

| VT Trans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Cavendish ER BR 0146(13) | | Boring No.: B-7 | | | | |
|--|-------|---|----------------|-------------------|---------------------|--------------------------|--------------------|-----------------|--------|---------|------|------|
| Cavendish, Vermont | | | | Page No.: 1 of 2 | | Pin No.: 11c318 | | Checked By: DTH | | | | |
| Boring Crew: T. Farrell (SJB), R. Marshall (GeoDesign) | | Type: FJ | | Sampler: SS | | Groundwater Observations | | Date | | | | |
| Date Started: 10/29/12 Date Finished: 11/01/12 | | I.D.: 3 in | | 1.38 in | | Date | | Depth (ft) | | | | |
| VTSPG NAD83: N 325276.70 ft E 1615418.10 ft | | Hammer Wt: N.A. | | 140 lb. | | 10/30/12 | | 13.0 | | | | |
| Station: Not Available Offset: Not Available | | Hammer Fall: N.A. | | 30 in. | | 10/31/12 | | 15.8 | | | | |
| Ground Elevation: 771 ft | | Hammer/Rod Type: Auto/AWJ | | Rig: CME 550X ATV | | C _g = 1.5 | | | | | | |
| Depth (ft) | Strat | CLASSIFICATION OF MATERIALS (Description) | Run (pdp dep.) | Core Rec. (ROD %) | Drill Rate (min/ft) | Blow (N Values) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
| 5 | X X X | Inferred Fill | | | | | | | | | | |
| 10 | X X X | S1 (9.5'-10.33'): Refusal, gray brown fine to coarse GRAVEL and fine to coarse SAND, trace Silt. Rec. = 0.58 ft | | | | 45-50/4" (R) | | | | | | |
| 15 | X X X | S2 (11.5'-12.5'): Very dense, gray brown fine to medium SAND, some fine to coarse Gravel, trace (+) Silt. Rec. = 0.75 ft | | | | 31-25-38-47 (63) | | | | | | |
| 20 | X X X | S3 (14.5'-16.5'): Dense, gray brown fine to coarse GRAVEL, some fine to coarse Sand, trace Silt. Rec. = 0.5 ft | | | | 25-22-24-36 (46) | | | | | | |
| 25 | X X X | S4 (16.5'-18.5'): Dense, gray brown fine to medium SAND and fine to coarse GRAVEL, trace Silt. Rec. = 1.25 ft | | | | 22-26 (42) | | | | | | |
| 30 | X X X | S5 (19.5'-19.58'): Refusal, no recovery. Rec. = 0.0 ft | | | | 50/1" (R) | | | | | | |
| 35 | X X X | S6 (24.5'-26.5'): Dense, gray brown fine to coarse SAND and fine to coarse GRAVEL, little Silt. Rec. = 0.92 ft (AASHTO M145 Classification: A-1-b.) | | | | 68-22-18-17 (40) | 11.0 | 50.7 | 33.3 | 16.1 | NP | NP |
| 40 | X X X | S7 (29.5' - 31.5'): Very dense, gray brown fine to coarse SAND and fine to coarse GRAVEL, little Silt. Rec. = 0.67 ft | | | | 21-20-36-50 (56) | | | | | | |
| 45 | X X X | S8 (34.5' - 36.5'): Dense, gray brown fine to coarse SAND, some fine to coarse Gravel, some Silt. Rec. = 0.75 ft (AASHTO M145 Classification: A-2-4.) | | | | 52-19-28-22 (47) | 12.4 | 37.9 | 41.5 | 20.6 | NP | NP |
| 50 | X X X | S9 (39.5' - 40.42'): Refusal, gray brown fine to medium SAND, some (+) fine to coarse Gravel, trace Silt. Rec. = 0.5 ft | | | | 34-50/5" (R) | | | | | | |
| 55 | X X X | C1 (43.9'-44.4'): Inferred cobble (no recovery). | C1 | 0 | | | | | | | | |
| 60 | X X X | S10 (44.5'-44.58'): Refusal, coarse GRAVEL (quartzite fragments). Rec. = 0.08 ft | C2 | 55 | 9 | 50/1" (R) | | | | | | |
| 65 | X X X | C2 (45.2'-50.2'): Boulder and Cobble fragments with subrounded Gravel; largest fragment 14". | | | | | | | | | | |

BOTTOM OF
ABUT. NO. 2
EL. 761.25

GEODESIGN BORING LOG - NO. STA. - OFFSET: 889-34.4 CAVENDISH ER BRF 0146(13) VERMONT AOT/BOI 5/20/13

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE 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.

