

Boring Crew: T. Farrell (SJB), Wimet/Gilman (GeoDesign)
 Date Started: 3/21/12 Date Finished: 3/22/12
 VTSFG NAD83: N 136376.00 ft E 1621267.00 ft
 Station: 564+60 Offset: 42' L
 Ground Elevation: 236 ft

Type: H.S.A. SS
 I.D.: 4.25 in 1.38 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 550X ATV CE = 1.5

Casing Sampler
 Groundwater Observations (3)
 Date Depth (ft) Notes
 03/21/12 14.0 Wet sample.
 03/21/12 17.3 In augers.

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (lip deg.) | Core Rec. (ROD %) | Drill Rate minutes/ft | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|-----------------------|-----------------------|--------------------|----------|--------|---------|
| 5 | X X X | S1) Very loose, dark brown fine to coarse SAND, little fine to coarse Gravel, little Silt, moist. (FILL) Rec. = 1.1 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | WOH-1-2-4 (3) | 14.0 | 51.8 | 40.0 | 8.2 |
| 5 | X X X | S2) Medium dense, dark brown and blue fine to coarse SAND, some fine to coarse Gravel, little Silt, trace Root/Wood Fibers, moist. (FILL) Rec. = 1.3 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 11-10-7- (17) | 12.2 | 39.3 | 43.4 | 17.3 |
| 10 | | Inferred Transition to natural Silty Gravelly Sand between 7.5' and 9'. (AASHTO M145 Classification: Field Note.) | | | | | | | | |
| 10 | | S3) Loose, gray/brown/white fine to coarse SAND, some fine to coarse Gravel, little Silt, moist. (SILTY GRAVELLY SAND) Rec. = 1.6 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 5-5-3-4 (8) | 12.8 | 34.4 | 46.2 | 19.4 |
| 15 | | S4) Very loose, brown fine to coarse SAND, trace coarse Gravel, wet (Top 2.5" and bottom 9" had coarse Sand and Gravel; middle 6.5" had no coarse Sand or Gravel). (SILTY GRAVELLY SAND) Rec. = 1.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | WOH-2-1-1 (3) | 22.0 | 16.6 | 54.2 | 29.2 |
| 20 | | S5) Medium dense, brown with oxidation fine to coarse SAND and fine to coarse GRAVEL, little Silt, wet. (SILTY GRAVELLY SAND) Rec. = 1.0 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 5-11-13-11 (24) | 14.0 | 34.0 | 57.3 | 8.7 |
| 20 | | Inferred transition to Weathered Rock between 21' and 23.5'. (AASHTO M145 Classification: Lab Note.) | | | | | | | | |
| 25 | | S6) Refusal, Pulverized Rock Fragments. Rec. = 0.2 ft (AASHTO M145 Classification: Visual Description (Burmister).) | C1 | 81 (30) | 3.2 | 50/2" | | | | |
| 25 | | C1) Poor quality, moderately hard to hard, slightly weathered with moderately weathered joints (upper 23") grading into highly weathered to decomposed (bottom 6") closely jointed to fissured, gray with green and white banding PHYLLITE White Quartzite intrusion between 5" and 12" into core. Fractured surfaces show some schistosity. Jointing at ~60 to 70 degrees from horizontal. No reaction to dilute HCl. | | | | | | | | |
| 25 | | C2) Poor quality, moderately hard to hard, moderately weathered, closely jointed to fissured, gray with white banding and orange weathered zones PHYLLITE Fractured surfaces show some schistosity. Jointing at ~60 to 70 degrees from horizontal. No reaction to HCl. | C2 | 100 (31) | 3.8 | | | | | |

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.

Boring Crew: T. Farrell (SJB), Wimet/Gilman (GeoDesign)
 Date Started: 3/21/12 Date Finished: 3/22/12
 VTSFG NAD83: N 136376.00 ft E 1621267.00 ft
 Station: 564+60 Offset: 42' L
 Ground Elevation: 236 ft

Type: H.S.A. SS
 I.D.: 4.25 in 1.38 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 550X ATV CE = 1.5

Casing Sampler
 Groundwater Observations (3)
 Date Depth (ft) Notes
 03/21/12 14.0 Wet sample.
 03/21/12 17.3 In augers.

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (lip deg.) | Core Rec. (ROD %) | Drill Rate minutes/ft | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|-----------------------|-----------------------|--------------------|----------|--------|---------|
| 35 | | C3) Poor quality, moderately hard to hard, moderately weathered close jointed, gray with white banding and orange weathered zones PHYLLITE Fractured surfaces show some schistosity. Jointing at ~60 to 80 degrees from horizontal. No reaction to dilute HCl. | C3 | 92 (35) | 3.3 | | | | | |
| 35 | | C4) Fair quality, moderately hard to hard, fresh to slightly weathered with occasional moderately weathered jointing, moderate to closely jointed, gray with white banding and orange weathering in joints PHYLLITE Fractured surfaces show some schistosity. Jointing at ~60 to 80 degrees from horizontal, no reaction to dilute HCl. | C4 | 100 (62) | 3.1 | | | | | |
| 40 | | Hole stopped @ 39.5 ft | | | | | | | | |
| 45 | | Remarks: 1) Ground surface elevation estimated from a topographic site plan provided by VHB. 2) Boring shifted 10.5" south of surveyed location due to overhead wires. 3) Driller noted easier augering through inferred softer soils beginning at 7.5' deep. Inferred upper 7.5' to contain blast rock fill. 4) Driller noted an increase in auger resistance beginning at 21' deep. 5) Driller reported hollow stem auger refusal at 23.5 feet deep. Split spoon refusal at 23.6 feet deep. 6) Inserted 3" casing through augers at 20' deep and set casing to 23.5' deep to obtain rock core sample. Reamed hole to 24' with rollerbit prior to coring. 7) Core run C1 ended after 3' of penetration (at 27' deep) due to core blockage. 8) Core run C2 ended after 3.5' of penetration (at 30.5' deep) due to reaching the end of stroke on the rigs drill head. Core time only recorded for entire run due to markings washing off drill rods during coring. 9) Core run C3 ended after 4' of penetration (at 34.5' deep) due to core block. Core time from 33.5' to 34.5' deep was not recorded. 10) Core times for core run C4 were only measured over the entire run (15.7 min.) due to foot markings washing off of the drill rods. 11) 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 BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ VERMONT AUT.GDT 12/2/13

GEODESIGN BORING LOG BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ VERMONT AUT.GDT 12/2/13



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

BORING LOG

Brattleboro Bridge #9 Replacement
 IM 091-1(65) BR 9

Boring No.: B-204

Page No.: 1 of 1

Pin No.: 12a026

Checked By: JAG

Boring Crew: T. Farrell (SJB), J. Gilman (GeoDesign)
 Date Started: 3/21/12 Date Finished: 3/21/12
 VTSPG NAD83: N 136341.00 ft E 1621295.00 ft
 Station: 564+57 Offset: 2' R
 Ground Elevation: 235 ft

Casing Sampler
 Type: H.S.A. SS
 I.D.: 4.25 in 1.38 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 550X ATV CE = 1.5

| Groundwater Observations (3) | | |
|------------------------------|------------|-------------|
| Date | Depth (ft) | Notes |
| 03/21/12 | 14.0 | Wet sample. |
| 03/21/12 | 15.2 | In augers. |

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % | | |
|------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|---------|------|------|
| 5 | X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X | S1) Loose, dark brown to brown fine to coarse SAND, some fine to coarse Gravel, trace Silt, trace Root Fibers, moist. (FILL) Rec. = 0.9 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | 1-2-4-3 (6) | 7.5 | 47.1 | 44.5 | 8.4 | | |
| | | S2) Medium dense, brown and blue fine to coarse SAND, some fine to coarse Gravel, little Silt, trace Root Fibers, trace Blast Wire, moist. (FILL) Rec. = 0.9 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | 6-7-7-5 (14) | 9.3 | 57.7 | 30.2 | 12.1 | | |
| | | S3A - Top 8.5": Similar description as S2 except loose. (FILL) Rec. = 1.3 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | 2-3-4-2 (7) | 13.9 | 44.3 | 36.7 | 19.0 | | |
| | | S3B - Bottom 7.5": Light brown fine to medium SAND, trace Silt, moist. (SILTY SAND) (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | 17.9 | 0.3 |
| | | 15 | X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X | S4) Very loose, brown fine to medium SAND, trace Silt, trace wood fibers, wet. (SILTY SAND) Rec. = 1.8 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 1-1-1-1 (2) | 30.1 | 1.4 | 79.7 | 18.9 |
| | | | | S5) Refusal, gray to dark gray fine to coarse SAND, some fine Gravel, little Silt, wet (sample pulverized rock fragments). (WEATHERED ROCK) Rec. = 0.3 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | 50/4" (100+) | 10.0 | 53.2 | 32.1 | 14.7 |

Hole stopped @ 20.4 ft
 HSA Refusal on Inferred Bedrock.

Top of Bedrock @ 20.4 ft

Remarks:

- 1) Ground surface elevation estimated from a topographic site plan provided by VHB.
- 2) Boring shifted 13' south of surveyed location due to overhead wires.
- 3) Driller noted easier augering through inferred softer soils beginning at 7.5' deep. Inferred upper 7.5' to contain blast rock fill.
- 4) Driller noted an increase in auger resistance beginning at 18' deep.
- 5) Driller noted hollow stem auger refusal at 20.4 feet deep. Exploration terminated at 20.4' deep.
- 6) 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.



