



ADDENDUM NO. 1

August 25, 2020

426187

**RE: TOWN OF NORTHFIELD, VERMONT
UNION BROOK ROAD REHABILITATION PROJECT**

**FROM: DuBOIS & KING, INC.
6 Green Tree Drive
South Burlington, Vermont 05403
(802) 878-7661**

TO: Prospective Bidders

This Addendum forms part of the Contract Documents and modifies the original Bidding Documents issued by the Town of Northfield - Union Brook Road Rehabilitation Project project dated August, 2020. **Acknowledge receipt of this Addendum in the space provided on Page 1 of the Bid Form. Failure to do so will subject the Bidder to disqualification.**

I. Pre-Bid Meeting

A Pre-Bid meeting was held at the Project Site on August 19, 2020 at 10:00 a.m. Attendees are listed on the attached Pre-Bid Meeting Attendance Log (**Attachment 1**).

II. Boring Information

As requested, boring information will be included in this addendum (**Attachment 2**).

III. Contract Documents (Plan) Changes

REVISED attached Sheet 4, 7 and 8 are included as **Attachment 4** of this Addendum and replace the corresponding original sheet in the Plans.

IV. Contract Documents (Request for Bids) Changes

REVISED attached Request for Construction Bids is included as **Attachment 3** of this Addendum and replaces the original Request for Construction Bids.

V. **Contract Documents (Bid Form) Changes**

REVISED attached Bid Form is included as **Attachment 5** of this Addendum and replaces the corresponding original sheets in the Bid Form.

VI. **Questions & Answers**

Question 1: Can the hot mix asphalt be a superpave design versus marshall mix design?

Answer 1: Yes.

Question 2: Will you consider adding VAOT's - asphalt price adjustment clause?

Answer 2: Yes, See **Attachment 5**.

Asphalt Price Adjustment will be paid under Contract item 406.50 according to the requirements of Subsection 406.18 of the Standard Specifications. All asphalt cement and emulsified asphalt produced under any Contract Item will be included for adjustment.

The Index Price for asphalt cement for this Contract is \$474.00 per Ton.

Question 3: What grade of liquid would you like the Hot Mix Asphalt to be? VAOT specifies 70-28, but most towns pave with 58-28.

Answer 3: 58-28 may be used.

Question 4: If the December completion date holds, the paving specifications will have to be relaxed to allow for the late season paving. If you do allow the work to go into 2021, the asphalt price adjustment becomes much more important, and you would have to add some temp paving for trench patch and also potentially the full depth reconstruction areas.

Answer 4: See updated Request for Construction Bids regarding December completion. If contractor chooses to pave in 2020, then Extended Paving procedures shall apply. See Section 406.04 of the 2018 Standard Specifications for Construction indicates the necessary process for Extended-Season Paving. If contractor paves in 2021, no waivers for specifications shall apply.

See **Attachment 5** regarding asphalt price adjustment.

Full depth reconstruction must be constructed in 2020. This work shall include all excavations, geosynthetic, sand borrow, subbase of crushed gravel, fine graded and



bituminous concrete pavement. The contractor may install a temporary wearing surface through these areas. The temporary wearing surface shall be coarse milled prior to permanent wearing course paving in 2021.

If contractor chooses to pave in 2021, then all culvert and underdrain trenches shall have temporary pavement installed prior to winter shut down. The contractor shall be responsible for maintaining the temporary pavement sections through winter shut down.

Question 5: I see no mention of a bid bond or Performance & Payment bond. Are either of these required?

Answer 5: There will be a bid bond and performance and pay bond in the contract.

Question 6: The payment schedule is confusing, it seems like it is really written as if this is a LS project, but I believe it is a line item/quantity type contract. Can this be defined a little better, and please take into consideration that if you extend the completion date to 2021, that waiting for 50% of the project payment through the winter is very difficult on contractors.

Answer 6: In the Request for Bids, under Compensation, the payment method for this project has been modified (See **Attachment 3**).

Question 7: I might have missed it, but what is the basis of bid for consideration of the low bid. I would assume it is just the base bid items, and no alternates, but could you define this?

Answer 7: The Town of Northfield will select low bidders based on the low bid including all alternatives. Additionally, the Town shall select a successful bidder based upon the Town's best interest, including or excluding alternatives or other work as deemed in the Town's best interest.

Question 8: Is there a full depth reconstruction from Sta. 102+00-106+50? Because this is shown on plan sheet #3, but plan sheet #4 shows a straight cold plane 2", shim and overlay from Sta. 83+50-166+00, and then the transition diagrams on sheet #8 do not show any transitions in the 102+00-106+50 area.

Answer 8: Contract Plans have been updated (See **Attachment 4**).

Question 9: It appears based on the bid quantity for cold planing and transition details on Sheet #8, that your intent is to pay for cold planning the entire 19,394 LF of the project. Can you confirm this?

Answer 9: Correct, but the contractor has the option to excavate through the full



depth reconstruction areas (See Note 1 on Detail Sheet 4 in the Contract Plans).

Question 10: It would appear based on the quantities as they are listed in the alternates, that you could not add Alt #2 paving, without also adding alt #1 paving. Can you confirm?

Answer 10: Yes. Each of the bid alternates represents an additional 1 inch in total section thickness. If a bid alternate is selected, then the number of courses, types and thickness will change. See Bid Alternates Table on Detail Sheet 5 in the Contract Documents for more information.

Question 11: The detail for the cross culverts indicates that the trench patch paving is incidental to 406.25. I assume this would mean that we would get paid for the tons used in the trench patch under the 406.25 item, but can you confirm?

Answer 11: Yes, trench patching paving will be paid under Contract Item 406.25 (or respective paving item). Payment will be for the amount of installed tons.

Question 12: You indicated at the prebid that you would share the boring information in the addendum. Just wanted to confirm this, so we can get an idea on the depth of trench patch.

Answer 12: See **Attachment 2** for Boring Information.

Question 13: Patch paving on the road, will the contractor be expected to patch pave back in the areas of full depth reconstruction and the culvert replacement areas immediately when work is complete, prior to the overall mill and fill of the project? Or is it acceptable to leave these areas graveled in preparation for paving all in one shot? Our paving manager has concerns with the cost of repeatedly mobilizing forces to complete smaller patch paving operations.

Answer 13: The Contractor may leave areas graveled before paving, or winter shut down, whichever comes first. However, if the contractor chooses to do final paving into 2021, then temporary pavement shall go over the trench excavations. Full depth reconstruction areas must be completed (excavations, geosynthetic, sand borrow, subbase of crushed gravel, fine graded and bituminous concrete pavement) prior to winter.

It should also be noted that coarse-milling will have to occur in the same season as paving.

Question 14: Will emulsion be expected to be applied prior to the final course of paving if the alternate for an intermediate course is accepted? Typically, there would be a layer of emulsion between the base course and the intermediate course,



and not the intermediate course and the wearing/top course.

Answer 14: As indicated in the 2018 Specifications, Section 406.12 CONDITIONING OF EXISTING SURFACE, all surfaces shall be cleaned and sprayed with an emulsion meeting the requirements of emulsified asphalt. Application rates are specified in Table 406.12A – SURFACE TYPE AND EMULSION APPLICATION RATES.

Question 14: How will Solid Rock Excavation of Trench Excavation of Earth paid for?

Answer 15: Solid Rock Excavation and Trench Excavation of Rock shall be considered incidental to items 900.640 “Special Provision (18” CPEP (SL))”, 900.640 “Special Provision (24” CPEP (SL))”, 900.640 “Special Provision (36” CPEP (SL))”, 900.640 “Special Provision (Ditching, Grass Lined)”, 900.640 “Special Provision (Ditching, Stone Lined)”, or 900.640 “Special Provision (Underdrain Pipe, 6 Inches)”. It is expected that the contractor excavate all pullable ledge with bucket, to the lines and grades shown on the plan. If ledge is not pullable, then the contractor shall notify the Town or Engineer to determine if typical shall be modified, if another detail shall be used, or if another typical section shall be used.

Question 16: What is the existing right-of-way width?

Answer 16: The right-of-way is assumed to be 3 rods or 49.5 feet, centered on the roadway.

This document constitutes Addendum 1 for this project.



ATTACHMENT 1

ATTACHMENT 2



Project: Union Brook Road
 Location: Northfield, VT
 Project No.: 4785.00

Log of Boring SH-1
 Ground Elevation: Not Available

Sanborn, Head & Associates, Inc.

