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GEOTECHNICAL | CONSTRUCTION | ENVIRONMENTAL
ENGINEERS and SCIENTISTS

August 4, 2015
File No. 750-09.18

Mr. Christopher Benda, P.E.
Vermont Agency of Transportation (VTrans)
Construction and Materials Bureau Central Lab
2178 Airport Road, Building B
Berlin, VT 05641

Email: Chris.Benda@state.vt.us

Re: Geotechnical Data Report
Hinesburg HES021-1(19)
Roadway, Signal Mast Arm, and Culvert Enhancements/Improvements
Hinesburg, VT

Dear Chris:

We are pleased to provide the following geotechnical data report for the proposed roadway, signal mast arm, and culvert enhancements/improvements at the intersection of Vermont Route 116 and Town Highways 1 and 7 in Hinesburg, Vermont.

This report includes a summary of soil boring and rock coring explorations performed at this site, subsurface findings, and laboratory testing results.

We completed these services at your request under our On-Call Geotechnical Engineering Services Contract Number PS0171 (EA number 0211019-100), and in accordance with our proposal dated May 14, 2015.

BACKGROUND

We understand that VTrans will be performing roadway enhancements/improvements consisting of four new mast arm signals, a new culvert, roadway widening, and the addition of turning lanes on Vermont Route 116 in Hinesburg at the Intersection of Town Highways 1 and 7 (Shelburne Falls and CVU Roads, respectively). VTrans has requested soil borings, rock coring (where necessary), and a data report for the proposed improvements. VTrans provided the proposed soil boring locations and depths. A Site Location Plan is shown on Figure 1 in Attachment 1.

GEOLOGIC SETTING

The project location is on Vermont Route 116 in Hinesburg at the Intersection of Town Highways 1 and 7 (Shelburne Falls and CVU Roads, respectively). The project site generally slopes down to the west from hills located to the southeast and northeast of the intersection. Marshlands are present to the north of the intersection where the existing culvert passes under Vermont Route 116.

Surficial soils mapped in the site vicinity include clay with boulders, glacial till, and exposed bedrock (Natural Resources Atlas, Vermont Agency of Natural Resources, 2015). Bedrock at the site is mapped as a predominantly vitreous quartzite and sandy dolostone members (Natural Resources Atlas, Vermont Agency of Natural Resources, 2015).

Bedrock and natural soils encountered in our explorations generally matched mapped conditions.

TEST BORINGS

Twelve test borings (B1 through B8, B1-RC, B2-RC, B5-ST, and B7-ST) were drilled between May 26 and June 3, 2015. Test borings were drilled at the approximate locations shown on the attached explorations location plans (Figures 2A through 2C in Attachment 1). As-drilled locations shown on these plans were offset where necessary from locations proposed by VTrans due to the presence of utilities at the intended locations and/or drill rig access constraints.

Boring location B1 consisted of 5 probes performed along a +/- 56 foot long portion of the road, none of which were able to advance past 3 feet deep due to repeated refusals on inferred bedrock. Refer to the boring log for details.

Borings labeled B1-RC, B2-RC, B5-ST, and B7-ST were drilled next to the location of the primary borings (B1 through B8) to obtain either a rock core (RC) or undisturbed tube sample (ST).

Borings were drilled to depths of refusal (B1 probes), 25 feet (B2 through B5 and B8), and 35 feet (B6 and B7). Sampling was performed in accordance with MREI 10-01 for borings B2 through B5 (at the proposed signal mast arms). Elsewhere sampling was performed semi-continuously through the upper 15 feet and at 5 foot intervals thereafter.

Borings B1, B2, B4 through B8, B5-ST, and B7-ST were drilled by Platform Environmental Drilling and Remediation Services using a Geoprobe 7720DT rubber tracked rig equipped with an automatic hammer. Borings were advanced using hollow stem augers.

Borings B1-RC, B2-RC, and B3 were drilled by SJB Services, Inc. using a CME 550X rubber tired ATV rig equipped with an automatic hammer. Borings were advanced using hollow stem augers and rock coring was performed using rotary wash methods.

Split spoon samples were collected in general accordance with the Standard Penetration Test (SPT) per ASTM D 1586. Blow counts are recorded on the logs. Shelby tube samples were collected in general accordance with ASTM D 1587 (Thin-Walled Tube Sampling). Recovery, pocket torvane test results, and sample descriptions are provided on the logs. Geo**Design** personnel coordinated, observed, and logged all soil explorations on a full-time basis. Refer to Attachment 2 for boring logs.

NX rock cores were obtained in borings B1-RC, B2-RC, and B3 where bedrock was initially inferred based on hollow stem auger refusals. Five feet of rock coring was performed at each of these locations. Geo**Design** personnel coordinated, observed, and logged all rock explorations on a full-time basis.

LABORATORY TESTING

Classification Tests

VTrans performed soil gradation sieve analyses, moisture content determinations, and Atterberg Limits testing (when applicable) on the majority of samples collected from the borings. Refer to Attachment 3 for VTrans laboratory testing results.

Consolidation Testing

Two Shelby tube samples (B5-ST, ST-1 and B7-ST, ST-1) were sent to GeoTesting Express for one-dimensional consolidation testing. The testing results were directly used to determine values for coefficient of at-rest earth pressure (K_0) for the cohesive soil layers based on correlations between overconsolidation ratio (OCR), plasticity index (PI), and K_0. The results of the consolidation testing were also used to characterize the stress history and sensitivity of the Silty Clay stratum. Understanding this stress history and sensitivity of the stratum was necessary in interpreting strength testing results and assigning strength parameters. Refer to Attachment 3 for GeoTesting Express consolidation testing results.

Note that while the consolidation test results for the B5-ST, ST-1 test specimen are provided, Geo**Design** concluded that the results from this test are not representative of the true soil characteristics of this stratum. Based on discussions with GeoTesting personnel, pieces of gravel dispersed throughout the soil matrix were recovered in B5-ST, ST-1 which they observed while extruding the bottom portion of the sample.

Based on the shape of the curve, we believe it is likely that sand and/or gravel was present within the consolidation ring, which resulted in a curve not representative of the consolidation characteristics of the clay. Given the prevalence of granular material observed in the extruded portion of the tube, we decided that obtaining another test specimen free of granular material from this sample was unlikely and was not attempted.

Consolidated Undrained Triaxial Compression Testing

Consolidated isotopically undrained compression testing (CIUC) testing was performed on the B7-ST, ST-1 sample which was collected in the Silty Clay stratum. CUIC testing was performed at uniform cell pressures of 500 psf, 1000 psf, and 1500 psf to estimate soil parameters. Refer to Attachment 3 for GeoTesting Express CIUC testing results. Testing results provided a highly non-linear failure envelope over the range was tested. This combined with liquidity index values greater than 1, a relatively high OCR (4) and weight-of-hammer sampling resistance are indicative of overconsolidated, sensitive clay. Given the irregularity in the failure envelope for these types of clays, the strength parameters of effective cohesion (c'), effective friction angle (Φ'), and undrained shear strength (S_u) can vary significantly with change in normal stress. As such, we recommend the value for these parameters provided in the Subsurface Conditions section below be considered accurate only for normal stresses between 1000 psf to 1500 psf.

It is important to note that the values of c', Φ', and S_u shown for the Reworked Clay Fill and Sandy Clay & Silt soil layers (see Subsurface Conditions section below), are conservatively based on the CIUC and consolidation testing performed on the B7-ST, ST-1 undisturbed tube sample which was collected in the Silty Clay stratum. This was done due to the lack of test specimen to perform suitable triaxial testing on these strata.

SUBSURFACE CONDITIONS

Refer to the boring logs provided in Attachment 2 for the subsurface conditions encountered at each individual location. The generalized subsurface profile observed in the borings is summarized in Table 1 and discussed below. Density/consistency and material composition descriptions are based on field recorded SPT N-values (not corrected for hammer efficiency or overburden pressure) and visual field classifications, respectively.

Table 1 – Subsurface Profile Summary

Soil Boring	General Fill	Reworked Clay Fill	Silt & Clay with Organics	Sandy Clay & Silt	Silty Clay	Gravelly Sand & Silt	Glacial Till	Bedrock
B1	Up to 3’	-	-	-	-	-	-	@ 1.5’ to 3’
B2	-	0’ to 2’	-	2’ to 4’	4’ to 7.5’	7.5’ to 15’	15’ to 22’ (3)	@ 22’ (3)
B3	0’ – 4’	-	-	4’ to 6.8’	-	6.8’ to 10’	10’ to 22.8’	@ 22.8’
B4	-	0’ to 5.5’	-	-	-	5.5’ to 12’	12’ to 25.5’	-
B5	0’ to 2’	2’ to 8’	-	13’ to 15’ (4)	8’ to 13’	15’ to 17'	17’ to 25.4’	-
B6	0’ to 6.5’	-	6.5’ to 12’	12’ to 15’	15’ to 17’	-	17’ to 36.5’	-
B7	-	0’ to 2’	-	15 to 17.5’	2’ to 15’	-	17.5’ to 35.3’	-
B8	0’ to 7’	-	7’ to 12’	-	-	12’ to 17’	17’ to 26’	-

Table 1 Notes:

1) Transition depths to different strata are approximate and were estimated from sample descriptions, auger cutting observations and drilling resistance. See the boring logs for details.
2) A dash (-) indicates the stratum was not encountered.
3) Depths indicate those encountered in B2-RC. Boring B2 encountered auger refusal at 18’ deep.
4) Sandy Clay & Silt is inferred at the transition between the Silty Clay and Gravelly Sand & Silt strata in Boring B5 based on testing laboratory (GeoTesting Express) personnel reporting frequent sand and gravel embedded in the tube collected in the immediately adjacent B5-ST (performed at a 2’ offset from location B5). This layer was not observed in samples collected at location B5.

General Fill

General Fill was noted in Borings B1, B3, B5, B6, and B8 starting just below the asphalt or topsoil and extending to the depths depicted in Table 1. This layer typically consisted of sand with some gravel and little to some silt. Uncorrected SPT-N values in the General Fill ranged from 7 to 31 blows per foot (bpf), but were typically between 10 and 30 bpf, indicating a medium dense soil condition.

We recommend the following soil parameters be used for the General Fill strata for design of the mast arm foundations:

Avg. SPT $(N_1)_{60}$:	28 bpf
Cohesion (c):	0 psf
Internal friction angle (Φ):	30°
Moist Unit weight (γ):	120 pcf
Soil Modulus (k):	90 pci

Friction factor (against mass concrete) (f):	0.5
At-rest earth pressure coefficient (K_0):	0.5

Reworked Clay Fill

Reworked Clay Fill was noted in soil borings B2, B4, B5, and B7 starting just below the topsoil (or the General Fill for B5) and extending to the depths depicted in Table 1. The Reworked Clay Fill soils generally consist of clay and silt with trace to some fine to coarse sand and little to no fine gravel. Uncorrected SPT-N values in the Reworked Clay Fill were erratic, and ranged from 0 to 9 bpf indicating soil conditions ranging from very soft to stiff.

We recommend the following soil parameters be used for the Reworked Clay Fill strata for design of the mast arm foundations:

Avg. SPT $(N_1)_{60}$:	6 bpf
Effective Cohesion (c'):	650 psf *
Effective Internal friction angle (Φ'):	13° *
Undrained Shear Strength (S_u):	900 psf *
Moist Unit weight (γ):	110 pcf
Soil Modulus (k):	30 pci
Friction factor (against mass concrete) (f):	0.3
At-rest earth pressure coefficient (K_0):	1.0

** Refer to the "Laboratory Testing" section of this report for more detail regarding the use of these parameters. These values should be considered accurate only across the range of normal stresses between 1000 and 1500 psf.*

Silt & Clay with Organics

A layer of Silt & Clay with Organics was encountered below the fill soils north of the intersection (Borings B6 and B8) to the depths indicated on Table 1. The Silt & Clay with Organics generally consisted of silt and clay to clayey silt, with some fine to medium sand, occasional trace amounts of fine gravel, and organic matter (i.e., roots) observed dispersed throughout the strata. We inferred this layer to be a natural swampy deposit surrounding the adjacent brook that was filled over during the road construction. Uncorrected SPT-N values in this layer ranged from 3 to 6 blows per foot (bpf) indicating a soft to medium soil stiffness.

Soil parameters for the Silt & Clay with Organics stratum were requested by VTrans to assist the designer in proceeding with the new culvert design. These soil parameters are presented below. The culvert designer should give special consideration to the presence of organic matter observed within all samples collected in the stratum when evaluating its suitability for bearing.

Avg. SPT $(N_1)_{60}$:	6 bpf
Effective Cohesion (c'):	0 psf

Effective Internal friction angle (Φ'):	25°
Undrained Shear Strength (S_u):	600 psf
Moist Unit weight (γ):	115 pcf
Soil Modulus (k):	50 pci *
Friction factor (against mass concrete) (f):	0.3
At-rest earth pressure coefficient (K_0):	0.9

** Soil modulus (k) was estimated based on correlations between soil type and k_1 values determined from 1 foot by 1 foot plate load test. The soil modulus must be adjusted for factors such as width and shape of the loaded area and position under the foundation.*

Sandy Clay & Silt

A relatively thin (2' to 3' thick) layer of Sandy Clay & Silt was encountered below the fill soils in Borings B2 and B3 and below the Silt & Clay with Organics stratum in Boring B6 to the depths indicated in Table 1. This stratum was also encountered below the Silty Clay in Borings B7 and inferred below the Silty Clay in B5 and B5-ST (based on soil descriptions from GeoTesting personnel) at the transition to the Gravelly Sand & Silt stratum.

The material typically consisted of a relatively equal mixture of clay and silt and fine to coarse sand with trace to some fine to coarse gravel. Uncorrected SPT-N values of 0, 3, 7, and 10 bpf were recorded in this layer indicating a soft to stiff soil condition.

We recommend the following soil parameters be used for the Sandy Clay & Silt strata for design of the mast arm foundations:

Avg. SPT $(N_1)_{60}$:	8 bpf
Effective Cohesion (c'):	650 psf *
Effective Internal friction angle (Φ'):	13° *
Undrained Shear Strength (S_u):	900 psf *
Moist Unit weight (γ):	115 pcf
Soil Modulus (k):	100 pci
Friction factor (against mass concrete) (f):	0.33
At-rest earth pressure coefficient (K_0):	1.0

** Refer to the "Laboratory Testing" section of this report for more detail regarding the use of these parameters. These values should be considered accurate only across the range of normal stresses between 1000 and 1500 psf.*

Silty Clay

Silty Clay was encountered in Borings B2 and B6 below the Sandy Clay & Silt stratum and in Borings B5 and B7 below the Fill layer to the depths indicated on Table 1. This stratum generally consisted of silty clay to clay and silt with trace amounts of fine sand. Uncorrected SPT-N values in this stratum ranged from 0 to 6 bpf, but were typically less than 4 bpf indicating

a very soft to soft soil stiffness. As noted in the "Laboratory Testing" section in this report, this stratum exhibits characteristics of a sensitive clay. As such, the sensitivity of this stratum should be taken into consideration during design and construction.

We recommend the following soil parameters be used for the Silty Clay strata for design of the mast arm foundations:

Avg. SPT $(N_1)_{60}$:	3 bpf
Effective Cohesion (c'):	650 psf *
Effective Internal friction angle (Φ'):	13° *
Undrained Shear Strength (S_u):	900 psf *
Moist Unit weight (γ):	110 pcf
Soil Modulus (k):	30 pci
Friction factor (against mass concrete) (f):	0.20
At-rest earth pressure coefficient (K_0):	1.0

** Refer to the "Laboratory Testing" section of this report for more detail regarding the use of these parameters. These values should be considered accurate only across the range of normal stresses between 1000 and 1500 psf.*

Gravelly Sand & Silt

Gravelly Sand & Silt was encountered in Borings B2, B3, B4, B5, and B8 at the depths indicated on Table 1. The soil matrix in this stratum typically consisted of fine to coarse sand with some silt and little to some fine to coarse gravel. Uncorrected SPT-N values in the Gravelly Sand & Silt ranged from 10 to 34 bpf, but were typically between 10 and 20 bpf indicating medium dense soils.

We recommend the following soil parameters be used for the Gravelly Sand & Silt strata for design of the mast arm foundations:

Avg. SPT $(N_1)_{60}$:	29 bpf
Cohesion (c):	0 psf
Internal friction angle (Φ):	35°
Moist Unit weight (γ):	125 pcf
Soil Modulus (k):	100 pci
Friction factor (against mass concrete) (f):	0.5
At-rest earth pressure coefficient (K_0):	0.43

Glacial Till

Glacial Till was encountered in all soil borings with the exception of Boring B1 to the depths indicated on Table 1. This stratum generally consisted of fine to coarse sand some silt (varying to silt, some fine to coarse sand) with little fine gravel. Uncorrected SPT-N values in this stratum

ranged from 32 bpf to refusal (greater than 50 blows per 6”), but were typically greater than 50 bpf indicating a very dense soil.

We recommend the following soil parameters be used for the Glacial Till strata for design of the mast arm foundations:

Avg. SPT $(N_1)_{60}$:	83 bpf
Cohesion (c):	0 psf
Internal friction angle (Φ):	40°
Moist Unit weight (γ):	135 pcf
Soil Modulus (k):	125 pci
Friction factor (against mass concrete) (f):	0.5
At-rest earth pressure coefficient (K_0):	0.36

Bedrock

Bedrock was encountered in borings performed on the south side of the intersection only (Borings B1/B1-RC, B2/B2-RC, and B3). At least 5 feet of rock coring was performed in each location (B1 probes and B2 were terminated with auger refusals on inferred bedrock, with Boring B2-RC performed offset of the initial location to obtain rock core).

Bedrock consisted of relatively fresh, moderately hard to hard dolostone. The rock ranged from fair to excellent quality based on Rock Quality Designation (RQD) values of 58% to 100%, but was typically of fair quality (RQD between 50% and 75%). Refer to the rock core descriptions on the boring logs for detailed information.

Groundwater

Groundwater was inferred based on wet samples and or static levels within the augers after drilling between approximately 6 and 15 feet deep (corresponding to between approximately El. 360’ to 364’) in all locations with the exception of Borings B1 and B3 which did not encounter groundwater. In general, the groundwater gradient was observed to be from northeast to southwest.

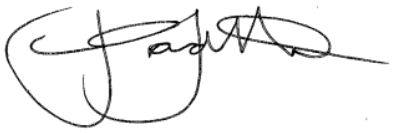
Groundwater conditions observed in the borings will likely vary from conditions which will be encountered during construction due to factors such as seasonal variations, temperature, rainfall, and other factors that differ from conditions at the time the subsurface explorations were made.

LIMITATIONS

This report is subject to the limitations included in Attachment 4.

Sincerely,

Geo**Design**, Inc.



Jacob F. Wimett, P.E.
Senior Project Engineer

Jason A. Gaudette, P.G., LEED AP
Senior Associate

Attachments:
Attachment 1 – Figures
Attachment 2 – Boring Logs
Attachment 3 – Laboratory Test Results
Attachment 4 – Limitations

ATTACHMENT 1 – FIGURES

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MIDDLEBURY, CT
BURLINGTON, VT

SITE LOCATION PLAN
HINESBURG HES 021-1(19)
HINESBURG, VT

FILE NO. 750-09.18

APPROXIMATE SCALE IN FEET
1" ≈ 150'

0 75 150 300

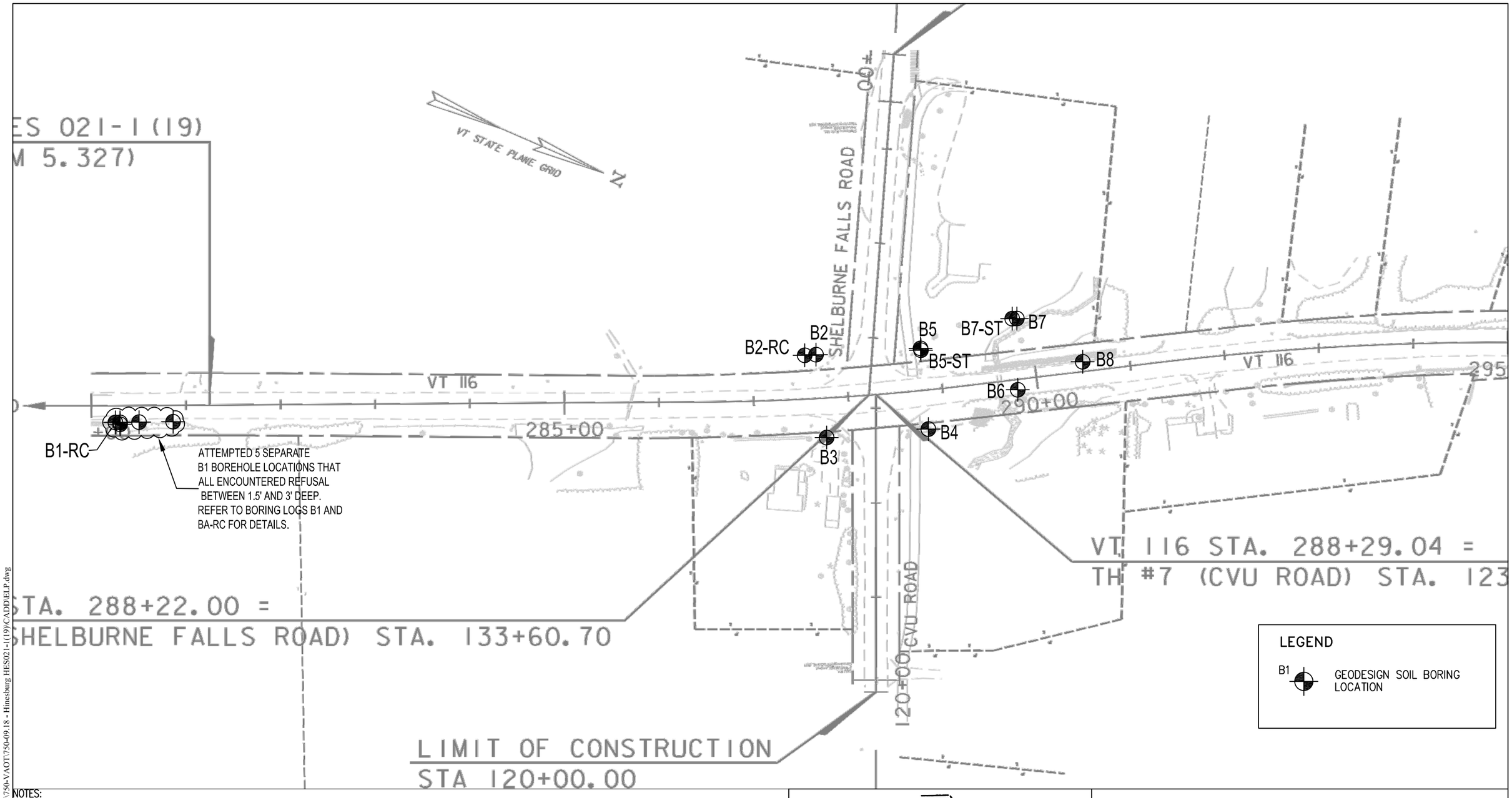
DATE: 07/14/15

DRAWN BY: JFW

REVIEWED BY: JAG

FIGURE NO. 1

CAD FILE No. O:\Client related\CL-700 to 799\750-VAOT\750-09.18 - Hinesburg HES021-1(19)\CADD\ELP.dwg



NOTES:

1. Exploration Location Plan derived from Sheet 1 of the Revised Preliminary Plans prepared by VHB dated 4/30/2015.
2. B–series soil boring locations shown are approximate, and are based on taped measurements and visual approximations from existing features made in the field by GeoDesign personnel. Locations should be considered accurate only to the degree implied by the method of location used.
3. All soil borings with the exception of B1–RC, B2–RC, and B–3 were performed by Platform Environmental Drilling and Remediation Services between May 26 and 29, 2015.
4. Soil borings B1–RC, B2–RC, and B3 were performed by SJB Services, Inc. between June 2 and 3, 2015.
5. All soil borings were observed and logged in the field by GeoDesign personnel.

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MIDDLEBURY, CT BURLINGTON, VT

DRAWN BY: JFW | REVIEWED BY: JAG

EXPLORATION LOCATION PLAN
HINESBURG HES 021-1(19)
HINESBURG, VT

FILE NO. 750-09.18

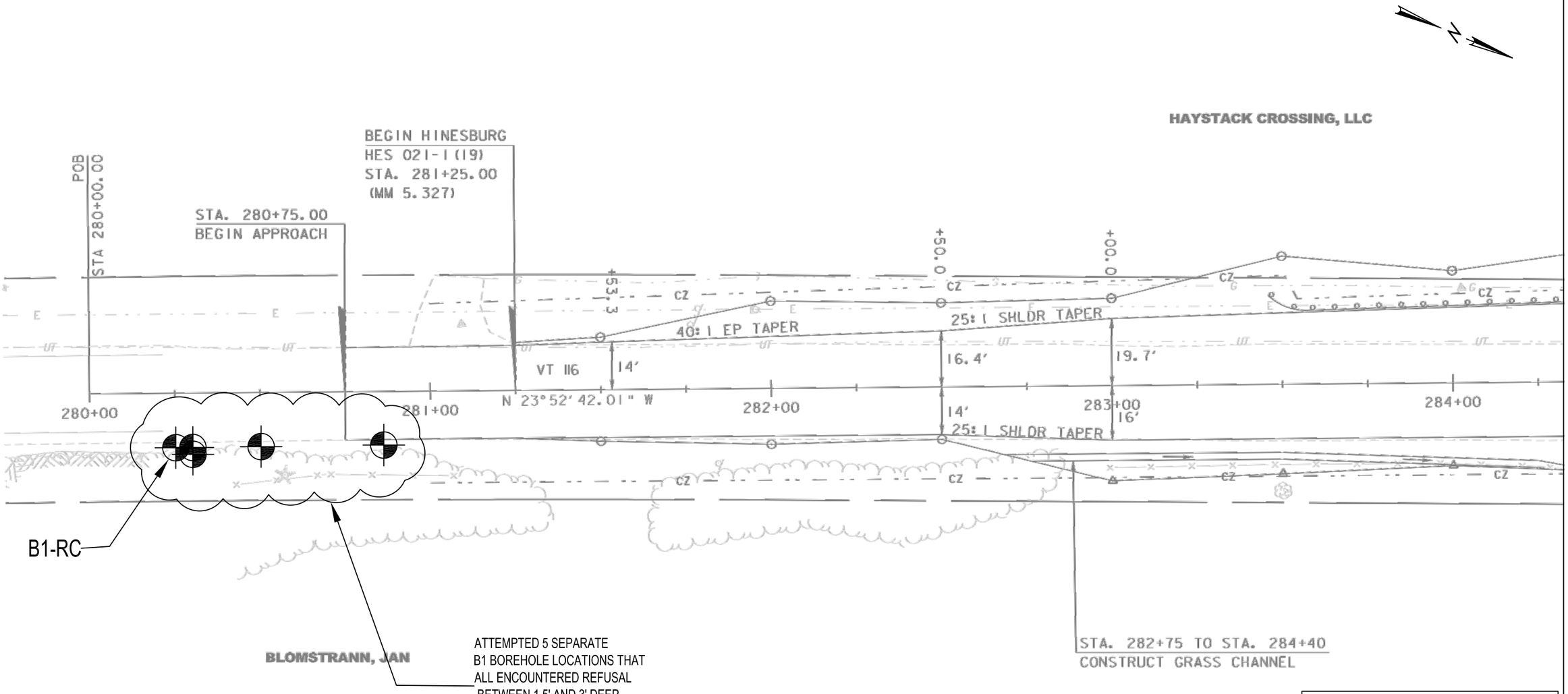
SCALE IN FEET
1" = 100'
0 50 100 200

DATE: 6/24/15

FIGURE NO. 2A

CAD FILE No. O:\Client related\CL-700 to 799\750-VAOT\750-09.18 - Hinesburg HES021-1(19)\CADD\ELP.dwg

HAYSTACK CROSSING, LLC



NOTES:

1. Exploration Location Plan (South) derived from Sheet 17 of the Revised Preliminary Plans prepared by VHB dated 4/30/2015.
2. B–series soil boring locations shown are approximate, and are based on taped measurements and visual approximations from existing features made in the field by GeoDesign personnel. Locations should be considered accurate only to the degree implied by the method of location used.
3. All soil borings with the exception of B1–RC, B2–RC, and B–3 were performed by Platform Environmental Drilling and Remediation Services between May 26 and 29, 2015.
4. Soil borings B1–RC, B2–RC, and B3 were performed by SJB Services, Inc. between June 2 and 3, 2015.
5. All soil borings were observed and logged in the field by GeoDesign personnel.

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DRAWN BY: JFW | REVIEWED BY: JAG

EXPLORATION LOCATION PLAN (SOUTH)
HINESBURG HES 021-1(19)
HINESBURG, VT

FILE NO. 750-09.18

SCALE IN FEET
1" = 30'
0 15 30 60

DATE: 6/24/15

FIGURE NO. 2B

CAD FILE No. O:\Client related\CL-700 to 799\750-VAOT\750-09.18 - Hinesburg HES021-1(19)\CADD\ELP.dwg

STA. 133+12, LT.
STA. 133+16, LT.
STA. 133+25, LT.

VT 116 POC STA. 288+22.00=
SHELBURNE FALLS ROAD POE STA. 133+60.70

HAYSTACK CROSSING, LLC

LEGEND

B1 GEODESIGN SOIL BORING LOCATION

B2 B2-RC B3 B4 B5 B5-ST B6 B7 B7-ST B8

SHELBURNE FALLS ROAD TH-1

CVU ROAD TH-7

CONCRETE SIDEWALK

SIDEWALK RAMP
DETECTABLE WARNING

PROPOSED 8' X6'
BOX CULVERT

INV. OUT=365.

INV.=372.73

INV. IN=366.62

SIDEWALK RAMP
DETECTABLE WARNING

CONCRETE SIDEWALK

RECONSTRUCT MULTI-USE PATH
(SEE PATH TYPICAL SECTION)

CURVE #3
Δ = 6°33'32.57" L
Dc = 2°16'54.45"
R = 2511'
T = 143.9'
L = 287.5'
E = 4.1'
e = 2.80%

PI (CURVE #3)
STA 287+89.52

INV.=373.75

REMOVE DRIVEWAY
TOPSOIL AND SEED

WOODWORTH,
KATRINA K. & DANIEL

THE MERCHANTS BANK

MICHAELIDES, IONNIS

2010/2012-P13
CLASS III

2012-C2
CLASS III

BILLINGSLEY, TYLER

VT 116 POT STA. 289+81.60 =
CHANNEL POT STA. 10+62.32

STA. 290+60 TO 291+15
CONSTRUCT GRASS CHANNEL

VT 116 POC STA. 288+29.04 =
CVU ROAD POE STA. 123+14.35

REMOVE DRY HYDRANT

N 30°26'14.58" W
VT 116

NOTES:
1. Exploration Location Plan (North) derived from Sheet 18 of the Revised Preliminary Plans prepared by VHB dated 4/30/2015.
2. B-series soil boring locations shown are approximate, and are based on taped measurements and visual approximations from existing features made in the field by GeoDesign personnel. Locations should be considered accurate only to the degree implied by the method of location used.
3. All soil borings with the exception of B1-RC, B2-RC, and B-3 were performed by Platform Environmental Drilling and Remediation Services between May 26 and 29, 2015.
4. Soil borings B1-RC, B2-RC, and B3 were performed by SJB Services, Inc. between June 2 and 3, 2015.
5. All soil borings were observed and logged in the field by GeoDesign personnel.

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DRAWN BY: JFW | REVIEWED BY: JAG

EXPLORATION LOCATION PLAN (NORTH)
HINESBURG HES 021-1(19)
HINESBURG, VT

FILE NO. 750-09.18

SCALE IN FEET
1" = 30'
0 15 30 60

DATE: 6/24/15

FIGURE NO. 2C

CAD FILE No. O:\Client related\CL-700 to 799\750-VAOT\750-09.18 - Hinesburg HES021-1(19)\CADD\ELP.dwg

ATTACHMENT 2 – BORING LOGS

EXPLANATION OF THE FORM - BORING LOG

The following provides an explanation of the various fields on the Boring Log form.

UPPER PORTION OF BORING LOG

Project and Boring Details
Within the upper portion of the Boring Log, details with regards to the Project Name and Location, Boring Number, and VTrans PIN number are provided. In addition, within the upper section of the Boring Log, the Boring Crew details - Driller (and name of the Drilling Company), together with the name of Geo**Design**'s representative, are presented. Details with regards to the dates when the boring was drilled, its coordinates or other location references and the corresponding surface elevation may also be provided.

Casing and Sampler
This section provides a summary of the typical size of samplers and casings used, together with the type of drilling rig See below for a description of samplers.
The type of drill rods and sampling hammer used is also provided in this section along with the hammer energy correction factor (C_E) to be used for converting N-values to N_{60}-Values.

Groundwater Observations
Water levels typically indicated on the Boring Log are levels measured in the boring at the date indicated. In permeable materials, the indicated levels may reflect the location of groundwater. In low permeability soils and/or due to effects of the casing, the accurate determination of groundwater levels may not be possible with only short term observations.

CENTRAL PORTION OF BORING LOG

DEPTH
This column gives the depth scale of the boring, in feet or meters.

STRATA
This column provides a graphical representation of the soil and bedrock units, and inferred geological contacts. See Subsurface Profile Legend. Stratification lines represent approximate boundaries between material types, transitions may be gradual.

SAMPLE INFORMATION
The initial columns provide the sample number, sample type, penetration, recovery and sample depth. The Sample Type Coding is as follows:

A - Auger Sample	PS- Undisturbed Piston - 3" (76 mm)	SSL - Large Split-Barrel - 3" (76 mm)	V - Vane Test
C - Core - Diamond Bit - NX double tube, unless otherwise noted.	SS - Split-Barrel (Split-Spoon)	ST - Shelby Tube - 3" (76 mm)	

Blows / 6 " (N Value)
Representative soil samples were obtained in the boring by split-barrel sampling procedures in general accordance with ASTM D 1586. The split-barrel sampling procedure utilizes a standard 51 mm (2") outside diameter split-barrel sampler that is driven into the bottom of the boring with a 63.5 kg (140-pound) hammer falling a distance of 0.76 m (30"). The number of blows required to advance the sampler in 0.15 m (6") increments is recorded as part of the Standard Penetration Test (SPT). These values are indicated at their depth of occurrence.

The number of blows required to advance the split-barrel sampler the middle two - 0.15 m (6") increments is recorded as the Standard Penetration Resistance Value ("N") and is listed in parenthesis.

Where the sampler advanced by Weight of Rods or Weight of Hammer, the designation WOR and WOH, respectively, was used.

Coring Time (Where Applicable)
This column provides the rate in minutes at which the core barrel was advanced into the bedrock (or boulder) in one foot (0.3 m) intervals.

Moisture Content % (Where Applicable)
This column provides moisture content determination results for the samples tested.

Gravel% / Sand% / Fines % (Where Applicable)
These columns provides the grain size breakdown per AASHTO M145 for the samples tested.

LL% / PI% (Where Applicable)
This column provides Liquid Limit and Plasticity Index results for the samples tested.

SAMPLE DESCRIPTION
This column provides a description of the soil and bedrock units, based on visual observation of the samples, sometimes in conjunction with field and laboratory tests. Each sample was generally described according to the following classification and terminology. In general, description of the soil units followed the Burmister classification system. AASHTO M145 Classifications where given are based on the results of laboratory testing.

SOIL PROPERTIES & DESCRIPTIONS

TEXTURE*

Component	Size (mm)
CLAY	< 0.002 mm
SILT	< #200 Sieve (0.075 mm)
SAND	#200 to #4 Sieve (0.075 mm to 4.75 mm)
Fine	#200 to #40 Sieve (0.075 mm to 0.425 mm)
Medium	#40 to #10 Sieve (0.425 mm to 2.00 mm)
Coarse	#10 to #4 Sieve (2.00 mm to 4.75 mm)
GRAVEL	#4 Sieve to 3 in (4.75 mm to 76 mm)
Fine	#4 Sieve to 3/4 in (4.75 mm to 19 mm)
Coarse	3/4 in to 3 in (19 mm to 76 mm)
COBBLES	3 in to 12 in (76 mm to 305 mm)
BOULDERS	> 12 in (305 mm)

COMPOSITION

Principal Component in Upper Case i.e. >50%
CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS

Minor Component Upper and Lower Case i.e.<50%
Clay, Silt, Sand, Gravel, Cobbles, Boulders

DESCRIPTIVE ADJECTIVE	PERCENTAGE REQUIREMENT
trace	<10 %
little	10 - 20 %
some	20 - 35 %
and	35 - 50 %

MOISTURE CONDITION

Dry	Absence of moisture, dusty
Moisture	Damp but no visible water
Wet	Visible free water

*textural classification as determined by sieve and hydrometer analyses

COHESIVE SOILS

ESTIMATED CONSISTENCY CLASSIFICATION ***	"N" Value
Very Soft	< 2
Soft	2 - 4
Medium	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	> 30

*** empirical relationship

COHESIONLESS SOILS

ESTIMATED COMPACTNESS DESCRIPTION ***	"N" Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

PLASTICITY - Burmister

Degree of Plasticity	Soil Type	Smallest Diameter of Thread**
Non-Plastic	SILT	None
Slight	Clayey SILT	1/4" (6 mm)
Low	SILT & CLAY	1/8" (3 mm)
Medium	CLAY & SILT	1/16" (1.6 mm)
High	Silty CLAY	1/32" (0.8 mm)
Very High	CLAY	1/64" (0.4 mm)

** moisture at or near optimum

STRUCTURE

Stratified,	>6 mm (1/4")
Laminated,	< 6 mm (1/4")
Parting,	0 to 1.6 mm (1/16")
Seam,	1.6 to 13 mm (1/2")
Layer,	13 to 305 mm (12")
Stratum,	> 305 mm (12")

BEDROCK PROPERTIES & DESCRIPTIONS

RECOVERY AND ROCK QUALITY DESIGNATION (RQD)

Recovery is defined as the length of core obtained expressed as a percentage of the total length cored.

RQD is defined as the total length of sound core pieces, 4 inches (100 mm) or greater in length, excluding drilling breaks, expressed as a percentage of the total length cored. RQD provides an indication of the integrity of the rock mass and relative extent of seams and bedding planes.

Classification	RQD %
Very Poor Quality	0 - 25
Poor Quality	25 - 50
Fair Quality	50 - 75
Good Quality	75 - 90
Excellent Quality	90 - 100

HARDNESS

TYPICAL ROCK TYPES		Moh's Hardness Scale
Hard	Cannot be scratched with knife	> 5.5
Moderately Hard	Can scratch with knife but not fingernail	5.5 - 2.5
Soft	Can be scratched with fingernail	< 2.5
SANDSTONE		
Well Cemented	Capable of scratching a knife blade	5.5 - 2.5
Cemented	Can be scratched with knife	< 2.5
Poorly Cemented	Can be broken apart easily with fingers	

WEATHERING

Fresh	No visible signs of weathering
Slightly Weathered	Slight discoloration of parent material in joints and seams
Moderately Weathered	Less than 35% of rock material is decomposed. Fresh or discolored rock is present.
Highly Weathered	More than 35% of rock material is decomposed. Fresh or discolored rock is present.
Extremely Weathered	All rock material is decomposed to soil. Rock mass structure may still be intact.

SPACING OF DISCONTINUITIES

Bedding	Jointing	Spacing (inches)	Spacing (mm)
Very Thick Bedded	Very Wide	>80	>2000
Thick Bedded	Wide	24 - 80	600 - 2000
Medium Bedded	Moderate	8 - 24	200 - 600
Thin Bedded	Close	2.4 - 8	60 - 200
Very Thin Bedded	Very Close	0.8 - 2.4	20 - 60
Laminated	Shattered	0.24 - 0.8	6 - 20
Thinly Laminated	Fissured	<0.24	<6

When classification of rock materials has been estimated from disturbed samples, core samples and petrographic analysis may reveal other rock types.

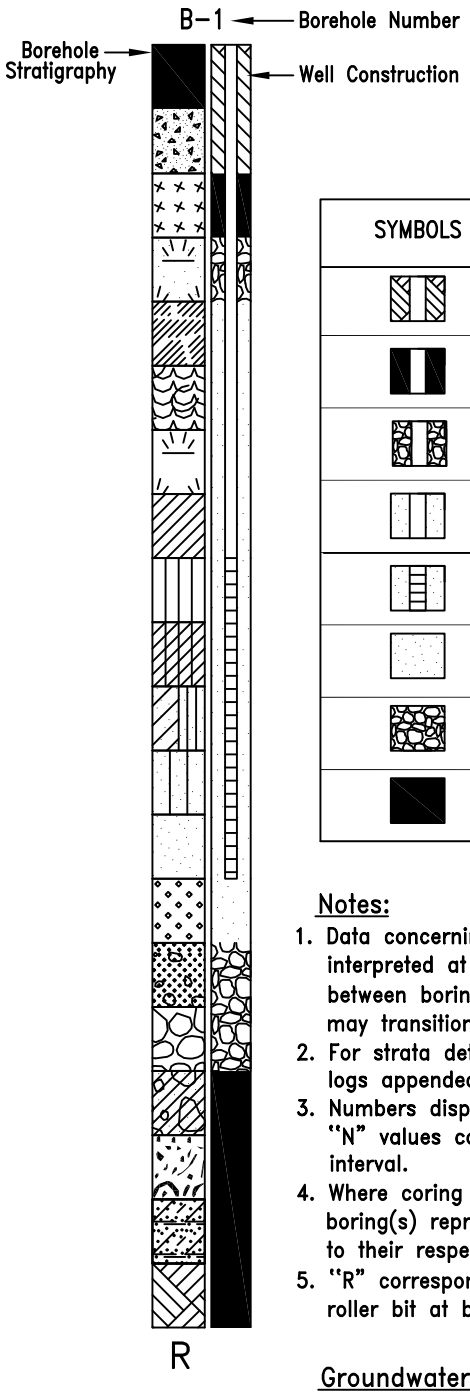
BOTTOM PORTION OF BORING LOG

The lower portion of the log provides borehole termination depth, termination criteria, and additional drilling notes within the Remarks section.

STRATIGRAPHY SYMBOLS

SYMBOLS	TYPICAL DESCRIPTIONS OF PREDOMINENT MATERIAL TYPE
	ASPHALT
	CONCRETE
	FILL
	TOPSOIL
	SUBSOIL
	ORGANIC SILT OR CLAY WITH SHELLS
	PEAT
	CLAY
	SILT
	CLAY/SILT MIXTURE
	CLAY/SILT/SAND MIXTURE
	SANDY SILT
	SILTY SAND
	POORLY-GRADED SAND
	WELL-GRADED SAND
	SAND/SILT/GRAVEL MIXTURE
	BOULDERS AND/OR COBBLES
	GLACIAL TILL
	WEATHERED BEDROCK
	BEDROCK

EXPLANATION OF BORING



WELL SYMBOLS

SYMBOLS	TYPICAL DESCRIPTIONS
	CEMENT SEAL: 1 PIPE
	BENTONITE SEAL: 1 PIPE
	SLOUGH BACKFILL: 1 PIPE
	FILTER PACK: 1 PIPE
	SLOTTED PIPE WITH FILTER PACK: 1 PIPE
	FILTER PACK AT BOTTOM OF HOLE
	SLOUGH AT BOTTOM OF HOLE
	BENTONITE AT BOTTOM OF HOLE

Notes:

1. Data concerning the various strata have been interpreted at boring locations only. The stratigraphy between borings may vary from that shown, and may transition more gradually within borings.
2. For strata details, see Report and boring logs appended to this report.
3. Numbers displayed beside boring(s) represent SPT "N" values corresponding to their respective sampling interval.
4. Where coring was performed, numbers displayed beside boring(s) represent Recovery and RQD values corresponding to their respective sampling interval.
5. "R" corresponds to refusal of sampler, casing and/or roller bit at bottom of boring.

Groundwater Observations (where applicable)

▽ Water Level Reading at time of drilling.

▼ Water Level Reading after completing drilling.

GEODESIGN INCORPORATED

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BORING LOG / SUBSURFACE PROFILE LEGEND

ACAD FILE No. \\Field\VTrans Boring Log Legend.DWG

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B1**
Page No.: 1 of 1
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), M. Hagedorn (GeoDesign)
Date Started: 5/29/15 Date Finished: 5/29/15
VTSPG NAD83:
Station: See Notes Offset: See Notes
Ground Elevation: 379 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/NWJ
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/29/15		None observed.

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %
2.5		No sampling performed. (Inferred General Sand & Gravel Fill from auger cuttings.)					
		Hole stopped @ 3.0 ft Multiple refusals on inferred rock < 3' deep.					

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Auger grinding and chatter noted from 1' - 2' deep on inferred bedrock. Moved drill rig multiple times and re-drilled with same result.
3. Inferred shallow bedrock, unable to core rock at shallow depths with equipment available on site.
4. 5 borehole locations were attempted at the following approximate stations and offsets:

Northing	Easting	Station	Offset	Refusal Depth
1479486	670955	280+30	16'R	1.5'
1479488	670956	280+30	18'R	1.5'
1479488	670950	280+25	16'R	1.5'
1479478	670973	280+50	16'R	3'
1479463	671006	280+86	16'R	2'

5. Large bedrock outcropping noticed at approximate station 280+00 on east side of roadway.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B1-RC**
Page No.: 1 of 1
Pin No.: 04b204
Checked By: JFW

Boring Crew: T. Farrell (SJB), M. Hagedorn (GeoDesign)
Date Started: 6/02/15 Date Finished: 6/02/15
VTSPG NAD83: N 670950.00 ft E 1479488.00 ft
Station: 280+25 Offset: 16 'RT
Ground Elevation: 379 ft

	Casing	Sampler
Type:	FJ	NA
I.D.:	4.25 in	
Hammer Wt:	140 lb.	N.A.
Hammer Fall:	30 in.	N.A.
Hammer/Rod Type:	Auto/NWJ	
Rig:	CME 550X ATV	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
06/02/15		None observed.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %
		Inferred General Sand & Gravel Fill (From Auger Spoils)								
2.5		C1 (2.5'-5'): Fair quality, moderately hard to hard, fresh with slightly weathered joints, very close to moderate jointing gray with infrequent white inclusions DOLOSTONE. Moderate reaction to dilute HCl when powdered. Jointing near horizontal with occasional near vertical fractures.	C1	87 (67)	1.5 2.4					
5.0		C2 (5'-7.5'): Excellent quality, moderately hard to hard, fresh with slightly weathered joints, moderate jointing, gray with occasional white inclusions DOLOSTONE. Moderate reaction to dilute HCl when powdered. Jointing near horizontal.	C2	100 (100)	2.1 2.6					
7.5		Hole stopped @ 7.5 ft Cored 5' into inferred bedrock.								
10.0										
12.5										
15.0										
17.5										

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Casing hammered to refusal at 2.5' deep. Begin core C1 at 2.5' deep.
3. Noted water return to be completely from around the outside of the casing during core bit advance below 4' deep.
4. Core block encountered at 5'. Retrieved 2.2' of cored rock and proceeded to advance core run C2 from 5' to 7.5' deep.
5. Consistent milky gray return color throughout coring.
6. Backfilled with 1.5 gallons of bentonite chips and cuttings.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B2**
Page No.: 1 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/26/15 Date Finished: 5/26/15
VTSPG NAD83: N 671601.00 ft E 1479128.00 ft
Station: 287+68 Offset: 46' LT
Ground Elevation: 368 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/26/15	6.0	Wet Sample

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S1 (0'-2'): S1A - Top 3": Topsoil. S1B - Bottom 21" - Soft, grey and tan mottled CLAY & SILT, some fine to medium Sand, trace (-) fine Gravel, trace Roots (upper 6"), moist. *(Reworked Clay Fill)* Rec. = 1.3 ft (AASHTO M145 Classification: A-6.)	1-1-2-2 (3)	26.0	2.0	20.3	77.7	39	19
2.5		S2 (2' -4'): Stiff, grey and tan CLAY & SILT, little fine to coarse Sand, little fine to coarse Gravel, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-6.)	4-4-6-5 (10)	20.9	13.6	9.8	76.6	30	13
5.0		S3 (4' -6'): Medium, brown and tan Silty CLAY, trace fine to medium Sand, moist to very moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-7-6.)	3-3-3-3 (6)	31.7	0.2	5.3	94.5	42	21
		S4 (6' -8'): Medium; S4A - (Upper 18": Brown and grey CLAY & SILT, trace fine to medium Sand, very moist to wet. Rec. = 2.0 ft (AASHTO M145 Classification: A-6.)	WOH-2-2-11 (4)	37.1	0.1	5.2	94.7	36	16
7.5		S4B - Lower 6": Brown and grey SILT, some (+) fine to coarse Gravel, some fine to coarse Sand, trace Clay & Silt, moist. (AASHTO M145 Classification: A-4.)		13.2	39.3	17.2	43.5	NP	NP
		S5 (8' -10'): Medium dense, brown (top 2" -4") to gray fine to coarse SAND, some Silt, some fine to coarse Gravel, moist. Rec. = 1.5 ft (AASHTO M145 Classification: A-2-4.)	2-8-10-9 (18)	8.3	36.0	34.0	30.0	NP	NP
10.0		S6 (10' - 12'): Medium dense, grey fine to coarse SAND, some Silt, some fine to coarse Gravel, moist. Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4.)	4-8-7-7 (15)	7.6	37.2	32.6	30.2	NP	NP
12.5									
15.0		S7 (15' -17'): Very dense, Grey fine to coarse SAND & SILT, some fine to coarse Gravel, moist. Rec. = 1.4 ft (AASHTO M145 Classification: A-4.)	9-18-47-57 (65)	7.5	34.2	28.6	37.2	NP	NP
17.5		Hole stopped @ 18.0 ft Hollow stem auger refusal.							

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B2**
Page No.: 2 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/26/15 Date Finished: 5/26/15
VTSPG NAD83: N 671601.00 ft E 1479128.00 ft
Station: 287+68 Offset: 46' LT
Ground Elevation: 368 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/26/15	6.0	Wet Sample

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
22.5		Remarks: 1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015. 2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145. 3. Auger grinding at approximately 3.5' deep on inferred Gravel. Auger grinding at approximately 7.5' to 17' through denser soil matrix. 4. Wet auger cuttings observed during advance below 8' deep. 5. Auger grinding/chatter at 17' deep. Water noted flowing from auger flights. 6. Hollow stem auger refusal on inferred bedrock at 18' deep. Attempted to core, but lost water around augers and unable to continue. Less than 1" advance with no recovery. 7. Backfilled with 2.5 bags bentonite and cuttings. 8. Hammer energy is assumed.							
25.0									
27.5									
30.0									
32.5									
35.0									
37.5									

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B2-RC**
Page No.: 1 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: T. Farrell (SJB), M. Hagedorn (GeoDesign)
Date Started: 6/03/15 Date Finished: 6/03/15
VTSPG NAD83: N 671591.00 ft E 1479134.00 ft
Station: 287+56 Offset: 46' LT
Ground Elevation: 368 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	CME 550X ATV	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
06/03/15	6.0	Inferred from B2.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Reworked Clay Fill (Inferred from B2)										
2.5		Sandy Clay & Silt (Inferred from B2)										
5.0		Silty Clay (Inferred from B2)										
7.5		Gravelly Sand & SIlt (Inferred from B2)										
10.0												
12.5												
15.0		Glacial Till (Inferred from B2)										
17.5		S1 (18'-20'): Very dense, grey fine to coarse SAND, some fine to coarse Gravel, some Silt, moist. Rec. = 1.6 ft (AASHTO M145 Classification: A-1-b.)				25-37-36-30 (73)	5.6	44.5	31.0	24.5	NP	NP

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B2-RC**
Page No.: 2 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: T. Farrell (SJB), M. Hagedorn (GeoDesign)
Date Started: 6/03/15 Date Finished: 6/03/15
VTSPG NAD83: N 671591.00 ft E 1479134.00 ft
Station: 287+56 Offset: 46' LT
Ground Elevation: 368 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	CME 550X ATV	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
06/03/15	6.0	Inferred from B2.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S2 (20'-22') Dense, grey fine to coarse SAND, some fine to coarse Gravel, some Silt, moist. Rec. = 1.2 ft (AASHTO M145 Classification: A-1-b.)				40-27-14-21 (41)	7.4	35.7	39.0	25.3	NP	NP
22.5		C1 (22.1'-27.1'): Fair quality, moderately hard to hard, fresh, close to moderate jointing, gray with infrequent white banding DOLOSTONE. Moderate reaction to dilute HCl when powdered. Jointing from near horizontal to ~45 degrees.	C1	87 (74)	2.8 1.6 1.9 1.6 1.8							
25.0												
27.5		Hole stopped @ 27.1 ft Cored 5' into inferred bedrock.										
30.0												
32.5												
35.0												
37.5												

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145.
3. Augered directly to 18' and began sampling. Infer the upper 18' of lithology from the adjacent boring B-2.
4. Inferred cobble/boulder between 20' and 20.5' deep from auger grinding.
5. Hollow stem auger refusal at 22.1'deep, set up to core.
6. Core block encountered almost immediately after beginning core run C1, removed and continued. Top of sample contains roller bit markings from cleanout.
7. Medium speed for first 0.5'; high speed for remainder of core run.
8. Consistent milky grey discharge for entire length of core.
9. Backfilled with bentonite and cuttings.
10. Hammer energy is assumed.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B3**
Page No.: 1 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: T. Farrell (SJB), M. Hagedorn (GeoDesign)
Date Started: 6/02/15 Date Finished: 6/02/15
VTSPG NAD83: N 671646.00 ft E 1479204.00 ft
Station: 287+75 Offset: 41' RT
Ground Elevation: 374 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	CME 550X ATV	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
06/02/15		None observed.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
2.5		S1 (2' - 4'): Medium dense, fine to coarse SAND, some Silt, some fine to coarse Gravel, little Roots, trace Clay & Silt, moist. *(General Fill)* Rec. = 1.8 ft (AASHTO M145 Classification: A-1-b.)				10-6-4-3 (10)	19.8	33.6	45.0	21.4	NP	NP
5.0		S2 (4' - 6'): Medium, brown mottled CLAY & SILT and fine to coarse SAND, trace fine to coarse Gravel, moist. Rec. = 1.8 ft (AASHTO M145 Classification: A-6.)				5-3-4-6 (7)	26.2	10.3	37.9	51.8	35	18
7.5		S3 (6' - 8'): S3A - (Upper 1'): Very stiff, brown mottled CLAY & SILT and fine to coarse SAND, trace (+) fine to coarse Gravel, moist. Rec. = 1.7 ft (AASHTO M145 Classification: A-6.)				10-13-12-11 (25)	20.9	16.5	30.4	53.1	33	15
		S3B - (Lower 1'): Medium dense, tan to brown fine to coarse SAND, some Silt, some fine to coarse Gravel, moist. (AASHTO M145 Classification: A-2-4.)					10.4	34.9	32.8	32.3	NP	NP
		S4 (8' - 10'): Medium dense, brown mottled SILT and fine to coarse SAND, little fine Gravel, moist. Rec. = 1.8 ft (AASHTO M145 Classification: A-4.)				8-5-8-12 (13)	12.5	22.8	31.5	45.7	NP	NP
10.0		S5 (10' - 12'): Dense, grey SILT, some fine to coarse Sand, little fine to coarse Gravel, moist. Rec. = 1.6 ft (AASHTO M145 Classification: A-4.)				10-14-19-34 (33)	11.3	21.4	28.0	50.6	NP	NP
12.5												
15.0		S6 (15' - 16.4'): Very dense, grey SILT, some (+) fine to coarse Sand, little fine to coarse Gravel, moist. Rec. = 1.2 ft (AASHTO M145 Classification: A-4.)				13-18-61/5" (79)	9.7	22.6	27.8	49.6	NP	NP
17.5												

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B3**
Page No.: 2 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: T. Farrell (SJB), M. Hagedorn (GeoDesign)
Date Started: 6/02/15 Date Finished: 6/02/15
VTSPG NAD83: N 671646.00 ft E 1479204.00 ft
Station: 287+75 Offset: 41' RT
Ground Elevation: 374 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	CME 550X ATV	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
06/02/15		None observed.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S7 (20' - 20.8'): Refusal, grey SILT, some fine to coarse Sand, some fine Gravel, trace Clay & Silt, moist. Rec. = 0.8 ft (AASHTO M145 Classification: A-4.)				29-50/4" (R)	9.8	33.2	25.6	41.2	NP	NP
22.5												
		C1 (22.8'-27.8'): Fair quality, moderately hard to hard, fresh with slightly weathered joints, very close to moderate jointing, gray with infrequent white inclusions DOLOSTONE. Moderate reaction to dilute HCl. Jointing near horizontal with occasional near vertical fractures.	1	93 (58)	3.7 2.3 1.8 1.8							
25.0												
27.5		Hole stopped @ 27.8 ft Cored 5' into inferred bedrock.										
30.0												
32.5												
35.0												
37.5												

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145.
3. Auger chatter observed from 14' - 15' deep.
4. Inferred boulder at 16.5' deep. Originally assumed bedrock. Driller switched to 3" flush joint casing lowered through the augers and was able to advance casing past the obstruction. Remainder of borehole below 16.5' deep was advanced using wash-rotary drilling methods.
5. During core run C1 advance, from 22.8' - 24.3' deep at low rotary head speed, 24.3' - 25.8' at medium speed, and from 25.8' to 27.8' at high speed.
6. Consistent milky grey return observed throughout coring.
7. Backfilled with cuttings and 1.5 gallons bentonite chips.
8. Hammer energy is assumed.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B4**
Page No.: 1 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/26/15 Date Finished: 5/26/15
VTSPG NAD83: N 671742.00 ft E 1479153.00 ft
Station: 288+81 Offset: 41' RT
Ground Elevation: 374 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/26/15	11.8	Wet Sample.
05/26/15	11.5	In open hole.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S1 (0' -2'): Very loose/very soft, brown to grey-brown mottled SILT grading to CLAY & SILT toward bottom, some fine Sand, trace Roots and Grass (Upper 8"), moist. *(Reworked Clay Fill)* Rec. = 1.3 ft (AASHTO M145 Classification: A-6.)	WOH-1-1-1 (2)	22.0	0.2	21.2	78.6	31	13
2.5		S2 (2' -4'): Very soft, brown with occasional grey mottling CLAY & SILT, little fine to coarse Sand, little fine Gravel, trace Root Fibers, moist. *(Reworked Clay Fill)* Rec. = 1.2 ft (AASHTO M145 Classification: A-6.)	WOH-WOH-WOH-2 (0)	23.9	15.1	12.7	72.2	34	16
5.0		S3 (4' -6'): Loose / Medium, brown with grey and orange mottling fine to coarse SAND, some Clay & Silt, little fine to coarse Gravel (lower 6"), trace Cotton Fabric, moist. *(Reworked Clay Fill)* Rec. = 1.2 ft (AASHTO M145 Classification: A-2-6.)	3-3-4-8 (7)	16.1	25.3	44.2	30.5	33	17
7.5		S4 (6' -8'): Medium dense, tan and grey fine to coarse SAND and SILT, some fine to coarse Gravel, moist (some areas very moist). Rec. = 1.6 ft (AASHTO M145 Classification: A-4.)	5-7-8-6 (15)	9.8	33.5	30.3	36.2	NP	NP
		S5 (8' -10'): Medium dense, tan and grey fine to coarse SAND & SILT, little fine to coarse Gravel, moist. Rec. = 1.5 ft (AASHTO M145 Classification: A-4.)	4-6-9-13 (15)	11.1	27.3	33.9	38.8	NP	NP
10.0		S6 (10' -12'): Dense, tan and grey SILT and fine to coarse SAND, little fine to coarse Gravel, moist (bottom 2" wet). Rec. = 2.0 ft (AASHTO M145 Classification: A-4.)	8-18-16-14 (34)	9.6	24.3	28.1	47.6	NP	NP
12.5									
15.0		S7 (15' -17'): Dense, grey fine to coarse SAND, some Silt, some fine to coarse Gravel, wet. Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4.)	14-14-18-19 (32)	9.4	30.9	36.9	32.2	NP	NP
17.5									
		S8 (19' -19.8'): Refusal, grey fine to coarse SAND, some Silt, some fine to coarse Gravel, moist. Rec. = 0.6 ft (AASHTO M145 Classification: A-2-4.)	47-50/3" (R)	7.0	38.4	34.7	26.9	NP	NP

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B4**
Page No.: 2 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/26/15 Date Finished: 5/26/15
VTSPG NAD83: N 671742.00 ft E 1479153.00 ft
Station: 288+81 Offset: 41' RT
Ground Elevation: 374 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/26/15	11.8	Wet Sample.
05/26/15	11.5	In open hole.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
22.5									
25.0		S9 (24' -25.5'): Refusal, grey fine to coarse SAND, some fine to coarse Gravel, some Silt, moist. Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4.)	41-61-68 (R)	7.1	40.2	33.9	25.9	NP	NP
		Hole stopped @ 25.5 ft Split spoon refusal.							
27.5									
30.0									
32.5									
35.0									
37.5									

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145.
3. Auger grinding at 5.5' deep. Inferred gravel between 5.5' - 7'. Occasional auger grinding noted thereafter.
4. More difficult drilling at approximately 11.5' deep per driller. Auger chatter noted at 17' deep.
5. End boring at 25.5' in greater than 50 blow/6" penetration soil material.
6. Hammer energy is assumed.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B5**
Page No.: 1 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/27/15 Date Finished: 5/28/15
VTSPG NAD83: N 671700.00 ft E 1479078.00 ft
Station: 288+81 Offset: 44' LT
Ground Elevation: 372 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/28/15	12.0	In open hole.
05/28/15	10.0	Wet sample

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S1 (0' - 2'): S1A - Top 12": Topsoil. S1B - Bottom 3":: Loose, brown SILT, some fine to coarse Sand, trace fine Gravel, trace Clay & Silt, trace Root Fibers, moist. *(General Fill)* Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	2-3-4-4 (7)	20.9	12.0	28.1	59.9	NP	NP
2.5		S2 (2' - 4'): Stiff, brown CLAY & SILT, little fine to medium Sand, trace Root Fiber, moist. *(Reworked Clay Fill)* Rec. = 1.8 ft (AASHTO M145 Classification: A-6.)	3-4-5-6 (9)	24.9	0.5	14.5	85.0	39	19
5.0		S3 (4' - 6'): Medium, grey-brown CLAY & SILT, trace fine to medium Sand, moist. *(Reworked Clay Fill)* Rec. = 1.9 ft (AASHTO M145 Classification: A-6.)	2-2-3-4 (5)	30.4		9.5	90.5	32	14
7.5		S4 (6' - 8'): Soft, grey-brown CLAY & SILT, trace fine to medium Sand, trace Root Fiber, moist. *(Reworked Clay Fill)* Rec. = 1.8 ft (AASHTO M145 Classification: A-6.)	1-1-2-2 (3)	35.4	0.1	2.3	97.6	33	13
10.0		S5 (8' - 10'): Soft, brown with grey mottling CLAY & SILT, trace (-) fine to medium Sand, trace Root Fibers, wet. *(Possible Subsoil)* (Torvane = 0.22 - 0.25 tsf). Rec. = 2.0 ft (AASHTO M145 Classification: A-6.)	WOH-1-1-1 (2)	41.2	0.1	1.0	98.9	39	19
12.5		S6 (10' - 12'): Very soft, grey Silty CLAY, trace (-) fine to medium Sand, possible layering, wet. Rec. = 2.0 ft (AASHTO M145 Classification: A-6.)	WOH-WOH-WOH-WOH (0)	44.7		0.8	99.2	40	21
		Inferred Sandy Clay & Silt (Inferred from transition encountered in B5-ST)							
15.0		S7 (15' - 17'): Medium dense, grey SILT and fine to coarse SAND, some fine to coarse Gravel, wet. Rec. = 0.8 ft (AASHTO M145 Classification: A-4.)	6-4-6-3 (10)	10.5	30.3	30.7	39.0	NP	NP
17.5									

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B5**
Page No.: 2 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/27/15 Date Finished: 5/28/15
VTSPG NAD83: N 671700.00 ft E 1479078.00 ft
Station: 288+81 Offset: 44' LT
Ground Elevation: 372 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/28/15	12.0	In open hole.
05/28/15	10.0	Wet sample

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
22.5		S8 (20' - 21.6'): Refusal, grey fine to coarse SAND, some Silt, little fine to coarse Gravel, moist. Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4.)	30-50-50/5" (R)	11.9	23.3	46.2	30.5	NP	NP
25.0		S9 (25' - 25.4'): Refusal, grey SILT and fine to coarse SAND, trace fine Gravel, wet. Rec. = 0.4 ft (AASHTO M145 Classification: A-4.)	50/4.5" (R)	13.2	12.9	38.2	48.9	NP	NP
		Hole stopped @ 25.4 ft Split spoon refusal.							
27.5									
30.0									
32.5									
35.0									
37.5									

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145.
3. Sample S1 from 0' - 2' was performed with approximately 4" of soil already in spoon left over from a previous borehole.
4. Borehole temporarily stopped after sampling S4 at 6' deep due to a thunder storm on May 27, 2015. Resumed on May 28.
5. SPT N-values by be artificially high for sample S7 at 15' deep due to drill string being out of vertical alignment. Able to straighten augers for samples below 15' deep.
6. Increased auger resistance noted during auger advance below 15' deep.
7. Hole remained open to 13.5' deep after removing augers with standing water at 12' deep.
8. Backfilled with cuttings and bentonite chips (1.5 bags).
9. Hammer energy is assumed.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B5-ST**
Page No.: 1 of 1
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/28/15 Date Finished: 5/29/15
VTSPG NAD83: N 671701.00 ft E 1479080.00 ft
Station: 288+81 Offset: 42' LT
Ground Elevation: 372 ft

	Casing	Sampler
Type:	FJ	TUBE
I.D.:	4 in	2.87 in
Hammer Wt:	N.A.	N.A.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:	N.A./N.A.	
Rig:	Geoprobe 7822DT	C_E = NA

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/28/15	12.0	Inferred from B5.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %
0		Fill (Inferred from B5)					
2.5							
5.0							
7.5							
		Silty Clay (Inferred from B5)					
10.0		ST-1 (10'-12'): Grey CLAY & SILT, little fine Gravel, trace fine to coarse Sand, moist. (See Remark 5). Rec. = 2.0 ft					
12.5		Hole stopped @ 12.0 ft No refusal.					
15.0							
17.5							

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. B5-ST Located 2' East of B5.
3. Advanced 4" casing to 10' with pneumatic direct push hammer. Cleaned out casing with a hand auger and bucket (was not cleaned using wash rotary methods).
4. Backfilled with cuttings and 1.5 bags bentonite chips.
5. ST-1 soil description based on discussion with GeoTesting Express personnel upon extruding the bottom portion of the tube.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B6**
Page No.: 1 of 3
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/28/15 Date Finished: 5/28/15
VTSPG NAD83: N 671812.00 ft E 1479078.00 ft
Station: 289+79 Offset: 11' RT
Ground Elevation: 375 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/28/15	12.0	Wet Sample

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Asphalt									
		S1 (0.5' - 2.5'): Dense, black (upper 4") and brown fine to coarse SAND, some fine Gravel, some Recycled Asphalt (upper 4"), little Silt, dry. *(General Fill)* Rec. = 1.3 ft (AASHTO M145 Classification: A-1-b.)			16-18-13-12 (31)	3.3	43.3	44.4	12.3	NP	NP
2.5											
5.0		S2 (5' - 7'): S2A - (Upper 10"): Medium dense, brown fine to coarse GRAVEL, some fine to coarse Sand, some Silt, trace Silt & Clay, moist. *(General Fill)* Rec. = 1.3 ft (AASHTO M145 Classification: A-1-b.)			4-8-6-3 (14)	8.9	50.1	27.0	22.9	NP	NP
		S2B (Lower 6") - Stiff, brown SILT & CLAY, some fine to medium Sand, trace Roots/Wood, moist. S2B: Torvane = 0.20 - 0.24 tsf. (AASHTO M145 Classification: A-4.)				25.5	1.9	20.0	78.1	26	8
7.5											
10.0		S3 (10' - 12'): Medium, brown with grey mottling SILT & CLAY, some fine to medium Sand, trace fine to coarse Gravel (lower 3"), trace Roots/Sticks, very moist (wet lower 3"). Torvane = 0.28 - 0.42 tsf. Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)			1-2-4-6 (6)	19.0	1.0	25.7	73.3	23	6
12.5		S4 (12' - 14'): Soft, SILT & CLAY and fine to coarse SAND, some fine Gravel, wet. (AASHTO M145 Classification: A-4). Rec. = 0.1 ft			1-2-1-2 (3)	22.2	31.7	29.6	38.7		
15.0		S5 (15' - 17'): Very soft, grey CLAY & SILT, (occasional possible layers SILT, some fine Sand), trace (-) fine to coarse Sand, wet. Torvane (soft areas) = 1.8 - 2.2 tsf; Torvane (medium areas) = 0.25 - 0.28 tsf. Rec. = 1.7 ft (AASHTO M145 Classification: A-6.)			WOH-WOH-1-2 (1)	39.8	0.4	2.9	96.7	40	18
17.5		S6 (17' - 18.9'): Very dense, grey SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Rec. = 1.5 ft (AASHTO M145 Classification: A-4.)			14-18-36-50/5" (54)		16.4	31.7	51.9	NP	NP
		C1 (19.8' - 21.8'): SILT and fine to coarse SAND, little fine to coarse Gravel.									

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B6**
Page No.: 2 of 3
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/28/15 Date Finished: 5/28/15
VTSPG NAD83: N 671812.00 ft E 1479078.00 ft
Station: 289+79 Offset: 11' RT
Ground Elevation: 375 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/28/15	12.0	Wet Sample

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
			17 (0)	2							
22.5											
25.0											
27.5											
30.0		S7 (30' - 31.4'): Very dense, grey SILT and fine to coarse SAND, little fine Gravel (some pulverized), moist. Rec. = 1.4 ft (AASHTO M145 Classification: A-4.)			30-33-43-50/5" (76)	9.2	21.0	30.6	48.4	NP	NP
32.5											
35.0		S8 (35' - 36.5'): Very dense, grey SILT, some fine to coarse Sand, little fine to coarse Gravel (some fractured), moist. Rec. = 1.5 ft (AASHTO M145 Classification: A-4.)			35-30-50-50/5.5 (80)	10.7	21.8	25.4	52.8	18	3
		Hole stopped @ 36.5 ft No refusal.									
37.5											

Notes:
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2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B6**
Page No.: 3 of 3
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/28/15 Date Finished: 5/28/15
VTSPG NAD83: N 671812.00 ft E 1479078.00 ft
Station: 289+79 Offset: 11' RT
Ground Elevation: 375 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/28/15	12.0	Wet Sample

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
42.5		Remarks: 1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015. 2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145. 3. Grinding on inferred cobbles/gravel within fill soils from approximately 2' to 7' deep. 4. The last blow of sample S2 penetrated approximately 4" past the intended sample depth. 5. HSA refusal at 19.8' deep in dense glacial till soils. Initially believed to be bedrock, so augers were removed and replaced with 3" flush joint casing to prepare for rock coring. 6. Wash water return light brown from ~10' to 19.8' deep. Switched to core barrel and attempted C1 from 19.8' to 21.8' deep through dense glacial till soils. 7. Casing driven to 19.8' deep and advanced open hole with NWJ rods and a carbide roller bit below this depth. All samples continued to be taken with an AWJ rod string. 8. Wash water return grey below 25' deep with water loss between 20' and 25' deep. 9. Driller accidentally passed the 25' depth without sampling. Similar drilling effort, with occasional grinding on inferred gravel/cobbles was noted. 10. No return water was observed below 30' deep. 11. Borehole backfilled with cuttings and 3 bags of bentonite chips. 12. Hammer energy is assumed.									
45.0											
47.5											
50.0											
52.5											
55.0											
57.5											

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B7**
Page No.: 1 of 3
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), M. Hagedorn (GeoDesign)
Date Started: 5/27/15 Date Finished: 5/27/15
VTSPG NAD83: N 671781.00 ft E 1479009.00 ft
Station: 289+87 Offset: 64' LT
Ground Elevation: 367 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/27/15	15.0	Wet Sample.
05/27/15	7.0	In augers.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S1 (0' -2'): Top 2" Topsoil. Bottom 22" - Very soft, brown CLAY & SILT, little fine to medium Sand, little Grass fibers, moist. (*Reworked Clay Fill)* Rec. = 1.1 ft (AASHTO M145 Classification: A-4.)	WOH-WOH-1-1 (1)	26.8	0.4	11.1	88.5	31	10
2.5		S2 (2' -4'): Soft, brown CLAY & SILT, trace fine to medium Sand, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-7-6.)	1-1-2-2 (3)	37.1	0.1	2.1	97.8	41	19
5.0		S3 (4' -6'): Soft, brown Silty CLAY, trace (-) fine Sand, trace Organics, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-7-6.)	WOH-1-2-2 (3)	39.7		1.2	98.8	59	33
7.5		S4 (6' -8'): Very soft, brown Silty CLAY, trace (-) fine Sand, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-7-6.)	WOH-1/12"-1 (1)	47.1		0.8	99.2	56	31
		S5 (8' -10'): Very soft, brown Silty CLAY, trace fine (-) Sand, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-7-6.)	WOH-WOH-WOH-WOH (0)	46.1		1.8	98.2	48	25
10.0		S6 (10' -12'): Very soft, grey CLAY & SILT, occasional Silt seams, trace (-) fine Sand, moist. (Torvane: 0.10 - 0.18 tsf) Rec. = 2.0 ft (AASHTO M145 Classification: A-6.)	WOH-WOH-WOH-WOH (0)	47.2		0.4	99.6	38	17
12.5									
15.0		S7 (15' - 17'): Very soft, grey Clayey SILT and fine to coarse SAND, little fine Gravel, wet. Rec. = 2.0 ft (AASHTO M145 Classification: A-4.)	WOH-WOH-WOH-2 (0)	12.1	22.5	30.7	46.8	16	2
17.5									

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
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3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B7**
Page No.: 2 of 3
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), M. Hagedorn (GeoDesign)
Date Started: 5/27/15 Date Finished: 5/27/15
VTSPG NAD83: N 671781.00 ft E 1479009.00 ft
Station: 289+87 Offset: 64' LT
Ground Elevation: 367 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/27/15	15.0	Wet Sample.
05/27/15	7.0	In augers.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		S8 (20' -21.5'): Refusal, grey SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Rec. = 1.0 ft (AASHTO M145 Classification: A-4.)	17-52-76 (R)	7.3	24.9	31.9	43.2	NP	NP
22.5									
25.0		S9 (25' -25.8'): Refusal, grey SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Rec. = 0.6 ft (AASHTO M145 Classification: A-4.)	31-50/3.5" (R)	9.0	21.0	28.4	50.6	NP	NP
27.5									
30.0		S10 (30' -30.8'): Refusal, grey SILT and fine to coarse SAND, trace fine Gravel, moist. Rec. = 0.8 ft (AASHTO M145 Classification: A-4.)	22-62/4" (R)	8.1	15.4	31.9	52.7	NP	NP
32.5									
		S11 (34' -35.3'): Refusal, grey SILT, some fine to coarse SAND, little fine to coarse Gravel, wet. Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	30-60-53/4" (R)	9.6	23.1	25.1	51.8	NP	NP
35.0									
		Hole stopped @ 35.3 ft Split spoon refusal.							
37.5									

Notes:
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3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B7**
Page No.: 3 of 3
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), M. Hagedorn (GeoDesign)
Date Started: 5/27/15 Date Finished: 5/27/15
VTSPG NAD83: N 671781.00 ft E 1479009.00 ft
Station: 289+87 Offset: 64' LT
Ground Elevation: 367 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/27/15	15.0	Wet Sample.
05/27/15	7.0	In augers.

