EXHIBIT I

Wyndham Microtel

750 Quince Street

Florence, Oregon

STORMWATER PLAN

June 2022

Prepared by:

RENEWS: 12/31/22

Civil West Engineering Services, Inc.

Designer's Certification and Statement: I hereby certify that this Stormwater Management Report for Wyndham Microtel has been prepared by me or under my supervision and meets minimum standards of the City of Florence and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.

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STORMWATER PLAN

WYNDHAM MICROTEL
FLORENCE, OREGON

1. Project Overview and Description

1.1 Size and Location of Project Site

The proposed development is a Microtel Hotel by Wyndham. The proposed hotel would be situated to the east of Quince Street in Florence, Oregon, across from the Florence Event Center, as shown in Figure 1, below. After proposed property line adjustments, the site would be approximately 3.05 acres.

Figure 1: Project Location

1.2 Property Zoning

The site is located in the Mixed use – Old Town Area C zone. There are areas of the existing site boundaries that are within the Natural Estuary zone, but this will be changed with the proposed lot line adjustments.

1.3 Type of Development/ Proposed Improvements

The proposal is to construct a commercial hotel on the site. This will consist of the hotel, asphalt parking lot, concrete sidewalks, and all necessary utilities, including an underground stormwater system. Please see attached Project Exhibits (Appendix A) for more details regarding the proposed improvements.

1.4 Watershed Description

The existing site and most of the surrounding area either sheet flows or is otherwise conveyed to either Munsel Creek to the northeast, or to the sloping hillside directly to the east. Both areas then flow into a low lying wetland before mixing with the Siuslaw River.

1.5 Permits Required

The project will require a DEQ 1200-C erosion control permit and any other construction permits that the City requires. Construction does not fall within a wetland, so no permitting with the Corps of Engineers or Department of State Lands will be required.

1.6 Existing vs. Post-Construction Conditions

The parcel in question at one point had a school on the site. Since then, it has been demolished and left undeveloped, occasionally being used as a material stockpiling area. Slopes range between 0-5% with the majority of the site sheet flowing to the east over the hillside. There is a mix of low lying vegetation and grass over predominantly soil sands, with some buried rubble from the previous school still remaining in some areas.

The proposed development will include an underground stormwater conveyance system and on site detention pond in order to infiltrate the stormwater, as well as provide treatment. This pond will entirely disperse the stormwater through infiltration.

2. Methodology

2.1 Drainage at Existing Site

2.1.1 Potential Impacts on the Proposed Site from Existing Conditions

Civil West Engineering does not foresee any measurable impacts to the existing site from the proposed development. The site is not currently being used and the proposed stormwater detention and treatment will discharge the drainage into the same aquifer that it is currently entering.

2.1.2 Potential Impacts from the Proposed Site on Existing Drainage

The existing site allows stormwater to either infiltrate or to sheet flow over the slope down into the wetland area to the east before ultimately entering the Siuslaw River. Because our proposed stormwater design relies on infiltration, we do not foresee any impacts to the drainage patterns.

2.1.3 Techniques for Mitigating Potential Conflicts or Problems

One concern that has been raised during planning discussions is that an outfall on the eastern slope could potentially cause erosion issues or unwanted concentrated flow onto an area that is planned to be developed into a trail along the estuary; however, by significantly oversizing our pond and utilizing the well drained soil in the area, emergency overflow will not occur even through the 100-year storm event. In the event that the pond was overtopped, the parking lot and system piping would provide extra storage.

2.2 Depth to Groundwater Testing Results

The Geotechnical Engineering Report attached (Appendix B) describes that the groundwater in the area is approximately 35-45' below ground surface, corresponding to the elevation of the lower marsh area.

2.3 Stormwater Management Narrative

Currently, the undeveloped site handles runoff primarily through infiltration. Anything that does not infiltrate sheet flows to the east, over the bank and into the estuary below. Our proposal is to develop the site while eliminating the need for additional outfalls.

We will install an underground storm drainage system that will convey the water to a stormwater treatment pond. Double chambered catch basins will be utilized in order to ensure that hydrocarbons and other pollutants are adequately removed. The stormwater will then infiltrate while being stored in the treatment ponds. Modeling shows that even with the 100-year storm event, the system will not overflow.

2.4 Demonstration of Maximized Infiltration and Vegetative Treatment

By using a large storage pond and the well drained native soil, our proposal utilizes infiltration to the maximum extent possible. The treatment ponds will be planted with a native wetland mix in order to provide additional treatment to the water.

3. Analysis

3.1 Design Assumptions

3.1.1 Design Storm Used

The design storm is an SCS Type 1A storm using the values below, taken from the Florence Stormwater Design Manual.

Figure 2: Design Storm

Return Frequency	24-hr Rainfall Depth (inches)
Water Quality Design Storm	
	0.83
Flow Control (or Flood Control) Storms[1]	
2- year	3.46
10-year	4.48
25-year	5.06
100-year	5.95

3.1.2 Computation Methods

The Performance Approach was the chosen method provided by the Florence Stormwater Design Manual. Specifically, we used NRCS TR-55 methodology utilizing SCS hydrographs.

3.1.3 Software Used

The software used for stormwater modeling was Autodesk Hydraflow Hydrographs. Impervious and pervious area calculations were performed using Autodesk Civil3D.

3.1.4 Safety Factors, Curve Numbers, and Design Coefficients

To evaluate the pre-developed site, the following curve numbers were used:

- 98 for any impervious areas
- 76 for gravel with group A soils
- 72 for dirt with group A soils
- 49 for fair condition open space with group A soils
- 39 for good condition open space with group A soils

To evaluate the proposed site, the following curve numbers were used:

- 98 for any impervious areas
- 39 for good condition open space with group A soils (landscaping)

See Figure 3 below, displaying the areas for each basin along with the corresponding curve numbers.

Figure 3: Basins

Areas (Acres):

Curve Numbers:	Pre-Developed Site	Proposed West
98 (Impervious)	0.06	1.86
76 (Gravel - Group A)	0.49	
72 (Dirt - Group A)	1.02	
49 (Open Space - Group A)	1.02	

39 (Open Space - Group A)	0.62	1.35
Composite Curve Number:	59.4	73

The Geotechnical Engineering Report provided an average infiltration rate of 64.25 in./hr. Our calculations used a value of 25 in./hr, providing a factor of safety of approximately 2.57.

When calculating time of concentration during pipe flow segments, a velocity of 3.5 feet/second was used. The remaining time of concentration segments were calculated using the TR-55 method to compute overland sheet flow.

3.1.5 Clarify Variations from the Norm

We are using a higher infiltration rate than the assumed values allowed by the Florence Stormwater Design Manual. Per the manual, this is allowed with a supporting Geotechnical Engineering Report. Please see the attached report in Appendix B.

3.1.6 Flow Rate Comparisons

Please see Figure 4 below, comparing the pre-developed vs. proposed site flow rates for each basin.

Figure 4: Flow Rates

Flow Rates (cfs):	Pre-Developed Site	Proposed
2 - Year Storm	0.103	0
10 - Year Storm	0.368	0
25 - Year Storm	0.61	0
100 - Year Storm	1.033	0

3.1.7 Emergency Overflow

As previously discussed, the emergency overflow will be to utilize the parking lot and piping as additional storage, but this will not occur until an event larger than the 100-year storm.

4. Engineering Conclusions

4.1 Compliance with Stormwater Design Manual

This design and corresponding report have been specifically tailored to the Florence Stormwater Design Manual. We believe that the proposed design will be an effective solution to the treatment and detention of stormwater on the proposed site.

4.2 Satisfaction of Water Quality, Flow Control, and Discharge Requirements

4.2.1 Water Quality

The primary treatment of stormwater will be via the sand and vegetation in the stormwater detention pond. Sand is an extremely effective filtration tool, and the wetland vegetation mix will help to keep the stormwater cool and allow for pollutants to be removed. In order to reduce maintenance in the pond and preserve the life of the wetland vegetation, double chambered catch basins will be installed prior to the pond inlet in order to pre-emptively remove hydrocarbons and other pollutants.

4.2.2 Flow Control

The attached stormwater modeling shows that the sizing and infiltration rates of the proposed facilities allows us to actually reduce the amount of runoff that travels off-site onto the eastern slope.

4.2.3 Discharge Requirements

By actually reducing flow off site with the development, we are complying with discharge requirements.

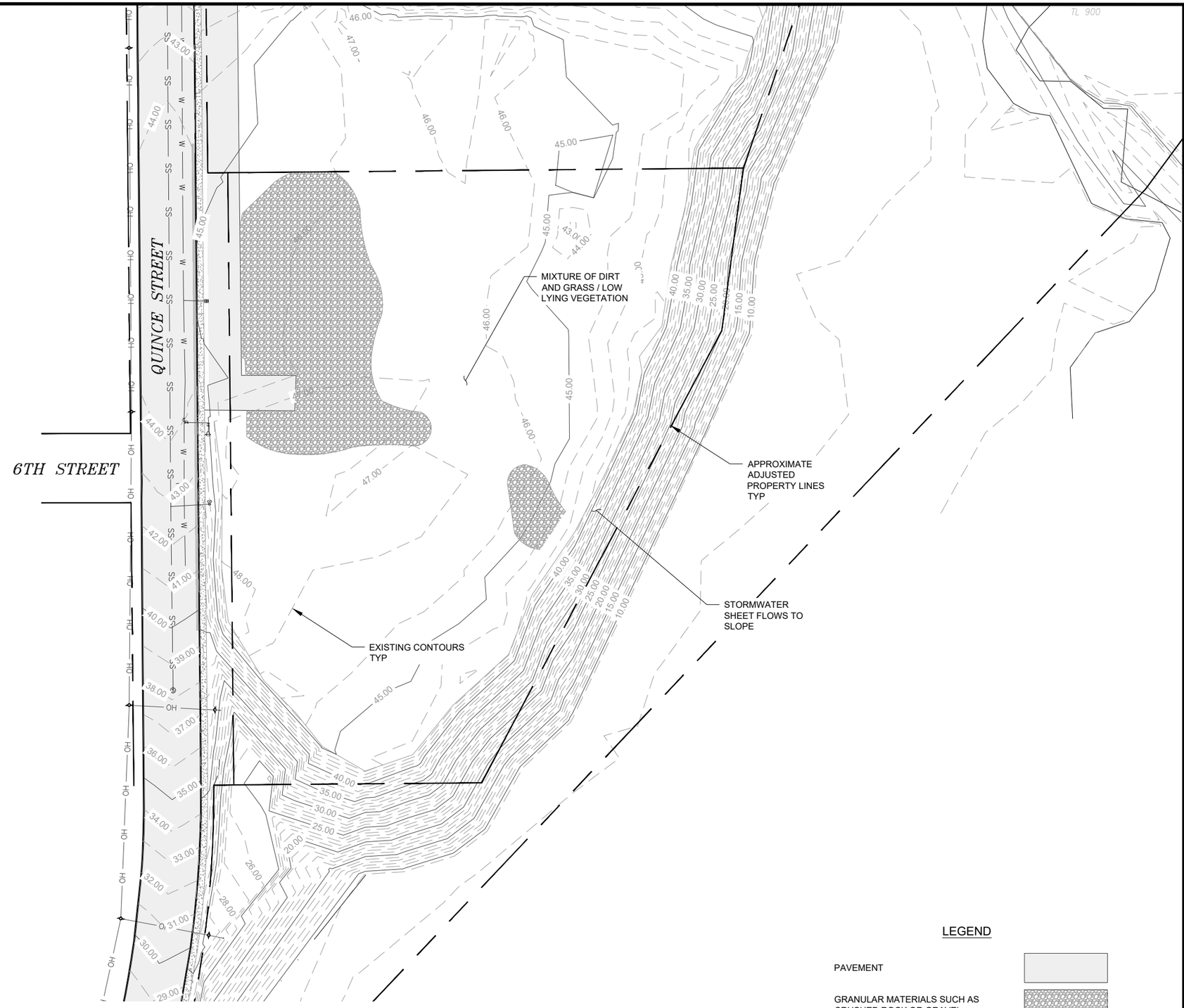
5. Stormwater Facility Details/Exhibits

Please see the attached Project Exhibits in Appendix A for a display of contours, impervious areas, and basin delineation. Please see separate landscape plans within the Land Use Submittal Package for Project Landscape Plans.

6. Operations and Maintenance Plan and O&M Form.

Please see the required O&M Form attached in Appendix D. An Operations & Maintenance Plan adhering to the requirements of Chapter 3 of the Portland Stormwater Management Manual will be submitted once land use approval is granted.

APPENDIX A: Project Exhibits



PRELIMINARY

Civil West Engineering Services, Inc.
609 SW Hurbert Street
Newport, Oregon 97365
541-266-8601
www.civilwest.com

REV.	DATE	DESCRIPTION	BY

Designed By: SDL
Drawn By: SDL
Checked By: SDL
Project No: 2204-165

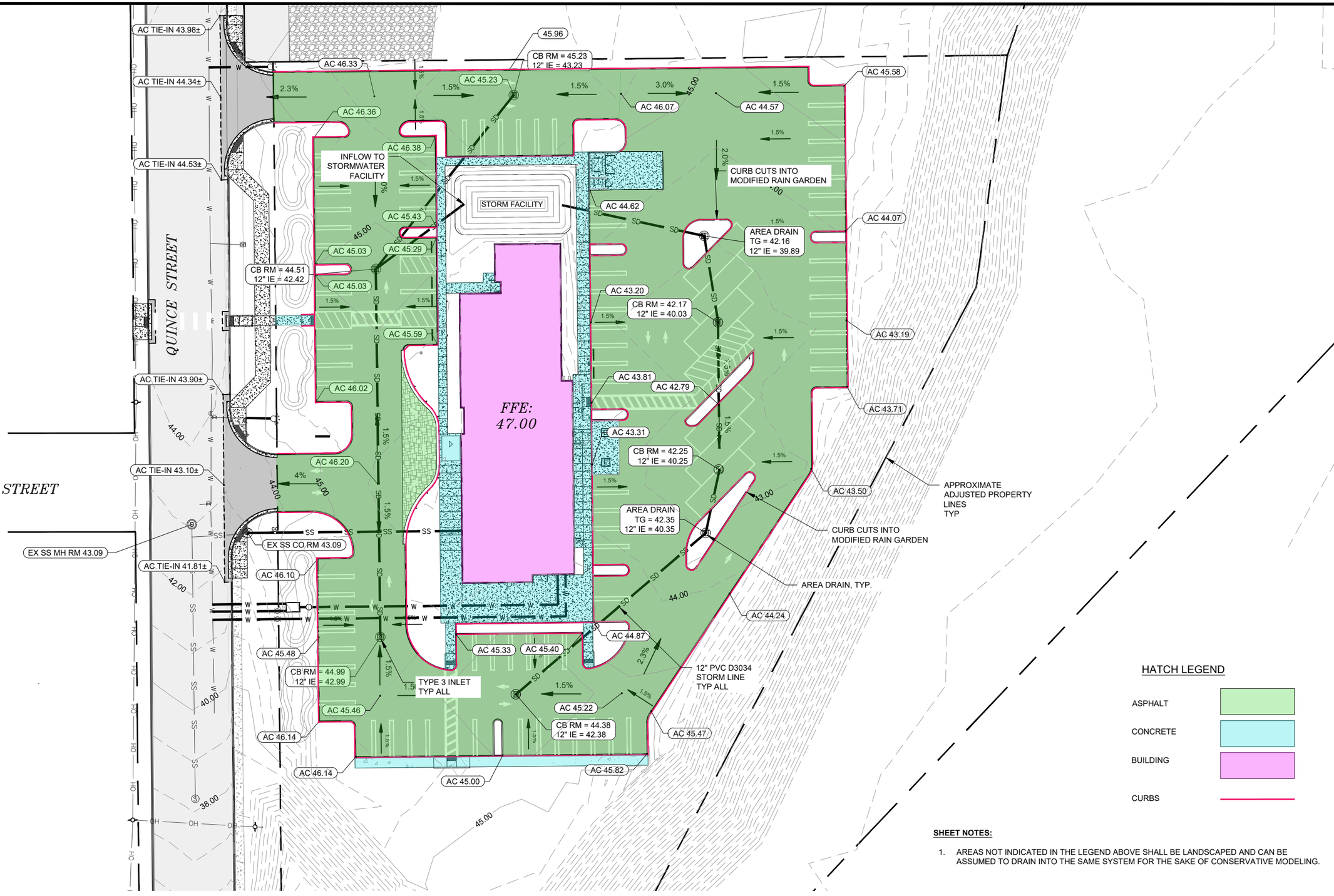
WYNDHAM MICROTEL
QUINCE ST., LANE COUNTY, FLORENCE, OR

PRELIMINARY SUBMITTAL

HYDROLOGY - PRE-DEVELOPED

Sheet No. EX 1

Date MAY 2022



PRELIMINARY

HATCH LEGEND

- ASPHALT
- CONCRETE
- BUILDING
- CURBS

SHEET NOTES:

1. AREAS NOT INDICATED IN THE LEGEND ABOVE SHALL BE LANDSCAPED AND CAN BE ASSUMED TO DRAIN INTO THE SAME SYSTEM FOR THE SAKE OF CONSERVATIVE MODELING.

PLAN SCALE
25 0 12.5 25 50
1"=50'

1 / EX 2 HYDROLOGY - DEVELOPED SITE

N

Civil West Engineering Services, Inc.
609 SW Hurbert Street
Newport, Oregon 97365
541-266-8601
www.civilwest.com

REV.	DATE	DESCRIPTION	BY

Designed By: SDL
Drawn By: SDL & CSK
Checked By: SDL
Project No: 2204-165

WYNDHAM MICROTEL
QUINCE DR., FLORENCE, LANE COUNTY, OR

PRELIMINARY SUBMITTAL

HYDROLOGY - DEVELOPED SITE

Sheet No. EX 2
Date JUNE 2022

DATE:6/1/22 FILE:O:\CW_Projects\2204 Misc Private Engineering Work\2204-165 Woodstock Architecture - Windham Microtel Florence Oregon\04 Final Design\D

APPENDIX B: Geotechnical Engineering Report

PRELIMINARY GEOTECHNICAL ENGINEERING REPORT

Proposed Microtel Inn and Suites
Tax Lots 18-12-26-33-00900 and 18-12-26-33-00901
Florence, Oregon 97439

Prepared for

Mr. Matt Braun
Braun Development Services
PO Box 13223
Portland, Oregon 97213

Prepared by

Professional Service Industries, Inc.
6032 North Cutter Circle, Suite 480
Portland, Oregon 97217

February 1, 2022

PSI Project No. 07041434

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RENEWS: 06/30/2023

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1 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

This report presents the results of PSI's geotechnical investigation performed for the proposed l Microtel Inn and Suites located on a 13.41 acre site consisting of two connecting tax lots, 18-12-26-33-00900 and 18-12-26-33-00901, east of the intersection between Quince Street and 6th Street in Florence, Oregon. A Vicinity Map of the site location is presented on Figure 1. This investigation was performed for Mr. Matt Braun of Braun Development Services in general accordance with PSI proposal number 0704-359739, dated November 23, 2021. The proposal was authorized by Mr. Braun on December 14, 2021.