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

BORING LOG
Brattleboro Bridge #9 Replacement
IM 091-1(65) BR 9

Boring No.: 8-205
Page No.: 1 of 2
Pin No.: 12a026
Checked By: JAG

Boring Crew: T. Farrell (SJB), J. Wimet (GeoDesign)
Date Started: 3/20/12 Date Finished: 3/20/12
VTSPG NAD83: N 136310.00 ft E 1621311.00 ft
Station: 564+47 Offset: 35' R
Ground Elevation: 235 ft

Casing Sampler
Type: H.S.A. SS
I.D.: 4.25 in 1.38 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 550X ATV CE = 1.5

| Groundwater Observations (3) | | |
|------------------------------|------------|-------------|
| Date | Depth (ft) | Notes |
| 03/20/12 | 12.5 | Wet sample. |
| 03/20/12 | 14.7 | In augers. |

| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. (ROD %) | Drill Rate (min/ft) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % | |
|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|-----------------------|--------------------|----------|--------|---------|-------|
| | | | | | | | | | | | Notes |
| 5 | XXXX | Asphalt Rec. = 1.5 ft | | | | 13-11-20-20 (31) | 4.1 | 56.7 | 33.5 | 9.8 | |
| | | S1 Dense, brown fine to coarse SAND and fine to coarse GRAVEL (occasionally fractured and pulverized), little (-) Silt, moist. (FILL) (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | | |
| | | S2 Dense, brown with gray fine to coarse SAND, some fine to coarse Gravel (pulverized and fractured), little Silt, moist. (FILL) Rec. = 1.2 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | | |
| | | Inferred transition to natural Silty Sand between 7.5' and 10'. (AASHTO M145 Classification: Field Note.) | | | | | | | | | |
| | | S3 Very loose, brown to light brown fine SAND and SILT, moist. (SILTY SAND) Rec. = 0.2 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | | |
| 10 | | S4 Very loose, brown fine SAND, some Silt, moist (Top 18" to wet (Bottom 6"). (SILTY SAND) Rec. = 2.0 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 4-2-2-2 (4) | 14.0 | 21.6 | 50.7 | 27.7 | |
| | | S5 Very loose, brown fine SAND, little Silt, wet. (SILTY SAND) Rec. = 1.6 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | | |
| 20 | XXXX | Inferred transition to Weathered Rock between 19.5' and 20'. (AASHTO M145 Classification: Field Note.) | | | | 34-50/2" (100+) | 17.1 | 66.2 | 24.4 | 9.4 | |
| | | S6 Refusal, gray-brown fractured WEATHERED ROCK, little fine to coarse Sand, trace Silt, wet. (WEATHERED ROCK) Rec. = 0.7 ft (AASHTO M145 Classification: A-1-a) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | | | | |
| | | C1 Fair quality, moderately hard, fresh to moderately weathered with occasional highly weathered joints and zones, moderately to very closely jointed, dark gray with white banding PHYLLITE Jointing ~60 degrees from horizontal. Occasional very slight reaction to dilute HCl on joints in possible Limestone beds. | | | | | | | | | |
| | | C2 Very poor quality, moderately hard, moderately weathered, closely jointed to fissured, dark gray with orange jointing and white banding PHYLLITE Fractured surfaces show some schistosity. Jointing ~60 degrees from horizontal. Slight reaction to dilute HCl in joints in upper 2' of core. | | | | | | | | | |
| | | C3 Poor quality, slight to moderately weathered with moderately weathered jointing, closely jointed, dark gray with orange joints and white | | | | | | | | | |

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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MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG
Brattleboro Bridge #9 Replacement
IM 091-1(65) BR 9

Boring No.: 8-205
Page No.: 2 of 2
Pin No.: 12a026
Checked By: JAG

Boring Crew: T. Farrell (SJB), J. Wimet (GeoDesign)
Date Started: 3/20/12 Date Finished: 3/20/12
VTSPG NAD83: N 136310.00 ft E 1621311.00 ft
Station: 564+47 Offset: 35' R
Ground Elevation: 235 ft

Casing Sampler
Type: H.S.A. SS
I.D.: 4.25 in 1.38 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 550X ATV CE = 1.5

| Groundwater Observations (3) | | |
|------------------------------|------------|-------------|
| Date | Depth (ft) | Notes |
| 03/20/12 | 12.5 | Wet sample. |
| 03/20/12 | 14.7 | In augers. |

| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. (ROD %) | Drill Rate (min/ft) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|---------------------|-----------------------|--------------------|----------|--------|---------|
| | | | | | | | | | | |
| 35 | XXXX | banding PHYLLITE Fractured surfaces show some schistosity. Jointing ~50 - 70 degrees from horizontal. No reaction to dilute HCl except for a strong reaction in a white seam towards bottom of core. | | | | 3 | | | | |
| | | C4 Poor quality, 0" to 24" and 43" to 60" : Slight to moderately weathered with moderately weathered jointing, moderate to closely jointed, dark gray with orange joints and white banding PHYLLITE Jointing ~70 to 80 degrees from horizontal. No reaction to dilute HCl. 24" to 43" : Hard, fresh to slightly weathered, closely to moderately jointed, gray with white banding LIMESTONE. Jointing ~45 degrees from horizontal. Strong reaction to dilute HCl. | | | | | | | | |
| | | Hole stopped @ 37.0 ft | | | | | | | | |
| | | Remarks: 1) Ground surface elevation estimated from a topographic site plan provided by VHB. 2) Boring shifted ~23' south of surveyed location due to overhead wires. 3) Augered through 3" of asphalt prior to sampling S1. 4) Note heavy auger grinding and changing angle of the augers during HSA advance to 7.5' deep through inferred blast rock fill soils. 5) Driller notes easier augering through inferred softer soils beginning at 7.5' deep. 6) Driller noted an increase in auger resistance beginning at 19.5' deep. 7) Inserted 3" casing through augers at 20' deep and set casing to 20.5' deep to obtain rock core sample. Reamed hole to 21' with rollerbit prior to coring. 8) End core run C2 after 36" of penetration (at 29' deep) due to core back. Noted highly fractured rock core in barrel (to finely fractured to replicate in-situ orientation in core box). 9) Core times for C3 at 29' to 33' deep are estimates. Actual per foot times were not recorded. 10) Lab testing gradations reported are per AASHTO M145. | | | | | | | | |
| | | | | | | | | | | |
| 45 | | | | | | 3 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 55 | | | | | | 3 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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.

GEOTECH BORING LOG: BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ, VERMONT AUT.GDT 12/2/13

GEOTECH BORING LOG: BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ, VERMONT AUT.GDT 12/2/13

| VT Trans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Boring No.: B-208 | |
|----------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|-----------------------|------------------------------|-------|
| | | Drottelleboro Bridge #9 Replacement IN 091-1(85) BR 9 | | Page No.: 1 of 3 | | Pin No.: 12x028 | |
| | | Checked By: JAG | | | | Checked By: JAG | |
| Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign) | | Type: Casing SS | | Sampler SS | | Groundwater Observations (3) | |
| Date Started: 3/22/12 Date Finished: 3/28/12 | | L.D.: 4 in. 1.38 in. | | Date | | Depth (ft) | |
| VTSPG MADRS: N 136765.00 ft E 1821668.00 ft | | Hammer Wt: 140 lb. 140 lb. | | 03/23/10 | | 9.8 | |
| Station: 570+19 Offset: 41' L | | Hammer Fall: 30 in. 30 in. | | 03/26/12 | | 11.9 | |
| Ground Elevation: 232 ft | | Hammer/Rob Type: Auto/AWJ | | Rig: CME 75 TRACK | | CE = 1.43 | |
| Depth (ft) | Strat (ft) | CLASSIFICATION OF MATERIALS (Description) | | Pen. (Obj. Dep.) | Core Rec. (Obj. Dep.) | Pen. (ft) | Notes |
| 0-7 | 0-7 | S1) Loose, Top 1": Topsoil. Below 7": Brown fine SAND, little SIL, trace coarse Gravel. (FLL) Rec. = 0.7 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 2-1-4-3 (5) | 12.1 | 16.3 | 58.4 |
| 7-12 | 7-12 | S2) Loose, Top 2": Gray brown fine to medium SAND, little fine to coarse Gravel, little SIL. Below 4": Brown fine SAND, little (-) SIL, trace fine Gravel. (SILTY SAND) Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 12-3-4 (6) | 12.6 | 37.9 | 47.0 |
| 12-15 | 12-15 | S3) Loose, brown fine SAND, little SIL, (SILTY SAND) Rec. = 0.6 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 5-4-3-2 (7) | 24.5 | 0.2 | 70.3 |
| 15-17.5 | 15-17.5 | S4) Very dense, gray brown fine to medium SAND, little (-) SIL, trace fine to coarse Gravel. (SILTY SAND) Rec. = 0.2 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) Inferred border from 15.5' to 17.5'. (AASHTO M145 Classification: Field Note.) | | 8-6-47-37 (53) | 14.4 | 45.5 | 42.6 |
| 17.5-20 | 17.5-20 | S5) Medium dense, brown fine to medium SAND, little SIL, trace fine to coarse Gravel. (SILTY SAND) Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 10-11-13-14 (24) | 18.3 | 28.0 | 57.8 |
| 20-25 | 20-25 | S6) Medium dense, brown fine to medium SAND, little (-) SIL, (SILTY SAND) Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 8-11-10 (21) | 24.4 | 0.4 | 85.3 |
| 25-27.5 | 25-27.5 | S7) Loose, brown fine SAND, trace (+) SIL, (SILTY SAND) Rec. = 1.4 ft | | 5-4-4-6 (22.0) | 4.4 | 77.5 | 18.1 |