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
42.5		Remarks: 1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015. 2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145. 3. Soft/very soft soils unable to get readings with Pocket Penetrometer. 4. Auger grinding at 17.5' deep at the inferred transition to glacial till soils. 5. Auger grinding from 20' - 22' deep with heavier grinding noted at 31' deep. 6. Backfilled with a mixture of bentonite chips and cuttings from hole. Approximately 1.5 bags of chips used. 7. Hammer energy is assumed.							
45.0									
47.5									
50.0									
52.5									
55.0									
57.5									

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B7-ST**
Page No.: 1 of 1
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), M. Hagedorn (GeoDesign)
Date Started: 5/27/15 Date Finished: 5/27/15
VTSPG NAD83: N 671777.00 ft E 1479011.00 ft
Station: 289+82 Offset: 64' LT
Ground Elevation: 367 ft

	Casing	Sampler
Type:	FJ	TUBE
I.D.:	4 in	2.87 in
Hammer Wt:	N.A.	N.A.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:	N.A./N.A.	
Rig:	Geoprobe 7822DT	C_E = NA

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/27/15	7.0	Inferred from B7.

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %
		Reworked Clay Fill (Inferred from B7)					
2.5		Silty Clay (Inferred from B7).					
5.0							
7.5		ST-1 (8'-10'): Grey Silty CLAY, moist. (Torvane performed at 10': 0.24 tsf) Rec. = 2.0 ft					
10.0		Hole stopped @ 10.0 ft No refusal.					
12.5							
15.0							
17.5							

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Exploration performed to obtain a Shelby Tube adjacent to Borehole B7 in the soft clay layer observed between 8' - 12' deep.
3. Borehole located 5' South-Southeast of B7.
4. Pushed casing to 3' deep. Casing advanced below 3' deep using a pneumatic direct push hammer.
5. Backfilled with a mixture of bentonite chips and cuttings from hole. Approximately 1.0 bag of chips used.

Notes:
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3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/29/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B8**
Page No.: 1 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/29/15 Date Finished: 5/29/15
VTSPG NAD83: N 671863.00 ft E 1479023.00 ft
Station: 290+50 Offset: 10' LT
Ground Elevation: 377 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/29/15	13.0	Wet sample.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Asphalt							
2.5		S1 (0.7' - 2.7'): Medium dense, brown fine to coarse SAND, some fine to coarse Gravel, little Asphalt Fragments (upper 4"), trace Silt, dry. *(General Fill)* Rec. = 1.6 ft (AASHTO M145 Classification: A-1-b.)	17-16-13-11 (29)	13.5	47.4	43.0	9.6	NP	NP
5.0		S2 (5' - 7'): Medium dense, brown and grey fine to coarse GRAVEL (possible limestone, angular), some fine to coarse Sand, little Clayey Silt in upper 3", moist. *(General Fill)* (AASHTO M145 Classification: A-1-b). Rec. = 0.7 ft	9-18-6-6 (24)	7.4	62.0	22.1	15.9		
7.5		S3 (7' - 9'): Medium, brown Clayey SILT, some fine to medium Sand, trace fine Gravel, trace Roots/Wood, top portion wet. Torvane = 0.32 - 0.45 tsf. Rec. = 1.8 ft (AASHTO M145 Classification: A-4.)	1-2-2-2 (4)	23.9	3.7	31.5	64.8	21	3
10.0		S4 (10' - 12'): Soft, grey with brown mottling Clayey SILT, little fine to medium Sand, trace (-) fine Gravel, trace Roots/Wood (decayed pieces, very faint odor), moist. Torvane = 5.0 -6.5 tsf bottom half; Torvane = 0.33 - 0.38 tsf top half. Rec. = 2.0 ft (AASHTO M145 Classification: A-4.)	WOH-1-2-3 (3)	25.6	0.9	16.4	82.7	21	2
12.5		S5 (12' - 14'): Medium dense grey SILT, some fine to coarse Sand, little fine to coarse Gravel (lower 4"), trace Clay & Silt, wet (lower 4"). Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	2-4-6-4 (10)	19.1	17.1	25.5	57.4	NP	NP
15.0		S6 (15' - 17'): Dense, grey SILT, some fine to coarse Sand, some fine to coarse Gravel, trace Clay & Silt, moist to wet. Rec. = 1.1 ft (AASHTO M145 Classification: A-4.)	13-21-14-7 (35)	11.5	27.6	25.5	46.9	NP	NP
17.5		S7 (17' - 19'): Dense, grey Clayey SILT, some fine to coarse Sand, little fine to coarse Gravel, moist. Rec. = 1.3 ft (AASHTO M145 Classification: A-4.)	10-16-18-26 (34)	9.3	16.3	24.8	58.9	17	3

Notes:
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2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

GEODESIGN BORING LOG 750-09.18 HINESBURG.GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Hinesburg HES 021-1(19)
(GeoDesign #750-09.18)
Hinesburg, VT

Boring No.: **B8**
Page No.: 2 of 2
Pin No.: 04b204
Checked By: JFW

Boring Crew: C. Aldrich (Platform), A. Baribault (GeoDesign)
Date Started: 5/29/15 Date Finished: 5/29/15
VTSPG NAD83: N 671863.00 ft E 1479023.00 ft
Station: 290+50 Offset: 10' LT
Ground Elevation: 377 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	2.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Geoprobe 7822DT	C_E = 1.35

Groundwater Observations [3]

Date	Depth (ft)	Notes
05/29/15	13.0	Wet sample.

Depth (ft)	Strata [1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value) [2]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
22.5		S8 (20' - 22'): Very dense, grey SILT, some fine to coarse Sand, some fine to coarse Gravel, trace Silt & Clay, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-4.)	21-28-44-48 (72)	6.7	28.5	24.3	47.2	NP	NP
25.0		S9 (24' - 26'): Very dense, grey SILT, some fine to coarse Sand, some fine to coarse Gravel, moist. Rec. = 2.0 ft (AASHTO M145 Classification: A-4.)	18-28-33-57 (61)	10.0	26.1	21.8	52.1	17	2
		Hole stopped @ 26.0 ft No refusal.							
27.5									
30.0									
32.5									
35.0									
37.5									

Remarks:
1. Ground surface elevation, northing, easting, station, and offset shown are approximated from ties made from existing features in the field by GeoDesign personnel, the Preliminary Plan Set prepared by VHB and dated 4/30/2015, and an electronic site plan titled "z04b204sv.dgn" provided by VHB via email on June 26, 2015.
2. Visual soil descriptions are per the Burmister system. Laboratory gradations where applicable were performed by VTrans and are per AASHTO M145.
3. Auger grinding on inferred cobbles/gravel from approximately 4' - 6' deep. Augers slightly out of alignment while sampling S3, but were able to be brought back to vertical prior to sampling S4.
4. Increased drilling resistance beginning at 18' deep at the inferred transition to glacial till soils.
5. Water/wet cuttings observed during auger advance between 20' and 24' deep.
6. Borehole backfilled with cuttings and 1.5 bags of bentonite chips, 0.75 bags asphalt patch.
7. Hammer energy is assumed.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

ATTACHMENT 3 – LABORATORY TESTING RESULTS

3A – VTRANS RESULTS

3B – GEOTESTING EXPRESS RESULTS

3A – VTRANS RESULTS

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150770 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:31 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 0 FT **to:** 2 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	99.5%
2.00 mm (#10):	98.0%
850 µm (#20):	93.7%
425 µm (#40):	88.8%
250 µm (#60):	84.7%
150 µm (#100):	81.2%
75 µm (#200):	77.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	26.0%
T-89 Liquid Limit:	39
T-90 Plastic Limit:	20
T-90 Plasticity Index:	19

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	2.0%	**D2487:**	CL	
Sa:	20.3%	**M145:**	A-6	Silty Clay
Si:	77.7%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150771 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:32 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 2 FT **to:** 4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	87.8%
2.00 mm (#10):	86.4%
850 µm (#20):	84.8%
425 µm (#40):	82.9%
250 µm (#60):	80.8%
150 µm (#100):	79.1%
75 µm (#200):	76.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	20.9%
T-89 Liquid Limit:	30
T-90 Plastic Limit:	17
T-90 Plasticity Index:	13

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	13.6%	**D2487:**	CL	
Sa:	9.8%	**M145:**	A-6	Silty Clay
Si:	76.6%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Central Laboratory

Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150772 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:32 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 4 FT **to:** 6 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.8%
850 µm (#20):	99.5%
425 µm (#40):	98.7%
250 µm (#60):	97.4%
150 µm (#100):	96.0%
75 µm (#200):	94.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	31.7%
T-89 Liquid Limit:	42
T-90 Plastic Limit:	21
T-90 Plasticity Index:	21

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.2% **D2487:** CL
Sa: 5.3% **M145:** A-7-6 Clay
Si: 94.5%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150773 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:32 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 6 FT **to:** 7.5 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4A

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.9%
850 µm (#20):	99.1%
425 µm (#40):	98.3%
250 µm (#60):	97.3%
150 µm (#100):	96.3%
75 µm (#200):	94.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	37.1%
T-89 Liquid Limit:	36
T-90 Plastic Limit:	20
T-90 Plasticity Index:	16

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	0.1%	**D2487:**	CL	
Sa:	5.2%	**M145:**	A-6	Silty Clay
Si:	94.7%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150774 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:33 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 7.5 FT **to:** 8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4B

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	80.1%
9.5 mm (3/8"):	73.7%
4.75 mm (#4):	66.4%
2.00 mm (#10):	60.7%
850 µm (#20):	56.7%
425 µm (#40):	53.8%
250 µm (#60):	51.2%
150 µm (#100):	48.3%
75 µm (#200):	43.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 13.2%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 39.3% **D2487:** GM
Sa: 17.2% **M145:** A-4 Gravelly Silt
Si: 43.5%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.
A SMALL AMOUNT OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150775 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:33 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 8 FT **to:** 10 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	90.7%
9.5 mm (3/8"):	83.1%
4.75 mm (#4):	74.4%
2.00 mm (#10):	64.0%
850 µm (#20):	55.7%
425 µm (#40):	49.5%
250 µm (#60):	44.0%
150 µm (#100):	38.6%
75 µm (#200):	30.0%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 8.3%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 36.0% **D2487:** SM
Sa: 34.0% **M145:** A-2-4 Silty Sandy Gravel
Si: 30.0%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150776 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:33 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	91.6%
9.5 mm (3/8"):	82.1%
4.75 mm (#4):	72.2%
2.00 mm (#10):	62.8%
850 µm (#20):	54.0%
425 µm (#40):	47.7%
250 µm (#60):	42.6%
150 µm (#100):	37.6%
75 µm (#200):	30.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.6%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 37.2% **D2487:** SM
Sa: 32.5% **M145:** A-2-4 Silty Sandy Gravel
Si: 30.2%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150777 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:30:34 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+65 **Offset:** -47.0 **Hole:** B-2 **Depth:** 15 FT **to:** 17 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	91.2%
9.5 mm (3/8"):	81.0%
4.75 mm (#4):	73.3%
2.00 mm (#10):	65.8%
850 µm (#20):	59.3%
425 µm (#40):	54.4%
250 µm (#60):	49.9%
150 µm (#100):	45.2%
75 µm (#200):	37.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.5%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 34.2% **D2487:** SM
Sa: 28.6% **M145:** A-4 Sandy Gravelly Silt
Si: 37.2%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

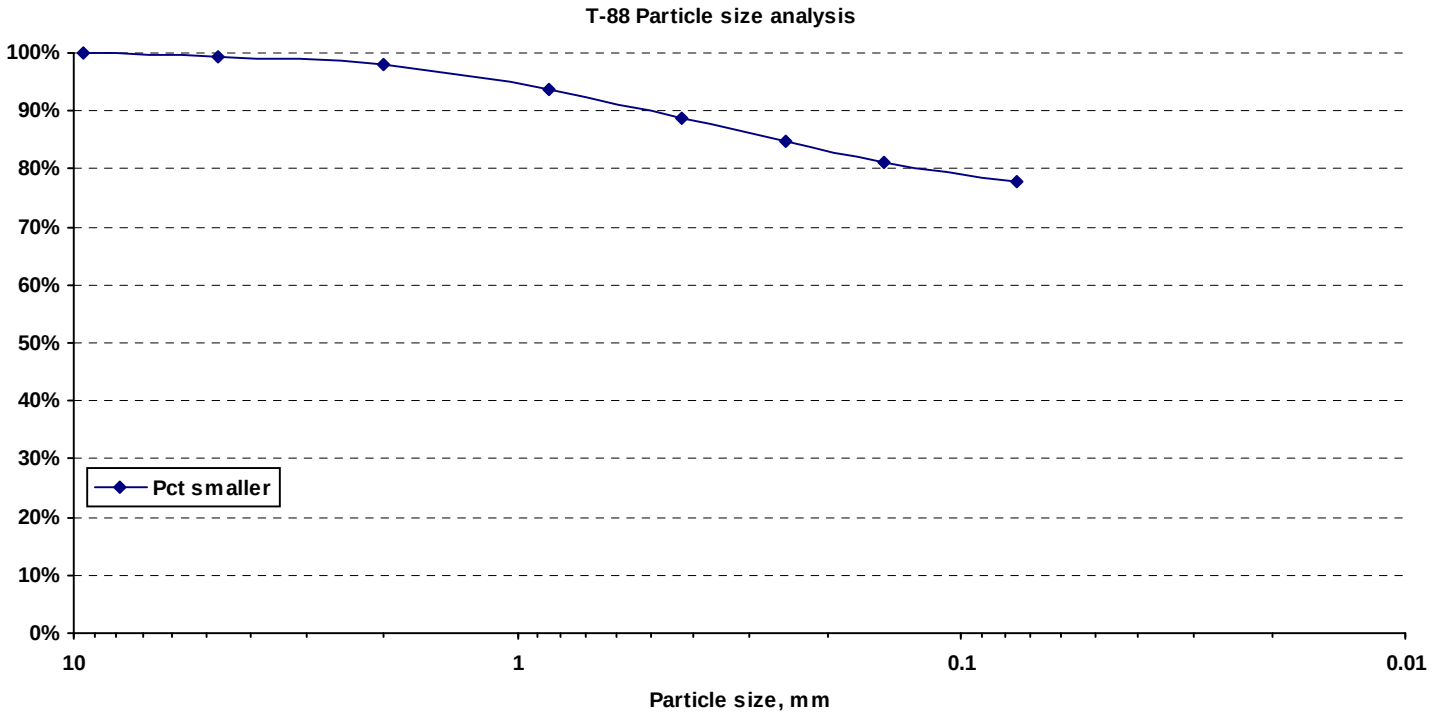
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150770 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 0 FT - 2 FT



Distribution list

State of Vermont
Agency of Transportation
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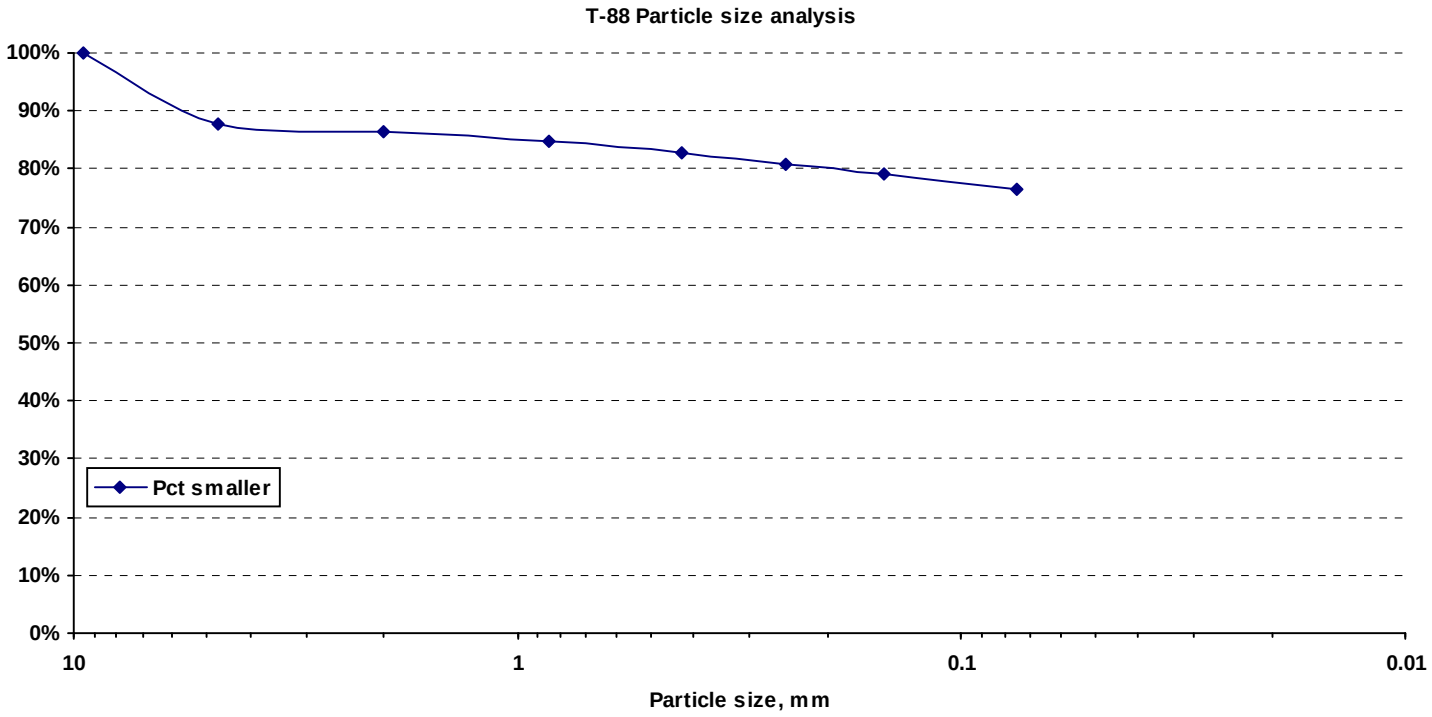
Central Laboratory

Report on Soil Sample

Lab number: E150771 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 2 FT - 4 FT



Distribution list

State of Vermont
Agency of Transportation
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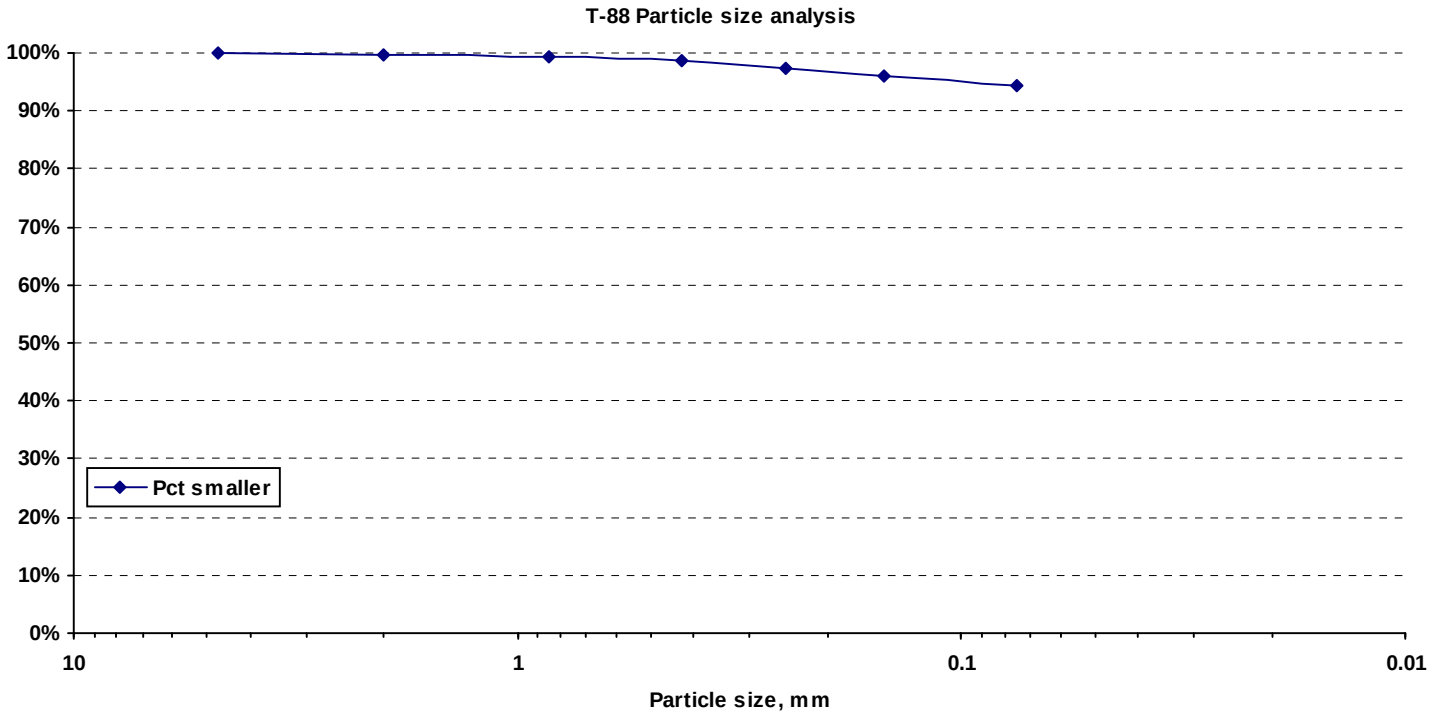
Central Laboratory

Report on Soil Sample

Lab number: E150772 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 4 FT - 6 FT



Distribution list

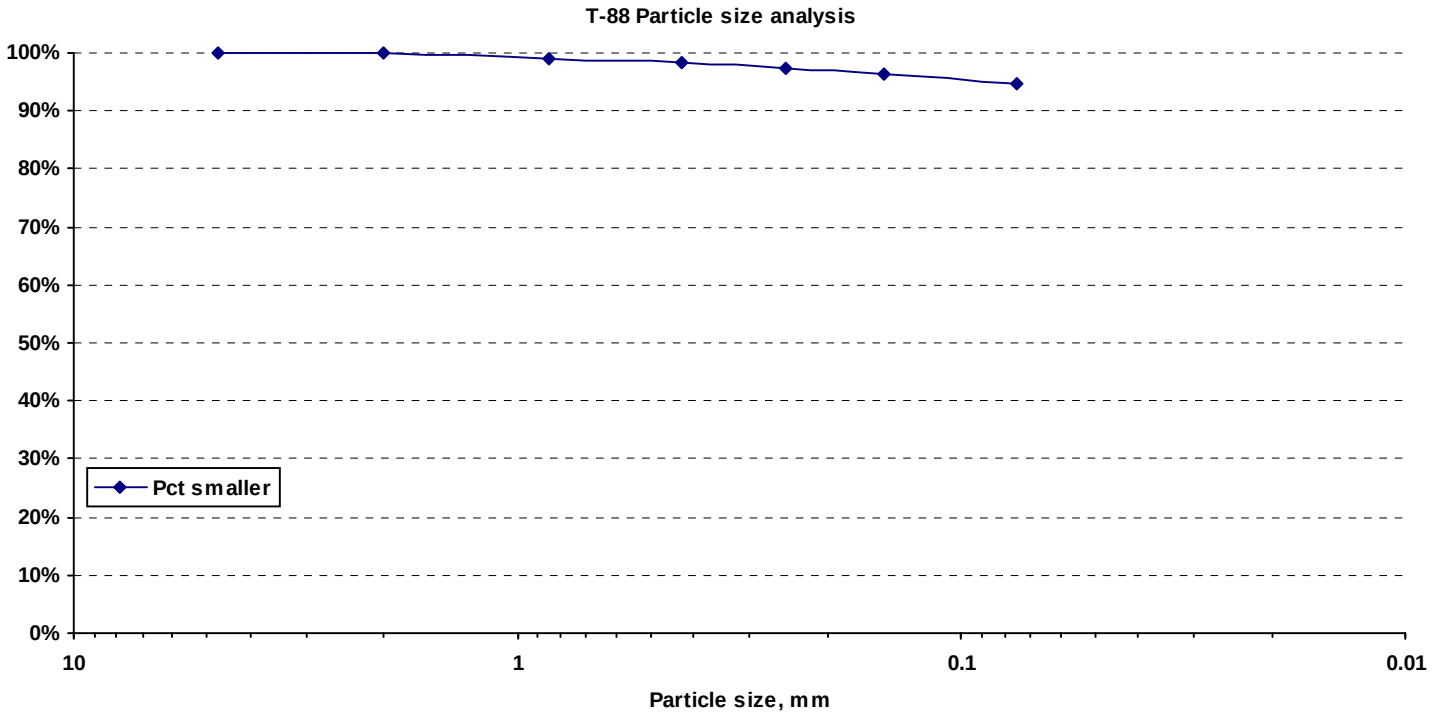
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150773 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 6 FT - 7.5 FT



Distribution list

State of Vermont
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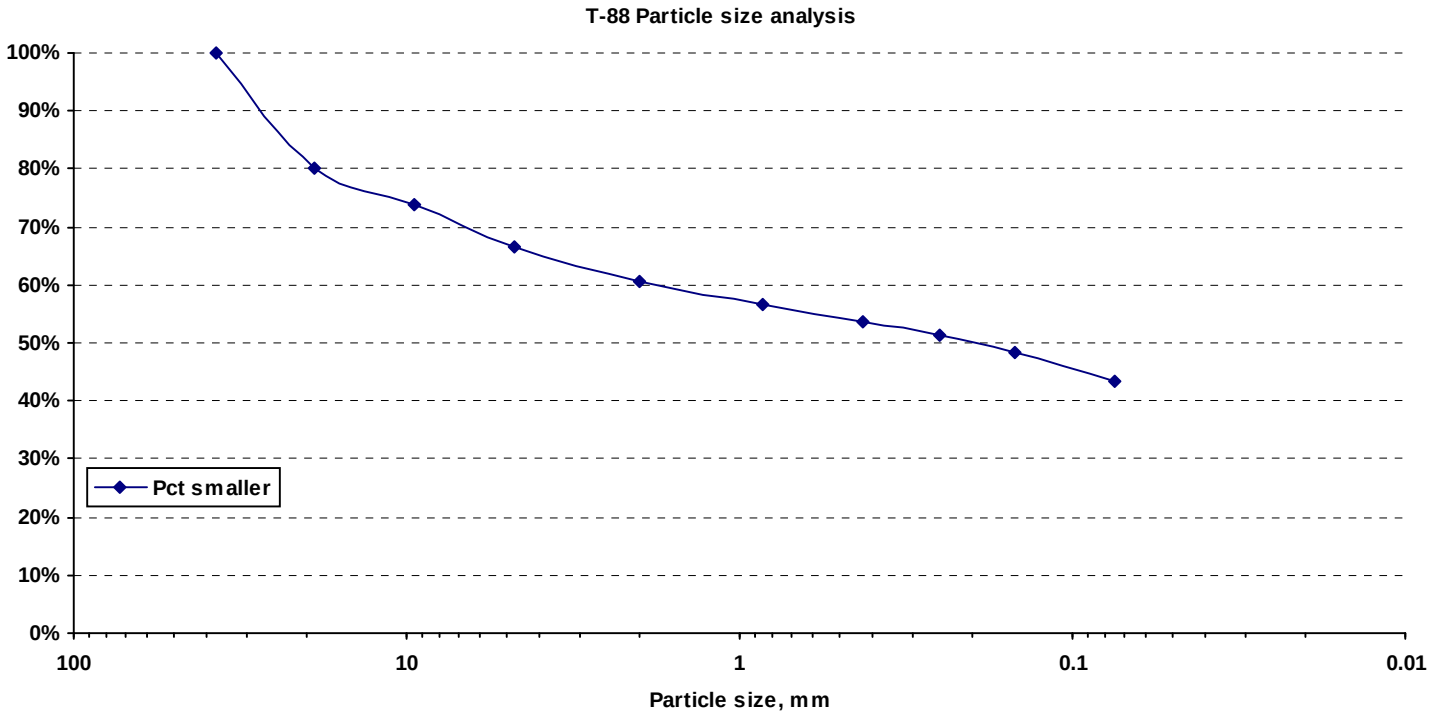
Report on Soil Sample

Lab number: E150774 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 7.5 FT - 8 FT



Distribution list

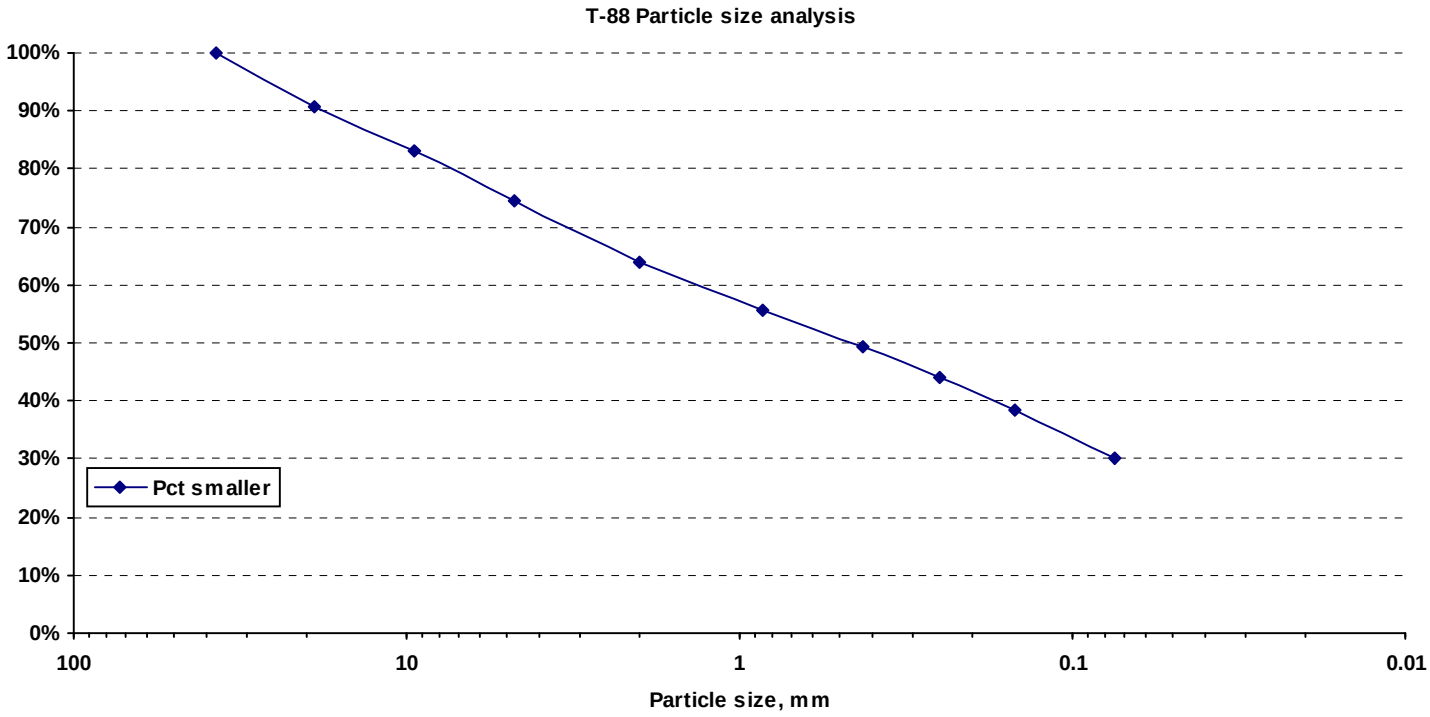
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150775 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 8 FT - 10 FT



Distribution list

State of Vermont
Agency of Transportation
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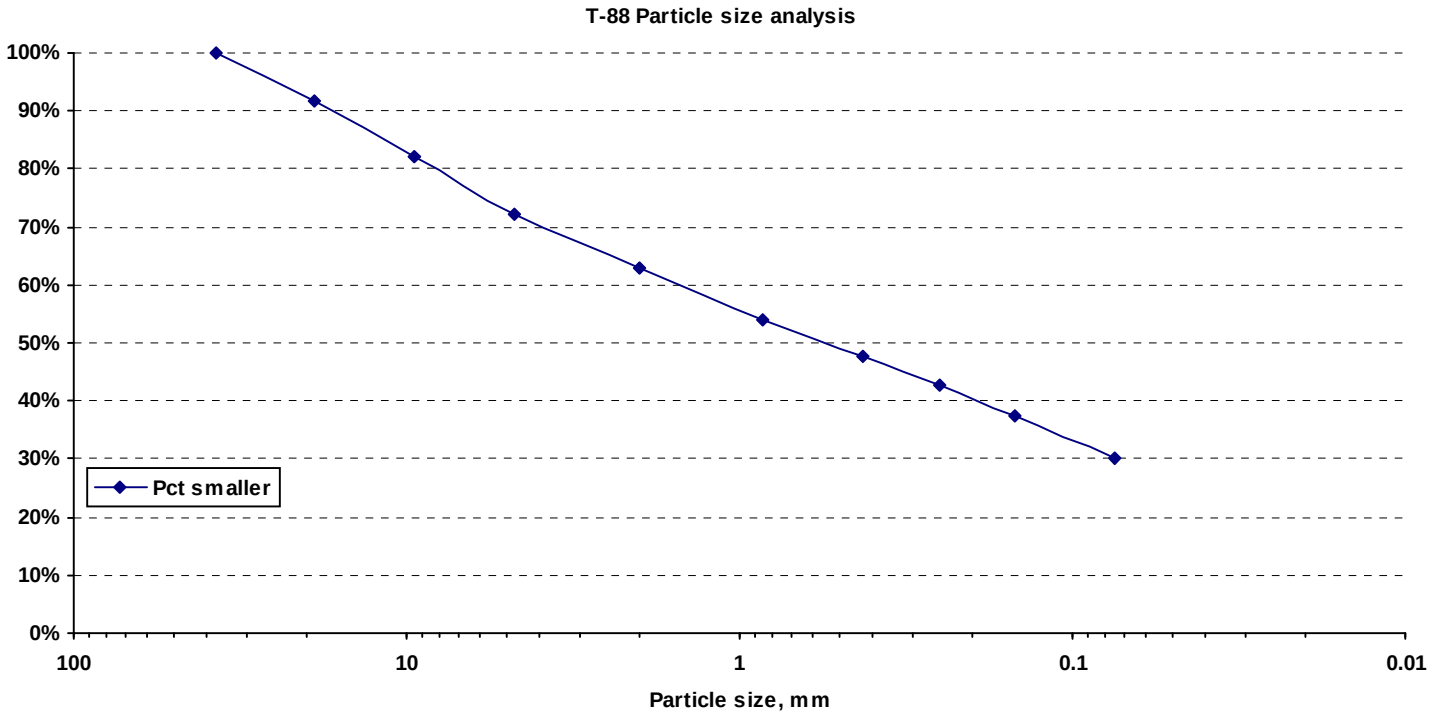
Central Laboratory

Report on Soil Sample

Lab number: E150776 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:43 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 10 FT - 12 FT



Distribution list

State of Vermont
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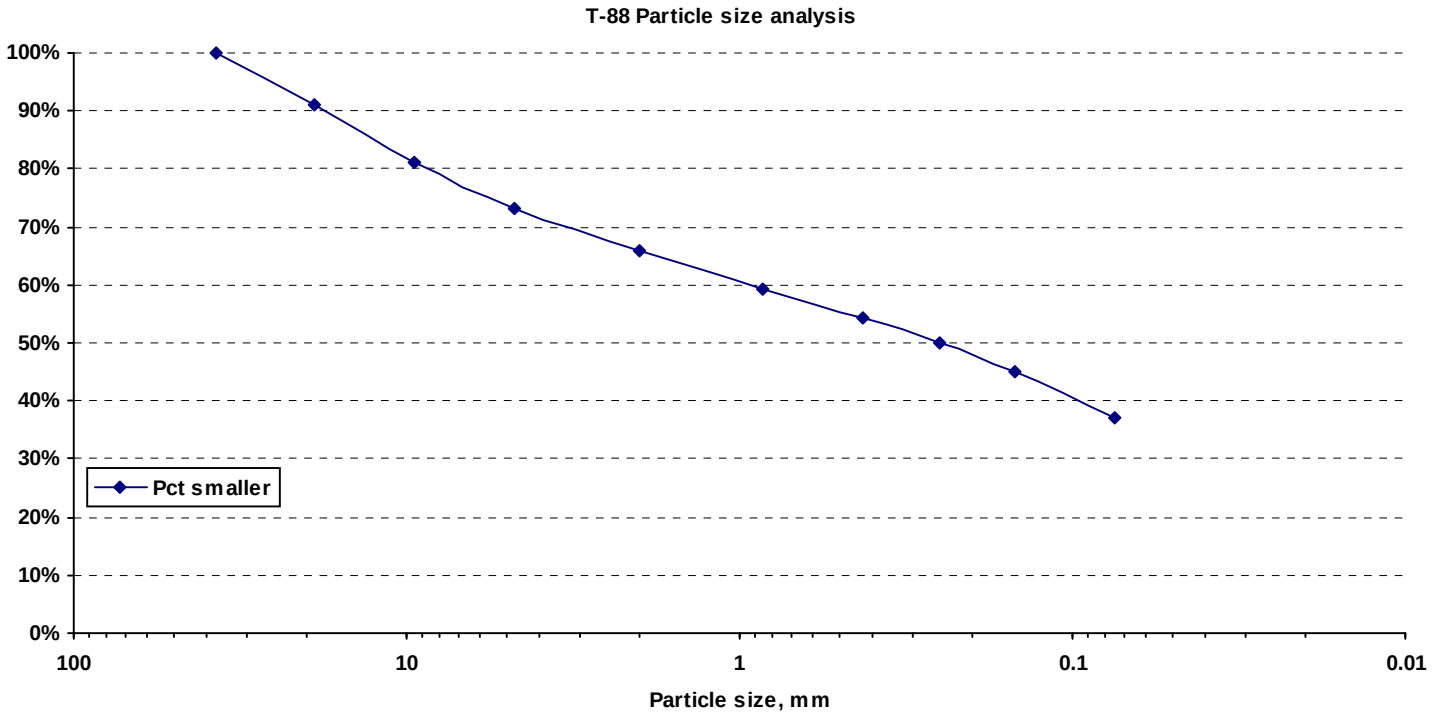
Central Laboratory

Report on Soil Sample

Lab number: E150777 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:31:44 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 **Depth:** 15 FT - 17 FT



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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150778 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:38:47 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/3/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-2 RC **Depth:** 18 FT **to:** 20 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	87.6%
9.5 mm (3/8"):	76.2%
4.75 mm (#4):	65.2%
2.00 mm (#10):	55.5%
850 µm (#20):	47.7%
425 µm (#40):	41.9%
250 µm (#60):	36.8%
150 µm (#100):	31.8%
75 µm (#200):	24.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 5.6%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 44.5% **D2487:** SM
Sa: 31.0% **M145:** A-1-b Silty Sandy Gravel
Si: 24.5%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150779 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:38:48 A
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/3/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-2 RC **Depth:** 20 FT **to:** 22 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.8%
9.5 mm (3/8"):	89.8%
4.75 mm (#4):	76.2%
2.00 mm (#10):	64.3%
850 µm (#20):	54.7%
425 µm (#40):	47.1%
250 µm (#60):	40.3%
150 µm (#100):	34.1%
75 µm (#200):	25.3%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.4%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 35.7% **D2487:** SM
Sa: 38.9% **M145:** A-1-b Silty Gravelly Sand
Si: 25.3%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

State of Vermont
Agency of Transportation
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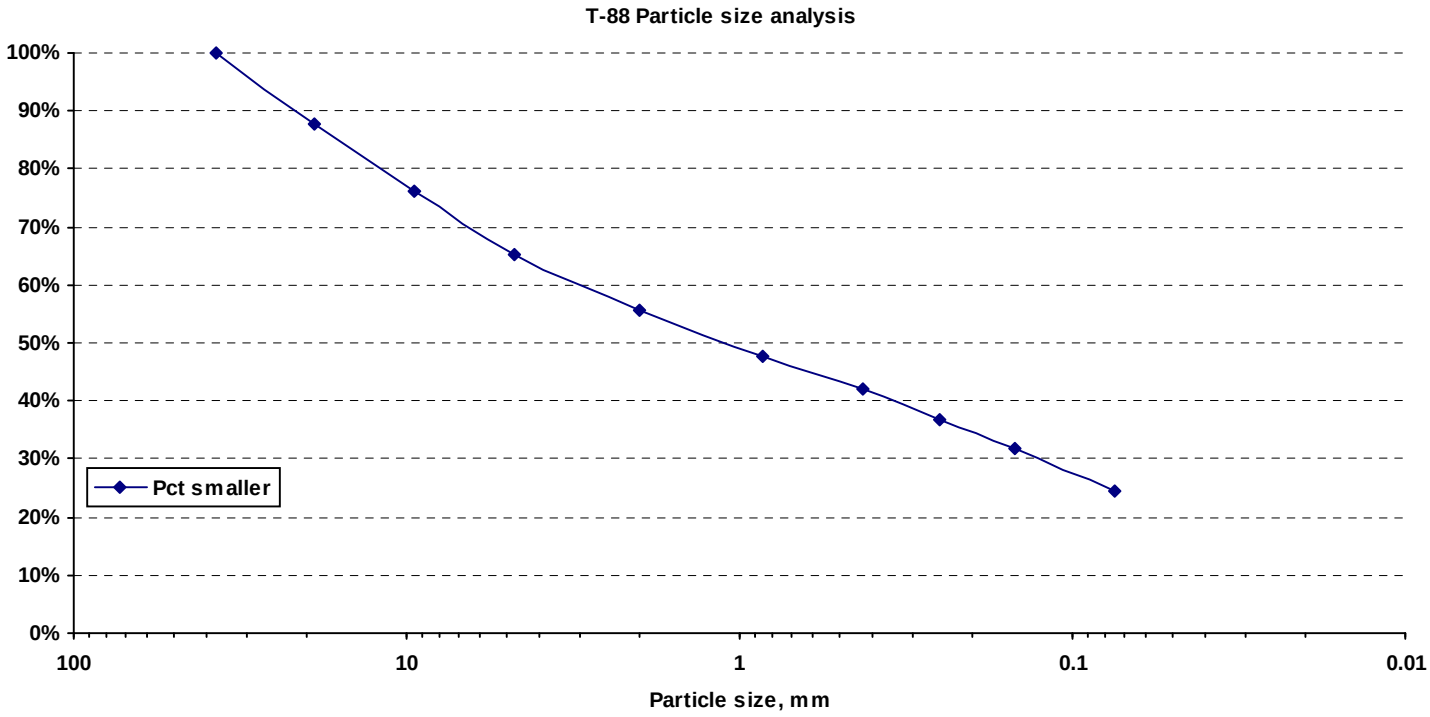
Central Laboratory

Report on Soil Sample

Lab number: E150778 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:39:34 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 RC **Depth:** 18 FT - 20 FT



Distribution list

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Agency of Transportation
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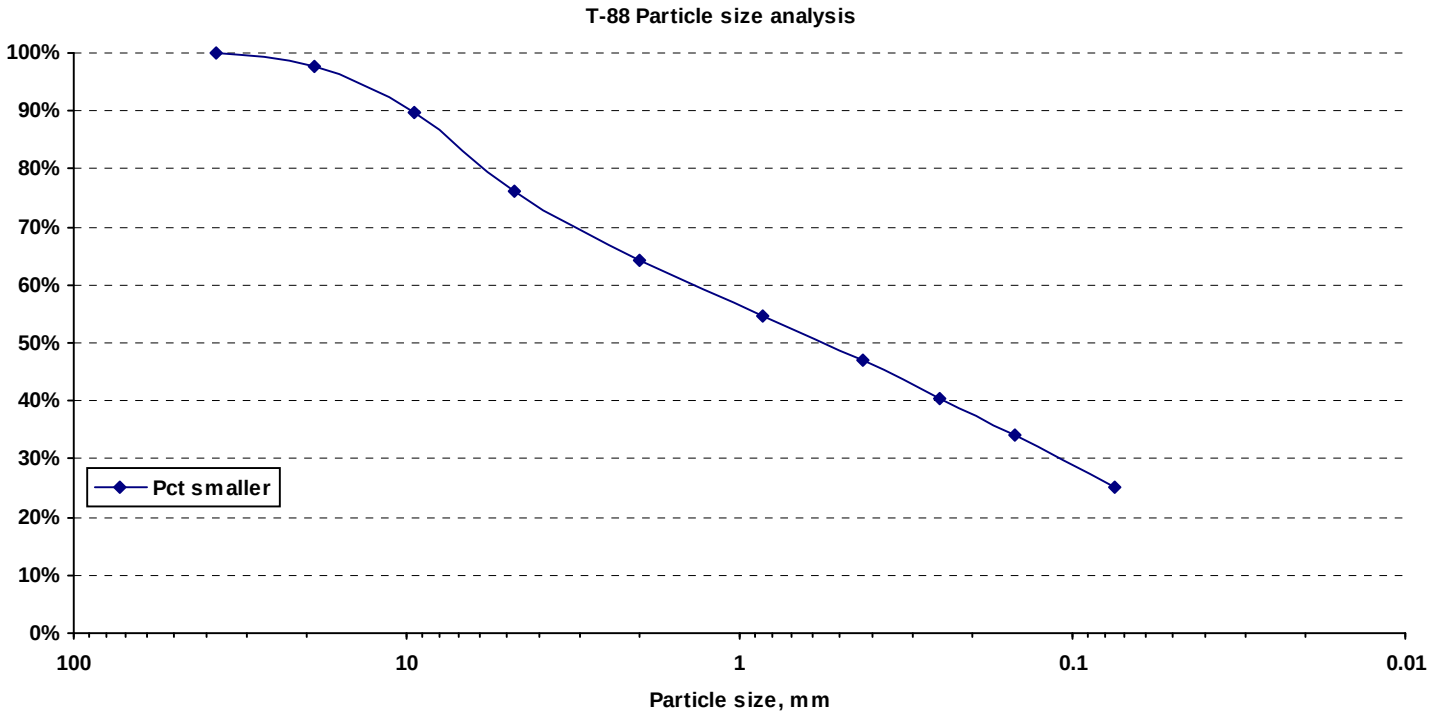
Central Laboratory

Report on Soil Sample

Lab number: E150779 **Corrected copy:** N/A **Report Date:** 6/15/2015 8:39:34 A

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-2 RC **Depth:** 20 FT - 22 FT



State of Vermont
Agency of Transportation
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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150780 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:21
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 2 FT **to:** 4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	83.9%
4.75 mm (#4):	73.4%
2.00 mm (#10):	66.4%
850 µm (#20):	56.5%
425 µm (#40):	45.5%
250 µm (#60):	36.1%
150 µm (#100):	28.6%
75 µm (#200):	21.4%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 19.8%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 33.6% **D2487:** SM
Sa: 45.0% **M145:** A-1-b Silty Gravelly Sand
Si: 21.4%

Comments: LAB NOTE: A SMALL AMOUNT OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150781 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:21
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 4 FT **to:** 6 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.3%
9.5 mm (3/8"):	96.9%
4.75 mm (#4):	94.6%
2.00 mm (#10):	89.7%
850 µm (#20):	80.4%
425 µm (#40):	70.4%
250 µm (#60):	61.8%
150 µm (#100):	56.6%
75 µm (#200):	51.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	26.2%
T-89 Liquid Limit:	35
T-90 Plastic Limit:	17
T-90 Plasticity Index:	18

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 10.3% **D2487:** CL
Sa: 37.9% **M145:** A-6 Sandy Silty Clay
Si: 51.8%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150782 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:21
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 6 FT **to:** 6.8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3A

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	98.7%
4.75 mm (#4):	90.0%
2.00 mm (#10):	83.5%
850 µm (#20):	77.8%
425 µm (#40):	72.3%
250 µm (#60):	66.1%
150 µm (#100):	60.1%
75 µm (#200):	53.1%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	20.9%
T-89 Liquid Limit:	33
T-90 Plastic Limit:	18
T-90 Plasticity Index:	15

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 16.5% **D2487:** CL
Sa: 30.4% **M145:** A-6 Sandy Silty Clay
Si: 53.1%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
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Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150783 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:22
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 6.8 FT **to:** 8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3B

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	91.9%
9.5 mm (3/8"):	85.9%
4.75 mm (#4):	74.2%
2.00 mm (#10):	65.1%
850 µm (#20):	58.0%
425 µm (#40):	52.0%
250 µm (#60):	46.1%
150 µm (#100):	40.6%
75 µm (#200):	32.3%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 10.4%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 34.9% **D2487:** SM
Sa: 32.8% **M145:** A-2-4 Silty Sandy Gravel
Si: 32.3%

Comments: LAB NOTE: SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150784 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:22
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 8 FT **to:** 10 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	99.2%
9.5 mm (3/8"):	92.6%
4.75 mm (#4):	84.4%
2.00 mm (#10):	77.2%
850 µm (#20):	70.5%
425 µm (#40):	65.2%
250 µm (#60):	60.2%
150 µm (#100):	54.6%
75 µm (#200):	45.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 12.5%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 22.8% **D2487:** SM
Sa: 31.5% **M145:** A-4 Gravelly Sandy Silt
Si: 45.7%

Comments: LAB NOTE: SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150785 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:22
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.4%
9.5 mm (3/8"):	91.3%
4.75 mm (#4):	84.8%
2.00 mm (#10):	78.6%
850 µm (#20):	73.2%
425 µm (#40):	68.6%
250 µm (#60):	63.8%
150 µm (#100):	58.8%
75 µm (#200):	50.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 11.3%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 21.4% **D2487:** ML
Sa: 27.9% **M145:** A-4 Gravelly Sandy Silt
Si: 50.6%

Comments: LAB NOTE: SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150786 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:23
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 15 FT **to:** 16.4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	98.0%
9.5 mm (3/8"):	92.6%
4.75 mm (#4):	84.4%
2.00 mm (#10):	77.4%
850 µm (#20):	71.4%
425 µm (#40):	67.1%
250 µm (#60):	62.9%
150 µm (#100):	57.8%
75 µm (#200):	49.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.7%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 22.6% **D2487:** SM
Sa: 27.8% **M145:** A-4 Gravelly Sandy Silt
Si: 49.6%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150787 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:23:23
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 6/2/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 287+76 **Offset:** 39.0 **Hole:** B-3 **Depth:** 20 FT **to:** 20.8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	91.3%
9.5 mm (3/8"):	83.3%
4.75 mm (#4):	74.2%
2.00 mm (#10):	66.8%
850 µm (#20):	59.8%
425 µm (#40):	55.1%
250 µm (#60):	51.2%
150 µm (#100):	47.2%
75 µm (#200):	41.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.8%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 33.2% **D2487:** SM
Sa: 25.6% **M145:** A-4 Sandy Gravelly Silt
Si: 41.2%

Comments: LAB NOTE: A SMALL AMOUNT OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP) BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

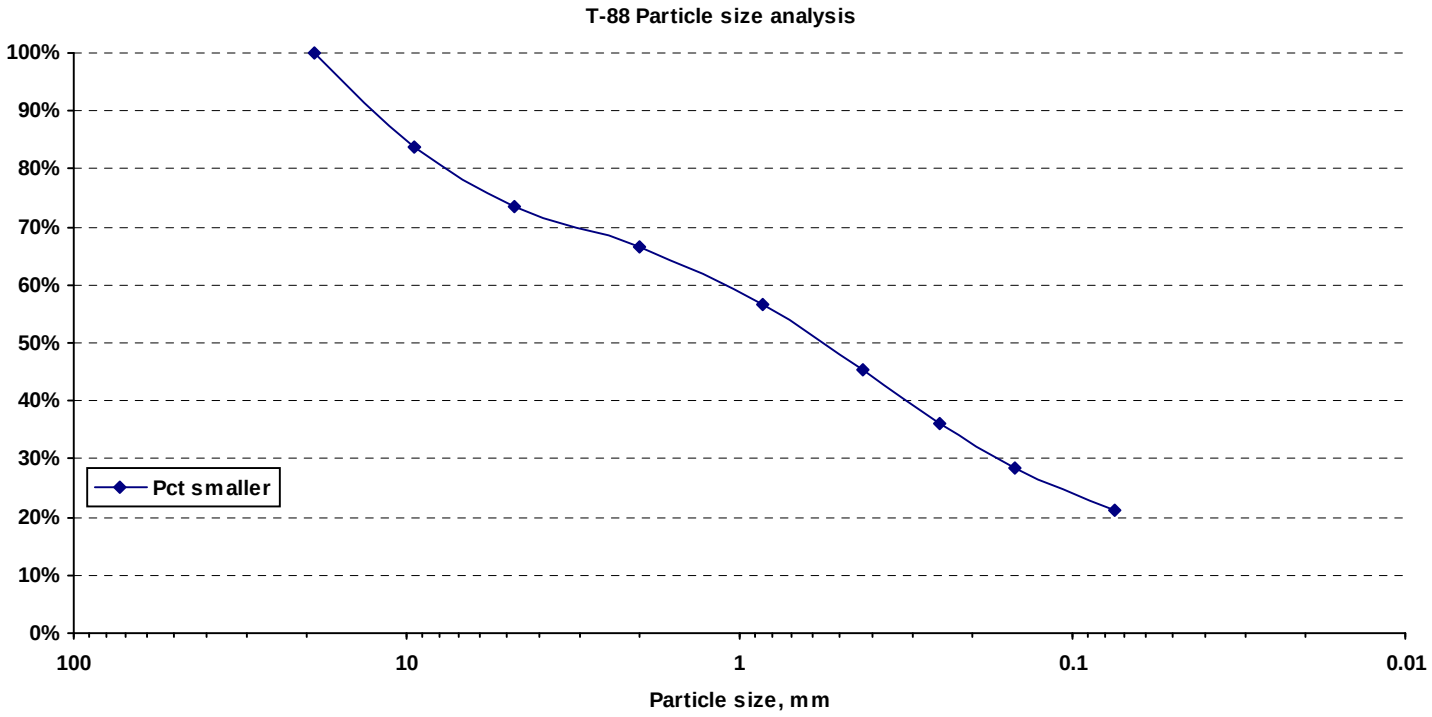
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150780 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 2 FT - 4 FT



Distribution list

State of Vermont
Agency of Transportation
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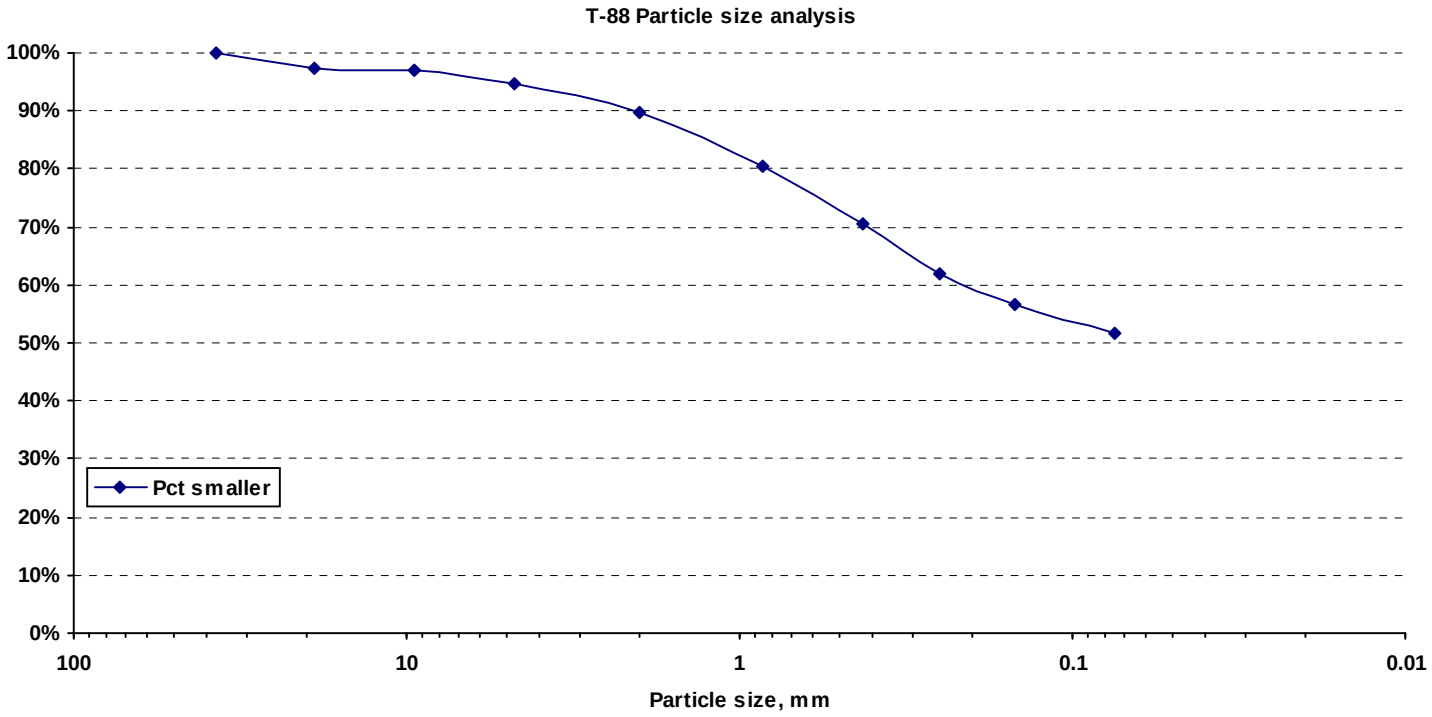
Report on Soil Sample

Lab number: E150781 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 4 FT - 6 FT



Distribution list

State of Vermont
Agency of Transportation
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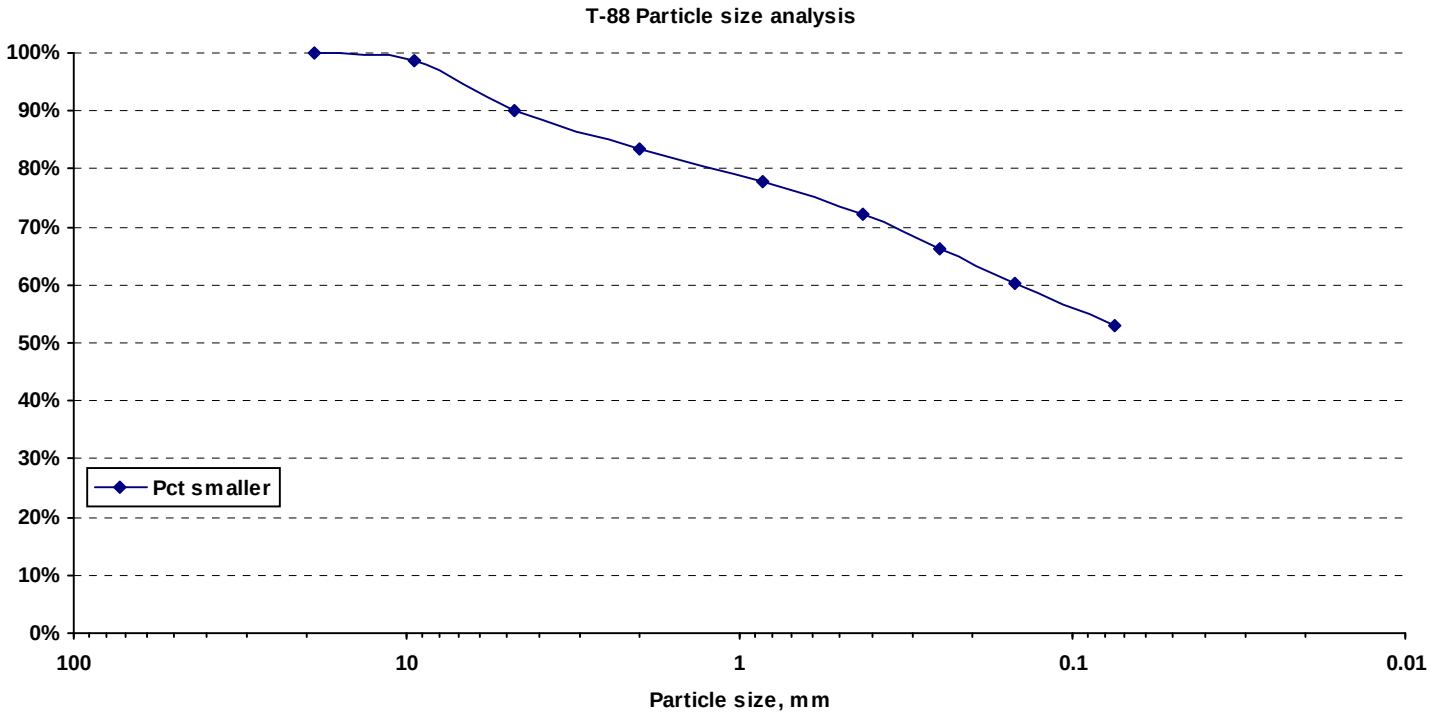
Central Laboratory

Report on Soil Sample

Lab number: E150782 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:33

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 6 FT - 6.8 FT



Distribution list

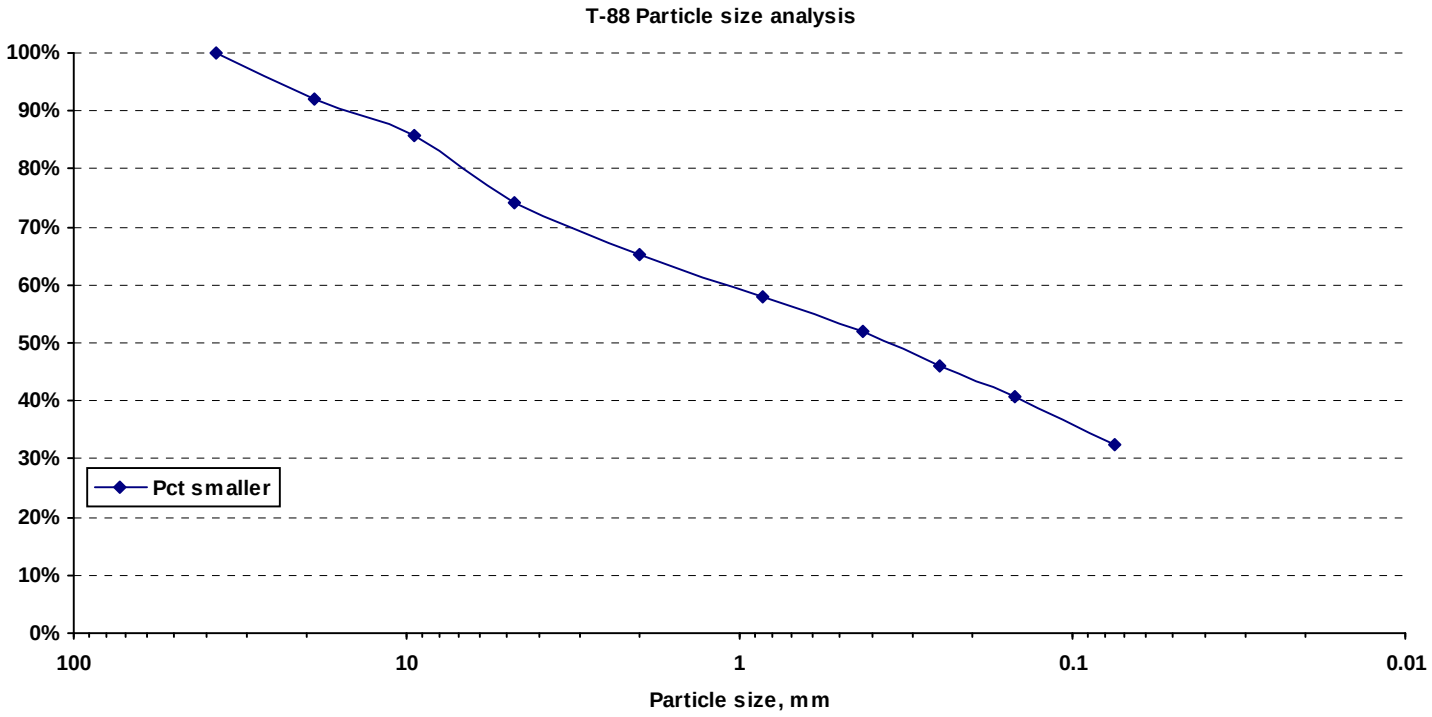
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150783 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:33

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 6.8 FT - 8 FT



Distribution list

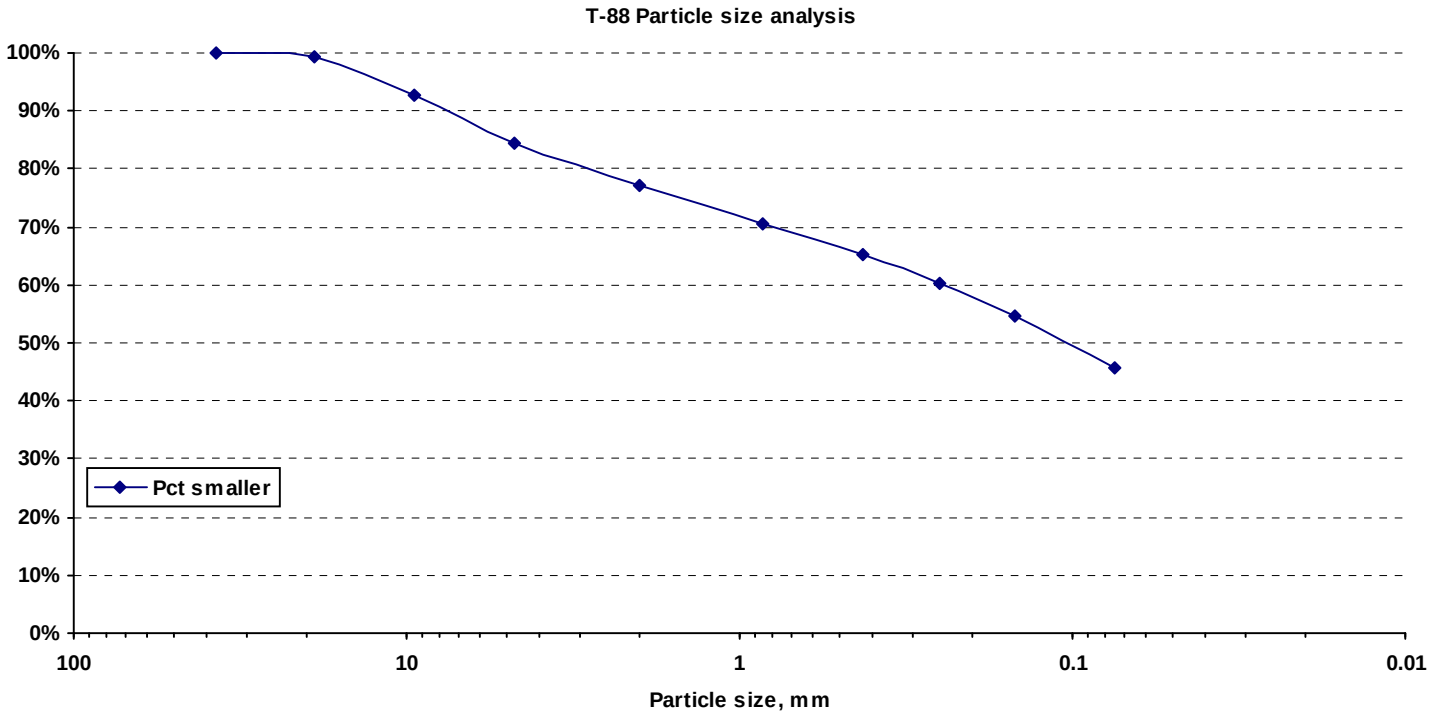
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150784 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:33

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 8 FT - 10 FT



Distribution list

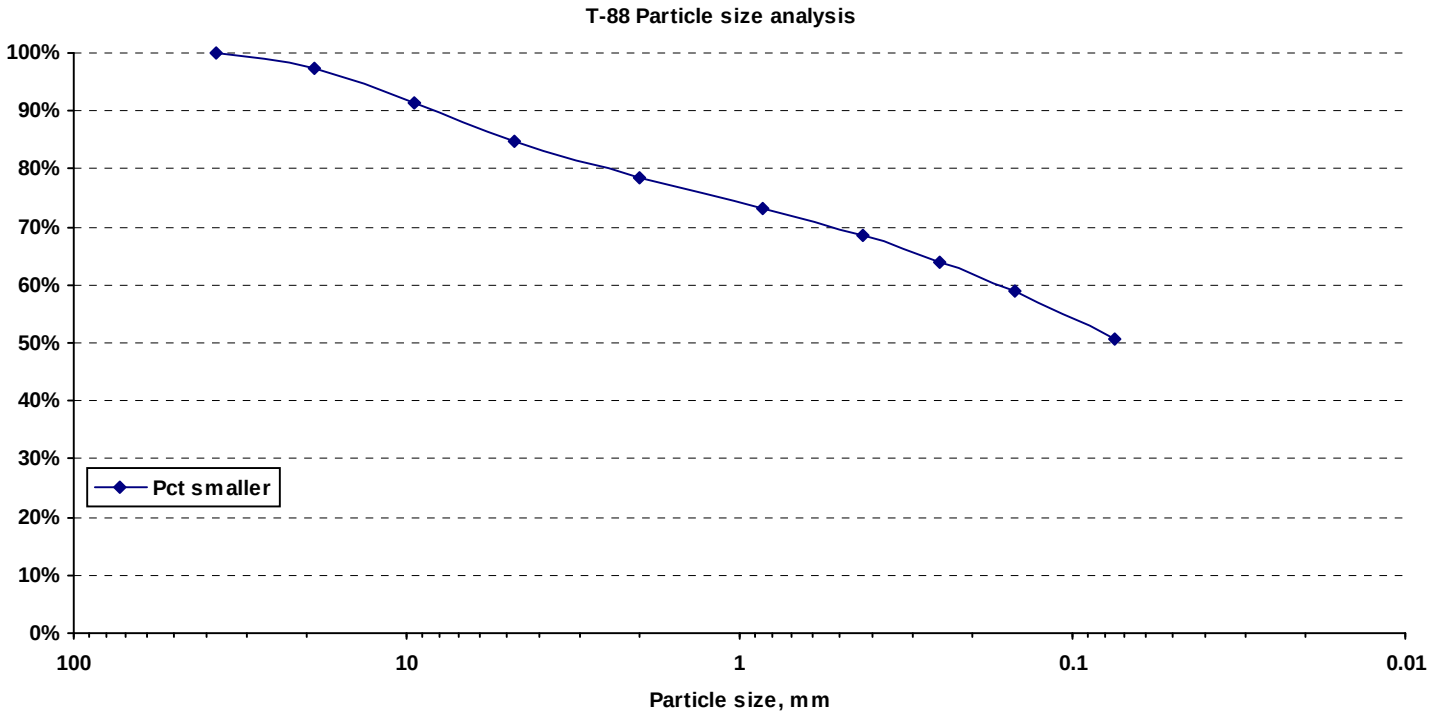
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150785 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:35

