CUT TUBE (inches)	
1	<u>10.875</u>		
2	<u>10.875</u>	top	<u>2.865</u>
3	<u>10.875</u>	bottom	<u>2.865</u>
Avg.	<u>10.875 (H)</u>	Avg.	<u>2.865 (D)</u>

**MOISTURE CONTENT DETERMINATION**

MOISTURE CONTENT	
Tare No.	<u>AB-17</u>
Tare Weight	<u>90.60 gm</u>
Wet Wt. + Tare	<u>679.40 gm</u>
Dry Wt. + Tare	<u>561.90 gm</u>
Wt. of Water	<u>117.50 gm</u>
Dry Weight	<u>471.30 gm</u>
Moisture Content, w	<u>24.9 %</u>

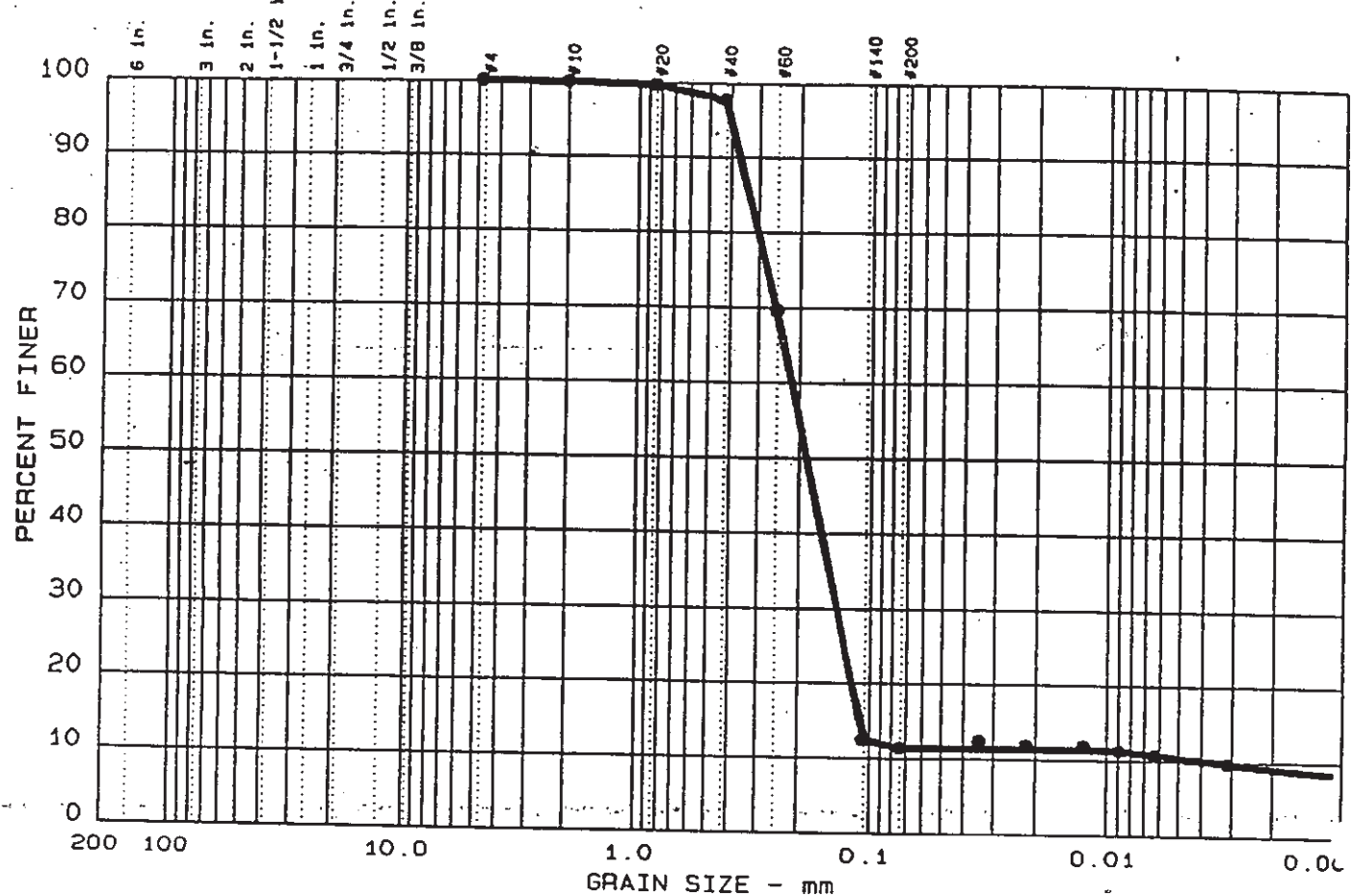
TOTAL WEIGHT OF SOIL + TUBE SECTION  
WEIGHT OF CLEAN, DRY TUBE SECTION  
WET WEIGHT OF SOIL, [(W<sub>stt</sub> - W<sub>t</sub>)/454]  
VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
WET DENSITY, [W<sub>s</sub>/V]  
DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

W<sub>stt</sub> = 3076 gm  
W<sub>t</sub> = 782.78 gm  
W<sub>s</sub> = 5.051 lbs  
V = 0.041 ft<sup>3</sup>  
D<sub>w</sub> = 124.5 pcf  
D<sub>p</sub> = 99.7 pcf

h:\users\lab\soil\program\usampdens.xls

K-TRT-F-00001

GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 3	0.0	0.0	88.6	1.0	10.4

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
• NL	NP	0.33	0.22	0.19	0.137	0.1088	0.0035	24.72	61.2

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 • Location: FB-2 St-22 @ 120 Ft.  
 Date: January 29, 1996

Remarks:  
 Tested by: DML  
 Reviewed by: HB

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ATTACHMENT 3

K-TRT-F-00001  
R/O

Tested by: CS

Reviewed by: RLB

Law Job No. 50161-5-5756

Date: 11/08/95

Date: 01/30/96

Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE**  
**"TYPICAL"**

Sample: Boring No.: FB-2  
Depth: 120-122 ft.  
Sample ID: ST-22

**MEASUREMENTS (Nominal 6-inch cut sample height):**

TOTAL SAMPLE HEIGHT (inches)		INSIDE DIAMETER OF CUT TUBE (inches)	
1	<u>13.813</u>		
2	<u>13.813</u>	top	<u>2.865</u>
3	<u>13.813</u>	bottom	<u>2.865</u>
Avg.	<u>13.813 (H)</u>	Avg.	<u>2.865 (D)</u>

**MOISTURE CONTENT DETERMINATION**

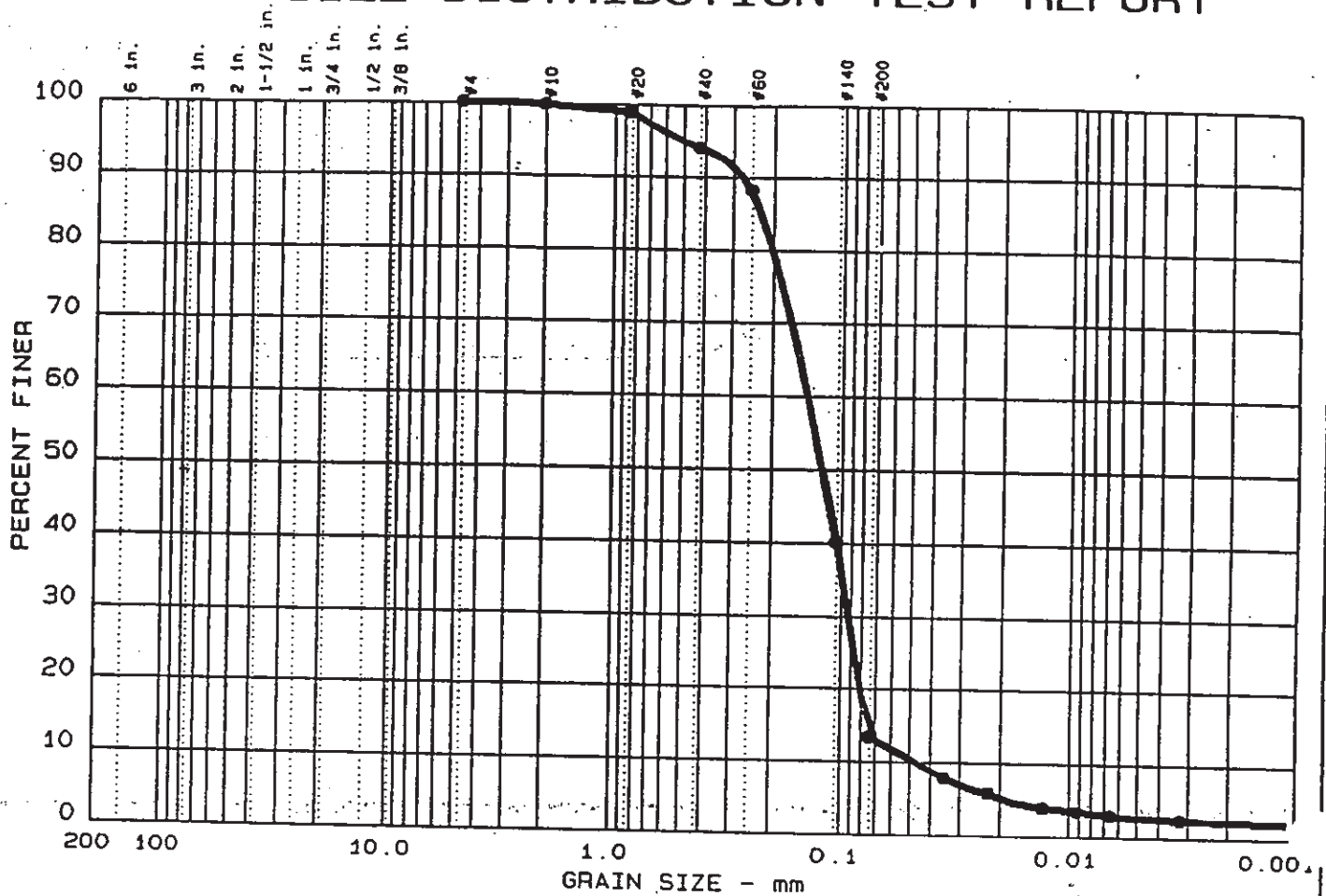
MOISTURE CONTENT	
Tare No.	<u>L-20</u>
Tare Weight	<u>91.10 gm</u>
Wet Wt. + Tare	<u>860.50 gm</u>
Dry Wt. + Tare	<u>702.20 gm</u>
Wt. of Water	<u>158.30 gm</u>
Dry Weight	<u>611.10 gm</u>
Moisture Content, w	<u>25.9 %</u>

TOTAL WEIGHT OF SOIL + TUBE SECTION  
WEIGHT OF CLEAN, DRY TUBE SECTION  
WET WEIGHT OF SOIL, [(W<sub>st</sub> - W<sub>t</sub>)/454]  
VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
WET DENSITY, [W<sub>s</sub>/V]  
DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

W<sub>st</sub> = 3814.2 gm  
W<sub>t</sub> = 994.22 gm  
W<sub>s</sub> = 6.211 lbs  
V = 0.052 ft<sup>3</sup>  
D<sub>w</sub> = 120.5 pcf  
D<sub>s</sub> = 95.7 pcf

h:\users\lab\soil\program\sampledens.wk3

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	86.6	10.6	2.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.23	0.14	0.12	0.092	0.0755	0.0460	1.32	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.4)

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 ● Location: FB-2 St-24 @ 147 Ft.  
 Date: January 29, 1996

Remarks:  
 Tested by: *DM*  
 Reviewed by: *HS*

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



**ATTACHMENT 3**

K-TRT-F-00001  
R/O

Tested by: DMJ      Reviewed by: RLB      Law Job No. 50161-5-5756  
 Date: 01/30/96      Date: 01/30/96      Job Name SRS Task 12

**TP-4A: UNIT WEIGHT OF SAMPLE**  
**"TYPICAL"**

Sample: Boring No.: FB-2  
 Depth: 147-149 ft.  
 Sample ID: ST-24

**MEASUREMENTS (Nominal 6-inch cut sample height):**

TOTAL SAMPLE HEIGHT (inches)		INSIDE DIAMETER OF CUT TUBE (inches)	
1	<u>8.092</u>		
2	<u>8.096</u>	top	<u>2.847</u>
3	<u>8.154</u>	bottom	<u>2.840</u>
Avg.	<u>8.114 (H)</u>	Avg.	<u>2.844 (D)</u>

**MOISTURE CONTENT DETERMINATION**

MOISTURE CONTENT	
Tare No.	<u>C-16</u>
Tare Weight	<u>15.97 gm</u>
Wet Wt. + Tare	<u>141.69 gm</u>
Dry Wt. + Tare	<u>116.63 gm</u>
Wt. of Water	<u>25.06 gm</u>
Dry Weight	<u>100.66 gm</u>
Moisture Content, w	<u>24.9 %</u>

TOTAL WEIGHT OF SOIL + TUBE SECTION  
 WEIGHT OF CLEAN, DRY TUBE SECTION  
 WET WEIGHT OF SOIL, [(W<sub>st</sub> - W<sub>t</sub>)/454]  
 VOLUME OF SAMPLE, [(pi\*D<sup>2</sup>/4)\*H/1728]  
 WET DENSITY, [W<sub>s</sub>/V]  
 DRY DENSITY, [D<sub>w</sub>/(1+w/100)]

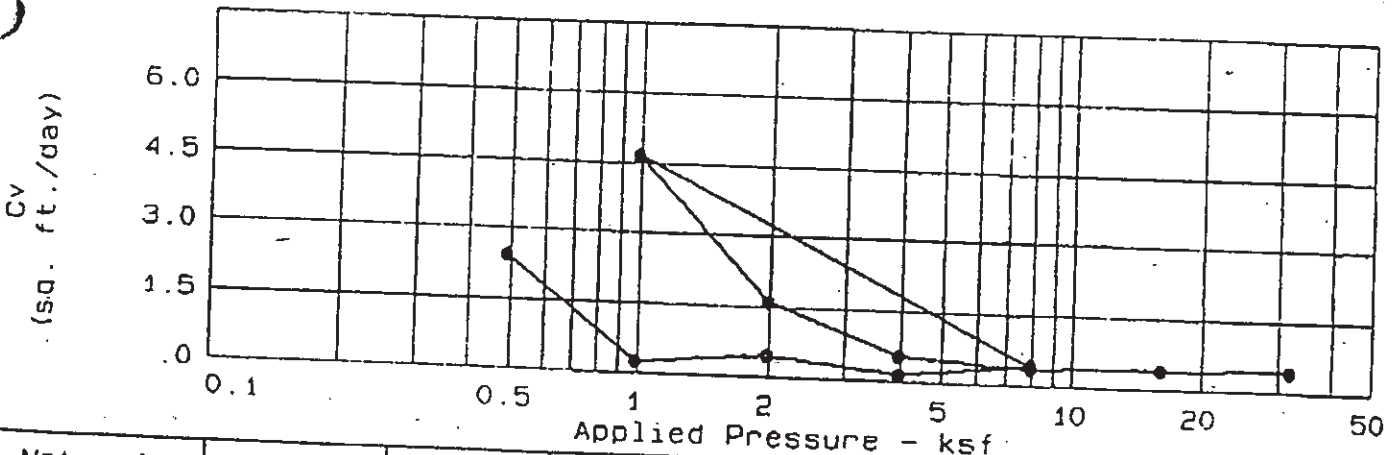
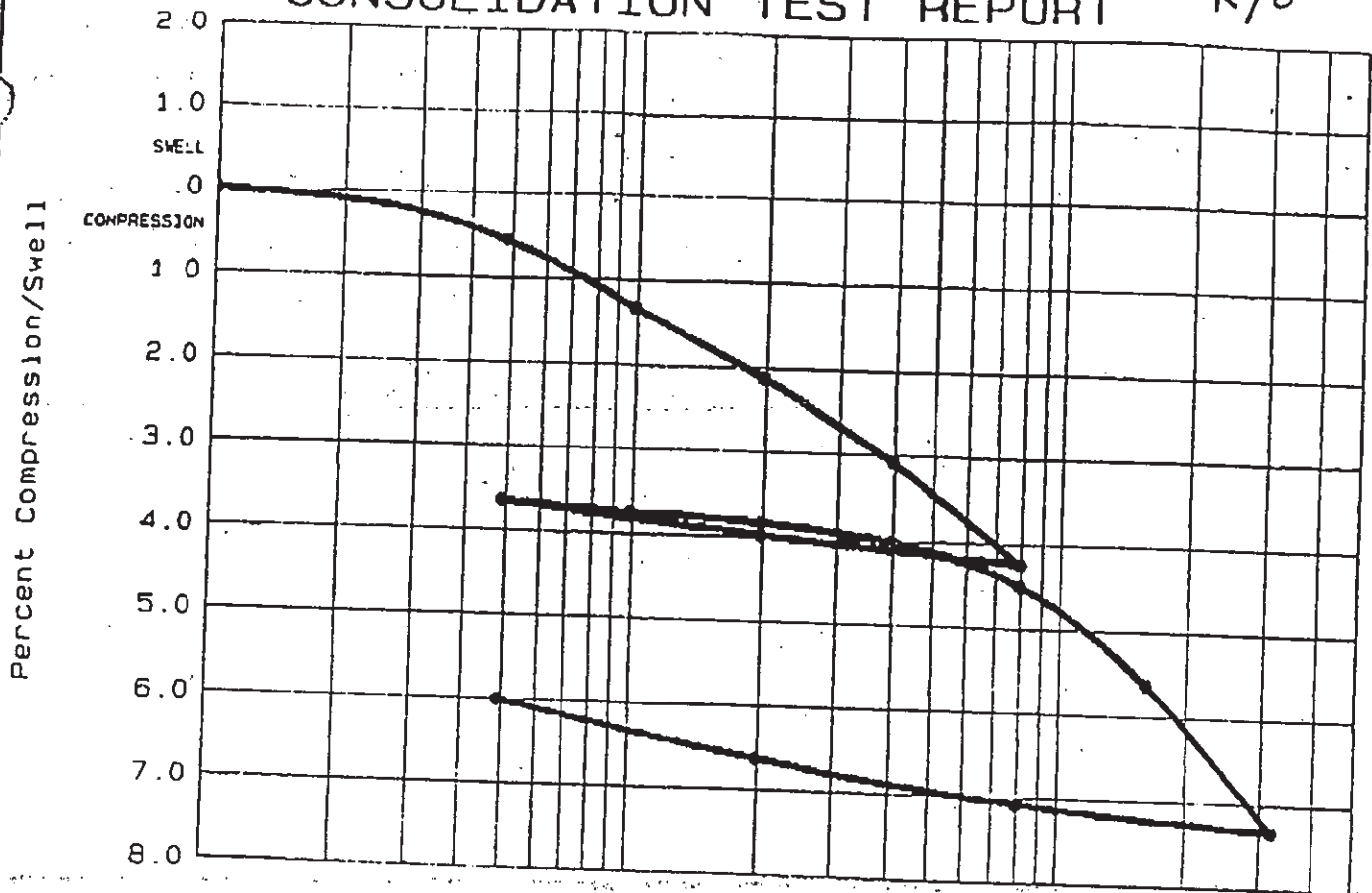
W<sub>st</sub> = 2223.8 gm  
 W<sub>t</sub> = 584.05 gm  
 W<sub>s</sub> = 3.612 lbs  
 V = 0.030 ft<sup>3</sup>  
 D<sub>w</sub> = 121.1 pcf  
 D<sub>s</sub> = 97.0 pcf

h:\mcrs\lab\soil\program\compdens.wt3

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# CONSOLIDATION TEST REPORT

R/O



Natural Saturation	Natural Moisture	Dry Density	LL	PI	Sp. Gr.	Precons. press.	C <sub>c</sub>	e <sub>0</sub>
83.5 %	28.6	85.9	NL	NP	2.610	11.08	0.11	0.8949

**TEST RESULTS**

Compression Index = 0.11

Project No.: 50161-5-5756  
 Project: SRS Task 12  
 Location: FB-2  
 ST-24 @ 147 Ft.  
 Date: 2/14/96

**MATERIAL DESCRIPTION**

Tan Brown Silty Sand

Remarks:  
 Tested by: HES  
 Reviewed by: RLB

CONSOLIDATION TEST REPORT  
**LAW ENGINEERING, INC.**

Fig. No. \_\_\_\_\_

Job Number 50161-7-0108 Task 16  
Job Name APSF Confirmatory Testing

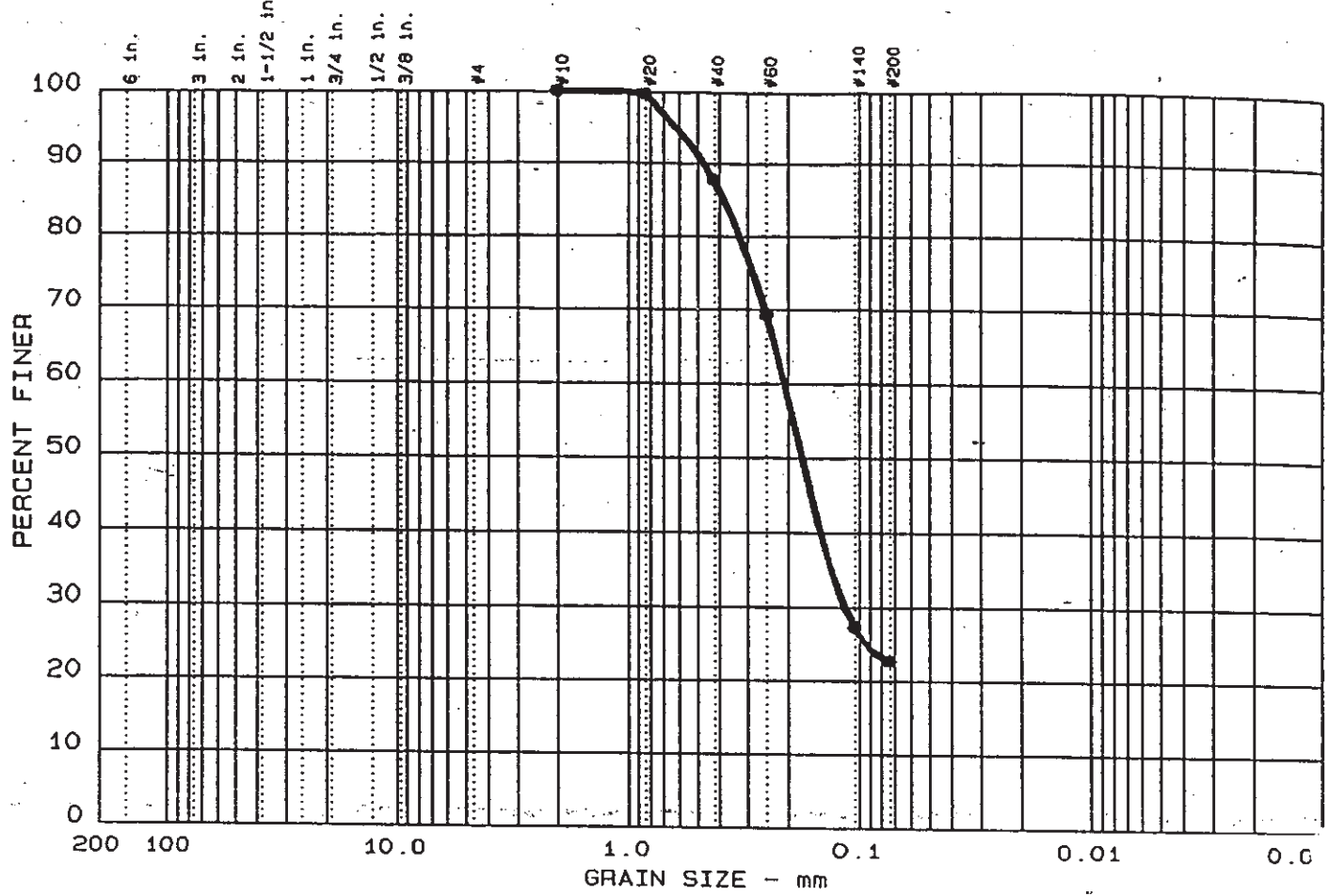
K-TRT-F-00001  
R/O  
Tested by: SC  
Reviewed by: HJ

Moisture Content (ASTM D2216)

Boring Number FB-3

Sample Number	Depth(Ft.)	Moisture Content (%)
SS-1	6	16.2
SS-7	15	19.2
SS-9	18	20.2
SS-11	21	20.1
SS-16	28.5	19.8
SS-35	63	26.0
SS-41	73.2	22.9
SS-45	79.2	31.9
SS-46	80.7	33.8
SS-53	91.2	27.9
SS-60	102.8	27.6
SS-68	115.3	30.7
SS-69	116.8	37.0
SS-70	118.3	29.5
SS-81	134.8	35.0
SS-83	138.7	37.2
SS-86	143.2	36.3
SS-90	149.2	31.7
SS-92	152.2	23.8

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	77.3	22.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
30	11	0.38	0.21	0.17	0.115				

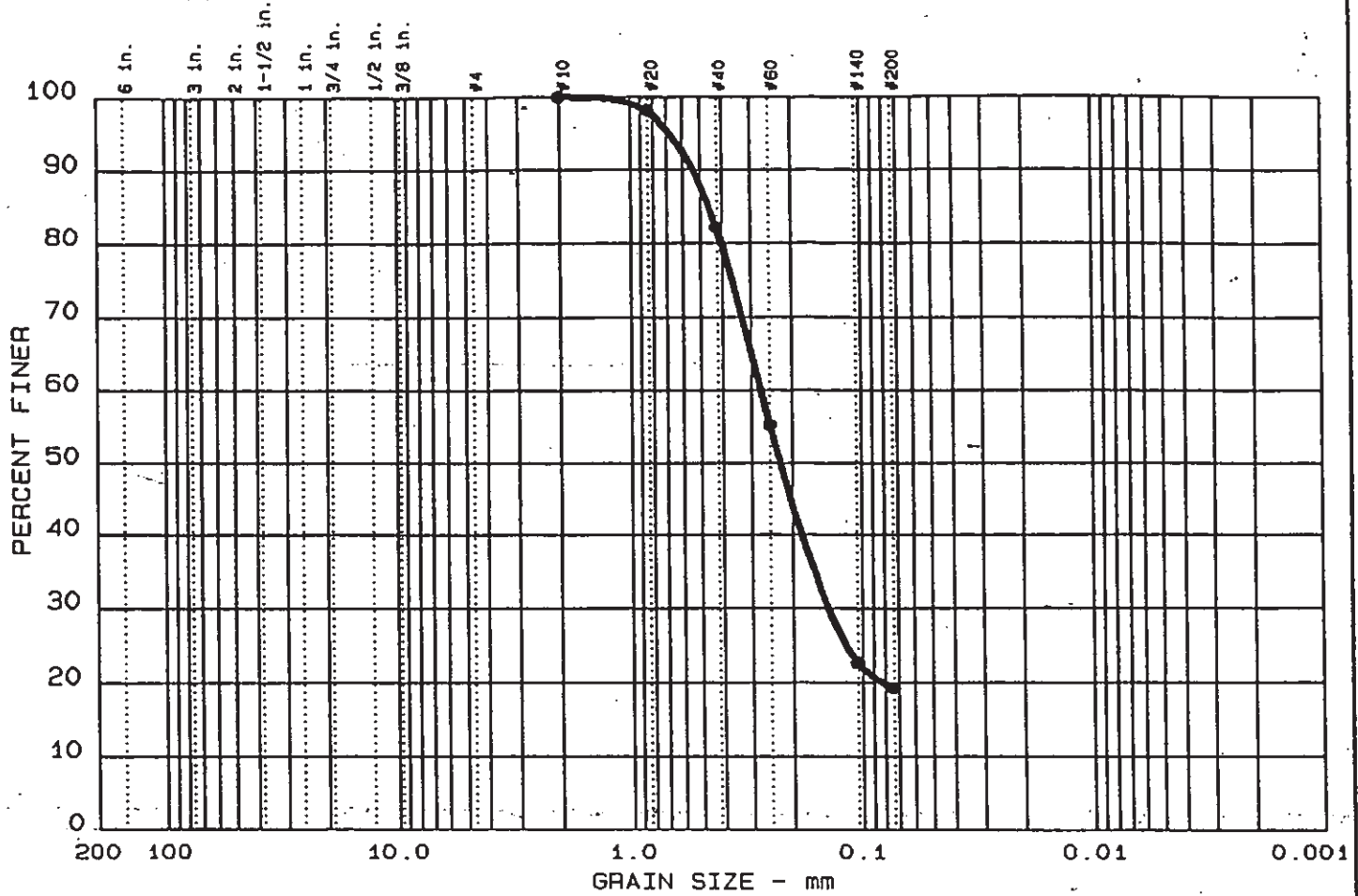
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan & Red Brown Clayey Sand	SC	A-2-6 (0.1)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-1 @ 6-7.5 Ft.  
 Date: March 16, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422  
 &  
 ASTM D 4318  
 Figure No. 11

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	80.7	19.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.45	0.27	0.23	0.141				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-3 @ 9-10.5 Ft.

Remarks:  
 Tested by: SC  
 Reviewed by: HB

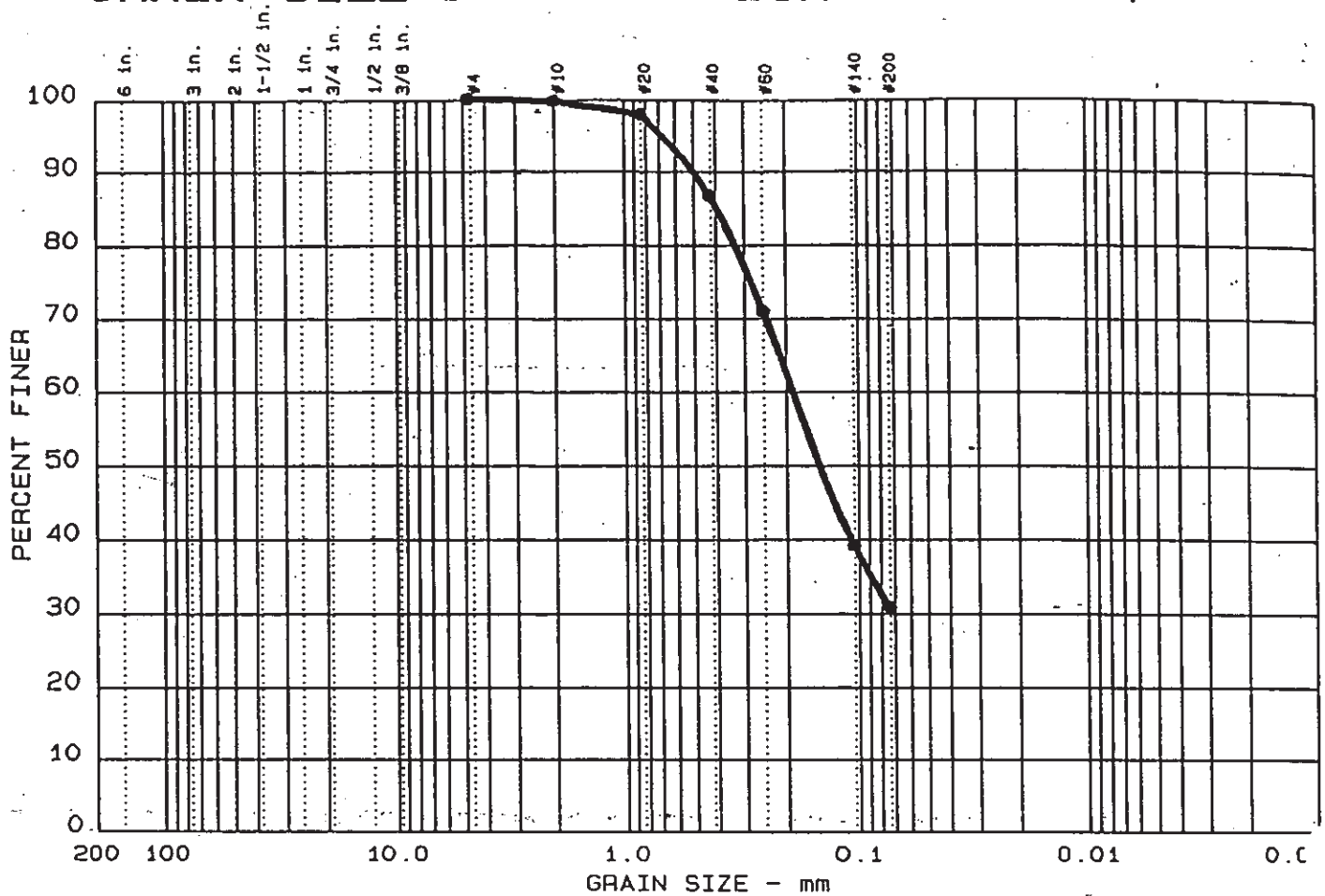
Date: March 16, 1998

ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. 11

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	69.2	30.8	

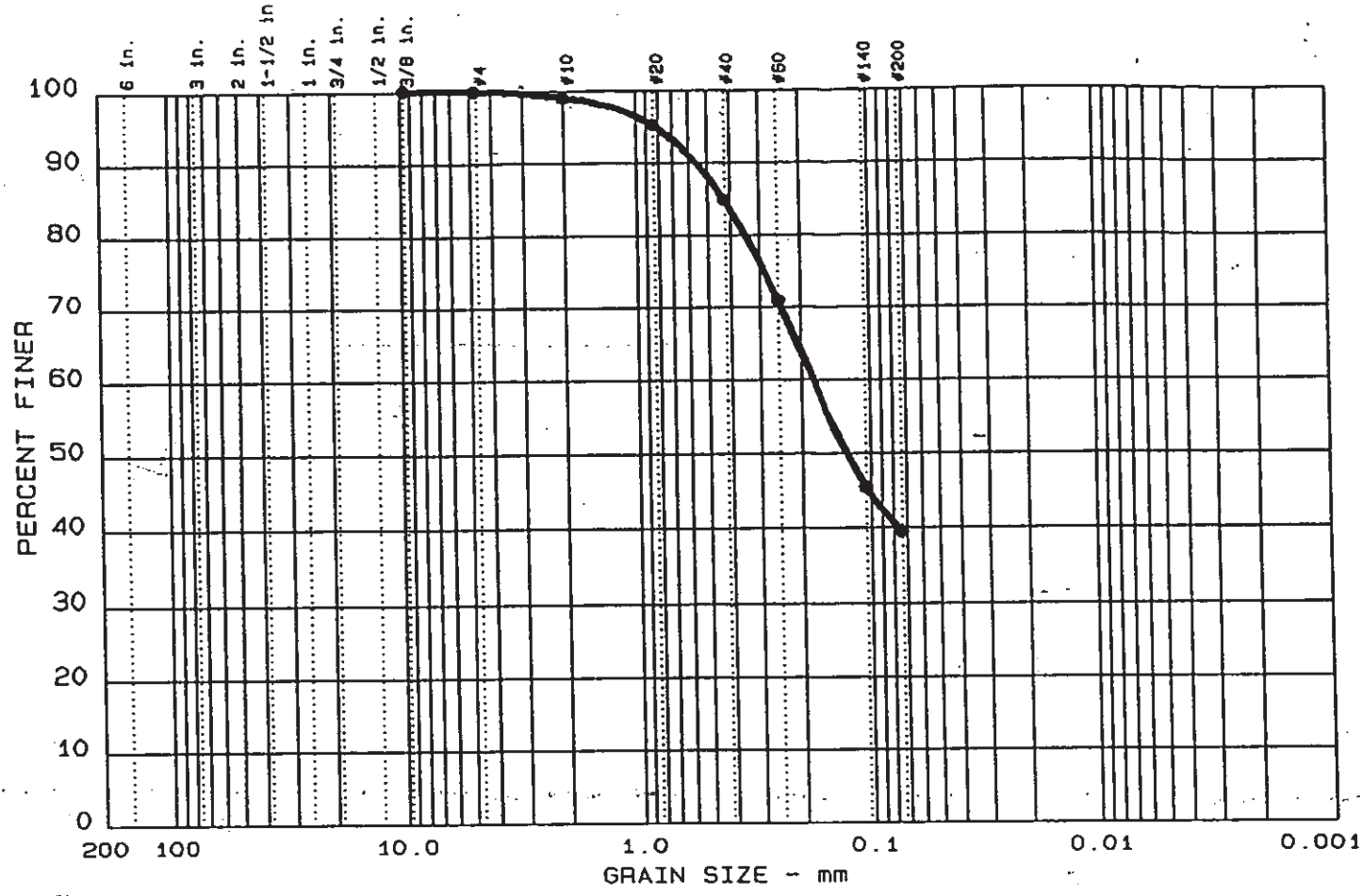
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.39	0.19	0.15					

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-4 @ 10.5-12 Ft.  
  
 Date: March 16, 1998  
  
 GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
  
 ASTM D422  
  
 Figure No. 11

# GRAIN SIZE DISTRIBUTION TEST REPORT



-% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.1	60.5	39.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.42	0.18	0.13					

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan & Red Brown Silty Sand	SM	A-4 (0.0)

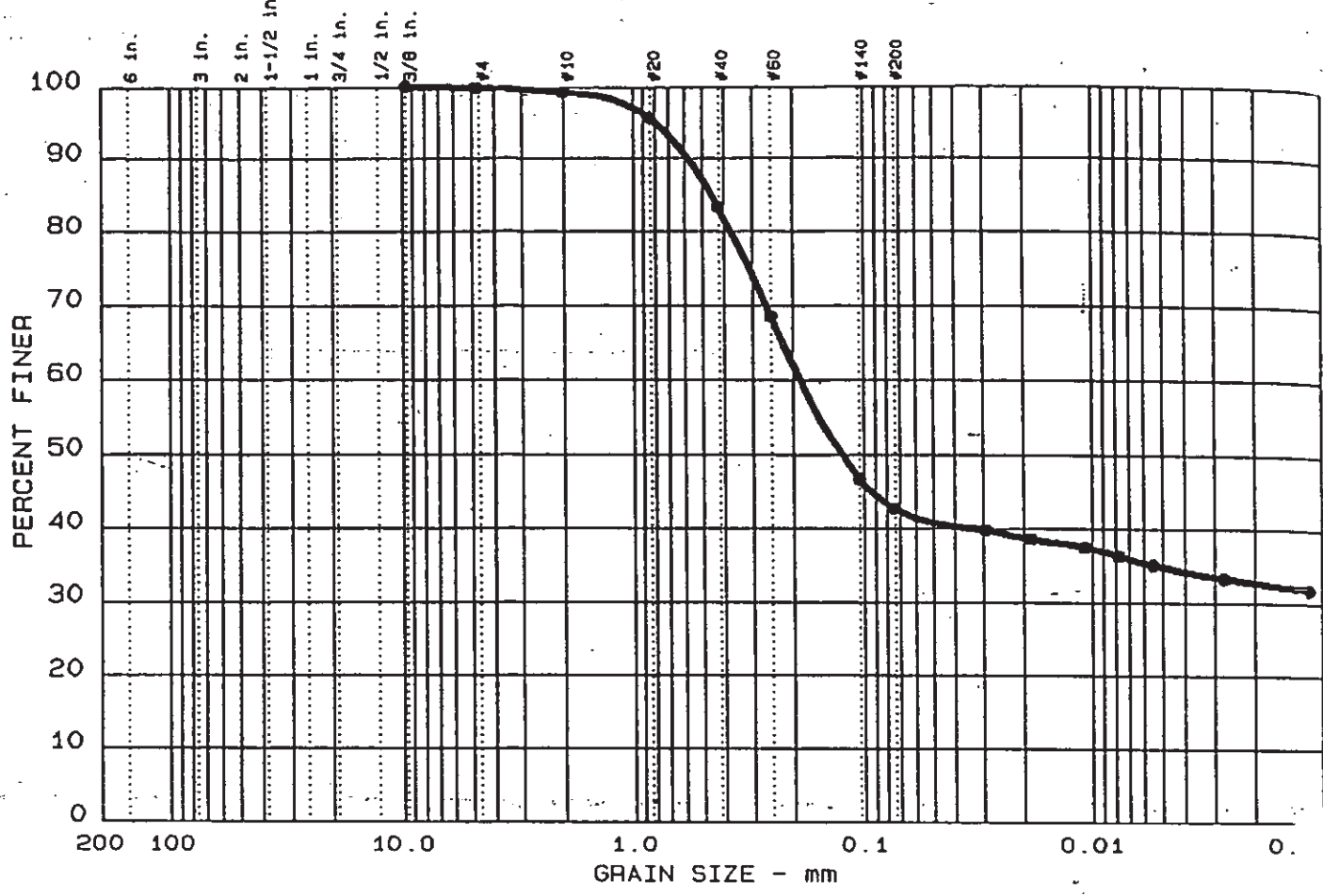
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-5 @ 12-13.5 Ft.

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HD*  
 ASTM D 422

Date: March 16, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.2	57.2	7.9	34.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.45	0.19	0.13					

MATERIAL DESCRIPTION	USCS	AASHTO
Red Brown Silty Sand	SM	A-4 (0.0)

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing Location: FB-3 SS-6 @ 13.5-15 Ft.  Date: March 16, 1998	Remarks: Tested by: SC+JPM Reviewed by: HB ASTM D422
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	

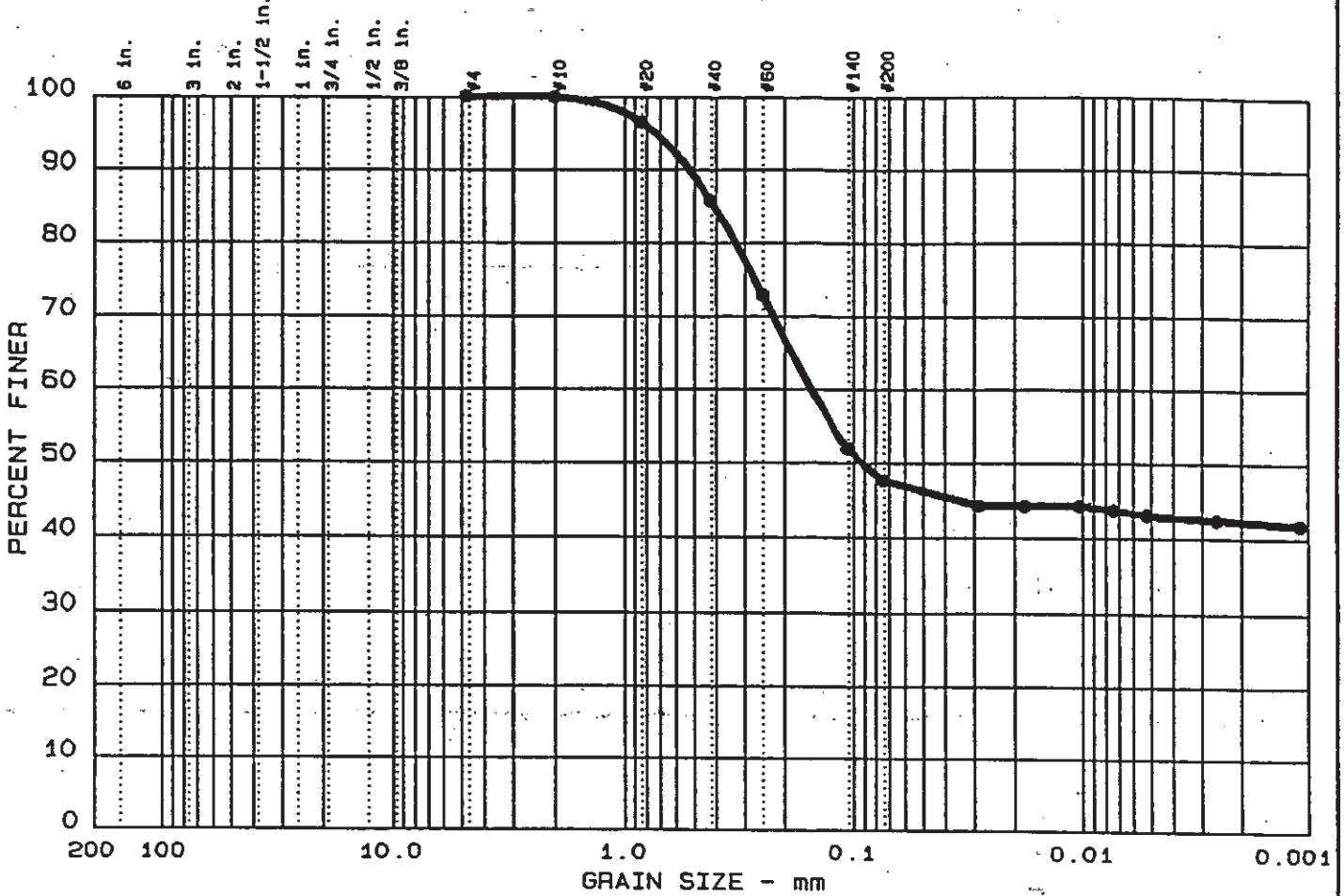
Figure No. 11

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K-TRT-F-00001  
R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	52.4	4.6	43.0

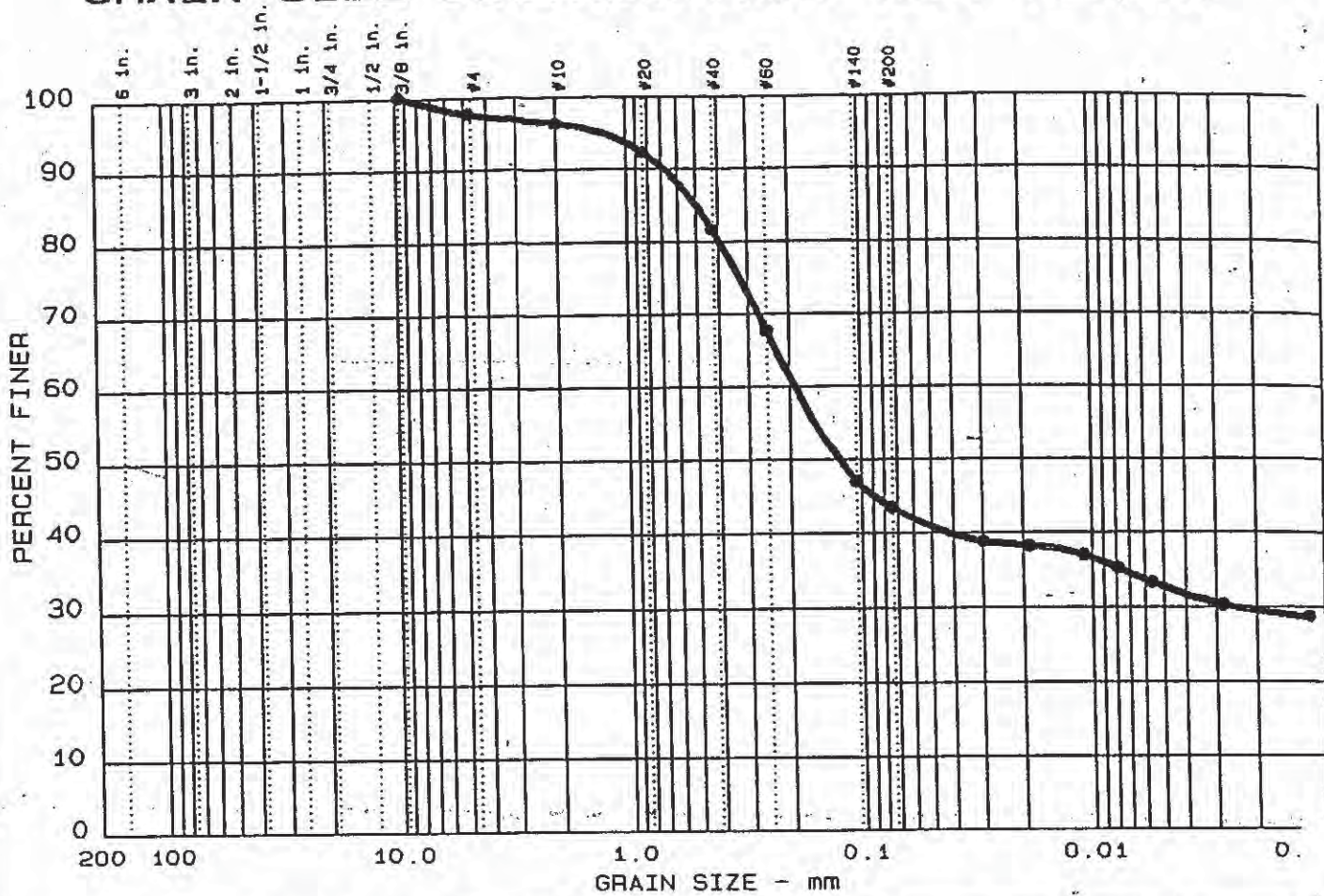
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
54	28	0.40	0.15	0.09					

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-7-6 (9.5)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-7 @ 15-16.5 Ft.  
  
 Date: March 19, 1998

Remarks:  
 Tested by: SCJ/JM  
 Reviewed by: HS  
 ASTM D422  
 &  
 ASTM D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	2.3	54.3	10.8	32.6

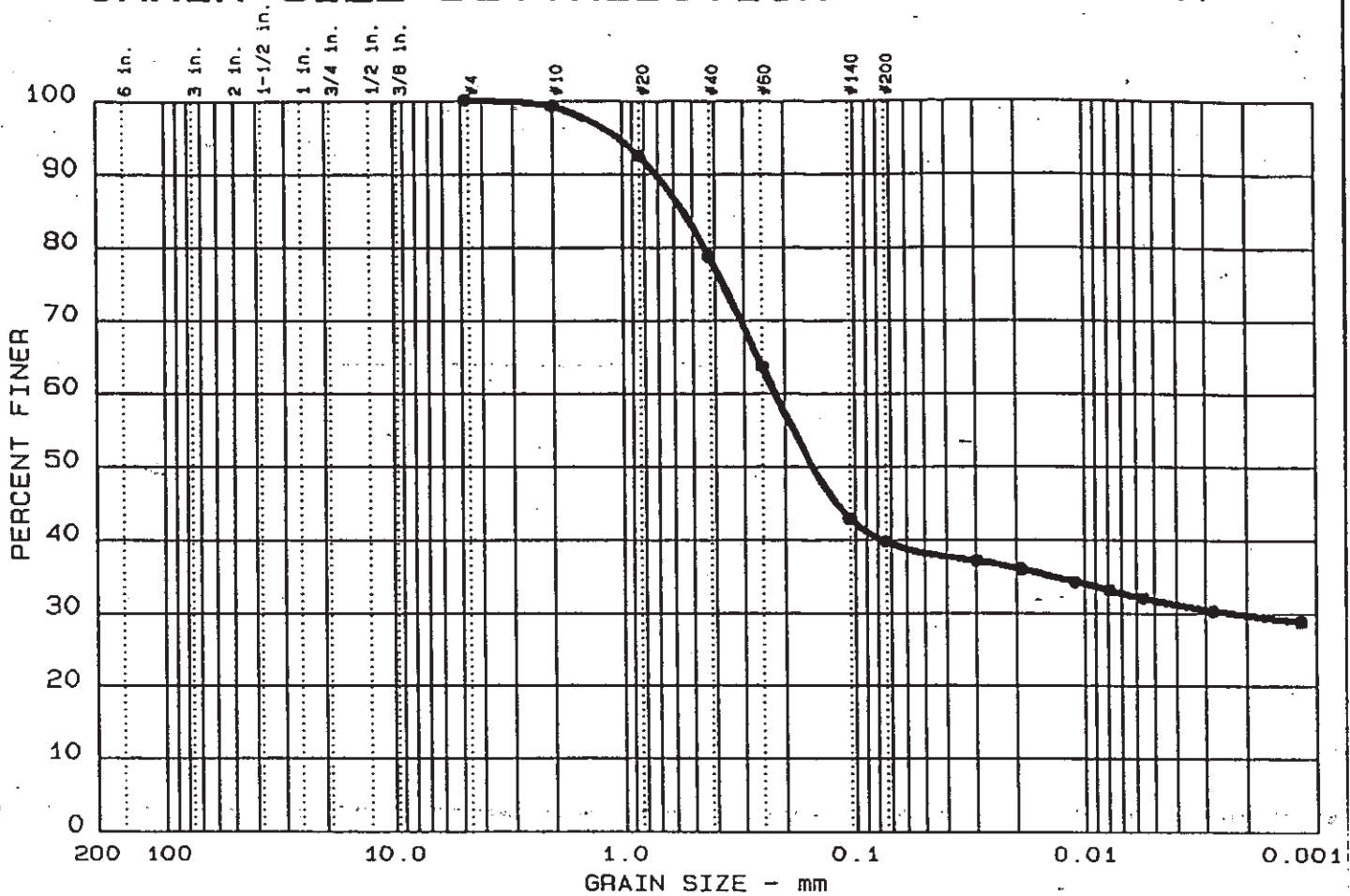
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.49	0.19	0.13	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-4 (0.0)

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-3 SS-8 16.5-18 Ft.  Date: March 16, 1998	Remarks: Tested by: <i>SC-JM</i> Reviewed by: <i>HS</i> ASTM D422
--	--

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



● % +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	60.3	8.1	31.6

● LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
46	22	0.54	0.22	0.15	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-7-6 (4.2)

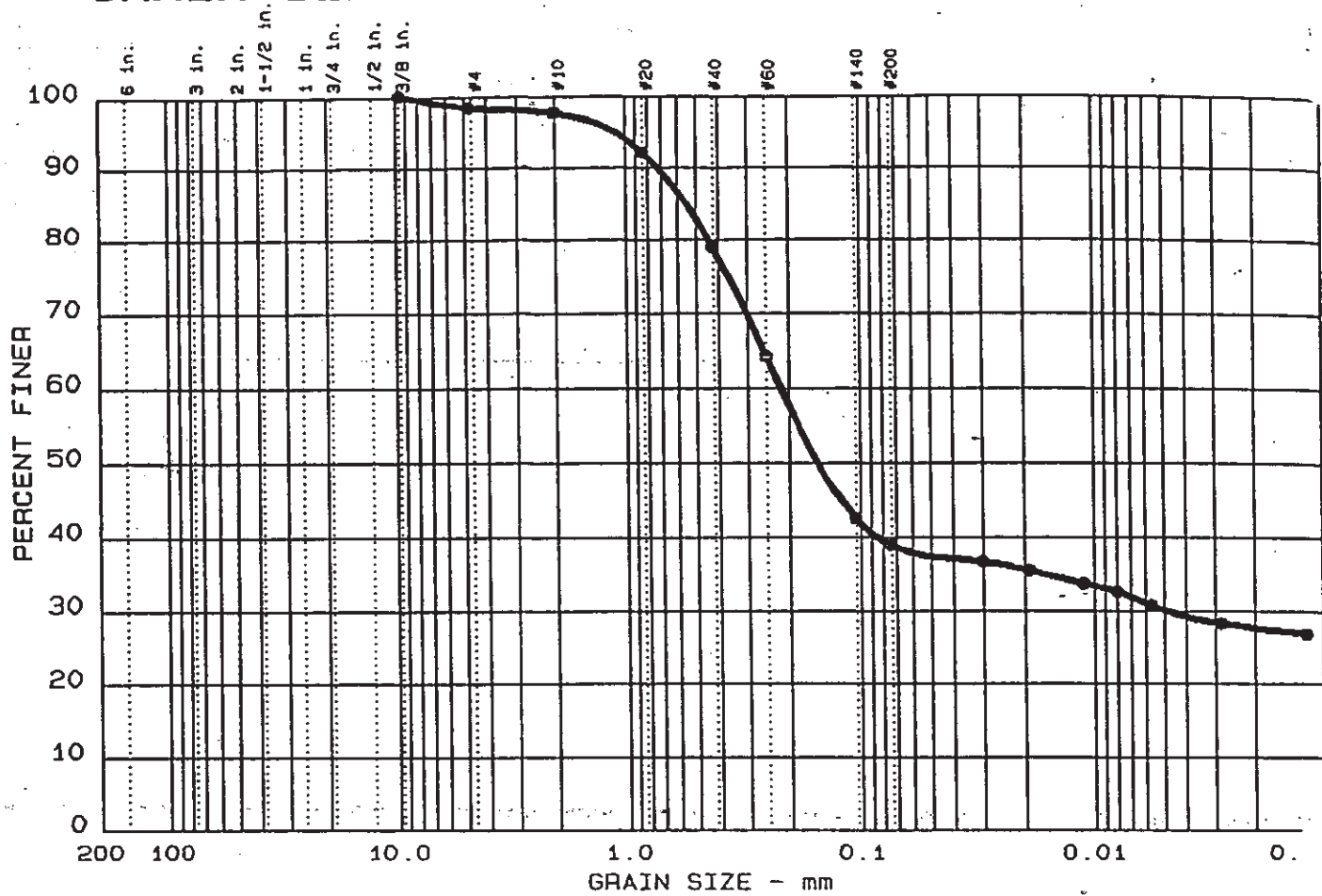
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-9 @ 18-19.5 Ft.  
 Date: March 16, 1998

Remarks:  
 Tested by: *SCJ/TM*  
 Reviewed by: *[Signature]*  
 ASTM D422  
 &  
 ASTM D4318

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. 11

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	1.6	59.6	8.8	30.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.54	0.22	0.15	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SM	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-10 @ 19.5-21 Ft.  
  
 Date: March 16, 1998

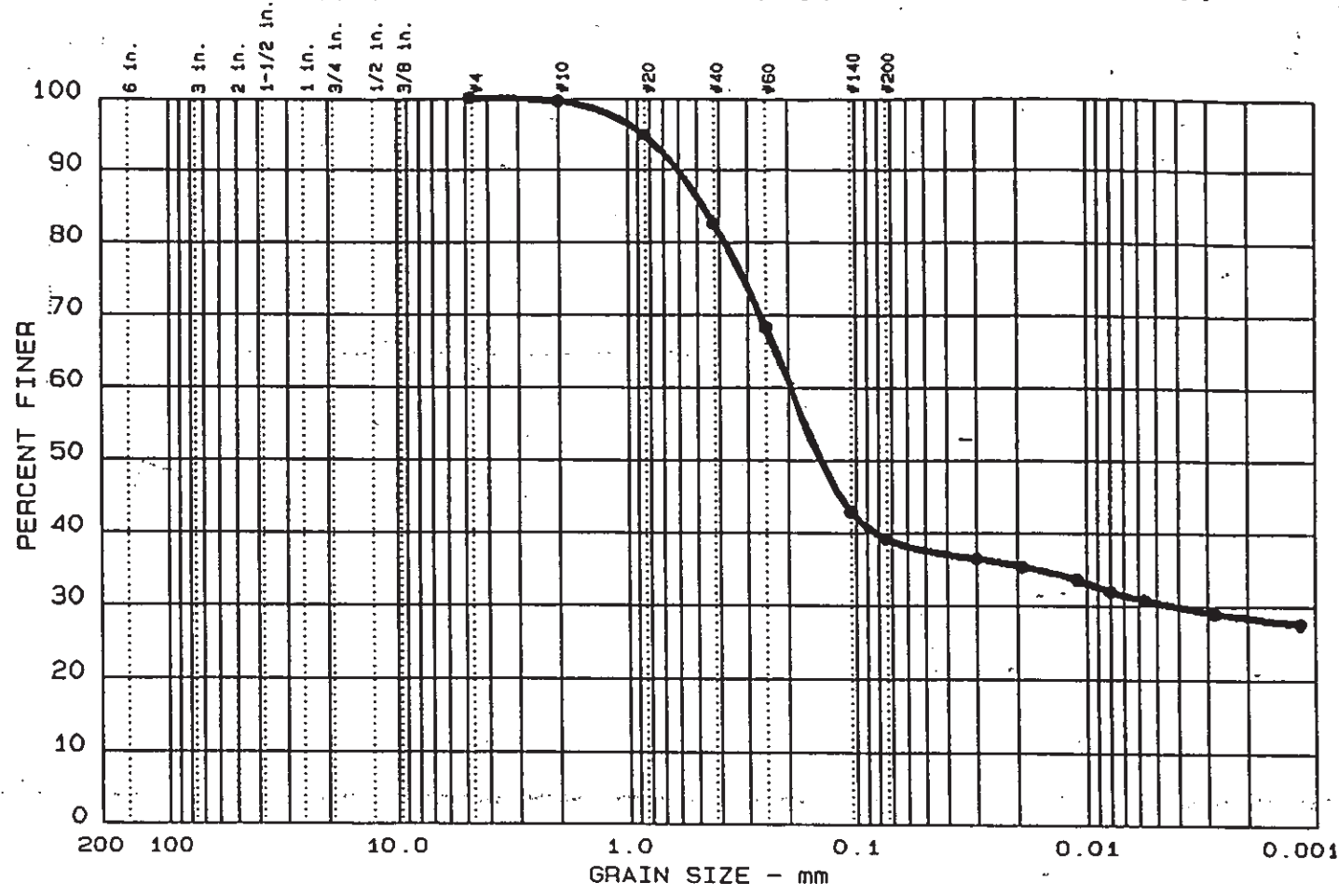
Remarks:  
 Tested by: *SCJ/JTM*  
 Reviewed by: *HJ*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. 11

K-TRT-E-00001

# GRAIN SIZE DISTRIBUTION TEST REPORT R/S



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	60.9	8.8	30.3

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
49	24	0.46	0.19	0.14	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-7-6 (4.3)

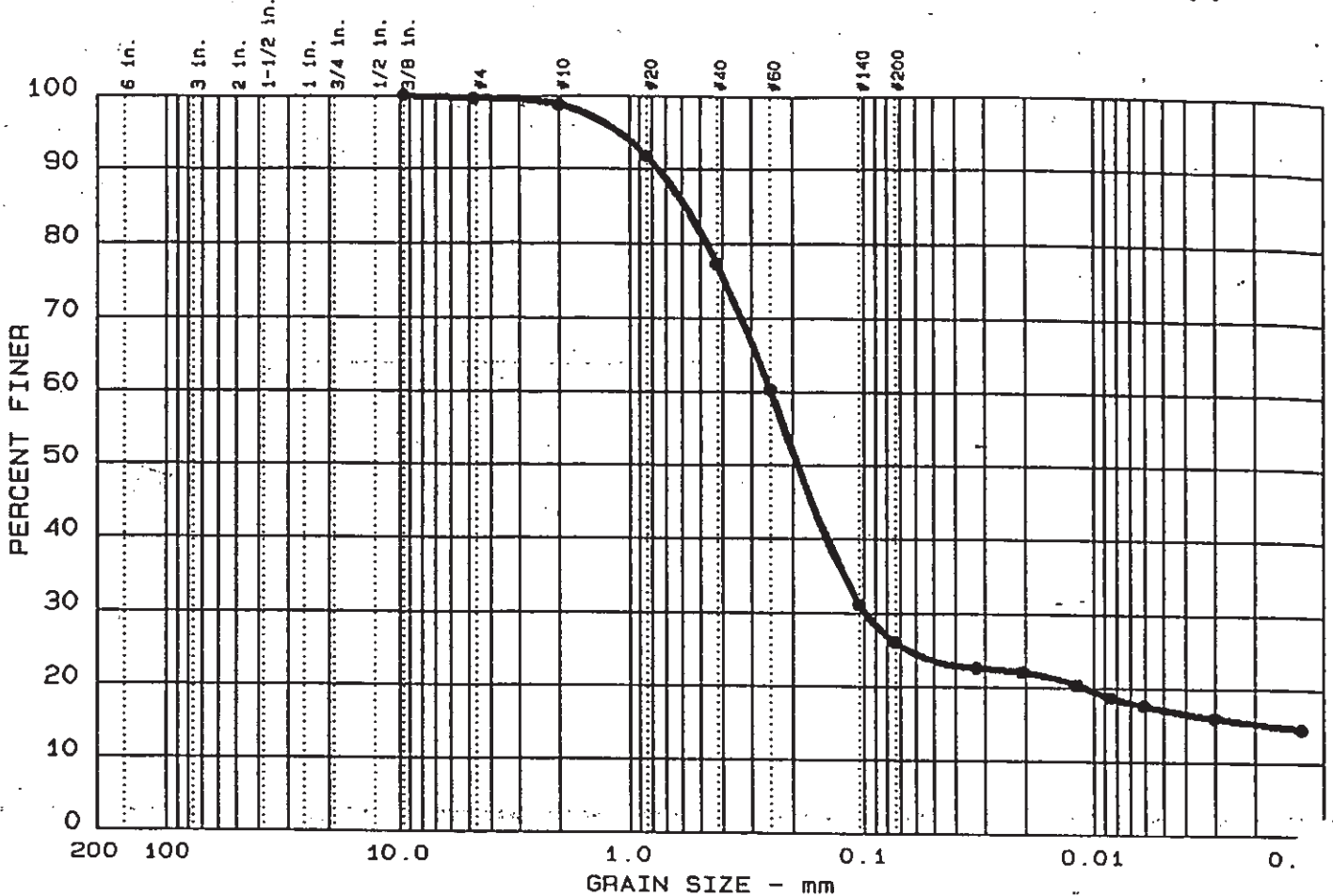
<p>Project No.: 50161-7-0108 Task 16                  Project: APSF Confirmatory Testing                  ● Location: FB-3 SS-11 @ 21-22.5 Ft.</p>	<p>Remarks:                  Tested by: <i>SC &amp; JM</i>                  Reviewed by: <i>HD</i>                  ASTM D 422                  &amp;                  ASTM D 4318</p>
--	--

Date: March 16, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. 11

# GRAIN SIZE DISTRIBUTION TEST REPORT



● % +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.4	73.5	8.9	17.2

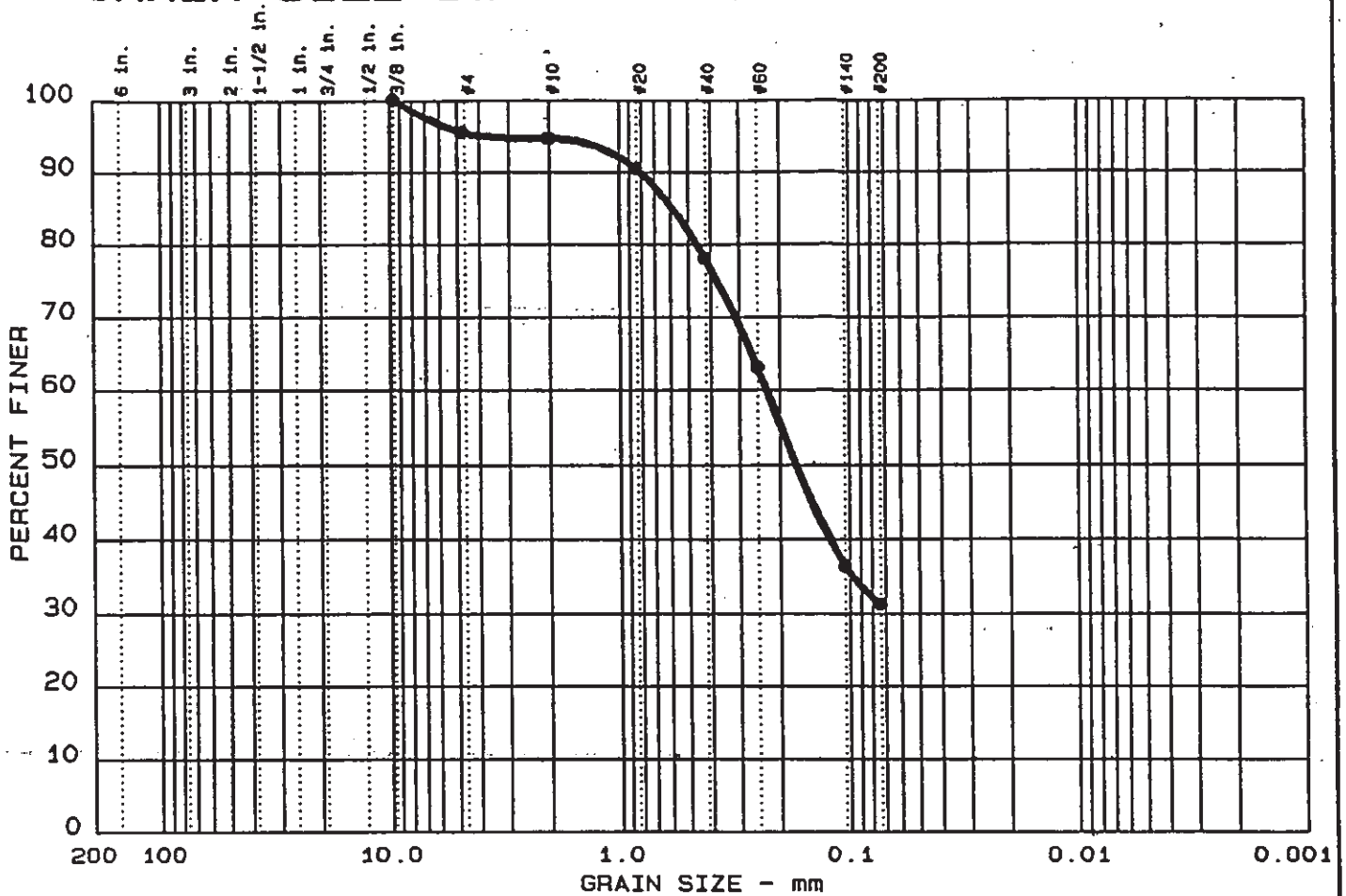
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.57	0.25	0.19	0.099	0.0015			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-13 @ 24-25.5 Ft.  
 Date: March 16, 1998

Remarks:  
 Tested by: *SC/STM*  
 Reviewed by: *HO*  
 ASTM D 422

## GRAIN SIZE DISTRIBUTION TEST REPORT



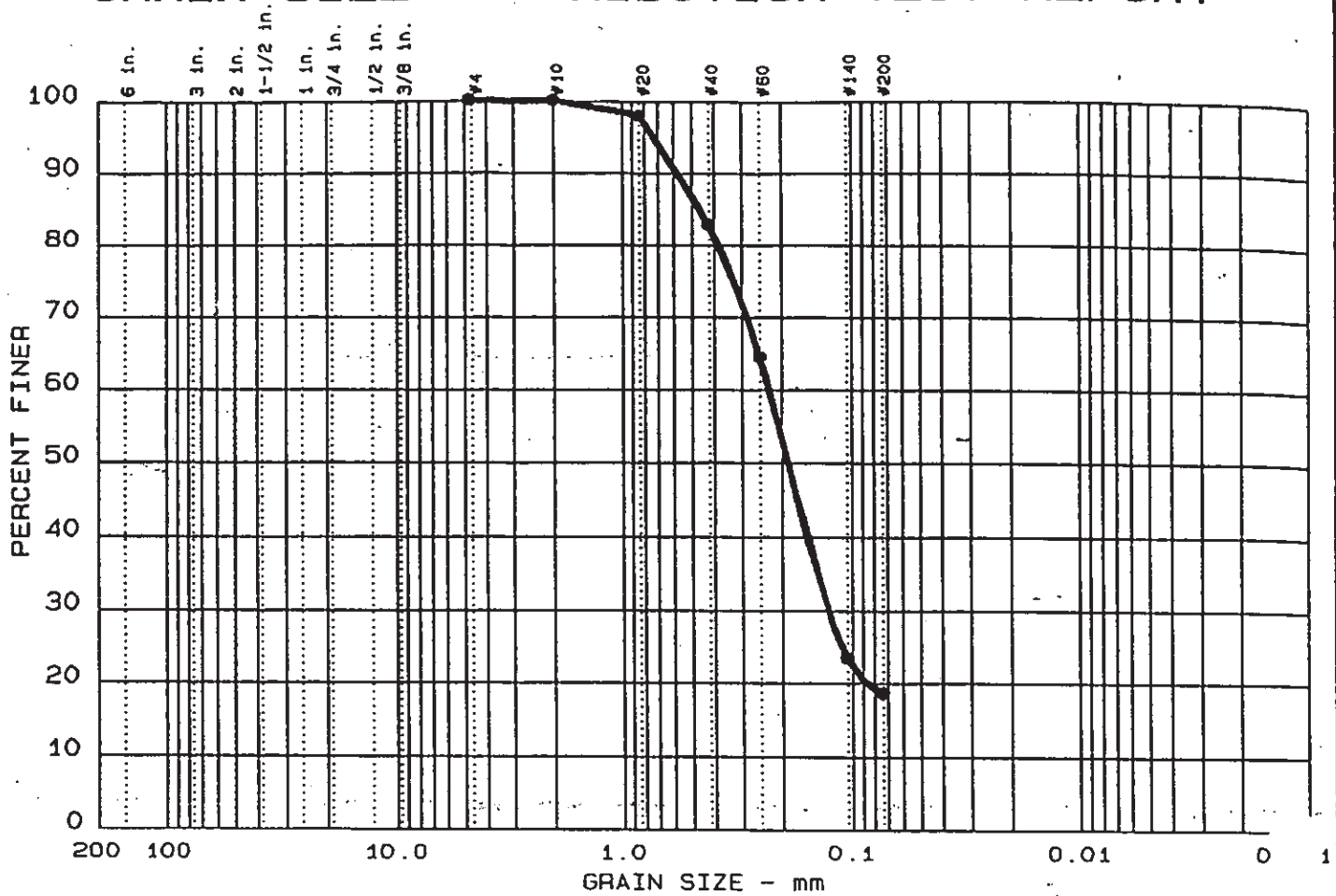
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	4.5	64.4	31.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.58	0.23	0.17					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

<p>Project No.: 50161-7-0108 Task 16          Project: APSF Confirmatory Testing          ● Location: FB-3 SS-14 @ 25.5-27 Ft.</p> <p>Date: March 16, 1998</p> <p style="text-align: center;"><b>GRAIN SIZE DISTRIBUTION TEST REPORT          LAW ENGINEERING, INC.</b></p>	<p>Remarks:</p> <p>Tested by: <i>SC</i></p> <p>Reviewed by: <i>HO</i></p> <p>ASTM D422</p> <p>Figure No. _____</p>
---	--

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	81.3	18.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.46	0.23	0.19	0.127				

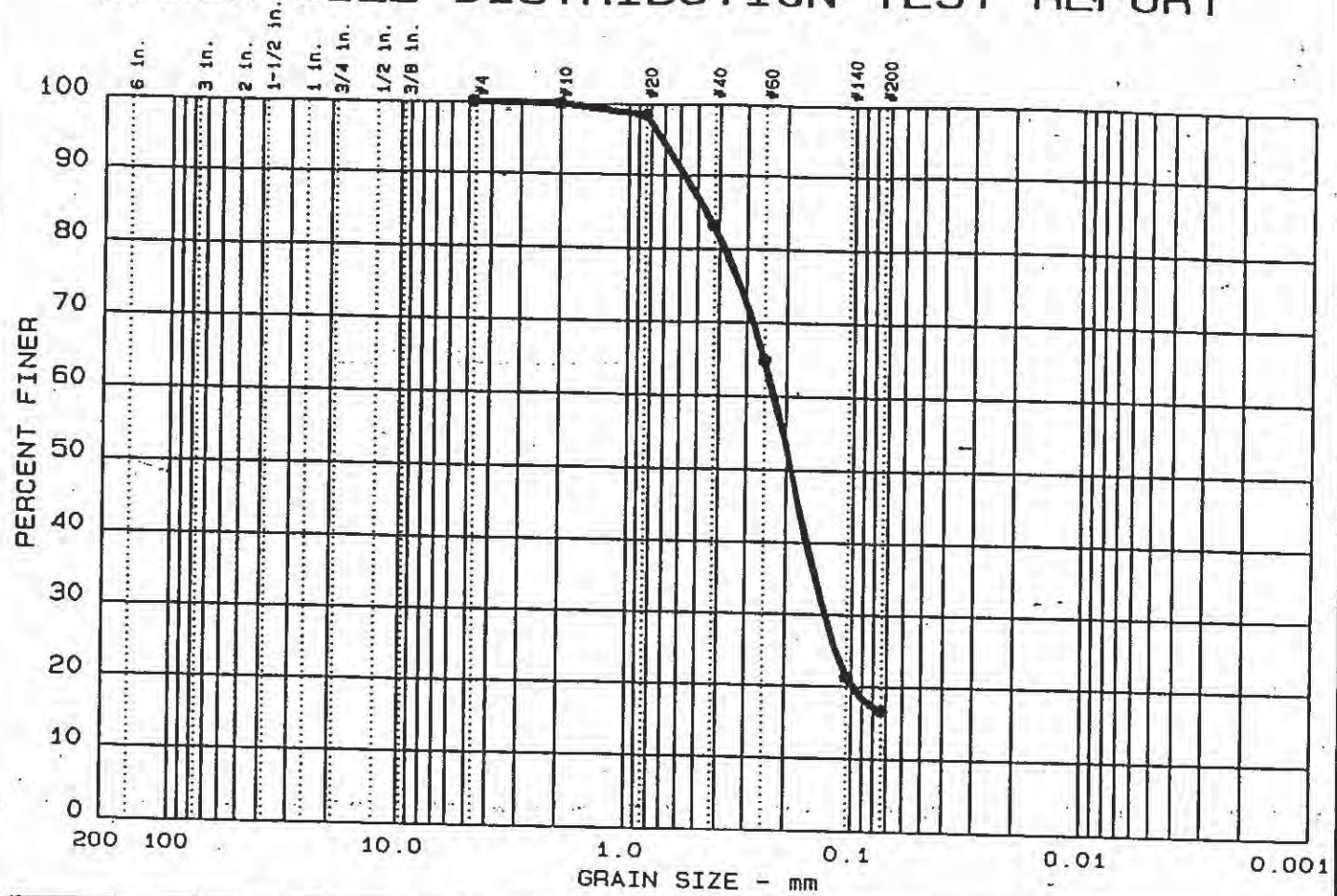
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-15 @ 27-28.5 Ft.  
 Date: March 16, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422



# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	83.3	16.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
30	7	0.45	0.23	0.19	0.132				

MATERIAL DESCRIPTION		USCS	AASHTO
● Red Brown Silty Sand		SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-16 @ 28.5-30 Ft.  
 Date: March 16, 1998

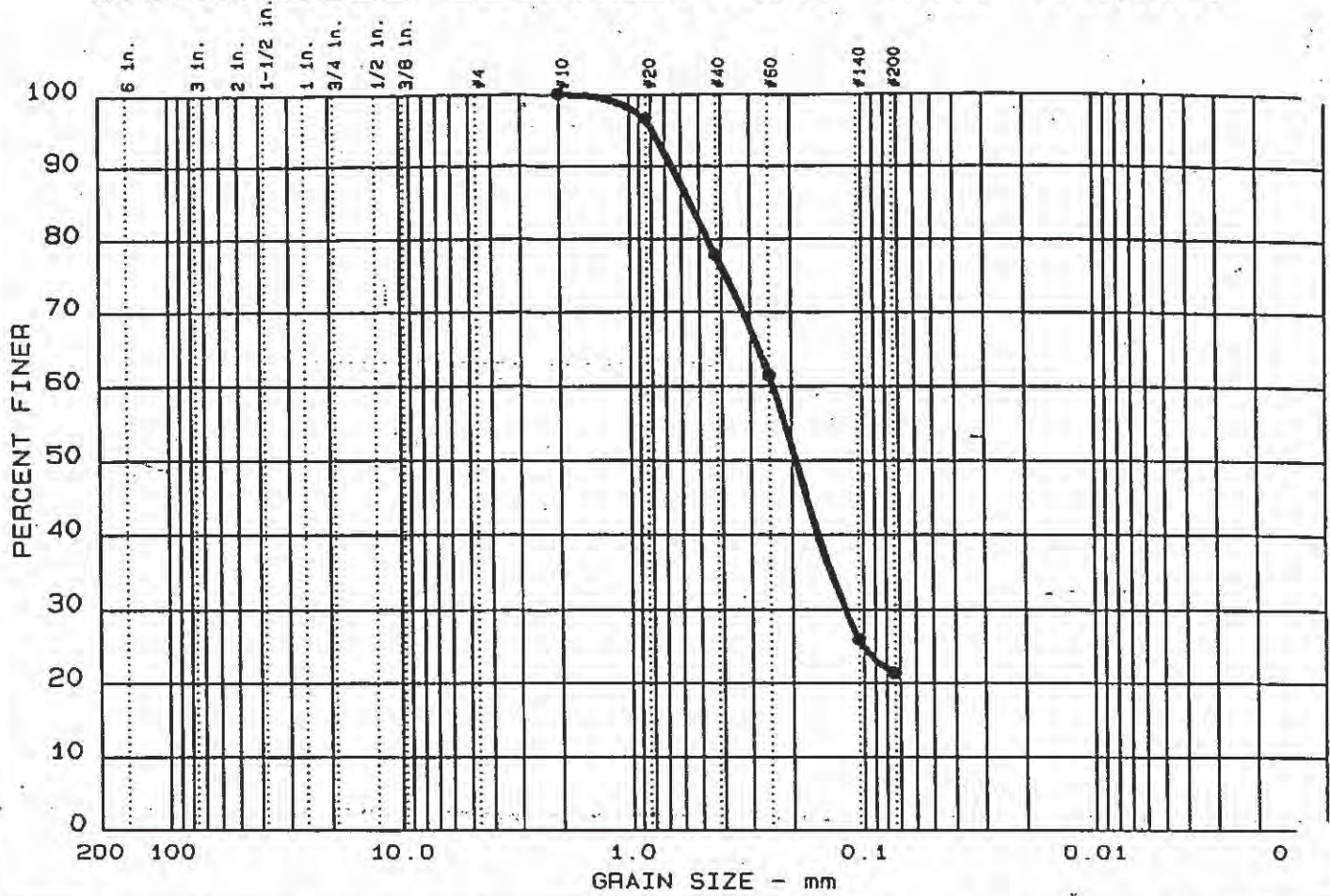
Remarks:  
 Tested by: *SC*  
 Reviewed by: *H*  
 ASTM D422  
 &  
 ASTM D4318

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. 11

K-TRT-F-00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	78.7	21.3	

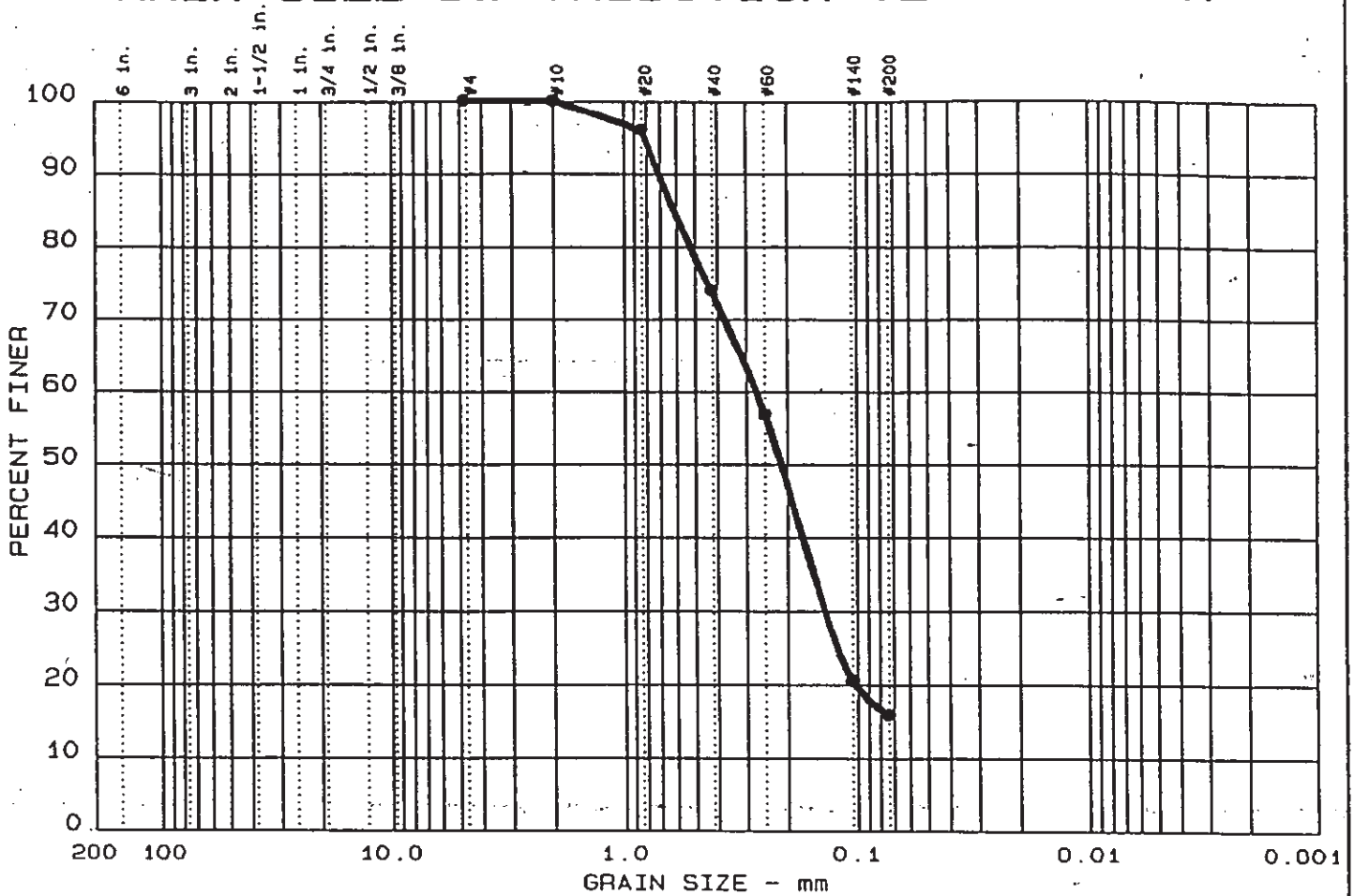
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.54	0.24	0.19	0.121				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-3 SS-17 @ 30-31.5 Ft.  Date: March 16, 1998	Remarks: Tested by: SC Reviewed by: HJ ASTM D 422
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	
Figure No. 11	

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# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	84.0	16.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.61	0.27	0.21	0.138				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-18 @ 31.5-33 Ft.

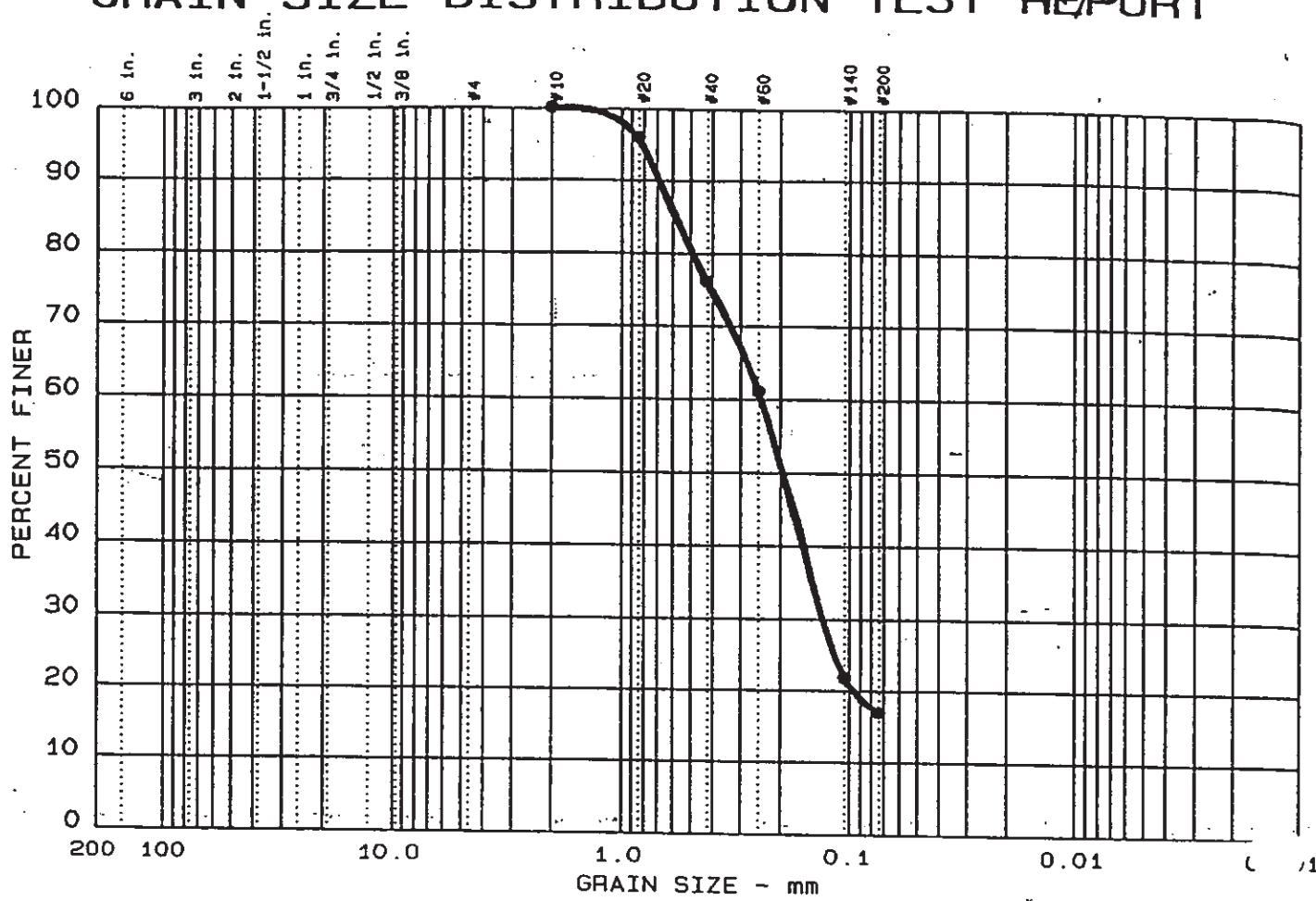
Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

Date: March 16, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. 11

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	83.0	17.0	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.57	0.24	0.20	0.132				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

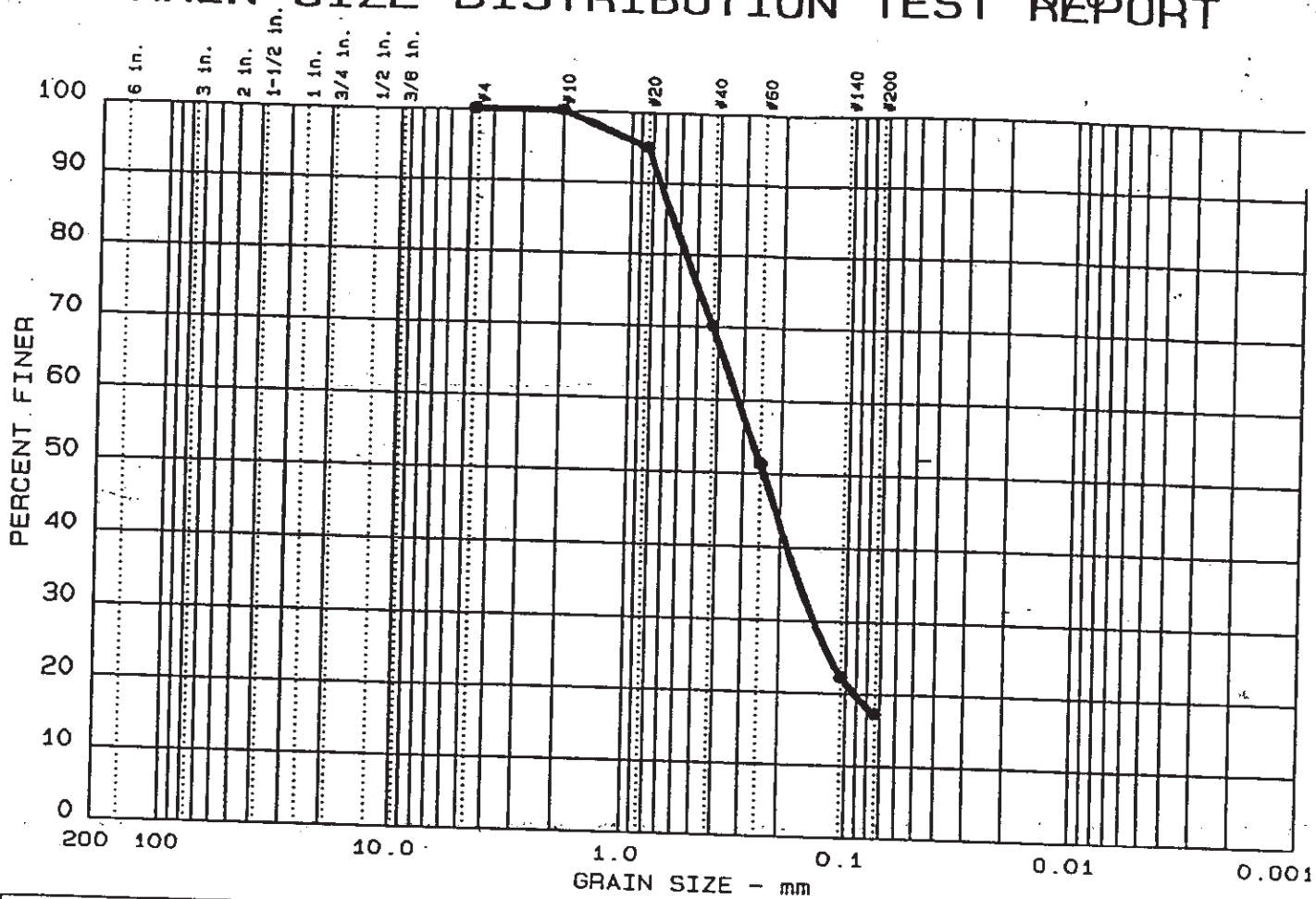
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-19 @ 33-34.5 Ft.  
 Date: March 16, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

K-TRT F 00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	82.7	17.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.64	0.32	0.24	0.140				

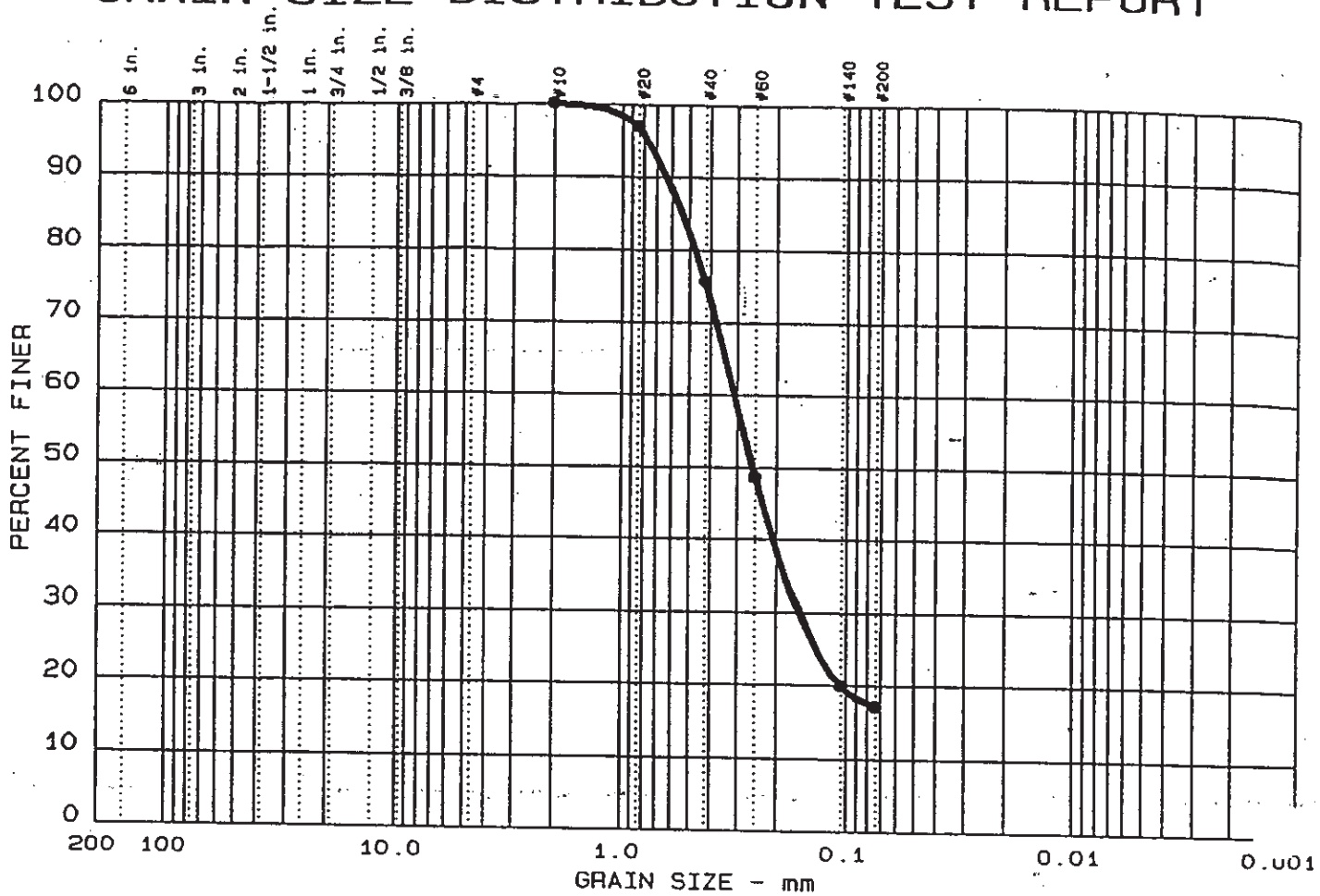
MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-20 @ 34.5-36 Ft.  
 Date: March 16, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D 422  
 Figure No. 11

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



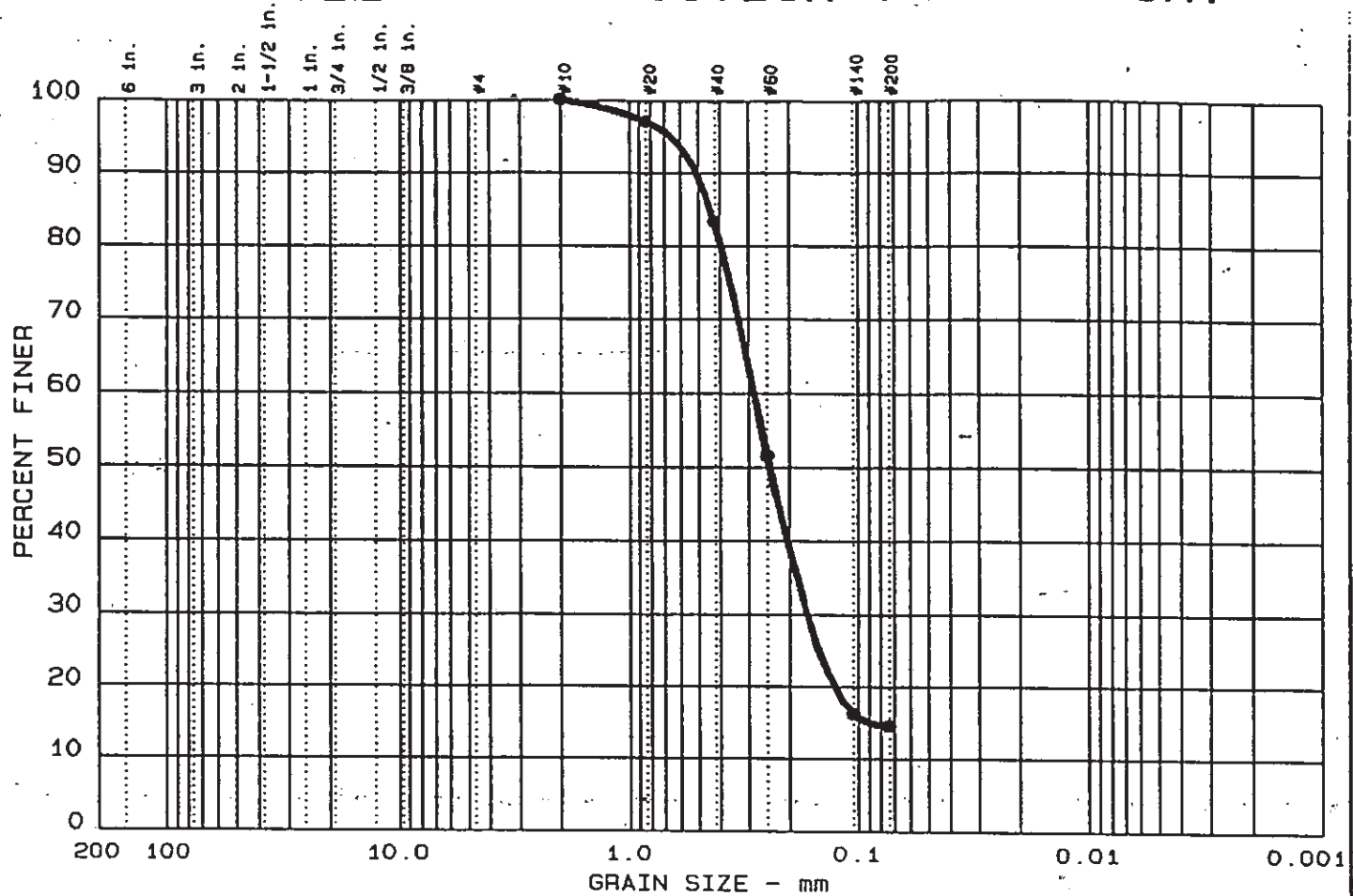
% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	82.8	17.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.53	0.31	0.26	0.160				

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0-0)

<p>Project No.: 50161-7-0108 Task 16                  Project: APSF Confirmatory Testing                  • Location: FB-3 SS-21 @ 36-37.5 Ft.</p> <p>Date: March 16, 1998</p> <p style="text-align: center;">GRAIN SIZE DISTRIBUTION TEST REPORT  <b>LAW ENGINEERING, INC.</b></p>	<p>Remarks:                  Tested by: <i>SC</i>                  Reviewed by: <i>HS</i>                  ASTM D422</p> <p style="text-align: right;">Figure No. 11</p>
---	--

# GRAIN SIZE DISTRIBUTION TEST REPORT R/0



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	85.5	14.5	

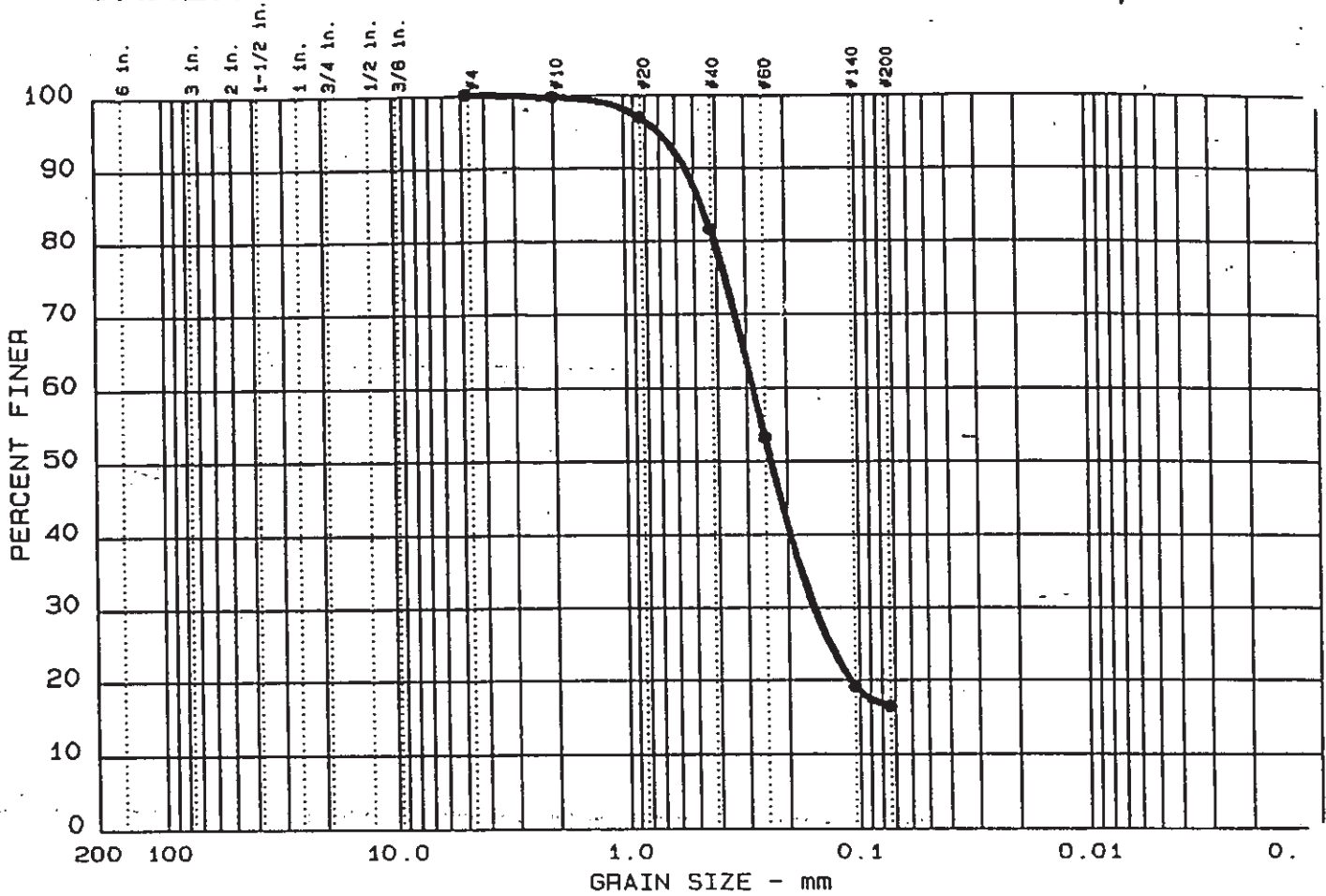
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.44	0.28	0.24	0.168	0.0911			

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-23 @ 40-41.5 Ft.  
  
 Date: March 16, 1998  
  
 GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: SC  
 Reviewed by: ND  
 ASTM D422  
  
 Figure No. 11

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	83.5	16.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.46	0.28	0.24	0.155				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

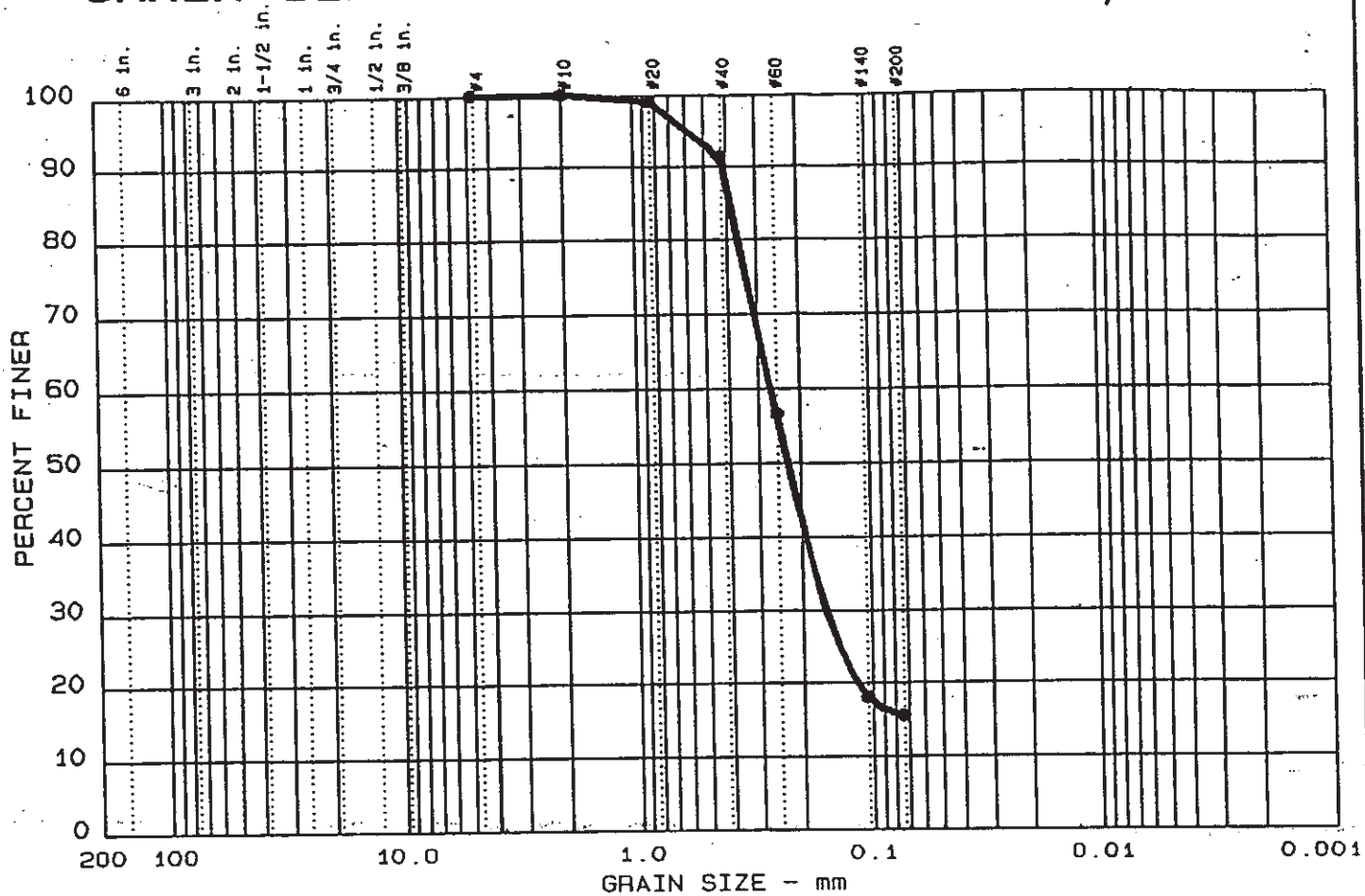
<p>Project No.: 50161-7-0108 Task 16                  Project: APSF Confirmatory Testing                  ● Location: FB-3 SS-24 @ 41.5-43 Ft.</p> <p>Date: March 16, 1998</p>	<p>Remarks:                  Tested by: SC                  Reviewed by: HD                  ASTM D 422</p>
<p>GRAIN SIZE DISTRIBUTION TEST REPORT  <b>LAW ENGINEERING, INC.</b></p>	
<p>Figure No. 11</p>	

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 16/12/99



K-TRT-F-00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	84.4	15.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.38	0.26	0.23	0.157				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-25 @ 43-44.5 Ft.

Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

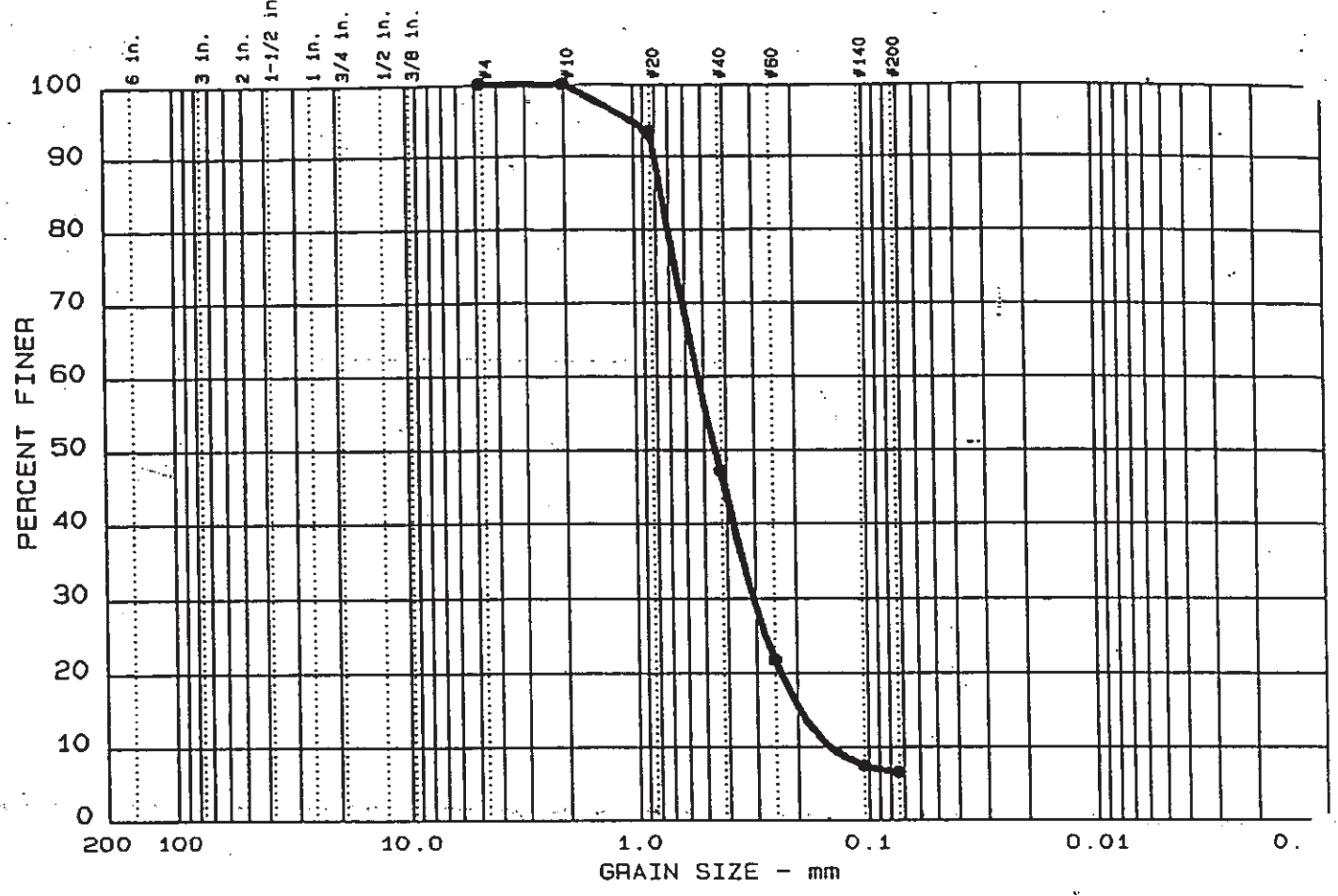
GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

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K-TRT-F-00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	93.4	6.6	

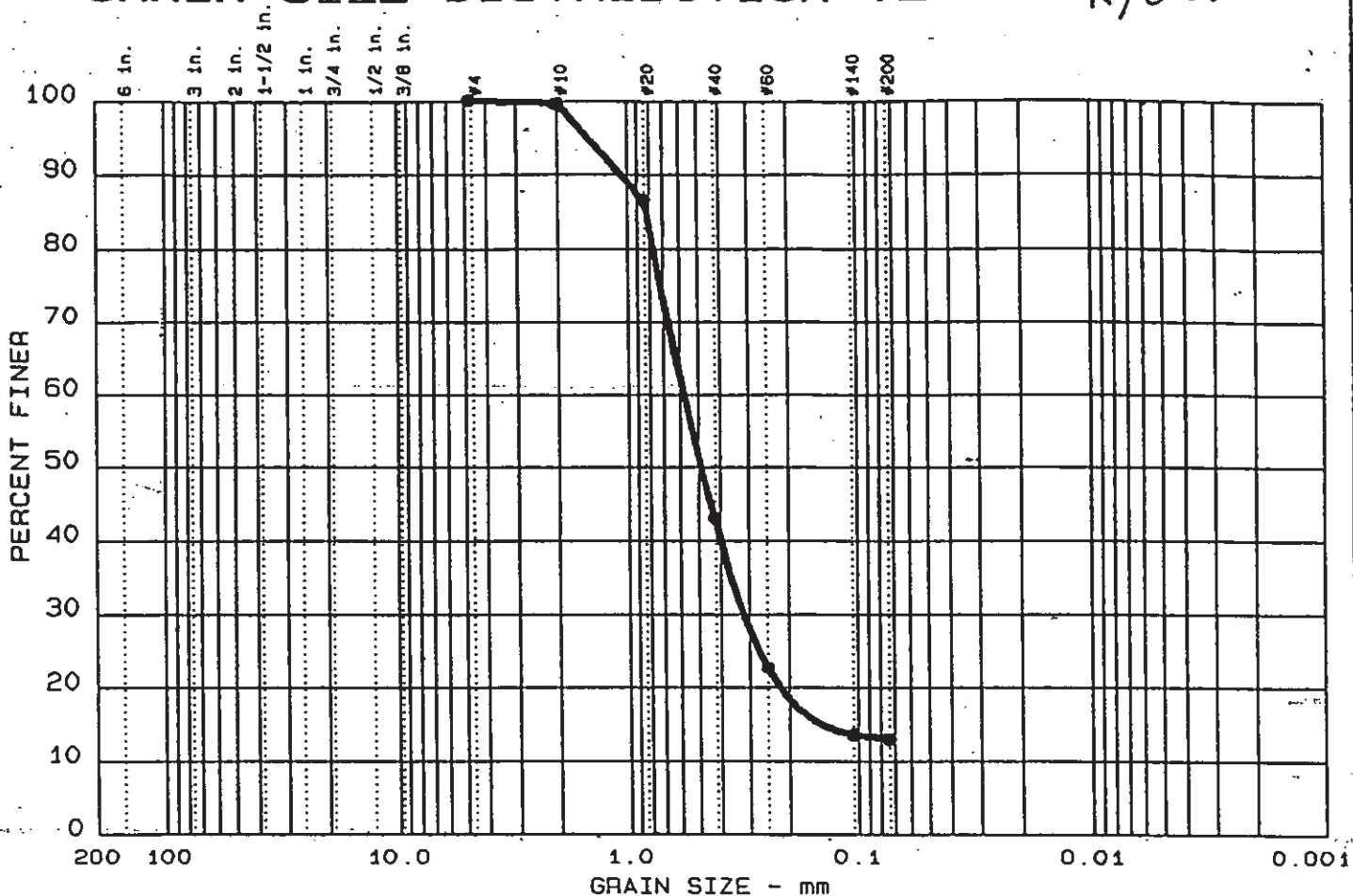
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.75	0.52	0.44	0.307	0.1936	0.1435	1.25	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

<p>Project No.: 50161-7-0108 Task 16          Project: APSF Confirmatory Testing          ● Location: FB-3 SS-26 @ 44.5-46 Ft.           Date: March 15, 1998</p>	<p>Remarks:          Tested by: <i>SC</i>          Reviewed by: <i>HS</i>           ASTM D422</p>
<p>GRAIN SIZE DISTRIBUTION TEST REPORT  <b>LAW ENGINEERING, INC.</b></p>	
<p>Figure No.</p>	

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# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>k-TRT-F-00001</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	87.0	13.0	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.82	0.57	0.48	0.316	0.1460			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-1-b

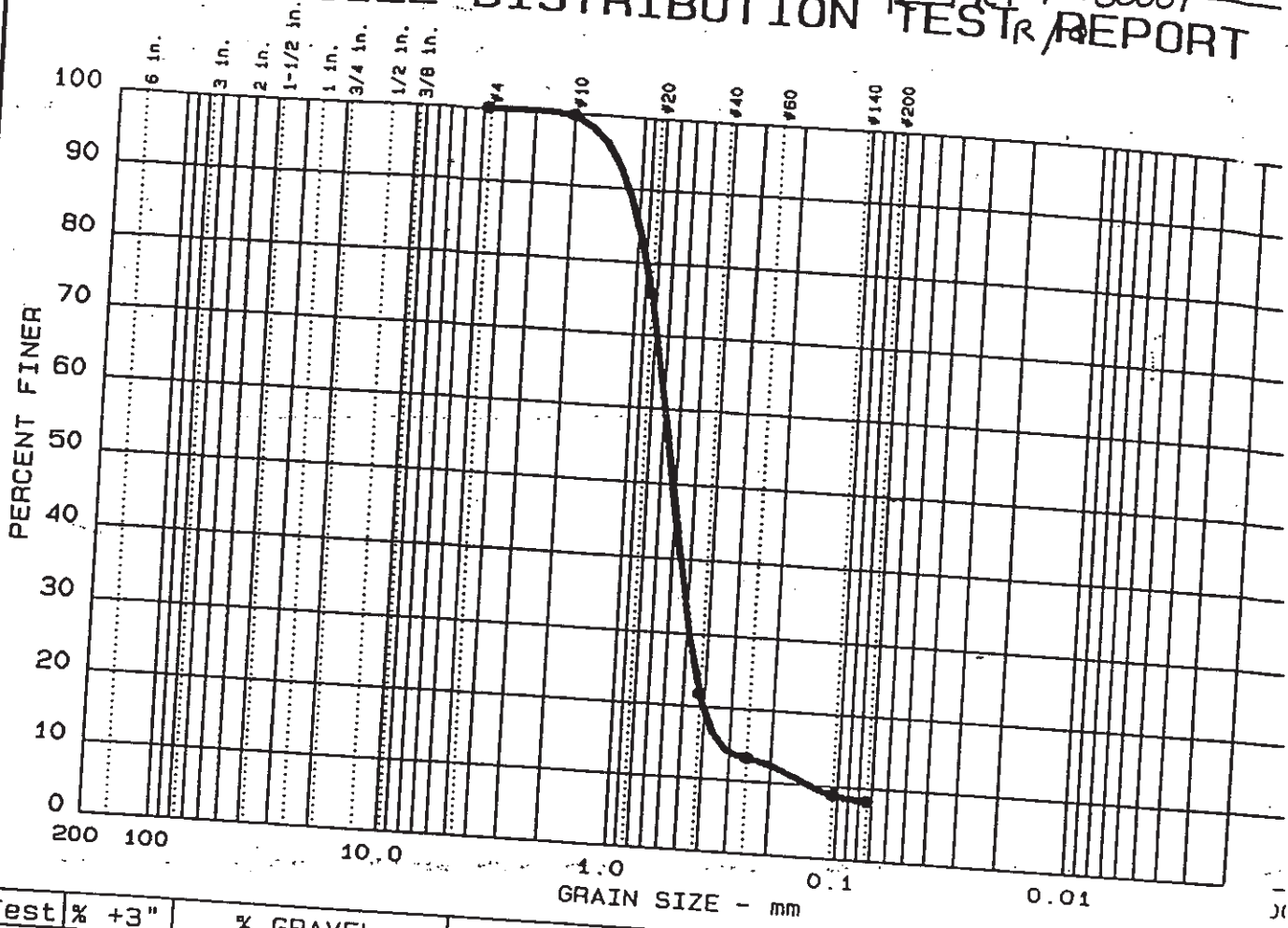
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-27 @ 46-47.5 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D 422

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# GRAIN SIZE DISTRIBUTION TEST REPORT

K-TRT-F-00001



Test	% +3"	% GRAVEL		% SAND		% SILT	% CLAY
● 5	0.0	0.0		91.8		8.2	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.99	0.69	0.61	0.480	0.3323	0.1338	2.51	5.1

**MATERIAL DESCRIPTION**  
 ● Tan Brown Poorly Graded Sand with Silt

USCS: SP-SM      AASHTO: A-1-b

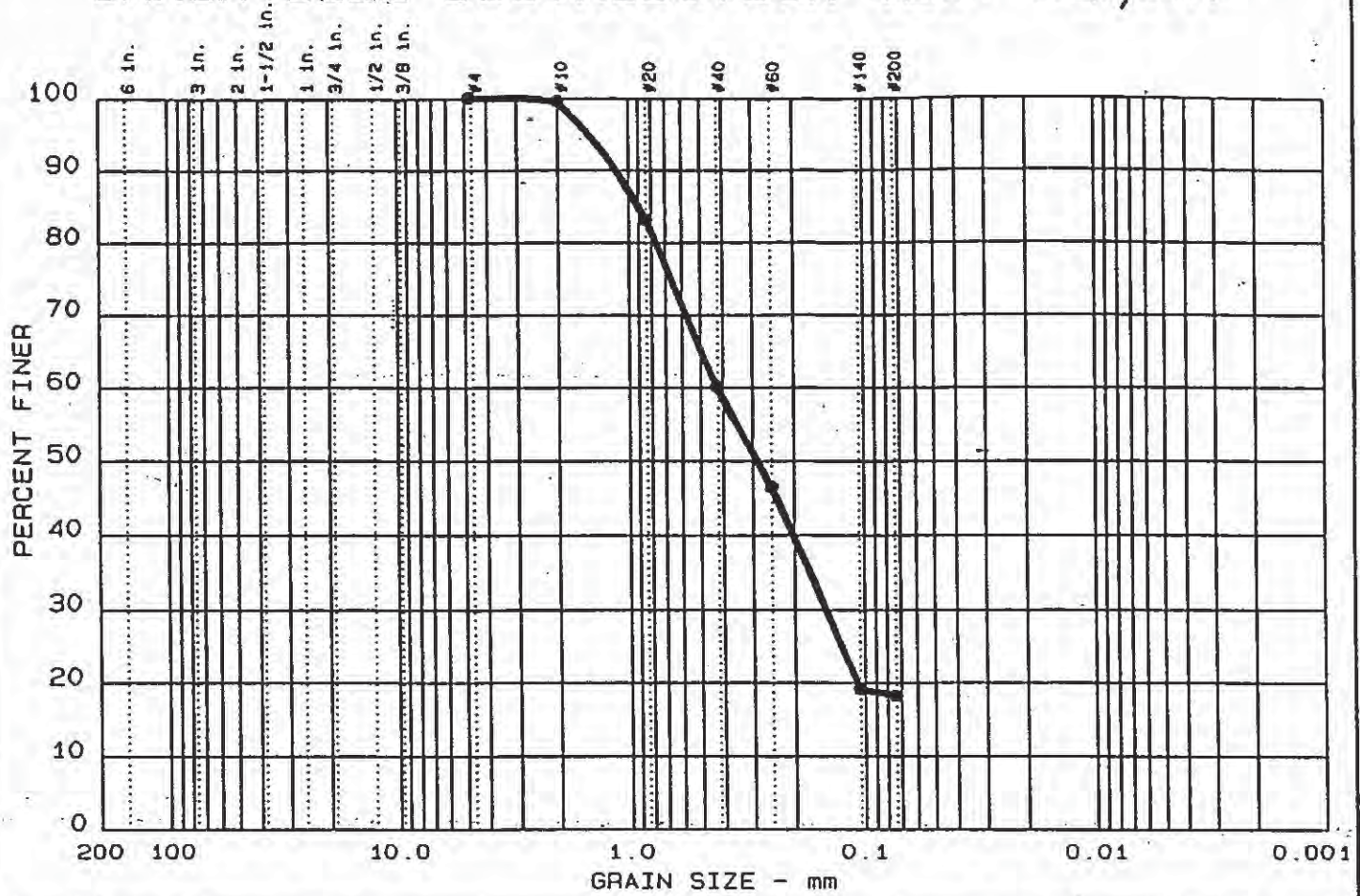
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-28 @ 47.5-49 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: H  
 ASTM D422  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT

K-TRT-F-00001



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	81.7	18.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.90	0.42	0.29	0.148				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-30 @ 50.5-52 Ft.

Date: March 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

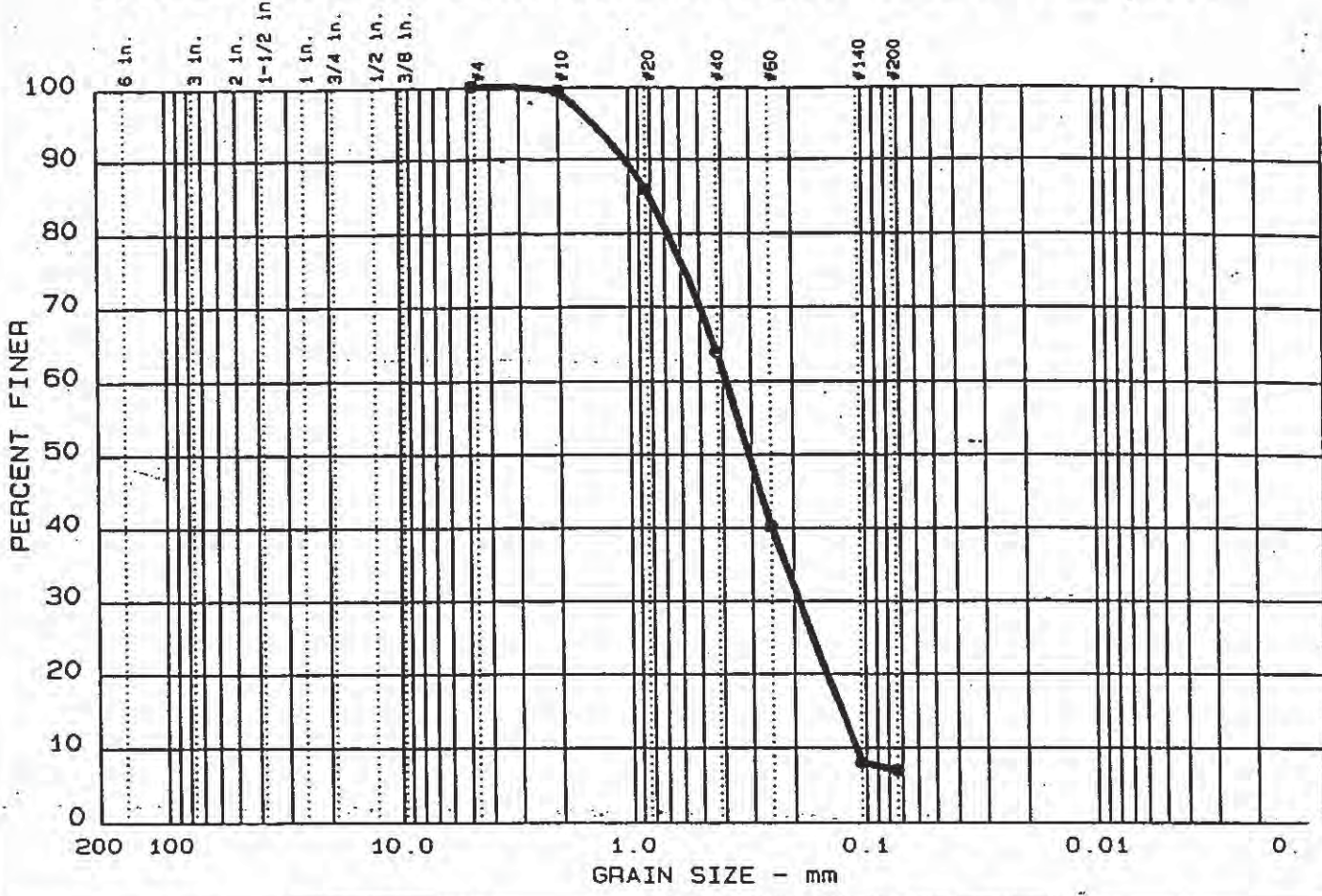
Remarks:  
 Tested by: SC  
 Reviewed by: HK

ASTM D 422

Figure No.