Notes:
 1. Stratification lines represent approximate boundary between unsorted types. Transition may be gradual.
 2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 3. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 4. Water level readings have been made of these and other conditions listed. Fluctuations of groundwater may occur due to other factors than those present at the time measurement was made.

| VT Trans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Boring No.: B-208 | |
|----------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|-----------------------|------------------------------|-------|
| | | Drottelleboro Bridge #9 Replacement IN 091-1(85) BR 9 | | Page No.: 2 of 3 | | Pin No.: 12x028 | |
| | | Checked By: JAG | | | | Checked By: JAG | |
| Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign) | | Type: Casing SS | | Sampler SS | | Groundwater Observations (3) | |
| Date Started: 3/22/12 Date Finished: 3/28/12 | | L.D.: 4 in. 1.38 in. | | Date | | Depth (ft) | |
| VTSPG MADRS: N 136765.00 ft E 1821668.00 ft | | Hammer Wt: 140 lb. 140 lb. | | 03/23/10 | | 9.8 | |
| Station: 570+19 Offset: 41' L | | Hammer Fall: 30 in. 30 in. | | 03/26/12 | | 11.9 | |
| Ground Elevation: 232 ft | | Hammer/Rob Type: Auto/AWJ | | Rig: CME 75 TRACK | | CE = 1.43 | |
| Depth (ft) | Strat (ft) | CLASSIFICATION OF MATERIALS (Description) | | Pen. (Obj. Dep.) | Core Rec. (Obj. Dep.) | Pen. (ft) | Notes |
| 0-7 | 0-7 | (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | (8) |
| 7-35 | 7-35 | Inferred transition from Silty Sand to Silty Gravelly Sand between 33' and 34.5'. (AASHTO M145 Classification: Field Note.) | | | | | |
| 35-40 | 35-40 | S9) Medium dense, gray brown fine SAND, trace (+) SIL, trace (-) coarse Gravel. (SILTY GRAVELLY SAND) Rec. = 1.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 7-9-17-28 (26) | 19.7 | 11.7 | 16.9 |
| 40-45 | 40-45 | S10) Loose, gray brown fine to medium SAND, little fine to coarse Gravel, little SIL, (SILTY GRAVELLY SAND) Rec. = 0.5 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | 9-3-4-4 (7) | 13.2 | 34.6 | 49.6 |
| 45-50 | 45-50 | S10) Refusal, gray brown fine to medium SAND, little fine to coarse Gravel, little SIL, (SILTY GRAVELLY SAND) Rec. = 1.3 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | 54-54-90 (100+) | 10.0 | 38.1 | 45.9 |
| 50-55 | 50-55 | C1) Very poor quality, hard, moderately weathered, shattered to very closely jointed, gray with white banding and orange weathering in joints PHYLITE. No reaction to dilute HCl. Fractured surfaces show some schistosity. Jointing at ~40 to 50 degrees from horizontal. | | C1 | 70 (0) | 7 | |
| | | C2) Very poor quality, hard, moderately weathered, fissured to closely jointed, gray with white banding and orange weathering in joints PHYLITE. Fractured surfaces show some schistosity. Jointing ~ 45 to 55 degrees from horizontal. No reaction to dilute HCl. | | C2 | 90 (15) | 5 | |
| | | C3) Very poor quality, hard, slight to moderately weathered, closely to very closely jointed, gray with white banding PHYLITE. Fractured surfaces in upper portion of the core shows some schistosity. Jointing ~40 to 50 degrees from horizontal. Occasional slight reaction to dilute HCl. | | C3 | 92 (22) | 5 | |
| | | C4) Fair quality, hard, slight to moderately weathered, closely to moderately jointed, gray with white banding PHYLITE. Fractured surfaces in lower half show some schistosity. Jointing ~20 to 30 degrees from horizontal. No reaction to dilute HCl. | | C4 | 92 (54) | 5 | |

Notes:
 1. Stratification lines represent approximate boundary between unsorted types. Transition may be gradual.
 2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 3. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 4. Water level readings have been made of these and other conditions listed. Fluctuations of groundwater may occur due to other factors than those present at the time measurement was made.

| VT Trans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Boring No.: B-208 | |
|----------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|-----------------------|------------------------------|-------|
| | | Drottelleboro Bridge #9 Replacement IN 091-1(85) BR 9 | | Page No.: 3 of 3 | | Pin No.: 12x028 | |
| | | Checked By: JAG | | | | Checked By: JAG | |
| Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign) | | Type: Casing SS | | Sampler SS | | Groundwater Observations (3) | |
| Date Started: 3/22/12 Date Finished: 3/28/12 | | L.D.: 4 in. 1.38 in. | | Date | | Depth (ft) | |
| VTSPG MADRS: N 136765.00 ft E 1821668.00 ft | | Hammer Wt: 140 lb. 140 lb. | | 03/23/10 | | 9.8 | |
| Station: 570+19 Offset: 41' L | | Hammer Fall: 30 in. 30 in. | | 03/26/12 | | 11.9 | |
| Ground Elevation: 232 ft | | Hammer/Rob Type: Auto/AWJ | | Rig: CME 75 TRACK | | CE = 1.43 | |
| Depth (ft) | Strat (ft) | CLASSIFICATION OF MATERIALS (Description) | | Pen. (Obj. Dep.) | Core Rec. (Obj. Dep.) | Pen. (ft) | Notes |
| 0-5 | 0-5 | C5) Good quality, hard, slight to moderately weathered, closely to moderately jointed, gray with white banding PHYLITE. Jointing ~40 to 50 degrees from horizontal. No reaction to dilute HCl. | | C5 | 92 (78) | 5 | |
| 5-65 | 5-65 | Hole stopped @ 63.5 ft | | | | | |
| 65-70 | 65-70 | Remarks: 1) Ground surface elevation estimated from a topographic site plan provided by VHD. 2) Boring shifted ~11' north of surveyed location due to d/w rig access constraints. 3) Casing refused at 17' deep. Refusal bit advanced through inferred cobbles / boulders to 17.5' deep. 4) Refusal bit advanced ahead of casing below 44.5' deep to refusal at 48.5' deep. 3" ID casing telescoped and driven to refusal at 48.5' deep. 5) Lab testing gradations reported are per AASHTO M145. | | | | | |

Notes:
 1. Stratification lines represent approximate boundary between unsorted types. Transition may be gradual.
 2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 3. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 4. Water level readings have been made of these and other conditions listed. Fluctuations of groundwater may occur due to other factors than those present at the time measurement was made.

| VTTrans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Boring No.: B-209 | | |
|----------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|-------------------|-------------------|--------|----------|
| | | Drottlersboro Bridge #9 Replacement IM 091-1(65) BR 9 | | Page No.: 1 of 3 | | Boring No.: B-209 | | |
| | | | | Pin No.: 12a026 | | Page No.: 3 of 3 | | |
| | | | | Checked By: JAG | | Pin No.: 12a026 | | |
| | | | | | | Checked By: JAG | | |
| Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign) | | Casing Sampler | | Groundwater Observations (3) | | | | |
| Date Started: 3/26/12 Date Finished: 3/26/12 | | Type: FJ SS | | Date | Depth (ft) | Notes | | |
| VSPG HADRS: N 136736.00 ft E 1621697.00 ft | | I.D.: 4 in. 1.38 in. | | 03/26/12 | 12.4 | In open hole. | | |
| Station: 570+20 Offset: 0.00 | | Hammer Wt: 140 lb. 140 lb. | | | | | | |
| Ground Elevation: 233.5 ft | | Hammer Fall: 30 in. 30 in. | | | | | | |
| | | Hammer/Rod Type: Auto/AWJ | | | | | | |
| | | Rig: CME 75 TRACK CE = 1.43 | | | | | | |
| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | | Blow Count (ft Blow/2') | Meters at Contact | Gravel % | Sand % | Filler % |
| 0-1 | xx | S1) Loose, Top 2": Topsoil. | | 1-2 | 10.7 | 8.4 | 71.2 | 20.4 |
| 1-10 | xx | Bottom 10': Brown fine SAND, little SIL, trace fine Gravel. (FIL) Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 10-3 | 17.8 | 24.8 | 52.8 | 22.3 |
| 10-5 | xx | S2) Loose, brown fine SAND, little SIL, trace fine Gravel. (SILTY SAND) Rec. = 0.2 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 5-3 | 19.5 | 6.9 | 68.0 | 25.1 |
| 5-10 | xx | S3) Loose, brown fine SAND, little SIL, trace (-) fine Gravel. (SILTY SAND) Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 82-45 | 14.7 | 42.8 | 44.1 | 13.1 |
| 10-15 | xx | S4) Very dense, brown fine to medium SAND, little SIL, little fine Gravel. (SILTY SAND) Rec. = 0.4 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | 17-11 | 22.8 | 0.5 | 82.7 | 16.8 |
| 15-20 | xx | S5) Loose, brown fine SAND, little SIL, trace (-) fine Gravel. (SILTY SAND) Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 8-5 | 24.9 | 0.9 | 77.3 | 21.8 |
| 20-25 | xx | S6) Medium dense, fine SAND, little SIL, trace fine Gravel. (SILTY SAND) Rec. = 0.6 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 8-10 | 24.4 | 0.1 | 86.3 | 13.4 |
| 25-30 | xx | S7) Medium dense, brown fine SAND, little SIL, (SILTY SAND) Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | |