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 10 FT - 12 FT



Distribution list

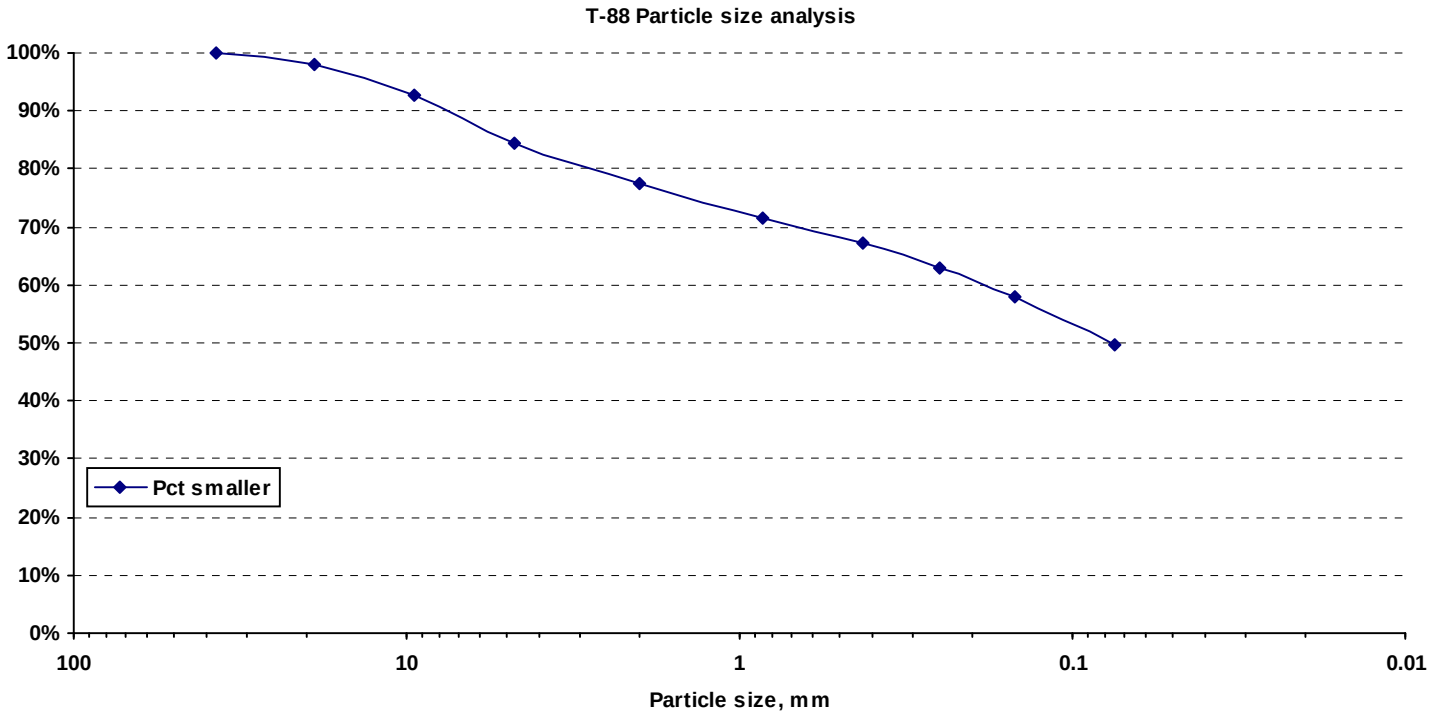
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150786 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:35

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 15 FT - 16.4 FT



Distribution list

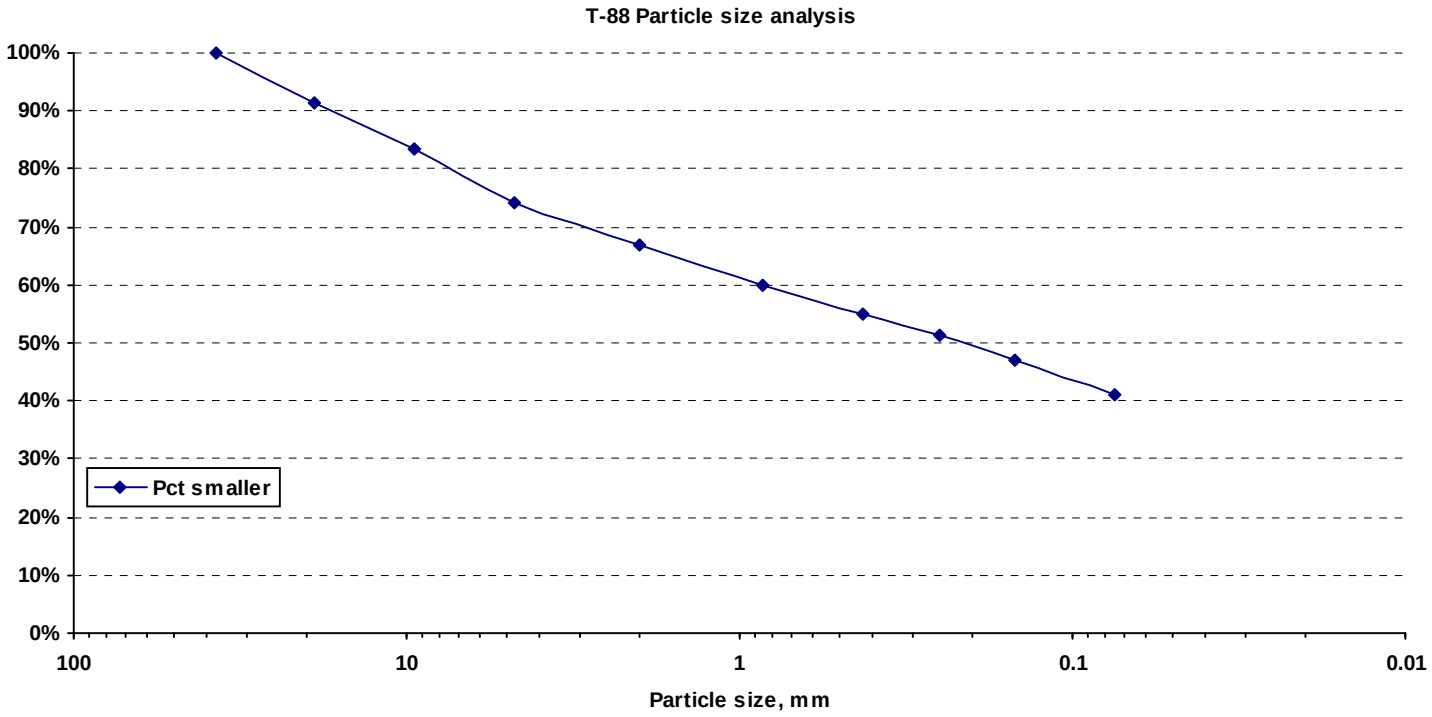
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150787 **Corrected copy:** N/A **Report Date:** 6/15/2015 11:29:35

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-3 **Depth:** 20 FT - 20.8 FT



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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150788 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:10
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 0 FT **to:** 2 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.8%
850 µm (#20):	98.6%
425 µm (#40):	95.7%
250 µm (#60):	90.9%
150 µm (#100):	85.6%
75 µm (#200):	78.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	22.0%
T-89 Liquid Limit:	31
T-90 Plastic Limit:	18
T-90 Plasticity Index:	13

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.2% **D2487:** CL
Sa: 21.2% **M145:** A-6 Sandy Silty Clay
Si: 78.6%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150789 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:10
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 2 FT **to:** 4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	98.2%
4.75 mm (#4):	86.9%
2.00 mm (#10):	84.9%
850 µm (#20):	84.0%
425 µm (#40):	82.1%
250 µm (#60):	79.7%
150 µm (#100):	77.2%
75 µm (#200):	72.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	23.9%
T-89 Liquid Limit:	34
T-90 Plastic Limit:	18
T-90 Plasticity Index:	16

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	15.1%	**D2487:**	CL	
Sa:	12.7%	**M145:**	A-6	Silty Clay
Si:	72.2%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Report on Soil Sample

Lab number: E150790 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:11
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 4 FT **to:** 6 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	91.8%
9.5 mm (3/8"):	89.2%
4.75 mm (#4):	83.5%
2.00 mm (#10):	74.7%
850 µm (#20):	66.4%
425 µm (#40):	59.2%
250 µm (#60):	52.1%
150 µm (#100):	43.7%
75 µm (#200):	30.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	16.1%
T-89 Liquid Limit:	33
T-90 Plastic Limit:	16
T-90 Plasticity Index:	17

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 25.3% **D2487:** SC
Sa: 44.2% **M145:** A-2-6 Gravelly Sandy Clay
Si: 30.5%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150791 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:11
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 6 FT **to:** 8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-4

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.9%
9.5 mm (3/8"):	88.4%
4.75 mm (#4):	76.3%
2.00 mm (#10):	66.5%
850 µm (#20):	59.5%
425 µm (#40):	54.2%
250 µm (#60):	49.4%
150 µm (#100):	44.4%
75 µm (#200):	36.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.8%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 33.5% **D2487:** SM
Sa: 30.3% **M145:** A-4 Sandy Gravelly Silt
Si: 36.2%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Report on Soil Sample

Lab number: E150792 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:12
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 8 FT **to:** 10 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	94.3%
4.75 mm (#4):	83.3%
2.00 mm (#10):	72.7%
850 µm (#20):	64.7%
425 µm (#40):	58.9%
250 µm (#60):	53.5%
150 µm (#100):	47.6%
75 µm (#200):	38.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 11.1%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 27.3% **D2487:** SM
Sa: 33.9% **M145:** A-4 Gravelly Sandy Silt
Si: 38.8%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Report on Soil Sample

Lab number: E150793 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:12
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.1%
9.5 mm (3/8"):	89.8%
4.75 mm (#4):	82.9%
2.00 mm (#10):	75.7%
850 µm (#20):	69.2%
425 µm (#40):	64.5%
250 µm (#60):	60.0%
150 µm (#100):	55.3%
75 µm (#200):	47.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.6%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 24.3% **D2487:** SM
Sa: 28.1% **M145:** A-4 Gravelly Sandy Silt
Si: 47.6%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Report on Soil Sample

Lab number: E150794 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:12
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 15 FT **to:** 17 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.8%
9.5 mm (3/8"):	90.4%
4.75 mm (#4):	78.1%
2.00 mm (#10):	69.1%
850 µm (#20):	61.6%
425 µm (#40):	55.9%
250 µm (#60):	50.2%
150 µm (#100):	43.1%
75 µm (#200):	32.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.4%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 30.9% **D2487:** SM
Sa: 36.9% **M145:** A-2-4 Gravelly Silty Sand
Si: 32.2%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
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Distribution list
GEODESIGN
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Report on Soil Sample

Lab number: E150795 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:13
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 19 FT **to:** 19.7 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-8

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	84.9%
9.5 mm (3/8"):	80.8%
4.75 mm (#4):	72.2%
2.00 mm (#10):	61.6%
850 µm (#20):	53.0%
425 µm (#40):	46.1%
250 µm (#60):	39.9%
150 µm (#100):	34.5%
75 µm (#200):	26.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.0%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 38.4% **D2487:** SM
Sa: 34.7% **M145:** A-2-4 Silty Sandy Gravel
Si: 26.9%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150796 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:06:13
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/26/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 288+80 **Offset:** 45.0 **Hole:** B-4 **Depth:** 24 FT **to:** 25.5 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-9

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	96.1%
9.5 mm (3/8"):	83.9%
4.75 mm (#4):	71.8%
2.00 mm (#10):	59.8%
850 µm (#20):	51.9%
425 µm (#40):	45.7%
250 µm (#60):	39.7%
150 µm (#100):	33.9%
75 µm (#200):	25.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.1%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 40.2% **D2487:** SM
Sa: 33.9% **M145:** A-2-4 Silty Sandy Gravel
Si: 25.9%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

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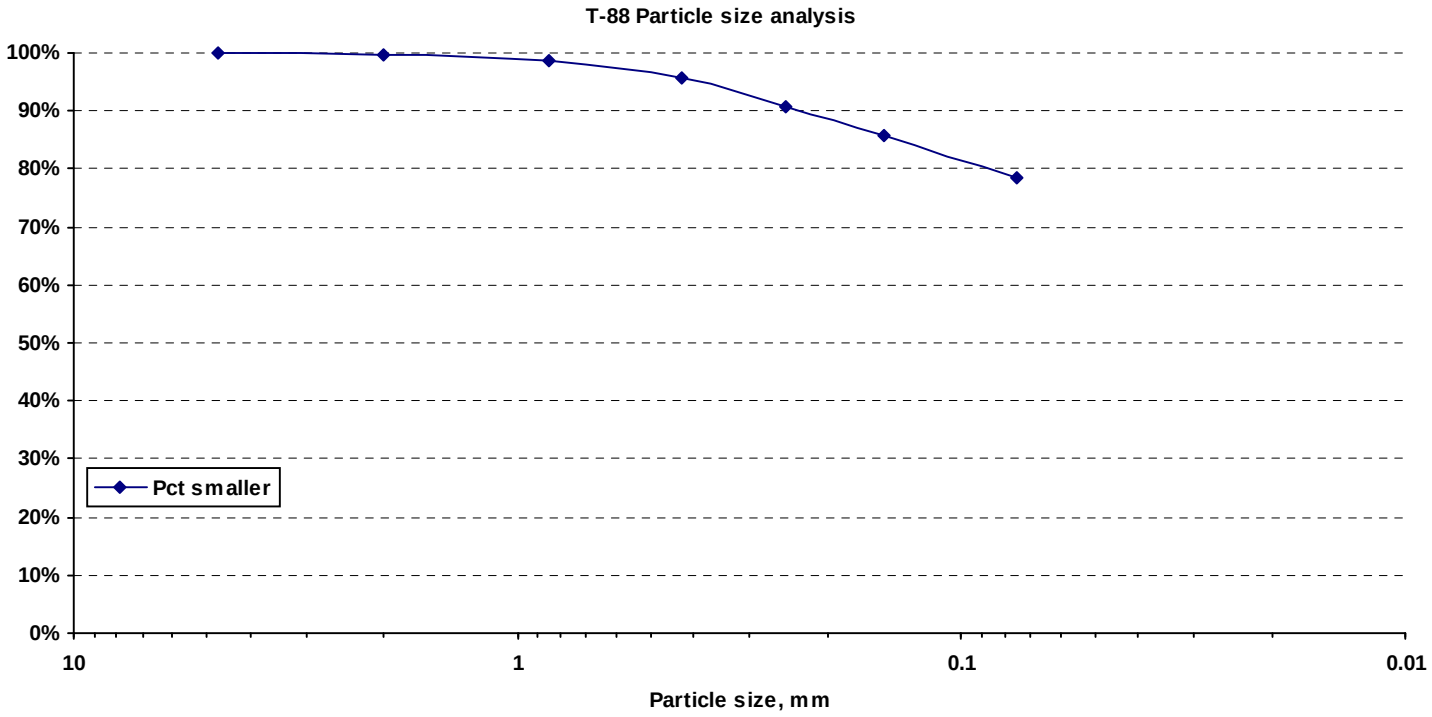
Central Laboratory

Report on Soil Sample

Lab number: E150788 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 0 FT - 2 FT



Distribution list

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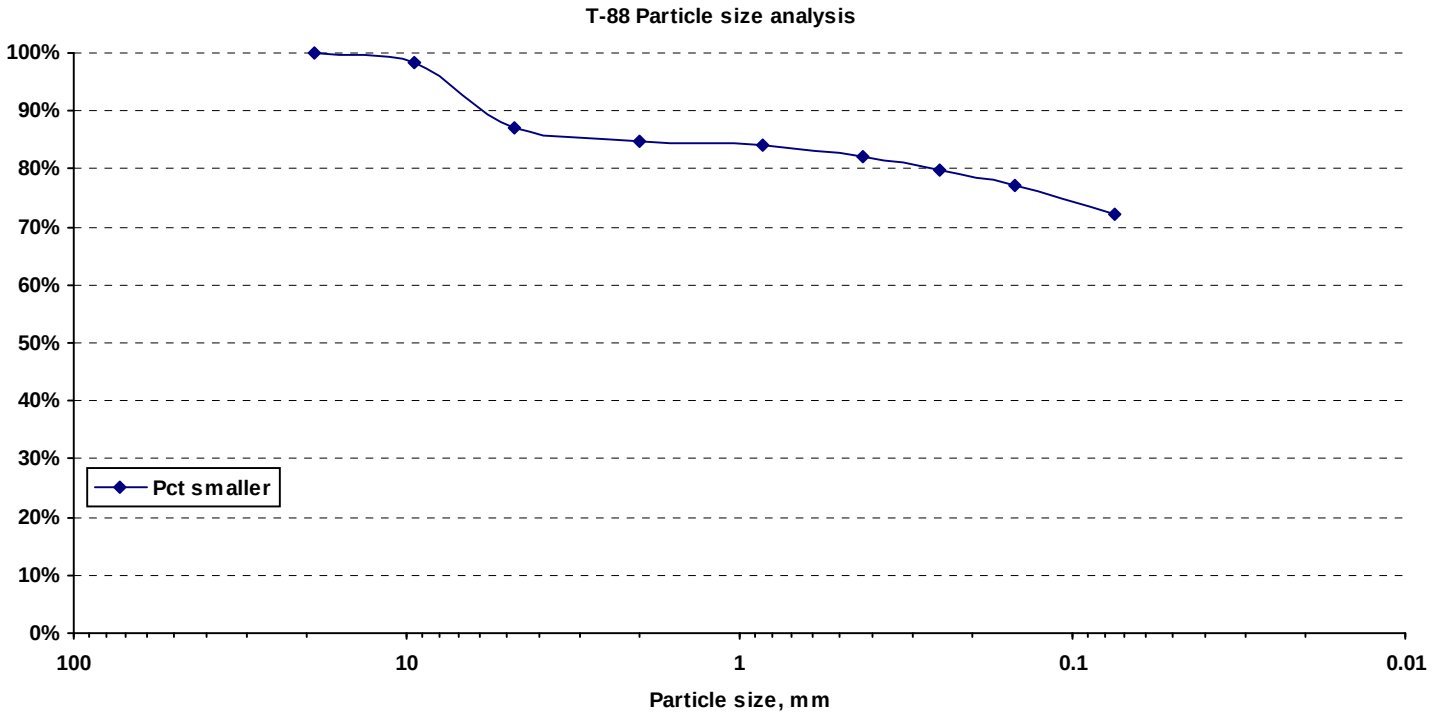
Report on Soil Sample

Lab number: E150789 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 2 FT - 4 FT



Distribution list

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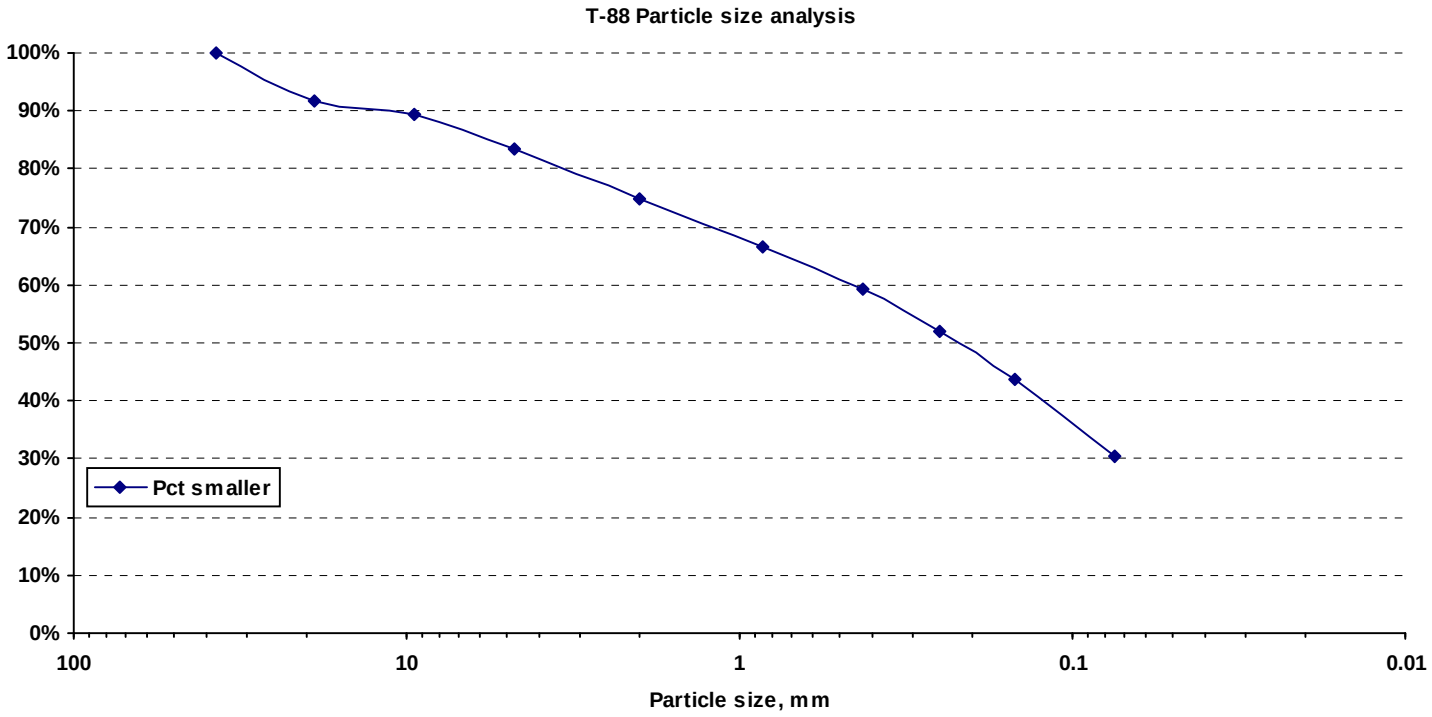
Report on Soil Sample

Lab number: E150790 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 4 FT - 6 FT



Distribution list

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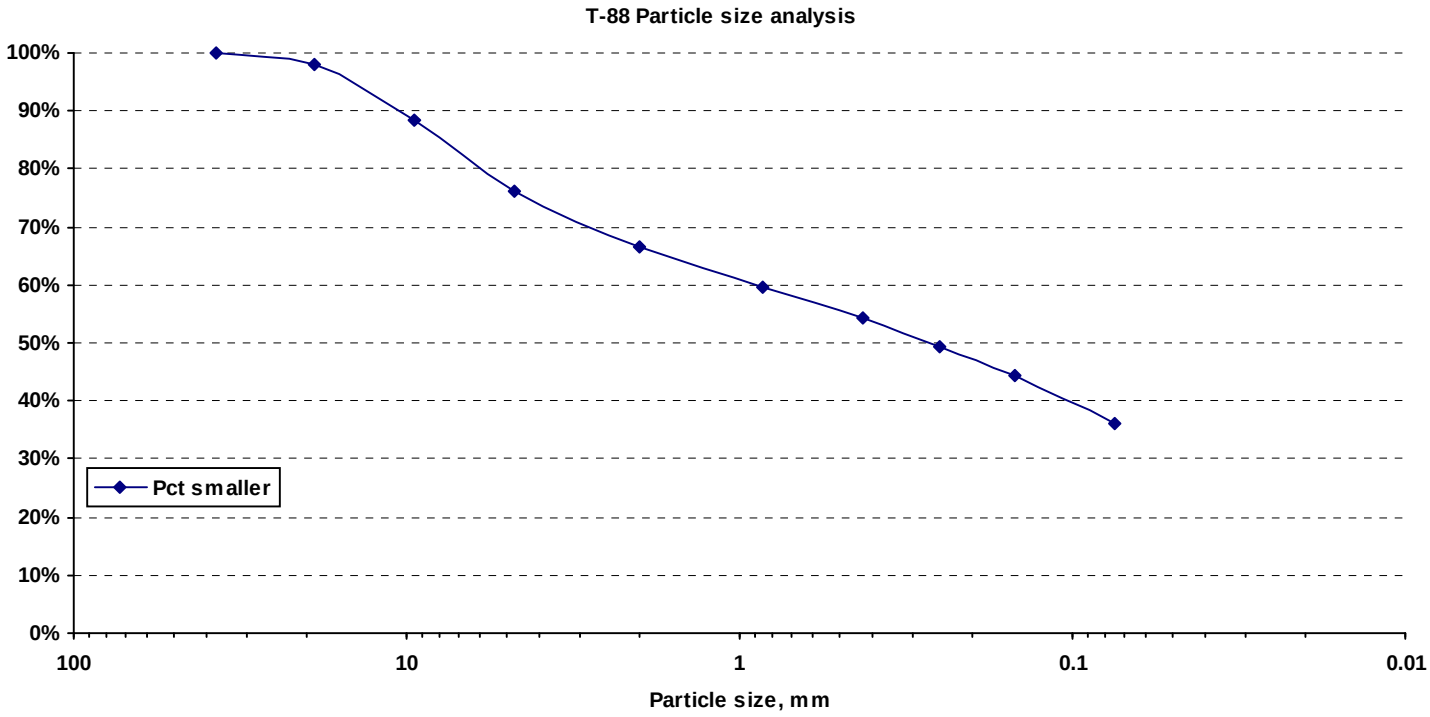
Report on Soil Sample

Lab number: E150791 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 6 FT - 8 FT



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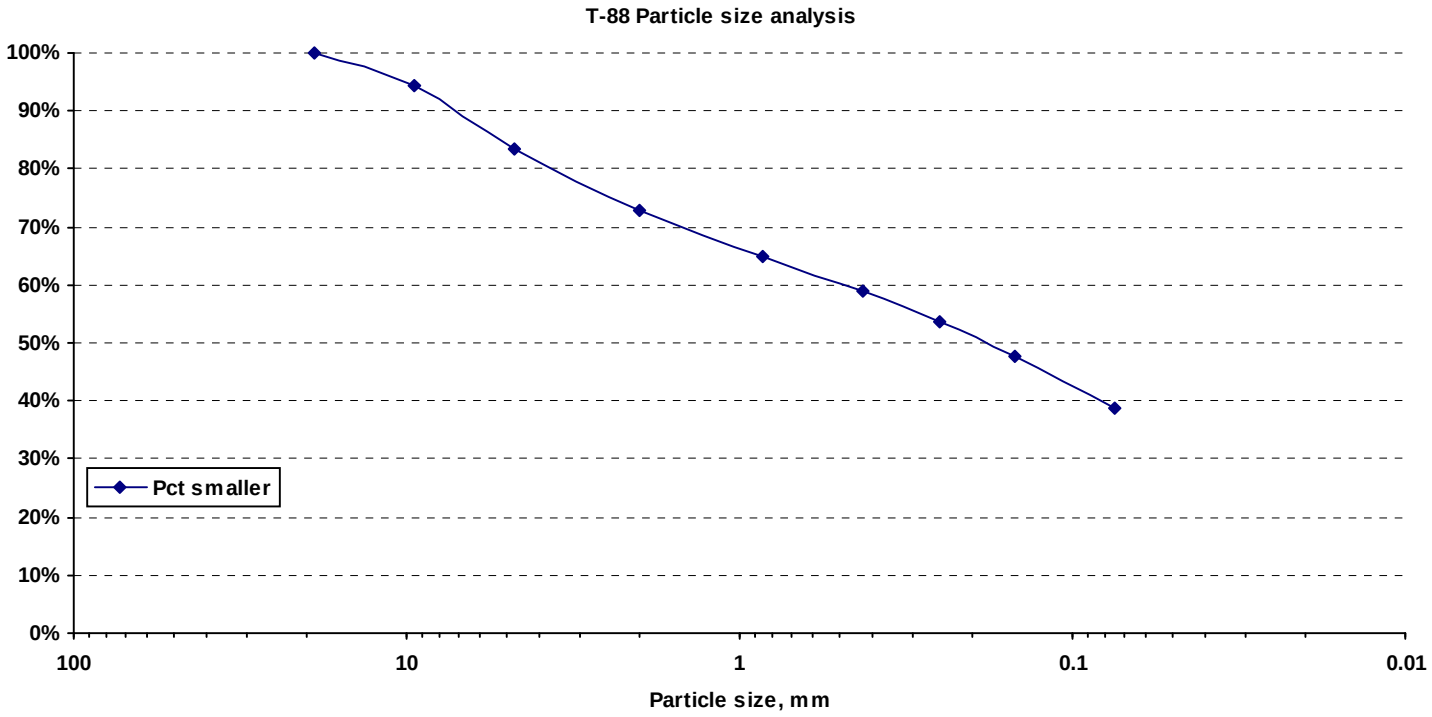
Report on Soil Sample

Lab number: E150792 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 8 FT - 10 FT



Distribution list

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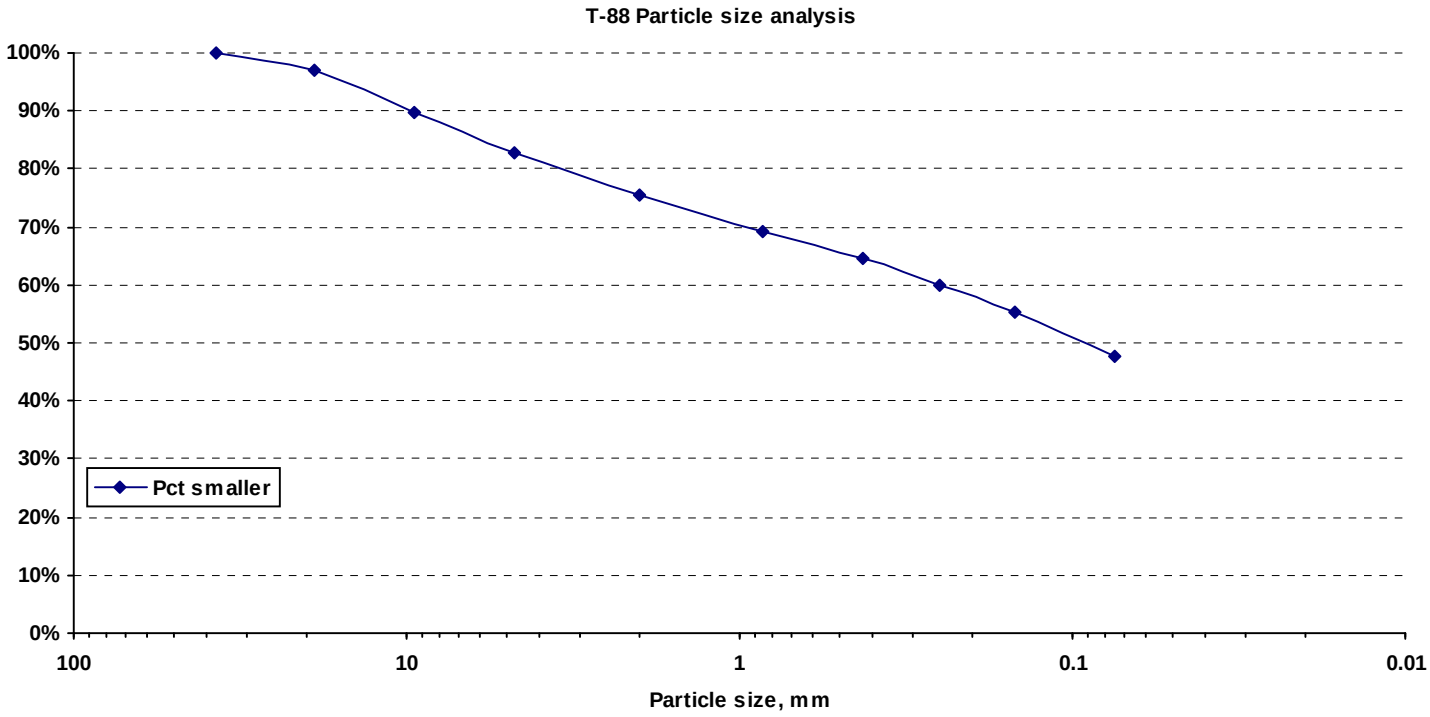
Report on Soil Sample

Lab number: E150793 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 10 FT - 12 FT



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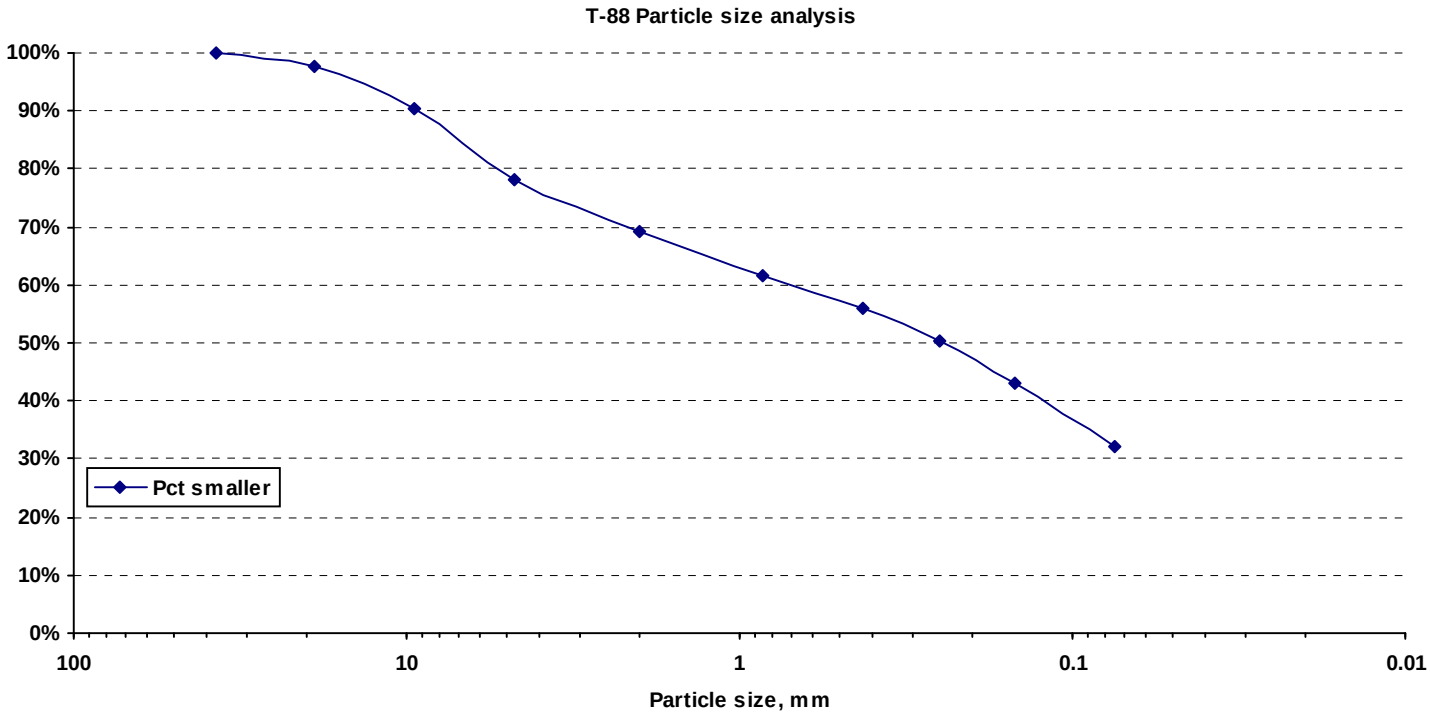
Report on Soil Sample

Lab number: E150794 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:10

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 15 FT - 17 FT



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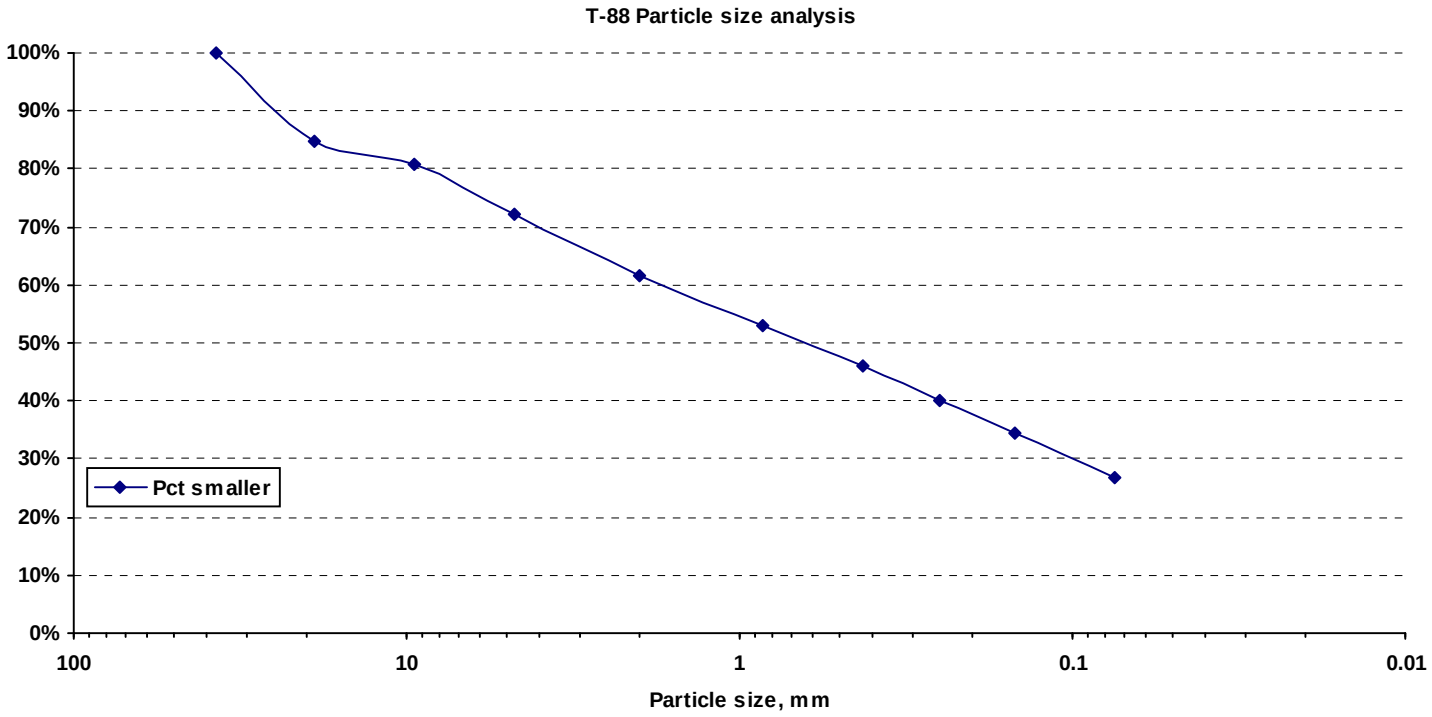
Report on Soil Sample

Lab number: E150795 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:11

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 19 FT - 19.7 FT



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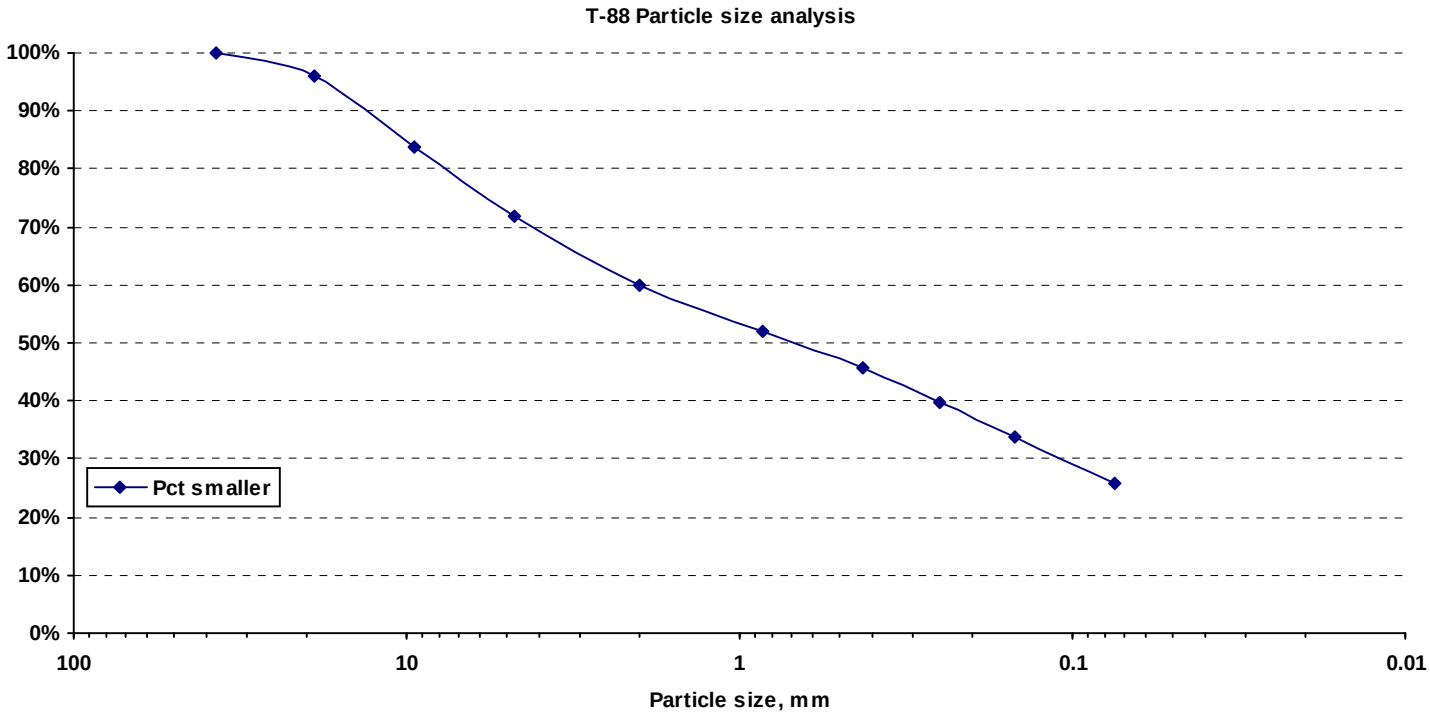
Report on Soil Sample

Lab number: E150796 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:13:11

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-4 **Depth:** 24 FT - 25.5 FT



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Distribution list
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Report on Soil Sample

Lab number: E150797 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:15
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 0 FT **to:** 2 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	96.2%
9.5 mm (3/8"):	94.8%
4.75 mm (#4):	92.4%
2.00 mm (#10):	88.0%
850 µm (#20):	82.1%
425 µm (#40):	75.4%
250 µm (#60):	69.4%
150 µm (#100):	65.1%
75 µm (#200):	59.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 20.9%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 12.0% **D2487:** ML
Sa: 28.1% **M145:** A-4 Sandy Silt
Si: 59.9%

Comments: LAB NOTE: A TRACE OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150798 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:15
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 2 FT **to:** 4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.5%
850 µm (#20):	96.3%
425 µm (#40):	92.4%
250 µm (#60):	89.4%
150 µm (#100):	87.1%
75 µm (#200):	85.0%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	24.9%
T-89 Liquid Limit:	39
T-90 Plastic Limit:	20
T-90 Plasticity Index:	19

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	0.5%	**D2487:**	CL	
Sa:	14.5%	**M145:**	A-6	Silty Clay
Si:	85.0%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150799 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:16
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 4 FT **to:** 6 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	100.0%
850 µm (#20):	99.8%
425 µm (#40):	98.9%
250 µm (#60):	95.5%
150 µm (#100):	92.9%
75 µm (#200):	90.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	30.4%
T-89 Liquid Limit:	32
T-90 Plastic Limit:	18
T-90 Plasticity Index:	14

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.0% **D2487:** CL
Sa: 9.5% **M145:** A-6 Silty Clay
Si: 90.5%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150800 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:16
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 6 FT **to:** 8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.9%
850 µm (#20):	99.7%
425 µm (#40):	99.2%
250 µm (#60):	98.7%
150 µm (#100):	98.1%
75 µm (#200):	97.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	35.4%
T-89 Liquid Limit:	33
T-90 Plastic Limit:	20
T-90 Plasticity Index:	13

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	0.1%	**D2487:**	CL	
Sa:	2.3%	**M145:**	A-6	Silty Clay
Si:	97.6%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150801 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:17
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 8 FT **to:** 10 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.9%
850 µm (#20):	99.8%
425 µm (#40):	99.6%
250 µm (#60):	99.3%
150 µm (#100):	99.2%
75 µm (#200):	98.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	41.2%
T-89 Liquid Limit:	39
T-90 Plastic Limit:	20
T-90 Plasticity Index:	19

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	0.1%	**D2487:**	CL	
Sa:	1.0%	**M145:**	A-6	Silty Clay
Si:	98.9%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150802 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:18
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	100.0%
850 µm (#20):	99.9%
425 µm (#40):	99.8%
250 µm (#60):	99.6%
150 µm (#100):	99.5%
75 µm (#200):	99.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	44.7%
T-89 Liquid Limit:	40
T-90 Plastic Limit:	19
T-90 Plasticity Index:	21

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	0.0%	**D2487:**	CL
Sa:	0.8%	**M145:**	A-6 Clay
Si:	99.2%		

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150803 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:18
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 15 FT **to:** 17 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	95.4%
9.5 mm (3/8"):	87.1%
4.75 mm (#4):	77.5%
2.00 mm (#10):	69.7%
850 µm (#20):	62.4%
425 µm (#40):	56.9%
250 µm (#60):	52.1%
150 µm (#100):	47.2%
75 µm (#200):	39.0%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 10.5%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 30.3% **D2487:** SM
Sa: 30.7% **M145:** A-4 Gravelly Sandy Silt
Si: 39.0%

Comments: LAB NOTE: SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150804 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:18
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 20 FT **to:** 21.4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-8

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	98.2%
9.5 mm (3/8"):	91.3%
4.75 mm (#4):	83.1%
2.00 mm (#10):	76.7%
850 µm (#20):	72.2%
425 µm (#40):	68.5%
250 µm (#60):	62.1%
150 µm (#100):	49.8%
75 µm (#200):	30.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 11.9%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 23.3% **D2487:** SM
Sa: 46.2% **M145:** A-2-4 Gravelly Silty Sand
Si: 30.5%

Comments: LAB NOTE: SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150805 **Corrected copy:** N/A **Report Date:** 6/15/2015 12:59:19
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: **Offset:** **Hole:** B-5 **Depth:** 25 FT **to:** 25.4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-9

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	97.0%
4.75 mm (#4):	94.1%
2.00 mm (#10):	87.1%
850 µm (#20):	81.0%
425 µm (#40):	75.7%
250 µm (#60):	69.4%
150 µm (#100):	61.7%
75 µm (#200):	48.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 13.2%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 12.9% **D2487:** SM
Sa: 38.2% **M145:** A-4 Sandy Silt
Si: 48.9%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

State of Vermont
Agency of Transportation
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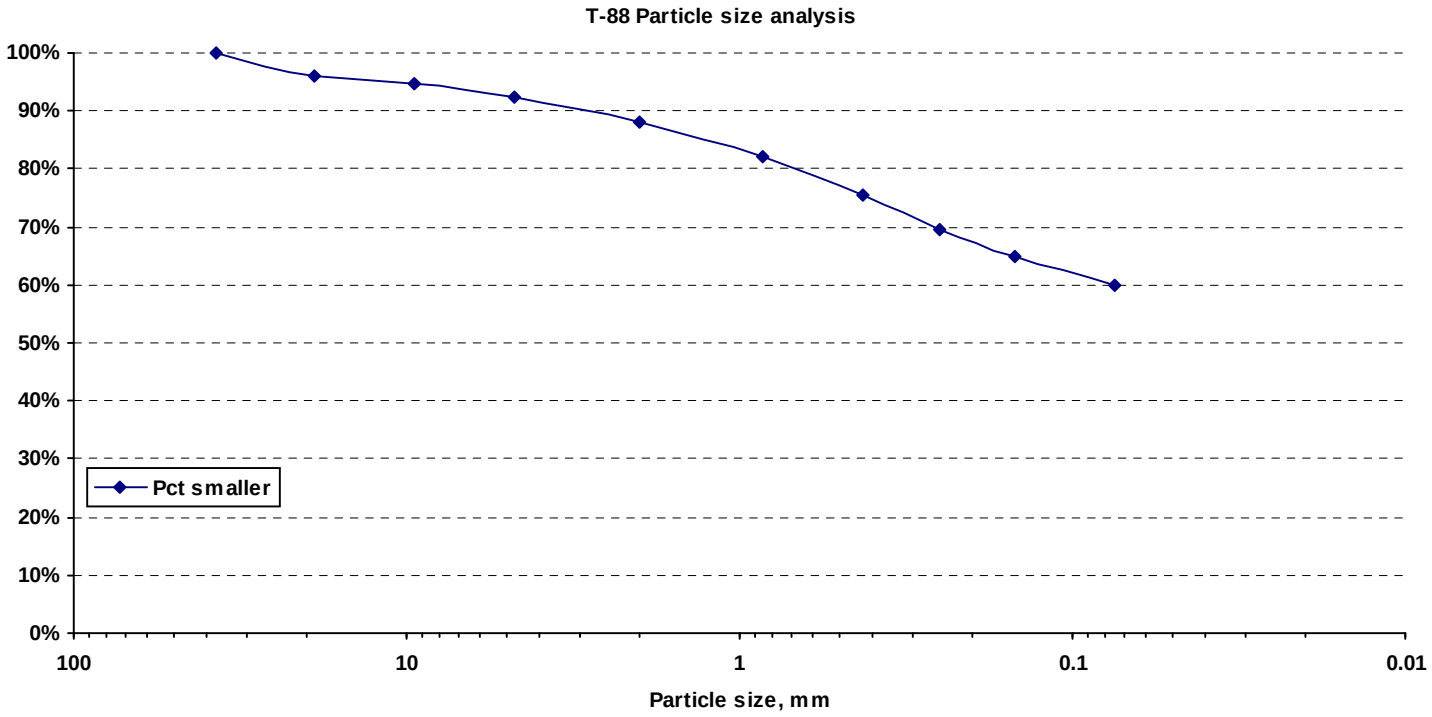
Central Laboratory

Report on Soil Sample

Lab number: E150797 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:11 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 0 FT - 2 FT



Distribution list

State of Vermont
Agency of Transportation
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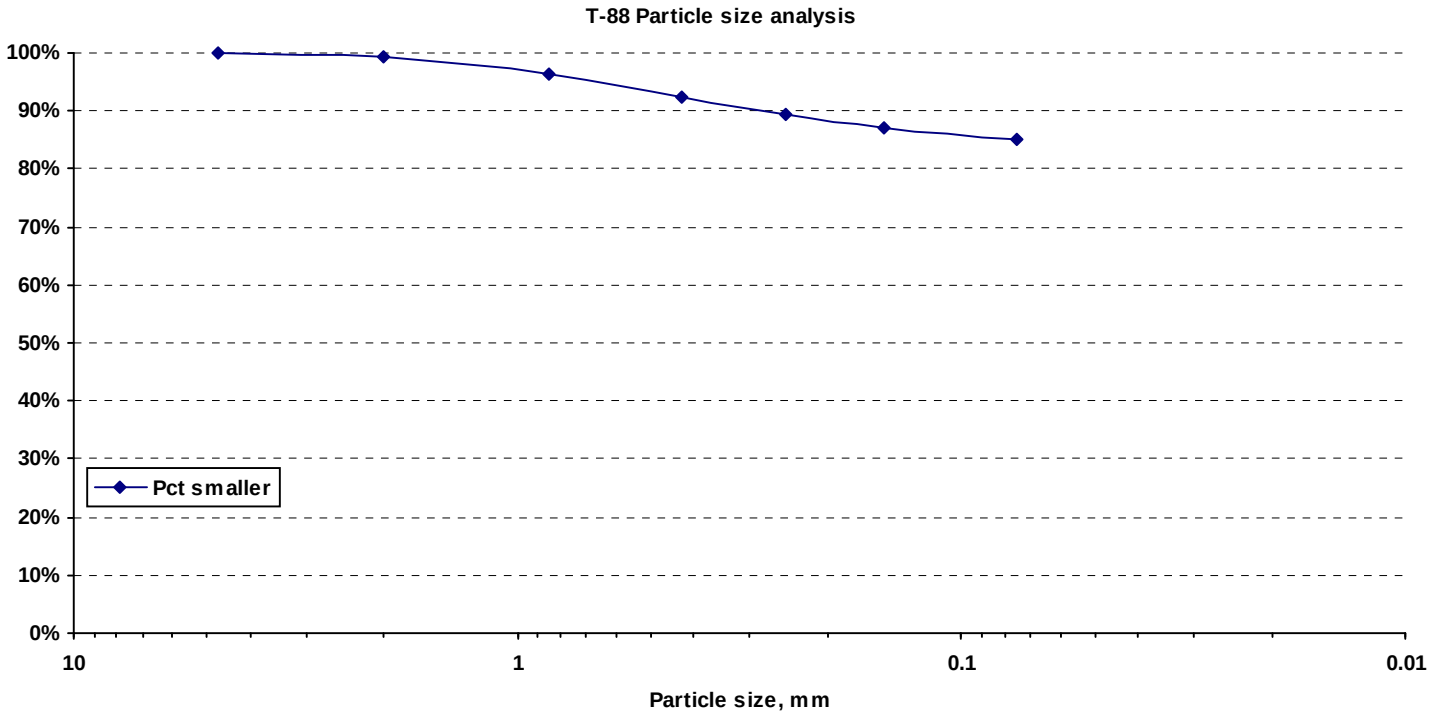
Report on Soil Sample

Lab number: E150798 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:11 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 2 FT - 4 FT



Distribution list

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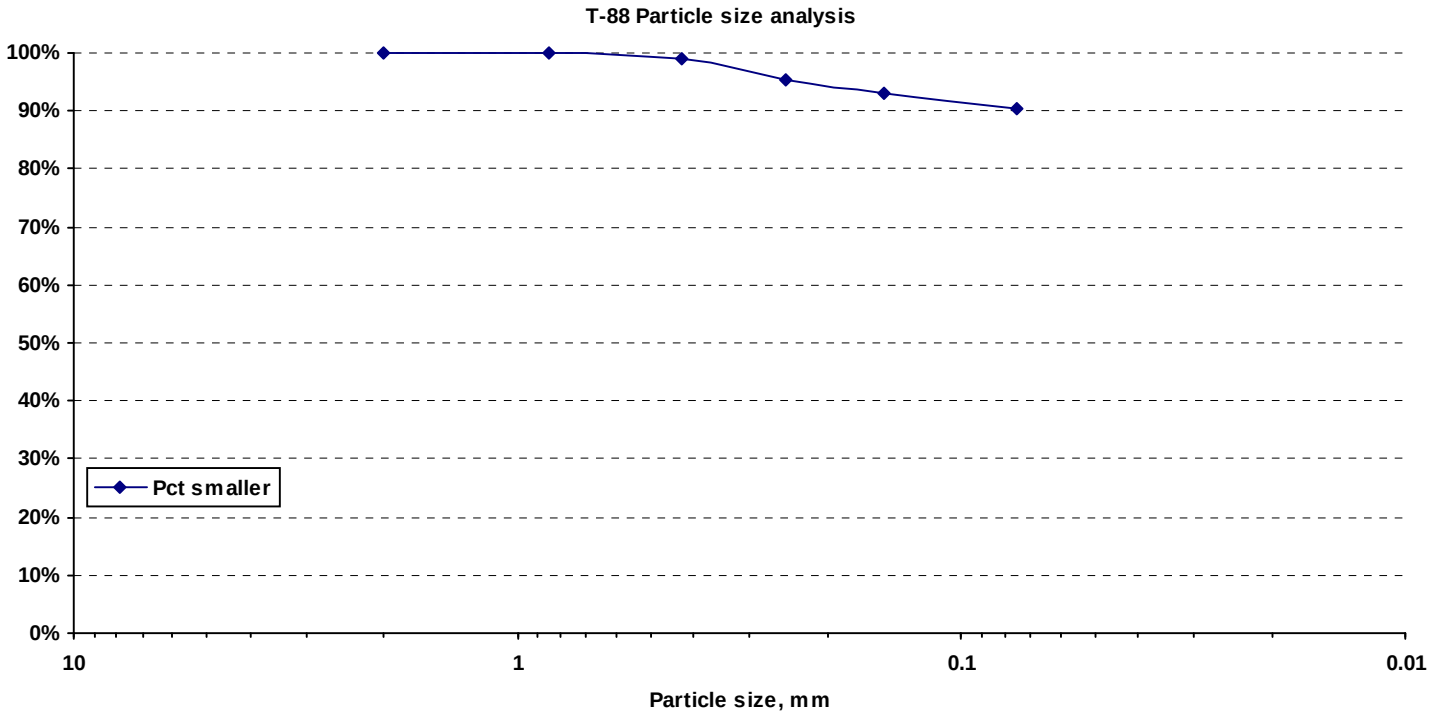
Report on Soil Sample

Lab number: E150799 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:11 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 4 FT - 6 FT



Distribution list

State of Vermont
Agency of Transportation
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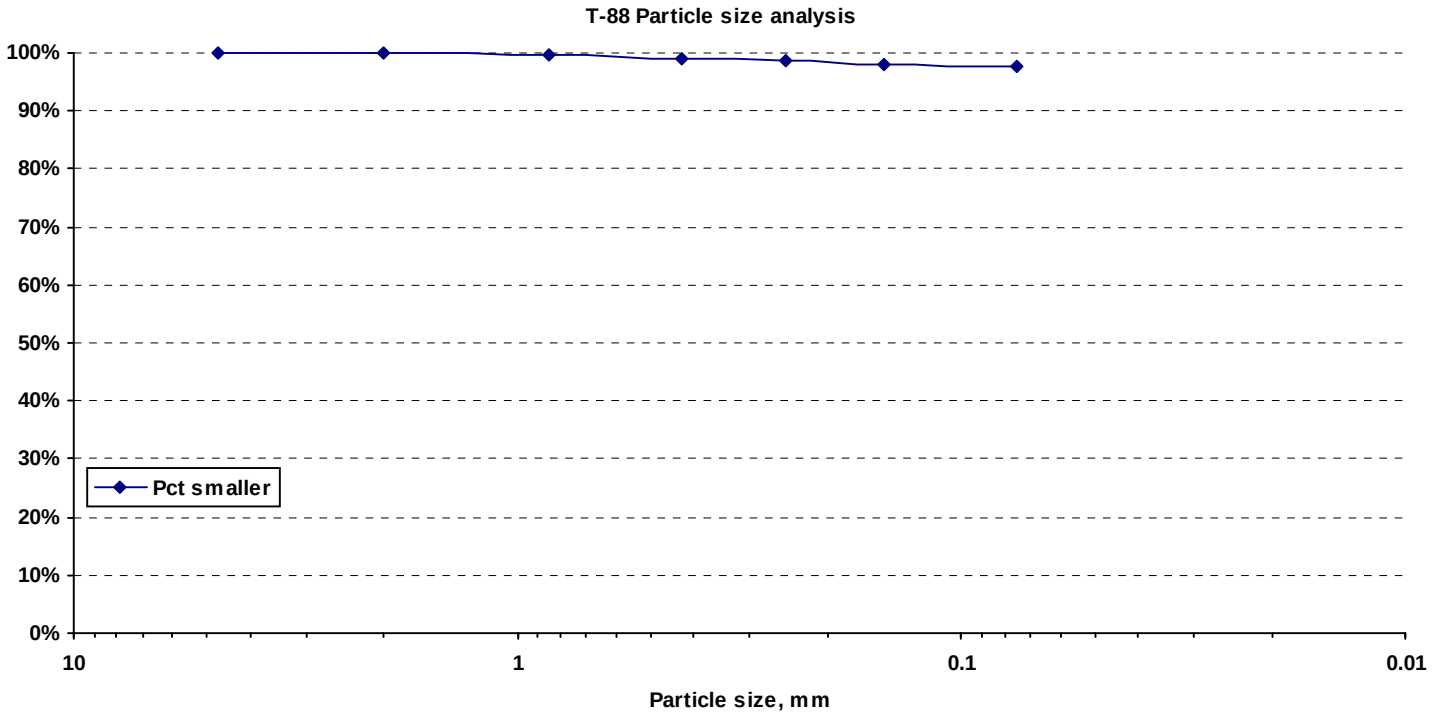
Central Laboratory

Report on Soil Sample

Lab number: E150800 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:13 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 6 FT - 8 FT



Distribution list

State of Vermont
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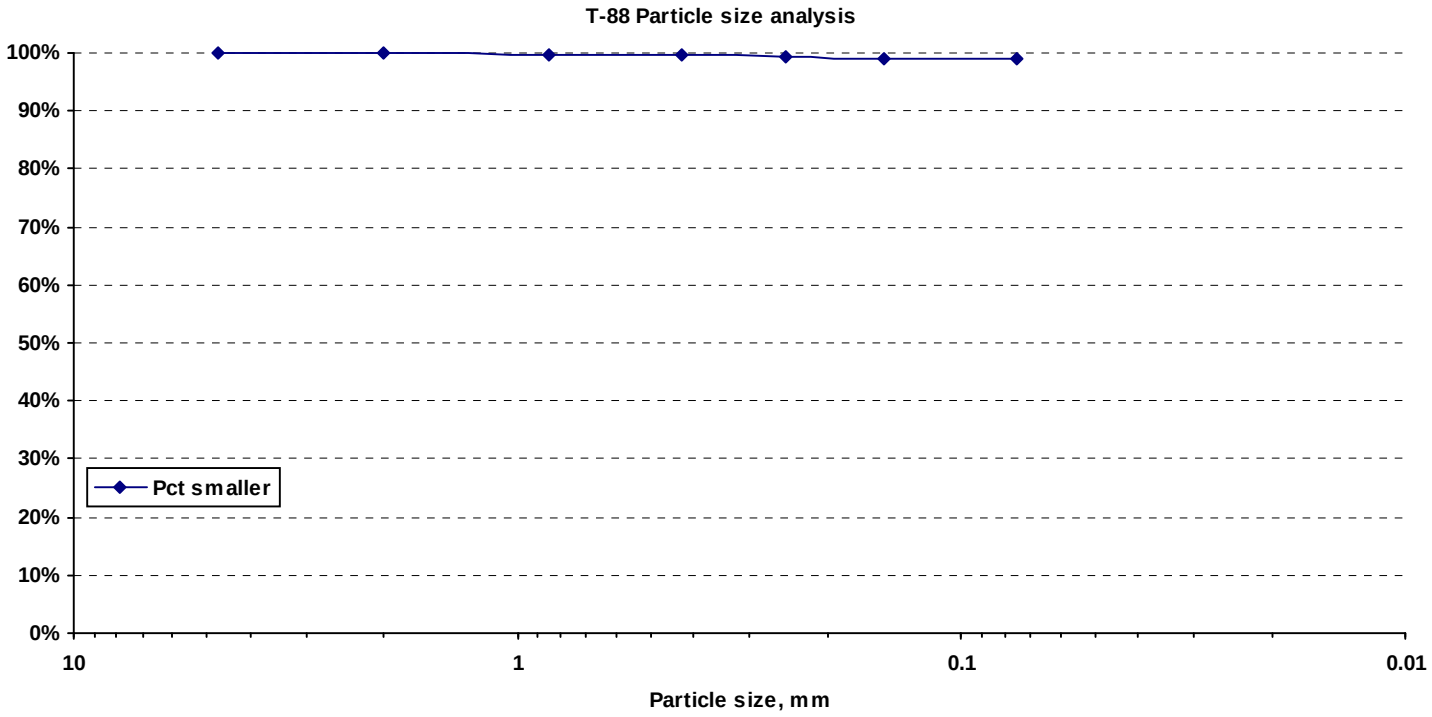
Central Laboratory

Report on Soil Sample

Lab number: E150801 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:15 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 8 FT - 10 FT



Distribution list

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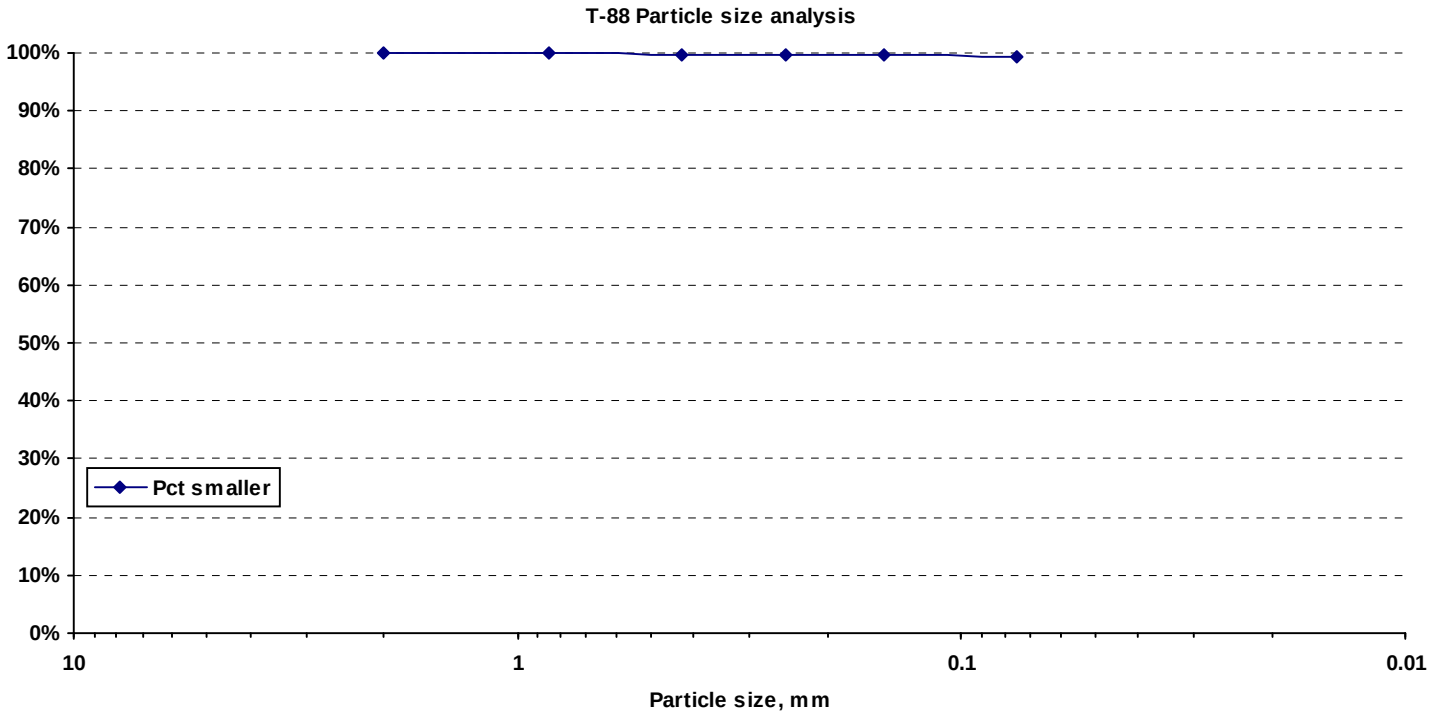
Report on Soil Sample

Lab number: E150802 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:20 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 10 FT - 12 FT



Distribution list

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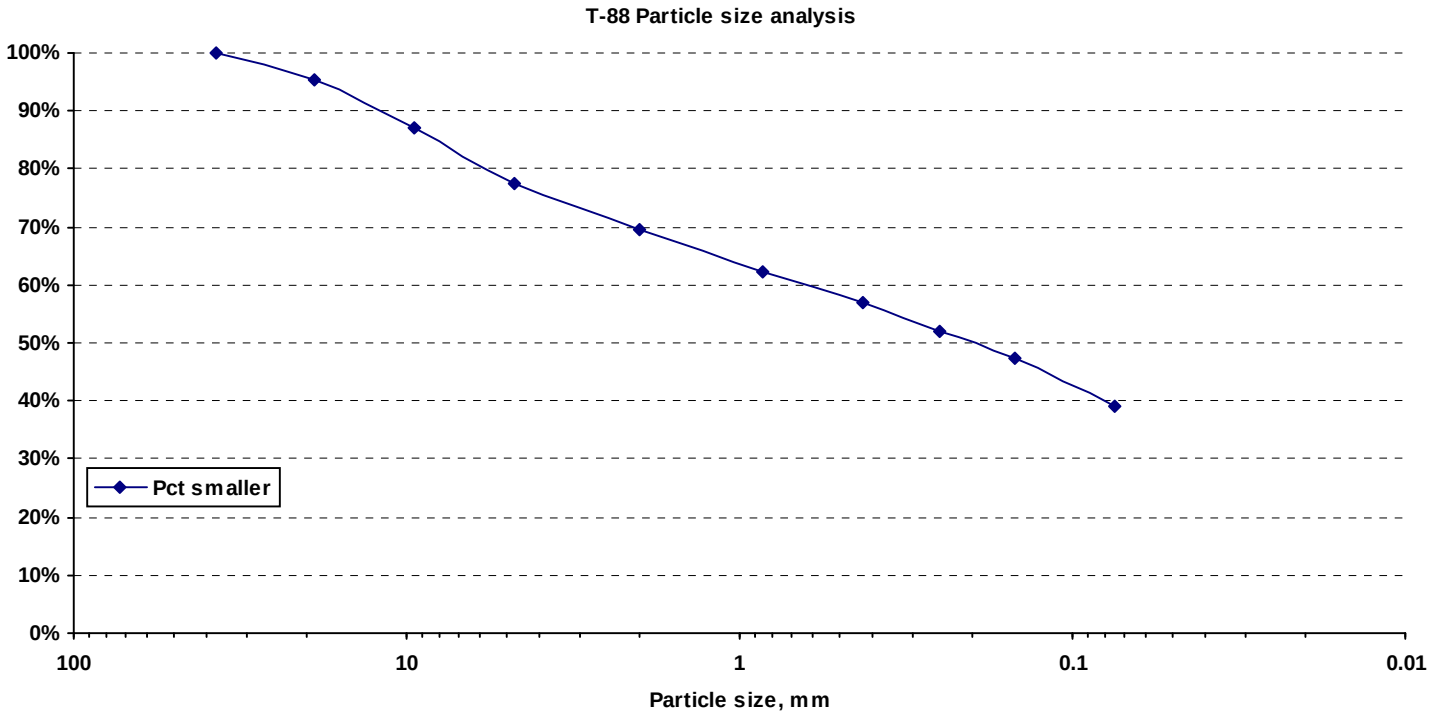
Report on Soil Sample

Lab number: E150803 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:22 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 15 FT - 17 FT