K-TKT-F-00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
7	0.0	0.0	93.0	7.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.80	0.38	0.31	0.190	0.1269	0.1105	0.86	3.5

MATERIAL DESCRIPTION	USCS	AASHTO
Red Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 Location: FB-3 SS-31 @ 57-58.5 Ft.  
 Date: March 15, 1998

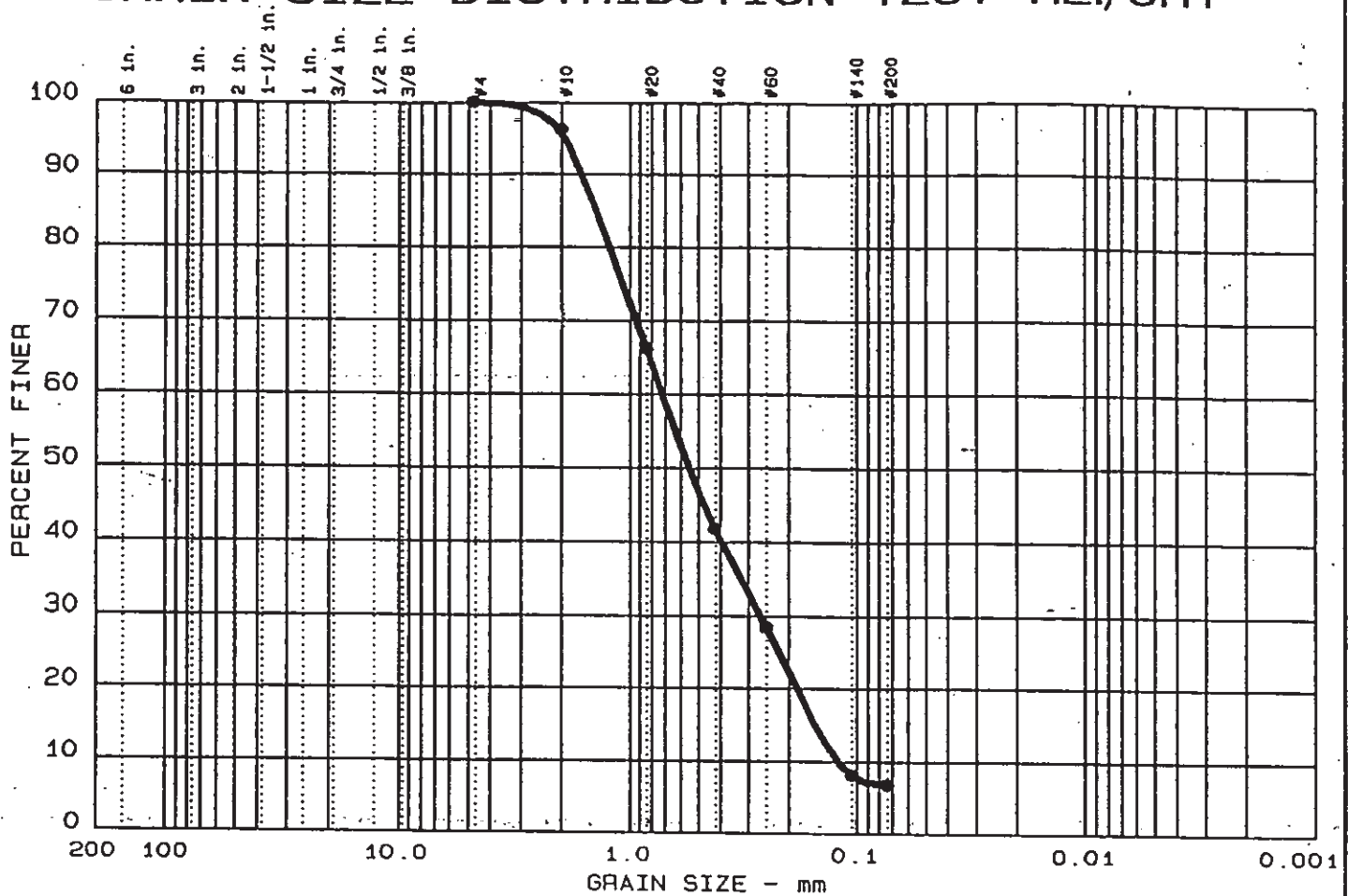
Remarks:  
 Tested by: SC  
 Reviewed by: [Signature]  
 ASTM D422  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

B-100

# GRAIN SIZE DISTRIBUTION TEST REPORT

K-TRF-F-00001



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
8	0.0	0.0	93.2	6.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.41	0.72	0.54	0.264	0.1517	0.1205	0.80	6.0

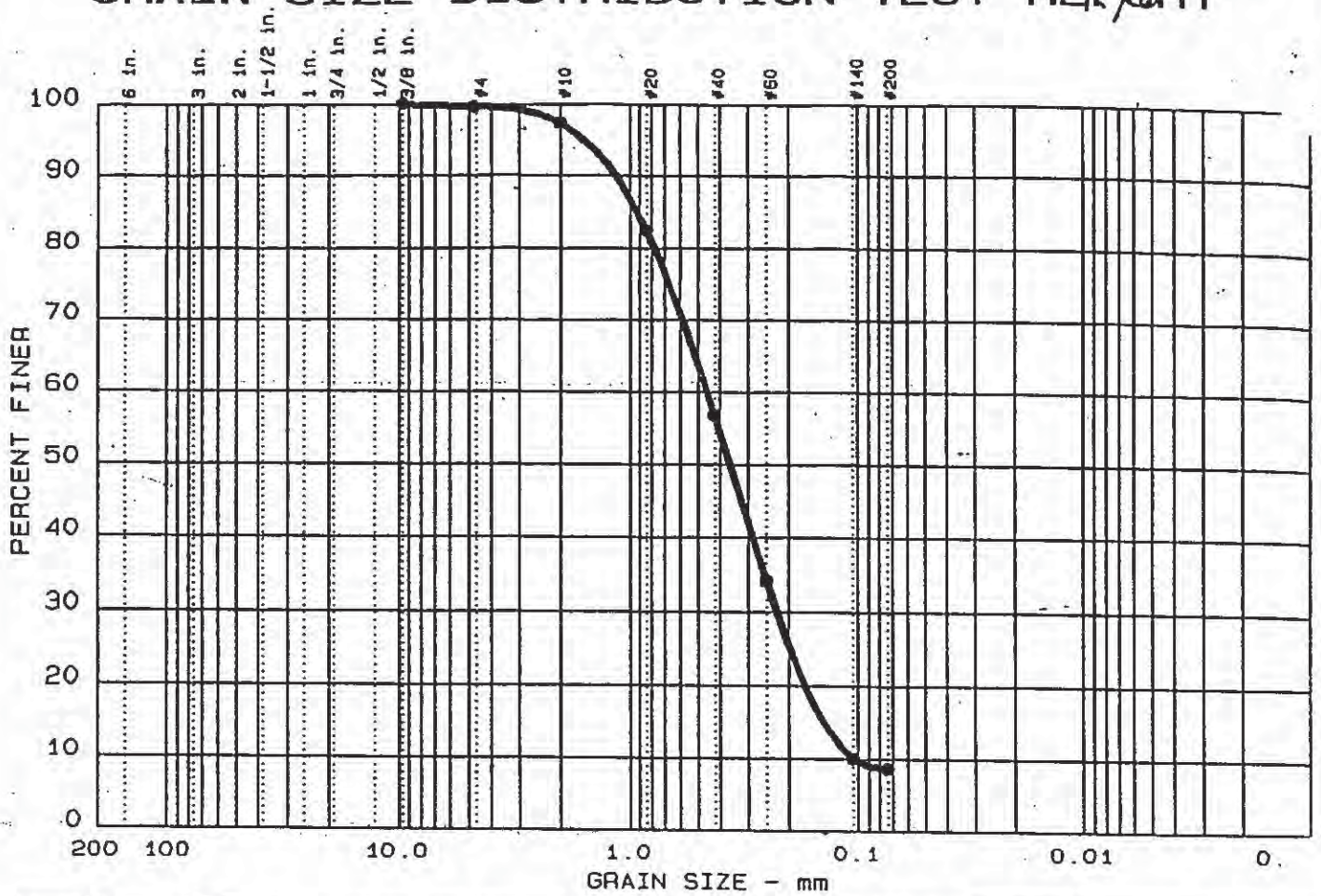
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

<p>Project No.: 50161-7-0108 Task 16                  Project: APSF Confirmatory Testing                  ● Location: FB-3 SS-32 @ 58.5-60 Ft.                   Date: March 15, 1998</p>	<p>Remarks:                  Tested by: SC                  Reviewed by: HJ                  ASTM D422</p>
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	
Figure No.	

B-101

# GRAIN SIZE DISTRIBUTION TEST REPORT

K-TRT-F-00001



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.4	90.9	8.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.92	0.45	0.36	0.226	0.1409	0.1045	1.08	4.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-33 @ 60-61.5 Ft.  
  
 Date: March 15, 1998

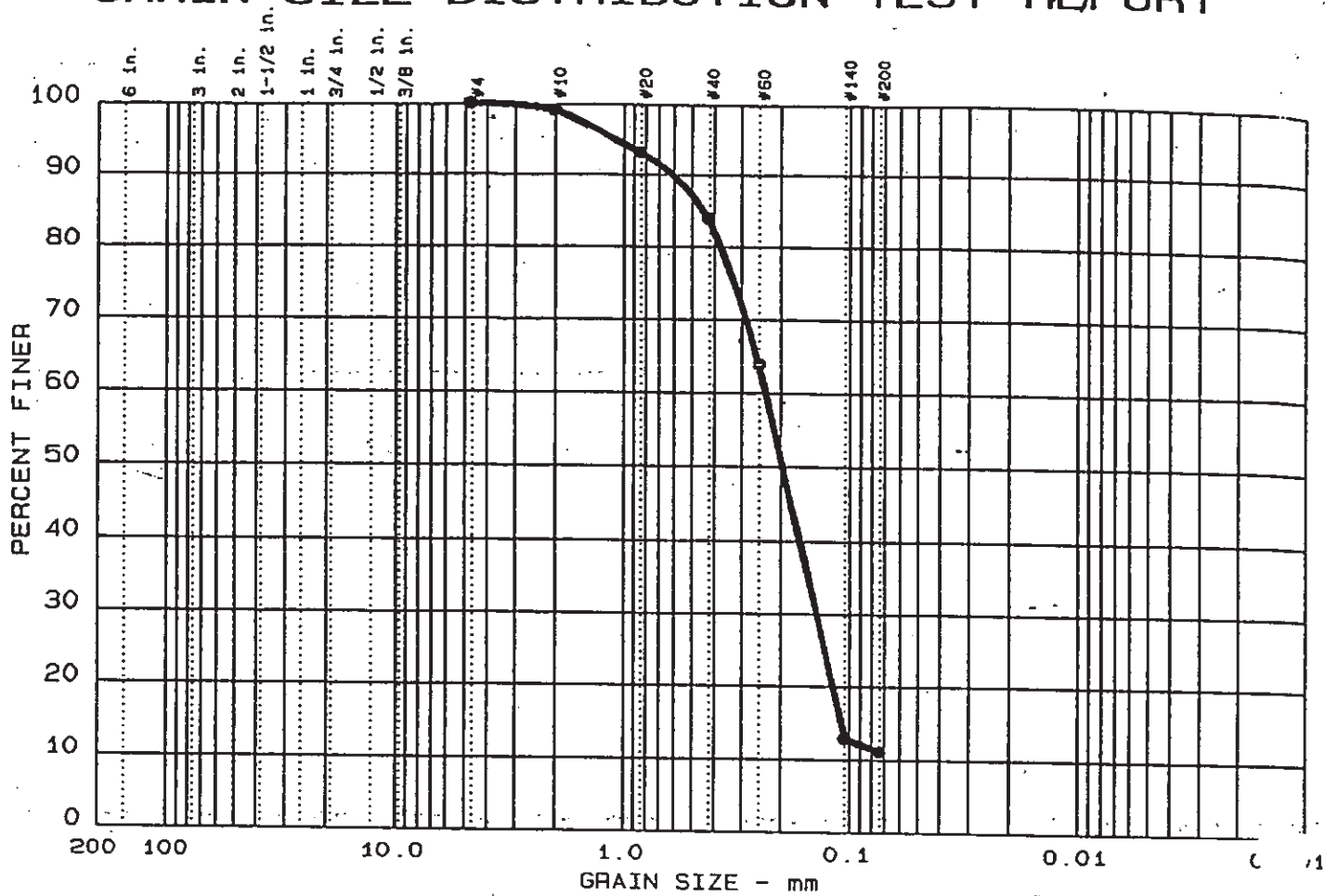
Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422  
  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**





# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	88.9	11.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.44	0.23	0.20	0.140	0.1086			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

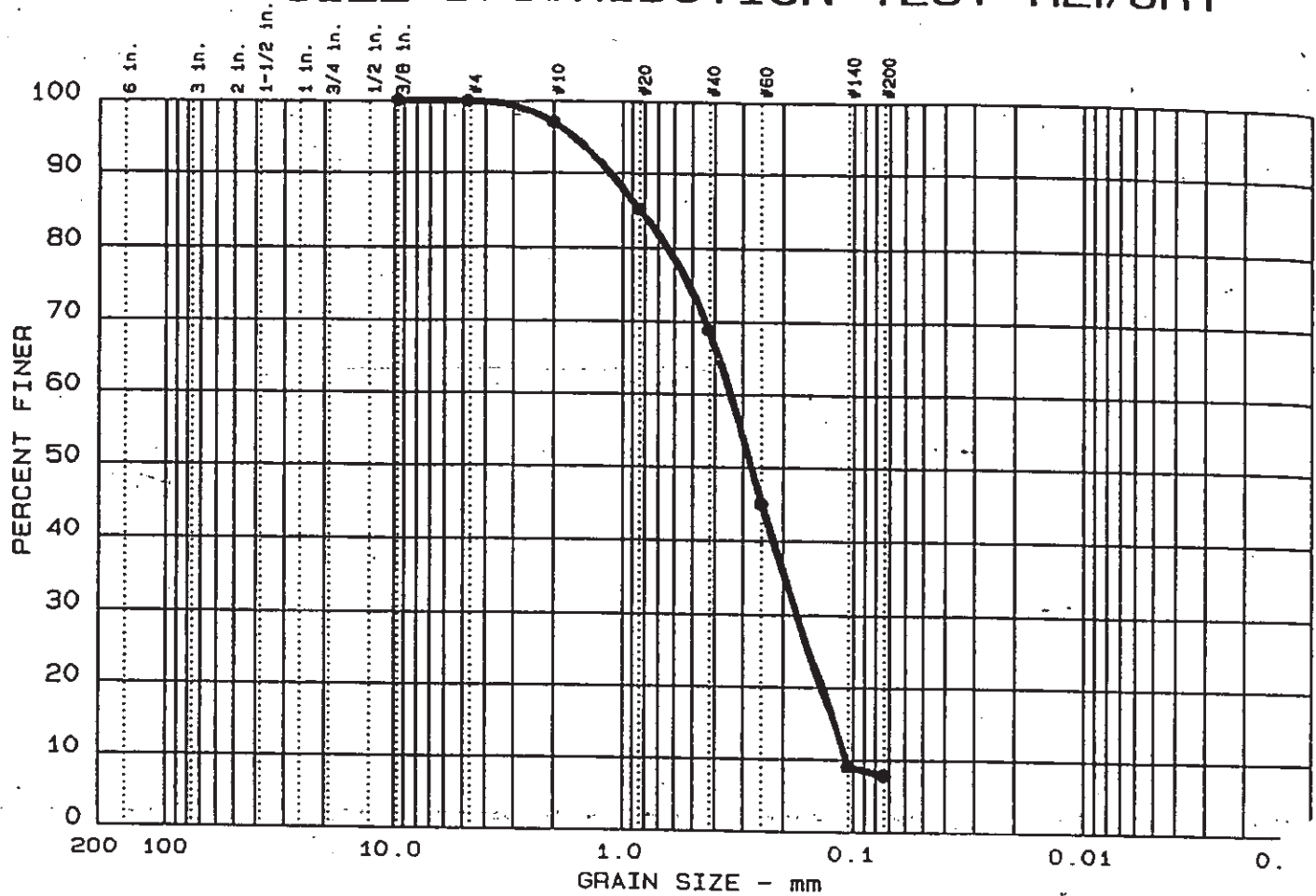
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-35 @ 63-64.5 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: *SCHUM*  
 Reviewed by: *HS*  
 ASTM D422  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.2	92.0	7.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.82	0.34	0.28	0.174	0.1211	0.1073	0.83	3.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

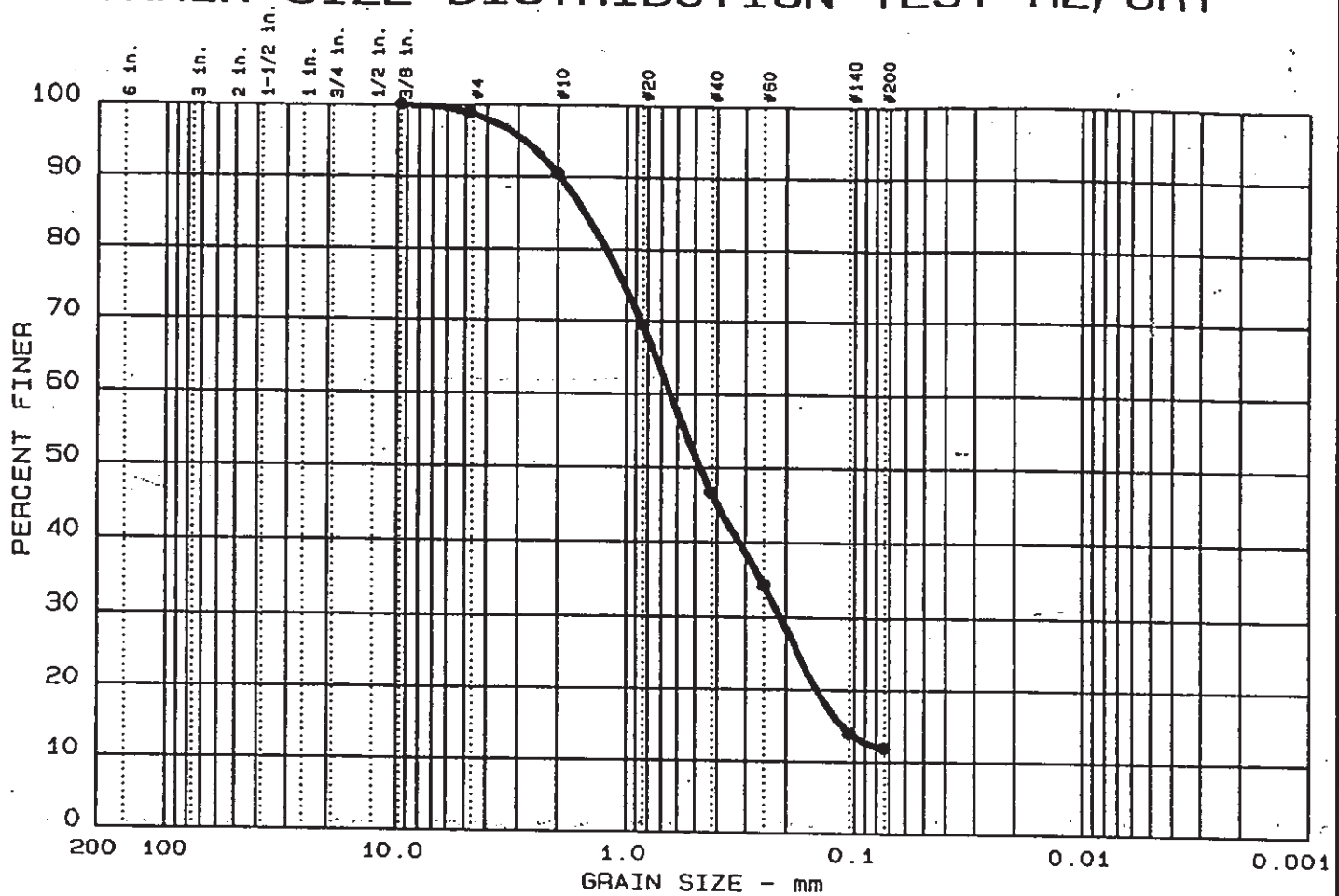
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-37 @ 67.2-68.7 Ft.  
 Date: March 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: *SC*  
 Reviewed by: *MS*  
 ASTM D422

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	1.2	85.9	11.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.50	0.64	0.47	0.211	0.1132			

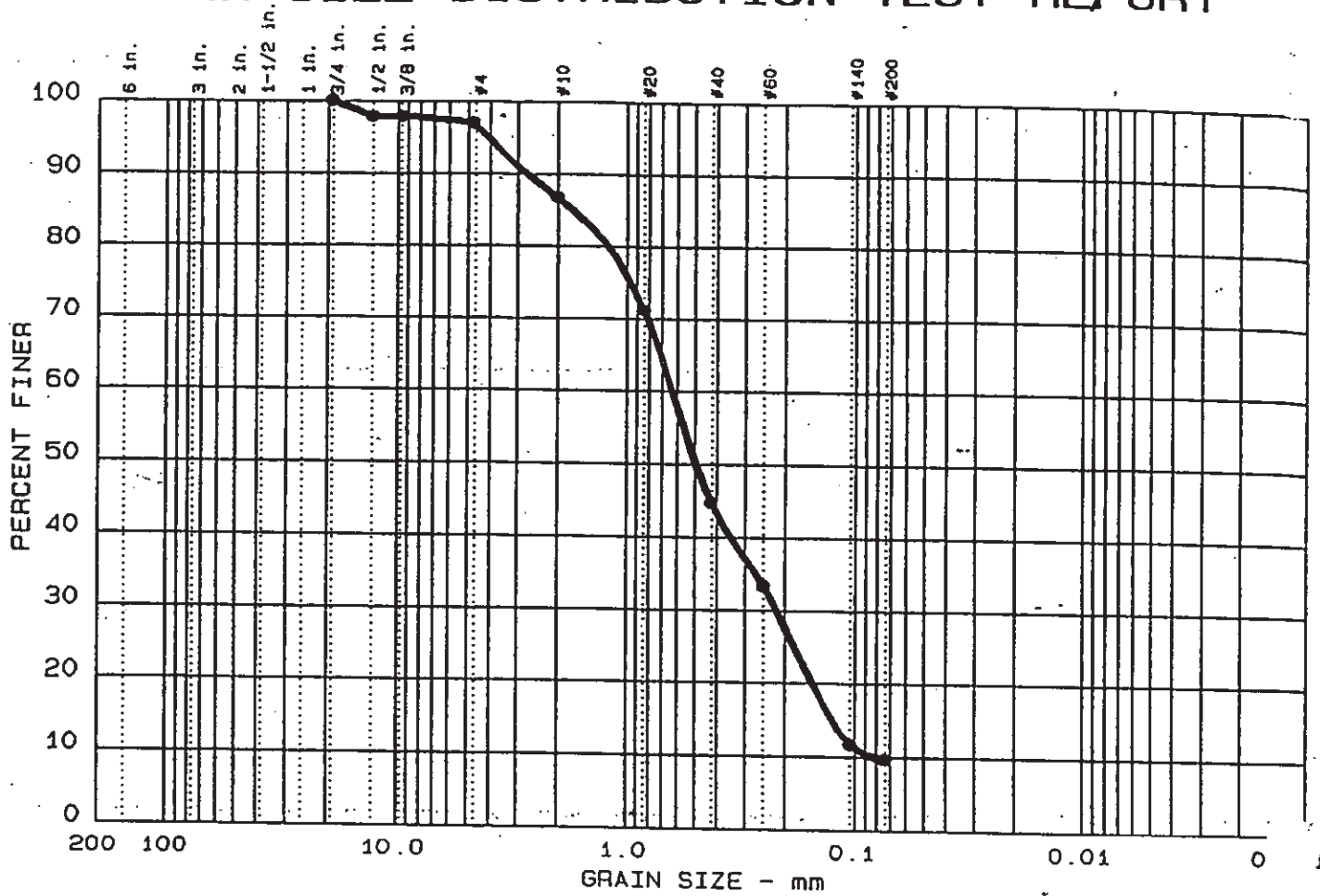
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-38 @ 68.7-70.2 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: [Signature]  
 ASTM D422  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	3.0	87.3	9.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.70	0.63	0.49	0.219	0.1257	0.0821	0.93	7.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-39 @ 70.2-71.7 Ft.  
 Date: March 15, 1998

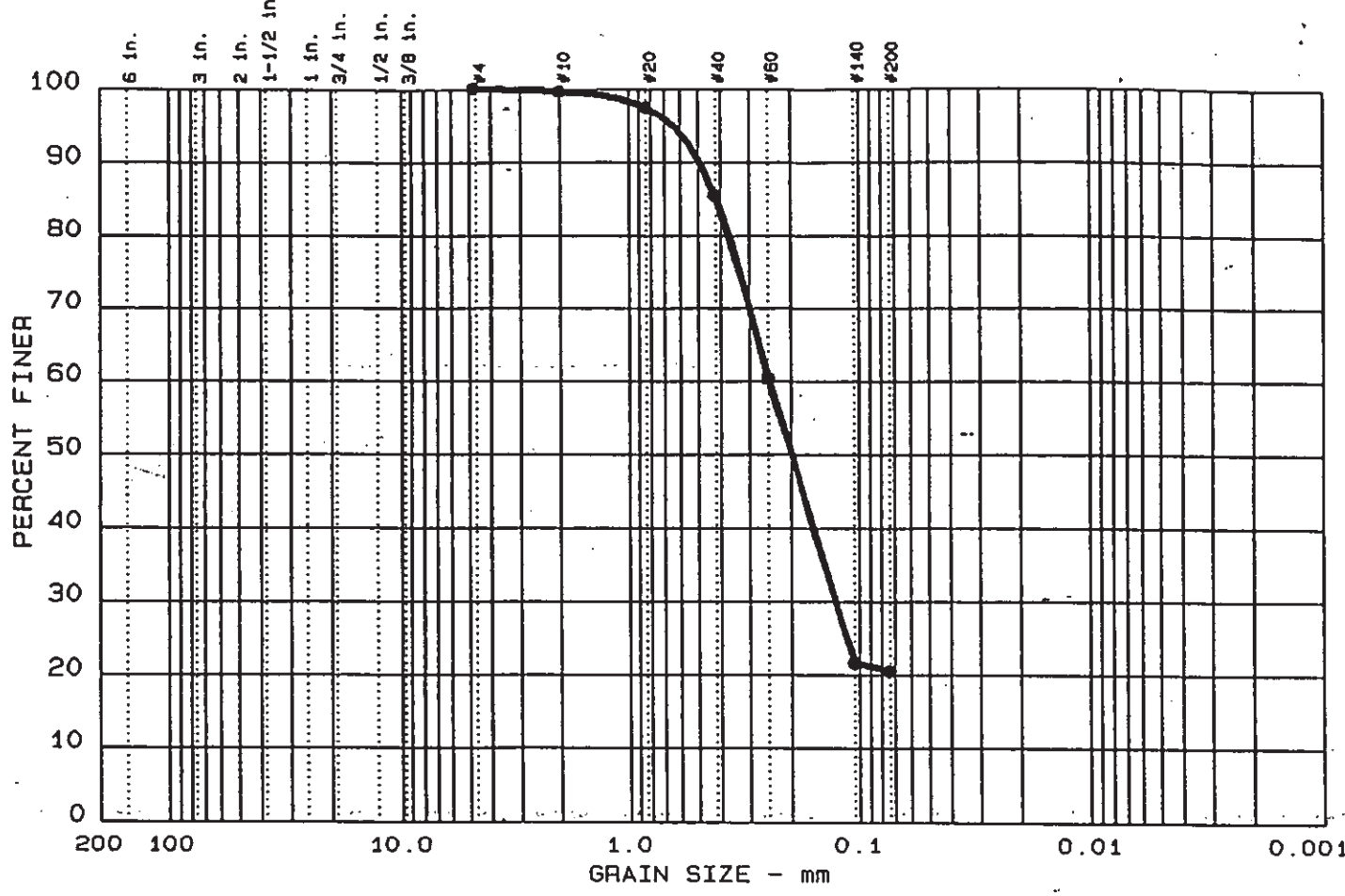
Remarks:  
 Tested by: *SC*  
 Reviewed by: *MS*  
 ASTM D422  
 Figure No.







# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.0	79.5	20.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.41	0.25	0.20	0.126				

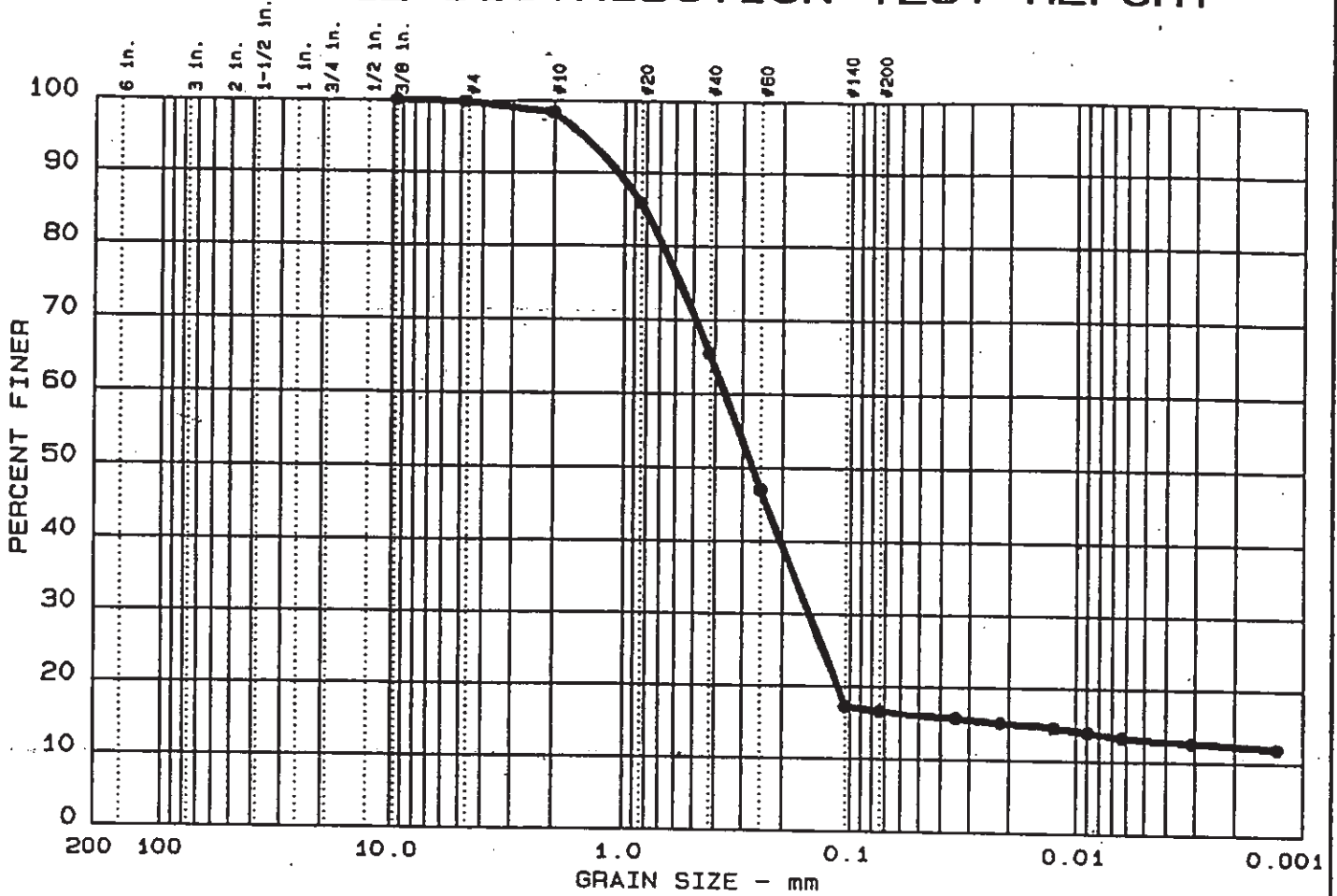
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-42 @ 74.7-76.2 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.2	83.3	3.5	13.0

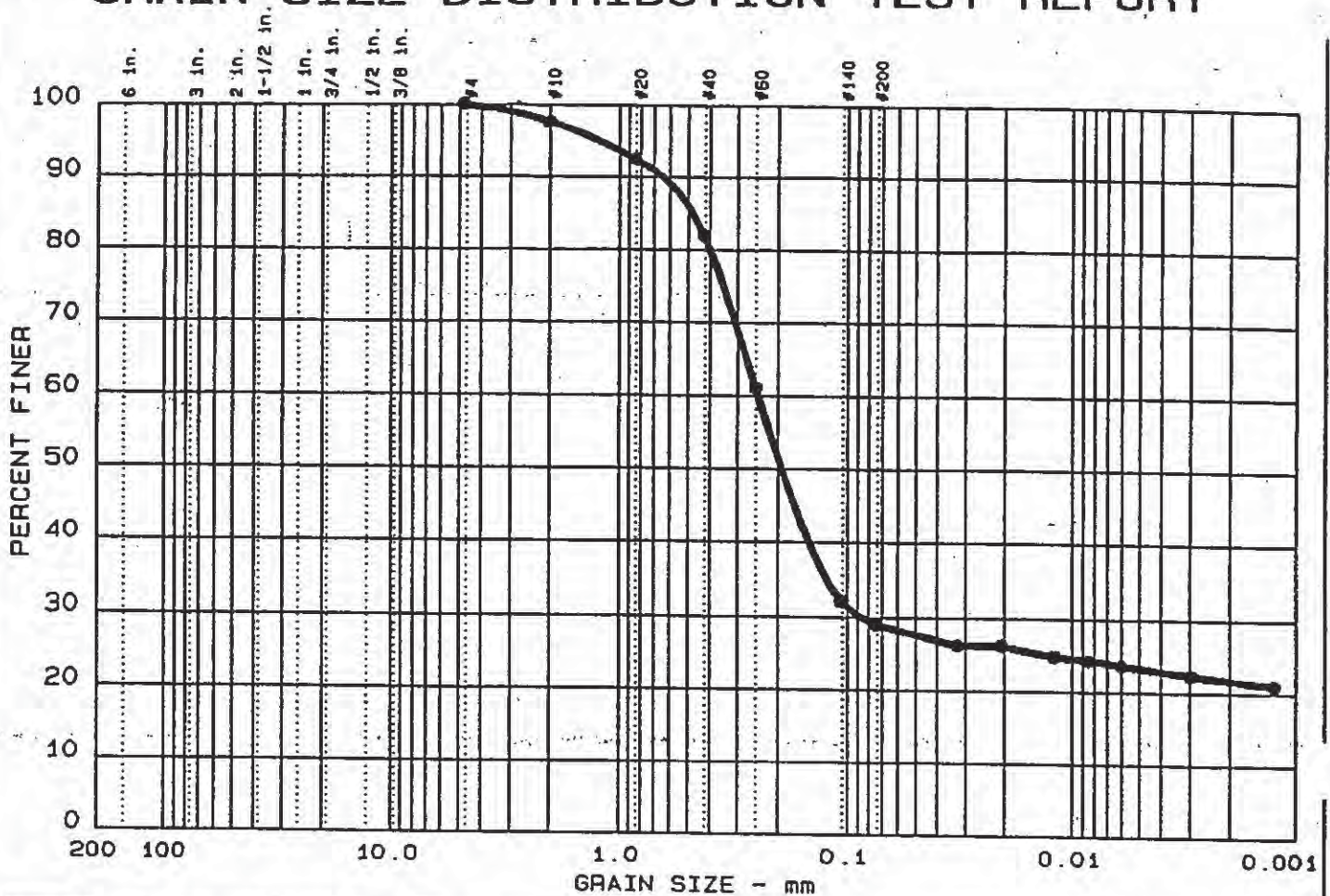
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 44	19	0.81	0.36	0.27	0.152	0.0192			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-45 @ 79.2-80.7 Ft.  
 Date: March 19, 1998

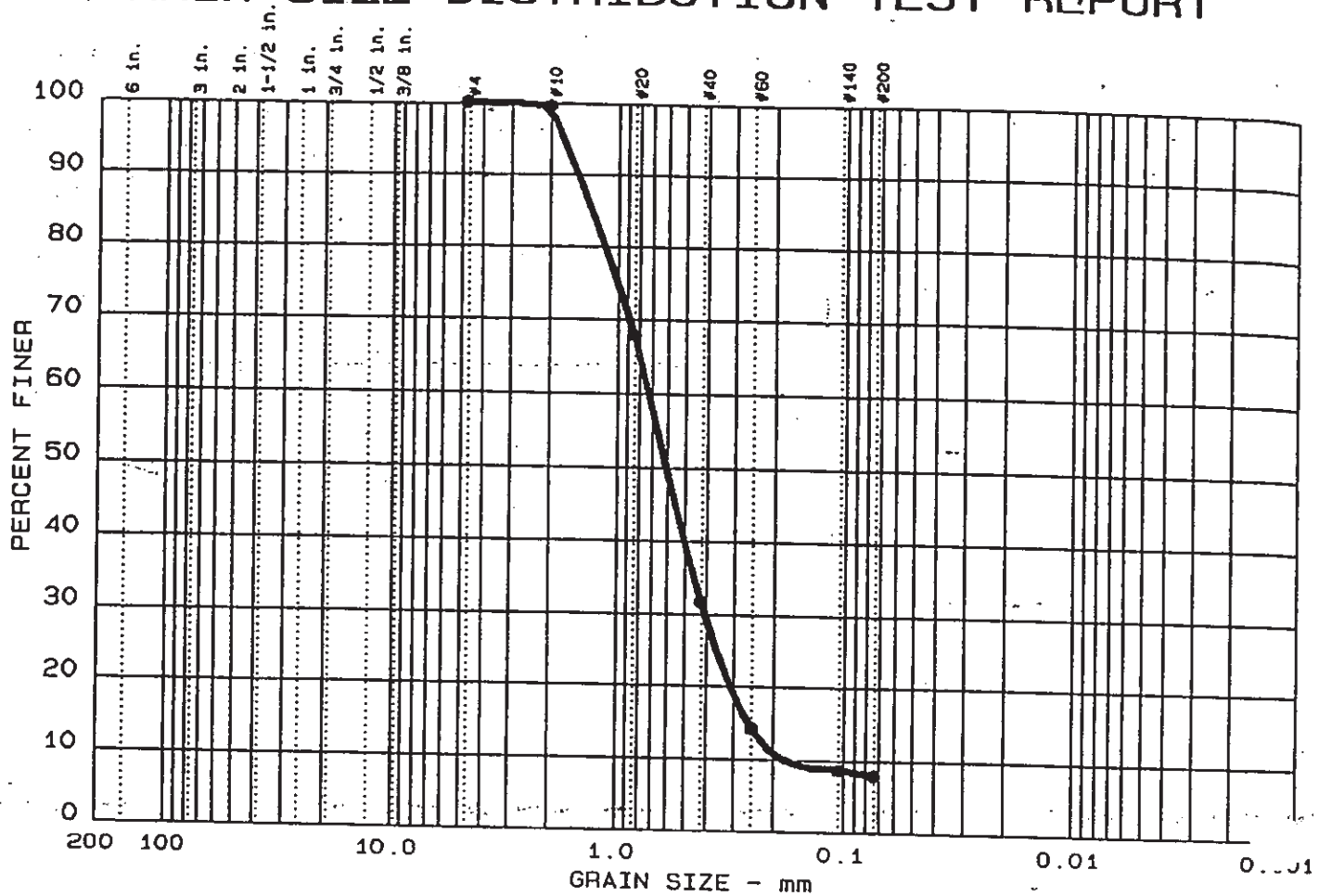
Remarks:  
 Tested by: *SC & JTM*  
 Reviewed by: *vtj*  
 ASTM D422  
 &  
 ASTM D4318  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT





# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/S</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.0	92.1	7.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.30	0.72	0.60	0.405	0.2582	0.1766	1.28	4.1

**MATERIAL DESCRIPTION**

● Tan Brown Poorly Graded Sand With Silt

USCS

SP-SM

AASHTO

A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-48 @ 83.7-85.2 Ft.

Date: March 15, 1998

Remarks:

Tested by: SC

Reviewed by: HS

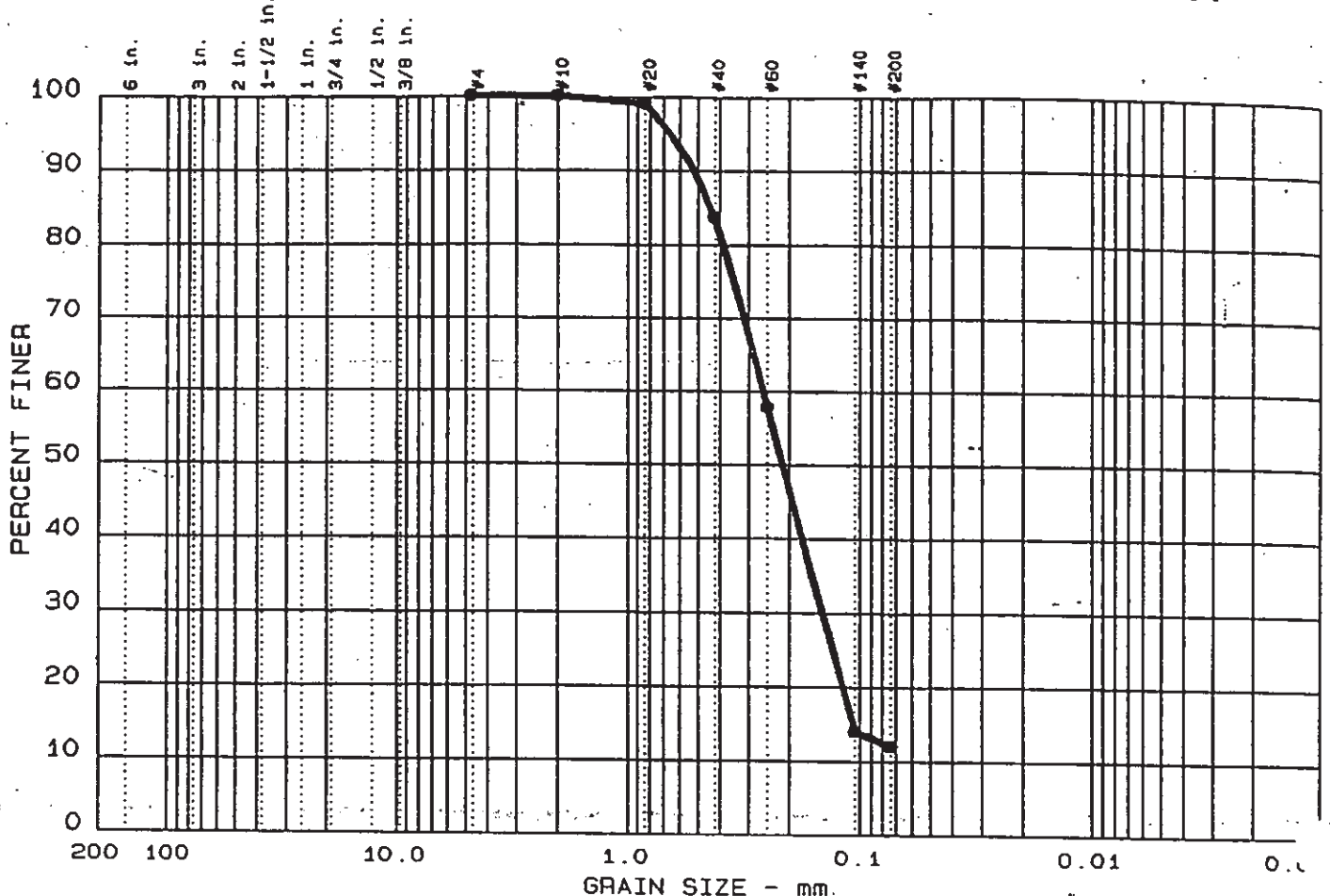
ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	88.0	12.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.43	0.26	0.21	0.144	0.1068			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-53 @ 91.2-92.7 Ft.  
 Date: March 15, 1998

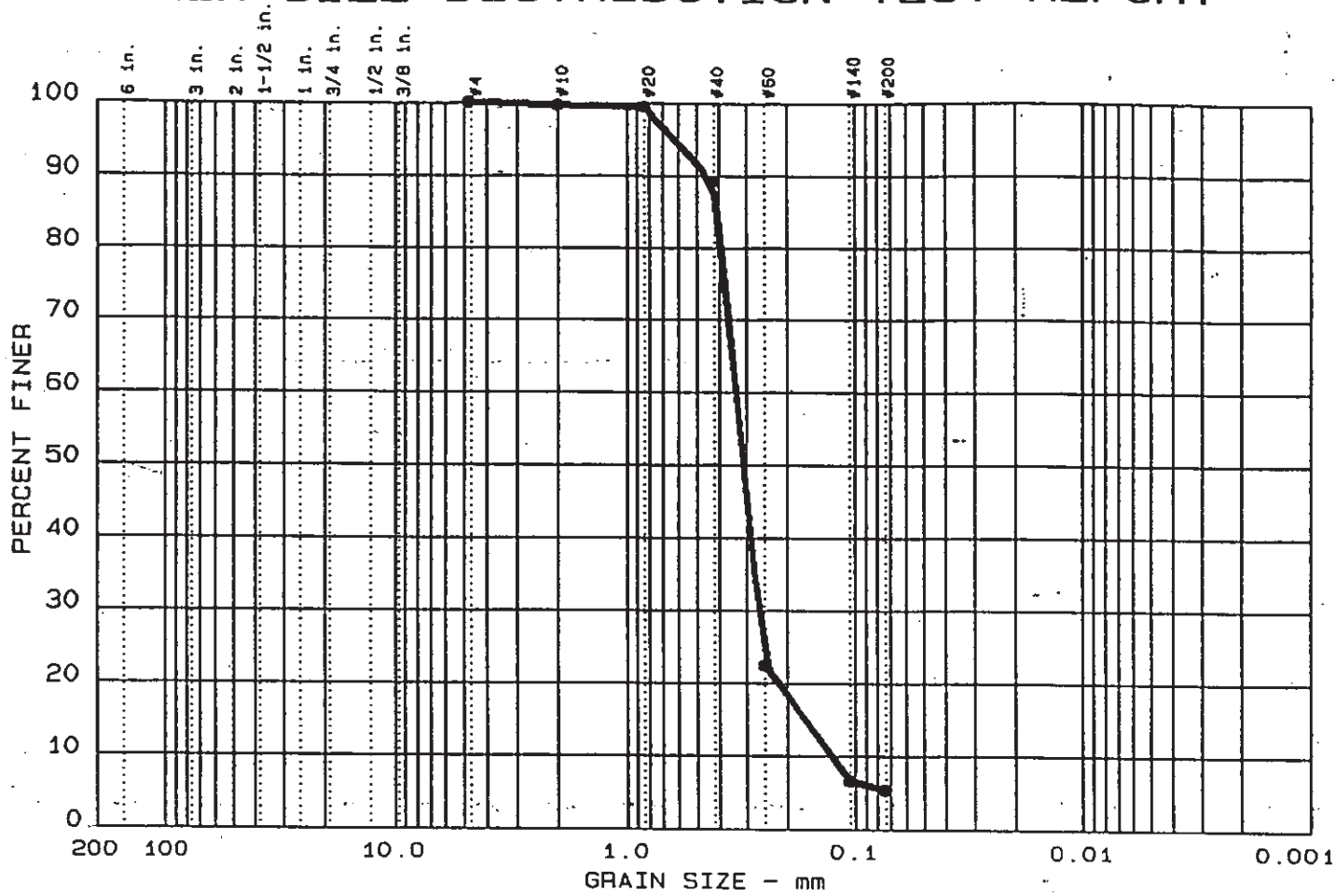
Remarks:  
 Tested by: SC & JTM  
 Reviewed by: HTJ  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	94.6	5.4	

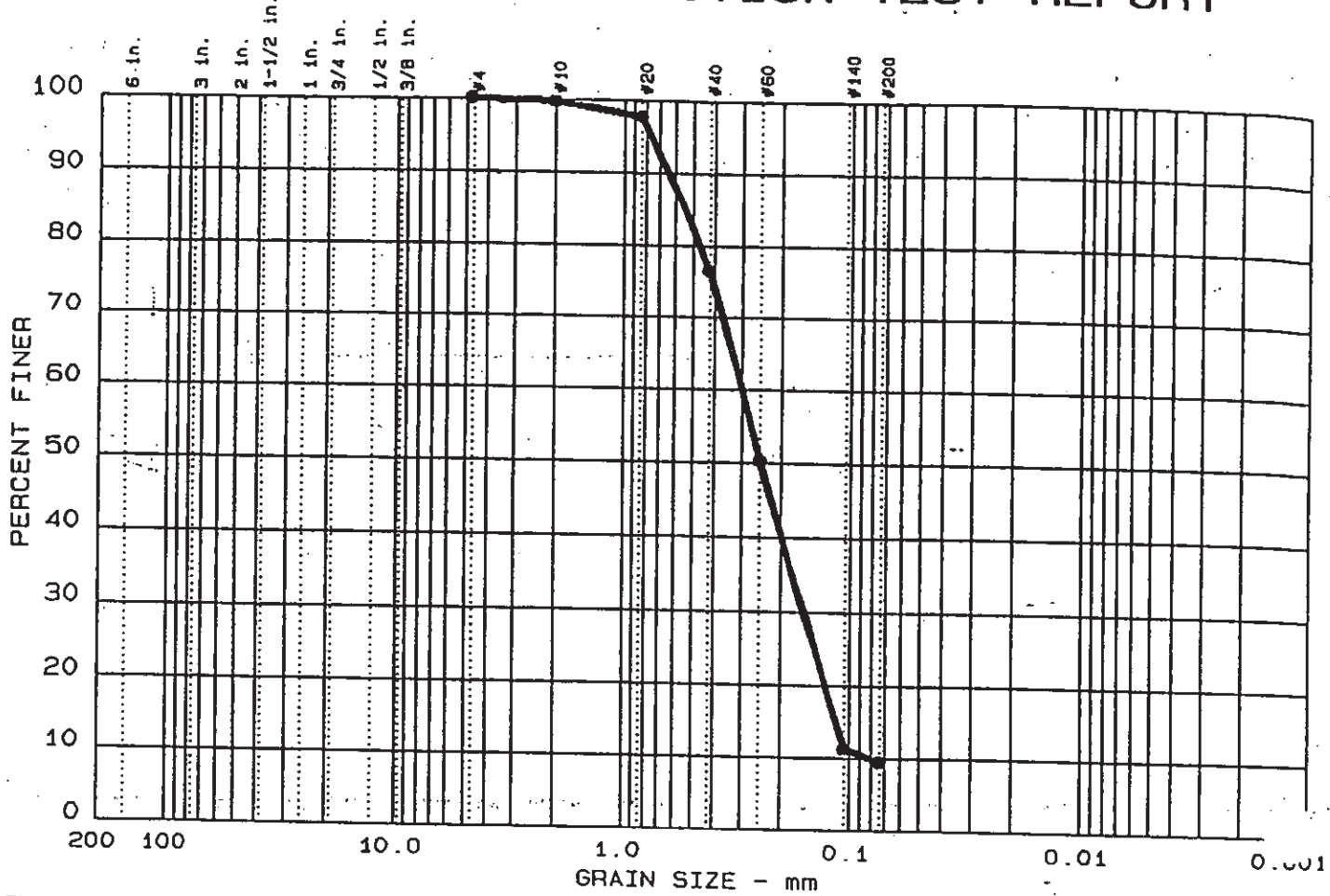
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.41	0.33	0.31	0.265	0.1652	0.1253	1.67	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-51 @ 88.2-89.7 Ft.  
  
 Date: March 15, 1998  
  
 GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HJ*  
 ASTM D422  
  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	90.5	9.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.54	0.30	0.25	0.159	0.1142	0.0818	1.04	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand With Silt	SP-SM	A-3

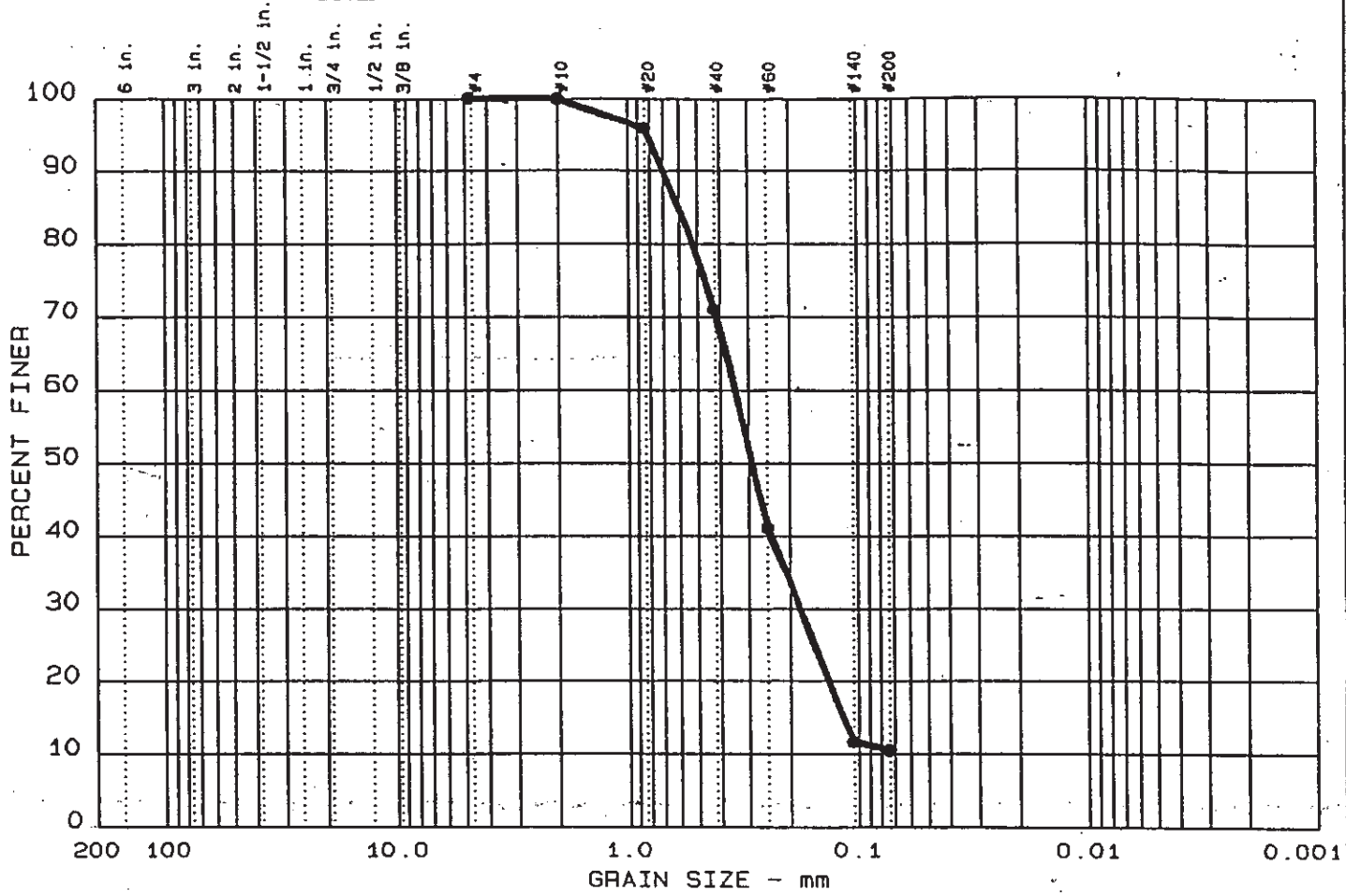
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-52 @ 89.7-91.2 Ft.  
  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	89.5	10.5	

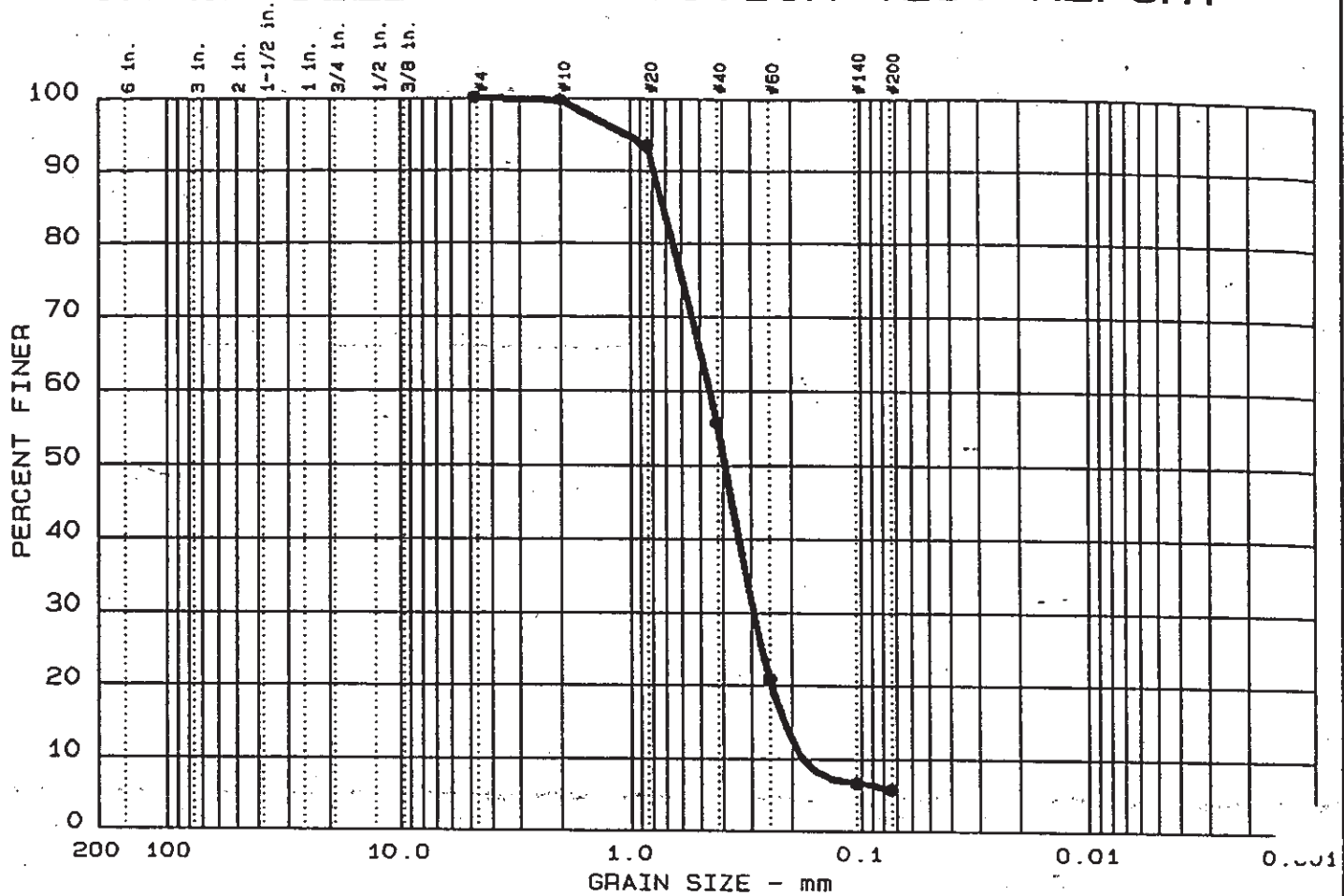
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.60	0.34	0.29	0.180	0.1157			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand With Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-54 @ 92.7-94.2 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D 422  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	94.2	5.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.71	0.45	0.39	0.293	0.2168	0.1762	1.08	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand With Silt	SP-SM	A-3

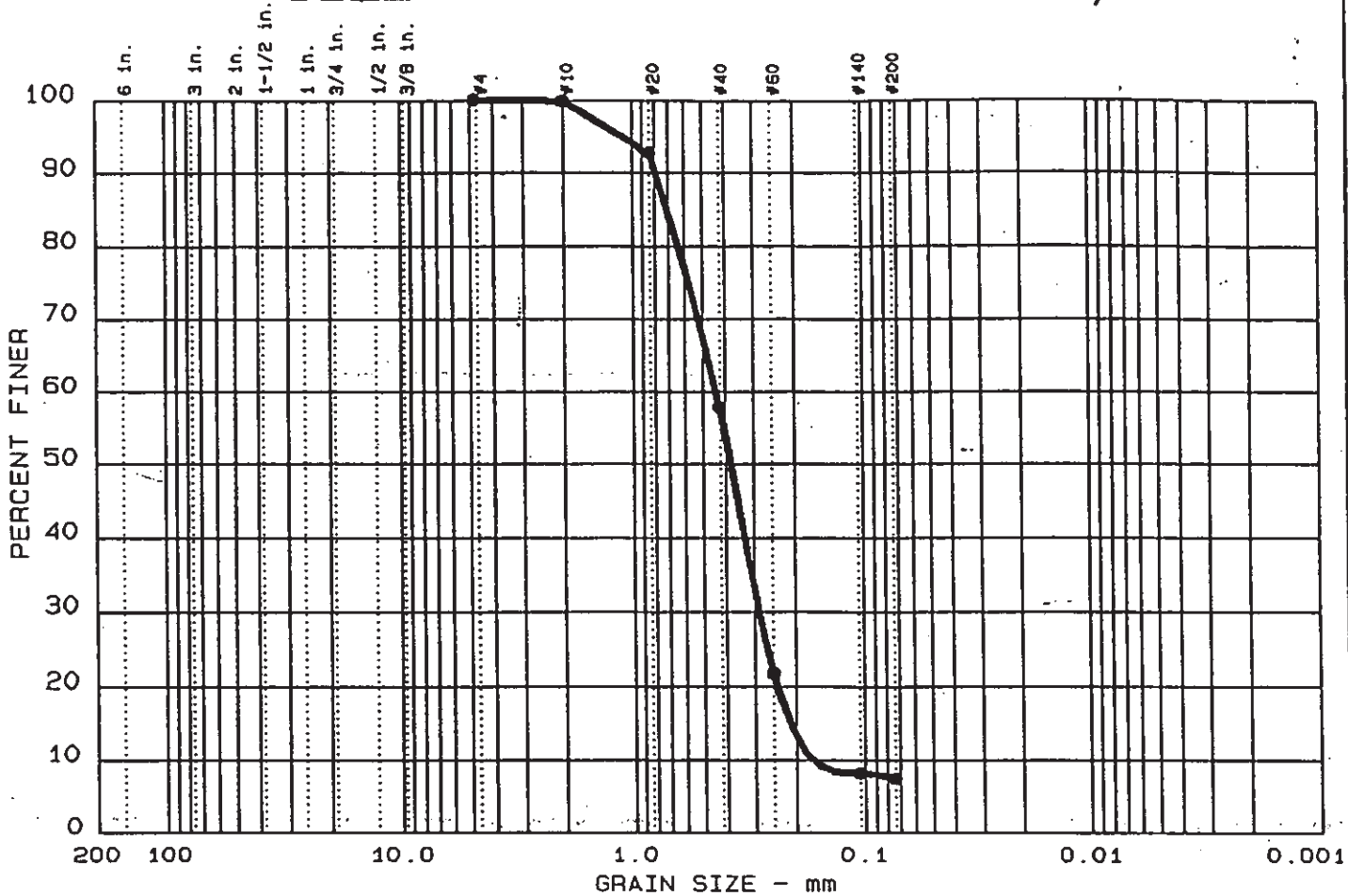
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-55 @ 94.2-95.7 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *KB*  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 4	0.0	0.0	92.6	7.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.70	0.43	0.38	0.286	0.2121	0.1685	1.12	2.6

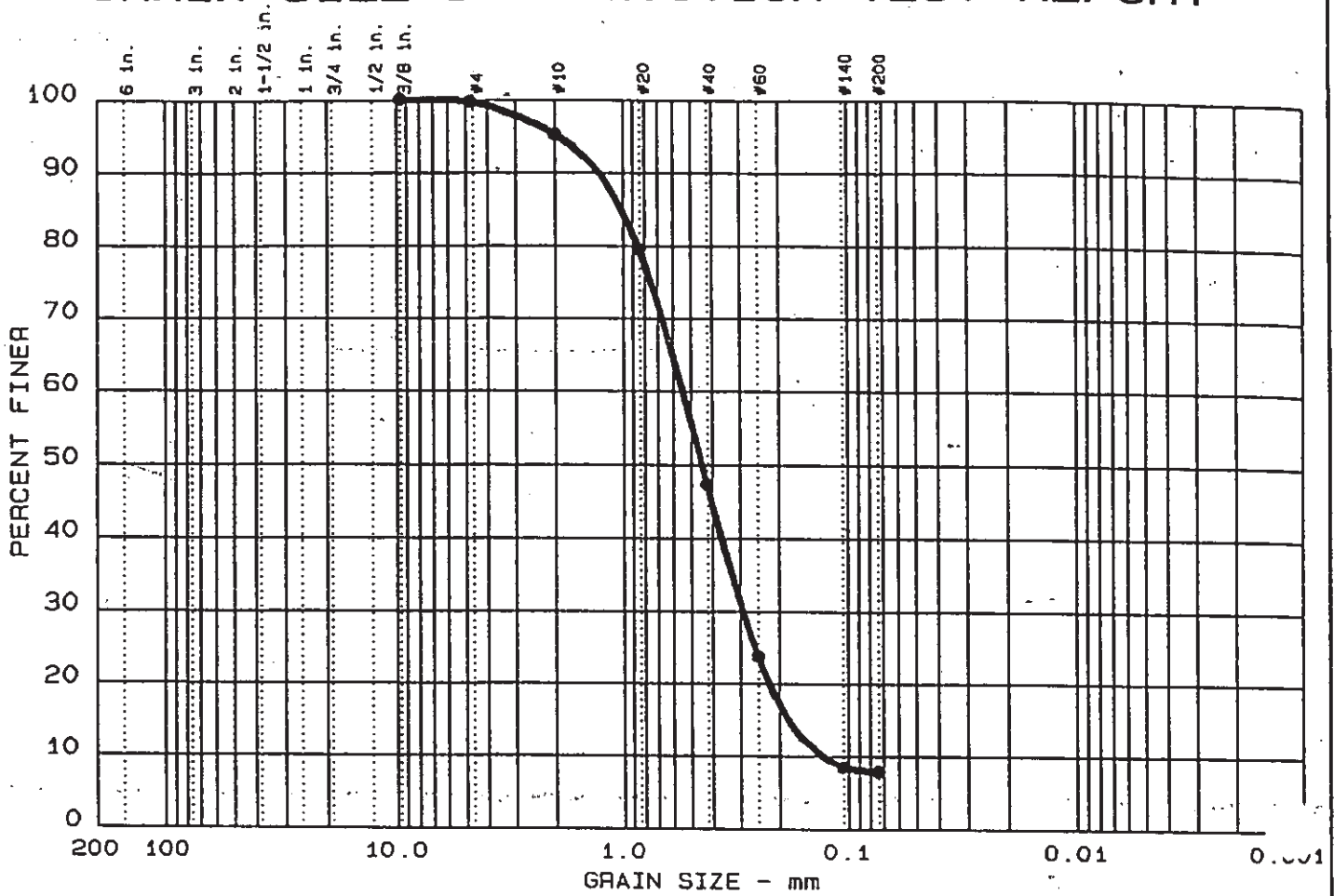
MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand With Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-57 @ 97.8-99.3 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT P/B



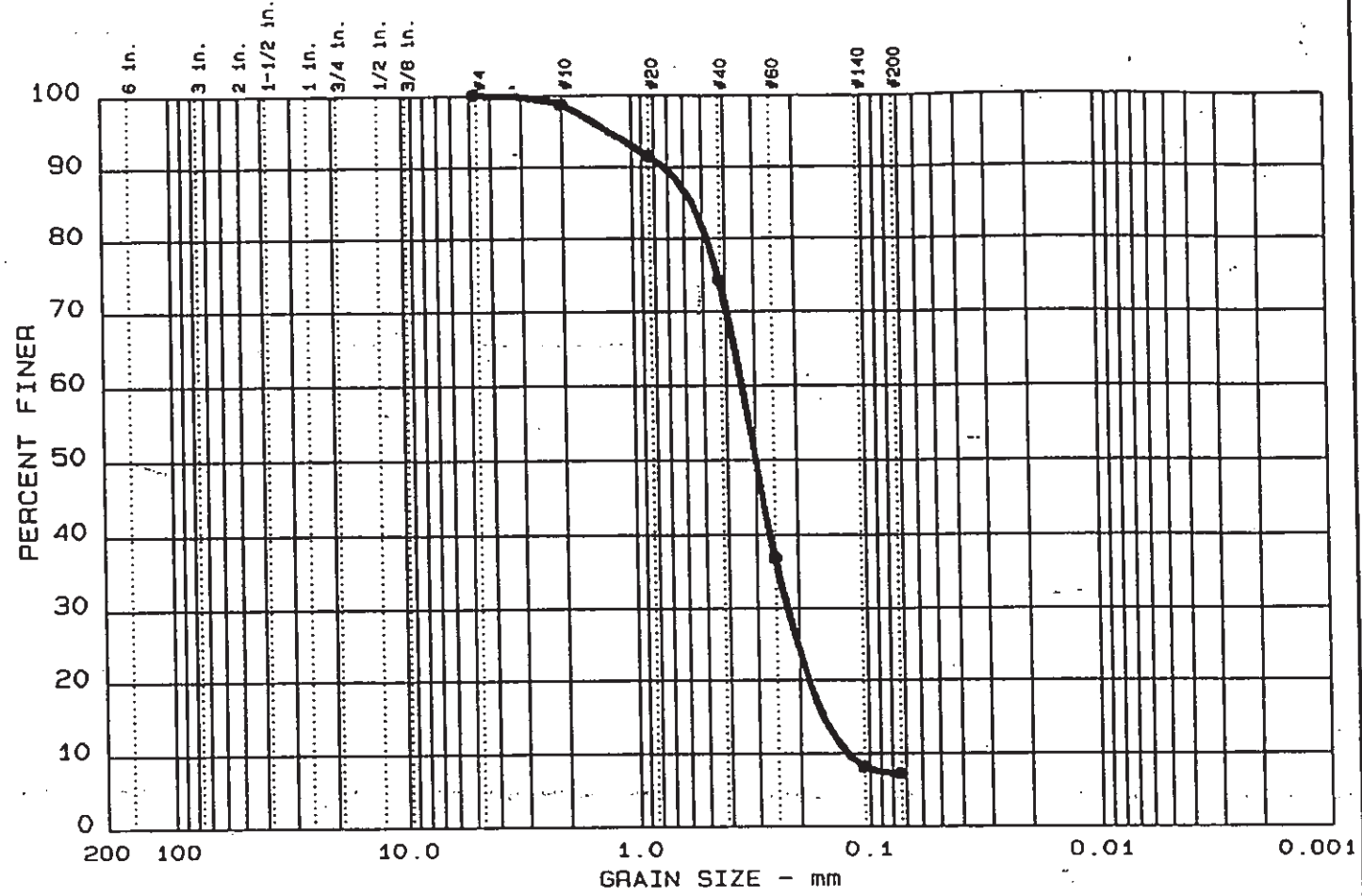
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.3	91.8	7.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.00	0.54	0.44	0.292	0.1820	0.1288	1.23	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand With Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-3 SS-58 @ 99.3-100.8 Ft.  Date: March 15, 1998	Remarks: Tested by: SC Reviewed by: HW  ASTM D422
--	---

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.0	92.8	7.2	

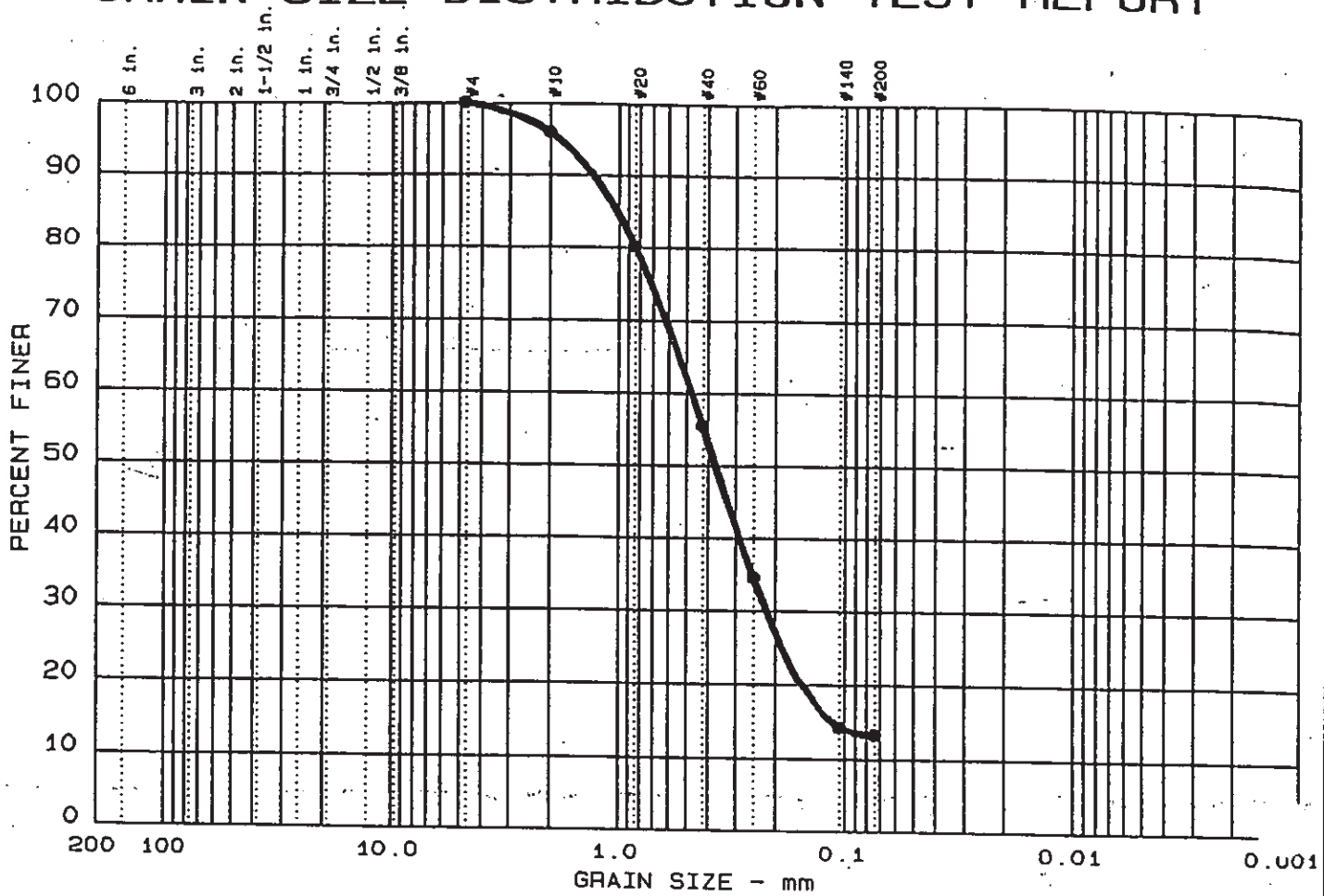
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
•		0.55	0.34	0.30	0.224	0.1567	0.1230	1.20	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand With Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-59 @ 101.3-102.8 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HB*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
7	0.0	0.0	86.7	13.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		1.01	0.47	0.37	0.219	0.1125			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-60 @ 102.8-104.3 Ft.  
  
 Date: March 15, 1998

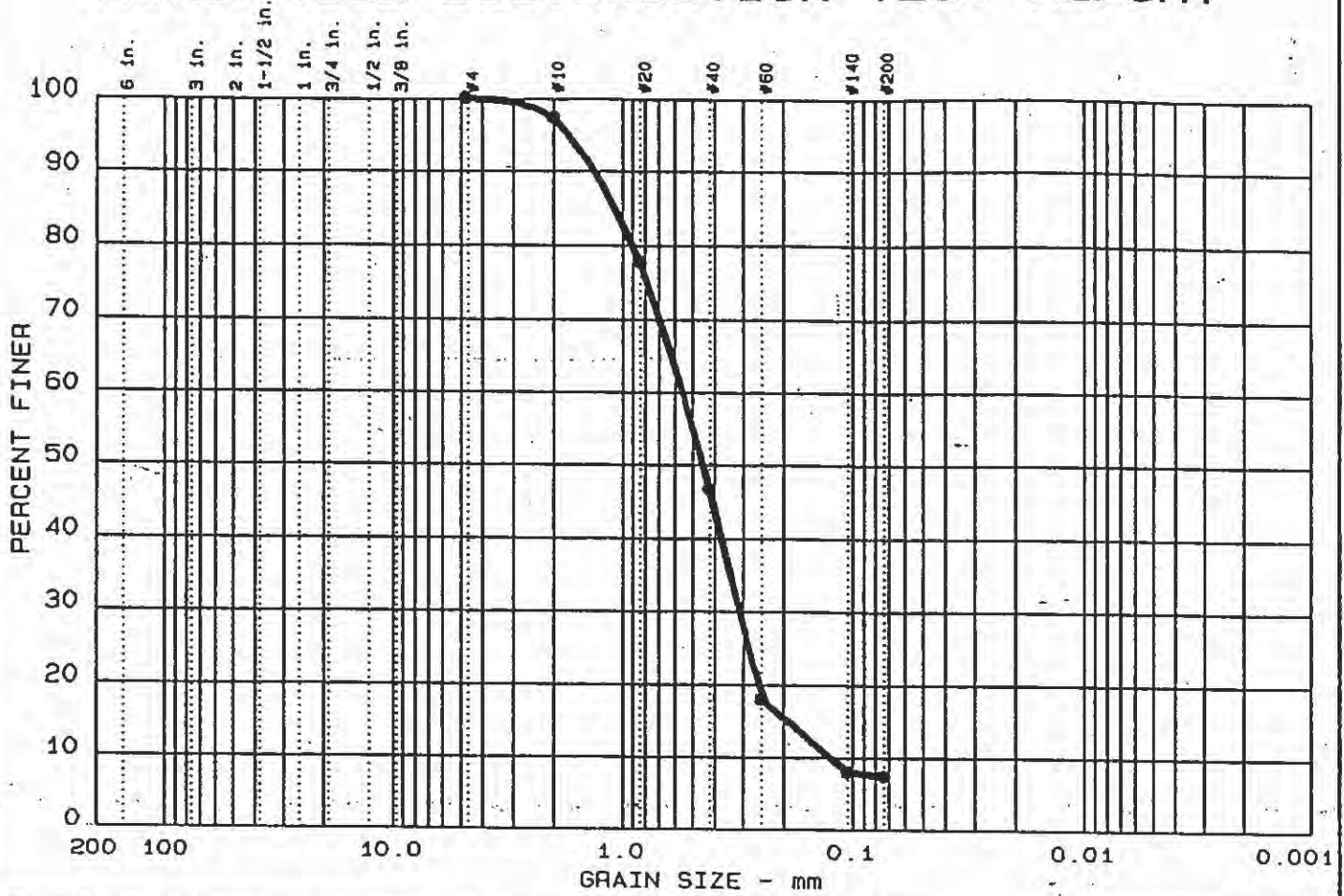
Remarks:  
 Tested by: *SC & STM*  
 Reviewed by: *HJ*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT R/ls



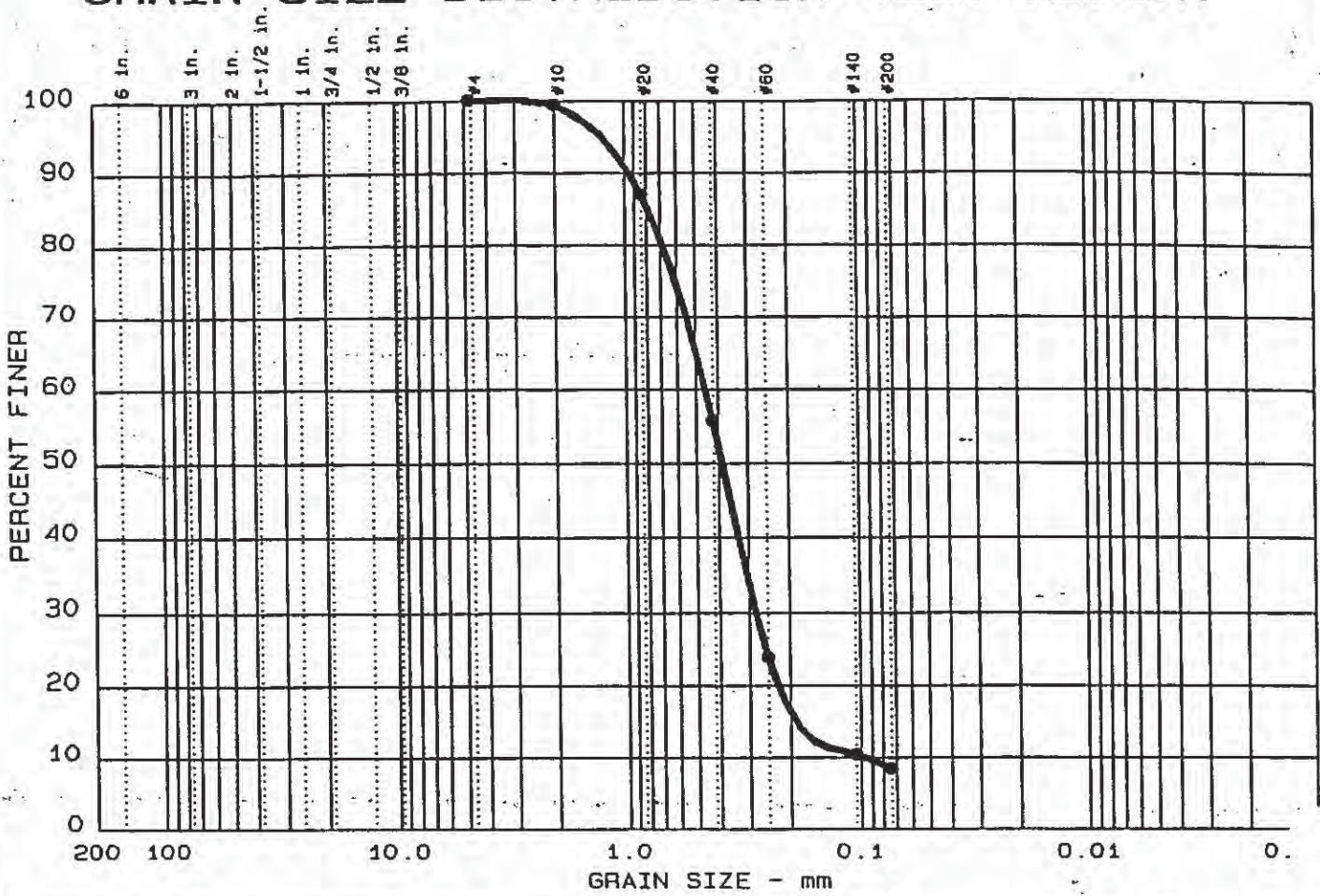
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
8	0.0	0.0	92.5	7.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.07	0.55	0.45	0.310	0.1912	0.1235	1.42	4.5

MATERIAL DESCRIPTION	USCS	AASHTO
Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing Location: FB-3 SS-61 @ 104.3-105.8 Ft.  Date: March 15, 1998	Remarks: Tested by: <i>SC</i> Reviewed by: <i>HJ</i> ASTM D 422
GRAIN SIZE DISTRIBUTION TEST REPORT <b>LAW ENGINEERING, INC.</b>	
Figure No.	

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	91.5	8.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.79	0.45	0.38	0.281	0.1875	0.0929	1.88	4.8

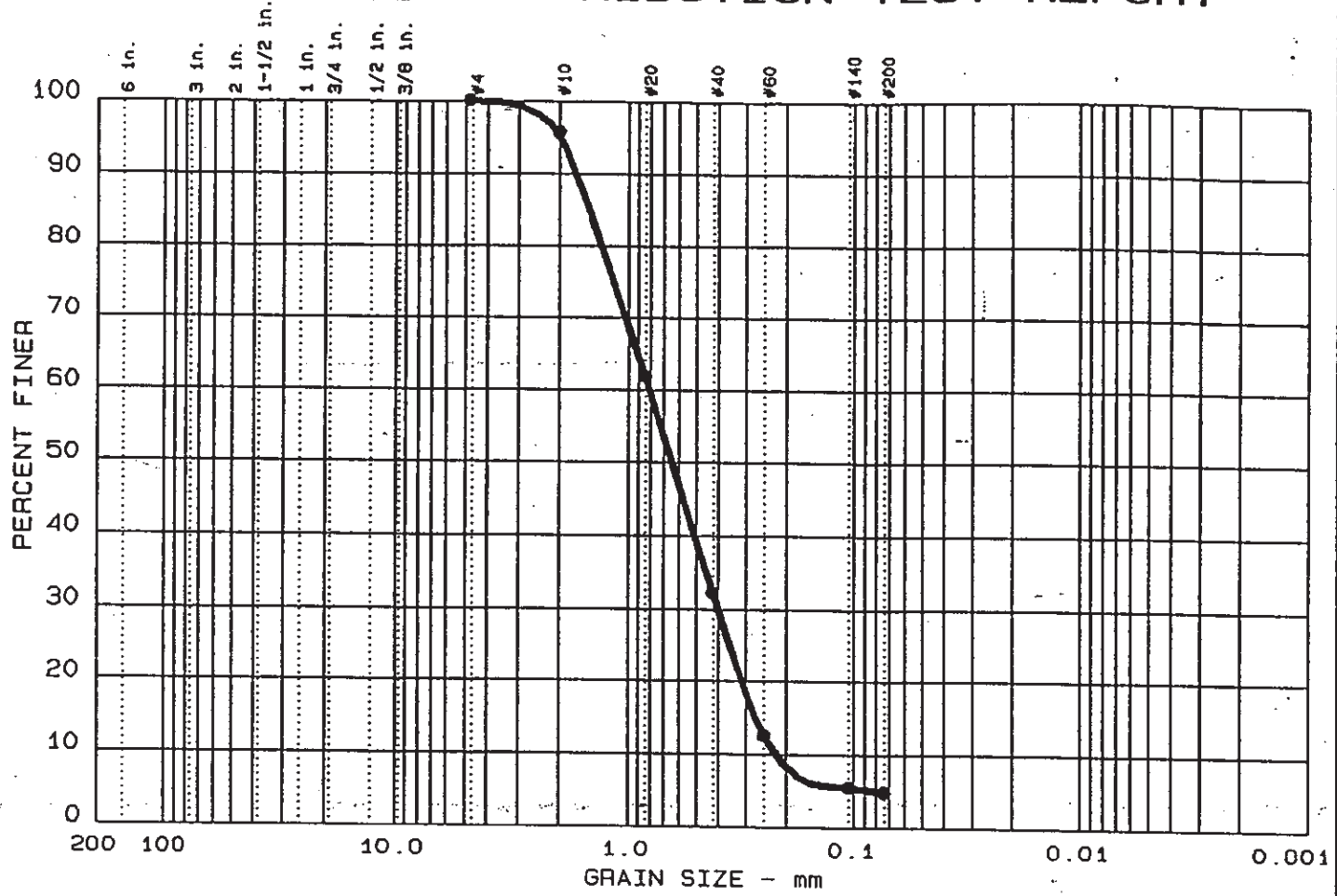
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-3 SS-63 @ 107.8-109.3 Ft.  Date: March 15, 1998	Remarks: Tested by: <i>BC</i> Reviewed by: <i>H</i> ASTM D422
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B-128

K-FRT-F-00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 10	0.0	0.0	95.1	4.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		1.48	0.81	0.64	0.399	0.2698	0.2218	0.89	3.6

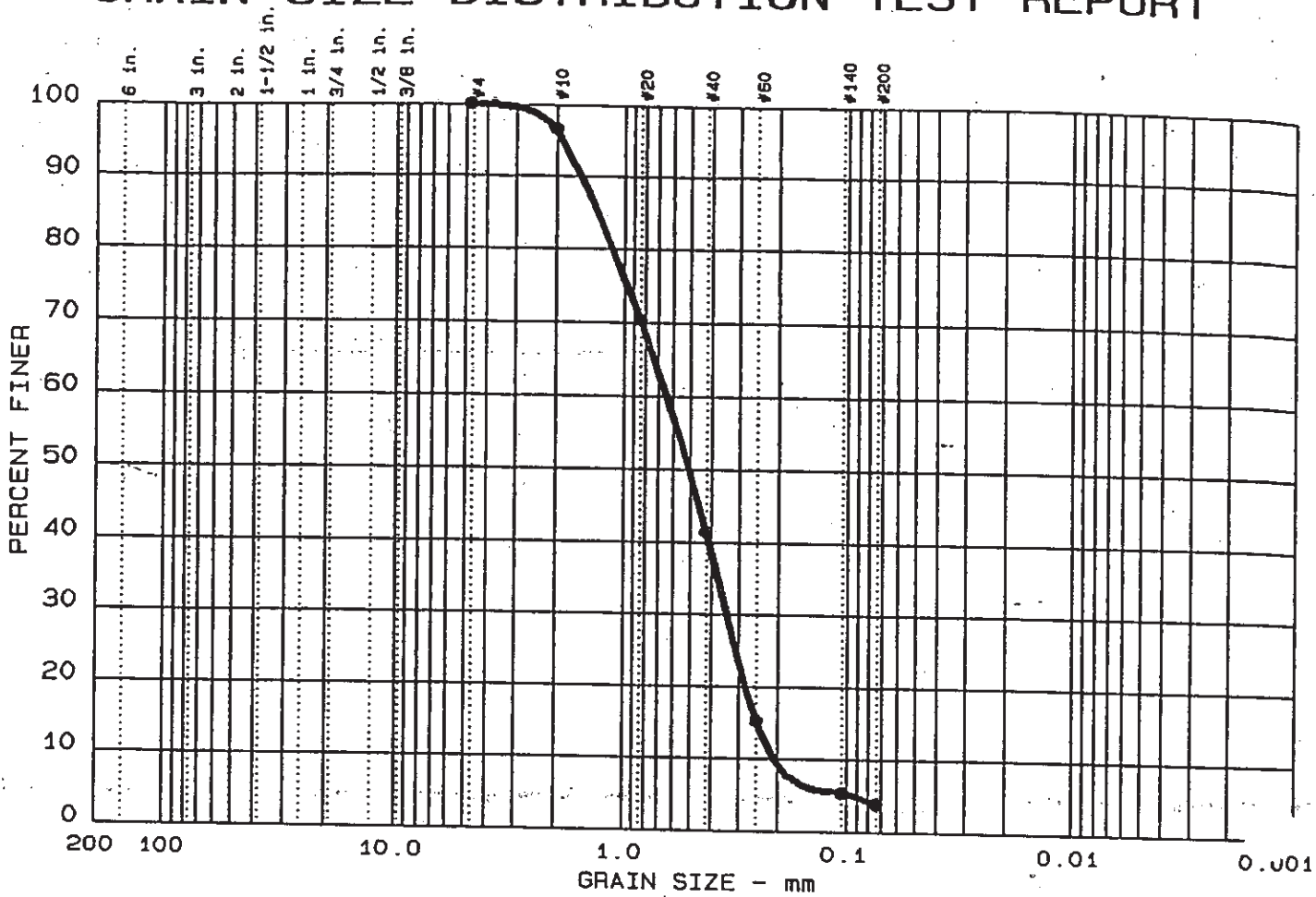
MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand	SP	A-1-b

<p>Project No.: 50161-7-0108 Task 16                  Project: APSF Confirmatory Testing                  • Location: FB-3 SS-64 @ 109.3-110.8 Ft.</p> <p>Date: March 15, 1998</p>	<p>Remarks:</p> <p>Tested by: SC</p> <p>Reviewed by: HS</p> <p style="text-align: center;">ASTM D 422</p>
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GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	96.1	3.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.32	0.64	0.50	0.340	0.2480	0.2084	0.87	3.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand	SP	A-1-b

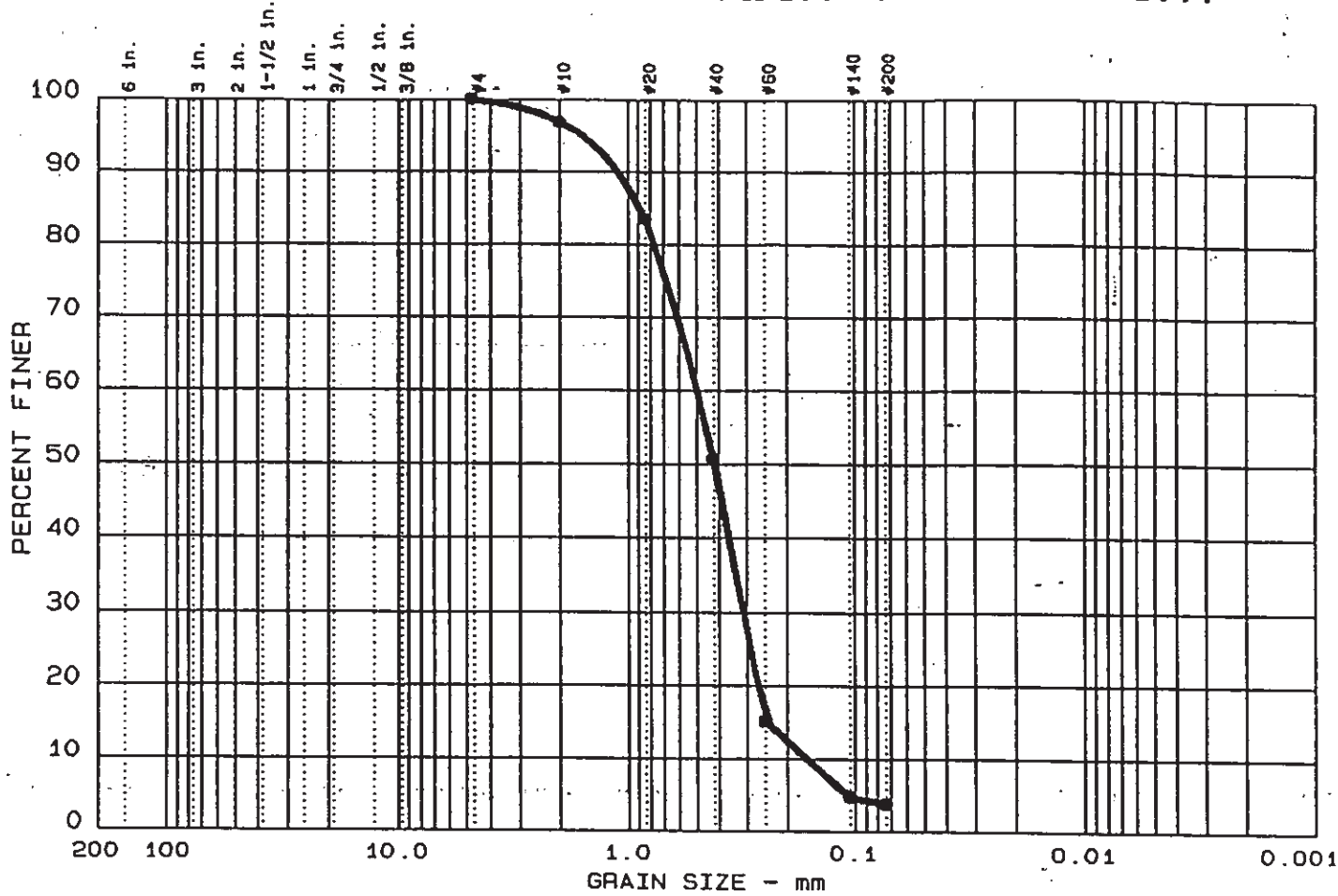
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-65 @ 110.8-112.3 Ft.  
  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	96.2	3.8	

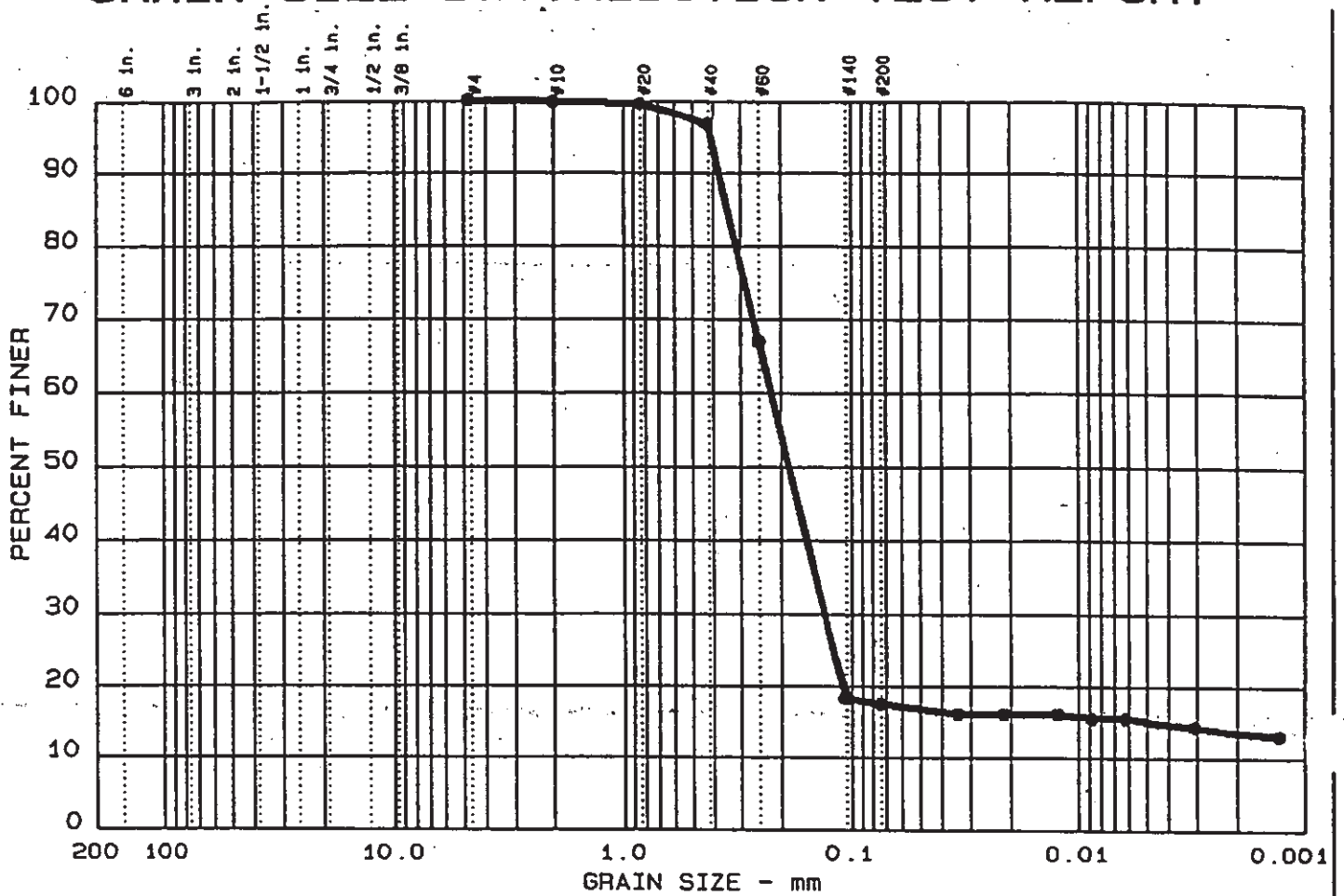
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.88	0.49	0.41	0.310	0.2463	0.1627	1.20	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand	SP	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-66 @ 112.3-113.8 Ft.  
 Date: March 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: AS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	82.5	2.4	15.1

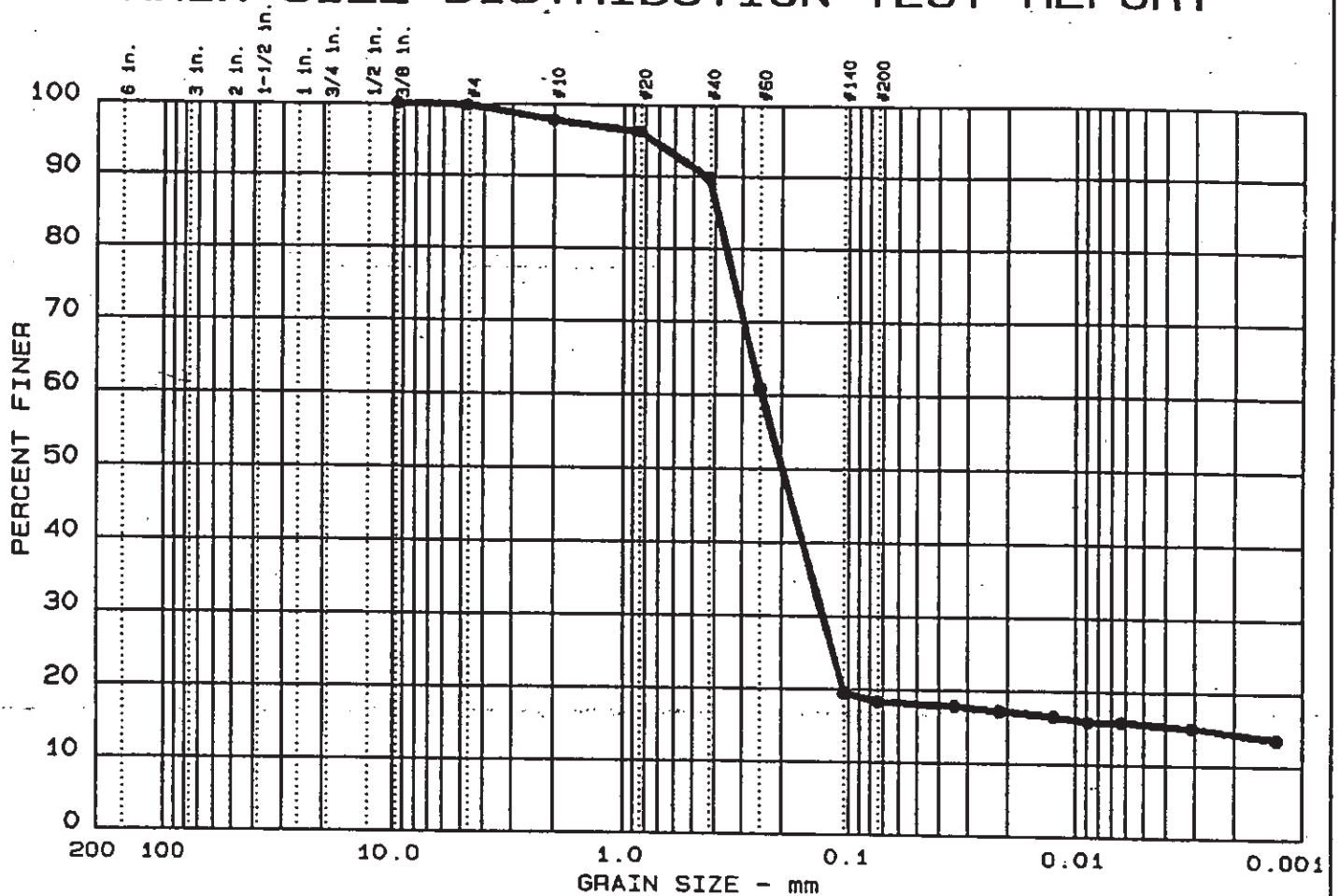
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.34	0.22	0.18	0.129	0.0044			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-68 @ 115.3-116.8 Ft.  
 Date: March 19, 1998

Remarks:  
 Tested by: *SCD/DM*  
 Reviewed by: *LD*  
 ASTM D422  
 &  
 ASTM D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
7	0.0	0.2	81.4	2.7	15.7

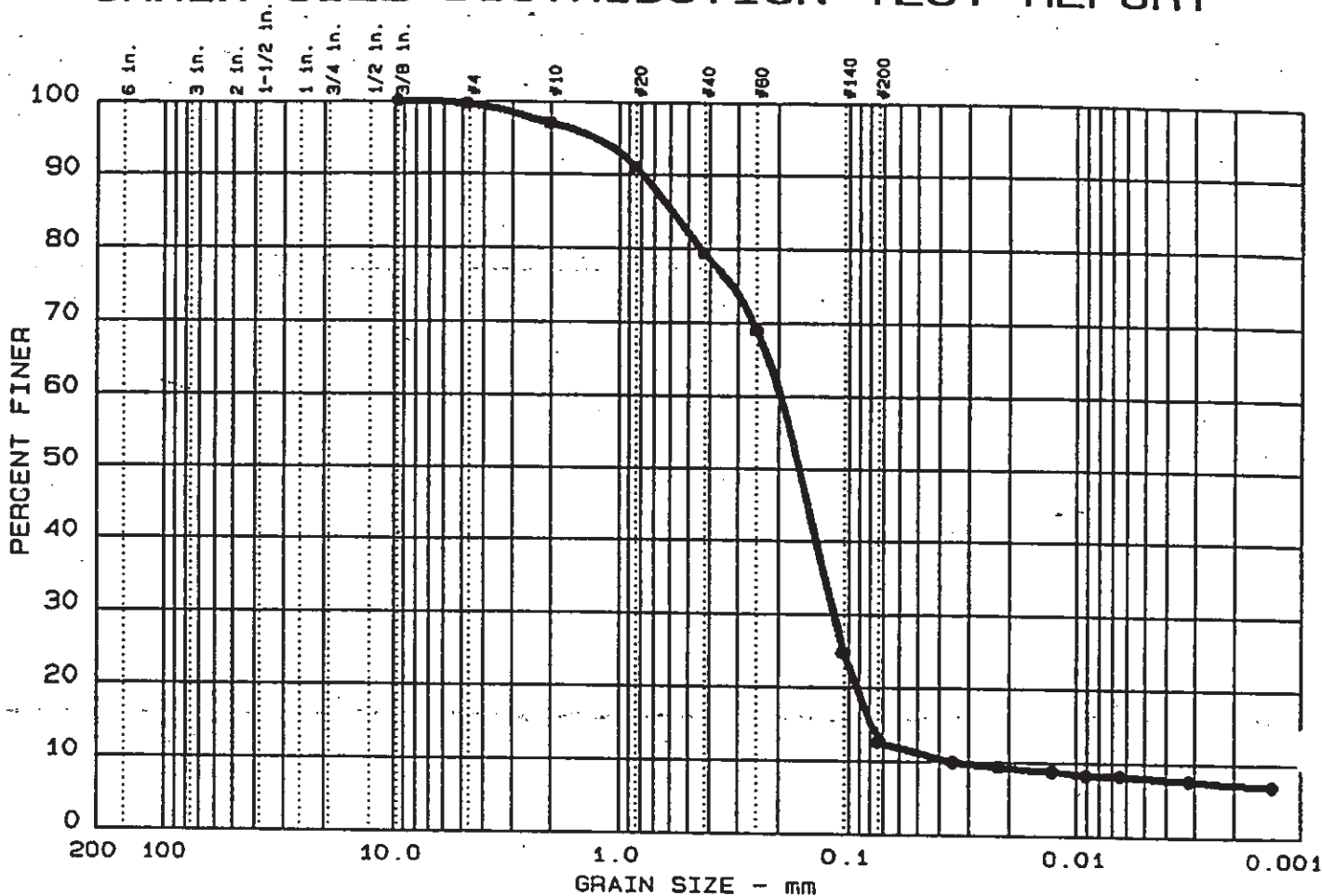
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
33	8	0.38	0.25	0.20	0.131	0.0027			

MATERIAL DESCRIPTION	USCS	AASHTO
Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-69 @ 116.8-118.3 Ft.  
  
 Date: March 19, 1998

Remarks:  
 Tested by: *SCJ/Tm*  
 Reviewed by: *H*  
 ASTM D422  
 &  
 ASTM D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.4	86.9	4.6	8.1

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.58	0.19	0.16	0.115	0.0788	0.0352	1.93	5.5

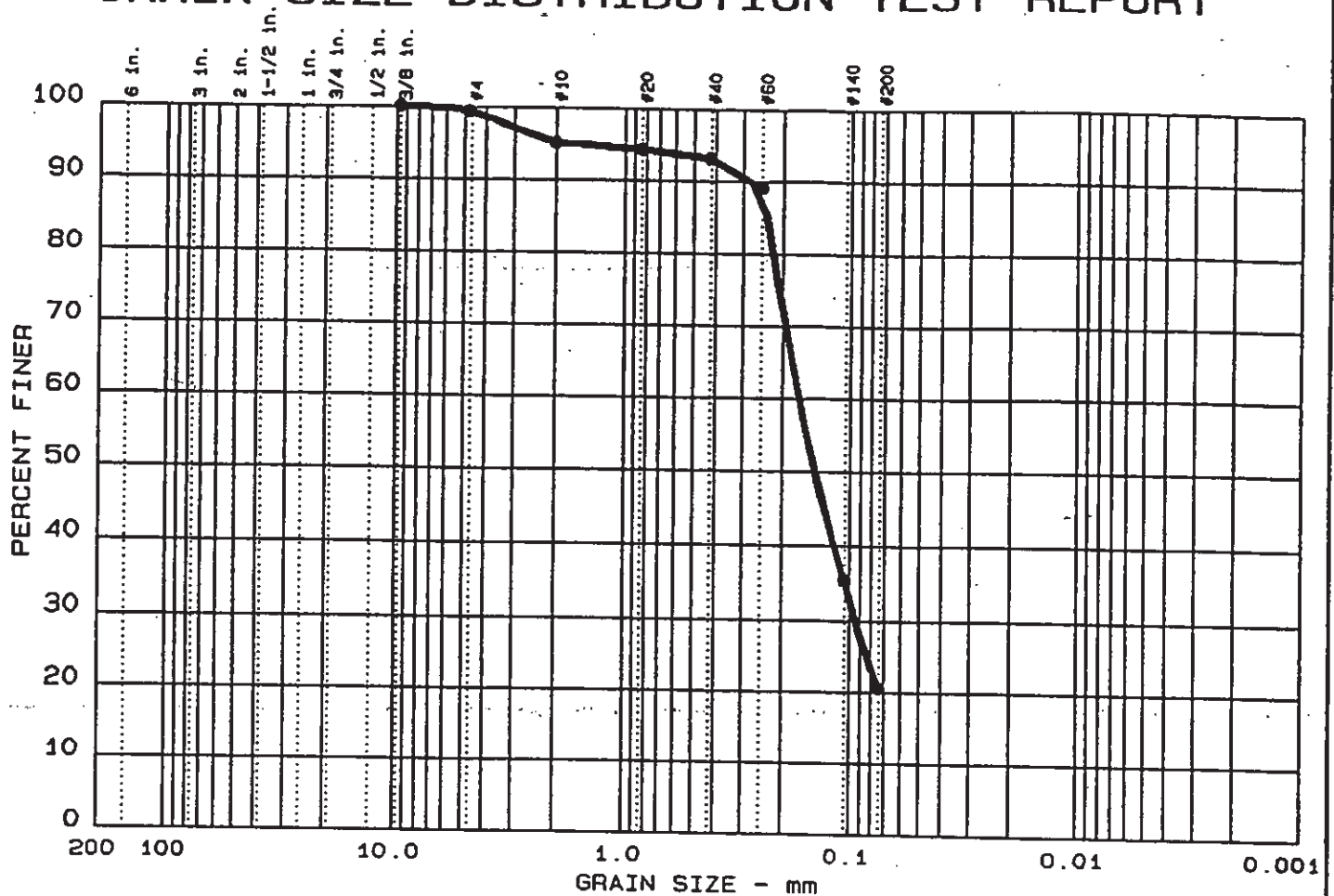
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-70 @ 118.3-119.8 Ft.  
 Date: March 19, 1998

Remarks:  
 Tested by: *SCB/TJM*  
 Reviewed by: *HB*  
 ASTM D422  
 &  
 ASTM D4318  
 Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.7	78.7	20.6	

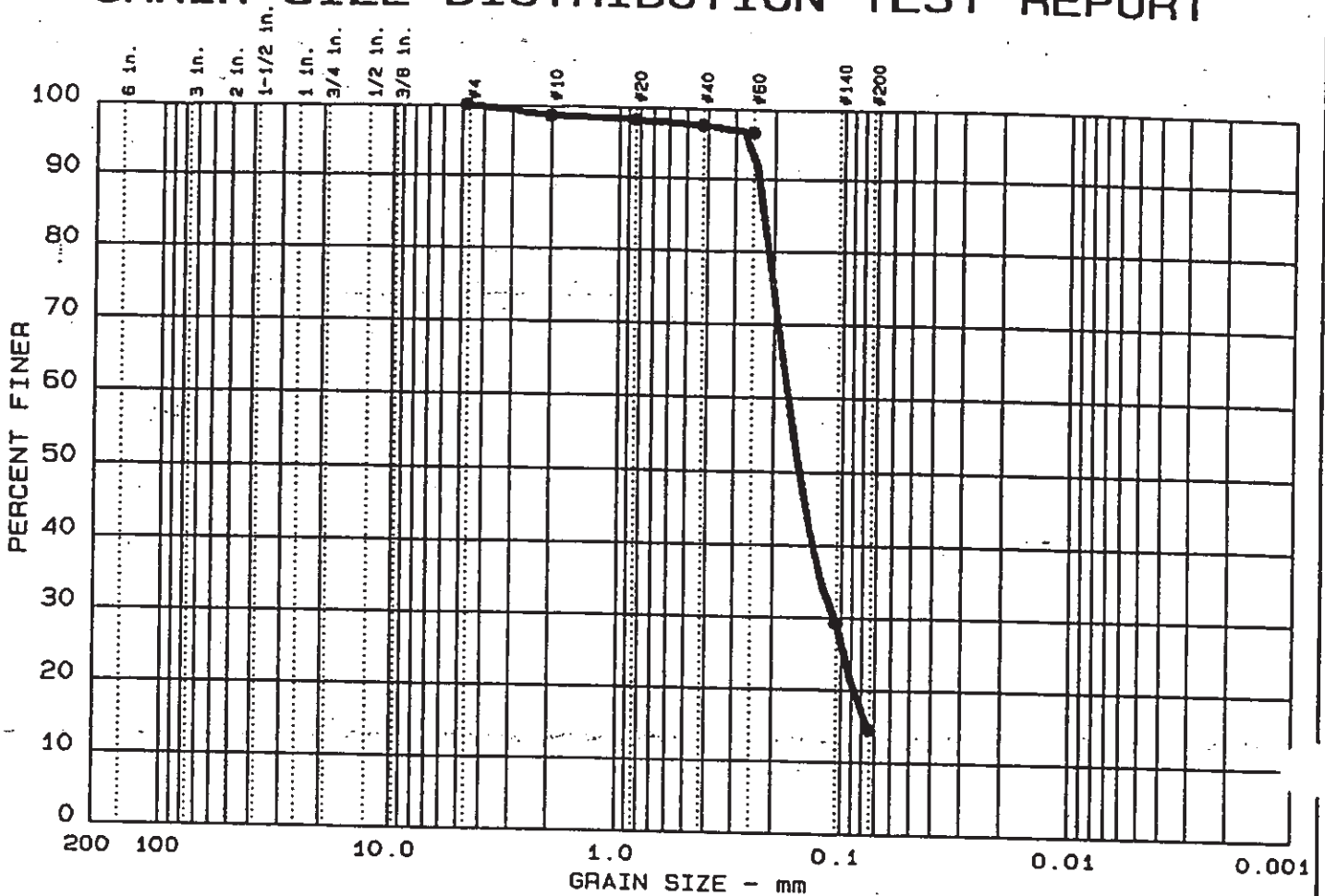
	LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●			0.24	0.17	0.14	0.094				

MATERIAL DESCRIPTION	USCS	AASHTO
	● Red Brown Silty Sand	SM

Project No.: 50161-7-0108 Task 16  
 Project: APSF-Confirmatory Testing  
 ● Location: FB-3 SS-71 @ 119.8-121.3 FT  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HW  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 1	0.0	0.0	85.5	14.5	

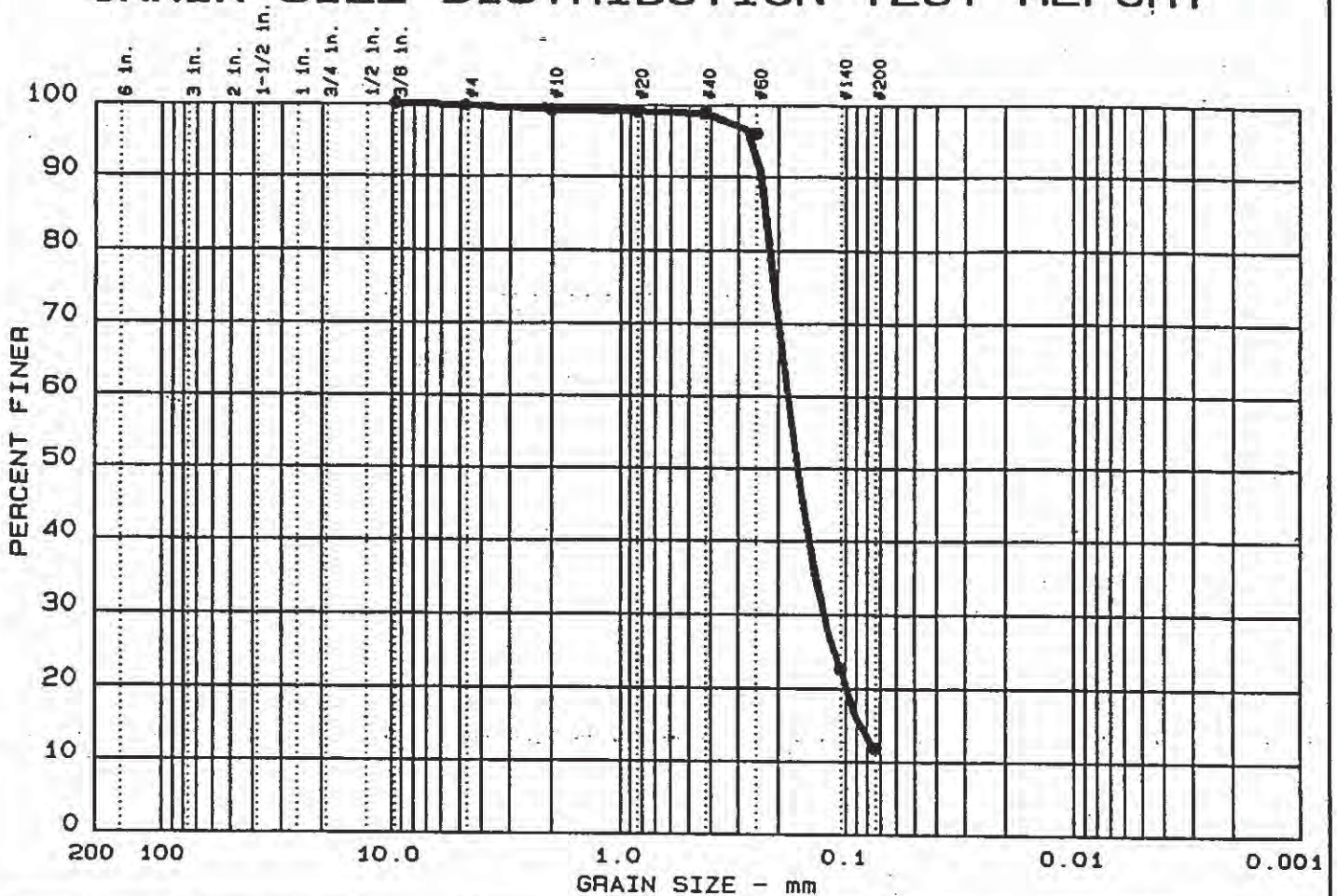
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.22	0.17	0.15	0.108	0.0750			

MATERIAL DESCRIPTION	USCS	AASHTO
• White & Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-72 @ 121.3-122.8 Ft.  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HO  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 2	0.0	0.2	87.8	12.0	

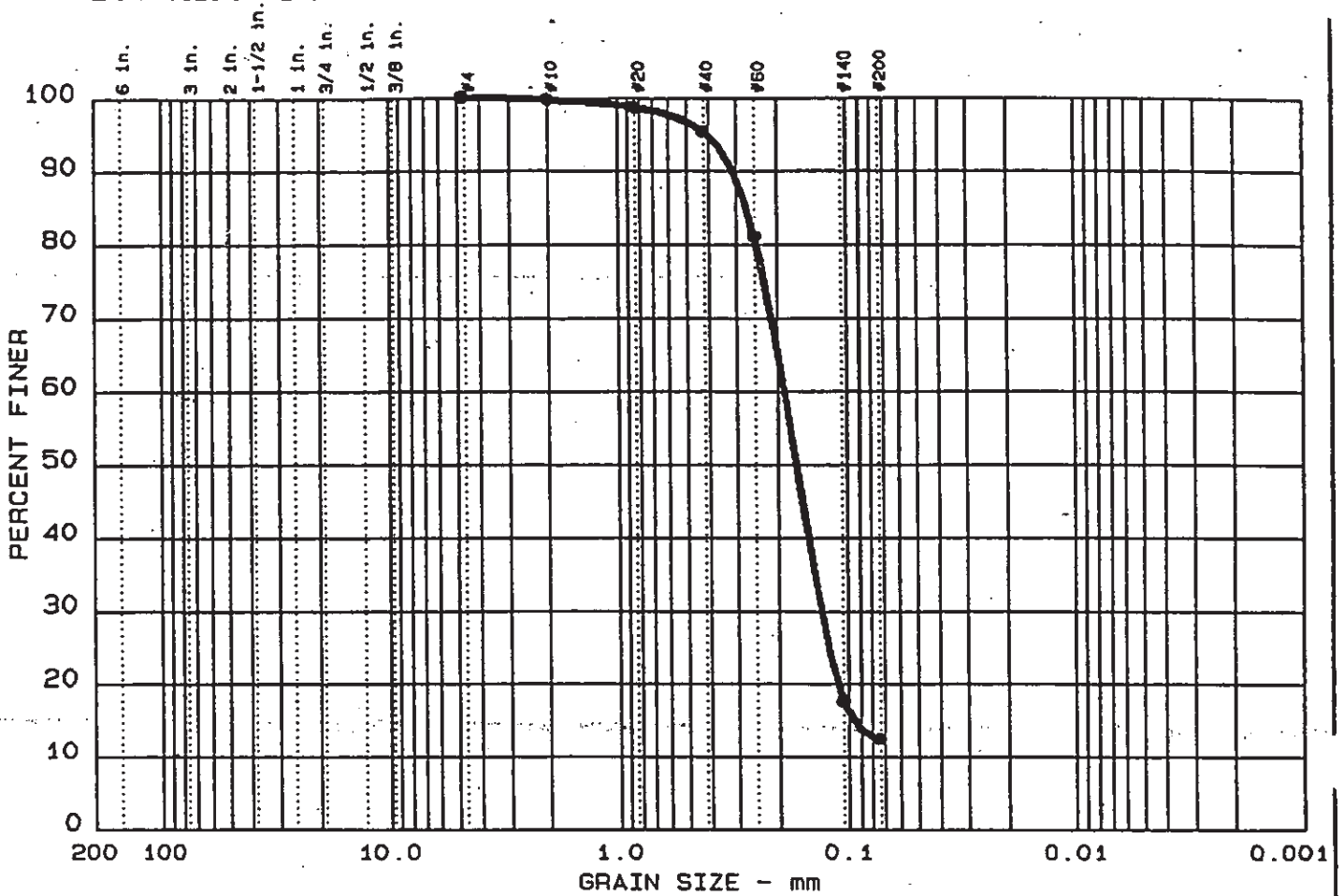
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.23	0.18	0.16	0.126	0.0853			

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-73 @ 122.8-124.3 Ft.  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	87.5	12.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.27	0.19	0.17	0.130	0.0956			

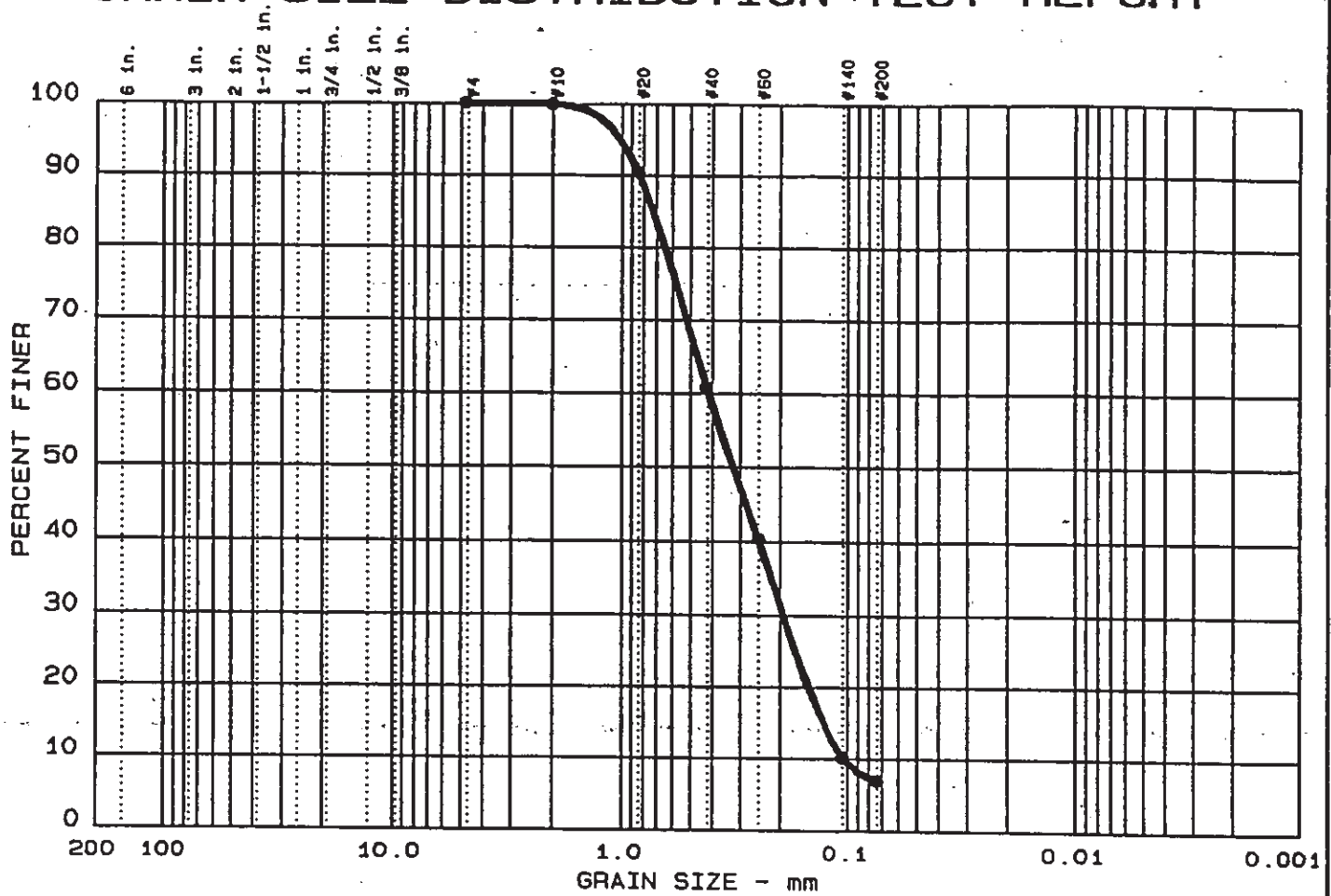
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-74 @ 124.3-125.8 Ft.  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D422

K-TRT-F-00001  
R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	93.1	6.9	

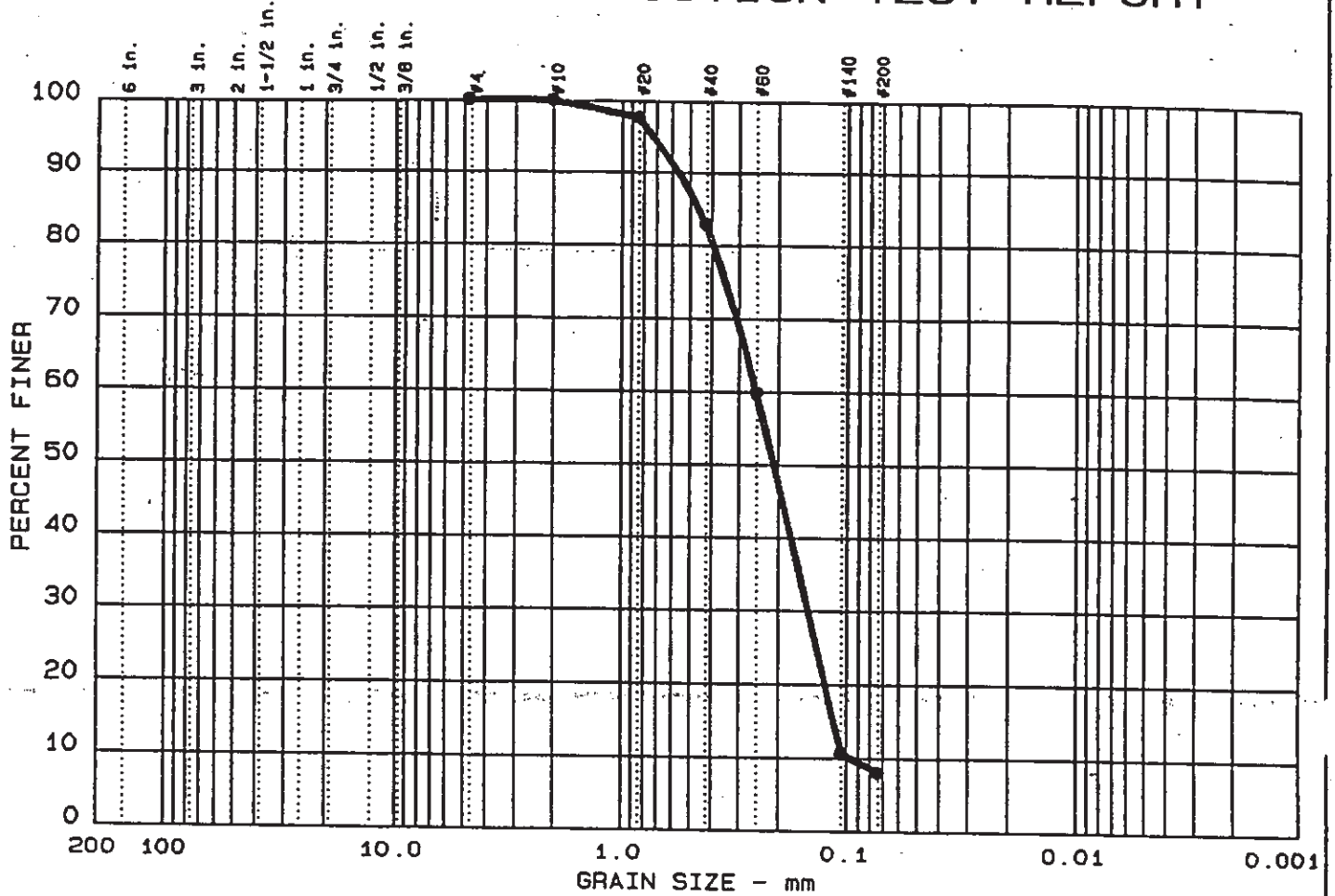
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.72	0.41	0.32	0.194	0.1282	0.1030	0.89	4.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-76 @ 127.3-128.8 Ft.  
  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.0	91.9	8.1	

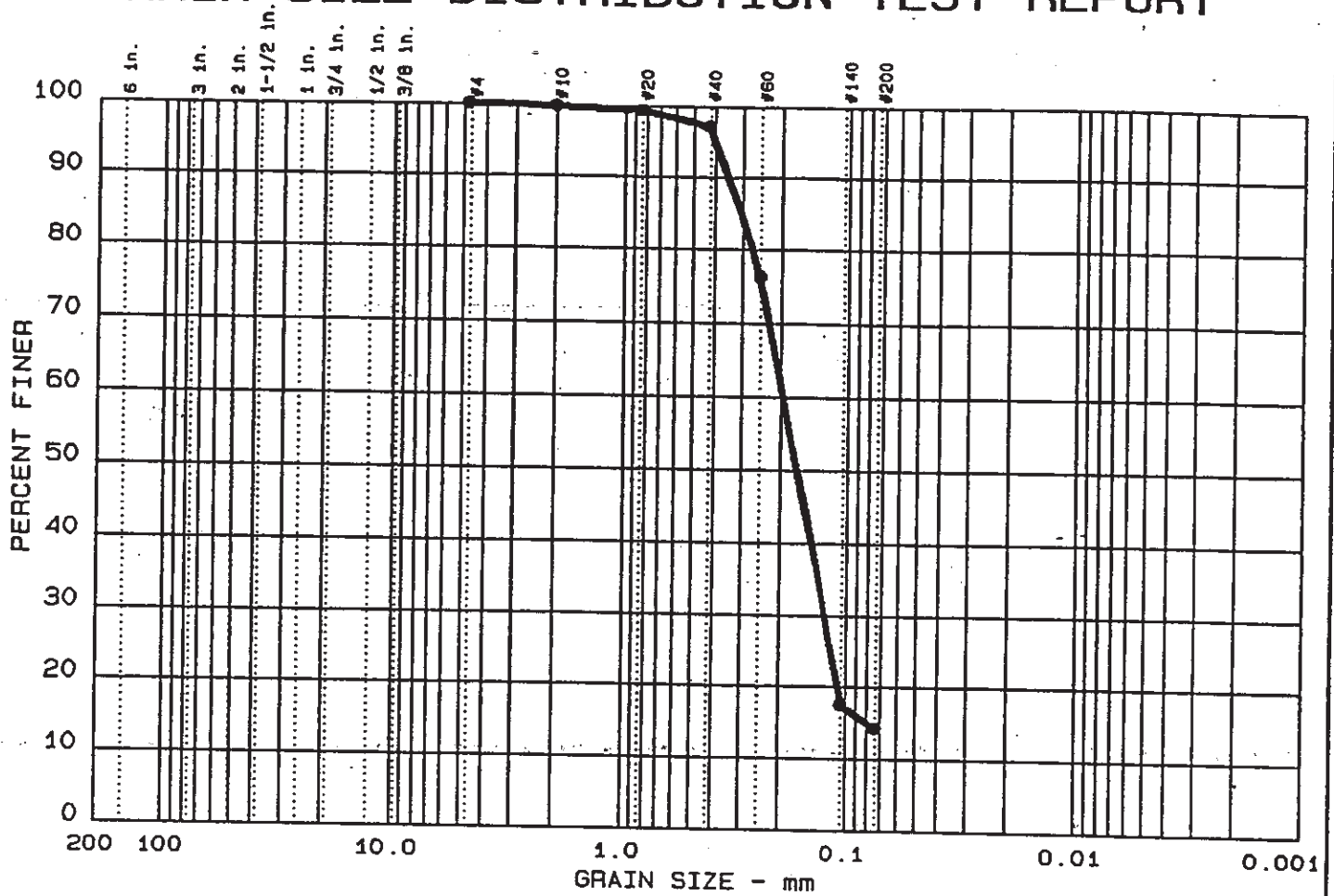
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.45	0.25	0.21	0.148	0.1134	0.0965	0.91	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan & White Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-3 SS-77 @ 128.8-130.3 Ft.  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.0	85.7	14.3	

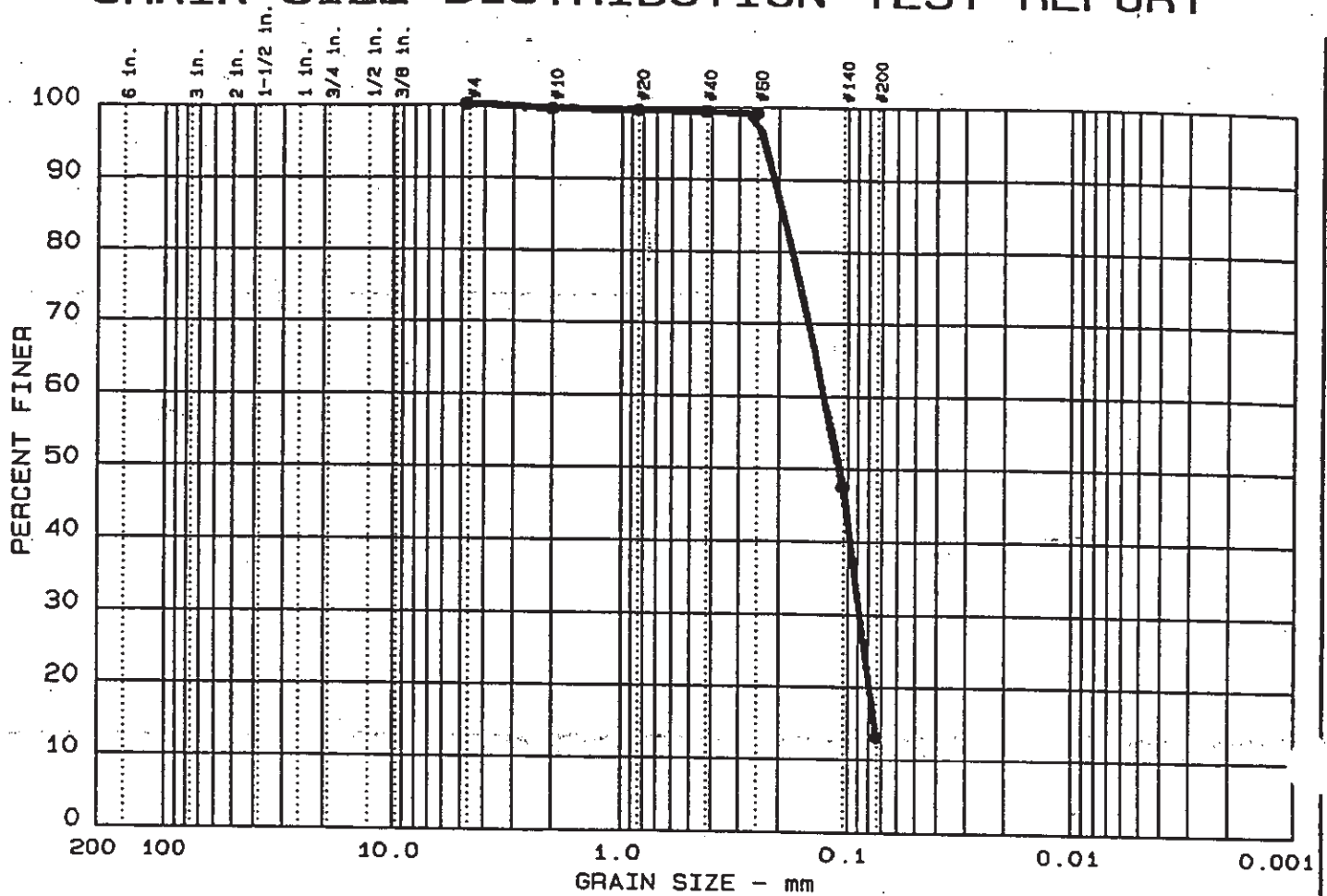
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.30	0.20	0.17	0.126	0.0796			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-White Silty Sand	SM	A-2-4 (0.1)