Notes:
 1. Stratification lines represent approximate boundary between soil/rock types. Transition may be gradual.
 2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 3. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 4. 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.

| VTTrans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Boring No.: B-209 | | |
|----------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|-------------------|-------------------|--------|----------|
| | | Drottlersboro Bridge #9 Replacement IM 091-1(65) BR 9 | | Page No.: 2 of 3 | | Boring No.: B-209 | | |
| | | | | Pin No.: 12a026 | | Page No.: 3 of 3 | | |
| | | | | Checked By: JAG | | Pin No.: 12a026 | | |
| | | | | | | Checked By: JAG | | |
| Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign) | | Casing Sampler | | Groundwater Observations (3) | | | | |
| Date Started: 3/26/12 Date Finished: 3/26/12 | | Type: FJ SS | | Date | Depth (ft) | Notes | | |
| VSPG HADRS: N 136736.00 ft E 1621697.00 ft | | I.D.: 4 in. 1.38 in. | | 03/26/12 | 12.4 | In open hole. | | |
| Station: 570+20 Offset: 0.00 | | Hammer Wt: 140 lb. 140 lb. | | | | | | |
| Ground Elevation: 233.5 ft | | Hammer Fall: 30 in. 30 in. | | | | | | |
| | | Hammer/Rod Type: Auto/AWJ | | | | | | |
| | | Rig: CME 75 TRACK CE = 1.43 | | | | | | |
| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | | Blow Count (ft Blow/2') | Meters at Contact | Gravel % | Sand % | Filler % |
| 0-35 | xx | Classification: A-2-4 (AASHTO M145 Classification: Visual Description (Burmister).) | | 12 | | | | |
| 35-37 | xx | Inferred transition from Silty Sand to Silty Gravelly Sand between 33' and 34.3'. (AASHTO M145 Classification: Field Note.) | | | | | | |
| 37-35 | xx | S8) Refusal, brown fine to medium SAND, little fine to coarse Gravel, little SIL, (SILTY GRAVELLY SAND) Rec. = 0.4 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 10-56 | 18.6 | 16.9 | 68.1 | 15.0 |
| 35-40 | xx | Inferred transition from Silty Gravelly Sand to Silty Sand between 37' and 39.5'. (AASHTO M145 Classification: Field Note.) | | | | | | |
| 40-45 | xx | S9) Medium dense, brown fine SAND, little SIL, (SILTY SAND) Rec. = 1.4 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 7-11 | 24.1 | | 72.0 | 28.0 |
| 45-45 | xx | Inferred transition from Silty Sand to Silty Gravelly Sand between 43' and 44.5'. (AASHTO M145 Classification: Field Note.) | | | | | | |
| 45-50 | xx | S10) Medium dense, brown fine SAND, little SIL, trace fine to coarse Gravel. (SILTY GRAVELLY SAND) Rec. = 1.2 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 7-9 | 19.2 | 20.8 | 48.6 | 29.6 |
| 50-55 | xx | S11) Refusal, brown fine SAND, little SIL, trace fine to coarse Gravel. (SILTY GRAVELLY SAND) Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 31-47 | 12.3 | 27.5 | 52.4 | 20.1 |
| 55-55 | xx | Inferred Weathered Rock based on roller bit resistance between 54' and 54.5'. (AASHTO M145 Classification: Field Note.) | | | | | | |
| | | Hole stopped @ 54.5 ft HSA Refused on Inferred Bedrock. | | Top of Bedrock @ 54.5 ft | | | | |

Notes:
 1. Stratification lines represent approximate boundary between soil/rock types. Transition may be gradual.
 2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 3. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 4. 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.

| VTTrans | | STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION | | BORING LOG | | Boring No.: B-209 | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------|--|------------------------------|-------------------|-------------------|--------|----------|
| | | Drottlersboro Bridge #9 Replacement IM 091-1(65) BR 9 | | Page No.: 3 of 3 | | Boring No.: B-209 | | |
| | | | | Pin No.: 12a026 | | Page No.: 3 of 3 | | |
| | | | | Checked By: JAG | | Pin No.: 12a026 | | |
| | | | | | | Checked By: JAG | | |
| Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign) | | Casing Sampler | | Groundwater Observations (3) | | | | |
| Date Started: 3/26/12 Date Finished: 3/26/12 | | Type: FJ SS | | Date | Depth (ft) | Notes | | |
| VSPG HADRS: N 136736.00 ft E 1621697.00 ft | | I.D.: 4 in. 1.38 in. | | 03/26/12 | 12.4 | In open hole. | | |
| Station: 570+20 Offset: 0.00 | | Hammer Wt: 140 lb. 140 lb. | | | | | | |
| Ground Elevation: 233.5 ft | | Hammer Fall: 30 in. 30 in. | | | | | | |
| | | Hammer/Rod Type: Auto/AWJ | | | | | | |
| | | Rig: CME 75 TRACK CE = 1.43 | | | | | | |
| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | | Blow Count (ft Blow/2') | Meters at Contact | Gravel % | Sand % | Filler % |
| <p>Remarks:</p> <ol style="list-style-type: none"> Ground surface elevation estimated from a topographic site plan provided by VHR. Boring shifted ~10' north of surveyed location due to drill rig access constraints. Boring advanced open hole below 29.5' deep. Roller bit advanced into inferred bedrock / weathered rock from 54' to near refusal at 54.5' deep. Lab testing gradations reported are per AASHTO M145. | | | | | | | | |

Notes:
 1. Stratification lines represent approximate boundary between soil/rock types. Transition may be gradual.
 2. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 3. If values have not been corrected for hammer energy, CE is the hammer energy correction factor.
 4. 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
 AGENCY OF TRANSPORTATION
 MATERIALS & RESEARCH SECTION
 SUBSURFACE INFORMATION

BORING LOG

Brattleboro Bridge #9 Replacement
 IM 091-1(65) BR 9

Boring No.: B-209A
 Page No.: 1 of 1
 Pin No.: 12a026
 Checked By: JAG

Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign)
 Date Started: 3/27/12 Date Finished: 3/27/12
 VTSPG NAD83: N 136739.00 ft E 1621694.00 ft
 Station: 570+20 Offset: 5' L
 Ground Elevation: 233.5 ft

Type: H.S.A. Sampler 3" SS
 I.D.: 3.25 in 2.35 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 75 TRACK CE = 1.43

Groundwater Observations (3)

| Date | Depth (ft) | Notes |
|----------|------------|-------------|
| 03/27/12 | 11.8 | Wet sample. |
| 03/27/12 | 13.0 | In HSA. |

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|----------|--------|---------|
| 5 | x x x | S1) Top 2": Topsoil Bottom 6": Brown fine SAND, little Silt, trace fine to coarse Gravel. Rec. = 0.7 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 1-4-5-6 (NA) | | | | |
| | | S2) Brown fine SAND, little Silt, trace Root Fibers. Rec. = 0.8 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 10-20-18-16 (NA) | | | | |
| | | S3) Brown fine SAND, little fine to coarse Gravel, little Silt. Rec. = 0.8 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 6-6-4-5 (NA) | | | | |
| 10 | | S4) S4A - Top 2": Black CINDERS. S4B - Bottom 9": Brown fine SAND, little Silt. Rec. = 0.9 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 4-5-4-4 (NA) | | | | |
| | | S5) Brown stratified fine SAND, trace to little Silt. Rec. = 1.3 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 4-4-5-5 (NA) | | | | |
| | | S6) Brown fine SAND, little Silt. Rec. = 1.2 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 4-3-3-3 (NA) | | | | |
| 15 | | S7) Brown fine SAND, little Silt. Rec. = 1.5 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 5-3-3-2 (NA) | | | | |
| | | S8) Brown to orange brown fine to coarse SAND, some fine to coarse Gravel, little Silt. Rec. = 0.6 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 17-19-15-12 (NA) | | | | |
| | | S9) Brown fine to medium SAND, some fine to coarse Gravel, little Silt. (One 4" Cobble jammed in the tip of the spoon). Rec. = 0.4 ft (AASHTO M145 Classification: Visual Description (Burmister).) | 24-44-40 (NA) | | | | |
| | | Hole stopped @ 17.5 ft | | | | | |
| 20 | | Remarks: 1) Ground surface elevation estimated from a topographic site plan provided by VHB. 2) Boring performed 5' west of B-209. 3) Sampling performed with a 3" OD split spoon. Blows are not representative of an SPT N-value. | | | | | |
| 25 | | | | | | | |

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 BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13

