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June 15, 2020

Mr. Dan Weinkauf
Integrated Grading & Excavating (IGE), Inc.
605 Grossman Drive
Schofield, WI 54476

Re: Raymond Road Storm Sewer Backfill Evaluation and Identified Soil Improvement Areas

Dear Mr. Weinkauf:

After construction on Raymond Road in 2018, subsidence features occurred at some locations in the roadway. The Wisconsin Department of Transportation (WisDOT) requested that the general contractor, Integrity Grading and Excavating (IGE), address the subsidence features by excavating and recompacting the soils along the entire storm sewer alignment. IGE retained Barr Engineering Co. (Barr) to evaluate the soil conditions in the backfill generally above the pipe and identify locations that may warrant soil improvement to help ensure future consequential soil subsidence within the roadway does not occur. The site location is shown on Figure 1.

This letter summarizes our geotechnical investigation analyses and testing completed to date and identifies locations and depths of storm sewer pipe backfill improvement for soils located between the pipe spring line and the ground surface.

1.0 Introduction

1.1 Purpose

In order to address WisDOT concerns regarding the pipe backfill and future subsidence features from developing in the backfill above the pipe, IGE requested Barr expand the investigation of the backfill to the entire 3,100-foot-long project alignment. The goal of the investigation is to provide a basis for identification of areas requiring backfill improvement to limit the potential for additional future consequential subsidence under the assumption that the joints in the pipe will be soil tight. Additionally, as a result of our investigation, we have identified areas along the pipe where soil improvement does not appear to be necessary.

1.2 Scope of Work

This investigation included soil borings and select laboratory testing, geophysical methods including surface and seismic Cone Penetrometer Testing (CPT) methods, test pits, and CPT soundings. Barr's investigation included reviewing construction information, observing soil borings, test pits, and CPT, documenting nuclear and laboratory density testing conducted by others, and recording pore water pressures from vibrating wire piezometers.

Our analysis and subsequent recommendations are based on review of the following documents and reports:

- The report: Presentation of Site Investigation Results Raymond Road, prepared by ConeTec dated April 28, 2020, which is included as Attachment A.
- Soil borings observed by Barr in June and July 2019 and May 2020, which are included as boring logs in Attachment B.
- Test pits observed by Barr conducted in July 2019, and May 20, 2020 which are included as test pit logs in Attachment C.
- Laboratory testing performed by Cooper Laboratories and Soils & Engineering Services, Inc., which was conducted in May 2020 for which the test results are provided in Attachment D.
- Collier Geophysics Multi-Spectral Analysis of Shear Waves (MASW) Report, May 2020, report provided as Attachment E.
- Information gathered by or provided to Barr for the prior subsidence investigation including conversations with CNA Consulting Engineers, Brent Anderson & Associates, IGE, and others.

2.0 Discussion of Investigation Findings and Analyses

The primary means of evaluating the backfill was through analysis of CPT data. The CPT method consists of applying force to advance a probe rod that can be fitted with a variety of instruments that are designed to allow for near-continuous subsurface data collection and measurement of soil properties. The specific cone penetrometer for this project included a piezometer (also known as a piezocone) that measures pore water pressure to estimate water levels at the time of the soundings. The CPT equipment is housed within a large truck that uses hydraulic rams to push the soil probe into the subsurface. Other data collection methods using hollow stem auger drilling methods, geophysics, or collection of soil samples involve measurement of soil properties that are averaged over a vertical portion of the subsurface that is generally greater than 1.5 feet. The CPT method allows for greater precision and in-situ measurement of subsurface soil properties allowing for much finer detail than other methods.

The locations of the investigation soil borings, CPT soundings, and test pits are shown on Figures 2 through 4. The CPT probe advancement (referred to as “soundings”) was pushed along the side and directly over the centerline of the pipe at intervals of approximately every 100 feet along the pipe alignment. Additional soundings were advanced in specific areas of interest such as previously observed subsidence features and additional soundings were advanced a few feet from where shallow refusal was encountered. The soundings that were advanced to depths below the pipe crown were positioned approximately 2 to 3 feet laterally beyond the edge of the pipe or were terminated approximately 1 to 2 feet above the pipe to prevent damage to the CPT equipment at storm sewer pipe. Due to local topography limiting safe rig access, the presence of the curb, or other constraints, the CPT soundings along the side of the pipe were generally advanced along the westerly/northwesterly side of the storm sewer.

2.1 CPT Tip Resistance (q_t)

One type of measurement collected by the CPT method is cone resistance, q_c, and as cone tip resistance, q_t, which is cone resistance corrected for cone area ratio and pore pressure. The attached Table 1 provides a visual summary of CPT q_t versus depth along the storm sewer alignment. Cone tip resistance is commonly used by geotechnical engineers to correlate soil strength and density. The recorded tip resistances were averaged for each 1-foot interval and were shaded from green to red to indicate relatively high (in green) to low cone resistances (in red). Table 1 was generated with the following notes:

1. CPT tip resistance is provided in values of tons per square-foot (tsf). Color shading is based on:
    a. Values less than 30 tsf are shaded red.
    b. Values between 30 and 60 tsf are shaded orange to yellow.
    c. Values between 60 tsf and 100 tsf shade from yellow to green.
    d. Values greater than 100 tsf are shaded dark green.
2. The tip resistance, q_t, is averaged over 1-foot intervals. Actual tip resistance values were measured at an interval of 0.05 meters and were directly provided by ConeTec (Attachment A).
3. Depth is measured from the existing ground surface at time of CPT exploration; the ground surface consisted of graded base aggregate in the roadway and grass-covered soil outside the roadway.
4. The roadway station locations were provided based on survey performed by Burse Surveying and Engineering.
5. The CPT locations were primarily surveyed by Burse Engineering and Surveying with some locations being recorded by Barr.
6. CPT locations CPT57 and CPT57B are shown separately since these were performed outside the anticipated trench and backfill zone of the storm sewer excavation. These soundings were advanced to evaluate the ground condition in areas where the pipe installation was not expected to have disturbed the native soil and were conducted for comparative purposes.
7. CPT locations CPT58, CPT59, and CPT60 are shown separately since these soundings were performed in an area where the existing trench backfill was excavated and recompacted under Barr's April 20, 2020 observation. The purpose of these soundings was to correlate the observed backfill process and condition with density testing and subsequent CPT tip resistance.
8. Heavy black borders of table cells indicate the estimated/approximate top and bottom of the pipe based on information provided in the Design Drawings. As-built drawings were not available and a current-condition pipe invert survey has not been performed. The location of the heavy black line is anticipated to generally be within 1 foot of the design elevation of the pipe. The actual pipe elevations may vary.
9. Heavy blue border of table cells indicates the estimated groundwater level based on CPT piezocone data. The water levels of the previously and subsequently performed soil borings or vibrating wire piezometer data is not represented in this data set. Groundwater levels are expected to fluctuate seasonally and with precipitation.

2.2 Soil Behavior Type (SBT)

ConeTec provided the Normalized Soil Behavior Type based on Q_{tn} (Q_{tn} SBT) (Robertson, 2009) to classify the soil. SBT is a calculated parameter based on CPT data that is intended to predict soil type based on mechanical properties recorded during the CPT soundings. The calculated parameter Q_{tn} is the cone resistance that is normalized to account for the vertical stresses. Table 2 is color-coded visual summary of the SBT data collected along the storm sewer alignment and reported by ConeTec compared to depth.

The CPT parameter calculations are based on values of tip resistance (q_t) sleeve friction (f_s) and pore pressure (u_2). Effective stresses are calculated based on unit weights that have been assigned to the individual soil behavior type zones and the assumed equilibrium pore pressure profile. Soils were classified as either drained or undrained based on the Q_{tn} SBT. Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4). Table 2 was generated with the following notes, and Table 1 notes 3, 4, 5, 8, and 9 also apply to Table 2 (not restated for brevity):

1. The SBT is averaged over 1-foot intervals. Actual SBT values were provided by ConeTec at 0.05-meter intervals over the depth of the CPT sounding. (Attachment A).

2. The SBTs at CPT57 and CPT57B (considered the roadway section construction) are shown as primarily 5 to 7 with the underlying native soil being SBT 3 and some type 4. At greater depths below about 27 to 28 feet, SBTs of 5 to 7 are found.

3. The SBT at CPT58, CPT59, and CPT60, correlated with the SBT of the backfill soils in the other CPT soundings performed in known backfill.

2.3 Relative Density, D_r, from CPT Correlation

The attached Table 3 provides a visual summary along the storm sewer alignment of CPT-correlated relative density, D_r, with respect to depth with the relative density based on the CPT data. Relative density is commonly used in the geotechnical industry as an index to correlate and estimate soil strength and relative compressibility as it identifies the minimum and maximum void ratio for a given soil.

Based on this information and the observed means and methods to place and compact the backfill at the test trench at station 526+50 at a depth of 4 feet, we estimate that the maximum dry densities (maximum unit weight) as determined by the Standard Proctor test (ASTM D698) and Maximum Index Unit Weight test are within about 5%. A relative density value of 50% was selected as the threshold for improvement as it correlates to soil that is compacted to about 90% of the maximum dry density as determined by the Standard Proctor test. A minimum specified density of 90% of the maximum dry density based on the Standard Proctor test is commonly specified for backfill placed deep below roadways. For our correlation, we assigned a 0% relative density to the determined unit weight based on the Minimum Index Density and Unit Weight of Soils Test (ASTM 4254) and 100% relative density to the Maximum Index Density and Unit Weight of Soils Test (ASTM 4253). Cooper Laboratory determined minimum unit weights of 107.1 and 88.9 pounds per cubic foot (pcf) at test pit locations excavated at stations 526+50 and 518+46, respectively. Similarly, Cooper Laboratory determined maximum unit weights of 128.9 and 122.2 pcf at test pit locations excavated at stations 526+50 and 518+46, respectively. Relative density, D_r, correlates to minimum, maximum, and in-place unit weight based on the formula:

$$D_r = \frac{\gamma_{dmax}}{\gamma_d}\left[\frac{\gamma_d - \gamma_{dmin}}{\gamma_{dmax} - \gamma_{dmin}}\right]$$

where γ_d = dry unit weight from nuclear density testing or proctor density testing
γ_{dmin} = minimum dry unit weight from ASTM 4254

γ_{dmax} = maximum dry unit weight from ASTM 4253

Therefore, we computed unit weights of 118.0 and 105.6 pcf at test location at stations 526+50 and 518+46, respectively, that correspond to 50% relative density. We then divided the 50% relative density unit weights by the maximum unit weight determined by the appropriate Standard Proctor test, which resulted in an average of 91.5% (or about 90%) of the maximum dry density determined by the Standard Proctor test. The table below provides a summary of the relationship between laboratory and insitu densities for sampling at a depth of 4 feet at the location of the observed test pits.

Test Location Approximate Station	Min. Unit Weight (ASTM 4254) 0% Relative Density (pcf)	Maximum Unit Weight (ASTM 4253) 100% Relative Density (pcf)	Unit Weight at 50% Relative Density (pcf)	Maximum Unit Weight (ASTM D698) Standard Proctor (pcf)	% of Maximum dry density (Standard Proctor)
526+50	107.1	128.9	118.0	123.6	95.5
518+46	88.9	122.2	105.6	120.5	87.6
				Average:	91.5

Table 3 is color-coded with only primarily granular soil behavior types (6 and greater) on a green to yellow to red-shaded scale to indicate relatively high to low correlated relative density. The table approximately provides where loose subgrade (red color range) exist that may require mitigation. Typically, red colors represent relative densities less than 40%, orange 40% to 50%, yellow from 50% to 60%, and green becoming darker from 60% and greater. Table 3 was generated with the following notes, and Table 1 notes 3, 4, 5, 8, and 9 also apply to Table 3 (again not restated for brevity):

1. The provided calculation of relative density from the CPT data is based on Baldi et al (1986) applied to SBTs of 6 or greater. Limitation of the correlation is to granular soils, specifically cleaner granular soils with small percentages of soil that pass the #40 and #200 sieve (soil types 6 and 7).

2. Relative density estimates may be influenced by artificially "high" cone resistances due to the presence of gravel, cobbles, and/or boulders and therefore not be locally representative of the relative density of the subgrade. Any value calculated as greater than 90% should be considered quite dense. Instead of reporting the correlated relative density value for any value greater than 90%, the cell is provided as a dark green shading.

As previously indicated, the CPT tip resistance can correlate to relative density using empirical formulas. To better define the correlation at this site, and aid in estimating relative density using other test methods, e.g., sand cone and Standard Proctor tests, Cooper Laboratories performed Minimum and Maximum Index Unit weight test on select bulk samples from the test trenches.

2.4 SPT N_{60} Value Correlation from CPT Data

The attached Table 4 provides a visual summary along the storm sewer alignment (based on the CPT locations) of CPT-correlated Standard Penetration Test (SPT) $(N_1)_{60}$-value, with respect to depth and corrected for overburden pressure. The correlated N-values were provided by ConeTec and SPT N-values are commonly used data for estimating soil strength and density. Table 4 is color-coded on a green to yellow to red-shaded scale to indicate low correlated N-values of 4 or less which are shaded red color range, N values of 5 to 7 are orange, 8 through 10 are yellow, and 11 and greater are light green. Values greater than 11 range from light green to dark green.

The N-values from SPT sampling generally aligned well with the correlated $(N_1)_{60}$-values from the CPT soundings for $(N_1)_{60}$-values for values below approximately 30. Above an $(N_1)_{60}$-value of 30, the soils are considered dense and the correlation appears to be heavily influenced by the presence of cobbles or gravel in the backfill soil. Note that the N-values reported on the logs are field recorded values and not corrected for overburden or sampling methods. The N-value correlations are provided for reference and were not utilized for identification of soil improvement areas.

Table 4 was generated based on Table 1 notes 3, 4, 5, 8, and 9 (again not restated for brevity) and includes the following notes:

1. The $(N_1)_{60}$-value provided is corrected for overburden stress and is based on the correlation by Lunne, Robertson, and Powell (1997).
2. Relative density estimates may be influenced by artificially “high” cone resistances due to the presence of gravel, cobbles, and/or boulders and therefore not be locally representative of the relative density of the subgrade. Any N-value calculated as greater than 30 should be considered dense. Instead of reporting the correlated N- value for any value greater than 30, the cell is provided as a dark green shading.
3. CPT locations CPT57 and CPT57B are shown separately since these were performed outside the anticipated trench and backfill zone of the storm sewer excavation. These soundings were advanced to evaluate the ground condition in areas where the pipe installation was not expected to have disturbed the native soil and were conducted for comparative purposes. The N-values in this area is similar to N-values observed below the expected pipe excavation zone from approximately station 524+00 to 525+75.

2.5 Comparison of MASW Results to CPT Soil Data

Geophysical methods used in the investigation included a MASW survey conducted by Collier Geophysics (Attachment E). This type of seismic geophysical method allowed collection of continuous subsurface data along three transects oriented parallel to the pipe alignment. Details on the method and the data collection are included in the Collier report found in Attachment E.

Shear wave velocities collected with a shear wave generation equipment attached to the CPT rig were compared to the MASW shear wave velocities. Generally, good agreement was found between the two data sources given the difference in scale between the CPT point measurements and geophysics which is a form of bulk subsurface measurement. Limitations for precise agreement between the different measurement methods include the subsurface resolution, different lateral locations, and the heterogeneity of soils observed within the backfill. Each consideration is discussed briefly below.

The MASW subsurface resolution is between 1-4 feet at the near surface, and increases with depth, in contrast to the CPT soil measurements which were made every 0.05 meters. CPT seismic readings were made approximately every 1-2 meters. As such, CPT soil observations that showed differences in small intervals were not observed in the MASW survey. Similarly, but to a lesser degree, the CPT seismic soundings interval remained at approximately 1-2 meters throughout the soil column, while the MASW intervals increased with depth. However, significantly low shear wave velocities, representative of weak soils, are observed in both sets of data in similar locations.

The MASW survey transects were located immediately over the storm sewer alignment, and one each located approximately 15-feet on either side of the pipe centerline. The CPT soundings were generally 8-9 feet from the storm sewer centerline, which is between the two MASW survey transects. This requires interpolation of two MASW transect data sets for a single comparison to the CPT data set.

Soil heterogeneity that naturally occurs during backfilling of construction projects is observed at a single lateral location in CPT soundings, but is averaged along the MASW transect data interpretation. Similar to the depth resolution, this difference in lateral spatial observation limits direct comparison of CPT data to MASW data.

Notwithstanding the above limitations, our review supports the generalized characterization that relatively low (red), medium (yellow-orange), and high (green) velocity shear waves measured by MASW sufficiently correlate to respective low, medium, and high velocity shear waves as measured by CPT.

2.6 Comparison of SPT Observations to CPT Soil Data

The comparison of SPT observations, recovered soil samples, and N-values to CPT soil behavior is limited by the soil heterogeneity and the differences in soils observed in undisturbed locations off the roadway and the disturbed soils within the roadway. SPT N-values and observed recovered soil samples, generally correlate well to the observed CPT soil behavior types, as noted in Section 2.4. Generally, soil observations, and select laboratory test results, from SPT borings confirm the soil backfill exhibits significant heterogeneity in some areas, which agrees with the heterogeneity observed in CPT soundings.

2.7 Comparison of Test Trench Observations to CPT Soil Data

Test trenches were performed to observe a soil profile as well as to measure in situ soil densities and collect samples for our evaluation, which were explicitly considered in conjunction with the CPT data for development of the identified soil improvement areas further discussed.

2.8 Combined Comparison of Data Sources

Overall, the observations and results from CPT soundings correlate relatively well with the observations and results from the MASW survey, SPT borings, lab testing, and test trench observations.

Geologic cross sections developed with consideration of the CPT soundings, SPT borings, and test pits are included as Figures 5 through 11.

2.9 Groundwater Elevations

Vibrating wire (VW) piezometers were previously installed in three nested locations, as summarized in the August 1, 2019 letter. Field activities performed in May 2020 included installation of four additional VW piezometers at the following SPT boring locations and corresponding depths: SB20-03 (30’), SB20-05 (30’), and SB20-07 (38’). The VW piezometer SB20-07 was installed immediately adjacent to the previously installed B3C VW piezometer nest. The locations of the VW piezometers are illustrated on Figures 2 through 4.

The measured potentiometric surface from May 18 – June 10, 2020 for each of the three nested vibrating wire piezometers are shown on Figures 12, 13, and 14. As observed in these hydrographs, the VW piezometers at higher elevations have higher pore water pressures than the lower elevation VW piezometers, which indicated a downward vertical gradient over the measured time period.

Comparison of VW piezometer potentiometric surface elevations to pore water pressure observations in CPT soundings indicate general agreement. Specifically, the B2B and B1B elevations compare favorably to nearby CPT soundings CPT20-11, CPT20-48, CPT20-13; and B3C elevations compare favorably to nearby CPT sounding CPT20-20 and CPT20-17.

3.0 Identification of Pipe Backfill Improvement Areas

Based on the review of the information presented in this letter, consideration of information from a variety of subgrade parameters from several investigation sources was used to aid in the delineation of the identified improvement areas.

For our analysis, we relied on the provided subgrade strength (q_t), soil behavior type (SBT), and relative density (D_r), with consideration of the relativeness thickness and proximity of subgrade conditions to the pavement layers and storm sewer pipe.

In our opinion, using a single parameter likely results in an overly conservative or insufficient limit to the areas which need to be addressed. As a result, the identified areas for the soil backfill improvement are based on soil resistance as derived from CPT tip resistance, soil behavior type and relative density as correlated from CPT testing, laboratory testing, observed backfill processes in the test excavations, nuclear density testing of the backfill, and the thickness and location of the loose soils.

The attached Table 5 provides a visual summary of the areas identified for soil improvement by the criteria along the storm sewer alignment with the identified depths described in text format in Table 6.

3.1 Overview of Findings

Table 6 summarizes the individual sections along the alignment where conditions meet the above-identified criteria for soil improvement. Consistent with Table 5, we identified areas where soil improvements are not warranted. Also consistent with Table 5, we identified areas that could benefit from soil improvement.

3.2 Backfill Improvement in Paved Areas

Our identification of areas for potential soil improvement to mitigate risk of consequential future soil subsidence are based on a tiered criterion. The evaluation is performed for the soil backfill located from the pipe spring line to the ground surface and do not include the soils beneath the pipe. The identified areas are provided with the understanding that pipe joint remediation is occurring that will inhibit soil migration into the pipe and that soil immediately below the pipe is improved in the process of the joint improvement.

Table 6 Identified Soil Backfill Improvement Areas

Zone	Station Start	Station Stop	Approximate Length	Soil Improvement Area and Depth
1	Start	502+40	225	Area over pipe not within roadway. Excavate and recompact upper 10 feet of backfill under observation to WisDOT requirements.
2	502+40	504+50	110	Soil improvement from spring line to approximately 3 to 9 feet over the top of the pipe.
3	504+50	506+50	100	No improvement need identified.
4	506+50	507+50	100	Soil improvement from top of pipe to approximately 9 feet over pipe
5	507+50	519+75	1225	No improvement need identified.
6	519+75	520+75	100	Soil improvement from spring line to up to 7 feet over the top of the pipe.
7	520+75	523+25	250	No improvement need identified.
8	523+25	524+00	75	Soil improvement from the spring line to approximately 3 feet over the top of the pipe.
9	524+00	525+75	175	Unanticipated geologic feature. Soil imporovement should be completed to address subgrade conditions within this specific zone.
10	525+75	527+00	125	Soil improvement from the spring line to approximately 5 feet over the top of the pipe.
11	527+00	528+00	100	No improvement need identified.
12	528+00	528+75	75	Soil improvement from spring line to up 3 to 9 feet over the top of the pipe.
13	528+75	530+00	125	No improvement need identified.
14	530+00	531+25	125	Soil improvement from spring line to approximately feet over the top of the pipe.
15	531+25	End	250	Area over pipe not within roadway. Excavate and recompact upper 10 feet of backfill under observation to Wisconsin DOT requirements.

Soils exhibiting response indicative of improvement must exhibit low tip resistance and low relative density and be present in a layer or collective layers of at least 3 feet or more. Areas targeted for improvement below the roadway are to meet the criteria of:

1. Exhibit CPT tip resistance, q_t, of less than 40 tsf and consist of soil type 5 or less or,

2. Exhibit CPT tip resistance, q_t, of less than 40 tsf and consist of SBT type 6 or greater and exhibit correlated relative densities less than 50% which indicate the soil may be qualitatively classified as loose or the lower range of medium dense. These threshold values are based on density testing of a test area of the backfill as well as advancing cone penetration test soundings through these areas, and the relevant laboratory and field testing described in Section 2.3. A relative density of

50% was selected as this generally corresponds to a standard proctor density of approximately 90%,

3. and be at least 3 contiguous feet or more than 4 collective feet in the evaluation depth if multiple layers of less than 3 feet are present in the vertical profile,
4. and be present at elevations at or above the pipe spring line.

If the criteria identified in items 1 or 2 and 3 and 4 above were not met, the area is not currently identified for ground improvement to mitigate future subsidence potential.

3.3 Backfill Improvement in Unpaved Areas

Given the location of the pipe alignment outside of the roadway occurring in green space, no soil improvement is immediately required as subsidence would not be consequential to the pavement and any subsidence would likely appear as a shallow depression. As shown in Table 5 and recommended in Table 6, unpaved areas (greenspace), such as southeast of approximate station 503+20 and northeast of station 530+50, have areas where loose soils were found to exist above the pipe. Due to the shallow nature of the pipe, these soils could be addresses by traditional excavation and backfill.

For these areas of greenspace outside of the roadway, a potential method to address these soils may include excavation and observed recompaction of the soils within 10 feet of the surface. The potential for subsidence in the areas where the pipe is in green space is limited by the fact that loads are not anticipated over the pipe, the pipe backfill is relatively shallow, and the joints will be sealed. The excavated soils should be excavated, the exposed subgrade evacuated, and the soils replaced and recompacted to Wisconsin DOT specification.

We assume that when soil improvement occurs, an experienced engineer familiar with the pipe constraints and selected soil improvement technique should be present while work is occurring to observe the improvement process and determine if the soil improvement may be suspended. The extent of the soil improvement should occur based on effectiveness and response of the soil within the recommended station interval but may be extended or shortened based on the observed soil improvement response. Upon starting the work, conditions may be encountered that would indicate a need for modifications to the identified soil improvement areas.

Table 6 provides a summary of the areas identified for soil improvement, as well as areas for which soil improvement needs were not observed. Table 5 provides a graphical display of these areas in the similar format as Table 2 through Table 4.

3.4 Station 524+00 to 525+75 Anomaly

Through the course of the most recent investigation, a previously unidentified subsurface condition was encountered from approximately station 524+00 to 525+75. Generally, this station range correlates to the location of previous subsidence features. Considerably weak soils were identified around and at elevations below the pipe to appreciable depth. One design soil boring was conducted by CGC (Attachment B) that identified a single soil sample of clay with low strength.

Soil improvement within the backfill in this area is necessary. However, this letter does not provide soil improvement recommendations between stations 524+00 to 525+75. Geotechnical conditions encountered indicate that soil improvement below the pipe spring line will likely be necessary in this area.

It is our belief is that soil improvement of the remainder of the pipe alignment outside of stations 524+00 to 525+75 should occur while soil improvement requirements for this specific area are determined.

4.0 Limitations

The initial scope of our review, analysis, and provided areas of improvement included only the soils present from the pipe spring line to the surface. The investigation encountered geotechnical conditions that indicate loose soil may be present beneath the pipe spring line and to depths well below the pipe invert in some locations. The identified soil improvement areas assume that the joint improvement addresses the pipe conditions found below the pipe spring line and effectively develops soil-tight joint conditions.

The physical investigation utilizing SPT borings and CPT soundings cannot evaluate soils immediately adjacent to the pipe without potential for contacting and damaging the pipe. Therefore, the conditions encountered were observed as practically close to the pipe as reasonable; within a few feet. This approach is considered as an appropriate and acceptable practice within the industry to gather necessary subsurface information. Although the conditions immediately surrounding and beneath the pipe may differ from what is observed in these investigation techniques, as the soil in these locations could not be directly assessed, the information gathered is considered to be sufficient for the purposes of identifying areas needing soil improvement.

The soil improvement is recommended to reasonably limit the potential for development of consequential subsidence features above the pipe alignment and the recommendations are based on observed investigation data. Methods of soil improvement are based on the encountered soil type, location of the improvement area relative to the pipe, pipe loading limitations, depth and thickness of treatment zone, access and space limitations, and schedule. This letter does not include recommendations regarding pipe joint repairs, improvement of soil below the pipe spring line, or pipe subgrade remediation.

Barr Engineering Company's services for this project were performed in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area. No warranty, expressed or implied, is made.

Please contact us regarding any questions you may have. We appreciate the opportunity to assist you with this project.

Sincerely,

Travis A. Davidsavor, PE
Wisconsin Professional Engineer #E-39112-6
Vice President, Sr. Geotechnical Engineer

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Enclosures
Tables
Figures
Attachments

References

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Tables

Table 1

Summary of CPT Q_t Values

Zone	1	2					3		4	5					
Reference	1	2	3	4	6	7	8	9	10	11	12	13	14	15	16
Name/ Average Depth (ft)	CPT20-45	CPT20-44	SCPT20-46	CPT20-47	CPT20-43B	CPT20-42	SCPT20-41	CPT20-40	CPT20-39	CPT20-38	SCPT20-37	CPT20-36	CPT20-34	CPT20-35	CPT20-33
Station	500+88	503+01	503+51	503+77	504+00	504+01	505+01	505+99	506+99	508+01	508+97	510+00	510+98	510+98	511+99
0.5	11	111	11	125	68	177	133	290	254	263	187	181	255	139	191
1.5	59	217	263	330	173	368	280	409	366	302	359	425	331	288	386
2.5	58	282	326	245	146	284	241	349	330	314	429	494	493	309	383
3.5	19	127	224	255	106	225	180	227	304	312	482	482	632	557	313
4.5	82	89	216	115	83	144	145	152	208	256	298	383	508	427	321
5.5	30	106	136	109	129	292	172	225	244	375	246	387	241	334	293
6.5	22	125	81	154	186	281	158	213	301	347	272	313	247	283	276
7.5	13	95	62	133	230	261	143	179	287	283	183	347	212	339	266
8.5	11	123	137	93	208	151	205	143	287	279	229	321	209	229	310
9.5	10	105	214	115	248	198	89	116	201	221	227	259	178	207	261
10.5	27	36	189	169	209	221	126	168	215	136	187	266	163	235	174
11.5	15	21	121	157	182	196	132	161	339	135	211	253	138	256	109
12.5	7	27	127	116	168	111	137	175	285	73	193	180	136	212	121
13.5	7	51	115	130	184	108	327	161	240	121	150	199	154	168	103
14.5	8	60	104	117	174	105	284	184	134	166	128	143	66	120	79
15.5	8	41	90	95	163	79	194	250	233	187	110	133	37	219	63
16.5	7	29	72	76	-	63	162	287	196	163	91	116	73	-	47
17.5	14	33	51	63	-	36	142	261	181	190	110	103	137	-	40
18.5	115	33	36	57	-	25	80	217	182	169	107	82	122	-	31
19.5	223	44	30	75	-	21	142	225	138	200	77	107	112	-	31
20.5	142	40	24	87	-	21	129	190	236	156	52	160	47	-	31
21.5	62	62	30	67	-	33	88	187	153	179	51	119	91	-	59
22.5	123	57	29	46	-	39	64	171	105	181	81	148	129	-	62
23.5	52	56	29	34	-	65	59	163	67	171	57	422	121	-	22
24.5	92	63	29	25	-	66	80	141	37	148	61	578	154	-	25
25.5	126	118	33	22	-	56	71	172	28	151	62	-	150	-	41
26.5	197	142	55	22	-	54	72	163	22	158	58	-	106	-	57
27.5	183	144	91	29	-	82	69	128	34	134	53	-	137	-	602
28.5	182	129	109	47	-	102	55	103	58	100	75	-	339	-	-
29.5	209	159	100	68	-	108	78	149	36	101	96	-	-	-	-
30.5	235	165	102	102	-	115	104	168	26	144	133	-	-	-	-
31.5	227	166	99	172	-	130	158	156	34	287	124	-	-	-	-
32.5	228	156	135	157	-	149	328	108	149	473	129	-	-	-	-
33.5	-	166	212	134	-	173	424	84	235	-	262	-	-	-	-
34.5	-	-	-	-	-	146	479	-	-	-	-	-	-	-	-
35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Zone	5											6			7	
Reference	17	18	19	20	21	22	23	24	25	26	27	#	29	30	#	32
Name/ Average Depth (ft)	CPT20-32	SCPT20-31	CPT20-29	CPT20-30	CPT20-28	CPT20-27	SCPT20-26	SCPT20-53	CPT20-54	CPT20-25	CPT20-55	CPT20-23	CPT20-24	CPT20-56	CPT20-22	CPT20-21
Station	512+90	513+99	514+96	514+97	516+00	516+81	516+81	518+00	518+48	518+99	519+52	519+88	519+88	520+51	520+91	520+93
0.5	76	150	186	164	157	184	252	269	196	245	192	###	184	296	207	203
1.5	269	406	341	386	430	306	572	379	298	348	380	###	356	408	293	435
2.5	341	398	435	326	364	464	592	431	353	371	260	###	382	411	387	379
3.5	270	447	358	333	240	526	444	383	442	454	565	###	503	502	540	495
4.5	109	251	198	164	227	374	292	227	234	258	347	###	358	281	376	317
5.5	92	161	233	80	190	231	171	149	157	190	256	###	250	227	207	224
6.5	126	158	187	85	149	177	135	86	82	161	219	###	114	194	126	150
7.5	109	144	148	238	152	172	137	77	61	153	202	61	64	155	83	122
8.5	91	124	151	226	124	176	101	83	81	110	157	54	37	128	177	133
9.5	75	126	156	180	62	202	141	65	73	98	124	###	29	171	104	130
10.5	94	163	165	151	118	196	145	52	86	62	86	96	56	190	41	78
11.5	92	107	126	122	135	184	162	65	104	21	69	77	56	137	69	55
12.5	99	108	108	83	113	187	158	53	92	29	70	67	91	94	59	39
13.5	83	70	99	111	87	194	87	66	102	21	70	44	88	86	57	31
14.5	93	58	94	134	67	-	110	74	94	42	83	-	73	43	86	-
15.5	59	48	113	-	69	-	60	77	76	74	82	-	40	34	91	-
16.5	53	51	96	-	54	-	67	87	49	58	86	-	24	20	101	-
17.5	41	45	104	-	46	-	59	94	40	41	103	-	21	26	74	-
18.5	53	66	108	-	54	-	41	115	57	65	149	-	26	20	59	-
19.5	85	44	113	-	60	-	105	144	82	130	190	-	106	27	112	-
20.5	110	37	71	-	84	-	179	151	128	111	216	-	168	39	107	-
21.5	84	42	62	-	94	-	165	165	124	119	306	-	196	39	94	-
22.5	139	58	82	-	50	-	171	157	94	226	234	-	202	179	96	-
23.5	157	115	128	-	44	-	194	148	126	320	211	-	197	188	161	-
24.5	161	81	150	-	44	-	188	134	128	342	248	-	194	134	167	-
25.5	101	169	193	-	90	-	196	180	138	235	374	-	161	130	124	-
26.5	92	107	234	-	151	-	217	186	168	223	278	-	218	137	128	-
27.5	145	103	268	-	100	-	227	178	153	216	357	-	225	128	128	-
28.5	154	162	122	-	60	-	211	223	92	191	381	-	216	140	130	-
29.5	168	200	45	-	55	-	215	227	317	159	310	-	292	137	121	-
30.5	84	69	33	-	107	-	242	222	338	146	254	-	389	151	124	-
31.5	89	250	41	-	81	-	231	217	303	135	329	-	-	177	138	-
32.5	-	362	35	-	52	-	272	247	-	142	-	-	-	-	142	-
33.5	-	-	84	-	40	-	-	-	-	166	-	-	-	-	175	-
34.5	-	-	164	-	-	-	-	-	-	144	-	-	-	-	174	-
35.5	-	-	-	-	-	-	-	-	-	227	-	-	-	-	171	-
36.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	149	-
37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	203	-
38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	379	-
39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	432	-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	189	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	147	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	149	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	134	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	193	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	176	-
50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175	-

Zone	7		8	9								10		11		
Reference	34	37	39	40	41	#	#			#	49	50	54	55	58	60
Name/ Average Depth (ft)	CPT20-01B	SCPT20-02C	CPT20-03B	CPT20-20	SCPT20-04	CPT20-19	SCPT20-05	CPT20-17	CPT20-18	CPT20-06	CPT20-16	CPT20-07	CPT20-08	CPT20-52	CPT20-14C	CPT20-15B
Station	521+98	522+93	523+78	524+16	524+68	524+74	524+99	525+12	525+12	525+22	525+58	525+86	526+82	527+09	527+42	527+30
0.5	182	111	30	124	144	###	145			215	172	228	179	172	174	126
1.5	256	289	126	256	265	###	288			314	310	297	200	251	252	339
2.5	428	367	96	301	313	###	300			343	271	141	211	440	254	555
3.5	543	521	324	301	234	###	339			319	336	278	265	312	241	260
4.5	292	265	294	130	143	###	217			225	210	151	132	143	191	112
5.5	208	209	262	58	74	87	122			176	104	88	61	146	166	107
6.5	167	166	77	39	33	78	75			112	48	60	43	118	218	171
7.5	143	114	40	32	39	77	79			92	61	33	42	142	163	219
8.5	107	87	35	36	65	54	76			99	63	33	38	107	55	255
9.5	91	59	27	39	60	49	60			108	51	33	30	63	84	154
10.5	125	61	83	42	48	28	50			91	45	34	46	56	65	85
11.5	106	68	29	74	24	8	80		-	60	18	72	48	75	54	66
12.5	125	95	68	71	10	3	62		-	35	15	43	59	35	60	114
13.5	125	92	128	44	4	3	44		-	39	21	28	35	27	85	-
14.5	159	53	168	8	5	6	48		-	41	25	32	40	57	113	-
15.5	68	39	410	10	7	5	27		-	15	10	55	104	95	282	-
16.5	74	85	541	11	8	7	10		-	7	11	67	161	149	505	-
17.5	87	65	-	9	8	8	9		-	8	102	89	206	207	605	-
18.5	84	55	-	8	8	8	8		-	8	242	195	178	334	729	-
19.5	93	37	-	9	7	7	7		-	8	67	134	139	262	777	-
20.5	140	24	-	8	8	8	7		-	7	92	151	255	278	-	-
21.5	320	20	-	10	8	8	8		-	9	368	165	254	145	-	-
22.5	474	21	-	16	9	9	8		-	11	355	284	254	142	-	-
23.5	-	22	-	14	9	9	8		-	18	294	528	490	118	-	-
24.5	-	23	-	17	43	15	8		-	121	327	571	-	126	-	-
25.5	-	31	-	57	120	###	10		-	117	165	-	-	318	-	-
26.5	-	40	-	35	200	###	8		-	332	204	-	-	191	-	-
27.5	-	44	-	6	174	###	8		-	339	172	-	-	108	-	-
28.5	-	72	-	10	223	###	58		-	364	45	-	-	111	-	-
29.5	-	72	-	92	166	87	82		-	417	43	-	-	109	-	-
30.5	-	88	-	122	131	56	254		-	516	40	-	-	115	-	-
31.5	-	90	-	115	19	###	-		-	492	121	-	-	166	-	-
32.5	-	99	-	-	5	79	-	-	-	604	177	-	-	192	-	-
33.5	-	112	-	-	4	19	-	-	-	532	370	-	-	180	-	-
34.5	-	113	-	-	14	32	-	-	-	580	256	-	-	230	-	-
35.5	-	110	-	-	176	19	-	-	-	675	136	-	-	214	-	-
36.5	-	179	-	-	459	11	-	-	-	-	171	-	-	247	-	-
37.5	-	221	-	-	-	52	-	-	-	-	195	-	-	581	-	-
38.5	-	193	-	-	-	###	-	-	-	-	147	-	-	-	-	-
39.5	-	258	-	-	-	###	-	-	-	-	366	-	-	-	-	-
40.5	-	205	-	-	-	###	-	-	-	-	583	-	-	-	-	-
41.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	###	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Zone	11	12				13			14	15		Off Alignment		Backfill CPT		
Reference	63	66	#		69	70	71	72	73	74	75	44	46	51	52	53
Name/ Average Depth (ft)	CPT20-09C	CPT20-51C	CPT20-61	SCPT20-50	CPT20-62	CPT20-10	CPT20-49	SCPT20-11	CPT20-48	CPT20-13	CPT20-12	CPT20-57	SCPT20-57B	CPT20-58	SCPT20-59	CPT20-60
Station	527+82	528+33	528+46	528+50	528+55	529+08	529+39	529+77	530+46	531+39	531+96	524+81	525+02	526+55	526+57	526+59
0.5	150	221	193	#	173	87	191	207	244	56	28	225	223	78	40	48
1.5	322	335	269	#	306	193	293	265	267	92	103	358	367	197	166	135
2.5	645	220	243	#	376	311	288	408	221	63	100	207	224	191	159	132
3.5	490	177	300	#	359	222	350	253	251	22	58	97	274	237	212	228
4.5	395	118	259	#	284	149	155	186	182	5	54	72	60	297	267	281
5.5	286	52	172	#	236	122	87	123	121	7	53	15	17	278	244	211
6.5	193	28	128	#	143	89	75	86	81	17	53	21	22	148	141	126
7.5	244	47	102	#	67	84	65	71	78	25	45	14	12	188	167	130
8.5	151	33	81	#	79	81	50	74	63	27	51	7.7	9	119	131	113
9.5	187	40	90	#	106	72	40	60	43	30	88	6	8	67	90	78
10.5	88	47	54	#	128	83	34	51	28	26	105	6	9	91	43	64
11.5	57	83	80	#	50	120	46	50	15	21	93	5.1	7	330	97	181
12.5	77	62	47	#	32	226	109	48	12	24	57	3.7	6	-	-	-
13.5	-	34	28	#	81	127	110	62	12	26	134	5.1	6	-	-	-
14.5	-	35	34	#	53	134	88	57	16	35	139	7.7	9	-	-	-
15.5	-	50	53	#	42	98	111	37	24	35	112	7.7	10	-	-	-
16.5	-	35	48	#	19	128	77	49	24	47	69	8	10	-	-	-
17.5	-	84	58	#	6	183	70	83	20	166	79	8.3	9	-	-	-
18.5	-	8	113	#	2	308	123	110	91	286	79	8.7	9	-	-	-
19.5	-	77	65	#	10	241	193	85	170	248	71	7.7	8	-	-	-
20.5	-	84	45	#	32	303	299	88	415	330	49	7.1	8	-	-	-
21.5	-	57	91	1	62	525	336	124	671	272	80	7.3	8	-	-	-
22.5	-	137	58	1	41	-	184	59	585	243	121	8	9	-	-	-
23.5	-	259	127	#	39	-	147	50	300	499	108	8.3	9	-	-	-
24.5	-	334	143	#	22	-	267	47	273	486	80	8.7	9	-	-	-
25.5	-	195	122	#	55	-	367	42	195	225	271	18	10	-	-	-
26.5	-	226	222	#	90	-	490	61	526	371	179	13	10	-	-	-
27.5	-	168	248	#	154	-	568	360	855	322	94	96	11	-	-	-
28.5	-	285	169	#	206	-	301	440	640	350	246	117	12	-	-	-
29.5	-	338	161	#	254	-	307	481	822	305	470	80	15	-	-	-
30.5	-	350	168	#	230	-	412	675	949	293	336	137	34	-	-	-
31.5	-	434	-	#	229	-	-	801	-	274	313	250	64	-	-	-
32.5	-	-	-	#	-	-	-	-	-	255	329	274	118	-	-	-
33.5	-	-	-	#	-	-	-	-	-	270	504	364	275	-	-	-
34.5	-	-	-	-	-	-	-	-	-	327	476	-	332	-	-	-
35.5	-	-	-	-	-	-	-	-	-	366	393	-	413	-	-	-
36.5	-	-	-	-	-	-	-	-	-	321	511	-	366	-	-	-
37.5	-	-	-	-	-	-	-	-	-	260	695	-	495	-	-	-
38.5	-	-	-	-	-	-	-	-	-	274	-	-	664	-	-	-
39.5	-	-	-	-	-	-	-	-	-	201	-	-	623	-	-	-
40.5	-	-	-	-	-	-	-	-	-	161	-	-	476	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	519	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	729	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	737	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2
Soil Behavior Type (SBT) Visual Data Summary

Zone	1	2					3		4	5										
Reference	1	2	3	4		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Name/ Average Depth (ft)	CPT20-45	CPT20-44	SCPT20-46	CPT20-47	CPT20-43	CPT20-42	SCPT20-41	CPT20-40	CPT20-39	CPT20-38	SCPT20-37	CPT20-36	CPT20-34	CPT20-35	CPT20-33	CPT20-32	SCPT20-31	CPT20-29	CPT20-30	CPT20-28
Station Burse	500+88	503+01	503+51	503+77	503+95	504+01	505+01	505+99	506+99	508+01	508+97	510+00	510+98	510+98	511+99	512+90	513+99	514+96	514+97	516+00
0.5	4	6	4	6	6	6	6	7	6	6	6	6	6	7	6	6	6	6	4	6
1.5	5	7	6	7	7	7	7	7	7	6	7	7	6	7	7	7	7	6	7	7
2.5	5	6	7	6	6	6	6	7	6	7	7	7	7	7	7	7	6	7	5	7
3.5	4	6	6	6	6	6	6	6	7	6	7	7	6	7	6	6	6	6	6	6
4.5	6	6	6	6	6	6	6	6	6	6	6	7	7	6	6	7	6	6	6	6
5.5	5	6	6	6	6	6	6	7	6	6	6	6	6	6	6	6	6	6	6	6
6.5	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7.5	4	6	6	6	6	6	6	6	6	6	6	7	6	7	6	6	7	6	6	6
8.5	3	6	6	6	6	6	6	6	6	6	6	6	6	6	7	6	6	6	6	6
9.5	4	6	6	6	-	6	6	6	6	6	6	6	6	6	6	5	6	6	6	5
10.5	5	5	6	6	-	6	6	6	6	6	6	6	6	7	6	5	6	6	6	6
11.5	3	4	6	6	-	6	6	6	6	6	6	6	6	7	5	6	6	6	6	6
12.5	3	5	6	6	-	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
13.5	3	5	6	6	-	6	6	6	6	6	6	6	8	6	6	5	5	6	6	6
14.5	3	5	6	6	-	6	6	6	6	6	6	6	5	5	5	6	5	6	-	5
15.5	3	5	6	6	-	6	6	6	6	6	6	6	5	-	5	5	5	6	-	5
16.5	3	5	6	6	-	6	6	6	6	6	6	6	5	-	5	4	4	6	-	5
17.5	4	5	5	5	-	5	6	6	6	6	6	6	6	-	4	5	4	6	-	5
18.5	6	5	5	5	-	5	5	6	6	6	6	6	5	-	4	5	5	6	-	5
19.5	6	5	5	6	-	5	6	6	6	6	6	6	6	-	4	6	4	6	-	5
20.5	6	4	5	6	-	5	6	6	6	6	5	6	4	-	4	6	4	6	-	6
21.5	5	5	5	6	-	5	6	6	6	6	5	6	5	-	5	5	5	5	-	5
22.5	6	5	5	5	-	5	5	6	6	6	6	6	5	-	4	6	5	6	-	5
23.5	5	5	5	5	-	5	5	6	5	6	5	6	5	-	4	6	6	6	-	4
24.5	5	5	5	5	-	5	6	6	5	6	6	-	5	-	4	6	6	6	-	4
25.5	6	6	5	5	-	5	5	6	3	6	5	-	6	-	4	5	6	6	-	5
26.5	6	6	5	4	-	5	5	6	4	6	5	-	6	-	4	5	5	6	-	6
27.5	6	6	6	5	-	6	5	6	4	6	5	-	5	-	6	6	5	6	-	5
28.5	6	6	6	5	-	6	5	6	5	6	6	-	6	-	-	6	6	5	-	5
29.5	6	6	6	5	-	6	6	6	4	6	6	-	-	-	-	6	6	5	-	5
30.5	6	6	6	6	-	6	6	6	4	6	6	-	-	-	-	5	5	4	-	6
31.5	6	6	6	6	-	6	6	6	4	6	6	-	-	-	-	-	6	4	-	5
32.5	-	6	6	6	-	6	6	5	6	6	6	-	-	-	-	-	6	4	-	4
33.5	-	6	-	-	-	6	6	-	-	-	-	-	-	-	-	-	-	5	-	4
34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Zone							6			7				8	9					
Reference	22	23	24	25	26	27	#	29	30	#	32	34	37	39	40	41	#	#		
Name/ Average Depth (ft)	CPT20-27	SCPT20-26	SCPT20-53	CPT20-54	CPT20-25	CPT20-55	CPT20-23	CPT20-24	CPT20-56	CPT20-22	CPT20-21	CPT20-01B	SCPT20-02C	CPT20-03B	CPT20-20	SCPT20-04	CPT20-19	SCPT20-05	CPT20-17	CPT20-18
Station Burse	516+81	516+81	518+00	518+48	518+99	519+52	519+88	519+88	520+51	520+91	520+93	521+98	522+93	523+78	524+16	524+68	524+74	524+99	525+12	525+12
0.5	7	7	7	7	7	7	7	6	7	7	7	7	7	5	7	7	7	7	[illegible]	[illegible]
1.5	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	7	7	[illegible]	[illegible]
2.5	7	7	7	7	7	6	6	7	7	6	6	7	7	6	6	7	7	7	[illegible]	[illegible]
3.5	7	6	7	7	7	7	7	7	7	6	7	7	7	6	6	6	6	7	[illegible]	[illegible]
4.5	6	6	6	6	6	7	6	6	6	6	6	6	6	6	6	6	6	6	[illegible]	[illegible]
5.5	6	6	6	6	6	6	6	6	7	6	6	6	6	6	6	6	6	6	[illegible]	[illegible]
6.5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	[illegible]	[illegible]
7.5	6	6	6	6	6	6	6	6	6	6	6	7	6	6	6	6	6	6	[illegible]	[illegible]
8.5	6	6	6	6	6	6	6	5	6	6	6	6	6	5	5	6	6	6	[illegible]	[illegible]
9.5	7	6	6	6	6	6	6	5	6	6	6	6	5	4	6	6	6	6	[illegible]	[illegible]
10.5	6	6	5	6	6	6	6	6	6	5	6	6	6	6	5	6	5	6	[illegible]	-
11.5	6	6	6	6	5	6	6	6	6	5	6	6	6	5	6	5	3	6	[illegible]	-
12.5	6	6	6	6	5	5	5	6	6	6	5	6	6	5	6	4	3	6	[illegible]	-
13.5	6	6	6	6	5	6	-	6	6	6	-	6	5	6	5	3	3	5	[illegible]	-
14.5	-	6	6	6	6	6	-	5	5	6	-	6	5	6	3	3	3	5	[illegible]	-
15.5	-	5	6	6	6	6	-	5	5	6	-	5	5	6	3	3	3	4	[illegible]	-
16.5	-	5	6	5	5	6	-	5	4	6	-	5	6	7	3	3	3	3	[illegible]	-
17.5	-	5	6	5	5	6	-	5	5	5	-	5	5	-	3	3	3	3	[illegible]	-
18.5	-	5	6	5	6	6	-	5	5	5	-	6	6	-	3	3	3	3	[illegible]	-
19.5	-	6	6	6	6	6	-	6	4	6	-	6	5	-	3	3	3	3	[illegible]	-
20.5	-	6	6	6	5	6	-	6	5	6	-	6	5	-	3	3	3	3	[illegible]	-
21.5	-	6	6	6	5	6	-	6	5	6	-	6	5	-	3	3	3	3	[illegible]	-
22.5	-	6	6	6	6	6	-	6	6	6	-	-	5	-	3	3	3	3	[illegible]	-
23.5	-	6	6	6	6	6	-	6	6	6	-	-	5	-	3	3	3	3	[illegible]	-
24.5	-	6	6	6	6	6	-	6	6	6	-	-	5	-	3	4	3	3	[illegible]	-
25.5	-	6	6	6	6	6	-	6	6	6	-	-	5	-	5	5	6	3	[illegible]	-
26.5	-	6	6	6	6	6	-	6	6	6	-	-	4	-	4	6	6	3	[illegible]	-
27.5	-	6	6	5	6	6	-	6	6	6	-	-	5	-	3	6	6	3	[illegible]	-
28.5	-	6	6	4	6	6	-	6	6	6	-	-	5	-	3	7	5	4	[illegible]	-
29.5	-	6	6	6	6	6	-	6	6	6	-	-	5	-	5	6	6	5	[illegible]	-
30.5	-	6	6	7	6	6	-	6	6	6	-	-	5	-	5	6	4	6	[illegible]	-
31.5	-	6	6	-	5	-	-	-	-	6	-	-	6	-	6	4	5	-	-	-
32.5	-	6	-	-	6	-	-	-	-	6	-	-	6	-	-	3	5	-	-	-
33.5	-	-	-	-	6	-	-	-	-	6	-	-	6	-	-	2	4	-	-	-
34.5	-	-	-	-	6	-	-	-	-	6	-	-	6	-	-	3	5	-	-	-
35.5	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	5	4	-	-	-
36.5	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	-	4	-	-	-
37.5	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	-	4	-	-	-
38.5	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	-	6	-	-	-
39.5	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	-	6	-	-	-
40.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6	-	-	-
41.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6	-	-	-
42.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6	-	-	-
43.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6	-	-	-
44.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6	-	-	-
45.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6	-	-	-
46.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	7	-	-	-
47.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-

Zone			10		11				12				13			14	15		Off Alignment		Backfill CPT		
Reference	#	49	50	54	55	58	60	63	66	#	#	69	70	71	72	73	74	75	44	46	51	52	53
Name/ Average Depth (ft)	CPT20-06	CPT20-16	CPT20-07	CPT20-08	CPT20-52	CPT20-14C	CPT20-15B	CPT20-09C	CPT20-51C	CPT20-61	SCPT20-50	CPT20-62	CPT20-10	CPT20-49	SCPT20-11	CPT20-48	CPT20-13	CPT20-12	CPT20-57	SCPT20-57B	CPT20-58	SCPT20-59	CPT20-60
Station Burse	525+22	525+58	525+86	526+82	527+09	527+42	527+30	527+82	528+33	528+46	528+50	528+55	529+08	529+39	529+77	530+46	531+39	531+96	524+81	525+02	526+55	526+57	526+59
0.5	7	7	7	7	7	7	7	7	7	7	7	6	6	7	7	7	5	5	7	7	6	6	6
1.5	7	7	7	7	6	6	7	6	8	7	6	6	7	7	7	7	6	6	7	6	7	7	6
2.5	7	7	6	6	6	6	7	7	7	6	7	7	7	7	7	6	6	6	6	6	6	7	6
3.5	7	6	7	7	6	7	6	7	6	7	6	6	6	8	6	6	5	6	6	6	6	6	6
4.5	6	6	6	6	6	6	6	7	6	6	7	6	6	7	6	6	3	6	5	5	6	6	7
5.5	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6	6	4	6	5	5	6	6	6
6.5	6	6	6	6	6	6	6	7	5	6	6	6	6	6	6	6	5	6	5	5	6	6	6
7.5	6	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6	5	6	4	4	6	6	6
8.5	6	6	5	6	6	5	6	6	5	6	6	6	6	6	6	6	5	6	3	3	6	6	6
9.5	6	6	5	5	5	5	6	7	5	6	6	6	6	6	6	5	5	6	3	3	6	6	6
10.5	6	6	5	5	5	6	6	5	5	6	6	6	6	5	6	5	5	6	3	3	5	5	6
11.5	6	4	6	6	6	5	6	6	6	6	6	6	6	5	6	5	5	6	3	3	-	-	-
12.5	5	4	5	6	5	6	-	5	5	5	6	5	6	6	6	4	5	5	3	3	-	-	-
13.5	5	5	5	5	5	5	-	-	5	5	6	6	6	6	6	4	4	6	3	3	-	-	-
14.5	5	5	5	4	5	6	-	-	5	5	5	5	6	6	6	5	5	6	3	3	-	-	-
15.5	4	4	6	6	6	6	-	-	5	5	5	5	6	6	5	5	5	6	3	3	-	-	-
16.5	3	3	6	6	6	6	-	-	4	5	5	4	5	5	5	5	5	5	3	3	-	-	-
17.5	3	5	6	6	6	7	-	-	5	5	5	2	6	5	6	4	6	5	3	3	-	-	-
18.5	3	6	6	6	6	6	-	-	3	6	5	1	6	6	6	6	6	5	3	3	-	-	-
19.5	3	5	6	6	6	-	-	-	5	5	5	3	6	6	5	6	6	5	3	3	-	-	-
20.5	3	5	6	6	6	-	-	-	5	5	6	5	6	6	5	6	6	4	3	3	-	-	-
21.5	3	6	6	6	6	-	-	-	5	5	0	6	6	6	5	7	6	5	3	3	-	-	-
22.5	3	6	6	6	6	-	-	-	6	5	0	6	-	6	5	7	6	5	3	3	-	-	-
23.5	3	6	7	7	6	-	-	-	6	6	5	5	-	6	4	6	7	5	3	3	-	-	-
24.5	6	6	-	-	6	-	-	-	6	6	6	5	-	6	4	6	7	5	3	3	-	-	-
25.5	5	5	-	-	7	-	-	-	6	6	6	5	-	7	4	6	6	6	4	3	-	-	-
26.5	7	6	-	-	6	-	-	-	6	6	6	6	-	6	5	7	7	6	3	3	-	-	-
27.5	6	6	-	-	6	-	-	-	6	6	6	6	-	7	6	7	6	5	5	3	-	-	-
28.5	7	4	-	-	6	-	-	-	7	6	6	6	-	6	6	7	6	5	5	3	-	-	-
29.5	6	5	-	-	6	-	-	-	6	6	6	6	-	6	7	7	6	6	5	3	-	-	-
30.5	6	4	-	-	6	-	-	-	6	-	6	6	-	-	7	-	6	6	6	5	-	-	-
31.5	7	5	-	-	6	-	-	-	6	-	6	-	-	-	-	-	6	6	6	4	-	-	-
32.5	7	6	-	-	6	-	-	-	-	-	7	-	-	-	-	-	6	6	6	5	-	-	-
33.5	6	6	-	-	6	-	-	-	-	-	-	-	-	-	-	-	6	7	6	6	-	-	-
34.5	6	6	-	-	6	-	-	-	-	-	-	-	-	-	-	-	6	7	-	6	-	-	-
35.5	6	6	-	-	6	-	-	-	-	-	-	-	-	-	-	-	6	6	-	6	-	-	-
36.5	-	6	-	-	6	-	-	-	-	-	-	-	-	-	-	-	6	6	-	6	-	-	-
37.5	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6	-	6	-	-	-
38.5	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	7	-	-	-
39.5	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Soil Behavior Type (SBT)	Soil Description
1	Sensitive, Fine-Grained
2	Organic Soils
3	Clays
4	Silt Mixtures
5	Sand Mixtures
6	Sands
7	Gravelly Sand to Sand
8	Stiff Sand to Clayey Sand
9	Very Stiff Fine-Grained

Table 3

CPT Results Correlated Relative Density

Zone	1	2					3		4	5															
Reference	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Name/ Average Depth (ft)	CPT20-45	CPT20-44	SCPT20-46	CPT20-47	CPT20-43	CPT20-42	SCPT20-41	CPT20-40	CPT20-39	CPT20-38	SCPT20-37	CPT20-36	CPT20-34	CPT20-35	CPT20-33	CPT20-32	SCPT20-31	CPT20-29	CPT20-30	CPT20-28	CPT20-27	SCPT20-26	SCPT20-53	CPT20-54	CPT20-25	CPT20-55
Station Burse	500+88	503+01	503+51	503+77	503+95	504+01	505+01	505+99	506+99	508+01	508+97	510+00	510+98	510+98	511+99	512+90	513+99	514+96	514+97	516+00	516+81	516+81	518+00	518+48	518+99	519+52
0.5																										
1.5																										
2.5																										
3.5	-																									
4.5	77	77		86								-														
5.5	58	79	89	81												77			85							
6.5	-	82	74													83			88	89		86	68	66		
7.5	-	70	59	82			86									74	81	86		87		83	61	52	87	
8.5	-	76	80	66		84		82								65	77	84		76		68	62	61	72	85
9.5	-	71		71	-		65	72					88			64	75	83		68		79	51	54	65	74
10.5	-	-	88	84	-		72	84		80	88		83		85	61	83	84		71		78	44	58	47	63
11.5	-	-	74	79	-	88	72	80		73			74		72	61	69	71	83	73		80	45	63	-	50
12.5	-	-	69	66	-	70	75	82		48	85	83	71		68	54	63	63	70	65		81	35	57	-	48
13.5	-	-	64	69	-	62		77		65	74	85	-		61	-	54	58	76	57		55	42	59	-	45
14.5	-	-	59	63	-	59		80	68	77	67	71	55	81	-	54	-	55	-	-	-	61	45	55	36	50
15.5	-	-	52	54	-	47	81		87	80	59	67	-	-	-	50	-	60	-	-	-	53	46	46	45	48
16.5	-	-	42	44	-	38	73		80	73	52	60	-	-	-	-	-	53	-	-	-	-	49	-	37	48
17.5	-	-	-	38	-	-	66	90	85	77	57	54	67	-	-	-	-	55	-	-	-	-	51	-	-	54
18.5	58	-	-	34	-	-	54	82	76	72	54	44	61	-	-	-	-	55	-	-	-	-	57	36	37	67
19.5	85	-	-	40	-	-	64	82	63	81	44	53	58	-	-	48	-	56	-	-	-	52	65	43	60	76
20.5	77	-	-	45	-	-	59	75	82	67	-	68	-	-	-	55	-	38	-	47	-	72	66	59	-	79
21.5	51	-	-	38	-	-	44	73	64	71	-	54	44	-	-	-	-	34	-	51	-	69	68	57	68	
22.5	60	-	-	-	-	-	35	68	50	71	45	63	72	-	-	63	64	42	-	-	-	70	65	46	79	81
23.5	51	-	-	-	-	32	-	66	39	67	37		-	-	-	68	62	58	-	-	-	74	63	57		77
24.5	51	35	-	-	-	-	38	59	-	61	28	-	65	-	-	67	49	64	-	-	-	72	58	57		82
25.5	61	51	-	-	-	-	35	66	-	62	29	-	61	-	-	57	69	73	-	57	-	73	69	59	79	
26.5	76	58	-	-	-	-	-	63	-	63	-	-	48	-	-	-	71	80	-	65	-	77	70	66	77	86
27.5	72	59	41	-	-	36	-	53	-	56	-	-	-	-		66	55	85	-	-	-	78	67	68	75	
28.5	72	54	47	-	-	44	-	47	-	45	34	-	88	-	-	63	71	-	-	-	-	75	76	-	70	
29.5	77	62	43	33	-	46	39	58	-	45	41	-	-	-	-	66	76	-	-	-	-	75	76		62	88
30.5	81	63	44	44	-	48	43	62	-	57	53	-	-	-	-	61	48	-	-	52	-	79	75		59	81
31.5	79	62	42	63	-	52	58	60	-	84	50	-	-	-	-	-	79	-	-	53	-	77	74	-	53	-
32.5	-	60	50	59	-	57	86	-	52		51	-	-	-	-	-		-	-	-	-	78	-	-	57	-
33.5	-	60	-	-	-	63		-	-	-	-	-	-	-	-	-	-	56	-	-	-	-	-	-	62	-
34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57	-
35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Zone	6			7				8	9								10		11				12				13			14	15	
Reference	#	29	30	#	32	34	37	39	40	41	#	#			#	49	50	54	55	58	60	63	66	#	#	69	70	71	72	73	74	75
Name/ Average Depth (ft)	CPT20-23	CPT20-24	CPT20-56	CPT20-22	CPT20-21	CPT20-01B	SCPT20-02C	CPT20-03B	CPT20-20	SCPT20-04	CPT20-19	SCPT20-05	CPT20-17	CPT20-18	CPT20-06	CPT20-16	CPT20-07	CPT20-08	CPT20-52	CPT20-14C	CPT20-15B	CPT20-09C	CPT20-51C	CPT20-61	SCPT20-50	CPT20-62	CPT20-10	CPT20-49	SCPT20-11	CPT20-48	CPT20-13	CPT20-12
Station Burse	519+88	519+88	520+51	520+91	520+93	521+98	522+93	523+78	524+16	524+68	524+74	524+99	525+12	525+12	525+22	525+58	525+86	526+82	527+09	527+42	527+30	527+82	528+33	528+46	528+50	528+55	529+08	529+39	529+77	530+46	531+39	531+96
0.5								82																								84
1.5																																
2.5																															76	
3.5					-	-																						-			-	65
4.5																							88								-	58
5.5									57	65	72	85				78	73	71					79				85	72	85	85	-	54
6.5		78		83				70	38	35	65	63			78	46	57	55	81				34	84	88	87	72	63	68	66	-	50
7.5	66	54	88	64		81	75	37	28	38	61	62			68	53	-	-	85	89			44	73	88	49	65	54	58	61	-	40
8.5	59	38	78	70		71	63	36	29	52	45	58			68	51	-	44	71	-			44	63	89	61	60	43	57	51	-	47
9.5	85	-	87	66		62	41	58	32	48	42	48			69	40	28	33	60	64			42	60	64	65	54	32	47	33	-	61
10.5	76	42	88	-	68	72	44	55	38	39	21	39			60	39	35	66	40	54	77	75	41	41	39	74	57	25	38	-	-	66
11.5	66	40	74	-	54	65	49	-	51	-	-	53			45	-	49	48	49	51	67	55	55	61	31	35	67	-	35	-	-	62
12.5	66	57	59	40	-	68	58	25	47	-	-	44			36	-	39	53	-	40	-	-	-	40	32	-	88	65	32	-	-	55
13.5	-	55	55	37	-	66	58	69	39	-	-	27			34	-	-	46	-	60	-	-	-	-	29	62	67	62	40	-	-	70
14.5	-	53	36	51	-	75	-	77	-	-	-	-			29	-	-	-	61	68	-	-	-	-	-	-	68	52	36	-	-	70
15.5	-	-	-	53	-	46	-		-	-	-	-			-	-	38	73	54		-	-	36	39	38	-	55	59	25	-	-	61
16.5	-	-	-	55	-	-	50		-	-	-	-			-	-	40	85	69		-	-	56	-	33	-	74	52	-	-	-	-
17.5	-	-	-	-	-	56	-	-	-	-	-	-	-	-	-	69	50		81		-	-	-	-	-	-	76	-	52	-	76	60
18.5	-	-	-	44	-	45	30	-	-	-	-	-	-	-	-	85	80	88			-	-	-	57	-	-		67	56	55		58
19.5	-	56	-	55	-	48	24	-	-	-	-	-	-	-	-	65	64	77	88	-	-	-	-	35	49	-	85	77	53	72	85	56
20.5	-	71	-	53	-	62	-	-	-	-	-	-	-	-	-	75	69		88	-	-	-	48	40	53	22			57			-
21.5	-	76	-	46	-		-	-	-	-	-	-	-	-	-		70		64	-	-	-	-	60	-	30			71	-	89	-
22.5	-	77	69	46	-	-	-	-	-	-	-	-	-	-	-				62	-	-	-	61	32	-	19	-	70	-		84	65
23.5	-	75	72	66	-	-	-	-	-	-	-	-	-	-	-	88		-	54	-	-	-	79	55	-	23	-	63	-			72
24.5	-	74	59	65	-	-	-	-	-	-	-	-	-	-	64		-	-	56	-	-	-		61	46	-	-	85	-	87	-	-
25.5	-	66	57	54	-	-	-	-	37	-	69	-	-	-	66	76	-	-	81	-	-	-	70	55	66	31	-		-	76	80	88
26.5	-	78	59	55	-	-	-	-	-	73	71	-	-	-	90	81	-	-	67	-	-	-	76	77	53	42	-		-		-	84
27.5	-	79	56	54	-	-	-	-	-	70	64	-	-	-		78	-	-	50	-	-	-	63	81	64	62	-			-		47
28.5	-	77	58	55	-	-	42	-	-	72	69	-	-	-		-	-	-	50	-	-	-	80	66	60	73	-	89		-		
29.5	-	87	57	51	-	-	41	-	45	71	49	57	-	-		-	-	-	49	-	-	-	88	63	46	81	-	88		-	89	
30.5	-		60	52	-	-	47	-	-	67	-	68	-	-		-	-	-	50	-	-	-		-	57	77	-	-	-	-	88	
31.5	-	-	-	55	-	-	40	-	68	-	64	-	-	-		56	-	-	63	-	-	-		-		-	-	-	-	-	85	89
32.5	-	-	-	56	-	-	44	-	-	-	48	-	-	-		65	-	-	70	-	-	-	-	-		-	-	-	-	-	82	
33.5	-	-	-	64	-	-	49	-	-	-	-	-	-	-			-	-	66	-	-	-	-	-	-	-	-	-	-	-	83	
34.5	-	-	-	63	-	-	49	-	-	-	-	-	-	-		75	-	-	76	-	-	-	-	-	-	-	-	-	-	-		
35.5	-	-	-	62	-	-	48	-	-	84	-	-	-	-		54	-	-	72	-	-	-	-	-	-	-	-	-	-	-		
36.5	-	-	-	57	-	-	65	-	-	-	-	-	-	-	-	65	-	-	77	-	-	-	-	-	-	-	-	-	-	-	88	
37.5	-	-	-	68	-	-	72	-	-	-	-	-	-	-	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	
38.5	-	-	-	87	-	-	67	-	-	-	60	-	-	-	-	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	-
39.5	-	-	-		-	-	80	-	-	-	71	-	-	-	-	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	-
40.5	-	-	-	64	-	-	-	-	-	-	82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.5	-	-	-	57	-	-	-	-	-	-	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	54	-	-	-	-	-	-	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	54	-	-	-	-	-	-	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	50	-	-	-	-	-	-	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	49	-	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Off Alignment		Backfill CPT		
Reference	44	46	51	52	53
Name/ Average Depth (ft)	CPT20-57	SCPT20-57B	CPT20-58	SCPT20-59	CPT20-60
Station Burse	524+81	525+02	526+55	526+57	526+59
0.5	-	-	125	109	113
1.5	154	153	139	134	130
2.5	121	125	132	126	118
3.5					
4.5					
5.5	-	-			
6.5	-	-			
7.5	-	-			
8.5	-	-	89		87
9.5	-	-	70	76	70
10.5	-	-	68	-	60
11.5	-	-	-	-	-
12.5	-	-	-	-	-
13.5	-	-	-	-	-
14.5	-	-	-	-	-
15.5	-	-	-	-	-
16.5	-	-	-	-	-
17.5	-	-	-	-	-
18.5	-	-	-	-	-
19.5	-	-	-	-	-
20.5	-	-	-	-	-
21.5	-	-	-	-	-
22.5	-	-	-	-	-
23.5	-	-	-	-	-
24.5	-	-	-	-	-
25.5	-	-	-	-	-
26.5	-	-	-	-	-
27.5	79	-	-	-	-
28.5	64	-	-	-	-
29.5	-	-	-	-	-
30.5	59	-	-	-	-
31.5	82	-	-	-	-
32.5	84	55	-	-	-
33.5	87	83	-	-	-
34.5	-		-	-	-
35.5	-		-	-	-
36.5	-		-	-	-
37.5	-		-	-	-
38.5	-		-	-	-
39.5	-		-	-	-
40.5	-		-	-	-
41.5	-		-	-	-
42.5	-		-	-	-
43.5	-	-	-	-	-
44.5	-	-	-	-	-
45.5	-	-	-	-	-
46.5	-	-	-	-	-
47.5	-	-	-	-	-
48.5	-	-	-	-	-
49.5	-	-	-	-	-
50.5	-	-	-	-	-

Table 4
Visual Summary of N-Value

Zone	1	2					3		4
Reference	1	2	3	4		7	8	9	10
Name/ Average Depth (ft)	CPT20-45	CPT20-44	SCPT20-46	CPT20-47	CPT20-43	CPT20-42	SCPT20-41	CPT20-40	CPT20-39
Station Burse	500+88	503+01	503+51	503+77	503+95	504+01	505+01	505+99	506+99
0.5	5	29	5		#				
1.5	21								
2.5	22								
3.5	9								
4.5	26	29							
5.5	12								
6.5	10		26						
7.5	9	27	19						
8.5	6			25					
9.5	5	27		28	-		23	29	
10.5	9	11			-		29		
11.5	7	7	28		-		29		
12.5	3	8	27	25	-	24			
13.5	3	13	24	27	-	22			
14.5	3	14	21	24	-	21			28
15.5	3	10	18	19	-	16			
16.5	3	7	15	15	-	13	30		
17.5	4	8	11	13	-	8	26		
18.5	22	7	8	11	-	6	16		
19.5		9	6	14	-	5	24		25
20.5	28	8	5	15	-	5	22		
21.5	13	11	6	12	-	7	15	29	25
22.5	23	11	6	9	-	7	11	27	17
23.5	12	10	6	7	-	11	11	25	12
24.5	18	11	6	5	-	11	13	22	7
25.5	23	18	6	4	-	10	12	25	5
26.5		21	9	4	-	9	12	24	4
27.5		21	14	5	-	13	11	18	6
28.5		20	17	8	-	15	9	16	10
29.5		23	15	11	-	16	12	21	6
30.5		24	15	15	-	17	15	24	4
31.5		24	15	23	-	19	22	22	6
32.5	-	23	17	22	-	21		18	19
33.5	-	23	-	-	-	24		-	-
34.5	-	-	-	-	-	-	-	-	-
35.5	-	-	-	-	-	-	-	-	-
36.5	-	-	-	-	-	-	-	-	-
37.5	-	-	-	-	-	-	-	-	-
38.5	-	-	-	-	-	-	-	-	-
39.5	-	-	-	-	-	-	-	-	-
40.5	-	-	-	-	-	-	-	-	-
41.5	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-

Zone	5																
Reference	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Name/ Average Depth (ft)	CPT20-38	SCPT20-37	CPT20-36	CPT20-34	CPT20-35	CPT20-33	CPT20-32	SCPT20-31	CPT20-29	CPT20-30	CPT20-28	CPT20-27	SCPT20-26	SCPT20-53	CPT20-54	CPT20-25	CPT20-55
Station Burse	508+01	508+97	510+00	510+98	510+98	511+99	512+90	513+99	514+96	514+97	516+00	516+81	516+81	518+00	518+48	518+99	519+52
0.5							21										
1.5																	
2.5																	
3.5																	
4.5																	
5.5							30			26							
6.5										26				25	24		
7.5														22	17		
8.5							25						26	23	21	28	
9.5							21				18			17	18	24	
10.5							24				28			14	20	15	21
11.5	29					26	22	26	29	27				15	23	6	17
12.5	16			30		27	23	24	24	19	26			13	20	8	17
13.5	25	29				23	20	17	21	24	20		19	14	21	5	16
14.5		25	28	15	25	18	20	14	20	-	15	-	23	16	20	9	18
15.5		21	25	9	-	14	14	12	22	-	15	-	14	16	15	15	16
16.5	29	18	22	16	-	11	12	13	20	-	12	-	15	17	11	12	17
17.5		20	19	27	-	10	9	11	20	-	10	-	13	17	8	9	19
18.5	30	19	16	23	-	7	11	14	20	-	11	-	9	20	11	12	26
19.5		14	19	21	-	7	16	10	20	-	12	-	19	24	15	23	
20.5	26	10	28	10	-	7	20	8	13	-	15	-		25	22	22	
21.5	28	9	21	17	-	13	16	9	12	-	18	-	28	26	20	22	
22.5	27	14	24	24	-	13	24	12	15	-	10	-	28	24	16		
23.5	26	10		23	-	5	28	21	22	-	9	-		23	20		
24.5	23	10	-	27	-	5	28	15	25	-	9	-	30	22	20		
25.5	23	10	-	24	-	9	18	28		-	17	-		27	22		
26.5	24	10	-	18	-	11	16	20		-	26	-		27	26		
27.5	20	9	-	23	-		24	19		-	18	-		26	26		
28.5	16	12	-		-	-	25	26	22	-	11	-			17	28	
29.5	16	14	-	-	-	-	27		8	-	10	-				24	
30.5	21	19	-	-	-	-	14	13	6	-	18	-				23	
31.5		18	-	-	-	-	-		7	-	14	-			-	22	-
32.5		18	-	-	-	-	-		6	-	10	-		-	-	21	-
33.5	-	-	-	-	-	-	-	-	14	-	7	-	-	-	-	24	-
34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-
35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Zone	6			7				8	9							
Reference	#	29	30	#	32	34	37	39	40	41	#	#			#	49
Name/ Average Depth (ft)	CPT20-23	CPT20-24	CPT20-56	CPT20-22	CPT20-21	CPT20-01B	SCPT20-02C	CPT20-03B	CPT20-20	SCPT20-04	CPT20-19	SCPT20-05	CPT20-17	CPT20-18	CPT20-06	CPT20-16
Station Burse	519+88	519+88	520+51	520+91	520+93	521+98	522+93	523+78	524+16	524+68	524+74	524+99	525+12	525+12	525+22	525+58
0.5							29	9								
1.5																
2.5								30								
3.5																
4.5																
5.5									19	23	27					
6.5								24	12	11	23	22				15
7.5	18	19		23				12	10	12	22	23			25	17
8.5	15	11				28	23	11	11	17	15	20			24	17
9.5	27	8		26		22	17	9	11	16	13	15			26	13
10.5	23	14		11	19	29	15	20	12	12	8	13			21	12
11.5	18	13	29	18	13	25	17	8	18	7	3	18		-	15	6
12.5	16	20	21	14	10	27	20	17	16	3	2	14		-	9	5
13.5	-	20	19	12	-	27	21	27	11	2	1	10		-	10	6
14.5	-	16	10	18	-		13		3	2	2	11		-	10	6
15.5	-	9	8	19	-	14	10		3	2	2	7		-	5	3
16.5	-	6	5	20	-	17	17		3	3	2	3		-	3	3
17.5	-	5	6	16	-	17	14	-	3	3	2	3		-	3	20
18.5	-	6	5	12	-	16	11	-	2	2	2	2		-	3	
19.5	-	19	6	19	-	16	7	-	3	2	2	2		-	2	14
20.5	-	29	8	19	-	24	5	-	2	2	2	2		-	2	17
21.5	-		8	16	-		4	-	3	2	2	2		-	3	
22.5	-			16	-	-	5	-	4	2	2	2		-	3	
23.5	-		28	26	-	-	5	-	3	2	2	2		-	5	
24.5	-		21	25	-	-	5	-	4	9	3	2		-	25	
25.5	-	26	21	19	-	-	7	-	11	23		2		-	23	27
26.5	-		22	19	-	-	8	-	7			2		-		
27.5	-		20	19	-	-	8	-	2	29	25	2		-		27
28.5	-		21	20	-	-	13	-	2		18	11		-		8
29.5	-		21	19	-	-	13	-	16	27	15	14		-		8
30.5	-		22	19	-	-	15	-	23	22	11	29		-		7
31.5	-	-	-	20	-	-	15	-	30	4	21	-	-	-		20
32.5	-	-	-	21	-	-	16	-	-	1	14	-	-	-		27
33.5	-	-	-	25	-	-	17	-	-	1	4	-	-	-		
34.5	-	-	-	25	-	-	17	-	-	3	6	-	-	-		
35.5	-	-	-	24	-	-	17	-	-	27	3	-	-	-		21
36.5	-	-	-	21	-	-	26	-	-	-	2	-	-	-	-	26
37.5	-	-	-	26	-	-		-	-	-	9	-	-	-	-	27
38.5	-	-	-		-	-	27	-	-	-	25	-	-	-	-	21
39.5	-	-	-		-	-		-	-	-		-	-	-	-	
40.5	-	-	-	26	-	-	-	-	-	-		-	-	-	-	-
41.5	-	-	-	21	-	-	-	-	-	-	29	-	-	-	-	-
42.5	-	-	-	20	-	-	-	-	-	-	18	-	-	-	-	-
43.5	-	-	-	20	-	-	-	-	-	-		-	-	-	-	-
44.5	-	-	-	18	-	-	-	-	-	-		-	-	-	-	-
45.5	-	-	-	18	-	-	-	-	-	-		-	-	-	-	-
46.5	-	-	-	17	-	-	-	-	-	-		-	-	-	-	-
47.5	-	-	-	16	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	24	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	22	-	-	-	-	-	-	-	-	-	-	-	-

Zone	10		11				12				13			14	15	
Reference	50	54	55	58	60	63	66	#	#	69	70	71	72	73	74	75
Name/ Average Depth (ft)	CPT20-07	CPT20-08	CPT20-52	CPT20-14C	CPT20-15B	CPT20-09C	CPT20-51C	CPT20-61	SCPT20-50	CPT20-62	CPT20-10	CPT20-49	SCPT20-11	CPT20-48	CPT20-13	CPT20-12
Station Burse	525+86	526+82	527+09	527+42	527+30	527+82	528+33	528+46	528+50	528+55	529+08	529+39	529+77	530+46	531+39	531+96
0.5											24				18	11
1.5															28	
2.5															20	
3.5															8	19
4.5															4	18
5.5	27	20					19					27			5	17
6.5	19	14					10				27	22	25	24	6	16
7.5	11	14					14			21	24	18	19	22	8	13
8.5	11	11	29	17			11	23		22	22	14	19	18	9	14
9.5	10	9	18	23			11	23	23	29	19	11	16	12	9	21
10.5	9	13	15	17	21	23	12	13	14		20	9	13	8	7	24
11.5	17	12	19	14	17	14	20	19	11	12	27	12	12	5	6	21
12.5	11	14	9	14	-	15	17	12	11	8		25	11	4	6	14
13.5	7	9	8	20	-	-	9	7	10	18	28	23	13	4	7	27
14.5	8	10	13	24	-	-	9	8	10	13	27	18	12	4	9	27
15.5	12	21	19		-	-	11	12	15	10	19	22	8	6	9	23
16.5	14	29	28		-	-	8	10	10	5	26	16	11	6	12	16
17.5	17				-	-	18	12	8	2		15	16	5		17
18.5					-	-	2	21	7	0		23	20	17		16
19.5	25	23		-	-	-	16	13	11	2			16	29		15
20.5	26			-	-	-	17	9	18	7			17			11
21.5	29		22	-	-	-	11	16	0	10			22			17
22.5			22	-	-	-	22	11	0	7	-	28	12			23
23.5			18	-	-	-		20	5	7	-	23	10			21
24.5	-	-	19	-	-	-		22	12	4	-		10			16
25.5	-	-		-	-	-	29	20	26	10	-		8			
26.5	-	-	28	-	-	-			19	15	-		12			29
27.5	-	-	17	-	-	-	24		24	24	-					17
28.5	-	-	17	-	-	-		24	22		-					
29.5	-	-	17	-	-	-		24	15		-					
30.5	-	-	18	-	-	-		-	22		-	-		-		
31.5	-	-	24	-	-	-		-		-	-	-	-	-		
32.5	-	-	27	-	-	-	-	-		-	-	-	-	-		
33.5	-	-	26	-	-	-	-	-	-	-	-	-	-	-		
34.5	-	-		-	-	-	-	-	-	-	-	-	-	-		
35.5	-	-	30	-	-	-	-	-	-	-	-	-	-	-		
36.5	-	-		-	-	-	-	-	-	-	-	-	-	-		
37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
39.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Off Alignment		Backfill CPT		
Reference	44	46	51	52	53
Name/ Average Depth (ft)	CPT20-57	SCPT20-57B	CPT20-58	SCPT20-59	CPT20-60
Station Burse	524+81	525+02	526+55	526+57	526+59
0.5			22	13	16
1.5					
2.5					
3.5					
4.5	26	22			
5.5	6	7			
6.5	8	8			
7.5	7	6			
8.5	5	5			30
9.5	4	4	18	24	20
10.5	3	4	18	12	16
11.5	3	3	-	-	-
12.5	2	3	-	-	-
13.5	2	2	-	-	-
14.5	3	3	-	-	-
15.5	3	3	-	-	-
16.5	3	3	-	-	-
17.5	3	3	-	-	-
18.5	3	3	-	-	-
19.5	2	3	-	-	-
20.5	2	2	-	-	-
21.5	2	2	-	-	-
22.5	2	2	-	-	-
23.5	2	2	-	-	-
24.5	2	2	-	-	-
25.5	4	2	-	-	-
26.5	3	2	-	-	-
27.5	18	3	-	-	-
28.5	21	3	-	-	-
29.5	16	3	-	-	-
30.5	23	7	-	-	-
31.5		13	-	-	-
32.5		21	-	-	-
33.5			-	-	-
34.5	-		-	-	-
35.5	-		-	-	-
36.5	-		-	-	-
37.5	-		-	-	-
38.5	-		-	-	-
39.5	-		-	-	-
40.5	-		-	-	-
41.5	-		-	-	-
42.5	-		-	-	-
43.5	-		-	-	-
44.5	-	-	-	-	-
45.5	-	-	-	-	-
46.5	-	-	-	-	-
47.5	-	-	-	-	-
48.5	-	-	-	-	-
49.5	-	-	-	-	-

Table 5
Soil Improvement Criteria

Zone	1	2					3		4	5																	6			7				8	9								10		11				12				13			14	15		Off Alignment		Backfill CPT		
Reference	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	#	29	30	#	32	34	37	39	40	41	#	#			48	49	50	54	55	58	60	63	66	67		69	70	71	72	73	74	75	44	46	51	52	53
Name/ Average Depth (ft)	CPT20-45	CPT20-44	SCPT20-46	CPT20-47	CPT20-42	CPT20-43B	SCPT20-41	CPT20-40	CPT20-39	CPT20-38	SCPT20-37	CPT20-36	CPT20-34	CPT20-35	CPT20-33	CPT20-32	SCPT20-31	CPT20-29	CPT20-30	CPT20-28	CPT20-27	SCPT20-26	SCPT20-53	CPT20-54	CPT20-25	CPT20-55	CPT20-23	CPT20-24	CPT20-56	CPT20-22	CPT20-21	CPT20-01B	SCPT20-02C	CPT20-03B	CPT20-20	SCPT20-04	CPT20-19	SCPT20-05	CPT20-17	CPT20-18	CPT20-06	CPT20-16	CPT20-07	CPT20-08	CPT20-52	CPT20-14C	CPT20-15B	CPT20-09C	CPT20-51C	CPT20-61	SCPT20-50	CPT20-62	CPT20-10	CPT20-49	SCPT20-11	CPT20-48	CPT20-13	CPT20-12	CPT20-57	SCPT20-57B	CPT20-58	SCPT20-59	CPT20-60
Station	500+88	503+01	503+51	503+77	504+01	504+00	505+01	505+99	506+99	508+01	508+97	510+00	510+98	510+98	511+99	512+90	513+99	514+96	514+97	516+00	516+81	516+81	518+00	518+48	518+99	519+52	519+88	519+88	520+51	520+91	520+93	521+98	522+93	523+78	524+16	524+68	524+74	524+99	525+12	525+12	525+22	525+58	525+86	526+82	527+09	527+42	527+30	527+82	528+33	528+46	528+50	528+55	529+08	529+39	529+77	530+46	531+39	531+96	524+81	525+02	526+55	526+57	526+59
0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-	-	-	-
1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.5	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	35	-	-	-	-	-	-	-	-	-	-	-	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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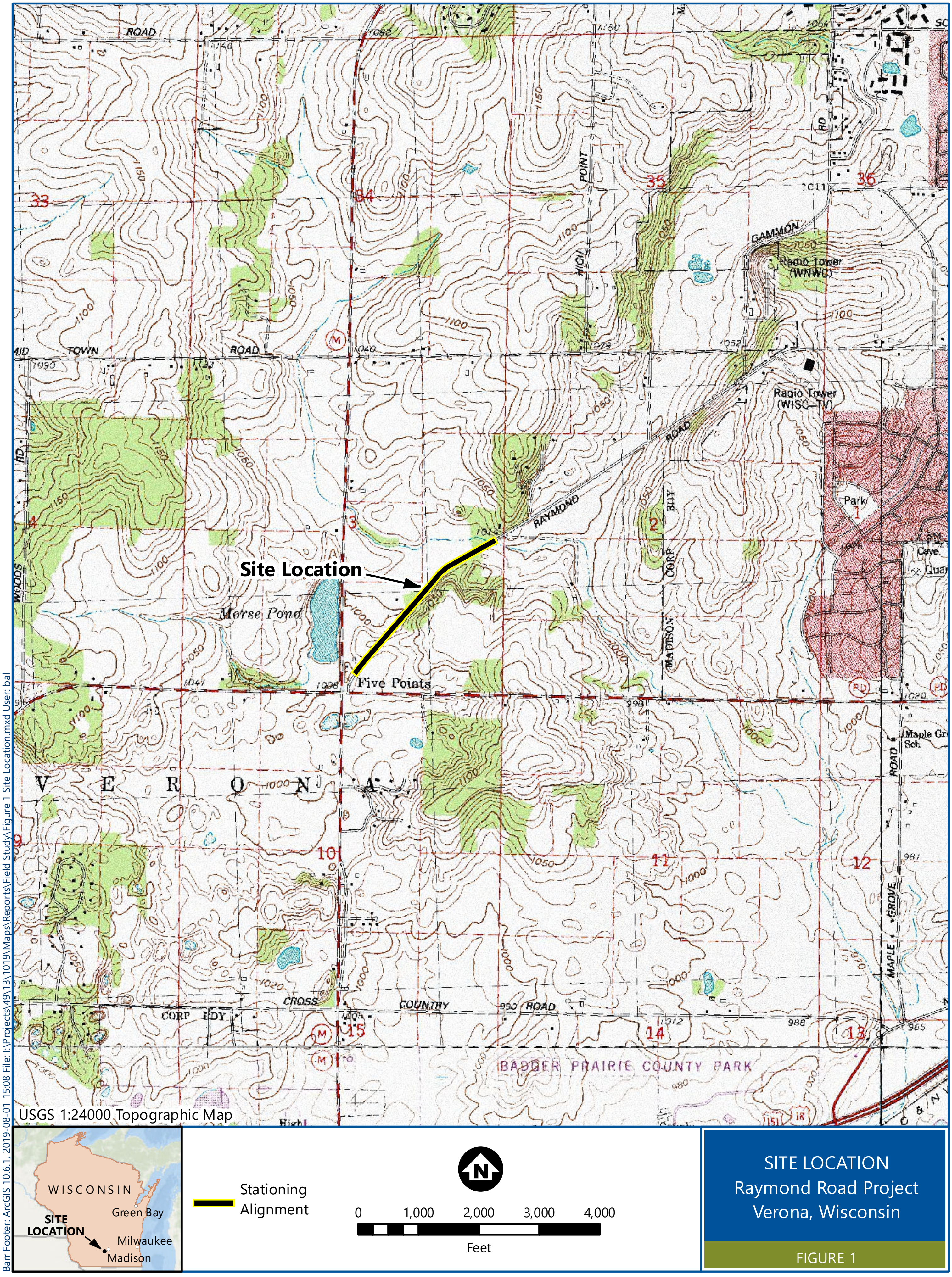


SITE LOCATION
Raymond Road Project
Verona, Wisconsin

FIGURE 1

○ 2011 and 2016 CGC Boring

● 2020 IGE Boring

▽ 2020 CPT Boring

◎ Storm Sewer Manhole

— Storm Sewer

— 10 ft Elevation Contour

— 2 ft Elevation Contour

CPT nomenclature is shortened for illustration purposes; for example, CPT20-05 is labeled as CPT-05.

Imagery: Nearmap 2020-04-16

INVESTIGATION LOCATIONS WEST
Raymond Road Project
Verona, Wisconsin

FIGURE 2

○ 2011 and 2016 CGC Boring

● 2020 IGE Boring

▽ 2020 CPT Boring

◎ 2020 SPT Boring

▭ Test Trench

◎ Storm Sewer Manhole

═ Storm Sewer

— 10 ft Elevation Contour

— 2 ft Elevation Contour

CPT nomenclature is shortened for illustration purposes; for example, CPT20-05 is labeled as CPT-05.

Imagery: Nearmap 2020-04-16

INVESTIGATION LOCATIONS
CENTRAL
Raymond Road Project
Verona, Wisconsin

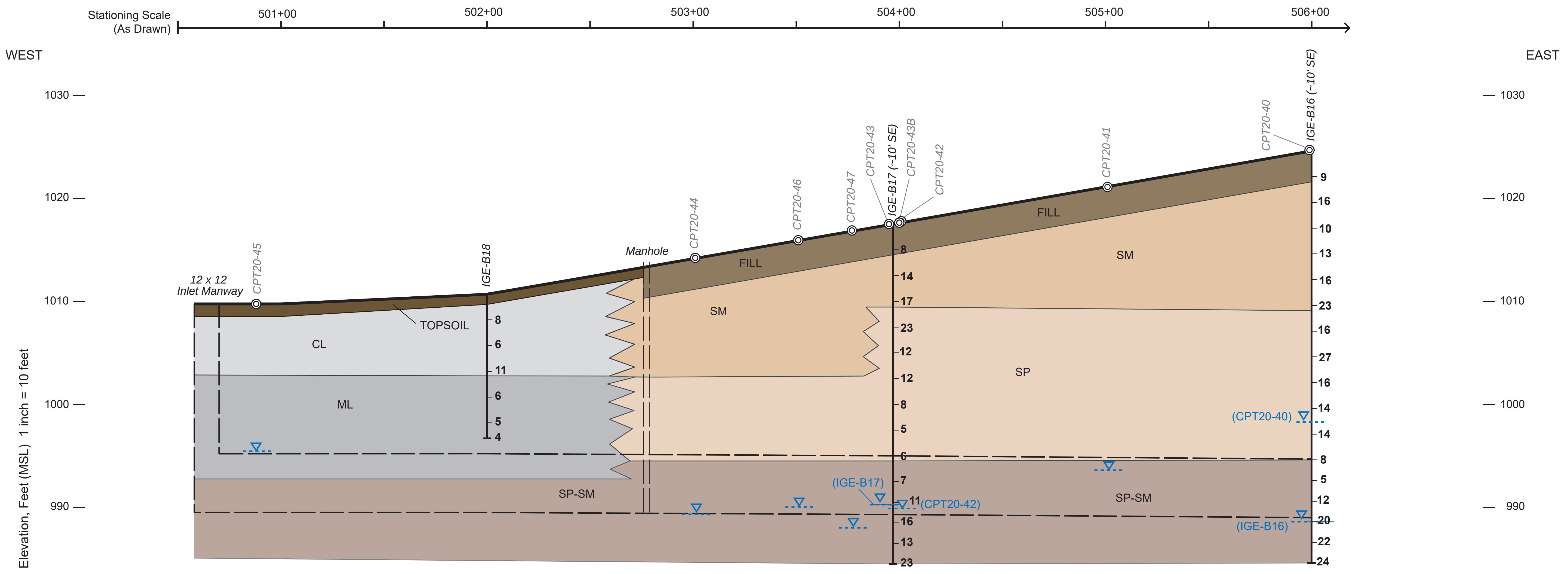
FIGURE 3

CPT nomenclature is shortened for illustration purposes; for example, CPT20-05 is labeled as CPT-05.

Imagery: Nearmap 2020-04-16

INVESTIGATION LOCATIONS
EAST
Raymond Road
Geophysical Investigation
Verona, Wisconsin

FIGURE 4



LEGEND

▨ TOPSOIL- Lean Clay

▨ FILL- Aggregate and Gravel Base Coarse

▨ CL- Lean Clay

▨ SM- Silty Sand

▨ ML- Silt

▨ SP- Sand

▨ SP-SM- Sand with Silt and Gravel

∼ Ground Surface Elevation

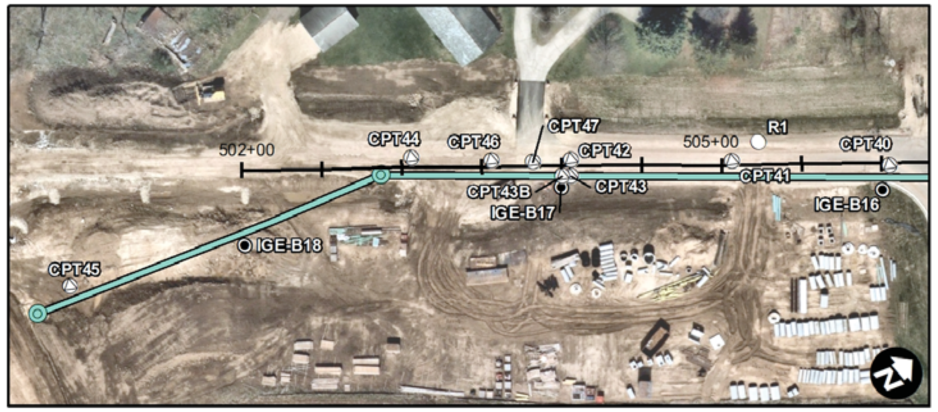
╪ Estimated Storm Sewer Pipe and Manway Outlines

▽ Approximate Water Table (SPT/CPT Borings)

⊥ Soil Boring

– 5 Standard Penetration Test (SPT) N-value

◎ Cone Penetration Test (CPT) Location



Note:

- Elevations based on Soils & Engineering Services, Inc. (SES) boring logs (Boring 18 - Boring 16) collected on 10/4/19.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as either water levels at the time of drilling or the top depth described as “wet” on split spoon sample descriptions.
- Water elevation interpretations are from CPT pore water pressure observations in May 2020.
- See applicable boring logs for additional geotechnical information and details.
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations. IGE 2019 Borings are projected from immediately south/southeast of roadway, with surficial fill superimposed.

0 50
Approximate Horizontal Scale in Feet
5X Vertical Exaggeration

BARR

Figure 5

GEOLOGIC CROSS SECTION
Stations 500+50 to 506+00
Raymond Road Project
Verona, Wisconsin

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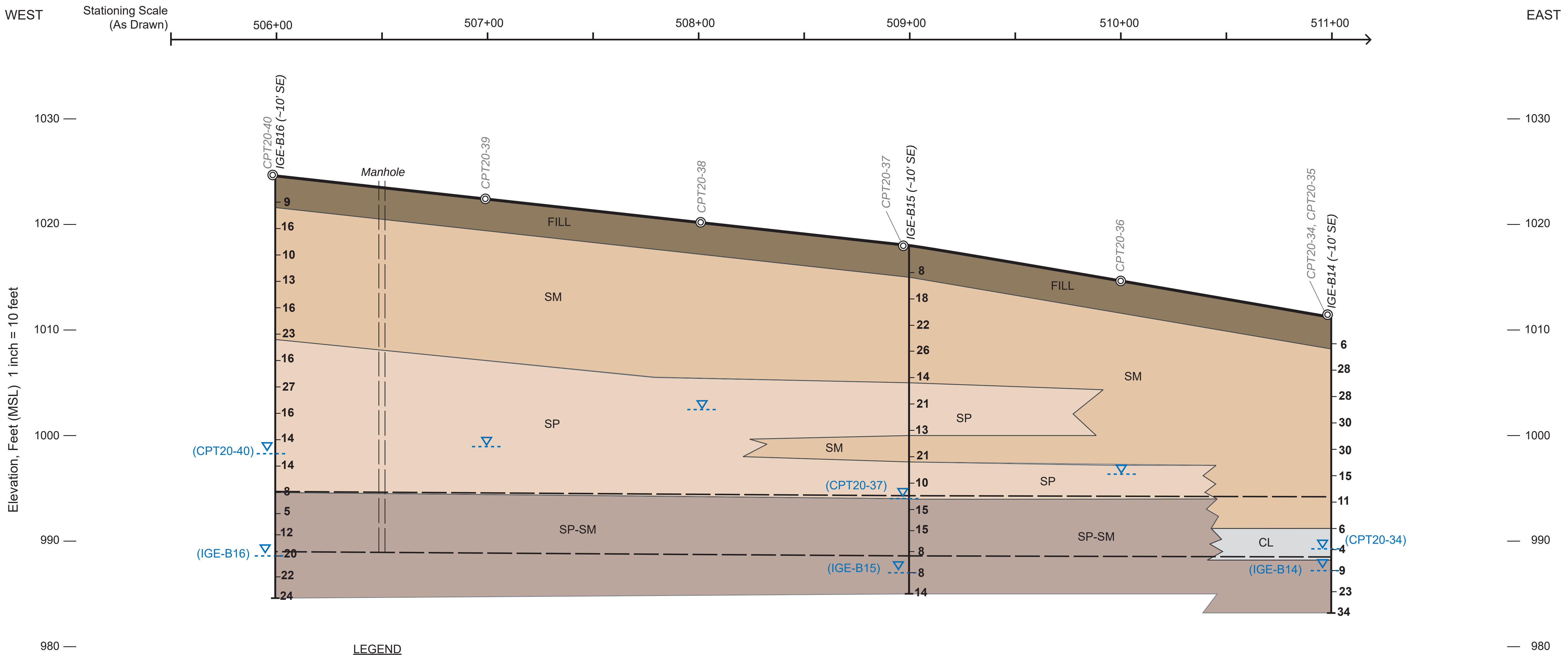


LEGEND

▨ FILL- Aggregate and Gravel Base Coarse

▨ SM- Silty Sand/Silty Sand with Gravel

▨ SP- Sand

▨ CL- Lean Clay

▨ SP-SM- Sand with Silt and Gravel

Ground Surface Elevation

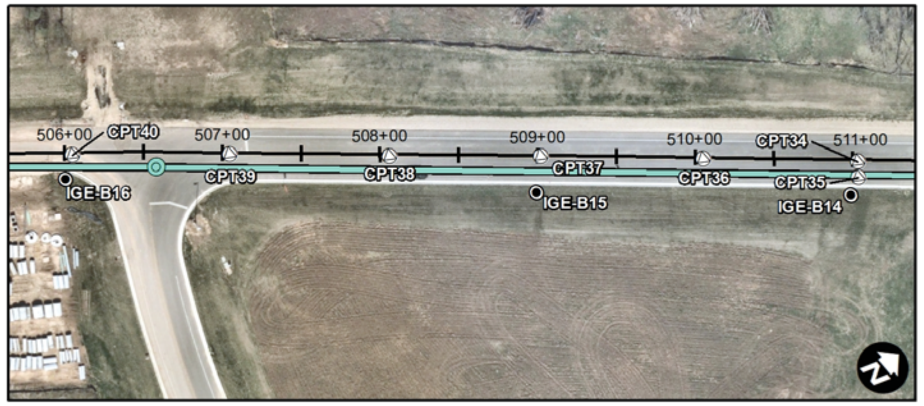
Estimated Storm Sewer Pipe and Manway Outlines

Approximate Water Table (SPT/CPT Borings)

Soil Boring

– 5 Standard Penetration Test (SPT) N-value

◎ Cone Penetration Test (CPT) Location



Note:

- Elevations based on Soils & Engineering Services, Inc. (SES) boring logs (Boring 16 - Boring 14) collected on 10/3/19-10/4/19.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as either water levels at the time of drilling or the top depth described as "wet" on split spoon sample descriptions.
- Water elevation interpretations are from CPT pore water pressure observations in May 2020.
- See applicable boring logs for additional geotechnical information and details.
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations. IGE 2019 Borings are projected from immediately south/southeast of roadway, with surficial fill superimposed.

0 50
Approximate Horizontal Scale in Feet
5X Vertical Exaggeration

Figure 6

GEOLOGIC CROSS SECTION
Stations 506+00 to 511+00
Raymond Road Project
Verona, Wisconsin

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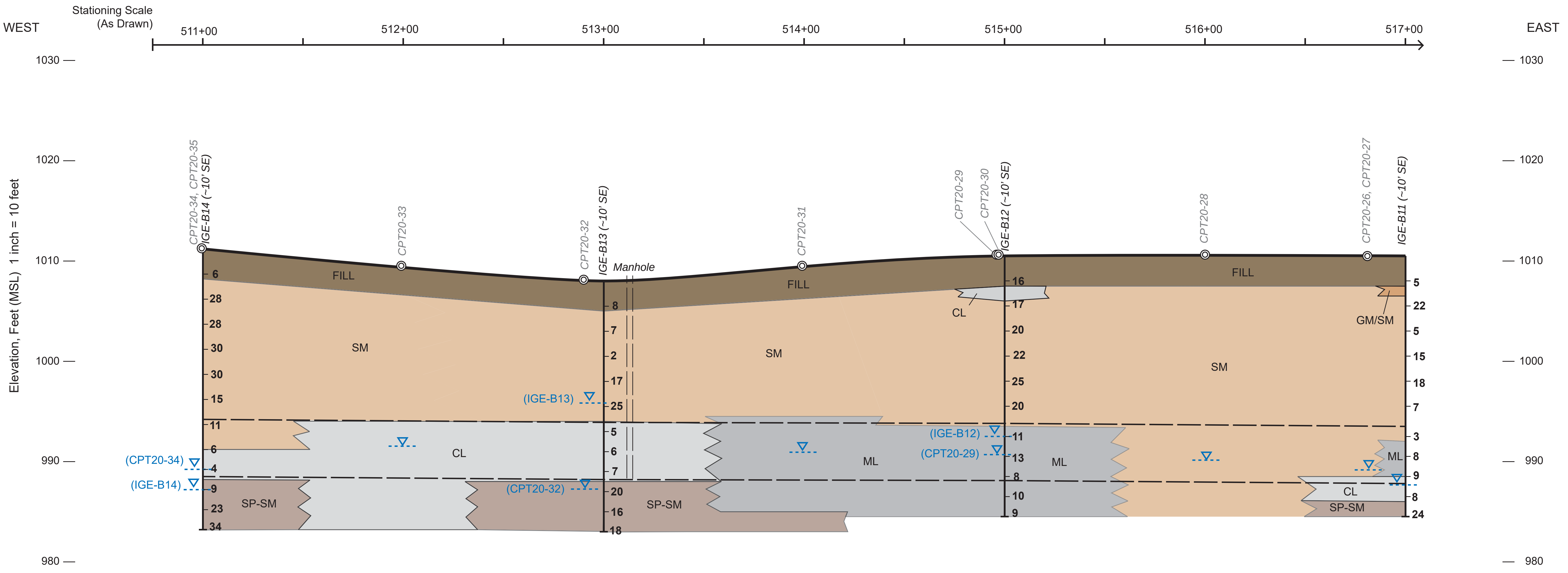

LEGEND

▨ FILL- Aggregate and Gravel Base Coarse

▨ SM- Silty Sand/Silty Sand with Gravel

▨ ML- Silt

▨ CL- Lean Clay/Sandy Lean Clay

▨ SP-SM- Sand with Silt and Gravel

Ground Surface Elevation

Estimated Storm Sewer Pipe and Manway Outlines

▽ Approximate Water Table (SPT/CPT Borings)

⊥ Soil Boring

–5 Standard Penetration Test (SPT) N-value

◎ Cone Penetration Test (CPT) Location

0 50

Approximate Horizontal Scale in Feet
5X Vertical Exaggeration

Note:

- Elevations based on Soils & Engineering Services, Inc. (SES) boring logs (Boring 14 - Boring 11) collected on 10/3/19.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as either water levels at the time of drilling or the top depth described as "wet" on split spoon sample descriptions.
- Water elevation interpretations are from CPT pore water pressure observations in May 2020.
- See applicable boring logs for additional geotechnical information and details.
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations. IGE 2019 Borings are projected from immediately south/southeast of roadway, with surficial fill superimposed.

BARR

Figure 7

GEOLOGIC CROSS SECTION
Stations 511+00 to 517+00
Raymond Road Project
Verona, Wisconsin

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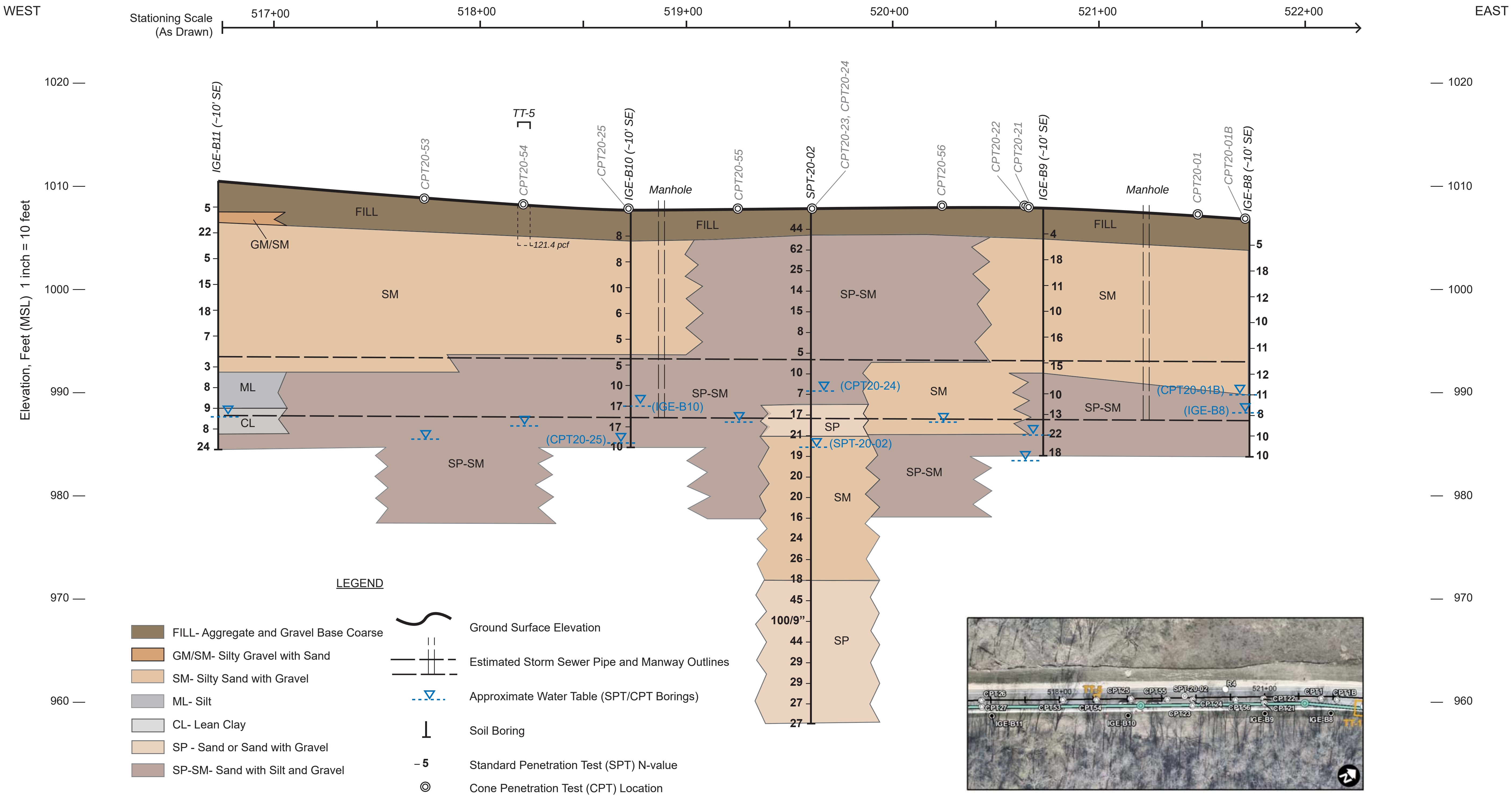

LEGEND

▨	FILL- Aggregate and Gravel Base Coarse
▨	GM/SM- Silty Gravel with Sand
▨	SM- Silty Sand with Gravel
▨	ML- Silt
▨	CL- Lean Clay
▨	SP - Sand or Sand with Gravel
▨	SP-SM- Sand with Silt and Gravel
~	Ground Surface Elevation
╪	Estimated Storm Sewer Pipe and Manway Outlines
▽	Approximate Water Table (SPT/CPT Borings)
⊥	Soil Boring
- 5	Standard Penetration Test (SPT) N-value
◎	Cone Penetration Test (CPT) Location

Note:

- Elevations based on Soils & Engineering Services, Inc. (SES) boring logs (Boring 11 - Boring 8) collected on 10/2/20-10/3/19.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as either water levels at the time of drilling or the top depth described as “wet” on split spoon sample descriptions.
- Water elevation interpretations are from CPT pore water pressure observations in May 2020.
- See applicable boring logs for additional geotechnical information and details.
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations. IGE 2019 Borings are projected from immediately south/southeast of roadway, with surficial fill superimposed.

0 50

Approximate Horizontal Scale in Feet
5X Vertical Exaggeration

BARR

Figure 8

GEOLOGIC CROSS SECTION
Stations 517+00 to 522+00
Raymond Road Project
Verona, Wisconsin

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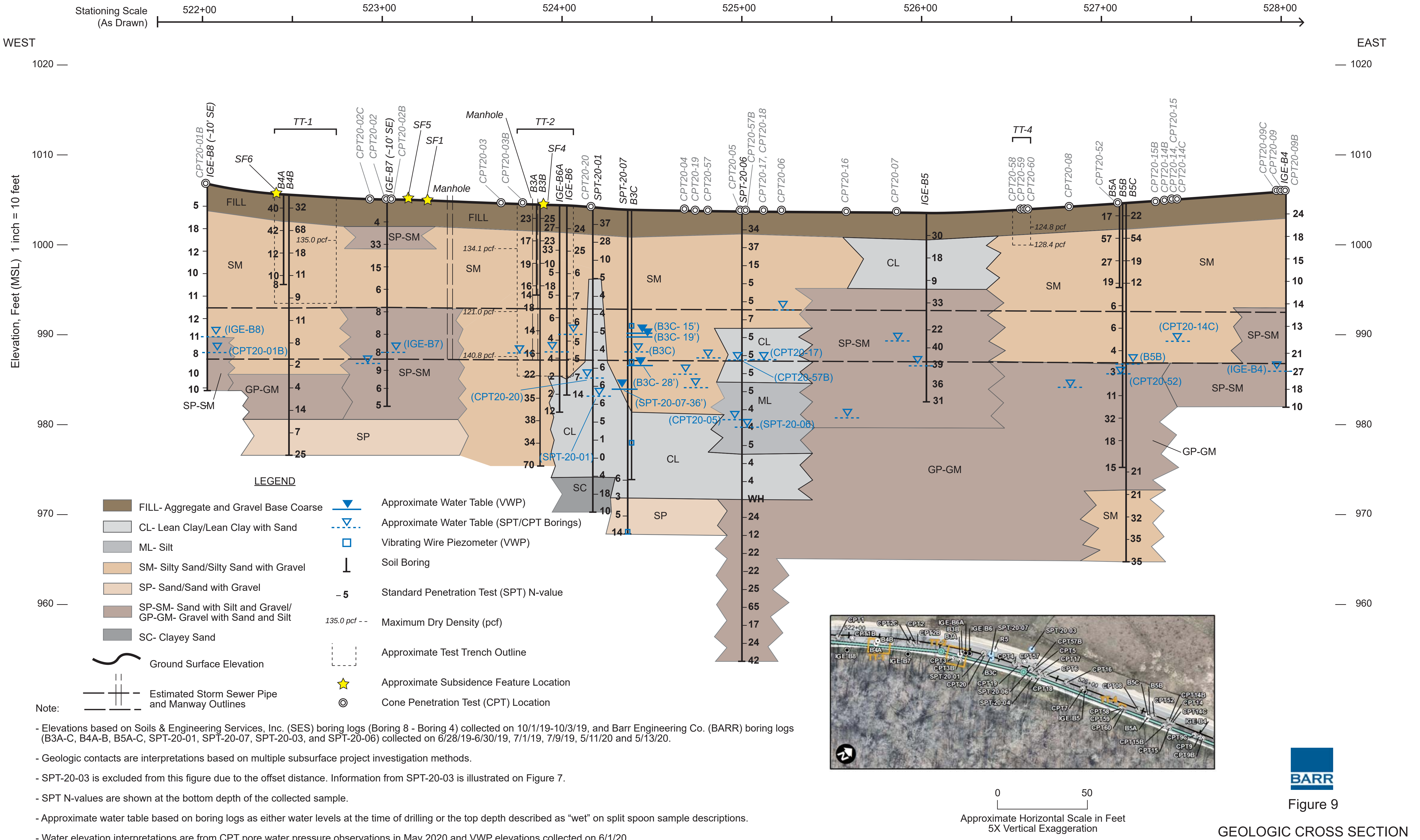

Note:

- Elevations based on Soils & Engineering Services, Inc. (SES) boring logs (Boring 8 - Boring 4) collected on 10/1/19-10/3/19, and Barr Engineering Co. (BARR) boring logs (B3A-C, B4A-B, B5A-C, SPT-20-01, SPT-20-07, SPT-20-03, and SPT-20-06) collected on 6/28/19-6/30/19, 7/1/19, 7/9/19, 5/11/20 and 5/13/20.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- SPT-20-03 is excluded from this figure due to the offset distance. Information from SPT-20-03 is illustrated on Figure 7.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as either water levels at the time of drilling or the top depth described as "wet" on split spoon sample descriptions.
- Water elevation interpretations are from CPT pore water pressure observations in May 2020 and VWP elevations collected on 6/1/20.
- See applicable boring logs for additional geotechnical information and details.
- Maximum density per "Standard Proctor Test (ASTM D698)."
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations. IGE 2019 Borings are projected from immediately south/southeast of roadway, with surficial fill superimposed.

BARR

Figure 9

GEOLOGIC CROSS SECTION
Stations 522+00 to 528+00
Raymond Road Project
Verona, Wisconsin

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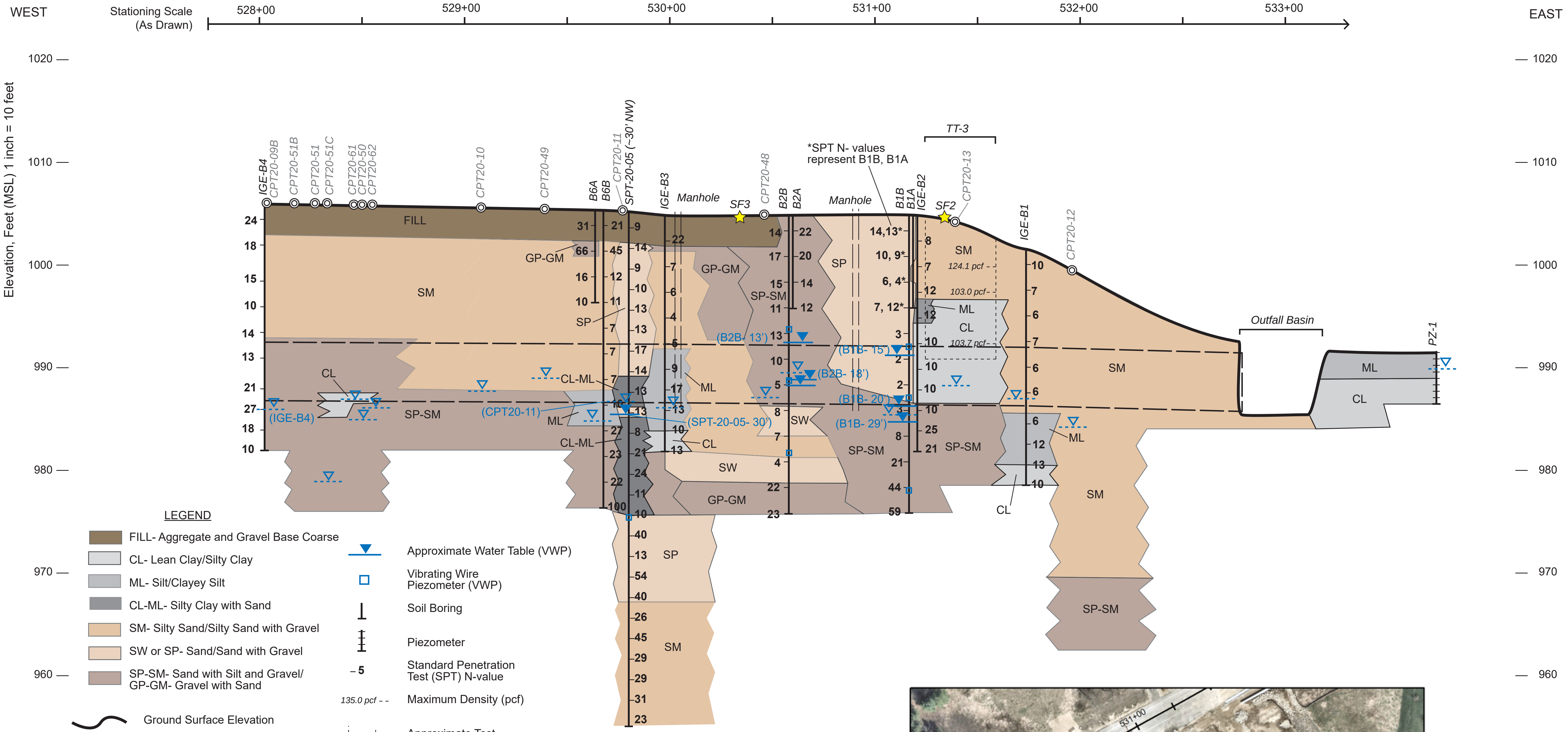

LEGEND

- ▨ FILL- Aggregate and Gravel Base Coarse
- ▨ CL- Lean Clay/Silty Clay
- ▨ ML- Silt/Clayey Silt
- ▨ CL-ML- Silty Clay with Sand
- ▨ SM- Silty Sand/Silty Sand with Gravel
- ▨ SW or SP- Sand/Sand with Gravel
- ▨ SP-SM- Sand with Silt and Gravel/ GP-GM- Gravel with Sand
- Ground Surface Elevation
- Estimated Storm Sewer Pipe and Manway Outlines
- ▽ Approximate Water Table (SPT/CPT Borings)
- ▼ Approximate Water Table (VWP)
- □ Vibrating Wire Piezometer (VWP)
- Soil Boring
- Piezometer
- – 5 Standard Penetration Test (SPT) N-value
- 135.0 pcf - - Maximum Density (pcf)
- Approximate Test Trench Outline
- ☆ Approximate Subsidence Feature Location
- ◎ Cone Penetration Test (CPT) Location

Note:

- Elevations based on Soils & Engineering Services, Inc. (SES) boring logs (Boring 4 - Boring 1) collected on 10/2/19-10/4/19, and Barr Engineering Co. (BARR) boring logs (B1A-B, B2A-B, B5A-C, B6A-B, and SPT-20-05) collected on 6/28/19-6/30/19, 7/1/19-7/2/19, and 5/14/20.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as either water levels at the time of drilling or the top depth described as “wet” on split spoon sample descriptions.
- Water elevation interpretations are from CPT pore water pressure observations in May 2020, VWP elevations collected on 6/1/20, and from PZ-1 measured 7/1/19.
- See applicable boring logs for additional geotechnical information and details.
- Maximum density per “Standard Proctor Test (ASTM D698).”
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations. IGE 2019 Borings are projected from immediately south/southeast of roadway, with surficial fill superimposed.

0 50
Approximate Horizontal Scale in Feet
5X Vertical Exaggeration

Figure 10

GEOLOGIC CROSS SECTION
Stations 522+00 to 528+00
Raymond Road Project
Verona, Wisconsin

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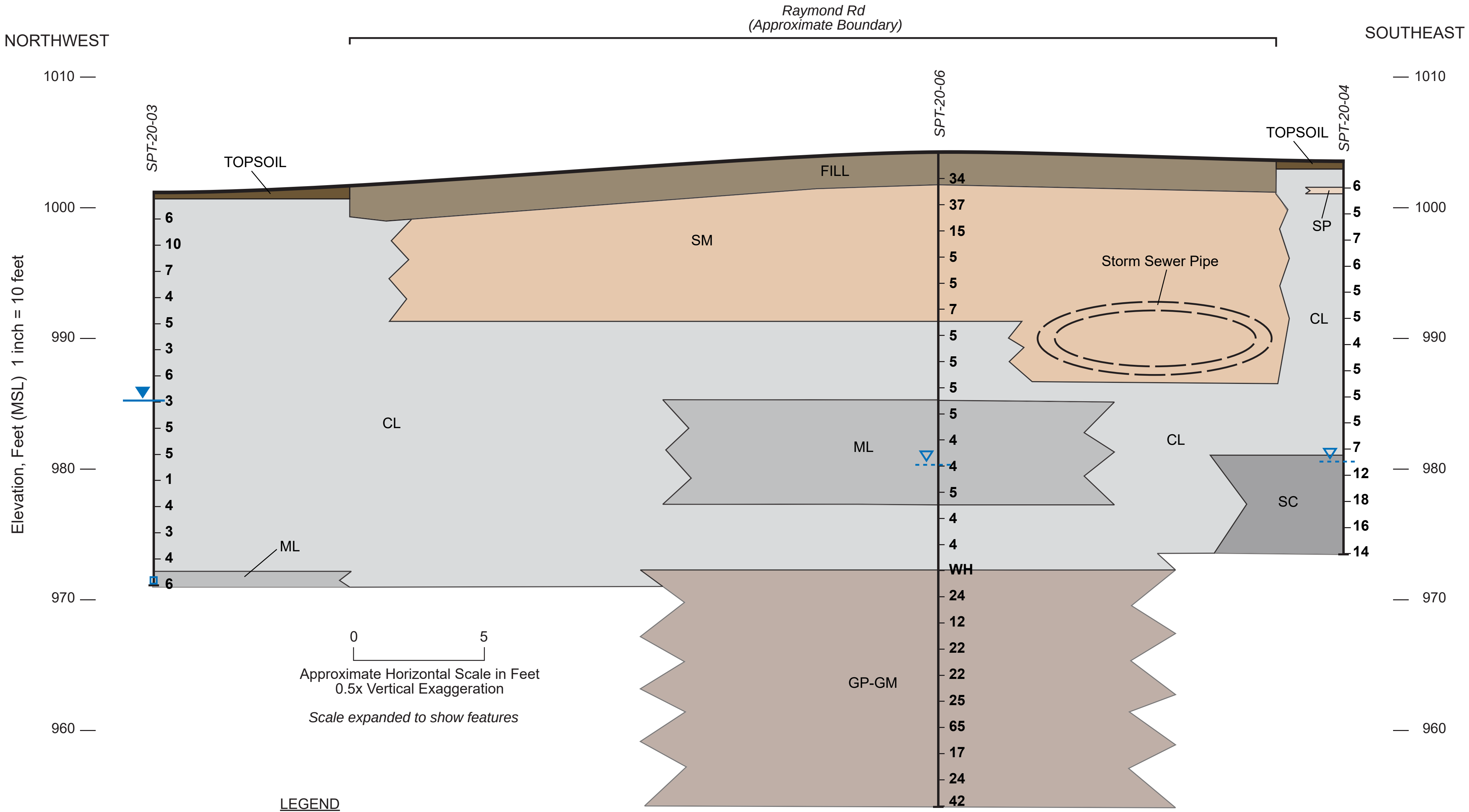
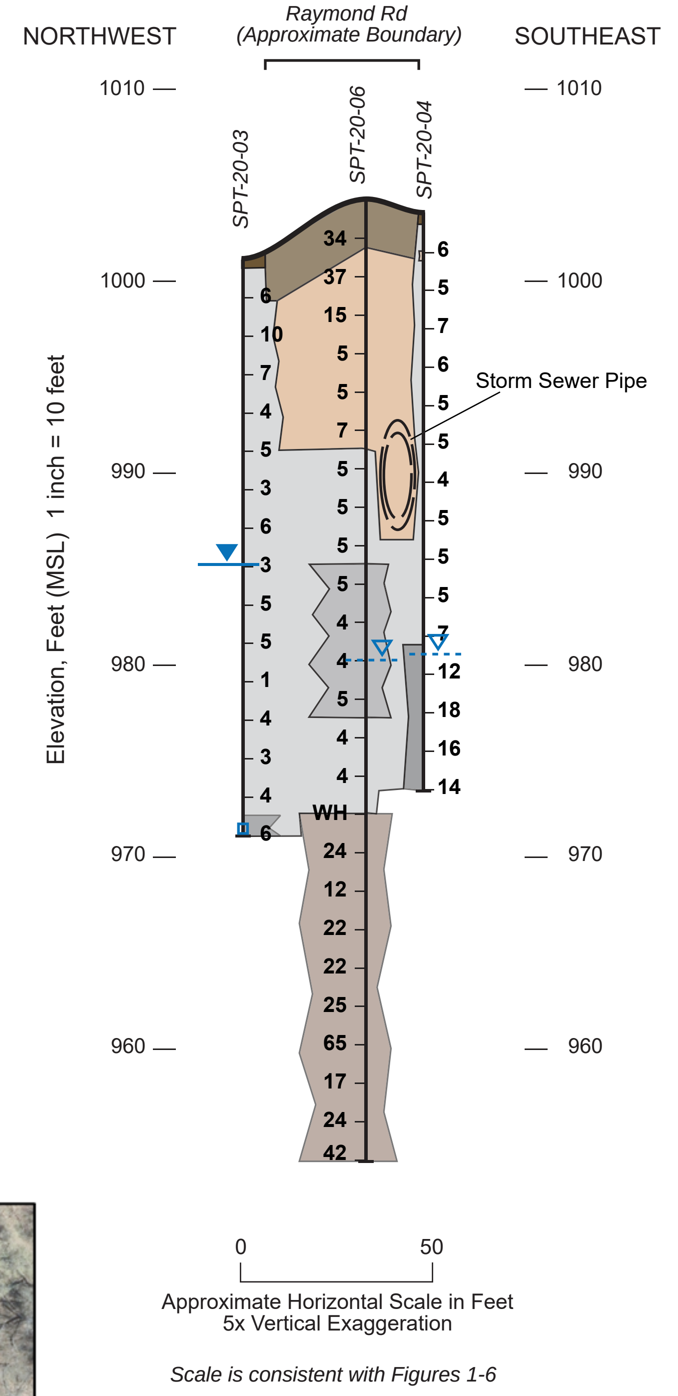
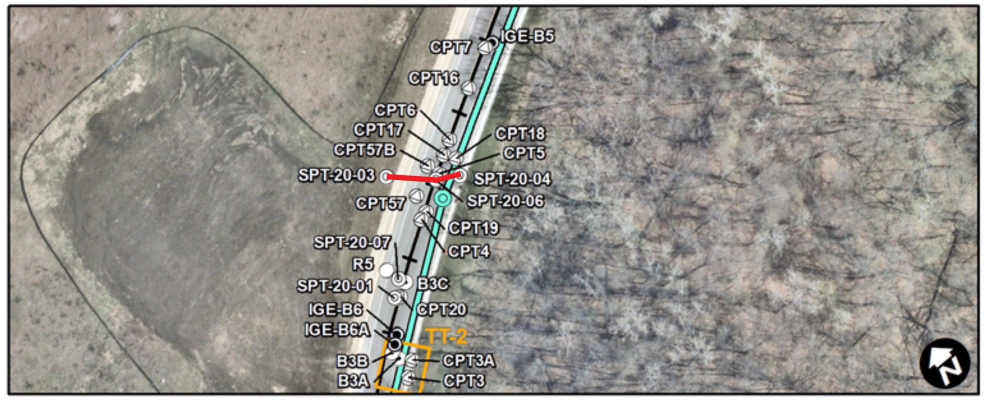




LEGEND

■ TOPSOIL- Lean Clay
■ FILL- Aggregate and Gravel Base Coarse
■ SM- Silty Sand
■ SP- Sand
■ ML- Silt
■ CL- Lean Clay
■ SC- Clayey Sand
■ GP-GM- Gravel with Sand and Silt

⌒ Ground Surface Elevation
– – Inferred Geologic Contact
▽ Approximate Water Table (SPT borings)
▼ Approximate Water Table (VWP)
□ Vibrating Wire Piezometer (VWP)
⊥ Soil Boring
– 5 Standard Penetration Test (SPT) N-value



Note:

- Elevations based on Barr Engineering Co. (BARR) boring logs (SPT-20-03, SPT-20-06, and SPT-20-04) collected on 5/11/20-5/13/20 and the City of Madison's 2016 LiDAR acquisition.
- Geologic contacts are interpretations based on multiple subsurface project investigation methods.
- Construction features on the ground surface (e.g., curbs) are not shown.
- SPT N-values are shown at the bottom depth of the collected sample.
- Approximate water table based on boring logs as water levels at the time of drilling and VWP elevations collected on June 1, 2020.
- See applicable boring logs for additional geotechnical information and details.
- Surficial fill inferred along roadway, as interpreted from in-roadway investigation locations.

BARR

Figure 11

GEOLOGIC CROSS SECTION
524+97 to 525+10
Fisher Bren Privileged and Confidential
Verona, Wisconsin

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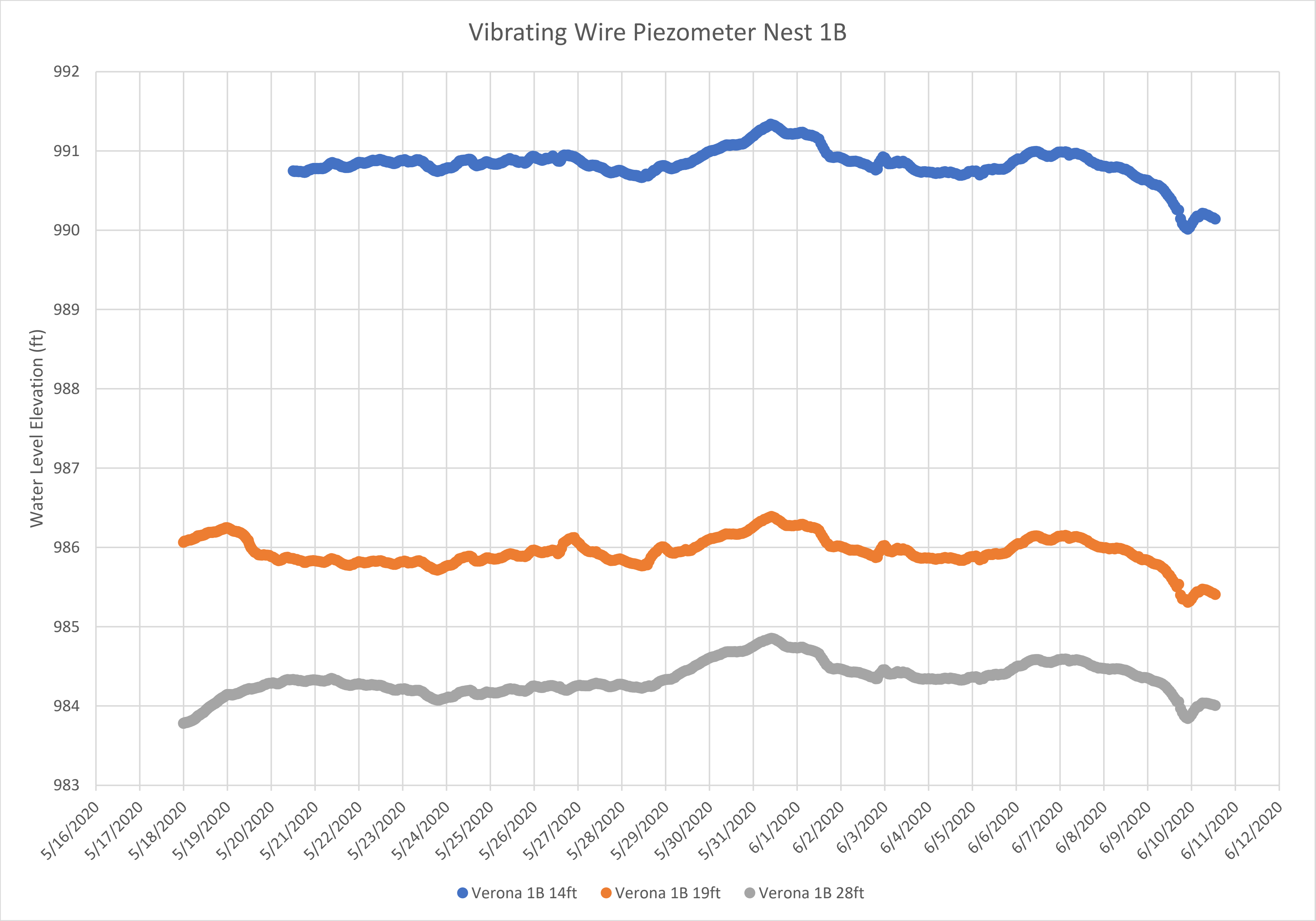


Figure 12
Vibrating Wire Piezometer Nest 1B
Raymond Road Storm Sewer
Verona, Wisconsin

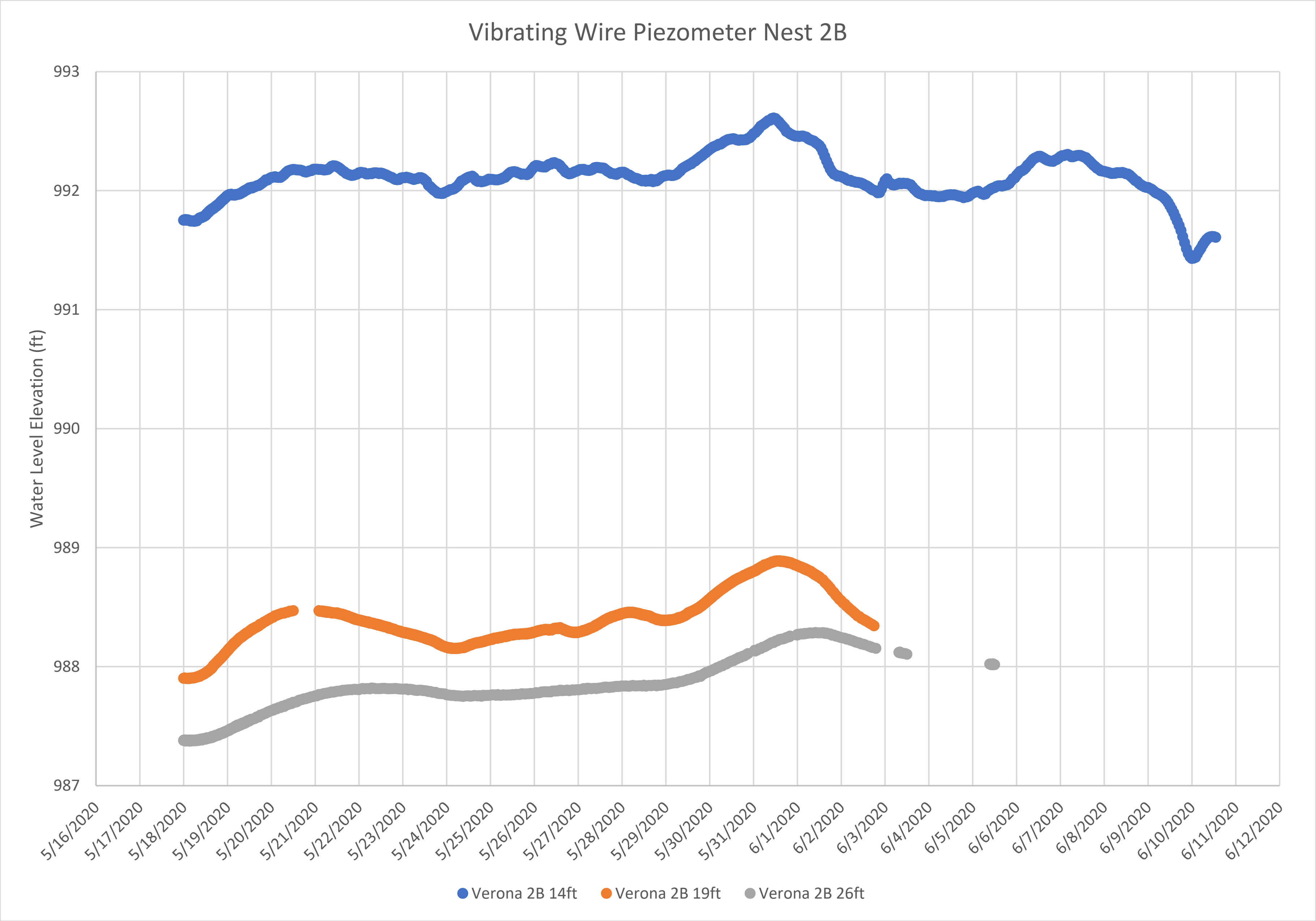


Figure 13
Vibrating Wire Piezometer Nest 2B
Raymond Road Storm Sewer
Verona, Wisconsin

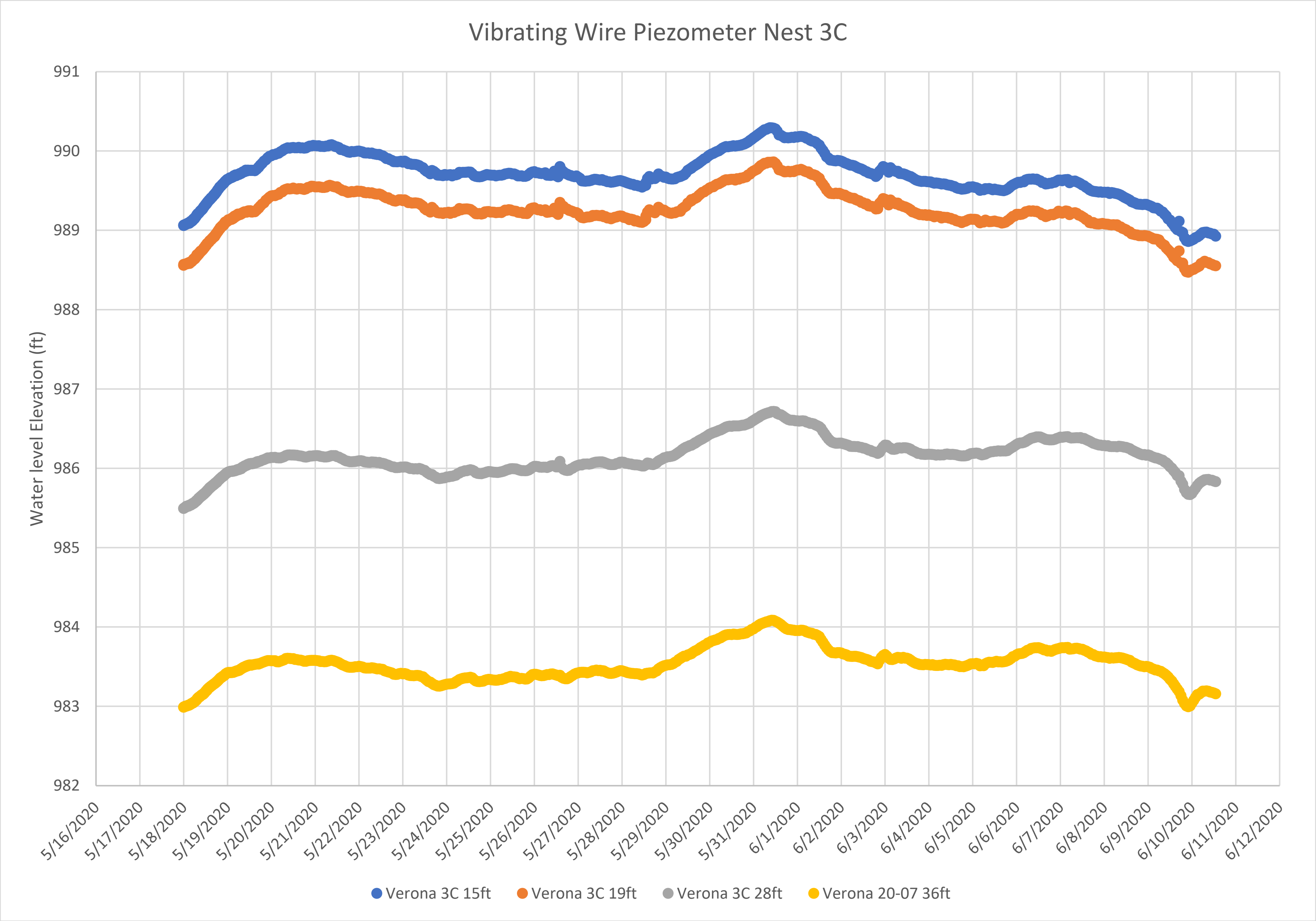


Figure 14
Vibrating Wire Piezometer Nest 3C
Raymond Road Storm Sewer
Verona, Wisconsin

Attachments

Attachment A ConeTec April 2020 Report

PRESENTATION OF SITE INVESTIGATION RESULTS

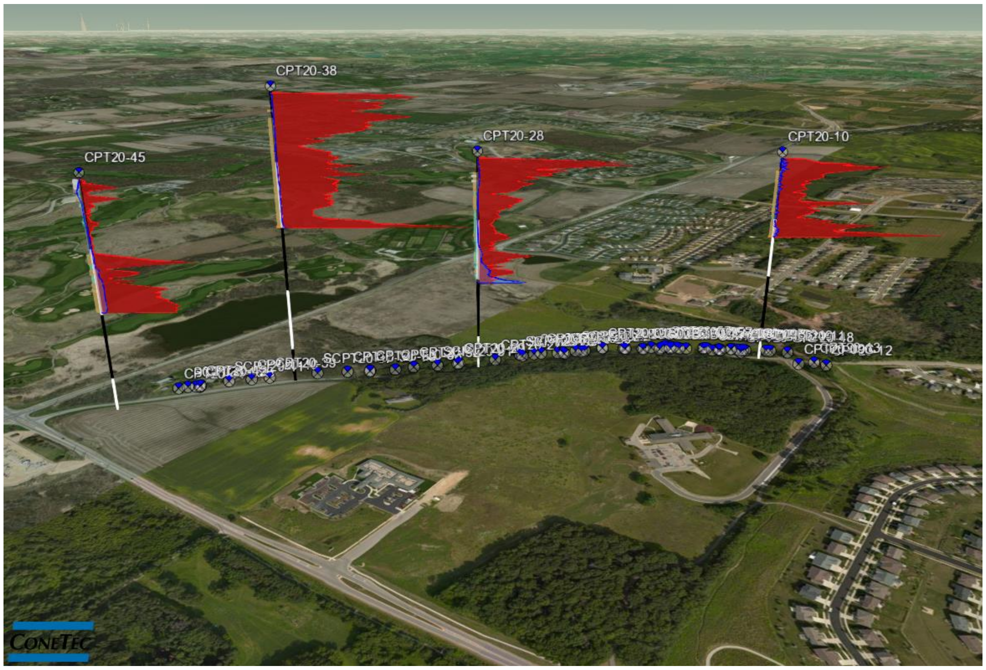
Raymond Road
Verona, Wisconsin

Prepared for:

Barr Engineering

ConeTec Job No: 20-61-20766

Project Start Date: 16-Apr-2020
Project End Date: 20-Apr-2020
Report Date: 28-Apr-2020



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Introduction

The enclosed report presents the results of a piezocone penetration testing (CPTu or CPT) and seismic piezocone penetration testing (SCPTu or SCPT) program carried out along Raymond Road in Verona, Wisconsin. The site investigation program was conducted by ConeTec Inc. (ConeTec), under contract to Barr Engineering of Minneapolis, Minnesota.

A total of 62 cone penetration tests and 13 seismic cone penetration tests were completed at 62 locations (multiple locations were offset and attempted several times due to shallow refusal). The CPT and SCPT program was performed to evaluate the subsurface soil conditions. CPT and SCPT sounding locations were selected and numbered under supervision of Barr Engineering personnel (Brian Moynihan).

Project Information

Project	
Client	Barr Engineering
Project	Raymond Road, Verona, WI
ConeTec project number	20-61-20766

A map from CESIUM including the CPT and SCPT test locations is presented below.

Rig Description	Deployment System	Test Type
CPT Truck Rig	25 ton truck mounted (twin cylinders)	CPT and SCPT

Coordinates		
Test Type	Collection Method	EPSG Number
CPT and SCPT	GPS (GlobalSat MR-350)	32616 (WGS 84 / UTM North)

Cone Penetration Test (CPT)	
Depth reference	Ground surface at the time of the investigation.
Tip and sleeve data offset	0.1 meter. This has been accounted for in the CPT data files.
Pore pressure dissipation (PPD) tests	Two pore pressure dissipation tests were completed primarily to determine the phreatic surface.
Additional plots	Advanced, Seismic and Soil Behavior Type (SBT) scatter plots are included in the data release package.

Cone Penetrometers Used for this Project						
Cone Description	Cone Number	Cross Sectional Area (cm^2)	Sleeve Area (cm^2)	Tip Capacity (bar)	Sleeve Capacity (bar)	Pore Pressure Capacity (psi)
568:T1500F15U500	527	15	225	1500	15	500
640:T1500F15U500	640	15	225	1500	15	500
678:T1500F15U500	678	15	225	1500	15	500
The CPT Summary indicates which cone was used for each sounding.						

Calculated Geotechnical Parameters Tables	
Additional information	The Normalized Soil Behavior Type Chart based on Q_{tn} (SBT Qtn) (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPT parameters have been generated and are provided in Excel format files in the release folder. The CPT parameter calculations are based on values of corrected tip resistance (q_t) sleeve friction (f_s) and pore pressure (u_2). Effective stresses are calculated based on unit weights that have been assigned to the individual soil behavior type zones and the assumed equilibrium pore pressure profile. Soils were classified as either drained or undrained based on the Q_{tn} Normalized Soil Behavior Type Chart (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4).

Limitations

This report has been prepared for the exclusive use of Barr Engineering (Client) for the project titled "Raymond Road, Verona, WI". The report's contents may not be relied upon by any other party without the express written permission of ConeTec. ConeTec has provided site investigation services, prepared the factual data reporting and provided geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

The information presented in the report document and the accompanying data set pertain to the specific project, site conditions and objectives described to ConeTec by the Client. In order to properly understand the factual data, assumptions and calculations, reference must be made to the documents provided and their accompanying data sets, in their entirety.

Cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd., a subsidiary of ConeTec.

ConeTec's piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and a geophone sensor for recording seismic signals. All signals are amplified down hole within the cone body and the analog signals are sent to the surface through a shielded cable.

ConeTec penetrometers are manufactured with various tip, friction and pore pressure capacities in both 10 cm^2 and 15 cm^2 tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table presented in the first appendix. The 15 cm^2 penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm^2 piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross sectional area (typically 44 mm diameter over a length of 32 mm with tapered leading and trailing edges) located at a distance of 585 mm above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle.

All ConeTec piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u_2" position (ASTM Type 2). The filter is 6 mm thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. ConeTec's calibration criteria also meet or exceed those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in Figure CPTu.

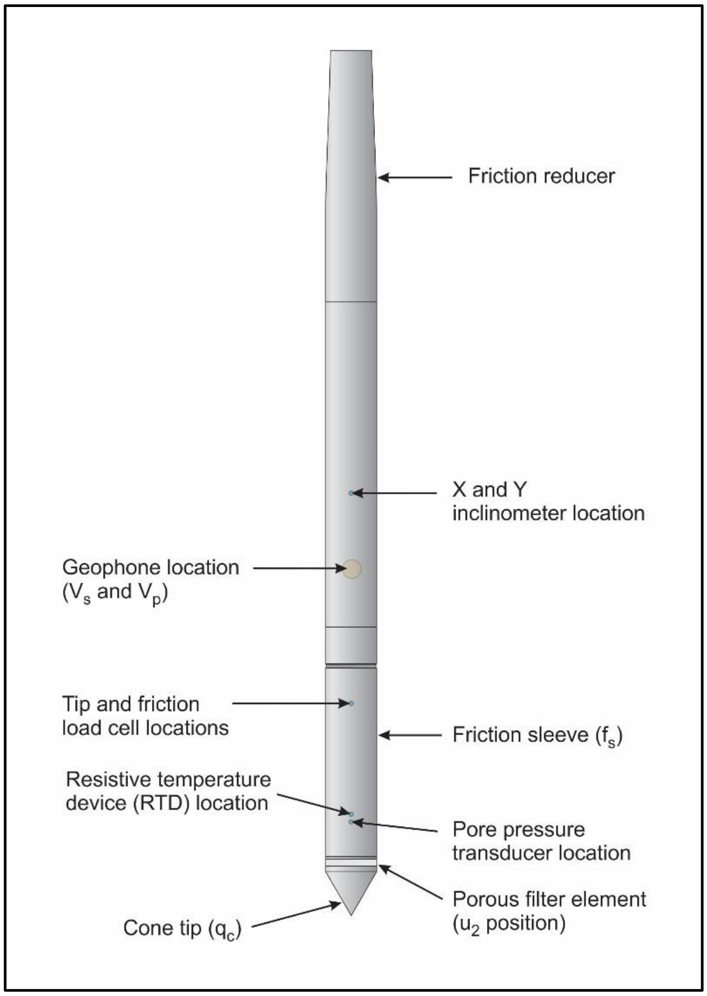

Figure CPTu. Piezocone Penetrometer (15 cm^2)

The ConeTec data acquisition systems consist of a Windows based computer and a signal conditioner and power supply interface box with a 16 bit (or greater) analog to digital (A/D) converter. The data is recorded at fixed depth increments using a depth wheel attached to the push cylinders or by using a spring loaded rubber depth wheel that is held against the cone rods. The typical recording interval is 2.5 cm; custom recording intervals are possible. The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance (q_c)
- Sleeve friction (f_s)
- Dynamic pore pressure (u)
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to ConeTec's CPT operating procedures which are in general accordance with the current ASTM D5778 standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with either glycerin or silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of 2 cm/s, within acceptable tolerances. Typically one meter length rods with an outer diameter of 1.5 inches are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to ConeTec's cone penetration testing procedures:

- Each filter is saturated in silicone oil under vacuum pressure prior to use
- Recorded baselines are checked with an independent multi-meter
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with ASTM standards

The interpretation of piezocone data for this report is based on the corrected tip resistance (q_t), sleeve friction (f_s) and pore water pressure (u). The interpretation of soil type is based on the correlations developed by Robertson et al. (1986) and Robertson (1990, 2009). It should be noted that it is not always possible to accurately identify a soil behavior based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behavior type.

The recorded tip resistance (q_c) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance (q_t) according to the following expression presented in Robertson et al. (1986):

$$q_t = q_c + (1-a) \bullet u_2$$

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)
a is the Net Area Ratio for the piezocone (0.8 for ConeTec probes)

The sleeve friction (f_s) is the frictional force on the sleeve divided by its surface area. As all ConeTec piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure (u) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio (Rf) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

A summary of the CPTu soundings along with test details and individual plots are provided in the appendices. A set of files with calculated geotechnical parameters were generated for each sounding based on published correlations and are provided in Excel format in the data release folder. Information regarding the methods used is also included in the data release folder.

For additional information on CPTu interpretations and calculated geotechnical parameters, refer to Robertson et al. (1986), Lunne et al. (1997), Robertson (2009), Mayne (2013, 2014) and Mayne and Peuchen (2012).

References

ASTM D5778-12, 2012, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils", ASTM, West Conshohocken, US.

Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, “Cone Penetration Testing in Geotechnical Practice”, Blackie Academic and Professional.

Mayne, P.W., 2013, “Evaluating yield stress of soils from laboratory consolidation and in-situ cone penetration tests”, Sound Geotechnical Research to Practice (Holtz Volume) GSP 230, ASCE, Reston/VA: 406-420.

Mayne, P.W. and Peuchen, J., 2012, “Unit weight trends with cone resistance in soft to firm clays”, Geotechnical and Geophysical Site Characterization *4,* Vol. 1 (Proc. ISC-4, Pernambuco), CRC Press, London: 903-910.

Mayne, P.W., 2014, “Interpretation of geotechnical parameters from seismic piezocone tests”, CPT’14 Keynote Address, Las Vegas, NV, May 2014.

Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, “Use of Piezometer Cone Data”, Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.

Robertson, P.K., 1990, “Soil Classification Using the Cone Penetration Test”, Canadian Geotechnical Journal, Volume 27: 151-158.

Robertson, P.K., 2009, “Interpretation of cone penetration tests – a unified approach”, Canadian Geotechnical Journal, Volume 46: 1337-1355.

Shear wave velocity (Vs) testing is performed in conjunction with the piezocone penetration test (SCPTu) in order to collect interval velocities. For some projects seismic compression wave velocity (Vp) testing is also performed.

ConeTec's piezocone penetrometers are manufactured with a horizontally active geophone (28 hertz) that is rigidly mounted in the body of the cone penetrometer, 0.2 meters behind the cone tip.

Shear waves are typically generated by using an impact hammer horizontally striking a beam that is held in place by a normal load. In some instances an auger source or an imbedded impulsive source maybe used for both shear waves and compression waves. The hammer and beam act as a contact trigger that initiates the recording of the seismic wave traces. For impulsive devices an accelerometer trigger may be used. The traces are recorded using an up-hole integrated digital oscilloscope which is part of the SCPTu data acquisition system. An illustration of the shear wave testing configuration is presented in Figure SCPTu-1.

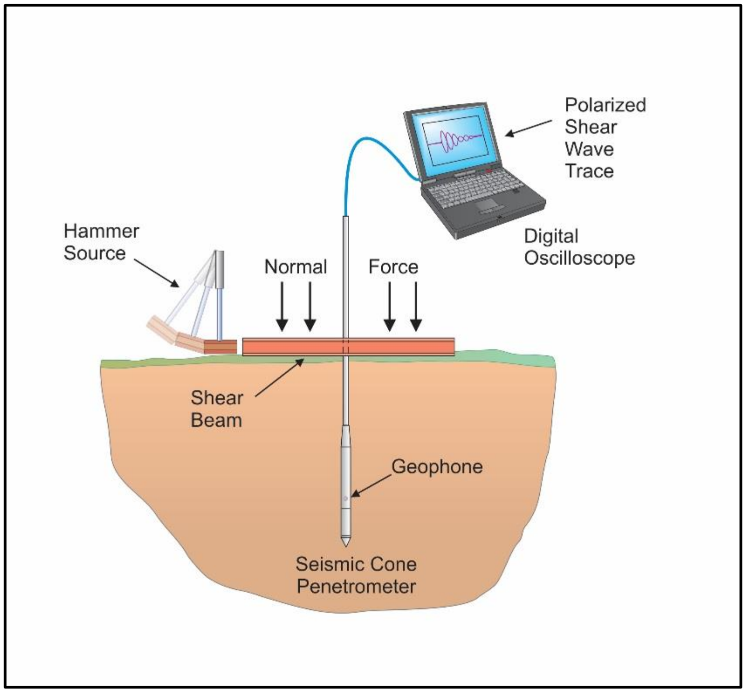

Figure SCPTu-1. Illustration of the SCPTu system

All testing is performed in accordance to ConeTec's SCPTu operating procedures which are in general accordance with the current ASTM 5778 and ASTM D7400 standards.

Prior to the start of a SCPTu sounding, the procedures described in the Cone Penetration Test section are followed. In addition, the active axis of the geophone is aligned parallel to the beam (or source) and the horizontal offset between the cone and the source is measured and recorded.

Prior to recording seismic waves at each test depth, cone penetration is stopped and the rods are decoupled from the rig to avoid transmission of rig energy down the rods. Typically, five wave traces for each orientation are recorded for quality control purposes and uncertainty analysis. After reviewing wave traces for consistency the cone is pushed to the next test depth (typically one meter intervals or as requested by the client). Figure SCPTu-2 presents an illustration of a SCPTu test.

For additional information on seismic cone penetration testing refer to Robertson et. al. (1986).

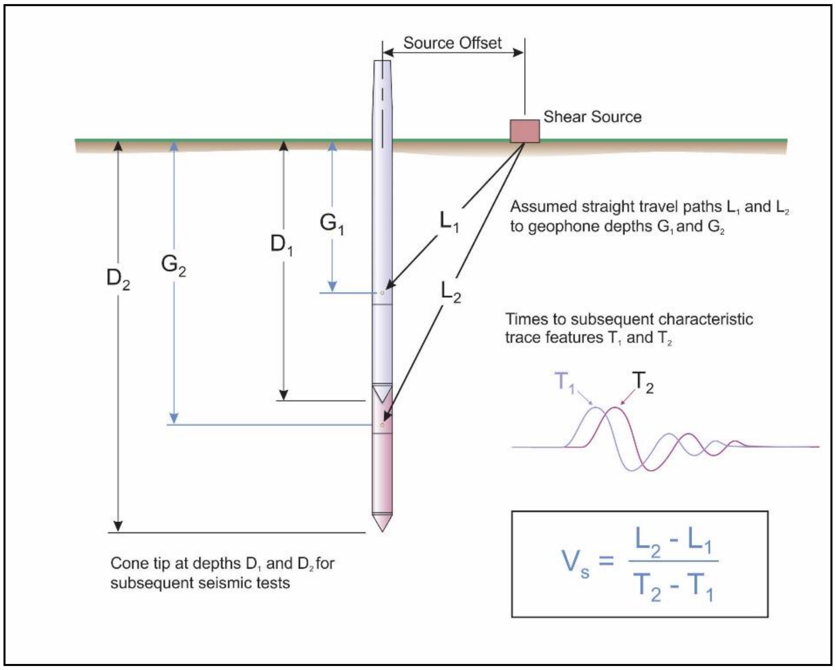

Figure SCPTu-2. Illustration of a seismic cone penetration test

Calculation of the interval velocities are performed by visually picking a common feature (e.g. the first characteristic peak, trough, or crossover) on all of the recorded wave sets and taking the difference in ray path divided by the time difference between subsequent features. Ray path is defined as the straight line distance from the seismic source to the geophone, accounting for beam offset, source depth and geophone offset from the cone tip.

For all SCPTu soundings that have achieved a depth of at least 100 feet (30 meters), the average shear wave velocity to a depth of 100 feet ($\bar{v}_s$) has been calculated using the following equation presented in ASCE (2010).

$$\bar{v}_s = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{v_{si}}}$$

where: $\bar{v}_s$ = average shear wave velocity ft/s (m/s)
d_i = the thickness of any layer between 0 and 100 ft (30 m)
v_{si} = the shear wave velocity in ft/s (m/s)
$\sum_{i=1}^{n} d_i$ = 100 ft (30 m)

Average shear wave velocity, $\bar{v}_s$ is also referenced to V_{s100} or V_{s30}.

The layer travel times refers to the travel times propagating in the vertical direction, not the measured travel times from an offset source.

Tabular results and SCPTu plots are presented in the relevant appendix.

References

American Society of Civil Engineers (ASCE), 2010, “Minimum Design Loads for Buildings and Other Structures”, Standard ASCE/SEI 7-10, American Society of Civil Engineers, ISBN 978-0-7844-1085-1, Reston, Virginia.

ASTM D5778-12, 2012, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils", ASTM, West Conshohocken, US.

ASTM D7400-14, 2014, "Standard Test Methods for Downhole Seismic Testing", ASTM, West Conshohocken, US.

Robertson, P.K., Campanella, R.G., Gillespie D and Rice, A., 1986, “Seismic CPT to Measure In-Situ Shear Wave Velocity”, Journal of Geotechnical Engineering ASCE, Vol. 112, No. 8: 791-803.

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in Figure PPD-1. For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure (u) with time (t).

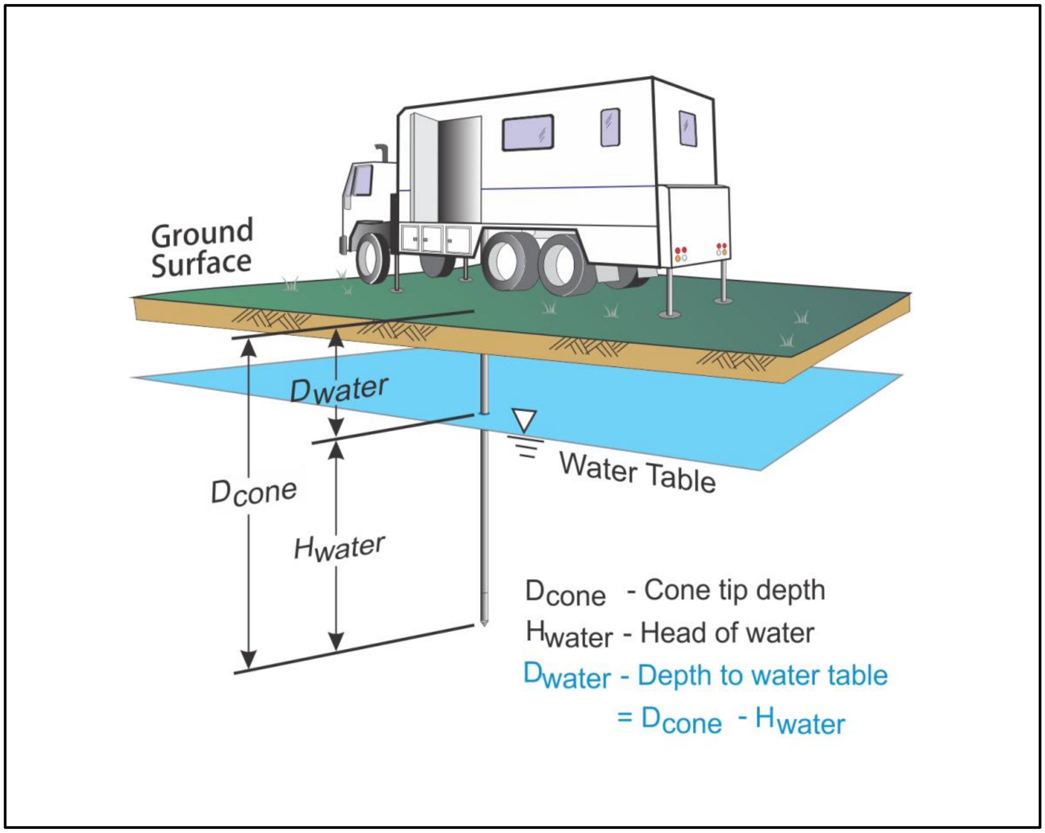

Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behavior.

The typical shapes of dissipation curves shown in Figure PPD-2 are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

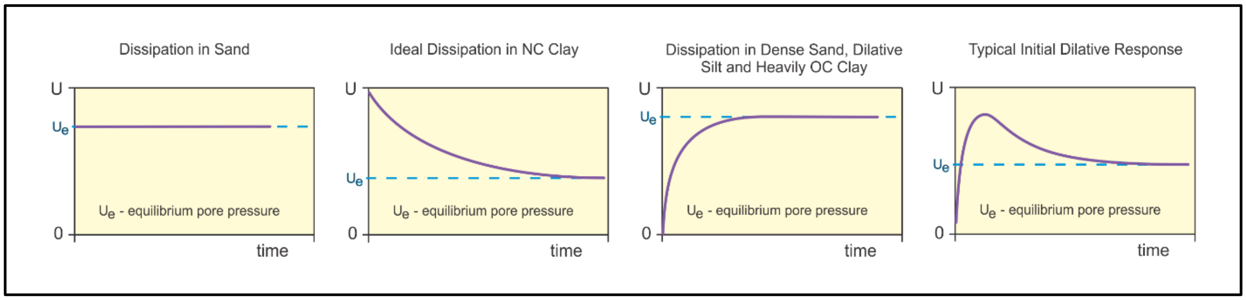

Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure (u_{eq}) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve in Figure PPD-2.

In fine grained deposits the point at which 100% of the excess pore pressure has dissipated is known as t_{100}. In some cases this can take an excessive amount of time and it may be impractical to take the dissipation to t_{100}. A theoretical analysis of pore pressure dissipations by Teh and Houlsby (1991) showed that a single curve relating degree of dissipation versus theoretical time factor (T*) may be used to calculate the coefficient of consolidation (c_h) at various degrees of dissipation resulting in the expression for c_h shown below.

$$c_h = \frac{T^* \cdot a^2 \cdot \sqrt{I_r}}{t}$$

Where:

T^* is the dimensionless time factor (Table Time Factor)

a is the radius of the cone

I_r is the rigidity index

t is the time at the degree of consolidation

Table Time Factor. T* versus degree of dissipation (Teh and Houlsby (1991))

Degree of Dissipation (%)	20	30	40	50	60	70	80
T* (u_2)	0.038	0.078	0.142	0.245	0.439	0.804	1.60

The coefficient of consolidation is typically analyzed using the time (t_{50}) corresponding to a degree of dissipation of 50% (u_{50}). In order to determine t_{50}, dissipation tests must be taken to a pressure less than u_{50}. The u_{50} value is half way between the initial maximum pore pressure and the equilibrium pore pressure value, known as u_{100}. To estimate u_{50}, both the initial maximum pore pressure and u_{100} must be known or estimated. Other degrees of dissipations may be considered, particularly for extremely long dissipations.

At any specific degree of dissipation the equilibrium pore pressure (u at t_{100}) must be estimated at the depth of interest. The equilibrium value may be determined from one or more sources such as measuring the value directly (u_{100}), estimating it from other dissipations in the same profile, estimating the phreatic surface and assuming hydrostatic conditions, from nearby soundings, from client provided information, from site observations and/or past experience, or from other site instrumentation.

For calculations of c_h (Teh and Houlsby (1991)), t_{50} values are estimated from the corresponding pore pressure dissipation curve and a rigidity index (I_r) is assumed. For curves having an initial dilatory response in which an initial rise in pore pressure occurs before reaching a peak, the relative time from the peak value is used in determining t_{50}. In cases where the time to peak is excessive, t_{50} values are not calculated.

Due to possible inherent uncertainties in estimating I_r, the equilibrium pore pressure and the effect of an initial dilatory response on calculating t_{50}, other methods should be applied to confirm the results for c_h.

Additional published methods for estimating the coefficient of consolidation from a piezocone test are described in Burns and Mayne (1998, 2002), Jones and Van Zyl (1981), Robertson et al. (1992) and Sully et al. (1999).

A summary of the pore pressure dissipation tests and dissipation plots are presented in the relevant appendix.

References

Burns, S.E. and Mayne, P.W., 1998, "Monotonic and dilatory pore pressure decay during piezocone tests", Canadian Geotechnical Journal 26 (4): 1063-1073.

Burns, S.E. and Mayne, P.W., 2002, "Analytical cavity expansion-critical state model cone dissipation in fine-grained soils", Soils & Foundations, Vol. 42(2): 131-137.

Jones, G.A. and Van Zyl, D.J.A., 1981, "The piezometer probe: a useful investigation tool", Proceedings, 10th International Conference on Soil Mechanics and Foundation Engineering, Vol. 3, Stockholm: 489-495.

Robertson, P.K., Sully, J.P., Woeller, D.J., Lunne, T., Powell, J.J.M. and Gillespie, D.G., 1992, "Estimating coefficient of consolidation from piezocone tests", Canadian Geotechnical Journal, 29(4): 551-557.

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J., 1999, "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils", Canadian Geotechnical Journal, 36(2): 369-381.

Teh, C.I., and Houlsby, G.T., 1991, "An analytical study of the cone penetration test in clay", Geotechnique, 41(1): 17-34.