1.2 PROJECT DESCRIPTION

Based on correspondence with Matt Braun of Bran Development Services, Logan Miller of SFA Design Group, and Michael Parshall of Woodblock Architecture, and the provided site information, PSI understands that an approximately 10,000 square foot four story hotel will be constructed. A storm facility to the north of the building a parking lot and associated drive lanes will be on all sides, and a pergola and an uncovered patio to the south of the building will be construed. Currently the site is undeveloped. Prior to 2009 the site was occupied with a local middle school. The site school and associated structures have been demolished but evidence of a concrete slab on grade and concrete foundations are currently visible at the ground surface. We anticipate that the majority of the structural material from the school demolition has been removed from the site.

PSI anticipates the project will consist of construction of a 3 or 4 story structure supported on shallow foundations and slab on grade floors. Structural loads were provided by Mr. Logan Miller of SFA Design Group with column loads not to exceed 50 kips,and wall loads not to exceed 3 kips per foot.. Cuts and fills at the site are expected to be less than 4 feet. Maximum depth of utilities will be less than 8 feet.

Traffic loading for associated parking and pavement areas was not provided. However, we anticipate the proposed parking and drive lanes will be paved with asphalt concrete. Should any of the above information or design basis made by PSI be inconsistent with the planned construction, it is requested that you contact us immediately to allow us to make any necessary modifications to this report. PSI will not be held responsible for changes to the project if not provided the opportunity to review the information and provide modifications to our recommendations.

2 SITE AND SUBSURFACE CONDITIONS

2.1 SITE DESCRIPTION

The property is located east of the intersection between Quince Street and 6th Street in Florence, Oregon. The site is covered mostly with grass and brush. Remnants of the concrete pad from the

school still exist along Quince Street and the asphalt parking lot is still used for parking. It is bound on the north, west, and south by commercial and residential developments. Trees and tidal flats are located to the east with Munsel Creek and the Siuslaw River approximately ¼ mile further.

2.2 TOPOGRAPHY

A review of available USGS topographic maps indicate that the site consists of an upper terrace above the Siuslaw River at an elevation of about 47 feet above mean sea level (AMSL) The ground surface slopes moderately to steeply down to a wooded area adjacent to the marsh about 45 feet below the upper terrace.

2.3 GEOLOGY

The project site is mapped as being underlain by a layer of fine sandy and silty loam over Stabilized Dunes consisting of unconsolidated fine to medium grained sand. The sand is underlain by the Tyee Formation, rhythmically bedded siltstone and sandstone layers. Alluvial deposits and Tidal flats are mapped to the east, bordering Munsel Creek. These consist of alluvial clay, silt, sand, and gravel.

2.4 SUBSURFACE CONDITIONS

PSI completed the initial field exploration for Sycan B Corp on February 22, 2021 through February 24, 2021. The supplemental explorations for Braun Development services were performed on January 4, 2022. Field activities consisted of drilling six cone penetration test (CPT) probes, two GeoProbe explorations, and three geophysical refraction-microtremor (ReMi) lines. Supplemental explorations consisted of excavating 7 test pits to depths of 5 to 8 feet.

Soils

The materials and conditions disclosed by the recent explorations are generally consistent with our previous experience and understanding of the subsurface conditions at the site. In the vicinity of the proposed building, the site is typically mantled with sandy silt topsoil and dune sand underlain by alluvial soils consisting of predominantly silt and sand to a depth of about 113 ft to 116 ft. The alluvial silt and sand are interbedded and the interbeds are often massive and indistinct. The alluvial silt and sand are underlain by medium-dense to dense sandy gravel.

For the purpose of discussion, the materials encountered in the explorations have been grouped into the following categories based on their physical characteristics and engineering properties. Listed as they were encountered from the ground surface downward, the categories are as follows:

1. **SAND**
2. **SILT**

The following paragraphs provide a detailed description of the materials encountered and a discussion of the groundwater conditions at the site.

1. **SAND.** Native sand layers were encountered at the ground surface in all 6 CPT probes and extend to depths ranging from about 33 feet to 50 ½ feet. CPT probe tip resistances indicate the relative density of the sand are generally medium dense in the upper 10 to 12 feet and dense to very dense below.
2. **SILT.** Layers of silt were encountered within the sand in both CPT- 2 and CPT- 6 at depths of 4 feet and 8 feet and extend to depths ranging from about 8 feet to 34 feet, respectively. CPT probe tip resistances indicate the relative consistency of the silt are generally very soft to stiff.

2.5 GROUNDWATER

Our review of available subsurface information from previous investigations indicates the groundwater level in the project area is about 45 feet below the ground surface, which corresponds closely to the elevation of the lower marsh area. At the time of our initial investigation, groundwater was observed at a depth of approximately 35 feet in GeoProbe explorations GP1 and GP2. at the estimated groundwater elevations at the site based on pore pressure dissipation testing in the CPT probes is provided below:

Table 1 - Summary of Pore Pressure Dissipation Test Results

CPT	Pore Dissipation calculated Groundwater Depth (feet bgs)
1	33.4
2	32.2
5	35.2
6	37.1

Fluctuations in the groundwater level should be anticipated. It is recommended that the contractor determine the groundwater levels at the time of the construction to evaluate groundwater impact on construction procedures. Discontinuous zones of perched water may also exist, or develop, within the silt layer encountered during our exploration. If groundwater conditions are found to be different from those determined in this report PSI should be notified to determine if changes to our recommendations are warranted.

2.6 LOCAL FAULTING AND SEISMIC DESIGN PARAMETERS

PSI has reviewed the USGS Quaternary Fault and Fold Database of the United States. Table 1 summarizes distance and names of the closest mapped faults within about 10 miles of the project site.

Table 2 - Summary of Published, Nearby Faults

Fault Name	Approximate Distance (miles) and Direction from the Site
Cascadia Fault and Fold Belt	6.2, southwest
Unnamed Siuslaw River Anticline	8.6, northeast

For preliminary seismic design considerations, we have assumed that a fundamental period of less than 0.5 seconds and a damping ratio of 5% are appropriate to characterize the planned structure. Based on the results of subsurface explorations, geophysical testing, and our review of geologic mapping, we recommend using soil Site Class D to evaluate the seismic design of the structure. Site coefficients and spectral acceleration parameters for structural design are provided in Table 2.

Table 3 - Seismic Design Parameters
(43.9727 °, -124.1003 °) – SITE CLASS "D"

ASCE 7-16 CODE BASED RESPONSE SPECTRUM MCER GROUND MOTION - 5% DAMPING 1% IN 50 YEARS PROBABILITY OF COLLAPSE	
S_S	1.402
S_1	0.737
MAPPED MAXIMUM CONSIDERED EARTHQUAKE SPECTRAL RESPONSE ACCELERATION PARAMETER (SITE CLASS D)	
F_A	1.0
F_V	1.7 - SEE ASCE 7-16 SECTION 11.4.8*
S_{MS}	1.682
S_{M1}	1.253 - SEE ASCE 7-16 SECTION 11.4.8*
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETER	
S_{DS}	0.935
S_{D1}	0.835 - SEE ASCE 7-16 SECTION 11.4.8*

*Factors dependent on structural design

Notes: SS = Short period (0.2 second) Mapped Spectral Acceleration
S1 = 1.0 second period Mapped Spectral Acceleration
SMS = Spectral Response adjusted for site class effects for short period = FA • SS
SM1 = Spectral Response adjusted for site class effects for 1-second period = Fv • S1
SDS = Design Spectral Response Acceleration for short period = 2/3 • SMS
SD1 = Design Spectral Response Acceleration for 1-second period =2/3 • SM1
FA = Short Period Site Coefficients
FV = Long Period Site Coefficients

2.7 LIQUEFACTION POTENTIAL

The potential for liquefaction and cyclic softening at the site was evaluated using the methods recommended by Idriss and Boulanger (I&B) 2008 and revised to Boulanger and Idriss (B&I) in 2014. For this procedure, the earthquake-induced cyclic shear stresses within the soil profile, designated by the term cyclic stress ratio (CSR), were estimated using the CPT data, earthquake magnitude distance pairs, estimated PGA values and the computer program CLIQ v3.0.3.4.

Based on our review of the 2014 USGS interactive deaggregation the Cascadia Subduction Zone (CSZ) represents the majority of the the seismic hazard at the site. For our liquefaction analysis, we considered MW 9.1 Cascadia earthquakes, and assumed a groundwater level of approximately 32 to 37 feet below the ground surface. The results of our evaluation indicate the poorly graded

sand that extend beyond a depth of about 32 feet in CPT2, 35 feet in CPT5, and 43 feet in CPT6 are susceptible to minor liquefaction during an MCE event. The silt soil encountered in CPT-6 will be subject to cyclic softening and could undergo some vertical or lateral deformation during a strong seismic event.

Our preliminary analysis indicates the potential for less than about 1 or 2 inches of seismically induced liquefaction settlement at the surface. Additional earthquake induced dry sand settlements is possible in the upper loose sands. Preliminary estimates of lateral spreading are on the order of about 6 inches based on evaluation of silt soil in CPT-6. However, we estimate that earthquake induced settlements experienced at the ground surface will be limited to dry sand settlement in the loose sands, due to the depth of the groundwater table and the unlikelihood that it would become perched in the well-drained sand at the ground surface.

2.8 TSUNAMI HAZARD

DOGAMI performed a government funded tsunami inundation assessment along the Oregon coast in 1995. In 2013, DOGAMI has performed a more thorough probabilistic assessment based on different magnitude CSZ events and prepared their findings in the "Local Source (Cascadia Subduction Zone) Tsunami Inundation Map" showing the current Tsunami Regions.

Based on the referenced map the site is located in a zone outside of Tsunami Hazard Areas based on "extra-large and large" CSZ earthquake events, correlating to magnitudes of approximately 9.0 and 9.1.

3 CONCLUSIONS AND RECOMMENDATIONS

The following preliminary geotechnical recommendations have been developed based on the subsurface conditions encountered at the site and PSI's preliminary understanding of the proposed project. In PSI's opinion, based on an evaluation of the data obtained, the proposed site is suitable for construction of the new additions, provided the geotechnical engineering recommendations in this report are followed.

The primary geotechnical related concerns at the site is the potential presence of concrete foundations and floor slab from the demolished buildings, the presence of the near surface loose sand, and the presence of over steepened sand slopes down to the lower elevation portion of the site. In this regard some over excavation and replacement of loose or disturbed sand should be anticipated, especially in the footprint of the proposed structures, in areas where the concrete foundations and floor slabs remain, or at the top of sand slope.

In addition, we recommend the geotechnical engineer to be involved in the layout of the proposed structures with respect to the slopes along the east and southern sides of the upper terrace. However, general recommendations for setbacks provided in the previous geotechnical report should be sufficient for preliminary layout planning purposes.

3.1 SITE PREPARATION

PSI recommends that construction debris, loose, soft, or otherwise unsuitable soils at the project site be stripped and removed from structural areas. Strippings will not be suitable for use as

structural fill and should be disposed of off-site or used only in landscape areas. Following stripping and prior to placement of structural fill, the exposed surface should be evaluated by a geotechnical engineer. Buried foundations, piping and utilities, if encountered, must be completely removed from below proposed building foundations and pavement areas. Should below-grade pipes remain, a risk of seepage or underground soil erosion may occur in the future.

PSI should observe the subgrade to identify any loose/soft or unsuitable areas. Any undocumented or uncontrolled fill should be completely removed, cleaned of any debris, and replaced as engineered fill. Where loose, soft or otherwise unsuitable soils are identified within structural areas of the project, these soils should be completely removed and replaced with structural fill. The Contractor should provide a contingency for the repair of loose, soft or otherwise unsuitable areas identified by the Geotechnical Engineer. Geotextile fabric or geotextile grid should be utilized to provide stabilization of the subgrade.

A proof roll using a fully loaded tandem-axle truck should be performed on finished subgrade elevations to identify any loose, soft or unsuitable areas of subgrade. Loose, soft or otherwise unsuitable soils in these areas should be over-excavated and replaced with properly placed and properly compacted structural fill.

3.2 EXCAVATION CONSIDERATIONS

Open excavations exceeding four feet are not anticipated; however, if they do occur, excavations should be performed in accordance with OSHA regulations as stated in 29 CFR Part 1926. The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor should evaluate the soil exposed in the excavations as part of the required safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified by local, state, and federal safety regulations. PSI is providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

During wet weather, earthen berms or other methods should be used to prevent runoff water from entering the excavations. The bottom of the excavations should be sloped to a collection point. Collected water within the foundation and utility trench excavations should be discharged to a suitable location outside the construction limits.

3.3 STRUCTURAL FILL MATERIALS

PSI should observe the subgrade prior to placing structural fill or structures to document the subgrade condition and stability. In areas where unsuitable soils are encountered and over excavation occurs below footings, the over excavation and structural fill should extend laterally a minimum distance that is equal to the depth of the excavation below the footing. In general, we anticipate the near surface sand soil will be suitable as structural fill.

General. All fill within building, pavement, and sidewalk areas should be placed as compacted structural fill. In areas where unsuitable soils are encountered and over excavation occurs below

footings, the over excavation and structural fill should extend laterally a minimum distance that is equal to the depth of the excavation below the footing. All structural fill materials should be compacted to at least 95% of the maximum dry density, at a moisture content within about 3% of optimum, as determined by ASTM D 1557. Coarse granular fill should be compacted until well keyed. No brush, roots, construction debris, or other deleterious material should be placed within the structural fills. The earthwork contractor's compactive effort should be evaluated on the basis of field observations, and lift thicknesses should be adjusted accordingly to meet compaction requirements. Additional information regarding specific types of fill is provided below.

Granular Fill. Imported granular fill materials should consist of sand, gravel, or fragmental rock with a maximum size on the order of 4 inches and with not more than about 5% passing the No. 200 sieve (washed analysis). Material satisfying these requirements can usually be placed during periods of wet weather. The first lift of granular fill placed over a fine-grained subgrade should be about 18 in. thick and subsequent lifts about 12 inches thick when using medium- to heavy-weight vibratory rollers. Granular structural fill should be limited to a maximum size of about 1 ½ inches when compacted with hand-operated equipment. We also recommend that lift thicknesses be limited to less than 8 inches when using hand-operated vibratory plate compactors.

Utility Trench Backfill. Utility trench backfill should consist of granular fill limited to a maximum size of about 1 ½ inches. The granular trench backfill should be compacted to at least 95% of the maximum dry density as determined by ASTM D 1557 in the upper 4 feet of the trench and to at least 90% of this density below this depth. The use of hoe-mounted vibratory plate compactors is usually most efficient for compaction of trench backfill. Lift thicknesses should be evaluated on the basis of field density tests; however, particular care should be taken when operating hoe-mounted compactors to prevent damage to the newly placed conduits. Flooding or jetting to compact the trench backfill should not be permitted. Native materials can be used for trench backfill in unimproved areas where a soft trench and future settlement of the backfill can be tolerated.

Free-Draining Fill. Free-draining material should have less than 2% passing the No. 200 sieve (washed analysis). Examples of materials that would satisfy this requirement include pea gravel and ¾ - to ¼ - inch, 1 ½ - to 3/4-inch, or 3- to 1-inch crushed rock.

3.4 FOUNDATIONS

Based on the subsurface conditions encountered, PSI anticipates that a building with four or less stories can be supported on spread footing foundations bearing on 12-inch thick section of crushed rock placed as structural fill. Based primarily on settlement considerations and minimum column and strip footing width of 3 feet and 24 -inches, respectively and minimum embedment depth of 1½ feet (deeper footing embedment's may be required to achieve adequate setback from slopes), footings established in accordance with these criteria can be designed on the basis of an allowable soil bearing pressure of 3,000 psf. This value applies to the total of dead load plus frequently and/or permanently applied live loads and can be increased by one third for the total of all loads; dead, live, and wind or seismic. If fill and/or other unsuitable soils are encountered at footing depth, the unsuitable material should be over excavated to firm subgrade material and replaced with granular structural fill. The over excavated areas should be backfilled with clean crushed rock and compacted to at least 95% of the maximum dry density as determined by ASTM

D 698 (Modified Proctor).

The total static settlement of footings designed in accordance with the recommendations presented above is estimated to be less than one inch. Differential settlements between adjacent foundation units should be less than half the total settlement across a distance of 40 feet. If the structure is not designed to accommodate these differential settlements, the use of grade beams may be considered to limit differential settlement across individual foundation elements under seismic events.

Horizontal shear forces can be resisted partially or completely by frictional forces developed between the base of spread footings and the underlying soil. The total shearing resistance between the foundation footprint and the soil can be computed as the normal force, i.e., the sum of all vertical forces (dead load plus real live load), times the coefficient of friction equal to 0.40 (ultimate value). If additional lateral resistance is required, passive earth resistance against embedded footings or walls can be computed using a pressure based on an equivalent fluid with a unit weight of 300 pcf. This design passive earth pressure assumes granular structural fill is used to backfill the footing excavation or the footings will be neat formed in situ.

3.5 FLOOR SLAB SUPPORT

PSI recommends the slab-on-grade be underlain by at least 12-inches of native sand soil removed and replaced as structural fill and capped with a minimum of 6-inch thick section of crushed angular "drain rock." The drain rock should be compacted until it is well keyed. In addition, it will be appropriate to install a durable vapor-retarding membrane beneath the slab-on-grade to limit the risk of damp floors in areas that will have moisture-sensitive materials placed directly on the floor. The vapor-retarding membrane should be installed in accordance with the manufacturer's recommendations.

In our opinion, a coefficient of subgrade reaction, k, of 150 pci can be used to characterize the support with a minimum thickness of 12-inches of "structural fill" (based on a 1x1-foot plate load). Depending on how the slab load is applied, the value should be geometrically modified. The value should be adjusted for larger areas using the following expression for cohesionless soil:

Modulus of Subgrade Reaction, for $k_s = k\left(\frac{B+1}{2B}\right)^2$ cohesionless soil,

where: k_s = coefficient of vertical subgrade reaction for loaded area;
k = coefficient of vertical subgrade reaction for 1x1 square foot area; and,
B = width of area loaded, in feet.

3.6 EMBEDDED WALL DESIGN

We anticipate embedded walls for the project will be limited to elevator pits or loadings docks with a height of less than five feet. Design lateral earth pressures against a retaining wall or other embedded structure depend on the drainage condition provided behind the wall, the geometry of the backfill slope, and the type of construction, i.e., the ability of the wall to yield. The two possible conditions regarding the ability of the wall to yield include the active and at-rest earth pressure cases. The active earth pressure case is applicable to a wall that is capable of yielding slightly away from the backfill by either sliding or rotating about its base. A conventional cantilever retaining wall is an example of a wall that can develop the active earth pressure case

by yielding. The at-rest earth pressure case is applicable to a wall that is considered to be relatively rigid and laterally supported at the top and bottom and therefore is unable to yield. The following general recommendations for embedded wall design assume the wall backfill is compacted to 90% of ASTM D 1557, and the embedded wall is fully drained, i.e., hydrostatic pressure cannot act on the wall.

