STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: AP-1
Page No.: 1 of 1
Pin No.: 12e134
Checked By: JFW

Boring Crew: J. Leonhardt (TransTech)
Date Started: 3/01/13 Date Finished: 3/01/13
VTSPG NAD83: N 562170.00 ft E 1613060.00 ft
Station: 14+48 Offset: 7' R
Ground Elevation: 1278 ft

| | Casing | Sampler |
|---|---|---|
| Type: | AUGER | N.A. |
| I.D.: | 3.25 in | |
| Hammer Wt: | N.A. | N.A. |
| Hammer Fall: | N.A. | N.A. |
| Hammer/Rod Type: | | NA |
| Rig: | CME 45C SKID | CE = NA |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| 5 | | Auger probe only. No soil data obtained. | | | | | |
| | | Hole stopped @ 5.5 ft<br>HSA refusal on inferred bedrock or possible boulder. | | | | | |

Remarks:
1) Ground surface elevation, northing, easting, and stationing are estimated from concept plans provided by TY Lin dated December 17, 2012.
2) Hollow stem auger refusal at 5.5' deep on inferred bedrock or possible boulder.

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.

GEODESIGN BORING LOG 888-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT AOT.GDT 5/7/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: AP-2
Page No.: 1 of 1
Pin No.: 12e134
Checked By: JFW

Boring Crew: J. Leonhardt (TransTech)
Date Started: 3/01/13 Date Finished: 3/01/13
VTSPG NAD83: N 562183.00 ft E 1613066.00 ft
Station: 14+48 Offset: 7' L
Ground Elevation: 1278 ft

| | Casing | Sampler |
|---|---|---|
| Type: | AUGER | N.A. |
| I.D.: | 3.25 in | |
| Hammer Wt: | N.A. | N.A. |
| Hammer Fall: | N.A. | N.A. |
| Hammer/Rod Type: | | NA |
| Rig: | CME 45C SKID | CE = NA |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| 5 | | Auger probe only. No soil data obtained. | | | | | |
| 10 | | Hole stopped @ 8.0 ft<br>HSA refusal on inferred bedrock or possible boulder. | | | | | |
| 15 | | Remarks:<br>1) Ground surface elevation, northing, easting, and stationing are estimated from concept plans provided by TY Lin dated December 17, 2012.<br>2) Hollow stem auger refusal at 8' deep on inferred bedrock or possible boulder. | | | | | |
| 20 | | | | | | | |
| 25 | | | | | | | |
| 30 | | | | | | | |
| 35 | | | | | | | |
| 40 | | | | | | | |
| 45 | | | | | | | |

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.

GEODESIGN BORING LOG 888-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT AOT.GDT 5/7/13

STATE OF VERMONT
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MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-2
Page No.: 1 of 1
Pin No.: 12e134
Checked By: JAG

Boring Crew: H. Garrow, J.Wimett (GeoDesign)
Date Started: 7/30/12 Date Finished: 7/30/12
VTSPG NAD83: N 562184.00 ft E 1613057.00 ft
Station: 14+36 Offset: 5' L
Ground Elevation: 1278 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | | Auto/AWJ |
| Rig: | CME 45C SKID | CE = 1.33 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 07/30/12 | 2.0 | Wet sample. |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| | | S1 (0'-2'): Very loose, dark brown fine to coarse SAND, some fine Gravel, little Silt, trace Cinders, moist. (FILL) Rec. = 1.5 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | 3-2-2-4 (4) | 8.2 | 44.9 | 42.2 | 12.9 |
| | | S2 (2'-4'): Loose, dark brown SILT and fine to coarse SAND, little coarse Gravel (stuck in spoon tip), wet. (FILL) Rec. = 0.9 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 2-3-5-25 (See Note 3) | 22.1 | 23.6 | 46.1 | 30.3 |
| 5 | | S3 (4'-6'): Very loose, piece of coarse GRAVEL stuck in spoon tip. (FILL) Rec. = 0.1 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 5-1-1-1 (See Note 3) | | | | |
| | | S4 (6'-7.6'): Refusal, gray fine to coarse GRAVEL (fractured weathered rock), little Silt, trace fine Sand, wet. (SANDY SILT) (AASHTO M145 Classification: Visual Description (Burmister).) Rec. = 0.3 ft | 2-8-25/0.2 (100+) | | | | |
| 10 | | Top of Bedrock @ 7.8 ft | | | | | |
| | | Inferred Weathered Rock based on casing resistance and rig chatter. (AASHTO M145 Classification: Field Note.) | | | | | |
| | | Hole stopped @ 7.8 ft<br>Roller bit refusal on inferred competent bedrock. | | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |
| 25 | | | | | | | |
| 30 | | | | | | | |
| 35 | | | | | | | |
| 40 | | | | | | | |
| 45 | | | | | | | |