Drilling Method: Mobile B-53 Drill Rig with 4 1/4" ID HSA

Sampling Method: 2" O.D. Split Spoon with Safety Hammer

Groundwater Readings

| Date | Time | Depth to Water | Ref. Pt. | Depth of Casing | Depth of Hole | Stab. Time |
|----------|------|----------------------------|----------|-----------------|---------------|------------|
| 05/05/20 | --- | No Groundwater Encountered | | | | |

Drilling Company: Mike's Boring and Coring, LLC

Foreman: M. McGinley

Date Started: 05/05/20

Date Finished: 05/05/20

Logged By: A. Lulias

Checked By: S. Kelley

BORING LOG C:\USERS\IDONOVAN\DESKTOP\VPN LOCAL FOLDER\4785.00\4785.00 LOGS.GPJ 2010 SANBORN HEAD V1.GLB 2010 SANBORN HEAD V1.GDT 6/26/20

| Depth (ft) | Sample Information | | | | | Stratum | | Geologic Description | Remarks |
|------------|--------------------|------------|--------------------------|--------------|--------------------|---------|---------------|---|---|
| | Sample No. | Depth (ft) | Spoon Blows per 6 in | Pen/Rec (in) | Field Testing Data | Log | Description | | |
| 0 | | | | | | | ASPHALT | (0 to 0.3'): ASPHALT. | |
| 0.3 | S-1 | 0.5 - 2 | 9 10 8 | 24/10 | | | | S-1 (0.3 to 2'): Medium dense, light brown, fine to coarse SAND and Gravel, little Silt. Moist. | |
| 2 | S-2 | 2 - 4 | 10 8 6 5 | 24/12 | | | FILL | S-2 (2 to 4'): Medium dense, brown, fine to coarse SAND & GRAVEL, little Silt. Moist. | |
| 4 | S-3 | 4 - 6 | 6 8 19 23 | 24/12 | | | | S-3A (4 to 5.5'): Medium dense, light brown, fine to coarse SAND & GRAVEL, some Silt. Moist. | |
| 6 | S-4 | 6 - 8 | 17 16 22 29 | 24/12 | | | SAND & GRAVEL | S-3B (5.5 to 6'): Dense, brown, fine to coarse SAND, little Gravel, trace Silt. Moist. S-4 (6 to 8'): Dense, brown, fine to coarse SAND & GRAVEL, trace Silt. Moist. | Drill rig bouncing at approximately 5 feet. Redish brown staining approximately 1" from spoon tip. |
| 8 | S-5 | 8 - 10 | 47 36 29 48 | 24/10 | | | | S-5 (8 to 10'): Hard, orange brown, CLAY & SILT, some Sand, trace Gravel. Moist. TILL. | |
| 10 | S-6 | 10 - 12 | 23 35 44 100/5" | 23/18 | | | GLACIAL TILL | S-6 (10 to 12'): Very dense, orange brown, fine to coarse SAND & GRAVEL, little Clayey Silt. Moist. TILL. | |
| 15.2 | S-7 | 15 - 15.2 | 100/2" | 2/2 | | | | S-7 (15 to 15.2'): Crushed Rock in Spoon Tip. | Drilling slowed at approximately 14 feet. Drilled into rock at approximately 15 feet for 2-inches. |
| 15.2 | | | | | | | | Boring terminated at 15.2 feet due to refusal. | |



Project: Union Brook Road
 Location: Northfield, VT
 Project No.: 4785.00

Log of Boring SH-2
 Ground Elevation: Not Available

Sanborn, Head & Associates, Inc.

Drilling Method: Mobile B-53 Drill Rig with 4 1/4" ID HSA

Sampling Method: 2" O.D. Split Spoon with Safety Hammer

Groundwater Readings

| Date | Time | Depth to Water | Ref. Pt. | Depth of Casing | Depth of Hole | Stab. Time |
|----------|------|----------------|----------------|-----------------|-----------------|------------|
| 05/05/20 | 10am | 8 feet | ground surface | | wet soil sample | |

Drilling Company: Mike's Boring and Coring, LLC

Foreman: M. McGinley

Date Started: 05/05/20

Date Finished: 05/05/20

Logged By: I. Donovan

Checked By: S. Kelley

BORING LOG C:\USERS\IDONOVAN\DESKTOP\VPN LOCAL FOLDER\4785.00\4785.00 LOGS.GPJ 2010 SANBORN HEAD V1.GLB 2010 SANBORN HEAD V1.GDT 6/26/20

| Depth (ft) | Sample Information | | | | | Stratum | | Geologic Description | Remarks |
|------------|--------------------|------------|----------------------|---------------|--------------------|---------|-----------------------------|--|---|
| | Sample No. | Depth (ft) | Spoon Blows per 6 in | Pen/ Rec (in) | Field Testing Data | Log | Description | | |
| 0 | S-1 | 0 - 2 | 100/1" | 1/0 | | | ---0'--- ASPHALT | S-1A (0 to 1.8'): ASPHALT. | Offset 2 feet towards the roadway and continued drilling due to possible utility indicated by Northfield DPW staff. |
| 2 | S-2 | 2 - 4 | 6 5 7 6 | 24/12 | | | ---1.7'--- FILL | S-1B (1.8 to 2'): Brown/black, fine to coarse SAND, some Gravel, trace Silt. Moist. S-2 (2 to 4'): Medium dense, brown/black, fine to coarse SAND and Gravel, trace Silt. Moist. | |
| 4 | S-3 | 4 - 6 | 8 5 5 7 | 24/13 | | | ---4.8'--- SAND & GRAVEL | S-3A (4 to 4.8'): Loose, gray/black, fine to coarse SAND, some Gravel, trace Silt, few Asphalt fragments. Moist. | |
| 6 | S-4 | 6 - 8 | 8 5 5 6 | 24/11 | | | | S-3B (4.8 to 6'): Loose, tan/brown, fine to coarse SAND, little Gravel, little Silt. Moist. S-4 (6 to 8'): Loose, tan/brown, fine to coarse SAND, some Gravel, trace Silt. Moist. | |
| 8 | S-5 | 8 - 10 | 8 7 6 4 | 24/5 | | | | S-5 (8 to 10'): Medium dense, brown, fine to coarse GRAVEL, little Sand, trace Silt. Wet. | |
| 10 | S-6 | 10 - 12 | 8 5 4 5 | 24/13 | | | ---10.5'--- SILTY CLAY | S-6A (10 to 10.5'): Loose, brown, fine to coarse SAND and Gravel, trace Silt. Wet. S-6B (10.5 to 12'): Stiff, brown, Silty CLAY, trace Sand. Wet. | |
| 12 | | | | | | | | | |
| 14 | | | | | | | | | Difficult drilling at approximately 14.5 feet. |
| 16 | S-7 | 15 - 17 | 100/5" | 5/3 | | | ---15'--- GLACIAL TILL | S-7 (15 to 17'): Very dense, gray, fine to coarse SAND & GRAVEL, little Silt. Moist. | |
| 18 | | | | | | | ---17.3'--- | Boring terminated at 17.3 feet due to auger/split spoon refusal. | |
| 20 | | | | | | | | | |
| 22 | | | | | | | | | |
| 24 | | | | | | | | | |
| 26 | | | | | | | | | |
| 28 | | | | | | | | | |
| 30 | | | | | | | | | |



Project: Union Brook Road
 Location: Northfield, VT
 Project No.: 4785.00

Log of Boring SH-3

Ground Elevation: Not Available

Sanborn, Head & Associates, Inc.

Drilling Method: Mobile B-53 Drill Rig with 4 1/4" ID HSA

Sampling Method: 2" O.D. Split Spoon with Safety Hammer

Groundwater Readings

| Date | Time | Depth to Water | Ref. Pt. | Depth of Casing | Depth of Hole | Stab. Time |
|----------|------|----------------|----------------|-----------------|-----------------|------------|
| 05/05/20 | 2 pm | 8 feet | ground surface | | wet soil sample | |

Drilling Company: Mike's Boring and Coring, LLC

Foreman: M. McGinley

Date Started: 05/05/20

Date Finished: 05/05/20

Logged By: A. Lulias

Checked By: S. Kelley

BORING LOG C:\USERS\IDONOV\ANDESKTOP\VPN LOCAL FOLDER\4785.00\4785.00 LOGS.GPJ 2010 SANBORN HEAD V1.GLB 2010 SANBORN HEAD V1.GDT 6/26/20

| Depth (ft) | Sample Information | | | | | Stratum | | Geologic Description | Remarks |
|------------|--------------------|-------------|----------------------|---------------|--------------------|---------|-------------|----------------------|---|
| | Sample No. | Depth (ft) | Spoon Blows per 6 in | Pen/ Rec (in) | Field Testing Data | Log | Description | | |
| 0 | | | | | | | ---0'--- | (0 to 2'): ASPHALT. | |
| 2 | S-1 | 2 - 4 | 3 2 2 2 | 1/2 | | | ---1.7'--- | ASPHALT | |
| 4 | S-2 | 4 - 6 | 2 2 2 2 | 24/0 | | | ---4'--- | FILL | S-1 (2 to 4'): No Recovery. |
| 6 | S-3 | 6 - 8 | 2 2 2 2 | 24/10 | | | ---8'--- | SAND & GRAVEL | S-2 (4 to 6'): Very loose, dark brown, fine to coarse SAND, little Gravel, trace Silt. Moist. |
| 8 | S-4 | 8 - 10 | 3 4 3 4 | 24/9 | | | | | S-3 (6 to 8'): Very loose, dark brown, fine to coarse SAND, trace Gravel, trace Silt. Moist. |
| 10 | S-5 | 10 - 12 | 2 3 4 5 | 24/14 | | | | | S-4 (8 to 10'): Soft, dark brown, Silty CLAY, little Sand. Wet. |
| 12 | | | | | | | | | |
| 14 | | | | | | | | | |
| 16 | S-6 | 15 - 17 | 3 6 7 8 | 24/11 | | | | | S-5 (10 to 12'): Medium stiff, dark brown, Silty CLAY. Wet. |
| 18 | | | | | | | | | |
| 20 | S-7 | 20 - 22 | 8 11 18 26 | 24/24 | | | | | S-6 (15 to 17'): Stiff, gray, Silty CLAY. Wet. |
| 22 | | | | | | | | | |
| 24 | | | | | | | | | |
| 26 | S-8 | 24.9 - 24.9 | 100/0" | 0/0 | | | ---24.9'--- | | S-7 (20 to 22'): Very stiff, gray, Silty CLAY. Wet. |
| 28 | | | | | | | | | S-8 (24 to 24.9'): Very dense, No Recovery. |
| 30 | | | | | | | | | Boring terminated at 24.9 feet due to auger/split spoon refusal. |
| | | | | | | | | | NOTES: 1. Test boring collapsed prior to groundwater measurement. |