Walls that are allowed to yield by tilting about their base should be designed using a lateral earth pressure based on an equivalent fluid having a unit weight of 25 pcf for horizontal backfill. Non-yielding walls should be designed using a lateral earth pressure based on an equivalent fluid having a unit weight of 45 pcf for horizontal backfill. Surcharge loads on walls should be accounted for in the structural design of the walls.

Over compaction of the backfill behind walls should be avoided. In this regard, we recommend compacting the backfill to about 90% of the maximum dry density (ASTM D 1557). Heavy compactors and large pieces of construction equipment should not operate within 5 ft of any embedded wall to avoid the buildup of excessive lateral pressures. Compaction close to the walls should be accomplished using hand-operated vibratory plate compactors.

3.7 PAVEMENT

In lieu of project-specific traffic estimates, the following pavement design recommendations are based on our past experience with similar facilities and subgrade conditions.

For automobile parking areas, we recommend a pavement section consisting of 3 in. of asphaltic concrete (AC) over 8 in. of crushed rock base (CRB). For heavy truck traffic areas, the pavement section should consist of 4 in. of AC over 12 in. of CRB. These recommended pavement sections are based on the assumption that the subgrade consists of firm, undisturbed soil or sand structural fill and that the pavements will be constructed during the dry summer months. Proof rolling should be used to evaluate pavement subgrades. Any soft areas disclosed by the proof rolling will likely require over excavation and replacement with structural fill. Some contingency should be provided for the repair of any soft areas. If pavement construction is scheduled for the wet season, it will be necessary to increase the above-recommended base course sections.

Permanent, properly installed drainage is also an essential aspect of pavement design and construction. All paved areas should have positive drainage to prevent ponding of surface water and saturation of the base course. This is particularly important in cut sections or at low points within the paved areas, such as in sunken loading dock areas or around stormwater catch basins. Effective means to prevent saturation of the base course include installing subdrain systems below sunken loading docks and weep holes in the sidewalls of catch basins.

To provide quality materials and construction practices, we recommend that the pavement work conform to the “Standard Specifications for Highway Construction” used by the Oregon Department of Transportation.

3.8 DESIGN REVIEW AND CONSTRUCTION MONITORING

After plans and specifications are complete, PSI should review the final design and specifications so that the earthwork and foundation recommendations are properly interpreted and implemented. It is considered imperative that the Geotechnical Engineer and/or their representative be present during earthwork operations and foundation installations to observe the field conditions with respect to the design assumptions and specifications. PSI will not be responsible for changes in the project design or project information it was not provided, or interpretations and field quality control observations made by others. PSI would be pleased to provide these services for this project.

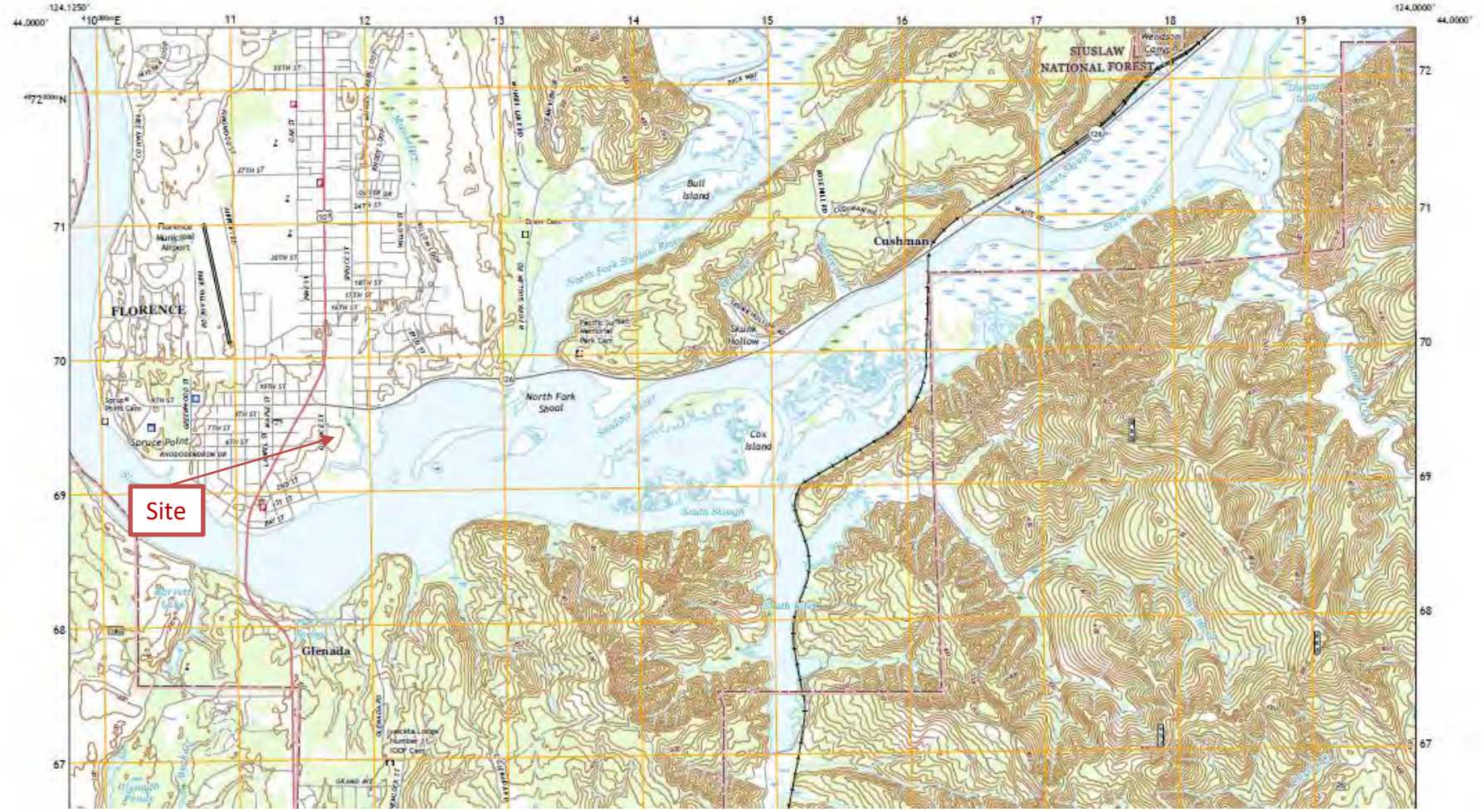
4 GEOTECHNICAL RISK AND REPORT LIMITATIONS

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the building and proposed pavement section will perform as planned. The engineering recommendations presented in the preceding sections constitute PSI's professional estimate of those measures that are necessary for the proposed building addition to perform according to the proposed design based on the information generated and referenced during this evaluation, and PSI's experience in working with these conditions.

The recommendations submitted are based on the available subsurface information obtained by PSI, and information provided by Mr.Matt Braun. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the recommendations are required. If PSI is not retained to perform these functions, PSI cannot be responsible for the impact of those conditions on the performance of the project.

The Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Mr. J. B. Jaramillo and his design consultants for the specific application to the proposed Microtel Inn and Suites located east of the intersection between Quince Street and 6th Street in Florence, Oregon.

FIGURES



USGS Florence Quadrangle Oregon - Lane County 7.5 Minute Series

intertek psi

Microtel Inn and Suites- Florence, OR	JOB NO.	7041434
Site Vicinity Map	FIGURE NO.	1

intertek psi	DATE January 31 2022	Microtel Inn and Suites Florence, OR	PSI PROJECT #: 07041434
Obtained from Google Earth	DRAWN BY: SRS	**INVESTIGATION LOCATION PLAN**	**FIGURE 2**

APPENDIX A

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATION PROGRAM

PSI completed the original field exploration of the project site on February 22, 2021, through February 24, 2021, using a track-mounted rig owned and operated by Oregon Geotechnical Exploration, Inc. of Kaiser, Oregon. The scope of the exploration included completion of six CPT probes and two direct push probes at the site. The CPT probes were designated CPT1 through CPT6 and the direct push probes were designated GP1 and GP2.

The supplemental explorations were conducted on January 4, 2022, using a tracked excavator provided by Dan J. Fisher Excavating, Inc. of Forest Grove, Oregon. The scope included the completion of seven test pits designated TP1 through TP7. The exploration locations were located in the field by PSI using handheld GPS. These exploration locations are presented on Figure 2. PSI notified Oregon's Utility Notification to locate public underground utilities and a Private Utility Locator to locate any potential private utilities in the vicinity of the proposed exploration locations prior to commencing the field activities.

Table 1 – Investigation Depths

Boring	Proposed Depth (feet)	Completion/Refusal Depth (feet)
CPT1	100	36.4*
CPT2	100	37.1*
CPT3	50	32.9*
CPT4	50	33.5*
CPT5	100	49.2*
CPT6	50	50.5*
GP1	20	38.5*
GP2	20	38.5*
TP1	10	5½**
TP2	10	8**
TP3	10	8**
TP4	10	8**
TP5	10	8**
TP6	10	7**
TP7	10	8**

* Refusal
**Caving

A representative from PSI's office observed the explorations and prepared borings logs of the conditions encountered. It should be noted that the subsurface conditions presented on the boring logs are representative of the conditions at the specific locations drilled. Variations may occur and should be expected across the site. The soil morphology represents the approximate boundary between subsurface materials and the transitions may be gradual and indistinct. Elevations referenced were obtained from the National Map developed by the United States Geological Survey (USGS) and should be considered approximations.

Infiltration Testing Procedure and Results

Based on the provided site plan, we understand that an infiltration facility is proposed in the northern portion of the site.

PSI performed a falling-head infiltration tests in general accordance with the EPA Design Manual, Onsite Wastewater Treatment and Disposal Systems, Table 3-8 Falling Head Percolation Test Procedure. Test pit TP-1 was excavated to a depth of 5 feet bgs and a 6-inch outside diameter pipe was set in the pit. The pipe was pushed down by the excavator bucket approximately 8 inches. At each infiltration location, the pipe was filled with between one to two feet of water a total of four times and the falling water level was recorded a various time interval during the test. Results of the infiltration testing are summarized below:

Table 1 – Field Infiltration Test Results

Infiltration Test	Duration (minutes)	Head (inches)	Average Infiltration Rate (inches/hour)
1	13	12.5	57
2	10	12	72
3	13	13	60
4	11	12.5	68

Please note that the infiltration rates shown above are measured rates and do not include a factor of safety. PSI recommends that a factor of safety of at least 2 be applied to this rate for design of infiltration systems.

Seismic Cone Penetration Test with Pore-Pressure Readings (SCPTu)

SCPTu is an in-situ testing method used to determine the geotechnical engineering properties of soils and to delineate soil lithology. SCPTu data is used in the analysis and design of foundations. SCPTu probing is a fast and cost-effective method for identifying subsurface soil types and evaluating the engineering properties of soils. The SCPTu records are presented in Appendix A.

During an SCPTu sounding, the electric cone (tip angle 60°, section area 10 cm^2) and the sounding rods are pushed continuously into the ground. Intermittent measurements of the cone resistance (q_t) and sleeve friction (f_s) are measured and recorded by the electric cone while it is being pushed into the ground.

The measurements from a SCPTu can be used to correlate a multitude of geotechnical parameters, including:

- Undrained shear strength (s_u)
- Effective friction angle (ϕ', degree)
- Coefficient of consolidation (C_v, cm^2/sec)
- Overconsolidation Ratio (OCR)

The results of the measured and correlated data are used in various geotechnical analyses, including soil behavior type, soil bearing capacity, estimated settlement, liquefaction settlement, lateral spread, foundation-design criteria, slope stability, and seismic site class.

Pore Pressure Dissipation Tests

Pore Pressure Dissipation Tests (PPDTs) were conducted at various intervals to measure equilibrium water pressure at the time of the SCPTu sounding. As the conditions are assumed to be hydrostatic, the equilibrium water pressure can be used to determine the approximate depth of the groundwater table. A PPDT is conducted when penetration is halted at specific intervals determined by the field representative. The variation of the penetration pore pressure (u) with time is measured using a piezometer fitted between the cone and the sleeve and recorded. Pore Pressure Dissipation Tests are provided below.

Downhole Shear Wave Velocity Measurements

Down hole shear wave velocity measurements were made while advancing each of the probes. This test consists of generating a shear wave by striking a hammer equipped with a trigger on a source beam located on the ground surface under the outrigger of the cone rig. The seismic cone consists of a piezocone unit with a receiver above it. The seismic cone penetrometer is pushed into the ground and penetration is stopped at 1-meter intervals. During the pause in penetration, a shear wave is generated at the ground surface and the time required for the shear wave to reach the seismometer in the cone penetrometer is recorded. The shear wave velocity measurements are used with elastic theory to estimate the mass density of the soil layers. Shear wave velocity measurements are provided below.

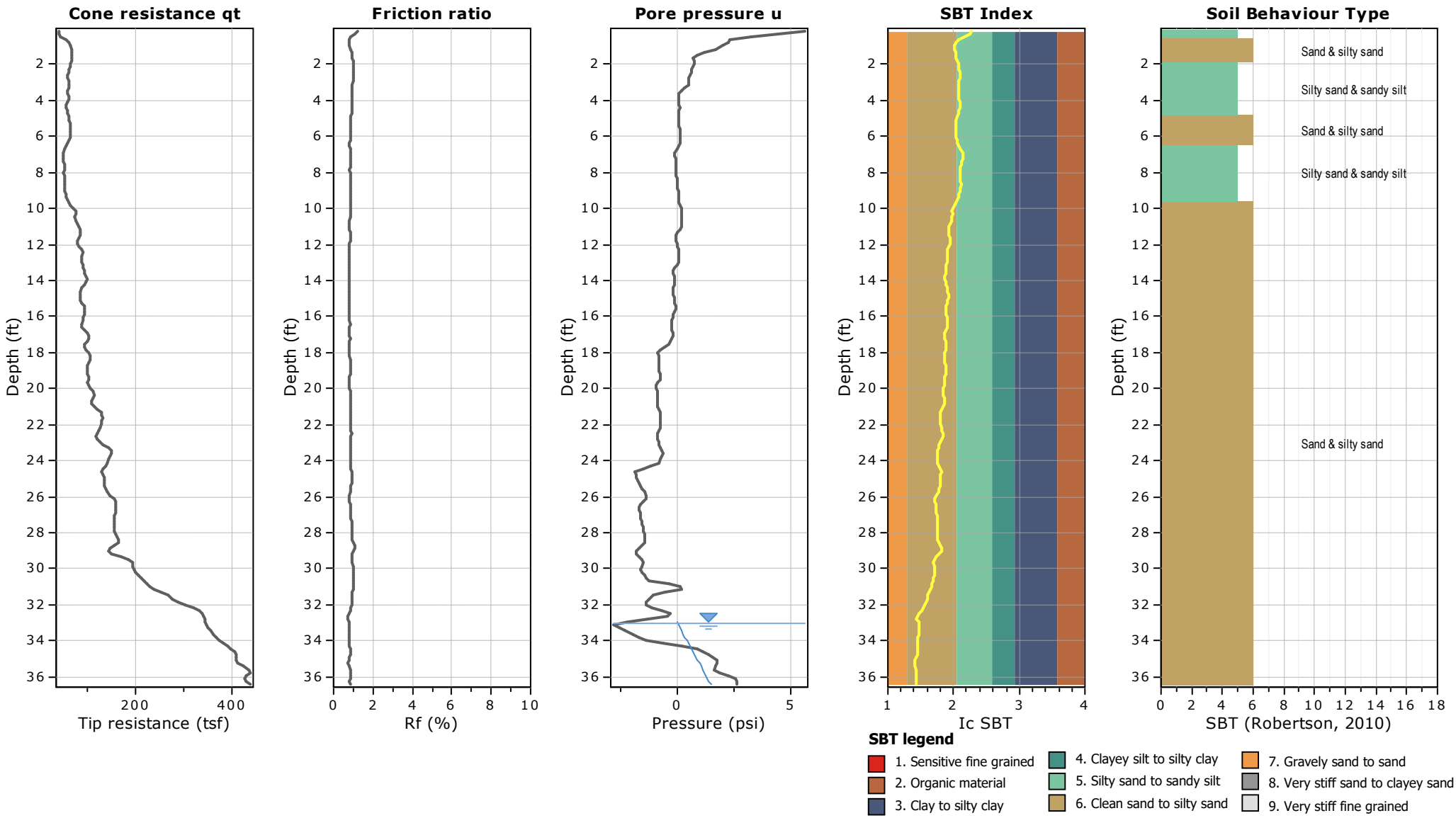
Field Classification

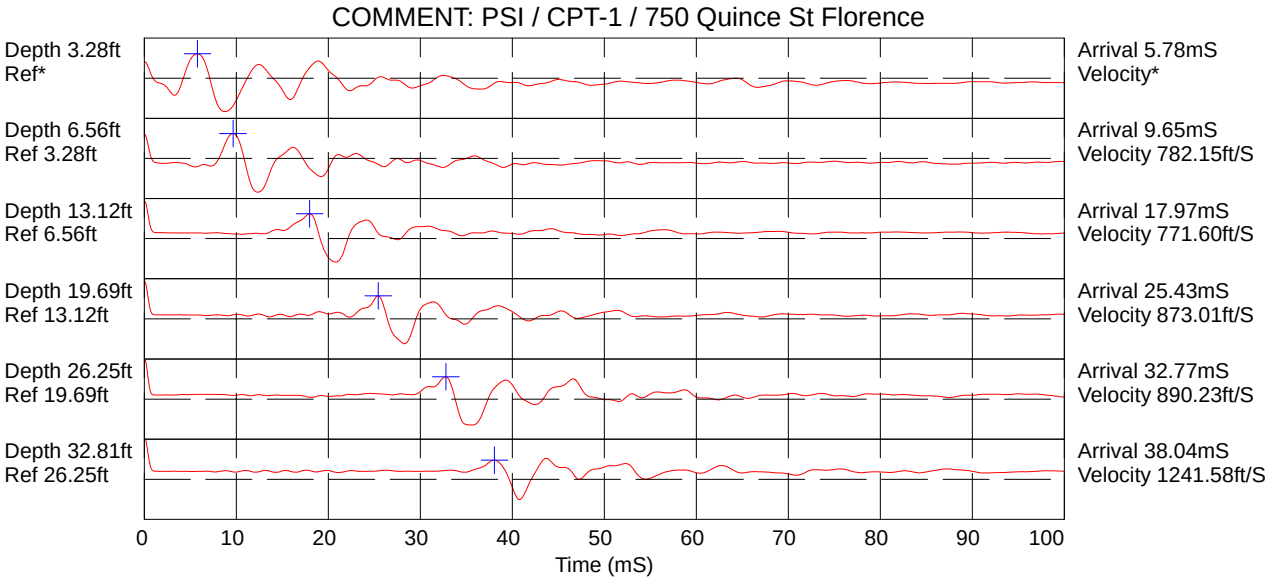
Soil samples were initially classified visually in the field. Consistency, color, relative moisture, degree of plasticity, and other distinguishing characteristics of the soil samples were noted. The terminology used in the soil classifications and other modifiers are depicted in the General Notes and Soil Classification Chart.