Remarks:
1) Borehole located 5' north of B-1.
2) No sample from S3 at 4' deep was retained. One piece of coarse gravel in the spoon tip was the entire recovery.
3) SPT N-values for samples S2 and S3 are invalid due to driller taking samples without clearing borehole between spoons. Instruct driller to clean borehole between samples going forward.
4) Advanced casing through wood from 5' to 6' deep (inferred timber cribbing). Wood was observed in roller bit spoils but was not picked up in split spoon sample S3.
5) Advance roller bit to 6.5' to clear hole of woody debris prior to sampling S4.
6) Split spoon refusal at 7.7' deep after 15 blows with no movement.
7) Roller bit refusal at 7.8' deep on inferred bedrock.
8) Lab testing gradations reported are per AASHTO M145.
9) Northing, Easting, Ground Surface Elevation, and Stationing shown are approximations based on taped measurements made from existing features in the field by GeoDesign personnel on July 30, 2012 and MicroStation files downloaded from TY Lin's FTP site by GeoDesign personnel on August 22, 2012. Location and elevation approximations for the borehole should be considered accurate only to the degree implied by the method of borehole location used.

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.

STATE OF VERMONT
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MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF F1BR(2)

Boring No.: B-3
Page No.: 1 of 3
Pin No.: 12e134
Checked By: JAG

Boring Crew: H. Garrow, J.Wimett/J. Gilman (GeoDesign)
Date Started: 7/31/12 Date Finished: 8/01/12
VTSPG NAD83: N 562290.00 ft E 1612740.00 ft
Station: 11+07 Offset: 7' R
Ground Elevation: 1277 ft

| Casing | | Sampler | |
|---|---|---|---|
| Type: | FJ | Type: | SS |
| I.D.: | 4 in | I.D.: | 1.38 in |
| Hammer Wt: | N.A. | Hammer Wt: | 140 lb. |
| Hammer Fall: | N.A. | Hammer Fall: | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | | |
| Rig: | CME 45C SKID | CE = 1.33 | |