MIKE'S BORING & CORING LLC.
 PO Box 75 ° East Barre, Vermont 05649 ° 802 476-5073

| | | |
|---|------------------------------|----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 1 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 1S |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2' | Dry | 12/14/12/10 | Moist | | 3" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 18 |
| 2'-3' | Dry | 8/21 | Moist | | Brown-gray, fine to coarse SAND, some Silt, little Gravel. Moist* | 2 | 12 | 6 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-1S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 2 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 2S |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2' | Dry | 17/14/8/10 | Moist | | 3" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, some Silt. Moist.* | 1 | 24 | 16 |
| 2'-3' | Dry | 10/12 | Moist | | Brown, fine to coarse GRAVEL and Sand, little Silt. Moist.* | 2 | 12 | 12 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-2S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 3 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 3S |
| | | LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 14/10/12/16 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 18 |
| 2'4"-3'4" | Dry | 15/16 | Moist | | Tan-gray, fine to coarse SAND, some Gravel, little Silt. Moist.* | 2 | 12 | 10 |
| | | | | | | | | |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-3S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

MIKE'S BORING & CORING LLC.
 PO Box 75 ° East Barre, Vermont 05649 ° 802 476-5073

| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 4 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 4S |
| | | LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 13/10/9/8 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 16 |
| 2'4"-3'4" | Dry | 8/10 | Moist | | Brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 2 | 12 | 10 |
| | | | | | | | | |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-4S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 5 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 5S |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 9/8/5/5 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt, very few organic fragments. Moist.* | 1 | 24 | 16 |
| 2'4"-3'4" | Dry | 8/5 | Moist | | Brown, fine to medium SAND and Silt, little Gravel. Moist.* | 2 | 12 | 6 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-5S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

MIKE'S BORING & CORING LLC.
 PO Box 75 ° East Barre, Vermont 05649 ° 802 476-5073

| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 6 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 6S |
| | | LINE & STA. OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 13/11/11/8 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND and Gravel, little Silt. Moist.* | 1 | 24 | 16 |
| 2'4"-3'4" | Dry | 10/12 | Moist | | Brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 2 | 12 | 6 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-6S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|---|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 7 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 7S LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 8/7/5/5 | Moist | | 4" Pavement Medium dense, brown-gray, fine to coarse SAND, some Silt, little Gravel. Moist.* | 1 | 24 | 14 |
| 2'4"-3'4" | Dry | 8/10 | Moist | | Brown-gray, fine to coarse SAND, little Gravel, little Silt. Moist.* | 2 | 12 | 6 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-7S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 8 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 8S |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 12/10/8/6 | Moist | | 4" Pavement Medium dense, tan, fine to coarse SAND and GRAVEL, little Silt. Moist.* | 1 | 24 | 16 |
| 2'4"-3'4" | Dry | 8/6 | Moist | | Brown, fine to coarse SAND, some Gravel, trace Silt. Moist.* | 2 | 12 | 2 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-8S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 9 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 9S |
| | | LINE & STA. OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'6" | Dry | 11/10/9/9 | Moist | | 6" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt. Moist.* | 1 | 24 | 16 |
| 2'6"-3'6" | Dry | 9/20 | Moist | | Brown, fine to coarse SAND and Gravel, trace Silt. Moist.* | 2 | 12 | 8 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-9S

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 10 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 10S |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|--------|-------------|------|
| | | | | | | No. | Pen. Inches | Rec. |
| 0'-2'6" | Dry | 12/10/10/7 | Moist | | 6" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt.* | 1 | 24 | 16 |
| 2'6"-3'6" | Dry | 7/5 | Damp | | Brown, fine to coarse GRAVEL and SAND, trace Silt. Moist.* | 2 | 12 | 4 |
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Ground Surface to 2' Used 3.25" Auger Then SS to 3'

Earth Boring 3'
 Rock Coring
 Samples: 2
 HOLE NUMBER B-10S

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 11 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 1-10' |
| | | LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'2" | Dry | 15/17/15/10 | Moist | | 2" Pavement Dense, brown, fine to coarse GRAVEL and SAND, little Silt. Moist.* | 1 | 24 | 16 |
| 2'2"-4'2" | Dry | 11/11/37/41 | Wet @3'6" | | Dense, brown, fine to coarse SAND, little Gravel, little Silt. Wet.* | 2 | 24 | 10 |
| 4'2"-6'2" | Dry | 4/4/3/2 | Wet | | Loose, brown, fine to coarse SAND, some Gravel, little Silt. Wet.* | 3 | 24 | 14 |
| 6'2"-8'2" | Dry | 9/14/27/41 | Wet | | Dense, brown, fine to coarse SAND, some Gravel, little Silt. Wet.* | 4 | 24 | 21 |
| 8'2"-10'2" | Dry | 27/34/63/100 for 3" | Moist | | Very dense, brown, fine to coarse SAND, some Gravel, little Silt. Wet.* | 5 | 21 | 22 |
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Ground Surface to 8'2" Used 3.25" Auger Then SS to refusal at 10'2"

Earth Boring 10'2"
 Rock Coring
 Samples: 5
 HOLE NUMBER B-1-10'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 12 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 2-10' |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'6" | Dry | 20/11/7/5 | Moist | | 6" Pavement Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt. Moist.* | 1 | 24 | 16 |
| 2'6"-4'6" | Dry | 5/6/5/7 | Moist | | Medium dense, brown, fine to coarse SAND, some Silt, little Gravel. Moist.* | 2 | 24 | 18 |
| 4'6"-6'6" | Dry | 5/5/6/5 | Damp | | Medium dense, brown-gray, fine to coarse SAND, little Gravel, little Silt. Moist.* | 3 | 24 | 18 |
| 6'6"-8'6" | Dry | 2/10/21/17 | Wet @6'6" | | Dense, dark brown, fine to coarse SAND, some Clayey Silt, trace Gravel. Wet.* | 4 | 24 | 10 |
| 8'6"-10'6" | Dry | 27/41/30/31 | Wet | | Very dense, tan-gray, fine to coarse GRAVEL, some Sand, some Clayey Silt. Wet.* | 5 | 24 | 18 |
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Ground Surface to 8'6" Used 3.25" Auger Then SS to 10'6"

Earth Boring 10'6"
 Rock Coring
 Samples: 5
 HOLE NUMBER B-2-10'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 13 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 3-10' |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'3" | Dry | 14/15/15/18 | Moist | | 3" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 20 |
| 2'3"-4'3" | Dry | 43/21/30/16 | Moist | | Very dense, tan, fine to coarse GRAVEL, some Sand, trace Silt. Moist.* | 2 | 24 | 18 |
| 4'3"-6'3" | Dry | 10/15/50/36 | wet@4'3" | | Very dense, tan-gray, fine to coarse SAND, some Gravel, some Silt. Moist.* | 3 | 24 | 16 |
| 6'3"-8'3" | Dry | 27/40/39/26 | Wet | | Very dense, tan-gray, fine to coarse SAND, some Gravel, some Clayey Silt. Moist.* | 4 | 24 | 18 |
| 8'3"-10'3" | Dry | 36/42/31/40 | Wet | | Very dense, tan-gray, fine to coarse SAND, some Gravel, some Clayey Silt. Moist.* | 5 | 24 | 20 |
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Ground Surface to 8'3" Used 3.25" Auger Then SS to 10'3"

Earth Boring 10'3"
Rock Coring
Samples: 5
HOLE NUMBER B-3-10'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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|---|------------------------------|-------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 14 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 1A-10' |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'2" | Dry | 8/10/10/7 | Moist | | 2" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt. Moist.* | 1 | 24 | 16 |
| 2'2"-4'2" | Dry | 8/12/10/9 | Wet @3' | | Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 2 | 24 | 14 |
| 4'2"-6'2" | Dry | 16/21/13/12 | Wet | | Dense, tan-gray, fine to coarse SAND, some Gravel, some Clayey Silt. Wet.* | 3 | 24 | 16 |
| 6'2"-8'2" | Dry | 10/18/24/27 | Wet | | Dense, tan-gray, fine to coarse SAND, some Gravel, some Clayey Silt. Wet.* | 4 | 24 | 18 |
| 8'2"-8'4" | Dry | 100 for 2" | Dry | | Crushed rock fragments.* | 5 | 2 | 1 |
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Ground Surface to 8'2" Used 3.25" Auger Then SS to refusal at 8'4"

