SECTION 00 3132

GEOTECHNICAL DATA

PART 1 - GENERAL

1.1 SUBSURFACE CONDITIONS

A. The Owner has explored subsurface conditions by having authorized the making of test borings on site.

B. Factual subsurface information (boring logs) have been included as part of these specifications. The logs describe subsurface conditions encountered at the exploration locations at the time explorations were made. Actual subsurface conditions may vary due to conditions not evident at the time explorations were made, and therefore no warranties, expressed or implied, are made as to accuracy of subsurface information provided herein.

C. No warranty is made of the continuity of strata or material between the exploration locations. The stratification lines on the logs represent approximate boundaries between soil types. The actual transitions may be gradual.

D. Water level readings have been observed in the drill holes at times and under conditions stated on the boring logs. It must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature and other factors not evident at the time measurements were made.

E. Boring locations shown on the drawings are approximate only and the Owner makes no representations regarding correctness of such information.

F. Bidders shall make their own deductions of subsurface conditions which may affect methods or cost of construction. Bidders may, at their own expense, and upon applications to the Owner, conduct additional subsurface testing.

1.2 GEOTECHNICAL ENGINEERING REPORT

A. A geotechnical engineering report titled “Geotechnical Engineering Report – 4187 Route 100 Slope Evaluation, Rochester, Vermont” dated May 28, 2026 has been prepared by Sanborn, Head & Associates, Inc. (Sanborn Head) for use of the Architect, Engineer, and Owner in the design of the Project. Part of the information contained in this report is interpretive (not factual) and therefore shall not be considered as part of the information for this contract.

B. The aforementioned reports will be made available to bidders via PDF. It is understood that neither Sanborn, Head & Associates, the Architect, Engineer, nor the Owner will be responsible for any interpretations or conclusions drawn there from by the Bidder with regard to the interpretive data or geotechnical report.

C. Soil samples from borings are available for viewing at the aforementioned office of Sanborn Head.

END OF SECTION 00 3132

Description and Classification of Soil

1. Density or Consistency: The density or consistency of a soil sample is based on the Standard Penetration Test N-value according to the following table:

Density of Granular Soil	SPT N-Value		Consistency of Cohesive Soil
Very Loose	0-4	<2	Very Soft
Loose	5-10	2-4	Soft
Medium Dense	11-30	5-8	Medium Stiff
Dense	31-50	9-15	Stiff
Very Dense	>50	16-30	Very Stiff
		>30	Hard

The Standard Penetration Resistance, or N-value in blows per foot, is the sum of the blows recorded over the second and third 6-inch interval.

A number followed by "/3" indicates the distance that the sampler advanced. For example, "100/4" indicates that 100 blows of a 140-pound hammer falling 30 inches advanced the sampler 4 inches. "WOR/24" indicates the weight of the drilling rods without the hammer caused the sampler to advance 24 inches.

"WOH" indicates the static weight of the 140-pound hammer and the drilling rods attached to the split spoon sampler were sufficient to cause the sampler to advance.

"WOR" indicates the static weight of the drilling rods attached to the split spoon sampler was sufficient to cause the sampler to advance.

2. Color: The color of a soil sample is based on visual observation.

3. Soil Components

A. Description: The components of a soil sample are described by visually estimating the percentage of each component by weight of the total sample using a Modified Burmister System.

i. Major Component: The major soil component is written with upper case letters for granular soil (e.g., SAND, GRAVEL) and a combination of upper- and lower-case letters for fine grained soil (e.g., Silty CLAY, Clayey SILT).

ii. Minor Component: The minor soil components are written with the first letter of each soil type in upper case, and the remaining letters in lower case (e.g., Gravel, Silt). The minor components are identified and prefaced in the description based on the following percentages:

Preface	Percentage
and	35-50
some	20-35
little	10-20
trace	0-10

iii. Note: The actual percentages of gravel soil may differ from that measured when sampling with a standard split spoon sampler because of the relatively small sampler diameter. Also, it is not possible to identify the presence of boulders and cobbles using a standard split spoon sampler.