Project No.: 50161-7-1362.01.831  
 Project: Tarmac Recycling  
 ● Location: FB-3 SS-78 @ 130.3-131.8 Ft.  
 Date: March 17, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.0	86.9	13.1	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.19	0.13	0.11	0.087	0.0753			

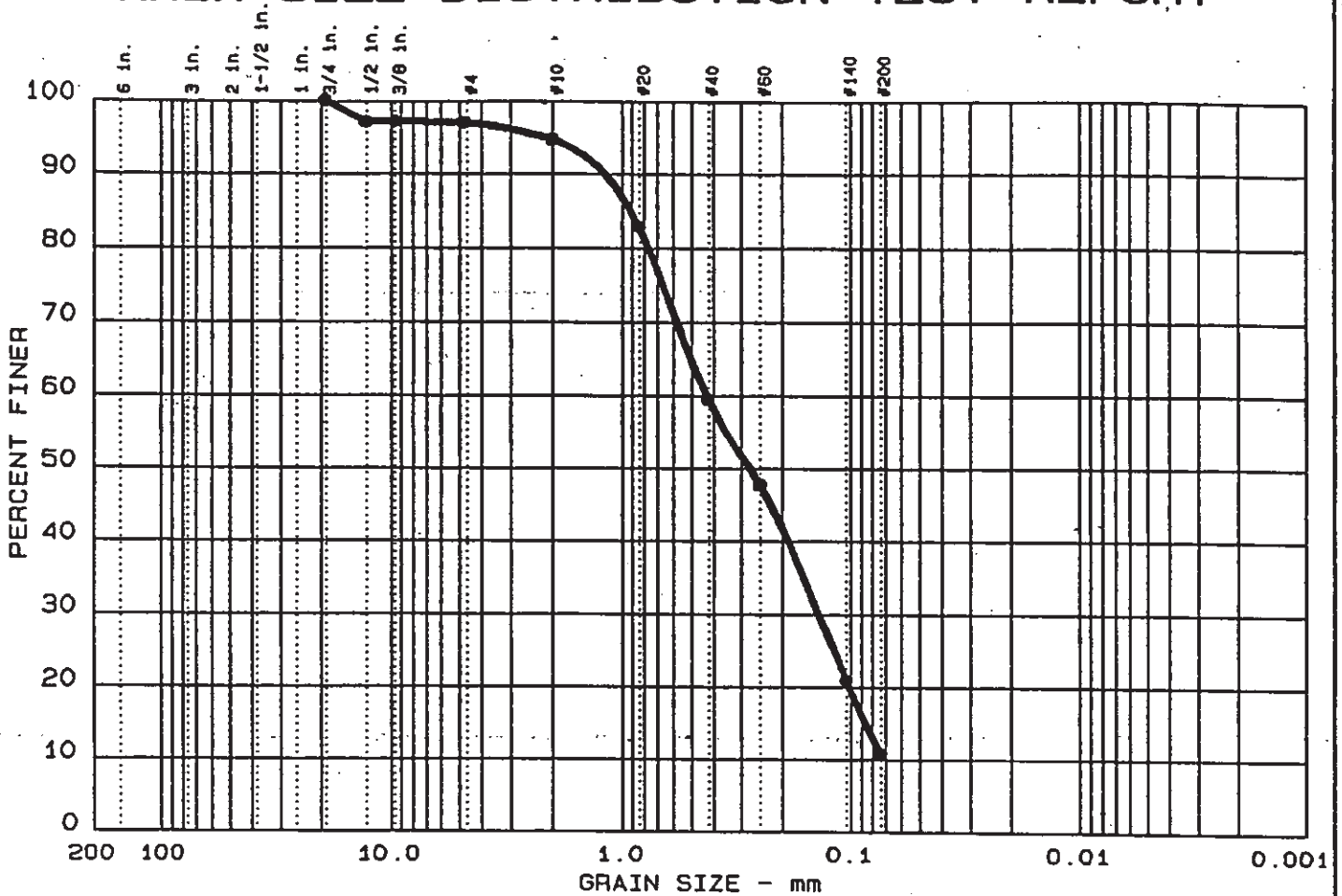
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-79 @ 131.8-133.3 Ft.  
 Date: March 18, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	3.0	86.1	10.9	

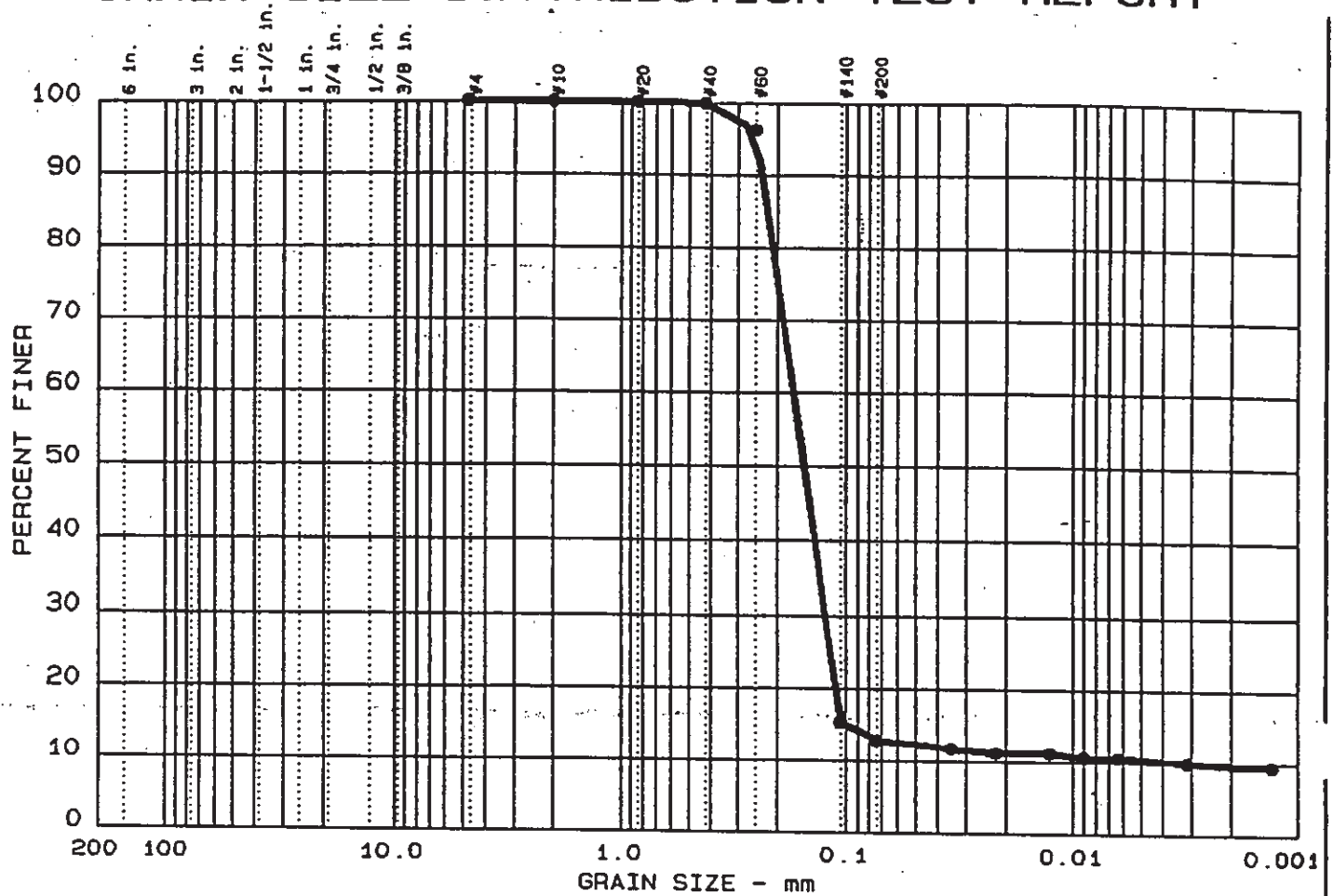
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.91	0.43	0.27	0.139	0.0857			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-80 @ 133.3-134.8 Ft.  
 Date: March 18, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HB*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	87.2	2.5	10.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.22	0.17	0.15	0.123	0.0999	0.0028	32.03	60.9

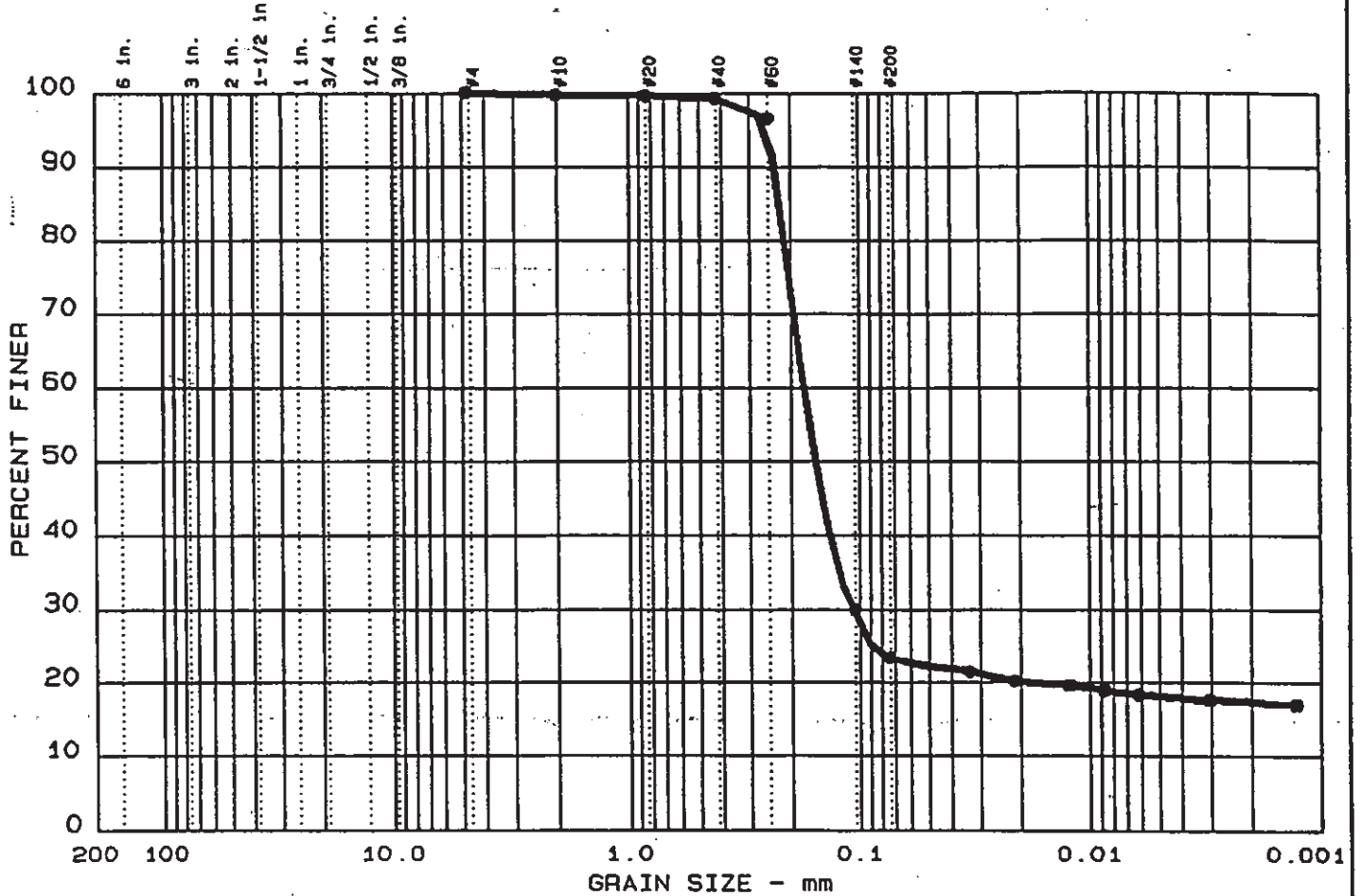
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF. Confirmatory Testing  
 ● Location: FB-3 SS-B1 @ 134.8-136.3 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SC JTM*  
 Reviewed by: *HD*  
 ASTM D422  
 &  
 ASTM D4318

K-TRT-F-00001  
R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	76.6	5.4	18.0

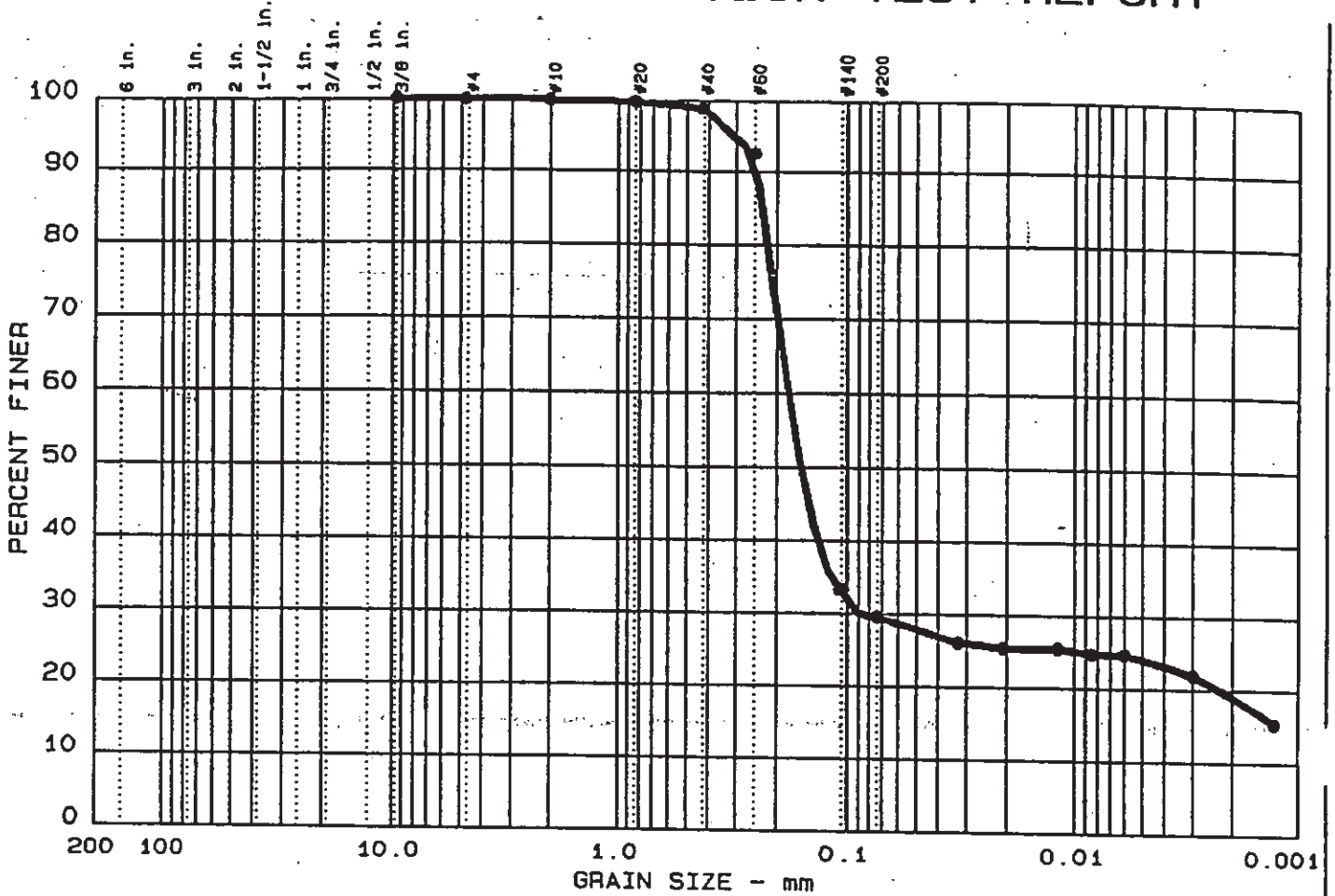
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.22	0.18	0.16	0.105				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-82 @ 136.3-137.8 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SG/ATM*  
 Reviewed by: *HS*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.1	70.4	5.4	24.1

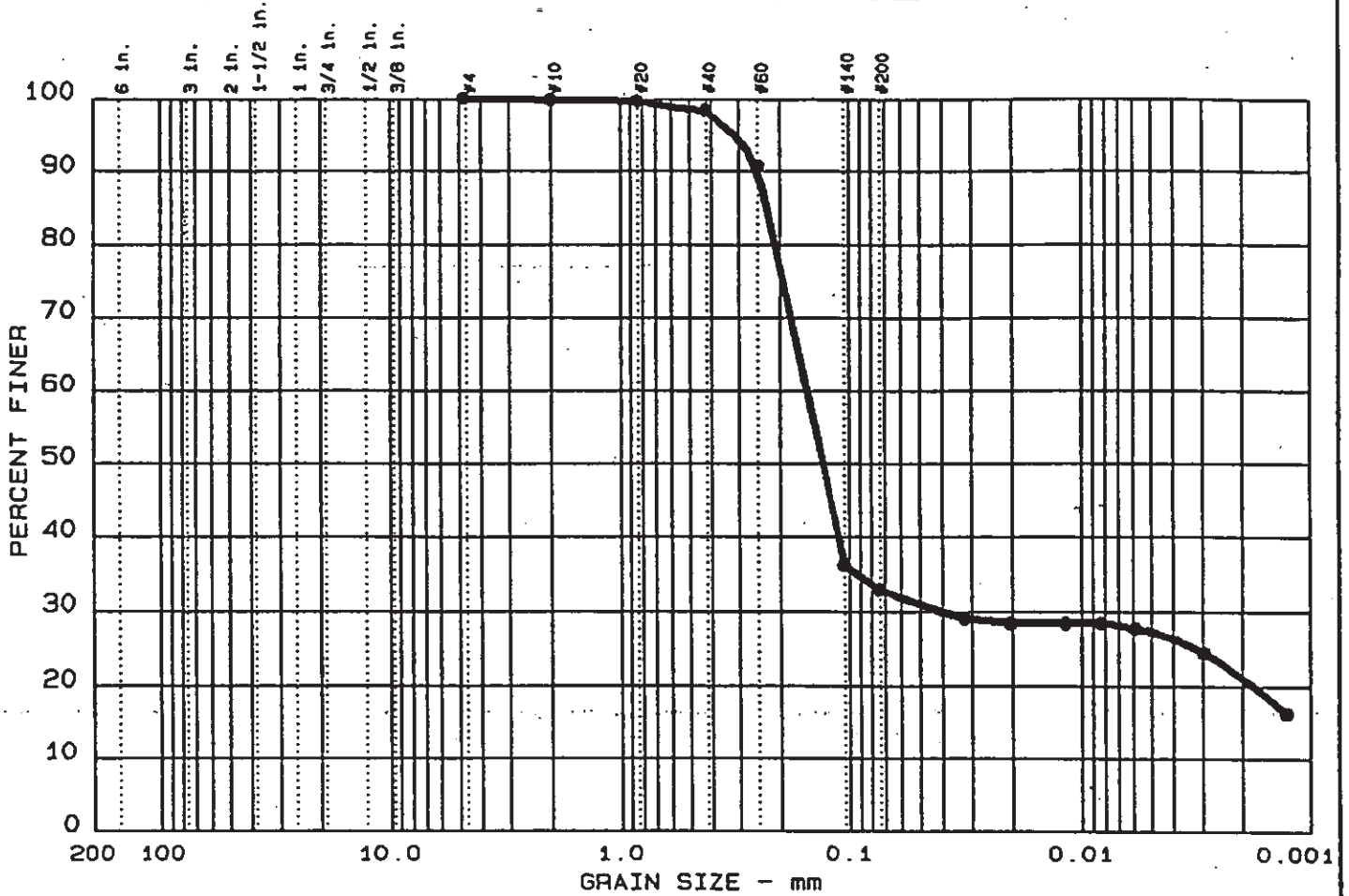
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 49	23	0.23	0.18	0.16	0.090				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-7 (1.8)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-83 @ 138.7-140.2 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SGT JMY*  
 Reviewed by: *HD*  
 ASTM D 422  
 &  
 ASTM D 4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	67.2	5.5	27.3

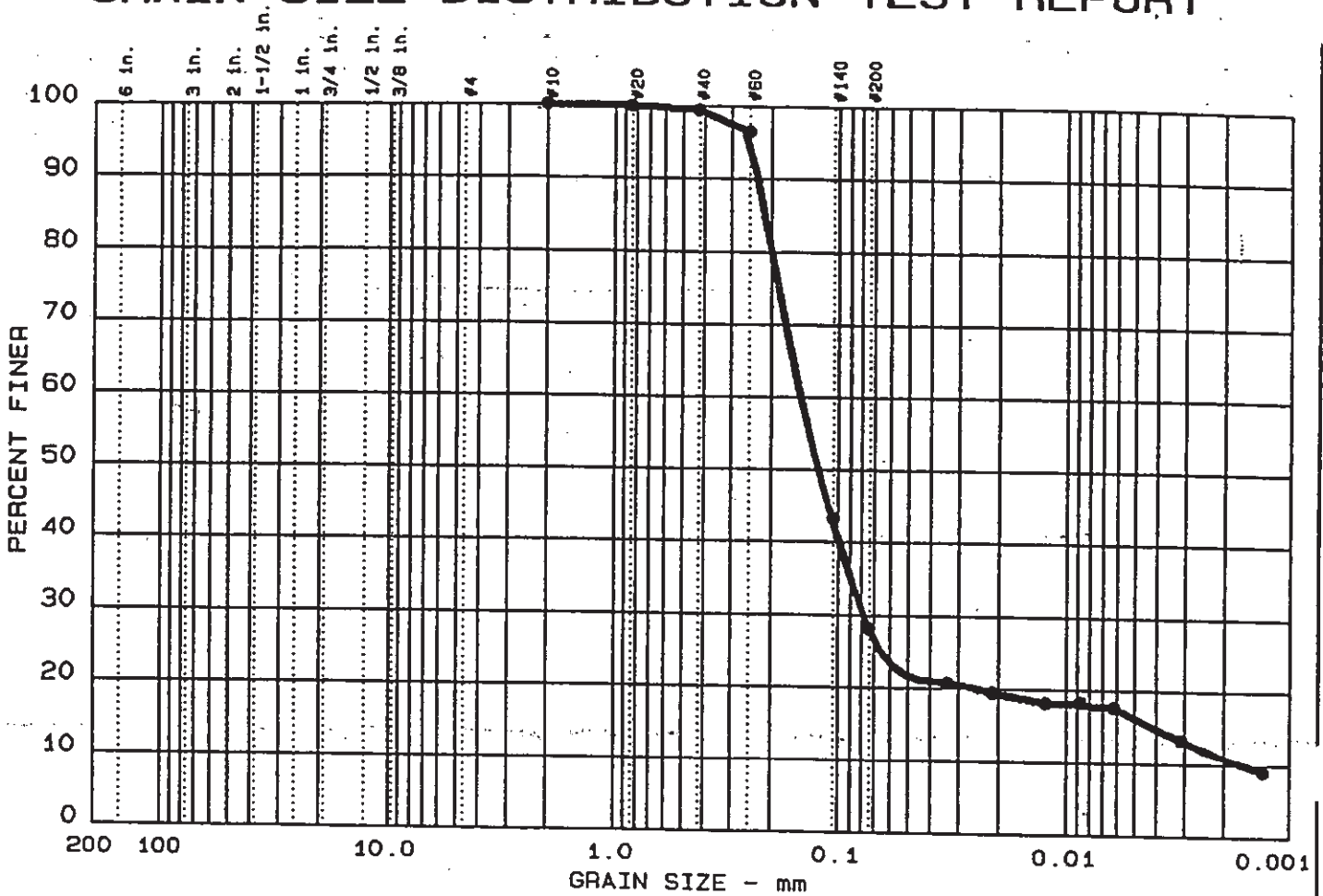
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.23	0.15	0.13	0.041				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-B4 @ 140.2-141.7 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SG/JTM*  
 Reviewed by: *HJ*  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	71.9	11.8	16.3

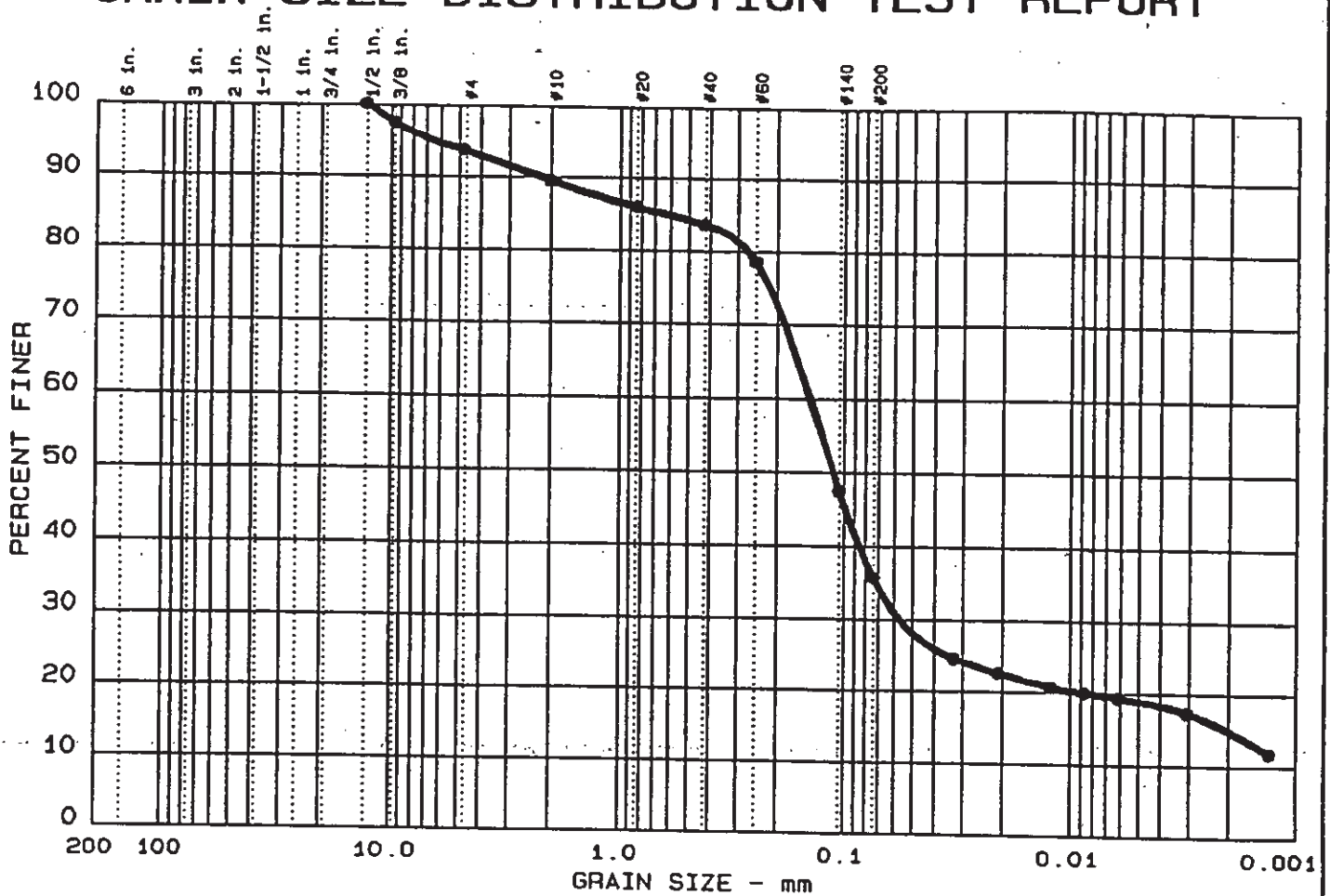
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.21	0.15	0.12	0.079	0.0041	0.0016	25.41	90.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-85 @ 141.7-143.2 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SC + JTM*  
 Reviewed by: *H*  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	6.3	58.1	16.7	18.9

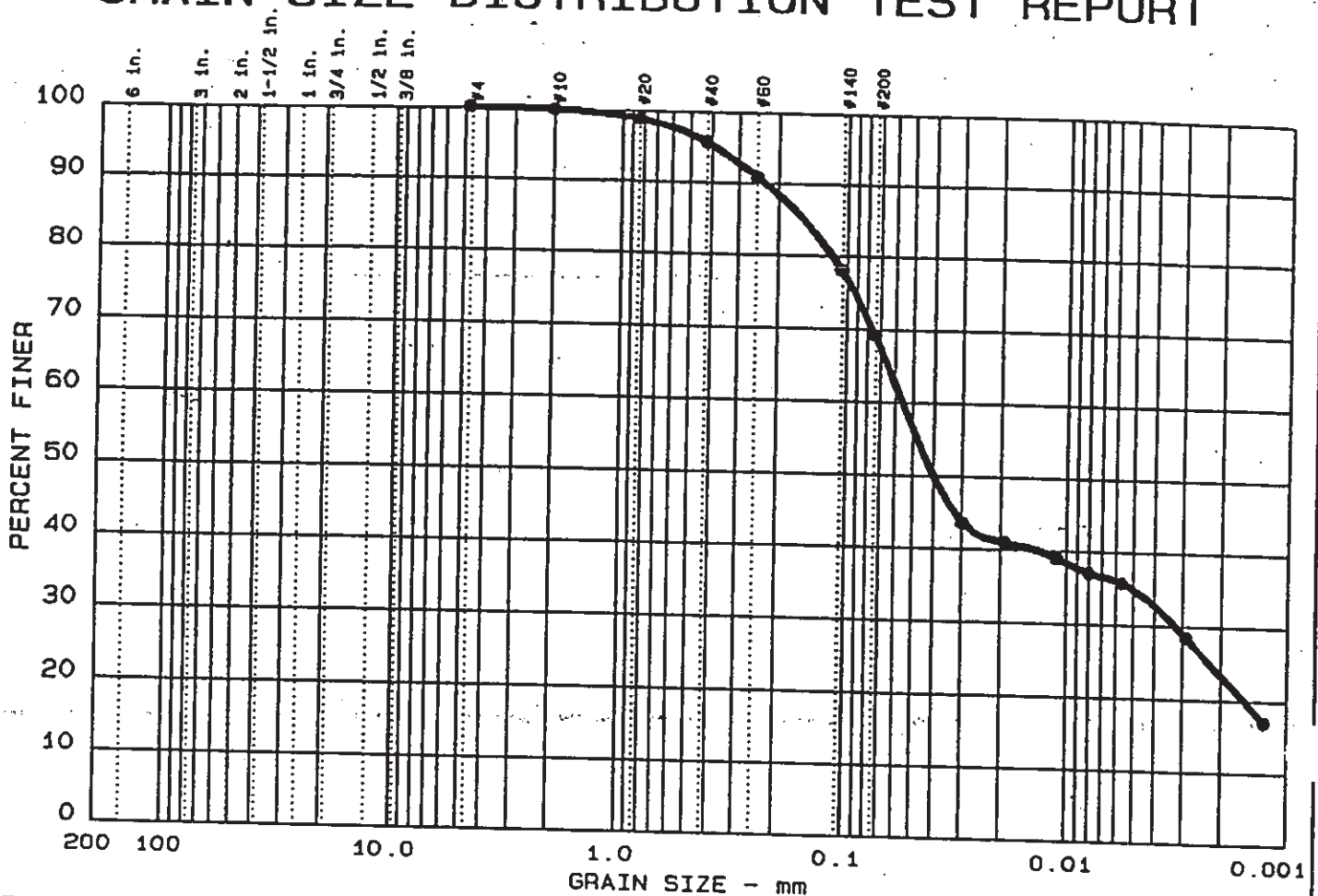
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 49	26	0.59	0.14	0.11	0.057	0.0020			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-7-6 (3.6)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-86 @ 143.2-144.7 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: SC-LJTM  
 Reviewed by: HS  
 ASTM D422  
 &  
 ASTM D 4318  
 Figure No. B-149

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	30.8	34.3	34.9

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.15		0.04	0.003				

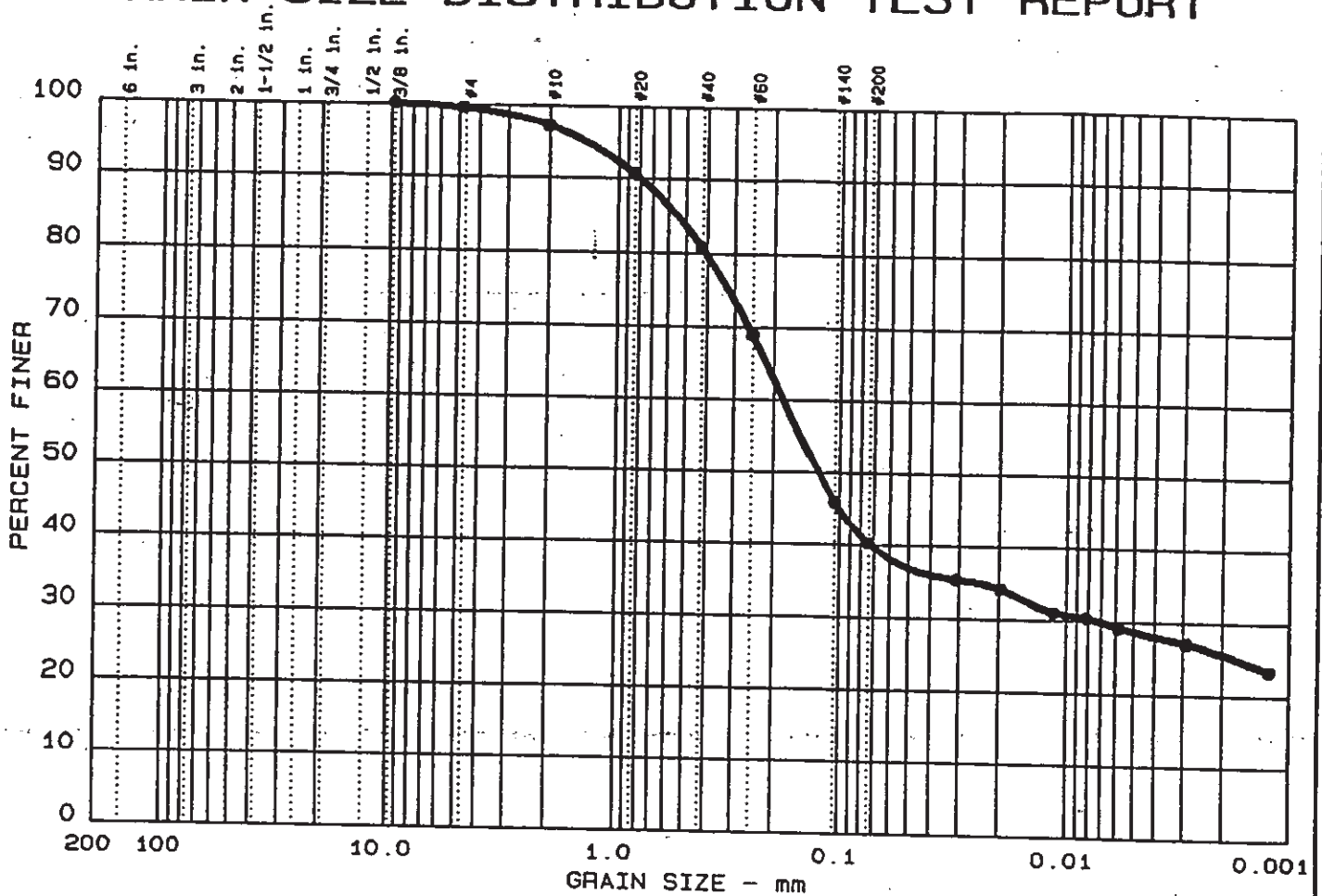
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Silt	ML	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-87 @ 144.7-146.2 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: SCJ/STM  
 Reviewed by: TD  
 ASTM D 422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.6	59.3	11.6	28.5

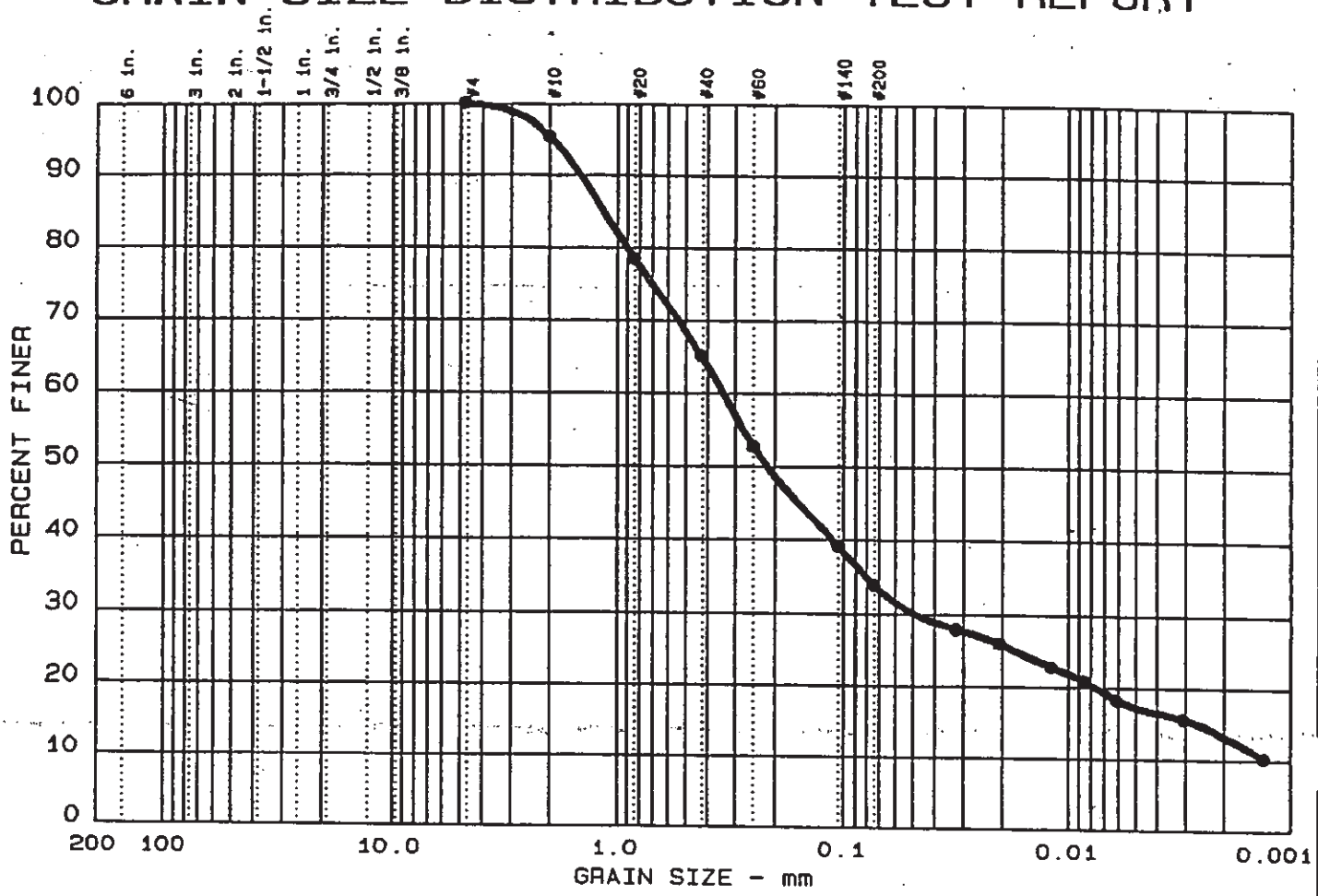
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 63	41	0.54	0.18	0.13	0.007				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-7-6 (9.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-90 @ 149.2-150.7 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SCJ/STM*  
 Reviewed by: *H*  
 ASTM D422  
 ASTM D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	0.0	66.2	16.4	17.4

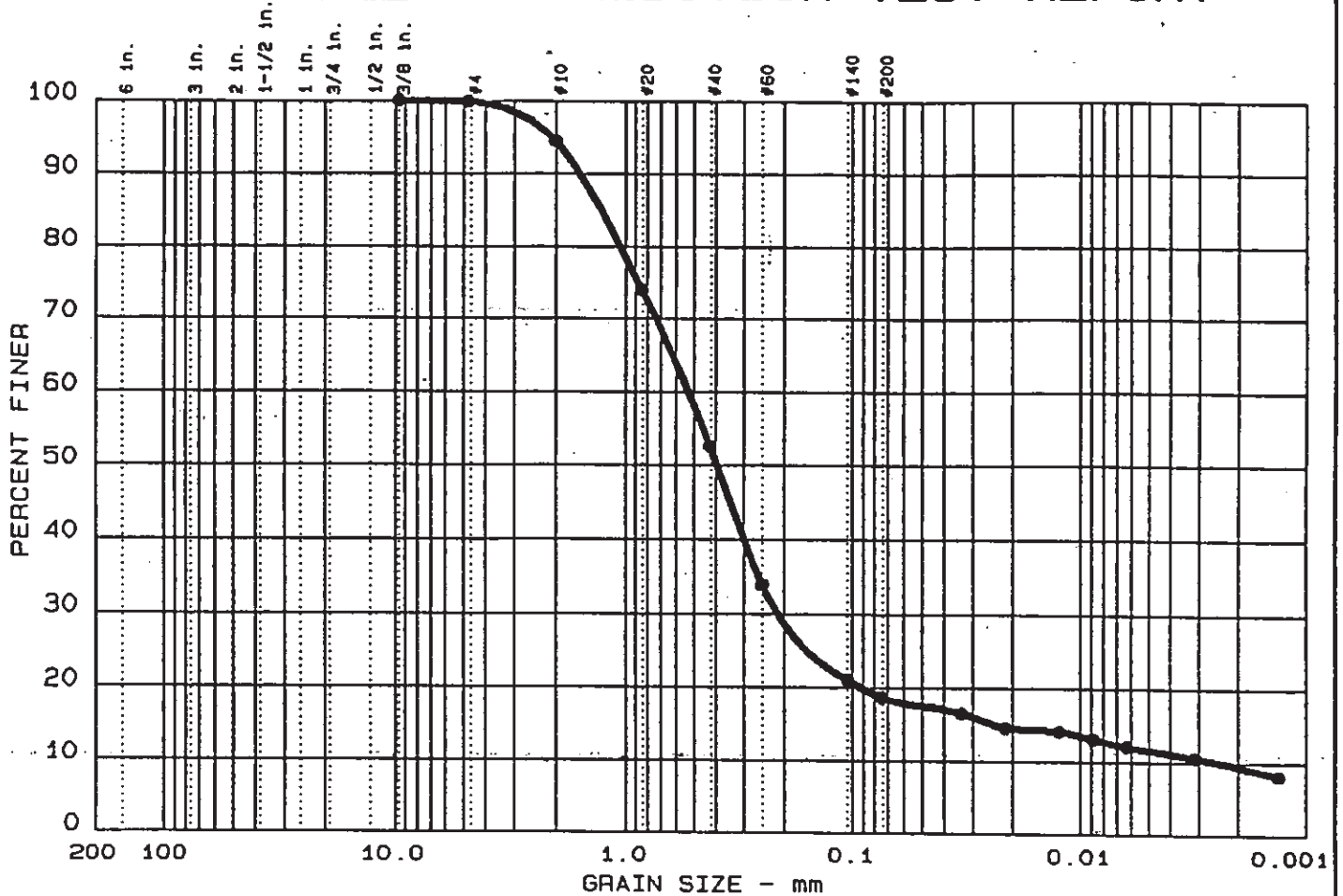
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 52	21	1.14	0.34	0.22	0.050	0.0026			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-7 (2.1)

Project No.: 50161-7-0108 Task 16  
Project: APSF Confirmatory Testing  
● Location: FB-3 SS-92 @ 152.2-153.7 Ft.  
Date: March 20, 1998

Remarks:  
Tested by: *SCJ/DM*  
Reviewed by: *HB*  
ASTM D422  
&  
ASTM D4318  
Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.1	81.2	7.1	11.6

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		1.26	0.52	0.39	0.213	0.0234	0.0024	35.48	213.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-3 SS-93 @ 153.7-154.5 Ft.  
 Date: March 20, 1998

Remarks:  
 Tested by: *SCJ/STM*  
 Reviewed by: *Hb*  
 ASTM D422

Job Number 50161-7-0108 Task 16  
Job Name APSF Confirmatory Testing

1K-TRT-F-00001  
R/O  
Tested by: JTM  
Reviewed by: HJ

### Moisture Content (ASTM D2216)

#### Boring FB-6

Sample Number	Depth(ft.)	Moisture Content (%)
SS-9	19.5	14.9
SS-13	24.5	27.9
SS-19	35	22.8
SS-48	78.5	24.6
SS-49	80	49.2
SS-51	83	68.2
SS-62	99.5	32.8
SS-63	101	28.6
SS-67	107	23.7
SS-68	108.5	18.6
SS-69	110.	28.3
SS-70	111.5	27.6
SS-71	113	33.1
SS-72	114.5	60.1
SS-73	116	30.2
SS-75	119.	18.3
SS-76	120.5	28.6

K-TRT-F-00001  
R/O

Job Number 50161-7-0108 Task 16  
Job Name APSF Confirmatory Testing

Tested by: JTM  
Reviewed by: HJ

Moisture Content (ASTM D2216)

Boring FB-6

Sample Number	Depth(ft.)	Moisture Content (%)
SS-77	122	24.9
SS-78	123.5	23.0
SS-79	125	32.0
SS-80	126.5	22.6
SS-82	129.5	26.1
SS-84	132.5	24.0
SS-89	140	39.3
SS-91	143	32.3
SS-92	144.5	40.4
SS-94	147.5	28.3
SS-98	153.5	32.3
SS-99	155	22.1

K-TRT-F-00001  
R/O

Job Number 50161-7-0108 Task 16  
Job Name APSF Confirmatory Testing

Specific Gravity and Moisture Content  
(ASTM D854) (ASTM D2216)

Boring FB-6

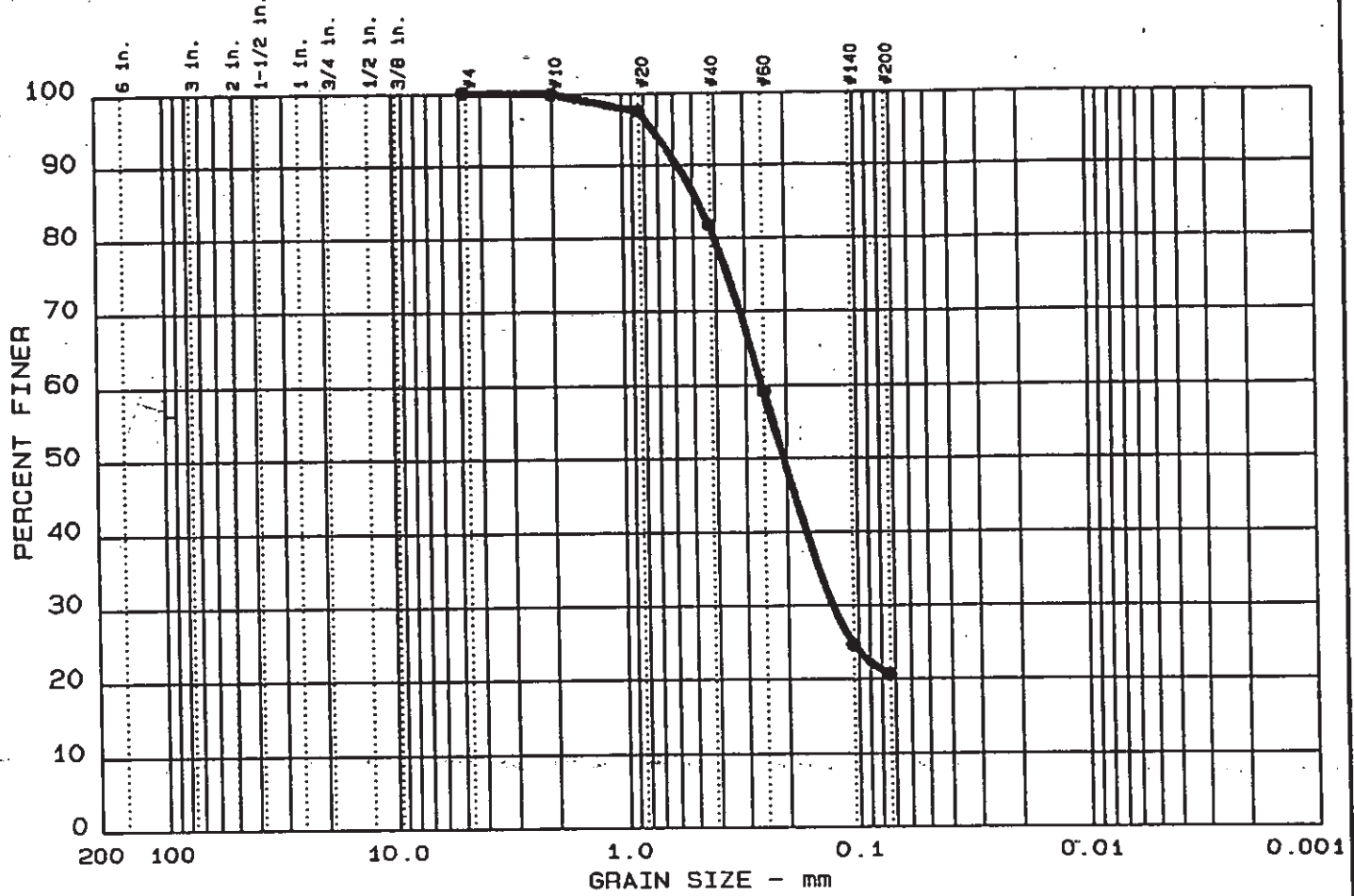
Sample Number	Depth (Ft.)	Moisture Content (%)	Specific Gravity
SS-67	107.0	22.3	2.66
SS-68	108.5	17.4	2.63
SS-69	110.0	25.9	2.66
SS-70	111.5	23.9	2.68
SS-75	119.0	18.8	2.67
SS-76	120.5	30.7	2.71
SS-77	122.0	25.9	2.64
SS-78	123.5	22.5	2.66
SS-79	125.0	32.5	2.68
SS-80	126.5	21.9	2.65
SS-82	129.5	26.4	2.66
SS-84	132.5	23.9	2.64

Tested by: SC

Reviewed by: HJ

B-156

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	79.4	20.6	

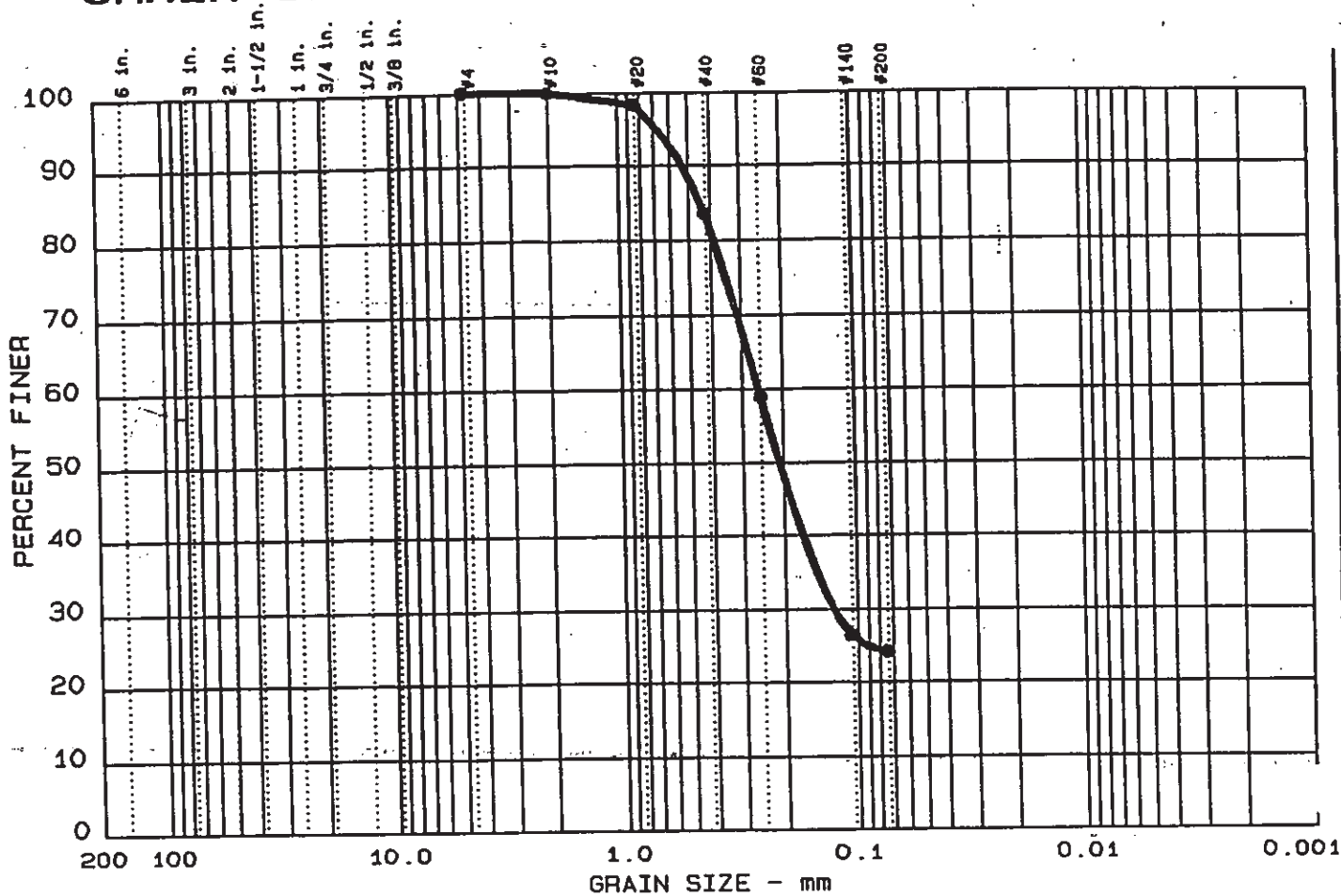
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.47	0.25	0.21	0.129				

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-6 SS-1 @ 8-9.5 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: SC/JTM  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	75.9	24.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.44	0.25	0.21	0.124				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

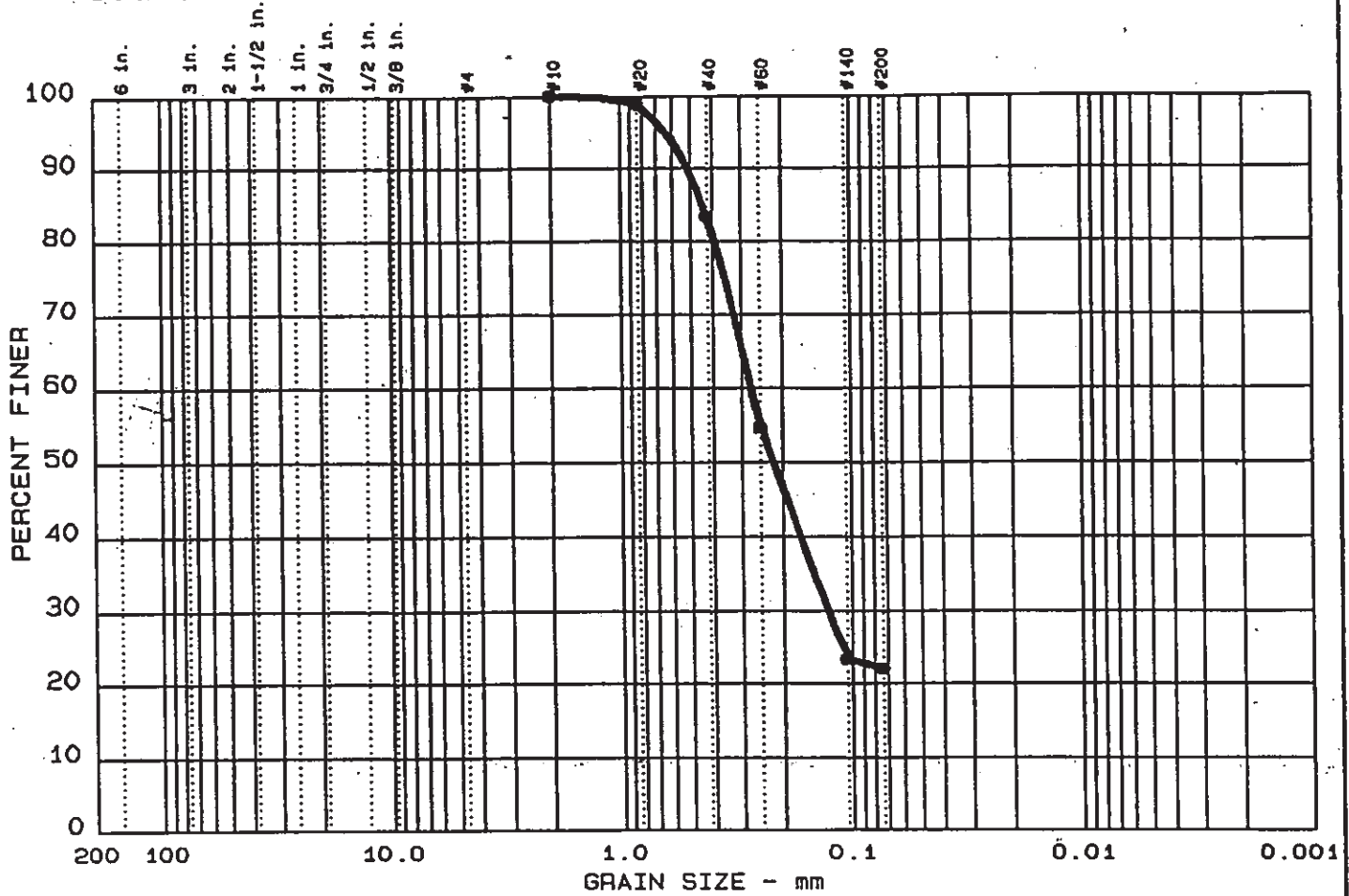
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-2 @ 9.5-10 Ft.

Date: March 24, 1998

Remarks:  
 Tested by: *SC + Jim*  
 Reviewed by: *[Signature]*  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 3	0.0	0.0	77.9	22.1	

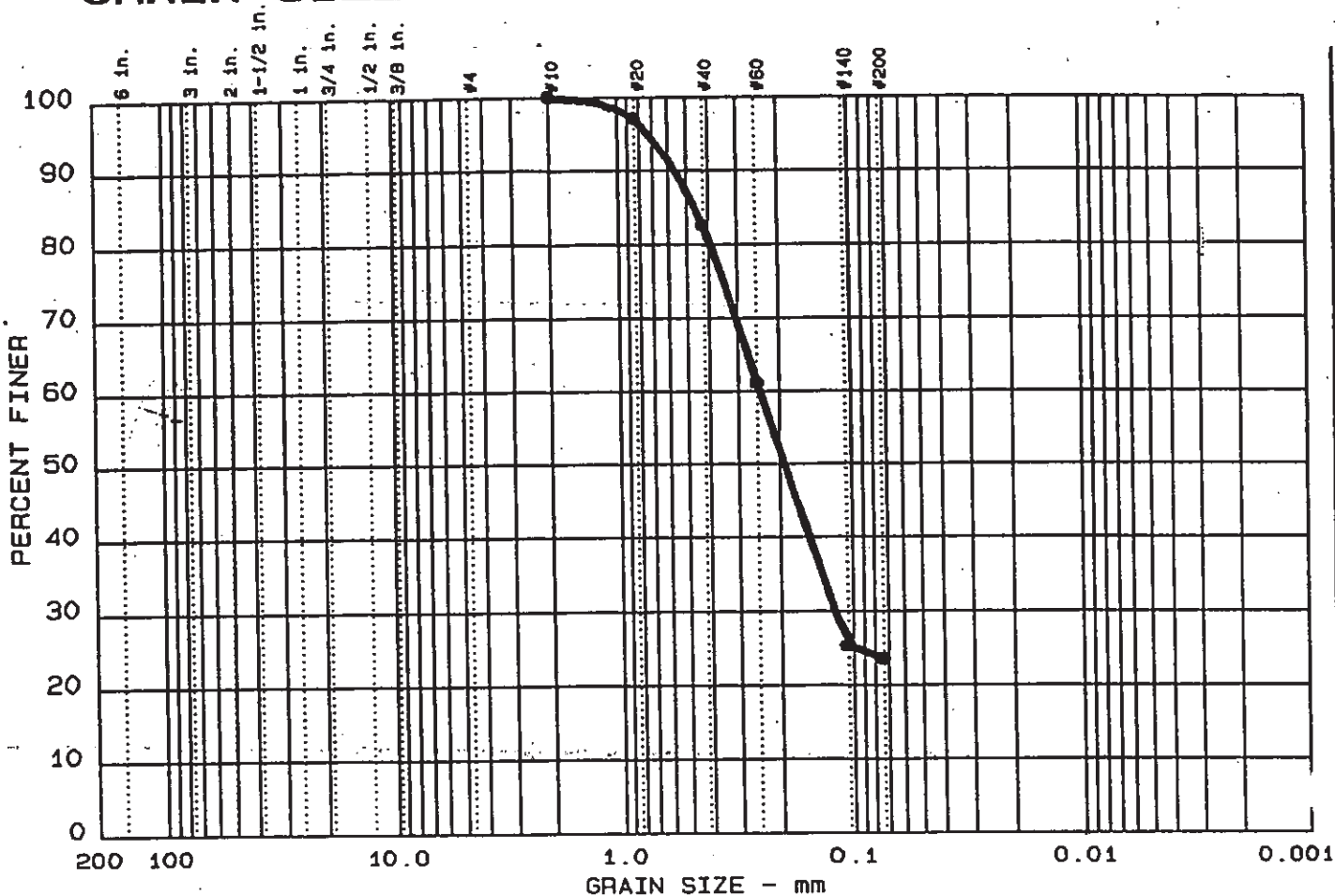
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.44	0.27	0.22	0.126				

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-6 SS-3 @ 11-12.5 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: *SCW/TM*  
 Reviewed by: *HB*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	76.5	23.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.45	0.24	0.19	0.117				

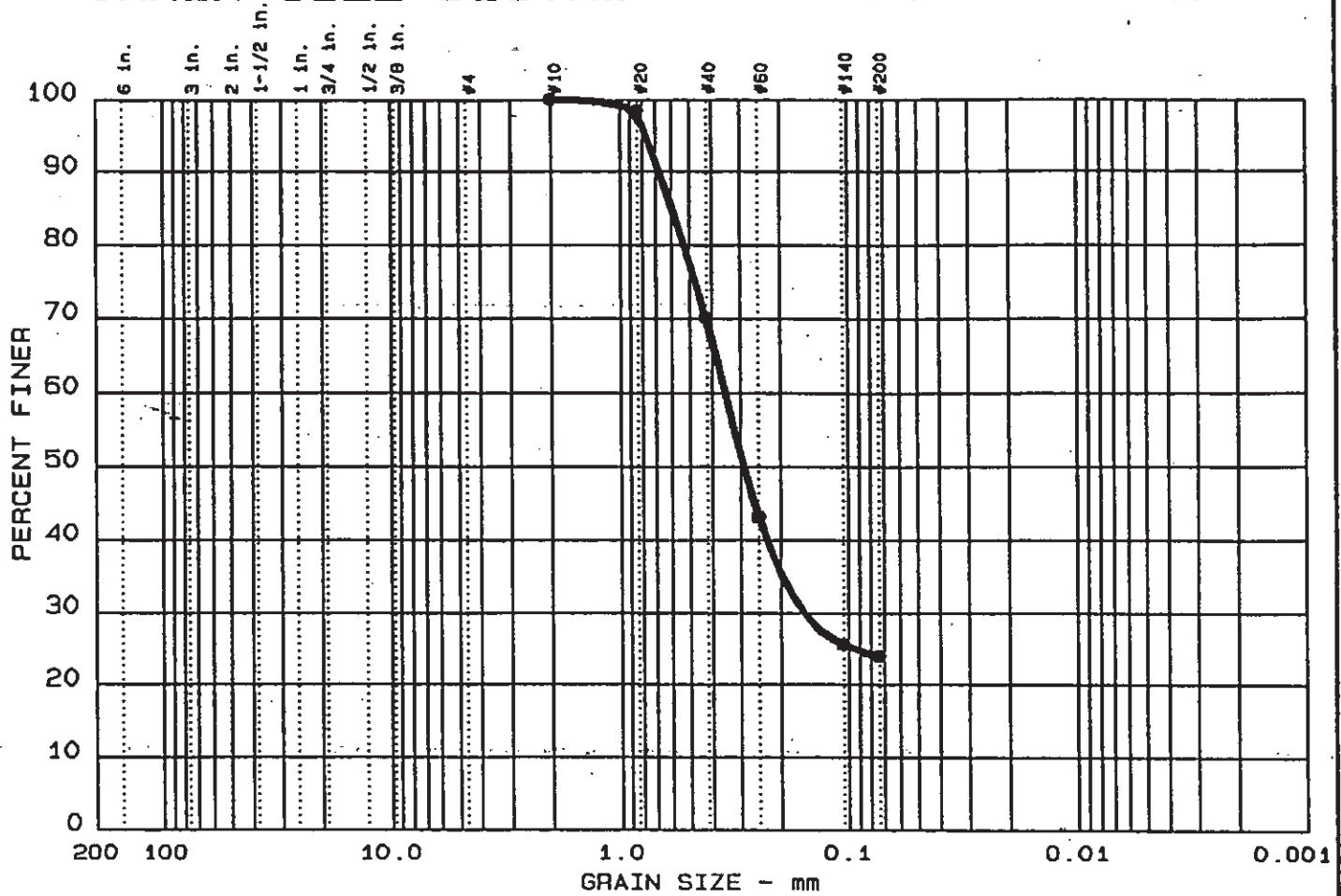
MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
Project: APSF Confirmatory Testing  
● Location: - FB-6 SS-4 @ 12.5-14 Ft.

Remarks:  
Tested by: SC + JTM  
Reviewed by: HO  
ASTM D422

Date: March 24, 1998

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	76.1	23.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.59	0.35	0.29	0.157				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-5 @ 14-15.5 Ft.

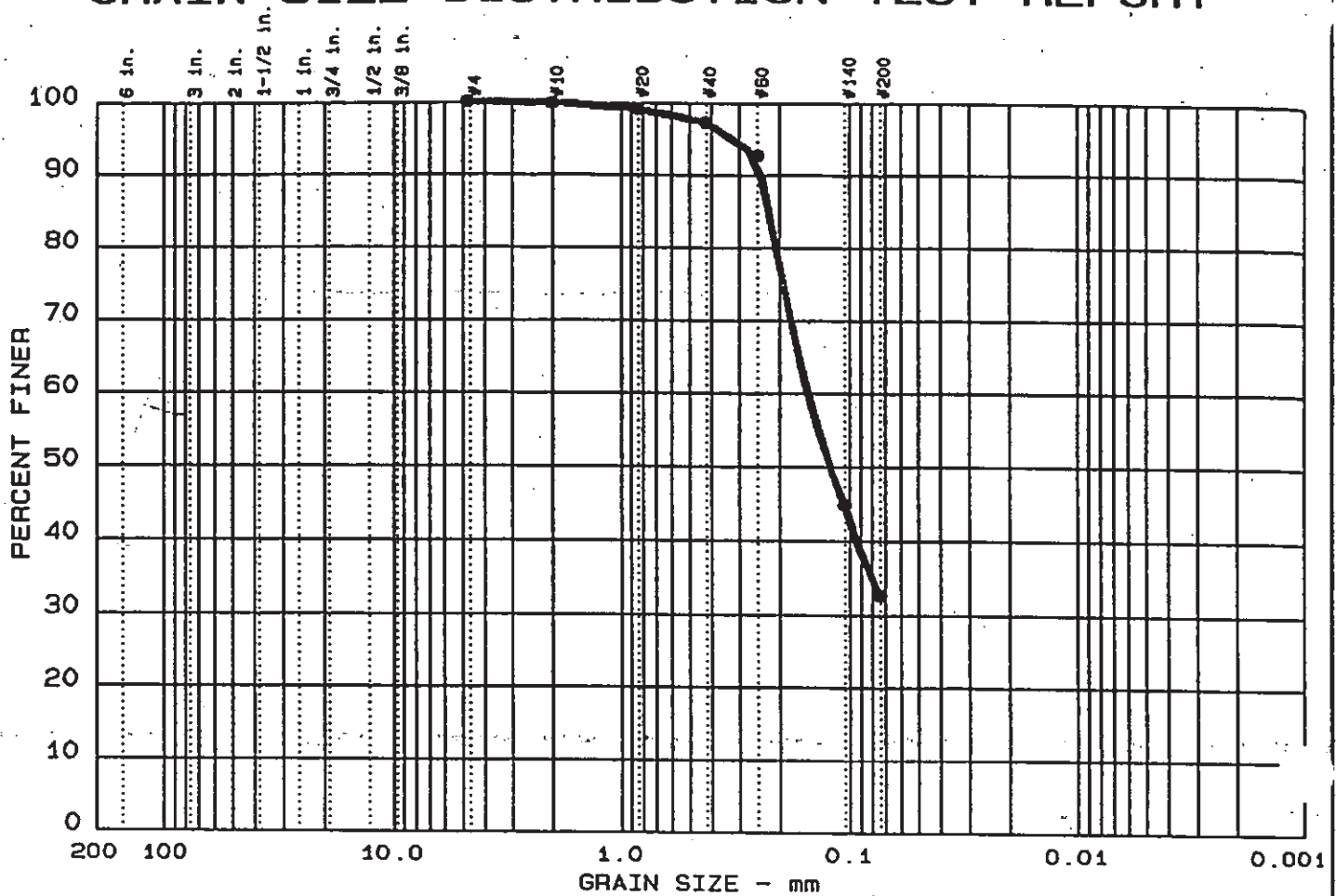
Date: March 24, 1998

Remarks:  
 Tested by: *SC + JTM*  
 Reviewed by: *HT*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. *B-161*

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	67.4	32.6	

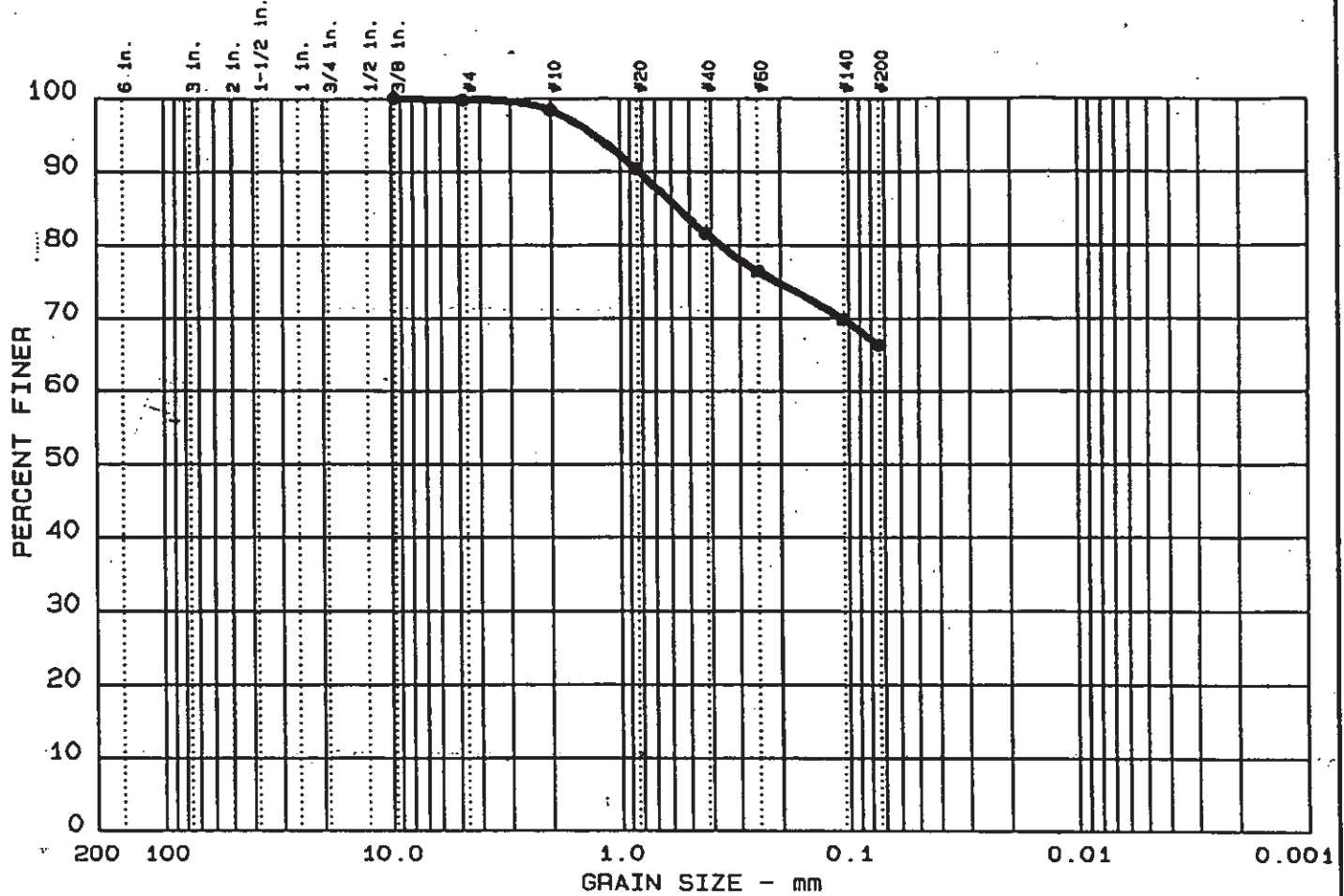
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.22	0.15	0.12					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-6 @ 15.5-17 Ft  
 Date: March 24, 1998

Remarks:  
 Tested by: *SC & JTM*  
 Reviewed by: *H*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.3	33.4	66.3	

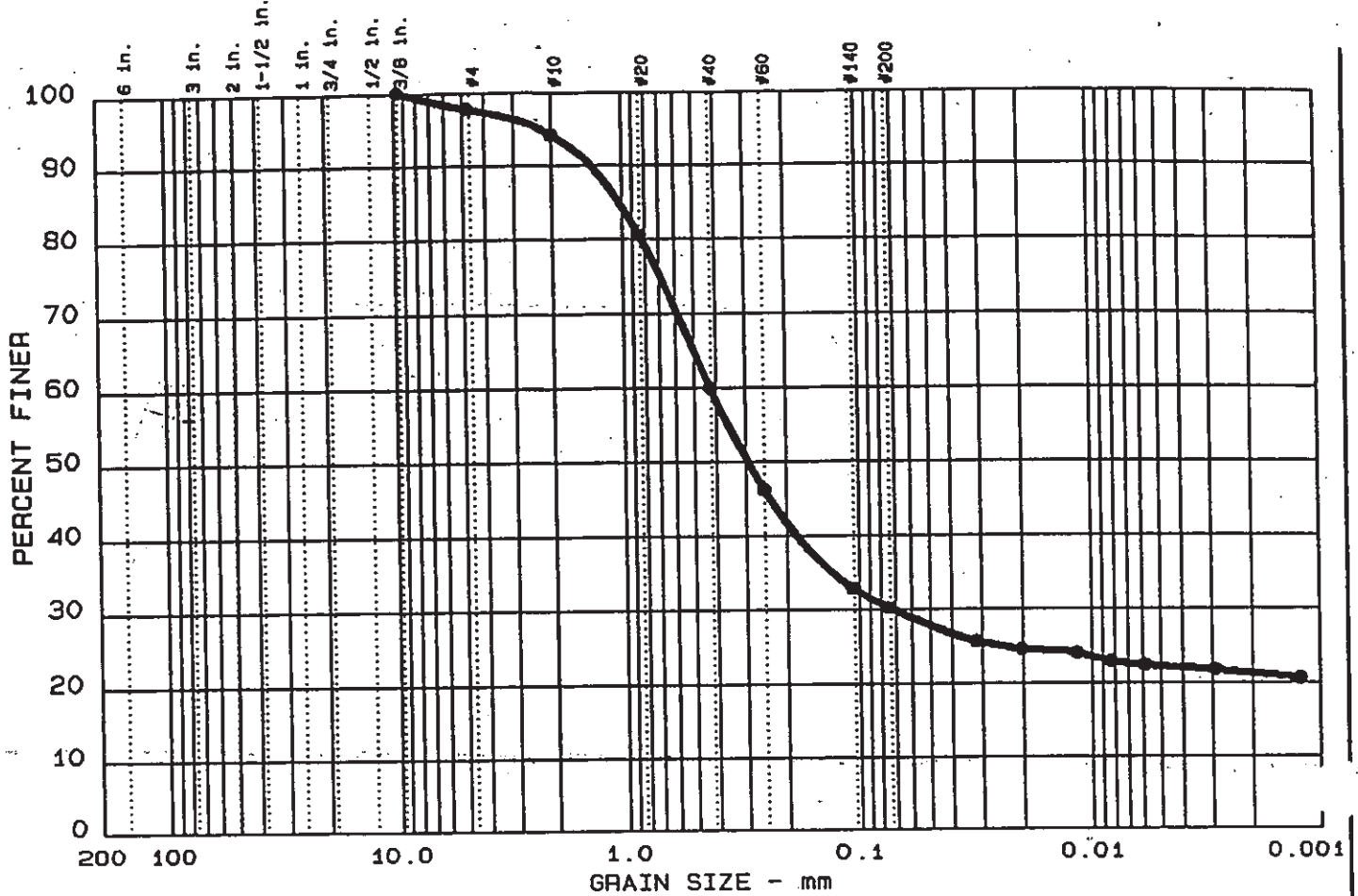
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.55							

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Sandy Silt	ML	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-8 @ 18.5-20 Ft.  
  
 Date: March 24, 1998

Remarks:  
 Tested by: *S. J. Tm*  
 Reviewed by: *HS*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	2.3	57.6	7.8	22.3

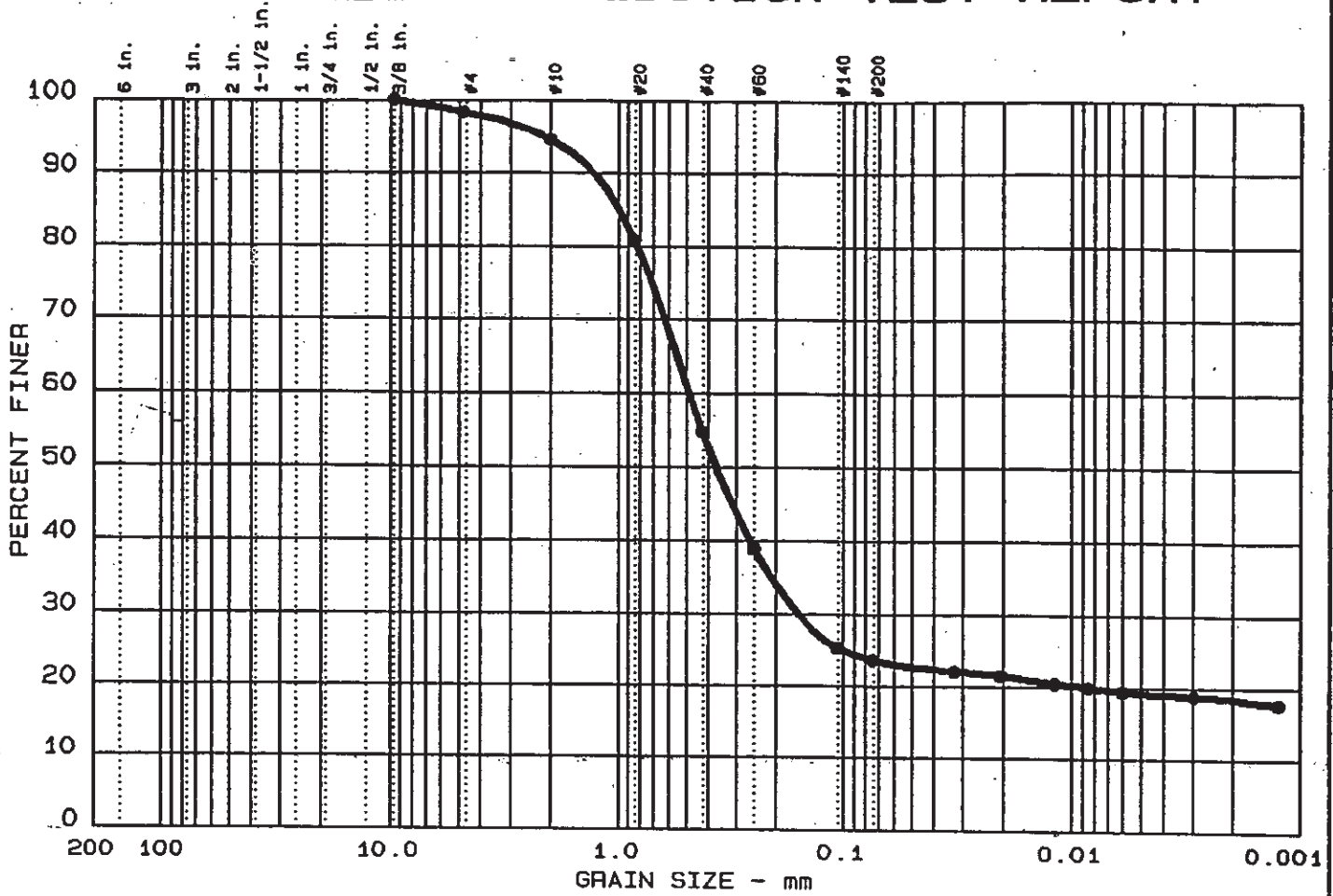
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 48	25	1.01	0.42	0.29	0.072				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Clayey Sand	SC	A-2-7 (2.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-9 @ 20-21.5 Ft.  
  
 Date: March 27, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422  
 &  
 ASTM D4318  
  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



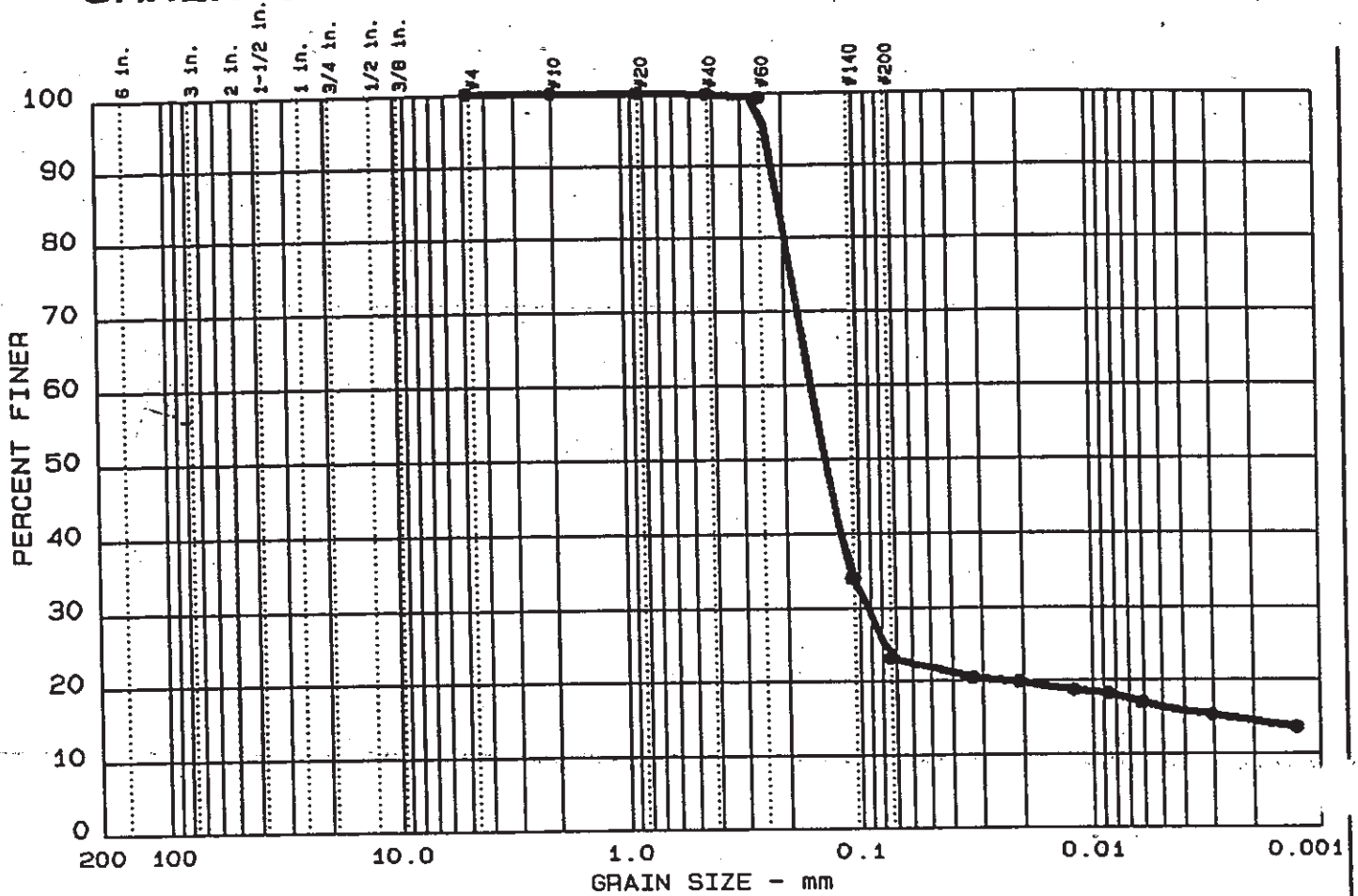
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	1.7	74.6	4.4	19.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.98	0.48	0.37	0.158				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-5 SS-10 @ 21.5-23 Ft.  Date: March 24, 1998	Remarks: Tested by: <i>SCJ/TM</i> Reviewed by: <i>HT</i> ASTM D422
<b>GRAIN SIZE DISTRIBUTION TEST REPORT</b> <b>LAW ENGINEERING, INC.</b>	Figure No. <i>B-165</i>

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	76.8	6.8	16.4

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.21	0.15	0.14	0.092	0.0027			

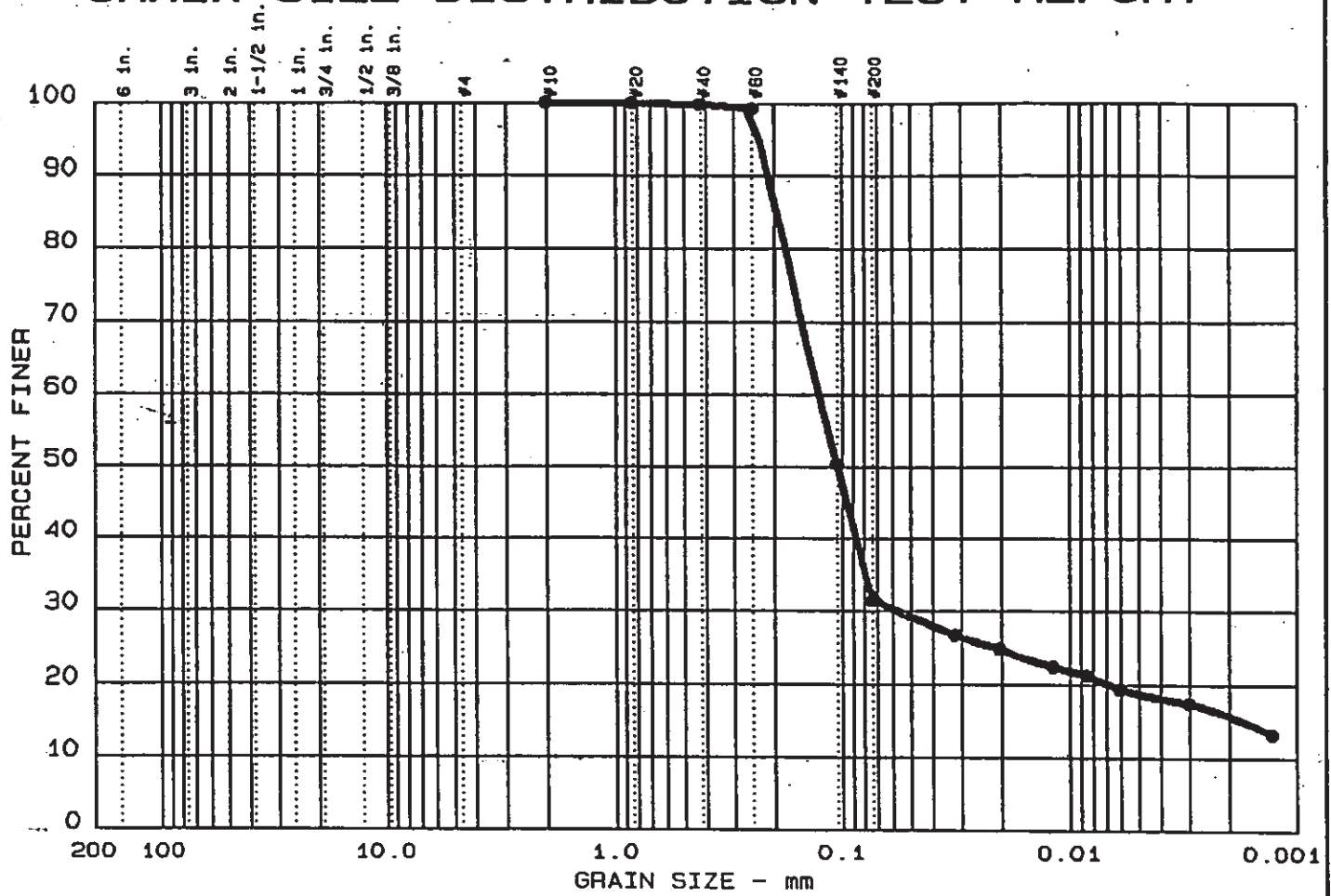
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-11 @ 23-24.5 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D 422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	58.8	12.5	18.7

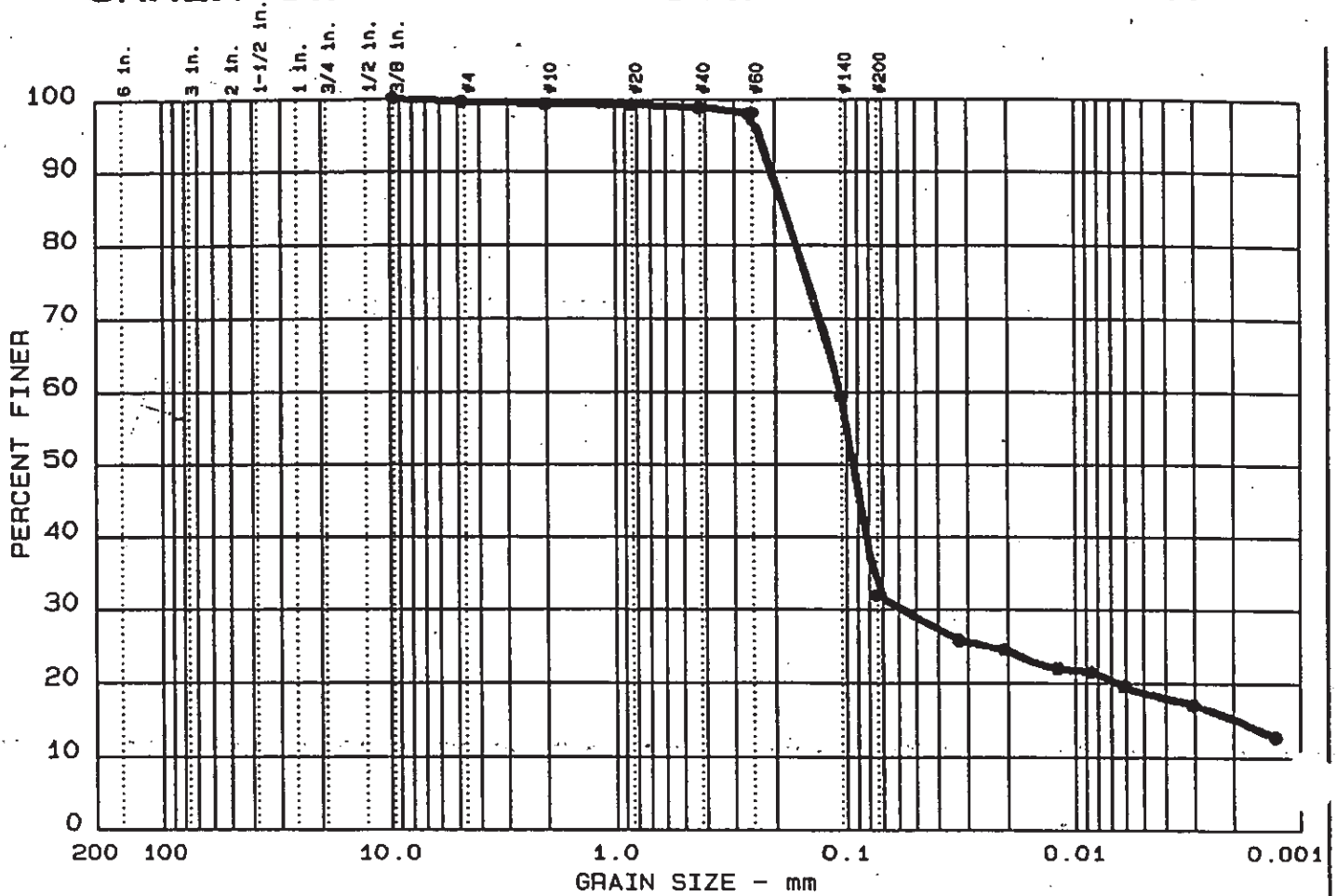
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.19	0.13	0.10	0.059	0.0017			

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-12 @ 24.5-26 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: JHJ  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.5	67.7	13.1	18.7

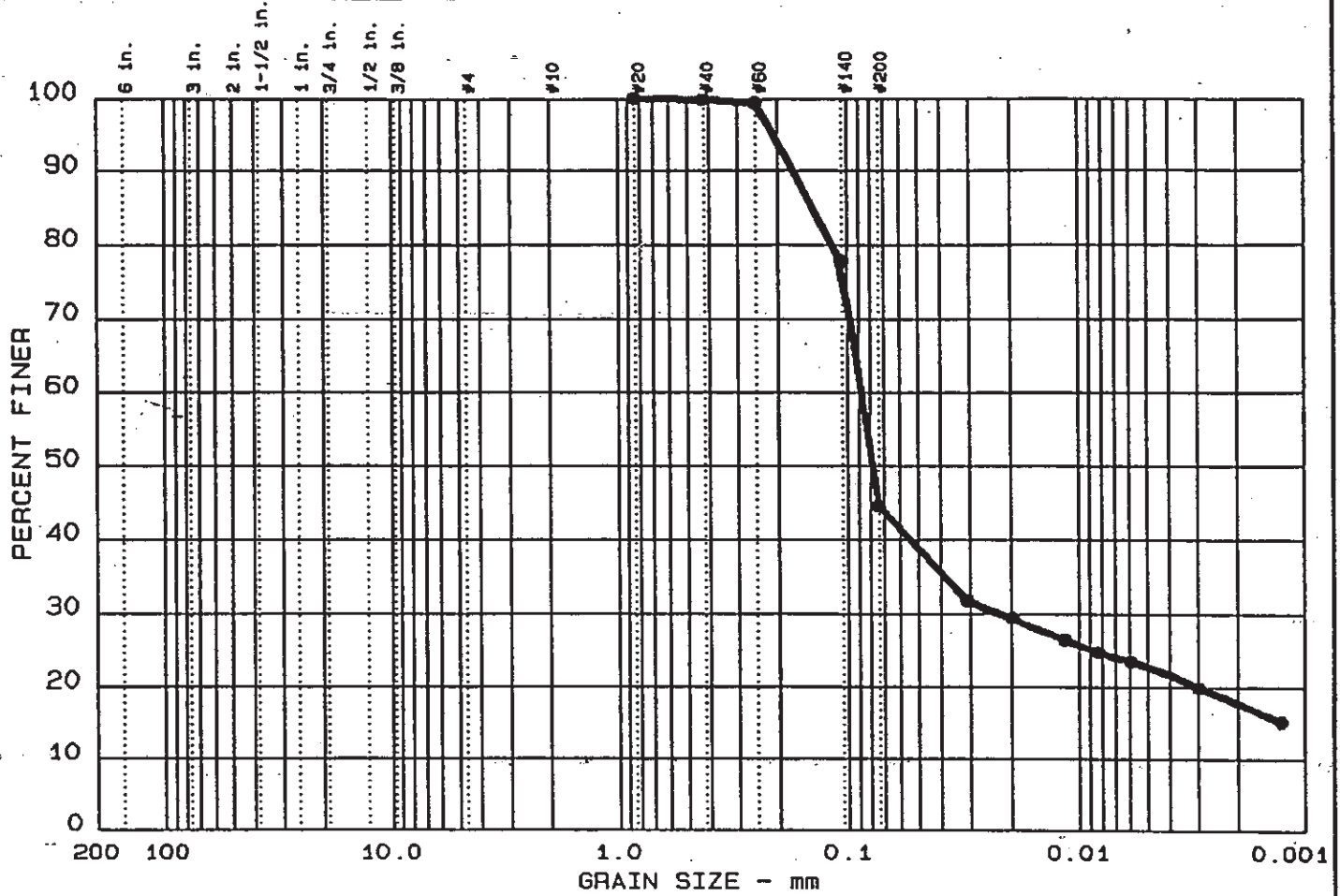
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 35	10	0.18	0.11	0.09	0.057	0.0019			

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-13 @ 26-27.5 Ft.  
 Date: March 27, 1998

Remarks:  
 Tested by: SC + JTM  
 Reviewed by: HD  
 ASTM D422  
 &  
 ASTM D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	55.6	21.6	22.8

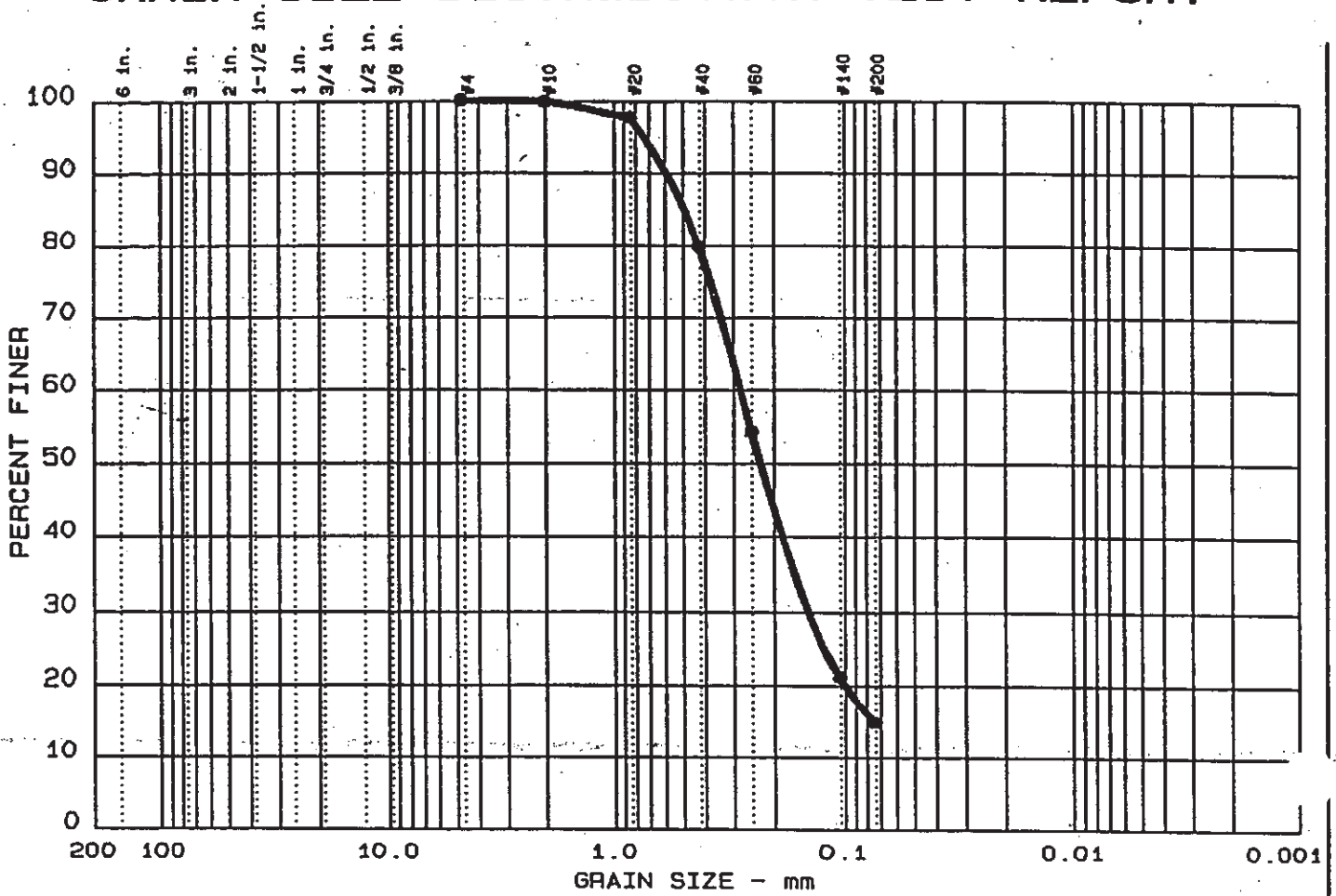
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.14	0.09	0.08	0.023				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Purple Silt Sand	SM	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-14 @ 27.5-29 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	85.0	15.0	

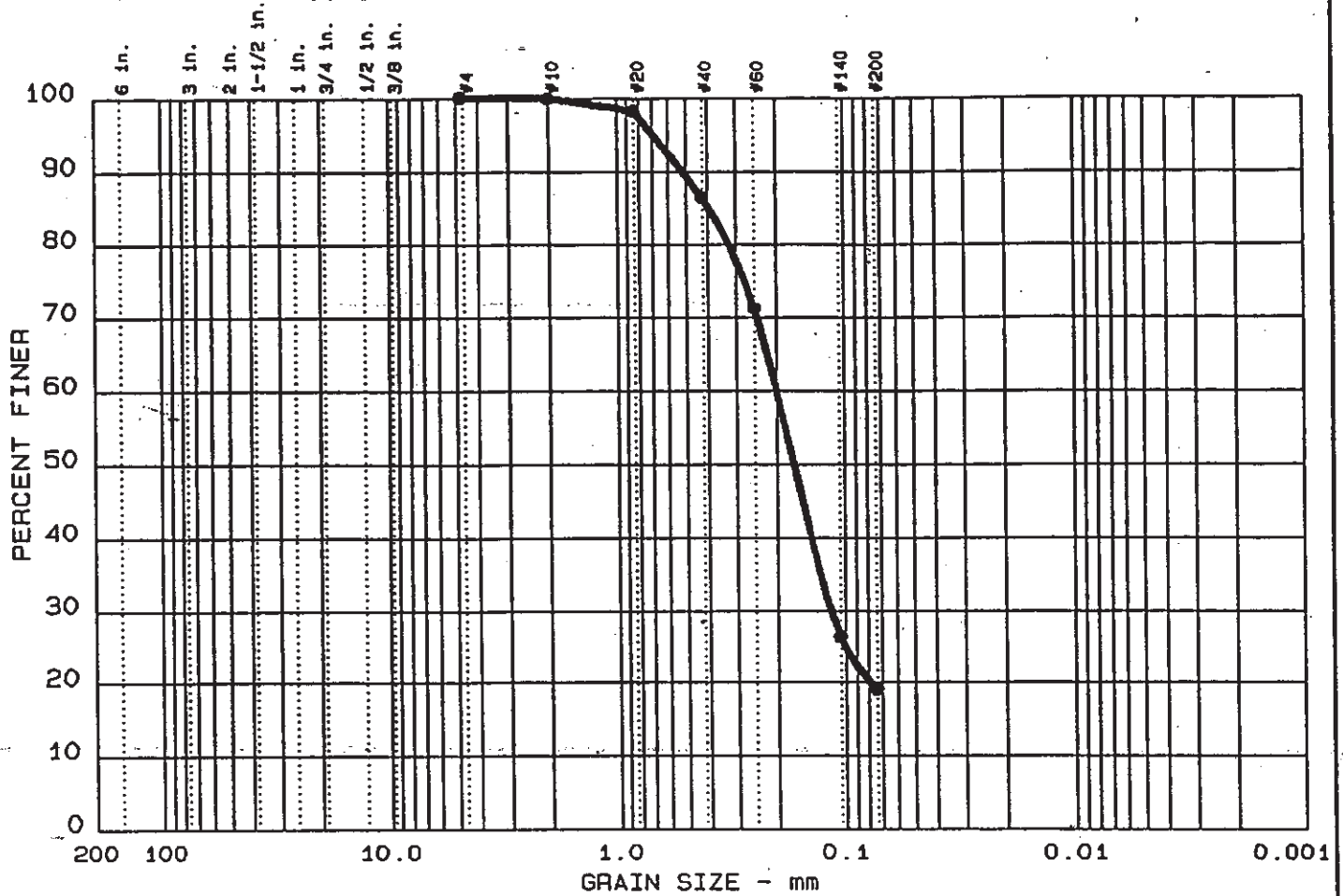
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.48	0.28	0.23	0.143	0.0740			

MATERIAL DESCRIPTION	USCS	AASHTO
● Red & Tan brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-15 @ 29-30.5 Ft.  
 Date: +

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	81.0	19.0	

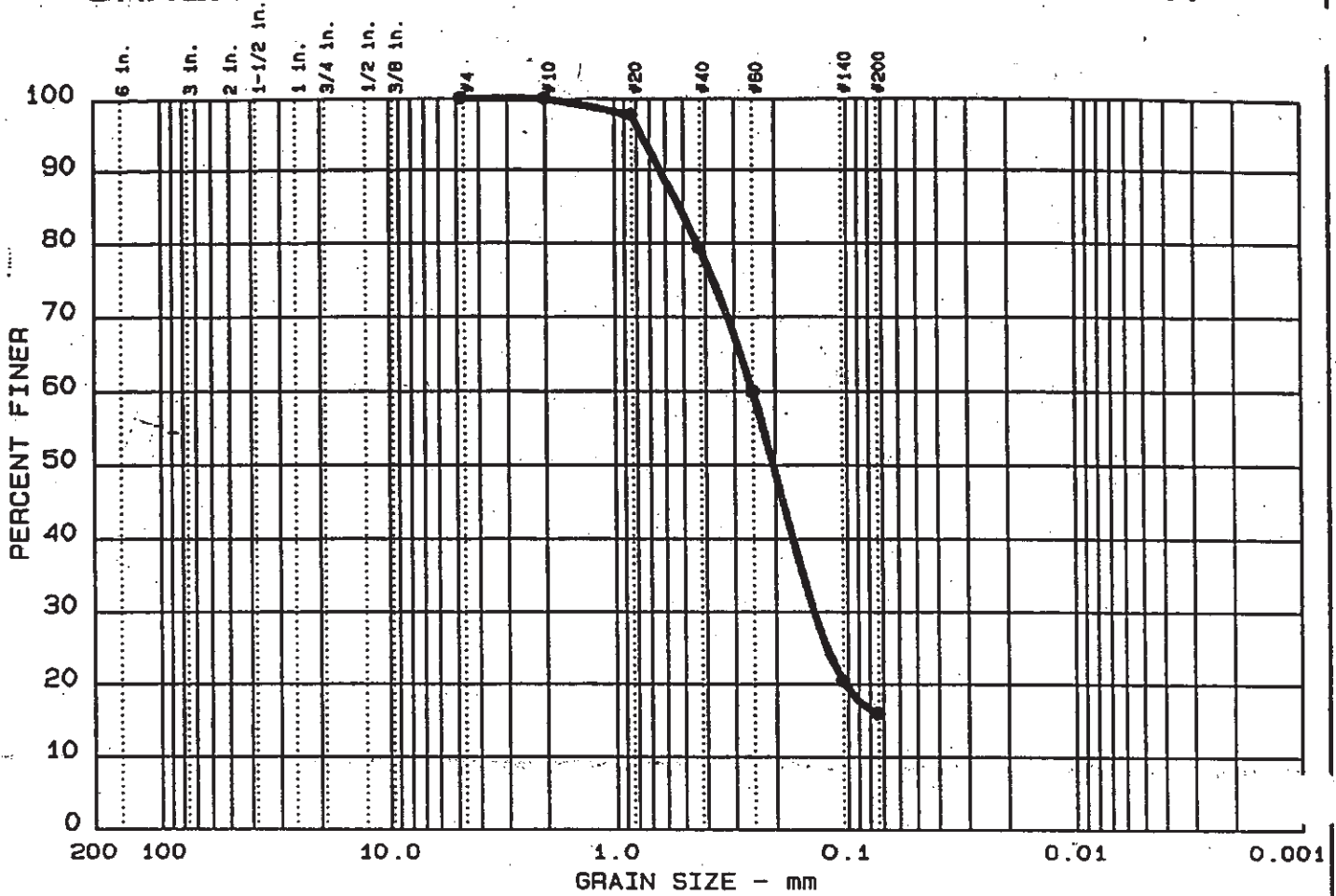
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.39	0.20	0.17	0.115				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-16 @ 30.5-32 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: *SCJ/TM*  
 Reviewed by: *HS*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	84.0	16.0	

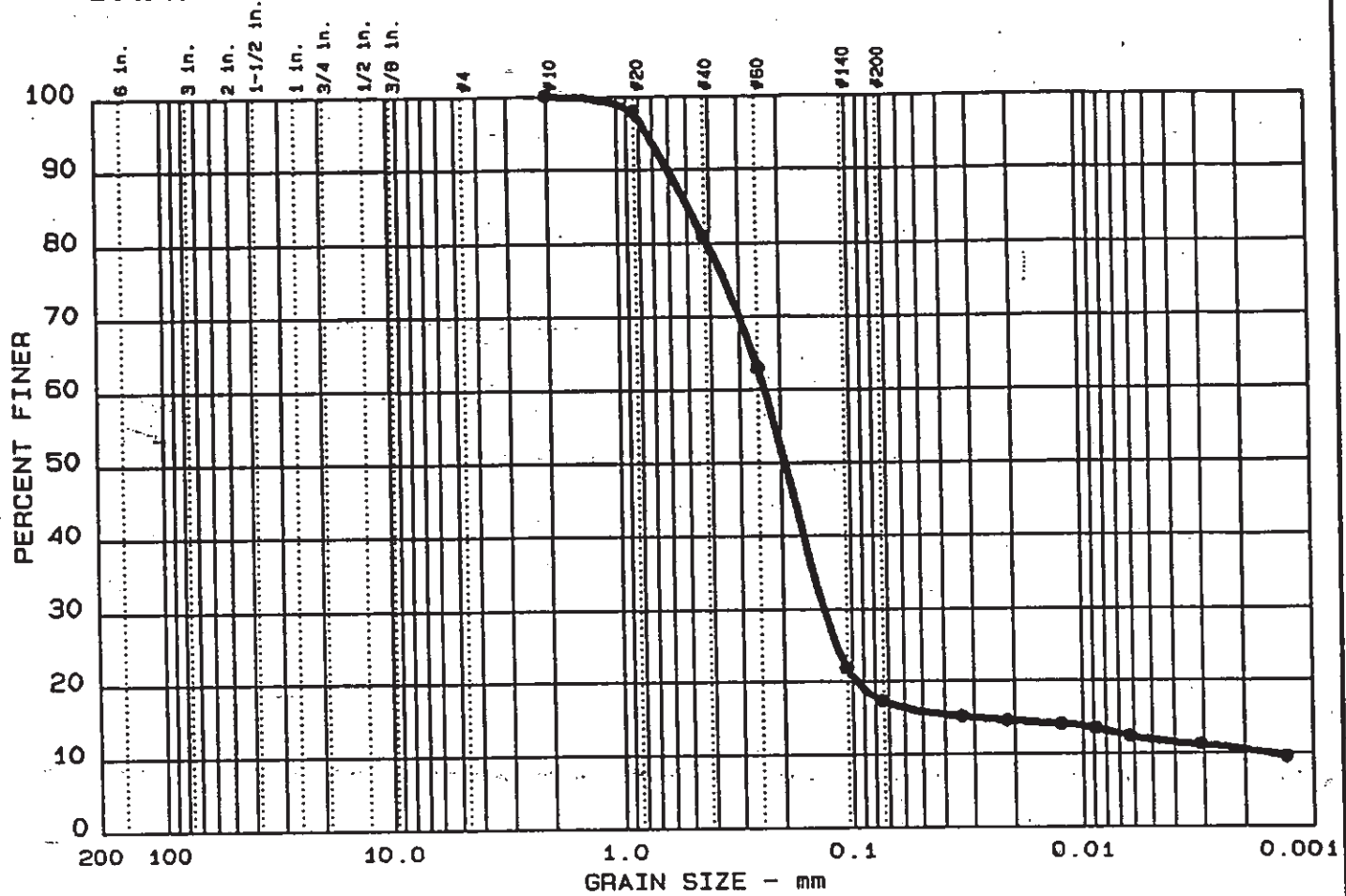
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.51	0.25	0.20	0.137				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-17 @ 32-33.5 Ft.  
  
 Date: March 24, 1998

Remarks:  
 Tested by: *SCJ/EM*  
 Reviewed by: *H*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 16	0.0	0.0	82.6	5.5	11.9

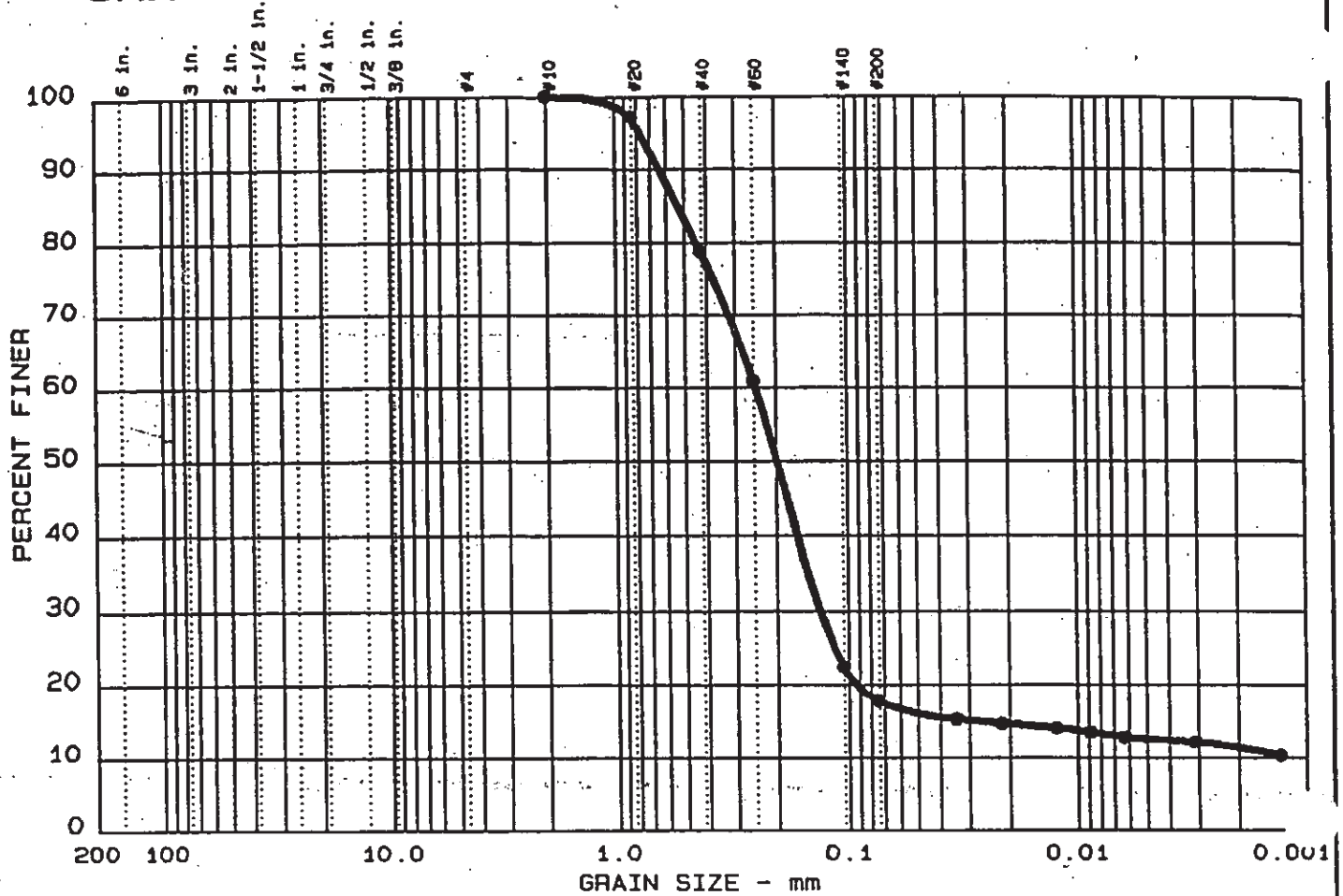
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
•		0.49	0.23	0.19	0.132	0.0265	0.0015	48.31	153.5

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown & Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-6 SS-18 @ 33.5-35 Ft.  
 Date: March 24, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: *[Signature]*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	82.2	5.3	12.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 35	12	0.52	0.24	0.20	0.131	0.0265			

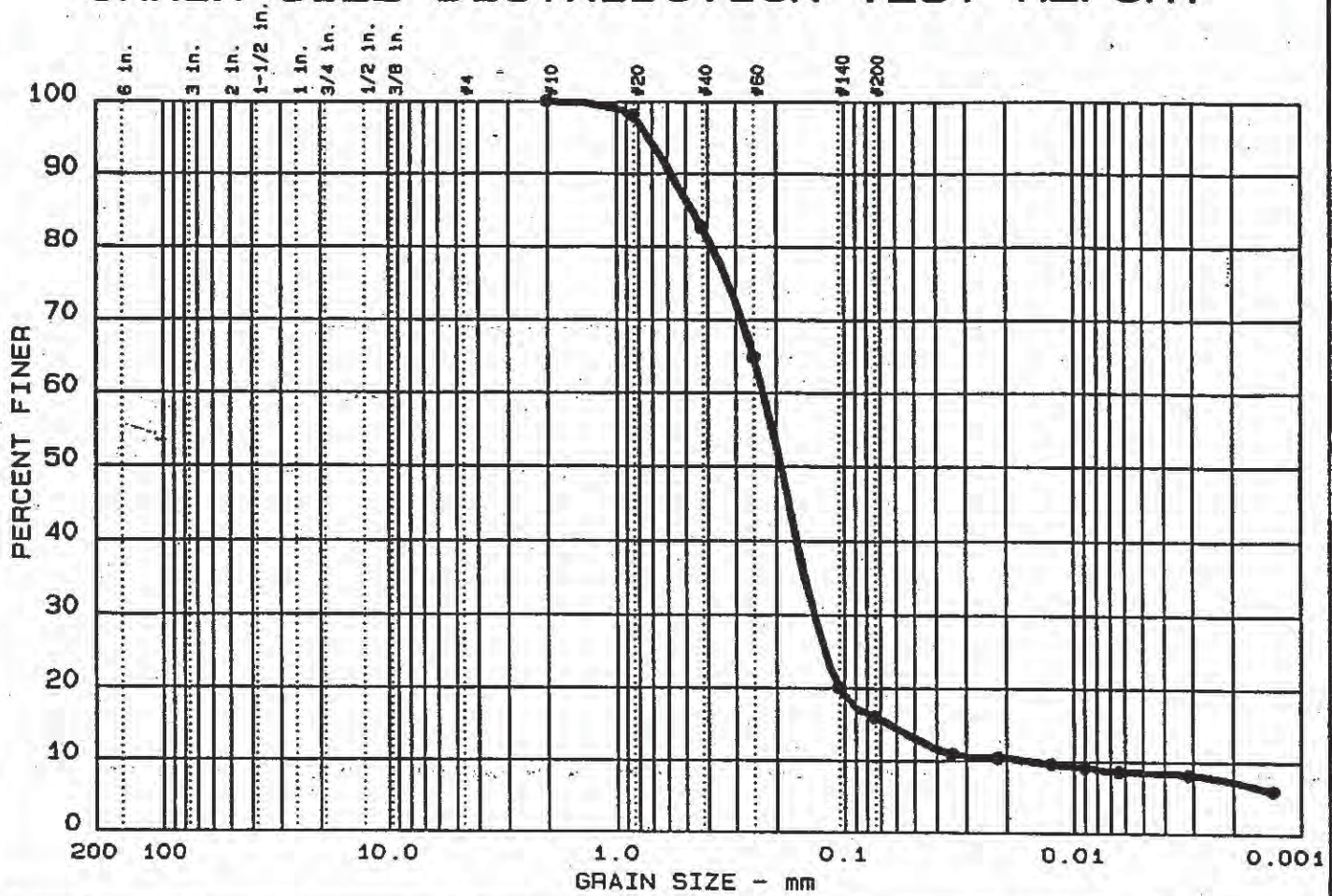
MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Clayey Sand	SC	A-2-6 (0.1)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-19 @ 35-36.5 Ft.  
 Date: March 27, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *H*  
 ASTM D 422  
 &  
 ASTM D 4318



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	0.0	84.0	7.5	8.5

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.46	0.23	0.19	0.135	0.0630	0.0153	5.22	14.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-20 @ 36.5-38 Ft.

Date: March 24, 1998

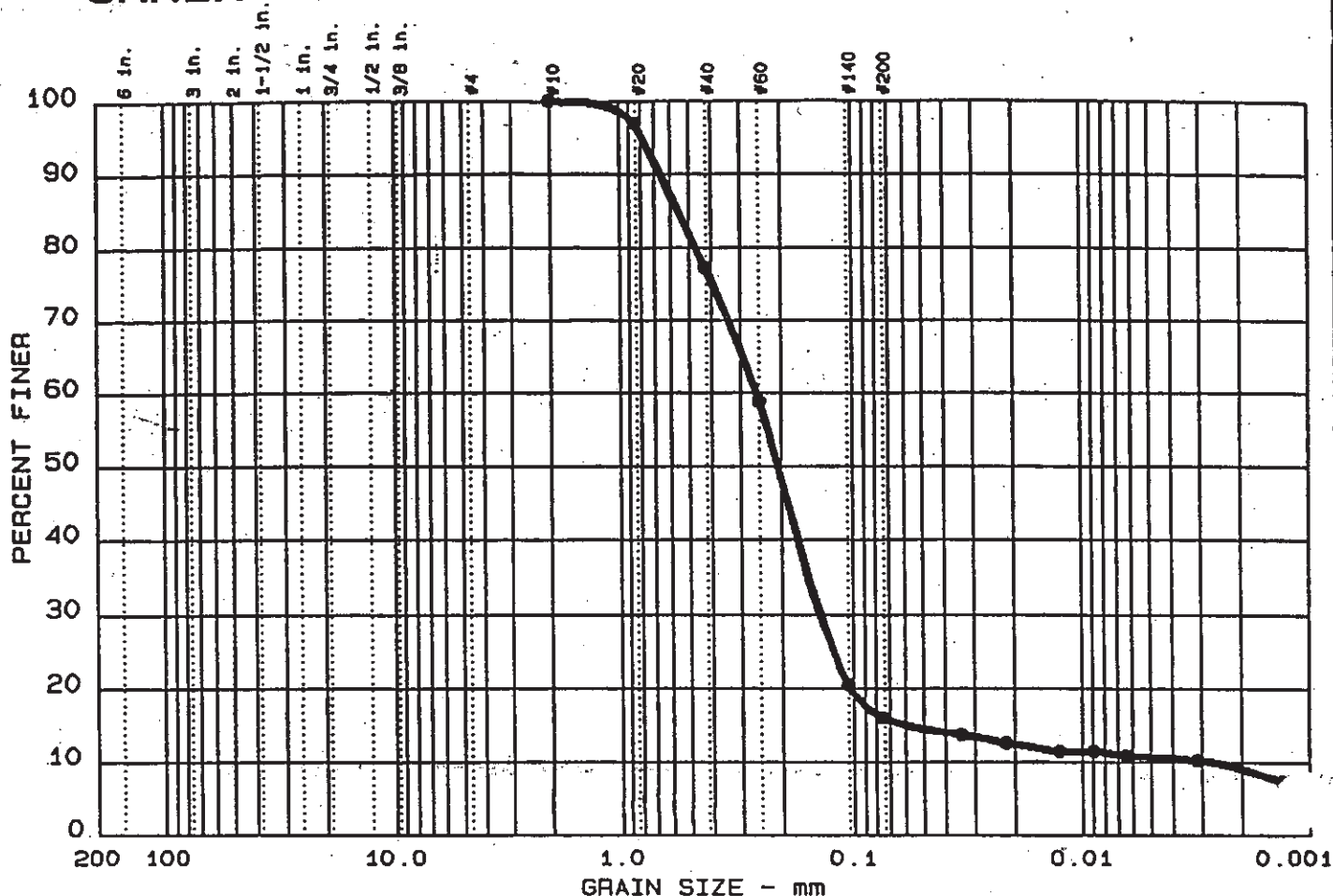
Remarks:  
 Tested by: *Scott TM*  
 Reviewed by: *lt*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

*B-175*

# GRAIN SIZE DISTRIBUTION TEST REPORT



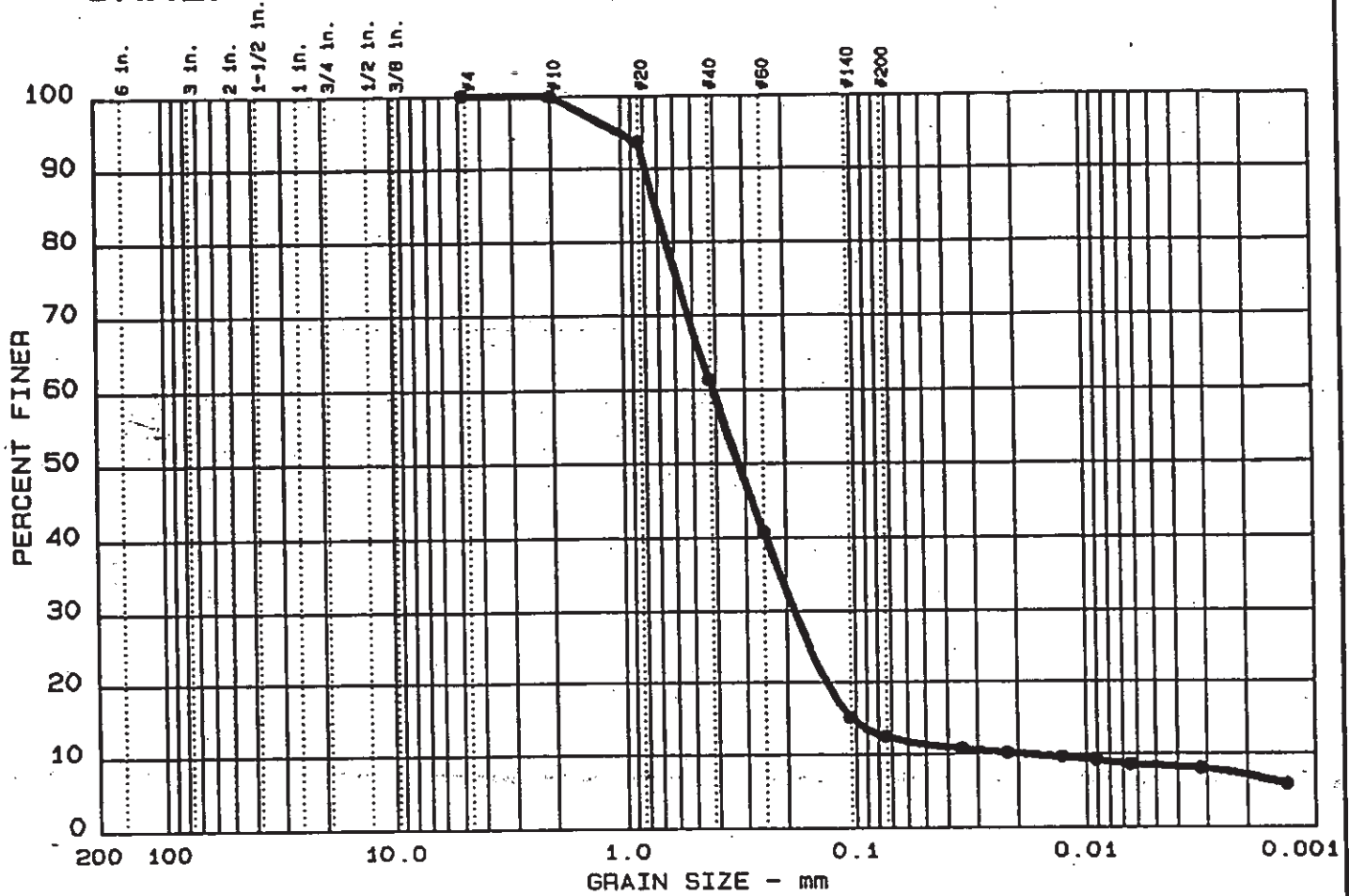
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.0	84.0	5.3	10.7

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.55	0.26	0.21	0.138	0.0587	0.0027	27.23	94.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-5 SS-21 @ 38-39.5 Ft.  Date: March 24, 1998	Remarks: Tested by: SC Reviewed by: HB ASTM D422
---	---

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.0	87.6	4.1	8.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.71	0.41	0.32	0.185	0.1030	0.0173	4.88	23.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Silty Sand	SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-22 @ 39.5-40 Ft.

Date: March 24, 1998

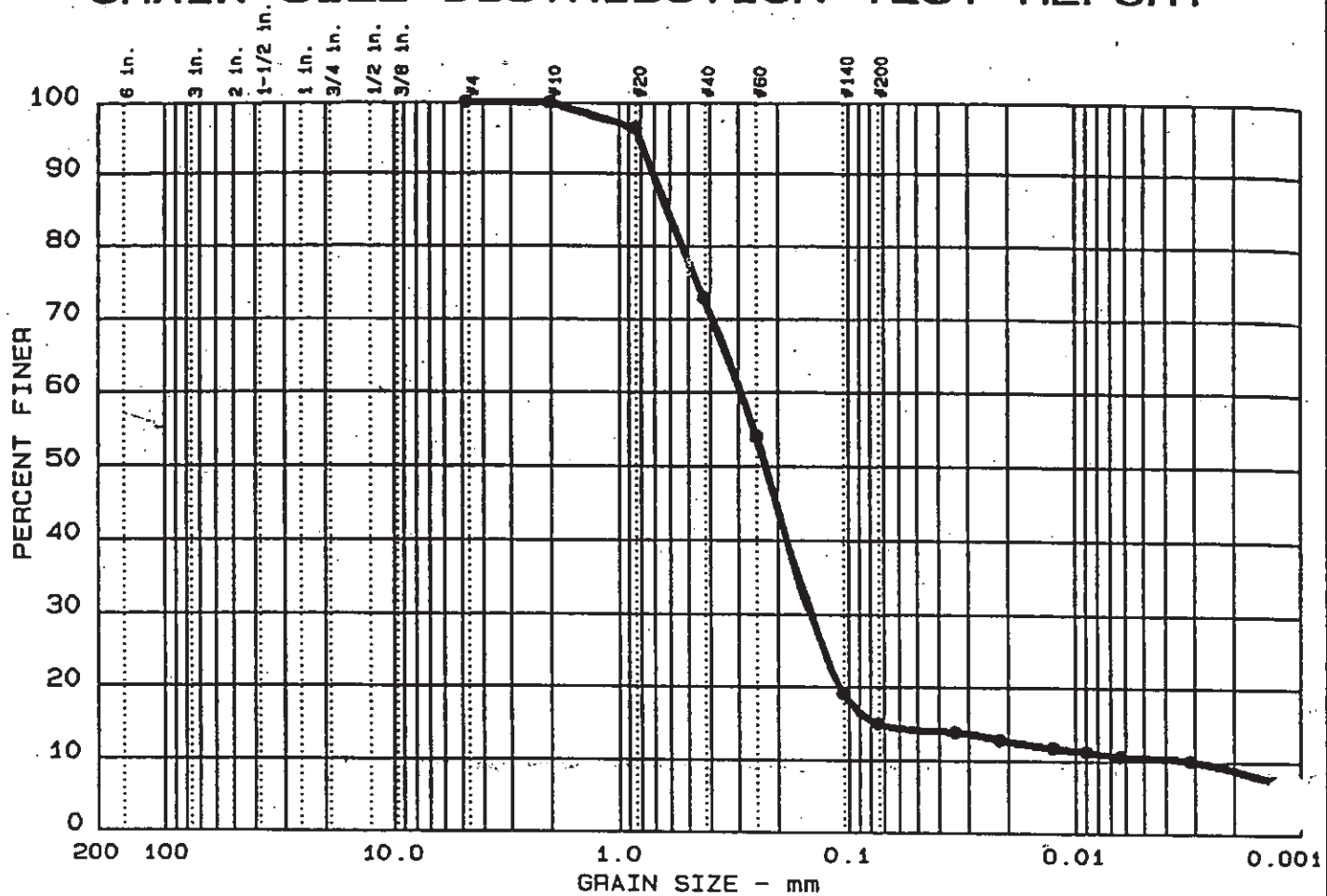
Remarks:

Tested by: *SCS/STM*  
 Reviewed by: *LD*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. *B-147*

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.0	85.0	4.5	10.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.61	0.29	0.23	0.146	0.0731	0.0027	26.55	106.2

### MATERIAL DESCRIPTION

● Red Brown &amp; Tan Silty Sand

## USCS

SM

## AASHTO

A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-5 SS-23 @ 41-43.5 Ft.