Boring Crew: A. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/27/12 Date Finished: 3/28/12
YSPG HADRS: N 136689.00 ft E 1621703.00 ft
Station: 568+92 Offset: 37' R
Ground Elevation: 224 ft

Casing: FJ SS
L.D.: 4 in. 1.38 in.
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rtg: CME 75 TRACK CE = 1.43

Groundwater Observations (3)
Date: 03/27/12 Depth: 4.8 in casing. Notes:

| Depth (ft) | Strat (ft) | CLASSIFICATION OF MATERIALS (Description) | Unit Weight (pcf) | Core Rec. at (Top %) | Core Rec. at (Bot %) | Dist. from Intensity (ft) | Moist. Content (%) | Over. % | Swell % | Flow % |
|------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------|----------------------|---------------------------|--------------------|---------|---------|--------|
| 5 | 0-2 | S1) Very loose, Top 2" Topsoil. Bottom 7": Brown fine to medium SAND, trace (+) SILT. (SILTY SAND) Rec. = 0.8 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 1-1-2 | 23.7 | 2.1 | 57.8 | 40.0 | | | |
| 5 | 2-3 | S2) Loose, brown fine SAND, little SILT. With gray staining near bottom of sample. (SILTY SAND) Rec. = 0.3 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 3-2-3 | 21.0 | 10.9 | 61.8 | 27.3 | | | |
| 10 | 3-2-1 | S3) Loose, brown fine SAND, little SILT. (SILTY SAND) Rec. = 0.4 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 3-2-1 | 22.7 | 6.0 | 68.4 | 24.6 | | | |
| 15 | 2-2-4 | S4) Loose, brown fine SAND, little SILT. (SILTY SAND) Rec. = 0.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 2-2-4 | 28.0 | 0.5 | 87.4 | 12.3 | | | |
| 20 | 9-7-7-9 | S5) Medium dense, brown fine to medium SAND, trace SILT. (SILTY SAND) Rec. = 0.7 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | 9-7-7-9 | 15.4 | 20.1 | 65.7 | 14.2 | | | |
| 25 | 3-4-4-6 | Inferred transition from Silty Sand to Silty Gravelly Sand between 23' and 24.5'. (AASHTO M145 Classification: Field Note.) S6) Medium dense, brown fine to medium SAND, little fine to coarse Gravel, little SILT. (SILTY GRAVELLY SAND) Rec. = 0.3 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 3-4-4-6 | 23.4 | | 63.8 | 16.2 | | | |
| 25 | 2-6-9-12 | Inferred transition from Silty Gravelly Sand to Silty Sand between 24.5' and 28'. (AASHTO M145 Classification: Field Note.) S7) Medium dense, brown fine SAND, little SILT. (SILTY SAND) Rec. = | 2-6-9-12 | 24.3 | 0.4 | 81.7 | 17.9 | | | |

1. Stratification lines represent approximate boundary between material types. Locations may be graded.
2. If Yellow lines have been searched for hammer energy, CE is the hammer energy correction factor.
3. If Yellow lines have been searched for fines and color conditions noted. Classification of groundwater may occur due to other factors than those present at the time measurements were made.

Boring Crew: A. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/27/12 Date Finished: 3/28/12
YSPG HADRS: N 136689.00 ft E 1621703.00 ft
Station: 568+92 Offset: 37' R
Ground Elevation: 224 ft

Casing: FJ SS
L.D.: 4 in. 1.38 in.
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rtg: CME 75 TRACK CE = 1.43

Groundwater Observations (3)
Date: 03/27/12 Depth: 4.8 in casing. Notes:

| Depth (ft) | Strat (ft) | CLASSIFICATION OF MATERIALS (Description) | Unit Weight (pcf) | Core Rec. at (Top %) | Core Rec. at (Bot %) | Dist. from Intensity (ft) | Moist. Content (%) | Over. % | Swell % | Flow % |
|------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------|----------------------|---------------------------|--------------------|---------|---------|--------|
| 35 | 2-5-4-5 | 1.4 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) S8) Loose, gray brown fine SAND, little SILT, med. (SILTY SAND) Rec. = 1.5 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 2-5-4-5 | 18.1 | 29.0 | 45.0 | 25.8 | | | |
| 40 | 2-5-7-10 | S9) Similar description as S8 except medium dense and wet. (SILTY SAND) Rec. = 1.7 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 2-5-7-10 | 25.1 | 86.6 | 13.4 | | | | |
| 45 | 3-4-8-10 | S10) Medium dense, gray brown fine SAND, trace to little SILT, wet. (SILTY SAND) Rec. = 1.7 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 3-4-8-10 | 23.7 | 85.4 | 14.6 | | | | |
| 50 | 2-6-8-10 | S11) Medium dense, gray brown fine SAND, little SILT, wet. (SILTY SAND) Rec. = 2.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 2-6-8-10 | 22.3 | 0.5 | 74.7 | 25.0 | | | |
| 55 | 10-12-2-5 | S12) Medium dense, gray brown fine to medium SAND, little SILT, trace fine Gravel; decomposed silted near vertical bedding bottom 1" of sample. (SILTY SAND) Rec. = 1.3 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | 10-12-2-5 | 14.7 | 24.7 | 54.2 | 21.1 | | | |
| 55 | C1 | C1) Very poor quality, hard, moderately weathered, fissured to closely jointed, gray with white banding and orange weathering in joints. PHYLLITE with white Quartzite intrusions. Fractured surfaces show some schistosity. Jointing near 60 degrees from horizontal. No reaction to dilute HCl. | C1 | 92 | 5 | | | | | |
| 55 | C2 | C2) Very poor quality, hard, moderately weathered, shelled to closely jointed, gray with white banding and orange weathering in joints. PHYLLITE with white Quartzite intrusions. Fractured surfaces show some schistosity. Jointing near 60 degrees from horizontal. No reaction to dilute HCl. | C2 | 108 | 5 | | | | | |
| 55 | | Top of Bedrock @ 60.0 ft | | | | | | | | |

1. Stratification lines represent approximate boundary between material types. Locations may be graded.
2. If Yellow lines have been searched for hammer energy, CE is the hammer energy correction factor.
3. If Yellow lines have been searched for fines and color conditions noted. Classification of groundwater may occur due to other factors than those present at the time measurements were made.

Boring Crew: A. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/27/12 Date Finished: 3/28/12
YSPG HADRS: N 136689.00 ft E 1621703.00 ft
Station: 568+92 Offset: 37' R
Ground Elevation: 224 ft

Casing: FJ SS
L.D.: 4 in. 1.38 in.
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rtg: CME 75 TRACK CE = 1.43

Groundwater Observations (3)
Date: 03/27/12 Depth: 4.8 in casing. Notes:

| Depth (ft) | Strat (ft) | CLASSIFICATION OF MATERIALS (Description) | Unit Weight (pcf) | Core Rec. at (Top %) | Core Rec. at (Bot %) | Dist. from Intensity (ft) | Moist. Content (%) | Over. % | Swell % | Flow % |
|------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------|----------------------|---------------------------|--------------------|---------|---------|--------|
| 65 | C3 | Jointed, gray with white banding and orange weathering in joints. PHYLLITE with white Quartzite from 58 to 60 feet. Fractured surfaces show some schistosity. Jointing at ~40 to 50 degrees from horizontal. No reaction to dilute HCl. C3) Fair quality, Upper 18": Hard, slightly weathered, very closely to moderately jointed, gray with white banding and orange weathering in joints. PHYLLITE. Jointing ~40 degrees from horizontal. No reaction to dilute HCl. Lower 38": Hard, fresh, moderately jointed, gray with white banding. LIMESTONE. Jointing ~20 to 30 degrees from horizontal. Strong reaction to dilute HCl. | C3 | 83 | 7 | | | | | |
| 65 | C4 | C4) Good quality, Upper 13": White QUARTZITE. 13" to 19": Hard, moderately weathered, very closely jointed, gray with white PHYLLITE. Jointing at ~40 degrees from horizontal. 19" to 26": Hard, fresh, closely jointed, gray with white banding. LIMESTONE 28" to 60": Hard, moderately weathered, moderately jointed to fissured, gray with white banding. PHYLLITE. Occasionally interbedded with Limestone (1/2" thick beds). Jointing at ~40 degrees from horizontal. Strong reaction to dilute HCl on Limestone beds. | C4 | 100 | 5 | | | | | |
| 70 | | Hole stopped @ 71.0 ft | | | | | | | | |
| 75 | | Remarks: 1) Ground surface elevation estimated with a hand level from a benchmark on a nearby utility pole. 2) Boring shifted ~18' south of surveyed location. 3) Lab testing gradations reported are per AASHTO M145. | | | | | | | | |

1. Stratification lines represent approximate boundary between material types. Locations may be graded.
2. If Yellow lines have been searched for hammer energy, CE is the hammer energy correction factor.
3. If Yellow lines have been searched for fines and color conditions noted. Classification of groundwater may occur due to other factors than those present at the time measurements were made.