The appendices listed below are included in the report:

- Cone Penetration Test Summary and Standard Cone Penetration Test Plots
- Advanced Cone Penetration Test Plots with Ic, Su(Nkt), Phi and N1(60)Ic
- Seismic Cone Penetration Test Plots
- Seismic Cone Penetration Test Shear Wave (Vs) Traces
- Seismic Cone Penetration Test Tabular Results
- Soil Behavior Type (SBT) Scatter Plots
- Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

Cone Penetration Test Summary and Standard Cone Penetration Test Plots

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Start Date: 16-Apr-2020
End Date: 20-Apr-2020

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Shear Wave Velocity Tests	Northing[2] (m)	Easting[2] (m)	Refer to Notation Number
CPT20-01	20-61-20766_CP01	16-Apr-2020	678:T1500F15U500		17.55		4766289	294048	4
CPT20-01B	20-61-20766_CP01B	17-Apr-2020	640:T1500F15U500	19.0	22.15		4766290	294047	3
CPT20-02	20-61-20766_CP02	17-Apr-2020	640:T1500F15U500		2.79		4766308	294074	4
CPT20-02B	20-61-20766_CP02B	17-Apr-2020	640:T1500F15U500		6.07		4766308	294075	4
SCPT20-02C	20-61-20766_SP02C	17-Apr-2020	640:T1500F15U500	18.5	40.03		4766308	294072	3
CPT20-03	20-61-20766_CP03	17-Apr-2020	640:T1500F15U500		3.28		4766321	294095	4
CPT20-03B	20-61-20766_CP03B	17-Apr-2020	640:T1500F15U500	15.0	16.57		4766321	294097	3
SCPT20-04	20-61-20766_SP04	17-Apr-2020	640:T1500F15U500	18.5	36.25	9	4766343	294114	3
SCPT20-05	20-61-20766_SP05	17-Apr-2020	640:T1500F15U500	23.5	30.51	7	4766351	294124	3
CPT20-06	20-61-20766_CP06	17-Apr-2020	640:T1500F15U500	11.5	35.43		4766359	294132	3
CPT20-07	20-61-20766_CP07	17-Apr-2020	640:T1500F15U500	15.0	24.11		4766363	294144	3
CPT20-08	20-61-20766_CP08	17-Apr-2020	640:T1500F15U500	21.0	23.46		4766377	294169	3
CPT20-09	20-61-20766_CP09	17-Apr-2020	640:T1500F15U500		2.79		4766392	294199	4
CPT20-09B	20-61-20766_CP09B	17-Apr-2020	640:T1500F15U500		3.12		4766393	294200	4
CPT20-09C	20-61-20766_CP09C	17-Apr-2020	640:T1500F15U500		12.63		4766389	294295	4
CPT20-10	20-61-20766_CP10	17-Apr-2020	640:T1500F15U500	18.5	21.49		4766402	294236	3
SCPT20-11	20-61-20766_SP11	17-Apr-2020	640:T1500F15U500	20.0	31.00	8	4766417	294248	3
CPT20-12	20-61-20766_CP12	18-Apr-2020	640:T1500F15U500	19.0	37.40		4766408	294327	3
CPT20-13	20-61-20766_CP13	18-Apr-2020	640:T1500F15U500	17.0	40.03		4766408	294311	3
CPT20-14	20-61-20766_CP14	18-Apr-2020	640:T1500F15U500		10.01		4766378	294187	4
CPT20-14B	20-61-20766_CP14B	18-Apr-2020	640:T1500F15U500		10.50		4766379	294189	4

CONETEC

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Start Date: 16-Apr-2020
End Date: 20-Apr-2020

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Shear Wave Velocity Tests	Northing[2] (m)	Easting[2] (m)	Refer to Notation Number
CPT20-14C	20-61-20766_CP14C	18-Apr-2020	640:T1500F15U500	17.0	19.03		4766381	294186	3
CPT20-15	20-61-20766_CP15	18-Apr-2020	640:T1500F15U500		4.10		4766378	294189	4
CPT20-15B	20-61-20766_CP15B	18-Apr-2020	640:T1500F15U500		12.14		4766378	294185	4
CPT20-16	20-61-20766_CP16	18-Apr-2020	640:T1500F15U500	23.5	40.03		4766358	294136	3
CPT20-17	20-61-20766_CP17	18-Apr-2020	640:T1500F15U500	17.0	31.00		4766356	294126	3
CPT20-18	20-61-20766_CP18	18-Apr-2020	640:T1500F15U500		9.51		4766348	294126	4
CPT20-19	20-61-20766_CP19	18-Apr-2020	640:T1500F15U500	20.0	47.08		4766336	294115	3
CPT20-20	20-61-20766_CP20	18-Apr-2020	640:T1500F15U500	19.0	62.66		4766334	294103	3
CPT20-21	20-61-20766_CP21	18-Apr-2020	640:T1500F15U500		13.12		4766261	294029	4
CPT20-22	20-61-20766_CP22	18-Apr-2020	640:T1500F15U500	24.5	50.03		4766267	294031	
CPT20-23	20-61-20766_CP23	18-Apr-2020	640:T1500F15U500		13.12		4766241	294013	4
CPT20-24	20-61-20766_CP24	18-Apr-2020	640:T1500F15U500	18.0	30.68		4766242	294010	3
CPT20-25	20-61-20766_CP25	18-Apr-2020	640:T1500F15U500	23.0	35.11		4766226	293984	3
SCPT20-26	20-61-20766_SP26	18-Apr-2020	640:T1500F15U500	20.0	32.81	9	4766200	293965	3
CPT20-27	20-61-20766_CP27	18-Apr-2020	640:T1500F15U500		13.62		4766165	293947	4
CPT20-28	20-61-20766_CP28	19-Apr-2020	640:T1500F15U500	20.0	33.79		4766152	293928	3
CPT20-29	20-61-20766_CP29	19-Apr-2020	640:T1500F15U500	19.0	34.28		4766131	293910	3
CPT20-30	20-61-20766_CP30	18-Apr-2020	640:T1500F15U500		14.27		4766128	293910	4
SCPT20-31	20-61-20766_SP31	19-Apr-2020	640:T1500F15U500	17.5	32.81	10	4766108	293891	3
CPT20-32	20-61-20766_CP32	19-Apr-2020	568:T1500F15U500	21.0	31.17		4766088	293866	3
CPT20-33	20-61-20766_CP33	19-Apr-2020	568:T1500F15U500	18.0	27.89		4766065	293853	3

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Start Date: 16-Apr-2020
End Date: 20-Apr-2020

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Shear Wave Velocity Tests	Northing[2] (m)	Easting[2] (m)	Refer to Notation Number
CPT20-34	20-61-20766_CP34	19-Apr-2020	568:T1500F15U500	23.0	28.71		4766042	293829	3
CPT20-35	20-61-20766_CP35	19-Apr-2020	568:T1500F15U500		15.09		4766039	293831	4
CPT20-36	20-61-20766_CP36	19-Apr-2020	568:T1500F15U500	20.0	24.11		4766020	293809	3
SCPT20-37	20-61-20766_SP37	19-Apr-2020	568:T1500F15U500	28.0	33.30	10	4765991	293783	3
CPT20-38	20-61-20766_CP38	19-Apr-2020	568:T1500F15U500	24.0	32.81		4765971	293763	3
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CPT20-40	20-61-20766_CP40	19-Apr-2020	568:T1500F15U500	28.0	33.14		4765929	293727	3
SCPT20-41	20-61-20766_SP41	19-Apr-2020	568:T1500F15U500	29.0	34.12	11	4765910	293706	3
CPT20-42	20-61-20766_CP42	19-Apr-2020	568:T1500F15U500	28.0	34.12		4765883	293684	3
CPT20-43	20-61-20766_CP43	19-Apr-2020	568:T1500F15U500		8.53		4765882	293685	4
CPT20-43B	20-61-20766_CP43B	19-Apr-2020	568:T1500F15U500		15.09		4765880	293686	4
CPT20-44	20-61-20766_CP44	19-Apr-2020	568:T1500F15U500	25.0	33.96		4765863	293666	3
CPT20-45	20-61-20766_CP45	19-Apr-2020	568:T1500F15U500	14.0	32.15		4765796	293638	3
SCPT20-46	20-61-20766_SP46	20-Apr-2020	568:T1500F15U500	26.0	33.14	10	4765872	293673	3
CPT20-47	20-61-20766_CP47	20-Apr-2020	568:T1500F15U500	29.0	33.14		4765878	293681	3
CPT20-48	20-61-20766_CP48	20-Apr-2020	568:T1500F15U500	18.0	30.02		4766425	294270	3
CPT20-49	20-61-20766_CP49	20-Apr-2020	568:T1500F15U500	18.0	30.02		4766415	294243	3
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CPT20-51	20-61-20766_CP51	20-Apr-2020	568:T1500F15U500		15.58		4766393	294213	4
CPT20-51B	20-61-20766_CP51B	20-Apr-2020	568:T1500F15U500		3.45		4766395	294209	4
CPT20-51C	20-61-20766_CP51C	20-Apr-2020	568:T1500F15U500	28.0	31.66		4766386	294216	3

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Start Date: 16-Apr-2020
End Date: 20-Apr-2020

CONE PENETRATION TEST SUMMARY

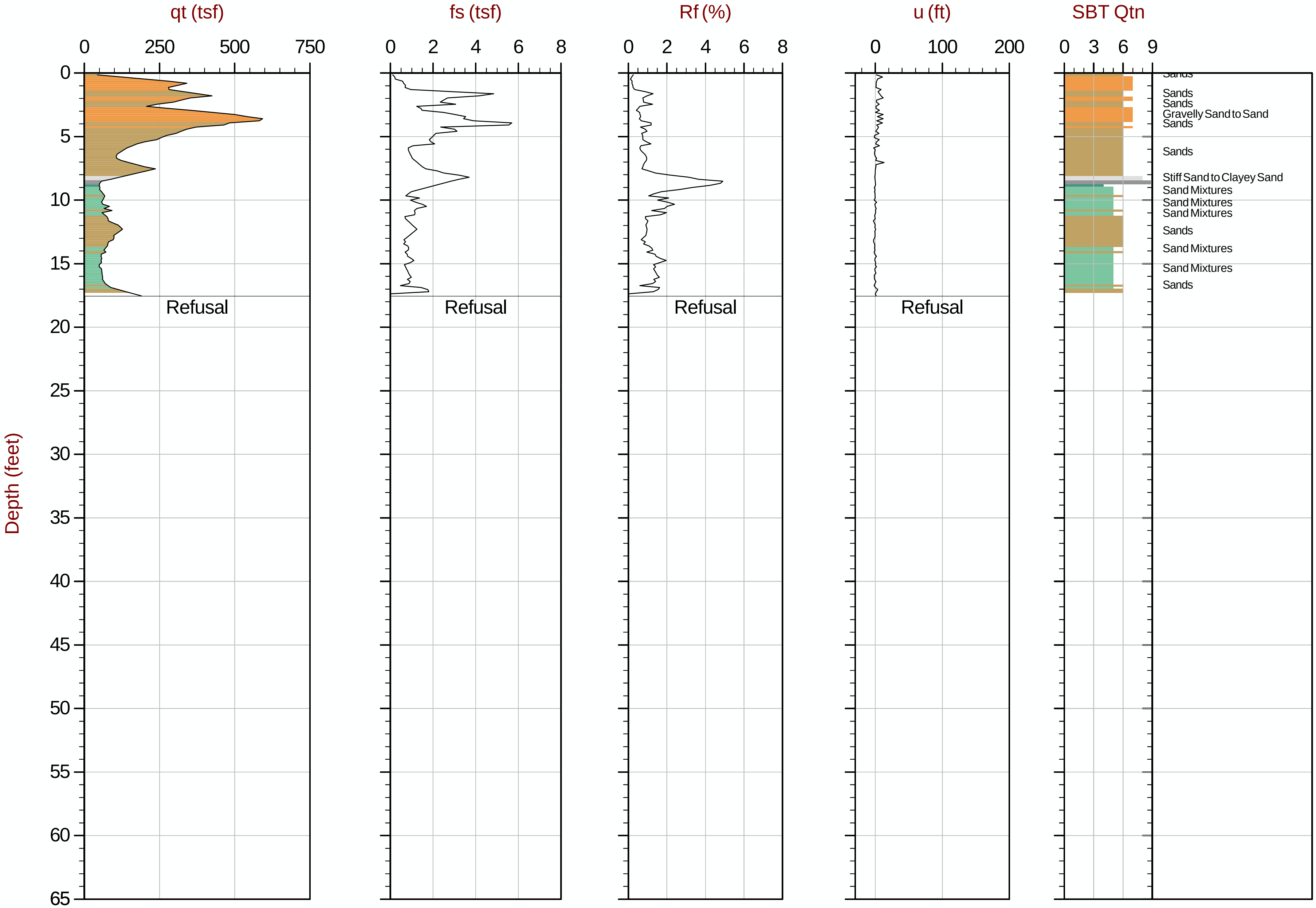
Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Shear Wave Velocity Tests	Northing[2] (m)	Easting[2] (m)	Refer to Notation Number
CPT20-52	20-61-20766_CP52	20-Apr-2020	568:T1500F15U500	20.0	37.24		4766370	294180	3
SCPT20-53	20-61-20766_SP53	20-Apr-2020	568:T1500F15U500	22.5	32.15	10	4766202	293968	3
CPT20-54	20-61-20766_CP54	20-Apr-2020	568:T1500F15U500	21.0	31.00		4766218	293977	3
CPT20-55	20-61-20766_CP55	20-Apr-2020	568:T1500F15U500	21.0	31.00		4766239	294003	3
CPT20-56	20-61-20766_CP56	20-Apr-2020	568:T1500F15U500	21.0	31.00		4766261	294020	3
CPT20-57	20-61-20766_CP57	20-Apr-2020	568:T1500F15U500	17.0	33.46		4766353	294116	3
SCPT20-57B	20-61-20766_SP57B	20-Apr-2020	568:T1500F15U500	17.0	43.80	13	4766355	294122	3
CPT20-58	20-61-20766_CP58	20-Apr-2020	568:T1500F15U500		11.16		4766374	294165	4
SCPT20-59	20-61-20766_SP59	20-Apr-2020	568:T1500F15U500		11.16	5	4766375	294166	4
CPT20-60	20-61-20766_CP60	20-Apr-2020	568:T1500F15U500		11.16		4766376	294167	4
CPT20-61	20-61-20766_CP61	20-Apr-2020	568:T1500F15U500	20.0	30.02		4766396	294215	3
CPT20-62	20-61-20766_CP62	20-Apr-2020	568:T1500F15U500	20.9	31.00		4766399	294218	
Totals	75 soundings				1917.96	112			

1. The assumed phreatic surface was based on pore pressure dissipation tests. Hydrostatic data were used for the calculated parameters.
2. Coordinates were acquired using a MR-350 GlobalSat GPS Receiver in datum: WGS84 / UTM Zone 16 North.
3. The assumed phreatic surface was estimated from the dynamic pore pressure data.
4. No phreatic surface detected.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-16 10:19
Site: Raymond Road, Verona, WI

Sounding: CPT20-01
Cone: 678:T1500F15U500



Max Depth: 5.350 m / 17.55 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766289m E: 294048m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

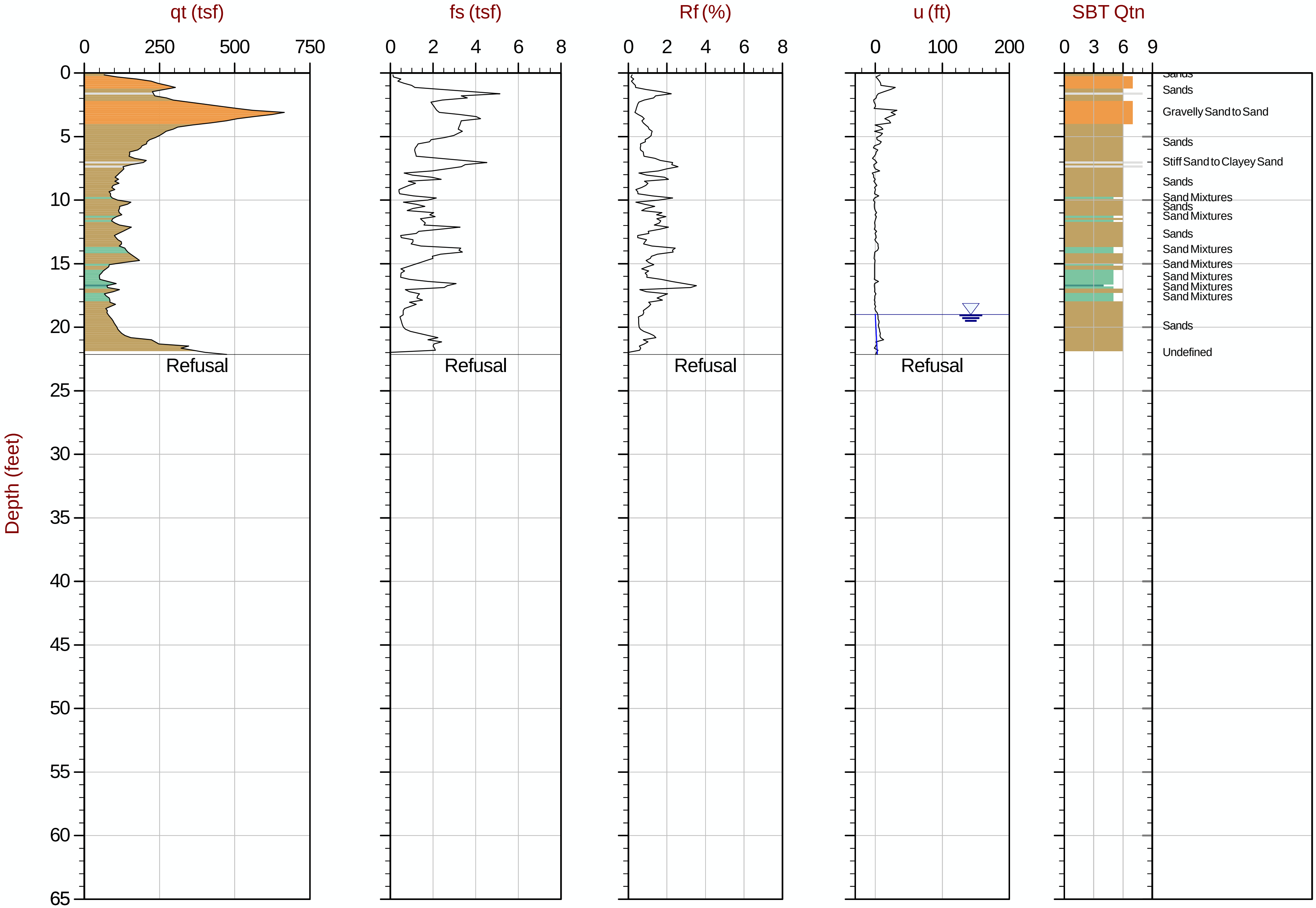
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 09:17
Site: Raymond Road, Verona, WI

Sounding: CPT20-01B
Cone: 640:T1500F15U500



Max Depth: 6.750 m / 22.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP01B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766290m E: 294047m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

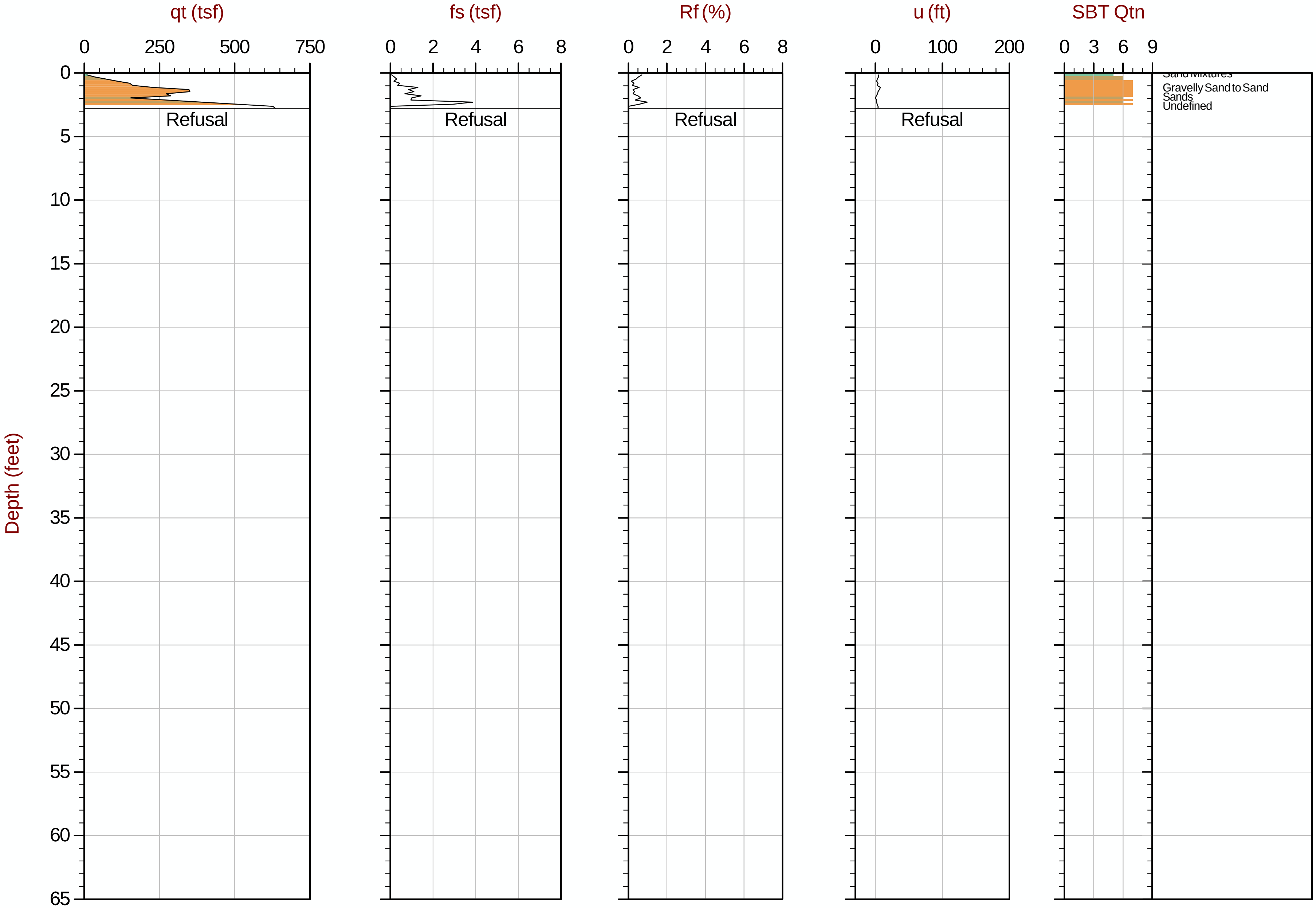
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:06
Site: Raymond Road, Verona, WI

Sounding: CPT20-02
Cone: 640:T1500F15U500



Max Depth: 0.850 m / 2.79 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP02.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766308m E: 294074m

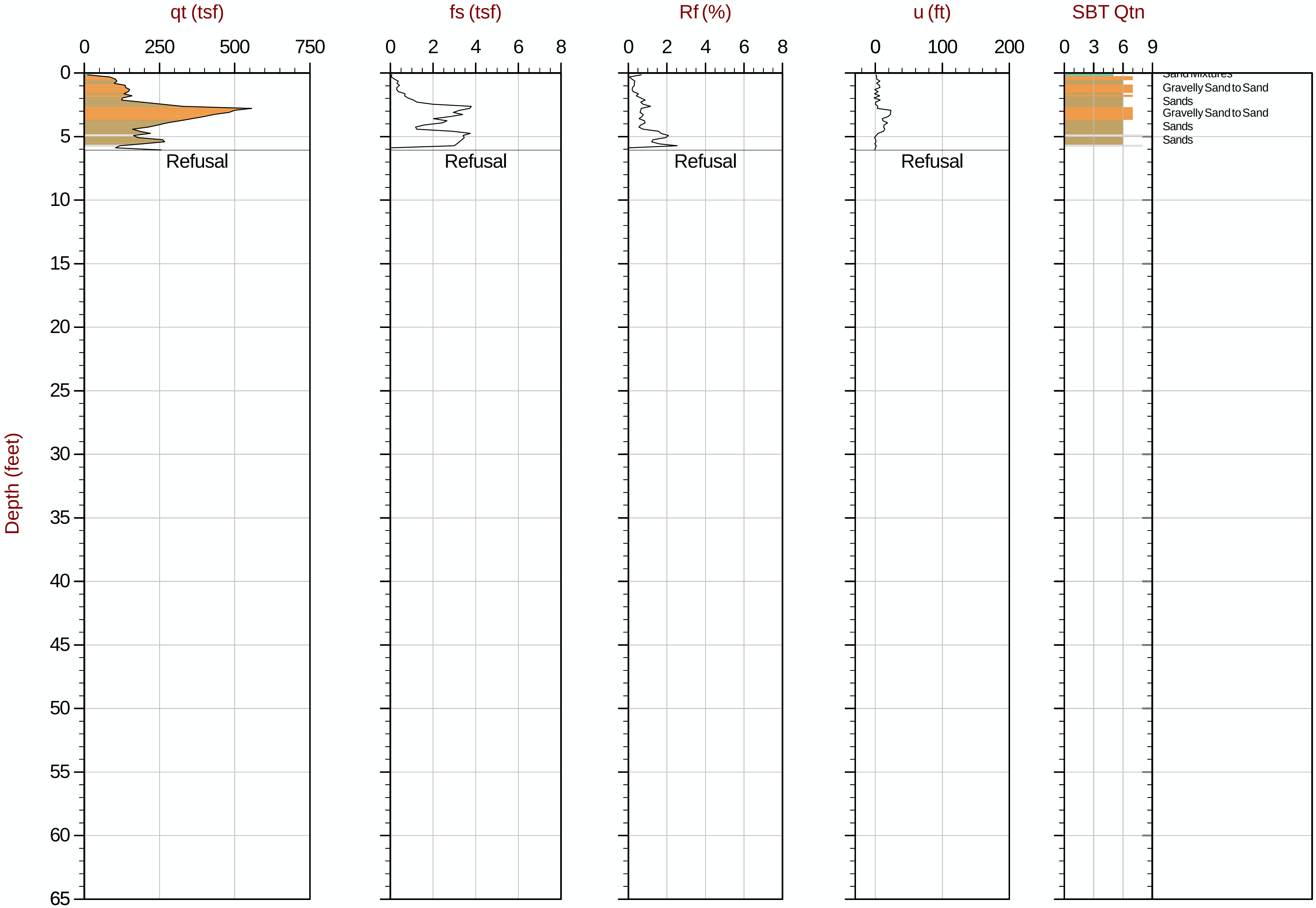
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:17
Site: Raymond Road, Verona, WI

Sounding: CPT20-02B
Cone: 640:T1500F15U500



Max Depth: 1.850 m / 6.07 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP02B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766308m E: 294075m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

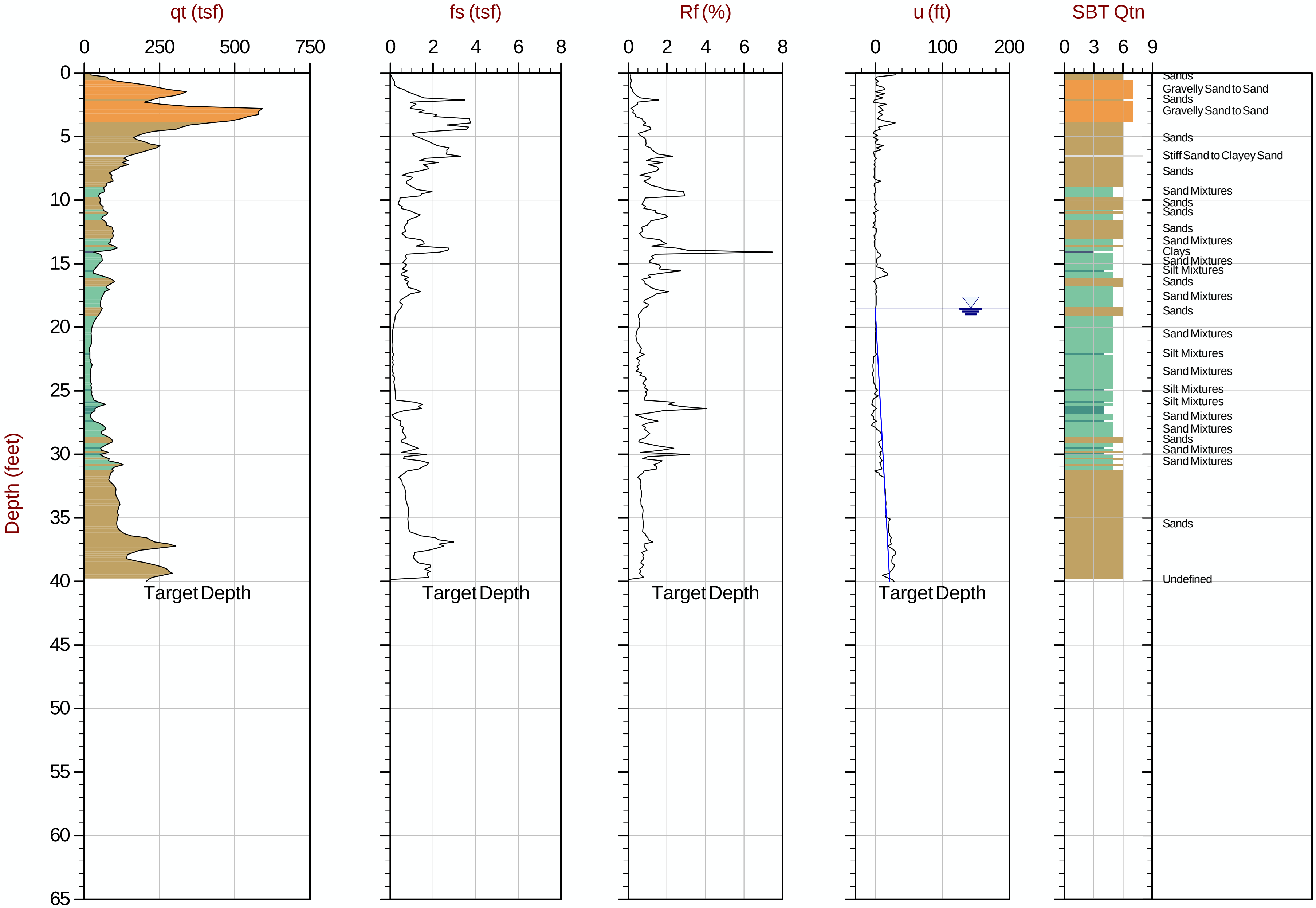
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:34
Site: Raymond Road, Verona, WI

Sounding: SCPT20-02C
Cone: 640:T1500F15U500



Max Depth: 12.200 m / 40.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP02C.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766308m E: 294072m

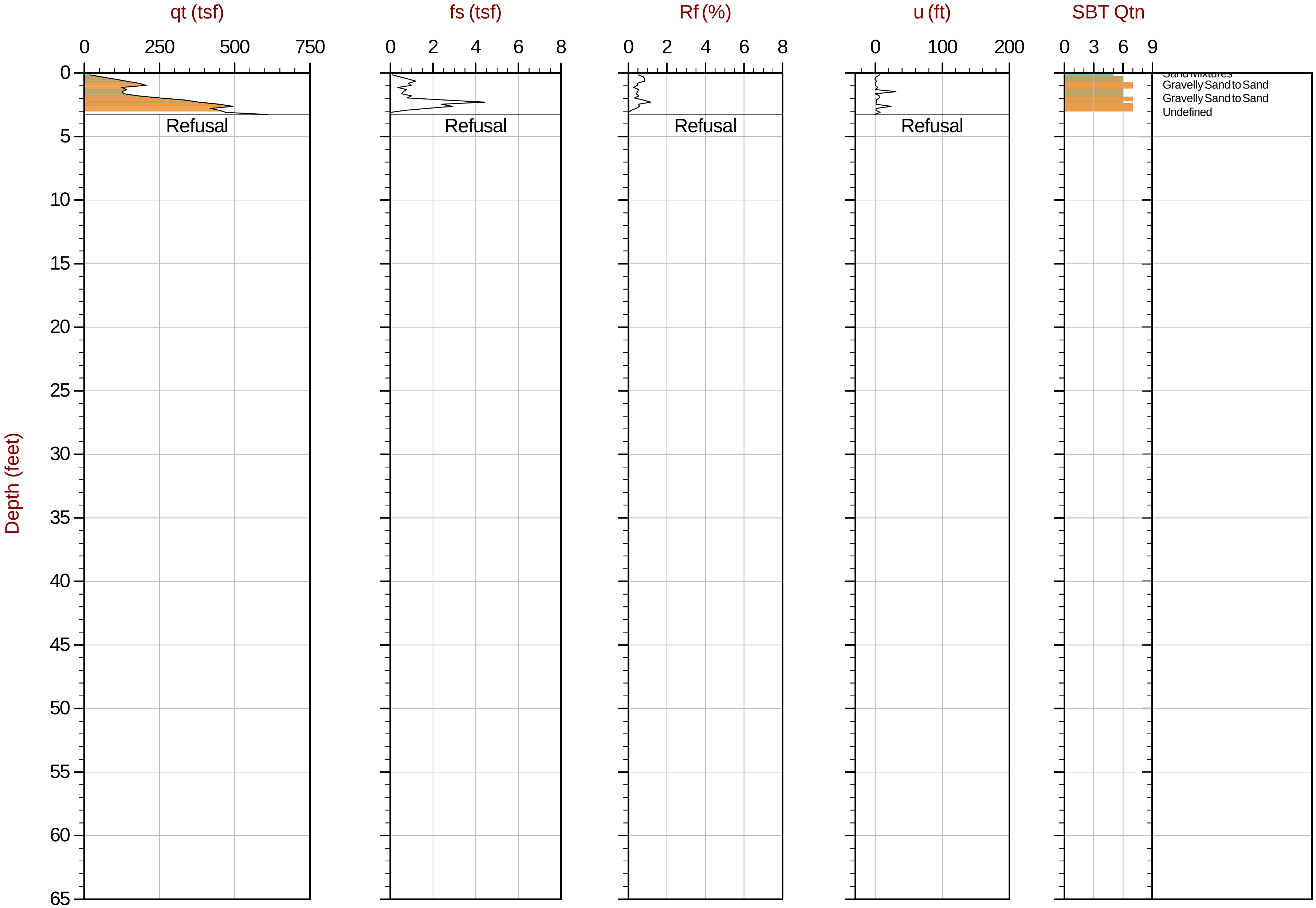
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 11:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-03
Cone: 640:T1500F15U500



Max Depth: 1.000 m / 3.28 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP03.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766321m E: 294095m

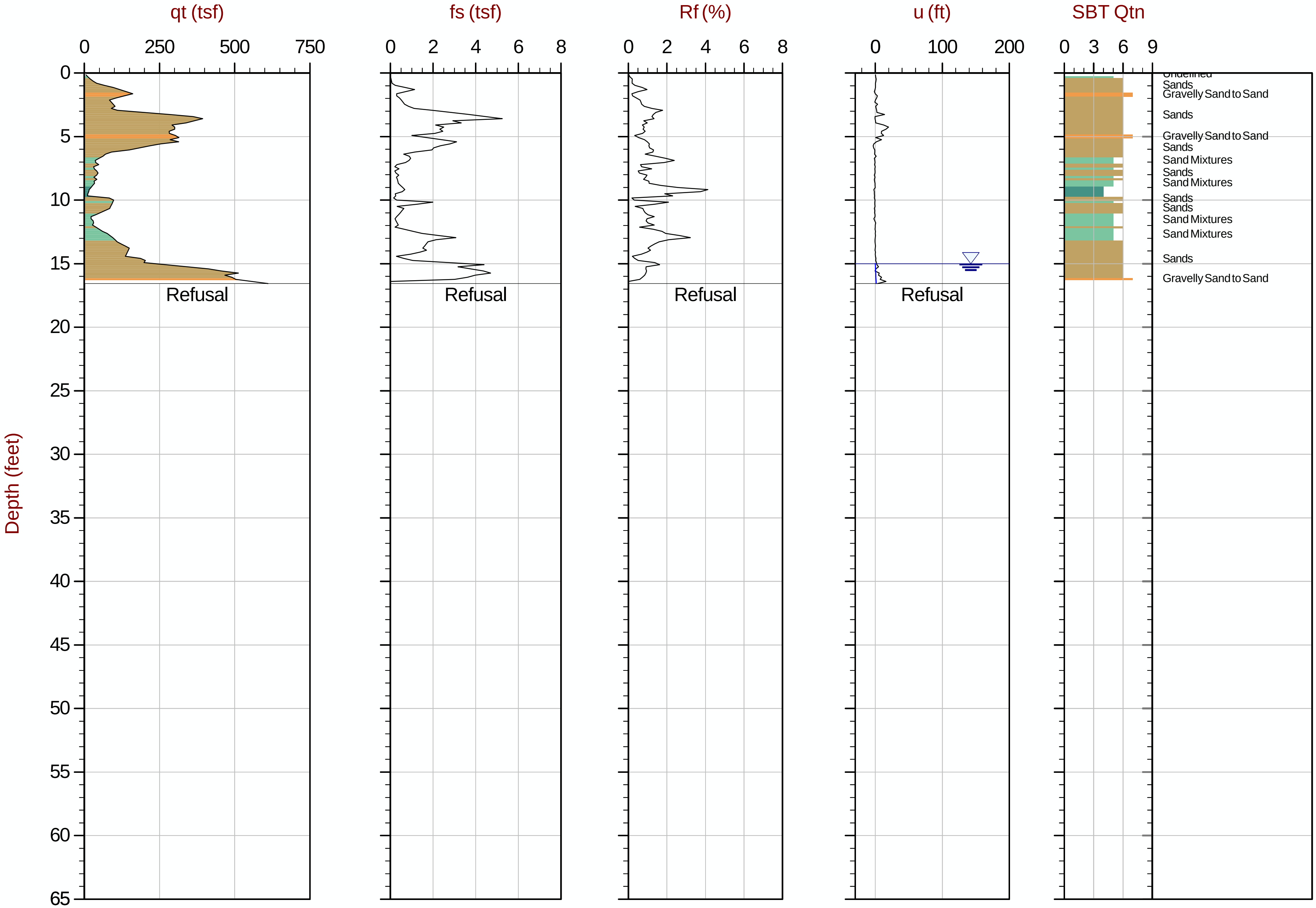
— Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 12:22
Site: Raymond Road, Verona, WI

Sounding: CPT20-03B
Cone: 640:T1500F15U500



Max Depth: 5.050 m / 16.57 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP03B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766321m E: 294097m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

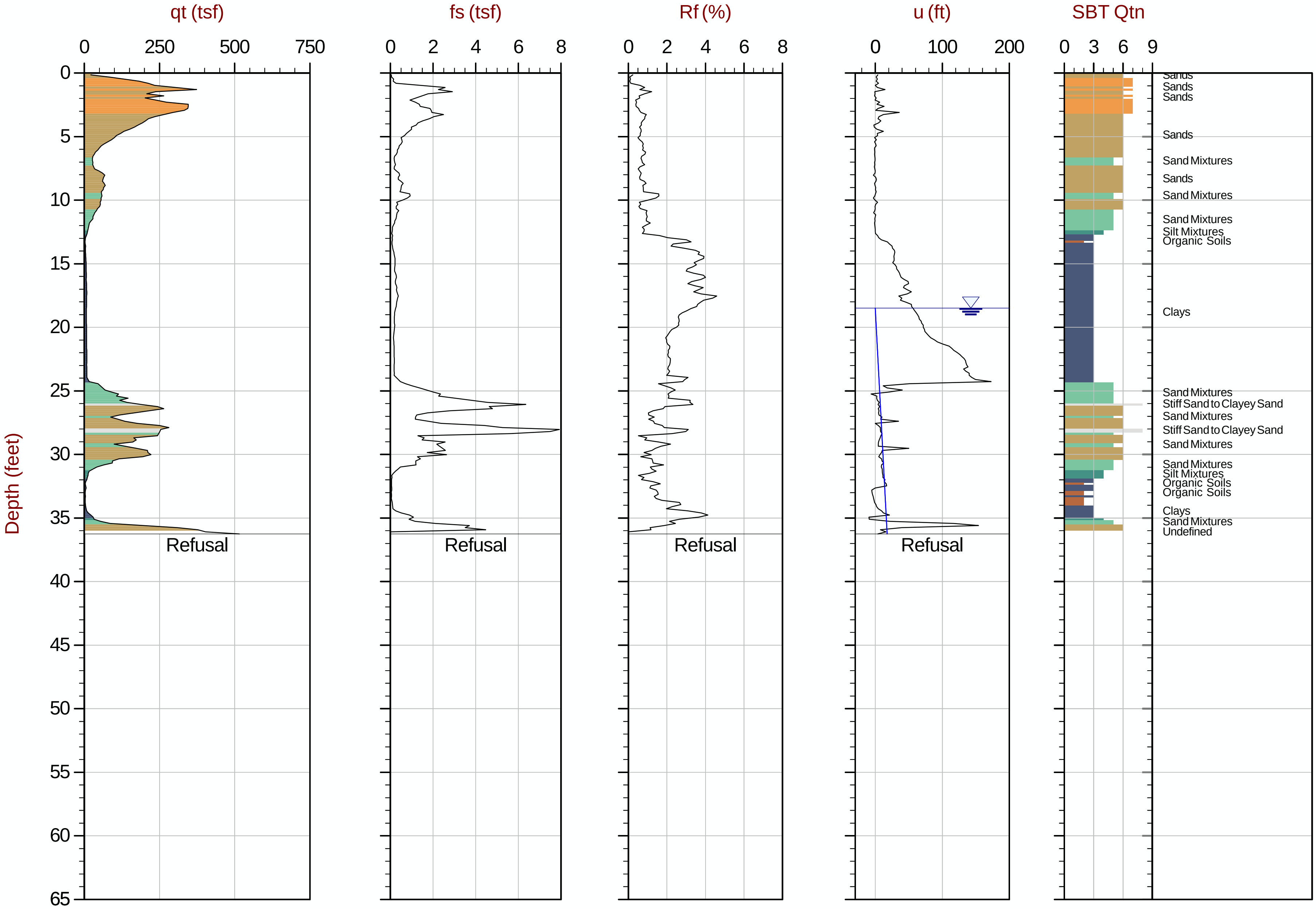
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 12:57
Site: Raymond Road, Verona, WI

Sounding: SCPT20-04
Cone: 640:T1500F15U500



Max Depth: 11.050 m / 36.25 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP04.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766343m E: 294114m

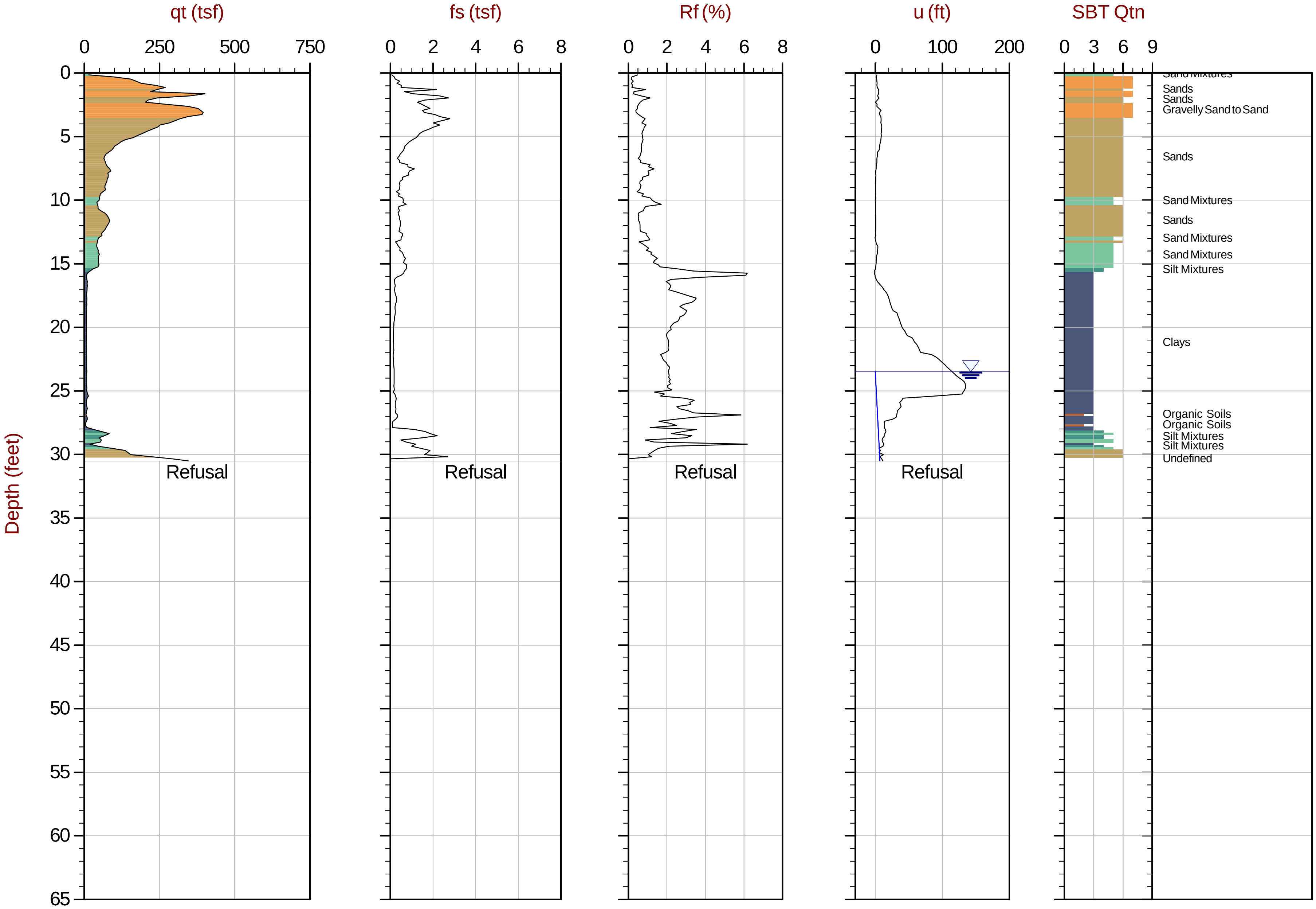
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 13:56
Site: Raymond Road, Verona, WI

Sounding: SCPT20-05
Cone: 640:T1500F15U500



Max Depth: 9.300 m / 30.51 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP05.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766351m E: 294124m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

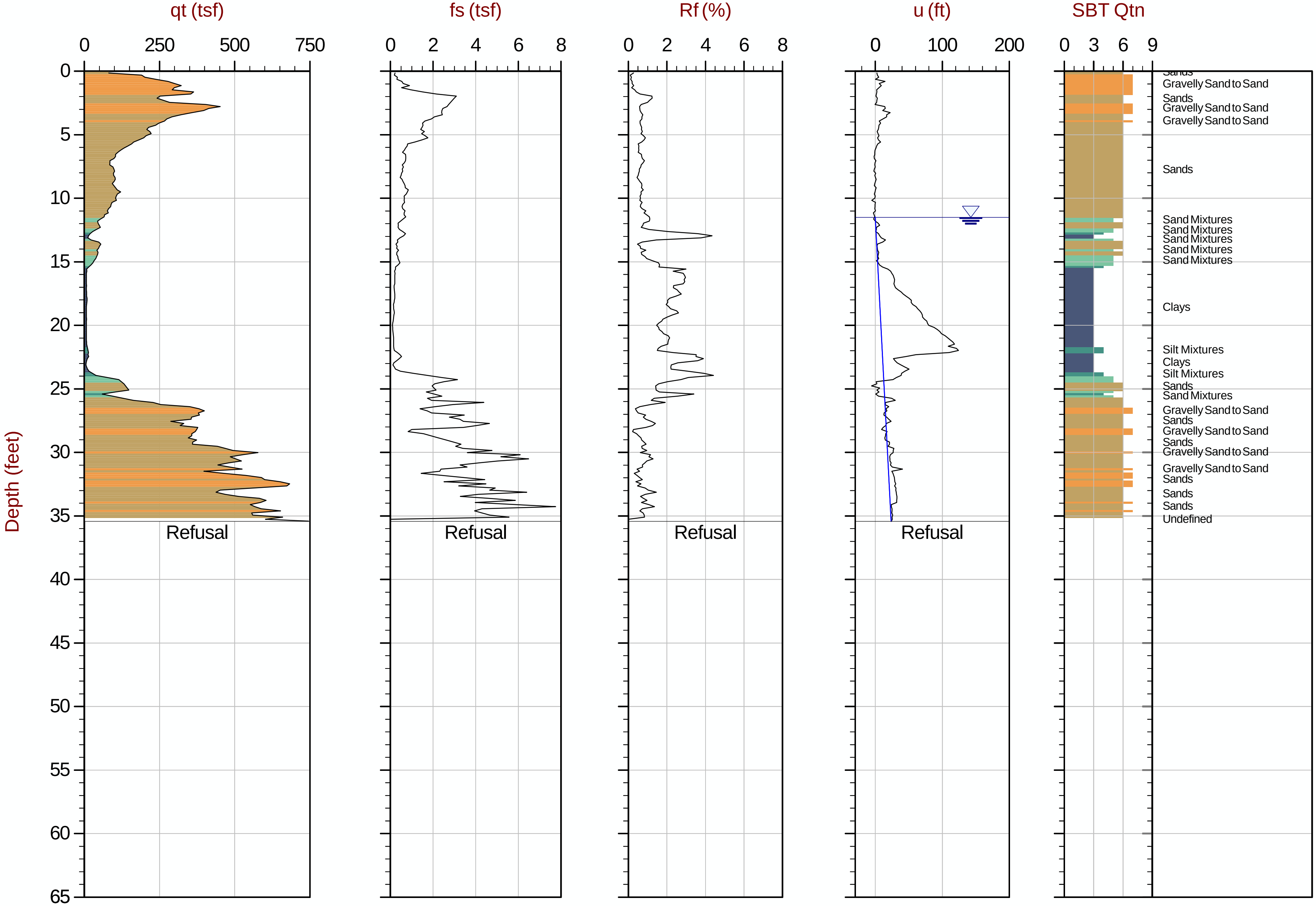
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 14:46
Site: Raymond Road, Verona, WI

Sounding: CPT20-06
Cone: 640:T1500F15U500



Max Depth: 10.800 m / 35.43 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP06.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766359m E: 294132m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

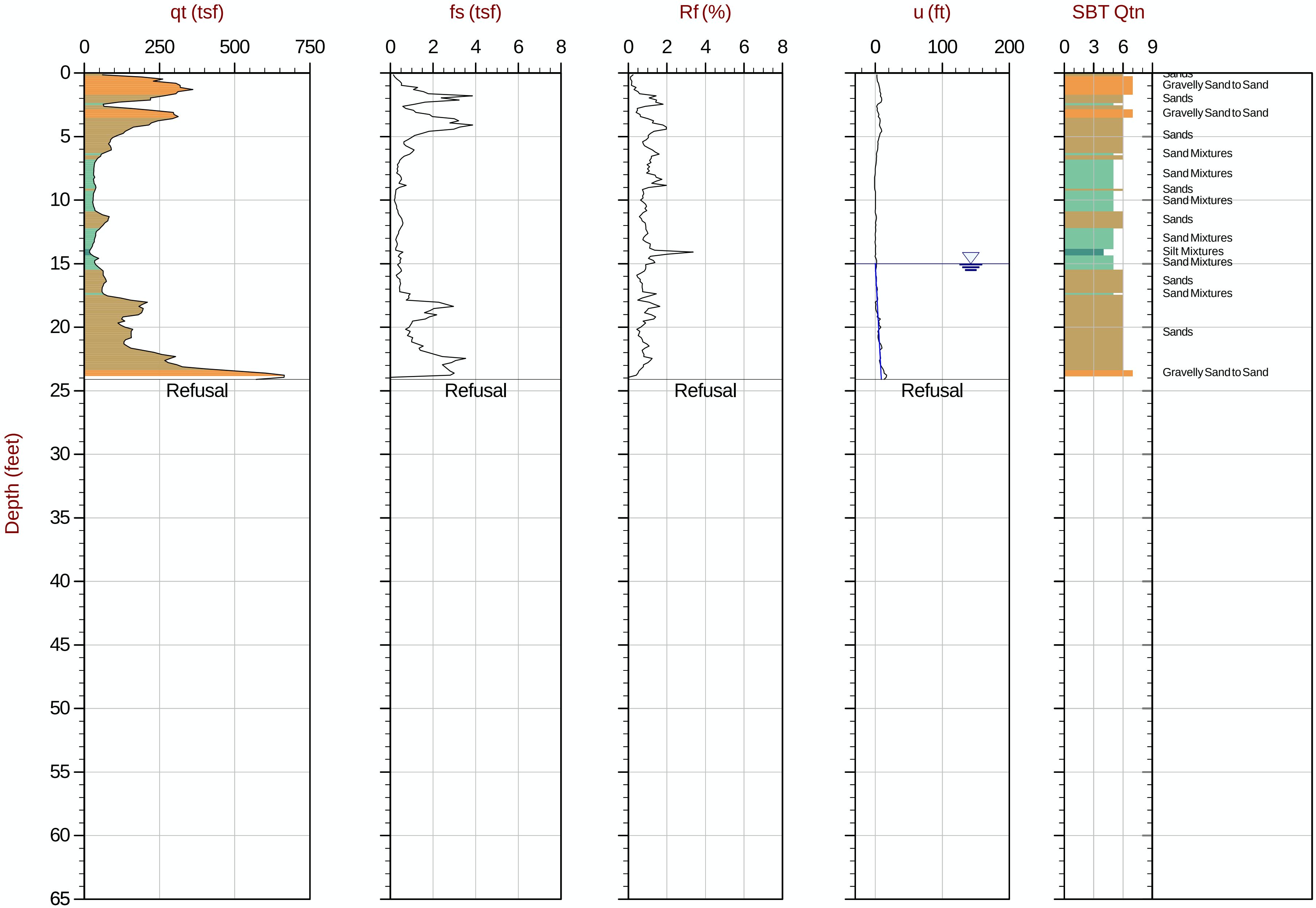
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 15:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-07
Cone: 640:T1500F15U500



Max Depth: 7.350 m / 24.11 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP07.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766363m E: 294144m

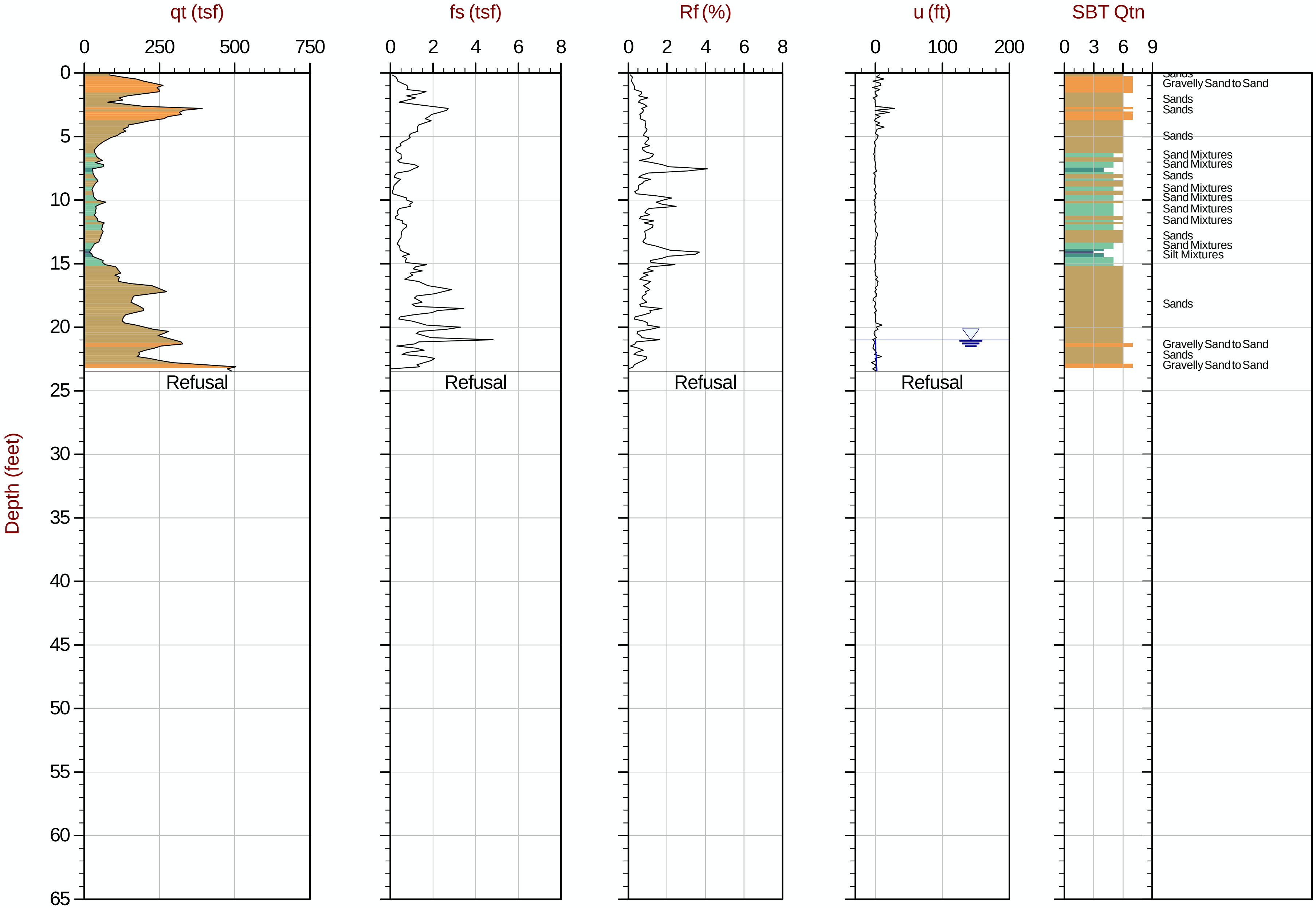
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 15:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-08
Cone: 640:T1500F15U500



Max Depth: 7.150 m / 23.46 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP08.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766377m E: 294169m

Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

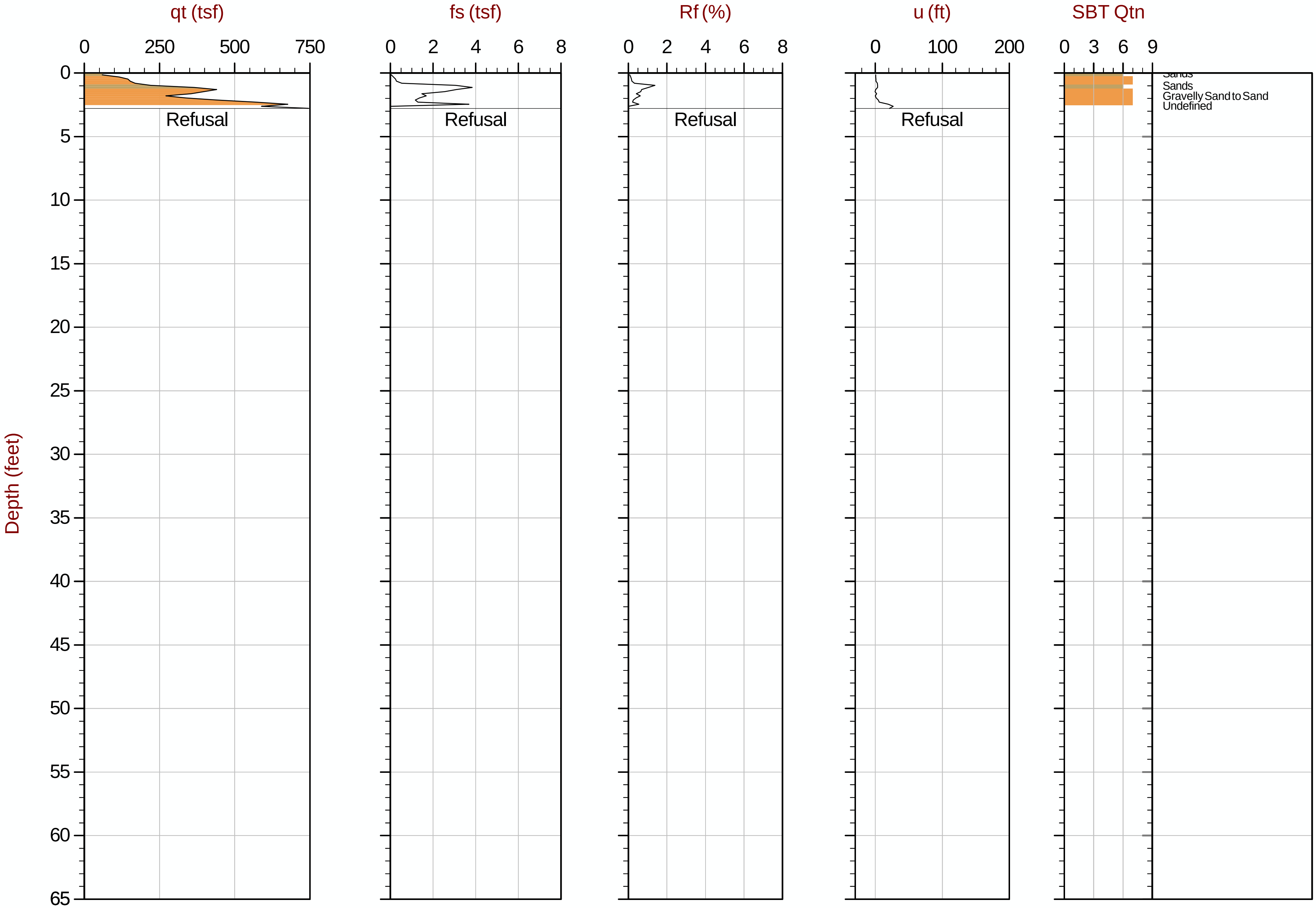
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-09
Cone: 640:T1500F15U500



Max Depth: 0.850 m / 2.79 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP09.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766392m E: 294199m

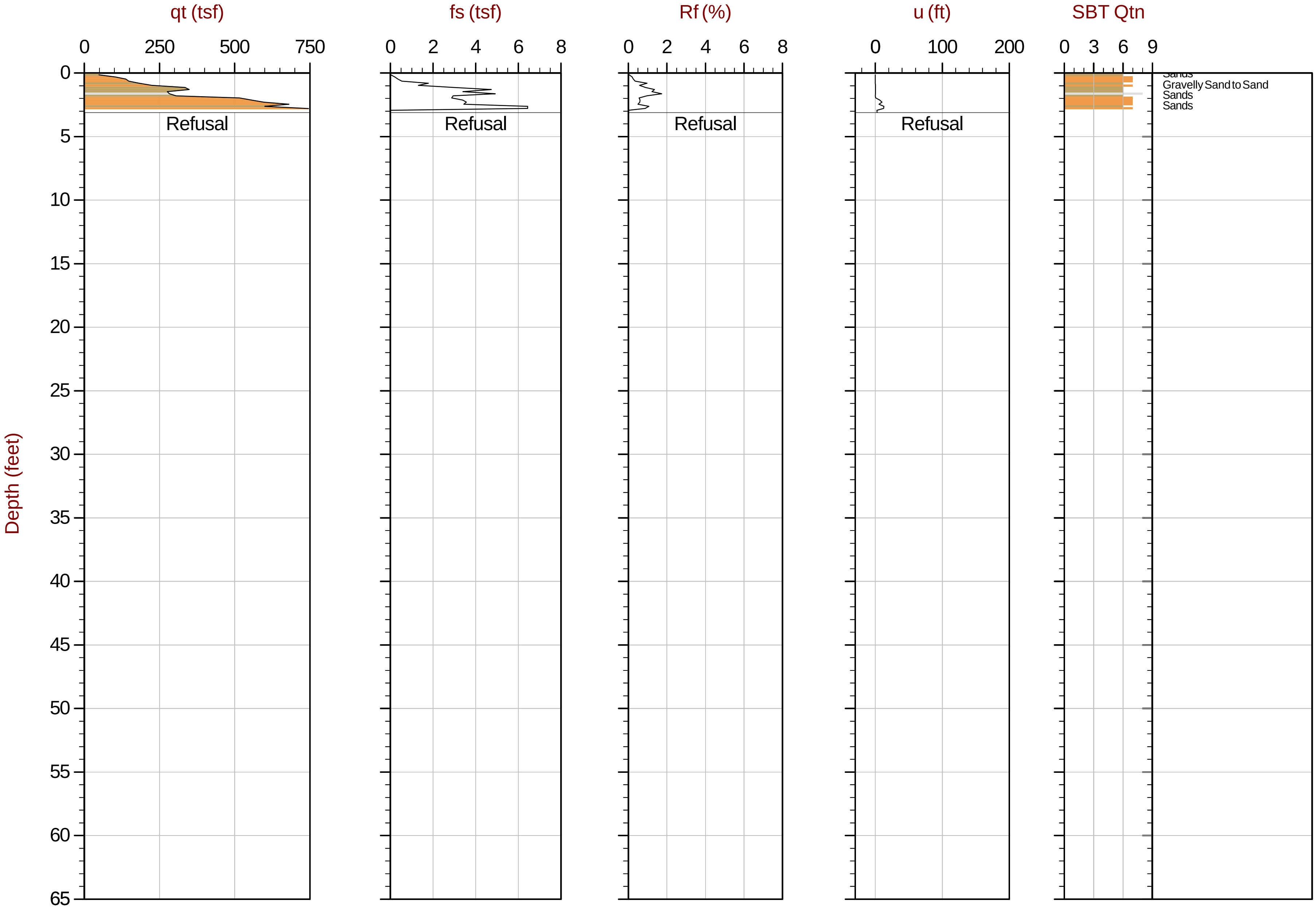
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:38
Site: Raymond Road, Verona, WI

Sounding: CPT20-09B
Cone: 640:T1500F15U500



Max Depth: 0.950 m / 3.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP09B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766393m E: 294200m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

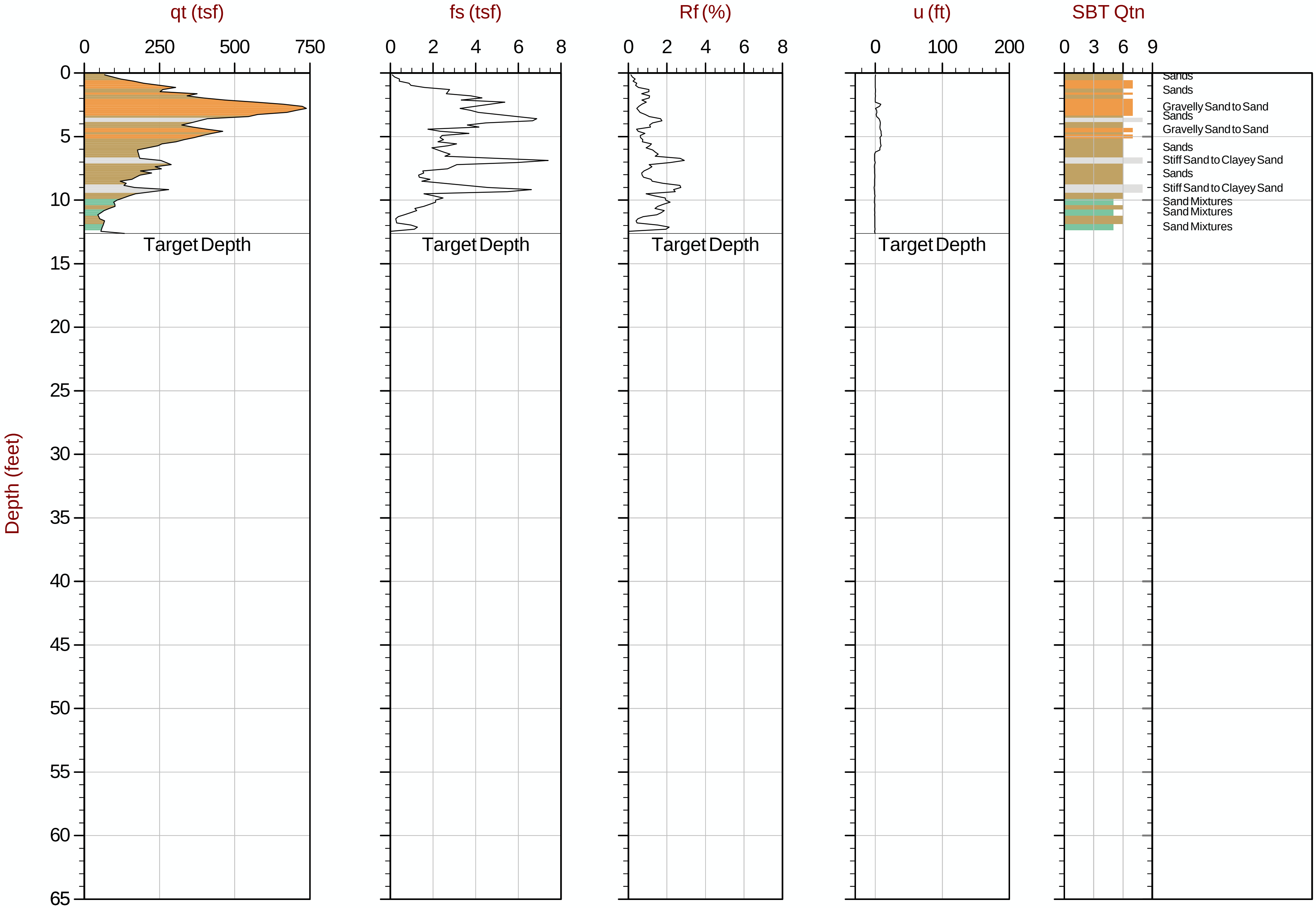
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-09C
Cone: 640:T1500F15U500



Max Depth: 3.850 m / 12.63 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP09C.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766389m E: 294295m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

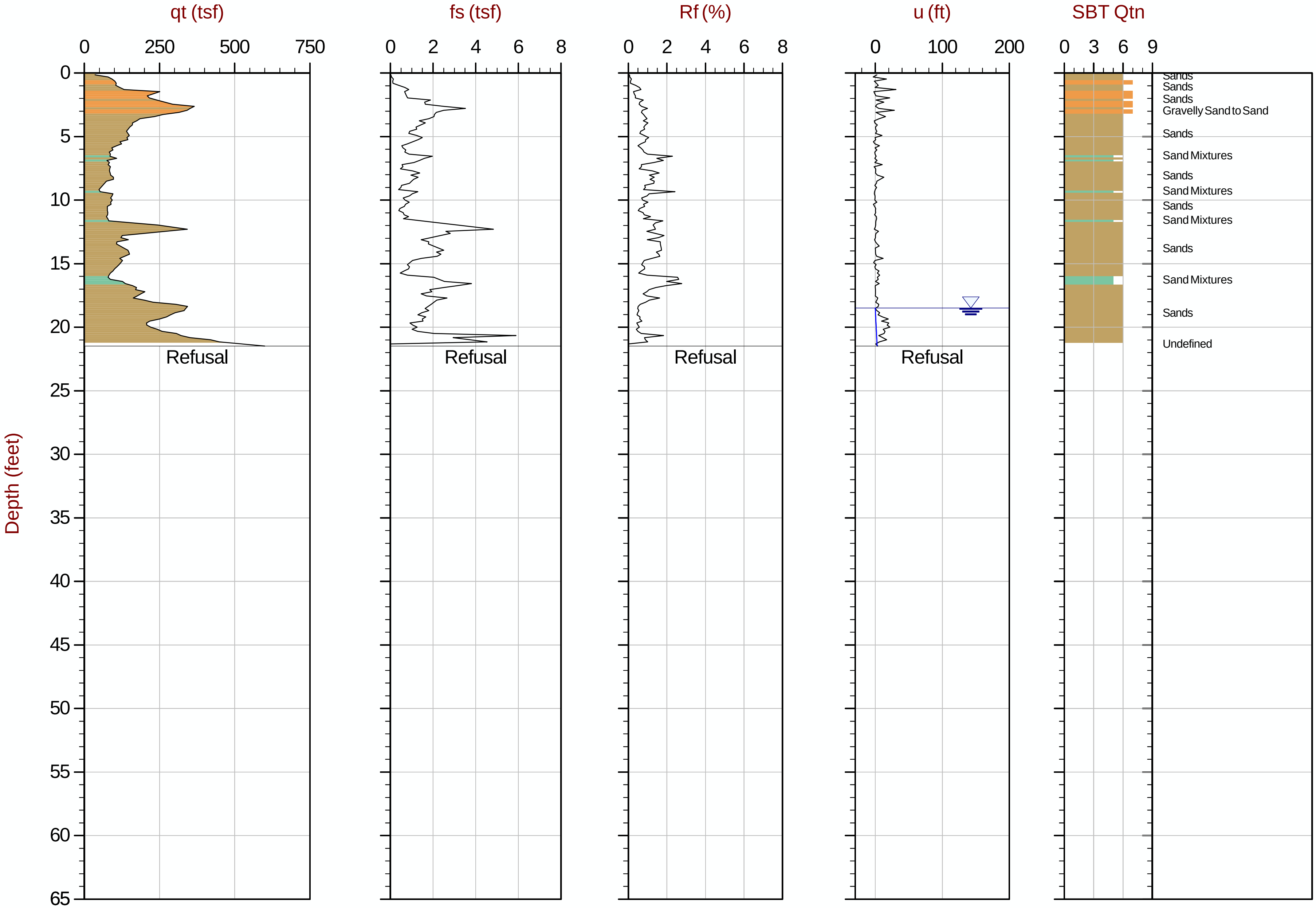
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 17:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-10
Cone: 640:T1500F15U500



Max Depth: 6.550 m / 21.49 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP10.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766402m E: 294236m

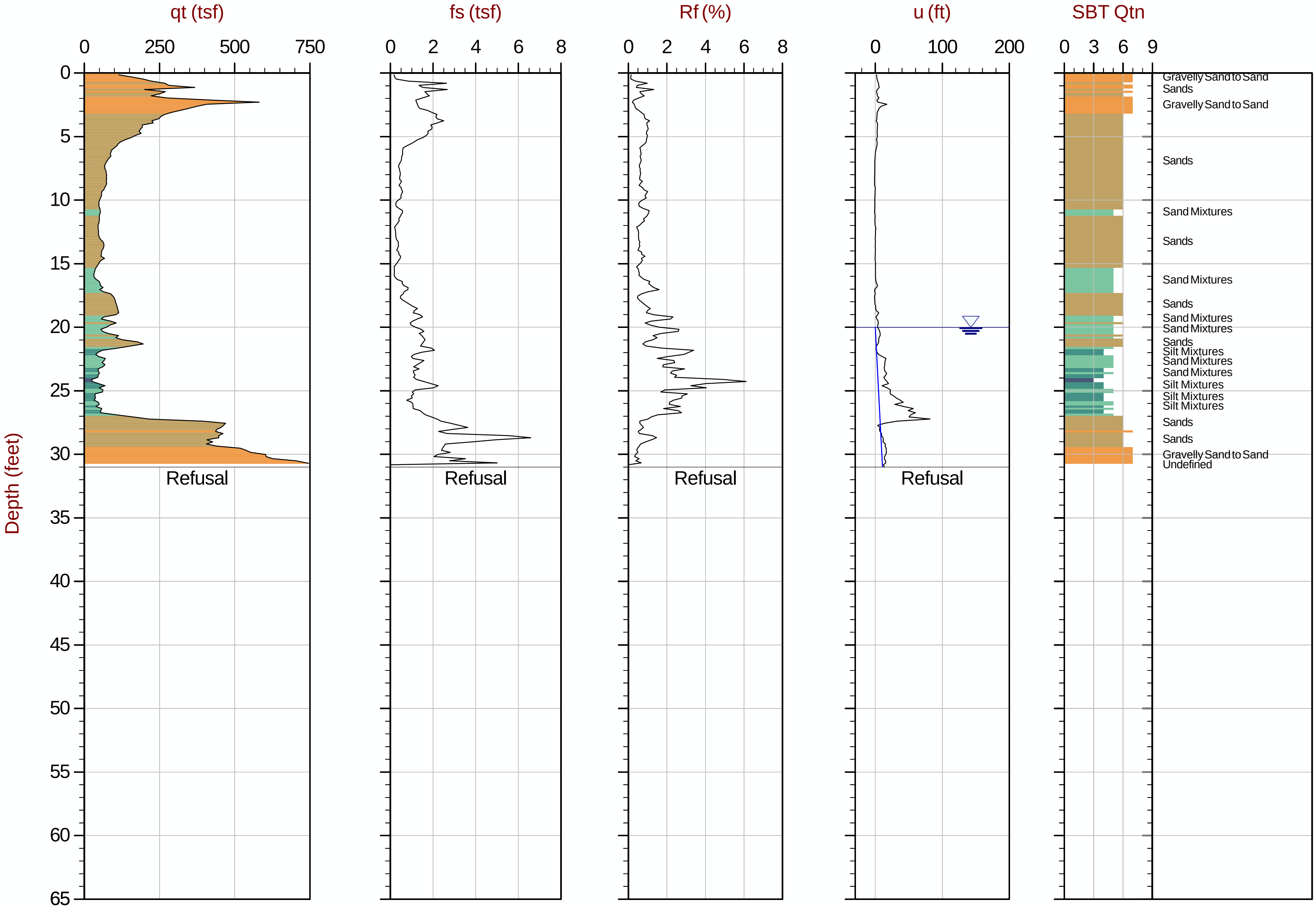
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 18:02
Site: Raymond Road, Verona, WI

Sounding: SCPT20-11
Cone: 640:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP11.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766417m E: 294248m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

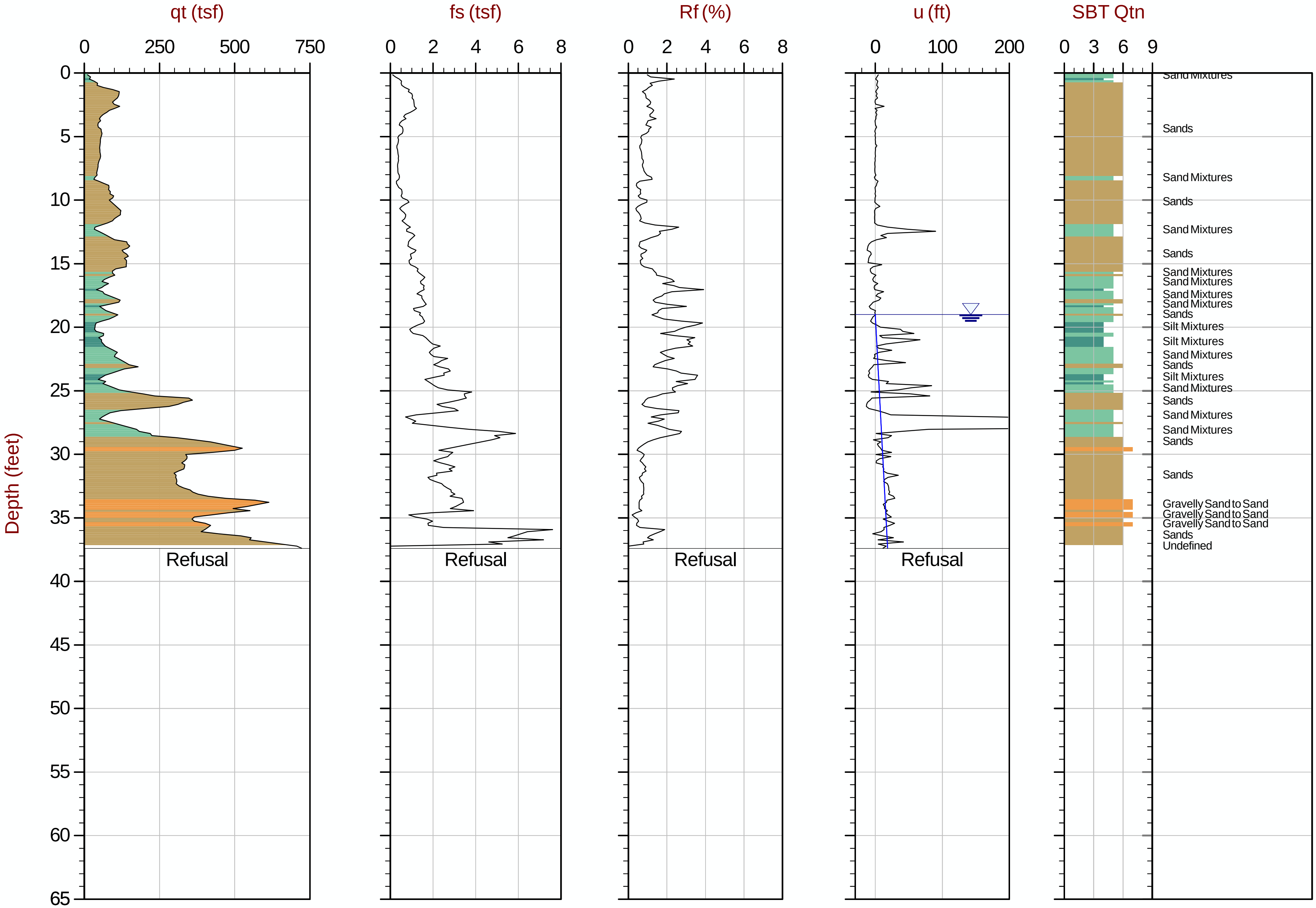
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 08:33
Site: Raymond Road, Verona, WI

Sounding: CPT20-12
Cone: 640:T1500F15U500



Max Depth: 11.400 m / 37.40 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP12.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766408m E: 294327m

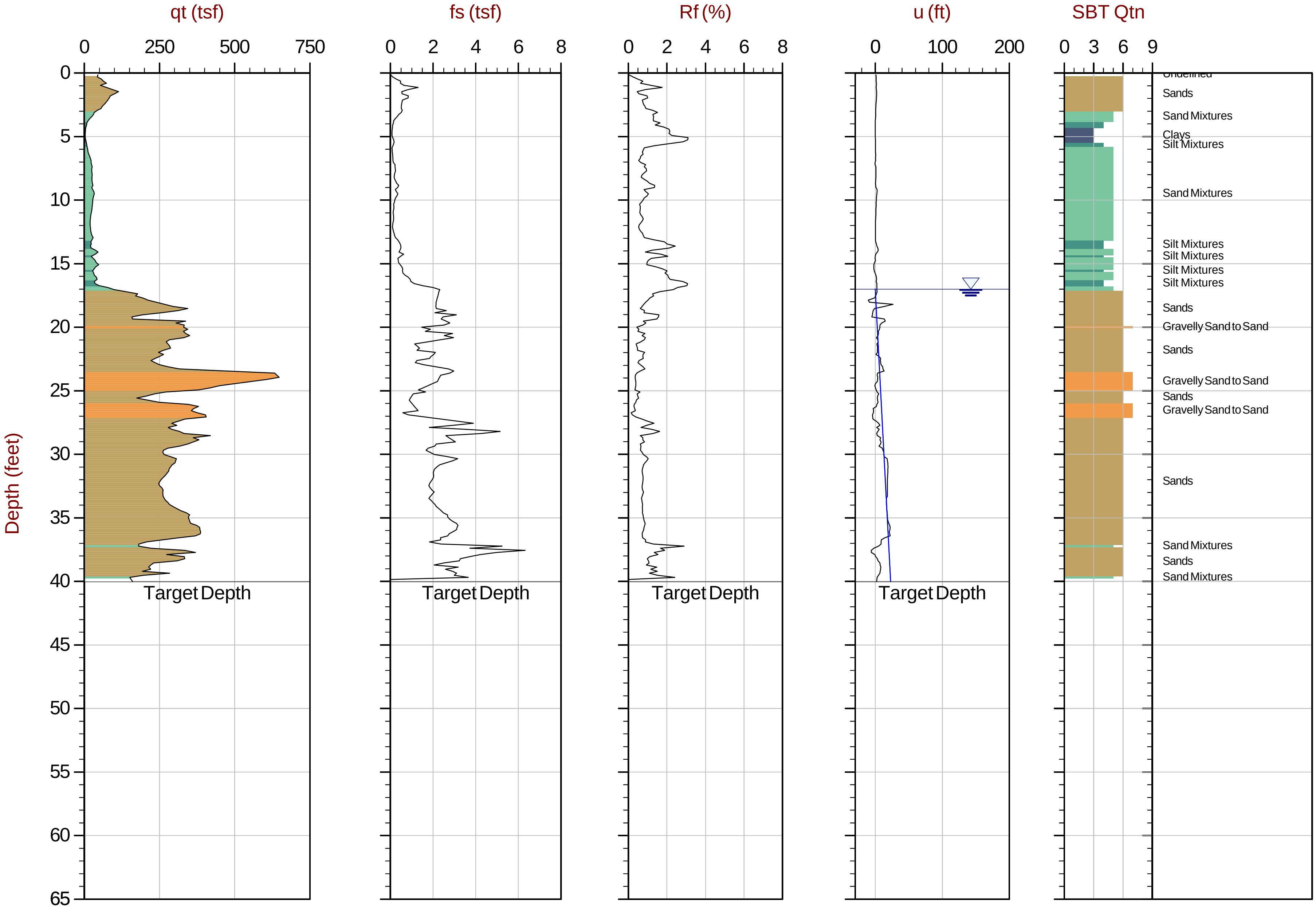
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 09:10
Site: Raymond Road, Verona, WI

Sounding: CPT20-13
Cone: 640:T1500F15U500



Max Depth: 12.200 m / 40.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP13.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766408m E: 294311m

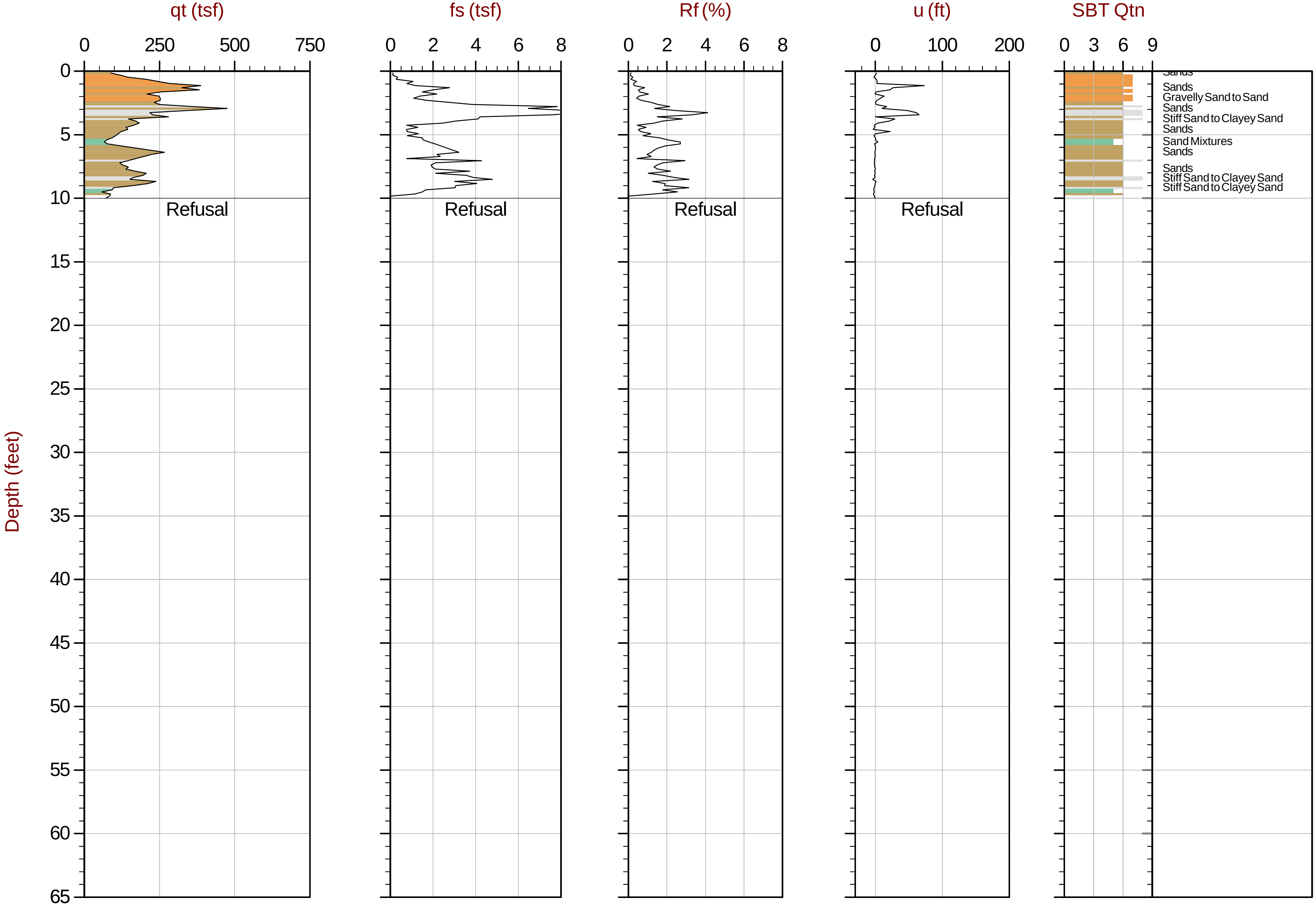
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 09:52
Site: Raymond Road, Verona, WI

Sounding: CPT20-14
Cone: 640:T1500F15U500



Max Depth: 3.050 m / 10.01 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP14.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766378m E: 294187m

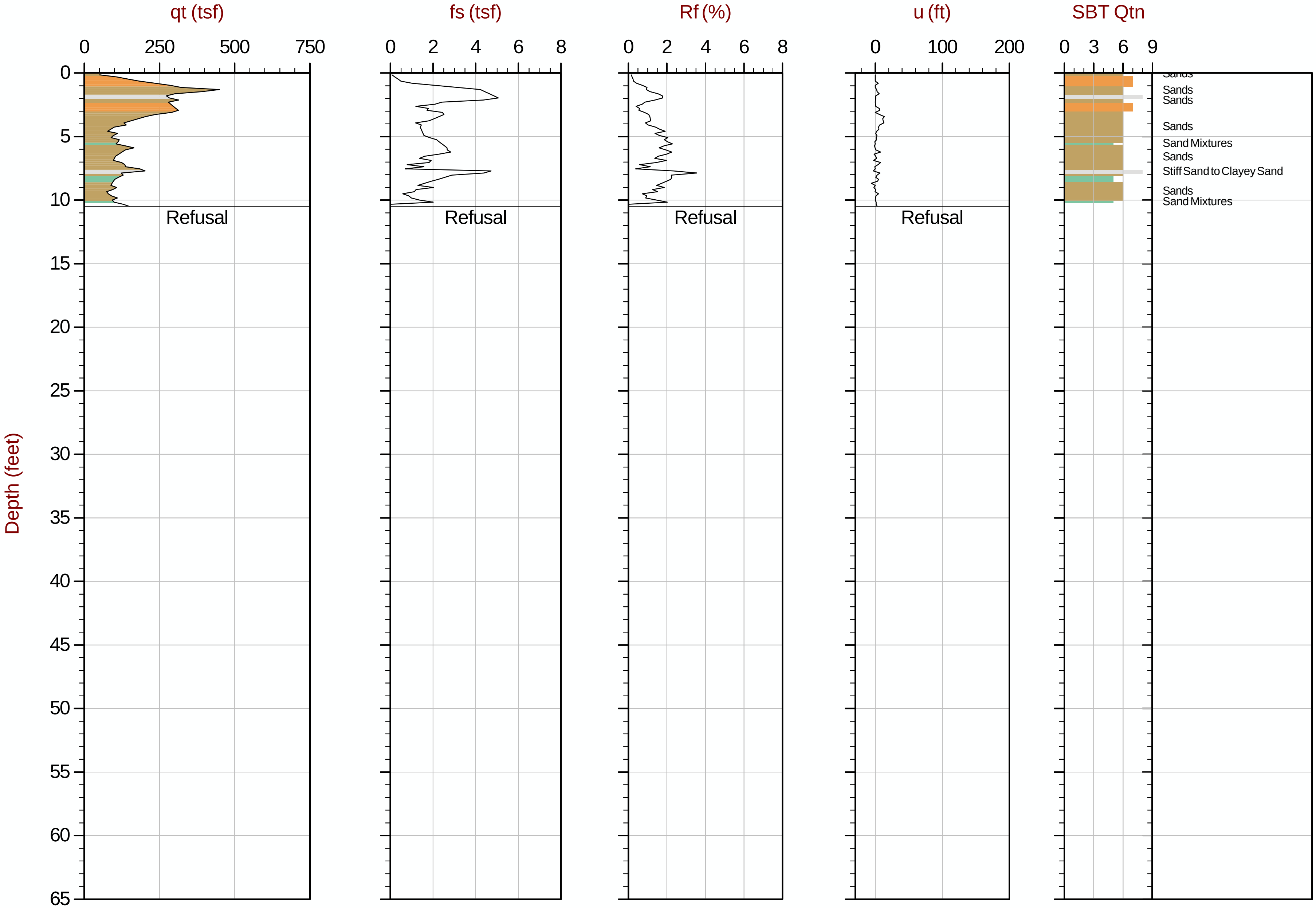
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:02
Site: Raymond Road, Verona, WI

Sounding: CPT20-14B
Cone: 640:T1500F15U500



Max Depth: 3.200 m / 10.50 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP14B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766379m E: 294189m

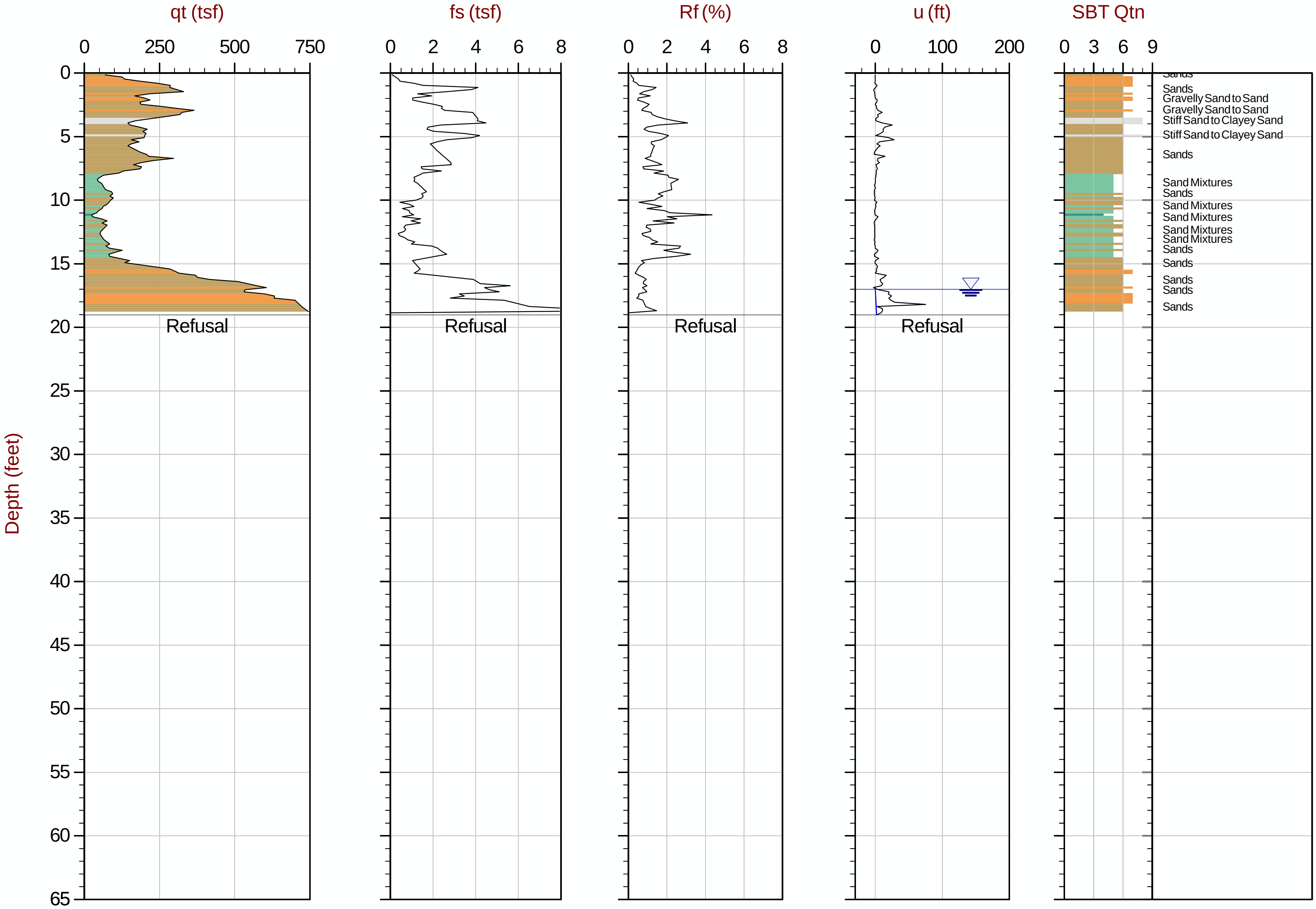
Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:20
Site: Raymond Road, Verona, WI

Sounding: CPT20-14C
Cone: 640:T1500F15U500



Max Depth: 5.800 m / 19.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP14C.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766381m E: 294186m

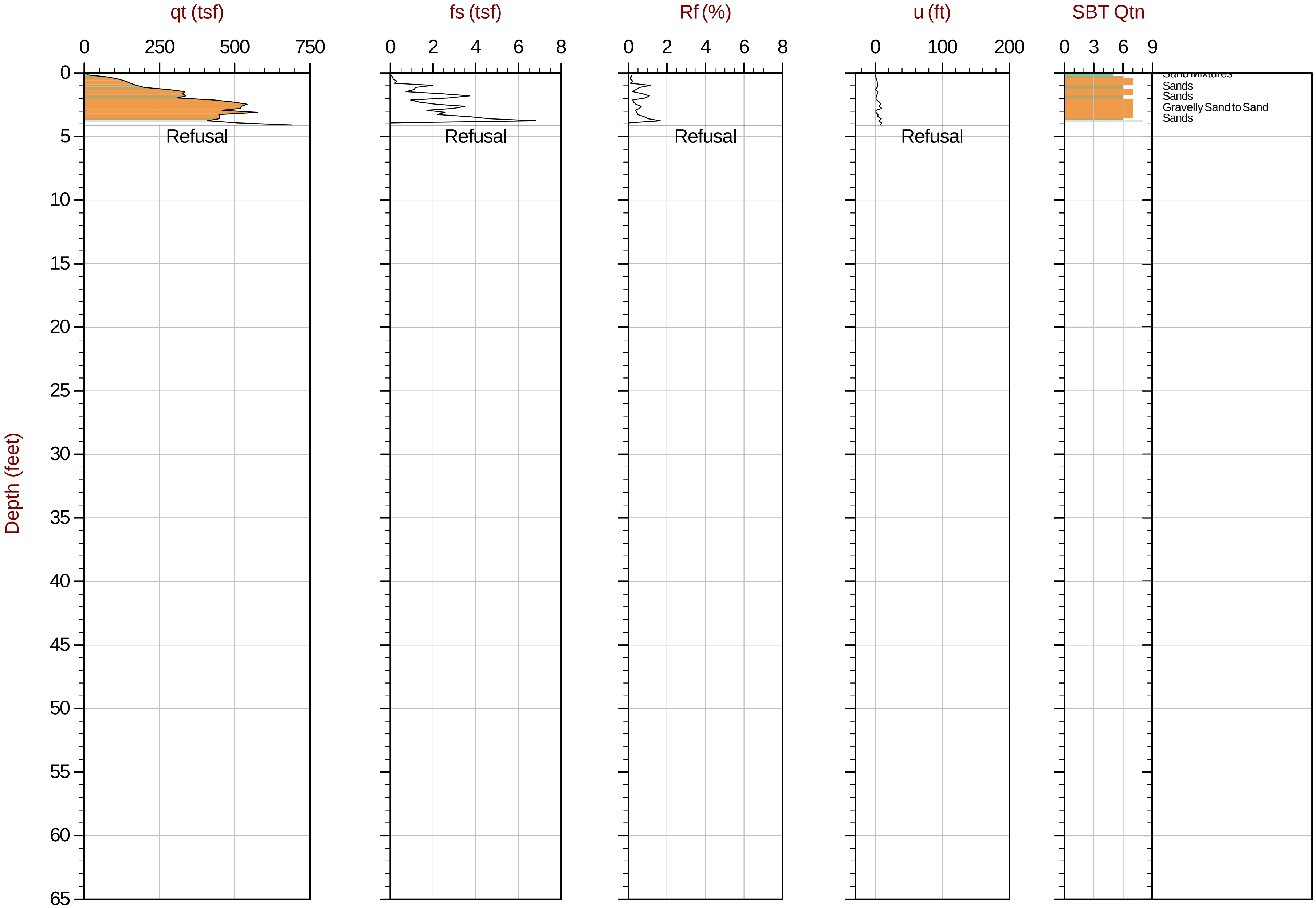
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-15
Cone: 640:T1500F15U500



Max Depth: 1.250 m / 4.10 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP15.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766378m E: 294189m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

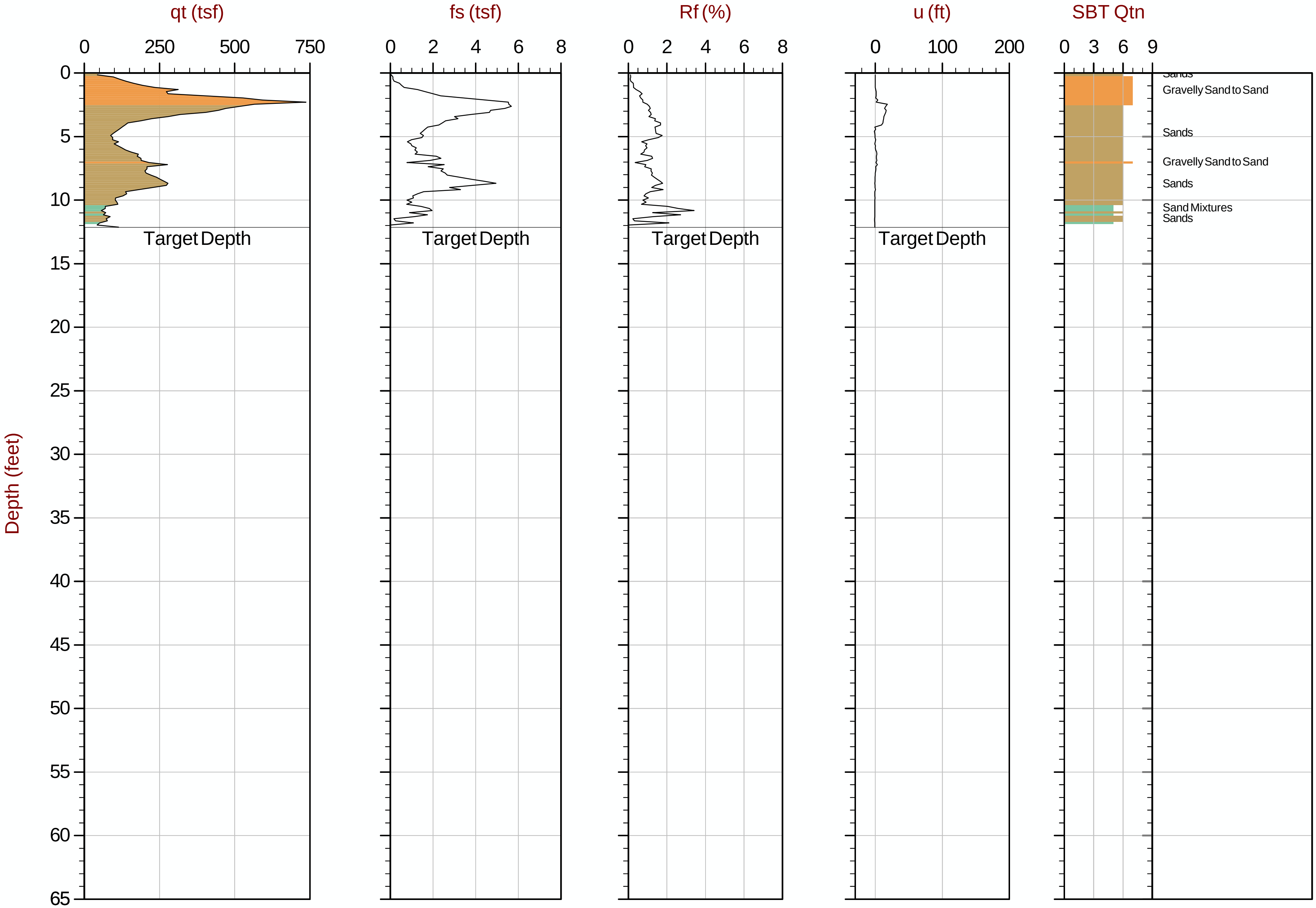
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 11:00
Site: Raymond Road, Verona, WI

Sounding: CPT20-15B
Cone: 640:T1500F15U500



Max Depth: 3.700 m / 12.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP15B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766378m E: 294185m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

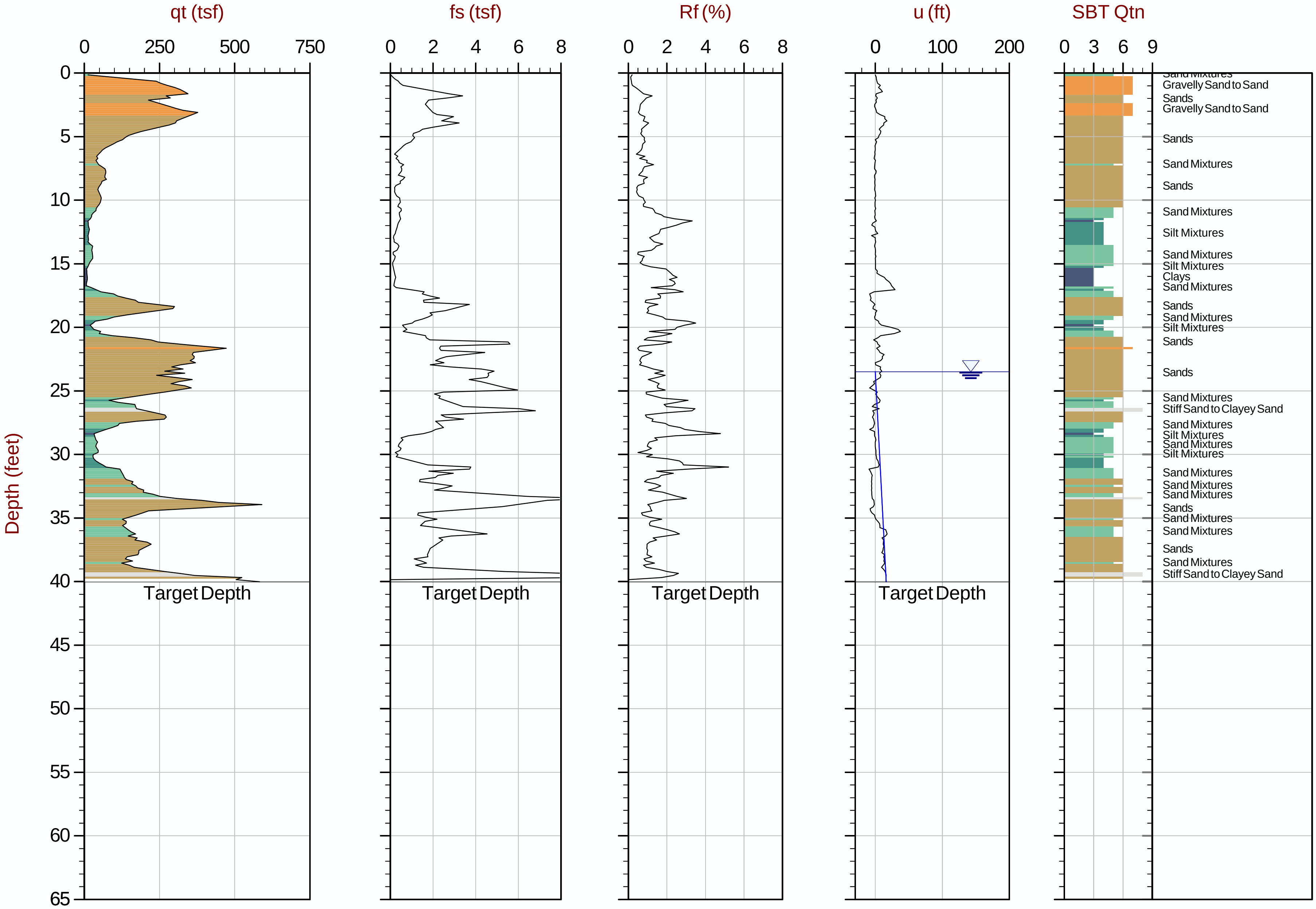
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 11:24
Site: Raymond Road, Verona, WI

Sounding: CPT20-16
Cone: 640:T1500F15U500



Max Depth: 12.200 m / 40.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP16.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766358m E: 294136m

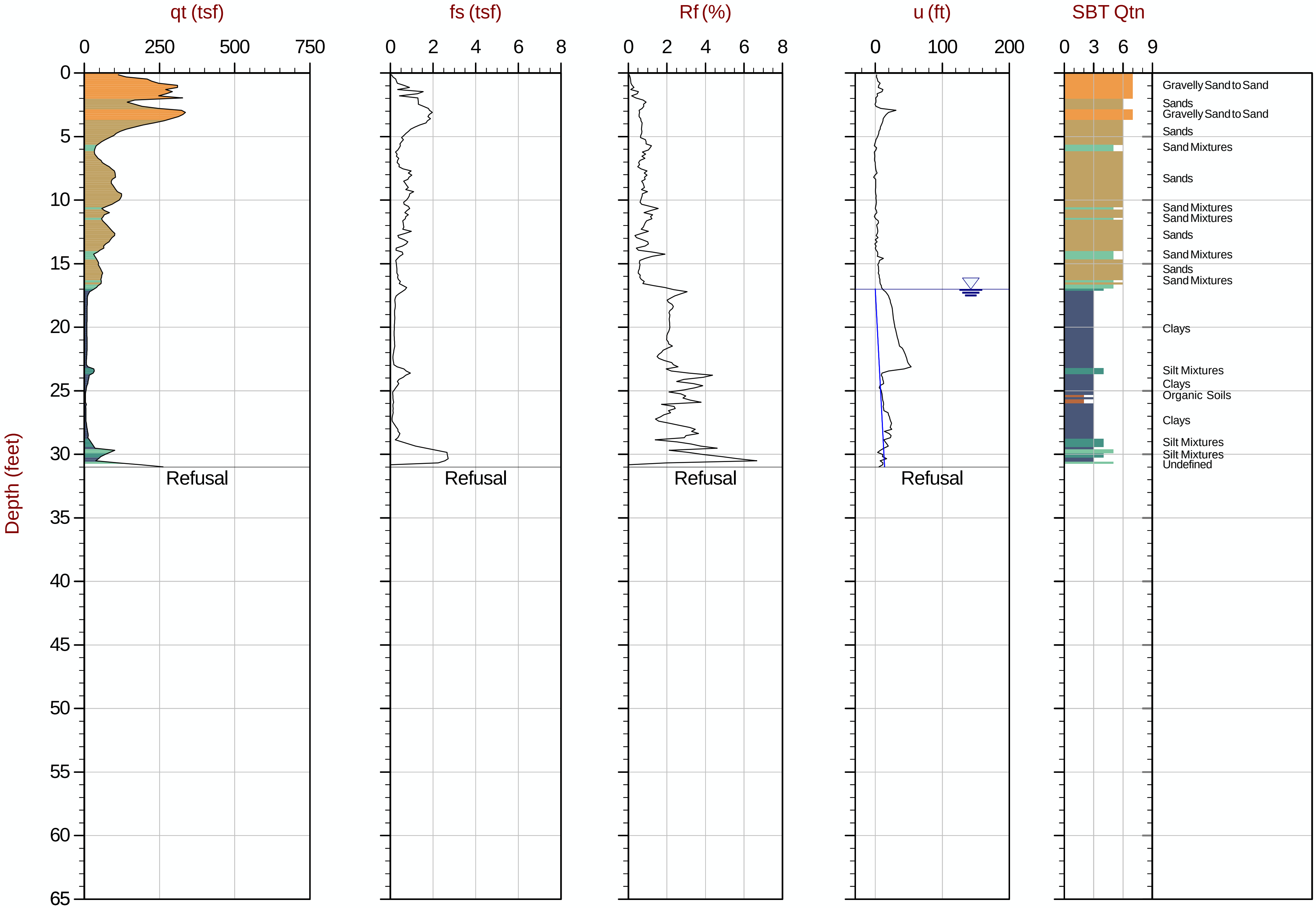
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:03
Site: Raymond Road, Verona, WI

Sounding: CPT20-17
Cone: 640:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP17.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766356m E: 294126m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

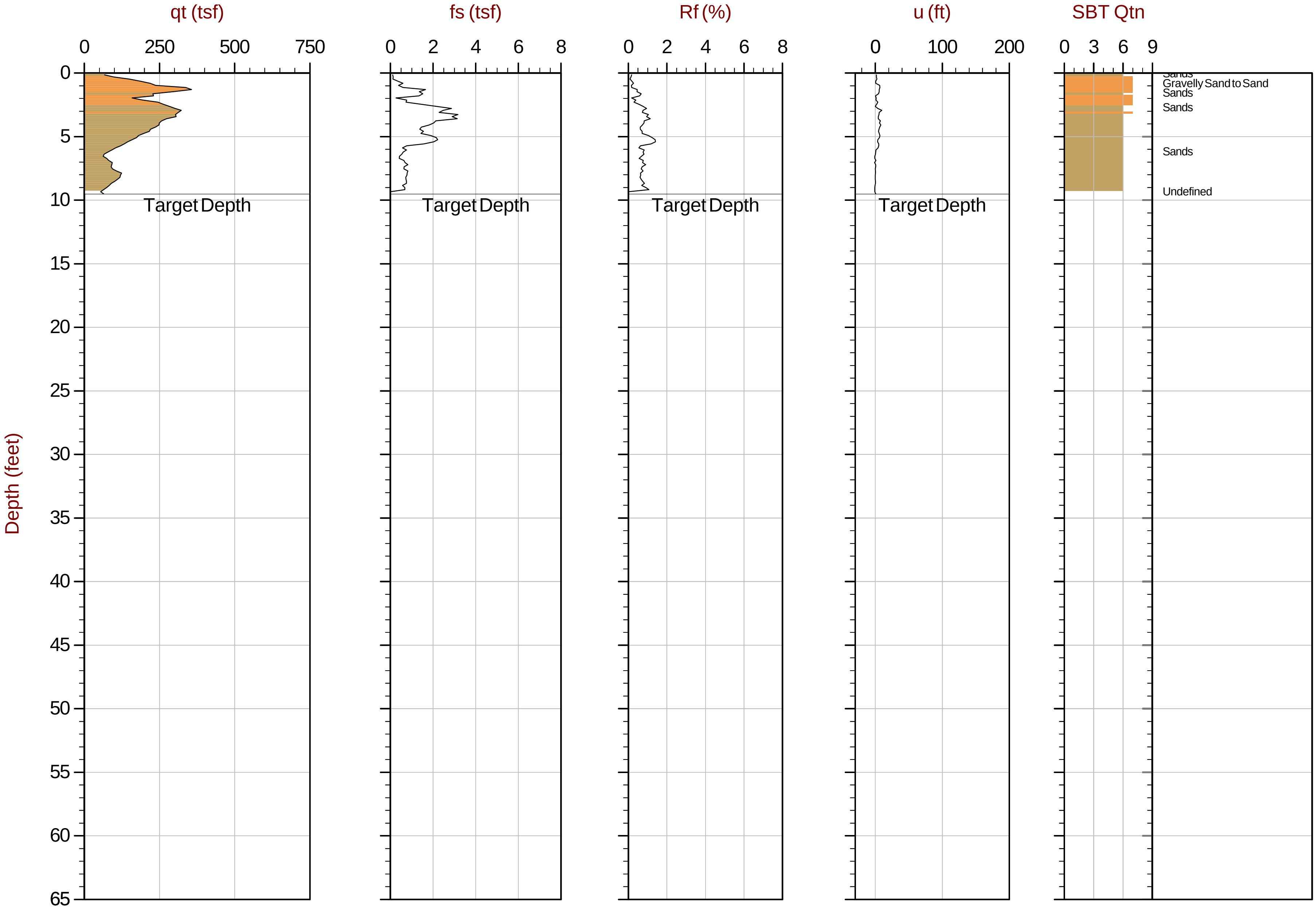
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:35
Site: Raymond Road, Verona, WI

Sounding: CPT20-18
Cone: 640:T1500F15U500



Max Depth: 2.900 m / 9.51 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP18.COR
Unit Wt: SBTQtn (PKR2009)

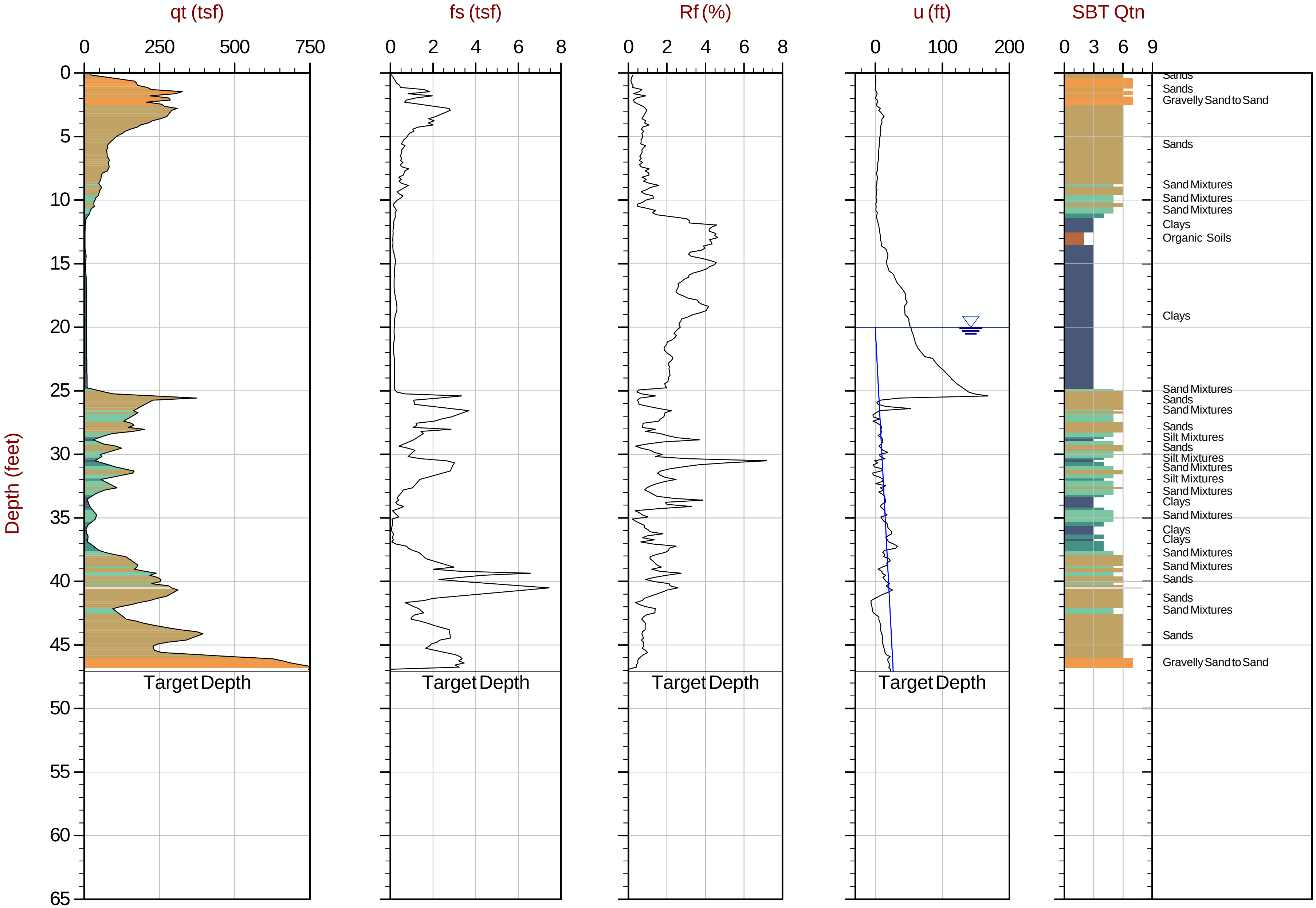
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766348m E: 294126m

Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:47
Site: Raymond Road, Verona, WI
Sounding: CPT20-19
Cone: 640:T1500F15U500



Max Depth: 14.350 m / 47.08 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP19.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766336m E: 294115m

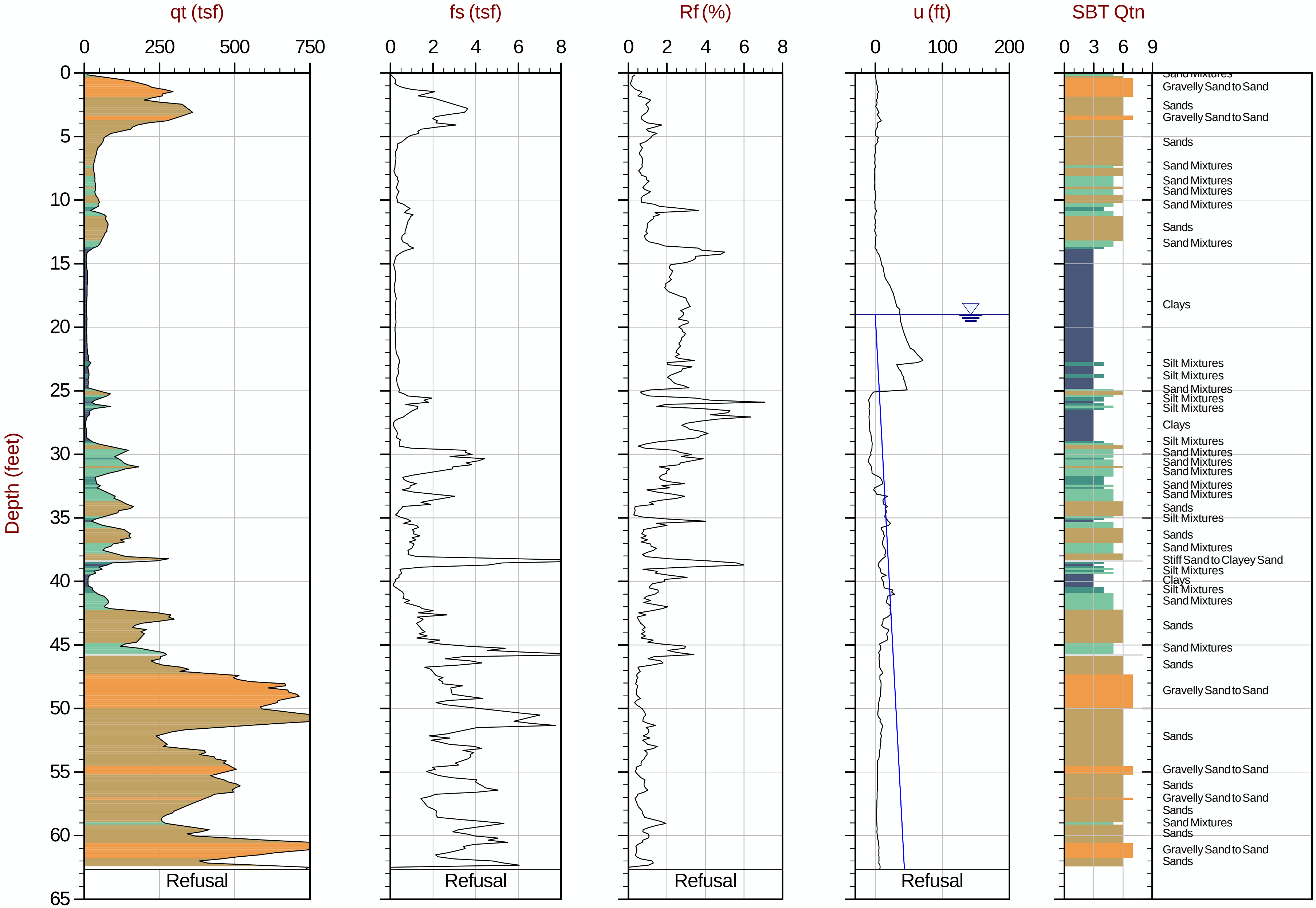
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 13:27
Site: Raymond Road, Verona, WI

Sounding: CPT20-20
Cone: 640:T1500F15U500



Max Depth: 19.100 m / 62.66 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP20.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766334m E: 294103m

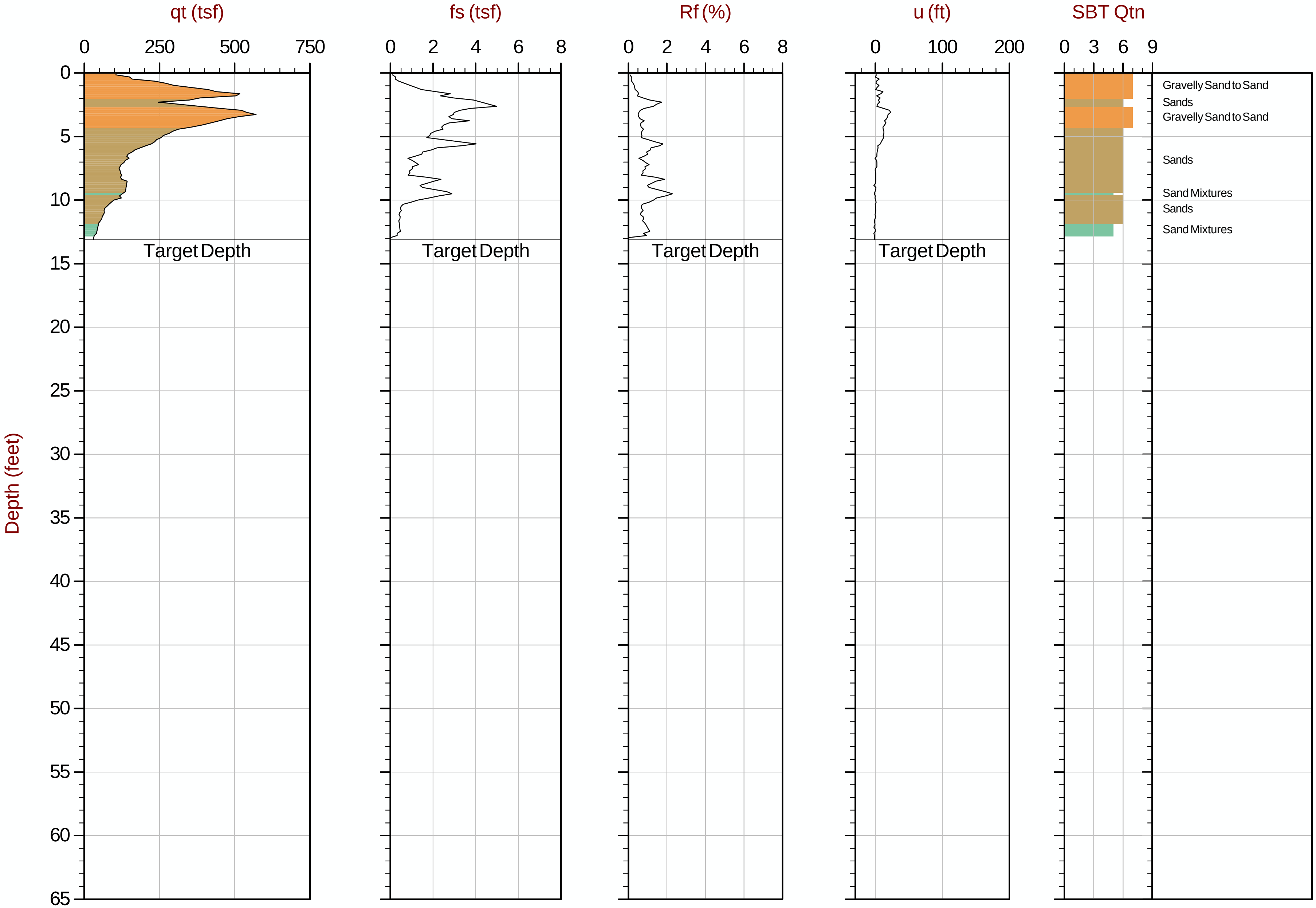
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 14:19
Site: Raymond Road, Verona, WI

Sounding: CPT20-21
Cone: 640:T1500F15U500



Max Depth: 4.000 m / 13.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP21.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766261m E: 294029m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

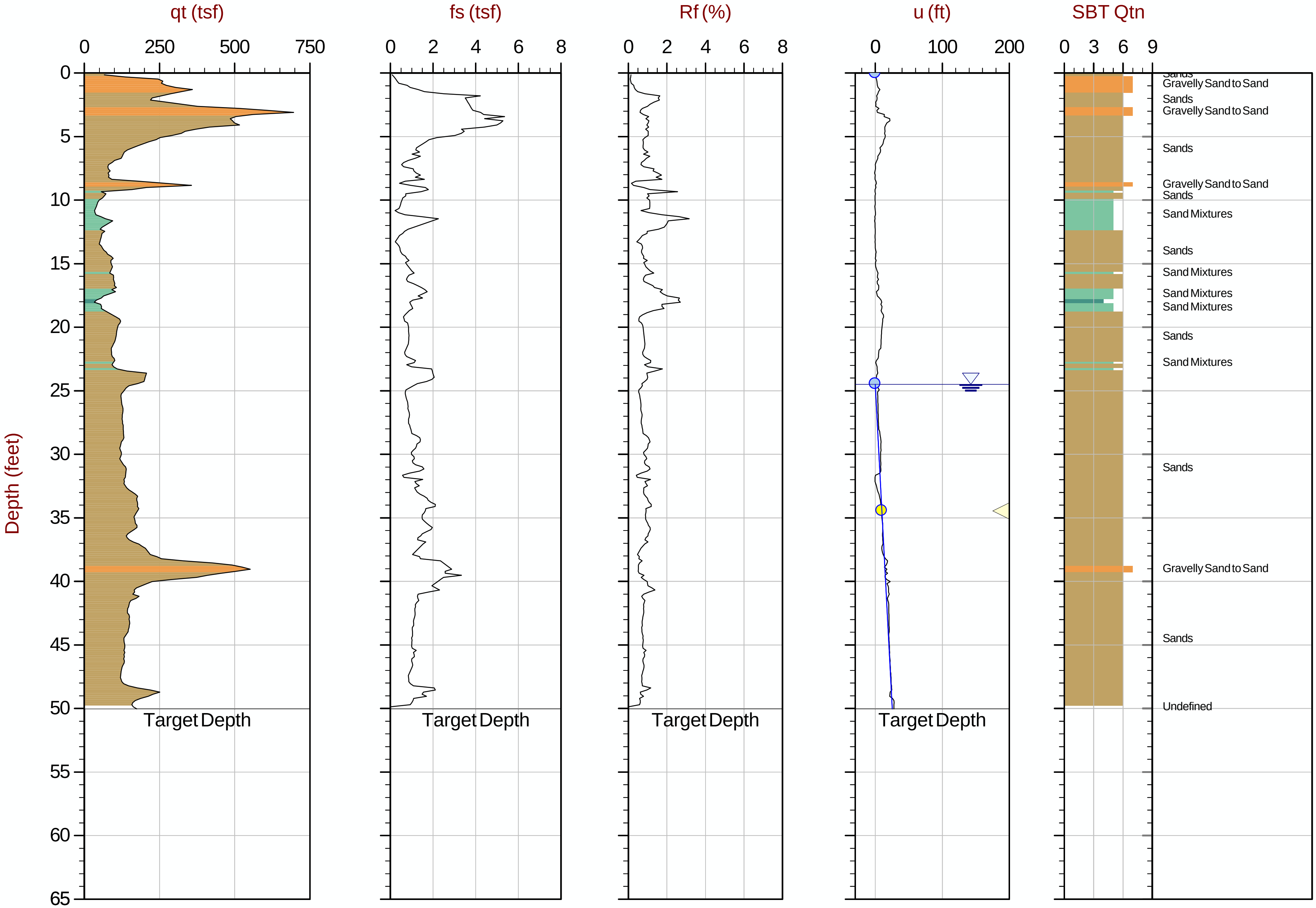
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 14:42
Site: Raymond Road, Verona, WI

Sounding: CPT20-22
Cone: 640:T1500F15U500



Max Depth: 15.250 m / 50.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP22.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766267m E: 294031m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

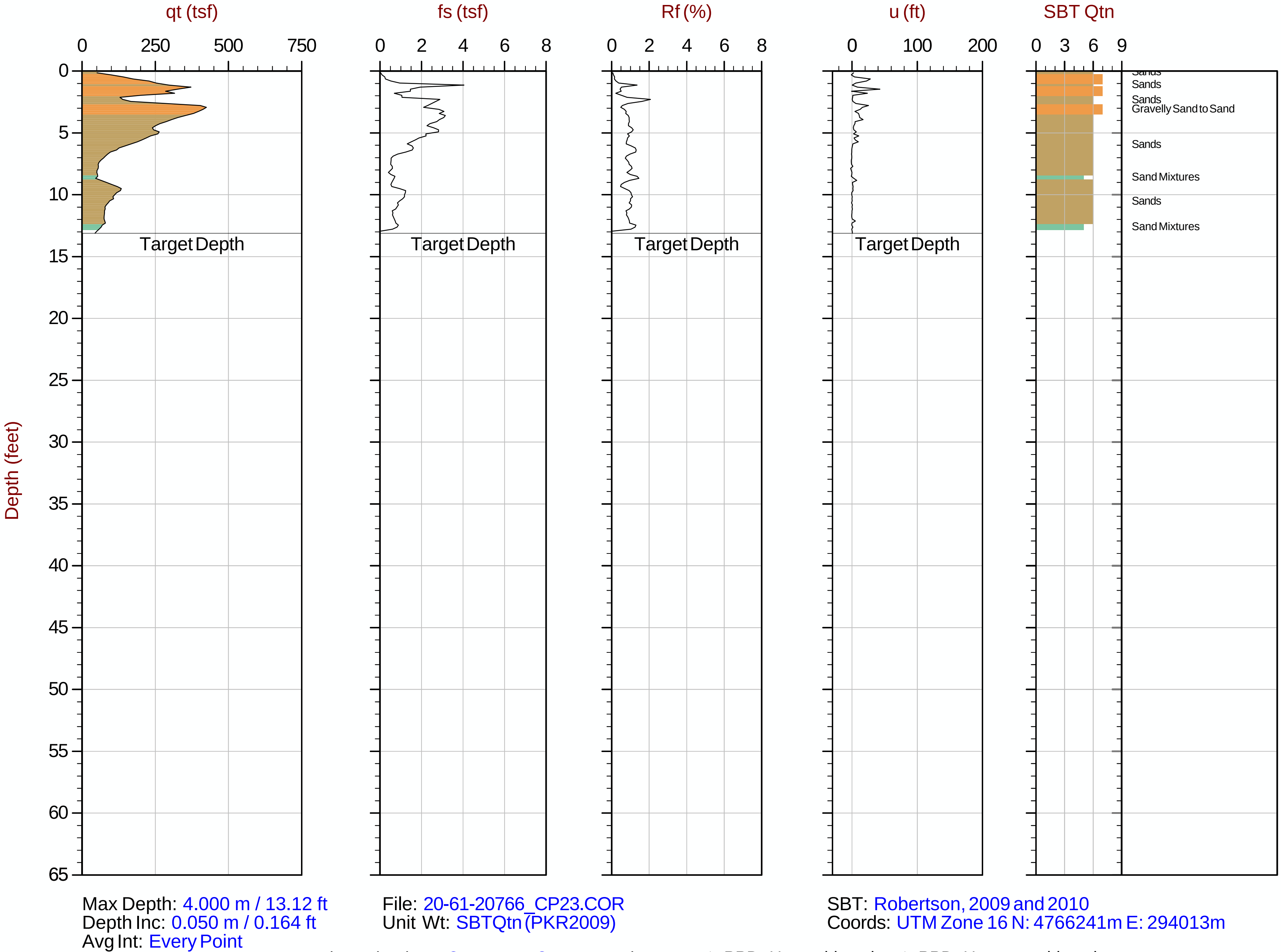
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 17:03
Site: Raymond Road, Verona, WI

Sounding: CPT20-23
Cone: 640:T1500F15U500



Max Depth: 4.000 m / 13.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP23.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766241m E: 294013m

Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

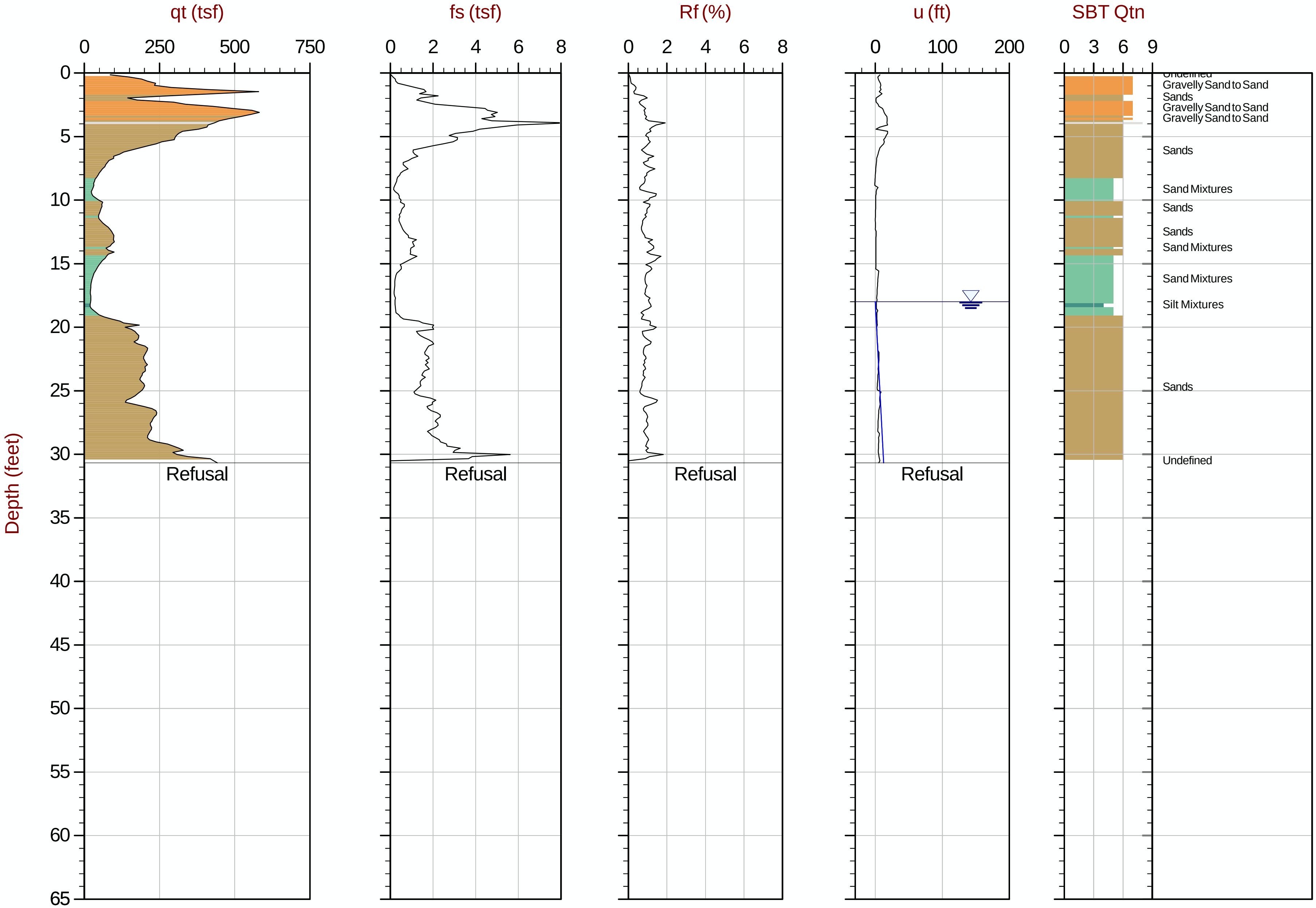
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 17:26
Site: Raymond Road, Verona, WI

Sounding: CPT20-24
Cone: 640:T1500F15U500



Max Depth: 9.350 m / 30.68 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP24.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766242m E: 294010m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

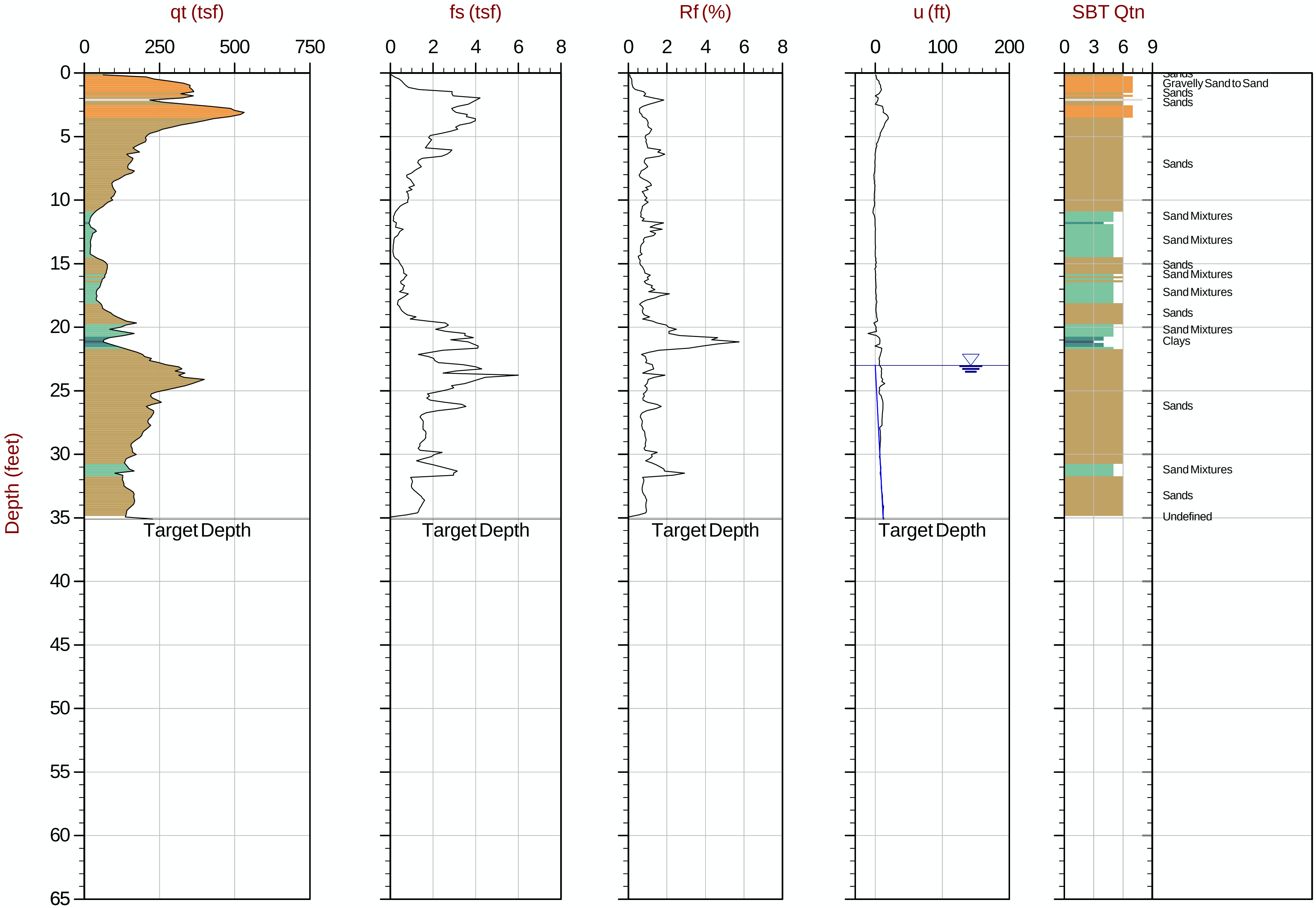
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 17:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-25
Cone: 640:T1500F15U500



Max Depth: 10.700 m / 35.10 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP25.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766226m E: 293984m

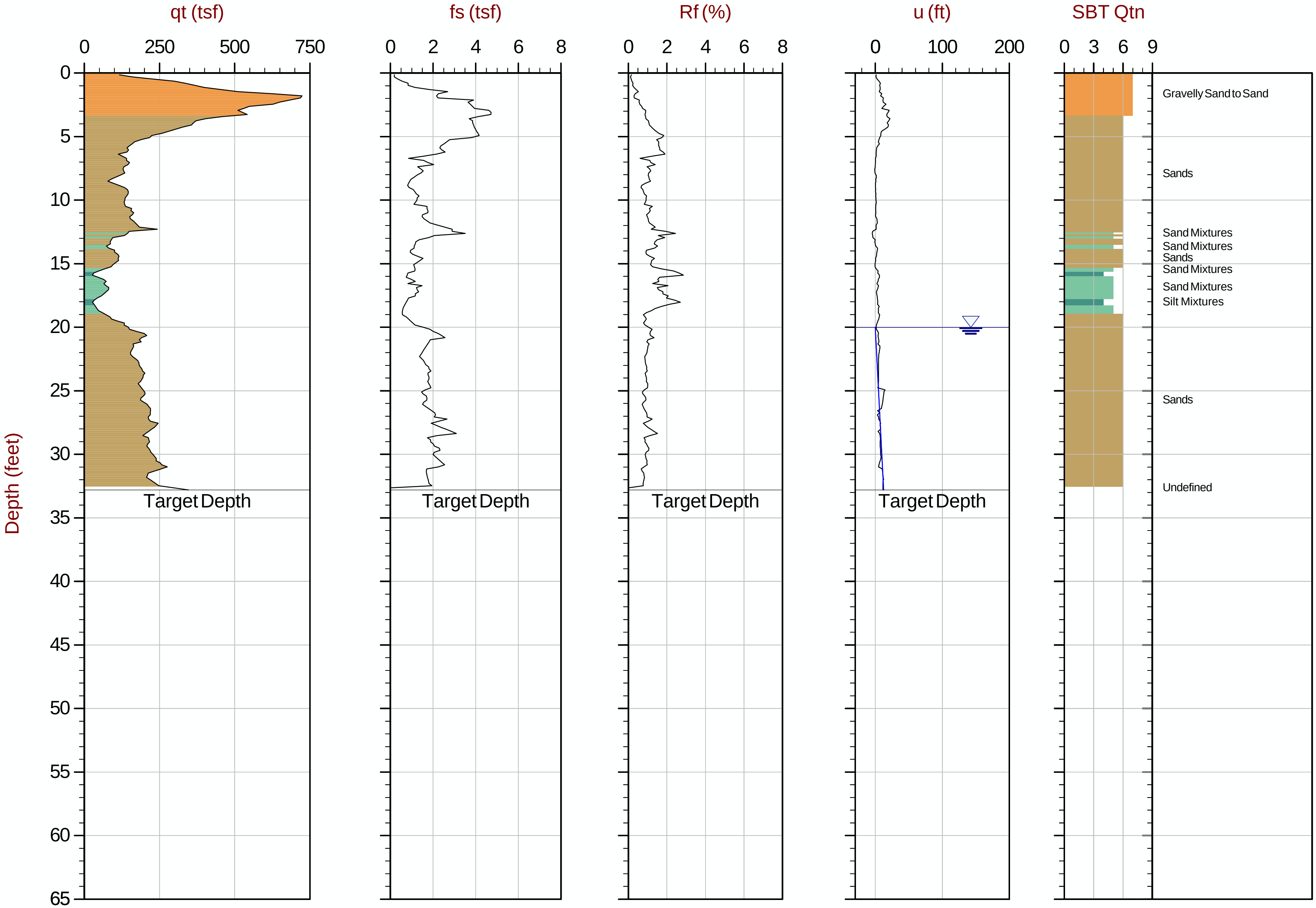
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 18:38
Site: Raymond Road, Verona, WI

Sounding: SCPT20-26
Cone: 640:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP26.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766200m E: 293965m

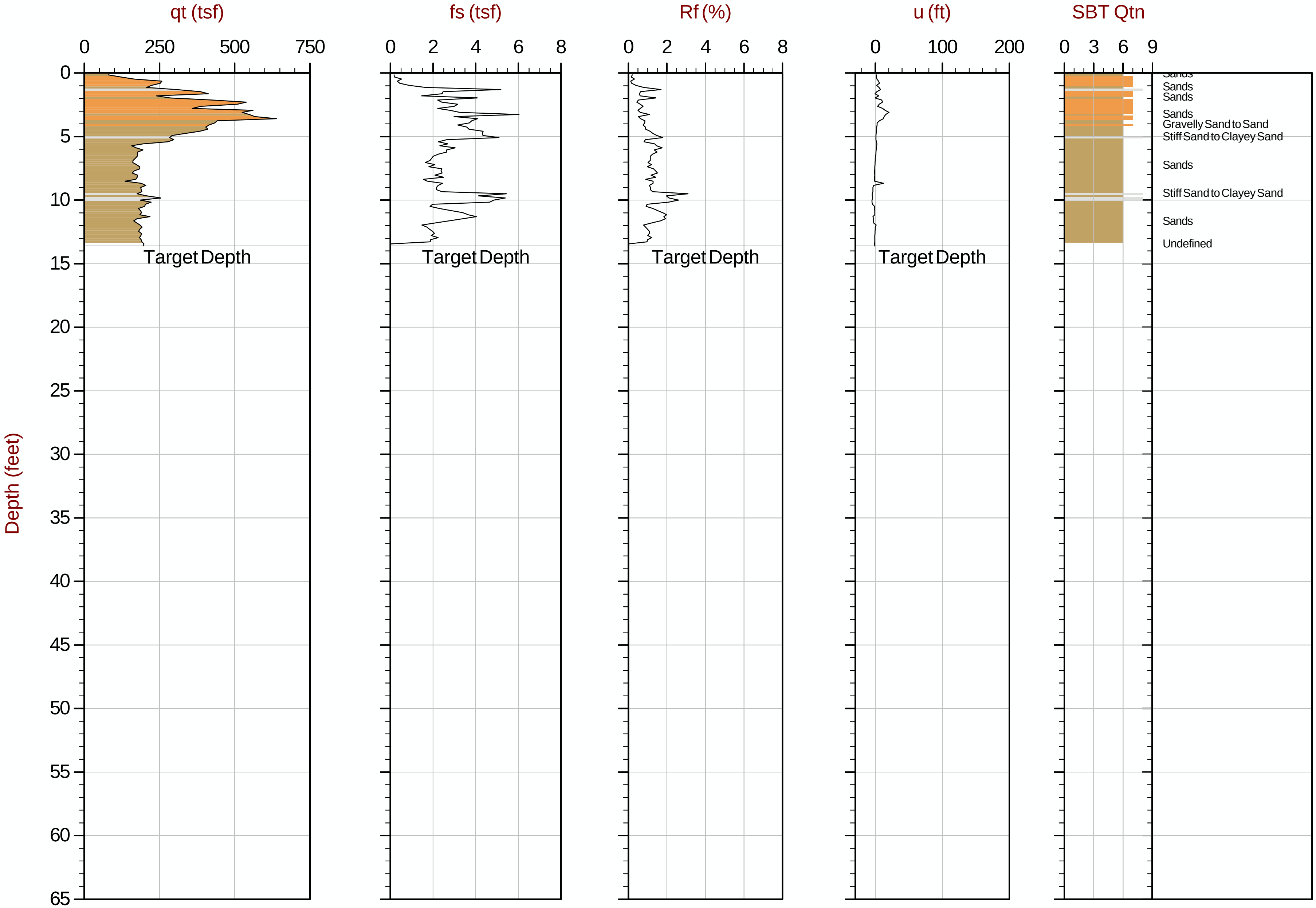
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 19:34
Site: Raymond Road, Verona, WI

Sounding: CPT20-27
Cone: 640:T1500F15U500



Max Depth: 4.150 m / 13.62 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP27.COR
Unit Wt: SBTQtn (PKR2009)

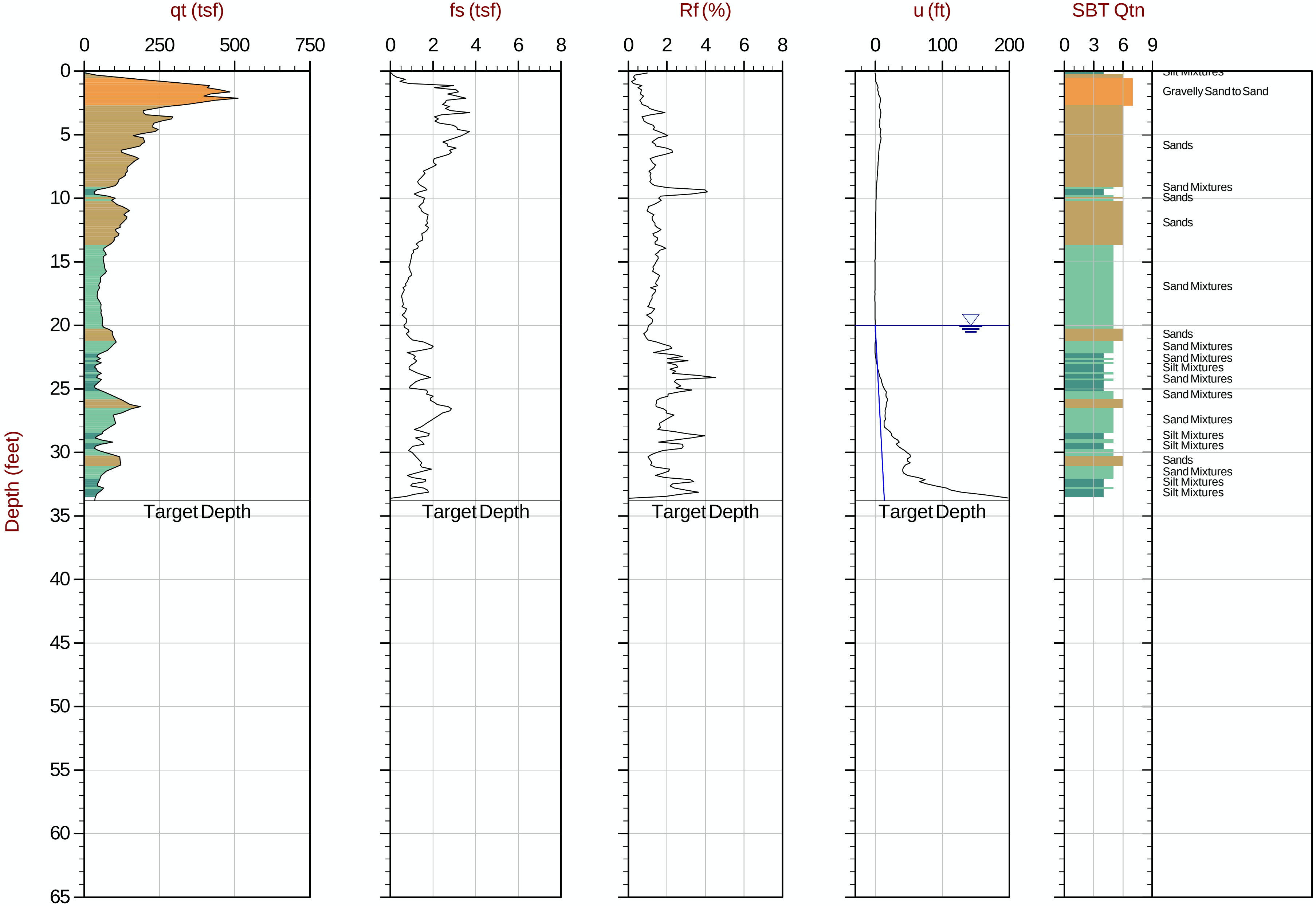
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766165m E: 293947m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 08:58
Site: Raymond Road, Verona, WI
Sounding: CPT20-28
Cone: 640:T1500F15U500



Max Depth: 10.300 m / 33.79 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP28.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766152m E: 293928m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

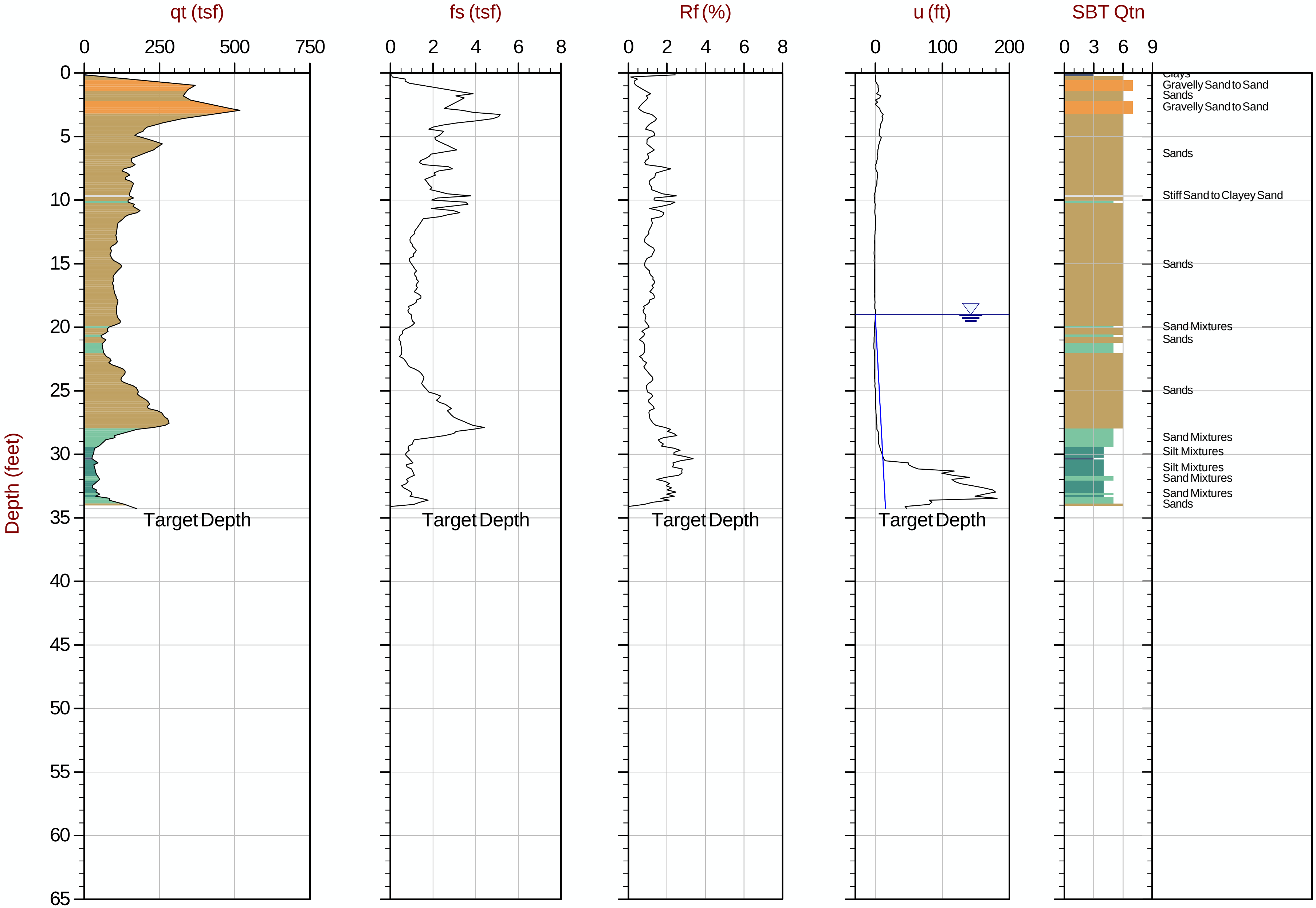
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 08:25
Site: Raymond Road, Verona, WI

Sounding: CPT20-29
Cone: 640:T1500F15U500



Max Depth: 10.450 m / 34.28 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP29.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766131m E: 293910m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

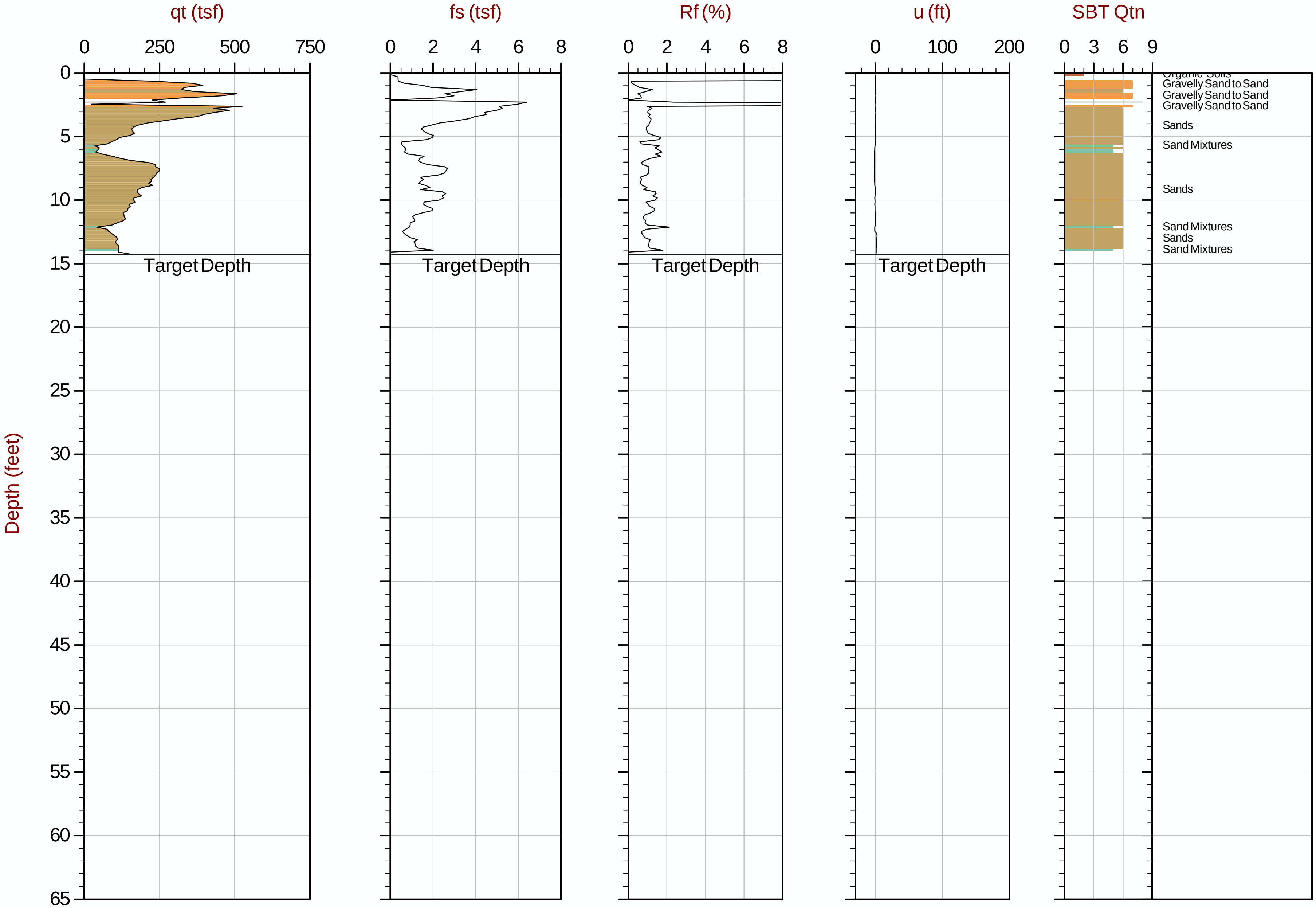
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 20:01
Site: Raymond Road, Verona, WI

Sounding: CPT20-30
Cone: 640:T1500F15U500



Max Depth: 4.350 m / 14.27 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP30.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766128m E: 293910m

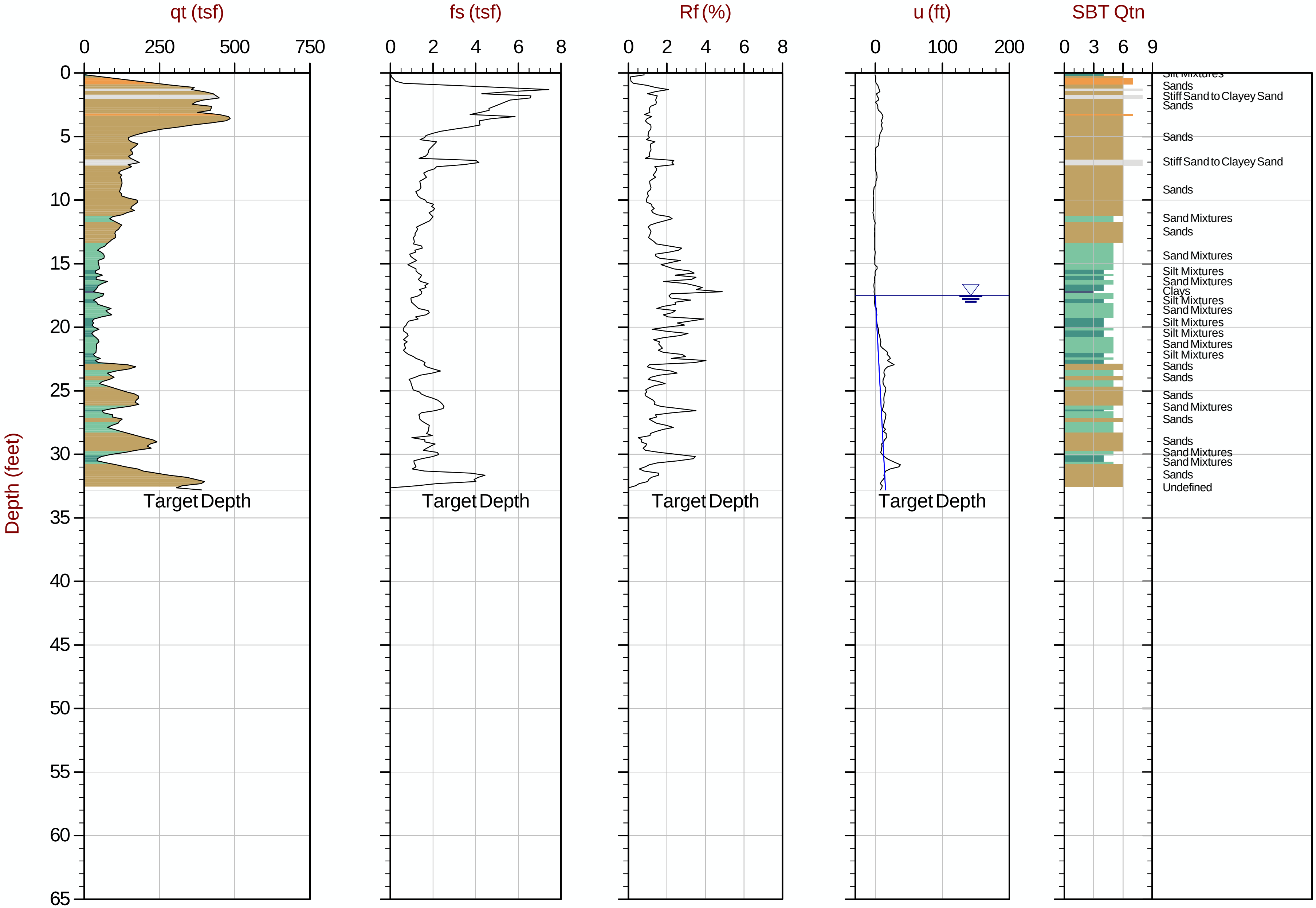
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 09:30
Site: Raymond Road, Verona, WI

Sounding: SCPT20-31
Cone: 640:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP31.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766108m E: 293891m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

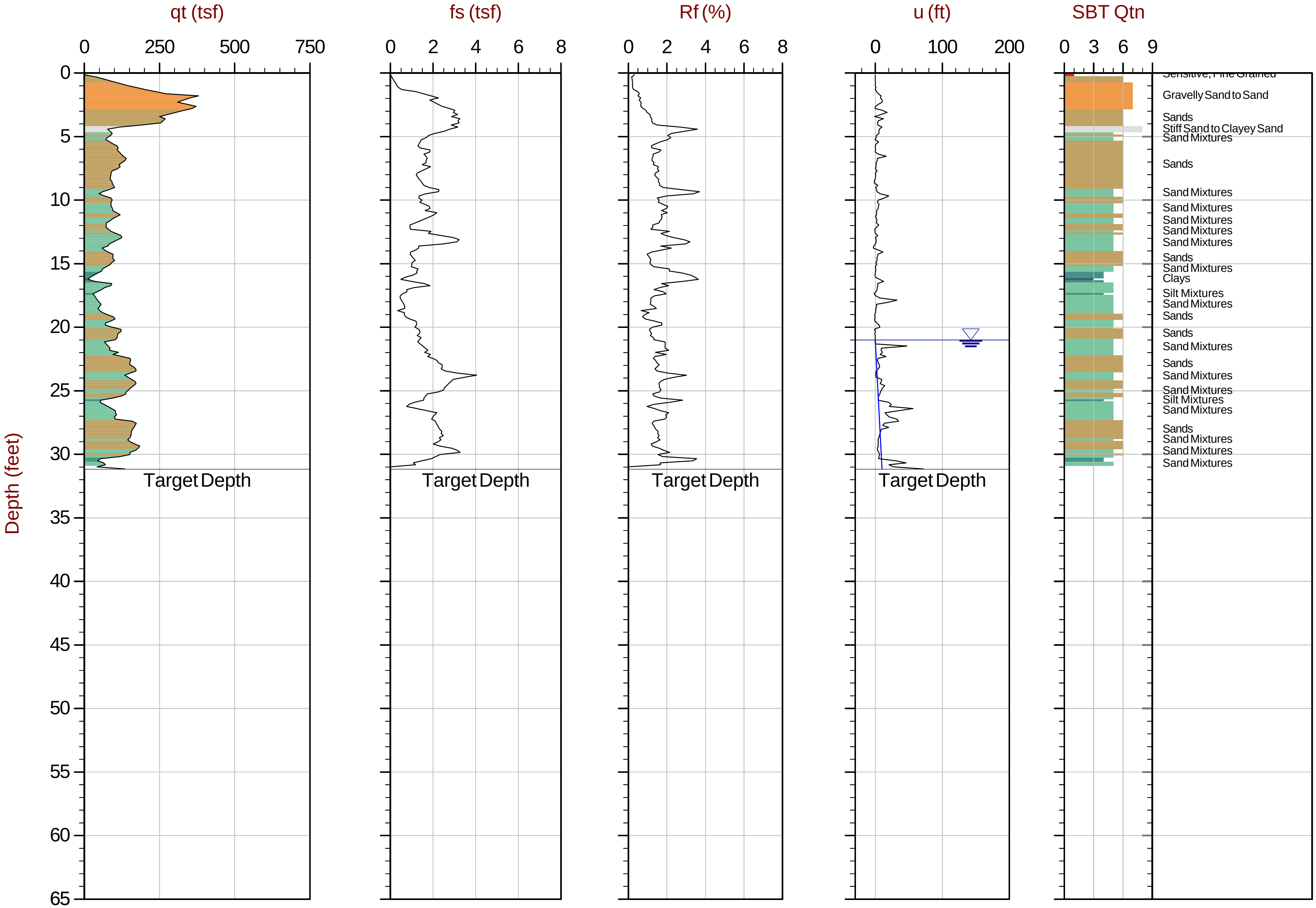
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 10:45
Site: Raymond Road, Verona, WI

Sounding: CPT20-32
Cone: 568:T1500F15U500



Max Depth: 9.500 m / 31.17 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP32.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766088m E: 293866m

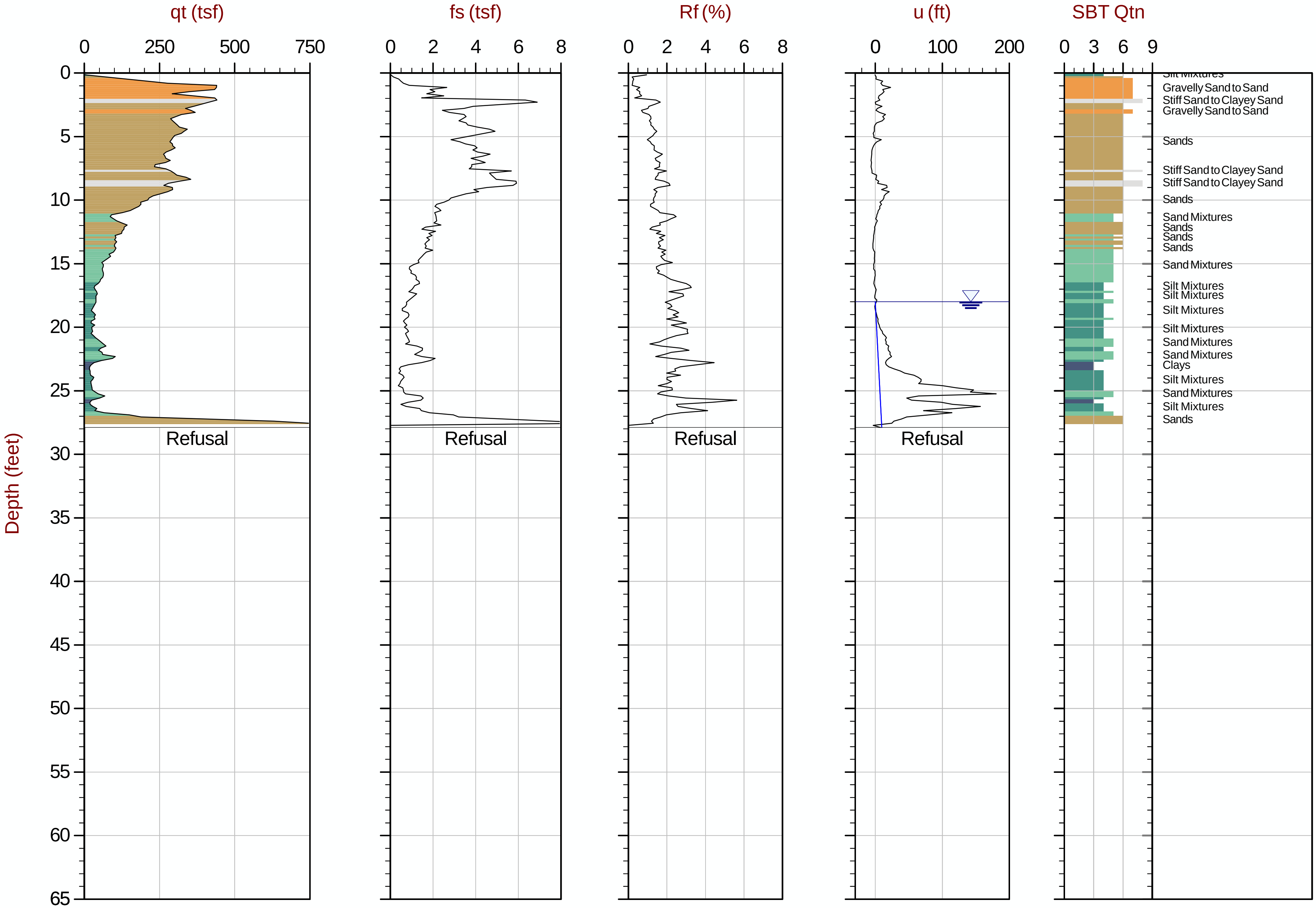
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 11:22
Site: Raymond Road, Verona, WI

Sounding: CPT20-33
Cone: 568:T1500F15U500



Max Depth: 8.500 m / 27.89 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP33.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766065m E: 293853m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

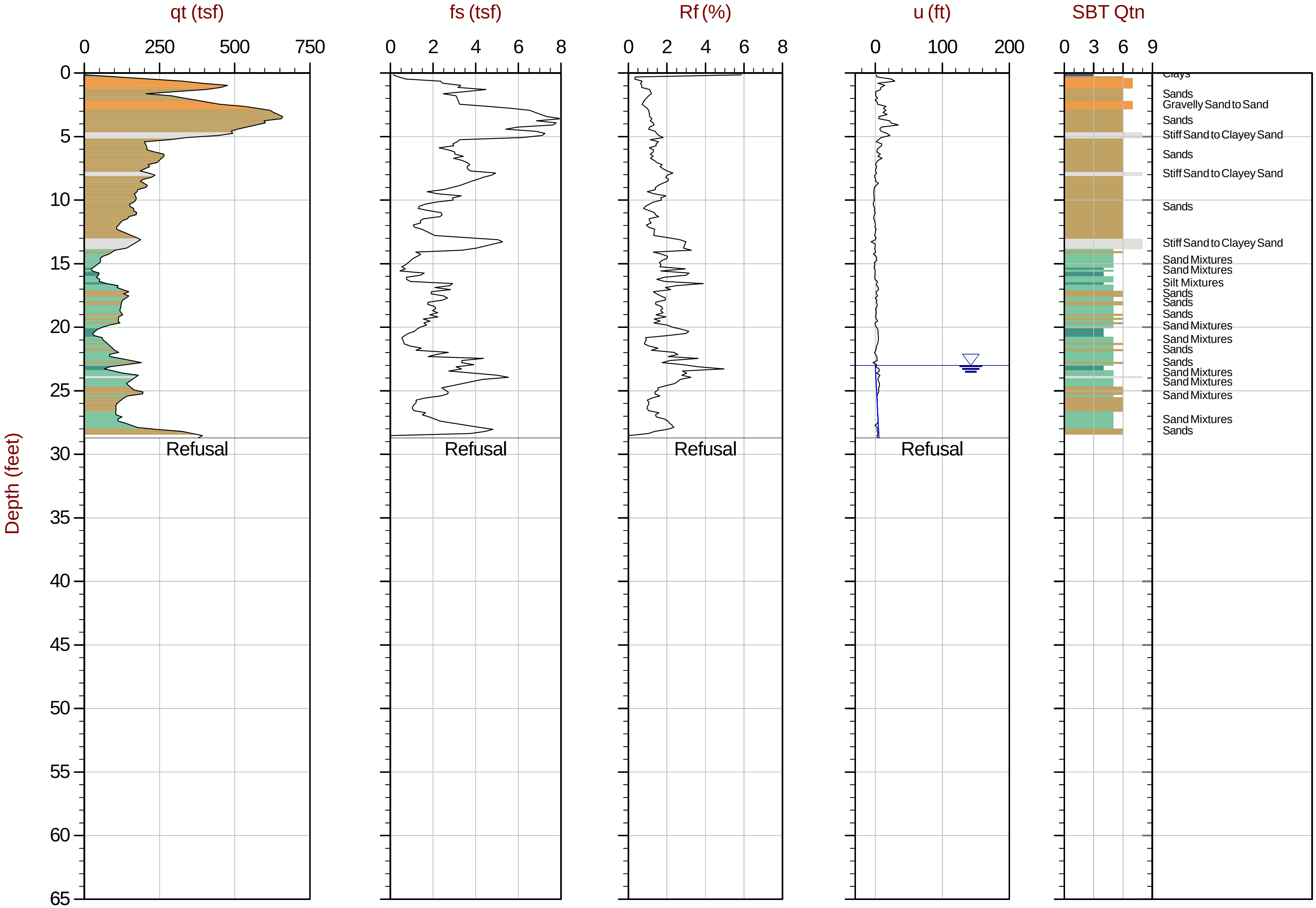
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 11:53
Site: Raymond Road, Verona, WI

Sounding: CPT20-34
Cone: 568:T1500F15U500



Max Depth: 8.750 m / 28.71 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP34.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766042m E: 293829m

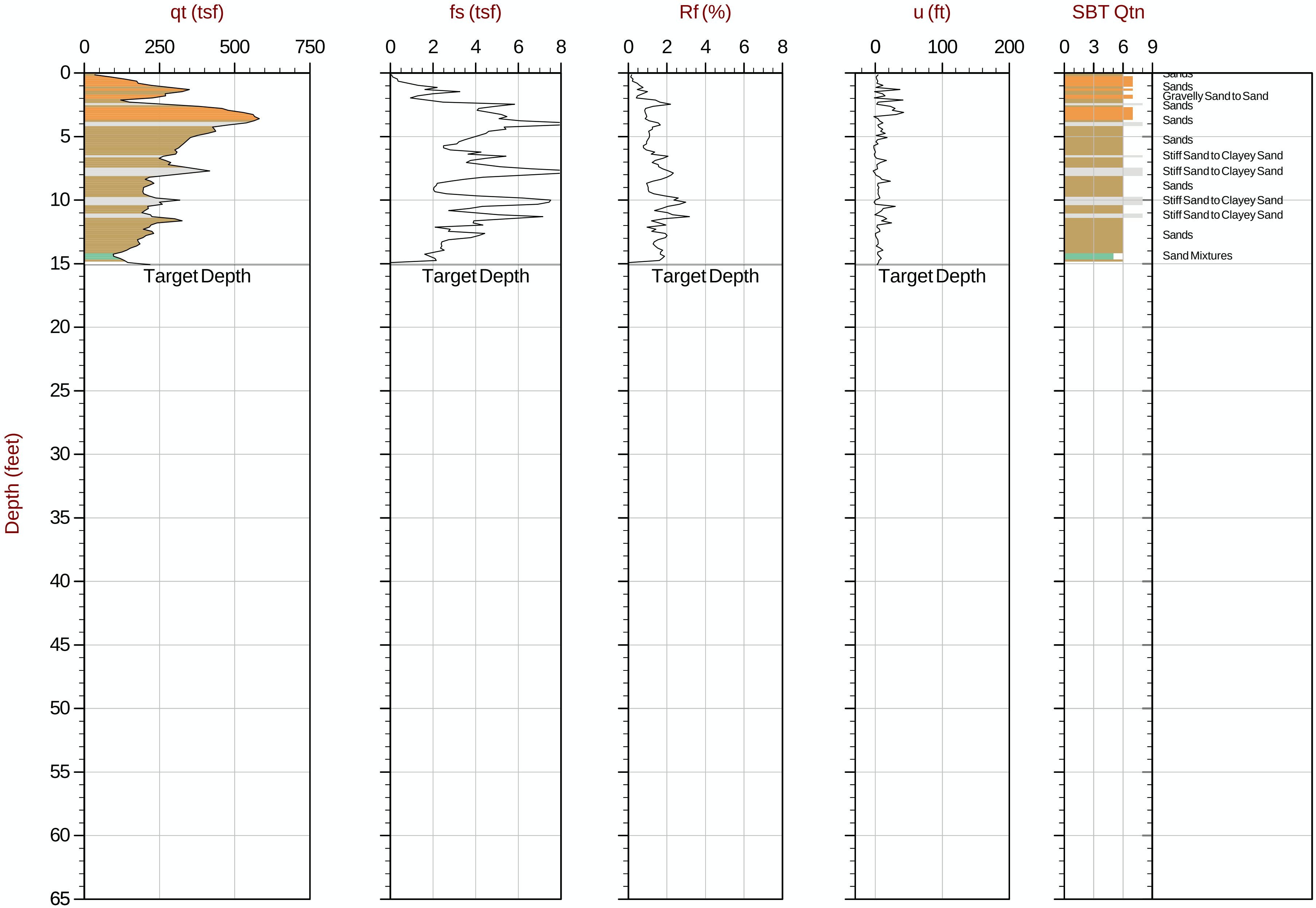
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 12:22
Site: Raymond Road, Verona, WI

Sounding: CPT20-35
Cone: 568:T1500F15U500



Max Depth: 4.600 m / 15.09 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP35.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766039m E: 293831m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

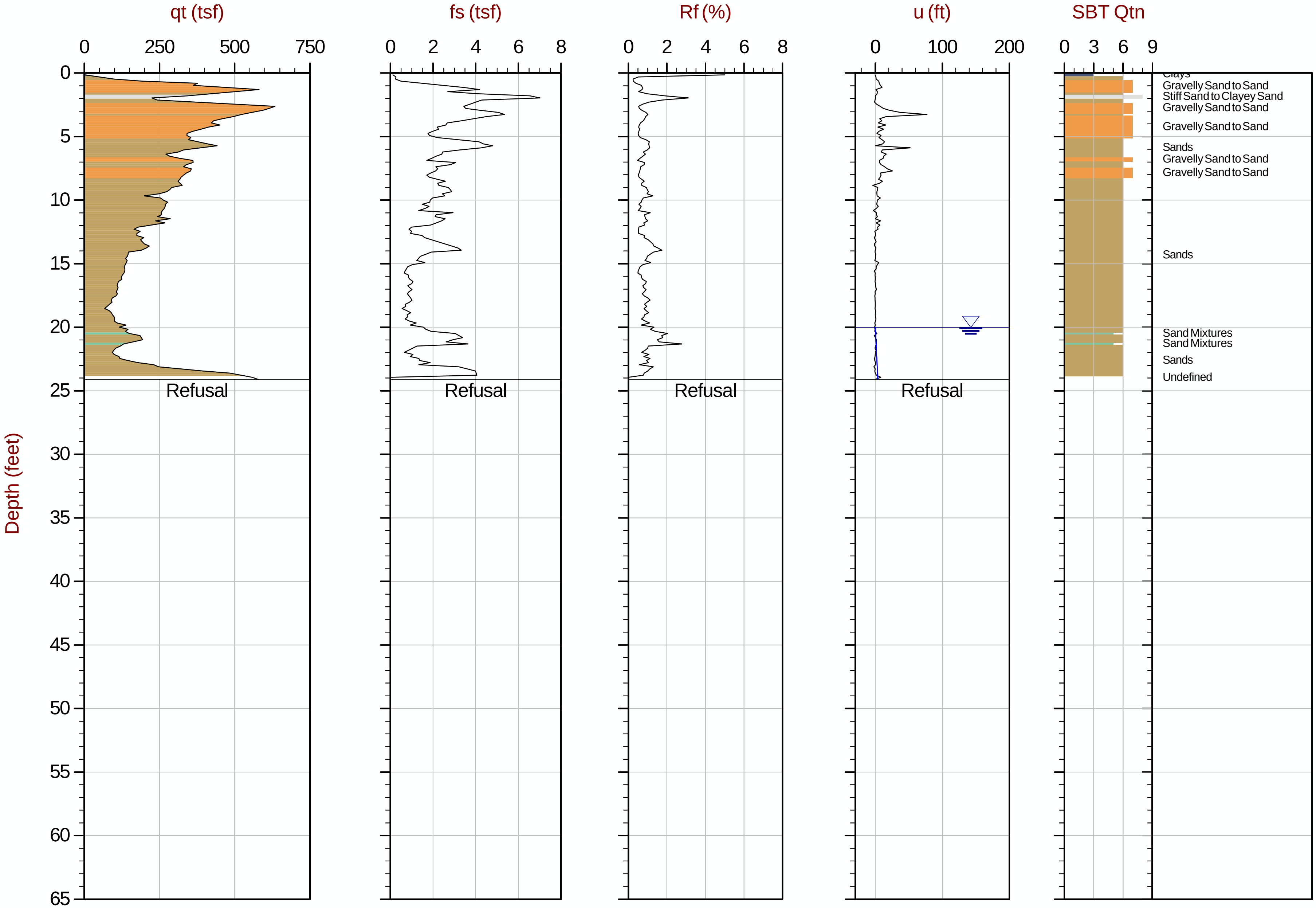
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 12:52
Site: Raymond Road, Verona, WI

Sounding: CPT20-36
Cone: 568:T1500F15U500



Max Depth: 7.350 m / 24.11 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP36.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766020m E: 293809m

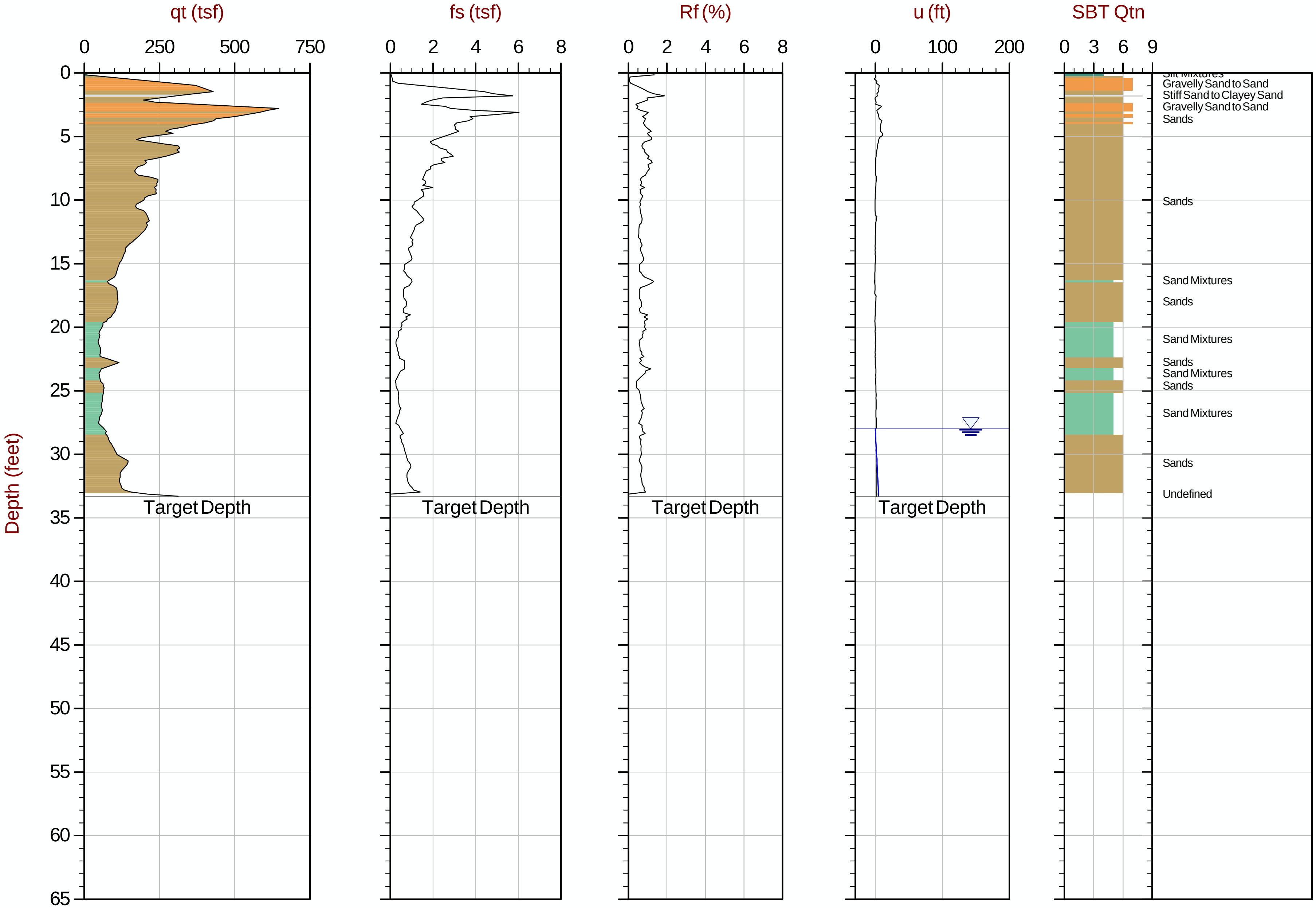
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 13:28
Site: Raymond Road, Verona, WI

Sounding: SCPT20-37
Cone: 568:T1500F15U500



Max Depth: 10.150 m / 33.30 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP37.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765991m E: 293783m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

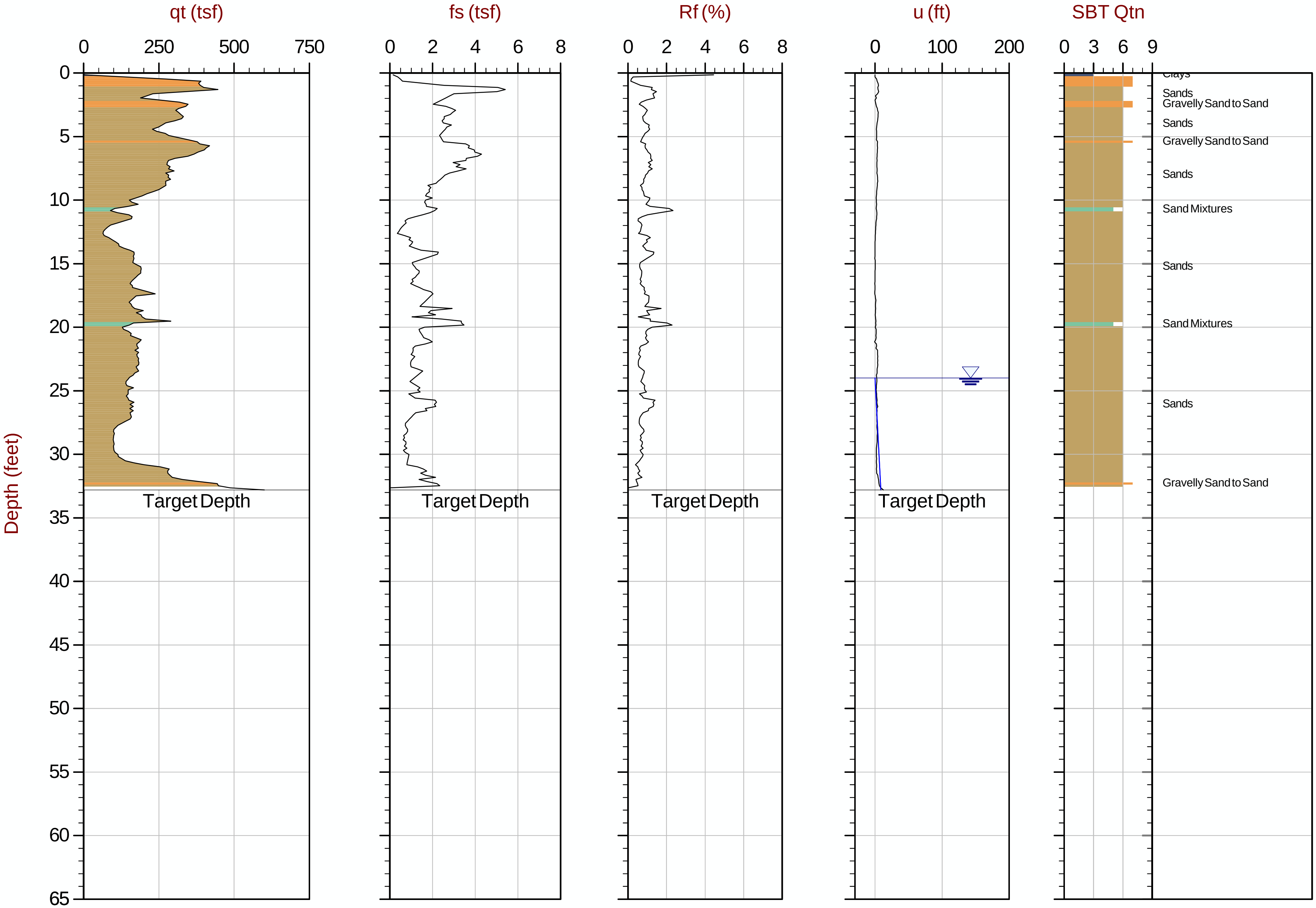
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 14:51
Site: Raymond Road, Verona, WI

Sounding: CPT20-38
Cone: 568:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP38.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765971m E: 293763m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

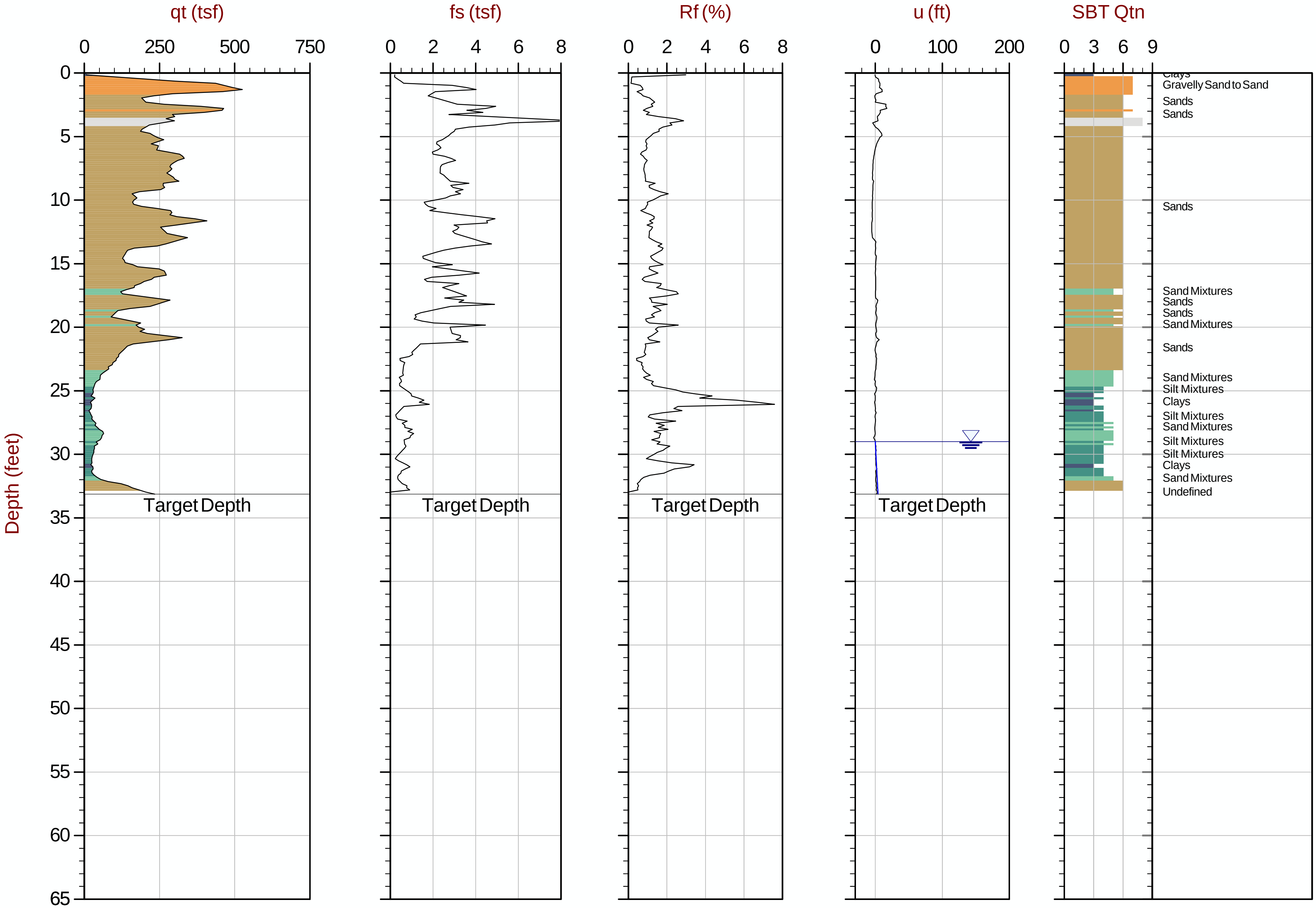
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 15:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-39
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP39.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765945m E: 293743m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

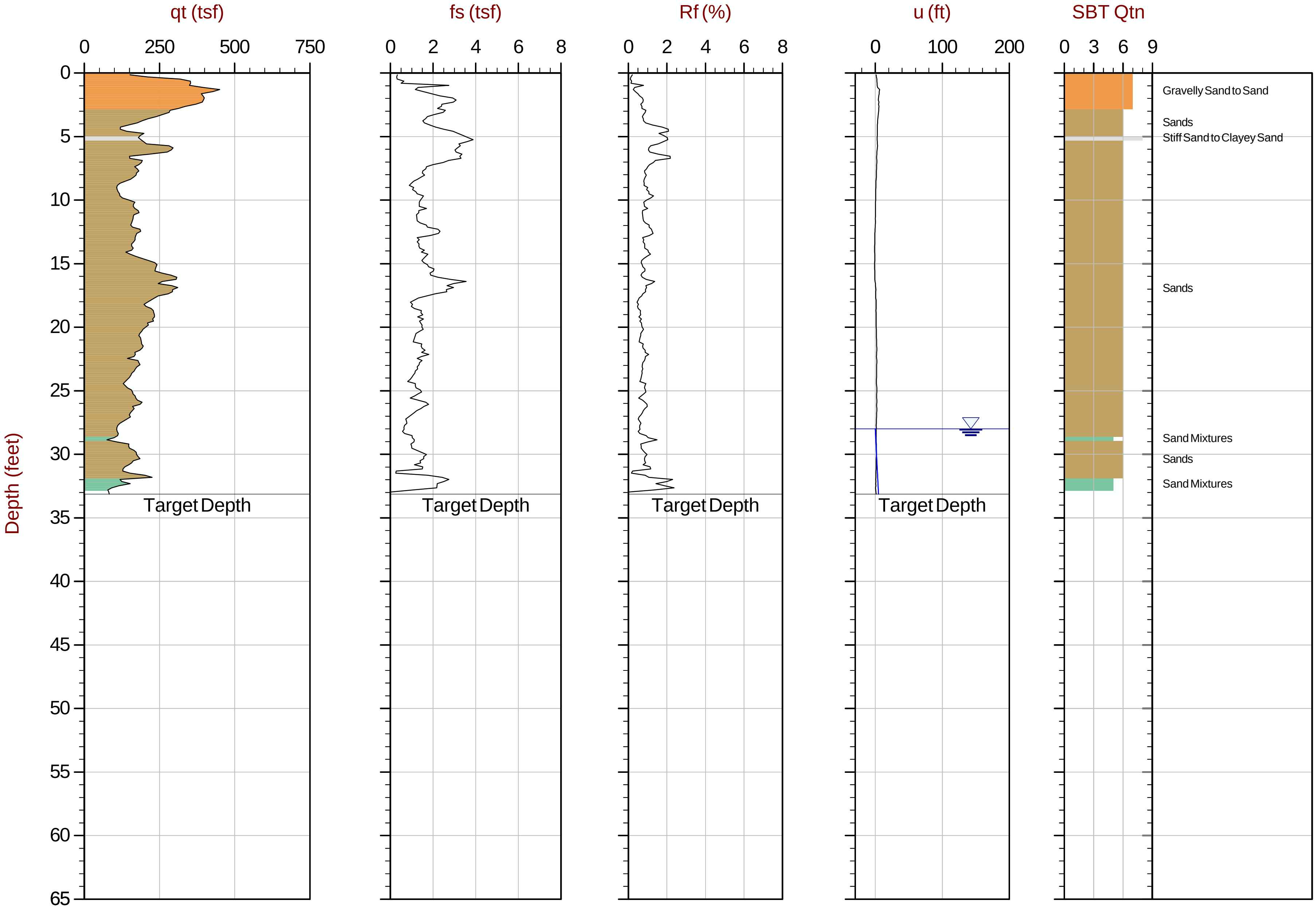
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 16:01
Site: Raymond Road, Verona, WI

Sounding: CPT20-40
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP40.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765929m E: 293727m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