Date: March 24, 1998

Remarks:

Tested by: SCJ/STW

Reviewed by: AS

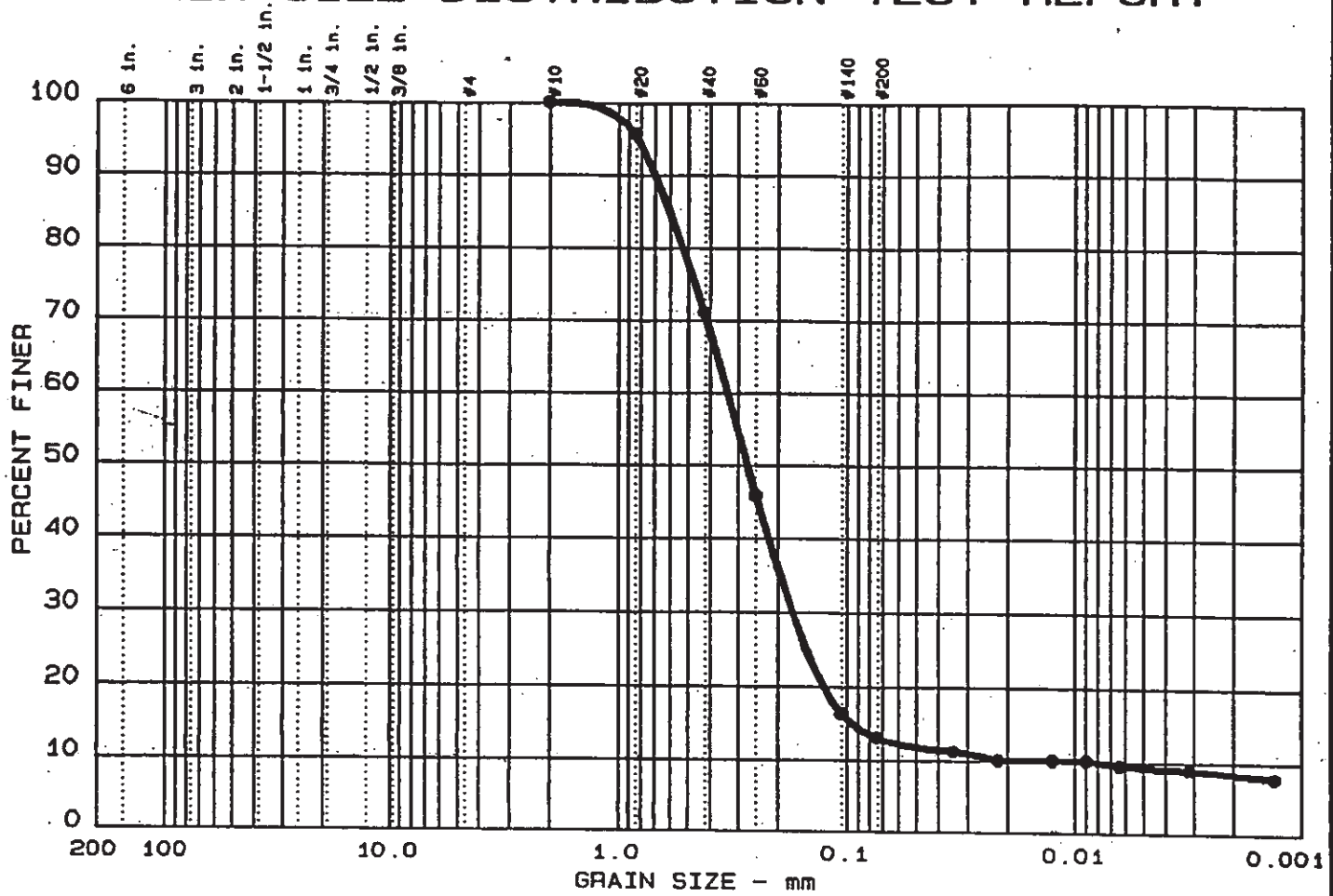
ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT

LAW ENGINEERING, INC. *B-178*

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	86.9	3.9	9.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.60	0.33	0.27	0.172	0.0934	0.0080	11.14	42.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Silty Sand	SM	A-2-4 (0.2)

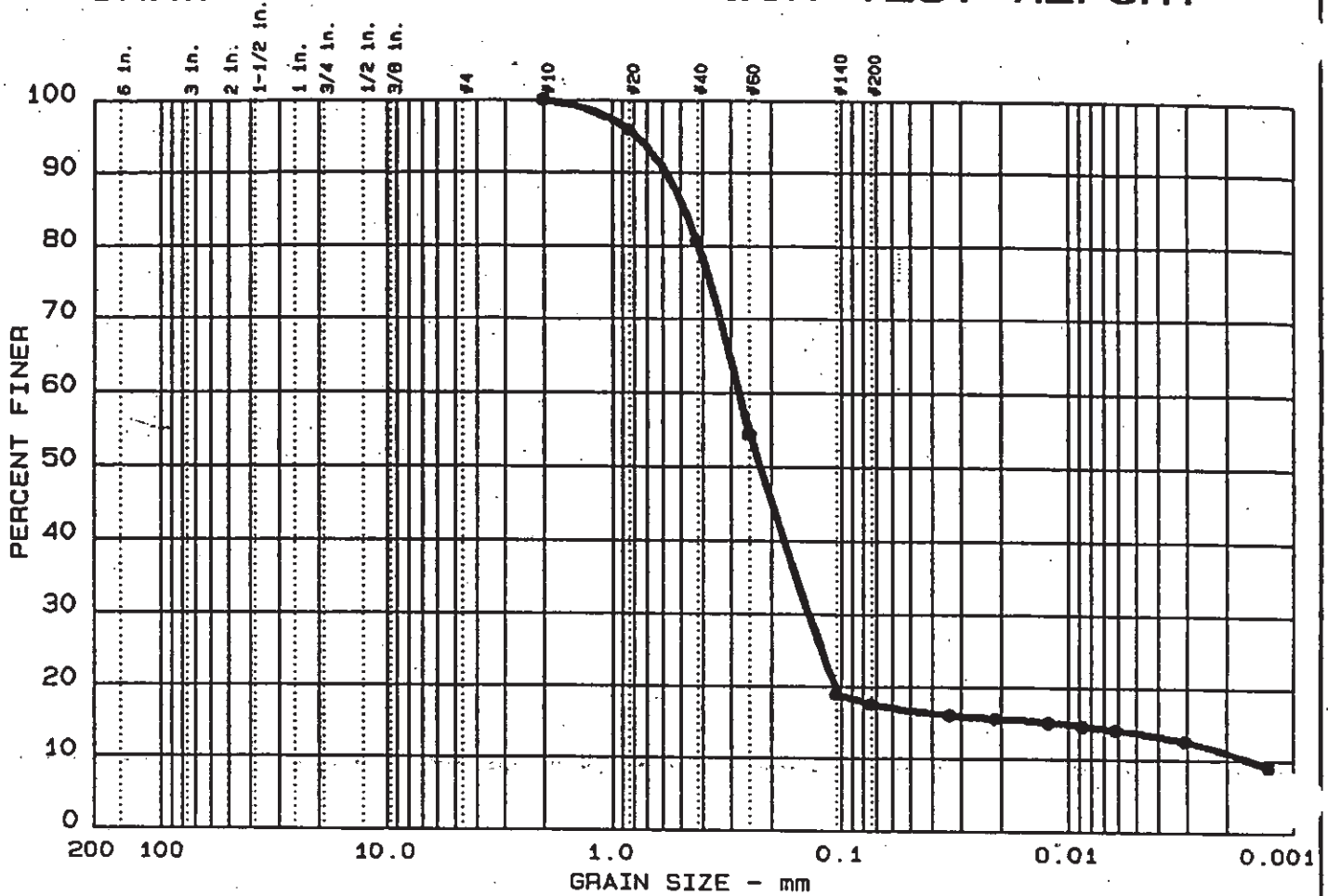
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-24 @ 42.5-44 Ft.  
  
 Date: March 24, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HP  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. B-177

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	82.4	3.9	13.7

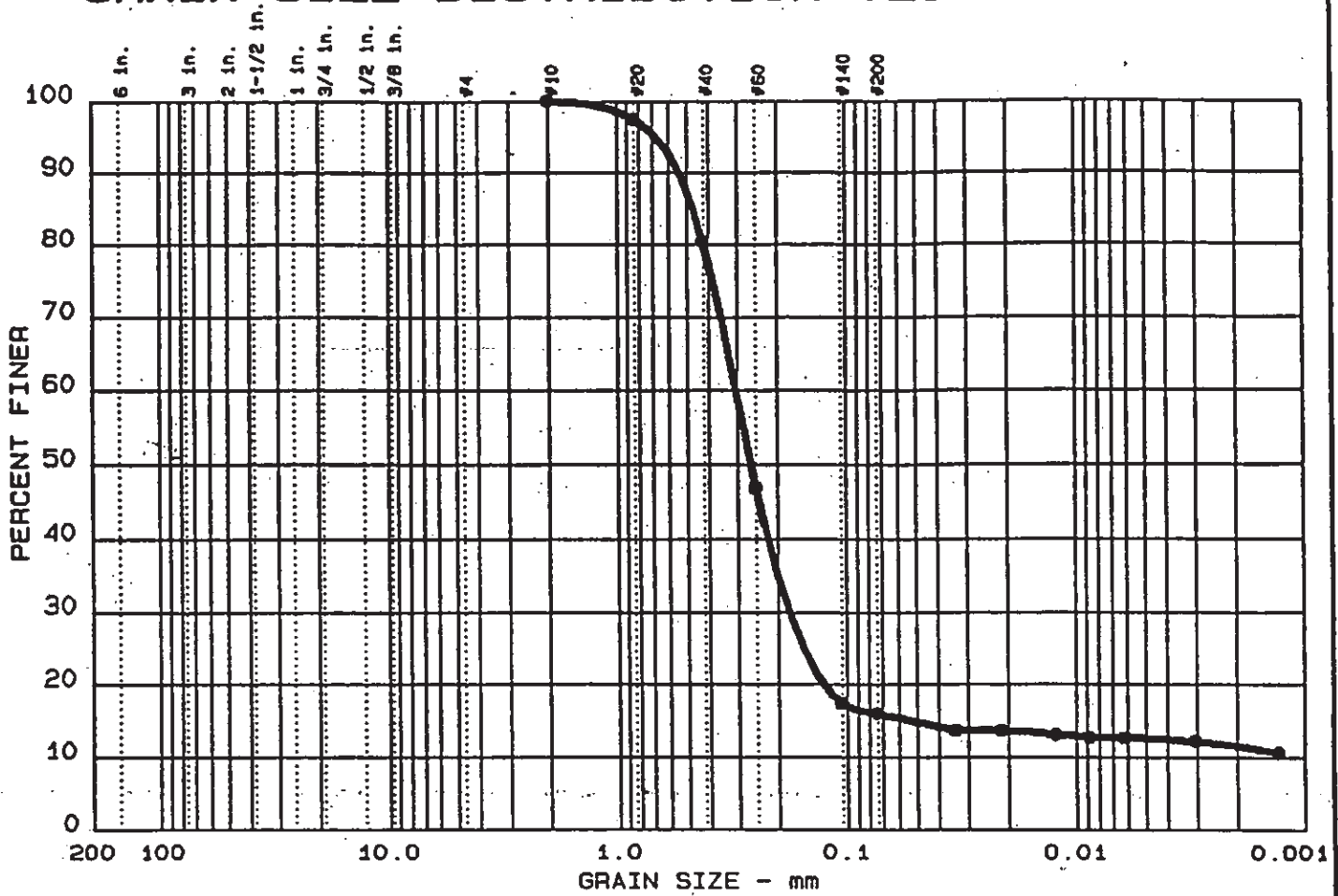
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.47	0.28	0.22	0.138	0.0108	0.0016	43.50	174.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-25 @ 44-45.5 Ft.  
 Date: March 27, 1998

Remarks:  
 Tested by: SC JTM  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT R/0



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 1	0.0	0.0	84.0	3.4	12.6

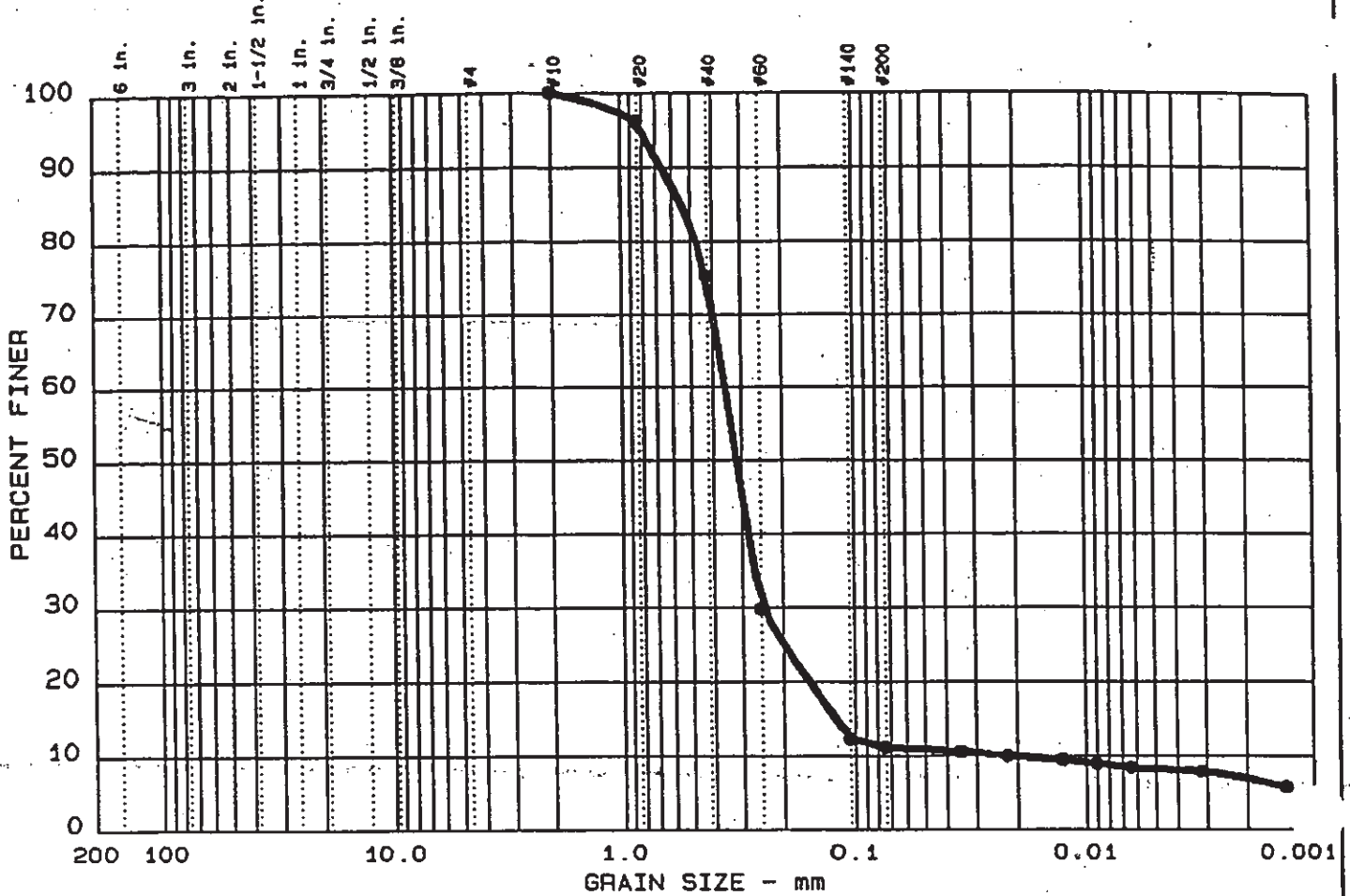
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.46	0.30	0.26	0.179	0.0521			

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-6 SS-26 @ 45.5-47 Ft.  
  
 Date: April 2, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HB*  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.0	88.9	2.9	8.2

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.54	0.35	0.31	0.251	0.1201	0.0195	9.15	18.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

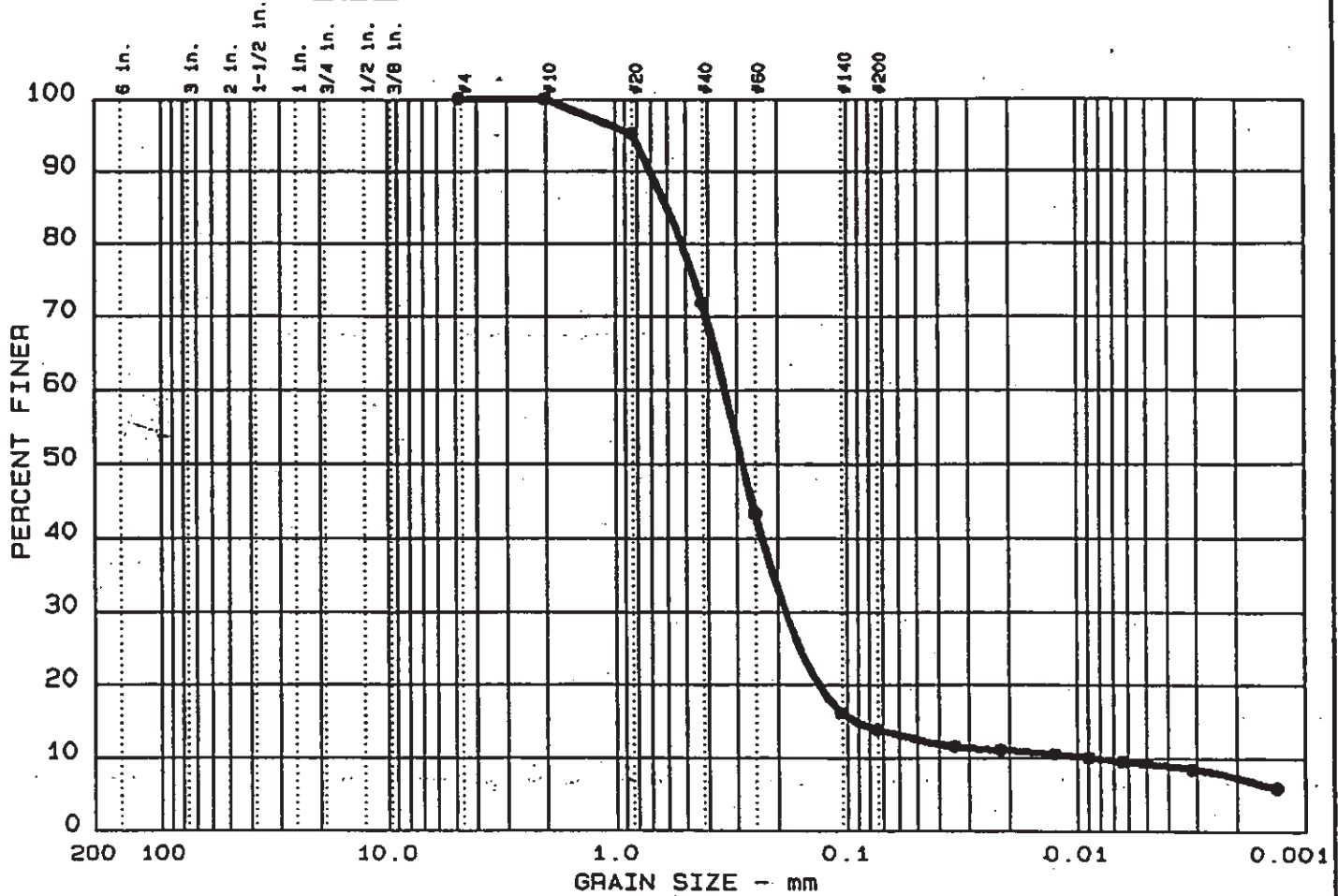
Project No.: 50161-7-0108 Task: 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-27 @ 47-48.5 Ft.

Date: March 27, 1998

Remarks:  
 Tested by: SCJ/TM  
 Reviewed by: H  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT R/O



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	86.1	4.6	9.3

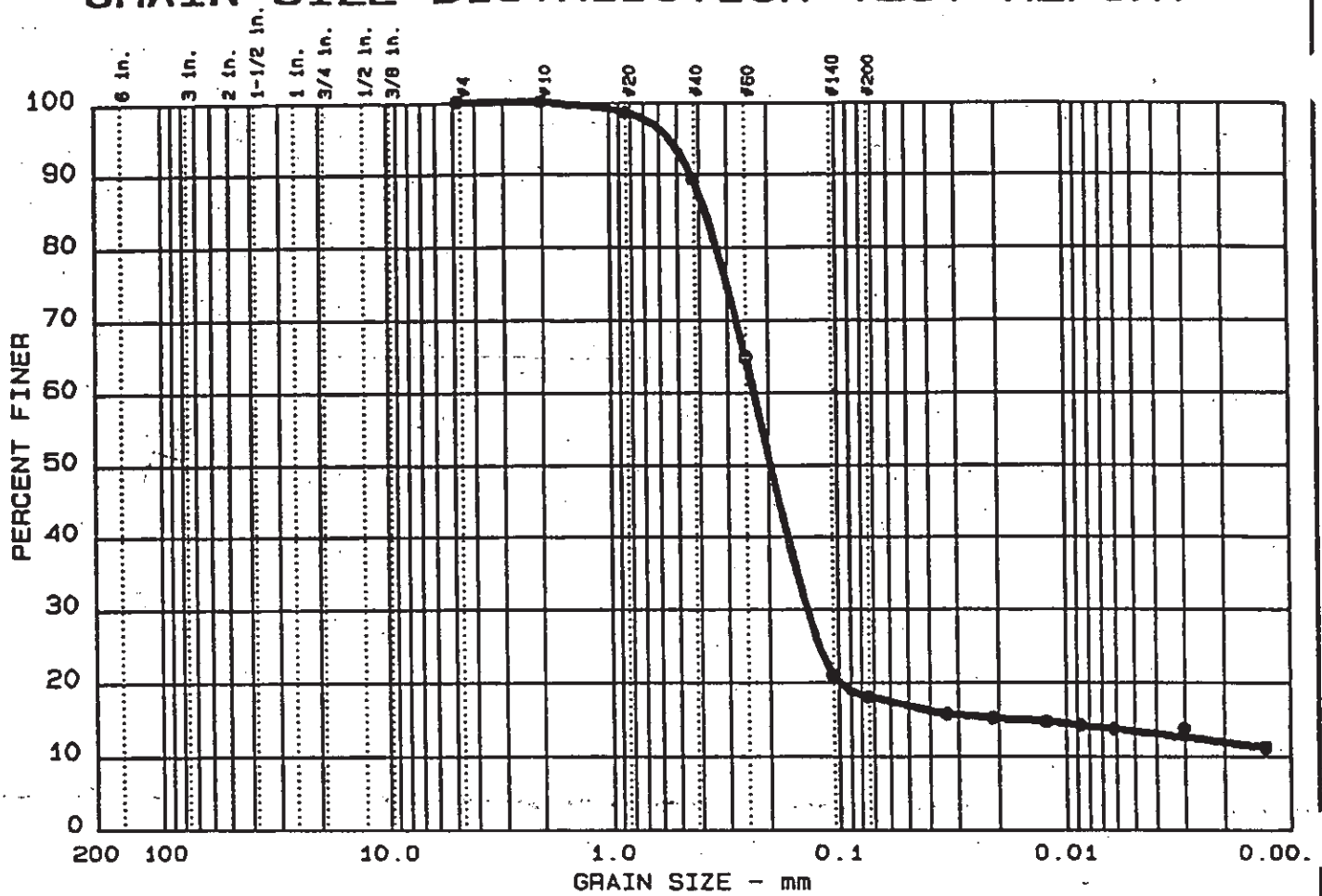
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.59	0.34	0.28	0.185	0.0926	0.0079	12.85	42.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Silty Sand	SM	A-2-4 (0.1)

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-6 SS-28 @ 48.5-50 Ft.  Date: March 27, 1998	Remarks: Tested by: <i>SC-HJM</i> Reviewed by: <i>HJ</i> ASTM D422
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K-FRT-F 00001

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	81.9	4.7	13.4

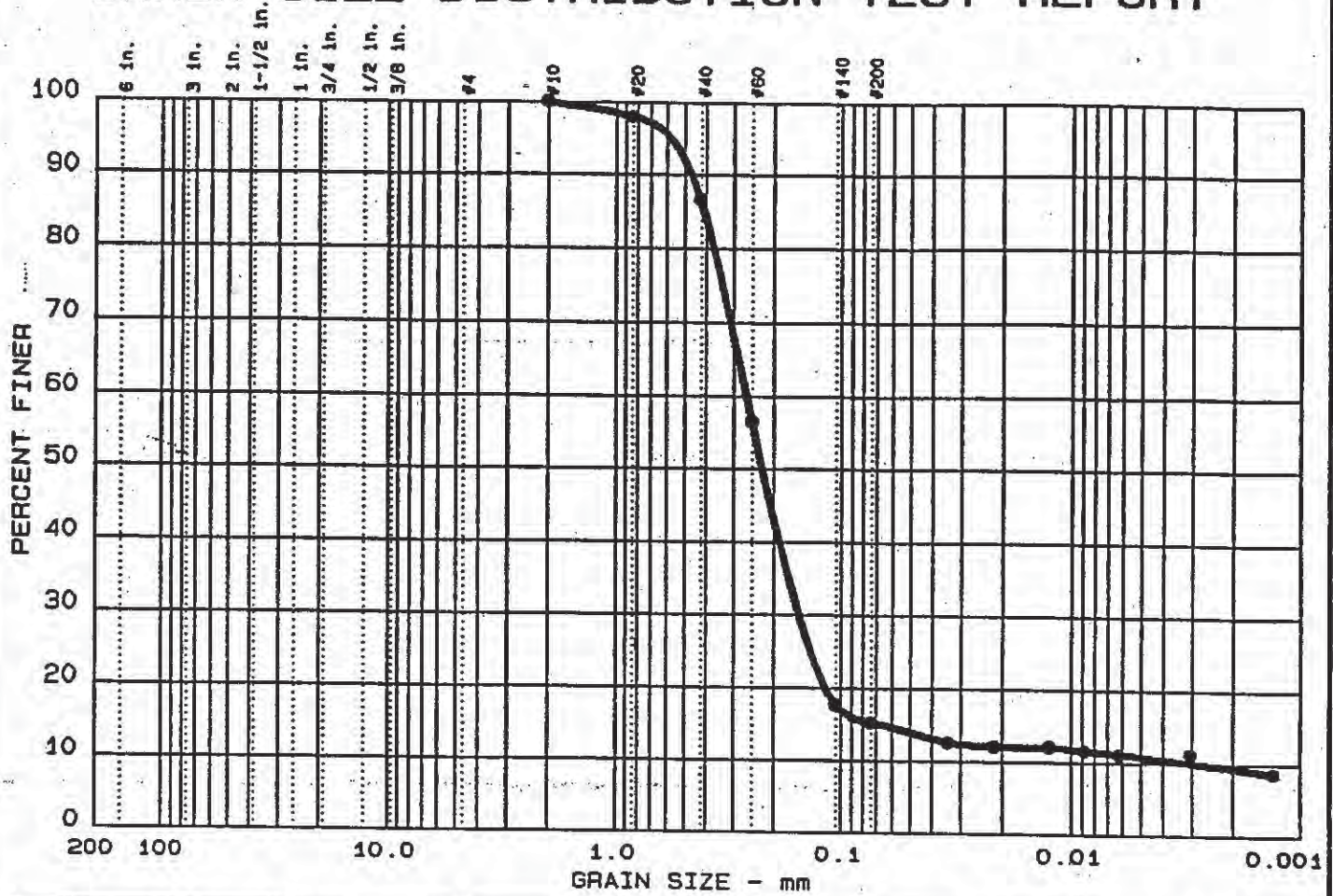
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.37	0.23	0.20	0.136	0.0149			

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-5 SS-29 @ 50-51.5 Ft.  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: AS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	84.8	4.4	10.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.40	0.26	0.22	0.155	0.0653	0.0028	33.00	95.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

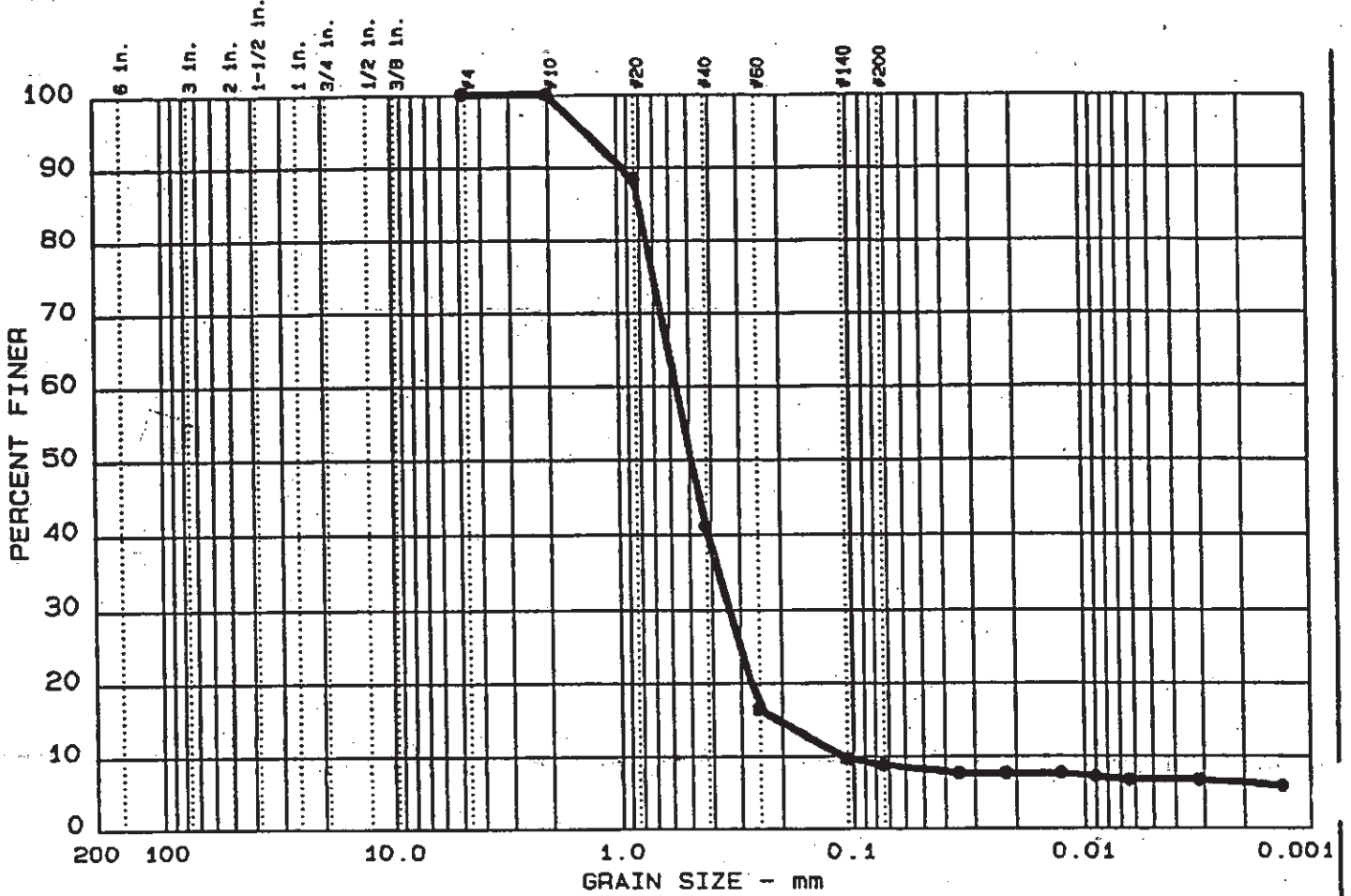
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-30 @ 51.5-53 Ft.  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



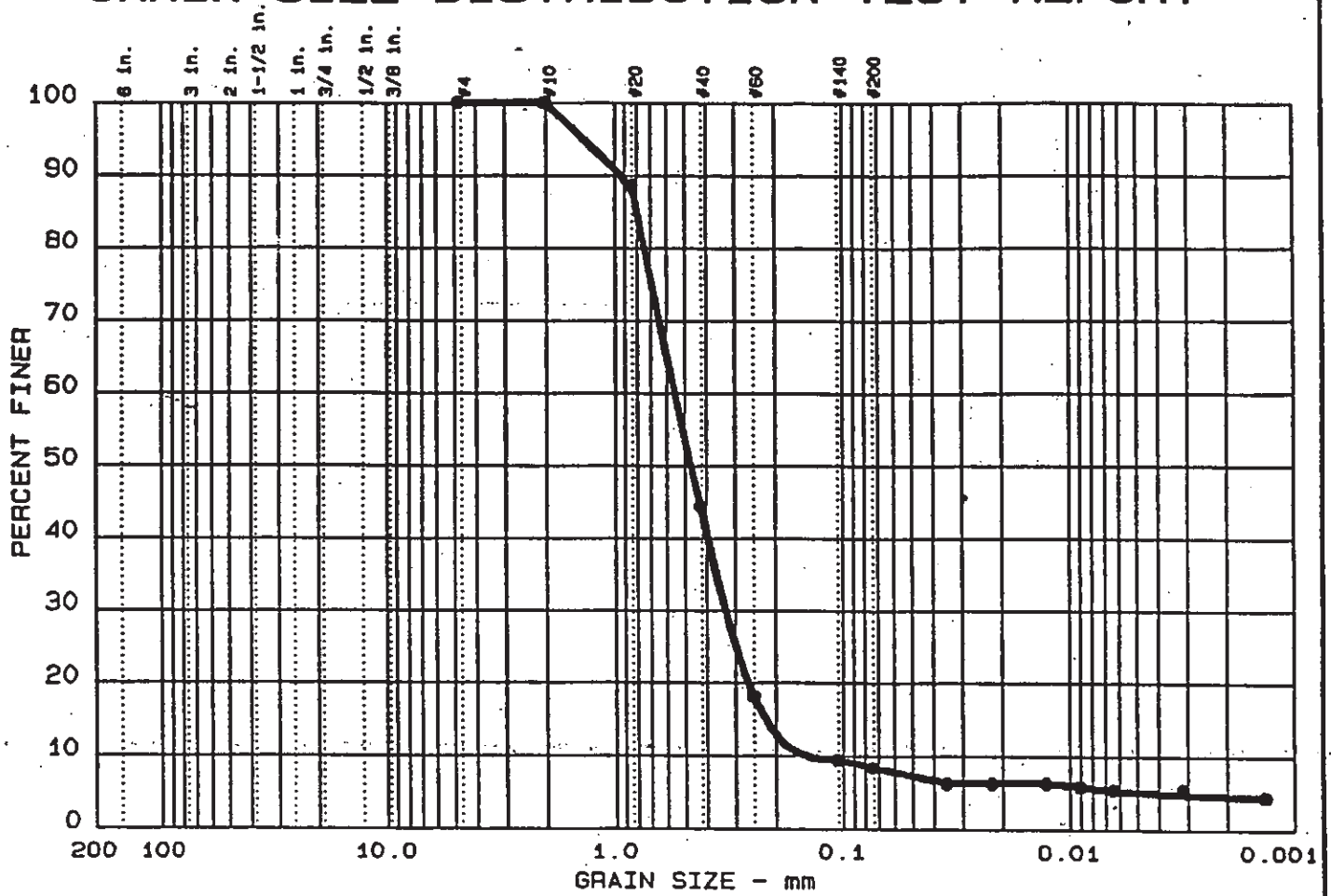
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	91.2	2.1	6.7

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.80	0.56	0.48	0.333	0.2051	0.1089	1.81	5.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-6 SS-31 @ 53-54.5 Ft.  Date: April 2, 1998	Remarks: Tested by: <i>SC</i> Reviewed by: <i>HD</i> ASTM D422
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# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.0	91.6	3.3	5.1

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.79	0.55	0.47	0.329	0.2226	0.1404	1.41	3.9

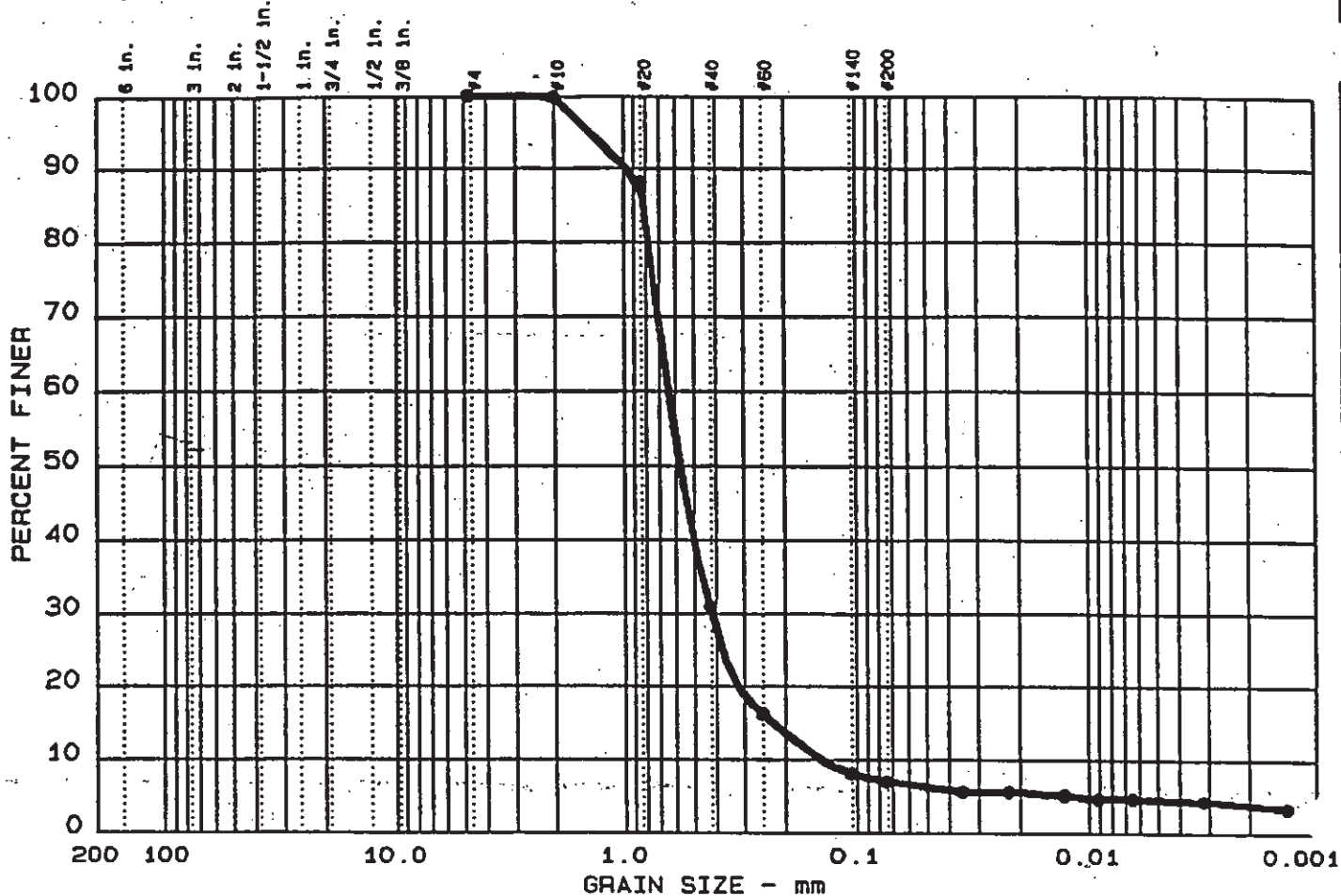
MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-6 SS-32 @ 54.5-56 Ft.  
  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• B	0.0	0.0	92.9	2.5	4.6

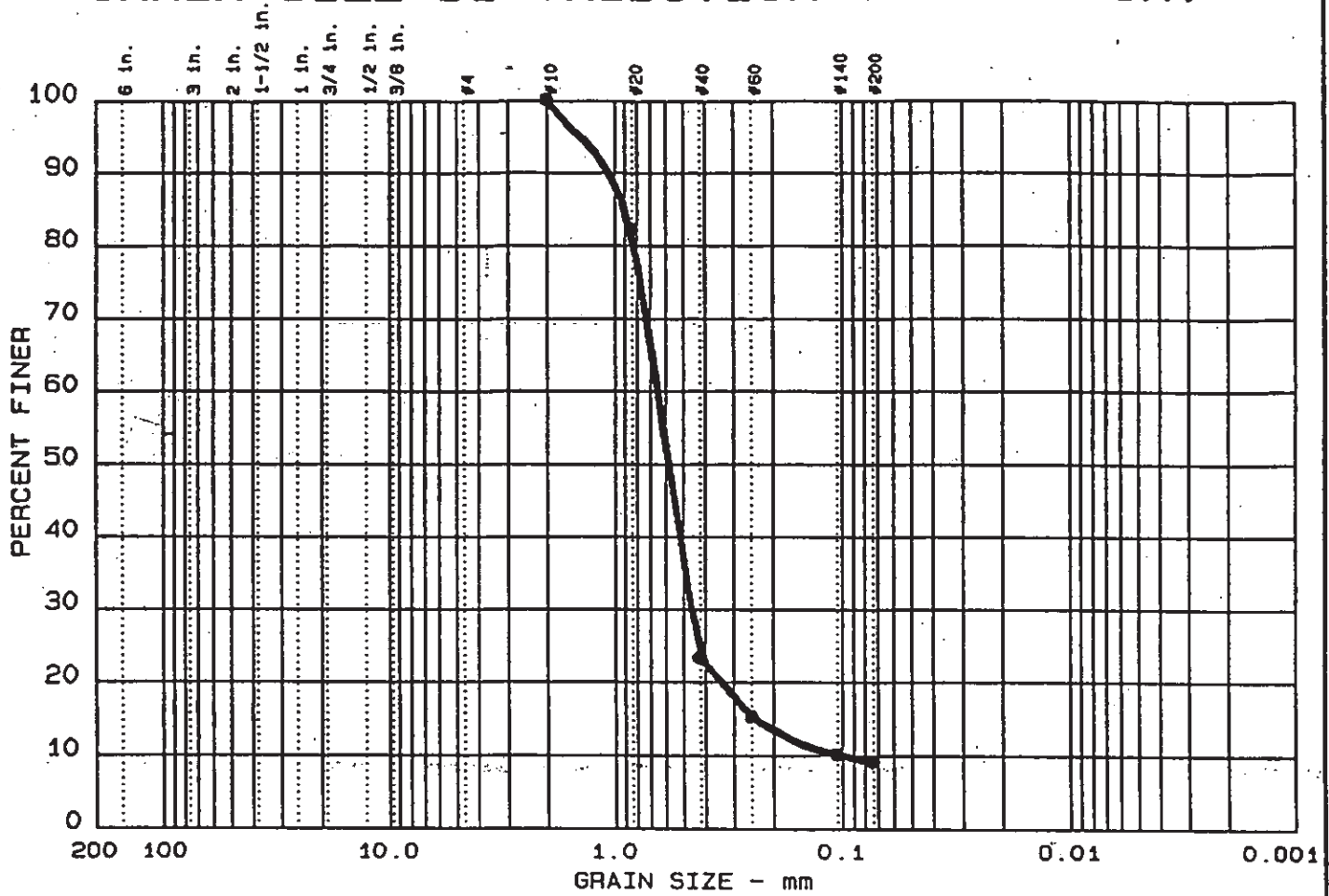
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.81	0.64	0.57	0.414	0.2226	0.1388	1.95	4.6

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-6 SS-33 @ 56-57.5 Ft.  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	90.8	9.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.90	0.65	0.57	0.454	0.2382	0.0993	3.21	6.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

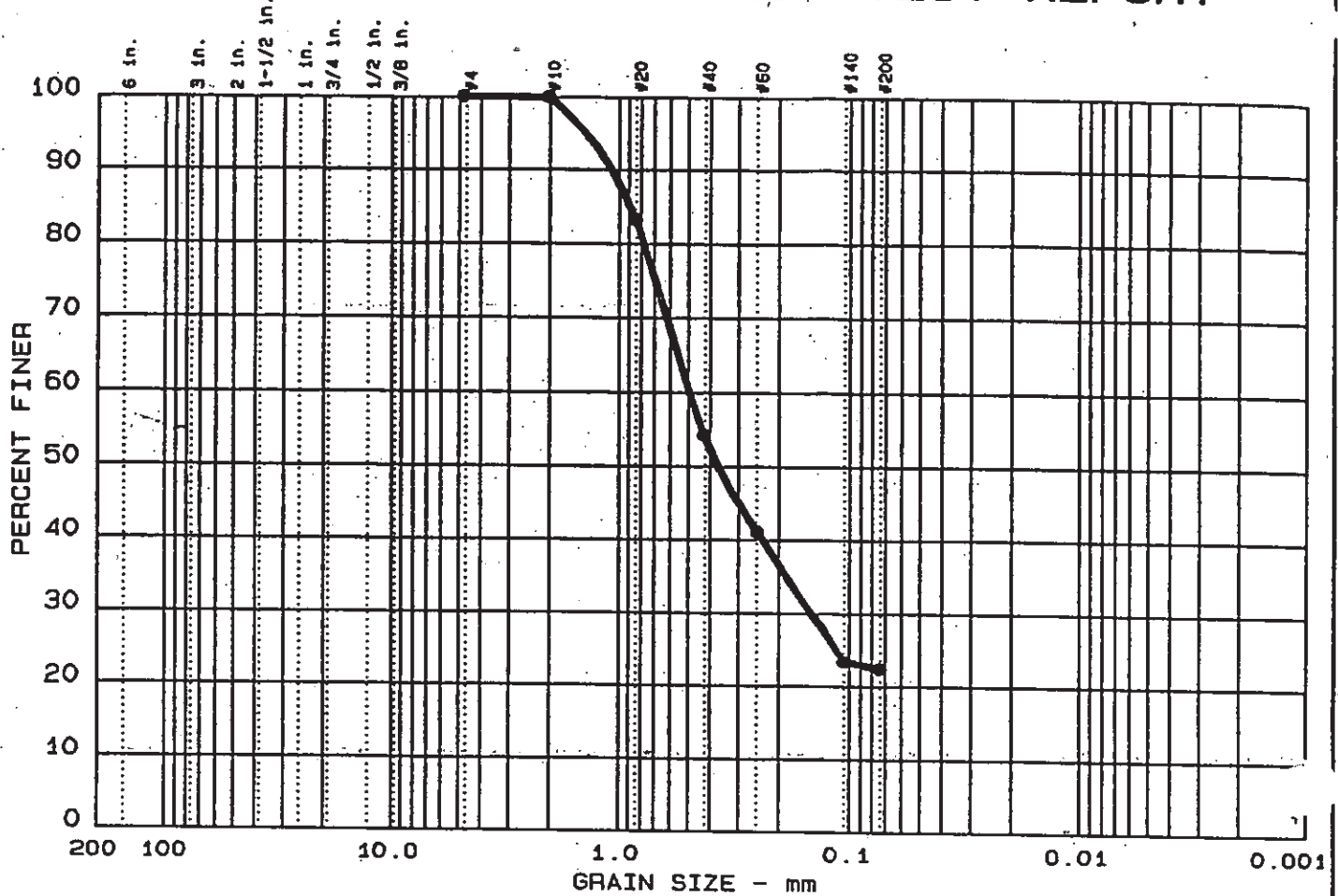
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-34 @ 57.5-59 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	77.6	22.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.88	0.49	0.37	0.144				

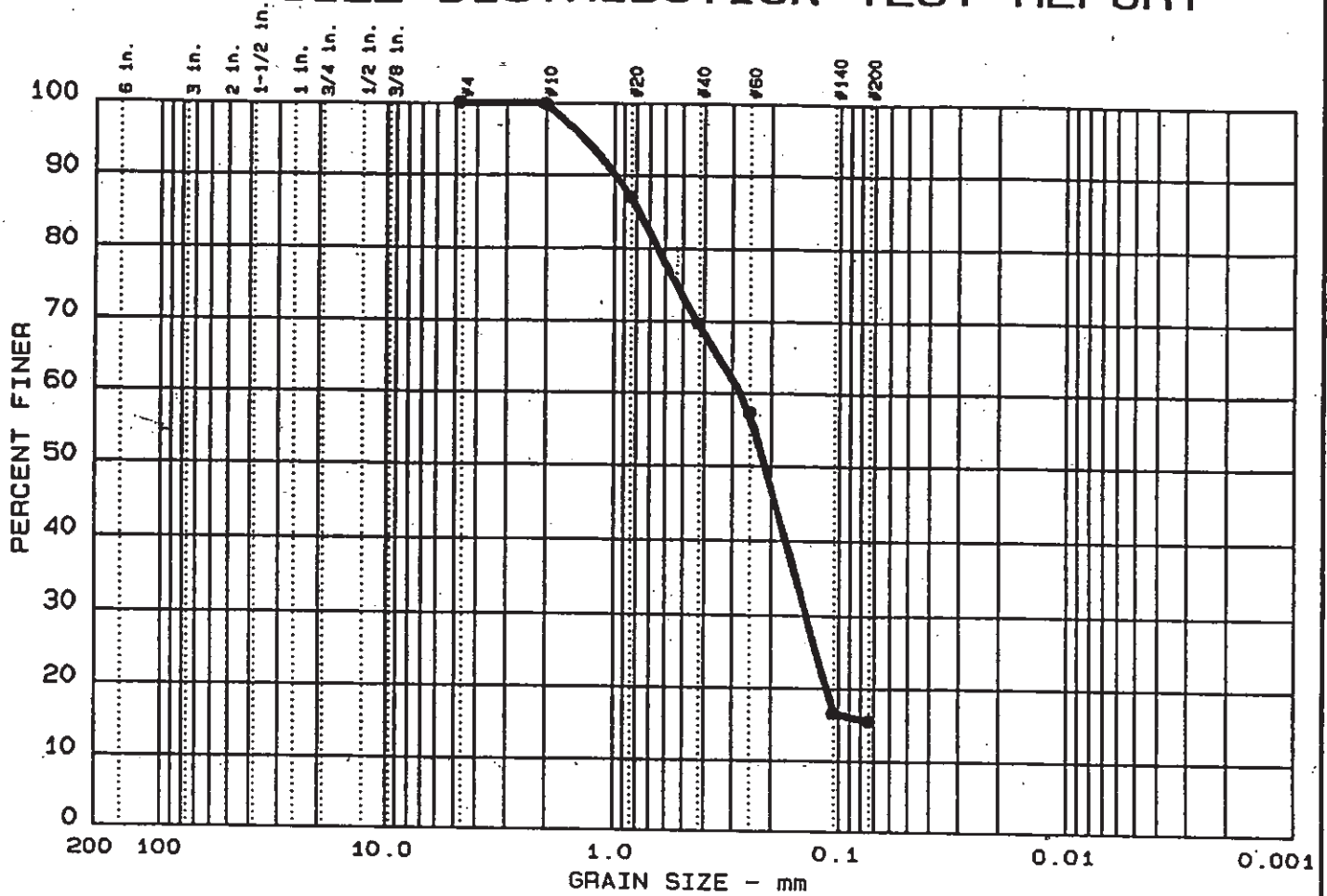
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-35 @ 59-60.5 Ft.  
  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.0	84.5	15.5	

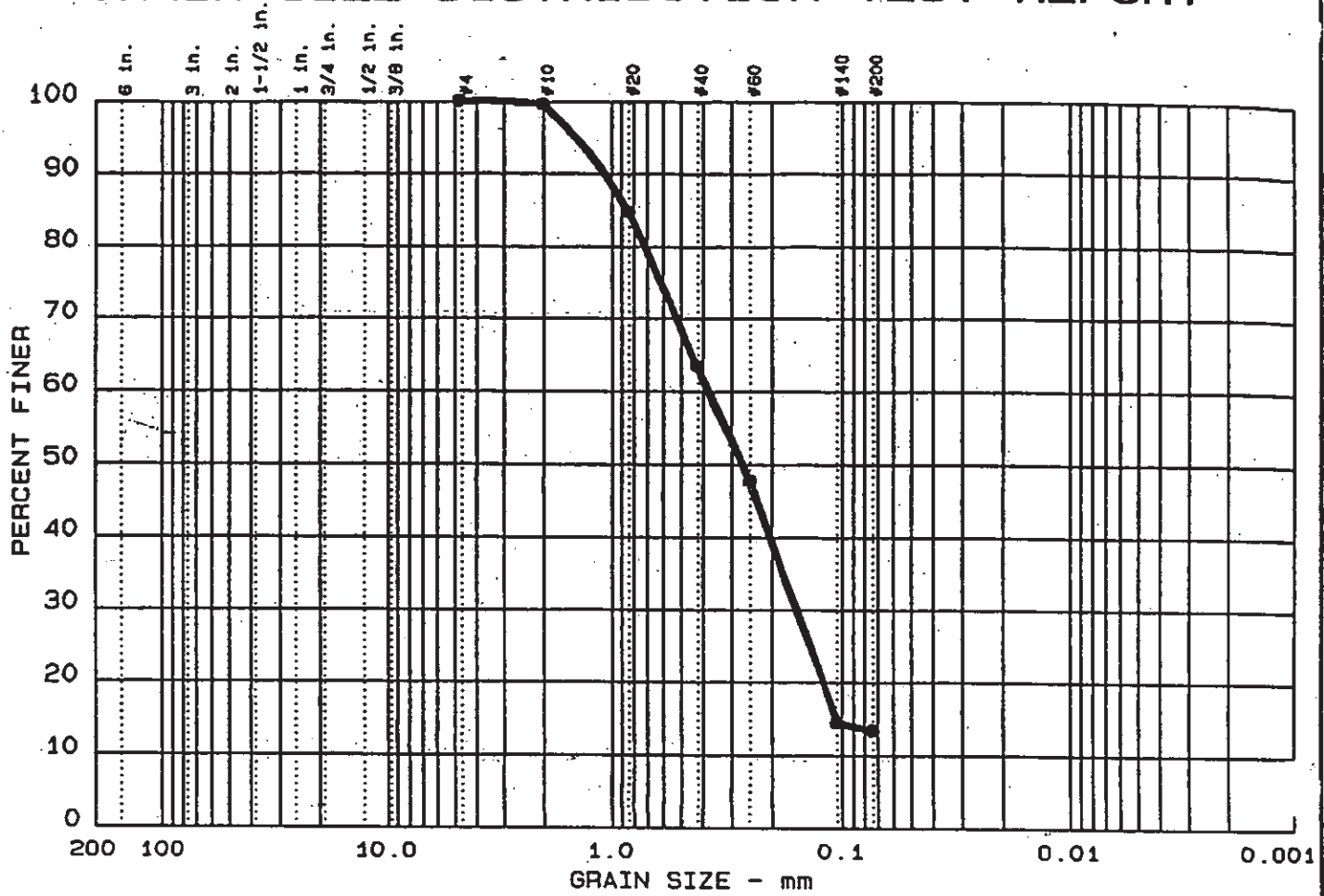
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.77	0.28	0.21	0.140				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-36 @ 60.5-62 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	86.6	13.4	

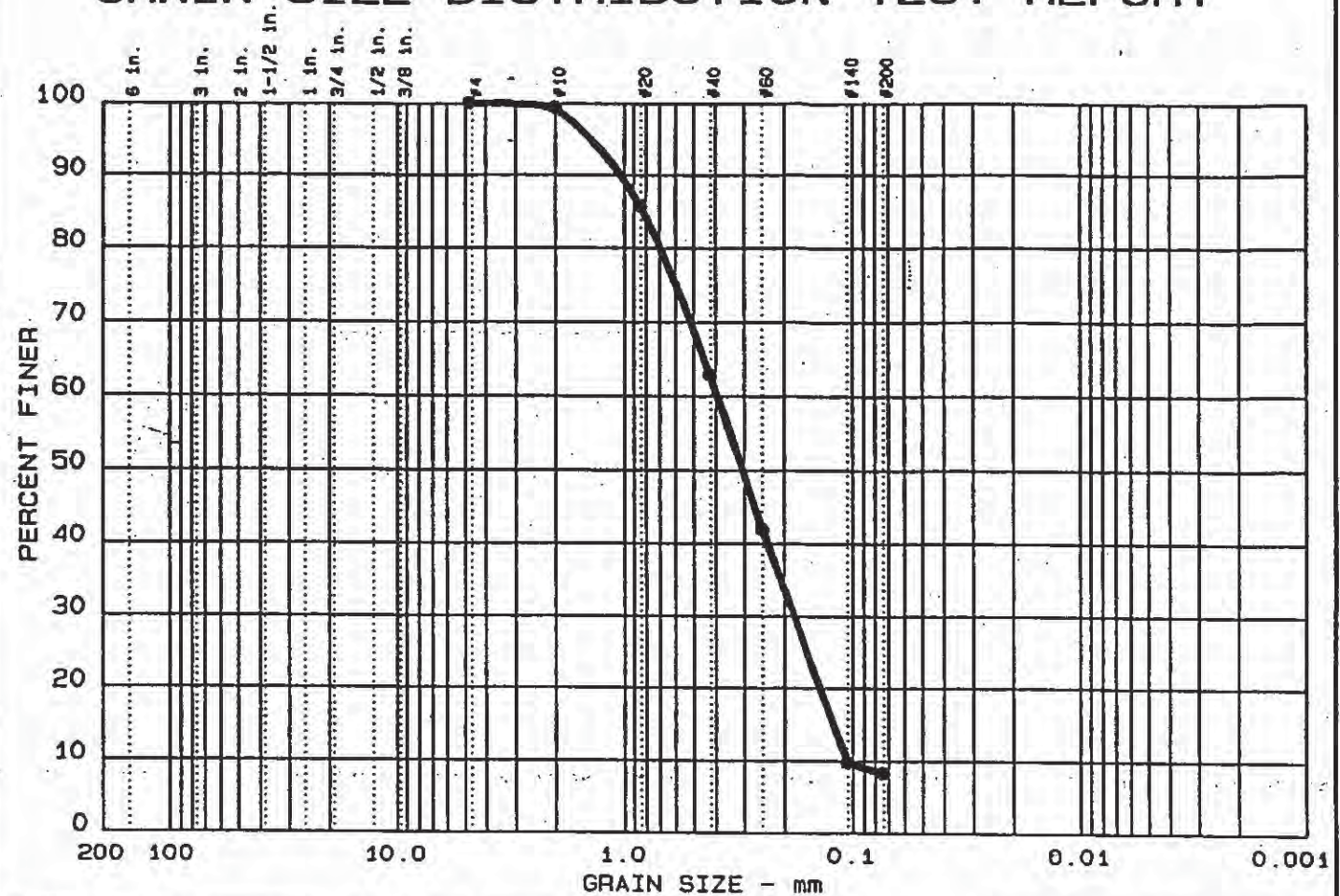
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.84	0.38	0.27	0.157	0.1063			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-37 @ 62-63.5 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	91.7	8.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.81	0.39	0.30	0.181	0.1209	0.1053	0.80	3.7

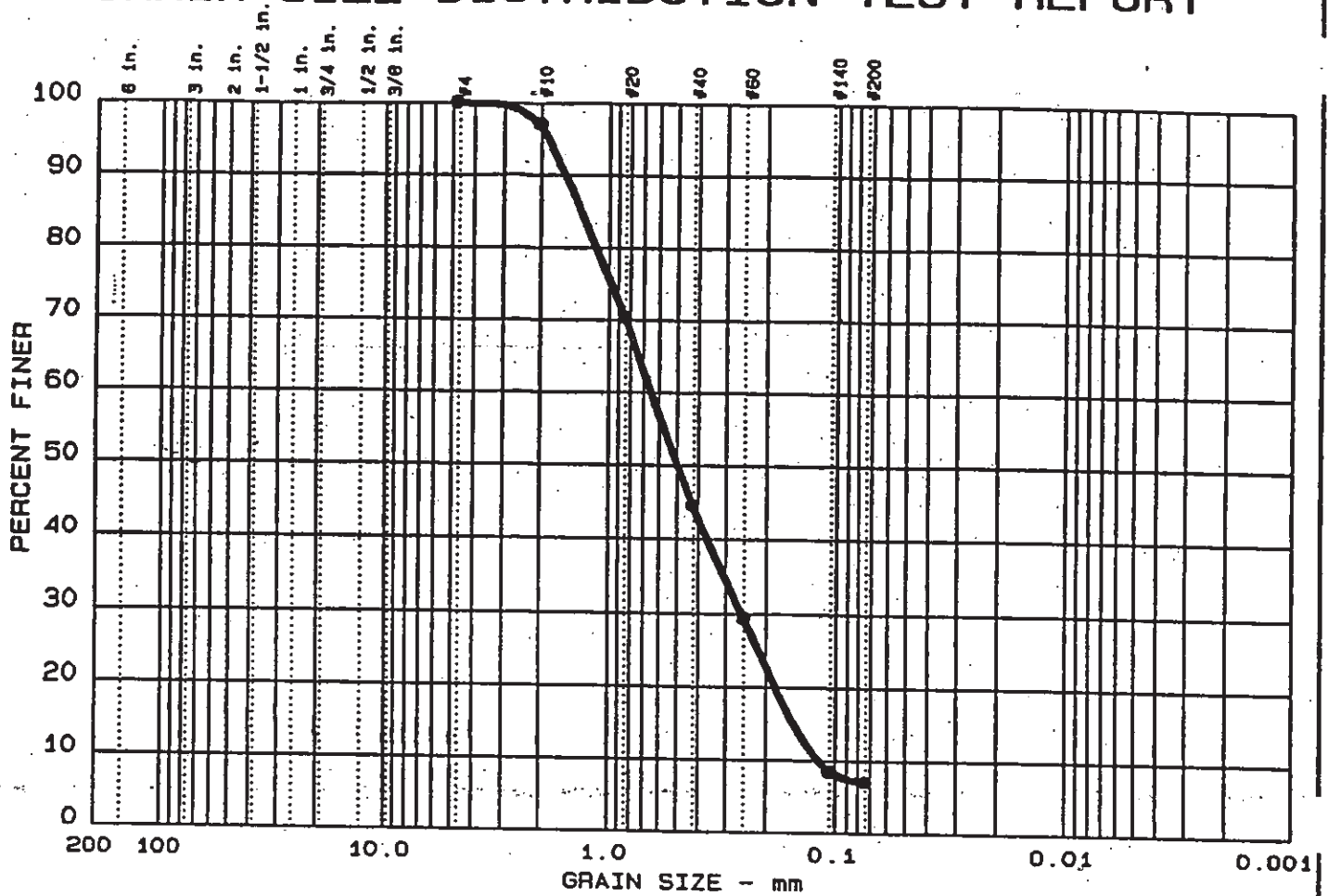
MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-38 @ 63.5-65 Ft.  
  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	92.9	7.1	

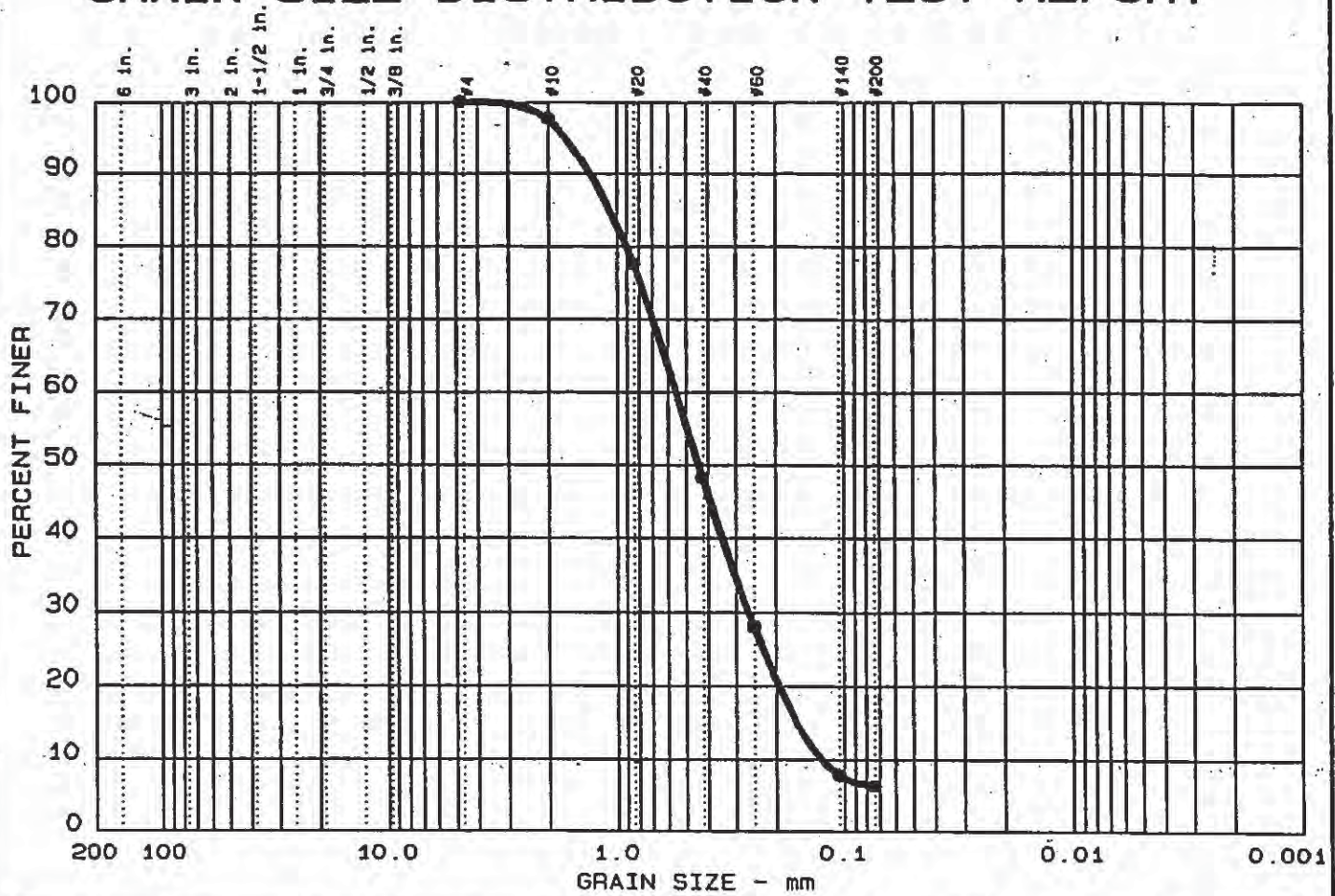
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.32	0.64	0.49	0.256	0.1503	0.1167	0.87	5.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-39 @ 65-66.5 Ft.  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	93.7	6.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.07	0.55	0.44	0.264	0.1607	0.1247	1.02	4.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SP-SM	A-1-b

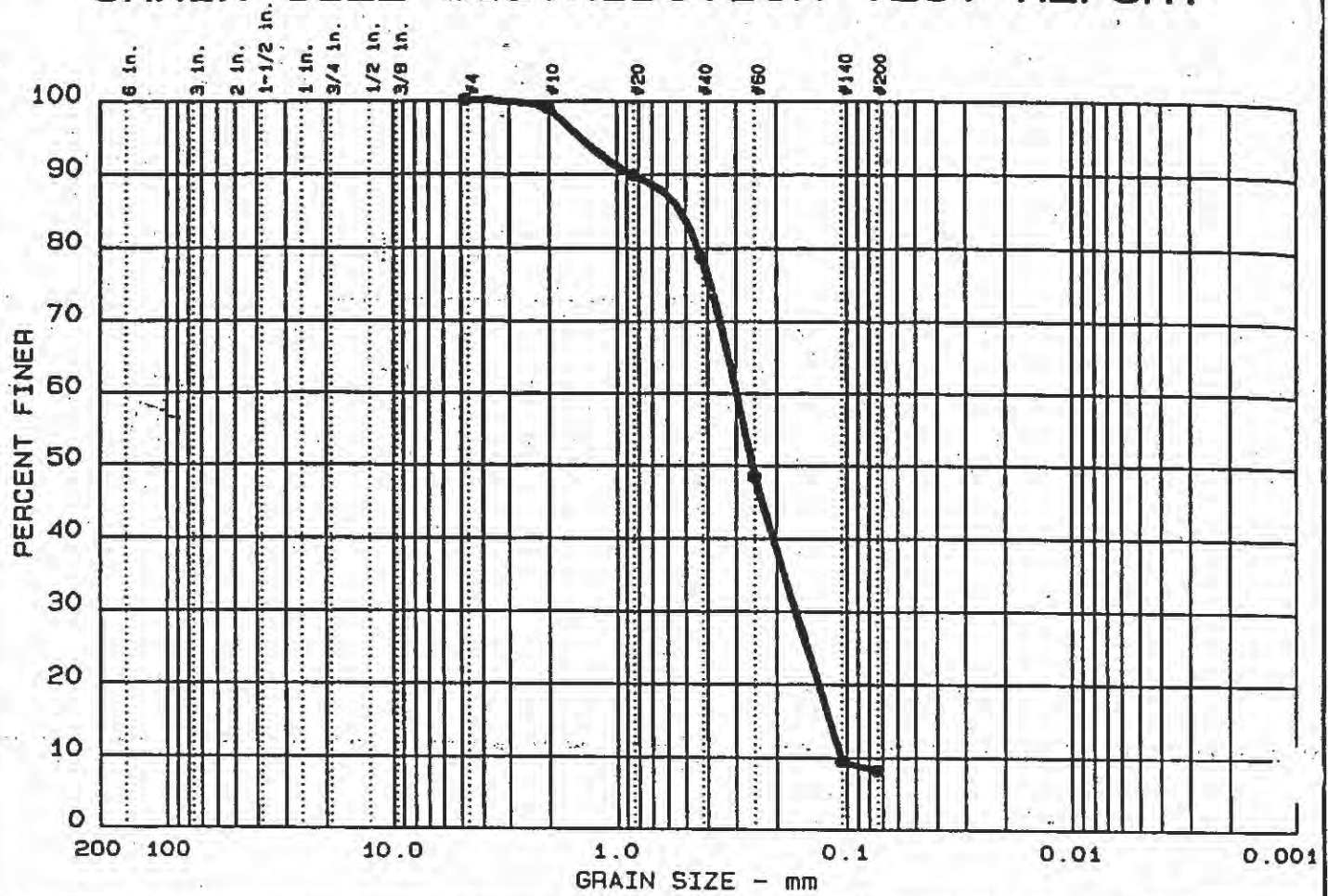
Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-6 SS-40 @ 66.5-68 Ft.	Remarks: Tested by: SC Reviewed by: HB ASTM D 422
---	--

Date: March 29, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	91.8	8.2	

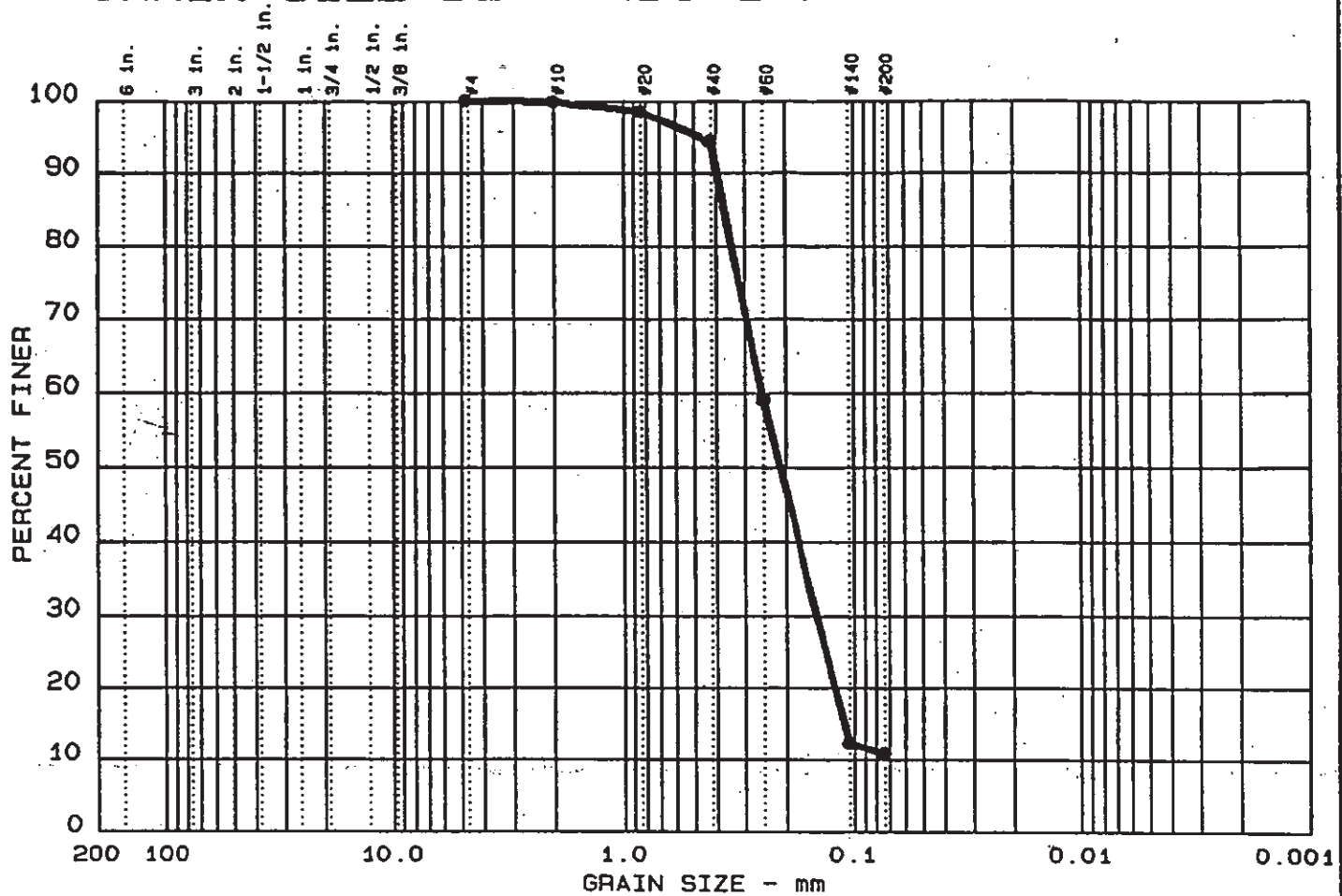
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.52	0.30	0.26	0.165	0.1183	0.1062	0.86	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-41 @ 68-69.5 Ft.  
  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	89.2	10.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.37	0.25	0.21	0.146	0.1104			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown. Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

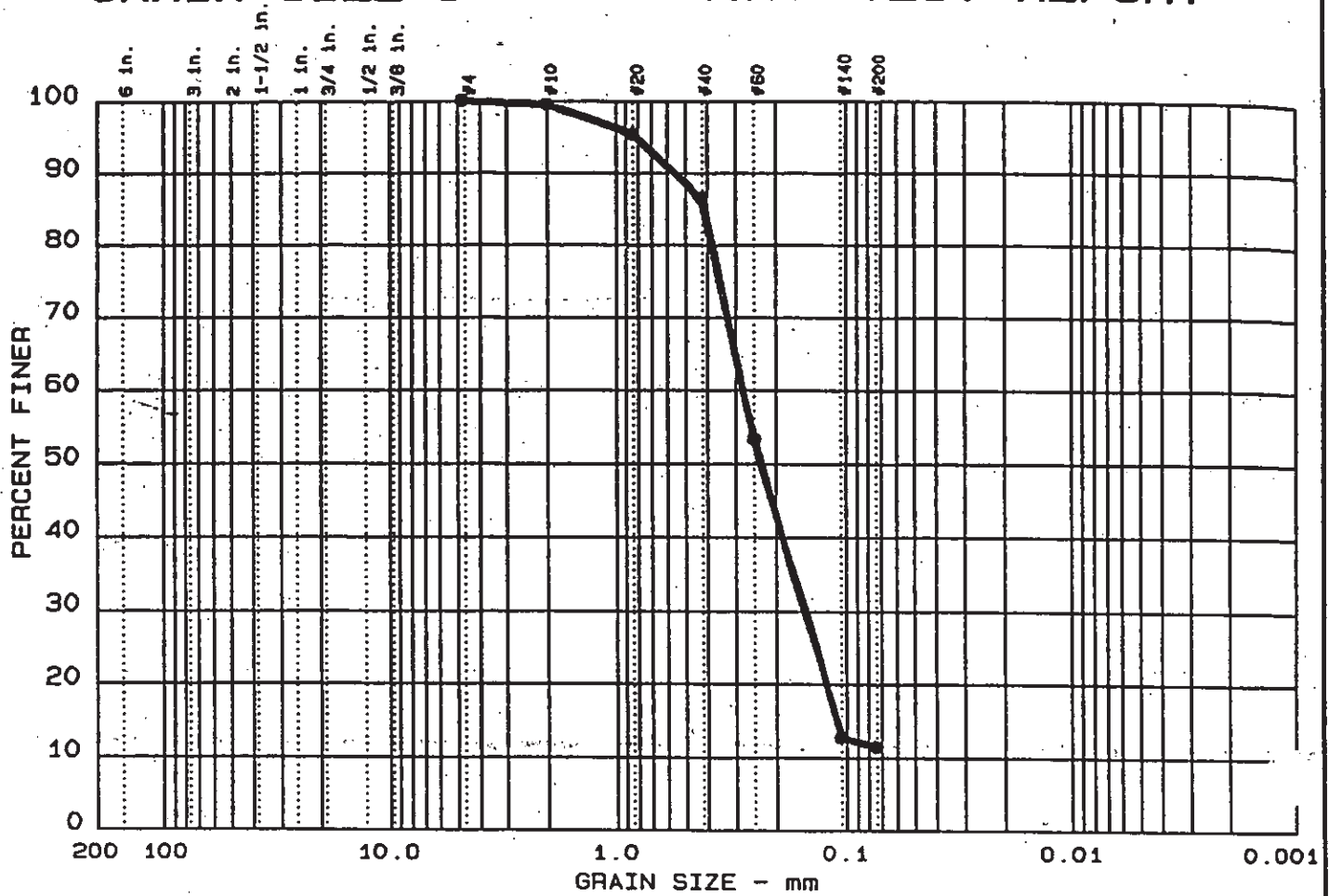
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-42 @ 69.5-71 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	88.5	11.5	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.41	0.28	0.23	0.152	0.1099			

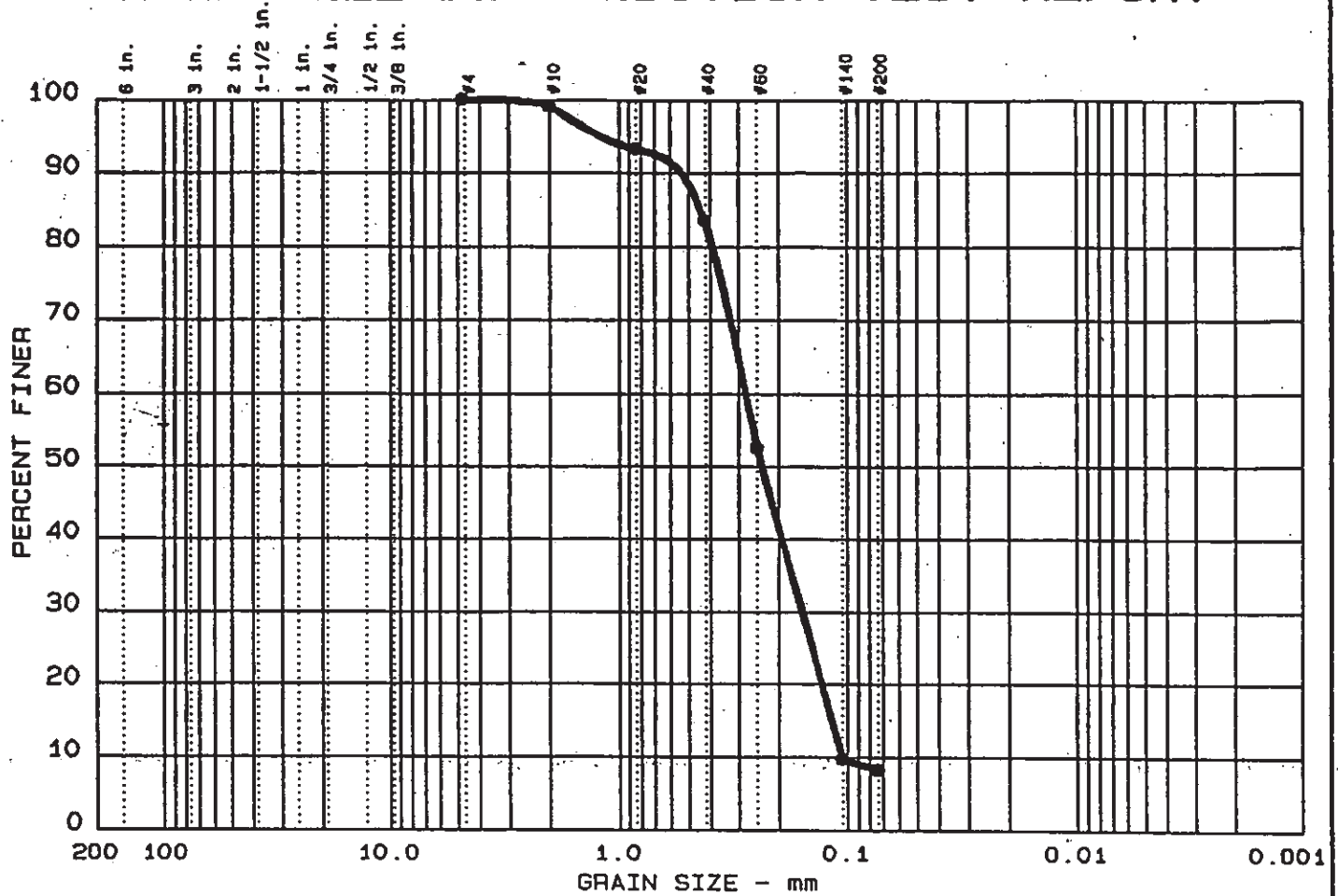
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

Project No.: 50161-7-0108 Task 16  
Project: APSF Confirmatory Testing  
● Location: FB-6 SS-43 @ 71-72.5 Ft.  
  
Date: March 29, 1998

Remarks:  
Tested by: SC  
Reviewed by: H  
ASTM D 422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	91.7	8.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.44	0.28	0.24	0.158	0.1168	0.1053	0.86	2.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

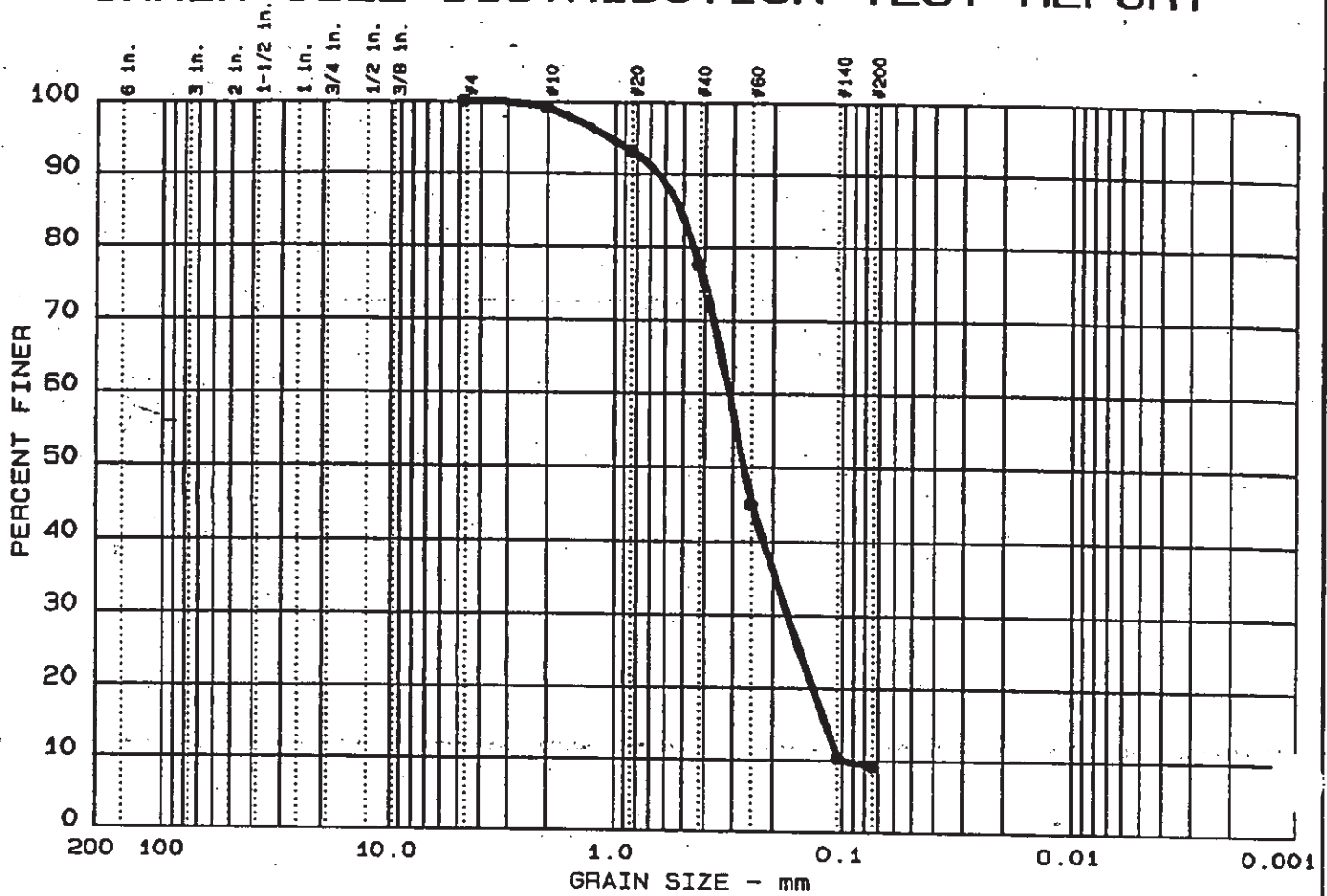
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-44 @ 72.5-74 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	90.9	9.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.51	0.31	0.27	0.172	0.1180	0.0927	1.02	3.3

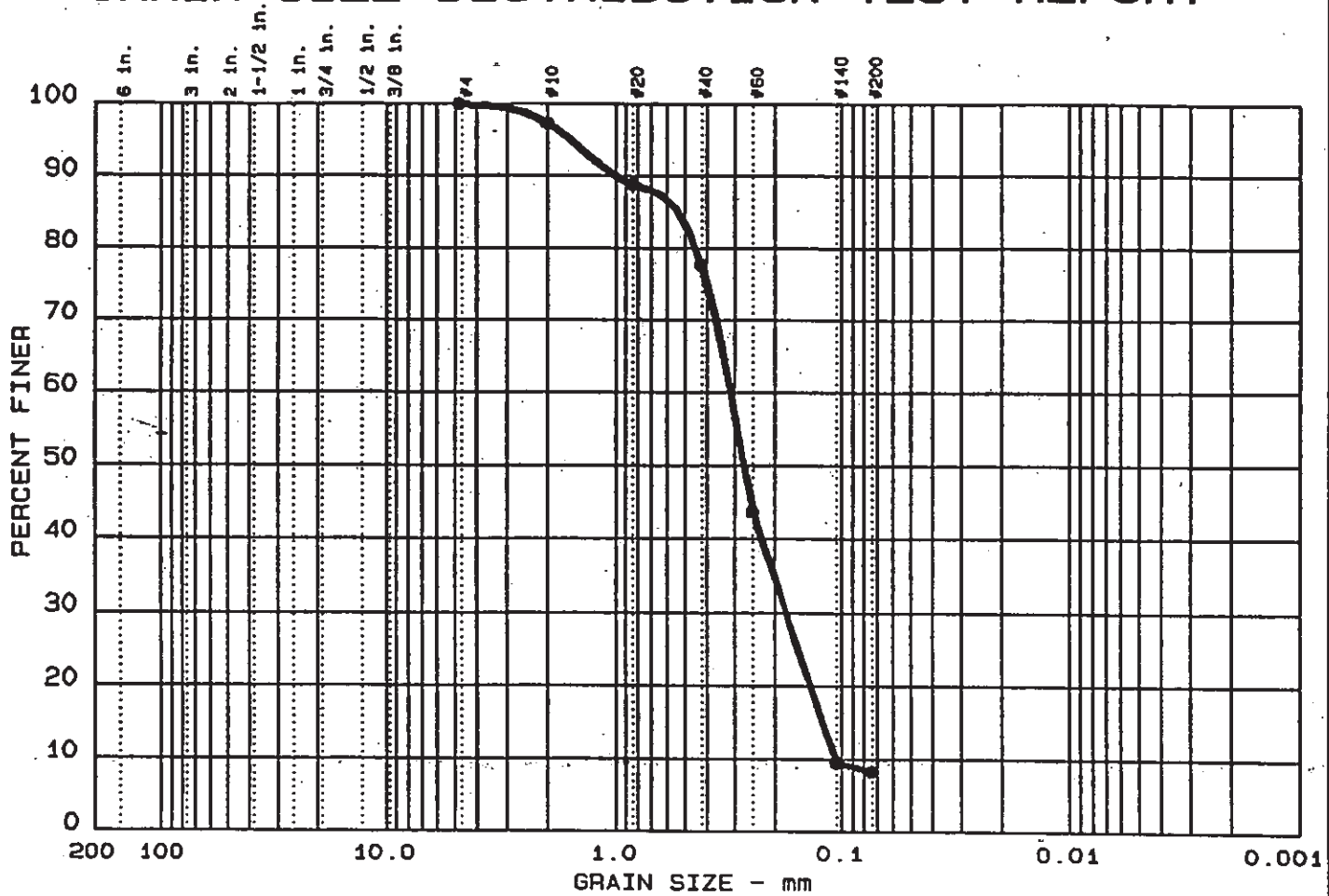
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: -FB-6 SS-45 @ 74-75.5 Ft.

Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	0.2	91.6	8.2	

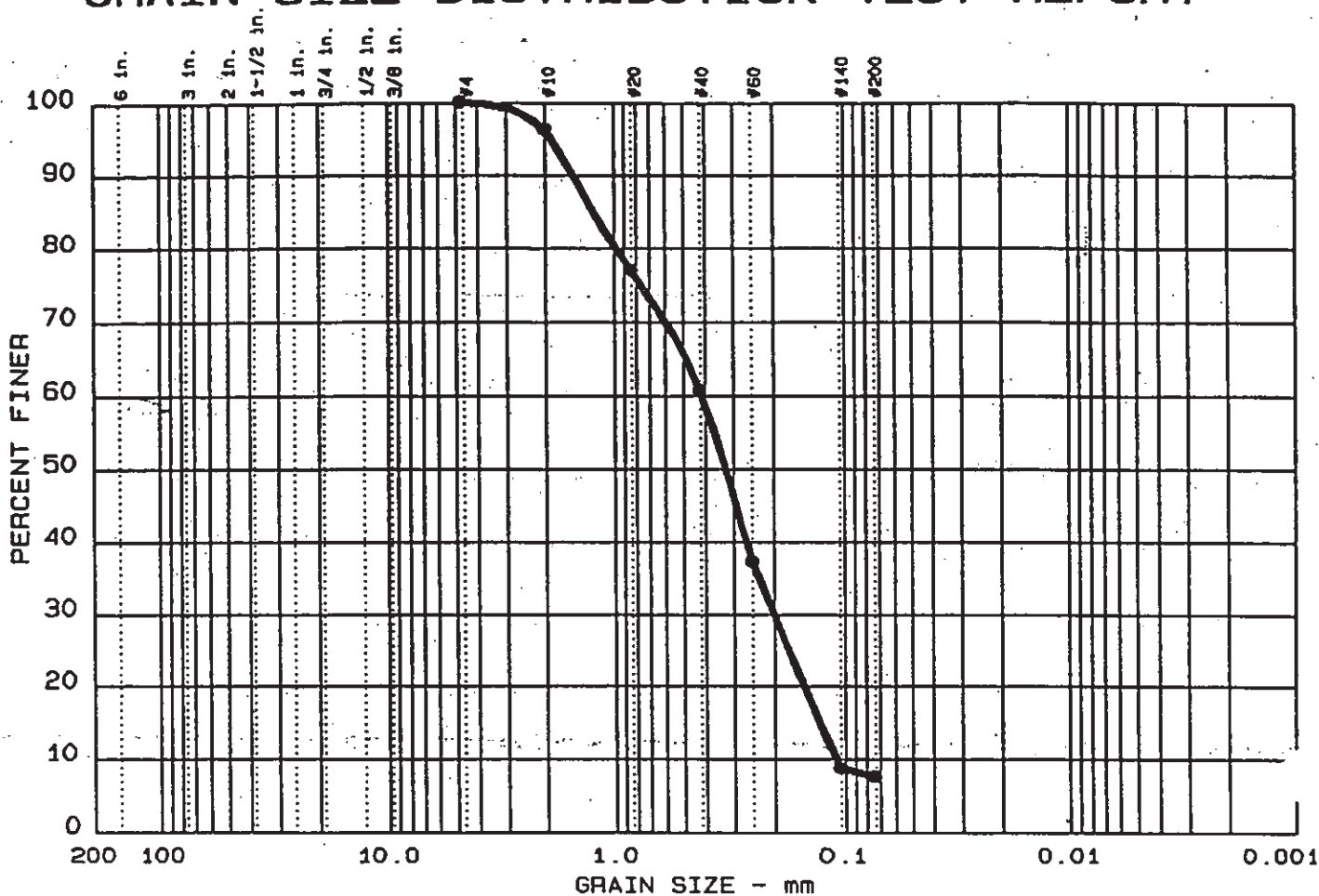
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.52	0.31	0.27	0.177	0.1206	0.1063	0.94	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-46 @ 75.5-77 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.0	92.4	7.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.22	0.41	0.32	0.200	0.1269	0.1089	0.89	3.8

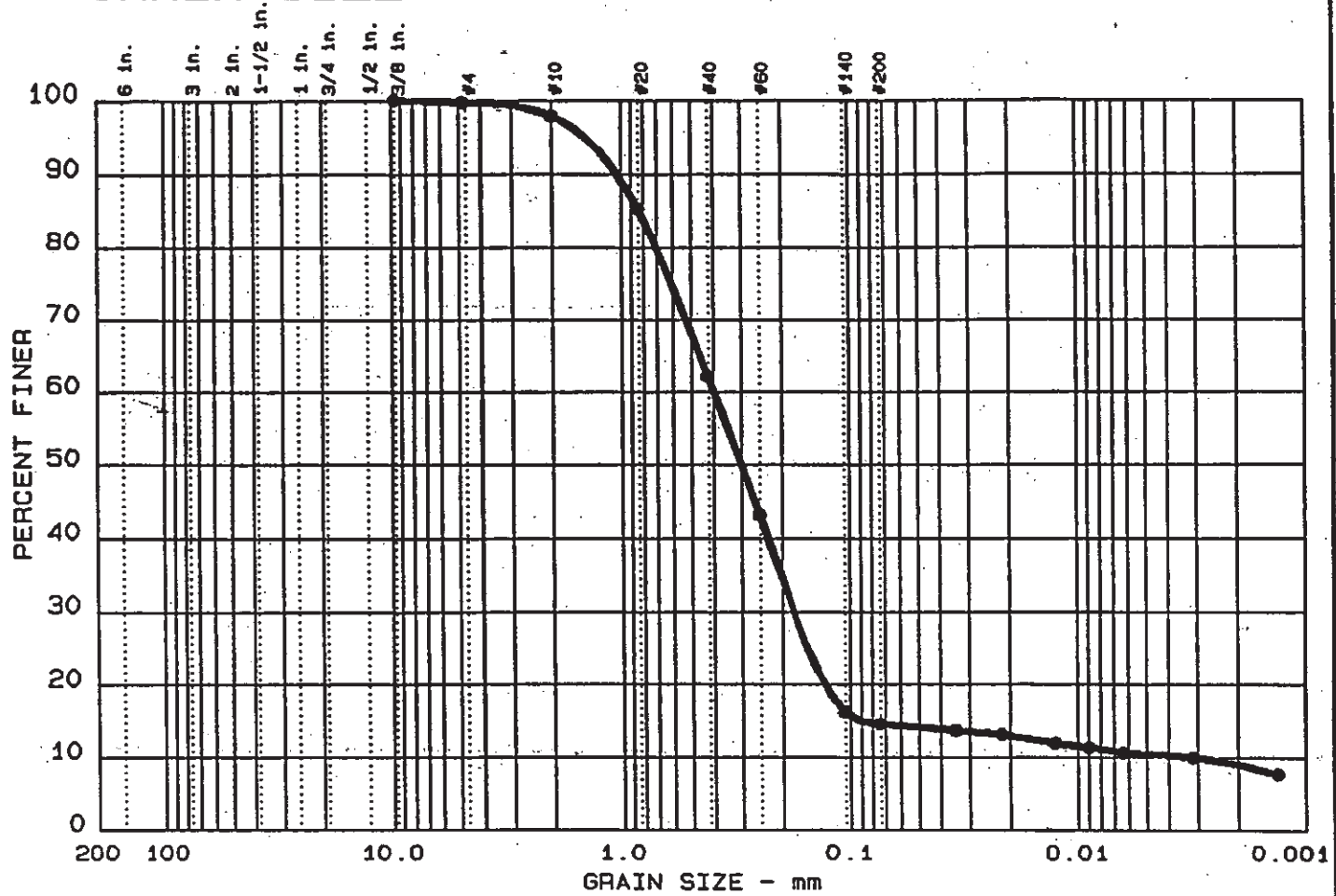
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-47 @ 77-78.5 Ft.

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

Date: March 29, 1998

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.4	85.1	4.1	10.4

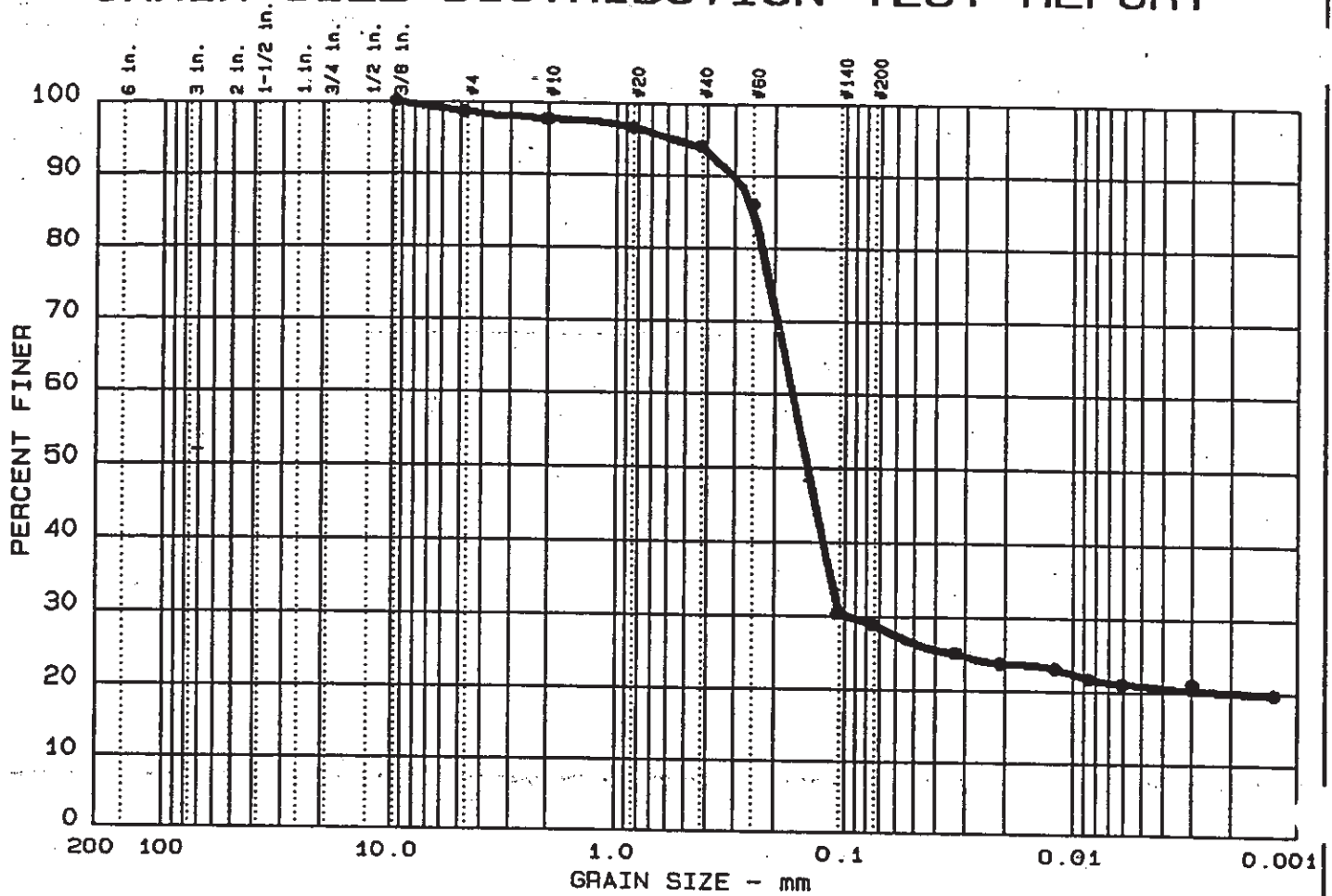
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.83	0.40	0.30	0.177	0.0907	0.0028	28.48	143.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-48 @ 78.5-80 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC/JTM  
 Reviewed by: H  
 ASTM D 422  
 ASTM D 4318  
 Figure No. B-203

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	1.5	69.8	7.9	20.8

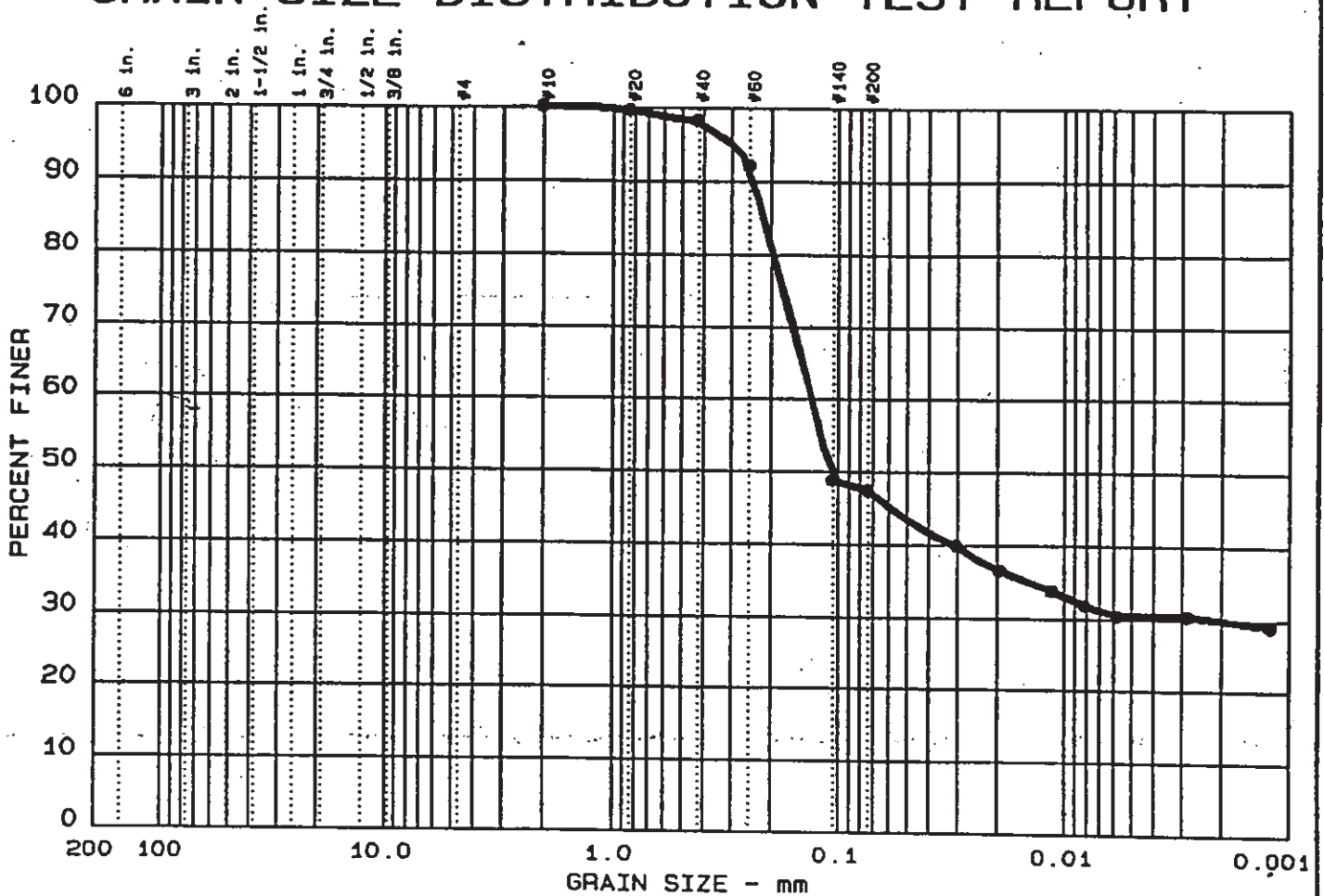
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 36	10	0.25	0.17	0.14	0.097				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-49 @ 80-81.5 Ft.  
 Date: April 13, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	0.0	52.6	17.0	30.4

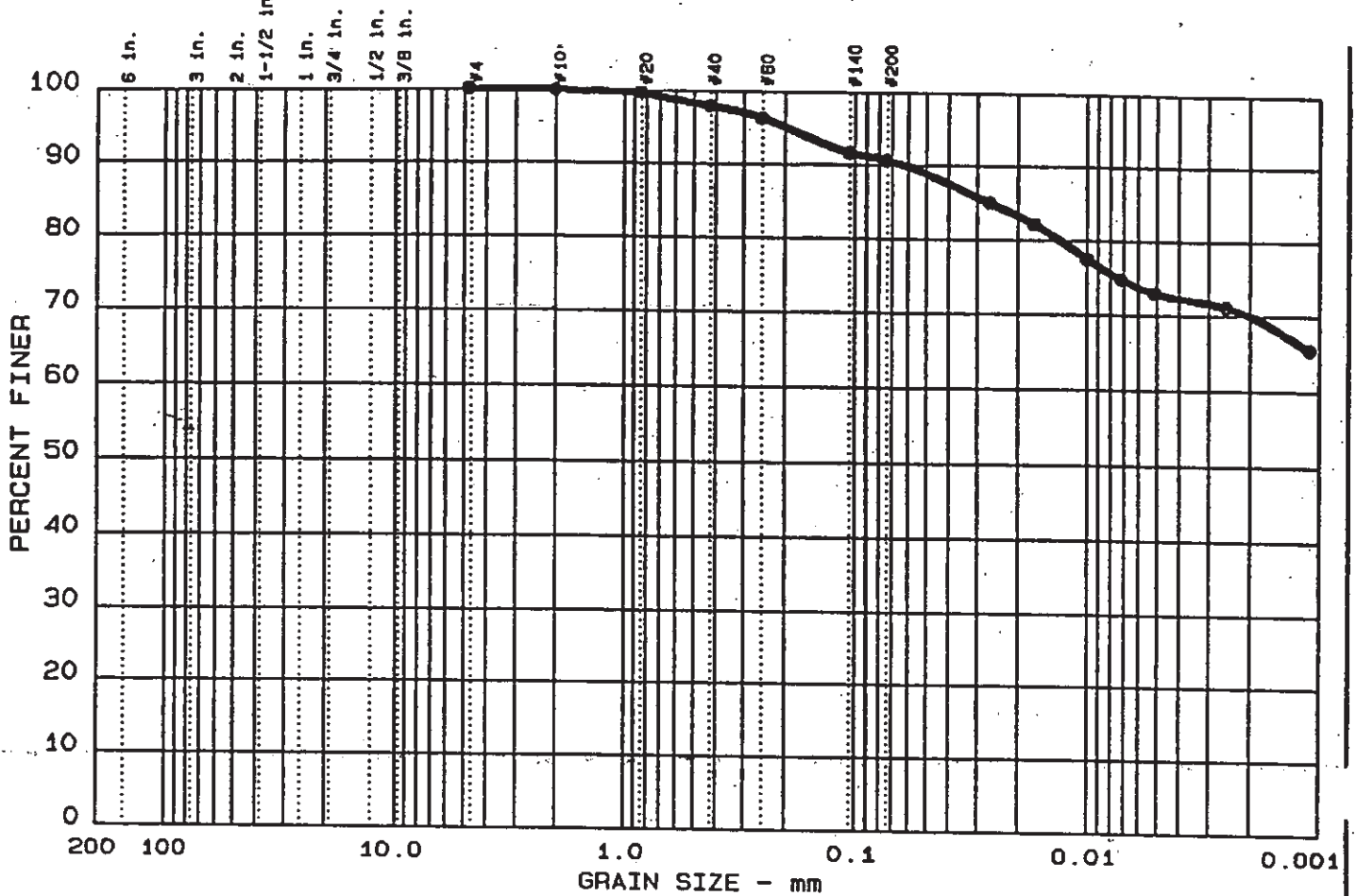
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.22	0.13	0.11	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-50 @ 81.5-83 Ft.  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	9.3	17.9	72.8

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 90	26								

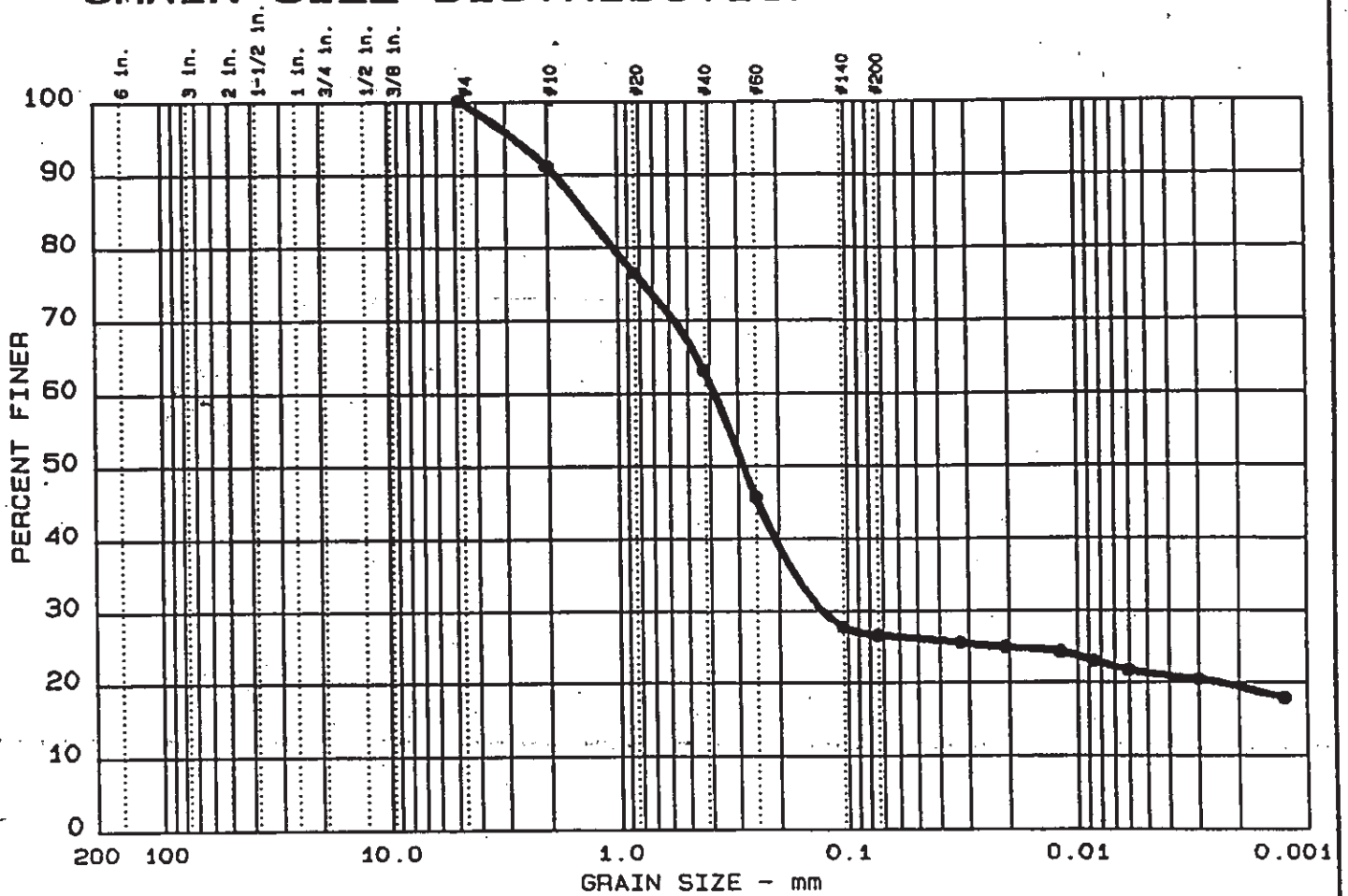
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Elastic Silt with Sand	MH	A-7-5 (37.4)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-51 @ 83-84.5 Ft.  
 Date: April 2, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D 422  
 &  
 ASTM D 4318  
 Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	73.4	5.3	21.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.36	0.38	0.28	0.130				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

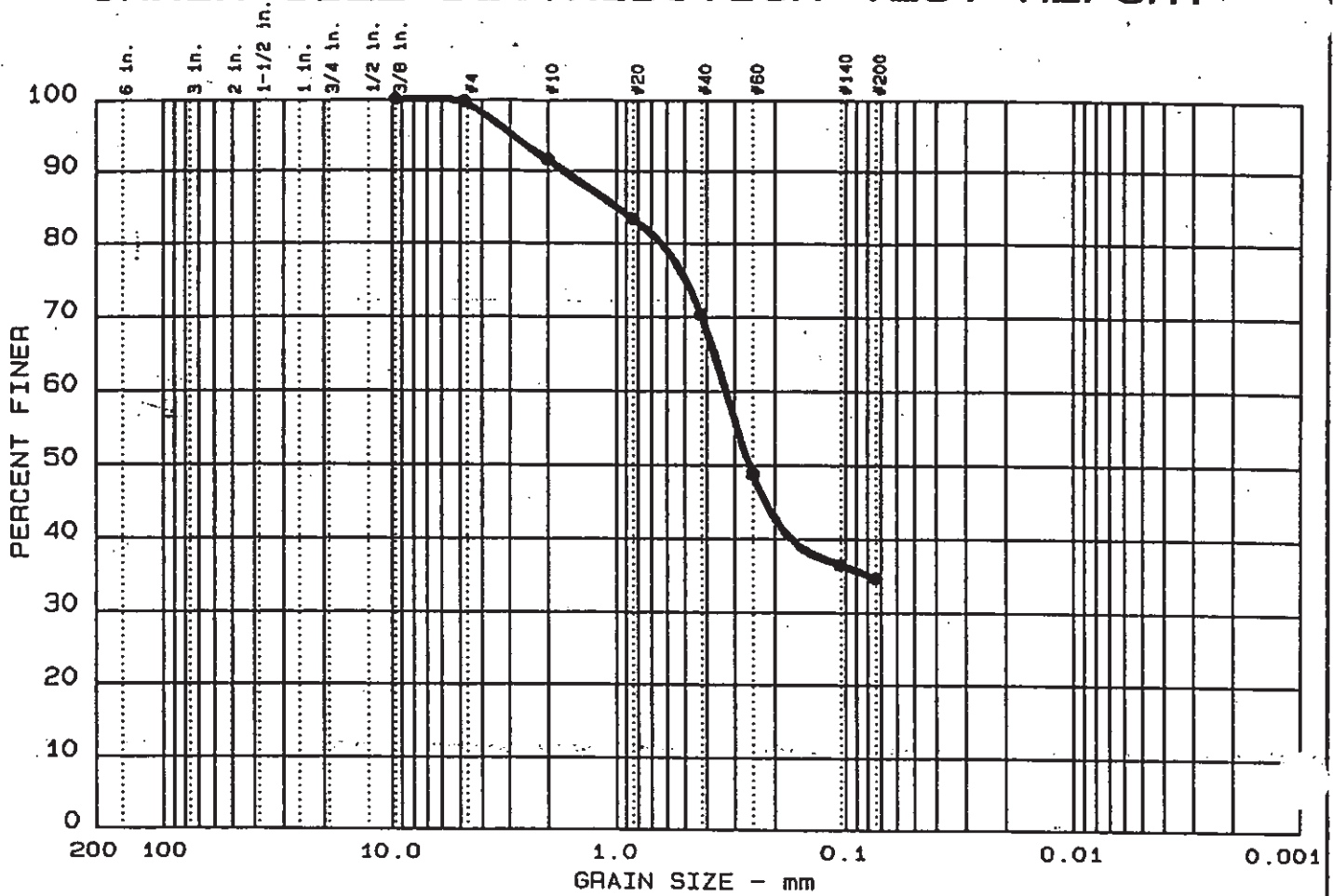
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-52 @ 84.5-86 Ft.  
 Date: March 27, 1998

Remarks:  
 Tested by: *SGJ/TM*  
 Reviewed by: *HP*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No. *6-207*

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.3	65.1	34.6	

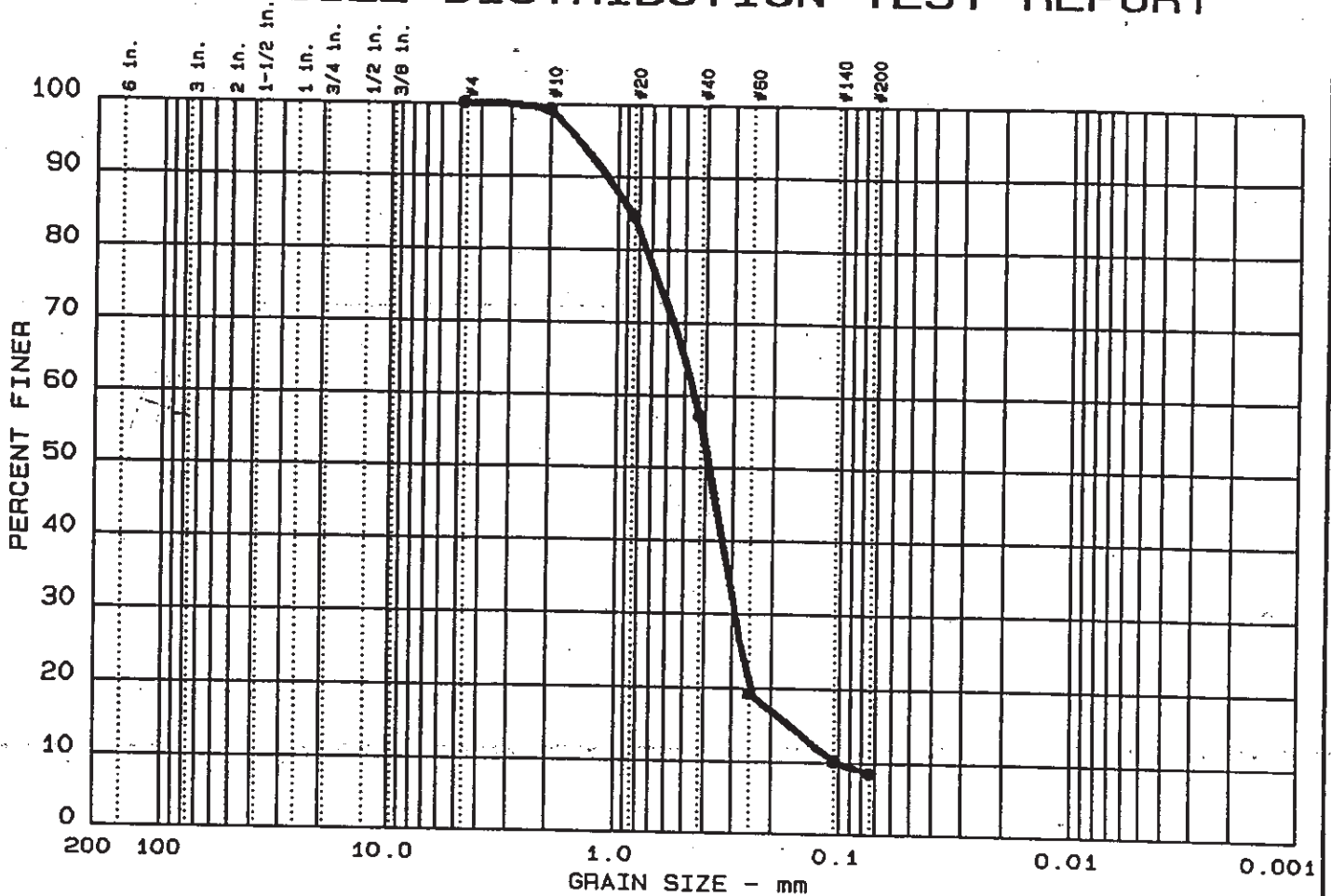
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.99	0.33	0.26					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-53 @ 86-87.5 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.0	91.5	8.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.85	0.44	0.38	0.289	0.1665	0.1015	1.86	4.4

### MATERIAL DESCRIPTION

● Tan Brown Poorly Graded Sand with Silt

USCS

SP-SM

AASHTO

A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-5.SS-54 @ 87.5-89 Ft.

