

SOIL CLASSIFICATION

AASHTO

A1 Clayey Soil - Low Compressibility
 A3 Gravel and Sand
 A2 Clayey Soil - Highly Compressible
 A4 Fine Sand
 A5 Silty or Clayey Gravel and Sand
 A6 Silty Soil - Low Compressibility
 A7 Silty Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.O.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.
 BOULDER - A rock fragment with an average dimension > 12 inches.
 COBBLE - Rock fragments with an average dimension between 3 and 12 inches.
 GRAVEL - Rounded particles of rock < 3" and > 0.075" (#10 sieve).
 SAND - Particles of rock < 0.075" (#10 sieve) and > 0.0029" (#200 sieve).
 SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.
 CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.
 VARIED - Alternate layers of silt and clay.
 HARDPAN - Extremely dense soil, cemented layer, not softened when wet.
 MUCK - Soft organic soil containing > 10% organic material.
 MOISTURE CONTENT - Weight of water divided by dry weight of soil.
 FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
 STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.
 DIP - Inclination of bed with a horizontal plane.

LOG KEY

GZA
 Geo Environmental, Inc.
 Engineers and Scientists

BURMISTER SOIL CLASSIFICATION (INORGANIC)

COMPONENT	NAME	PROPORTIONAL TERM	PERCENT BY WEIGHT	IDENTIFICATION OF FINES		
				Material	PI	Atterberg Thread Dia.
MAJOR	GRAVEL, SAND, FINES*		>50	SILT	0	Cannot Roll
Minor	Gravel, Sand, Fines*	and some little trace	35 - 50 20-35 10-20 0-10	Clayey SILT	1-5	1/4"
				SILT & CLAY	5-10	1/8"
				CLAY & SILT	10-20	1/16"
				Silty CLAY	20-40	1/32"
				CLAY	>40	1/64"

*See identification of fines table.

GRADATION DESIGNATION	PROPORTION OF COMPONENT	PLASTIC SOILS		GRAVEL & SAND	
		Consistency	Blows/Ft. SPT N-Value	Density	Blows/Ft. SPT N-Value
Fine to coarse	All fractions > 10%	Very Soft	< 2	Very Loose	< 4
Medium to coarse	<10% fine	Soft	2 - 4	Loose	4 - 10
Fine to medium	<10% coarse	Medium Stiff	4 - 8	Medium Dense	10 - 30
Coarse	<10% fine and medium	Stiff	8 - 15	Dense	30 - 50
Medium	<10% coarse and fine	Very Stiff	15 - 30	Very Dense	> 50
Fine	<10% coarse and medium	Hard	>30		

BURMISTER SOIL CLASSIFICATION (ORGANIC)

Fibrous PEAT (Pt) - Lightweight, spongy, mostly visible organic matter, water squeezes readily from sample. Typically near top of deposit.
 Fine Grained PEAT (Pt) - Lightweight, spongy, little visible organic matter, water squeezes readily from sample. Typically below fibrous peat.
 Organic Silt (OL) - Typically gray to dark gray, often has strong H2S odor. Typically contains shells or shell fragments. Lightweight. Usually found near coastal regions. May contain wide range of sand fractions.
 Organic Clay (OH) - Typically gray to dark gray, high plasticity. Usually found near coastal regions. May contain wide range of sand fractions. Need organic content test for final identification.

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (ASTM D 2487)

MAJOR DIVISIONS	Group Symbols		
Coarse Grained Soils More than 50% of material larger than No. 200 sieve	Gravel More than 50% larger than No. 4 sieve	Clean Gravels (Little or no fines)	GW GP
		Gravels with Fines (Appreciable amount of fines)	GM GC
	Sand More than 50% smaller than No. 4 sieve	Clean Sands (Little or no fines)	SW SP
		Sands with Fines (Appreciable amount of fines)	SM SC
		Silts and Clays Liquid Limit <50	ML CL
		Silts and Clays Liquid Limit >50	OL MH CH OH
		Highly Organic Soils	PT