BORING LOG

Brattleboro Bridge #9 Replacement
IM 091-1(65) BR 9

Boring No.: B-211
Page No.: 1 of 2
Pin No.: 12a026
Checked By: JAG

Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/21/12 Date Finished: 3/22/12
VTSPG NAD83: N 136798.00 ft E 1621764.00 ft
Station: 571+11 Offset: 2' R
Ground Elevation: 263 ft

Type: FJ
I.D.: 4 in 1.38 in
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 75 TRACK CE = 1.43

Groundwater Observations (3)

| Date | Depth (ft) | Notes |
|----------|------------|-------------------|
| 03/22/12 | 20.5 | In casing (15hrs) |
| 03/23/12 | 29.0 | In well. |

| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Run (Dip deg.) | Core Rec. % (ROD %) | Groundwater Observations (3) | | | | |
|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|---------------------|------------------------------|-----------------------|--------------------|----------|--------|
| | | | | | | Drill Rate minutes/ft | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % |
| 0-5 | X X X | S1) Medium dense, Top 1": Topsoil. Bottom 11": Light brown fine SAND, little fine to coarse Gravel, little Silt. (FILL) Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 1-4-8-6 (12) | 10.4 | 33.1 | 45.5 | 21.4 |
| 5-10 | X X X | S2) Dense, gray brown fine to medium SAND, little (+) Silt, little fine to coarse Gravel. (FILL) Rec. = 0.8 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 14-17-23-26 (40) | 11.5 | 40.7 | 42.5 | 16.8 |
| 10-15 | X X X | S3) Medium dense, brown fine to medium SAND, little fine to coarse Gravel, trace (+) Silt. (FILL) Rec. = 0.8 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 11-12-14-15 (26) | 8.4 | 51.7 | 37.3 | 11.0 |
| 15-19.5 | | Inferred transition to natural Silty Sand between 13.5' and 15' (AASHTO M145 Classification: Field Note.) | | | | | | | | |
| 19.5-20 | | Inferred cobble based on roller bit grinding between 19' and 19.5'. (AASHTO M145 Classification: Field Note.) | | | | | | | | |
| 20-25 | | S5) Medium dense, gray stratified fine SAND, little Silt. (SILTY SAND) Rec. = 1.0 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 4-7-10-11 (17) | 15.8 | 0.3 | 41.0 | 58.7 |
| 25-28.5 | | S6) Medium dense, gray stratified fine SAND, little to some Silt. (SILTY SAND) Rec. = 1.2 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 7-6-7-8 (13) | 20.0 | 0.1 | 43.5 | 56.4 |
| 28.5-30 | | Inferred transition from Silty Sand to Silty Gravelly Sand between 28.5' and 30'. (AASHTO M145 Classification: Field Note.) | | | | | | | | |

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.



BORING LOG

Brattleboro Bridge #9 Replacement
IM 091-1(65) BR 9

Boring No.: B-211
Page No.: 2 of 2
Pin No.: 12a026
Checked By: JAG

Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/21/12 Date Finished: 3/22/12
VTSPG NAD83: N 136798.00 ft E 1621764.00 ft
Station: 571+11 Offset: 2' R
Ground Elevation: 263 ft

Type: FJ
I.D.: 4 in 1.38 in
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 75 TRACK CE = 1.43

Groundwater Observations (3)

| Date | Depth (ft) | Notes |
|----------|------------|-------------------|
| 03/22/12 | 20.5 | In casing (15hrs) |
| 03/23/12 | 29.0 | In well. |

| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Run (Dip deg.) | Core Rec. % (ROD %) | Groundwater Observations (3) | | | | |
|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|---------------------|------------------------------|-----------------------|--------------------|----------|--------|
| | | | | | | Drill Rate minutes/ft | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % |
| 0-35 | | S8) Medium dense, gray brown fine to medium SAND, little fine to coarse Gravel, little Silt. (SILTY GRAVELLY SAND) Rec. = 0.7 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 14-10-8-11 (18) | 13.2 | 33.5 | 48.3 | 18.2 |
| 35-40 | | Inferred bedrock from 33' to 33.5'. (AASHTO M145 Classification: Field Note.) C1) Excellent quality, hard, slightly weathered, moderately jointed, gray with occasional white banding LIMESTONE. Quartzite intrusion 37.5 to 38.5 feet. Strong reaction to dilute HCL C2) Good quality, hard, moderately weathered, gray with white bedding LIMESTONE (Upper 23") transitioning to PHYLLITE (Lower 35"). Strong dilute HCL reaction in Limestone and white bedded sections. No reaction in Phyllite sections | | | | | | | | |
| 40-45 | | Hole stopped @ 43.5 ft | | | | | | | | |

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: BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13

GEODESIGN BORING LOG: BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13



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

BORING LOG
Borings No.: B-212
Page No.: 1 of 2
Pin No.: 12a026
Checked By: JAG

Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/28/12 Date Finished: 3/29/12
VTSPG NAD83: N 136884.00 ft E 1621848.00 ft
Station: 572+31 Offset: 0.00
Ground Elevation: 318 ft

Type: Casing FJ Sampler SS
I.D.: 4 in 1.38 in
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 75 TRACK CE = 1.43

Groundwater Observations (3)
Date Depth (ft) Notes
03/29/12 15.5 In casing overnight.

| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. (ROD %) | Drill Rate (minutes/ft) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % | |
|------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|-------------------------|-----------------------|--------------------|----------|--------|---------|--|
| 5 | X X X | S1 Top 2": Very loose, dark brown topsoil. Bottom 4": fine to medium SAND, little Silt, trace fine Gravel, trace Roots. (FILL) Rec. = 0.5 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 1-2-1-1 (3) | 16.0 | 18.2 | 45.7 | 36.1 | |
| | | S2 Loose, brown fine to medium SAND, little fine to coarse Gravel, little Silt. (FILL) Rec. = 0.2 ft (AASHTO M145 Classification: A-1-b) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | 2-3-3-9 (6) | 14.3 | 38.5 | 41.0 | 20.5 | |
| | | Inferred Silty Sand from 1956 boring data between 6.5' and 9'. (AASHTO M145 Classification: Field Note.) | | | | | | | | | |
| 10 | [Pattern] | C1 Very poor quality, hard, moderately weathered, fissured to closely jointed, gray with white banding and orange weathering in joints PHYLLITE Fractured surfaces show some schistosity. Jointing at ~70 to 80 degrees from horizontal. No reaction to dilute HCl. | C1 | 93 (0) | 4 | | | | | | |
| | | C2 Very poor quality, hard, moderately weathered, fissured to closely jointed, gray with white banding and orange weathering in joints PHYLLITE Fractured surfaces show some schistosity. Jointing at ~60 to 70 degrees from horizontal. No reaction to dilute HCl. | C2 | 100 (0) | 5 | | | | | | |
| | | C3 Very poor quality, hard, moderately weathered, fissured to closely jointed, gray with white banding and orange weathering in joints PHYLLITE Upper 13" of core shows some schistosity. Jointing at ~70 degrees from horizontal. No reaction to dilute HCl. | C3 | 100 (0) | 6 | | | | | | |
| | | C4 Very poor quality, hard, moderately weathered, shattered to closely jointed, gray with white banding and orange weathering in joints PHYLLITE Fractured surfaces show some schistosity. Jointing at ~80 to 90 degrees from horizontal. No reaction to dilute HCl. | C4 | 100 (0) | 5 | | | | | | |
| | | C5 Very poor quality, hard, moderately weathered, shattered to closely jointed, gray with white banding PHYLLITE Jointing at ~80 to 90 degrees from horizontal in upper 25" and at ~40 to 50 degrees from horizontal lower 16". White Quartzite intrusions from 33" to 41" in the core. No reaction to dilute HCl. | C5 | 100 (0) | 8 | | | | | | |
| 25 | | Hole stopped @ 24.0 ft | | | | | | | | | |

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
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG
Borings No.: B-212
Page No.: 2 of 2
Pin No.: 12a026
Checked By: JAG

Boring Crew: J. Leonhardt (TransTech), B. Marshall (GeoDesign)
Date Started: 3/28/12 Date Finished: 3/29/12
VTSPG NAD83: N 136884.00 ft E 1621848.00 ft
Station: 572+31 Offset: 0.00
Ground Elevation: 318 ft

Type: Casing FJ Sampler SS
I.D.: 4 in 1.38 in
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 75 TRACK CE = 1.43

Groundwater Observations (3)
Date Depth (ft) Notes
03/29/12 15.5 In casing overnight.

| Depth (ft) | Strat(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. (ROD %) | Drill Rate (minutes/ft) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % | |
|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------|-------------------------|-----------------------|--------------------|----------|--------|---------|--|
| 35 | | Remarks: 1) Boring location offset 14' north of surveyed stake location. 2) Fill thickness inferred from 1956 record drawings for the original bridge construction and increased blow counts observed at 6.5' deep. Soil matrix of natural soils is inferred from boring B-211 and those shown on the 1956 record drawings for the original bridge construction. 3) Casing refusal at 8.5' deep. Driller advanced roller bit then casing into rock to 9' deep prior to coring. 4) Upon completion of exploration, borehole was backfilled with bentonite cement grout. 5) Lab testing gradations reported are per AASHTO M145. | | | | | | | | | |
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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: BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.CPJ VERMONT A01.GBT 12/2/13