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

CPT: 21020 CPT-1 Text File
Total depth: 36.42 ft, Date: 2/23/2021
Surface Elevation: 47.00 ft
Coords: X:43.97, Y:-124.10
Cone Type: Vertek
Cone Operator: Oregon Geotechnical Explorations

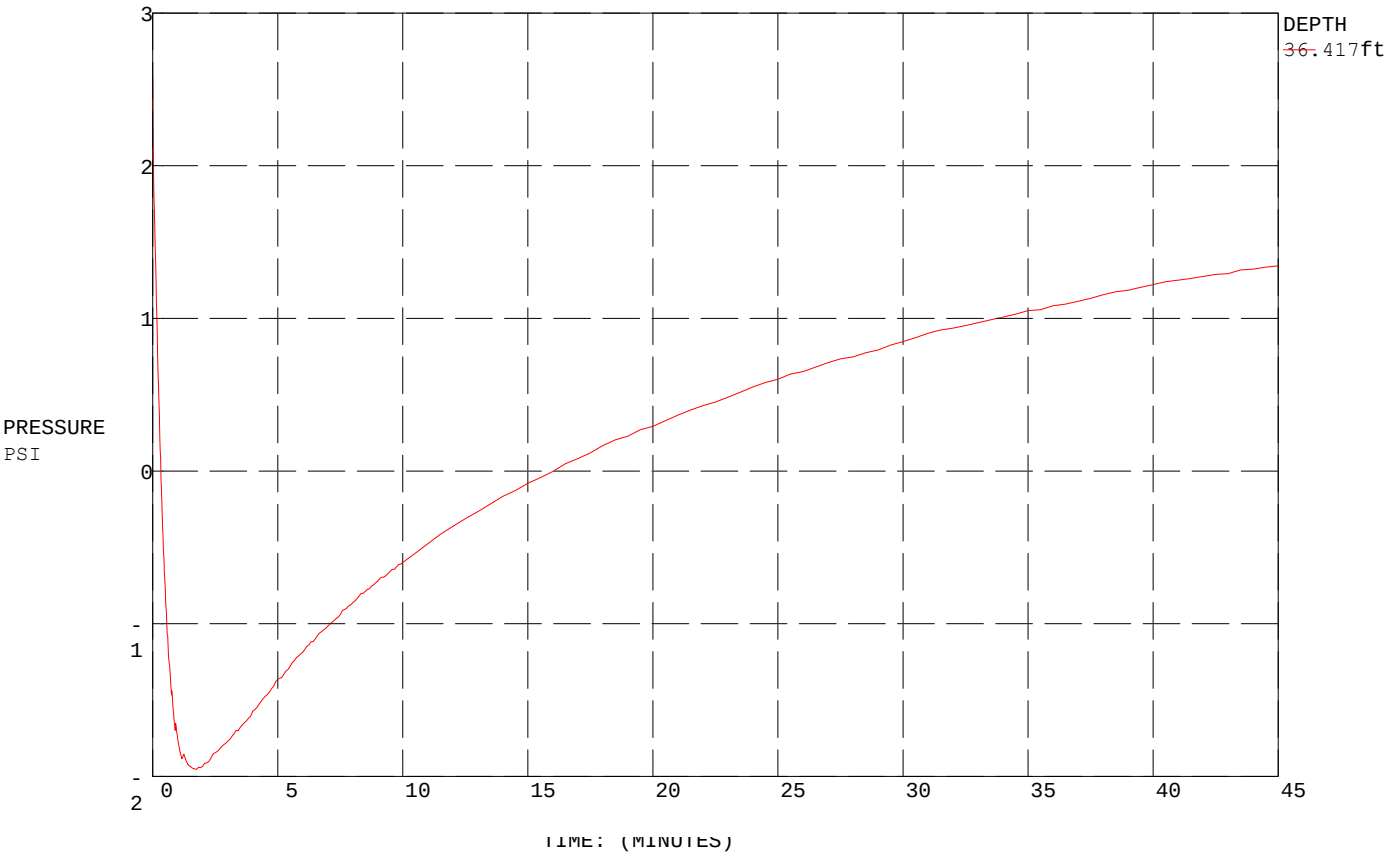
Project: **Microtel Inn and Suites - 07041434**
Location: **43.9727, -124.1003**





Hammer to Rod String Distance (ft): 1.97
* = Not Determine

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-1 SHEAR WAVE VELOCITY MEASUREMENTS**	**FIGURE A2**
	Drawn By: SRS		



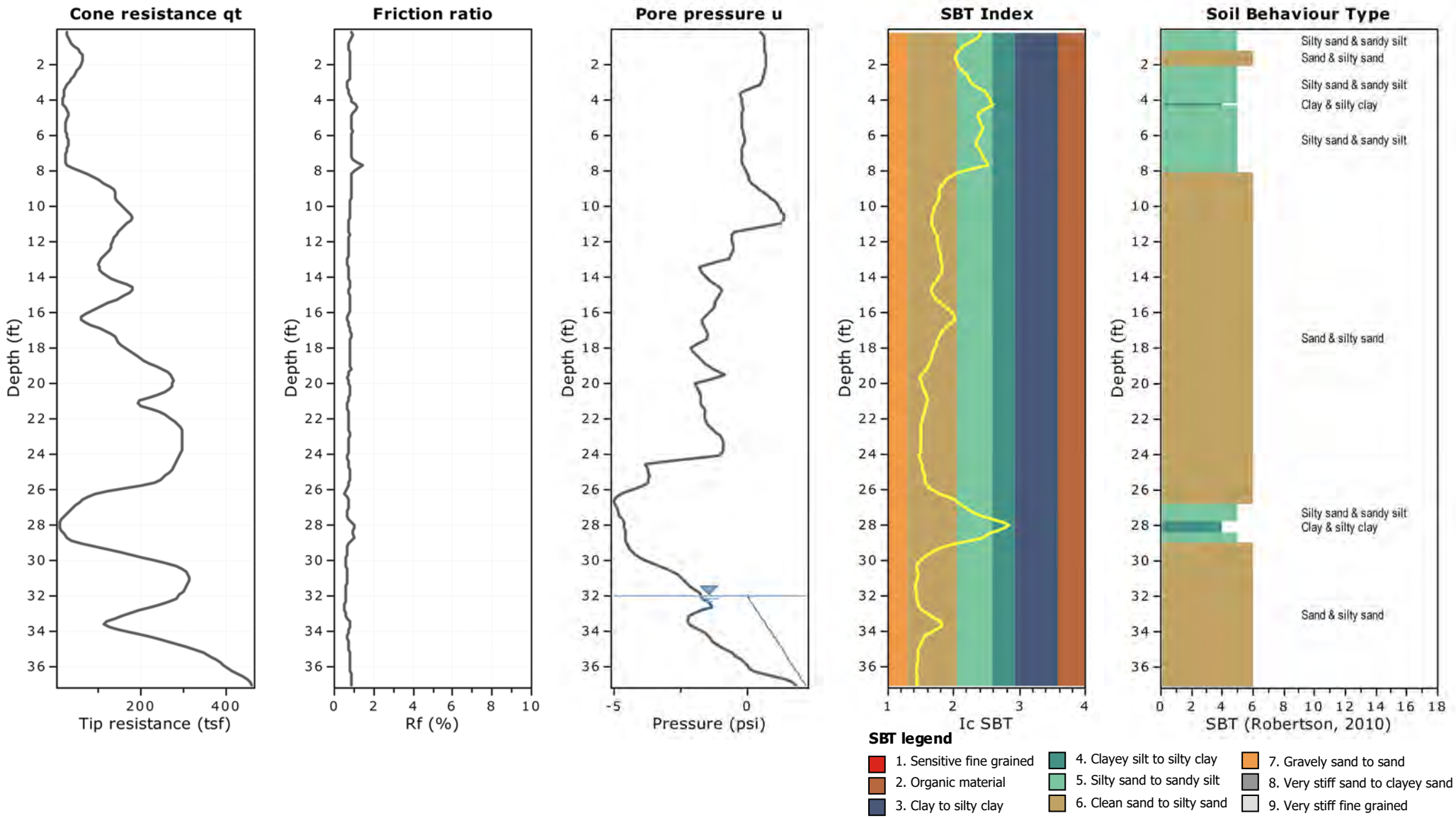
MAXIMUM PRESSURE = 2.582 (PSI)
HYDROSTATIC PRESSURE = 1.499 (PSI), WATER TABLE: 32.96 ft

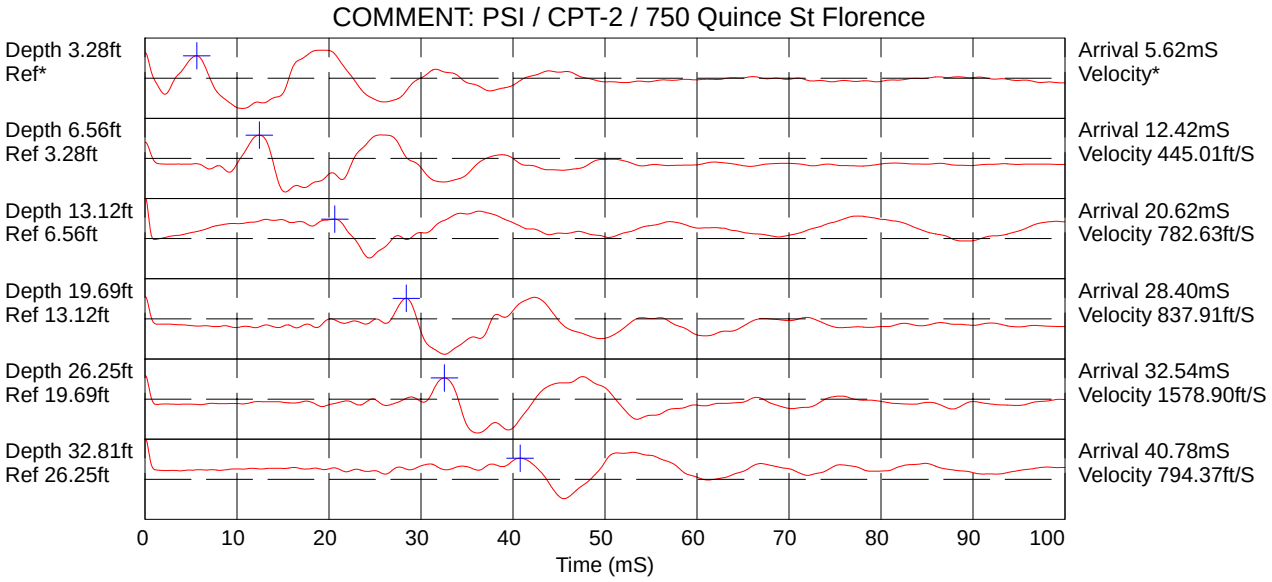
intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-1 PORE PRESSURE DISSAPATION MEASUREMENTS**	**FIGURE A3**
	Drawn By: SRS		

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

Project: Microtel Inn and Suites - 07041434
Location: 43.9727, -124.1003

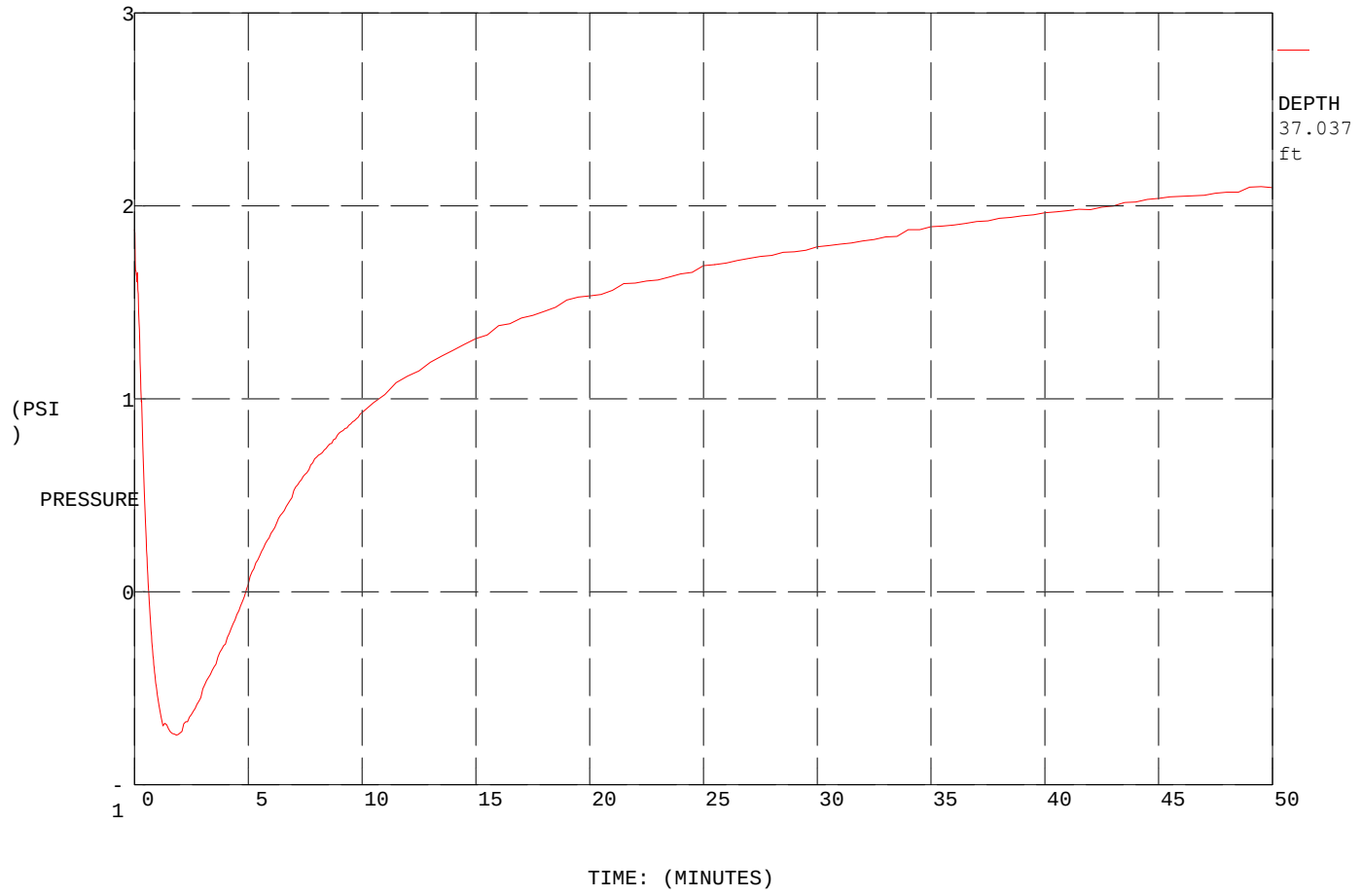
CPT: 21020 CPT-2 Text File
Total depth: 37.07 ft, Date: 2/23/2021
Surface Elevation: 44.00 ft
Coords: X:43.97, Y:-124.10
Cone Type: Vertek
Cone Operator: Oregon Geotechnical Explorations





Hammer to Rod String Distance (ft): 1.97
* = Not Determine

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-2 SHEAR WAVE VELOCITY MEASUREMENTS**	**FIGURE A5**
	Drawn By: SRS		



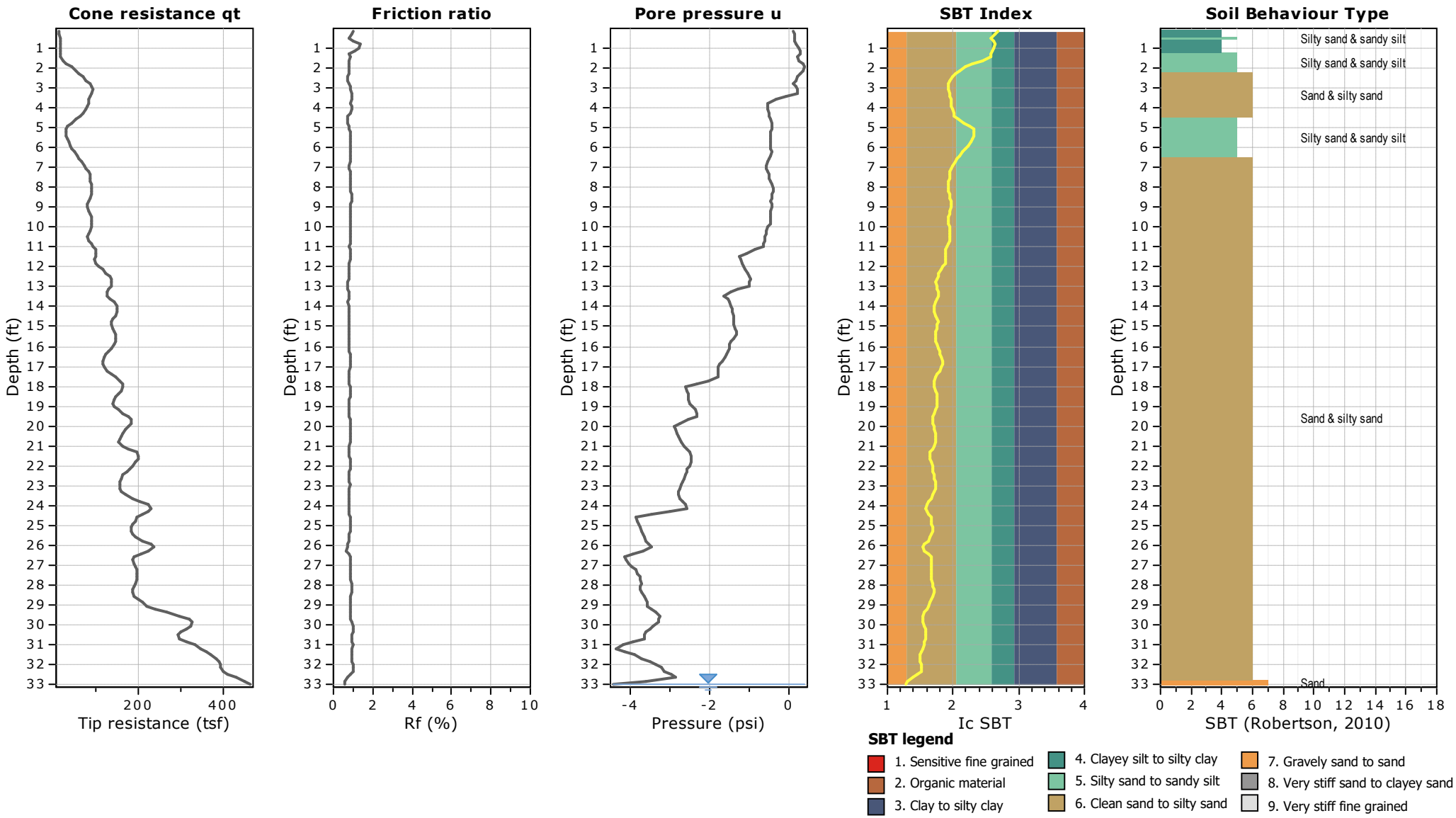
MAXIMUM PRESSURE = 2.1 (PSI)
HYDROSTATIC PRESSURE = 2.15 (PSI), WATER TABLE: 32.11 ft