Data: March 29, 1998

Remarks:

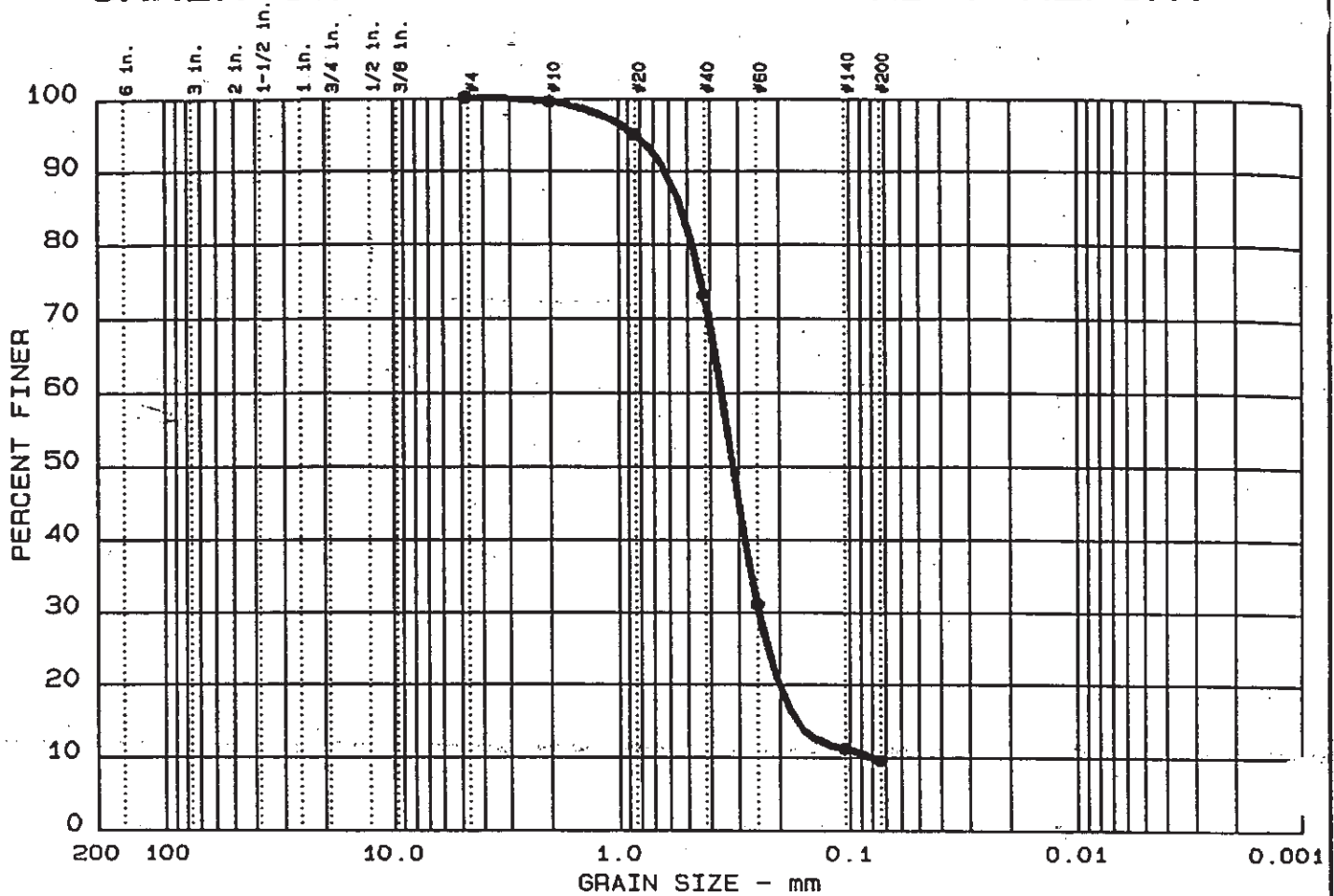
Tested by: SC  
 Reviewed by: HS  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

B-209

# GRAIN SIZE DISTRIBUTION TEST REPORT



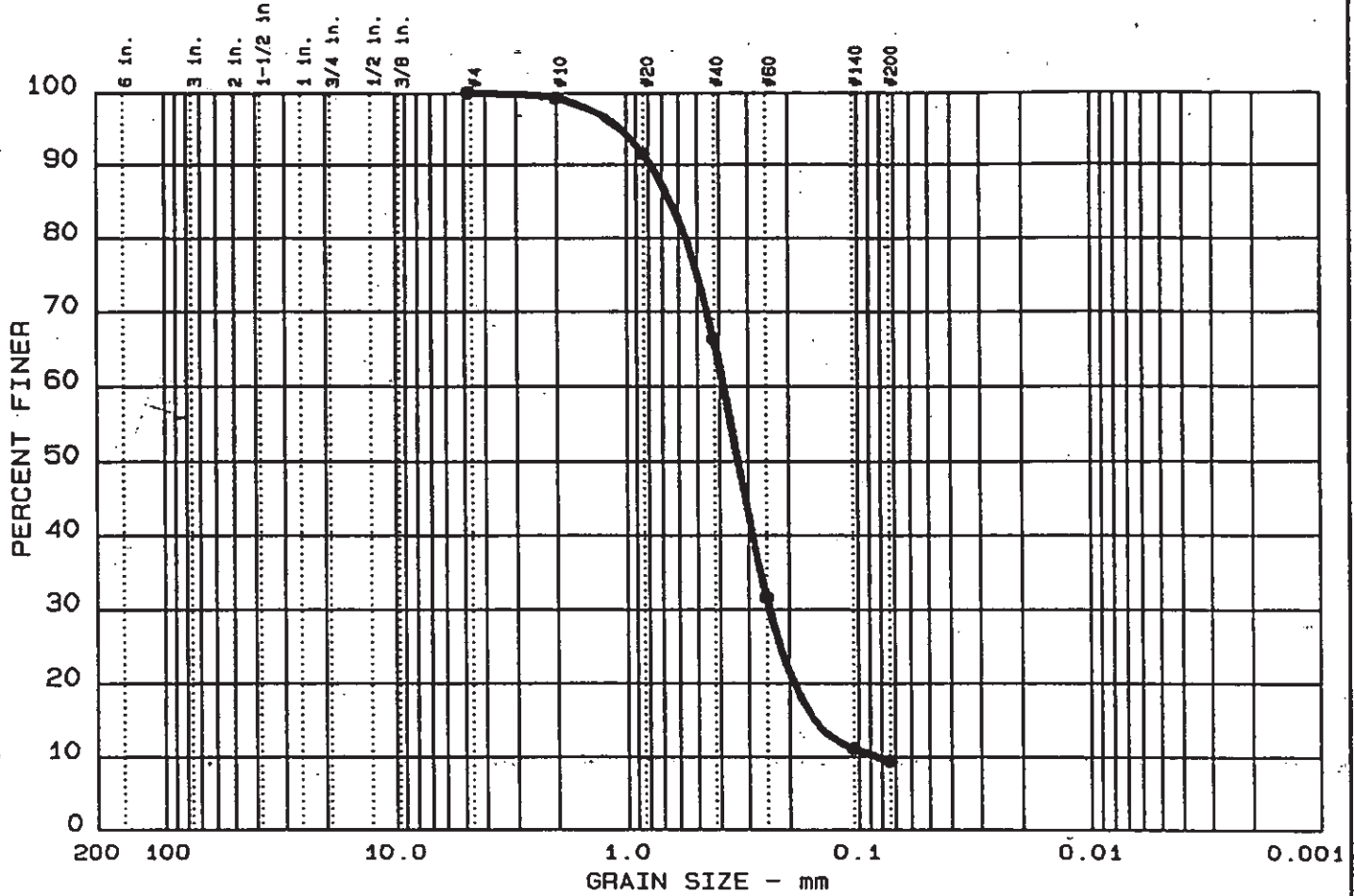
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 1	0.0	0.0	90.4	9.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.52	0.35	0.32	0.245	0.1679	0.0794	2.14	4.5

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing • Location: FB-6 SS-55 @ 89-90.5 Ft.  Date: March 29, 1998	Remarks: Tested by: SC Reviewed by: HB ASTM D 422
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# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	90.6	9.4	

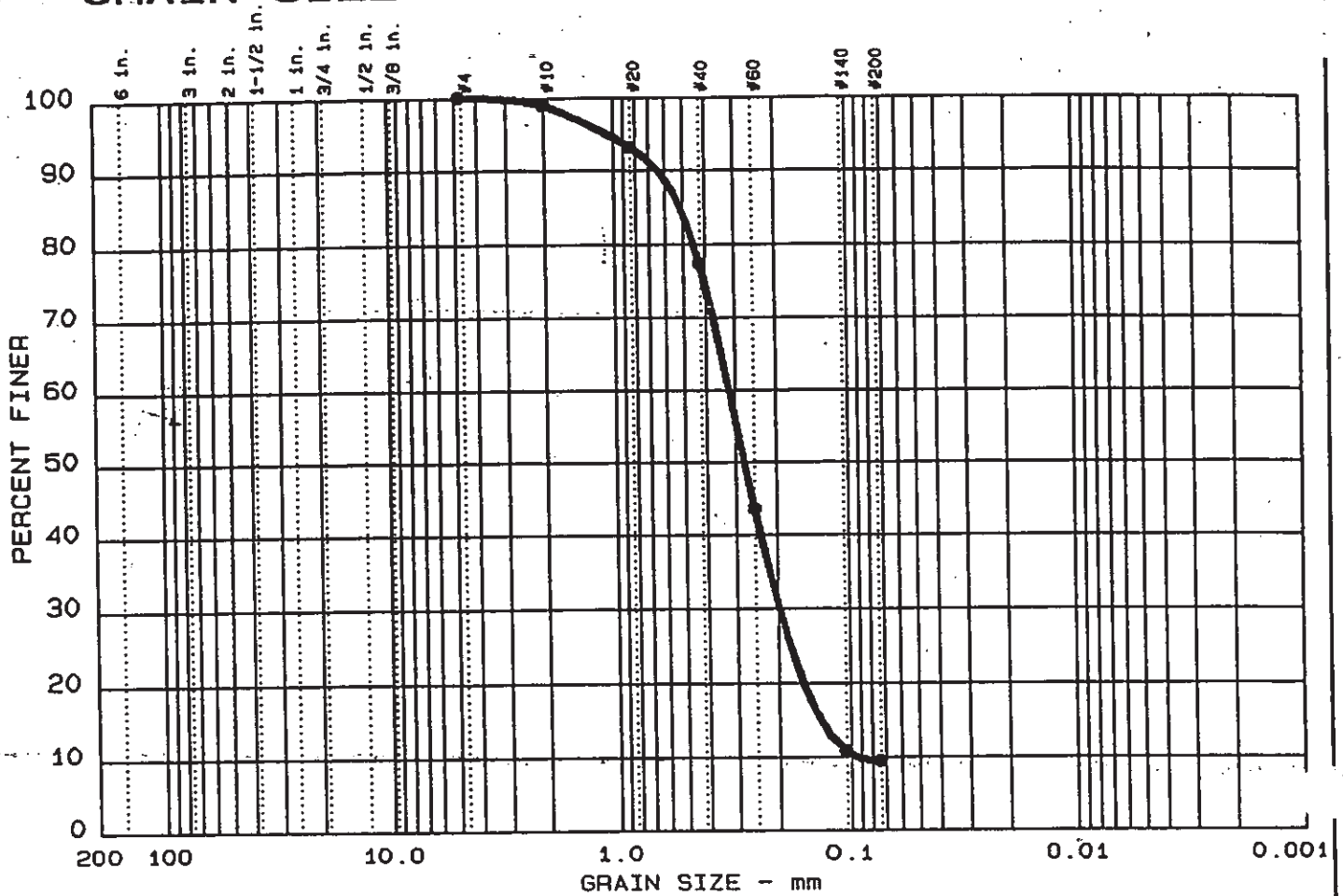
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.64	0.38	0.33	0.243	0.1552	0.0834	1.87	4.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

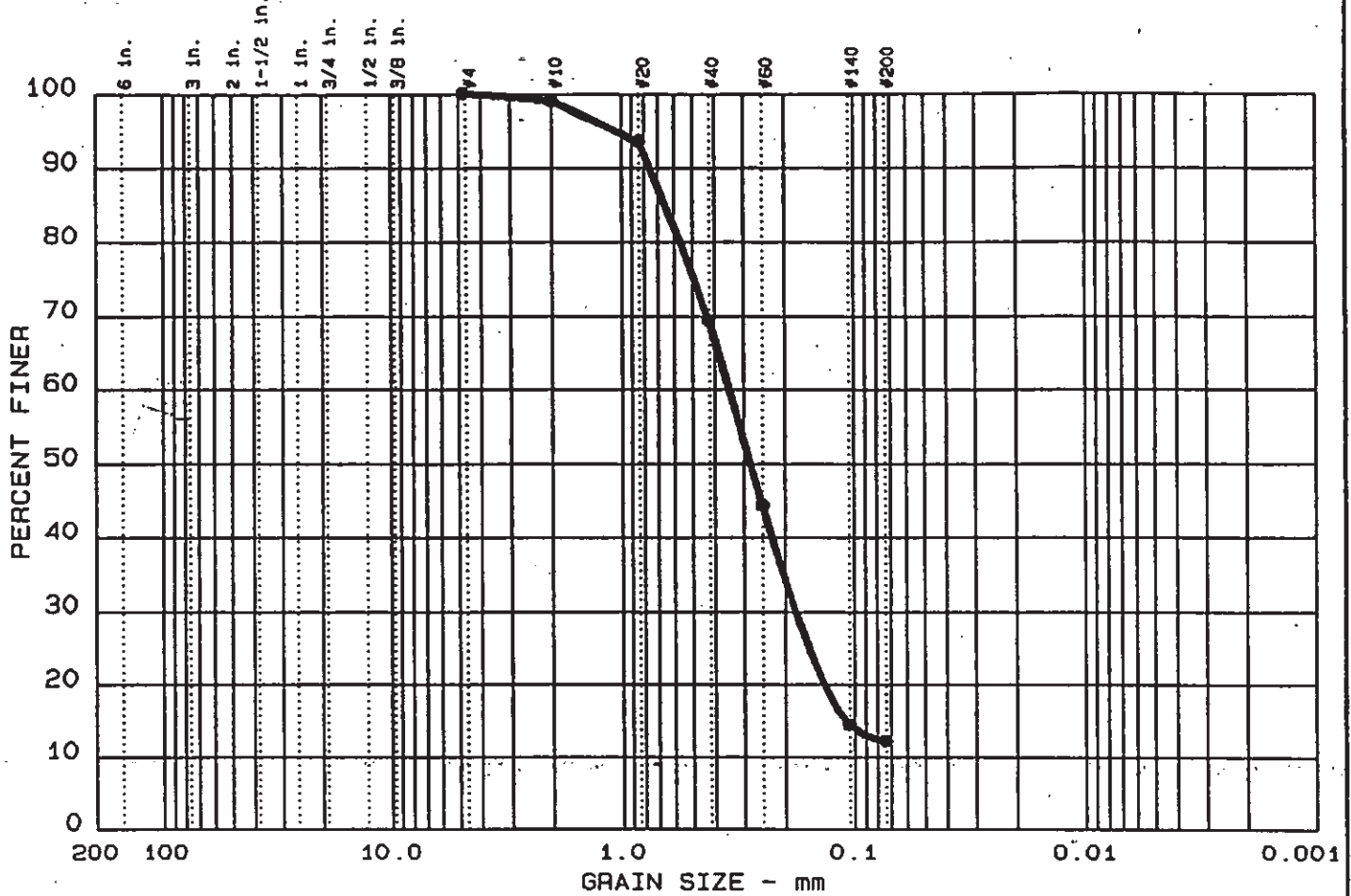
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-56 @ 90.5-92 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	87.8	12.2	

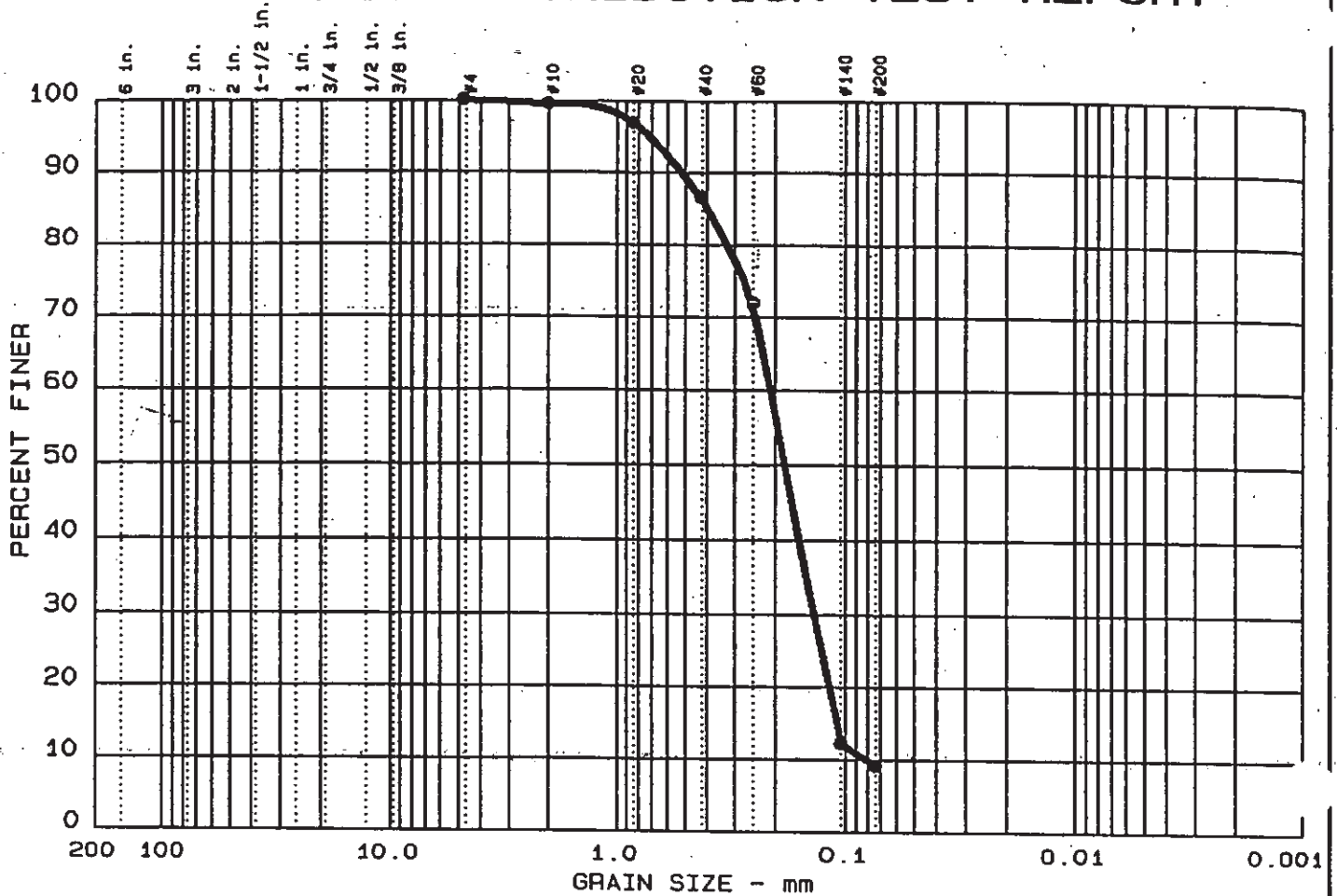
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.65	0.34	0.28	0.181	0.1076			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-59 @ 95-96.5 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	90.8	9.2	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.39	0.21	0.18	0.136	0.1091	0.0809	1.09	2.6

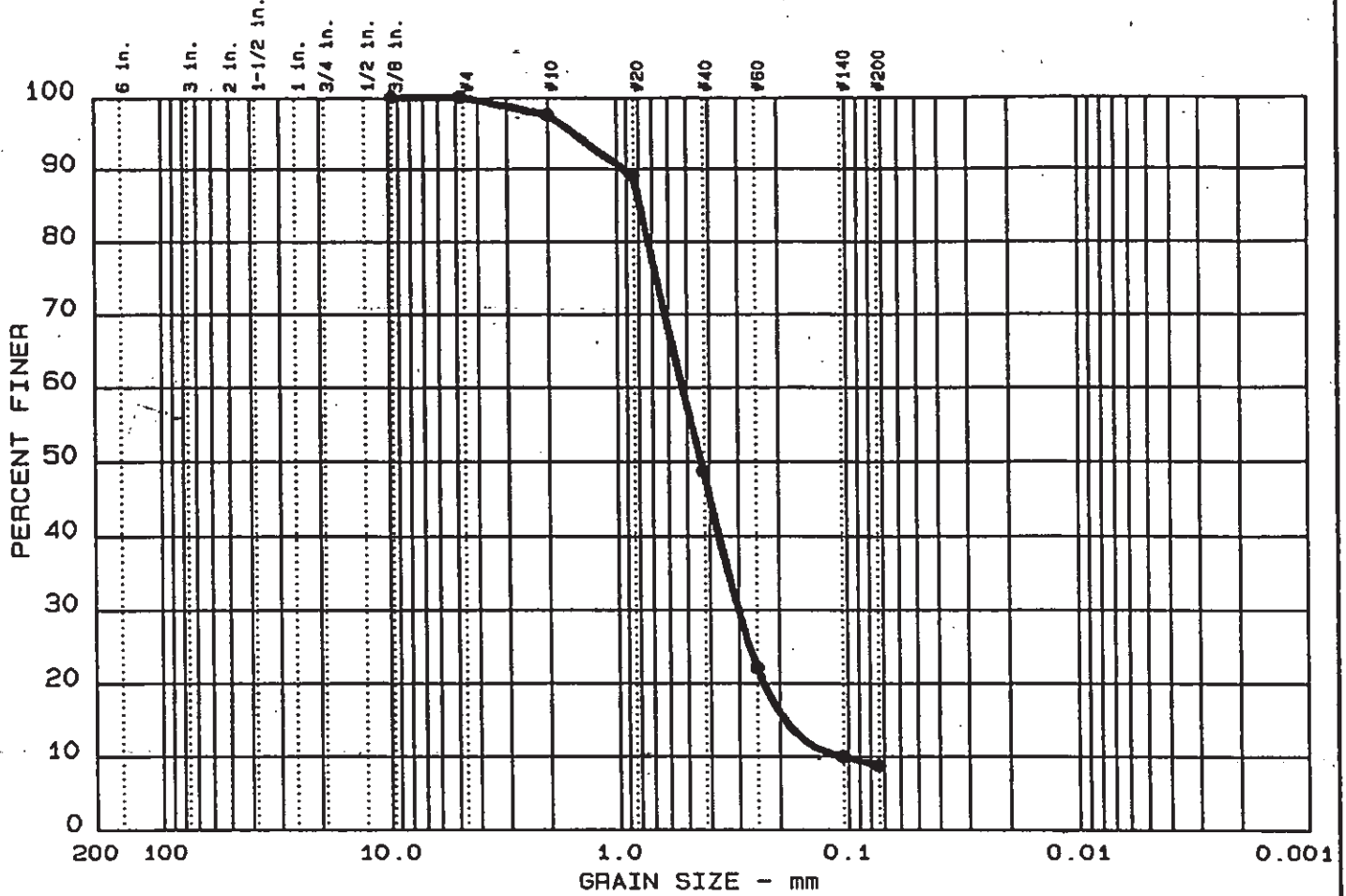
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-60 @ 96.5-98 Ft.  
 Date: March 29, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	91.2	8.8	

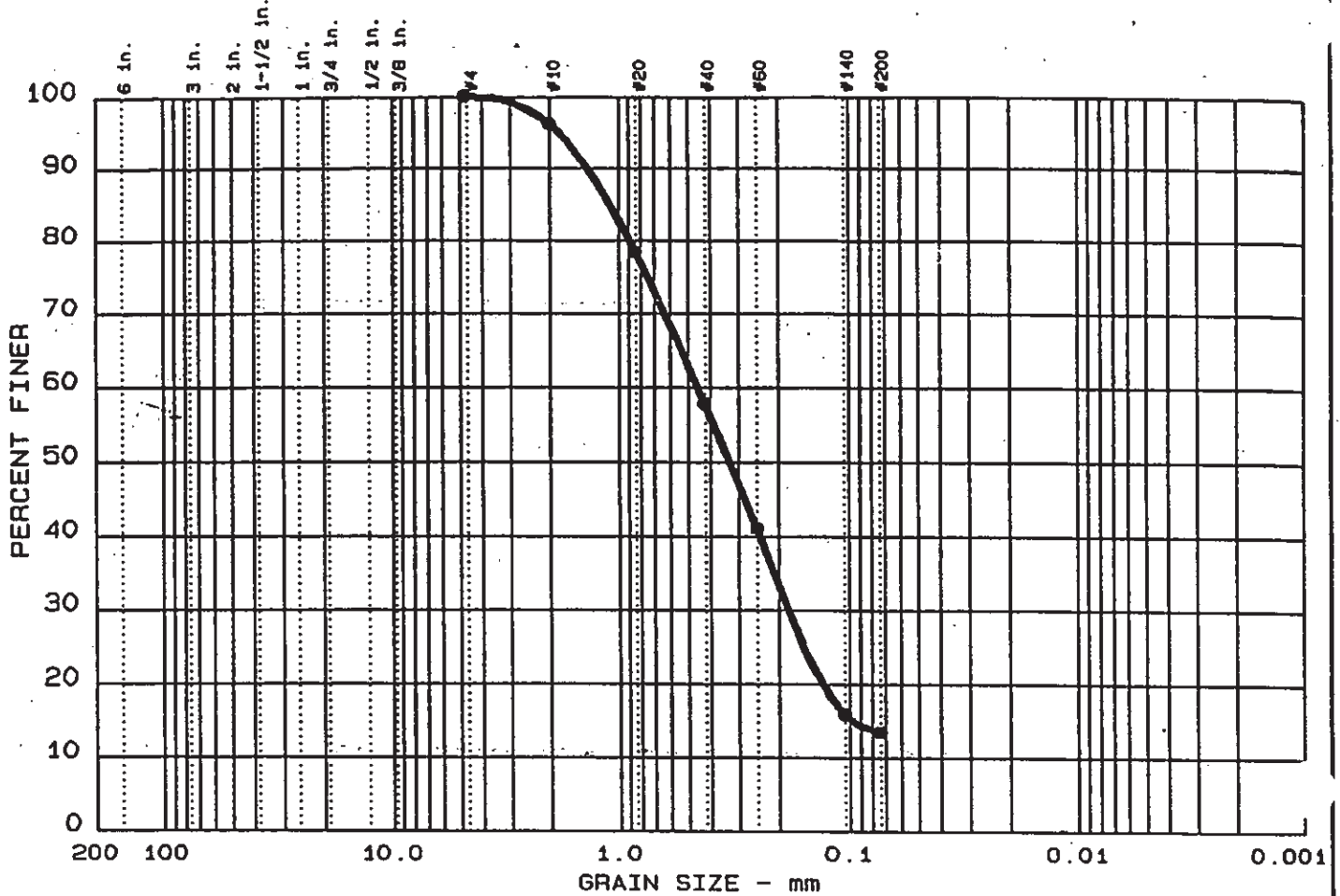
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.79	0.52	0.43	0.301	0.1901	0.1057	1.66	4.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-61 @ 98-99.5 Ft.  
  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	86.5	13.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	1.08	0.45	0.33	0.182	0.0964			

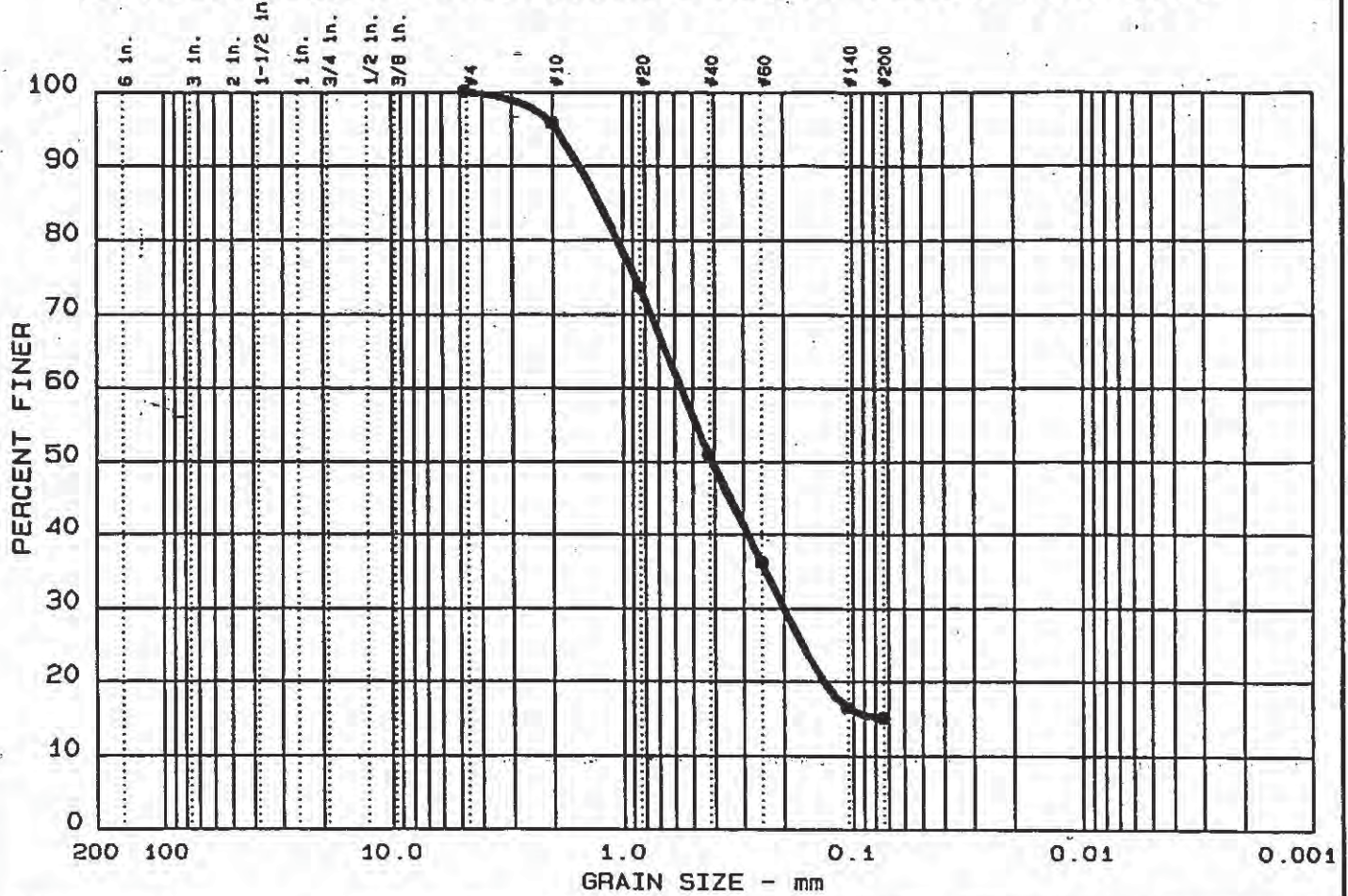
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.1)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-62 @ 99.5-101.0 Ft.

Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: AB  
 ASTM D422  
 & ASTM D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	84.9	15.1	

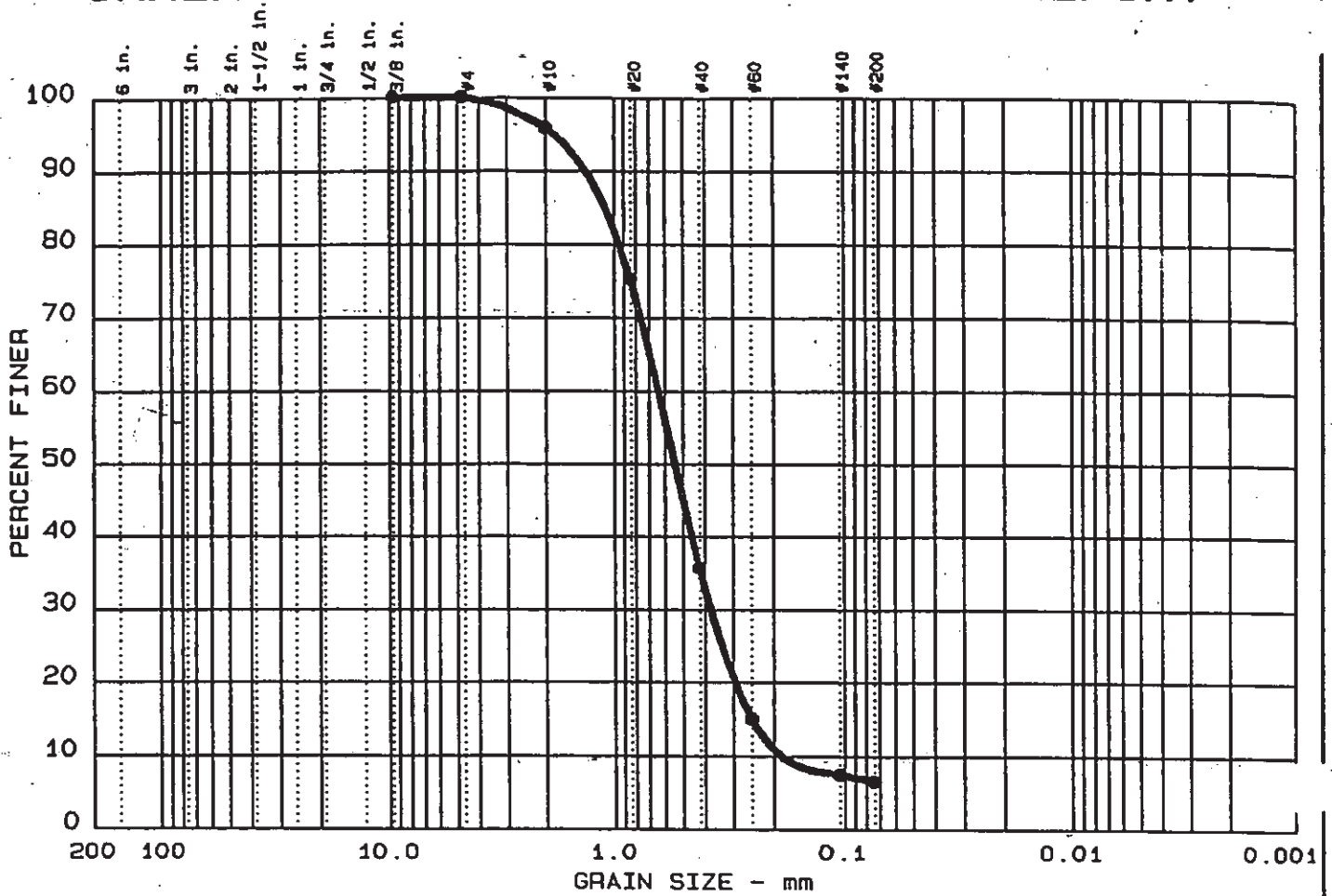
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	1.24	0.56	0.41	0.201				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-63 @ 101-102.5 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422  
 &  
 ASTM D4318  
 Figure No. B-217

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	93.5	6.5	

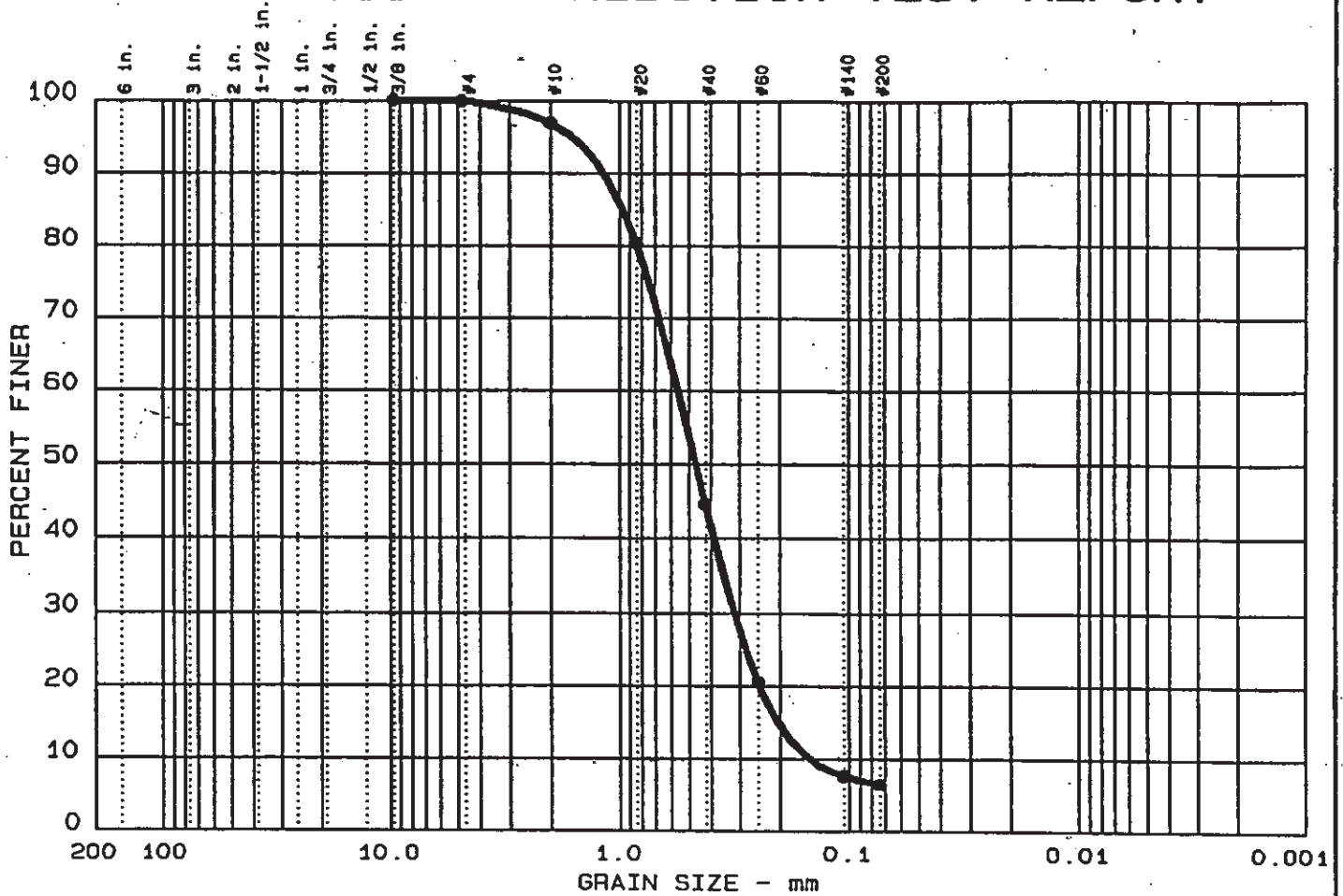
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.08	0.63	0.54	0.375	0.2480	0.1860	1.20	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-64 @ 102.5-104 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: H  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.1	93.4	6.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.95	0.55	0.46	0.316	0.2039	0.1477	1.22	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

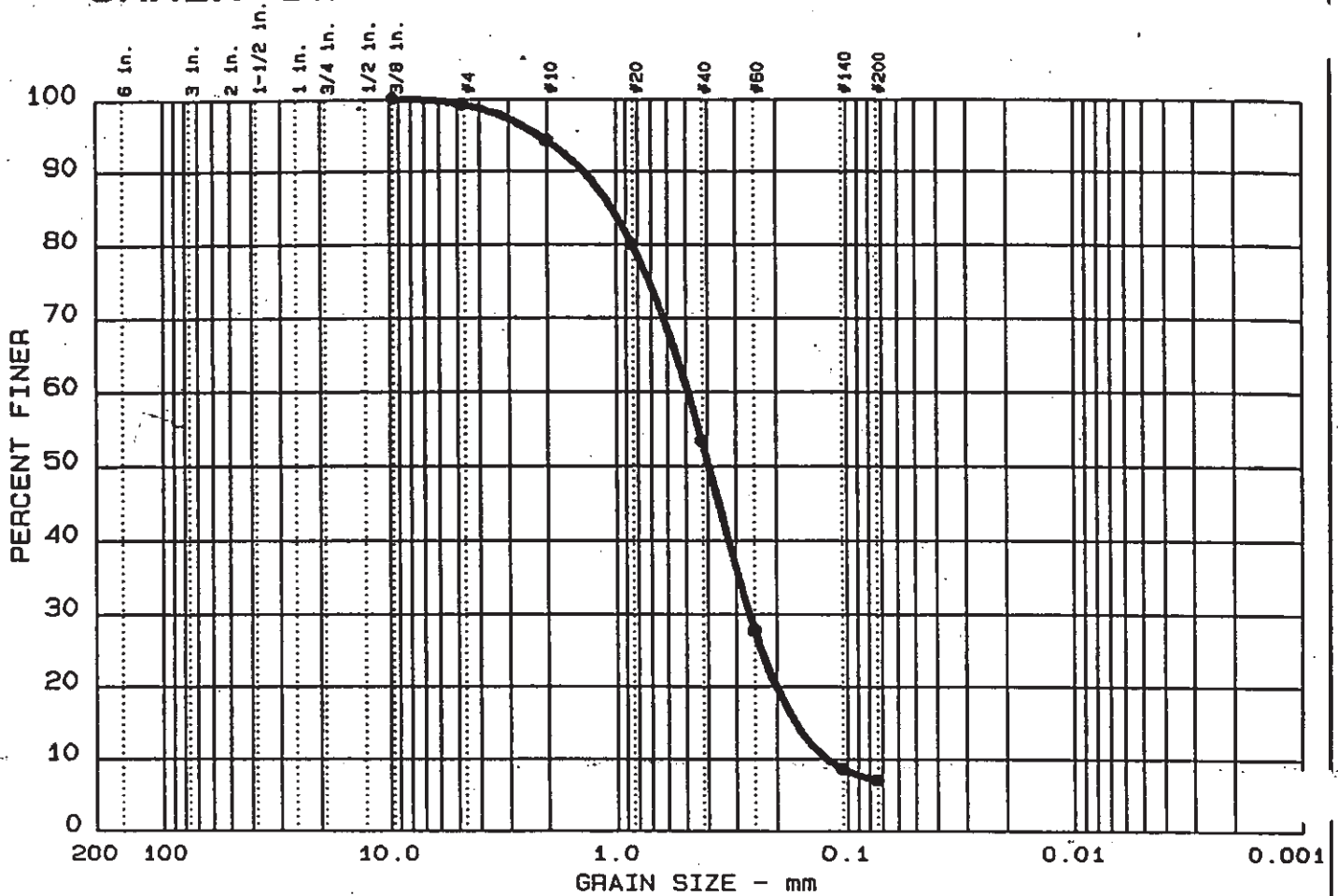
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-5 SS-65 @ 104-105.5 Ft.  
  
 Date: April 9, 1998

Remarks:  
 Tested by: SC.  
 Reviewed by: *HB*  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.8	92.1	7.1	

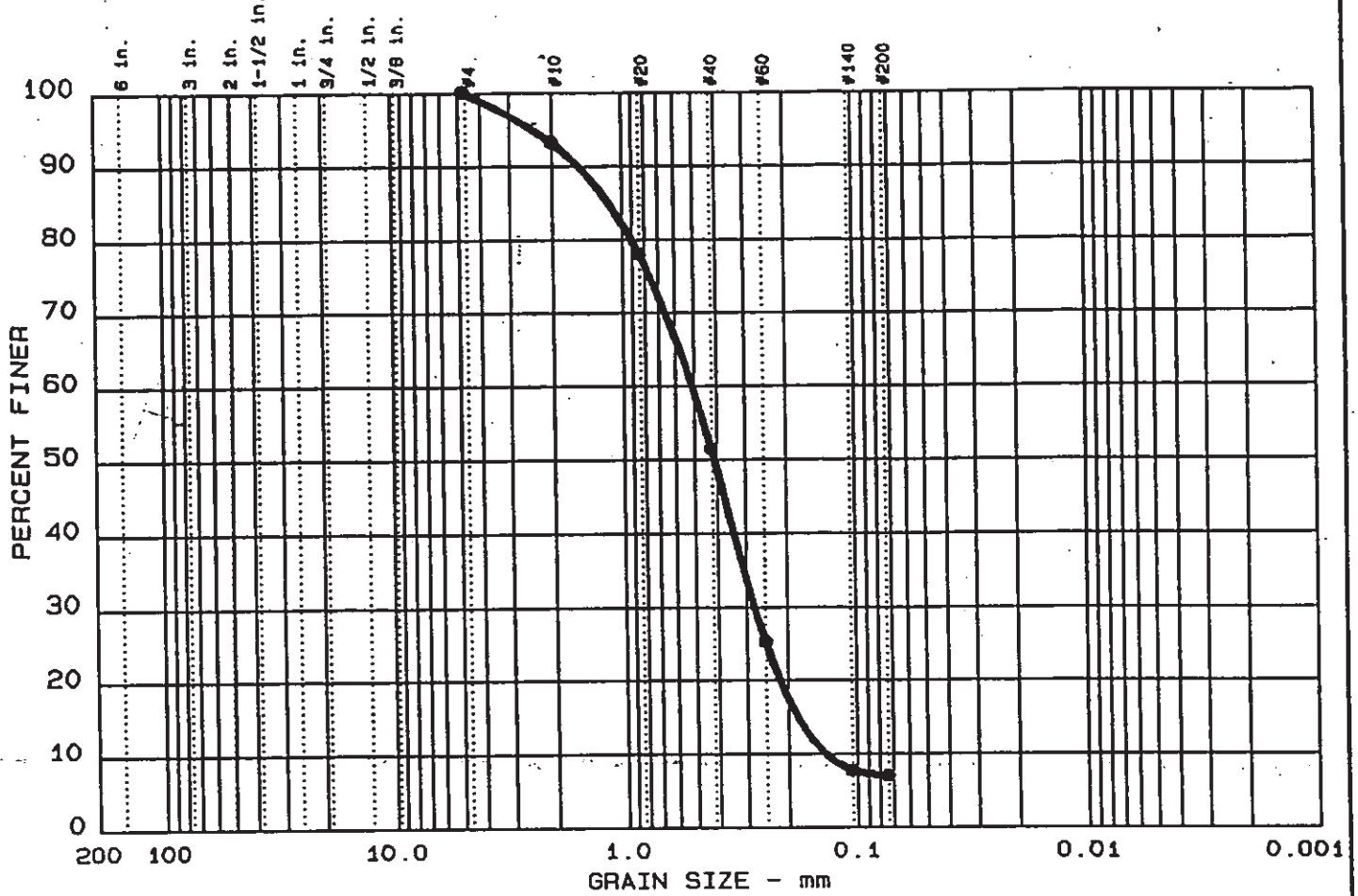
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		1.02	0.48	0.39	0.263	0.1658	0.1215	1.17	4.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-66 @ 105.5-107 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	92.9	7.1	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.12	0.50	0.41	0.277	0.1826	0.1369	1.11	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

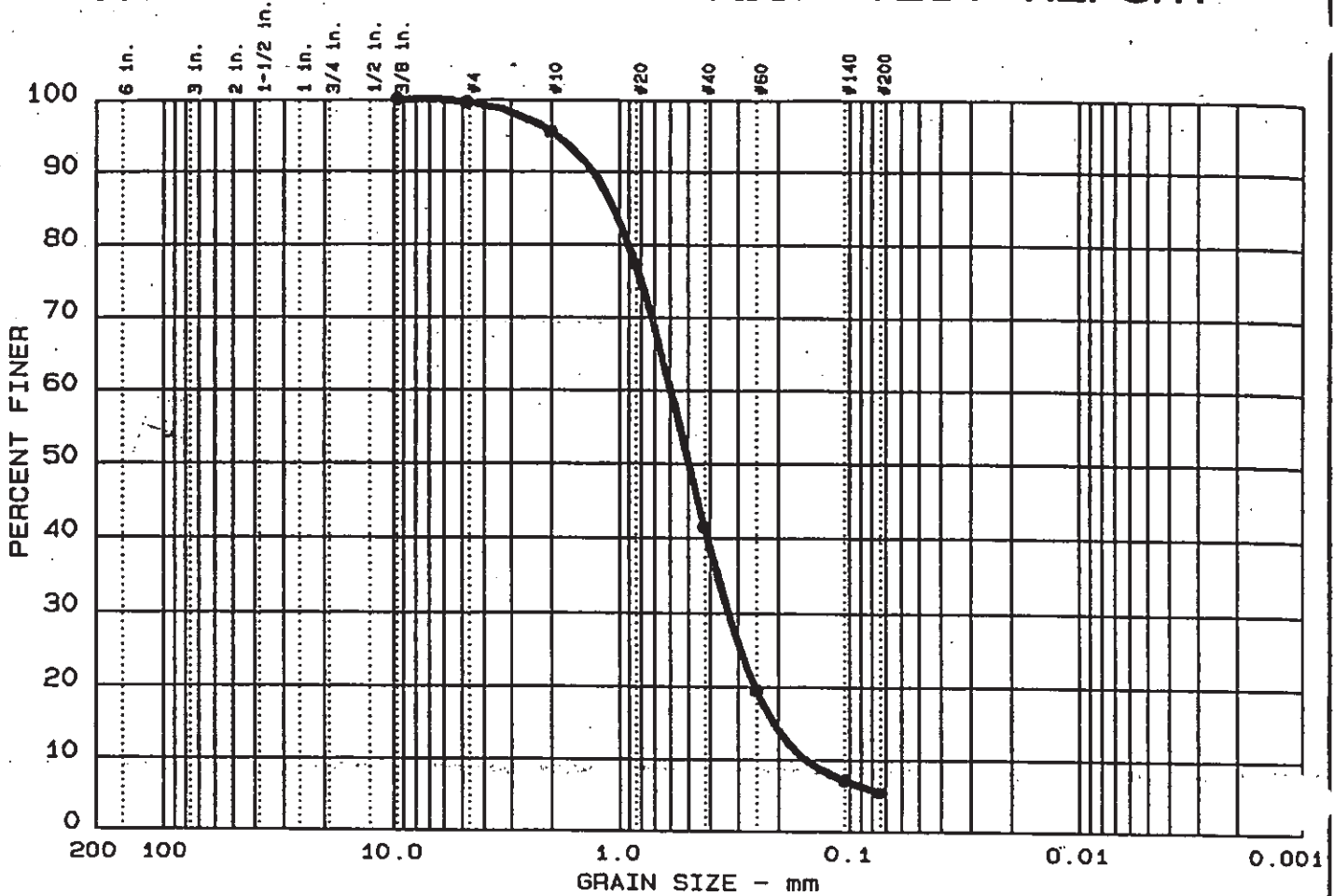
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-57 @ 107-108.5 Ft.  
 Date: April 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D 422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.4	94.1	5.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.05	0.59	0.49	0.331	0.2087	0.1529	1.21	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-68 @ 108.5-110 Ft.  
  
 Date: April 15, 1998

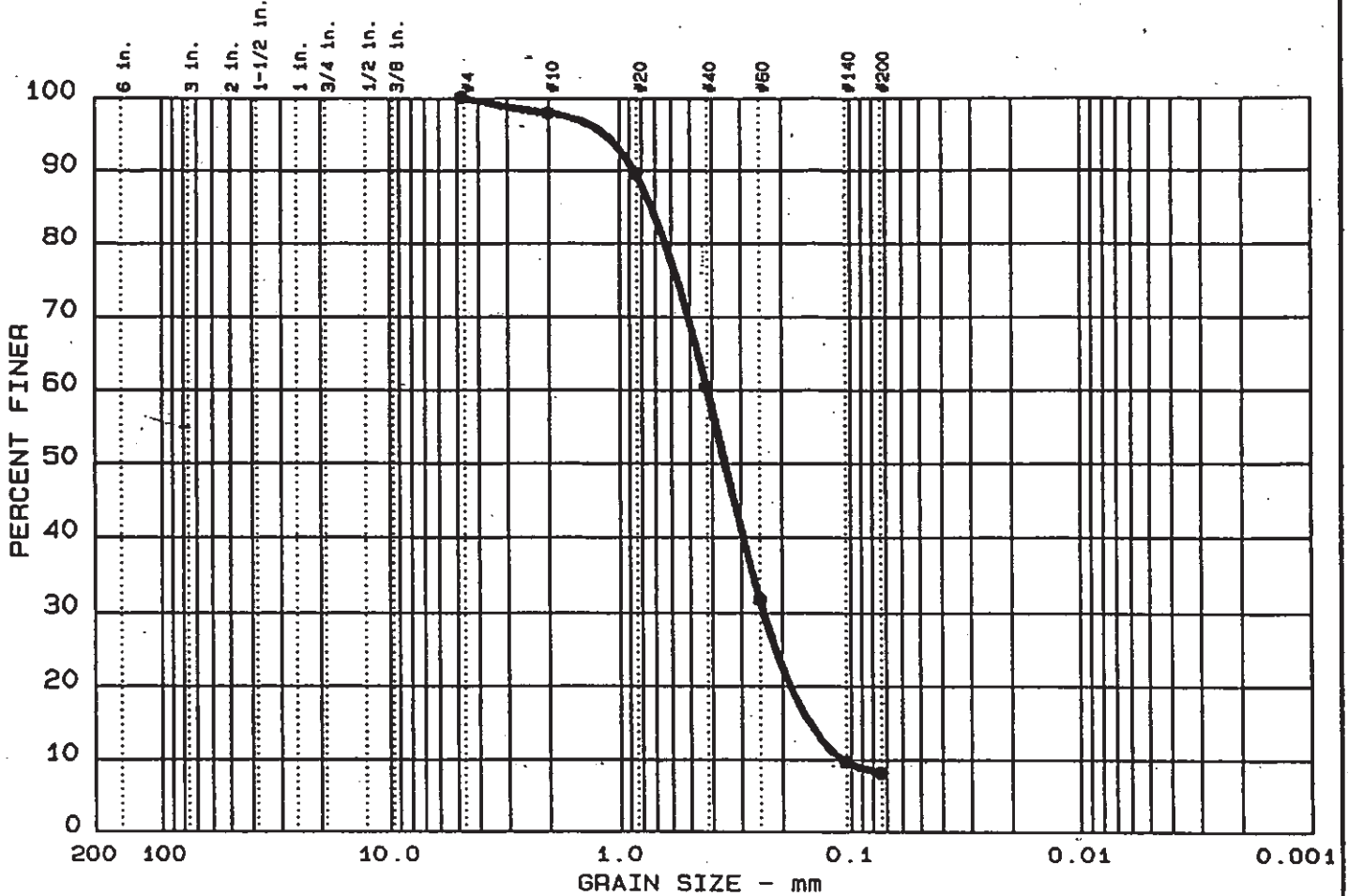
Remarks:  
 Tested by: *SC*  
 Reviewed by: *HJ*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.** *B-222*

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	91.8	8.2	

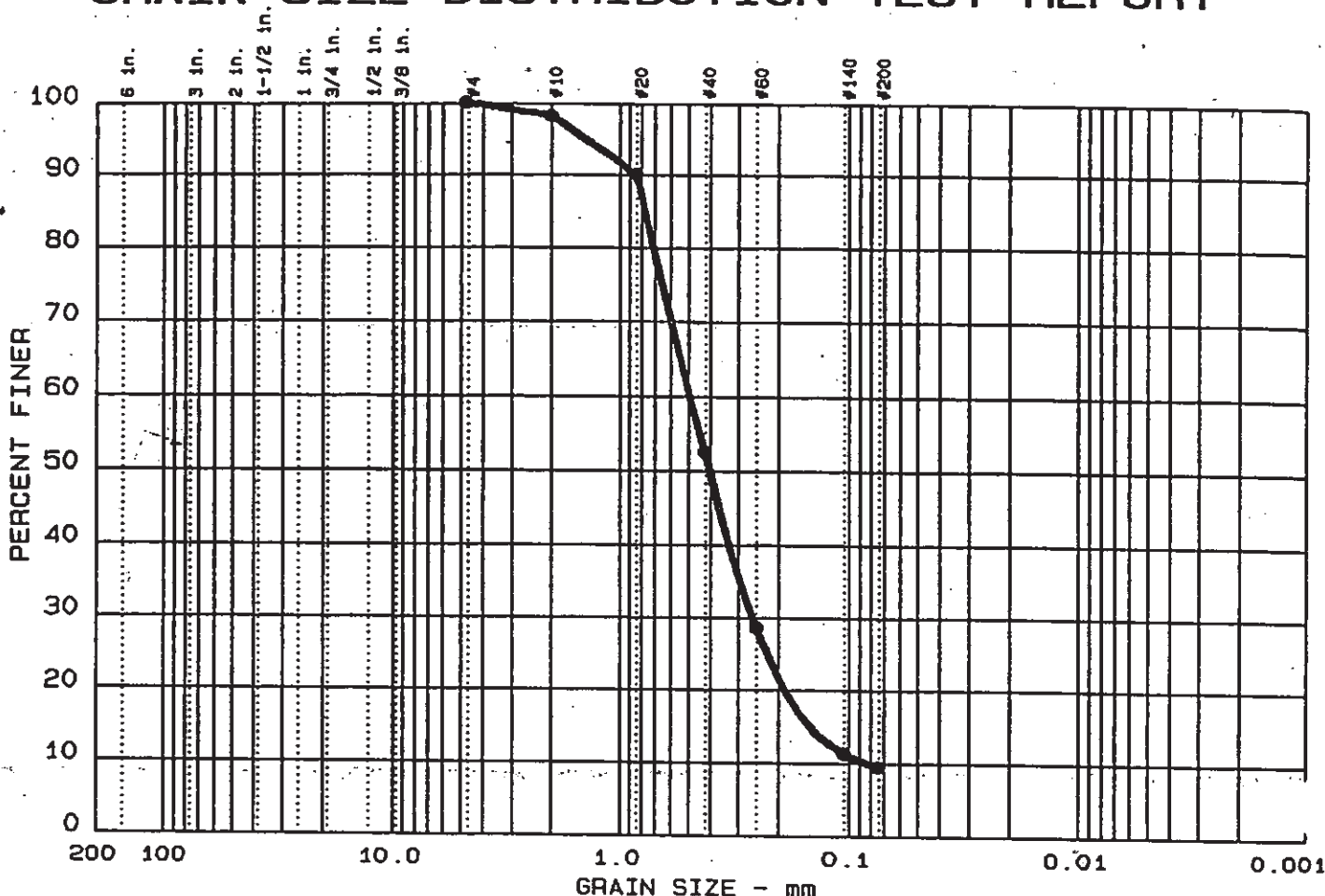
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.72	0.42	0.35	0.241	0.1522	0.1078	1.30	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-59 @ 110-111.5 Ft.  
 Date: April 15, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HS*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	0.0	90.5	9.5	

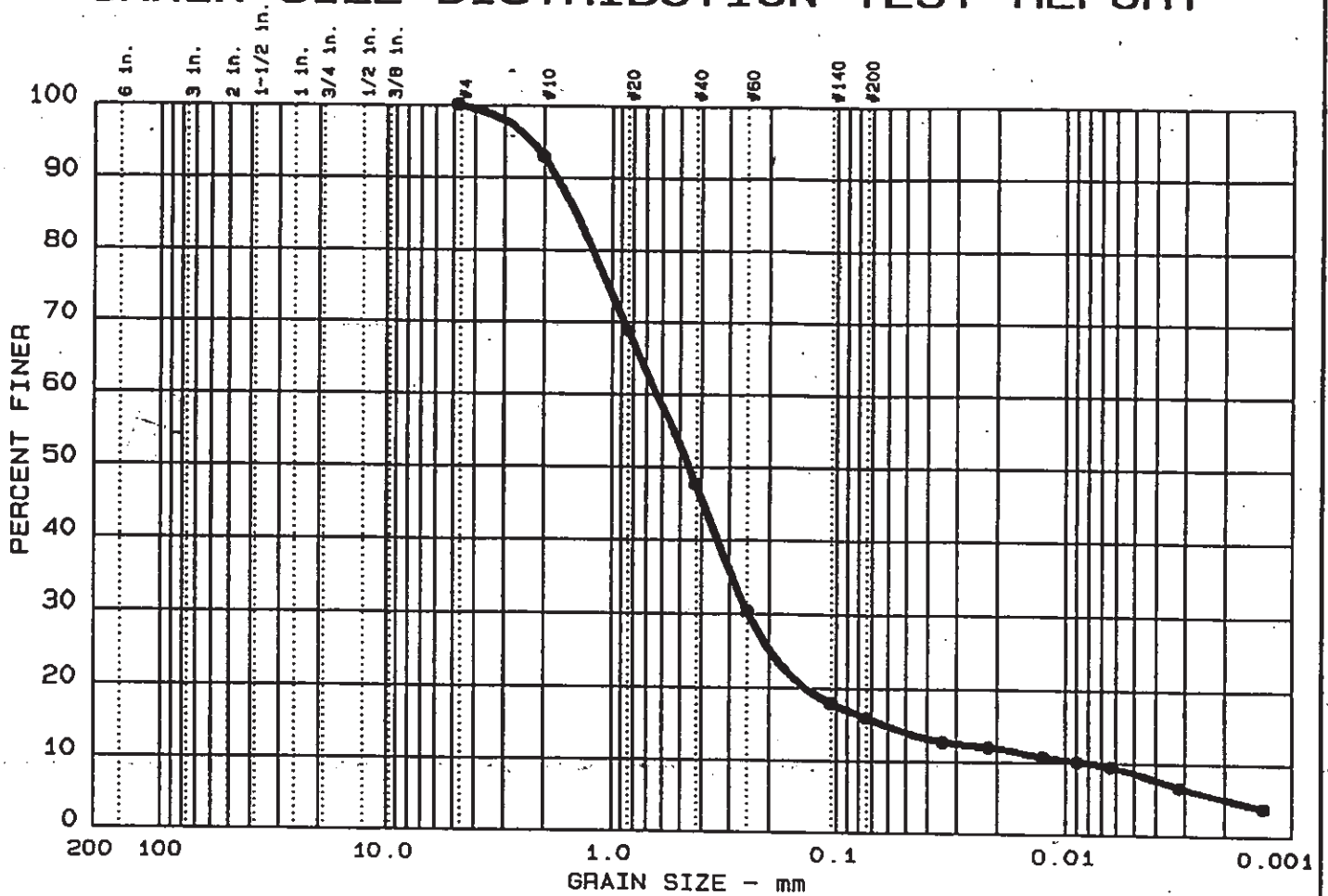
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.77	0.49	0.40	0.260	0.1447	0.0833	1.66	5.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-70 @ 111.5-113 Ft.  
 Date: April 15, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HS*  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	84.0	7.3	8.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 40	2	1.43	0.62	0.45	0.247	0.0587	0.0079	12.40	78.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-1-b

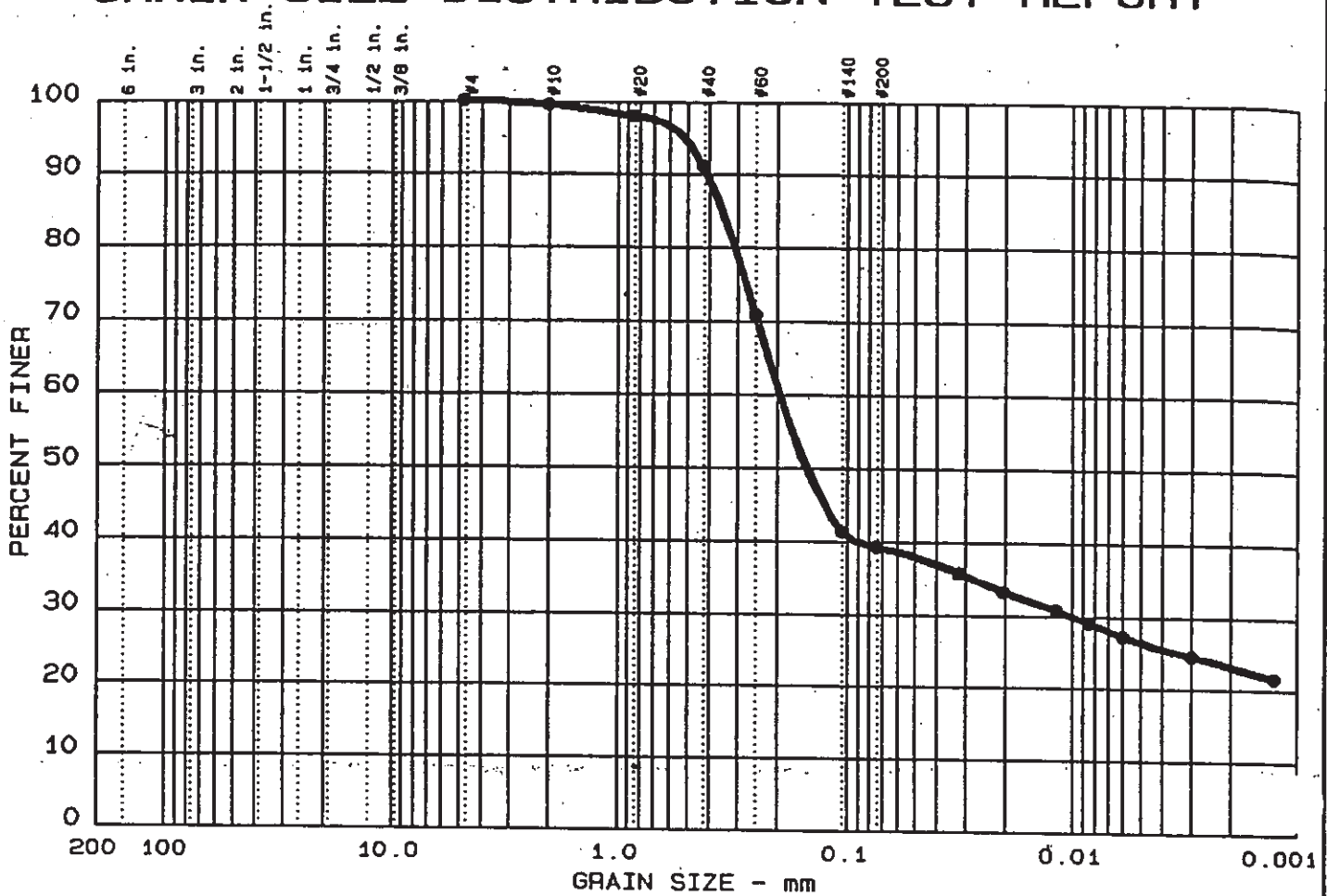
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-71 @ 113-114.5 Ft.  
 Date: April 13, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: NB  
 ASTM D 422  
 &  
 ASTM D 4318

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	60.8	12.8	26.4

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 63	22	0.35	0.19	0.15	0.010				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-7-5 (4.1)

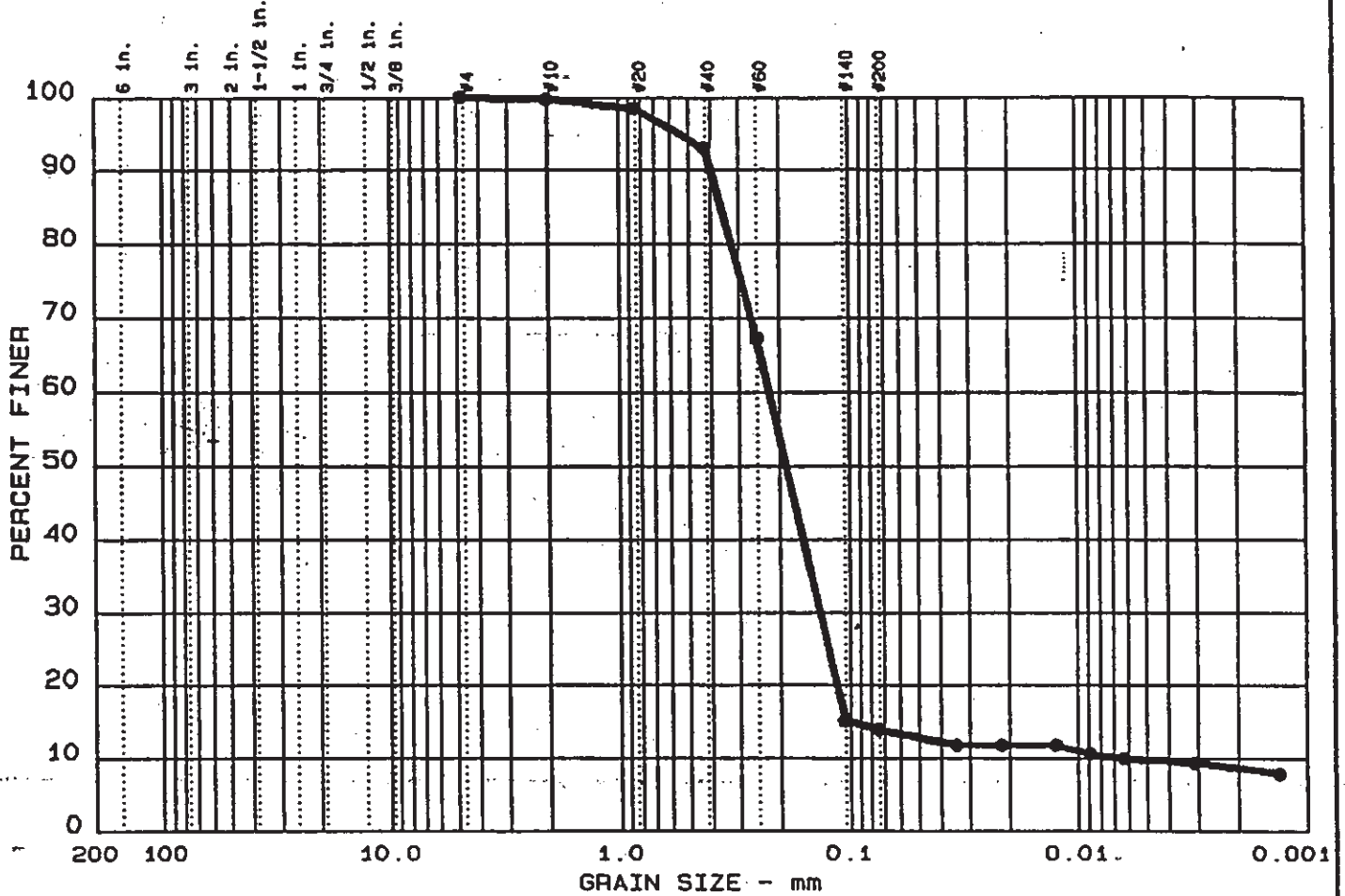
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-5 SS-72 @ 114.5-116 Ft.  
 Date: April 13, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.** B-226

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422  
 &  
 ASTM D4318

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.0	86.1	4.1	9.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.35	0.22	0.19	0.134	0.1007	0.0062	13.12	35.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand	SM	A-2-4 (0.1)

Project No.: 50161-7-0108 Task 16.  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-73 @ 116-117.5 Ft.

Date: April 9, 1998

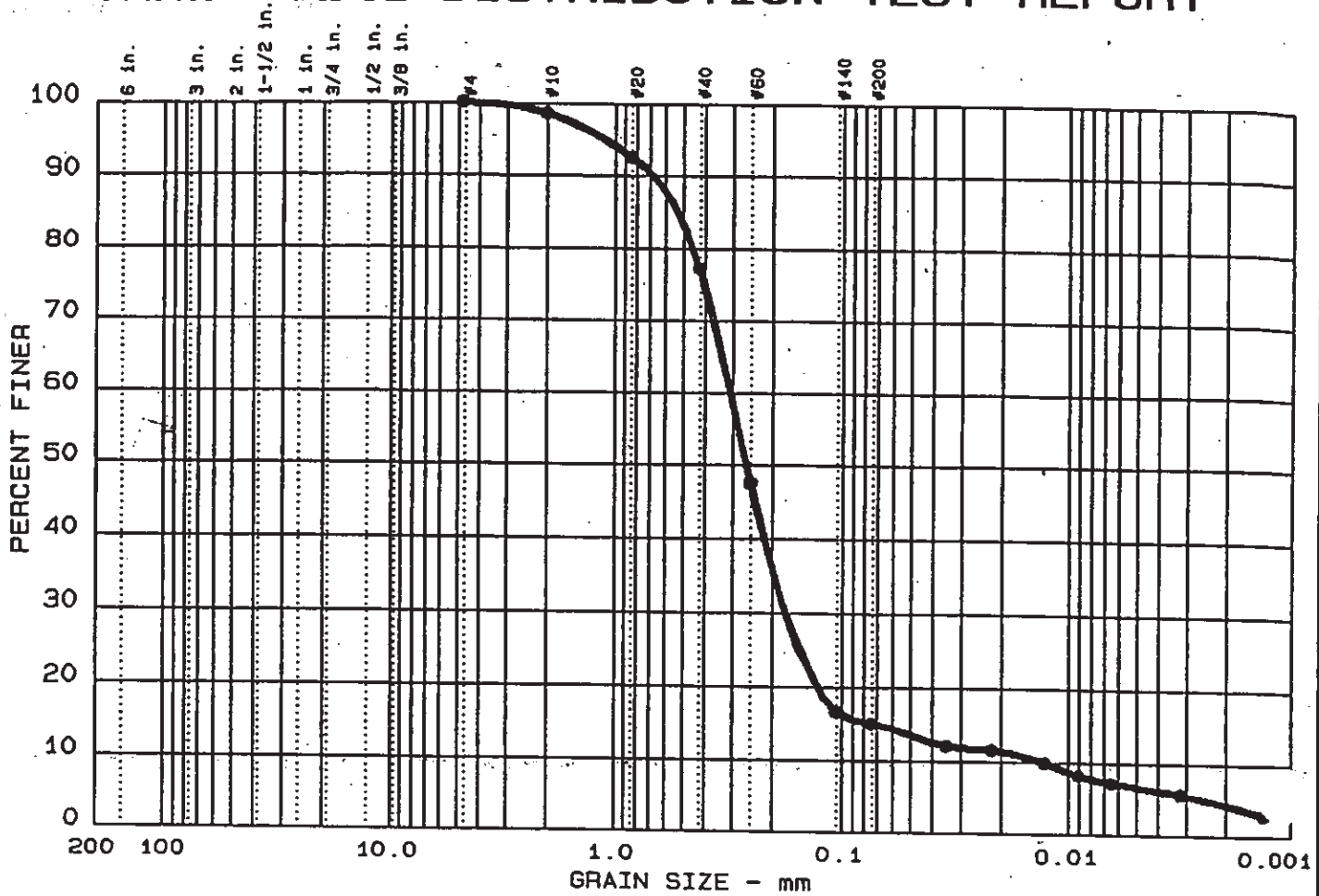
Remarks:

Tested by: SC  
 Reviewed by: HJ  
 ASTM D422  
 &  
 ASTM D4318

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	84.9	8.5	6.6

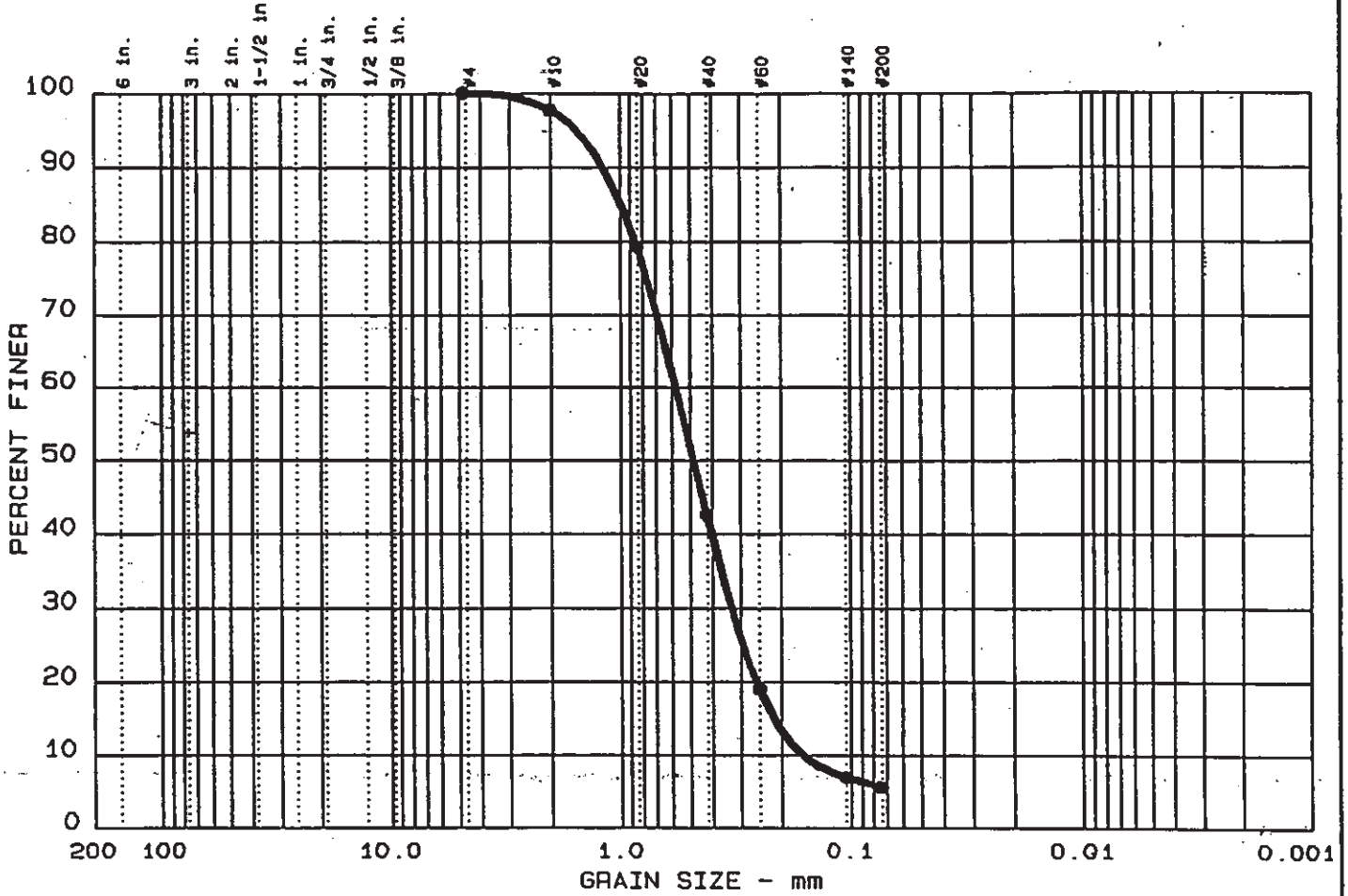
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.52	0.31	0.26	0.175	0.0705	0.0130	7.68	23.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan & White Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-74 @ 117.5-119 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HB*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.0	94.4	5.6	

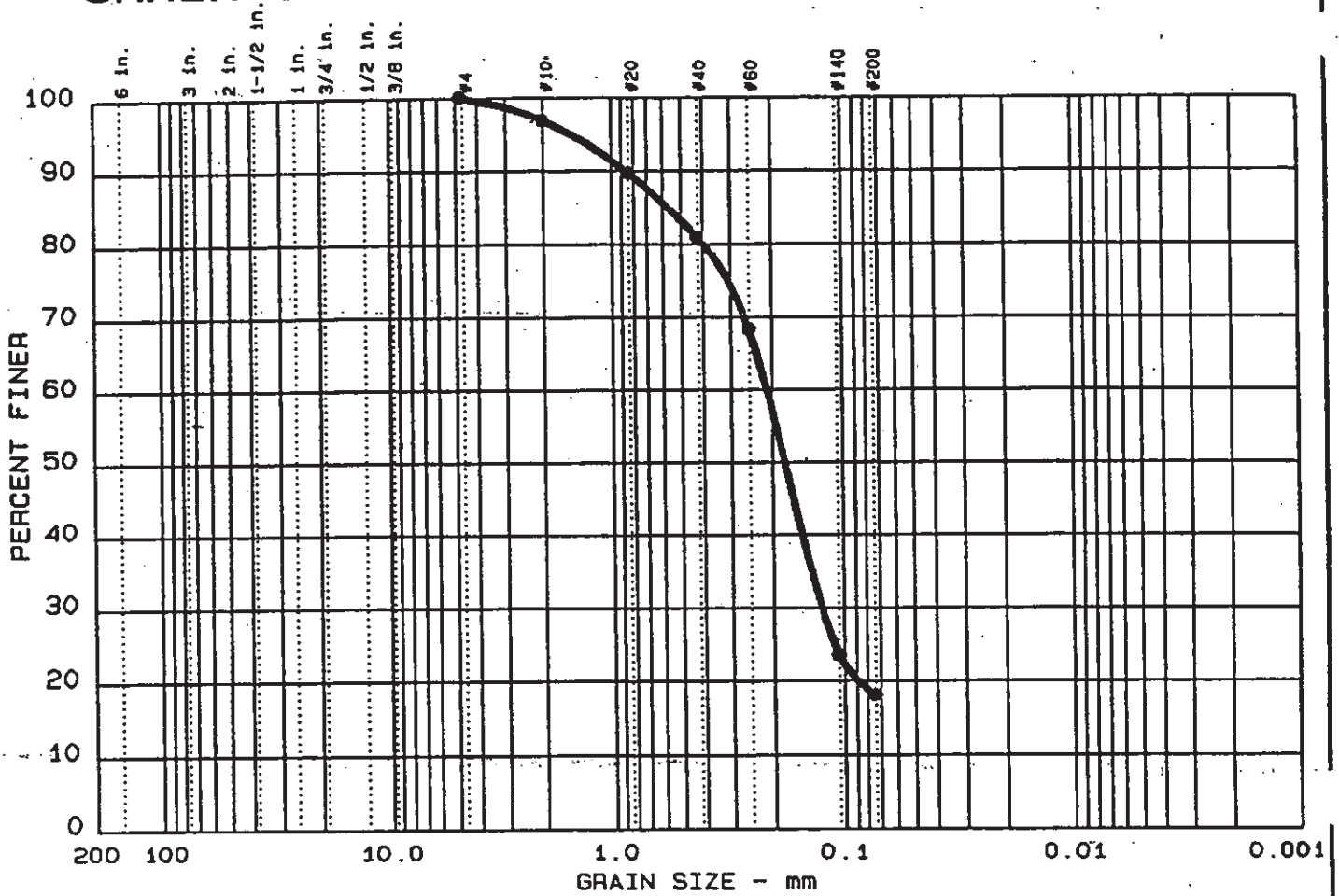
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.98	0.57	0.48	0.328	0.2163	0.1622	1.16	3.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: Fb-6 SS-75 @ 119-120.5 Ft.  
 Date: April 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	81.8	18.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.56	0.21	0.18	0.124				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-76 @ 120.5-122.0 Ft  
 Date: April 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD

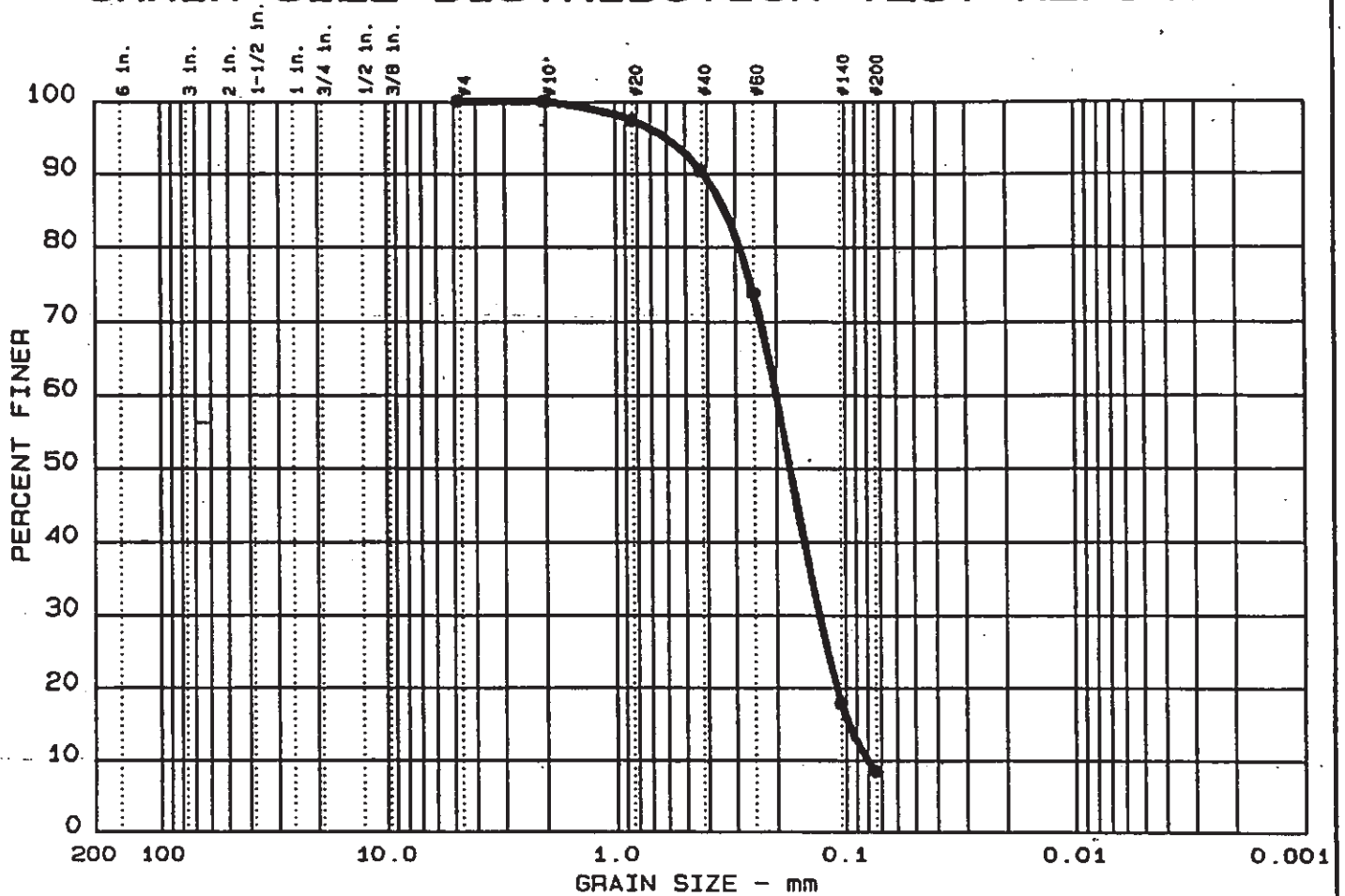
ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.** B-230

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	91.5	8.5	

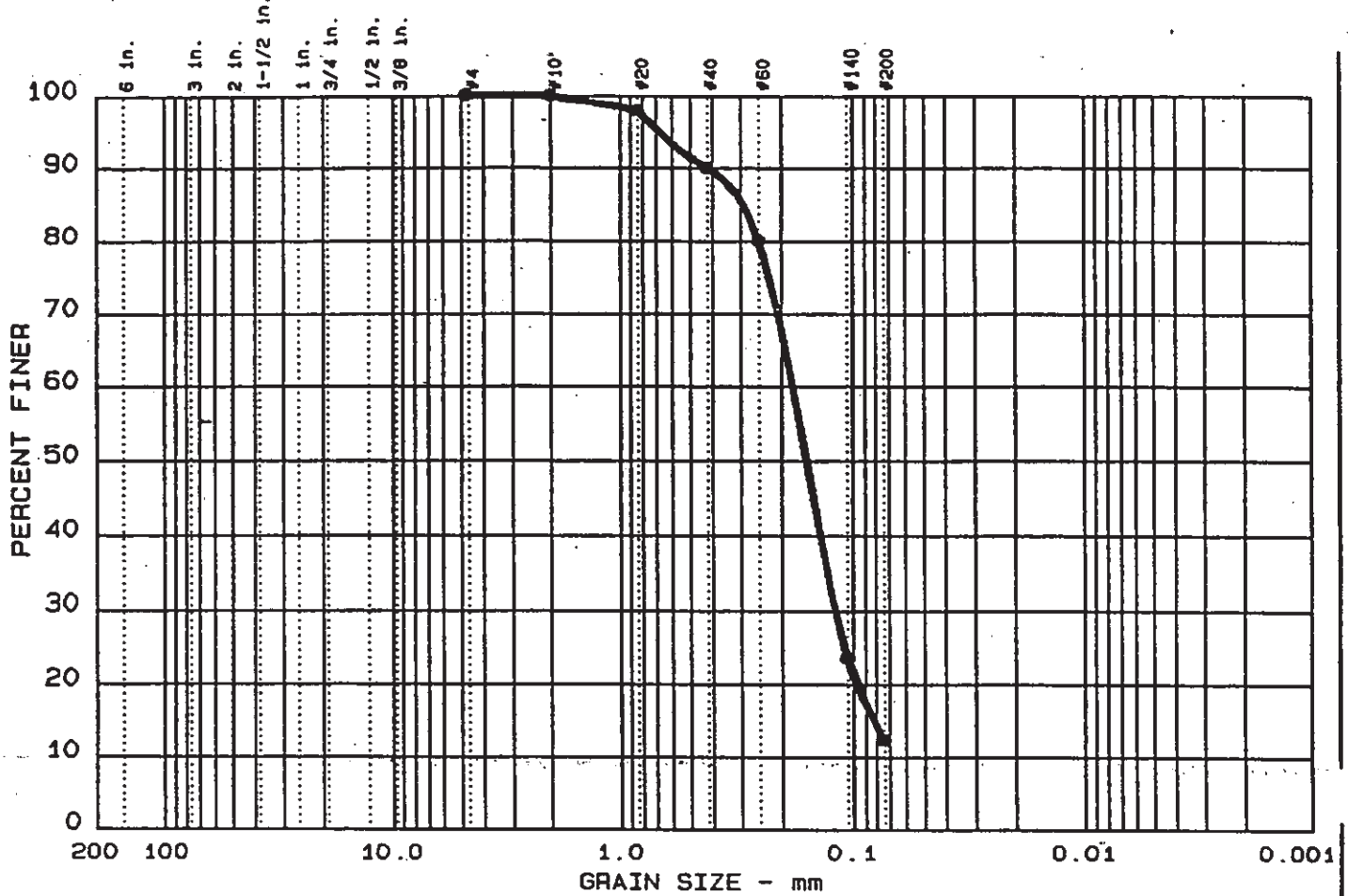
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.33	0.20	0.17	0.131	0.0971	0.0798	1.08	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-77 @ 122-123.5 Ft.  
 Date: April 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	87.6	12.4	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.29	0.18	0.16	0.118	0.0817			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-78 @ 123.5-125.0 Ft.

Remarks:  
 Tested by: SC  
 Reviewed by: HD

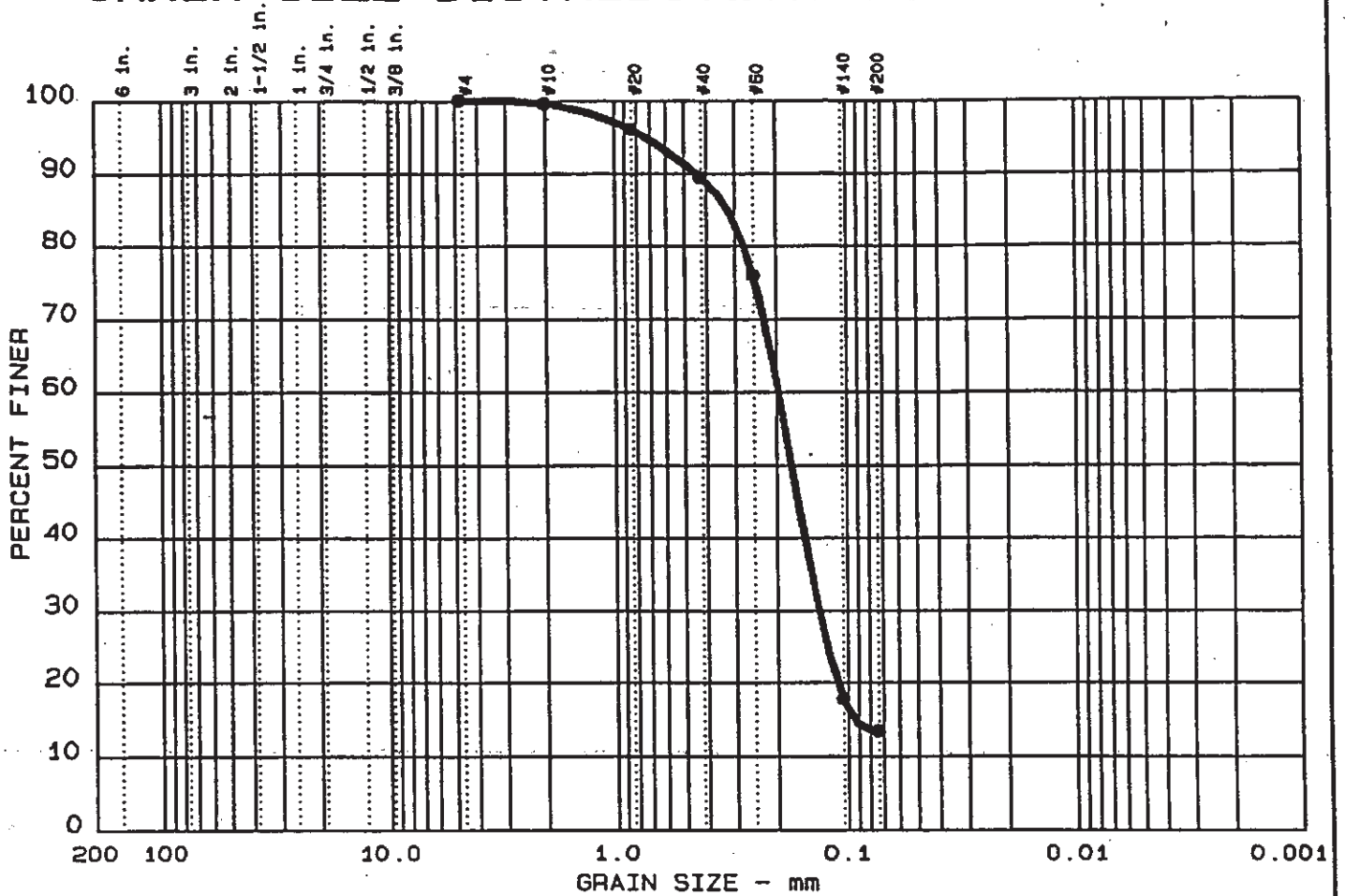
Date: April 15, 1998

ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
 LAW ENGINEERING, INC. B-232

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	86.6	13.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.32	0.20	0.17	0.132	0.0938			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.2)

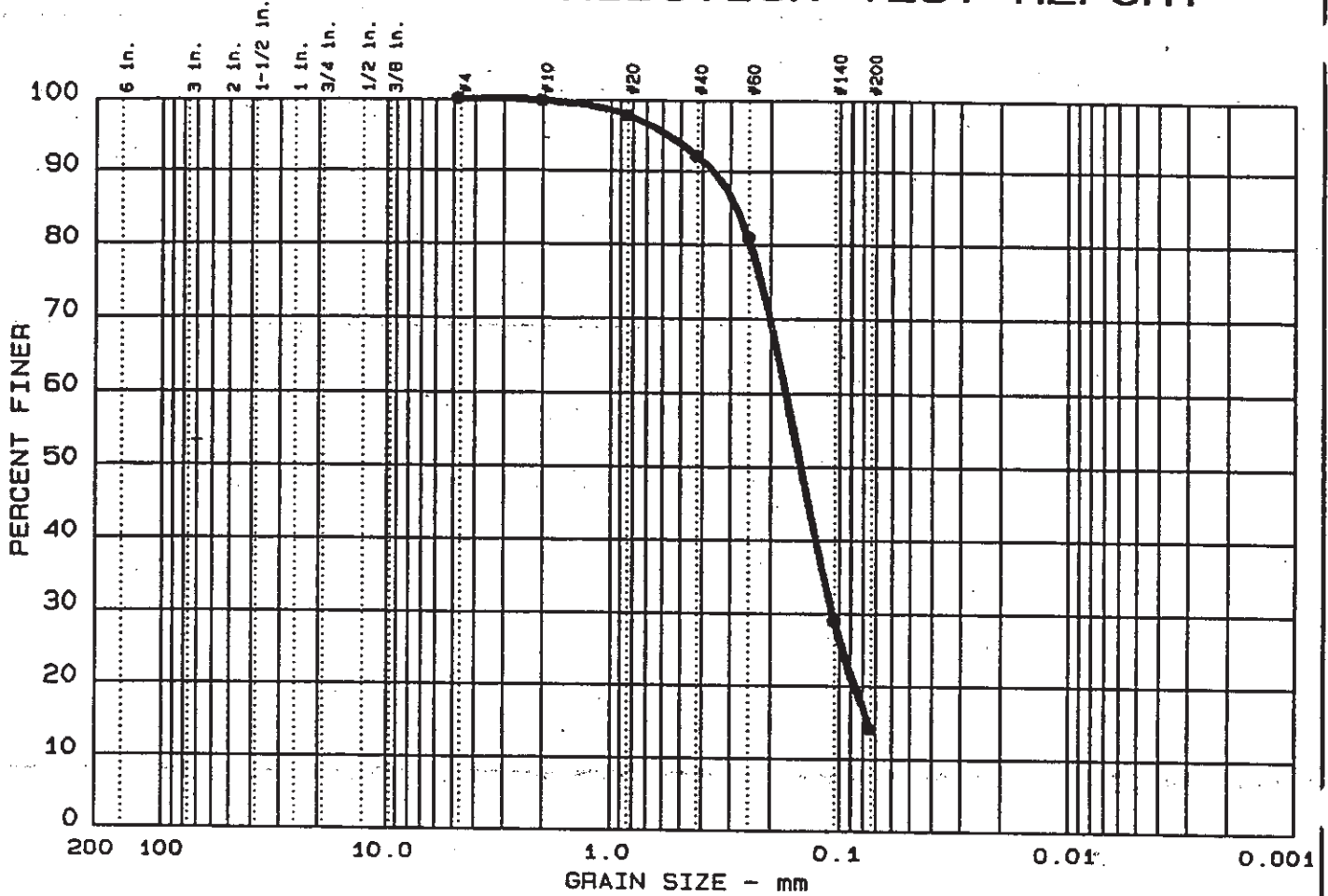
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-79 @ 125-126.5 Ft.  
 Date: April 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	85.8	14.2	

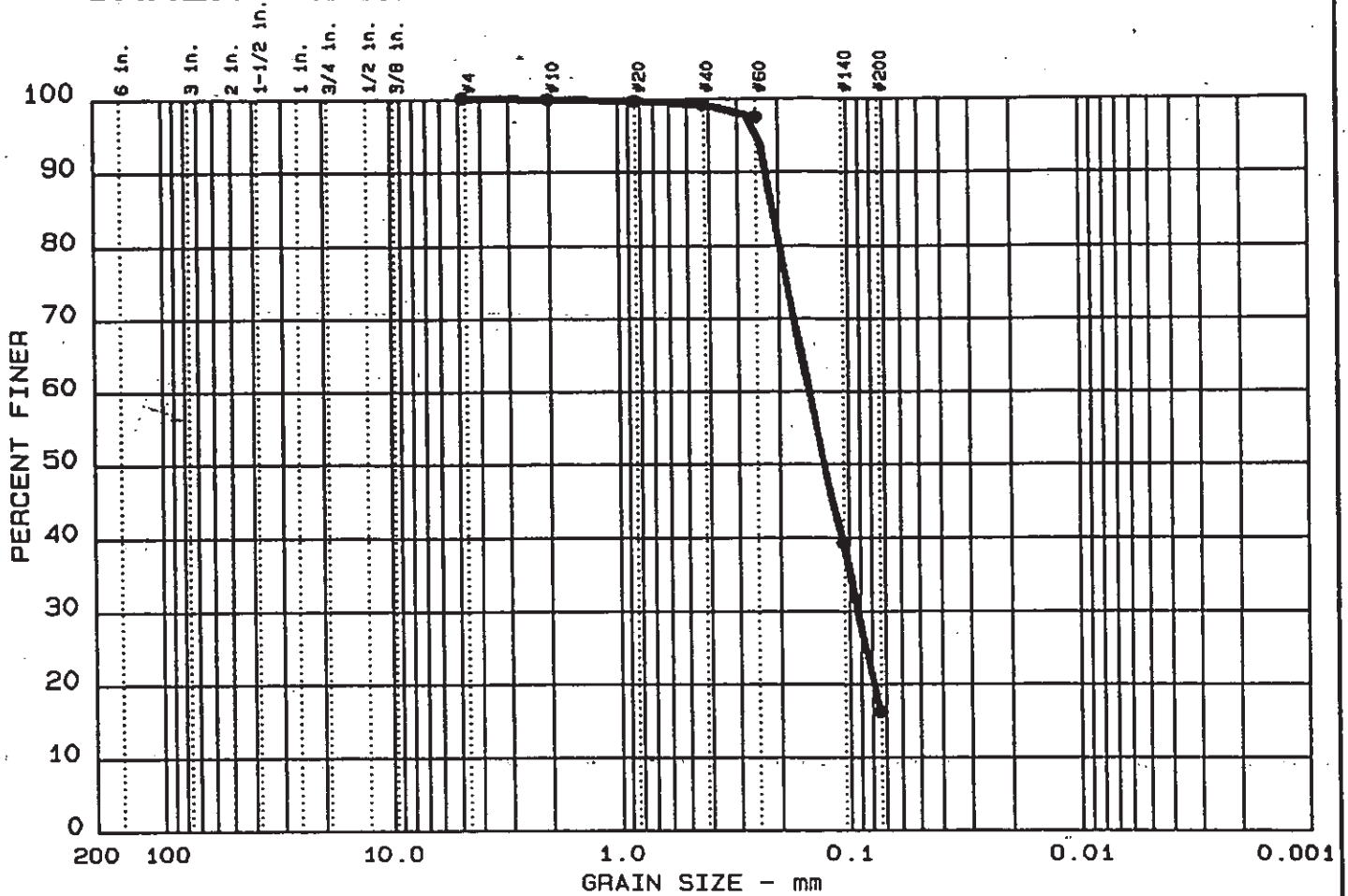
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.28	0.17	0.15	0.107	0.0757			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4(0.1)

Project No.: 50161-7-0108 Task 16:  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-80 @ 126.5-128.0 Ft.  
  
 Date: April 15, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HF

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	83.8	16.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.21	0.15	0.13	0.092				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-82 @ 129.5-131 Ft.

Date: April 15, 1998

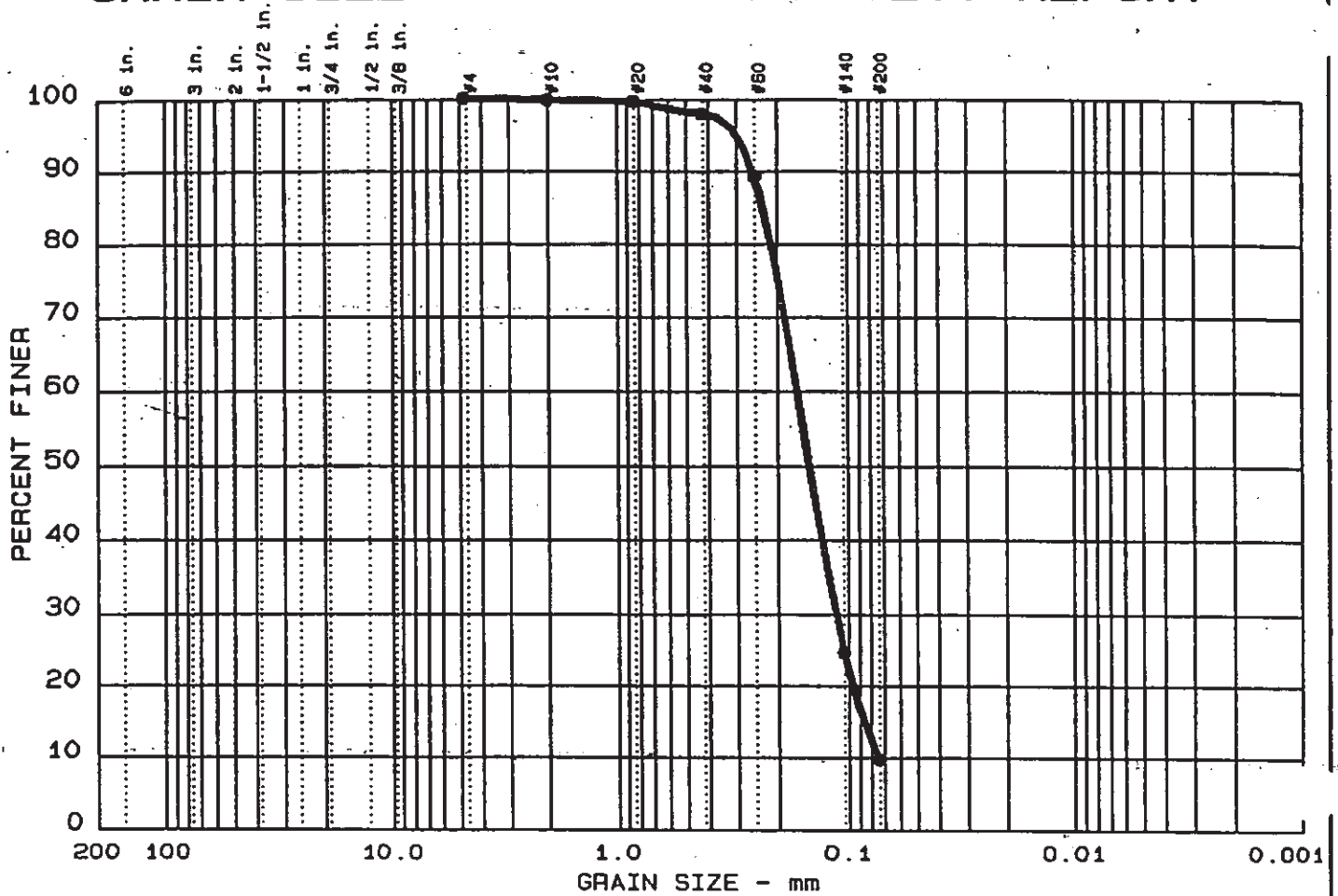
Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

K-TRT-F-00001  
R/0

# GRAIN SIZE DISTRIBUTION TEST REPORT



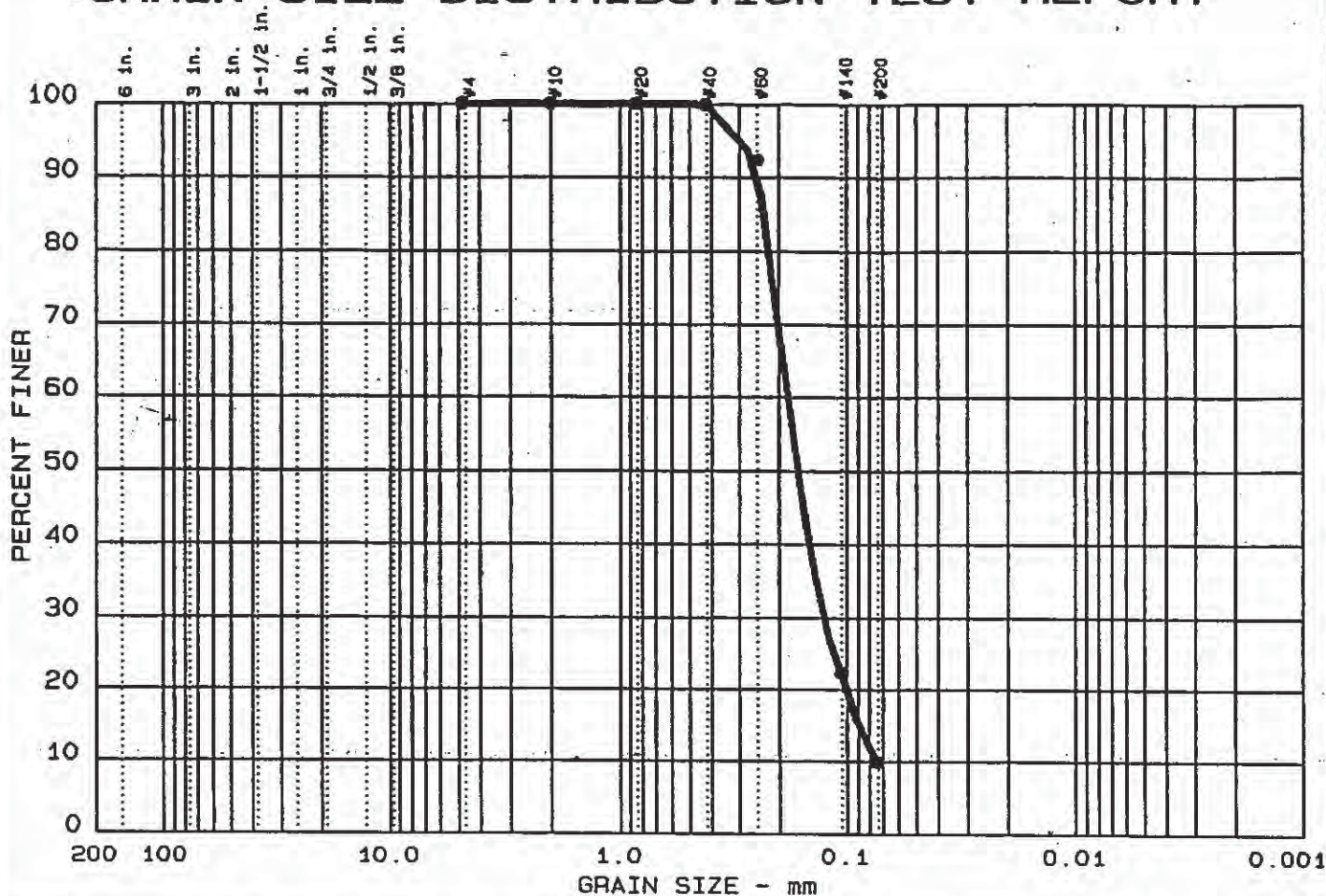
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	90.3	9.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.23	0.16	0.15	0.114	0.0854	0.0744	1.06	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16 Project: APSF Confirmatory Testing ● Location: FB-6 SS-84 @ 132.5-134 Ft.  Date: April 15, 1998	Remarks: Tested by: <i>SC</i> Reviewed by: <i>149</i> ASTM D422
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# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	90.1	9.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.23	0.18	0.16	0.126	0.0889			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SP-SM	A-3

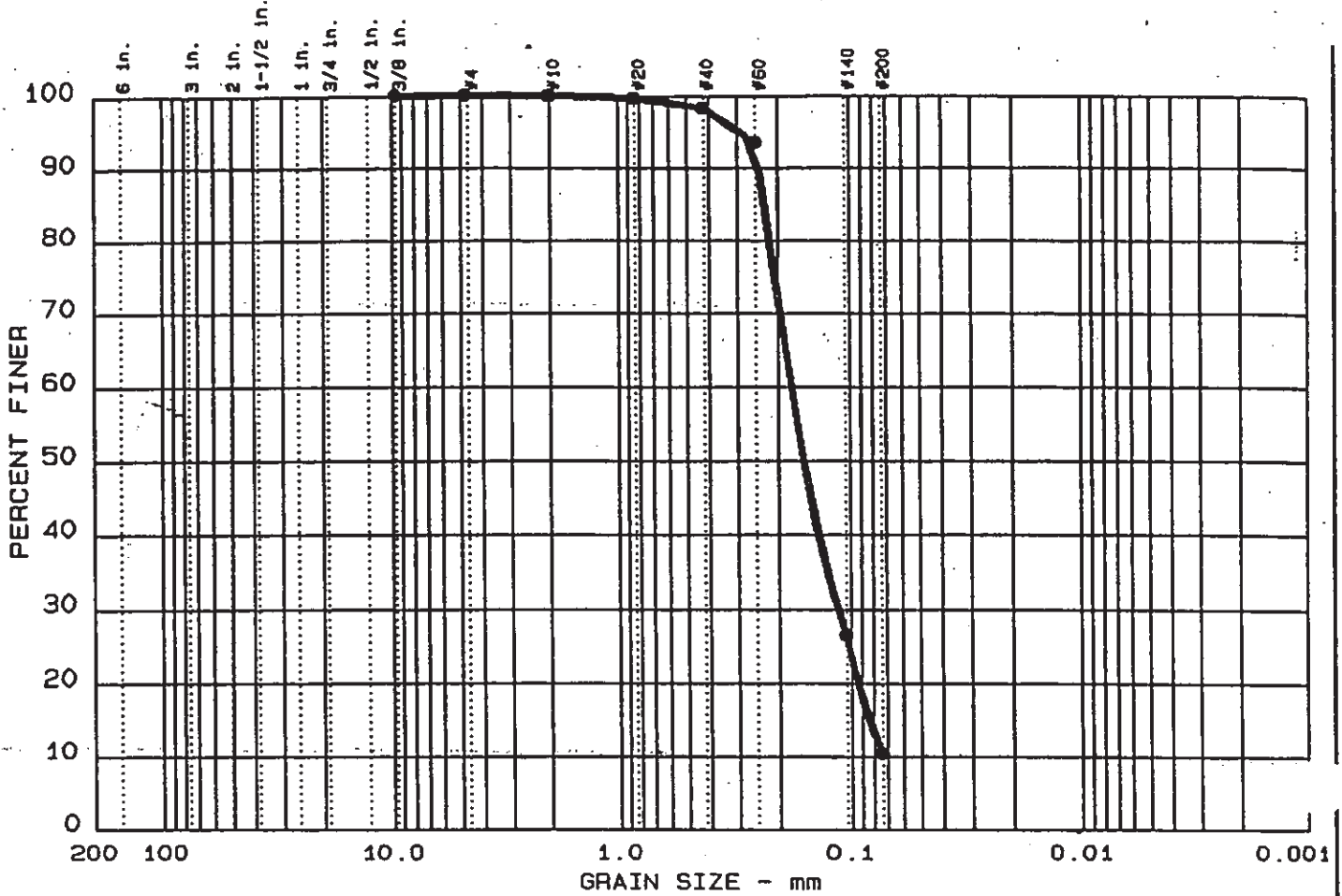
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-85 @ 134-135.5 Ft.  
  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D422

**GRAIN SIZE DISTRIBUTION TEST REPORT**  
**LAW ENGINEERING, INC.**

Figure No. \_\_\_\_\_

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	89.6	10.4	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.23	0.18	0.16	0.114	0.0832			

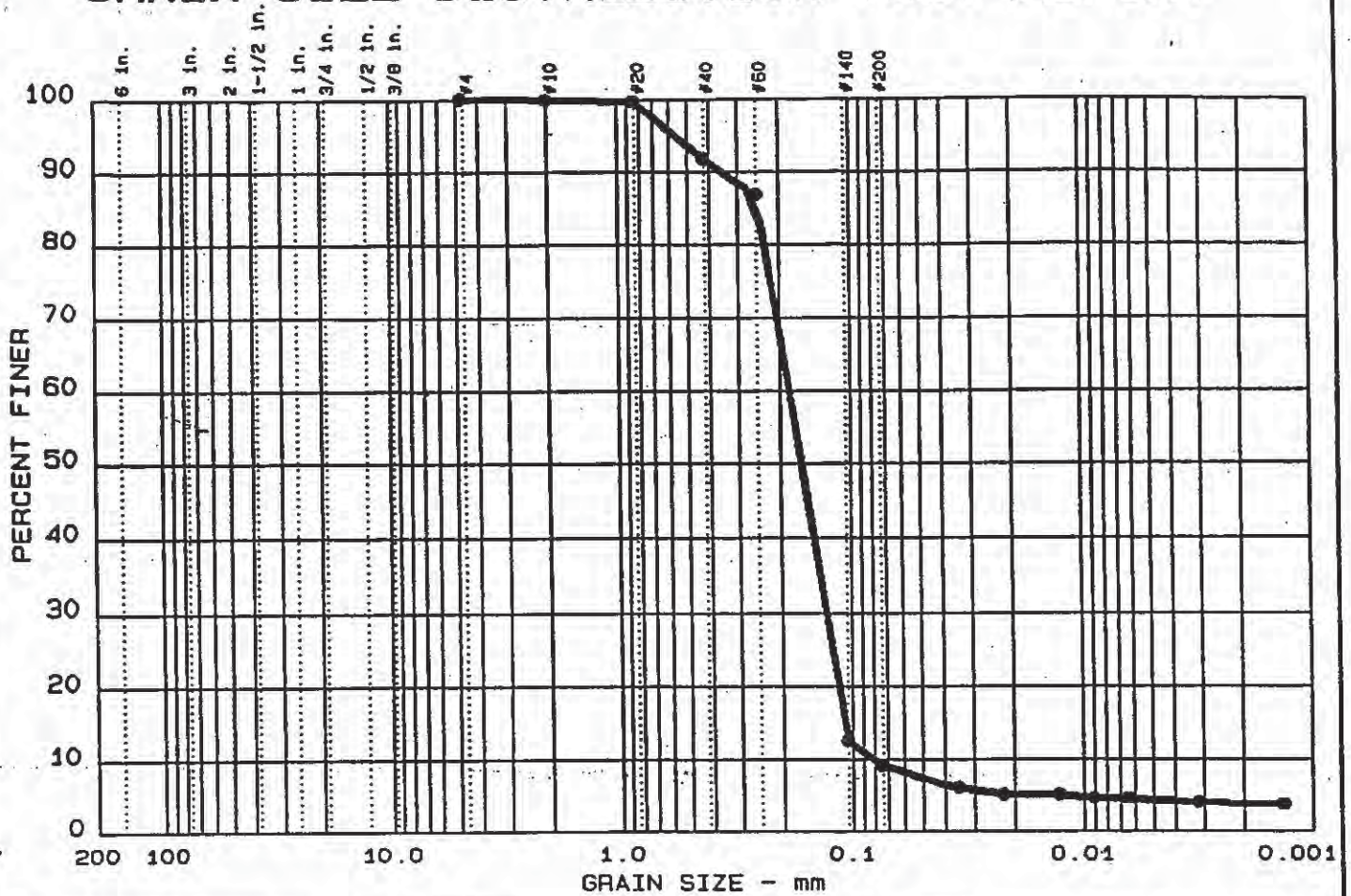
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-86 @ 135.5-137 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.0	90.8	4.8	4.4

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.24	0.18	0.16	0.129	0.1080	0.0801	1.13	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-87 @ 137-138.5 Ft.

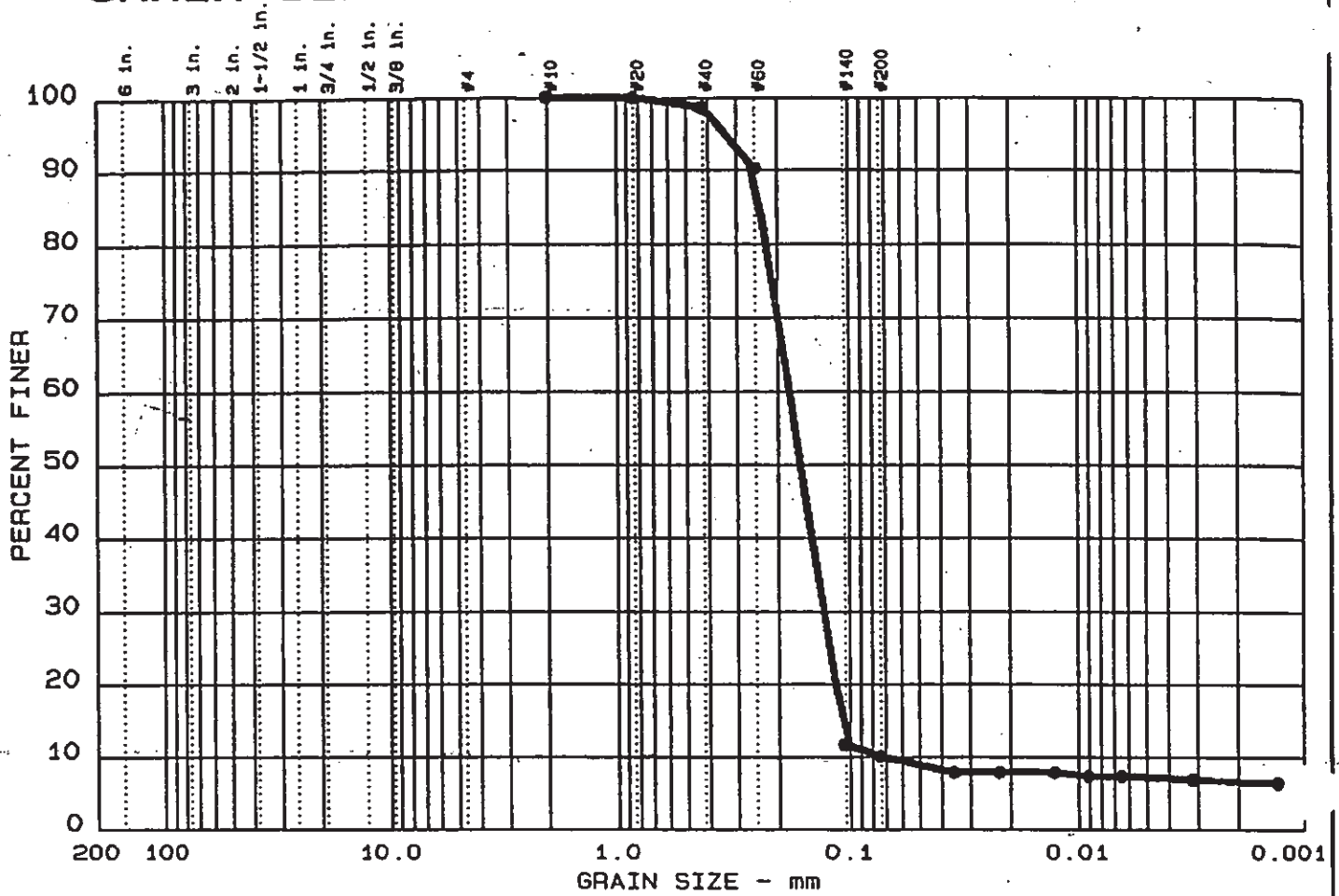
Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	89.9	3.0	7.1

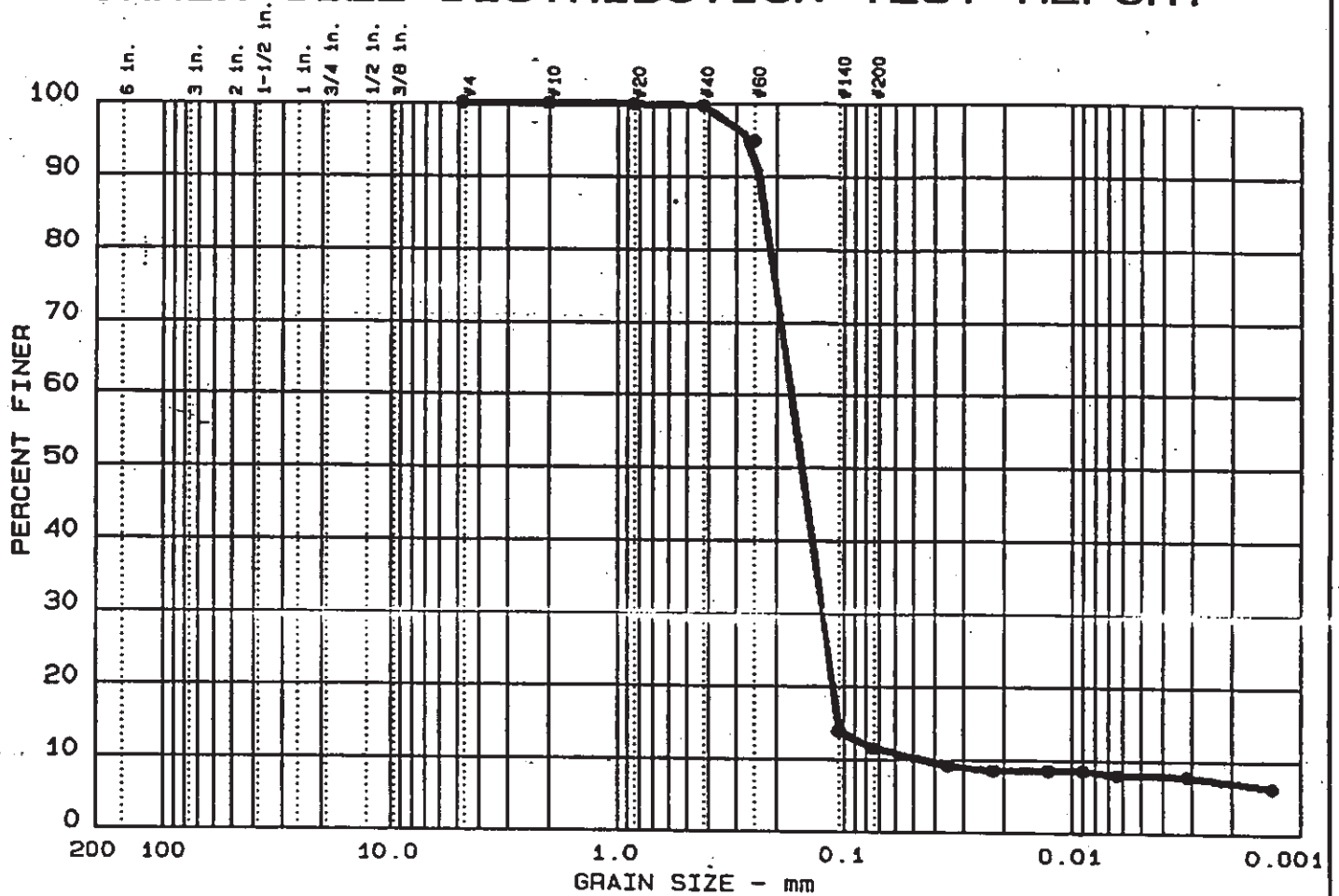
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.24	0.18	0.16	0.128	0.1089	0.0711	1.30	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SP-SM	A-3

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-88 @ 138.5-140 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HB*  
 ASTM D422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.0	88.5	3.6	7.9

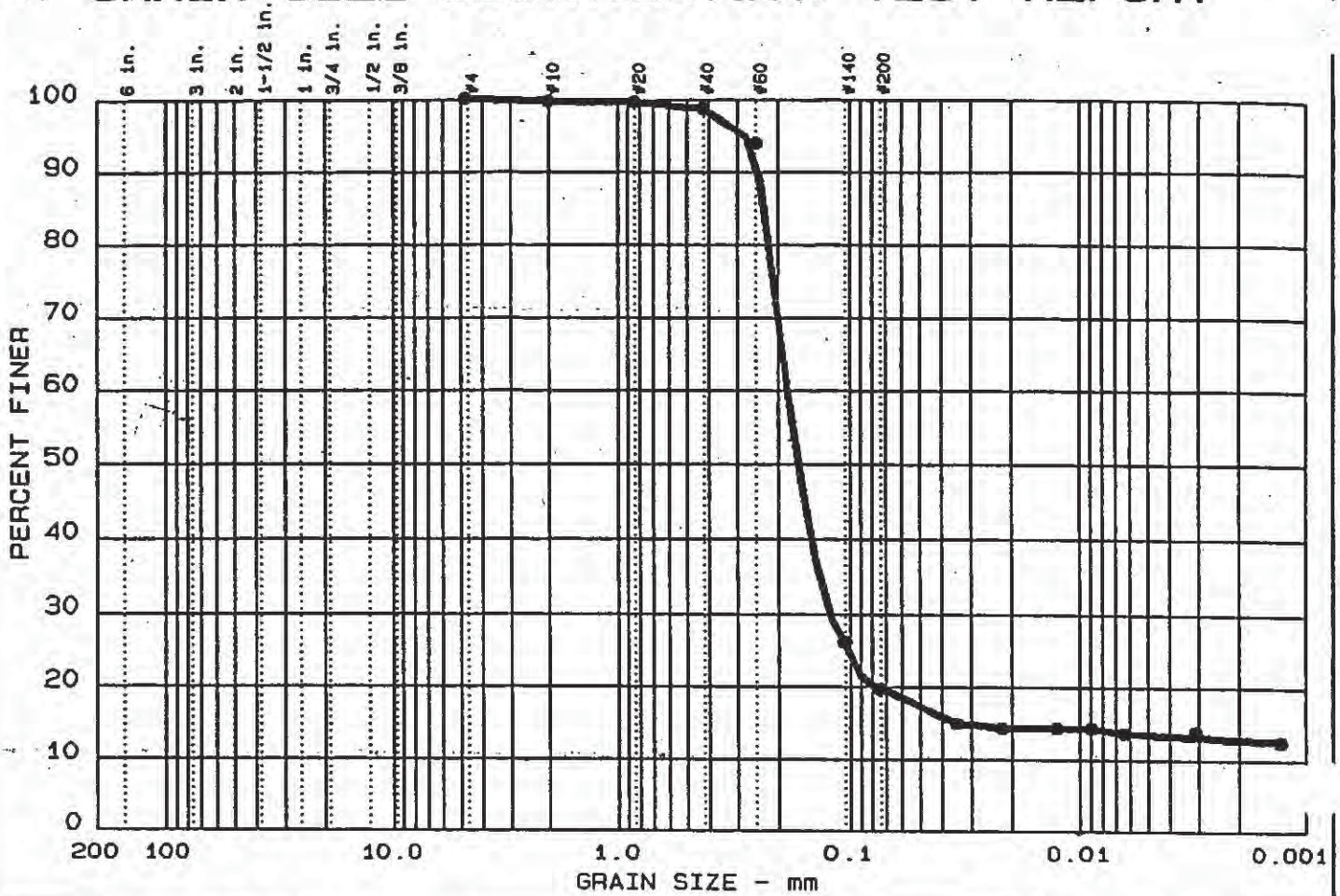
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.22	0.17	0.15	0.125	0.1062	0.0448	2.02	3.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-89 @ 140-141.5 Ft.  
 Date: April 9, 1998  
 GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HJ*  
 ASTM D 422  
 &  
 ASTM D 4318  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	80.3	6.2	13.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.23	0.18	0.16	0.121	0.0345			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown & Tan Silty Sand	SM	A-2-4 (0.0)

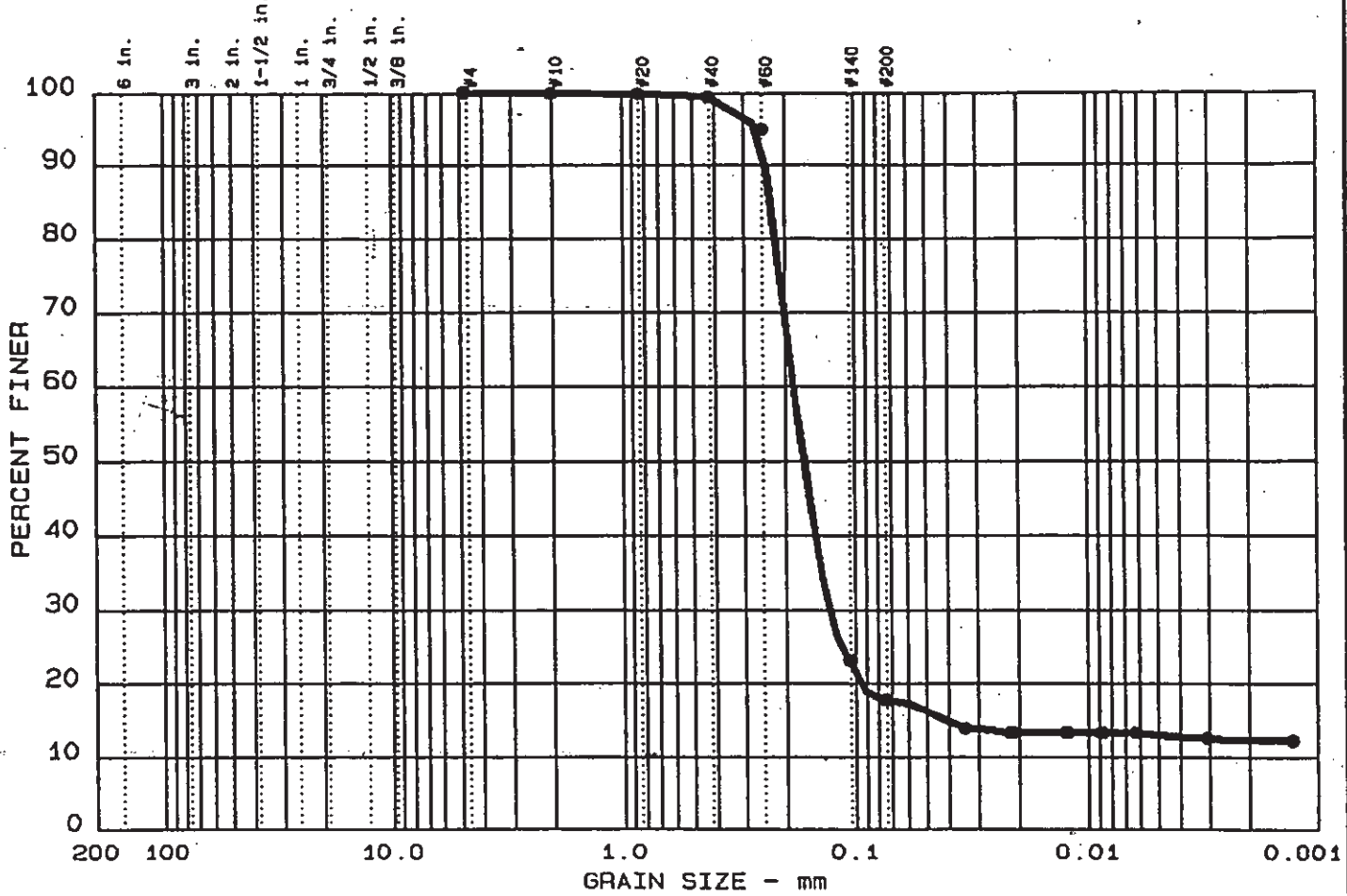
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6, SS-90 @ 141.5-143 Ft.  
  
 Date: April 9, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *H*  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.** B-242

Figure No. \_\_\_\_\_

### GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	82.2	4.7	13.1

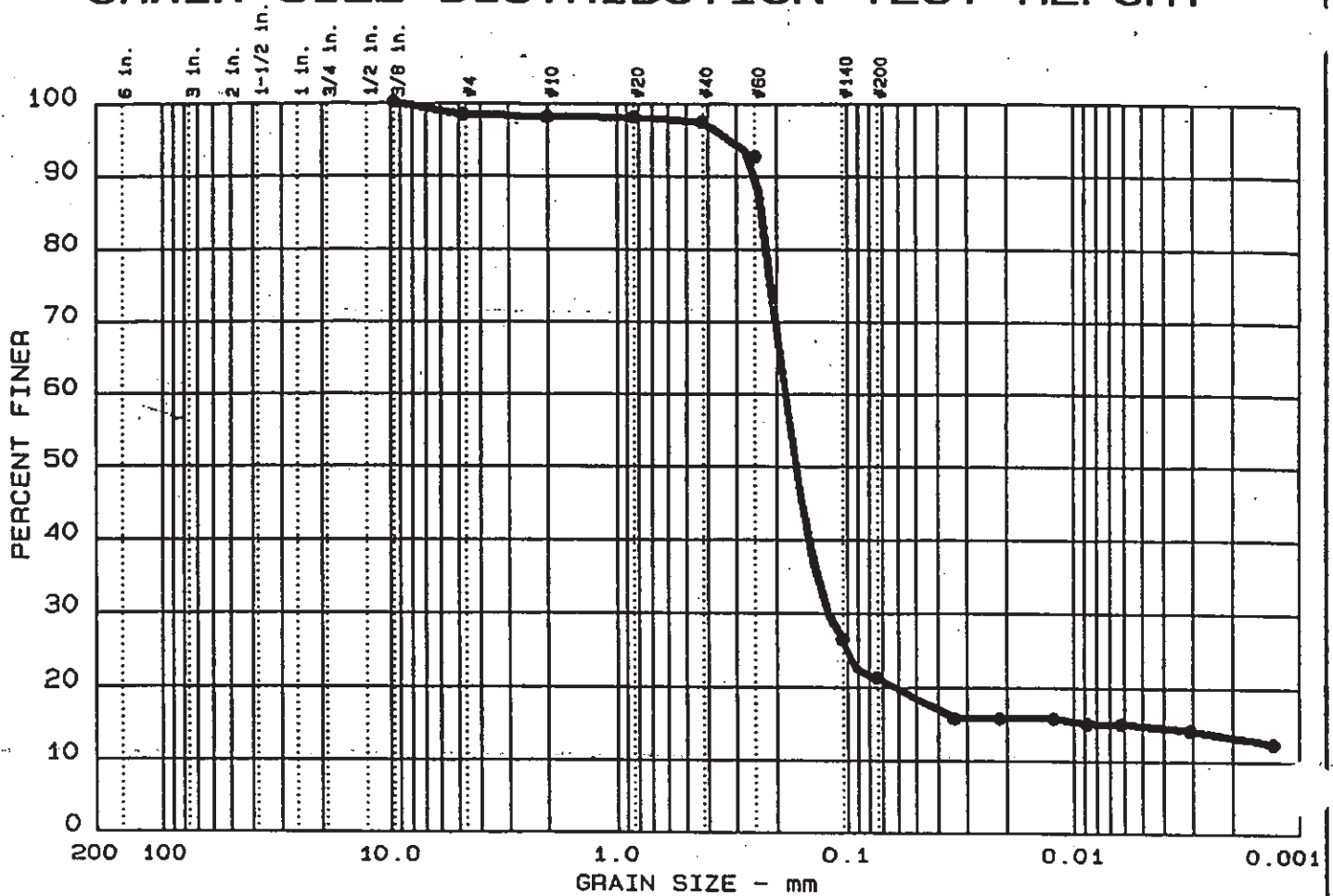
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 34	8	0.23	0.18	0.17	0.129	0.0404			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-91 @ 143-144.5 Ft.  
  