Earth Boring 8'4"
 Rock Coring
 Samples: 5
 HOLE NUMBER B-1A-10'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|-------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 15 |
| | LOCATION: Northfield, VT | DATE: 5-8-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 2A-10' |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-8-2020 |
| | Hammer Wt. 140# | Date Completed: 5-8-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'6" | Dry | 14/12/13/10 | Wet@6" Damp | | 6" Pavement Medium dense, brown, fine to coarse SAND, some Silt, some Gravel. Moist.* | 1 | 24 | 18 |
| 2'6"-4'6" | Dry | 16/12/13/10 | Dry | | Medium dense, tan-gray, fine to coarse SAND, some Gravel, little Clayey Silt. Moist.* | 2 | 24 | 16 |
| 4'6"-6'6" | Dry | 14/13/10/11 | Wet | | Medium dense, brown, fine to coarse SAND and Gravel, little Silt. Wet.* | 3 | 24 | 14 |
| 6'6"-8'6" | Dry | 10/9/10/11 | Wet | | Medium dense, brown, fine to coarse SAND, some Clayey Silt, little Gravel. Wet.* | 4 | 24 | 16 |
| 8'6"-10'6" | Dry | 14/15/18/16 | Wet | | Dense, brown, fine to medium SAND and SILT, trace Gravel. Wet.* | 5 | 24 | 18 |
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Ground Surface to 8'6" Used 3.25" Auger Then SS to 10'6"

Earth Boring 10'6"
 Rock Coring
 Samples: 5
 HOLE NUMBER B-2A-10'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

MIKE'S BORING & CORING LLC.
 PO Box 75 ° East Barre, Vermont 05649 ° 802 476-5073

| | | |
|---|------------------------------|-----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 16 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 1-5' |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 15/13/9/9 | Moist | | 4" Pavement Medium dense, gray-brown, fine to coarse SAND and GRAVEL, little Silt. Moist.* | 1 | 24 | 16 |
| 2'4"-4'4" | Dry | 8/9/10/10 | Damp/wet @4' | | Medium dense, gray, fine to coarse SAND and GRAVEL, little Silt. Moist.* | 2 | 24 | 14 |
| 4'4"-5'4" | Dry | 15/16 | Wet | | Brown-gray, fine to coarse GRAVEL and SAND, little Silt. Wet.* | 3 | 12 | 10 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-1-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 17 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 2-5' |
| | | LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 17/16/14/12 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 16 |
| 2'4"-4'4" | Dry | 5/5/5/5 | Moist | | Loose, brown, fine to coarse SAND, some Gravel, some Clayey Silt, very few roots/organic fragments. Moist.* | 2 | 24 | 14 |
| 4'4"-5'4" | Dry | 10/16 | Moist | | Brown, fine to coarse SAND, some Gravel, some Clayey Silt, very few roots/organic fragments. Moist.* | 3 | 12 | 10 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-2-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 18 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 3-5' |
| | | LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 14/12/8/9 | Moist | | 4" Pavement Medium dense, brown-gray, fine to coarse SAND, some Gravel, trace Silt. Dry.* | 1 | 24 | 14 |
| 2'4"-4'4" | Dry | 15/14/5/5 | Moist | | Medium dense, brown, fine to coarse SAND and Gravel, little Silt. Moist.* | 2 | 24 | 16 |
| 4'4"-5'4" | Dry | 3/5 | Moist | | Brown silt with organics ¹ . Moist.* | 3 | 12 | 10 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4" Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-3-5'

Note:
 1. Sample not provided to Sanborn Head for review.

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|---|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 19 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 4-5' LINE & STA. OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'6" | Dry | 6/4/2/2 | Moist | | 6" Pavement Loose, brown, fine to coarse SAND, some Gravel, trace Silt. Moist.* | 1 | 24 | 6 |
| 2'6"-4'6" | Dry | 2/2/16/18 | Moist | | Brown medium fine sandy gravel ¹ | 2 | 24 | 4 |
| 4'6"-5'6" | Dry | 8/5 | Damp | | Brown medium fine sandy gravel ¹ | 3 | 12 | 2 |
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Ground Surface to 4'6" Used 3.25" Auger Then SS to 5'6"

Earth Boring 5'6"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-4-5'

Note:
 1. Sample not provided to Sanborn Head for review.

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|---|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 20 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 5-5' LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 10/6/2/2 | Moist | | 4" Pavement Loose, brown, fine to coarse GRAVEL and SAND, little Silt. Moist.* | 1 | 24 | 16 |
| 2'4"-4'4" | Dry | 2/2/2/2 | Wet @2'4" | | Very loose, dark brown, fine to coarse SAND and Clayey Silt, trace Gravel, very few organic fragments. Moist.* | 2 | 24 | 16 |
| 4'4"-5'4" | Dry | 3/3 | Wet | | Dark brown, fine to coarse SAND, little Silt, little Gravel, very few organic particles. Wet.* | 3 | 12 | 6 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-5-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|---|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 21 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 6-5' LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 9/5/6/3 | Moist | | 4" Pavement Medium dense, brown/gray fine sand and medium gravel ¹ | 1 | 24 | 16 |
| 2'4"-4'4" | Dry | 3/6/8/9 | Moist | | Medium dense, brown, fine to coarse SAND, some organic silt, little gravel. Moist. | 2 | 24 | 14 |
| 4'4"-5'4" | Dry | 6/10 | Moist | | Brown silty fine sand some stones ¹ | 3 | 12 | 8 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4" Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-6-5'

Note:
 1. Samples 1 and 3 did not have distinct labels and were not reviewed by Sanborn Head.

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|-----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 22 |
| | LOCATION: Northfield, VT | DATE: 5-6-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 7-5' |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-6-2020 |
| | Hammer Wt. 140# | Date Completed: 5-6-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 9/11/15/11 | Moist | | 4" Pavement Medium dense, tan-gray, fine to coarse SAND and GRAVEL, trace Silt. Moist.*8 | 1 | 24 | 16 |
| 2'4"-4'4" | Dry | 9/18/21/6 | Moist | | Dense, dark brown, fine to coarse SAND, some silt, trace gravel. Moist.* | 2 | 24 | 8 |
| 4'4"-5'4" | Dry | 5/7 | Moist | | Dark brown, fine to coarse SAND, some Silt, trace Gravel. Moist.* | 3 | 12 | 3 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-7-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|--|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 23 |
| | LOCATION: Northfield, VT | DATE: 5-7-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 1A-5' LINE & STA. OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-7-2020 |
| | Hammer Wt. 140# | Date Completed: 5-7-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'6"-2'6" | Dry | 12/10/8/8 | Moist | | 6" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 16 |
| 2'6"-4'6" | Dry | 8/8/52/16 | Damp | | Very dense, gray, fine to coarse SAND, some Silt, little Gravel. Moist.* | 2 | 24 | 12 |
| 4'4"-5'4" | Dry | 4/9 | Damp | | Brown, fine to coarse SAND and Clayey Silt, trace Gravel. Moist.* | 3 | 12 | 10 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-1A-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 24 |
| | LOCATION: Northfield, VT | DATE: 5-8-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 5A-5' |
| | | LINE & STA. OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-8-2020 |
| | Hammer Wt. 140# | Date Completed: 5-8-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'6" | Dry | 14/14/9/5 | Moist | | 6" Pavement Medium dense, brown, fine to coarse SAND, some Silt, little Gravel. Moist. | 1 | 24 | 16 |
| 2'6"-4'6" | Dry | 5/6/6/18 | Moist | | Medium dense, tan-gray, fine to coarse SAND and GRAVEL, little Clayey Silt. Moist. | 2 | 24 | 21 |
| 4'6"-5'6" | Dry | 100 for 4" | Dry | | Very dense, tan-gray, fine to coarse SAND and GRAVEL, little Clayey Silt. Moist. | 3 | 4 | 3 |
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Ground Surface to 4'6" Used 3.25" Auger Then SS to refusal at 4'10"

Earth Boring 4'10"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-5A-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|--|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 26 |
| | LOCATION: Northfield, VT | DATE: 5-8-2020 |
| | MBC JOB #: 202028 | HOLE #: B- 5B-5' LINE & STA. OFFSET: |

| | | |
|--|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-8-2020 |
| | Hammer Wt. 140# | Date Completed: 5-8-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 9/7/4/7 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND, some Silt, little Gravel. Moist.* | 1 | 24 | 12 |
| 2'4"-4'4" | Dry | 7/6/4/2 | Moist | | Loose, brown, fine to coarse SAND, some organic silt, little Gravel. Moist.* | 2 | 24 | 16 |
| 4'4"-5'4" | Dry | 2/8 | Moist | | Brown, fine to coarse SAND, some organic Silt, trace Gravel. Moist.* | 3 | 12 | 4 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-5B-5'

