

SOIL CLASSIFICATION

AASHTO

- A1 Gravel and Sand
- A3 Fine Sand
- A2 Silty or Clayey Gravel and Sand
- A4 Silty Soil - Low Compressibility
- A5 Silty Soil - Highly Compressible
- A6 Clayey Soil - Low Compressibility
- A7 Clayey 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 kPa	CONSISTENCY
<12	Very Soft
12-24	Soft
24-48	Med. Stiff
48-96	Stiff
96-192	Very Stiff
>192	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

COMMONLY USED SYMBOLS

- ▼ Water Elevation
 - ⊕ Standard Penetration Boring
 - ⊙ Auger Boring
 - ⊖ Rod Sounding
 - S Sample
 - N Standard Penetration Test
 - Blow Count Per 300 mm For:
 - 50.8 mm O.D. Sampler
 - 35.0 mm I.D. Sampler
 - Hammer Weight Of 63.5 kg.
 - Hammer Fall Of 762 mm
 - VS Field Vane Shear Test
 - US Undisturbed Soil Sample
 - B Blast
 - DC Diamond Core
 - MD Mud Drill
 - WA Wash Ahead
 - HSA Hollow Stem Auger
 - AX Core Size 30.1mm
 - BX Core Size 42.0 mm
 - NX Core Size 54.7 mm
 - M Double Tube Core Barrel Used
 - LL Liquid Limit
 - PL Plastic Limit
 - PI Plasticity Index
 - NP Non Plastic
 - w Moisture Content (Dry Wgt. Basis)
 - D Dry
 - M Moist
 - MTW Moist To Wet
 - W Wet
 - Sat Saturated
 - Bo Boulder
 - Gr Gravel
 - Sa Sand
 - SI Silt
 - Cl Clay
 - HP Hardpan
 - Le Ledge
 - NLTD No Ledge To Depth
 - CNPF Can Not Penetrate Further
 - TLOB To Ledge Or Boulder
 - NR No Recovery
 - Rec. Recovery
 - 1/2Rec. Percent Recovery
 - RQD Rock Quality Designation
 - CBR California Bearing Ratio
 - < Less Than
 - > Greater Than
 - R Refusal (N > 100)
 - OW Indicates a temporary observation well installed
- COLOR**
- | | |
|-----------|-------------------|
| b/k Black | pnk Pink |
| bl Blue | pu Purple |
| brn Brown | rd Red |
| dk Dark | tn Tan |
| gry Gray | wh White |
| gn Green | yel Yellow |
| lt Light | mltc Multicolored |
| or Orange | |

DEFINITIONS (AASHTO)

- BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.
- BOULDER** - A rock fragment with an average dimension > 304.8 mm.
- COBBLE** - Rock fragments with an average dimension between 76.2 and 304.8 mm.
- GRAVEL** - Rounded particles of rock < 76.2 mm and > 2 mm (#10 sieve).
- SAND** - Particles of rock < 2 mm (#10 sieve) and > 75 μm (#200 sieve).
- SILT** - Soil < 75 μm (#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.
- VARVED** - 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.

GENERAL NOTES

- The test borings shown herein were drilled by the Agency between the period from 02/09/12 through 03/22/12.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency 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 Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. 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.
- 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.

BORING CHART

HOLE NO.	STATION	OFFSET (ft)	GROUND ELEV.
B-103	VT ROUTE 2 17+44	30.00 LT	304.0
B-104	VT ROUTE 2 17+55	40.00 RT	302.6
B-105	VT ROUTE 2 18+16	23.00 LT	304.2
B-106	VT ROUTE 2 18+48	40.00 RT	303.6
B-107	PNR 72+85	56.00 LT	310.3
B-108	PNR 72+33	40.00 RT	305.2

PROJECT NAME: RICHMOND
 PROJECT NUMBER: STP 0284 (17)/ CMG PARK (31)
 FILE NAME: z97ci86bor.dgn PLOT DATE: 4/29/2013
 PROJECT LEADER: ERIK ATKINS DRAWN BY: N. BOSAN
 DESIGNED BY: T. BIGELOW CHECKED BY: E. ATKINS
 BORING LAYOUT SHEET 2 SHEET 29 OF 133