Distribution list

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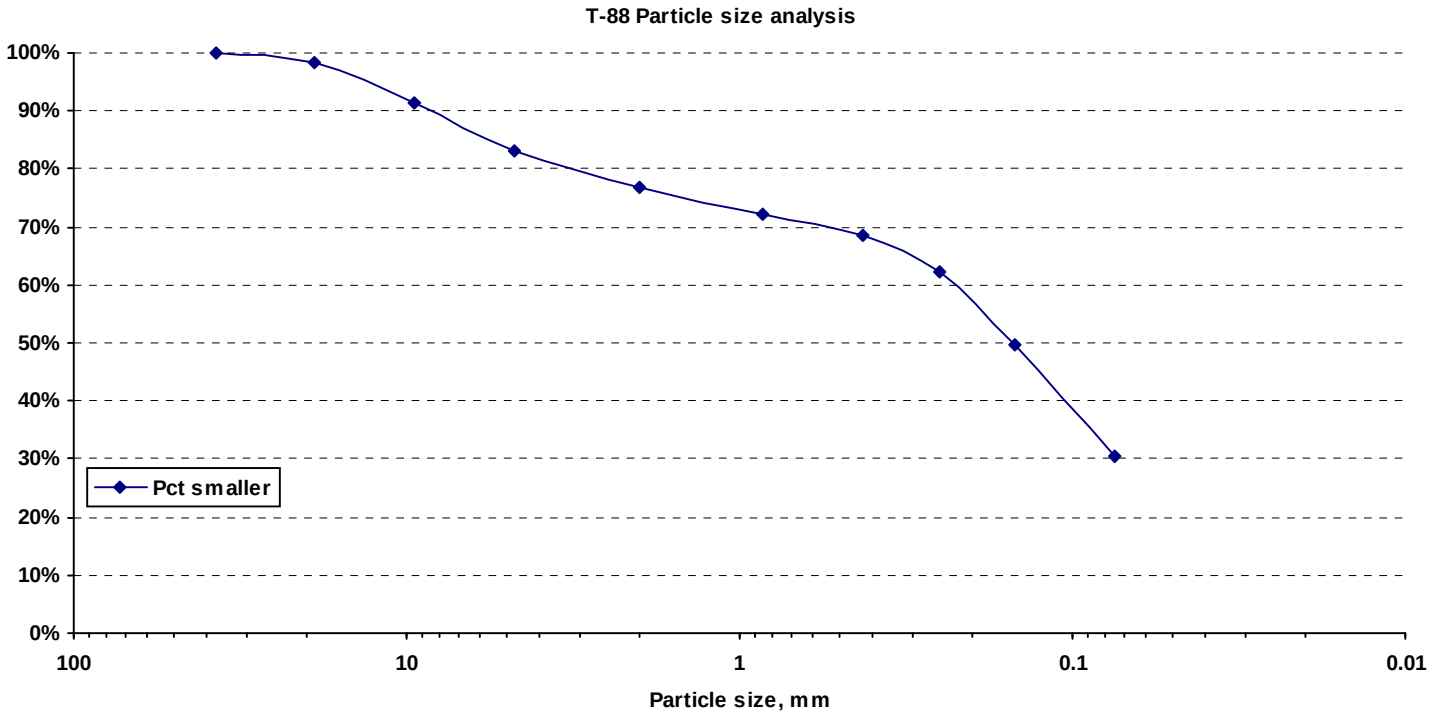
Central Laboratory

Report on Soil Sample

Lab number: E150804 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:25 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 20 FT - 21.4 FT



Distribution list

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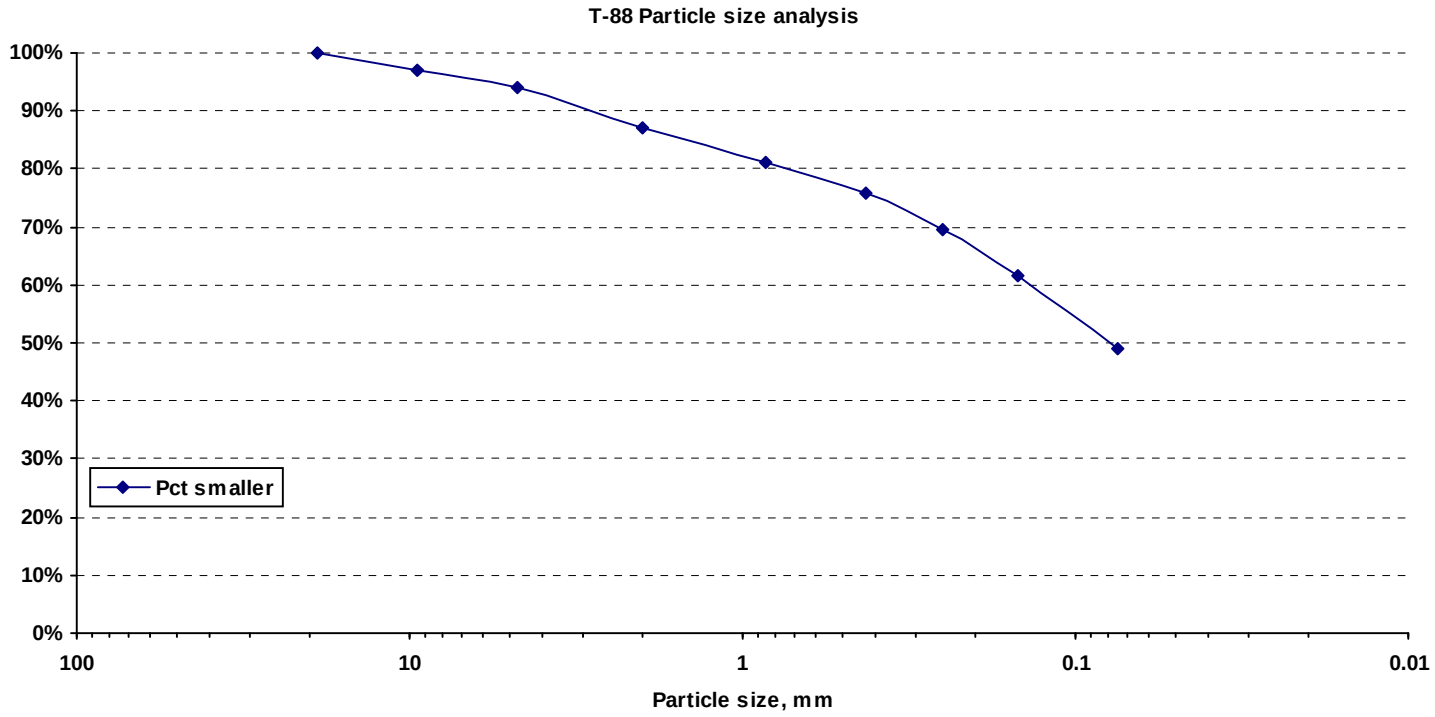
Central Laboratory

Report on Soil Sample

Lab number: E150805 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:01:26 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-5 **Depth:** 25 FT - 25.4 FT



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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150811 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:06 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 15 FT **to:** 17 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.6%
850 µm (#20):	99.0%
425 µm (#40):	98.6%
250 µm (#60):	98.2%
150 µm (#100):	97.7%
75 µm (#200):	96.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	39.8%
T-89 Liquid Limit:	40
T-90 Plastic Limit:	22
T-90 Plasticity Index:	18

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.4% **D2487:** CL
Sa: 2.9% **M145:** A-6 Silty Clay
Si: 96.7%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150812 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:07 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 17 FT **to:** 19 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	98.2%
9.5 mm (3/8"):	94.7%
4.75 mm (#4):	89.1%
2.00 mm (#10):	83.6%
850 µm (#20):	78.4%
425 µm (#40):	74.0%
250 µm (#60):	68.6%
150 µm (#100):	61.9%
75 µm (#200):	51.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 16.4% **D2487:** ML
Sa: 31.7% **M145:** A-4 Sandy Silt
Si: 51.9%

Comments: LAB NOTE: SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
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Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150813 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:07 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 30 FT **to:** 31.4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	95.5%
4.75 mm (#4):	88.0%
2.00 mm (#10):	79.0%
850 µm (#20):	72.6%
425 µm (#40):	67.9%
250 µm (#60):	63.4%
150 µm (#100):	57.4%
75 µm (#200):	48.4%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.2%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 21.0% **D2487:** SM
Sa: 30.6% **M145:** A-4 Gravelly Sandy Silt
Si: 48.4%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150814 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:07 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 35 FT **to:** 36.5 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-8

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.8%
9.5 mm (3/8"):	94.2%
4.75 mm (#4):	86.6%
2.00 mm (#10):	78.2%
850 µm (#20):	72.3%
425 µm (#40):	67.7%
250 µm (#60):	63.6%
150 µm (#100):	59.5%
75 µm (#200):	52.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	10.7%
T-89 Liquid Limit:	18
T-90 Plastic Limit:	15
T-90 Plasticity Index:	3

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	21.8%	**D2487:**	ML	
Sa:	25.4%	**M145:**	A-4	Gravelly Sandy Silt
Si:	52.8%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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Report on Soil Sample

Lab number: E150806 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:08 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 0.5 FT **to:** 2.5 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	87.5%
4.75 mm (#4):	71.2%
2.00 mm (#10):	56.7%
850 µm (#20):	43.2%
425 µm (#40):	33.0%
250 µm (#60):	24.9%
150 µm (#100):	18.4%
75 µm (#200):	12.3%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 3.3%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 43.3% **D2487:** SM
Sa: 44.4% **M145:** A-1-b Gravelly Sand
Si: 12.3%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150807 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:08 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 5 FT **to:** 6.5 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2A

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	74.7%
9.5 mm (3/8"):	63.0%
4.75 mm (#4):	55.2%
2.00 mm (#10):	49.9%
850 µm (#20):	44.3%
425 µm (#40):	38.7%
250 µm (#60):	33.3%
150 µm (#100):	29.0%
75 µm (#200):	22.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 8.9%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 50.1% **D2487:** GM
Sa: 27.0% **M145:** A-1-b Silty Sandy Gravel
Si: 22.9%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.
A THIN LAYER OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150808 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:08 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 6.5 FT **to:** 7 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2B

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	98.1%
850 µm (#20):	95.8%
425 µm (#40):	93.1%
250 µm (#60):	90.4%
150 µm (#100):	84.4%
75 µm (#200):	78.1%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	25.5%
T-89 Liquid Limit:	26
T-90 Plastic Limit:	18
T-90 Plasticity Index:	8

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	1.9%	**D2487:**	CL	
Sa:	20.0%	**M145:**	A-4	Sandy Clayey Silt
Si:	78.1%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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Report on Soil Sample

Lab number: E150809 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:09 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.0%
850 µm (#20):	97.2%
425 µm (#40):	94.2%
250 µm (#60):	89.4%
150 µm (#100):	83.2%
75 µm (#200):	73.3%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	19.0%
T-89 Liquid Limit:	23
T-90 Plastic Limit:	17
T-90 Plasticity Index:	6

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	1.0%	**D2487:**	CL-ML	
Sa:	25.6%	**M145:**	A-4	Sandy Silt
Si:	73.3%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
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Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150810 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:22:09 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/28/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 298+75 **Offset:** -11.0 **Hole:** B-6 **Depth:** 12 FT **to:** 14 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	92.7%
4.75 mm (#4):	75.4%
2.00 mm (#10):	68.3%
850 µm (#20):	62.7%
425 µm (#40):	58.3%
250 µm (#60):	53.1%
150 µm (#100):	46.5%
75 µm (#200):	38.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 22.2%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 31.7% **D2487:** SM
Sa: 29.6% **M145:** A-4 Sandy Gravelly Silt
Si: 38.7%

Comments: LAB NOTE: INSUFFICIENT SAMPLE TO TEST FOR LIMITS, BUT CLAY WAS NOTICEABLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

State of Vermont
Agency of Transportation
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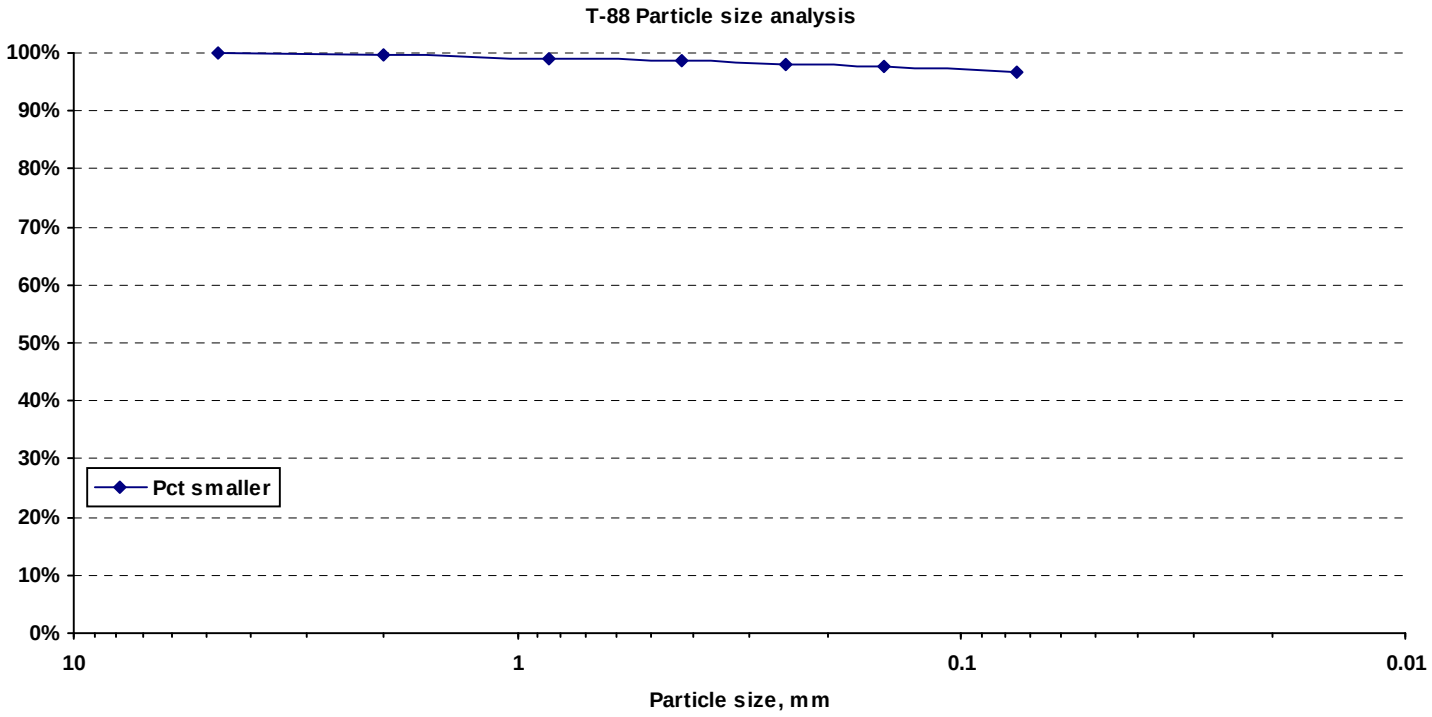
Central Laboratory

Report on Soil Sample

Lab number: E150811 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:29 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 15 FT - 17 FT



Distribution list

State of Vermont
Agency of Transportation
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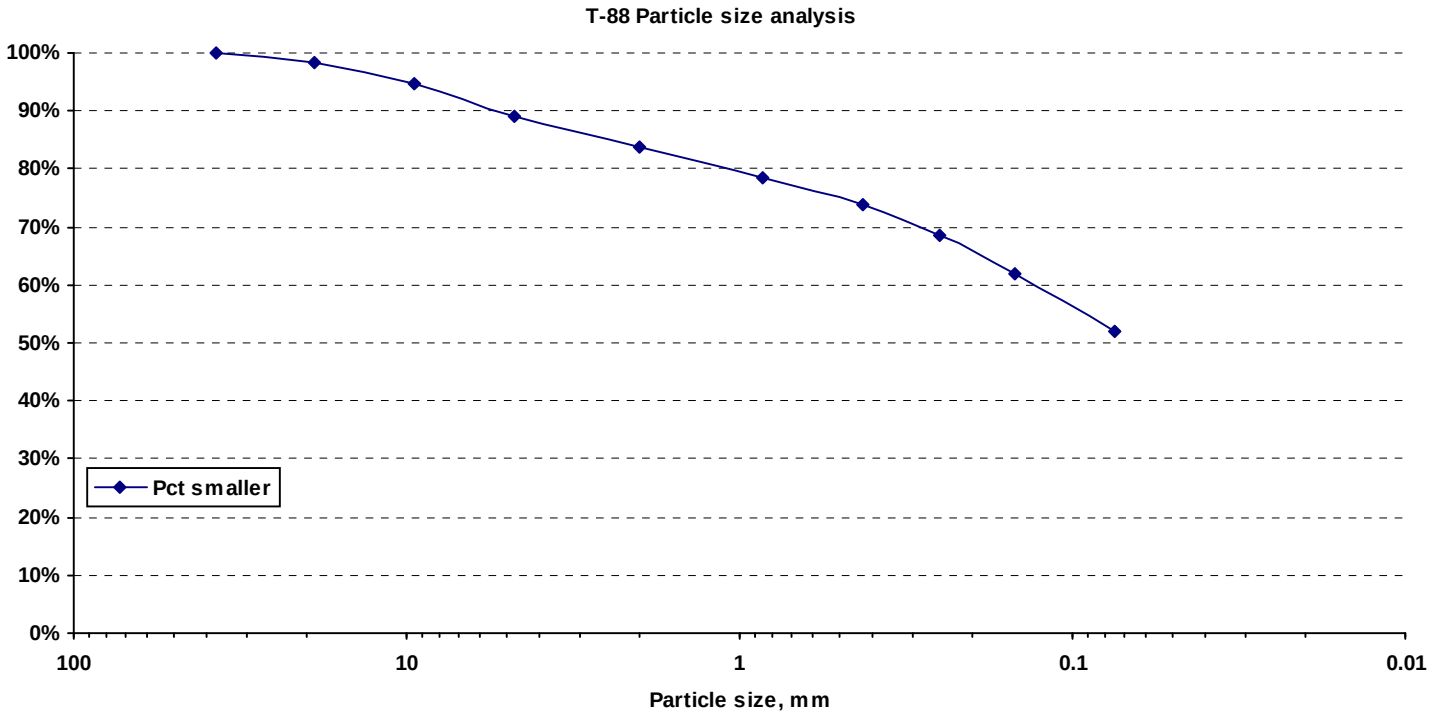
Central Laboratory

Report on Soil Sample

Lab number: E150812 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:30 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 17 FT - 19 FT



Distribution list

State of Vermont
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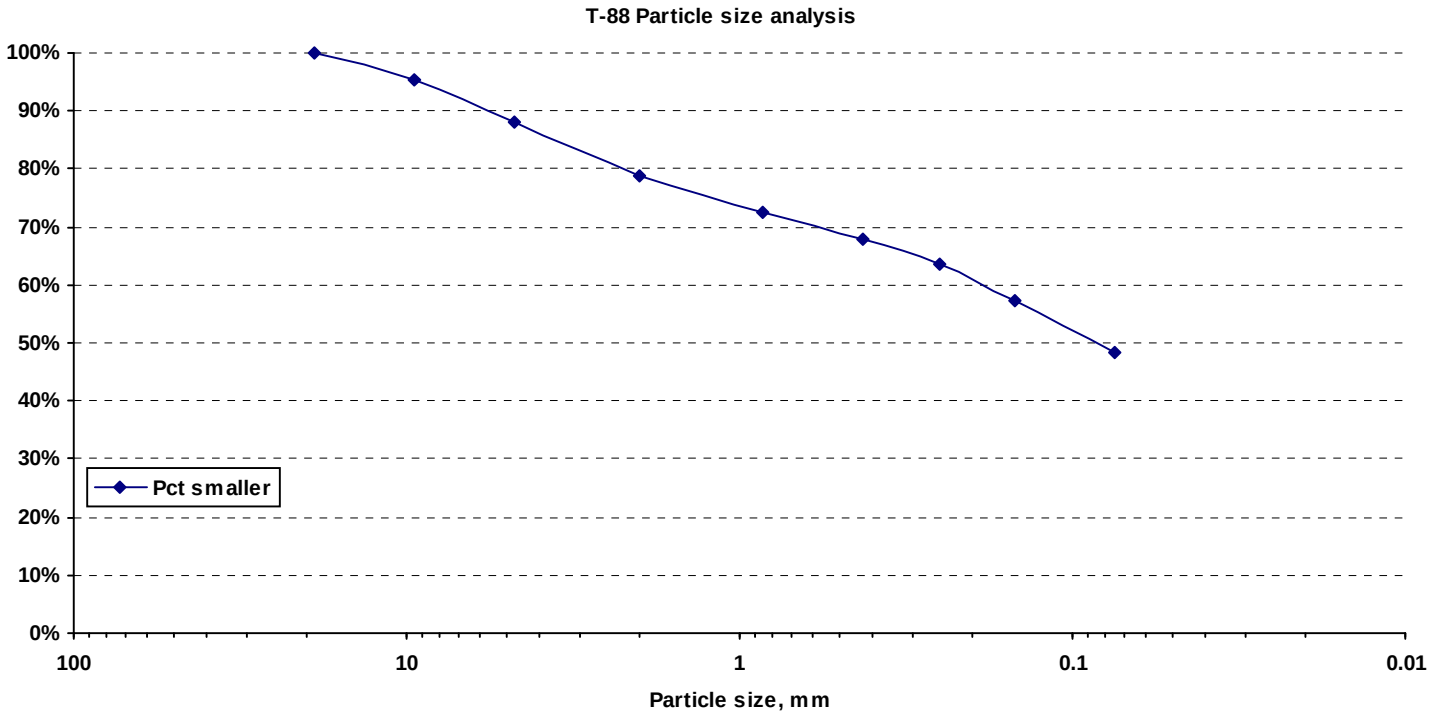
Report on Soil Sample

Lab number: E150813 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 30 FT - 31.4 FT



Distribution list

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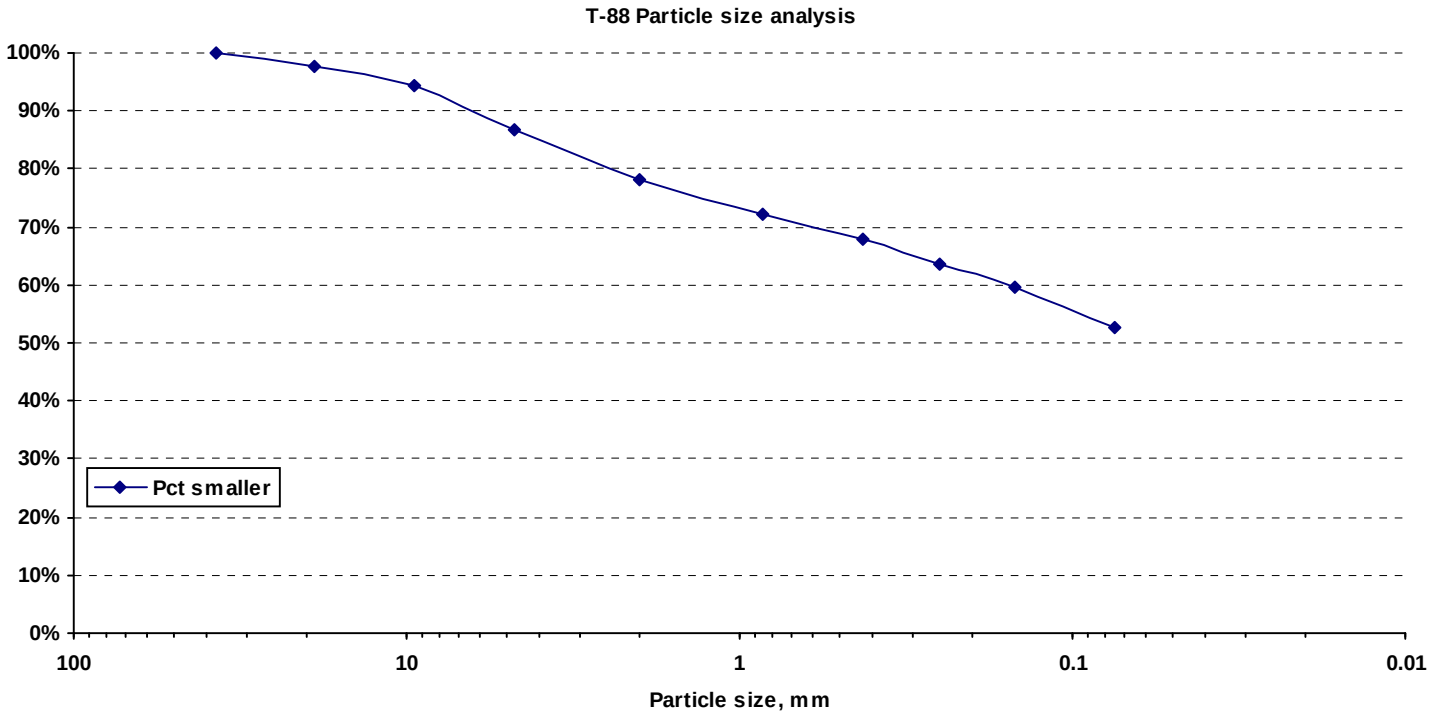
Report on Soil Sample

Lab number: E150814 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 35 FT - 36.5 FT



Distribution list

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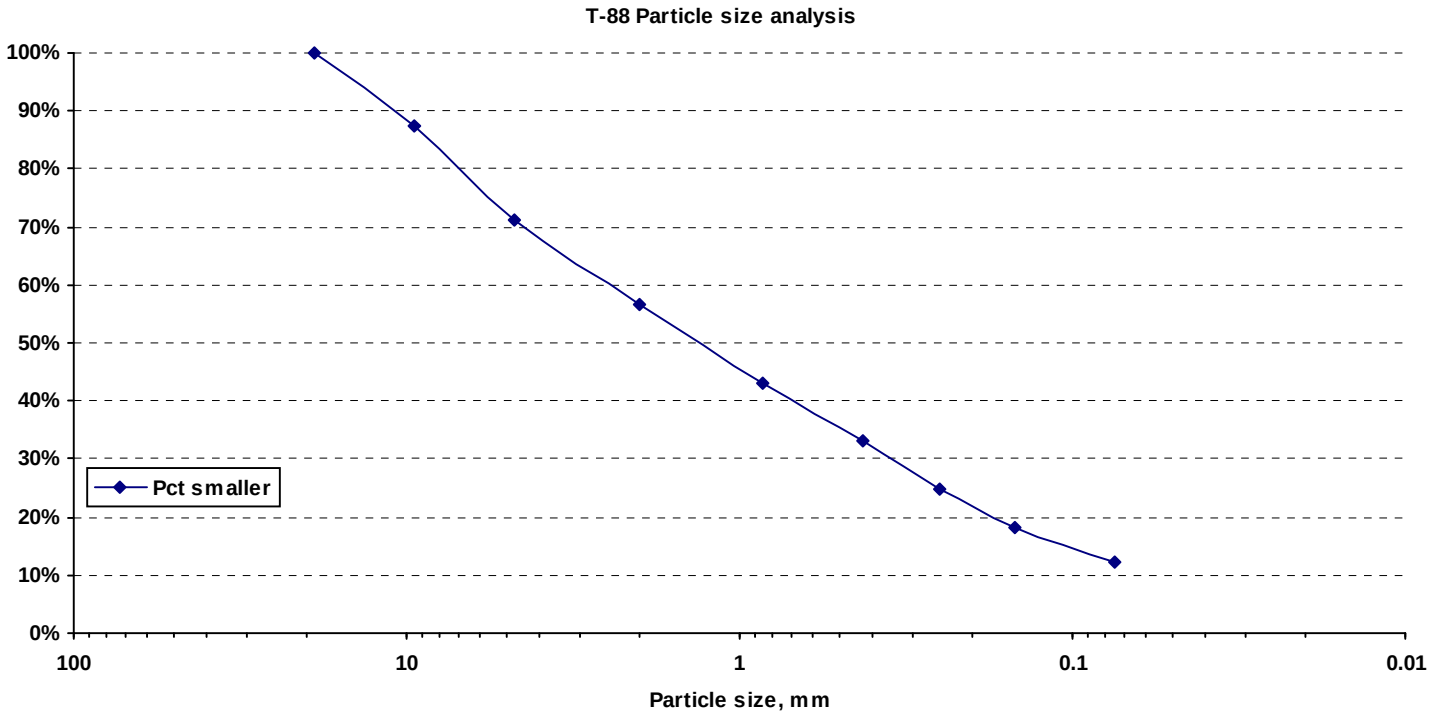
Report on Soil Sample

Lab number: E150806 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 0.5 FT - 2.5 FT



Distribution list

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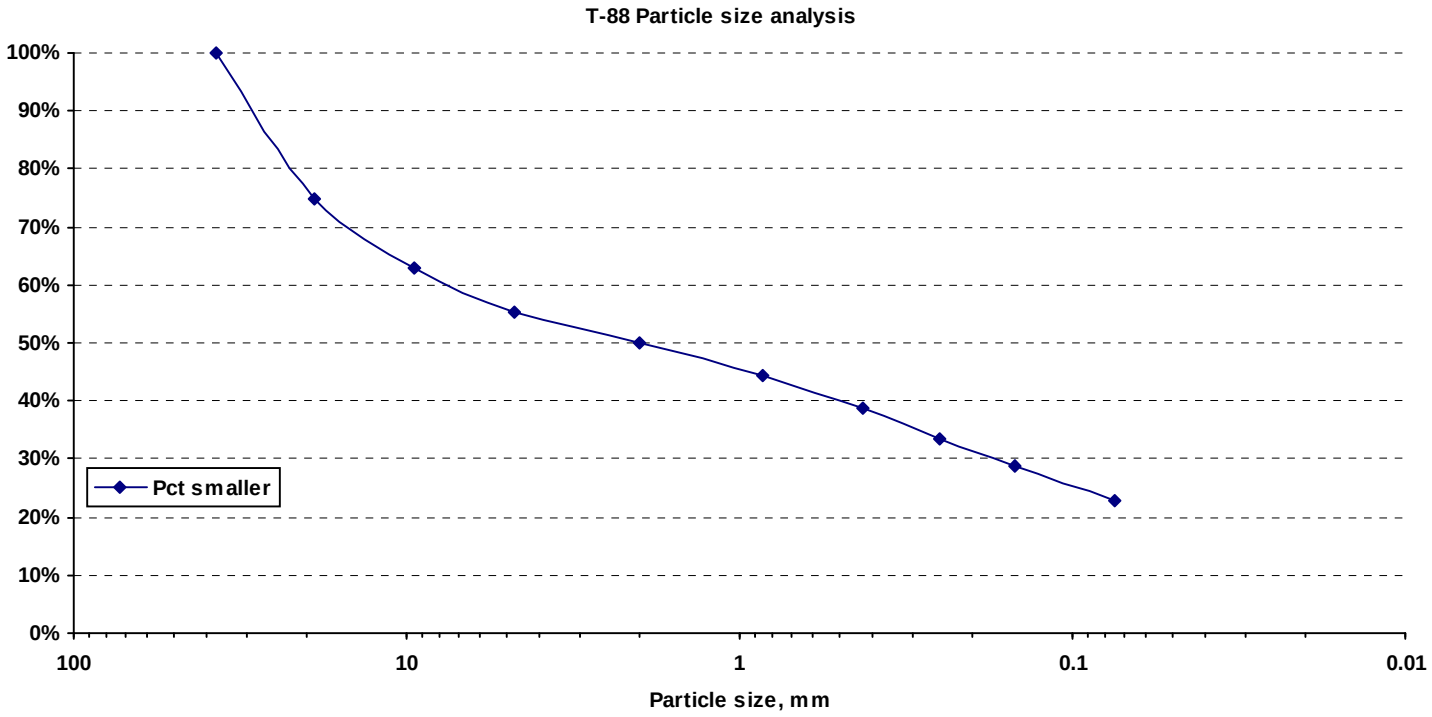
Report on Soil Sample

Lab number: E150807 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 5 FT - 6.5 FT



Distribution list

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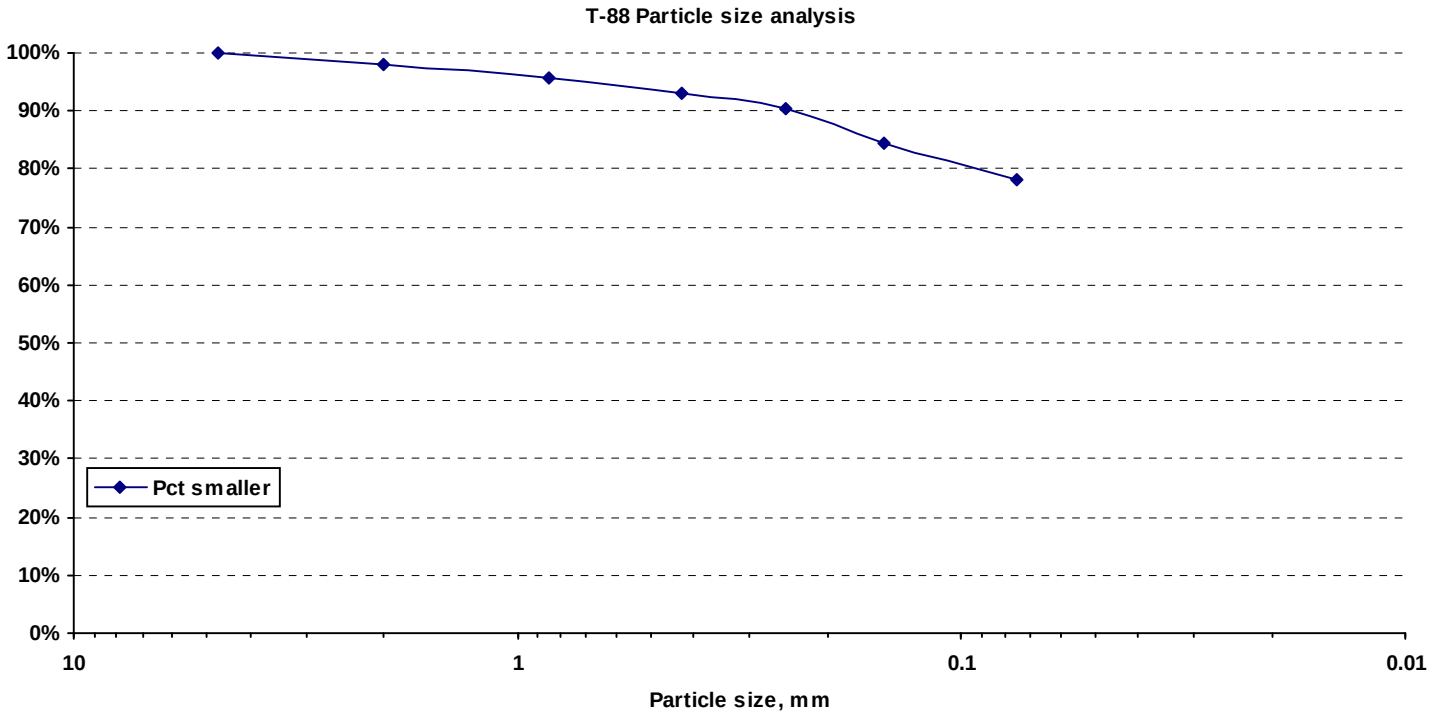
Report on Soil Sample

Lab number: E150808 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 6.5 FT - 7 FT



Distribution list

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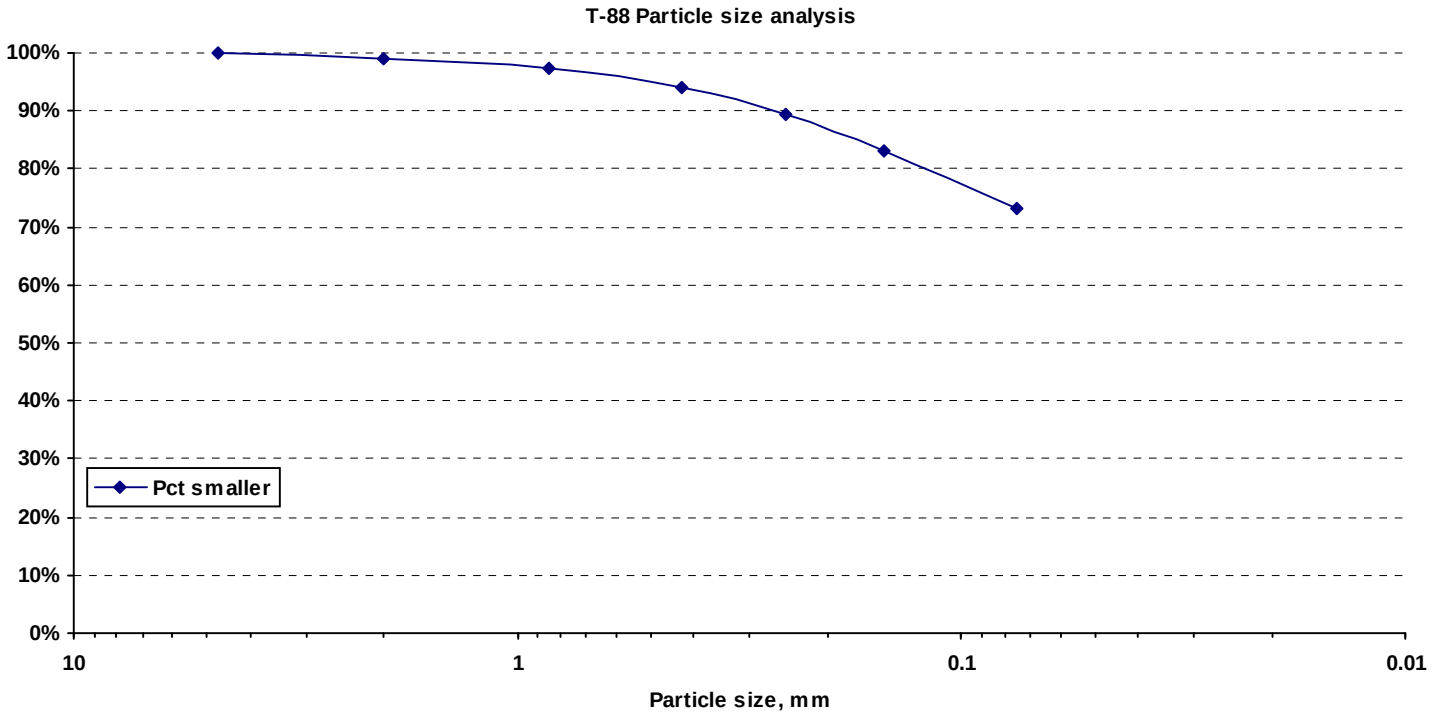
Report on Soil Sample

Lab number: E150809 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 10 FT - 12 FT



Distribution list

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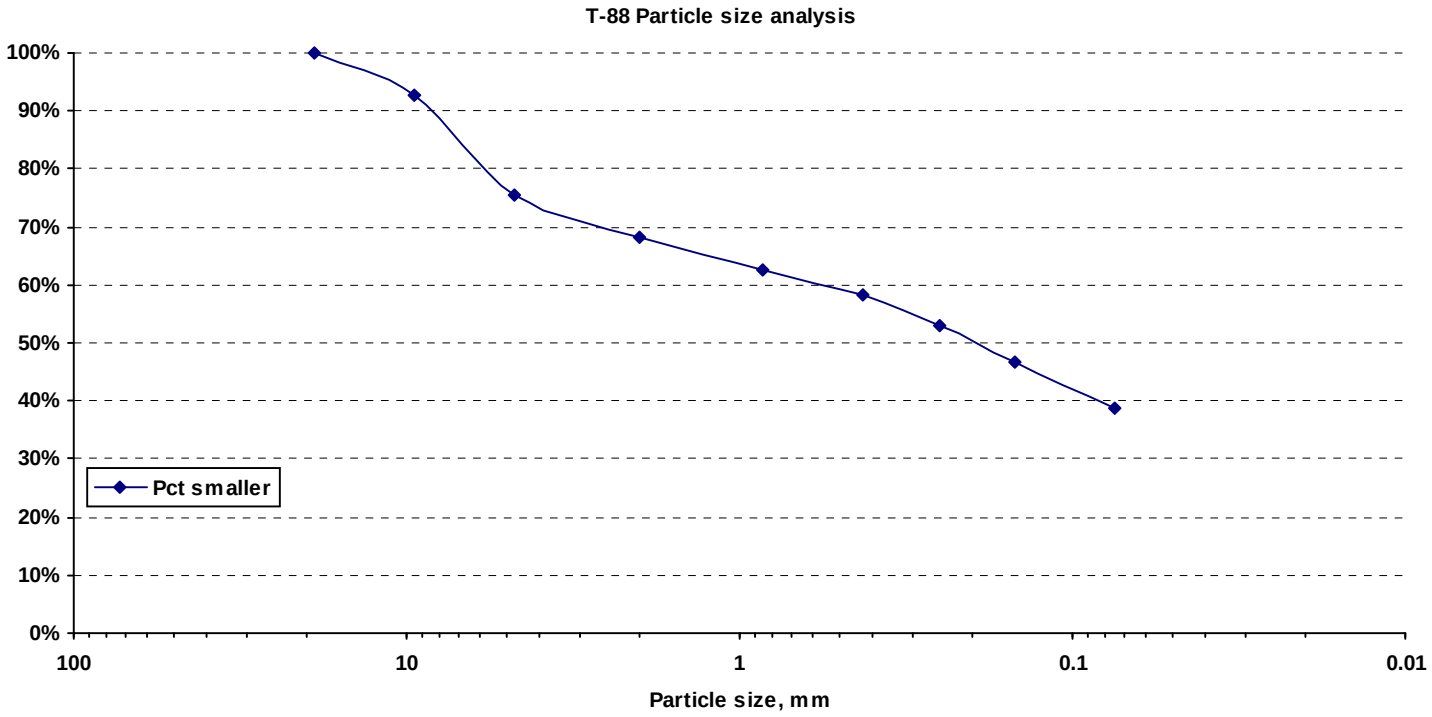
Report on Soil Sample

Lab number: E150810 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:24:31 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-6 **Depth:** 12 FT - 14 FT



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Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150815 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:22
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 0 FT **to:** 2 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.6%
850 µm (#20):	98.4%
425 µm (#40):	96.7%
250 µm (#60):	95.0%
150 µm (#100):	93.2%
75 µm (#200):	88.5%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	26.8%
T-89 Liquid Limit:	31
T-90 Plastic Limit:	21
T-90 Plasticity Index:	10

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	0.4%	**D2487:**	CL	
Sa:	11.1%	**M145:**	A-4	Clayey Silt
Si:	88.5%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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J. TOUCHETTE

Report on Soil Sample

Lab number: E150816 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:23
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 2 FT **to:** 4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	99.9%
850 µm (#20):	99.5%
425 µm (#40):	99.0%
250 µm (#60):	98.5%
150 µm (#100):	98.3%
75 µm (#200):	97.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	37.1%
T-89 Liquid Limit:	41
T-90 Plastic Limit:	22
T-90 Plasticity Index:	19

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.1% **D2487:** CL
Sa: 2.1% **M145:** A-7-6 Silty Clay
Si: 97.8%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150817 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:23
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 4 FT **to:** 6 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	100.0%
850 µm (#20):	
425 µm (#40):	
250 µm (#60):	
150 µm (#100):	99.6%
75 µm (#200):	98.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	39.7%
T-89 Liquid Limit:	59
T-90 Plastic Limit:	26
T-90 Plasticity Index:	33

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.0% **D2487:** CH
Sa: 1.2% **M145:** A-7-6 Clay
Si: 98.8%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
GEODESIGN
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150818 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:24
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 6 FT **to:** 8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	100.0%
850 µm (#20):	
425 µm (#40):	
250 µm (#60):	
150 µm (#100):	99.9%
75 µm (#200):	99.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	47.1%
T-89 Liquid Limit:	56
T-90 Plastic Limit:	25
T-90 Plasticity Index:	31

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.0% **D2487:** CH
Sa: 0.8% **M145:** A-7-6 Clay
Si: 99.2%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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J. TOUCHETTE

Report on Soil Sample

Lab number: E150819 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:24
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 8 FT **to:** 10 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	100.0%
850 µm (#20):	
425 µm (#40):	
250 µm (#60):	99.8%
150 µm (#100):	99.2%
75 µm (#200):	98.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	46.1%
T-89 Liquid Limit:	48
T-90 Plastic Limit:	23
T-90 Plasticity Index:	25

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.0% **D2487:** CL
Sa: 1.8% **M145:** A-7-6 Clay
Si: 98.2%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Report on Soil Sample

Lab number: E150820 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:24
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	100.0%
2.00 mm (#10):	100.0%
850 µm (#20):	
425 µm (#40):	
250 µm (#60):	
150 µm (#100):	99.9%
75 µm (#200):	99.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	47.2%
T-89 Liquid Limit:	38
T-90 Plastic Limit:	21
T-90 Plasticity Index:	17

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.0% **D2487:** CL
Sa: 0.4% **M145:** A-6 Silty Clay
Si: 99.6%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150821 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:25
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 15 FT **to:** 17 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	92.6%
4.75 mm (#4):	83.9%
2.00 mm (#10):	77.5%
850 µm (#20):	71.0%
425 µm (#40):	65.8%
250 µm (#60):	60.9%
150 µm (#100):	55.4%
75 µm (#200):	46.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	12.1%
T-89 Liquid Limit:	16
T-90 Plastic Limit:	14
T-90 Plasticity Index:	2

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	22.5%	**D2487:**	SM	
Sa:	30.7%	**M145:**	A-4	Gravelly Sandy Silt
Si:	46.8%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150822 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:25
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 20 FT **to:** 21.5 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-8

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	96.6%
9.5 mm (3/8"):	90.1%
4.75 mm (#4):	81.9%
2.00 mm (#10):	75.1%
850 µm (#20):	68.5%
425 µm (#40):	63.2%
250 µm (#60):	57.7%
150 µm (#100):	51.9%
75 µm (#200):	43.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.3%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 24.9% **D2487:** SM
Sa: 31.9% **M145:** A-4 Gravelly Sandy Silt
Si: 43.2%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Report on Soil Sample

Lab number: E150823 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:25
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 25 FT **to:** 25.8 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-9

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.4%
9.5 mm (3/8"):	94.1%
4.75 mm (#4):	86.4%
2.00 mm (#10):	79.0%
850 µm (#20):	73.1%
425 µm (#40):	68.7%
250 µm (#60):	64.4%
150 µm (#100):	59.1%
75 µm (#200):	50.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.0%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 21.0% **D2487:** ML
Sa: 28.4% **M145:** A-4 Gravelly Sandy Silt
Si: 50.6%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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Report on Soil Sample

Lab number: E150824 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:26
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 30 FT **to:** 30.9 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-10

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	97.0%
4.75 mm (#4):	91.4%
2.00 mm (#10):	84.6%
850 µm (#20):	79.0%
425 µm (#40):	74.3%
250 µm (#60):	68.8%
150 µm (#100):	62.2%
75 µm (#200):	52.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 8.1%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 15.4% **D2487:** ML
Sa: 31.9% **M145:** A-4 Sandy Silt
Si: 52.7%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

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Distribution list
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J. TOUCHETTE

Report on Soil Sample

Lab number: E150825 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:10:26
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/27/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 289+85 **Offset:** -60.0 **Hole:** B-7 **Depth:** 34 FT **to:** 35.4 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-11

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	93.2%
9.5 mm (3/8"):	90.4%
4.75 mm (#4):	82.9%
2.00 mm (#10):	76.9%
850 µm (#20):	72.1%
425 µm (#40):	68.1%
250 µm (#60):	63.9%
150 µm (#100):	59.1%
75 µm (#200):	51.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 9.6%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 23.1% **D2487:** ML
Sa: 25.1% **M145:** A-4 Gravelly Sandy Silt
Si: 51.8%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

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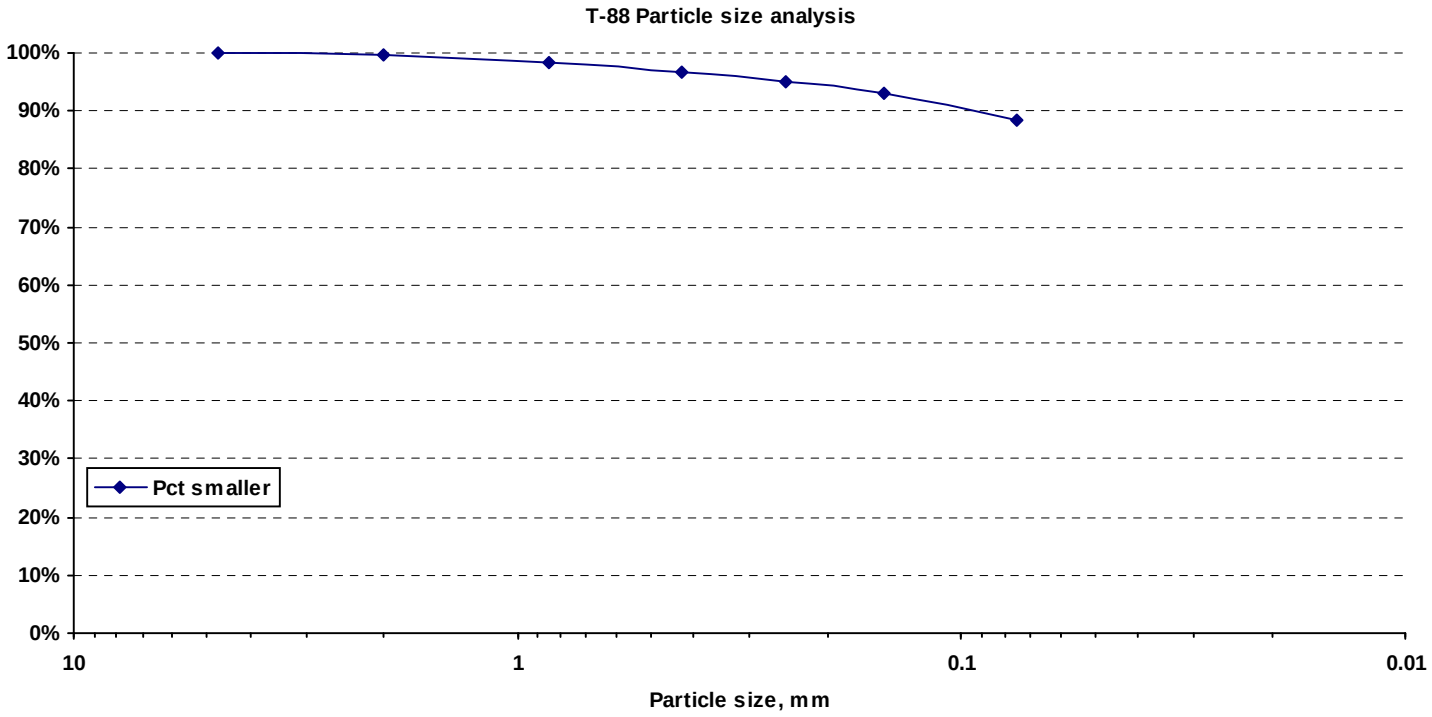
Report on Soil Sample

Lab number: E150815 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:29

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 0 FT - 2 FT



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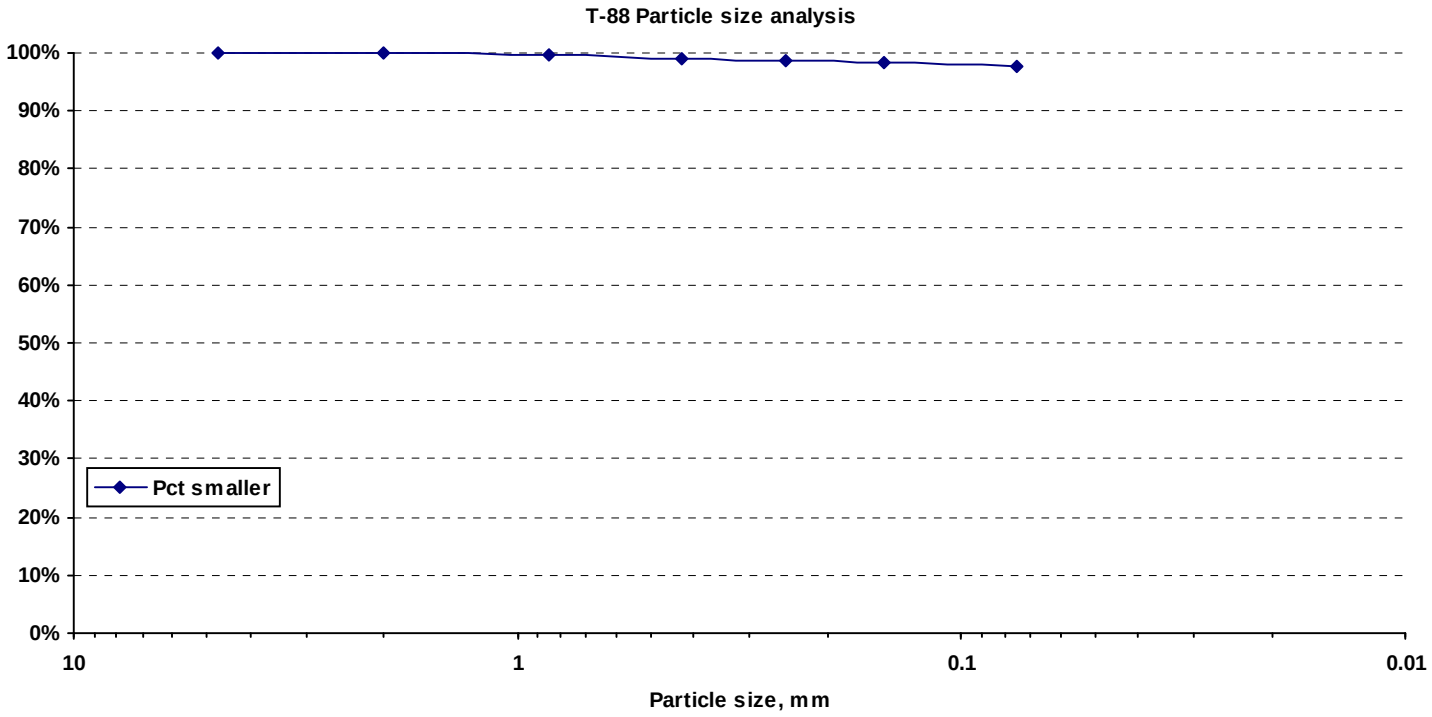
Report on Soil Sample

Lab number: E150816 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:29

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 2 FT - 4 FT



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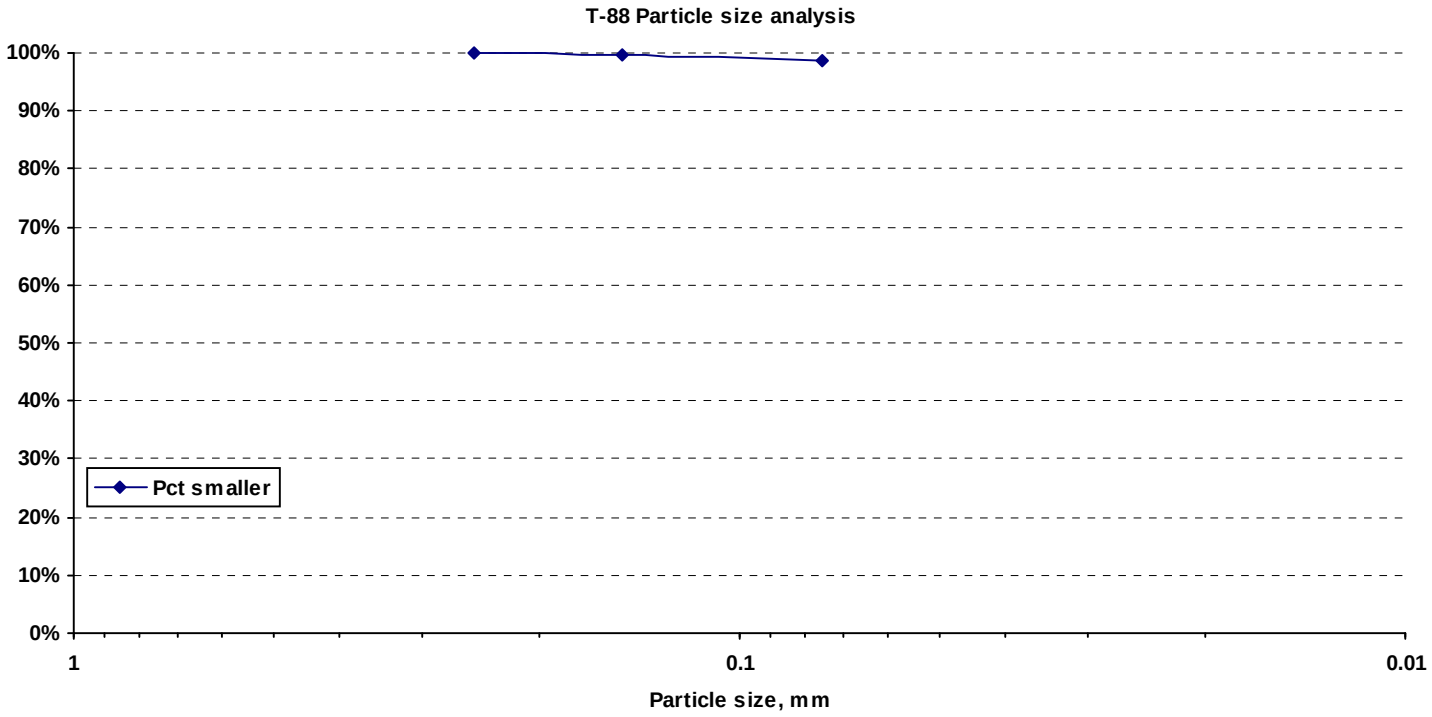
Report on Soil Sample

Lab number: E150817 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:30

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 4 FT - 6 FT



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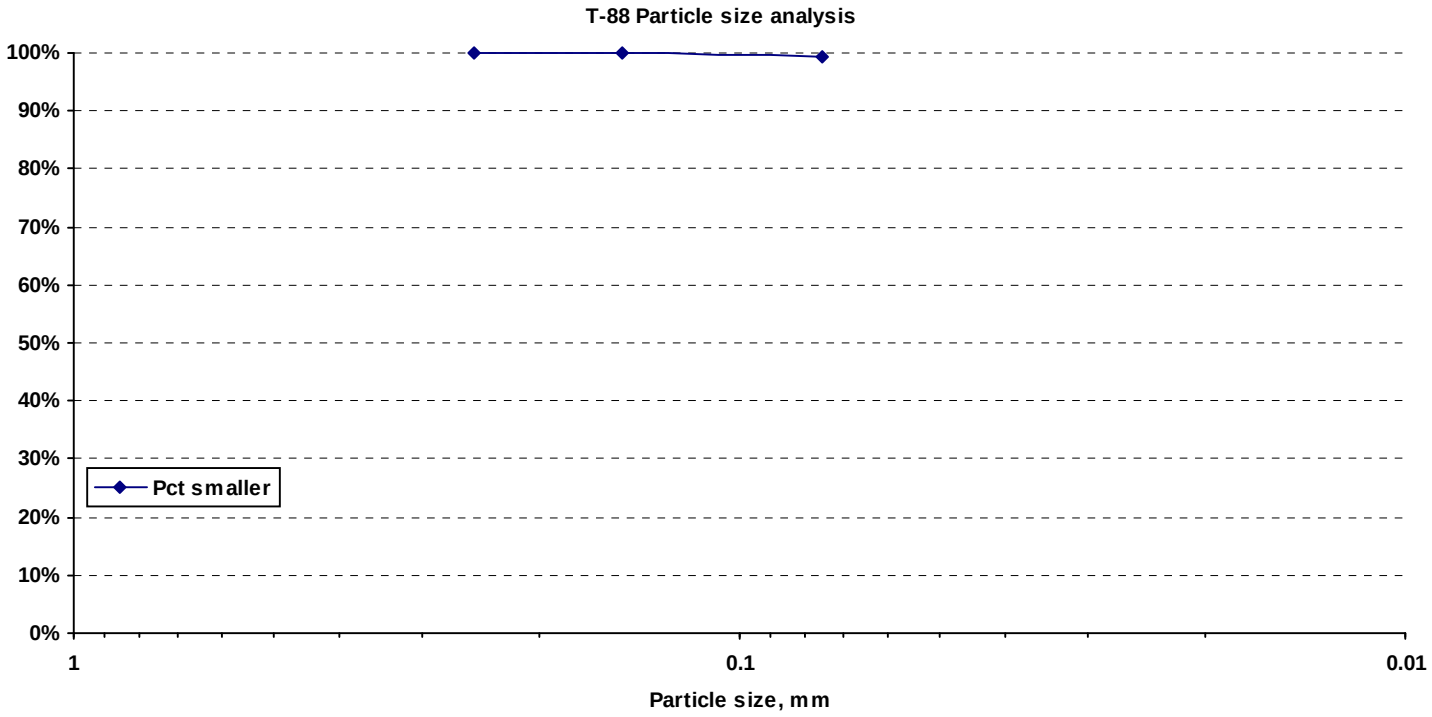
Report on Soil Sample

Lab number: E150818 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:30

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 6 FT - 8 FT



Distribution list

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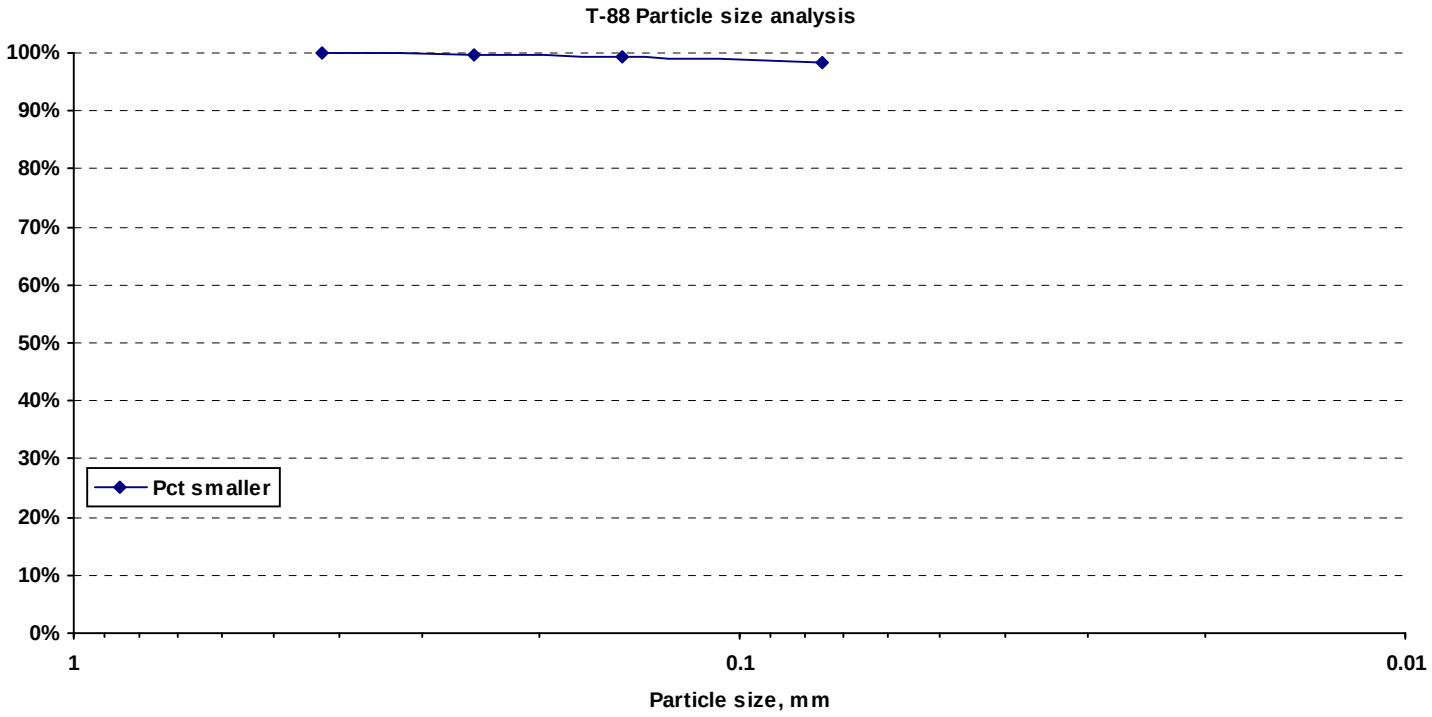
Report on Soil Sample

Lab number: E150819 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 8 FT - 10 FT



Distribution list

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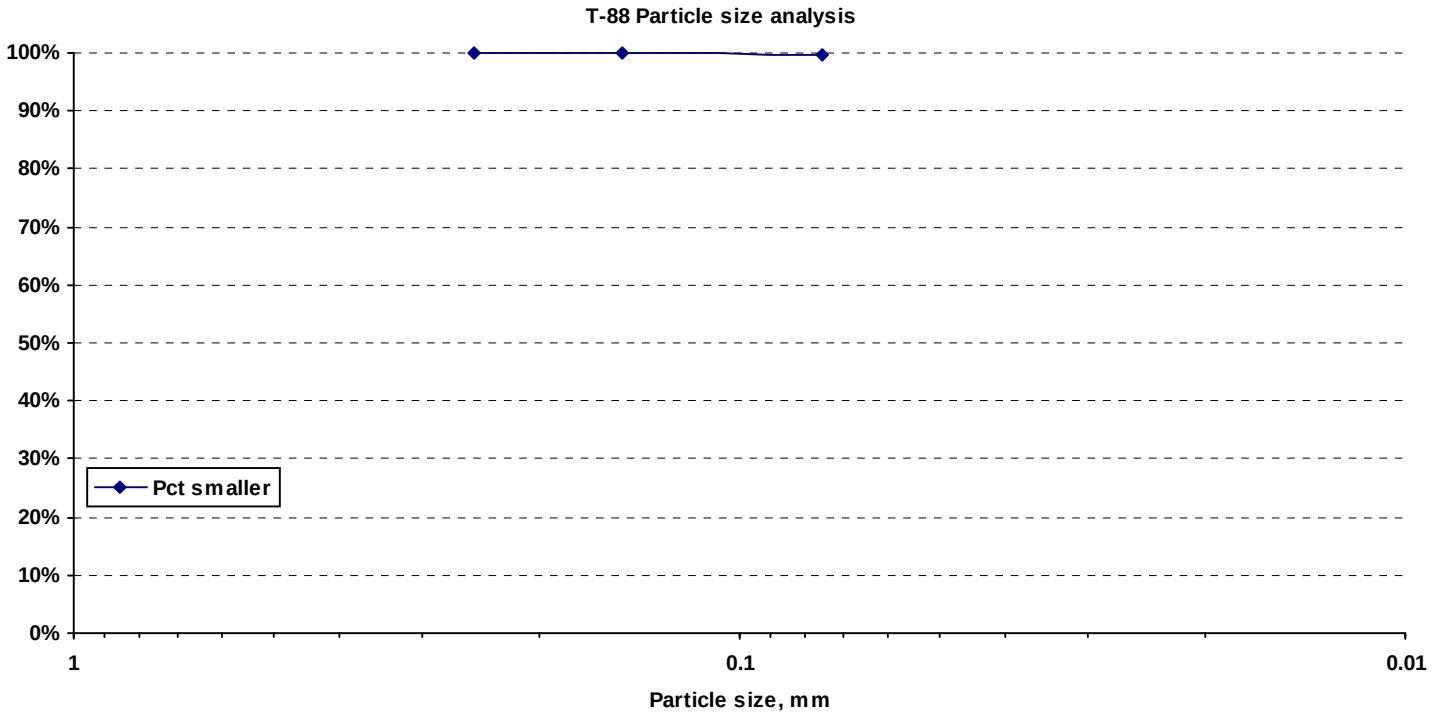
Report on Soil Sample

Lab number: E150820 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 10 FT - 12 FT



Distribution list

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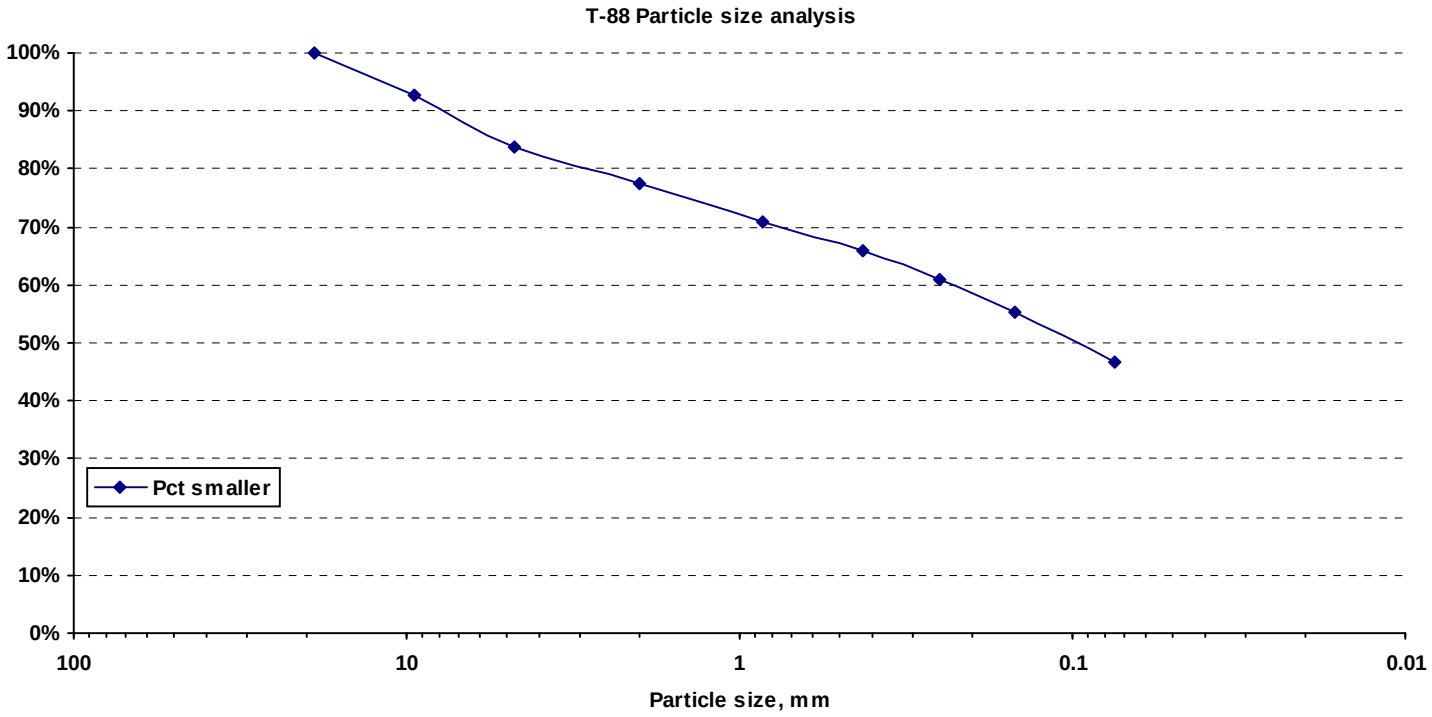
Report on Soil Sample

Lab number: E150821 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 15 FT - 17 FT



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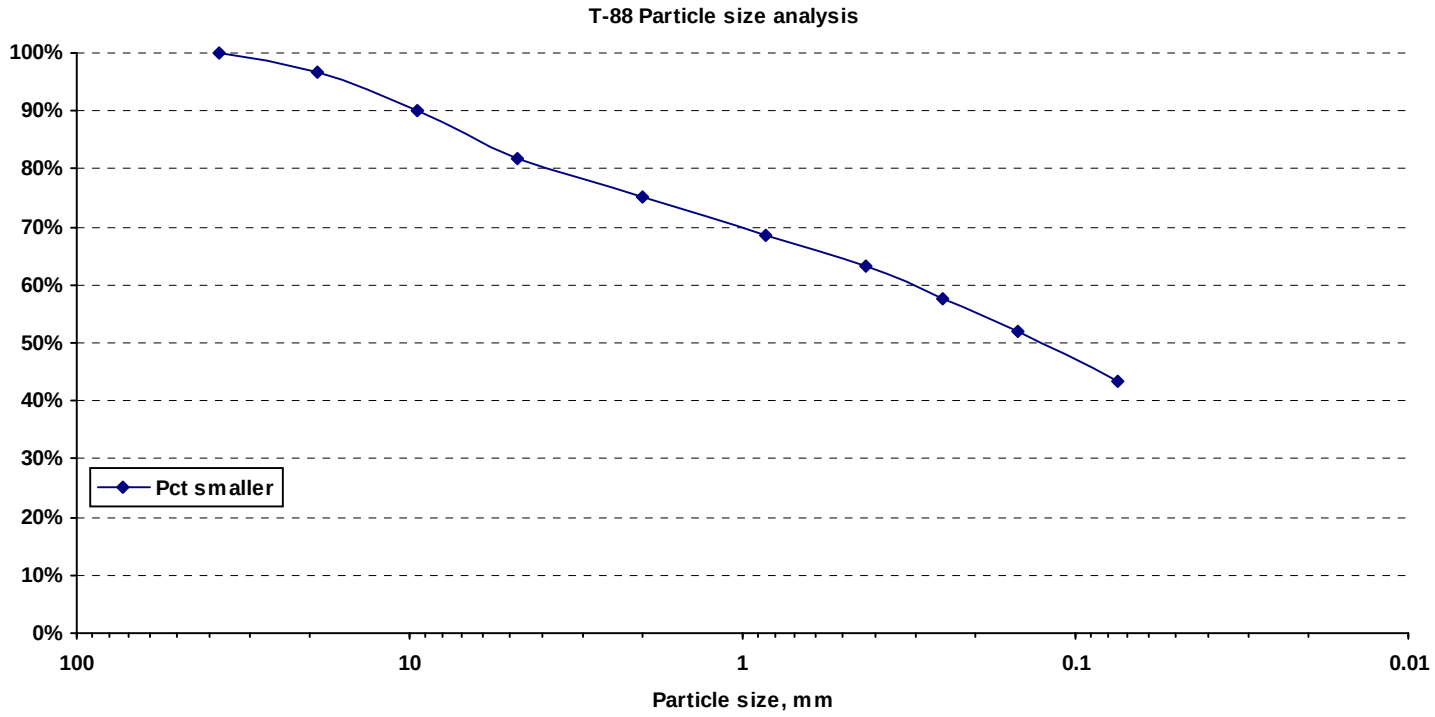
Report on Soil Sample