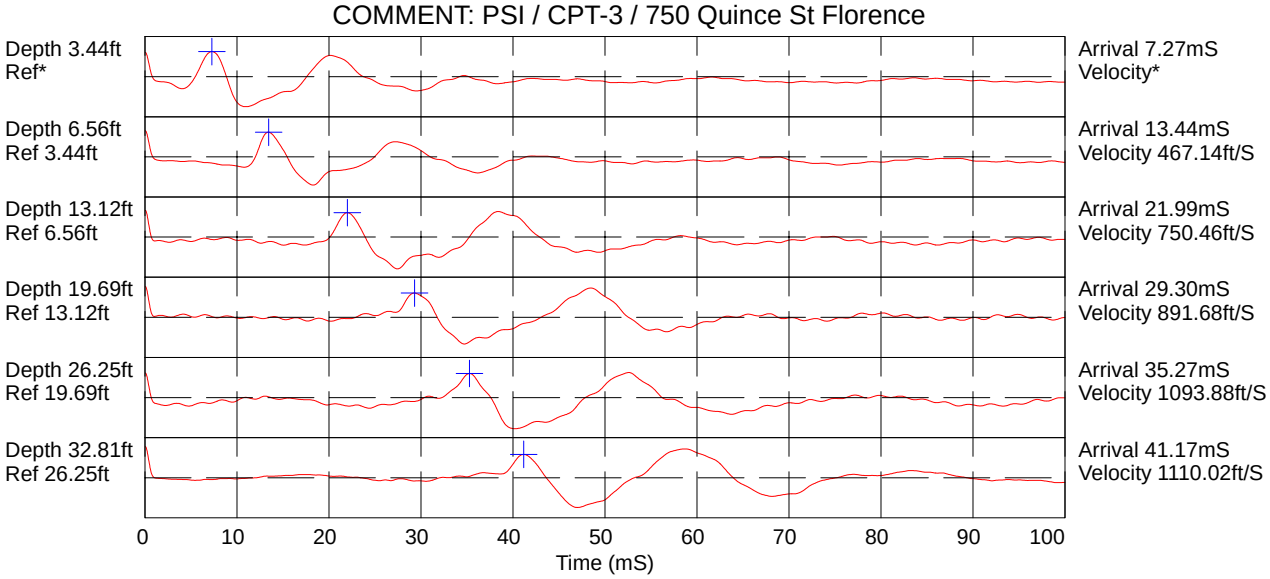
intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-2 PORE PRESSURE DISSAPATION MEASUREMENTS**	**FIGURE A6**
	Drawn By: SRS		

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

Project: Microtel Inn and Suites - 07041434
Location: 43.9727, -124.1003

CPT: 21020 CPT-3 Text File
Total depth: 32.97 ft, Date: 2/23/2021
Surface Elevation: 47.00 ft
Coords: X:43.97, Y:-124.10
Cone Type: Vertek
Cone Operator: Oregon Geotechnical Explorations

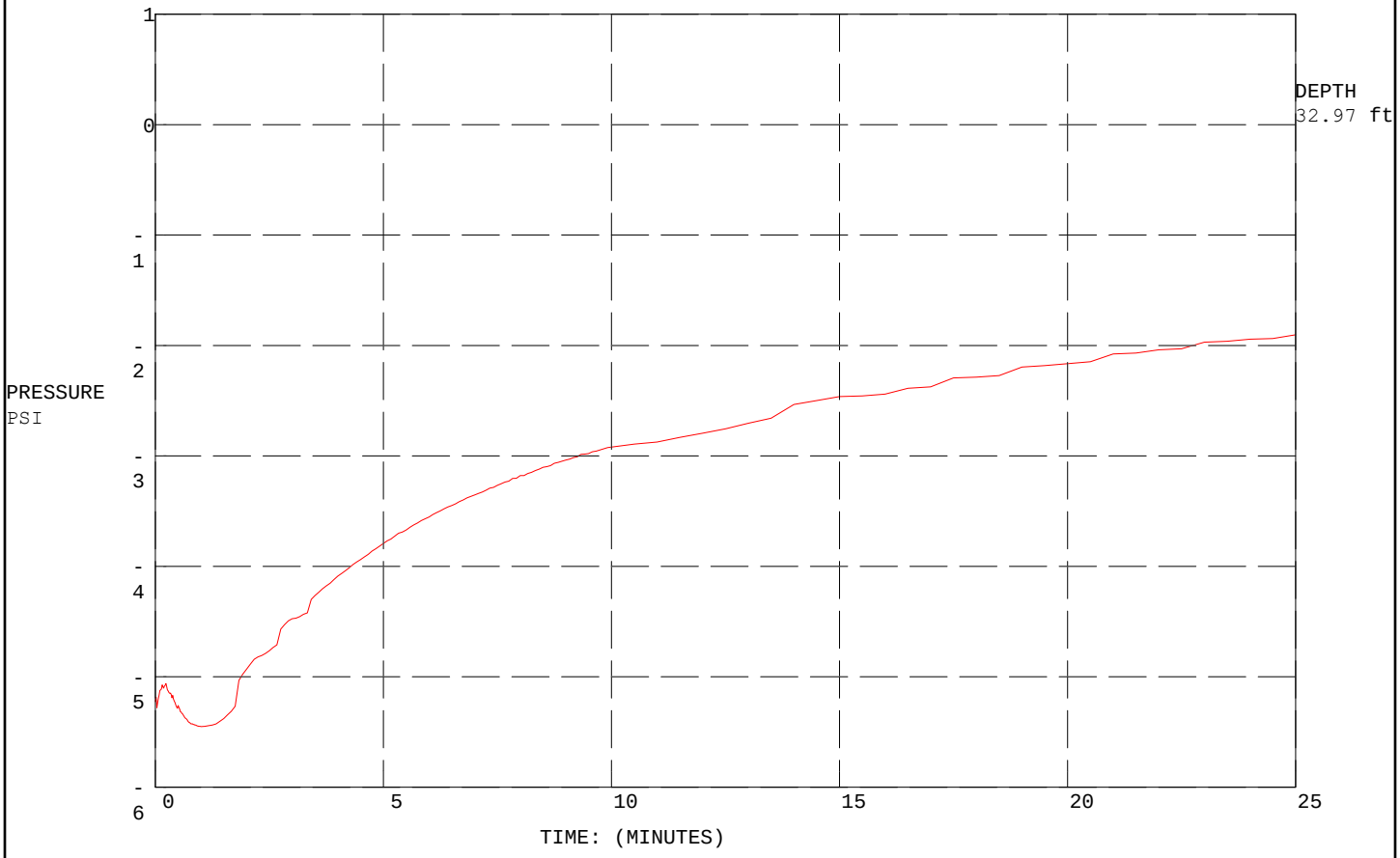




Hammer to Rod String Distance (ft): 1.97
* = Not Determine

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-3 SHEAR WAVE VELOCITY MEASUREMENTS**	**FIGURE A8**
	Drawn By: SRS		

COMMENT: PSI / CPT-3 / 750 Quince St Florence



MAXIMUM PRESSURE = -1.903 (PSI)

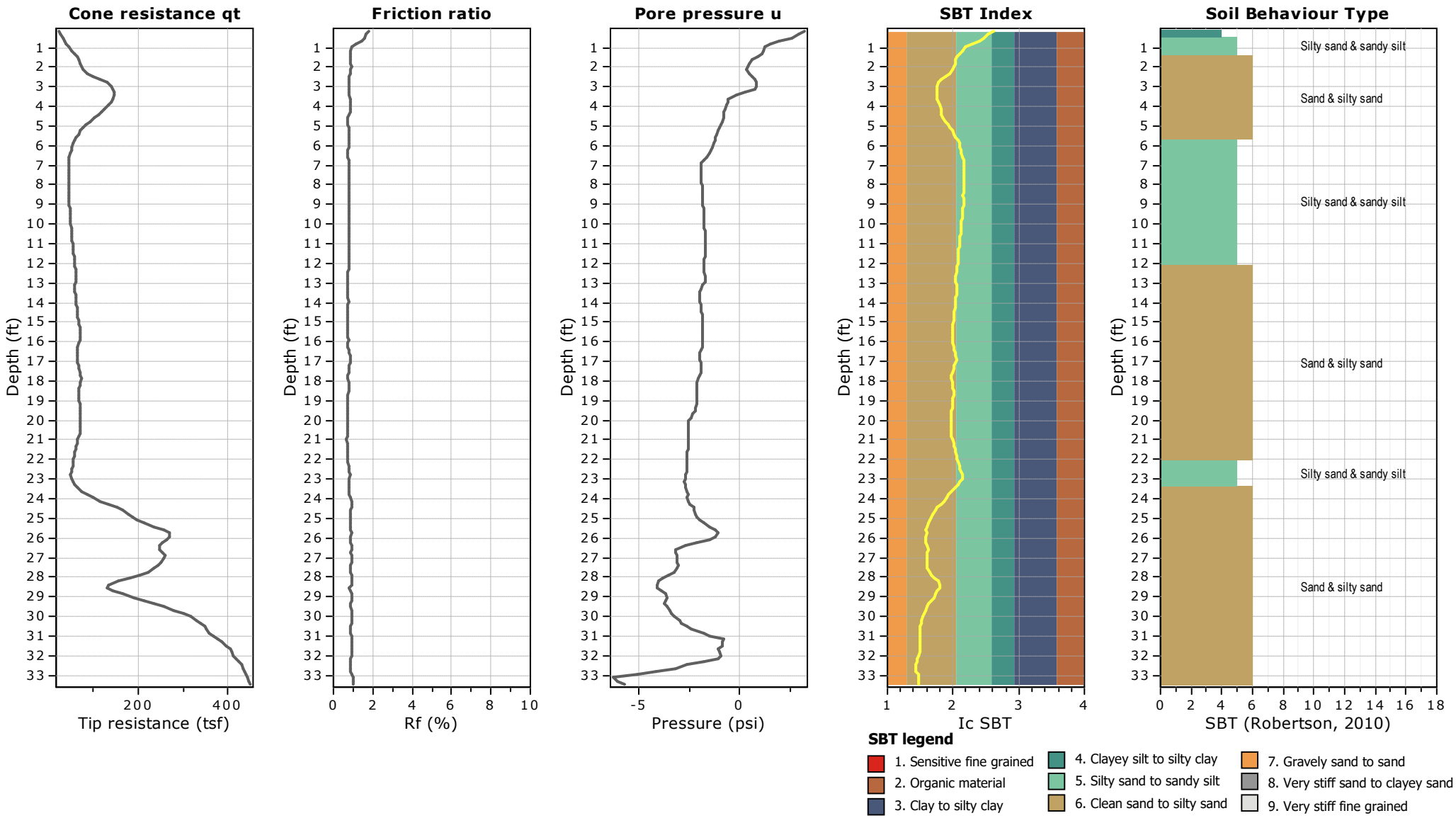
HYDROSTATIC PRESSURE = 0.0 (PSI), WATER TABLE: 33.14 ft

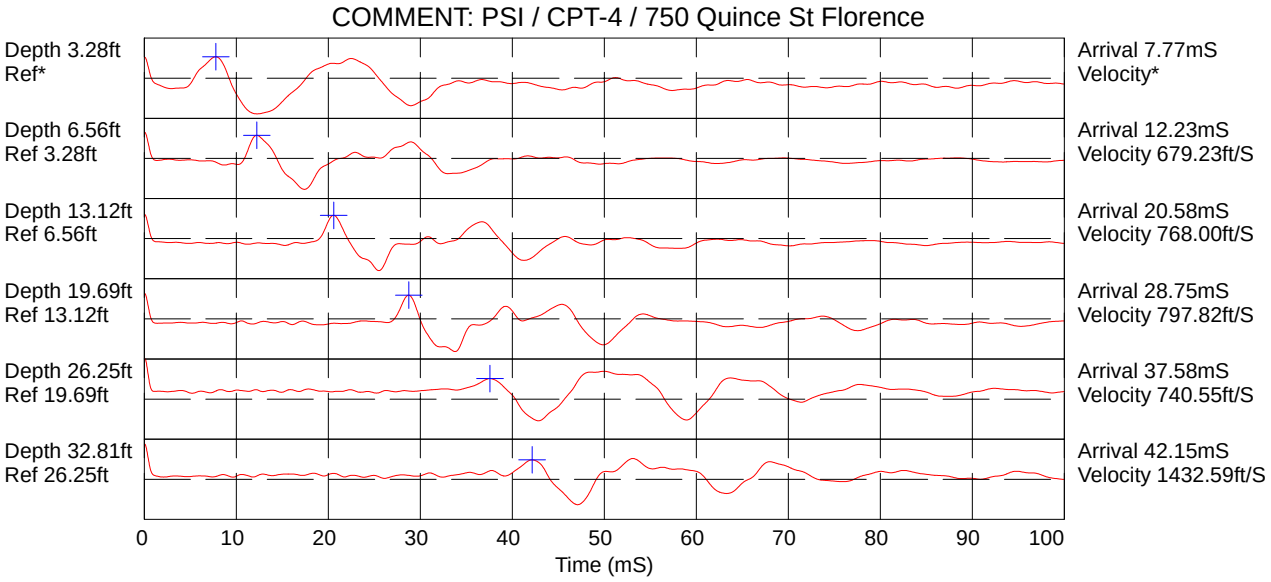
intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-3 PORE PRESSURE DISSAPATION MEASUREMENTS**	**FIGURE A9**
	Drawn By: SRS		

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

Project: Microtel Inn and Suites - 07041434
Location: 43.9727, -124.1003

CPT: 21020 CPT-4 Text File
Total depth: 33.47 ft, Date: 2/23/2021
Surface Elevation: 47.00 ft
Coords: X:43.97, Y:-124.10
Cone Type: Vertek
Cone Operator: Oregon Geotechnical Explorations

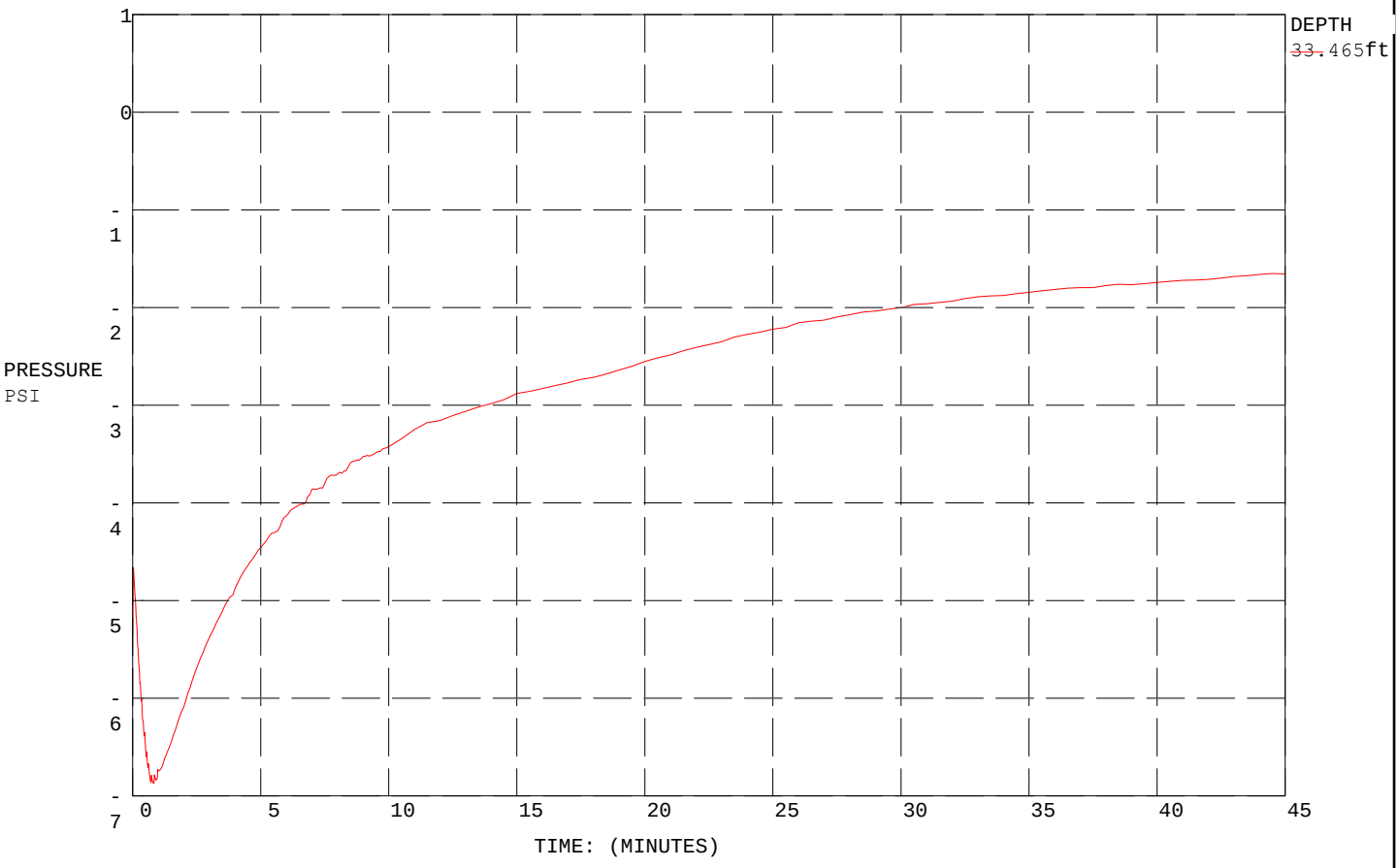




Hammer to Rod String Distance (ft): 1.97
* = Not Determine

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-4 SHEAR WAVE VELOCITY MEASUREMENTS**	**FIGURE A11**
	Drawn By: SRS		

COMMENT: PSI / CPT-4 / 750 Quince St Florence



MAXIMUM PRESSURE = -1.653 (PSI)