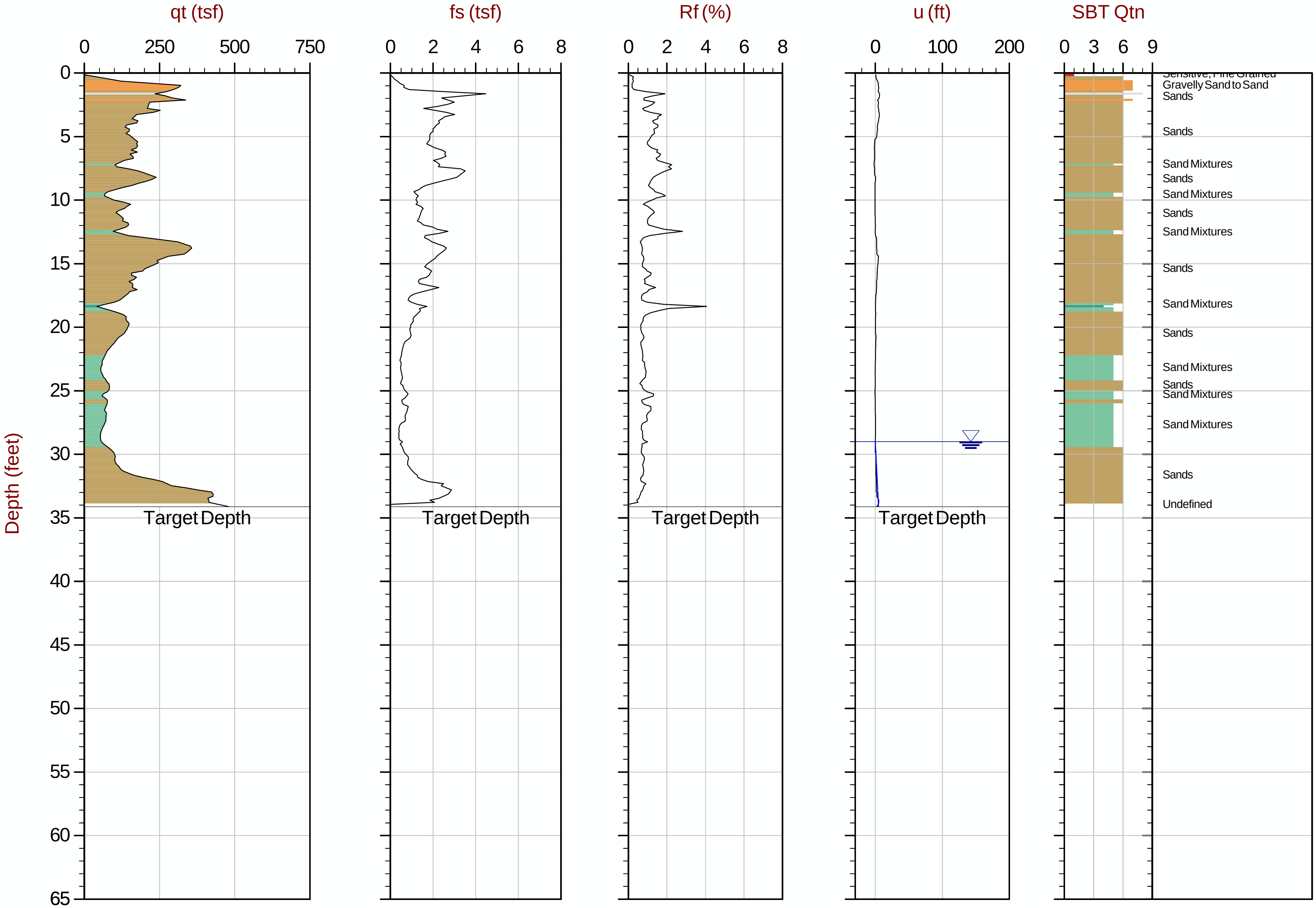
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 16:32
Site: Raymond Road, Verona, WI

Sounding: SCPT20-41
Cone: 568:T1500F15U500



Max Depth: 10.400 m / 34.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP41.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765910m E: 293706m

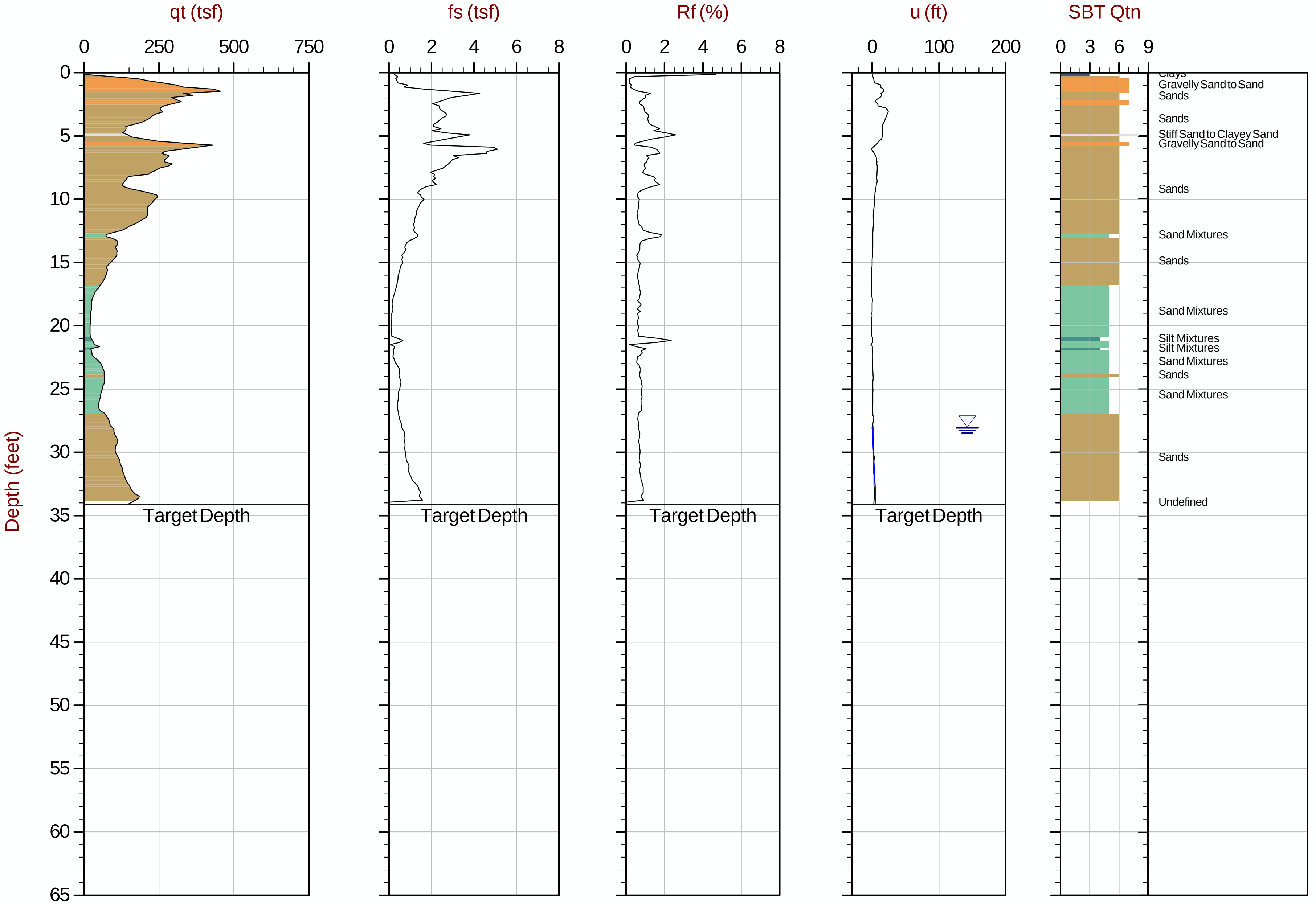
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 17:40
Site: Raymond Road, Verona, WI

Sounding: CPT20-42
Cone: 568:T1500F15U500



Max Depth: 10.400 m / 34.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP42.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765883m E: 293684m

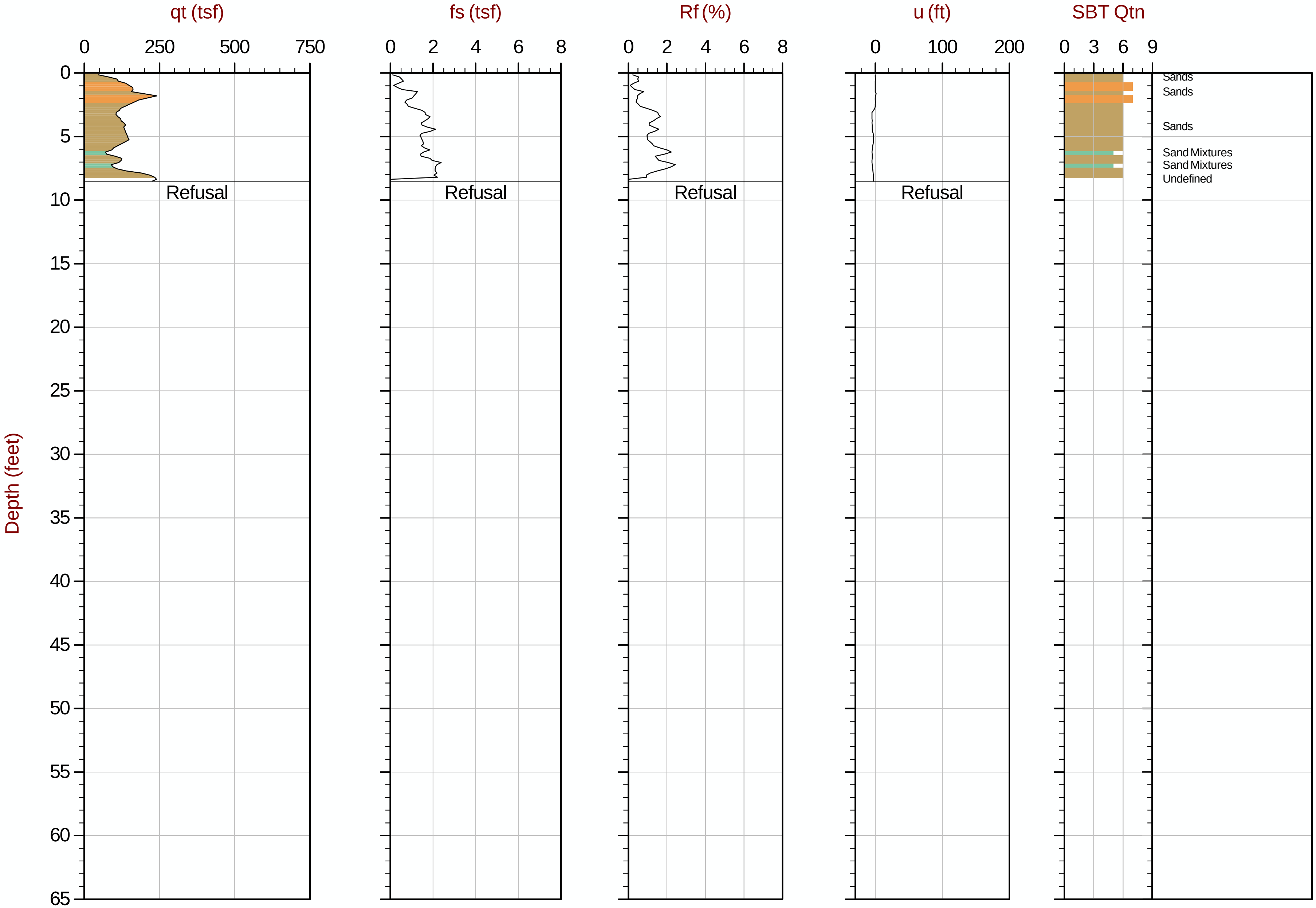
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:09
Site: Raymond Road, Verona, WI

Sounding: CPT20-43
Cone: 568:T1500F15U500



Max Depth: 2.600 m / 8.53 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP43.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765882m E: 293685m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

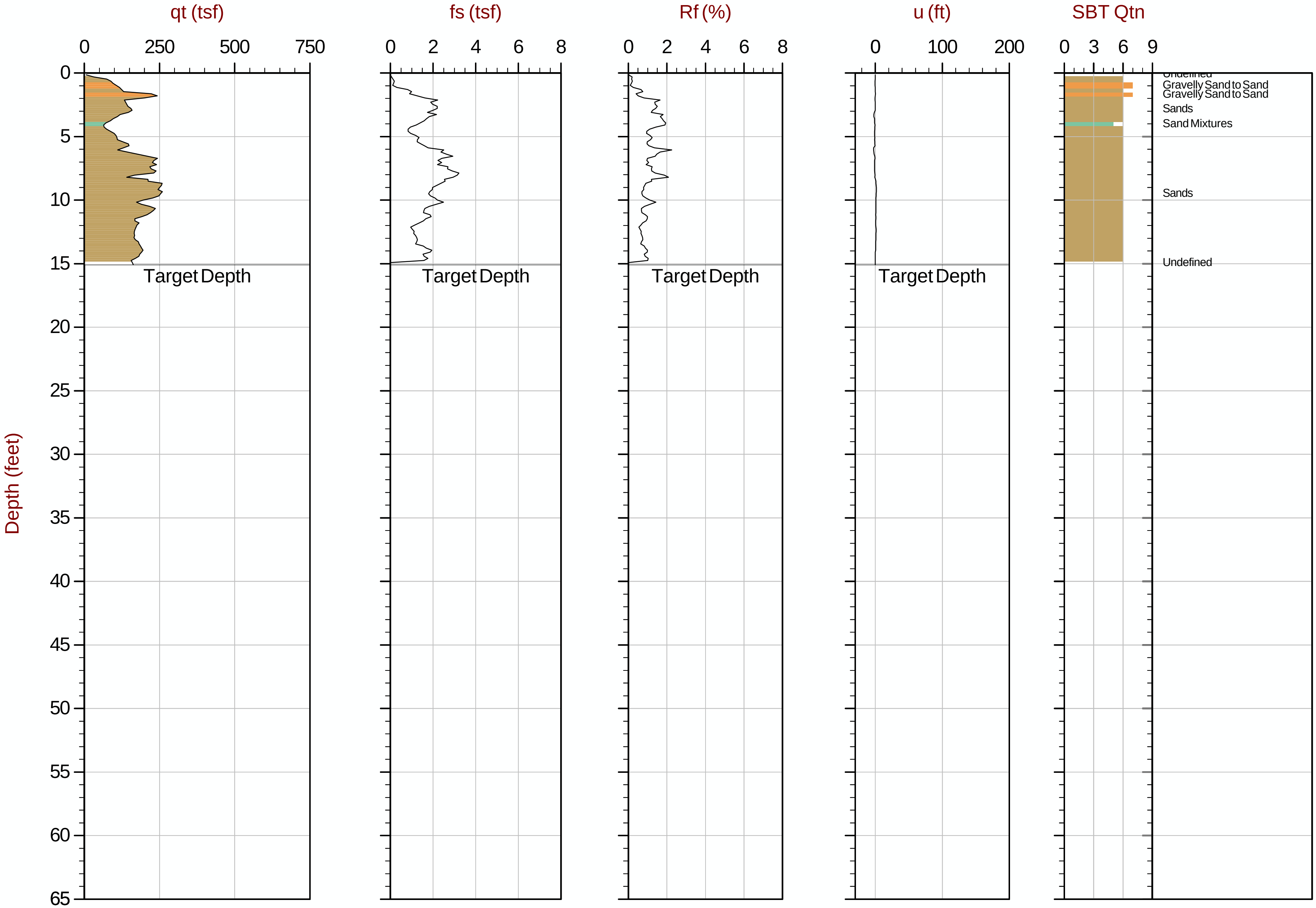
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:25
Site: Raymond Road, Verona, WI

Sounding: CPT20-43B
Cone: 568:T1500F15U500



Max Depth: 4.600 m / 15.09 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP43B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765880m E: 293686m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

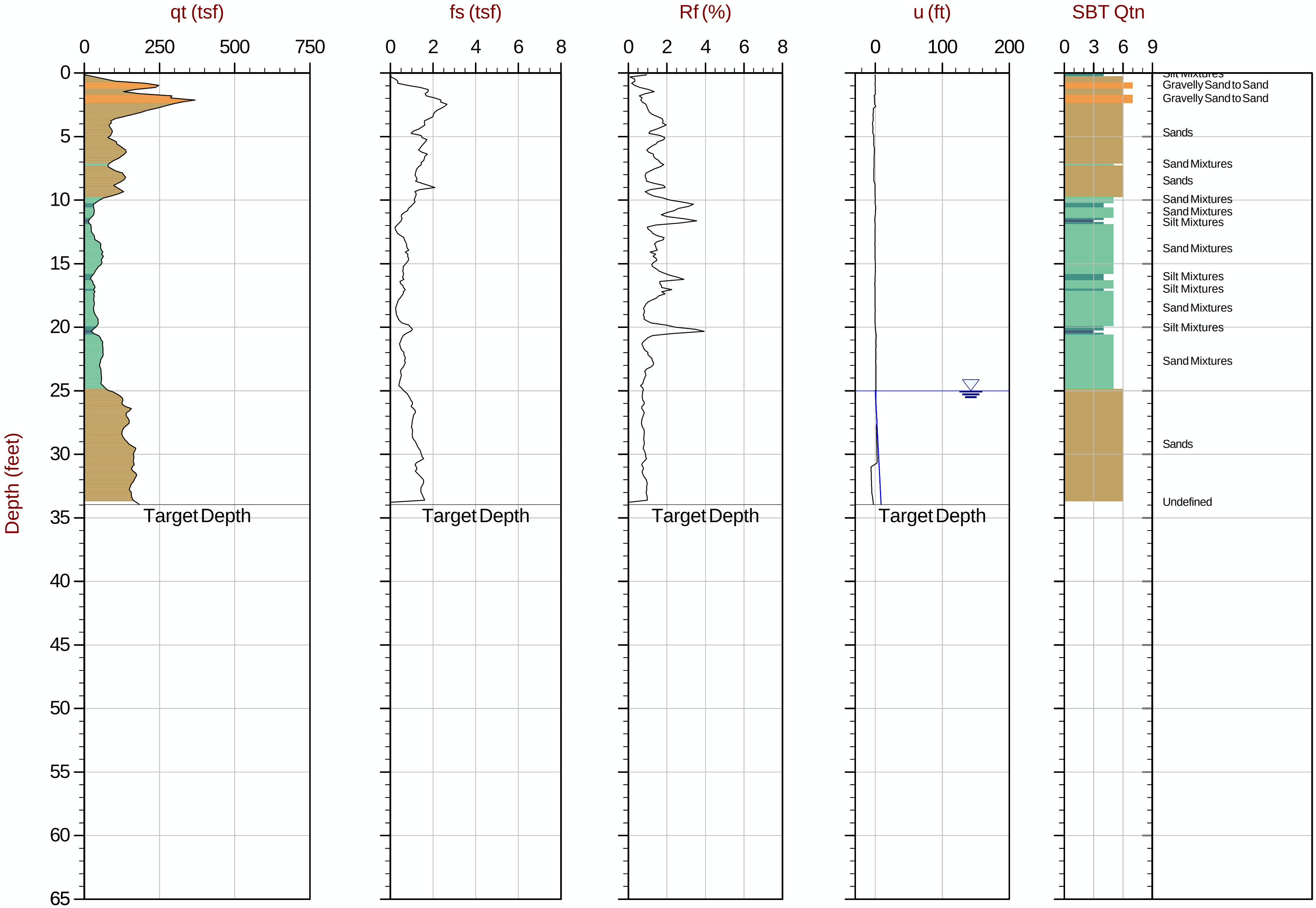
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:49
Site: Raymond Road, Verona, WI

Sounding: CPT20-44
Cone: 568:T1500F15U500



Max Depth: 10.350 m / 33.96 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP44.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765863m E: 293666m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

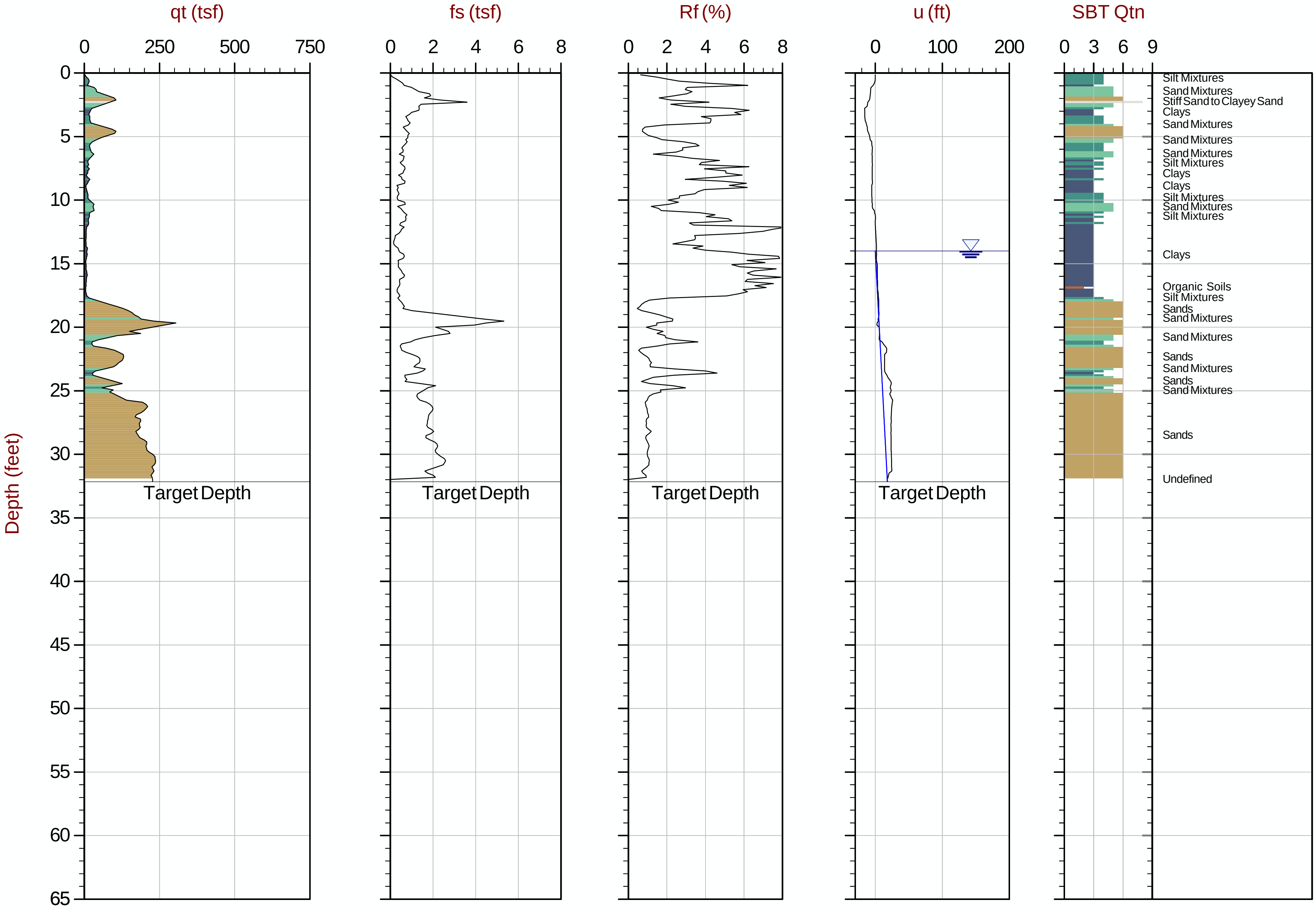
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 19:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-45
Cone: 568:T1500F15U500



Max Depth: 9.800 m / 32.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP45.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765796m E: 293638m

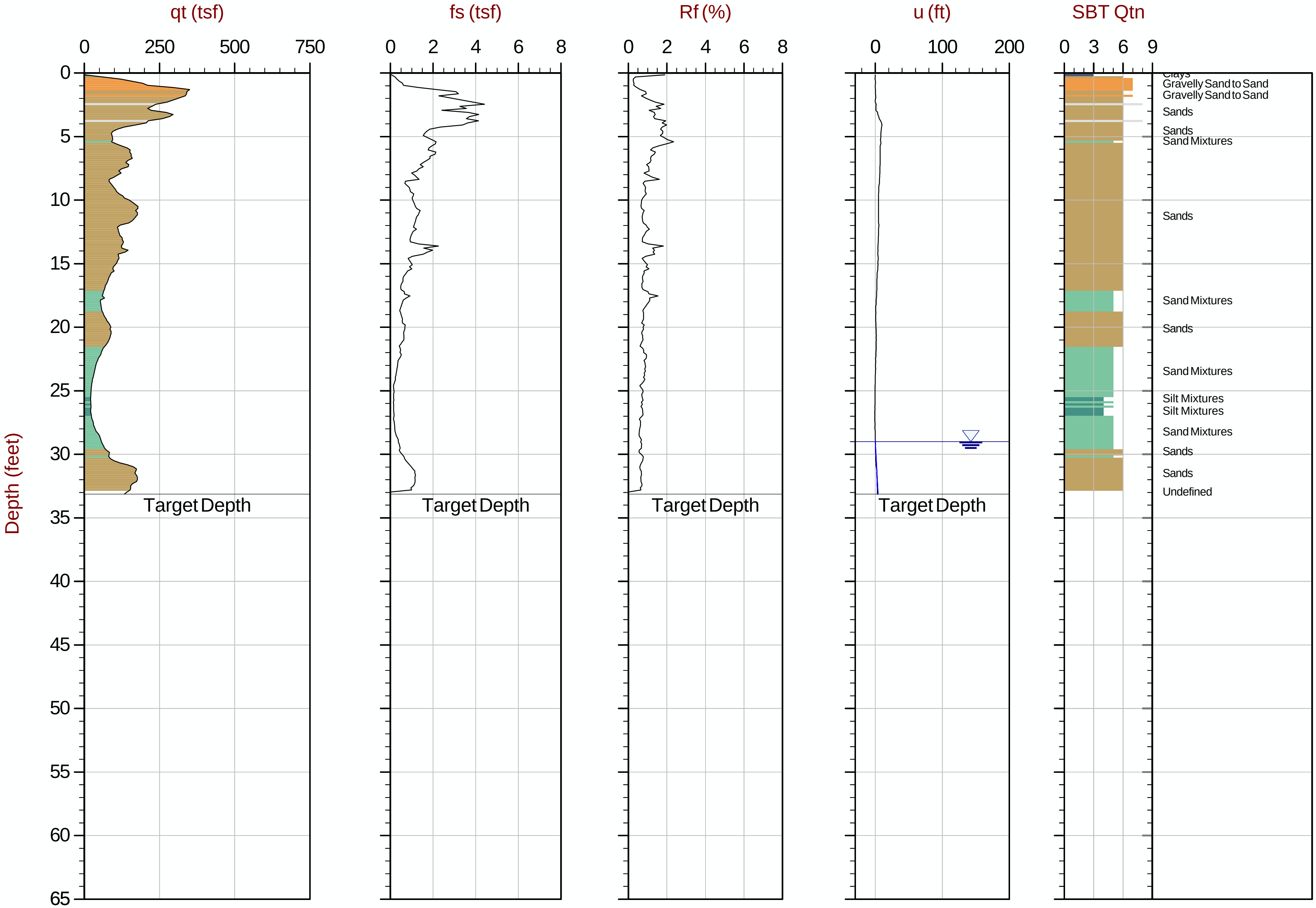
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 09:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-47
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP47.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765878m E: 293681m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

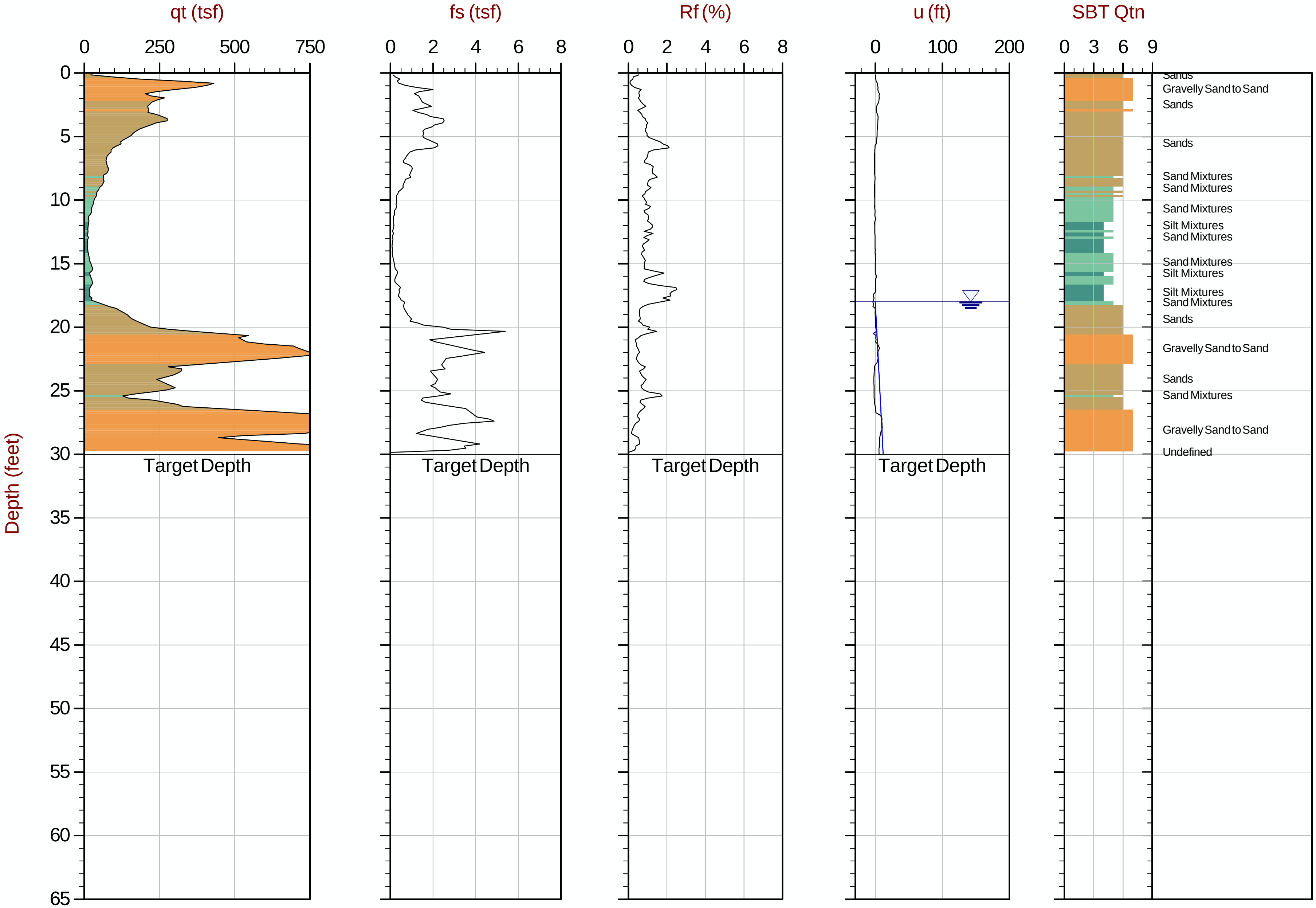
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 10:16
Site: Raymond Road, Verona, WI

Sounding: CPT20-48
Cone: 568:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP48.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766425m E: 294270m

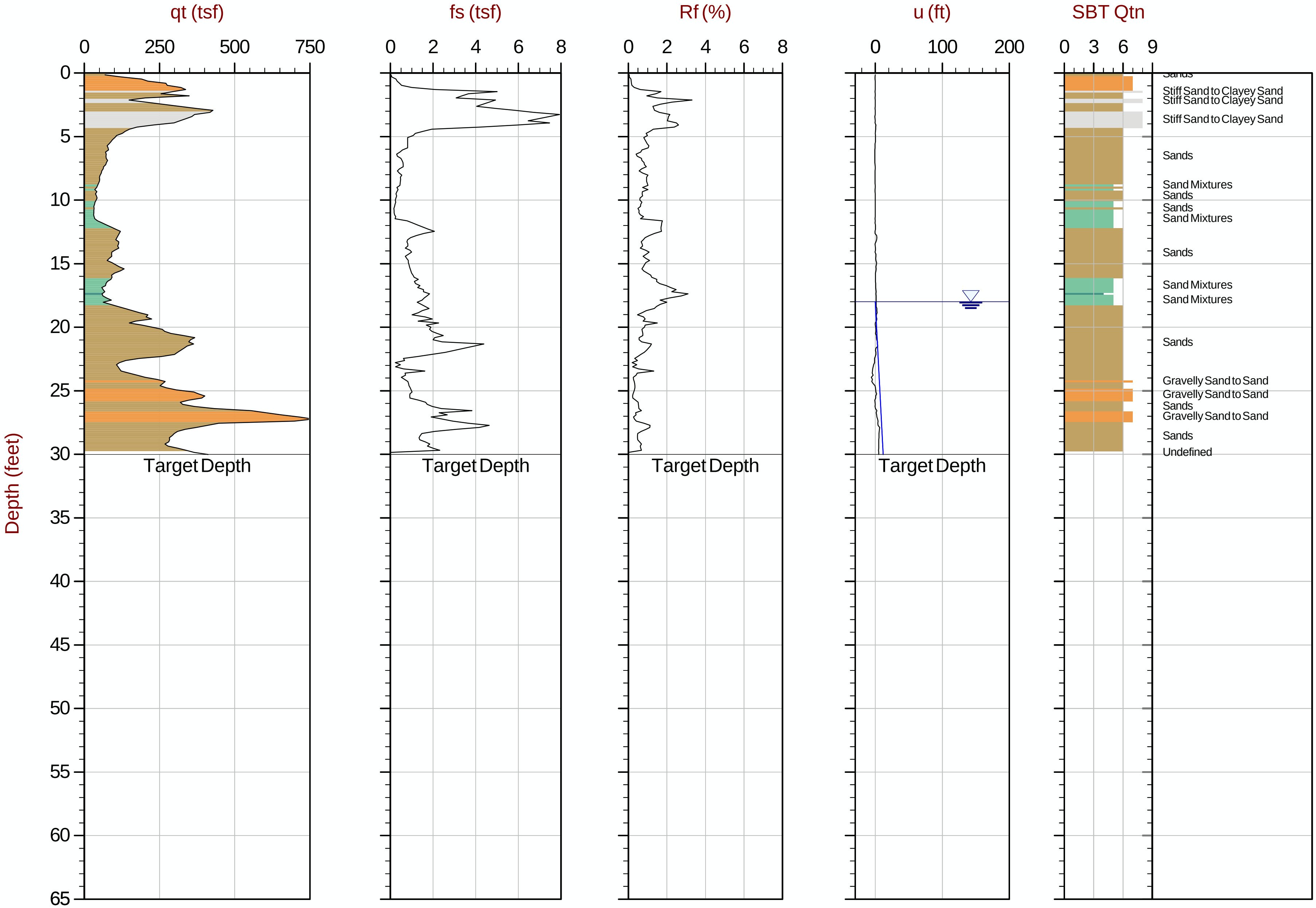
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 10:48
Site: Raymond Road, Verona, WI

Sounding: CPT20-49
Cone: 568:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP49.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766415m E: 294243m

Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

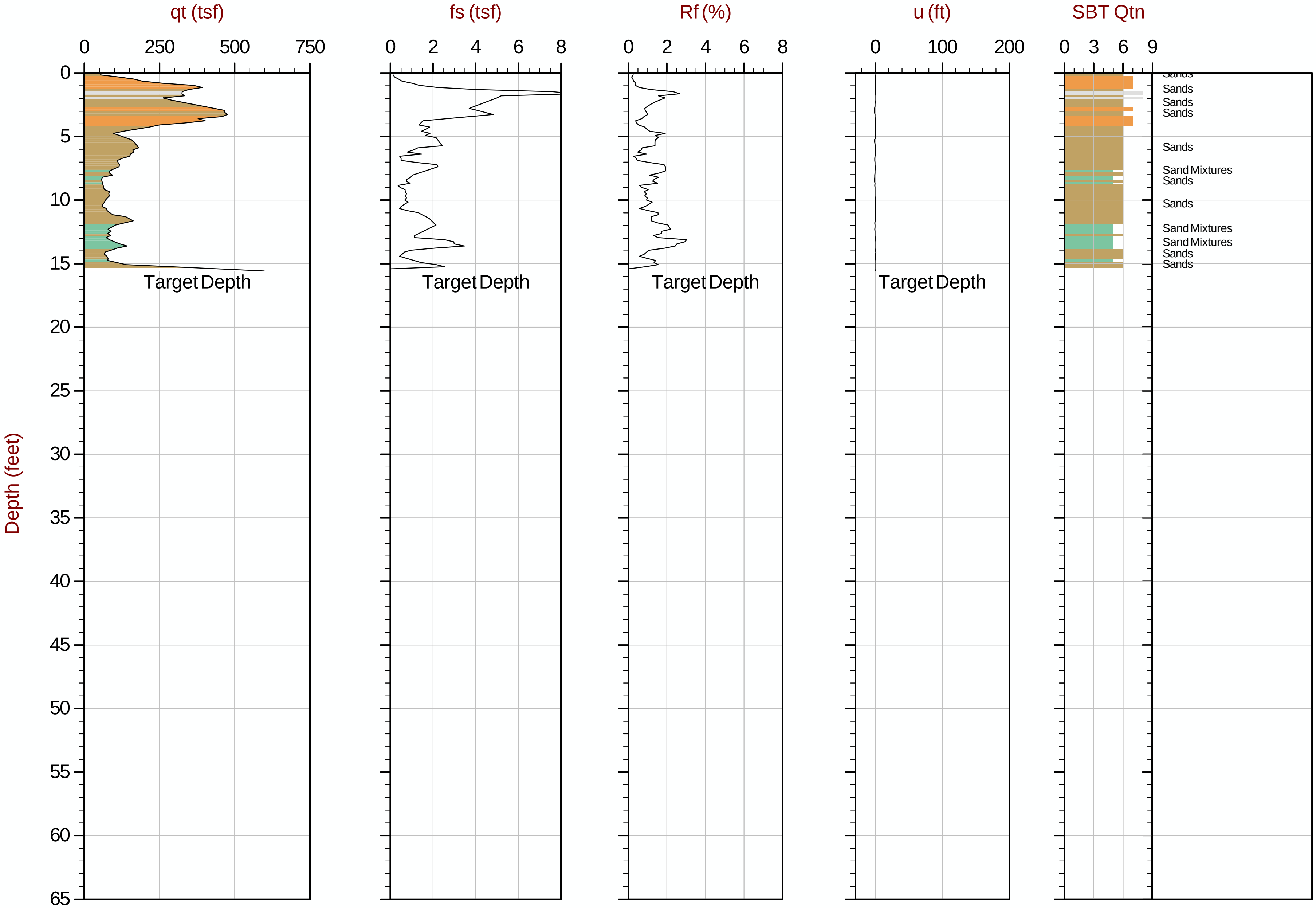
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 12:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-51
Cone: 568:T1500F15U500



Max Depth: 4.750 m / 15.58 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP51.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766393m E: 294213m

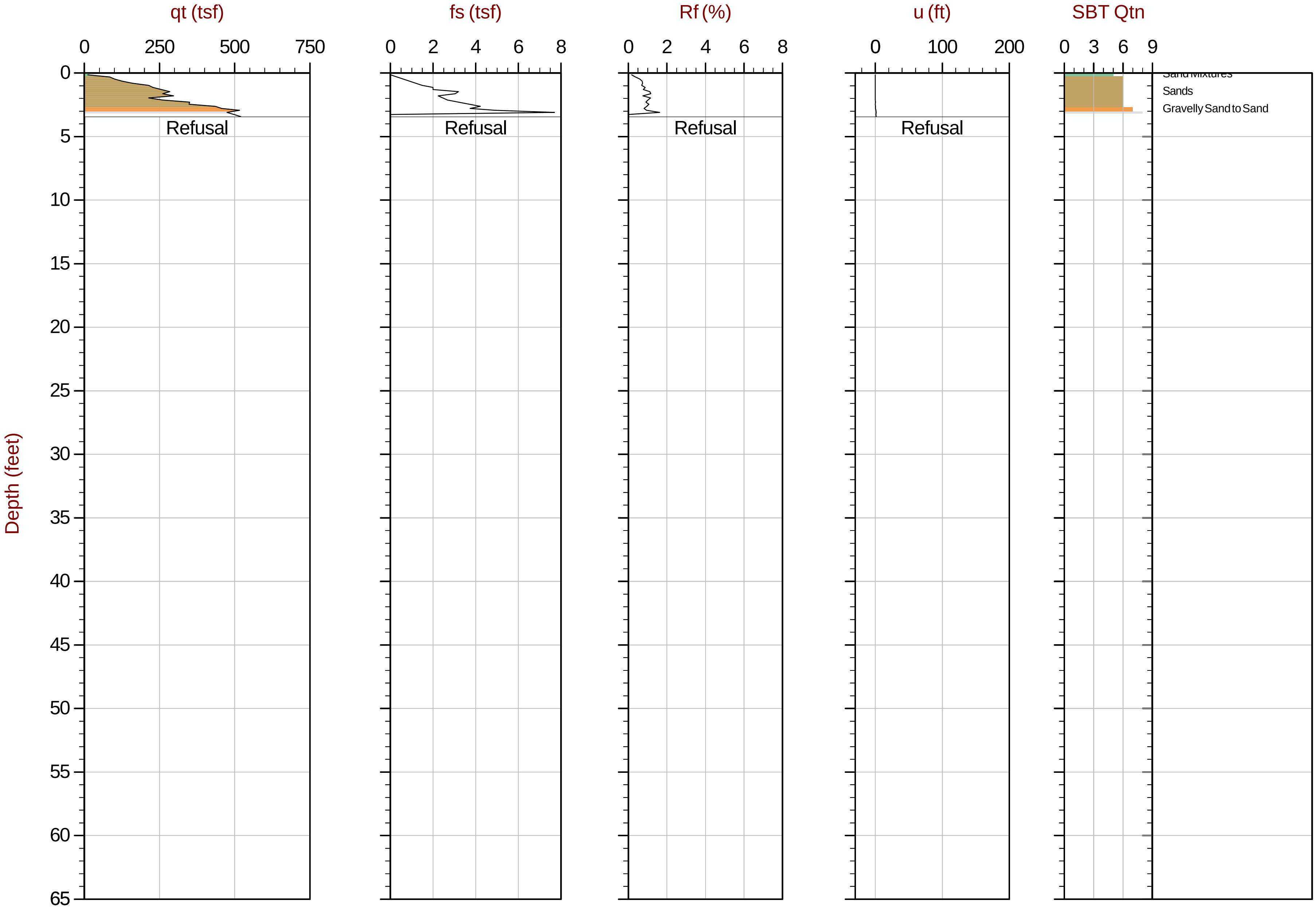
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:11
Site: Raymond Road, Verona, WI
Sounding: CPT20-51B
Cone: 568:T1500F15U500



Max Depth: 1.050 m / 3.44 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP51B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766395m E: 294209m

— Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

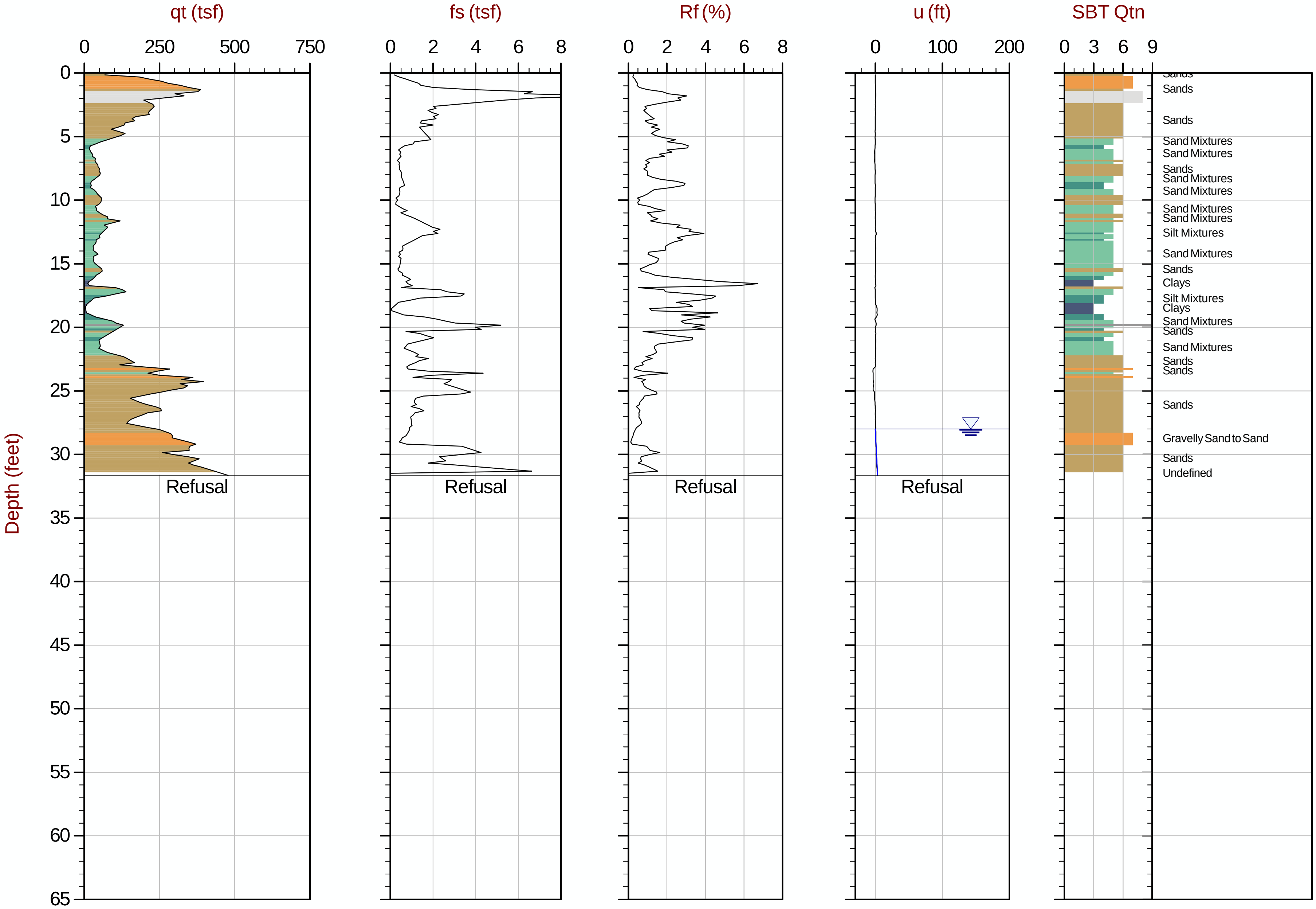
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:21
Site: Raymond Road, Verona, WI

Sounding: CPT20-51C
Cone: 568:T1500F15U500



Max Depth: 9.650 m / 31.66 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP51C.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766386m E: 294216m

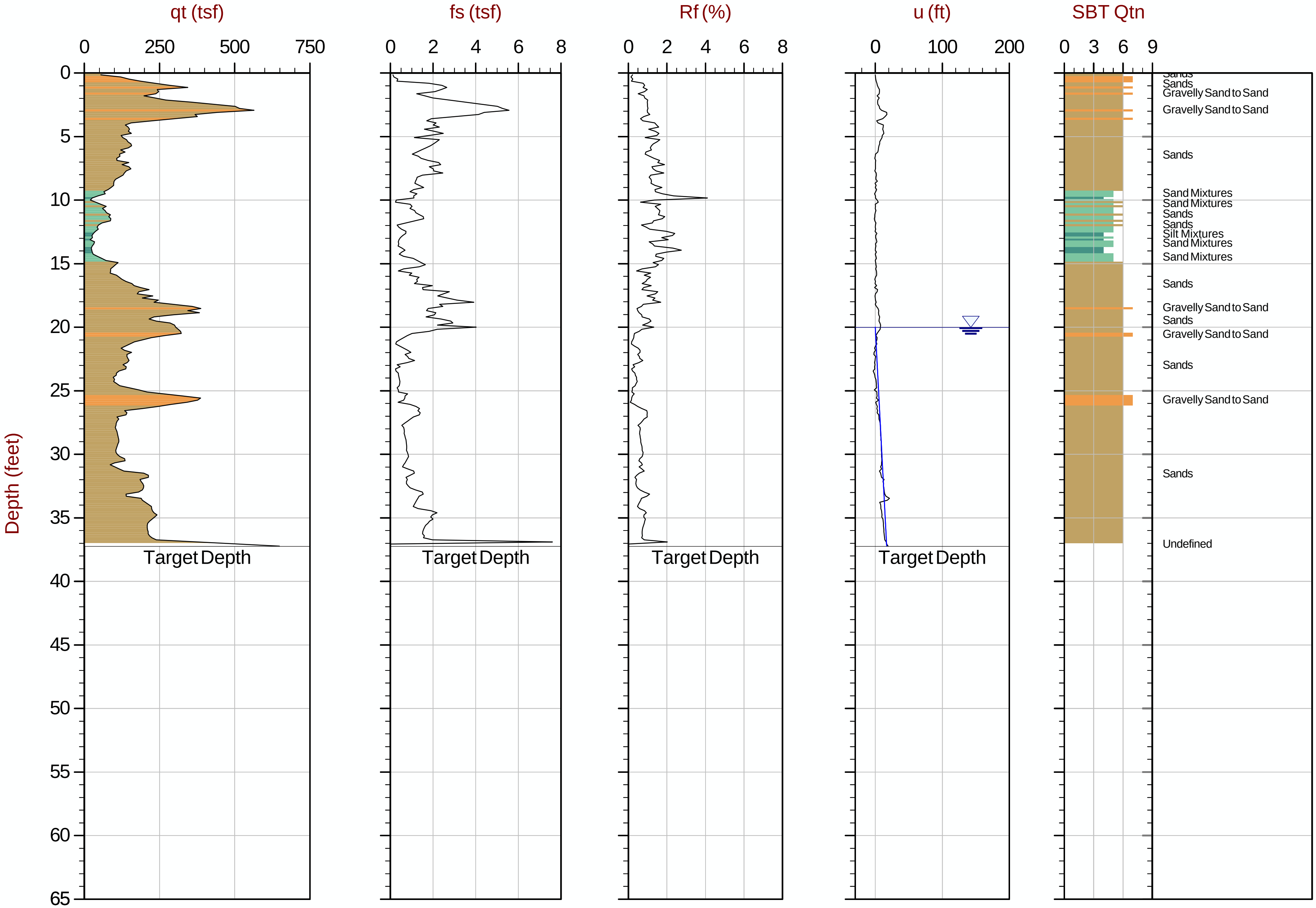
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-52
Cone: 568:T1500F15U500



Max Depth: 11.350 m / 37.24 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP52.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766370m E: 294180m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

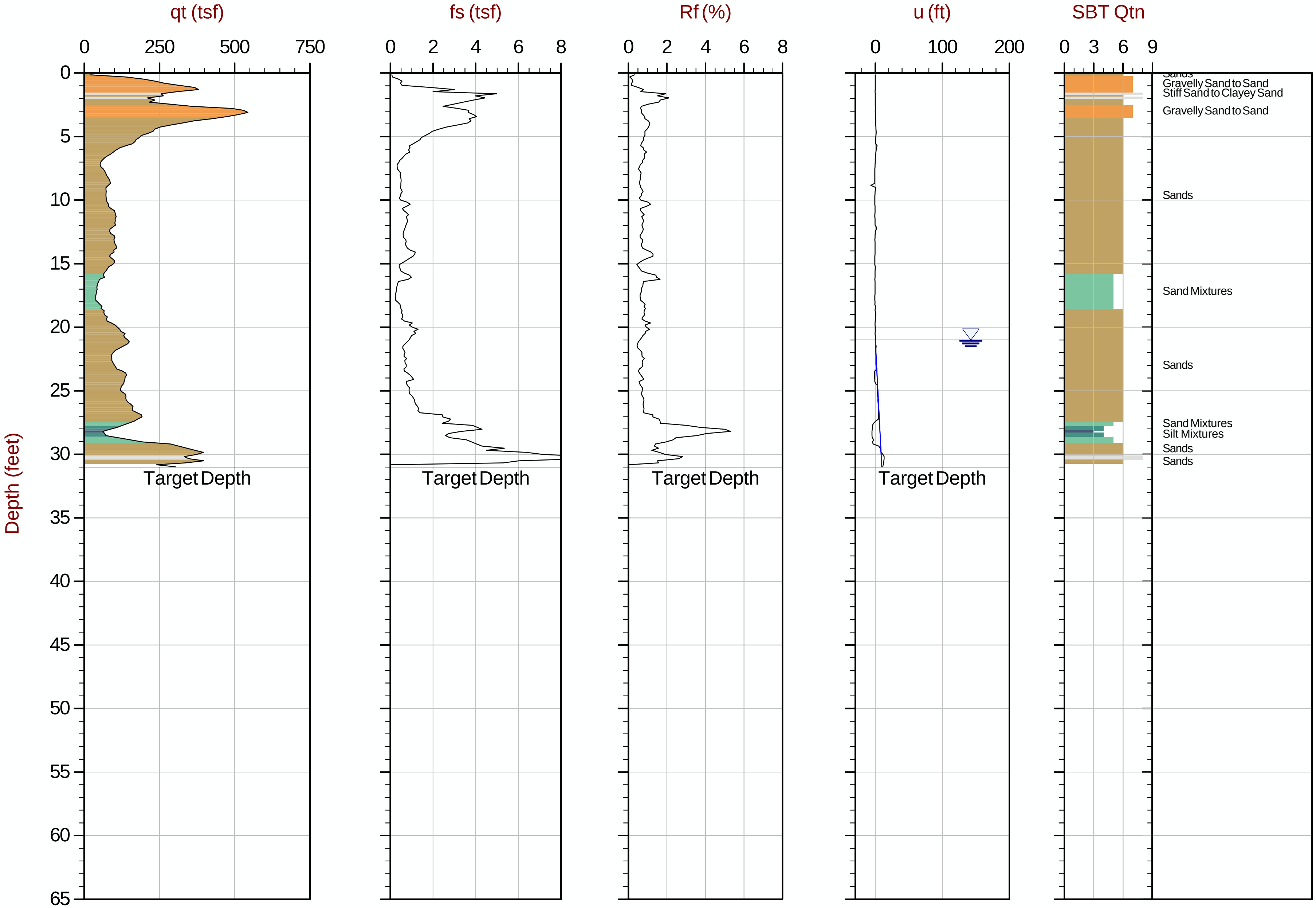
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 15:33
Site: Raymond Road, Verona, WI

Sounding: CPT20-54
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP54.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766218m E: 293977m

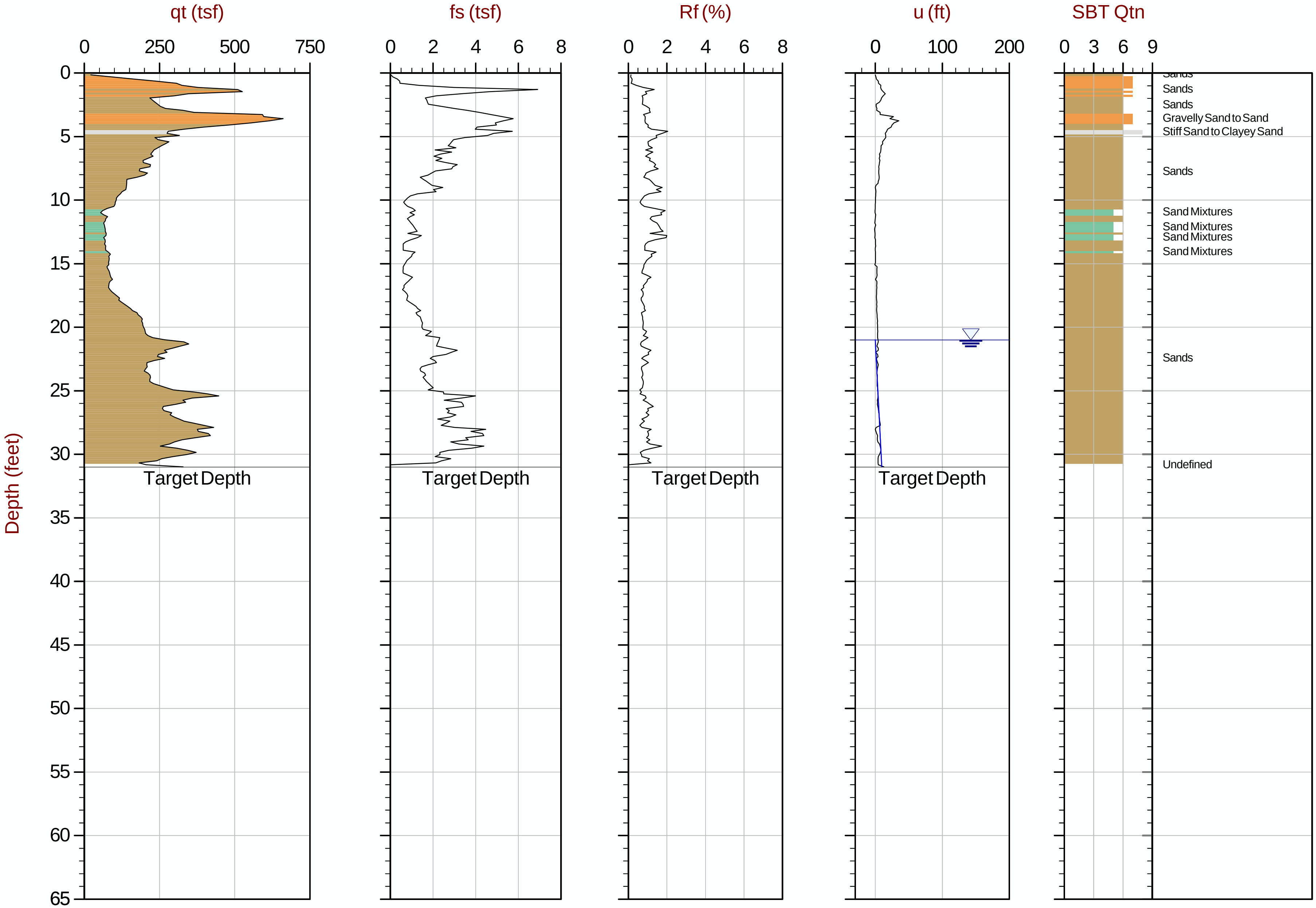
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 15:57
Site: Raymond Road, Verona, WI

Sounding: CPT20-55
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP55.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766239m E: 294003m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

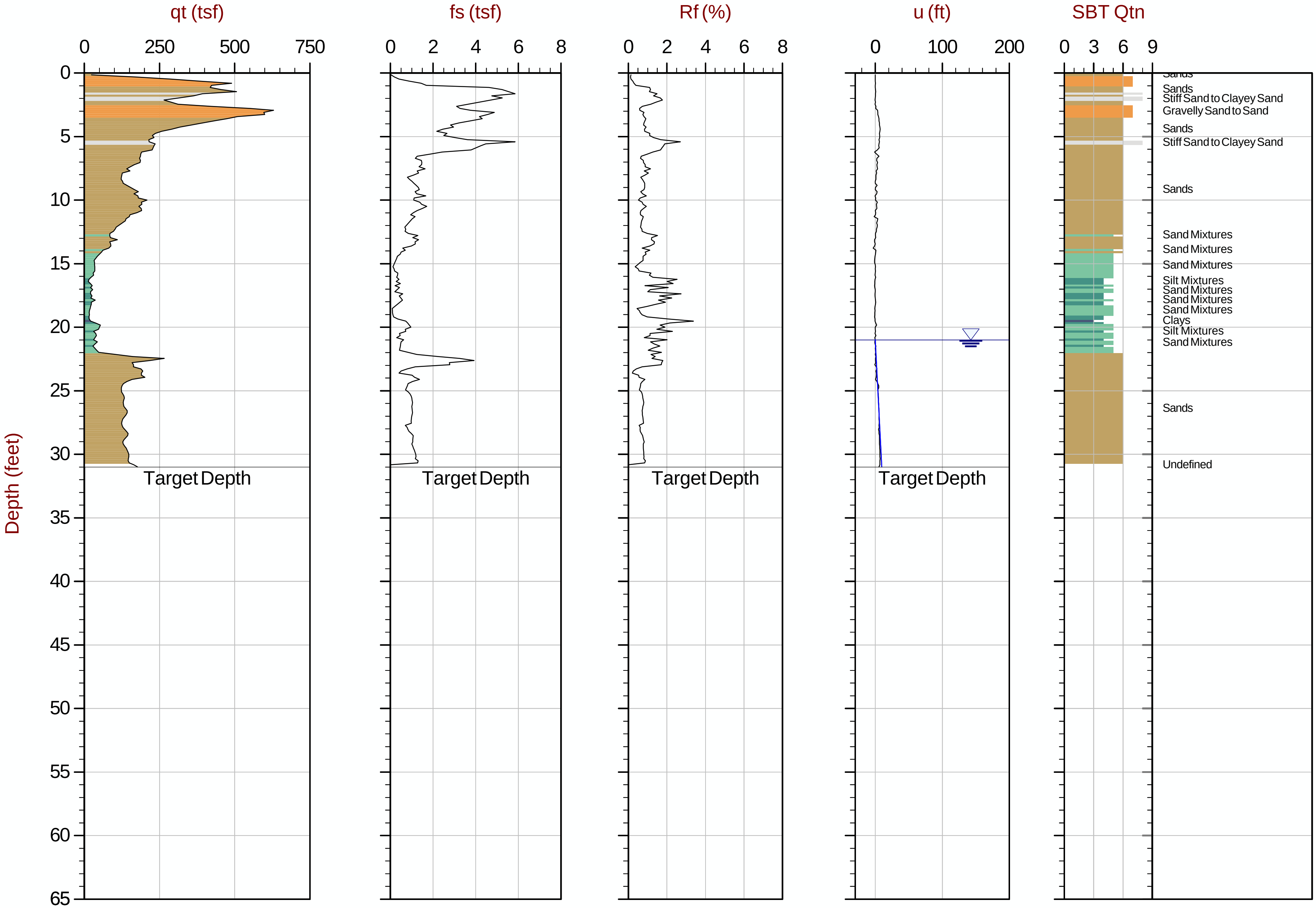
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 16:20
Site: Raymond Road, Verona, WI

Sounding: CPT20-56
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP56.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766261m E: 294020m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

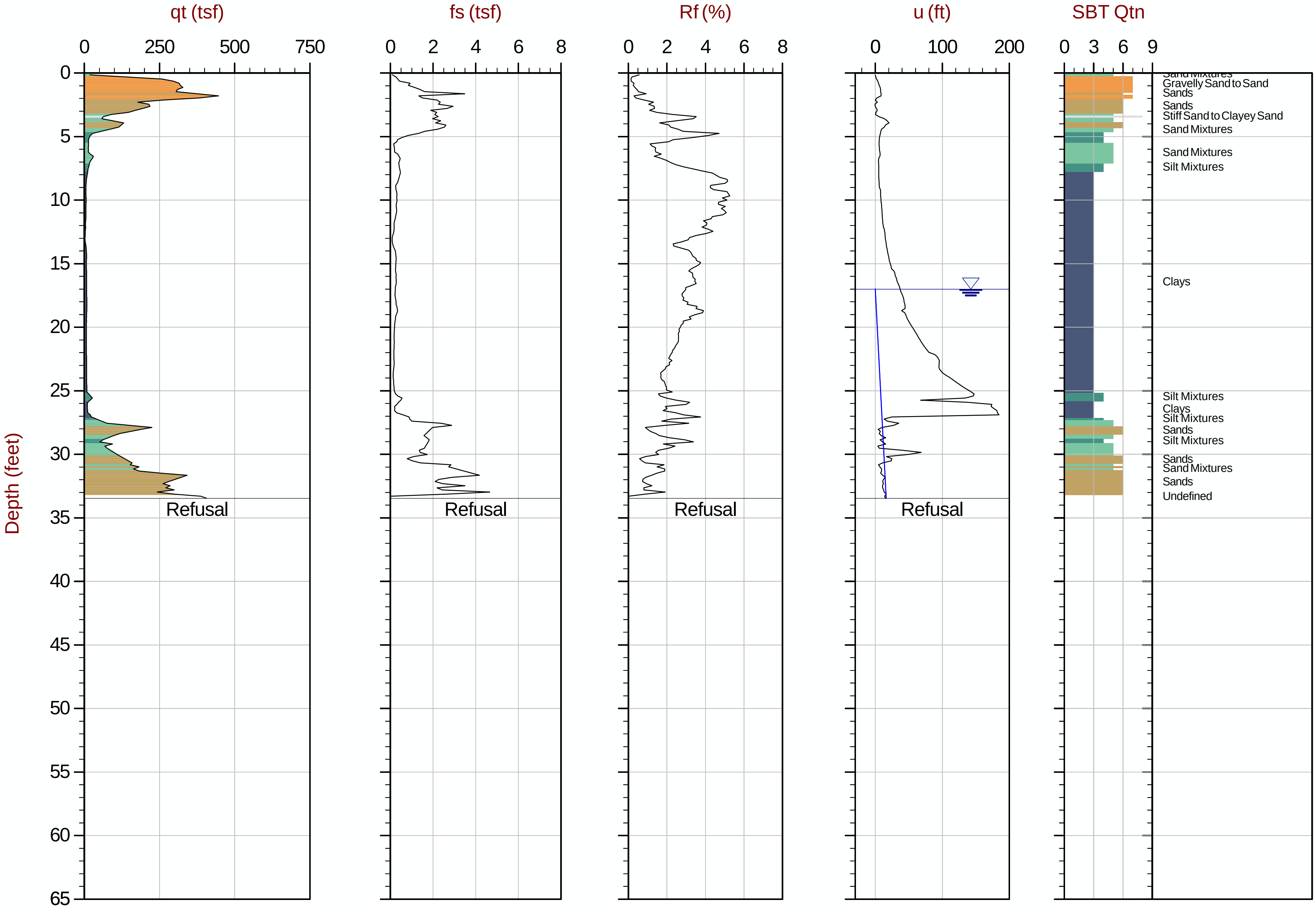
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 16:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-57
Cone: 568:T1500F15U500



Max Depth: 10.200 m / 33.46 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP57.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766353m E: 294116m

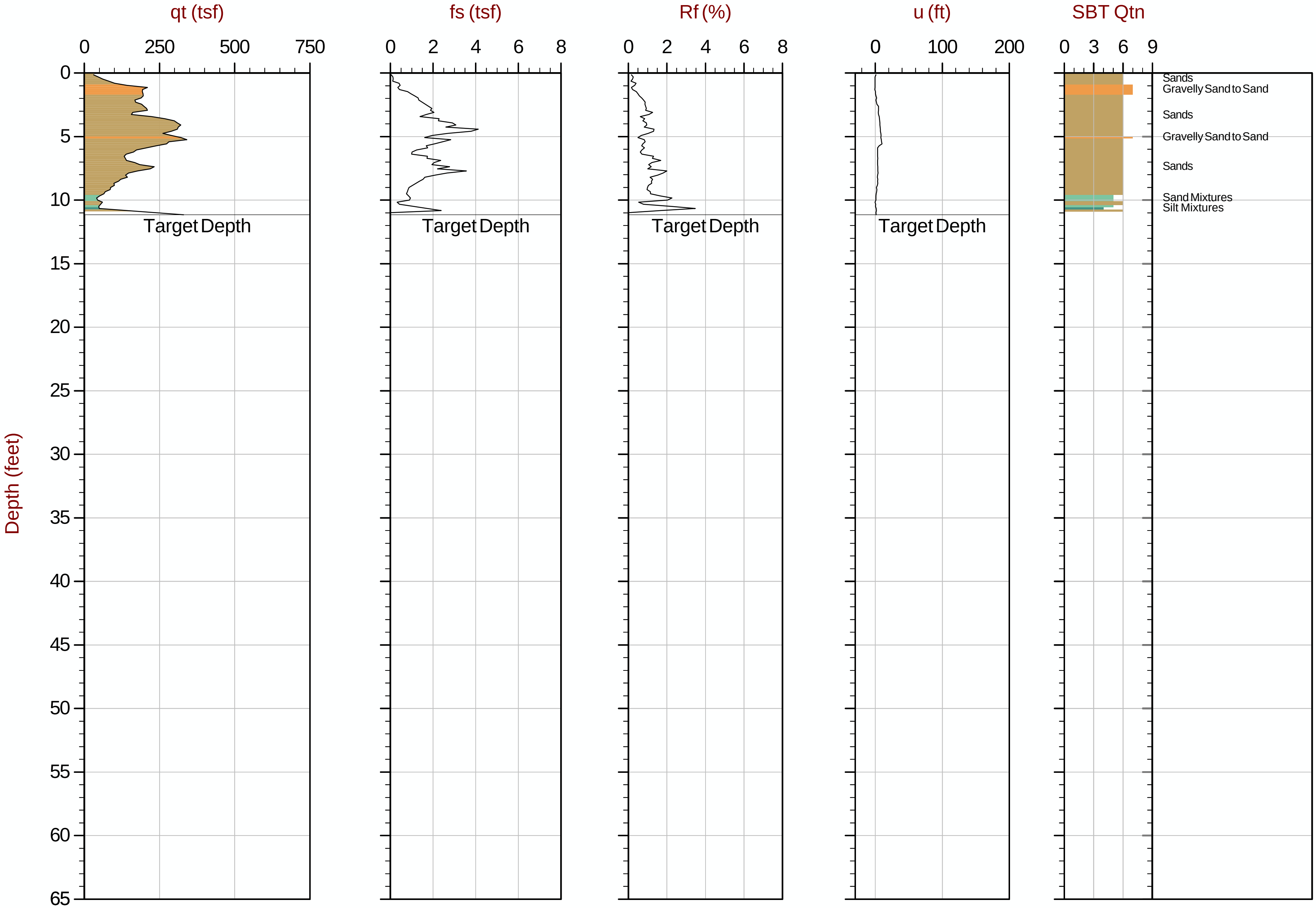
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:23
Site: Raymond Road, Verona, WI
Sounding: CPT20-58
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP58.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766374m E: 294165m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

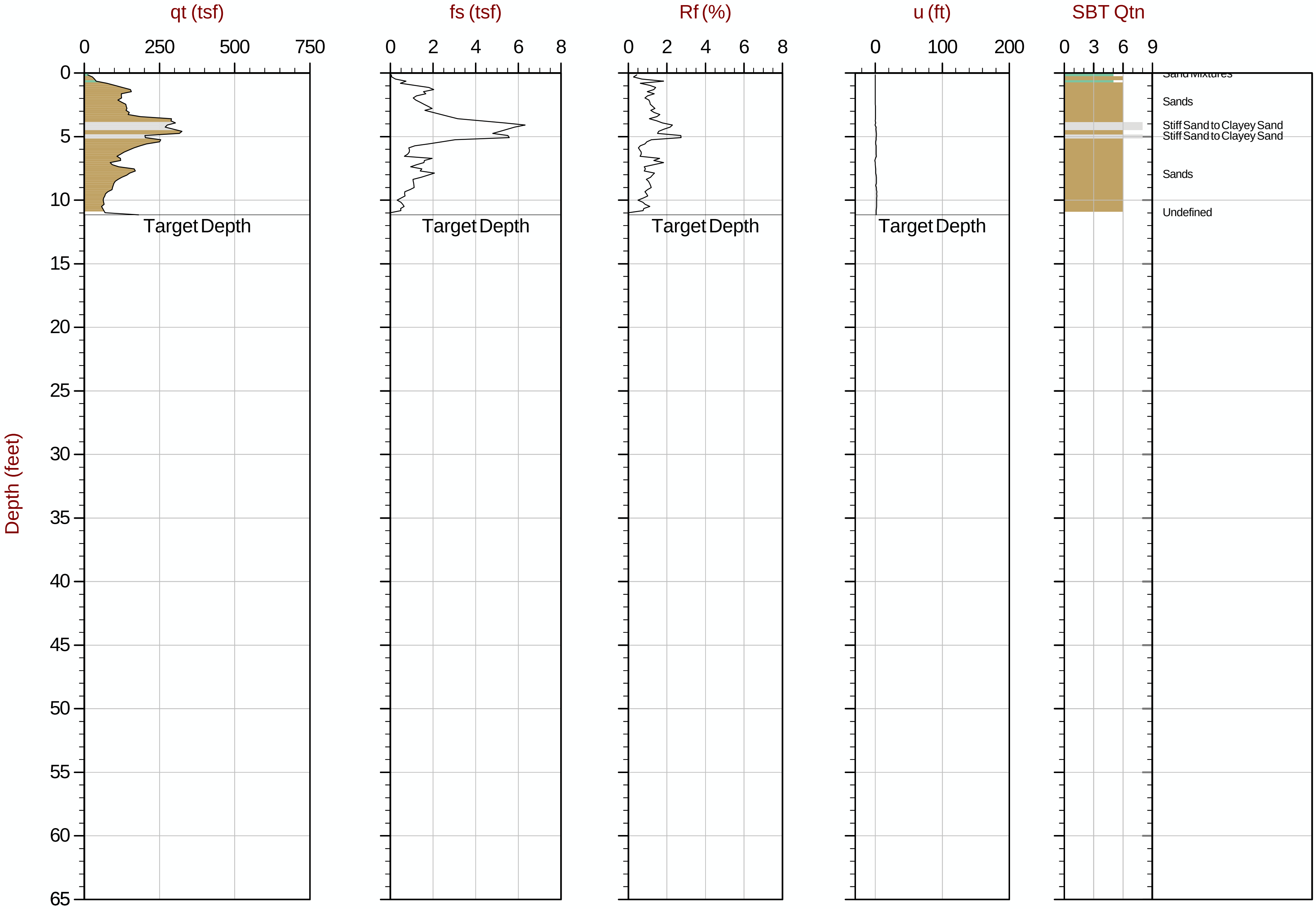
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-60
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP60.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766376m E: 294167m

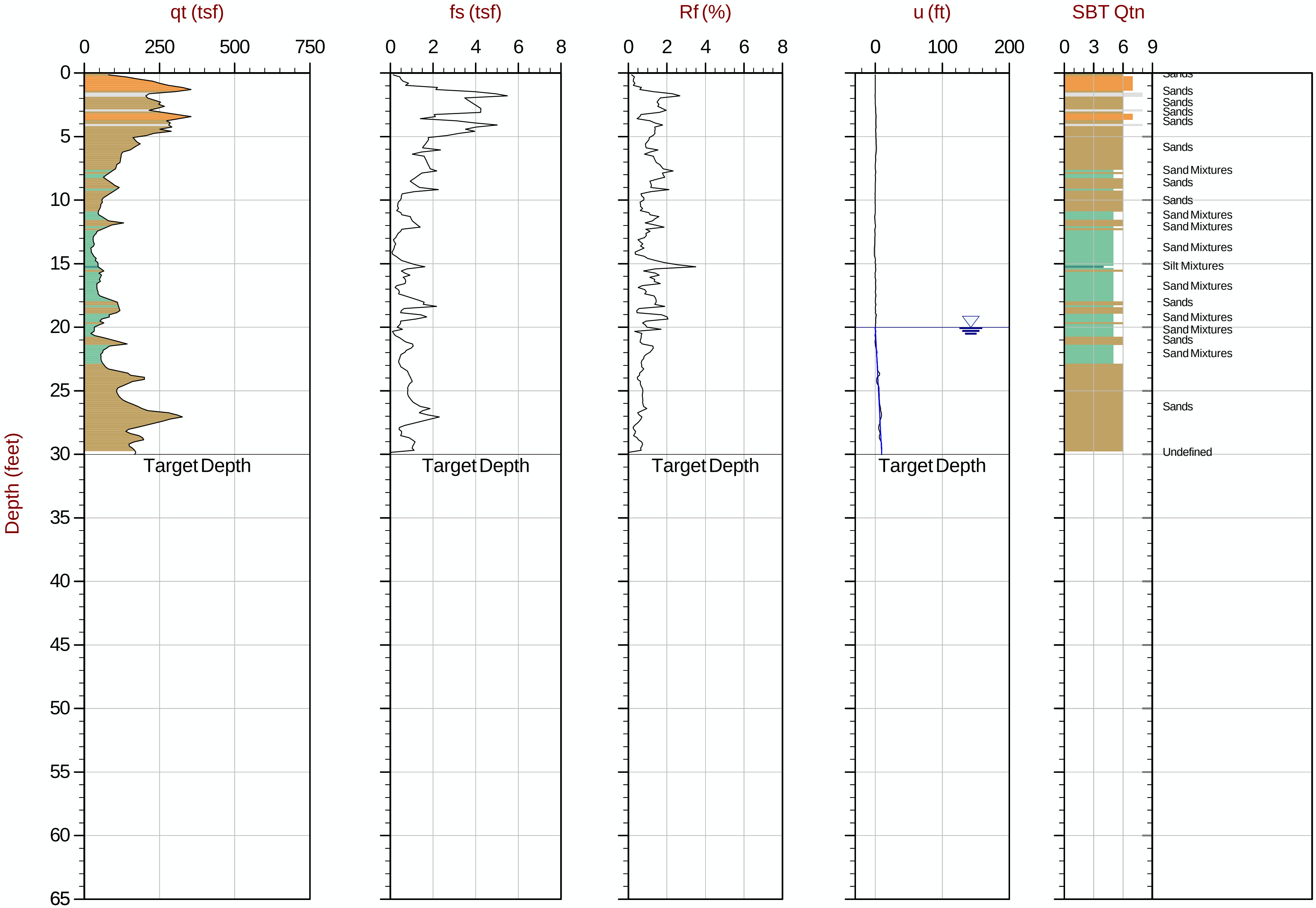
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 19:16
Site: Raymond Road, Verona, WI

Sounding: CPT20-61
Cone: 568:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP61.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766396m E: 294215m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

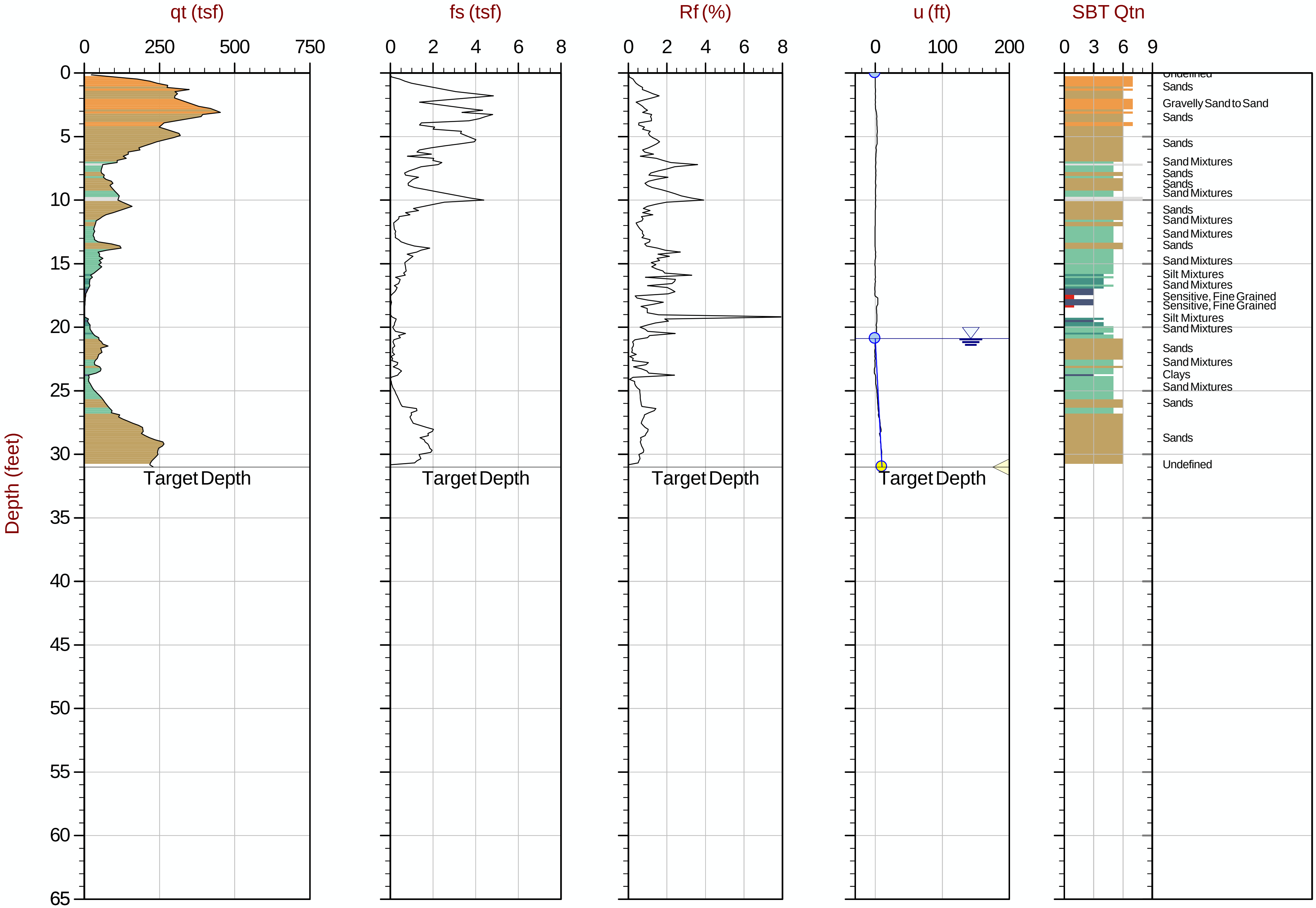
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 19:35
Site: Raymond Road, Verona, WI

Sounding: CPT20-62
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP62.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766399m E: 294218m

― Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

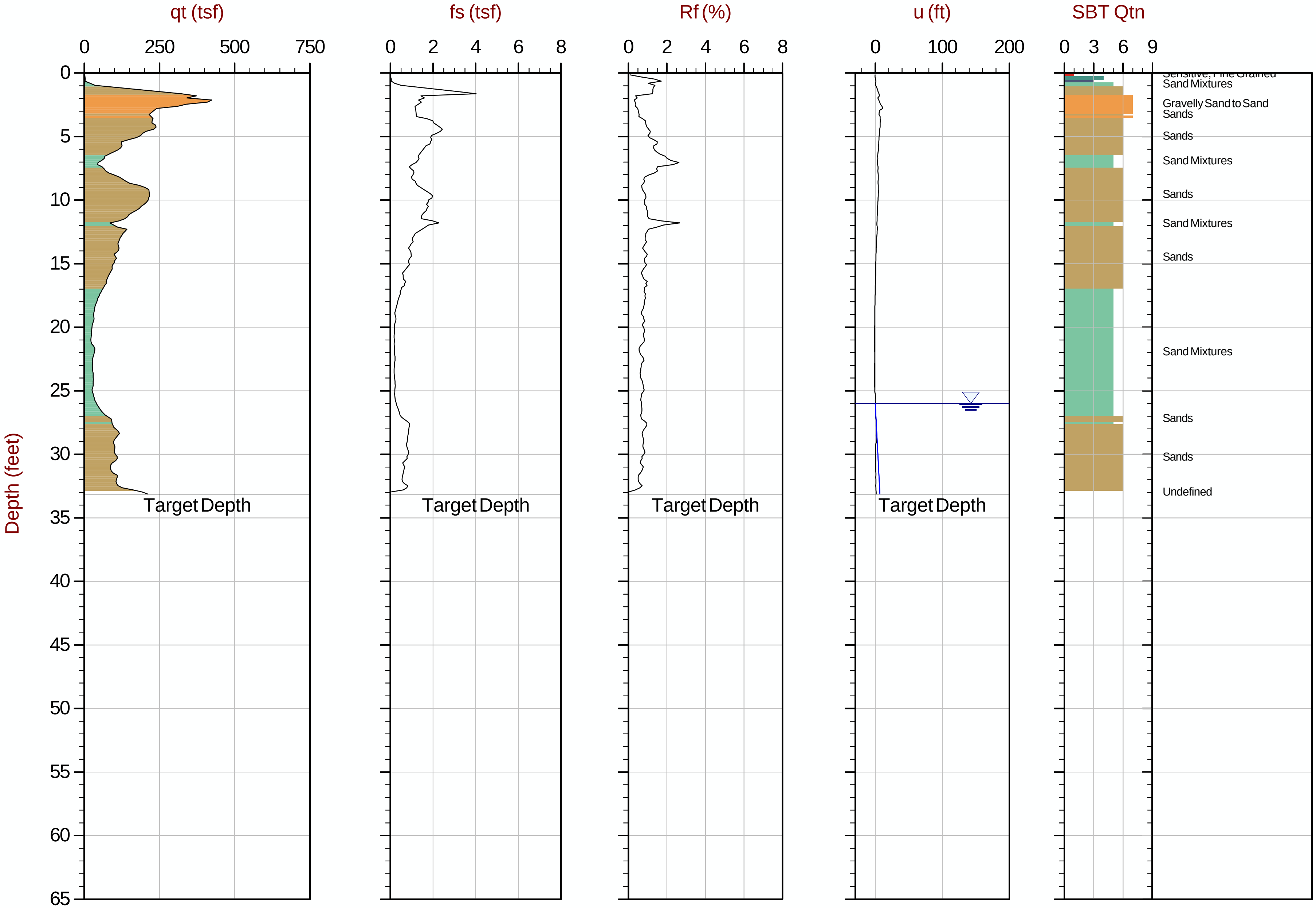
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 08:45
Site: Raymond Road, Verona, WI

Sounding: SCPT20-46
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP46.COR
Unit Wt: SBTQtn (PKR2009)

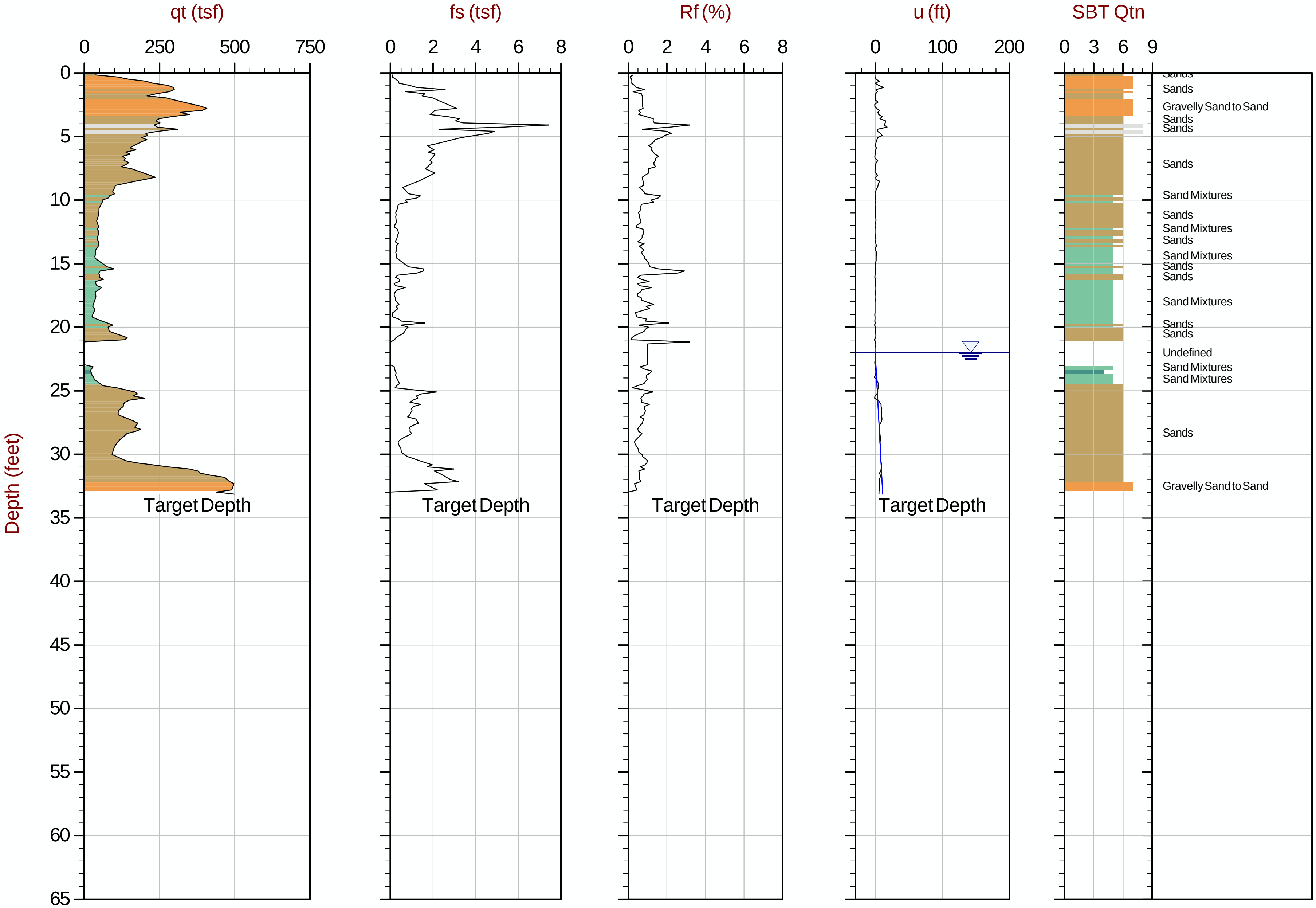
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765872m E: 293673m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 11:21
Site: Raymond Road, Verona, WI
Sounding: SCPT20-50
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP50.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766400m E: 294214m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

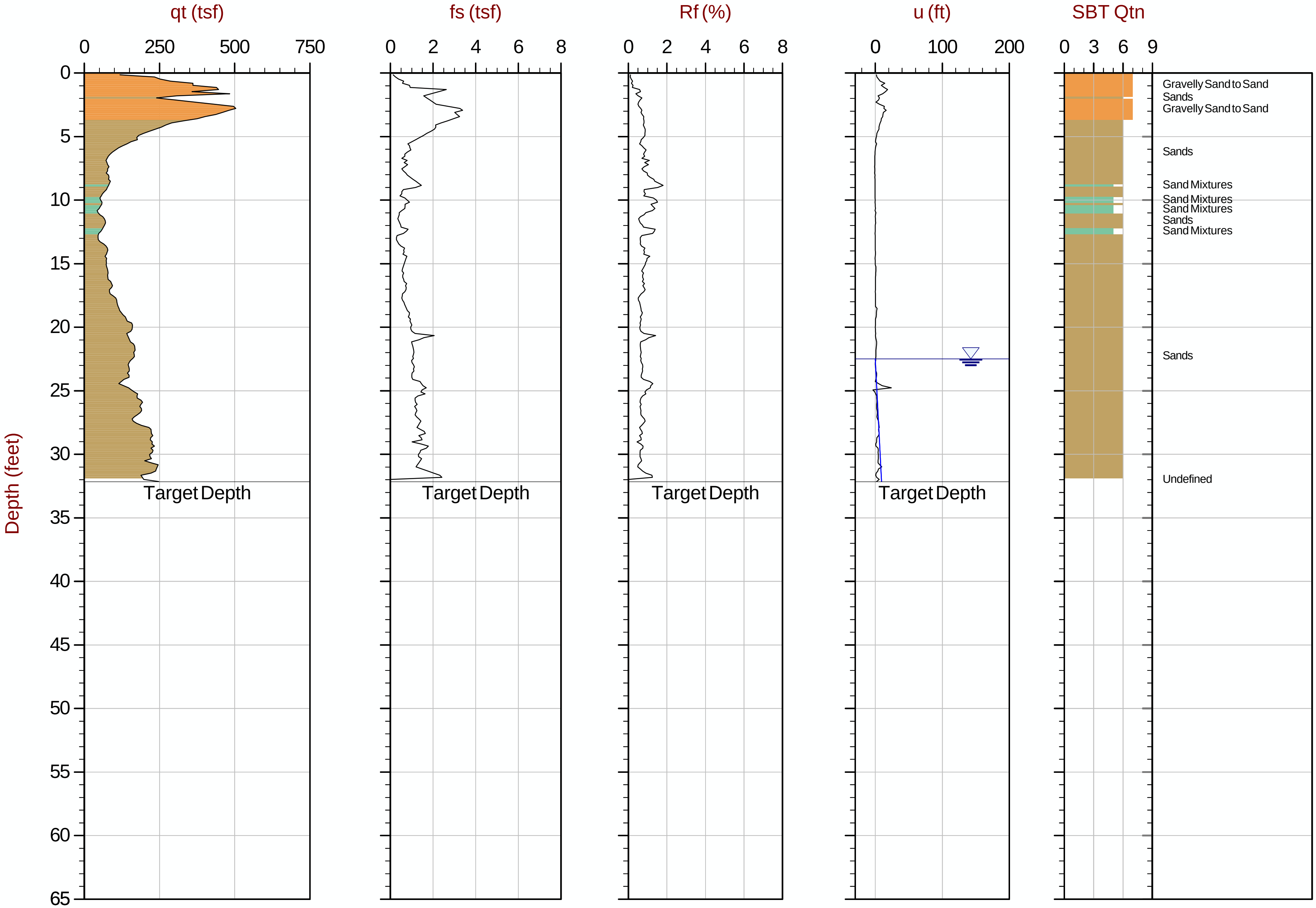
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 14:41
Site: Raymond Road, Verona, WI

Sounding: SCPT20-53
Cone: 568:T1500F15U500



Max Depth: 9.800 m / 32.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP53.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766202m E: 293968m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

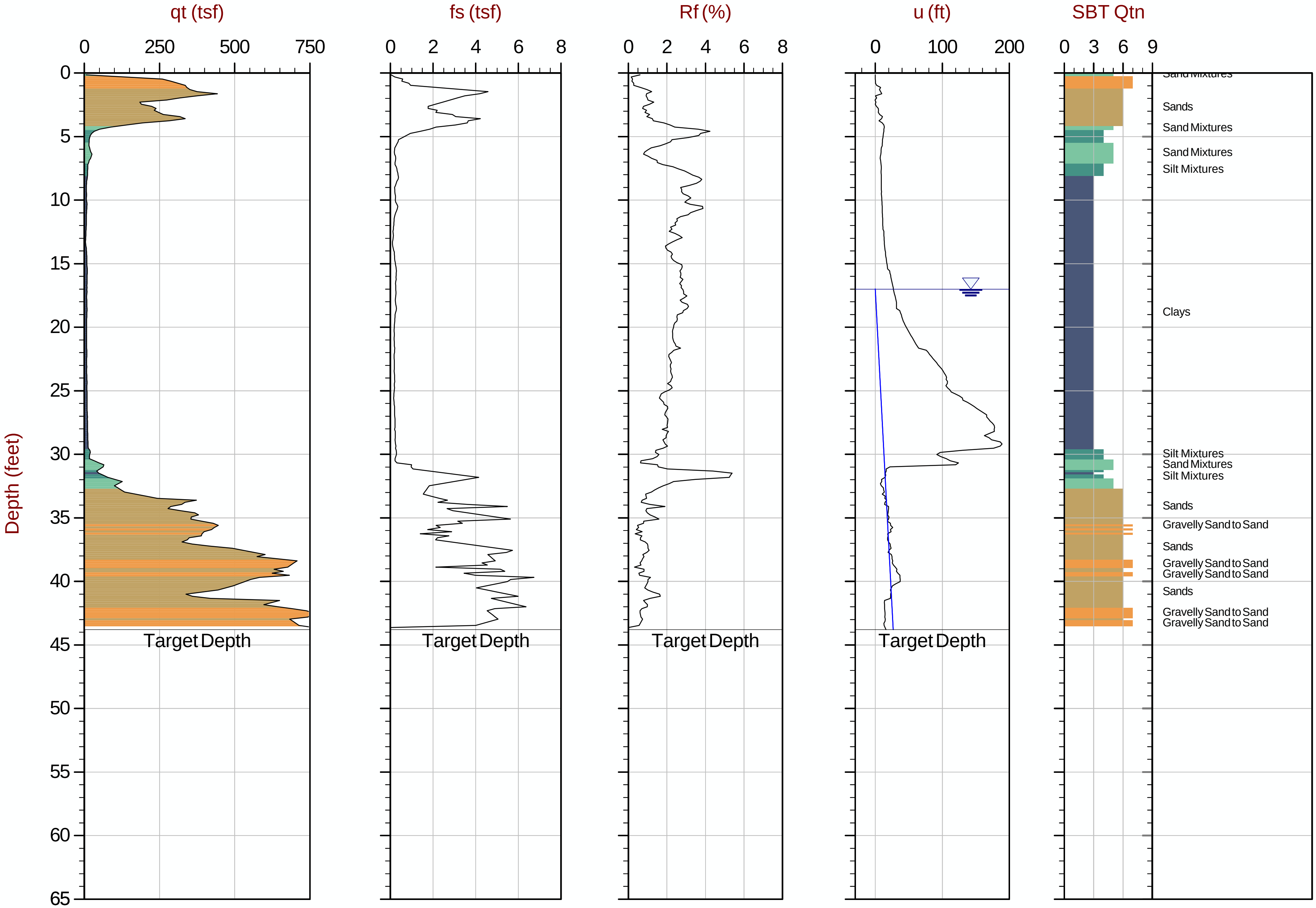
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 17:27
Site: Raymond Road, Verona, WI

Sounding: SCPT20-57B
Cone: 568:T1500F15U500



Max Depth: 13.350 m / 43.80 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP57B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766355m E: 294122m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

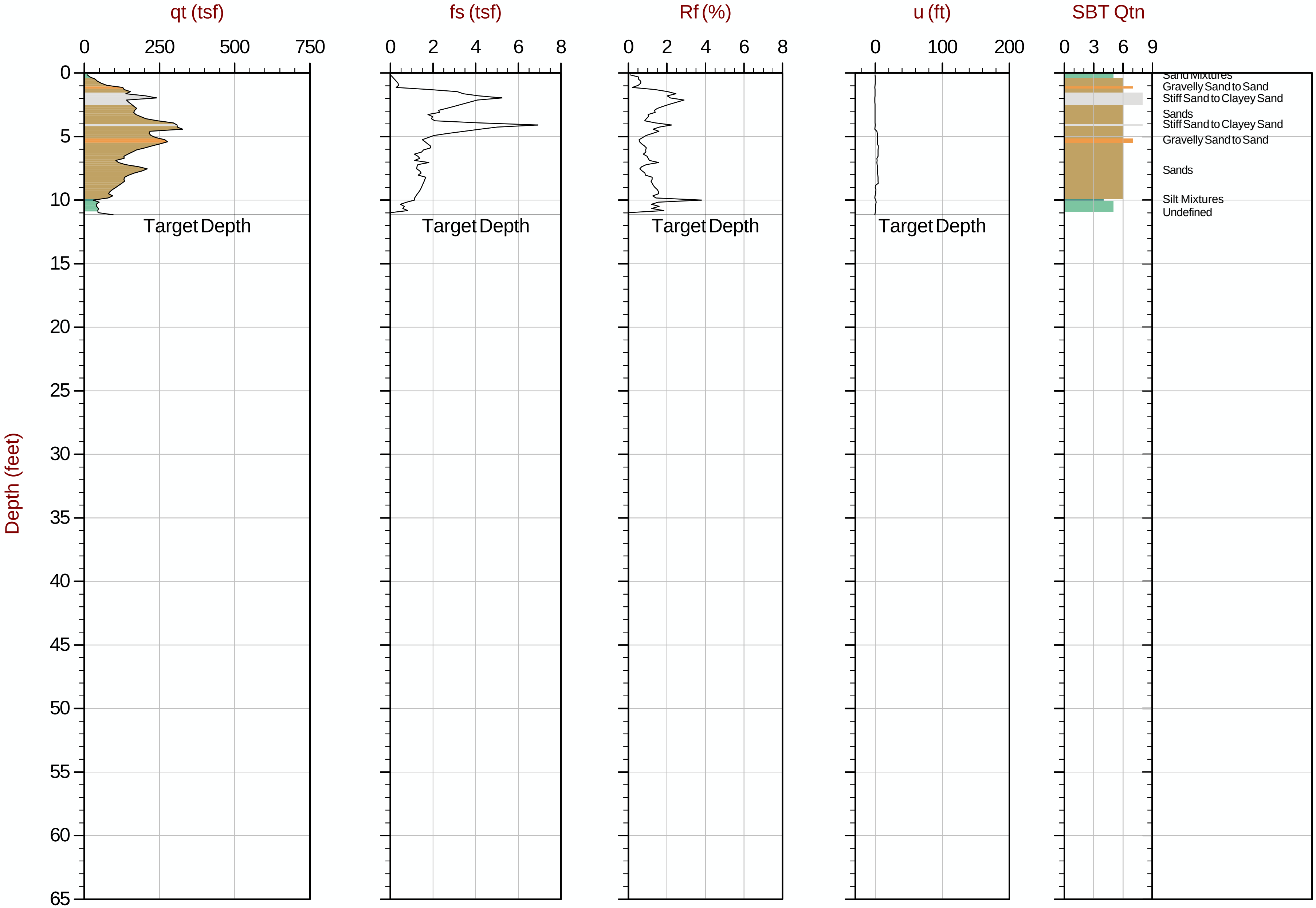
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:34
Site: Raymond Road, Verona, WI

Sounding: SCPT20-59
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP59.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766375m E: 294166m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

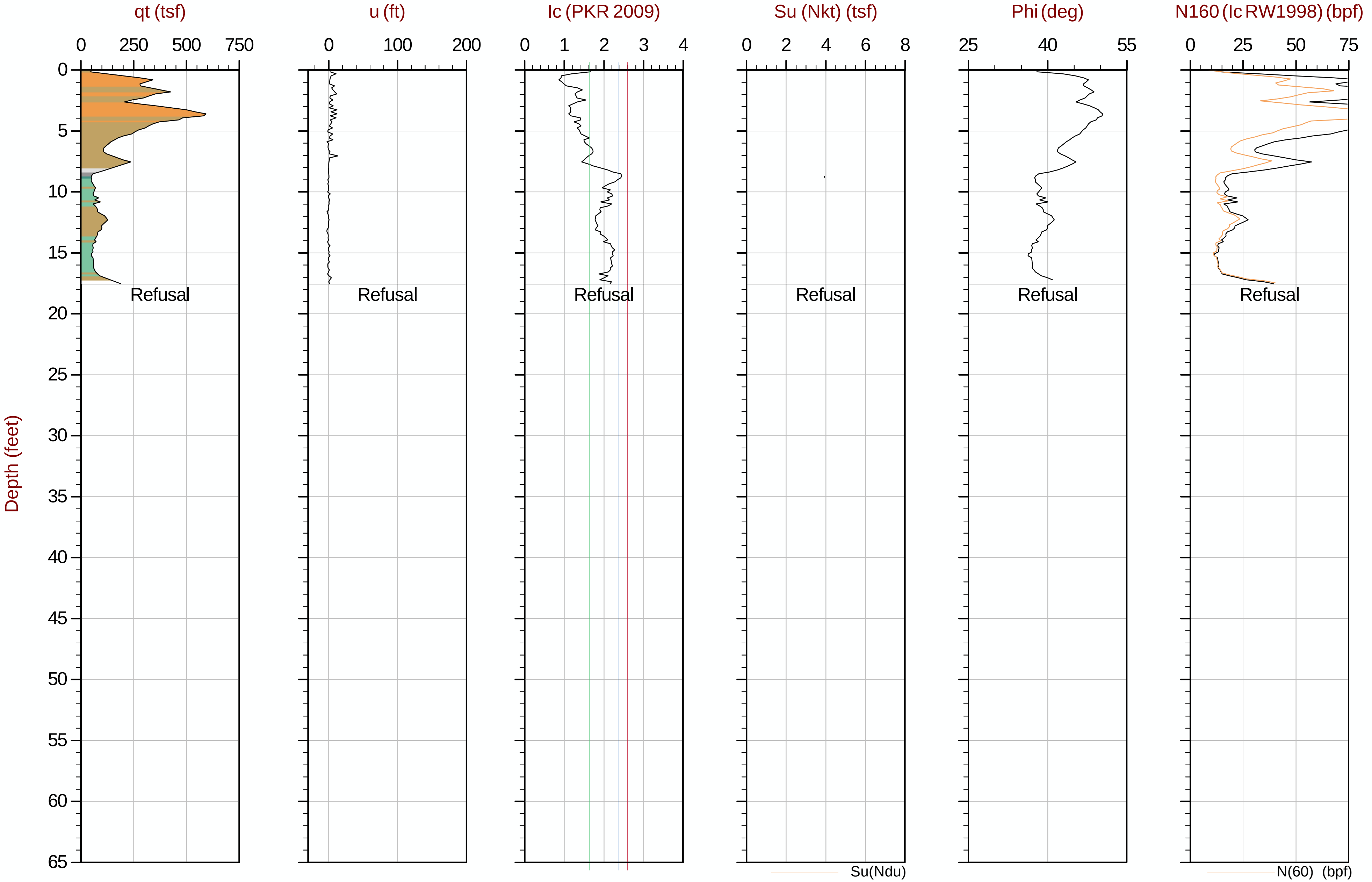
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Advanced Cone Penetration Plots with Ic, Su(Nkt), Phi and N1(60)Ic

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-16 10:19
Site: Raymond Road, Verona, WI

Sounding: CPT20-01
Cone: 678:T1500F15U500



Max Depth: 5.350 m / 17.55 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP01.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766289m E: 294048m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

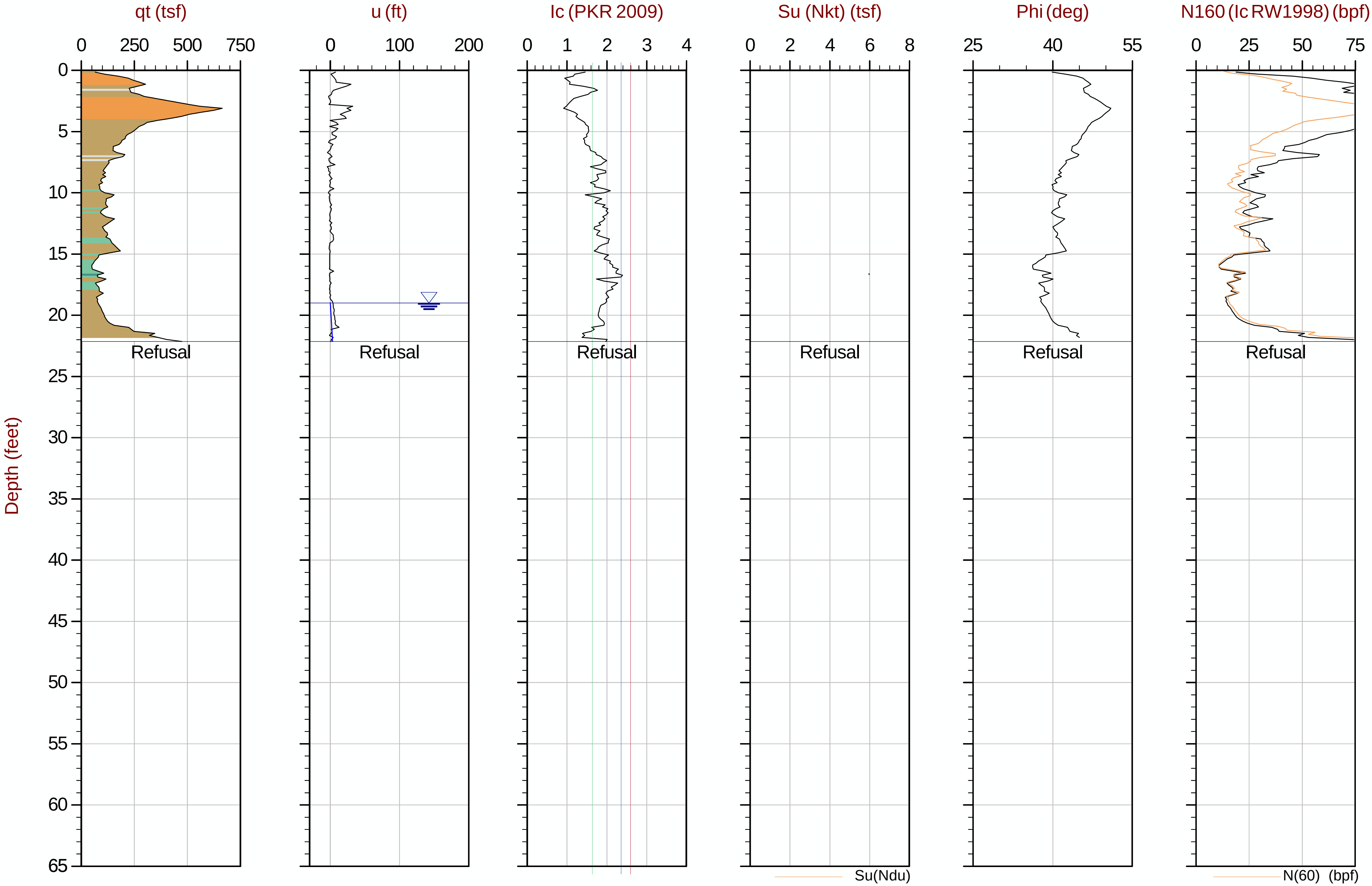
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 09:17
Site: Raymond Road, Verona, WI

Sounding: CPT20-01B
Cone: 640:T1500F15U500



Max Depth: 6.750 m / 22.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP01B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766290m E: 294047m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

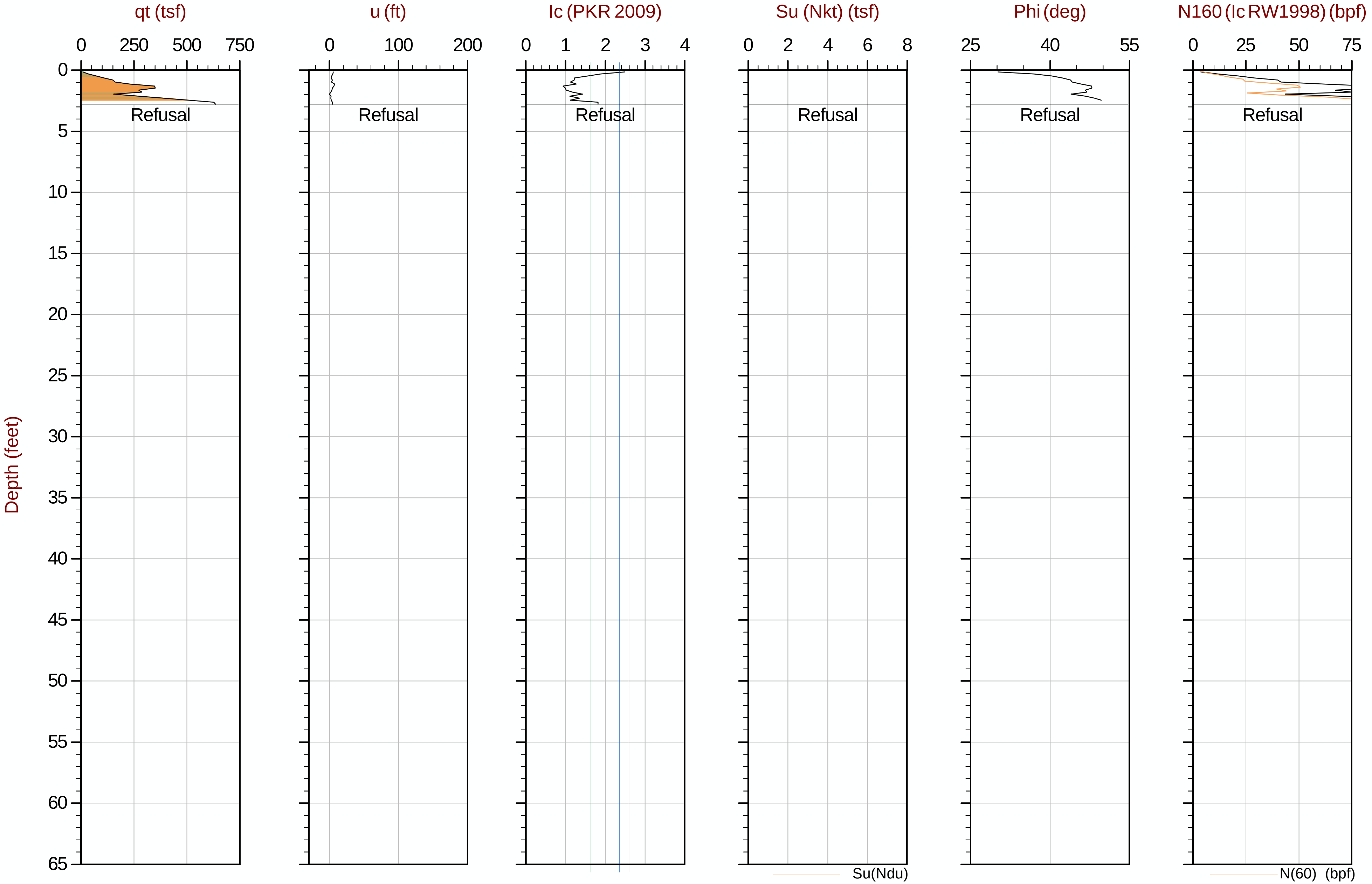
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:06
Site: Raymond Road, Verona, WI

Sounding: CPT20-02
Cone: 640:T1500F15U500



Max Depth: 0.850 m / 2.79 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP02.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766308m E: 294074m

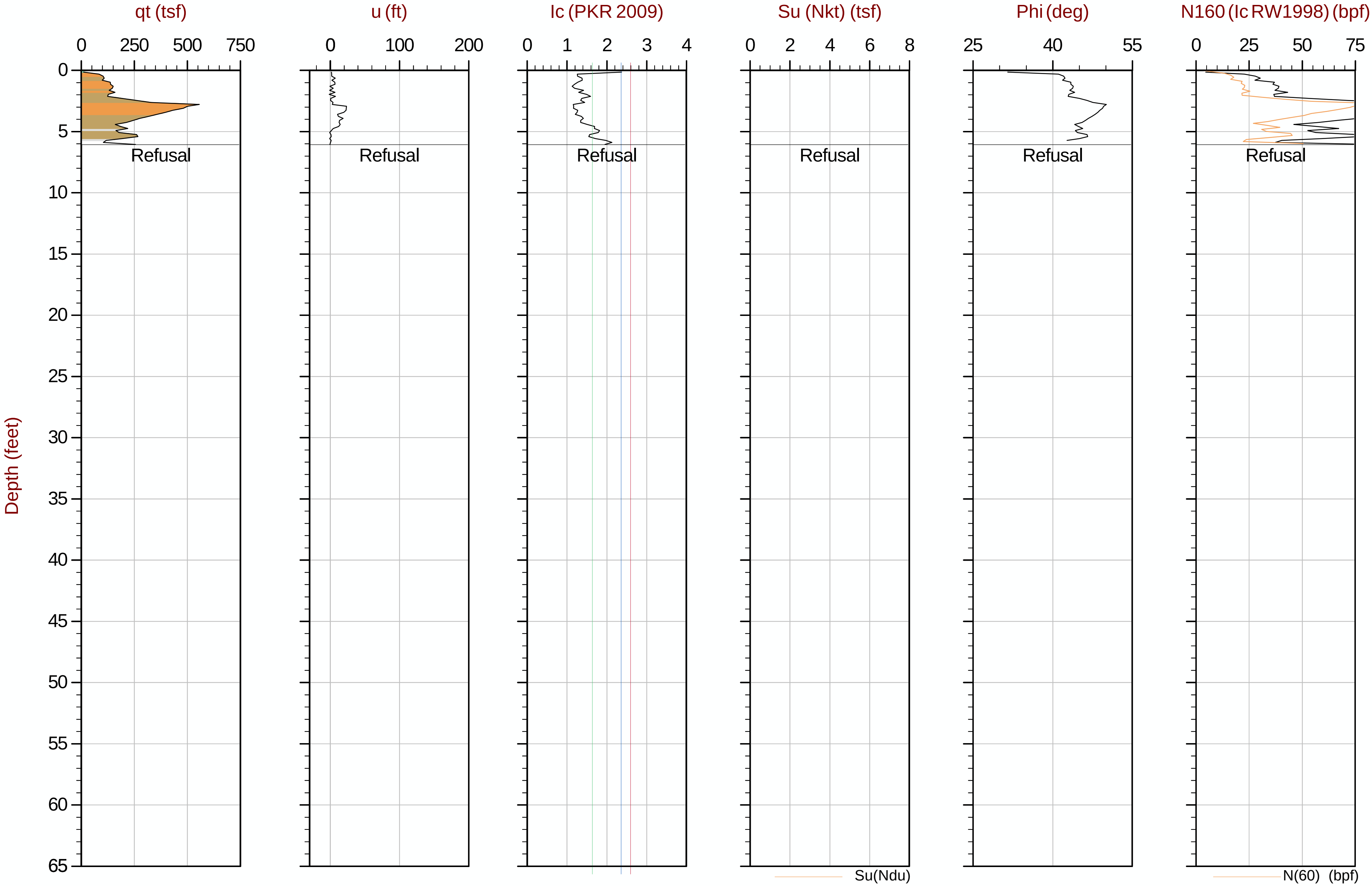
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:17
Site: Raymond Road, Verona, WI

Sounding: CPT20-02B
Cone: 640:T1500F15U500



Max Depth: 1.850 m / 6.07 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP02B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766308m E: 294075m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

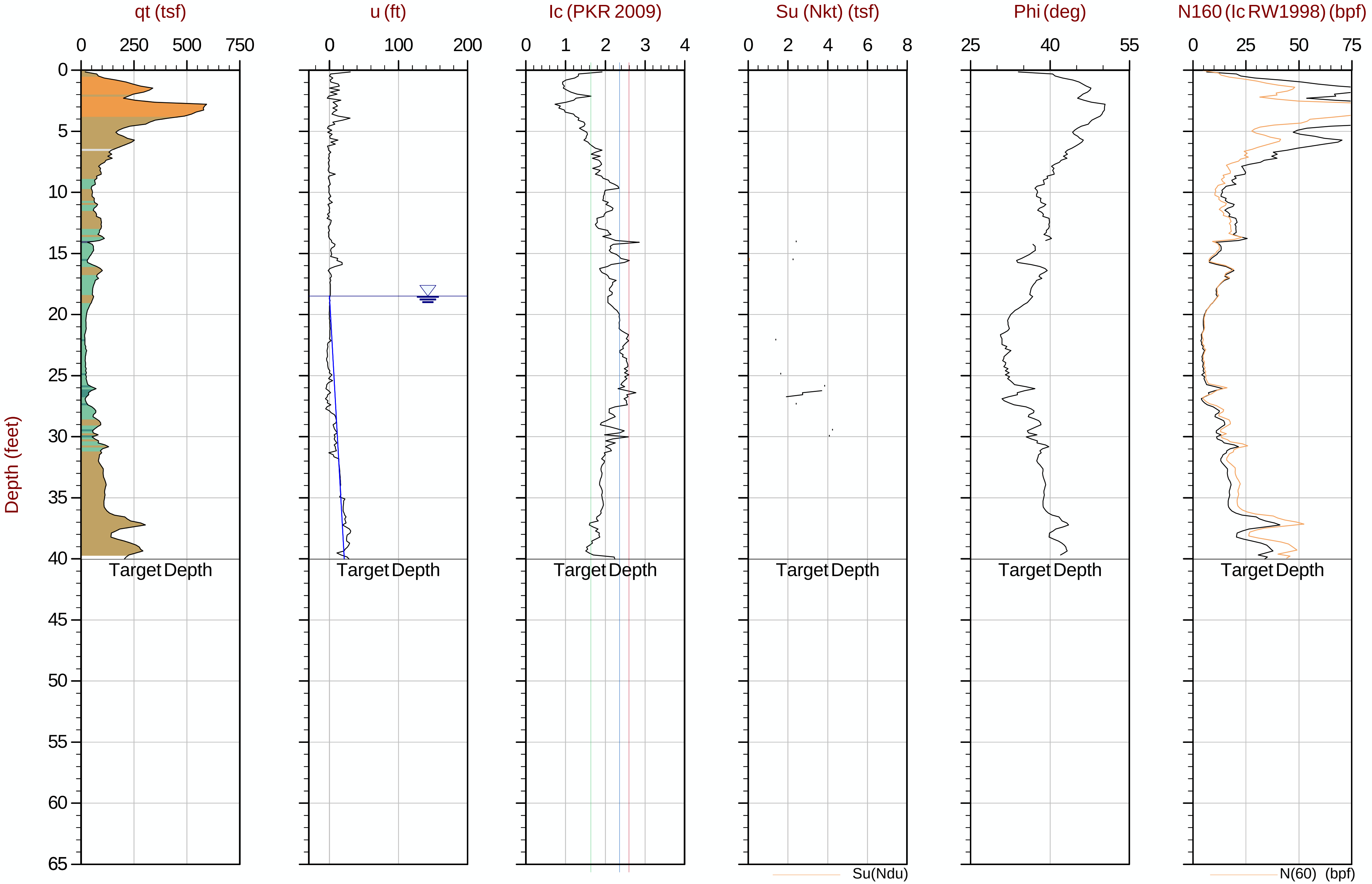
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:34
Site: Raymond Road, Verona, WI

Sounding: SCPT20-02C
Cone: 640:T1500F15U500



Max Depth: 12.200 m / 40.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP02C.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766308m E: 294072m

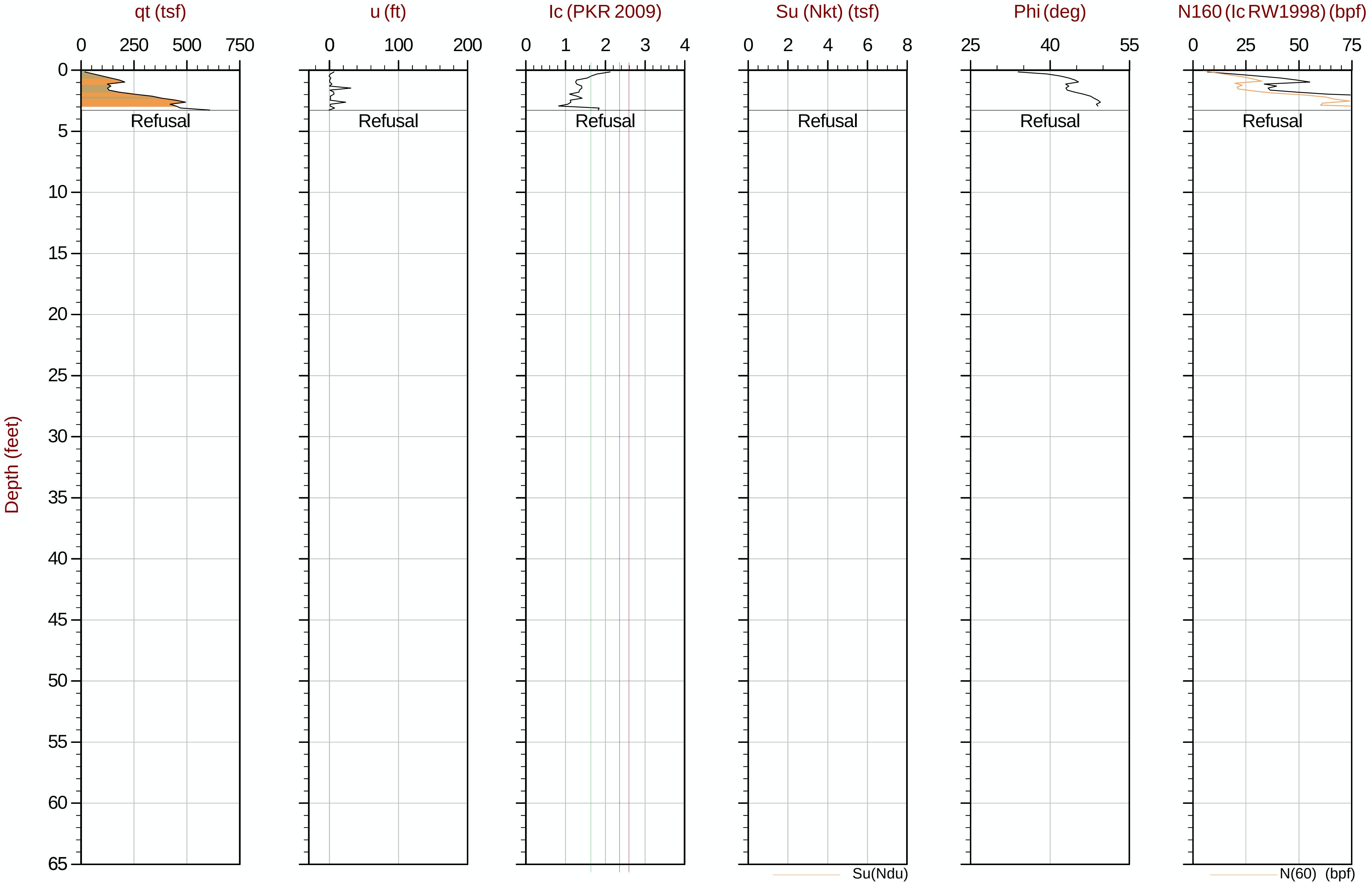
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 11:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-03
Cone: 640:T1500F15U500



Max Depth: 1.000 m / 3.28 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP03.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766321m E: 294095m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

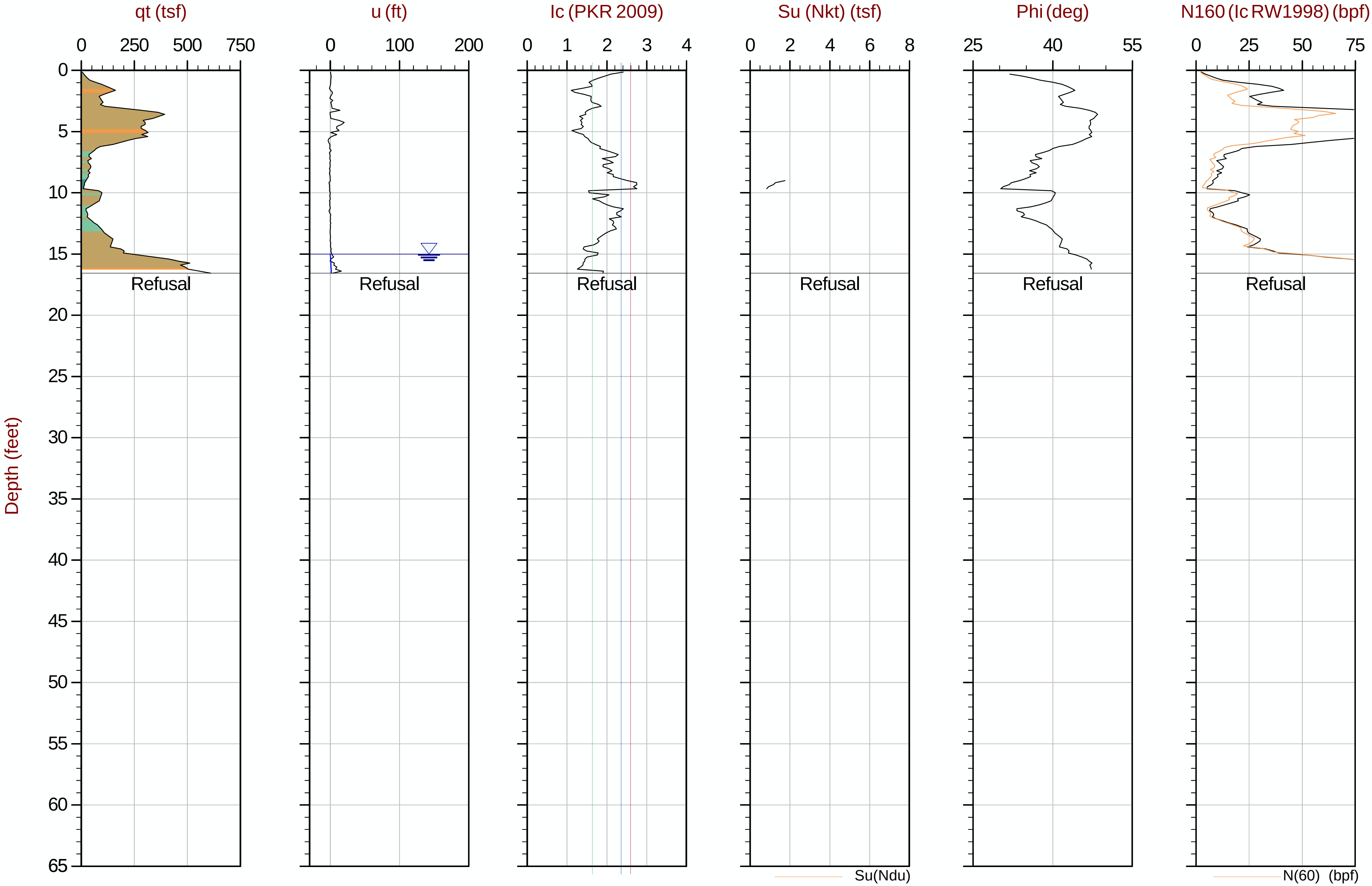
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 12:22
Site: Raymond Road, Verona, WI

Sounding: CPT20-03B
Cone: 640:T1500F15U500



Max Depth: 5.050 m / 16.57 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP03B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766321m E: 294097m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

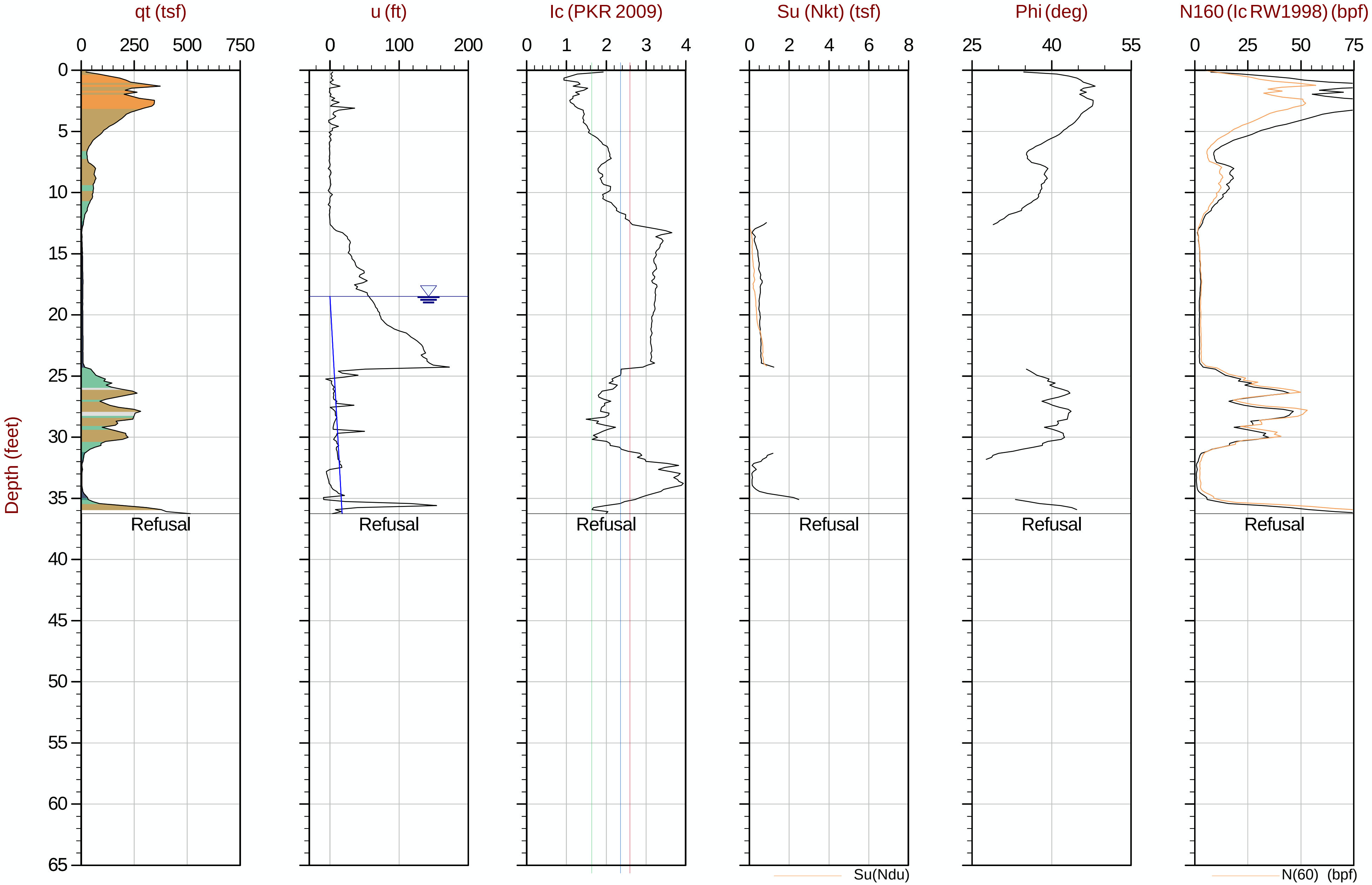
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 12:57
Site: Raymond Road, Verona, WI

Sounding: SCPT20-04
Cone: 640:T1500F15U500



Max Depth: 11.050 m / 36.25 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP04.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766343m E: 294114m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

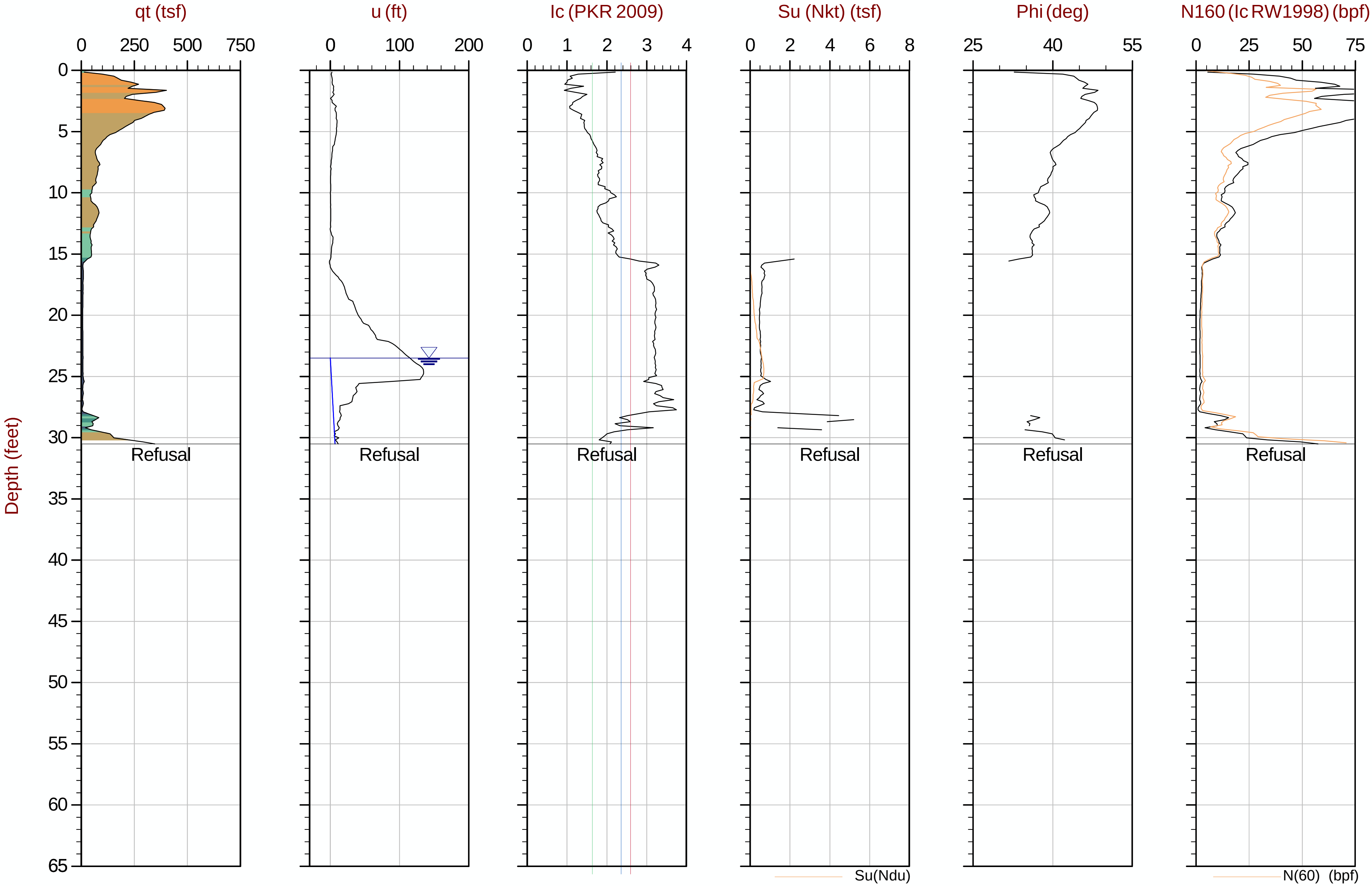
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 13:56
Site: Raymond Road, Verona, WI

Sounding: SCPT20-05
Cone: 640:T1500F15U500



Max Depth: 9.300 m / 30.51 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP05.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766351m E: 294124m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

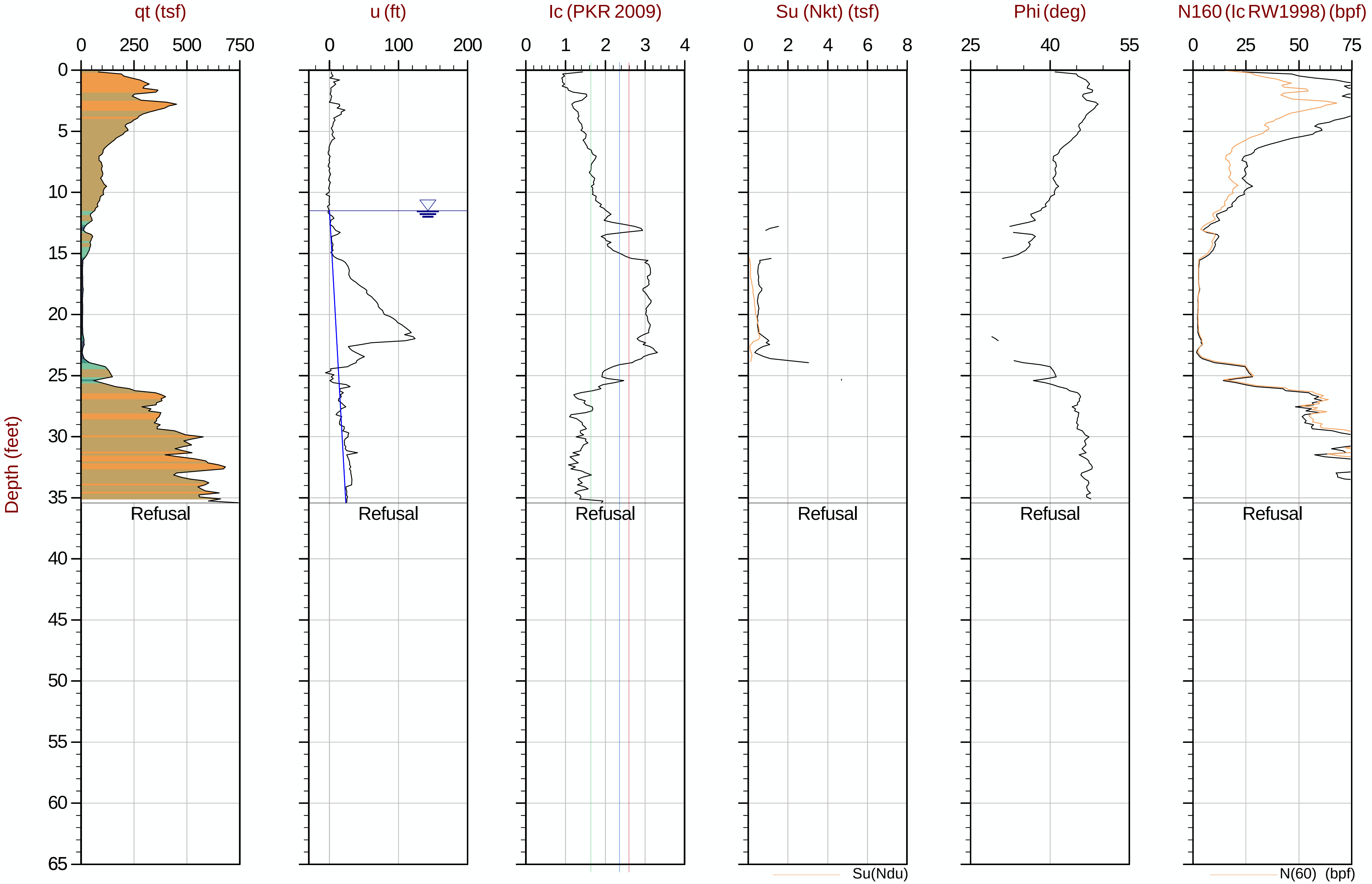
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 14:46
Site: Raymond Road, Verona, WI

Sounding: CPT20-06
Cone: 640:T1500F15U500



Max Depth: 10.800 m / 35.43 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP06.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766359m E: 294132m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

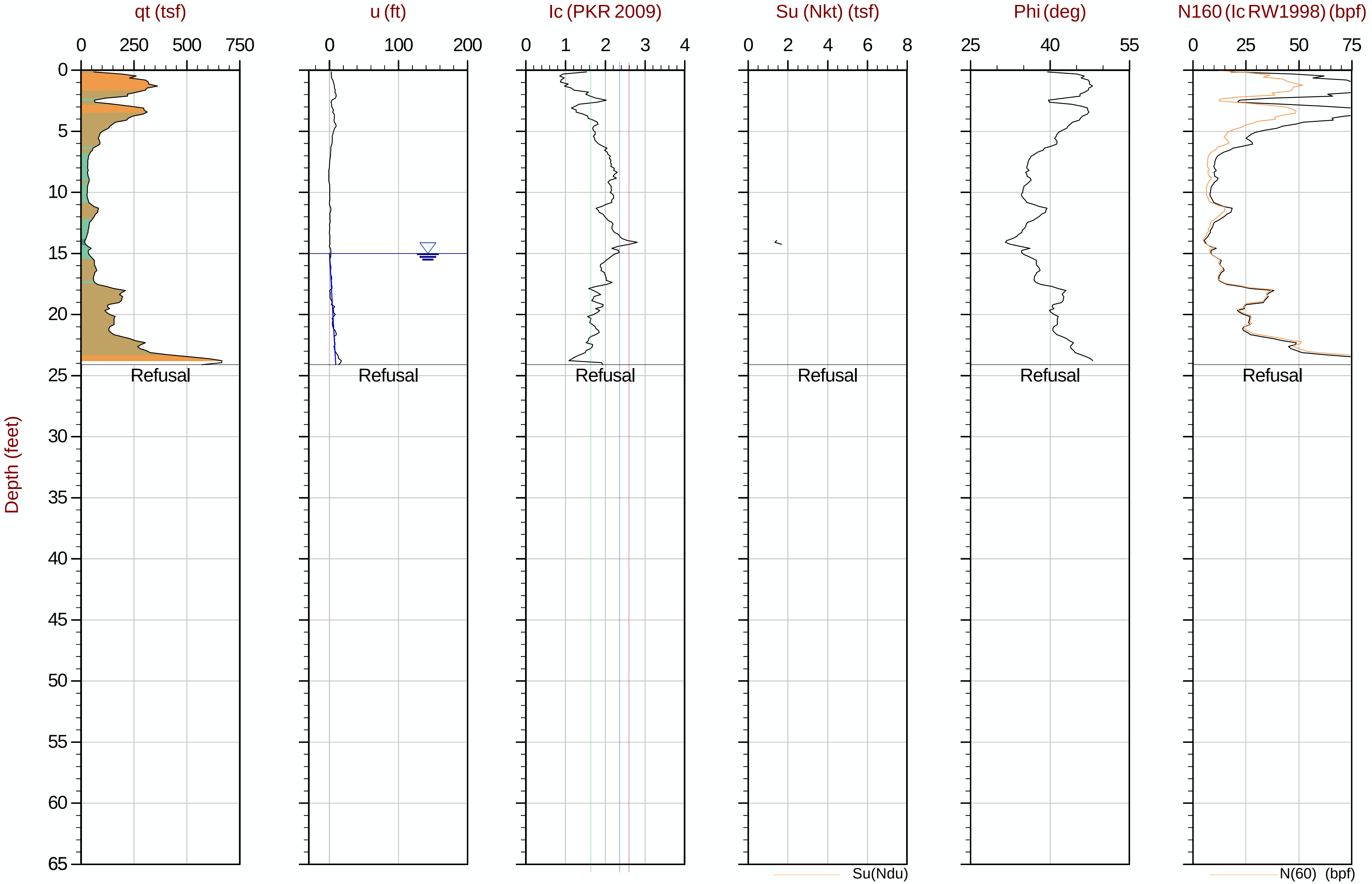
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 15:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-07
Cone: 640:T1500F15U500



Max Depth: 7.350 m / 24.11 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP07.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766363m E: 294144m

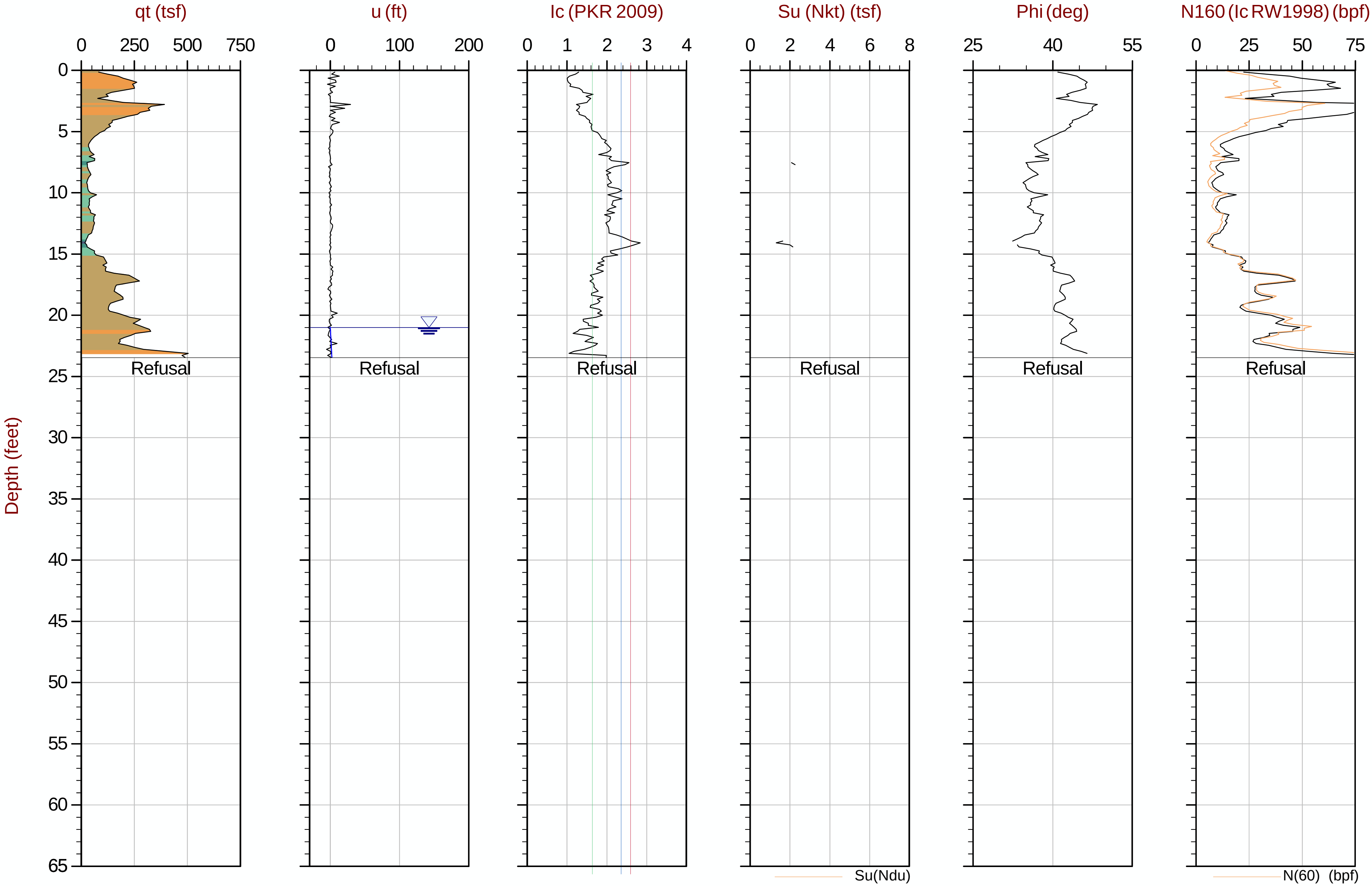
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 15:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-08
Cone: 640:T1500F15U500



Max Depth: 7.150 m / 23.46 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP08.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

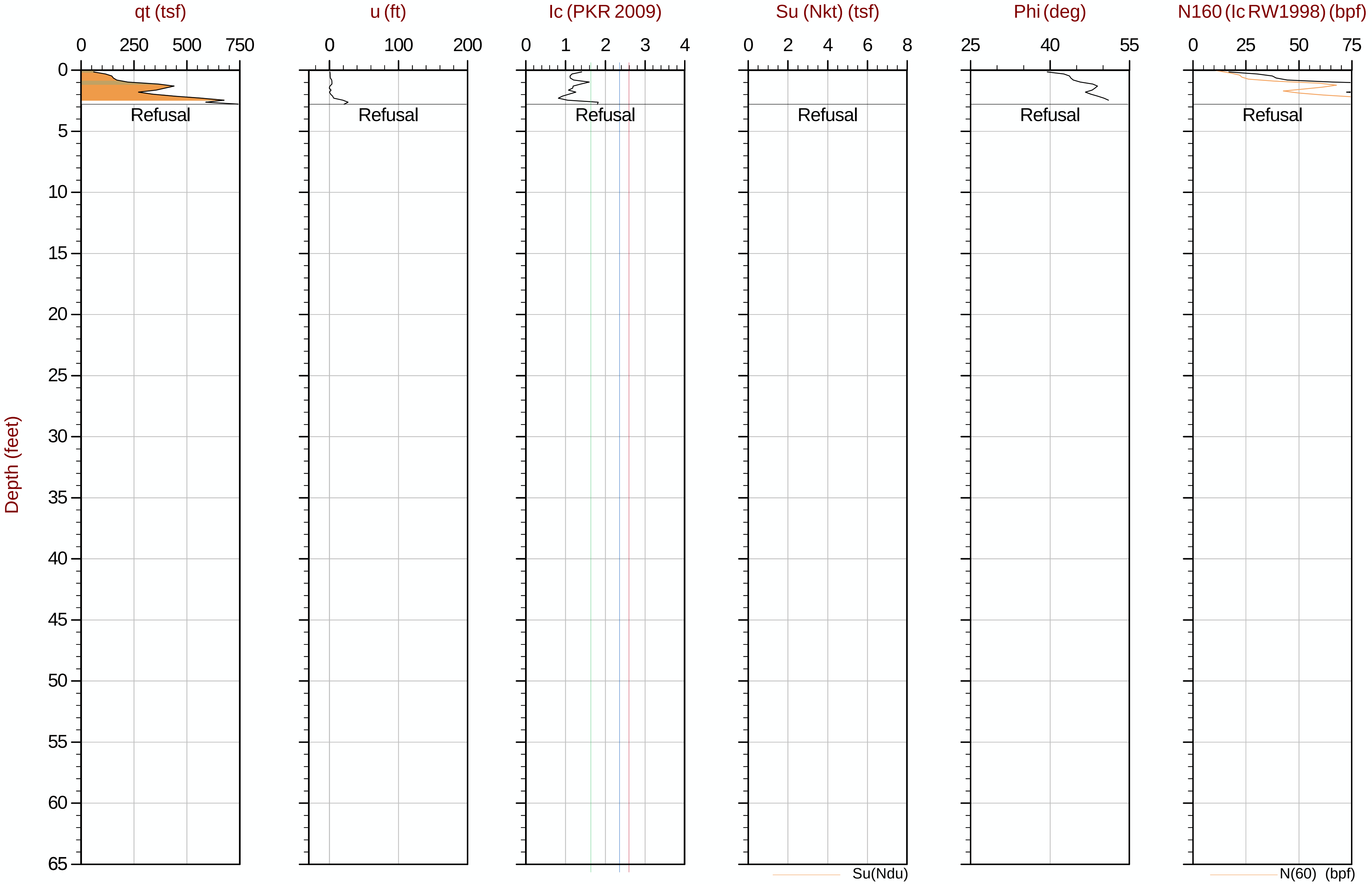
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766377m E: 294169m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:30
Site: Raymond Road, Verona, WI
Sounding: CPT20-09
Cone: 640:T1500F15U500



Max Depth: 0.850 m / 2.79 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP09.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766392m E: 294199m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

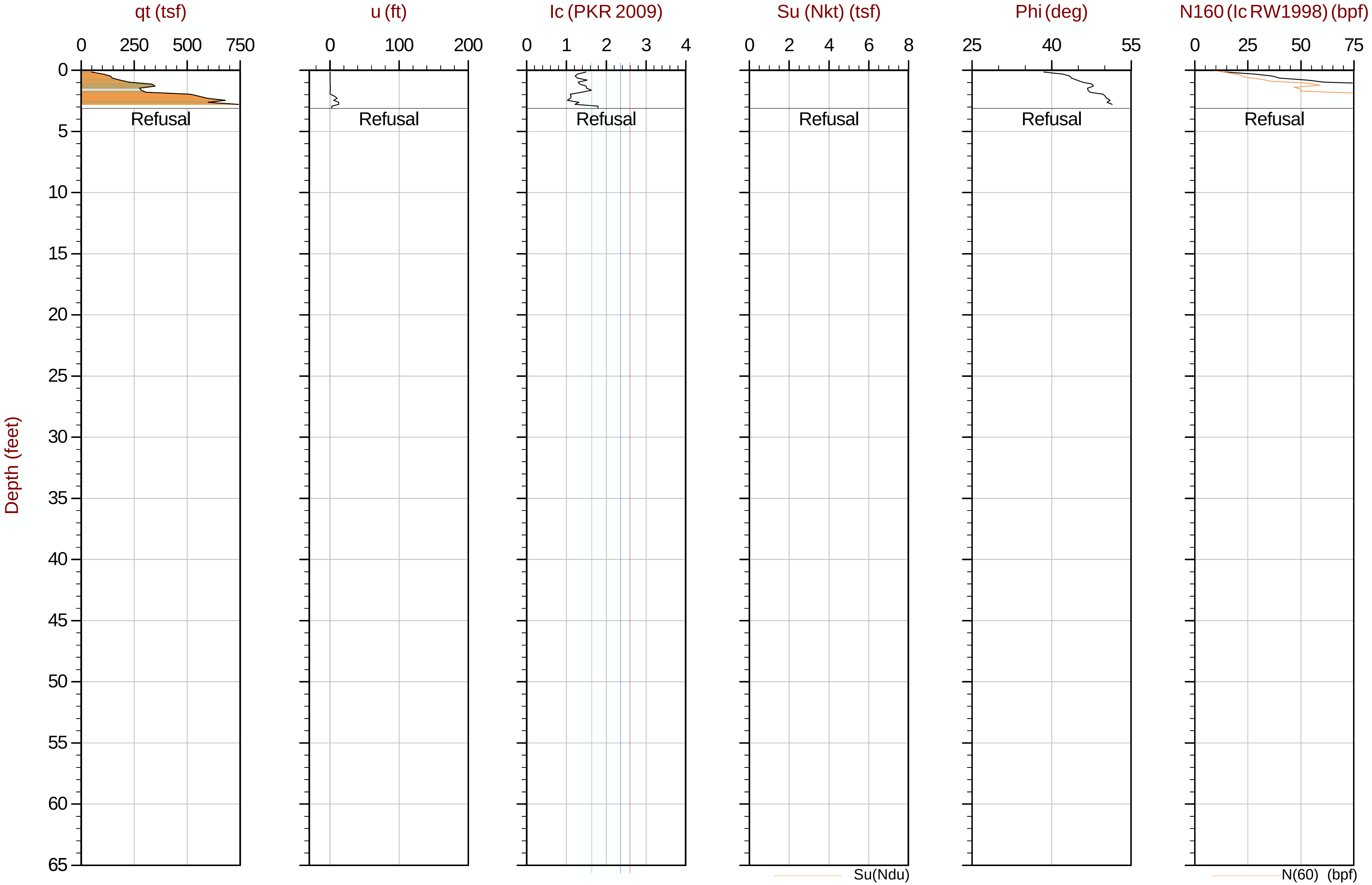
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:38
Site: Raymond Road, Verona, WI

Sounding: CPT20-09B
Cone: 640:T1500F15U500



Max Depth: 0.950 m / 3.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP09B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766393m E: 294200m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

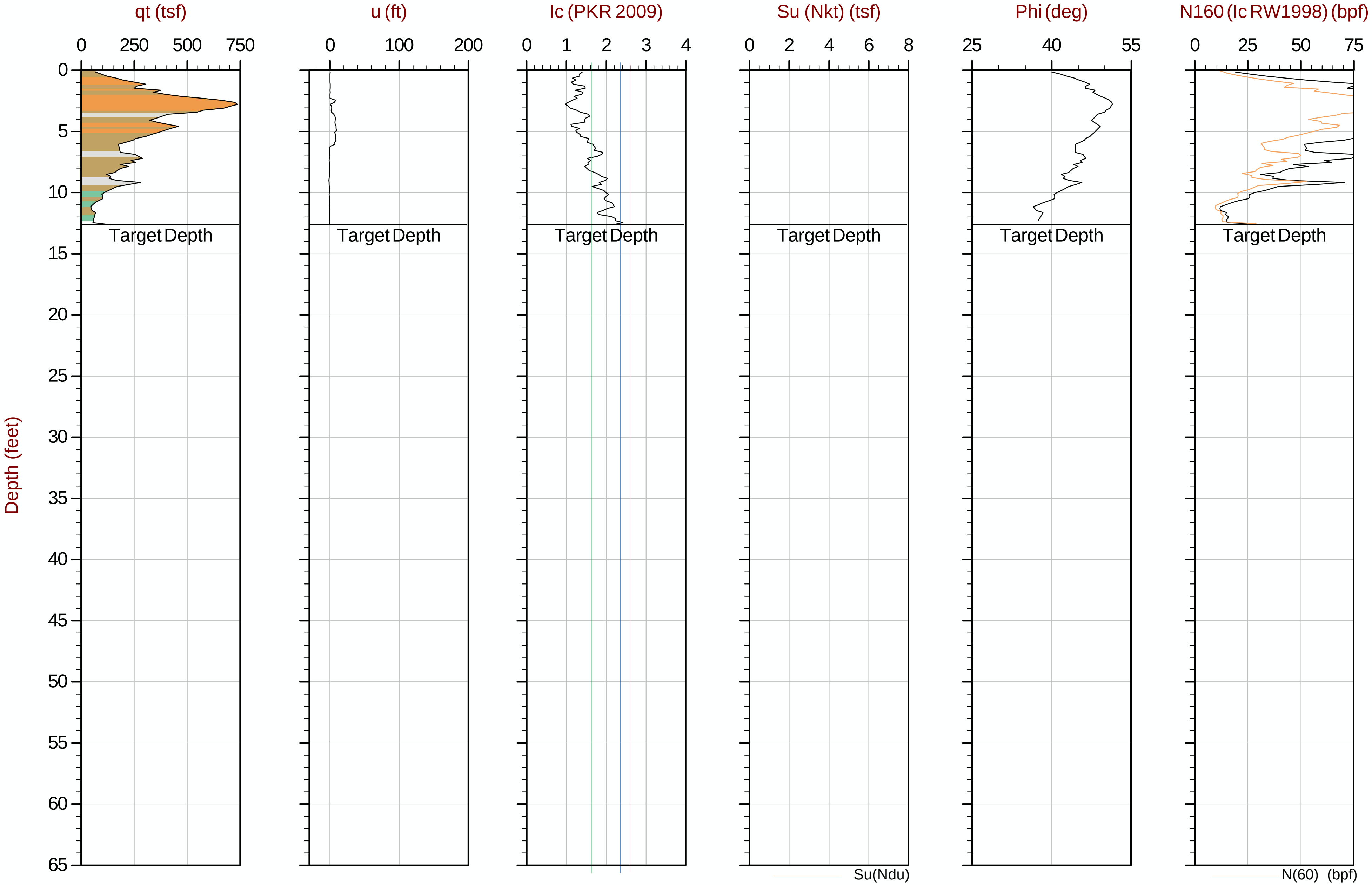
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-09C
Cone: 640:T1500F15U500



Max Depth: 3.850 m / 12.63 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP09C.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

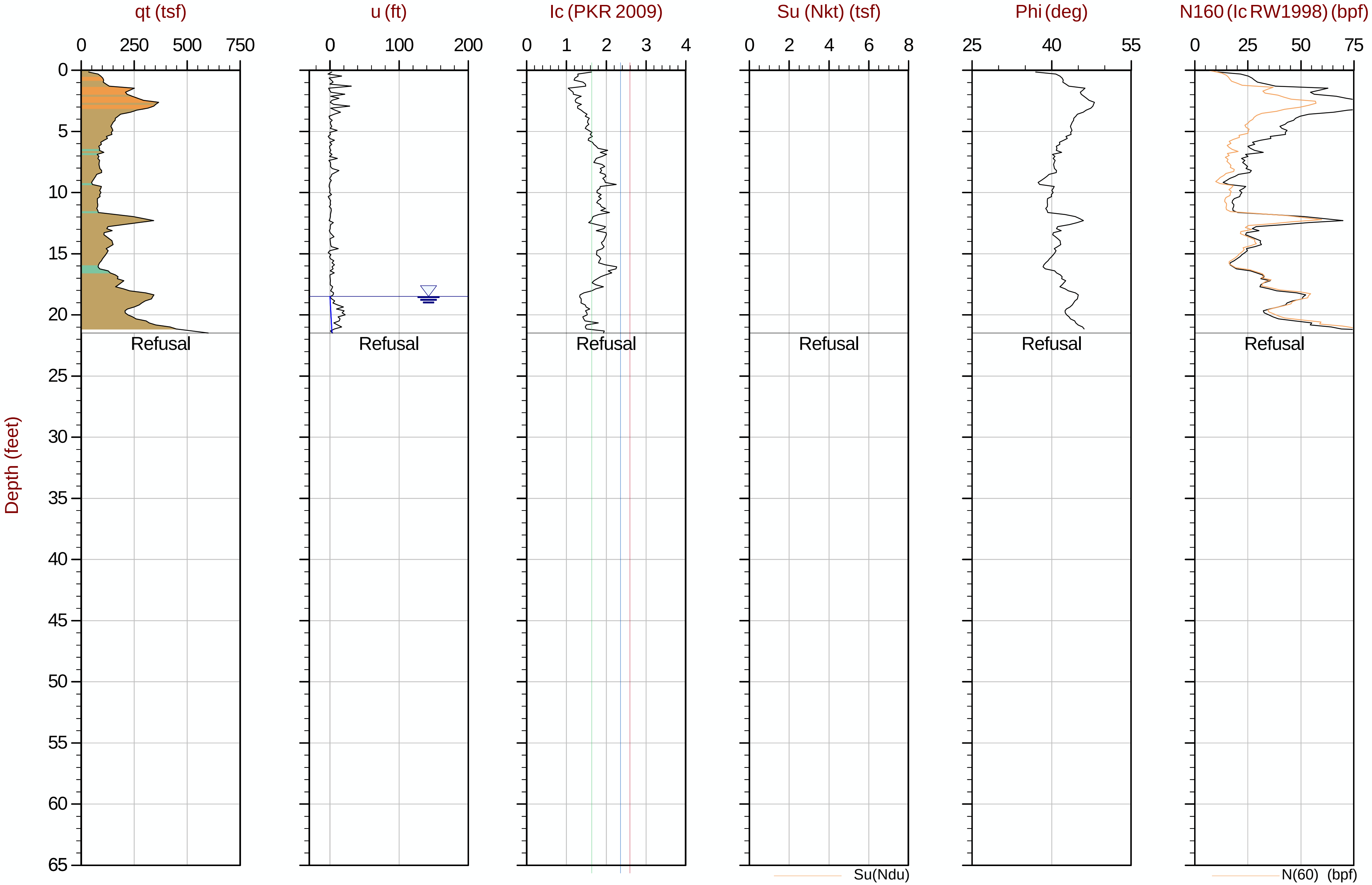
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766389m E: 294295m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 17:23
Site: Raymond Road, Verona, WI
Sounding: CPT20-10
Cone: 640:T1500F15U500



Max Depth: 6.550 m / 21.49 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP10.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766402m E: 294236m

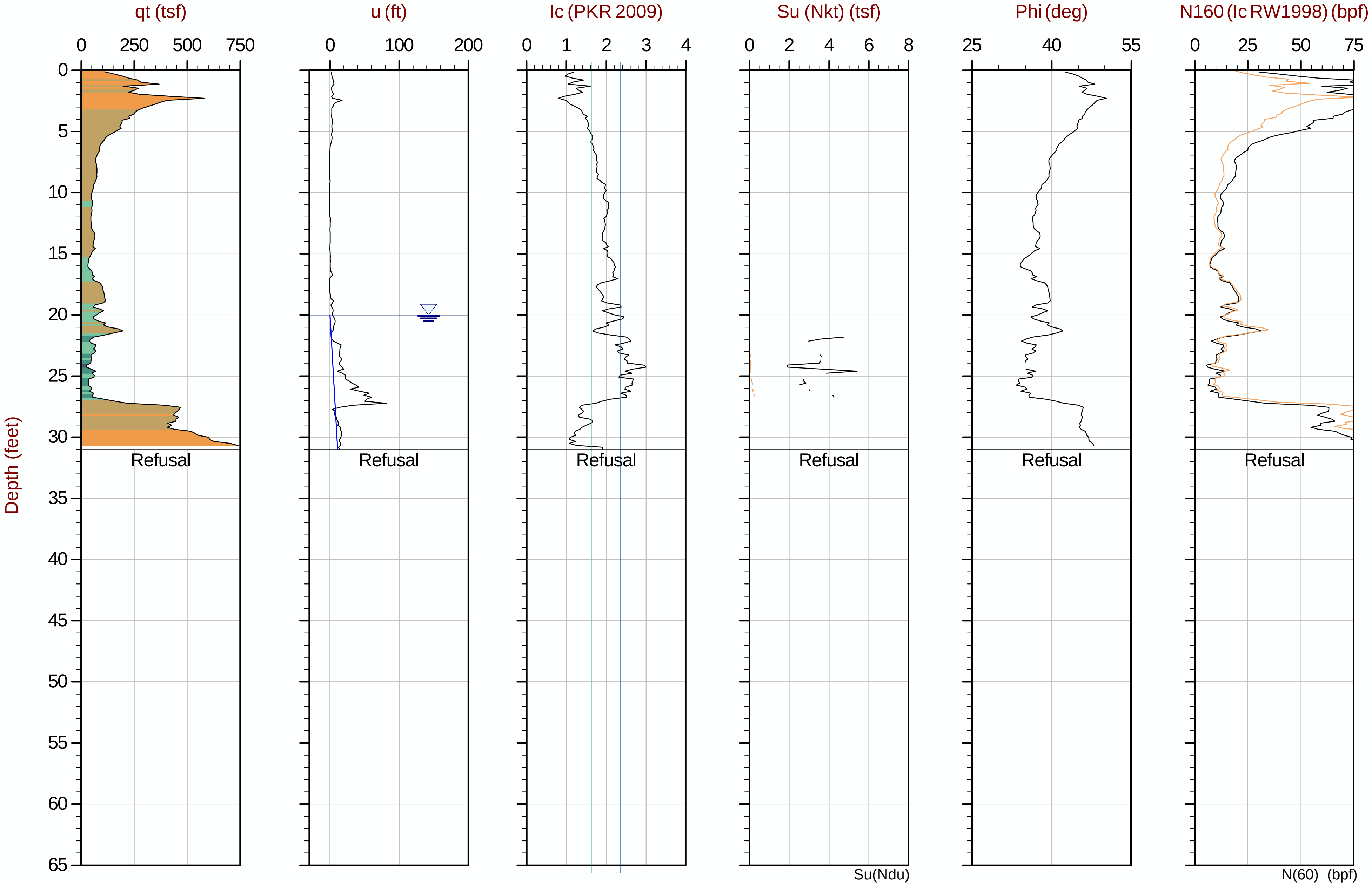
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 18:02
Site: Raymond Road, Verona, WI

Sounding: SCPT20-11
Cone: 640:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP11.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

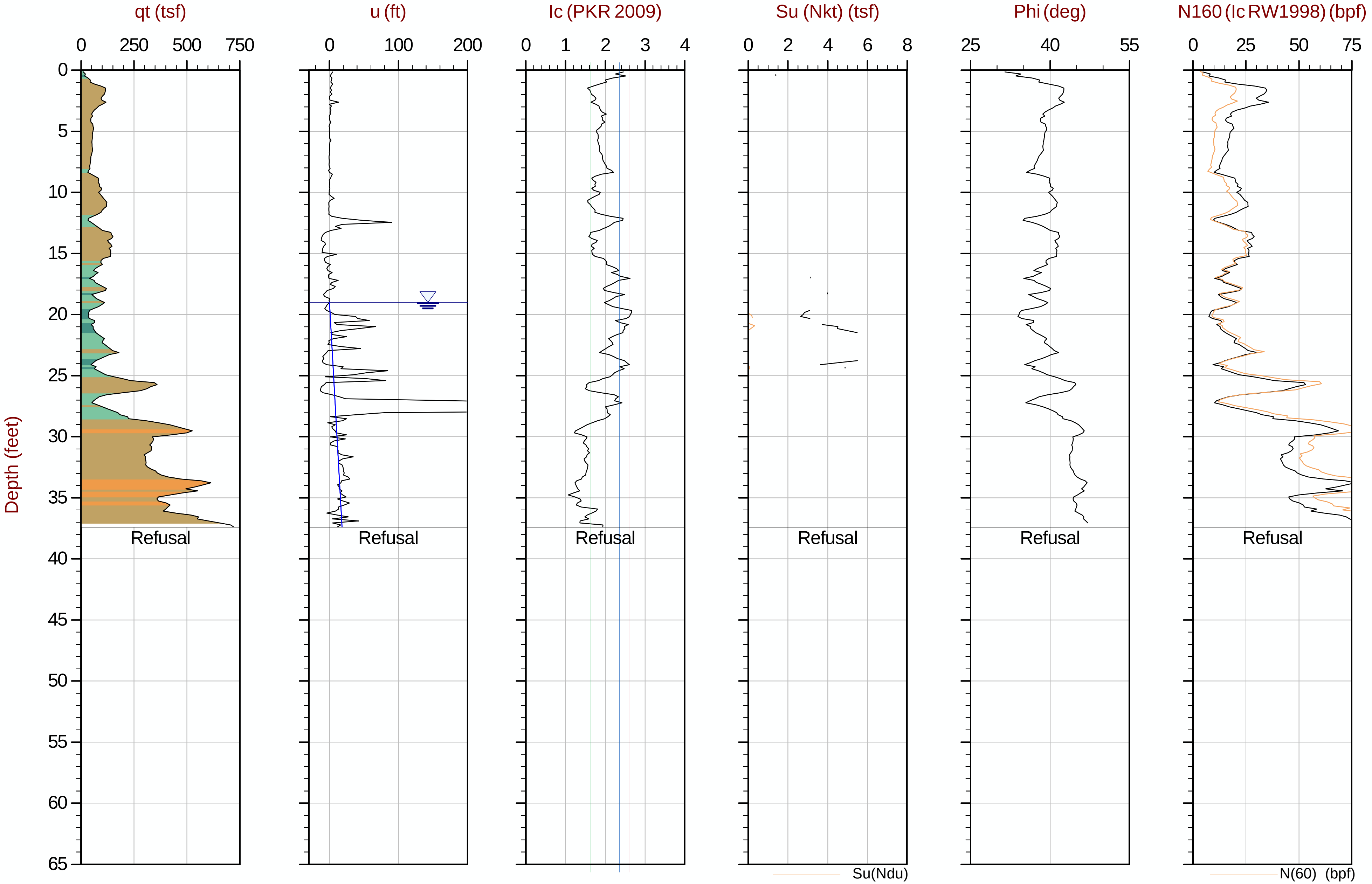
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766417m E: 294248m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 08:33
Site: Raymond Road, Verona, WI
Sounding: CPT20-12
Cone: 640:T1500F15U500



Max Depth: 11.400 m / 37.40 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP12.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766408m E: 294327m

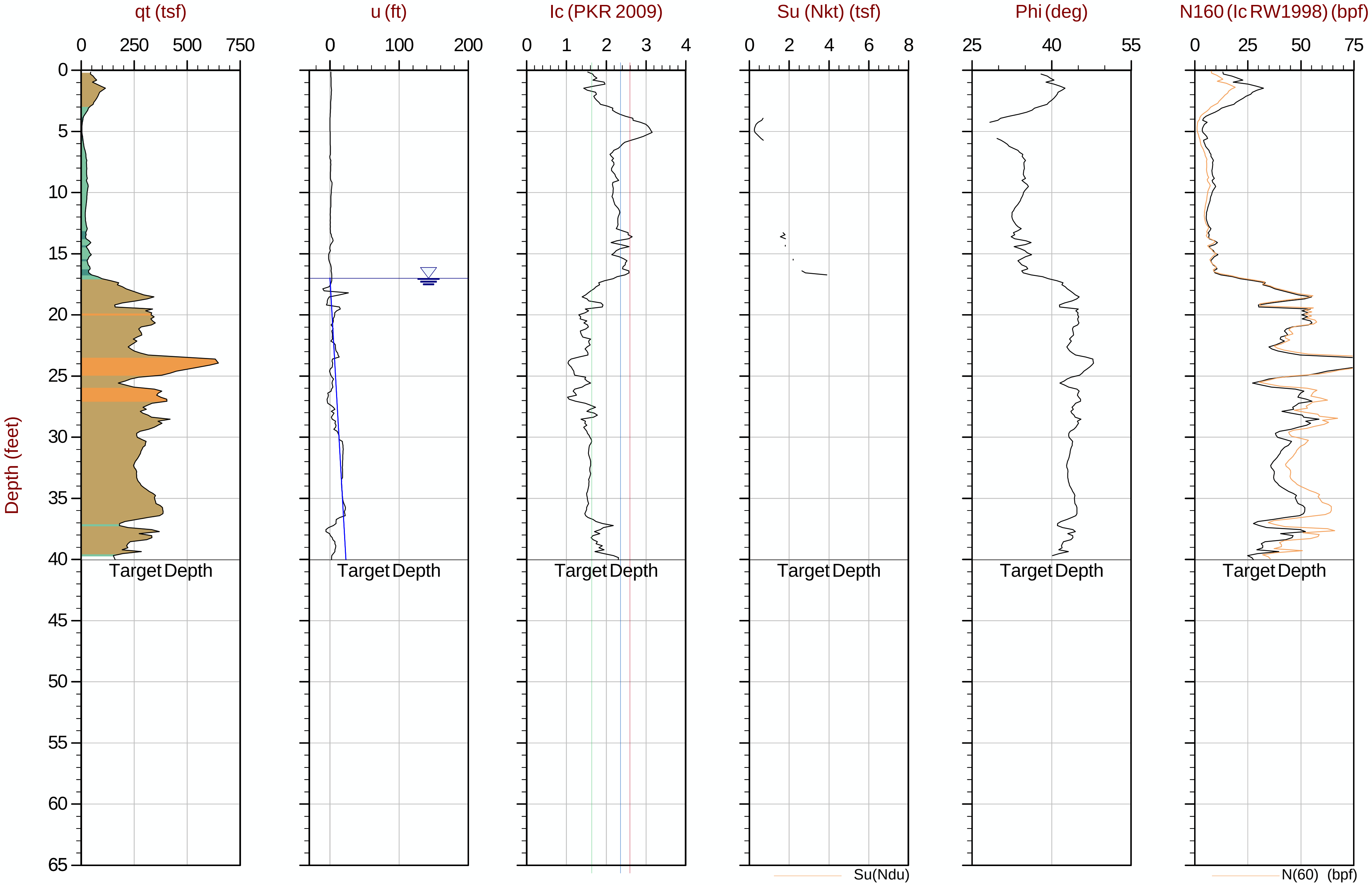
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 09:10
Site: Raymond Road, Verona, WI

Sounding: CPT20-13
Cone: 640:T1500F15U500



Max Depth: 12.200 m / 40.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP13.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766408m E: 294311m

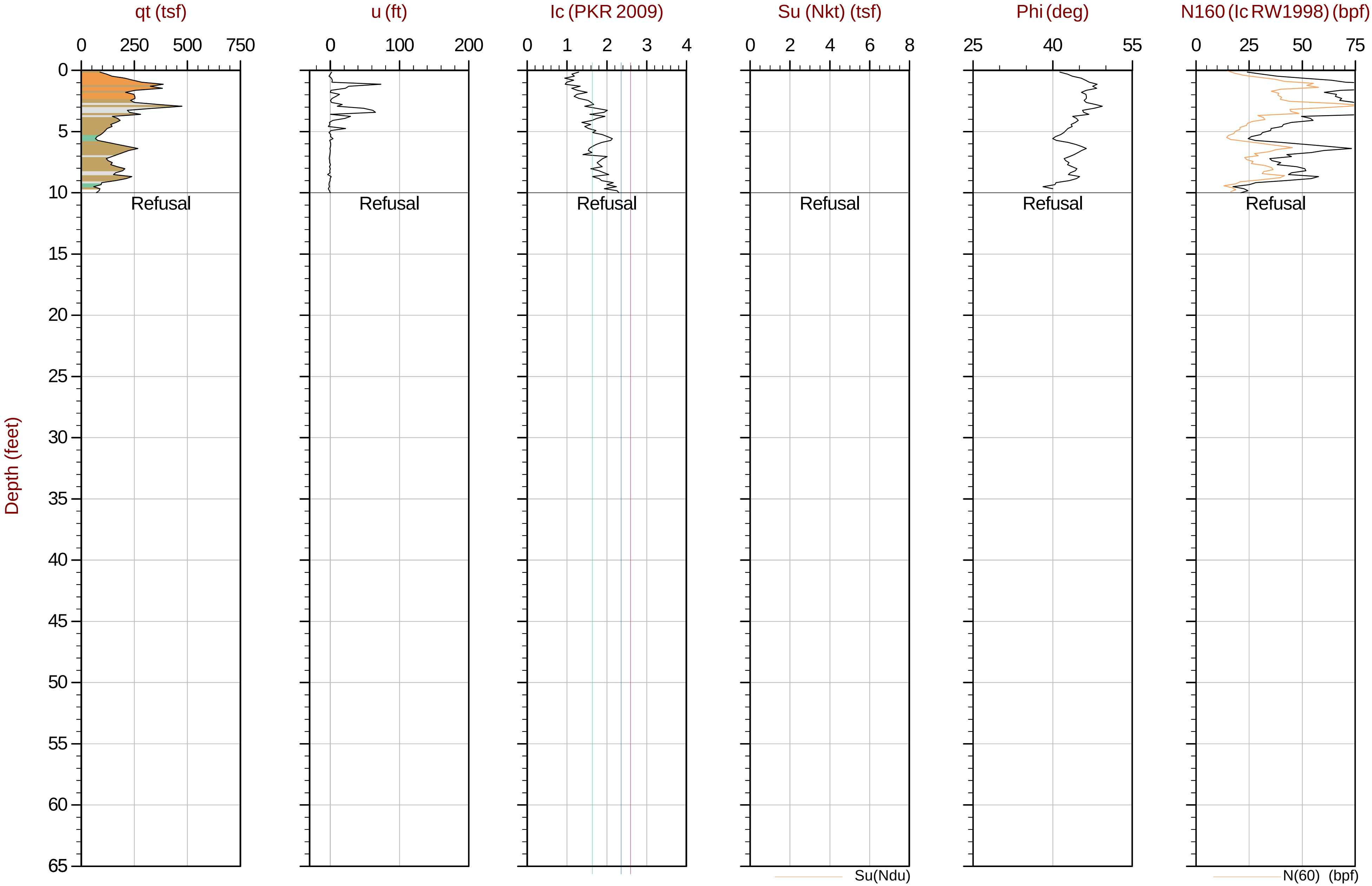
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 09:52
Site: Raymond Road, Verona, WI

Sounding: CPT20-14
Cone: 640:T1500F15U500



Max Depth: 3.050 m / 10.01 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP14.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766378m E: 294187m

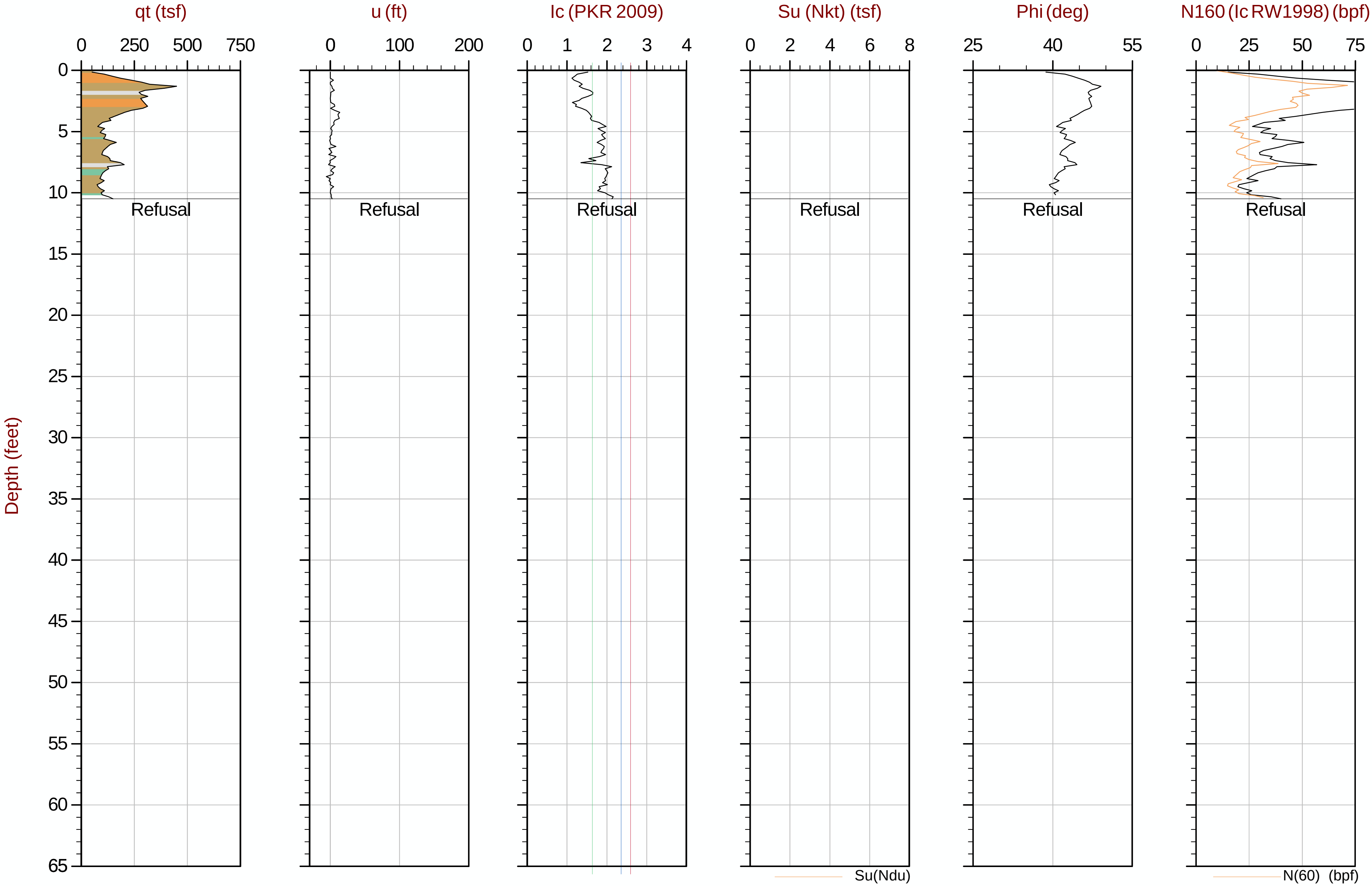
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:02
Site: Raymond Road, Verona, WI

Sounding: CPT20-14B
Cone: 640:T1500F15U500



Max Depth: 3.200 m / 10.50 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP14B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766379m E: 294189m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

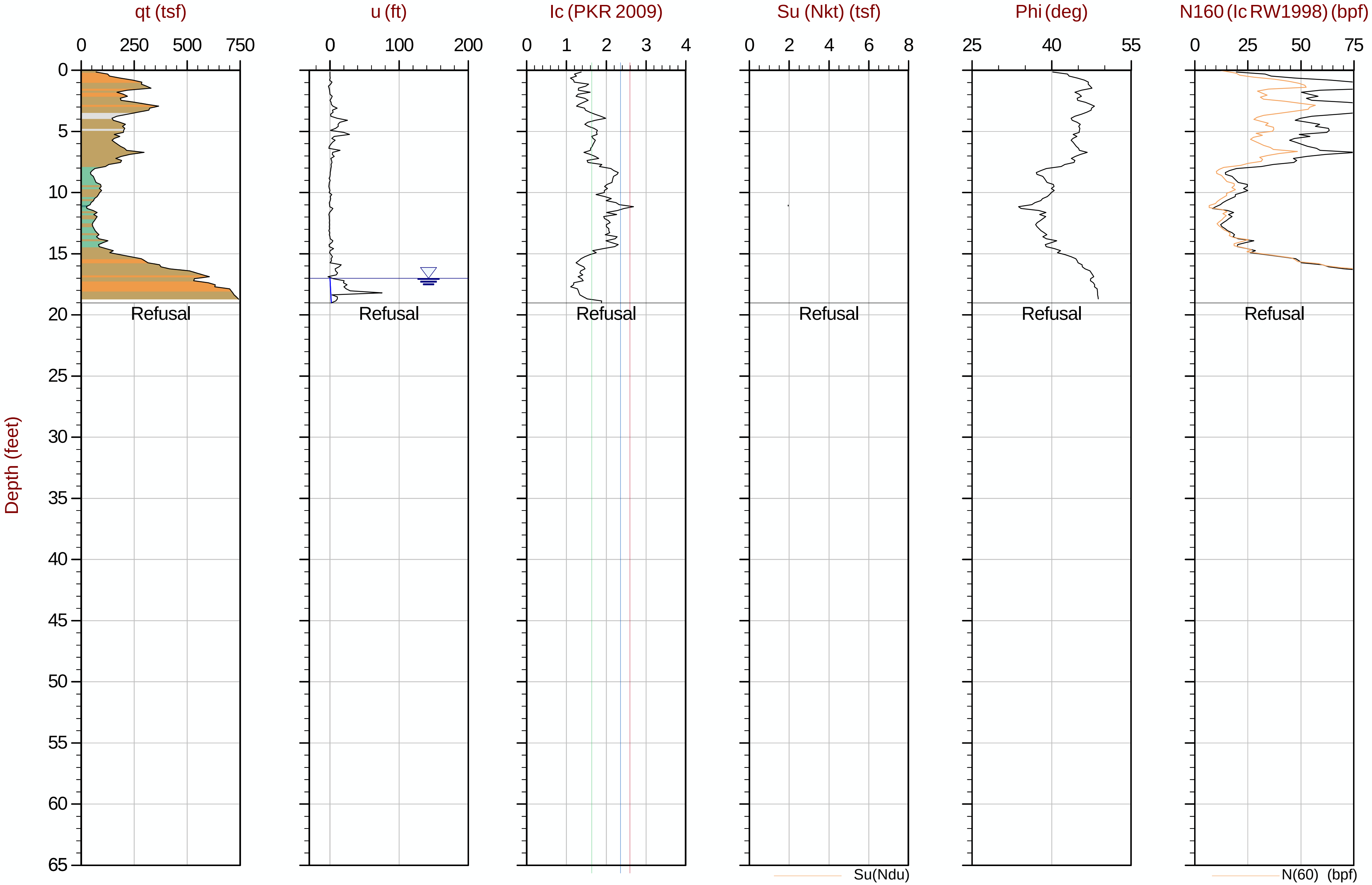
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:20
Site: Raymond Road, Verona, WI