Lab number: E150822 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 20 FT - 21.5 FT



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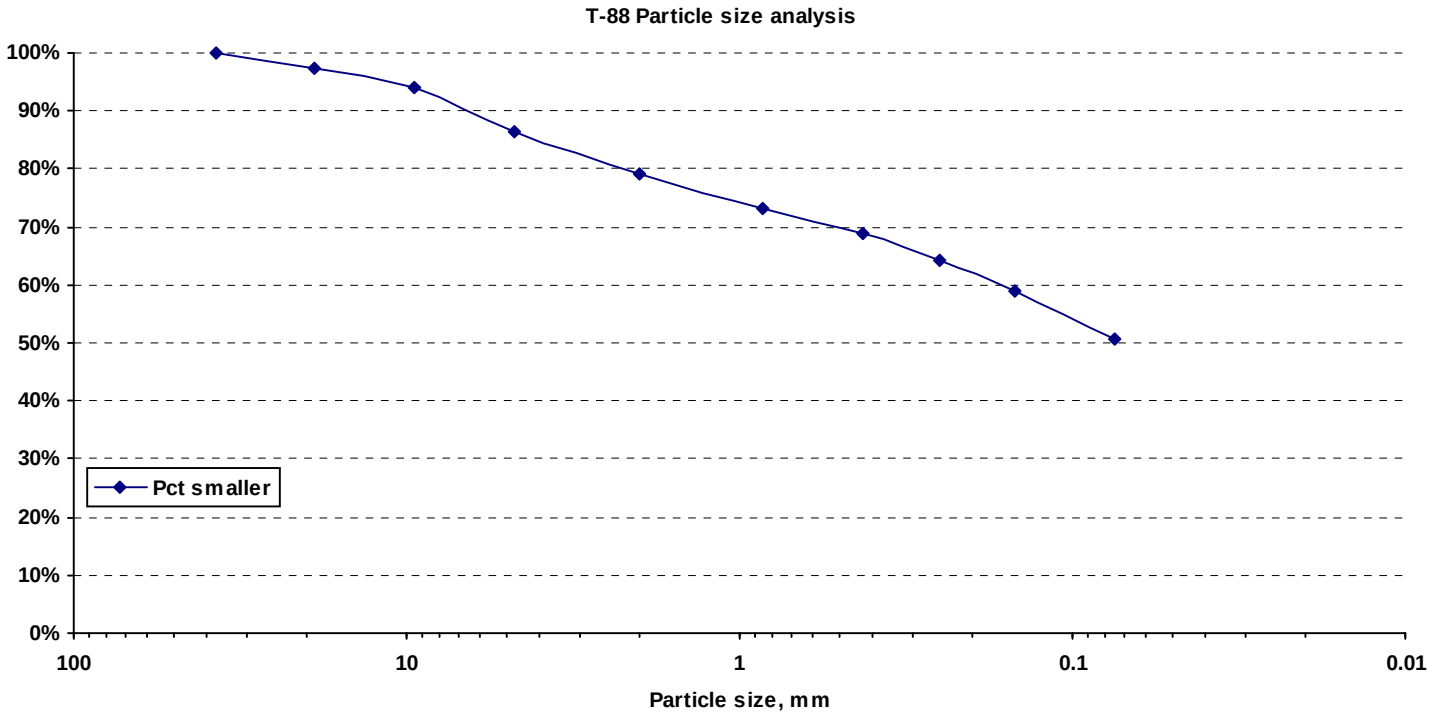
Report on Soil Sample

Lab number: E150823 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 25 FT - 25.8 FT



Distribution list

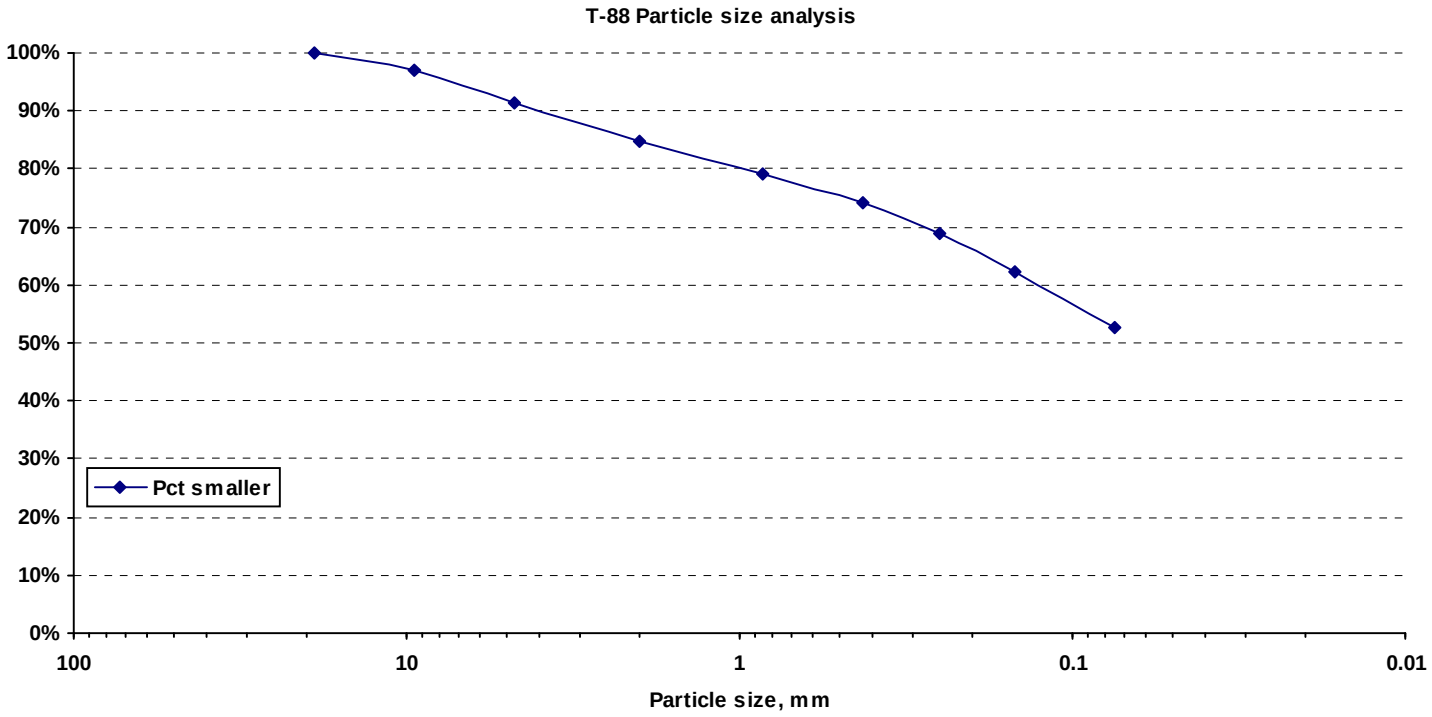
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150824 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 30 FT - 30.9 FT



Distribution list

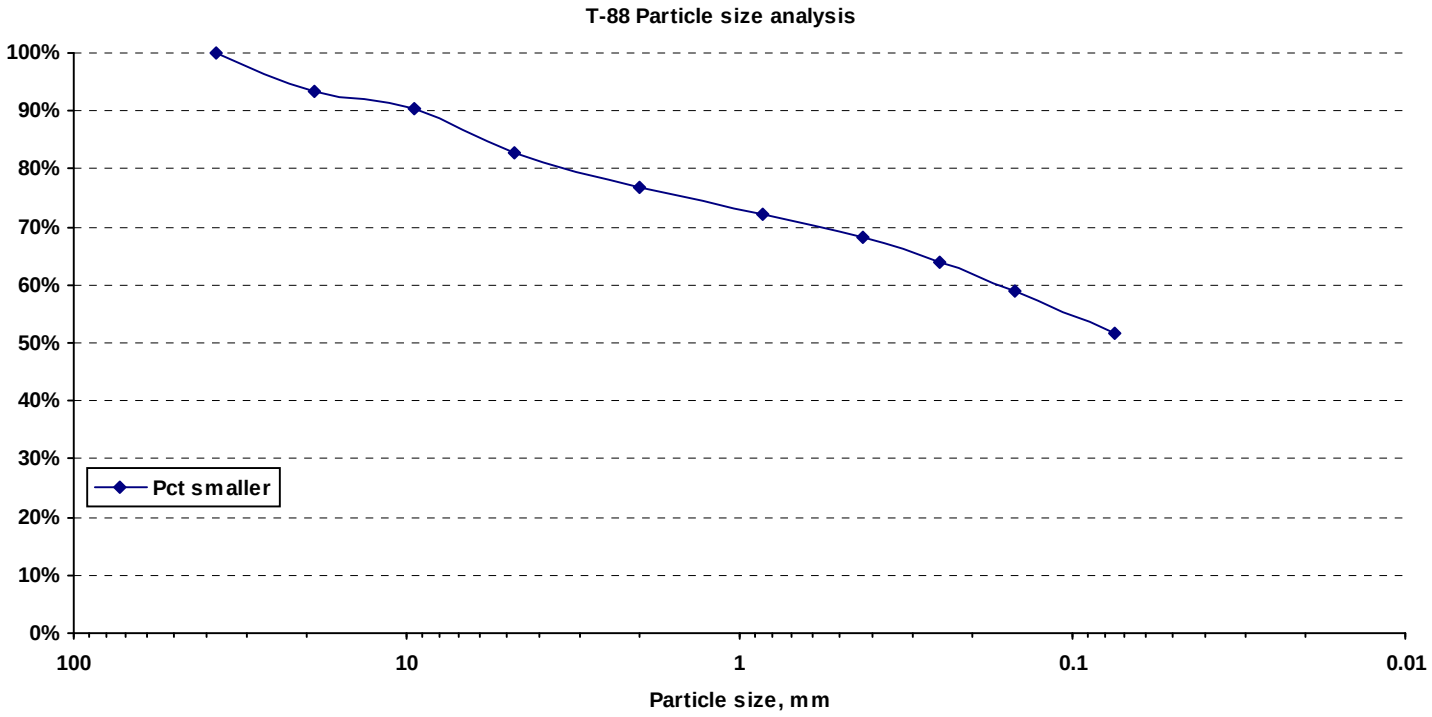
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150825 **Corrected copy:** N/A **Report Date:** 6/12/2015 10:13:32

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-7 **Depth:** 34 FT - 35.4 FT



State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150826 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:48 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 0.7 FT **to:** 2.7 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS
Comment: S-1

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	92.4%
9.5 mm (3/8"):	82.0%
4.75 mm (#4):	67.9%
2.00 mm (#10):	52.6%
850 µm (#20):	38.1%
425 µm (#40):	28.5%
250 µm (#60):	20.9%
150 µm (#100):	15.0%
75 µm (#200):	9.6%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 13.5%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 47.4% **D2487:** SP-SM
Sa: 42.9% **M145:** A-1-b Sandy Gravel
Si: 9.6%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150827 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:48 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 5 FT **to:** 7 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-2

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	75.6%
9.5 mm (3/8"):	60.3%
4.75 mm (#4):	46.7%
2.00 mm (#10):	38.0%
850 µm (#20):	32.7%
425 µm (#40):	28.7%
250 µm (#60):	24.7%
150 µm (#100):	20.9%
75 µm (#200):	15.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 7.4%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 62.0% **D2487:** GM
Sa: 22.1% **M145:** A-1-b Sandy Gravel
Si: 15.9%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.
INSUFFICIENT SAMPLE FOR LIMITS TESTING.
CLAY WAS NOTICEABLE AND SIMILAR TO 7-9 FT.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150828 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:49 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 7 FT **to:** 9 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-3

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	99.1%
4.75 mm (#4):	98.2%
2.00 mm (#10):	96.3%
850 µm (#20):	92.7%
425 µm (#40):	87.2%
250 µm (#60):	79.9%
150 µm (#100):	73.3%
75 µm (#200):	64.8%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	23.9%
T-89 Liquid Limit:	21
T-90 Plastic Limit:	18
T-90 Plasticity Index:	3

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	3.7%	**D2487:**	ML	
Sa:	31.5%	**M145:**	A-4	Sandy Silt
Si:	64.8%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150829 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:49 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 10 FT **to:** 12 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-4

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	
4.75 mm (#4):	99.4%
2.00 mm (#10):	99.1%
850 µm (#20):	98.4%
425 µm (#40):	96.3%
250 µm (#60):	92.6%
150 µm (#100):	88.9%
75 µm (#200):	82.7%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	25.6%
T-89 Liquid Limit:	21
T-90 Plastic Limit:	19
T-90 Plasticity Index:	2

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 0.9% **D2487:** ML
Sa: 16.4% **M145:** A-4 Silt
Si: 82.7%

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150830 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:50 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 12 FT **to:** 14 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-5

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	
9.5 mm (3/8"):	97.3%
4.75 mm (#4):	89.7%
2.00 mm (#10):	82.9%
850 µm (#20):	77.4%
425 µm (#40):	72.9%
250 µm (#60):	68.3%
150 µm (#100):	63.7%
75 µm (#200):	57.4%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 19.1%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 17.1% **D2487:** ML
Sa: 25.5% **M145:** A-4 Sandy Silt
Si: 57.4%

Comments: LABN NOTE: A VERY SMALL AMOUNT OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150831 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:50 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 17 FT **to:** 19 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-6

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	94.0%
9.5 mm (3/8"):	86.3%
4.75 mm (#4):	80.0%
2.00 mm (#10):	72.4%
850 µm (#20):	67.1%
425 µm (#40):	63.0%
250 µm (#60):	58.7%
150 µm (#100):	54.4%
75 µm (#200):	46.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 11.5%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 27.6% **D2487:** SM
Sa: 25.4% **M145:** A-4 Sandy Gravelly Silt
Si: 46.9%

Comments: LABN NOTE: A VERY SMALL AMOUNT OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150832 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:50 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 17 FT **to:** 19 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-7

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	97.1%
9.5 mm (3/8"):	94.2%
4.75 mm (#4):	89.5%
2.00 mm (#10):	83.7%
850 µm (#20):	78.4%
425 µm (#40):	74.3%
250 µm (#60):	70.3%
150 µm (#100):	65.8%
75 µm (#200):	58.9%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	9.3%
T-89 Liquid Limit:	17
T-90 Plastic Limit:	14
T-90 Plasticity Index:	3

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	16.3%	**D2487:**	ML	
Sa:	24.9%	**M145:**	A-4	Sandy Silt
Si:	58.9%			

Comments:

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150833 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:51 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 20 FT **to:** 22 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-8

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	95.7%
9.5 mm (3/8"):	87.3%
4.75 mm (#4):	79.8%
2.00 mm (#10):	71.5%
850 µm (#20):	66.1%
425 µm (#40):	61.9%
250 µm (#60):	57.7%
150 µm (#100):	53.6%
75 µm (#200):	47.2%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content: 6.7%
T-89 Liquid Limit:
T-90 Plastic Limit:
T-90 Plasticity Index: NP

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr: 28.5% **D2487:** SM
Sa: 24.3% **M145:** A-4 Sandy Gravelly Silt
Si: 47.2%

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.
A SMALL AMOUNT OF CLAY WAS NOTICEABLE. SAMPLE TESTED (NP)

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Distribution list
GEODESIGN
T. ELIASSEN
J. TOUCHETTE

Report on Soil Sample

Lab number: E150834 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:55:51 P
Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Date sampled: 5/29/2015 **Received:** 6/10/2015 **Tested:** 6/10/2015 **Tested by:** J. TOUCHETTE
Station: 290+50 **Offset:** -10.0 **Hole:** B-8 **Depth:** 24 FT **to:** 26 FT
Field description:
Submitted by: GEODESIGN **Address:**
Sample type: SPLIT BARREL **Quantity:**
Sample source/Outside agency name:
Location used: **Examined for:** MC, GS, AL
Comment: S-9

Test Results

Sieve Analysis

T-88	% Passing Total Sample
75 mm (3.0"):	
37.5 mm (1.5"):	
19 mm (3/4"):	93.3%
9.5 mm (3/8"):	86.6%
4.75 mm (#4):	79.5%
2.00 mm (#10):	73.9%
850 µm (#20):	69.1%
425 µm (#40):	65.5%
250 µm (#60):	62.2%
150 µm (#100):	58.5%
75 µm (#200):	52.1%

Hydrometer Analysis

Particles smaller	% total sample
0.05 mm:	
0.02 mm:	
0.005 mm:	
0.002 mm:	
0.001 mm:	

Limits

T-265 Moisture content:	10.0%
T-89 Liquid Limit:	17
T-90 Plastic Limit:	15
T-90 Plasticity Index:	2

Moisture Density

Test method: T-180 **Method:**
Maximum density: **pcf**
Optimum moisture:
T-100 Specific Gravity:

Gr:	26.1%	**D2487:**	ML	
Sa:	21.8%	**M145:**	A-4	Sandy Gravelly Silt
Si:	52.1%			

Comments: LAB NOTE: BROKEN ROCK WAS WITHIN SAMPLE.

Reviewed by: T. Eliassen, P.G., Transportation Geologist TDE

Distribution list

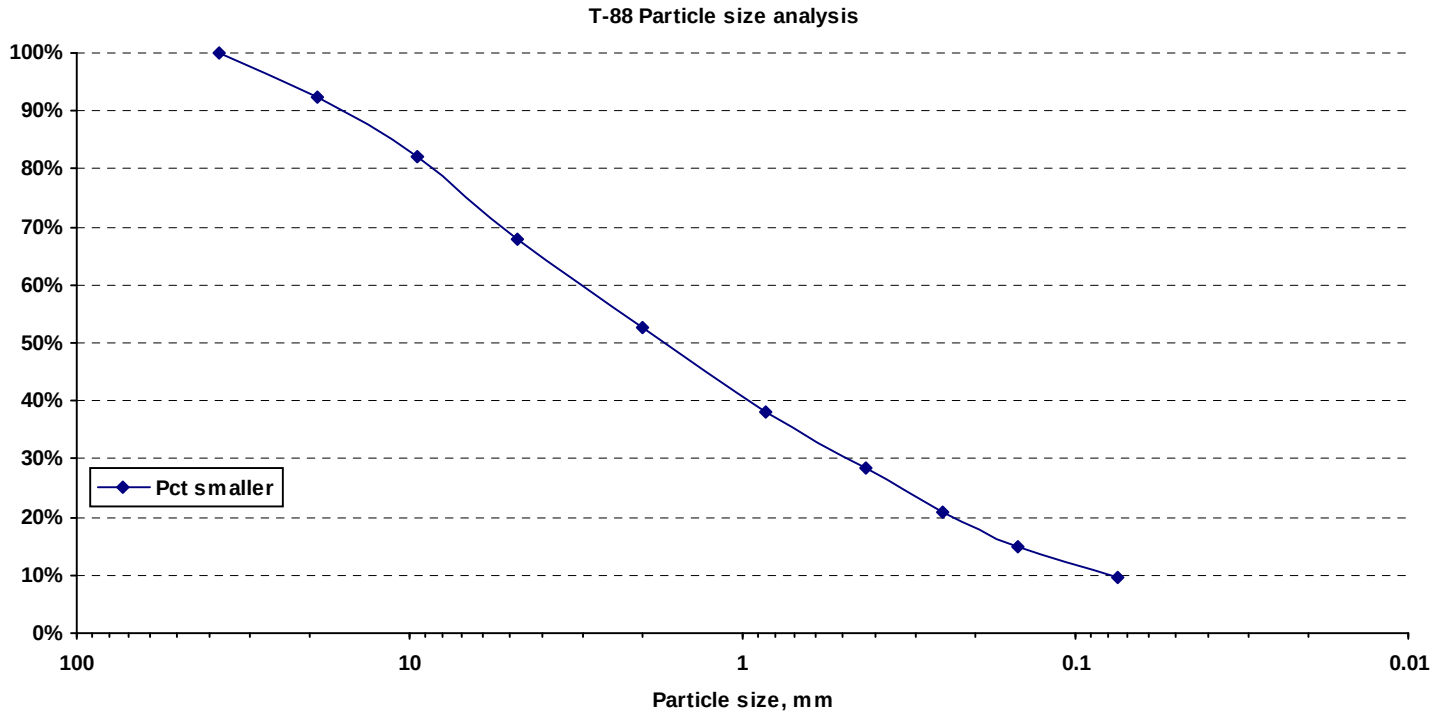
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150826 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:05 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 0.7 FT - 2.7 FT



Distribution list

State of Vermont
Agency of Transportation
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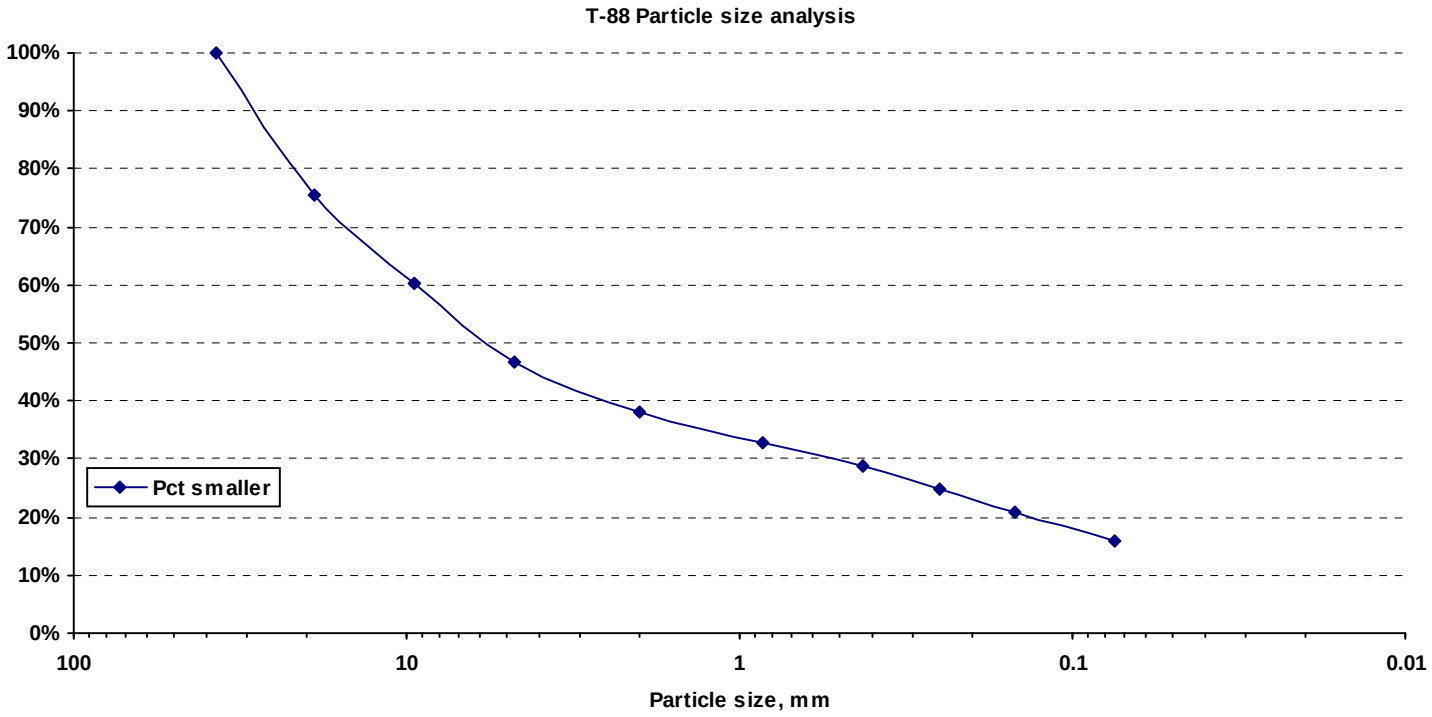
Central Laboratory

Report on Soil Sample

Lab number: E150827 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:05 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 5 FT - 7 FT



Distribution list

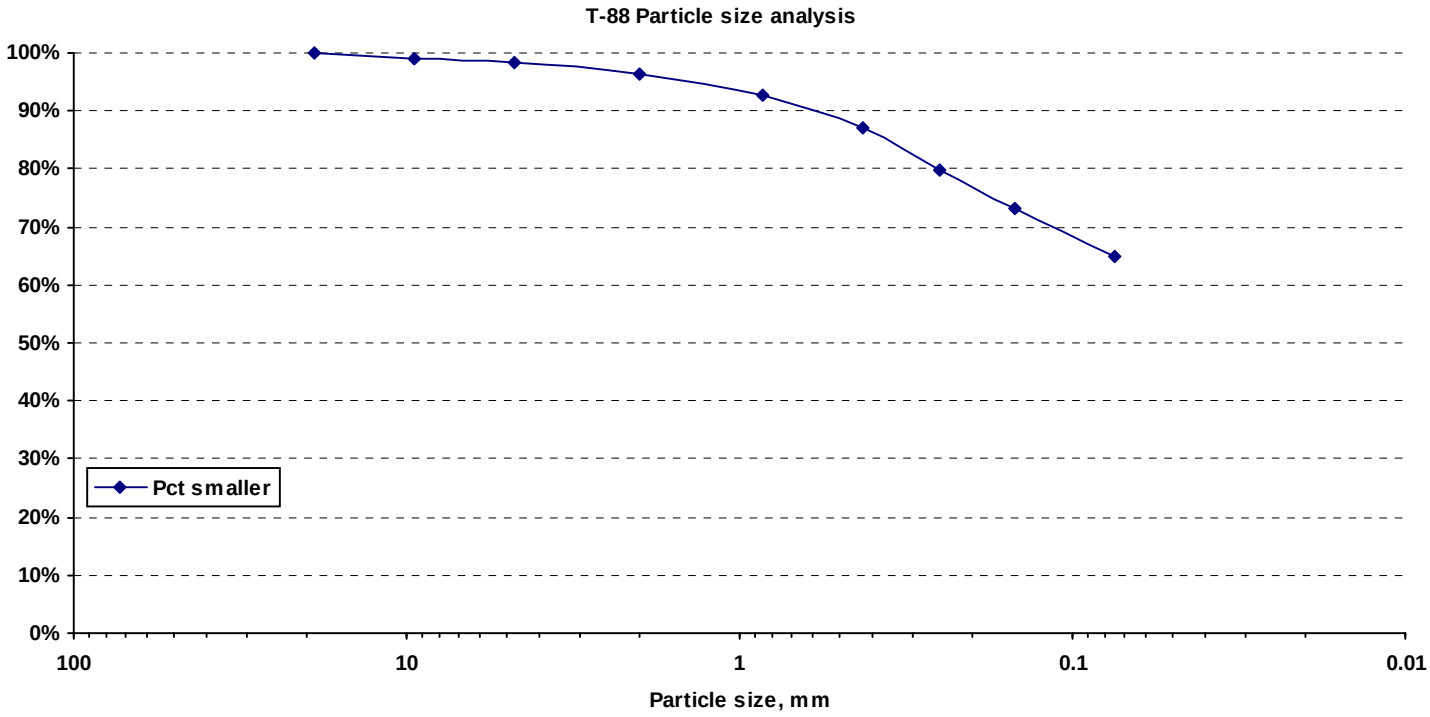
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150828 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:07 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 7 FT - 9 FT



Distribution list

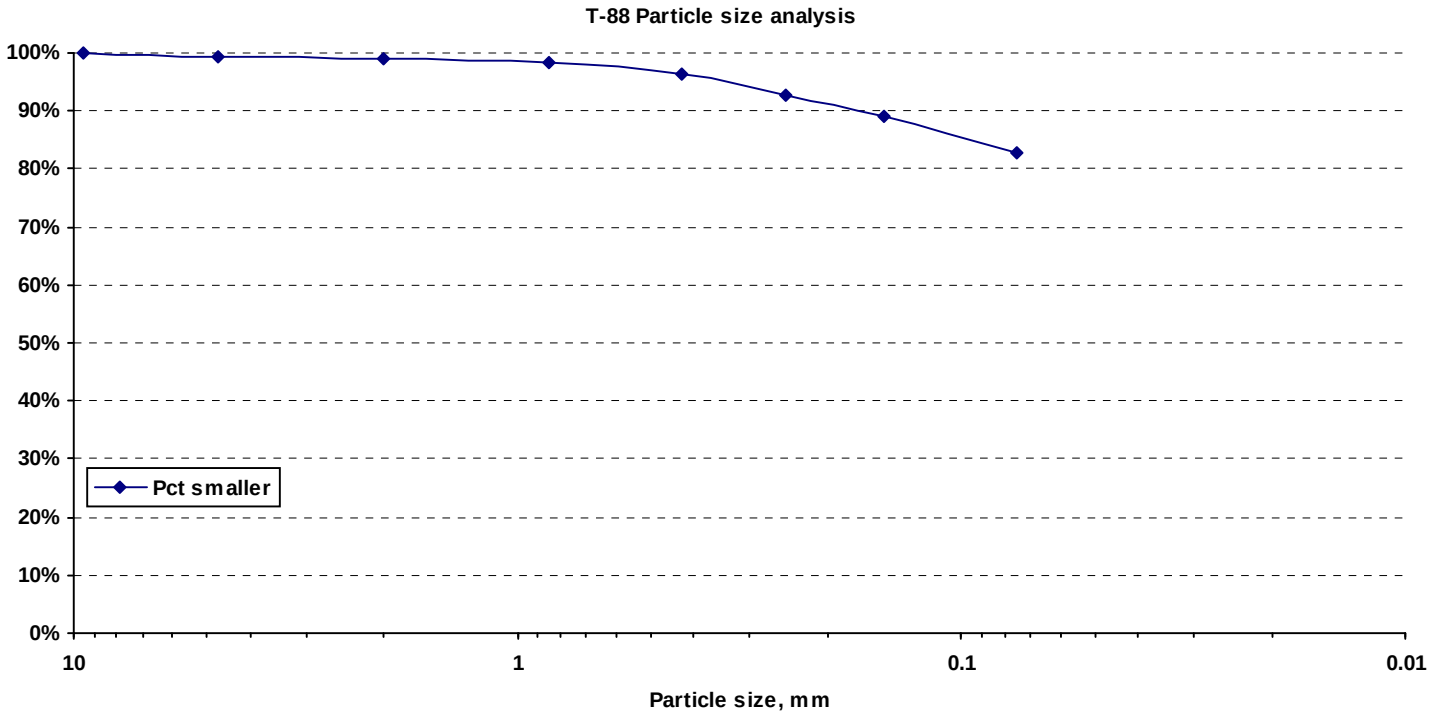
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150829 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:07 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 10 FT - 12 FT



Distribution list

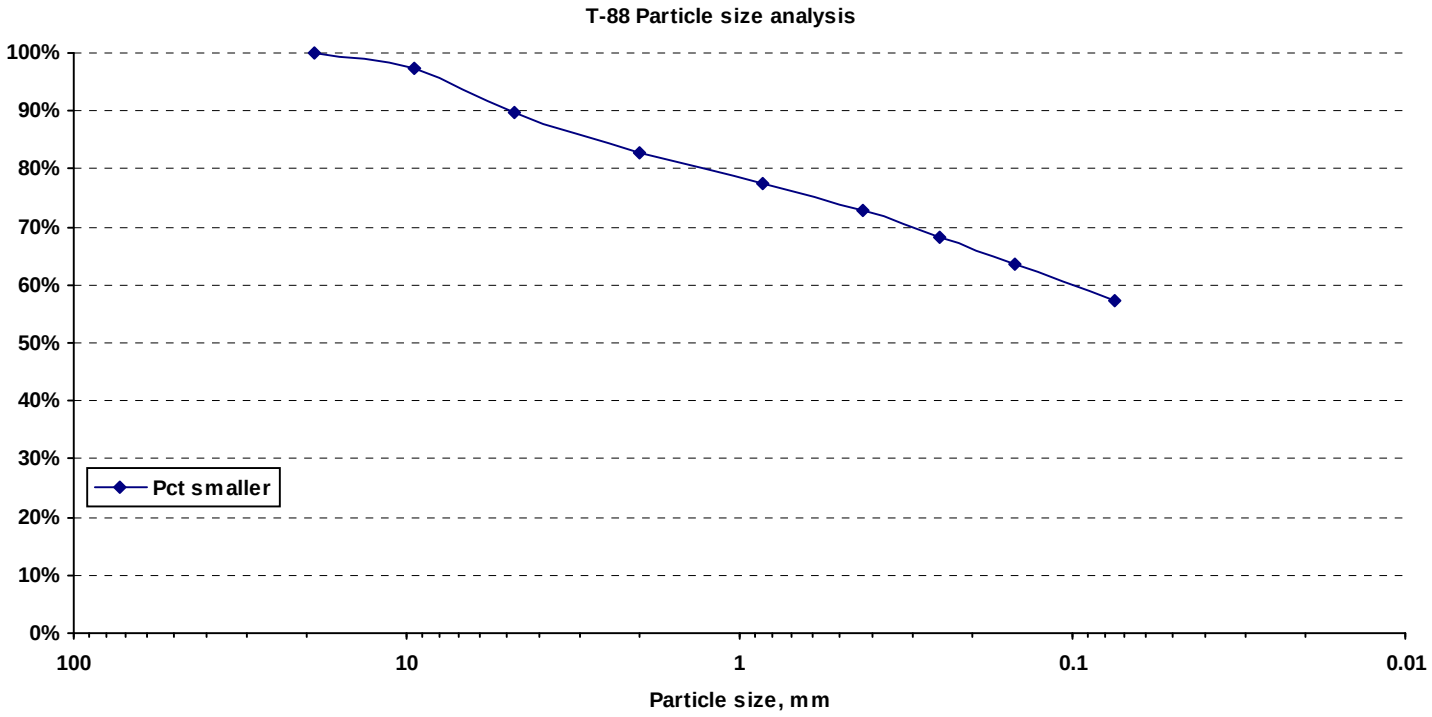
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150830 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:07 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 12 FT - 14 FT



Distribution list

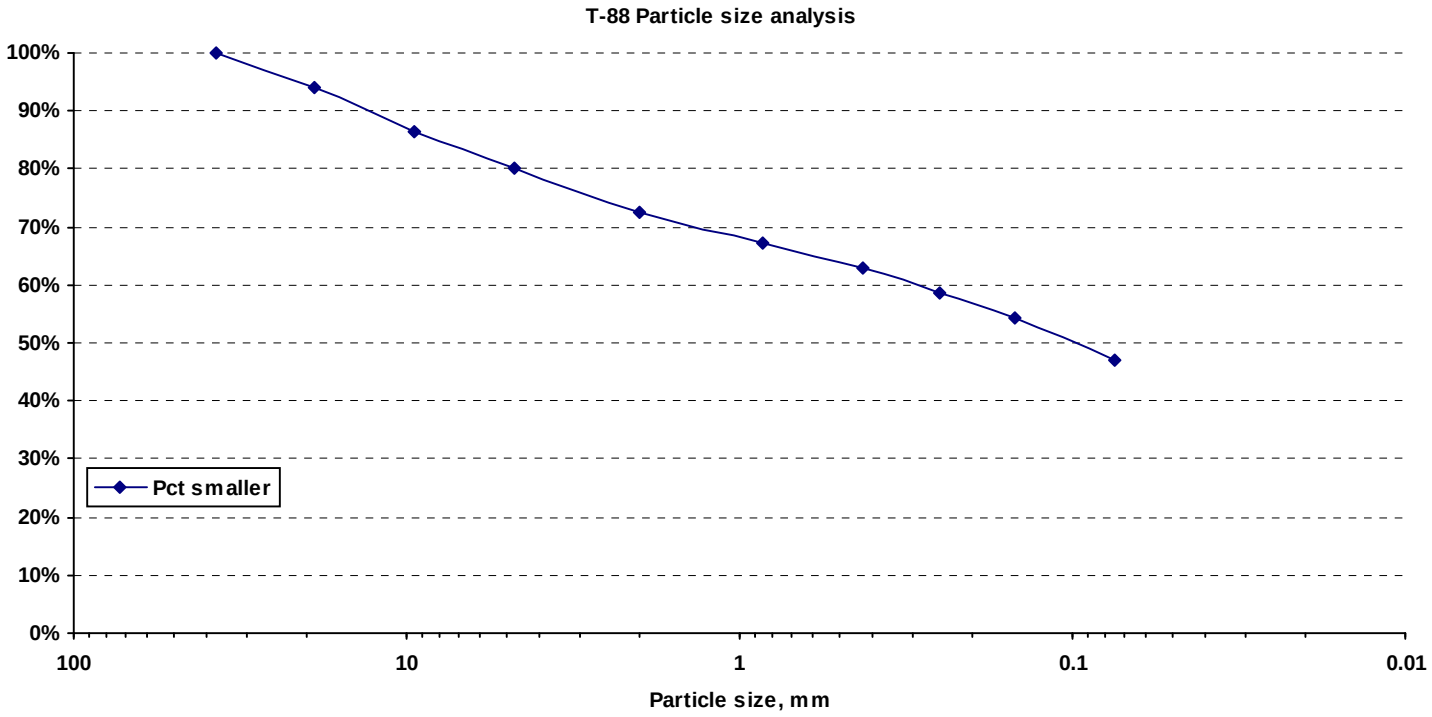
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150831 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:07 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 17 FT - 19 FT



Distribution list

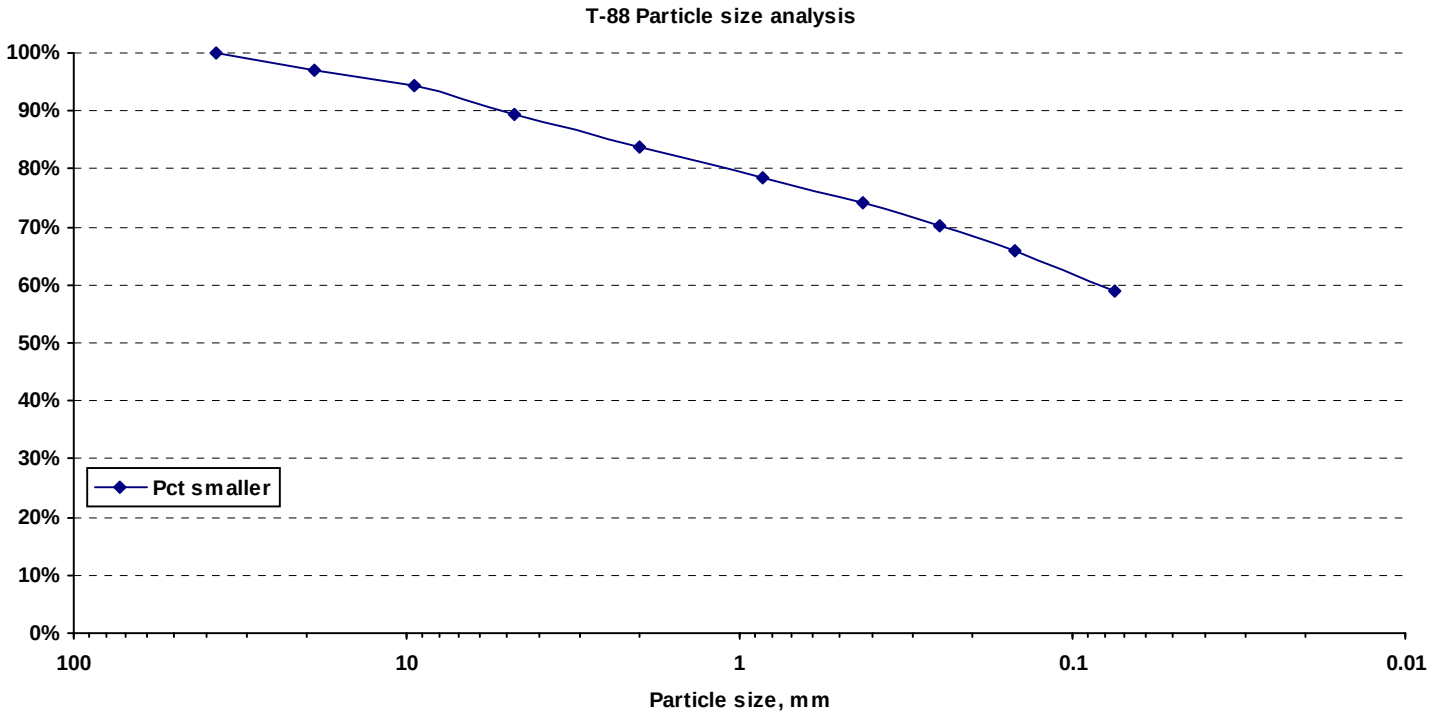
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150832 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:07 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 17 FT - 19 FT



Distribution list

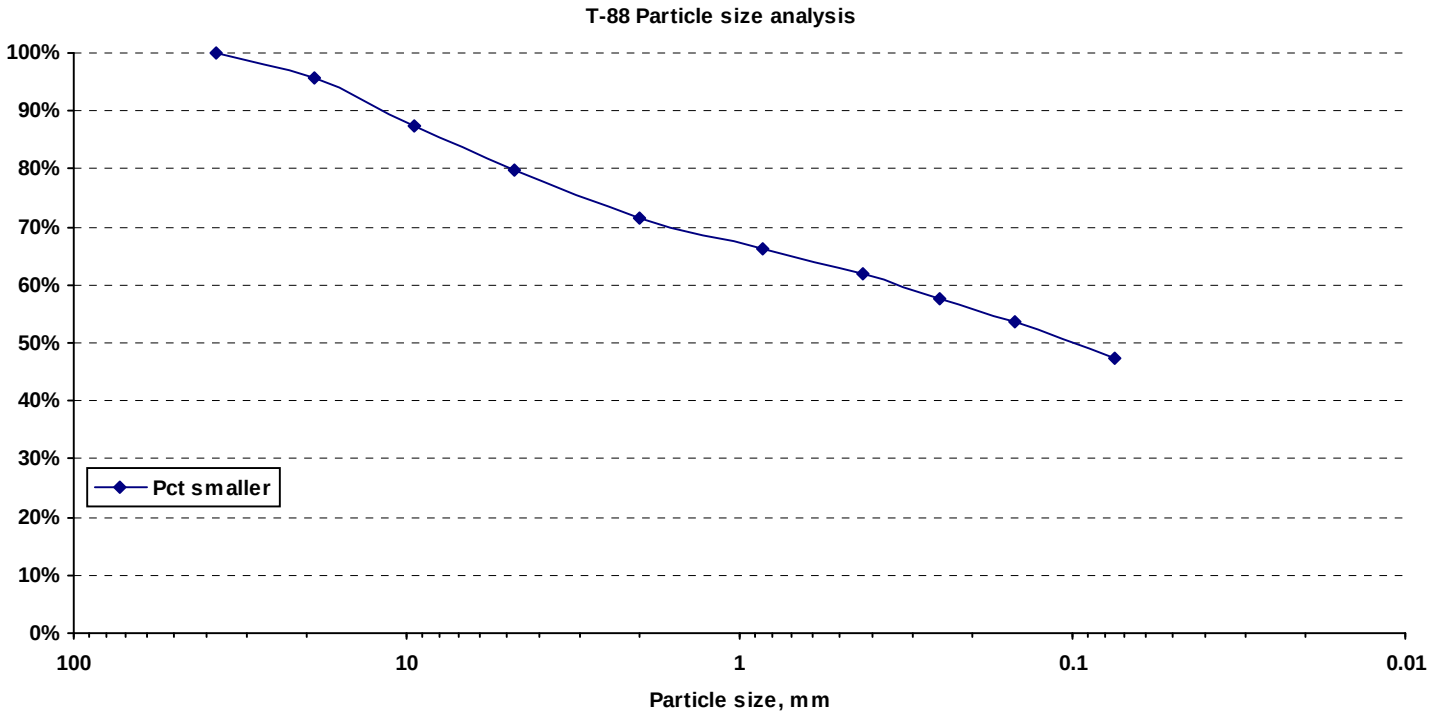
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150833 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:08 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

Hole: B-8 **Depth:** 20 FT - 22 FT



Distribution list

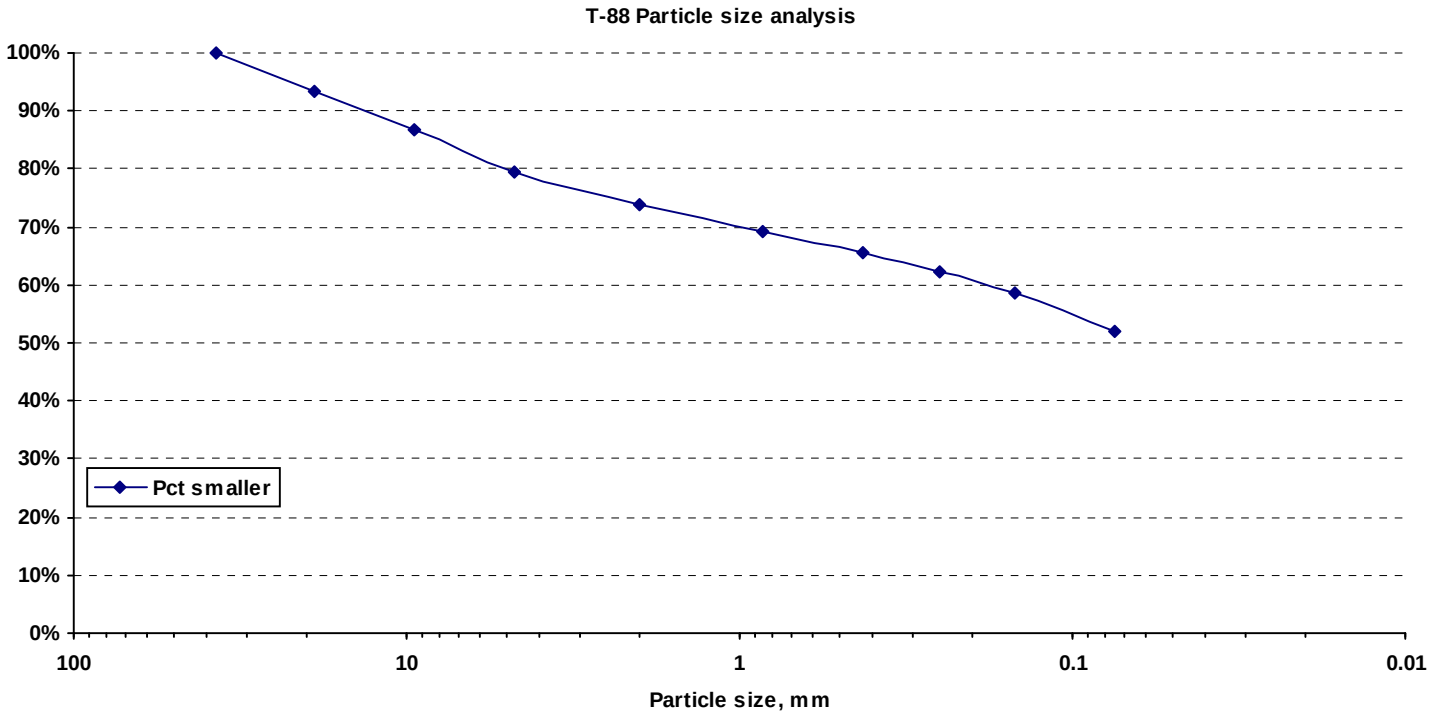
State of Vermont
Agency of Transportation
Construction and Materials Bureau
Central Laboratory

Report on Soil Sample

Lab number: E150834 **Corrected copy:** N/A **Report Date:** 6/15/2015 1:57:08 P

Project: HINESBURG **Number:** HES 021-1(19) **Site:** VT-116 TH-1, TH-7

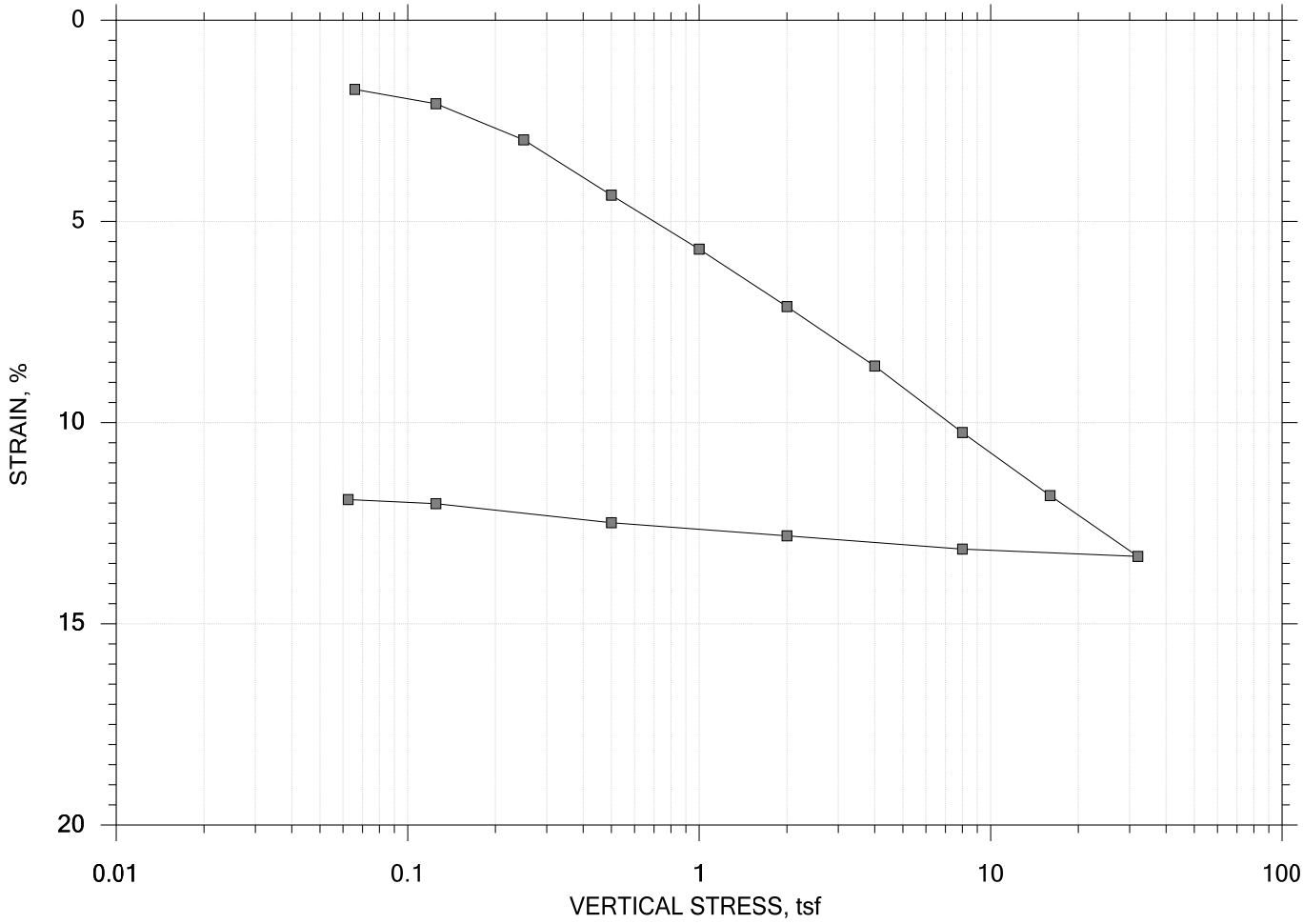
Hole: B-8 **Depth:** 24 FT - 26 FT

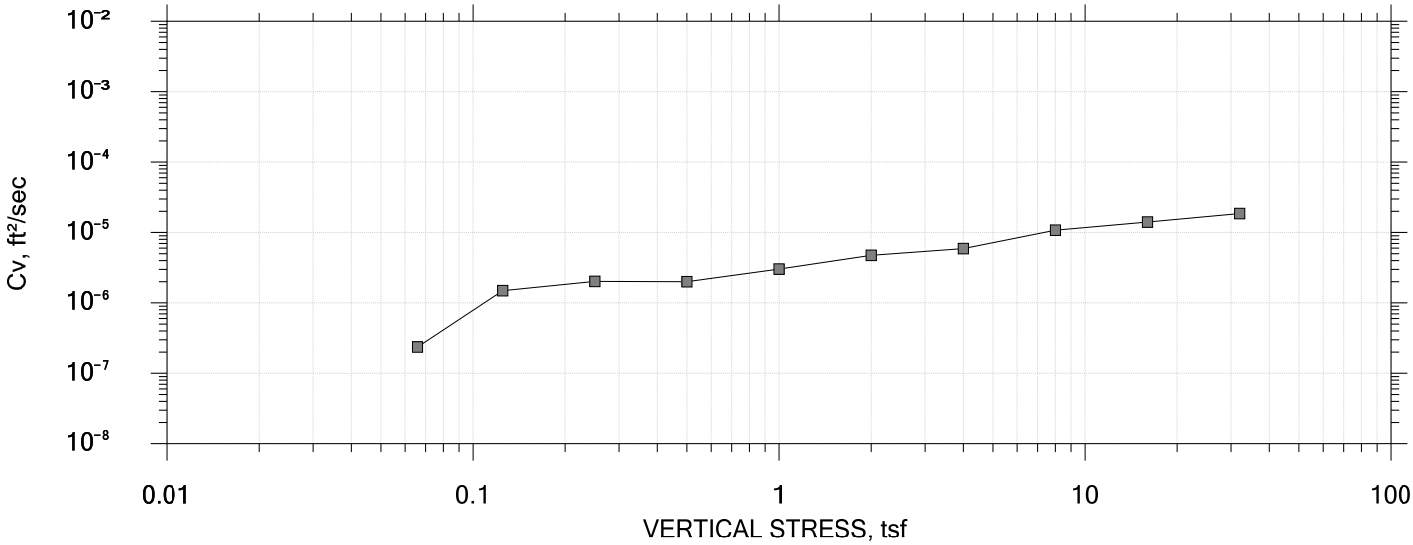


3B – GEOTESTING EXPRESS RESULTS

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT

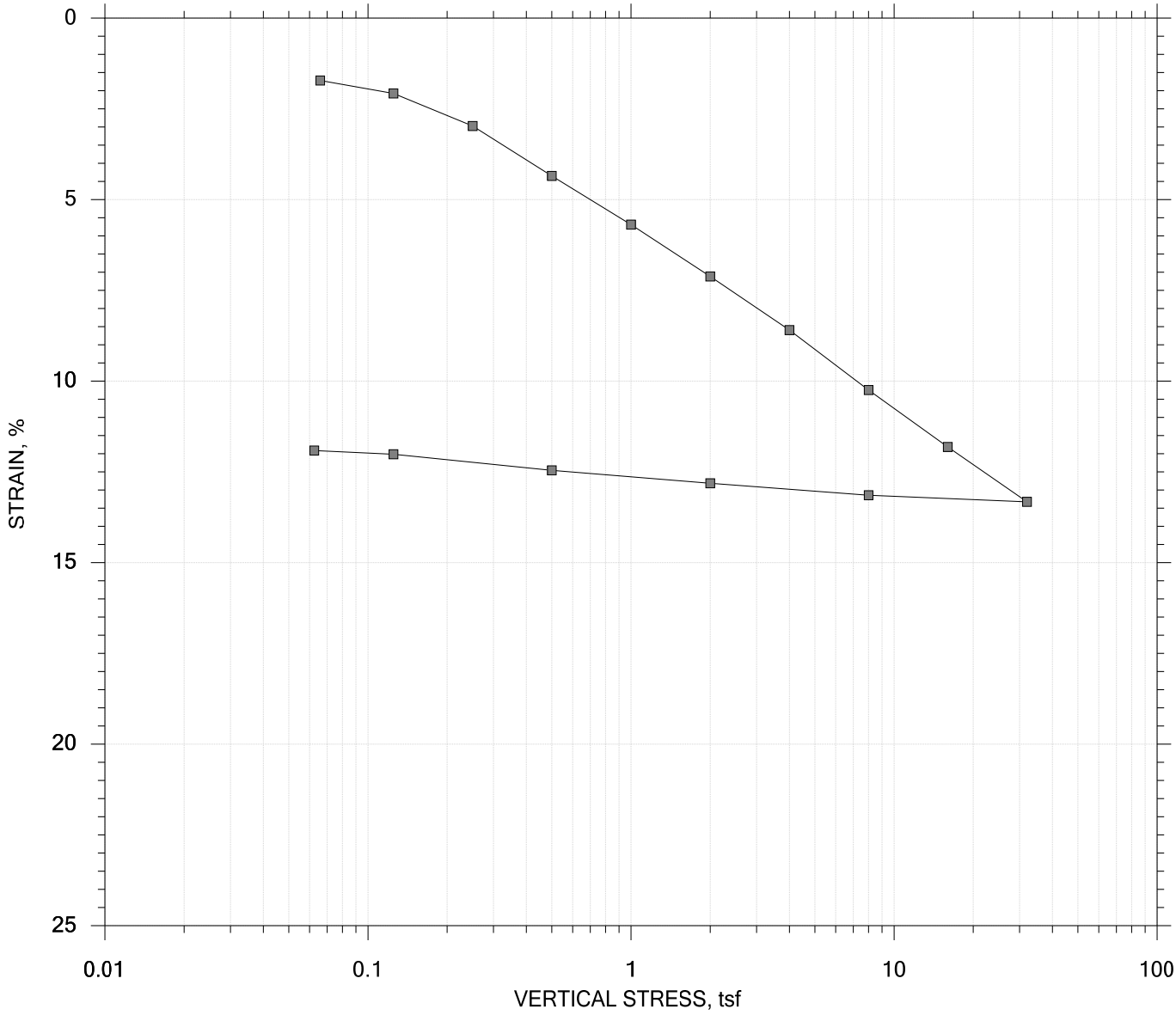




GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT



				Before Test	After Test
Current Vertical Effective Stress: ---			Water Content, %	14.87	10.26
Preconsolidation Stress: ---			Dry Unit Weight, pcf	121.46	133.47
Compression Ratio: ---			Saturation, %	99.92	100.00
Diameter: 2.5 in		Height: 1 in	Void Ratio	0.41	0.28
LL: 24	PL: 12	PI: 12	GS: 2.74		

GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
Boring No.: B5-ST	Tested By: md	Checked By: jdt
Sample No.: ST-1	Test Date: 06/15/15	Depth: 10-12 ft
Test No.: IP-1	Sample Type: intact	Elevation: ---

Soil Description: Moist, dark olive gray clay with gravel
Remarks: System S, Swell Pressure = 0.0658 tsf

Estimated Specific Gravity: 2.74	Liquid Limit: 24	Specimen Diameter: 2.50 in
Initial Void Ratio: 0.408	Plastic Limit: 12	Initial Height: 1.00 in
Final Void Ratio: 0.281	Plasticity Index: 12	Final Height: 0.91 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	A-1032	RING		A-247
Wt. Container + Wet Soil, gm	207.57	288.72	281.50	180.32
Wt. Container + Dry Soil, gm	179.74	265.44	265.44	164.31
Wt. Container, gm	8.4700	108.94	108.94	8.2600
Wt. Dry Soil, gm	171.27	156.50	156.50	156.05
Water Content, %	16.25	14.87	10.26	10.26
Void Ratio	---	0.408	0.281	---
Degree of Saturation, %	---	99.92	100.00	---
Dry Unit Weight, pcf	---	121.46	133.47	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: Hinesburg HES 021-0(19) | Location: --- | Project No.: GTX-303296
Boring No.: B5-ST | Tested By: md | Checked By: jdt
Sample No.: ST-1 | Test Date: 06/15/15 | Depth: 10-12 ft
Test No.: IP-1 | Sample Type: intact | Elevation: ---

Soil Description: Moist, dark olive gray clay with gravel
Remarks: System S, Swell Pressure = 0.0658 tsf

Displacement at End of Increment

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt T90 min	Cv ft²/sec	Mv 1/tsf	k ft/day
1	0.0658	0.01719	0.383	1.72	99.527	2.42e-007	2.61e-001	1.71e-004
2	0.125	0.02073	0.378	2.07	15.224	1.55e-006	5.98e-002	2.50e-004
3	0.250	0.02970	0.366	2.97	12.407	1.88e-006	7.18e-002	3.64e-004
4	0.500	0.04346	0.346	4.35	11.708	1.95e-006	5.50e-002	2.89e-004
5	1.00	0.05688	0.328	5.69	9.155	2.42e-006	2.68e-002	1.75e-004
6	2.00	0.07115	0.308	7.11	4.527	4.75e-006	1.43e-002	1.83e-004
7	4.00	0.08592	0.287	8.59	3.175	6.56e-006	7.39e-003	1.31e-004
8	8.00	0.1024	0.263	10.2	2.520	7.99e-006	4.13e-003	8.90e-005
9	16.0	0.1181	0.241	11.8	1.670	1.16e-005	1.96e-003	6.15e-005
10	32.0	0.1332	0.220	13.3	1.240	1.51e-005	9.44e-004	3.85e-005
11	8.00	0.1314	0.223	13.1	0.413	4.47e-005	7.52e-005	9.06e-006
12	2.00	0.1281	0.227	12.8	0.597	3.11e-005	5.52e-004	4.64e-005
13	0.500	0.1249	0.232	12.5	3.980	4.70e-006	2.17e-003	2.76e-005
14	0.125	0.1201	0.239	12.0	50.053	3.77e-007	1.26e-002	1.28e-005
15	0.0625	0.1191	0.240	11.9	0.000	0.00e+000	1.65e-002	0.00e+000

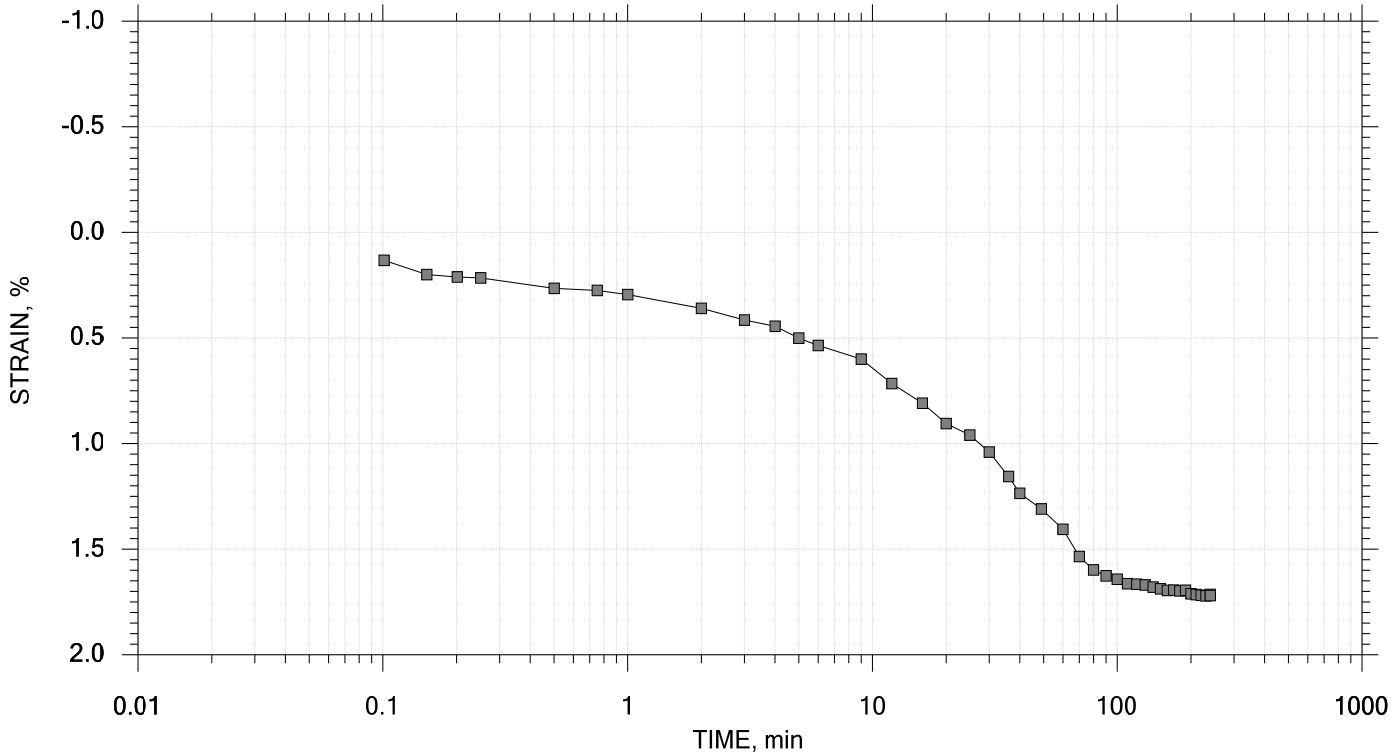
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log T50 min	Cv ft²/sec	Mv 1/tsf	k ft/day	Ca %
1	0.0658	0.01719	0.383	1.72	0.000	0.00e+000	2.61e-001	0.00e+000	0.00e+000
2	0.125	0.02073	0.378	2.07	0.000	0.00e+000	5.98e-002	0.00e+000	0.00e+000
3	0.250	0.02970	0.366	2.97	0.000	0.00e+000	7.18e-002	0.00e+000	0.00e+000
4	0.500	0.04346	0.346	4.35	0.000	0.00e+000	5.50e-002	0.00e+000	0.00e+000
5	1.00	0.05688	0.328	5.69	1.648	3.12e-006	2.68e-002	2.26e-004	0.00e+000
6	2.00	0.07115	0.308	7.11	0.000	0.00e+000	1.43e-002	0.00e+000	0.00e+000
7	4.00	0.08592	0.287	8.59	0.917	5.28e-006	7.39e-003	1.05e-004	0.00e+000
8	8.00	0.1024	0.263	10.2	0.289	1.62e-005	4.13e-003	1.80e-004	0.00e+000
9	16.0	0.1181	0.241	11.8	0.282	1.60e-005	1.96e-003	8.48e-005	0.00e+000
10	32.0	0.1332	0.220	13.3	0.175	2.49e-005	9.44e-004	6.34e-005	0.00e+000
11	8.00	0.1314	0.223	13.1	0.000	0.00e+000	7.52e-005	0.00e+000	0.00e+000
12	2.00	0.1281	0.227	12.8	0.000	0.00e+000	5.52e-004	0.00e+000	0.00e+000
13	0.500	0.1249	0.232	12.5	0.000	0.00e+000	2.17e-003	0.00e+000	0.00e+000
14	0.125	0.1201	0.239	12.0	11.451	3.83e-007	1.26e-002	1.30e-005	0.00e+000
15	0.0625	0.1191	0.240	11.9	0.000	0.00e+000	1.65e-002	0.00e+000	0.00e+000

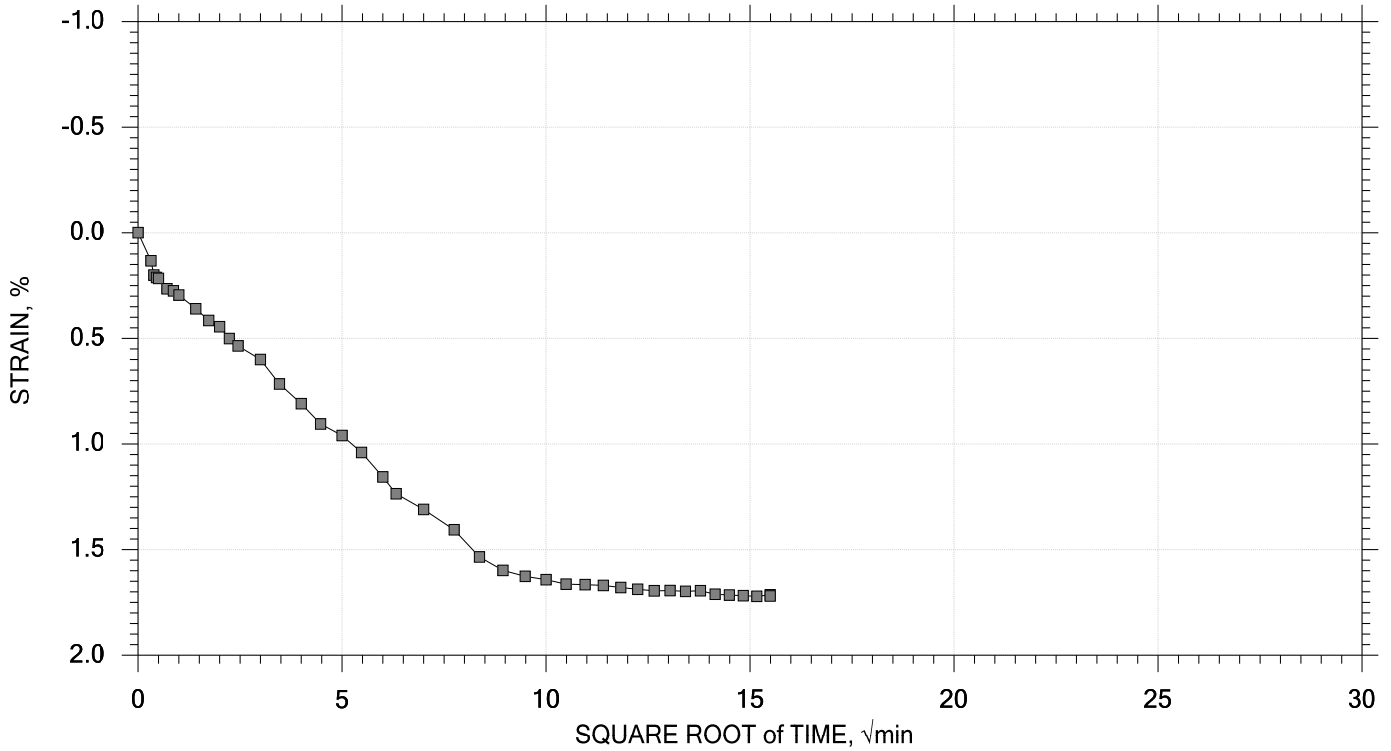
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Volume Step 1 of 15

Stress: 0.065835 tsf





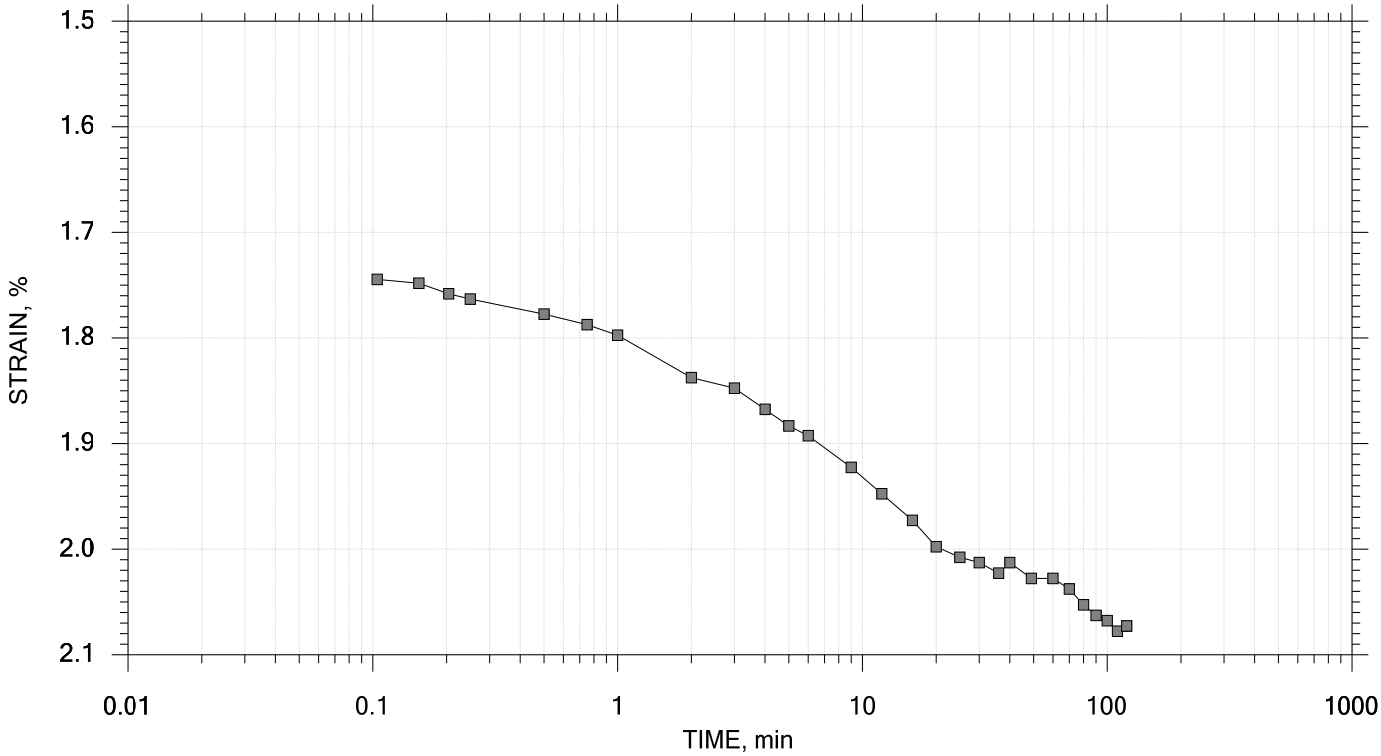
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