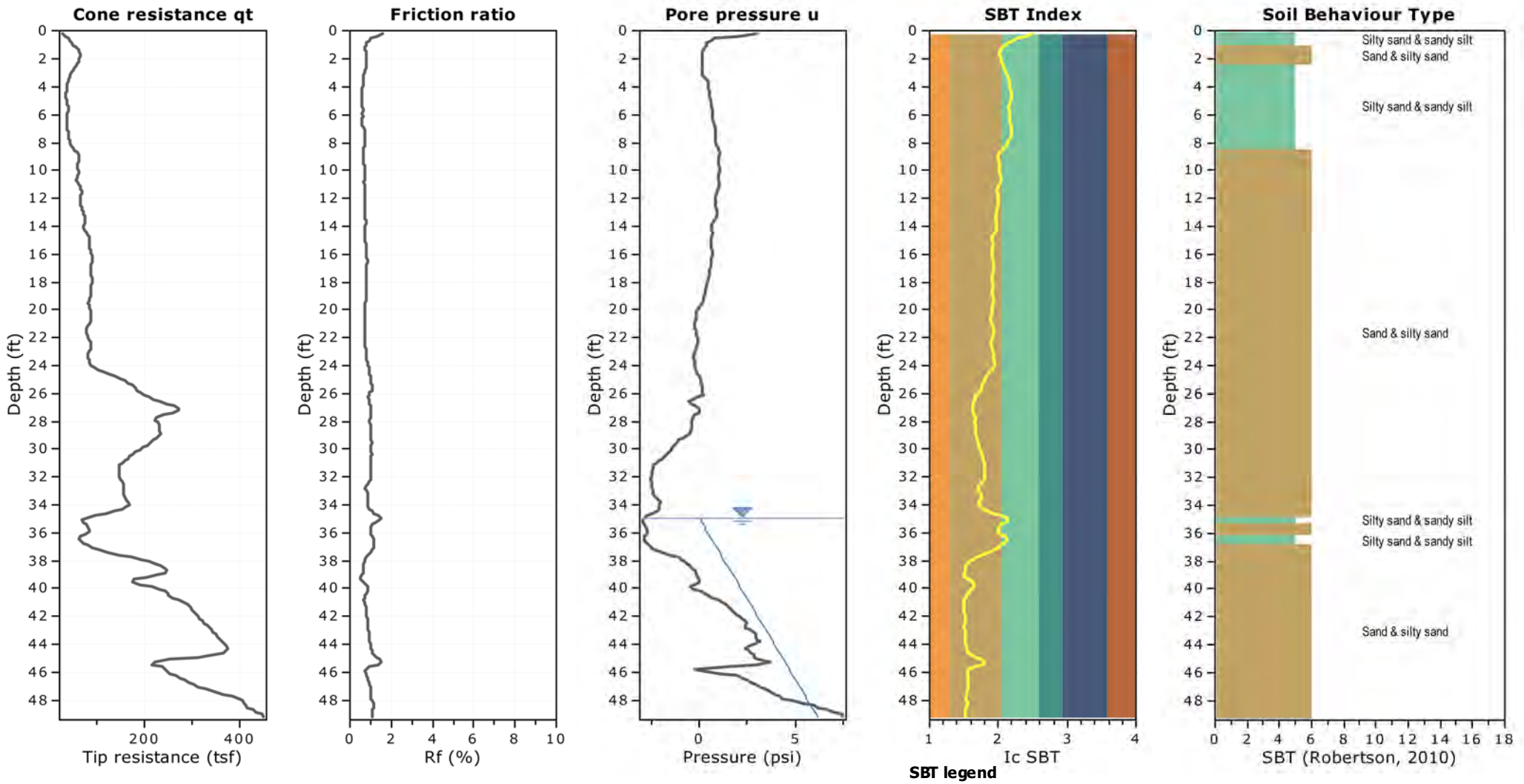
HYDROSTATIC PRESSURE = 0.0 (PSI), WATER TABLE: 35.01 ft

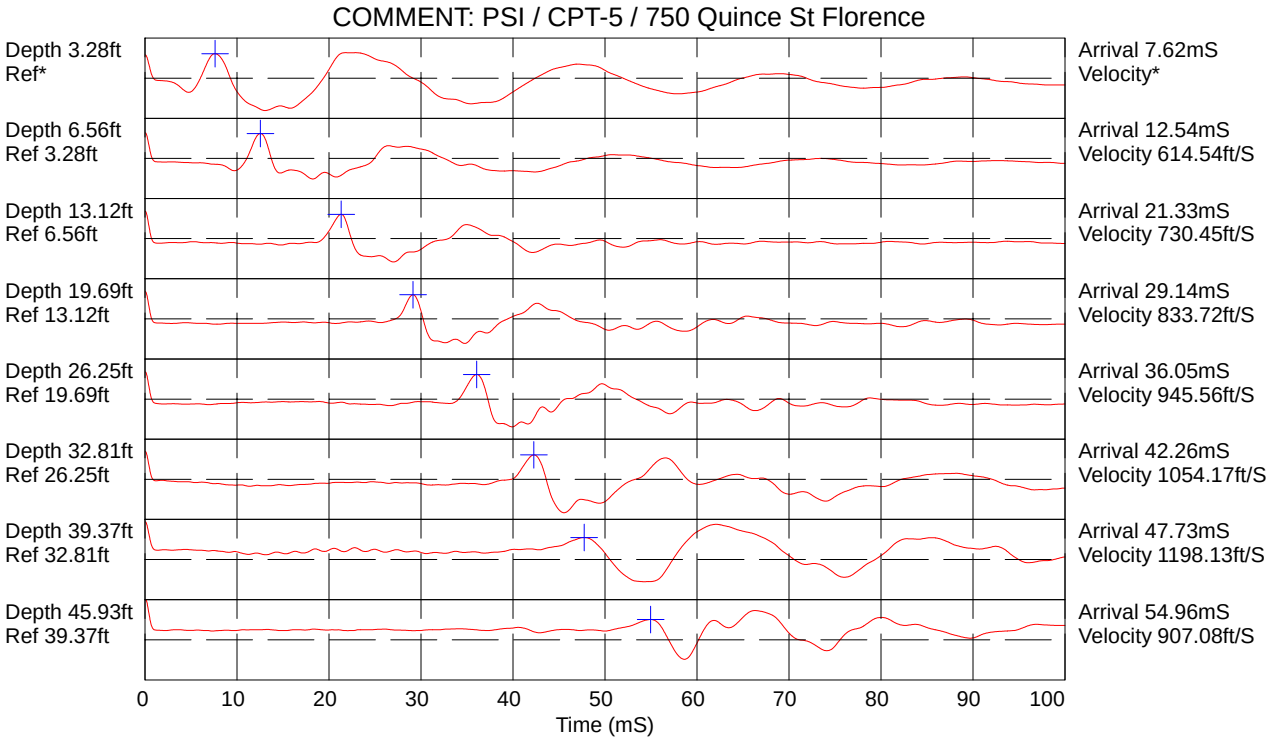
intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021 Drawn By: SRS	**CPT-4 PORE PRESSURE DISSAPATION MEASUREMENTS**	**FIGURE A12**

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

CPT: 21020 CPT-5 Text File
Total depth: 49.21 ft, Date: 2/23/2021
Surface Elevation: 47.00 ft
Coords: X:43.97, Y:-124.10
Cone Type: Vertek
Cone Operator: Oregon Geotechnical Explorations

Project: Microtel Inn and Suites - 07041434
Location: 43.9727, -124.1003

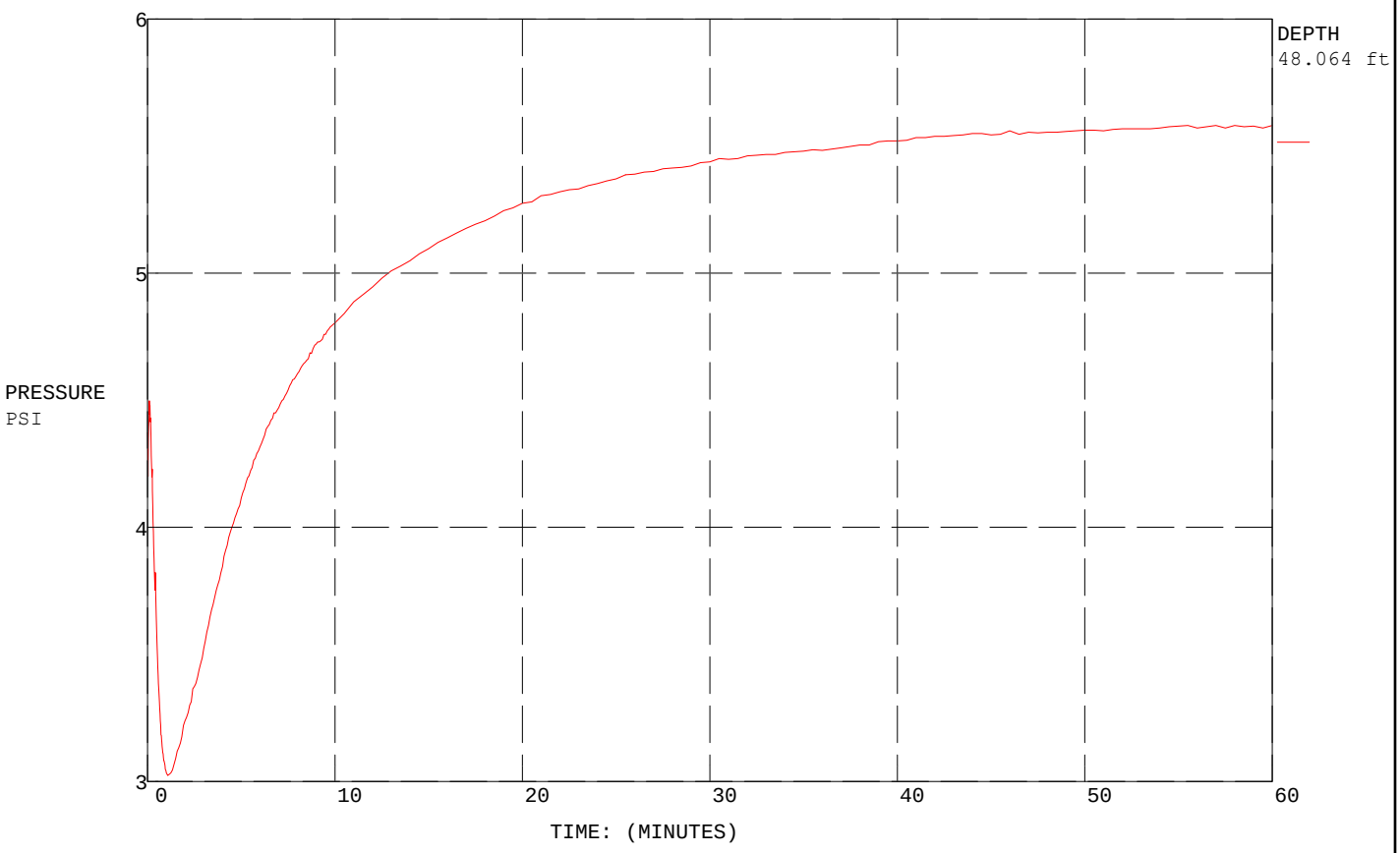




Hammer to Rod String Distance (ft): 1.97
* = Not Determine

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-5SHEAR WAVE VELOCITY MEASUREMENTS**	**FIGURE A14**
	Drawn By: SRS		

COMMENT: PSI / CPT-5 / 750 Quince St Florence



MAXIMUM PRESSURE = 5.581 (PSI)

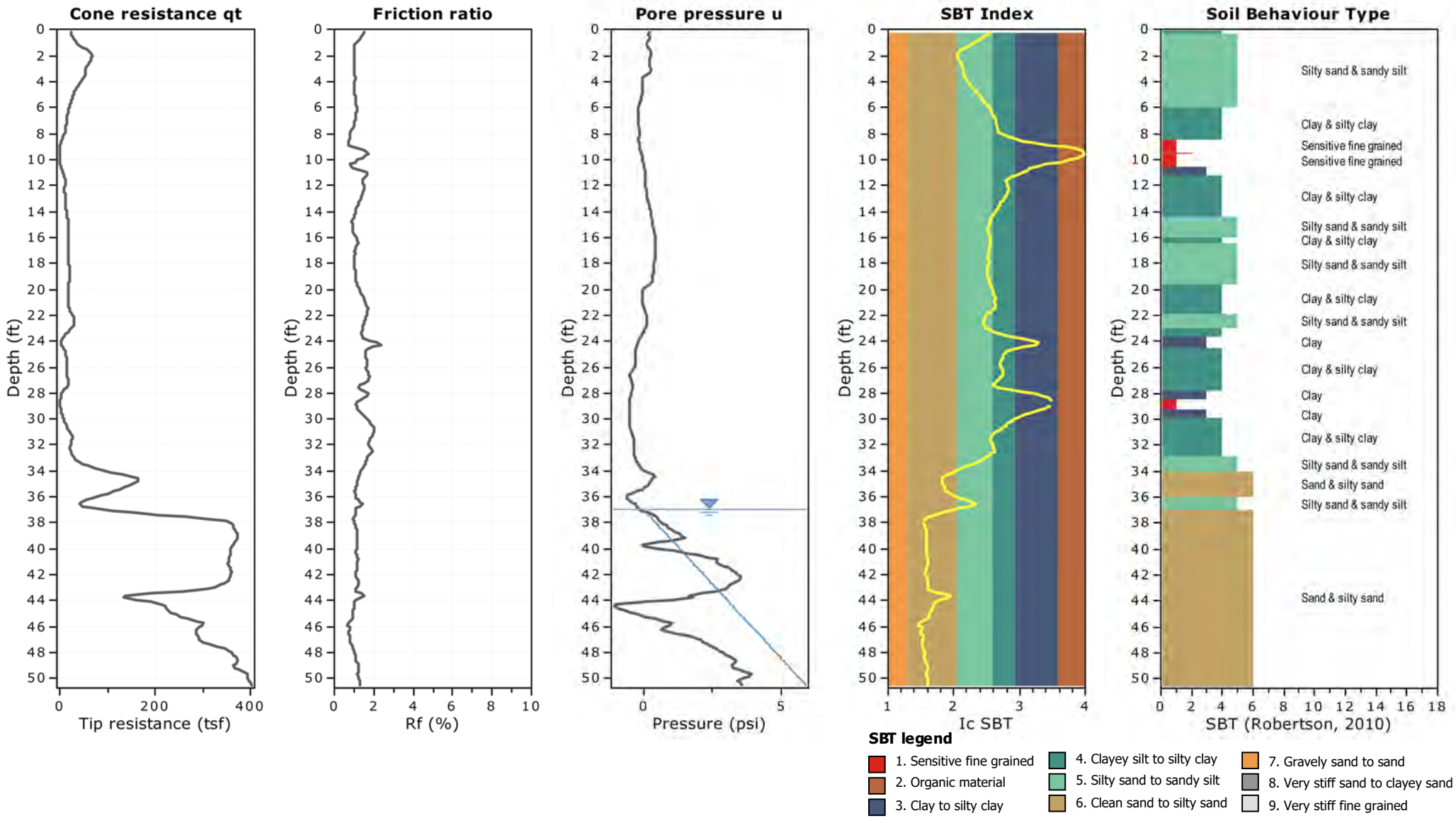
HYDROSTATIC PRESSURE = 5.584 (PSI), WATER TABLE: 35.18 ft

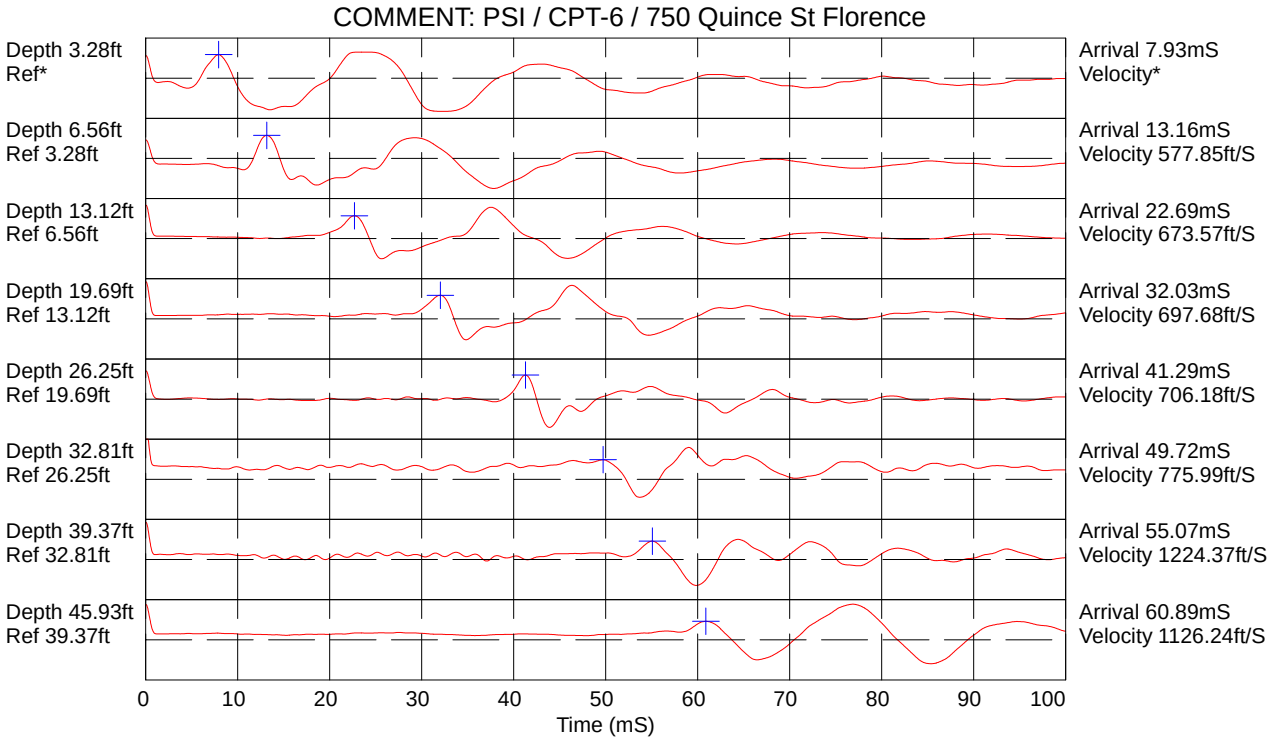
intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-5 PORE PRESSURE DISSAPATION MEASUREMENTS**	**FIGURE A15**
	Drawn By: SRS		

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

CPT: 21020 CPT-6 Text File
Total depth: 50.53 ft, Date: 2/23/2021
Surface Elevation: 47.00 ft
Coords: X:43.97, Y:121.10
Cone Type: Vertek
Cone Operator: Oregon Geotechnical Explorations