Sounding: CPT20-14C
Cone: 640:T1500F15U500



Max Depth: 5.800 m / 19.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP14C.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766381m E: 294186m

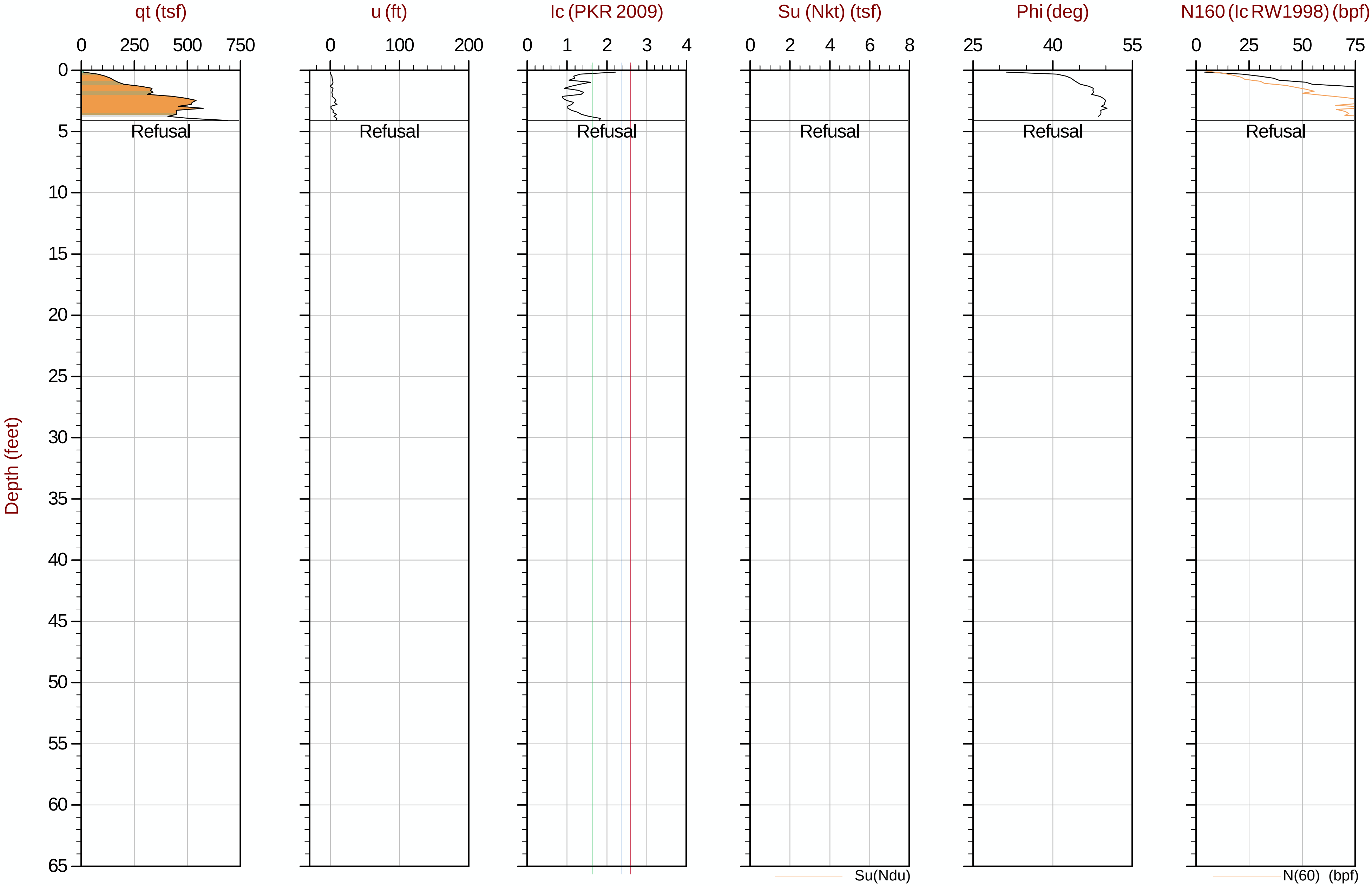
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-15
Cone: 640:T1500F15U500



Max Depth: 1.250 m / 4.10 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP15.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766378m E: 294189m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

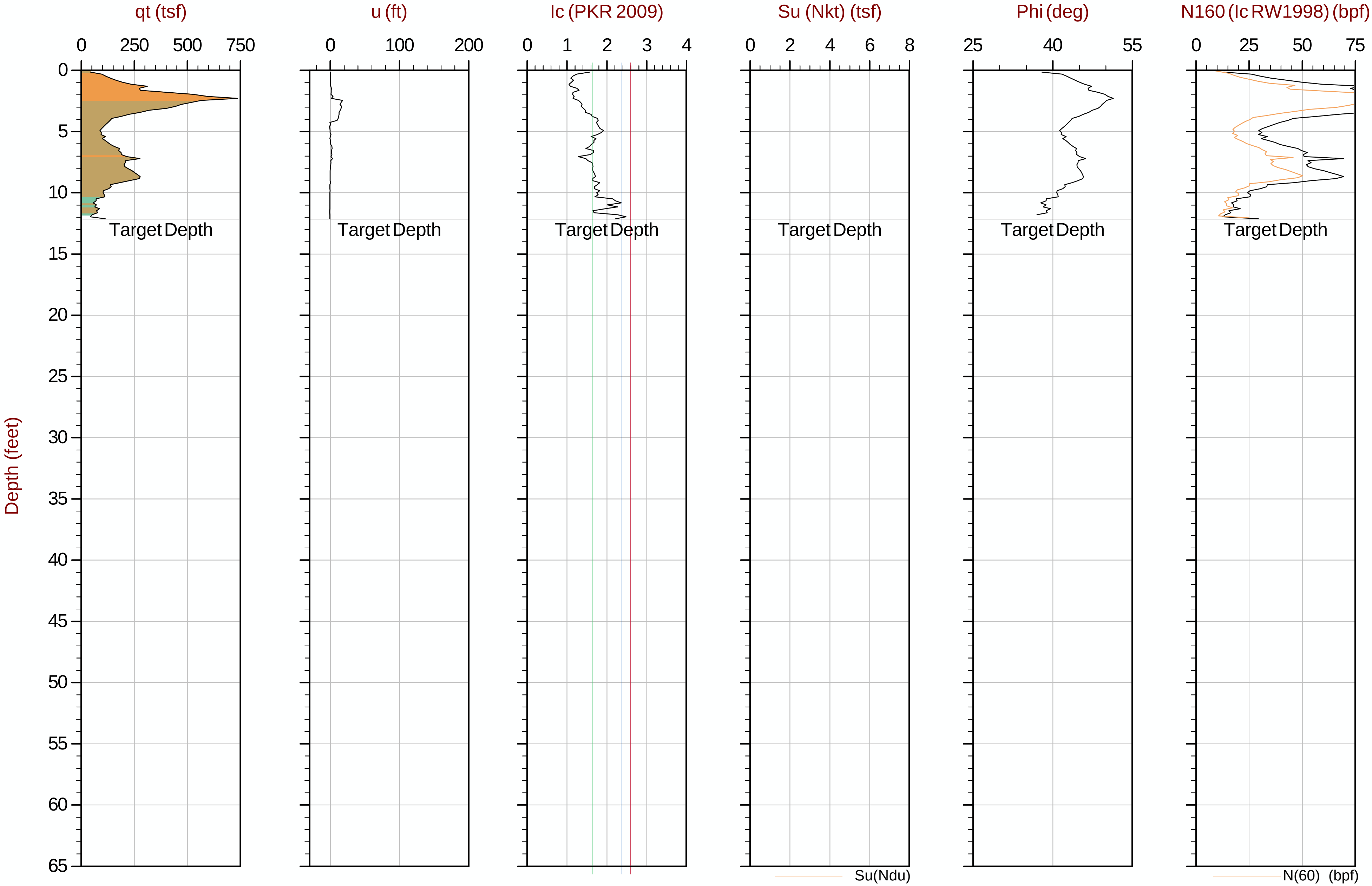
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 11:00
Site: Raymond Road, Verona, WI

Sounding: CPT20-15B
Cone: 640:T1500F15U500



Max Depth: 3.700 m / 12.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP15B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766378m E: 294185m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

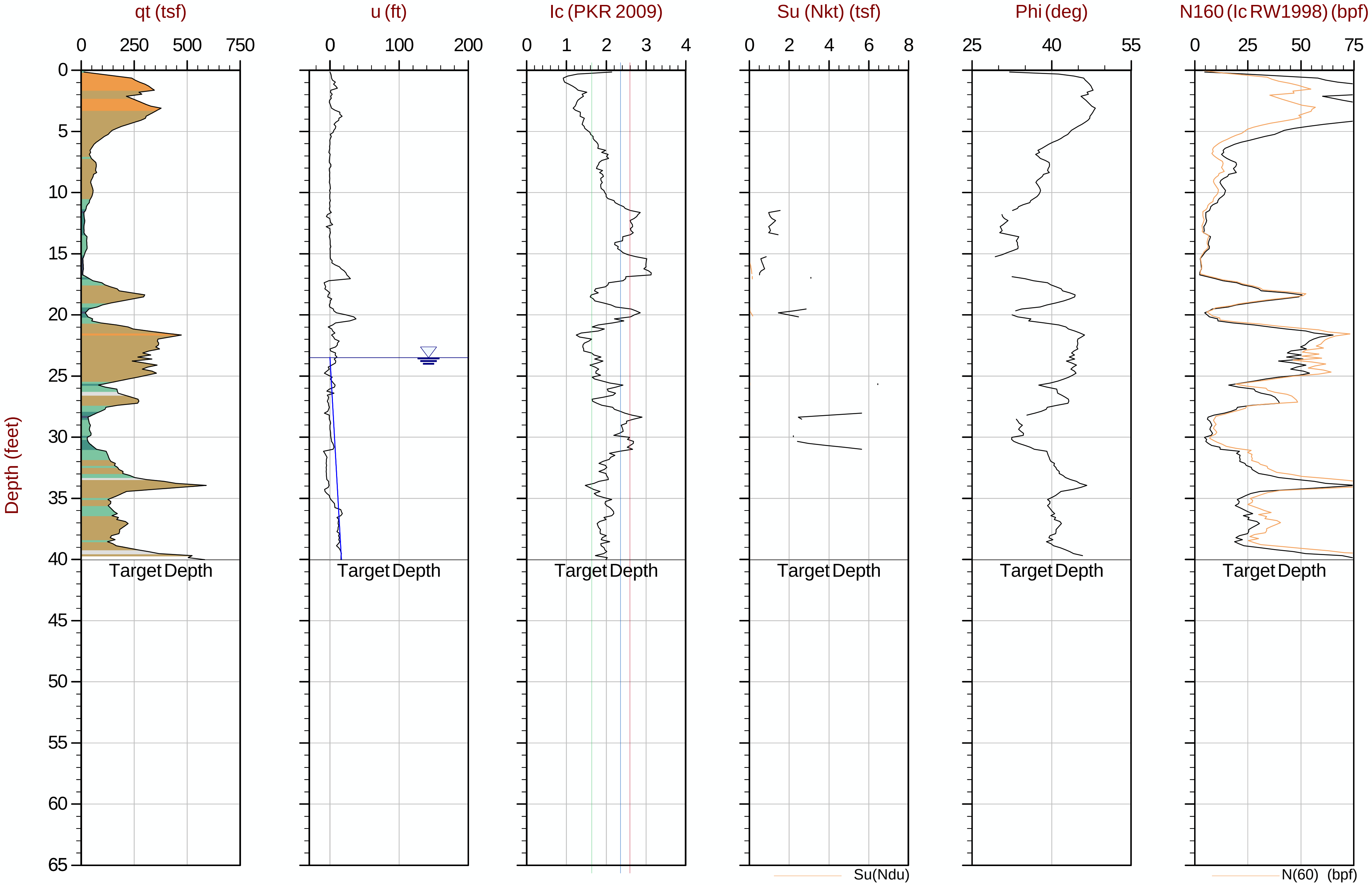
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 11:24
Site: Raymond Road, Verona, WI

Sounding: CPT20-16
Cone: 640:T1500F15U500



Max Depth: 12.200 m / 40.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP16.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766358m E: 294136m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

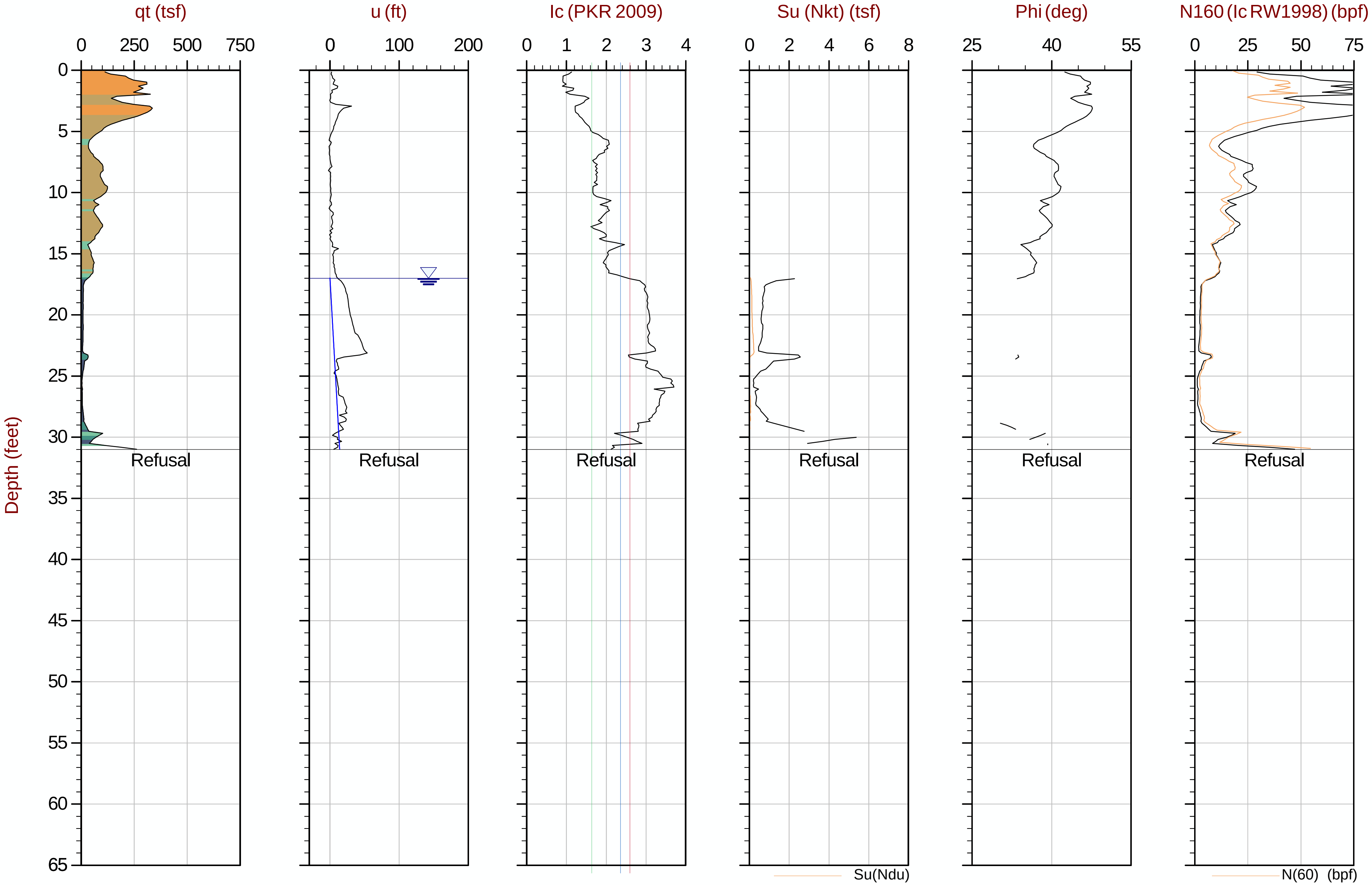
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:03
Site: Raymond Road, Verona, WI

Sounding: CPT20-17
Cone: 640:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP17.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766356m E: 294126m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

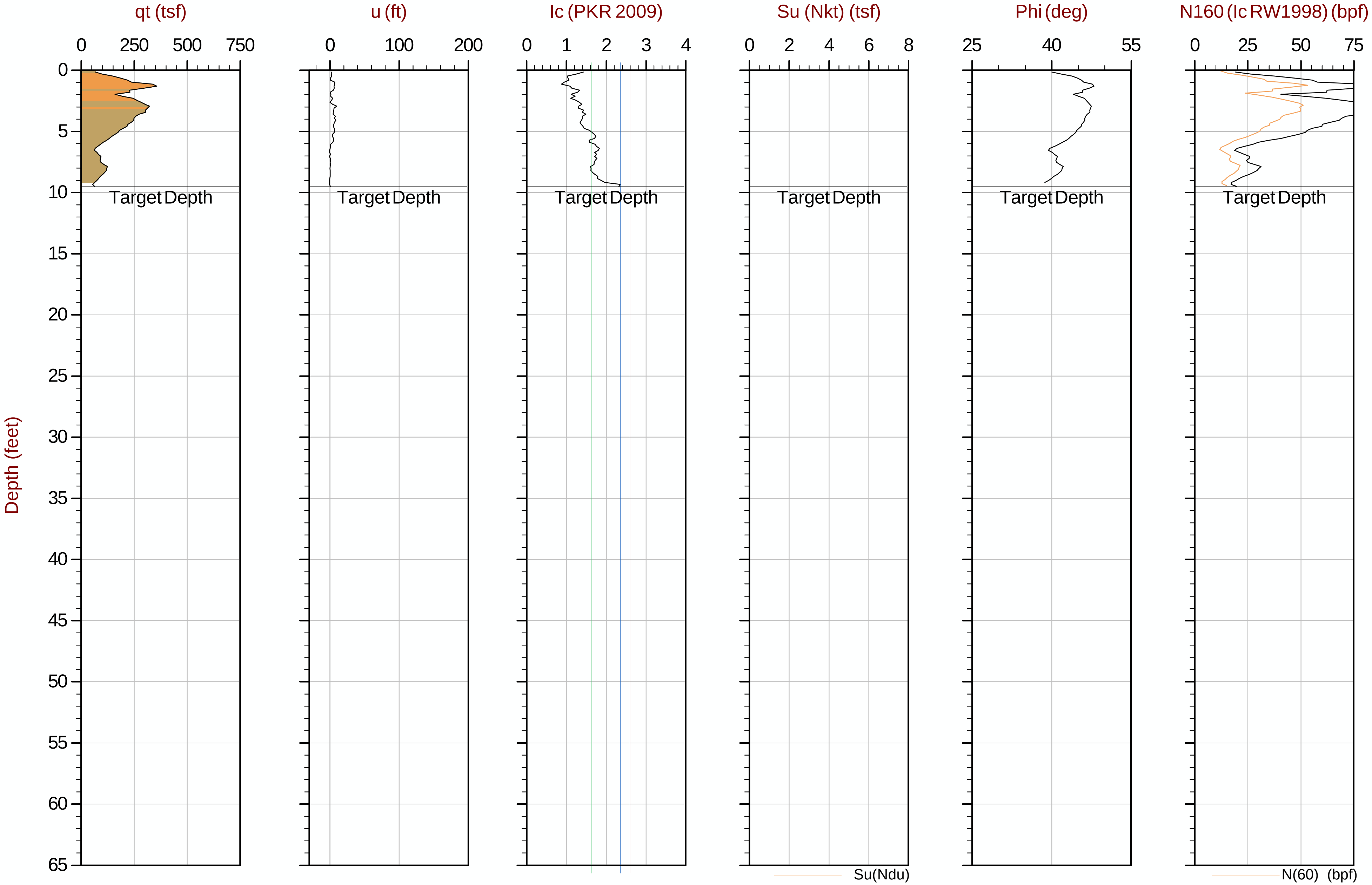
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:35
Site: Raymond Road, Verona, WI

Sounding: CPT20-18
Cone: 640:T1500F15U500



Max Depth: 2.900 m / 9.51 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP18.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766348m E: 294126m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

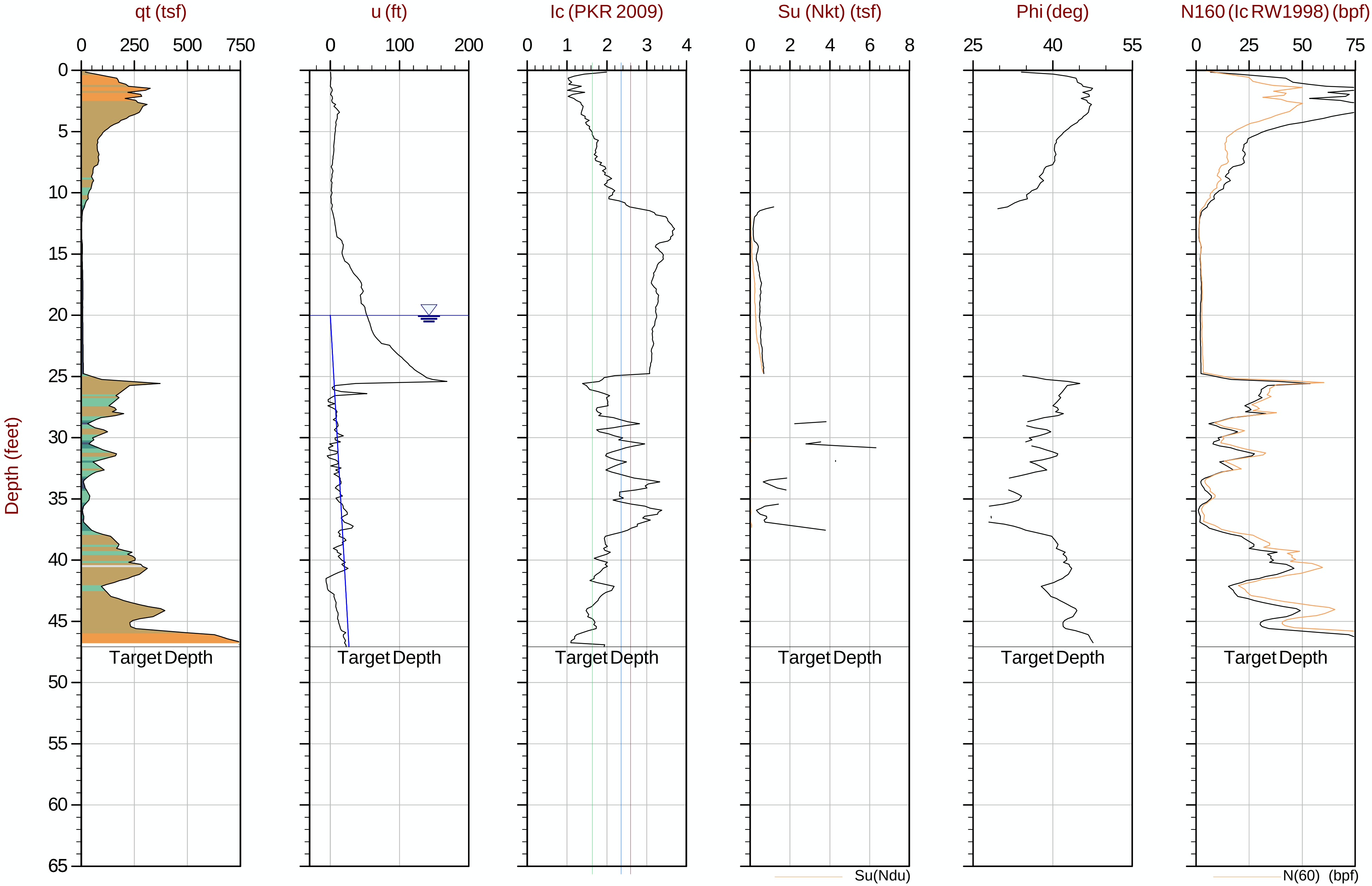
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:47
Site: Raymond Road, Verona, WI

Sounding: CPT20-19
Cone: 640:T1500F15U500



Max Depth: 14.350 m / 47.08 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP19.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766336m E: 294115m

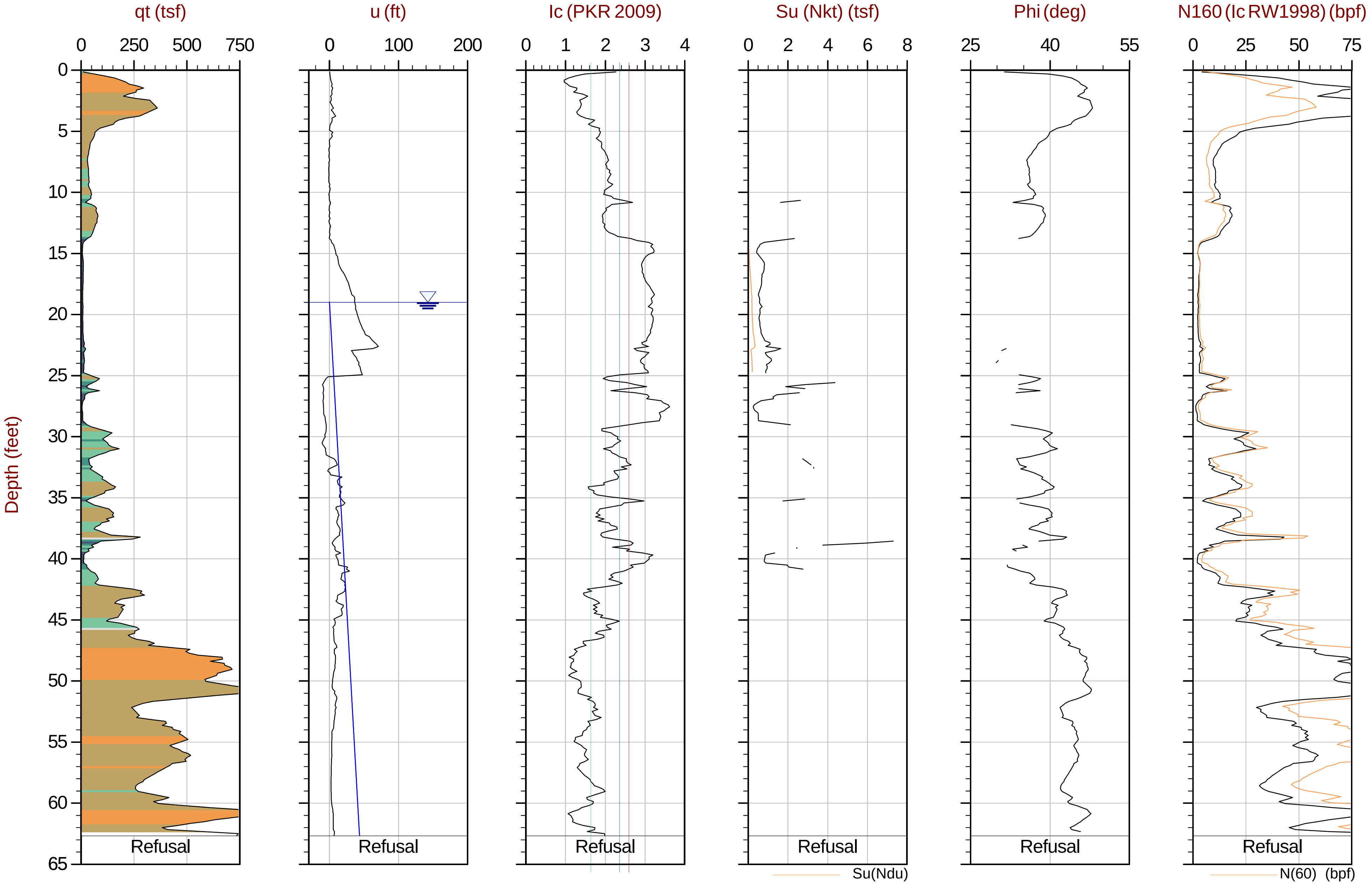
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 13:27
Site: Raymond Road, Verona, WI

Sounding: CPT20-20
Cone: 640:T1500F15U500



Max Depth: 19.100 m / 62.66 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP20.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766334m E: 294103m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

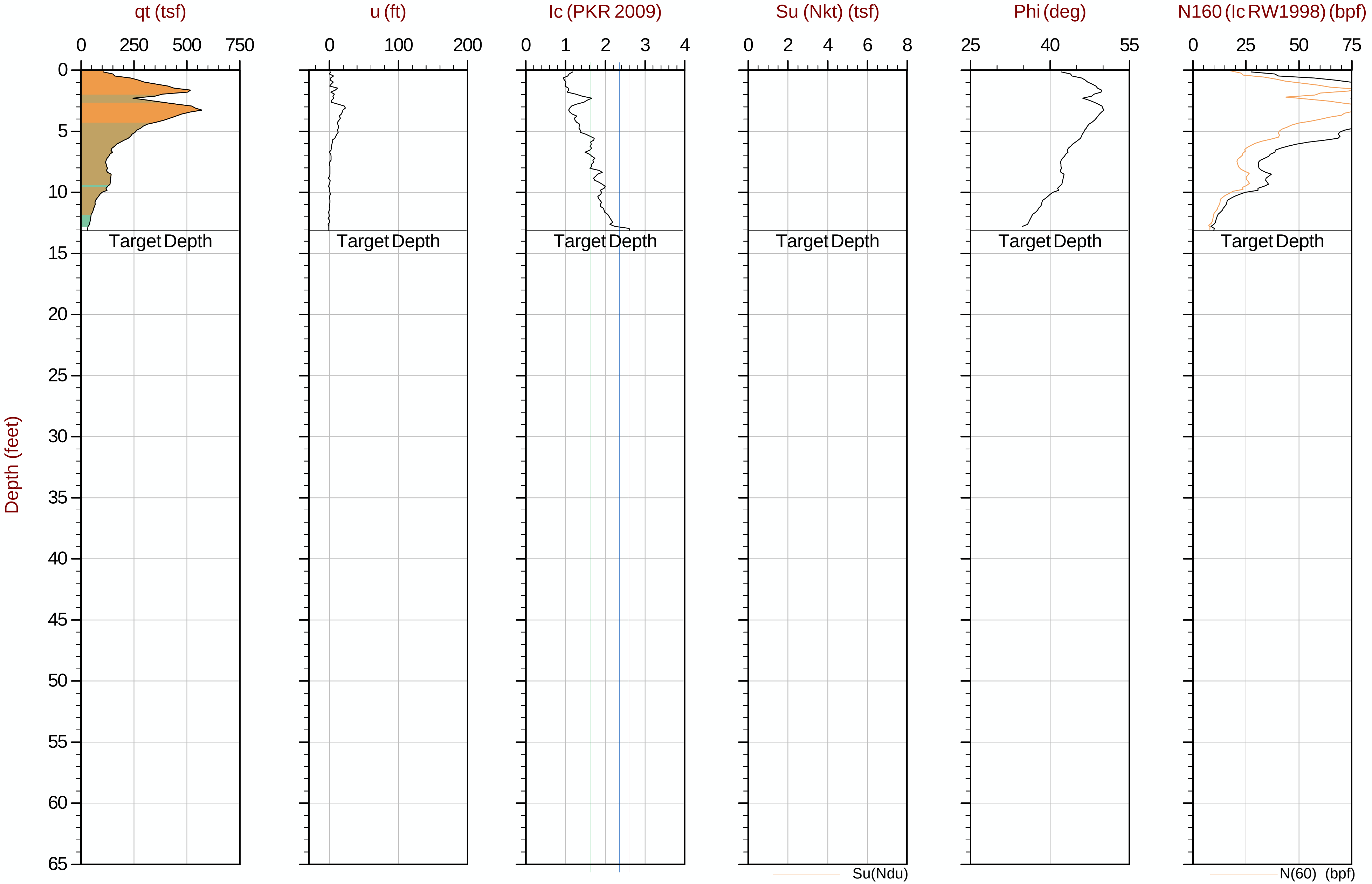
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 14:19
Site: Raymond Road, Verona, WI

Sounding: CPT20-21
Cone: 640:T1500F15U500



Max Depth: 4.000 m / 13.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP21.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

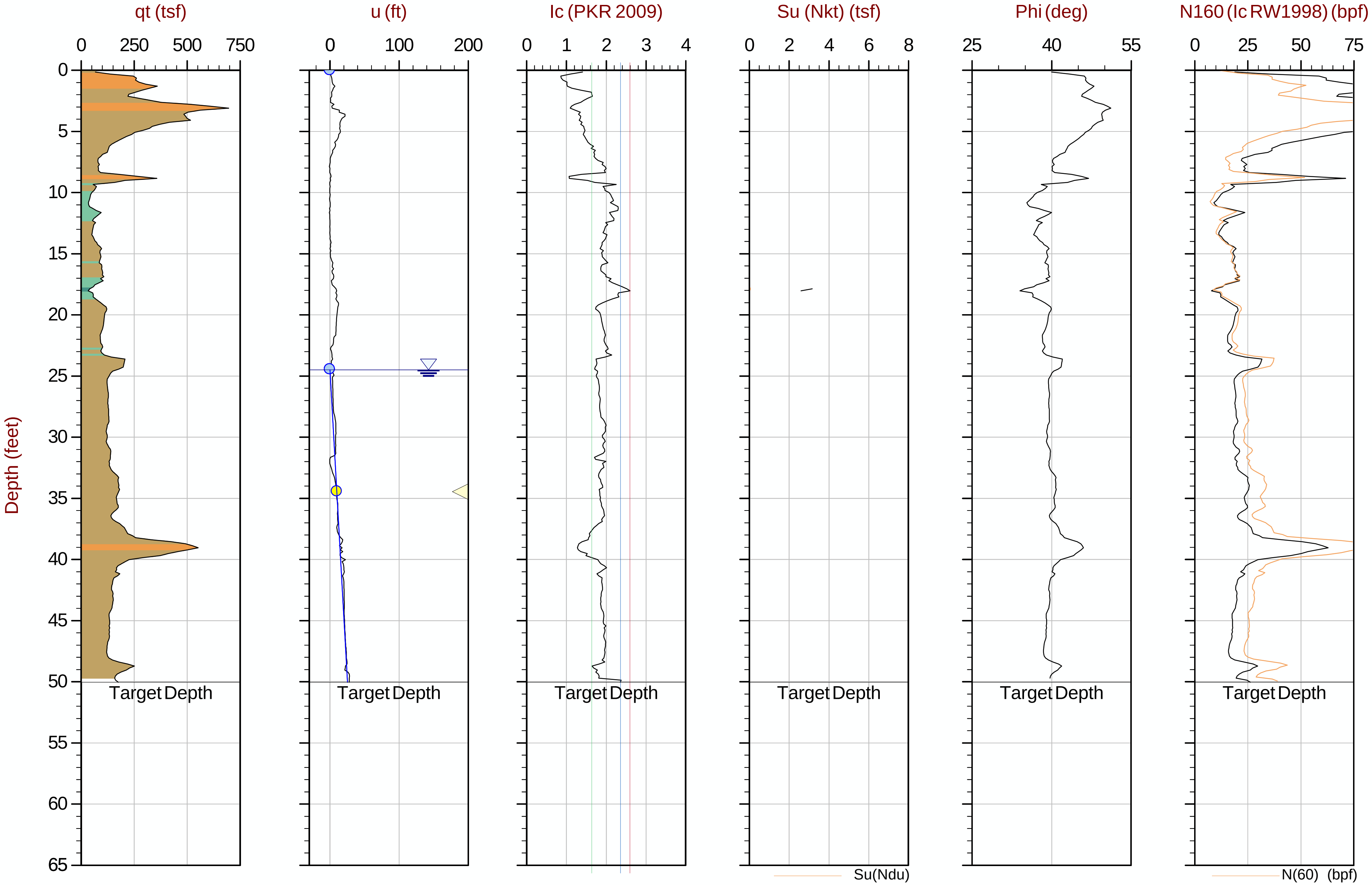
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766261m E: 294029m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 14:42
Site: Raymond Road, Verona, WI
Sounding: CPT20-22
Cone: 640:T1500F15U500



Max Depth: 15.250 m / 50.03 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP22.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766267m E: 294031m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

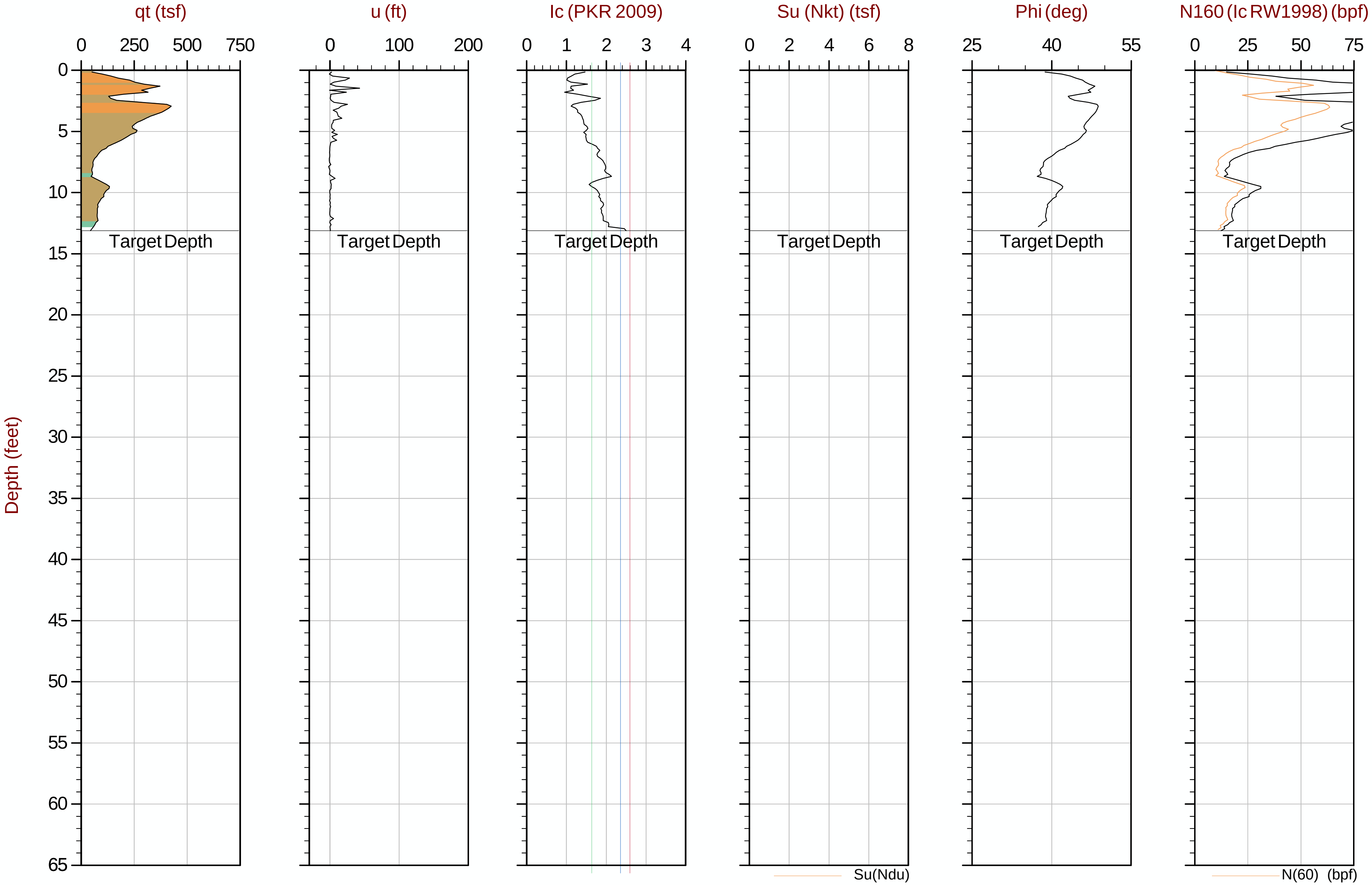
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 17:03
Site: Raymond Road, Verona, WI

Sounding: CPT20-23
Cone: 640:T1500F15U500



Max Depth: 4.000 m / 13.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP23.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766241m E: 294013m

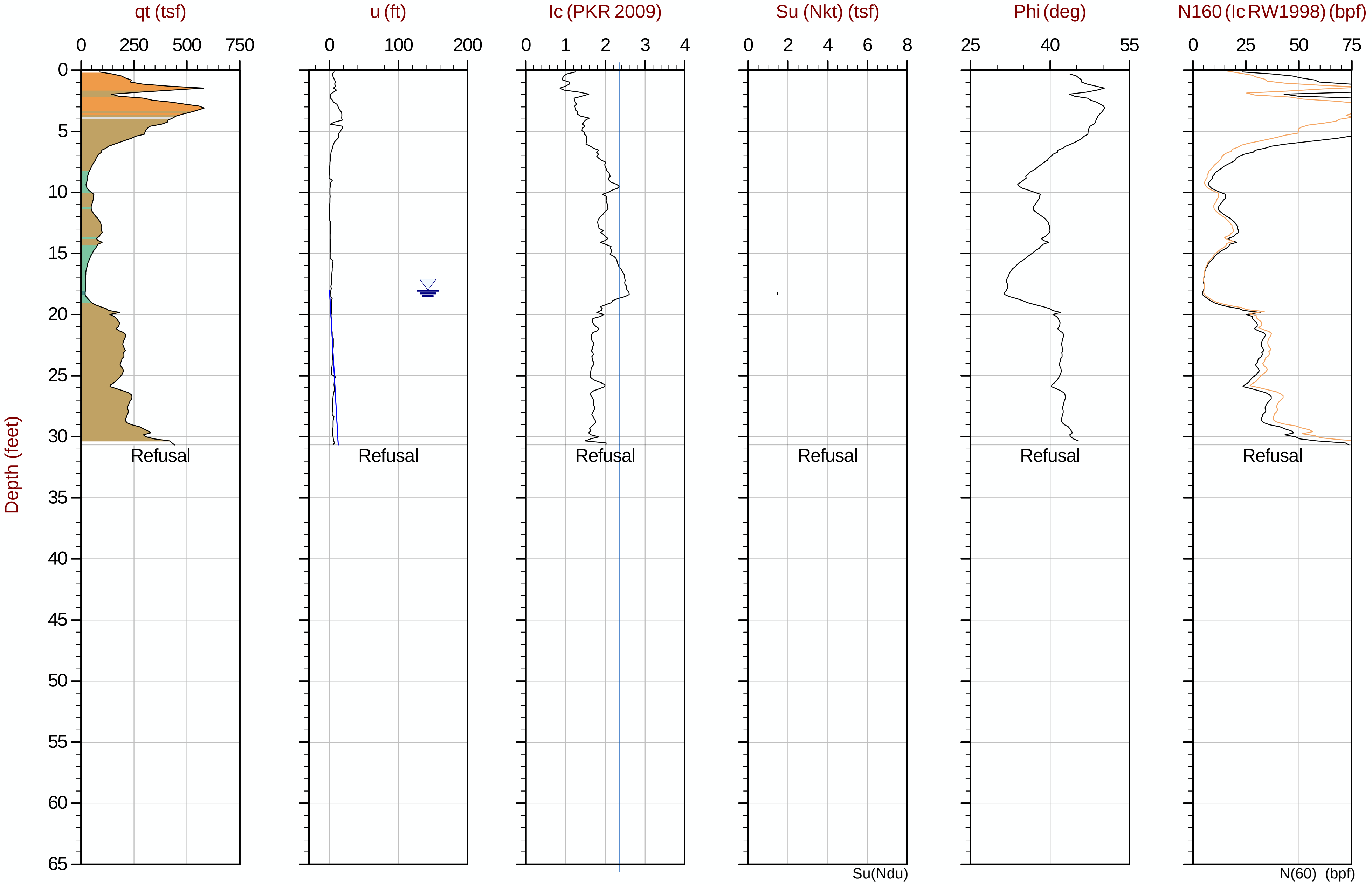
Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 17:26
Site: Raymond Road, Verona, WI

Sounding: CPT20-24
Cone: 640:T1500F15U500



Max Depth: 9.350 m / 30.68 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP24.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766242m E: 294010m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

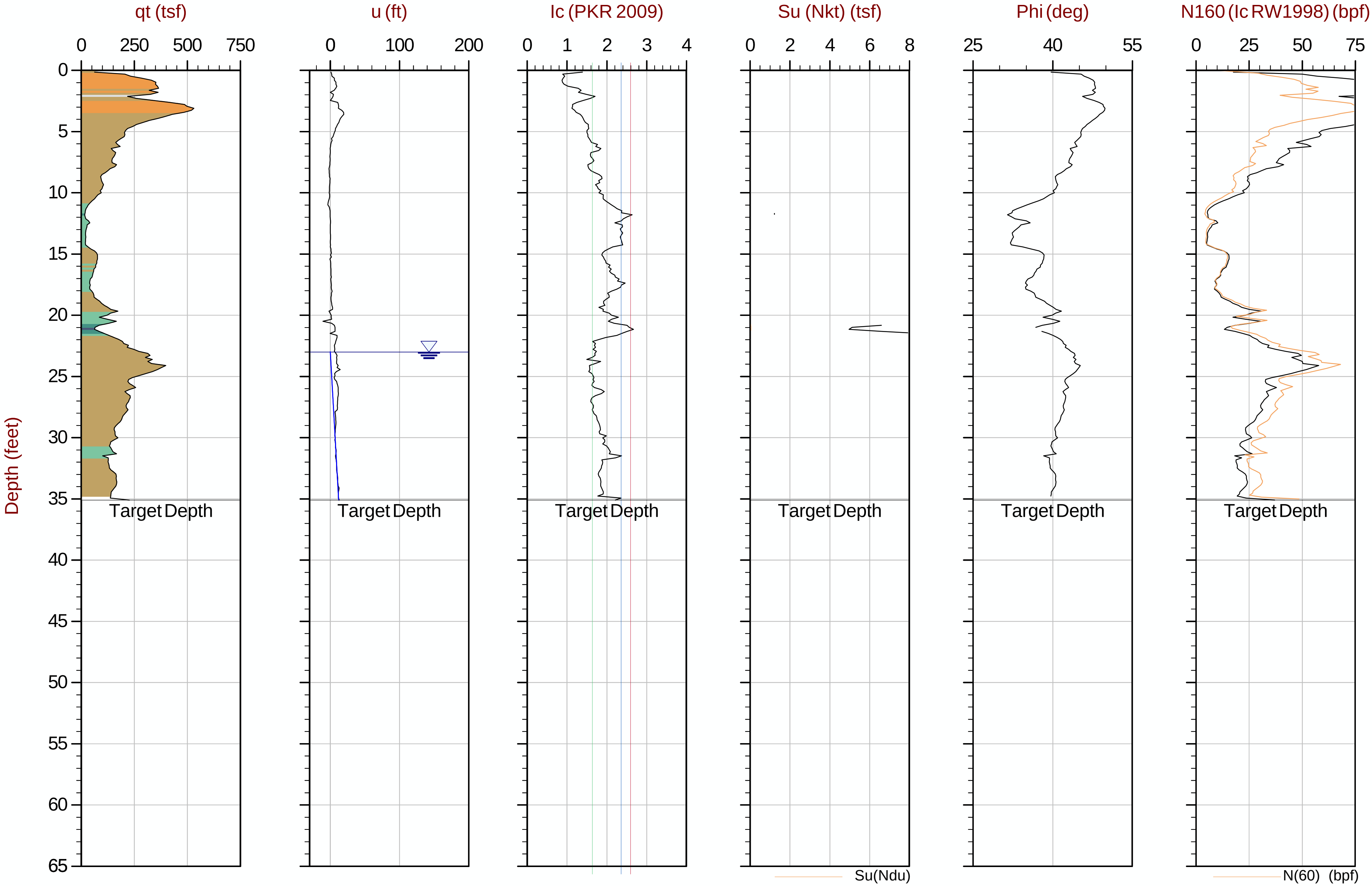
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 17:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-25
Cone: 640:T1500F15U500



Max Depth: 10.700 m / 35.10 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP25.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766226m E: 293984m

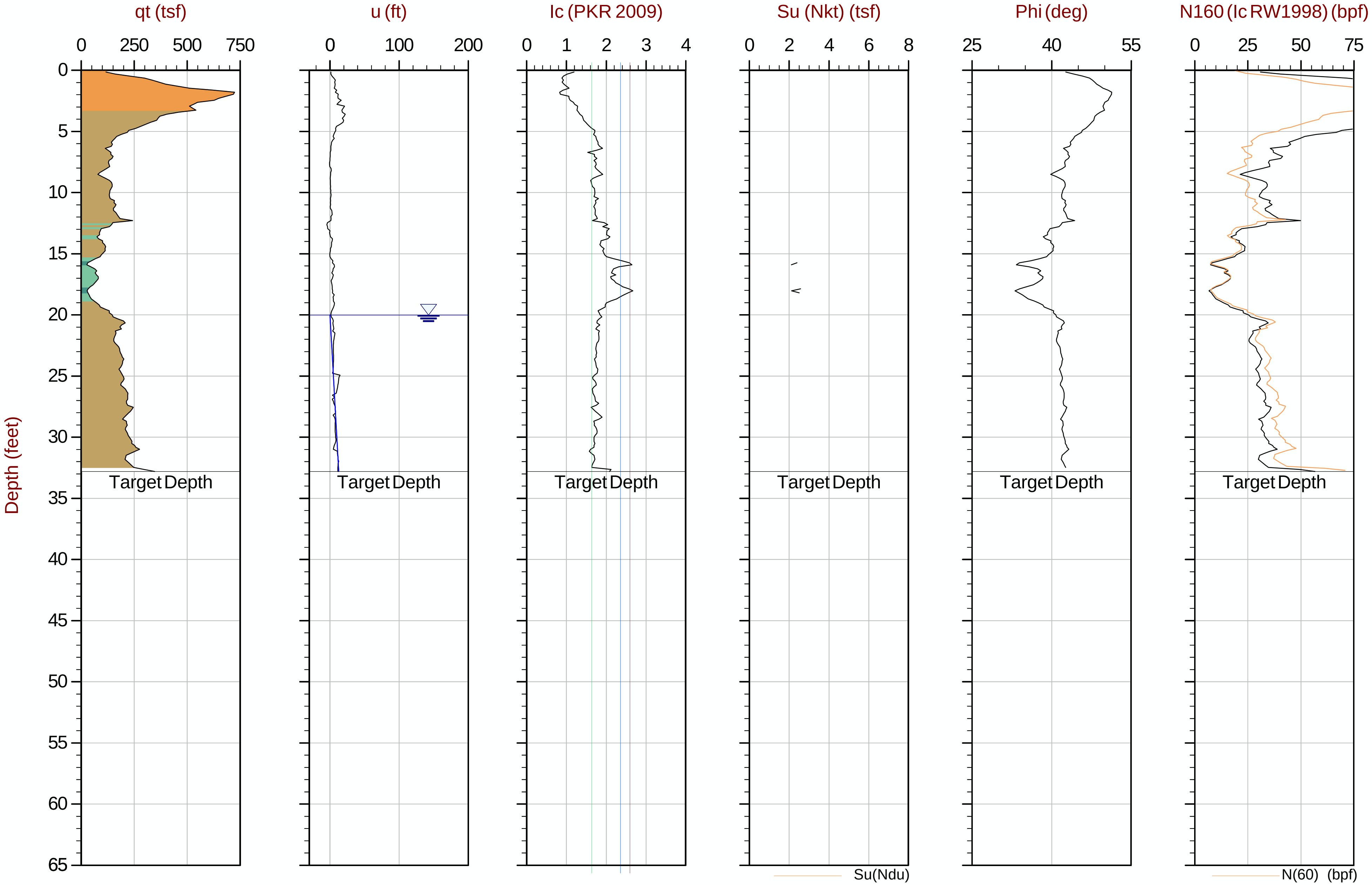
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 18:38
Site: Raymond Road, Verona, WI

Sounding: SCPT20-26
Cone: 640:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP26.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766200m E: 293965m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

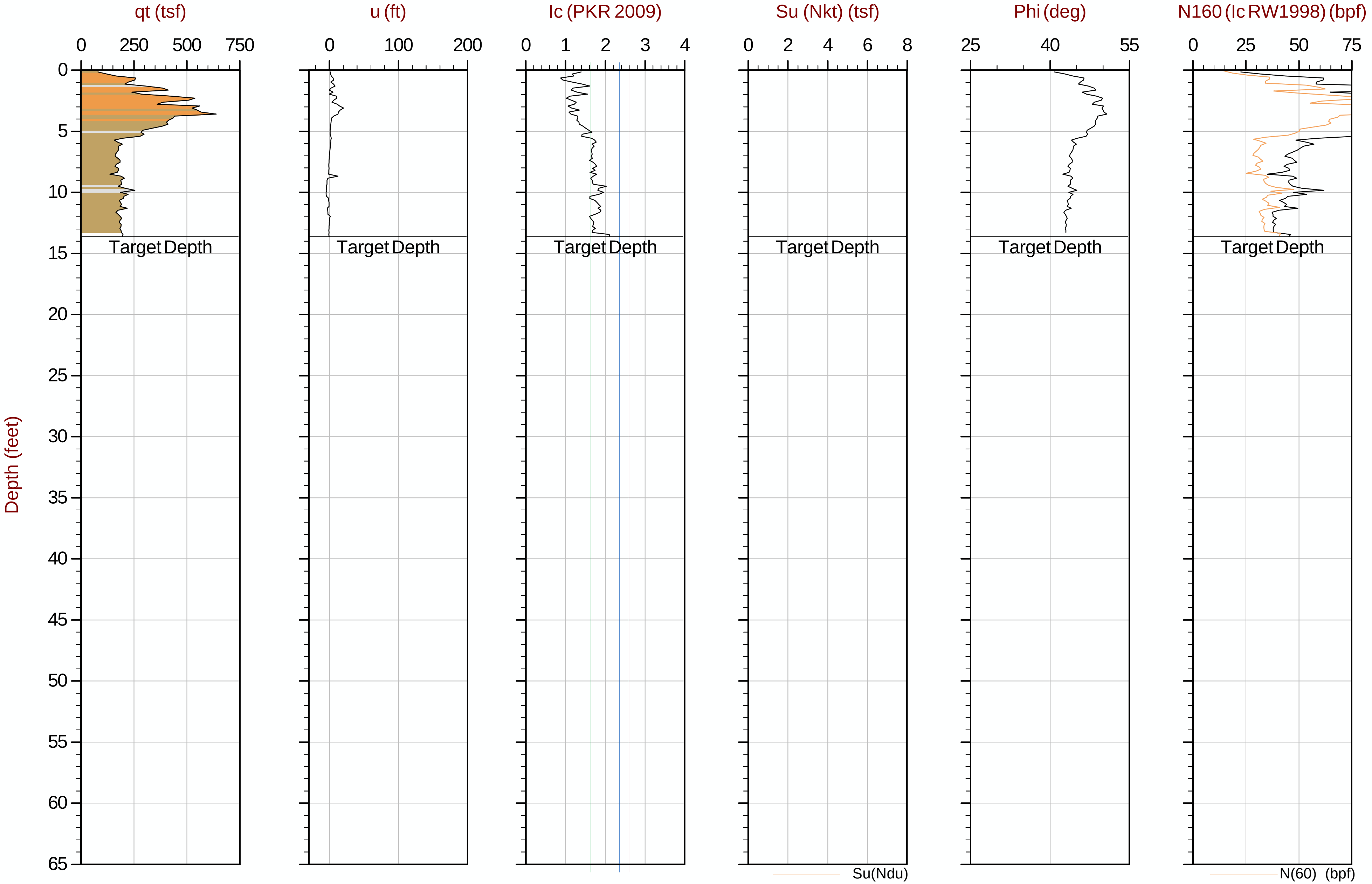
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 19:34
Site: Raymond Road, Verona, WI

Sounding: CPT20-27
Cone: 640:T1500F15U500



Max Depth: 4.150 m / 13.62 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP27.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766165m E: 293947m

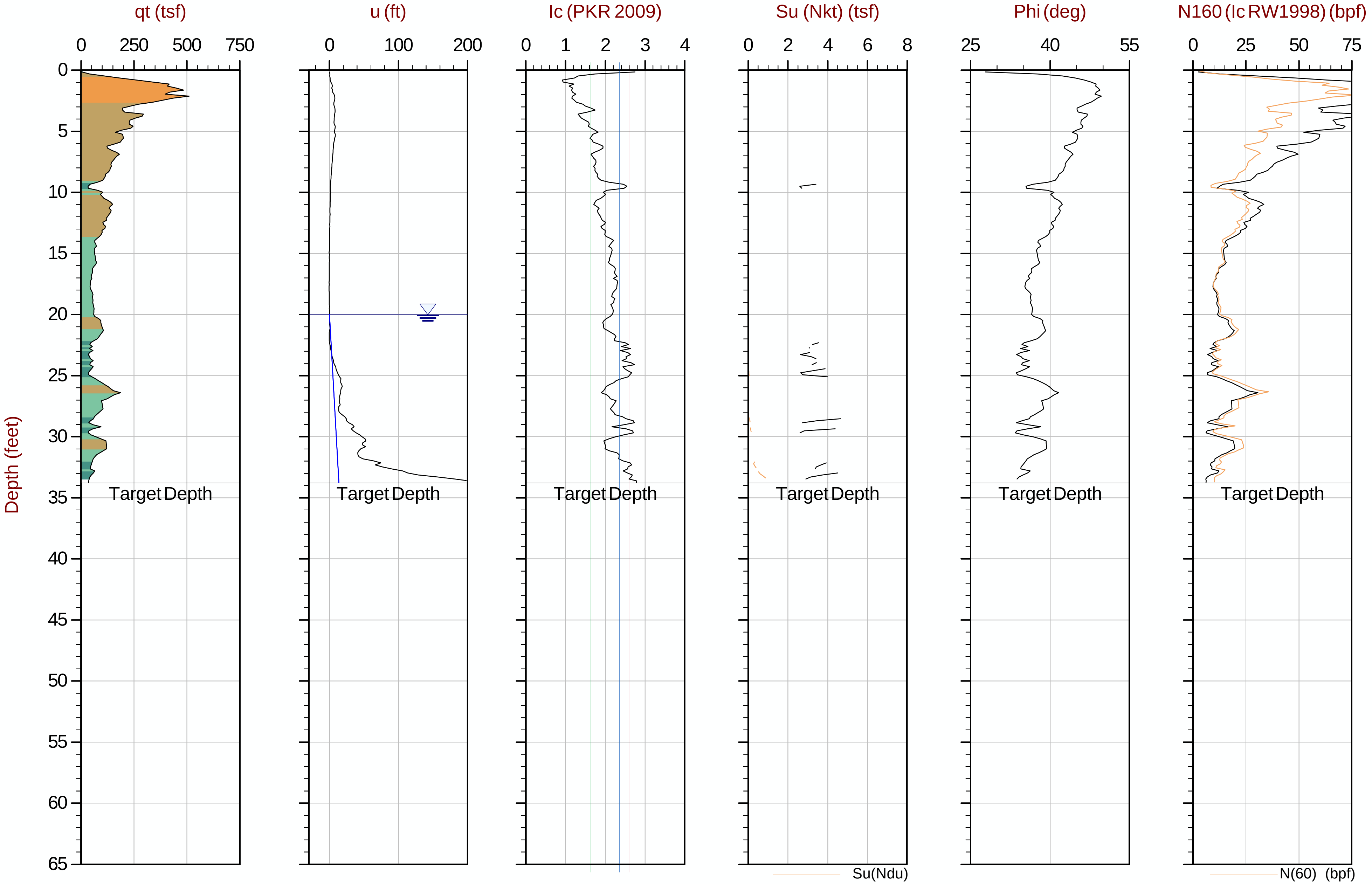
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 08:58
Site: Raymond Road, Verona, WI

Sounding: CPT20-28
Cone: 640:T1500F15U500



Max Depth: 10.300 m / 33.79 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP28.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766152m E: 293928m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

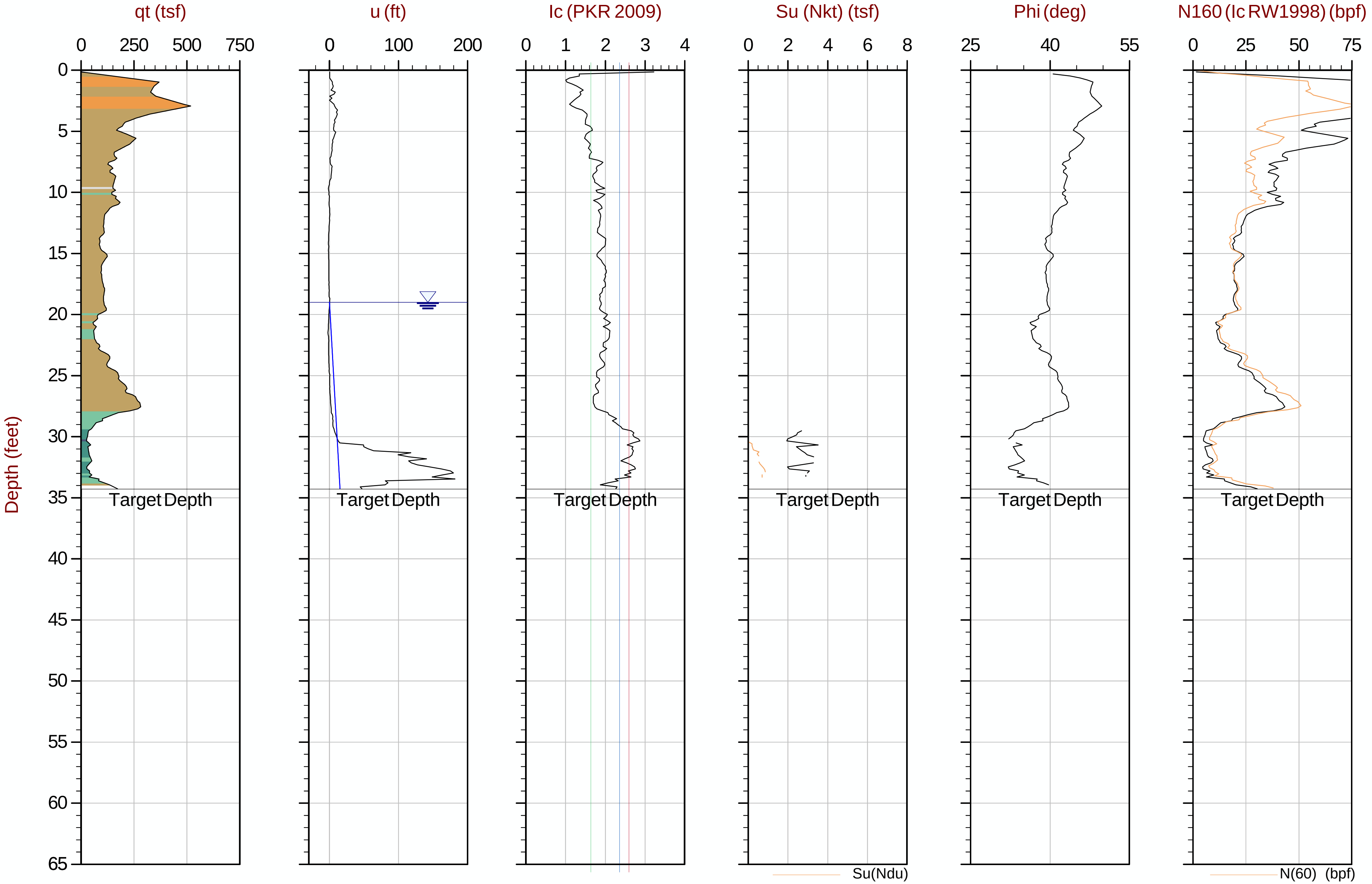
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 08:25
Site: Raymond Road, Verona, WI

Sounding: CPT20-29
Cone: 640:T1500F15U500



Max Depth: 10.450 m / 34.28 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP29.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766131m E: 293910m

—— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

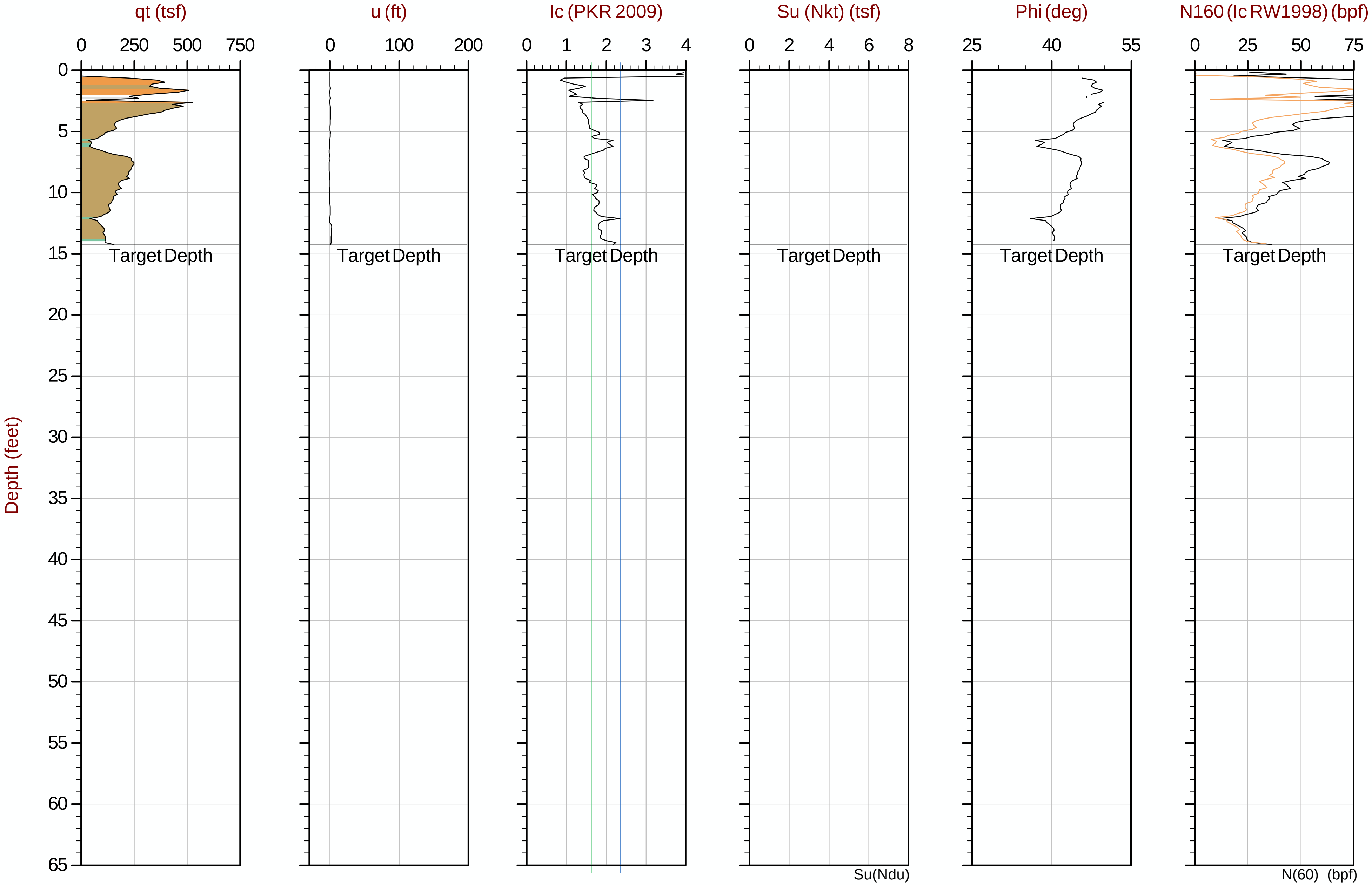
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 20:01
Site: Raymond Road, Verona, WI

Sounding: CPT20-30
Cone: 640:T1500F15U500



Max Depth: 4.350 m / 14.27 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP30.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766128m E: 293910m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

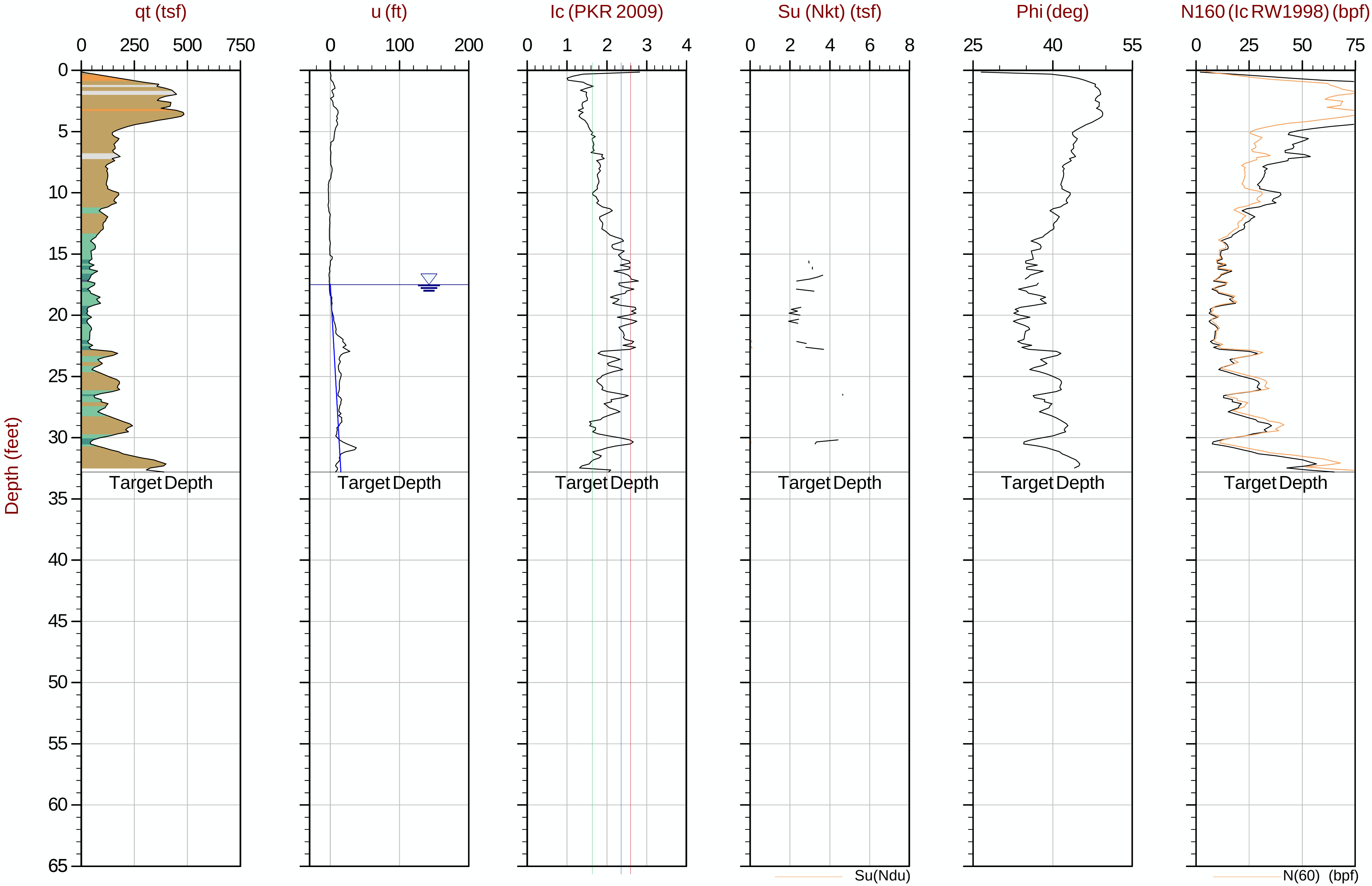
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 09:30
Site: Raymond Road, Verona, WI

Sounding: SCPT20-31
Cone: 640:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP31.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766108m E: 293891m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

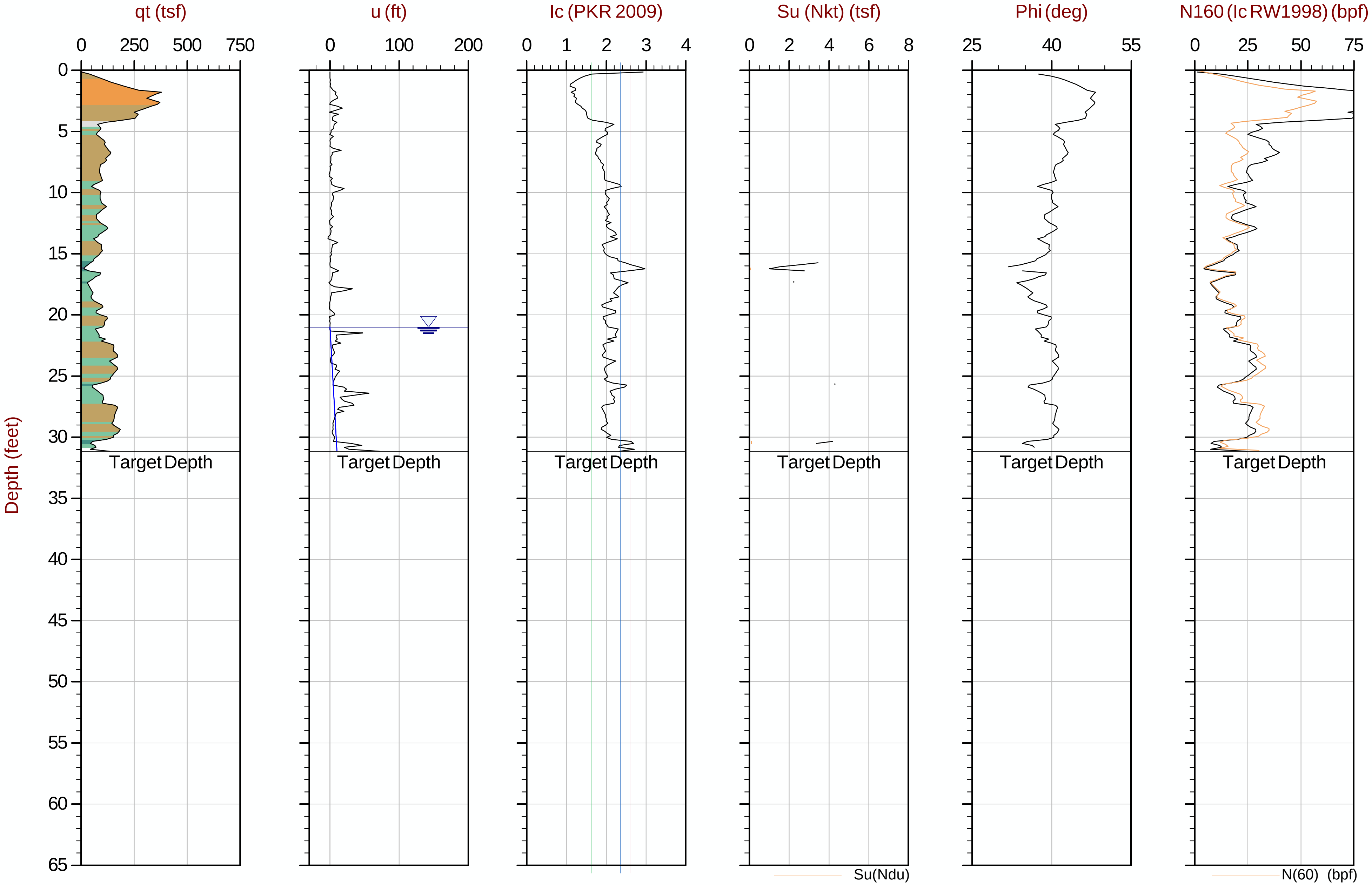
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 10:45
Site: Raymond Road, Verona, WI

Sounding: CPT20-32
Cone: 568:T1500F15U500



Max Depth: 9.500 m / 31.17 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP32.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766088m E: 293866m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

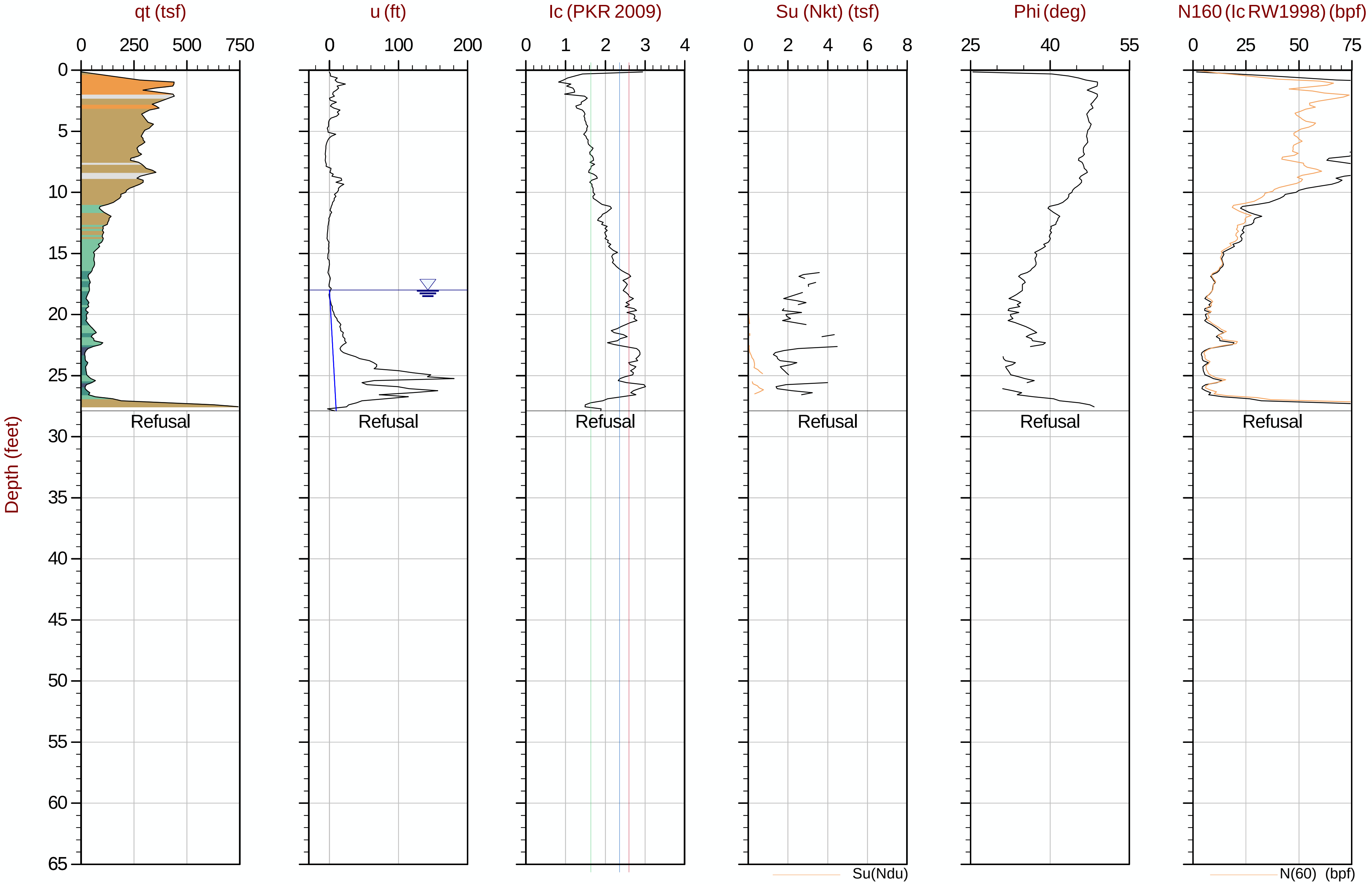
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 11:22
Site: Raymond Road, Verona, WI

Sounding: CPT20-33
Cone: 568:T1500F15U500



Max Depth: 8.500 m / 27.89 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP33.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766065m E: 293853m

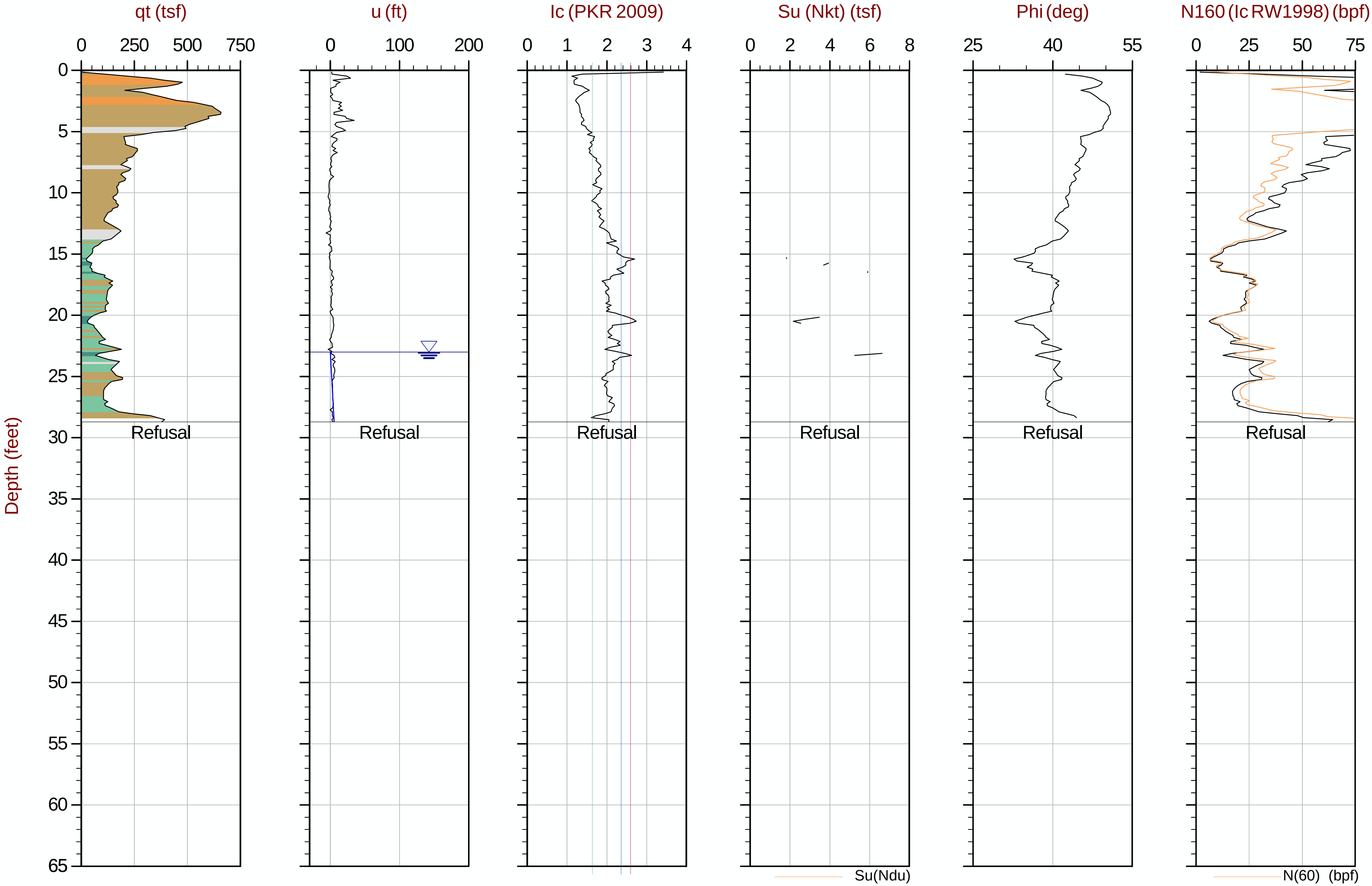
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 11:53
Site: Raymond Road, Verona, WI

Sounding: CPT20-34
Cone: 568:T1500F15U500



Max Depth: 8.750 m / 28.71 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP34.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766042m E: 293829m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

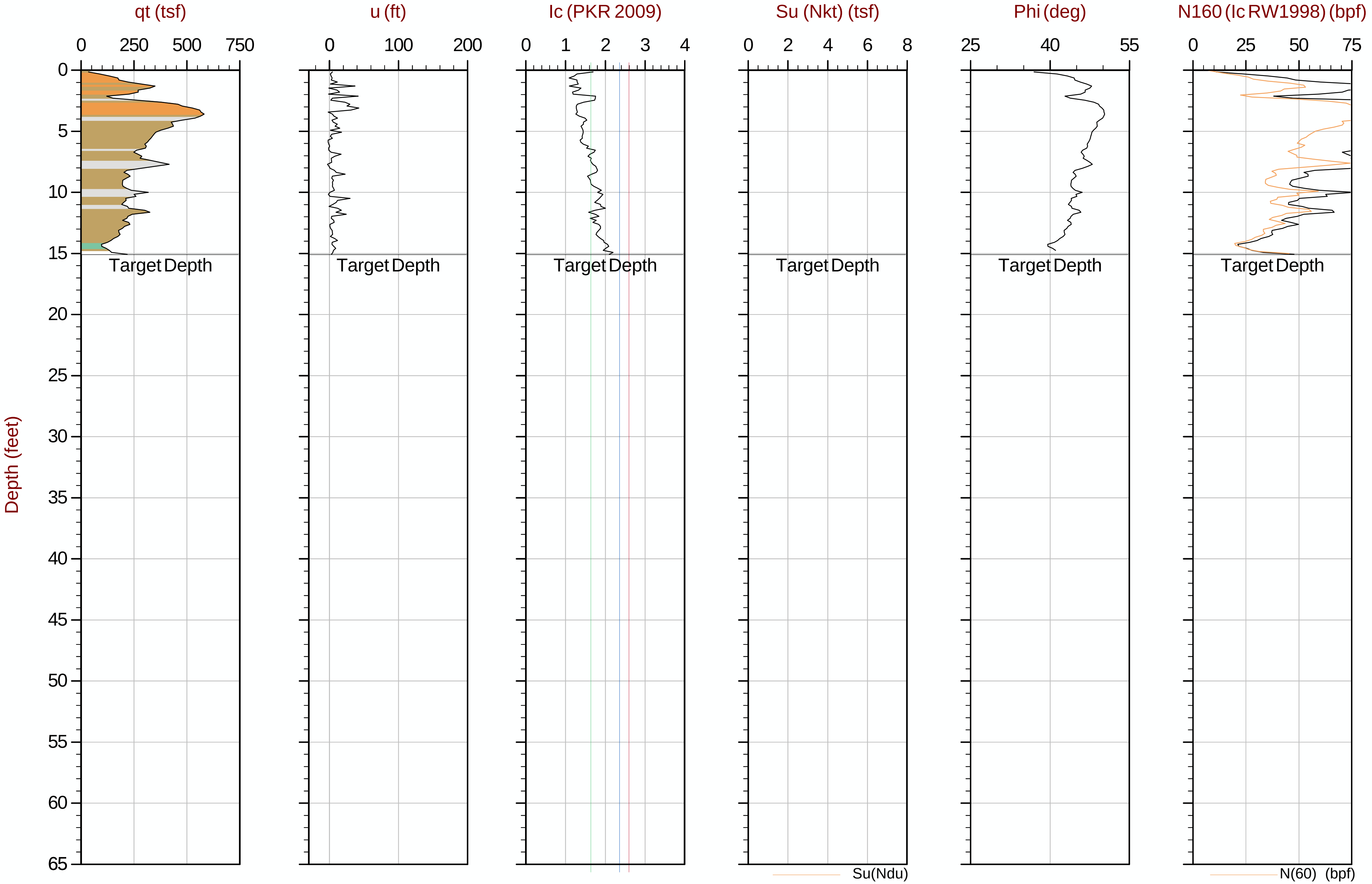
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 12:22
Site: Raymond Road, Verona, WI

Sounding: CPT20-35
Cone: 568:T1500F15U500



Max Depth: 4.600 m / 15.09 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP35.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766039m E: 293831m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

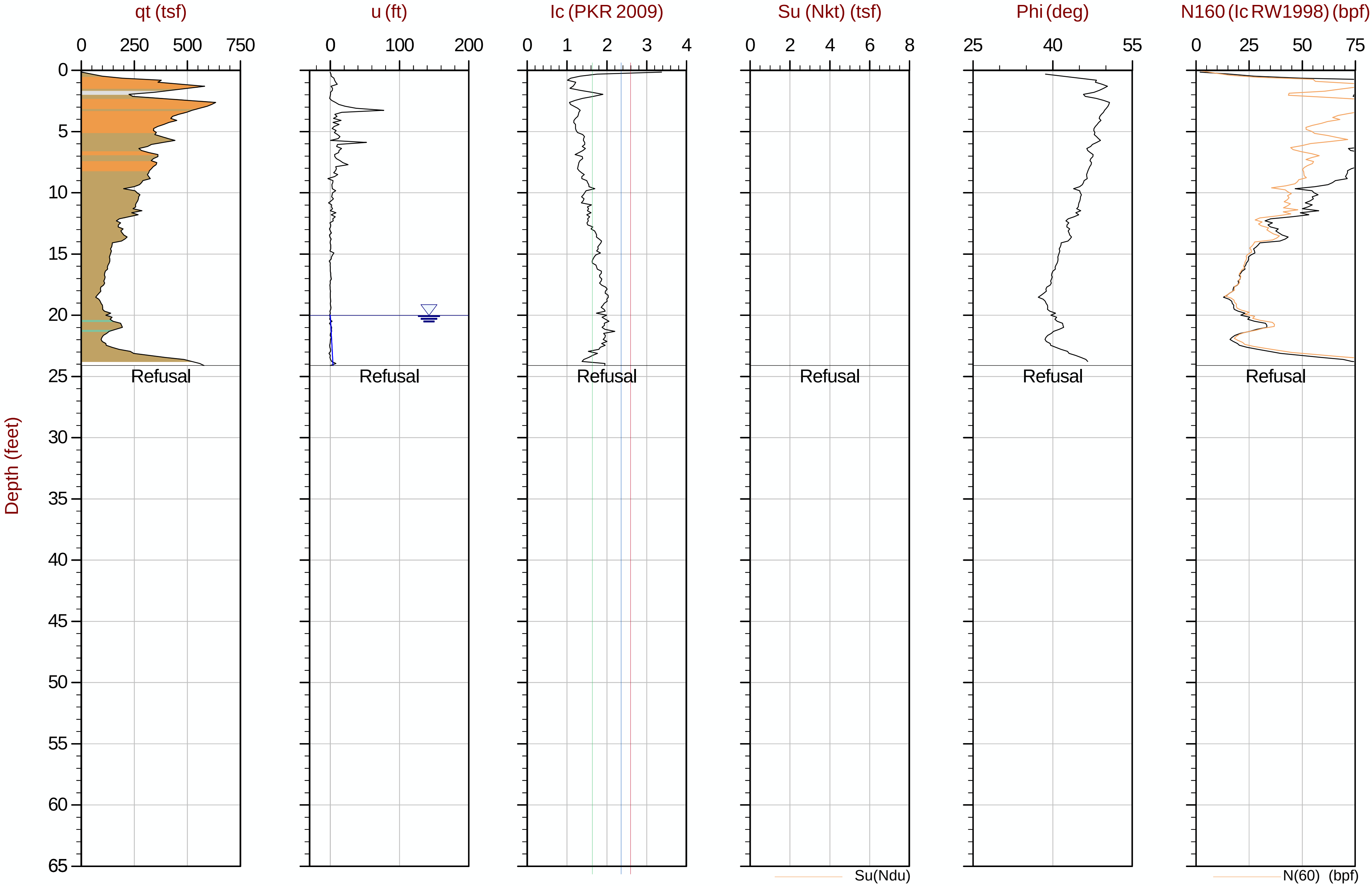
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 12:52
Site: Raymond Road, Verona, WI

Sounding: CPT20-36
Cone: 568:T1500F15U500



Max Depth: 7.350 m / 24.11 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP36.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766020m E: 293809m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

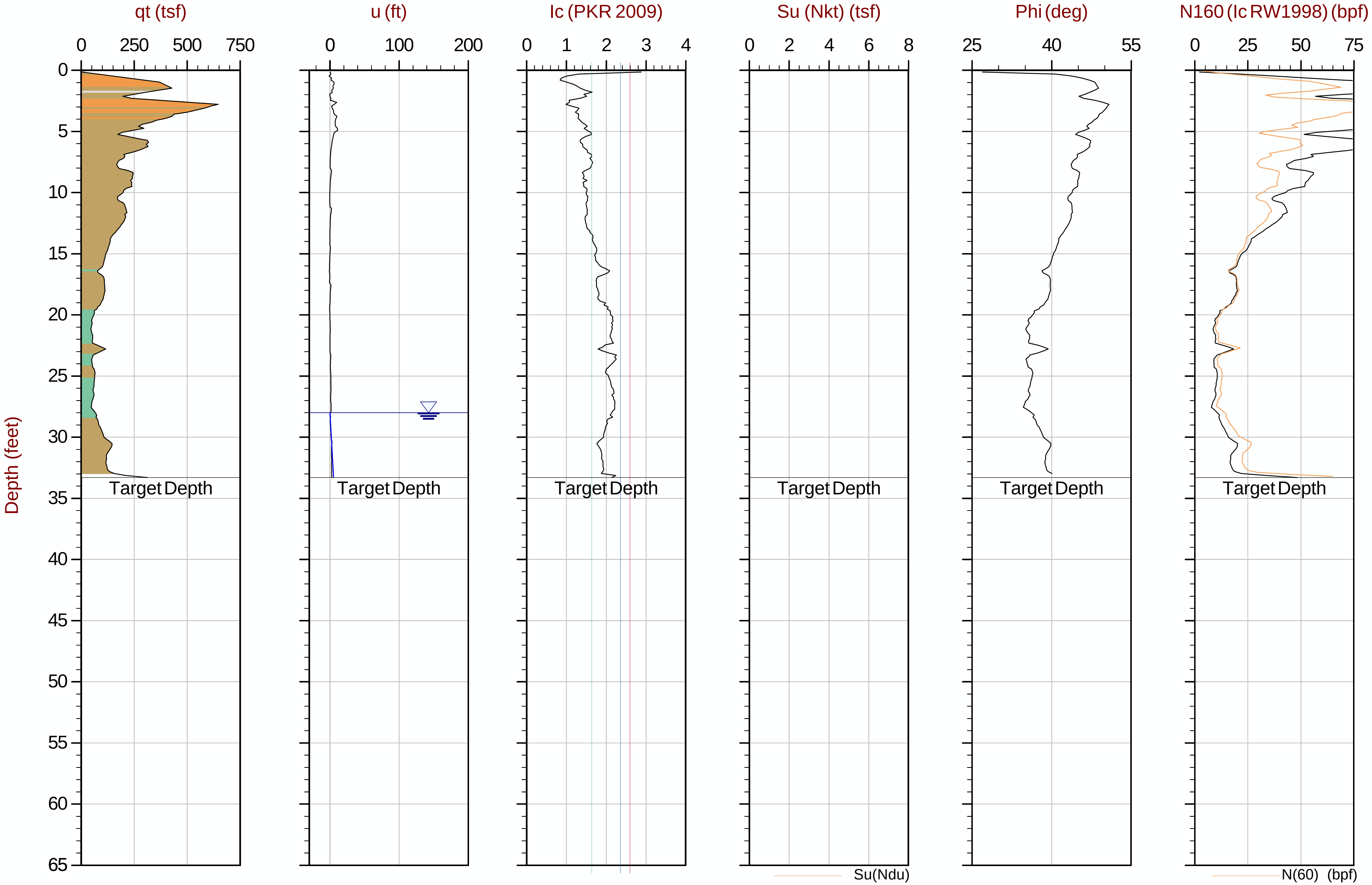
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 13:28
Site: Raymond Road, Verona, WI

Sounding: SCPT20-37
Cone: 568:T1500F15U500



Max Depth: 10.150 m / 33.30 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP37.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765991m E: 293783m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

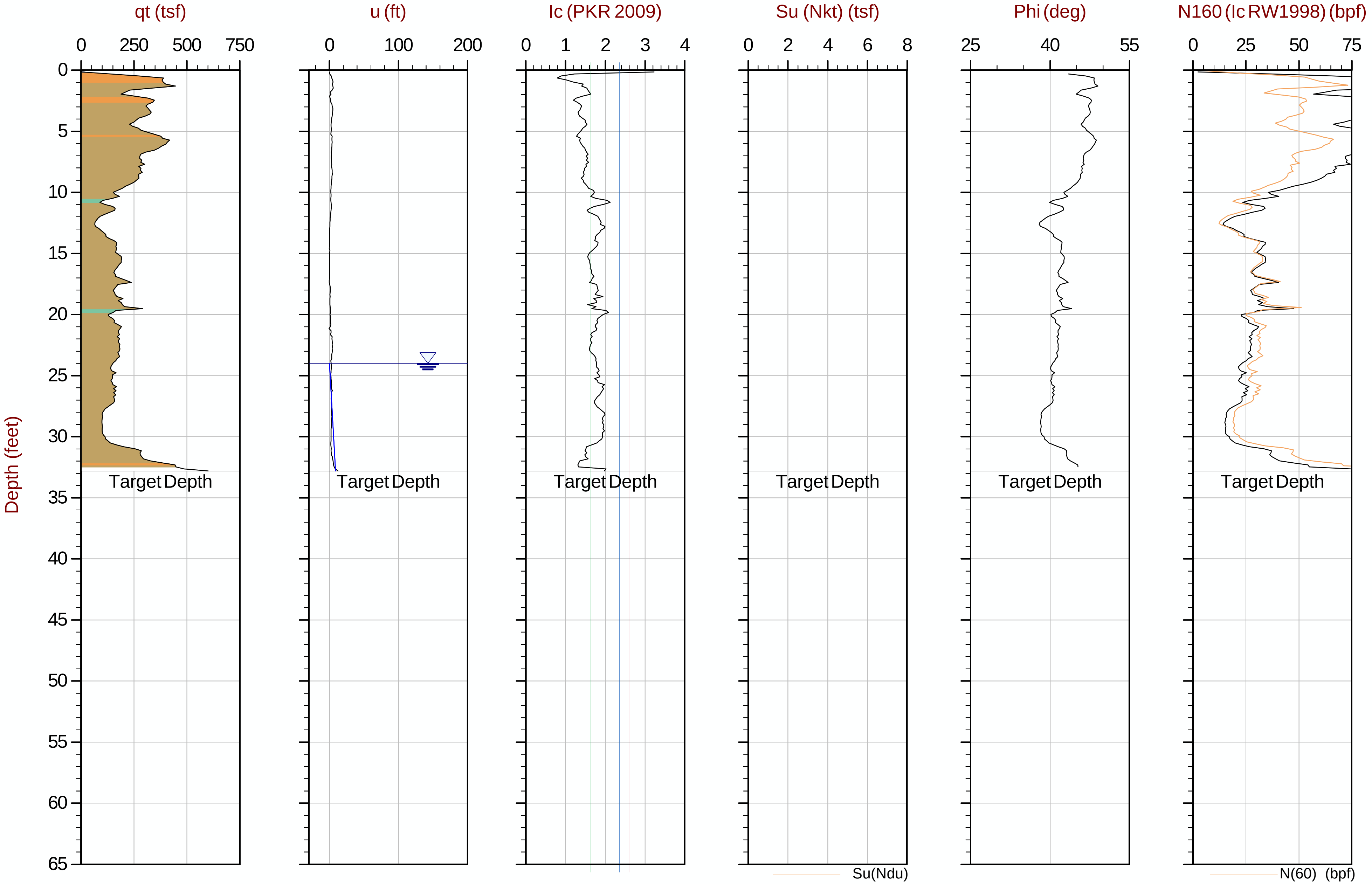
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 14:51
Site: Raymond Road, Verona, WI

Sounding: CPT20-38
Cone: 568:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP38.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765971m E: 293763m

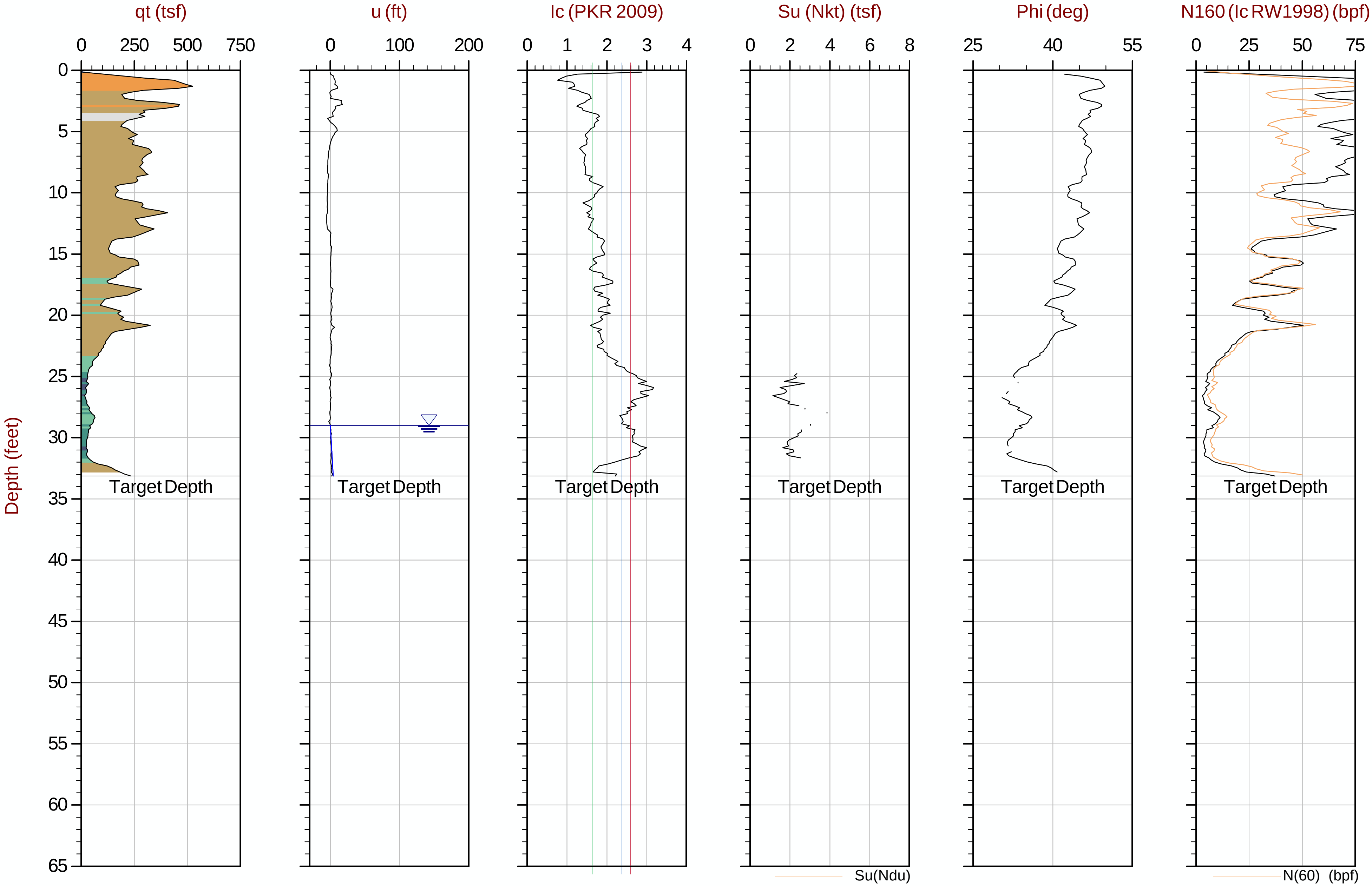
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 15:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-39
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP39.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765945m E: 293743m

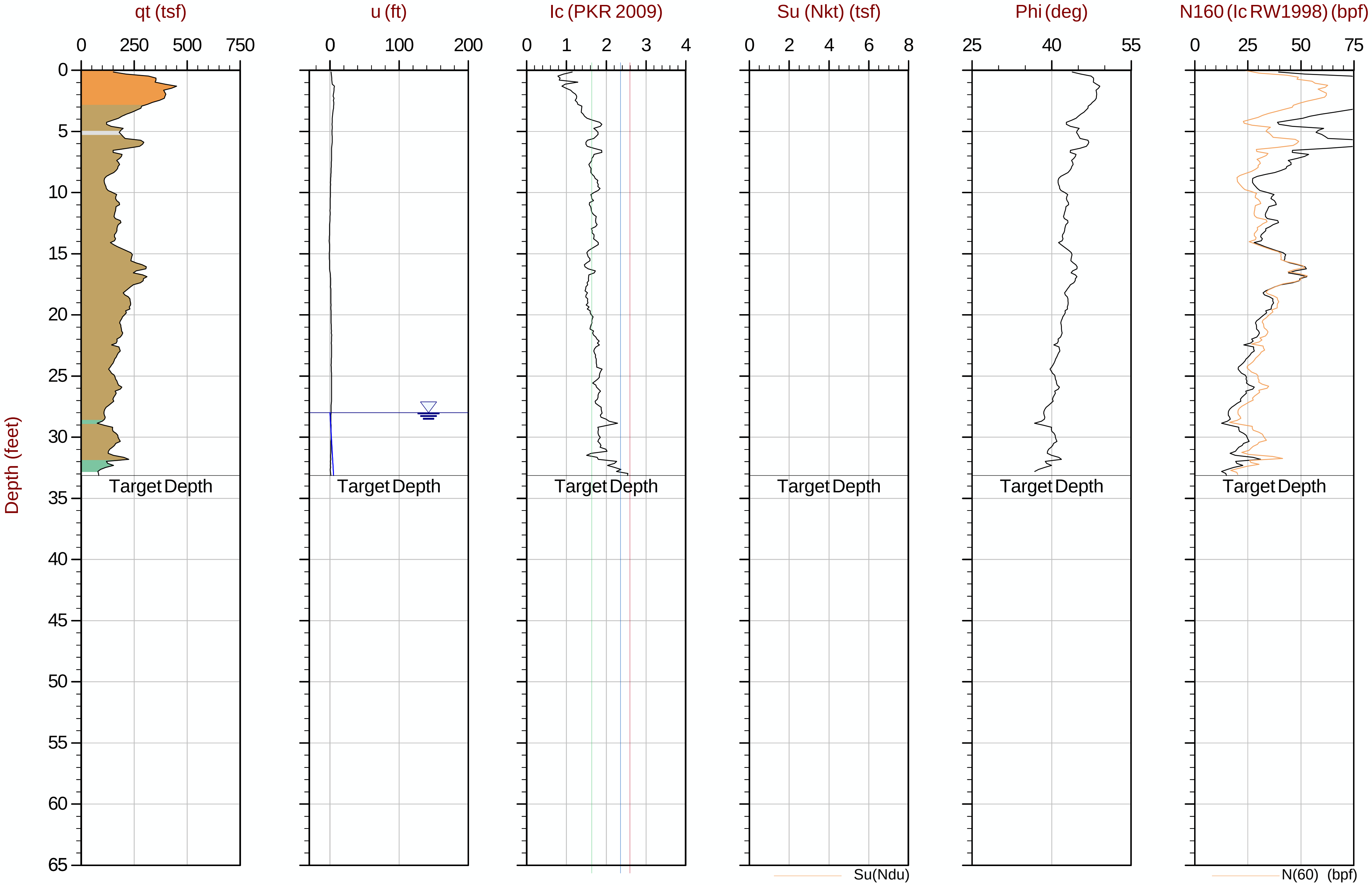
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 16:01
Site: Raymond Road, Verona, WI

Sounding: CPT20-40
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP40.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

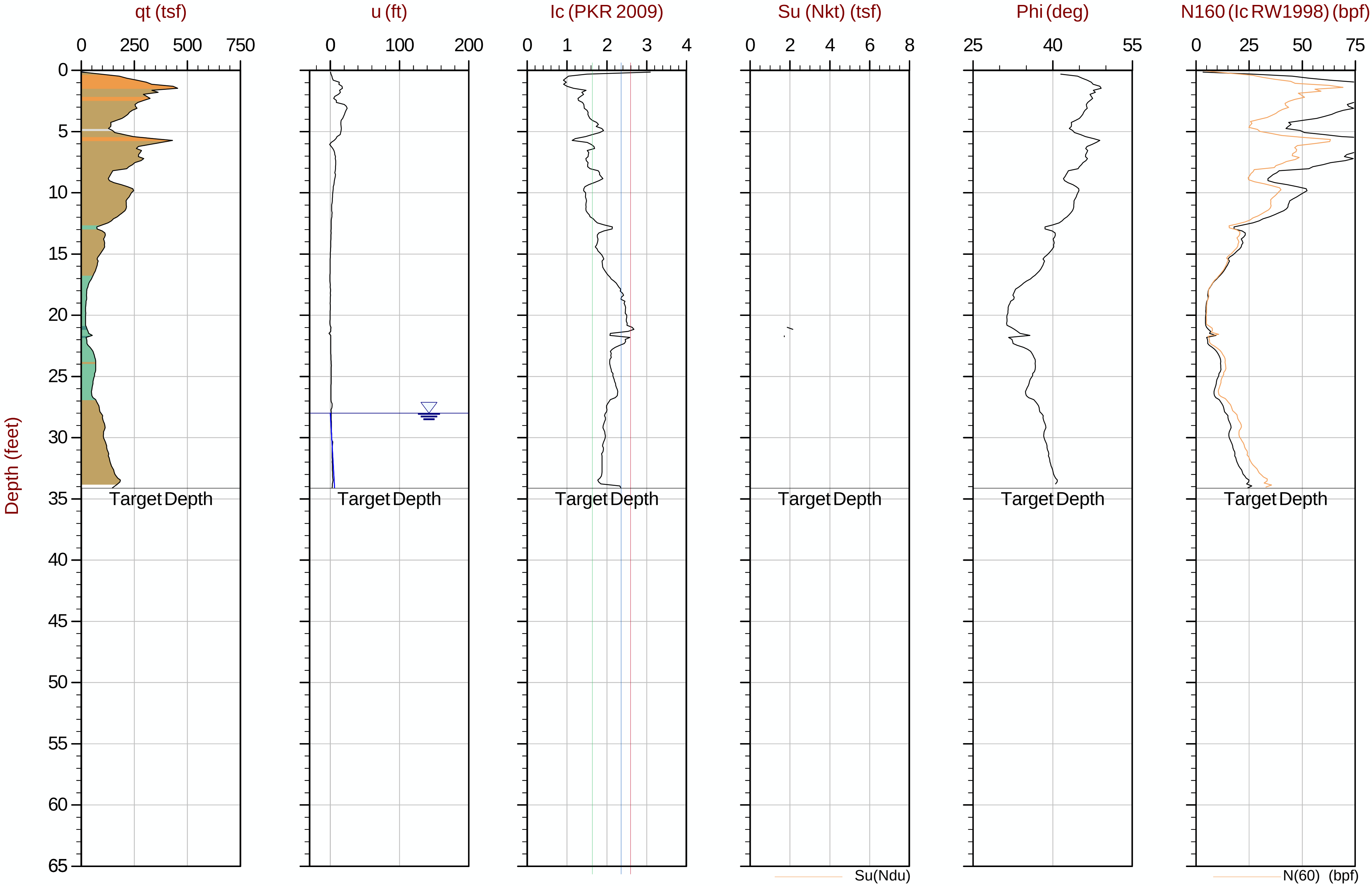
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765929m E: 293727m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 17:40
Site: Raymond Road, Verona, WI
Sounding: CPT20-42
Cone: 568:T1500F15U500



Max Depth: 10.400 m / 34.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP42.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765883m E: 293684m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

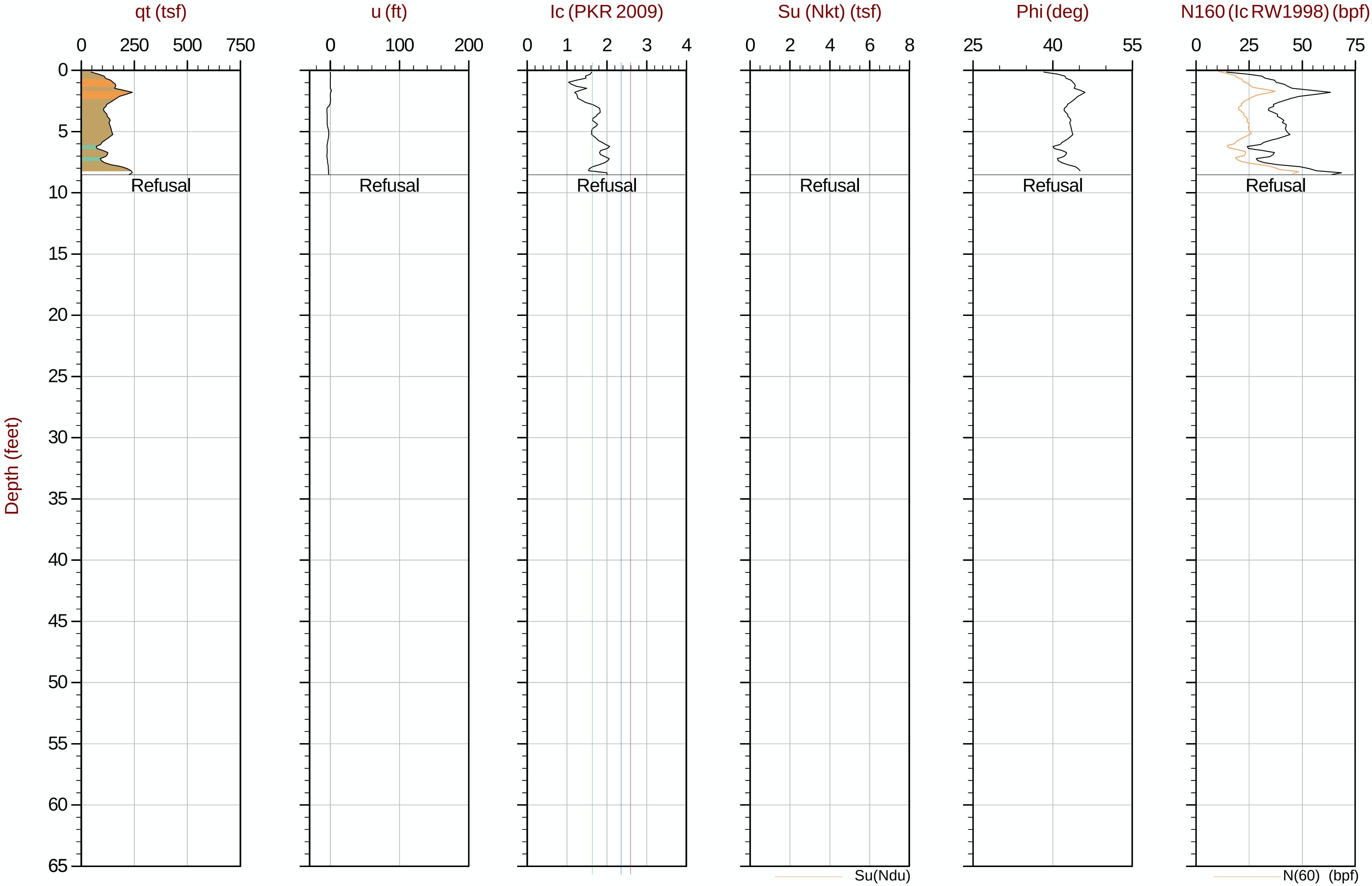
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:09
Site: Raymond Road, Verona, WI

Sounding: CPT20-43
Cone: 568:T1500F15U500



Max Depth: 2.600 m / 8.53 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP43.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765882m E: 293685m

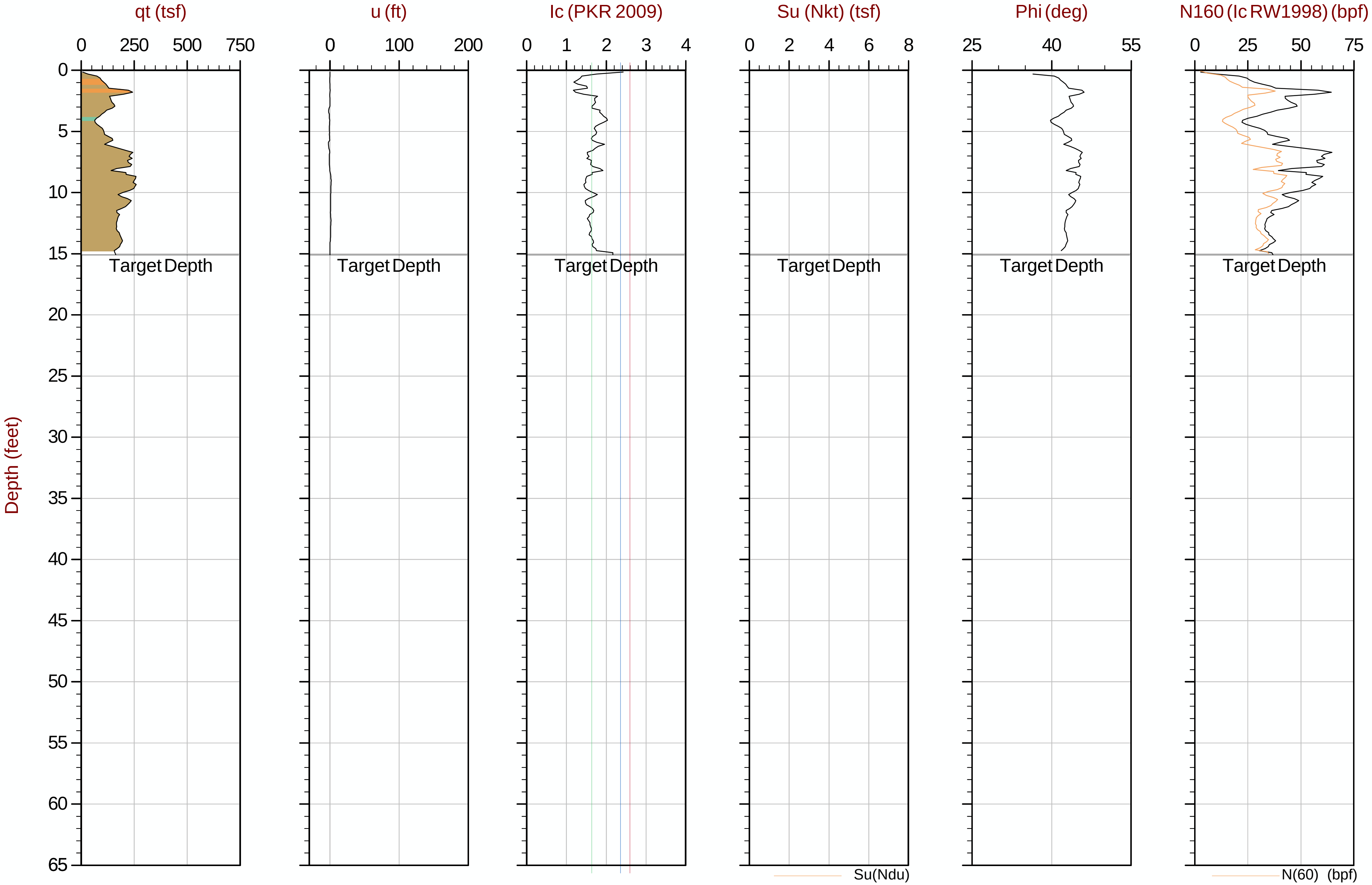
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:25
Site: Raymond Road, Verona, WI

Sounding: CPT20-43B
Cone: 568:T1500F15U500



Max Depth: 4.600 m / 15.09 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP43B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765880m E: 293686m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

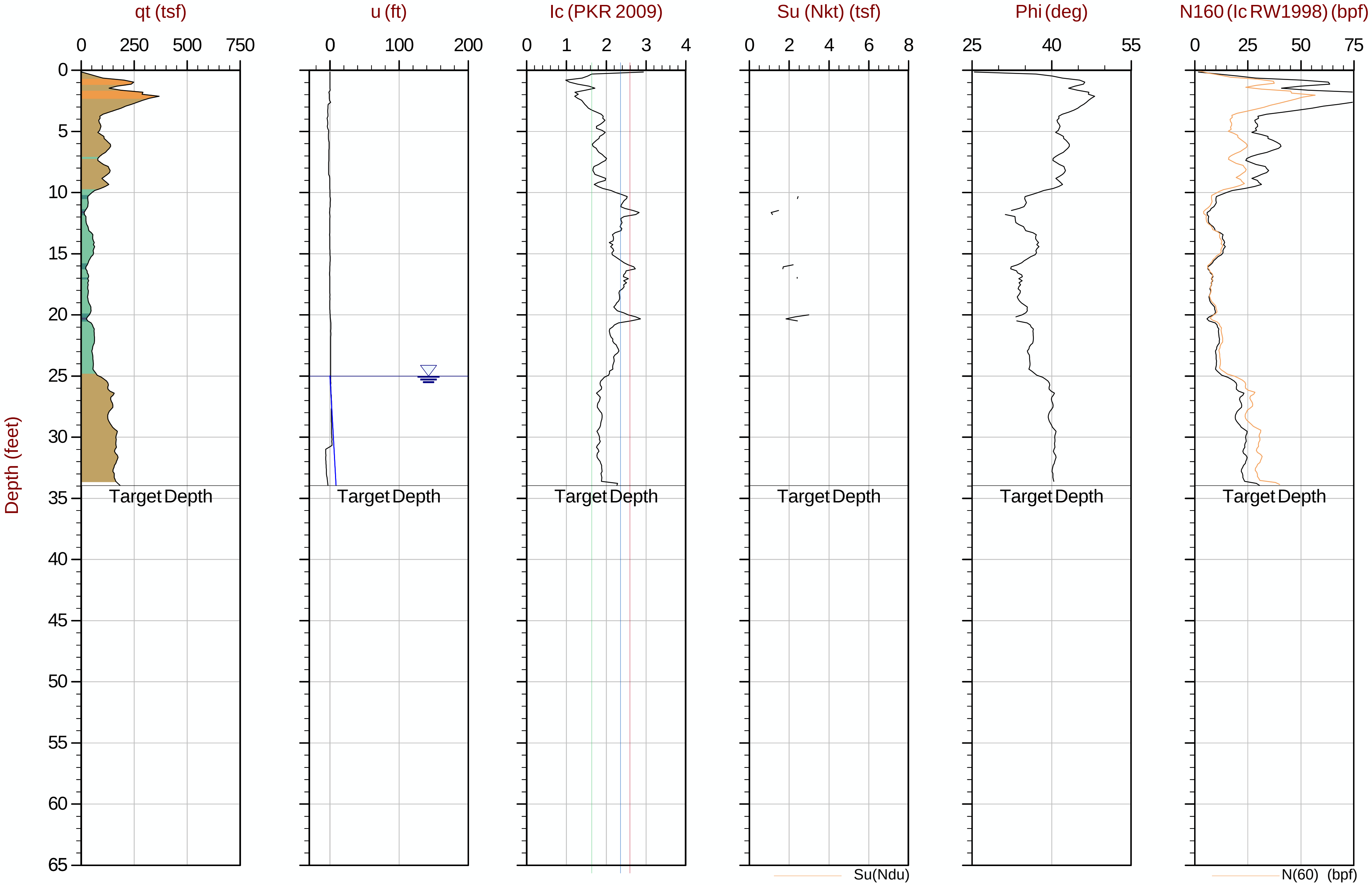
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:49
Site: Raymond Road, Verona, WI

Sounding: CPT20-44
Cone: 568:T1500F15U500



Max Depth: 10.350 m / 33.96 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP44.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765863m E: 293666m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

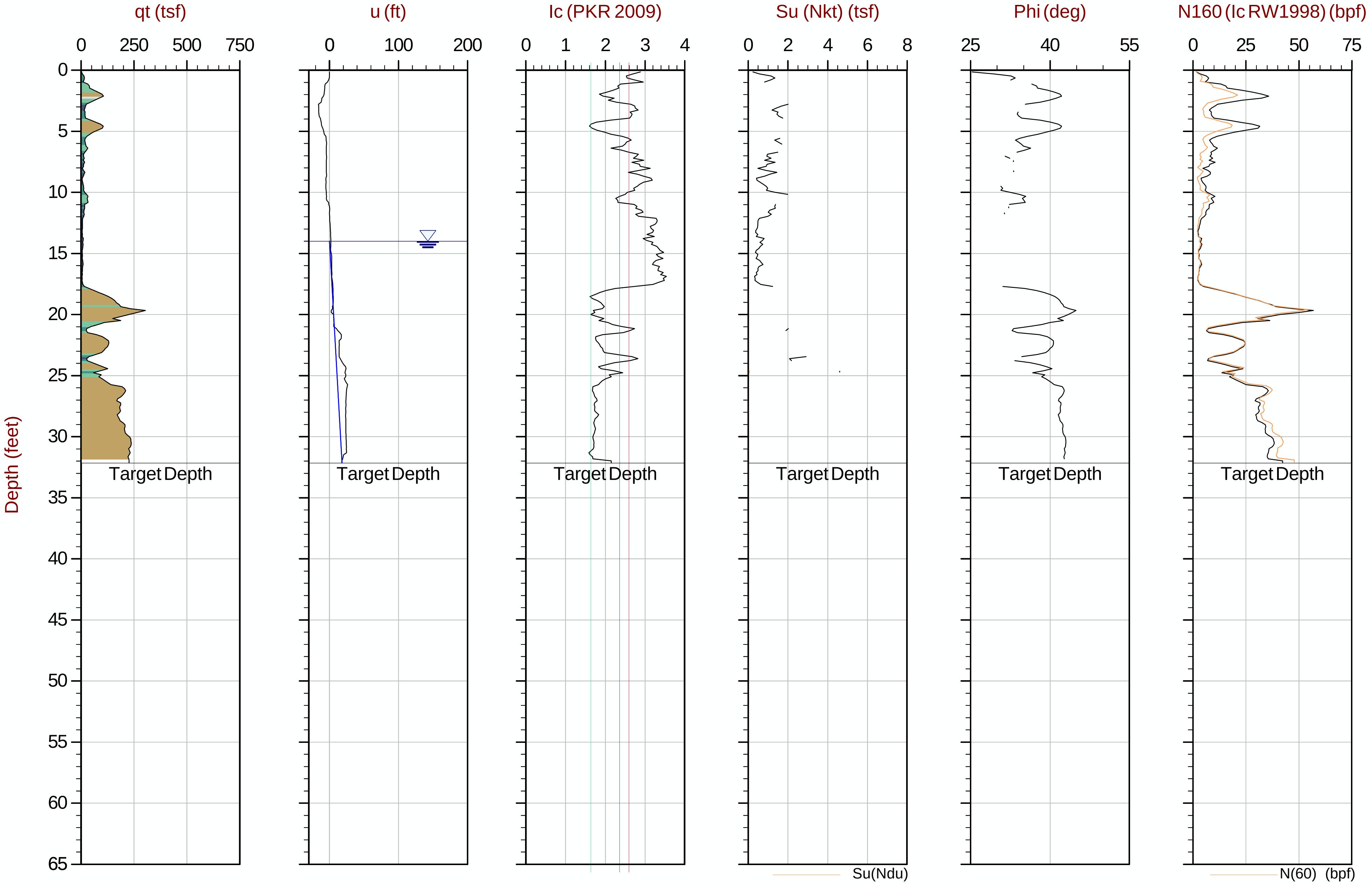
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 19:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-45
Cone: 568:T1500F15U500



Max Depth: 9.800 m / 32.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP45.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765796m E: 293638m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

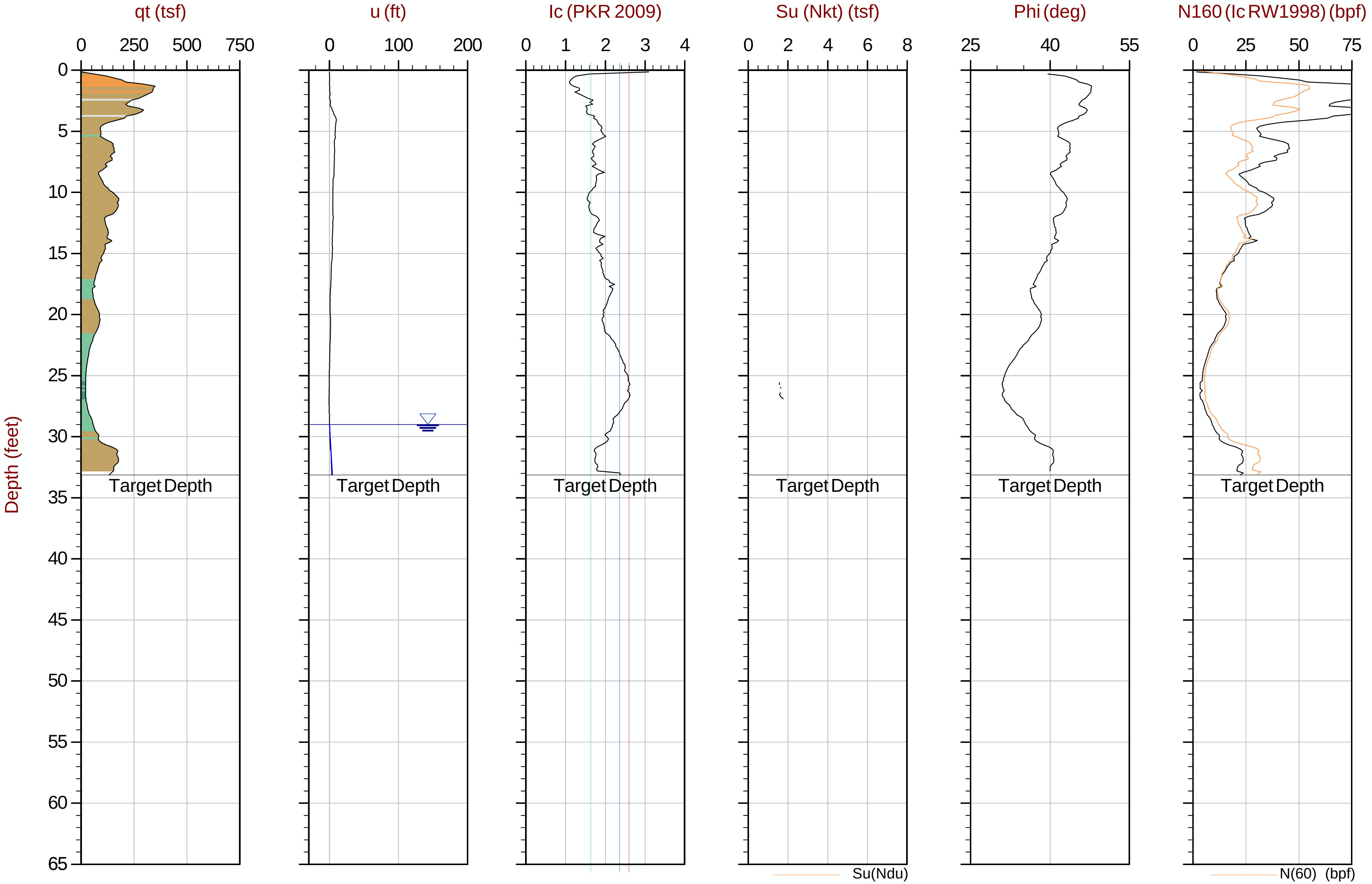
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 09:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-47
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP47.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765878m E: 293681m

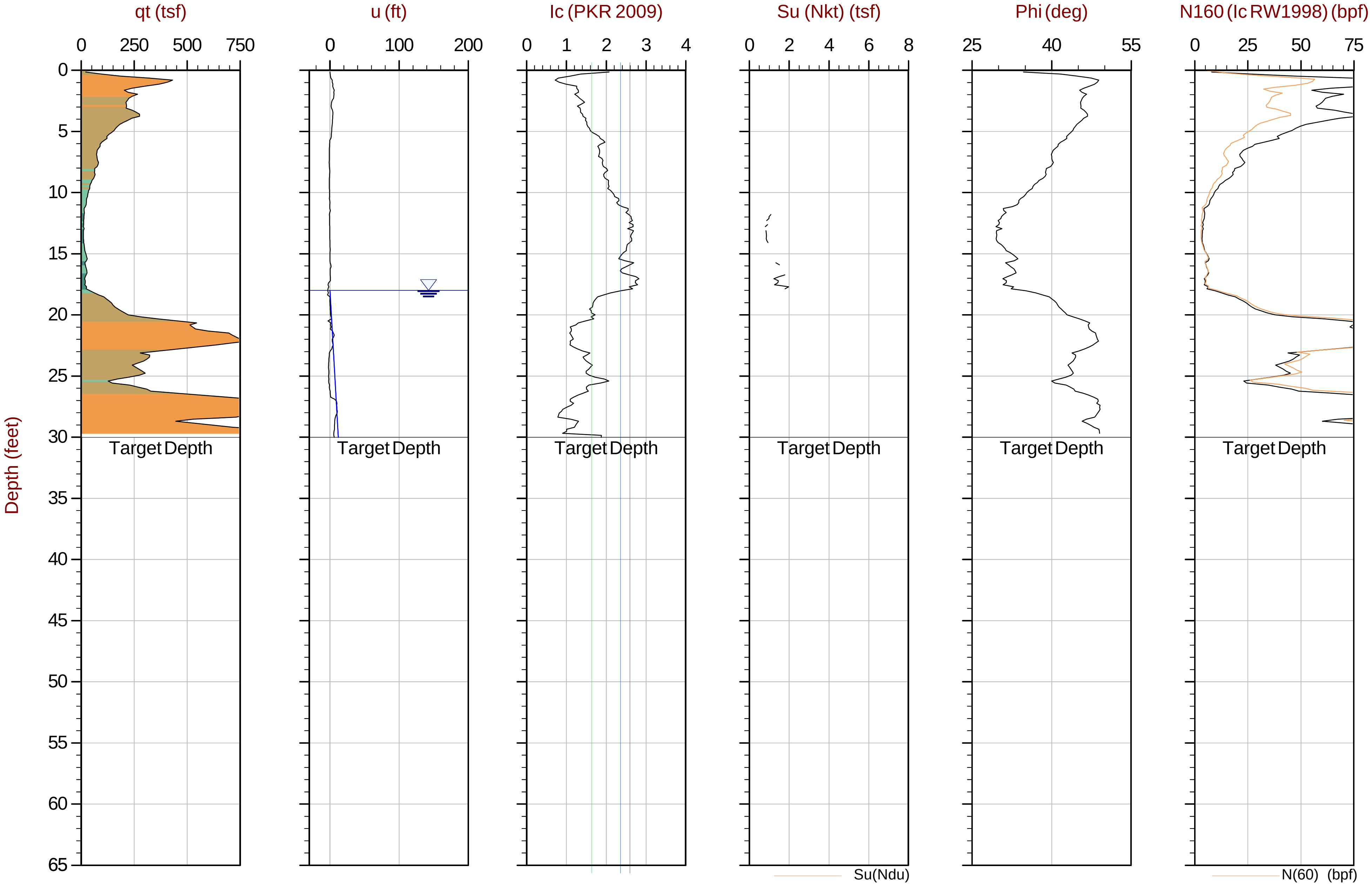
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 10:16
Site: Raymond Road, Verona, WI

Sounding: CPT20-48
Cone: 568:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP48.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766425m E: 294270m

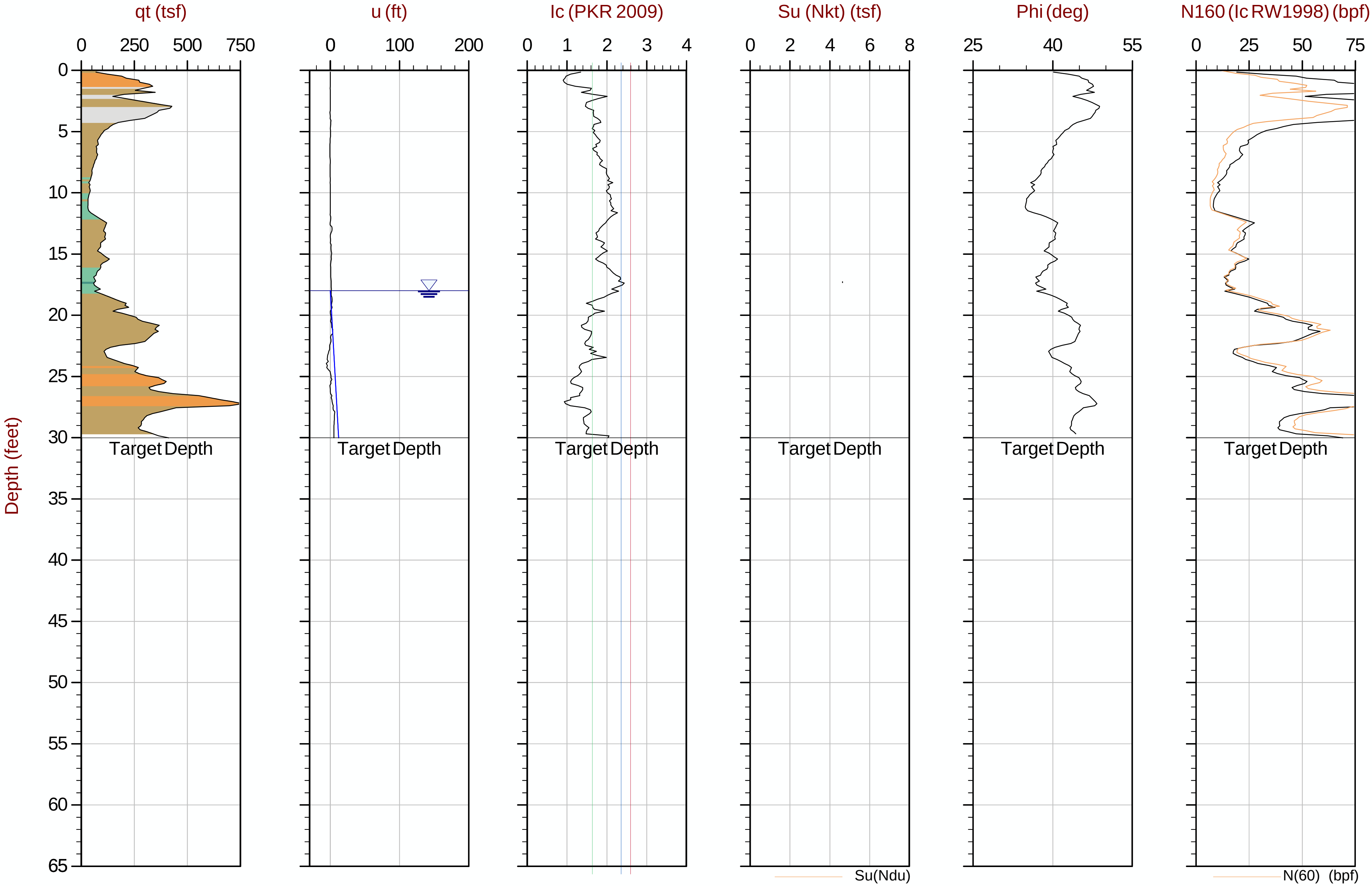
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 10:48
Site: Raymond Road, Verona, WI

Sounding: CPT20-49
Cone: 568:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP49.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766415m E: 294243m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

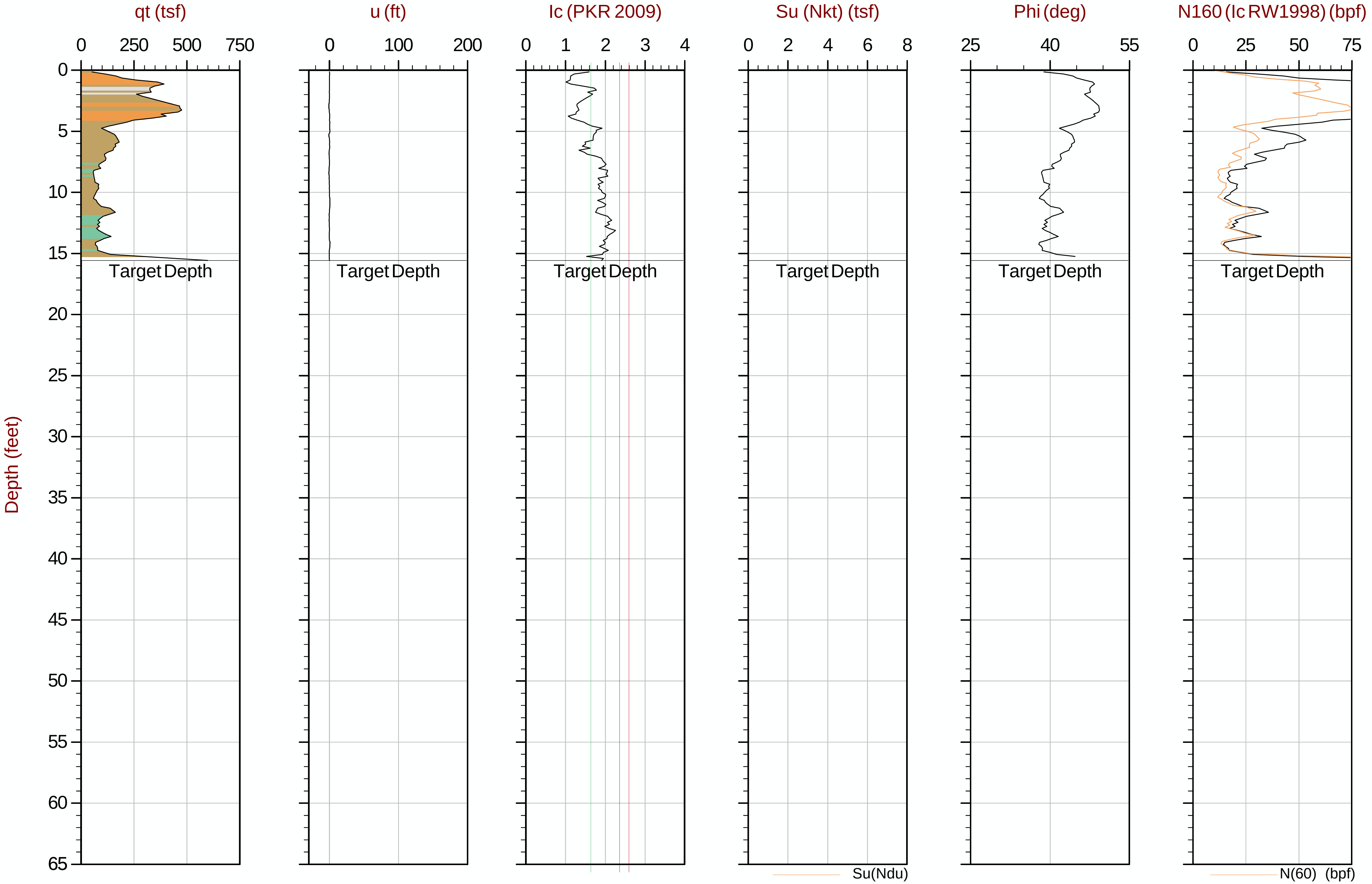
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 12:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-51
Cone: 568:T1500F15U500



Max Depth: 4.750 m / 15.58 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP51.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766393m E: 294213m

— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

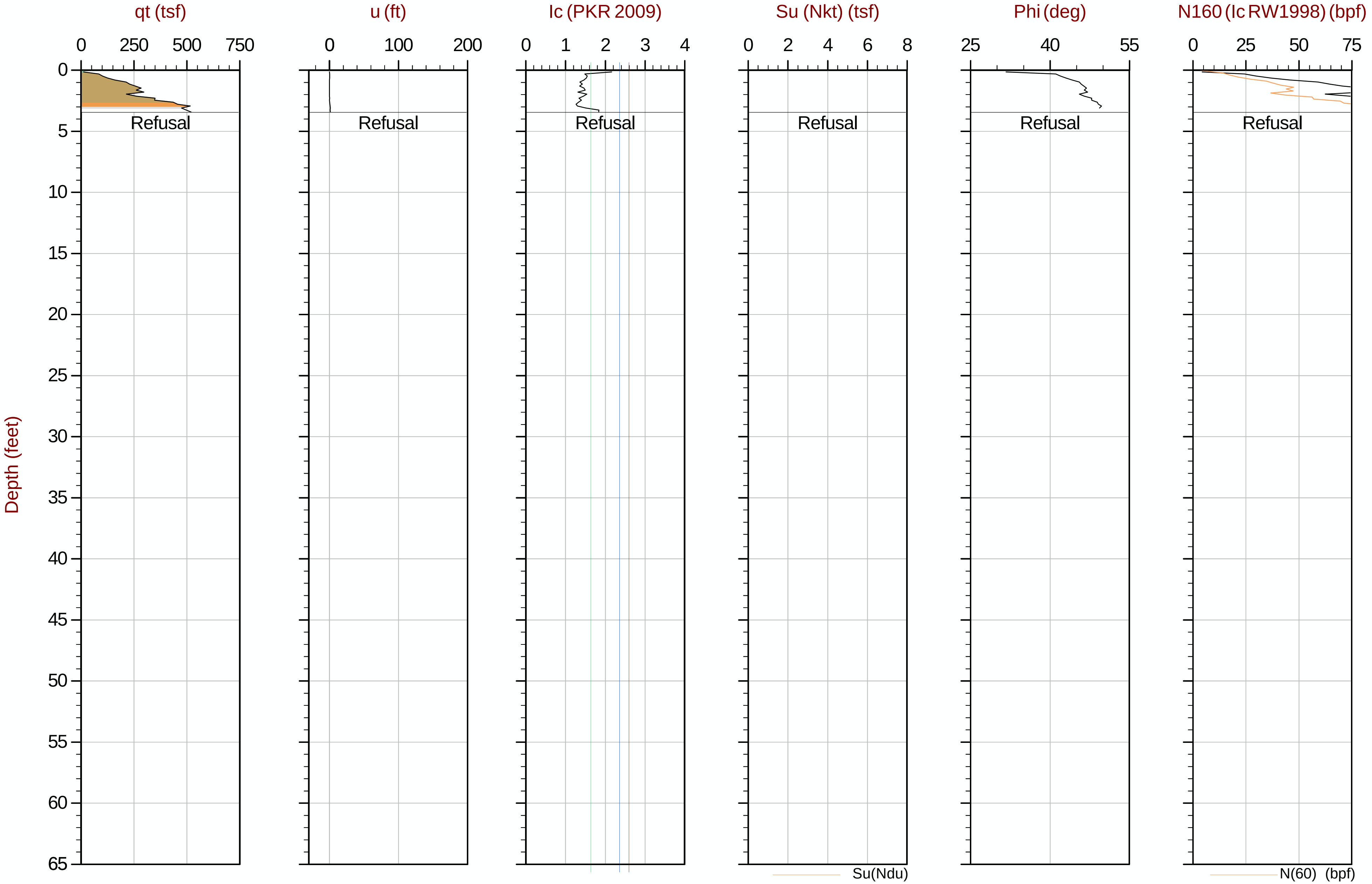
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:11
Site: Raymond Road, Verona, WI

Sounding: CPT20-51B
Cone: 568:T1500F15U500



Max Depth: 1.050 m / 3.44 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP51B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766395m E: 294209m

—— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

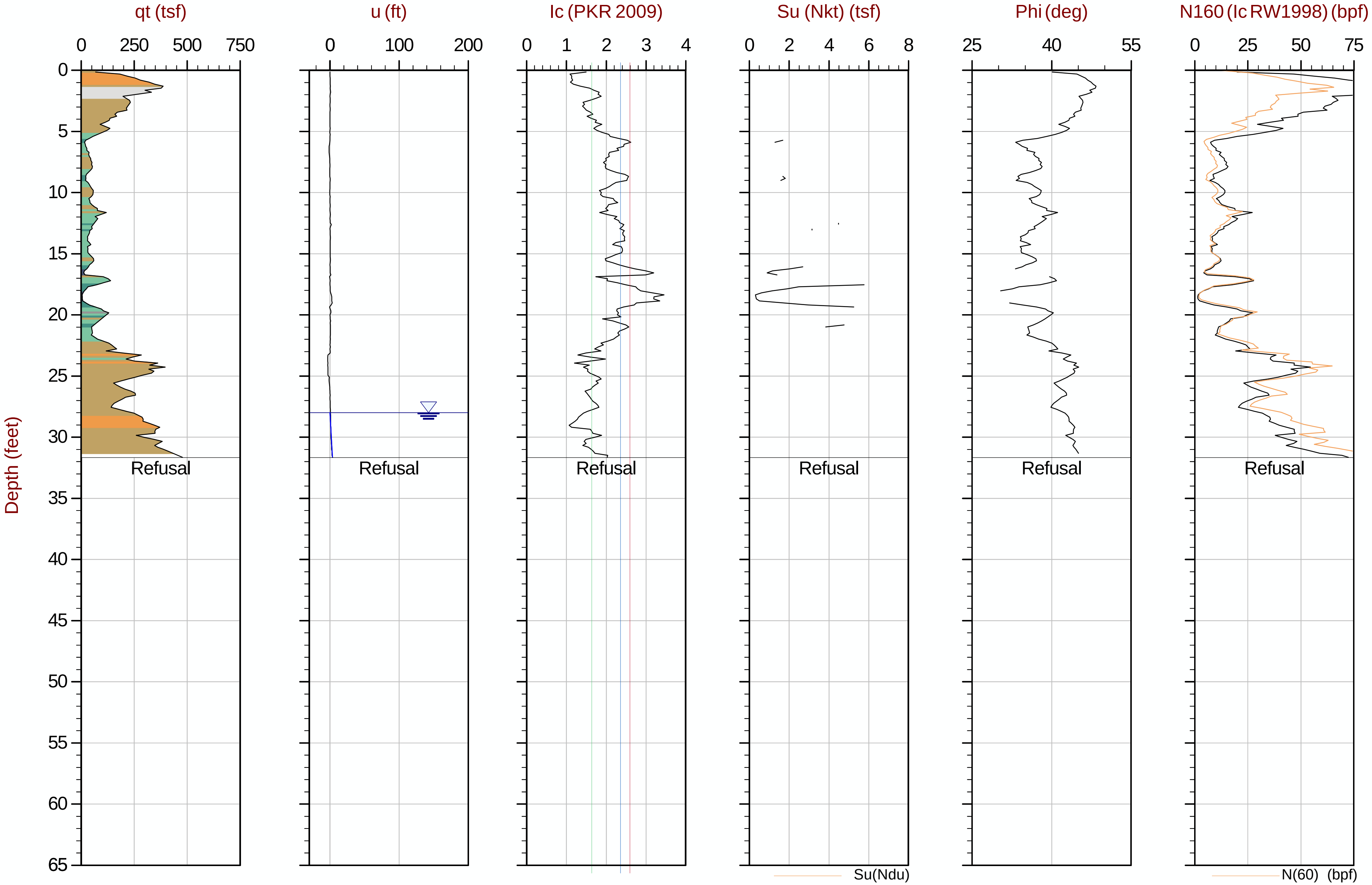
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:21
Site: Raymond Road, Verona, WI

Sounding: CPT20-51C
Cone: 568:T1500F15U500



Max Depth: 9.650 m / 31.66 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP51C.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766386m E: 294216m

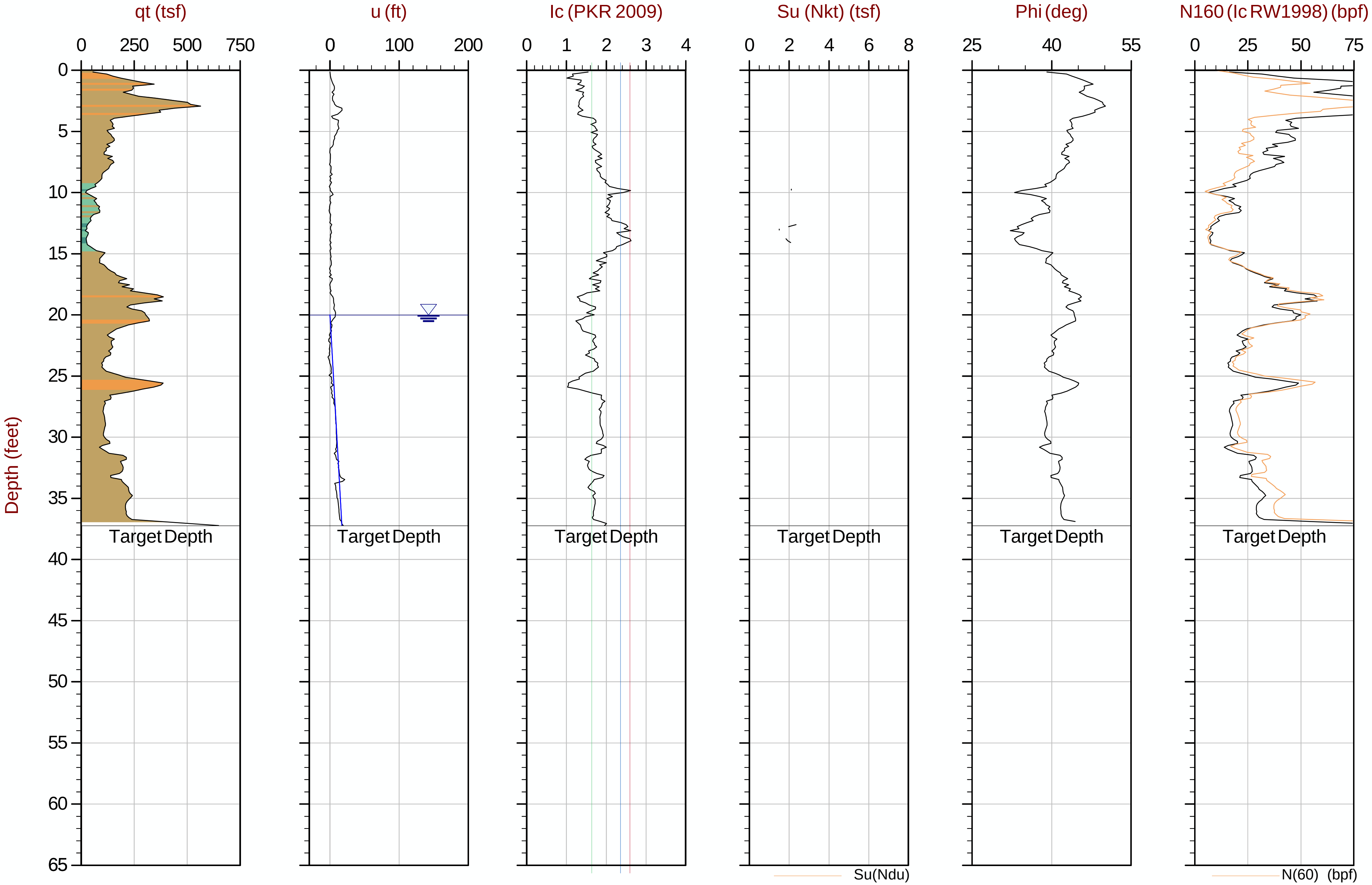
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-52
Cone: 568:T1500F15U500



Max Depth: 11.350 m / 37.24 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP52.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766370m E: 294180m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

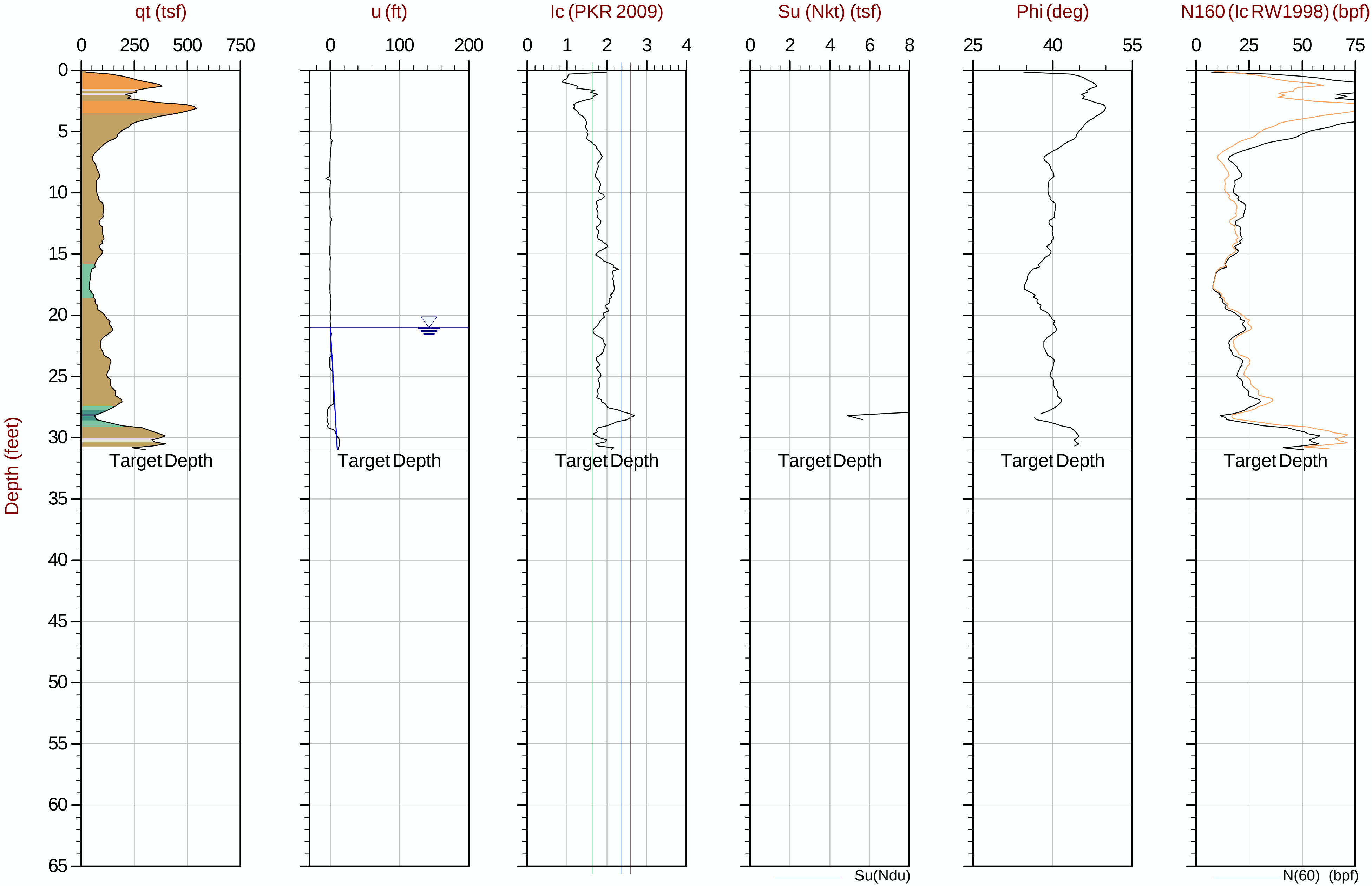
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 15:33
Site: Raymond Road, Verona, WI

Sounding: CPT20-54
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP54.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766218m E: 293977m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

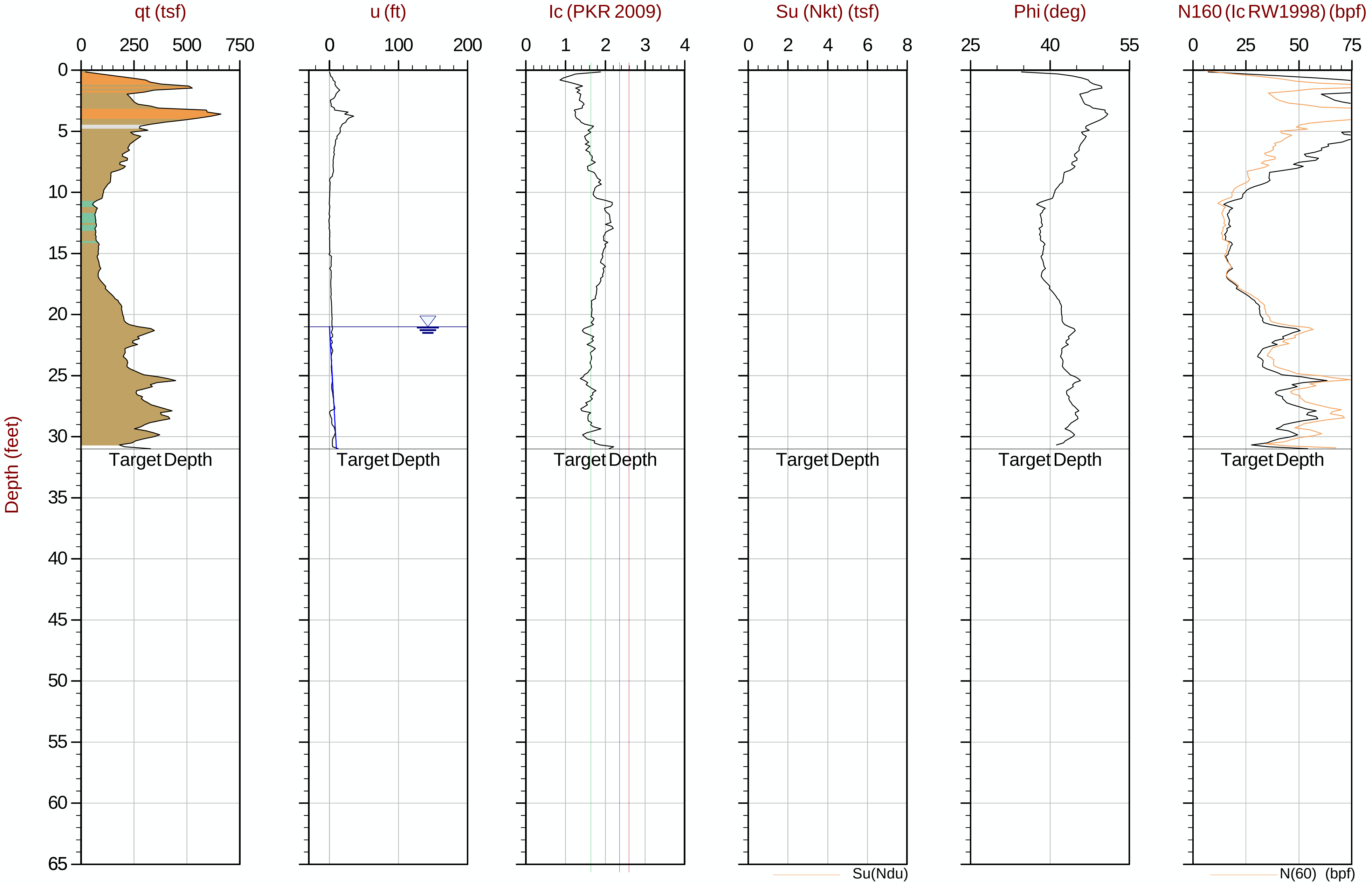
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 15:57
Site: Raymond Road, Verona, WI

Sounding: CPT20-55
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP55.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766239m E: 294003m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

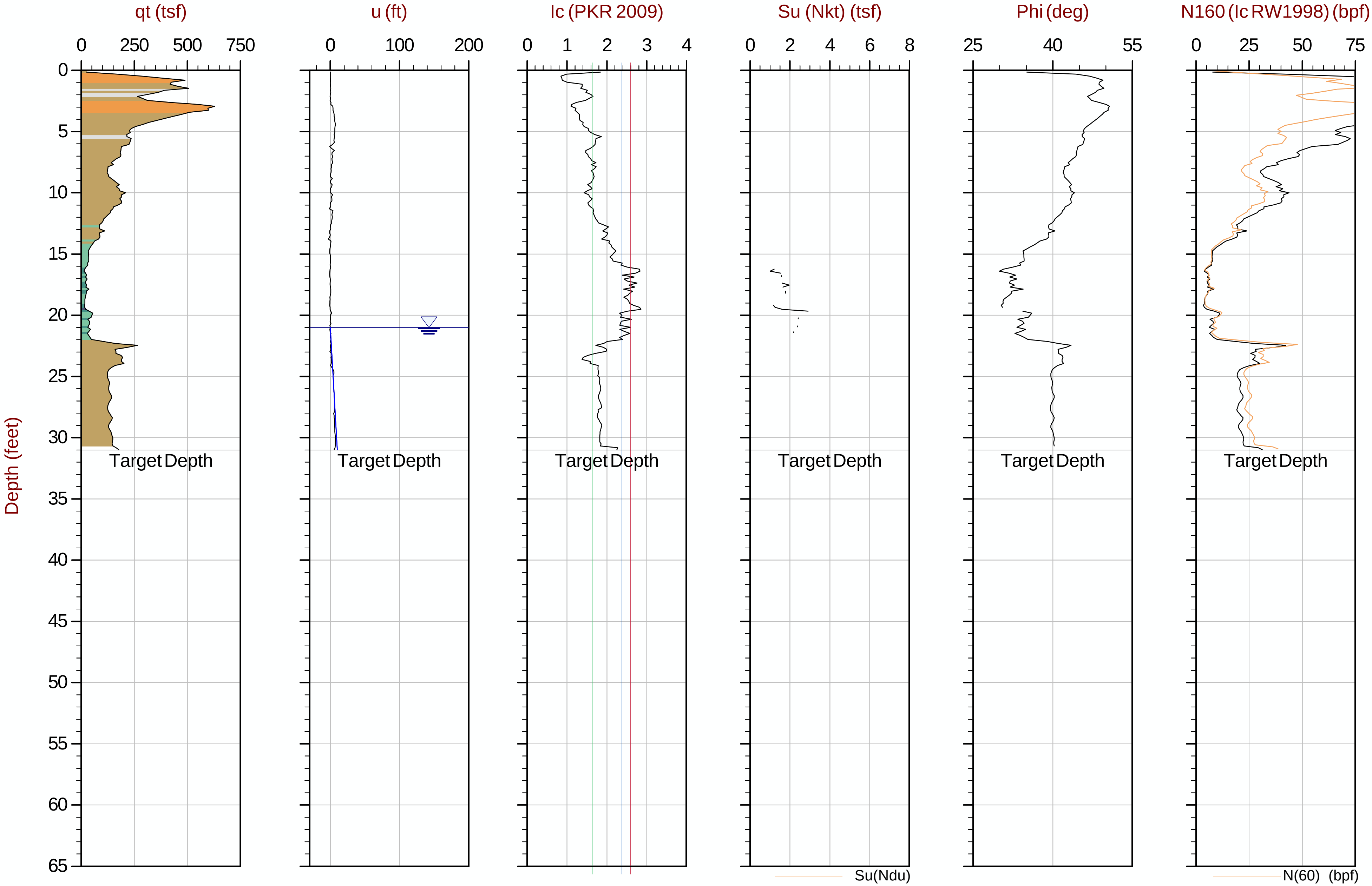
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 16:20
Site: Raymond Road, Verona, WI

Sounding: CPT20-56
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP56.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766261m E: 294020m

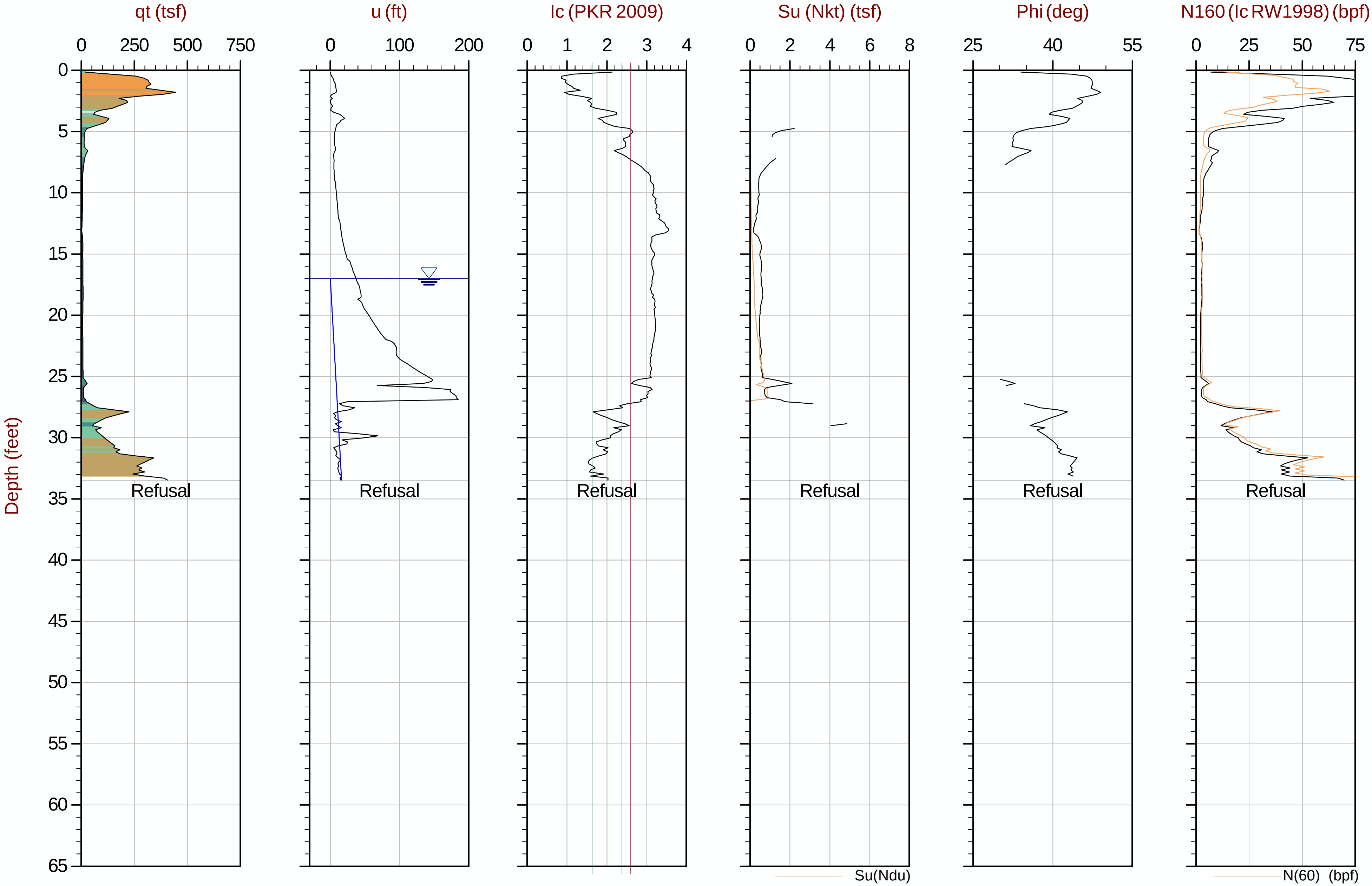
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 16:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-57
Cone: 568:T1500F15U500



Max Depth: 10.200 m / 33.46 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP57.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766353m E: 294116m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◀ PPD, Ueq not achieved

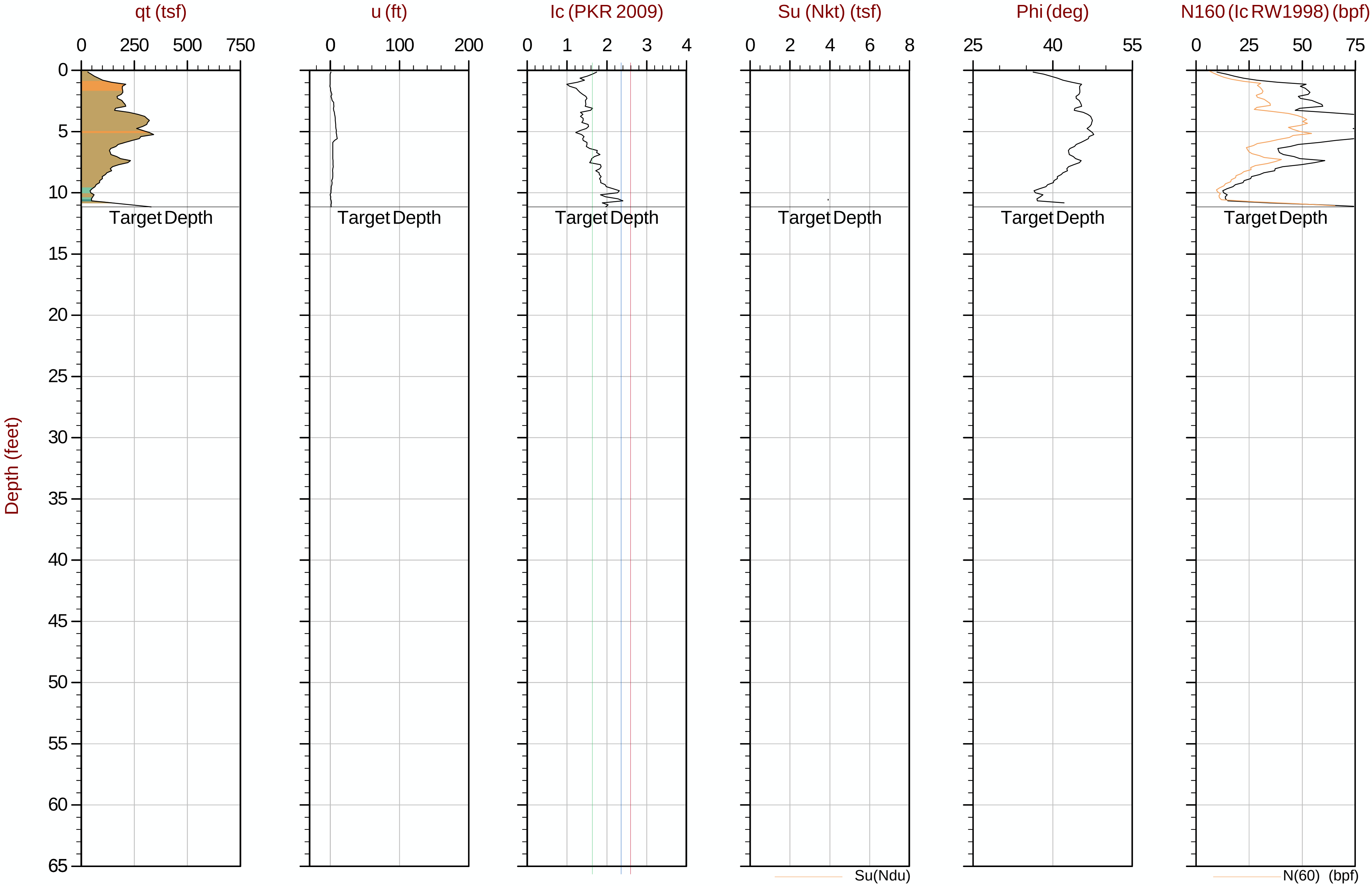
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-58
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP58.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766374m E: 294165m

Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

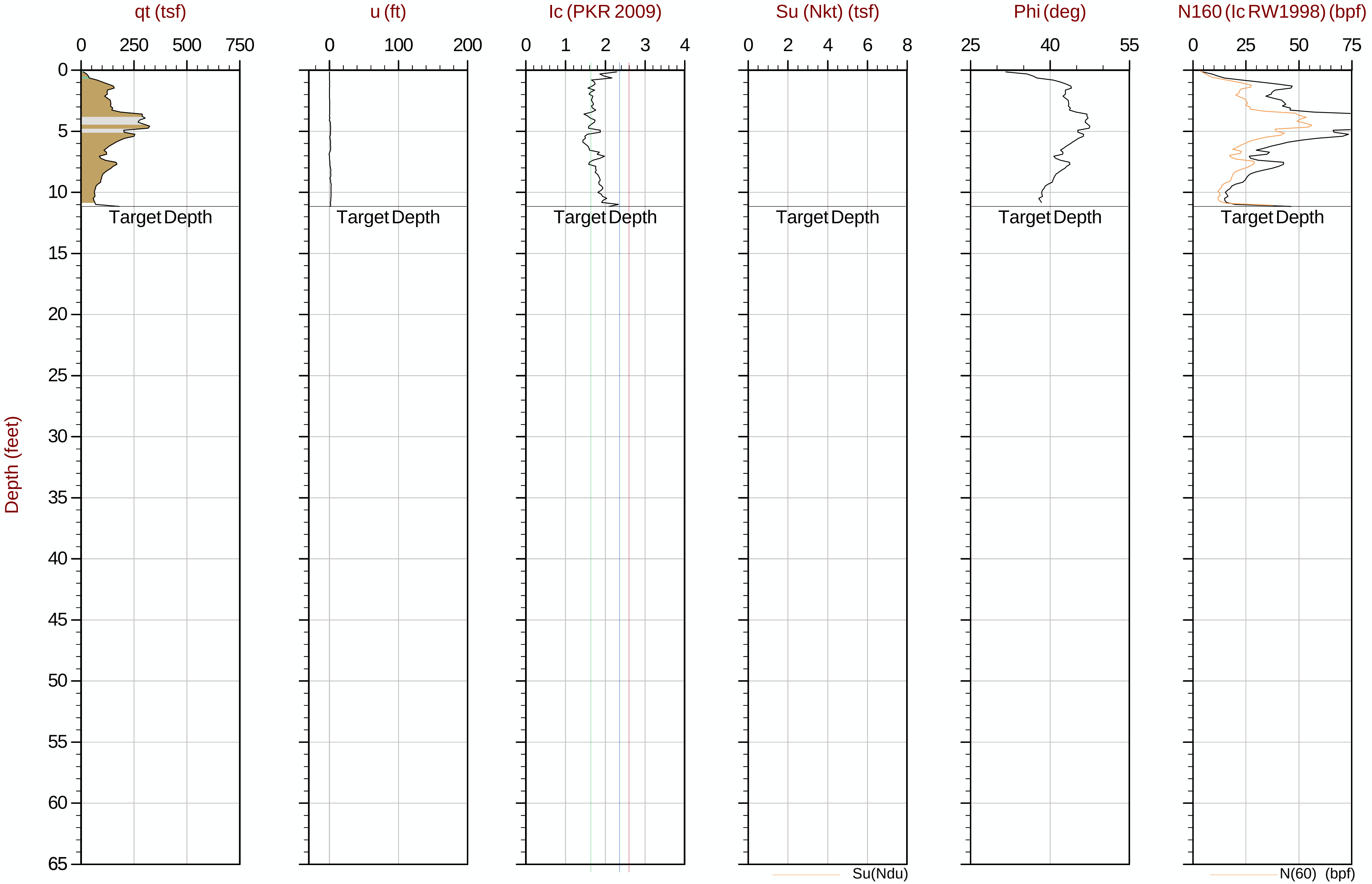
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-60
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP60.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766376m E: 294167m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

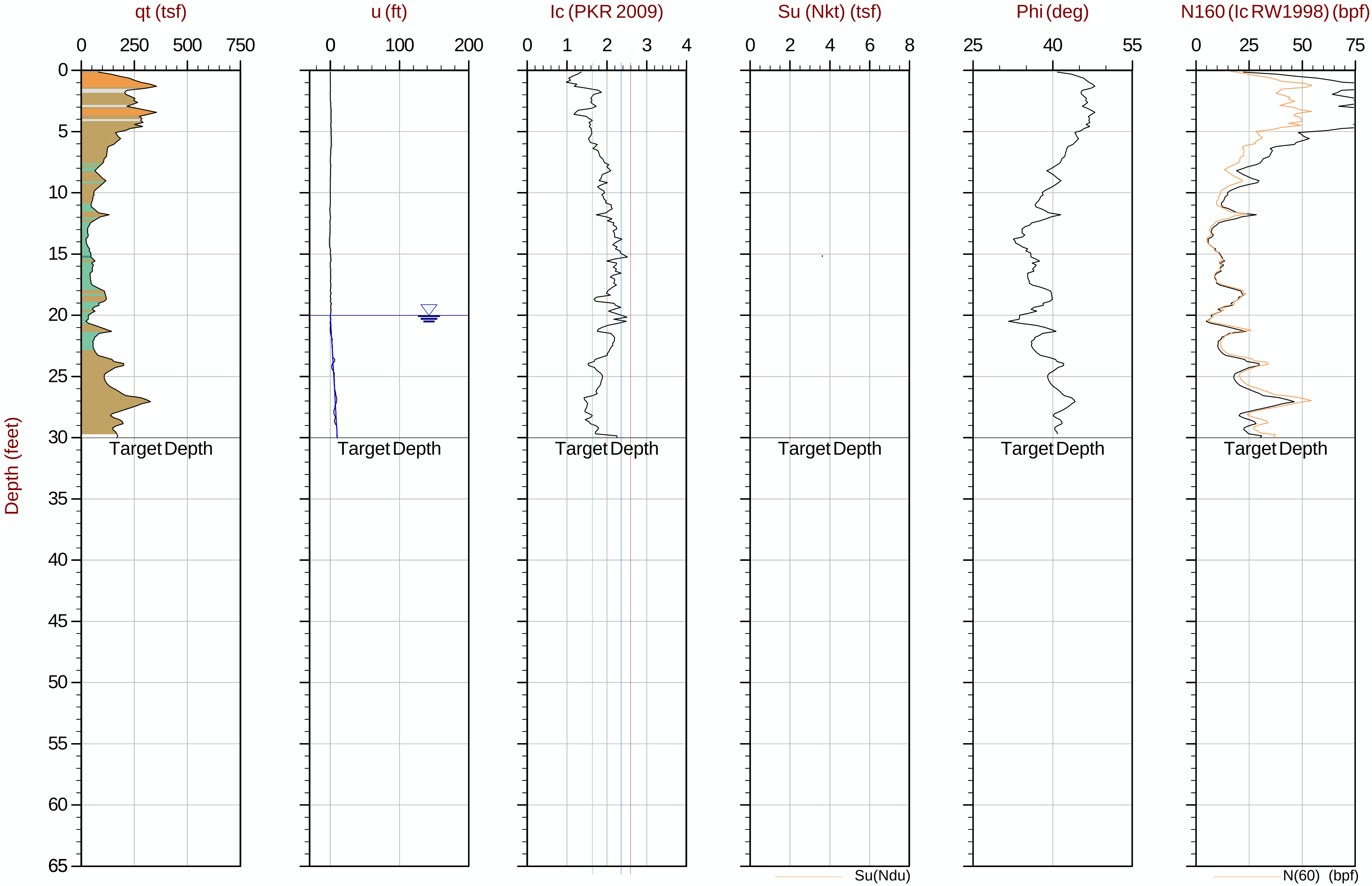
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 19:16
Site: Raymond Road, Verona, WI

Sounding: CPT20-61
Cone: 568:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP61.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766396m E: 294215m

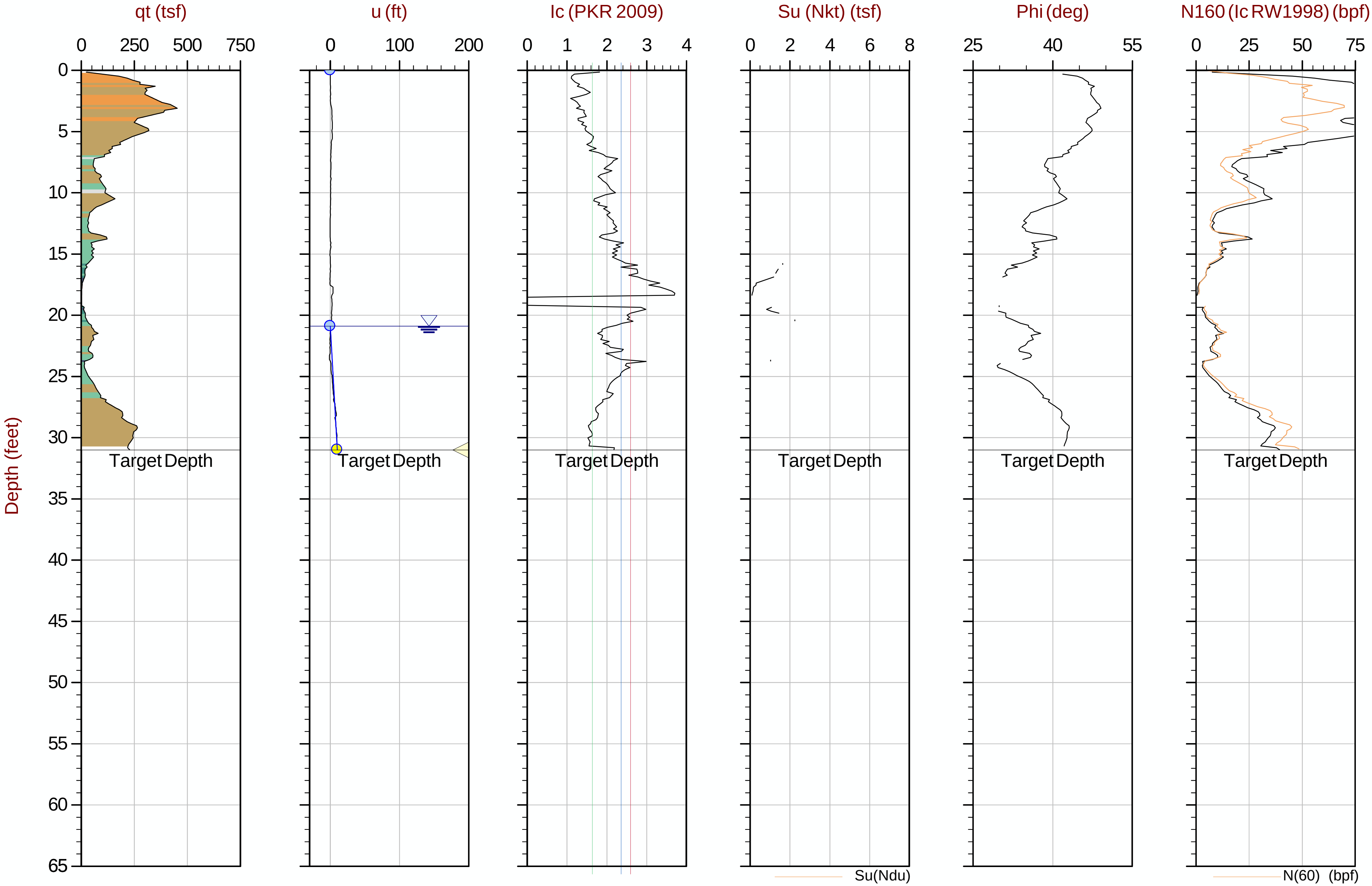
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 19:35
Site: Raymond Road, Verona, WI