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

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| | | |
|---|------------------------------|------------------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 26 |
| | LOCATION: Northfield, VT | DATE: 5-8-2020 |
| | MBC JOB #: 202028 | HOLE #: B-3A |
| | | LINE & STA. OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-8-2020 |
| | Hammer Wt. 140# | Date Completed: 5-8-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|---|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'8" | Dry | 14/12/10/7 | Moist | | 8" Pavement Medium dense, brown-black, fine to coarse SAND, some Silt, trace Gravel. Moist.* | 1 | 24 | 16 |
| 2'8"-4'8" | Dry | 7/8/5/2 | Damp | | Medium dense, brown, Organic SILT and GRAVEL, little Sand, very few organic fragments. Moist.* | 2 | 24 | 14 |
| 4'8"-5'8" | Dry | 3/3 | Damp/wet | | Brown, fine to coarse SAND, some silt, some gravel. Wet.* | 3 | 12 | 4 |
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Ground Surface to 4'8" Used 3.25" Auger Then SS to refusal at 5'8"

Earth Boring 5'8"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-3A

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

MIKE'S BORING & CORING LLC.
 PO Box 75 ° East Barre, Vermont 05649 ° 802 476-5073

| | | |
|---|------------------------------|----------------|
| TO: Ron Lyons DuBois & King, Inc. 6 Greentree Drive South Burlington, VT 05403 | PROJECT NAME: Union Brook Rd | SHEET: 27 |
| | LOCATION: Northfield, VT | DATE: 5-8-2020 |
| | MBC JOB #: 202028 | HOLE #: B-3B |
| | | LINE & STA. |
| | | OFFSET: |

| | | |
|---|------------------------|-------------------------------|
| Ground Water Observations at Hours | Augers-Size I.D. 3.25" | Surface Elevation: |
| | Split Spoon 2" | Date Started: 5-8-2020 |
| | Hammer Wt. 140# | Date Completed: 5-8-2020 |
| | Hammer Fall 30" | Boring Foreman: Mike McGinley |
| | | Inspector: |
| | | Soils Engineer: Ron Lyons |

LOCATION OF BORING: As staked- behind curb

| Sample Depths From/To (Feet) | Type of Sample | Blows per 6" on Sampler | Moisture Density or Consist. | Strata Change Elev. | Soil Identification | Sample | | |
|------------------------------|----------------|-------------------------|------------------------------|---------------------|--|------------|-------------|------|
| | | | | | | No. Inches | Pen. Inches | Rec. |
| 0'-2'4" | Dry | 16/14/8/8 | Moist | | 4" Pavement Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 1 | 24 | 14 |
| 2'4"-4'4" | Dry | 8/7/6/6 | Moist | 2'6" | Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. Moist.* | 2 | 24 | 8 |
| 4'4"-5'4" | Dry | 4/12 | Moist | | Brown, fine to coarse SAND, some Clayey Silt, little Gravel. Moist.* | 3 | 12 | 8 |
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Ground Surface to 4'4" Used 3.25" Auger Then SS to refusal at 5'4"

Earth Boring 5'4"
 Rock Coring
 Samples: 3
 HOLE NUMBER B-3B

* Modified by Sanborn Head & Associates, Inc. using Modified Burmister System visual classification and geotechnical laboratory testing results

ATTACHMENT 3

REQUEST FOR CONSTRUCTION BIDS

August 25, 2020

Union Brook Project Northfield, Vermont

Project Background

The Town of Northfield is seeking bids from qualified contractors for road reconstruction work on an approximately four-mile section of Union Brook Road. The road has deteriorated due to poor soils, drainage issues and time, and is in need of extensive drainage improvements and paving.

Construction plans accompany this Request for Construction Bids are in Attachment A.

Project construction is anticipated between September 15 and June 15.

General Scope of Work

Work tasks will generally involve the installation of approximately 30 culverts, underdrainage, road ditching (stone and grass lined), full depth road reconstruction in five specific locations, coarse-milling and paving (Attachment A). Please note that the Town is seeking an add alternative bid for both an additional one inch and a two inch top coat of pavement. Additionally, the Town is seeking an add alternative bid for permanent and temporary white and yellow pavement markings.

The Town may reduce or eliminate certain pay items at their discretion if the Town budget constraints do not allow for all work items to be accomplished.

Work hours will be agreed upon by the Contractor, the Town, and the Project Engineer prior to construction. All disturbed areas shall be returned to pre-construction conditions, including repairs of the road surface, seeding and mulching all disturbed areas. Disturbance shall be minimized during construction.

Invasive species may be present at the project site. The contractor shall accomplish the work to minimize the recolonization or spread of these plants on the project site during construction operations.

All spoiled materials shall be removed and disposed of by the Contractor.

Owner's Project Representation

Engineering oversight of the project will be conducted by the Project Engineer in combination with Town staff. The Contractor will be obligated to comply with directives from the Project Engineer to ensure that the Contractor meets all contract provisions and design specifications.

Construction Access

Construction access will be made directly from Union Brook Road and from a construction staging area as agreed to by the Town. Removal of vegetation at each access location shall be minimized. If the Contractor wishes to leave the Town right-of-way or Town-owned land, permission is required from landowners to cross their property. Any expected traffic lane closures need to be coordinated with the Project Engineer and the Town. All abutters will have been notified about the project before construction.

Sequence of Work

The sequence of work will be defined by the contractor and submitted to the Project Engineer for review and approval prior to construction.

Specifications

Technical specifications are included in the details and notes on the construction plans (Attachment A). The Contractor shall refer to the VTrans Standard Specifications for Construction. The Contractor will be obligated to adhere to the Terms and Conditions in the Contract with the Town for this project.

Sediment and Erosion Control

Sediment and erosion control notes, water control notes, and details are contained in the construction plans (Attachment A). Silt fencing will be required around any stockpiled materials to contain sediment migration during construction.

Construction Notes

Construction notes are contained in the construction plans (Attachment A).

Construction Schedule

Construction is planned for between September 15, 2020 and June 15, 2021. All ditching, culvert, drainage, underdrain and full depth

reconstruction work must be completed by December 15, 2020. Full depth reconstruction work shall include temporary or permanent pavement to match typical sections. Course-milling and final paving must occur in the same construction season. A Notice to Proceed will be issued by the Project Engineer prior to the start of work.

Sub-contractors

The Town will allow for the use of sub-contractors. Information and documentation for all subcontractors shall be provided and include: insurance certificates, references and task to be performed.

Insurance

All contractors and sub-contractors must carry adequate insurance coverage (not less than \$2,000,000-per occurrence). \$2,000,000 - General Aggregate Applying, in total, \$2,000,000 - Products/Completed Operations Aggregate, \$50,000 – Fire/Legal/Liability, and \$1,000,000 – Automotive Liability).

Compensation

The Town will accept an initial request for payment for Mobilization/Demobilization upon Contractors mobilization on the job, per section 635 of the VTrans 2018 Standard Specifications for Construction. Subsequent pay requests will be accepted at 30 day intervals during construction, and after project completion and a final site inspection with the engineer. A final payment of 5% of the total contract amount will be made after 3 months from the project completion.

Bid Submittal Information & Format

Bids shall be presented on the enclosed bid sheet (Attachment B), along with two project references for past similar work. Bid proposals must be received electronically by Jeff Schulz (jschulz@northfield.vt.us) no later than 4:30 PM September 1, 2020. If you do not have email capability, a hardcopy may be delivered to the Northfield Town office with the same submission deadline. Notice of contract award is anticipated by Thursday, September 3, 2020. The Town reserves the right to reject any or all bids on its own motion.

All questions shall be submitted to Jeff Schulz (jschulz@northfield.vt.us) no later than 4:30 pm on August 21, 2020.

A pre-bid site showing is planned for Wednesday, August 19 at 10:00 am at the corner Union Brook Road and West Hill Road in Northfield.

Electronic copies of the construction plans are attached to this request. For questions contact the Town Manager (802-485-9822; jschulz@northfield.vt.us).

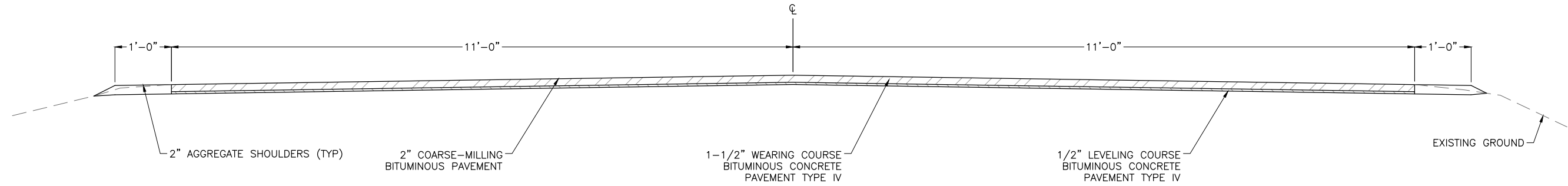
Attachments

- Attachment A: Construction Plans
- Attachment B: Bid Sheet

ATTACHMENT 4

**NOT FOR
 CONSTRUCTION
 PRELIMINARY
 PLANS**

PROFESSIONAL SEAL



**COARSE-MILL/OVERLAY TYPICAL
 SECTION**

- STA. 2+03 - STA. 52+00
- STA. 57+00 - STA. 79+50
- STA. 83+50 - STA. 101+50
- STA. 107+00 - STA. 166+00
- STA. 169+00 - STA. 188+50
- STA. 192+00 - STA. 195+97



| NO. | DATE | ADDED STATION RANGES | DESCRIPTION | TAM BY | BMB CK'D |
|-----|----------|----------------------|-------------|--------|----------|
| 1 | 08-24-20 | | | | |