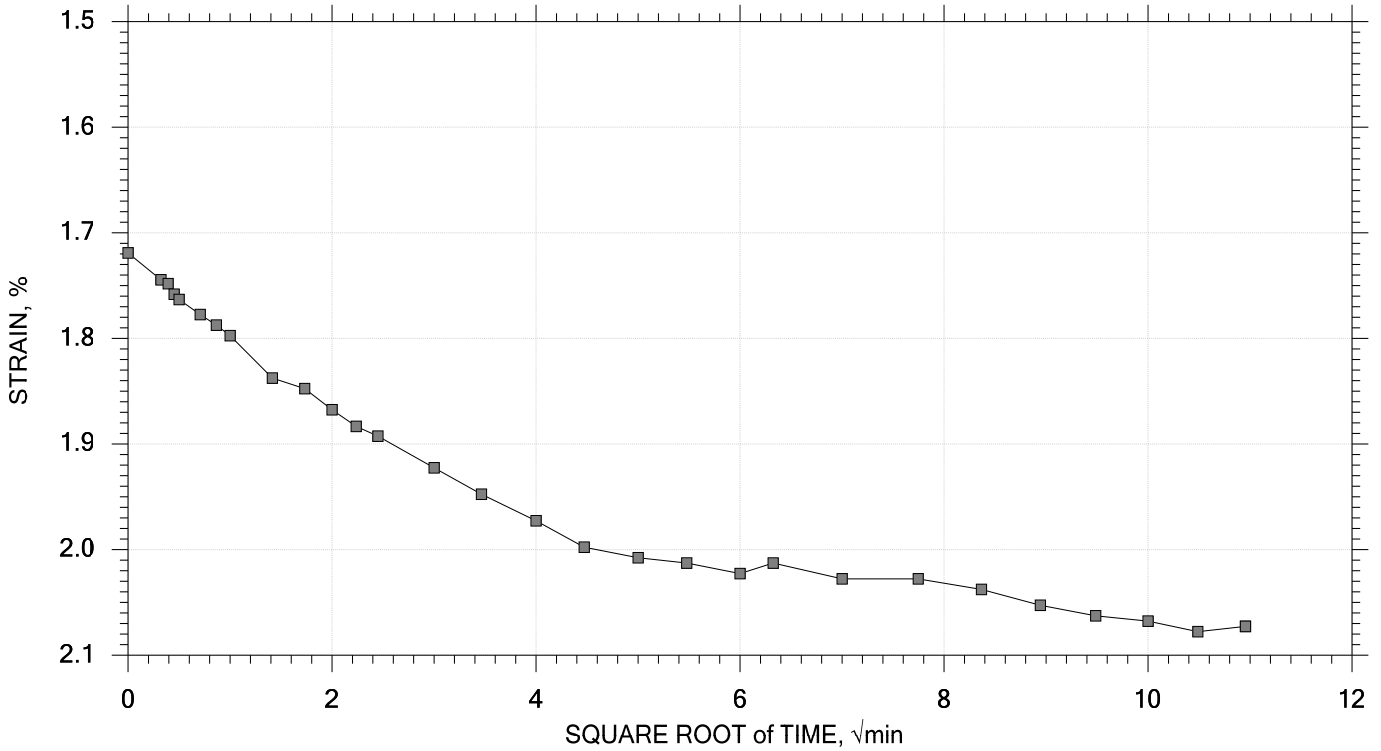
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 2 of 15

Stress: 0.125 tsf





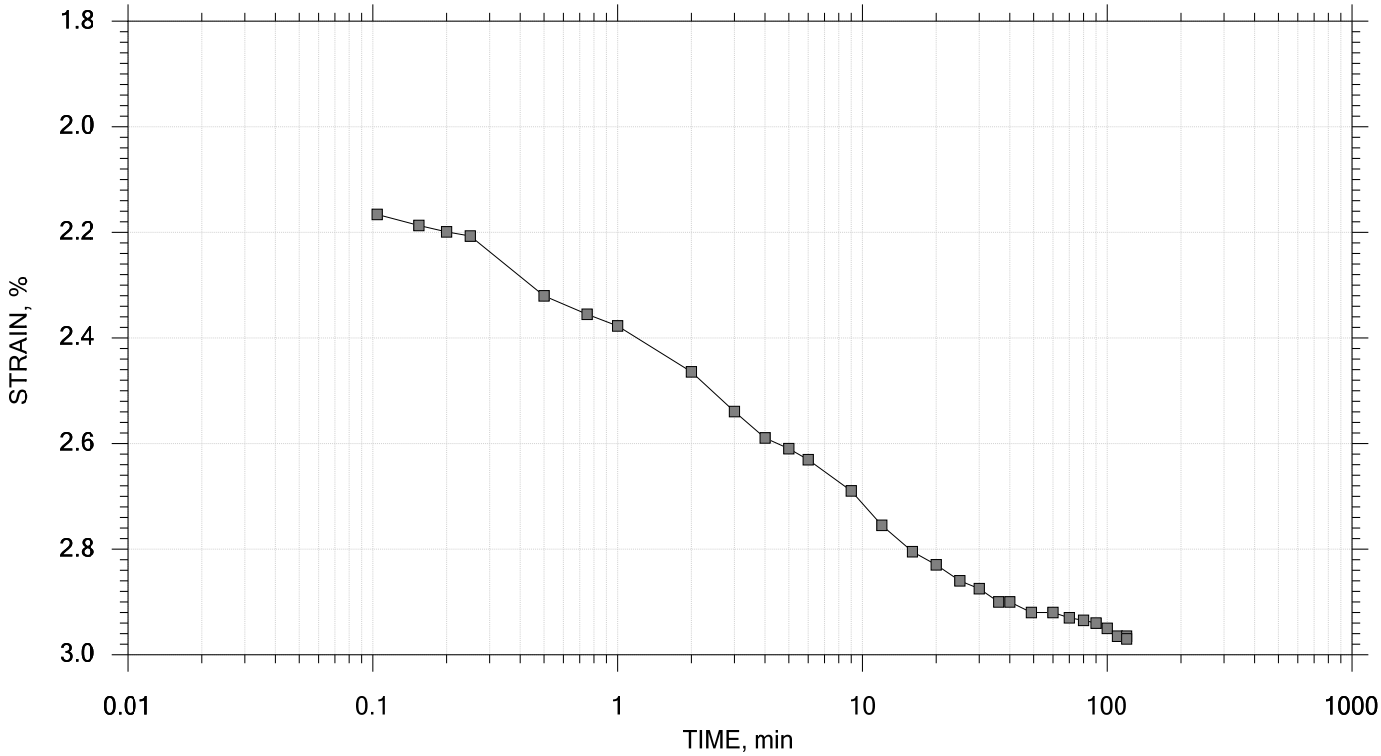
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

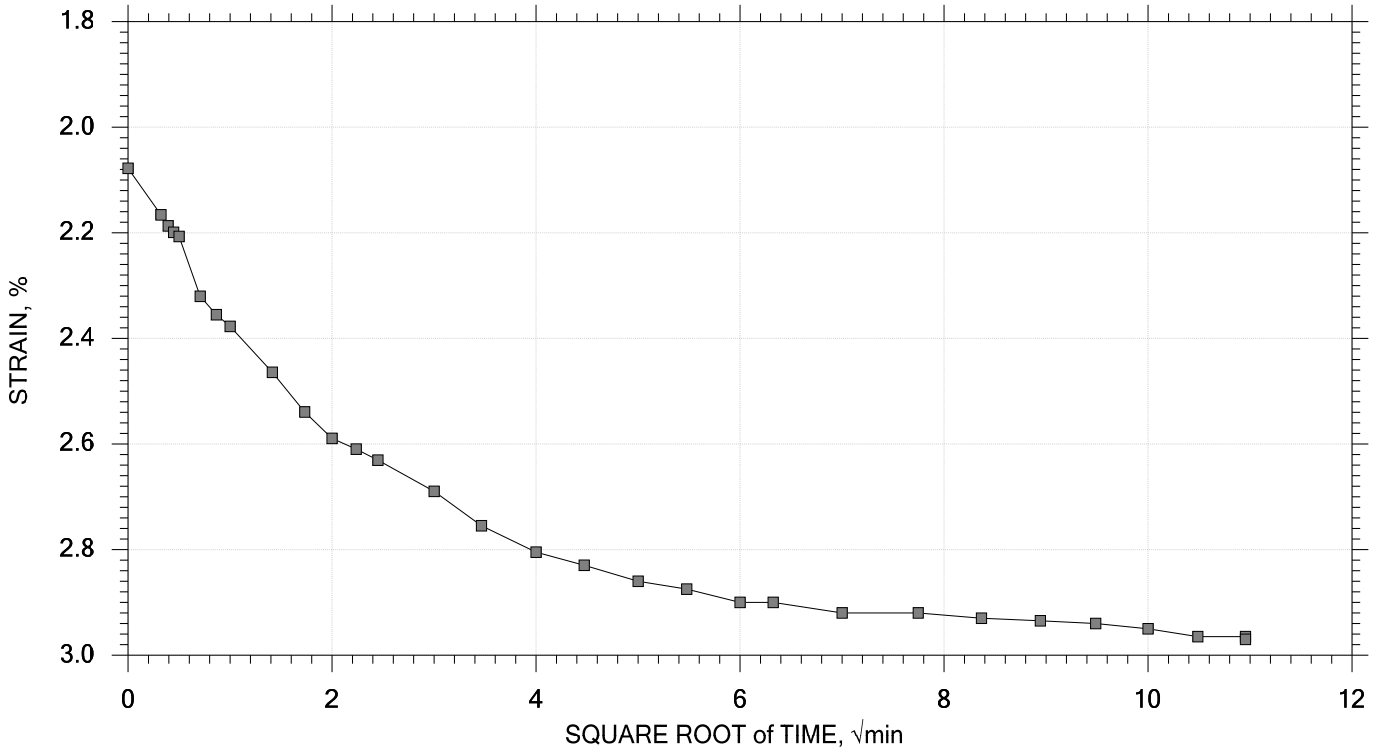
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 3 of 15

Stress: 0.25 tsf





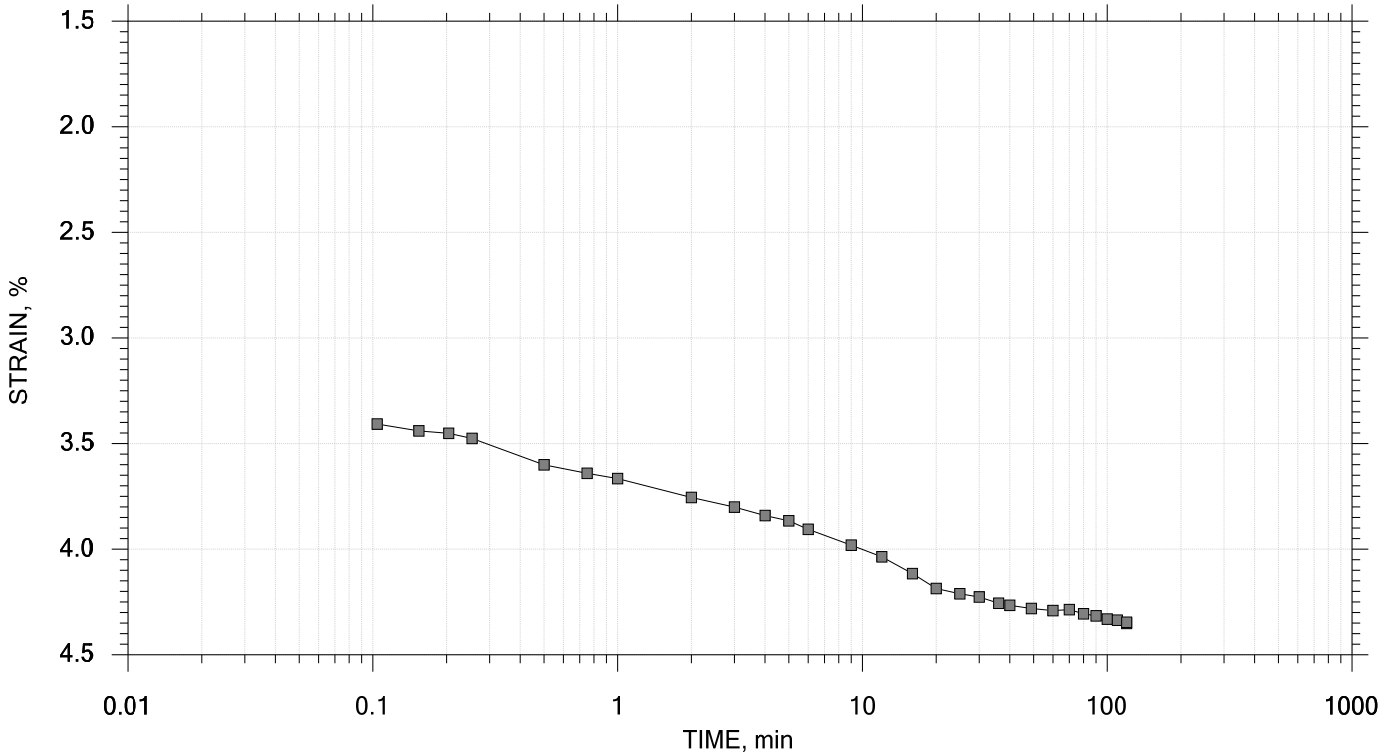
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

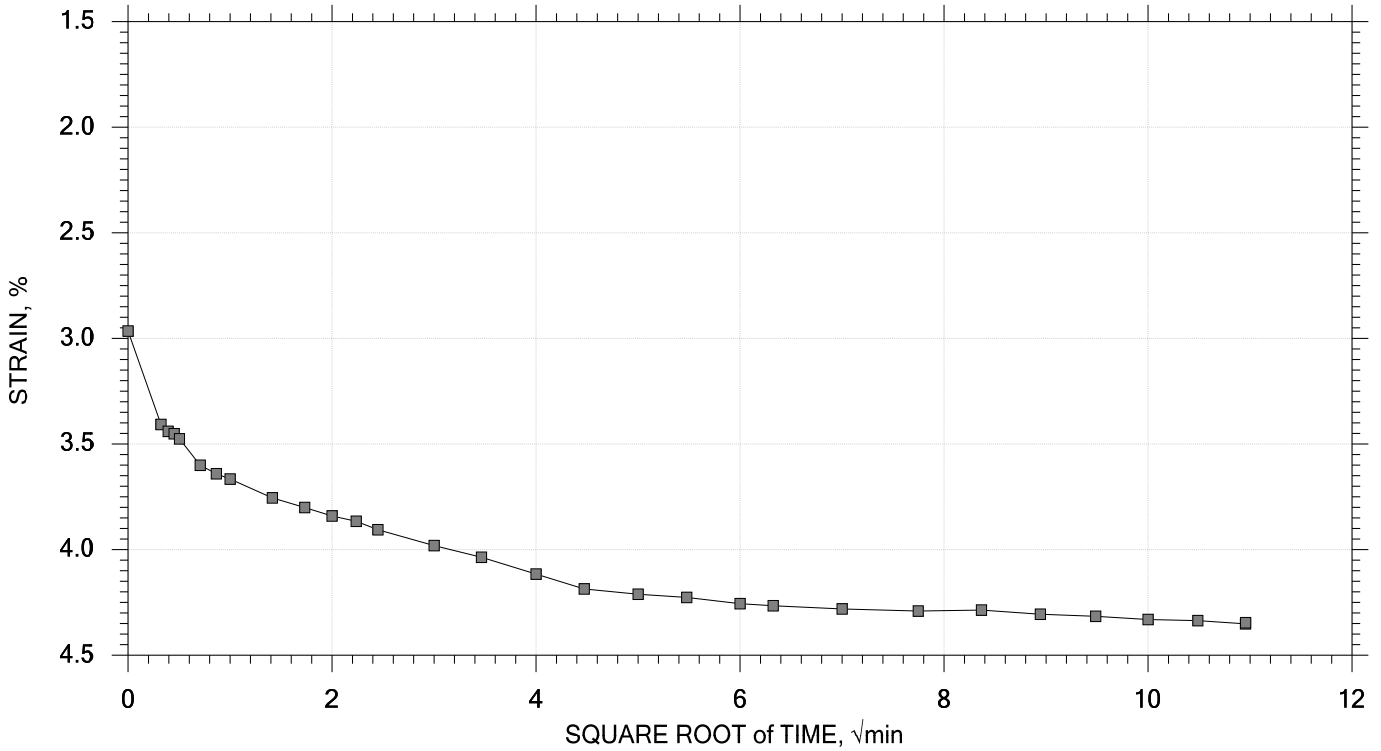
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 4 of 15

Stress: 0.5 tsf





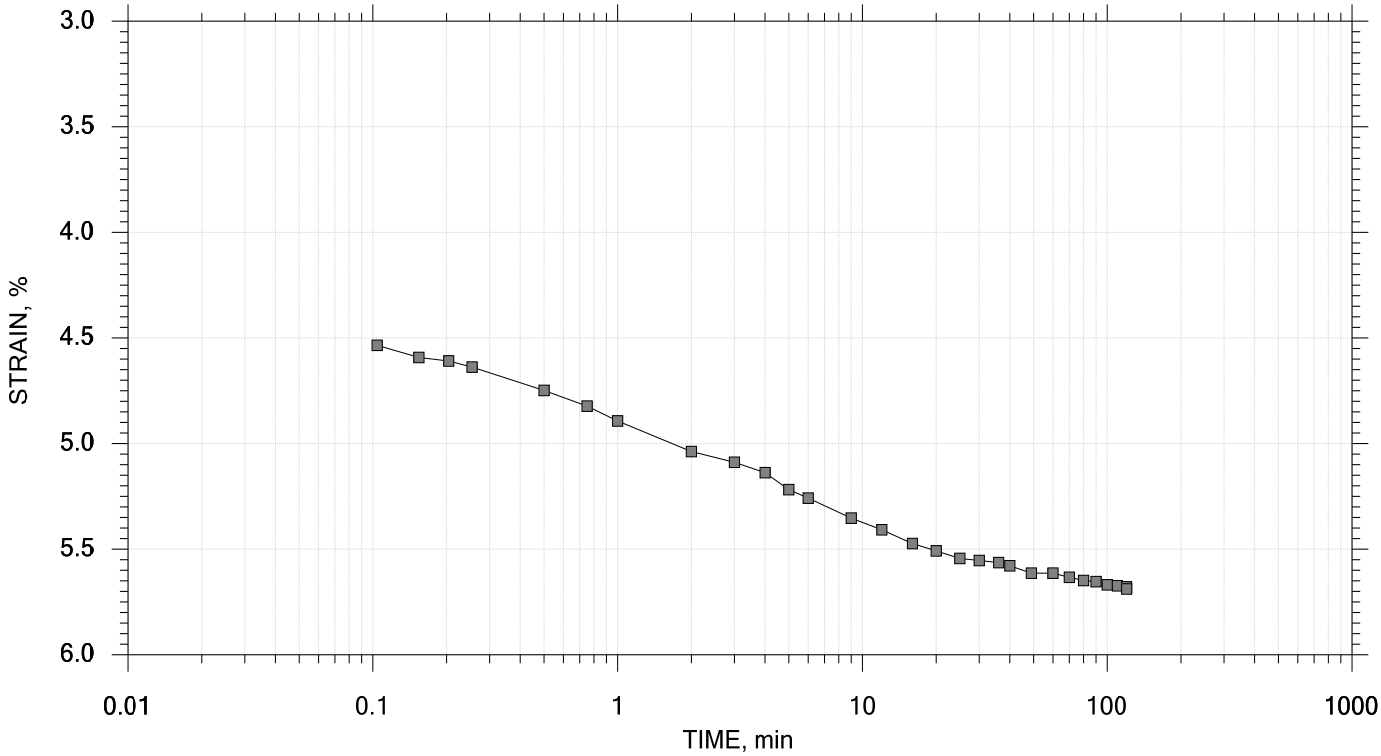
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

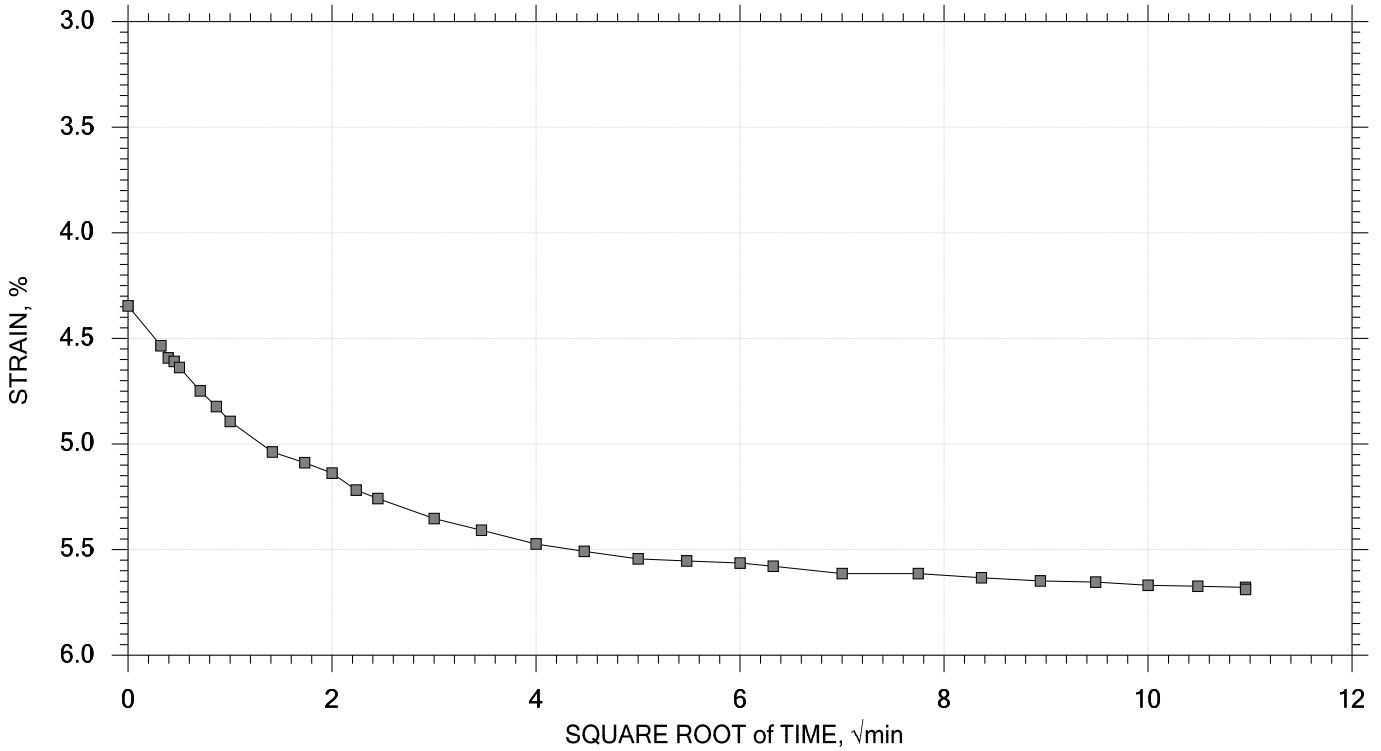
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 5 of 15

Stress: 1 tsf





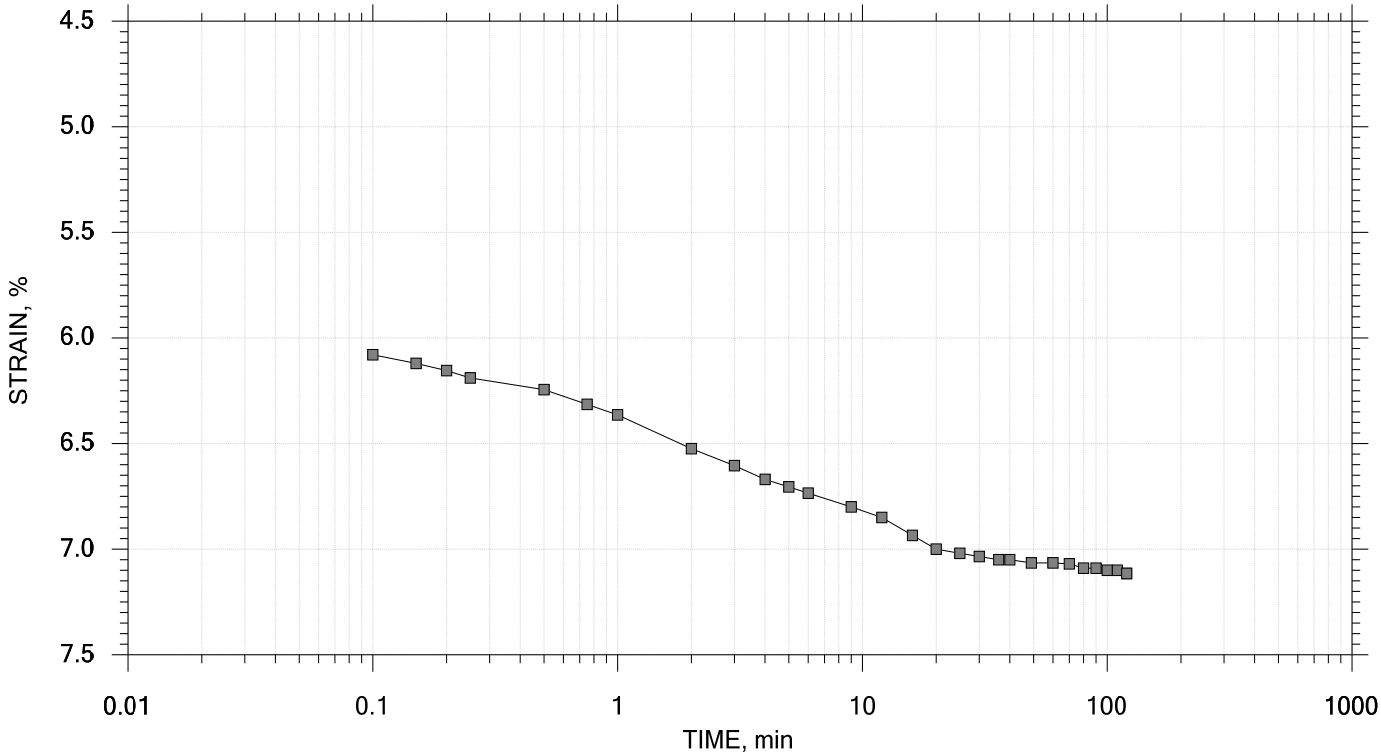
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

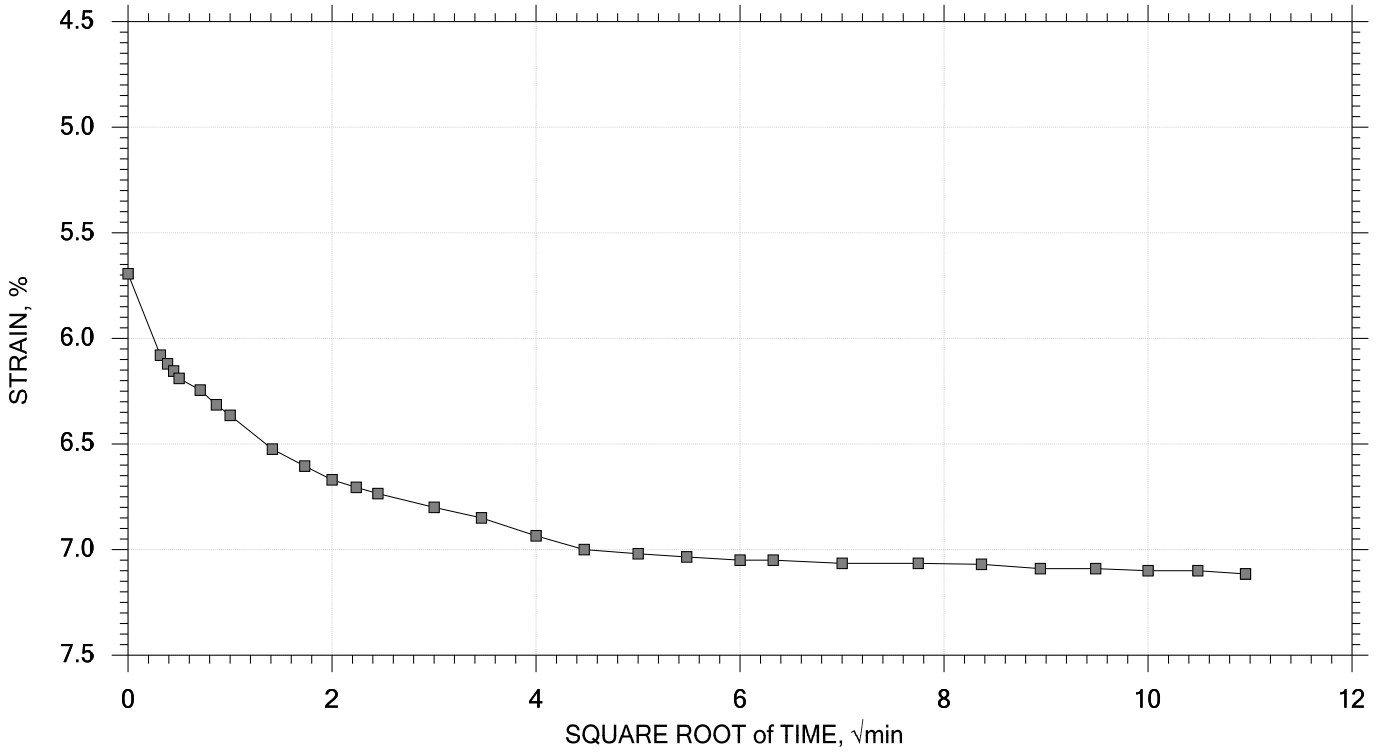
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 6 of 15

Stress: 2 tsf





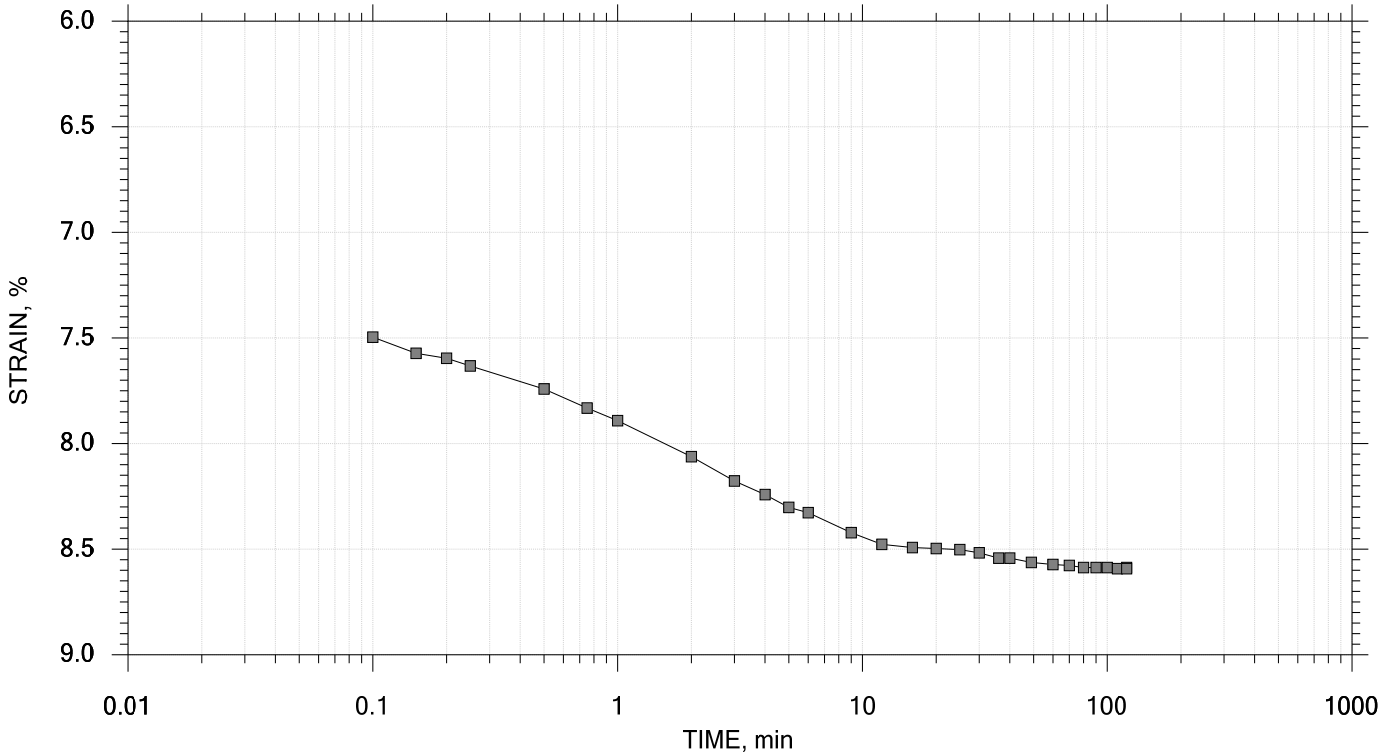
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

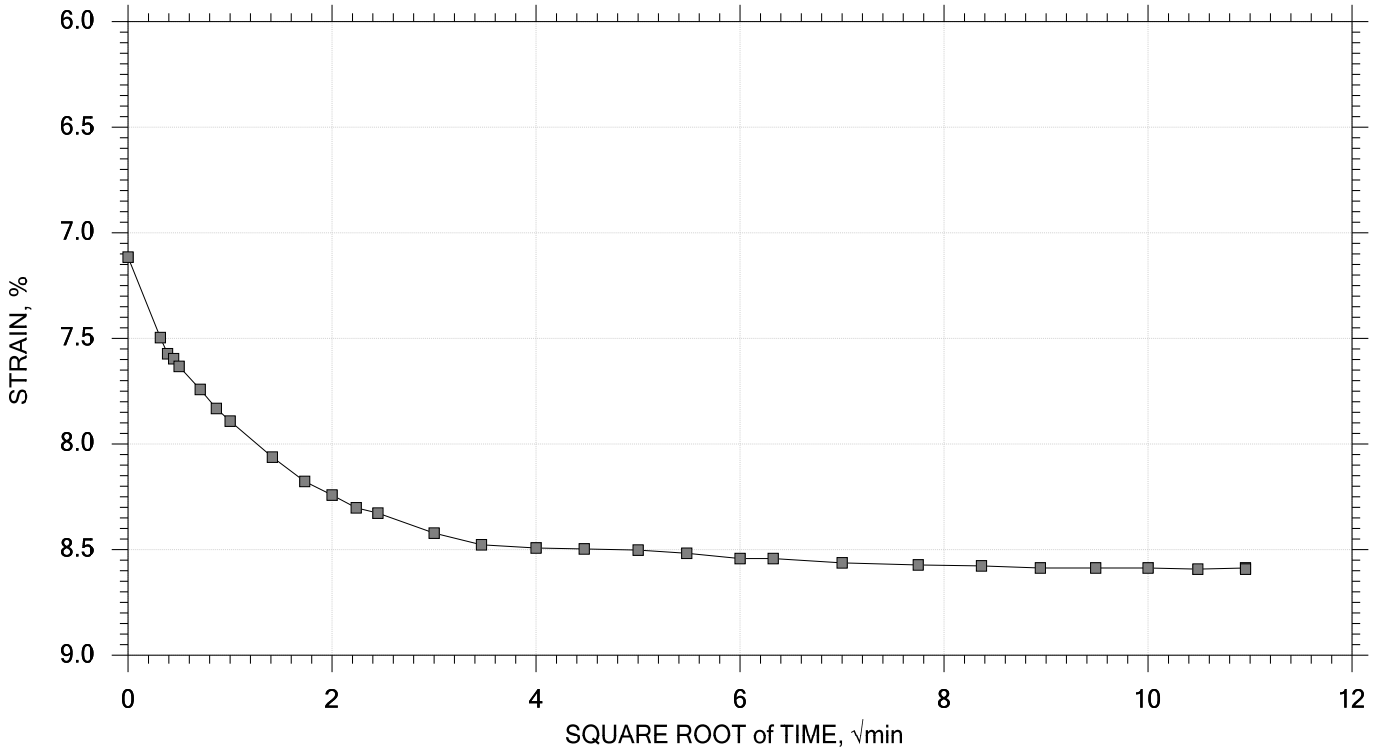
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 7 of 15

Stress: 4 tsf





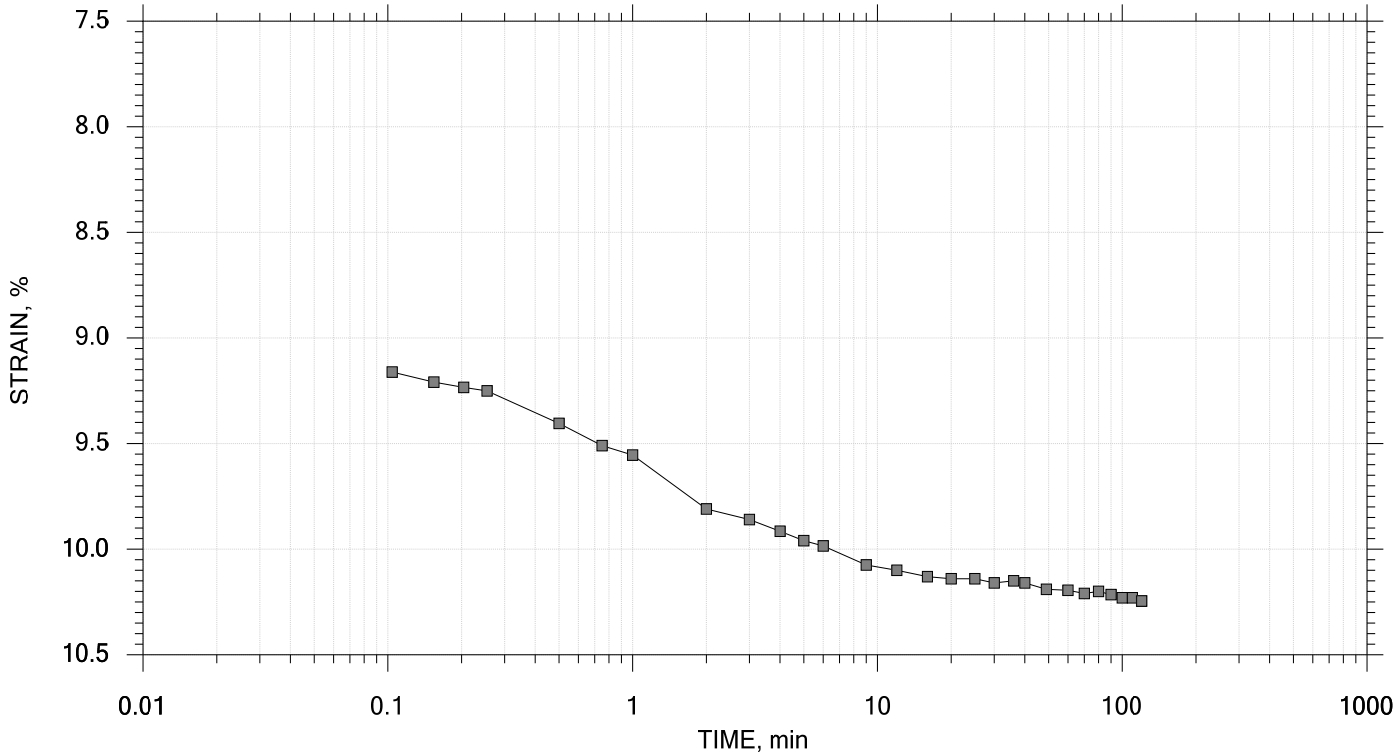
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

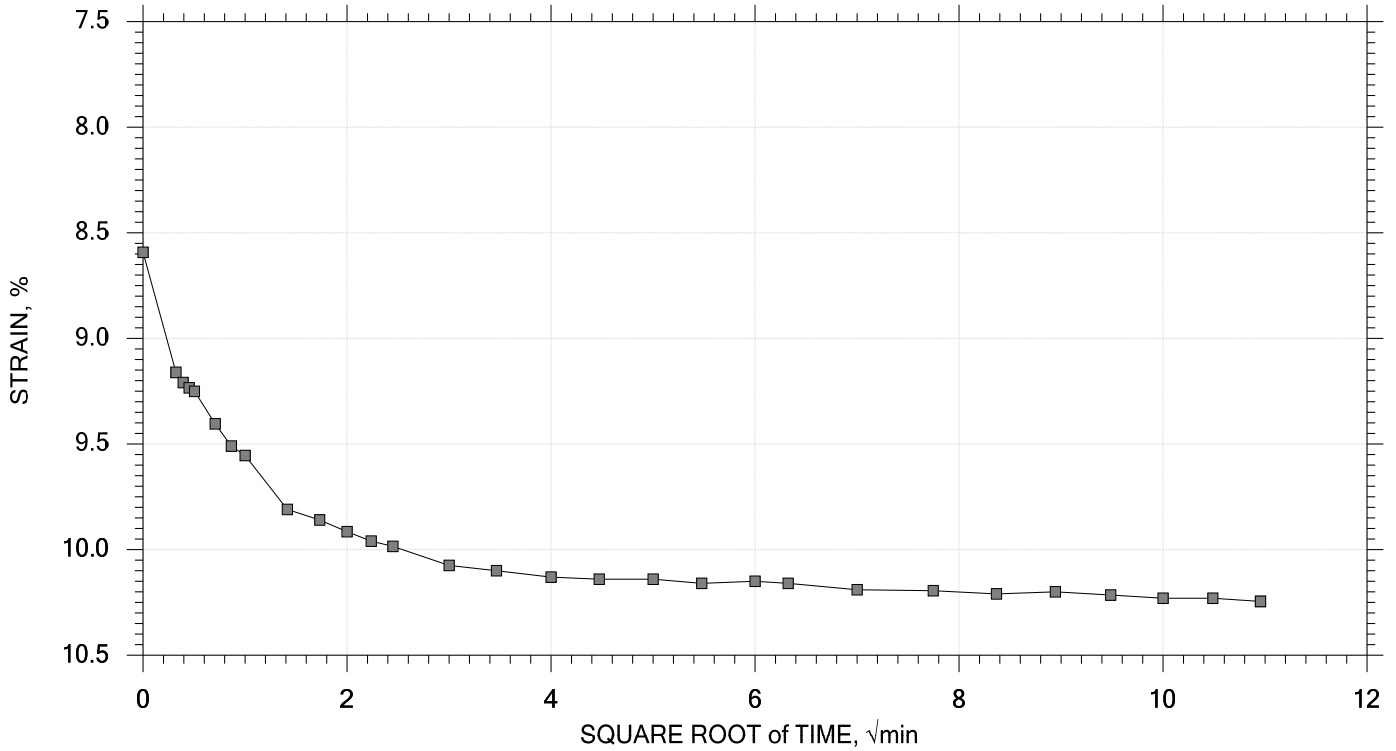
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 8 of 15

Stress: 8 tsf





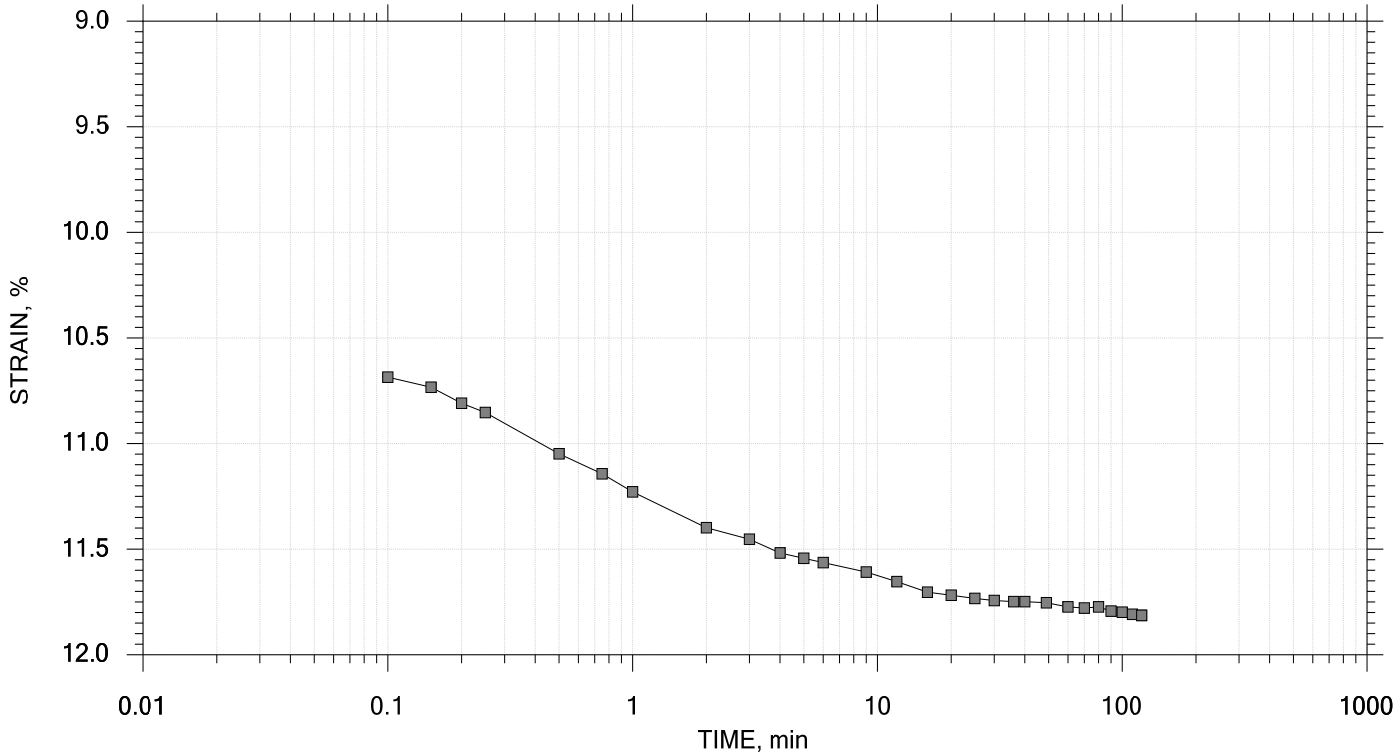
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

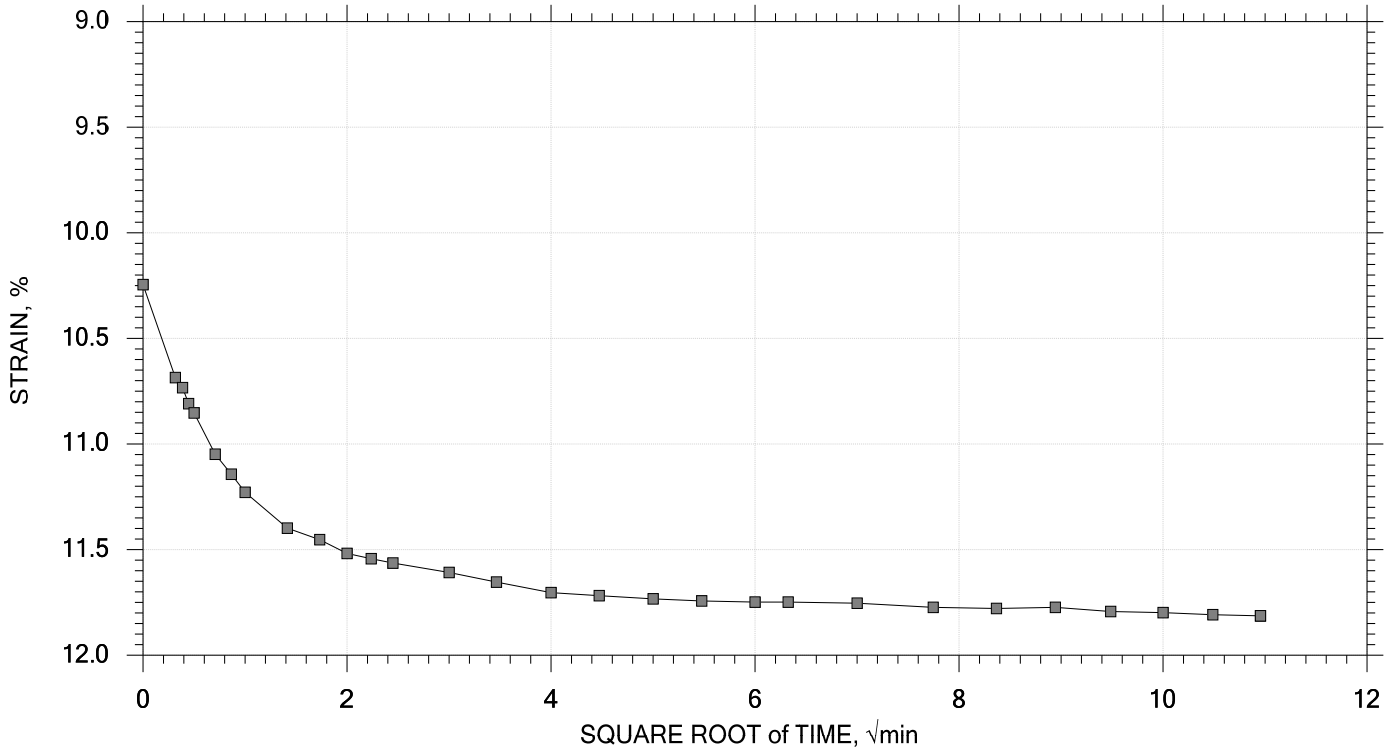
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 9 of 15

Stress: 16 tsf





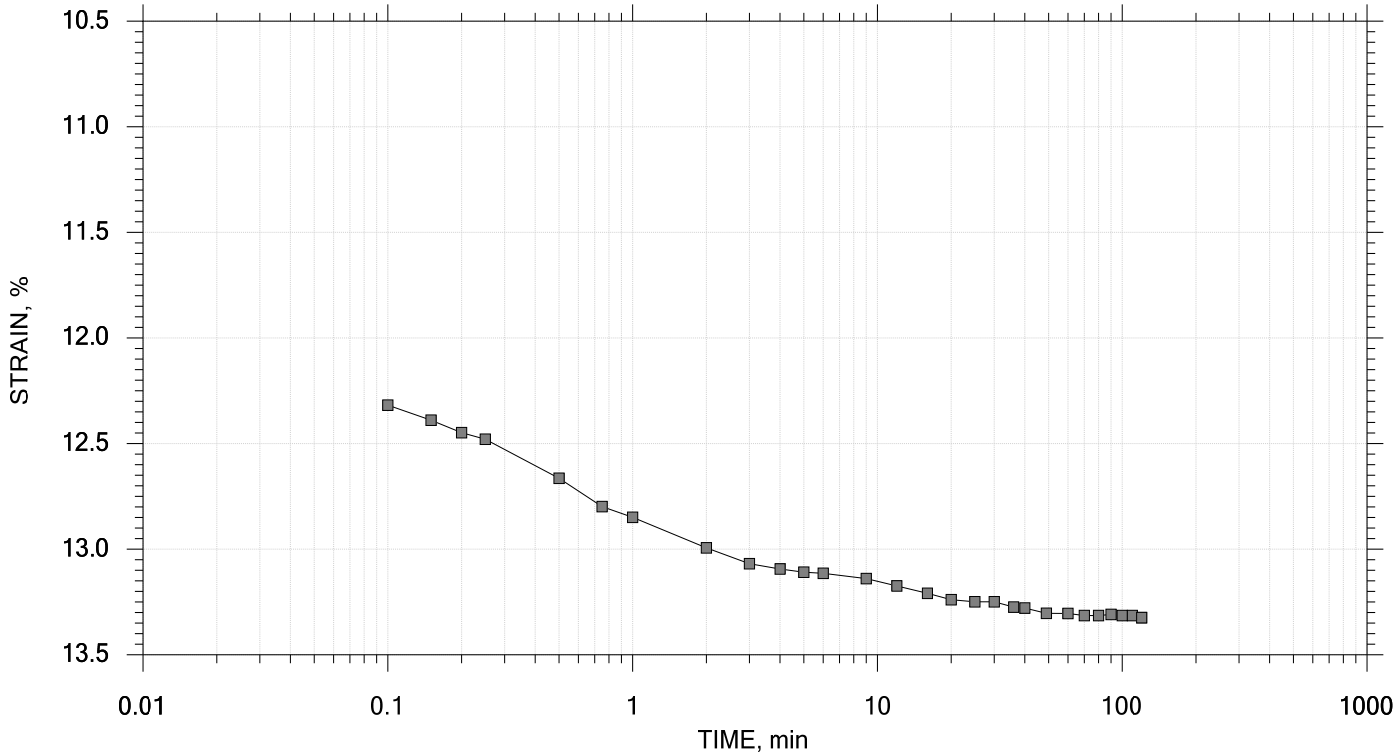
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

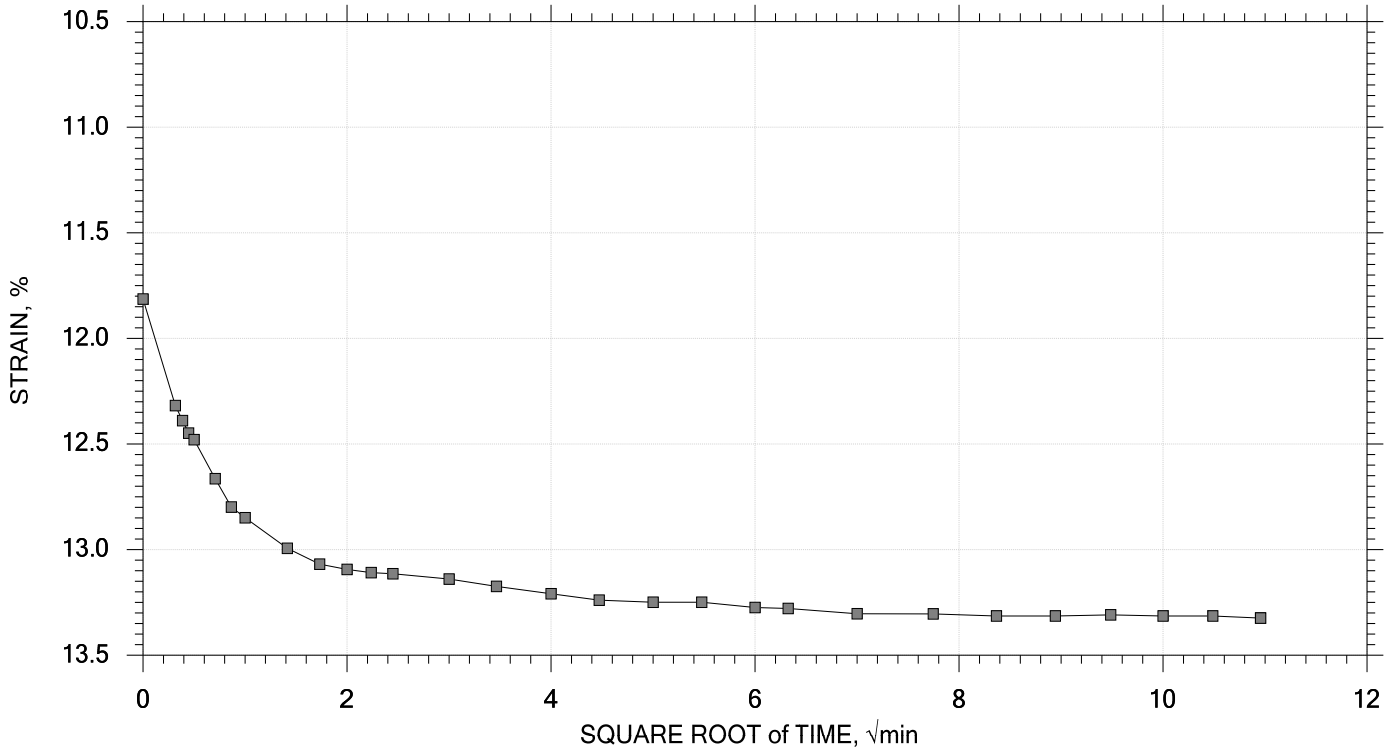
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 10 of 15

Stress: 32 tsf





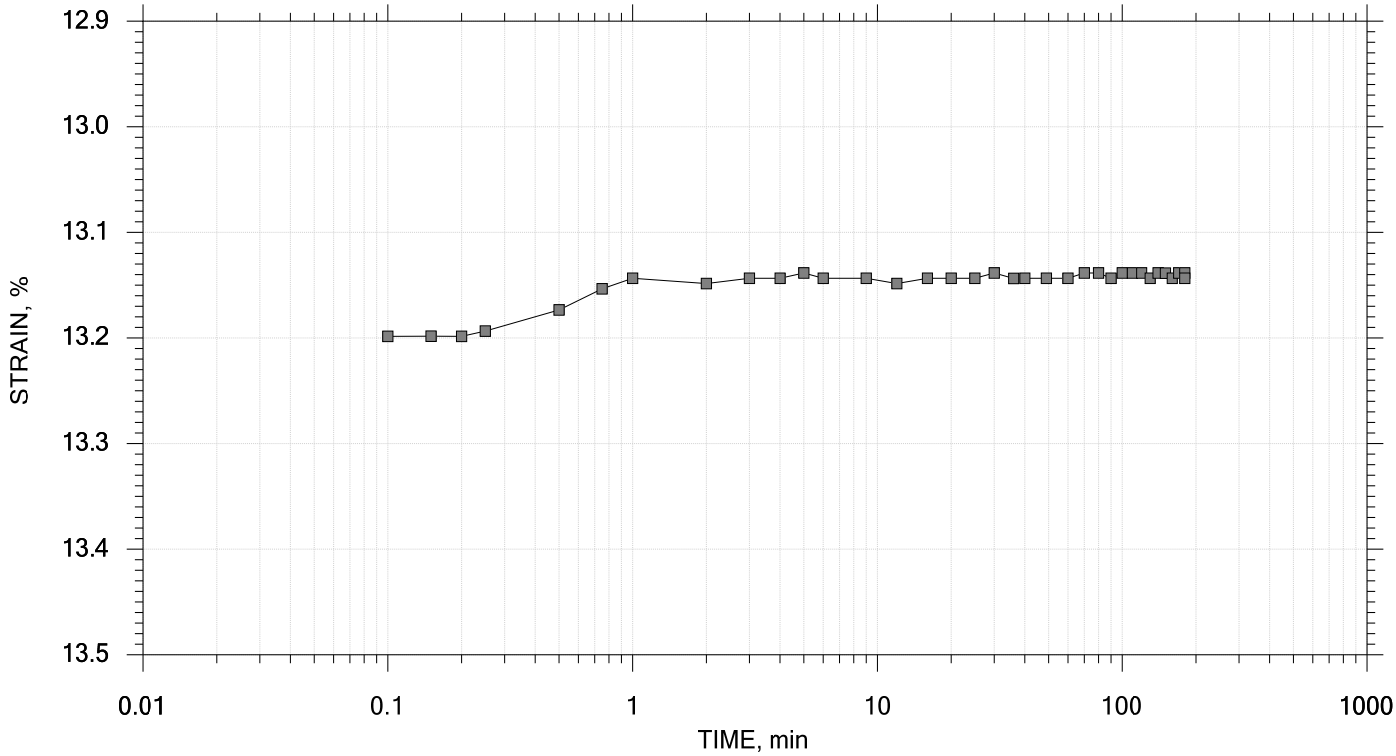
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

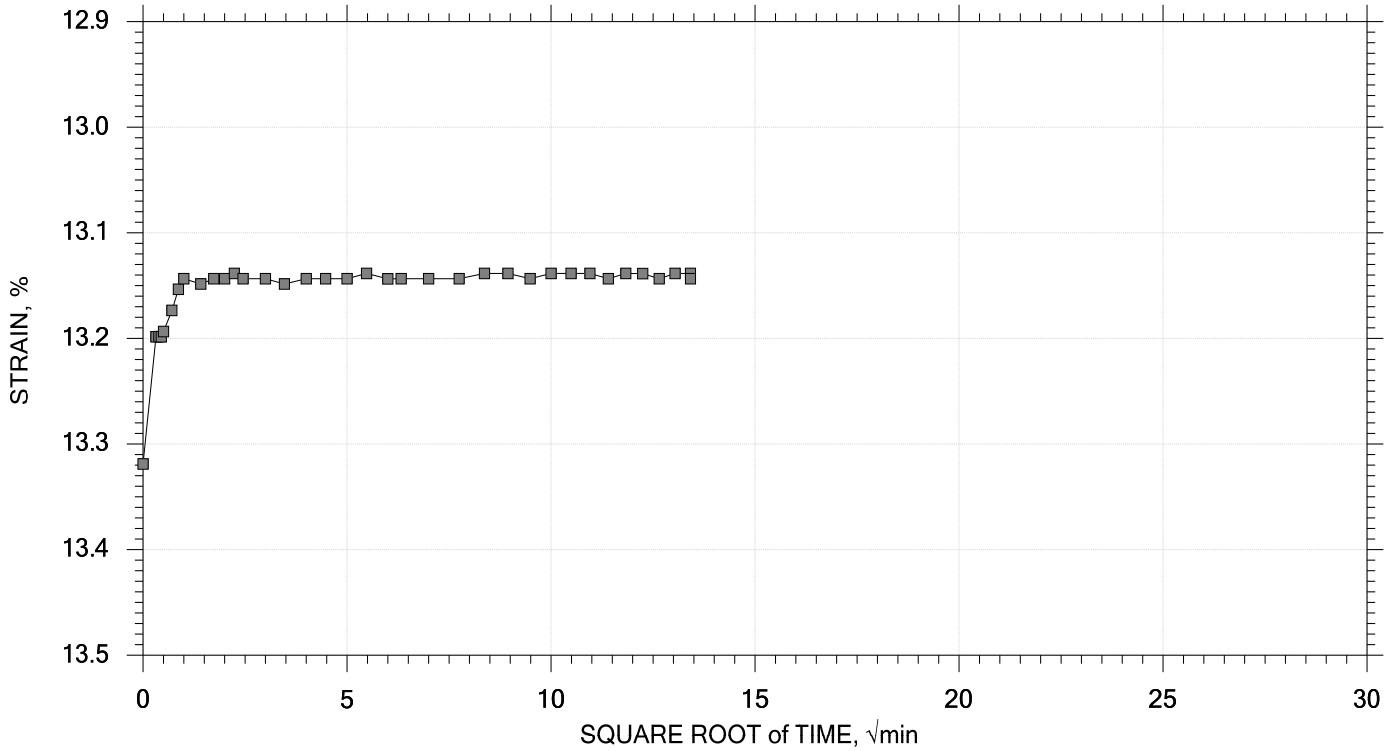
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 11 of 15

Stress: 8 tsf





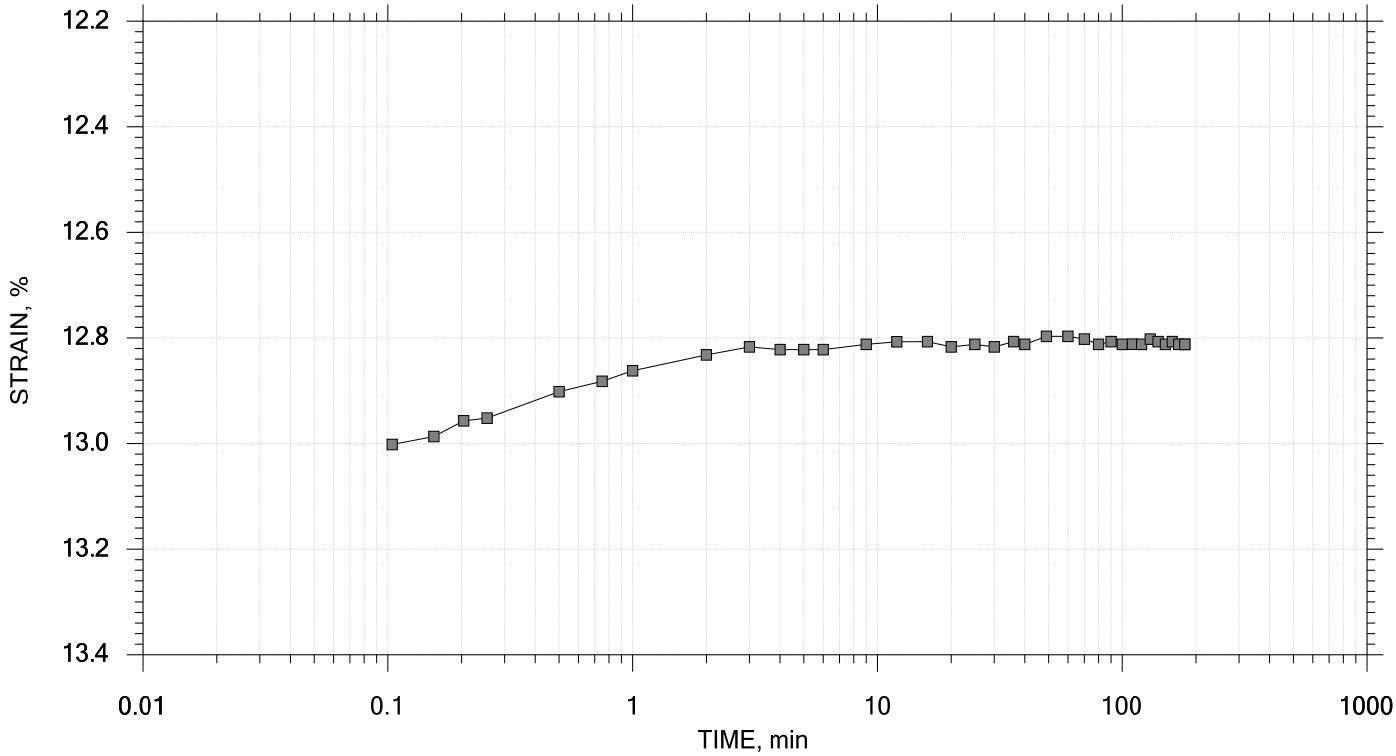
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

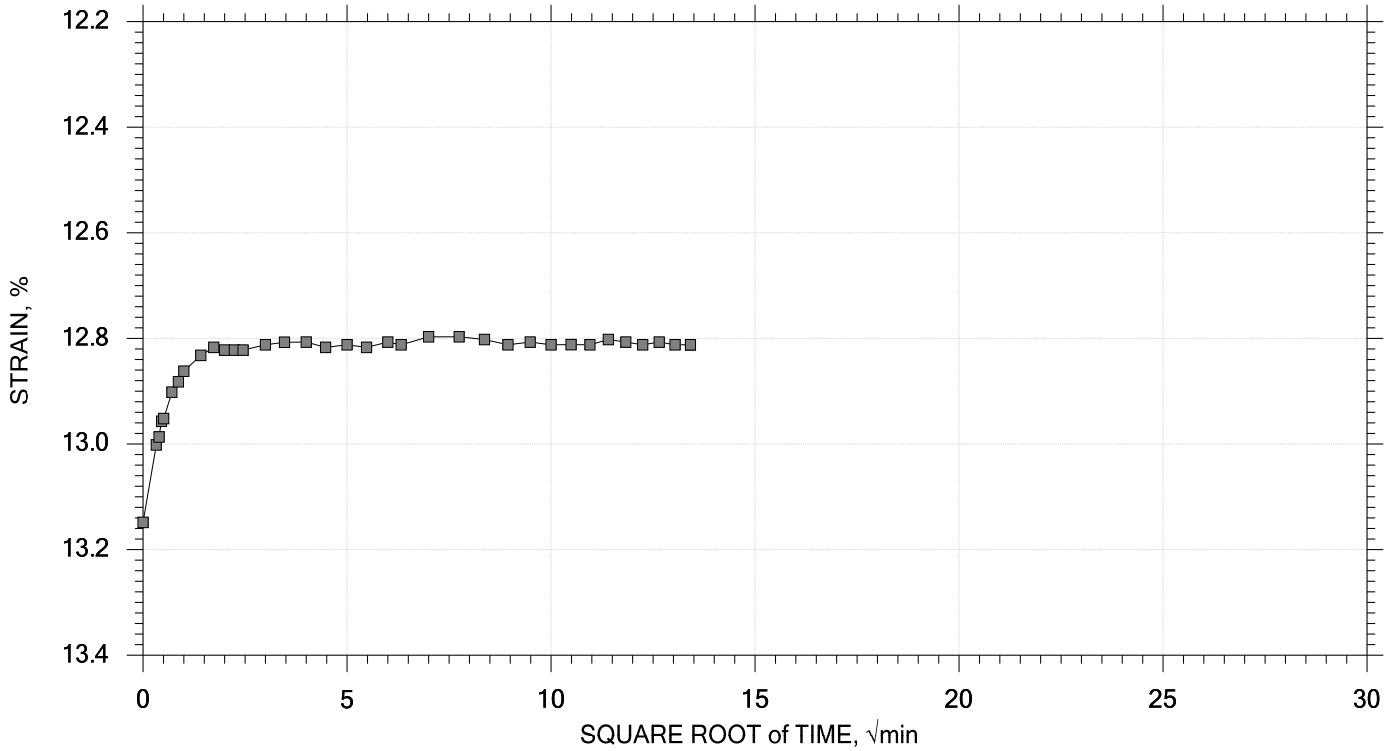
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 12 of 15

Stress: 2 tsf





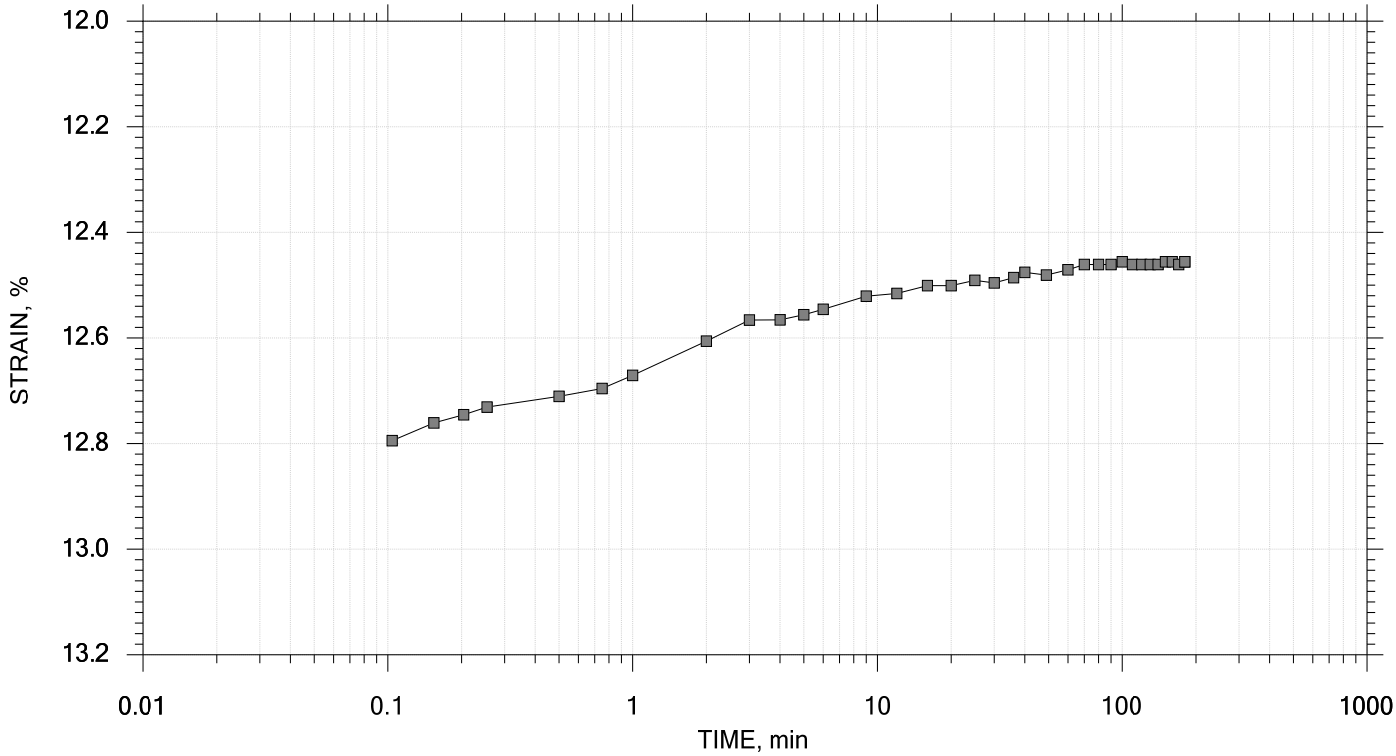
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