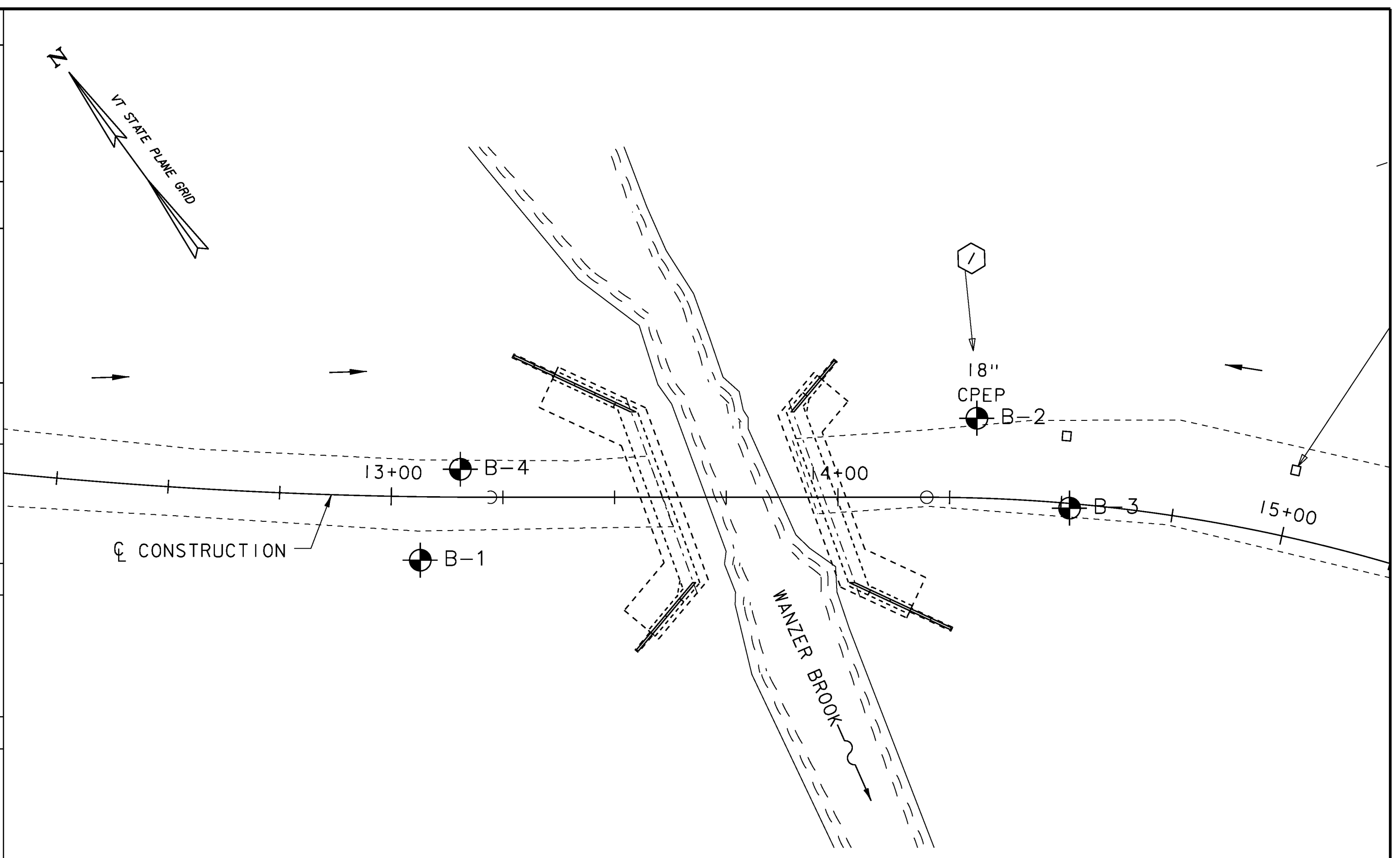
ABBREVIATIONS

MR = Mud Rotary
 HSA = Hollow Stem Auger
 SSA = Solid Stem Auger
 SS = Split Spoon Sampler
 U = Undisturbed Sample (Shelby Tube)
 MC = Modified California Sampler
 V = Vibracore
 M = Macrocore
 R = Refusal
 USCS = Unified Soil Classification System (ASTM D2487)
 NYCBC = New York City Building Code
 WOR = Weight of Rods
 WOH = Weight of Hammer
 SPT = Standard Penetration Test (ASTM D1586)
 N-Value = Cumulative number of uncorrected blows for the middle two 6-inch intervals (blows/foot).