 Date: April 13, 1998  
  
 GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HJ*  
 ASTM D 422  
 &  
 ASTM D 4318  
  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	1.6	77.1	6.5	14.8

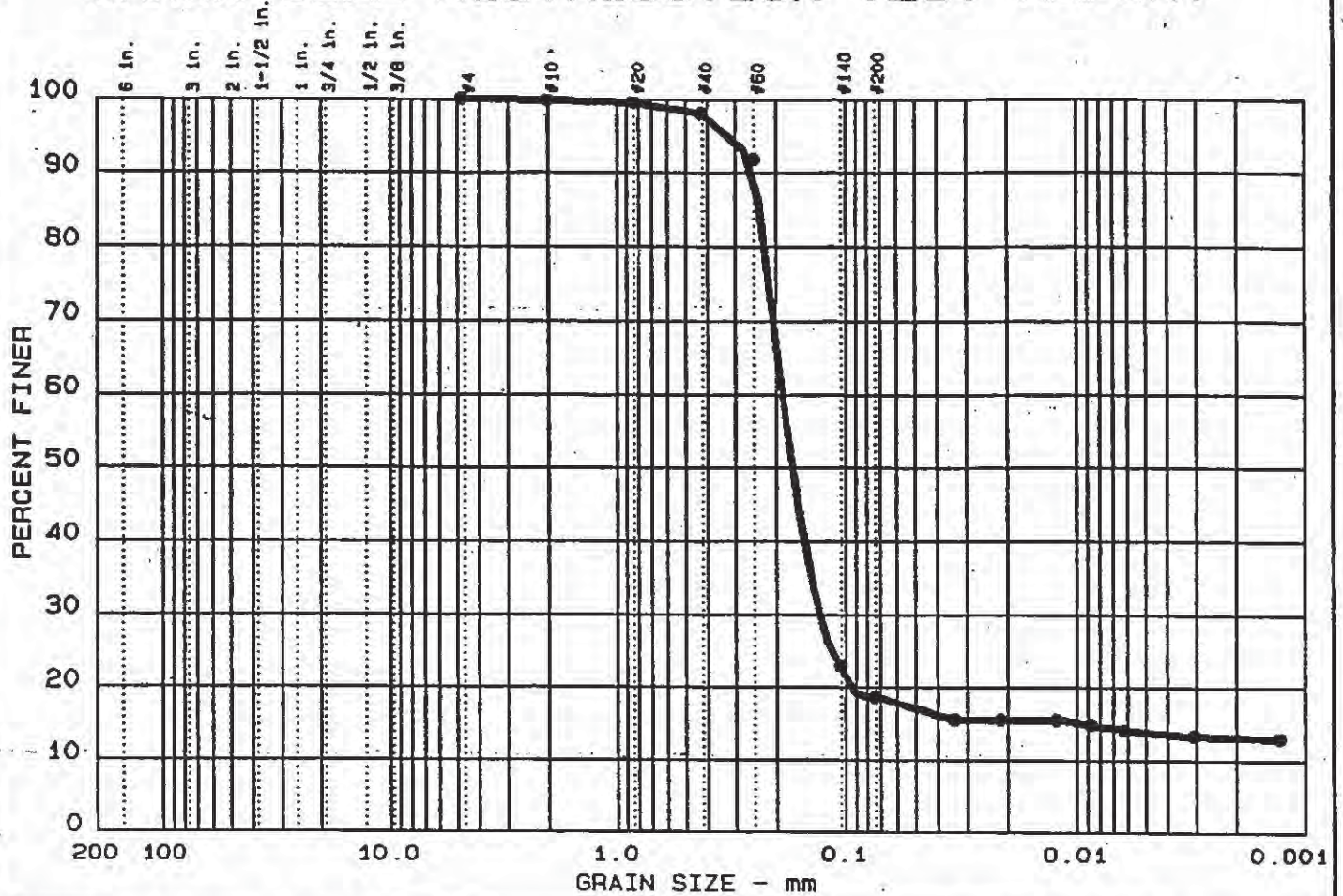
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 54	29	0.23	0.18	0.16	0.121	0.0055			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (1.1)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-92 @ 144.5-146 Ft.  
 Date: April 13, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: H  
 ASTM D422  
 &  
 ASTM D4318  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 1	0.0	0.0	81.3	4.9	13.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
•		0.24	0.19	0.17	0.130	0.0092			

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Silty Sand	SM	A-2-4 (0.0)

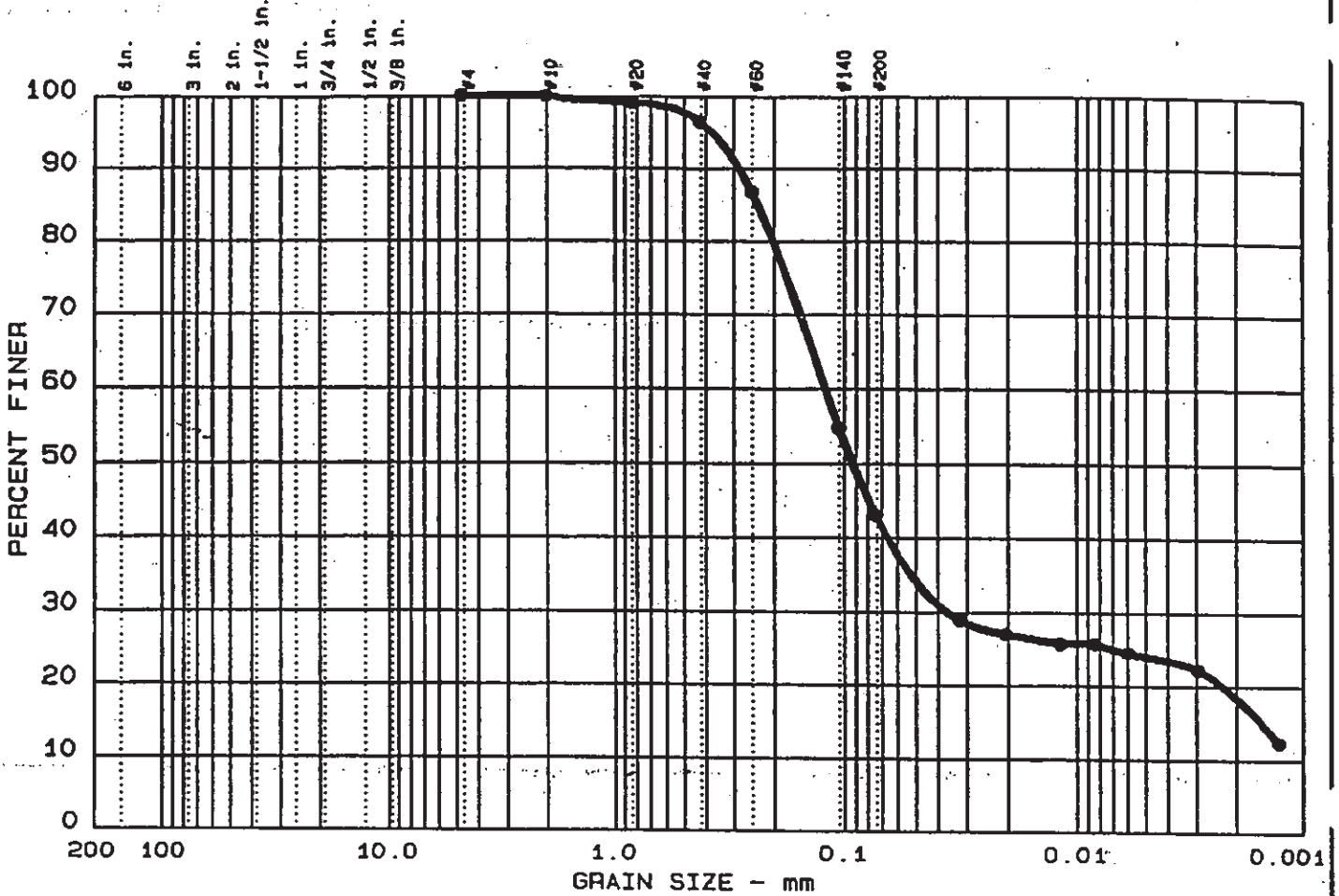
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 • Location: FB-5 SS-93 @ 146-147.5 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: H  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.0	57.0	19.0	24.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 43	20	0.23	0.12	0.09	0.036	0.0015			

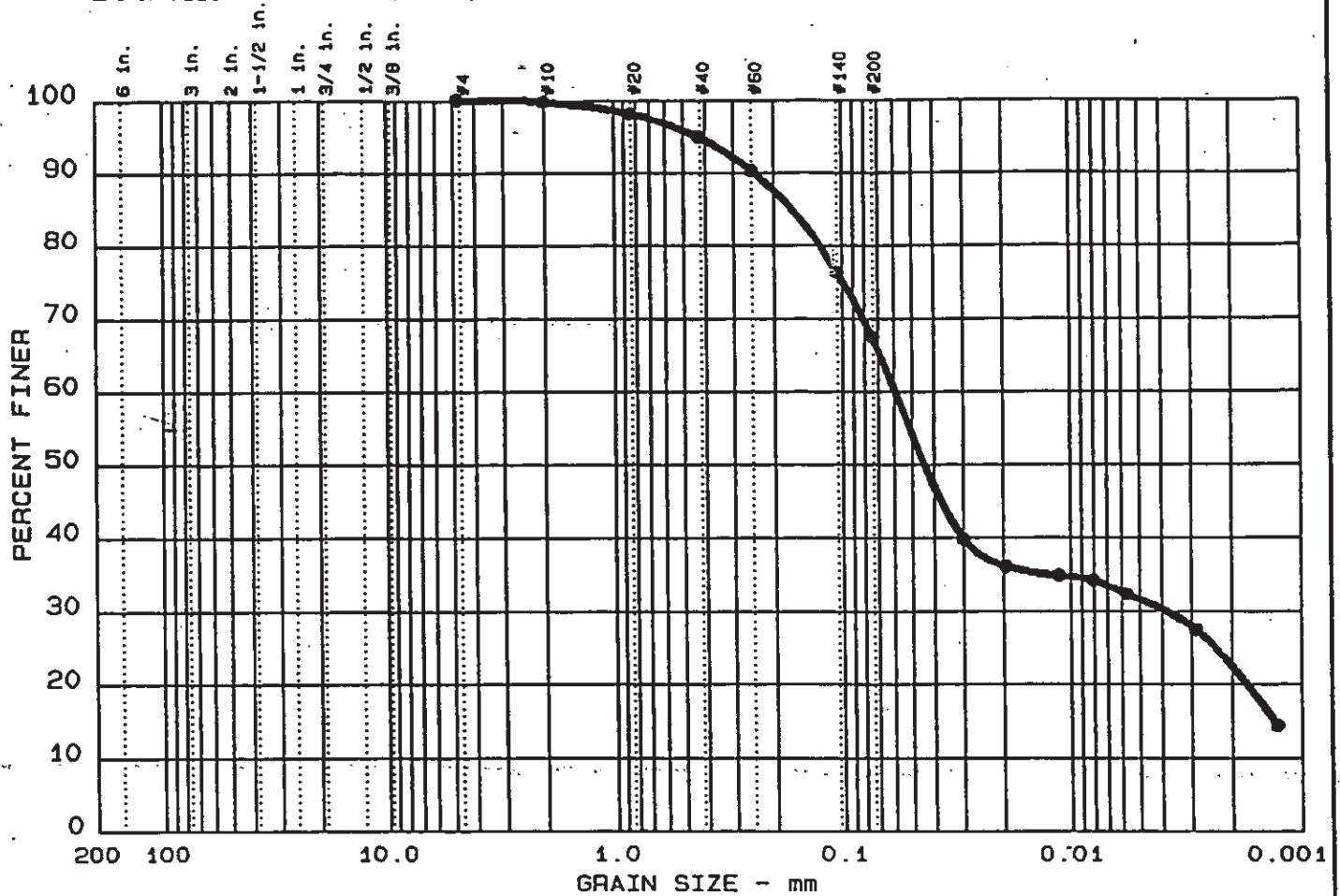
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-7-6 (4.5)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-94 @ 147.5-149 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 ASTM D 422  
 &  
 ASTM D 4318



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	32.6	35.9	31.5

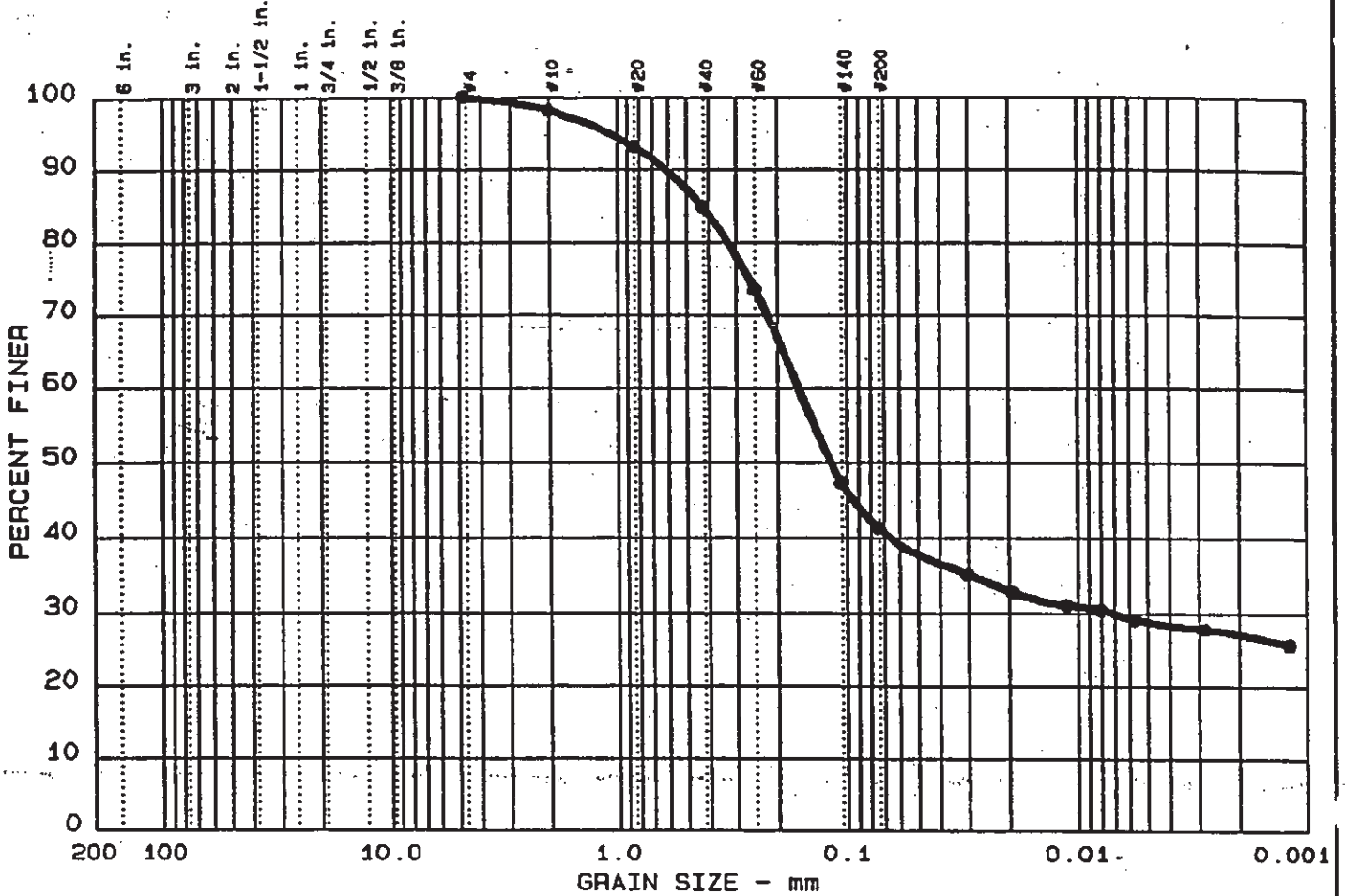
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.17		0.04	0.004	0.0013			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Silt	ML	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-95 @ 149-150.5 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	58.8	12.4	28.8

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.42	0.16	0.12	0.007				

MATERIAL DESCRIPTION	USCS	AASHTO
● Gray Tan Silty Sand	SM	A-4 (0.0)

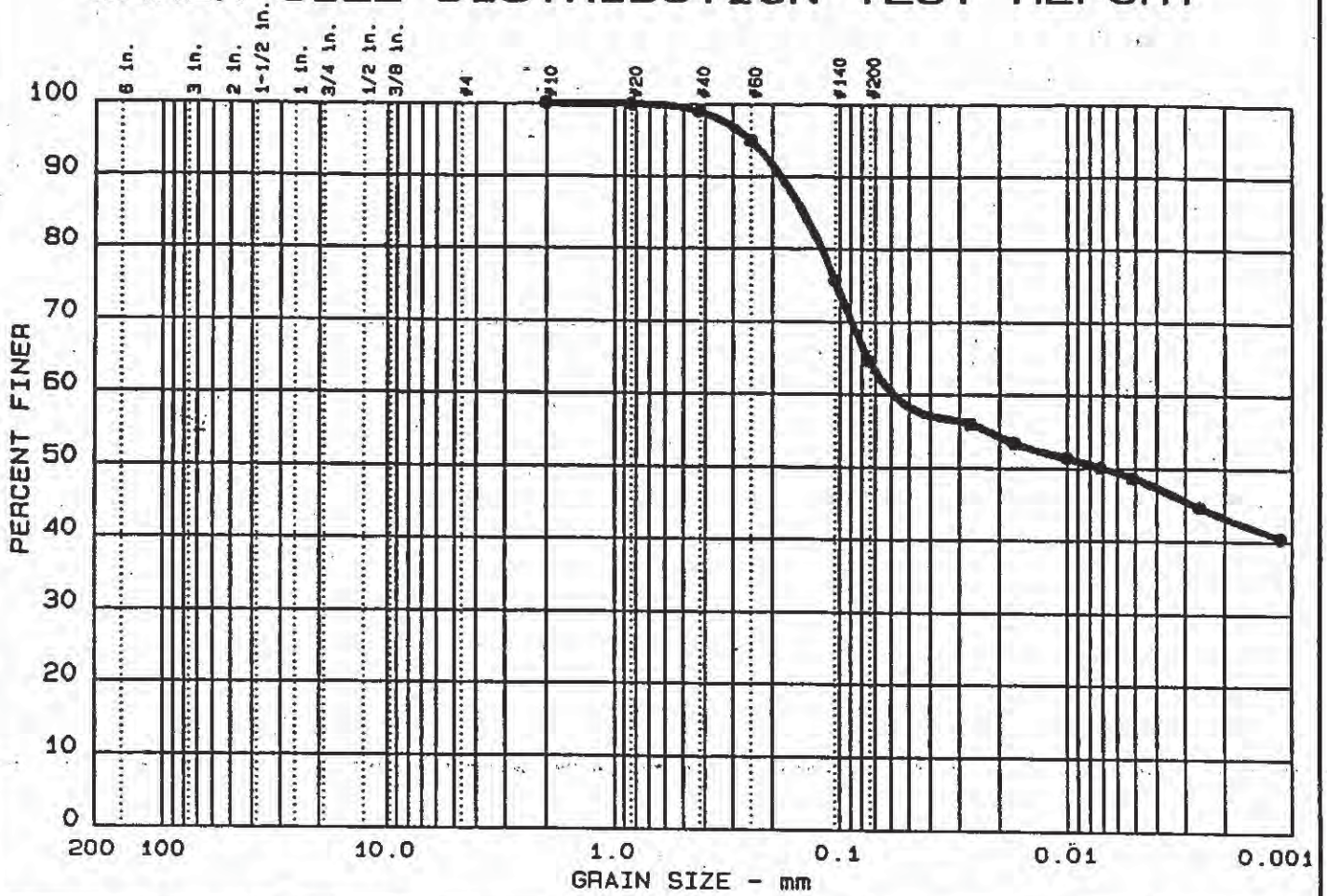
Project No.: 50161-7-0108 Task 16:  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-96 @ 150.5-152 Ft.  
  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: AB  
 ASTM D422

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.** B-248

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	35.4	16.1	48.5

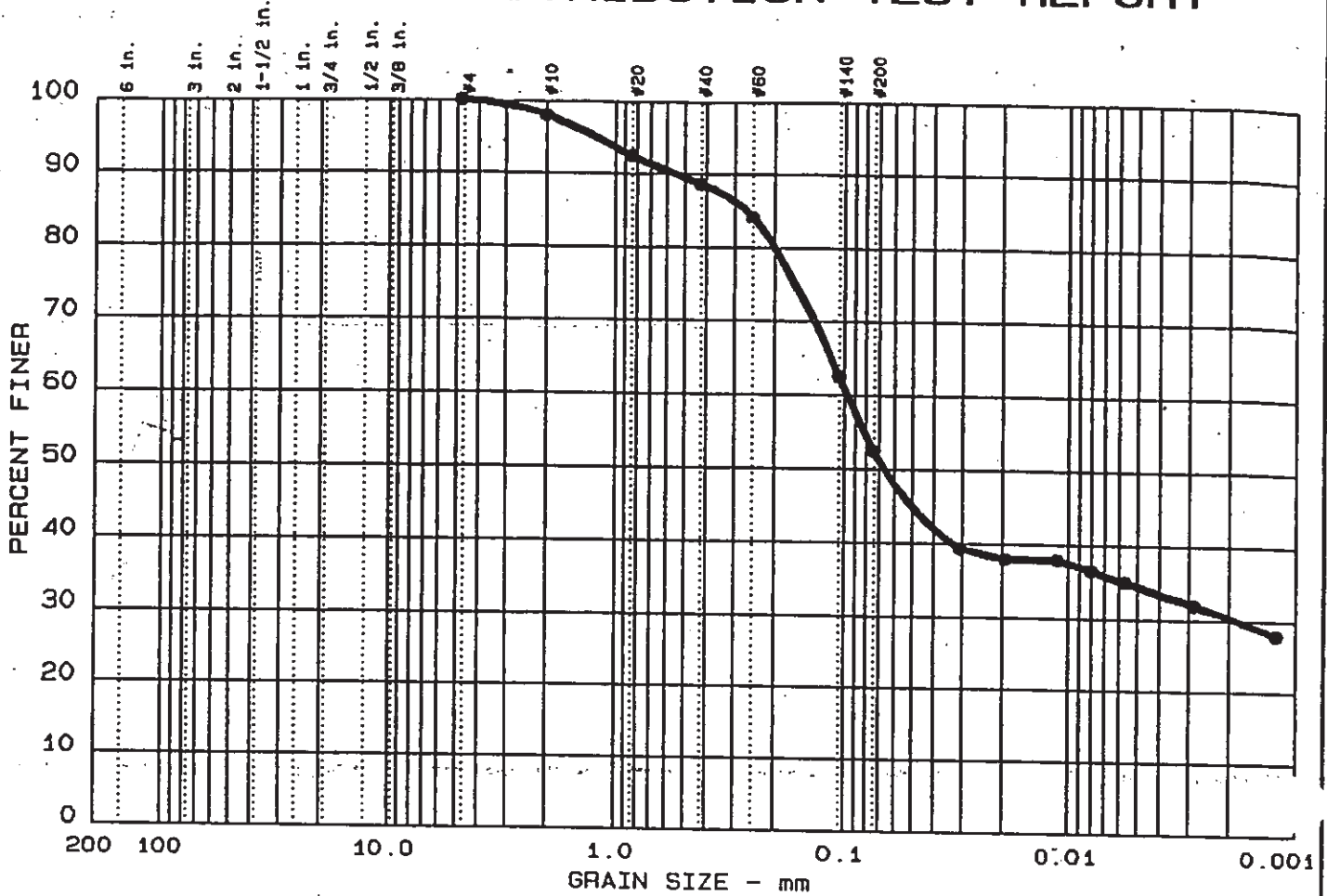
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.15		0.01					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Silt	ML	A-4 (0.0)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-97 @ 152-153.5 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	47.6	18.1	34.3

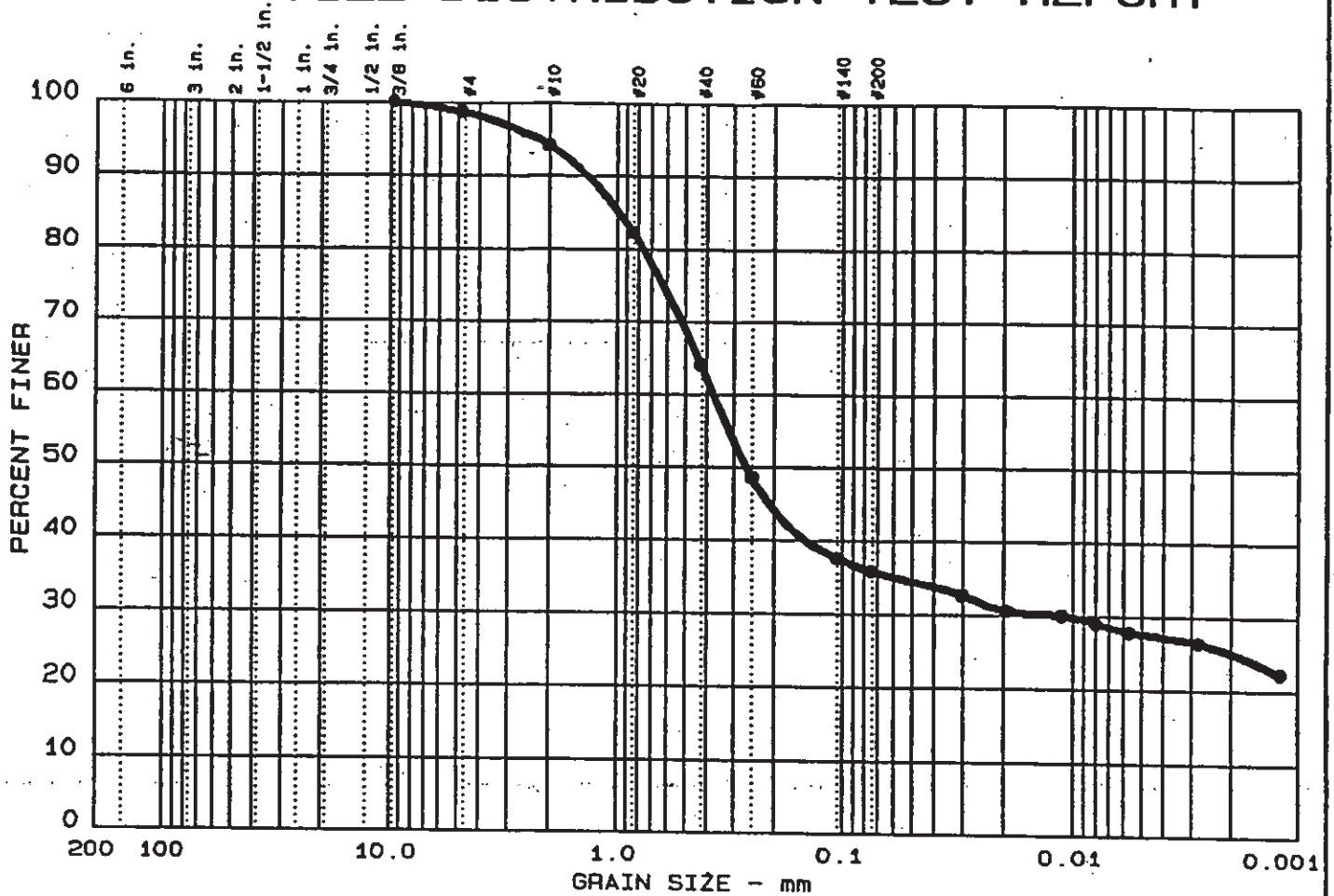
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 61	39	0.26	0.10	0.07	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Fat Clay	CH	A-7-6 (15.9)

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-98 @ 153.5-155 Ft.  
 Date: April 13, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: H  
 ASTM D 422  
 &  
 ASTM D 318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	1.3	62.9	8.2	27.6

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 63	40	0.97	0.37	0.26	0.012				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-7-6 (5.6)

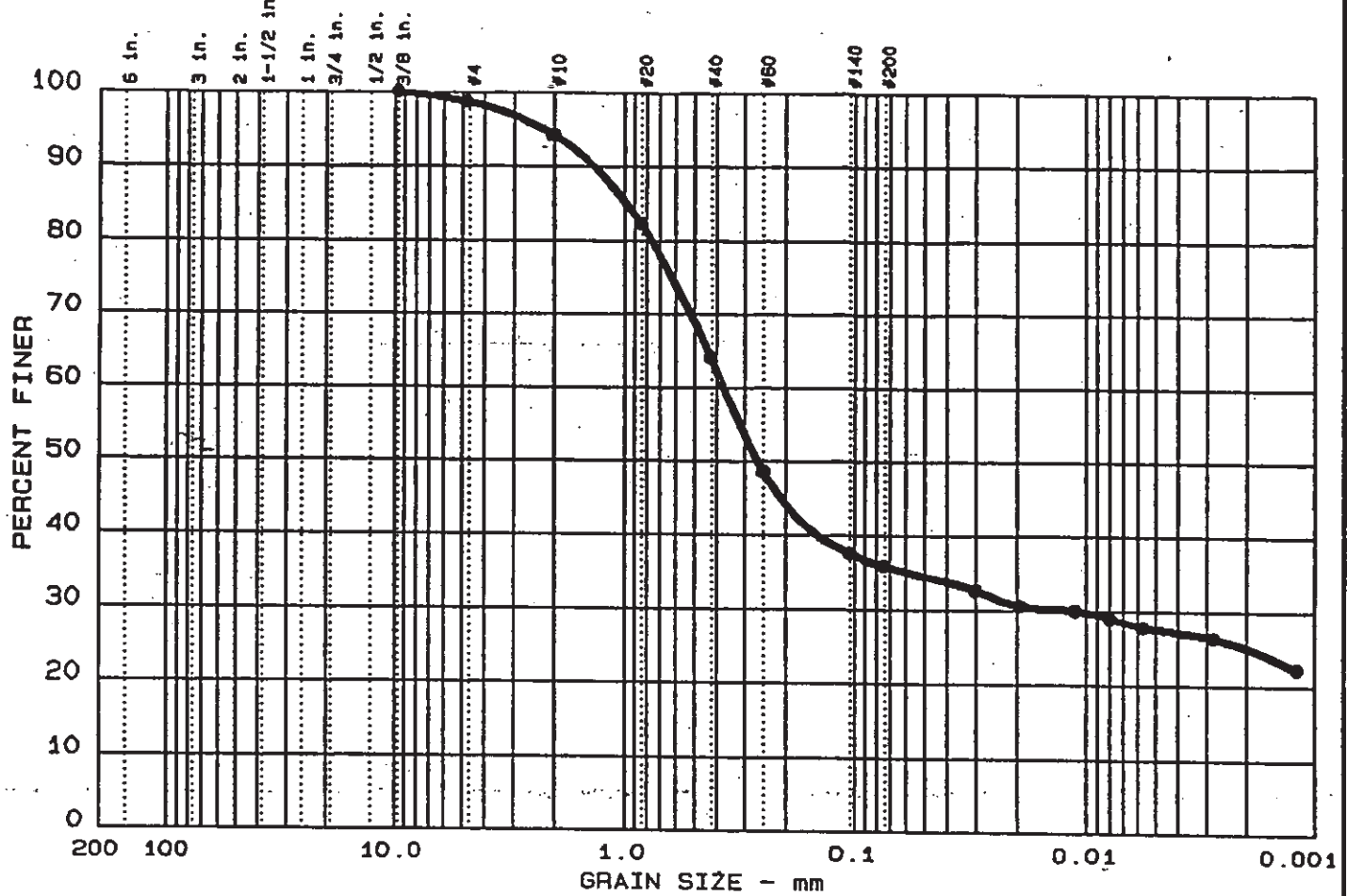
Project No.: 50161-7-0108 Task 15  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-99 @ 155-156.5 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422  
 &  
 ASTM D 4318  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**



# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	1.3	62.9	8.2	27.6

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 63	40	0.97	0.37	0.26	0.012				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-7-6 (6.6)

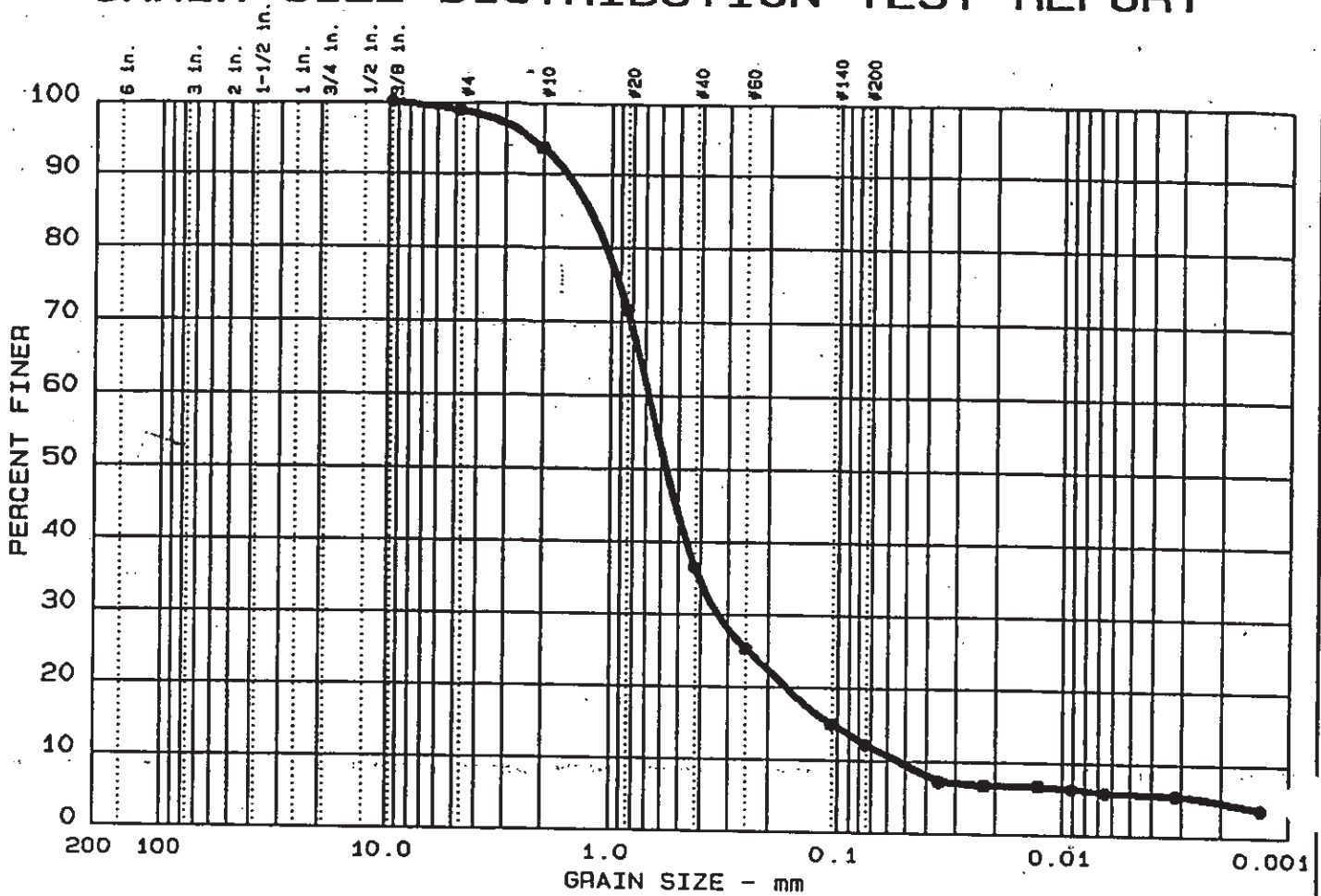
Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-99 @ 155-156.5 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 ASTM D 422  
 &  
 ASTM D 4318

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	1.1	86.7	6.4	5.8

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		1.22	0.67	0.56	0.333	0.1053	0.0522	3.16	12.9

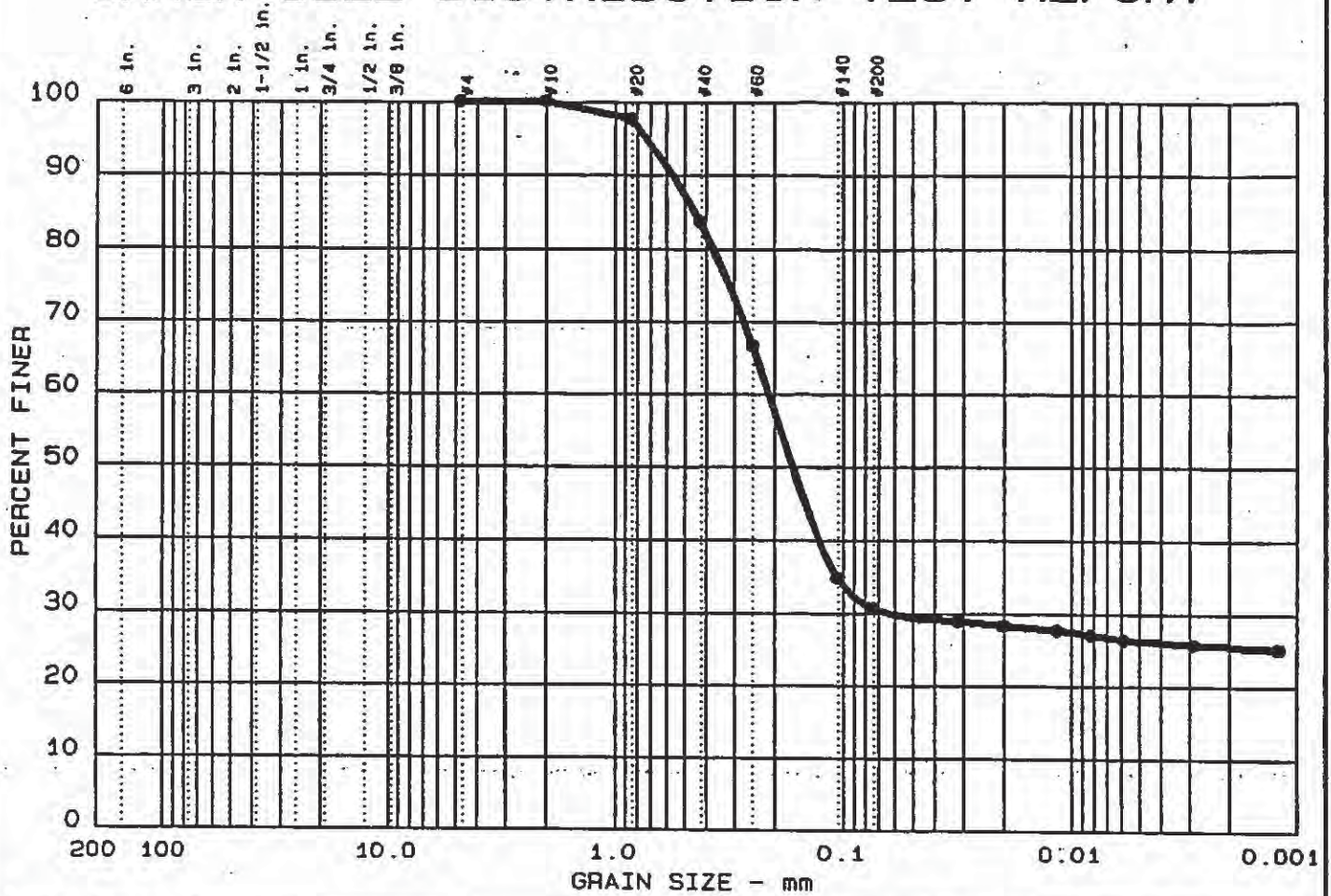
MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand	SM	A-1-b

Project No.: 50161-7-0108 Task 16  
 Project: APSF Confirmatory Testing  
 ● Location: FB-6 SS-100 @ 156.5-158 Ft.  
 Date: April 9, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: NB  
 ASTM D422



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	69.4	4.4	26.2

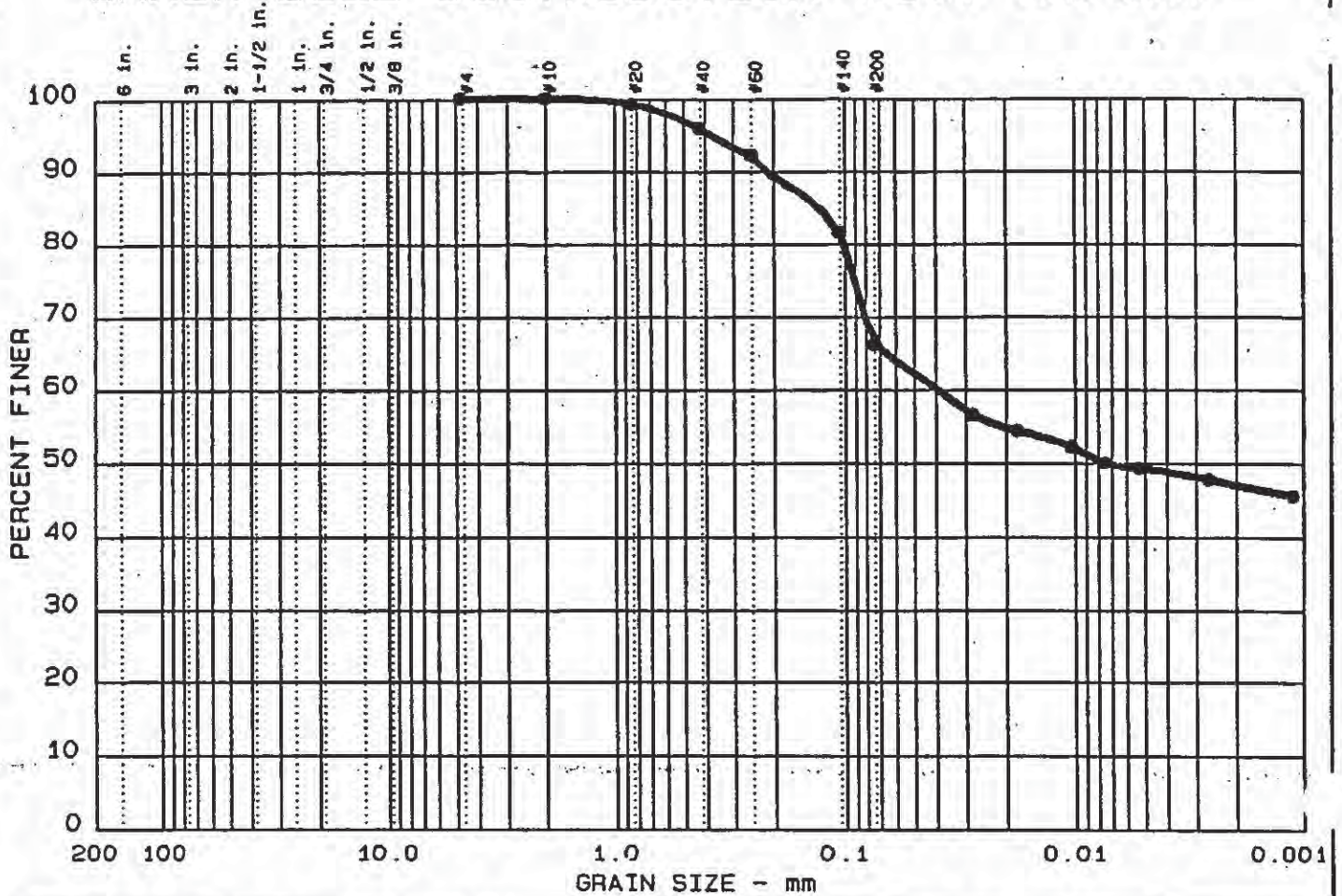
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 21	2	0.44	0.21	0.17	0.064				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-Red Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-3 @ 10.0-11.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SC + JM*  
 Reviewed by: *HB*  
 Moisture Content = 18.0%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	33.8	16.9	49.3

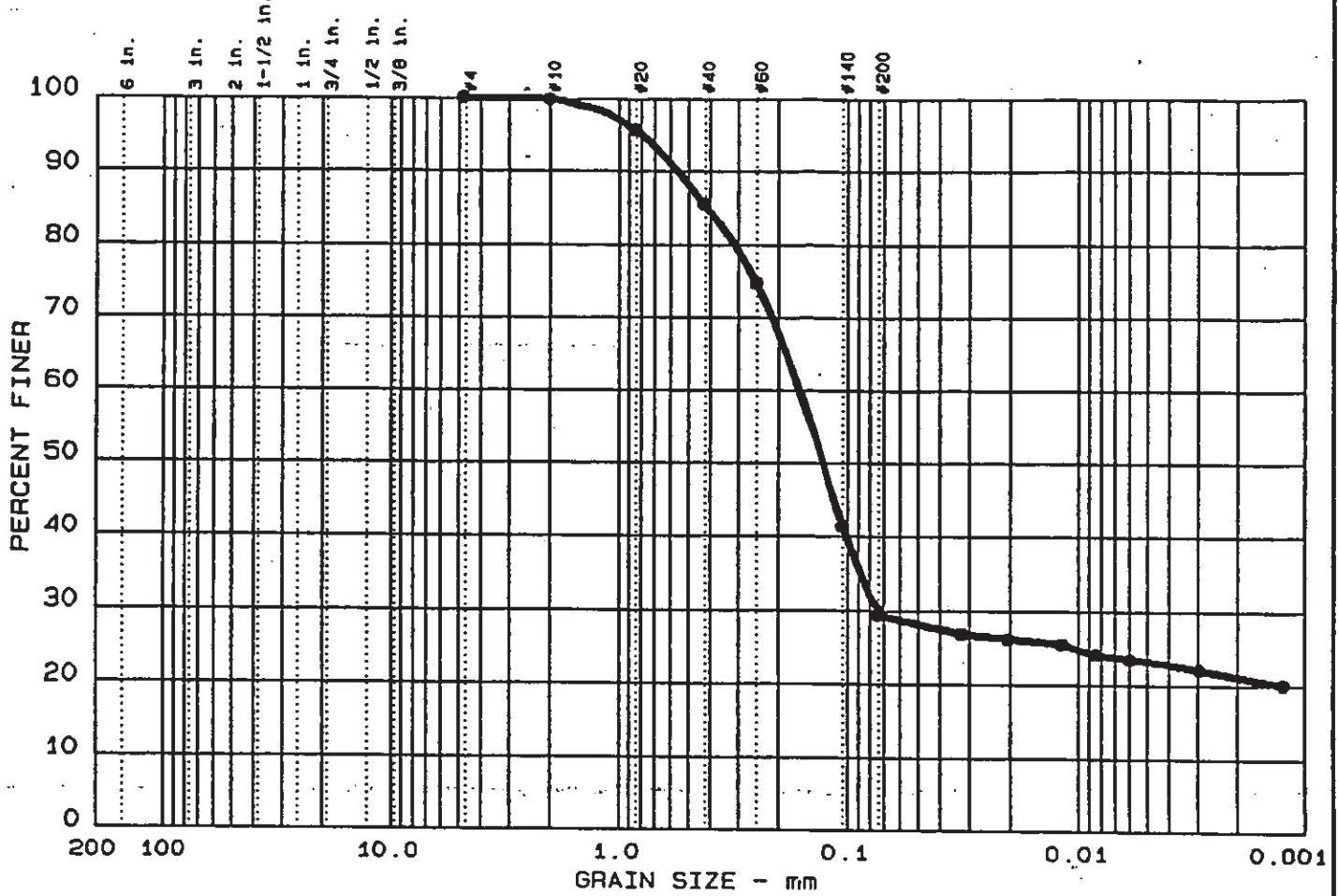
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 68	32	0.12		0.01					

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Sandy Elastic Silt	MH	A-7-5 (21.8)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-5 @ 13-14.5 Ft.  
  
 Date: June 19, 1998

Remarks:  
 Tested by: *SCJ/TM*  
 Reviewed by: *H*  
 Moisture Content = 27.7%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>B/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.0	70.7	5.1	23.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 41	19	0.40	0.16	0.13	0.076				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-7 (1.3)

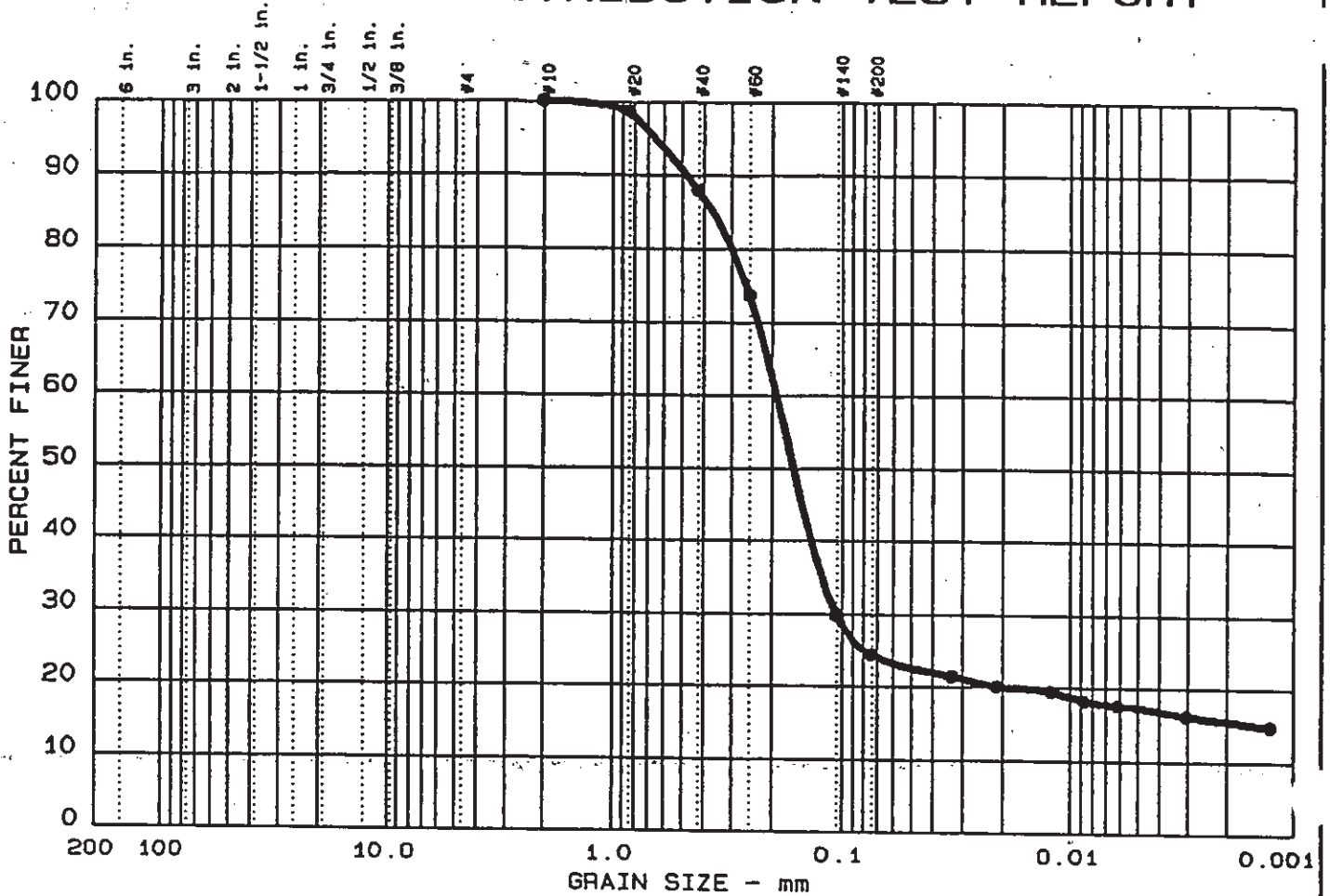
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-7 @ 16.0-17.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SGS/Jm*  
 Reviewed by: *H*  
 Moisture Content = 17.7%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	75.6	7.1	17.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 39	17	0.36	0.19	0.16	0.106	0.0013			

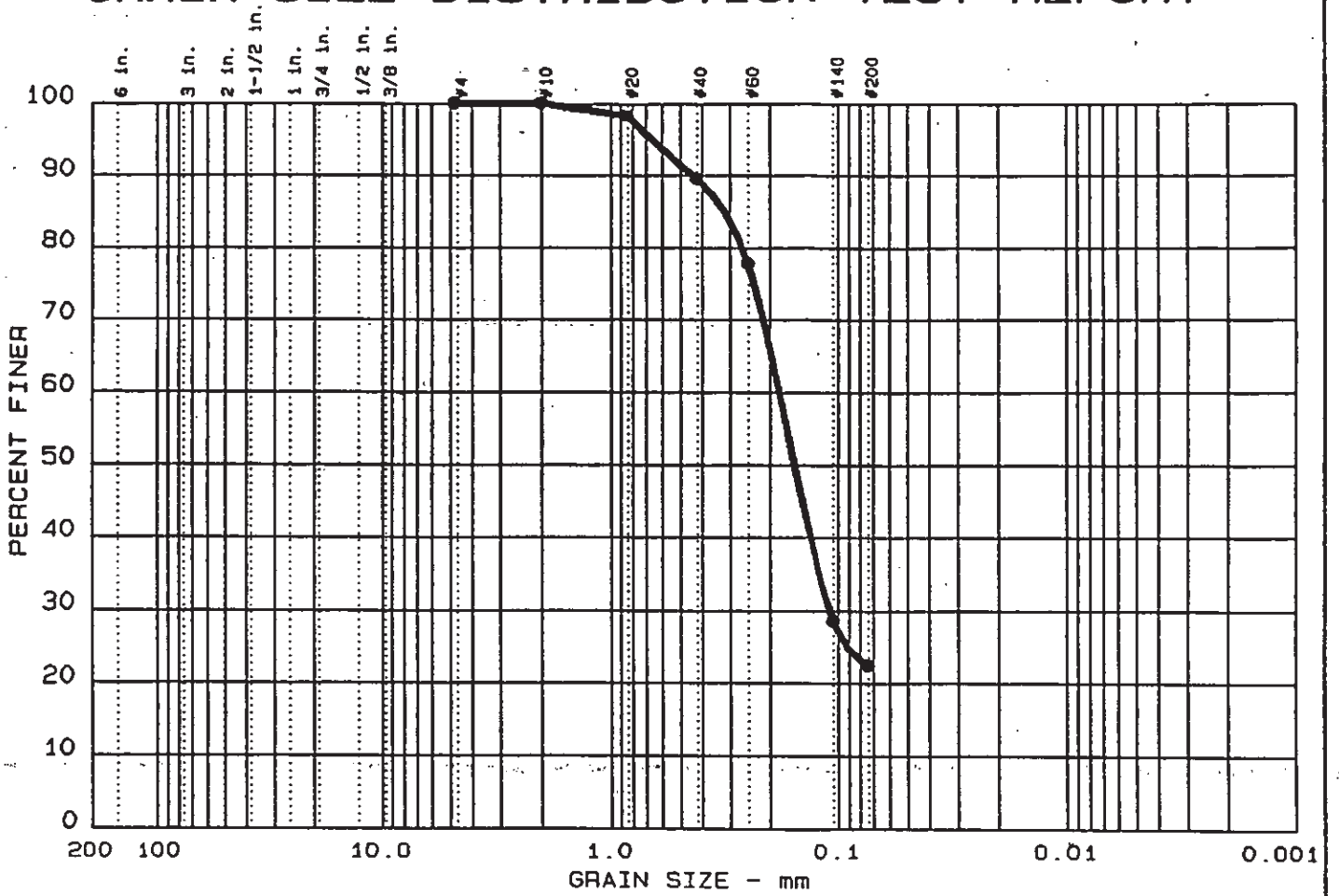
MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-2-6 (0.6)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-9 @ 19-20.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SC JTM*  
 Reviewed by: *HO*  
 Moisture Content = 20.1%  
 ASTM D422, D4318 & D2216

K-TRT-F-00001  
R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.0	77.5	22.5	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.31	0.18	0.16	0.109				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Silty Sand	SM	A-2-4 (0.0)

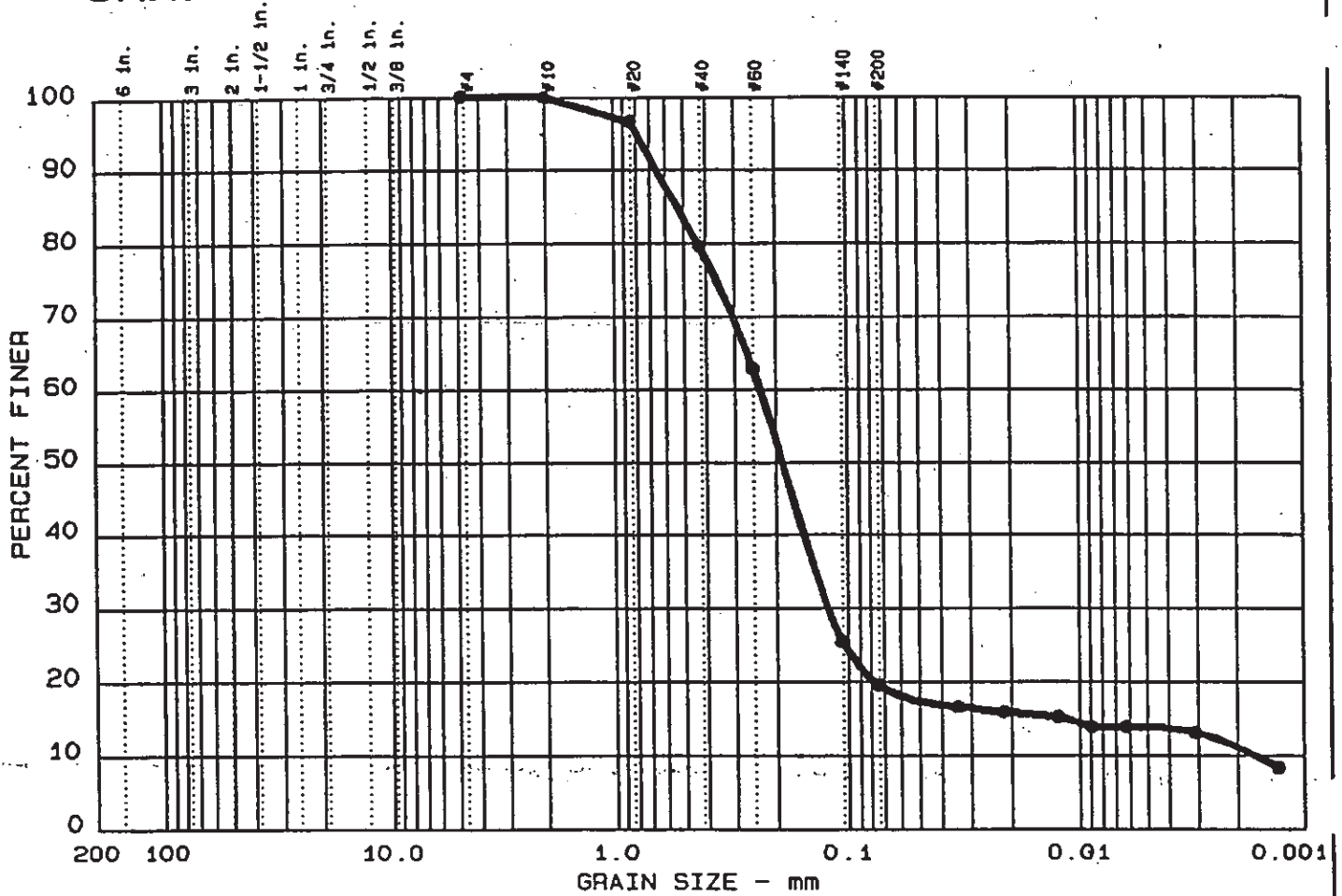
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-11 @ 22-23.5 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: SC-JSM  
 Reviewed by: HD  
 Moisture Content = 19.6%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	80.4	5.7	13.9

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 37	14	0.52	0.23	0.19	0.121	0.0115	0.0017	38.06	141.1

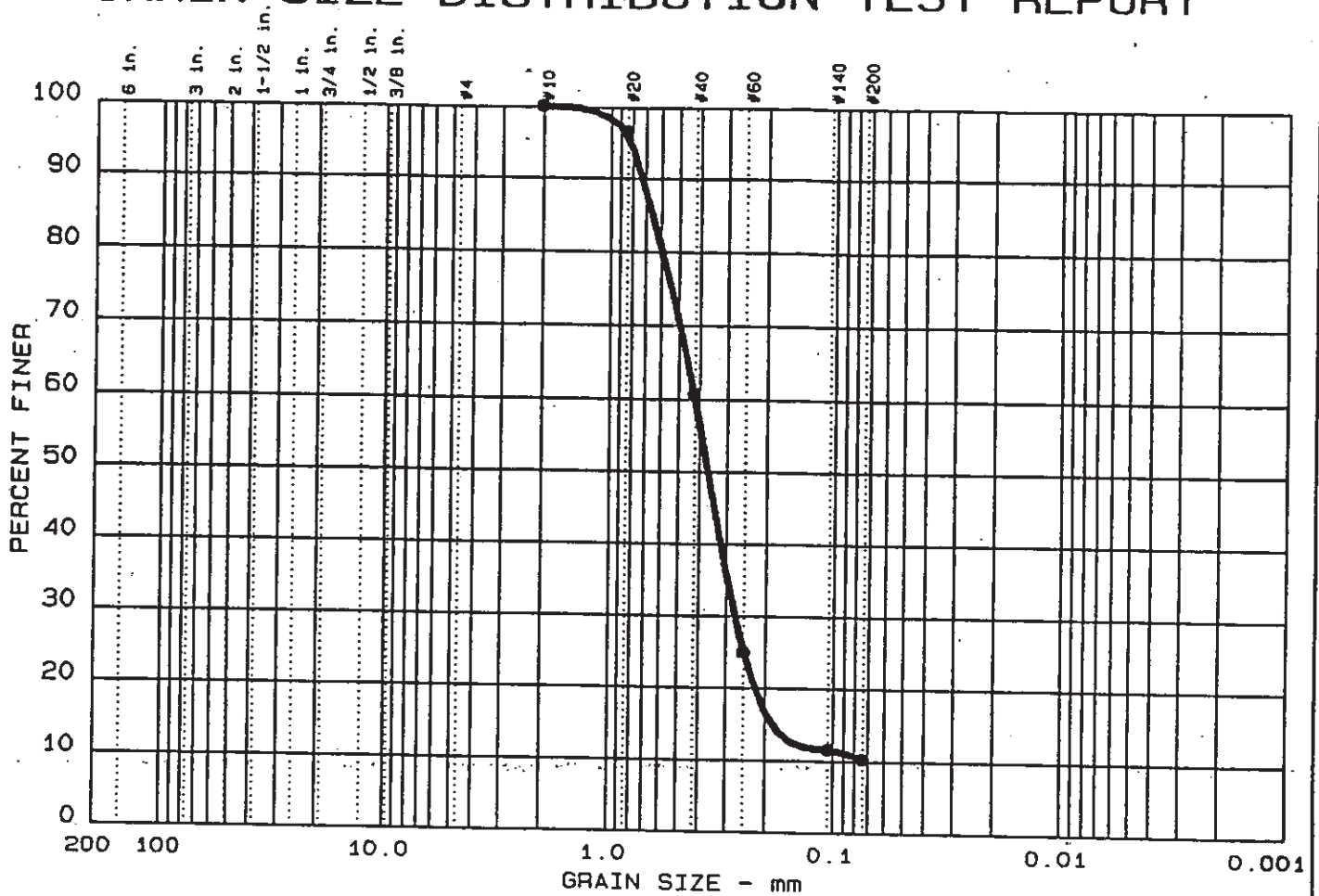
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-Red Brown Clayey Sand	SC	A-2-6 (0.2)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-13 @ 25.0-26.5 Ft.

Date: June 19, 1998

Remarks:  
 Tested by: *SCW/STM*  
 Reviewed by: *H*  
 Moisture Content = 19.1%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	89.7	10.3	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.65	0.42	0.36	0.274	0.1849			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-Red Brown Poorly Graded Sand with Silt	SP-SM	A-3

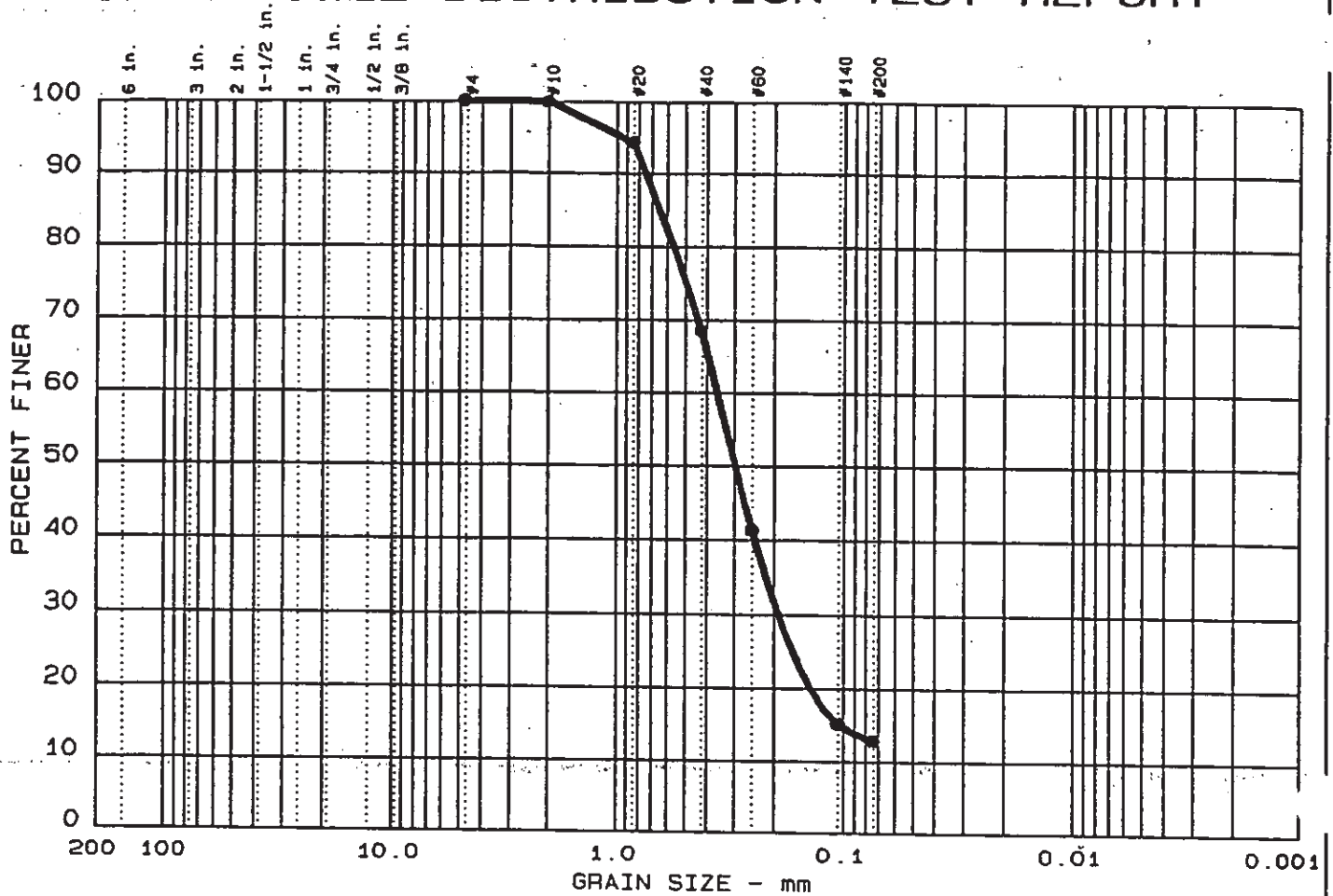
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-15 @ 28-29.5 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: *SCJ/STW*  
 Reviewed by: *HD*  
 Moisture Content = 19.2%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	87.1	12.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.64	0.36	0.30	0.192	0.1017			

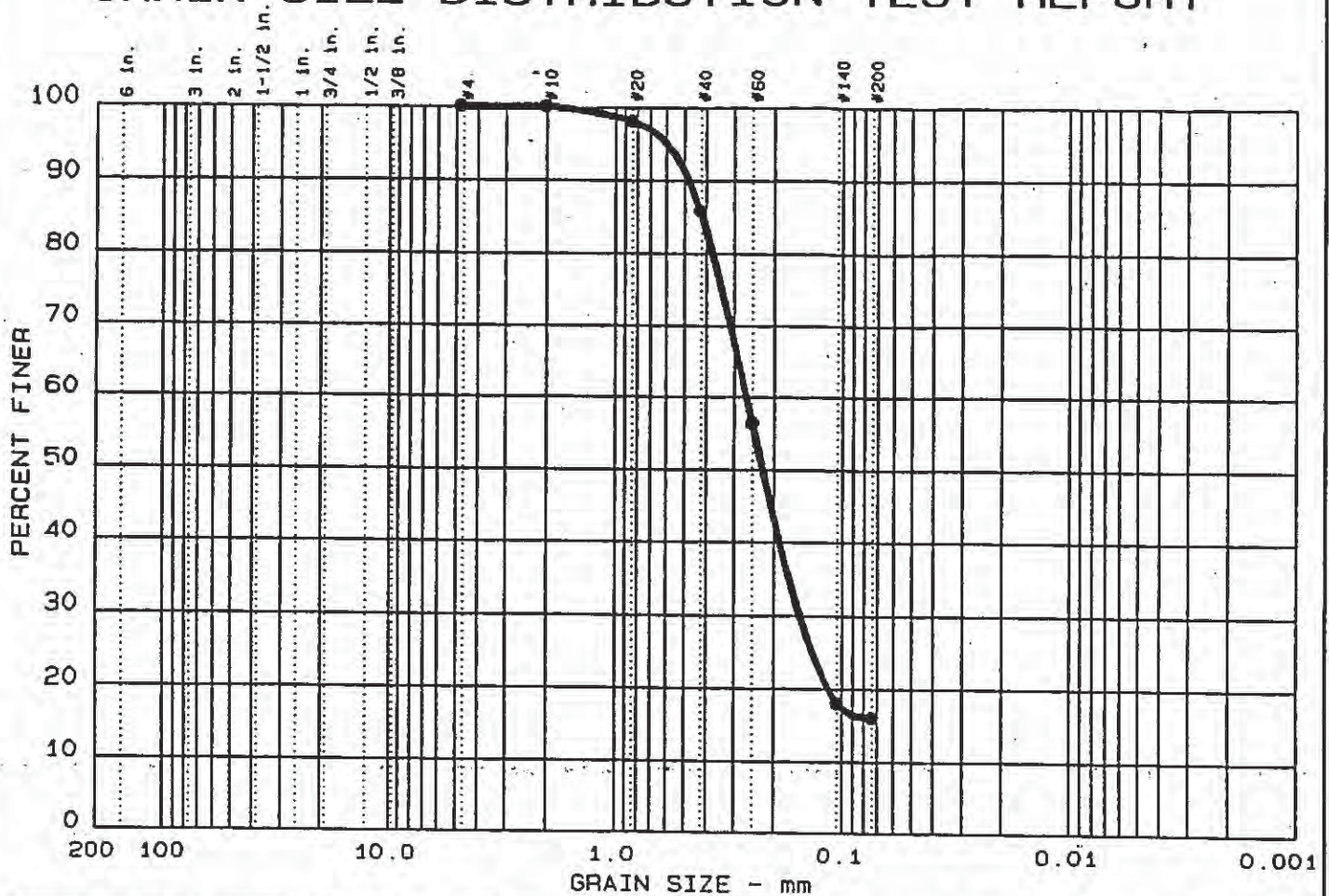
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-Red Brown Silty Sand	SM	A-2-4 (0.2)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-17 @ 31.0-32.5 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: SC + STM  
 Reviewed by: WJ  
 Moisture Content = 16.4%  
 ASTM D422 & D2216



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	83.9	16.1	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.41	0.26	0.23	0.154				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

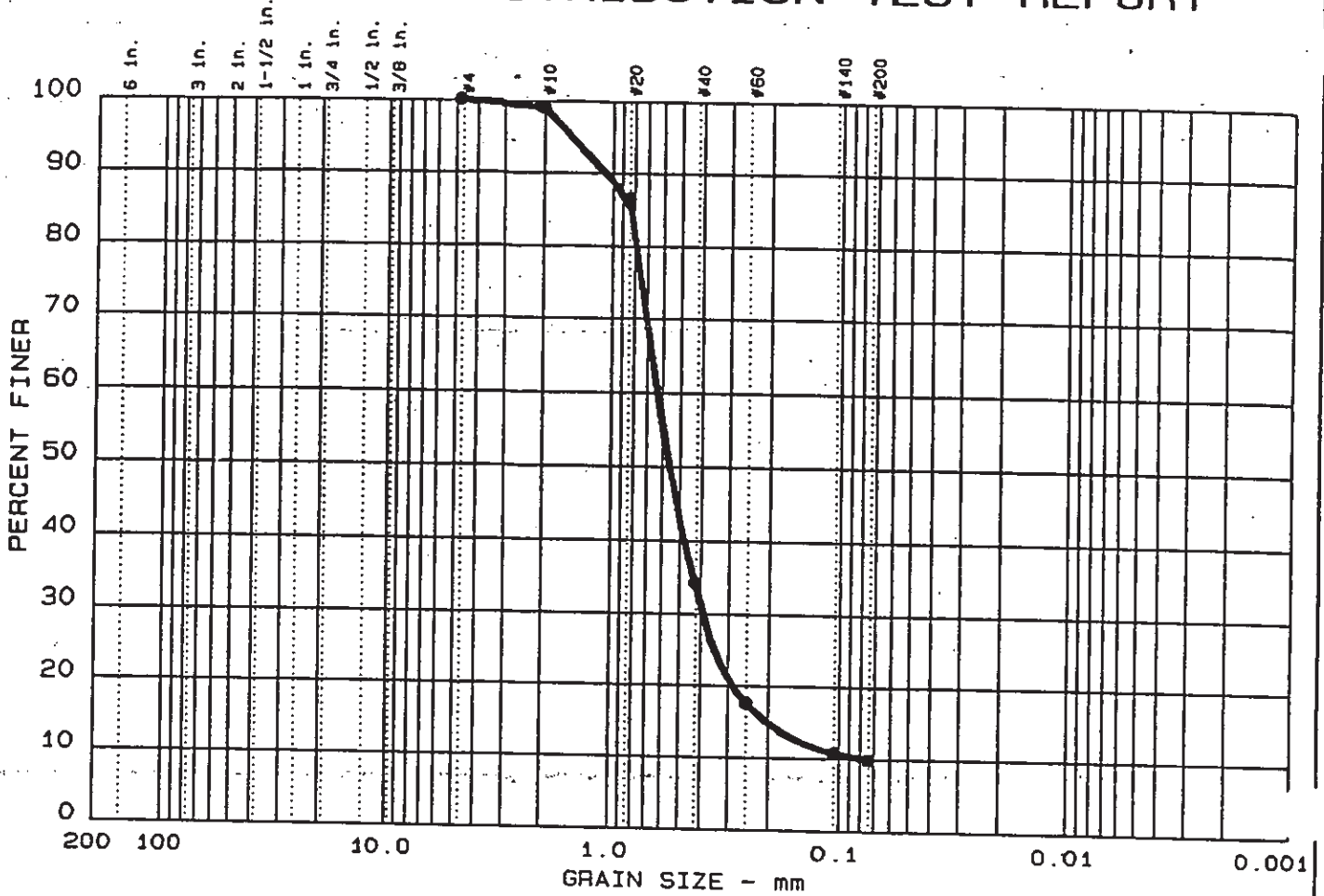
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-19 @ 34-35.5 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: *SC & STM*  
 Reviewed by: *HS*  
 Moisture Content = 16.7%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	90.1	9.9	

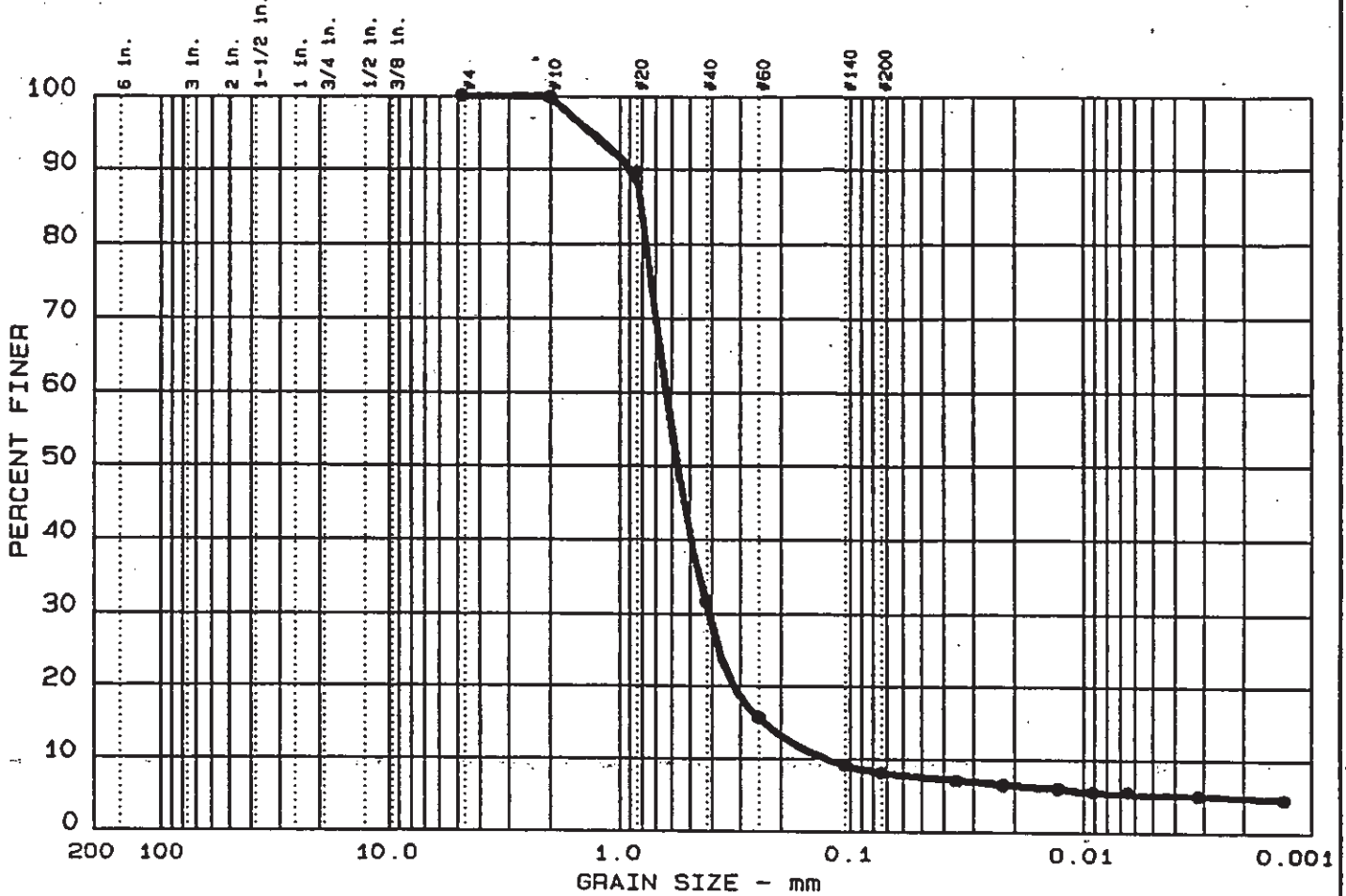
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.83	0.62	0.55	0.389	0.2018	0.0741	3.27	8.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-20 @ 35.5-37.0 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: *Scott M*  
 Reviewed by: *W*  
 Moisture Content = 12.8%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 5	0.0	0.0	91.9	3.0	5.1

LL	PI	D85	D60	D50	D30	D15	D10	C <sub>c</sub>	C <sub>u</sub>
• NL	NP	0.80	0.63	0.56	0.409	0.2355	0.1279	2.09	4.9

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-17 SS-22 @ 38.5-40.0 Ft.  
 Date: June 19, 1998

**GRAIN SIZE DISTRIBUTION TEST REPORT**  
**LAW ENGINEERING, INC.**

Remarks:

Tested by: *SC + JPM*

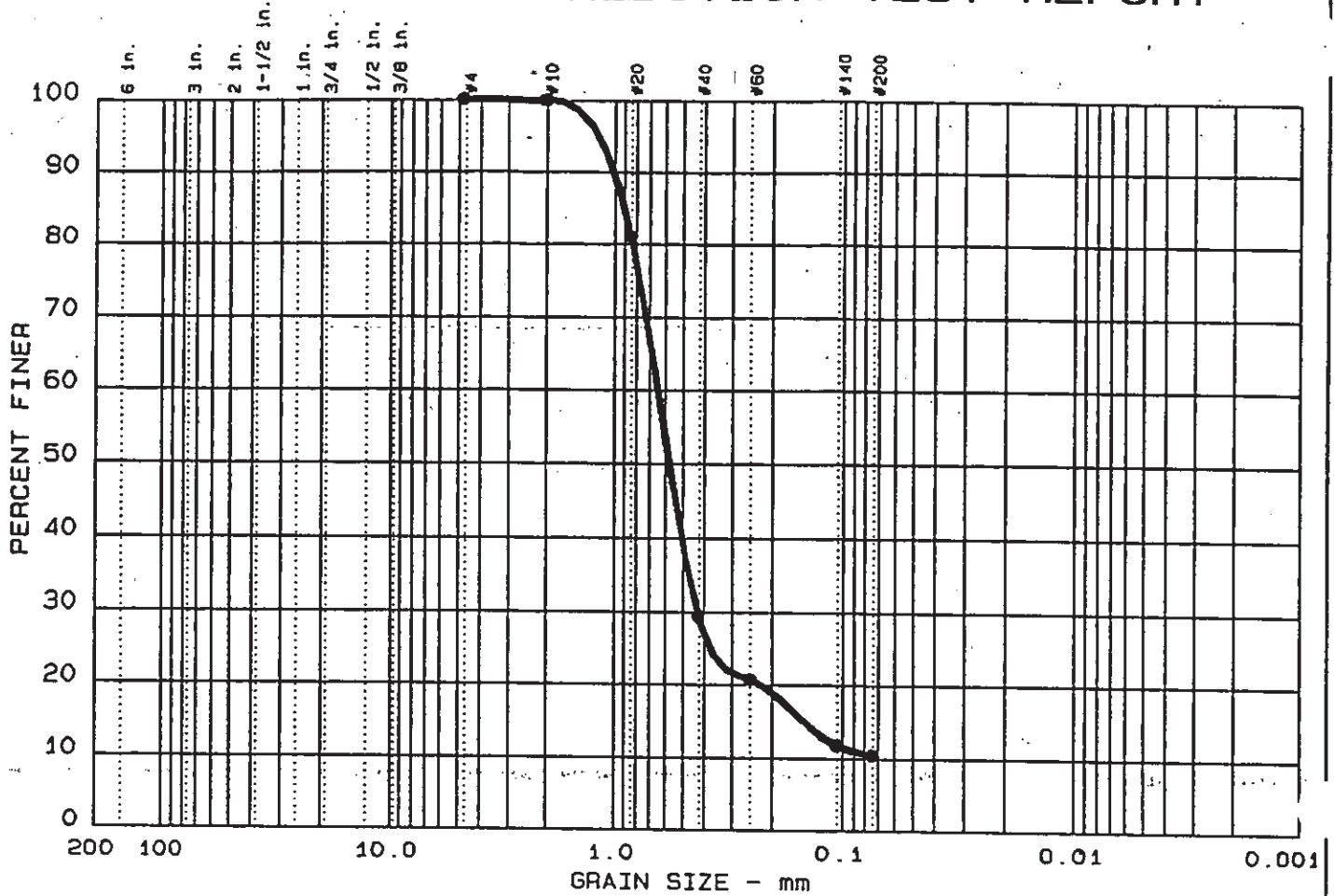
Reviewed by: *HW*

Moisture Content = 15.1%

ASTM D422, D4318 & D2216

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	89.5	10.5	

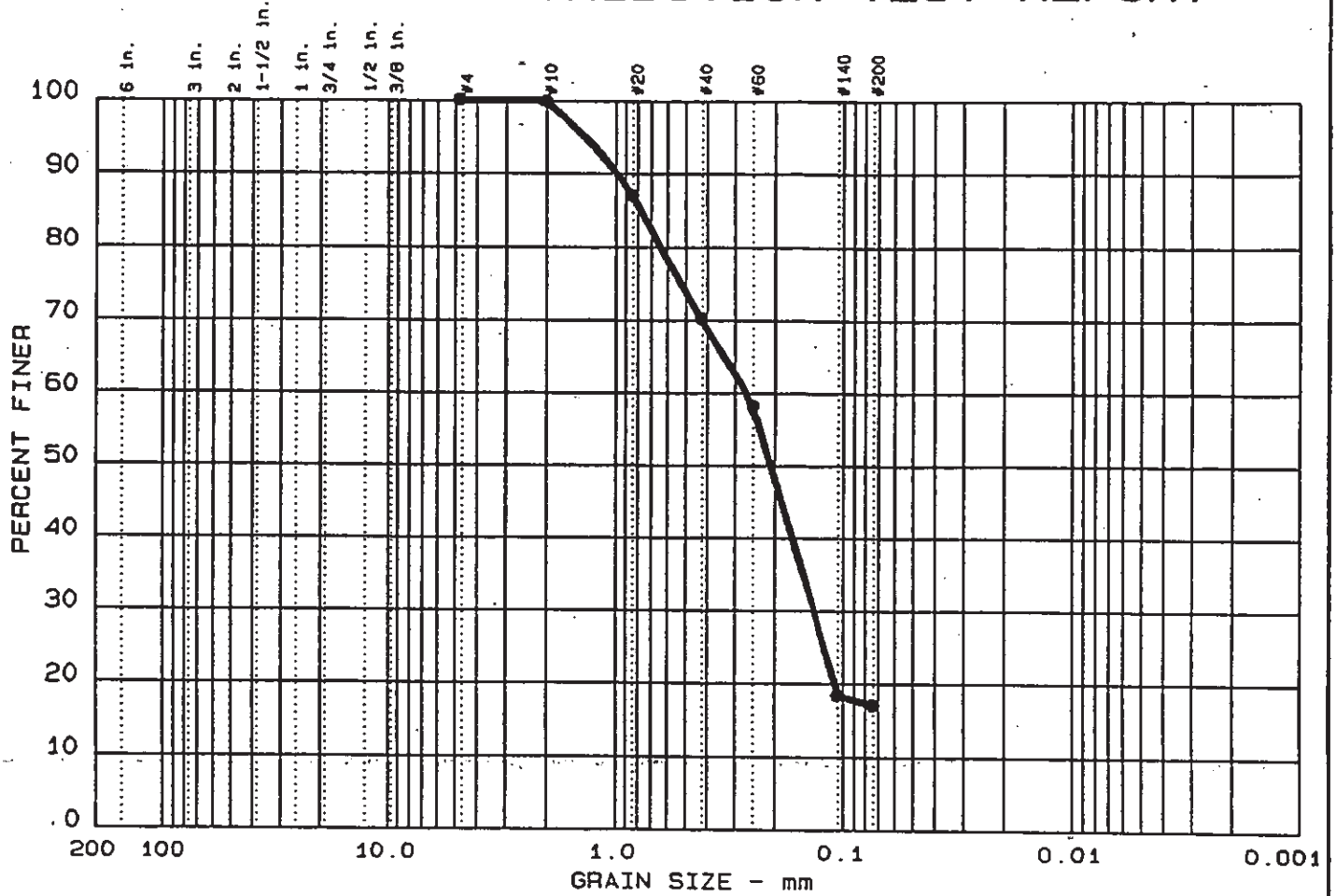
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.90	0.64	0.57	0.426	0.1444			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-24 @ 41.5-43.0 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: *SCJ/m*  
 Reviewed by: *HJ*  
 Moisture Content = 14.9%  
 ASTM D422 & D2216

**GRAIN SIZE DISTRIBUTION TEST REPORT**



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 7	0.0	0.0	83.0	17.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.77	0.27	0.21	0.135				

MATERIAL DESCRIPTION	USCS	AASHTO
• Red Brown Silty Sand	SM	A-2-4 (0.0)

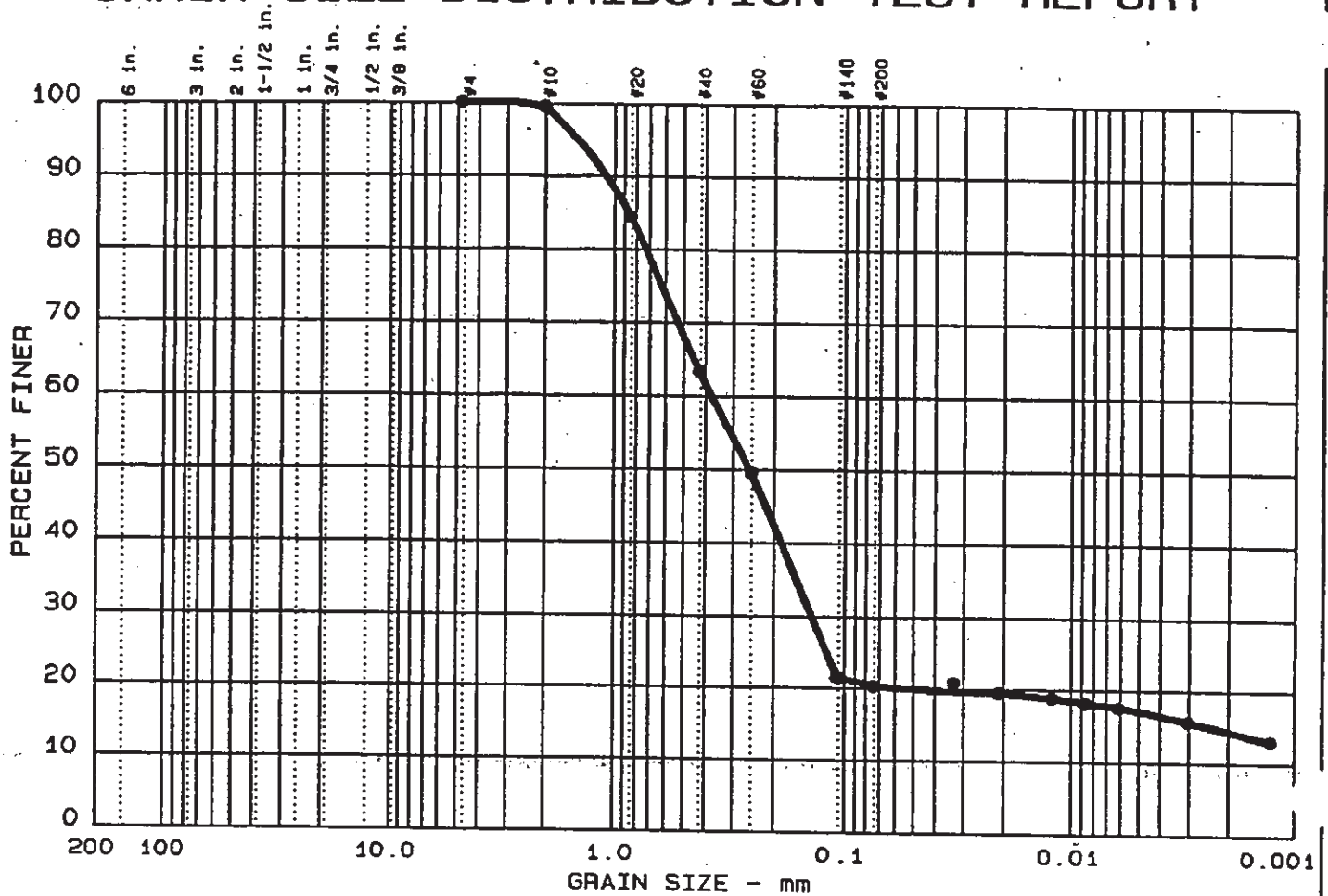
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-17 SS-26 @ 44.5-46.0 Ft.  
  
 Date: June 21, 1998

Remarks:  
 Tested by: *SC & CS*  
 Reviewed by: *HP*  
 Moisture Content = 13.3%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	79.7	3.2	17.1

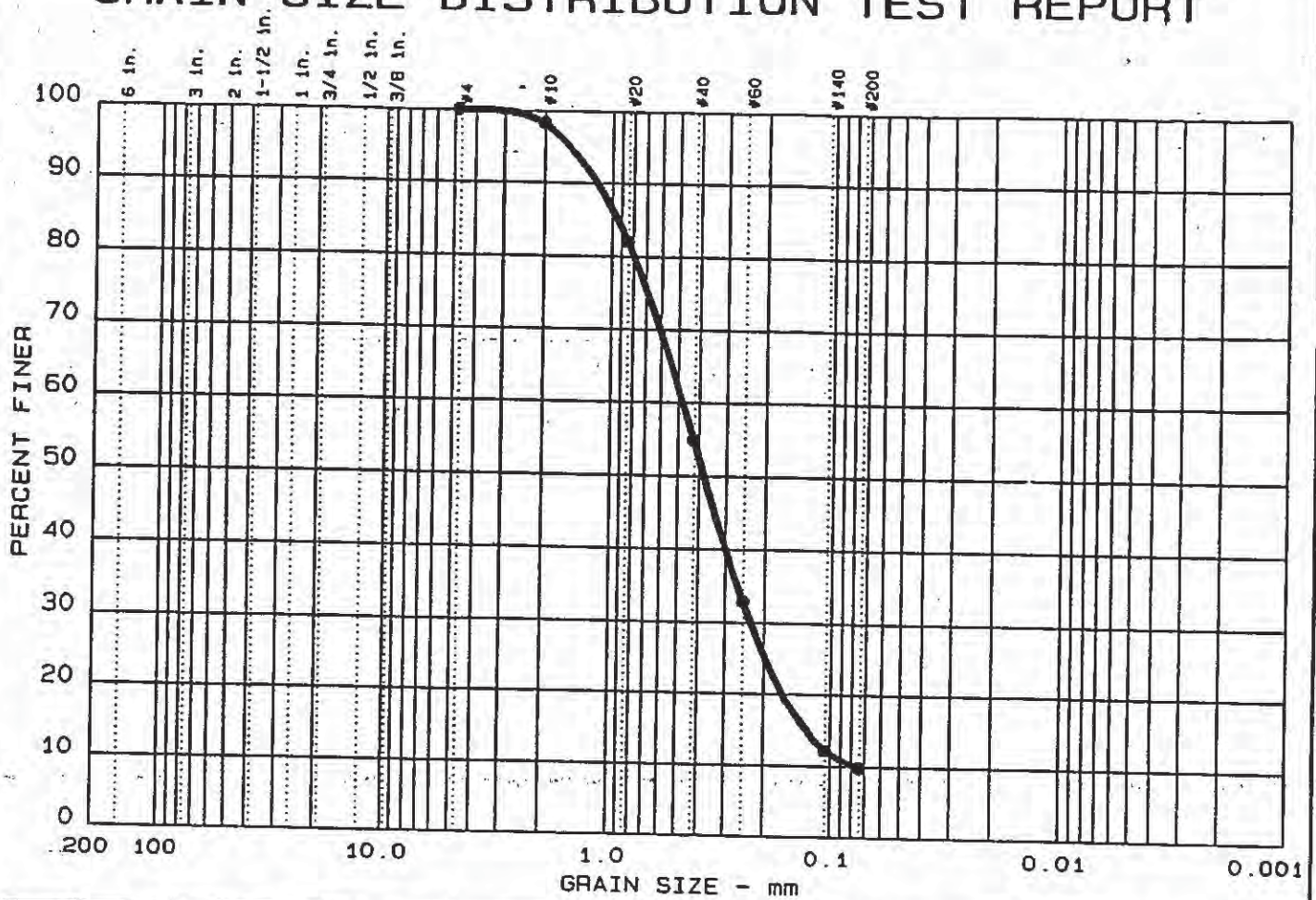
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 44	22	0.85	0.37	0.25	0.136	0.0024			

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-2-7 (0.6)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-27 @ 46.0-47.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SC & JTM*  
 Reviewed by: *H*  
 Moisture Content = 16.4%  
 ASTM D422, D431B & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• B	0.0	0.0	90.2	9.8	

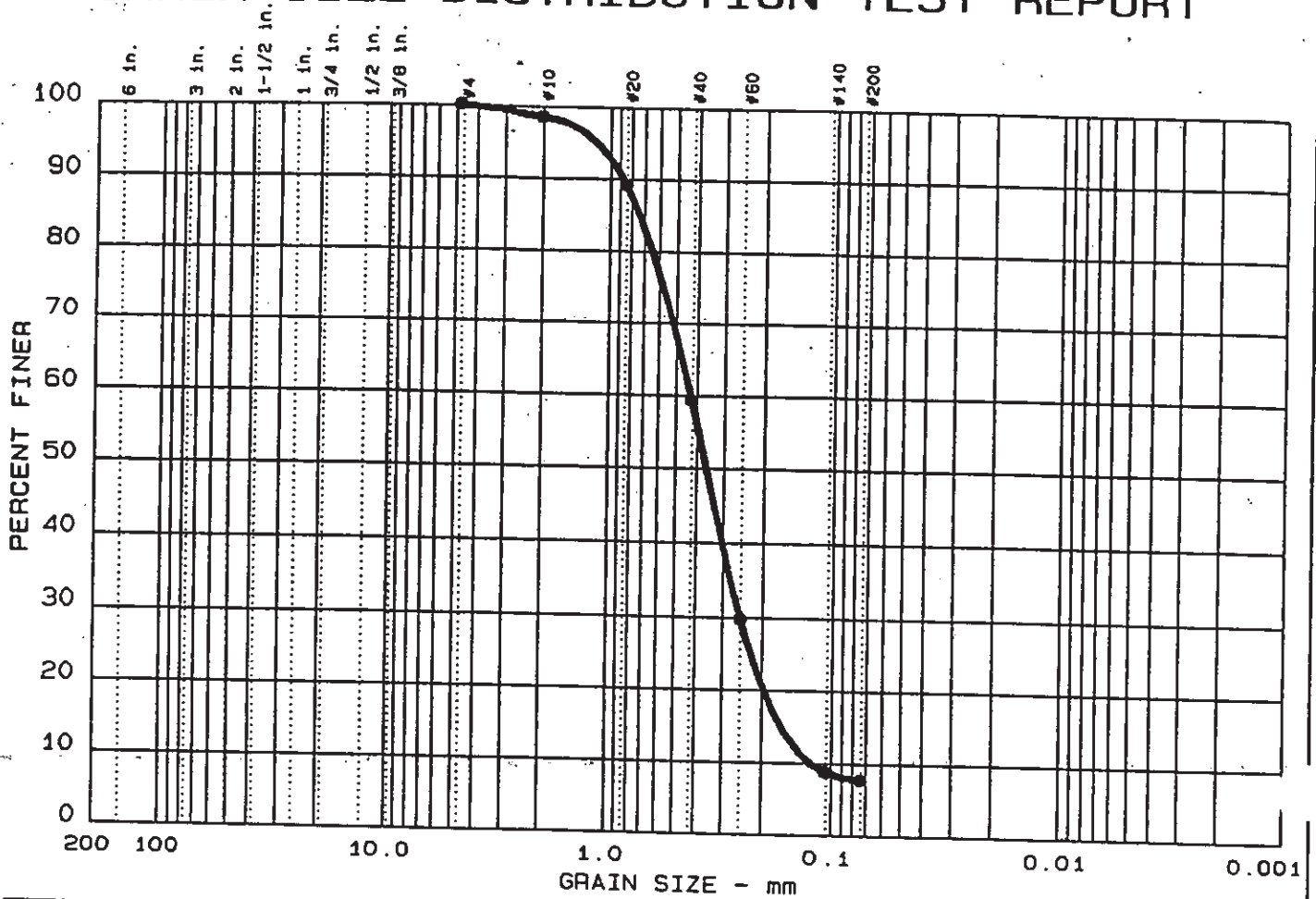
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.93	0.47	0.38	0.231	0.1284	0.0765	1.48	6.2

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Well Graded Sand with Silt	SW-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-17 SS-30 @ 50.5-52.0 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: *S. C. J. M.*  
 Reviewed by: *HJ*  
 Moisture Content = 13.7%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	92.3	7.7	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.73	0.42	0.36	0.251	0.1639	0.1201	1.23	3.5

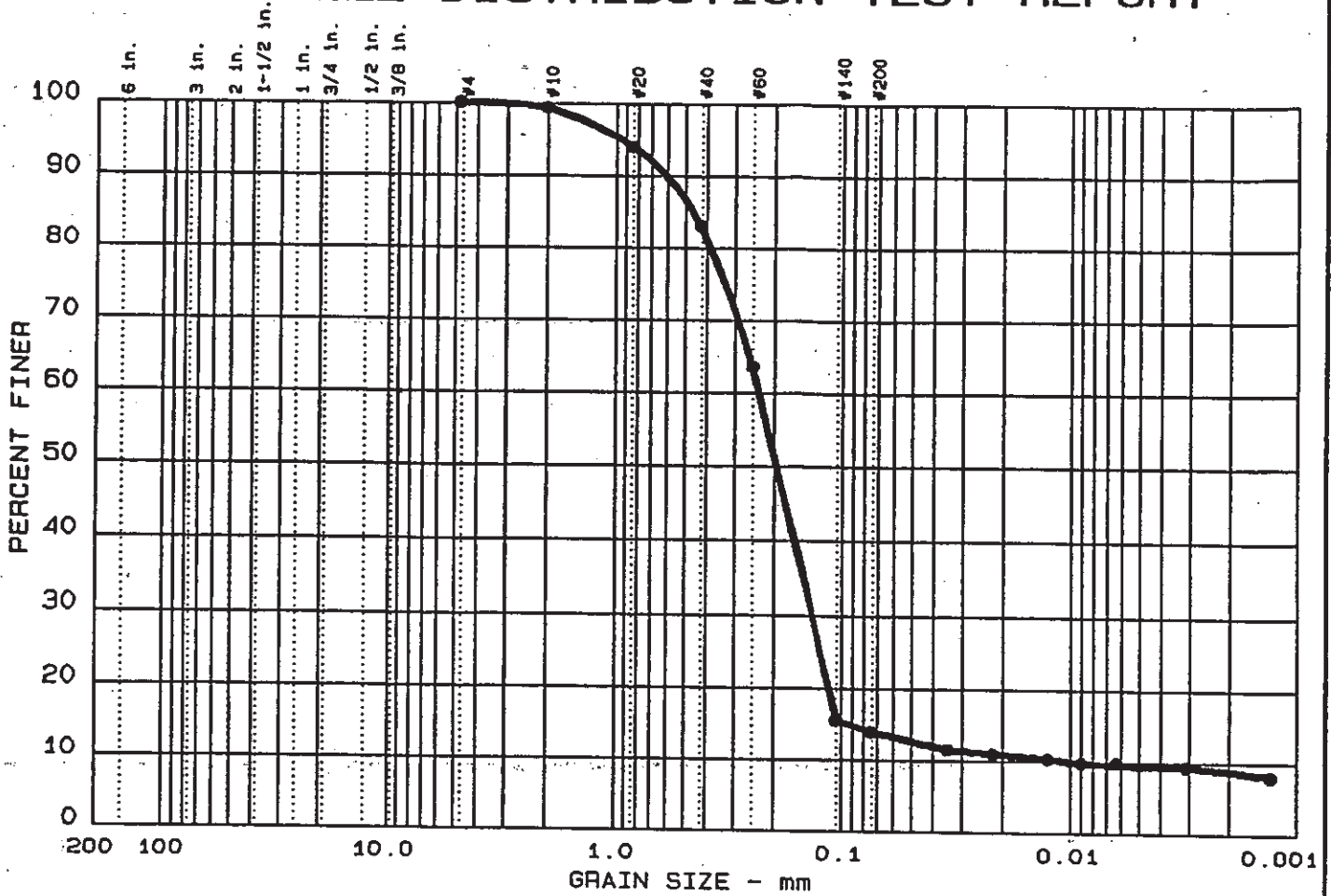
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-32 @ 53.5-55.0 Ft.  
 Date: June 21, 1998

Remarks:  
 Tested by: *SC + JTM*  
 Reviewed by: *W*  
 Moisture Content = 16.4%  
 ASTM D422 & D2216



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	86.0	4.5	9.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 28	3	0.45	0.23	0.20	0.136	0.0920	0.0100	7.93	23.5

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

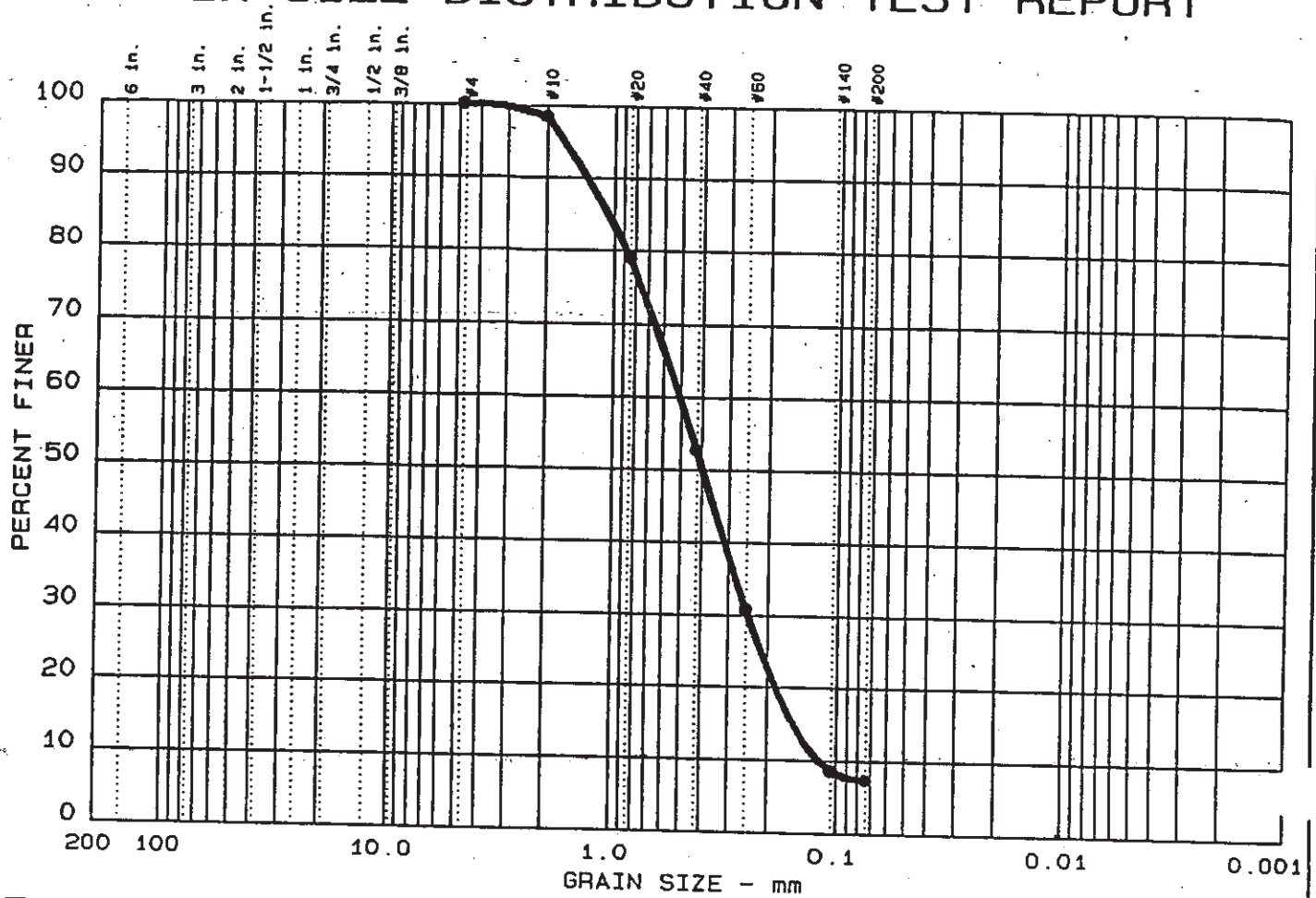
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-34 @ 56.5-58.0 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SC + JTM*  
 Reviewed by: *HP*  
 Moisture Content = 19.9%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 10	0.0	0.0	92.6	7.4	

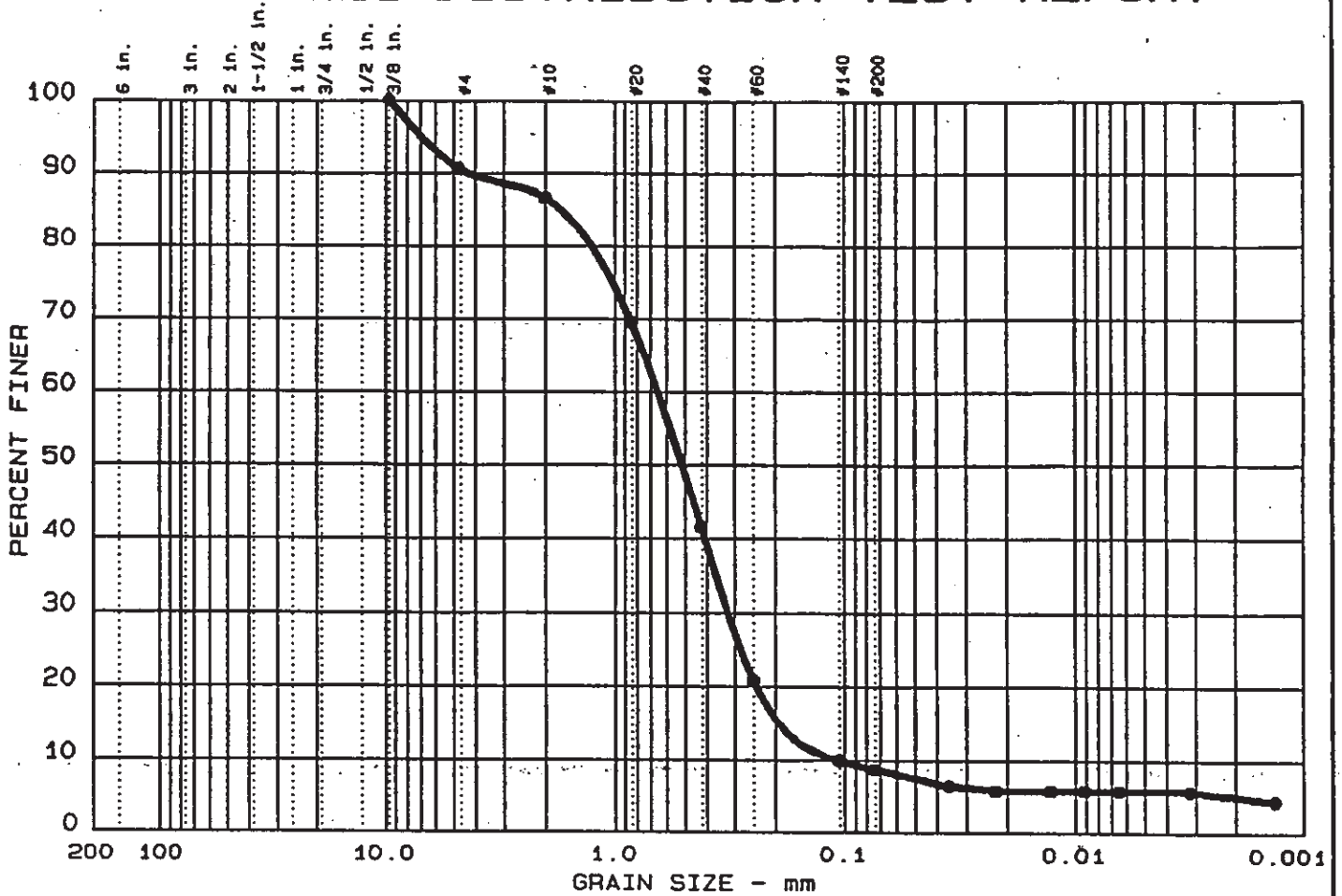
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
•		1.05	0.50	0.39	0.245	0.1529	0.1174	1.02	4.3

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
Project: F-Area Northeast Expansion  
• Location: FB-17 SS-37 @ 61.0-62.5 Ft.  
  
Date: June 21, 1998

Remarks:  
Tested by: *SGH/TM*  
Reviewed by: *H*  
Moisture Content = 16.4%  
ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	9.3	82.0	3.0	5.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	1.70	0.65	0.51	0.321	0.1936	0.1064	1.50	6.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Well Graded Silty Sand	SW-SM	A-1-b

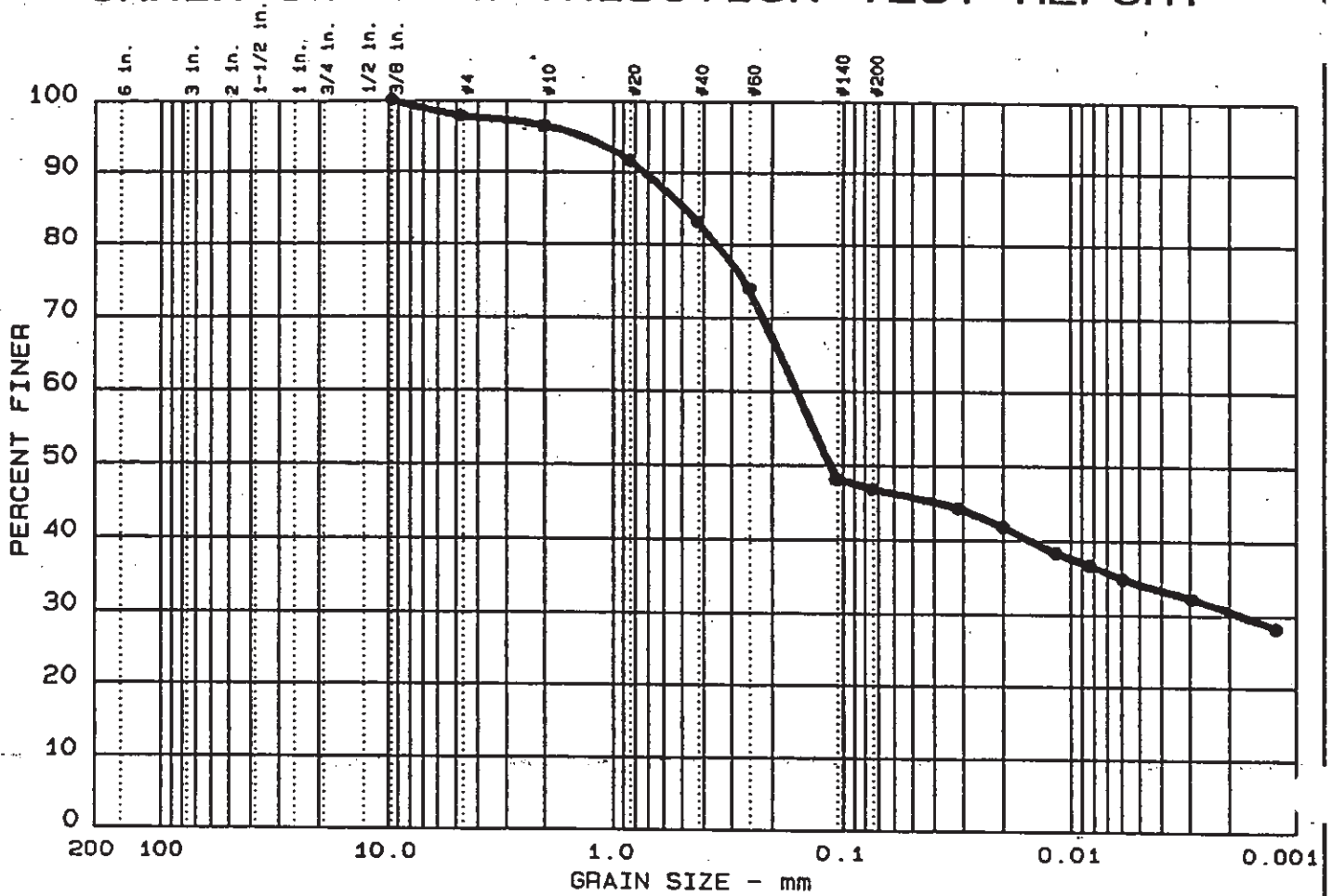
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-40 @ 65.5-67.0 Ft  
 Date: June 19, 1998

Remarks:  
 Tested by: *SCJ/TM*  
 Reviewed by: *H*  
 Moisture Content = 16.2%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	2.2	51.1	12.7	34.0

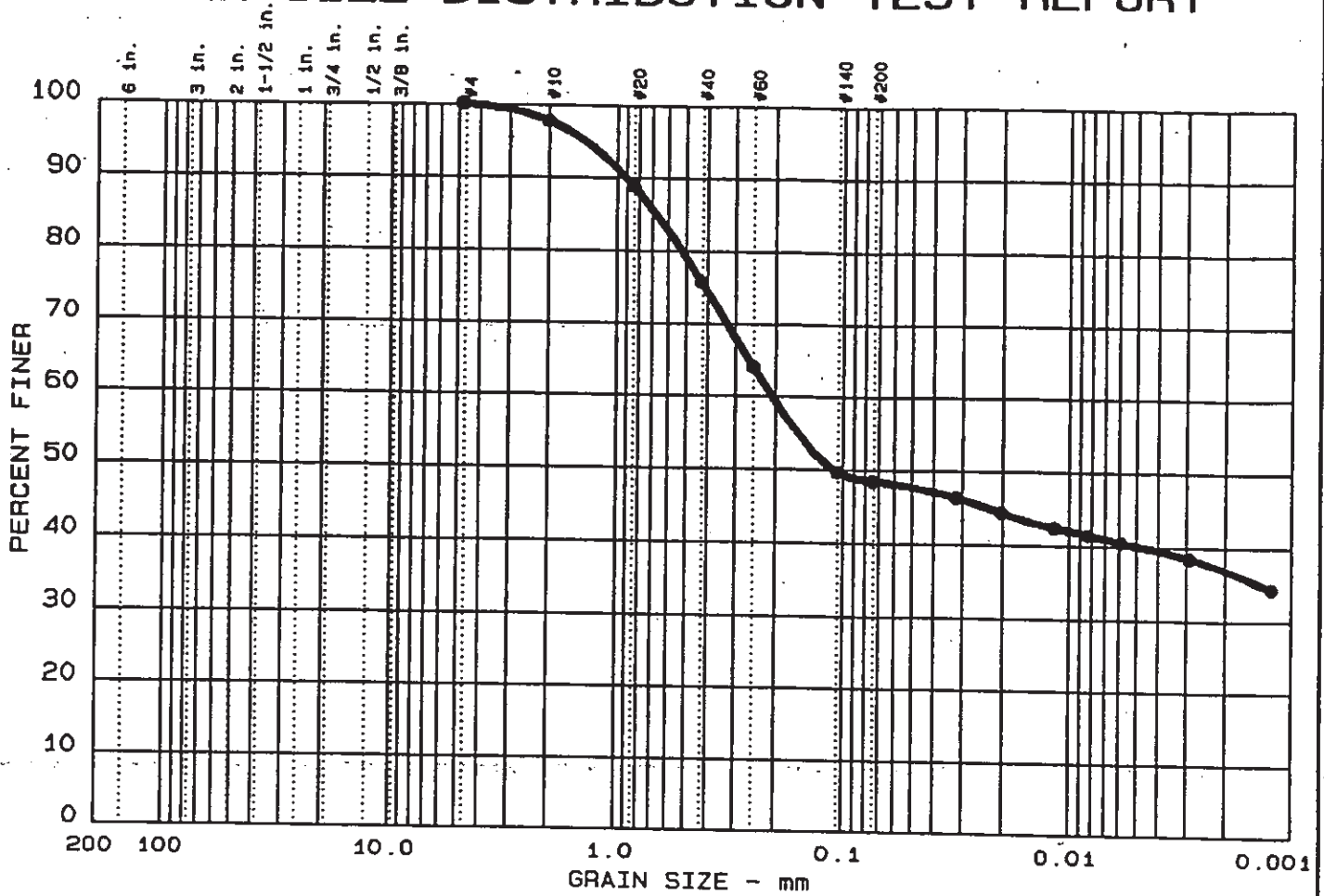
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 73	46	0.48	0.16	0.11	0.002				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Black Clayey Sand	SC	A-7-6 (15.9)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-41 @ 67.0-68.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *H*  
 Moisture Content = 30.4%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	51.6	8.4	40.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 75	43	0.66	0.21	0.11					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-7-5 (15.8)

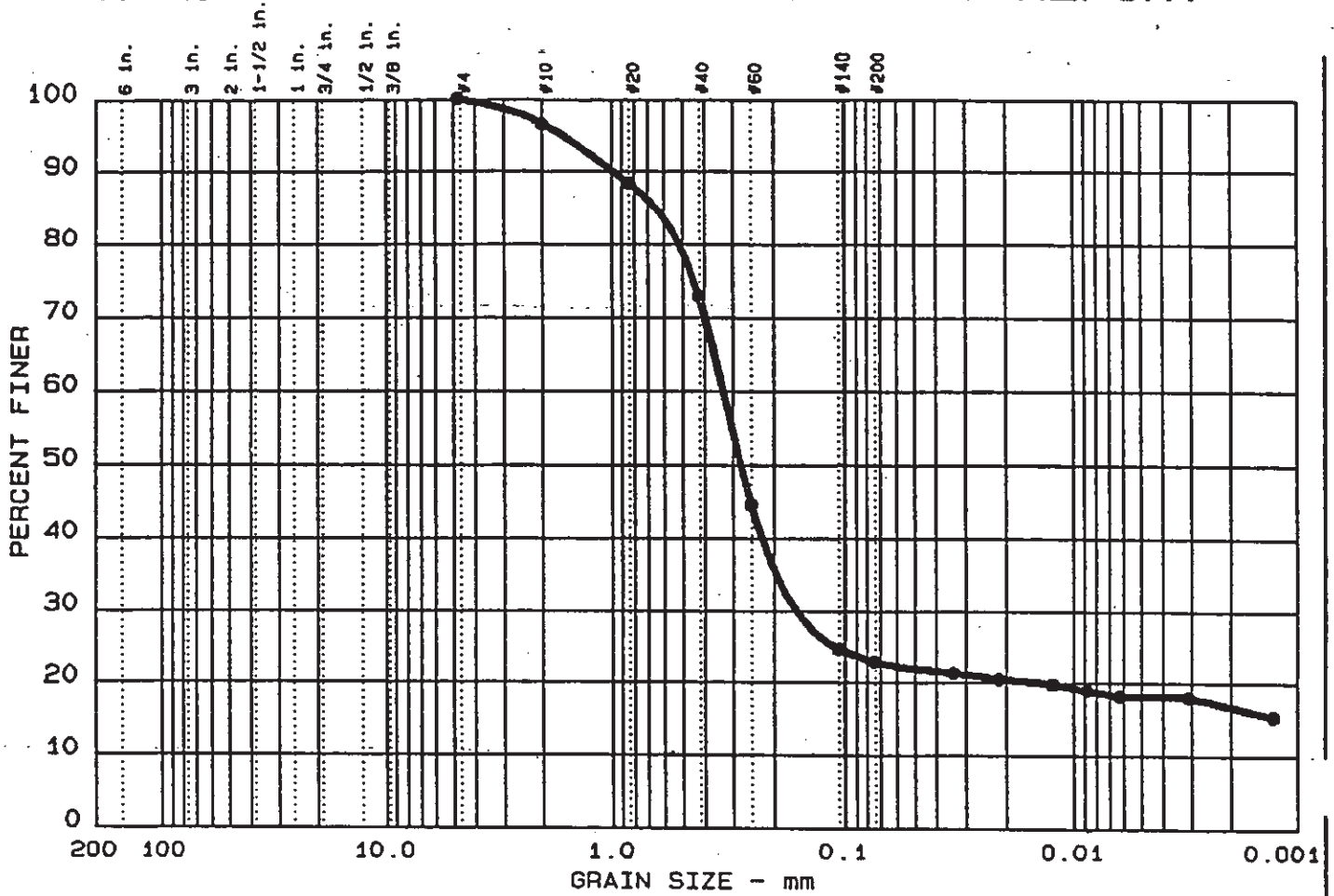
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-42 @ 58.5-70.0 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *JTM & SC*  
 Reviewed by: *H*  
 Moisture Content = 43.0%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	77.2	4.7	18.1

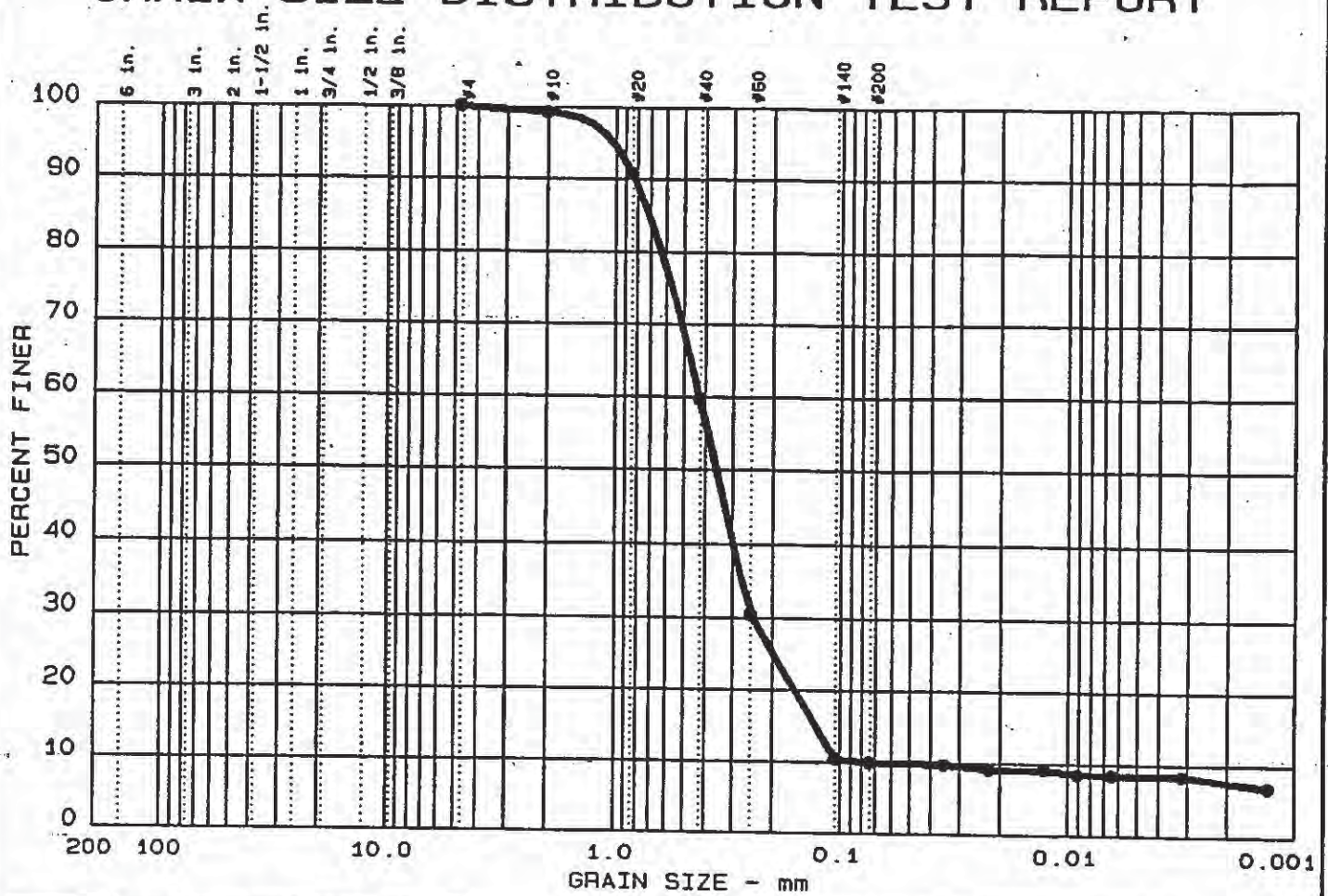
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 29	8	0.64	0.33	0.28	0.161				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-43 @ 70.0-71.5 Ft.  
  
 Date: June 19, 1998

Remarks:  
 Tested by: *SCJ/TM*  
 Reviewed by: *HS*  
 Moisture Content = 29.3%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	90.0	1.5	8.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.70	0.42	0.35	0.246	0.1278	0.0752	1.91	5.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

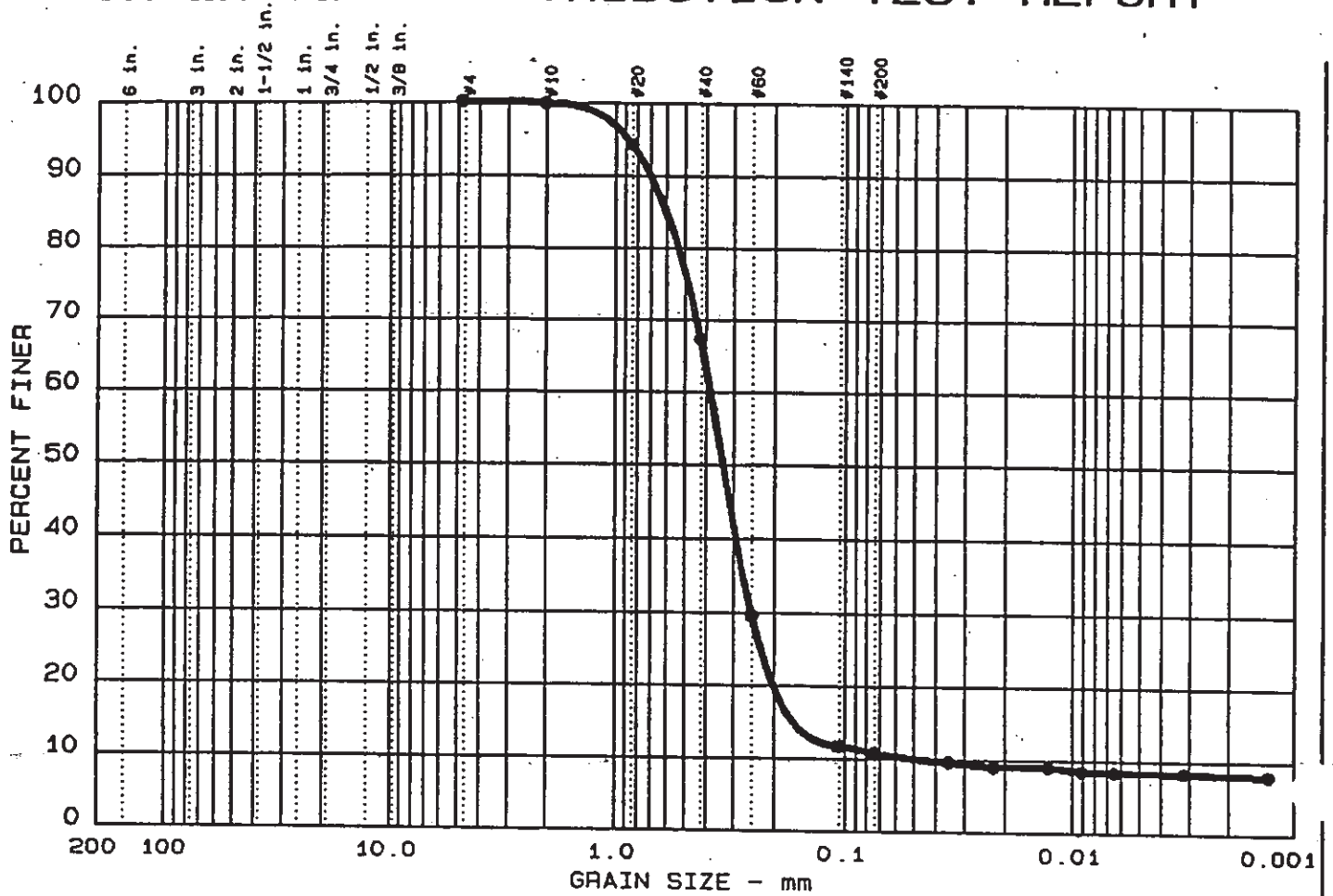
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-45 @ 73.0-74.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SCD/STM*  
 Reviewed by: *HJ*  
 Moisture Content = 30.0%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	89.2	2.5	8.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.59	0.38	0.33	0.250	0.1652	0.0466	3.55	8.1

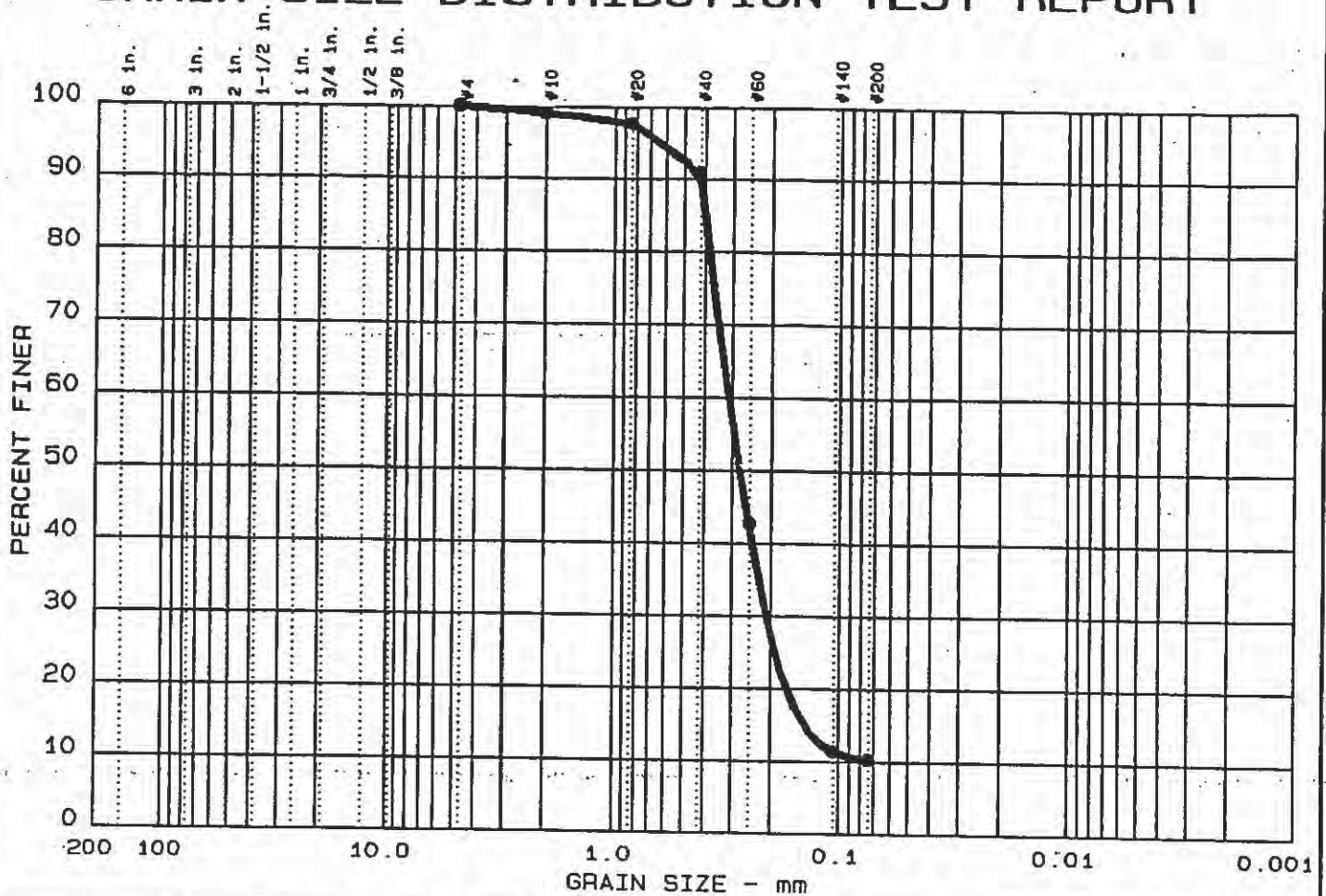
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.4)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-49 @ 79.0-80.5 Ft.  
 Date: June 19, 1998

Remarks:  
 Tested by: *SCJ/JM*  
 Reviewed by: *HB*  
 Moisture Content = 26.3%  
 ASTM D422, D4318 & D2216



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 13	0.0	0.0	89.7	10.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.40	0.31	0.28	0.210	0.1422			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

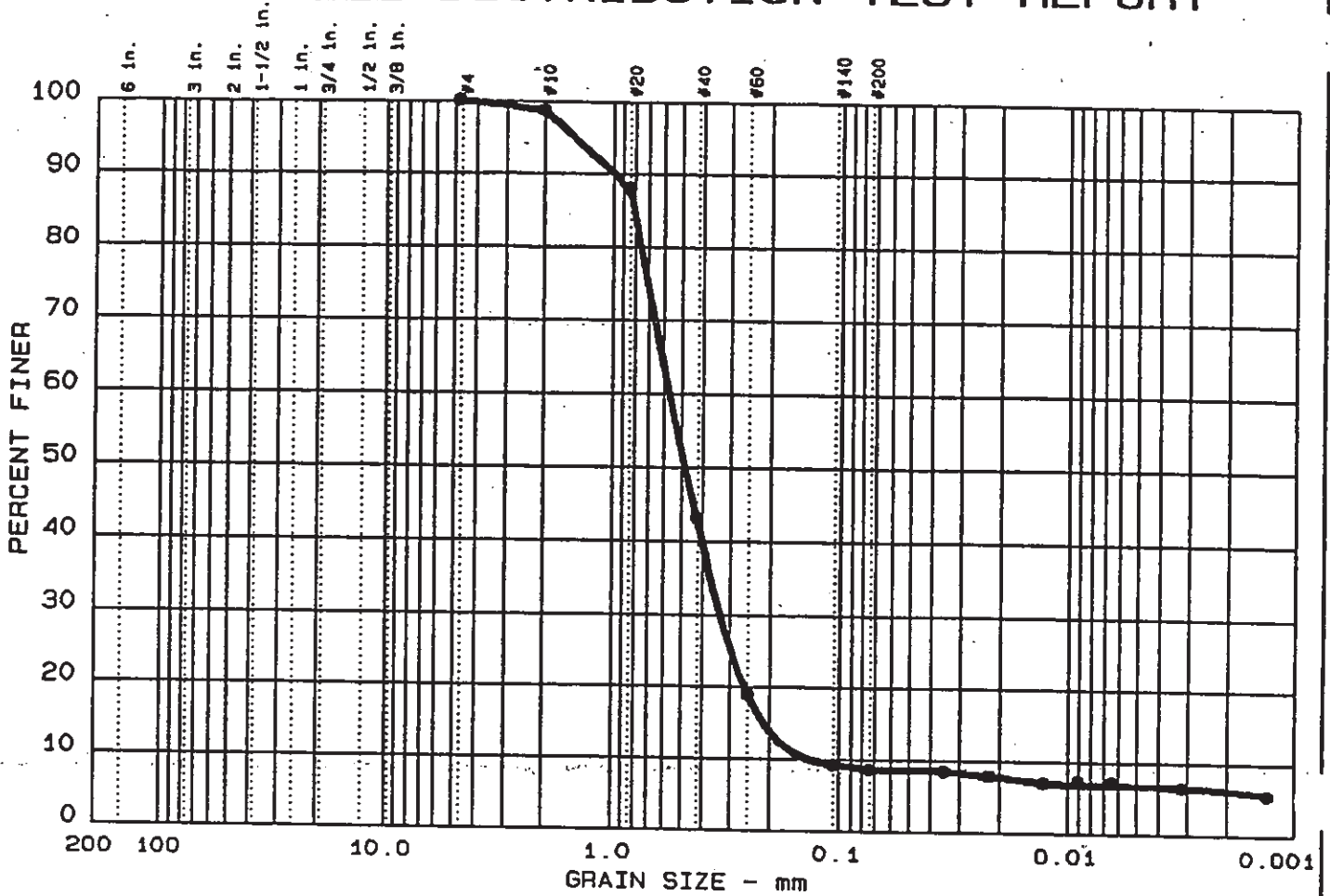
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-52 @ 83.5-85.0 Ft.  
  