| Groundwater Observations | | |
|---|---|---|
| Date | Depth (ft) | Notes |
| 07/31/12 | 2.0 | Wet sample. |
| 08/01/12 | 1.5 | In casing (overnight) |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (No dep.) | Core Rec. % (RQD %) | Drill Rate minutes/ft | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Asphalt (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | |
| | | S1 (1'-3'): Loose, dark brown fine to coarse SAND, some (+) SILT, little (-) fine to coarse Gravel, moist to wet. (FILL) (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) Rec. = 1.1 ft | | | | 3-4-4-4 (8) | 19.6 | 37.8 | 40.9 | 21.3 |
| | | | | | | 7-4-3-2 (7) | | | | |
| 5 | | S2 (3'-5'): Loose, no recovery. (FILL) Rec. = 0.0 ft (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 2-1-5-3 (6) | 22.6 | 31.7 | 39.9 | 28.4 |
| | | S3 (5'-7'): Loose, dark brown SILT and fine to coarse SAND, some fine to coarse Gravel, trace Organic Fibers, wet. (LAKE SEDIMENT - POSSIBLE FILL) Rec. = 0.4 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 1-1-8-10 (9) | 26.7 | 45.6 | 36.0 | 18.4 |
| 10 | | | | | | 2-2-8-5 (10) | 17.3 | 48.2 | 34.1 | 17.7 |
| | | S4 (7'-9'): Loose, dark brown fine to coarse SAND, some fine Gravel, little Silt, trace (+) Organic Fibers, wet. (LAKE SEDIMENT - POSSIBLE FILL) Rec. = 0.7 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) Rec. = 0.7 ft | | | | 5-6-6-5 (12) | 14.6 | 42.3 | 44.2 | 13.5 |
| 15 | | | | | | 6-8-6-7 (12) | 15.4 | 51.8 | 33.7 | 14.5 |
| | | S5 (9'-11'): Medium dense, dark brown fine to coarse SAND, little fine to coarse Gravel, little Silt, wet. (SILTY SAND & GRAVEL) (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 3-6-6-9 (12) | 10.8 | 57.6 | 32.0 | 10.4 |
| 20 | | | | | | | | | | |
| | | S6 (11'-13'): Medium dense, dark brown fine to coarse SAND, little Silt, little fine Gravel, wet. (SILTY SAND & GRAVEL) Rec. = 1.1 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 16-10-10-14 (20) | 10.8 | 41.9 | 32.0 | 26.1 |
| 25 | | S7 (13'-15'): Medium dense, dark brown fine to coarse SAND, some fine Gravel, little Silt, wet. (SILTY SAND & GRAVEL) Rec. = 0.9 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 15/0.4 (100+) | 5.4 | 70.8 | 16.0 | 13.2 |
| | | S8 (15'-17'): Medium dense, dark brown fine to coarse SAND, some fine Gravel, trace Silt, wet. (SILTY SAND ° GRAVEL) Rec. = 0.6 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 50/0.4 (100+) | 7.7 | 65.9 | 15.3 | 18.8 |
| 30 | | S9 (20'-22'): Medium dense, gray fine to medium SAND, some Silt, some fine to coarse Gravel, wet. (GLACIAL TILL WITH FREQUENT BOULDERS/COBBLES) Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | |
| 35 | | S10 (25'-25.4'): Refusal, gray fine to coarse GRAVEL (fractured cobble pieces), little fine to medium Sand, little Silt, wet. (GLACIAL TILL WITH FREQUENT BOULDERS/COBBLES) Rec. = 0.3 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | C1 | 36 (10) | 2 2 2 2 2 2 | 23-50/0.2 (100+) | 7.0 | 56.4 | 23.1 | 20.5 |
| 40 | | S11 (30'-30.4'): Refusal, gray fine to coarse GRAVEL, little fine to coarse Sand, little (-) Silt, wet. (Pen = 0.4, Rec. = 0.4) C1) Very poor quality, fresh, moderately hard, gray LIMESTONE (Boulder). (GLACIAL TILL WITH FREQUENT BOULDERS/COBBLES) Rec. = 0.4 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 67 (100+) | 8.6 | 44.7 | 22.9 | 32.4 |
| 45 | | S12 (35'-35.7'): Refusal, gray fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet. (GLACIAL TILL WITH FREQUENT BOULDERS/COBBLES) Rec. = 0.7 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual | | | | 48-50 (100+) | 10.7 | 24.3 | 22.6 | 53.1 |

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.

GEODESIGN BORING LOG BRF-045 FLOATING BRIDGE VTRANS (FORMAT.GPJ) VERMONT.GDT 5/7/13


STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Brookfield Floating Bridge
BRF F1BR(2)


Boring No.: B-3
Page No.: 2 of 3
Pin No.: 12e134
Checked By: JAG


Boring Crew: H. Garrow, J.Wimett/J. Gilman (GeoDesign)
Date Started: 7/31/12 Date Finished: 8/01/12
VTSPG NAD83: N 562290.00 ft E 1612740.00 ft
Station: 11+07 Offset: 7' R
Ground Elevation: 1277 ft

Casing: Type: FJ; I.D.: 4 in; Hammer Wt: N.A.; Hammer Fall: N.A.; Hammer/Rod Type: Auto/AWJ; Rig: CME 45C SKID
Sampler: Type: SS; I.D.: 1.38 in; Hammer Wt: 140 lb.; Hammer Fall: 30 in.; CE = 1.33

Groundwater Observations
07/31/12 | 2.0 | Wet sample.
08/01/12 | 1.5 | In casing (overnight)


| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (No dep.) | Core Rec. % (RQD %) | Drill Rate minutes/ft | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Description (Burmister).) | | | | 50 (100+) | 11.6 | 18.4 | 19.5 | 62.1 |
| | | S13 (40'-40.5'): Refusal, gray SILT, some (-) fine to medium Sand, trace fine to coarse Gravel, wet. (GLACIAL TILL WITH FREQUENT BOULDERS/COBBLES) Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | |
| 55 | | S14 (45'-46'): Refusal, gray SILT, some fine to medium Sand, trace (+) fine Gravel, wet. (GLACIAL TILL) Rec. = 1.0 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 18-25-32-28 (57) | 23.2 | | 7.2 | 92.8 |
| 60 | | S15 (50'-50.5'): Refusal, gray SILT, little fine Sand, trace fine Gravel, wet. (GLACIAL TILL) Rec. = 0.5 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 17-23-26-35 (49) | 23.5 | | 27.4 | 72.6 |
| | | S16 (55'-57'): Very dense, gray SILT, little fine Sand, wet. (GLACIAL TILL) Rec. = 1.8 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | |
| 65 | | S17 (60'-62'): Very dense, SILT and fine to medium SAND, wet. (GLACIAL TILL) Rec. = 1.8 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | |
| 70 | | S18 (70'-72'): Dense, SILT and fine to medium SAND, wet. (GLACIAL TILL) Rec. = 1.8 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 3-14-24-32 (38) | 24.0 | | 39.2 | 60.8 |
| 75 | | | | | | | | | | |
| 80 | | S19 (80'-82'): Very dense, SILT and fine to medium SAND, wet. (GLACIAL TILL) Rec. = 1.7 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 20-31-40-44 (71) | 22.8 | | 41.2 | 58.8 |
| 85 | | | | | | | | | | |
| 90 | | S20 (90'-91.4'): Refusal, gray SILT, little fine to coarse Sand, trace fine to coarse Gravel, wet (top 3" washed angular gravel). (GLACIAL TILL) Rec. = 1.4 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 22-50-50/0.4 (100+) | 20.4 | 12.3 | 7.8 | 79.9 |
| 95 | | | | | | | | | | |


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.

GEODESIGN BORING LOG BRF-045 FLOATING BRIDGE VTRANS (FORMAT.GPJ) VERMONT.GDT 5/7/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Brookfield Floating Bridge
BRF F1BR(2)


Boring No.: B-3
Page No.: 3 of 3
Pin No.: 12e134
Checked By: JAG


Boring Crew: H. Garrow, J.Wimett/J. Gilman (GeoDesign)
Date Started: 7/31/12 Date Finished: 8/01/12
VTSPG NAD83: N 562290.00 ft E 1612740.00 ft
Station: 11+07 Offset: 7' R
Ground Elevation: 1277 ft

Casing: Type: FJ; I.D.: 4 in; Hammer Wt: N.A.; Hammer Fall: N.A.; Hammer/Rod Type: Auto/AWJ; Rig: CME 45C SKID
Sampler: Type: SS; I.D.: 1.38 in; Hammer Wt: 140 lb.; Hammer Fall: 30 in.; CE = 1.33

Groundwater Observations
07/31/12 | 2.0 | Wet sample.
08/01/12 | 1.5 | In casing (overnight)


| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (No dep.) | Core Rec. % (RQD %) | Drill Rate minutes/ft | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Hole stopped @ 100.0 ft<br>No refusal to 100' deep. | | | | | | | | |
| 105 | | | | | | | | | | |
| 110 | | Remarks:<br>1) Start sampling at 1' deep. Advanced casing through 5" of asphalt.<br>2) Driller notes occasional roller bit chatter through inferred coarse gravel and or small cobbles at 13' deep.<br>3) Infer boulder at 24.5' deep based on roller bit resistance.<br>4) Split spoon refusal at 25.4' deep after 10 blows with no movement.<br>5) Infer glacial till with frequent rested boulders and cobbles (estimated under 12" thick) from 24.5' to 35' deep based grinding and chatter during casing advance. Recoveries from the clean out barrel used to clear the casing and split spoon samples from this interval were almost entirely composed of broken pieces of Limestone with silt and sand. Attempted core run from 30' to 35' and recovered 1.8' worth of Limestone and Quartz boulder/cobble pieces.<br>6) Driller used hammer to pound sampler through approximately 8" of slough to reach sample interval for S12 at 35' (8 blows). 12" of slough for sample S13 at 40' deep (10 blows) and through 4" of slough at 45' deep (11 blows). Asked driller to clean hole with the roller bit instead of cleanout barrel going forward in attempt to break up more of the coarse gravel slough in the borehole. Driller stated he couldn't because it would over torque the drill rods.<br>7) Infer glacial till between 35' and 45' deep to contain frequent boulders and cobbles (estimated under 12" diameter) but not as frequent as noted between 24.5' and 35'.<br>8) Boulders and cobbles not encountered while advancing borehole below 45' deep.<br>9) Driller noted decrease in resistance to casing advance at approximately 54' deep.<br>10) Exploration terminated after roller bit advance to 100' deep with no refusal (casing was at 90' deep).<br>11) Lab testing gradations reported are per AASHTO M145.<br>12) Northing, Easting, Ground Surface Elevation, and Stationing shown are approximations based on visual estimates of the borehole location made in the field by GeoDesign personnel on July 31, 2012 and MicroStation files downloaded from TY Lin's FTP site by GeoDesign personnel on August 22, 2012. Location and elevation approximations for the borehole should be considered accurate only to the degree implied by the method of borehole location used. | | | | | | | | |
| 115 | | | | | | | | | | |
| 120 | | | | | | | | | | |
| 125 | | | | | | | | | | |
| 130 | | | | | | | | | | |
| 135 | | | | | | | | | | |
| 140 | | | | | | | | | | |
| 145 | | | | | | | | | | |