Sounding: CPT20-62
Cone: 568:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_CP62.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766399m E: 294218m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

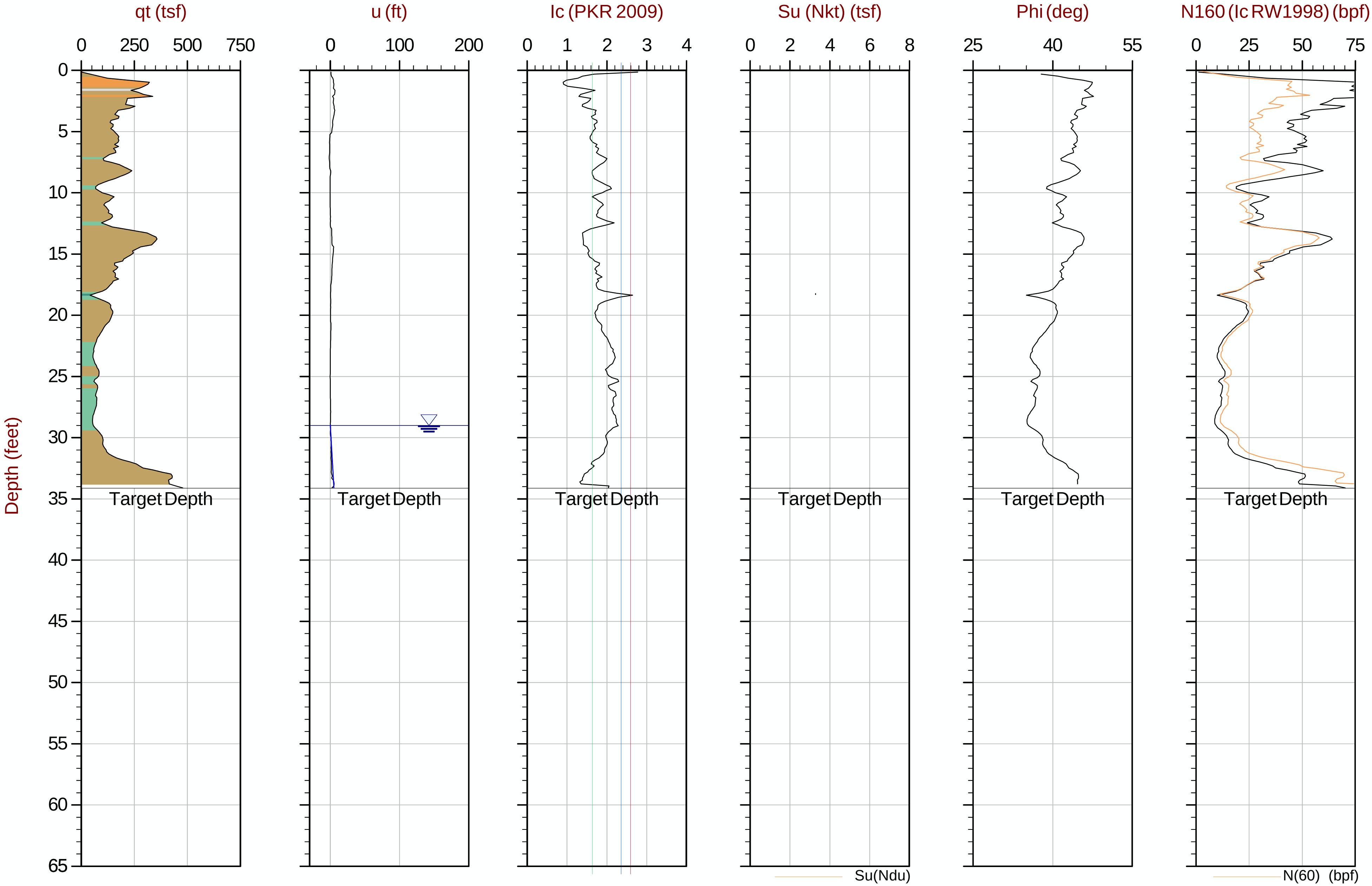
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 16:32
Site: Raymond Road, Verona, WI

Sounding: SCPT20-41
Cone: 568:T1500F15U500



Max Depth: 10.400 m / 34.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP41.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765910m E: 293706m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

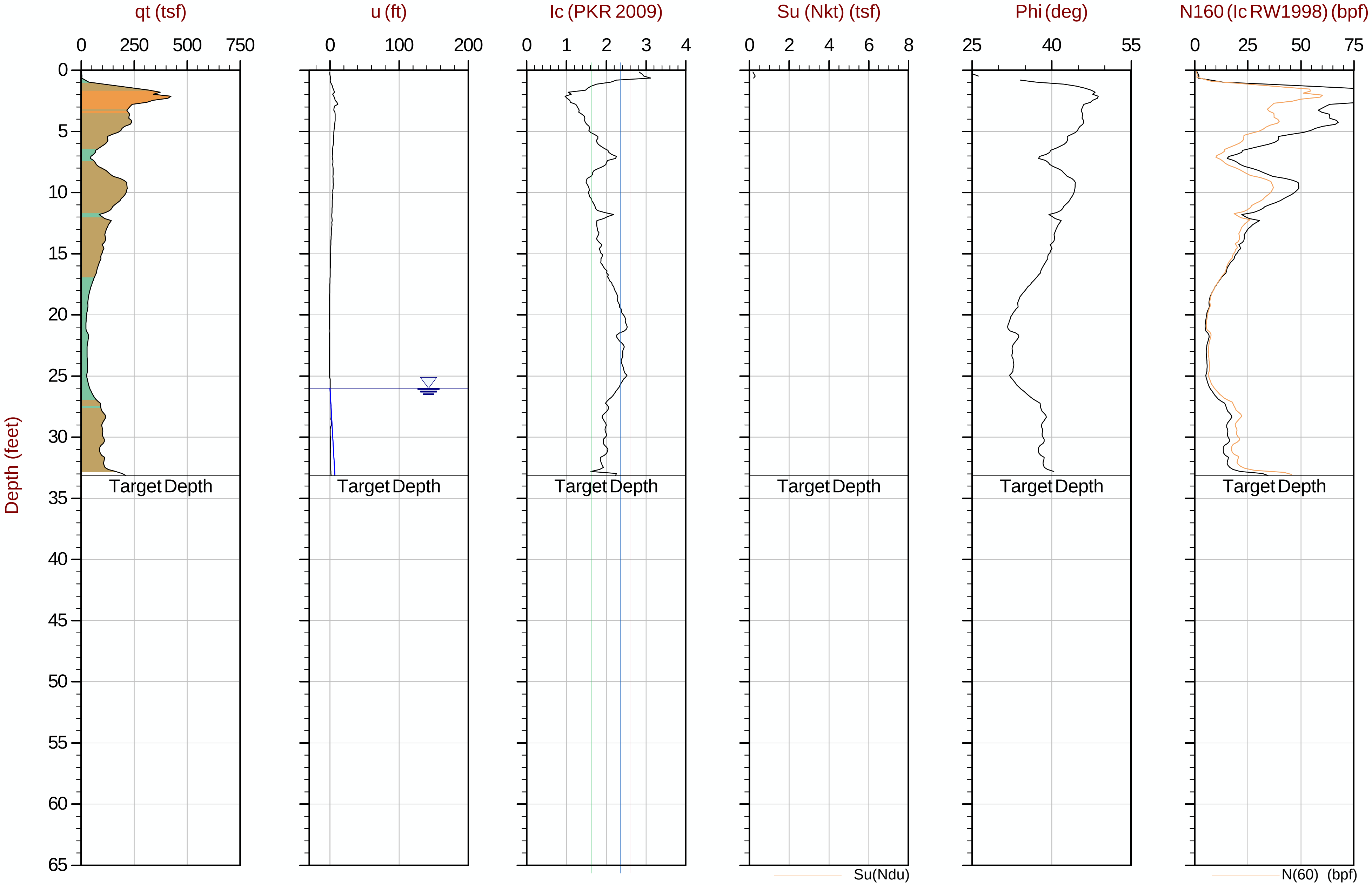
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 08:45
Site: Raymond Road, Verona, WI

Sounding: SCPT20-46
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP46.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765872m E: 293673m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

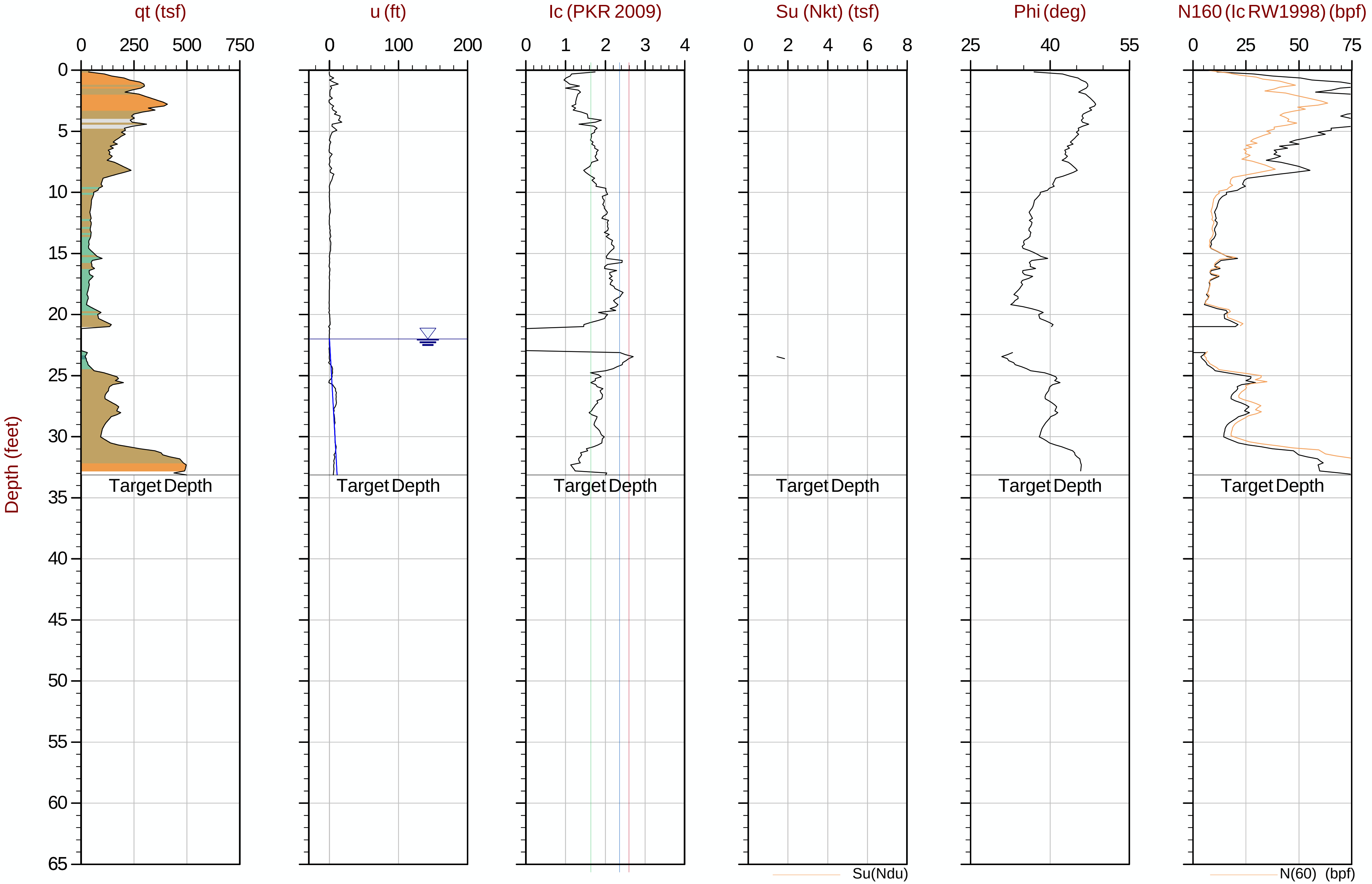
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 11:21
Site: Raymond Road, Verona, WI

Sounding: SCPT20-50
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP50.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766400m E: 294214m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

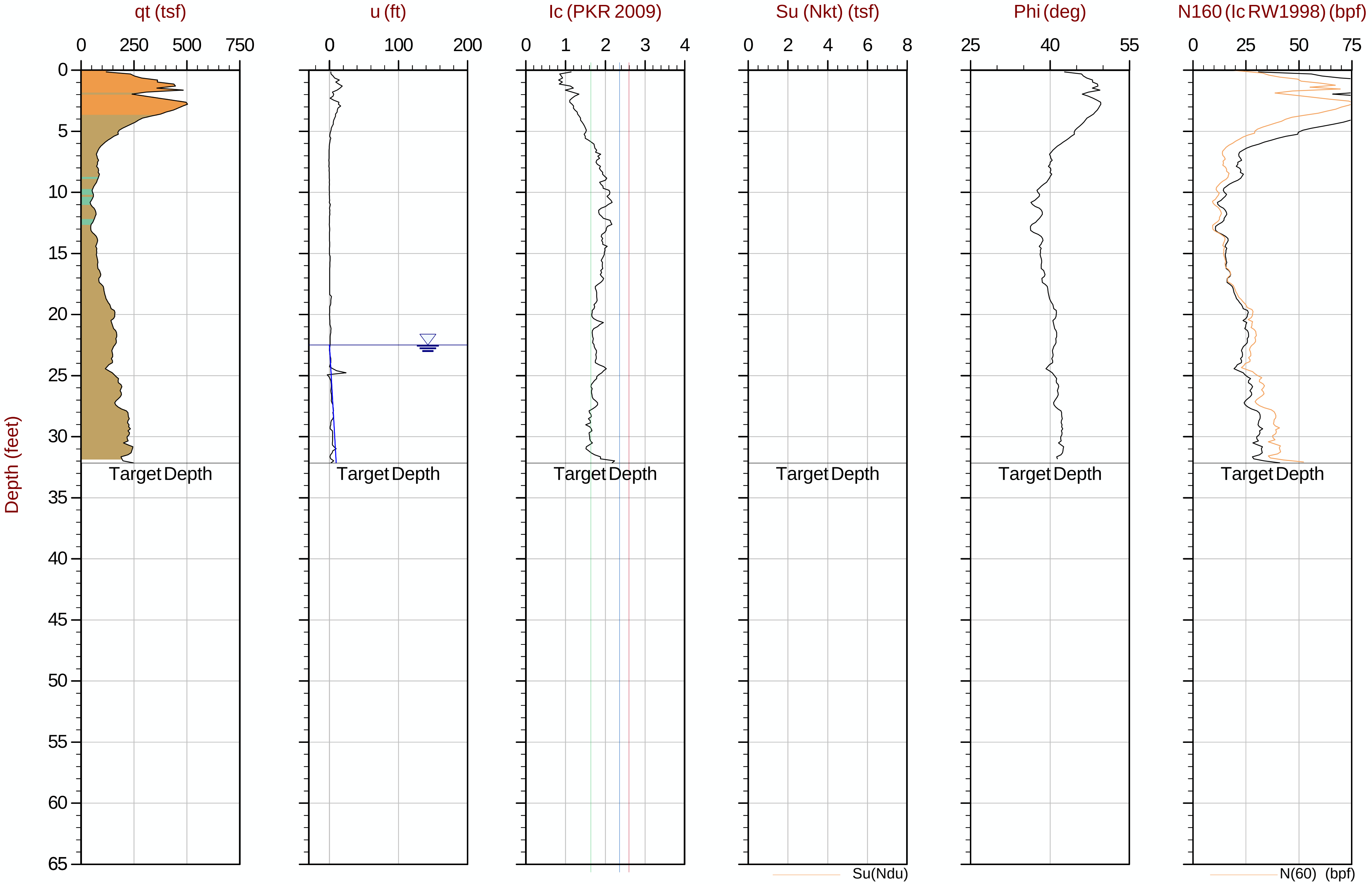
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 14:41
Site: Raymond Road, Verona, WI

Sounding: SCPT20-53
Cone: 568:T1500F15U500



Max Depth: 9.800 m / 32.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP53.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766202m E: 293968m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

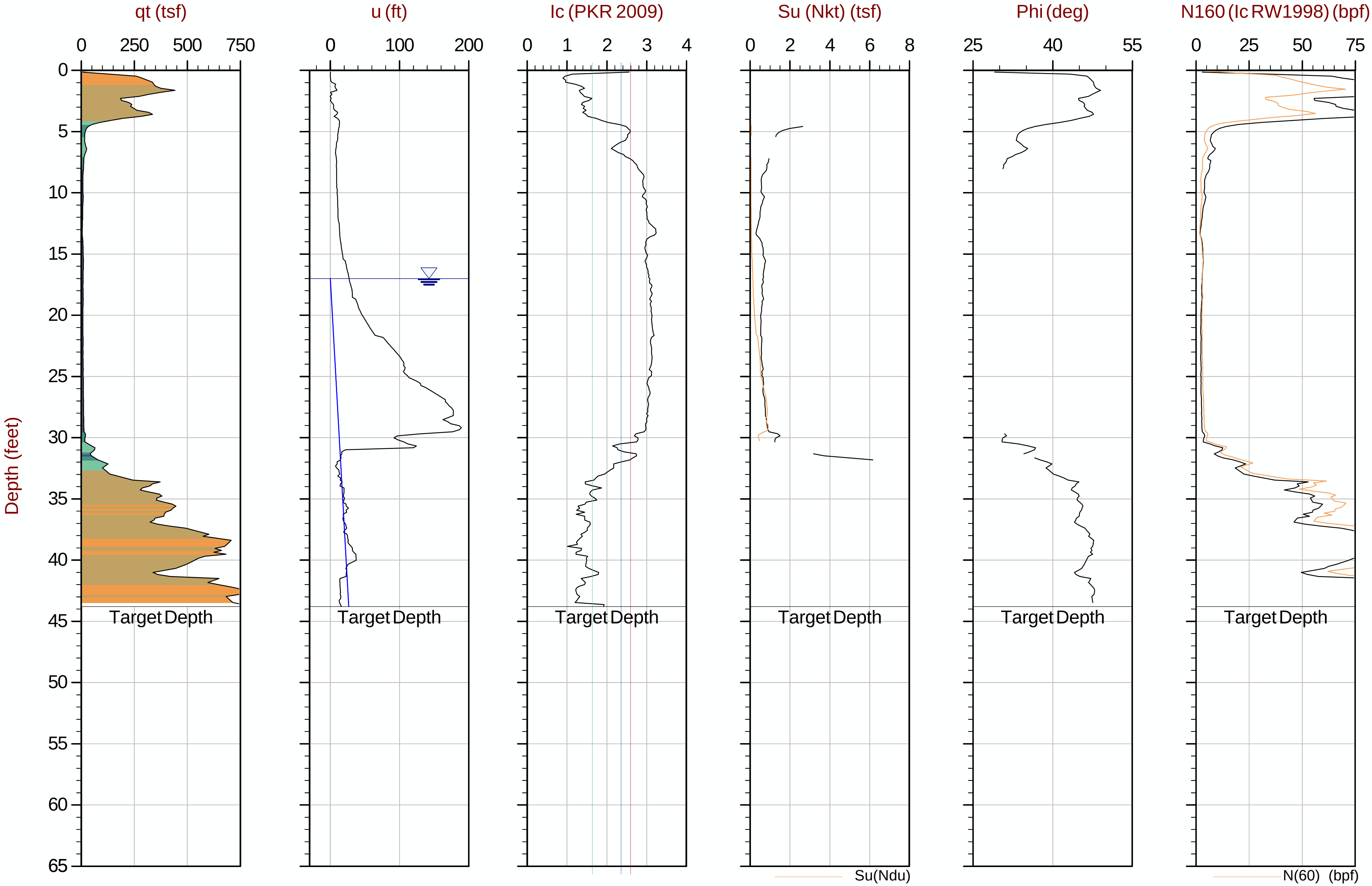
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 17:27
Site: Raymond Road, Verona, WI

Sounding: SCPT20-57B
Cone: 568:T1500F15U500



Max Depth: 13.350 m / 43.80 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP57B.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

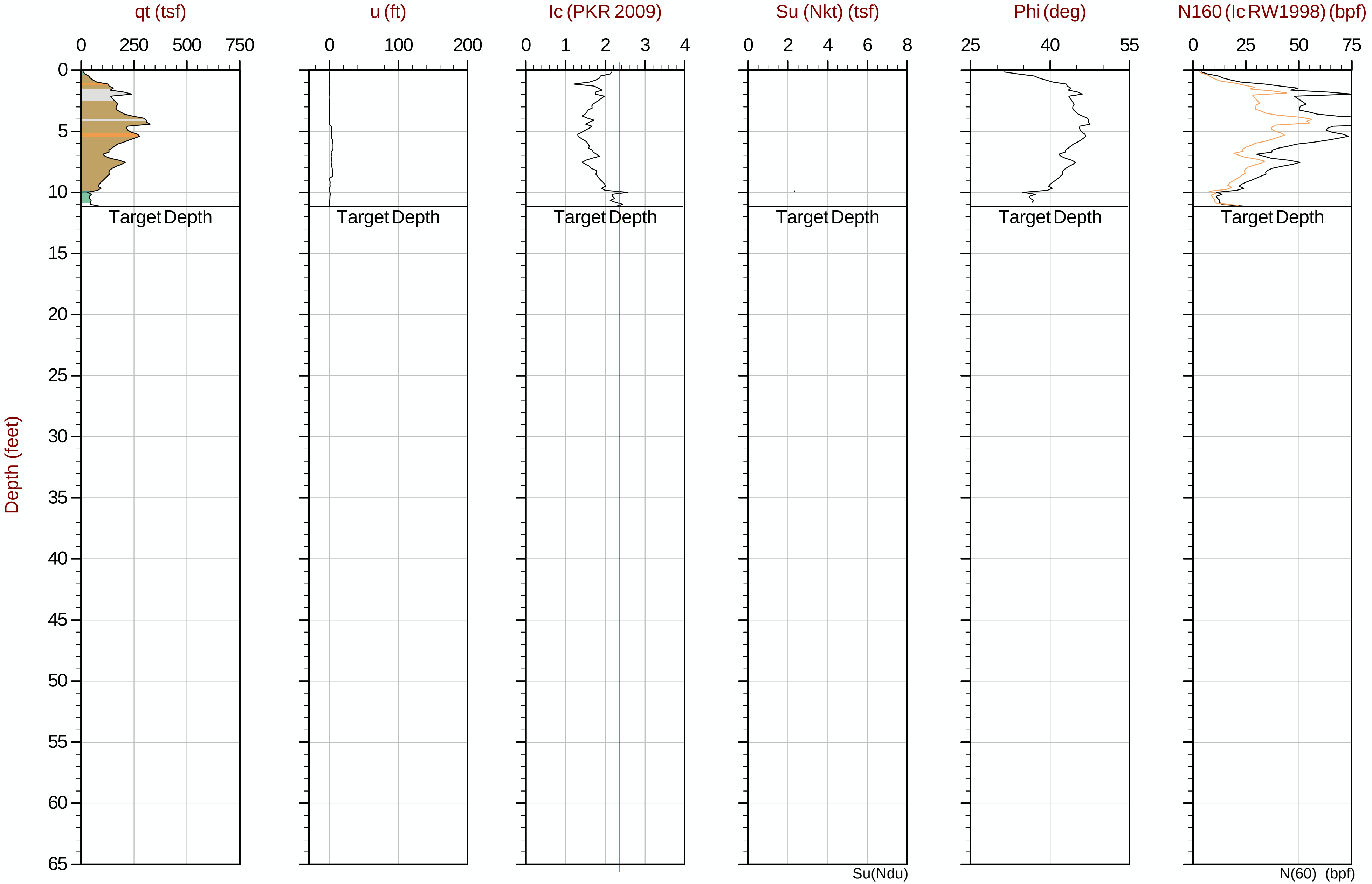
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766355m E: 294122m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:34
Site: Raymond Road, Verona, WI
Sounding: SCPT20-59
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP59.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 12.5 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766375m E: 294166m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

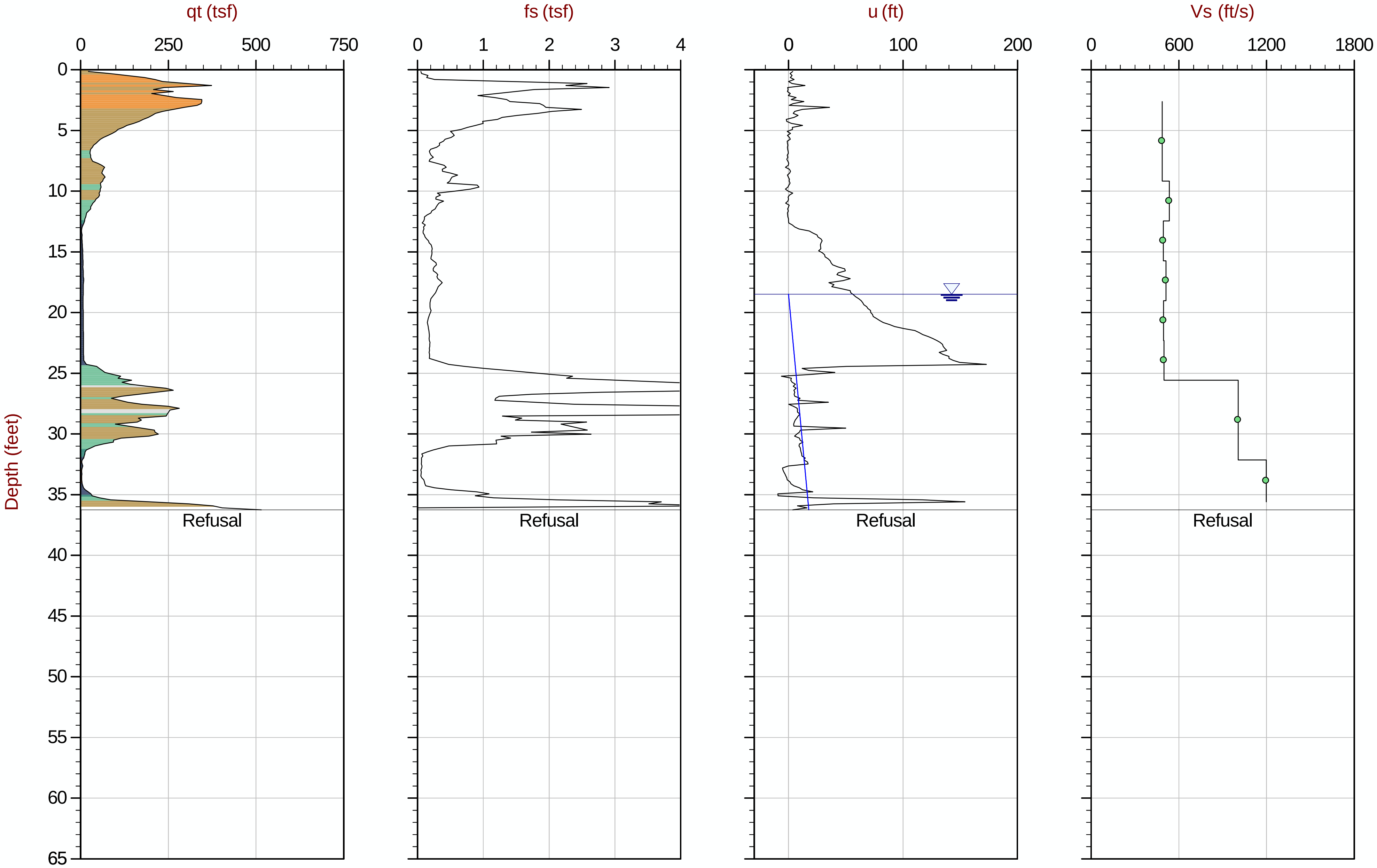
Seismic Cone Penetration Test Plots

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 12:57
Site: Raymond Road, Verona, WI

Sounding: SCPT20-04
Cone: 640:T1500F15U500



Max Depth: 11.050 m / 36.25 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP04.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766343m E: 294114m

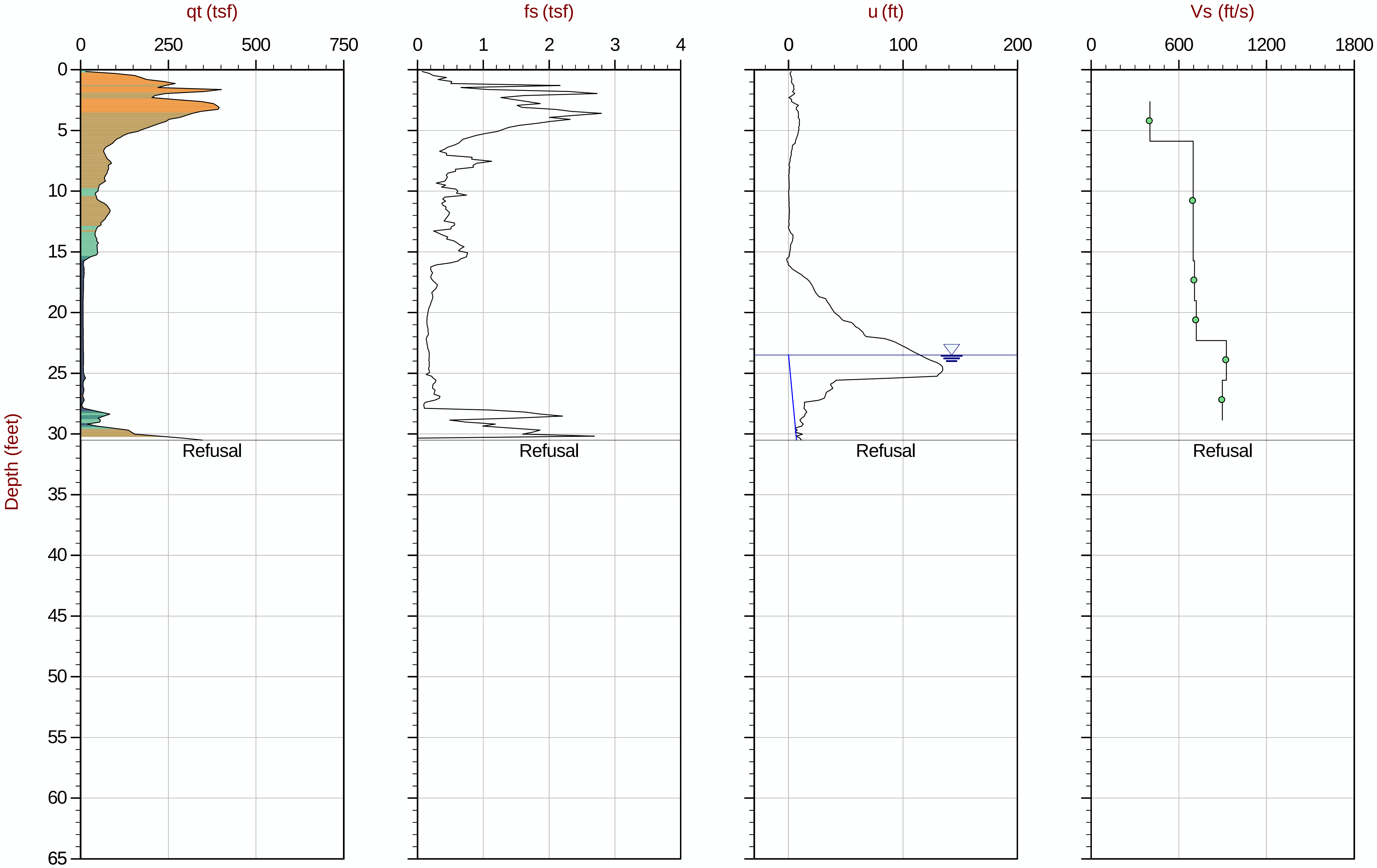
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 13:56
Site: Raymond Road, Verona, WI

Sounding: SCPT20-05
Cone: 640:T1500F15U500



Max Depth: 9.300 m / 30.51 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP05.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766351m E: 294124m

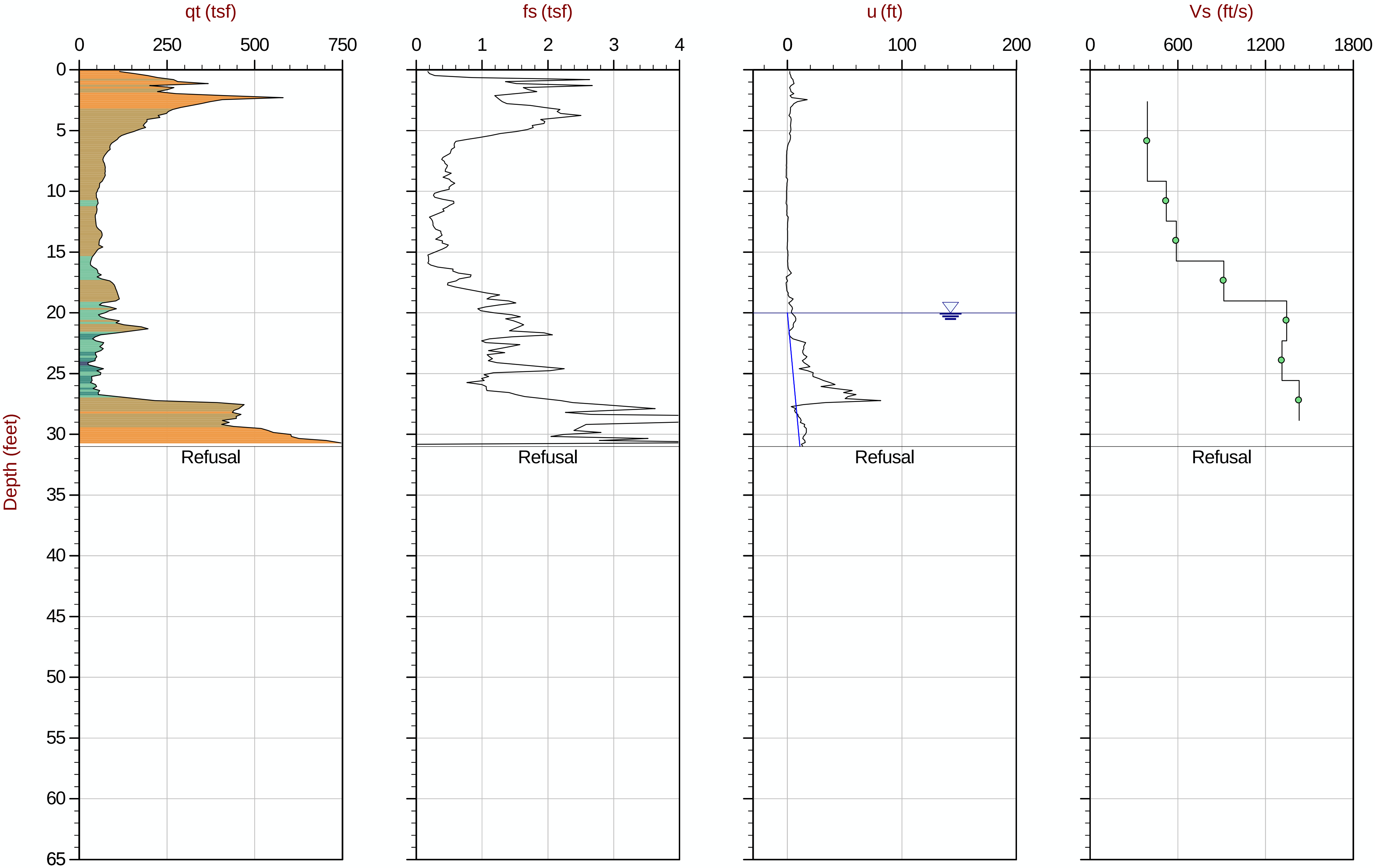
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 18:02
Site: Raymond Road, Verona, WI

Sounding: SCPT20-11
Cone: 640:T1500F15U500



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP11.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766417m E: 294248m

Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

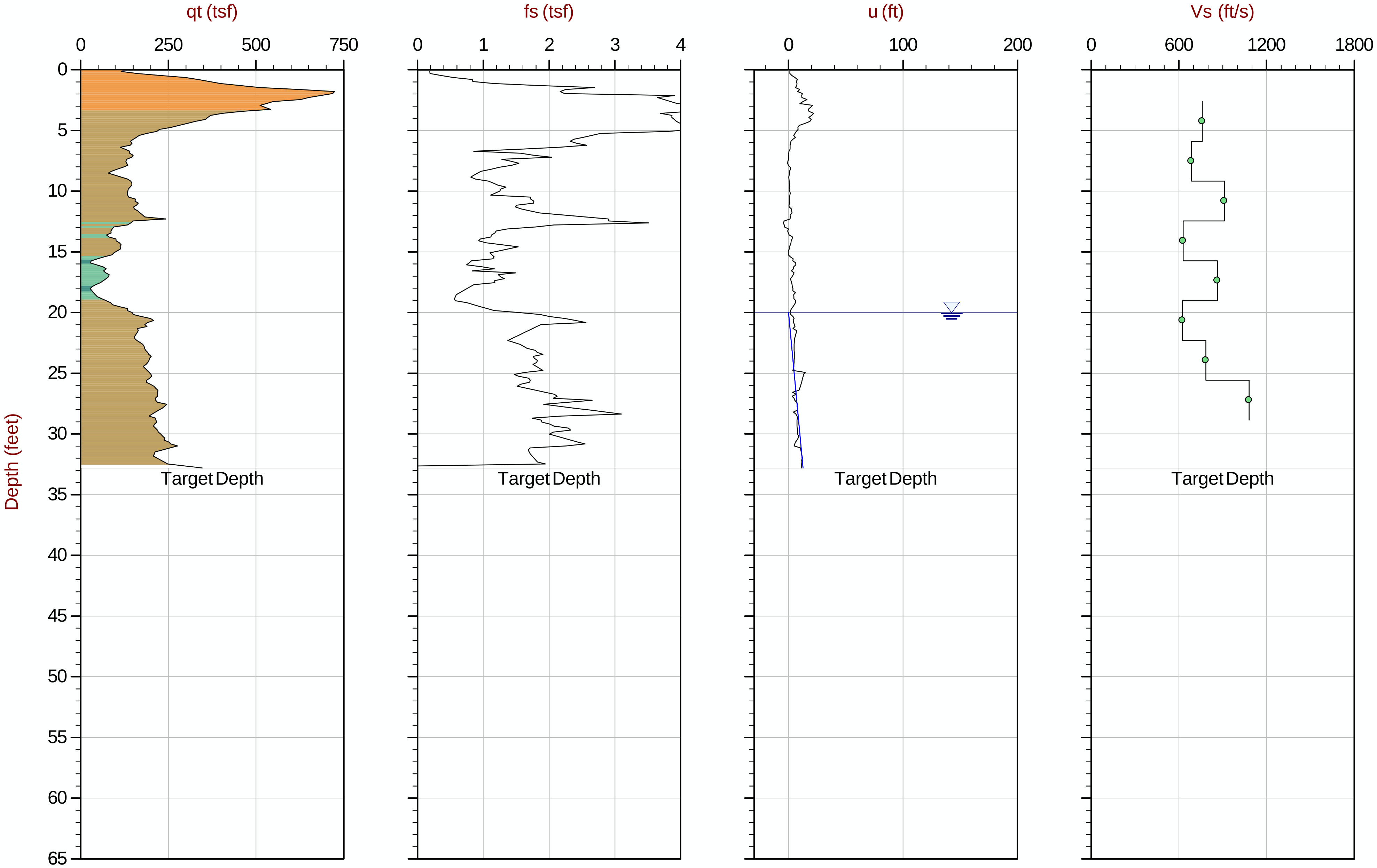
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 18:38
Site: Raymond Road, Verona, WI

Sounding: SCPT20-26
Cone: 640:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP26.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766200m E: 293965m

― Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

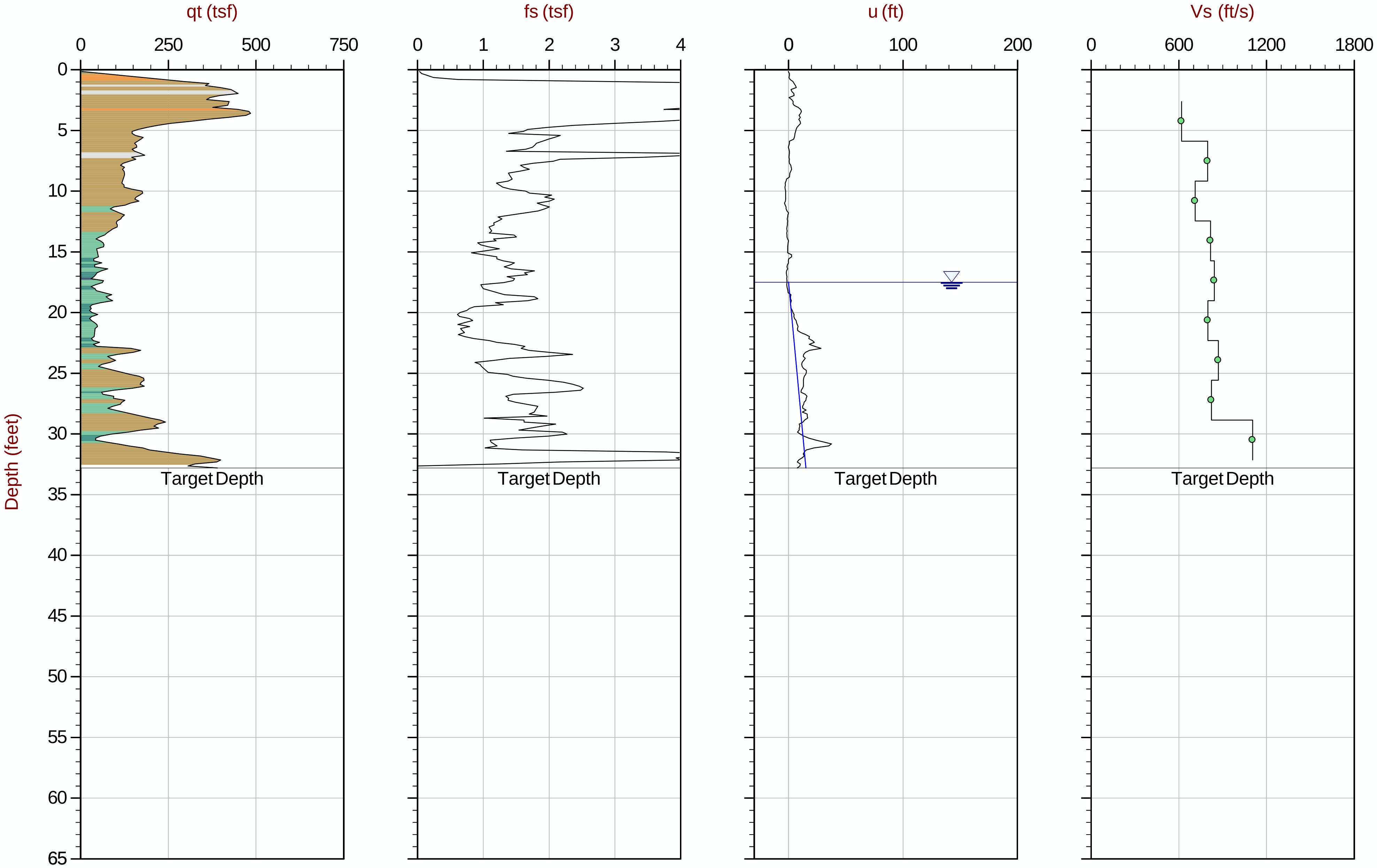
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 09:30
Site: Raymond Road, Verona, WI

Sounding: SCPT20-31
Cone: 640:T1500F15U500



Max Depth: 10.000 m / 32.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP31.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766108m E: 293891m

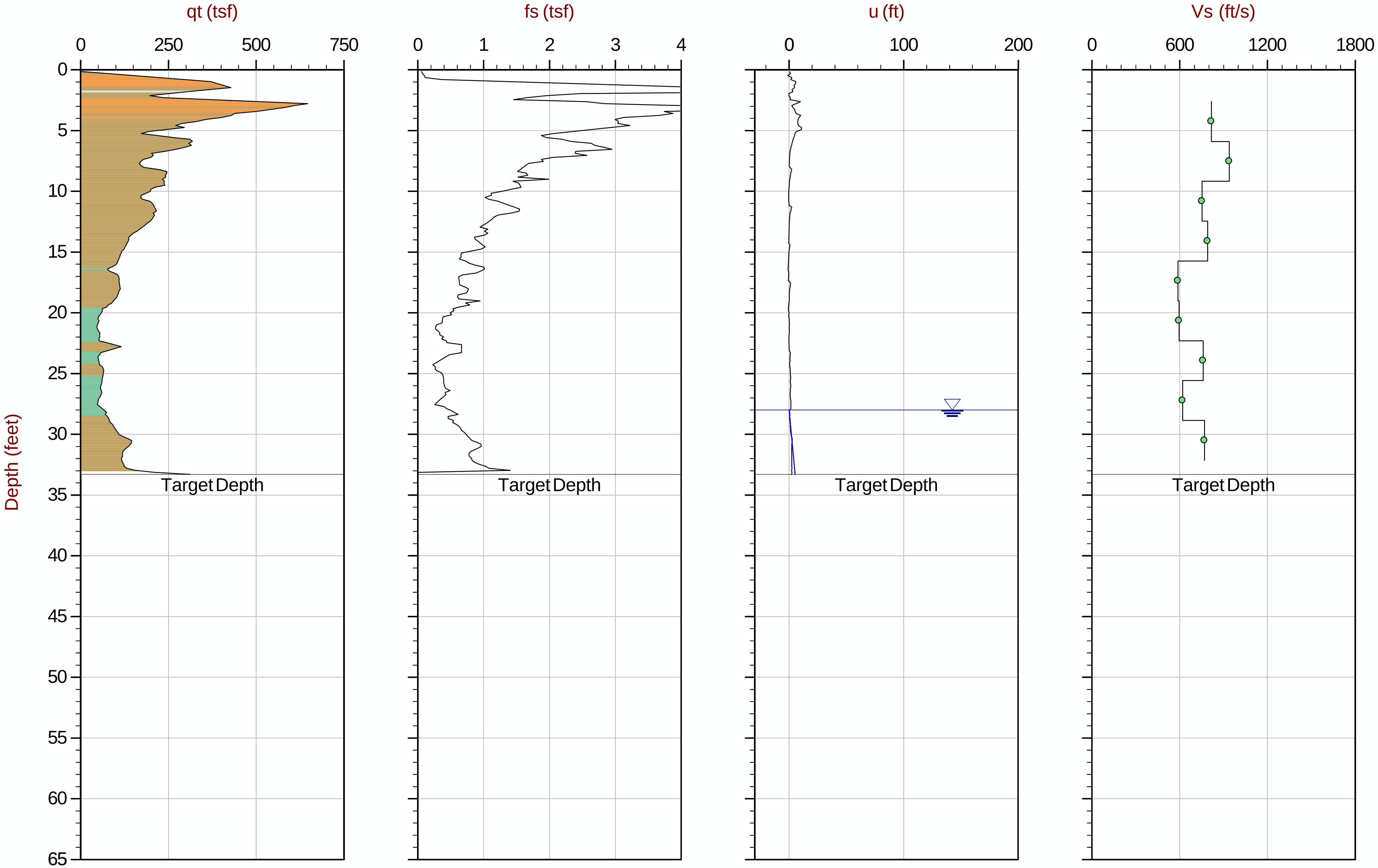
— Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 13:28
Site: Raymond Road, Verona, WI

Sounding: SCPT20-37
Cone: 568:T1500F15U500



Max Depth: 10.150 m / 33.30 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP37.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765991m E: 293783m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

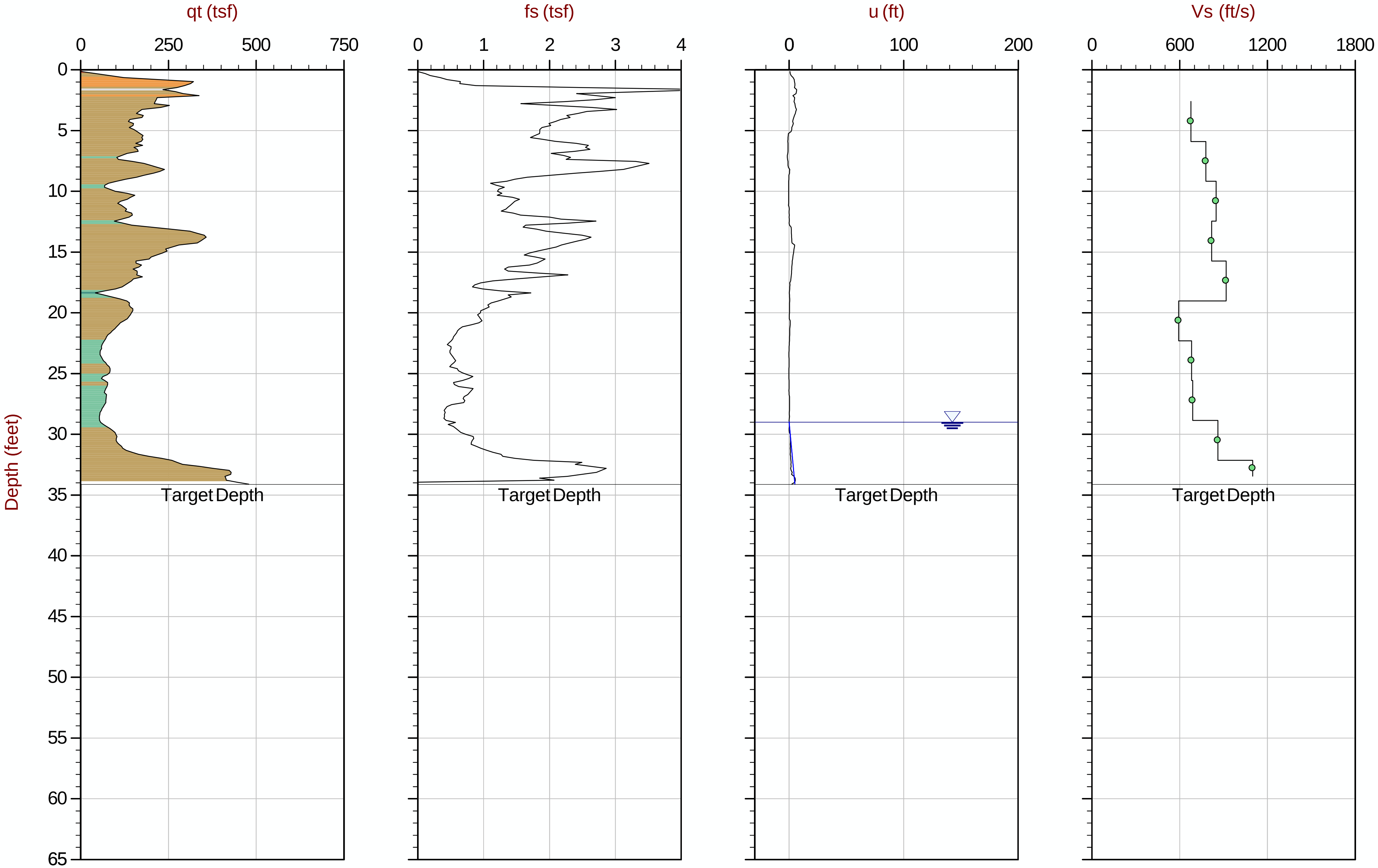
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 16:32
Site: Raymond Road, Verona, WI

Sounding: SCPT20-41
Cone: 568:T1500F15U500



Max Depth: 10.400 m / 34.12 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP41.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765910m E: 293706m

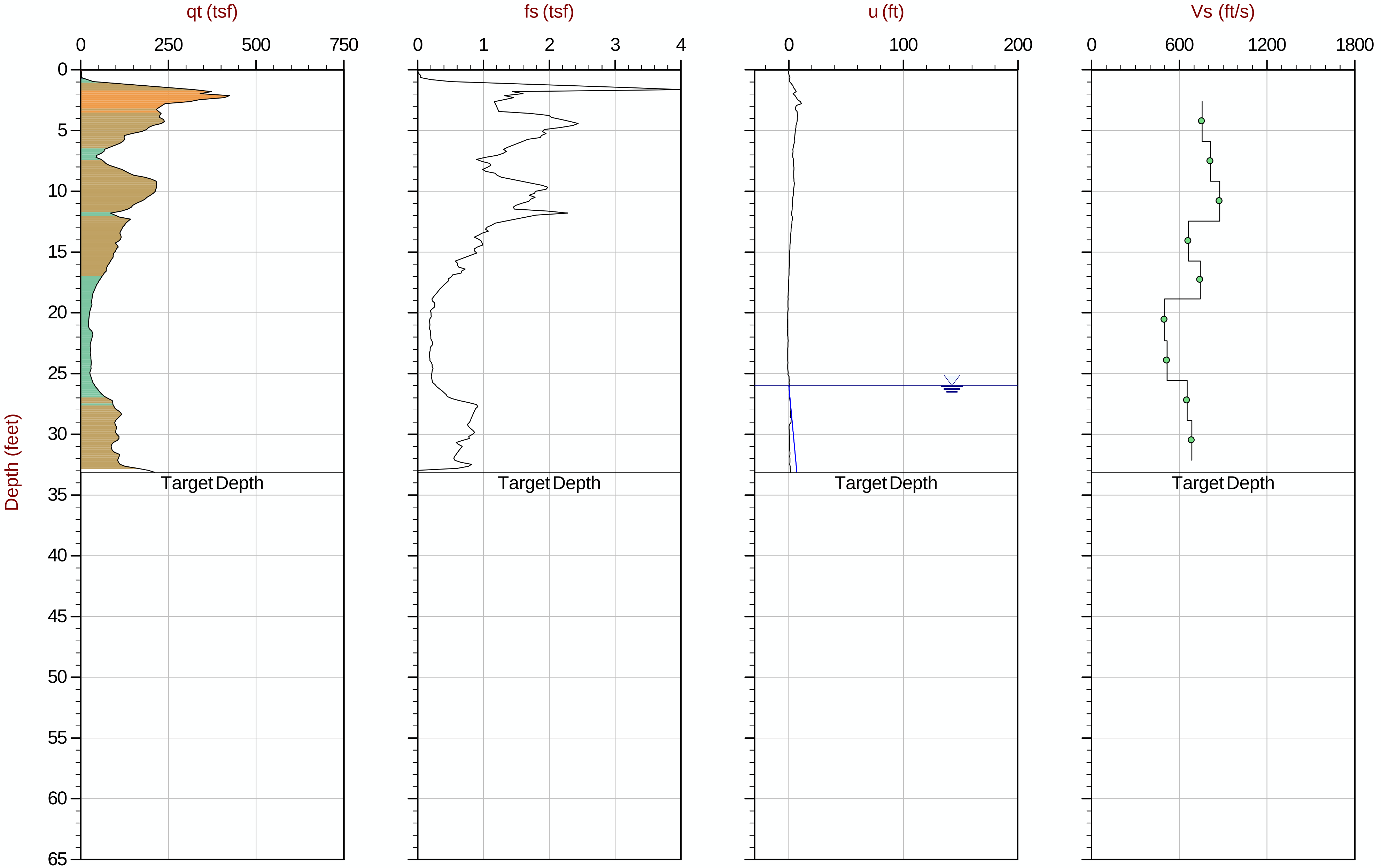
— Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 08:45
Site: Raymond Road, Verona, WI

Sounding: SCPT20-46
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP46.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4765872m E: 293673m

— Hydrostatic Line ○ Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

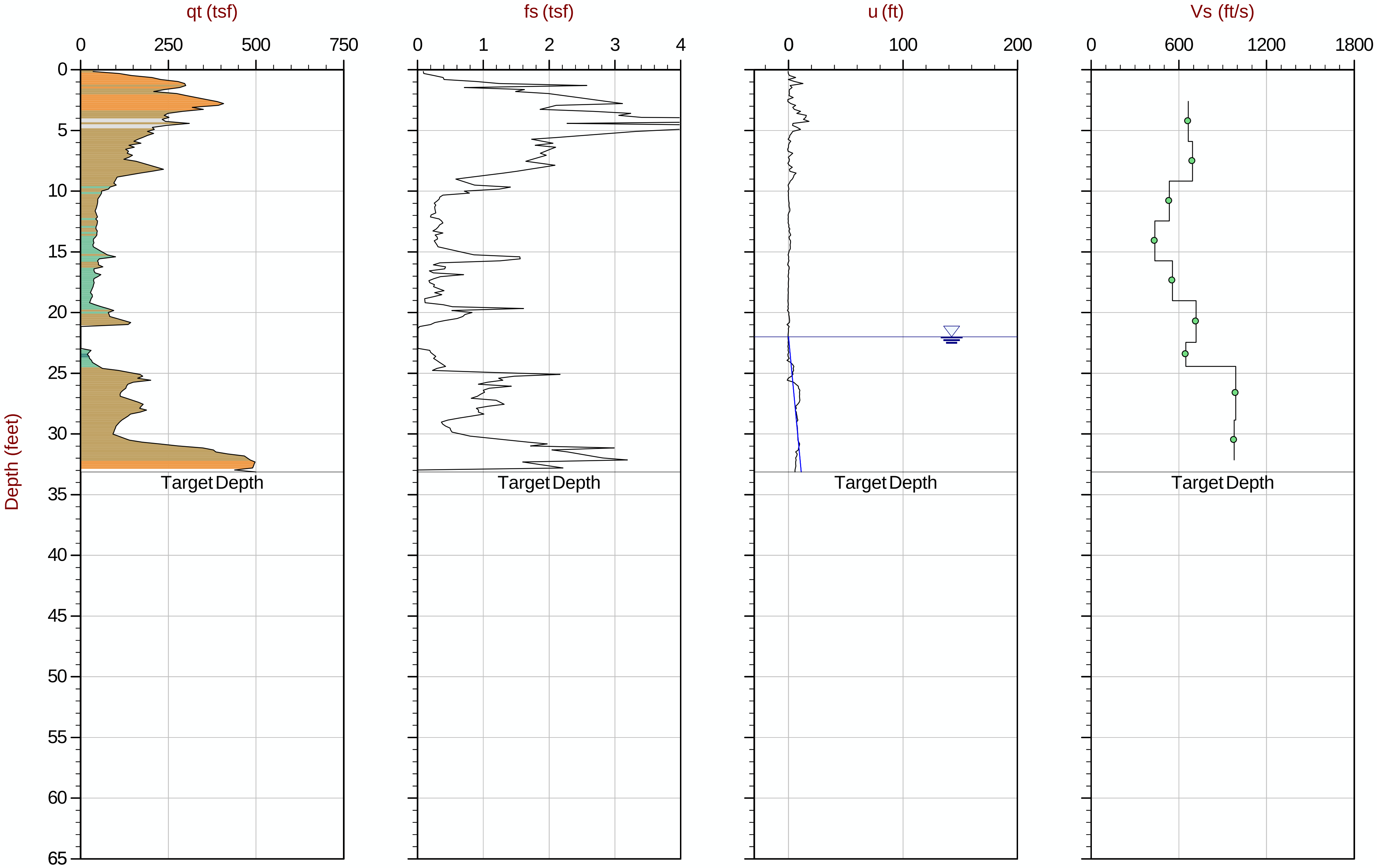
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 11:21
Site: Raymond Road, Verona, WI

Sounding: SCPT20-50
Cone: 568:T1500F15U500



Max Depth: 10.100 m / 33.14 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP50.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766400m E: 294214m

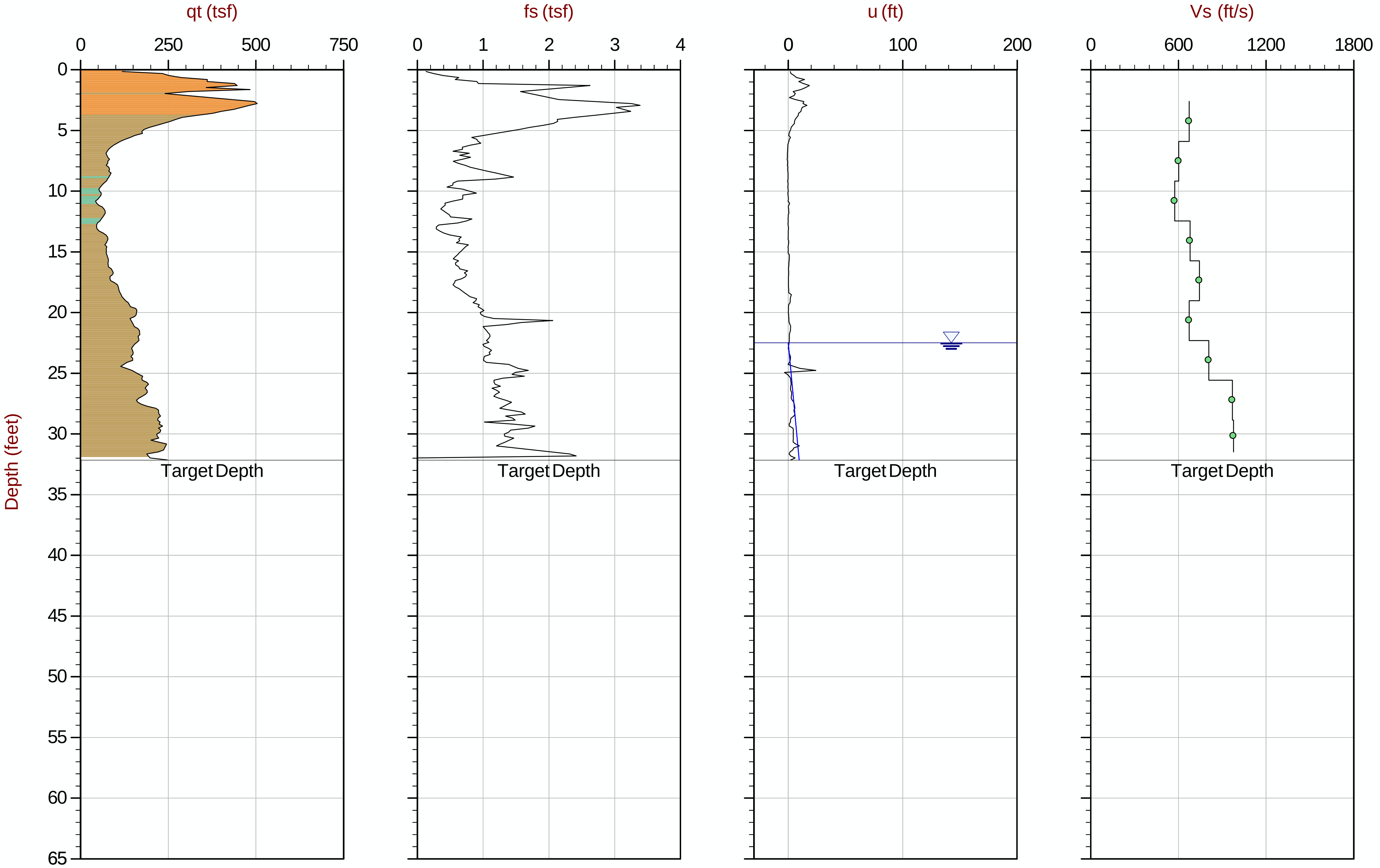
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 14:41
Site: Raymond Road, Verona, WI

Sounding: SCPT20-53
Cone: 568:T1500F15U500



Max Depth: 9.800 m / 32.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP53.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766202m E: 293968m

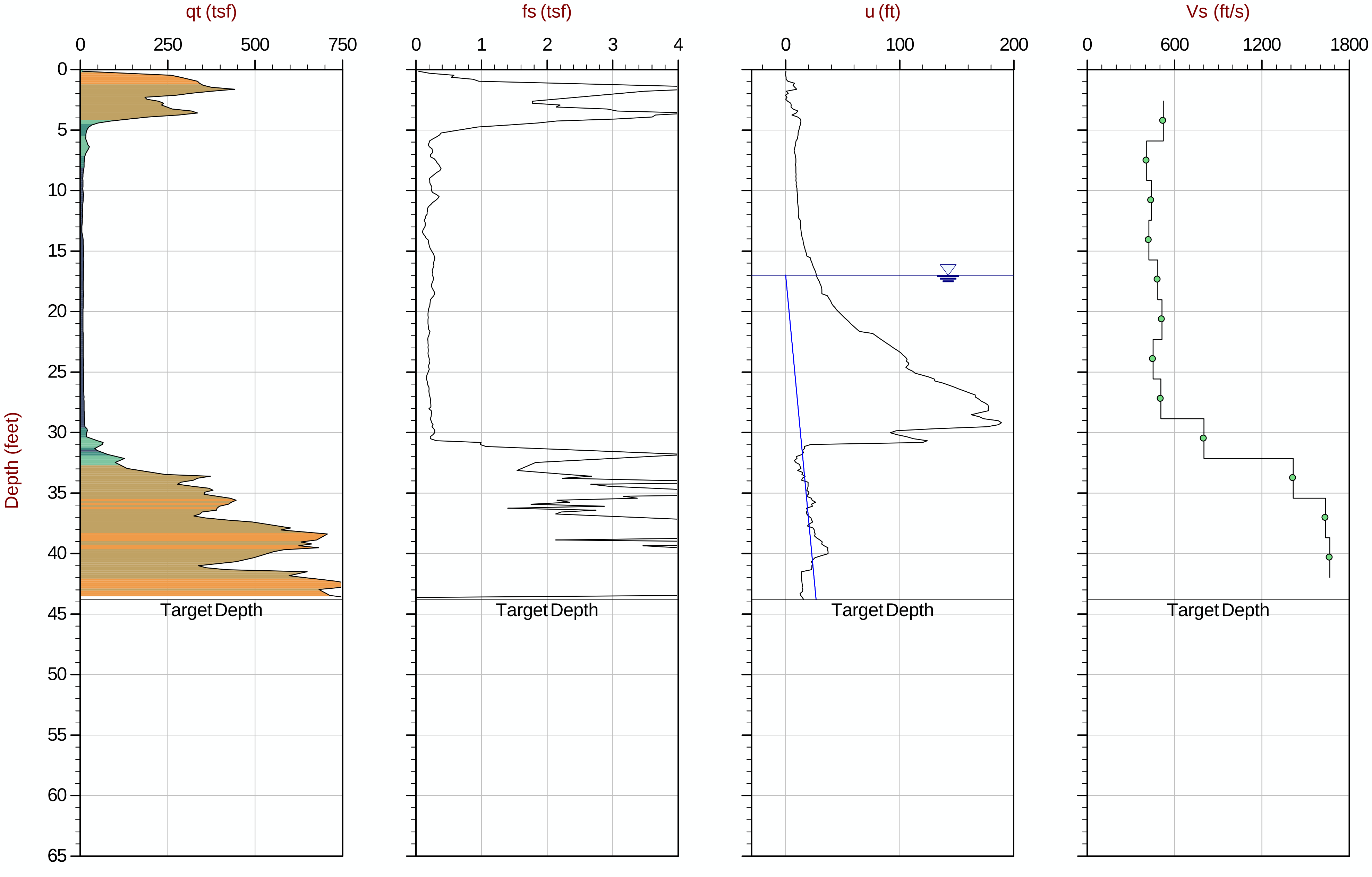
Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 17:27
Site: Raymond Road, Verona, WI

Sounding: SCPT20-57B
Cone: 568:T1500F15U500



Max Depth: 13.350 m / 43.80 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP57B.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766355m E: 294122m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

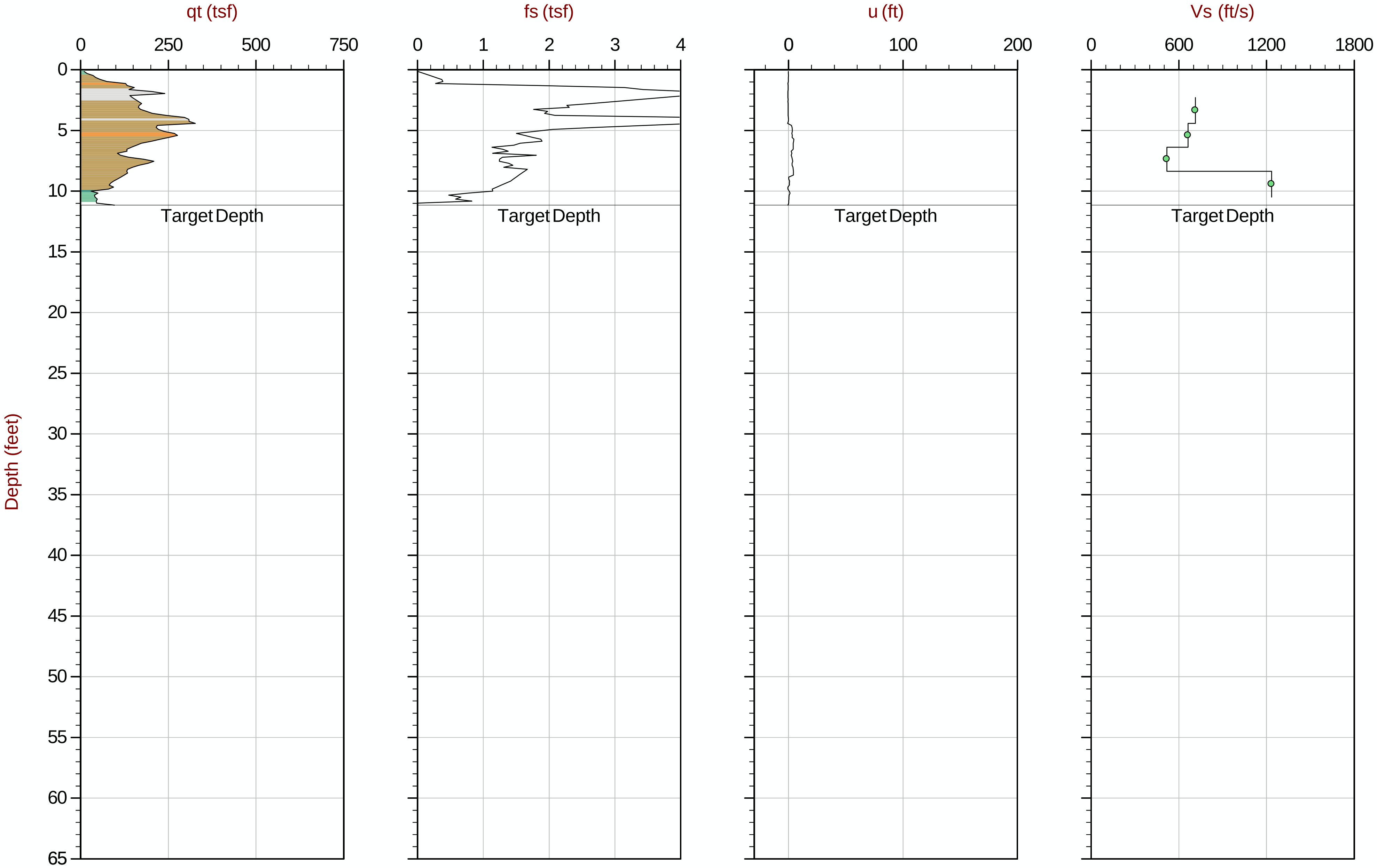
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:34
Site: Raymond Road, Verona, WI

Sounding: SCPT20-59
Cone: 568:T1500F15U500



Max Depth: 3.400 m / 11.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: Every Point

File: 20-61-20766_SP59.COR
Unit Wt: SBTQtn (PKR2009)

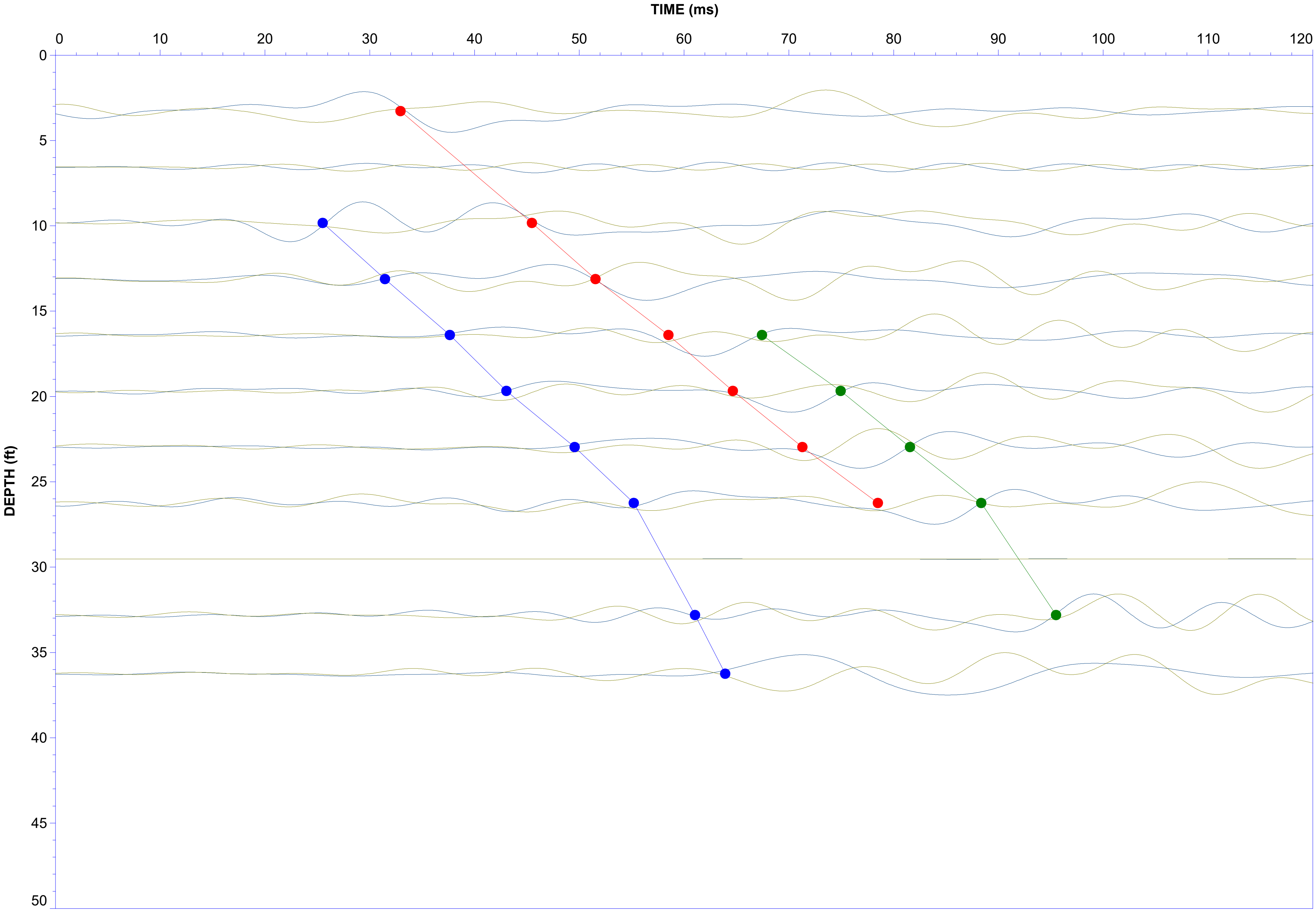
SBT: Robertson, 2009 and 2010
Coords: UTM Zone 16 N: 4766375m E: 294166m

Hydrostatic Line ● Ueq ● Assumed Ueq ◁ PPD, Ueq achieved ◁ PPD, Ueq not achieved

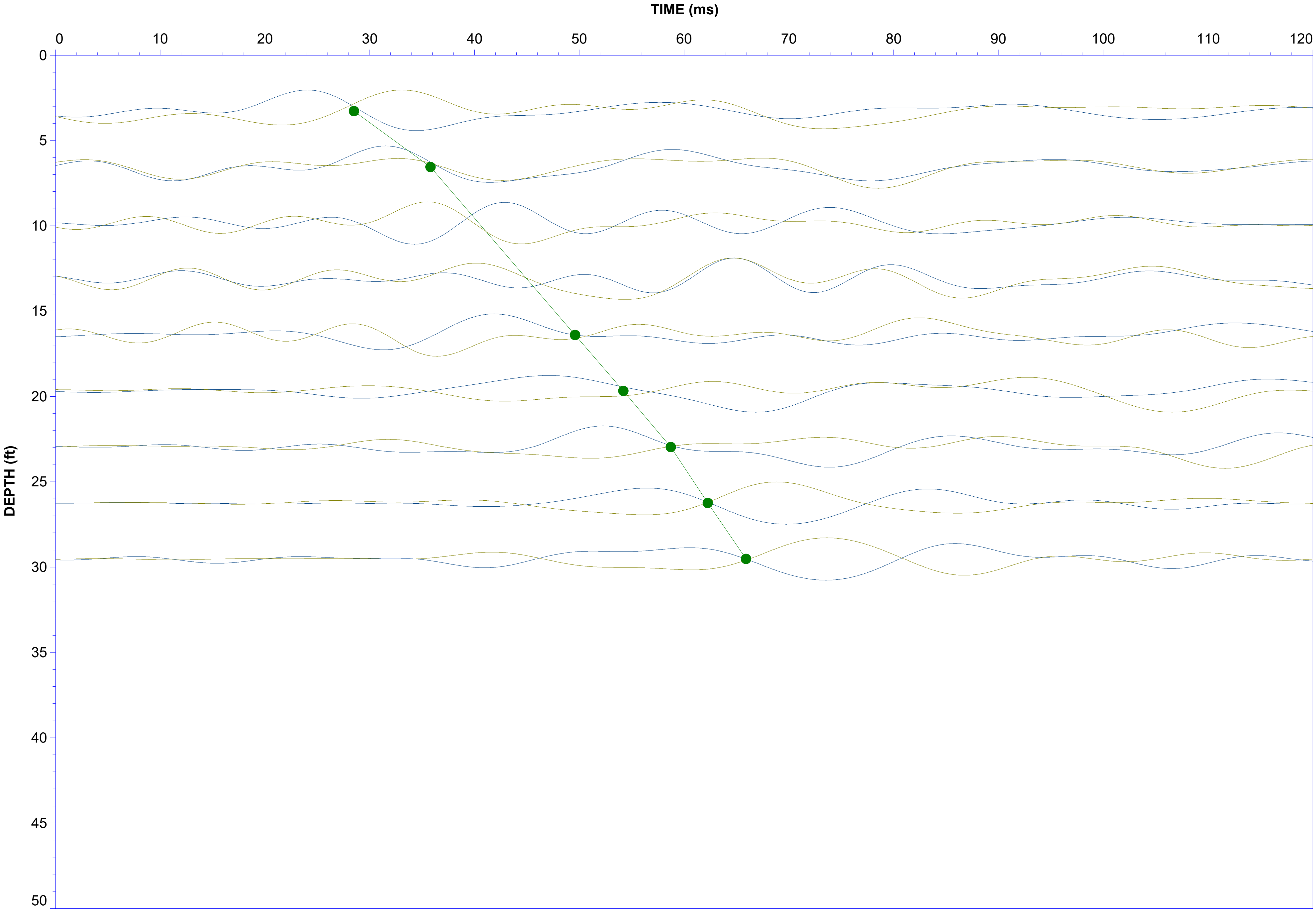
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Seismic Cone Penetration Test Shear Wave (Vs) Traces

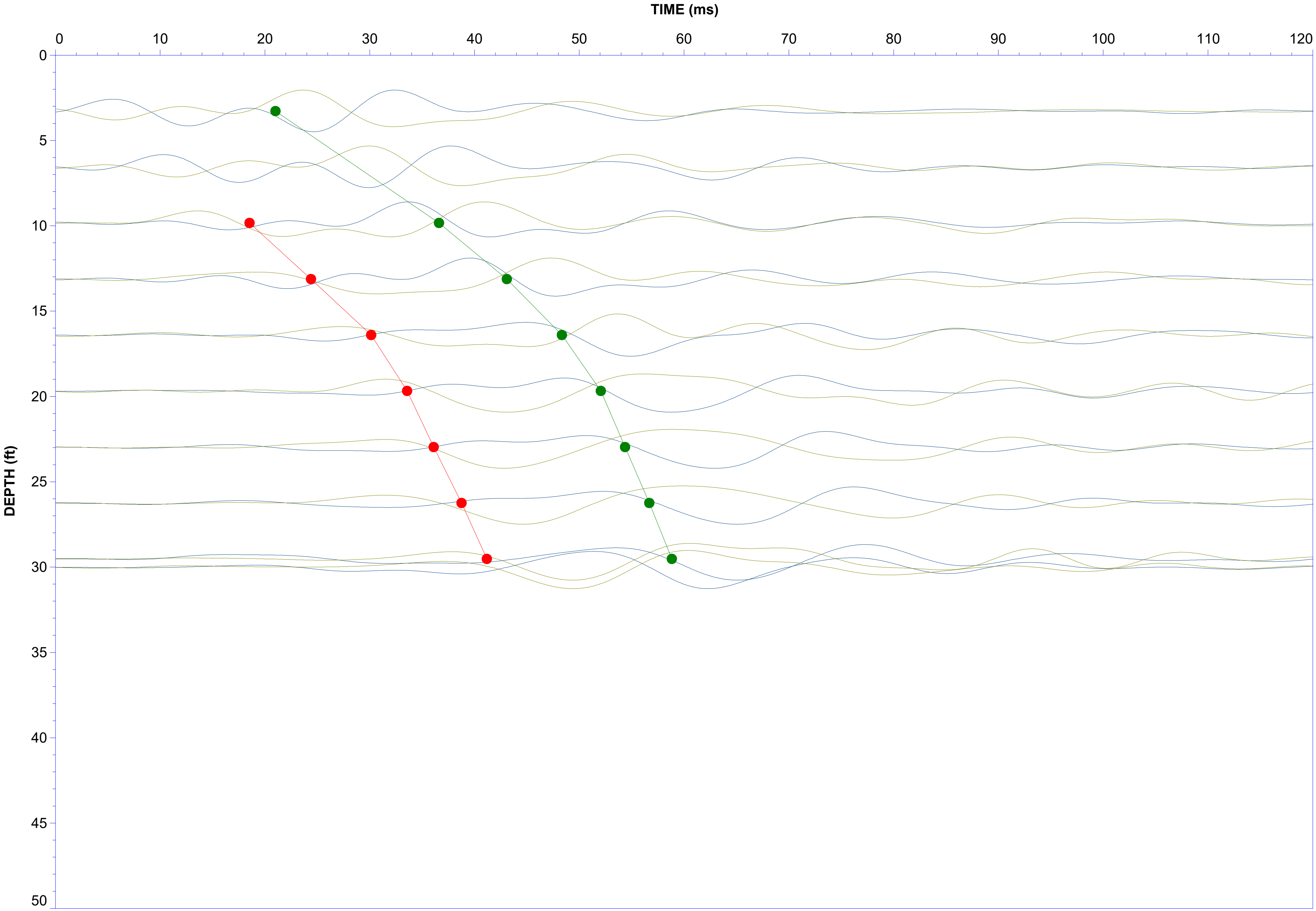
Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Filter: 0-100 Hz Sounding: SCPT20-04 Date: 17-Apr-2020



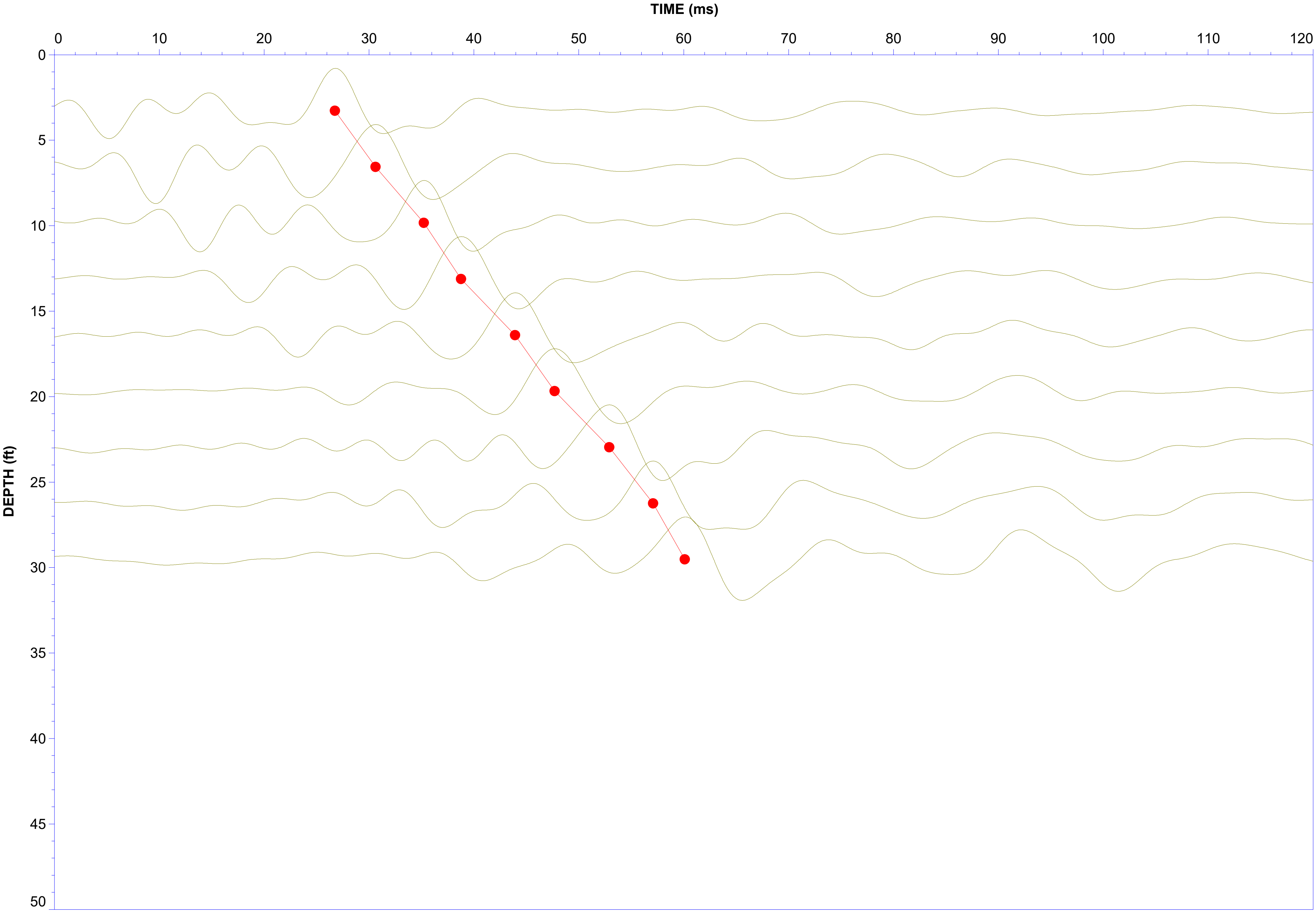
Job No: 20-61-20766 | Client: Barr Engineering | Project: Raymond Road, Verona, WI | Filter: 0-80 Hz | Sounding: SCPT20-05 | Date: 17-Apr-2020



Job No: 20-61-20766	Client: Barr Engineering	Project: Raymond Road, Verona, WI	Filter: 0-100 Hz	Sounding: SCPT20-11	Date: 17-Apr-2020

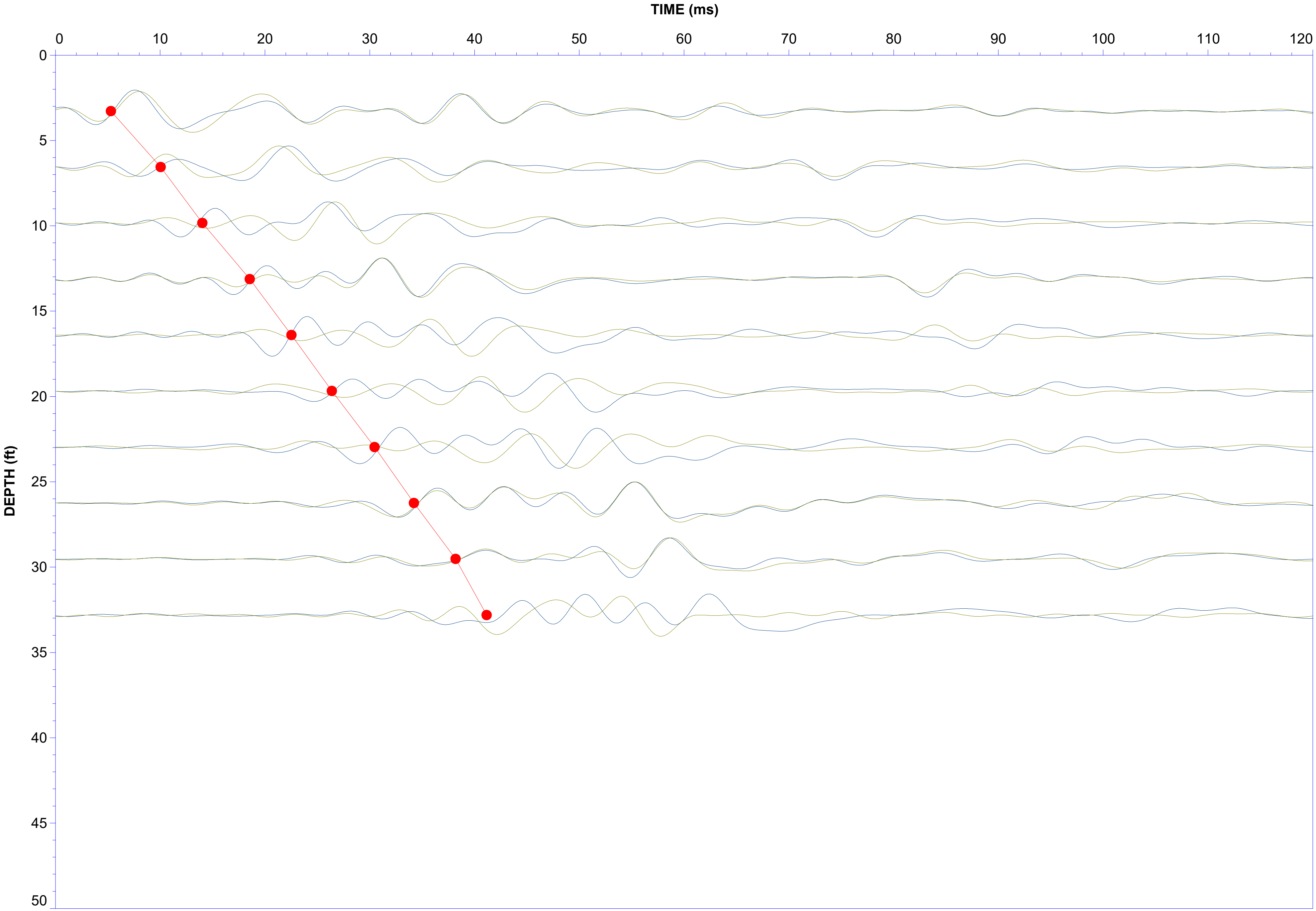


Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Sounding: SCPT20-26 Filter: 30-175hz Date: 18-Apr-2020

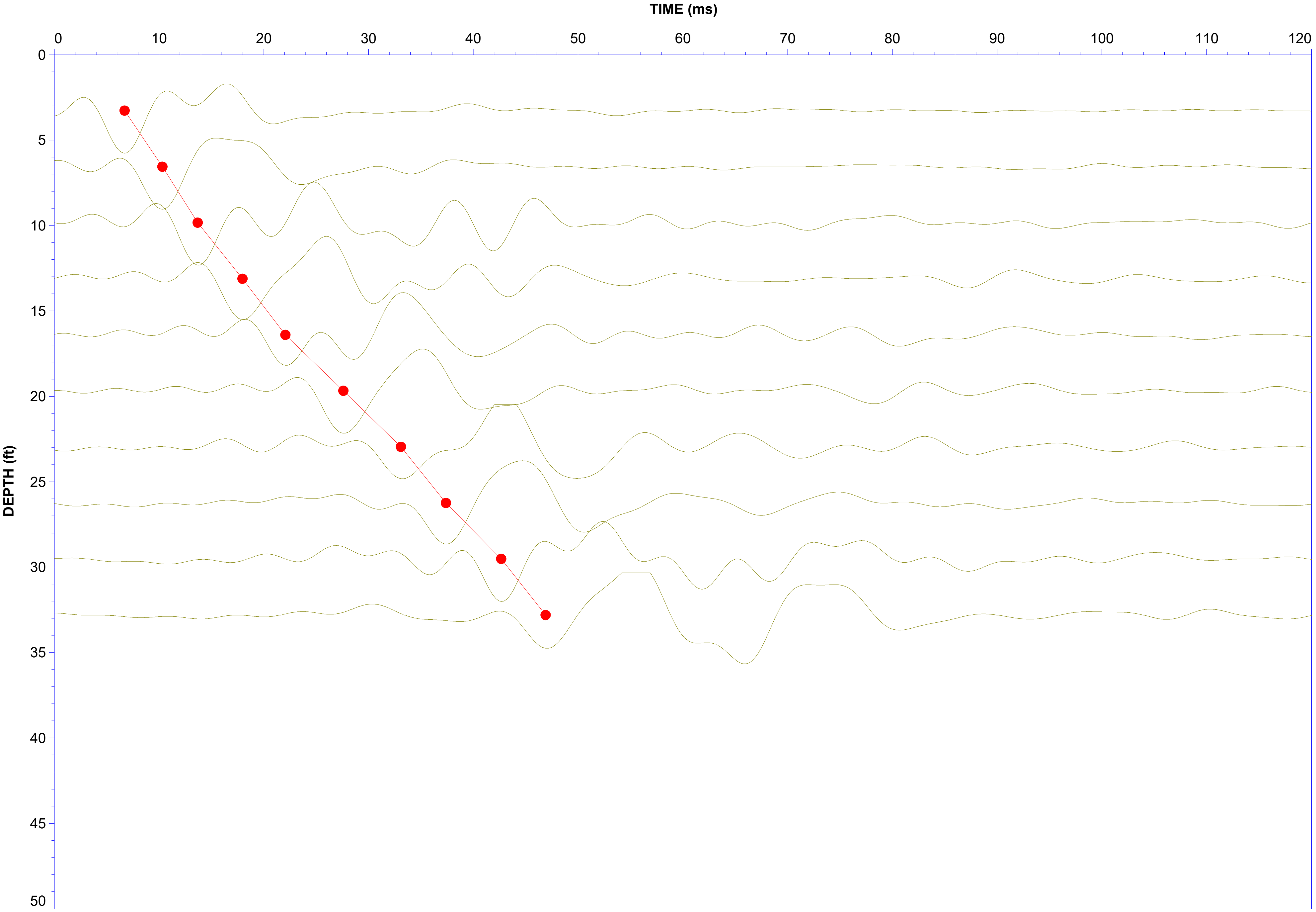


CONETEC

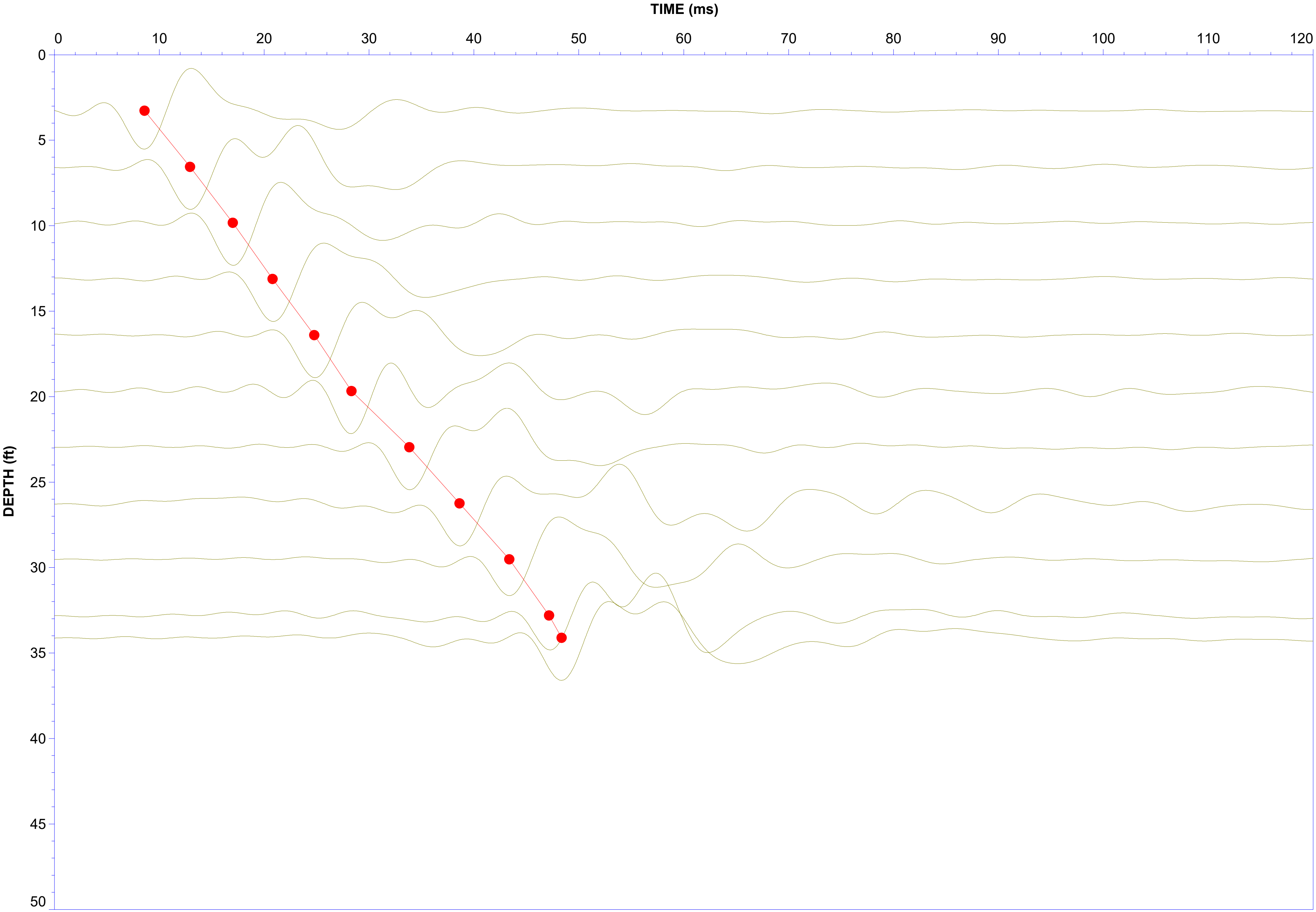
Job No: 20-61-20766	Client: Barr Engineering	Project: Raymond Road, Verona, WI	Filter: 0-200 Hz	Sounding: SCPT20-31	Date: 19-Apr-2020



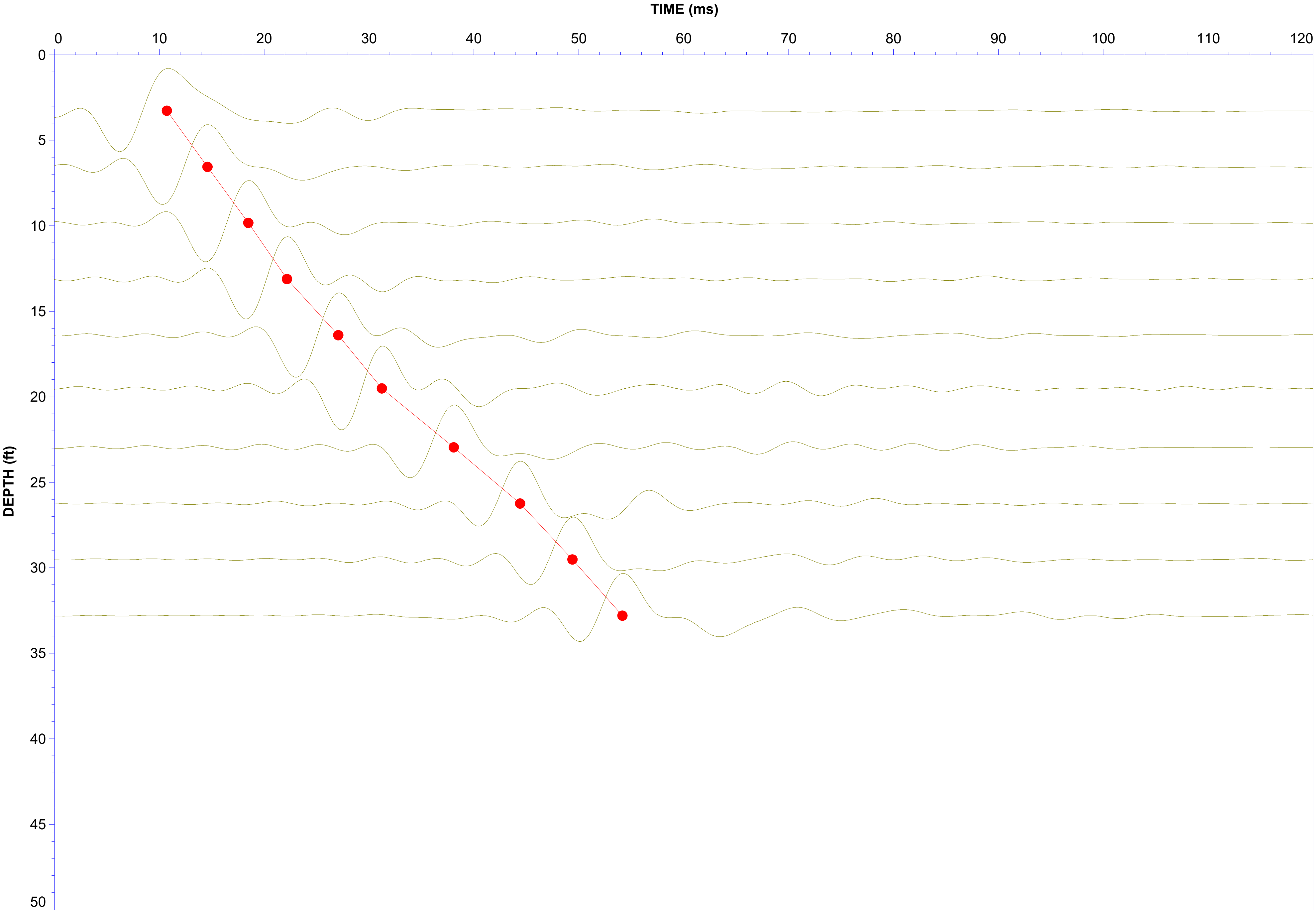
Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Sounding: SCPT20-37 Filter: 30-175hz Date: 19-Apr-2020



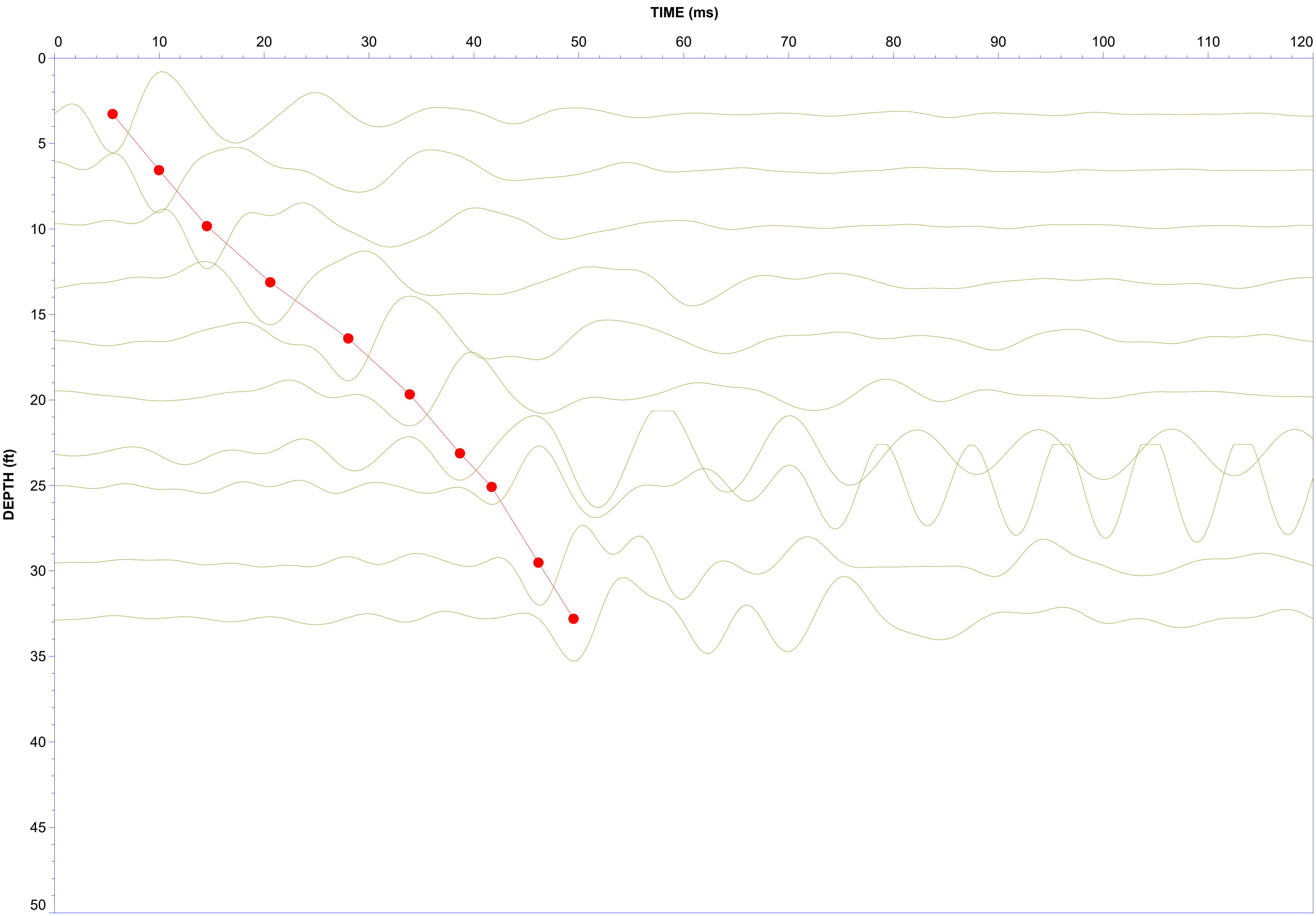
Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Sounding: SCPT20-41 Filter: 20-185hz Date: 19-Apr-2020



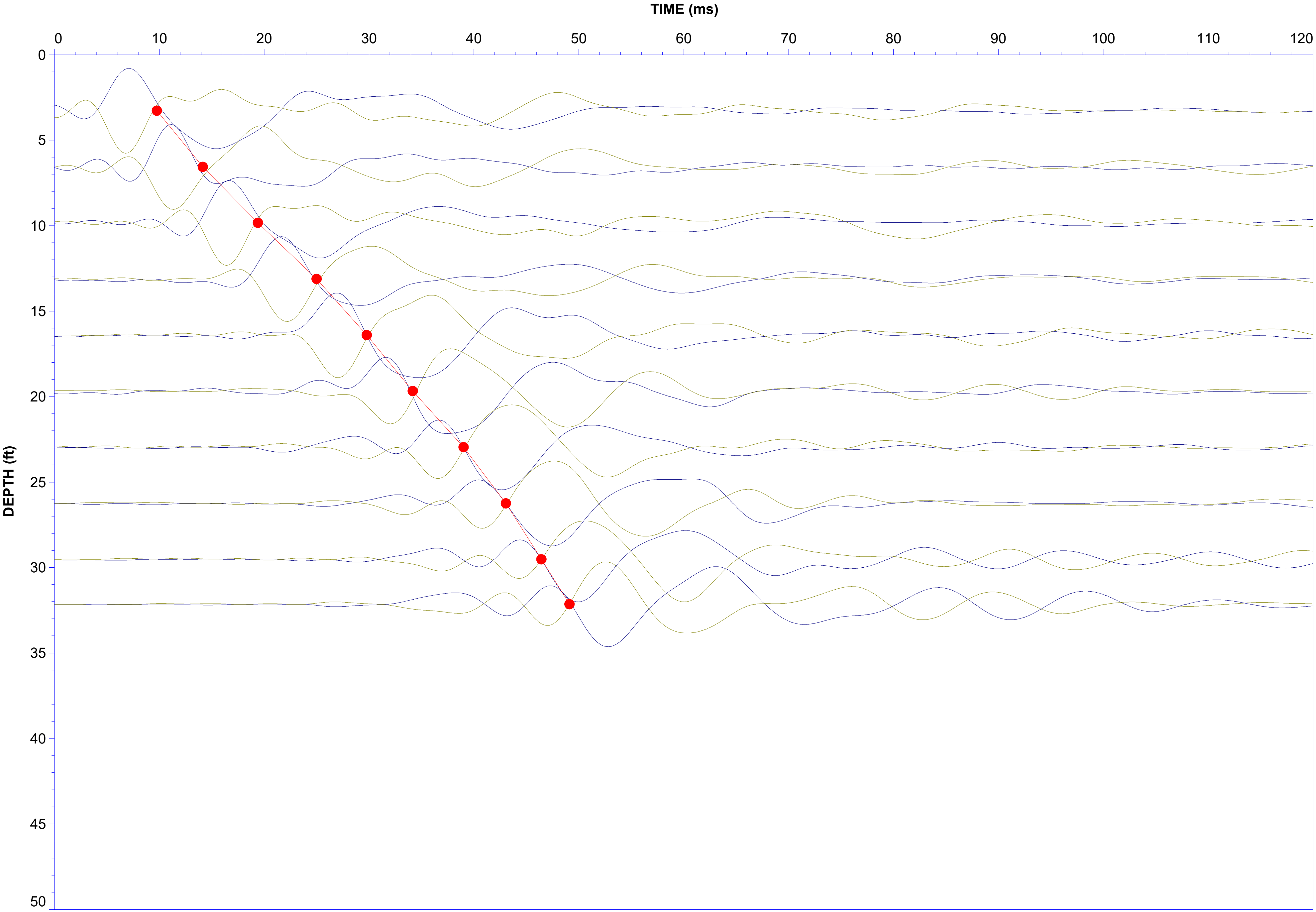
Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Sounding: SCPT20-46 Filter: 20-185hz Date: 20-Apr-2020



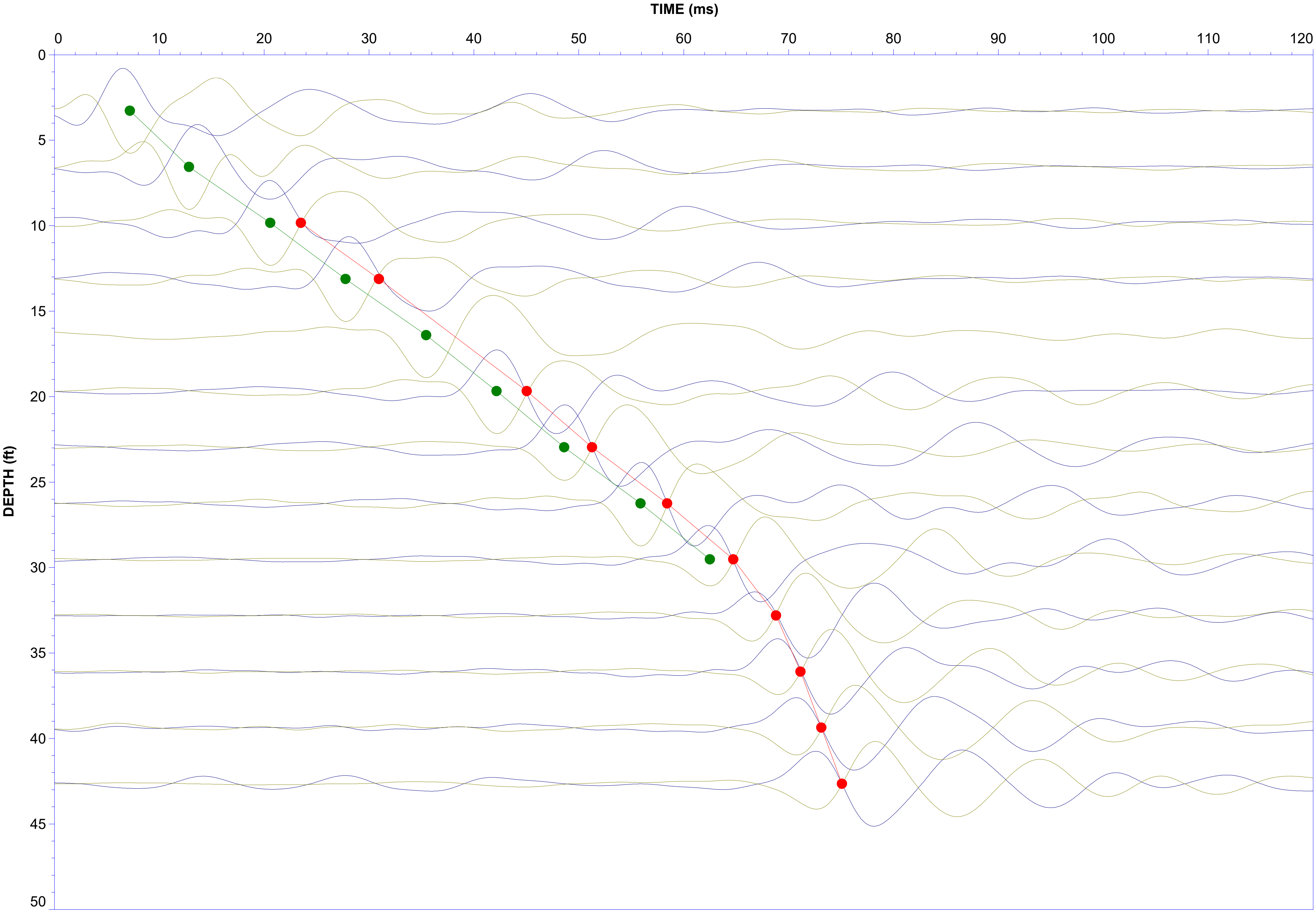
Job No: 20-61-20766 Client: Barr Engineering Project Title: Raymond Road, Verona, WI Hole: SCPT20-50 Filter: 40-190hz Date: 20-Apr-2020



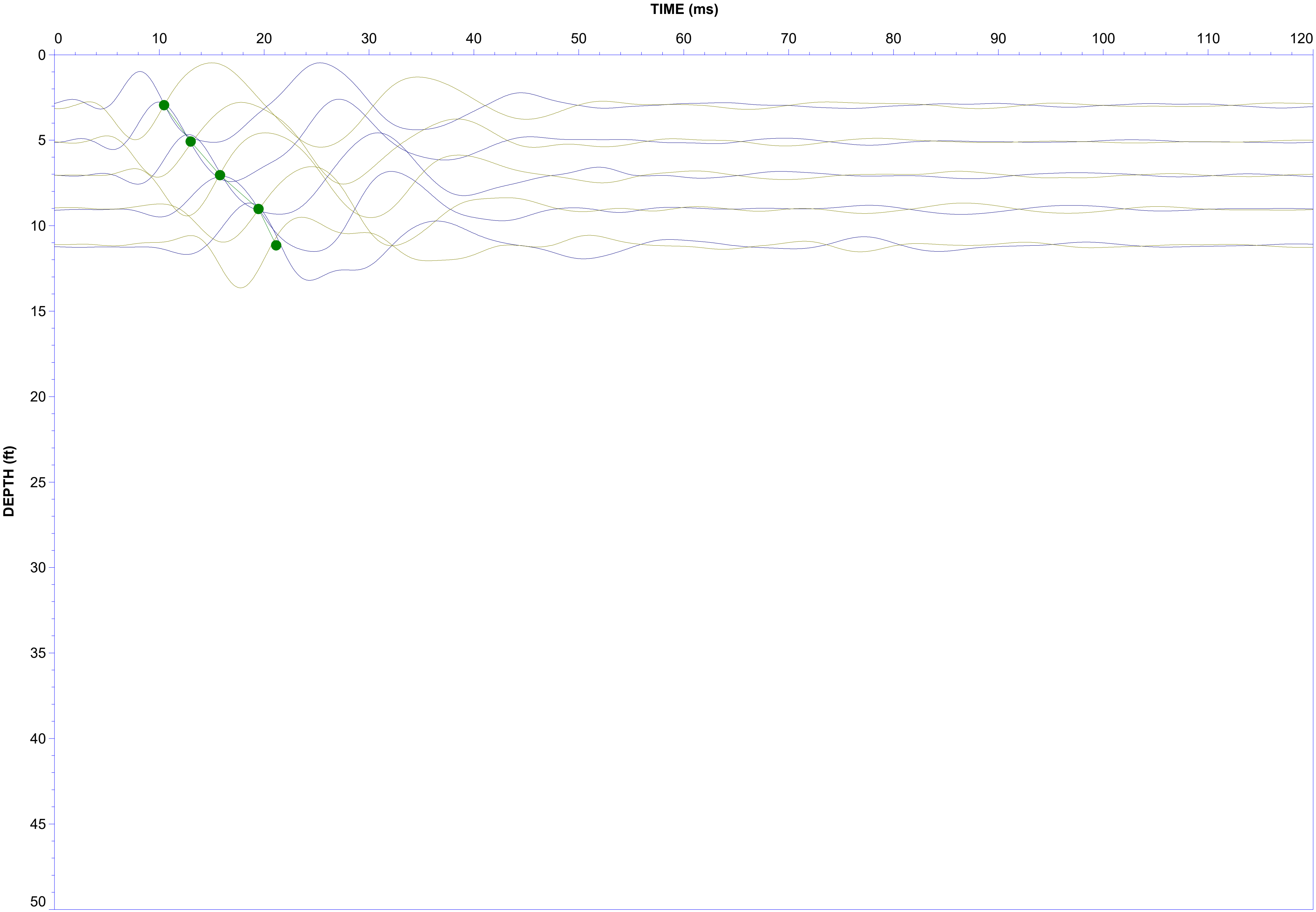
Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Sounding: SCPT20-53 Filter: 20-185hz Date: 20-Apr-2020



Job No: 20-61-20766 | Client: Barr Engineering | Project: Raymond Road, Verona, WI | Sounding: SCPT20-57B | Filter: 20-185hz | Date: 20-Apr-2020



Job No: 20-61-20766 Client: Barr Engineering Project: Raymond Road, Verona, WI Sounding: SCPT20-59 Filter: 25-200hz Date: 20-Apr-2020



Seismic Cone Penetration Test Tabular Results

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-04
Date: 17-Apr-2020

Seismic Source: Beam
Seismic Offset (ft): 1.97
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.63	3.28			
9.84	9.19	9.40	6.11	12.55	487
13.12	12.47	12.62	3.23	6.02	536
16.40	15.75	15.87	3.25	6.57	495
19.69	19.03	19.13	3.26	6.35	513
22.97	22.31	22.40	3.27	6.59	496
26.25	25.59	25.67	3.27	6.55	500
32.81	32.15	32.21	6.55	6.50	1007
36.25	35.60	35.65	3.44	2.87	1198

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-05
Date: 17-Apr-2020

Seismic Source: Beam
Seismic Offset (ft): 1.97
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.63	3.28			
6.56	5.91	6.23	2.94	7.30	403
16.40	15.75	15.87	9.65	13.80	699
19.69	19.03	19.13	3.26	4.60	709
22.97	22.31	22.40	3.27	4.53	721
26.25	25.59	25.67	3.27	3.53	926
29.53	28.87	28.94	3.27	3.64	898

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-11
Date: 17-Apr-2020

Seismic Source: Beam
Seismic Offset (ft): 1.97
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.63	3.28			
9.84	9.19	9.40	6.11	15.60	392
13.12	12.47	12.62	3.23	6.18	523
16.40	15.75	15.87	3.25	5.50	591
19.69	19.03	19.13	3.26	3.57	915
22.97	22.31	22.40	3.27	2.43	1345
26.25	25.59	25.67	3.27	2.49	1313
29.53	28.87	28.94	3.27	2.29	1430

Job No:	20-61-20766
Client:	Barr Engineering
Project:	Raymond Road, Verona, WI
Sounding ID:	SCPT20-26
Date:	18-Apr-2020

Seismic Source:	Beam
Source Offset (ft):	1.97
Source Depth (ft):	0
Geophone Offset (ft):	0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	3.87	762
9.84	9.19	9.40	3.17	4.61	687
13.12	12.47	12.62	3.23	3.54	912
16.40	15.75	15.87	3.25	5.16	630
19.69	19.03	19.13	3.26	3.77	865
22.97	22.31	22.40	3.27	5.22	625
26.25	25.59	25.67	3.27	4.17	785
29.53	28.87	28.94	3.27	3.03	1082

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-31
Date: 19-Apr-2020

Seismic Source: Beam
Seismic Offset (ft): 1.97
Source Depth (ft): 0.00
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.63	3.28			
6.56	5.91	6.23	2.94	4.75	620
9.84	9.19	9.40	3.17	3.97	798
13.12	12.47	12.62	3.23	4.53	713
16.40	15.75	15.87	3.25	3.97	818
19.69	19.03	19.13	3.26	3.86	844
22.97	22.31	22.40	3.27	4.09	800
26.25	25.59	25.67	3.27	3.75	871
29.53	28.87	28.94	3.27	3.97	823
32.81	32.15	32.21	3.27	2.96	1105

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-37
Date: 19-Apr-2020

Seismic Source: Beam
Source Offset (ft): 1.97
Source Depth (ft): 0
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	3.60	817
9.84	9.19	9.40	3.17	3.37	940
13.12	12.47	12.62	3.23	4.28	754
16.40	15.75	15.87	3.25	4.10	792
19.69	19.03	19.13	3.26	5.54	589
22.97	22.31	22.40	3.27	5.48	596
26.25	25.59	25.67	3.27	4.30	761
29.53	28.87	28.94	3.27	5.27	621
32.81	32.15	32.21	3.27	4.25	771

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-41
Date: 19-Apr-2020

Seismic Source: Beam
Source Offset (ft): 1.97
Source Depth (ft): 0
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	4.35	677
9.84	9.19	9.40	3.17	4.07	780
13.12	12.47	12.62	3.23	3.80	849
16.40	15.75	15.87	3.25	3.97	819
19.69	19.03	19.13	3.26	3.55	918
22.97	22.31	22.40	3.27	5.50	593
26.25	25.59	25.67	3.27	4.80	682
29.53	28.87	28.94	3.27	4.74	690
32.81	32.15	32.21	3.27	3.80	862
34.12	33.46	33.52	1.31	1.19	1100

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-46
Date: 20-Apr-2020

Seismic Source:	Beam
Source Offset (ft):	1.97
Source Depth (ft):	0
Geophone Offset (ft):	0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	3.89	757
9.84	9.19	9.40	3.17	3.89	815
13.12	12.47	12.62	3.23	3.68	877
16.40	15.75	15.87	3.25	4.89	664
19.52	18.86	18.97	3.10	4.16	744
22.97	22.31	22.40	3.43	6.84	501
26.25	25.59	25.67	3.27	6.33	517
29.53	28.87	28.94	3.27	5.00	655
32.81	32.15	32.21	3.27	4.77	687

Job No:	20-61-20766
Client:	Barr Engineering
Project:	Raymond Road, Verona, WI
Sounding ID:	SCPT20-50
Date:	20-Apr-2020

Seismic Source:	Beam
Source Offset (ft):	1.97
Source Depth (ft):	0
Geophone Offset (ft):	0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	4.43	665
9.84	9.19	9.40	3.17	4.56	695
13.12	12.47	12.62	3.23	6.03	535
16.40	15.75	15.87	3.25	7.45	436
19.69	19.03	19.13	3.26	5.85	557
23.13	22.47	22.56	3.43	4.78	718
25.10	24.44	24.52	1.96	3.02	649
29.53	28.87	28.94	4.42	4.46	990
32.81	32.15	32.21	3.27	3.34	980

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-53
Date: 20-Apr-2020

Seismic Source: Beam
Source Offset (ft): 1.97
Source Depth (ft): 0
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	4.37	674
9.84	9.19	9.40	3.17	5.26	603
13.12	12.47	12.62	3.23	5.60	576
16.40	15.75	15.87	3.25	4.78	680
19.69	19.03	19.13	3.26	4.38	744
22.97	22.31	22.40	3.27	4.84	674
26.25	25.59	25.67	3.27	4.05	808
29.53	28.87	28.94	3.27	3.37	970
32.15	31.50	31.56	2.62	2.68	978

Job No:	20-61-20766
Client:	Barr Engineering
Project:	Raymond Road, Verona, WI
Sounding ID:	SCPT20-57B
Date:	20-Apr-2020

Seismic Source:	Beam
Source Offset (ft):	1.97
Source Depth (ft):	0
Geophone Offset (ft):	0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
3.28	2.62	3.28			
6.56	5.91	6.23	2.94	5.62	524
9.84	9.19	9.40	3.17	7.75	409
13.12	12.47	12.62	3.23	7.31	441
16.40	15.75	15.87	3.25	7.67	424
19.69	19.03	19.13	3.26	6.73	485
22.97	22.31	22.40	3.27	6.34	515
26.25	25.59	25.67	3.27	7.22	453
29.53	28.87	28.94	3.27	6.45	507
32.81	32.15	32.21	3.27	4.08	802
36.09	35.43	35.49	3.28	2.31	1415
39.37	38.71	38.76	3.28	2.00	1638
42.65	41.99	42.04	3.28	1.97	1666

Job No: 20-61-20766
Client: Barr Engineering
Project: Raymond Road, Verona, WI
Sounding ID: SCPT20-59
Date: 20-Apr-2020

Seismic Source: Beam
Source Offset (ft): 1.97
Source Depth (ft): 0
Geophone Offset (ft): 0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Geophone Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
2.95	2.30	3.03			
5.08	4.43	4.85	1.82	2.55	714
7.05	6.40	6.69	1.85	2.79	663
9.02	8.37	8.59	1.90	3.66	519
11.15	10.50	10.68	2.09	1.69	1235

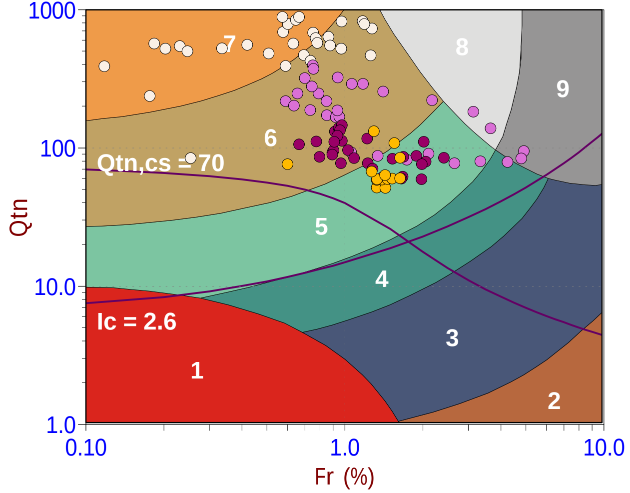
Soil Behavior Type (SBT) Scatter Plots

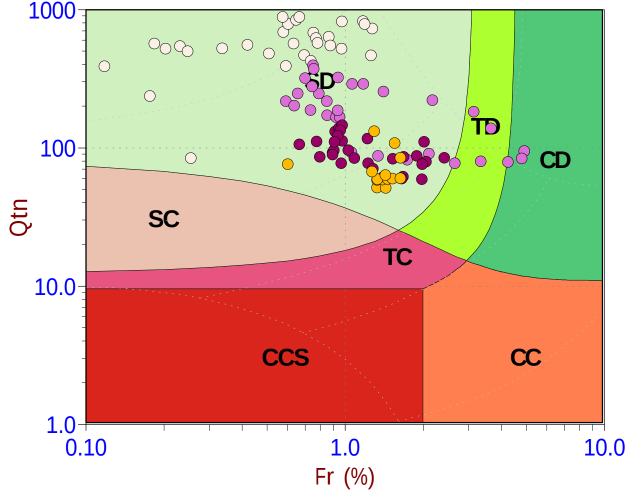
CONETEC

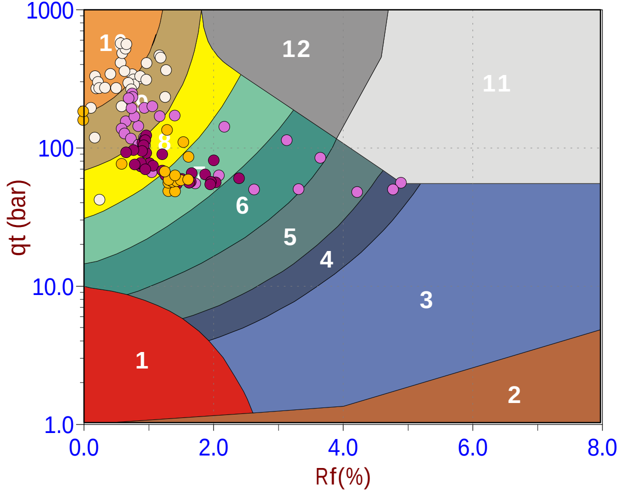
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-16 10:19
Site: Raymond Road, Verona, WI

Sounding: CPT20-01
Cone: 678:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

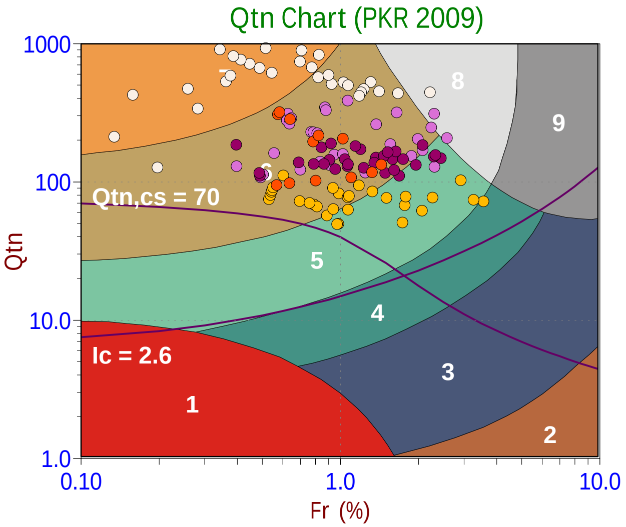
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

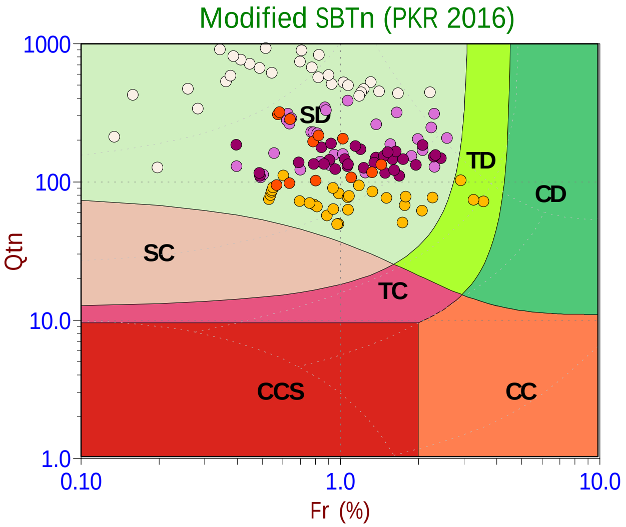
ConeTec

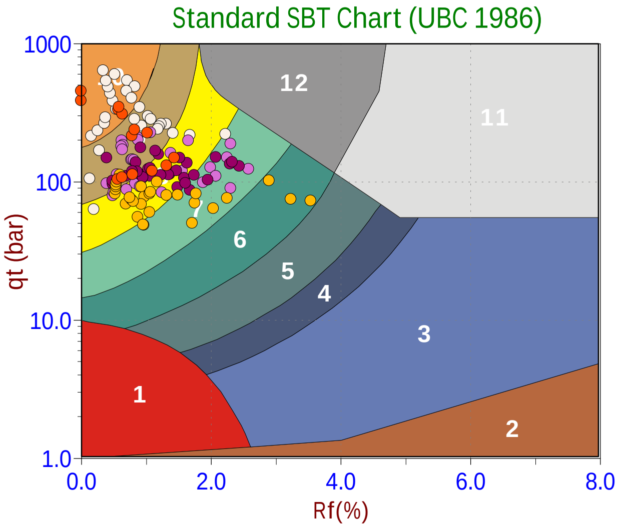
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 09:17
Site: Raymond Road, Verona, WI

Sounding: CPT20-01B
Cone: 640:T1500F15U500





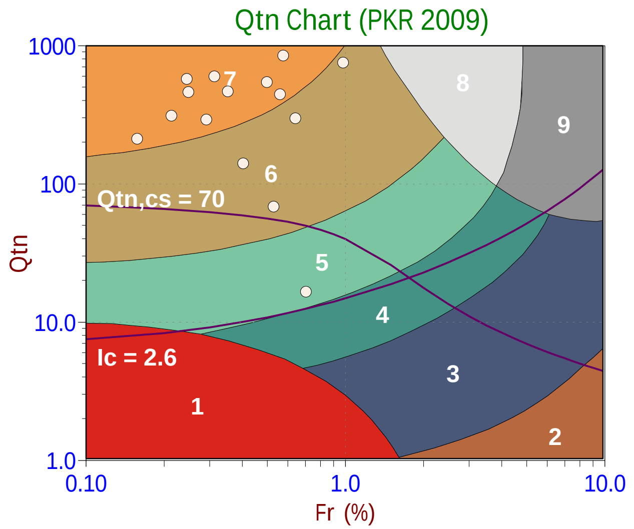


Depth Ranges
- ○ >0.0 to 5.0 ft
- ○ >5.0 to 10.0 ft
- ○ >10.0 to 15.0 ft
- ○ >15.0 to 20.0 ft
- ○ >20.0 to 25.0 ft
- ○ >25.0 to 30.0 ft
- ○ >30.0 to 35.0 ft
- ○ >35.0 to 40.0 ft
- ○ >40.0 to 45.0 ft
- ○ >45.0 to 50.0 ft
- ○ >50.0 ft

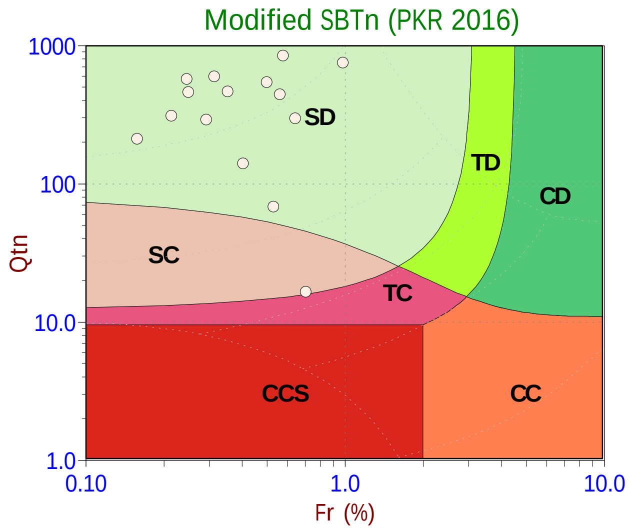
Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

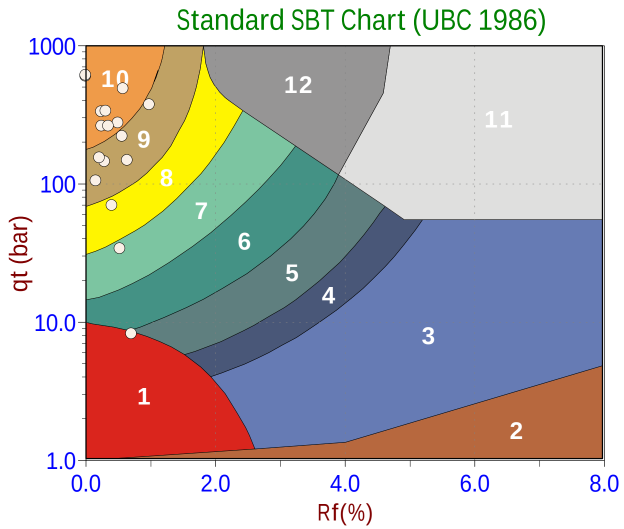
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ○ >0.0 to 5.0 ft
- 🟣 >5.0 to 10.0 ft
- 🟣 >10.0 to 15.0 ft
- 🟠 >15.0 to 20.0 ft
- 🔴 >20.0 to 25.0 ft
- 🔵 >25.0 to 30.0 ft
- 🔵 >30.0 to 35.0 ft
- 🟢 >35.0 to 40.0 ft
- 🟢 >40.0 to 45.0 ft
- 🟡 >45.0 to 50.0 ft
- 🟡 >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- 🟩 Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

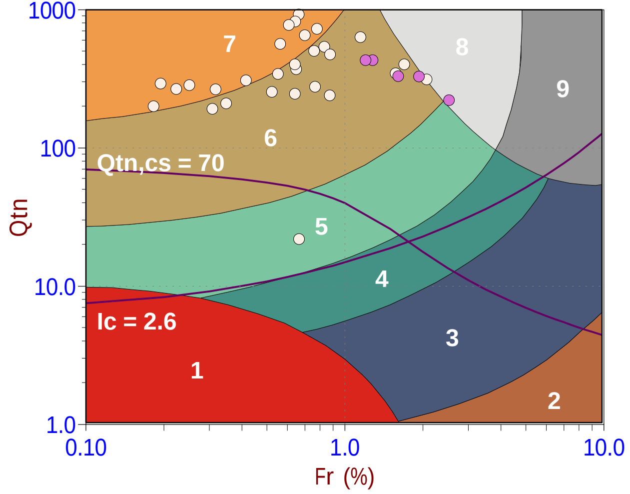
CONETEC

Barr Engineering

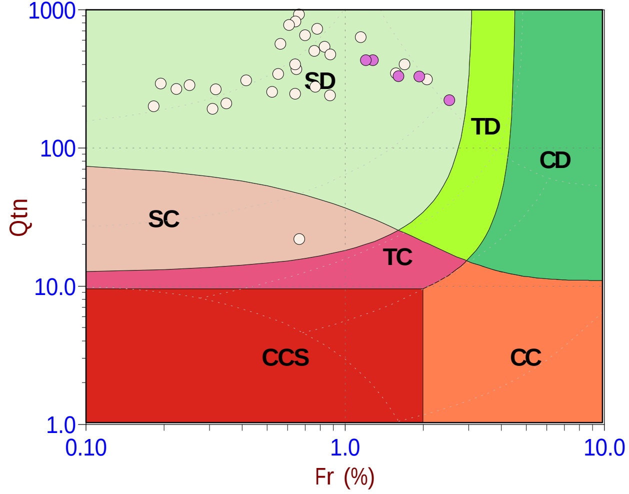
Job No: 20-61-20766
Date: 2020-04-17 10:17
Site: Raymond Road, Verona, WI

Sounding: CPT20-02B
Cone: 640:T1500F15U500

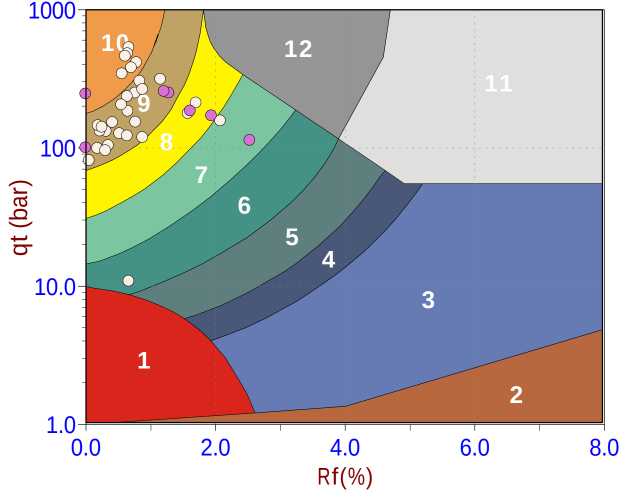
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

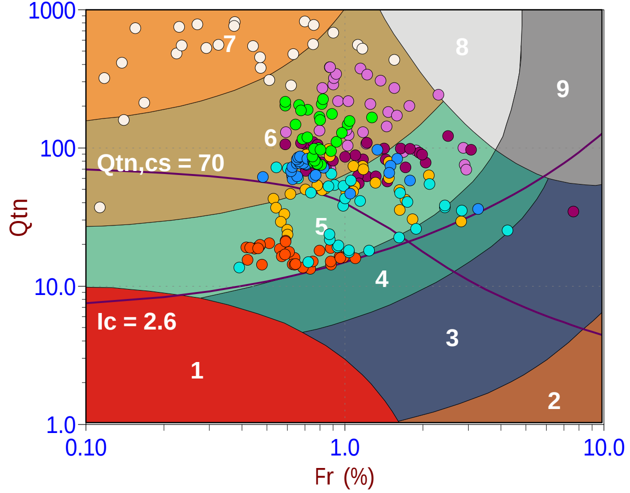
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

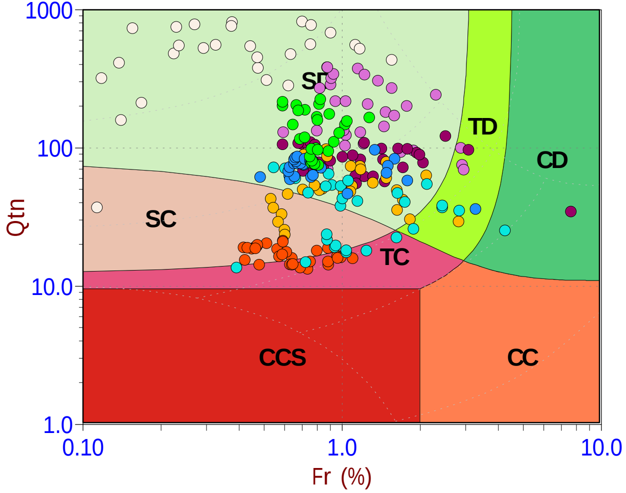
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 10:34
Site: Raymond Road, Verona, WI

Sounding: SCPT20-02C
Cone: 640:T1500F15U500



Qtn Chart (PKR 2009)



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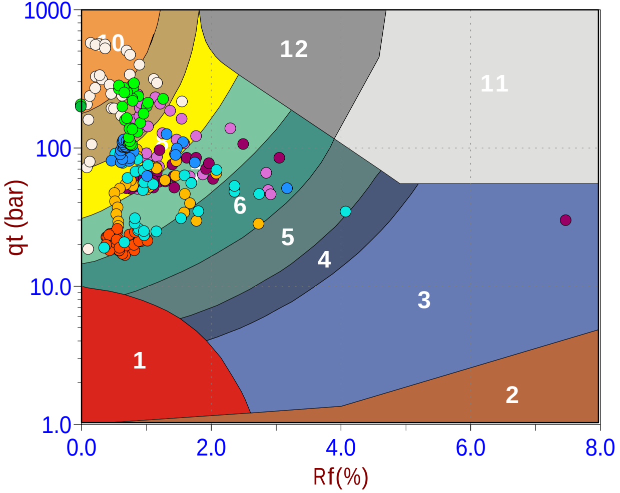


Standard SBT Chart (UBC 1986)

Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- 🟩 Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

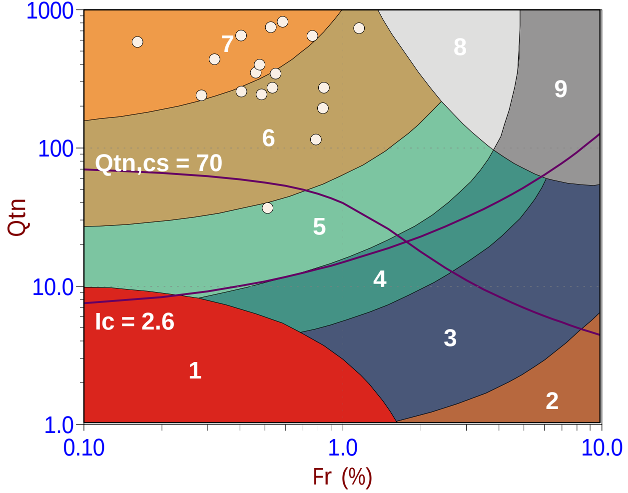
CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 11:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-03
Cone: 640:T1500F15U500

Qtn Chart (PKR 2009)



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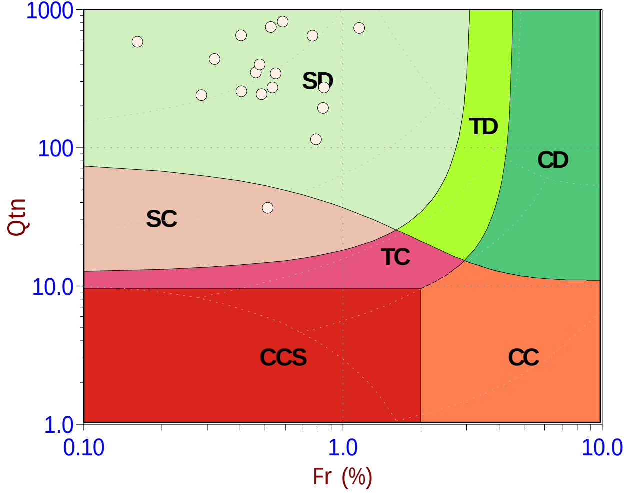
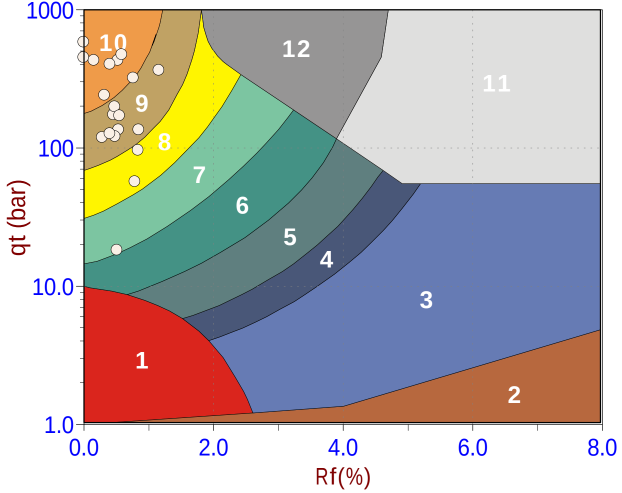


Standard SBT Chart (UBC 1986)

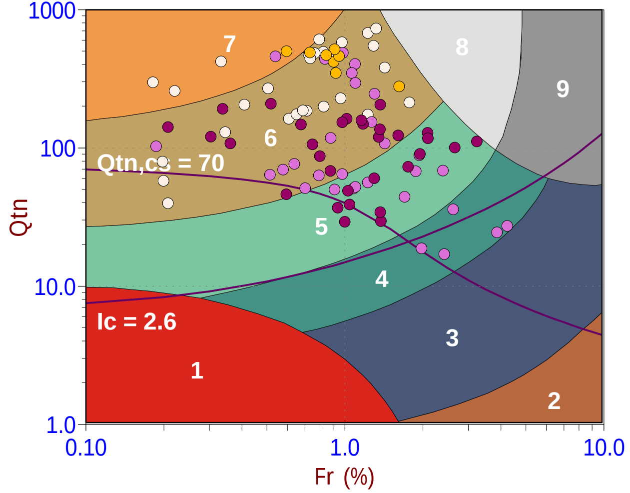


Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

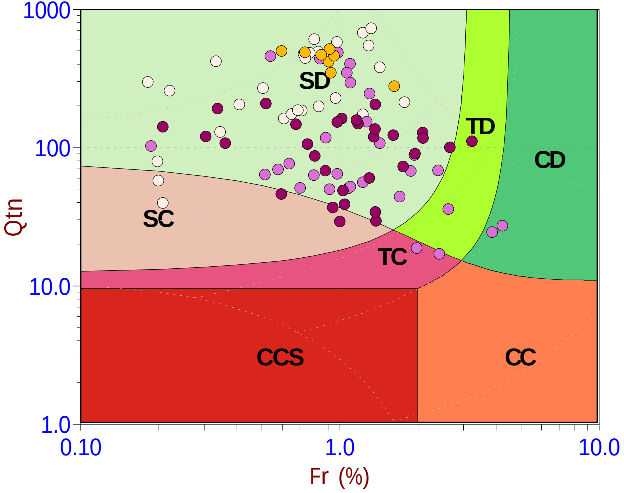
Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

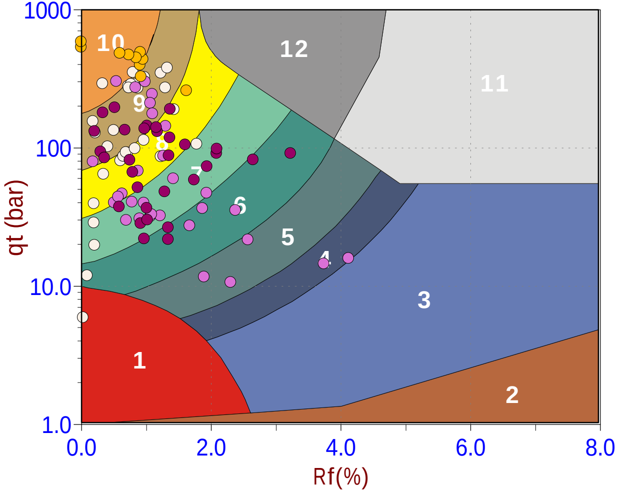
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

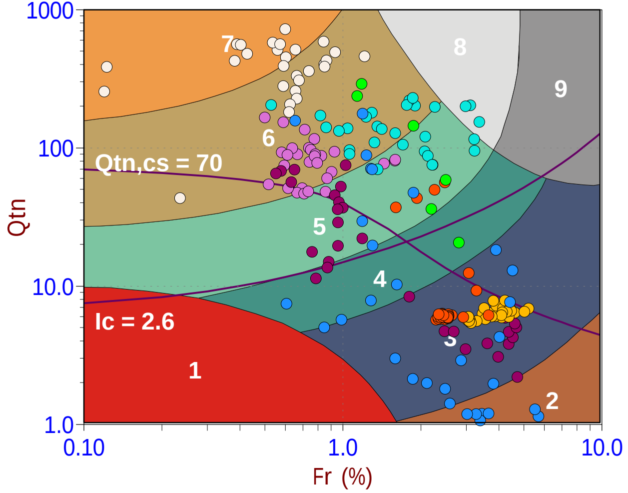
CONETEC

Barr Engineering

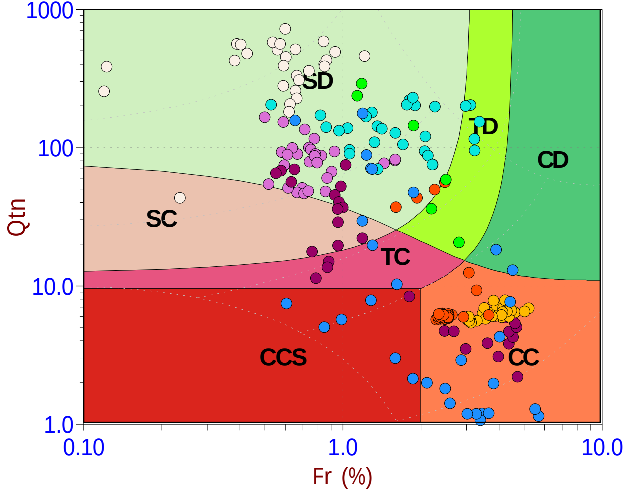
Job No: 20-61-20766
Date: 2020-04-17 12:57
Site: Raymond Road, Verona, WI

Sounding: SCPT20-04
Cone: 640:T1500F15U500

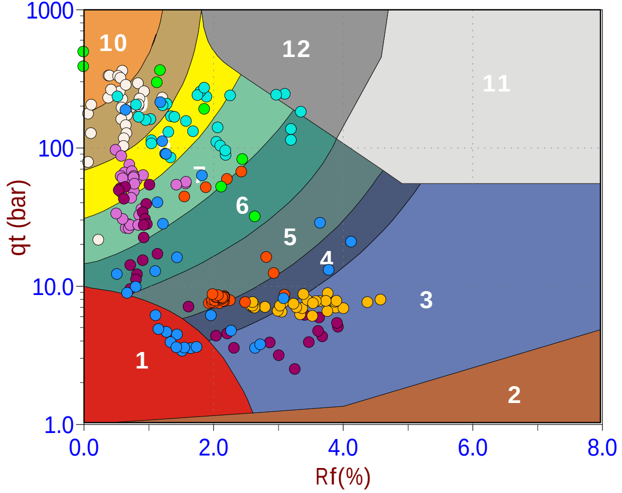
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



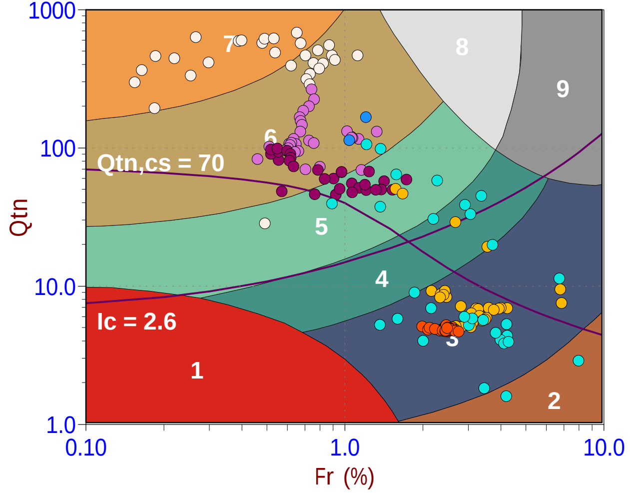
Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Qtn Chart (PKR 2009)



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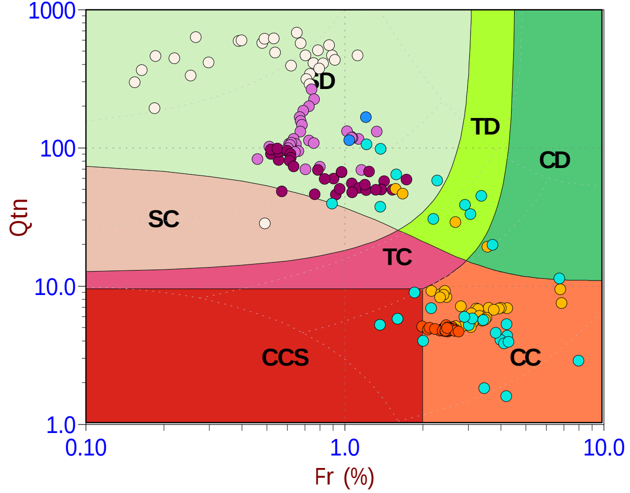
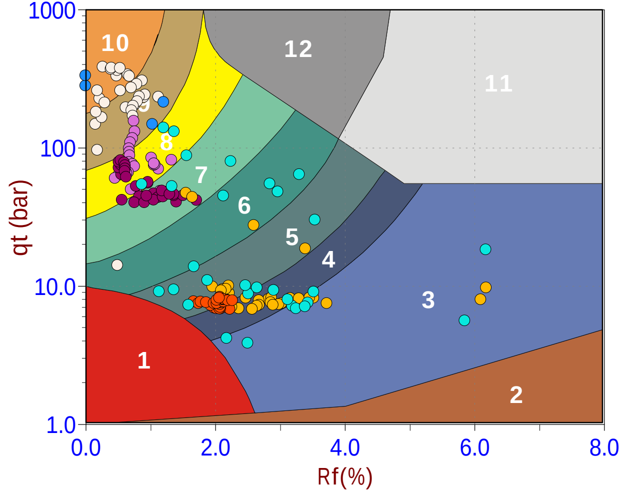


Standard SBT Chart (UBC 1986)



Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

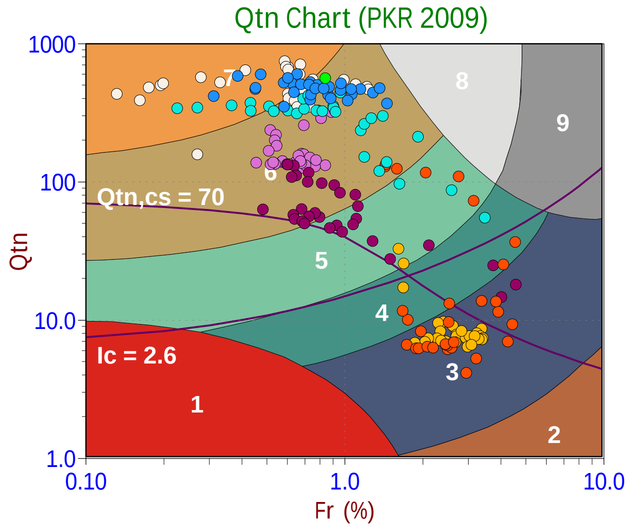
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand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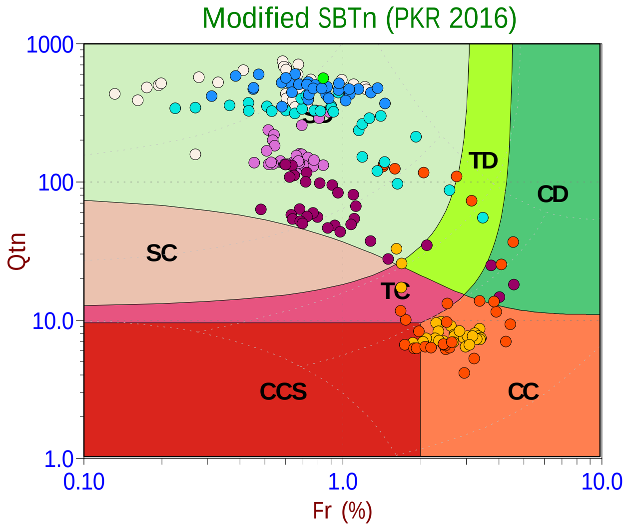
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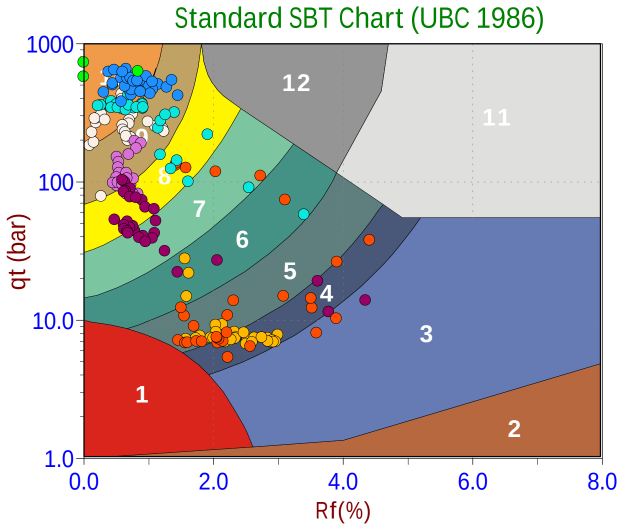

Standard SBT Chart (UBC 1986)

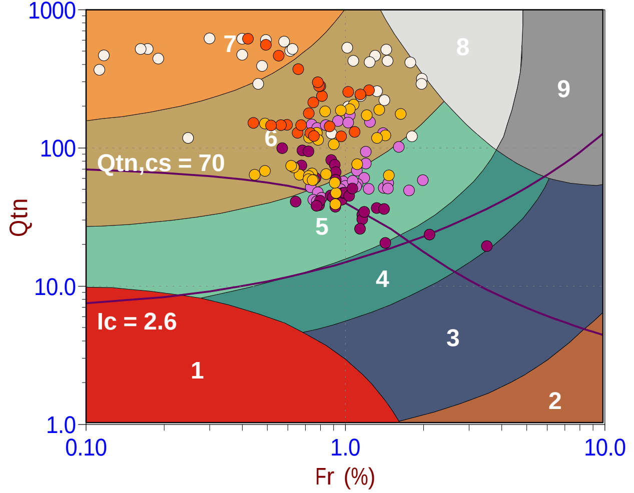
Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Qtn Chart (PKR 2009)



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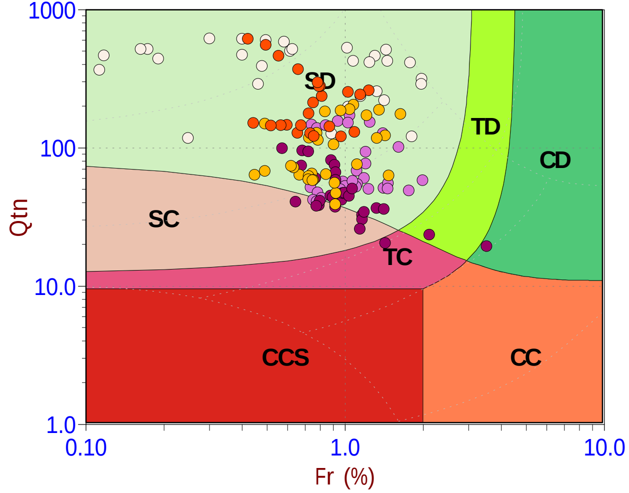
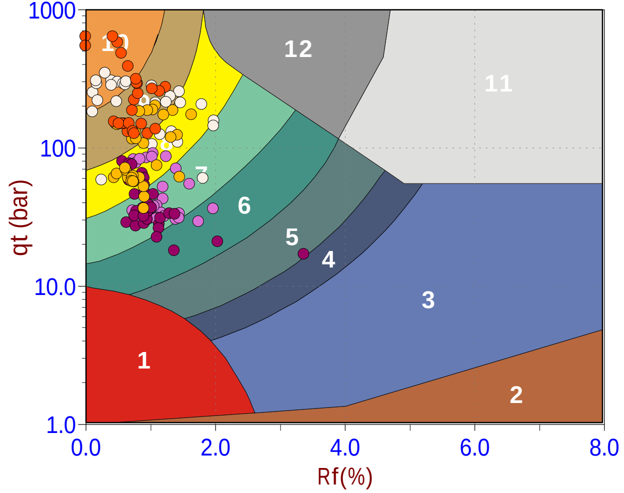


Standard SBT Chart (UBC 1986)



Depth Ranges

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- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

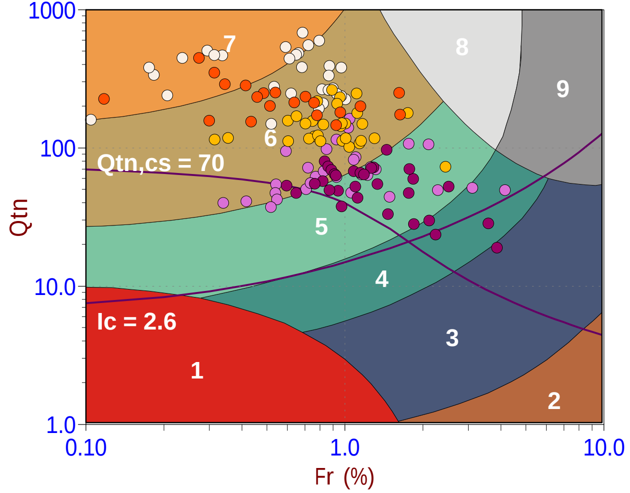
Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Qtn Chart (PKR 2009)



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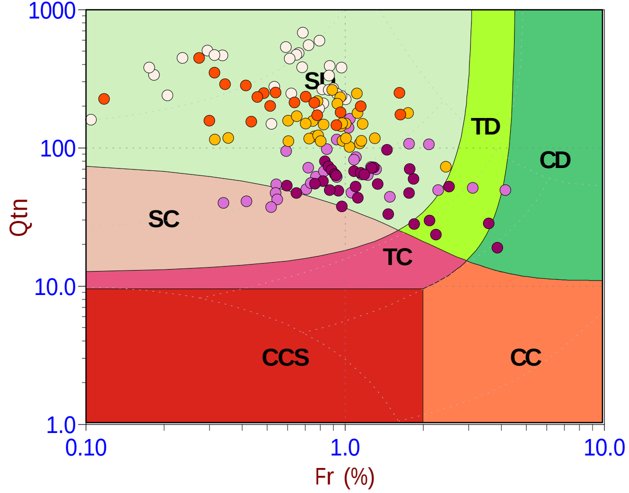

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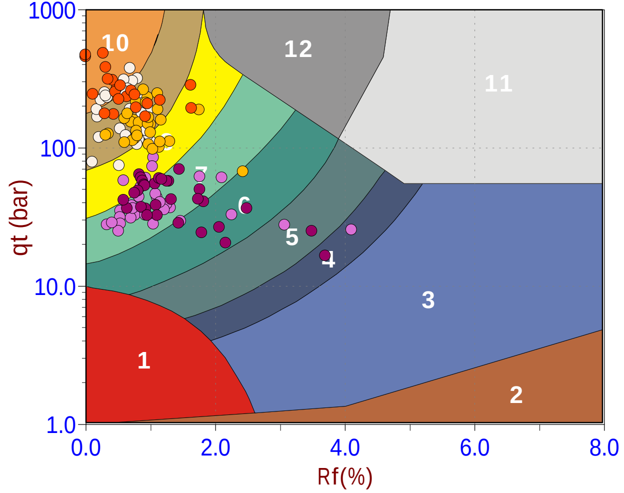

Depth Ranges

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- ● >5.0 to 10.0 ft
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- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

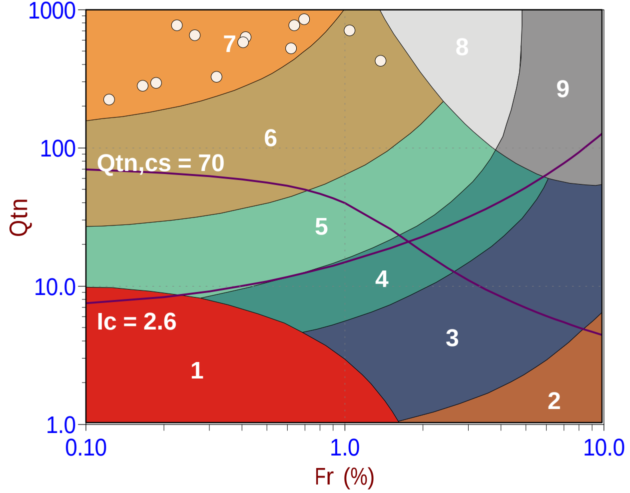
CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-09
Cone: 640:T1500F15U500

Qtn Chart (PKR 2009)



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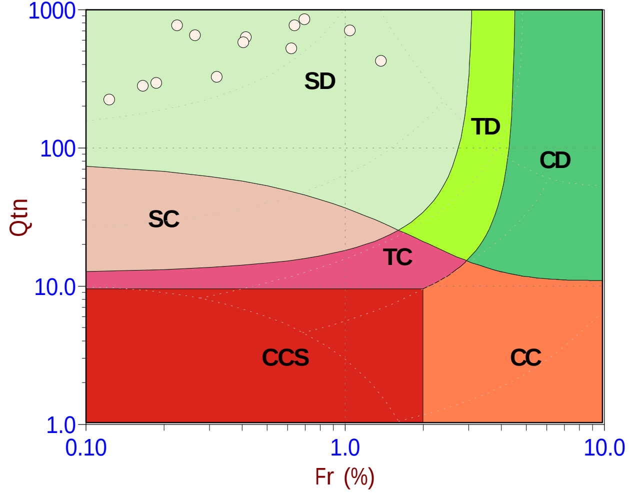
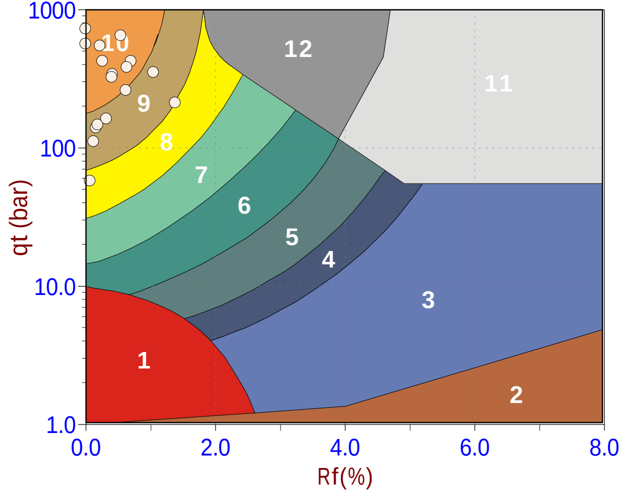


Standard SBT Chart (UBC 1986)



Depth Ranges
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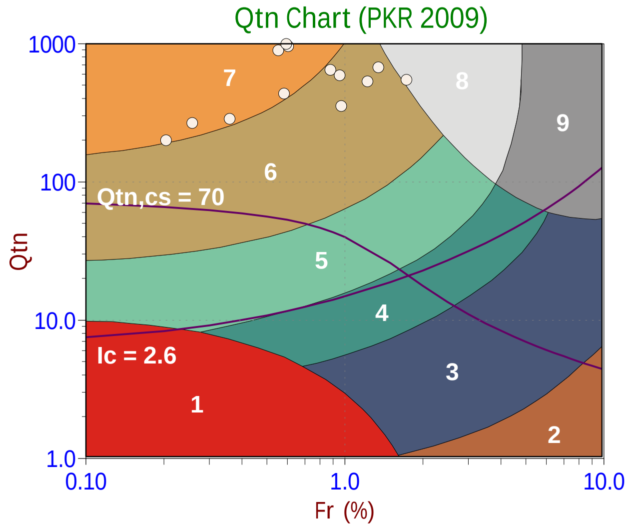
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand



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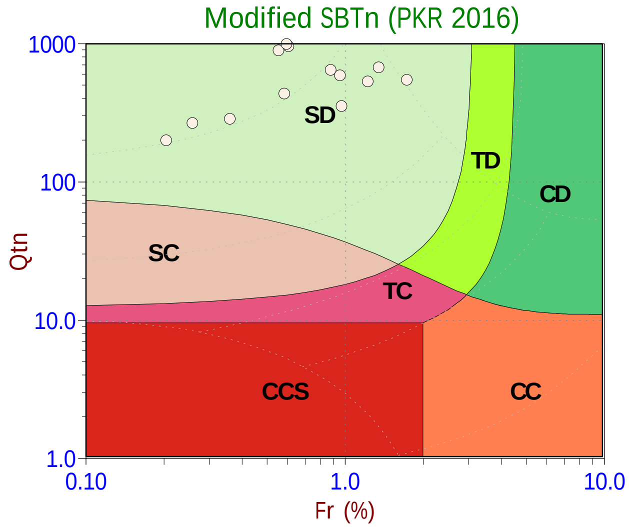

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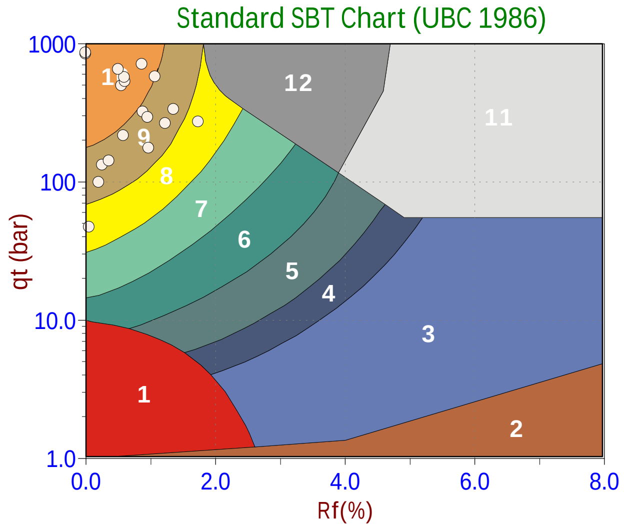

Standard SBT Chart (UBC 1986)

Depth Ranges
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- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

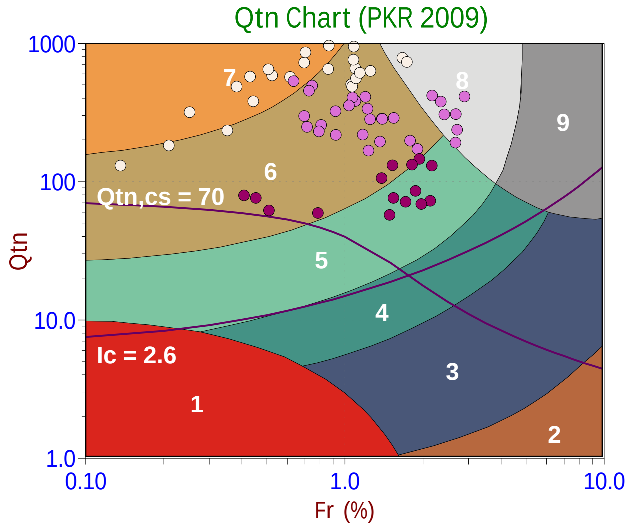
Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 16:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-09C
Cone: 640:T1500F15U500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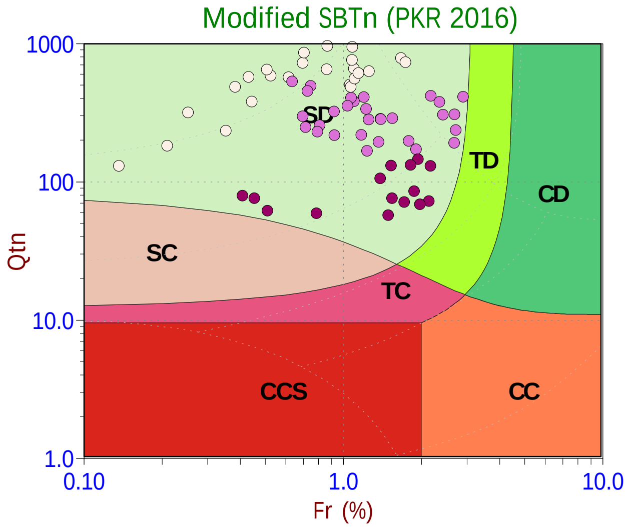
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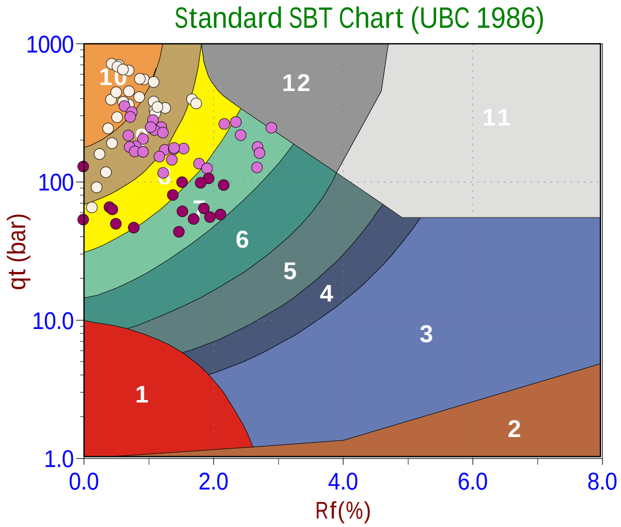

Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

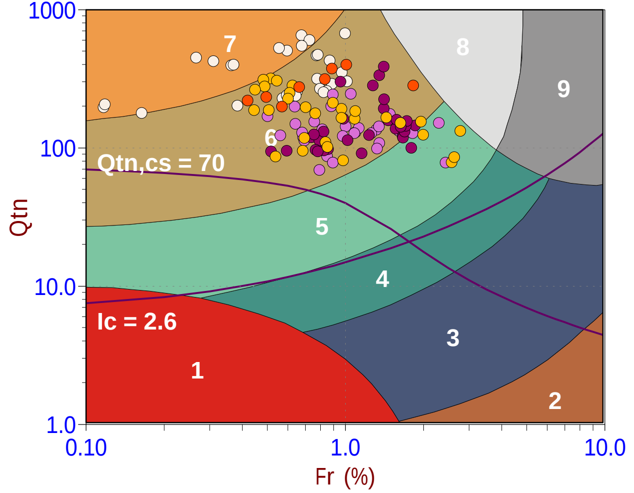
CONETEC

Barr Engineering

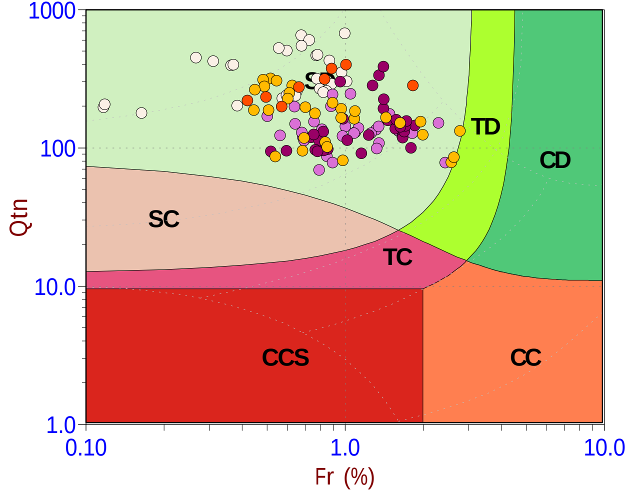
Job No: 20-61-20766
Date: 2020-04-17 17:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-10
Cone: 640:T1500F15U500

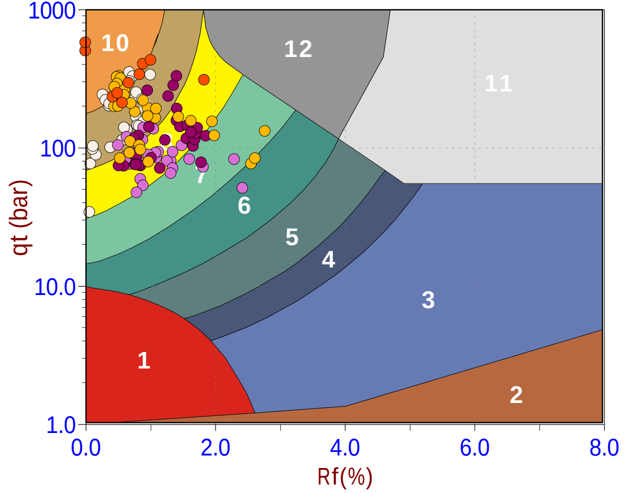
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

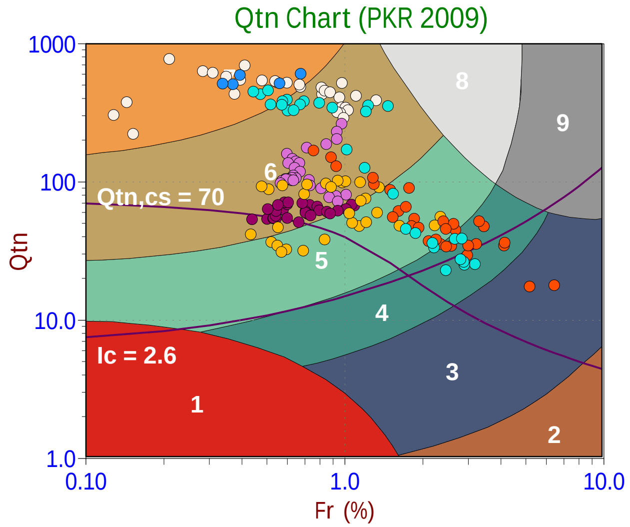
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-17 18:02
Site: Raymond Road, Verona, WI

Sounding: SCPT20-11
Cone: 640:T1500F15U500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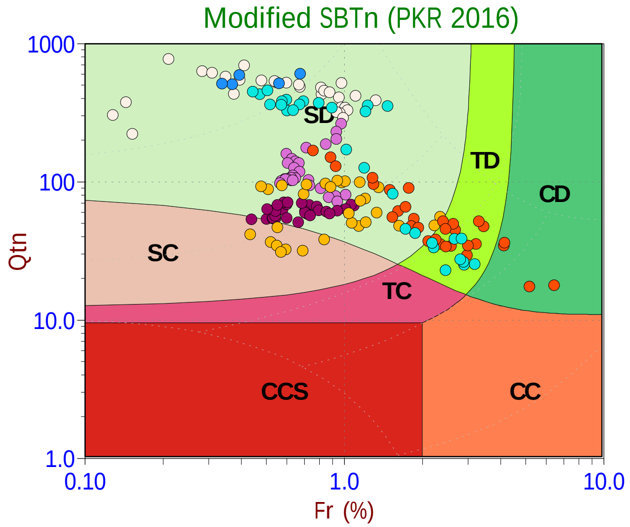
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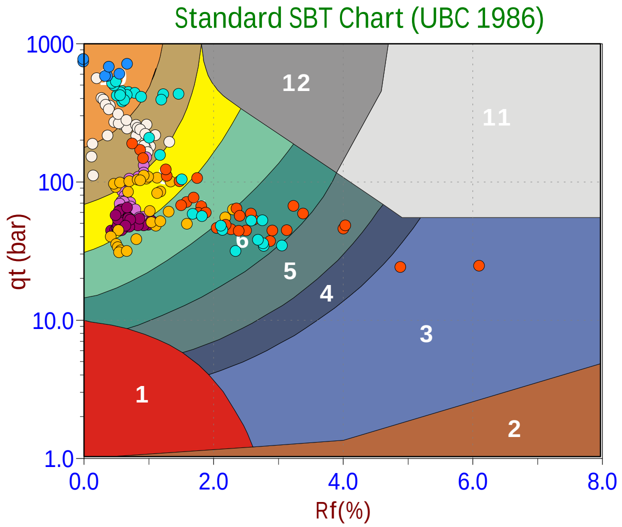

Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

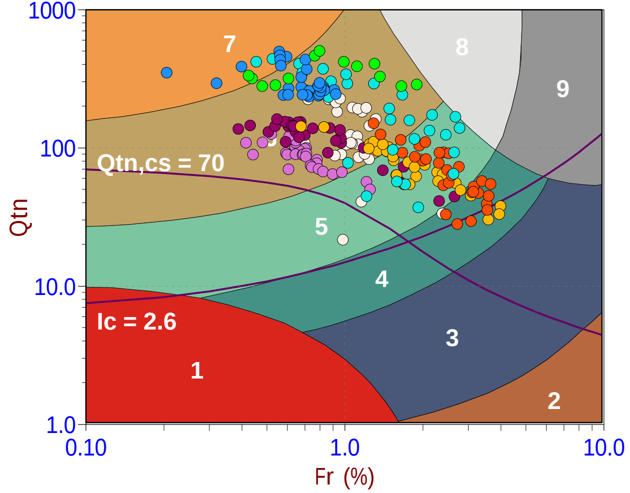
CONETEC

Barr Engineering

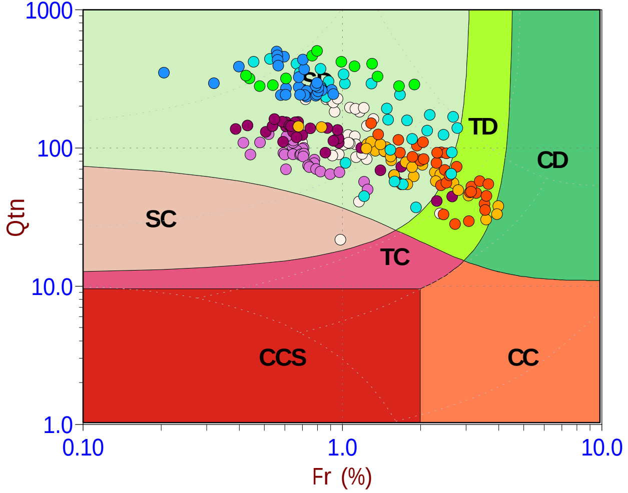
Job No: 20-61-20766
Date: 2020-04-18 08:33
Site: Raymond Road, Verona, WI

Sounding: CPT20-12
Cone: 640:T1500F15U500

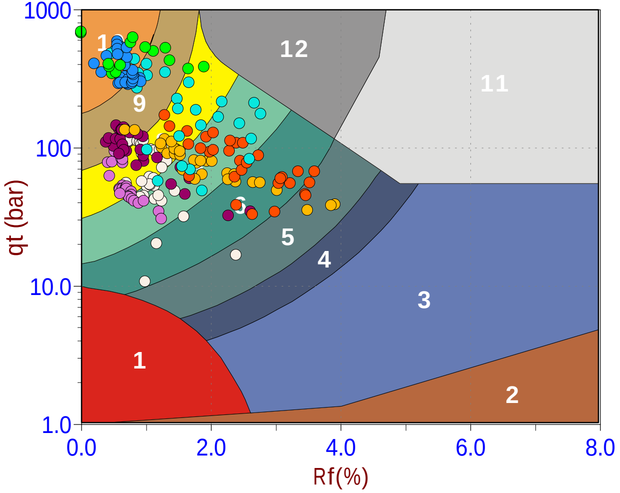
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

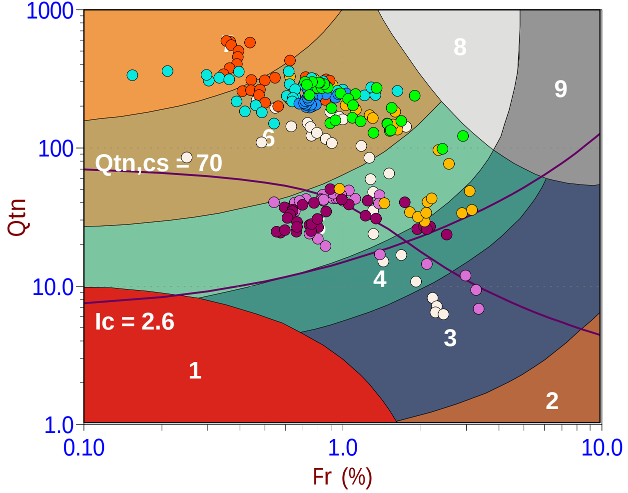
CONETEC

Barr Engineering

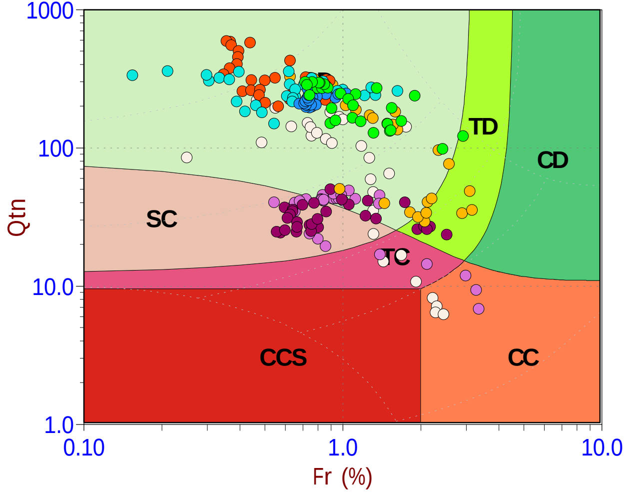
Job No: 20-61-20766
Date: 2020-04-18 09:10
Site: Raymond Road, Verona, WI