UNION BROOK ROAD
 REHABILITATION
 PROJECT

TOWN OF
 NORTHFIELD

NORTHFIELD,
 VERMONT 05663

SHEET TITLE

TYPICAL SECTION
 SHEET 2

| | |
|------------|---------------|
| DRAWN BY | DATE |
| JWP | AUG. 2020 |
| CHECKED BY | D&K PROJECT # |
| RCL | 426187P |
| PROJ. ENG. | D&K ARCHIVE # |
| BMB | |

SHEET NUMBER

4

NO SCALE

NOT FOR CONSTRUCTION PRELIMINARY PLANS

PROFESSIONAL SEAL



| NO. | DATE | DESCRIPTION | TAM | BMB | CK'D |
|-----|----------|-------------|-----|-----|------|
| 1 | 08-24-20 | | | | |

UNION BROOK ROAD REHABILITATION PROJECT

TOWN OF NORTHFIELD

NORTHFIELD, VERMONT 05663

SHEET TITLE

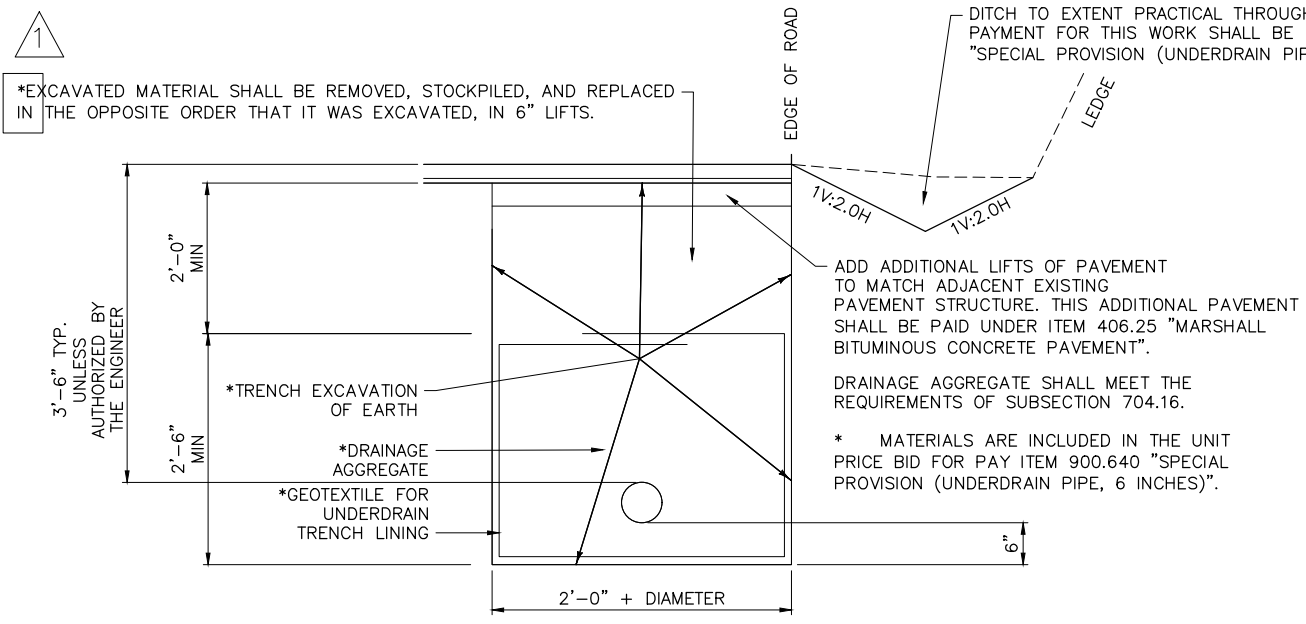
DETAIL SHEET 3

| | |
|------------|---------------|
| DRAWN BY | DATE |
| TAM | AUG. 2020 |
| CHECKED BY | D&K PROJECT # |
| RCL | 426187P |
| PROJ. ENG. | D&K ARCHIVE # |
| BMB | |