B. Definitions

i. Granular Soil: A granular soil sample is defined by the following particle sizes as referenced to a standard sieve:

Material	Description	Standard Sieve Limit	
		Upper	Lower
Boulders	C-sized	--	36 inch
	B-sized	36 inch	24 inch
	A-sized	24 inch	12 inch
Cobbles	--	12 inch	3 inch
Gravel	coarse	3 inch	3/4 inch
	fine	3/4 inch	No. 4
Sand	coarse	No. 4	No. 10
	medium	No. 10	No. 40
	fine	No. 40	No. 200

ii. Fine Grained Soil: The degree of plasticity of fine-grained soils is defined as follows:

Material	Degree of Plasticity	Plasticity Index (PI)	Smallest Thread Diameter (in.)
SILT	Non-Plastic	0	None
Clayey SILT	Slight	1 to 5	1/4
SILT & CLAY	Low	5 to 10	1/8
CLAY & SILT	Medium	10 to 20	1/16
Silty CLAY	High	20 to 40	1/32
CLAY	Very High	40+	1/64

iii. Organic Soil: An organic soil sample is classified by observation of the sample structure as follows:

Material	Description
TOPSOIL	Surficial soils that support plant life and which contain organic matter.
SUBSOIL	Soil underlying the topsoil which may contain roots or plant fibers.
PEAT	Deposits of plant remains in which the original plant fibers or root structure are visible.
ORGANIC SILT	Deposit of plant remains in which the original plant fibers or root structure have decomposed.

iv. Non-Soil Constituents: Non-soil constituents (artificial or anthropogenic material, organic materials, cobbles and boulders) are described as follows:

The following terminology is used to denote size ranges of non-soil constituents such as man-made objects or fill material:

Descriptive Term	Size Range	Comparative Term
Specks	< No. 200 Sieve	Silt and Clay fines
Particles	No. 200 Sieve to No. 4 Sieve	Sand
Fragments	No. 4 Sieve to 3 in.	Gravel
Pieces	3 in. to 12 in.	Cobbles
Blocks	> 12 in.	Boulders

The following terminology is used to describe the frequency that a non-soil constituent is observed by estimating the percentage of the constituent by weight of the total sample:

Descriptor	Percentage
very few	0-5
few	5-10
common	10-20
frequent	20-35
numerous	35-50

4. Moisture Content: The moisture content of a soil sample is based on the observable presence of water according to the following table:

Dry	Moisture is not apparent, dusty.
Moist	No visible water.
Wet	Visible free water.

5. Other Pertinent Characteristics: Pertinent characteristics observed in a soil sample should be noted according to the following table:

Soil Structure Produced by Deposition of Sediments	
Stratified	Random soil deposits of varying components of color.
Varved	Alternating soil deposits of varying thickness (i.e., clays or silts).
Stratum	Soil deposit > 12 inches thick.
Layer	Soil deposit 3 inches to 12 inches thick.
Seam	Soil deposit 1/8 inch to 3 inches thick.
Parting/Lens	Soil deposit <1/8 inch thick.

Boring / Monitoring Well Log Legend

SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: Industrial Site Redevelopment
Location: Anytown, State
Project No.: 1234.56

Log of Monitoring Well SH-1

Ground Elevation: 112.2 feet
TOC Elevation: 115.2 feet
PVC Elevation: 115.10 feet
Datum: MSL

Drilling Method: Mobile B-53 Truck, 5" PW Drive & Wash

Sampling Method: 2" O.D. Split Spoon w/140 lb Safety Hammer

Drilling Company: Ground Down Drilling Co.
Foreman: J. Driller
Date Started: 06/25/08 **Date Finished: 06/26/08**
Logged By: A. Engineer **Checked By: A. Principal**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
06/24/08	09:45	10.0'	Ground	27'	27'	<5 min
06/25/08	14:50	12.0'	Top of PVC	Well Installed	50'	15 min
07/03/08	13:00	12.2'	Top of PVC	Well Installed	50'	8 days

Depth (ft)	Casing Blows (per ft)	Drill Rate (min/ft)	Sample Information					Stratum		Geologic Description	Well Diagram	Well Description
			Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Log	Description			
1	2	3	4	5	6	7	8	9	9	10	11	11

1. The numbers in this column report the depth in feet below ground surface.

2. The numbers in this column report the number of blows required to drive the drill casing one foot using a 300 pound hammer, unless otherwise specified.

3. The numbers in this column report the rate of advance when coring rock.

4. The values in this column report the sample designation. In the example S-1, "S" indicates the sample type and "1" indicates the sample number.

"S" indicates split spoon sample
"U" indicates Shelby tube sample
"C" indicates rock core sample
"G" indicates grab sample

5. The numbers in this column report the depth, in feet, from the ground surface of the sample identified in column 4.

6. The numbers in this column report the number of blows required to drive a split spoon sampler 6 inches using a 140 pound hammer free falling 30 inches. The standard split spoon sampler is 1-3/8 inch inside diameter and 2 inches outside diameter. The Standard Penetration Resistance, or N-value in blows per foot, is the sum of the blows recorded over the second and third 6-inch interval.