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.

STATE OF VERMONT
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MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-4
Page No.: 1 of 1
Pin No.: 12e134
Checked By: DTH

Boring Crew: J. Leonhardt (TransTech), J.Wimett (GeoDesign)
Date Started: 2/22/13 Date Finished: 2/22/13
VTSPG NAD83: N 562185.00 ft E 1613005.00 ft
Station: 13+90 Offset: 12'R
Ground Elevation: 1275 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | | Safety/AWJ |
| Rig: | CME 45C SKID | CE = 1 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. % (RQD %) | Drill Rate minutes/ft | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Water Column | | | | | | | | | | |
| 15 | | S1 (13.5' – 15.5'): Very loose, black/brown PEAT and ORGANIC SILT and fine to medium SAND, some Wood Pieces, wet. (Lake Bottom Sediment) Rec. = 0.6 ft (AASHTO M145 Classification: A-4.) | | | | 2/24" (1) | 115.8 | 4.5 | 36.4 | 59.1 | NP | NP |
| 20 | | S2 (20' – 20.2'): Refusal, black ORGANIC SILT and WOOD PIECES and fine to coarse SAND, trace Debris (Beer Cap), little fine Gravel, wet. (Lake Bottom Sediment). Rec. = 0.2 ft (AASHTO M145 Classification: A-4.) | | | | 50/2" (R) | 98.2 | 22.6 | 32.4 | 45.0 | NP | NP |
| | | | C1 | 100 (100) | 5 8 | | | | | | | |
| 25 | | Inferred Lake Bottom Sediment. | | | | | | Top of Bedrock @ 23.0 ft | | | | |
| | | C1) Excellent quality, moderately hard, fresh, moderately jointed, gray with white banding LIMESTONE. Moderate to strong reaction to diluted HCl. Jointing at 38 degrees from horizontal. | C2 | 96 (65) | 7 8 8 9 | | | | | | | |
| 30 | | C2) Fair quality, moderately hard, fresh, closely to moderately jointed gray with white banding LIMESTONE. Moderate to strong reaction to diluted HCl. Jointing between 0 and 35 degrees from horizontal with one joint at 65 degrees. | C3 | 100 (100) | 8 8 7 10 | | | | | | | |
| 35 | | C3) Excellent quality, moderately hard, fresh, widely jointed, gray with white banding LIMESTONE. Moderate to strong reaction to diluted HCl. Jointing nearly horizontal. | | | | | | | | | | |
| | | Hole stopped @ 33.0 ft | | | | | | | | | | |

Remarks:
1) Ground surface elevation, northing, easting, and stationing are estimated from concept plans provided by TY Lin dated December 17, 2012. Borehole performed ~10' west of proposed hinge point due to accessibility.
2) Hammer correction factor is assumed to be 1.0 (rope and cathead safety hammer).
3) Performed borehole through lake ice. Lake bottom sediments noted to begin at 13.5' below ice level.
4) After hitting sample S1 with 2 blows, both the rod and casing began sinking through the lake bottom sediments.
5) Split spoon refusal at 20.2' deep on inferred cobble.
6) Driller notes increase in rollerbit resistance on inferred bedrock at 23' deep.
7) Stopped core C1 at 24.5' deep to add a drill rod and immediately had core blockage upon attempting to restart core run. End core run C1 at 24.5'.
8) Stopped core C2 at 29' (4.5' long run) due to drill stroke. Begin C3 at 29'.
9) Stopped core C3 after 4' of penetration for a total of 10' of rock core.
10) Visual soil descriptions are per the Burmister system. Lab testing gradations reported are per AASHTO M145.

