

GZA GeoEnvironmental, Inc. **Guilford Bridge Widening** Boring No.: _____
 Page: _____ of _____
 File No.: 22718
 Check: _____

Contractor: New Hampshire Boring
 Foreman: _____
 Logged by: _____
 Date Start/Finish: _____
 Boring Location: See Exploration Location Plan
 GS Elev.: _____ Datum: NGVD

Auger/Casing Sampler
 Type: _____
 I.D. (mm): _____
 Hammer Wt.: _____
 Hammer Fall: _____
 Rig Type: _____

Depth (feet)	Casing blows	Sample Information					Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Equipment Installed
		No.	Rec. (in.)	Depth (ft.)	Blows (/6 in.)					
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.

1. Numbers in this column are the depth in feet below ground surface.
 2. Numbers in this column report the number of blows required to drive the casing 1 foot with a 300 lb hammer, free-falling 24 inches.
 3. The sample number and type are designated in this column.
 e.g., S-1
 Sample number
 Sample type (S = Split Spoon Sample)
 4. The values shown are the length of the soil sample recovered, in inches.
 5. The numbers in this column designate the depth, in feet, from the ground surface of the sample identified in column 3.
 6. Numbers in this column report the number of blows required to drive a split spoon sampler (2-inch outside diameter) 6 inches with a 140 lb hammer free-falling 30 inches.
 7. Numbers in this column report data from field screening soil samples using an organic vapor meter (OVM).
 8. Description of soil samples include:
 - the relative density or consistency;
 - color;
 - a listing of the Major or Minor soil components based on particle size distribution and plasticity;
 - other pertinent characteristics; and
 - AASHTO classifications based on visual perception.
 For example:
 - Medium dense, brown, fine to medium SAND, trace Silt, stratified.
 A solid line indicates a boundary between geologic deposits.
 A dashed line indicates a gradation change within a geologic deposit.
 9. Geologic deposit (e.g., Lacustrine).
 10. Pertinent observations made while advancing the test boring are identified in this column opposite the depth the observation was made. The observation is explained at the bottom of the page under "Notes" next to the appropriate number.
 11. Equipment installed within the borehole and graphically presented in this column. If no equipment was installed, this column is blank.

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DESCRIPTION OF SOIL SAMPLES

1. Density or Consistency:
 The density or consistency listed is determined from the Standard Penetration Test N-Value according to the following table:

Density of Granular Soils	SPT N-Value	Consistency of Cohesive Soils
Very Loose	0-4	Very Soft
Loose	4-10	Soft
Medium Dense	10-30	Medium
Dense	30-50	Stiff
Very Dense	50+	Very Stiff
		Hard

WOR - indicates weight of rods
 WOH - indicates weight of hammer

2. Color: Visual perception.

3. Soil Components:
 3.1 **Description:** The components of a soil sample are described by visually estimating the percentage of each component by weight of the total sample.
 a. **Major Component:** The major soil component (>50 Percent) is written with upper case letters for granular soil (e.g., SAND, GRAVEL) and a combination of the upper and lower case letters for fine grained soil (e.g., Silty CLAY, Clayey SILT).
 b. **Minor Component:** The minor soil components (<50 Percent) are written with the first letter of each soil type in upper case, and the remaining letters in the lower case (e.g., Gravel, Silt). The minor components are identified and prefaced in the description based on the following percentages:

Description	Percentage
and	35-50
some	20-35
little	10-20
trace	0-10

c. **Note:** The actual percentage of gravel soils may differ from that measured when sampling with a standard split spoon sampler and/or auger type sampler because of the relatively small sampler diameter. Also, it is not possible to identify the presence of boulders and cobbles using a standard split spoon sampler and/or auger type sampler.

d. **Fill:** Fill is a material placed by other than natural processes. It is described by its major component(s) and additional significant components are listed.

3.2 Definitions:
 a. **Granular Soil:** A granular soil sample is defined by the following particle sizes as referenced to a standard sieve.

Material	Standard Upper	Sieve Limit Lower
GRAVEL	-coarse 3 inch	3/4 inch
	-fine 3/4 inch	No. 4
SAND	-coarse No. 4	No. 10
	-medium No. 10	No. 40
	-fine No. 40	No. 200

The Gravel/Sand portions of a granular soil are further divided based on the following visually estimated proportions:

Gravel/Sand	Proportion
fine to coarse	> 10% all fractions
coarse	< 10% fine and medium
medium to coarse	< 10% fine
medium	< 10% fine and coarse
fine to medium	< 10% coarse
fine	< 10% medium to coarse

b. **Cohesive:** A cohesive soil is classified by visually estimating the degree of plasticity based upon the minimum diameter thread which a sample can be rolled with the finger in the palm of the hand.

Material	Degree of Plasticity	Smallest Diameter Thread (inches)
SILT	Non-plastic	None
Clayey SILT	Slight	1/4
SILT and CLAY	Low	1/8
CLAY and SILT	Medium	1/16
Silty CLAY	High	1/32
CLAY	Very High	1/64

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c. **Organic Soils:** An organic soil sample is classified by observation of the sample structure.

Material	Description
Topsoil	• Typically well-graded fine granular soil with organic matter.
Fibrous Peat	• Can see vegetative structure
Fine Grained Peat	• Spongy, water squeezes out
Organic Silt	• Little vegetative matter • Spongy • H ₂ S odor • Shell fragments • Often contains Sand

4. Other Pertinent Characteristics:
Soil Structure: Produced by deposition of sediments.

Stratified	- Random soil deposits of varying components or color
Varved	- Alternating soil deposits of varying thickness (i.e., clays or silts)
Stratum	- Soil deposit > 12 inches thick
Layer	- Soil deposit 3 inches to 12 inches thick
Seam	- Soil deposit 1/8 inch to 3 inches thick
Parting/Lens	- Soil deposit < 1/8 inch thick

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**STATE OF VERMONT
 AGENCY OF TRANSPORTATION**

Town Of	GUILFORD	Bridge No.	3 N
Highway No.	1-91	Log Sta.	
		Surv. Sta.	
1-91NB OVER BROAD BROOK & BROAD BROOK ROAD			
BORING INFORMATION SHEET (2 OF 2)			
Designed By	GZA	Drawn By	GZA
Checked By	Date	Bridge Design Supervisor	Date
GZA	01/03	J.P. HALSTEAD	01/03
PROJECT	GUILFORD	PROJECT NO.	IM 091-I(33)
		TVGA CAD Drawing No.	B-INFO2.dgn
		Date	04/27/08
Bridge Sheet No.	BRI04	Sheet	30 of 14