Sounding: CPT20-13
Cone: 640:T1500F15U500

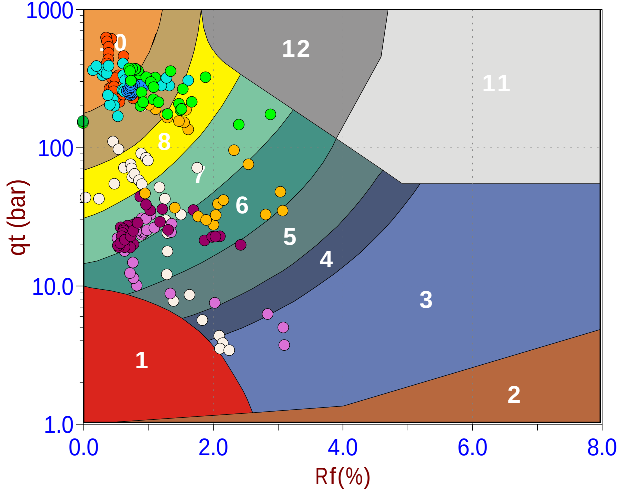
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

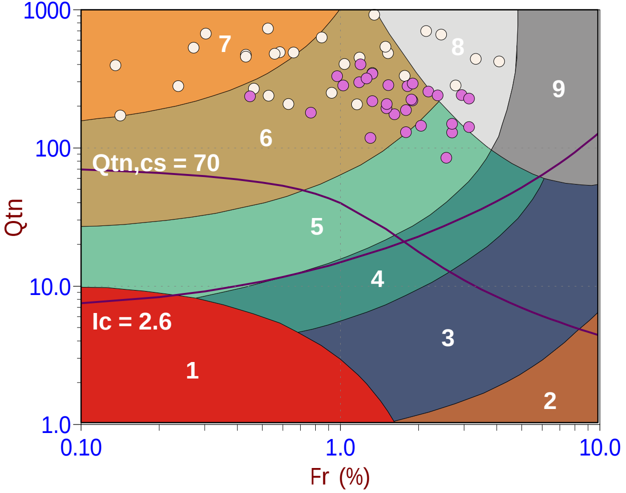
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

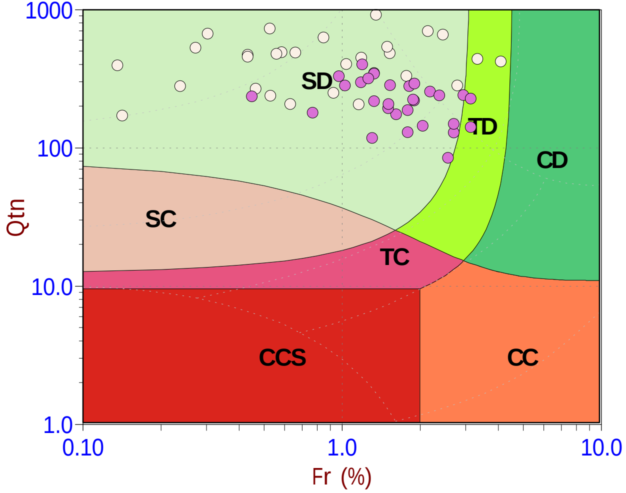
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 09:52
Site: Raymond Road, Verona, WI

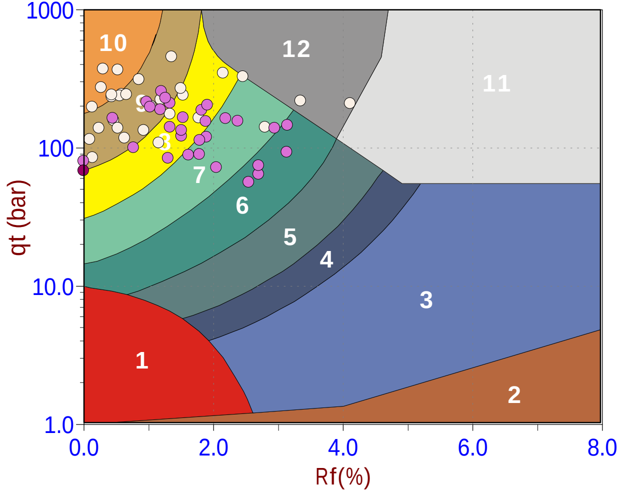
Sounding: CPT20-14
Cone: 640:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

○ >0.0 to 5.0 ft
● >5.0 to 10.0 ft
● >10.0 to 15.0 ft
● >15.0 to 20.0 ft
● >20.0 to 25.0 ft
● >25.0 to 30.0 ft
● >30.0 to 35.0 ft
● >35.0 to 40.0 ft
● >40.0 to 45.0 ft
● >45.0 to 50.0 ft
● >50.0 ft

Legend

🟥 Sensitive, Fine Grained
🟫 Organic Soils
■ Clays
■ Silt Mixtures
■ Sand Mixtures
■ Sands
🟧 Gravelly Sand to Sand
■ Stiff Sand to Clayey Sand
■ Very Stiff Fine Grained

Legend

🟥 CCS (Cont. sensitive clay like)
🟧 CC (Cont. clay like)
■ TC (Cont. transitional)
■ SC (Cont. sand like)
🟩 CD (Dil. clay like)
🟩 TD (Dil. transitional)
■ SD (Dil. sand like)

Legend

🟥 Sensitive Fines
🟫 Organic Soil
🟦 Clay
■ Silty Clay
■ Clayey Silt
■ Silt
■ Sandy Silt
🟨 Silty Sand/Sand
■ Sand
🟧 Gravelly Sand
■ Stiff Fine Grained
■ Cemented Sand

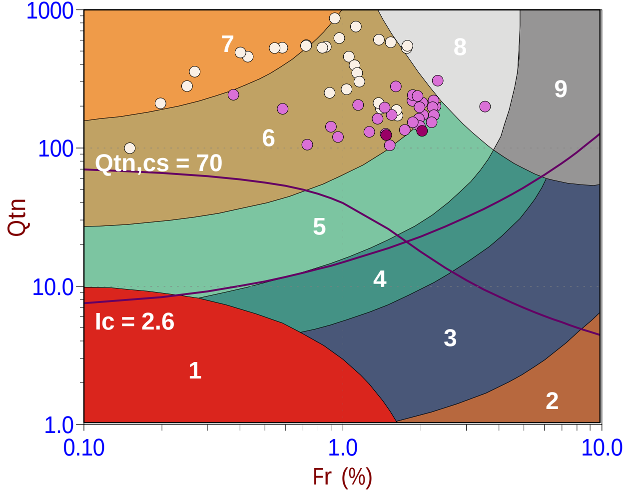
CONETEC

Barr Engineering

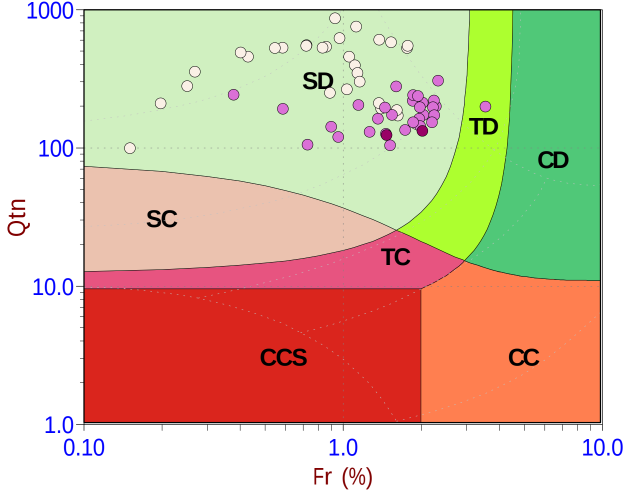
Job No: 20-61-20766
Date: 2020-04-18 10:02
Site: Raymond Road, Verona, WI

Sounding: CPT20-14B
Cone: 640:T1500F15U500

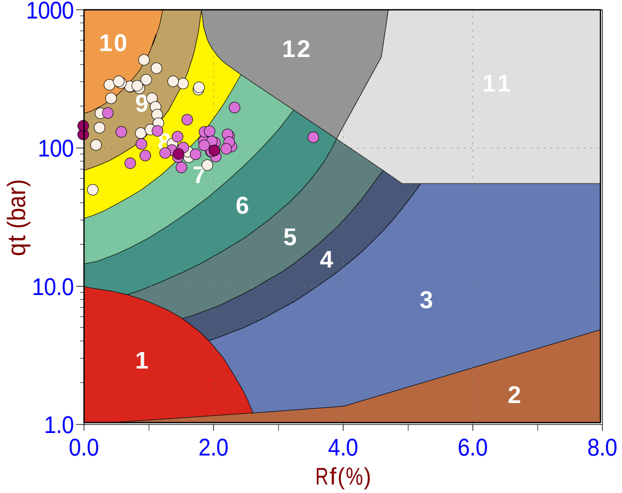
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

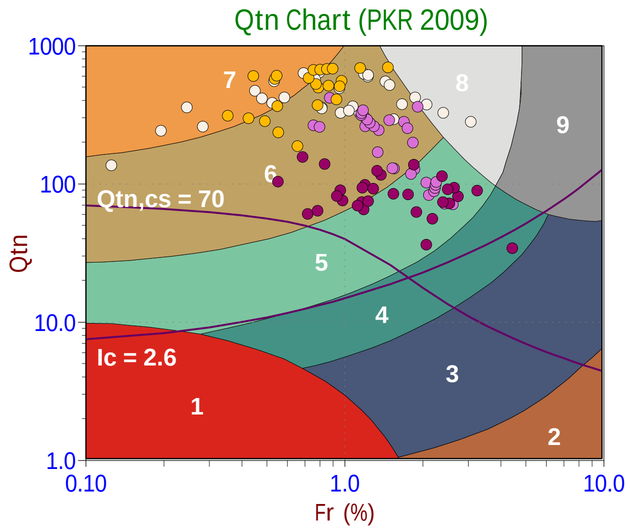
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:20
Site: Raymond Road, Verona, WI

Sounding: CPT20-14C
Cone: 640:T1500F15U500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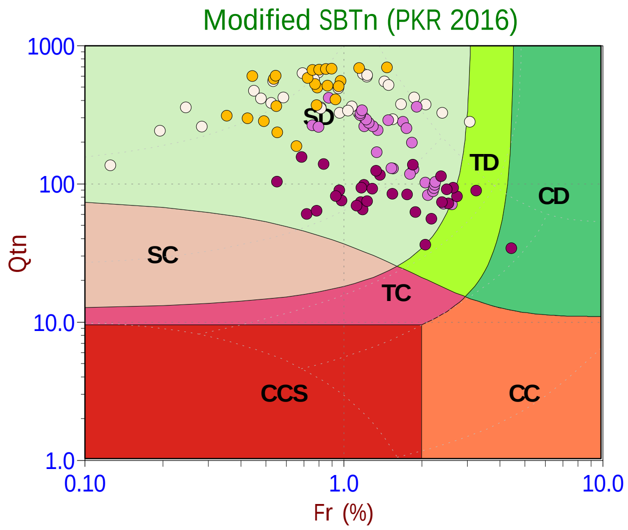
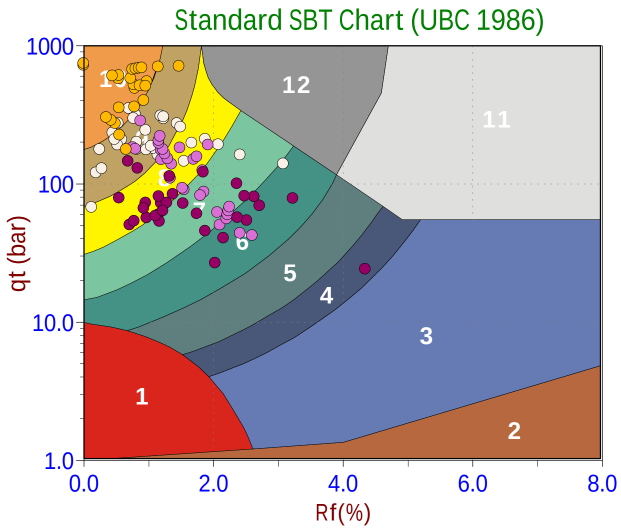

Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

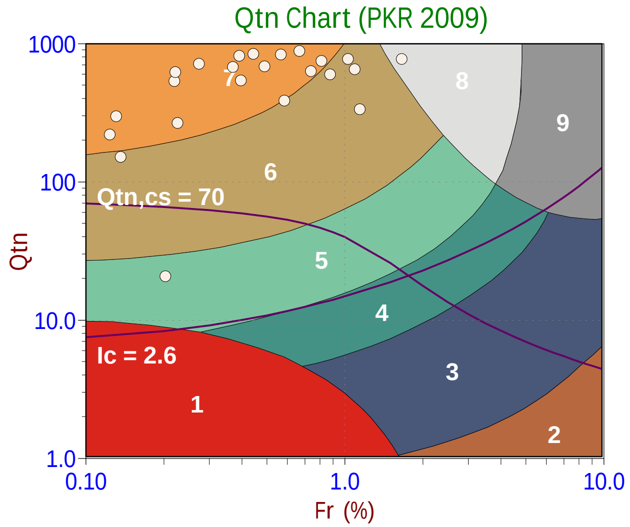
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

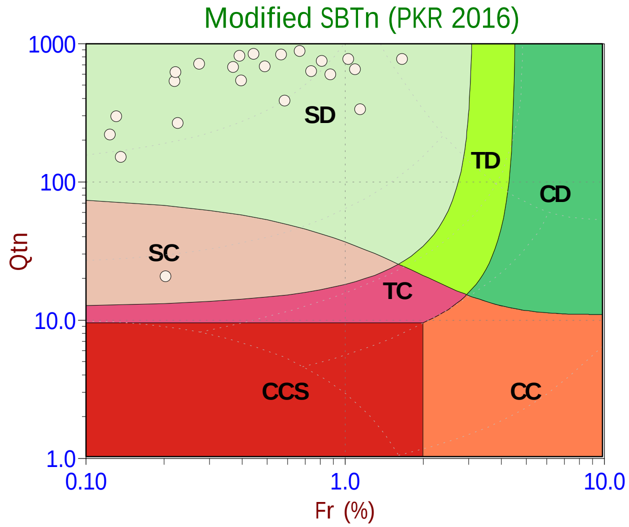
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 10:50
Site: Raymond Road, Verona, WI

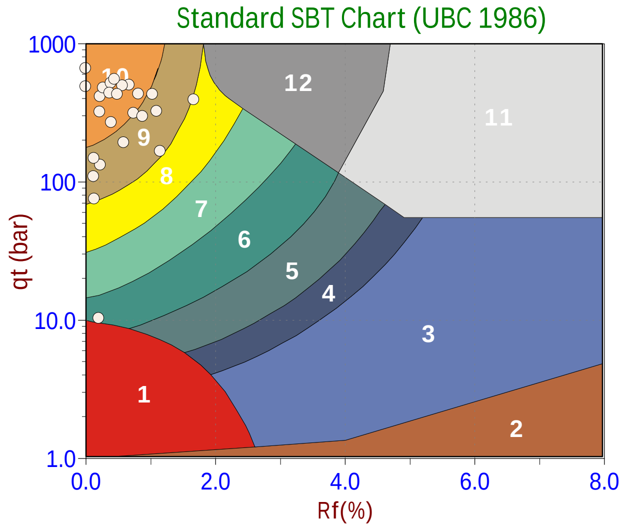
Sounding: CPT20-15
Cone: 640:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

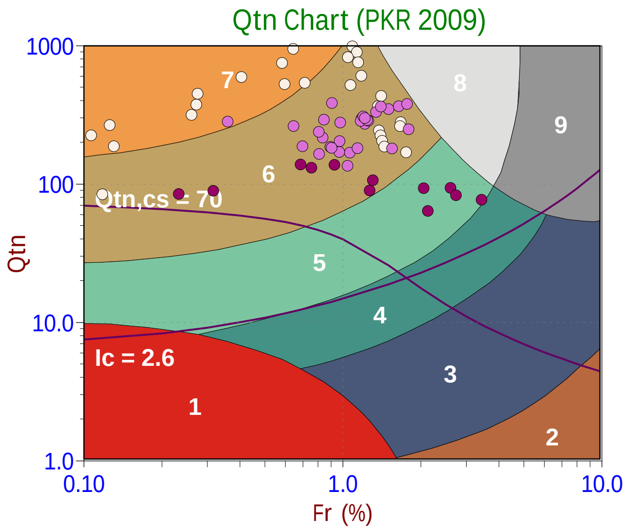
Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

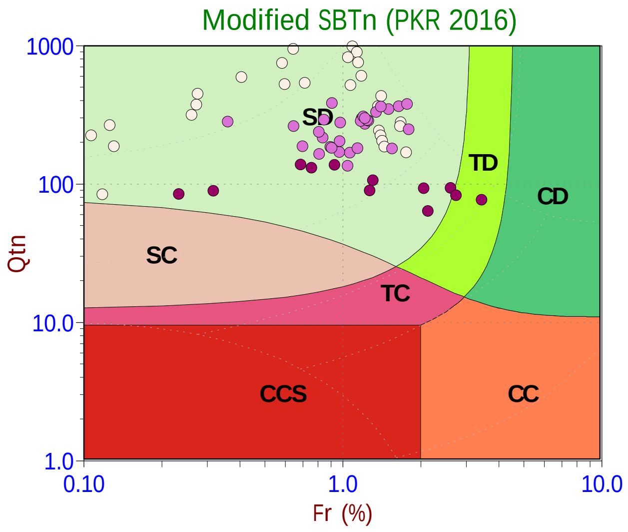
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 11:00
Site: Raymond Road, Verona, WI

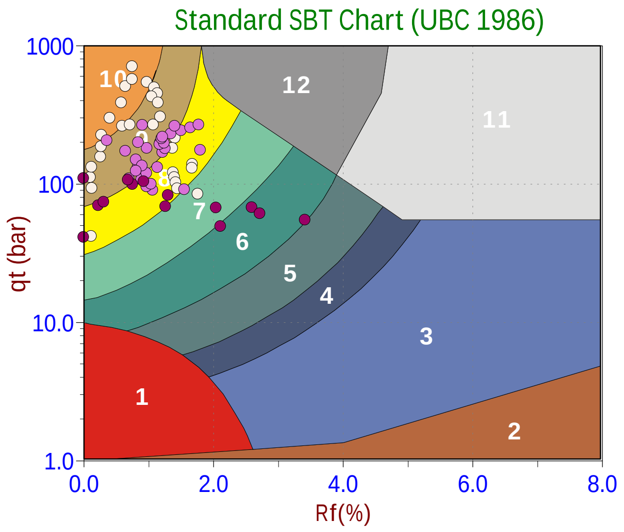
Sounding: CPT20-15B
Cone: 640:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

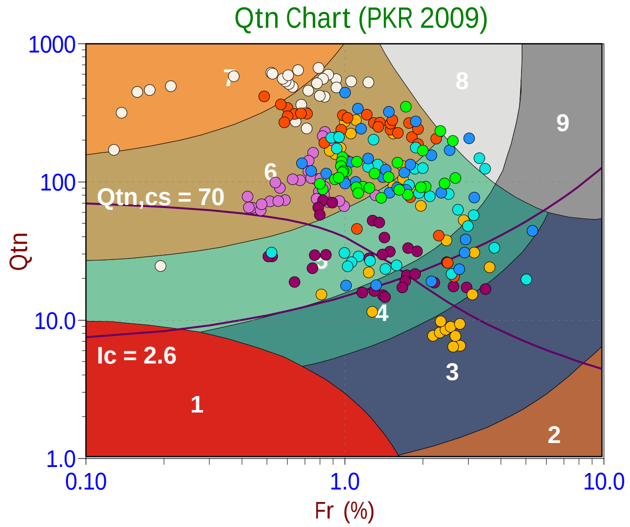
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

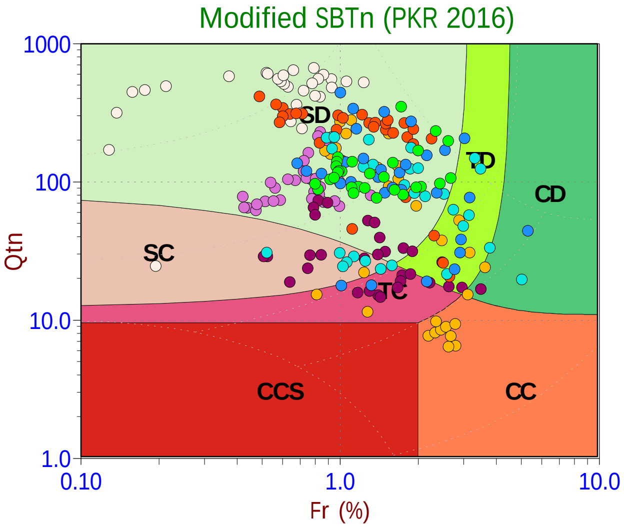
CONETEC

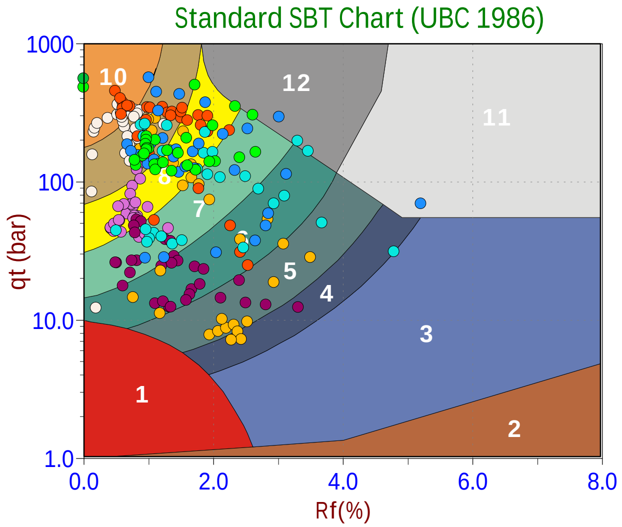
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 11:24
Site: Raymond Road, Verona, WI

Sounding: CPT20-16
Cone: 640:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- 🟩 Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ■ Cemented Sand

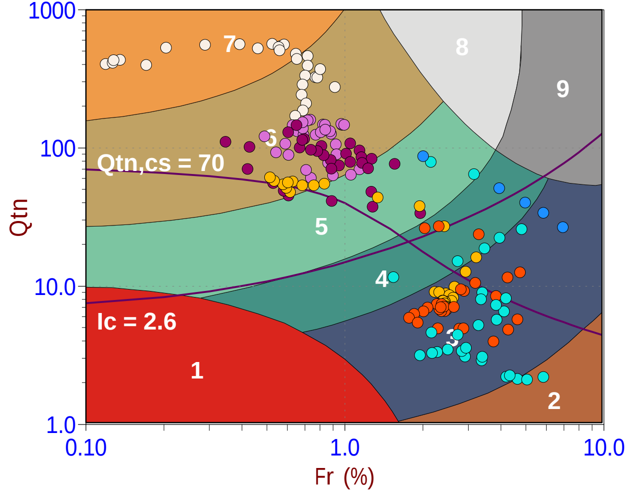
CONETEC

Barr Engineering

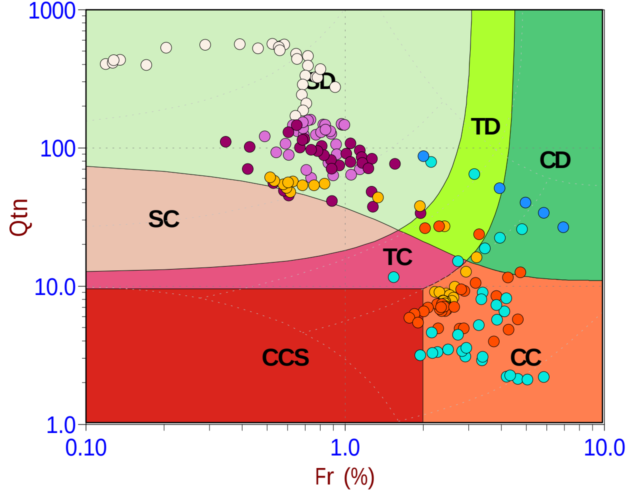
Job No: 20-61-20766
Date: 2020-04-18 12:03
Site: Raymond Road, Verona, WI

Sounding: CPT20-17
Cone: 640:T1500F15U500

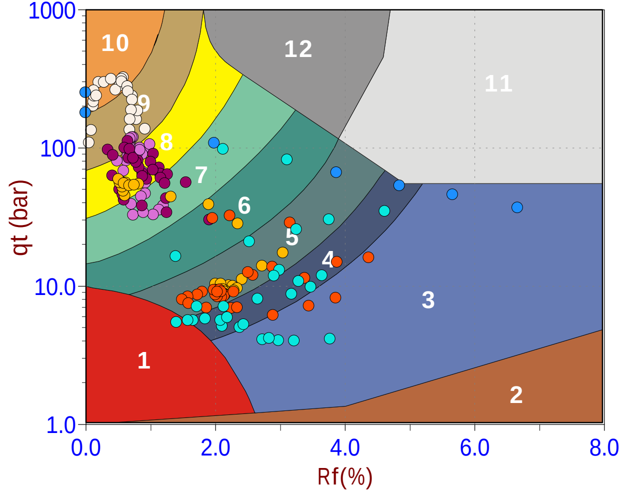
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- 🟩 Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

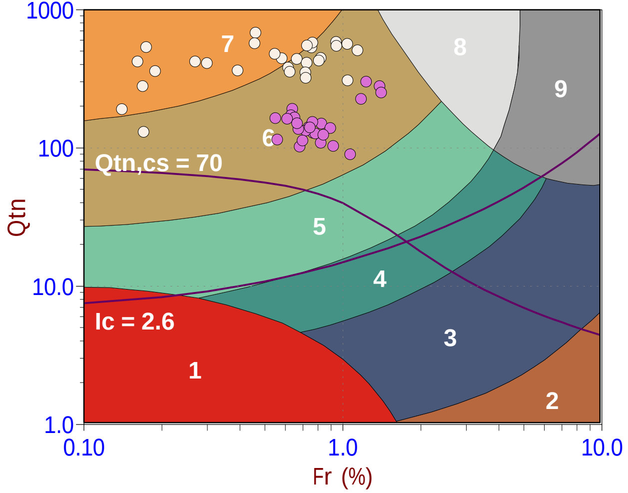
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ■ Cemented Sand

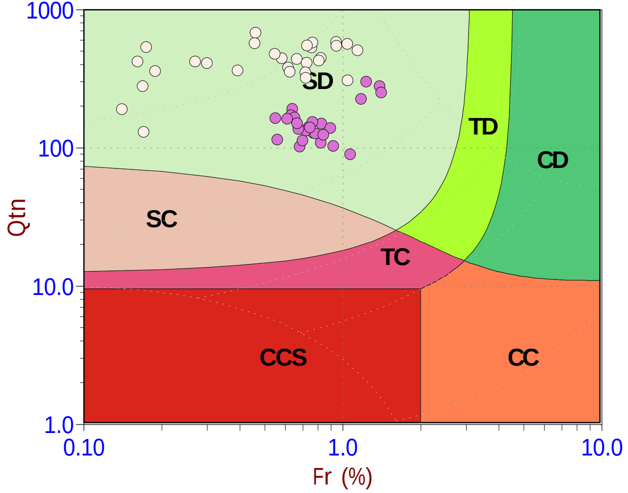
CONETEC

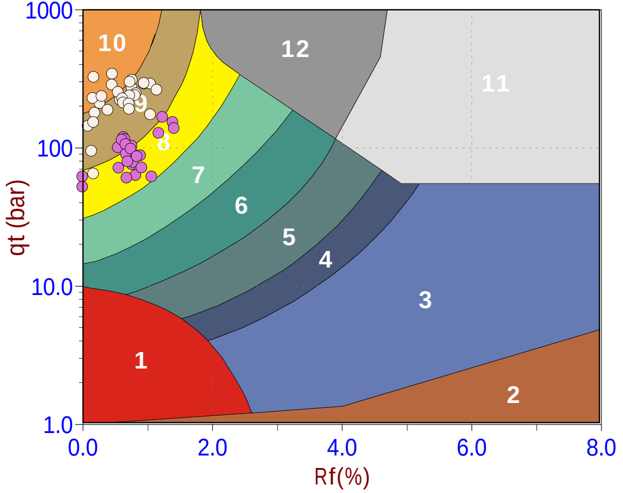
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:35
Site: Raymond Road, Verona, WI

Sounding: CPT20-18
Cone: 640:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

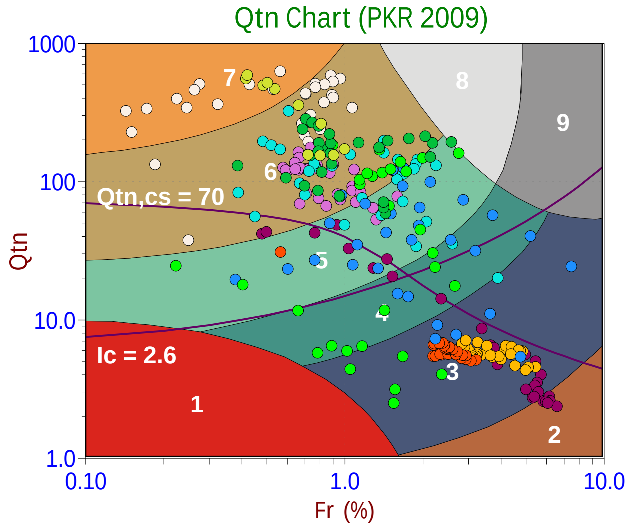
Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

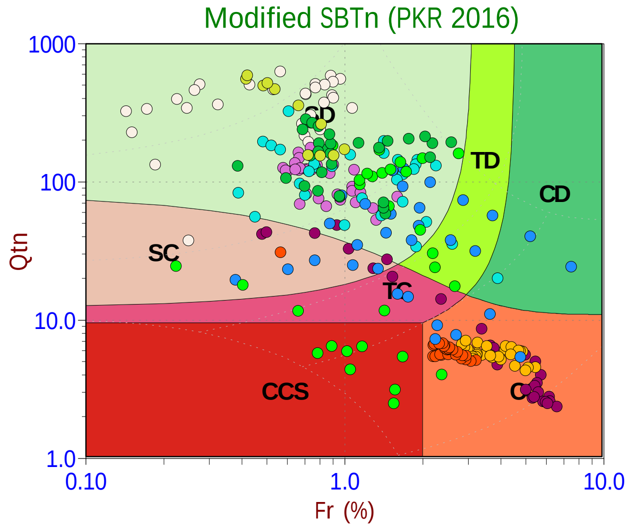
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 12:47
Site: Raymond Road, Verona, WI

Sounding: CPT20-19
Cone: 640:T1500F15U500


Qtn Chart (PKR 2009)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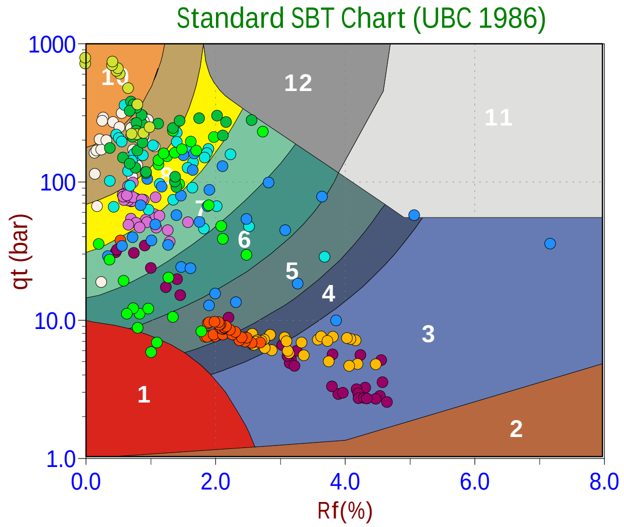

Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

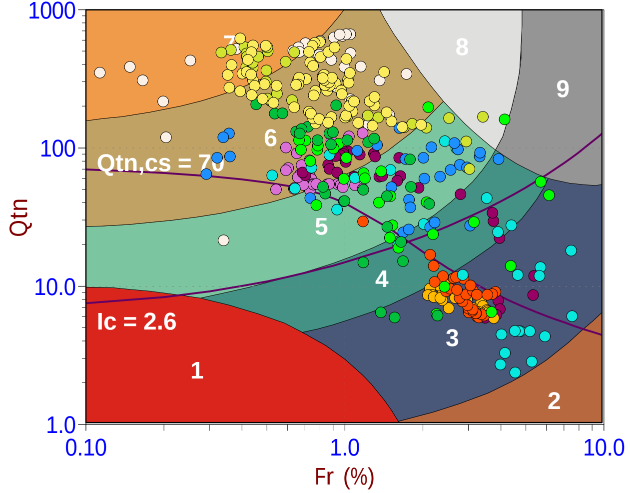
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Barr Engineering

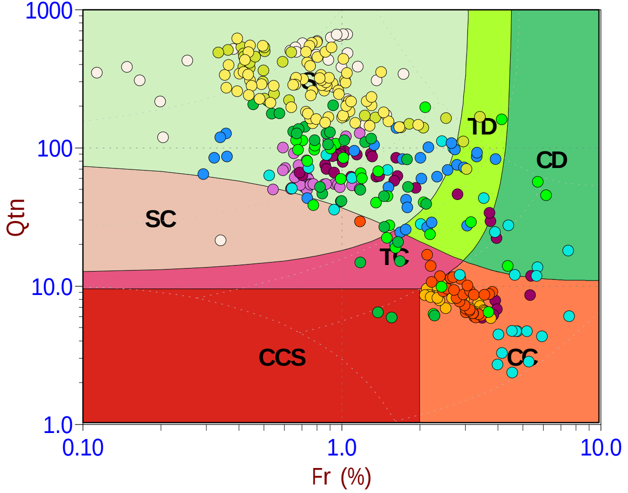
Job No: 20-61-20766
Date: 2020-04-18 13:27
Site: Raymond Road, Verona, WI

Sounding: CPT20-20
Cone: 640:T1500F15U500

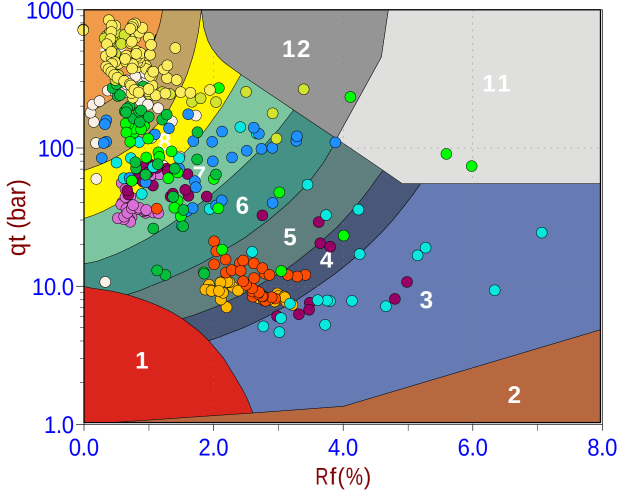
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

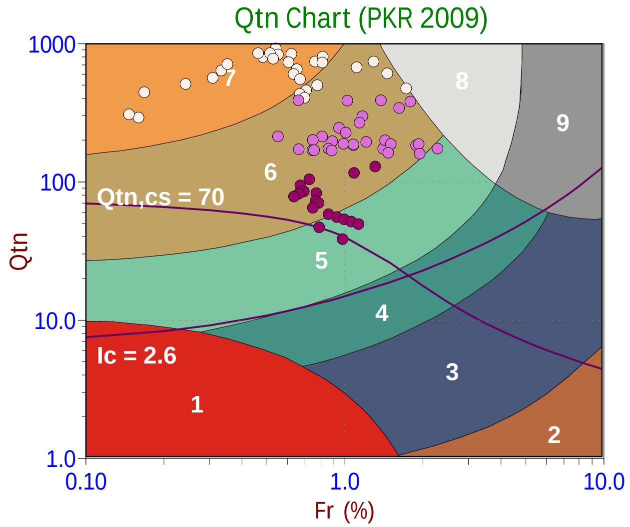
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- 🟩 Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

CONETEC

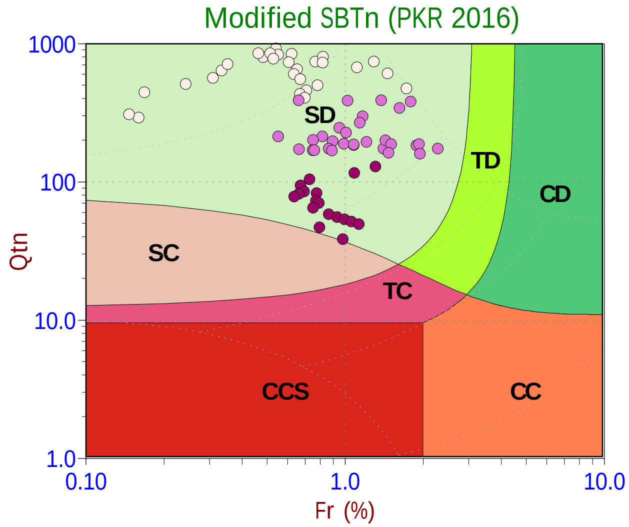
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 14:19
Site: Raymond Road, Verona, WI

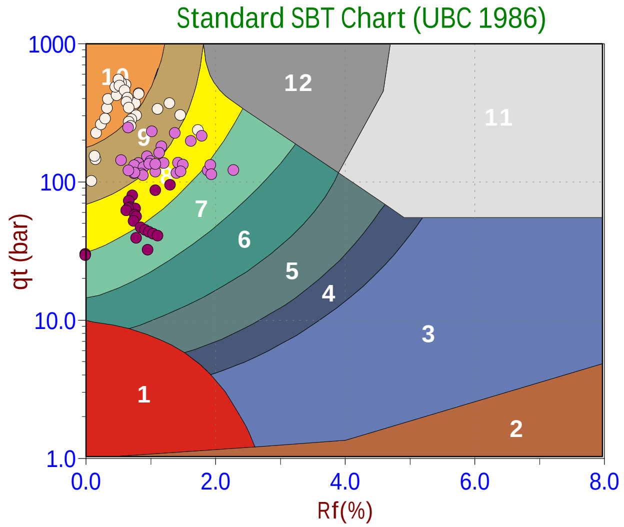
Sounding: CPT20-21
Cone: 640:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

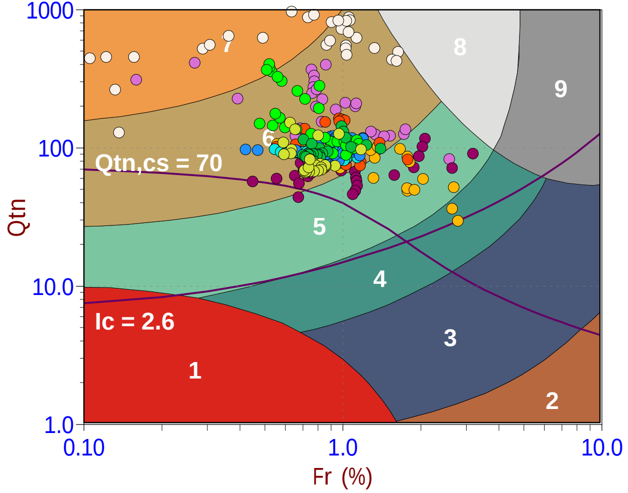
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

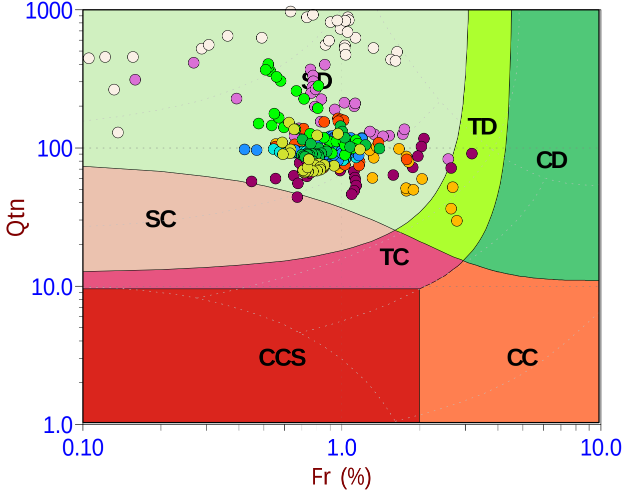
CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 14:42
Site: Raymond Road, Verona, WI

Sounding: CPT20-22
Cone: 640:T1500F15U500


Qtn Chart (PKR 2009)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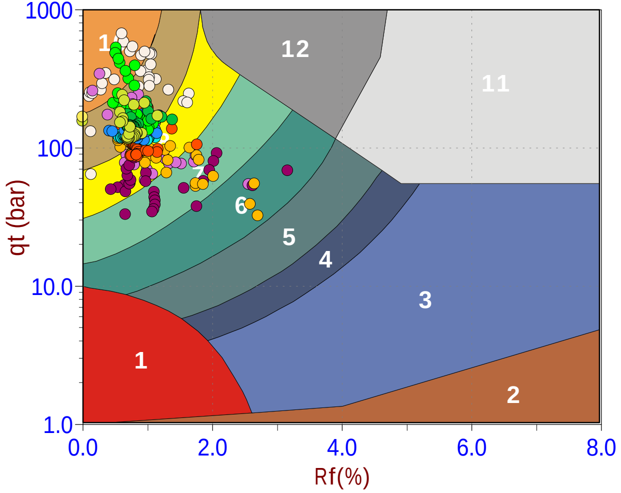
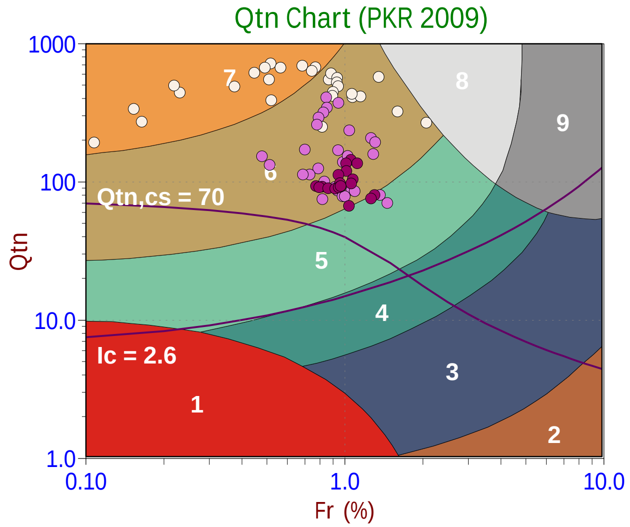

Standard SBT Chart (UBC 1986)

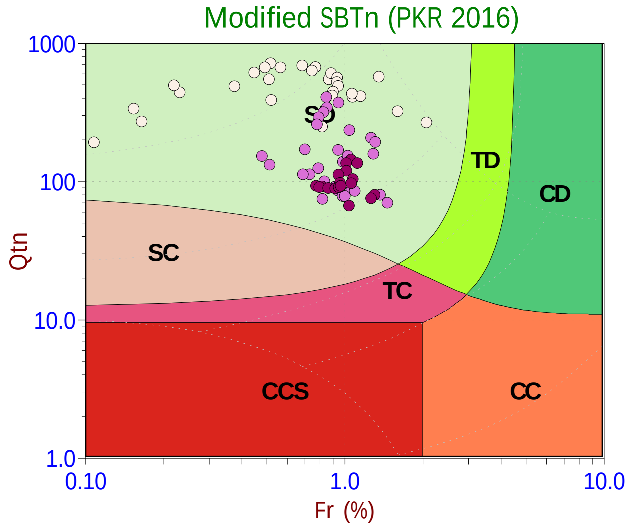
Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand


Qtn Chart (PKR 2009)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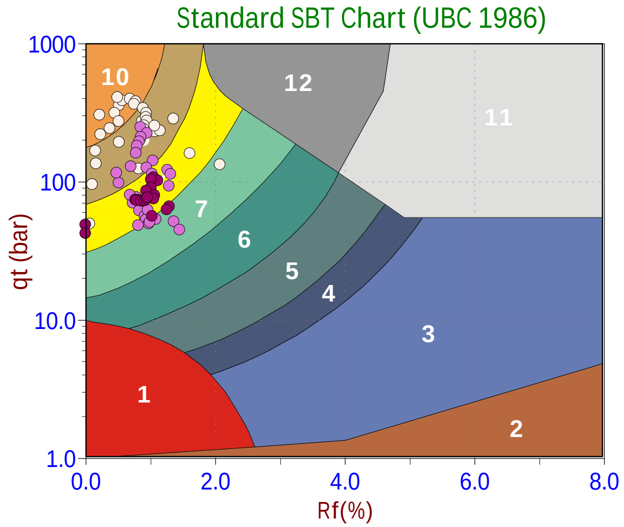

Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

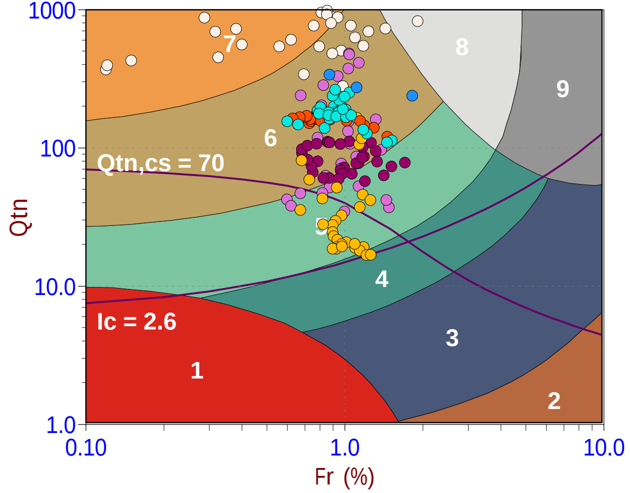
CONETEC

Barr Engineering

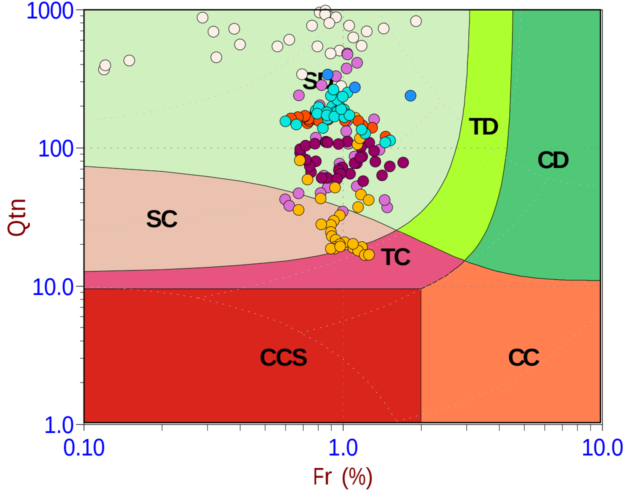
Job No: 20-61-20766
Date: 2020-04-18 17:26
Site: Raymond Road, Verona, WI

Sounding: CPT20-24
Cone: 640:T1500F15U500

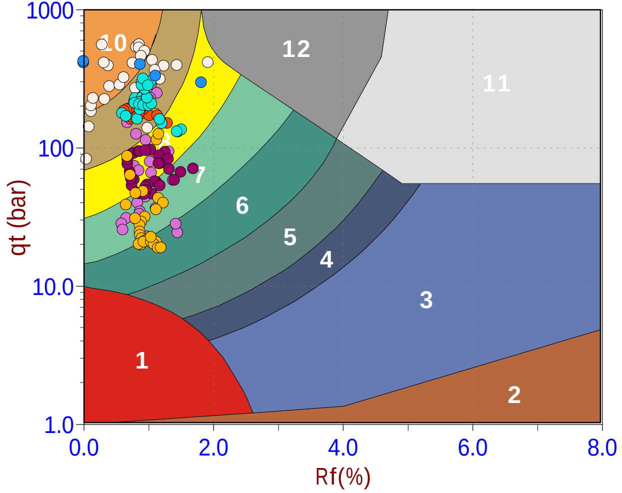
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

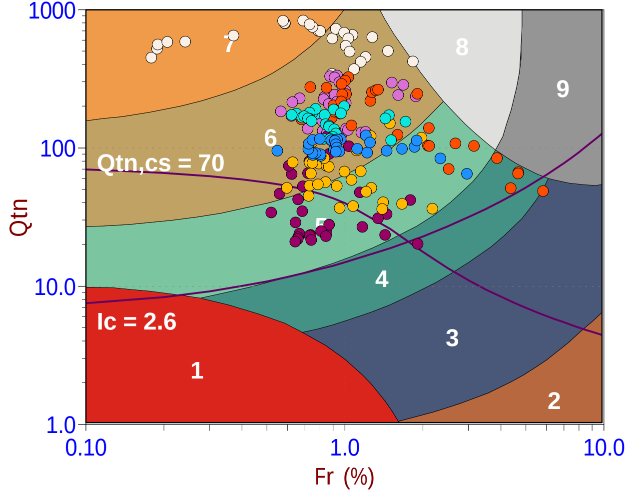
CONETEC

Barr Engineering

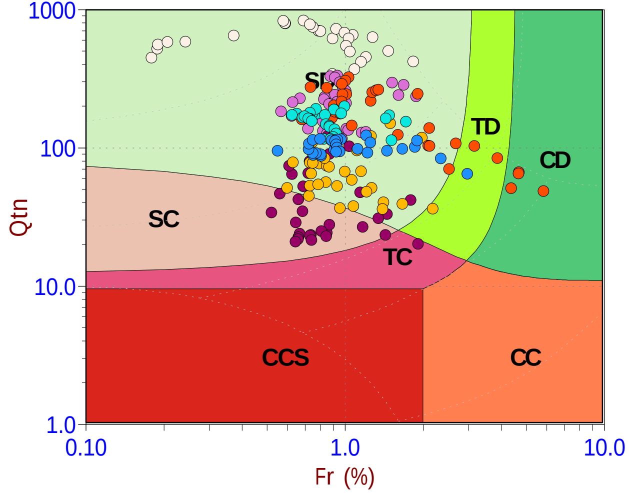
Job No: 20-61-20766
Date: 2020-04-18 17:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-25
Cone: 640:T1500F15U500

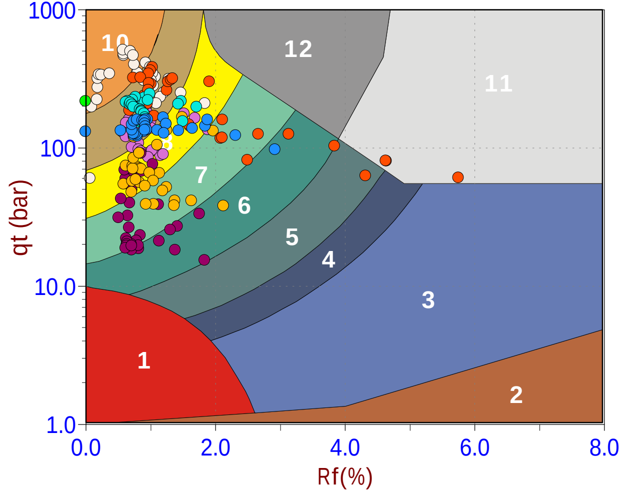
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ⚪ >0.0 to 5.0 ft
- 🟣 >5.0 to 10.0 ft
- 🟣 >10.0 to 15.0 ft
- 🟡 >15.0 to 20.0 ft
- 🟠 >20.0 to 25.0 ft
- 🔵 >25.0 to 30.0 ft
- 🔵 >30.0 to 35.0 ft
- 🟢 >35.0 to 40.0 ft
- 🟢 >40.0 to 45.0 ft
- 🟡 >45.0 to 50.0 ft
- 🟡 >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

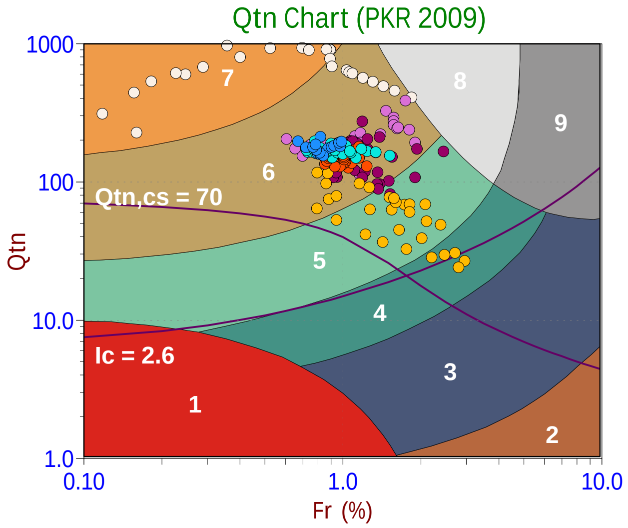
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

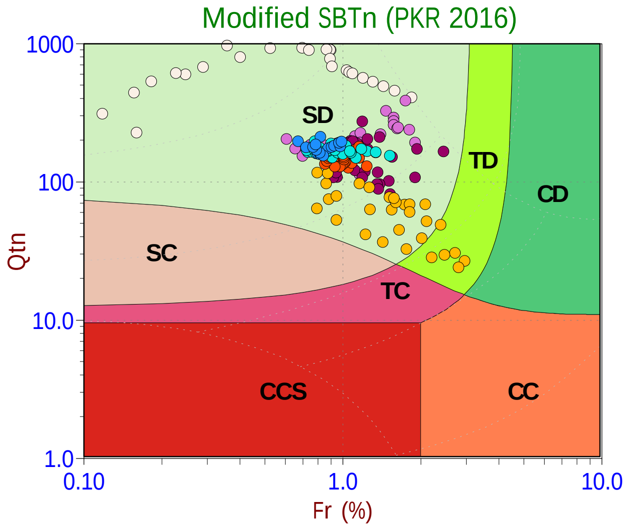
CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 18:38
Site: Raymond Road, Verona, WI

Sounding: SCPT20-26
Cone: 640:T1500F15U500


Qtn Chart (PKR 2009)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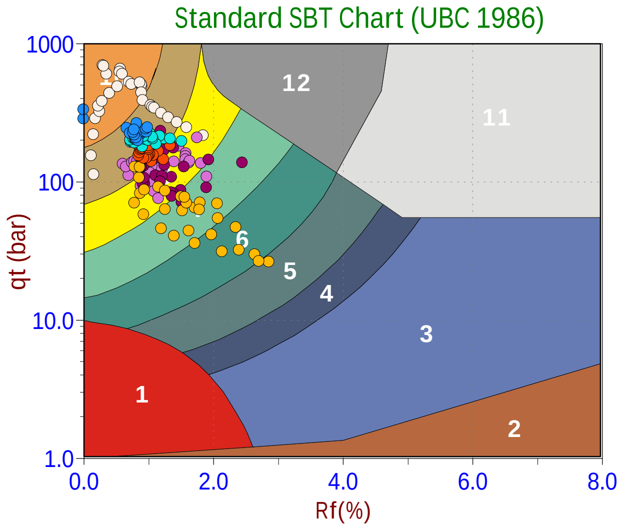

Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

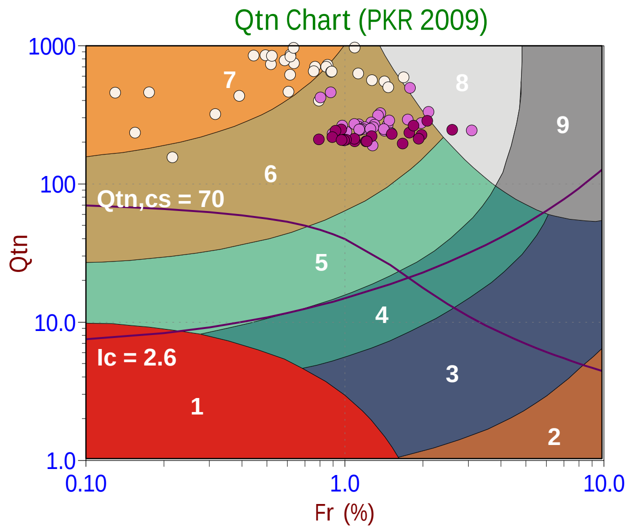
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

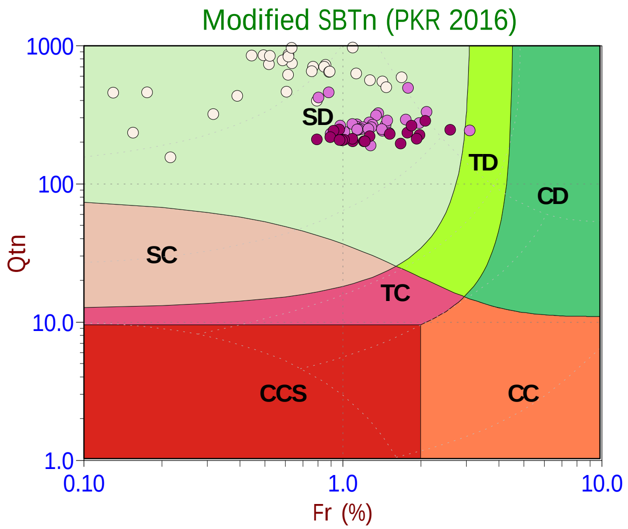
CONETEC

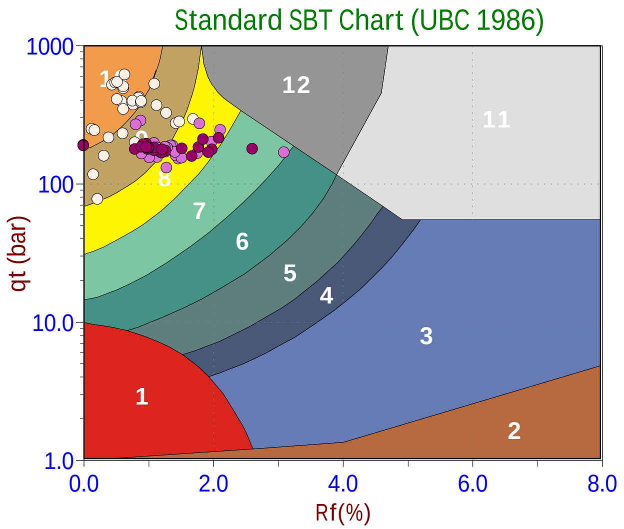
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 19:34
Site: Raymond Road, Verona, WI

Sounding: CPT20-27
Cone: 640:T1500F15U500







Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

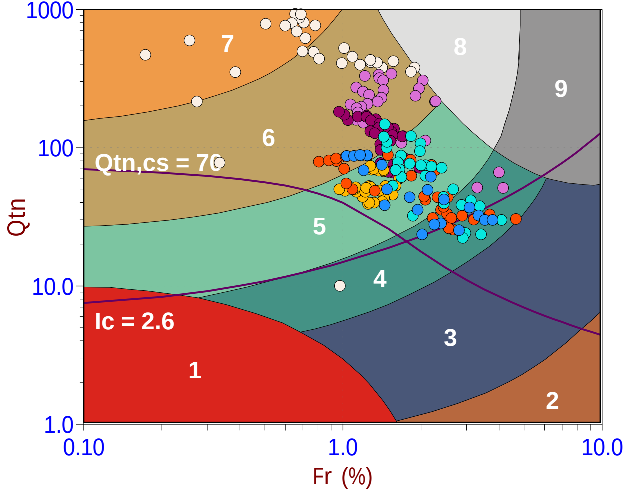
CONETEC

Barr Engineering

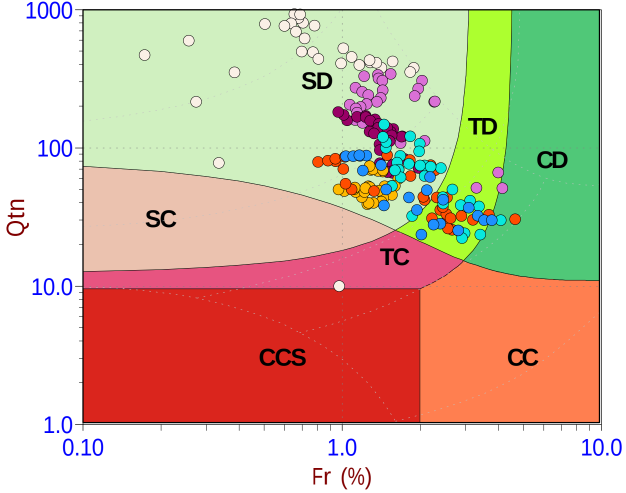
Job No: 20-61-20766
Date: 2020-04-19 08:58
Site: Raymond Road, Verona, WI

Sounding: CPT20-28
Cone: 640:T1500F15U500

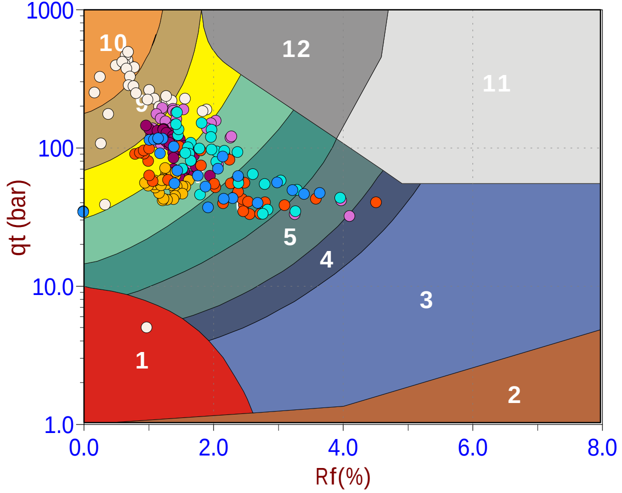
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

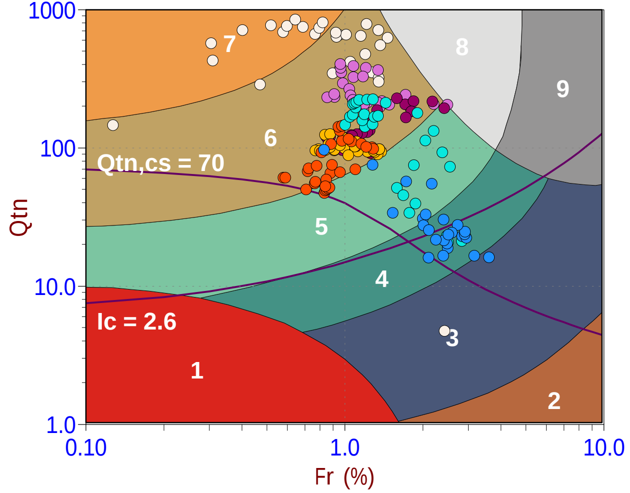
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Barr Engineering

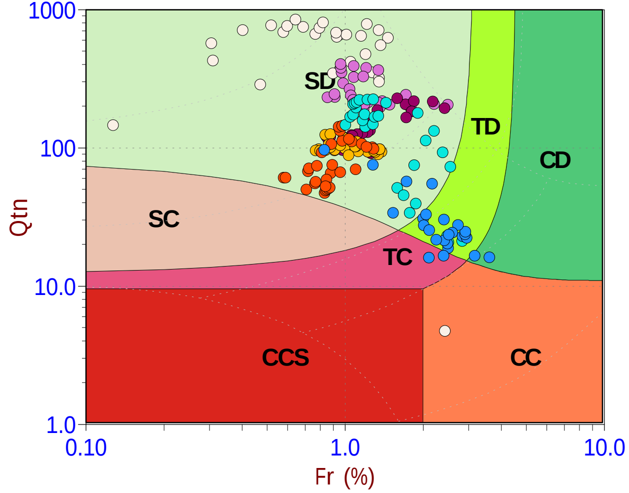
Job No: 20-61-20766
Date: 2020-04-19 08:25
Site: Raymond Road, Verona, WI

Sounding: CPT20-29
Cone: 640:T1500F15U500

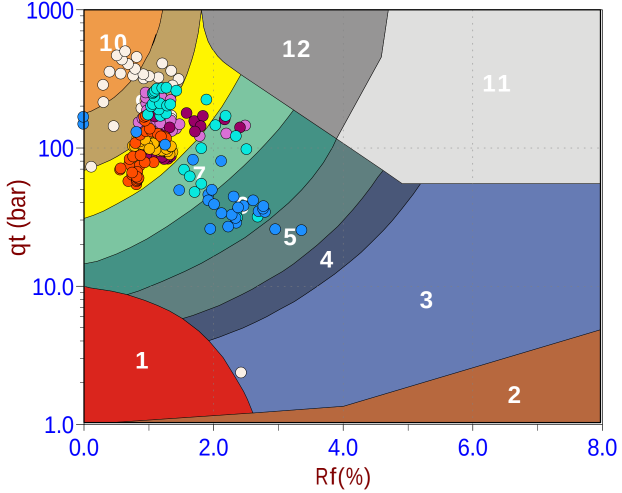
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

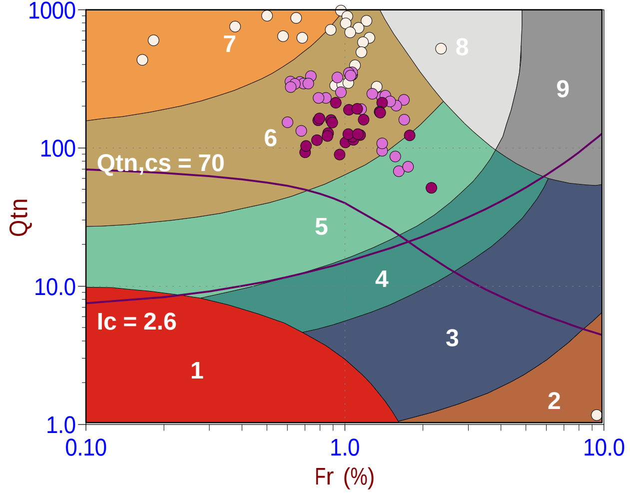
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

ConeTec

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-18 20:01
Site: Raymond Road, Verona, WI

Sounding: CPT20-30
Cone: 640:T1500F15U500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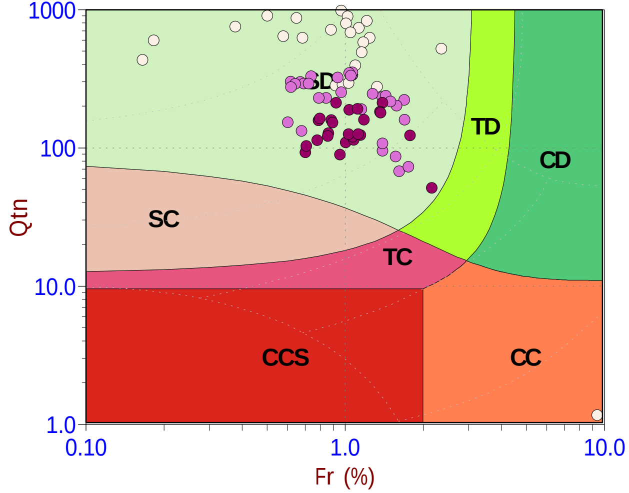
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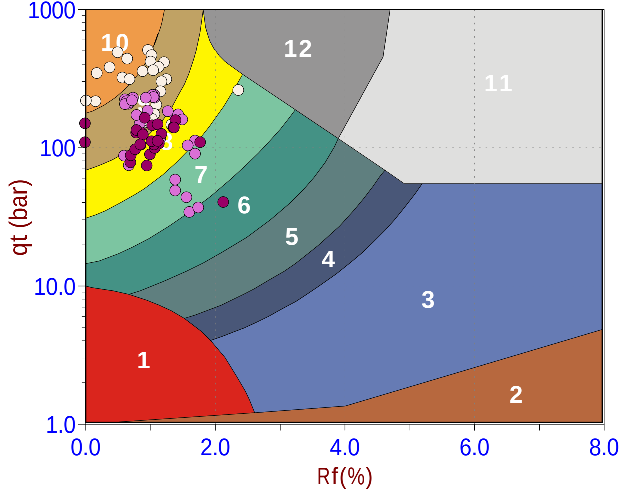

Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

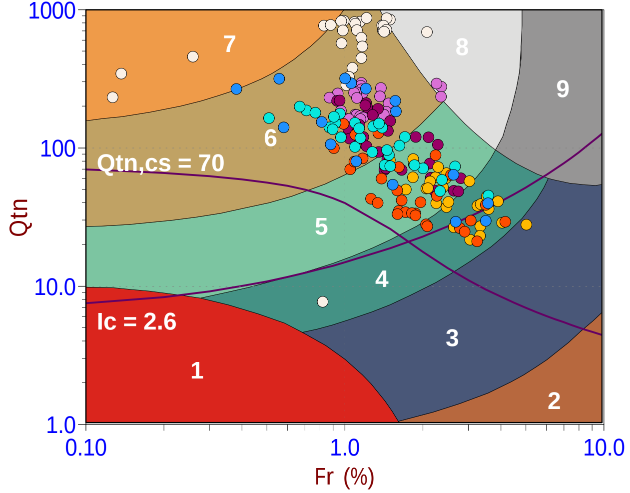
CONETEC

Barr Engineering

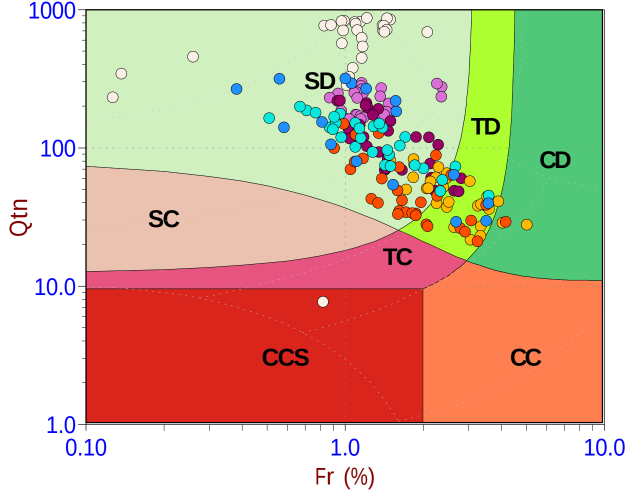
Job No: 20-61-20766
Date: 2020-04-19 09:30
Site: Raymond Road, Verona, WI

Sounding: SCPT20-31
Cone: 640:T1500F15U500

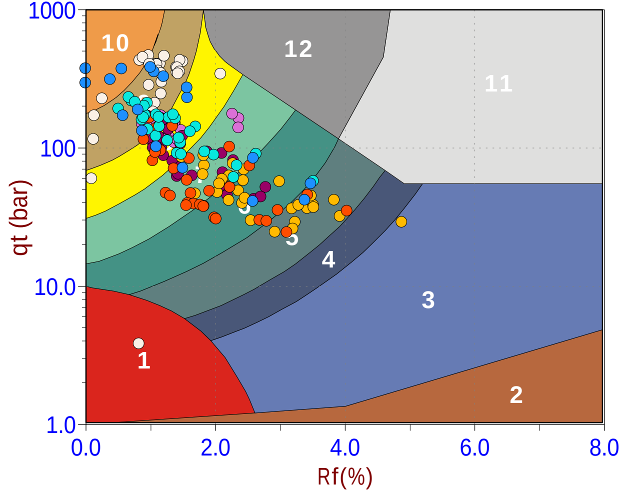
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟧 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

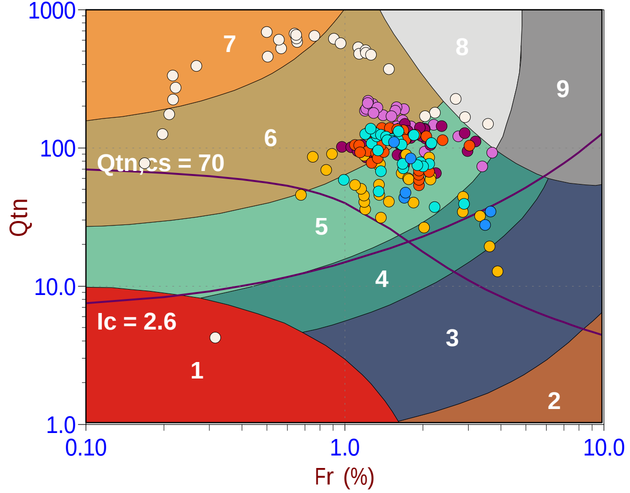
CONETEC

Barr Engineering

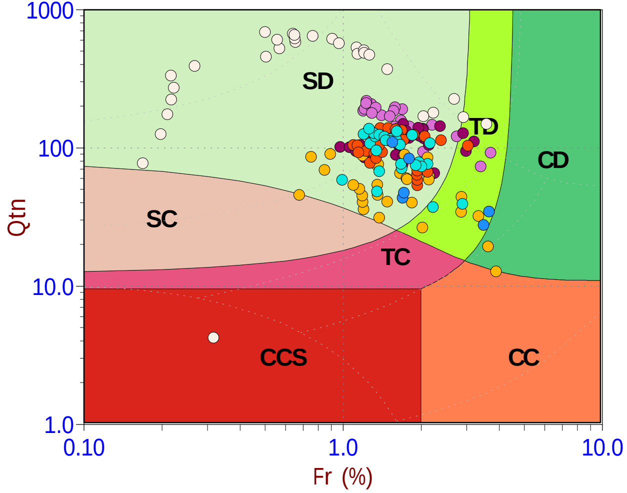
Job No: 20-61-20766
Date: 2020-04-19 10:45
Site: Raymond Road, Verona, WI

Sounding: CPT20-32
Cone: 568:T1500F15U500

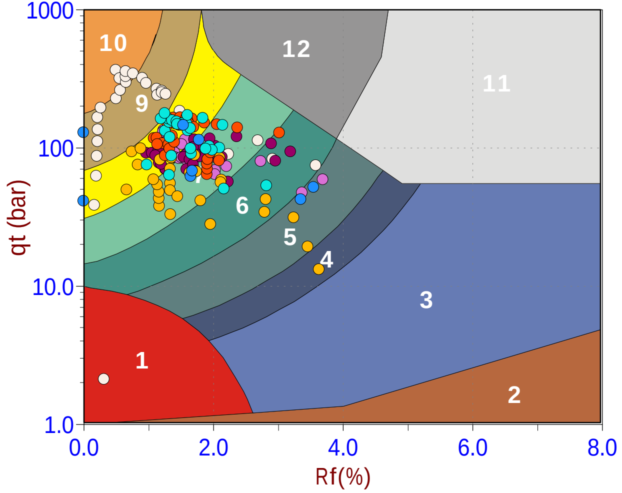
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

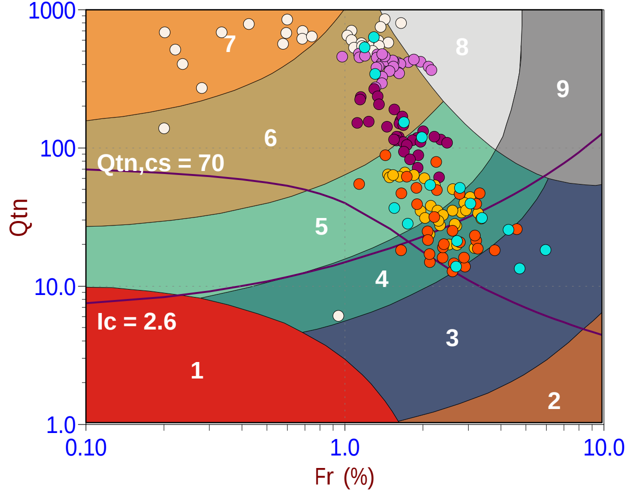
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

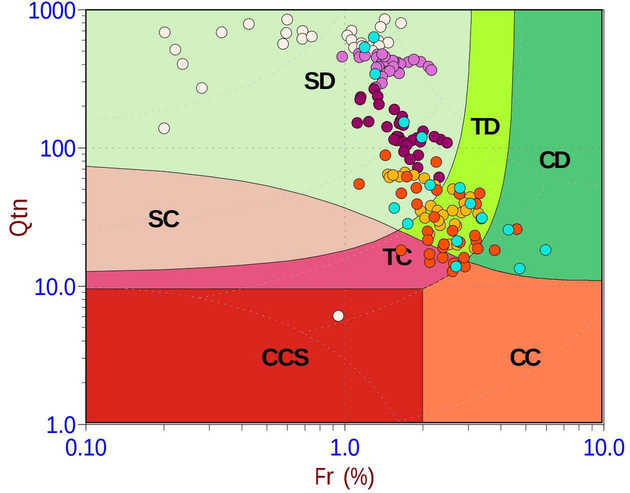
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 11:22
Site: Raymond Road, Verona, WI

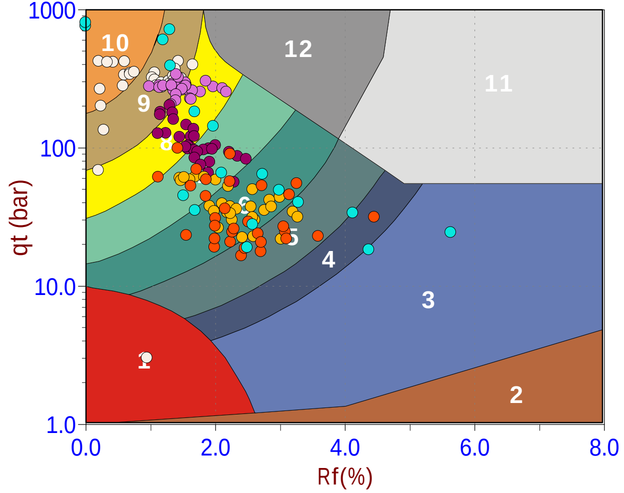
Sounding: CPT20-33
Cone: 568:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

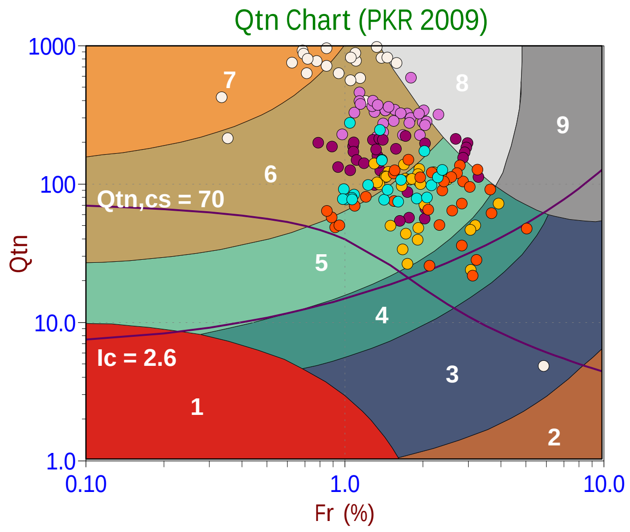
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

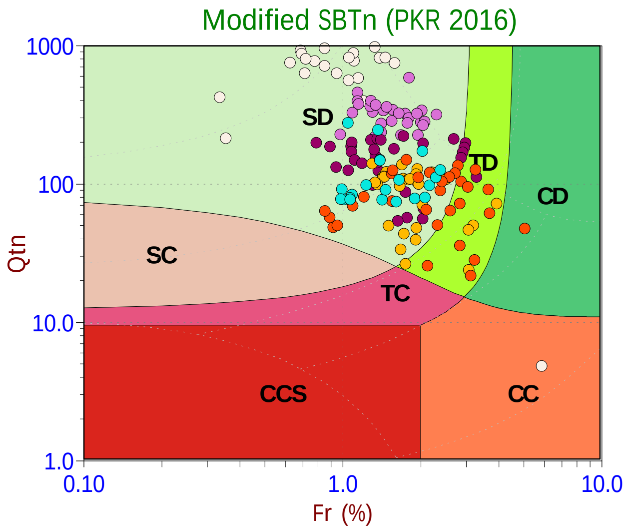
CONETEC

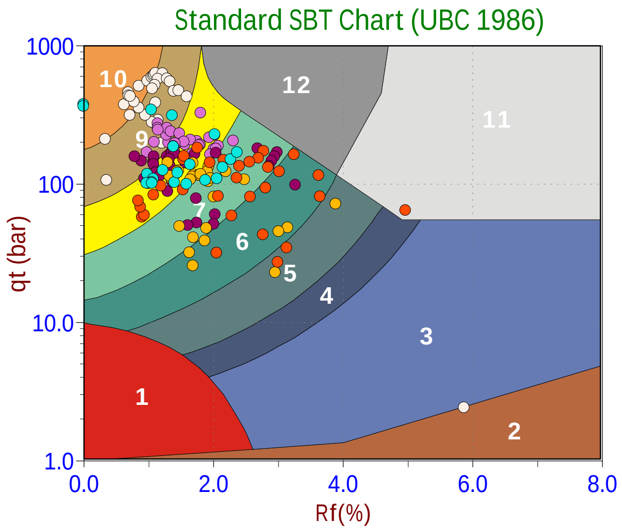
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 11:53
Site: Raymond Road, Verona, WI

Sounding: CPT20-34
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

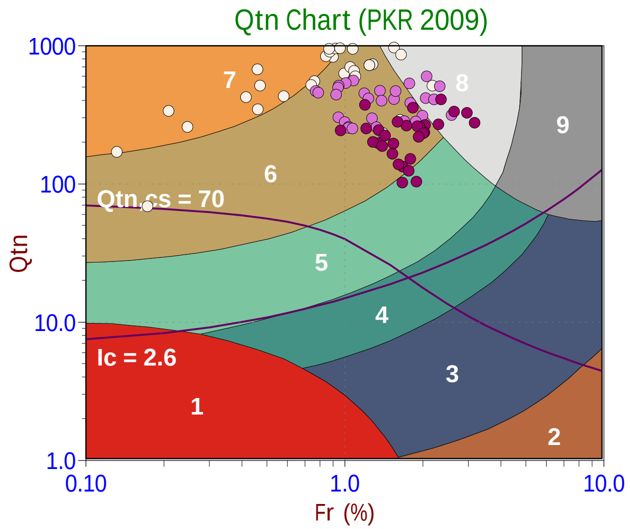
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

CONETEC

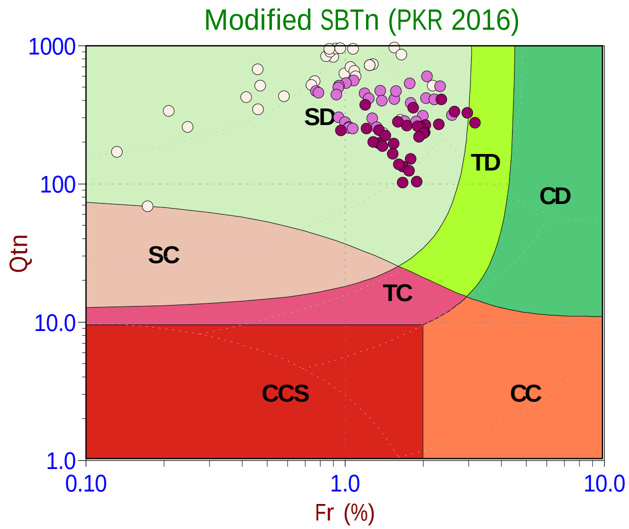
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 12:22
Site: Raymond Road, Verona, WI

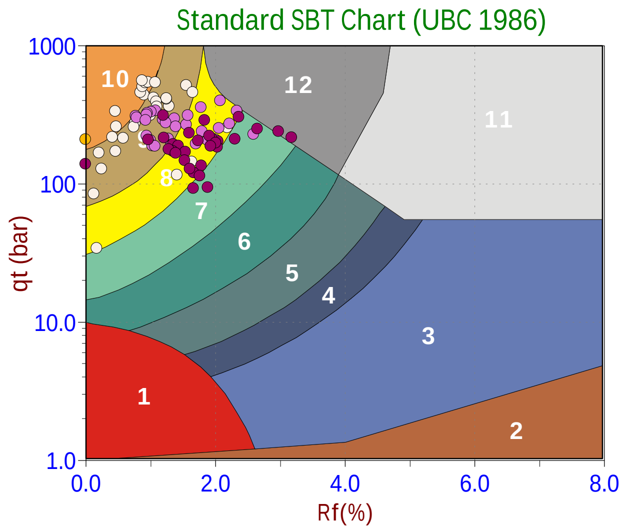
Sounding: CPT20-35
Cone: 568:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

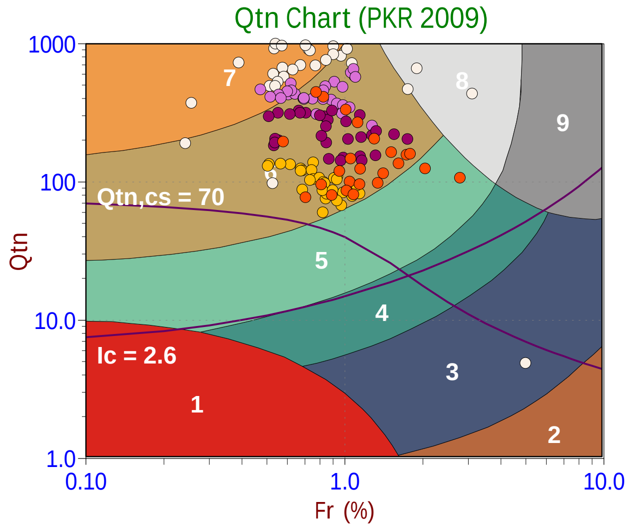
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

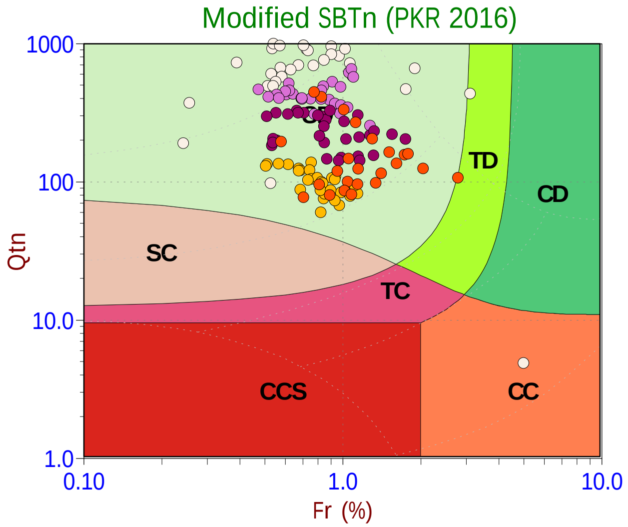
CONETEC

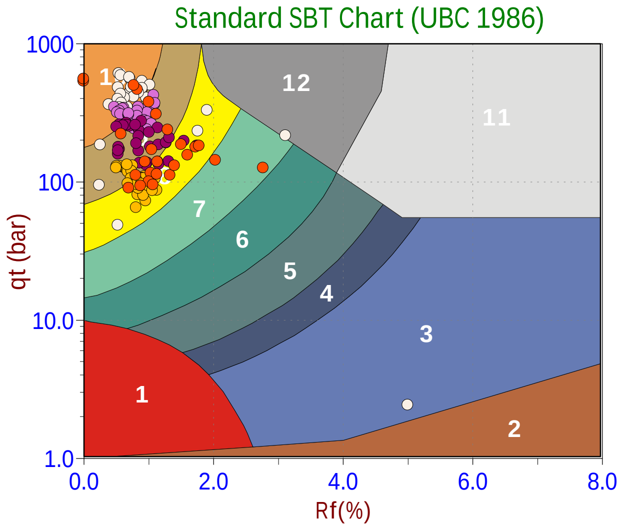
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 12:52
Site: Raymond Road, Verona, WI

Sounding: CPT20-36
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

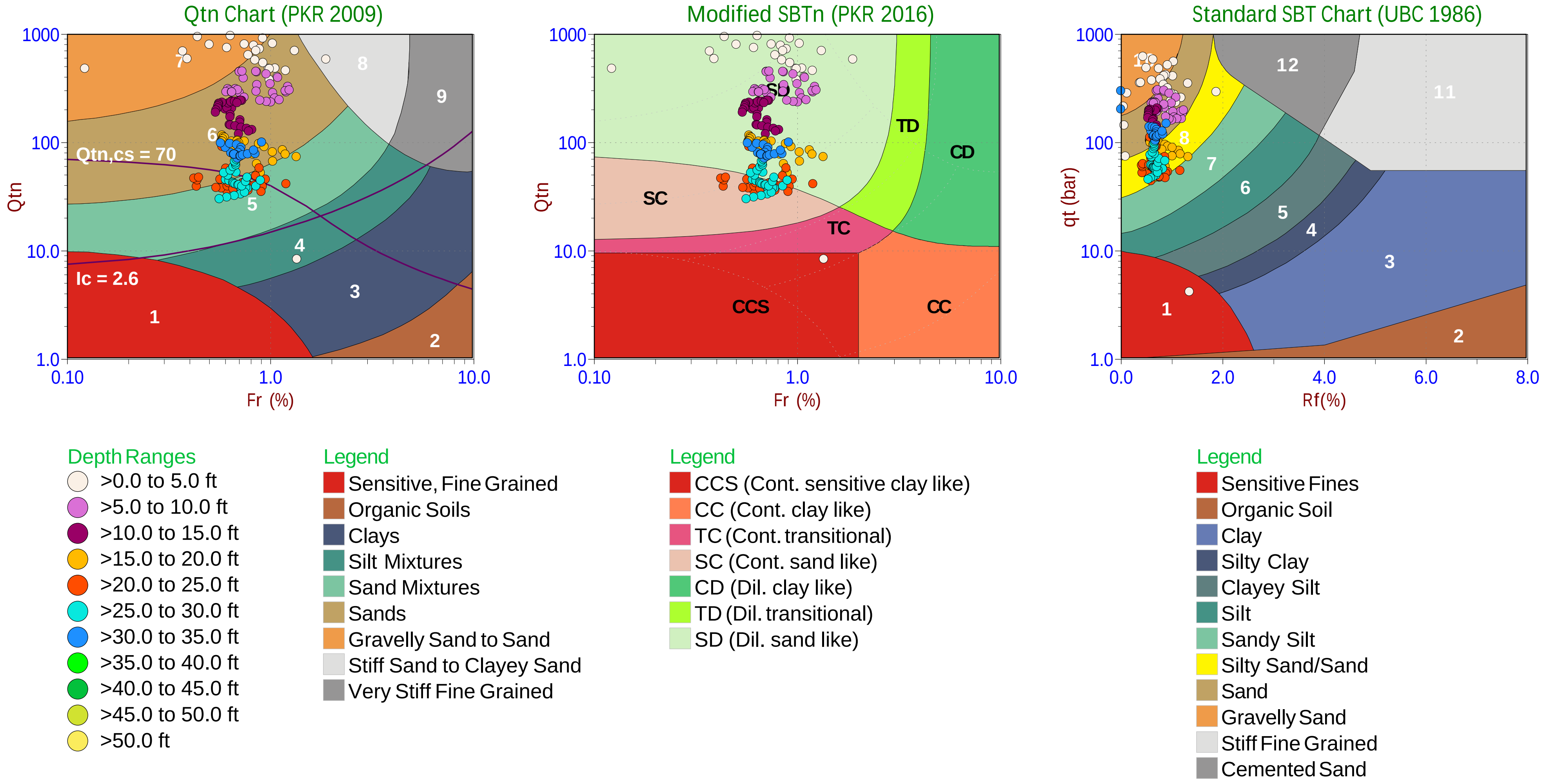
Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 13:28
Site: Raymond Road, Verona, WI

Sounding: SCPT20-37
Cone: 568:T1500F15U500

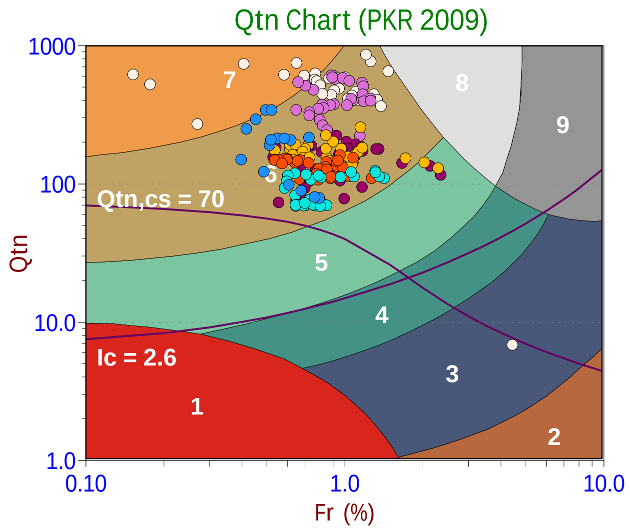


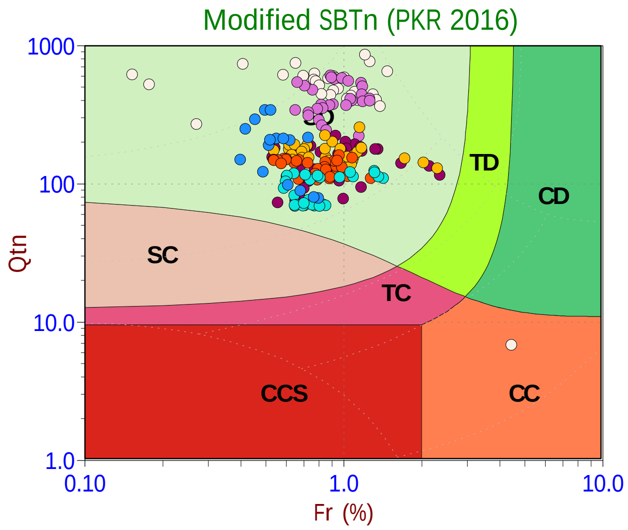
CONETEC

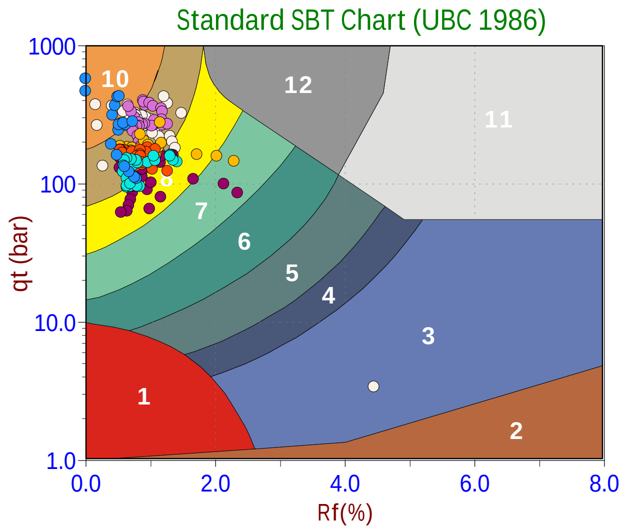
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 14:51
Site: Raymond Road, Verona, WI

Sounding: CPT20-38
Cone: 568:T1500F15U500







Depth Ranges
- >0.0 to 5.0 ft
- >5.0 to 10.0 ft
- >10.0 to 15.0 ft
- >15.0 to 20.0 ft
- >20.0 to 25.0 ft
- >25.0 to 30.0 ft
- >30.0 to 35.0 ft
- >35.0 to 40.0 ft
- >40.0 to 45.0 ft
- >45.0 to 50.0 ft
- >50.0 ft

Legend
- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend
- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend
- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

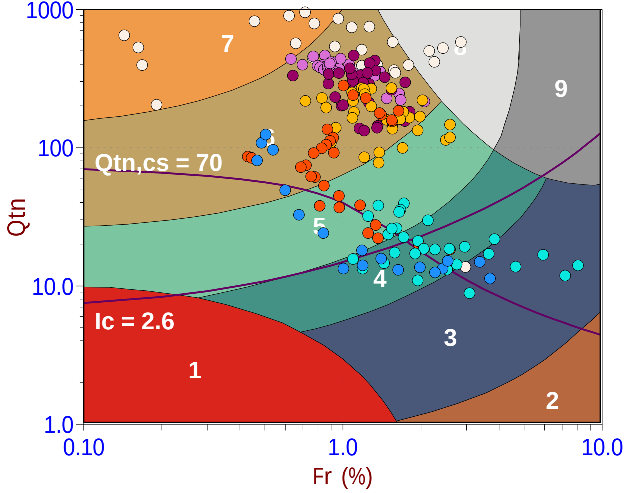
CONETEC

Barr Engineering

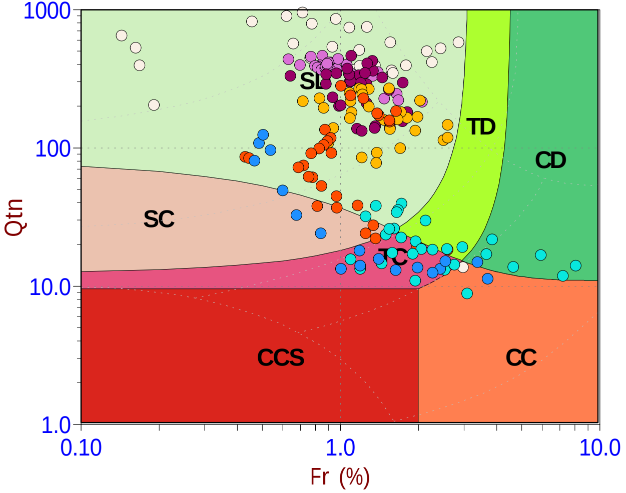
Job No: 20-61-20766
Date: 2020-04-19 15:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-39
Cone: 568:T1500F15U500

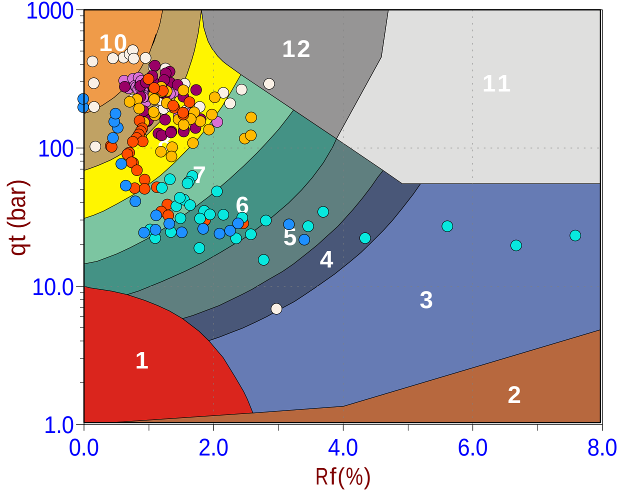
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

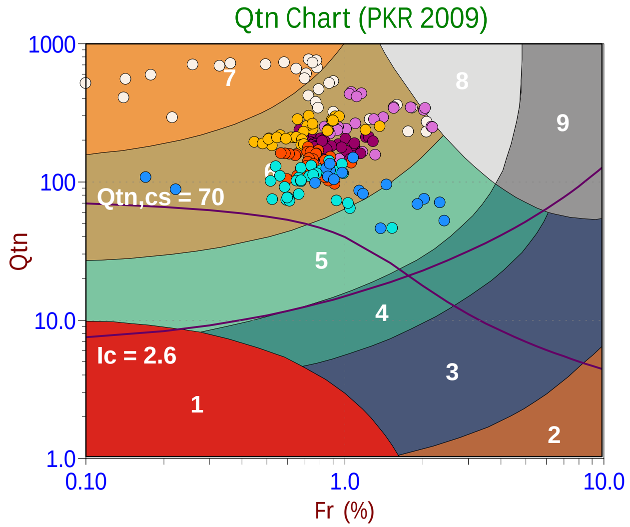
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

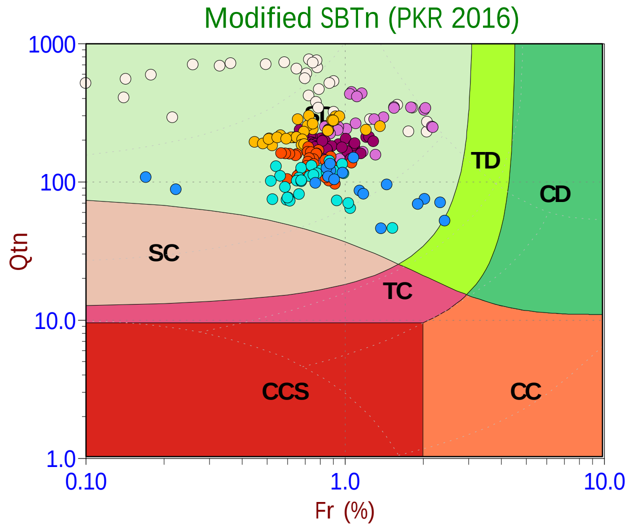
CONETEC

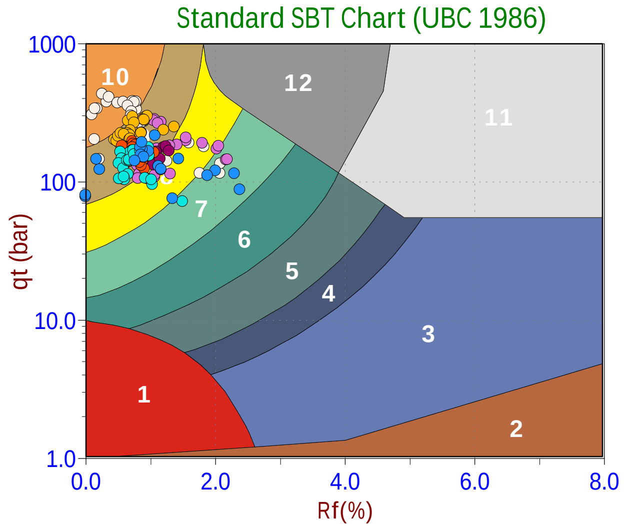
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 16:01
Site: Raymond Road, Verona, WI

Sounding: CPT20-40
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟧 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

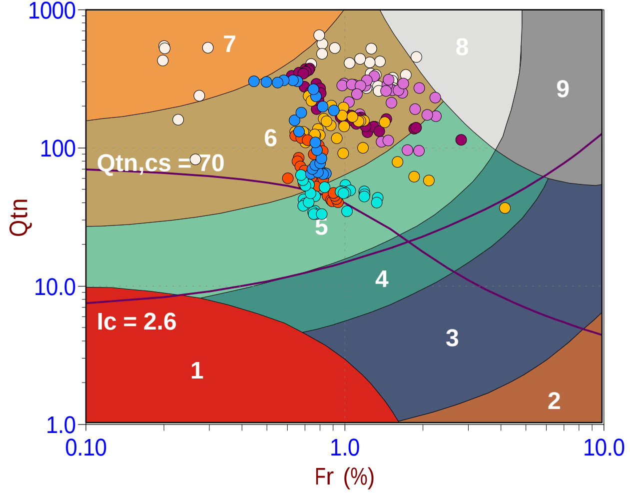
CONETEC

Barr Engineering

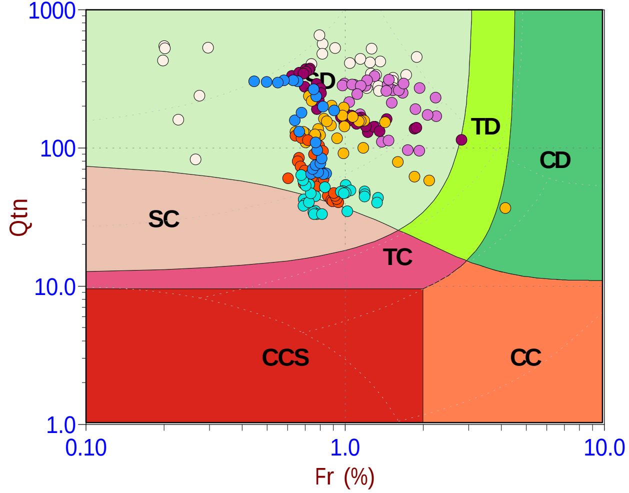
Job No: 20-61-20766
Date: 2020-04-19 16:32
Site: Raymond Road, Verona, WI

Sounding: SCPT20-41
Cone: 568:T1500F15U500

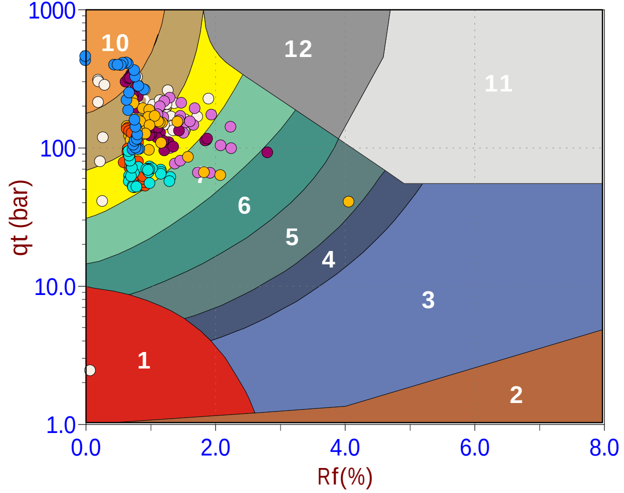
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- 🟩 Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

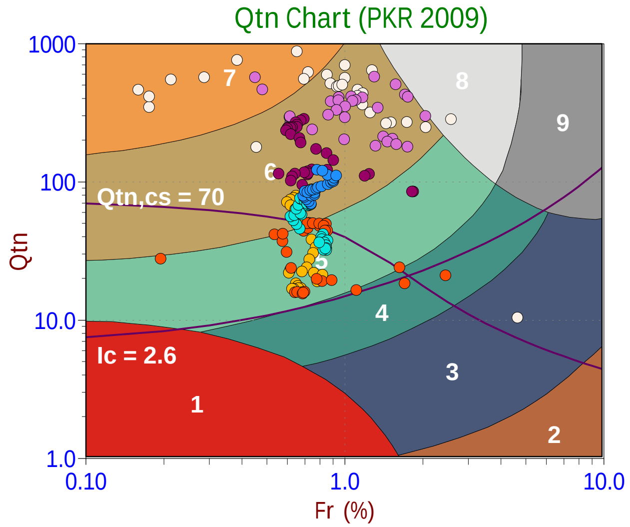
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

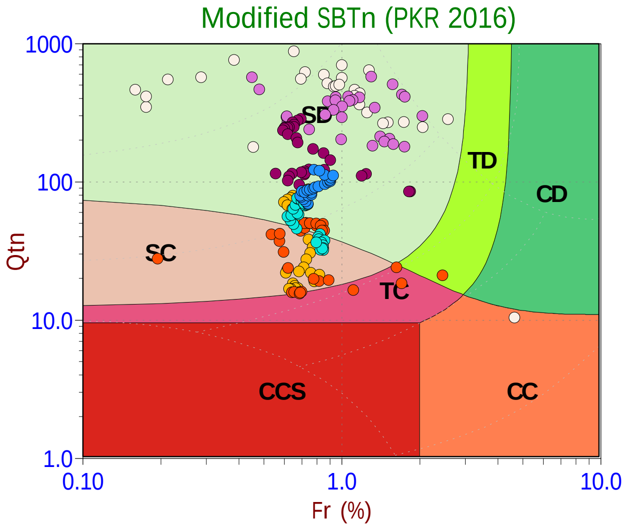
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 17:40
Site: Raymond Road, Verona, WI

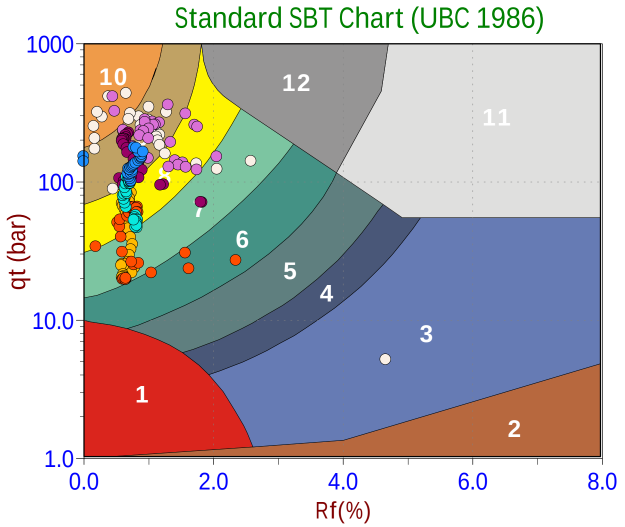
Sounding: CPT20-42
Cone: 568:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

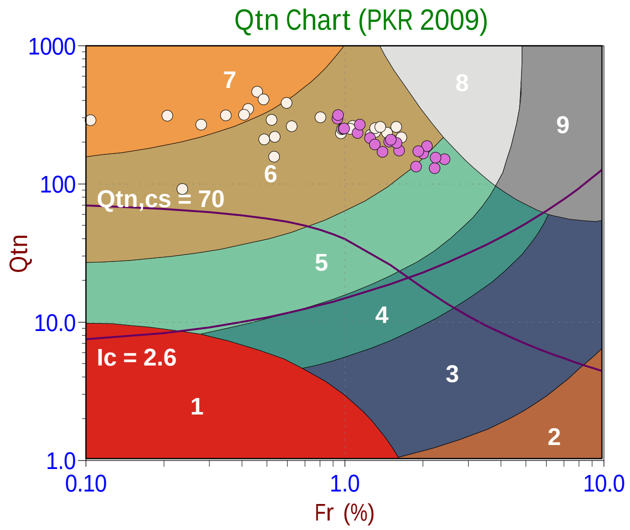
Legend

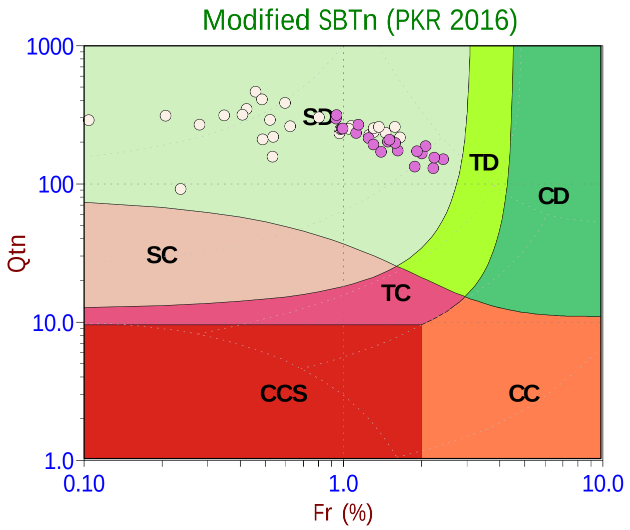
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

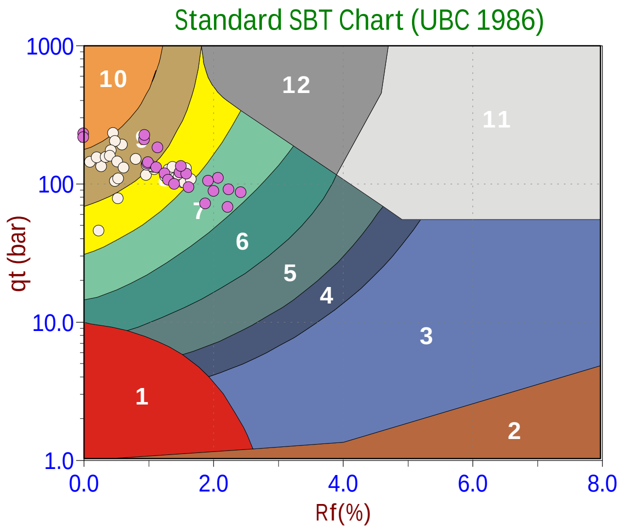
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:09
Site: Raymond Road, Verona, WI

Sounding: CPT20-43
Cone: 568:T1500F15U500







Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

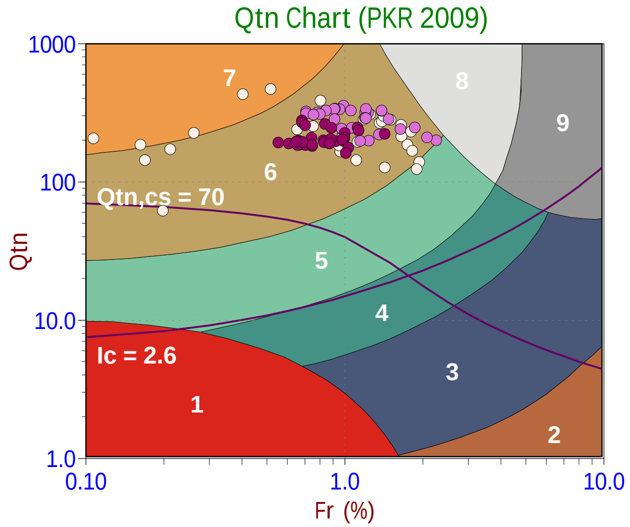
Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

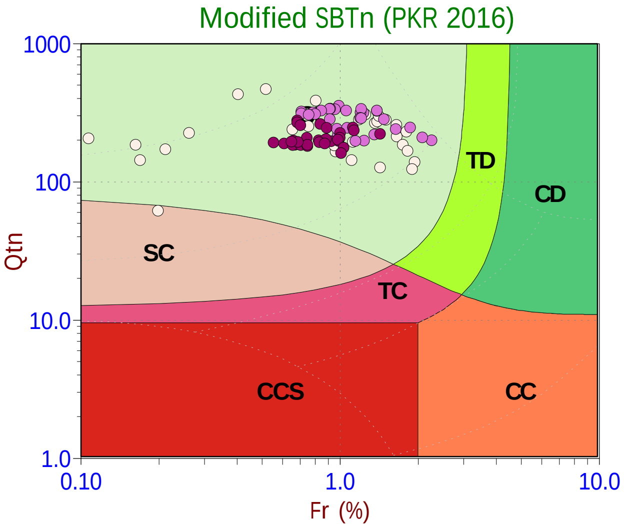
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

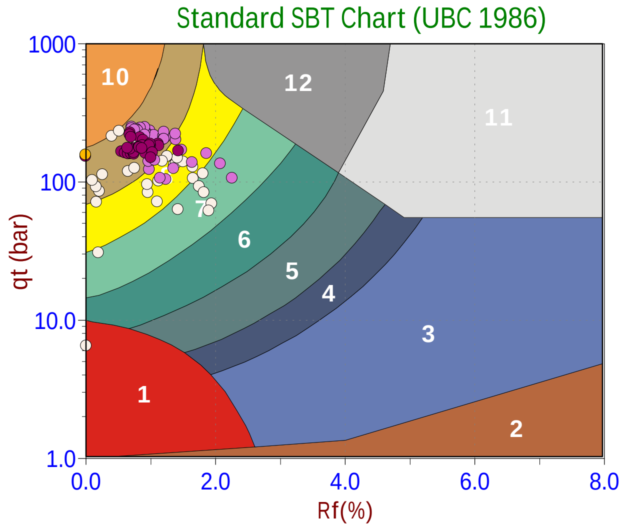
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:25
Site: Raymond Road, Verona, WI

Sounding: CPT20-43B
Cone: 568:T1500F15U500







Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

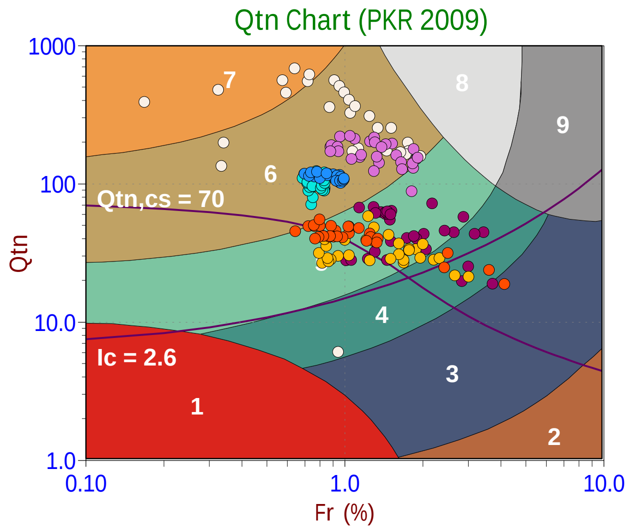
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

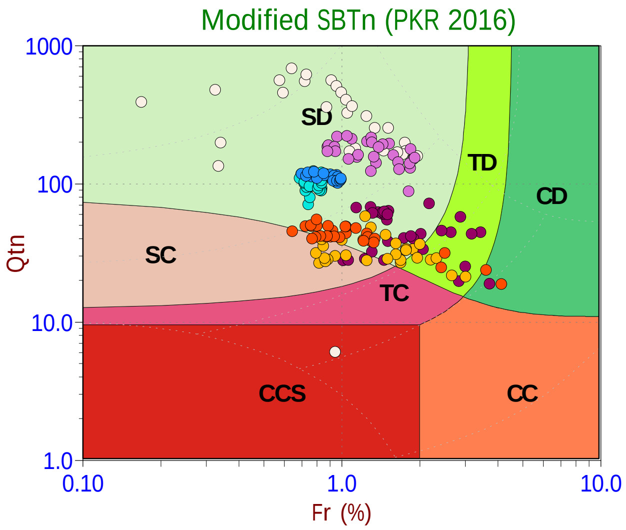
CONETEC

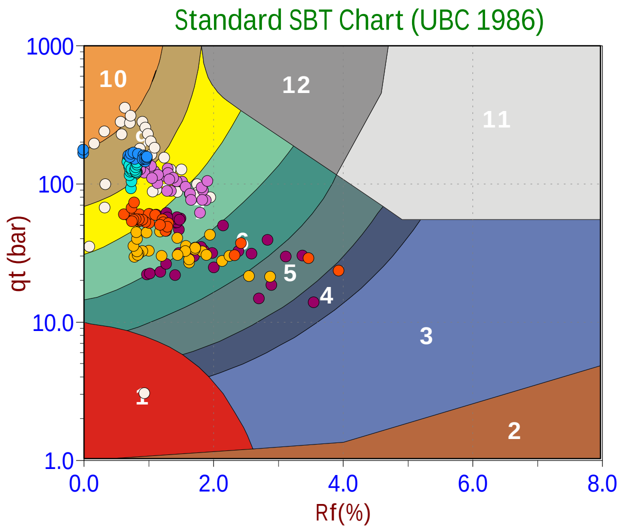
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-19 18:49
Site: Raymond Road, Verona, WI

Sounding: CPT20-44
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

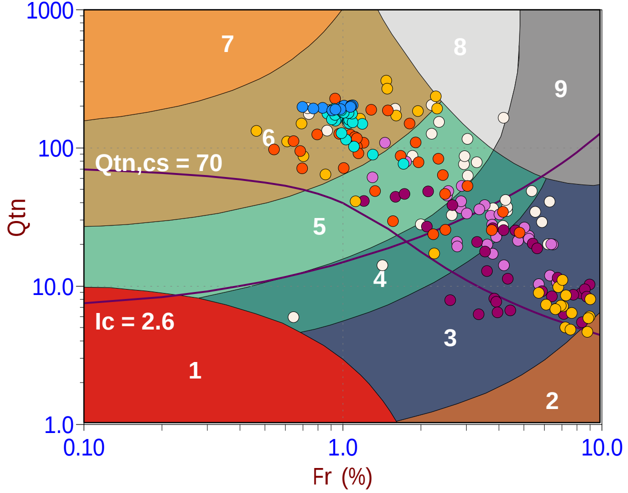
CONETEC

Barr Engineering

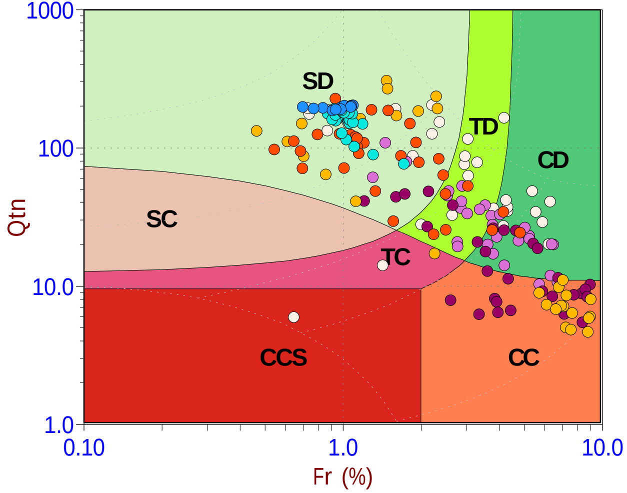
Job No: 20-61-20766
Date: 2020-04-19 19:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-45
Cone: 568:T1500F15U500

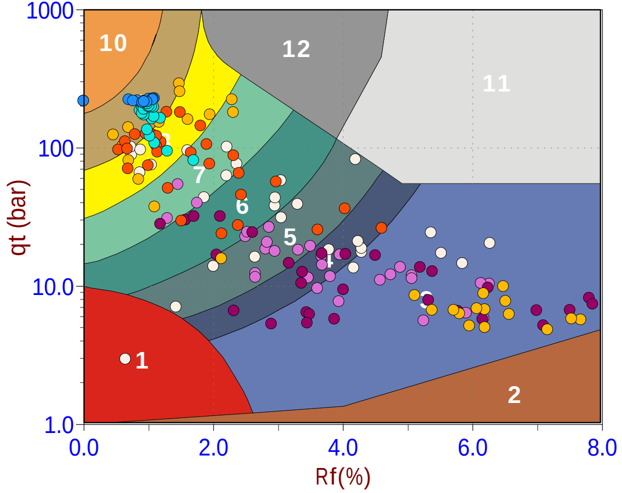
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- ⬜ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

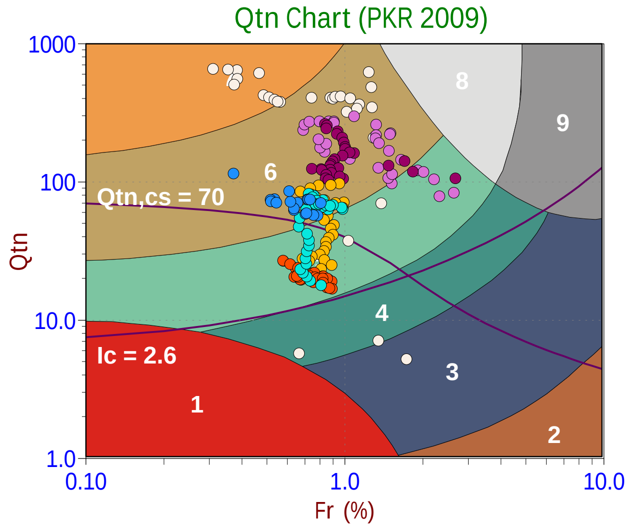
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

CONETEC

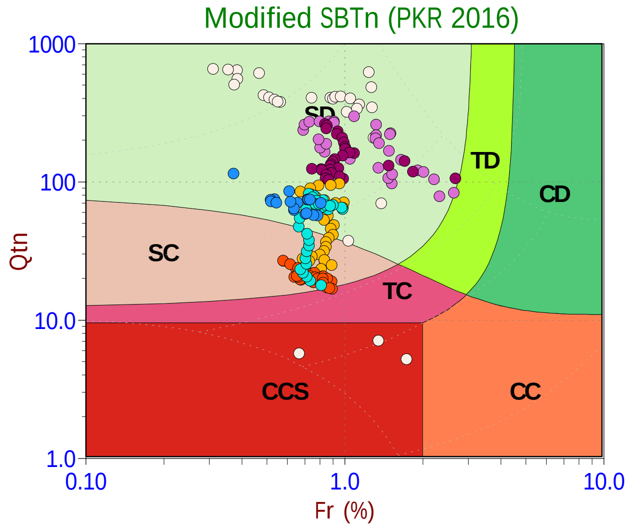
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 08:45
Site: Raymond Road, Verona, WI

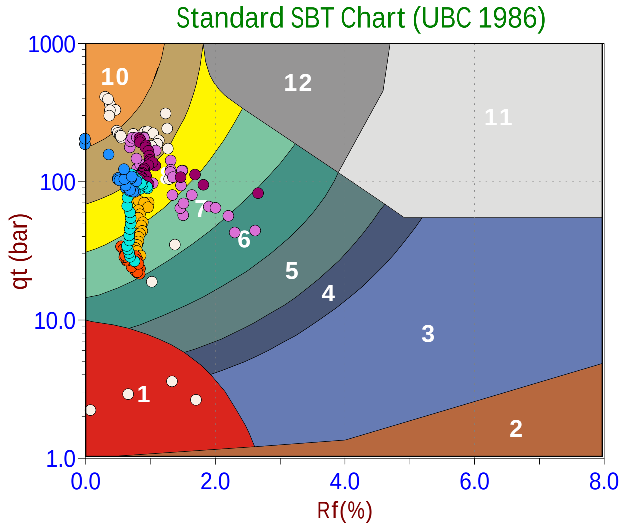
Sounding: SCPT20-46
Cone: 568:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

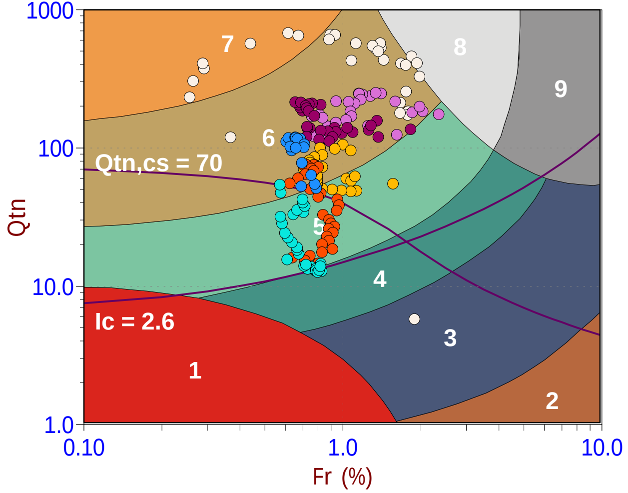
Legend

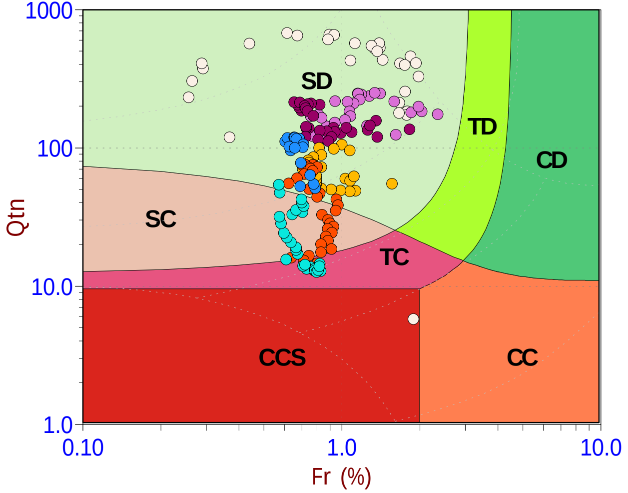
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

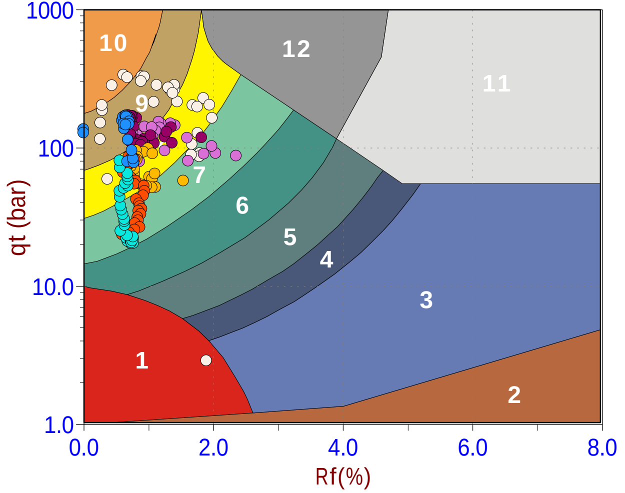
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 09:30
Site: Raymond Road, Verona, WI

Sounding: CPT20-47
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- 🟣 >5.0 to 10.0 ft
- 🟣 >10.0 to 15.0 ft
- 🟠 >15.0 to 20.0 ft
- 🔴 >20.0 to 25.0 ft
- 🔵 >25.0 to 30.0 ft
- 🔵 >30.0 to 35.0 ft
- 🟢 >35.0 to 40.0 ft
- 🟢 >40.0 to 45.0 ft
- 🟡 >45.0 to 50.0 ft
- 🟡 >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- 🟩 Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

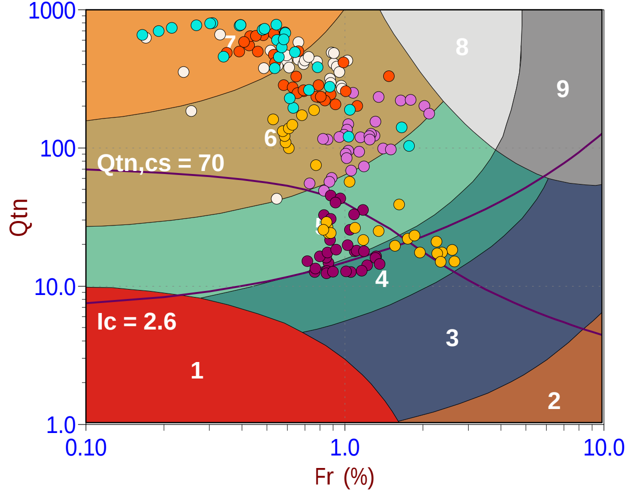
CONETEC

Barr Engineering

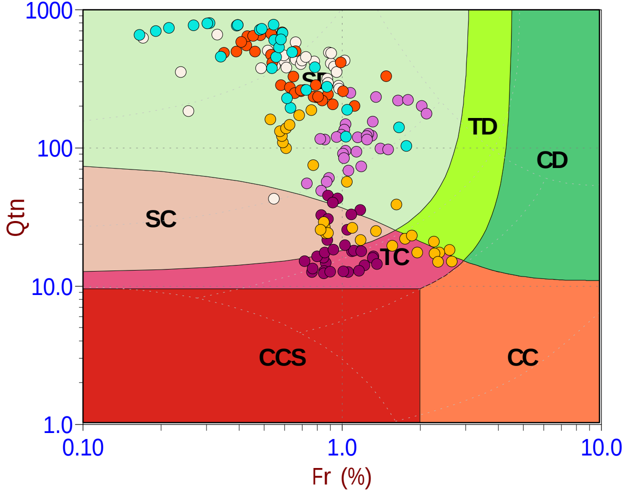
Job No: 20-61-20766
Date: 2020-04-20 10:16
Site: Raymond Road, Verona, WI

Sounding: CPT20-48
Cone: 568:T1500F15U500

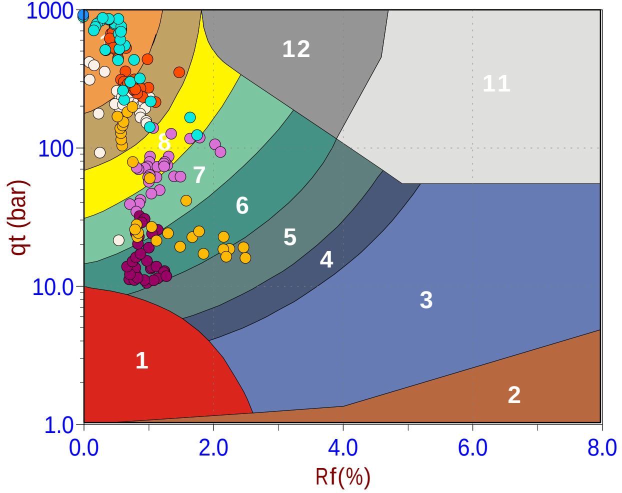
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

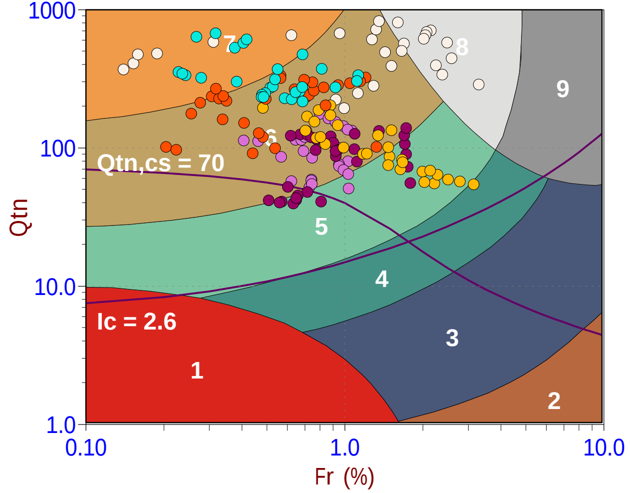
CONETEC

Barr Engineering

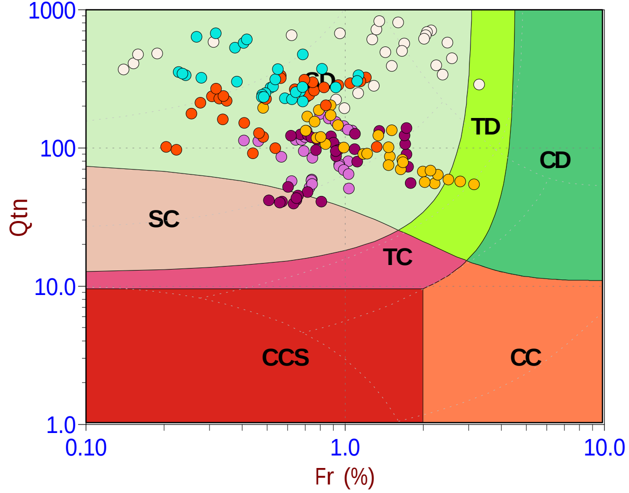
Job No: 20-61-20766
Date: 2020-04-20 10:48
Site: Raymond Road, Verona, WI

Sounding: CPT20-49
Cone: 568:T1500F15U500

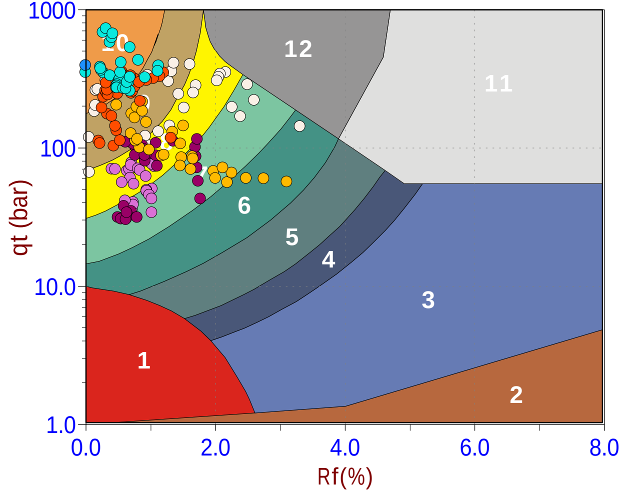
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

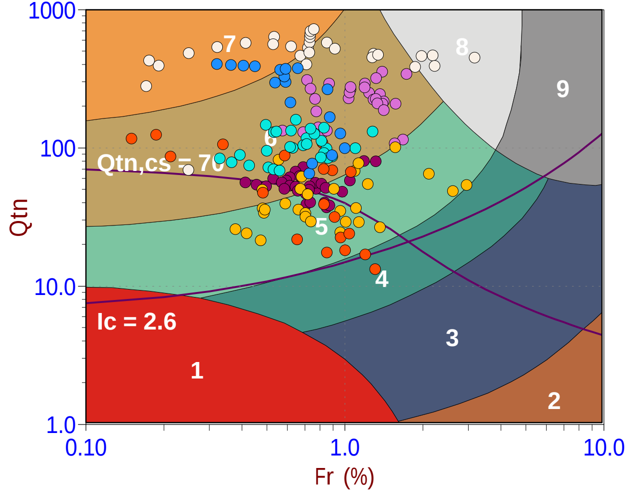
CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 11:21
Site: Raymond Road, Verona, WI

Sounding: SCPT20-50
Cone: 568:T1500F15U500

Qtn Chart (PKR 2009)



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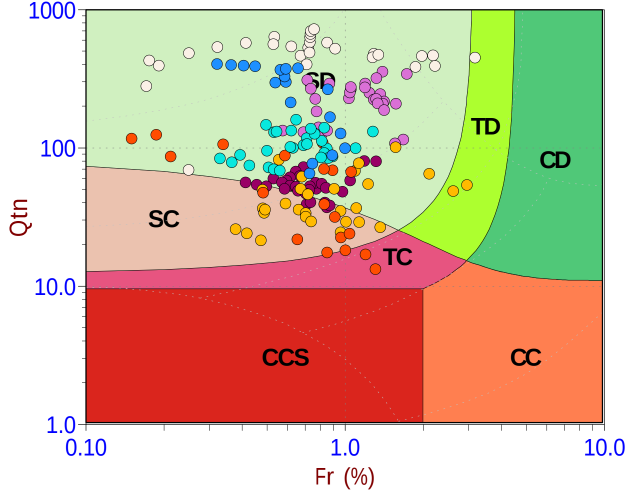
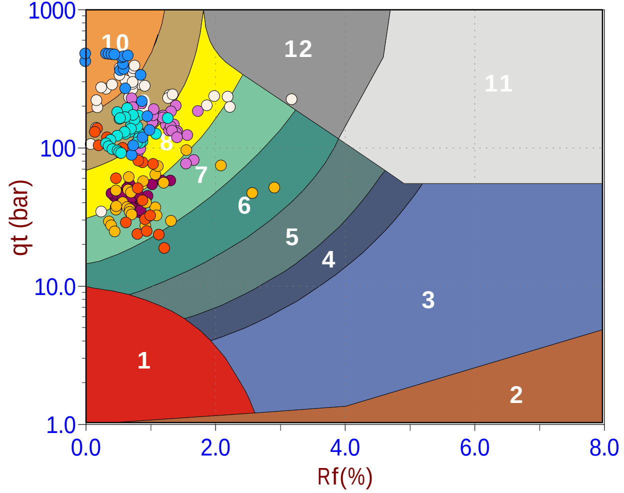


Standard SBT Chart (UBC 1986)



Depth Ranges

- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend

- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟧 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

Legend

- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- ⬛ Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

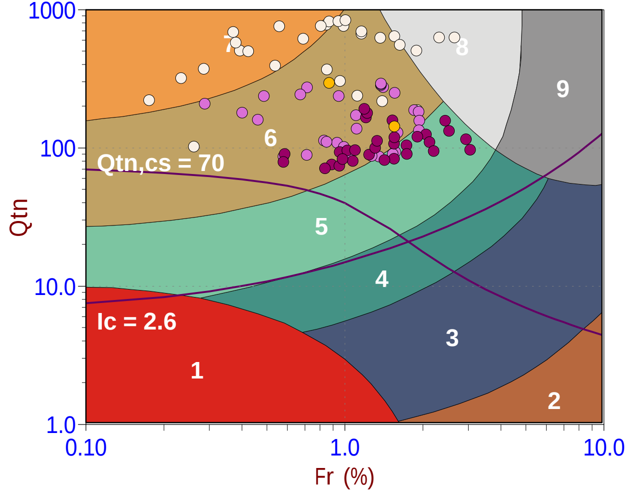
ConeTec

Barr Engineering

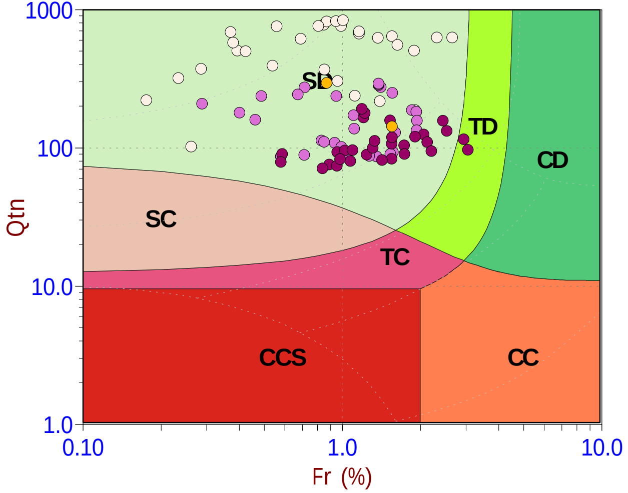
Job No: 20-61-20766
Date: 2020-04-20 12:50
Site: Raymond Road, Verona, WI

Sounding: CPT20-51
Cone: 568:T1500F15U500

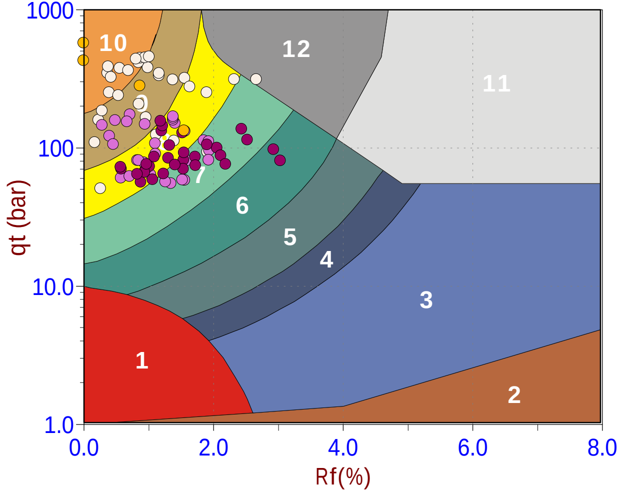
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

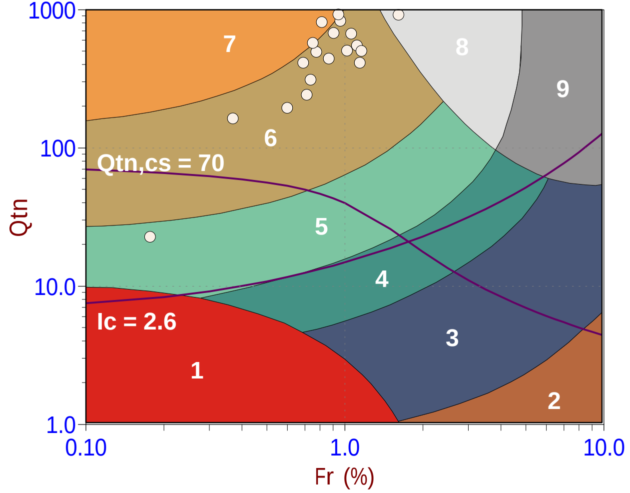
CONETEC

Barr Engineering

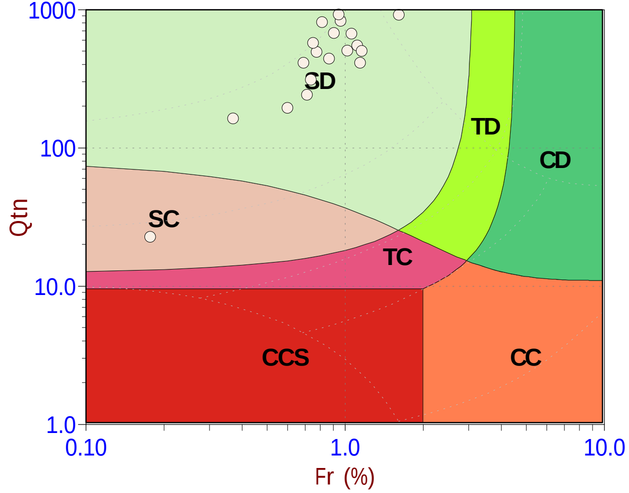
Job No: 20-61-20766
Date: 2020-04-20 13:11
Site: Raymond Road, Verona, WI

Sounding: CPT20-51B
Cone: 568:T1500F15U500

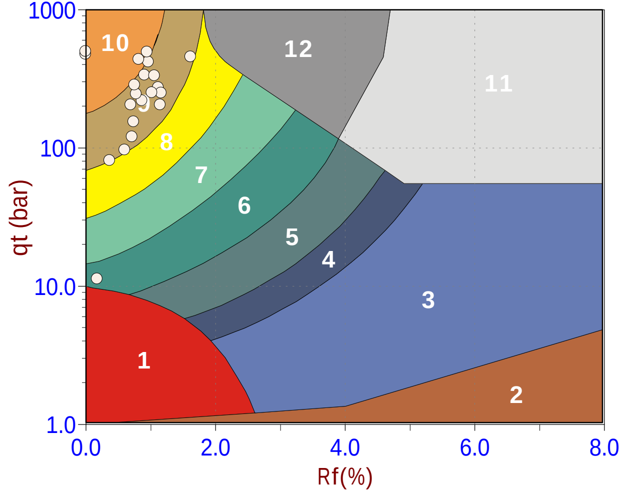
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- 🟩 Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

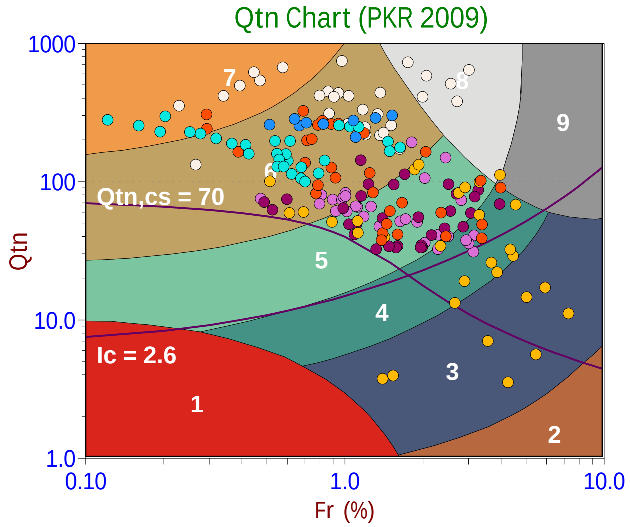
Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ■ Cemented Sand

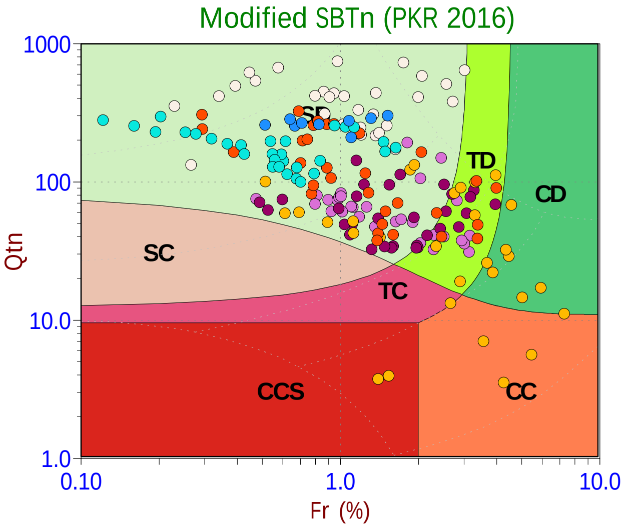
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 13:21
Site: Raymond Road, Verona, WI

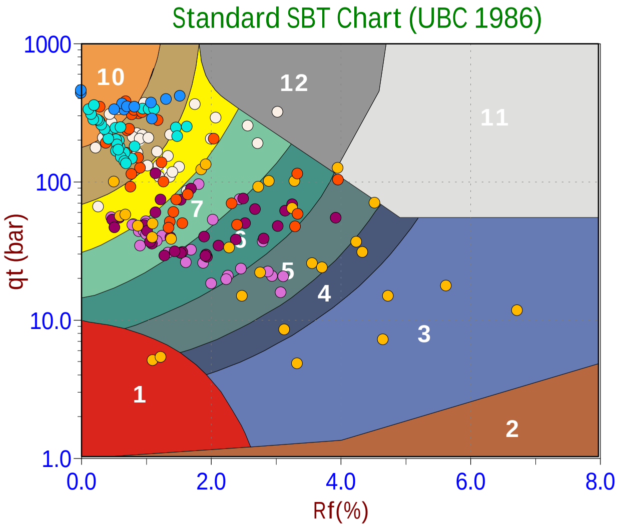
Sounding: CPT20-51C
Cone: 568:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- ■ Clays
- ■ Silt Mixtures
- 🟩 Sand Mixtures
- ■ Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- ■ Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ■ Cemented Sand

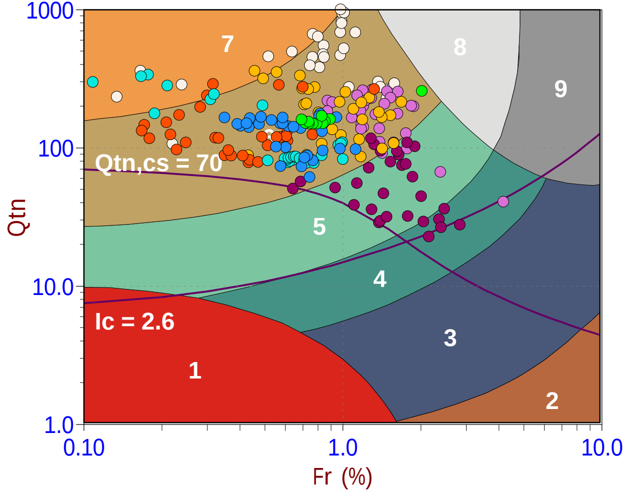
CONETEC

Barr Engineering

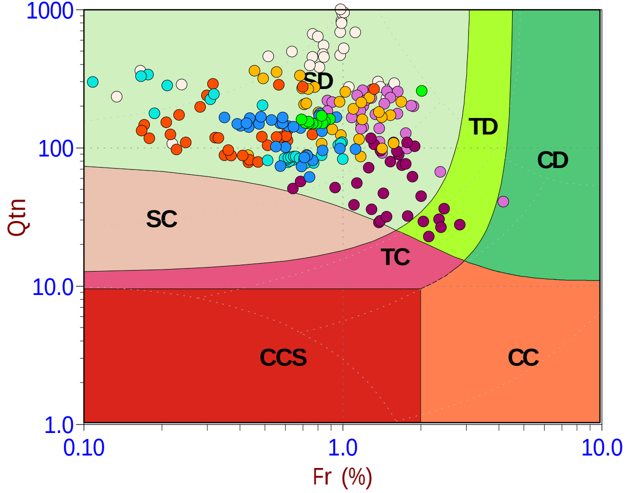
Job No: 20-61-20766
Date: 2020-04-20 13:56
Site: Raymond Road, Verona, WI

Sounding: CPT20-52
Cone: 568:T1500F15U500

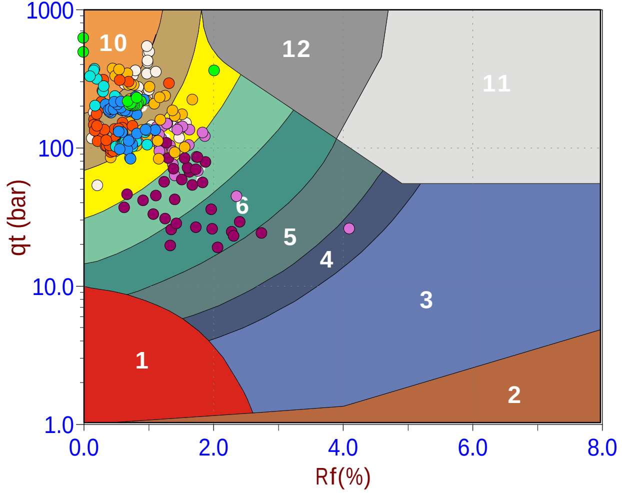
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

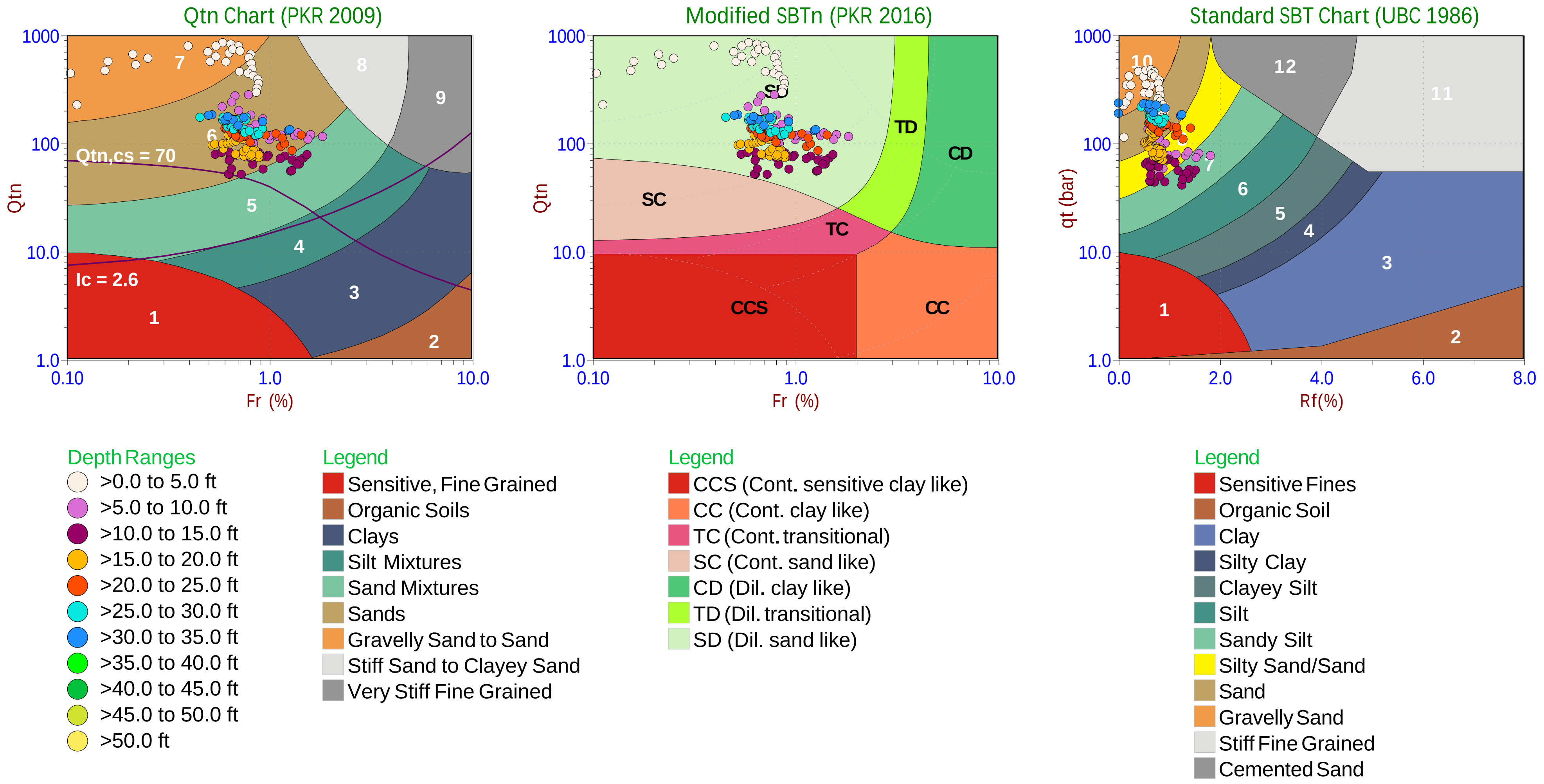
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 14:41
Site: Raymond Road, Verona, WI

Sounding: SCPT20-53
Cone: 568:T1500F15U500

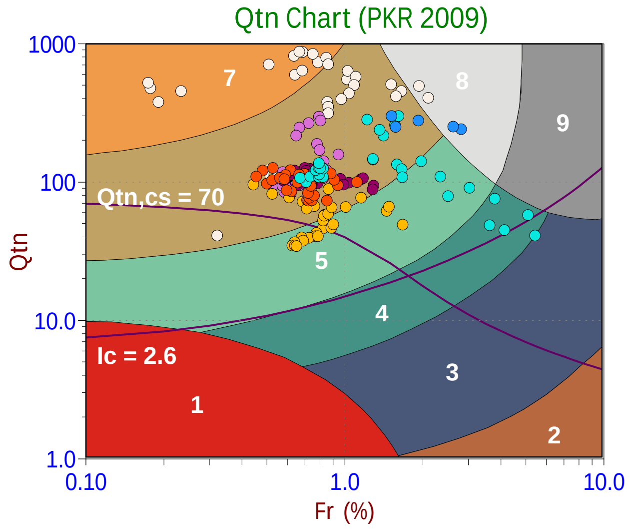


CONETEC

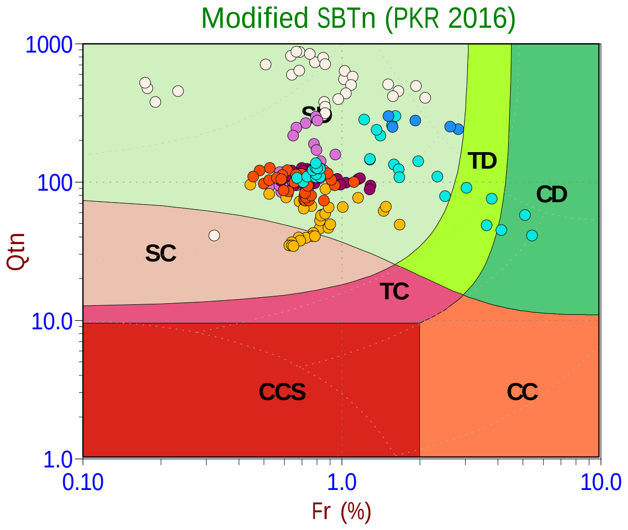
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 15:33
Site: Raymond Road, Verona, WI

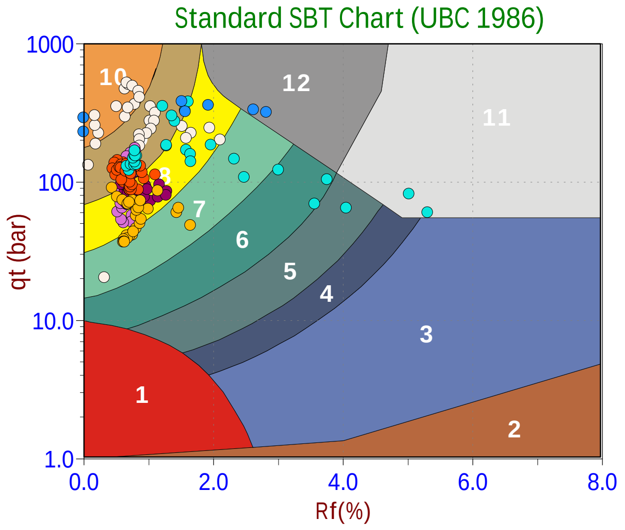
Sounding: CPT20-54
Cone: 568:T1500F15U500



Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

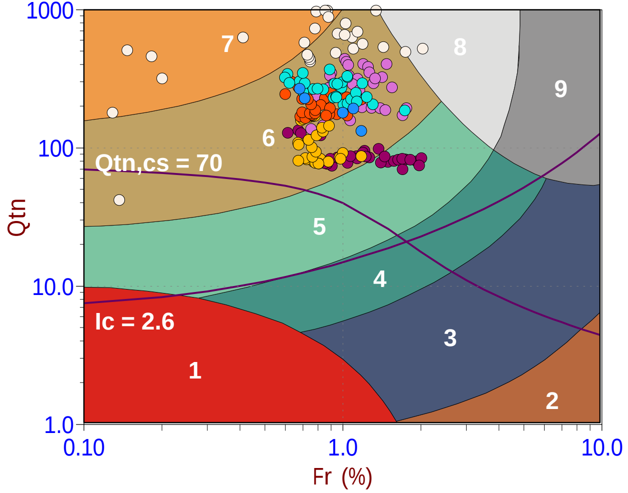
ConeTec

Barr Engineering

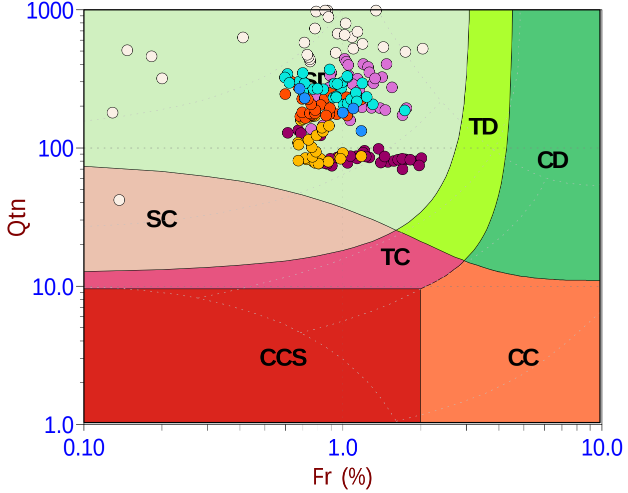
Job No: 20-61-20766
Date: 2020-04-20 15:57
Site: Raymond Road, Verona, WI

Sounding: CPT20-55
Cone: 568:T1500F15U500

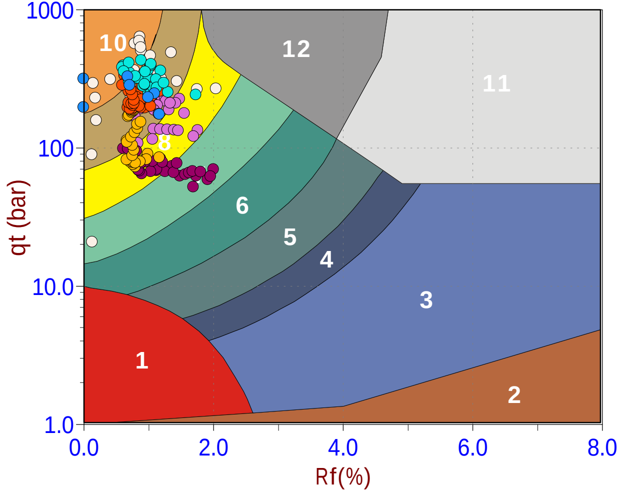
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

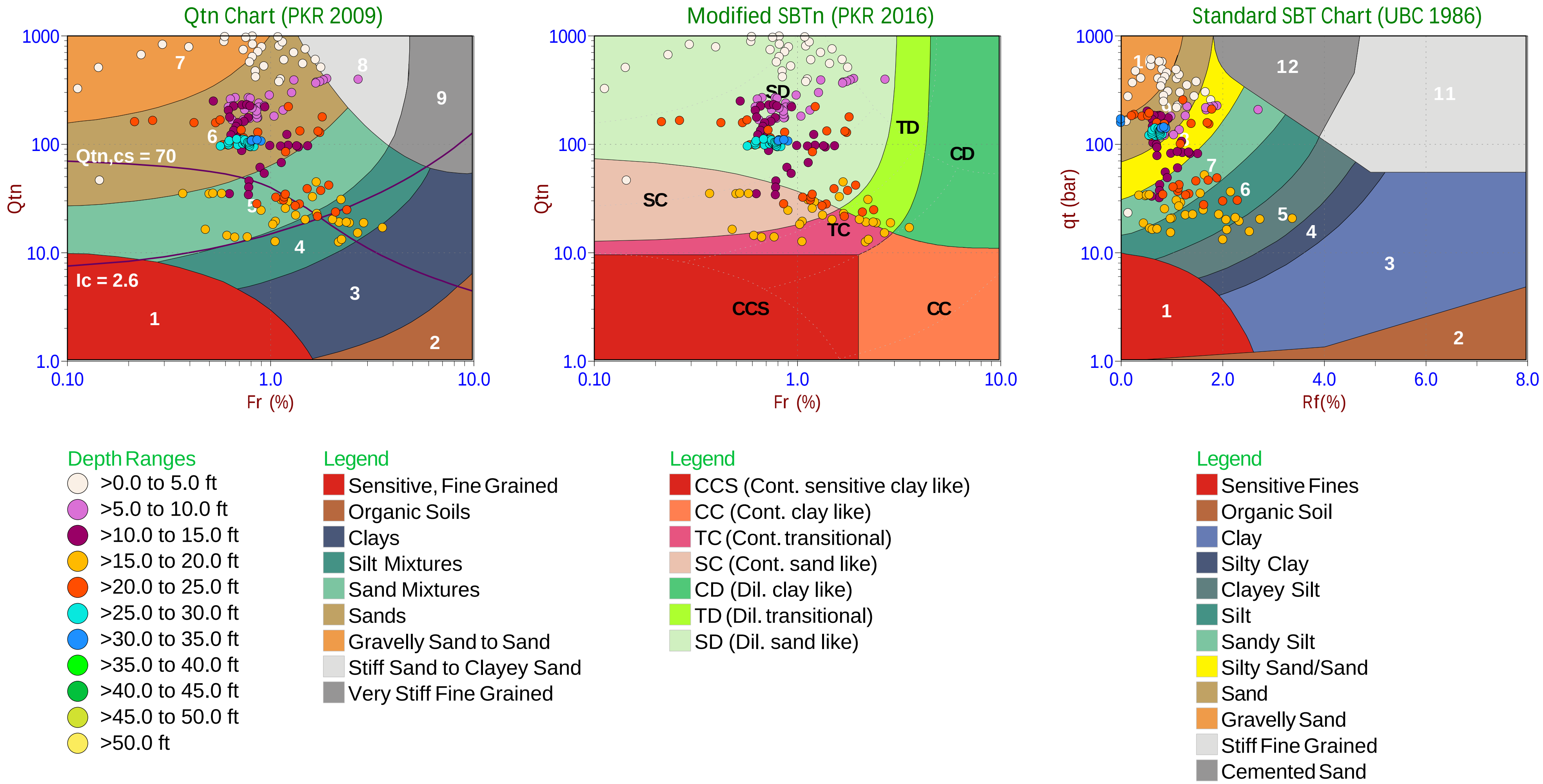
Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 16:20
Site: Raymond Road, Verona, WI

Sounding: CPT20-56
Cone: 568:T1500F15U500

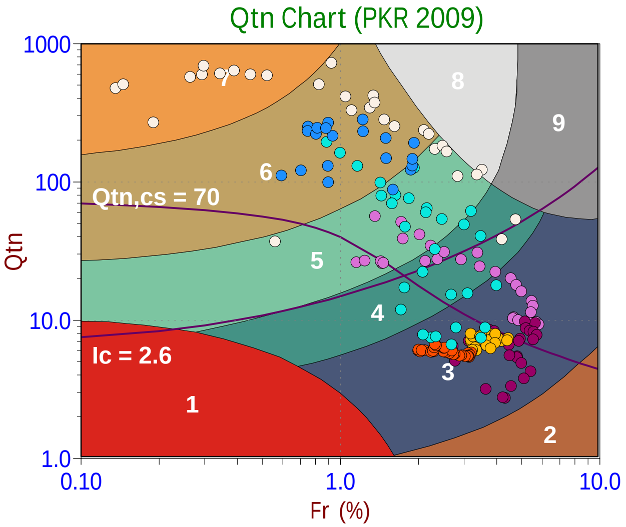


CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 16:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-57
Cone: 568:T1500F15U500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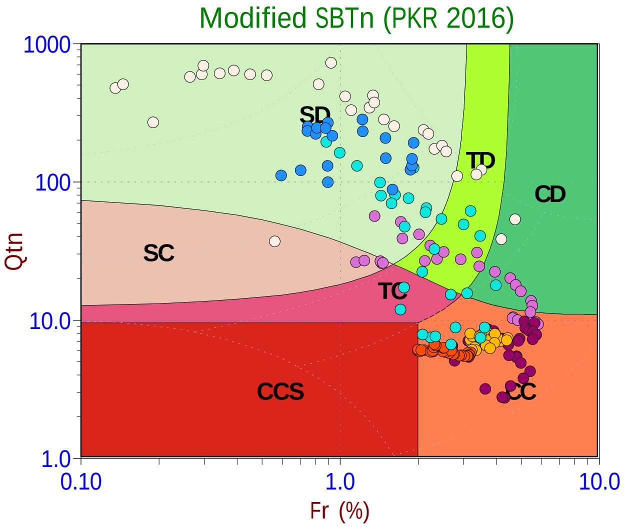
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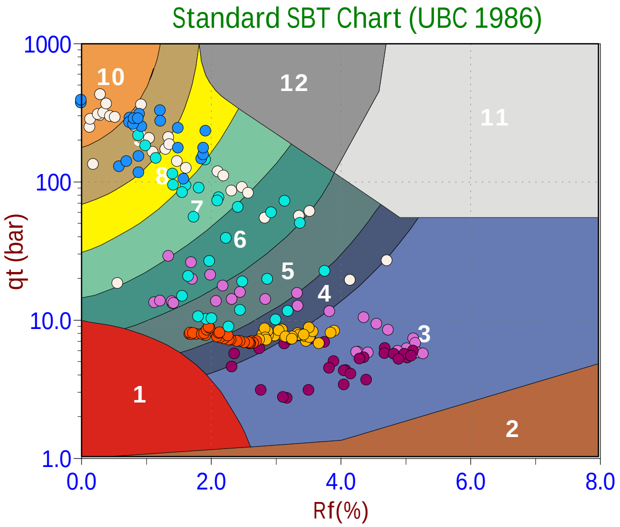

Standard SBT Chart (UBC 1986)

Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

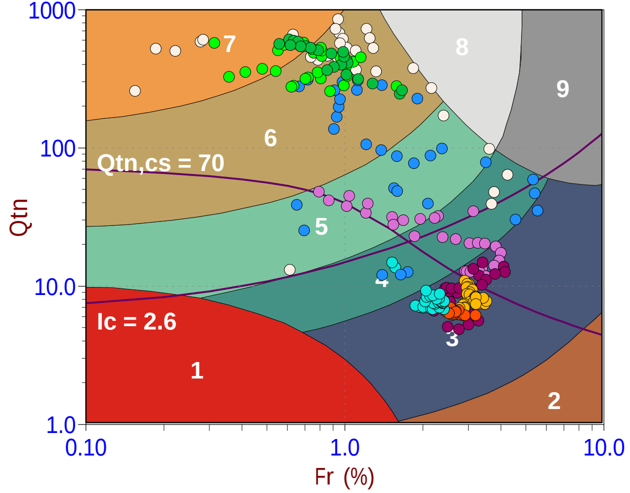
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Barr Engineering

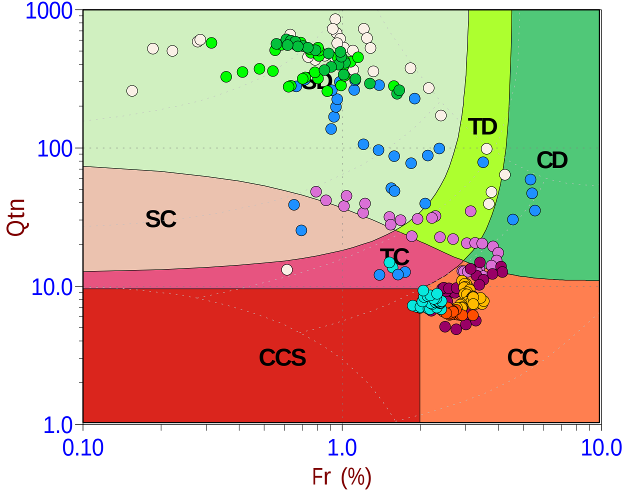
Job No: 20-61-20766
Date: 2020-04-20 17:27
Site: Raymond Road, Verona, WI

Sounding: SCPT20-57B
Cone: 568:T1500F15U500

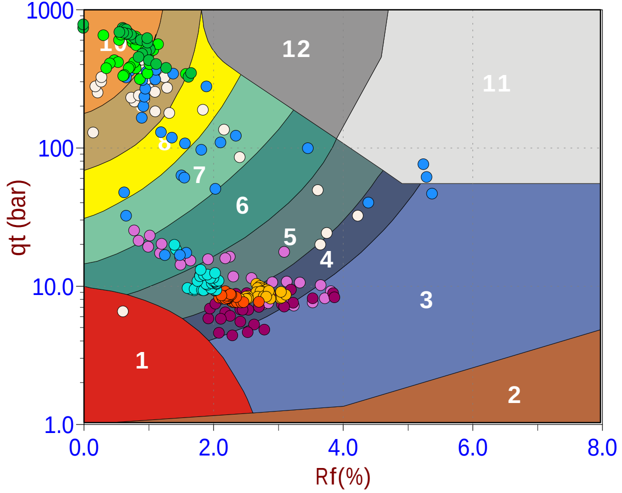
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- 🟥 Sensitive, Fine Grained
- 🟫 Organic Soils
- 🟦 Clays
- 🟩 Silt Mixtures
- 🟩 Sand Mixtures
- 🟫 Sands
- 🟧 Gravelly Sand to Sand
- ⬜ Stiff Sand to Clayey Sand
- ⬛ Very Stiff Fine Grained

Legend
- 🟥 CCS (Cont. sensitive clay like)
- 🟧 CC (Cont. clay like)
- 🟥 TC (Cont. transitional)
- 🟫 SC (Cont. sand like)
- 🟩 CD (Dil. clay like)
- 🟩 TD (Dil. transitional)
- 🟩 SD (Dil. sand like)

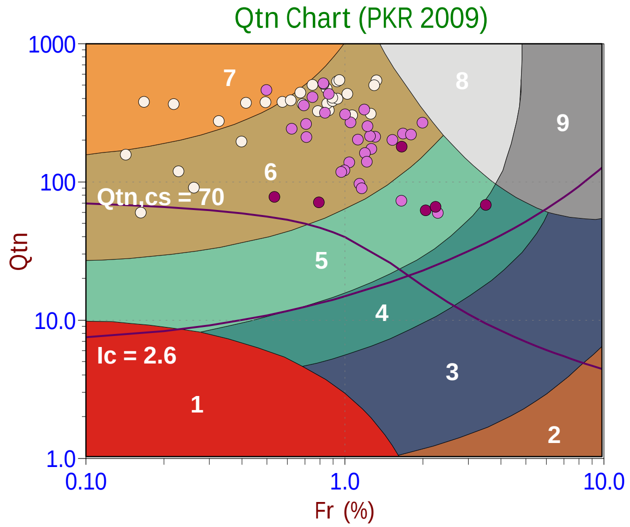
Legend
- 🟥 Sensitive Fines
- 🟫 Organic Soil
- 🟦 Clay
- 🟦 Silty Clay
- 🟩 Clayey Silt
- 🟩 Silt
- 🟩 Sandy Silt
- 🟨 Silty Sand/Sand
- 🟫 Sand
- 🟧 Gravelly Sand
- ⬜ Stiff Fine Grained
- ⬛ Cemented Sand

CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:23
Site: Raymond Road, Verona, WI

Sounding: CPT20-58
Cone: 568:T1500F15U500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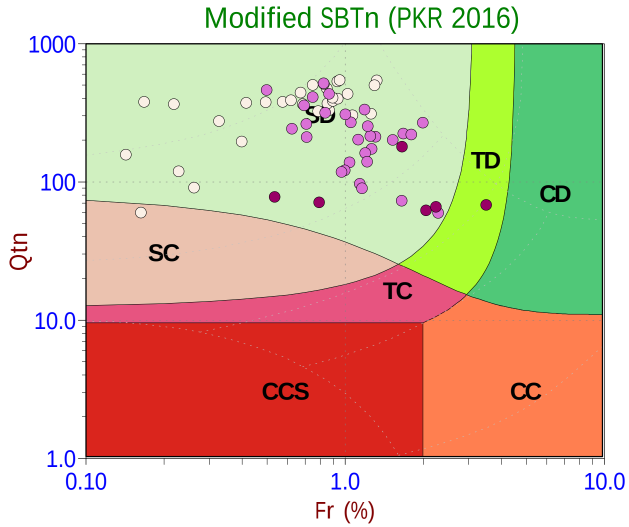
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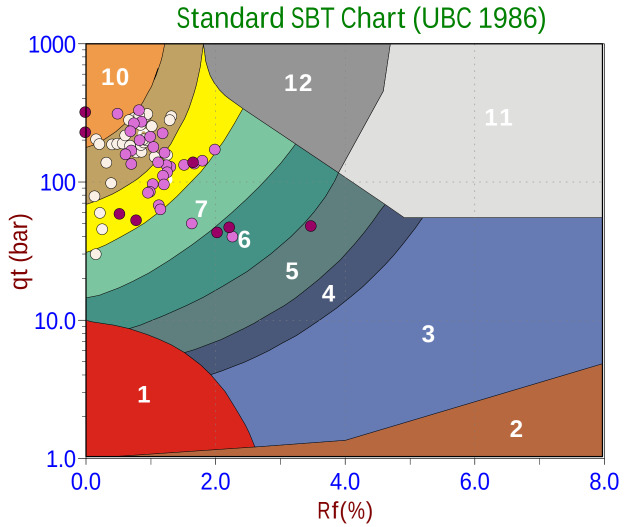

Standard SBT Chart (UBC 1986)

Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

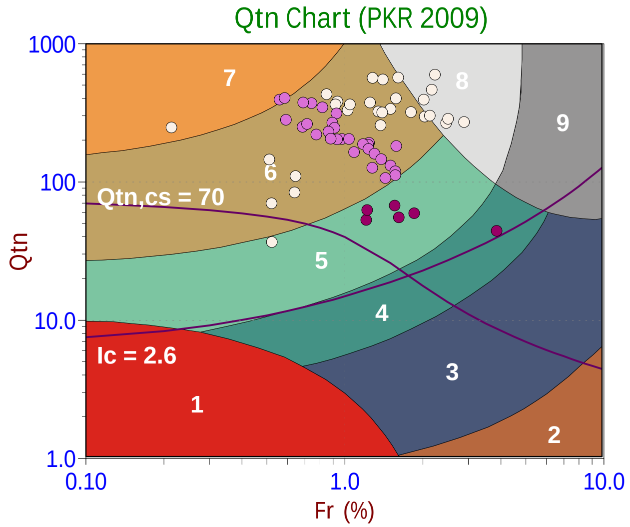
CONETEC

Barr Engineering

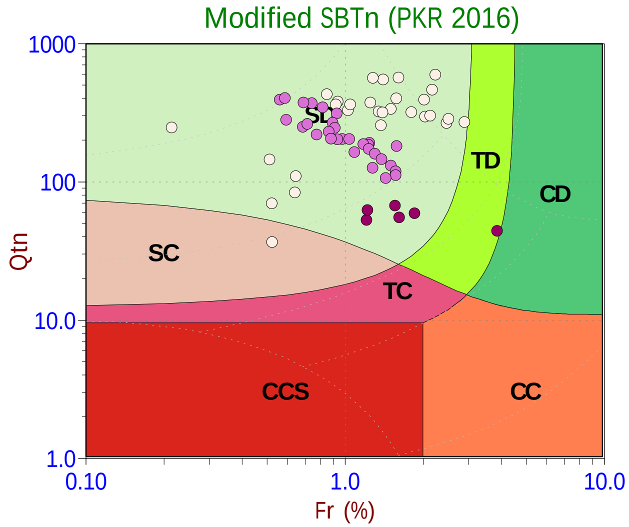
Job No: 20-61-20766
Date: 2020-04-20 18:34
Site: Raymond Road, Verona, WI

Sounding: SCPT20-59
Cone: 568:T1500F15U500

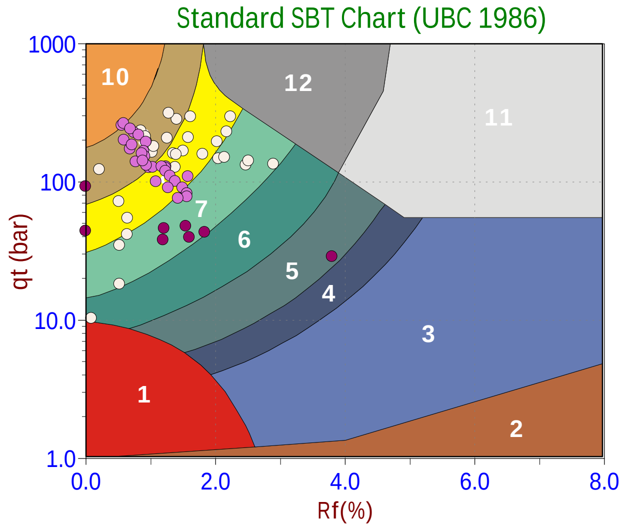
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend

- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend

- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

Legend

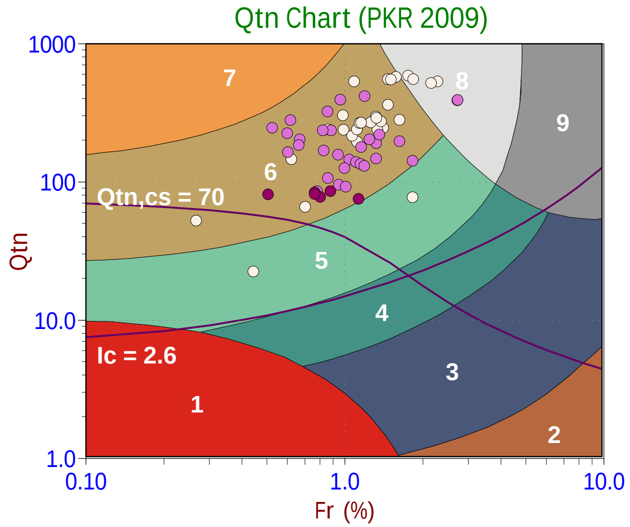
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

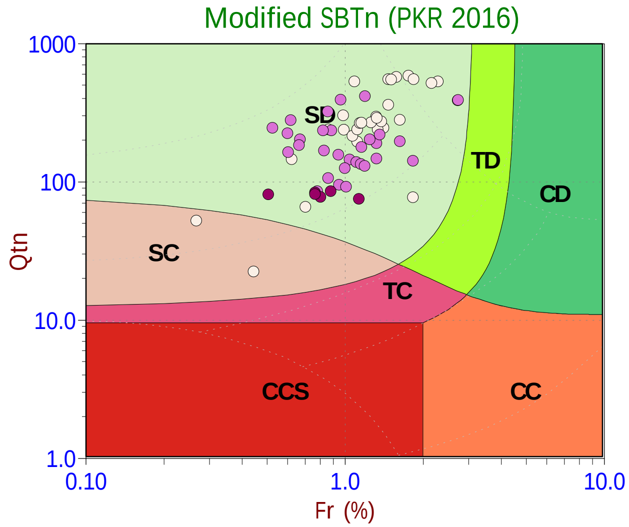
CONETEC

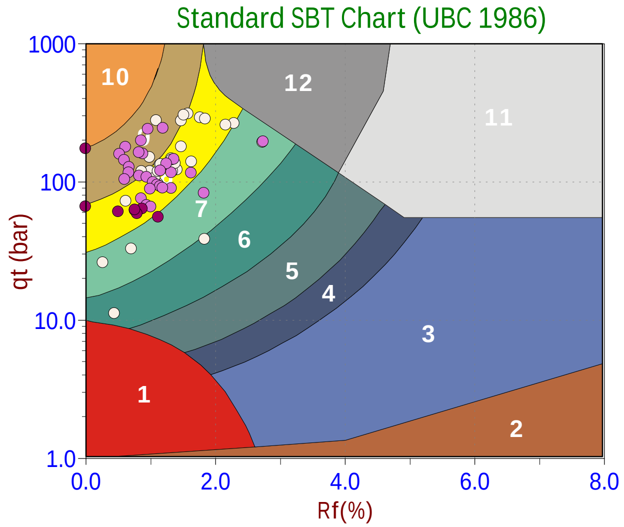
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 18:59
Site: Raymond Road, Verona, WI

Sounding: CPT20-60
Cone: 568:T1500F15U500







Depth Ranges
- ○ >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

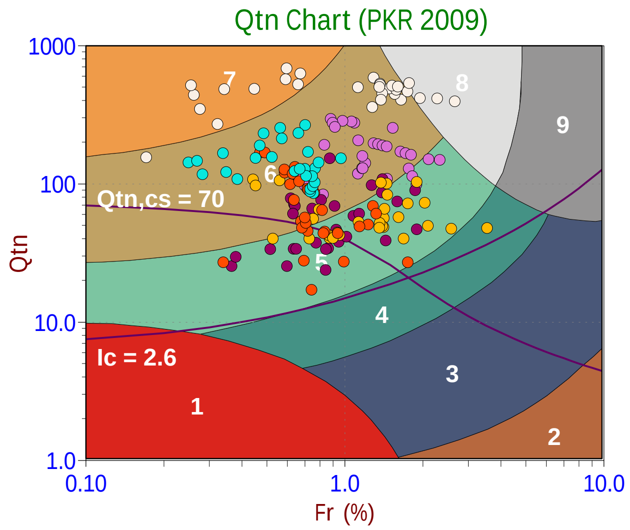
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

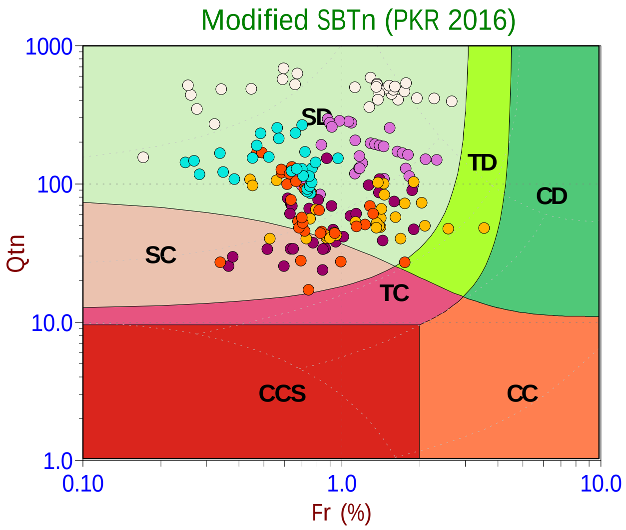
CONETEC

Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 19:16
Site: Raymond Road, Verona, WI

Sounding: CPT20-61
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)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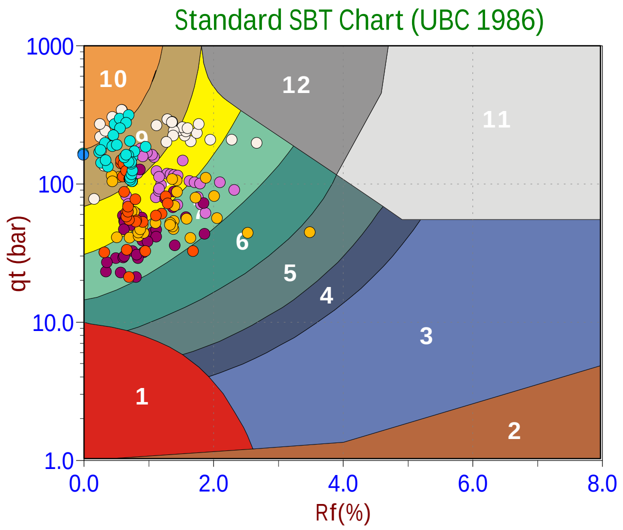

Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

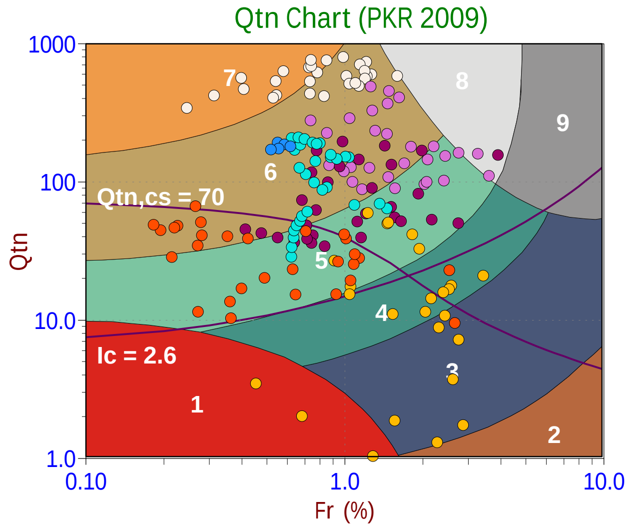
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

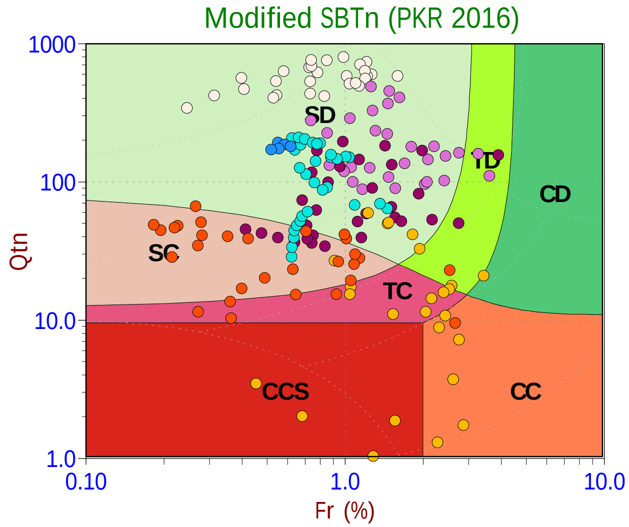
CONETEC

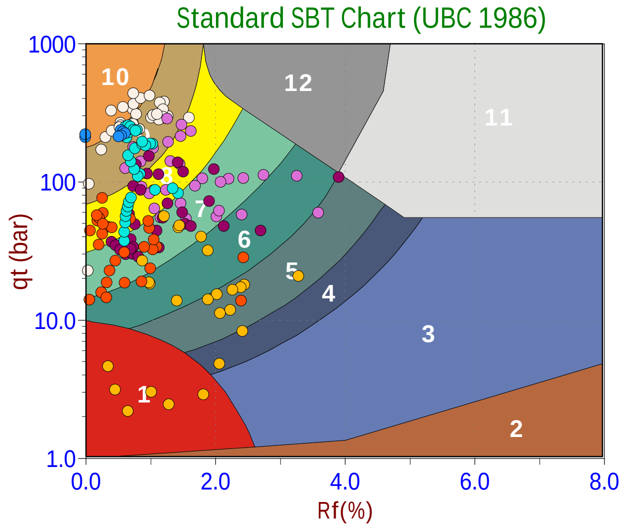
Barr Engineering

Job No: 20-61-20766
Date: 2020-04-20 19:35
Site: Raymond Road, Verona, WI

Sounding: CPT20-62
Cone: 568:T1500F15U500


Qtn Chart (PKR 2009)


Modified SBTn (PKR 2016)


Standard SBT Chart (UBC 1986)

Depth Ranges
- ● >0.0 to 5.0 ft
- ● >5.0 to 10.0 ft
- ● >10.0 to 15.0 ft
- ● >15.0 to 20.0 ft
- ● >20.0 to 25.0 ft
- ● >25.0 to 30.0 ft
- ● >30.0 to 35.0 ft
- ● >35.0 to 40.0 ft
- ● >40.0 to 45.0 ft
- ● >45.0 to 50.0 ft
- ● >50.0 ft

Legend
- ■ Sensitive, Fine Grained
- ■ Organic Soils
- ■ Clays
- ■ Silt Mixtures
- ■ Sand Mixtures
- ■ Sands
- ■ Gravelly Sand to Sand
- ■ Stiff Sand to Clayey Sand
- ■ Very Stiff Fine Grained

Legend
- ■ CCS (Cont. sensitive clay like)
- ■ CC (Cont. clay like)
- ■ TC (Cont. transitional)
- ■ SC (Cont. sand like)
- ■ CD (Dil. clay like)
- ■ TD (Dil. transitional)
- ■ SD (Dil. sand like)

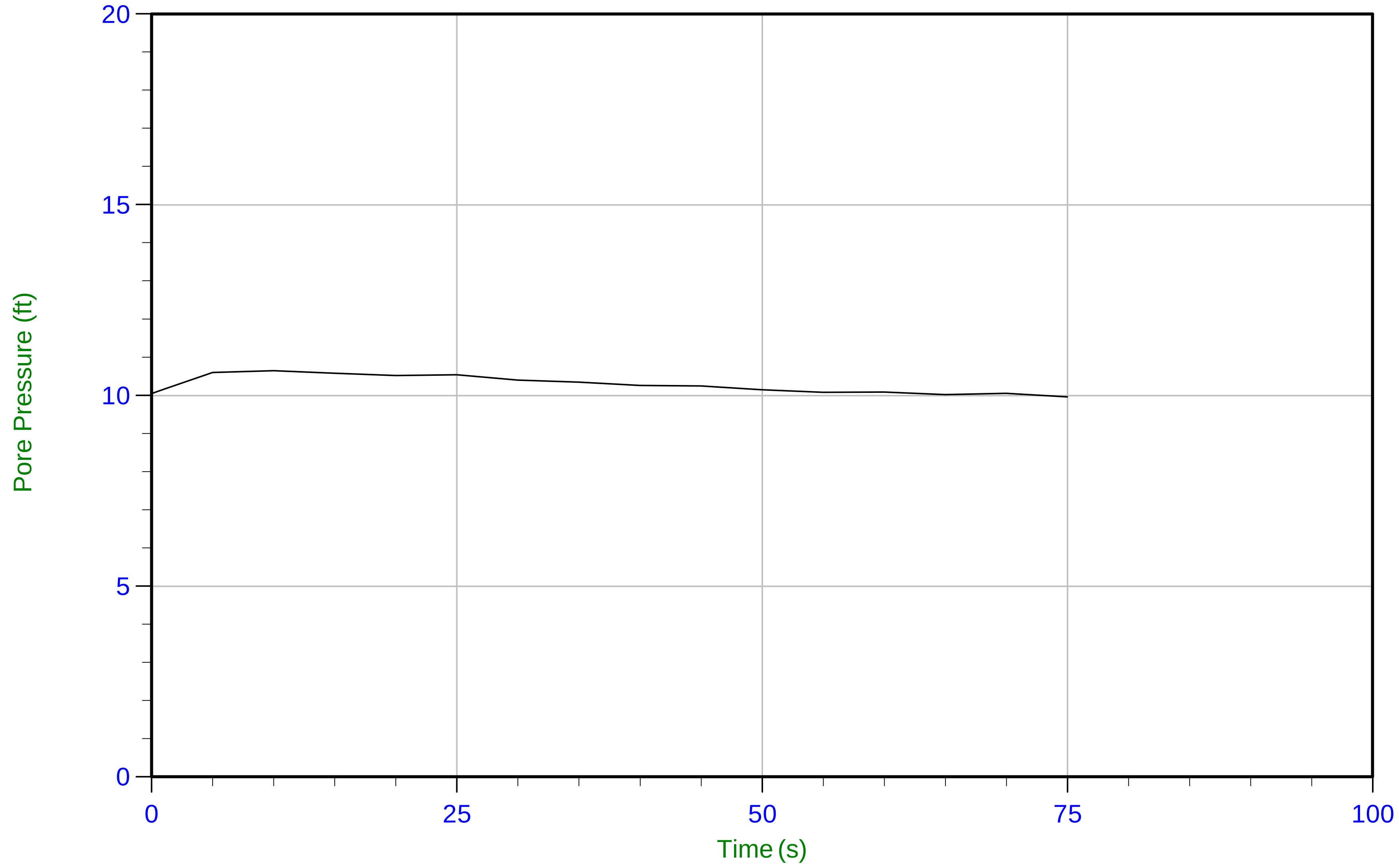
Legend
- ■ Sensitive Fines
- ■ Organic Soil
- ■ Clay
- ■ Silty Clay
- ■ Clayey Silt
- ■ Silt
- ■ Sandy Silt
- ■ Silty Sand/Sand
- ■ Sand
- ■ Gravelly Sand
- ■ Stiff Fine Grained
- ■ Cemented Sand

Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

Job No:	20-61-20766
Client:	Barr Engineering
Project:	Raymond Road, Verona, WI
Start Date:	17-Apr-2020
End Date:	20-Apr-2020

CPTu PORE PRESSURE DISSIPATION SUMMARY

Sounding ID	File Name	Cone Area (cm^2)	Duration (s)	Test Depth (ft)	Estimated Equilibrium Pore Pressure U_{eq} (ft)	Calculated Phreatic Surface (ft)
CPT20-22	20-61-20766_CP22	15	75	34.45	10.0	24.5
CPT20-62	20-61-20766_CP62	15	70	31.00	10.1	20.9
Total Duration	2 dissipations		2.4 min			

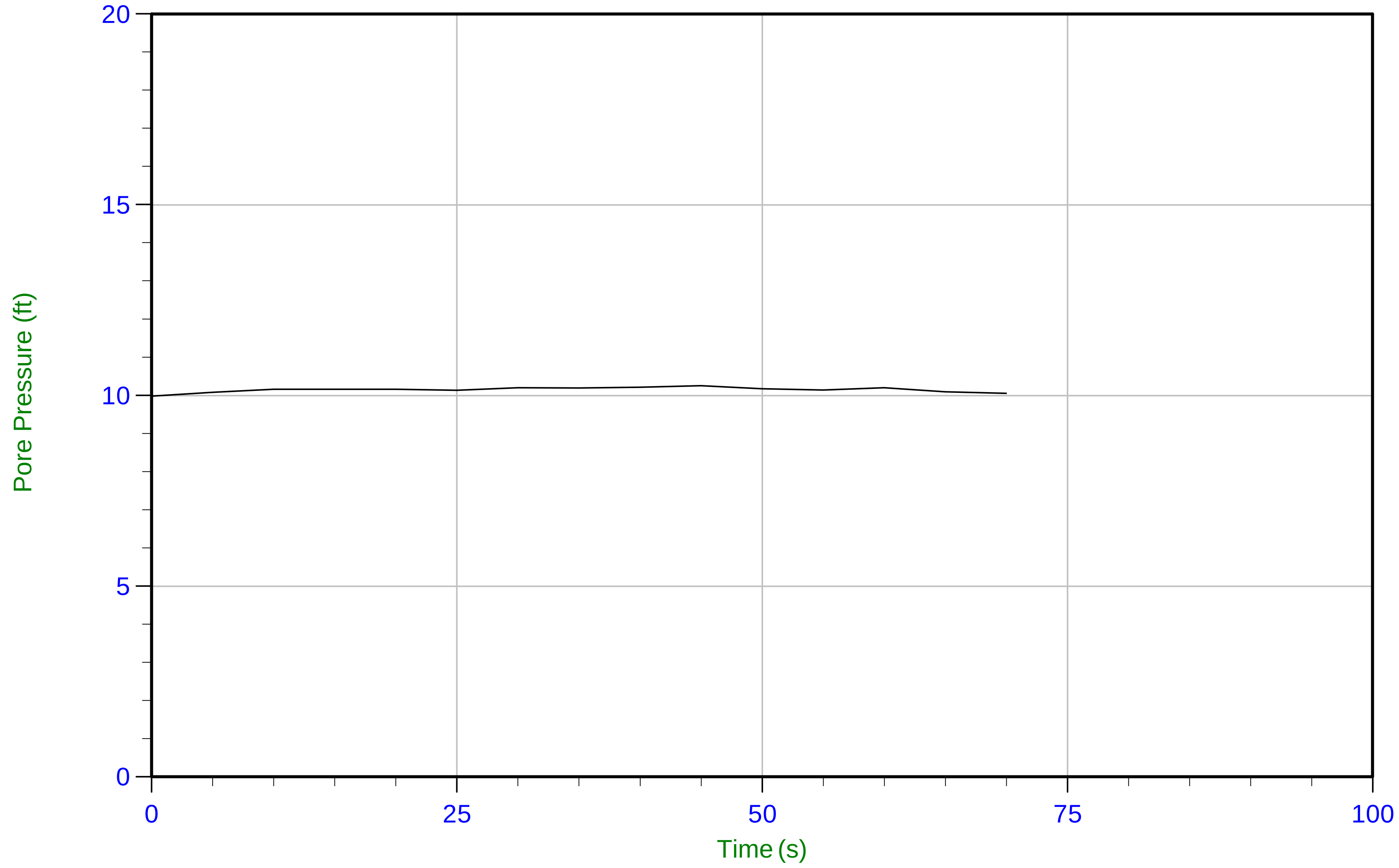


Trace Summary:

Filename: 20-61-20766_CP22.PPD
Depth: 10.500 m / 34.448 ft
Duration: 75.0 s

u Min: 10.0 ft
u Max: 10.6 ft
u Final: 10.0 ft

WT: 7.458 m / 24.469 ft
Ueq: 10.0 ft



Trace Summary:

Filename: 20-61-20766_CP62.PPD
Depth: 9.450 m / 31.004 ft
Duration: 70.0 s

u Min: 10.0 ft
u Max: 10.3 ft
u Final: 10.1 ft

WT: 6.371 m / 20.903 ft
Ueq: 10.1 ft

Attachment B Soil Borings

Standard Guide to Geotechnical Logs

The Unified Soil Classification System (ASTM D-2487)

CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TESTS [A]				SOIL CLASSIFICATION	
				GROUP SYMBOL	GROUP NAME [B]
Coarse-grained soils More than 50% retained on the No. 200 sieve	GRAVELS More than 50% of coarse fraction is retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines [C]	$C_U \geq 4$ and $1 \leq C_C \leq 3$ [E]	GW	Well-graded gravel [F]
			$C_U > 4$ and/or $1 > C_C > 3$ [E]	GP	Poorly graded gravel [F]
		GRAVELS WITH FINES More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [FGH]
			Fines classify as CL or CH	GC	Clayey gravel [FGH]
	SANDS 50% or more of coarse fraction passes No. 4 sieve	CLEAN SANDS More than 12%	$C_U \geq 6$ and $1 \leq C_C \leq 3$ [E]		Well-graded sand [I]
			$C_U < 6$ and/or $1 > C_C > 3$ [E]	SP	Poorly graded sand [I]
		SANDS WITH FINES More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [GHI]
			Fines classify as CL or CH	SC	Clayey sand [GHI]
Fine-grained soils 50% or more passes the No. 200 sieve	LOW PLASTICITY SILTS AND CLAYS Liquid Limit less than 50	Inorganic	PI > 7 and plots on or above the "A" line [J]	CL	Lean clay [KLM]
			PI < 4 or plots below "A" line [J]	ML	Silt [KLM]
		Organic	$\frac{\text{Liquid Limit (oven dried)}}{\text{Liquid Limit (not dried)}} < 0.75$	OL	Organic clay [KLMN] Organic silt [KLMO]
	HIGH PLASTICITY SILTS AND CLAYS Liquid Limit 50 or more	Inorganic	PI plots on or above the "A" lines	CH	Fat clay [KLM]
			PI plots below the "A" line	MH	Elastic silt [KLM]
		Organic	$\frac{\text{Liquid Limit (oven dried)}}{\text{Liquid Limit (not dried)}} < 0.75$	OH	Organic clay [KLMP] Organic silt [KLMQ]
Highly organic soils			Primarily organic matter, dark in color, and organic odor	PT	Peat

A. Based on material passing the 3-inch (75-mm) sieve

B. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name.