 Date: June 25, 1998

Remarks:  
 Tested by: *CS & SC*  
 Reviewed by: *HD*  
 Moisture Content = 28.8%  
 ASTM D422 & D2216





# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	91.4	1.9	6.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.80	0.56	0.48	0.332	0.2118	0.1337	1.47	4.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

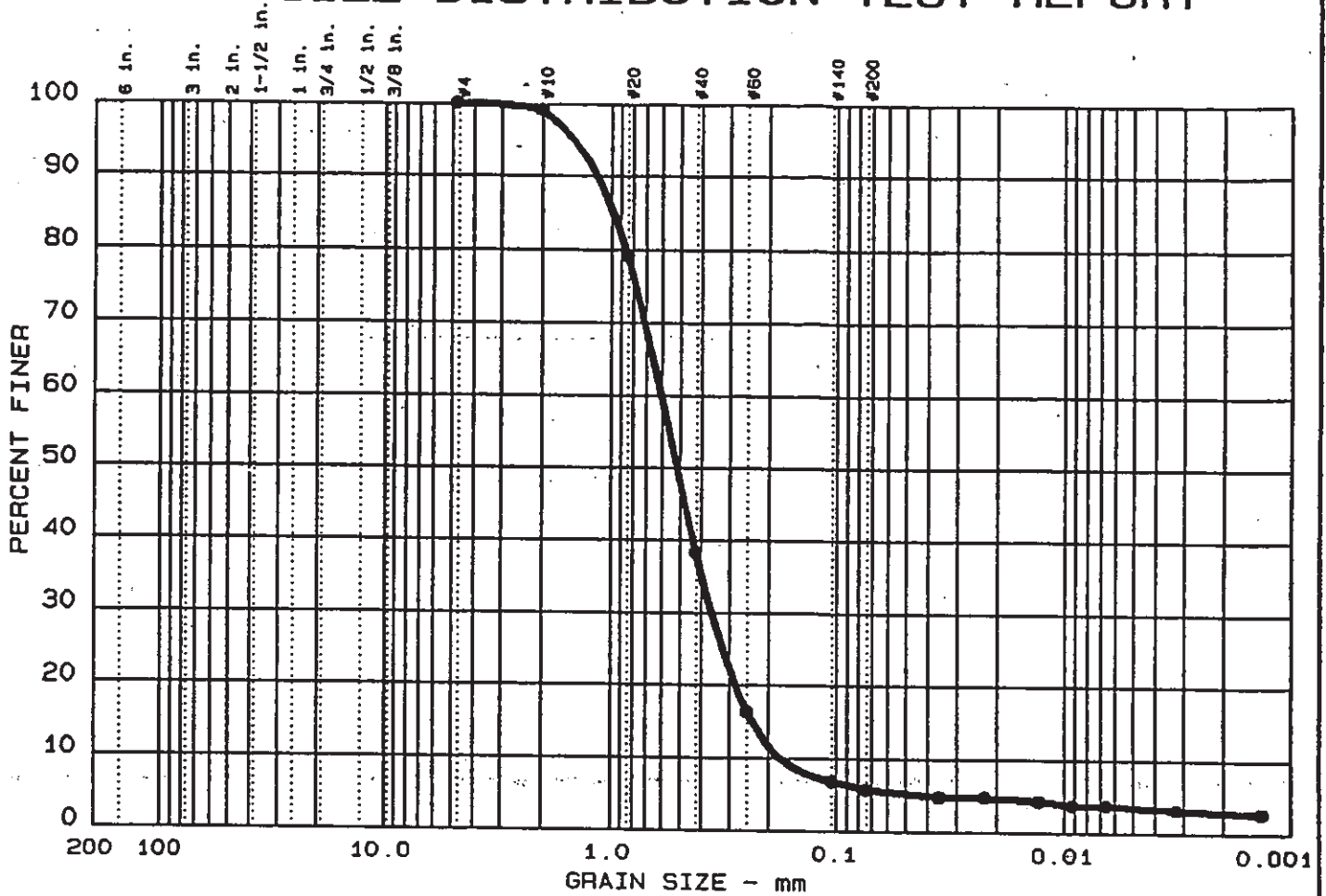
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-58 @ 92.5-94.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SCJ/JM  
 Reviewed by: HP  
 Moisture Content = 26.2%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 6	0.0	0.0	94.3	2.3	3.4

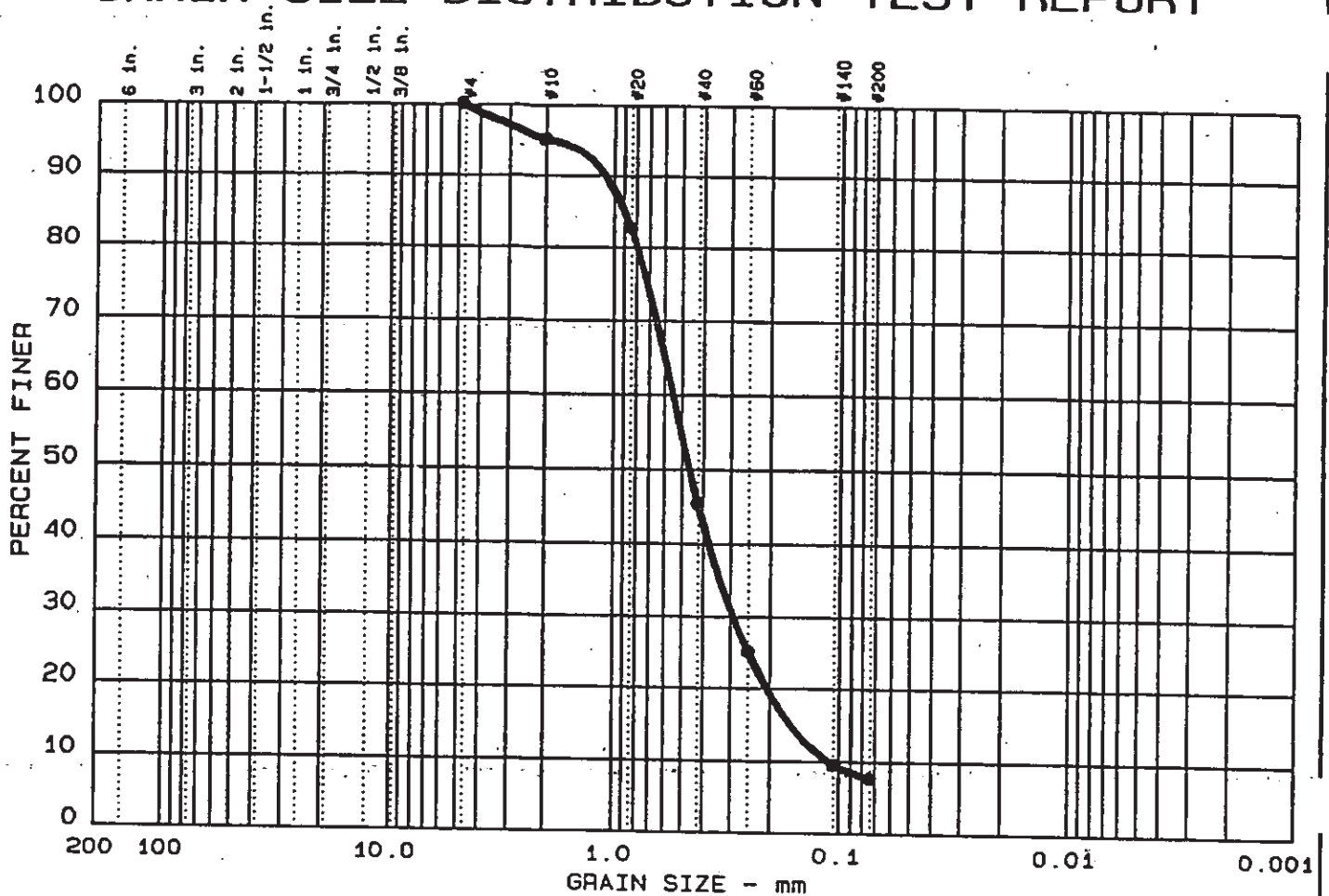
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.97	0.60	0.51	0.358	0.2363	0.1772	1.21	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-60 @ 95.5-97.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC JTM  
 Reviewed by: HP  
 Moisture Content = 20.2%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	92.3	7.7	

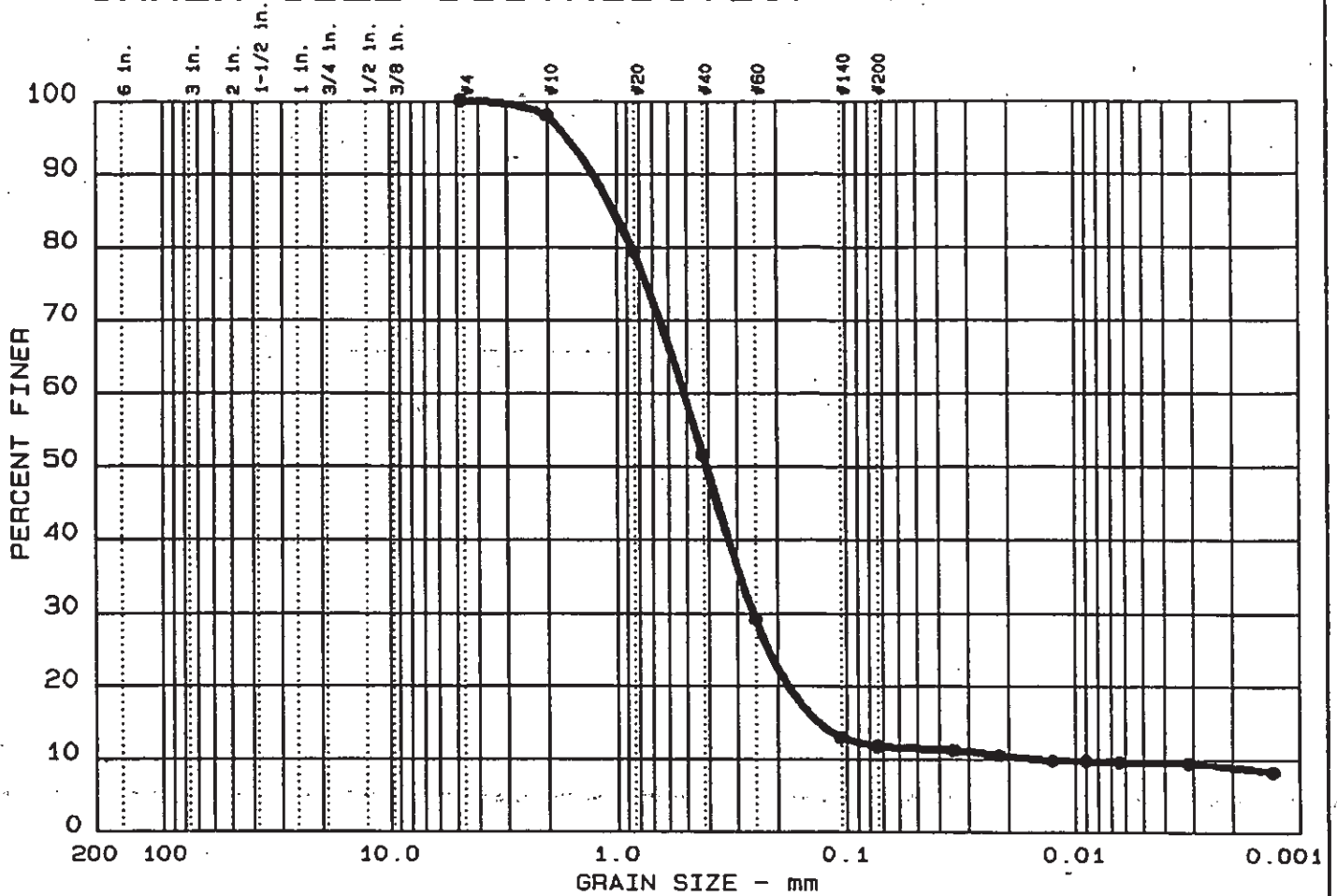
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
●		0.89	0.54	0.46	0.292	0.1622	0.1096	1.43	5.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-62@ 98.5-100.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 Moisture Content = 19.6%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT 8/9



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	88.2	2.2	9.6

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 40	15	1.02	0.51	0.41	0.256	0.1327	0.0137	9.38	37.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Gray Poorly Graded Sand with Clay	SP-SC	A-2-6 (0.0)

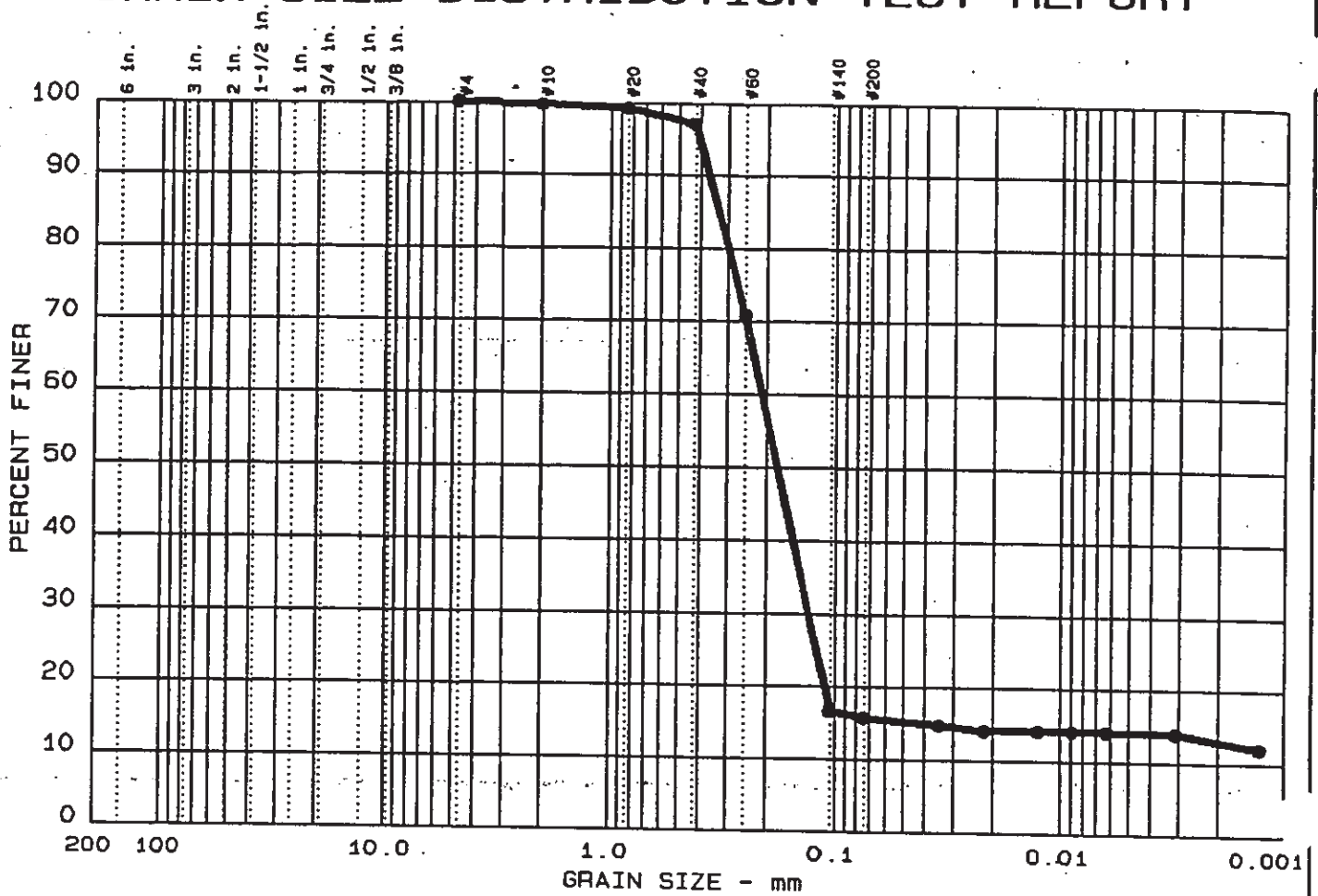
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-63 @ 100.0-101.5 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: *SCJ/TM*  
 Reviewed by: *HS*  
 Moisture Content = 29.8%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	84.2	1.7	14.1

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
29	1	0.33	0.21	0.18	0.130	0.0371			

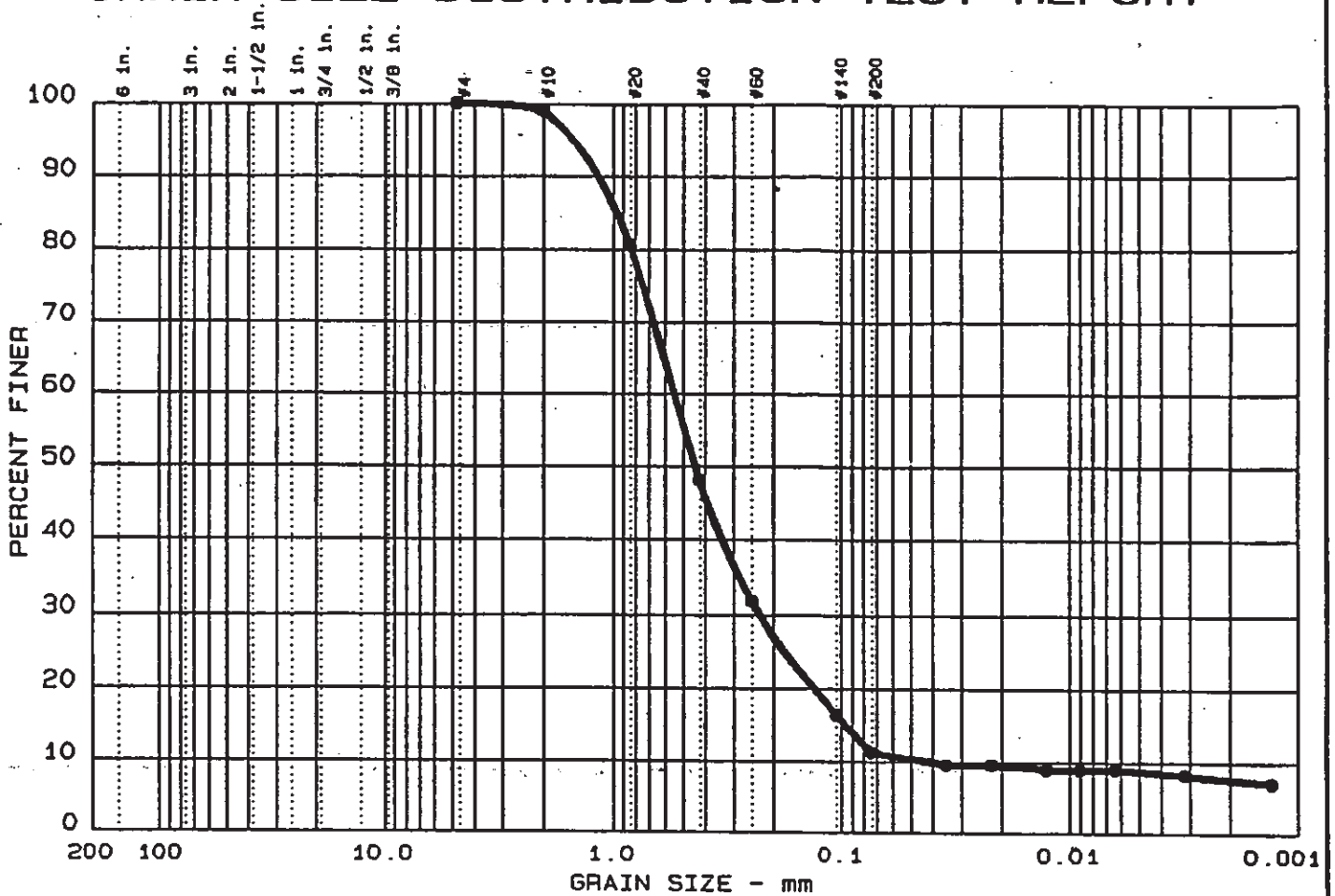
MATERIAL DESCRIPTION	USCS	AASHTO
Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 Location: FB-17 SS-65 @ 103-104.5 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: *SC/NTM*  
 Reviewed by: *HO*  
 Moisture Content = 40.1%  
 ASTM D422, D4318 & D2216



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.0	88.8	2.5	8.7

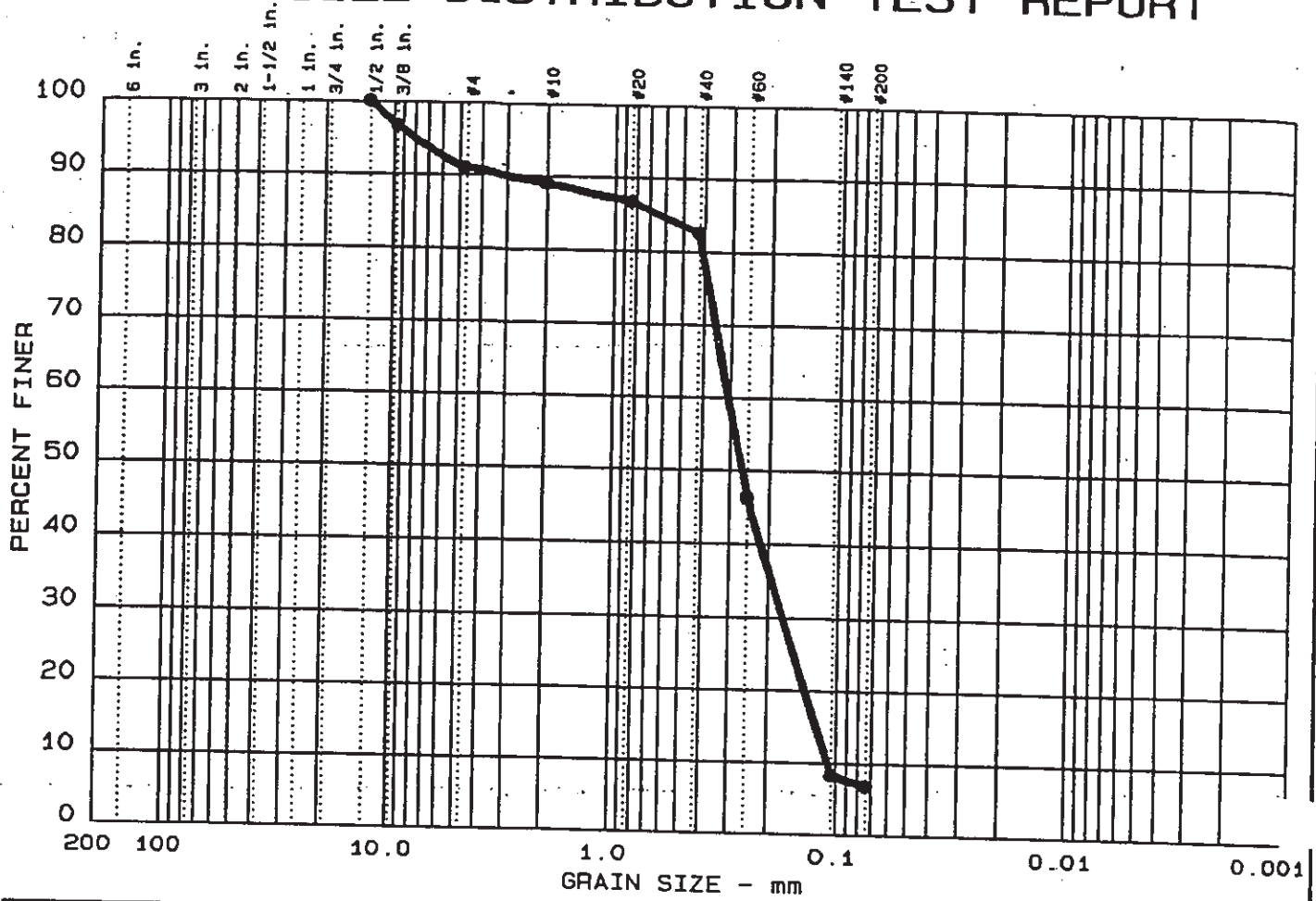
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 32	7	0.95	0.54	0.44	0.231	0.0951	0.0415	2.37	13.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Well Graded Sand with Silt	SW-SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-67 @ 108.0-109.5 Ft.  
  
 Date: June 23, 1998

Remarks:  
 Tested by: *SCW/DM*  
 Reviewed by: *HS*  
 Moisture Content - 25.8%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	9.0	84.1	6.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		0.62	0.31	0.26	0.172	0.1220	0.1088	0.89	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt and Gravel	SP-SM	A-3

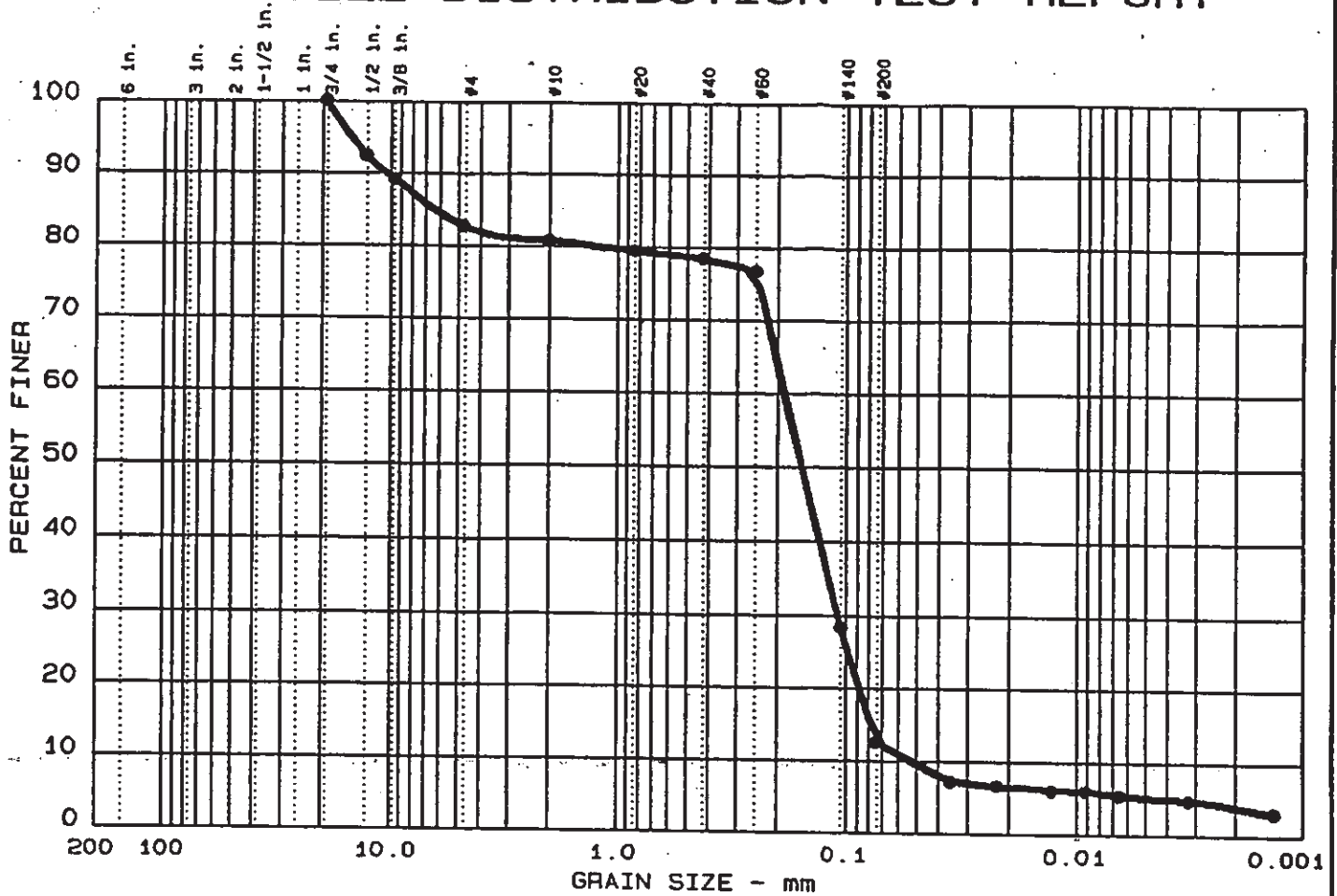
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-69 @ 111.0-112.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: *CS & SC*  
 Reviewed by: *HO*  
 Moisture Content = 19.8%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	17.2	70.2	7.5	5.1

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	6.24	0.19	0.16	0.109	0.0778	0.0514	1.23	3.6

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.2)

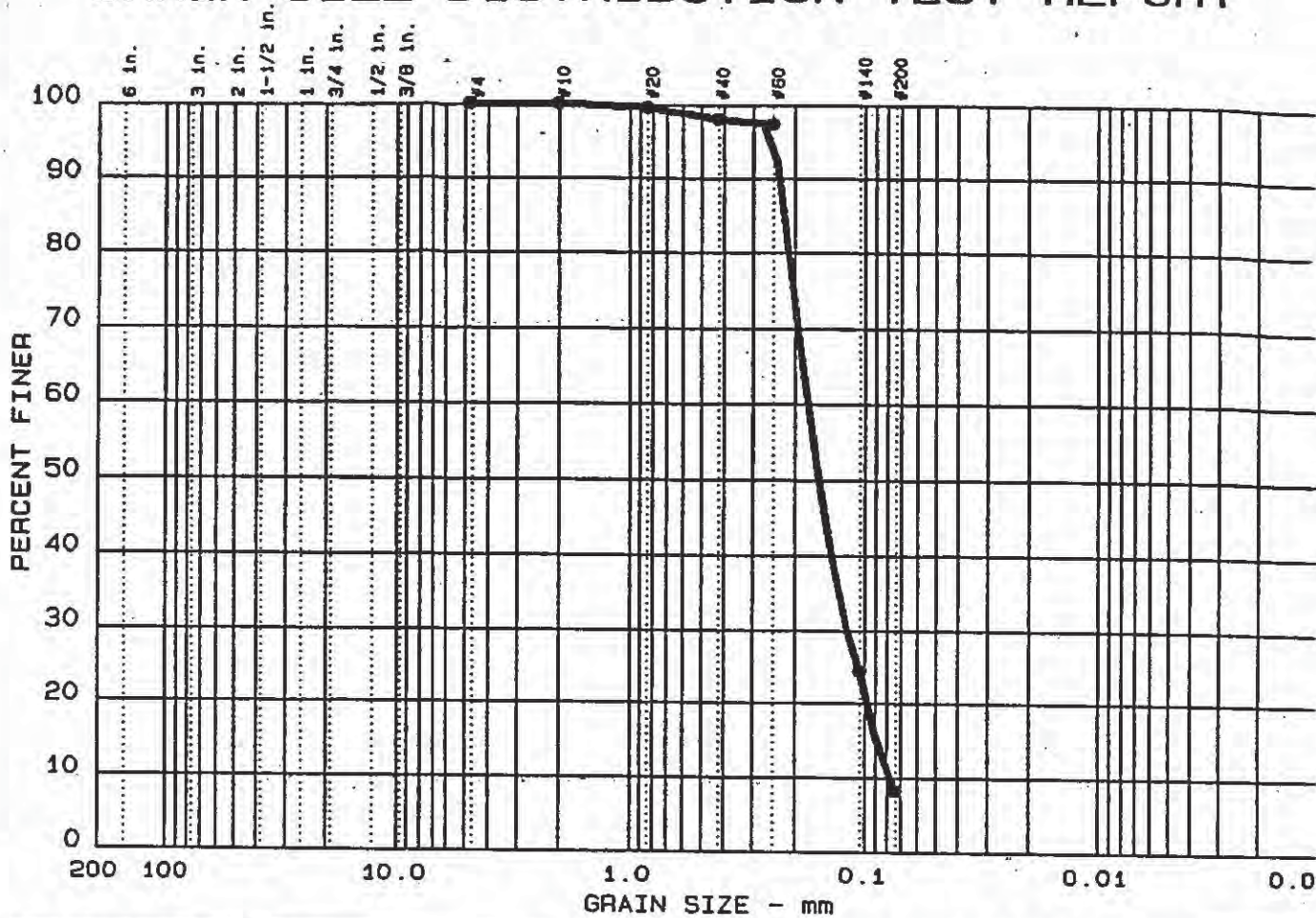
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17SS-71 @ 114.0-115.5 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: *SCJ/Jm*  
 Reviewed by: *H*  
 Moisture Content = 24.6%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	91.7	8.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.22	0.18	0.16	0.120	0.0882	0.0776	1.05	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
Tan Poorly Graded Sand with Silt	SP-SM	A-3

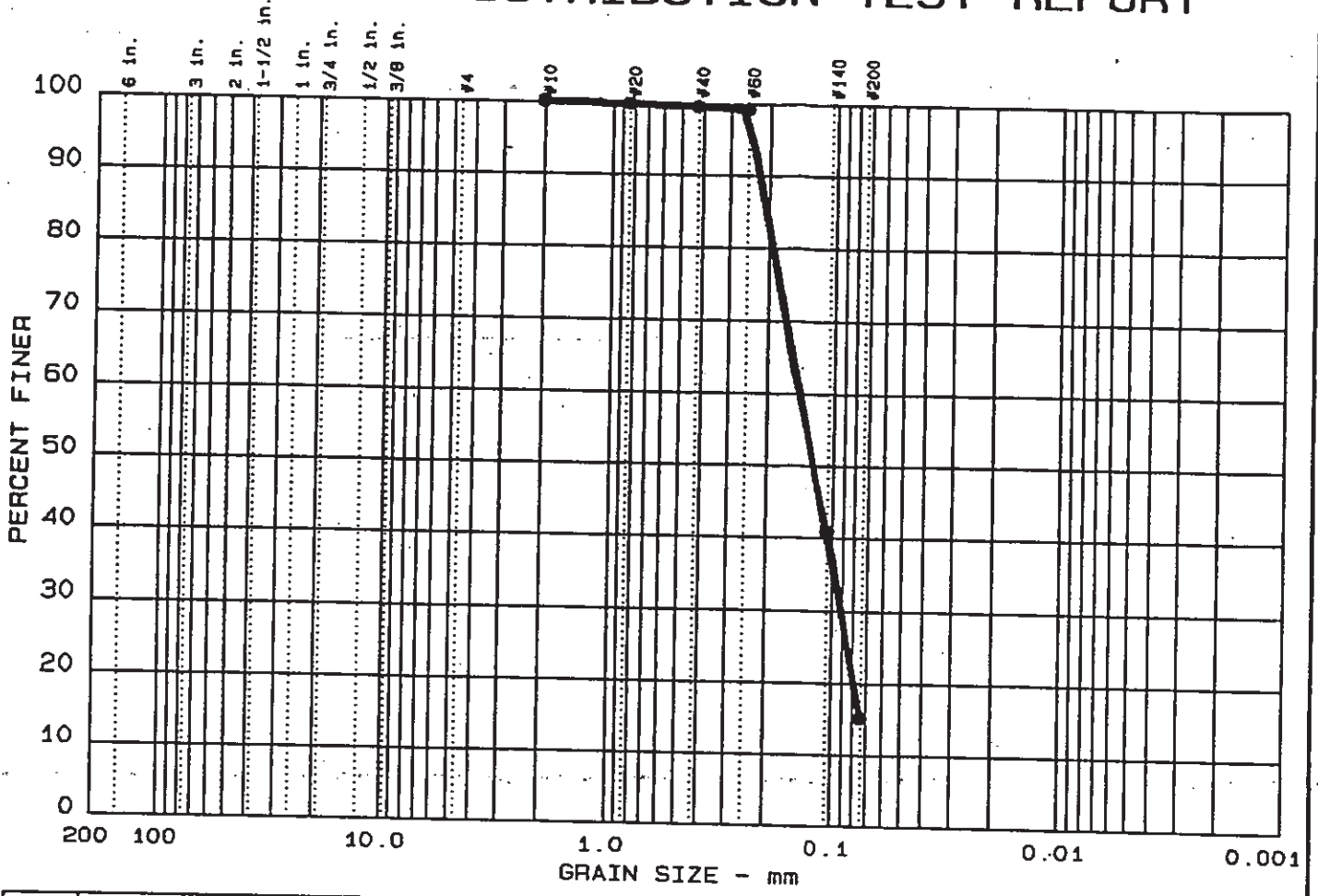
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 Location: FB-17 SS-72 @ 115.5-117.67 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 Moisture Content = 33.5%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.0	84.8	15.2	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.21	0.14	0.12	0.091				

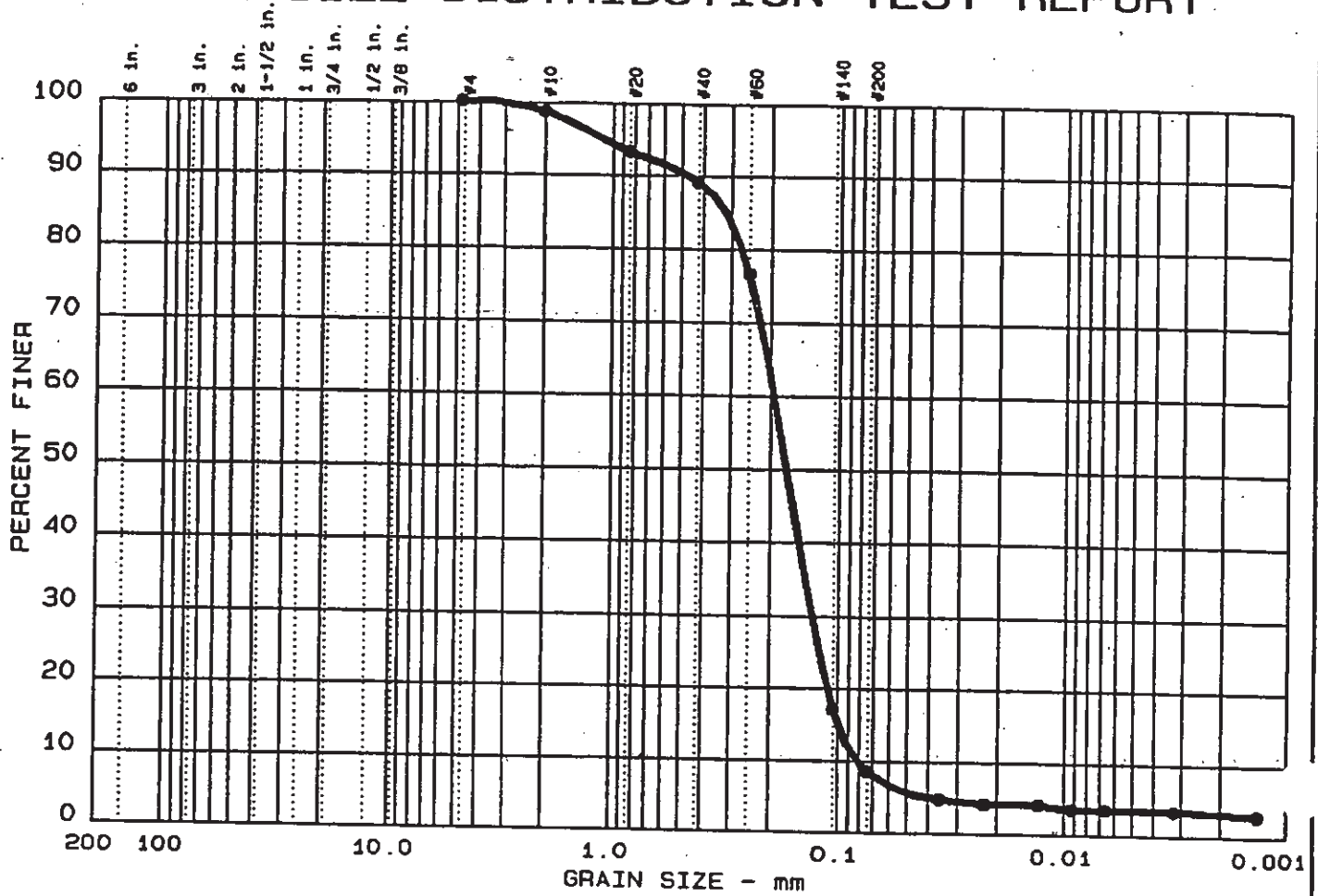
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-73 @ 118.0-119.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: *CS & SC*  
 Reviewed by: *HD*  
 Moisture Content = 27.0%  
 ASTM D422 & D2216  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	91.3	5.2	3.5

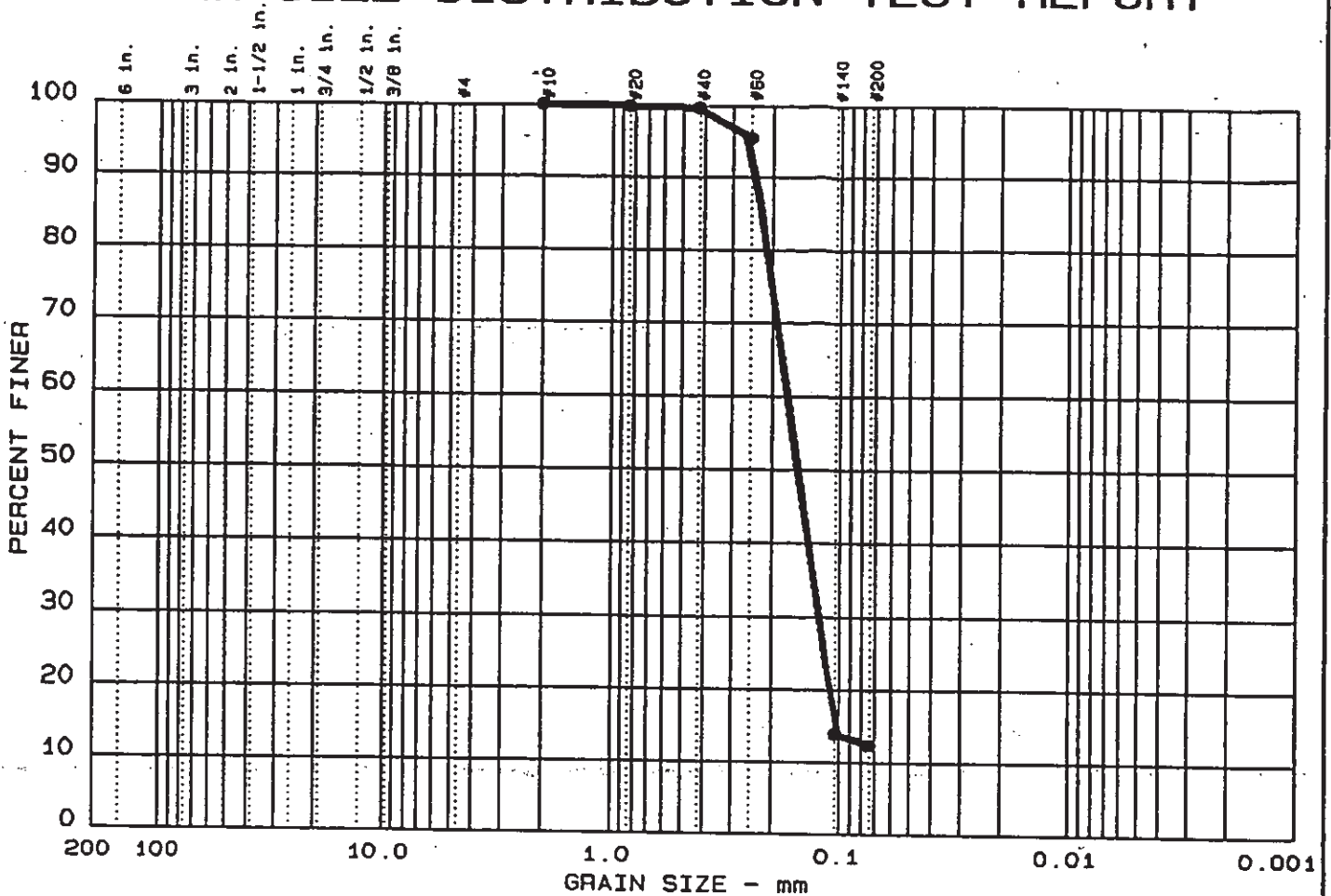
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.32	0.19	0.17	0.131	0.0993	0.0807	1.10	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-76 @ 122.5-124.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: *SC + Jm*  
 Reviewed by: *W*  
 Moisture Content = 24.7%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	87.6	12.4	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.22	0.17	0.15	0.124	0.1060			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-2-4 (0.3)

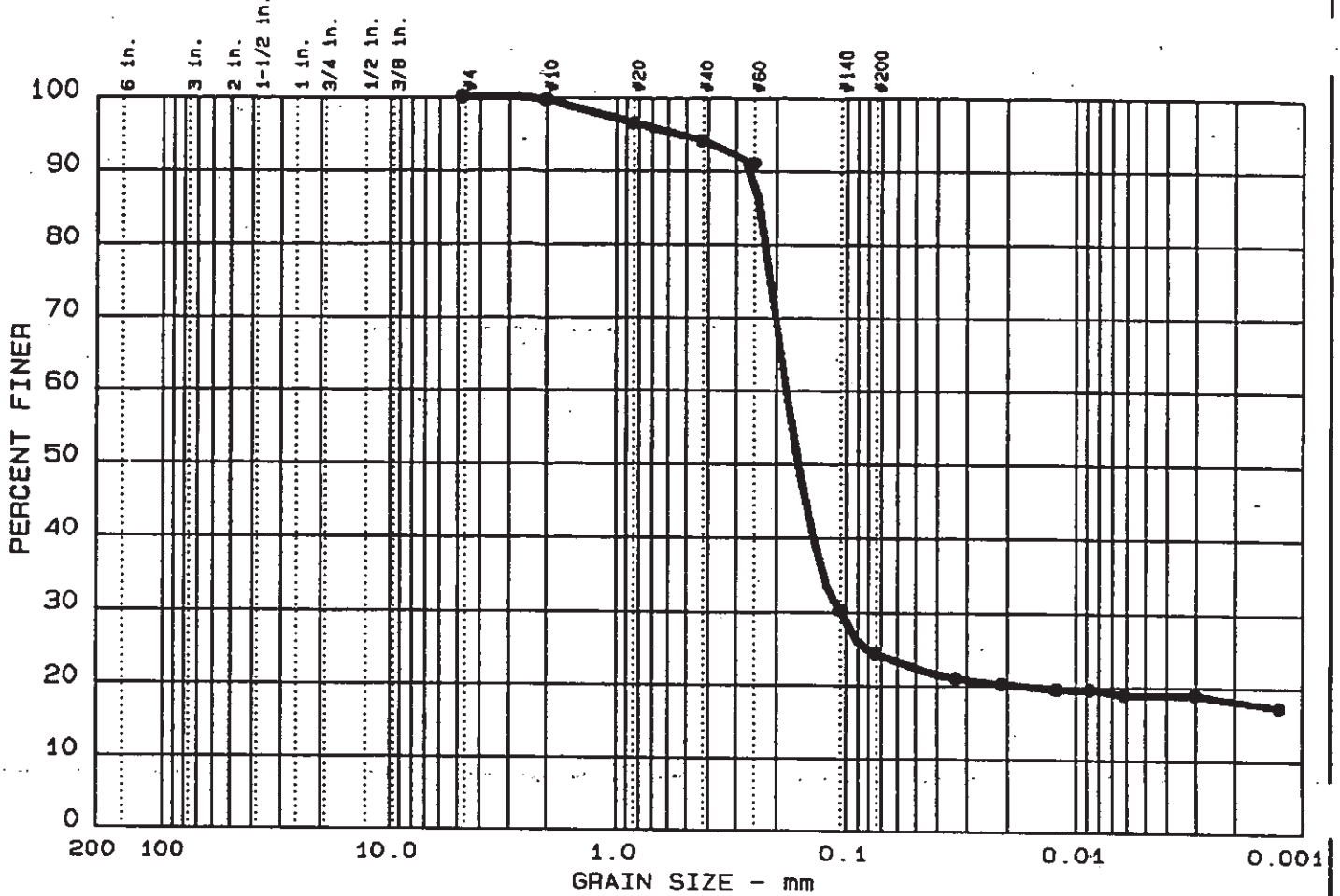
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-78 @ 125.5-127.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 Moisture Content = 39.4%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	75.6	5.5	18.9

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 46	21	0.23	0.18	0.16	0.104				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (1.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-80 @ 128.5-130.0 Ft.  
 Date: June 26, 1998

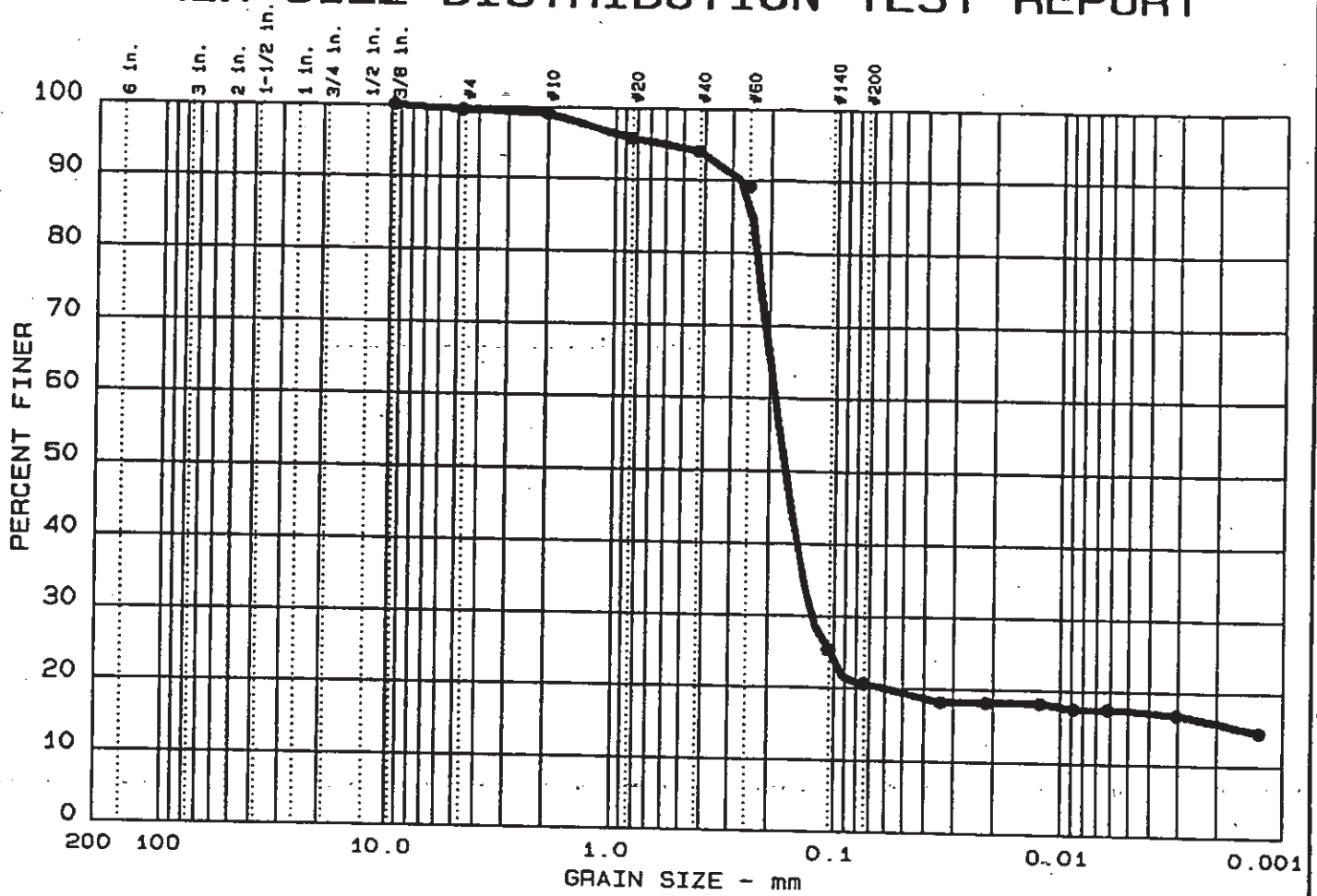
Remarks:  
 Tested by: SC + JTM  
 Reviewed by: HS  
 Moisture Content = 37.7%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT R/O



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.6	78.7	3.3	17.4

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 45	19	0.24	0.19	0.17	0.125	0.0015			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (0.5)

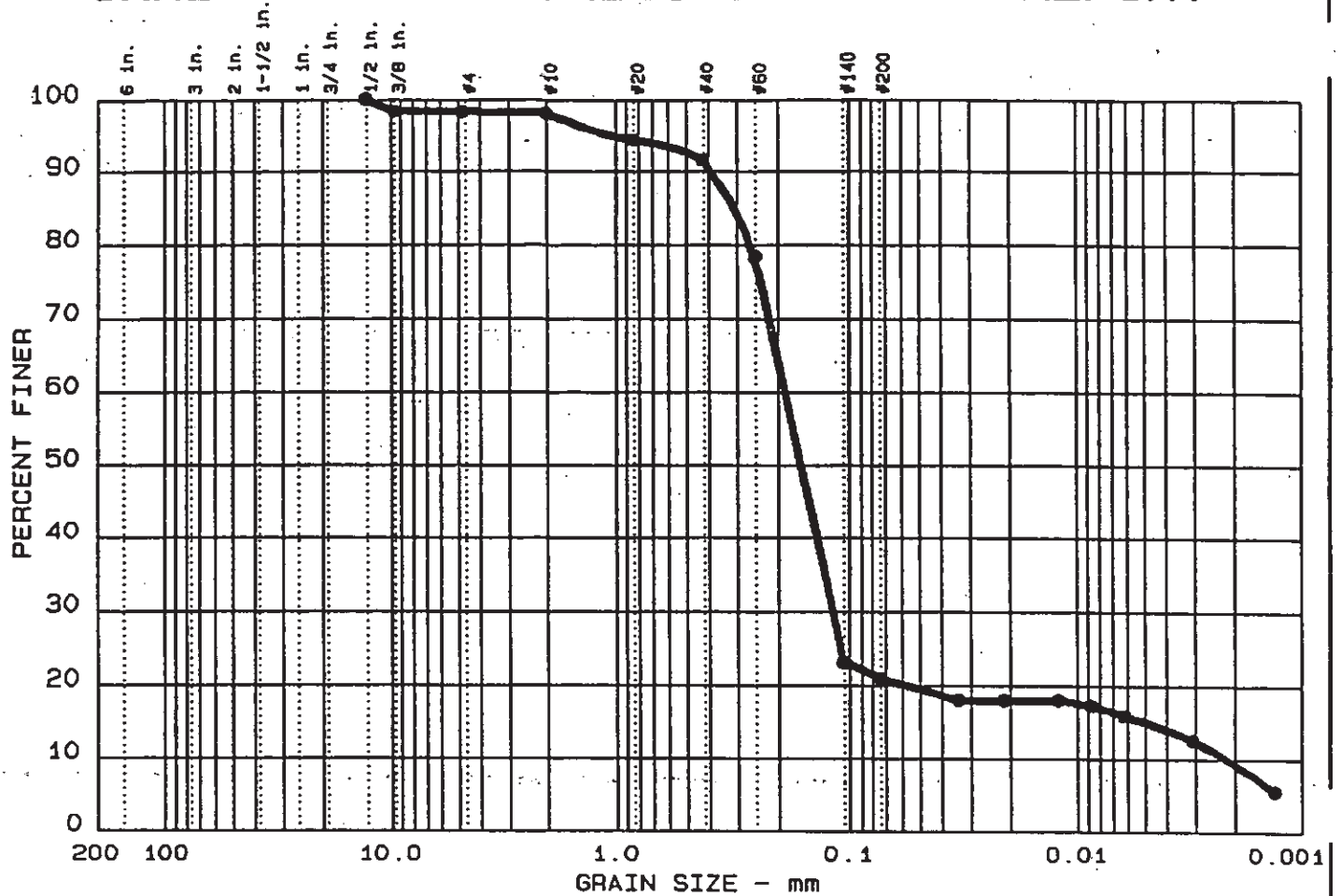
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Notheast Expansion  
 ● Location: FB-17 SS-81 @ 130.0-131.5 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: *SC/JTM*  
 Reviewed by: *HT*  
 Moisture Content = 40.5%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	1.7	77.3	6.0	15.0

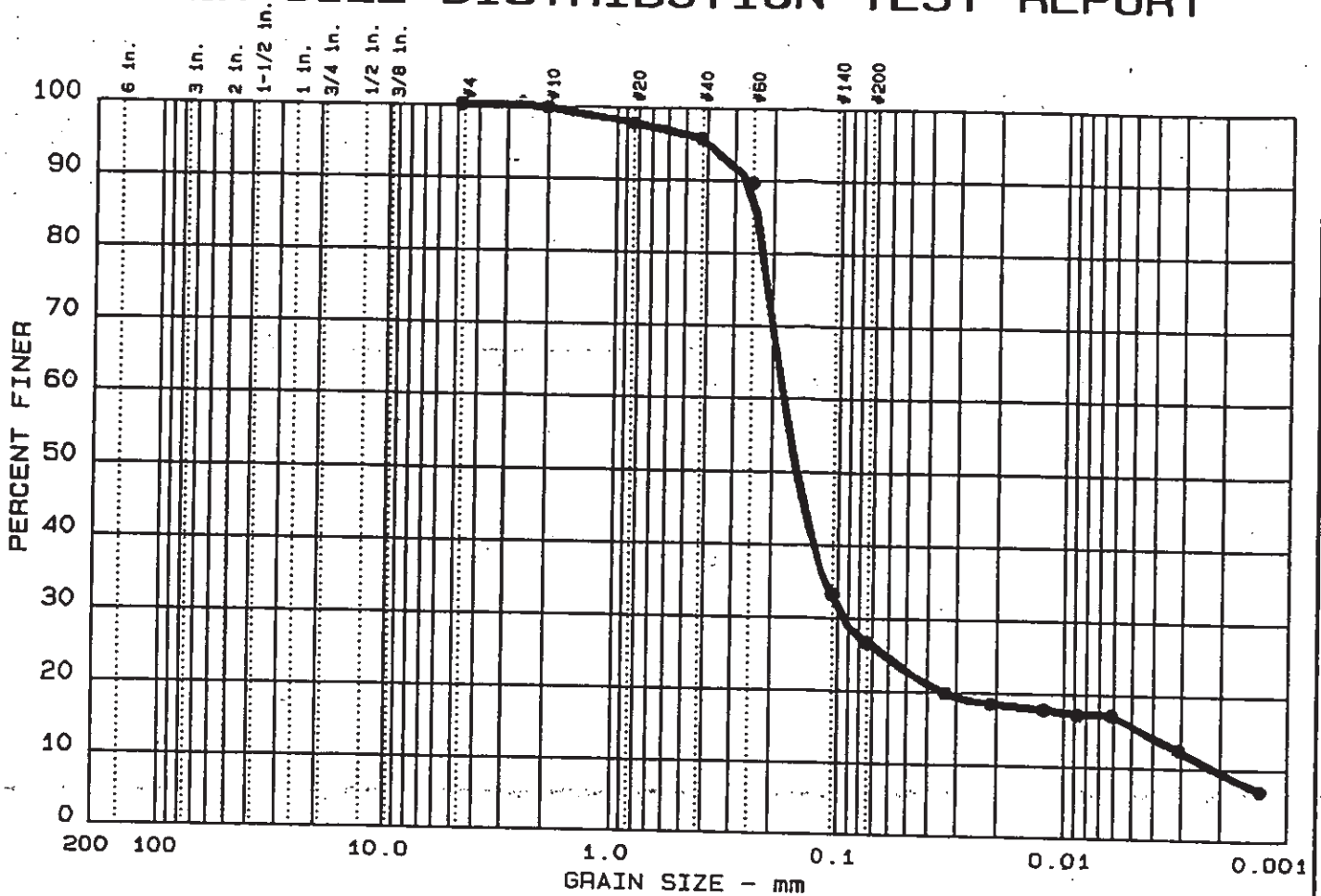
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 42	19	0.31	0.19	0.16	0.117	0.0049	0.0022	34.00	86.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (0.5)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-83 @ 133.0-134.5 Ft.  
  
 Date: June 26, 1998

Remarks:  
 Tested by: *SC + STM*  
 Reviewed by: *HD*  
 Moisture Content = 36.1%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT R/O



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 8	0.0	0.0	73.4	10.9	15.7

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 38	16	0.24	0.18	0.15	0.094	0.0045	0.0021	23.50	83.0

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-6 (0.7)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-85 @ 136.0-137.5 Ft.  
 Date: June 26, 1998

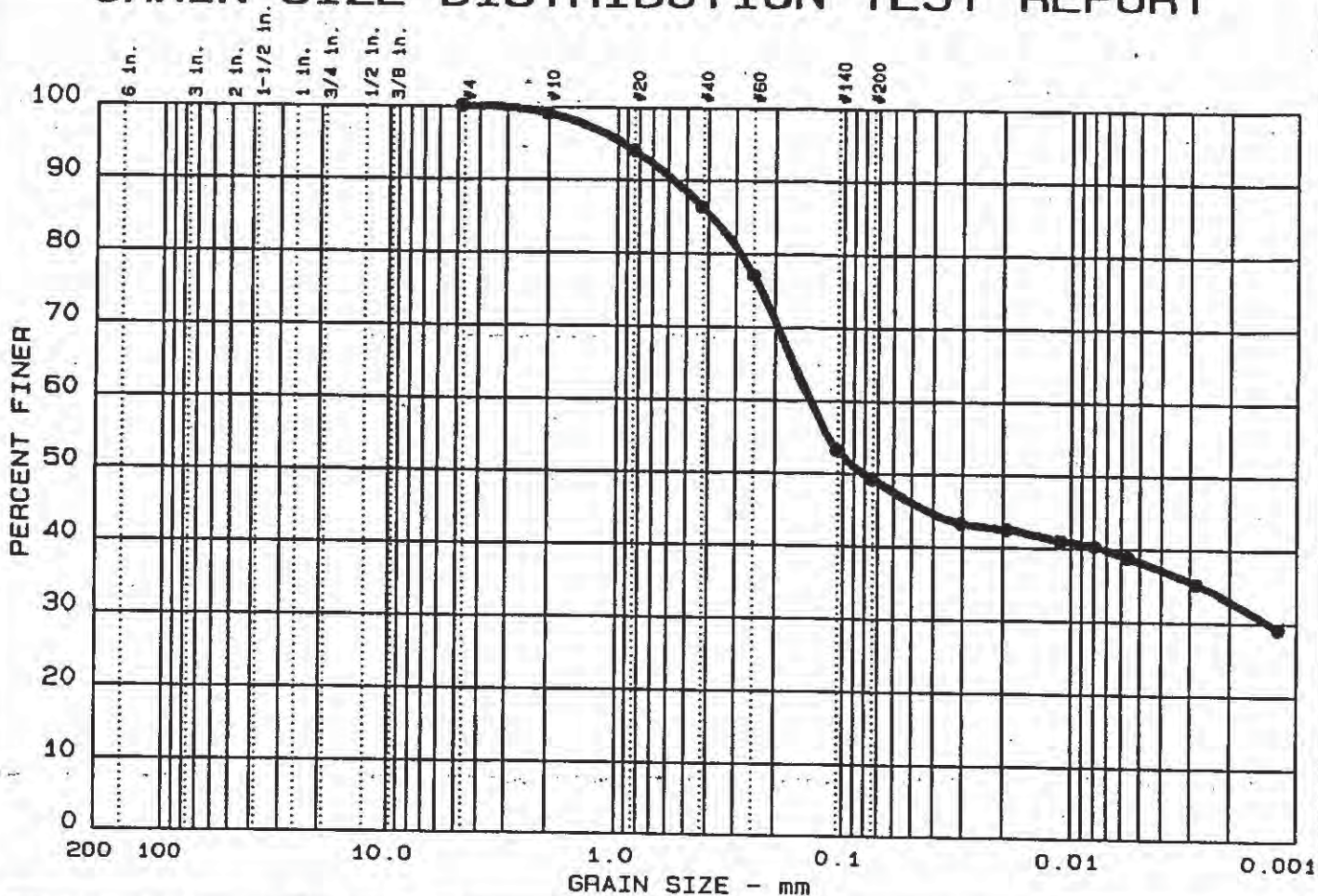
Remarks:  
 Tested by: *SC Johnson*  
 Reviewed by: *HJ*  
 Moisture Content = 31.8%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	50.7	11.1	38.2

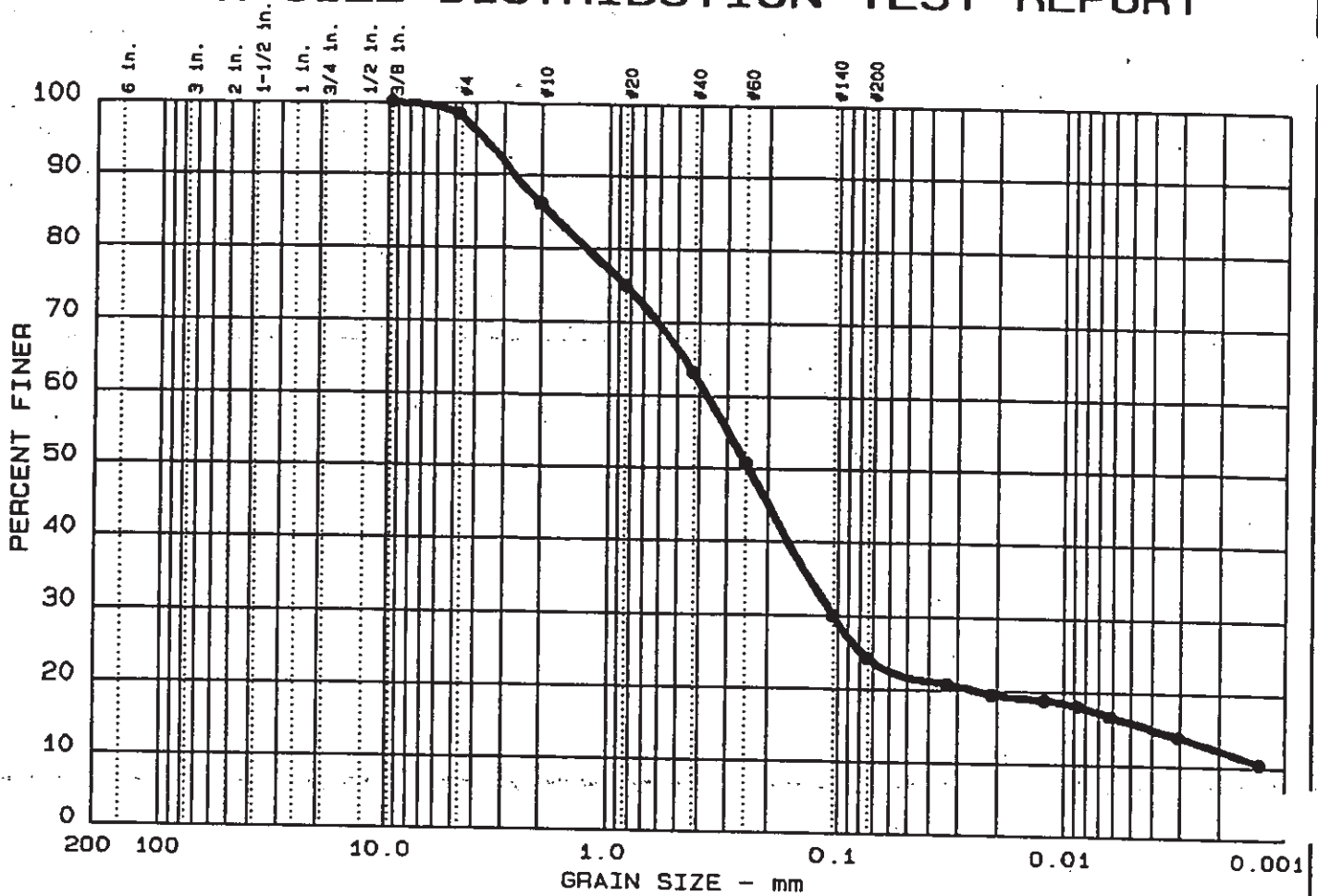
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 63	40	0.38	0.14	0.08	0.001				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-6 (14.6)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-88 @ 140.5-142.0 Ft.  
  
 Date: June 26, 1998

Remarks:  
 Tested by: *SC Johnson*  
 Reviewed by: *HO*  
 Moisture Content = 30.8%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	1.6	74.1	8.3	16.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 60	38	1.84	0.36	0.24	0.105	0.0038			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Gray Clayey Sand	SC	A-2-7 (2.5)

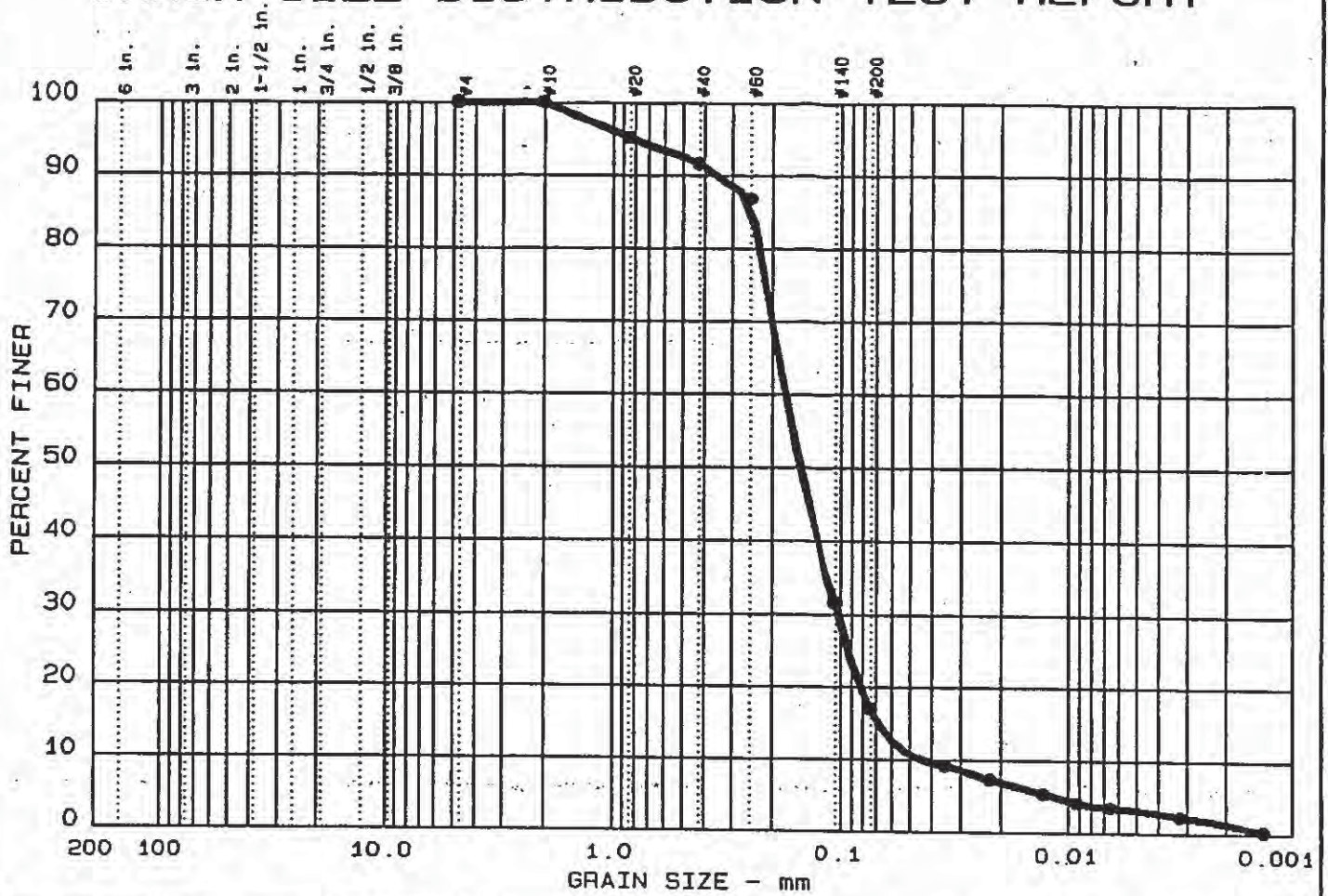
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-89 @ 142.0-143.5 Ft.  
 Date: June 26, 1998

Remarks:  
 Tested by: *SCJ/DM*  
 Reviewed by: *WJ*  
 Moisture Content = 34.8%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	83.0	13.9	3.1

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 32	8	0.24	0.18	0.15	0.102	0.0681	0.0430	1.38	4.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Gray Silty Sand	SM	A-2-4 (0.0)

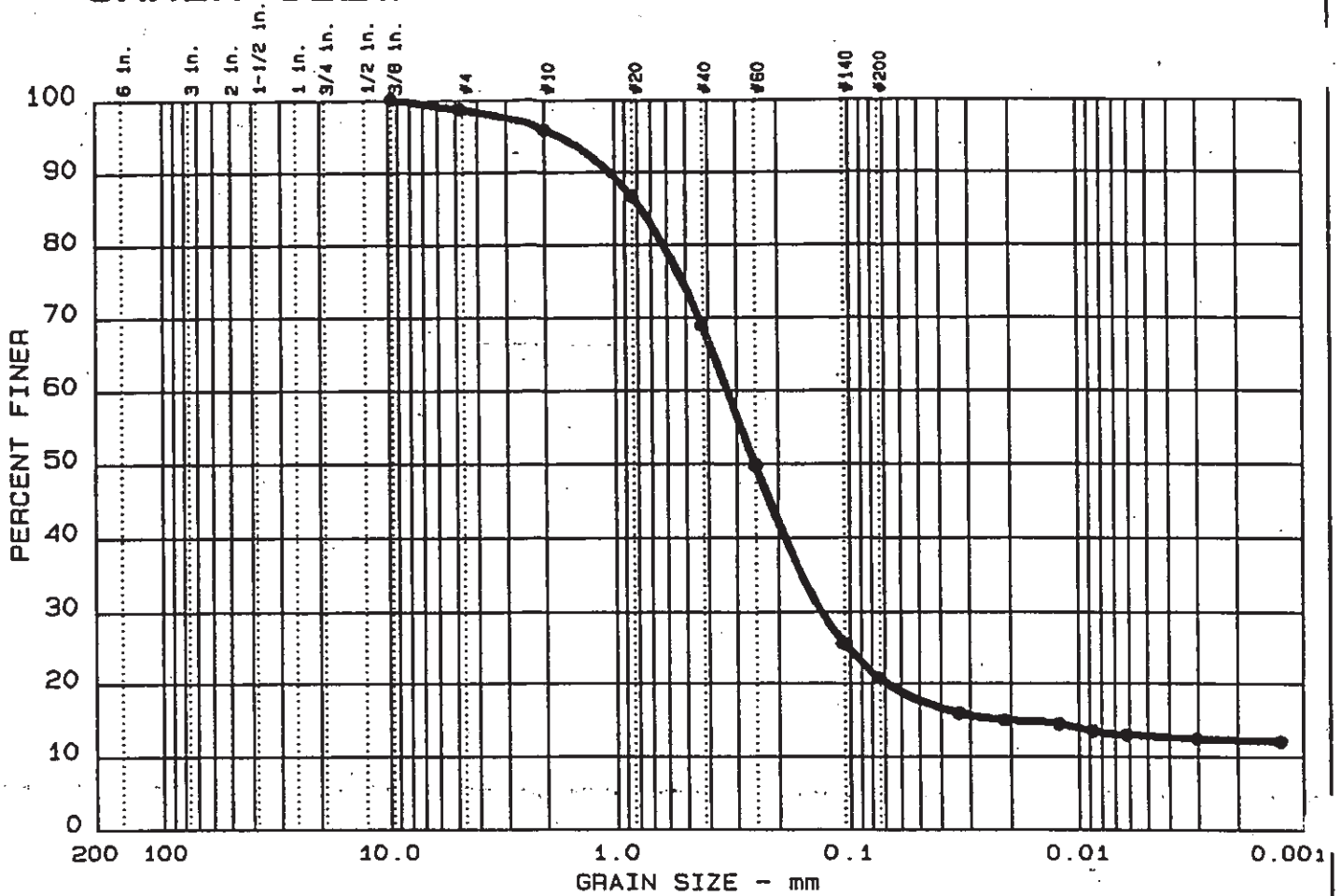
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-17 SS-90 @ 143.5-145.0 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: *SCJ/DM*  
 Reviewed by: *HB*  
 Moisture Content = 33.0%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	1.3	77.9	8.0	12.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 22	6	0.77	0.33	0.25	0.130	0.0214			

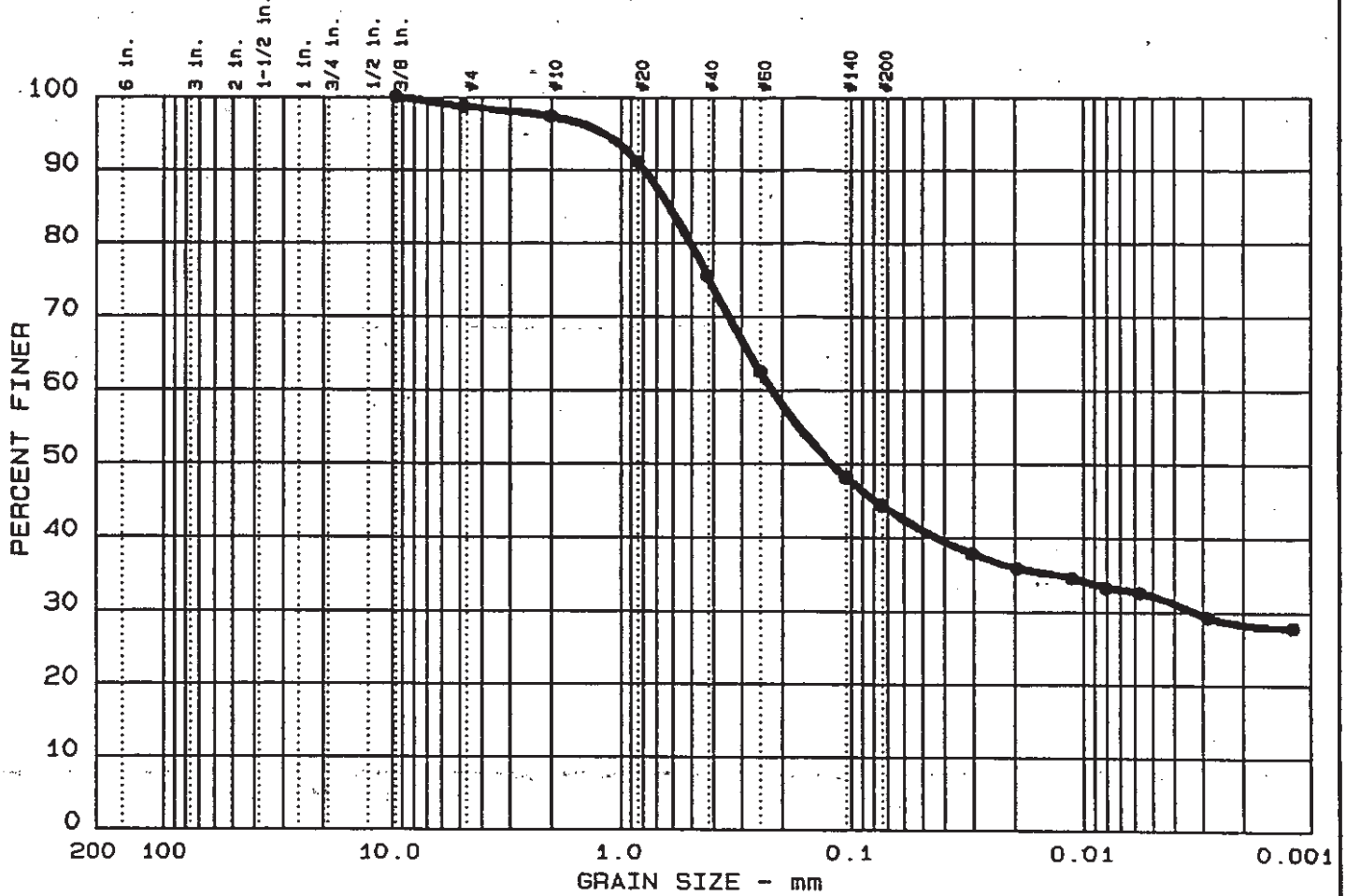
MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Clayey Silty Sand	SC-SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-1 @ 6.0 Ft.  
  
 Date: June 30, 1998

Remarks:  
 Tested by: *SC ES*  
 Reviewed by: *HO*  
 Moisture Content = 13.8%  
 ASTM D422, D4318 & D2216



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	1.3	54.4	12.2	32.1

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 61	32	0.61	0.22	0.12	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown & Tan Clayey Sand	SC	A-7-6 (9.1)

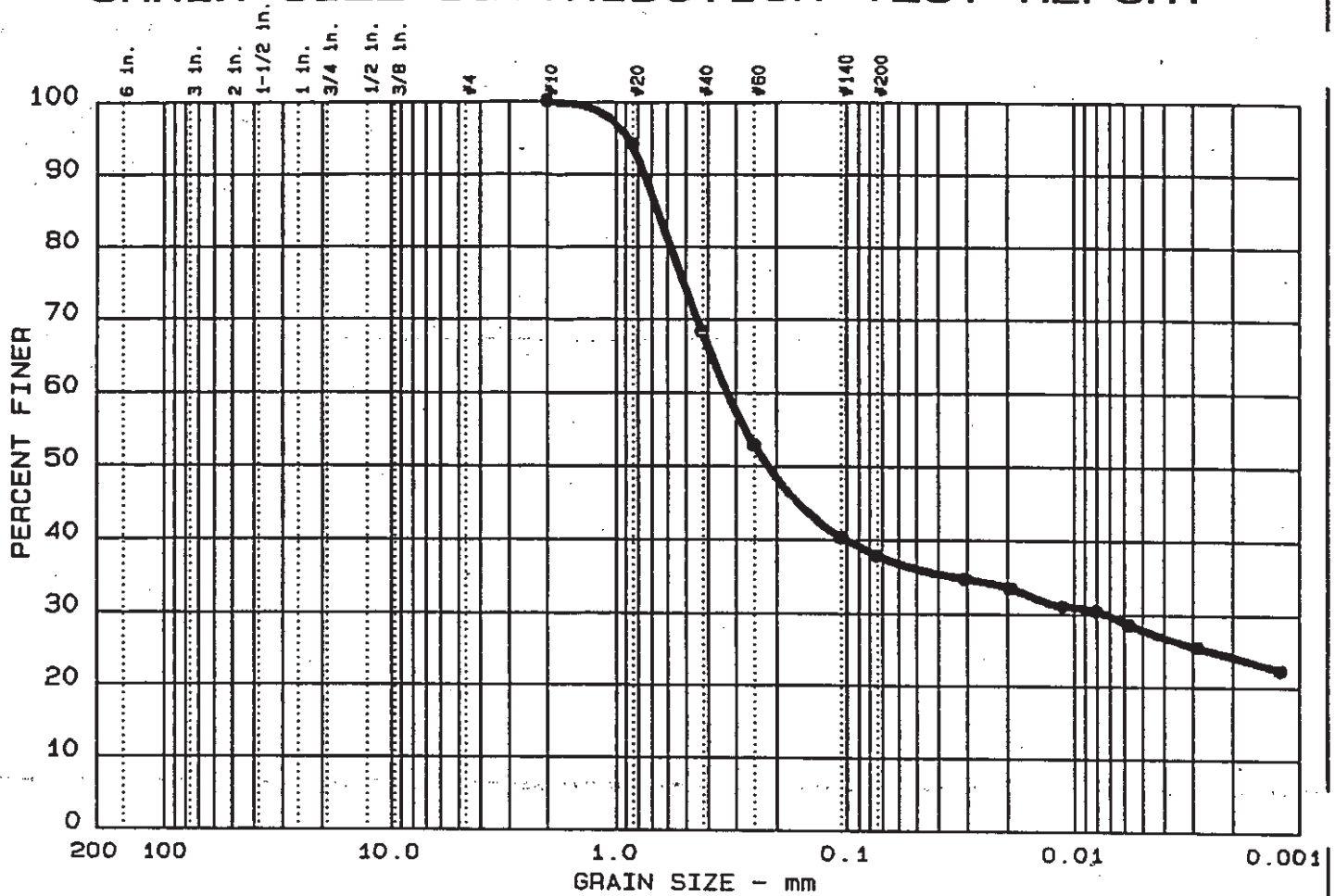
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-3 @ 9.0 Ft.  
 Date: June 26, 1998

Remarks:  
 Tested by: *SC [signature]*  
 Reviewed by: *HB*  
 Moisture Content = 22.9%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	62.2	10.0	27.8

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 61	32	0.65	0.33	0.22	0.007				

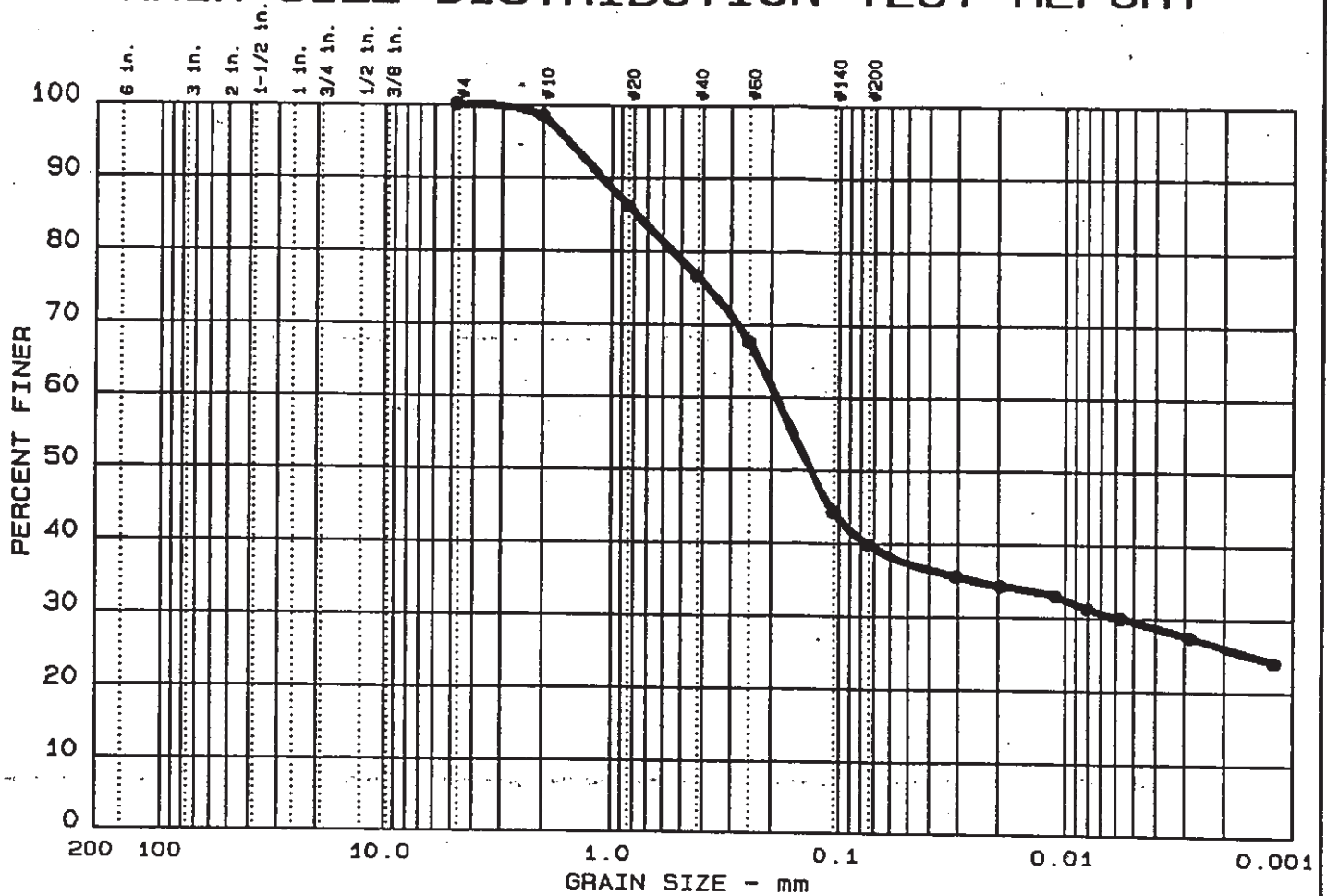
MATERIAL DESCRIPTION	USCS	AASHTO
● Red-Brown & Purple Clayey Sand	SC	A-7-6 (6.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-5 @ 12.0 Ft.  
 Date: June 26, 1998

Remarks:  
 Tested by: *SC + [Signature]*  
 Reviewed by: *K*  
 Moisture Content = 18.8%  
 ASTM D422, D4318 & D2216

B-304

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	60.3	10.3	29.4

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 55	30	0.77	0.19	0.13	0.006				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan & Red Brown Clayey Sand	SC	A-7-6 (5.4)

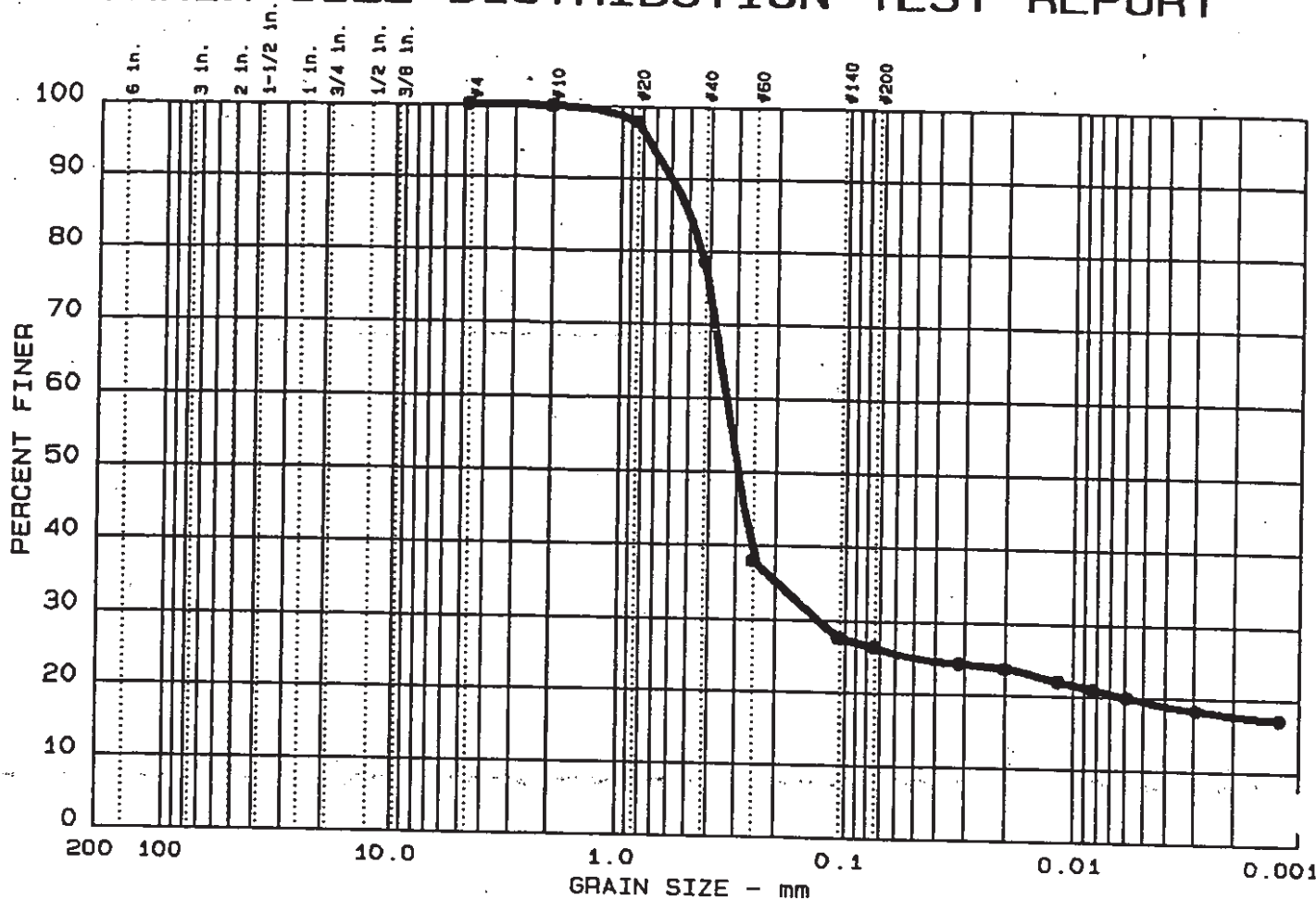
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-7 @ 15.0 Ft.  
  
 Date: June 26, 1998

Remarks:  
 Tested by: *SCJ/STM*  
 Reviewed by: *HD*  
 Moisture Content = 21.6%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 4	0.0	0.0	73.6	6.9	19.5

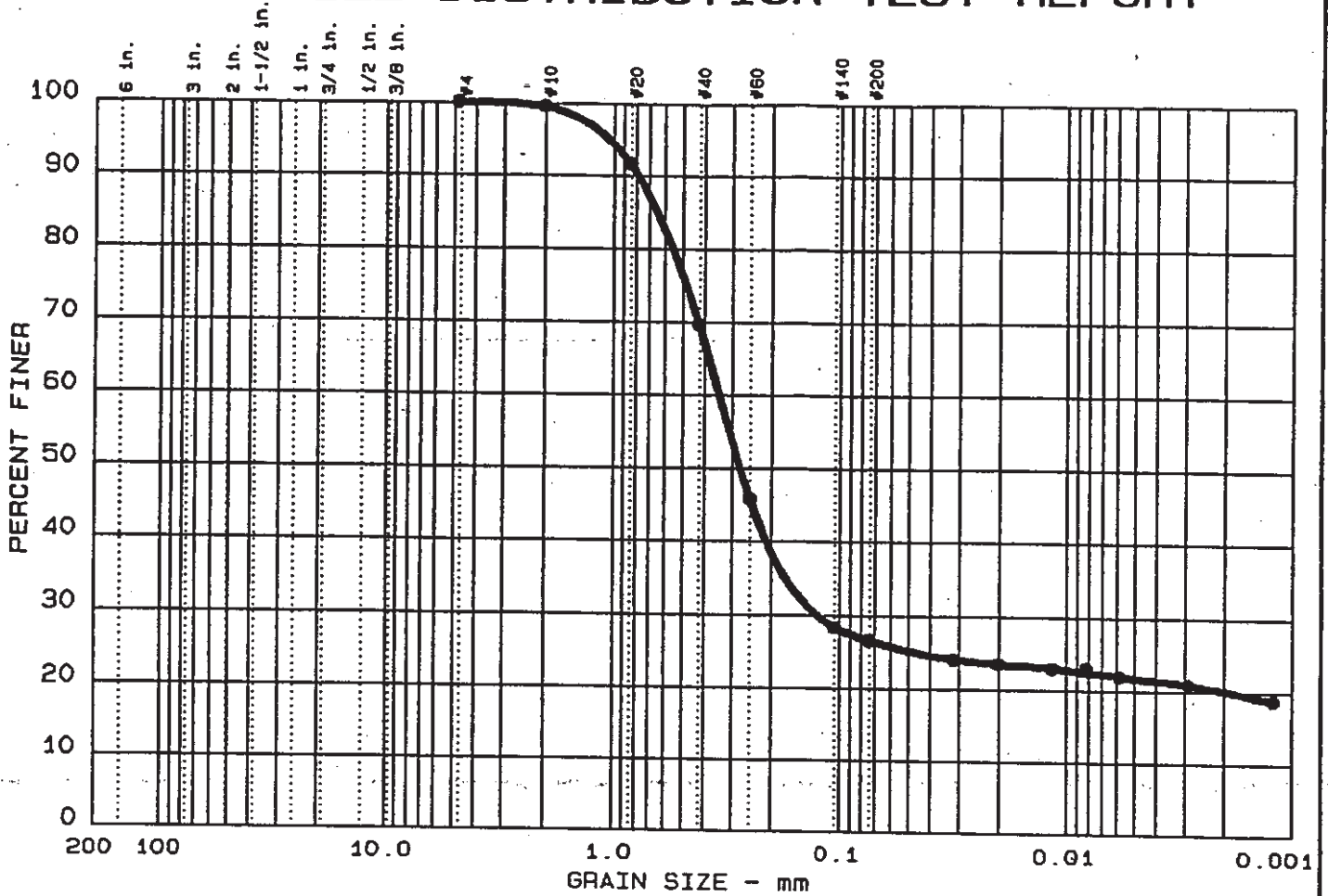
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 49	28	0.49	0.33	0.29	0.129				

MATERIAL DESCRIPTION	USCS	AASHTO
● Red Brown Clayey Sand	SC	A-2-7 (2.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-9 @ 18.0 Ft.  
 Date: June 26, 1998

Remarks:  
 Tested by: *SC/JS*  
 Reviewed by: *HJ*  
 Moisture Content = 18.0%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	73.4	4.8	21.8

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 42	22	0.64	0.34	0.28	0.126				

MATERIAL DESCRIPTION

● Tan Brown Clayey Sand

USCS  
SC

AASHTO  
A-2-7 (1.4)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-13 @ 24.0 Ft.  
 Date: June 26, 1998

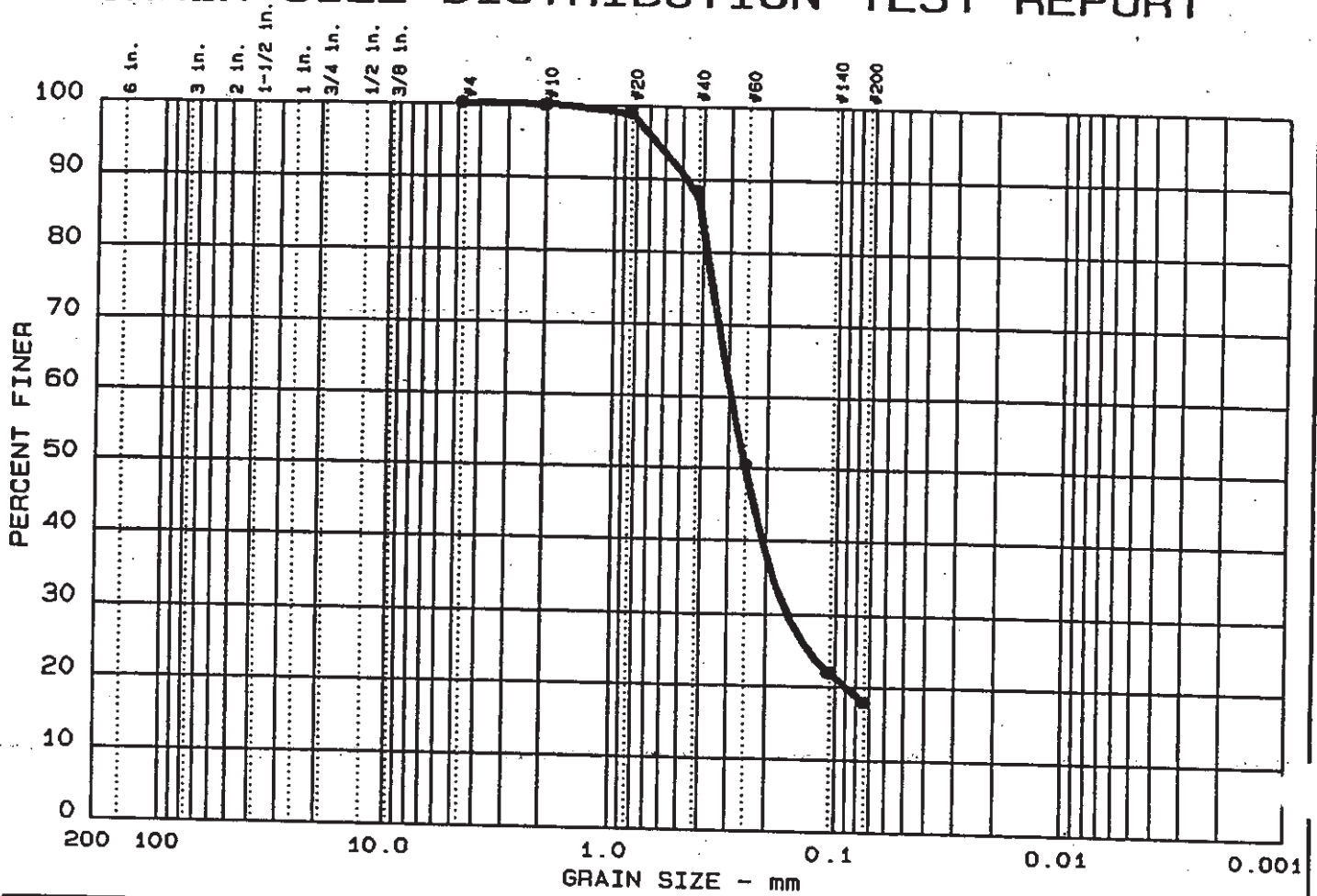
Remarks:

Tested by: *SG/STW*  
 Reviewed by: *HJ*  
 Moisture Content = 20.8%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	82.0	18.0	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.40	0.29	0.25	0.160				

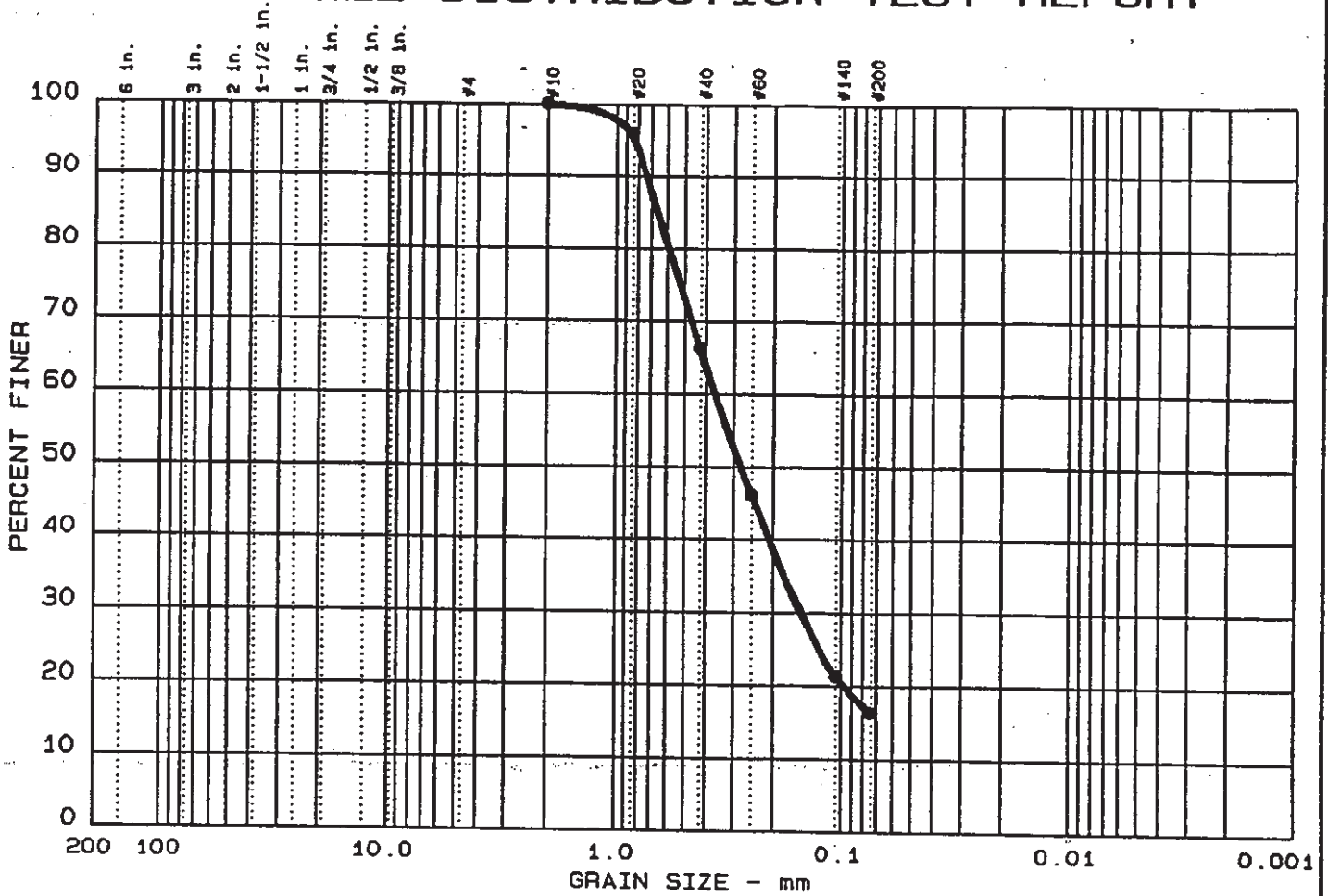
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-17 @ 30.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: *SG/JTM*  
 Reviewed by: *KB*  
 Moisture Content = 15.7%  
 ASTM D422 & D2216

B-308

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.0	83.6	16.4	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.65	0.36	0.28	0.152				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

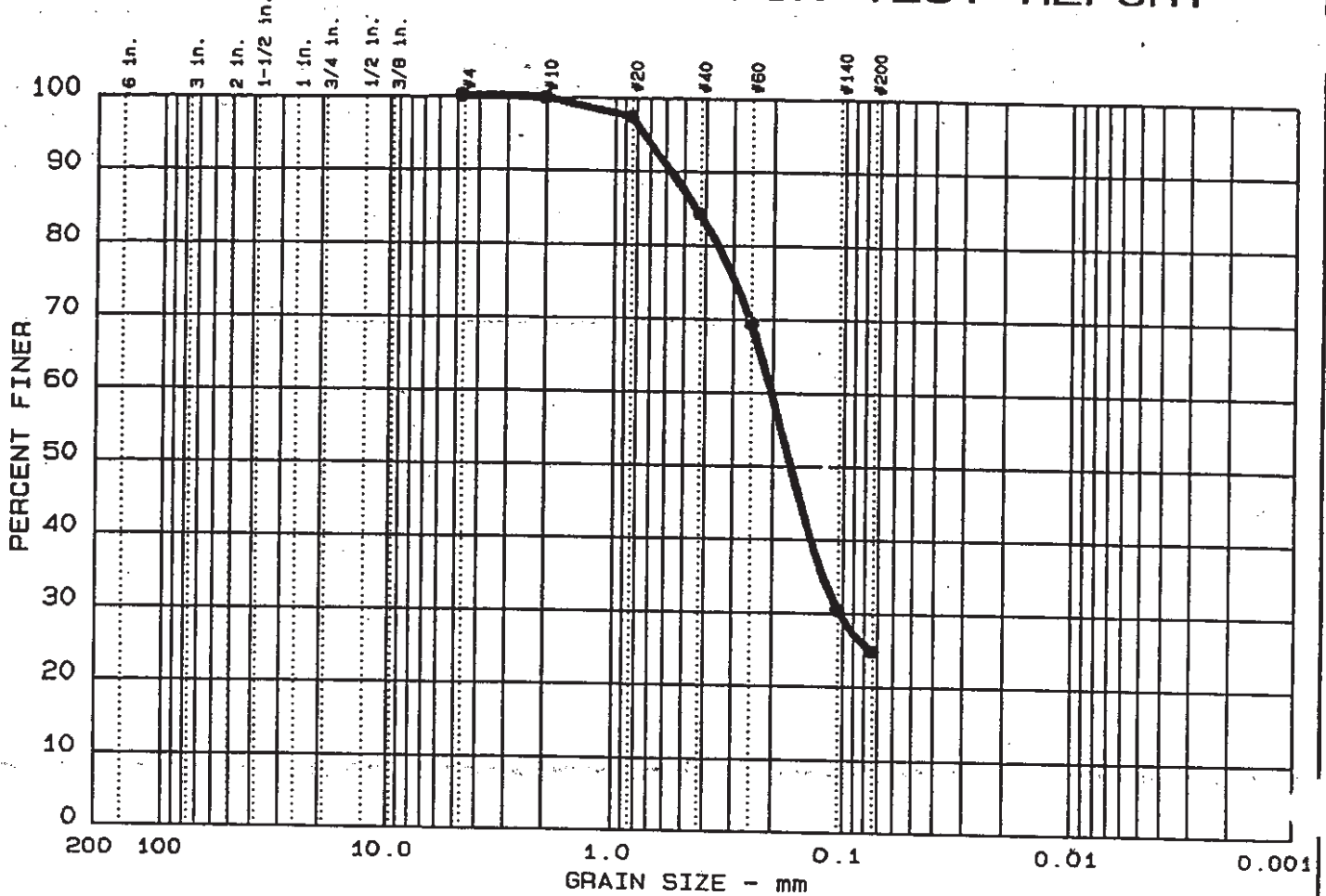
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-21 @ 36.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 Moisture Content = 17.5%  
 ASTM D422 & D2216

**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.0	75.2	24.8	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.43	0.20	0.17	0.103				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

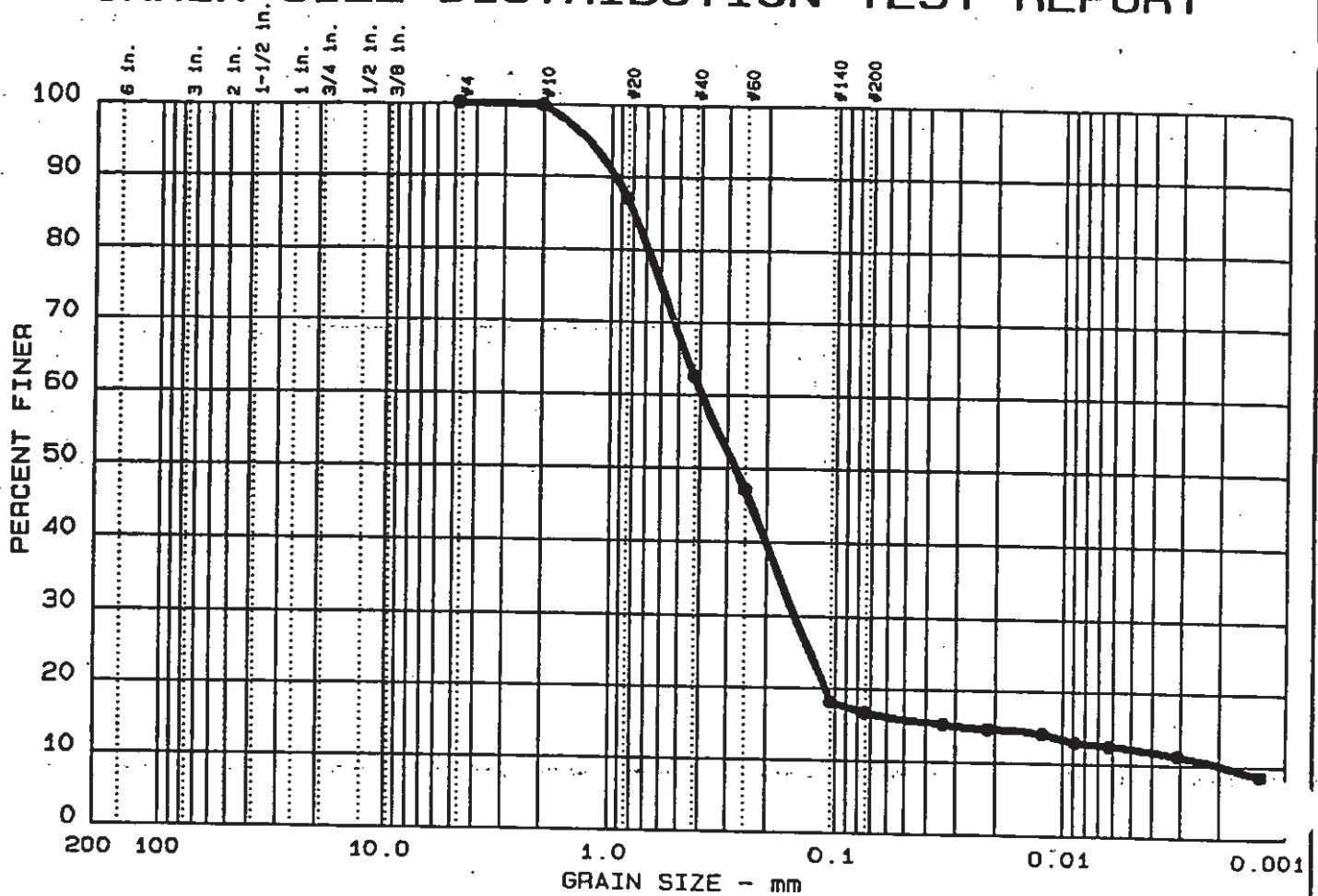
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-26 @ 43.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: SC&CS  
 Reviewed by: AD  
 Moisture Content = 19.1%  
 ASTM D422 & D2216





# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● B	0.0	0.0	83.3	4.5	12.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 37	13	0.79	0.39	0.28	0.150	0.0299	0.0019	29.85	201.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-6 (0.1)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-32 @ 52.5 Ft.  
 Date: June 30, 1998

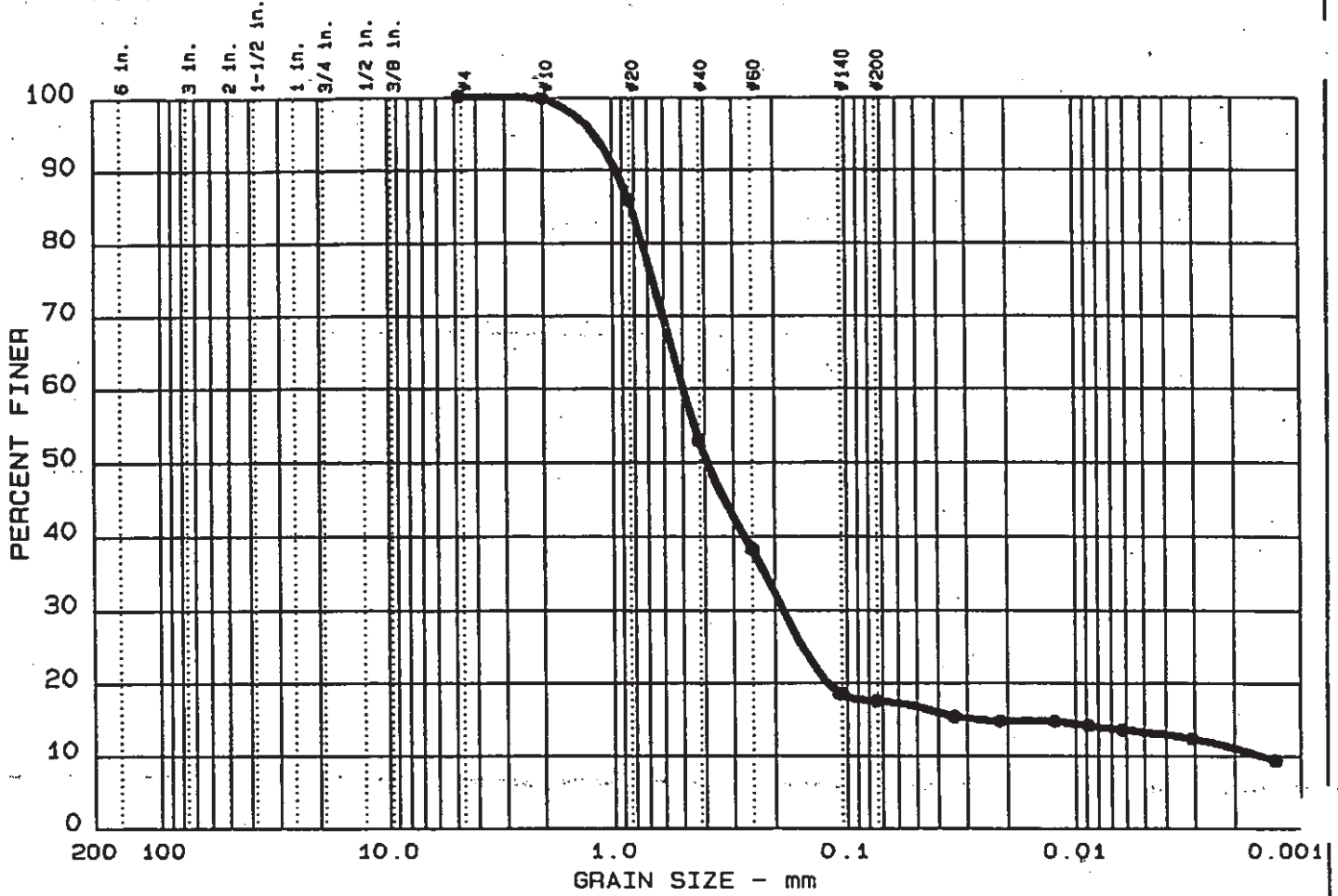
Remarks:  
 Tested by: SC CS & STM  
 Reviewed by: HJ  
 Moisture Content = 17.2%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 3	0.0	0.0	82.5	4.3	13.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 40	18	0.82	0.49	0.39	0.184	0.0237	0.0015	46.03	328.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-6 (0.2)

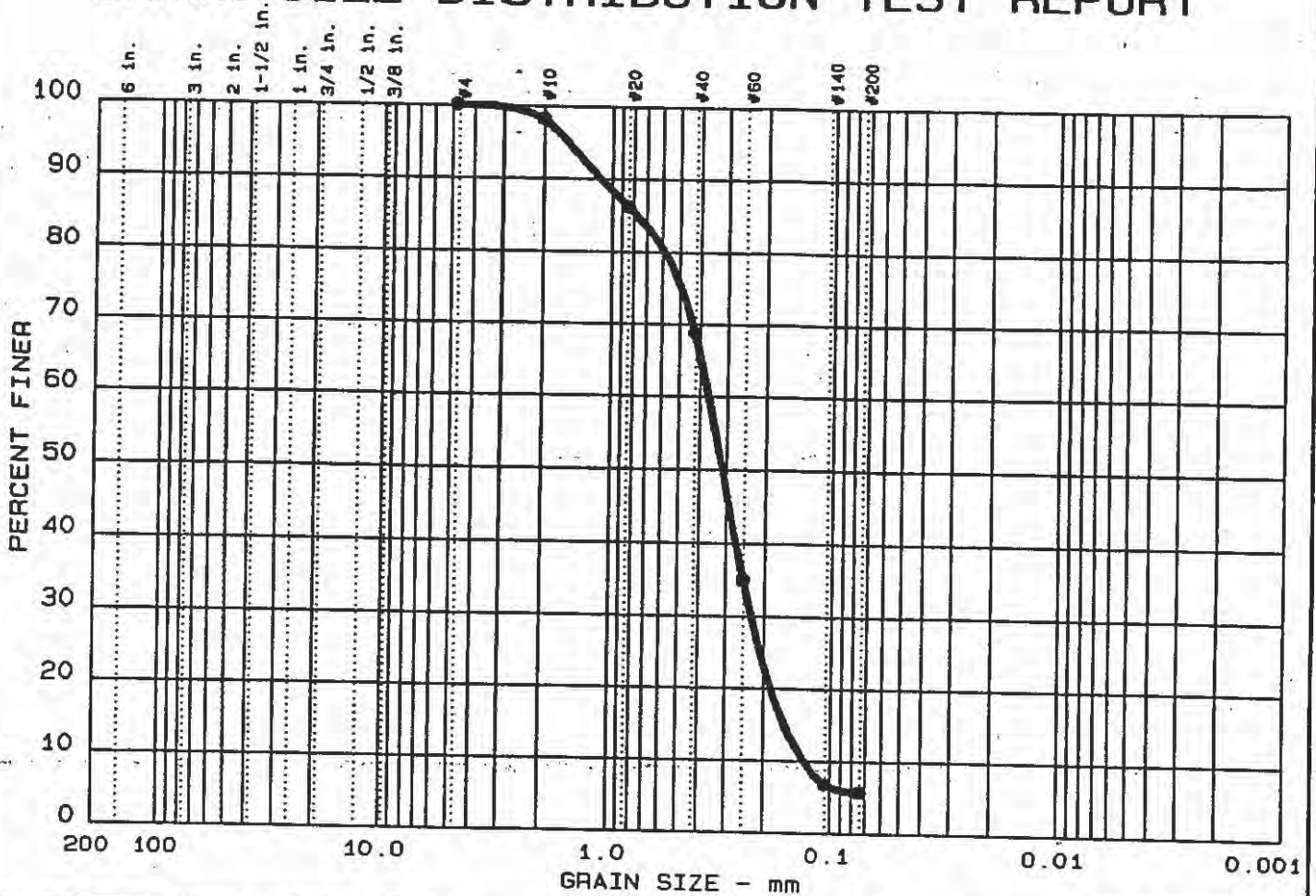
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-36 @ 58.5 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: *SC, CS, Wm*  
 Reviewed by: *bt*  
 Moisture Content = 19.5%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	94.4	5.6	

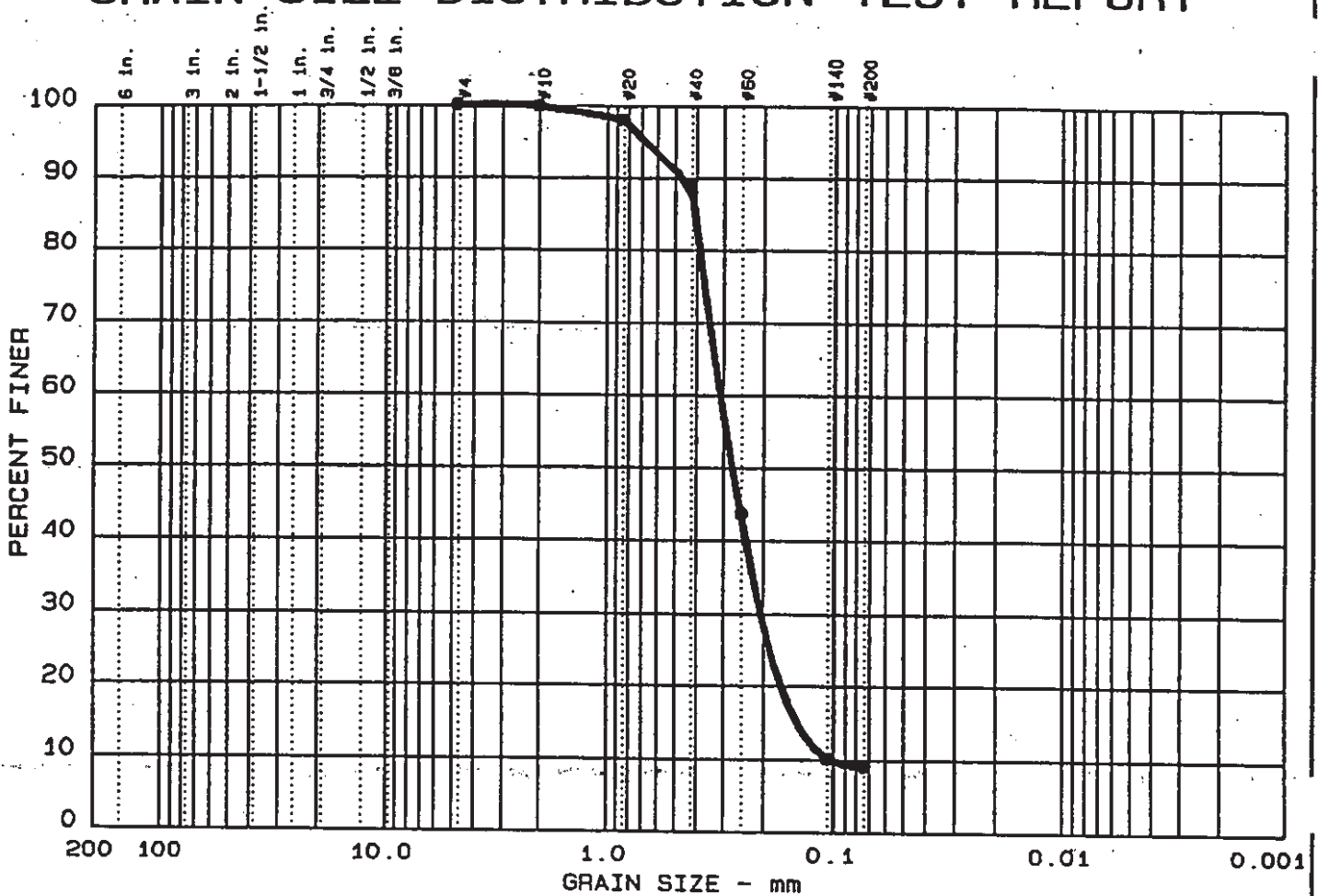
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.76	0.36	0.31	0.230	0.1618	0.1315	1.11	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-38 @ 61.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 Moisture Content = 18.4%  
 ASTM D422 & D2216  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
• 14	0.0	0.0	90.8	9.2	

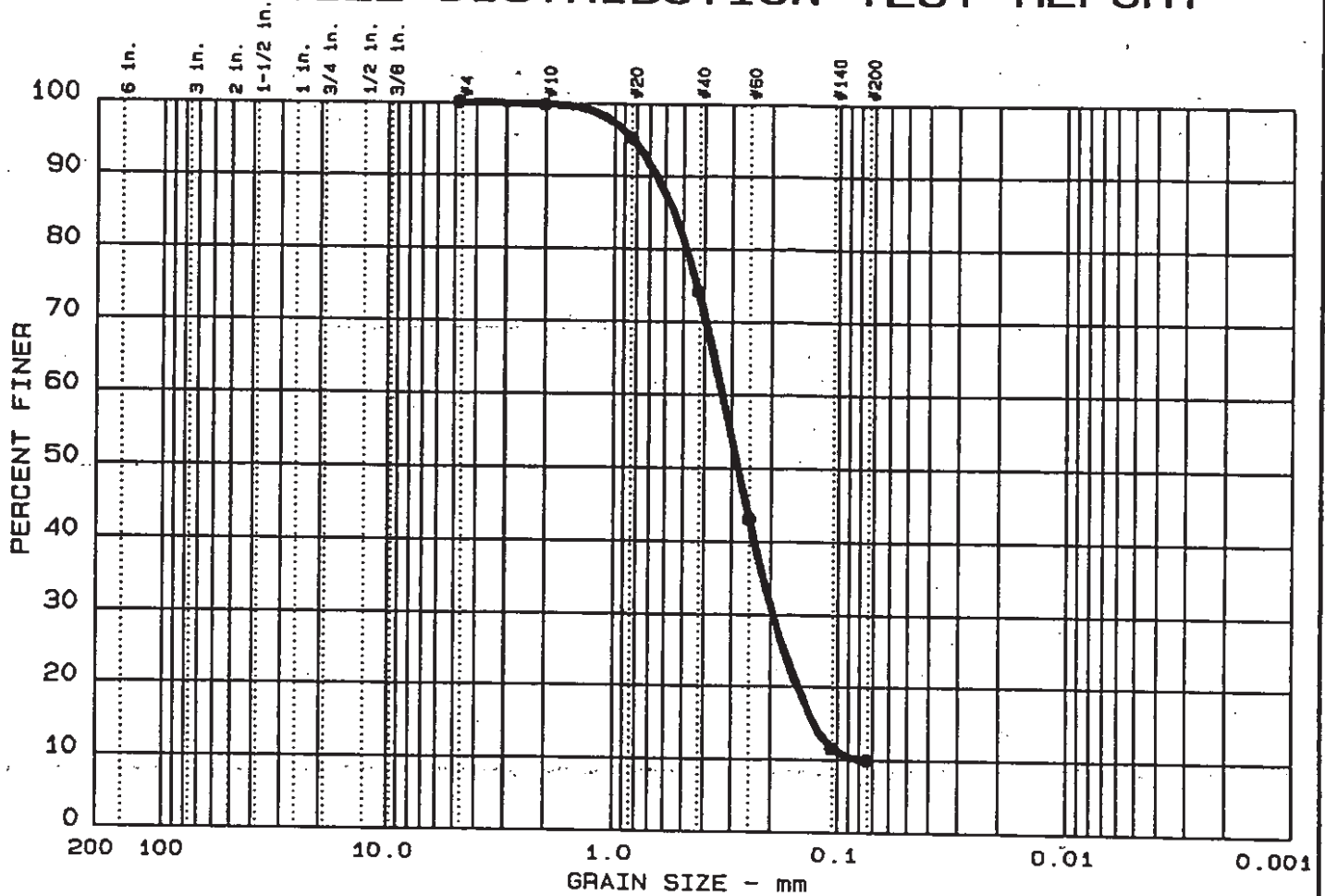
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.40	0.31	0.27	0.206	0.1426	0.1021	1.35	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-20 SS-40 @ 64.5 Ft.  
 Date: June 23, 1998  
**GRAIN SIZE DISTRIBUTION TEST REPORT**  
**LAW ENGINEERING, INC.**

Remarks:  
 Tested by: SC  
 Reviewed by: HD  
 Moisture Content = 22.5%  
 ASTM D422 & D2216  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	90.1	9.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.54	0.33	0.28	0.195	0.1274	0.0741	1.56	4.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Silt	SP-SM	A-3

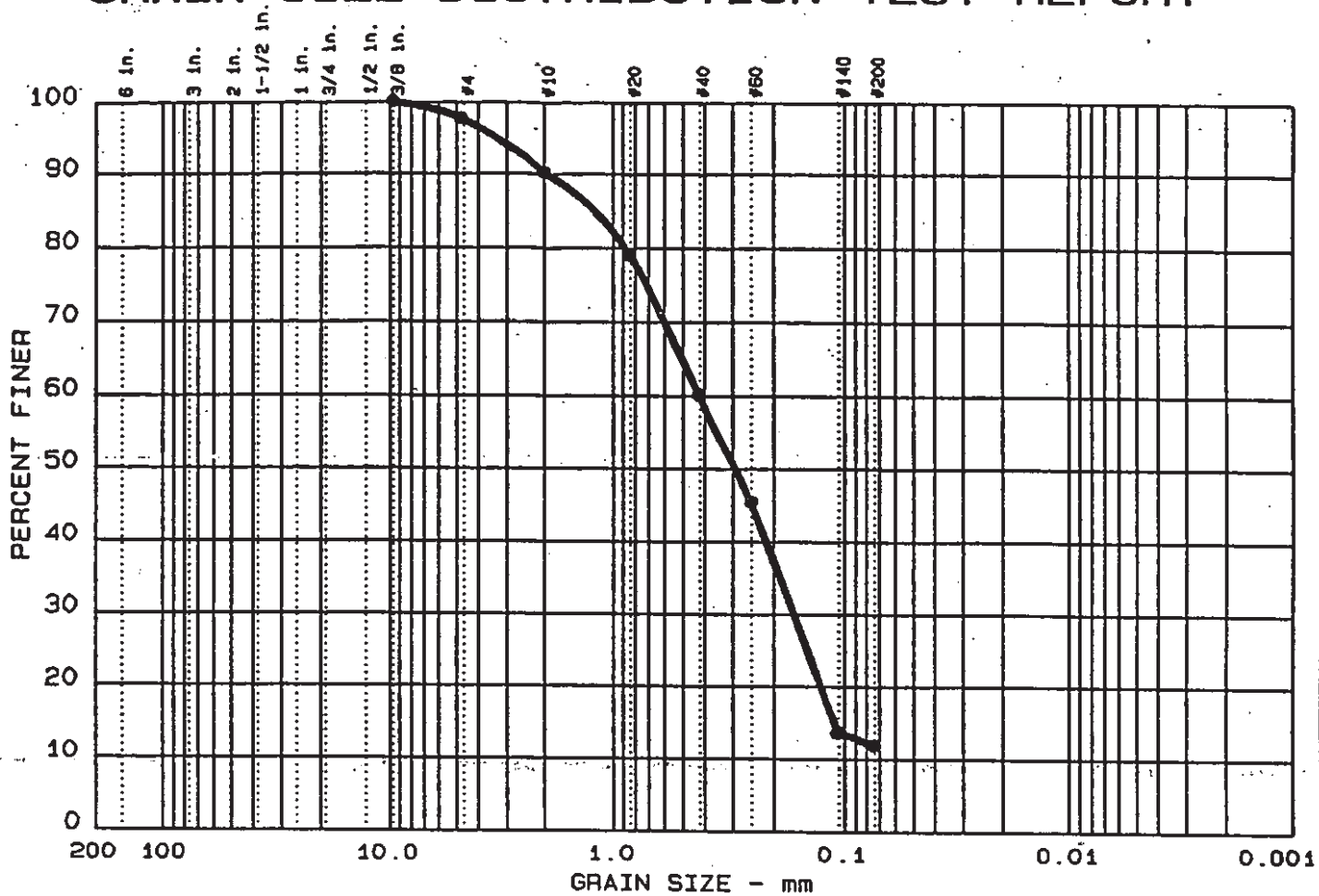
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-44 @ 70.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 Moisture Content - 22.3%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	2.3	85.8	11.9	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.19	0.42	0.29	0.164	0.1084			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-46 @ 73.5 Ft.  
 Date: June 23, 1998

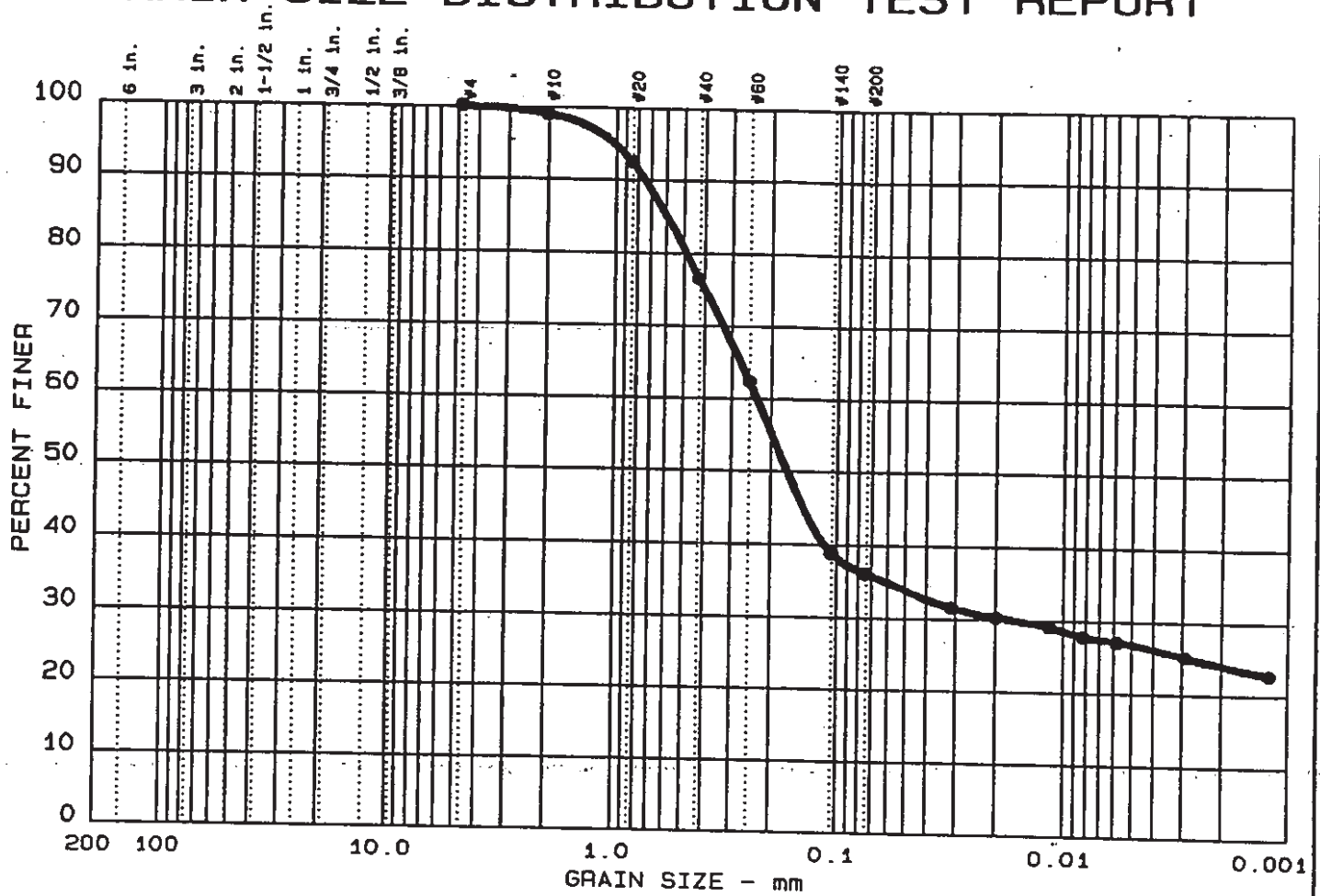
Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 Moisture Content = 18.5%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 2	0.0	0.0	64.0	9.2	26.8

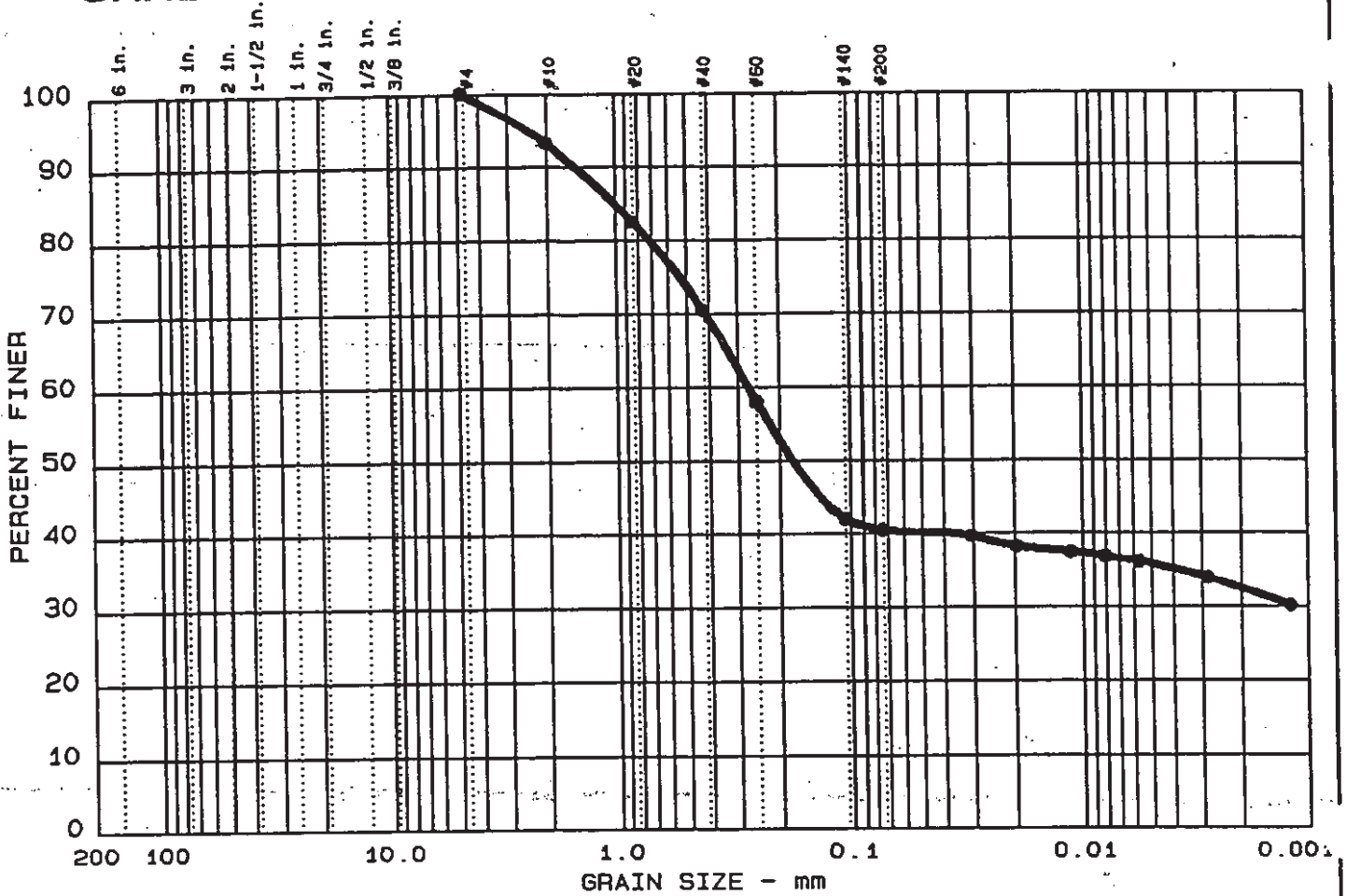
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 47	21	0.58	0.23	0.17	0.017				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Black Clayey Sand	SC	A-7-6 (2.5)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-48 @ 76.5 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: *SC + JDM*  
 Reviewed by: *hb*  
 Moisture Content = 26.9%  
 ASTM D422, D4318 & D2216  
 Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.0	59.7	4.7	35.6

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 63	26	1.00	0.27	0.18					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Black Silty Sand	SM	A-7-5 (5.6)

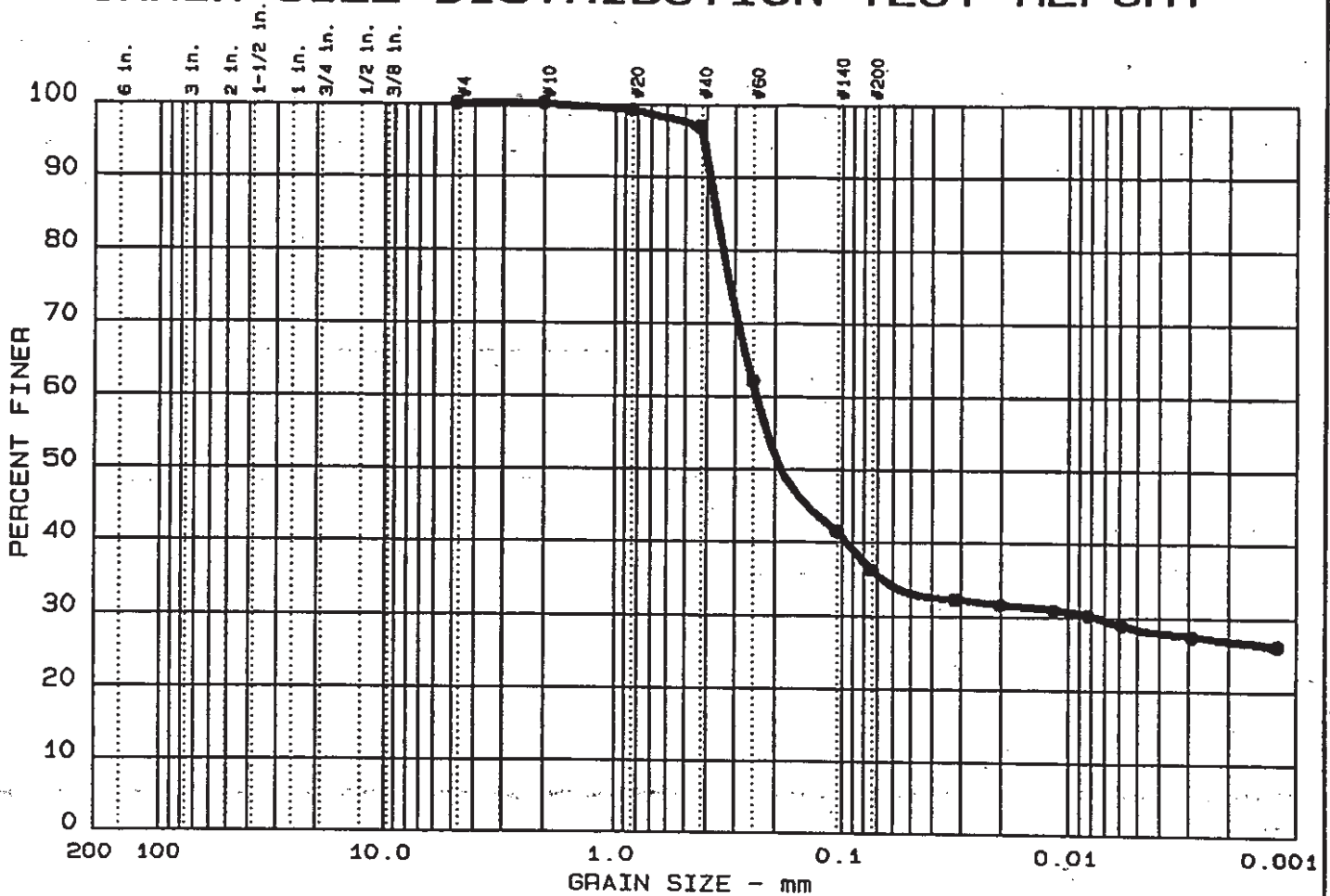
Project No.: 50161-7-0108 Task 21  
Project: F-Area Northeast Expansion  
● Location: FB-20 SS-49 @ 78.0 Ft.  
  