SHEET NUMBER

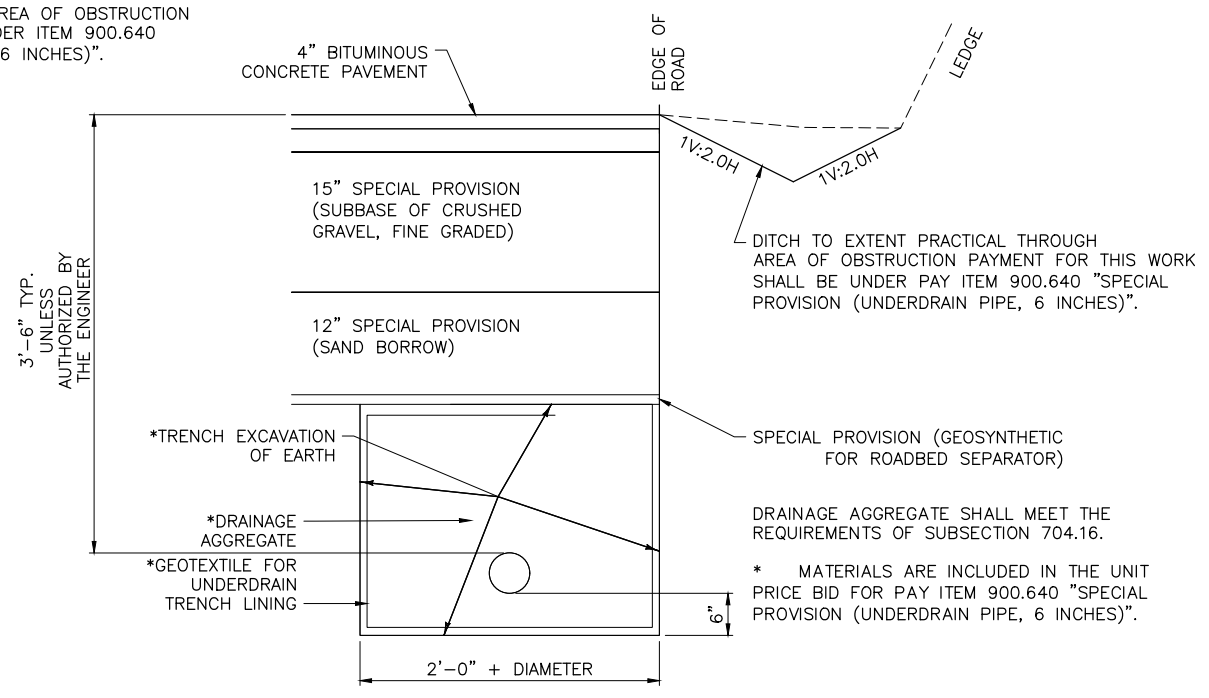
7

SHEET 7 OF 27



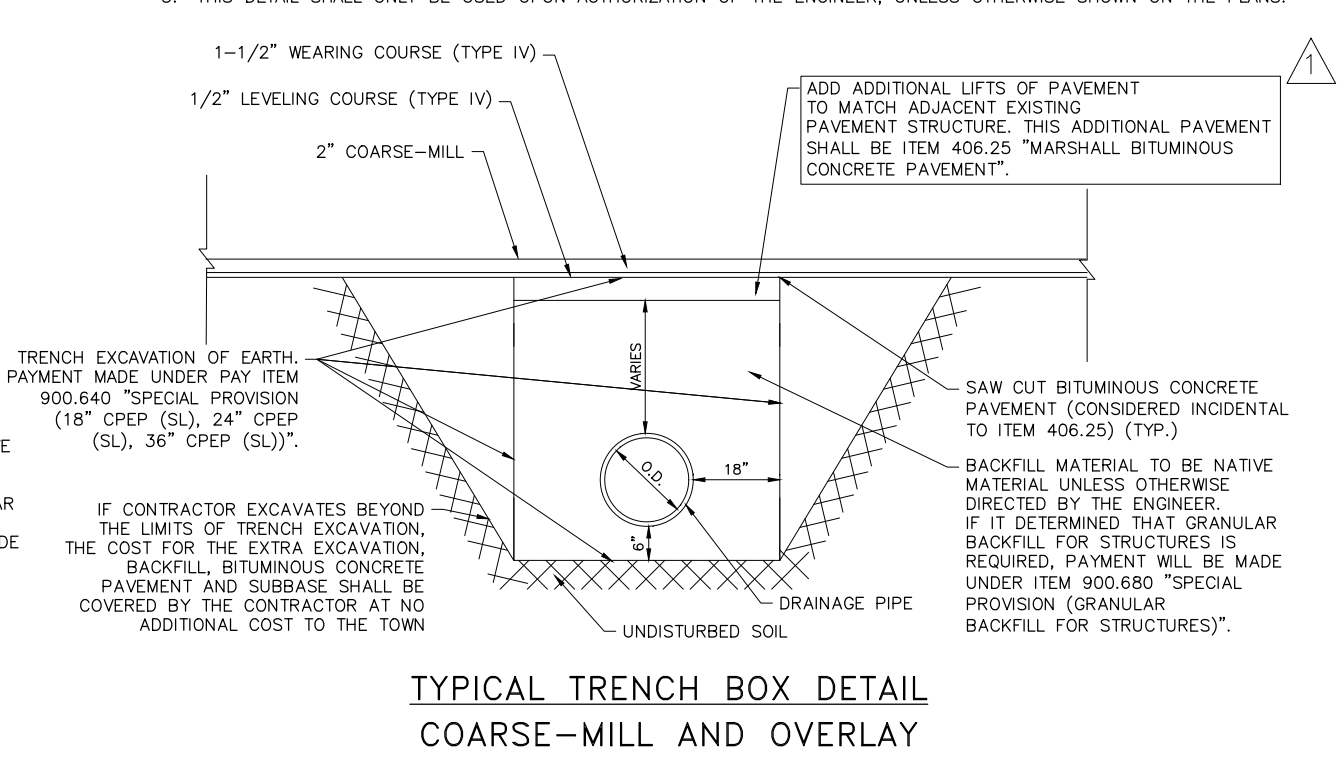
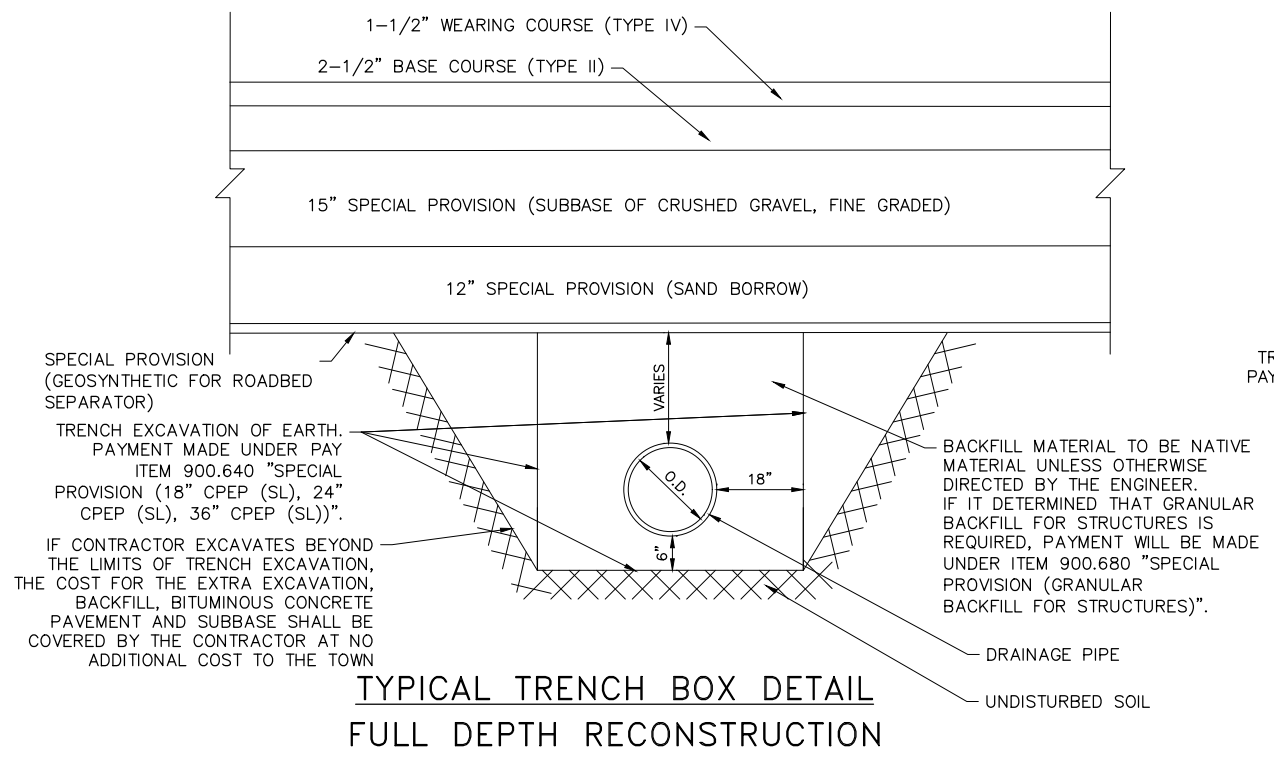
UNDERDRAIN DETAIL - UNDER ROADWAY (COARSE-MILL/OVERLAY)

- NOTES:
- THIS DETAIL TO BE USED WHERE AN OBSTRUCTION (LEDGE, TREE, ETC.) CAN NOT REMOVED BY MECHANICAL MEANS, AS DETERMINED BY THE ENGINEER.
 - INSTALL DITCHING TO THE EXTENT PRACTICAL IN CONJUNCTION WITH UNDERDRAIN INSTALLATION.
 - ADDITIONAL LIFTS OF PAVEMENT MAY BE REQUIRED. MATCH ADJACENT PAVEMENT STRUCTURE.



UNDERDRAIN DETAIL - UNDER ROADWAY (RECONSTRUCTION)

- NOTES:
- THIS DETAIL TO BE USED WHERE AN OBSTRUCTION (LEDGE, TREE, ETC.) CAN NOT REMOVED BY MECHANICAL MEANS.
 - INSTALL DITCHING TO THE EXTENT PRACTICAL IN CONJUNCTION WITH UNDERDRAIN INSTALLATION.
 - THIS DETAIL SHALL ONLY BE USED UPON AUTHORIZATION OF THE ENGINEER, UNLESS OTHERWISE SHOWN ON THE PLANS.



NO SCALE

NOT FOR CONSTRUCTION PRELIMINARY PLANS

PROFESSIONAL SEAL



| NO. | DATE | ADDED STATION RANGES | DESCRIPTION | BY | CHK'D |
|-----|----------|----------------------|-------------|-----|-------|
| 1 | 08-24-20 | | | TAM | BMB |

UNION BROOK ROAD REHABILITATION PROJECT

TOWN OF NORTHFIELD

NORTHFIELD, VERMONT 05663

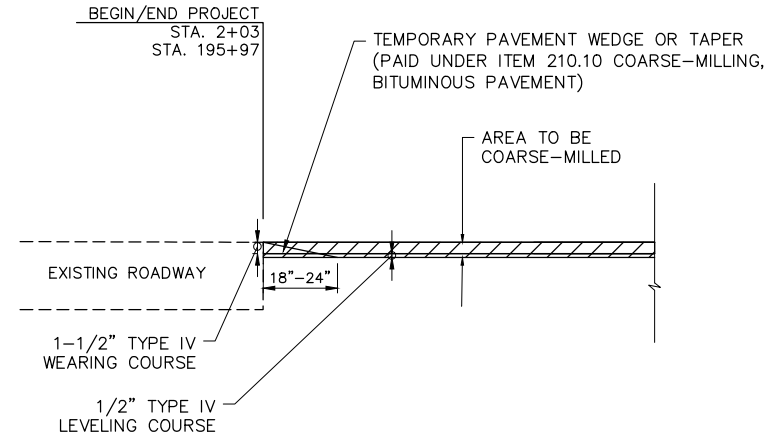
SHEET TITLE

DETAIL SHEET 4

| | |
|-------------------|--------------------------|
| DRAWN BY TAM | DATE AUG. 2020 |
| CHECKED BY RCL | D&K PROJECT # 426187P |
| PROJ. ENG. BMB | D&K ARCHIVE # |