C. Gravels with 5 to 12% fines by weight require dual symbols.
GW-GM: well-graded gravel with silt
GW-GC: well-graded gravel with clay
GP-GM: poorly graded gravel with silt
GP-GC: poorly graded gravel with clay

D. Sands with 5 to 12% fines by weight require dual symbols.
SW-SM: well-graded sand with silt
SW-SC: well-graded sand with clay
SP-SM: poorly graded sand with silt
SP-SC: poorly graded sand with clay

E. $C_c = \frac{D_{30}{}^2}{D_{60} * D_{10}}$ $C_u = \frac{D_{60}}{D_{10}}$

F. If soil contains ≥ 15% sand by weight, add "with sand" to group name. If soil contains < 15% sand by weight, add "trace sand" to group name.

G. If fines classify as CL-ML, use dual symbol GC-GM, SC-SM.

H. If fines are organic, add "with organic fines" to group name.

I. If soil contains ≥ 15% gravel by weight, add "with gravel" to group name. If soil contains < 15% gravel by weight, add "trace gravel" to group name.

J. If the Liquid Limit and Plasticity Index plot in hatched area on plasticity chart, soil is a CL-ML, silty clay.

K. If soil contains 15 to 29% plus No. 200 by weight, add "with sand" or "with gravel," whichever is predominant. If soil contains < 15% plus No. 200 by weight, add "trace sand" or "trace gravel," whichever is predominant.

L. If soil contains ≥ 30% plus No. 200 by weight, predominantly sand, add "sandy" to group name.

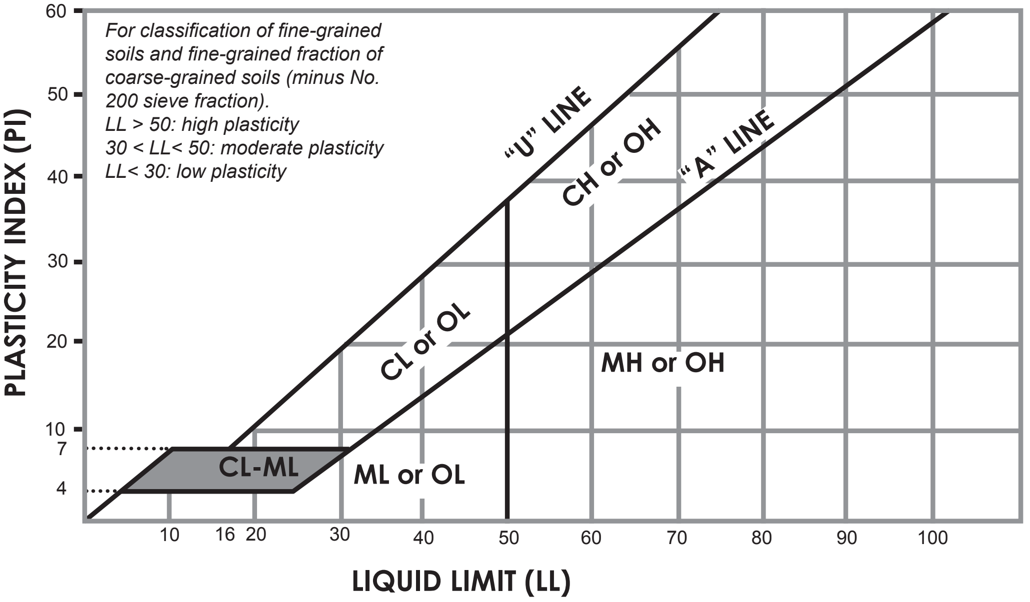
M. If soil contains ≥ 30% plus No. 200 by weight, predominantly gravel, add "gravelly" to group name.

N. PI ≥ 4 and plots on or above "A" line

O. PI < 4 or plots below "A" line

P. PI plots on or above "A" line

Q. PI plots below "A" line



For classification of fine-grained soils and fine-grained fraction of coarse-grained soils (minus No. 200 sieve fraction).
LL > 50: high plasticity
30 < LL< 50: moderate plasticity
LL< 30: low plasticity

Representative Particle Sizes	
Boulders	Larger than 12"
Cobbles	3" to 12"
Coarse gravel	3/4" to 3"
Fine gravel	No. 4 (4.75 mm) sieve to 3/4"
Coarse sand	No. 10 (2 mm) to No. 4 (4.75 mm) sieve
Medium sand	No. 40 (0.425 mm) to No. 10 (2 mm) sieve
Fine sand	No. 200 (0.075mm) to No. 40 (0.425 mm) sieve
Silt	0.002 mm to No. 200 (0.075mm) sieve
Clay	Finer than 0.002 mm

Sampling Symbols

SS	Split spoon (2” OD, unless otherwise noted)
3T	3” Shelby tube/thin wall
5T	5” Shelby tube/thin wall
MCS	Modified California sampler
PS	Piston sampler
PT	Pitcher sampler
TC	Texas cone penetrometer
WS	Wash sample
HA	Hand auger sampler
BS	Miscellaneous bag/bottle/bucket bulk sample
NR	No recovery
RS	Rotosonic
DP	Direct push (Geoprobe)
RC	Rock core
VC	Vibro core
CT	Cuttings

Water Level Measurement Symbols

ED	End of drilling
WS	While sampling
WD	While drilling
BCR	Before casing removal
ACR	After casing removal
AI	Immediately after installation
WCI	Wet cave-in
DCI	Dry cave-in

Laboratory Tests

DD	Dry density
WD	Wet density
MC	Natural moisture content
LL	Liquid Limit
PL	Plastic Limit
PI	Plascticity Index
P200	Percent passing No. 200 sieve
OC	Organic content
S	Degree of saturation
SG	Specific gravity
ϕ	Angle of internal friction
Q_u	Unconfined compressive strength
C	Shear strength

Miscellaneous Codes

Q_P	Undrained shear strength from pocket penetrometer
TV	Undrained shear strength from torvane shear test
FV	Field vane shear test
REM	Remolded field vane shear test
WPT	Water pressure (packer) test
WH	Penetration test[3] produced 1-foot penetration under weight of rods and hammer alone. No driving required.
WR	Penetration test[3] produced 1-foot penetration under weight of rods alone. No driving required.
RQD	Rock quality designation

Drilling Symbols

HSA	Hollow-stem auger
MRO	Mud rotary
WRO	Water rotary
ARO	Air rotary
BRO	Biodegradable mud rotary
DBC	Diamond bit coring
TTC	Triple tube coring with diamond bit
DPT	Direct push technology (Geoprobe)
DHH	Downhole hammer
RSC	Rotosonic coring
TP	Test pit

Exploration Methods

Hollow-stem auger borings performed in accordance with ASTM Test Method D-6151
Flight auger borings performed in accordance with ASTM Test Method D-1452
Test pits typically performed with a backhoe
Rock coring performed in accordance with ASTM Test Method D-2113
RQD performed in accordance with ASTM Test Method D-6032
Penetration test[3] performed in accordance with ASTM Test Method D-1586
Thin wall tube sampling performed in accordance with ASTM Test Method D-1587
Soil classification performed in accordance with ASTM Test Method D-2487

Relative Density of Cohesionless Soils[1]

N-value[2]	Qualitative Density Description	Estimated D_R
< 4 BPF	Very loose	$D_R < 15\%$
4 to 10 BPF	Loose	D_R up to 35%
10 to 30 BPF	Medium dense	D_R up to 65%
30 to 50 BPF	Dense	D_R up to 85%
> 50 BPF	Very dense	$D_R > 85\%$

Consistency of Fine-Grained Soils[1]

N-value[2]	Qualitative Consistency Description	Estimated Q_U
< 2 BPF	Very soft	$Q_U < 0.25$ tsf
2 and 4 BPF	Soft	Q_U up to 0.50 tsf
4 to 8 BPF	Medium stiff	Q_U up to 1.0 tsf
8 to 15 BPF	Stiff	Q_U up to 2.0 tsf
15 to 30 BPF	Very stiff	Q_U up to 4.0 tsf
> 30 BPF	Hard	$Q_U > 4.0$ tsf

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[1] *Reference: Terzaghi, Peck, and Mesri,* Soil Mechanics in Engineering Practice, *third edition, 1996.*

[2] *Based on N_{60} values corresponding to 60% hammer efficiency.*

[3] *The penetration resistance, or N-value, is the total number of blows required to drive two successive 6” rams with a 2” split-spoon sampler. The sampler is driven with a 140-pound hammer falling 30”, unless otherwise noted. The N-value is reported in blows per foot (BPF).*

BARR

LOG OF BORING 1A

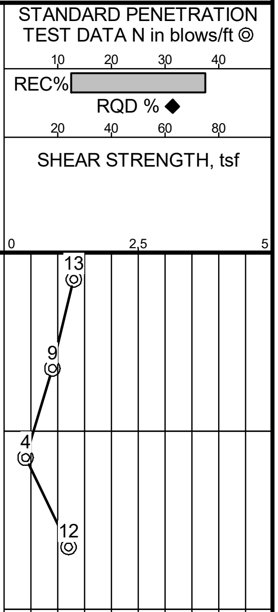
Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1004.6 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,854.0 ft E 783,655.3 ft	Completion Depth:	9.0 ft
Datum:	NAVD 88		

Surface Elev.: 1004.6 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION		Sample No.	% Recovery	SPT, N value or RQD %
	0	Crushed asphalt/ Topsoil mix. 1004.1 ft	0.5ft	1	100	13
		POORLY GRADED SAND (SP): very fine to fine grained; tan; moist; loose to medium dense; slight silt; 5% fines. 999.6 ft		2	100	9
1000	5	SILTY SAND (SM): tan to brown; moist; very loose; 20% fines. 998.1 ft	5.0ft	3	100	4
		POORLY GRADED SAND (SP): very fine to fine grained; tan; moist; medium dense; 95% sand. 995.6 ft	6.5ft	4	100	12
		Bottom of Boring at 9.0 feet	9.0ft			

STANDARD PENETRATION TEST DATA N in blows/ft ◎



Date Boring Started:	6/29/19
Date Boring Completed:	6/29/19
Logged By:	CSM
Drilling Contractor:	Badger
Drill Rig:	D-50

Water Levels (ft)
At Time of Drilling
Dry

Remarks: Estimated Top of storm sewer at 12 feet. Boring located over sewer pipe.

Weather: hot and humid approximately 90 F

BARR

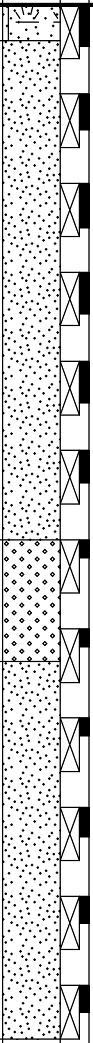
LOG OF BORING 1B

Sheet 1 of 1

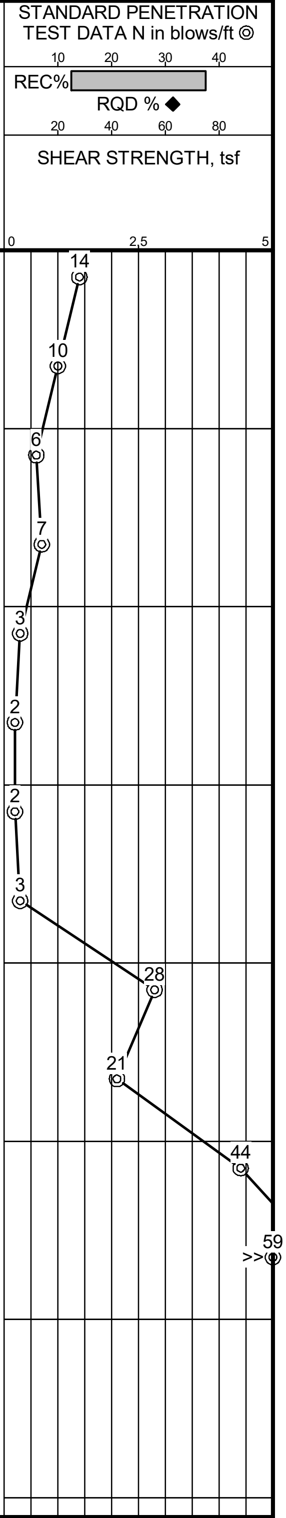
Project: Fisher Bren
Job No.: 49191019.00/100/300
Location: Verona, Wisconsin
Coordinates: N 463,850.8 ft E 783,651.5 ft
Datum: NAVD 88

Surface Elevation: 1004.9 ft
Drilling Method: HSA
Sampling Method: Split Barrel
Completion Depth: 29.0 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION
1004.9	0	Surface Elev.: 1004.9 ft TOPSOIL: Crushed asphalt/topsoil.
1003.9 ft	1.0ft	POORLY GRADED SAND (SP): very fine to fine grained; tan; moist; very loose to medium dense; 10% fines.
1000	5	Silty sand lense observed at 5 feet (20% fines).
995	10	
989.9 ft	15.0ft	WELL GRADED SAND (SW): fine to coarse grained; very loose; 5% gravel. Rod drop 12-inches by weight of Auto-Hammer; moist to wet at 17.5 feet.
986.5 ft	18.4ft	Lens of silty sand (5 inches) at 18 feet..
985	20	WELL GRADED SAND WITH GRAVEL (SW): medium brown; saturated; very soft to very dense; lense of course sand and gravel at 26 feet.
980	25	
975.9 ft	29.0ft	Bottom of Boring at 29.0 feet



Sample No.	% Recovery	SPT, N value or RQD %
1	78	14
2	67	10
3	83	6
4	78	7
5	78	3
6	61	2
7	33	2
8	33	3
9	33	28
10	56	21
11	50	44
12	50	59



Date Boring Started: 6/29/19
Date Boring Completed: 6/29/19
Logged By: CSM
Drilling Contractor: Badger
Drill Rig: D-50

Water Levels (ft)
▼ At Time of Drilling 17.5

Remarks:

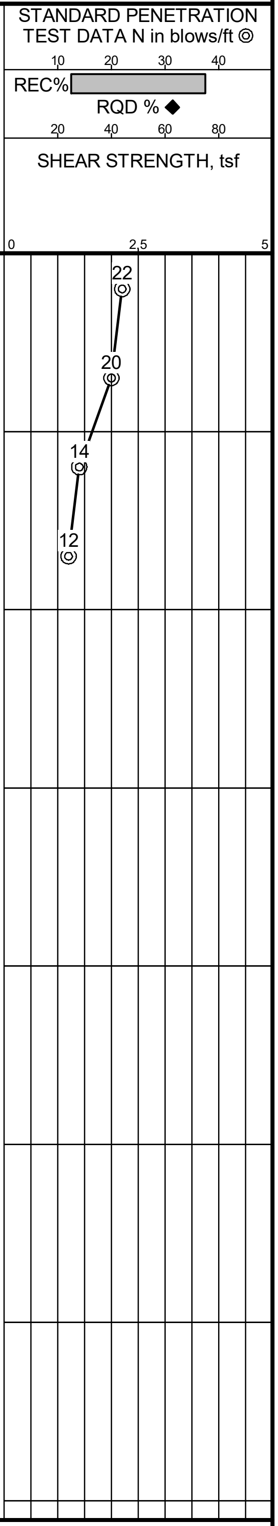
Weather: sunny approximately 90 F

LOG OF BORING 2A

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1004.8 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,866.0 ft E 783,565.6 ft	Completion Depth:	9.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
	0	Surface Elev.: 1004.8 ft					
		SILTY SAND (SM): fine to coarse grained; medium brown; moist; medium dense; angular; 70% sand, 30% fines, crushed Asphalt mix.			1	67	22
		1001.8 ft					
		POORLY GRADED SAND WITH SILT (SP-SM): very fine to fine grained; moist; medium dense; 90% sand, 10% fines. 3.0ft			2	54	20
1000	5				3	100	14
		995.8 ft			4	75	12
		Bottom of Boring at 9.0 feet 9.0ft					



Date Boring Started:	6/28/19
Date Boring Completed:	6/28/19
Logged By:	CSM
Drilling Contractor:	SES
Drill Rig:	CME 75

Water Levels (ft)
At Time of Drilling
Dry

Remarks: No sample obtained from 0-2.5 feet. crushed asphalt mix.

Weather: partly cloudy approximately 90 F

BARR

LOG OF BORING 2B

Sheet 1 of 1

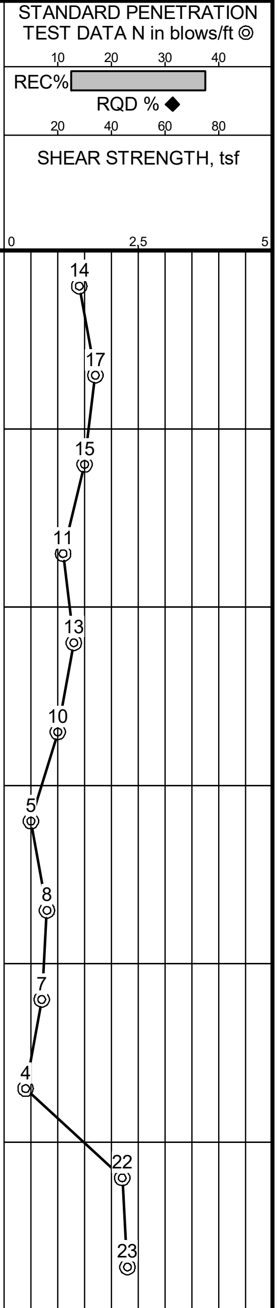
Project:	Fisher Bren	Surface Elevation:	1004.8 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,856.8 ft E 783,568.7 ft	Completion Depth:	29.0 ft
Datum:	NAVD 88		

MATERIAL DESCRIPTION

Surface Elev.: 1004.8 ft

Elevation, feet	Depth, feet	Material Description
1004.8	0	TOPSOIL/CRUSHED ASPHALT MIX.
1003.8 ft	1.0ft	POORLY GRADED SAND WITH SILT (SP-SM): very fine to fine grained; medium brown; moist; loose to medium dense; 90% sand, 10% fines. At 5.5 feet 95% sand and 5% fines, fine to medium grain, slight coarse sand.
986.3 ft	18.5ft	WELL GRADED SAND WITH GRAVEL (SW): fine to coarse grained; medium brown; loose; subrounded; 25% gravel, 75% sand, very moist to saturated.
983.3 ft	21.5ft	SILTY SAND (SM): medium brown; saturated; loose; 65% sand, 35% fines.
981.3 ft	23.5ft	WELL GRADED SAND (SW): fine to coarse grained; medium brown; saturated; very loose; 95% sand, 5% fines.
978.8 ft	26.0ft	POORLY GRADED GRAVEL WITH SAND (GP): medium brown; saturated; medium dense; angular to subrounded.
975.8 ft	29.0ft	Bottom of Boring at 29.0 feet

Sample No.	% Recovery	SPT, N value or RQD %
1	83	14
2	100	17
3	100	15
4	100	11
5	100	13
6	100	10
7	100	5
8	50	8
9	50	7
10	50	4
11	50	22
12	100	23



Date Boring Started:	6/28/19
Date Boring Completed:	6/28/19
Logged By:	CSM
Drilling Contractor:	SES
Drill Rig:	CME 75

Water Levels (ft)
▽ At Time of Drilling 18.5

Remarks:

Weather: sunny approximately 90 F

\BARR.COM\PROJECTS\MPLS\49 WI\13\49131019 VERONA WI SINKHOLE EVALUATION\WORKFILES\FIELD DATA\BORING AND TEST TRENCH LOGS\SOIL BORINGS\FISHER BREN BORING LOGS.GPJ BARRLIBRARY.GLB BOREHOLE LOG REPORT BARR TEMPL

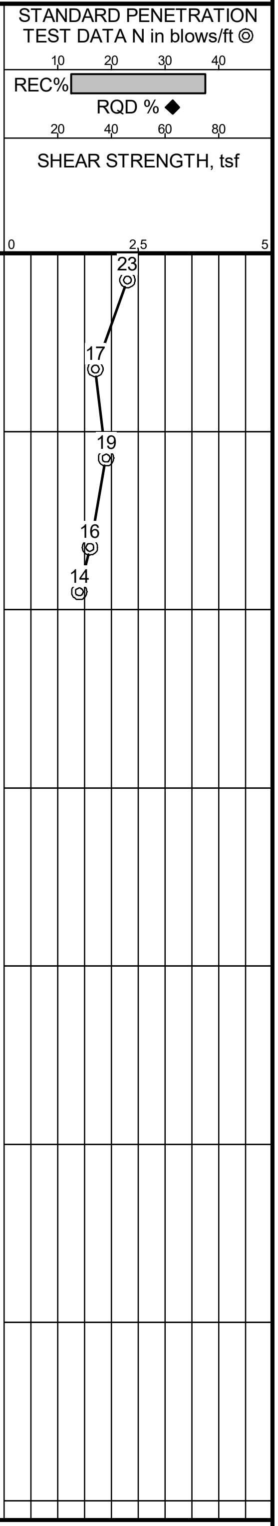
BARR

LOG OF BORING 3A

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1003.7 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,540.1 ft E 782,965.8 ft	Completion Depth:	10.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
		Surface Elev.: 1003.7 ft			
	0	SILTY SAND WITH GRAVEL (SM): very fine to fine grained; tan; moist; medium dense; 10% gravel, 70% sand, 20% fines.	1	61	23
		Difficult drilling from approximately 1.5 feet to 3 feet due to large gravel.			
1000			2	72	17
	5		3	50	19
995		Decreasing gravel from 7.5 to 9 feet.	4	44	16
	10	Increasing gravel from 9 to 10 feet.	5	50	14
		993.7 ft 10.0ft			
		Bottom of Boring at 10.0 feet			



Date Boring Started:	6/30/19
Date Boring Completed:	6/30/19
Logged By:	CSM
Drilling Contractor:	Badger
Drill Rig:	D-50

Water Levels (ft)
▽ At Time of Drilling
Dry

Remarks:

Weather:

BARR

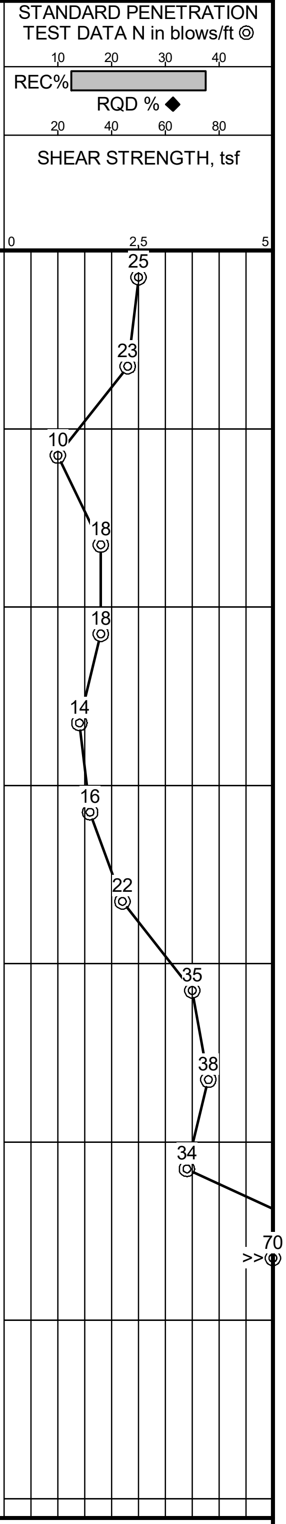
LOG OF BORING 3B

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1003.9 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,545.8 ft E 782,965.2 ft	Completion Depth:	29.0 ft
Datum:	NAVD 88		

Surface Elev.: 1003.9 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
1003.9	0	SILTY SAND WITH GRAVEL (SM): very fine to coarse grained; tan; moist; medium dense; some crushed concrete from 2.5 to 4 feet causing difficult drilling; 15% gravel, 70% sand, 15% fines.	1	67	25
			2	50	23
			3	44	10
			4	67	18
		Less gravel observed from 10 to 12 feet.	5	44	18
990.9 ft	13.0ft	POORLY GRADED SAND WITH GRAVEL (SP): fine to coarse grained; brown; medium dense to dense; 15% gravel, 80% sand, 5% fines.	6	33	14
			7	0	16
		Trace silt; moist to wet at 18 feet.	8	39	22
			9	44	35
		Siltier with depth at 22.5 to 24.5 feet.	10	33	38
979.4 ft	24.5ft	SILTY SAND WITH GRAVEL (SM): fine grained; brown; wet; dense; 10% gravel, 60% sand, 30% fines.	11	33	34
976.4 ft	27.5ft	SILTY SAND (SM): fine grained; brown; wet; very dense; 5% gravel, 80% sand, 15% fines.	12	67	70
975.4 ft	28.5ft	POORLY GRADED GRAVEL WITH SAND (GP): brown; wet; very dense; 80% gravel, 15% sand, 5% fines.			
974.9 ft	29.0ft	Bottom of Boring at 29.0 feet			



Date Boring Started:	6/30/19
Date Boring Completed:	7/1/19
Logged By:	CSM-AMS3
Drilling Contractor:	Badger
Drill Rig:	D-120

Water Levels (ft)

▽ At Time of Drilling 18.0

Remarks: Drilling ceased on 6/30/2019 due to weather, completed on 7/1/2019.

Weather:

LOG OF BORING 3C

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1003.9 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,575.0 ft E 783,001.0 ft	Completion Depth:	30.0 ft
Datum:	NAVD 88		

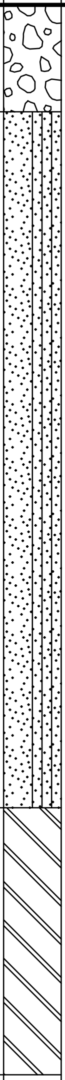
STANDARD PENETRATION TEST DATA N in blows/ft ◎ 10 20 30 40

REC% ▬ RQD % ◆ 20 40 60 80

SHEAR STRENGTH, tsf 0 2.5 5

Surface Elev.: 1003.9 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
	0	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM): brown; fill; 75% gravel, 15% sand, 10% fines. Difficult drilling from 1 to 3 feet due to gravel. 1000.9 ft					
1000	5	SAND WITH SILT TO SILTY SAND (SP-SM): fine to medium grained; brown. 3.0ft					
995	10						
990	15						
985 ▼	20	981.4 ft					
980	25	LEAN CLAY TO FAT CLAY TRACE SAND, TRACE GRAVEL (CL-CH): dark gray; moist; medium to high plasticity; 5% gravel, 5% sand, 90% fines. 22.5ft 973.9 ft					
975	30	Bottom of Boring at 30.0 feet 30.0ft					



Date Boring Started:	7/9/19
Date Boring Completed:	7/9/19
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME85

Water Levels (ft)

▼ At Time of Drilling 19.1

Remarks: Blind drilled to 30 feet installed 3 vibrating wire piezos. Soil logged by inspection of drill cuttings.

Weather: 80 F, Sunny

\BARR.COM\PROJECTS\MPLS\49 WI\13\49131019 VERONA WI SINKHOLE EVALUATION\WORKFILES\FIELD DATA\BORING AND TEST TRENCH LOGS\SOIL BORINGS\FISHER BREN BORING LOGS.GPJ BARRLIBRARY.GLB BOREHOLE LOG REPORT BARR TEMPLA

LOG OF BORING 4A

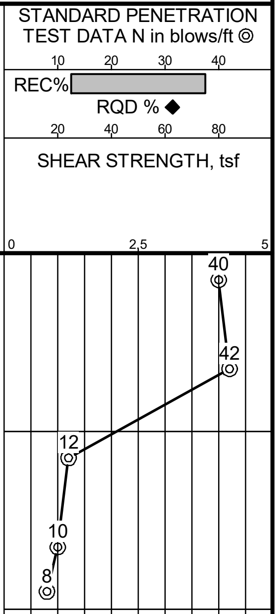
Sheet 1 of 1

Project: Fisher Bren
Job No.: 49191019.00/100/300
Location: Verona, Wisconsin
Coordinates: N 463,446.7 ft E 782,864.9 ft
Datum: NAVD 88

Surface Elevation: 1005.6 ft
Drilling Method: HSA
Sampling Method: Split Barrel
Completion Depth: 10.0 ft

Surface Elev.: 1005.6 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
1005	0	SILTY SAND WITH GRAVEL (SM): tan; moist; loose to dense; 5% gravel, 80% sand, 15% fines. Difficult drilling from approximately 1.5 to 3 feet due to large gravel.	1	61	40
			2	78	42
1000	5		3	56	12
		Increased silt and decreased gravel from 7.5 feet to 10 feet.	4	56	10
		995.6 ft	5	50	8
	10	Bottom of Boring at 10.0 feet — 10.0ft			



Date Boring Started: 6/29/19
Date Boring Completed: 6/29/19
Logged By: CSM
Drilling Contractor: Badger
Drill Rig: D-50

Water Levels (ft)
At Time of Drilling
Dry

Remarks:

Weather: Hot/humid 90F

BARR

LOG OF BORING 4B

Sheet 1 of 1

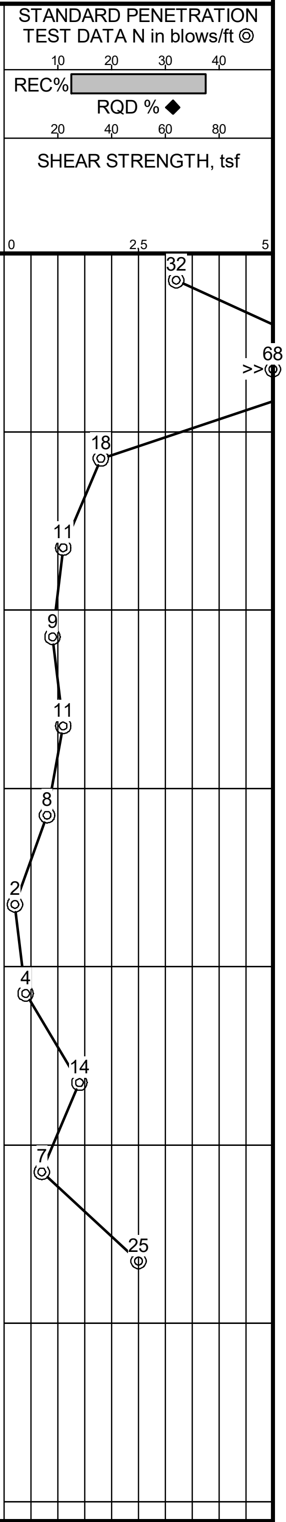
Project:	Fisher Bren	Surface Elevation:	1006.0 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Barrel
Coordinates:	N 463,452.2 ft E 782,863.0 ft	Completion Depth:	29.0 ft
Datum:	NAVD 88		

MATERIAL DESCRIPTION

Surface Elev.: 1006.0 ft

Elevation, feet	Depth, feet	Material Description	
	0	SILTY SAND WITH GRAVEL (SM): fine to medium grained; tan; moist; very loose to very dense; dense to very dense from 0-4 feet; 5% gravel, 80% sand, 15% fines. Difficult drilling from approximately 2 to 3 feet due to large gravel. Loose/very loose at 18 feet.	
987.0 ft		POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM): fine to medium grained; medium brown; saturated; very loose to medium dense; 70% gravel, 25% sand, 5% fines.	19.0ft
981.0 ft		WELL GRADED SAND (SW): fine to medium grained; medium brown; saturated; loose to medium dense; 95% sand, 5% fines.	25.0ft
977.0 ft		Bottom of Boring at 29.0 feet	29.0ft

Sample No.	% Recovery	SPT, N value or RQD %
1	89	32
2	78	68
3	61	18
4	61	11
5	22	9
6	33	11
7	39	8
8	28	2
9	28	4
10	22	14
11	50	7
12	22	25



Date Boring Started:	6/30/19	Water Levels (ft)	Remarks:
Date Boring Completed:	6/30/19	▼ At Time of Drilling 19.0	
Logged By:	CSM		
Drilling Contractor:	Badger		
Drill Rig:	D-50		Weather: 75 F Partly sunny

BARR

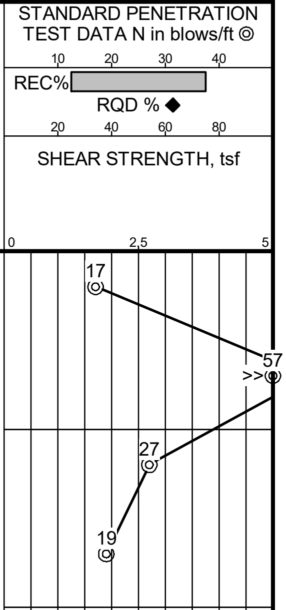
LOG OF BORING 5A

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1005.1 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	N 463,706.5 ft E 783,241.3 ft	Completion Depth:	9.5 ft
Datum:	NAVD 88		

Surface Elev.: 1005.1 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
	0	POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM): fine grained; tan; moist; medium dense; 15% gravel, 75% sand, 10% fines.			1	92	17
		1003.6 ft 1.5ft					
		POORLY GRADED GRAVEL WITH SAND (GP): gray; moist; very dense; 70% gravel, 25% sand, 5% fines, contains crushed rock and concrete; difficulty drilling.			2	100	57
		1002.1 ft 3.0ft					
1000	5	POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM): fine grained; brown; moist; medium dense to very dense; laminated; 15% gravel, 70% sand, 15% fines. End of laminations at 4 feet.			3	100	27
					4	25	19
		995.6 ft 9.5ft					
		Bottom of Boring at 9.5 feet					



Date Boring Started:	6/28/19 1:00 pm	Water Levels (ft)	Remarks: Non-subsidence area boring.
Date Boring Completed:	6/28/19 1:40 pm	▼ At Time of Drilling Dry	
Logged By:	AMS3		
Drilling Contractor:	SES		
Drill Rig:	CME85		Weather: 80 F overcast, scattered T-storms

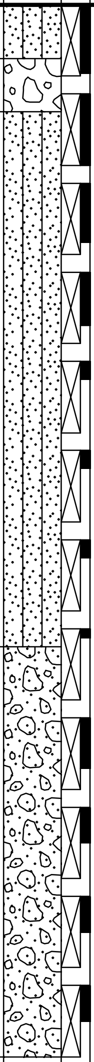
BARR

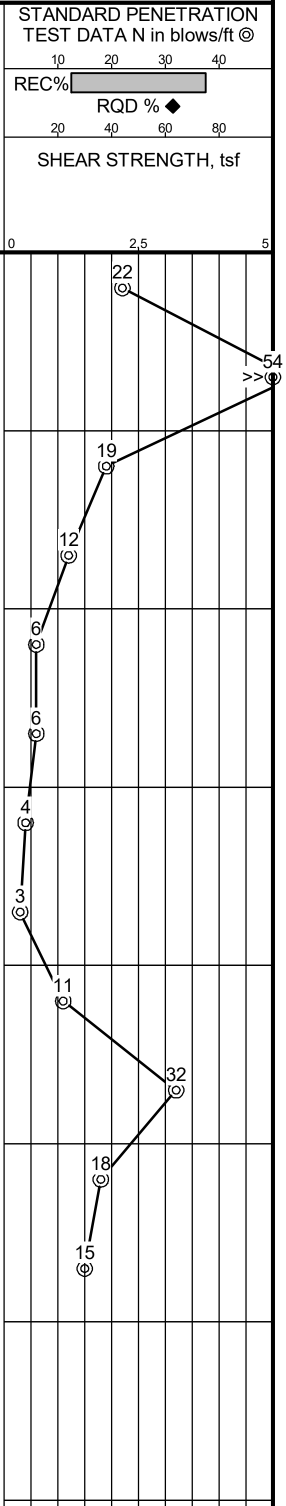
LOG OF BORING 5B

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1005.2 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	N 463,713.0 ft E 783,240.6 ft	Completion Depth:	29.5 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
	0	Surface Elev.: 1005.2 ft			
		SILTY SAND (SM): fine grained; tan; moist; medium dense; 10% gravel, 70% sand, 20% fines.	1	96	22
	1.5ft	1003.7 ft POORLY GRADED GRAVEL (GP): gray; moist; medium dense; crushed concrete; 85% gravel, 10% sand, 5% fines, difficult drilling due to large gravel.			
	3.0ft	1002.2 ft SILTY SAND WITH GRAVEL (SM): fine grained; brown; very loose to very dense; 15% gravel, 70% sand, 15% fines.	2	100	54
1000	5		3	83	19
			4	75	12
995	10	Cobbly at 10 to 13 feet.	5	25	6
			6	25	6
990	15		7	25	4
	18.0ft	987.2 ft Clayey sand lens 17.5 to 18 feet. loose to medium dense. POORLY GRADED GRAVEL WITH SAND (GP): brown; wet; very loose to dense; 80% gravel, 15% sand, 5% fines.	8	13	3
985	20		9	71	11
			10	50	32
980	25		11	50	18
		975.7 ft	12	50	15
	29.5ft	Bottom of Boring at 29.5 feet			





Date Boring Started:	6/28/19 1:55 pm
Date Boring Completed:	6/28/19 4:40 pm
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME85

Water Levels (ft)

▼ At Time of Drilling 18.0

Remarks: Grinding noise from the auger, metal wire 6 inches long at 13 feet. Non-subsidence area boring.

Weather: 85-90 F Mostly Cloudy

LOG OF BORING 5C

Sheet 1 of 2

Project:	Fisher Bren	Surface Elevation:	1005.4 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	N 463,712.0 ft E 783,237.3 ft	Completion Depth:	41.5 ft
Datum:	NAVD 88		

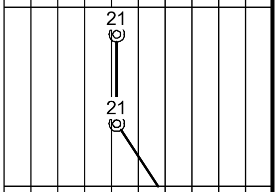
Surface Elev.: 1005.4 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION		Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
1005	0	5C starts at 30 feet. Refer to 5B for adjacent boring blow counts and lithology description for 0 to 29.5 feet.						
975.4 ft	30	POORLY GRADED GRAVEL (GP): fine to coarse grained; brown; wet; medium dense; few sand, trace silt; 80% gravel, 15% sand, 5% fines.	30.0ft			1	33	21
973.4 ft	32	SILTY SAND (SM): fine to coarse grained; brown; wet; medium dense to dense; 5% gravel, 80% sand, 15% fines. Sandy silt and lens from 33.5 to 34 feet, 0% gravel, 20% sand and 80% silt.	32.0ft			2	67	21

STANDARD PENETRATION TEST DATA N in blows/ft ◎

REC% ▭ RQD % ◆

SHEAR STRENGTH, tsf



Depth scale: 0, 5, 10, 15, 20, 25, 30, 35; Elevation scale: 1005, 1000, 995, 990, 985, 980, 975

Continued Next Page

Date Boring Started:	7/1/19 11:25 am
Date Boring Completed:	7/1/19 1:00 pm
Logged By:	AMS3
Drilling Contractor:	Badger
Drill Rig:	D-120

Water Levels (ft)

▽ At Time of Drilling 18.0 observed in adjacent boring 5B

Remarks: Non-subsidence feature area boring drilled to investigate for bedrock. Blind drilled to 30 feet.

Weather: 80 Mostly Sunny

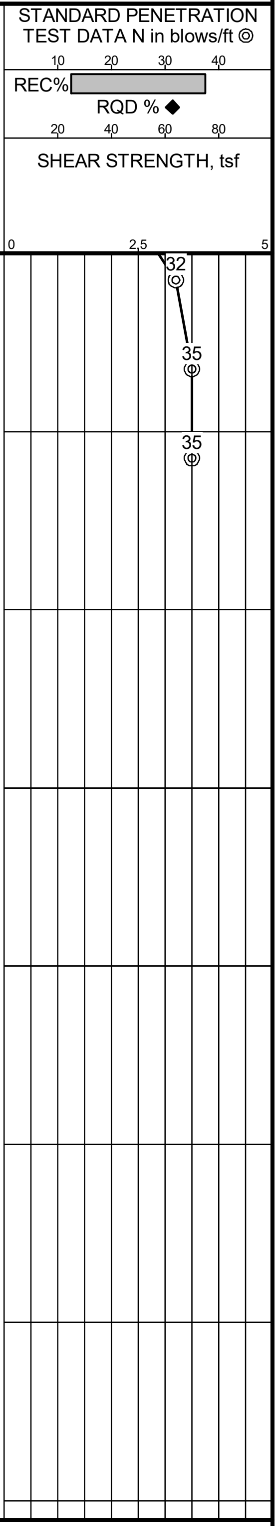
LOG OF BORING 5C

Sheet 2 of 2

Project: Fisher Bren
Job No.: 49191019.00/100/300
Location: Verona, Wisconsin
Coordinates: N 463,712.0 ft E 783,237.3 ft
Datum: NAVD 88

Surface Elevation: 1005.4 ft
Drilling Method: HSA
Sampling Method: Split Spoon
Completion Depth: 41.5 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
970	35	SILTY SAND (SM): fine to coarse grained; brown; wet; medium dense to dense; 5% gravel, 80% sand, 15% fines. *(Continued)*		☒	3	67	32
				☒	4	0	35
965	40	964.4 ft		☒	5	56	35
		POORLY GRADED GRAVEL WITH SAND, TRACE SILT (GP): greyish brown; wet; dense; 80% gravel, 15% sand, 5% fines. 41.0ft 963.9 ft 41.5ft					
		Bottom of Boring at 41.5 feet					



Date Boring Started: 7/1/19 11:25 am
Date Boring Completed: 7/1/19 1:00 pm
Logged By: AMS3
Drilling Contractor: Badger
Drill Rig: D-120

Water Levels (ft)
▽ At Time of Drilling 18.0 observed in adjacent boring 5B

Remarks: Non-subsidence feature area boring drilled to investigate for bedrock. Blind drilled to 30 feet.

Weather: 80 Mostly Sunny

BARR

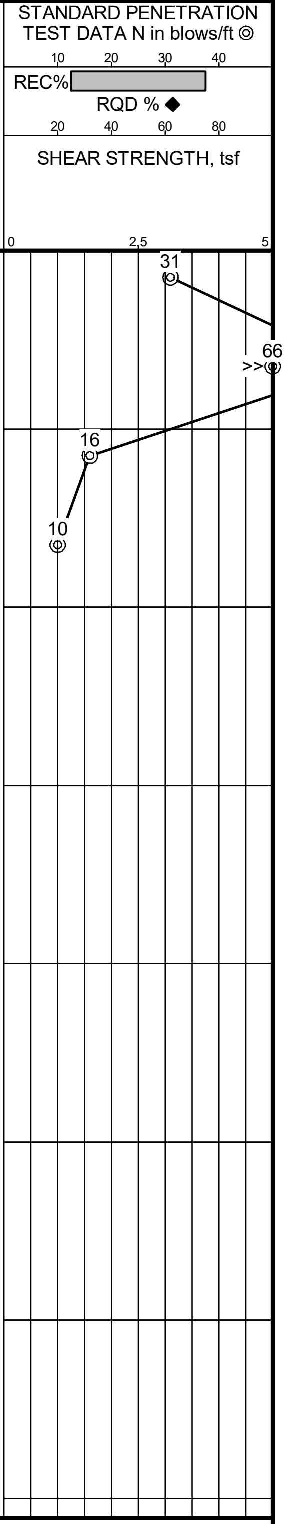
LOG OF BORING 6A

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1006.2 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	N 463,827.3 ft E 783,459.8 ft	Completion Depth:	9.0 ft
Datum:	NAVD 88		

Surface Elev.: 1006.2 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
	0	POORLY GRADED SAND WITH GRAVEL (SP): fine to medium grained; brown; moist; dense to very dense; 15% gravel, 80% sand, 5% fines. Difficult drilling from 1.5 to 3 feet due to large gravel.	1	83	31
1005			2	83	66
		1001.7 ft			
	5	SILTY SAND (SM): fine grained; brown; moist; loose to medium dense; 5% gravel, 80% sand, 15% fines. 4.5ft	3	94	16
1000			4	83	10
		997.2 ft			
		Bottom of Boring at 9.0 feet 9.0ft			



Date Boring Started:	7/1/19 3:05 pm
Date Boring Completed:	7/1/19 3:30 pm
Logged By:	AMS3
Drilling Contractor:	Badger
Drill Rig:	D-120

Water Levels (ft)
At Time of Drilling
Dry

Remarks: Non-subsidence area boring.

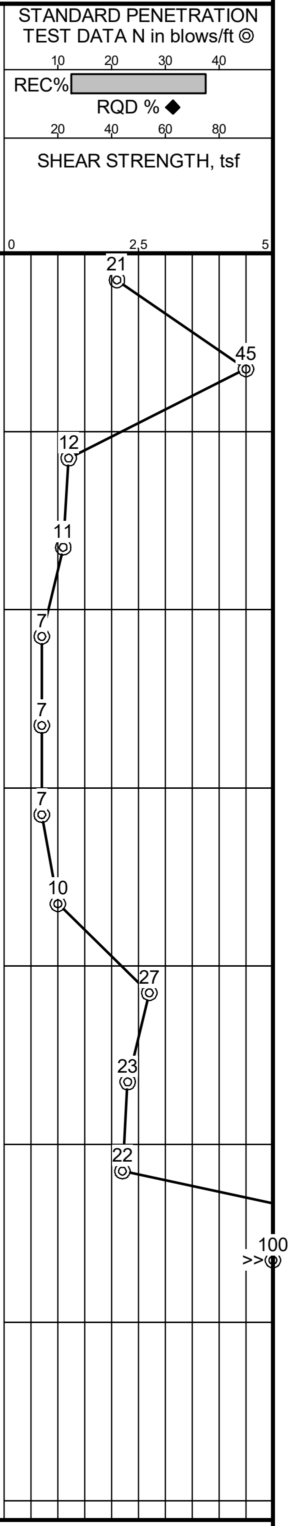
Weather: 75 F Partly Cloudy

LOG OF BORING 6B

Sheet 1 of 1

Project:	Fisher Bren	Surface Elevation:	1005.8 ft
Job No.:	49191019.00/100/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	N 463,820.9 ft E 783,463.2 ft	Completion Depth:	29.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
	0	Surface Elev.: 1005.8 ft			
1005		CRUSHED ASPHALT. 1005.3 ft 0.5ft	1	67	21
		POORLY GRADED GRAVEL WITH SAND (GP): moist; medium dense; 80% gravel, 15% sand, 5% fines, difficult drilling due to large gravel. 1002.8 ft 3.0ft	2	89	45
1000	5	SILTY SAND (SM): fine grained; brown; moist; medium dense to dense; 5% gravel, 75% sand, 20% fines.	3	78	12
			4	78	11
995	10		5	83	7
			6	89	7
990	15	988.3 ft	7	83	7
		SANDY SILT (ML): fine grained; grey brown to orange brown; moist; stiff; 0% gravel, 30% sand, 70% fines. 17.5ft	8	100	10
985 ▽	20	984.8 ft	9	56	27
		POORLY GRADED SAND WITH GRAVEL (SP): fine to coarse grained; brown; wet; medium dense; 20% gravel, 75% sand, 5% fines. 21.0ft 981.8 ft	10	56	23
980	25	POORLY GRADED GRAVEL (GP): brown; wet; very dense; 95% gravel, 5% sand, 0% fines. 24.0ft	11	0	22
		976.8 ft	12		100
		Bottom of Boring at 29.0 feet 29.0ft			



Date Boring Started:	7/2/19 7:40 am	Water Levels (ft)	Remarks: Non-subsidence area boring.
Date Boring Completed:	7/2/19 9:30 am	▽ At Time of Drilling 21.0	
Logged By:	AMS3		
Drilling Contractor:	Badger		
Drill Rig:	D-120		Weather: 75 F Partly Cloudy

NOTES

1. The boundary lines between different soil strata, as shown on the Soil Boring Records, are approximate and may be gradual.

2. The drillers' field log contains a description of the soil conditions between samples based on the equipment performance and the soil cuttings. The Soil Boring Records contain the description of the soil conditions as interpreted by a geotechnical engineer and/or a geologist after review of the drillers' field logs and soil samples and/or laboratory test results.

3. We define "Caved Level" as the depth below the existing ground surface at a boring location where the soils have collapsed into the borehole following removal of the drilling tools.

4. We define "Water Level" as the depth below the existing ground surface at a boring location to the level of water in the open borehole at the time indicated unless otherwise defined on the Soil Boring Records.

5. We define "at completion" for a boring as being the time when our drilling crew has completed the removal of all drilling tools from the borehole.

6. The Notes and Legend Record and the Soil Boring Records should not be separated.

RELATIVE PERCENTAGE TERMS

no	0%
trace	<5%
few	5 to <10%
little	10 to <30%
some	30 to < 50%

TEST RESULTS LEGEND

q_p = Penetrometer reading, $^{ton}/_{ft^2}$
MC = Moisture Content, % moisture by weight
P_{200} = % Passing the No. 200-mesh Sieve

RELATIVE MOISTURE TERMS AT TIME OF SAMPLING

Frozen or F = Frozen material
Dry = Dusty, dry to touch, absence of moisture
Moist or M = Damp to touch, no visible water
Wet or W = Visible free water

DRILLING METHODS LEGEND

HSA = Continuous flight hollow-stem augers

N-VALUE LEGEND

DS = Drove Stone
WH = Weight of hammer and sampling rods.

REMARKS LEGEND

NR = No Recovery
OO = Organic Odor

SAMPLER TYPE LEGEND

✋ Grab sample

⧄ 2-inch-outside-diameter, split-barrel sampler

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CONSULTING CIVIL ENGINEERS SINCE 1966

NOTES AND LEGEND RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

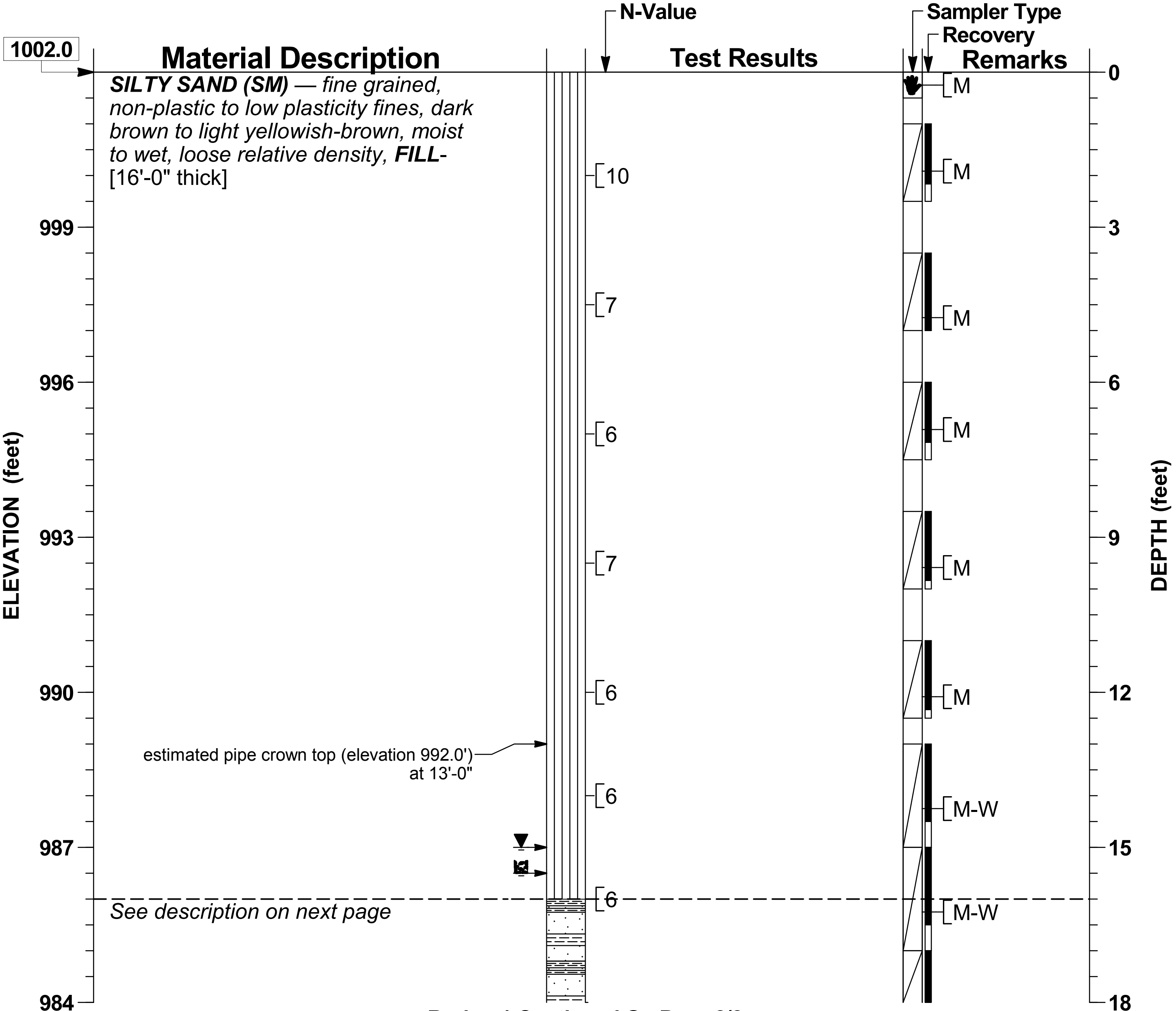
13282

Printed on 10/21/2019

General Location:

Boring 1

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 531+76	OFFSET: 131.8' Left	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/04/2019	DATE COMPLETED: 10/04/2019



***SILTY SAND (SM)** — fine grained, non-plastic to low plasticity fines, dark brown to light yellowish-brown, moist to wet, loose relative density, **FILL**-*
[16'-0" thick]

See description on next page

Boring 1 Continued On Page 2/2

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
▼ 15'-0" at completion	15'-6" Caved at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^{1}/_{4}$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

The Notes and Legend Record is considered a part of this Soil Boring Record.

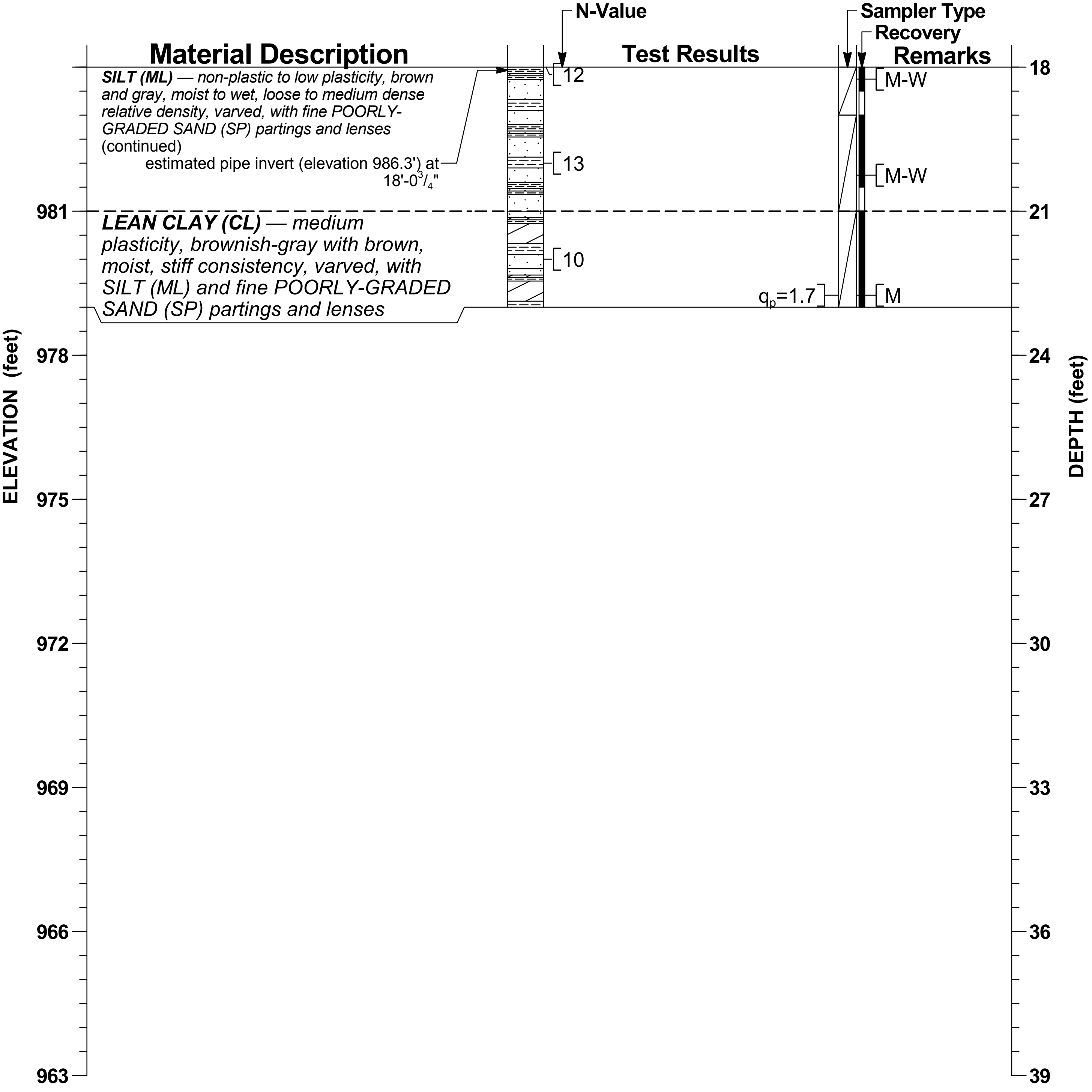
SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

13282

Printed on 10/21/2019

Boring 1

PAGE: **2** of **2**



***SILT (ML)** — non-plastic to low plasticity, brown and gray, moist to wet, loose to medium dense relative density, varved, with fine POORLY-GRADED SAND (SP) partings and lenses*
(continued)

estimated pipe invert (elevation 986.3') at 18'-$0^3/_4$"

***LEAN CLAY (CL)** — medium plasticity, brownish-gray with brown, moist, stiff consistency, varved, with SILT (ML) and fine POORLY-GRADED SAND (SP) partings and lenses*

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CONSULTING CIVIL ENGINEERS SINCE 1966

SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

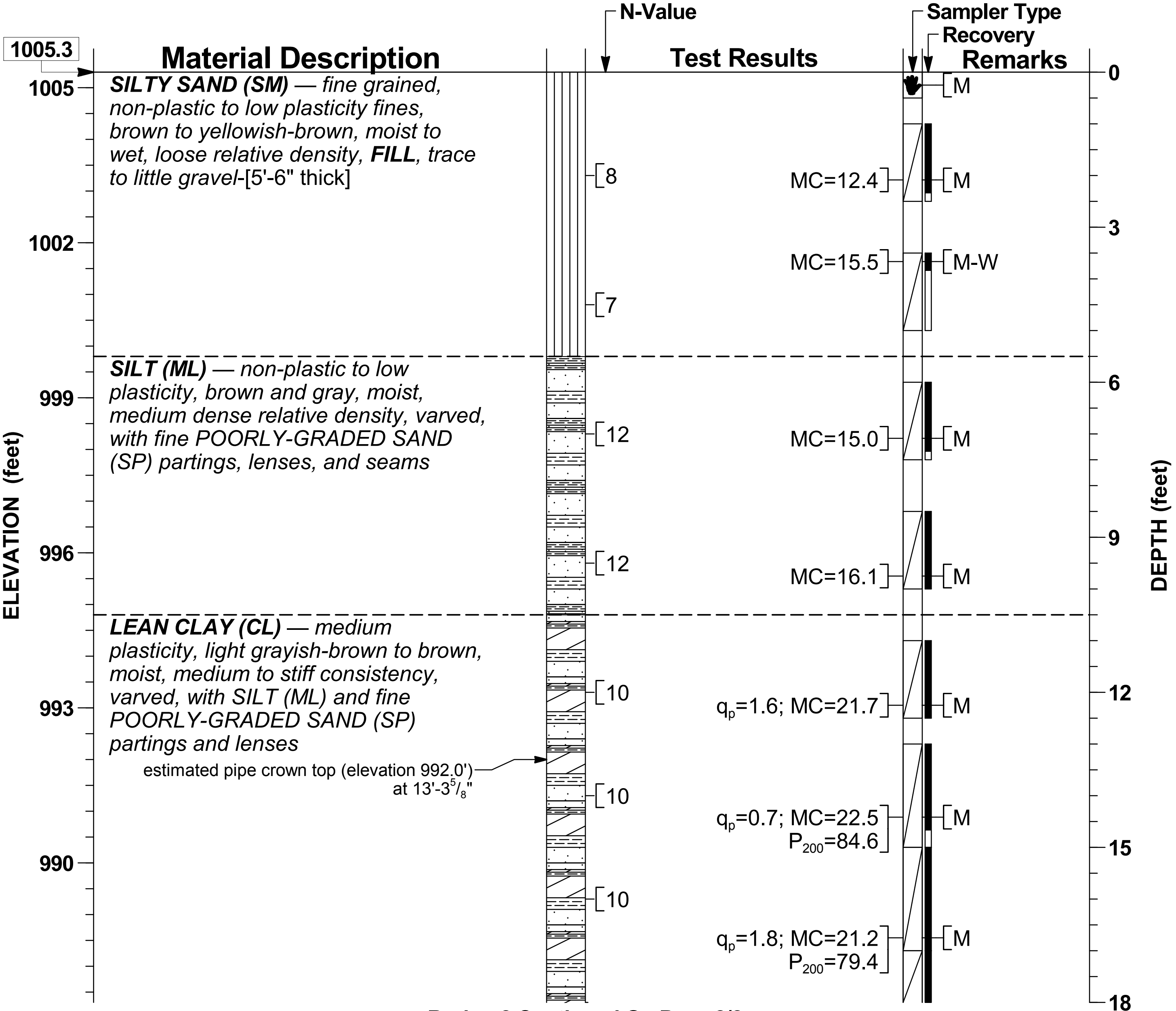
13282

Printed on 10/21/2019

General Location:

Boring 2

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 531+23	OFFSET: 84.8'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/03/2019



Material Description

SILTY SAND (SM) *— fine grained, non-plastic to low plasticity fines, brown to yellowish-brown, moist to wet, loose relative density,* ***FILL****, trace to little gravel*-[5'-6" thick]

SILT (ML) *— non-plastic to low plasticity, brown and gray, moist, medium dense relative density, varved, with fine POORLY-GRADED SAND (SP) partings, lenses, and seams*

LEAN CLAY (CL) *— medium plasticity, light grayish-brown to brown, moist, medium to stiff consistency, varved, with SILT (ML) and fine POORLY-GRADED SAND (SP) partings and lenses*

estimated pipe crown top (elevation 992.0') at 13'-3$^5/_8$"

N-Value	Test Results	Remarks
		M
8	MC=12.4	M
	MC=15.5	M-W
7		
12	MC=15.0	M
12	MC=16.1	M
10	q_p=1.6; MC=21.7	M
10	q_p=0.7; MC=22.5 P_{200}=84.6	M
10	q_p=1.8; MC=21.2 P_{200}=79.4	M

Boring 2 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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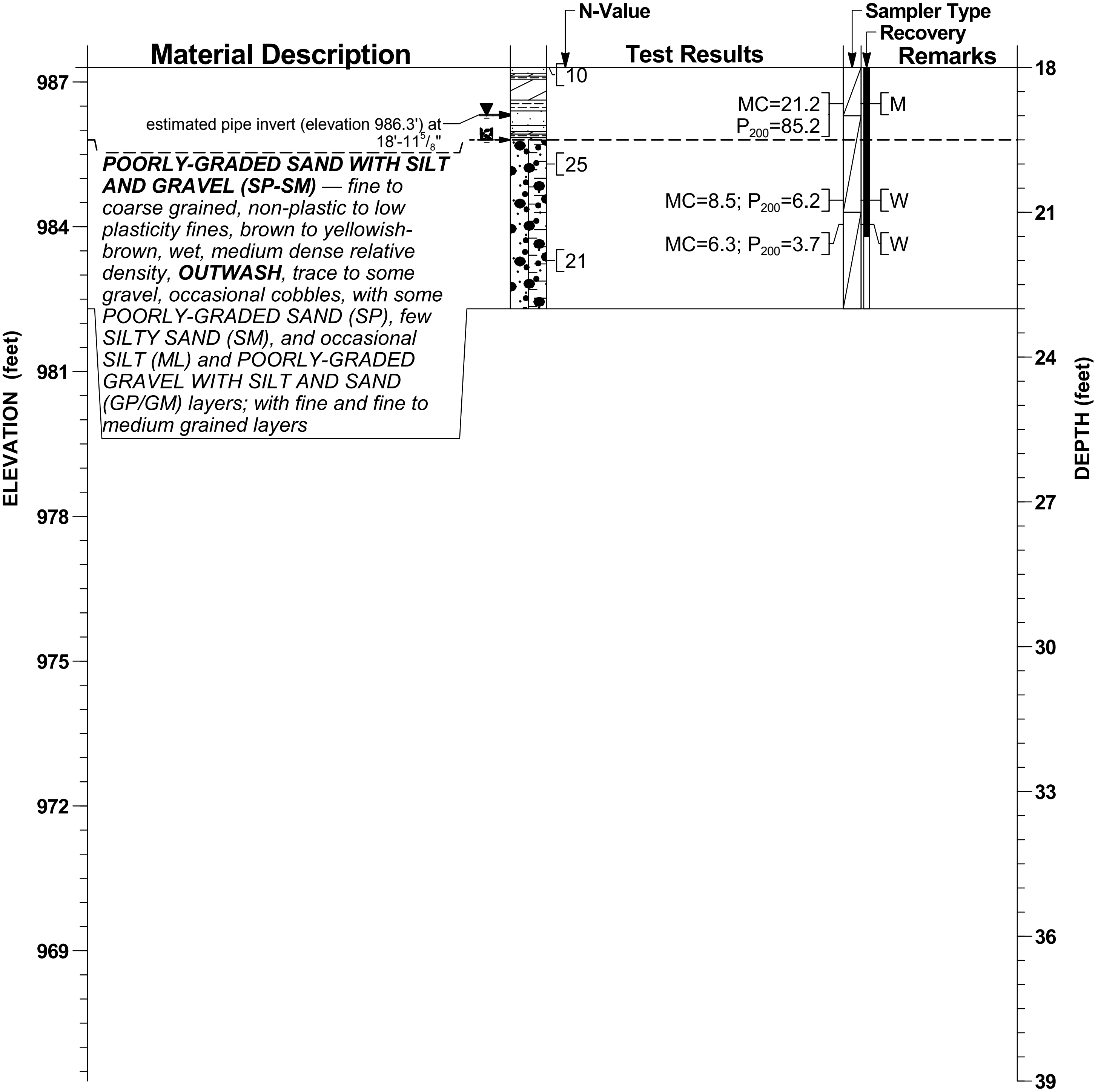
SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

13282

Printed on 10/21/2019

Boring 2

PAGE: 2 of 2



estimated pipe invert (elevation 986.3') at 18'-11$^5/_8$"

***POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)** — fine to coarse grained, non-plastic to low plasticity fines, brown to yellowish-brown, wet, medium dense relative density, **OUTWASH**, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*

MC=21.2
P_{200}=85.2

MC=8.5; P_{200}=6.2

MC=6.3; P_{200}=3.7

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
▼ 19'-0" at completion	19'-6" Caved at completion

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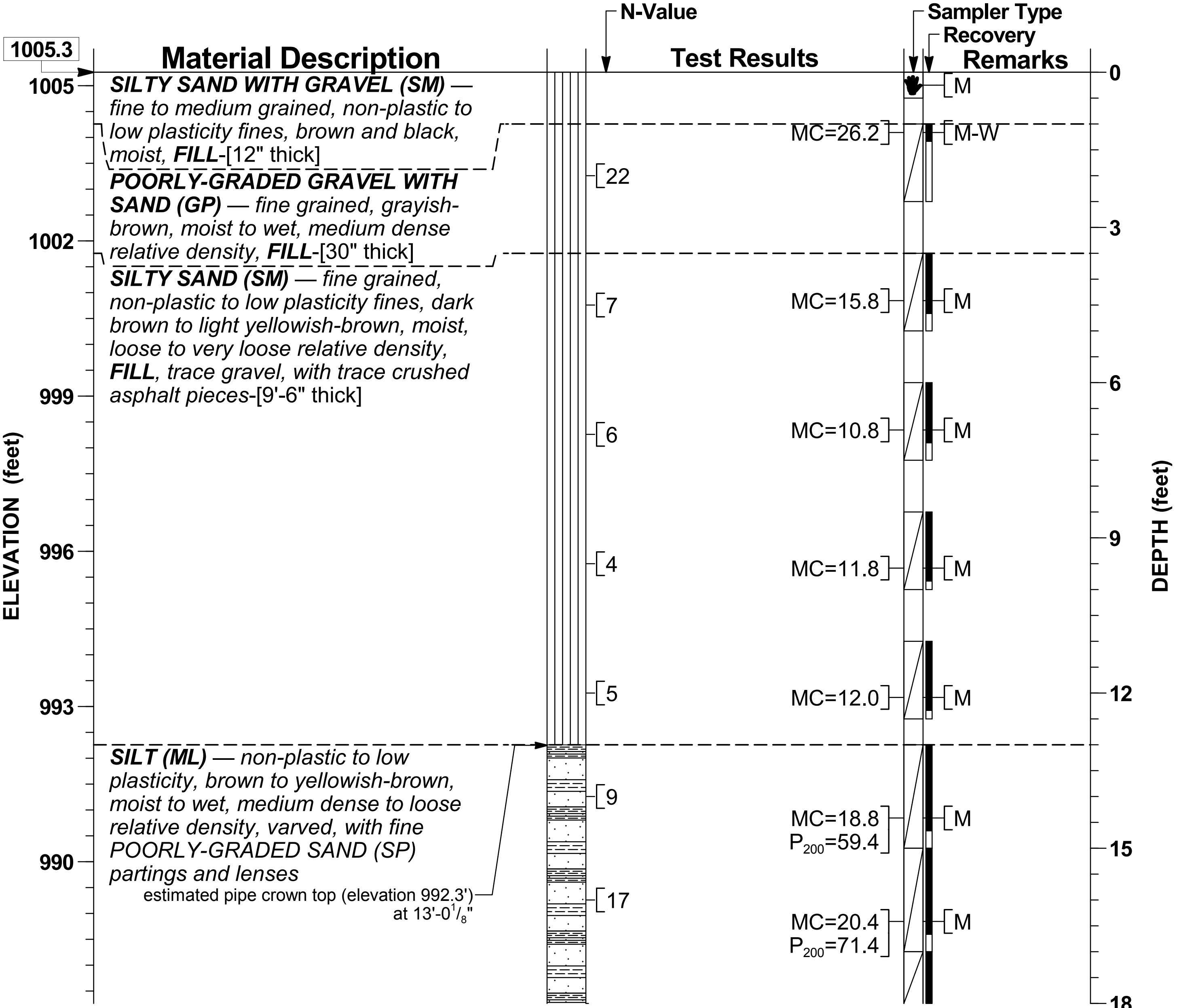
SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

13282

General Location:

Boring 3

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 529+95	OFFSET: 18.0'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/01/2019	DATE COMPLETED: 10/02/2019



SILTY SAND WITH GRAVEL (SM) *— fine to medium grained, non-plastic to low plasticity fines, brown and black, moist,* ***FILL***-[12" thick]

POORLY-GRADED GRAVEL WITH SAND (GP) *— fine grained, grayish-brown, moist to wet, medium dense relative density,* ***FILL***-[30" thick]

SILTY SAND (SM) *— fine grained, non-plastic to low plasticity fines, dark brown to light yellowish-brown, moist, loose to very loose relative density,* ***FILL****, trace gravel, with trace crushed asphalt pieces*-[9'-6" thick]

SILT (ML) *— non-plastic to low plasticity, brown to yellowish-brown, moist to wet, medium dense to loose relative density, varved, with fine POORLY-GRADED SAND (SP) partings and lenses*

estimated pipe crown top (elevation 992.3') at 13'-0$^1/_8$"

Boring 3 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

The Notes and Legend Record is considered a part of this Soil Boring Record.

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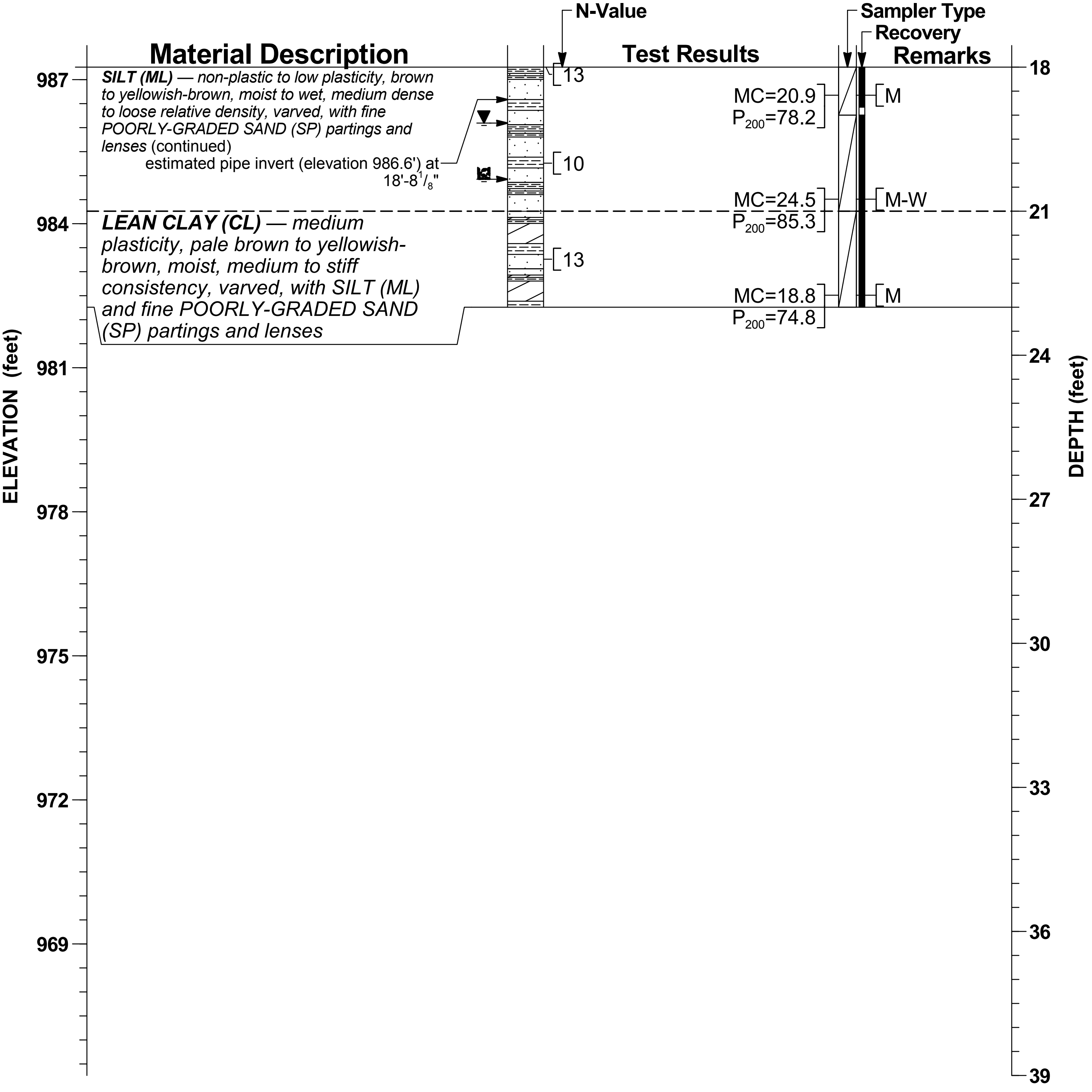
SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

13282

Printed on 10/21/2019



***SILT (ML)** — non-plastic to low plasticity, brown to yellowish-brown, moist to wet, medium dense to loose relative density, varved, with fine POORLY-GRADED SAND (SP) partings and lenses* (continued)

estimated pipe invert (elevation 986.6') at 18'-8$^1/_8$"

***LEAN CLAY (CL)** — medium plasticity, pale brown to yellowish-brown, moist, medium to stiff consistency, varved, with SILT (ML) and fine POORLY-GRADED SAND (SP) partings and lenses*

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
▼ 19'-2" at completion	⊠ 20'-4" Caved at completion

The Notes and Legend Record is considered a part of this Soil Boring Record.

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CONSULTING CIVIL ENGINEERS SINCE 1966

SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

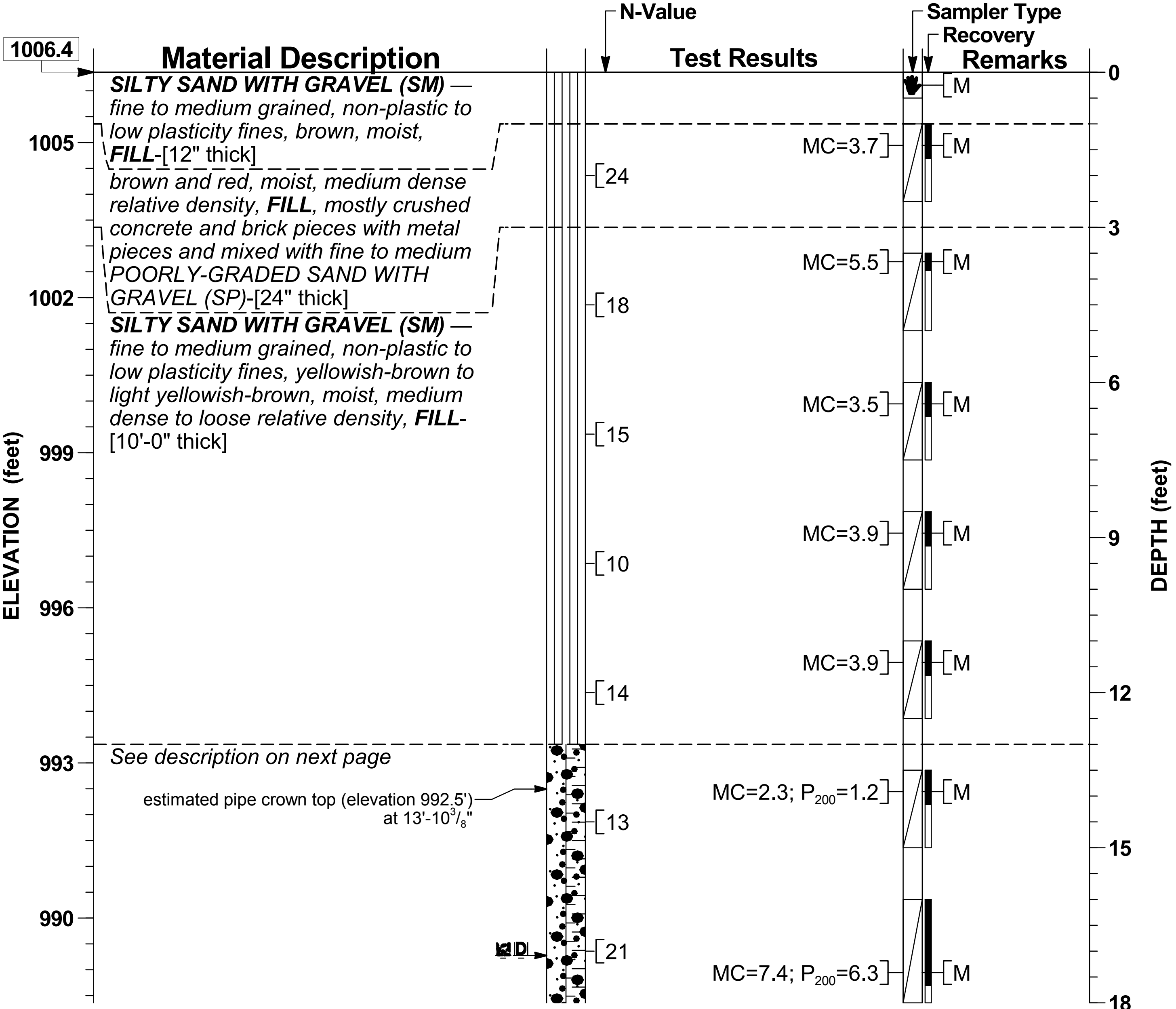
13282

Printed on 10/21/2019

General Location:

Boring 4

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 24'-0"
STATION: 528+00	OFFSET: 2.5'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/02/2019	DATE COMPLETED: 10/02/2019



Material Description

SILTY SAND WITH GRAVEL (SM) *— fine to medium grained, non-plastic to low plasticity fines, brown, moist,* ***FILL***-[12" thick]

brown and red, moist, medium dense relative density, ***FILL****, mostly crushed concrete and brick pieces with metal pieces and mixed with fine to medium POORLY-GRADED SAND WITH GRAVEL (SP)*-[24" thick]

SILTY SAND WITH GRAVEL (SM) *— fine to medium grained, non-plastic to low plasticity fines, yellowish-brown to light yellowish-brown, moist, medium dense to loose relative density,* ***FILL***-[10'-0" thick]

See description on next page

estimated pipe crown top (elevation 992.5') at 13'-10$^3/_8$"

N-Value	Test Results	Sampler Type Recovery Remarks
		M
24	MC=3.7	M
18	MC=5.5	M
15	MC=3.5	M
10	MC=3.9	M
14	MC=3.9	M
13	MC=2.3; P_{200}=1.2	M
21	MC=7.4; P_{200}=6.3	M

Boring 4 Continued On Page 2/2

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 17'-1" Dry at completion	17'-1" Caved at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	24'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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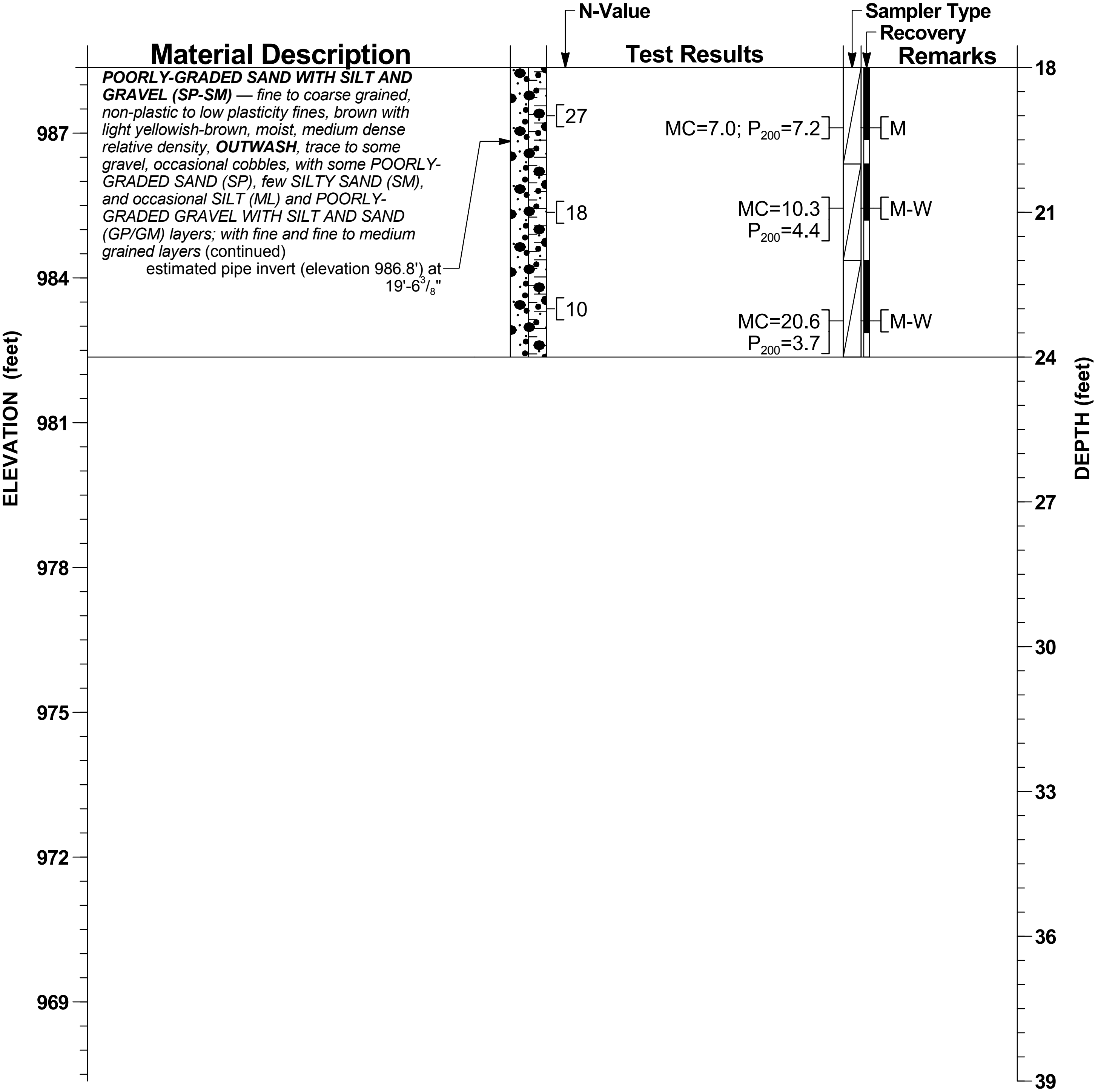
Boring 4

PAGE: 2 of 2



POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) — *fine to coarse grained, non-plastic to low plasticity fines, brown with light yellowish-brown, moist, medium dense relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers* (continued)

estimated pipe invert (elevation 986.8') at 19'-6$^{3}/_{8}$"

N-Value	Test Results	Remarks
27	MC=7.0; P_{200}=7.2	M
18	MC=10.3 P_{200}=4.4	M-W
10	MC=20.6 P_{200}=3.7	M-W

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Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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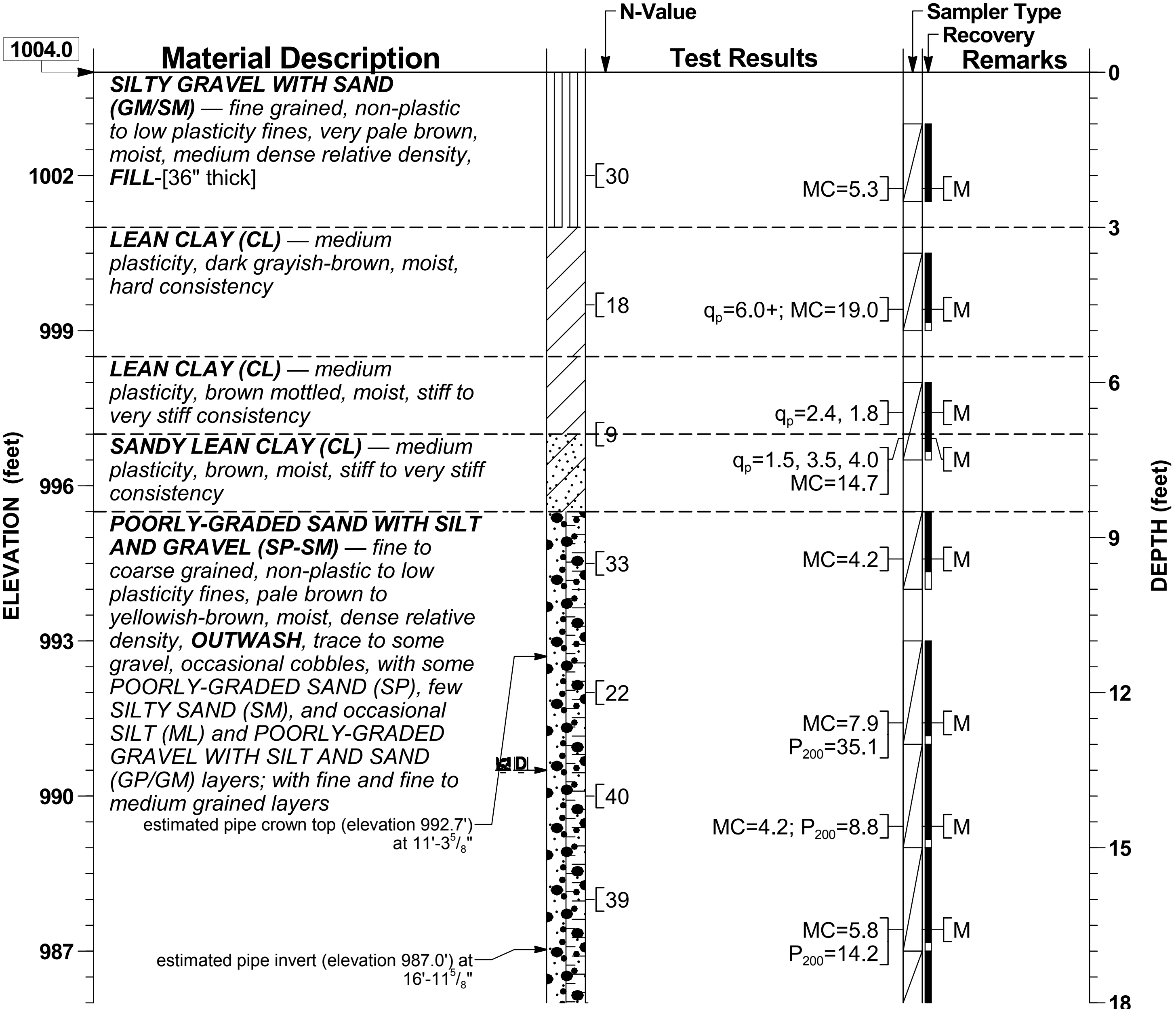
Printed on 10/21/2019

General Location:

Boring 5

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 21'-0"
STATION: 526+00	OFFSET: 4.0'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/01/2019	DATE COMPLETED: 10/01/2019



Material Description

SILTY GRAVEL WITH SAND (GM/SM) *— fine grained, non-plastic to low plasticity fines, very pale brown, moist, medium dense relative density,* ***FILL***-[36" thick]

LEAN CLAY (CL) *— medium plasticity, dark grayish-brown, moist, hard consistency*

LEAN CLAY (CL) *— medium plasticity, brown mottled, moist, stiff to very stiff consistency*

SANDY LEAN CLAY (CL) *— medium plasticity, brown, moist, stiff to very stiff consistency*

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— fine to coarse grained, non-plastic to low plasticity fines, pale brown to yellowish-brown, moist, dense relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*

estimated pipe crown top (elevation 992.7') at 11'-3$^5/_8$"

estimated pipe invert (elevation 987.0') at 16'-11$^5/_8$"

N-Value	Test Results	Remarks
30	MC=5.3	M
18	q_p=6.0+; MC=19.0	M
9	q_p=2.4, 1.8	M
	q_p=1.5, 3.5, 4.0 MC=14.7	M
33	MC=4.2	M
22	MC=7.9 P_{200}=35.1	M
40	MC=4.2; P_{200}=8.8	M
39	MC=5.8 P_{200}=14.2	M

Boring 5 Continued On Page 2/2

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 13'-6" Dry at completion	13'-6" Caved at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	21'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Auger Cuttings, Bentonite Chips, Caved Soil

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Storm Sewer Exploration
Raymond Road
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City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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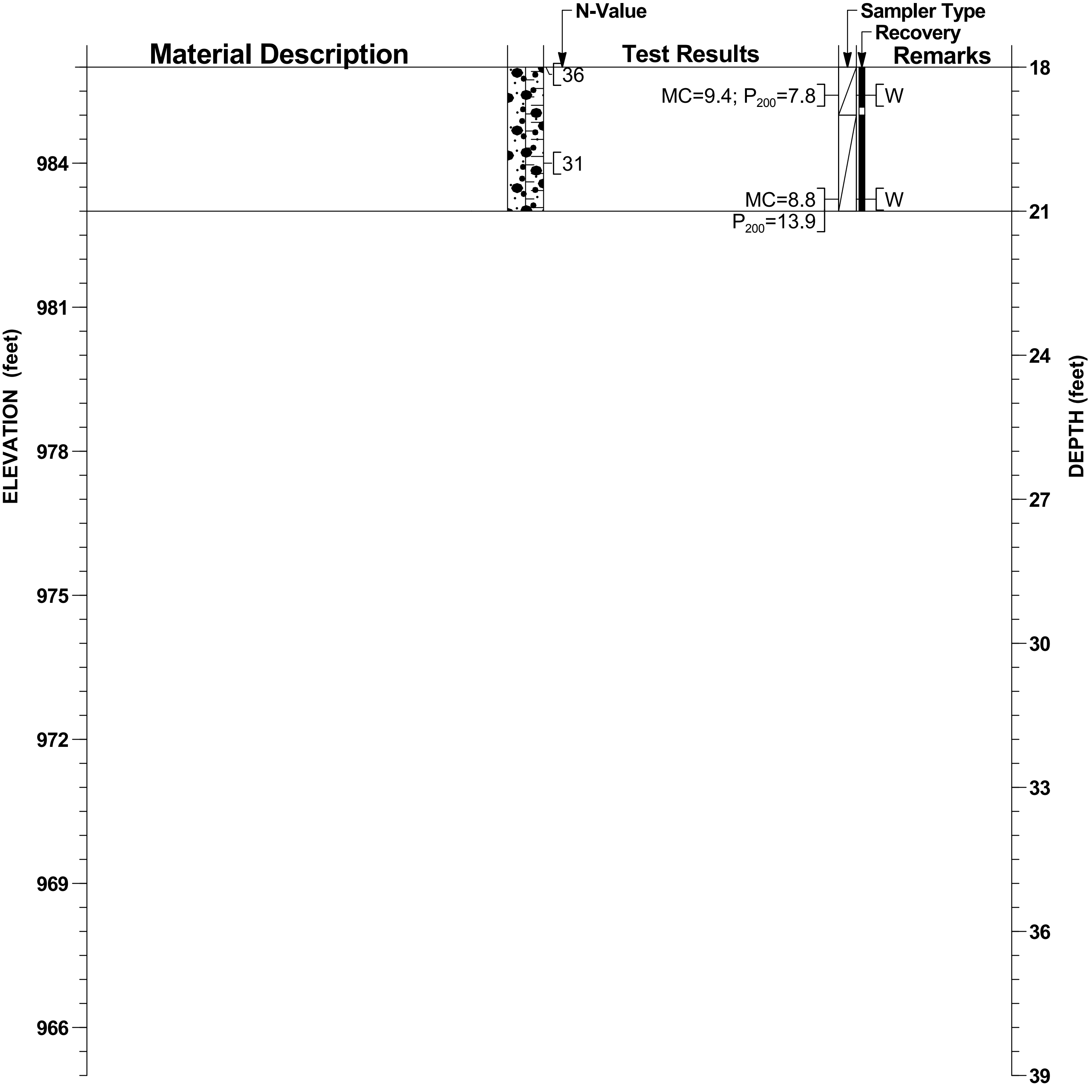
Boring 5

PAGE: 2 of 2



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Raymond Road
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WisDOT State ID 5992-09-83

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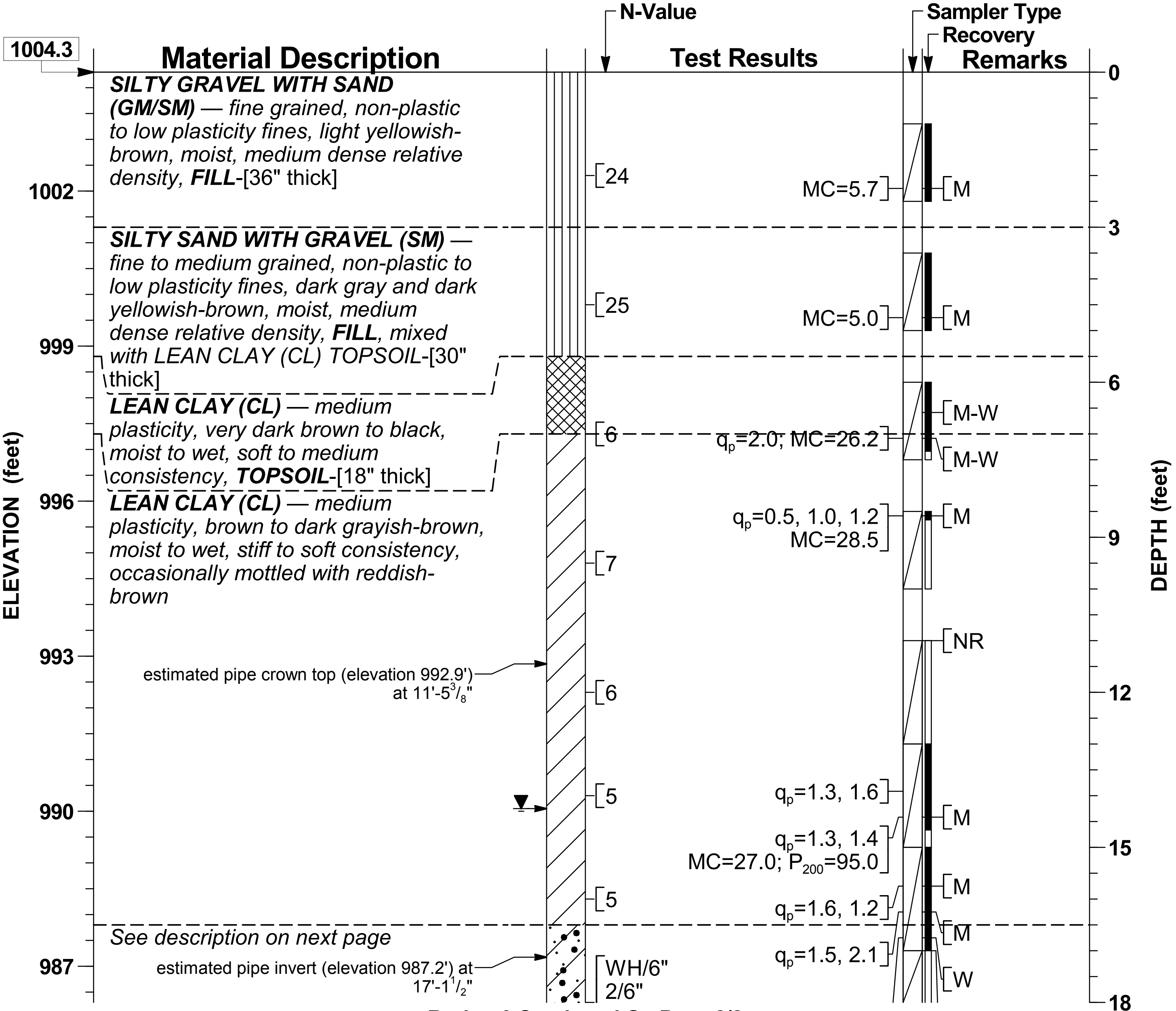
General Location:

Boring 6

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 21'-0"
STATION: 524+00	OFFSET: 3.5'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/01/2019	DATE COMPLETED: 10/02/2019



SILTY GRAVEL WITH SAND (GM/SM) — *fine grained, non-plastic to low plasticity fines, light yellowish-brown, moist, medium dense relative density, **FILL**-*[36" thick]

SILTY SAND WITH GRAVEL (SM) — *fine to medium grained, non-plastic to low plasticity fines, dark gray and dark yellowish-brown, moist, medium dense relative density, **FILL**, mixed with LEAN CLAY (CL) TOPSOIL*-[30" thick]

LEAN CLAY (CL) — *medium plasticity, very dark brown to black, moist to wet, soft to medium consistency, **TOPSOIL**-*[18" thick]

LEAN CLAY (CL) — *medium plasticity, brown to dark grayish-brown, moist to wet, stiff to soft consistency, occasionally mottled with reddish-brown*

estimated pipe crown top (elevation 992.9') at 11'-5$^3/_8$"

See description on next page

estimated pipe invert (elevation 987.2') at 17'-1$^1/_2$"

Boring 6 Continued On Page 2/2

WATER LEVEL LEGEND
▼ 14'-3" at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	21'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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WisDOT State ID 5992-09-83

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Material Description	N-Value	Test Results	Sampler Type / Recovery / Remarks
***CLAYEY SAND WITH GRAVEL (SC)** — fine to medium grained, medium plasticity fines, very dark grayish-brown, moist to wet, very loose to medium dense relative density* (continued)	5/6" 6/6"	MC=22.4 P_{200}=25.3	NR
	14		NR

ELEVATION (feet): 984, 981, 978, 975, 972, 969, 966

DEPTH (feet): 18, 21, 24, 27, 30, 33, 36, 39

OTHER LEVEL LEGEND
18'-9" Caved at completion

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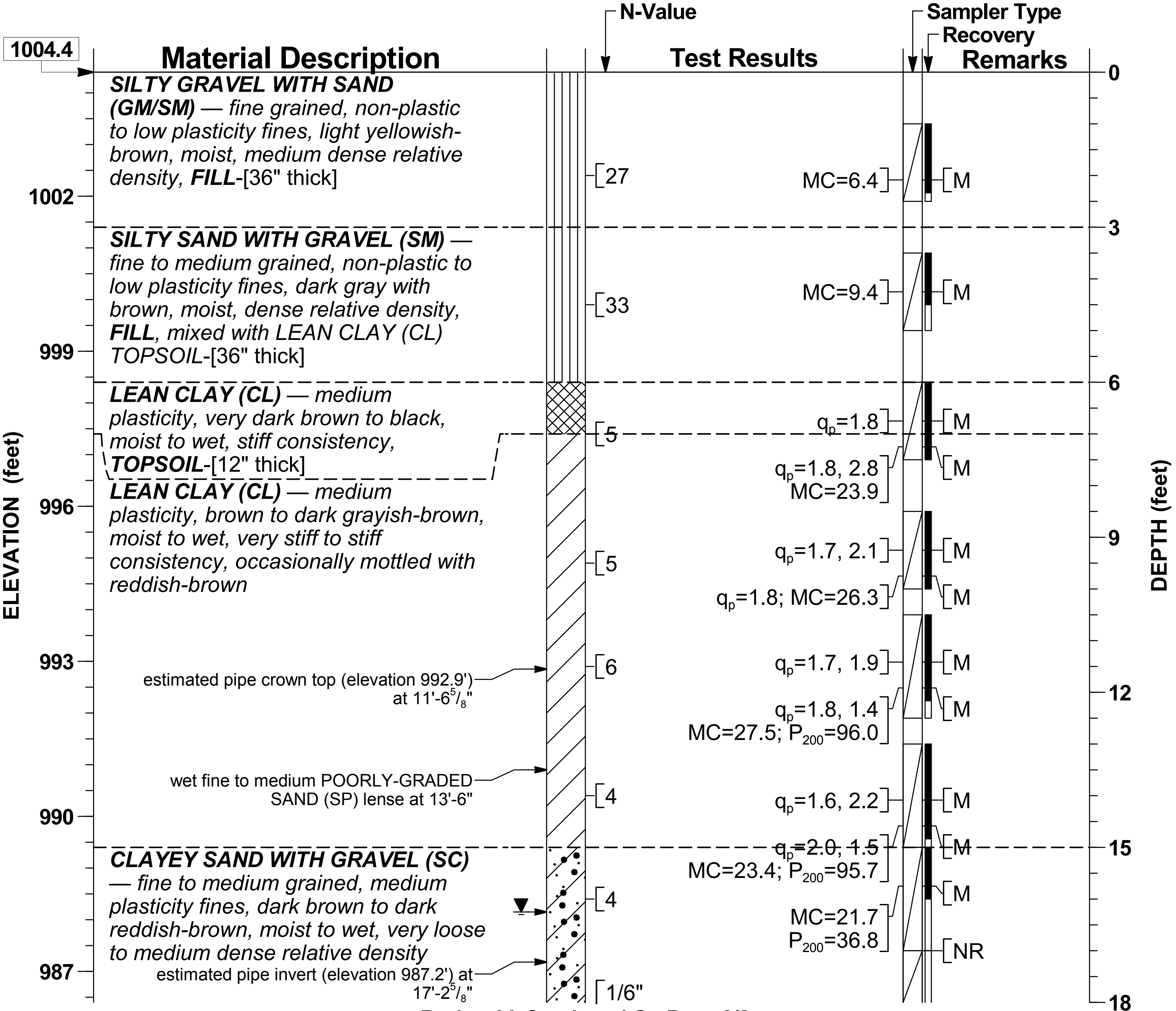
Printed on 10/21/2019

General Location:

Boring 6A

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 523+96	OFFSET: 3.5'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/02/2019	DATE COMPLETED: 10/02/2019



Material Description

SILTY GRAVEL WITH SAND (GM/SM) *— fine grained, non-plastic to low plasticity fines, light yellowish-brown, moist, medium dense relative density,* ***FILL****-[36" thick]*

SILTY SAND WITH GRAVEL (SM) *— fine to medium grained, non-plastic to low plasticity fines, dark gray with brown, moist, dense relative density,* ***FILL****, mixed with LEAN CLAY (CL) TOPSOIL-[36" thick]*

LEAN CLAY (CL) *— medium plasticity, very dark brown to black, moist to wet, stiff consistency,* ***TOPSOIL****-[12" thick]*

LEAN CLAY (CL) *— medium plasticity, brown to dark grayish-brown, moist to wet, very stiff to stiff consistency, occasionally mottled with reddish-brown*

estimated pipe crown top (elevation 992.9') at 11'-6$^5/_8$"

wet fine to medium POORLY-GRADED SAND (SP) lense at 13'-6"

CLAYEY SAND WITH GRAVEL (SC) *— fine to medium grained, medium plasticity fines, dark brown to dark reddish-brown, moist to wet, very loose to medium dense relative density*

estimated pipe invert (elevation 987.2') at 17'-2$^5/_8$"

Test Results

N-Value	Test Results	Remarks
27	MC=6.4	M
33	MC=9.4	M
5	q_p=1.8	M
	q_p=1.8, 2.8 MC=23.9	M
5	q_p=1.7, 2.1	M
	q_p=1.8; MC=26.3	M
6	q_p=1.7, 1.9	M
	q_p=1.8, 1.4 MC=27.5; P_{200}=96.0	M
4	q_p=1.6, 2.2	M
	q_p=2.0, 1.5 MC=23.4; P_{200}=95.7	M
4		M
	MC=21.7 P_{200}=36.8	M
		NR
1/6"		

Boring 6A Continued On Page 2/2

WATER LEVEL LEGEND

▼ 16'-3" at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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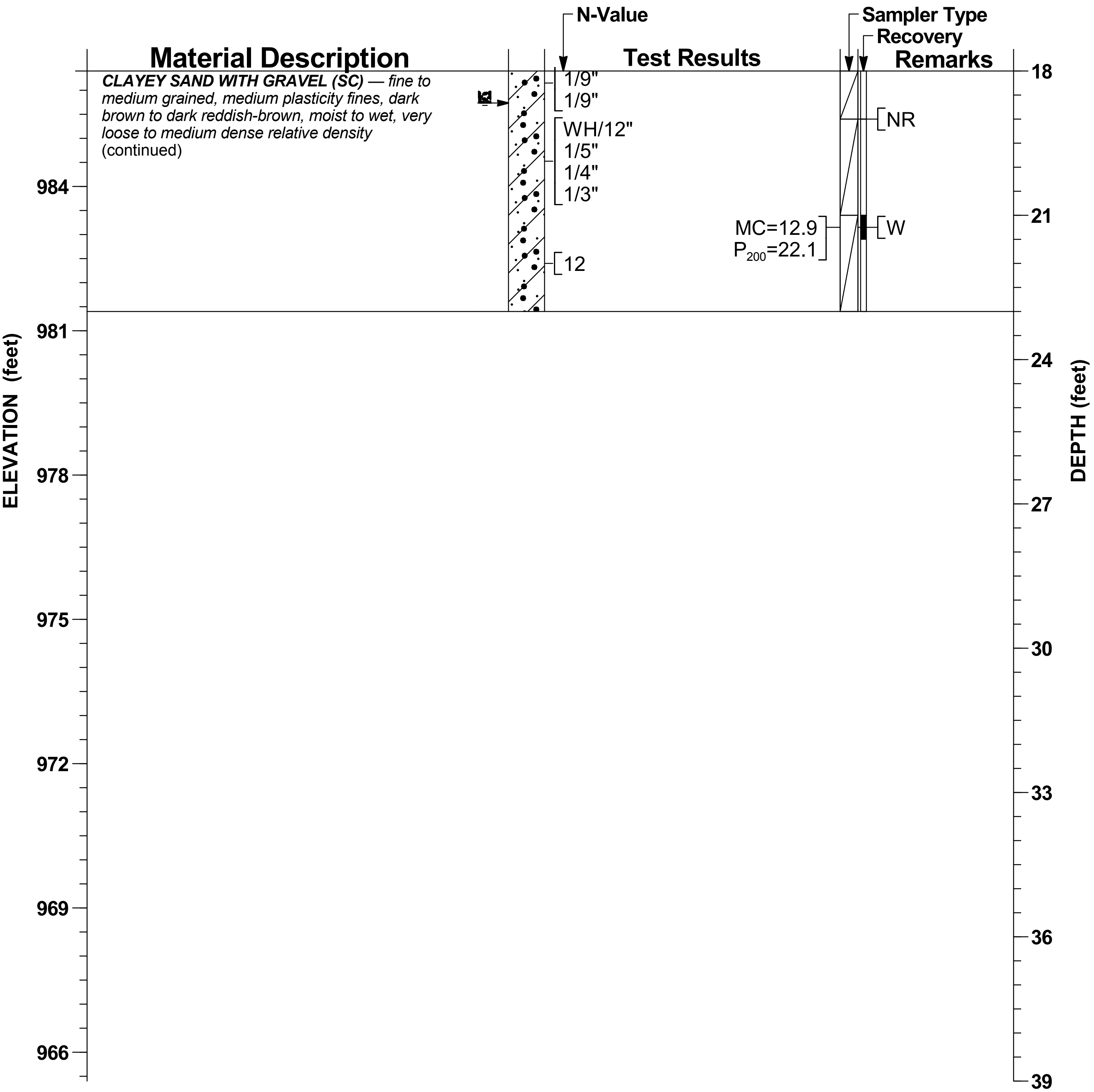
SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

Boring 6A



OTHER LEVEL LEGEND
18'-8" Caved at completion

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Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
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WisDOT State ID 5992-09-83

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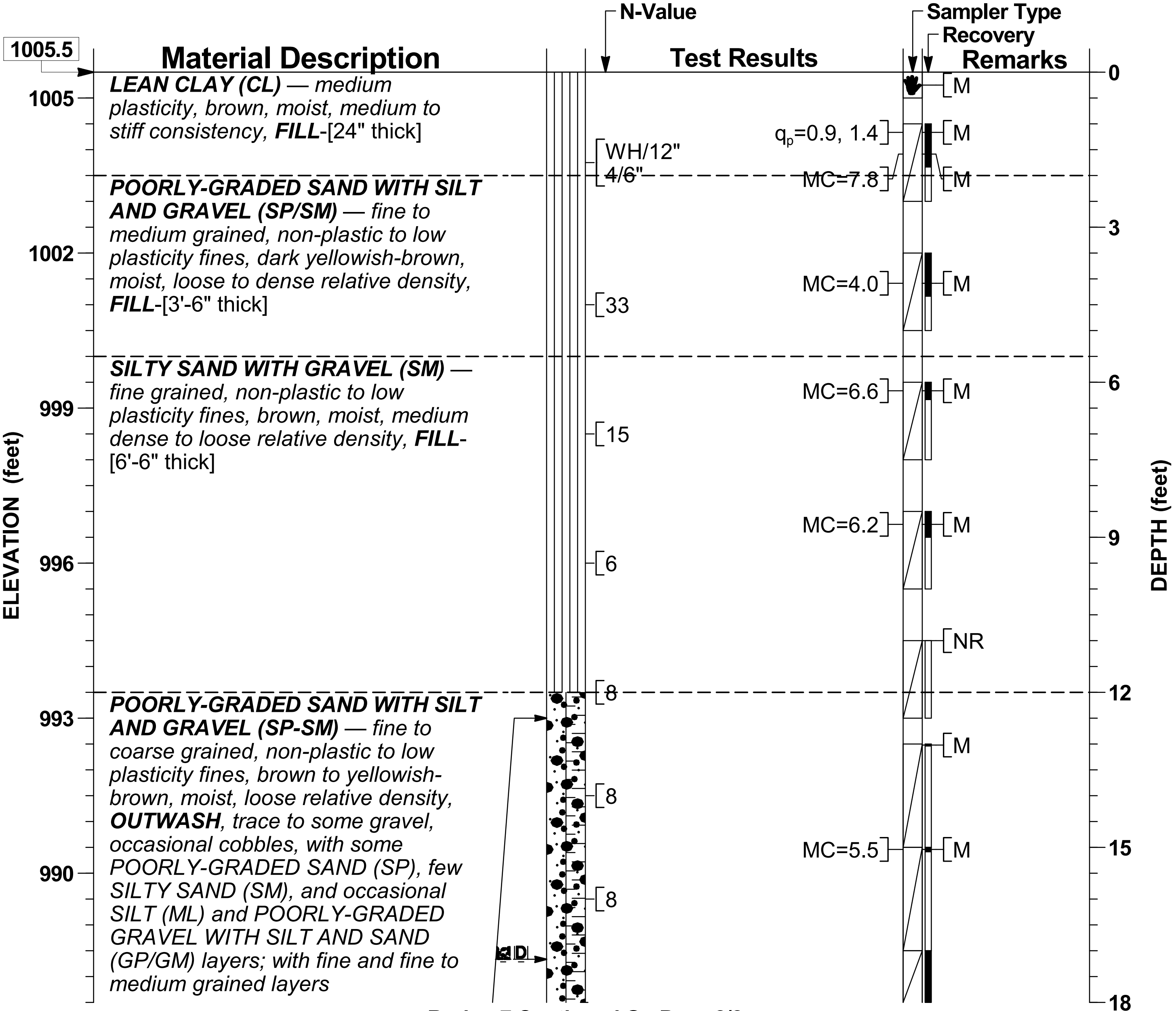
Printed on 10/21/2019

General Location:

Boring 7

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 523+00	OFFSET: 20.0'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/02/2019	DATE COMPLETED: 10/02/2019



LEAN CLAY (CL) *— medium plasticity, brown, moist, medium to stiff consistency,* ***FILL***-[24" thick]

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP/SM) *— fine to medium grained, non-plastic to low plasticity fines, dark yellowish-brown, moist, loose to dense relative density,* ***FILL***-[3'-6" thick]

SILTY SAND WITH GRAVEL (SM) *— fine grained, non-plastic to low plasticity fines, brown, moist, medium dense to loose relative density,* ***FILL***-[6'-6" thick]

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— fine to coarse grained, non-plastic to low plasticity fines, brown to yellowish-brown, moist, loose relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*

Boring 7 Continued On Page 2/2

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 17'-2" Dry at completion	17'-2" Caved at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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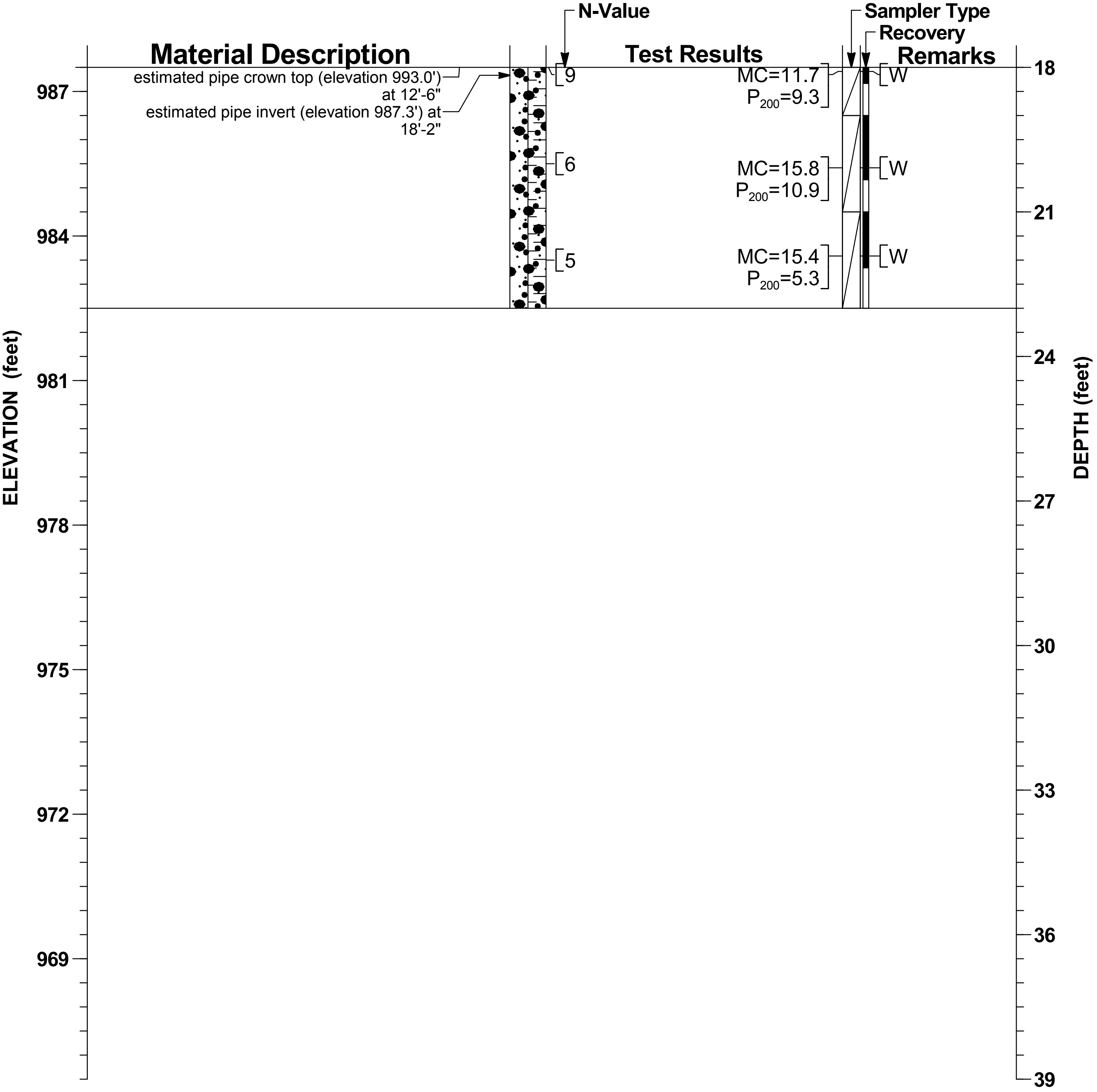
Boring 7

PAGE: 2 of 2



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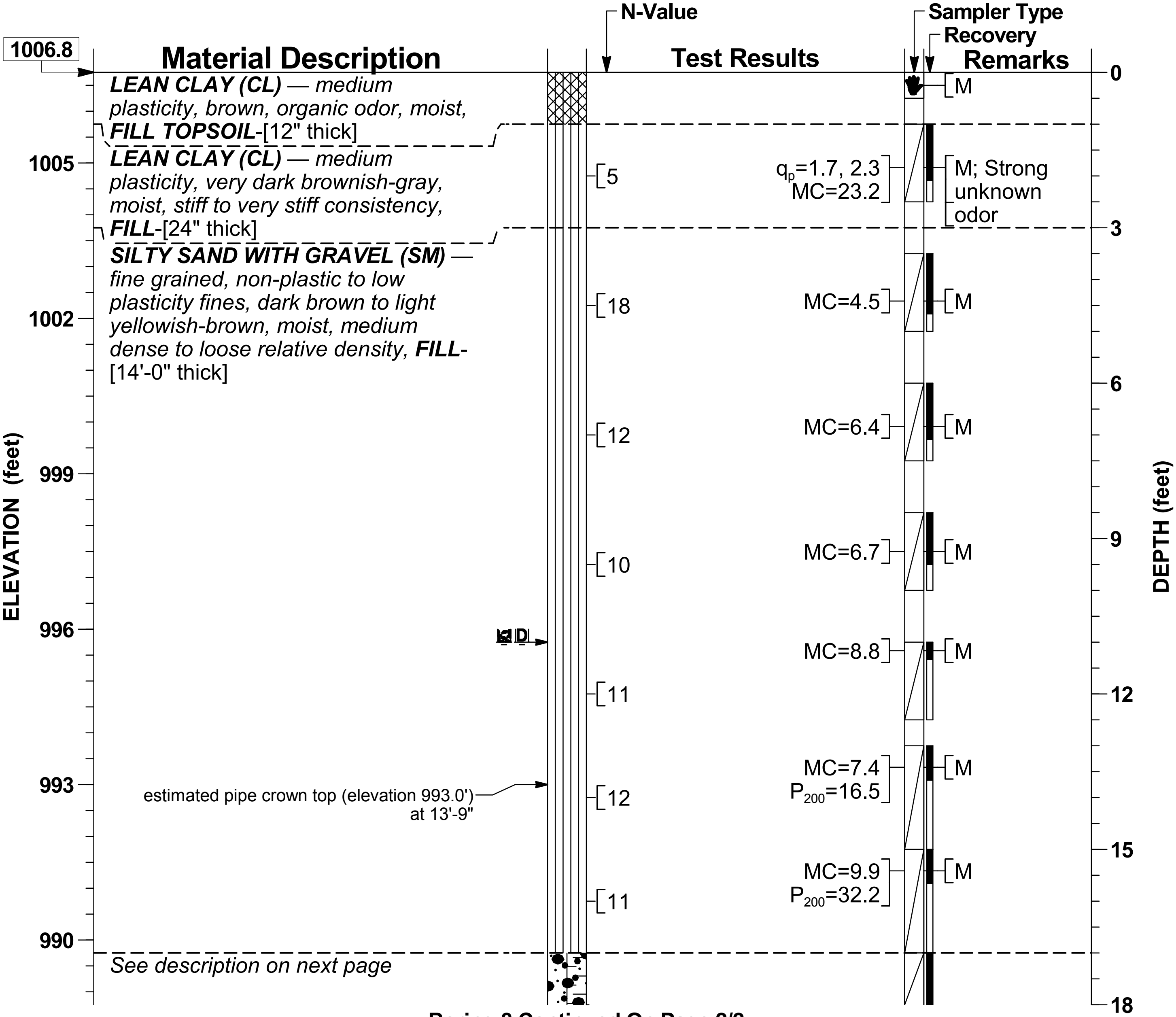
General Location:

Boring 8

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 522+00	OFFSET: 21.3' Left	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/03/2019



LEAN CLAY (CL) *— medium plasticity, brown, organic odor, moist,* ***FILL TOPSOIL***-[12" thick]

LEAN CLAY (CL) *— medium plasticity, very dark brownish-gray, moist, stiff to very stiff consistency,* ***FILL***-[24" thick]

SILTY SAND WITH GRAVEL (SM) *— fine grained, non-plastic to low plasticity fines, dark brown to light yellowish-brown, moist, medium dense to loose relative density,* ***FILL***-[14'-0" thick]

estimated pipe crown top (elevation 993.0') at 13'-9"

See description on next page

Boring 8 Continued On Page 2/2

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 11'-0" Dry at 16 hours after completion	11'-0" Caved at 16 hours after completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

Material Description	N-Value	Test Results	Sampler Type / Recovery / Remarks
***POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)** — fine to coarse grained, non-plastic to low plasticity fines, yellowish-brown to light yellowish-brown, wet, loose relative density, **OUTWASH**, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers* (continued) estimated pipe invert (elevation 987.3') at 19'-5"	8	MC=8.8 P_{200}=11.7	W
	10	MC=8.9; P_{200}=5.5	W
	10	MC=8.1; P_{200}=4.0	W

ELEVATION (feet): 987, 984, 981, 978, 975, 972, 969

DEPTH (feet): 18, 21, 24, 27, 30, 33, 36, 39

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Raymond Road
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WisDOT State ID 5992-09-83

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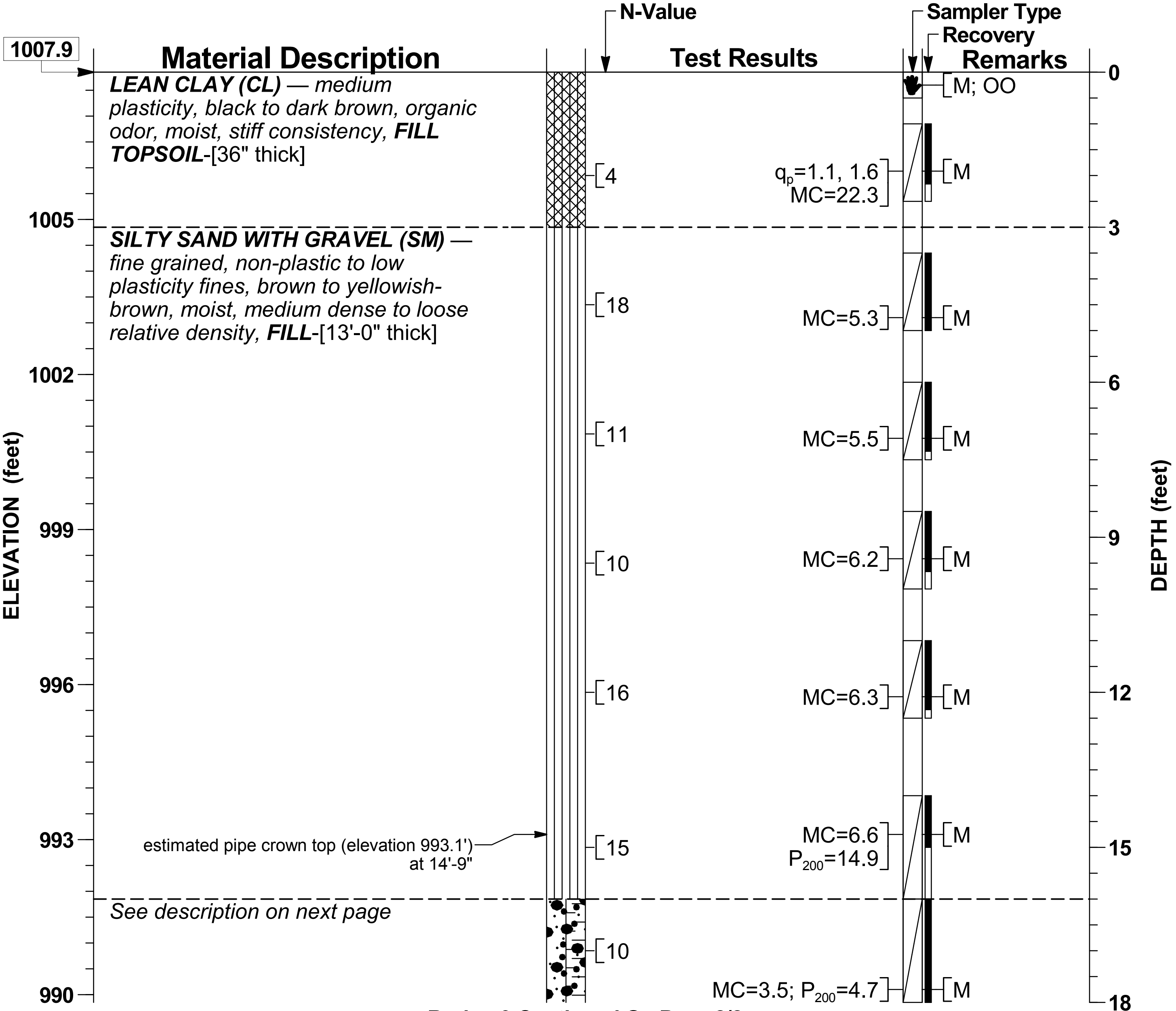
Printed on 10/21/2019

General Location:

Boring 9

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 24'-0"
STATION: 521+00	OFFSET: 19.8' Left	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/03/2019



LEAN CLAY (CL) *— medium plasticity, black to dark brown, organic odor, moist, stiff consistency,* ***FILL TOPSOIL***-[36" thick]

SILTY SAND WITH GRAVEL (SM) *— fine grained, non-plastic to low plasticity fines, brown to yellowish-brown, moist, medium dense to loose relative density,* ***FILL***-[13'-0" thick]

estimated pipe crown top (elevation 993.1') at 14'-9"

See description on next page

N-Value	Test Results	Remarks
		M; OO
4	q_p=1.1, 1.6 MC=22.3	M
18	MC=5.3	M
11	MC=5.5	M
10	MC=6.2	M
16	MC=6.3	M
15	MC=6.6 P_{200}=14.9	M
10	MC=3.5; P_{200}=4.7	M

Boring 9 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	24'-0"	6.3"

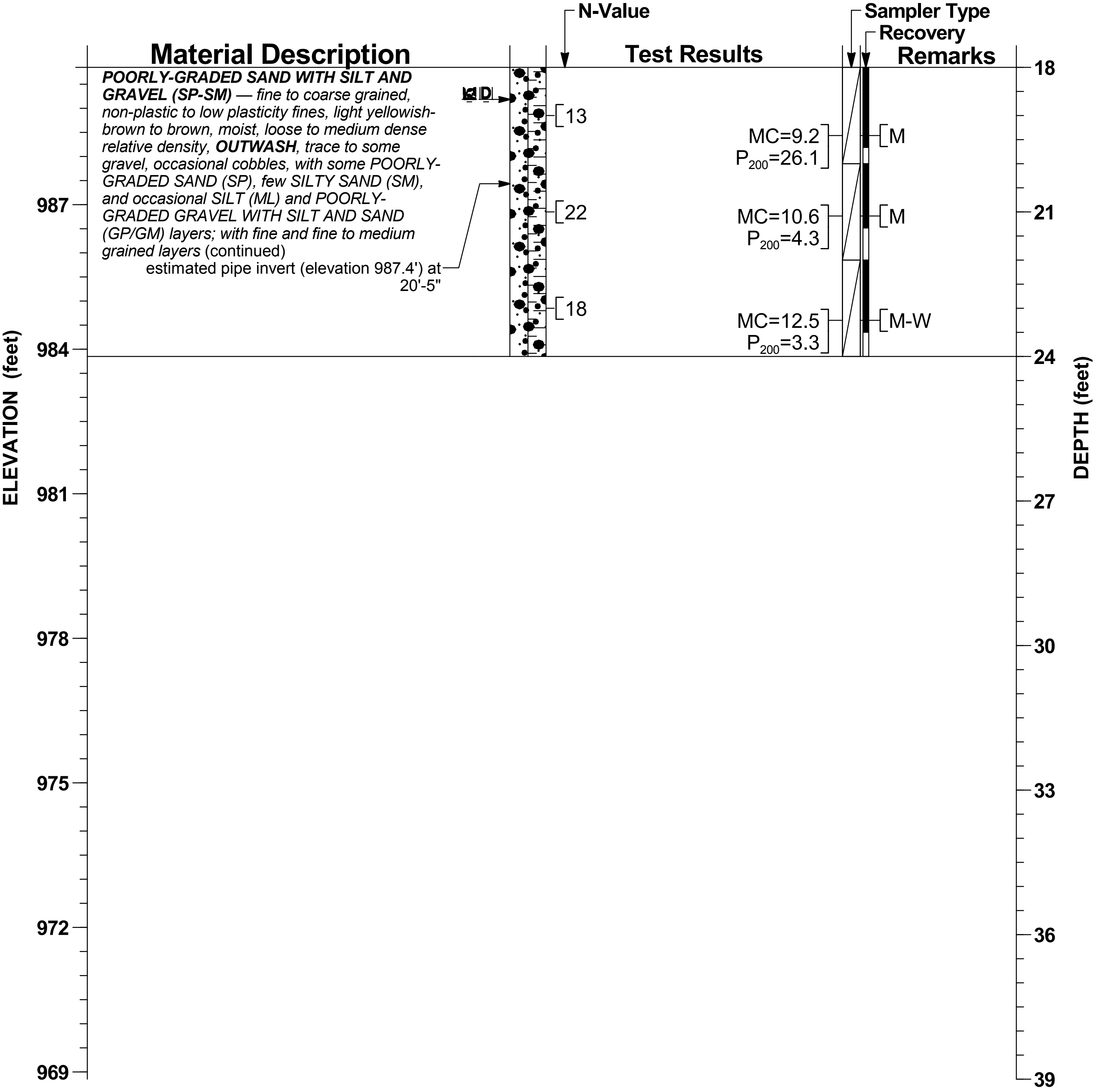
SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

The Notes and Legend Record is considered a part of this Soil Boring Record.

SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83



Material Description

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— fine to coarse grained, non-plastic to low plasticity fines, light yellowish-brown to brown, moist, loose to medium dense relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers* (continued)

estimated pipe invert (elevation 987.4') at 20'-5"

Test Results

N-Value	Test Results	Remarks
13	MC=9.2 P_{200}=26.1	M
22	MC=10.6 P_{200}=4.3	M
18	MC=12.5 P_{200}=3.3	M-W

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 18'-8" Dry at completion	18'-8" Caved at completion

The Notes and Legend Record is considered a part of this Soil Boring Record.

SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

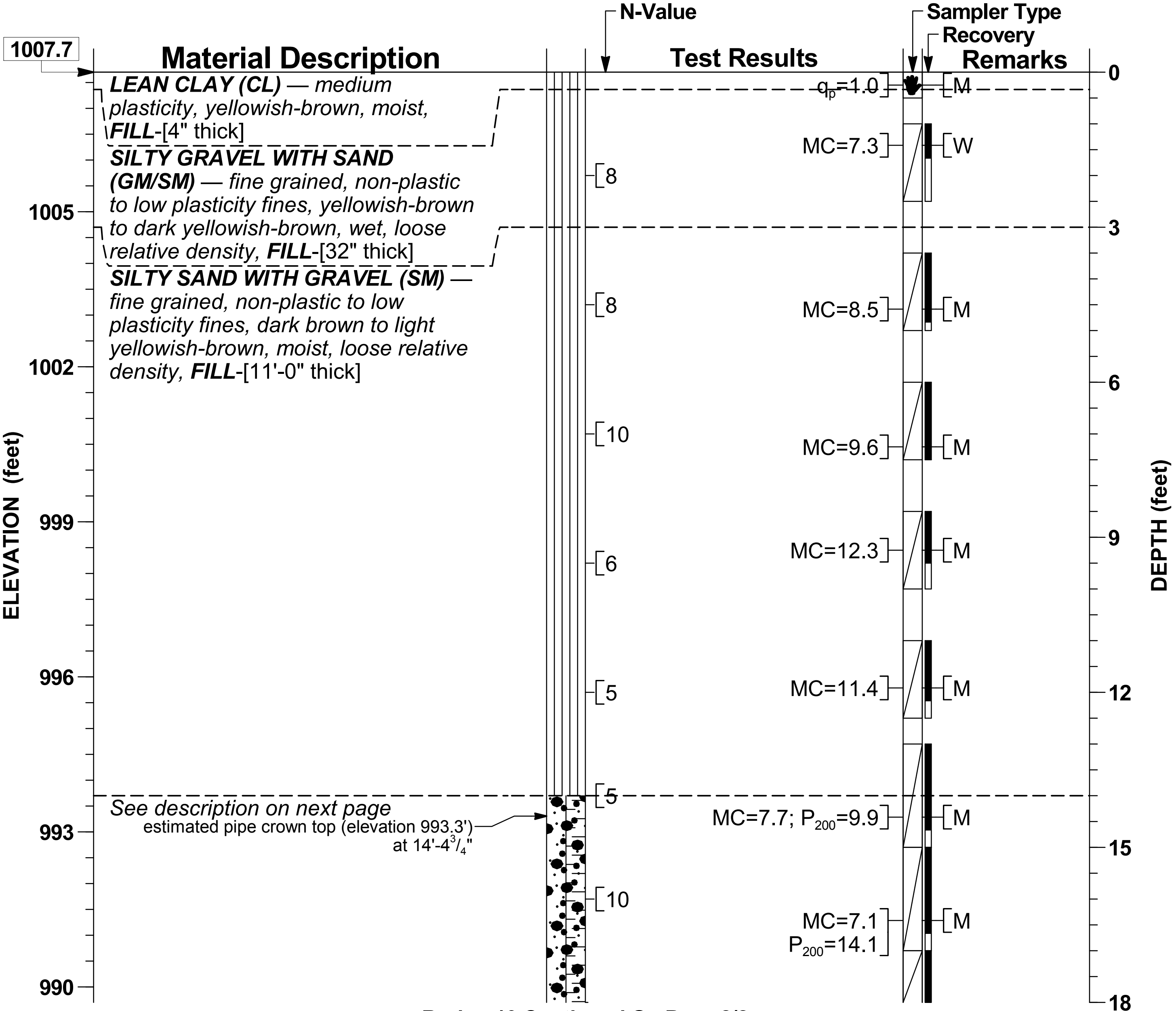
13282

Printed on 10/21/2019

General Location:

Boring 10

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 23'-0"
STATION: 519+00	OFFSET: 20.2'	RANGE: 8 E	¼ ¼: NE	LOG QC: CMB	DATE STARTED: 10/02/2019	DATE COMPLETED: 10/02/2019



Material Description

LEAN CLAY (CL) *— medium plasticity, yellowish-brown, moist,* ***FILL***-[4" thick]

SILTY GRAVEL WITH SAND (GM/SM) *— fine grained, non-plastic to low plasticity fines, yellowish-brown to dark yellowish-brown, wet, loose relative density,* ***FILL***-[32" thick]

SILTY SAND WITH GRAVEL (SM) *— fine grained, non-plastic to low plasticity fines, dark brown to light yellowish-brown, moist, loose relative density,* ***FILL***-[11'-0" thick]

See description on next page

estimated pipe crown top (elevation 993.3') at 14'-4$^3/_4$"

N-Value	Test Results	Remarks
	q_p=1.0	M
8	MC=7.3	W
8	MC=8.5	M
10	MC=9.6	M
6	MC=12.3	M
5	MC=11.4	M
5	MC=7.7; P_{200}=9.9	M
10	MC=7.1 P_{200}=14.1	M

Boring 10 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	23'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

The Notes and Legend Record is considered a part of this Soil Boring Record.

SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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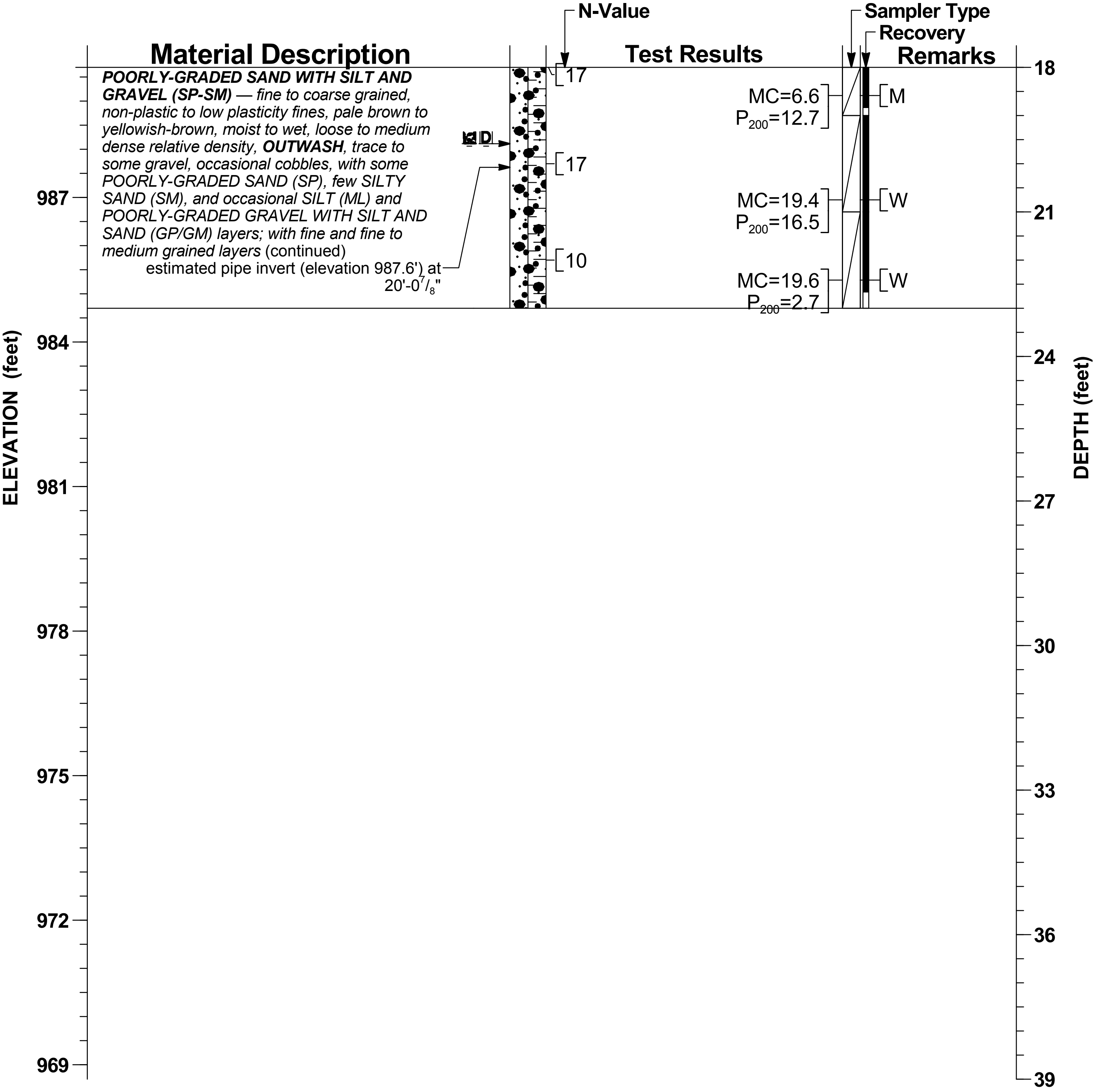


***POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)** — fine to coarse grained, non-plastic to low plasticity fines, pale brown to yellowish-brown, moist to wet, loose to medium dense relative density, **OUTWASH**, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers* (continued)

estimated pipe invert (elevation 987.6') at 20'-0$^{7}/_{8}$"

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 19'-7" Dry at completion	19'-7" Caved at completion

The Notes and Legend Record is considered a part of this Soil Boring Record.

General Location:

Boring 11

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 26'-0"
STATION: 517+00	OFFSET: 20.0'	RANGE: 8 E	¼ ¼: NW	LOG QC: CMB	DATE STARTED: 10/02/2019	DATE COMPLETED: 10/03/2019

1010.5

Material Description

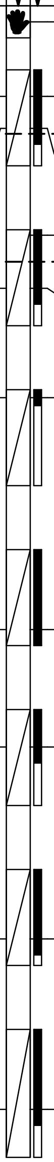
LEAN CLAY (CL) *— medium plasticity, dark yellowish-brown, moist, stiff consistency,* ***FILL***-[24" thick]

SILTY GRAVEL WITH SAND (GM/SM) *— fine grained, non-plastic to low plasticity fines, yellowish-brown, moist, medium dense relative density,* ***FILL***-[24" thick]

SILTY SAND WITH GRAVEL (SM) *— fine grained, non-plastic to low plasticity fines, dark brown to light yellowish-brown, moist, medium dense to very loose relative density,* ***FILL***-[14'-6" thick]

estimated pipe crown top (elevation 993.5')
at 17'-0"

N-Value	Test Results	Remarks
		M
WH/12" 5/6"	q_p=1.6, 1.7 MC=16.9	M M
		M
22	MC=8.0	M
	MC=8.2	M
5 (DS)		
15	MC=8.9	M
18	MC=10.0	M
7	MC=9.3	M
3	MC=11.7 P_{200}=29.8	M



ELEVATION (feet): 1008, 1005, 1002, 999, 996, 993

DEPTH (feet): 0, 3, 6, 9, 12, 15, 18

Boring 11 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	26'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
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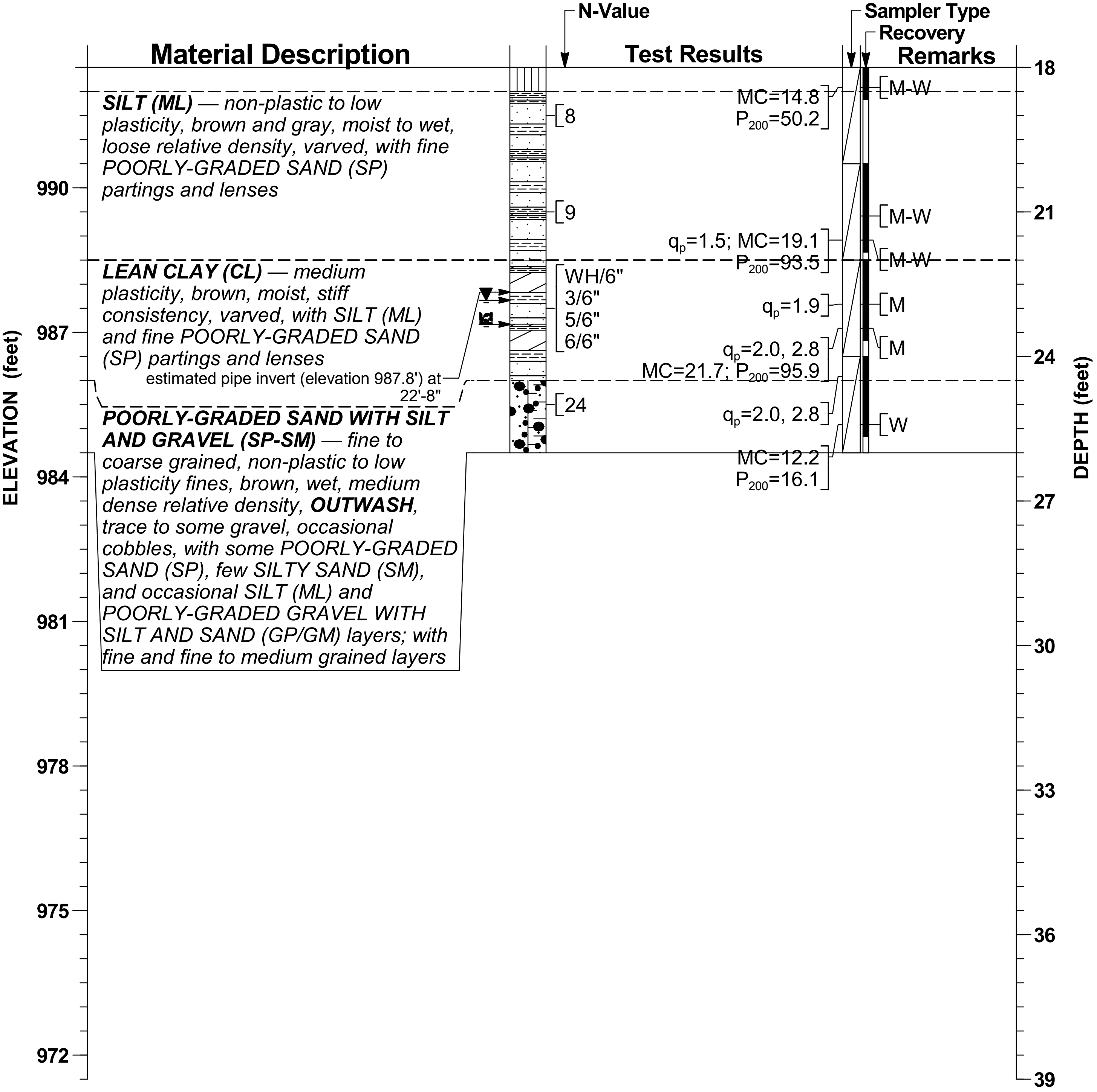
WisDOT State ID 5992-09-83

Boring 11

PAGE: 2 of 2



SILT (ML) *— non-plastic to low plasticity, brown and gray, moist to wet, loose relative density, varved, with fine POORLY-GRADED SAND (SP) partings and lenses*

LEAN CLAY (CL) *— medium plasticity, brown, moist, stiff consistency, varved, with SILT (ML) and fine POORLY-GRADED SAND (SP) partings and lenses*

estimated pipe invert (elevation 987.8') at 22'-8"

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— fine to coarse grained, non-plastic to low plasticity fines, brown, wet, medium dense relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*

8	MC=14.8 P_{200}=50.2	M-W
9		M-W
	q_p=1.5; MC=19.1 P_{200}=93.5	M-W
WH/6" 3/6" 5/6" 6/6"	q_p=1.9	M
	q_p=2.0, 2.8 MC=21.7; P_{200}=95.9	M
24	q_p=2.0, 2.8 MC=12.2 P_{200}=16.1	W

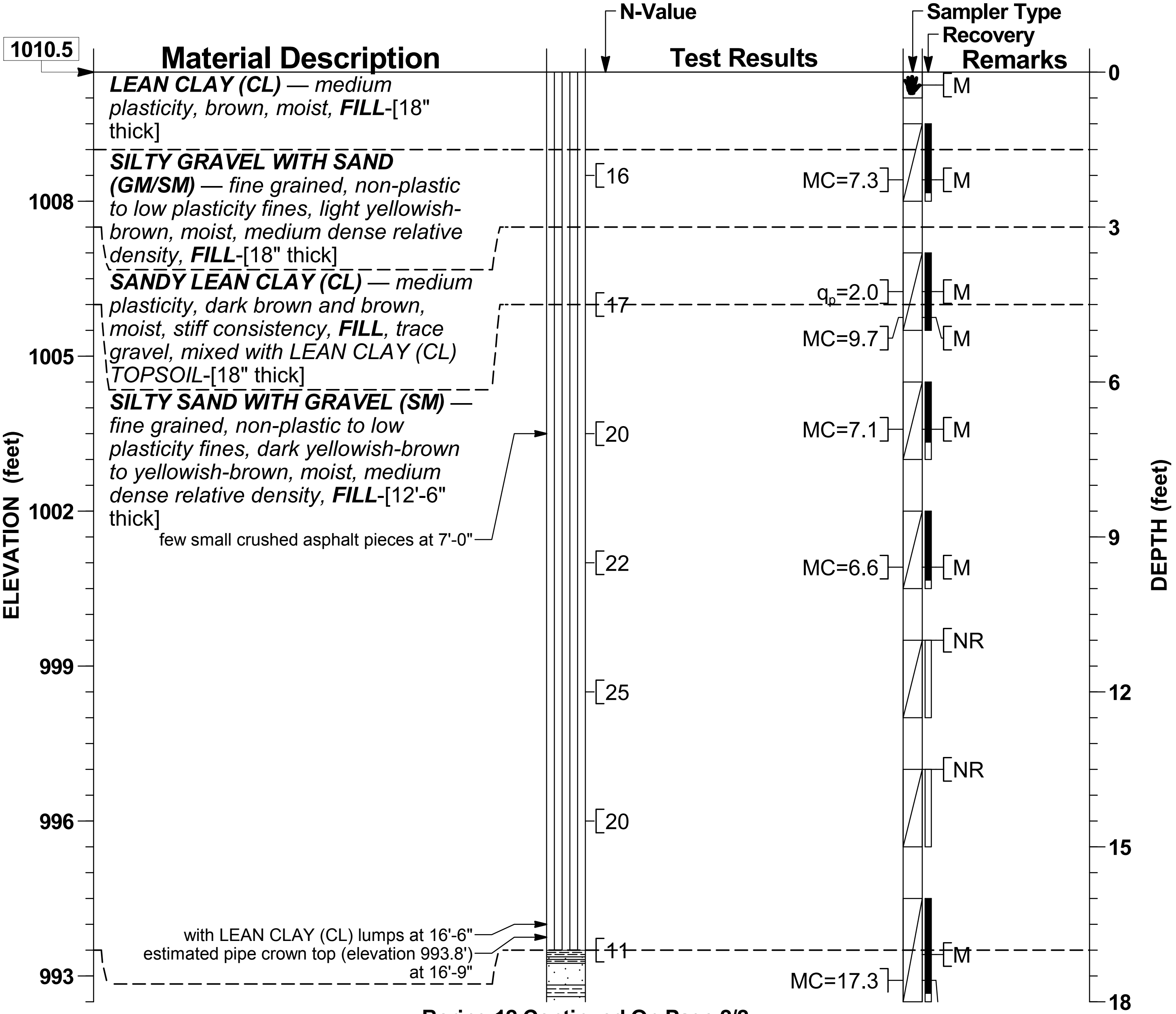
WATER LEVEL LEGEND	OTHER LEVEL LEGEND
▼ 22'-10" at completion	▨ 23'-4" Caved at completion

The Notes and Legend Record is considered a part of this Soil Boring Record.

General Location:

Boring 12

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 26'-0"
STATION: 515+00	OFFSET: 20.0'	RANGE: 8 E	¼ ¼: NW	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/03/2019



LEAN CLAY (CL) *— medium plasticity, brown, moist,* ***FILL***-[18" thick]

SILTY GRAVEL WITH SAND (GM/SM) *— fine grained, non-plastic to low plasticity fines, light yellowish-brown, moist, medium dense relative density,* ***FILL***-[18" thick]

SANDY LEAN CLAY (CL) *— medium plasticity, dark brown and brown, moist, stiff consistency,* ***FILL****, trace gravel, mixed with LEAN CLAY (CL) TOPSOIL*-[18" thick]

SILTY SAND WITH GRAVEL (SM) *— fine grained, non-plastic to low plasticity fines, dark yellowish-brown to yellowish-brown, moist, medium dense relative density,* ***FILL***-[12'-6" thick]

few small crushed asphalt pieces at 7'-0"

with LEAN CLAY (CL) lumps at 16'-6"

estimated pipe crown top (elevation 993.8') at 16'-9"

Boring 12 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	26'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Auger Cuttings, Bentonite Chips, Caved Soil

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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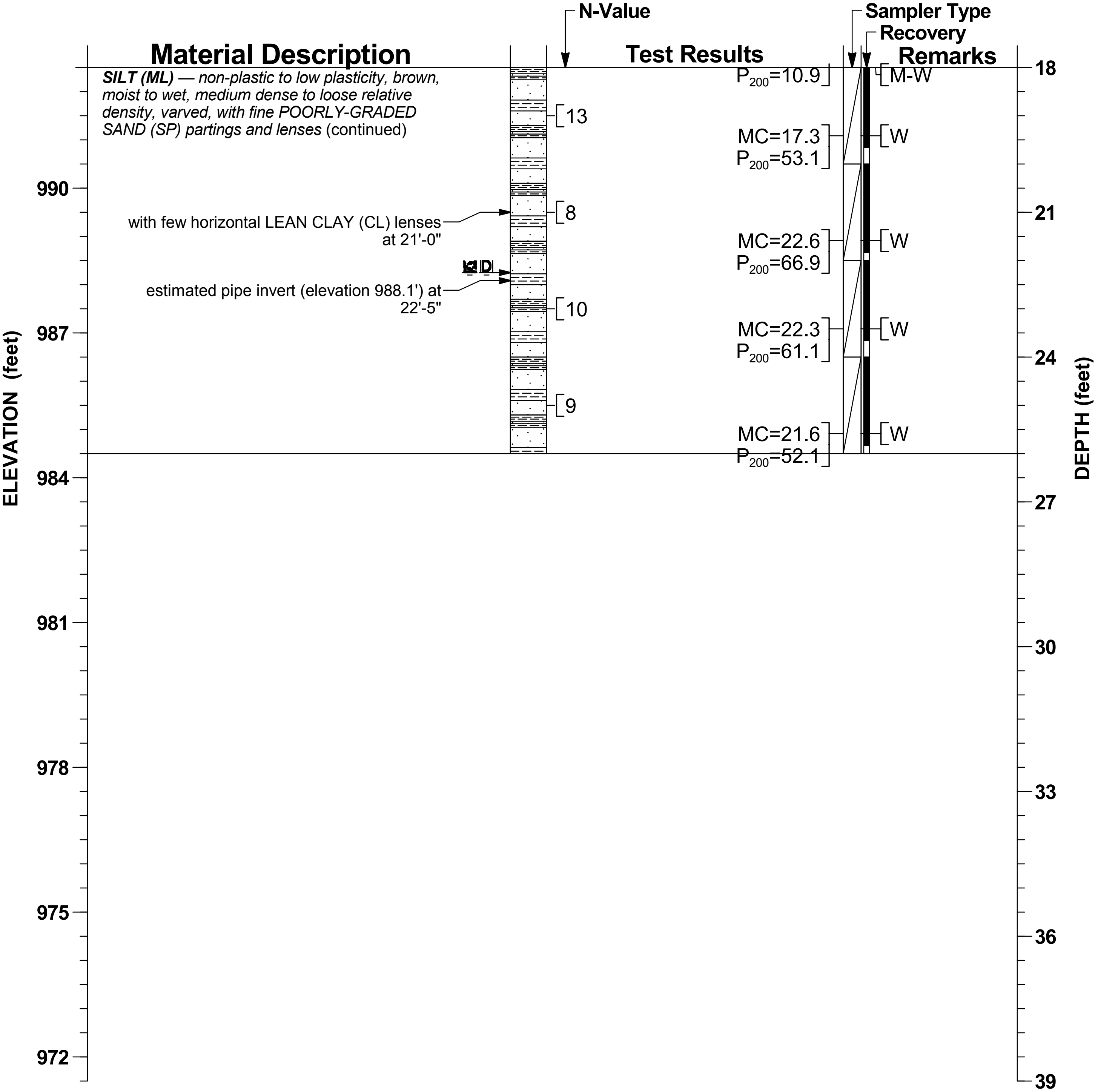
Boring 12

PAGE: **2** of **2**

SILT (ML) — *non-plastic to low plasticity, brown, moist to wet, medium dense to loose relative density, varved, with fine POORLY-GRADED SAND (SP) partings and lenses* (continued)



WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 22'-3" Dry at completion	22'-3" Caved at completion

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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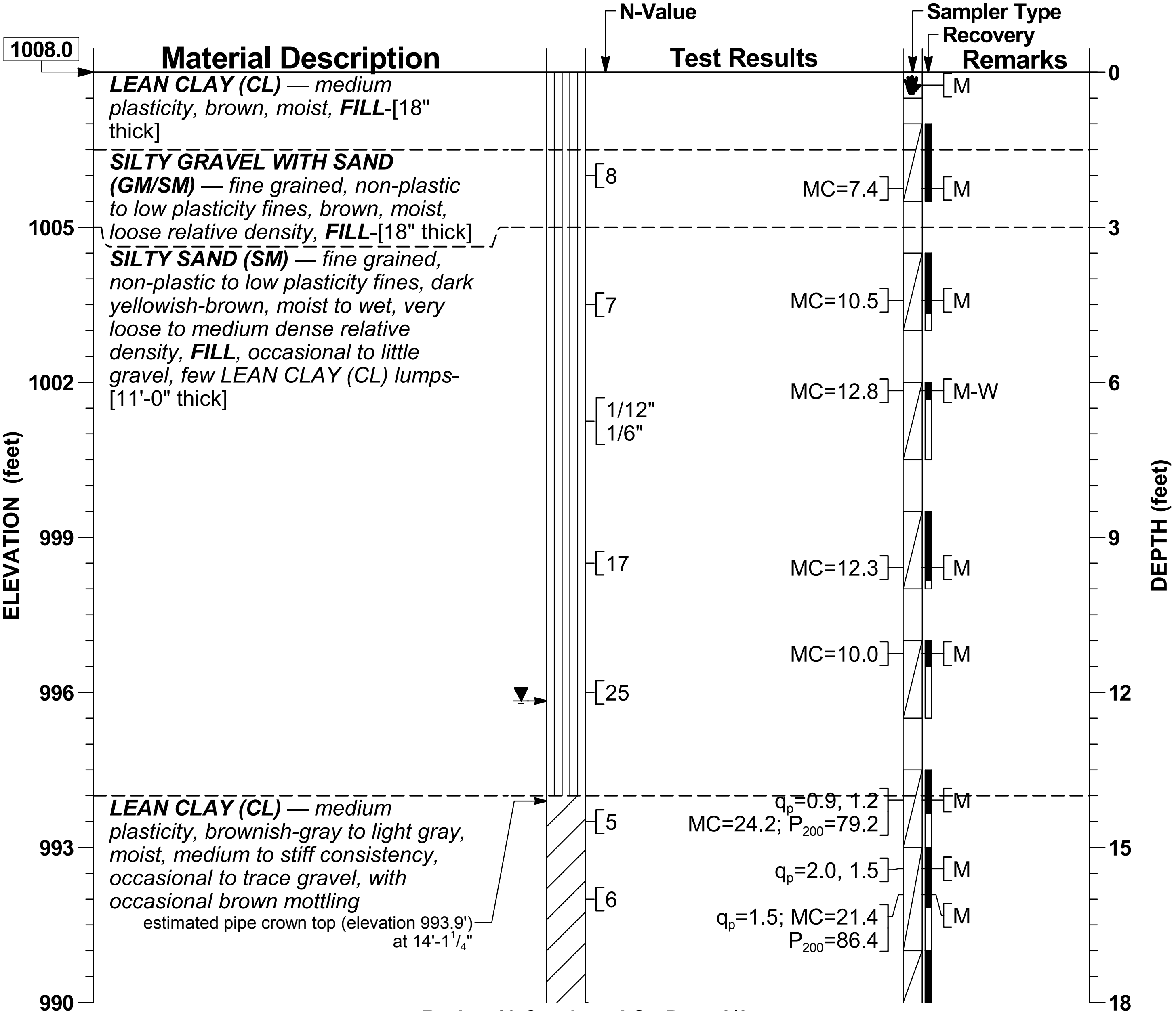
General
Location:

Boring 13

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 25'-0"
STATION: 513+00	OFFSET: 20.0'	RANGE: 8 E	¼ ¼: SW	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/03/2019



Material Description

***LEAN CLAY (CL)** — medium plasticity, brown, moist, **FILL**-*[18" thick]

***SILTY GRAVEL WITH SAND (GM/SM)** — fine grained, non-plastic to low plasticity fines, brown, moist, loose relative density, **FILL**-*[18" thick]

***SILTY SAND (SM)** — fine grained, non-plastic to low plasticity fines, dark yellowish-brown, moist to wet, very loose to medium dense relative density, **FILL**, occasional to little gravel, few LEAN CLAY (CL) lumps-*[11'-0" thick]

***LEAN CLAY (CL)** — medium plasticity, brownish-gray to light gray, moist, medium to stiff consistency, occasional to trace gravel, with occasional brown mottling*

estimated pipe crown top (elevation 993.9') at 14'-1$^1/_4$"

N-Value	Test Results	Remarks
		M
8	MC=7.4	M
7	MC=10.5	M
1/12" 1/6"	MC=12.8	M-W
17	MC=12.3	M
	MC=10.0	M
25		
5	q_p=0.9, 1.2 MC=24.2; P_{200}=79.2	M
	q_p=2.0, 1.5	M
6	q_p=1.5; MC=21.4 P_{200}=86.4	M

Boring 13 Continued On Page 2/2

WATER LEVEL LEGEND

▼ 12'-2" at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	25'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

N-Value

Sampler Type

Recovery

Material Description

Test Results

Remarks

estimated pipe invert (elevation 988.2') at 19'-9$^1/_4$"

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— fine to coarse grained, non-plastic to low plasticity fines, brown, wet, medium dense relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with occasional LEAN CLAY (CL) partings*

7	q_p=1.4, 2.4	M
	q_p=1.4; MC=22.1 P_{200}=88.1	M
20		M
	q_p=1.9, 2.5	
	MC=20.6 P_{200}=45.1	W
16		
	MC=19.3 P_{200}=33.5	W
18	MC=16.6 P_{200}=50.7	W

ELEVATION (feet): 987, 984, 981, 978, 975, 972, 969

DEPTH (feet): 18, 21, 24, 27, 30, 33, 36, 39

OTHER LEVEL LEGEND
▨ 20'-3" Caved at completion

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Storm Sewer Exploration
Raymond Road
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City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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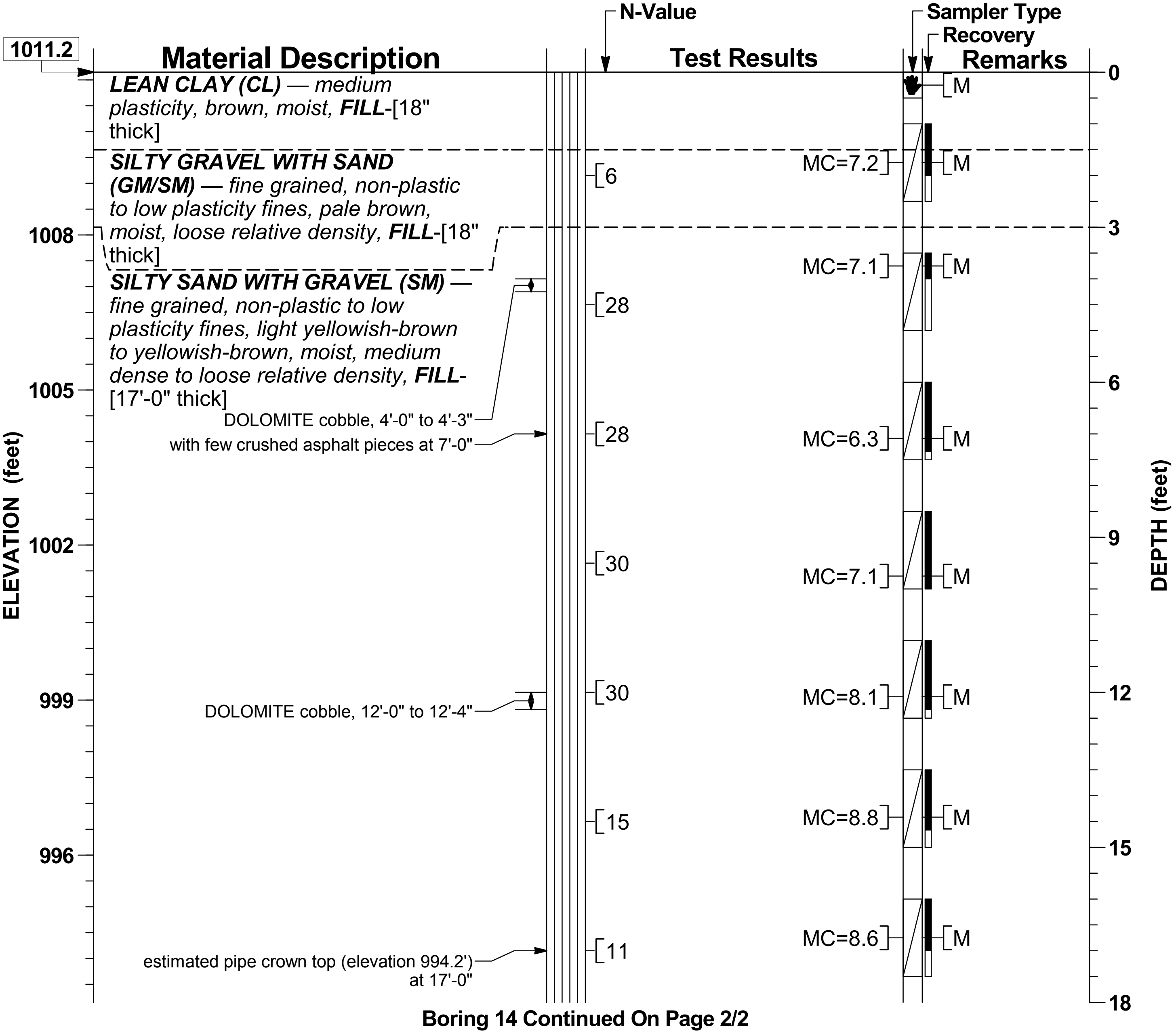
Printed on 10/21/2019

General Location:

Boring 14

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 28'-0"
STATION: 511+00	OFFSET: 19.0'	RANGE: 8 E	¼ ¼: SW	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/03/2019



***LEAN CLAY (CL)** — medium plasticity, brown, moist, **FILL**-*[18" thick]

***SILTY GRAVEL WITH SAND (GM/SM)** — fine grained, non-plastic to low plasticity fines, pale brown, moist, loose relative density, **FILL**-*[18" thick]

***SILTY SAND WITH GRAVEL (SM)** — fine grained, non-plastic to low plasticity fines, light yellowish-brown to yellowish-brown, moist, medium dense to loose relative density, **FILL**-*[17'-0" thick]

DOLOMITE cobble, 4'-0" to 4'-3"

with few crushed asphalt pieces at 7'-0"

DOLOMITE cobble, 12'-0" to 12'-4"

estimated pipe crown top (elevation 994.2') at 17'-0"

N-Value	Test Results	Remarks
		M
6	MC=7.2	M
28	MC=7.1	M
28	MC=6.3	M
30	MC=7.1	M
30	MC=8.1	M
15	MC=8.8	M
11	MC=8.6	M

Boring 14 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	2$^1/_4$"	—	None	0'-0"	28'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Auger Cuttings, Bentonite Chips, Caved Soil

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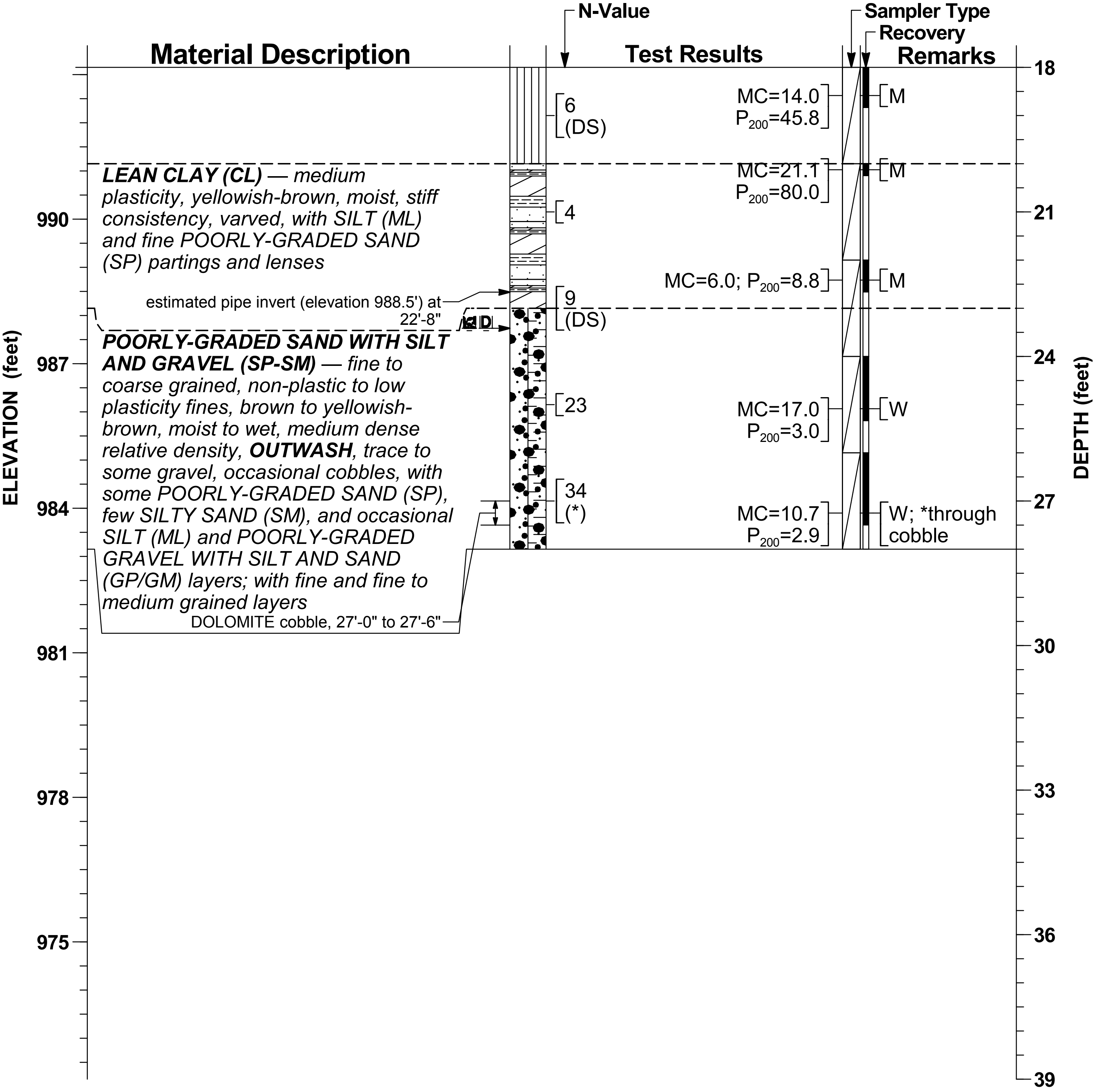
SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83



Material Description	N-Value	Test Results	Remarks
	6 (DS)	MC=14.0 P_{200}=45.8	M
***LEAN CLAY (CL)** — medium plasticity, yellowish-brown, moist, stiff consistency, varved, with SILT (ML) and fine POORLY-GRADED SAND (SP) partings and lenses*	4	MC=21.1 P_{200}=80.0	M
	9 (DS)	MC=6.0; P_{200}=8.8	M
***POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)** — fine to coarse grained, non-plastic to low plasticity fines, brown to yellowish-brown, moist to wet, medium dense relative density, **OUTWASH**, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*	23	MC=17.0 P_{200}=3.0	W
	34 (*)	MC=10.7 P_{200}=2.9	W; *through cobble

estimated pipe invert (elevation 988.5') at 22'-8"

DOLOMITE cobble, 27'-0" to 27'-6"

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 23'-5" Dry at completion	⛝ 23'-5" Caved at completion

The Notes and Legend Record is considered a part of this Soil Boring Record.