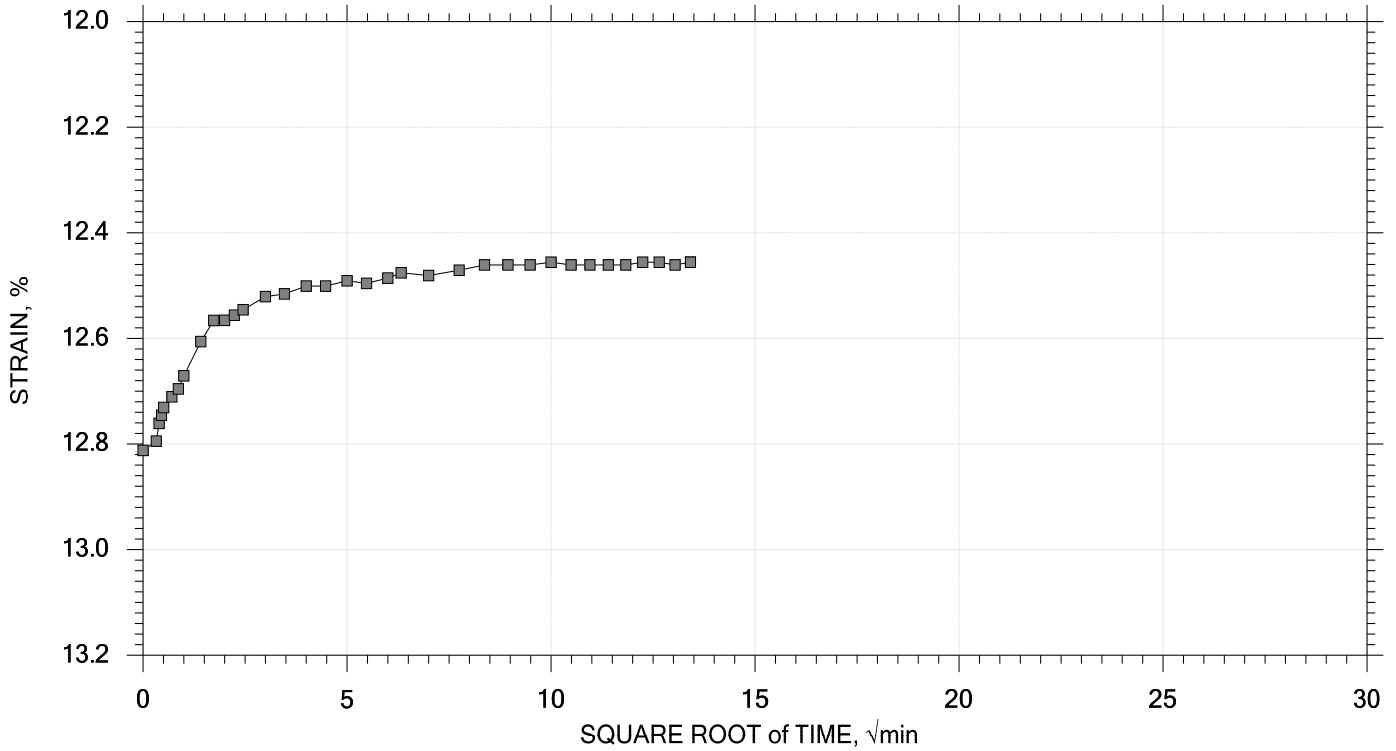
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 13 of 15

Stress: 0.5 tsf





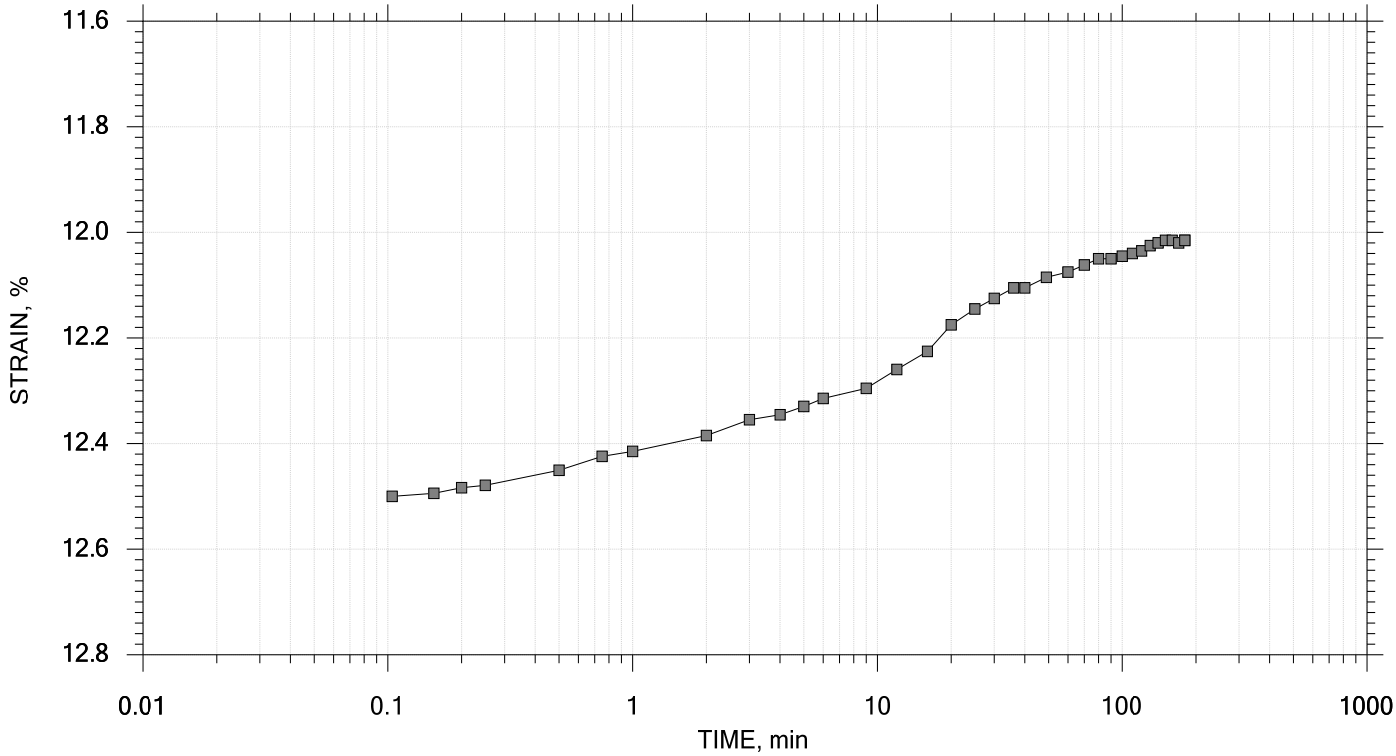
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

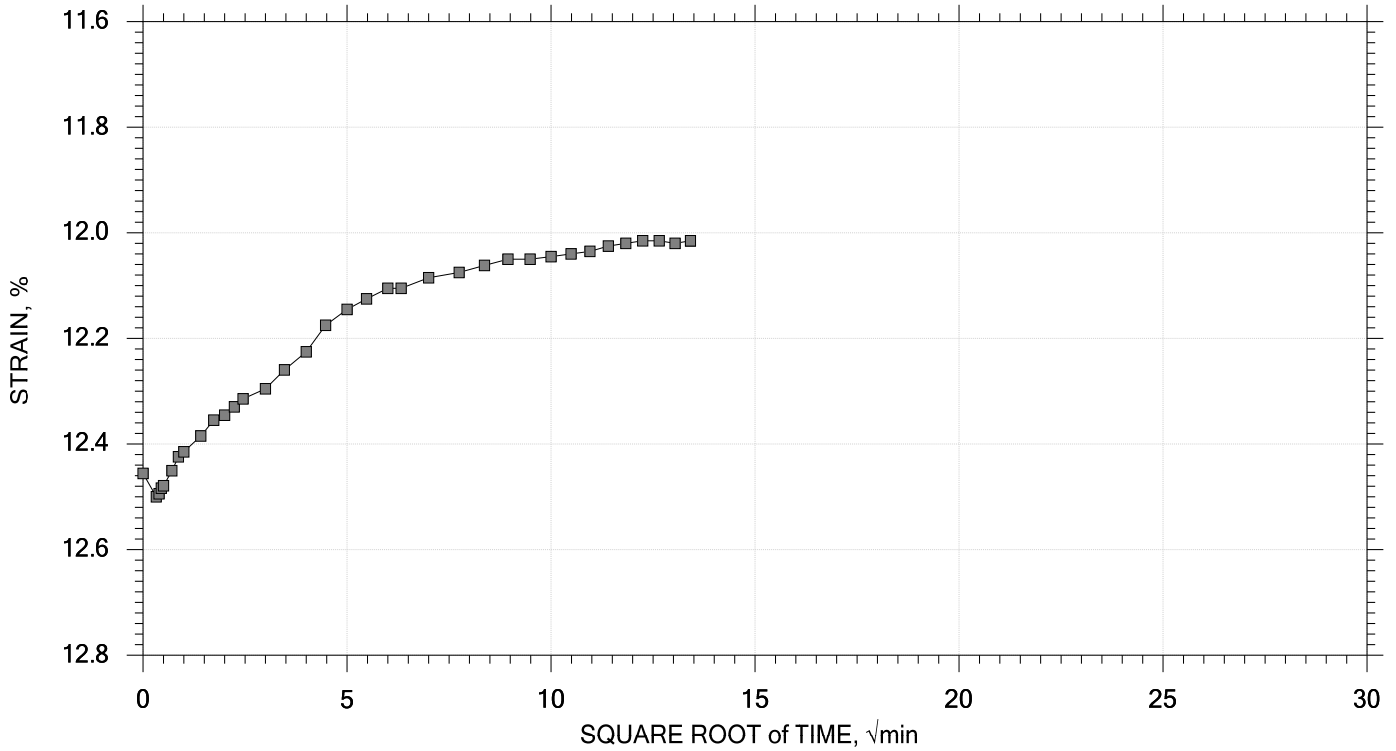
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 14 of 15

Stress: 0.125 tsf





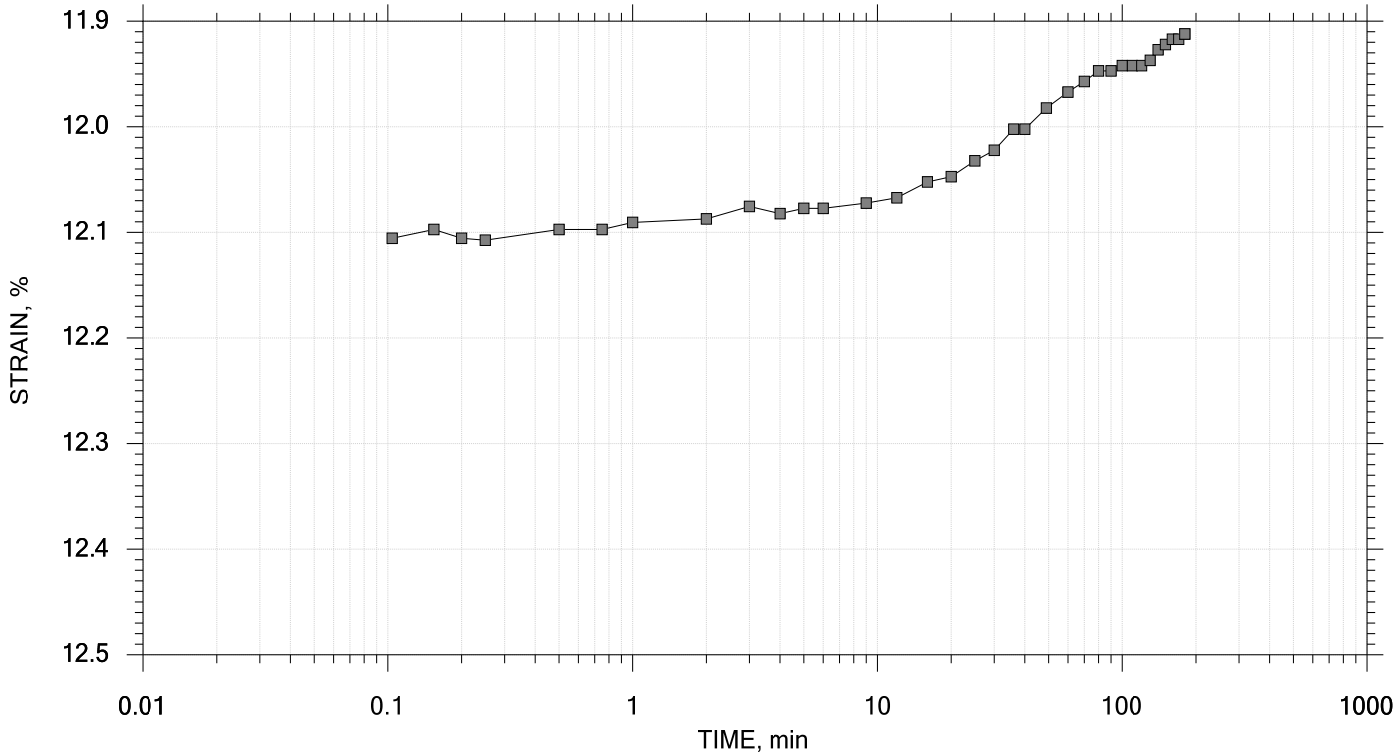
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

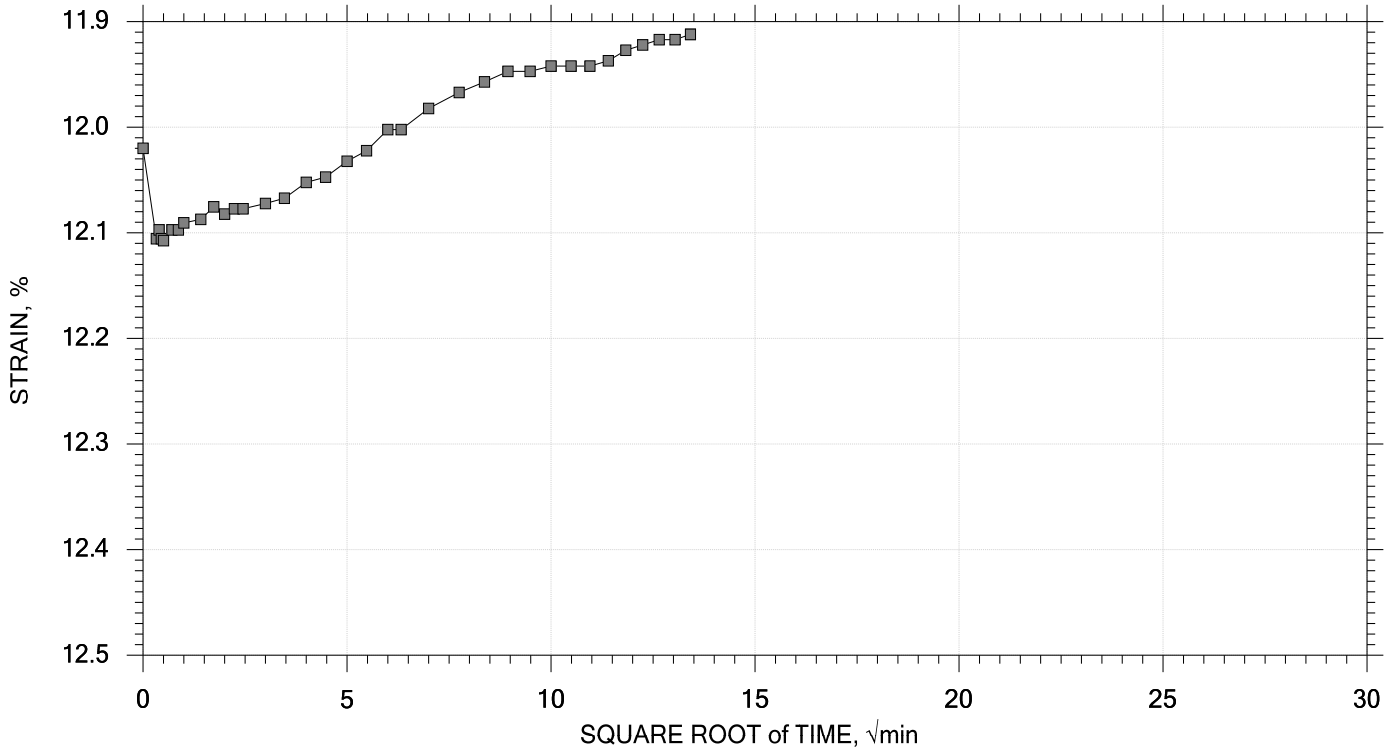
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 15 of 15

Stress: 0.0625 tsf

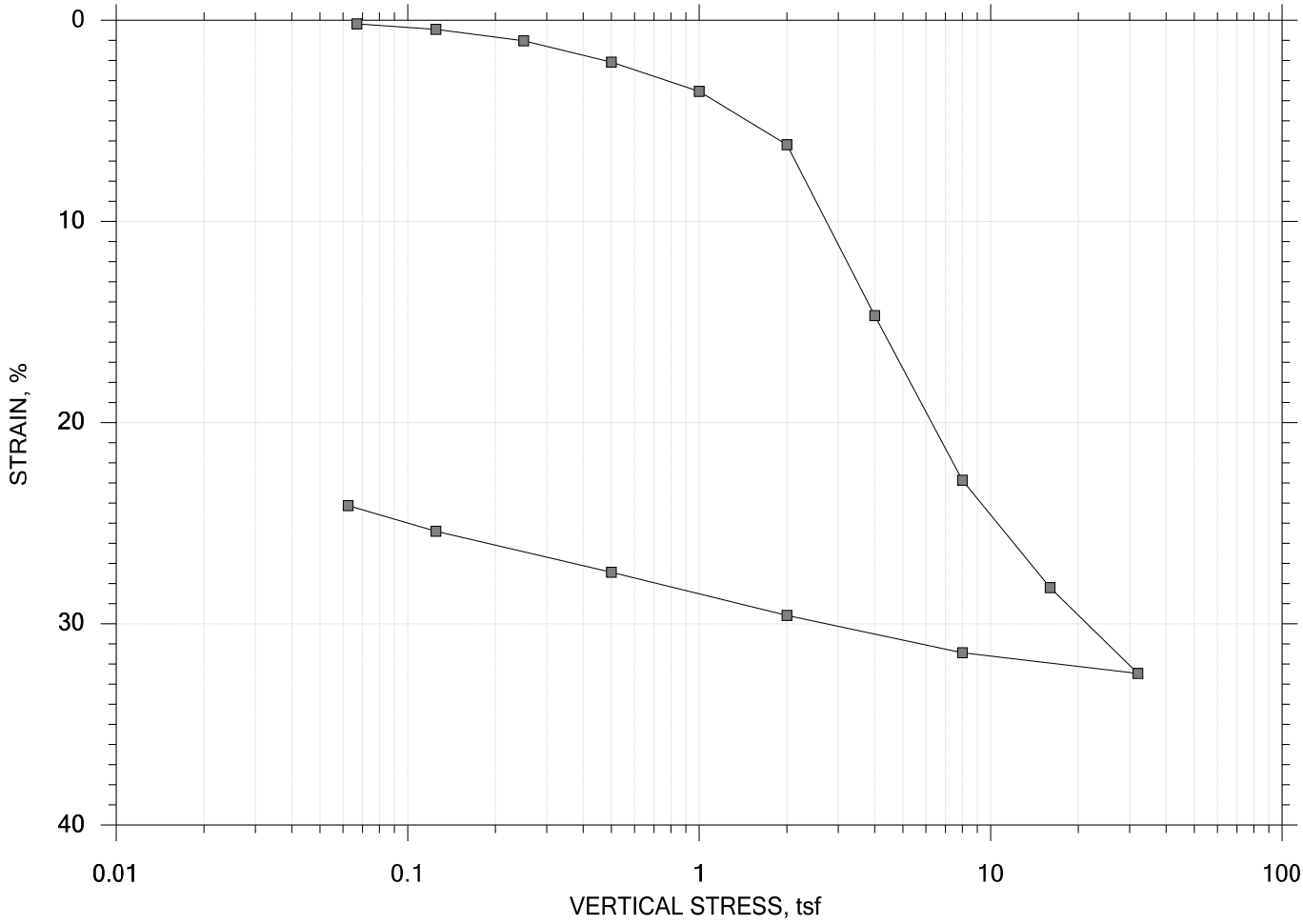


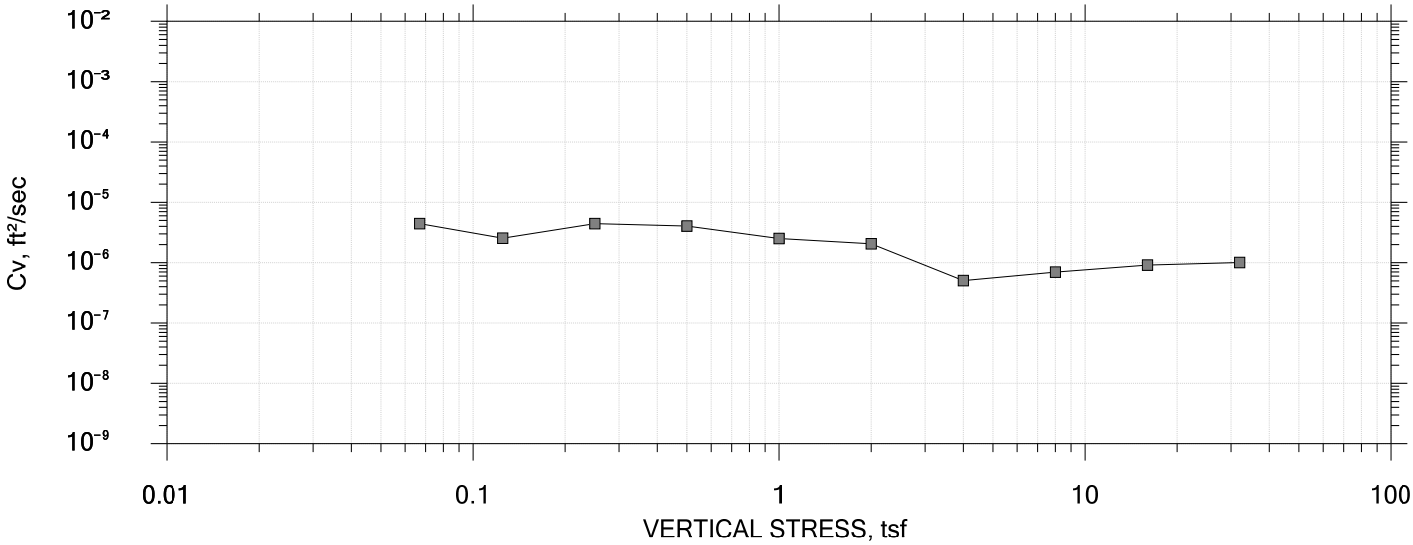


GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B5-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-1
	Depth: 10-12 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark olive gray clay with gravel		
	Remarks: System S, Swell Pressure = 0.0658 tsf		

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT

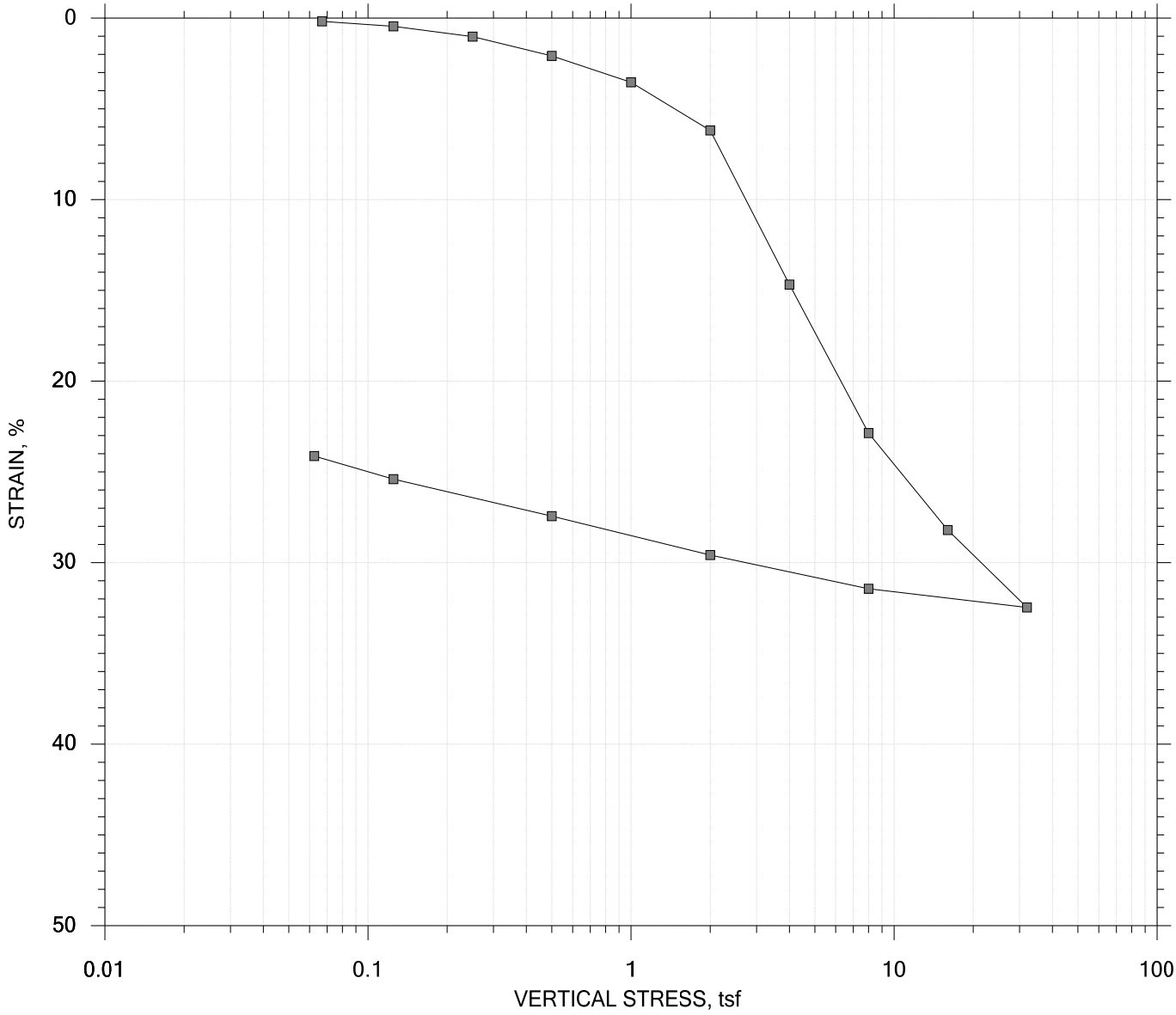




GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

SUMMARY REPORT



					Before Test	After Test
Current Vertical Effective Stress: ---				Water Content, %	44.32	28.20
Preconsolidation Stress: ---				Dry Unit Weight, pcf	77.032	96.29
Compression Ratio: ---				Saturation, %	99.80	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.21	0.77
LL: 55	PL: 23	PI: 32	GS: 2.73			

GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		
	Displacement at End of Increment		

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: Hinesburg HES 021-0(19) | Location: --- | Project No.: GTX-303296
Boring No.: B7-ST | Tested By: md | Checked By: jdt
Sample No.: ST-1 | Test Date: 06/15/15 | Depth: 8-10 ft
Test No.: IP-2 | Sample Type: intact | Elevation: ---

Soil Description: Moist, dark grayish brown clay
Remarks: System V, Swell Pressure = 0.0669 tsf

Estimated Specific Gravity: 2.73 | Liquid Limit: 55 | Specimen Diameter: 2.50 in
Initial Void Ratio: 1.21 | Plastic Limit: 23 | Initial Height: 1.00 in
Final Void Ratio: 0.770 | Plasticity Index: 32 | Final Height: 0.80 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	A-658	RING		A-603
Wt. Container + Wet Soil, gm	153.83	254.53	238.53	133.89
Wt. Container + Dry Soil, gm	104.55	210.54	210.54	106.26
Wt. Container, gm	8.3900	111.28	111.28	8.2900
Wt. Dry Soil, gm	96.160	99.257	99.257	97.970
Water Content, %	51.25	44.32	28.20	28.20
Void Ratio	---	1.21	0.770	---
Degree of Saturation, %	---	99.80	100.00	---
Dry Unit Weight, pcf	---	77.032	96.290	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

One-Dimensional Consolidation by ASTM D2435 - Method B

Project: Hinesburg HES 021-0(19) | Location: --- | Project No.: GTX-303296
Boring No.: B7-ST | Tested By: md | Checked By: jdt
Sample No.: ST-1 | Test Date: 06/15/15 | Depth: 8-10 ft
Test No.: IP-2 | Sample Type: intact | Elevation: ---

Soil Description: Moist, dark grayish brown clay
Remarks: System V, Swell Pressure = 0.0669 tsf

Displacement at End of Increment

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Sq.Rt T90 min	Cv ft²/sec	Mv 1/tsf	k ft/day
1	0.0669	0.001797	1.21	0.180	4.942	4.96e-006	2.69e-002	3.59e-004
2	0.125	0.004504	1.20	0.450	11.401	2.14e-006	4.66e-002	2.69e-004
3	0.250	0.01022	1.19	1.02	5.800	4.17e-006	4.57e-002	5.14e-004
4	0.500	0.02080	1.17	2.08	4.976	4.78e-006	4.23e-002	5.46e-004
5	1.00	0.03534	1.13	3.53	8.054	2.88e-006	2.91e-002	2.26e-004
6	2.00	0.06185	1.08	6.19	10.889	2.04e-006	2.65e-002	1.46e-004
7	4.00	0.1468	0.888	14.7	39.594	4.97e-007	4.25e-002	5.69e-005
8	8.00	0.2286	0.707	22.9	22.803	7.10e-007	2.04e-002	3.91e-005
9	16.0	0.2820	0.588	28.2	11.950	1.14e-006	6.68e-003	2.05e-005
10	32.0	0.3246	0.494	32.5	12.055	9.88e-007	2.66e-003	7.10e-006
11	8.00	0.3144	0.517	31.4	9.239	1.23e-006	4.26e-004	1.41e-006
12	2.00	0.2958	0.558	29.6	20.356	5.82e-007	3.09e-003	4.86e-006
13	0.500	0.2744	0.605	27.4	123.661	1.01e-007	1.43e-002	3.91e-006
14	0.125	0.2540	0.650	25.4	0.000	0.00e+000	5.43e-002	0.00e+000
15	0.0625	0.2413	0.679	24.1	0.000	0.00e+000	2.04e-001	0.00e+000

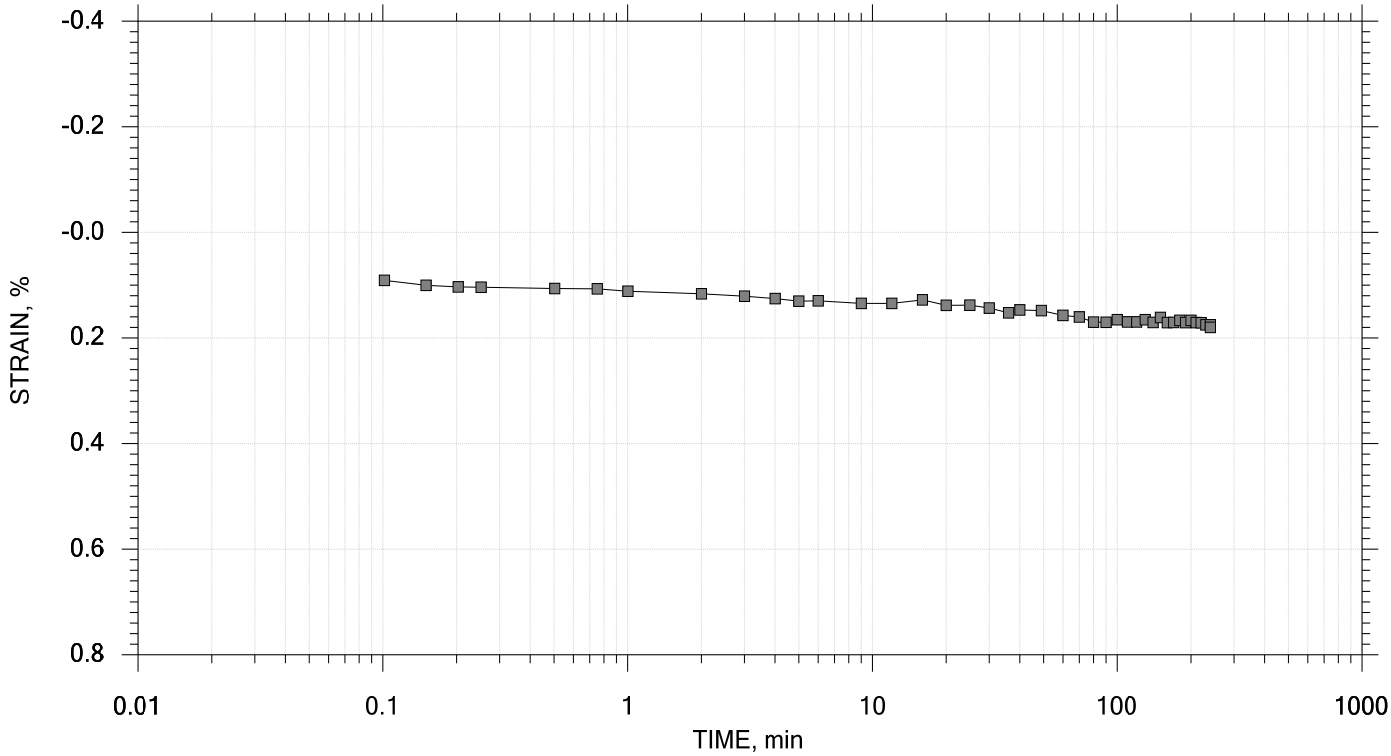
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	Log T50 min	Cv ft²/sec	Mv 1/tsf	k ft/day	Ca %
1	0.0669	0.001797	1.21	0.180	0.000	0.00e+000	2.69e-002	0.00e+000	0.00e+000
2	0.125	0.004504	1.20	0.450	1.074	5.27e-006	4.66e-002	6.62e-004	0.00e+000
3	0.250	0.01022	1.19	1.02	0.000	0.00e+000	4.57e-002	0.00e+000	0.00e+000
4	0.500	0.02080	1.17	2.08	0.000	0.00e+000	4.23e-002	0.00e+000	0.00e+000
5	1.00	0.03534	1.13	3.53	0.000	0.00e+000	2.91e-002	0.00e+000	0.00e+000
6	2.00	0.06185	1.08	6.19	2.658	1.94e-006	2.65e-002	1.39e-004	0.00e+000
7	4.00	0.1468	0.888	14.7	0.000	0.00e+000	4.25e-002	0.00e+000	0.00e+000
8	8.00	0.2286	0.707	22.9	0.000	0.00e+000	2.04e-002	0.00e+000	0.00e+000
9	16.0	0.2820	0.588	28.2	3.954	8.00e-007	6.68e-003	1.44e-005	0.00e+000
10	32.0	0.3246	0.494	32.5	2.649	1.04e-006	2.66e-003	7.50e-006	0.00e+000
11	8.00	0.3144	0.517	31.4	0.000	0.00e+000	4.26e-004	0.00e+000	0.00e+000
12	2.00	0.2958	0.558	29.6	5.554	4.96e-007	3.09e-003	4.14e-006	0.00e+000
13	0.500	0.2744	0.605	27.4	17.061	1.71e-007	1.43e-002	6.58e-006	0.00e+000
14	0.125	0.2540	0.650	25.4	0.000	0.00e+000	5.43e-002	0.00e+000	0.00e+000
15	0.0625	0.2413	0.679	24.1	0.000	0.00e+000	2.04e-001	0.00e+000	0.00e+000

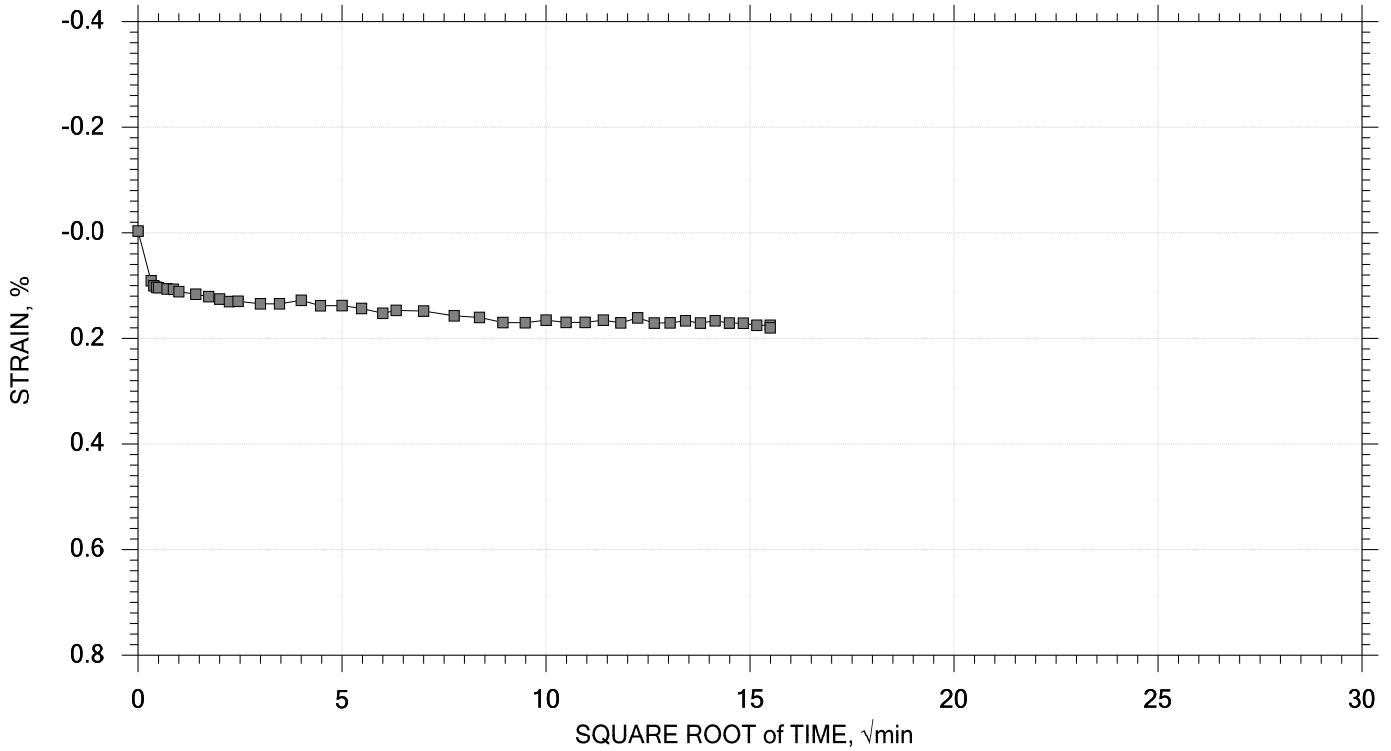
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Volume Step 1 of 15

Stress: 0.066885 tsf





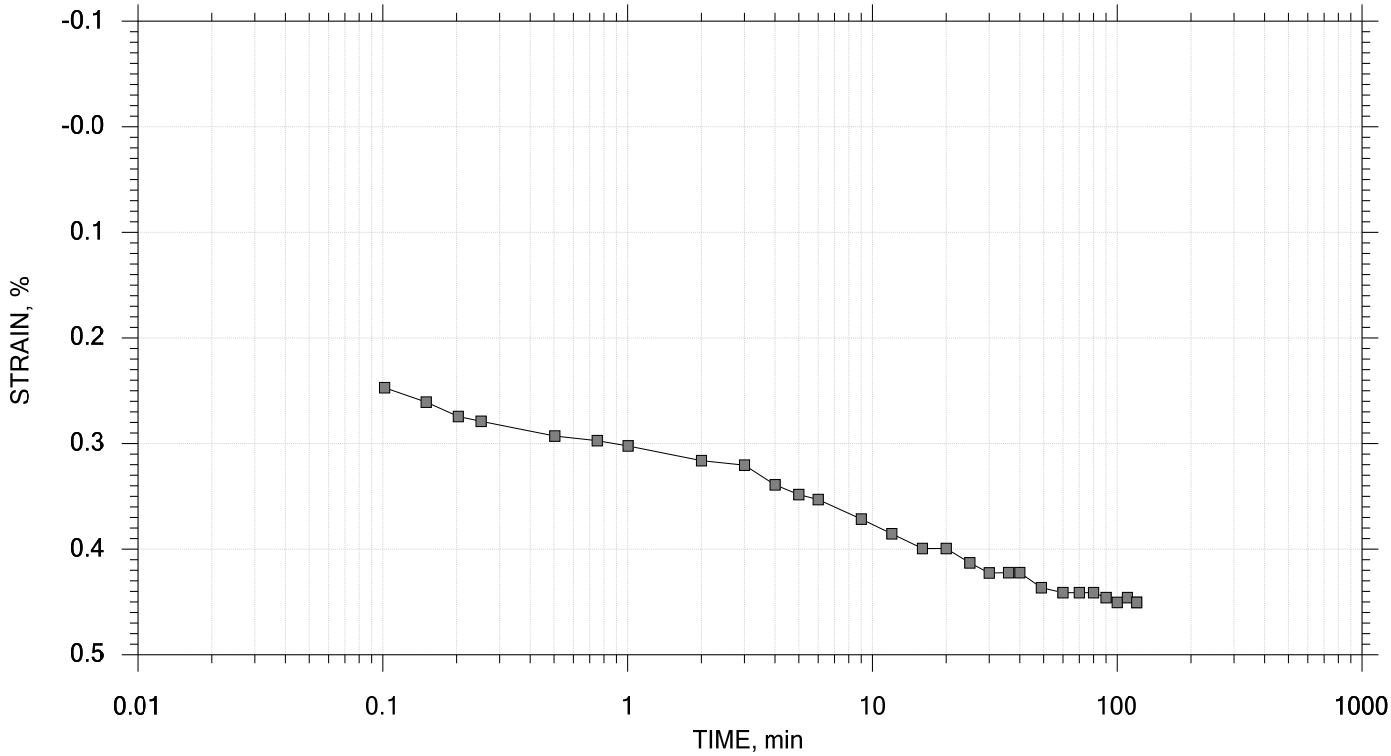
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

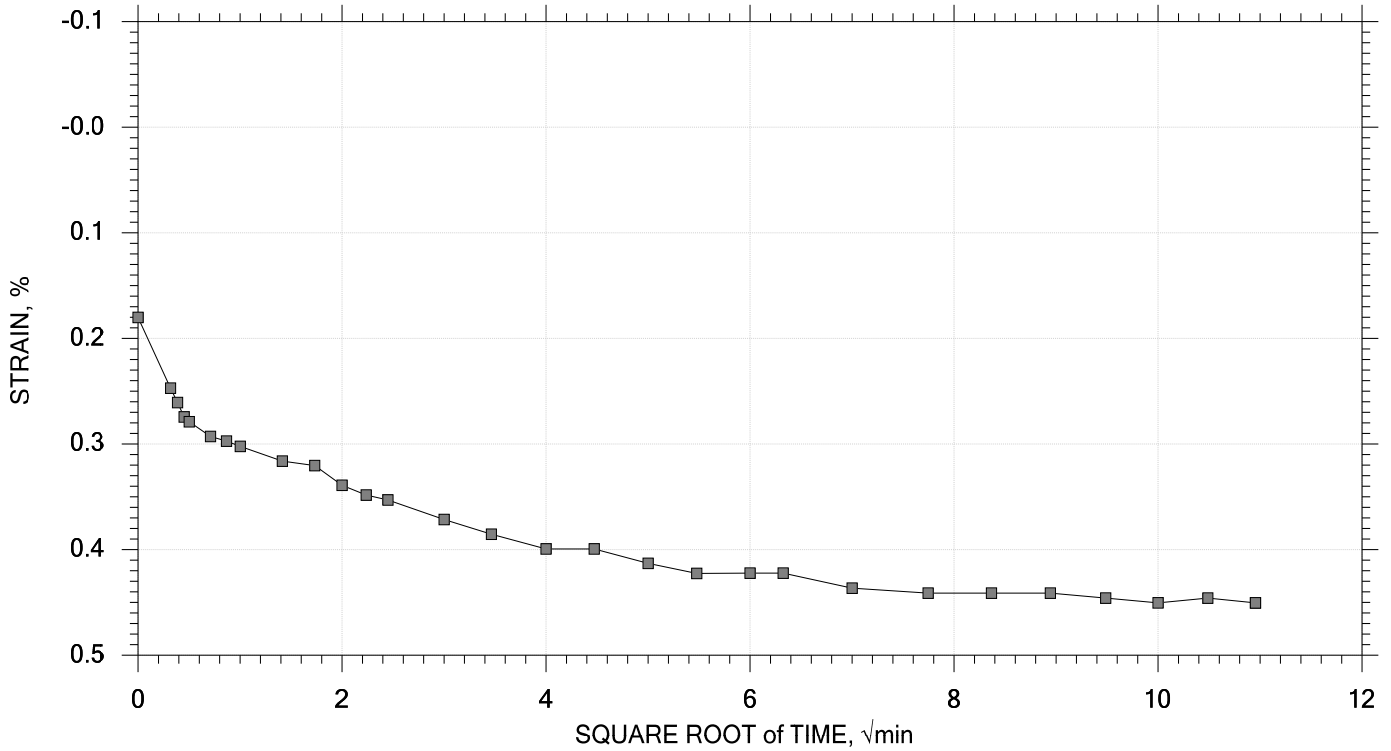
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 2 of 15

Stress: 0.125 tsf





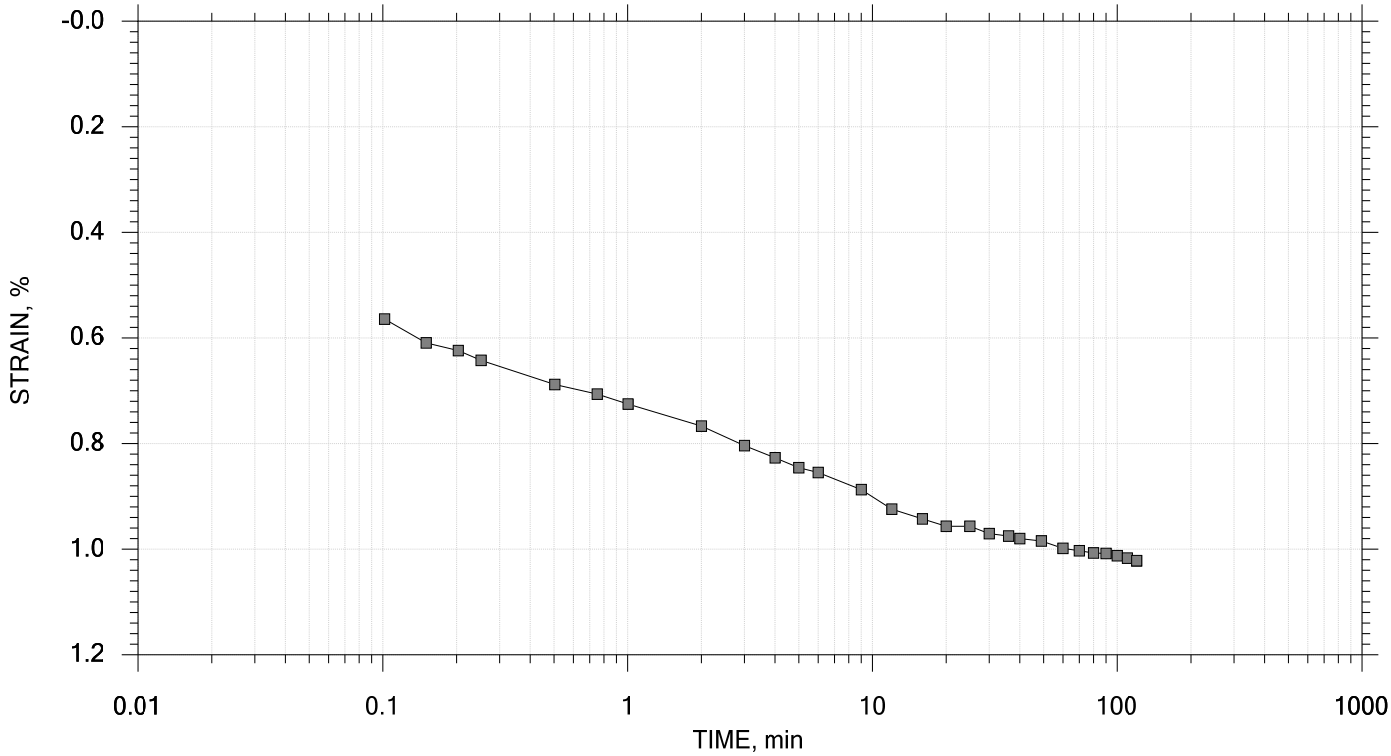
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

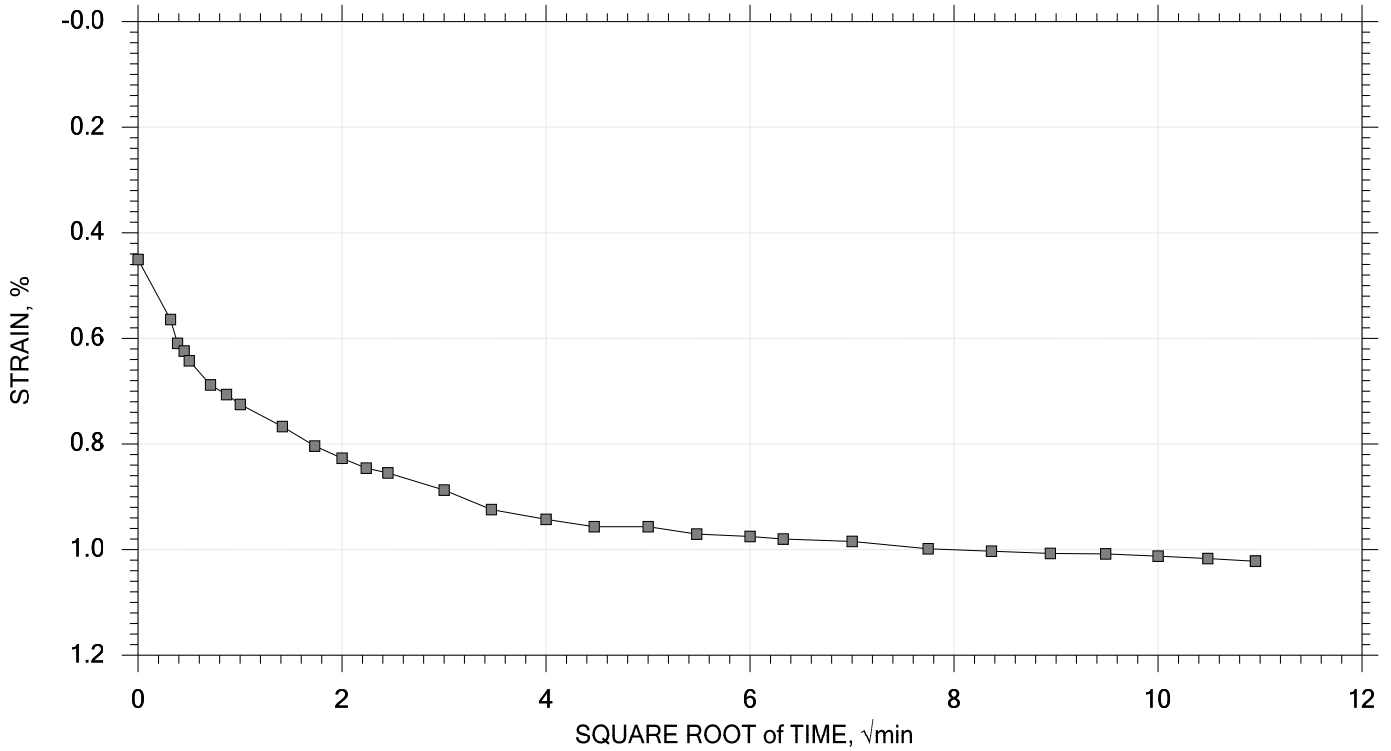
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 3 of 15

Stress: 0.25 tsf





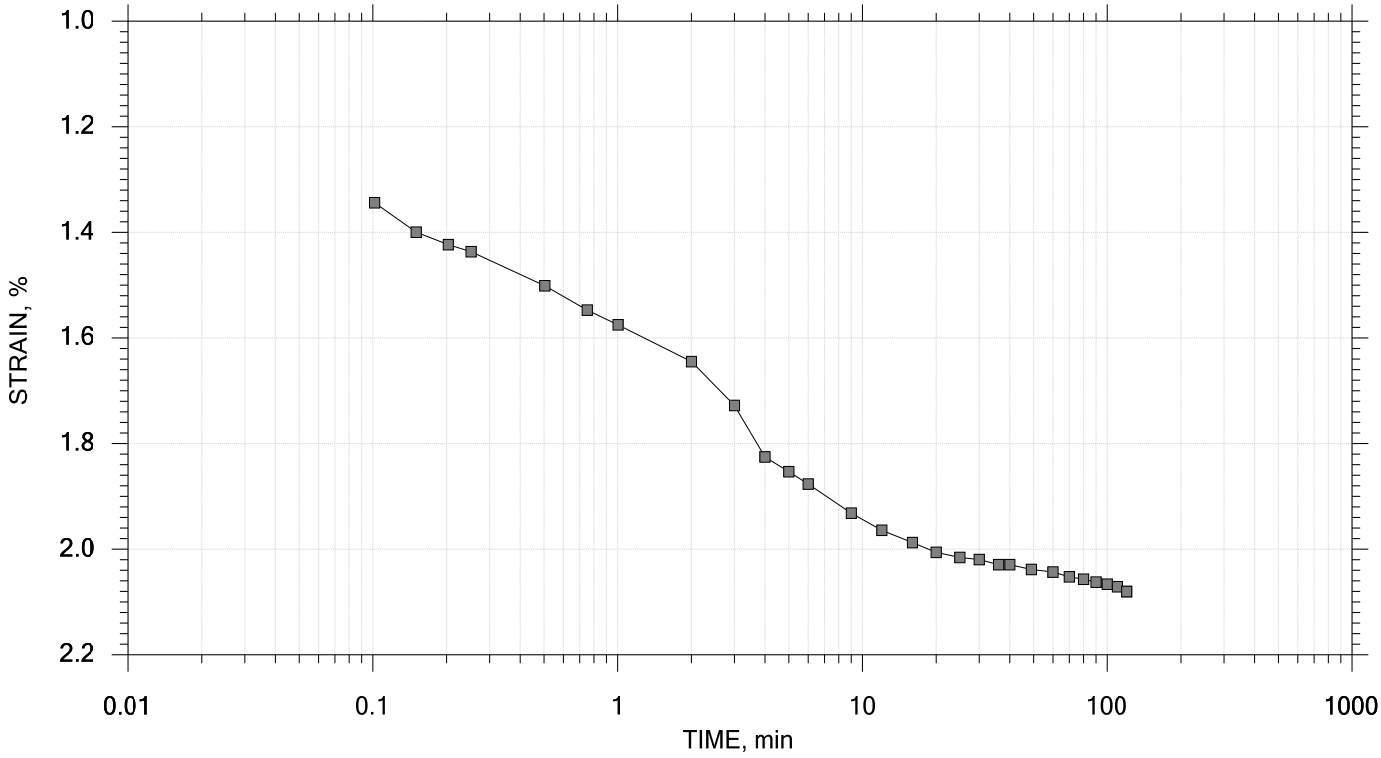
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

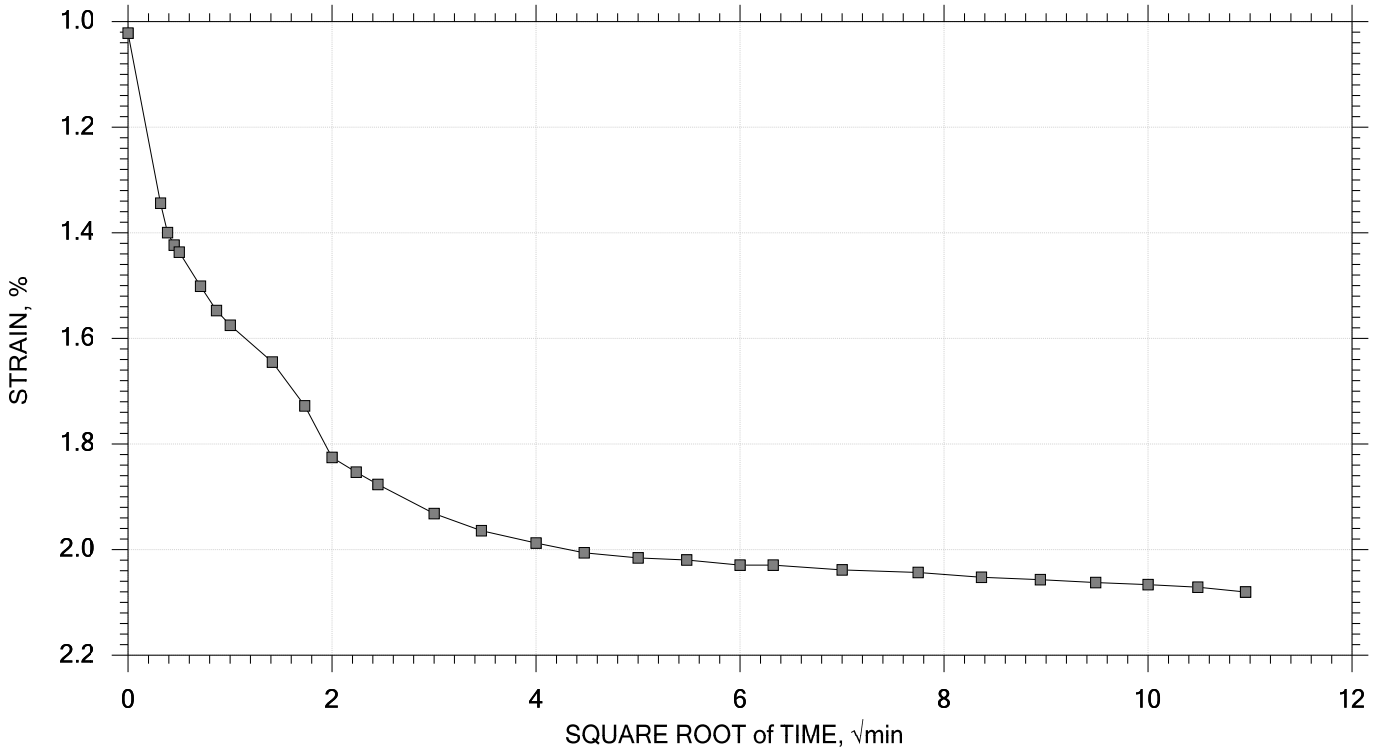
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 4 of 15

Stress: 0.5 tsf





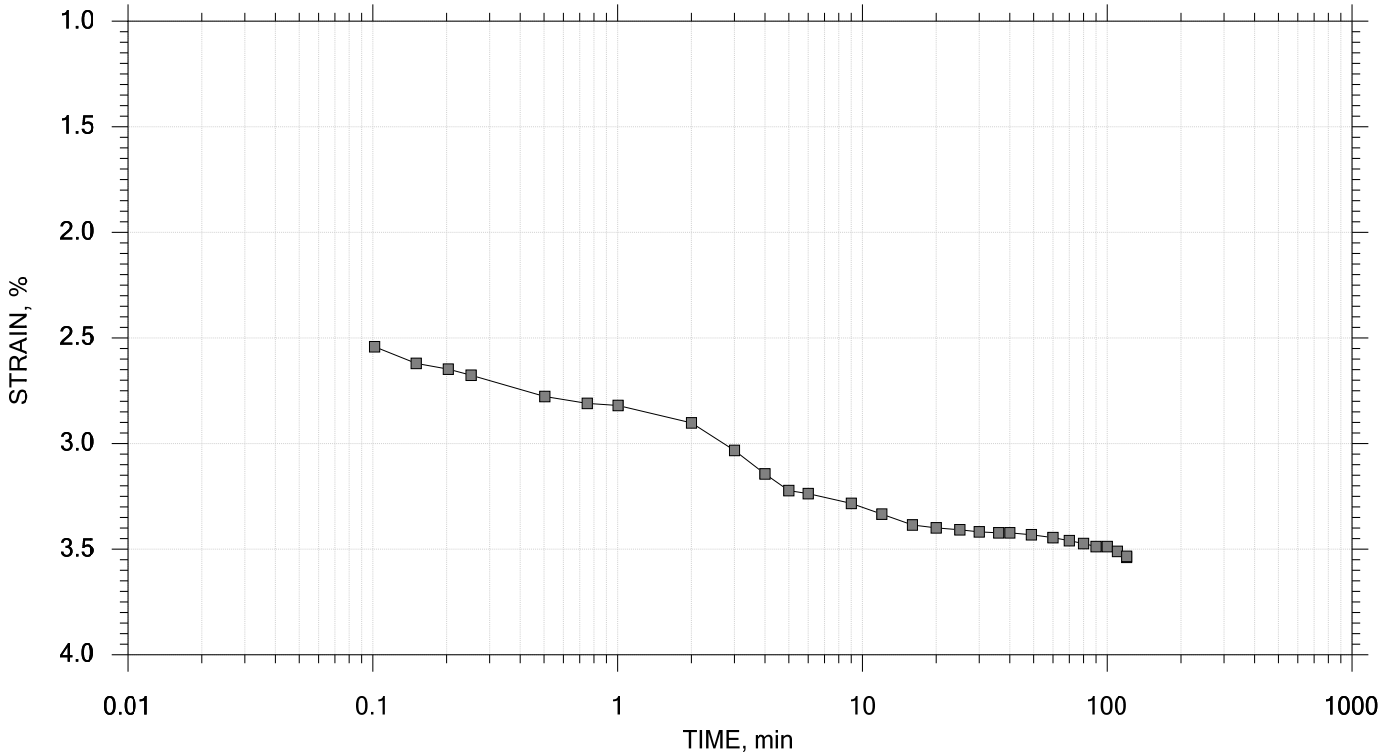
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

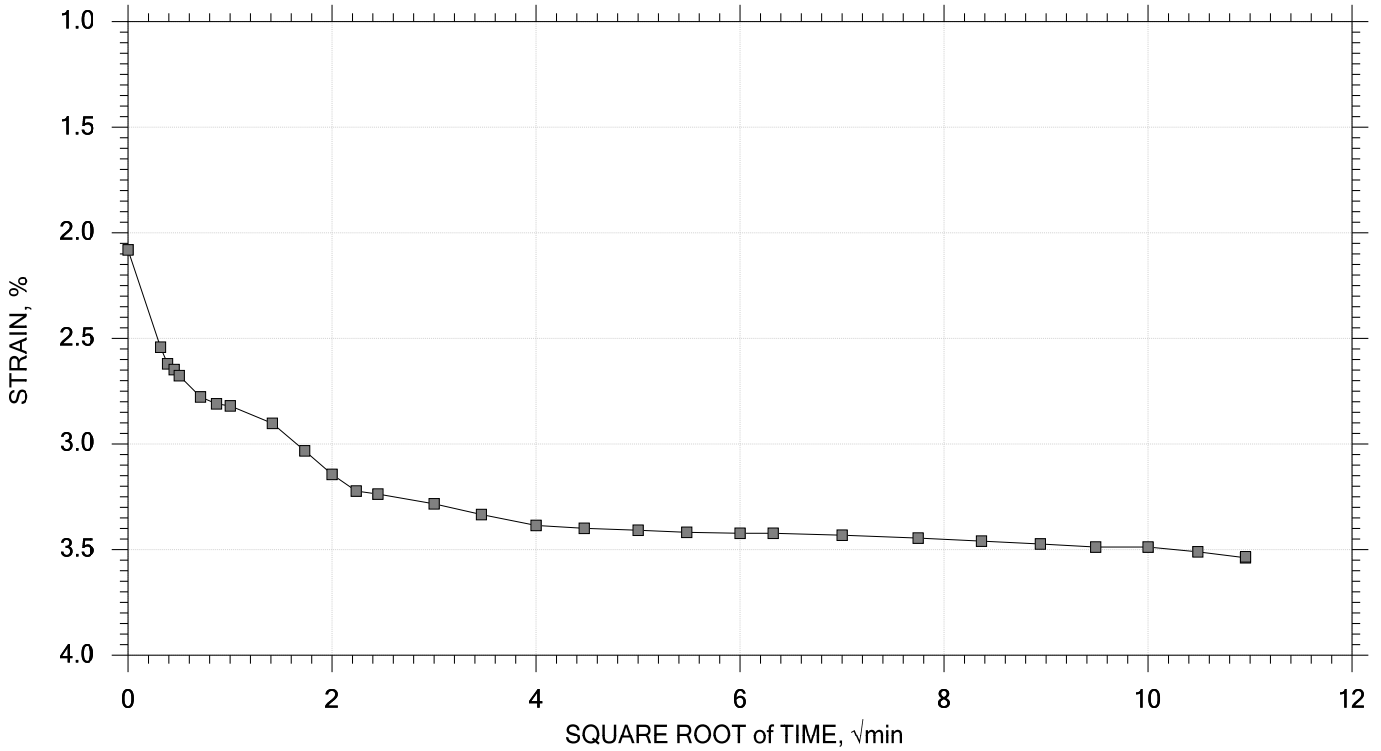
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 5 of 15

Stress: 1 tsf





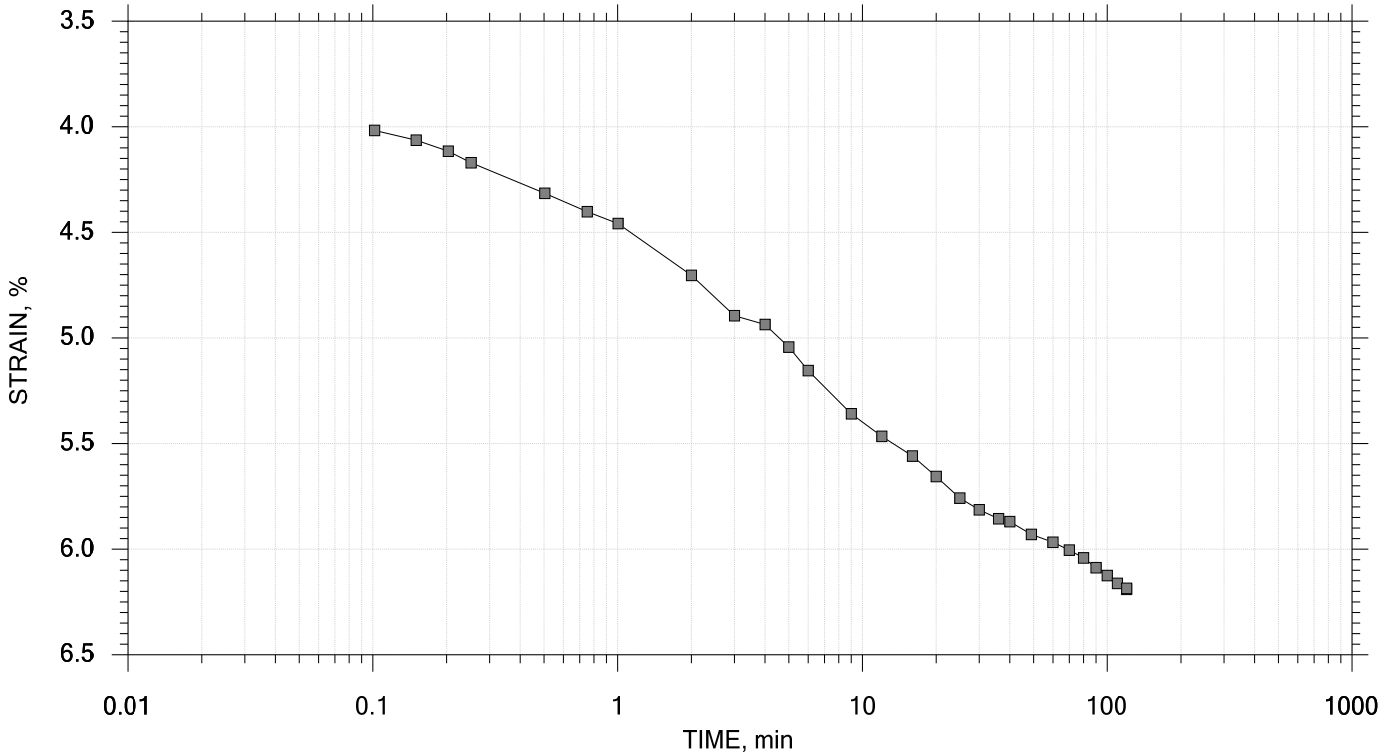
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

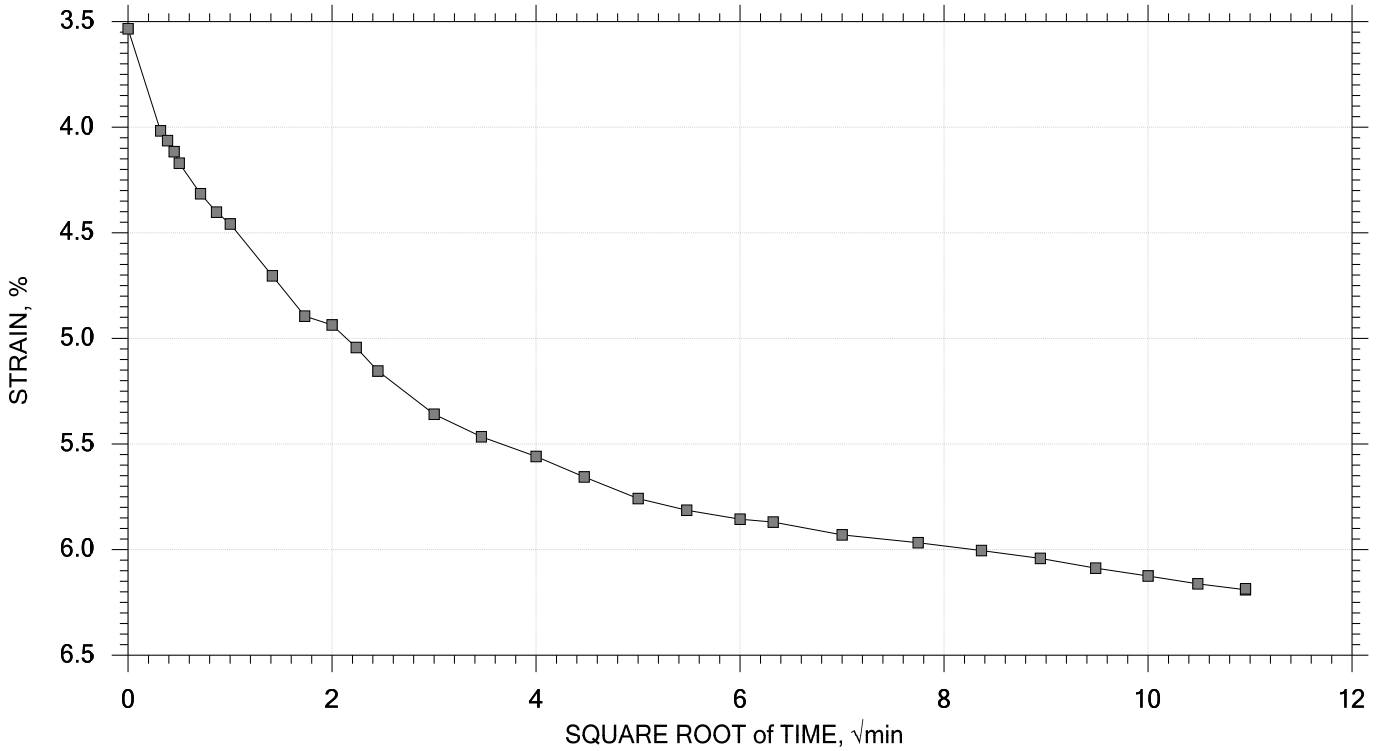
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 6 of 15