Project: Microtel Inn and Suites - 07041434
Location: 43.9727, -124.1003

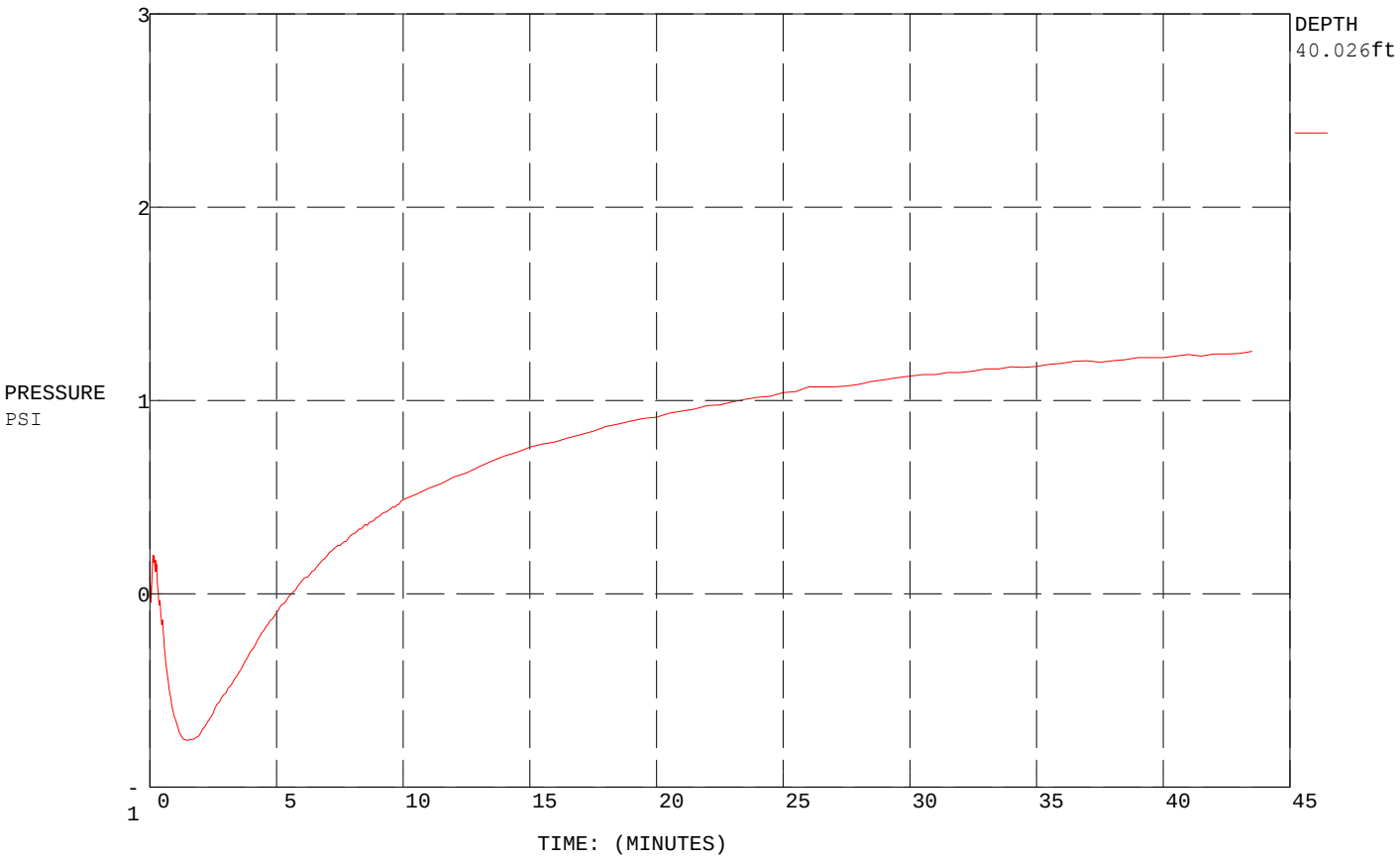




Hammer to Rod String Distance (ft): 1.97
* = Not Determine

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021 Drawn By: SRS	**CPT-6 SHEAR WAVE VELOCITY MEASUREMENTS**	**FIGURE A17**

COMMENT: PSI / CPT-6 / 750 Quince St Florence



MAXIMUM PRESSURE = 1.254 (PSI)

HYDROSTATIC PRESSURE = 1.297 (PSI), WATER TABLE: 37.03 ft

intertek psi	Project No. 07041434	**Microtel Inn and Suites Florence, Oregon**	
6032 North Cutter Circle, Suite 480 Portland, Oregon 97217	March 2021	**CPT-6 PORE PRESSURE DISSAPATION MEASUREMENTS**	**FIGURE A18**
	Drawn By: SRS		

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.
HSA: Hollow Stem Auger - typically 3¼" or 4¼ I.D. openings, except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry
R.C.: Diamond Bit Core Sampler
H.A.: Hand Auger
P.A.: Power Auger - Handheld motorized auger

SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
RC: Rock Core
TC: Texas Cone
BS: Bulk Sample
PM: Pressuremeter
CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N_{60}: A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q_u: Unconfined compressive strength, TSF
Q_p: Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL),%
DD: Dry unit weight, pcf
▼,▽,⧩ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (¾ in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to ¾ in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

Q_U - TSF	N - Blows/foot	Consistency
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

Description	Criteria
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term	% Dry Weight
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

Description	Criteria
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided:	Fracture planes appear polished or glossy, sometimes striated
Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed:	Inclusion of small pockets of different soils
Layer:	Inclusion greater than 3 inches thick (75 mm)
Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

Q_U - TSF	Consistency
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

Description	Criteria
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

Voids	Void Diameter
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)

Component	Size Range
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

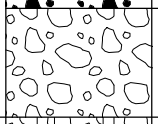
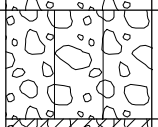
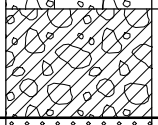
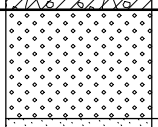
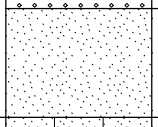
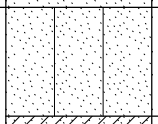
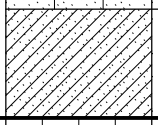
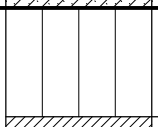
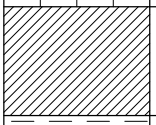
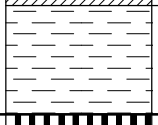
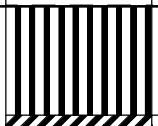
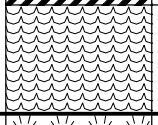
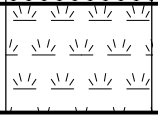
Rock Mass Description	RQD Value
Excellent	90 -100
Good	75 - 90
Fair	50 - 75
Poor	25 -50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

BORING GP-1

DATE STARTED:	2/23/20	**DRILL COMPANY:**	Oregon Geotechnical Exploration, Inc
DATE COMPLETED:	2/23/20	**DRILLER:**	Dom
COMPLETION DEPTH	45.0 ft	**LOGGED BY:**	Staci Shub
BENCHMARK:	N/A	**DRILL RIG:**	GeoProbe Rig
ELEVATION:	47 ft	**DRILLING METHOD:**	GeoProbe
LATITUDE:	43.972804°	**SAMPLING METHOD:**	GP
LONGITUDE:	-124.100541°	**HAMMER TYPE:**	Automatic
STATION:	N/A	**EFFICIENCY**	N/A
OFFSET:	N/A	**REVIEWED BY:**	SRS

REMARKS:

Water

While Drilling	35	feet
Upon Completion	35	feet
Delay	N/A	

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	Additional Remarks
47	0	1		**Approximately 4 inches of grassy Topsoil**	Topsoil	46	Gradation: Fines = 25%
45	2	2		Light brown to brown, moist, **Well graded silty SAND**, fine to coarse grained, trace black staining	SM	4	
	5	3		Gray to light brown, moist, **Poorly graded SAND**, fine to medium grained, trace intermitten silt lenses		7	Gradation: Fines = 5%
40		4				8	
	10	5				6	
35		6				6	Gradation: Fines = 1%
	15	7				7	Gradation: Fines = 0%
30		8		Black staining and trace orange and gray mottling below 18 feet bgs		6	
	20	9			SP	6	
25	25	10				5	
20							
	30						
15		11				6	Gradation: Fines = 0%
	35	12		Wet below 35 feet bgs		18	Gradation: Fines = 3%
10							
	40			Geoprobe terminated at 38.5 due to refusal on very dense sand			
5							
	45						

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture ✕ 0 25 50
PL ◪
LL ✚
STRENGTH, tsf
Qu ▲ 0 2.0 4.0
Qp ✳

intertek psi

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97219
Telephone: (503) 289-1778

PROJECT NO.:	07041434
PROJECT:	Microtell Inn and Suites
LOCATION:	750 Quince Street
	Florence, Oregon

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING GP-2

DATE STARTED:	2/23/20	**DRILL COMPANY:**	Oregon Geotechnical Exploration, Inc
DATE COMPLETED:	2/23/20	**DRILLER:**	Dom
COMPLETION DEPTH	45.0 ft	**LOGGED BY:**	Staci Shub
BENCHMARK:	N/A	**DRILL RIG:**	GeoProbe Rig
ELEVATION:	47 ft	**DRILLING METHOD:**	GeoProbe
LATITUDE:	43.972073°	**SAMPLING METHOD:**	GP
LONGITUDE:	-124.100257°	**HAMMER TYPE:**	Automatic
STATION:	N/A	**EFFICIENCY**	N/A
OFFSET:	N/A	**REVIEWED BY:**	SRS

REMARKS:

Water

While Drilling	35	feet
Upon Completion	35	feet
Delay	N/A	

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Moisture, %	Additional Remarks
47	0	1		**Approximately 4 inches of grassy Topsoil**	Topsoil	45	Gradation: Fines =28%
45	2	2		Light brown to brown, moist, **Poorly graded silty SAND** , fine to medium grained, trace black staining and organge mottling	SM	5	Fines = 0% Gradation:
	5			Gray to light brown, moist, **Poorly graded SAND**, fine to medium grained, trace intermitten silt lenses			
40		3				9	
	10	4				6	
35							
	15	5				5	
30				Black staining and trace orange and gray mottling below 18 feet bgs			
	20	6			SP	5	Gradation: Fines = 1%
25		7				5	
	25	8				5	Gradation: Fines = 1%
20							
	30	9				7	Gradation: Fines = 1%
15				Light gray to gray below 32 feet bgs			
	35	10		Wet below 35 feet bgs		17	Gradation: Fines = 0%
10							
	40			Geoprobe terminated at 38.5 due to refusal on very dense sand			
5							
	45						

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture ✕ PL ◪ LL ✚
0 25 50
STRENGTH, tsf
Qu ▲ Qp ✳
0 2.0 4.0

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LOG OF TP1

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture × PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
	0					**Approximately 4 inches of grassy Topsoil**	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt, trace black staining					
	2								19	×	Fines=7%
	2			1							>>◎
44	3						SP				
	4										
42	5										
	5			2							>>◎
						Test pit terminated at approximately 5 feet bgs					

Completion Depth: 5.5 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9727°
Longitude: -124.1005°
Excavation Equipment: Excavator
Remarks:

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LOG OF TP2

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture ✕ PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
						Approximately 4 inches of grassy Topsoil	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt, trace black and orange staining					
	2										
44	3			1			SP			>>◎	
	4										
42	5										
	6			2						>>◎	
40	7										
	8					Test pit terminated at approximately 8 feet bgs due to caving					

Completion Depth: 8.0 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9727°
Longitude: -124.0998°
Excavation Equipment: Excavator
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

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LOG OF TP3

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture ✕ PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
	0					**Approximately 4 inches of grassy Topsoil**	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt, trace black and orange staining					
	2			1						>>◎	
44	3						SP				
	4										
42	5										
	6			2						>>◎	
40	7										
	8			3		Test pit terminated at approximately 7 feet bgs due to caving				>>◎	

Completion Depth: 8.0 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9724°
Longitude: -124.0998°
Excavation Equipment: Excavator
Remarks:

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LOG OF TP4

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture × PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
	0					**Approximately 4 inches of grassy Topsoil**	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt, trace black staining					
	2										
44	3			1			SP		26	×	>>◎Fines=0.2%
	4										
42	5			2					20	×	>>◎Fines=0.2%
	6										
40	7			3							>>◎
	8					Test pit terminated at approximately 8 feet bgs due to caving					

Completion Depth: 8.0 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9721°
Longitude: -124.1°
Excavation Equipment: Excavator
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97219
Telephone: (503) 289-1778
Fax: (503) 289-1918

LOG OF TP5

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture ✕ PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
						Approximately 4 inches of grassy Topsoil	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt, trace black staining					
	2										
44	3						SP				
	4										
42	5										
	6										
				1					8	✕	>>@Fines=0.3%
						Test pit terminated at approximately 6 feet bgs due to caving					

Completion Depth: 6.0 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9718°
Longitude: -124.1003°
Excavation Equipment: Excavator
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

intertek psi
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6032 N. Cutter Circle, Suite 480
Portland, OR 97219
Telephone: (503) 289-1778
Fax: (503) 289-1918

LOG OF TP6

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture ✕ PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
						Approximately 4 inches of grassy Topsoil	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt and gravel, trace black staining					
	2					No gravel observed below 1.5 feet					
44	3										
	4						SP				
42	5								12	✕	>>◎Fines=0.2%
	6			1							
				2							>>◎
40	7					Test pit terminated at approximately 7 feet bgs due to caving					

Completion Depth: 7.0 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9721°
Longitude: -124.1005°
Excavation Equipment: Excavator
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97219
Telephone: (503) 289-1778
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LOG OF TP7

PSI Job No.: 07041434
Project: Microtel Inn and Suites
Location: 750 Quince Street
Florence, Oregon

Excavation Method:Excavation
Sampling Method:
DCP Type: N/A
Boring Location:

WATER LEVELS

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	Dynamic Cone (DCP) Blows per 1¾-inch	Moisture, %	DYNAMIC CONE PENETRATION TEST DATA Blows per 1¾-inch ◎ 0 15 30; Moisture ✕ PL ◪ LL ✚ 0 25 50; STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0					**Surface Elev.:** 47 ft					
	0					**Approximately 4 inches of grassy Topsoil**	Topsoil				
46	1					Light brown, moist, **Poorly graded SAND**, fine to medium grained, trace silt, trace black and orange staining					
	2										
44	3						SP				
	4										
42	5										
	6										
40	7										
	8			1		Test pit terminated at approximately 8 feet bgs due to caving				>>◎	

Completion Depth: 8.0 ft
Date Boring Started: 1/4/21
Date Boring Completed: 1/4/21
Logged By: S. Shub
Excavation Contractor: Dan Fisher Excavating, Inc

Sample Types:
Shelby Tube
Dynamic Cone (DCP)
Grab Sample

Latitude: 43.9725°
Longitude: -124.1004°
Excavation Equipment: Excavator
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

Geophysical Testing

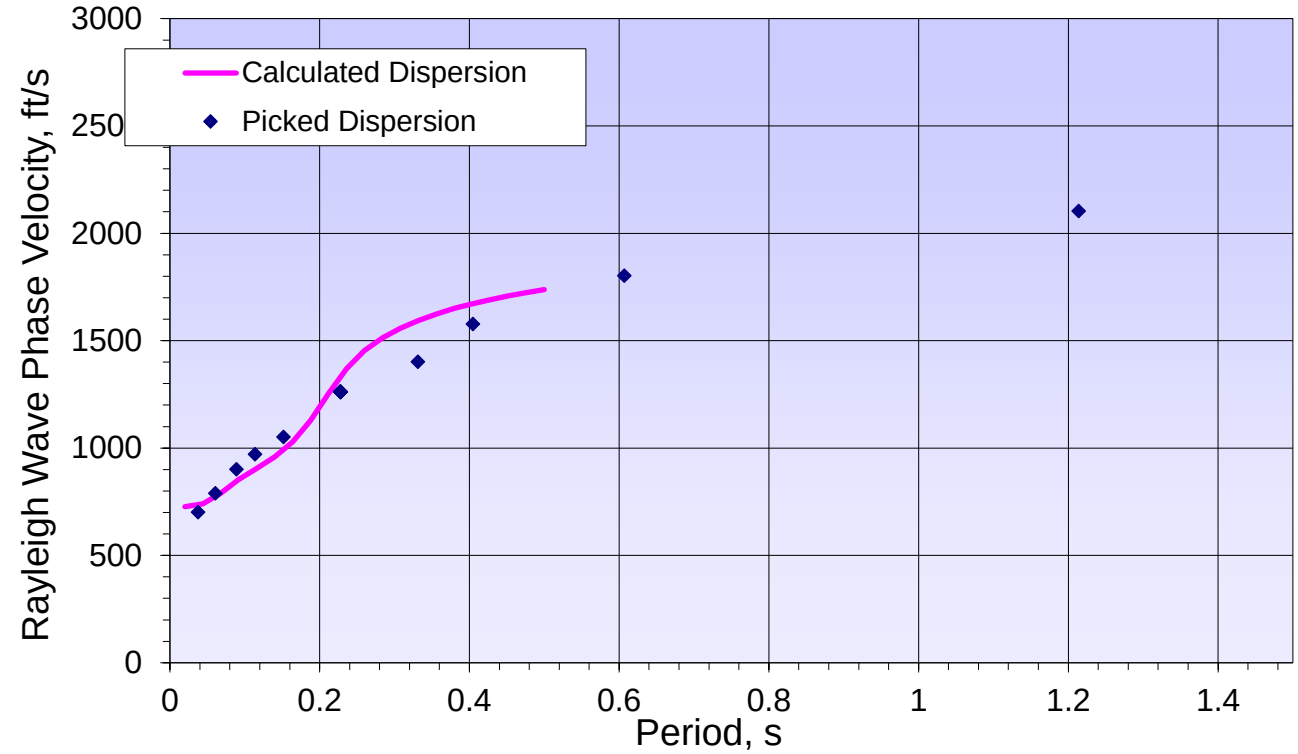
Three Refraction Microtremor (ReMi) arrays were performed at the project site (see Figure 2). The ReMi method uses standard P-wave recording equipment and ambient noise to determine shear-wave velocities. The equipment used for our ReMi evaluation included a Seismic Source DAQLink III 24-Bit ADC acquisition system and STC-85-SM-4 10-hertz geophones developed by Seismic Source Technology. Field acquisition of the data incorporated 24 geophone locations with equal spacing of 15 feet. SeisOpt ReMi Version 4.0 (Vspect and Disper modules) software developed by Optim LLC was used to process the collected data, and to create the shear wave velocity profile. To provide a robust data profile, both individual recordings and multiple summed (stacked) recordings were evaluated.

Each individual record of the traces is pre-processed to reduce or eliminate anomalies in the raw data. The data is then processed to produce a velocity spectrum. This process involves computing a surface wave, phase velocity dispersion spectral ratio image by p-tau and Fourier transforms across the array. This process is described in the document titled, "Faster, Better: Shear-wave Velocity to 100 Meters Depth from Refraction Microtremor Arrays", Bulletin of the Seismological Society of America by Louie, J, N. (2001). The resulting spectrum is in the slowness-frequency (p-f) domain. The p-f transformation helps segregate the Rayleigh Wave arrivals from other surface waves, body waves, sound waves, etc. The p-f image is generated for each record, and a final p-f image for each test is generated by combining some, or all, of the individual images.