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| Cavendish, Vermont | | | | Page No.: 2 of 2 | | Pin No.: 11c318 | | Checked By: DTH | | | | |
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| Date Started: 10/29/12 Date Finished: 11/01/12 | | I.D.: 3 in | | 1.38 in | | Date | | Depth (ft) | | | | |
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| Station: Not Available Offset: Not Available | | Hammer Fall: N.A. | | 30 in. | | 10/31/12 | | 15.8 | | | | |
| Ground Elevation: 771 ft | | Hammer/Rod Type: Auto/AWJ | | Rig: CME 550X ATV | | C _g = 1.5 | | | | | | |
| Depth (ft) | Strat | CLASSIFICATION OF MATERIALS (Description) | Run (pdp dep.) | Core Rec. (ROD %) | Drill Rate (min/ft) | Blow (N Values) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
| 55 | X X X | C3 (50.2'-54.5'): Cobble fragments with Gravel; largest fragment 4". | C3 | 59 | | | | | | | | |
| 60 | X X X | C4 (54.5'-60.6'): Cobble fragments with coarse Sand and fine to coarse Gravel; largest fragment 3". | C4 | 16 | 3 | | | | | | | |
| 65 | X X X | Hole stopped @ 60.6 ft Borehole terminated after breaking spin casing shoe. | | | | | | | | | | |
| 70 | X X X | Remarks: 1) Ground surface elevation was estimated from topographic plan and exploration location was taped from existing features in the field by GeoDesign. 2) Hollow stem auger refusal at 7.9 feet; boring offset approximately 2.5 feet SW and advanced using 4-inch ID Flush Joint casing with drive and wash method. 3) Roller bit advanced through inferred cobbles and boulders below 19.6 feet, to 34.5 feet. 4) At 34.5 feet, 4-inch casing ended, and 3-inch Flush Joint casing was telescoped inside and advanced using wash and drive method to 43.6 feet. 5) Attempted to core despite difficulty lowering NX wireline coring barrel to 43.6 feet due to bent or crooked 3-inch casing; grinding noise indicated problems with drive shoe, and 3-inch casing was removed; drive shoe partially crushed. 6) Switched from drive shoe to spin shoe on 3-inch casing and advanced into rock from 43.6 to 43.9 feet and cleaned out. 7) Rock core attempted with white cuttings from 43.9 to 44.4 feet through inferred cobble (no recovery). 8) Flush joint casing spun to 49.3 feet to maximum reach of casing. Then roller bit advanced through gravelly sands to pilot ahead of casing to 51.4 feet before switching over to NQ wireline. 9) Borehole collapsed to 56 feet after removing NQ casing in order to remove a 5 ft and add a 10ft section. 10) Removed 3-inch casing in order to add four, 10-ft sections of HQ casing to bottom of casing string in order to re-case borehole to the bottom of borehole; found spin shoe to be damaged / partially broken with carbide fragments in the borehole. Borehole subsequently abandoned at 60.6 feet. 11) Hammer efficiency is assumed. 12) Soil descriptions are per the Burmister Classification System based on visual observations. Lab testing gradations reported are per AASHTO M145. | | | | | | | | | | |

ESTIMATED BOTTOM
OF PILE AT
ABUT. NO. 2
EL. 681.25

GEODESIGN BORING LOG - NO. STA. - OFFSET: 889-34.4 CAVENDISH ER BRF 0146(13) VERMONT AOT/BOI 5/20/13

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PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

TYL INTERNATIONAL

FILE NAME: zllc318bdrbor8.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 8

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 27 OF 49