A number followed by "/3" indicates the distance that the sampler advanced. For example "100/4" indicates that 100 blows of a 140 pound hammer falling 30 inches advanced the sampler 4 inches. "WOR/24" indicates the weight of the drilling rods without the hammer caused the sampler to advance 24 inches.

"WOH" indicates the static weight of the 140 pound hammer and the drilling rods attached to the split spoon sampler were sufficient to cause the sampler to advance.

"WOR" indicates the static weight of the drilling rods attached to the split spoon sampler was sufficient to cause the sampler to advance.

7. The values shown are the length of the soil or rock core sampler penetration and the number of inches of sample recovered from the sampler.

8. The values shown are the results of field tests performed on soil or rock samples. The test method, result and units are indicated. Unless otherwise noted "ND" denotes not detected.

9. These columns provide a graphic illustration and verbal description of the subsurface soil and rock strata. The depths of strata changes should be considered approximate and general in nature, actual strata changes in the field may be more gradual.

10. Descriptions of soil samples include:

- the density or consistency;
- color;
- a listing of MAJOR and minor soil components based on particle size and plasticity;
- structure,
- moisture; and
- other pertinent characteristics.

For example: Medium dense, brown, fine to medium SAND, trace Silt. Stratified. Moist. Faint petroleum odor.

Description of rock core samples include:

- hardness, weathering, rock continuity, color, texture, rock type, structure; and RQD (%)

For example: Hard to very hard, slightly weathered, grey-green, fine grained, RHYOLITE, with joints spaced 4 to 12 inches apart and dipping from near horizontal to approximately 60°. Open crack in core at 14.4', moderately fractured . RQD=58%

NOTE: "RQD" is defined as the summation of all pieces of rock core greater than 4 inches in length divided by the length of the core run and expressed as a percentage.

11. Monitoring well materials or other equipment installed within the borehole are graphically presented in these columns. If no equipment was installed, these columns are used for notes, remarks or other pertinent observations.

SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-1

Ground Elevation: 865 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer
Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/16/25 **Date Finished: 12/16/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
12/16/25	---	34'	Ground Surface	34'	34'	(Wet Soils)

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
0	S-1	0 - 2	6 7 7 4	24/9			0' TOPSOIL 0.3	(0 to 0.3'): TOPSOIL. S-1 (0.3 to 2'): Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt. Moist. FILL.	
2	S-2	2 - 4	3 13 24 11	24/8			FILL	S-2 (2 to 4'): Dense, brown/gray, fine to coarse SAND and Gravel, trace Silt. Moist. FILL.	
4	S-3	4 - 6	4 11 14 4	24/10			4'	S-3 (4 to 6'): Medium dense, brown, fine to coarse SAND, little Silt, trace Gravel. Moist.	
6	S-4	6 - 8	6 4 4 7	24/16				S-4 (6 to 8'): Loose, brown/tan, fine to coarse SAND, little Gravel, trace Silt. Moist.	
8	S-5	8 - 10	8 7 5 6	24/8				S-5 (8 to 10'): Medium dense, brown, fine to coarse SAND, little Silt, trace Gravel. Moist.	
10	S-6	10 - 12	5 4 7 10	24/10				S-6 (10 to 12'): Medium dense, brown, fine to coarse SAND, little Silt, trace Gravel. Moist.	
12									
14	S-7	14 - 16	19 22 22 26	24/0			SAND	S-7 (14 to 16'): Dense, No recovery.	
16									
18									
20	S-8	19 - 21	5 12 11 24	24/8				S-8 (19 to 21'): Medium dense, brown, fine to coarse SAND, some Silt, little Gravel. Moist.	
22									
24	S-9	24 - 26	2 6 6 7	24/4				S-9 (24 to 26'): Medium dense, brown, fine to medium SAND, some Silt. Moist.	
26									

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SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-1

Ground Elevation: 865 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer
Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/16/25 **Date Finished: 12/16/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
12/16/25	---	34'	Ground Surface	34'	34'	(Wet Soils)