GEODESIGN BORING LOG: BRATTLEBORO IM 091-1(65) BR 9 VTRANS FORMAT.CPJ VERMONT A01.GBT 12/2/13



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

BORING LOG

Brattleboro Bridge #9 Replacement
 IM 091-1(65) BR 9

Boring No.: B-301
 Page No.: 1 of 1
 Pin No.: 12a026
 Checked By: JFW

Boring Crew: Joshua Gilman (GeoDesign), Tom Farrell (SJB)
 Date Started: 8/14/12 Date Finished: 8/14/12
 VTSPG NAD83: N 136333.00 ft E 1621304.00 ft
 Station: 564+58 Offset: 14' R
 Ground Elevation: 234.6 ft

Casing Sampler
 Type: FJ
 I.D.: 4 in
 Hammer Wt: 140 lb. N.A.
 Hammer Fall: 30 in. N.A.
 Hammer/Rod Type: Auto/NWJ
 Rig: CME 550X ATV CE = 1.5

Groundwater Observations (3)

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

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. % (RQD %) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|-----------------------|--------------------|----------|--------|---------|
| 5 | x x x | Inferred to be Fill based on soil samples from nearby Boring B-204 | | | | | | | |
| 10 | x x x | Inferred to be Silty Sand based on soil samples from nearby Boring B-204 | | | | | | | |
| 20 | | C1) Very poor quality, moderately hard, moderately weathered, very closely jointed dark gray with white banding PHYLLITE. | C1 | 88 (13) | | | | | |
| 25 | | C2) Poor quality, moderately hard, moderately to slightly weathered, very closely to moderately jointed dark gray with white banding PHYLLITE. | C2 | 100 (46) | | | | | |
| 30 | | C3) Poor quality, moderately hard, slightly weathered, closely jointed, dark gray with white banding PHYLLITE. | C3 | 91 (46) | | | | | |
| 30.8 | | Hole stopped @ 30.8 ft | | | | | | | |
| 35 | | Remarks: 1) Soil boring location and elevation shown are surveyed by VHB. 2) No groundwater observations were made due to wash-drive drilling method. 3) Soil strata is inferred from B-204 located 12 feet northwest of B-301. No soil samples were taken from Boring B-301. 4) Driller noted rig chatter at 5.5 feet deep on inferred cobble. 5) Increased roller bit resistance and grinding observed at 20 feet deep (inferred top of weathered bedrock). 6) Driller stopped coring C2 due to core barrel blockage. 7) 3" I.D. inclinometer casing installed to 23 feet deep with grout mix consisting of approximately 1.5 bags of cement (94# bag), 10# of bentonite, and 25 gallons of water. Length of casing installed was 24'-4" with 18" stick-up. | | | | | | | |

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 750-09.6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13



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

BORING LOG

Brattleboro Bridge #9 Replacement
 IM 091-1(65) BR 9

Boring No.: B-302
 Page No.: 1 of 1
 Pin No.: 12a026
 Checked By: JFW

Boring Crew: Joshua Gilman (GeoDesign), Tom Farrell (SJB)
 Date Started: 8/15/12 Date Finished: 8/15/12
 VTSPG NAD83: N 136336.00 ft E 1621293.00 ft
 Station: 564+52 Offset: 4' R
 Ground Elevation: 235 ft

Casing Sampler
 Type: FJ
 I.D.: 4 in
 Hammer Wt: 140 lb. N.A.
 Hammer Fall: 30 in. N.A.
 Hammer/Rod Type: Auto/NWJ
 Rig: CME 550X ATV CE = 1.5

| Groundwater Observations (3) | | |
|------------------------------|------------|-------|
| Date | Depth (ft) | Notes |
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. % (ROD %) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------|-----------------------|--------------------|----------|--------|---------|
| 5 | x x x x x x x x x x x x x x x x x x x x x x x x | Inferred to be Fill based on soil samples from nearby Boring B-204 | | | | | | | |
| 10 | | Inferred to be Silty Sand based on soil samples from nearby Boring B-204 | | | | | | | |
| 15 | | | | | | | | | |
| 20 | | C1) Good quality, hard, slightly weathered, closely jointed, gray with white banding PHYLLITE. C2) Fair quality, hard, moderately weathered, closely jointed, gray with white banding PHYLLITE. | C1 C2 | 100 (88) 100 (68) | | | | | |
| 25 | | Hole stopped @ 23.0 ft | | | | | | | |
| 30 | | Remarks: 1) Soil boring location and elevation shown are surveyed by VHB. 2) No groundwater observations were made due to wash-drive drilling method. 3) Soil strata is inferred from B-204 located 5 feet northeast of B-302. No soil samples were taken from Boring B-302. 4) Casing and roller bit refusal at 5.5 feet deep on inferred cobble. Driller offset approximately 3 feet northwest to resume advance. 5) Driller advanced to 9 feet deep with 4.25" I.D. hollow stem auger through cobbles and boulders, then resumed advance with 4" flush-joint casing. 6) Driller noted casing refused at 14 feet deep. Driller advanced roller bit to 16 feet deep through inferred weathered bedrock prior to attempting C1. 7) 3" I.D. inclinometer casing installed to 23 feet deep with grout mix consisting of approximately 1.5 bags of cement (94# bag), 10# of bentonite, and 25 gallons of water. Length of casing installed was 24'-1 1/4" with 15" stick-up. (~3" of stickup removed at time of crosshole seismic testing). | | | | | | | |
| 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 750-09.6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13



Boring Crew: Jesse McIntyre (GeoDesign), Ralph Ciccatelli (SJB)
Date Started: 8/17/12 Date Finished: 8/20/12
VTSPG NAD83: N 136744.00 ft E 1621693.00 ft
Station: 570+26 Offset: 8' L
Ground Elevation: 233.2 ft

Casing Sampler
Type: FJ
I.D.: 4 in
Hammer Wt: 140 lb. N.A.
Hammer Fall: 30 in. N.A.
Hammer/Rod Type: Auto/NWJ
Rig: CME 550X ATV CE = 1.5

Groundwater Observations (3)
Date Depth (ft) Notes

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Tip dep.) | Core Rec. % (RQD %) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|-----------------------------------------------------------------------------------------------------------|----------------|---------------------|-----------------------|--------------------|----------|--------|---------|
| | | | | | | | | | |
| 0-5 | x x x | Inferred to be Fill based on soil samples from nearby Boring B-209 | | | | | | | |
| 5-45 | | Inferred to be Silty Sand with occasional gravelly layers based on soil samples from nearby Boring B-209. | | | | | | | |
| 45-50 | | Inferred to be Silty Gravelly Sand based on soil samples from nearby Boring B-209. | | | | | | | |

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.



Boring Crew: Jesse McIntyre (GeoDesign), Ralph Ciccatelli (SJB)
Date Started: 8/17/12 Date Finished: 8/20/12
VTSPG NAD83: N 136744.00 ft E 1621693.00 ft
Station: 570+26 Offset: 8' L
Ground Elevation: 233.2 ft

Casing Sampler
Type: FJ
I.D.: 4 in
Hammer Wt: 140 lb. N.A.
Hammer Fall: 30 in. N.A.
Hammer/Rod Type: Auto/NWJ
Rig: CME 550X ATV CE = 1.5

Groundwater Observations (3)
Date Depth (ft) Notes

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Tip dep.) | Core Rec. % (RQD %) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|-----------------------|--------------------|----------|--------|--------------------------|
| | | | | | | | | | |
| 0-55 | | | | | | | | | |
| 55-60 | | C1) Very poor quality, moderately hard to hard, fresh to moderately weathered, closely jointed to shattered, gray with white banding PHYLLITE. With occasional white Quartz intrusions. Jointing at ~60 degrees from horizontal. No reaction to dilute HCl. | C1 | 88 (22) | | | | | Top of Bedrock @ 54.0 ft |
| 60-65 | | C2) Very poor quality, moderately hard to hard, fresh to moderately weathered, closely jointed to shattered, gray with white banding PHYLLITE. With occasional weathered Quartz intrusions Jointing ~60 degrees from horizontal. No reaction to dilute HCl. | C2 | 85 (18) | | | | | |
| 65-64.0 | | Hole stopped @ 64.0 ft | | | | | | | |

Remarks:
1) Soil boring location and elevation shown are surveyed by VHB.
2) No groundwater observations were made due to wash-drive drilling method.
3) Soil strata is inferred from B-209 located 9 feet southeast of B-303. No soil samples were taken from Boring B-303.
4) Advanced boring with hollow stem augers to 14' deep prior to switching to 4" flush joint casing.
5) Note loss of water towards end of C2. Had to refill recirculation tub 3 times.