General Location:

Boring 15

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 33'-0"
STATION: 509+00	OFFSET: 19.0'	RANGE: 8 E	¼ ¼: SW	LOG QC: CMB	DATE STARTED: 10/03/2019	DATE COMPLETED: 10/04/2019

ELEVATION (feet)	Material Description	N-Value	Test Results	Sampler Type / Recovery / Remarks	DEPTH (feet)
1018.0	***LEAN CLAY (CL)*** — *medium plasticity, dark brown, moist,* ***FILL TOPSOIL***-[18" thick]			M	0
1017	***SILTY GRAVEL WITH SAND (GM/SM)*** — *fine grained, non-plastic to low plasticity fines, light yellowish-brown, moist, loose relative density,* ***FILL***-[18" thick]	8	MC=6.1	M	
					3
1014	***SILTY SAND WITH GRAVEL (SM)*** — *fine grained, non-plastic to low plasticity fines, yellowish-brown, moist, medium dense relative density,* ***FILL***-[10'-0" thick]	18	MC=6.0	M	
1011		22	MC=10.7	M	6
	with LEAN CLAY (CL) lumps at 9'-0"	26	MC=9.5	M	9
1008					
	with few small crushed aphalt pieces and LEAN CLAY (CL) lumps at 12'-0"	14	MC=5.9	M	12
1005	***POORLY-GRADED SAND (SP)*** — *fine grained, light yellowish-brown, moist, medium dense relative density,* ***FILL***-[5'-0" thick]	21	MC=4.2	M	15
1002		13	MC=4.7	M	18

Boring 15 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	33'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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SOIL BORING RECORD
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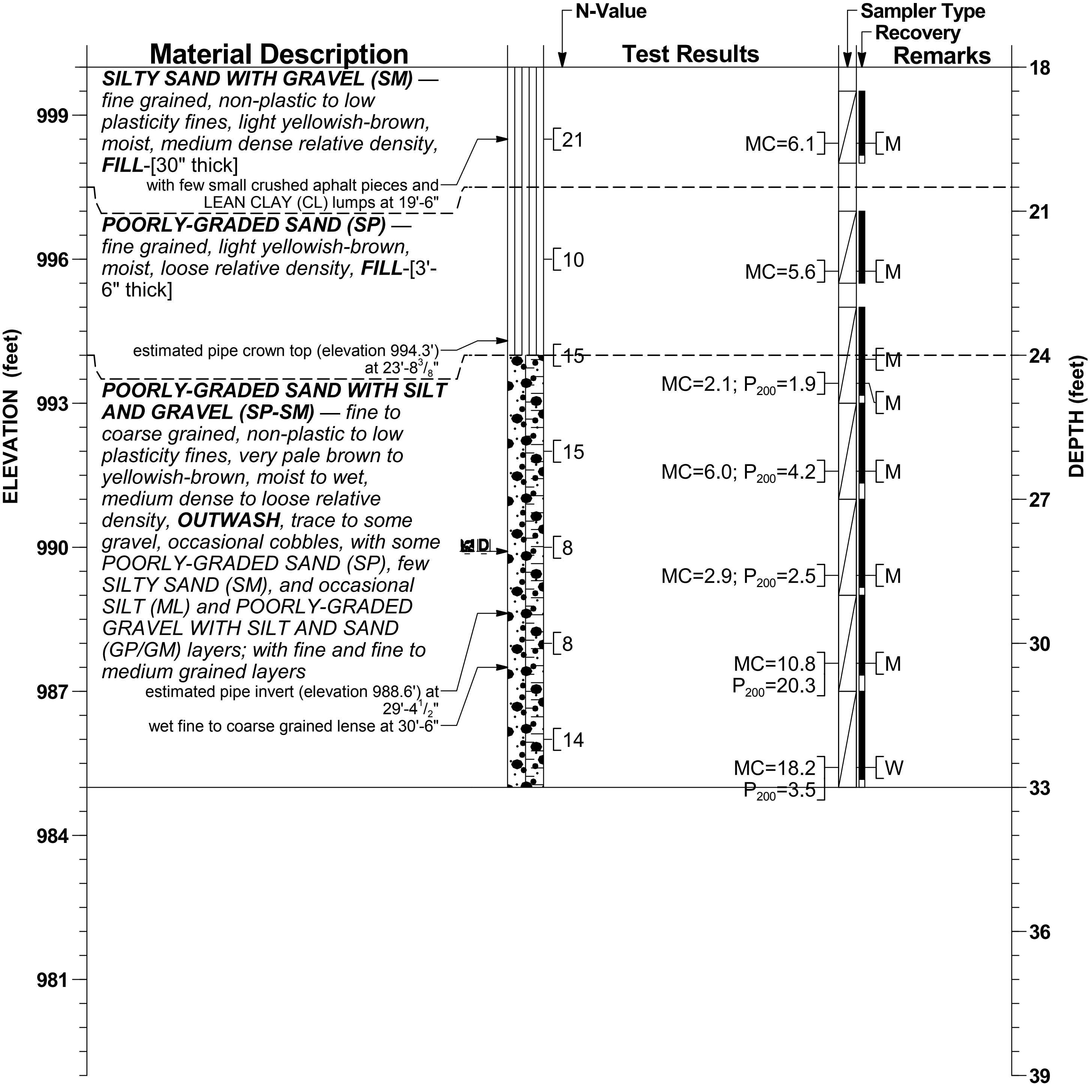

Material Description

SILTY SAND WITH GRAVEL (SM) — *fine grained, non-plastic to low plasticity fines, light yellowish-brown, moist, medium dense relative density,* ***FILL***-[30" thick]

with few small crushed aphalt pieces and LEAN CLAY (CL) lumps at 19'-6"

POORLY-GRADED SAND (SP) — *fine grained, light yellowish-brown, moist, loose relative density,* ***FILL***-[3'-6" thick]

estimated pipe crown top (elevation 994.3') at 23'-8$^3/_8$"

POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) — *fine to coarse grained, non-plastic to low plasticity fines, very pale brown to yellowish-brown, moist to wet, medium dense to loose relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*

estimated pipe invert (elevation 988.6') at 29'-4$^1/_2$"

wet fine to coarse grained lense at 30'-6"

N-Value	Test Results	Remarks
21	MC=6.1	M
10	MC=5.6	M
15		M
	MC=2.1; P_{200}=1.9	M
15	MC=6.0; P_{200}=4.2	M
8	MC=2.9; P_{200}=2.5	M
8	MC=10.8 P_{200}=20.3	M
14	MC=18.2 P_{200}=3.5	W

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 28'-1" Dry at completion	28'-1" Caved at completion

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CONSULTING CIVIL ENGINEERS SINCE 1966

SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

13282

Printed on 10/21/2019

General Location:

Boring 16

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: SWK	DRILL RIG: CME 85	PAGE: 1 of 3
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 40'-0"
STATION: 506+00	OFFSET: 20.0'	RANGE: 8 E	¼ ¼: SW	LOG QC: CMB	DATE STARTED: 10/04/2019	DATE COMPLETED: 10/04/2019

Ground surface elevation: 1024.6

Elevation (feet)	Material Description	N-Value	Test Results	Sampler Type / Recovery	Remarks	Depth (feet)
1024.6	***LEAN CLAY (CL)** — medium plasticity, brown, moist, **FILL**-*[18" thick]				M	0
1023	***SILTY GRAVEL WITH SAND (GM/SM)** — fine grained, non-plastic to low plasticity fines, very pale brown, moist, loose relative density, **FILL**-*[18" thick]	WH/6" 4/6" 5/6"	MC=5.0		M	
	***SILTY SAND (SM)** — fine grained, non-plastic to low plasticity fines, yellowish-brown, moist, medium dense to loose relative density, **FILL**, trace gravel, occasional LEAN CLAY (CL) lumps*-[12'-6" thick]					3
1020		16	MC=9.3		M	
						6
1017		10	MC=11.6		M	
						9
1014		13	MC=11.6		M	
						12
1011		16	MC=8.7		M	
		23	MC=8.1		M	15
	See description on next page					
1008		16	MC=8.7		M	18

Boring 16 Continued On Page 2/3

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	40'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
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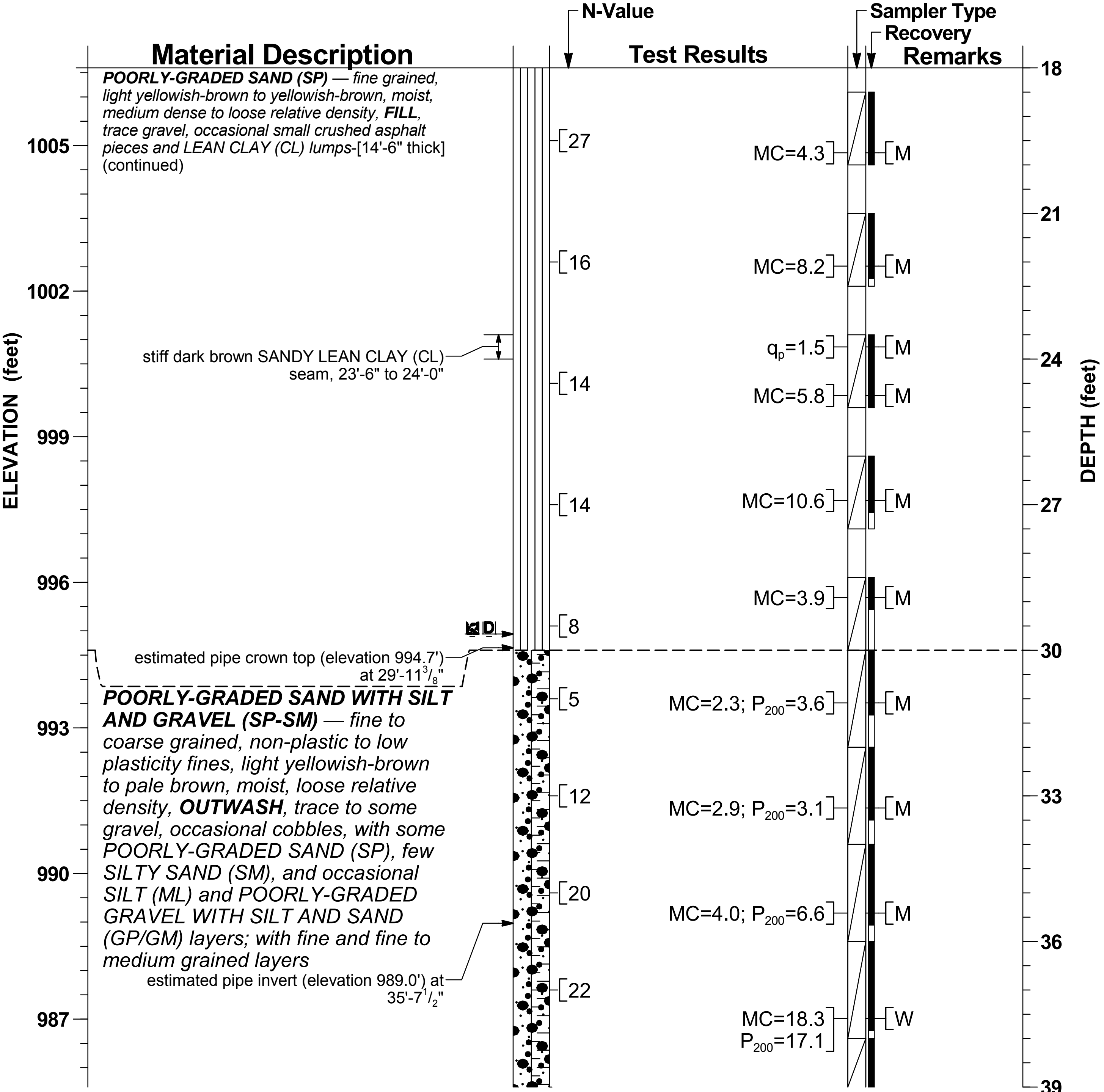


***POORLY-GRADED SAND (SP)** — fine grained, light yellowish-brown to yellowish-brown, moist, medium dense to loose relative density, **FILL**, trace gravel, occasional small crushed asphalt pieces and LEAN CLAY (CL) lumps*-[14'-6" thick] (continued)

stiff dark brown SANDY LEAN CLAY (CL) seam, 23'-6" to 24'-0"

estimated pipe crown top (elevation 994.7') at 29'-11 3/8"

***POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)** — fine to coarse grained, non-plastic to low plasticity fines, light yellowish-brown to pale brown, moist, loose relative density, **OUTWASH**, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*

estimated pipe invert (elevation 989.0') at 35'-7 1/2"

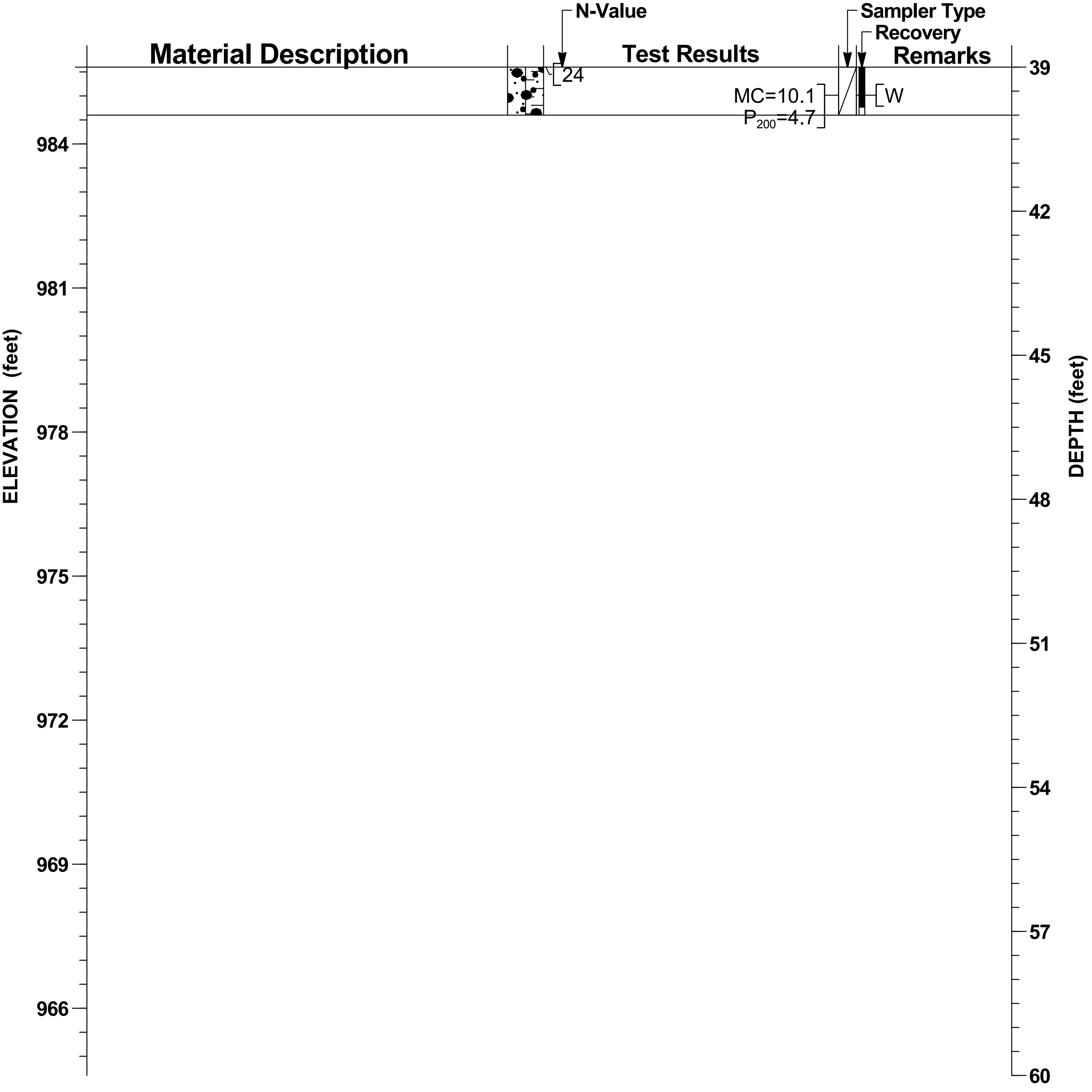
N-Value	Test Results	Remarks
27	MC=4.3	M
16	MC=8.2	M
14	q_p=1.5 MC=5.8	M M
14	MC=10.6	M
8	MC=3.9	M
5	MC=2.3; P_{200}=3.6	M
12	MC=2.9; P_{200}=3.1	M
20	MC=4.0; P_{200}=6.6	M
22	MC=18.3 P_{200}=17.1	W

Boring 16 Continued On Page 3/3

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 29'-8" Dry at completion	29'-8" Caved at completion

The Notes and Legend Record is considered a part of this Soil Boring Record.

Boring 16



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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

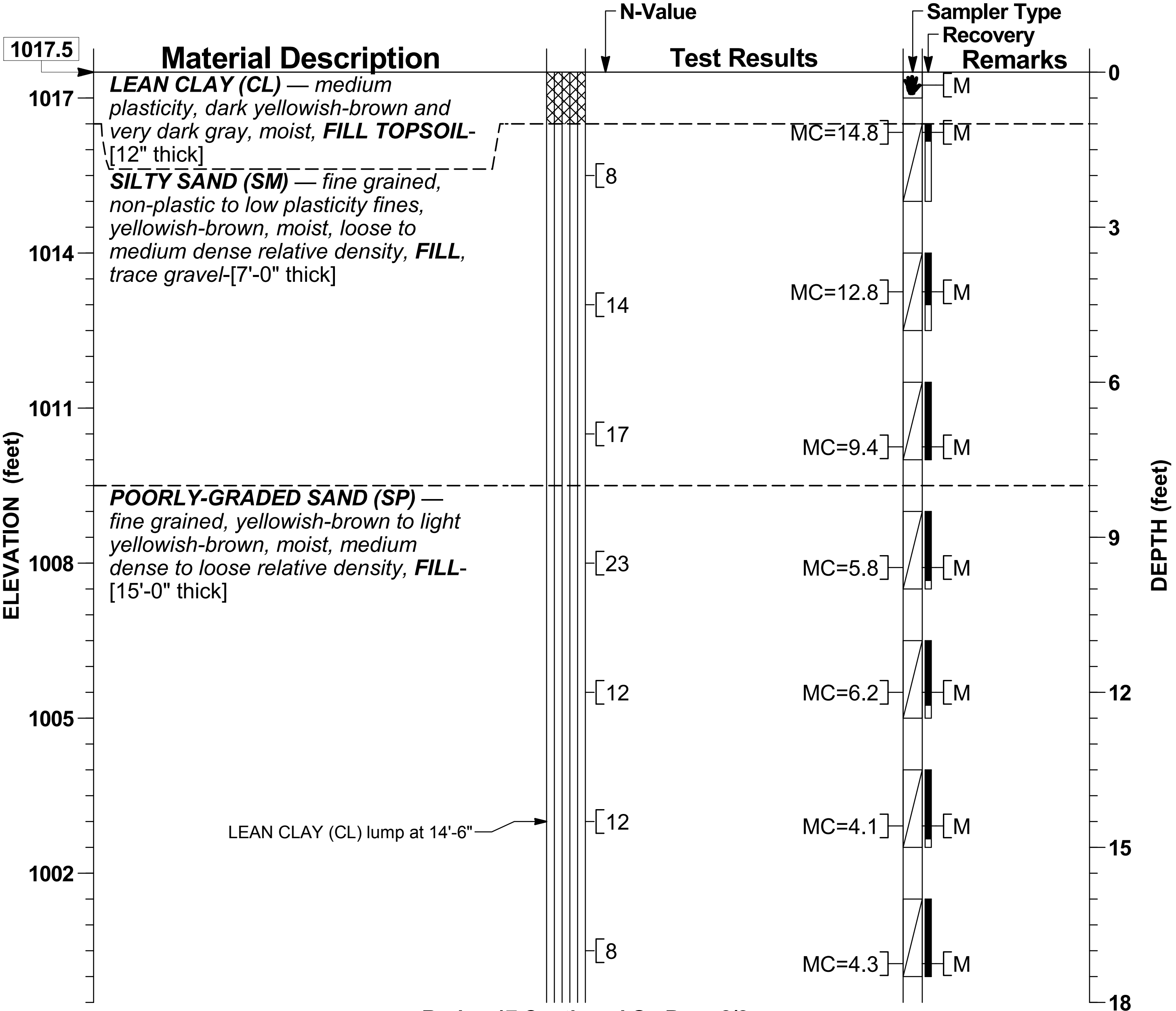
13282

Printed on 10/21/2019

General Location:

Boring 17

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 33'-0"
STATION: 504+00	OFFSET: 19.3' Left	RANGE: 8 E	¼ ¼: SW	LOG QC: CMB	DATE STARTED: 10/04/2019	DATE COMPLETED: 10/04/2019



LEAN CLAY (CL) *— medium plasticity, dark yellowish-brown and very dark gray, moist,* ***FILL TOPSOIL***-[12" thick]

SILTY SAND (SM) *— fine grained, non-plastic to low plasticity fines, yellowish-brown, moist, loose to medium dense relative density,* ***FILL****, trace gravel*-[7'-0" thick]

POORLY-GRADED SAND (SP) *— fine grained, yellowish-brown to light yellowish-brown, moist, medium dense to loose relative density,* ***FILL***-[15'-0" thick]

LEAN CLAY (CL) lump at 14'-6"

		M
8	MC=14.8	M
14	MC=12.8	M
17	MC=9.4	M
23	MC=5.8	M
12	MC=6.2	M
12	MC=4.1	M
8	MC=4.3	M

Boring 17 Continued On Page 2/2

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	33'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

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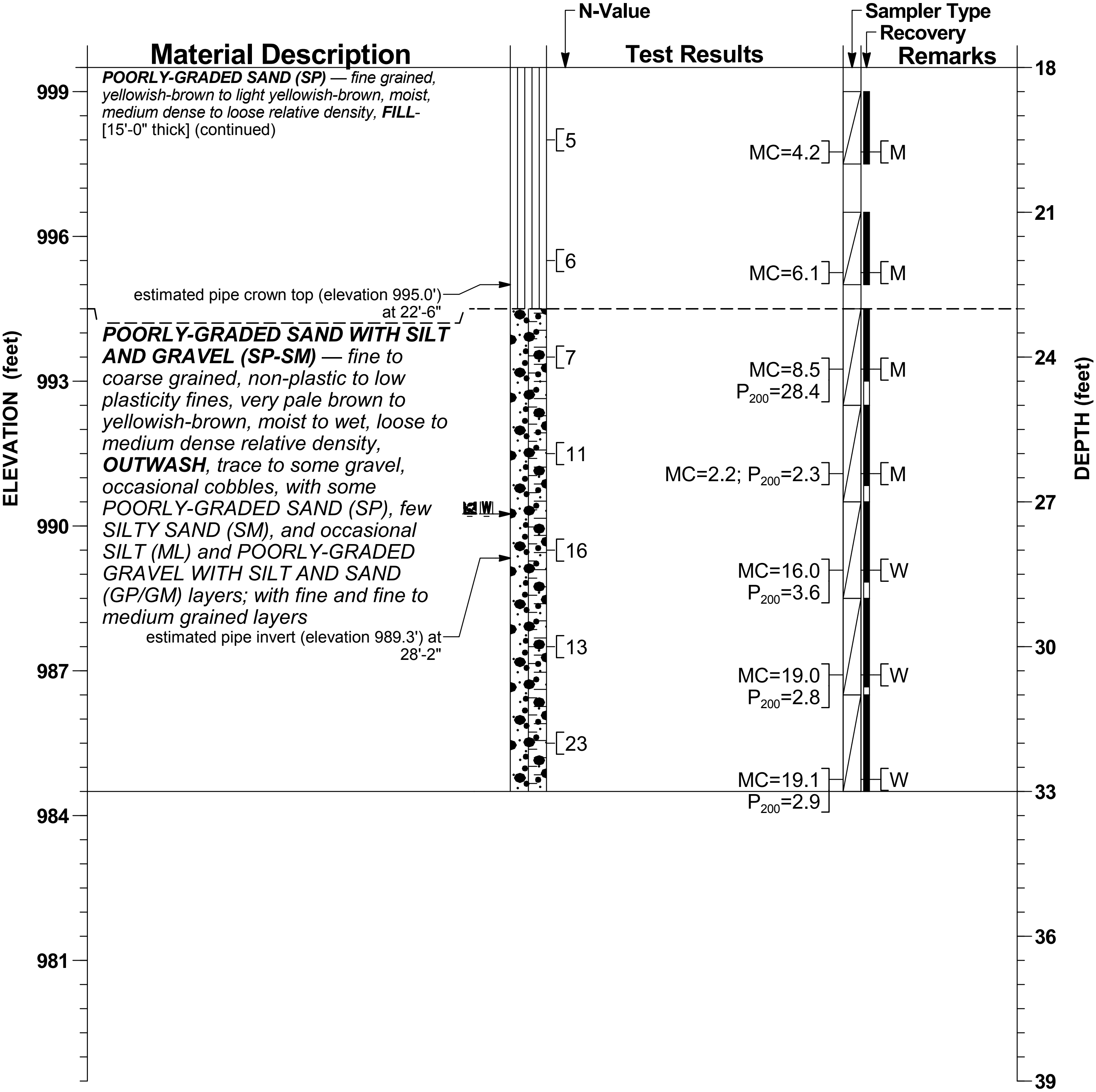
Boring 17

PAGE: **2** of **2**



Material Description	N-Value	Test Results	Remarks
POORLY-GRADED SAND (SP) *— fine grained, yellowish-brown to light yellowish-brown, moist, medium dense to loose relative density,* ***FILL***- [15'-0" thick] (continued)	5	MC=4.2	M
	6	MC=6.1	M
POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— fine to coarse grained, non-plastic to low plasticity fines, very pale brown to yellowish-brown, moist to wet, loose to medium dense relative density,* ***OUTWASH****, trace to some gravel, occasional cobbles, with some POORLY-GRADED SAND (SP), few SILTY SAND (SM), and occasional SILT (ML) and POORLY-GRADED GRAVEL WITH SILT AND SAND (GP/GM) layers; with fine and fine to medium grained layers*	7	MC=8.5 P_{200}=28.4	M
	11	MC=2.2; P_{200}=2.3	M
	16	MC=16.0 P_{200}=3.6	W
	13	MC=19.0 P_{200}=2.8	W
	23	MC=19.1 P_{200}=2.9	W

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
W 27'-3" Wet at completion	27'-3" Caved at completion

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SOIL BORING RECORD
Storm Sewer Exploration
Raymond Road
CTH PD to Ice Age Scenic Trail
City of Madison, Dane County, Wisconsin
WisDOT State ID 5992-09-83

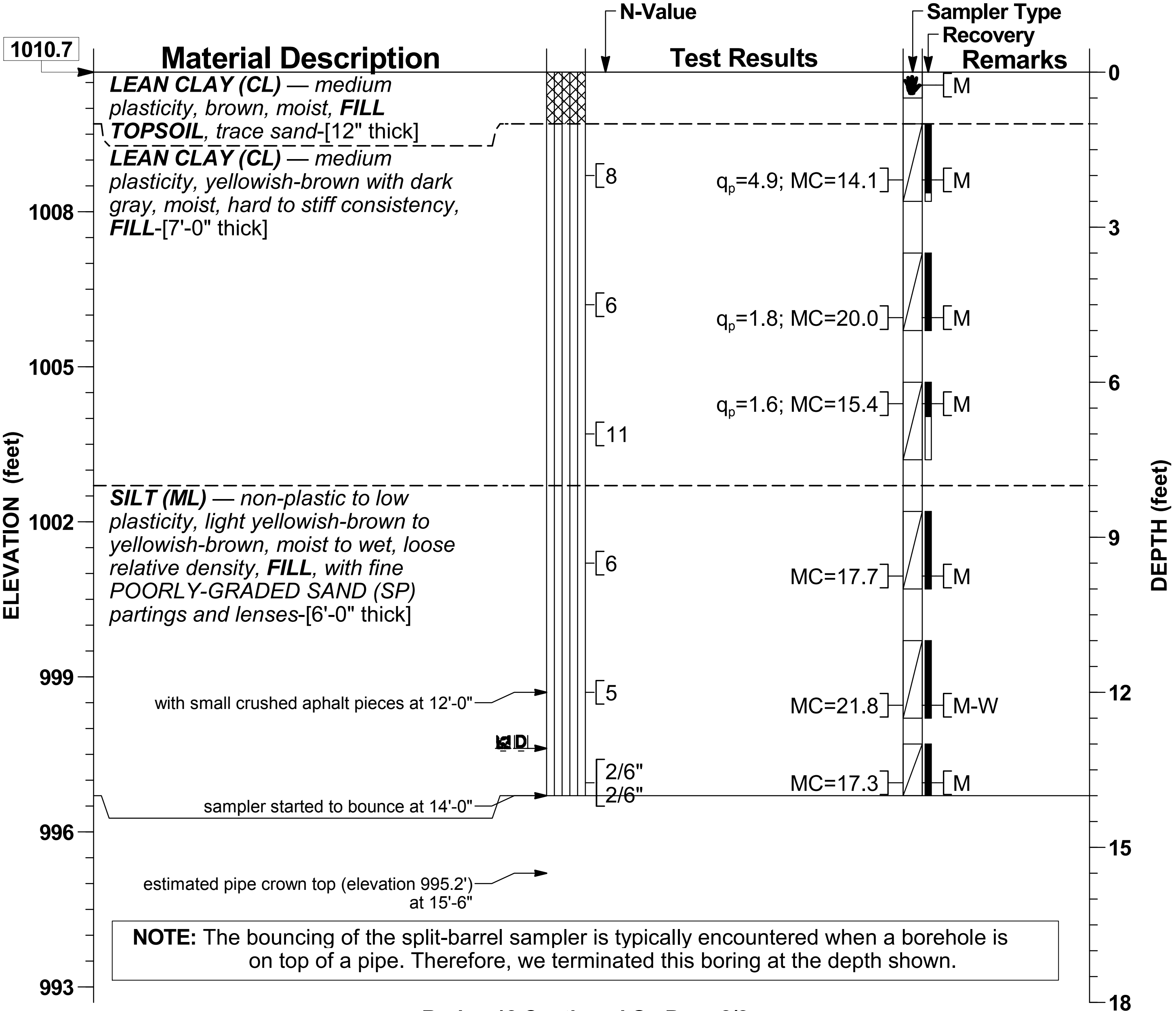
13282

Printed on 10/21/2019

General Location:

Boring 18

LATITUDE: —	LONGITUDE: —	COUNTY: Dane	SECTION: 3	CREW CHIEF: RRR	DRILL RIG: CME 550X	PAGE: 1 of 2
NORTHING: —	EASTING: —	TOWNSHIP: (Verona) 6 N	¼: SE	LOG REVIEW: CMB	HAMMER TYPE: Automatic	TOTAL DEPTH: 14'-0"
STATION: 502+00	OFFSET: 46.5' Left	RANGE: 8 E	¼ ¼: SW	LOG QC: CMB	DATE STARTED: 10/04/2019	DATE COMPLETED: 10/04/2019



Material Description

LEAN CLAY (CL) *— medium plasticity, brown, moist,* ***FILL***

TOPSOIL*, trace sand*-[12" thick]

LEAN CLAY (CL) *— medium plasticity, yellowish-brown with dark gray, moist, hard to stiff consistency,* ***FILL***-[7'-0" thick]

SILT (ML) *— non-plastic to low plasticity, light yellowish-brown to yellowish-brown, moist to wet, loose relative density,* ***FILL****, with fine POORLY-GRADED SAND (SP) partings and lenses*-[6'-0" thick]

with small crushed aphalt pieces at 12'-0"

sampler started to bounce at 14'-0"

estimated pipe crown top (elevation 995.2') at 15'-6"

N-Value	Test Results	Remarks
		M
8	q_p=4.9; MC=14.1	M
6	q_p=1.8; MC=20.0	M
11	q_p=1.6; MC=15.4	M
6	MC=17.7	M
5	MC=21.8	M-W
2/6" 2/6"	MC=17.3	M

NOTE: The bouncing of the split-barrel sampler is typically encountered when a borehole is on top of a pipe. Therefore, we terminated this boring at the depth shown.

Boring 18 Continued On Page 2/2

WATER LEVEL LEGEND	OTHER LEVEL LEGEND
D 13'-1" Dry at completion	13'-1" Caved at completion

DRILL METHOD	TOOL SIZE	CASING SIZE	DRILL FLUID	DEPTH FROM	DEPTH TO	HOLE DIA
HSA	$2^1/_4$"	—	None	0'-0"	14'-0"	6.3"

SAMPLING METHOD(S): ASTM D1586

SURFACE PATCH: —

BACKFILL: Bentonite Chips, Caved Soil

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Material Description	N-Value	Test Results	Sampler Type	Recovery	Remarks
estimated pipe invert (elevation 989.5') at 21'-2"					

ELEVATION (feet): 990, 987, 984, 981, 978, 975, 972

DEPTH (feet): 18, 21, 24, 27, 30, 33, 36, 39

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Storm Sewer Exploration
Raymond Road
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BARR

LOG OF BORING SPT-20-01

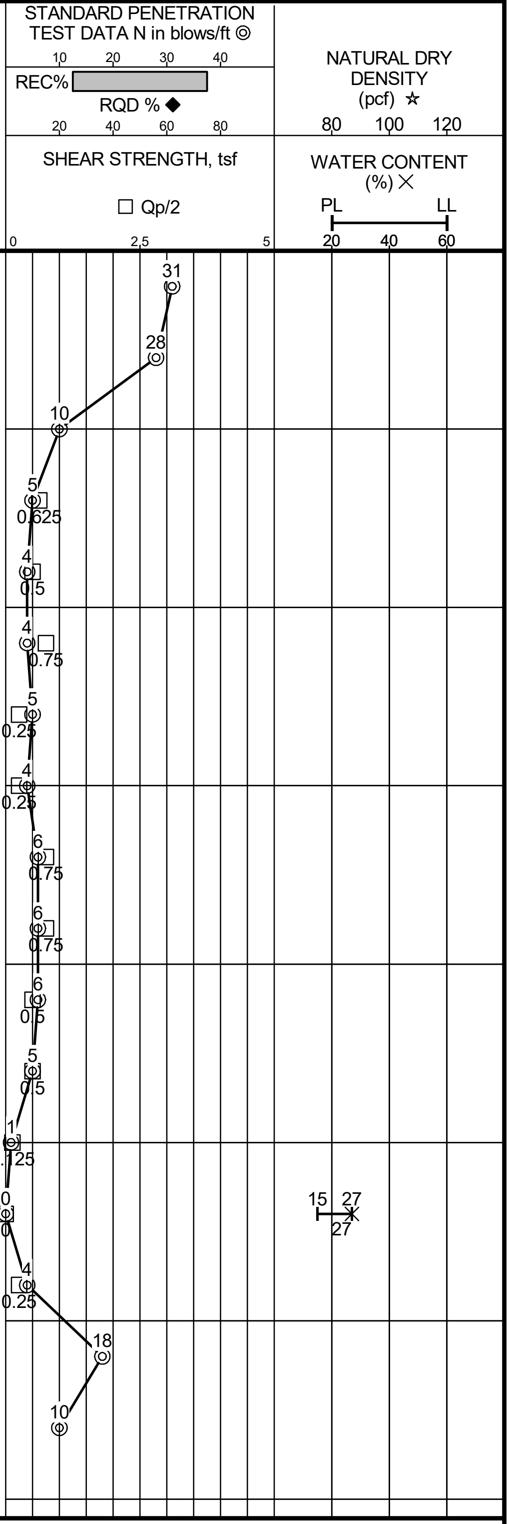
Sheet 1 of 1

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1004.4 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02180703° Long: -89.52696058°	Completion Depth:	34.0 ft
Datum:	NAVD 88		

Surface Elev.: 1004.4 ft

MATERIAL DESCRIPTION	Depth
POORLY GRADED SAND WITH GRAVEL (SP): fine to medium grained; grayish tan; moist; dense to medium dense; angular. Crushed concrete and cobbles caused difficult drilling from 1.0 to 3.5 feet. 1000.9 ft	3.5ft
POORLY GRADED SAND WITH SILT (SP-SM): fine grained; tan; moist; medium dense; trace gravel. 997.9 ft	6.5ft
CLAYEY SILT (ML): gray; moist; stiff; orange mottling. 996.4 ft	8.0ft
LEAN CLAY (CL): gray; moist; soft to stiff; orange mottling; trace sand. 983.4 ft	21.0ft
LEAN CLAY WITH SAND (CL): gray; moist to wet; very soft to medium stiff; black and orange mottling. 974.4 ft	30.0ft
CLAYEY SAND WITH GRAVEL (SC): fine grained; brown; wet; medium dense. 970.4 ft	34.0ft
Bottom of Boring at 34.0 feet	

Sample No.	% Recovery	SPT, N value or RQD %
1	67	31
2	79	28
3	75	10
4	67	5
5	100	4
6	100	4
7	100	5
8	100	4
9	100	6
10	100	6
11	100	6
12	100	5
13	92	1
14	83	0
15	92	4
16	92	18
17	75	10



Date Boring Started:	5/11/20 10:00 am
Date Boring Completed:	5/11/20 11:50 am
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)

▽ After Drilling	24.5
▼ At Time of Drilling	21.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Sample 16 was too disturbed for hand penetrometer test. No drilling fluids used. Boring backfilled with bentonite chips to surface.

Weather: 45 F Mostly Sunny

BARR

LOG OF BORING SPT-20-02

Sheet 1 of 2

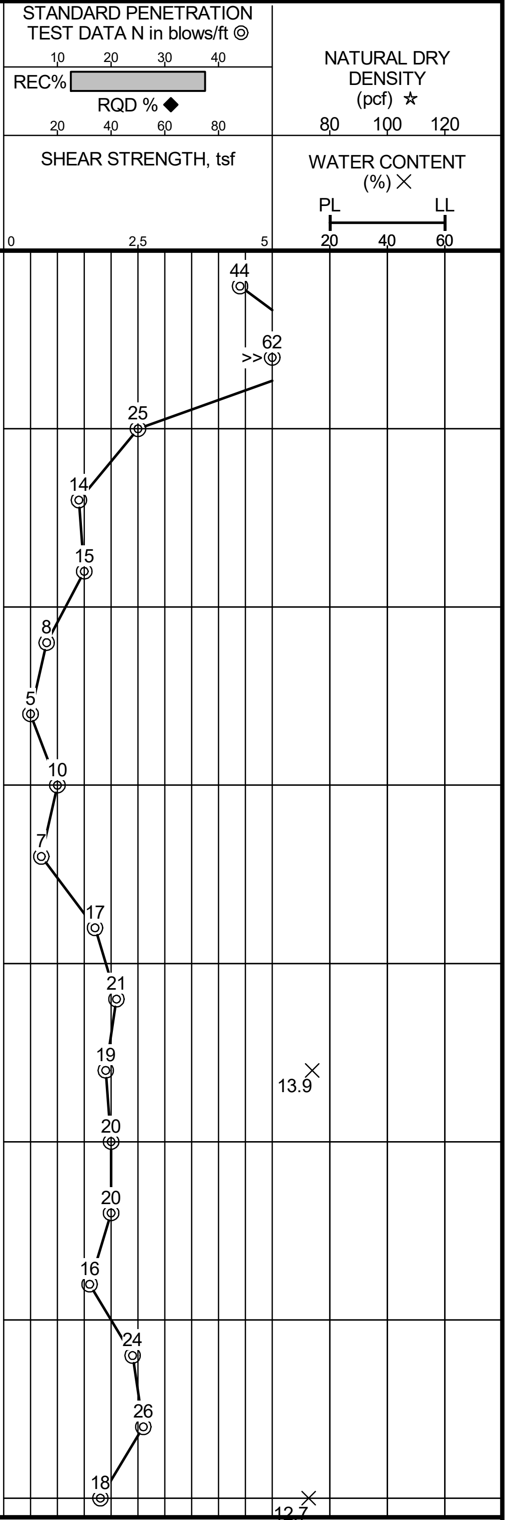
Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1008.4 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02094313° Long: -89.52809309°	Completion Depth:	50.0 ft
Datum:	NAVD 88		

Surface Elev.: 1008.4 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION
1008.4	0	POORLY GRADED SAND WITH GRAVEL (SP): fine to medium grained; tan; moist; dense.
1005.9 ft	2.5ft	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM): fine to medium grained; brown; moist; very dense to loose.
989.4 ft	19.0ft	POORLY GRADED SAND (SP): fine grained; tan; moist; medium dense; trace silt; trace gravel.
986.4 ft	22.0ft	SILTY SAND (SM): fine grained; brown; moist to wet; medium dense; interbedded SP-SM lenses; few gravel.

Continued Next Page

Sample No.	% Recovery	SPT, N value or RQD %
1	92	44
2	100	62
3	100	25
4	100	14
5	100	15
6	100	8
7	75	5
8	92	10
9	100	7
10	79	17
11	100	21
12	100	19
13	83	20
14	100	20
15	100	16
16	100	24
17	100	26



Date Boring Started:	5/12/20 10:55 am
Date Boring Completed:	5/12/20 3:20 pm
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)
▽ After Drilling Not measured (water added)
▼ At Time of Drilling 23.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Boring flushed with water starting at 36' bgs. Boring backfilled with bentonite chips to surface.

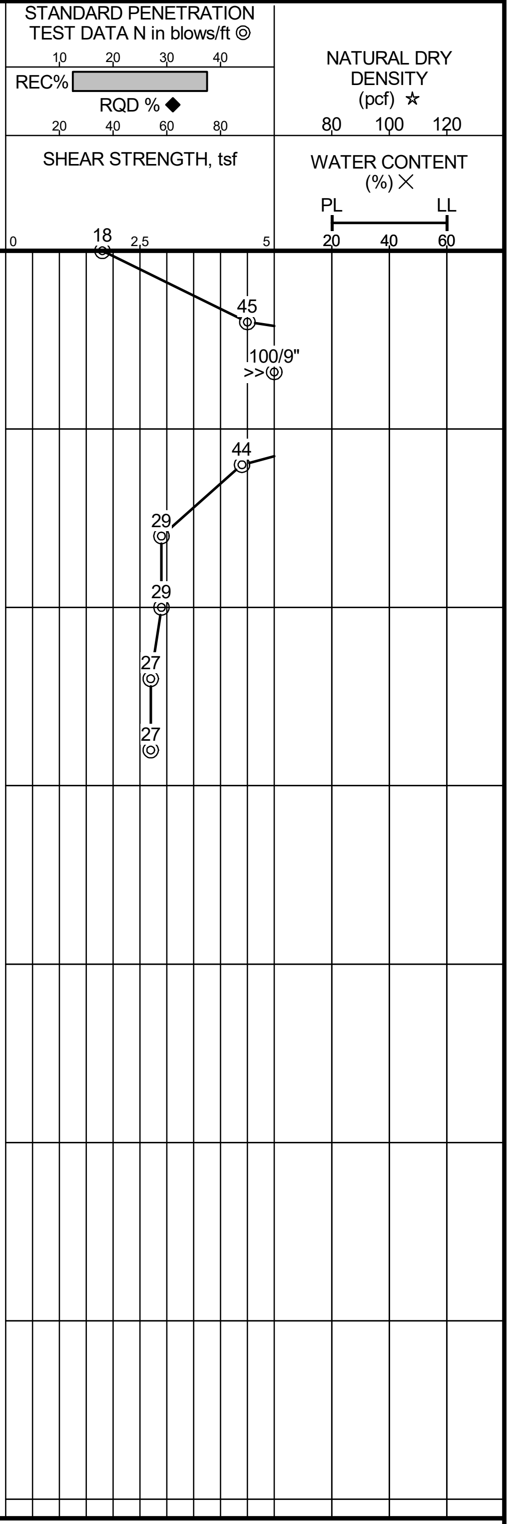
Weather: 50 F Sunny

LOG OF BORING SPT-20-02

Sheet 2 of 2

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1008.4 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02094313° Long: -89.52809309°	Completion Depth:	50.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Sample No.	% Recovery	SPT, N value or RQD %
	35	972.4 ft	18	100	18
		POORLY GRADED SAND WITH GRAVEL (SP): fine to medium grained; brown; wet; very dense to medium dense. 36.0ft	19	100	45
970			20	63	100/ 9"
	40		21	75	44
965			22	63	29
	45		23	58	29
			24	50	27
960			25	50	27
	50	958.4 ft Bottom of Boring at 50.0 feet 50.0ft			



Date Boring Started:	5/12/20 10:55 am
Date Boring Completed:	5/12/20 3:20 pm
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)

▽ After Drilling Not measured (water added)

▼ At Time of Drilling 23.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Boring flushed with water starting at 36' bgs. Boring backfilled with bentonite chips to surface.

Weather: 50 F Sunny

P:\MPLS\49 WI\13\49131019 VERONA WI SINKHOLE EVALUATION\WORKFILES\FIELD DATA\BORINGS TRENCHES AND X SECTIONS\SOIL BORINGS\FISHER BREN BORING LOGS.GPJ BARRLIBRARY.GLB BOREHOLE LOG REPORT BARR TEMPLATE.GDT

BARR

LOG OF BORING SPT-20-03

Sheet 1 of 1

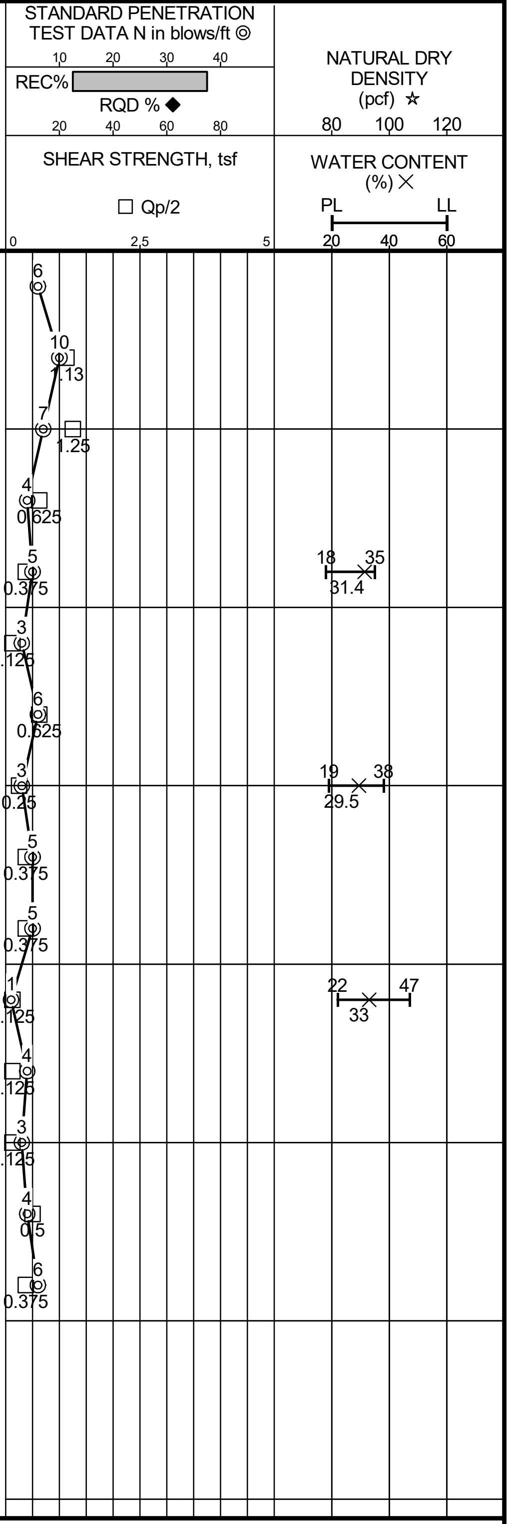
Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1001.2 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02198134° Long: -89.52678931°	Completion Depth:	30.0 ft
Datum:	NAVD 88		

Surface Elev.: 1001.2 ft

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	
1001.2	0	LEAN CLAY WITH SAND (CL): dark brown; moist; trace organics; trace roots.	0.5ft
1000.7 ft		LEAN CLAY (CL): dark brown; moist; very stiff to stiff; trace roots; trace gravel; trace sand.	
994.2 ft		LEAN CLAY (CL): grayish tan; moist; very soft to stiff; orange mottling.	7.0ft
983.2 ft		LEAN CLAY (CL): dark gray to black; moist; very soft to medium stiff.	18.0ft
972.2 ft		SILT (ML): gray; moist; medium stiff; trace sand @ 29'.	29.0ft
971.2 ft			30.0ft

Bottom of Boring at 30.0 feet

Sample No.	% Recovery	SPT, N value or RQD %	SHEAR STRENGTH, tsf ☐ Qp/2	PL	LL	WATER CONTENT (%) ✕
1	0	6				
2	63	10	1.13			
3	75	7	1.25			
4	88	4	0.625			
5	100	5	0.375	18	35	31.4
6	100	3	0.125			
7	100	6	0.625			
8	58	3	0.25	19	38	29.5
9	100	5	0.375			
10	100	5	0.375			
11	100	1	0.125	22	47	33
12	100	4	0.125			
13	100	3	0.125			
14	100	4	0.5			
15	100	6	0.375			



Date Boring Started:	5/13/20 1:00 pm	Water Levels (ft)	Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Installed VWP @ 30' (VWP 2012931). Boring backfilled with grout to the surface. No drilling fluids used. Sample 1 too disturbed for hand penetrometer test.
Date Boring Completed:	5/13/20 2:40 pm	▽ After Drilling None encountered	
Logged By:	AMS3	▼ At Time of Drilling None encountered	
Drilling Contractor:	SES		
Drill Rig:	CME 550X		Weather: 60 F Sunny

BARR

LOG OF BORING SPT-20-04

Sheet 1 of 1

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1003.5 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02189895° Long: -89.52665127°	Completion Depth:	30.0 ft
Datum:	NAVD 88		

MATERIAL DESCRIPTION

Surface Elev.: 1003.5 ft

Depth, feet	MATERIAL DESCRIPTION	Elevation	Bottom depth
0	LEAN CLAY (CL): dark brown; moist; trace roots; trace sand.	1003.0 ft	0.5ft
0.5	LEAN CLAY (CL): brown; moist; stiff; trace roots; trace sand.	1001.5 ft	2.0ft
2.0	POORLY GRADED SAND (SP): brown; moist; few silt; trace gravel.	1001.0 ft	2.5ft
2.5	LEAN CLAY (CL): dark brown; moist; stiff to medium stiff; light brown mottling.	997.5 ft	6.0ft
6.0	LEAN CLAY (CL): grayish tan; moist; medium stiff; trace sand; orange and black mottling.	991.5 ft	12.0ft
12.0	LEAN CLAY (CL): grayish tan; moist; soft; orange mottling.	981.0 ft	22.5ft
22.5	CLAYEY SAND WITH GRAVEL (SC): brown; wet; medium dense. Rock fragments observed @ 26-28'. Brown poorly graded sand with silt @ 28-29'.	973.5 ft	30.0ft

Bottom of Boring at 30.0 feet 30.0ft

STANDARD PENETRATION TEST DATA N in blows/ft ◎

Sample No.	% Recovery	SPT, N value or RQD %	SHEAR STRENGTH, tsf ☐ Qp/2	WATER CONTENT (%) ×	PL	LL
1	46	6	0.875			
2	50	5	0.625			
3	67	7	0.75			
4	75	6	0.5			
5	88	5	0.5			
6	100	5	0.375	28.7	19	40
7	100	4	0.25			
8	75	5	0.25			
9	100	5	0.25			
10	100	5	0.25	28.9	19	46
11	75	7	0.25			
12	58	12				
13	25	18				
14	4	16				
15	75	14				

Date Boring Started:	5/12/20 8:50 am
Date Boring Completed:	5/12/20 10:00 am
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)

▽ After Drilling	22.2
▼ At Time of Drilling	23.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Boring backfilled with bentonite chips to surface. No drilling fluids used.

Weather: 50 F Sunny

BARR

LOG OF BORING SPT-20-05

Project: Fisher Bren Privileged and Confidential
Job No.: 49131019.20/004/300
Location: Verona, Wisconsin
Coordinates: Lat: 43.02263444° Long: -89.52516762°
Datum: NAVD 88

Surface Elevation: 1006.9 ft
Drilling Method: HSA
Sampling Method: Split Spoon
Completion Depth: 50.0 ft

MATERIAL DESCRIPTION

Surface Elev.: 1006.9 ft

POORLY GRADED SAND WITH GRAVEL TO GRAVELLY SAND (SP): fine to medium grained; tan; moist.
1006.4 ft — 0.5ft

LEAN CLAY (CL): brown; moist; very stiff; trace gravel.
1005.9 ft — 1.0ft

POORLY GRADED SAND (SP): fine to medium grained; tan; moist; loose to medium dense; trace silt; trace gravel.
990.9 ft — 16.0ft

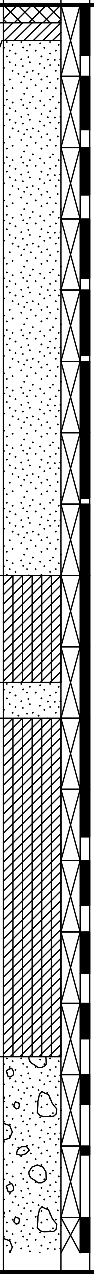
SILTY CLAY WITH SAND (CL-ML): brown; moist; stiff.
987.9 ft — 19.0ft

POORLY GRADED SAND (SP): fine to medium grained; tan; wet; medium dense; trace silt; trace gravel.
986.9 ft — 20.0ft

SILTY CLAY WITH SAND (CL-ML): brown; moist; medium stiff to soft; trace gravel.

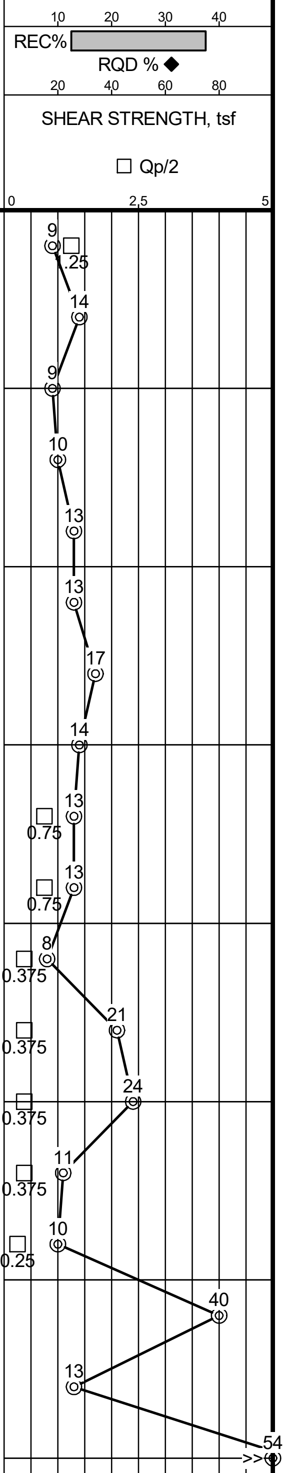
Interbedded with 6" layers of sand with gravel (SP).
977.4 ft — 29.5ft

GRAVELLY SAND (SP): fine to medium grained; brown; wet; dense to medium dense.



Sample No.	% Recovery	SPT, N value or RQD %
1	71	9
2	75	14
3	67	9
4	83	10
5	92	13
6	100	13
7	92	17
8	100	14
9	100	13
10	100	13
11	100	8
12	67	21
13	63	24
14	58	11
15	50	10
16	42	40
17	13	13

STANDARD PENETRATION TEST DATA N in blows/ft ◎



Elevation, feet: 1005, 1000, 995, 990, 985, 980, 975
Depth, feet: 0, 5, 10, 15, 20, 25, 30, 35

Continued Next Page

Date Boring Started: 5/14/20 10:30 am
Date Boring Completed: 5/14/20 2:30 pm
Logged By: AMS3
Drilling Contractor: SES
Drill Rig: CME 550X

Water Levels (ft)
▽ After Drilling Not measured (water added)
▼ At Time of Drilling 18.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Water added during drilling. Installed VWP @ 30' (VWP 2010656). Boring backfilled with grout to surface.

Weather: 50 F Rainy

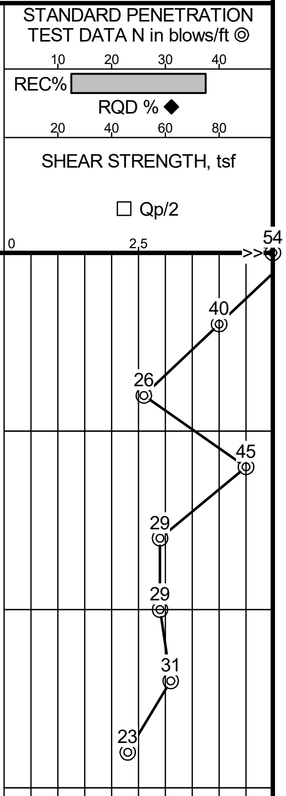
BARR

LOG OF BORING SPT-20-05

Sheet 2 of 2

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1006.9 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02263444° Long: -89.52516762°	Completion Depth:	50.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION		Sample No.	% Recovery	SPT, N value or RQD %
	35	GRAVELLY SAND (SP): fine to medium grained; brown; wet; dense to medium dense. *(Continued)*		18	58	54
970				19	0	40
		968.9 ft				
		SILTY SAND (SM): fine grained; brown; wet; dense to medium dense.	38.0ft			
				20	67	26
	40					
				21	83	45
965						
		Interbedded with sand and gravel layers.		22	83	29
	45			23	50	29
960				24	50	31
				25	63	23
		956.9 ft				
	50					
		Bottom of Boring at 50.0 feet	50.0ft			



Date Boring Started:	5/14/20 10:30 am
Date Boring Completed:	5/14/20 2:30 pm
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)
▽ After Drilling
Not measured (water added)
▼ At Time of Drilling 18.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. Water added during drilling. Installed VWP @ 30' (VWP 2010656). Boring backfilled with grout to surface.

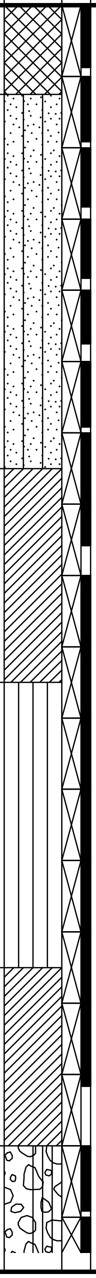
Weather: 50 F Rainy

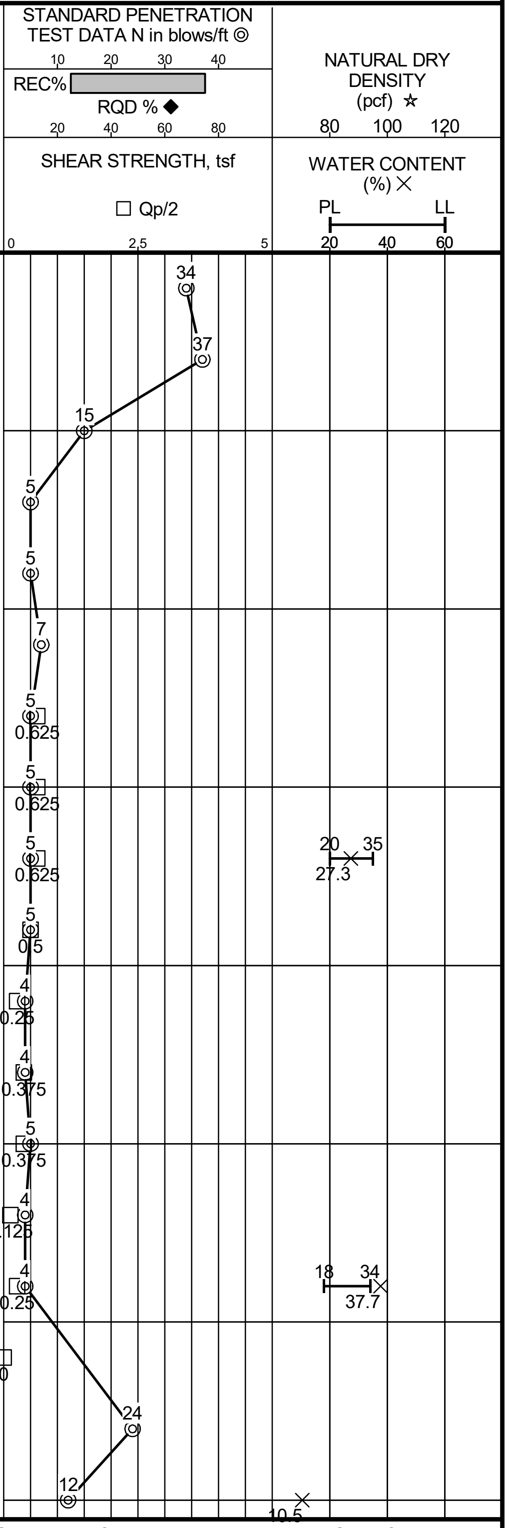
LOG OF BORING SPT-20-06

Sheet 1 of 2

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1004.3 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02192090° Long: -89.52670129°	Completion Depth:	50.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION Surface Elev.: 1004.3 ft	Sample No.	% Recovery	SPT, N value or RQD %
	0	POORLY GRADED SAND WITH GRAVEL (SP): fine to medium grained; grayish tan; moist; dense; crushed asphalt @ 2.3-2.5'. 1001.8 ft	1	88	34
		SILTY SAND (SM): fine to medium grained; tan; moist; dense to loose; few gravel. 2.5ft	2	92	37
1000	5		3	83	15
			4	83	5
995			5	75	5
	10		6	92	7
		991.3 ft	7	100	5
990		LEAN CLAY (CL): gray; moist; stiff to medium stiff; black and orange mottling. 13.0ft			
	15		8	58	5
		985.3 ft	9	100	5
985		SILT (ML): dark gray; moist to wet; medium stiff to soft; light gray laminations. 19.0ft	10	100	5
	20		11	100	4
▽ ▼			12	100	4
980	25		13	100	5
		977.3 ft	14	100	4
		LEAN CLAY (CL): gray; moist; very soft to soft; black and orange mottling; trace sand. 27.0ft	15	100	4
975	30				
		972.3 ft	16	17	WH
		POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM): fine to medium grained; brown; wet; medium dense to very dense. 32.0ft	17	92	24
970	35				





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Date Boring Started:	5/11/20 1:20 pm
Date Boring Completed:	5/11/20 4:20 pm
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)

▽	After Drilling	23.5
▼	At Time of Drilling	24.0

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. No drilling fluids used. Boring backfilled with bentonite chips to surface.

Weather: 40 F Mostly cloudy

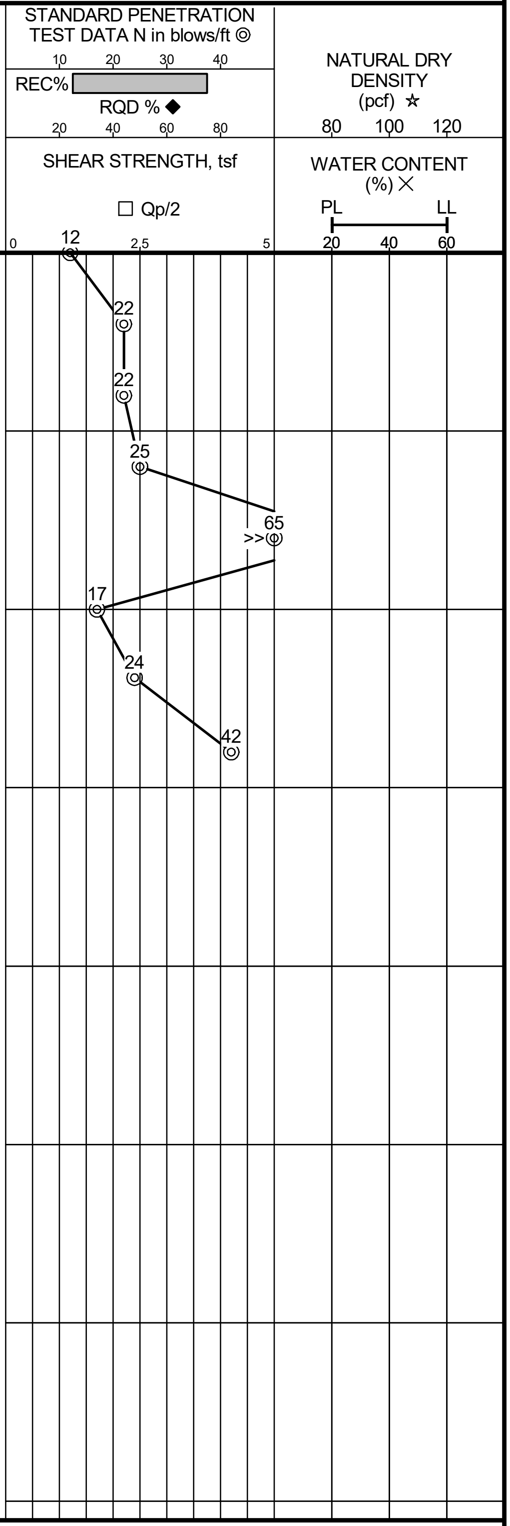
BARR

LOG OF BORING SPT-20-06

Sheet 2 of 2

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1004.3 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02192090° Long: -89.52670129°	Completion Depth:	50.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
	35	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM): fine to medium grained; brown; wet; medium dense to very dense. *(Continued)*			18	67	12
					19	38	22
965					20	58	22
	40				21	50	25
					22	25	65
960	45				23	42	17
					24	55	24
955		954.3 ft			25	42	42
	50	Bottom of Boring at 50.0 feet 50.0ft					



Date Boring Started:	5/11/20 1:20 pm	Water Levels (ft)	
Date Boring Completed:	5/11/20 4:20 pm	▽ After Drilling	23.5
Logged By:	AMS3	▼ At Time of Drilling	24.0
Drilling Contractor:	SES		
Drill Rig:	CME 550X		

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. No drilling fluids used. Boring backfilled with bentonite chips to surface.

Weather: 40 F Mostly cloudy

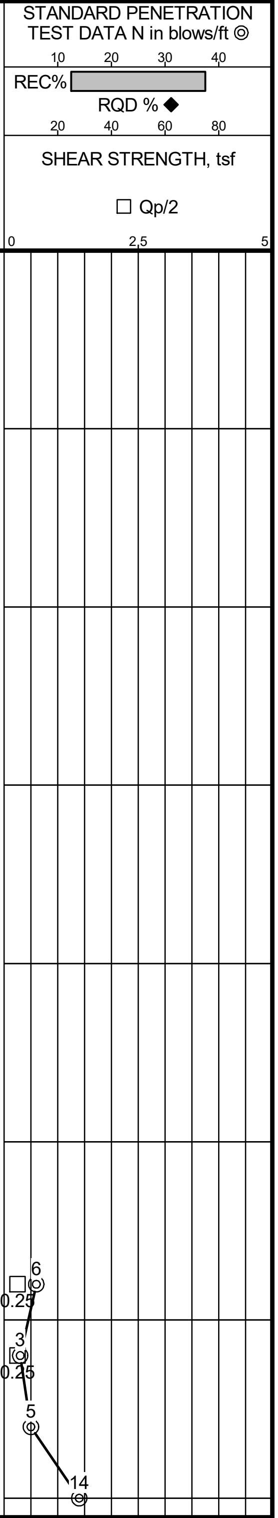
BARR

LOG OF BORING SPT-20-07

Sheet 1 of 2

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1004.3 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02182868° Long: -89.52692496°	Completion Depth:	36.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %
1004.3	0	Surface Elev.: 1004.3 ft BLIND DRILLED TO 28'.					
976.3 ft	28.0ft	SANDY SILTY CLAY (CL-ML): brown; wet; soft; few gravel.	▨	☒	15	75	6
			▨	☒	16	25	3
972.3 ft	32.0ft	POORLY GRADED SAND WITH GRAVEL (SP): fine to medium grained; brown; wet; loose to medium dense; trace clay.	⁘	☒	17	63	5
			⁘	☒			



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Date Boring Started:	5/13/20 8:30 am
Date Boring Completed:	5/13/20 9:20 am
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)
▼ At Time of Drilling
Not measured (blind drilled)
▽ After Drilling 21.7

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. No drilling fluids used. Installed VWP @ 36' (VWP 2012932). Boring backfilled with grout to surface.

Weather: 50 F Sunny

LOG OF BORING SPT-20-07

Project:	Fisher Bren Privileged and Confidential	Surface Elevation:	1004.3 ft
Job No.:	49131019.20/004/300	Drilling Method:	HSA
Location:	Verona, Wisconsin	Sampling Method:	Split Spoon
Coordinates:	Lat: 43.02182868° Long: -89.52692496°	Completion Depth:	36.0 ft
Datum:	NAVD 88		

Elevation, feet	Depth, feet	MATERIAL DESCRIPTION	Graphic Log	Samples	Sample No.	% Recovery	SPT, N value or RQD %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ 10 20 30 40 REC% ▭ RQD % ◆ 20 40 60 80 SHEAR STRENGTH, tsf ☐ Qp/2 0 2.5 5
968.3 ft	35			☒	18	63	14	
		Bottom of Boring at 36.0 feet 36.0ft						

Date Boring Started:	5/13/20 8:30 am
Date Boring Completed:	5/13/20 9:20 am
Logged By:	AMS3
Drilling Contractor:	SES
Drill Rig:	CME 550X

Water Levels (ft)

▼ At Time of Drilling Not measured (blind drilled)

▽ After Drilling 21.7

Remarks: Ground surface elevation based on City of Madison's 2016 LiDAR. No drilling fluids used. Installed VWP @ 36' (VWP 2012932). Boring backfilled with grout to surface.

Weather: 50 F Sunny

Attachment C Test Pit Logs

Project Name: Verona WI Sinkhole Evaluation

Log of Test Pit No. TT-1

Client: Fisher Bren & Sheridan, LLP

Number: 49131019.00

Elevation:

Total Depth: 12'

Location: Verona, WI

Date Started: 07/01/2019

Contractor: IGE

Logged By: TMG

Map View

Refer to figures 2-5

Depth (feet)	PID Reading (ppm)	Odor	Discoloration	Sheen	DESCRIPTION
0-1.5'	N/A	N/A	N/A	N/A	Compacted, light brown sand. Fill. 80/15/5 (s/f/g) SM.
1.5-2.5'					Gravel material with brick pieces, fill.
2.5-12'					Brown sand with no debris, some gravel. 75/10/15 SP-SM.

ELEVATION (feet MSL)

LENGTH (feet)

Remarks:

- IGE excavator pointed out a depression on the east side of the test trench at 1.5-2.5', where material would fall in. Excavated to investigate, was not a cavity as originally presumed.

- The pipe was approximately 13.5' below ground surface (bgs).

- Tests for density and moisture and samples for grain size analysis were collected at 5.5' bgs.
  - nuclear density gauge
  - sand cone
  - sample for grain size

Figure

BARR

Barr Engineering Co.
4700 W 77th St. Suite 200
Edina, MN 55435
Telephone: 952-832-2600
Fax: 952-862-2601

Project Name: Verona WI Sinkhole Evaluation

Log of Test Pit No. TT-1

Client: Fisher Bren & Sheridan, LLP

Number: 49131019.00

Elevation:

Total Depth: 12'

Location: Verona, WI

Date Started: 07/01/2019

Contractor: IGE

Logged By: TMG

Depth (feet)	PID Reading (ppm)	Odor	Discoloration	Sheen	DESCRIPTION
0-1.0'	N/A	N/A	N/A	N/A	Compacted, light brown sand. Fill. 70/15/15 (s/f/g) SM.
1.0-2.5'					Gravel material with brick pieces, fill.
2.5-10'					Brown sand with cobble. 60/10/30 SP-SM. - at 8' excavator found a tar pail lid - at 9.5-10' uncovered a root
10-19'					Fine sand with cobble, 60/10/30 SP-SM. -Water present at 18' bgs.

LENGTH (feet)

ELEVATION (feet MSL)

Map View

Refer to figures 2-5

Remarks:

- The pipe was approximately 12.8' below ground surface (bgs).

- Tests for density and moisture, and samples for grain size analysis were collected at 5', 12' and 17' bgs.
    - nuclear density gauge
    - sand cone
    - sample for grain size

Figure

Barr Engineering Co.
4700 W 77th St. Suite 200
Edina, MN 55435
Telephone: 952-832-2600
Fax: 952-862-2601

Project Name: Verona WI Sinkhole Evaluation	**Log of Test Pit No.** TT-1
Client: Fisher Bren & Sheridan, LLP	
Number: 49131019.00	**Elevation:**
	Total Depth: 12'
Location: Verona, WI	**Date Started:** 07/01/2019
Contractor: IGE	**Logged By:** TMG

Map View

Refer to figures 2-5

Depth (feet)	PID Reading (ppm)	Odor	Discoloration	Sheen	DESCRIPTION
0-0.5'	N/A	N/A	N/A	N/A	Fine, tan sand, trace silt. Fill. 80/15/5 (s/f/g) SM.
0.5-1.5'					Asphalt and gravel material with brick pieces, fill.
1.5-7.0'					Silty, fine, brown sand 70/20/0 SM. - At 7.0' in northwest corner of the test trench, lean-fat clay present. Brown clay with trace gray modeling, trace sand and trace gravel 10/85/5, CL-CH. Medium-high plasticity, qu = soft-medium (0.5-0.75). - Along the east wall of the test trench, clay and silt are present.
7.0-14'					Lean-fat brown clay with trace sand and trace gravel. 15/80/5 CL-CH. Medium-high plasticity. -Along east wall of the test trench, tan silty sand (SM) with a few silt layers 65/30/5. Appears to be undisturbed laminated native silt and sand.

ELEVATION (feet MSL)

LENGTH (feet)

Remarks:

- The pipe was approximately 12.6' below ground surface (bgs).

- Tests for density and moisture, and samples for grain size analysis were collected at 5', 7.5' and 12' bgs.
    - nuclear density gauge
    - sand cone
    - sample for grain size
    - Note: 7.5' bgs sample was based on clay presence.

Figure

BARR

Barr Engineering Co.
4700 W 77th St. Suite 200
Edina, MN 55435
Telephone: 952-832-2600
Fax: 952-862-2601

Project Name: Raymond Road - Storm Sewer Soils

Log of Test Trench No. TT-04

Client: Integrity Grading and Excavating

Project Station: 526+50

Number: 49/13-1019.20

Elevation: 1004.7 ft MSL

Total Depth: 4 feet

Location: Raymond Road, Verona, WI

Date Started: May 20, 2020

Contractor: IGE

Logged By: KAE

Map View

◄ ►

Depth (ft)	Moisture	g/s/f	Grain Size	Color	DESCRIPTION
0-1.3					FILL - light brown poorly graded silty sand and gravel
1.3-2					FILL - gray coarse gravel to cobble
2-4					FILL - light brown poorly graded sand with gravel

ELEVATION (feet MSL)

LENGTH (feet)

Remarks:

Density testing at 2' and 4'

6' wide bucket; 10' long

Figure

Barr Engineering Co.
4700 W 77th St. Suite 200
Edina, MN 55435
Telephone: 952-832-2600
Fax: 952-862-2601

TEST PIT LOG PAGE 2362884.GPJ BARRLOG.GDT 6/18/09

Project Name: Raymond Road - Storm Sewer Soils

Log of Test Trench No. TT-05

Map View

Client: Integrity Grading and Excavating

Project Station: 518+46

Number: 49/13-1019.20

Elevation: 1007.8 ft MSL

Total Depth: 4 feet

Location: Raymond Road, Verona, WI

Date Started: May 20, 2020

Contractor: IGE

Logged By: KAE

◄ ►

Depth (ft)	Moisture	g/s/f	Grain Size	Color	DESCRIPTION
0-1.8					FILL - light brown poorly graded silty sand and gravel
1.8-2.5					FILL - gray coarse gravel to cobble
2.5-4					FILL - reddish-brown silty sand

LENGTH (feet)

ELEVATION (feet MSL)

Remarks:

Density testing at 4'

6' wide bucket; 7' long

Figure

Barr Engineering Co.
4700 W 77th St. Suite 200
Edina, MN 55435
Telephone: 952-832-2600
Fax: 952-862-2601

TEST PIT LOG PAGE 2362884.GPJ BARRLOG.GDT 6/18/09

Attachment D Laboratory Test Data

Grain Size Distribution ASTM D422-16

Job No. : **12551**

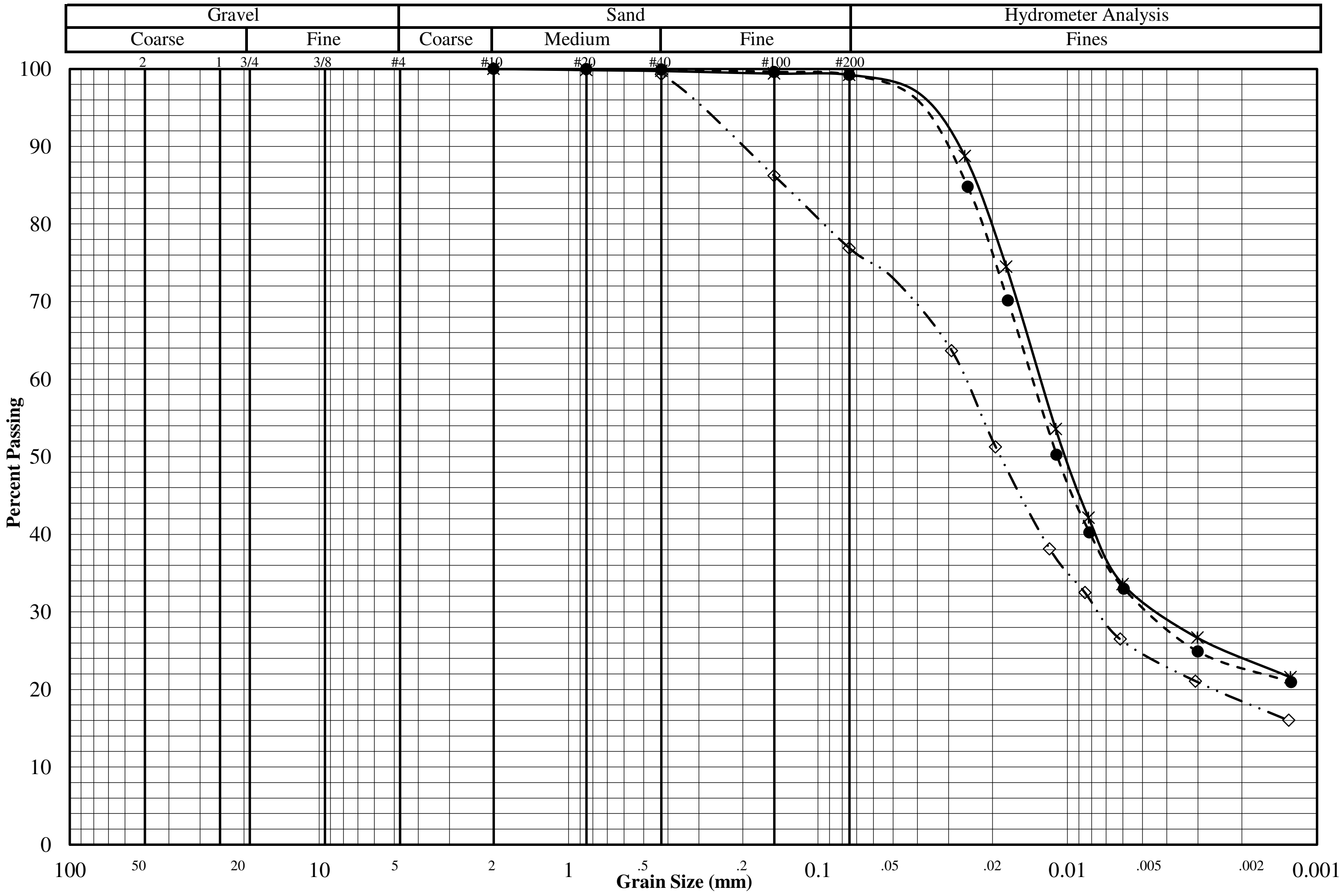
Project: Raymond Road

Test Date: 5/25/20

Reported To: Barr Engineering Company

Report Date: 5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
*	SPT-20-01	5/11/2020	10-12	Bag	Lean Clay (CL)
●	SPT-20-01	5/11/2020	14-16	Bag	Lean Clay (CL)
◇	SPT-20-01	5/11/2020	26-28	Bag	Lean Clay w/sand (CL)



Additional Results	*	●	◇
Liquid Limit			27
Plastic Limit			15
Plasticity Index ASTM:D4316			12
Water Content ASTM:D2216			27.0
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854	2.68*	2.68*	2.68*
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	198.3	187.6	191.2
2"			
1.5"			
1"			
3/4"			
3/8"			
#4			
#10	100.0	100.0	100.0
#20	99.9	100.0	99.9
#40	99.8	99.9	99.3
#100	99.4	99.6	86.2
#200	99.2	99.3	76.9

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
Spec 1	SPT-20-01	5/11/2020	10-12	Bag	Lean Clay (CL)
Spec 2	SPT-20-01	5/11/2020	14-16	Bag	Lean Clay (CL)
Spec 3	SPT-20-01	5/11/2020	26-28	Bag	Lean Clay w/sand (CL)

Sieve Data

Specimen 1		Specimen 2		Specimen 3	
Sieve	% Passing	Sieve	% Passing	Sieve	% Passing
2"		2"		2"	
1.5"		1.5"		1.5"	
1"		1"		1"	
3/4"		3/4"		3/4"	
3/8"		3/8"		3/8"	
#4		#4		#4	
#10	100.0	#10	100.0	#10	100.0
#20	99.9	#20	100.0	#20	99.9
#40	99.8	#40	99.9	#40	99.3
#100	99.4	#100	99.6	#100	86.2
#200	99.2	#200	99.3	#200	76.9

Hydrometer Data

Specimen 1		Specimen 2		Specimen 3	
Diameter (mm)	% Passing	Diameter	% Passing	Diameter	% Passing
0.026	88.8	0.025	84.8	0.029	63.7
0.018	74.5	0.017	70.1	0.019	51.3
0.011	53.6	0.011	50.3	0.012	38.1
0.008	42.1	0.008	40.3	0.009	32.5
0.006	33.6	0.006	33.0	0.006	26.5
0.003	26.7	0.003	24.9	0.003	21.1
0.001	21.6	0.001	21.0	0.001	16.0

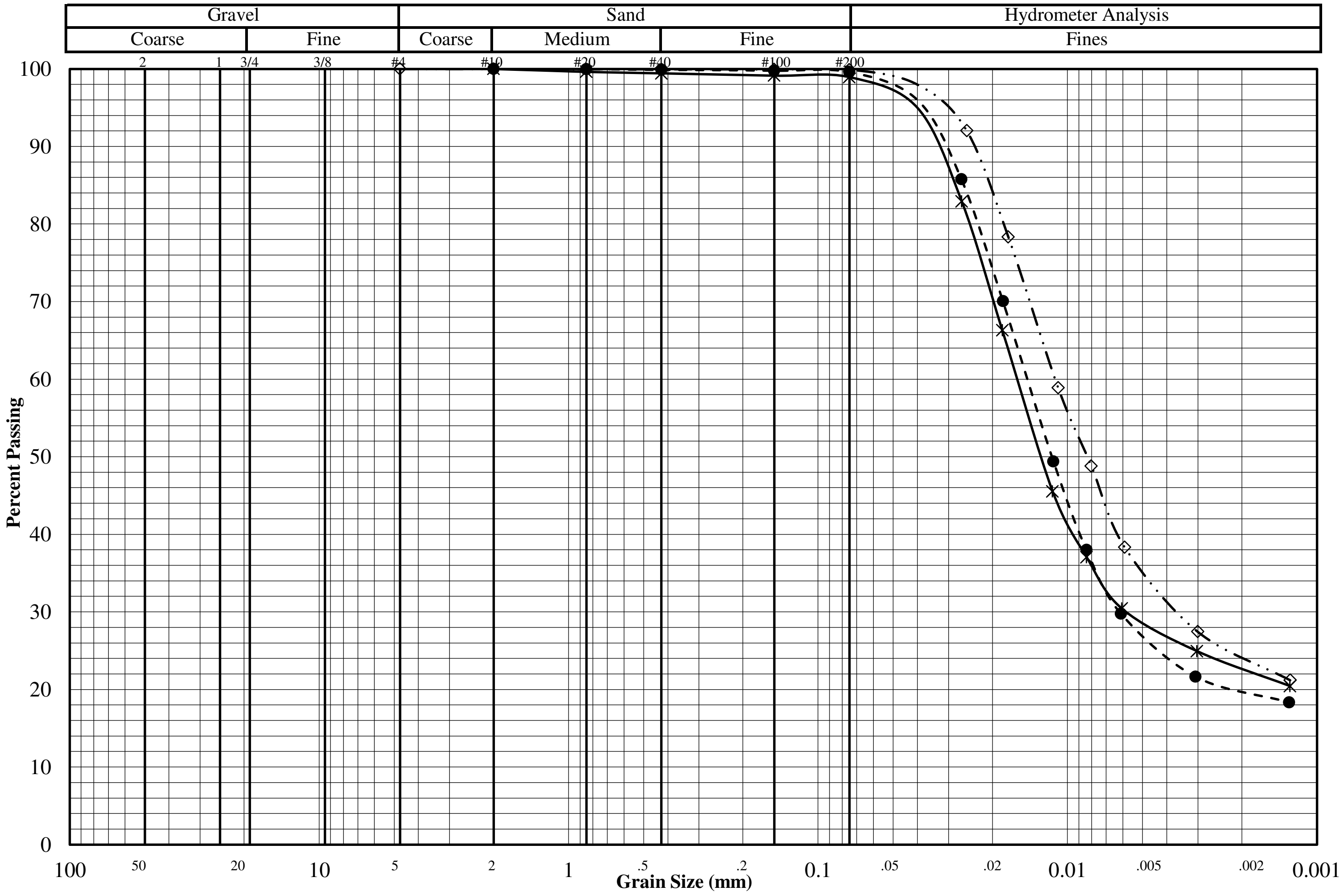
Remarks

Specimen 1	Specimen 2	Specimen 3

Grain Size Distribution ASTM D422-16

Job No. :	**12551**		
Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
*	SPT-20-03	5/13/2020	8-10	Bag	Lean Clay (CL)
●	SPT-20-03	5/13/2020	14-16	Bag	Lean Clay (CL)
◇	SPT-20-03	5/13/2020	20-22	Bag	Lean Clay (CL)



Additional Results	*	●	◇
Liquid Limit	35	38	47
Plastic Limit	18	19	22
Plasticity Index ASTM:D4316	17	19	25
Water Content ASTM:D2216	31.4	29.5	33.0
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854	2.68*	2.68*	2.68*
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	137.2	123.0	141.0
2"			
1.5"			
1"			
3/4"			
3/8"			
#4			100.0
#10	100.0	100.0	100.0
#20	99.6	100.0	100.0
#40	99.4	99.9	100.0
#100	99.1	99.8	99.9
#200	98.9	99.6	99.9

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
Spec 1	SPT-20-03	5/13/2020	8-10	Bag	Lean Clay (CL)
Spec 2	SPT-20-03	5/13/2020	14-16	Bag	Lean Clay (CL)
Spec 3	SPT-20-03	5/13/2020	20-22	Bag	Lean Clay (CL)

Sieve Data

Specimen 1		Specimen 2		Specimen 3	
Sieve	% Passing	Sieve	% Passing	Sieve	% Passing
2"		2"		2"	
1.5"		1.5"		1.5"	
1"		1"		1"	
3/4"		3/4"		3/4"	
3/8"		3/8"		3/8"	
#4		#4		#4	100.0
#10	100.0	#10	100.0	#10	100.0
#20	99.6	#20	100.0	#20	100.0
#40	99.4	#40	99.9	#40	100.0
#100	99.1	#100	99.8	#100	99.9
#200	98.9	#200	99.6	#200	99.9

Hydrometer Data

Specimen 1		Specimen 2		Specimen 3	
Diameter (mm)	% Passing	Diameter	% Passing	Diameter	% Passing
0.027	82.9	0.027	85.8	0.025	92.0
0.018	66.3	0.018	70.1	0.017	78.3
0.011	45.5	0.011	49.4	0.011	58.9
0.008	37.1	0.008	38.0	0.008	48.8
0.006	30.5	0.006	29.8	0.006	38.3
0.003	24.9	0.003	21.7	0.003	27.5
0.001	20.4	0.001	18.4	0.001	21.2

Remarks

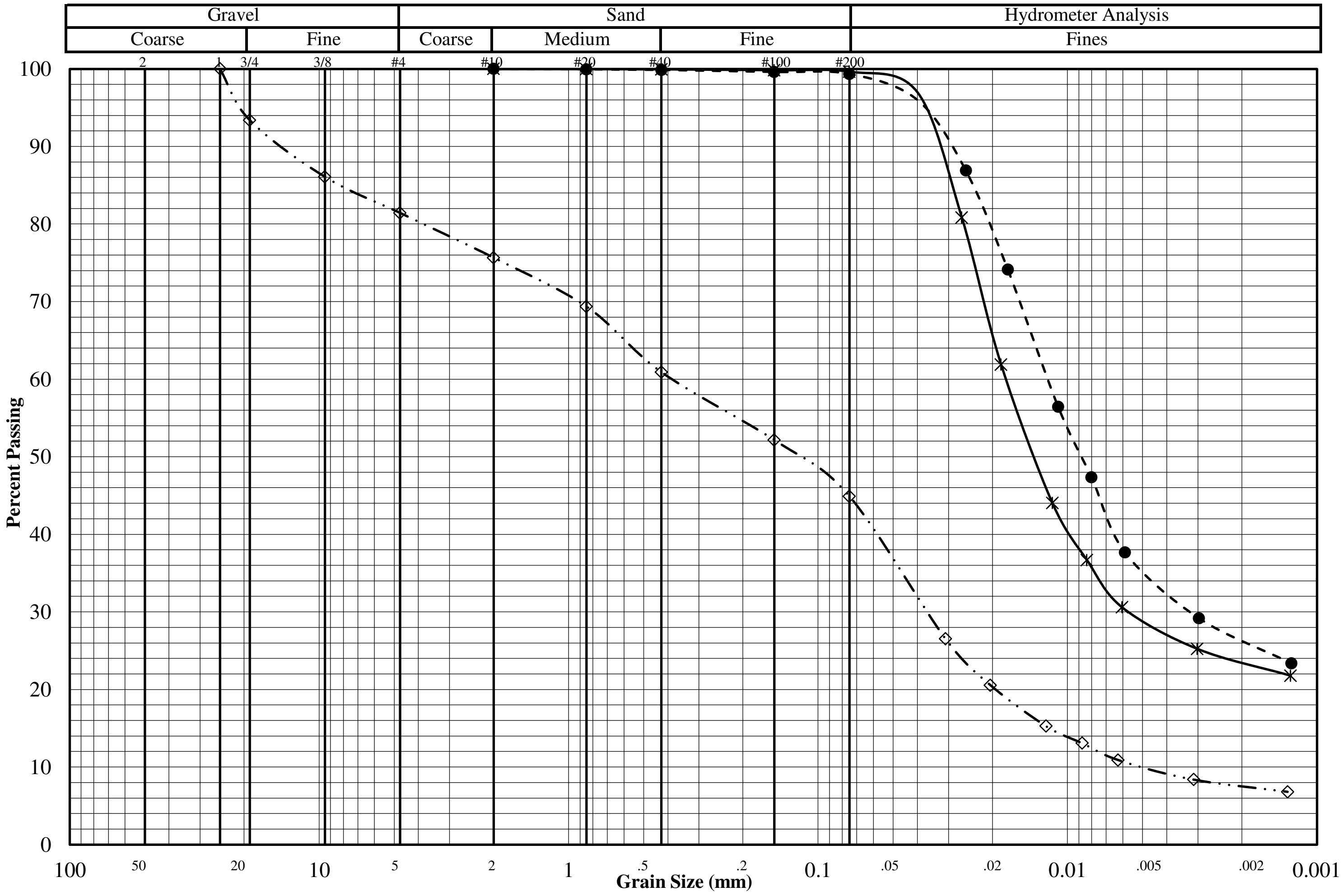
Specimen 1	Specimen 2	Specimen 3

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
*	SPT-20-04	5/12/2020	10-12	Bag	Lean Clay (CL)
●	SPT-20-04	5/12/2020	18-20	Bag	Lean Clay (CL)
◇	SPT-20-04	5/12/2020	22-24	Bag	Clayey Sand w/gravel (SC)



Additional Results	*	●	◇
Liquid Limit	40	46	
Plastic Limit	19	19	
Plasticity Index ASTM:D4316	21	27	
Water Content ASTM:D2216	28.7	28.9	
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854	2.68*	2.68*	2.68*
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	178.1	161.5	395.9
2"			
1.5"			
1"			100.0
3/4"			93.4
3/8"			86.1
#4			81.4
#10	100.0	100.0	75.7
#20	100.0	99.9	69.4
#40	99.9	99.9	60.9
#100	99.8	99.6	52.2
#200	99.6	99.4	44.9

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project: Raymond Road

Test Date: 5/25/20

Reported To: Barr Engineering Company

Report Date: 5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
Spec 1	SPT-20-04	5/12/2020	10-12	Bag	Lean Clay (CL)
Spec 2	SPT-20-04	5/12/2020	18-20	Bag	Lean Clay (CL)
Spec 3	SPT-20-04	5/12/2020	22-24	Bag	Clayey Sand w/gravel (SC)

Sieve Data

Specimen 1		Specimen 2		Specimen 3	
Sieve	% Passing	Sieve	% Passing	Sieve	% Passing
2"		2"		2"	
1.5"		1.5"		1.5"	
1"		1"		1"	100.0
3/4"		3/4"		3/4"	93.4
3/8"		3/8"		3/8"	86.1
#4		#4		#4	81.4
#10	100.0	#10	100.0	#10	75.7
#20	100.0	#20	99.9	#20	69.4
#40	99.9	#40	99.9	#40	60.9
#100	99.8	#100	99.6	#100	52.2
#200	99.6	#200	99.4	#200	44.9

Hydrometer Data

Specimen 1		Specimen 2		Specimen 3	
Diameter (mm)	% Passing	Diameter	% Passing	Diameter	% Passing
0.027	80.8	0.026	86.9	0.031	26.5
0.018	61.9	0.017	74.1	0.020	20.6
0.012	44.0	0.011	56.5	0.012	15.3
0.008	36.7	0.008	47.3	0.009	13.1
0.006	30.6	0.006	37.7	0.006	10.9
0.003	25.2	0.003	29.2	0.003	8.4
0.001	21.8	0.001	23.4	0.001	6.8

Remarks

Specimen 1	Specimen 2	Specimen 3

SOIL
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9530 James Ave South

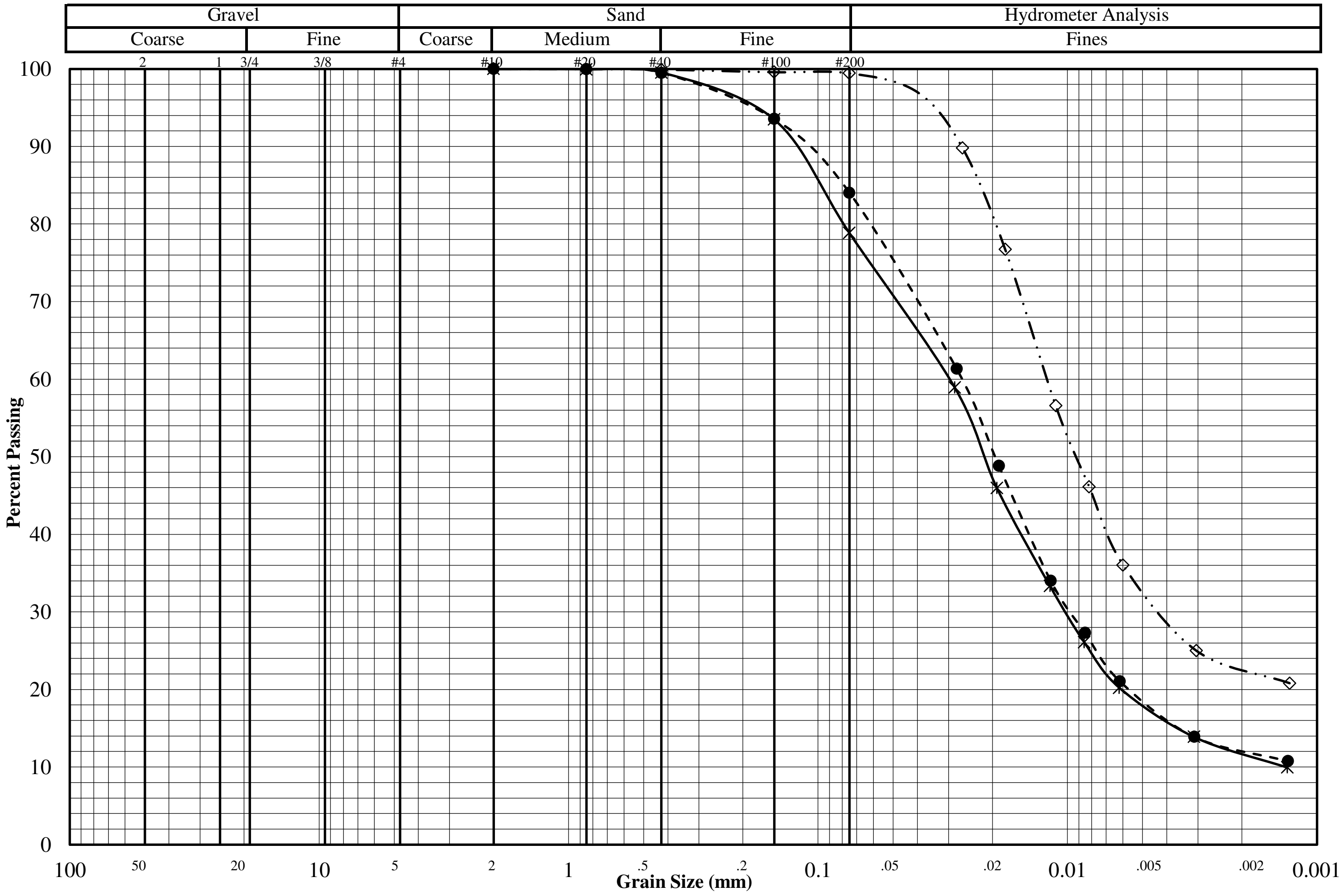
Bloomington, MN 55431

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
∗	SPT-20-05	5/14/2020	16-18	Bag	Silty Clay w/sand (CL-ML)
●	SPT-20-05	5/14/2020	20-22	Bag	Silty Clay w/sand (CL-ML)
◇	SPT-20-06	5/11/2020	16-18	Bag	Lean Clay (CL)



Additional Results	∗	●	◇
Liquid Limit			35
Plastic Limit			20
Plasticity Index ASTM:D4316			15
Water Content ASTM:D2216			27.3
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854	2.68*	2.68*	2.68*
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

(* = assumed)

Percent Passing

	∗	●	◇
Mass (g)	132.6	144.9	119.6
2"			
1.5"			
1"			
3/4"			
3/8"			
#4			
#10	100.0	100.0	100.0
#20	99.9	100.0	100.0
#40	99.5	99.5	99.9
#100	93.5	93.6	99.6
#200	78.9	84.1	99.5

	∗	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
Spec 1	SPT-20-05	5/14/2020	16-18	Bag	Silty Clay w/sand (CL-ML)
Spec 2	SPT-20-05	5/14/2020	20-22	Bag	Silty Clay w/sand (CL-ML)
Spec 3	SPT-20-06	5/11/2020	16-18	Bag	Lean Clay (CL)

Sieve Data

Specimen 1		Specimen 2		Specimen 3	
Sieve	% Passing	Sieve	% Passing	Sieve	% Passing
2"		2"		2"	
1.5"		1.5"		1.5"	
1"		1"		1"	
3/4"		3/4"		3/4"	
3/8"		3/8"		3/8"	
#4		#4		#4	
#10	100.0	#10	100.0	#10	100.0
#20	99.9	#20	100.0	#20	100.0
#40	99.5	#40	99.5	#40	99.9
#100	93.5	#100	93.6	#100	99.6
#200	78.9	#200	84.1	#200	99.5

Hydrometer Data

Specimen 1		Specimen 2		Specimen 3	
Diameter (mm)	% Passing	Diameter	% Passing	Diameter	% Passing
0.028	59.0	0.028	61.3	0.026	89.8
0.019	46.0	0.019	48.9	0.018	76.7
0.012	33.3	0.012	34.0	0.011	56.6
0.009	26.1	0.009	27.3	0.008	46.1
0.006	20.2	0.006	21.1	0.006	36.0
0.003	13.9	0.003	13.9	0.003	25.0
0.001	10.0	0.001	10.8	0.001	20.8

Remarks

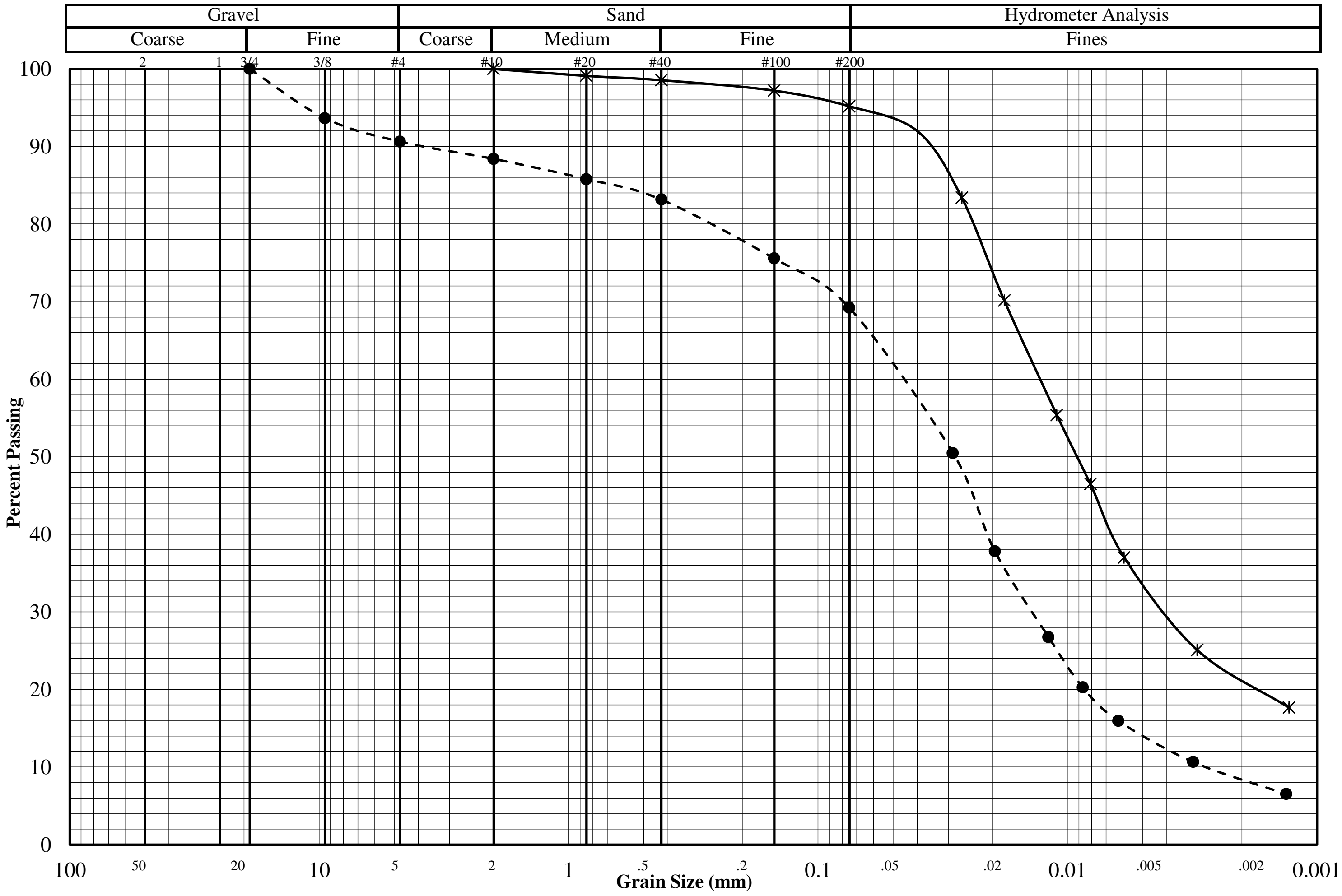
Specimen 1	Specimen 2	Specimen 3

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project:	Raymond Road	Test Date:	5/25/20
Reported To:	Barr Engineering Company	Report Date:	5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
*	SPT-20-06	5/11/2020	28-30	Bag	Lean Clay (CL)
●	SPT-20-07	5/13/2020	28-30	Bag	Sandy Silty Clay w/a little gravel (CL-ML)
◇					



Additional Results	*	●	◇
Liquid Limit	34		
Plastic Limit	18		
Plasticity Index ASTM:D4316	16		
Water Content ASTM:D2216	37.7		
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854	2.68*	2.68*	
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	182.3	441.6	
2"			
1.5"			
1"			
3/4"		100.0	
3/8"		93.7	
#4		90.6	
#10	100.0	88.4	
#20	99.1	85.8	
#40	98.6	83.2	
#100	97.2	75.6	
#200	95.2	69.2	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project: Raymond Road

Test Date: 5/25/20

Reported To: Barr Engineering Company

Report Date: 5/28/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
Spec 1	SPT-20-06	5/11/2020	28-30	Bag	Lean Clay (CL)
Spec 2	SPT-20-07	5/13/2020	28-30	Bag	Sandy Silty Clay w/a little gravel (CL-ML)
Spec 3					

Sieve Data

Specimen 1		Specimen 2		Specimen 3	
Sieve	% Passing	Sieve	% Passing	Sieve	% Passing
2"		2"		2"	
1.5"		1.5"		1.5"	
1"		1"		1"	
3/4"		3/4"	100.0	3/4"	
3/8"		3/8"	93.7	3/8"	
#4		#4	90.6	#4	
#10	100.0	#10	88.4	#10	
#20	99.1	#20	85.8	#20	
#40	98.6	#40	83.2	#40	
#100	97.2	#100	75.6	#100	
#200	95.2	#200	69.2	#200	

Hydrometer Data

Specimen 1		Specimen 2		Specimen 3	
Diameter (mm)	% Passing	Diameter	% Passing	Diameter	% Passing
0.027	83.4	0.029	50.5		
0.018	70.1	0.020	37.8		
0.011	55.4	0.012	26.8		
0.008	46.5	0.009	20.3		
0.006	37.0	0.006	16.0		
0.003	25.1	0.003	10.7		
0.001	17.7	0.001	6.5		

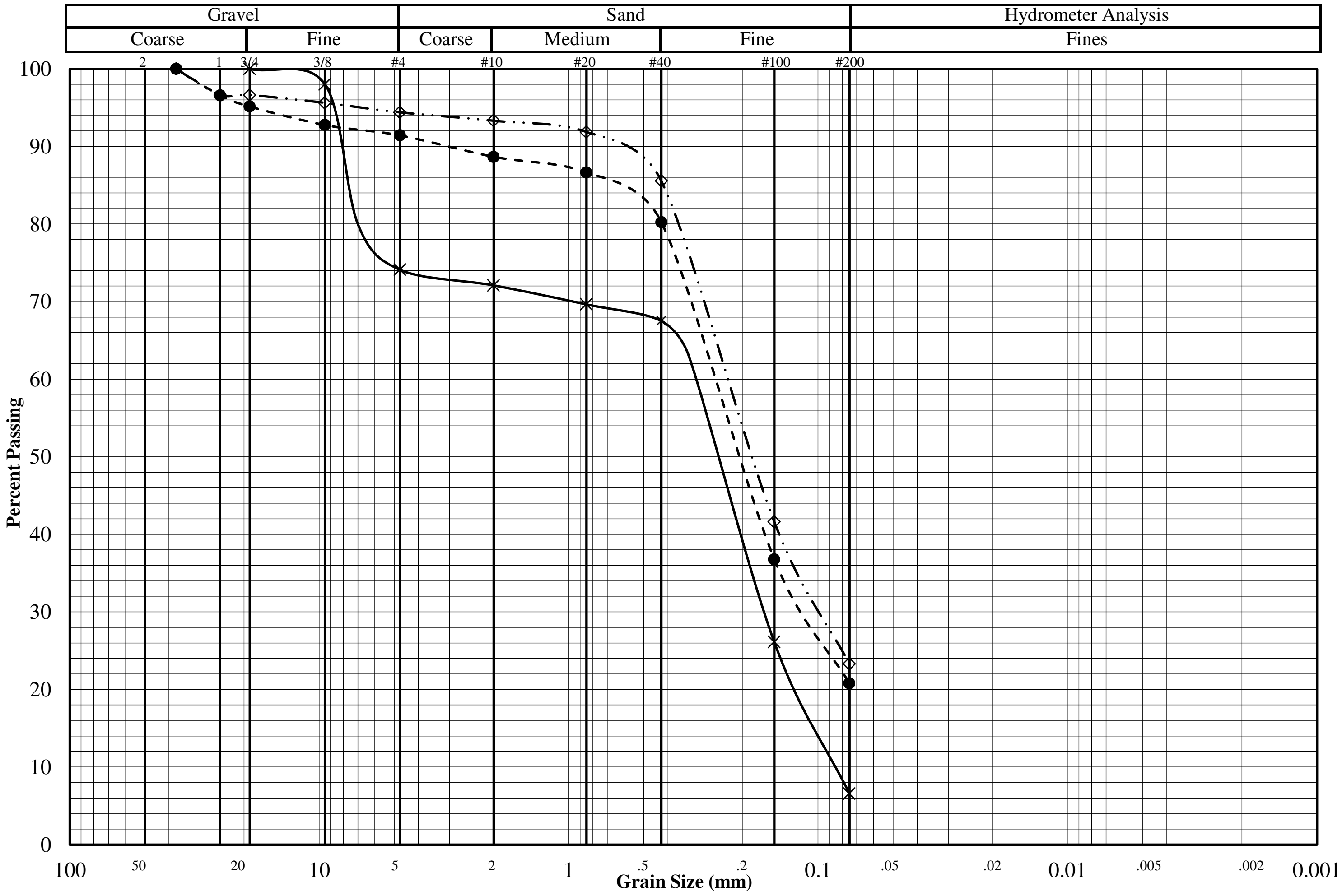
Remarks

Specimen 1	Specimen 2	Specimen 3

Grain Size Distribution ASTM D422-16

Project:	Raymond Road	Job No. :	**12551**
		Test Date:	5/22/20
Reported To:	Barr Engineering Company	Report Date:	5/26/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
*	SPT-20-02	5/12/2020	12-14	Bag	Sand w/silt and gravel, fine grained (SP-SM)
●	SPT-20-02	5/12/2020	16-18	Bag	Silty Sand w/a little gravel (SM)
◇	SPT-20-02	5/12/2020	22-24	Bag	Silty Sand w/a little gravel (SM)



Additional Results	*	●	◇
Liquid Limit			N/A
Plastic Limit			N/A
Plasticity Index ASTM:D4316			NP
Water Content ASTM:D2216			13.9
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854			
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	842.7	933.1	940.4
2"			
1.5"		100.0	100.0
1"		96.6	96.6
3/4"	100.0	95.2	96.6
3/8"	98.0	92.8	95.6
#4	74.1	91.4	94.4
#10	72.1	88.7	93.3
#20	69.7	86.7	91.9
#40	67.5	80.2	85.6
#100	26.1	36.8	41.6
#200	6.6	20.8	23.3

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9530 James Ave South

SOIL
ENGINEERING
TESTING, INC.

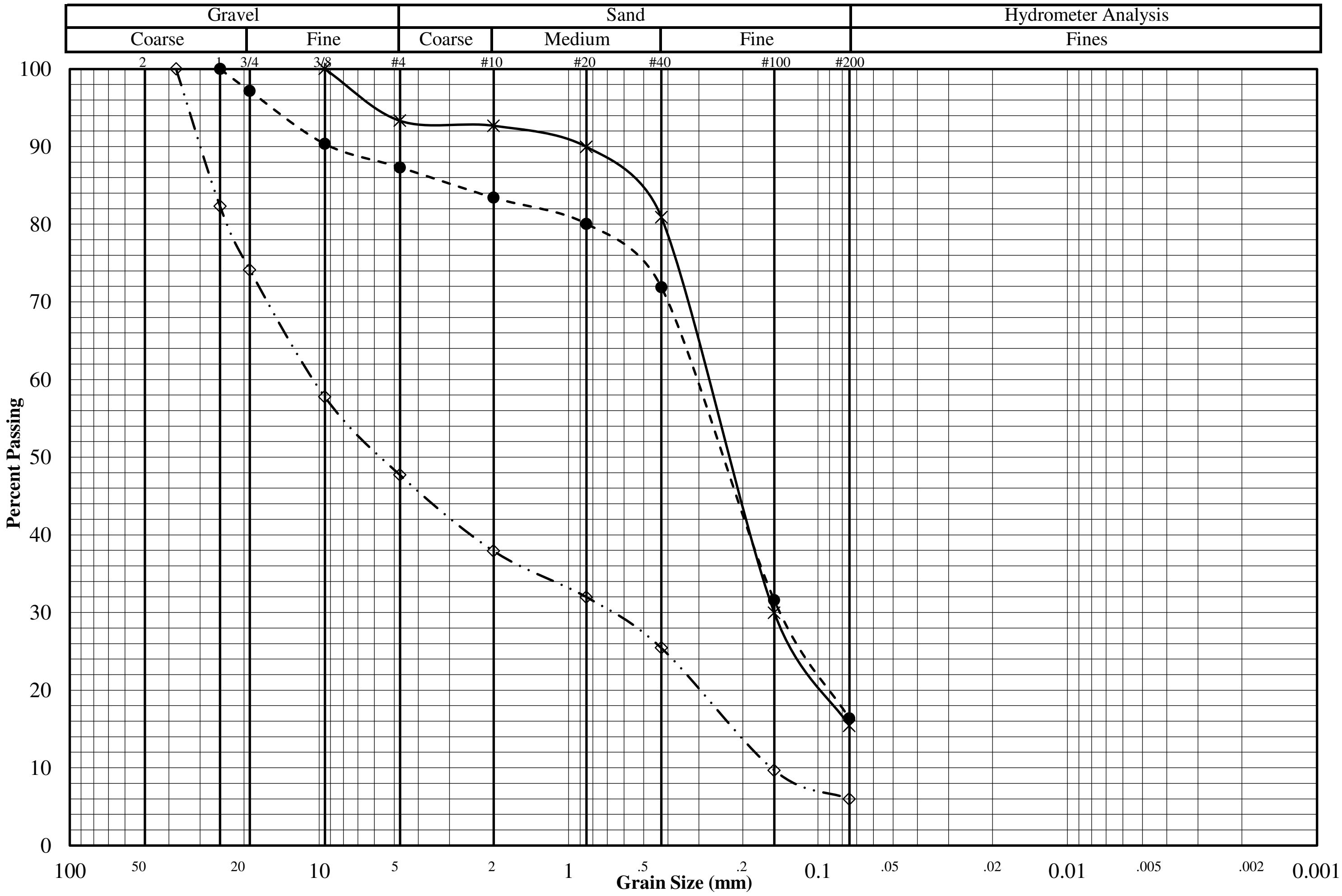
Bloomington, MN 55431

Grain Size Distribution ASTM D422-16

Job No. : **12551**

Project: Raymond Road
Test Date: 5/22/20
Reported To: Barr Engineering Company
Report Date: 5/26/20

	Location / Boring No.	Collection Date	Depth (ft)	Sample Type	Soil Classification
*	SPT-20-02	5/12/2020	34-36	Bag	Silty Sand w/a little gravel (SM)
●	SPT-20-06	5/11/2020	10-12	Bag	Silty Sand w/a little gravel (SM)
◇	SPT-20-06	5/12/2020	34-36	Bag	Gravel w/silt and sand (GP-GM)



Additional Results	*	●	◇
Liquid Limit	N/A		N/A
Plastic Limit	N/A		N/A
Plasticity Index ASTM:D4316	NP		NP
Water Content ASTM:D2216	12.7		10.5
Dry Density (pcf) ASTM:D7263			
Specific Gravity ASTM:D854			
Porosity			
Organic Content ASTM:D2974			
pH ASTM:D4972 Method B			

Percent Passing

	*	●	◇
Mass (g)	896.6	810.4	621.3
2"			
1.5"			100.0
1"		100.0	82.3
3/4"		97.2	74.1
3/8"	100.0	90.4	57.8
#4	93.3	87.3	47.7
#10	92.7	83.4	37.9
#20	90.0	80.1	32.0
#40	80.9	71.9	25.5
#100	30.0	31.6	9.7
#200	15.4	16.4	6.0

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

(* = assumed)

COOPER TESTING LABORATORY

Minimum & Maximum Index Unit Weight
ASTM D4254 & ASTM D4253

CTL Job No.:	553-018	**Boring:**	St. 518+46	**Date:**	6/1/2020
Client:	Barr Engineering	**Sample:**		**Tested :**	PJ
Project Name:	Raymond Rd.	**Depth (ft.):**	4	**Checked:**	DC
Project No:	49/13-1019.20				

Visual Description: Brown SAND w/ Silt & Gravel

INDEX UNIT WEIGHT TEST RESULTS

Minimum Index Unit Wt., pcf	**88.9**
Maximum Index Unit Wt., pcf	**122.2**

GRADATION TEST RESULTS

Gradation As Received			
Sieve #	**Wt. Retained**	**% Retained**	**% Finer**
3"	-	-	-
1 1/2"	-	-	-
3/4"	-	-	-
1/2"	-	-	-
3/8"	-	-	-
#4	-	-	-

Testing Remarks

Minimum Index Unit Weight:

Test Method used: A

Size of mold used (ft^3): 0.5

Remarks: Method A - Funnel/ Scoop.

Maximum Index Unit Weight:

Test Method used: 1B

Size of mold used (ft^3): 0.5

Remarks: Method 1B - Wet Soil.

COOPER
TESTING LABORATORY

Minimum & Maximum Index Unit Weight
ASTM D4254 & ASTM D4253

CTL Job No.:	553-018	**Boring:**	St 526-50	**Date:**	6/1/2020
Client:	Barr Engineering	**Sample:**		**Tested :**	PJ
Project Name:	Raymond Rd.	**Depth (ft.):**	4	**Checked:**	DC
Project No:	49/13-1019.20				

Visual Description: Brown SAND w/ Silt & Gravel

INDEX UNIT WEIGHT TEST RESULTS

Minimum Index Unit Wt., pcf	**107.1**
Maximum Index Unit Wt., pcf	**128.9**

GRADATION TEST RESULTS

Gradation As Received			
Sieve #	**Wt. Retained**	**% Retained**	**% Finer**
3"	-	-	-
1 1/2"	-	-	-
3/4"	-	-	-
1/2"	-	-	-
3/8"	-	-	-
#4	-	-	-

Testing Remarks

Minimum Index Unit Weight:

Test Method used: A

Size of mold used (ft^3): 0.5

Remarks: Method A - Funnel/ Scoop.

Maximum Index Unit Weight:

Test Method used: 1B

Size of mold used (ft^3): 0.5

Remarks: Method 1B - Wet Soil.

Soils &
Engineering
Services, Inc.

June 11, 2020

Project 13282

Mr. Kevin Eisen
Barr Engineering Company
4300 Market Pointe Drive
Minneapolis, Minnesota 55435

Subject: Test Pits and Field Density Testing
Raymond Road Storm Sewer
Madison, Wisconsin
Field Report 3

Dear Mr. Eisen:

On May 20, 2020, we met with you at the subject site to perform field density tests on and to collect samples of previously-placed storm sewer trench backfill materials.

You directed us to a test pit site excavation located on the existing Raymond Road storm sewer line at Station 526+50. At that location, a backhoe equipped with a cleaning bucket was used to excavate a roughly 10-foot-long test pit alongside the storm sewer trench line to a depth of approximately 2 feet below the existing road subgrade surface. At your request, we performed a series of three nuclear density tests on the exposed trench backfill material at the 2-foot depth along the length of the test pit. We collected a composite sample of the backfill material from each of our density test locations. The depth of the test pit was then extended to approximately 4 feet below the road subgrade surface. As instructed, we perform another 3 field density tests on the backfill material at this elevation and collected another composite sample of the material from our field density test locations.

You requested that a second test pit be excavated on the storm sewer trench at Station 518+46. The test pit at that location was excavated directly to a depth of approximately 4 feet below the road subgrade surface. At your direction, we performed one density test on the existing trench backfill material at the 4 foot depth. Upon completion of our testing, you instructed the backhoe operator to extend the test pit depth by approximately 1 foot in order to retrieve a larger sample of the trench backfill material immediate below the surface of our test site. This was accomplished and we collected a 200(+/-)-pound representative sample of material retrieved from the bottom foot of that test pit. You took possession of approximately 150 pounds of the composite sample from the Station 518+46 test pit. We retained the remainder of that sample and delivered it, along with the two composite samples we collected from the test pit at Station 526+50, to our laboratory for testing. We labeled each composite sample according to the test pit location and depth from which they were collected. The sample number, material description, test pit station, and depth for each of the three samples are summarized in Table 1.

Table 1

Sample No.	Test Pit Station	Depth* (in feet)	Material Description
1	526+50	2	Poorly-graded Silty Sand and Gravel (SP-SM), light brown
2	526+50	4	Poorly-graded Sand with Gravel (SP), light brown
3	518+46	4	Silty Sand (SM), reddish-brown

*Depth is the distance below the existing road subgrade surface at the named test pit location.

We performed the particle size analysis test (ASTM Designations C117 and C136) and the optimum moisture and maximum density determination test (ASTM D698) on each of Samples 1, 2 and 3. Based on the particle size analyses test results, we classified the samples in accordance with the Unified Soil Classification System (USCS) as described in ASTM Designation D 2487. The Particle Size Analysis Test Reports for Samples 1, 2, and 3 are included with this report as Figures 1a, 2a, and 3a, respectively. The Optimum Moisture/Maximum Density Test Reports for Samples 1, 2, and 3 are included with this report as Figures 1b, 2b, and 3b, respectively.

We performed the field density tests in accordance with nuclear gauge test procedure ASTM Designation D 6938. The percent compaction is based on the maximum dry density determined for the material in accordance with ASTM Designation D 698, standard Proctor method. The test results are summarized as follows:

Test	Location of Test	Depth*	Percent Moisture	Field Dry Density, pcf	Maximum Density, pcf	Percent Compaction
	Raymond Road Storm Sewer Trench Backfill					
1	Station 526+50, West End of Test Pit	2	4.5	121.9	127.0	96
2	Station 526+50, Center of Test Pit	2	6.3	121.3	127.0	96
3	Station 526+50, East End of Test Pit	2	9.0	131.3	127.0	103
4	Station 526+50, West End of Test Pit	4	5.2	129.1	123.6	104
5	Station 526+50, Center of Test Pit	4	7.8	127.8	123.6	103
6	Station 526+50, East End of Test Pit	4	7.0	128.4	123.6	104
7	Station 518+46, Center of Test Pit	4	7.7	121.4	120.5	101

** Depth is the distance in feet from the existing top of roadway subgrade elevation to the surface of the test site.

We have prepared this report for the subject project according to materials testing engineering practices generally accepted at this time. No other warranty, either expressed or implied, is made.

If you have any questions concerning this work or if we can be of any further assistance to you, please contact us at (608) 274-7600.

Respectfully submitted,

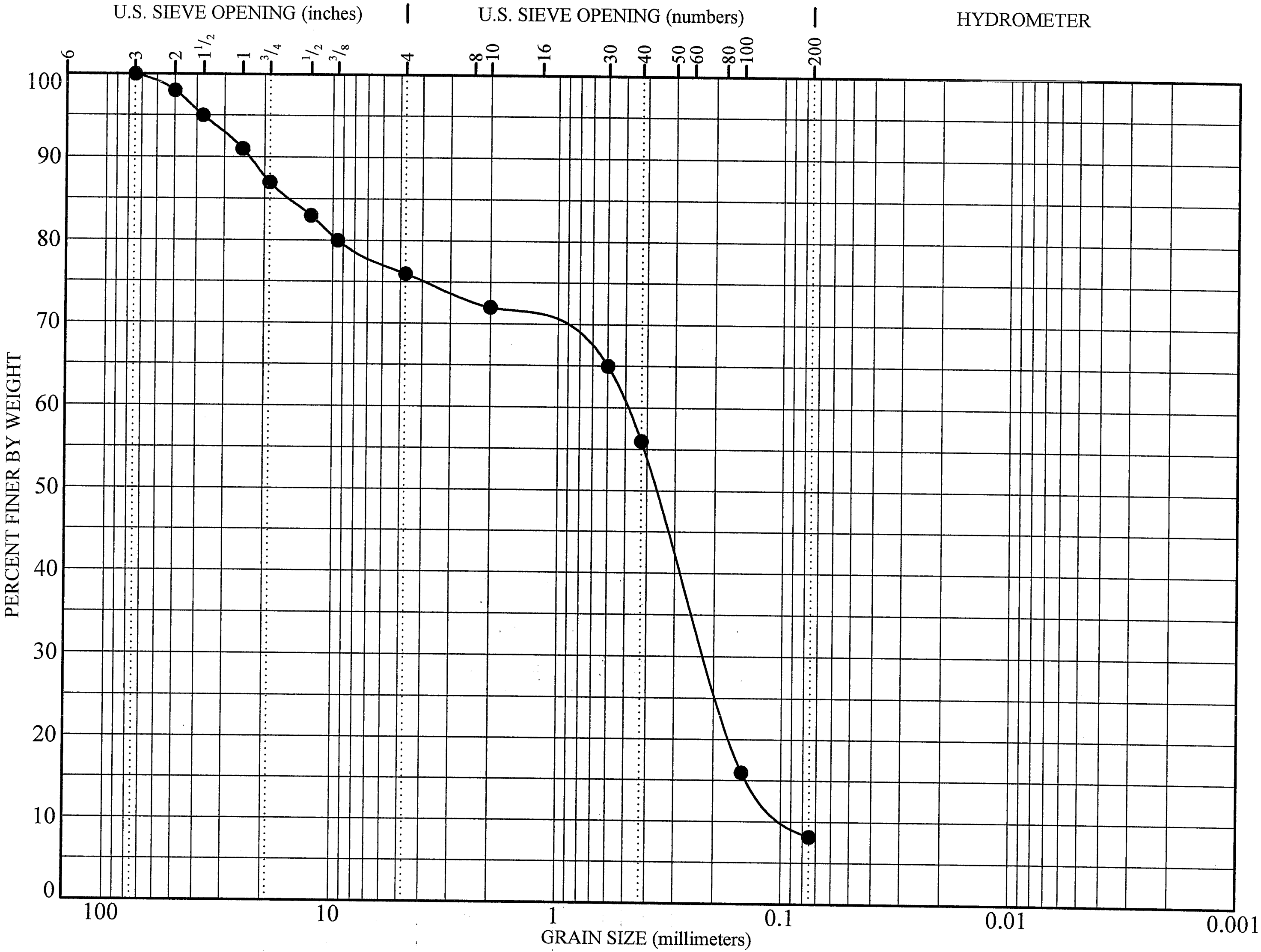
SOILS & ENGINEERING SERVICES, INC.

Duane E. Reichel, P.E.

DER:MKM:mkm

WISCONSIN
6/11/2020
DUANE E.
REICHEL
E-28408
MADISON
WI
PROFESSIONAL ENGINEER

PARTICLE SIZE DISTRIBUTION ANALYSIS REPORT



	COBBLES (%)	GRAVEL (%)		SAND (%)			FINES (%)	
		coarse	fine	coarse	medium	fine	SILT (%)	CLAY (%)
●	0	13	11	4	16	48	8.2	

Sieve Size	Percent Finer		
	●		
3-inch	**100**		
2-inch	**98**		
1 1/2-inch	**95**		
1-inch	**91**		
3/4-inch	**87**		
1/2-inch	**83**		
3/8-inch	**80**		
#4	**76**		
#10	**72**		
#30	**65**		
#40	**56**		
#100	**16**		

Sieve Size	Percent Finer		
	●		
#200	**8.2**		

	Grain Size (mm)			Coefficients	
	D_{60}	D_{30}	D_{10}	C_c	C_u
●	**0.49**	**0.22**	**0.088**	**1.1**	**5.6**

	Sample Information
●	Sample 1 SES Sample No. 1897 {obtained 5/20/2020}: ***POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM)*** *— fine to medium grained, non-plastic to low plasticity fines, light brown*

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LABORATORY TEST RESULT RECORD
Raymond Road
Dane County, Wisconsin

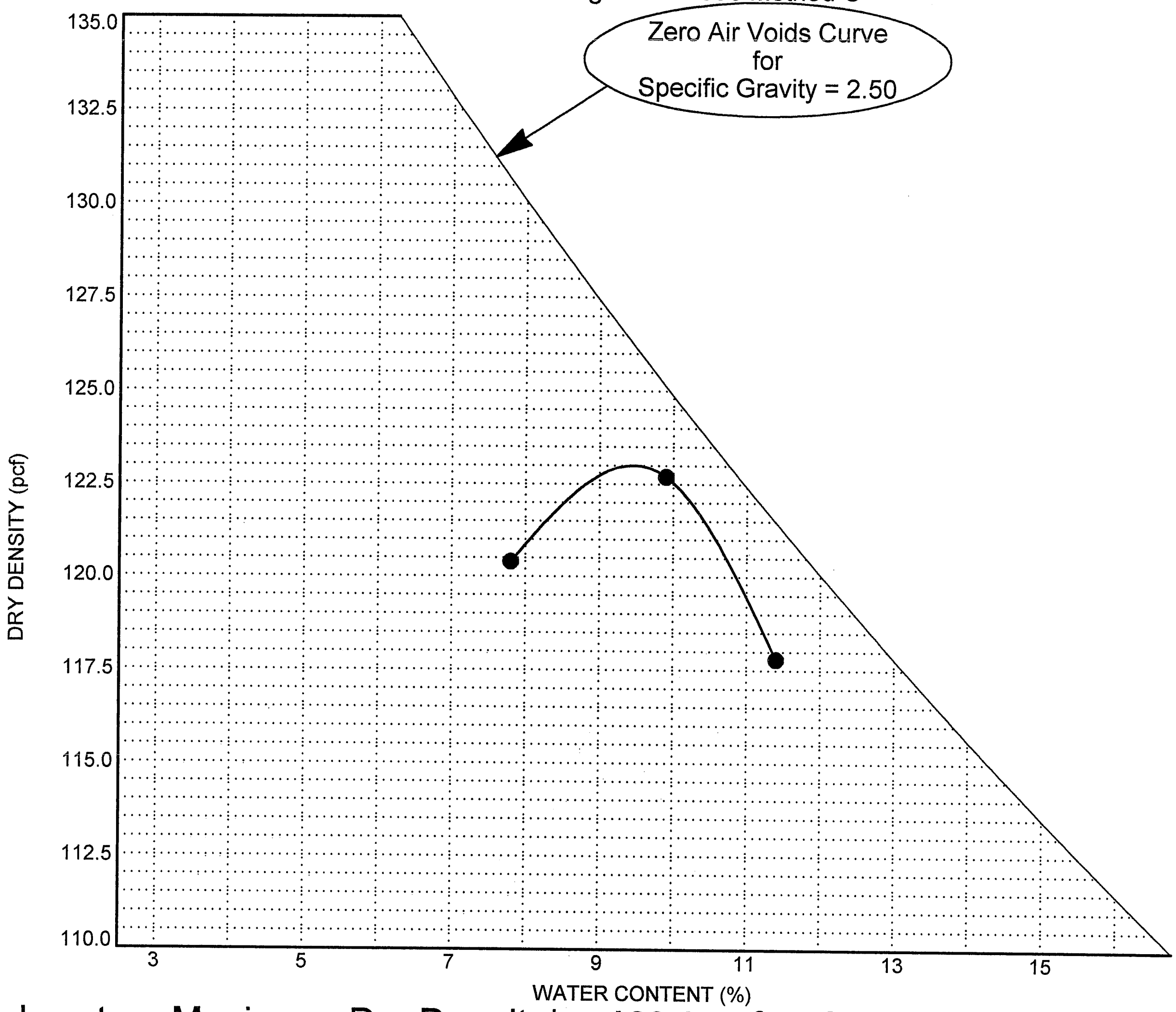
13282

FIGURE 1a

Printed on 5/22/2020

OPTIMUM MOISTURE / MAXIMUM DENSITY TEST REPORT

ASTM Test Designation D698 Method C



Laboratory Maximum Dry Density* = **123.0** pcf at Optimum Moisture = **9.5** %
Computed Total Sample Maximum Dry Density** = **127.0** pcf

*Laboratory Maximum Dry Density determined for material passing the $^{3}/_{4}$-inch sieve using a mechanical rammer with a pie-shaped face.
**Computed Total Sample Maximum Dry Density determined using an estimated coarse aggregate specific gravity = 2.6 and an oversize (retained $^{3}/_{4}$" sieve) material content of 13%.

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Percent Material			
				Retained			Passing
				3/4"	3/8"	#4	#200
—	—	—	—	**13**	**20**	**24**	**8.2**

Remarks

Sample Name
Sample 1 **SES Sample No. 1897 {obtained 5/20/2020}**

Sample Classification
POORLY-GRADED SAND WITH SILT AND GRAVEL (SP-SM) *— 24% gravel, 68% sand, 8.2% fines, fine to medium grained, non-plastic to low plasticity fines, light brown*

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FIGURE 1b

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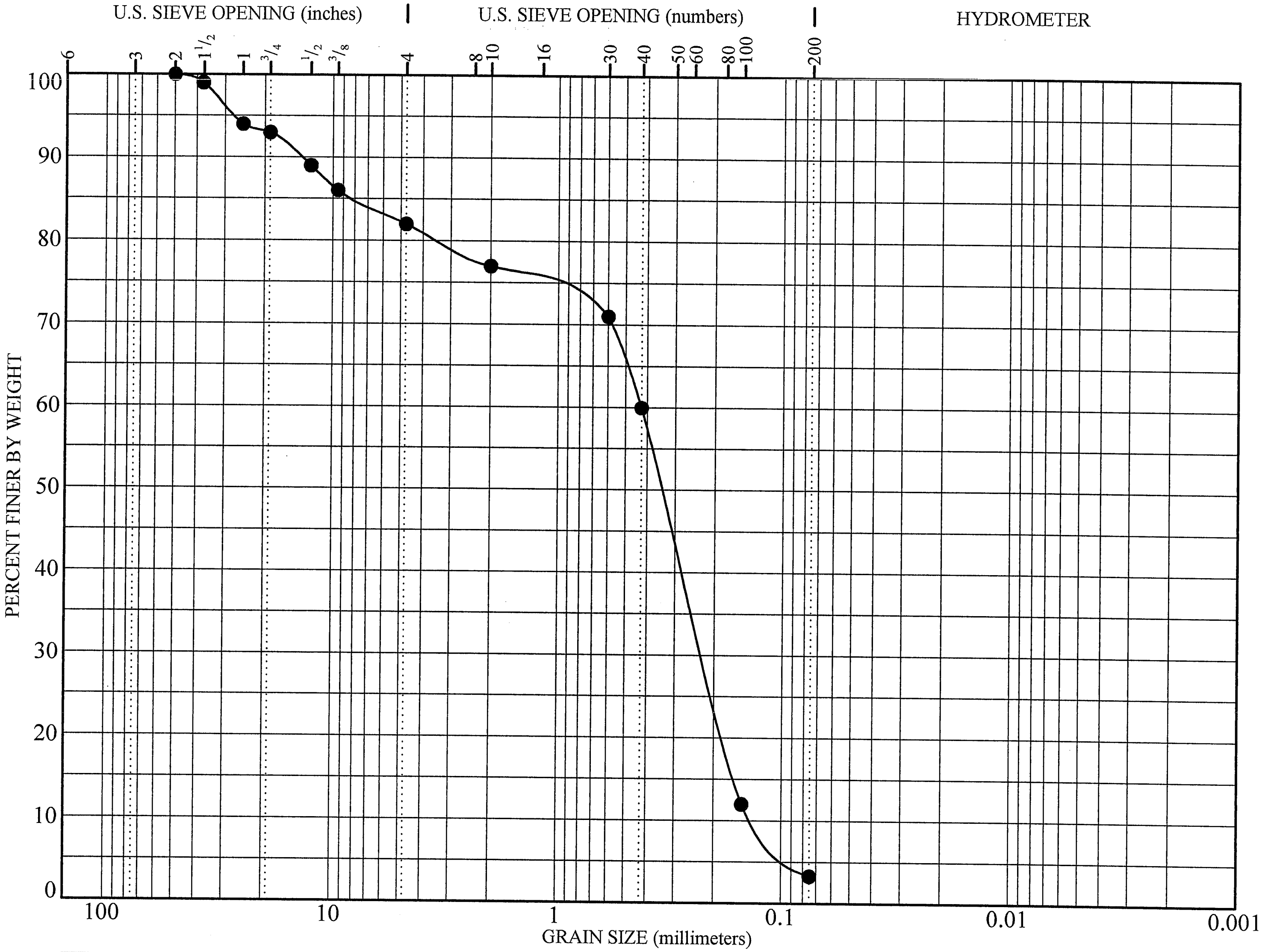
PARTICLE SIZE DISTRIBUTION ANALYSIS REPORT



	COBBLES (%)	GRAVEL (%)		SAND (%)			FINES (%)	
		coarse	fine	coarse	medium	fine	SILT (%)	CLAY (%)
●	0	7	11	5	17	57	3.3	

Sieve Size	Percent Finer		
	●		
2-inch	**100**		
$1^1/_2$-inch	**99**		
1-inch	**94**		
$^3/_4$-inch	**93**		
$^1/_2$-inch	**89**		
$^3/_8$-inch	**86**		
#4	**82**		
#10	**77**		
#30	**71**		
#40	**60**		
#100	**12**		
#200	**3.3**		

Sieve Size	Percent Finer		
	●		

	Grain Size (mm)			Coefficients	
	D_{60}	D_{30}	D_{10}	C_c	C_u
●	**0.43**	**0.22**	**0.13**	**0.87**	**3.3**

Sample Information

● Sample 2
SES Sample No. 1898 {obtained 5/20/2020}:
POORLY-GRADED SAND WITH GRAVEL (SP) *— fine to medium grained, light brown, trace fines*

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LABORATORY TEST RESULT RECORD
Raymond Road
Dane County, Wisconsin

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FIGURE 2a

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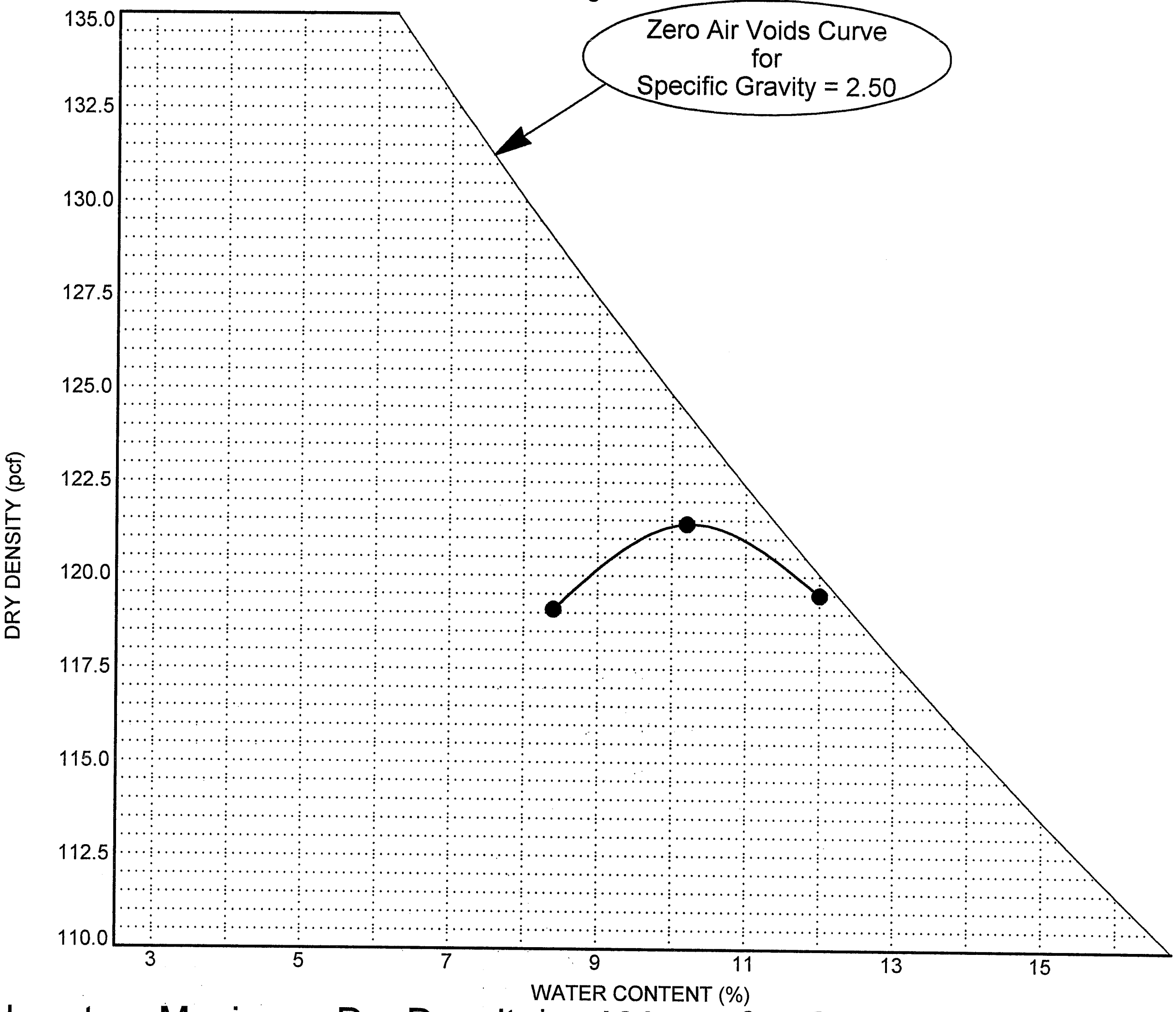
OPTIMUM MOISTURE / MAXIMUM DENSITY TEST REPORT

ASTM Test Designation D698 Method C



Laboratory Maximum Dry Density* = 121.4 pcf at Optimum Moisture = 10.3 %
Computed Total Sample Maximum Dry Density = 123.6 pcf**

*Laboratory Maximum Dry Density determined for material passing the ${}^{3}/_{4}$-inch sieve using a mechanical rammer with a pie-shaped face.
**Computed Total Sample Maximum Dry Density determined using an estimated coarse aggregate specific gravity = 2.6 and an oversize (retained ${}^{3}/_{4}$" sieve) material content of 7%.

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Percent Material			
				Retained			Passing
				3/4"	3/8"	#4	#200
—	—	—	—	**7**	**14**	**19**	**3.3**

Remarks

Sample Name
Sample 2 **SES Sample No. 1898 {obtained 5/20/2020}**

Sample Classification
POORLY-GRADED SAND WITH GRAVEL (SP) *— 18% gravel, 79% sand, 3.3% fines, fine to medium grained, light brown, trace fines*

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LABORATORY TEST RESULT RECORD
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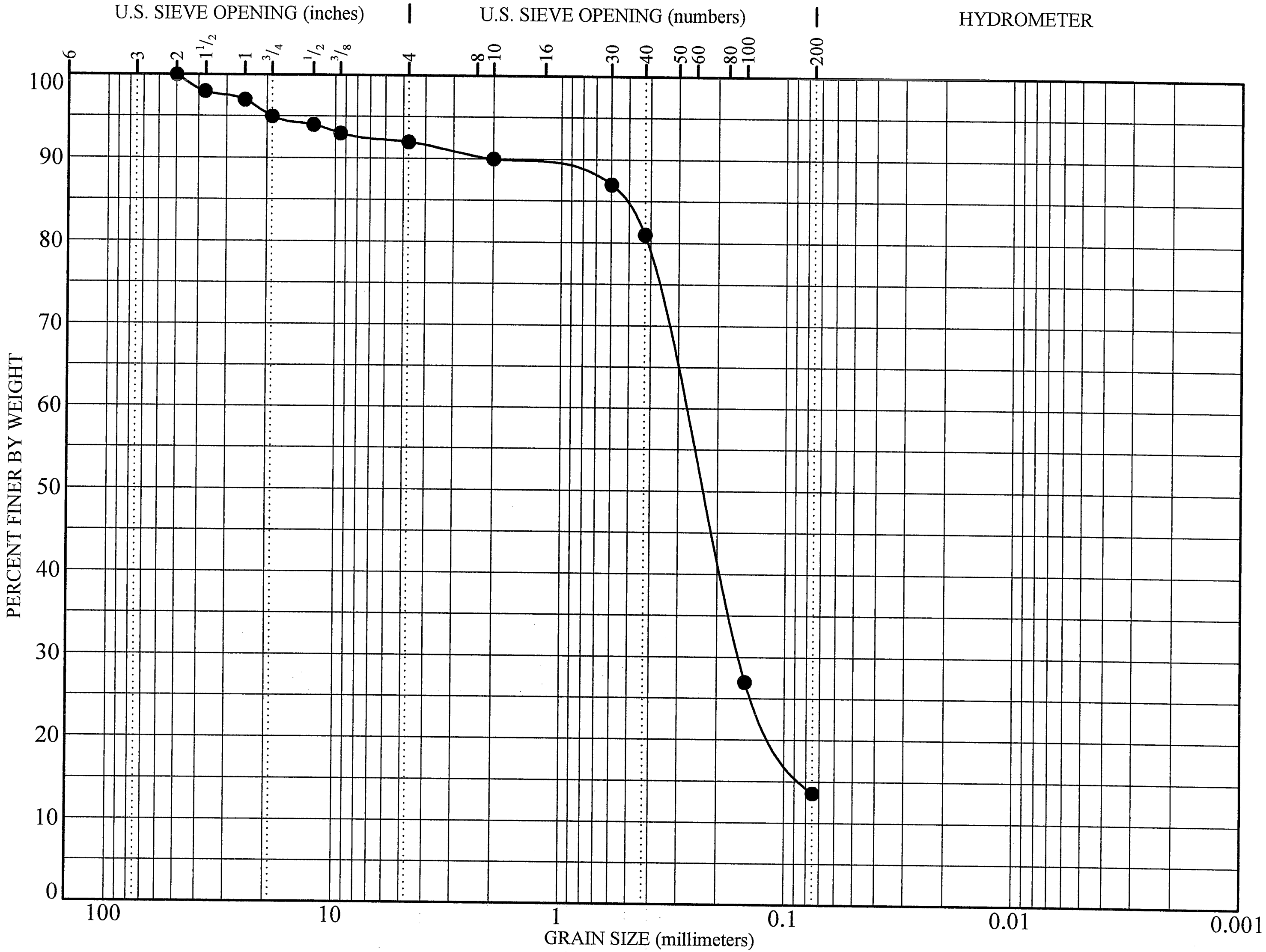
FIGURE 2b

Printed on 5/22/2020

PARTICLE SIZE DISTRIBUTION ANALYSIS REPORT



	COBBLES (%)	GRAVEL (%)		SAND (%)			FINES (%)	
		coarse	fine	coarse	medium	fine	SILT (%)	CLAY (%)
●	0	5	3	2	9	67	13.6	

Sieve Size	Percent Finer		
	●		
2-inch	100		
$1^1/_2$-inch	98		
1-inch	97		
$^3/_4$-inch	95		
$^1/_2$-inch	94		
$^3/_8$-inch	93		
#4	92		
#10	90		
#30	87		
#40	81		
#100	27		
#200	13.6		

Sieve Size	Percent Finer		
	●		

	Grain Size (mm)			Coefficients	
	D_{60}	D_{30}	D_{10}	C_c	C_u
●	0.28	0.16			

Sample Information

● Sample 3
SES Sample No. 1899 {obtained 5/20/2020}: ***SILTY SAND (SM)*** — *fine grained, non-plastic to low plasticity fines, reddish-brown, few gravel*

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LABORATORY TEST RESULT RECORD
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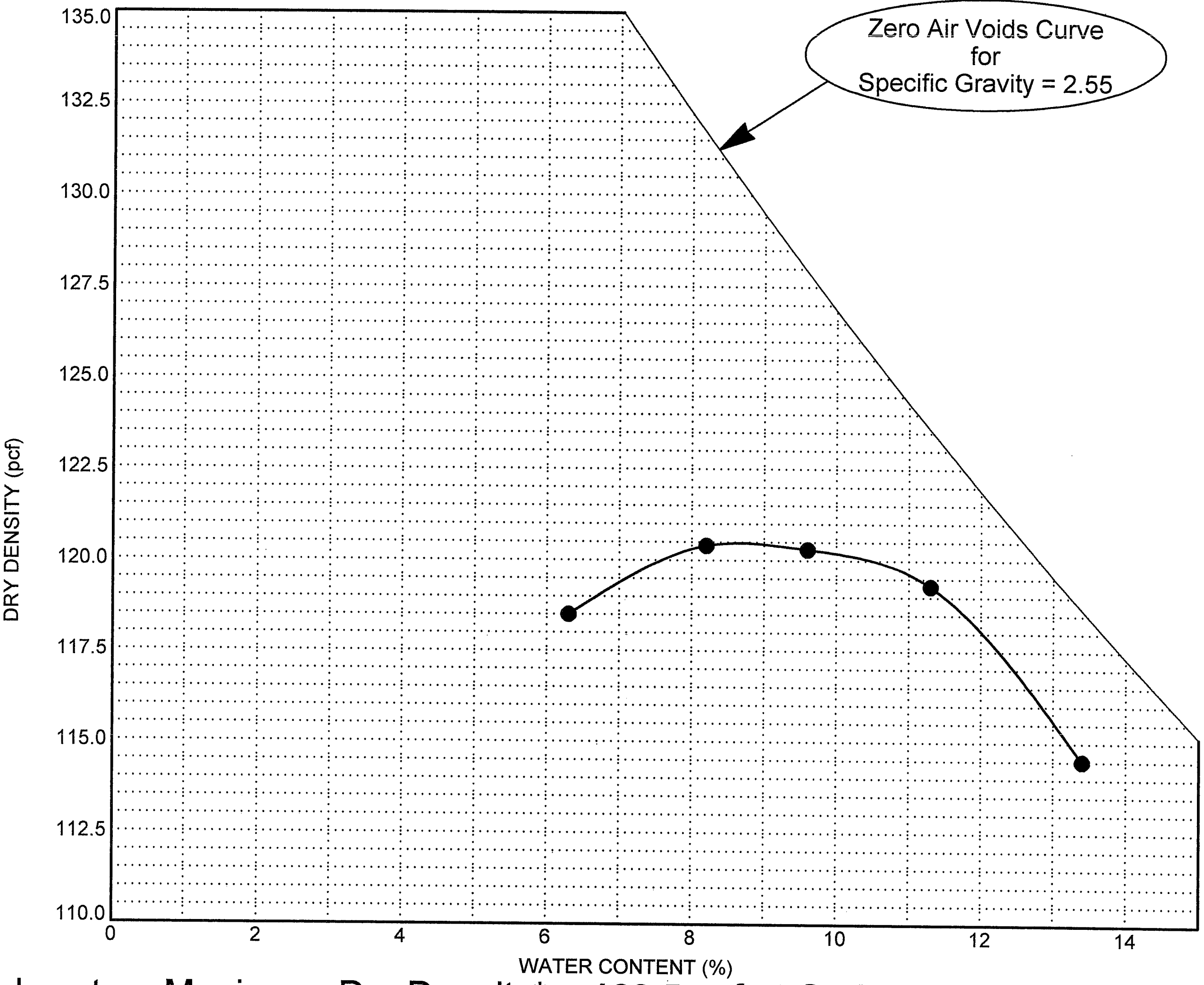
FIGURE 3a

Printed on 5/22/2020

OPTIMUM MOISTURE / MAXIMUM DENSITY TEST REPORT

ASTM Test Designation D698 Method C



Laboratory Maximum Dry Density* = **120.5** pcf at Optimum Moisture = **8.6** %

*Laboratory Maximum Dry Density determined for material passing the $^3/_4$-inch sieve using a mechanical rammer with a pie-shaped face.

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	Percent Material Retained 3/4"	Percent Material Retained 3/8"	Percent Material Retained #4	Percent Material Passing #200
—	—	—	—	**5**	**7**	**8**	**13.6**

Remarks

Sample Name	Sample Classification
Sample 3 **SES Sample No. 1899 {obtained 5/20/2020}**	***SILTY SAND (SM)*** *— 8% gravel, 78% sand, 13.6% fines, fine grained, non-plastic to low plasticity fines, reddish-brown, few gravel*

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LABORATORY TEST RESULT RECORD
Raymond Road
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FIGURE 3b

Printed on 5/22/2020

Soils & Engineering Services, Inc.

May 5, 2020

Project 13282

Mr. Thor Wick
Integrity Grading & Excavating, Inc.
605 Grossman Drive
Shofield, Wisconsin 54467

Subject: Test Pits and Field Density Testing
Raymond Road Storm Sewer
Madison, Wisconsin
Report 2

Dear Mr. Wick:

On April 20, 2020, we were at the subject site, at your request, to make field observations and to perform field density tests for use in correlating information collected by a truck-mounted cone penetrometer testing rig.

We met at the site with Mr. Brian Moynihan of Barr Engineering Company. A backhoe operated by personnel from your firm had excavated a test pit into the previously-placed storm sewer trench backfill material at approximately Station 526+50 on Raymond Road. The material excavated from the test pit had been set aside for use as backfill to restore the test pit area to the existing top of street subgrade elevation. The test pit was approximately 12 feet long and 6 feet wide and extended to a depth of 12 to 14 feet below the existing road subgrade surface. We observed that a portion of the side of one section of the reinforced concrete storm sewer pipe was exposed near the bottom of the test pit.

Based on our telephone conversation with you on the morning of April 20, 2020, we understood that the test pit was to be backfilled in a manner consistent with the current City of Madison requirements for placing and compacting utility trench backfill materials in roadway areas. We further understood that we were to perform field density tests on the backfill material at several different elevations as the backfill was being placed and compacted.

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BY:

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Madison, WI 53713-4648
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888-866-7645
Fax: 608-274-7511
www.soils.ws
soils@soils.ws
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Due to safety concerns related to the depth and side wall stability of the test pit, we did not enter the excavation until the backfilling had been completed to within 4 feet of the adjacent roadway subgrade surface.

We noted that the backfill materials tested consisted of a well-graded, fine- to medium-grained sand with silt, gravel, and some broken concrete "breaker run" pieces. During our site visit, we observed that the backfill material was placed in approximately 18-inch-thick lifts and that each lift was compacted using a backhoe-mounted vibratory plate compactor.

We performed the density tests in accordance with ASTM Designation D 6938, nuclear test procedure. Percent compaction was not determined. Our test results are summarized as follow:

Test	Location of Test	Depth*	Percent Moisture	Field Wet Density, pcf	Field Dry Density, pcf
	Test Pit Backfill at Raymond Road Station 526+50				
A	Center of Test Pit	4.0	7.1	140.3	130.9
B	Center of Test Pit	2.5	6.3	133.2	125.2
C	Center of Test Pit	1.0	6.4	137.9	129.6

---

* Depth is the distance in feet from the test surface to the existing street subgrade elevation.

At your direction, we provided Mr. Moynihan with our field density test results prior to leaving the site.

We have prepared this report for the subject project according to materials testing engineering practices generally accepted at this time. No other warranty, either expressed or implied, is made.

If you have any questions concerning this work or if we can be of any further assistance to you, please contact us at (608) 274-7600.

Respectfully submitted,

SOILS & ENGINEERING SERVICES, INC.

Duane E Reichel

Duane E. Reichel, P.E.

DER:MKM:mkm

WISCONSIN
5/5/2020
DUANE E.
REICHEL
E-28408
MADISON, WI
Duane E Reichel
PROFESSIONAL ENGINEER

Attachment E Collier Geophysics MASW May 2020 Report

COLLIER
GEOPHYSICS
Surface • Marine • Borehole

7711 W. 6th, Ste G | Lakewood, CO 80214

O: (720) 487-9200

A Service-Disabled Veteran-Owned Small Business (SDVOSB)

June 8, 2020

Barr Engineering Company
4300 Market Pointe Drive
Suite 200
Minneapolis, MN 55435

Attn: Kevin Eisen, P.E.
Office: (952) 832-2937
Email: kkeisen@barr.com

RE: MASW Geophysical Investigation
Stormwater Pipeline Alignment, Verona, WI
Collier Geophysics Project 20-066

Collier Geophysics, LLC (Collier) conducted a geophysical investigation on behalf of Barr Engineering Company (Barr) along the storm water pipe beneath Raymond Road in Verona, WI (Figure 1). The objective of the investigation was to determine the presence of soft soil conditions, laterally and vertically, near the existing and recently constructed stormwater pipeline. To meet this objective Collier utilized the Multi-channel Analysis of Surface Waves (MASW) method to measure the shear-wave velocity (Vs) along the pipeline alignment. The MASW method allowed for the determination of the two-dimensional distribution of shear-wave velocity (Vs) in the subsurface to depths of between 50 to 70 feet below ground surface along the pipe alignment.

The geophysical investigation was conducted between April 28th and May 4th, 2020. Three survey lines (Lines 1, 2 and 3) were conducted along the pipe alignment: Line 2 directly over the pipe and Lines 1 and 3 located parallel to Line 2 and 15 feet off center. The MASW seismic survey was led by a Collier senior geophysicist Ted Powell. The following report presents results from the geophysical investigation and summarizes the site conditions, field methods, data acquisition, and processing procedures. For further information regarding the details of the MASW technique, Collier will provide a MASW "method addendum" upon request.

Site Conditions

Seismic Lines 1 and 2 were located primarily on Raymond Road, which was constructed of both asphalt and gravel. Line 3 was collected in the right-of-way along the southeast side of Raymond Road. On each end of the pipeline the pipe alignment deviated from beneath Raymond Road in fairly sharp bends referred to as "doglegs", with the survey lines tracking the alignment across grassy areas, gravel and minor asphalt pathways. The weather ranged from intermittent rain at the beginning of the surveys to generally warm and sunny, sometimes windy, spring days with cool mornings. Ground conditions ranged from partially wet and somewhat muddy on the doglegs to dry pavement and gravel on the road and grass and weedy areas on the right of way. See Figure 3 for representative site photos.

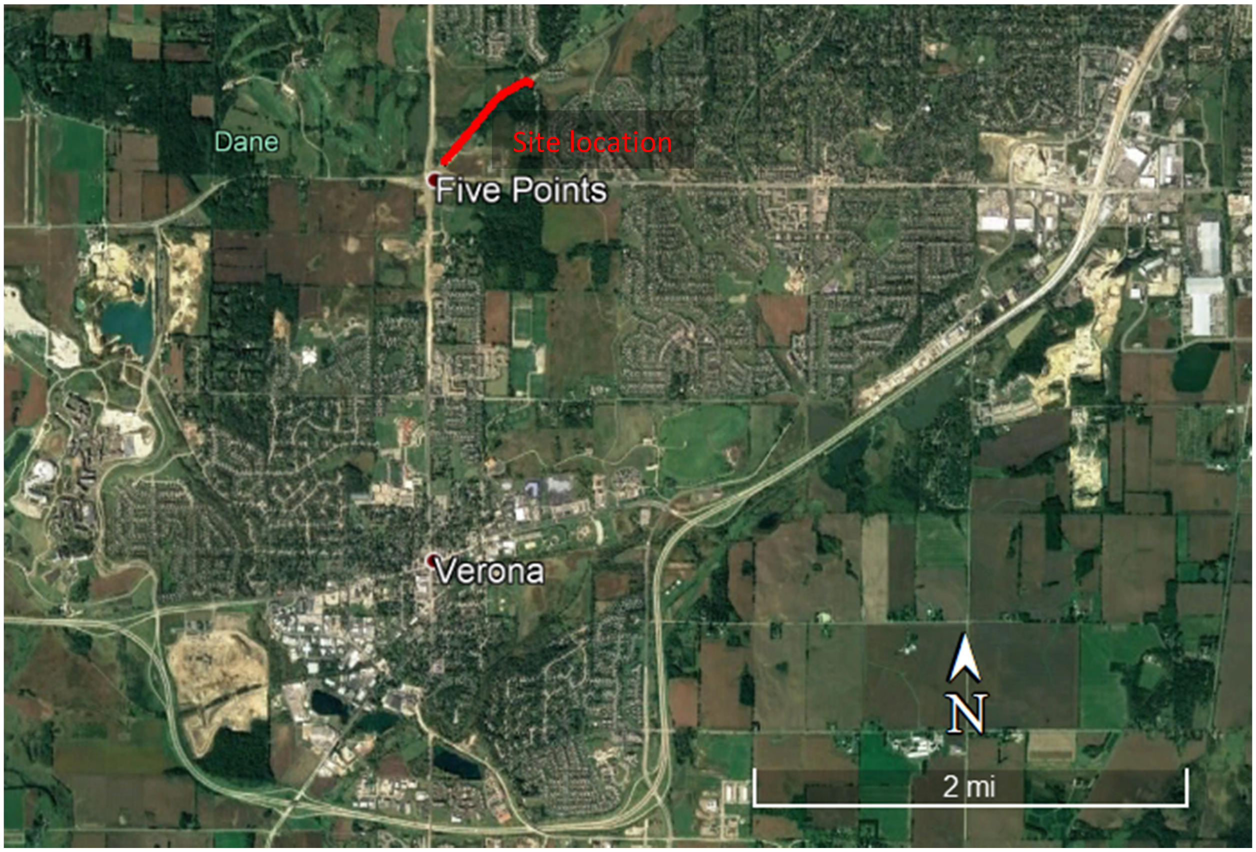


Figure 1. Site location shown by red line (Google Earth Imagery).

Figure 2. Seismic coverage shown in red (Google Earth Imagery).

Figure 3. Photos showing typical site conditions at the time of MASW data collection.

Data Acquisition

Data were acquired using a Geometrics Geode, 24-channel seismograph (*inset photo at right*) with 24 4.5 Hertz vertical component geophones mounted on a Geostuff land streamer. A land streamer is an array of geophones fastened to a tow strap designed to be towed along the ground. The land streamer used for this project had a geophone spacing of 5 feet.

Due to site conditions at the time of data collection, the southern end of Line 3 was collected using the same shot and geophone spacing as the rest of the data collected, but with geophones mounted on spikes that were planted into the ground. Only the first 115 feet of Line 3 were collected using the spiked geophones before switching back to the land streamer for the remaining portion of the line.

This system utilizes a 24-bit seismograph connected to a field laptop via Ethernet cable. Analog data from the 24 geophones are collected in the Geode seismograph where the data are digitized, transmitted to the laptop computer, and then recorded on the hard drive. The land streamer and geophones were placed on the low side of the Geode, with geophone 1 farthest away and geophone 24 nearest to the Geode (in the direction of travel of the system).

MASW acquisition parameters consisted of a 2 second record length and a sample interval of 0.5 milliseconds. The seismic source for the surveys was provided by manually striking a plastic plate with a 16-pound sledge hammer. Three hits were collected at each shot point. The shot point spacing was 30 feet. The first shot location was collected 30 feet off the high end of the streamer. After acquiring three shots at the first shot point, the streamer was pulled (via pickup truck or by hand) 30 feet ahead, and data was acquired at another shot point, as prior.

Approximately 9,000 feet of seismic data were collected along the pipeline alignment between the three lines. Line placement was based on previously surveyed station markers, plan maps of the alignment location, and visible cues from surface features such as manholes and end of pipe alignment. Shot locations and select geophone positions were recorded using a Trimble Geo7x handheld GPS unit capable of sub-foot horizontal precisions.

Data Processing

MASW analysis consists of generating a frequency-velocity transform from surface waves, picking the transformed data to derive a dispersion curve, and then inverting this dispersion curve to a layered Vs model. Figure 4 illustrates this dispersion curve picking approach used for MASW soundings, with an example from this investigation. These steps are repeated for each shot location down-line using 6 geophones at a time. The resulting layered models are combined to generate a two-dimensional (2D) S-wave velocity (Vs) model. The program SurfSeis, version 5.3, by the Kansas Geological Survey was used to accomplish these steps.

The Vs models output from SurfSeis were processed, filtered, and gridded using Geosoft Oasis montaj (Geosoft), version 9.3, a processing and data visualization software suite used for analysis of geophysical data sets. Final figures were generated using Surfer (Golden Software), version 16.6.

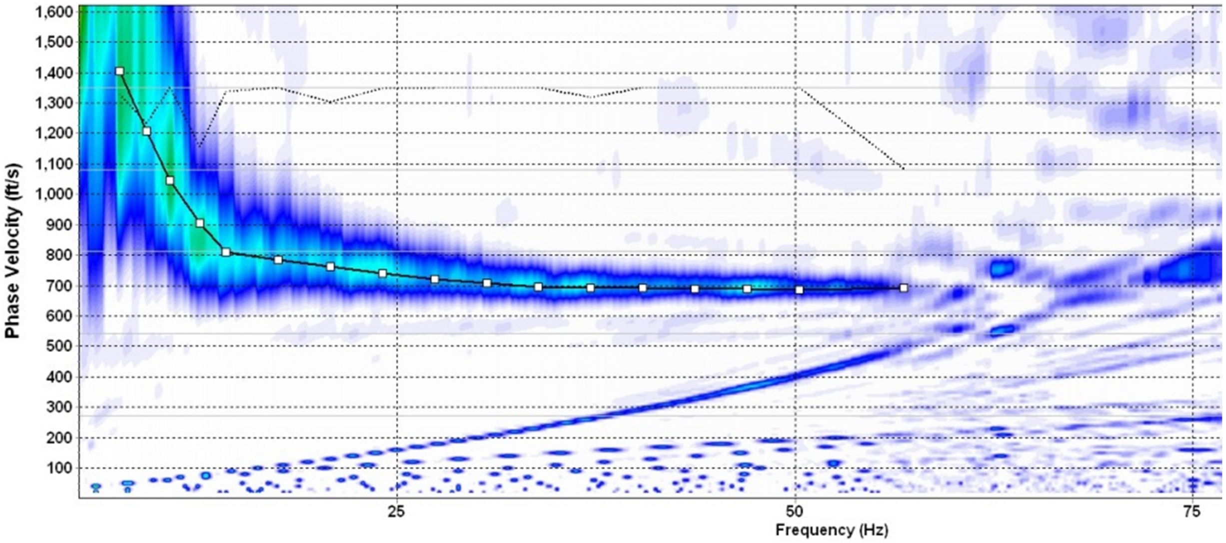


Figure 4. Example dispersion curve from this project.

Results and Discussion

The results from the MASW survey can be found in Figures 5-8, attached to the end of this report. The results are displayed as color cross sections with warm colors (red, orange and yellow) representing lower velocity values and green representing higher velocity values. The horizontal axis is in distance down the line and the vertical axis is in elevation, both in feet. The project stationing is displayed along the top of the color cross sections.

Figure 5 shows the results from all three lines at a vertical exaggeration of 4:1. Figures 6-8 show each line at a 5:1 vertical exaggeration along with a larger scale overall.

Closure

The MASW data were collected and processed using industry standard methods. The data was of sufficient quality to make measurements of the subsurface seismic shear wave velocities of the material beneath the lines which can be related to geotechnical properties of the material.

The geophysical methods and field procedures defined in this report were applicable to the project objectives and have been successfully applied by Collier geophysicists to investigations of similar size and nature. However, sometimes field or subsurface conditions are different from those anticipated and the resultant data may not achieve the investigation objectives. Collier warrants that our services were performed within the limits prescribed for this project, with the usual thoroughness and competence of the geophysical profession. Collier conducted this project using the current standards of the geophysical industry and utilized in house quality control standards to produce a precise geophysical survey.

If you have any questions regarding the field procedures, data analyses, or results presented herein, please do not hesitate to contact us. We appreciate working with you and look forward to providing Barr Engineering with geophysical services in the future.

Respectfully Submitted,
Collier Geophysics, LLC

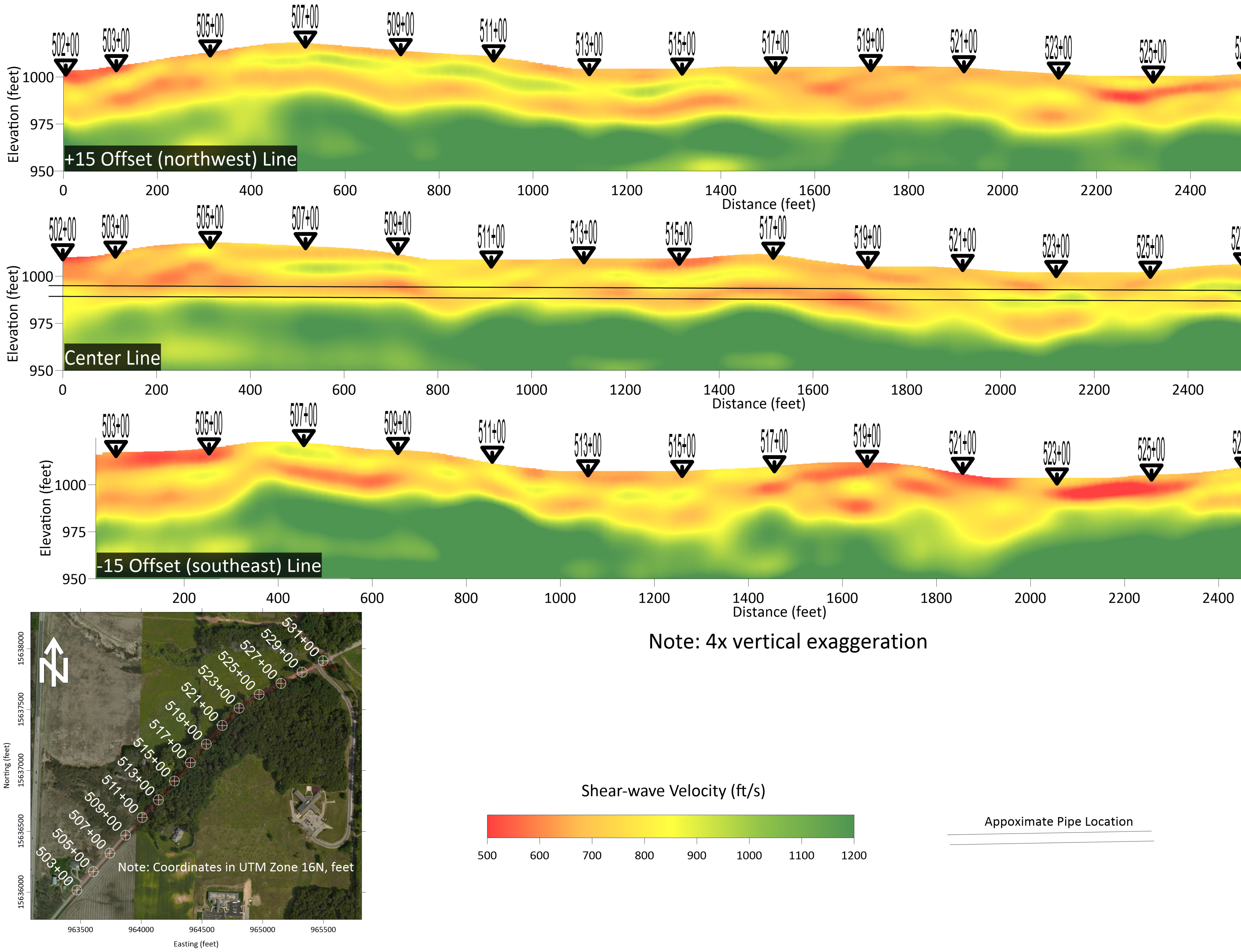
Ted Powel

Ted Powel
Senior Geophysicist

Jacob Sheehan

Jacob Sheehan
Senior Geophysicist

(1 copy e-mailed PDF format)



MASW Results
Raymond Rd. MASW
Verona, WI

Barr Engineering

Project #: 20-066

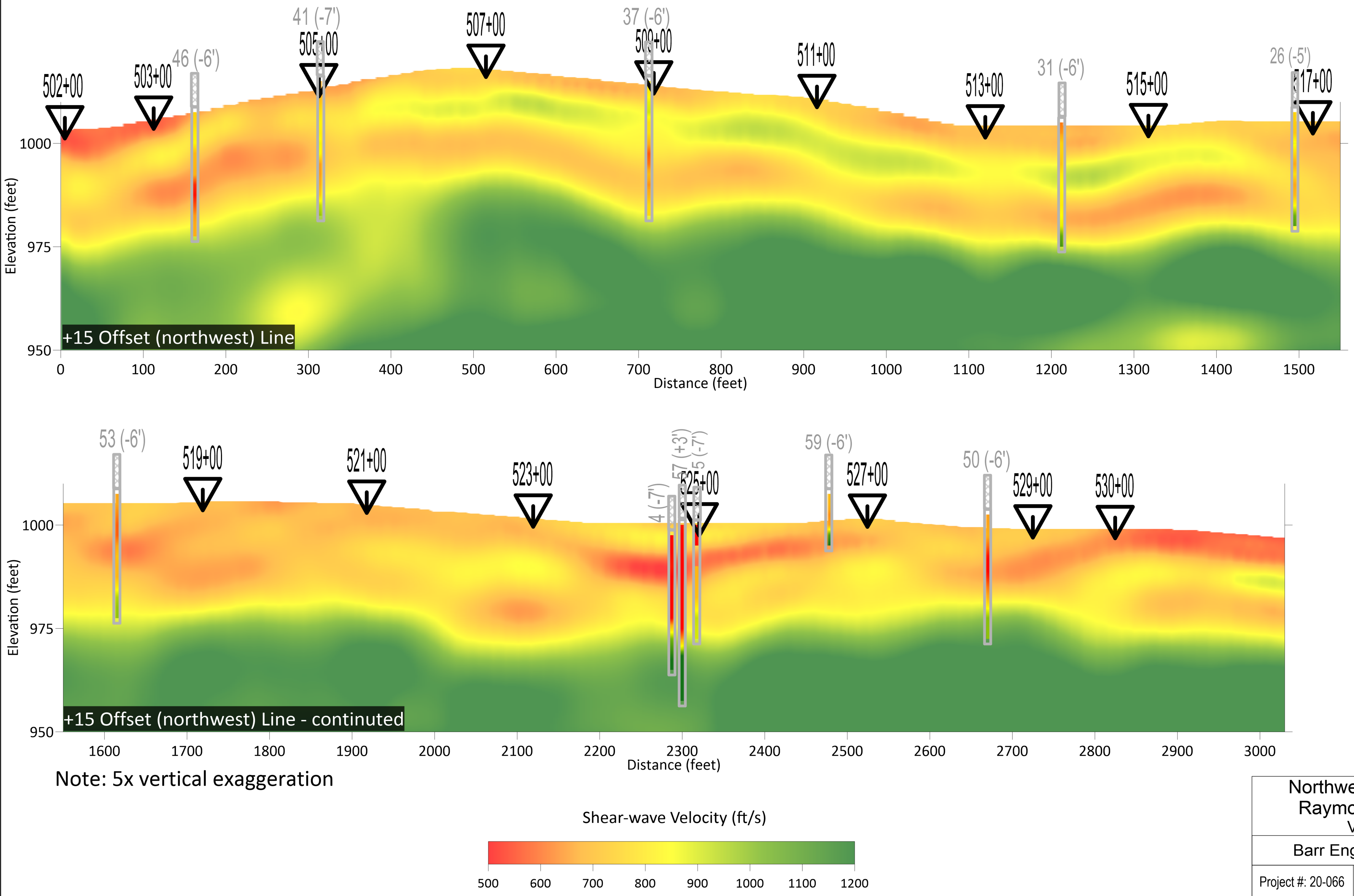
June 2020

COLLIER GEOPHYSICS

Drafted by: J. Sheehan

Checked by: N. Pendrigh

Figure 5



Note: 5x vertical exaggeration

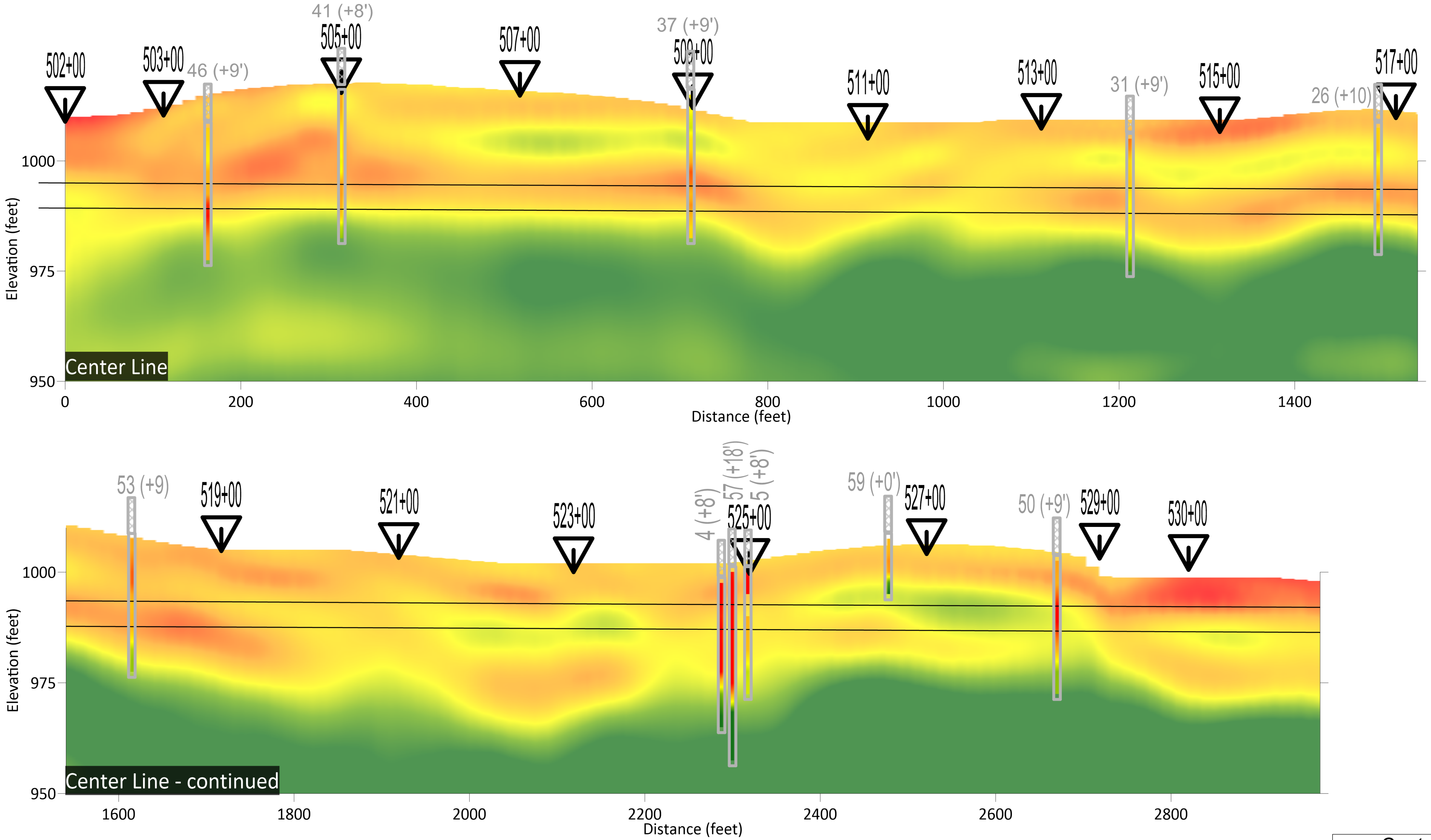
Northwest Line Results
Raymond Rd. MASW
Verona, WI

Barr Engineering

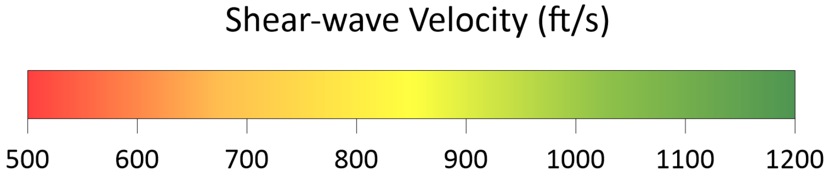
Project #: 20-066	June 2020
Drafted by: J. Sheehan	Checked by: N. Pendrigh

COLLIER GEOPHYSICS

Figure 6



Note: 5x vertical exaggeration



Centerline Results
Raymond Rd. MASW
Verona, WI

Barr Engineering

Project #: 20-066	June 2020
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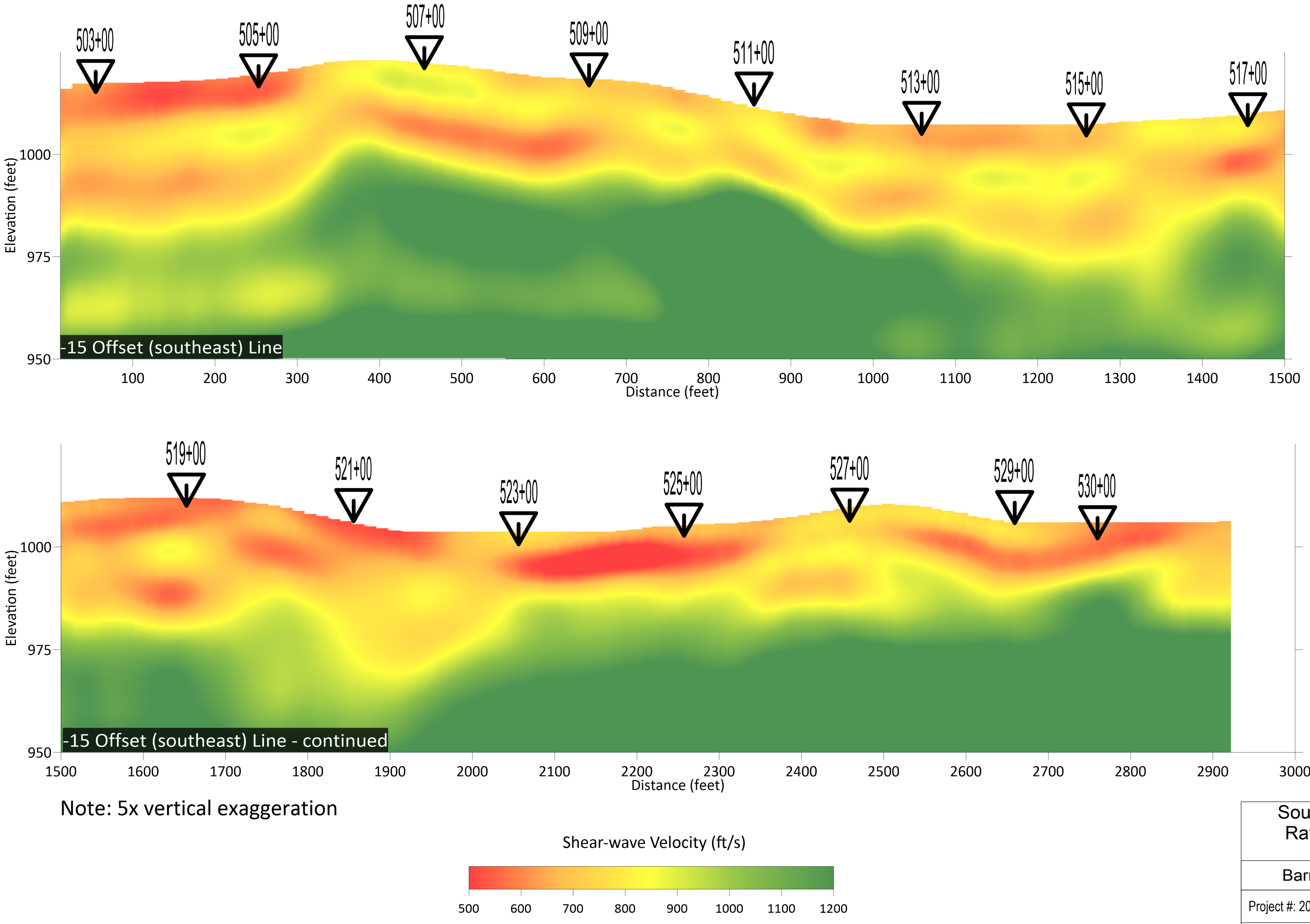
COLLIER GEOPHYSICS

Figure 7



Note: 5x vertical exaggeration

Southeast Line Results
Raymond Rd. MASW
Verona, WI

Barr Engineering

Project #: 20-066

June 2020

COLLIER GEOPHYSICS

Drafted by: J. Sheehan

Checked by: N. Pendrigh

Figure 8