Date: June 26, 1998

Remarks:  
Tested by: *SC + JTM*  
Reviewed by: *H*  
Moisture Content = 36.5%  
ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	63.8	7.8	28.4

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 57	25	0.36	0.24	0.19	0.008				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-7-5 (3.4)

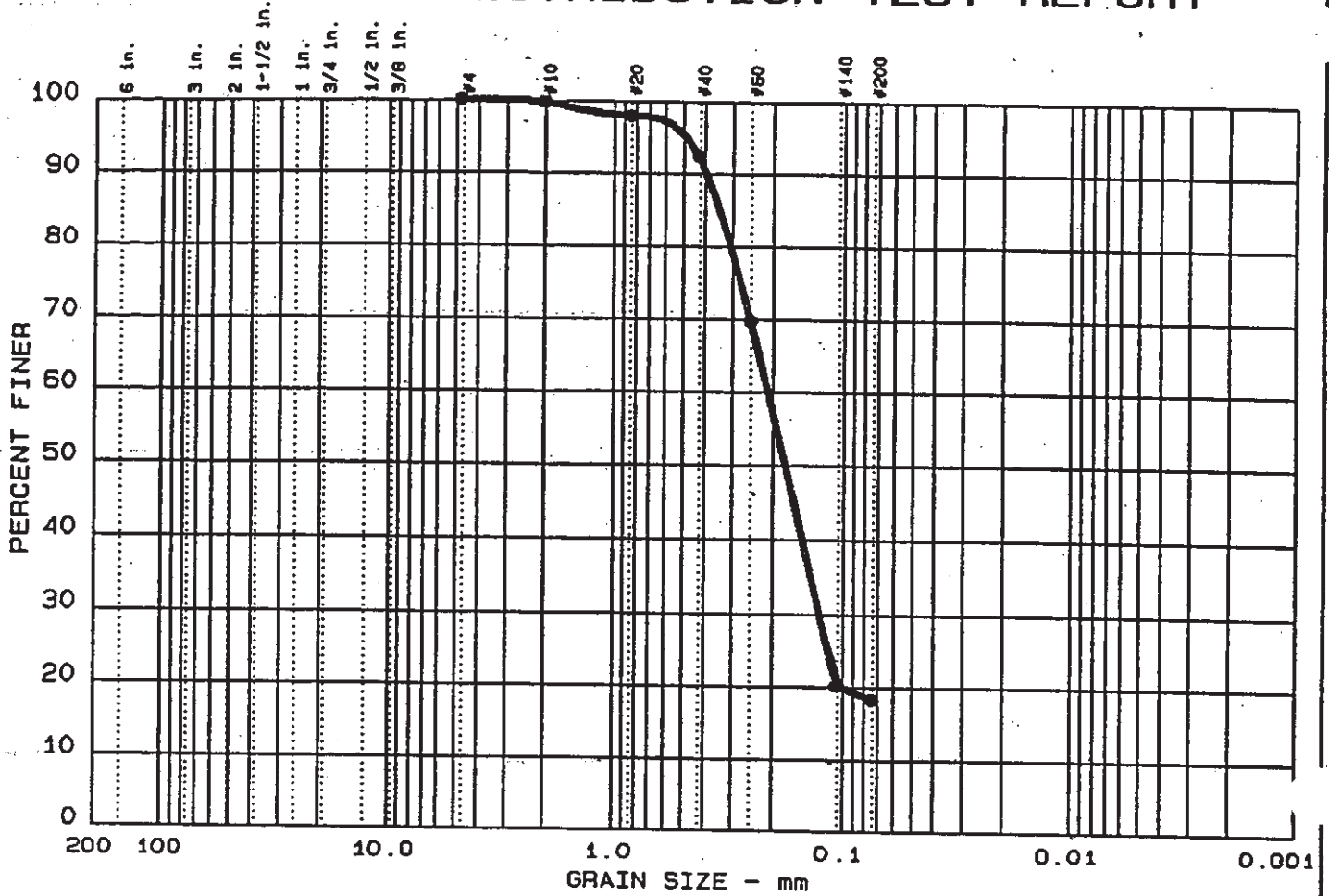
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-50 @ 79.5 Ft.  
  
 Date: June 30, 1998

Remarks:  
 Tested by: *SC CS STM*  
 Reviewed by: *HD*  
 Moisture Content = 32.8%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 16	0.0	0.0	81.7	18.3	

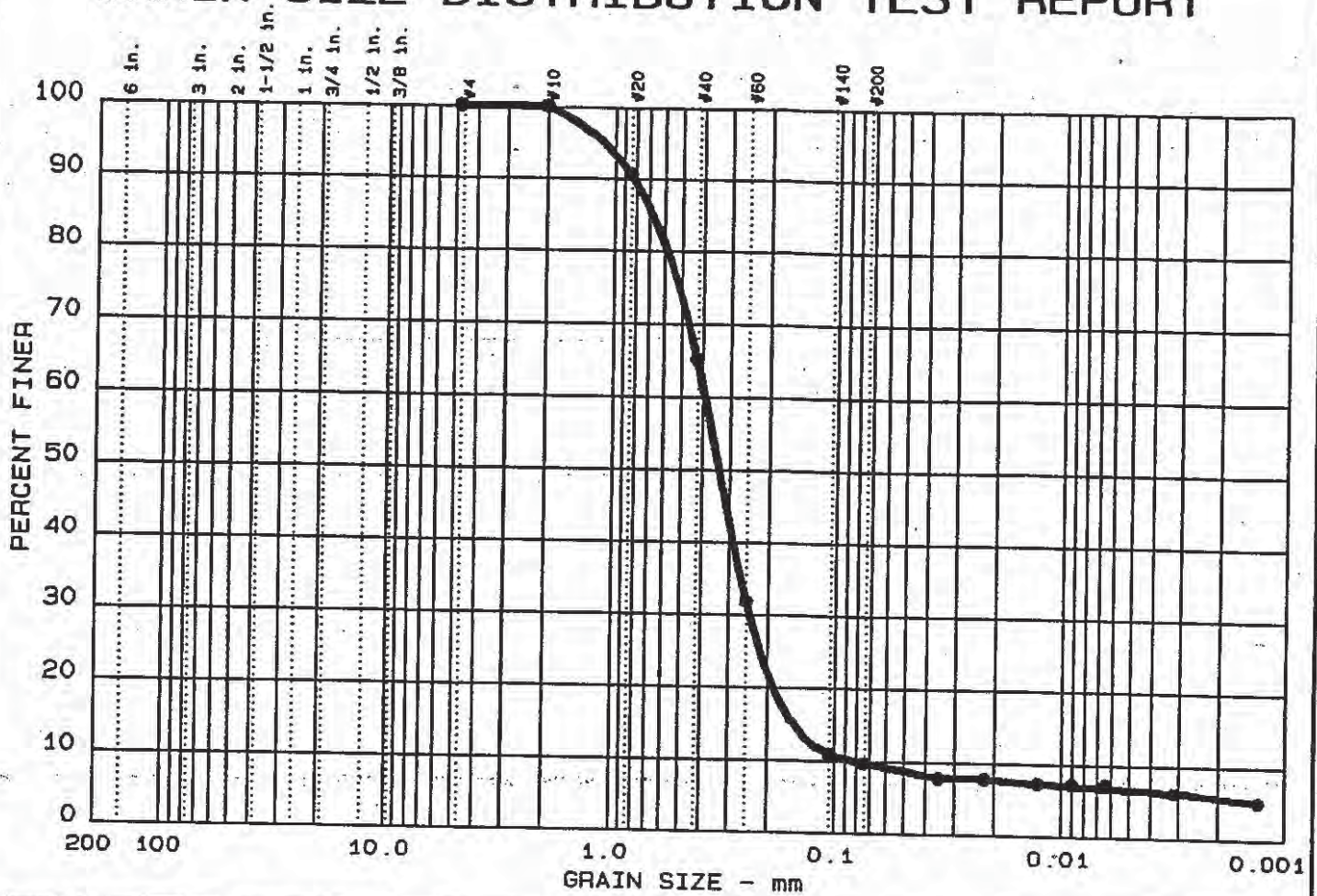
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.34	0.21	0.18	0.124				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-52 @ 82.5 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: *SC*  
 Reviewed by: *HP*  
 Moisture Content = 25.8%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 10	0.0	0.0	90.3	3.1	6.6

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.67	0.39	0.33	0.241	0.1521	0.0807	1.86	4.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Poorly Graded Sand with Silt	SP-SM	A-3

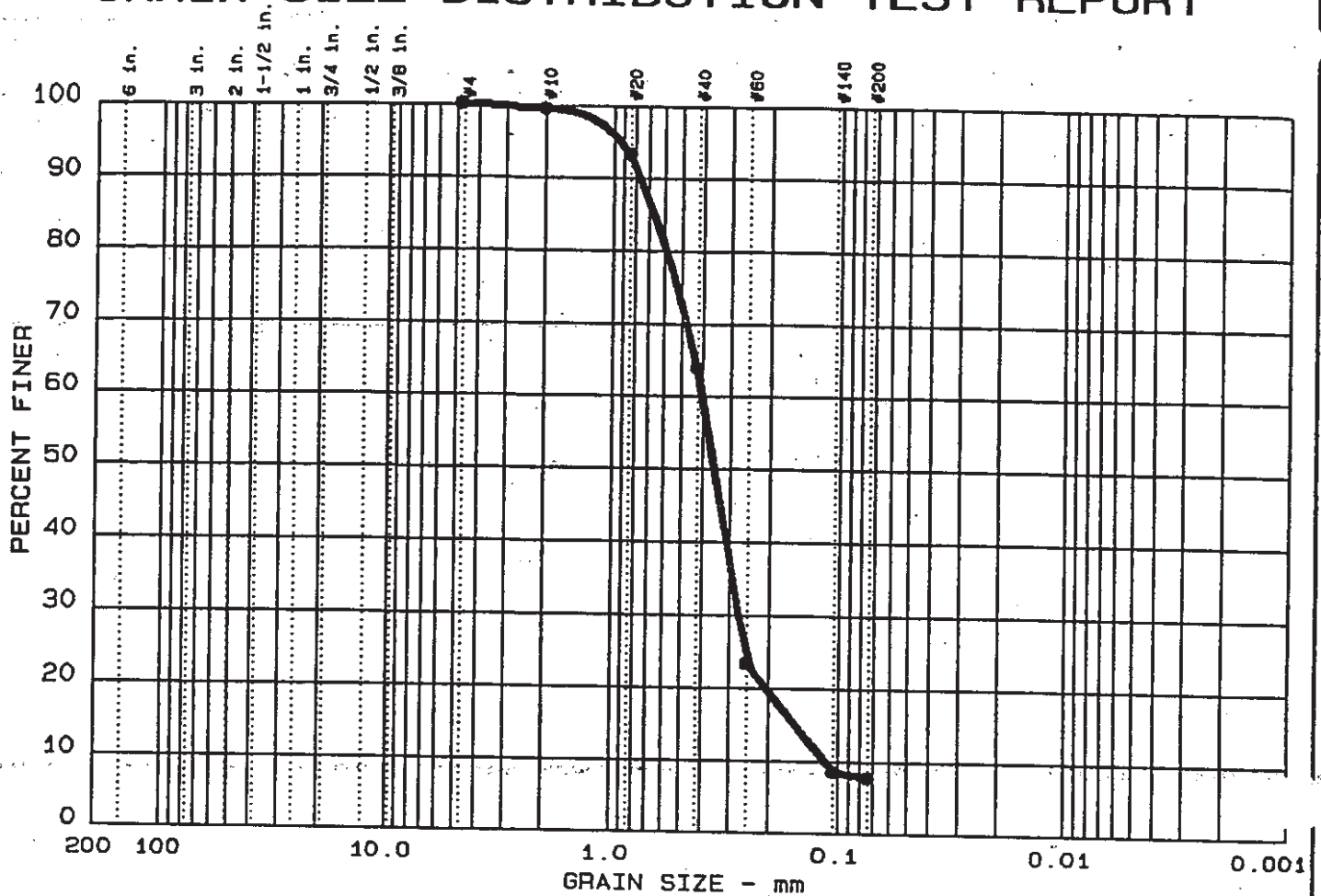
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-54 @ 85.5 Ft.  
  
 Date: June 26, 1998

Remarks:  
 Tested by: *SC + SM*  
 Reviewed by: *HJ*  
 Moisture Content = 22.4%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



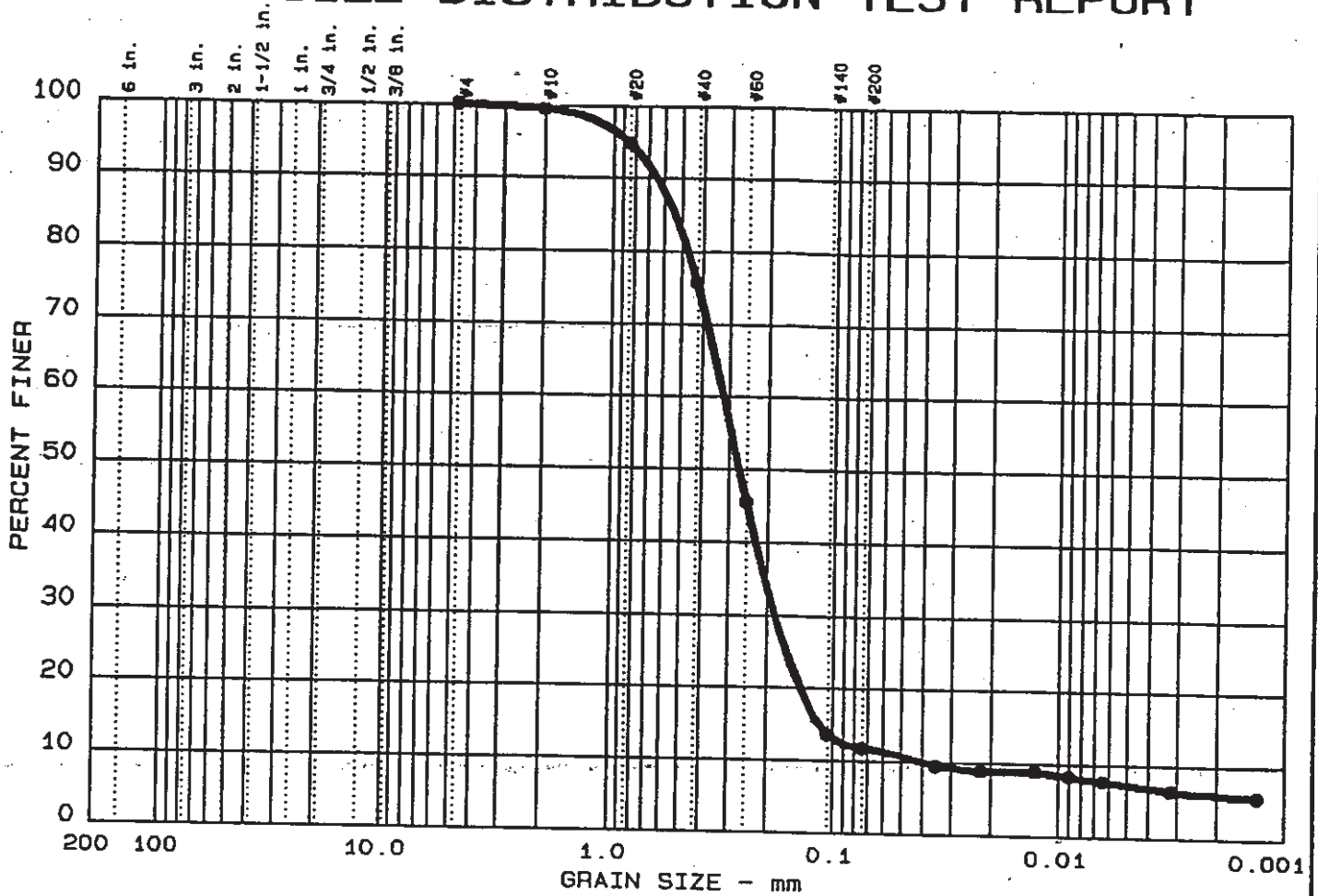
Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
4	0.0	0.0	92.2	7.8	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.66	0.40	0.35	0.272	0.1512	0.1134	1.63	3.5

MATERIAL DESCRIPTION	USCS	AASHTO
• Brown Poorly Graded Sand with Silt	SP-SM	A-3
Project No.: 50161-7-0108 Task 21 Project: F-Area Northeast Expansion • Location: FB-20 SS-56 @ 88.5 Ft. Date: June 25, 1998	Remarks: Tested by: <i>SC</i> Reviewed by: <i>HO</i> Moisture Content = 18.9% ASTM D422 & D2216	Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
1	0.0	0.0	88.2	4.6	7.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.53	0.32	0.27	0.184	0.1149	0.0399	2.69	8.0

MATERIAL DESCRIPTION	USCS	AASHTO
	SW-SM	A-2-4 (0.3)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Notheast Expansion  
 Location: FB-20 SS-59 @ 93.0 Ft  
 Date: June 26, 1998

Remarks:  
 Tested by: *SCJ/dm*  
 Reviewed by: *HJ*  
 Moisture Content = 20.4%  
 ASTM D422, D4318 & D2216

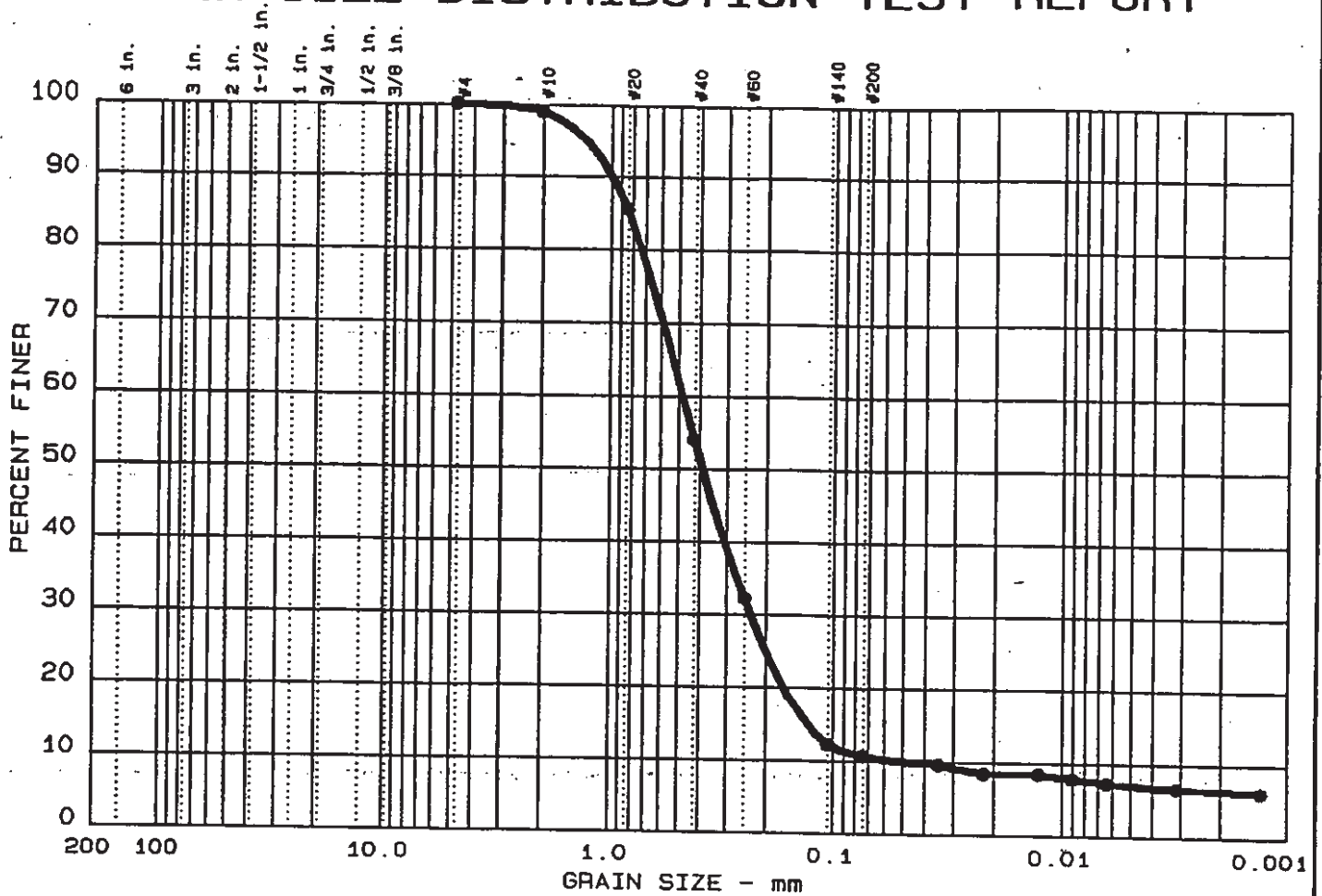
GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

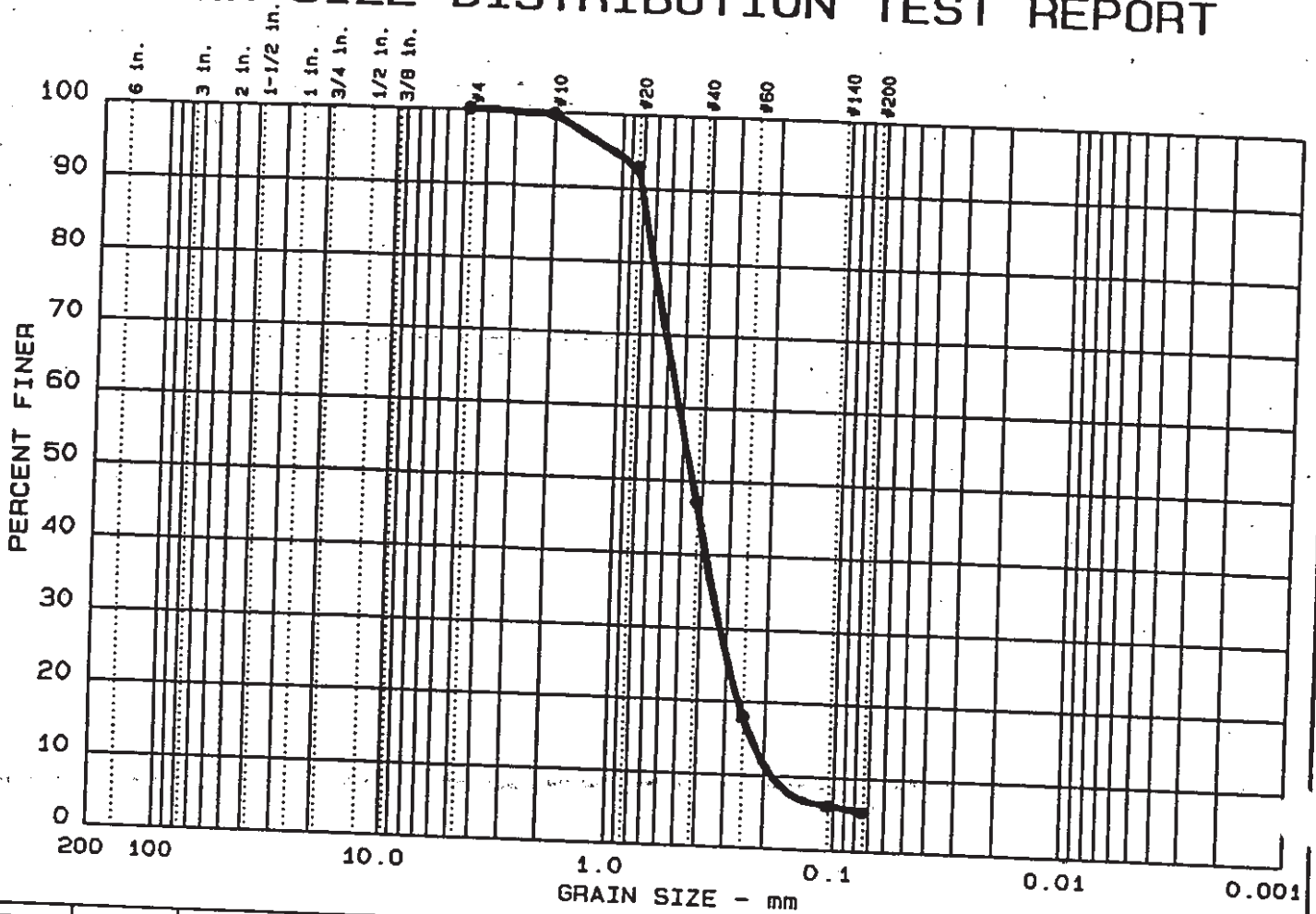




# GRAIN SIZE DISTRIBUTION TEST REPORT



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	0.0	94.7	5.3	

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.75	0.52	0.44	0.322	0.2294	0.1843	1.08	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly-Graded Sand with Silt	SP-SM	A-1-b

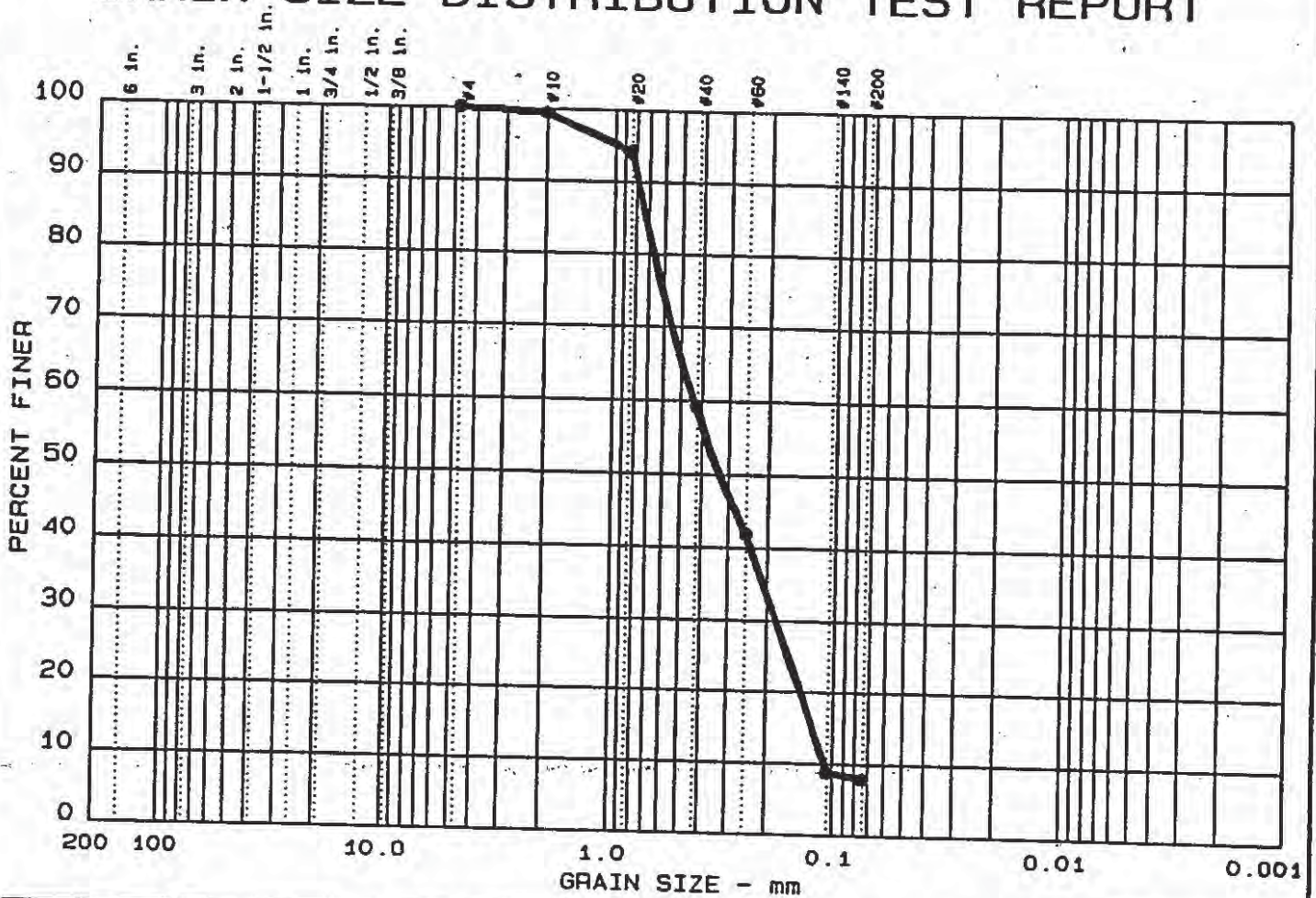
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-66 @ 103.5-105.1 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HB  
 Moisture Content = 24.5%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.0	92.1	7.9	

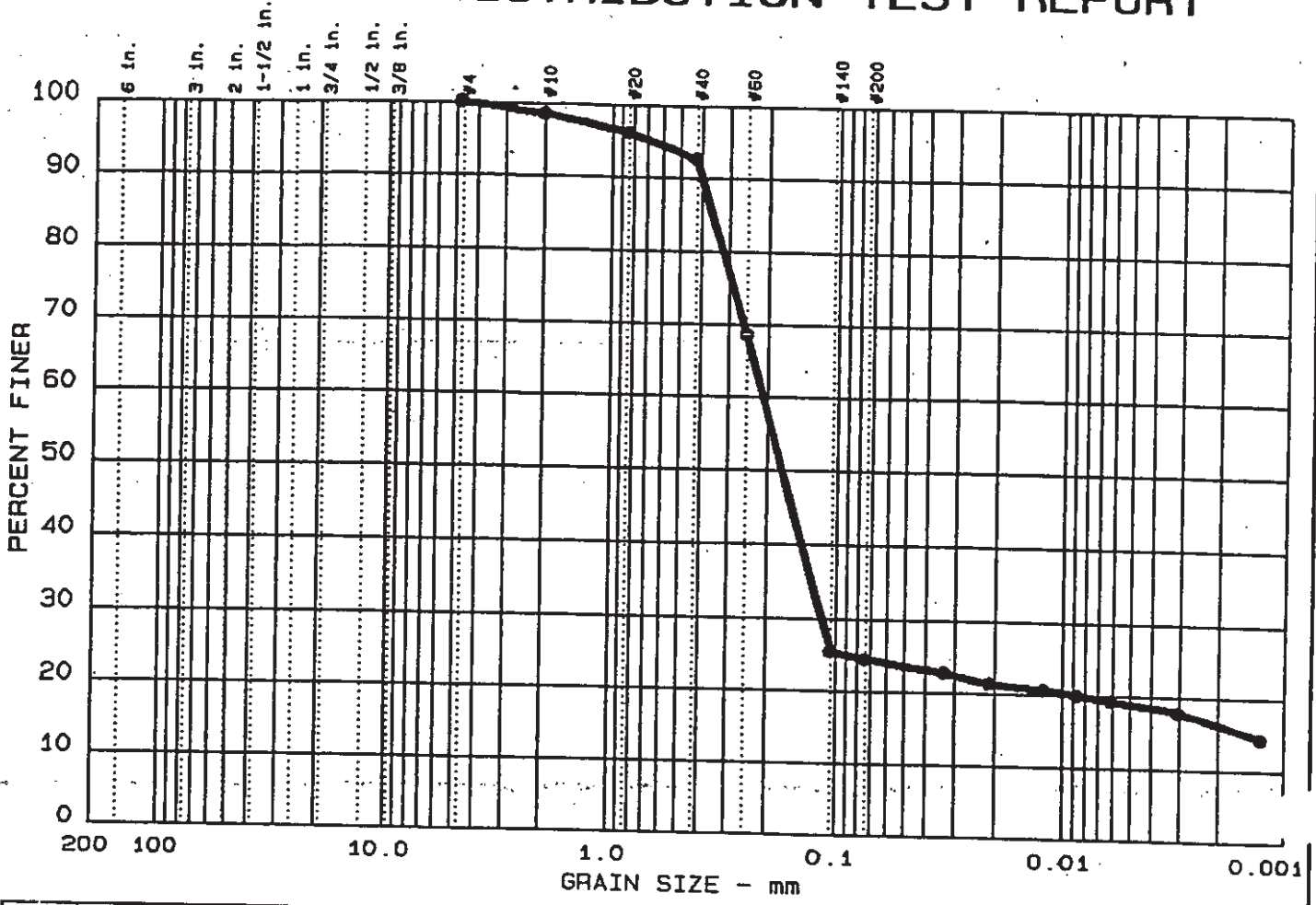
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.72	0.43	0.33	0.183	0.1236	0.1085	0.72	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-68 @ 106.6-108.1 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HS  
 Moisture Content = 26.2%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 7	0.0	0.0	75.5	5.5	18.9

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 44	19	0.35	0.21	0.17	0.115	0.0014			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-7 (0.8)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-20 SS-70 @ 109.6-112.7 Ft.  
 Date: June 30, 1998

Remarks:  
 Tested by: CS SCD/JM  
 Reviewed by: LT  
 Moisture Content = 47.3%  
 ASTM D422, D4318 & D2216

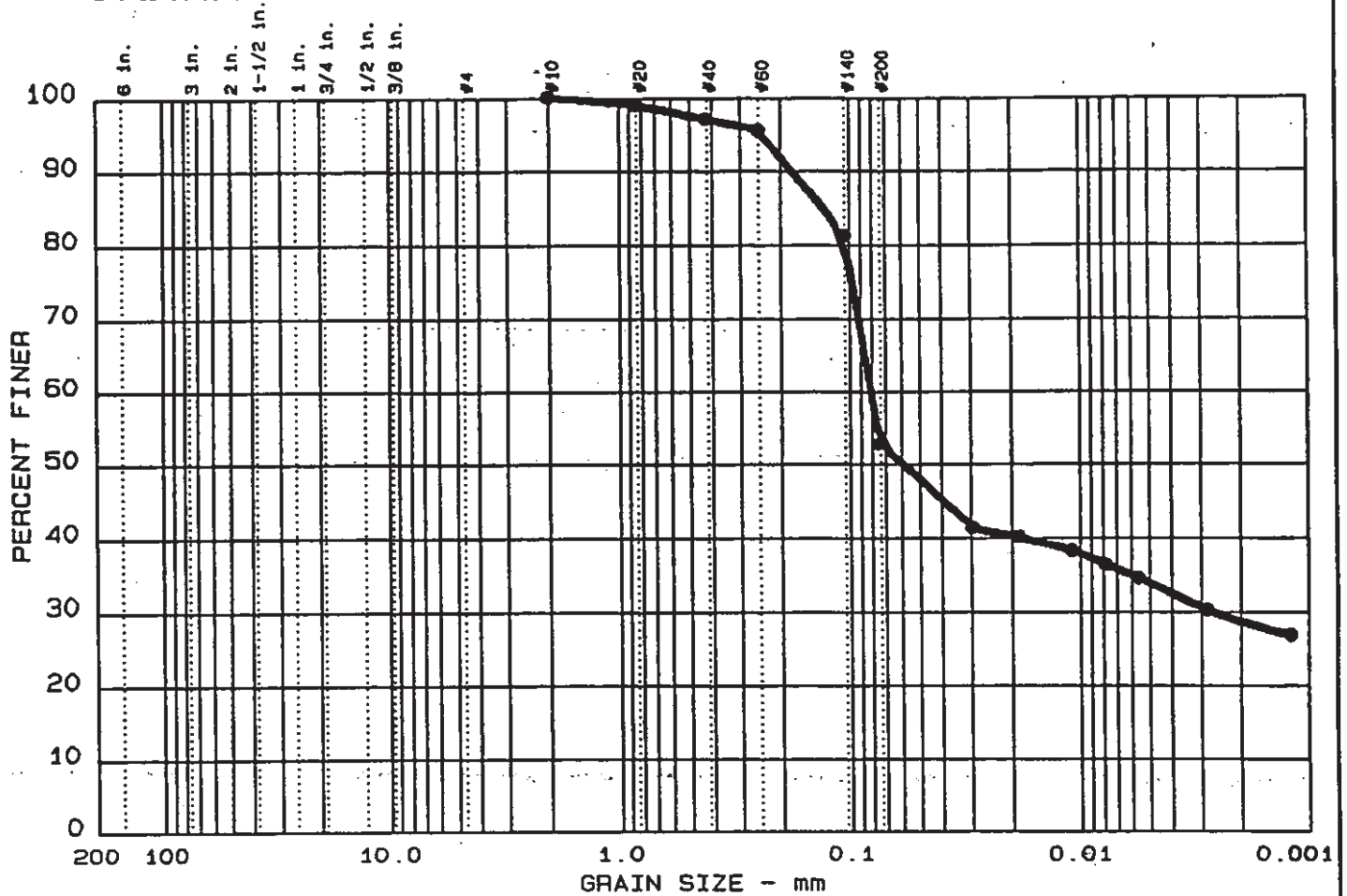
GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.





# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	47.2	18.9	33.9

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
45	22	0.13	0.08	0.06	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Red Brown Sandy Lean Clay	CL	A-7-6 (B.6)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-4 @ 11.5-13.0 Ft.  
 Date: July 5, 1998

Remarks:  
 Tested by: *Jim LSC*  
 Reviewed by: *[Signature]*  
 Moisture Content = 20.9%  
 ASTM D422, D4318 & D2216

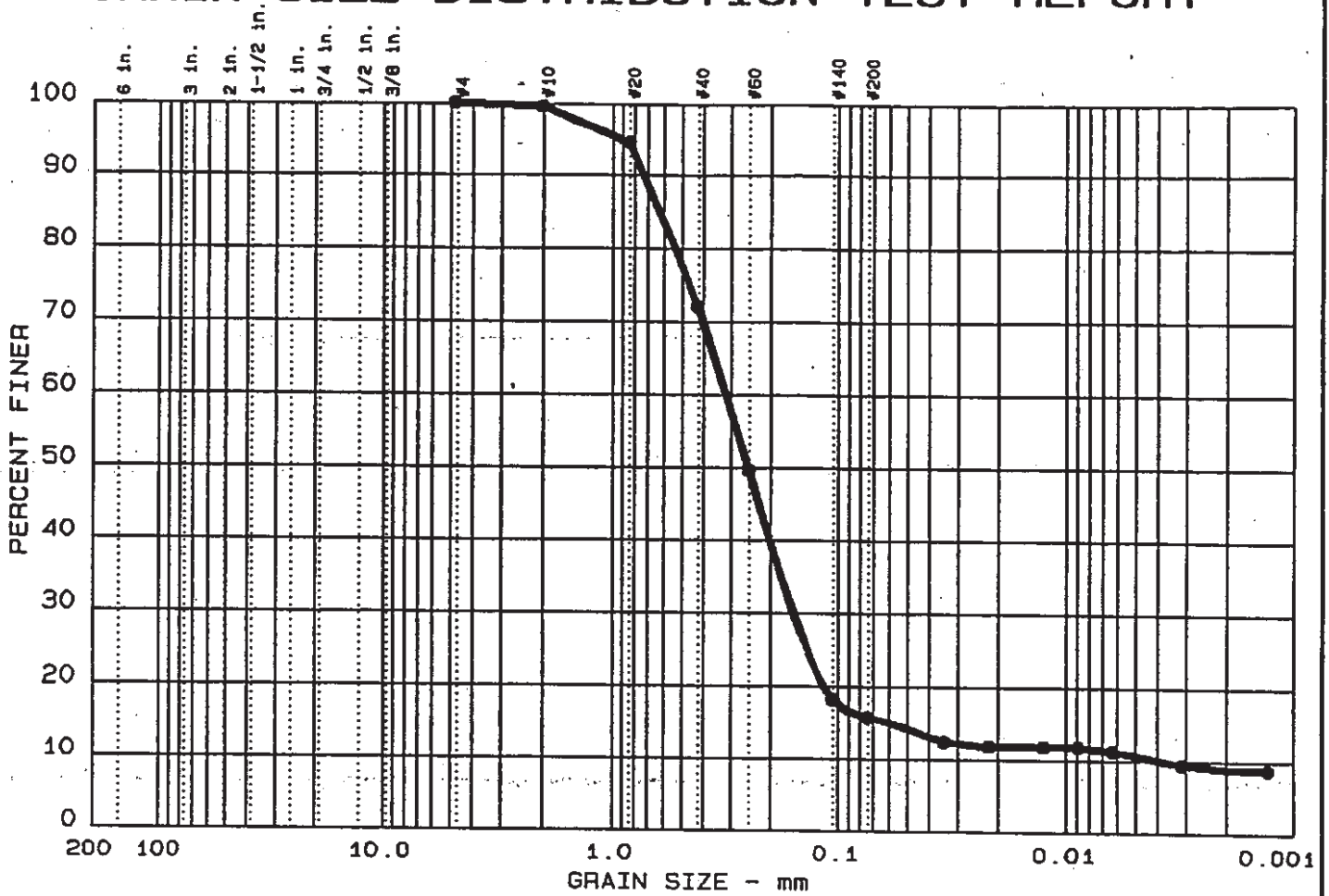








# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	84.2	5.1	10.7

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
30	8	0.62	0.32	0.25	0.159	0.0583	0.0038	20.99	82.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Clayey Sand	SC	A-2-4 (0.0)

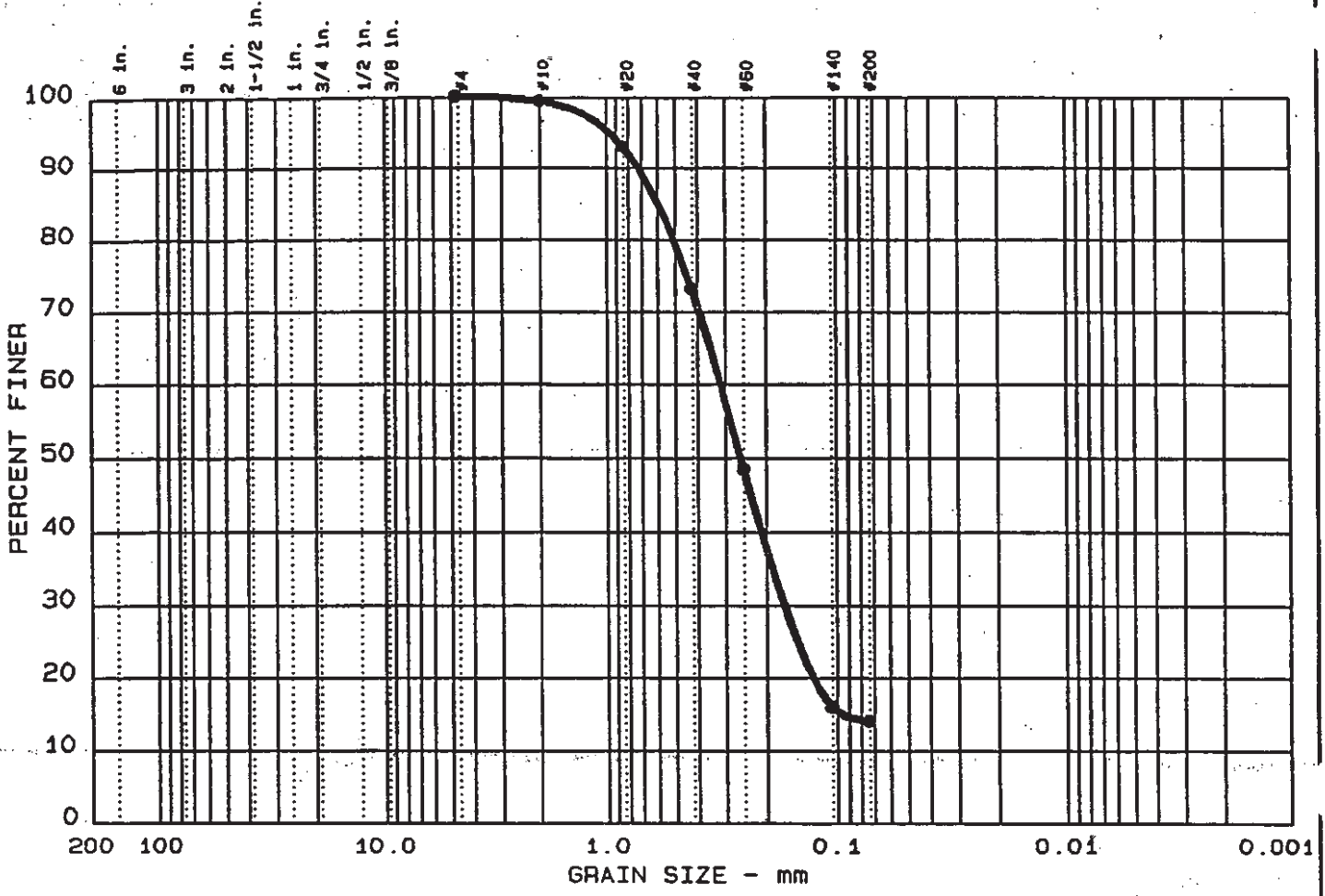
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-13 @ 25.0-26.5 Ft.  
 Date: July 5, 1998

Remarks:  
 Tested by: *SC/STM*  
 Reviewed by: *HO*  
 Moisture Content = 18.6%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 19	0.0	0.0	85.9	14.1	

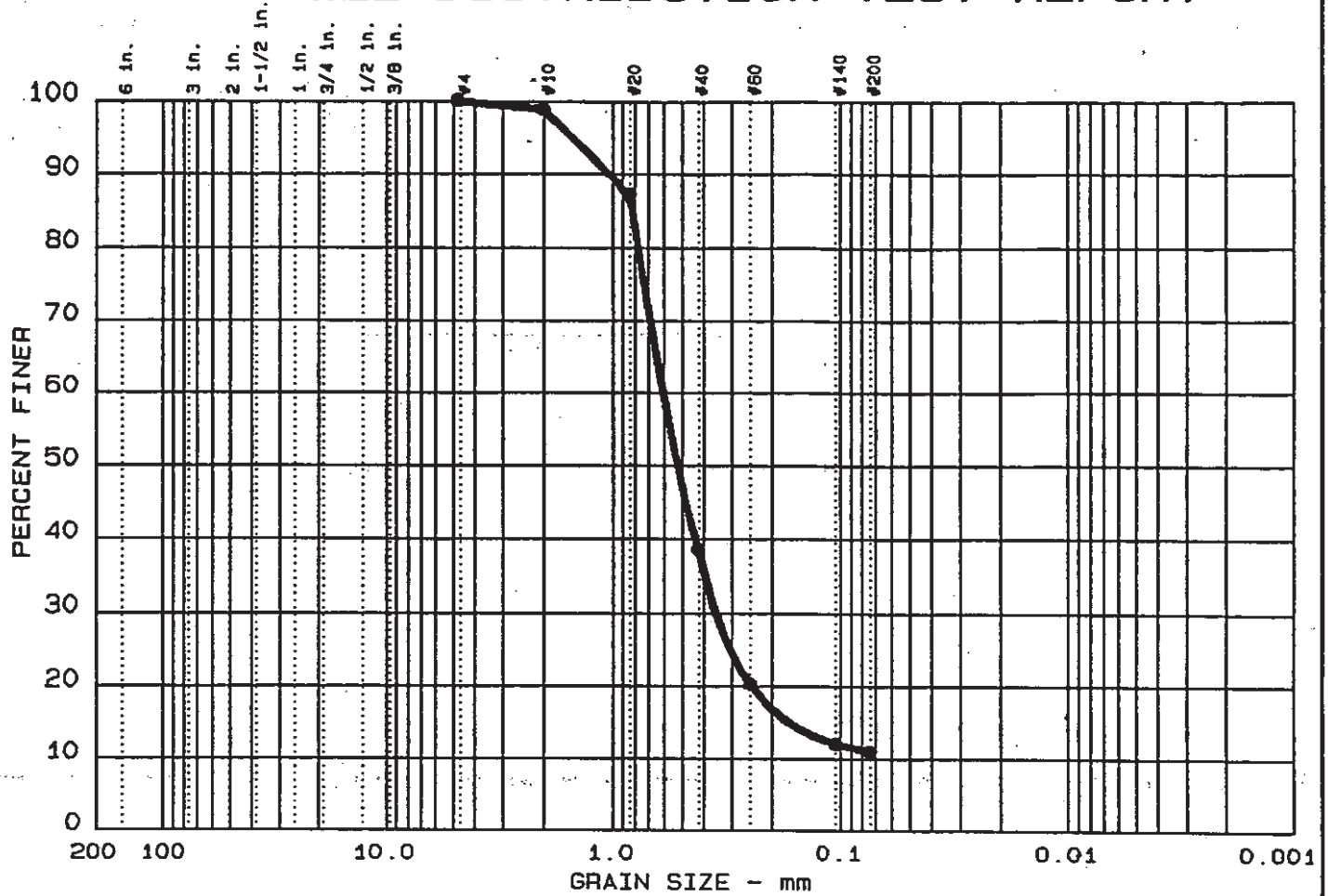
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
		0.59	0.31	0.26	0.168	0.0934			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.1)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-16 @ 29.5-31.0 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: HJ  
 Moisture Content = 16.8%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 9	0.0	0.0	89.0	11.0	

LL	PI	D85	D60	D50	D30	D15	D10	C <sub>c</sub>	C <sub>u</sub>
		0.82	0.60	0.52	0.353	0.1688			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SP-SM	A-1-b

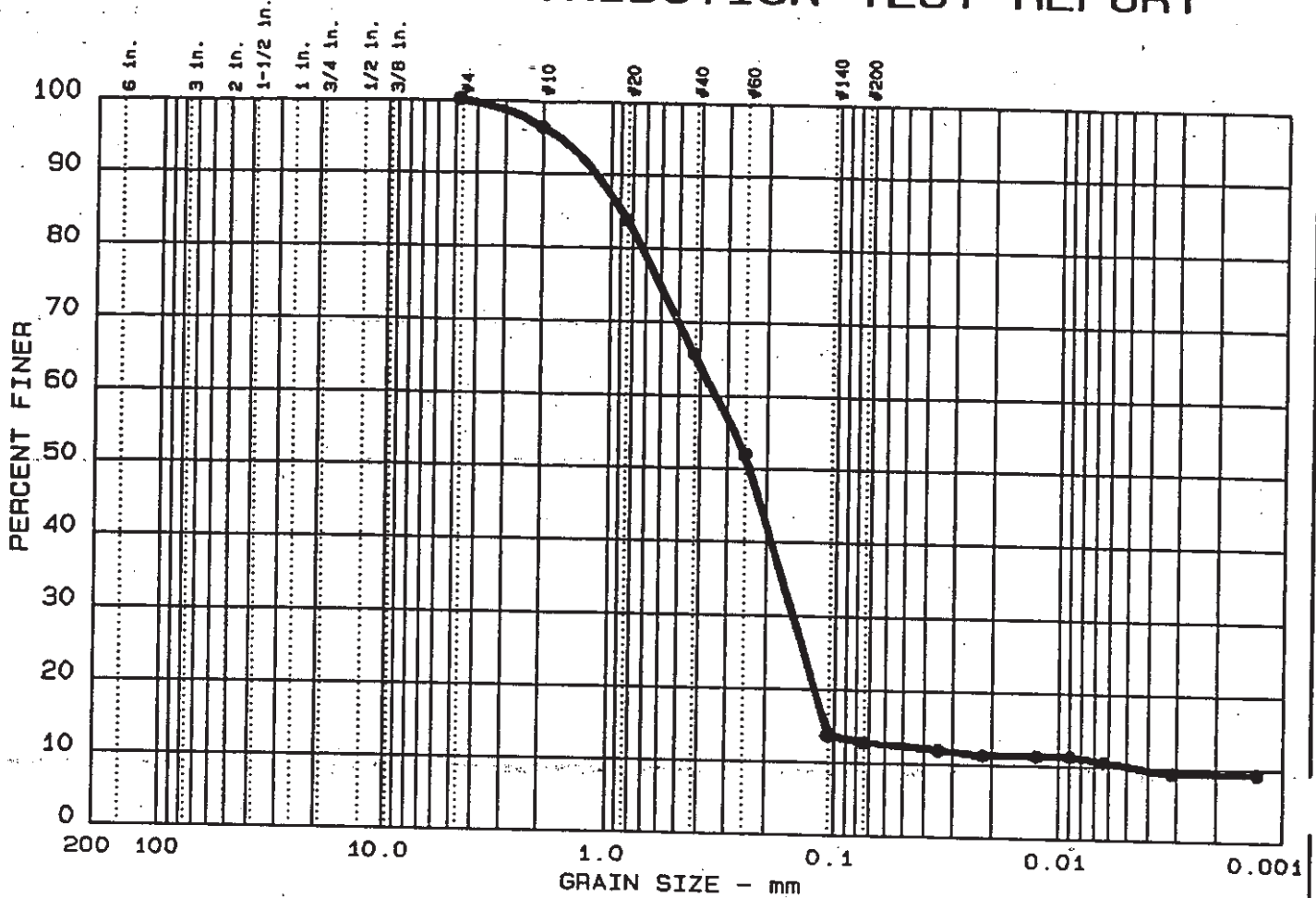
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-19 @ 34-35.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: SC & CS  
 Reviewed by: HB  
 Moisture Content = 16.3%  
 ASTM D422 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	87.1	2.7	10.2

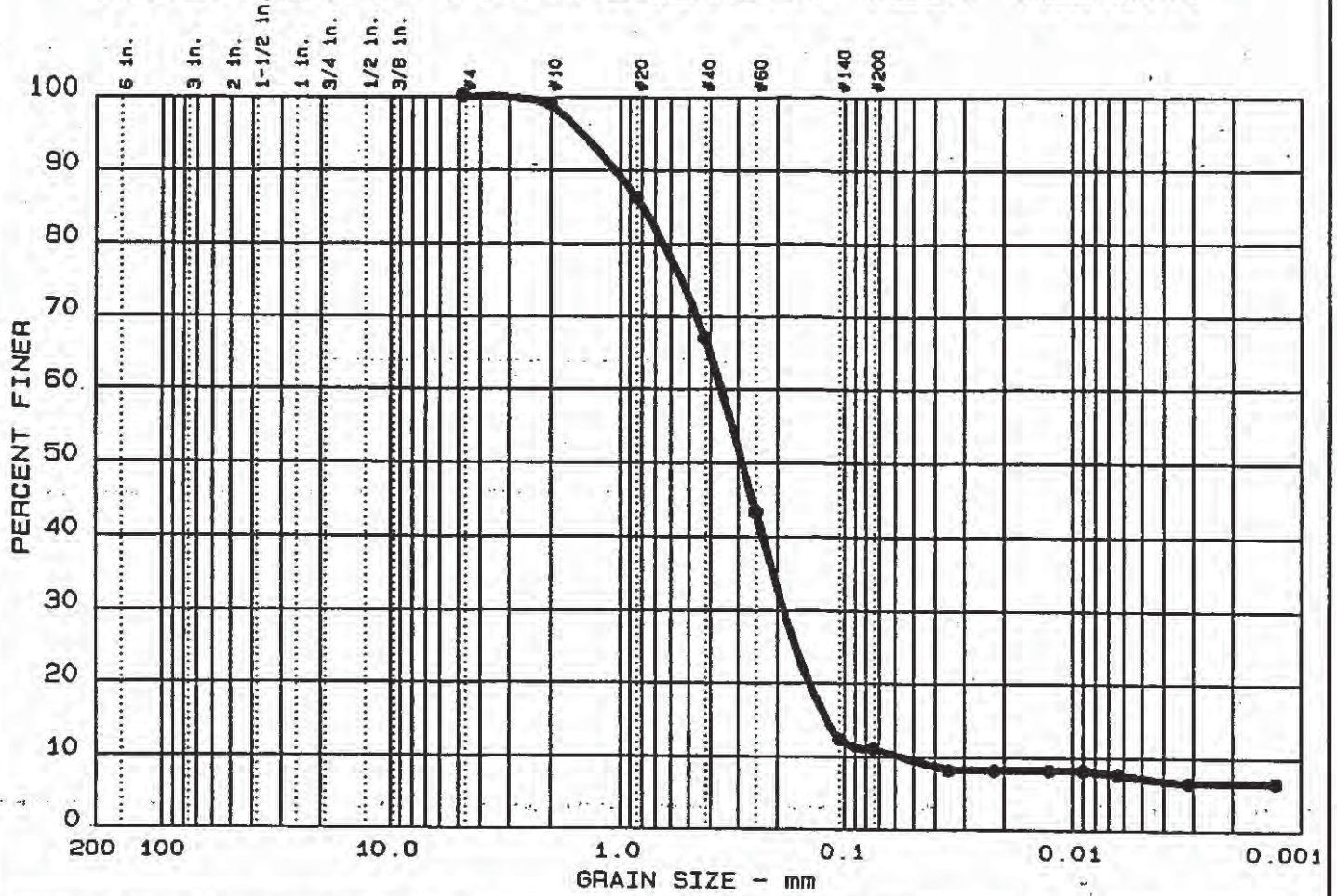
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
30	5	0.88	0.34	0.24	0.152	0.1080	0.0044	15.47	77.0

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-22 SS-22 @ 38.5-40.0 Ft.  
 Date: July 5, 1998

Remarks:  
 Tested by: *JMT/SC*  
 Reviewed by: *HD*  
 Moisture Content = 19.0%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	88.9	3.9	7.2

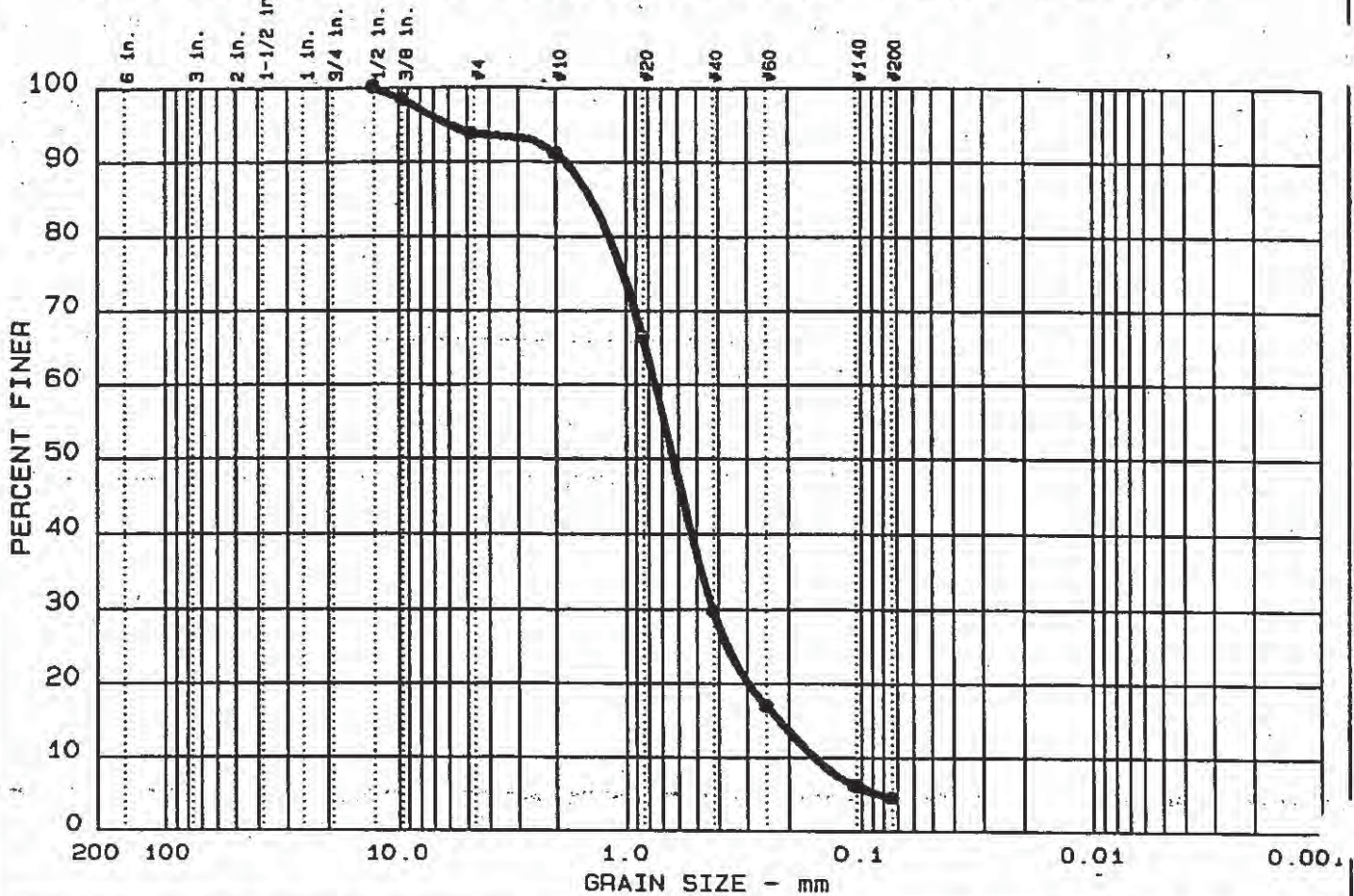
LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
29	5	0.79	0.35	0.29	0.187	0.1208	0.0552	1.79	6.4

<b>MATERIAL DESCRIPTION</b> ● Tan Brown Well Graded Sand with Silt	USCS	AASHTO
	SW-SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-23 @ 40.0-41.5 Ft.  
 Date: July 5, 1998

Remarks:  
 Tested by: *SLJ/SM*  
 Reviewed by: *W*  
 Moisture Content = 20.1%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/P</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	6.2	89.2	4.6	

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		1.39	0.74	0.62	0.422	0.2188	0.1549	1.55	4.8

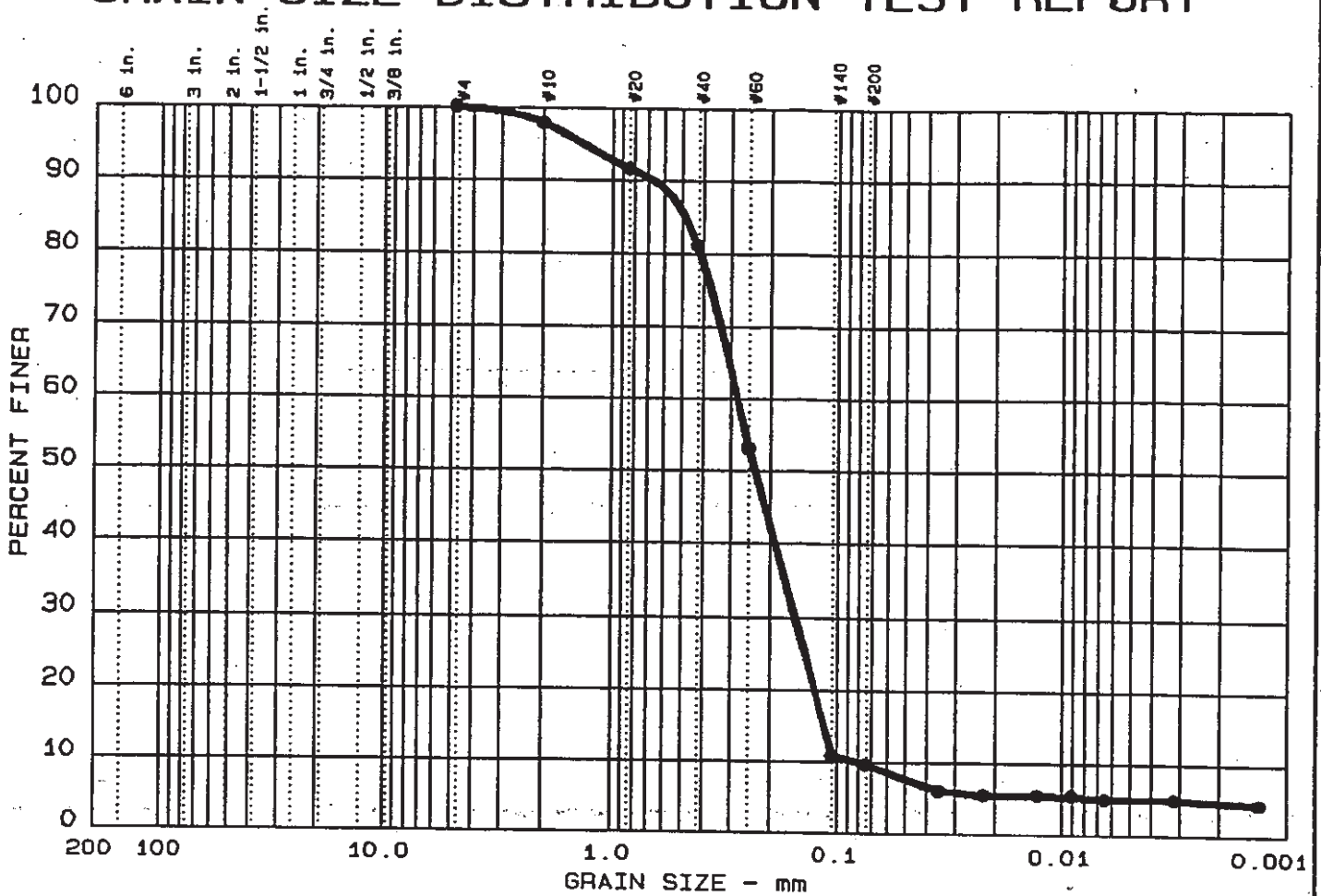
MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand	SP	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-27 @ 46.0-47.5 Ft.  
 Date: June 25, 1998

Remarks:  
 Tested by: *CS & SS*  
 Reviewed by: *KB*  
 Moisture Content = 15.2%  
 ASTM D422 & D2216



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 1	0.0	0.0	90.3	4.6	5.1

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.47	0.28	0.23	0.155	0.1139	0.0816	1.06	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-3

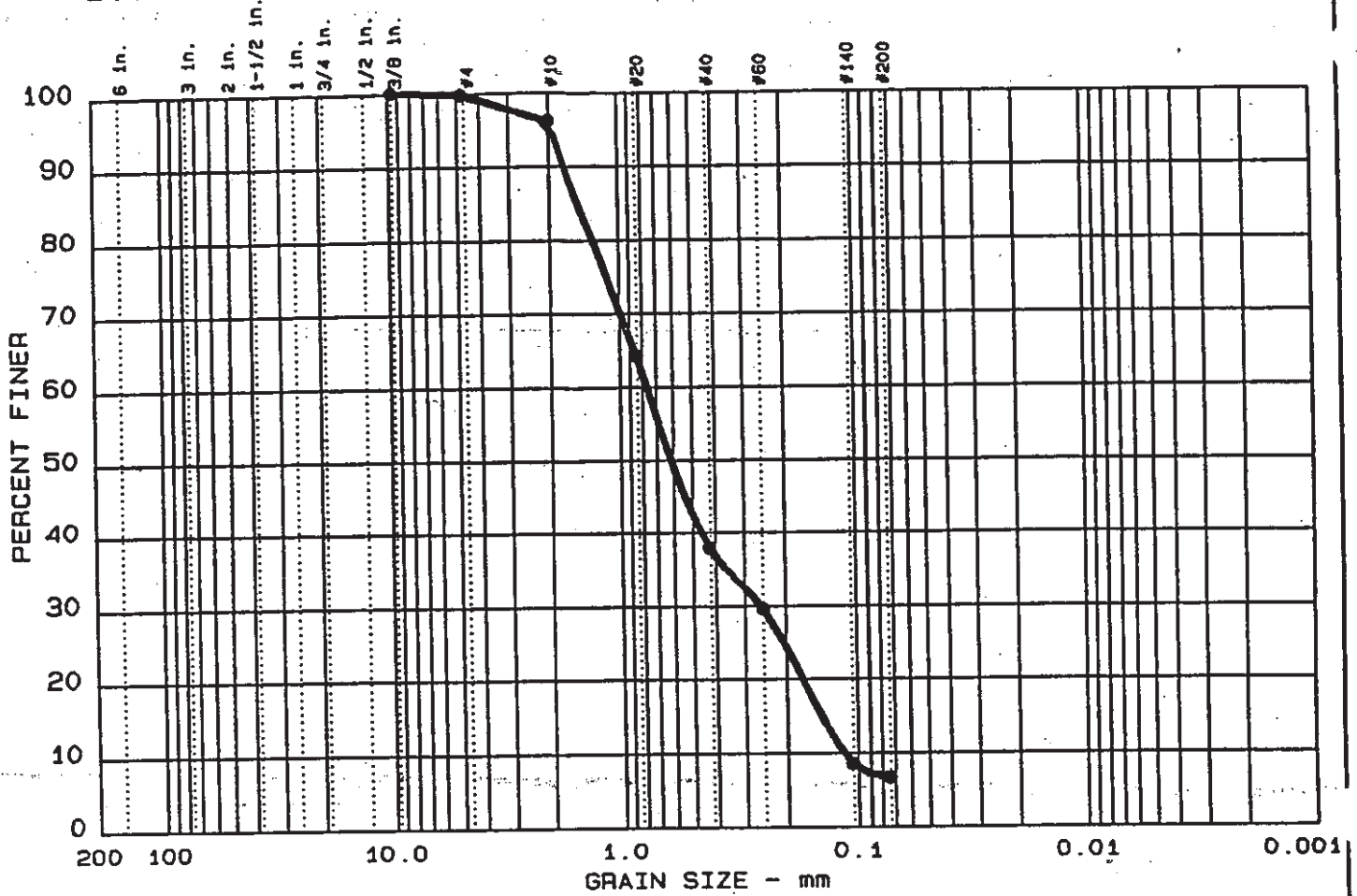
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-32 @ 53.5-55.0 Ft.  
 Date: July 9, 1998

Remarks:  
 Tested by: JTM/SC  
 Reviewed by: H  
 Moisture Content = 22.7%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 20	0.0	0.3	92.9	6.8	

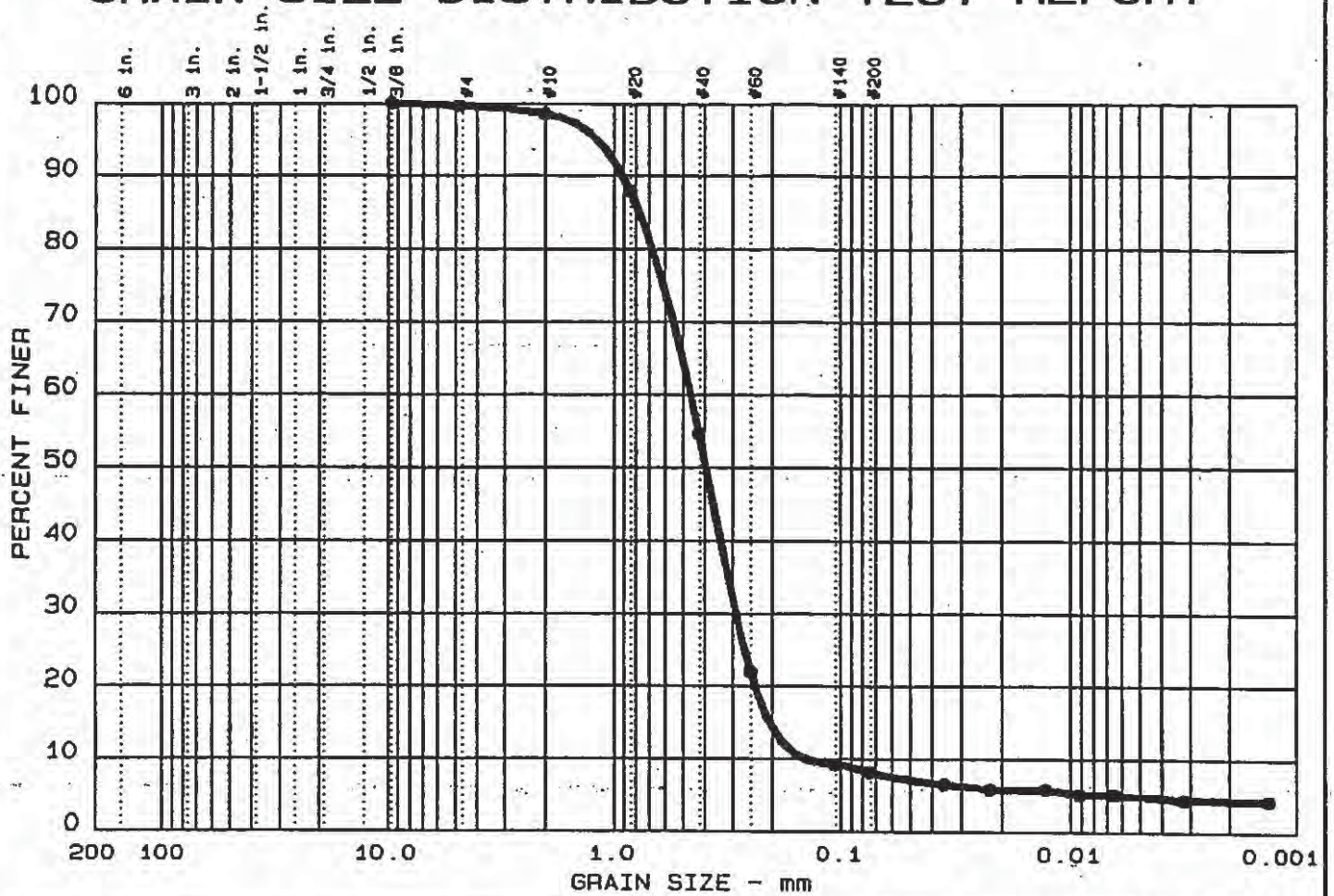
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
●		1.48	0.76	0.61	0.256	0.1422	0.1143	0.75	6.7

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-35 @ 58.0-59.5 Ft.  
 Date: June 23, 1998

Remarks:  
 Tested by: SC  
 Reviewed by: *[Signature]*  
 Moisture Content = 12.5%  
 ASTM D422 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT <sup>R/O</sup>



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 11	0.0	0.4	91.5	3.2	4.9

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
● 29	3	0.77	0.46	0.39	0.290	0.2054	0.1454	1.26	3.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Poorly Graded Sand with Silt	SP-SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-38 @ 62.9-64.4 Ft.

Date: July 9, 1998

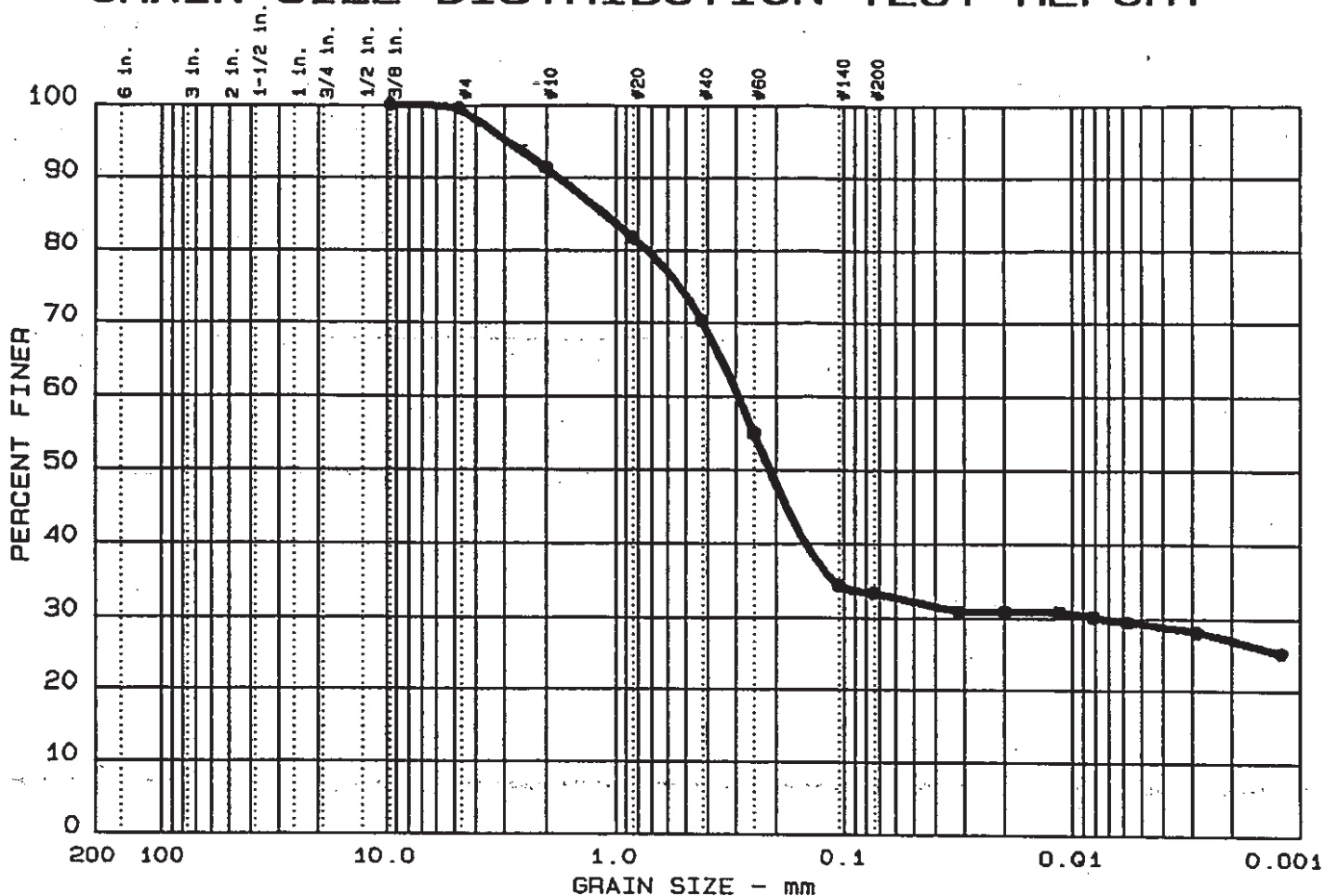
Remarks:  
 Tested by: JTM & SC  
 Reviewed by: HJ  
 Moisture Content = 19.5%  
 ASTM D422 & D4318

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 14	0.0	0.5	66.2	4.1	29.2

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 50	22	1.10	0.29	0.21	0.007				

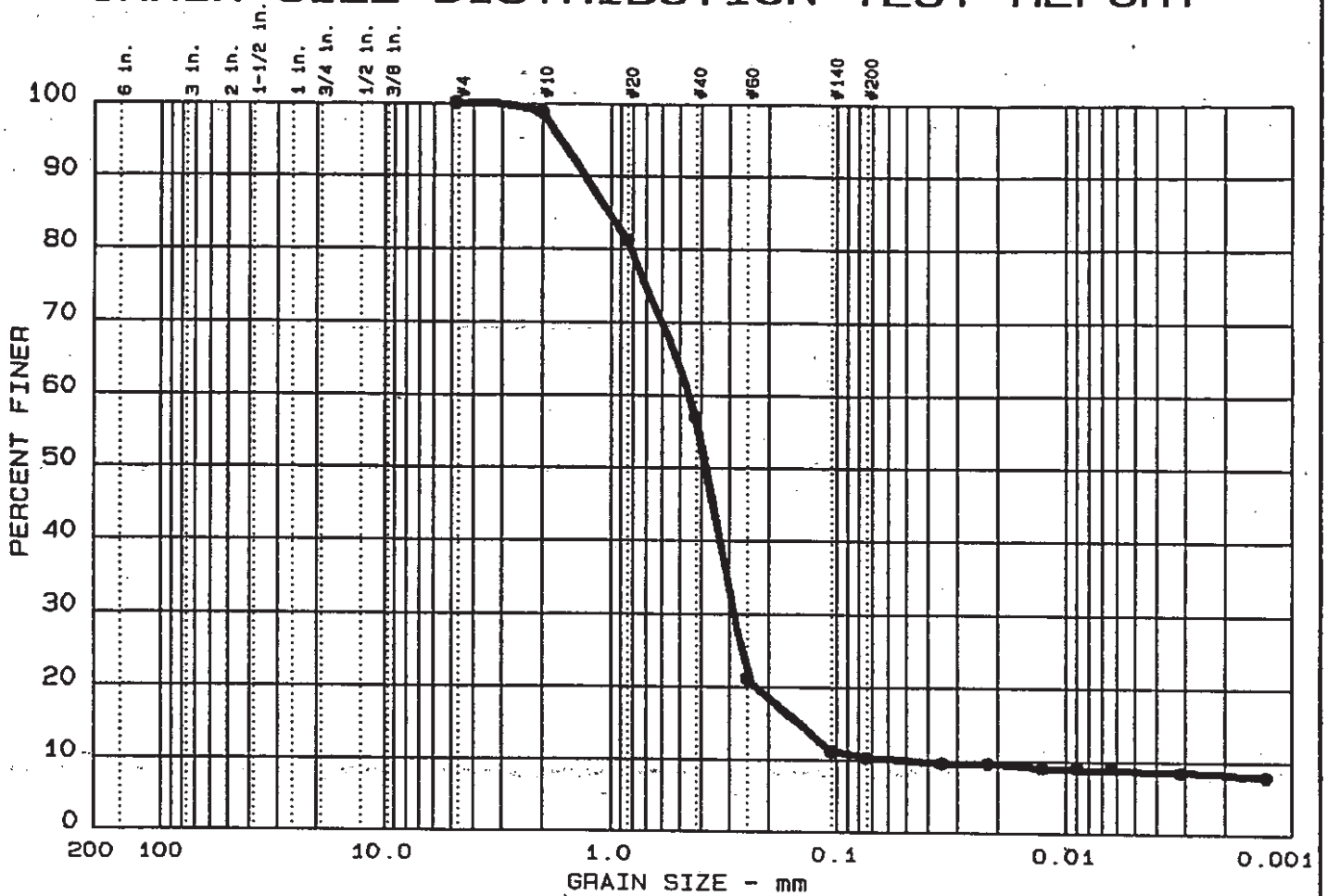
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Clayey Sand	SC	A-2-7 (2.2)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-42 @ 68.9-70.4 Ft.  
 Date: July 9, 1998

Remarks:  
 Tested by: SC JSM  
 Reviewed by: HJ  
 Moisture Content = 34.0%  
 ASTM D422 & D4318



## GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 12	0.0	0.0	89.6	1.7	8.7

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 47	24	1.01	0.45	0.38	0.284	0.1457	0.0466	3.86	9.6

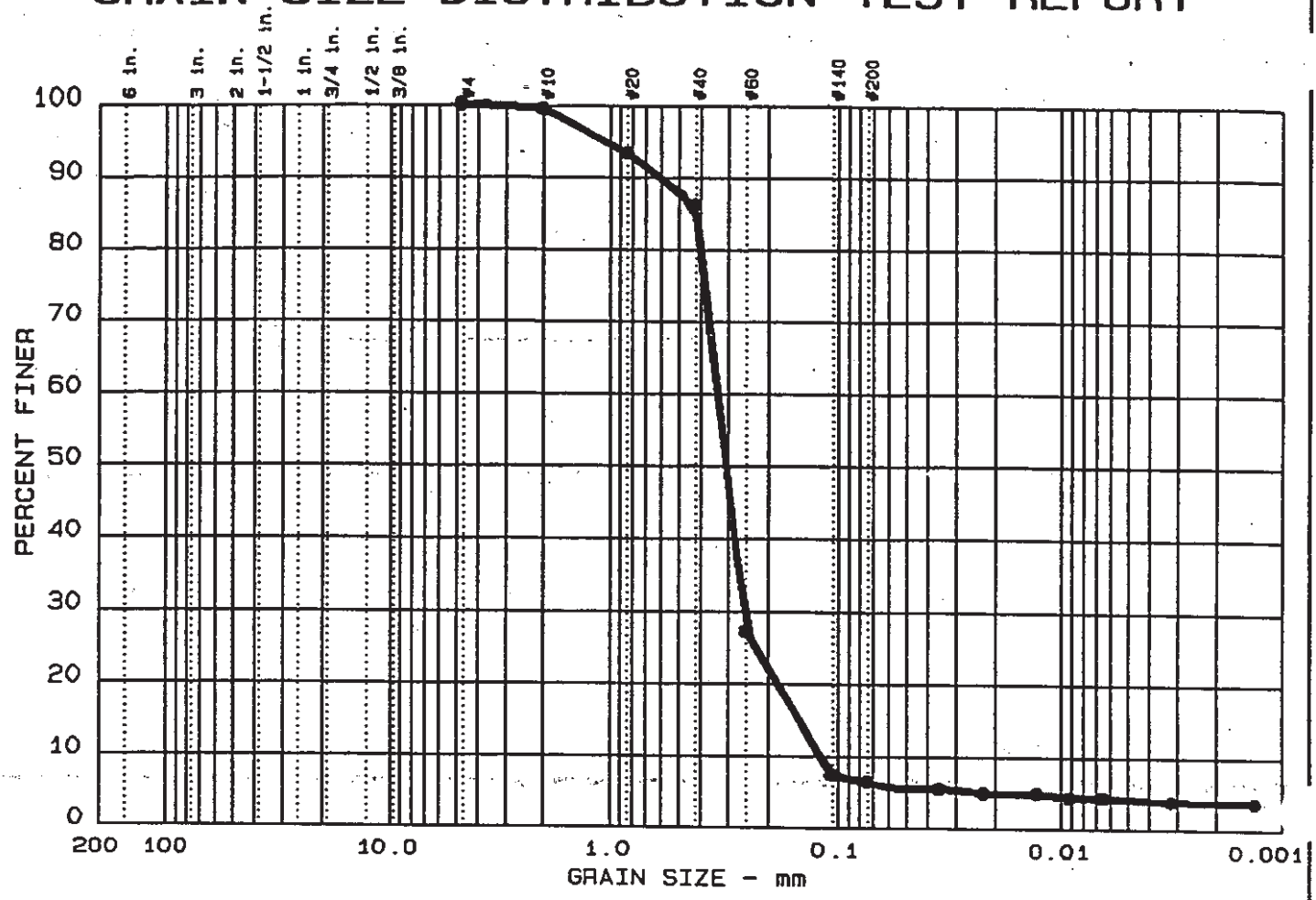
MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Clay	SP-SC	A-2-7 (0.0)

<p>Project No.: 50161-7-0108 Task 21                  Project: F-Area Northeast Expansion                  ● Location: FB-22 SS-44 @ 71.9-73.4 Ft.</p>	<p>Remarks:                  Tested by: <i>JTM/SC</i>                  Reviewed by: <i>W</i>                  Moisture Content = 22.3%                  ASTM D422 &amp; D4318</p>
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<p style="text-align: center;">GRAIN SIZE DISTRIBUTION TEST REPORT  <b>LAW ENGINEERING, INC.</b></p>	<p>Figure No.</p>
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B-345

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	0.0	93.5	2.2	4.3

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● NL	NP	0.41	0.33	0.31	0.256	0.1455	0.1169	1.68	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan-Brown-Poorly Graded Sand with Silt	SP-SM	A-3

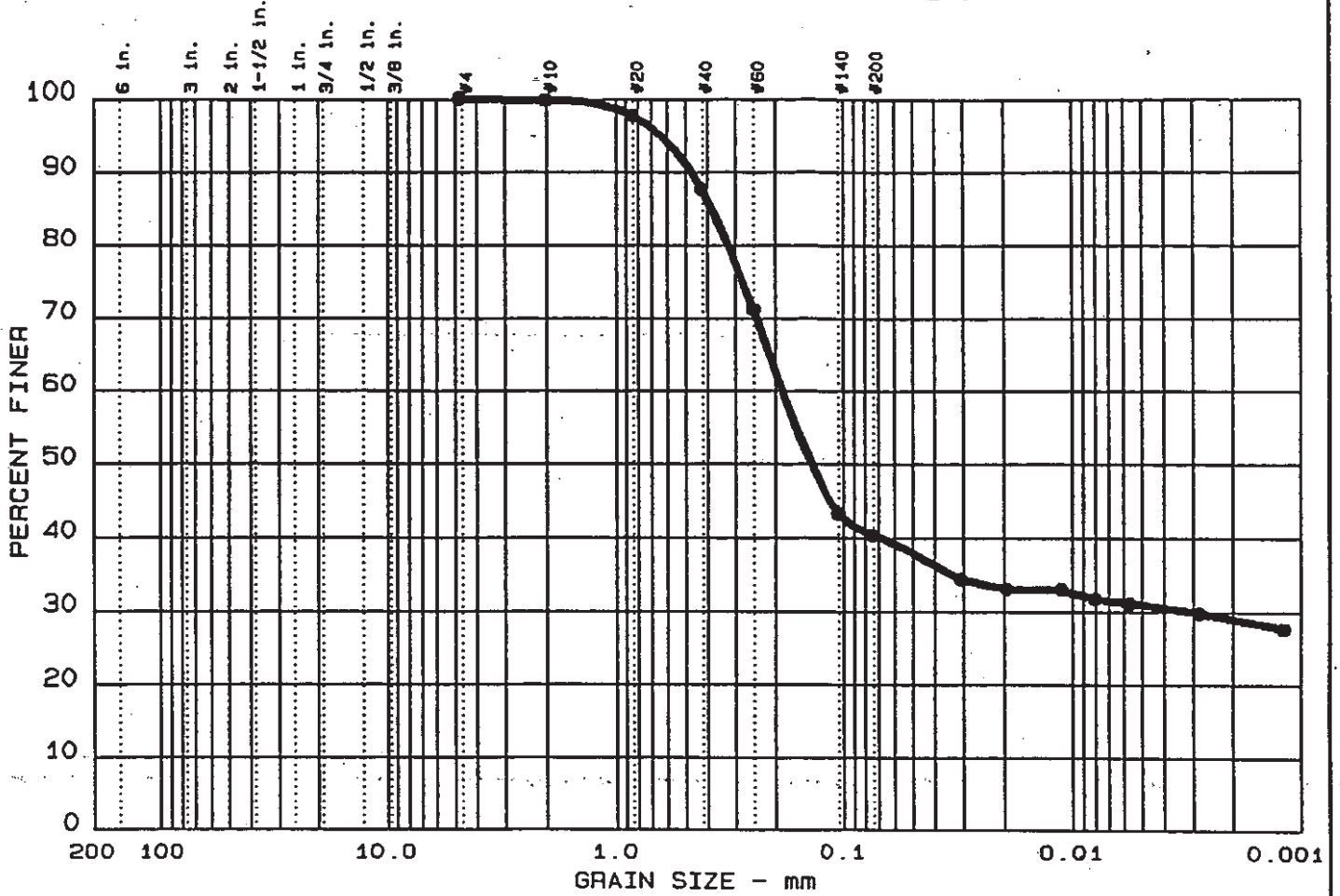
Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-45 @ 73.4-74.9 Ft.  
 Date: July 9, 1998

Remarks:  
 Tested by: *JTM*  
 Reviewed by: *H*  
 Moisture Content = 21.5%  
 ASTM D422, D4318 & D2216  
 Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**



# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 17	0.0	0.0	59.7	9.4	30.9

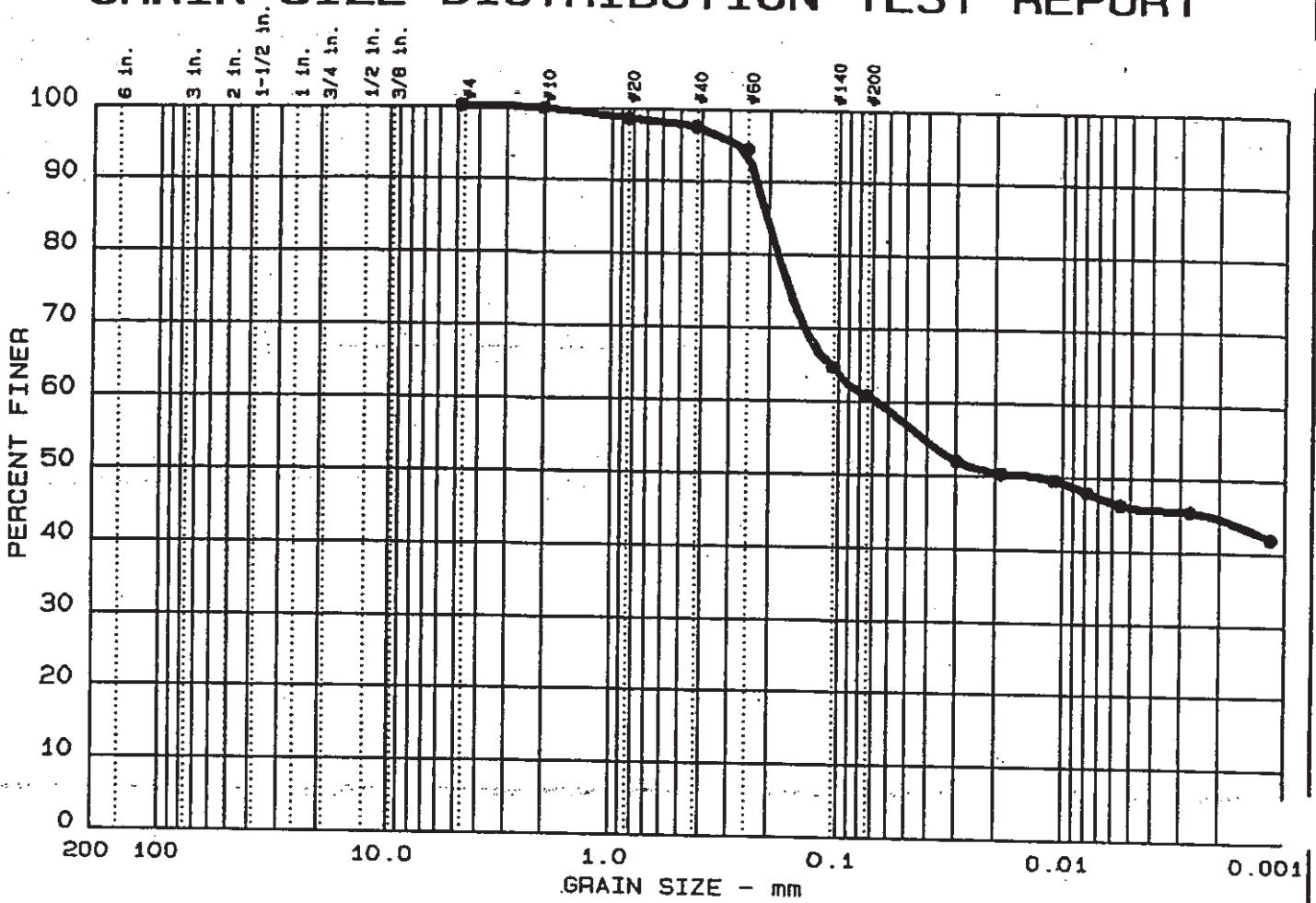
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 37	14	0.38	0.19	0.14	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown & Black Clayey Sand	SC	A-6 (1.9)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-49 @ 79.4-80.9 Ft.  
 Date: July 9, 1998

Remarks:  
 Tested by: JTM & SS  
 Reviewed by: [Signature]  
 Moisture Content = 38.4%  
 ASTM D422 & D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 15	0.0	0.0	39.2	14.8	46.0

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 74	40	0.20		0.01					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Fat Clay	CH	A-7-5 (23.4)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-50 @ 80.9-82.4 Ft.  
 Date: July 9, 1998

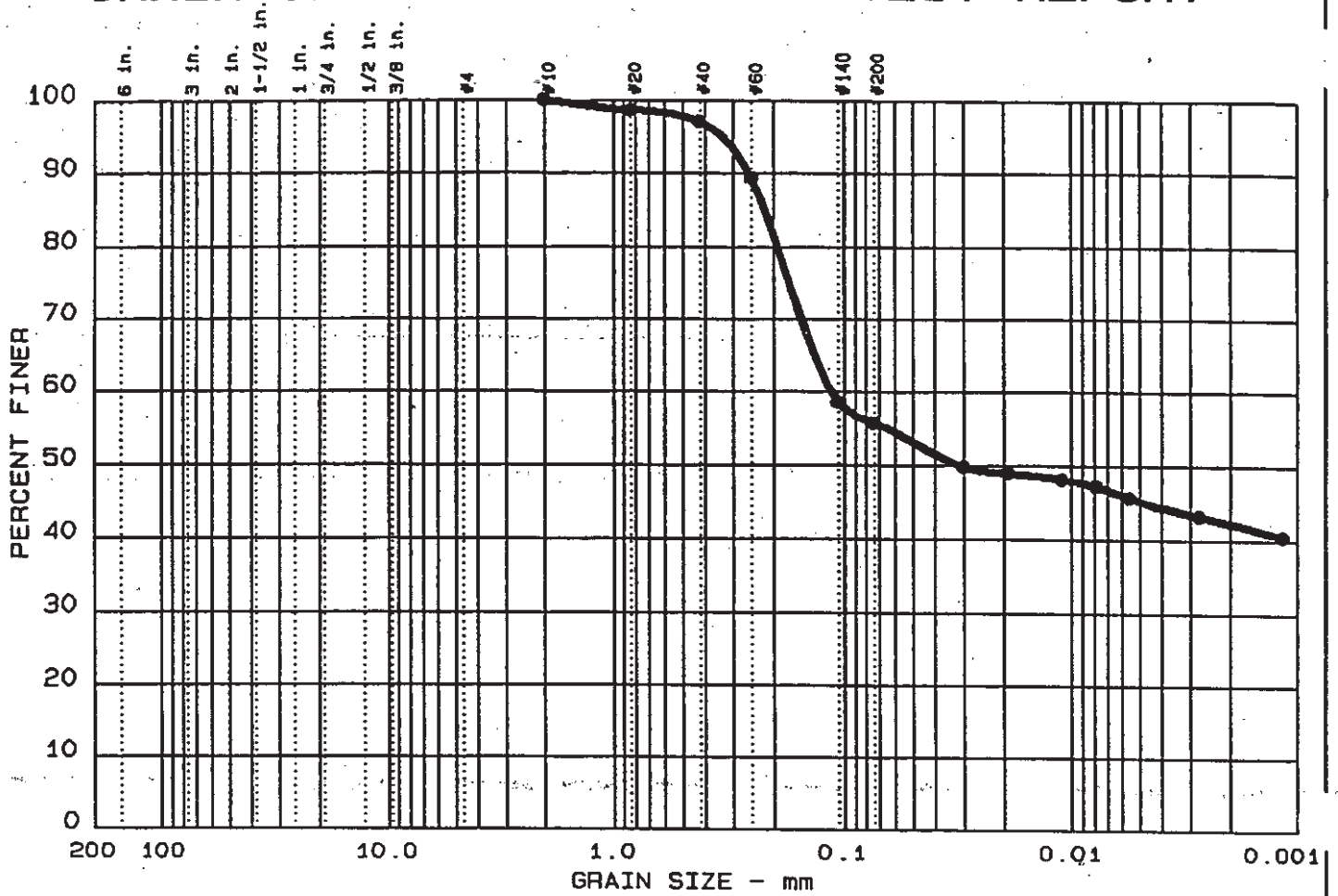
Remarks:  
 Tested by: *SCHSTM*  
 Reviewed by: *RF*  
 Moisture Content = 51.1%  
 ASTM D422 & D4318

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.



# GRAIN SIZE DISTRIBUTION TEST REPORT R/O



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 18	0.0	0.0	44.3	10.6	45.1

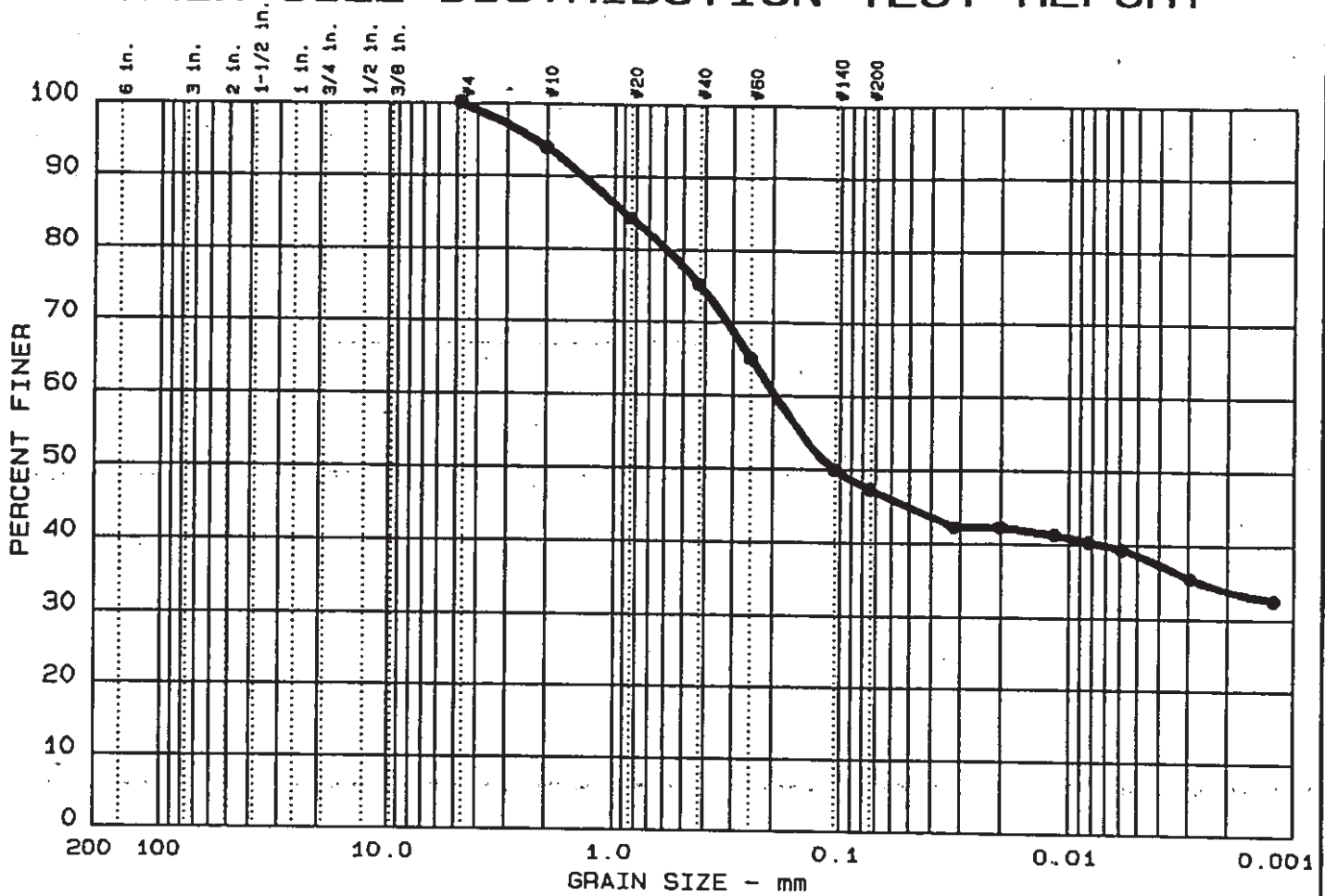
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
● 63	34	0.22	0.11	0.03					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Sandy Fat Clay	CH	A-7-6 (16.5)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-52 @ 84.6-86.1 Ft.  
  
 Date: July 9, 1998

Remarks:  
 Tested by: *SC/DTH*  
 Reviewed by: *HD*  
 Moisture Content = 54.2%  
 ASTM D422 & D4318

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	52.8	8.7	38.5

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
82	45	0.88	0.19	0.11					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Silty Sand	SM	A-7-5 (16.1)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-53 @ 86.1-87.6 Ft.  
 Date: July 5, 1998

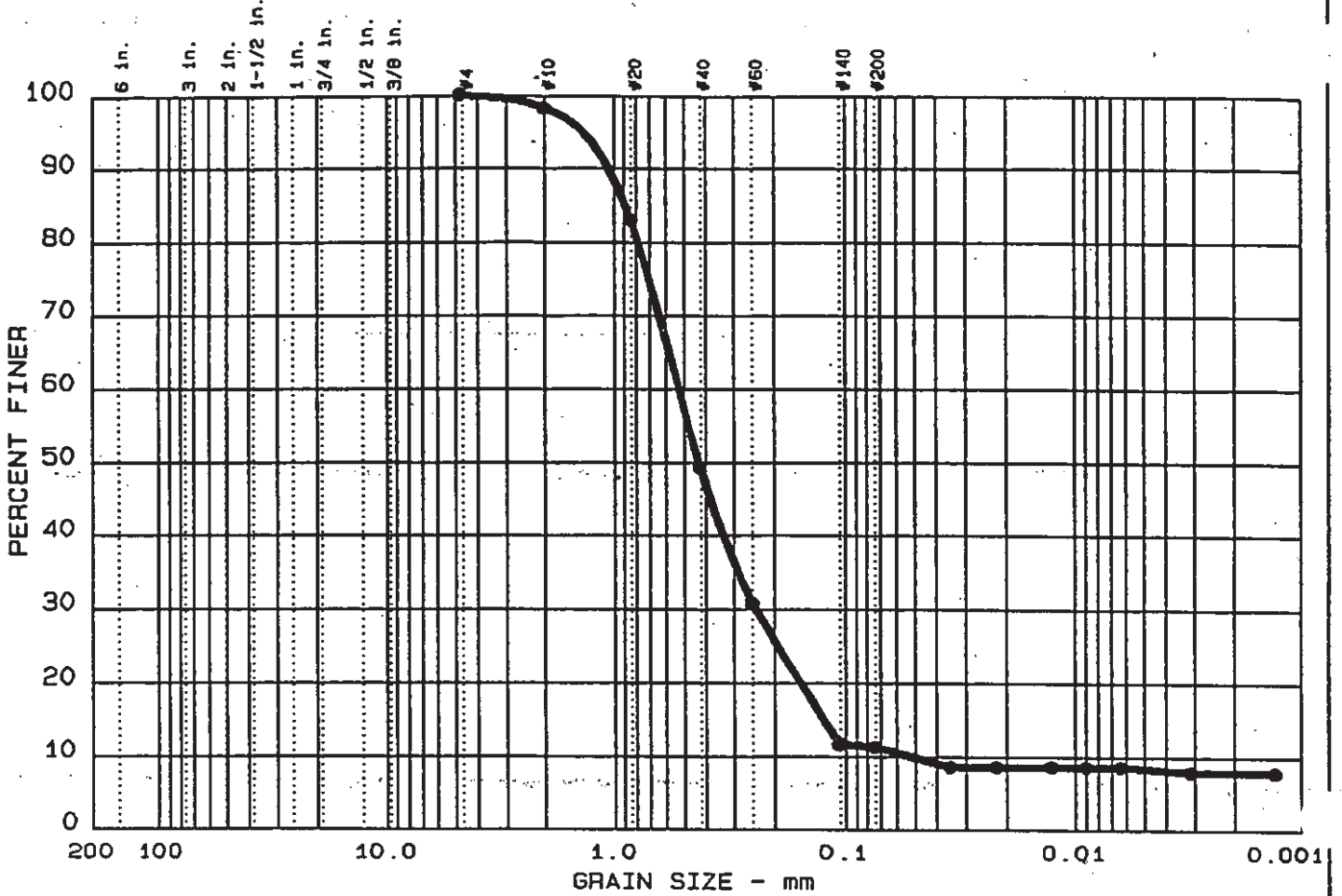
Remarks:  
 Tested by: *SCJ/DM*  
 Reviewed by: *WJ*  
 Moisture Content = 67.7%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.

R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	88.8	2.8	8.4

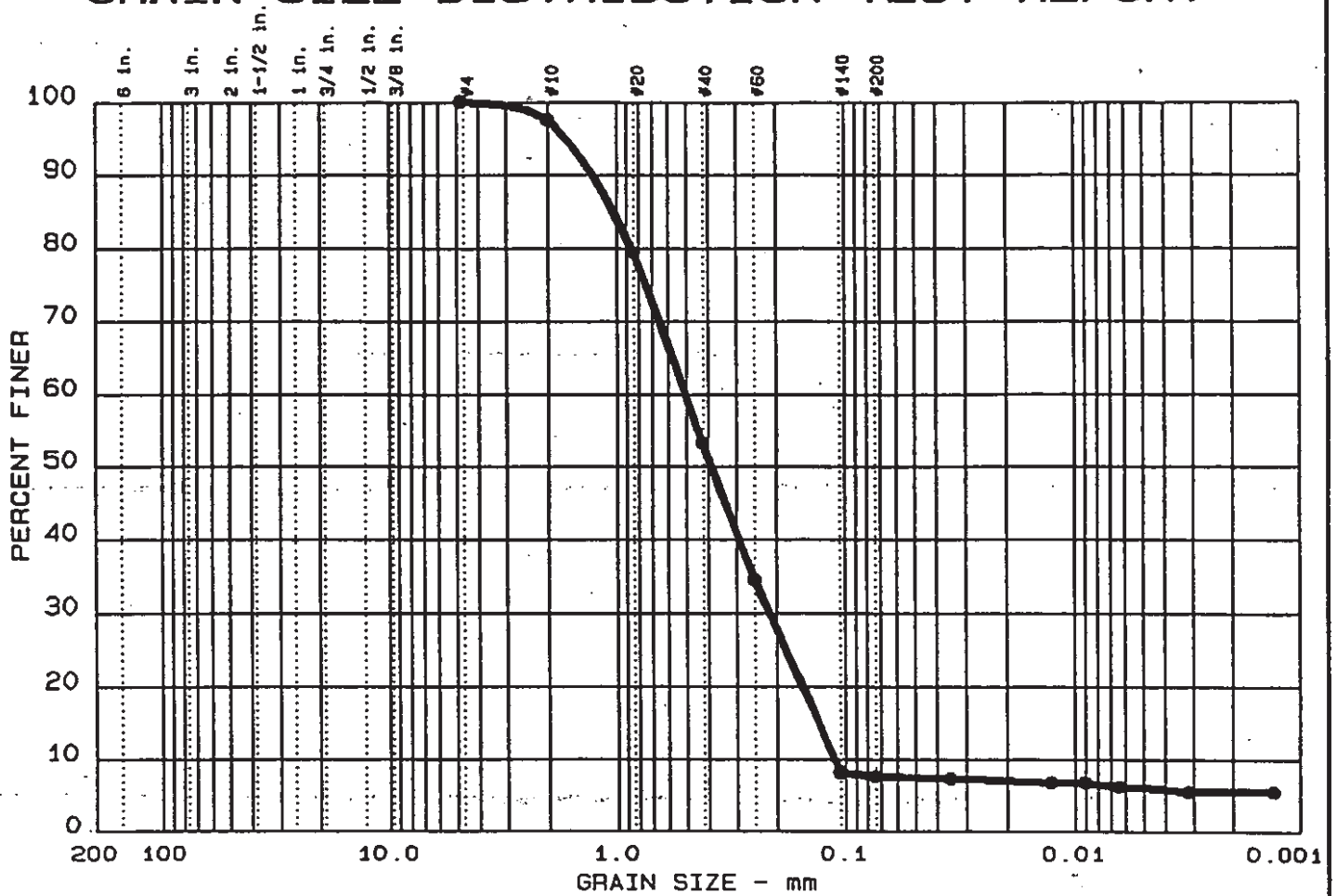
LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.88	0.52	0.43	0.243	0.1216	0.0513	2.20	10.2

MATERIAL DESCRIPTION	USCS	AASHTO
• Tan Brown Well Graded Sand with Silt	SW-SM	A-1-b

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 • Location: FB-22 SS-54 @ 88.0-89.5 Ft.  
  
 Date: July 5, 1998

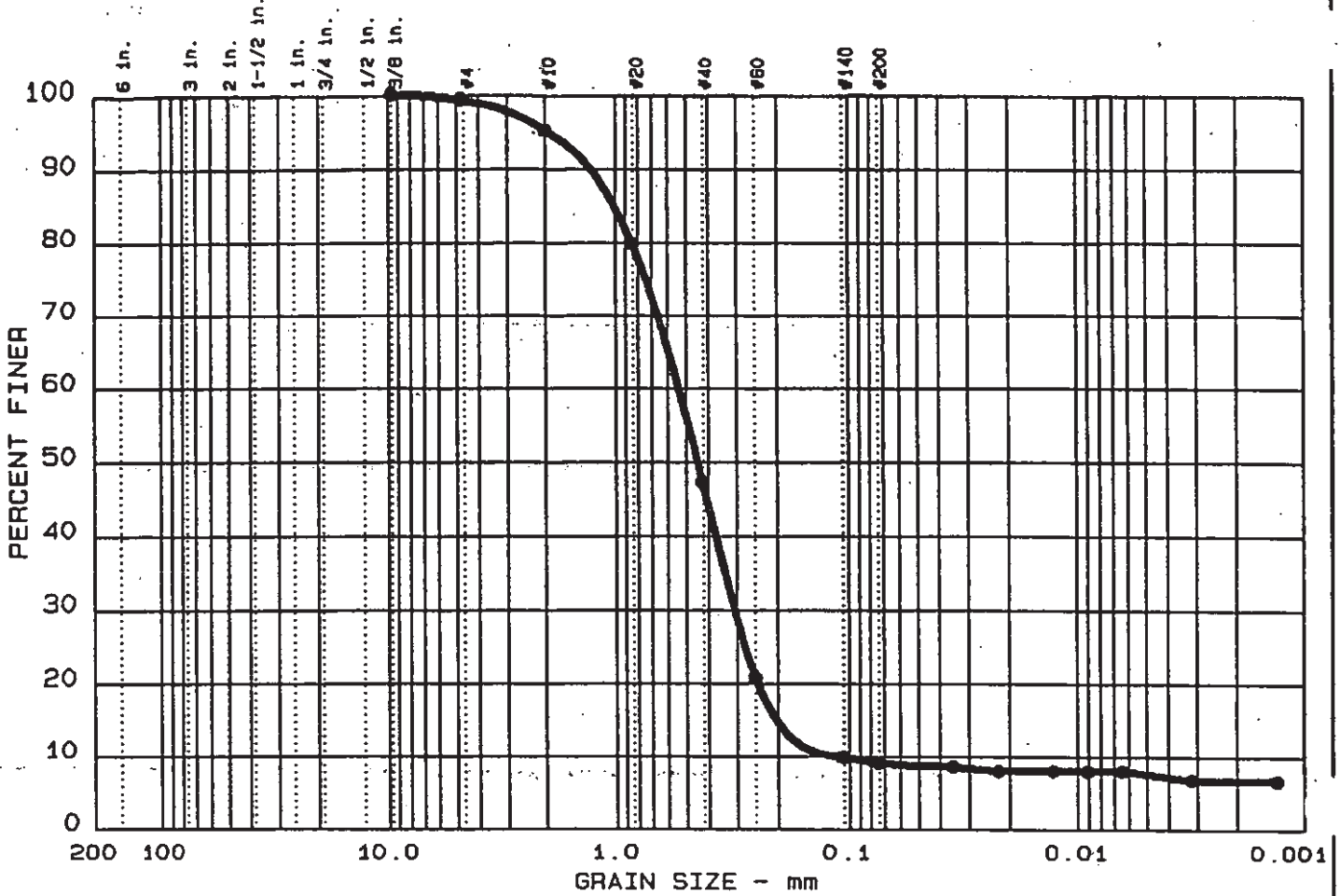
Remarks:  
 Tested by: *SC & DM*  
 Reviewed by: *VP*  
 Moisture Content - 30.1%  
 ASTM D422, D4318 & D2216

# GRAIN SIZE DISTRIBUTION TEST REPORT



K-TRT-F-00001  
R/O

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.6	90.2	1.5	7.7

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
50	27	1.00	0.53	0.44	0.307	0.2028	0.1102	1.61	4.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Poorly Graded Sand with Clay	SP-SC	A-2-7 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-58 @ 94.0-95.5 Ft.  
 Date: July 5, 1998

Remarks:  
 Tested by: *SCJ/UM*  
 Reviewed by: *HP*  
 Moisture Content = 30.1%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

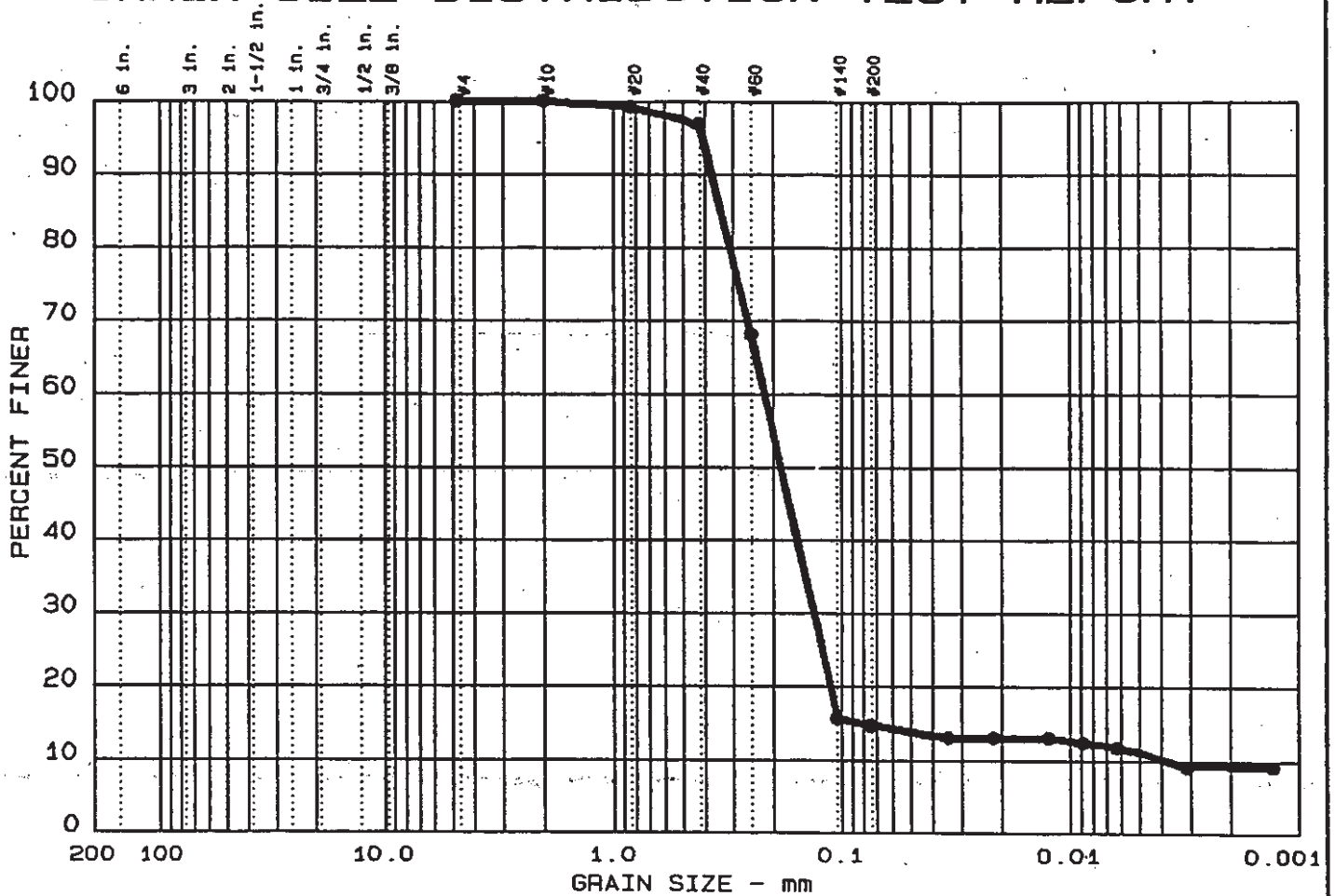
Figure No.







# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	85.3	3.6	11.1

LL	PI	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
NL	NP	0.34	0.22	0.19	0.133	0.0811	0.0037	21.90	58.8

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan Brown Silty Sand	SM	A-2-4 (0.0)

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 ● Location: FB-22 SS-62 @ 100.0-101.5 Ft.

Date: July 5, 1998

Remarks:

Tested by: *SCJ/TM*

Reviewed by: *HP*

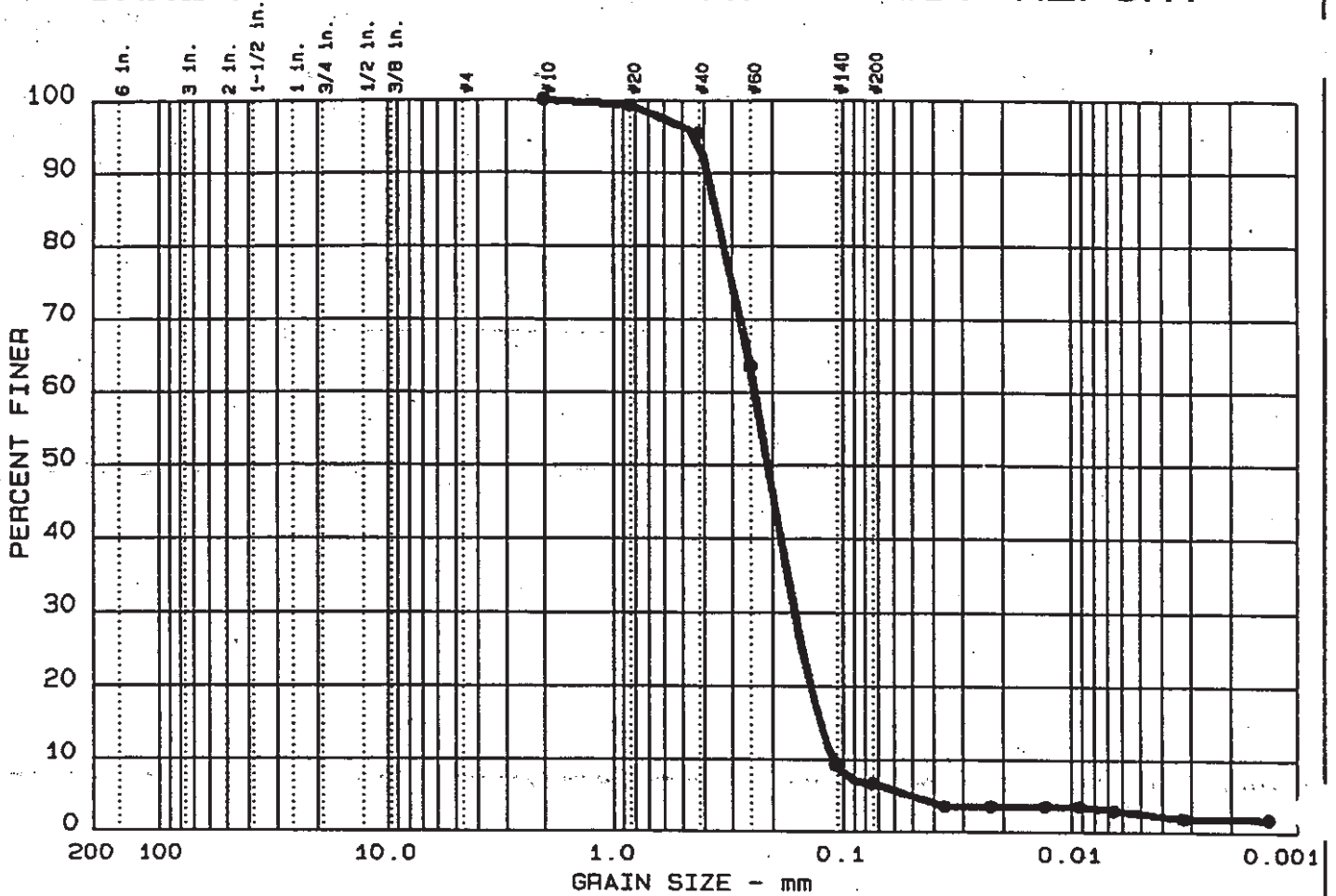
Moisture Content = 34.9%

ASTM D422, D4318 & D2216

Figure No.

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

# GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	93.3	4.2	2.5

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
NL	NP	0.35	0.24	0.21	0.161	0.1237	0.1078	1.00	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
Tan Brown Poorly-Graded Sand with Silt	SP-SM	A-3

Project No.: 50161-7-0108 Task 21  
 Project: F-Area Northeast Expansion  
 Location: FB-22 SS-64 @ 103-104.5 Ft.  
 Date: July 5, 1998

Remarks:  
 Tested by: *SCJ/JM*  
 Reviewed by: *HB*  
 Moisture Content = 23.9%  
 ASTM D422, D4318 & D2216

GRAIN SIZE DISTRIBUTION TEST REPORT  
**LAW ENGINEERING, INC.**

Figure No.