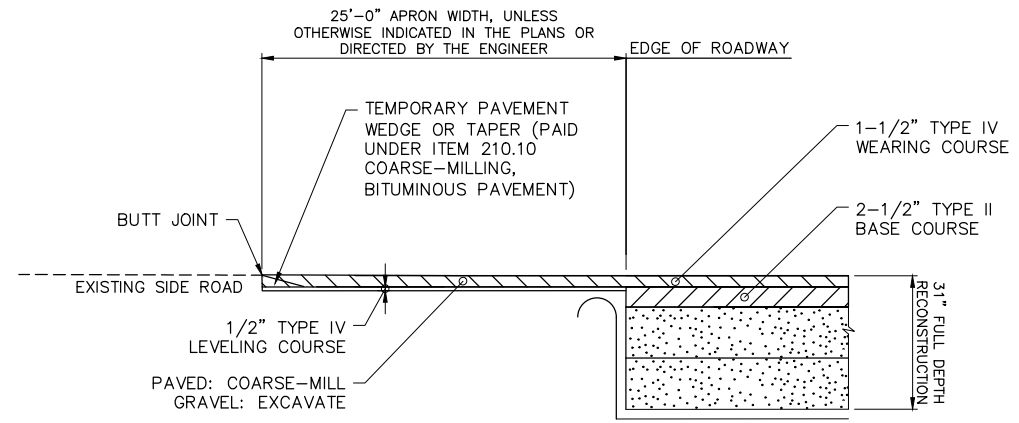
SHEET NUMBER

8



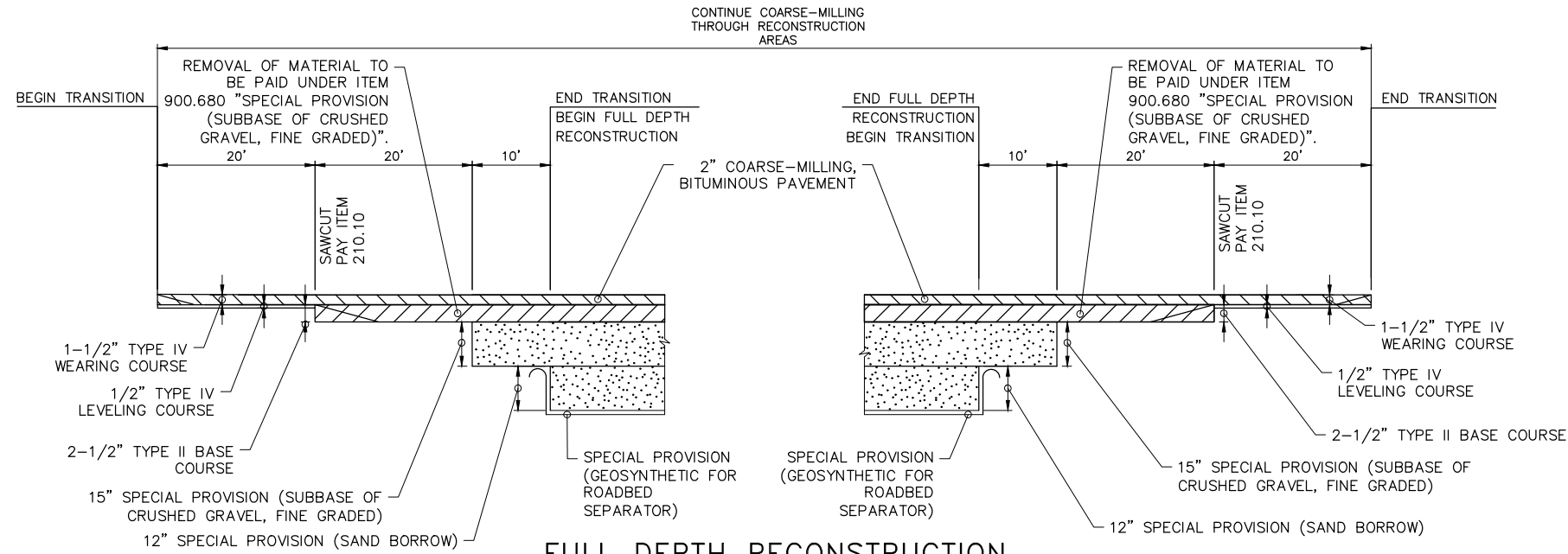
**START/END PROJECT TRANSITION DETAIL
 EXISTING PAVEMENT TO COARSE-MILLING**

STA. 2+03
 STA. 195+97



TRANSITION AREA FOR SIDE ROADS

SEE PLAN SHEETS FOR LOCATIONS OF ALL SIDE ROADS
 TH# 25 (WEST HILL ROAD) - STA. 54+00
 TH# 25 (WEST HILL ROAD) - STA. 54+51
 TH# 52 (HUTCH ROAD) - STA. 81+89



**FULL DEPTH RECONSTRUCTION
 TRANSITION AREA DETAIL**

NOTES:

- IF CONTRACTOR CHOOSES TO EXCAVATE THROUGH RECONSTRUCTION AREAS RATHER THAN COARSE-MILLING, THEN PAYMENT WILL BE UNDER ITEM 900.680 "SPECIAL PROVISION (SUBBASE OF CRUSHED GRAVEL, FINE GRADED)".

- SEE PLAN SHEETS FOR LOCATIONS
- STA. 52+00 - STA. 52+50
 - STA. 56+50 - STA. 57+00
 - STA. 79+50 - STA. 80+00
 - STA. 83+00 - STA. 83+50
 - STA. 101+50 - STA. 102+00
 - STA. 106+50 - STA. 107+00
 - STA. 166+00 - STA. 166+50
 - STA. 168+50 - STA. 169+00
 - STA. 188+00 - STA. 188+500
 - STA. 191+50 - STA. 192+00



NO SCALE

ATTACHMENT 5

UNION BROOK ROAD BID SHEET

NORTHFIELD, VERMONT

DATE:

COMPANY

CONTACT:

ADDRESS:

PHONE:

EMAIL:

REFERENCES:

PLANNED PROJECT START DATE:

ADDENDUMS:

| BID ITEM | | | TASK COMMENTS | UNIT | QUANTITY | COST/UNIT | ITEM COST (\$) |
|----------|---------|---|---------------|------|----------|-----------|----------------|
| A. | 204.22 | TRENCH EXCAVATION OS EARTH, EXPLORATORY (N.A.B.I.) | | CY | 1 | 75.00 | 75.00 |
| B. | 210.10 | COARSE-MILLING, BITUMINOUS PAVEMENT | | SY | 47500 | | |
| C. | 402.12 | AGGREGATE SHOULDERS | | TON | 500 | | |
| D. | 404.65 | EMULSIFIED ASPHALT | | CWT | 60 | | |
| E. | 406.25 | MARSHALL BITUMINOUS CONCRETE PAVEMENT | | TON | 6300 | | |
| F. | 406.38 | HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES | | SY | 900 | | |
| G. | 406.50 | PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.) | | LU | 1 | 1.00 | 1.00 |
| H. | 601.995 | CLEANING CULVERT PIPE, IN-PLACE [0 TO 24 IN., INCL.] | | LF | 270 | | |
| I. | 601.996 | CLEANING CULVERT PIPE, IN-PLACE [GREATER THAN 24 IN.] | | LF | 50 | | |
| J. | 635.11 | MOBILIZATION/DEMOBILIZATION | | LS | 1 | | |

| | | | | | | | |
|----------------------------|---------|--|---|-----|-------|--|--|
| K. | 641.11 | TRAFFIC CONTROL, ALL-INCLUSIVE | INCLUDES FLAGGERS | LS | 1 | | |
| L. | 900.640 | SPECIAL PROVISION (18" CPEP (SL)) | INCLUDES EXCAVATION AND BACKFILL | LF | 940 | | |
| M. | 900.640 | SPECIAL PROVISION (24" CPEP (SL)) | INCLUDES EXCAVATION AND BACKFILL | LF | 170 | | |
| N. | 900.640 | SPECIAL PROVISION (36" CPEP (SL)) | INCLUDES EXCAVATION AND BACKFILL | LF | 60 | | |
| O. | 900.640 | SPECIAL PROVISION (DITCHING, GRASS LINED) | | LF | 3100 | | |
| P. | 900.640 | SPECIAL PROVISION (DITCHING, STONE LINED) | INCLUDES STONE FILL, TYPE I | LF | 8600 | | |
| Q. | 900.640 | SPECIAL PROVISION (RE-LAYING PIPE CULVERTS) | INCLUDES EXCAVATION AND BACKFILL | LF | 90 | | |
| R. | 900.640 | SPECIAL PROVISION (UNDERDRAIN PIPE, 6 INCHES) | INCLUDES EXCAVATION, BACKFILL, DRAINAGE AGREGATE, GEOTEXTILE AND STONE FILL, TYPE I | LF | 6300 | | |
| S. | 900.645 | SPECIAL PROVISION (EROSION PREVENTION AND SEDIMENT CONTROL MEASURES) | | LS | 1 | | |
| T. | 900.675 | SPECIAL PROVISION (GEOSYNTHETIC FOR ROADBED SEPARATOR) | | SY | 5000 | | |
| U. | 900.680 | SPECIAL PROVISION (GRANULAR BACKFILL FOR STRUCTURES) | | TON | 1500 | | |
| V. | 900.680 | SPECIAL PROVISION (SAND BORROW) | INCLUDES EXCAVATION | TON | 2300 | | |
| W. | 900.680 | SPECIAL PROVISION (SUBBASE OF CRUSHED GRAVEL, FINE GRADED) | INCLUDES EXCAVATION | TON | 3500 | | |
| X. | 900.680 | SPECIAL PROVISION (STONE FILL, TYPE II) | INCLUDES EXCAVATION | TON | 700 | | |
| TOTAL BASE BID | | | | | | | |
| ADD ALTERNATE NO. 1 | | | | | | | |
| Y. | 900.680 | MARSHALL BITUMINOUS CONCRETE PAVEMENT | | TON | 2500 | | |
| ADD ALTERNATE NO. 2 | | | | | | | |
| Z. | 900.680 | MARSHALL BITUMINOUS CONCRETE PAVEMENT | | TON | 2600 | | |
| ADD ALTERNATE NO. 3 | | | | | | | |
| AA. | 646.403 | DURABLE 4 INCH WHITE LINE, EPOXY PAINT | | LF | 39000 | | |
| ADD ALTERNATE NO. 4 | | | | | | | |
| AB. | 646.413 | DURABLE 4 INCH YELLOW LINE, EPOXY PAINT | | LF | 39000 | | |

| | | | | | | |
|----------------------------|---------|-------------------------------------|--|----|-------|--|
| ADD ALTERNATE NO. 5 | | | | | | |
| AC. | 646.602 | TEMPORARY 4 INCH WHITE LINE, PAINT | | LF | 78000 | |
| ADD ALTERNATE NO. 6 | | | | | | |
| AD. | 646.612 | TEMPORARY 4 INCH YELLOW LINE, PAINT | | LF | 78000 | |