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.

GEODESIGN BORING LOG 888-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT AOT.GDT 5/7/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-5
Page No.: 1 of 1
Pin No.: 12e134
Checked By: DTH

Boring Crew: J. Leonhardt (TransTech), J.Wimett (GeoDesign)
Date Started: 2/25/13 Date Finished: 2/25/13
VTSPG NAD83: N 562208.00 ft E 1613012.00 ft
Station: 13+89 Offset: 12'L
Ground Elevation: 1275 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | | Safety/AWJ |
| Rig: | CME 45C SKID | CE = 1 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. % (RQD %) | Drill Rate minutes/ft | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | Water Column. | | | | | | | | | | |
| 15 | | Inferred Lake Bottom Sediments(Organic Silts and Organic Matter). | | | | | | | | | | |
| 25 | | S1 (24.5' – 25'): Refusal, gray fine to medium SAND, some (+) Silt, some fine Gravel (fractured), wet. Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4.) | | | | 6-12/0" (R) | 14.3 | 26.2 | 44.8 | 29.0 | NP | NP |
| | | C1) Excellent quality, moderately hard, fresh, moderate to widely jointed, gray with white banding LIMESTONE. Moderate to strong reaction to diluted HCl. Jointing between 0 and 35 degrees from horizontal. | C1 | 100 (98) | 9 7 7 7 8 | | | | | | | |
| | | Top of Bedrock @ 25.0 ft | | | | | | | | | | |
| 30 | | Hole stopped @ 30.0 ft | | | | | | | | | | |

Remarks:
1) Ground surface elevation, northing, easting, and stationing are estimated from concept plans provided by TY Lin dated December 17, 2012. Borehole performed ~10' west of proposed hinge point due to accessibility.
2) Hammer correction factor is assumed to be 1.0 (rope and cathead safety hammer).
3) Performed borehole through lake ice. Lake bottom sediments noted to begin at 13' below ice level.
4) While placing casing through ice to lake bottom, casing stopped on sediments at 13' deep. Driller added additional section of casing and casing sunk through sediments prior to obtaining a sample at 13' deep. Casing continued to advance under its own self weight until 22' deep. Driller drove casing to 24.5' deep prior to sampling S1 (due to excessive casing stickup at 22').
5) Stop sample S1 after 12 blows with no movement and spoon bouncing. Note casing to have sunk 6 inches while sampling S1.
6) Visual soil descriptions are per the Burmister system. Lab testing gradations reported are per AASHTO M145.

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.

GEODESIGN BORING LOG 888-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT AOT.GDT 5/7/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-6
Page No.: 1 of 2
Pin No.: 12e134
Checked By: DTH

Boring Crew: J. Leonhardt (TransTech), J.Wimett (GeoDesign)
Date Started: 2/25/13 Date Finished: 2/27/13
VTSPG NAD83: N 562271.00 ft E 1612777.00 ft
Station: 11+47 Offset: 12'R
Ground Elevation: 1275 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | | Safety/AWJ |
| Rig: | CME 45C SKID | CE = 1 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | Water Column. | | | | | | | |
| 15 | | Inferred Lake Bottom Sediment (Organic Silt / Organic Matter) | | | | | | | |
| 20 | | S1 (20'–22'): Very loose, black ORGANIC SILT, little fine to coarse Sand, trace Organic Matter, wet. (Lake Bottom Sediment) Rec. = 0.4 ft (AASHTO M145 Classification: A-4.) | WOR-WOR-WOR-WOR (0) | 392.5 | 3.0 | 11.0 | 86.0 | NP | NP |
| 25 | | S2 (25'–27'): Dense, olive brown fine to coarse SAND, some Silt, little fine to coarse Gravel (Decomposed), wet. (Glacial Moraine). Rec. = 0.8 ft (AASHTO M145 Classification: A-2-4.) | 12-14-29-16 (43) | 14.5 | 24.9 | 45.5 | 29.6 | NP | NP |
| 30 | | S3 (30'–32'): Dense, olive brown fine to coarse SAND, some fine to coarse Gravel (Decomposed), little Silt, wet. (Glacial Moraine). Rec. = 0.8 ft (AASHTO M145 Classification: A-1-a.) | 10-11-23-17 (34) | 12.7 | 50.2 | 35.0 | 14.8 | NP | NP |
| 35 | | S4 (34'–34.3'): Refusal, gray SILT, some fine to coarse Sand, some fine Gravel, wet. (Glacial Till). Rec. = 0.3 ft (AASHTO M145 Classification: A-4.) | 100/4" (R) | 8.8 | 31.2 | 29.2 | 39.6 | NP | NP |
| 40 | | S5 (39'–39.3'): Refusal, gray SILT and fine to coarse SAND, some fine Gravel, wet. (Glacial Till). Rec. = 0.3 ft (AASHTO M145 Classification: A-4.) | 100/4" (R) | 14.2 | 41.8 | 14.8 | 43.4 | NP | NP |
| 45 | | S6 (44'–44.8'): Refusal, gray SILT, some fine to coarse Sand, little fine to coarse Gravel, wet. (Glacial Till) Rec. = 0.5 ft (AASHTO M145 Classification: A-4.) | 66-100/3" (R) | 15.1 | 19.6 | 17.1 | 63.3 | NP | NP |
| | | S7 (49'–49.2'): Refusal, gray fine SAND and SILT, wet. (Glacial Till) Rec. = | 100/2" | | | | | | |