Stress: 2 tsf





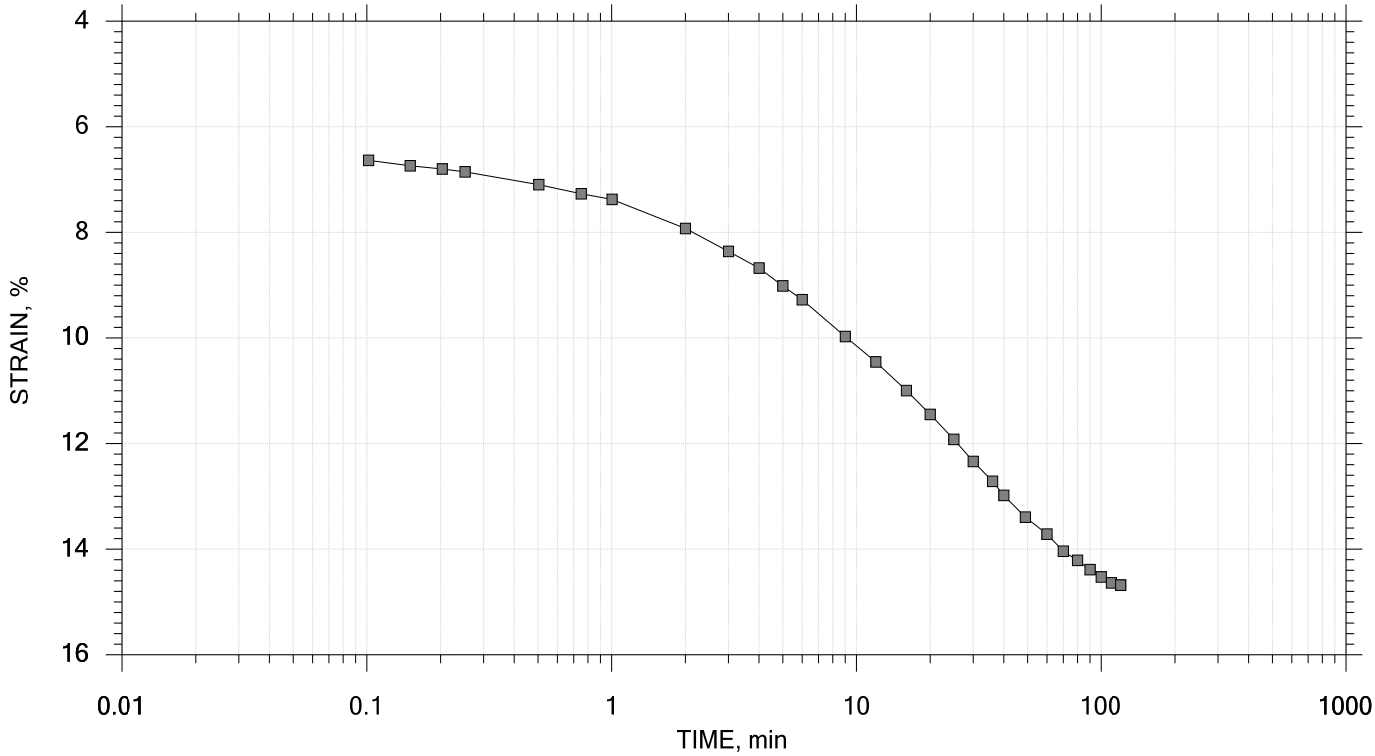
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

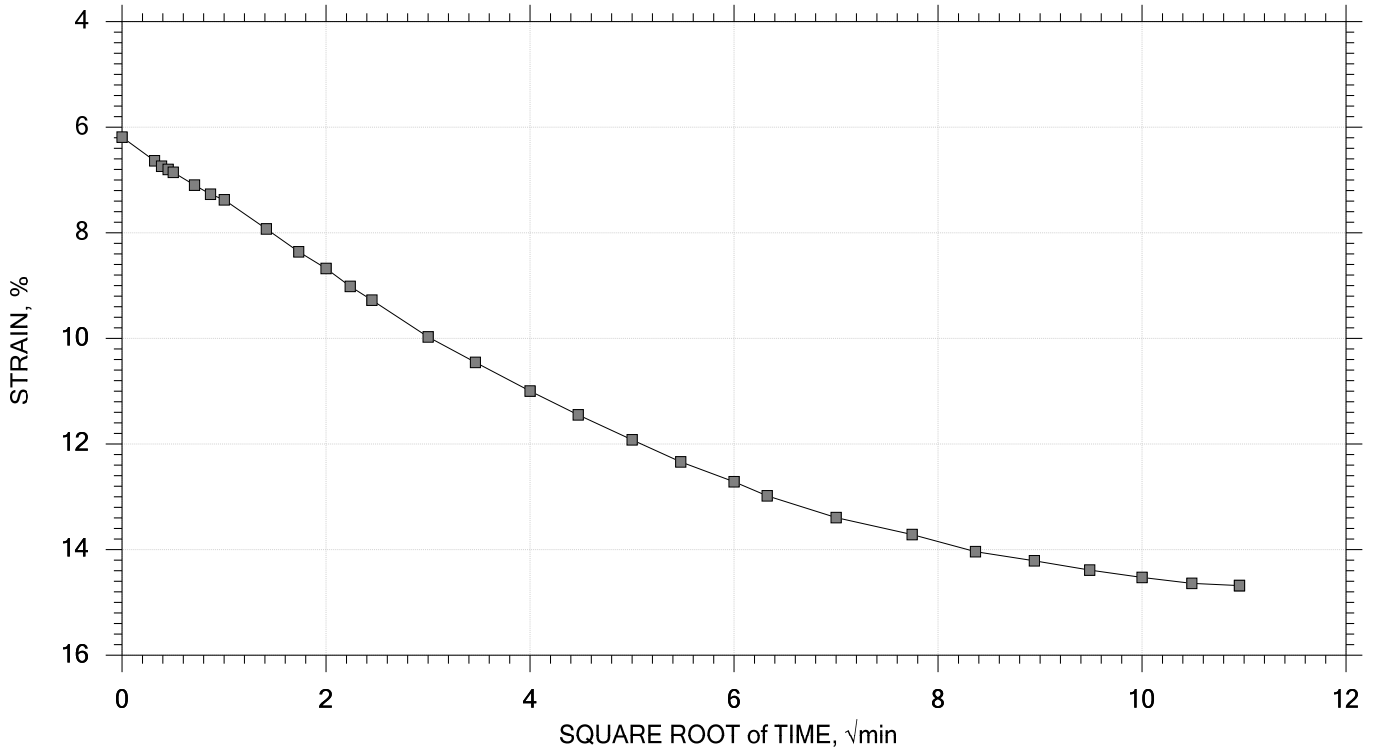
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 7 of 15

Stress: 4 tsf





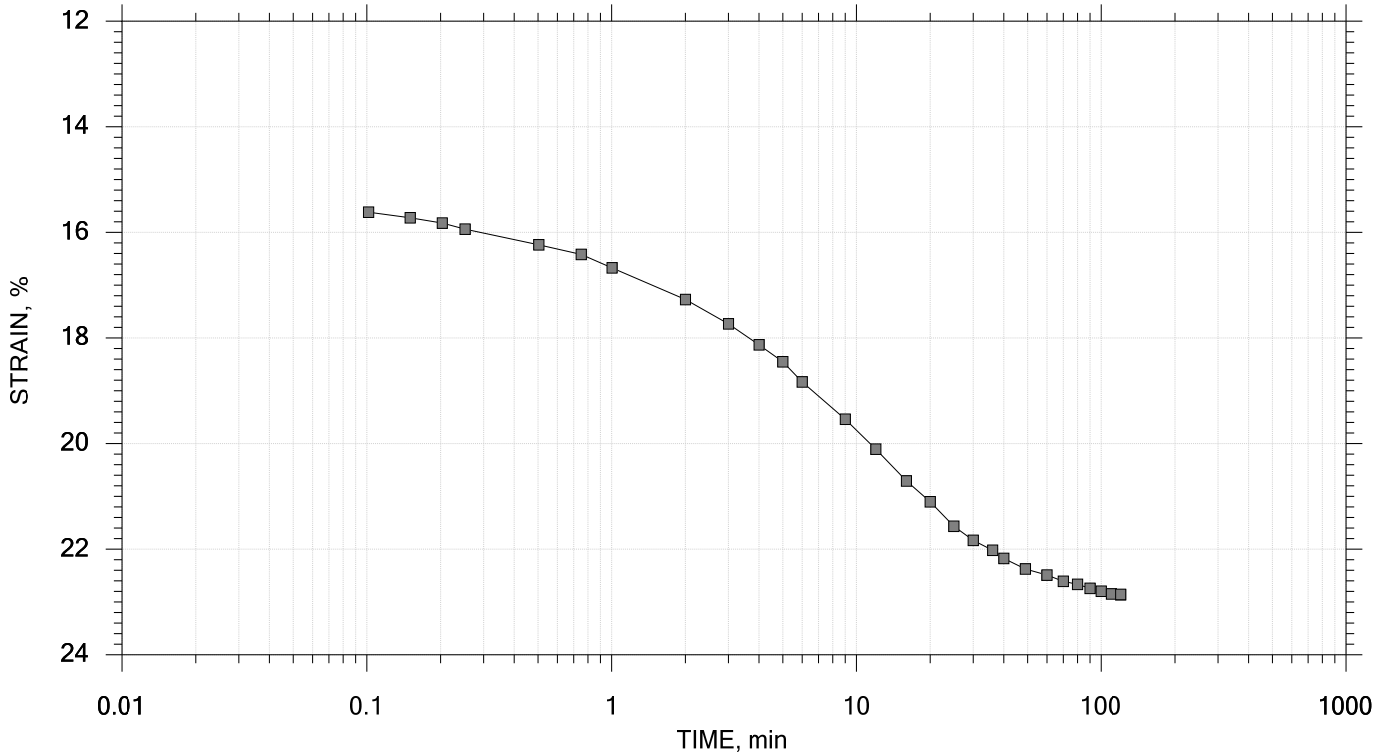
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

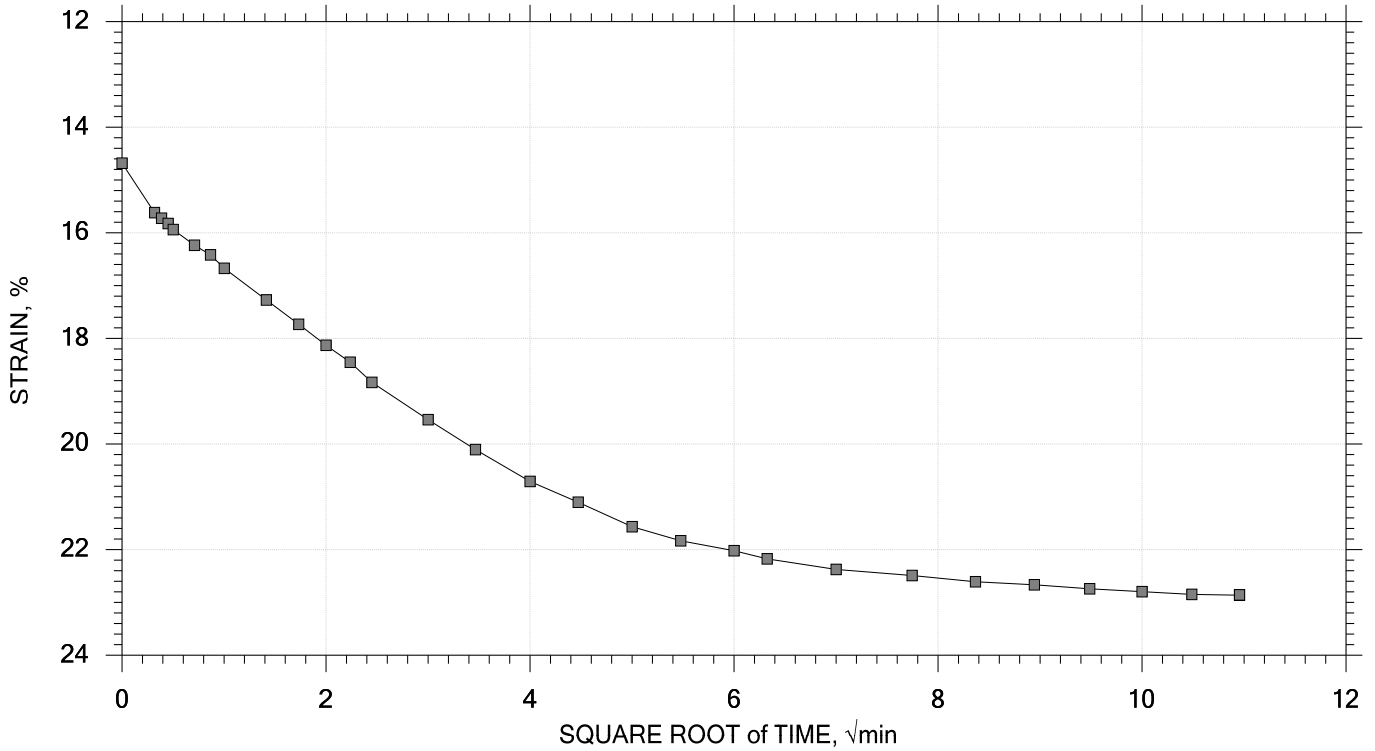
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 8 of 15

Stress: 8 tsf





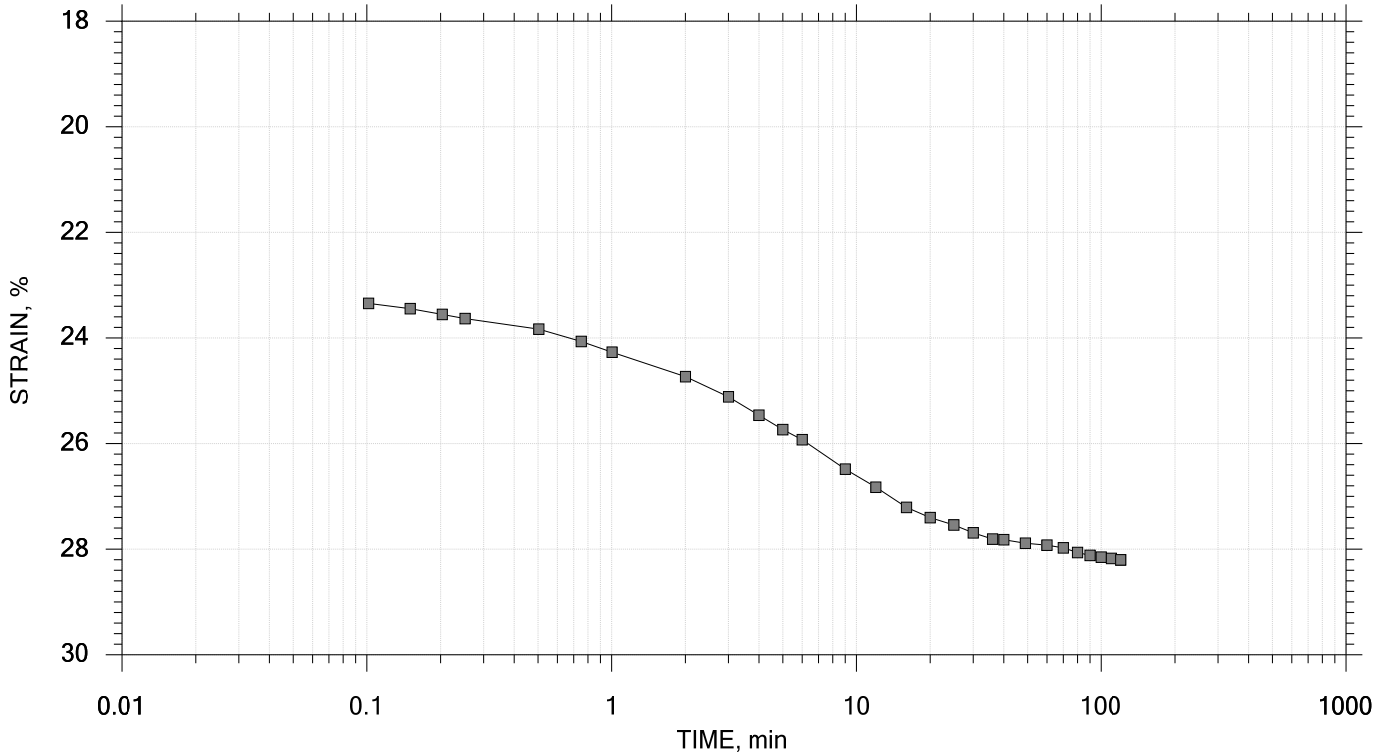
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

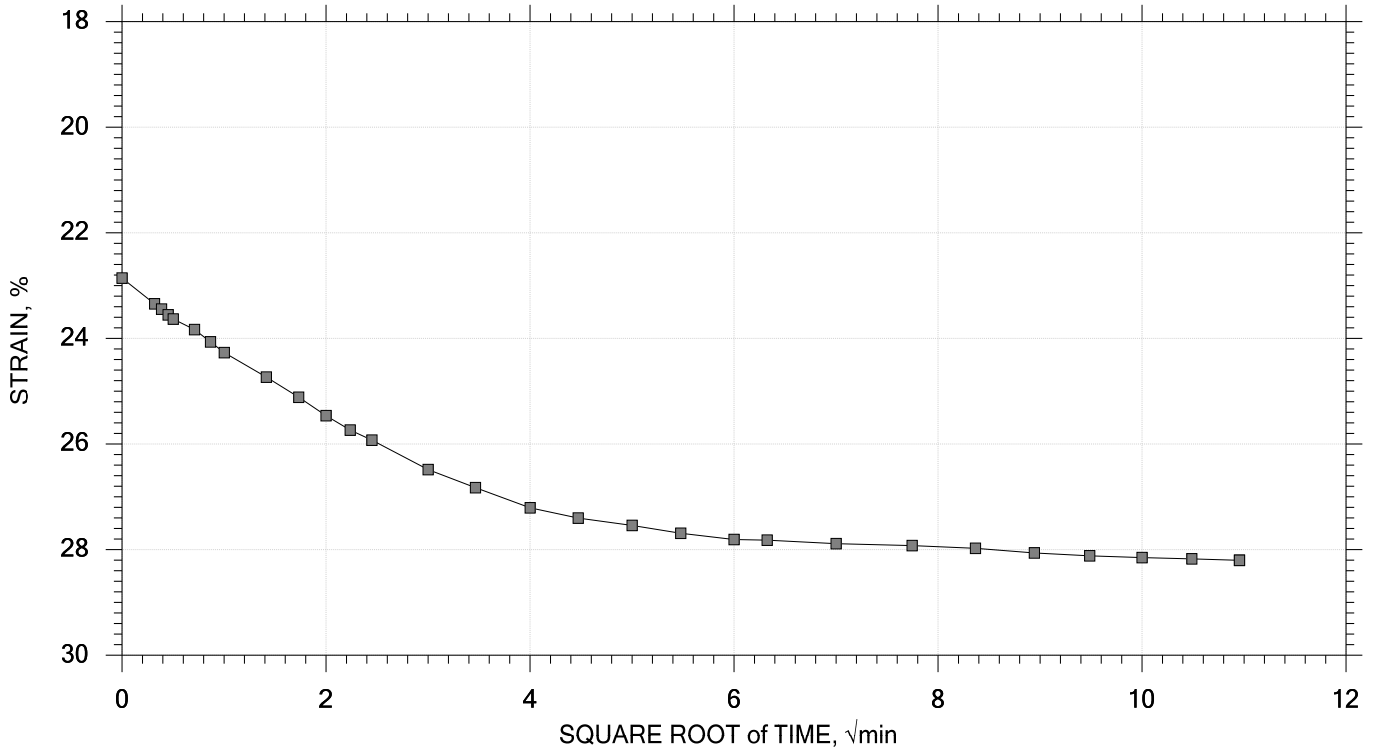
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 9 of 15

Stress: 16 tsf





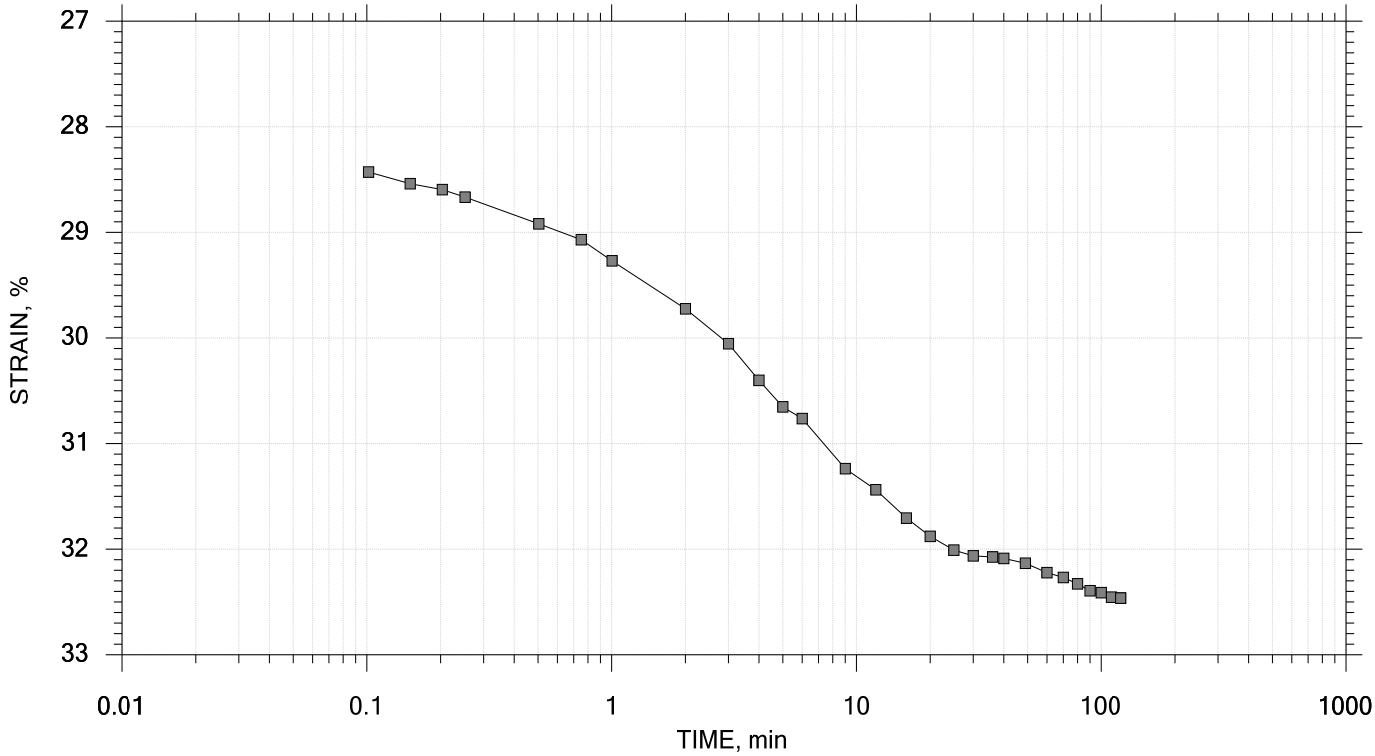
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

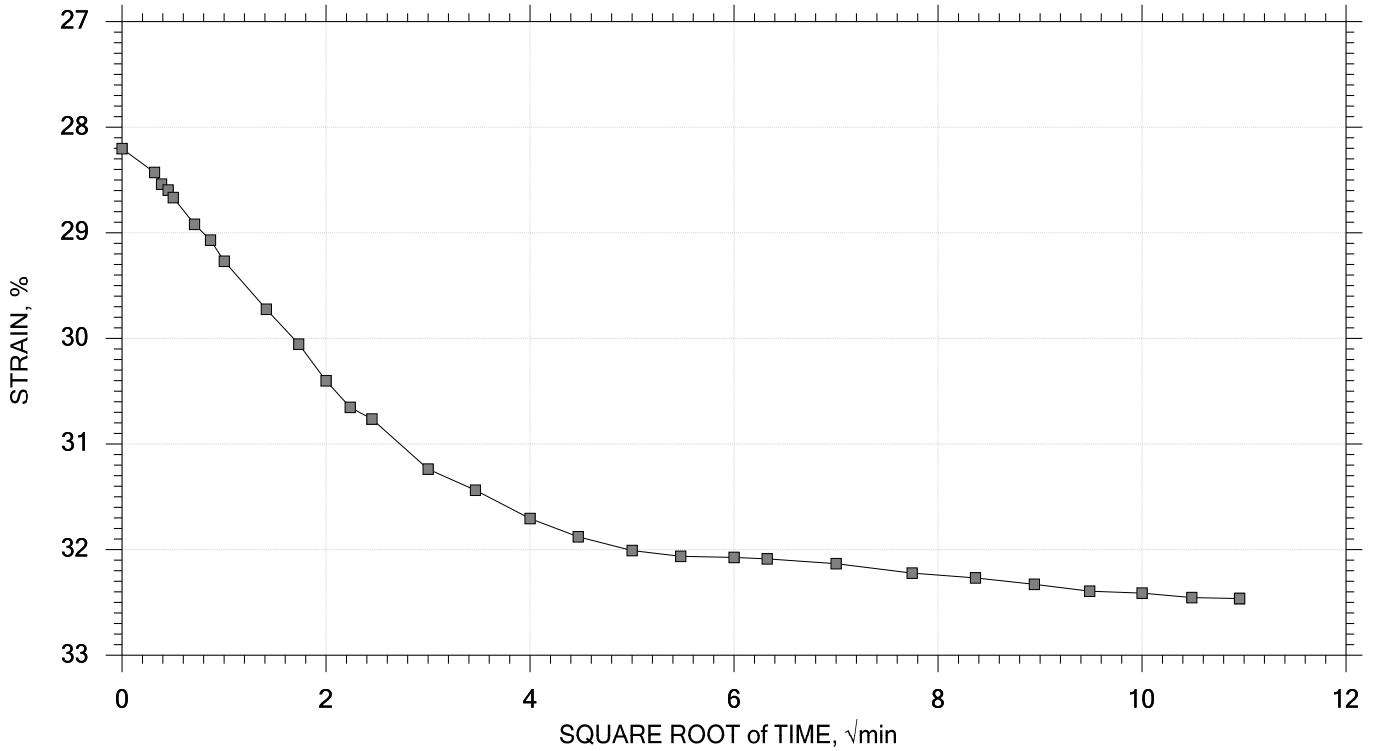
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 10 of 15

Stress: 32 tsf





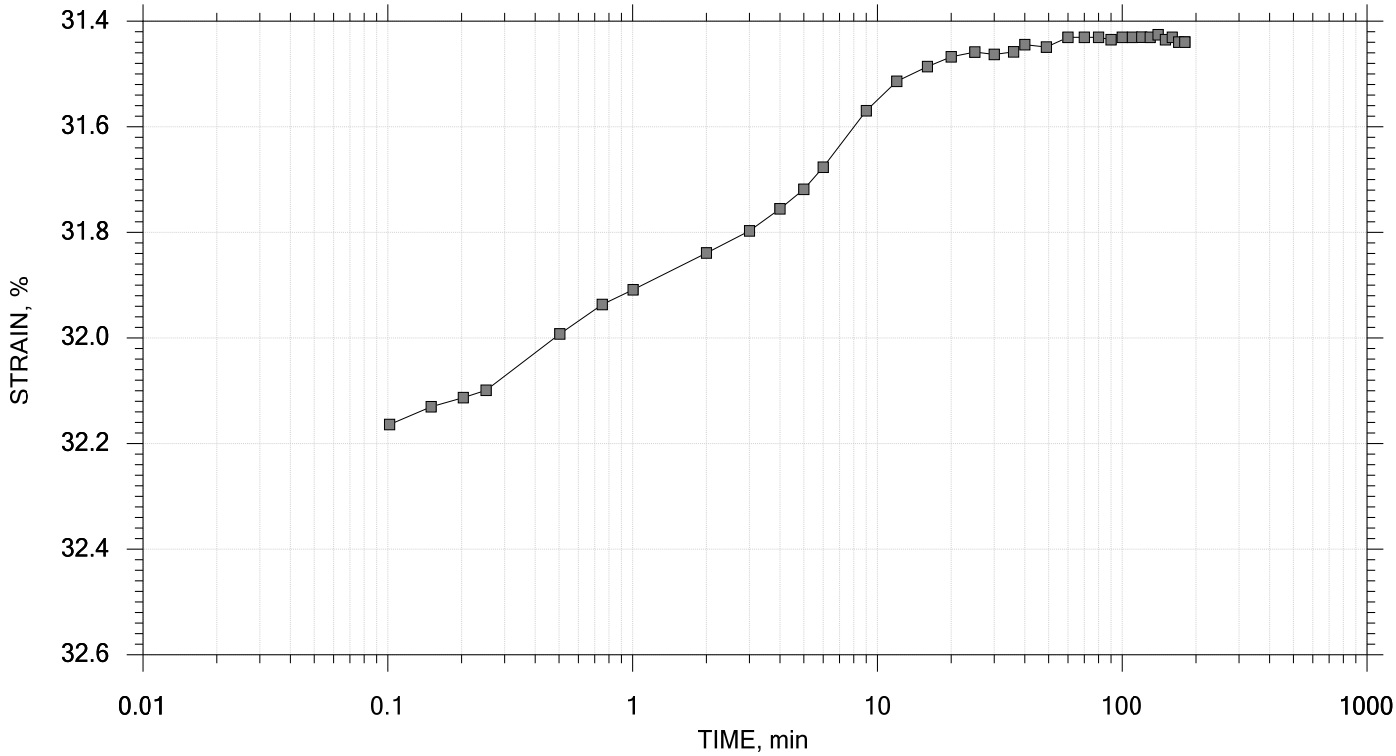
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

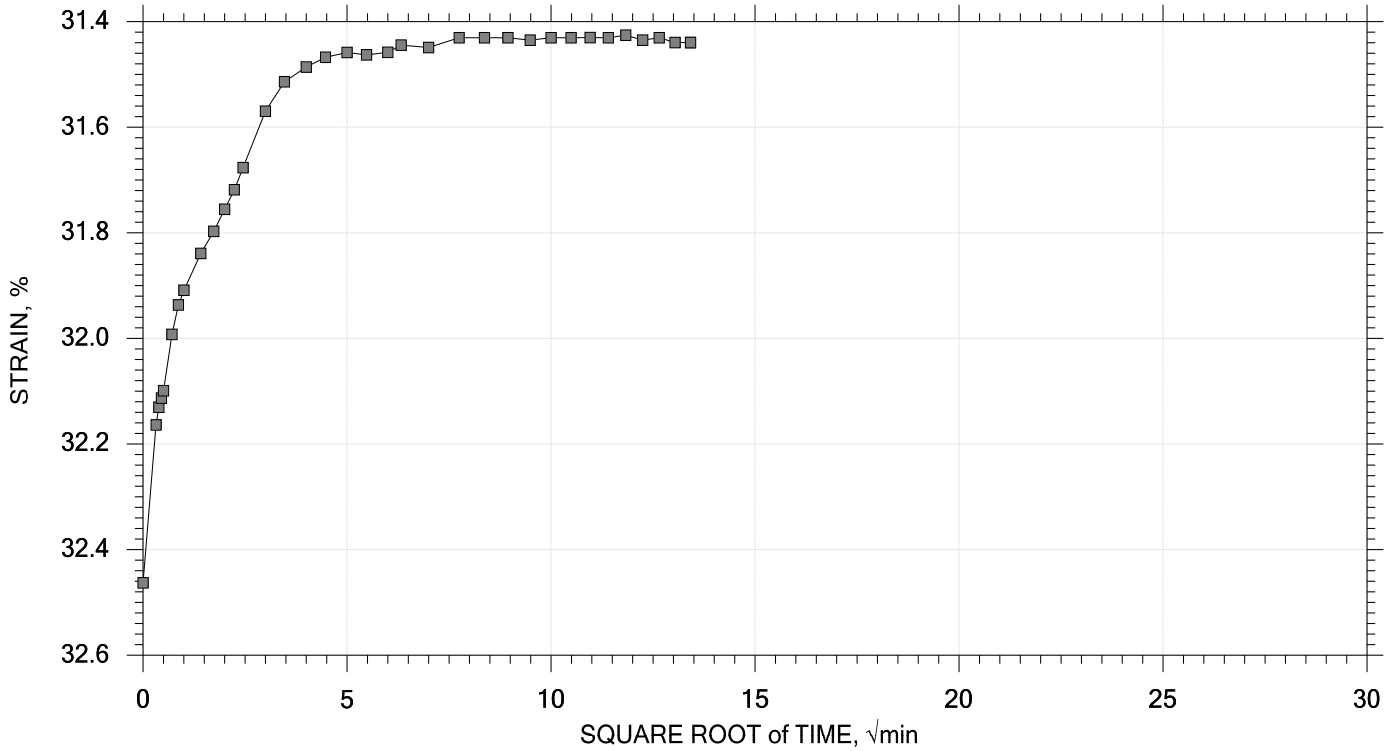
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 11 of 15

Stress: 8 tsf





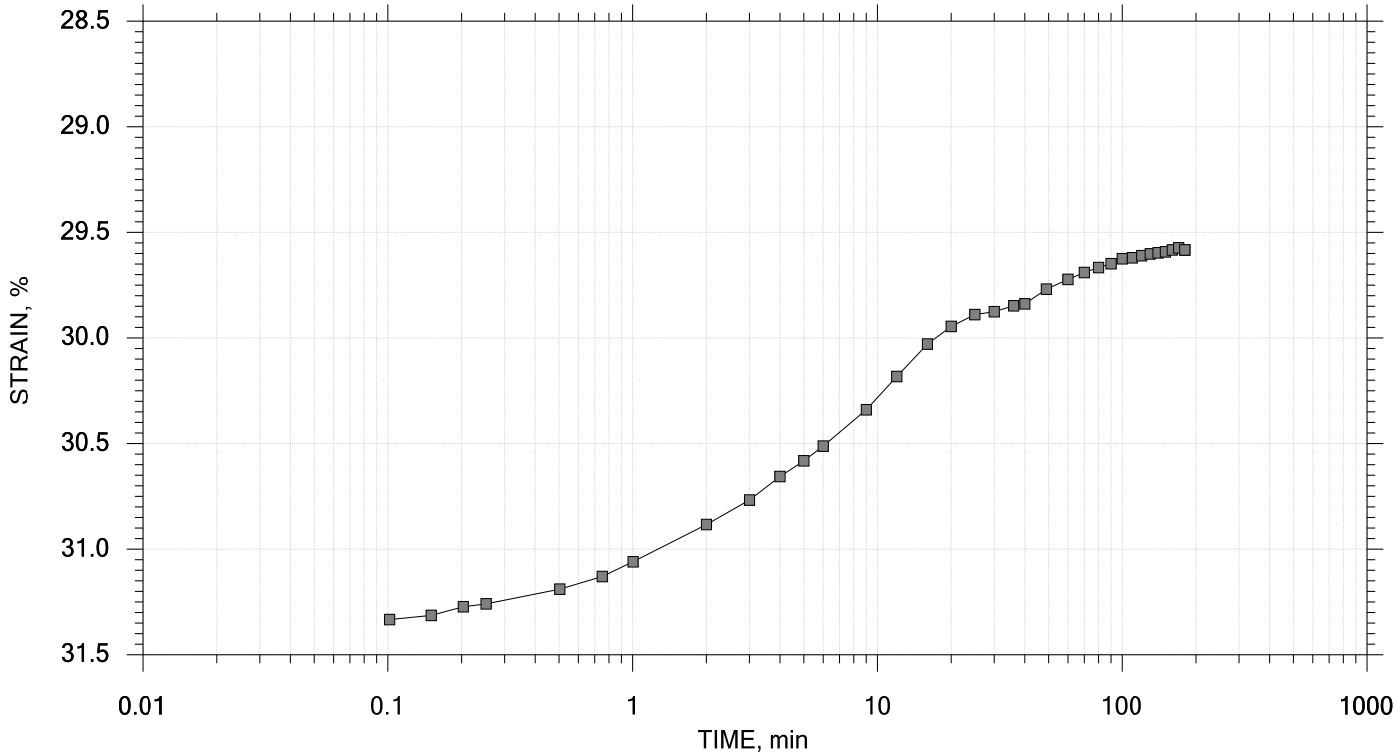
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

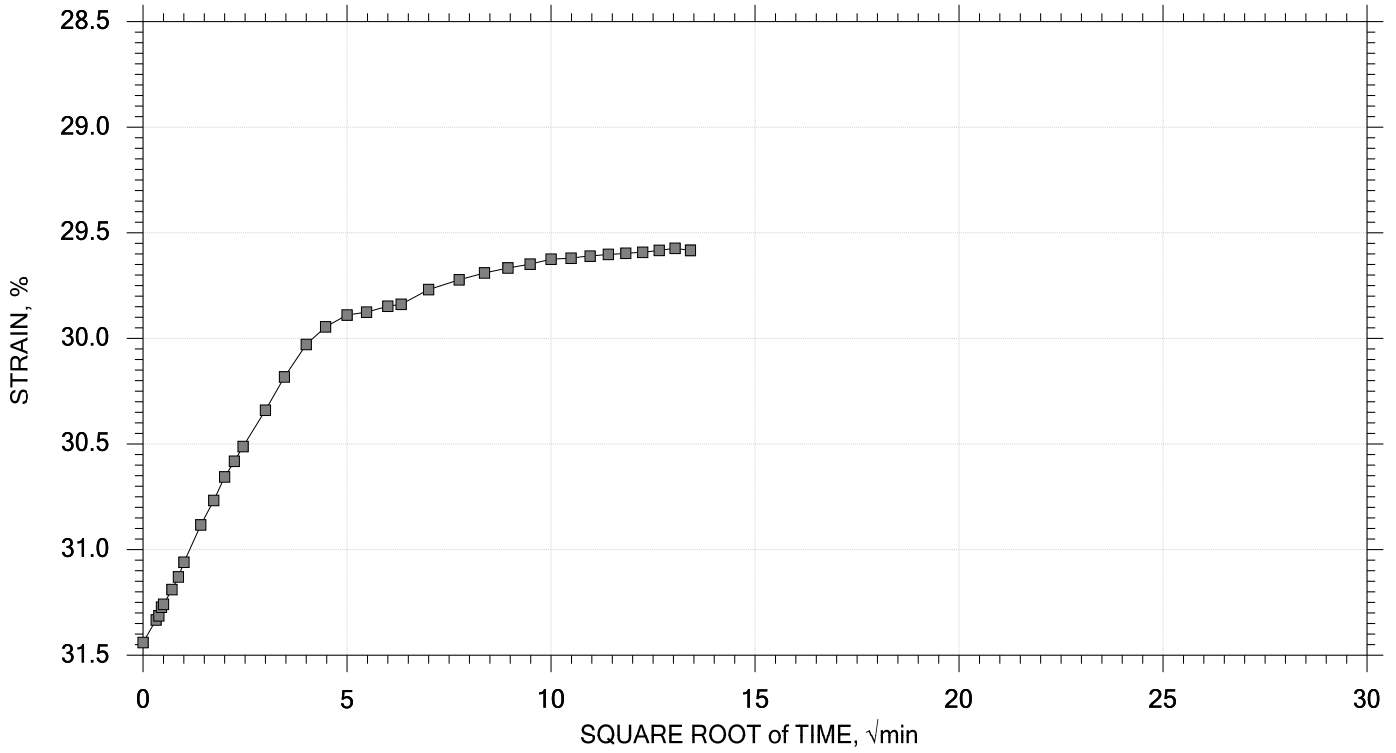
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 12 of 15

Stress: 2 tsf





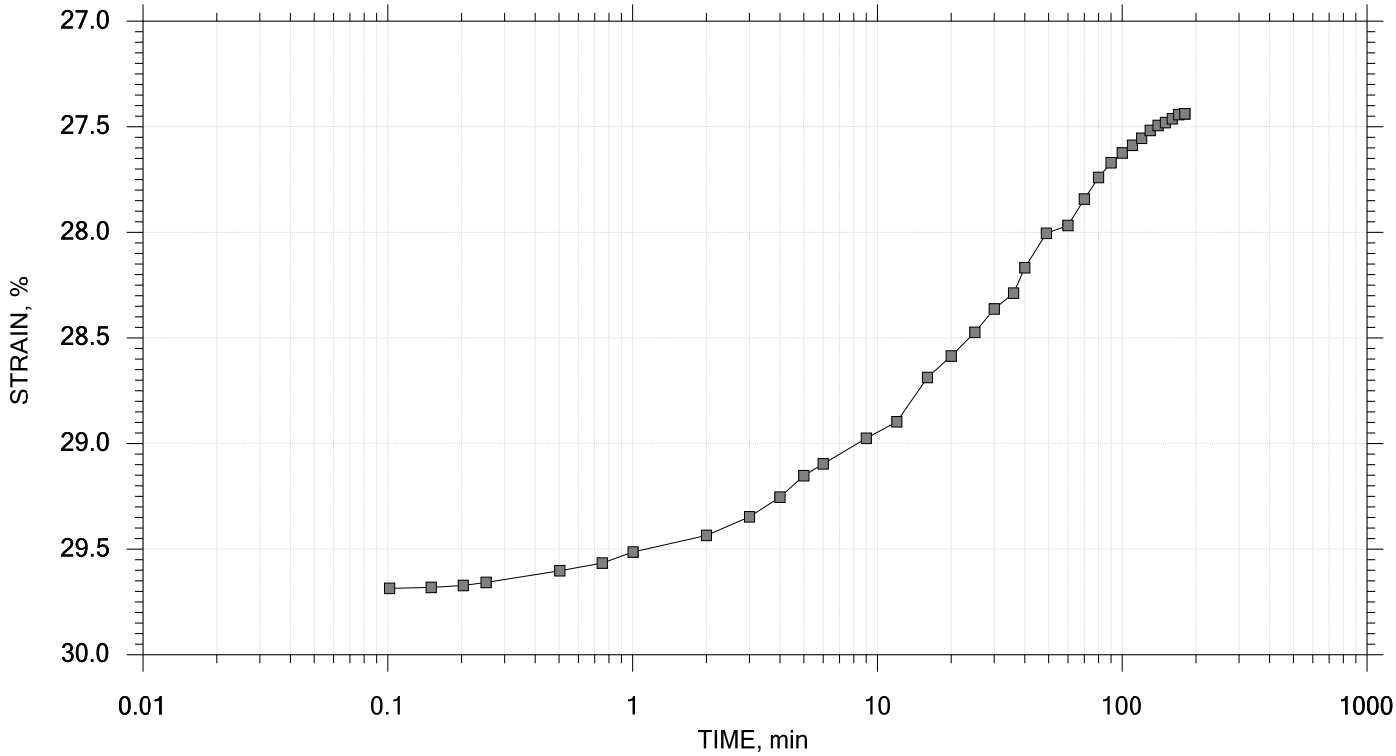
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

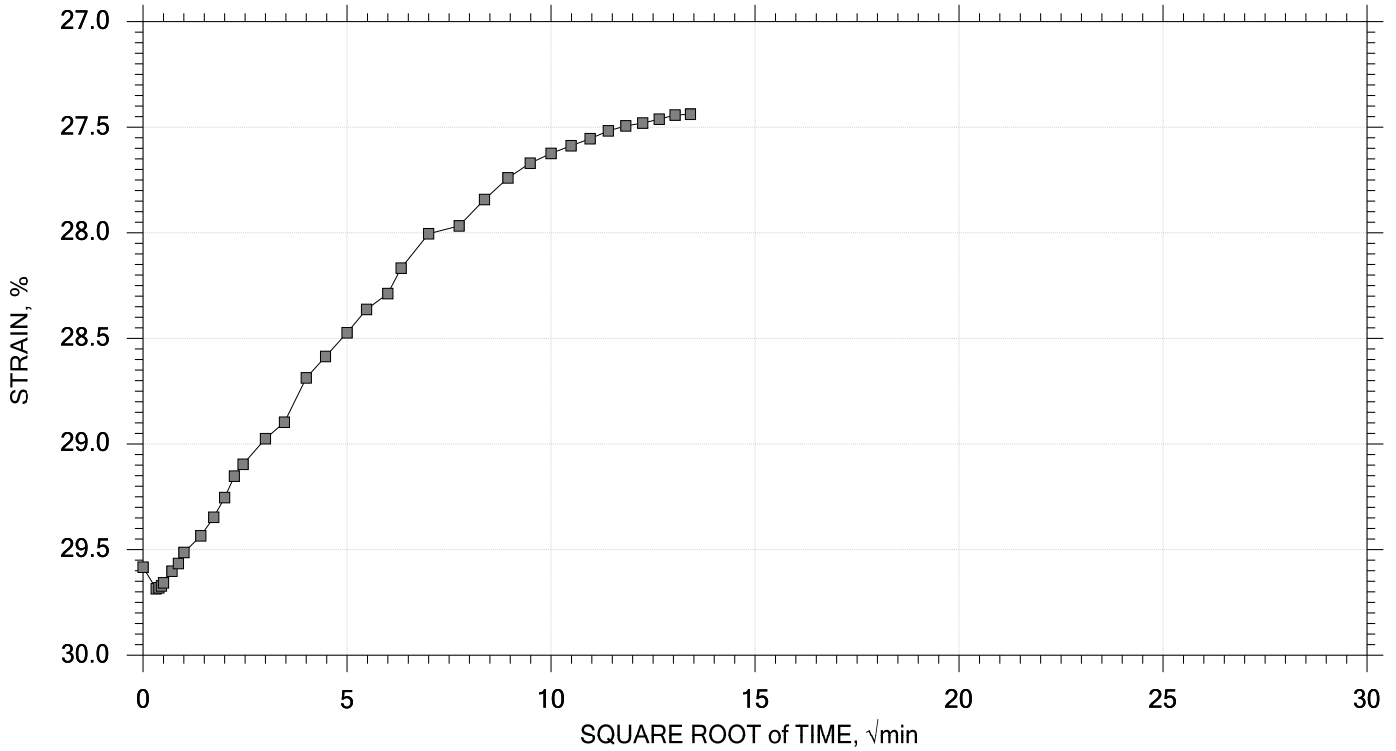
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 13 of 15

Stress: 0.5 tsf





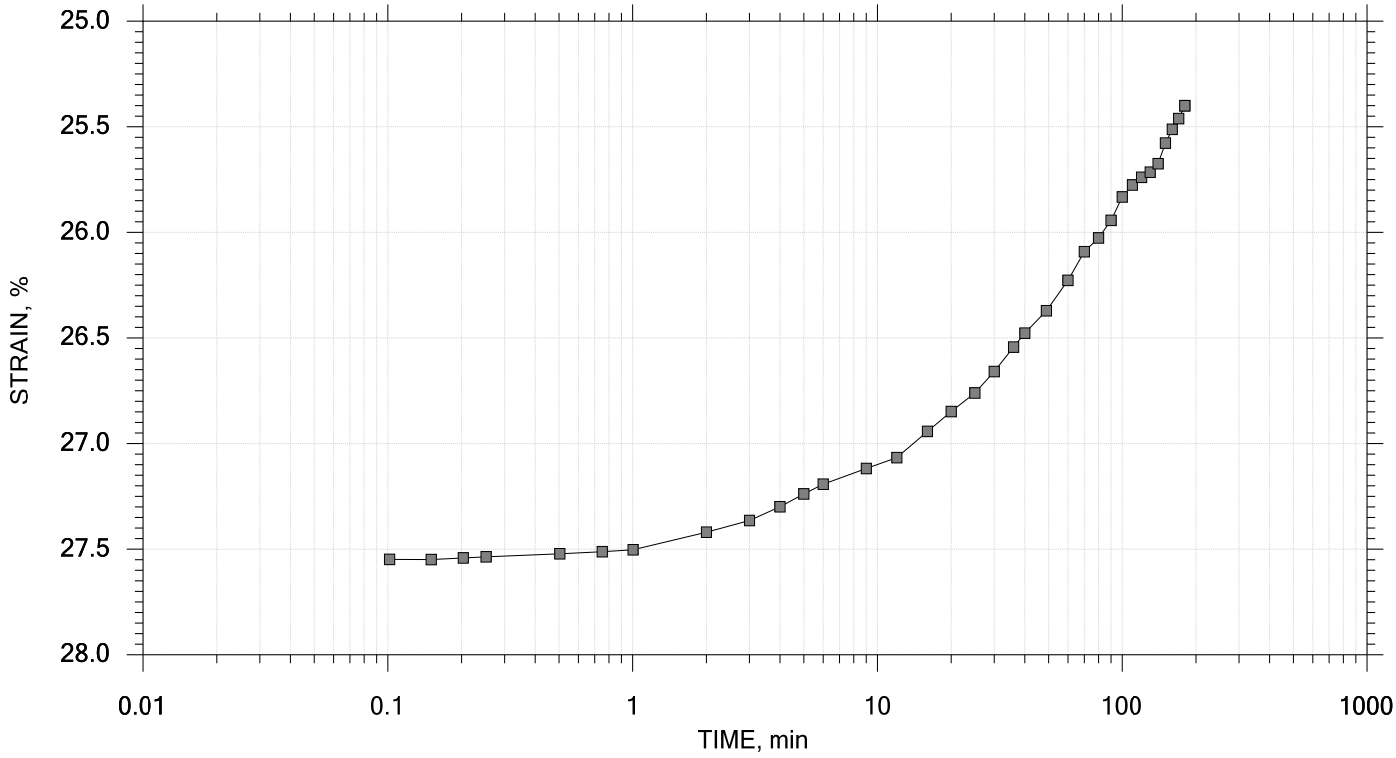
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

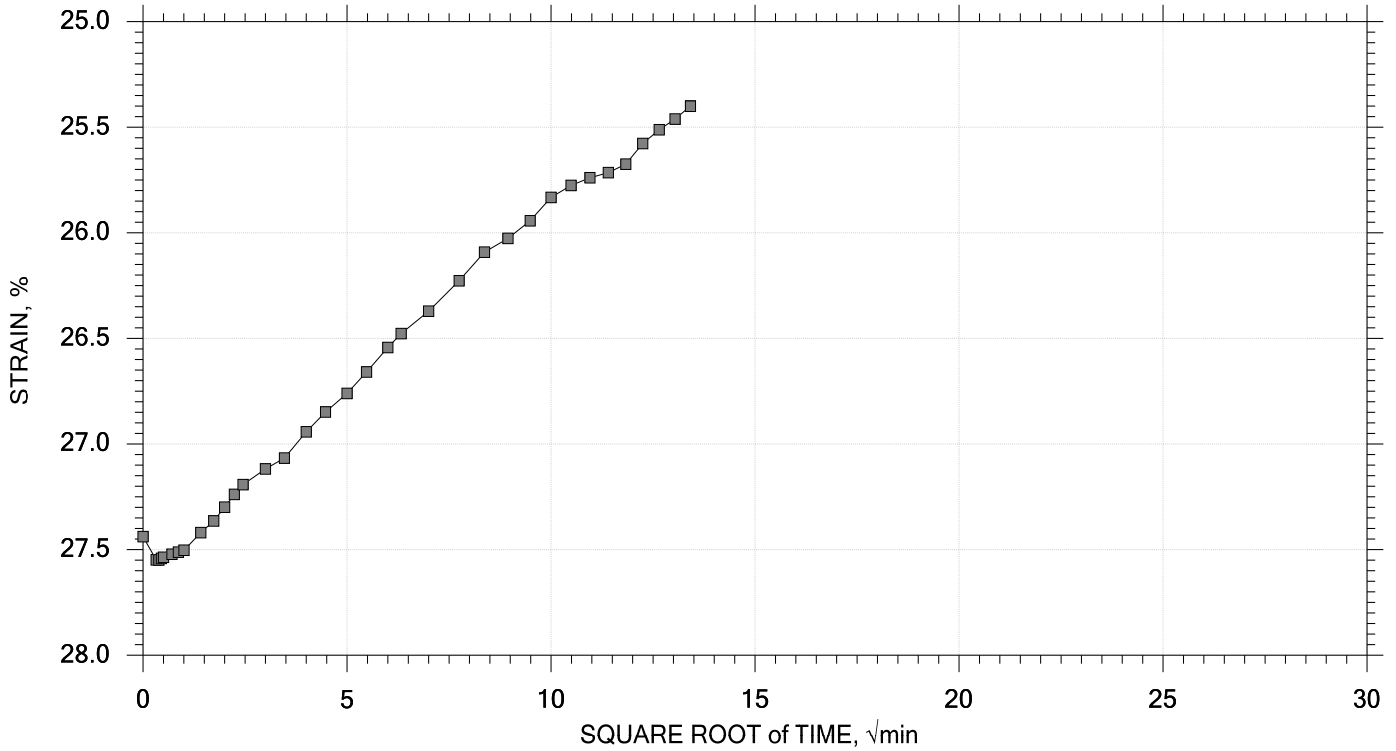
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 14 of 15

Stress: 0.125 tsf





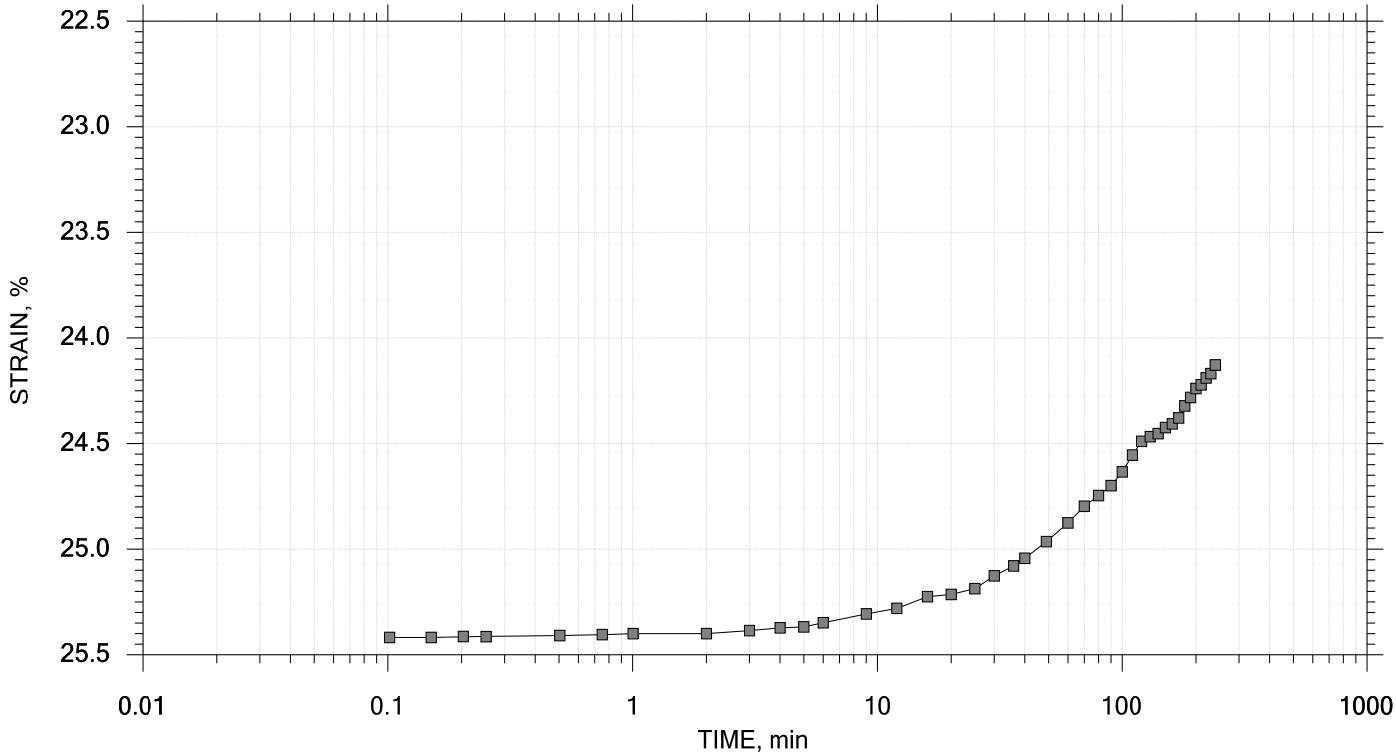
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

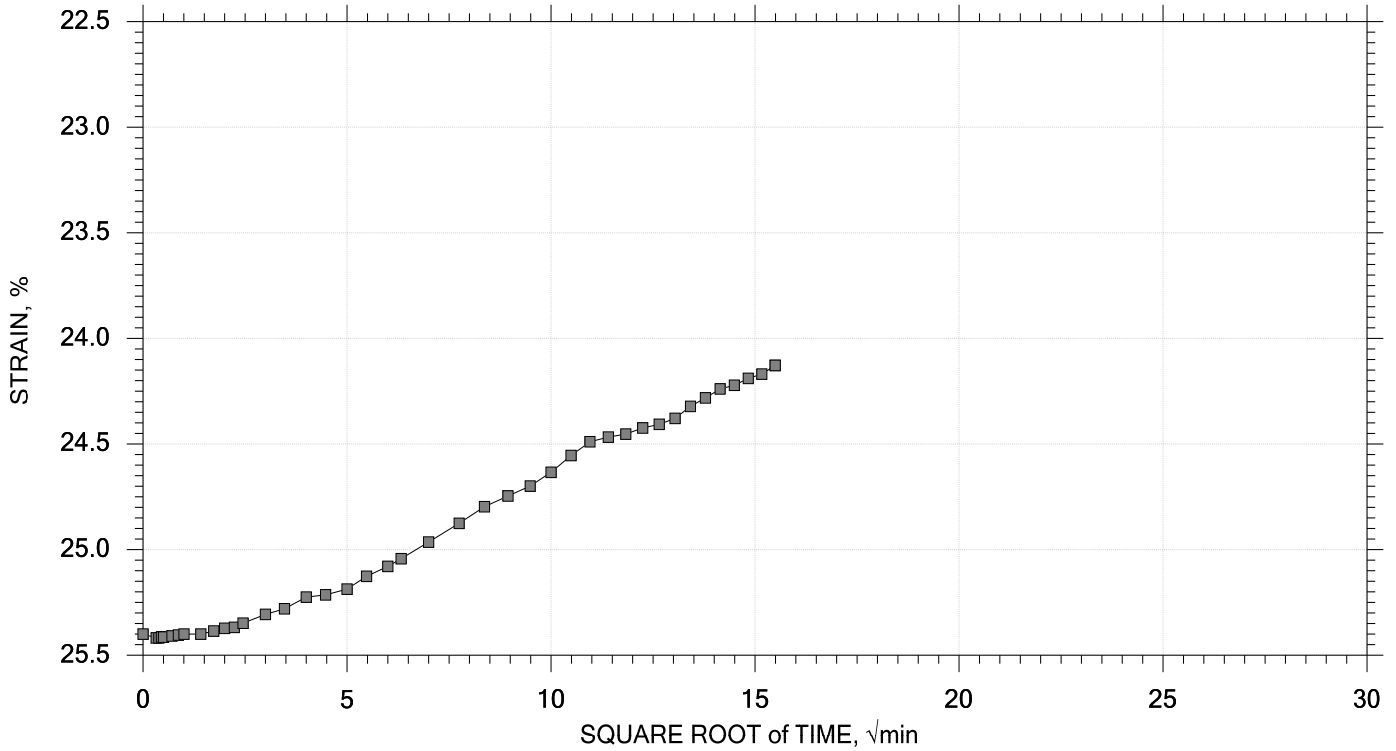
One-Dimensional Consolidation by ASTM D2435 - Method B

TIME CURVES

Constant Load Step 15 of 15

Stress: 0.0625 tsf



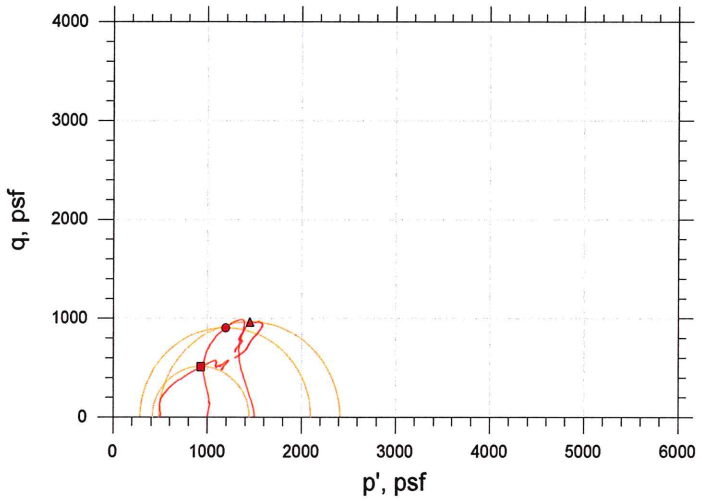


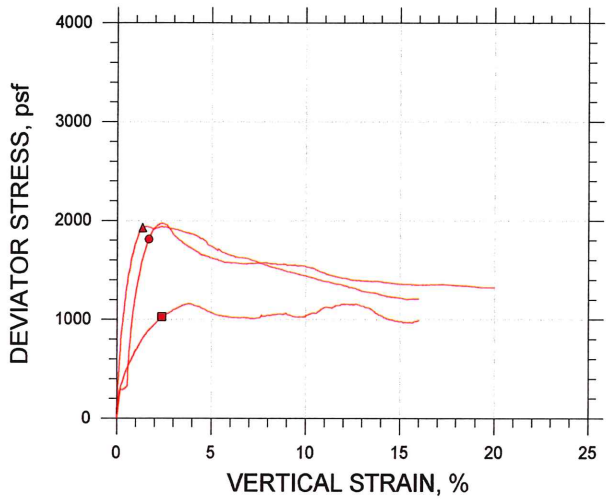
GeoTesting EXPRESS	Project: Hinesburg HES 021-0(19)	Location: ---	Project No.: GTX-303296
	Boring No.: B7-ST	Tested By: md	Checked By: jdt
	Sample No.: ST-1	Test Date: 06/15/15	Test No.: IP-2
	Depth: 8-10 ft	Sample Type: intact	Elevation: ---
	Description: Moist, dark grayish brown clay		
	Remarks: System V, Swell Pressure = 0.0669 tsf		

GeoTesting EXPRESS

Client: GeoDesign, Inc.	
Project Name: Hinesburg HES 021-1(19)	
Project Location: ---	
Project Number: GTX-303296	
Tested By: md	Checked By: njh
Boring ID: B7-ST	
Preparation: intact	
Description: Moist, dark grayish brown clay	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲	
Sample ID		ST-1	ST-1	ST-1	
Depth, ft		8-10 ft	8-10 FT	8-10 ft	
Test Number		CU-1	CU-3	CU-2	
Initial	Height, in	4.000	4.730	3.800	
	Diameter, in	2.030	2.020	2.000	
	Moisture Content (from Cuttings), %	46.9	46.3	49.0	
	Dry Density, pcf	71.2	73.1	71.7	
	Saturation (Wet Method), %	92.6	95.8	98.1	
	Void Ratio	1.37	1.31	1.35	
Before Shear	Moisture Content, %	48.3	47.8	47.8	
	Dry Density, pcf	73.2	73.6	73.6	
	Cross-sectional Area (Method A), in²	3.183	3.183	3.094	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	1.30	1.29	1.29	
	Back Pressure, psf	2.146e+004	2.027e+004	2.285e+004	
Vertical Effective Consolidation Stress, psf		498.4	1001.	1497.	
Horizontal Effective Consolidation Stress, psf		499.7	999.6	1503.	
Vertical Strain after Consolidation, %		0.1636	0.0000	0.5024	
Volumetric Strain after Consolidation, %		-0.1054	0.7238	1.148	
Time to 50% Consolidation, min		0.6400	0.0000	6.760	
Shear Strength, psf		515.6	907.7	965.9	
Strain at Failure, %		2.38	1.68	1.35	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		1031.	1815.	1932.	
Effective Minor Principal Stress at Failure, psf		413.5	282.9	481.7	
Effective Major Principal Stress at Failure, psf		1445.	2098.	2413.	
B-Value		0.96	0.95	0.95	

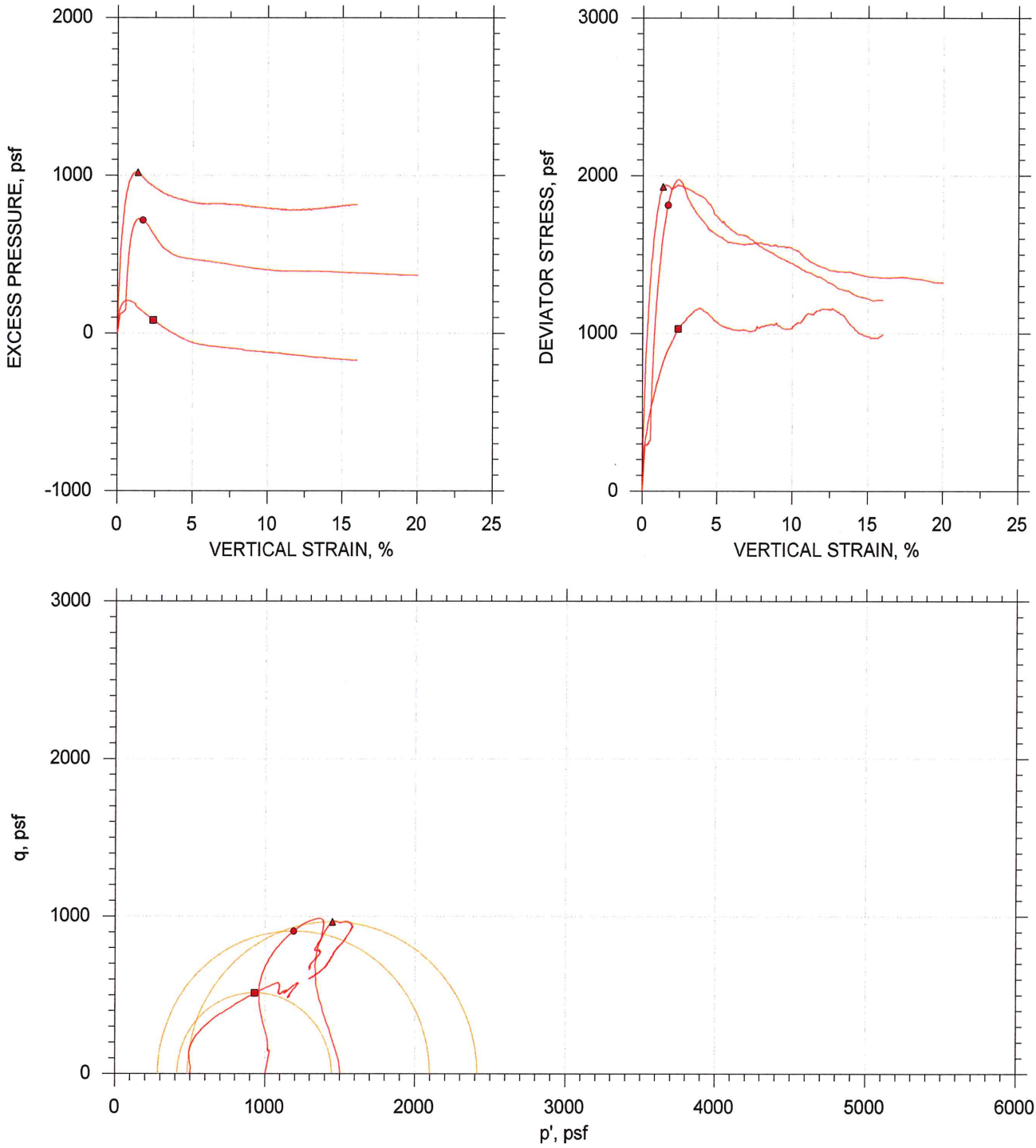
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.



Remarks:

System O

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	ST-1	CU-1	8-10 ft	md	7/1/15	njh	7/9/15	303296-CU-1n.dat
●	ST-1	CU-3	8-10 FT	md	07/14/15	jdt		303296-CU-2Ajoe2.dat
▲	ST-1	CU-2	8-10 ft	md	7/1/15	njh	7/9/15	303296-CU-2n.dat

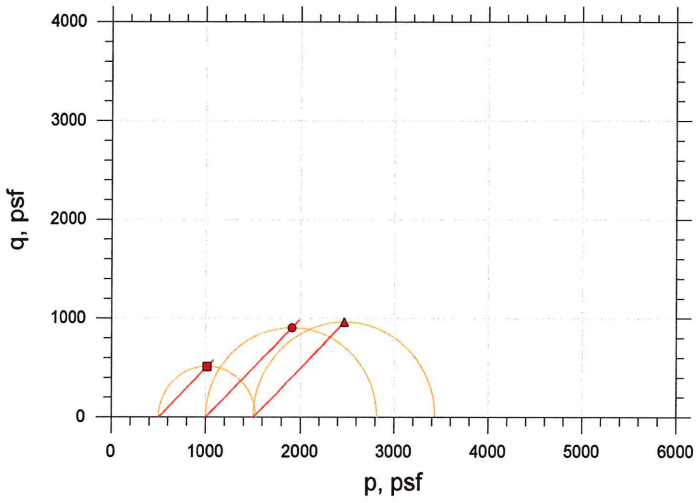
GeoTesting EXPRESS

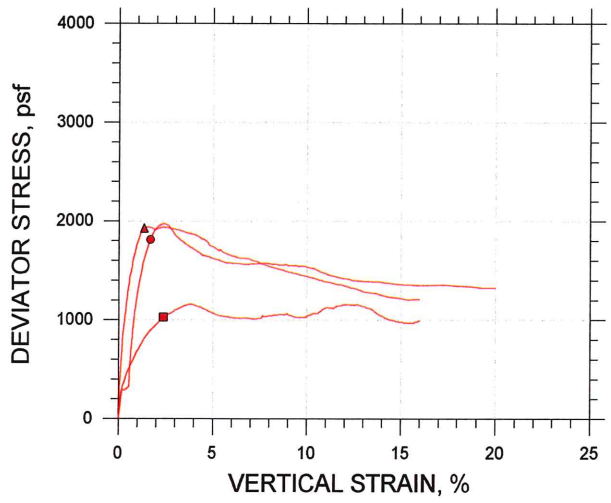
Project: Hinesburg HES 021-1(19)	Location: ---	Project No.: GTX-303296
Boring No.: B7-ST	Sample Type: intact	
Description: Moist, dark grayish brown clay		
Remarks: System O		

GeoTesting EXPRESS

Client: GeoDesign, Inc.	
Project Name: Hinesburg HES 021-1(19)	
Project Location: ---	
Project Number: GTX-303296	
Tested By: md	Checked By: njh
Boring ID: B7-ST	
Preparation: intact	
Description: Moist, dark grayish brown clay	
Classification: ---	
Group Symbol: ---	
Liquid Limit: ---	Plastic Limit: ---
Plasticity Index: ---	Estimated Specific Gravity: 2.7

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





		■	●	▲	
Symbol					
Sample ID		ST-1	ST-1	ST-1	
Depth, ft		8-10 ft	8-10 FT	8-10 ft	
Test Number		CU-1	CU-3	CU-2	
Initial	Height, in	4.000	4.730	3.800	
	Diameter, in	2.030	2.020	2.000	
	Moisture Content (from Cuttings), %	46.9	46.3	49.0	
	Dry Density, pcf	71.2	73.1	71.7	
	Saturation (Wet Method), %	92.6	95.8	98.1	
	Void Ratio	1.37	1.31	1.35	
Before Shear	Moisture Content, %	48.3	47.8	47.8	
	Dry Density, pcf	73.2	73.6	73.6	
	Cross-sectional Area (Method A), in²	3.183	3.183	3.094	
	Saturation, %	100.0	100.0	100.0	
	Void Ratio	1.30	1.29	1.29	
	Back Pressure, psf	2.146e+004	2.027e+004	2.285e+004	
Vertical Effective Consolidation Stress, psf		498.4	1001.	1497.	
Horizontal Effective Consolidation Stress, psf		499.7	999.6	1503.	
Vertical Strain after Consolidation, %		0.1636	0.0000	0.5024	
Volumetric Strain after Consolidation, %		-0.1054	0.7238	1.148	
Time to 50% Consolidation, min		0.6400	0.0000	6.760	
Shear Strength, psf		515.6	907.7	965.9	
Strain at Failure, %		2.38	1.68	1.35	
Strain Rate, %/min		0.01600	0.01600	0.01600	
Deviator Stress at Failure, psf		1031.	1815.	1932.	
Effective Minor Principal Stress at Failure, psf		413.5	282.9	481.7	
Effective Major Principal Stress at Failure, psf		1445.	2098.	2413.	
B-Value		0.96	0.95	0.95	

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Remarks:

System O

ATTACHMENT 4 - LIMITATIONS

REPORT LIMITATIONS

Explorations

1. The analysis and data submitted in this geotechnical data report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the interpretations made in this report or for design.

2. The generalized soil profiles described in the text are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil bedrock transitions are probably more erratic. For specific information, refer to the exploration logs.

3. Water level readings have been made in the explorations at times and under conditions stated on the logs. These data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature and other factors occurring since the time measurements were made.

Review

4. In the event that any changes in the nature, design or location of the proposed structure are planned, the conclusions and interpretations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by Geo**Design**, Inc.

Uses of Report

5. This report has been prepared for the exclusive use of **VTrans** and their design teams for specific application to the proposed **Hinesburg HES021-1(19)** project in **Hinesburg, Vermont** in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

6. This geotechnical data report has been prepared for this project by Geo**Design**, Inc. This report is for informational and design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to informational considerations only.