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
26									
28									
30	S-10	29 - 31	9 11 12 12	24/8				S-10 (29 to 31'): Medium dense, brown, fine to medium SAND, little Silt. Moist.	
32							SAND		
34	S-11	34 - 36	9 10 10 9	24/6				S-11 (34 to 36'): Medium dense, brown, fine to medium SAND, little Silt. Wet.	
36									
38									
40	S-12	39 - 41	1 3 5 8	24/17			-----39'----- CLAYEY SILT	S-12 (39 to 41'): Medium stiff, brown, Clayey SILT, little Sand. Varved. Wet.	
42									
44	S-13	44 - 46	14 13 5 4	24/3			-----44'----- GLACIAL TILL	S-13 (44 to 46'): Medium dense, brown, fine to coarse SAND, little Gravel, little Silt. Wet.	
46									
48									
50	S-14	50 - 50.3	50/3"	3/0			-----50.3'-----	S-14 (50 to 50.3'): Very dense, No recovery. Boring terminated at approximately 50.3 feet below ground surface due to split spoon refusal.	
52									

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SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-2

Ground Elevation: 866 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer
Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/17/25 **Date Finished: 12/17/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
12/17/25	---	No Groundwater Encountered		19'	23'	N/A

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
0							-----0'-----	(0 to 10'): Soil stratigraphy inferred from test boring SH-1 and observed drill action.	
2							FILL		
4							-----4'-----		
6									
8									
10	S-1	10 - 12	13 14 17 14	24/10				S-1 (10 to 12'): Dense, brown, fine to coarse SAND, little Gravel, trace Silt. Moist.	
12							SAND		
14									
16									
18									
20							-----20'-----		Encountered top of probable boulder at approximately 20 feet bgs. Driller advanced roller bit approximately 3 feet into probable boulder prior to terminating boring.
22							PROBABLE BOULDER		
							-----23'-----	Boring terminated at approximately 23 feet below ground surface due to practical refusal.	
24									

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SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-2A

Ground Elevation: 867 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer

Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/17/25 **Date Finished: 12/17/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
0							-----0'-----	(0 to 4'): Soil stratigraphy inferred from test boring SH-1.	Offset approximately 10 feet east of SH-2.
2							FILL		
4							-----4'-----	Boring terminated at approximately 4 feet below ground surface due to practical refusal.	
6									
8									
10									
12									
14									
16									
18									
20									
22									
24									

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SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-2B (INCLIN)

Ground Elevation: 866 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer

Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/17/25 **Date Finished: 12/19/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
12/19/25	---	40'	Ground Surface	40'	42'	(Wet Soils)

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
0							-----0'-----	(0 to 40'): Soil stratigraphy inferred from test boring SH-1 and observed drill action.	Offset approximately 5 feet west of SH-2. Advanced casing to approximately 40 feet bgs prior to sampling. Test boring completed as an inclinometer.
2							FILL		
4							-----4'-----		
6									
8									
10									
12									
14							SAND		
16									
18									
20									
22									
24									

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SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-2B (INCLIN)

Ground Elevation: 866 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer
Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/17/25 **Date Finished: 12/19/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
12/19/25	---	40'	Ground Surface	40'	42'	(Wet Soils)

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
26									
28									
30									
32									
34							SAND		
36									
38									
40	S-1	40 - 42	4 6 4 5	24/16				S-1 (40 to 42'): Loose, brown, fine to medium SAND, some Silt. Wet.	
42							-----42'-----	(42 to 55'): Soil stratigraphy inferred from test boring SH-1 and observed drill action.	
44							CLAYEY SILT		
46									
							-----47'-----		
48							GLACIAL TILL		
50									

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SANBORN HEAD

Sanborn, Head & Associates, Inc.

Project: 4187 VT-100
Location: Rochester, VT
Project No.: 6345.000

Log of Boring SH-2B (INCLIN)

Ground Elevation: 866 ± feet
Datum: NAVD 1988

Drilling Method: Geoprobe® 7822DT Track-mounted drill rig with 4" casing & Rotary Wash
Sampling Method: 2" O.D. Split Spoon, Automatic Hammer
Drilling Company: Platform, LLC
Foreman: M. Jordan
Date Started: 12/17/25 **Date Finished: 12/19/25**
Logged By: W. Raboin **Checked By: J. Kugel**

Groundwater Readings

Date	Time	Depth to Water	Ref. Pt.	Depth of Casing	Depth of Hole	Stab. Time
12/19/25	---	40'	Ground Surface	40'	42'	(Wet Soils)

Depth (ft)	Sample Information: Sample No.	Depth (ft)	Spoon Blows per 6 in	Pen/ Rec (in)	Field Testing Data	Stratum: Log	Description	Geologic Description	Remarks
50									
52							GLACIAL TILL		
54									
							-----55'-----	Boring terminated at approximately 55 feet below ground surface. No refusal encountered.	
56								NOTES:	
								1. Test boring completed as an inclinometer and the annulus around the pipe was backfilled with grout.	
58									
60									
62									
64									
66									
68									
70									
72									
74									

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