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 B88-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT ADT.GDT 5/7/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
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SUBSURFACE INFORMATION

BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-6
Page No.: 2 of 2
Pin No.: 12e134
Checked By: DTH

Boring Crew: J. Leonhardt (TransTech), J.Wimett (GeoDesign)
Date Started: 2/25/13 Date Finished: 2/27/13
VTSPG NAD83: N 562271.00 ft E 1612777.00 ft
Station: 11+47 Offset: 12'R
Ground Elevation: 1275 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | | Safety/AWJ |
| Rig: | CME 45C SKID | CE = 1 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| 50 | | 0.1 ft | (R) | | | | | | |
| 55 | | S8 (54'–54.8'): Refusal, gray SILT, some fine to coarse Sand, some fine Gravel, wet. (Glacial Till) Rec. = 0.8 ft (AASHTO M145 Classification: A-4.) | 92-100/4" (R) | 11.6 | 29.9 | 19.5 | 50.6 | NP | NP |
| 60 | | S9 (59'–61'): Very dense, gray SILT, some fine to coarse Sand, trace (+) fine Gravel, wet. (Glacial Till) Rec. = 2.0 ft (AASHTO M145 Classification: A-4.) | 38-42-49-69 (91) | 16.9 | 13.7 | 20.4 | 65.9 | NP | NP |
| | | Hole stopped @ 61.0 ft<br>No refusal to 61' depth. | | | | | | | |

Remarks:
1) Ground surface elevation, northing, easting and stationing are estimated from concept plans provided by TY Lin dated December 17, 2012. Borehole performed ~4' east of proposed hinge point due to accessibility.
2) Hammer correction factor is assumed to be 1.0 (rope and cathead safety hammer).
3) Performed borehole through lake ice. Lake bottom sediments noted to begin at 14' below ice level. Casing sunk under own weight through lake bottom sediments until 20' deep.
4) Note increase in resistance during casing and roller bit advance at 24' deep.
5) Frequent rollerbit grinding and chatter through inferred gravel and cobbles below 24' deep.
6) Advance casing to 34' deep. Driller added EZ-Mud to the wash tub and advanced the borehole open hole below 34' deep.
7) Borehole terminated at 61' deep in glacial till. No refusal encountered.
8) Visual soil descriptions are per the Burmister system. Lab testing gradations reported are per AASHTO M145.

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.

GEODESIGN BORING LOG B88-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT ADT.GDT 5/7/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-7
Page No.: 1 of 2
Pin No.: 12e134
Checked By: DTH