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: 750-08.6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ VERMONT AUT.GDT 12/2/13

GEODESIGN BORING LOG: 750-08.6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ VERMONT AUT.GDT 12/2/13



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

BORING LOG
Brattleboro Bridge #9 Replacement
IM 091-1(65) BR 9

Boring No.: B-304
Page No.: 1 of 2
Pin No.: 12a026
Checked By: JFW

Boring Crew: Jesse McIntyre (GeoDesign), Ralph Ciccaterri (SJB)
Date Started: 8/21/12 Date Finished: 8/23/12
VTSPG NAD83: N 136737.00 ft E 1621700.00 ft
Station: 570+22 Offset: 1' R
Ground Elevation: 233.2 ft

Casing Sampler
Type: FJ
I.D.: 4 in
Hammer Wt: 140 lb. N.A.
Hammer Fall: 30 in. N.A.
Hammer/Rod Type: Auto/NWJ
Rig: CME 550X ATV CE = 1.5

| Groundwater Observations (3) | | |
|------------------------------|------------|-------|
| Date | Depth (ft) | Notes |
| | | |
| | | |

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. % (RQD %) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|-----------------------------------------------------------------------------------------------------------|----------------|---------------------|-----------------------|--------------------|----------|--------|---------|
| | | | | | | | | | |
| 0-5 | x x x | Inferred to be Fill based on soil samples from nearby Boring B-209 | | | | | | | |
| 5-45 | | Inferred to be Silty Sand with occasional gravelly layers based on soil samples from nearby Boring B-209. | | | | | | | |
| 45-50 | | Inferred to be Silty Gravelly Sand based on soil samples from nearby Boring B-209. | | | | | | | |

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BORING LOG
Brattleboro Bridge #9 Replacement
IM 091-1(65) BR 9

Boring No.: B-304
Page No.: 2 of 2
Pin No.: 12a026
Checked By: JFW

Boring Crew: Jesse McIntyre (GeoDesign), Ralph Ciccaterri (SJB)
Date Started: 8/21/12 Date Finished: 8/23/12
VTSPG NAD83: N 136737.00 ft E 1621700.00 ft
Station: 570+22 Offset: 1' R
Ground Elevation: 233.2 ft

Casing Sampler
Type: FJ
I.D.: 4 in
Hammer Wt: 140 lb. N.A.
Hammer Fall: 30 in. N.A.
Hammer/Rod Type: Auto/NWJ
Rig: CME 550X ATV CE = 1.5

| Groundwater Observations (3) | | |
|------------------------------|------------|-------|
| Date | Depth (ft) | Notes |
| | | |
| | | |

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Run (Dip deg.) | Core Rec. % (RQD %) | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|-----------------------|--------------------|----------|--------|---------|
| | | | | | | | | | |
| 0-3 | | | | | | | | | |
| 3-55 | | C1) Upper 12": Slough in borehole. Bottom 16": Poor quality, moderately hard to hard, fresh with slightly weathered jointing, closely jointed, gray with white PHYLLITE With white Quartz intrusions. Jointing from near horizontal to ~60 degrees from horizontal. No reaction to dilute HCl. | C1 | 55 (36) | | | | | |
| 55-60 | | C2) Very poor quality, moderately hard to hard, slightly to moderately weathered, closely jointed to shattered, gray with white PHYLLITE Jointing ~45 degrees from horizontal. No reaction to dilute HCl. Hole stopped @ 59.5 ft | C2 | 100 (0) | | | | | |
| 60-95 | | Remarks: 1) Soil boring location and elevation shown are surveyed by VHB. 2) No groundwater observations were made due to wash-drive drilling method. 3) Soil strata is inferred from B-209 located 3 feet southwest of B-304. No soil samples were taken from Boring B-304. 4) Advanced boring with hollow stem augers to 14' deep prior to switching to 4" flush joint casing. Drove casing to 35' deep. 5) Advanced borehole open hole with the rollerbit from 35' to 55' deep. Telescoped through the 4" casing with 3" casing to 55' deep. Removed 3" casing and advanced 4" casing to refusal at 54' deep. 6) Core run C2 was stopped after 18" of penetration due to loss of water / core blockage. Driller to continue to end of intended run (63.5') with roller bit. | | | | | | | |
| 95-100 | | Top of Bedrock @ 55.0 ft | | | | | | | |

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GEODESIGN BORING LOG: 750-09-6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ - VERMONT AOT.ADT 12/2/13

GEODESIGN BORING LOG: 750-09-6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ - VERMONT AOT.ADT 12/2/13



STATE OF VERMONT
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 MATERIALS & RESEARCH SECTION
 SUBSURFACE INFORMATION

BORING LOG

Brattleboro Bridge #9 Replacement
 IM 091-1(65) BR 9

Boring No.: OW-1
 Page No.: 1 of 1
 Pin No.: 12a026
 Checked By: JFW

Boring Crew: Joshua Gilman (GeoDesign), Tom Farrell (SJB)
 Date Started: 8/16/12 Date Finished: 8/16/12
 VTSPG NAD83: N 136319.00 ft E 1621306.00 ft
 Station: 564+49 Offset: 26' R
 Ground Elevation: 234.7 ft

Type: FJ Sampler: SS
 I.D.: 4 in 1.38 in
 Hammer Wt: 140 lb. 140 lb.
 Hammer Fall: 30 in. 30 in.
 Hammer/Rod Type: Auto/NWJ
 Rig: CME 550X ATV CE = 1.5

Groundwater Observations (3)

| Date | Depth (ft) | Notes |
|----------|------------|----------|
| 08/20/12 | 15.0 | In well. |
| 08/24/12 | 15.1 | In well. |

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|---------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|--------------------|----------|--------|---------|
| Top of Well Elevation: 234.7 ft | | | | | | | | |
| 5 | x x x x x x x x x x x x x x x x x x x x x x x x | Inferred from nearby boring B-204 to be Fill. | | | | | | |
| 10 | | S1 (10'-12'): Very loose, brown fine to medium SAND and SILT, moist. Rec. = 0.75 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) Inferred from nearby boring B-204 to be Silty Fine Sand | | 4-2-2-3 (4) | 22.1 | 0.3 | 56.8 | 42.9 |
| 15 | | S2 (15'-17'): Loose, brown fine to medium SAND, some Silt, moist. Rec. = 1.08 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) Inferred from nearby boring B-204 to be Silty Fine Sand | | 2-3-3-4 (6) | 29.7 | 0.1 | 80.1 | 19.8 |
| 20 | | Hole stopped @ 18.2 ft Roller bit refusal on inferred bedrock. | | | | | | |
| 25 | | Remarks: 1) Location and elevation shown are based on survey data provided by VHB. 2) Bottom of casing was at 10 feet deep while sampling S1. 3) Bottom of casing was at 12.5 feet deep while sampling S2. 4) Casing and roller bit refusal at 18.2 feet deep on inferred bedrock. 5) Hammer efficiency is assumed. 6) Lab testing gradations reported are per AASHTO M145. | | | | | | |
| 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.
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GEODESIGN BORING LOG 750-09.6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13



STATE OF VERMONT
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BORING LOG

Brattleboro Bridge #9 Replacement
 IM 091-1(65) BR 9

Boring No.: OW-2
 Page No.: 1 of 1
 Pin No.: 12a026
 Checked By: JFW

Boring Crew: Jesse McIntyre (GeoDesign), Ralph Ciccaterra (SJB)
 Date Started: 8/23/12 Date Finished: 8/23/12
 VTSPG NAD83: N 136717.00 ft E 1621716.00 ft
 Station: 570+20 Offset: 27' R
 Ground Elevation: 233.9 ft

Casing Sampler
 Type: FJ SS
 I.D.: 4 in 1.38 in
 Hammer Wt: 140 lb. 140 lb.
 Hammer Fall: 30 in. 30 in.
 Hammer/Rod Type: Auto/NWJ
 Rig: CME 550X ATV CE = 1.5

Groundwater Observations (3)

| Date | Depth (ft) | Notes |
|----------|------------|----------|
| 08/24/12 | 13.8 | In well. |
| | | |
| | | |

| Depth (ft) | Strata(1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value)(2) | Moisture Content % | Gravel % | Sand % | Fines % |
|---------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|--------------------|----------|--------|---------|
| Top of Well Elevation: 234.6 ft | | | | | | | | |
| 0 - 5 | X X X X X X X X X X X X | S1 (2'-4'): Loose, tan fine to coarse SAND, little Silt, little fine Gravel. (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | 10.0 | 22.0 | 59.6 | 18.4 |
| 5 - 10 | | Inferred from nearby borings B-209 and B-210 to be Silty Fine Sand. | | 4-3-5-4 (8) | 21.9 | | 59.2 | 40.8 |
| 10 - 15 | | S2 (10'-12'): Loose, tan fine SAND and SILT, Rec. = 0.83 ft (AASHTO M145 Classification: A-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 3-1-1-3 (2) | 29.5 | 0.5 | 67.3 | 32.2 |
| 15 - 20 | | S3 (15'-17'): Very loose, tan fine SAND, some Silt, Rec. = 1.0 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | 5-6-6-7 (12) | 22.4 | 7.2 | 75.5 | 17.3 |
| 20 - 22 | | S4 (20'-22'): Medium dense, gray-brown fine SAND, little Silt, trace fine Gravel, Rec. = 0.58 ft (AASHTO M145 Classification: A-2-4) (AASHTO M145 Classification: Visual Description (Burmister).) | | | | | | |
| 22 - 25 | | Hole stopped @ 22.0 ft No Refusal. | | | | | | |
| 25 - 30 | | Remarks: 1) Location and elevation shown are based on survey data provided by VHB. 2) Hammer efficiency is assumed. 3) Lab testing gradations reported are per AASHTO M145. | | | | | | |
| 30 - 35 | | | | | | | | |
| 35 - 40 | | | | | | | | |
| 40 - 45 | | | | | | | | |
| 45 - 50 | | | | | | | | |

Notes:
 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
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GEODESIGN BORING LOG 750-09.6 BRATTLEBORO BR 9 SEISMIC VTRANS FORMAT.GPJ VERMONT AOT.GDT 12/2/13