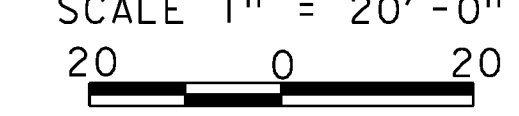
Tv = Field Vane Shear Test (Torvane)
 PP = Pocket Penetrometer
 PI = Plasticity Index
 MC = Moisture Content
 CO = Consolidation
 UC = Unconfined Compression Test
 SI = Sieve Analysis
 DS = Direct Shear
 PID = Photoionization Detector
 ppm = Parts Per Million
 REC = Recovery
 RQD = Rock Quality Designation
 = Measured Water Level

COMMONLY USED SYMBOLS

▽ Water Elevation	M Double Tube Core Barrel Used	NR No Recovery
⊕ Standard Penetration Boring	LL Liquid Limit	Rec. Recovery
⊕ Auger Boring	PL Plastic Limit	%Rec. Percent Recovery
⊙ Rod Sounding	PI Plasticity Index	RQD Rock Quality Designation
S Sample	NP Non Plastic	CBR California Bearing Ratio
N Standard Penetration Test	w Moisture Content (Dry Wgt. Basis)	< Less Than
D Blow Count Per Foot For:	D Dry	> Greater Than
2" O.D. Sampler	M Moist	R Refusal (N > 100)
1 3/8" I.D. Sampler	MTW Moist To Wet	
Hammer Weight Of 140 Lbs.	W Wet	
Hammer Fall Of 30"	Sat Saturated	
	Bo Boulder	blk Black
VS Field Vane Shear Test	Gr Gravel	bl Blue
US Undisturbed Soil Sample	Sa Sand	brn Brown
B Blast	SI Silt	dk Dark
DC Diamond Core	Cl Clay	gry Gray
MD Mud Drill	HP Hardpan	gn Green
WA Wash Ahead	Le Ledge	lt Light
HSA Hollow Stem Auger	NLTD No Ledge To Depth	or Orange
AX Core Size 1 1/8"	CNPF Can Not Penetrate Further	
BX Core Size 1 5/8"	TLOB To Ledge Or Boulder	
NX Core Size 2 1/8"		



BORING LAYOUT
 SCALE 1" = 20'-0"

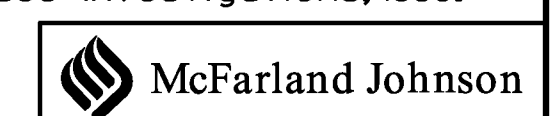


BORING CHART

BORING	STATION	OFFSET (FT)	NORTHING	EASTING	GROUND ELEV.	TLOB ELEV.
B-1	13+06.7	14.2 RT	849893.57	1534488.55	480.0	434.0
B-2	14+30.6	17.9 LT	849845.62	1534607.88	478.0	436.0
B-3	14+52.0	1.1 RT	849817.12	1534612.74	479.0	441.0
B-4	13+15.4	6.3 LT	849904.71	1534507.83	479.0	441.5

GENERAL NOTES

- The subsurface explorations shown herein were made March 19 thru March 21, 2012 by GZA GeoEnvironmental, Inc. estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Owner. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Soiland rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for design and
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.



PROJECT NAME: FAIRFIELD
 PROJECT NUMBER: BRO 1448(38)
 FILE NAME: zlj072bor_01.dgn
 DESIGNED BY: GZA
 BORING INFORMATION SHEET

PLOT DATE: 01-NOV-2013
 DRAWN BY: W. GAYNOR
 CHECKED BY: T. KENDRICK
 SHEET 20 OF 41