Boring Crew: J. Leonhardt (TransTech), J.Wimett (GeoDesign)
Date Started: 2/27/13 Date Finished: 2/28/13
VTSPG NAD83: N 562294.00 ft E 1612786.00 ft
Station: 11+47 Offset: 12'L
Ground Elevation: 1275 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Safety/AWJ | |
| Rig: | CME 45C SKID | CE = 1 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| | | Water Column. | | | | | | | |
| 15 | | S1 (13'–15'): Very loose, no recovery. Inferred Lake Bottom Sediment (Organic Silt / Organic Matter) Rec. = 0.0 ft | WOR-WOR-WOR-1 (0) | | | | | | |
| 20 | | S2 (20'–22'): Very loose, brown ORGANIC SILT and ORGANIC MATTER, trace fine Gravel, trace Glass, trace fine Sand, wet. (Lake Bottom Sediment). Rec. = 0.1 ft (AASHTO M145 Classification: A-4.) | WOR-WOR-WOR-WOR (0) | 166.1 | 6.7 | 8.7 | 84.6 | NP | NP |
| 25 | | S3 (25'–27'): Medium dense, gray fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet. (Glacial Moraine) Rec. = 0.3 ft (AASHTO M145 Classification: A-2-4.) | 7-14-10-8 (24) | 8.9 | 48.4 | 22.8 | 28.8 | NP | NP |
| 30 | | S4 (30'–32'): Dense, gray fine to coarse SAND and SILT, little fine Gravel, wet. (Glacial Moraine) Rec. = 0.3 ft (AASHTO M145 Classification: A-4.) | 9-11-25-35 (36) | 10.1 | 22.9 | 35.7 | 41.4 | NP | NP |
| 35 | | Inferred nested boulders. | | | | | | | |
| | | C1 (35.5' – 37.5'): Gray LIMESTONE BOULDER/COBBLE PIECES. | | | | | | | |
| 40 | | S5) (40'–40.75') Refusal, gray fine to coarse SAND and SILT, some fine to coarse Gravel, wet. (Glacial Till) Rec. = 0.75 ft (AASHTO M145 Classification: A-4.) | 22-50/3" (R) | 9.6 | 42.8 | 18.6 | 38.6 | NP | NP |
| | | S6) (45'–45.5') Refusal, gray fine to coarse SAND, some fine to coarse Gravel, some Silt, wet. (INFERRED ROLLERBIT 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. 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.

GEODESIGN BORING LOG 888-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT AOT.GDT 5/7/13

STATE OF VERMONT
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BORING LOG

Brookfield Floating Bridge
BRF FLBR(2)

Boring No.: B-7
Page No.: 2 of 2
Pin No.: 12e134
Checked By: DTH

Boring Crew: J. Leonhardt (TransTech), J.Wimett (GeoDesign)
Date Started: 2/27/13 Date Finished: 2/28/13
VTSPG NAD83: N 562294.00 ft E 1612786.00 ft
Station: 11+47 Offset: 12'L
Ground Elevation: 1275 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Safety/AWJ | |
| Rig: | CME 45C SKID | CE = 1 |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| 50 | | Rec. = 0.5 ft (AASHTO M145 Classification: A-1-b.) | 80-50/0" (R) | 9.2 | 56.9 | 20.1 | 23.0 | NP | NP |
| | | S7) (50'–50.9') Refusal, gray fine to coarse SAND and SILT, some fine to coarse Gravel, wet. (Glacial Till) | | | | | | | |
| | | Rec. = 0.9 ft (AASHTO M145 Classification: A-4.) | 31-100/5" (R) | 9.1 | 40.0 | 23.7 | 36.3 | NP | NP |
| | | Hole stopped @ 50.9 ft<br>No refusal to 50.9' depth. | | | | | | | |

Remarks:
1) Ground surface elevation, northing, easting, and stationing are estimated from concept plans provided by TY Lin dated December 17, 2012. Borehole performed ~4' east of proposed hinge point due to accessibility.
2) Hammer correction factor is assumed to be 1.0 (rope and cathead safety hammer).
3) Performed borehole through lake ice. Lake bottom sediments noted to begin at 13' below ice level. Casing sunk under own weight through lake bottom sediments until 23.5' deep.
4) Note increase in resistance during casing and roller bit advance at 23.5' deep.
5) Advance casing to 30' deep. Driller added EZ-Mud to the wash tub and advanced the borehole open hole below 30' deep.
6) Advance roller bit through inferred boulder from 32.5' to 35.5'. Attempt core run to break through boulders from 35.5' to 37.5'. Break through inferred nested boulders at 37' deep.
7) Telescope through 4" casing and inferred nested boulder layer with 3" flush joint casing to 40' deep.
8) Exploration terminated at 50.9 feet due to crooked borehole causing difficulty advancing the roller bit and clearing cuttings.
9) Visual soil descriptions are per the Burmister system. Lab testing gradations reported are per AASHTO M145.

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.

GEODESIGN BORING LOG 888-04.5 FLOATING BRIDGE VTRANS FORMAT.GPJ VERMONT AOT.GDT 5/7/13