The fundamental mode dispersion curve on the final p-f image can be seen as a distinct trend from the aliasing and wave-field transformation truncation artifact trends in the spectra. Once the fundamental mode dispersion curve is visually interpreted, data points along this curve are picked. Using the picked data points, an interactive forward-modeling process is used to model a shear wave velocity profile, with a resulting dispersion curve that approximately matches the picked data points. The process and resulting velocity profiles are able to identify the various velocity layers in the subsurface, including velocity inversions within the profile.

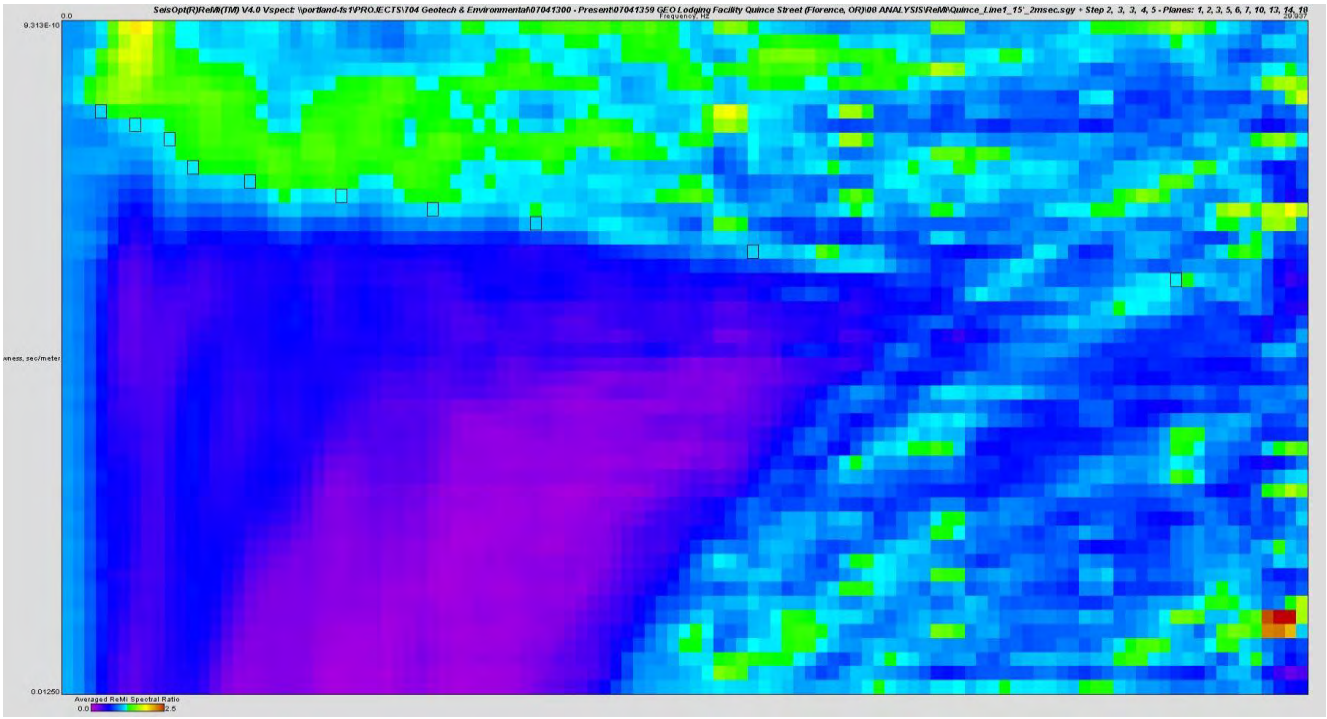
The results of the ReMi testing indicates that the weighted-average shear wave velocity in the upper 100 feet of the project site (V_S) is approximately 1,000 feet per second. This indicates that the project site is classified as a Site Class D, in accordance with ASCE 7-16.

Dispersion Curve Showing Picks and Fit



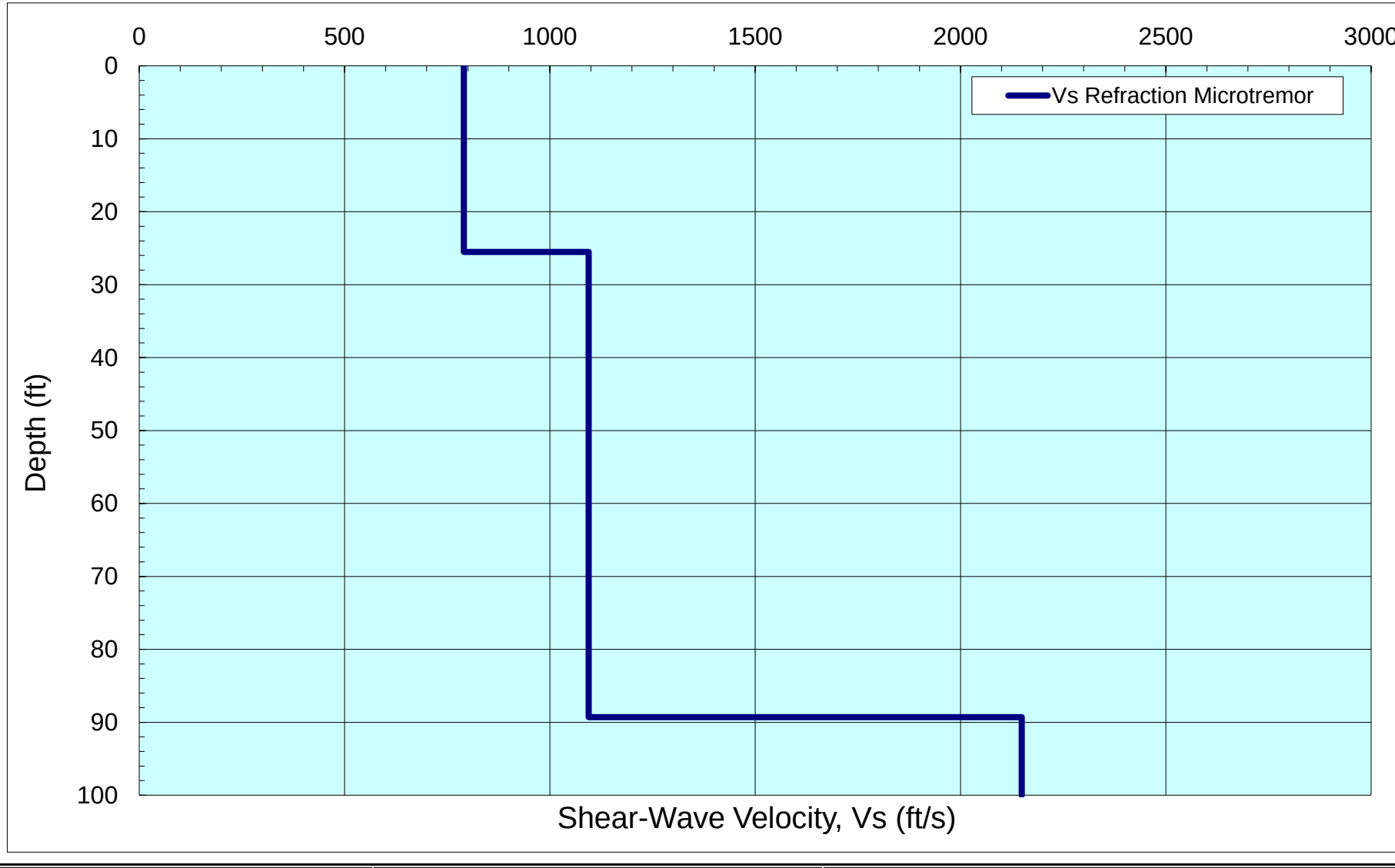
Geophone Spacing (ft) 15 Sampling Interval (ms) 2

p-f Image with Dispersion Modeling Picks



Line Number	**Array 1 (Geophones 1-24)**	
Project Number	07041434	
Project Name	Microtell Inn and Suites	
Location	43.972804, -124.100541 Florence, Oregon	Figure: A9

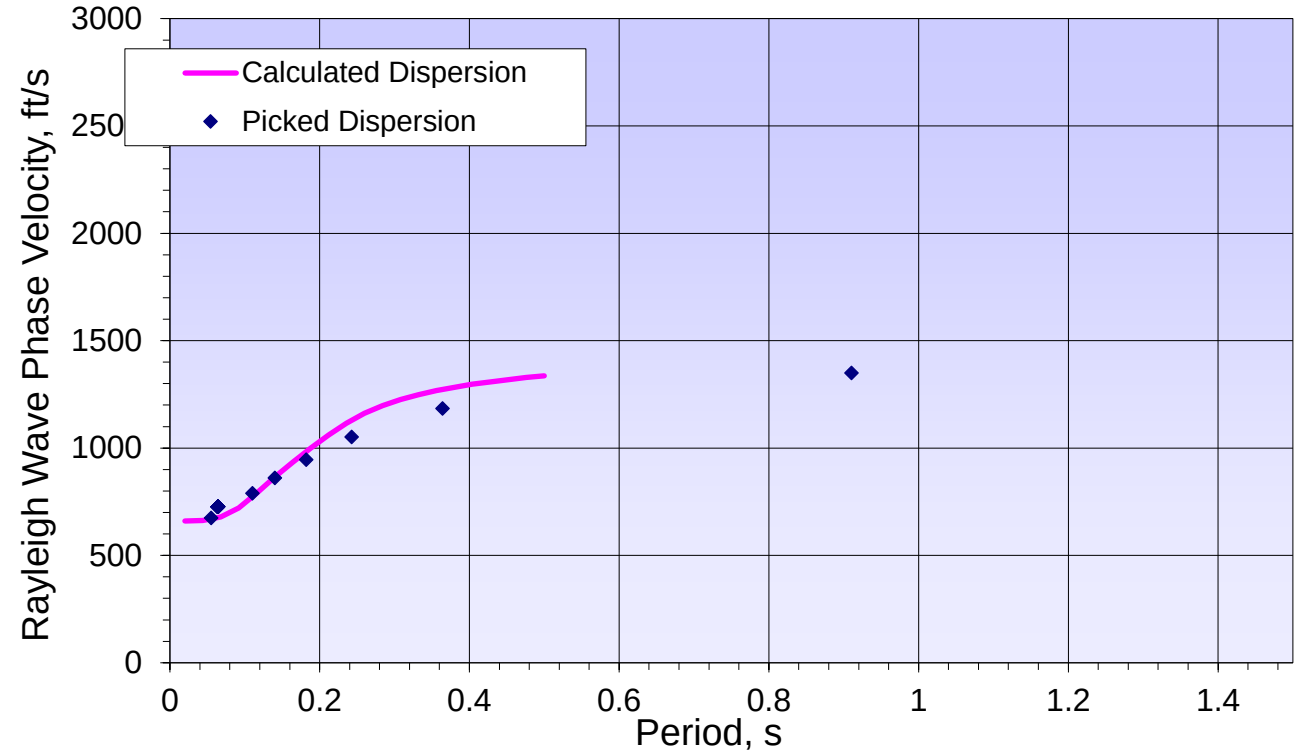
Shear Wave Velocity Profile Vs. Depth



intertek psi	**IBC Site Class**	**D**	
	Average Shearwave Velocity within 100 feet, V_s (ft/s)	**1,047**	

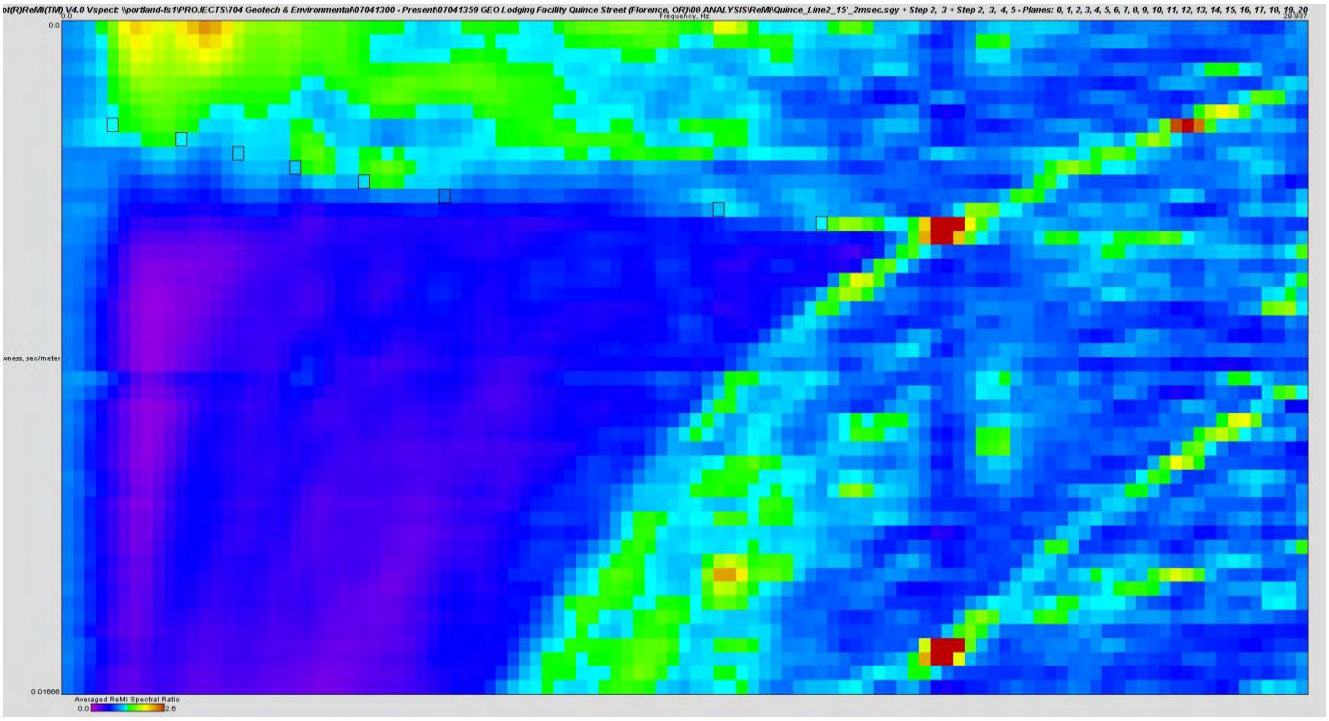
Line Number	**Array 1 (Geophones 1-24)**	
Project Number	07041434	
Project Name	Microtell Inn and Suites	
Location	43.972804, -124.100541 Florence, Oregon	Figure: A10

Dispersion Curve Showing Picks and Fit



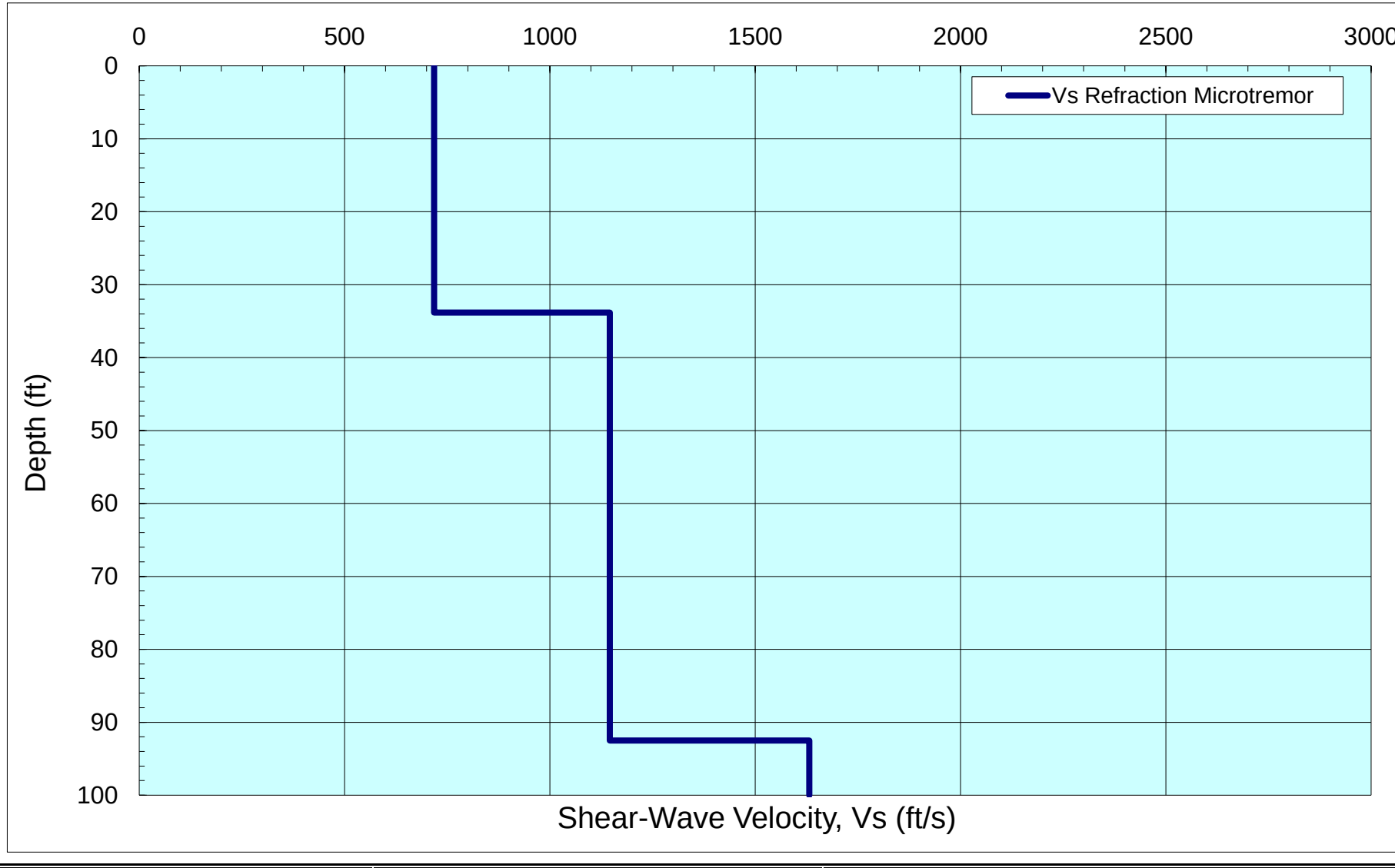
Geophone Spacing (ft) 15 Sampling Interval (ms) 2

p-f Image with Dispersion Modeling Picks



Line Number	**Array 2 (Geophones 1-24)**	
Project Number	07041434	
Project Name	Microtell Inn and Suites	
Location	43.972804, -124.100541 Florence, Oregon	Figure: A9

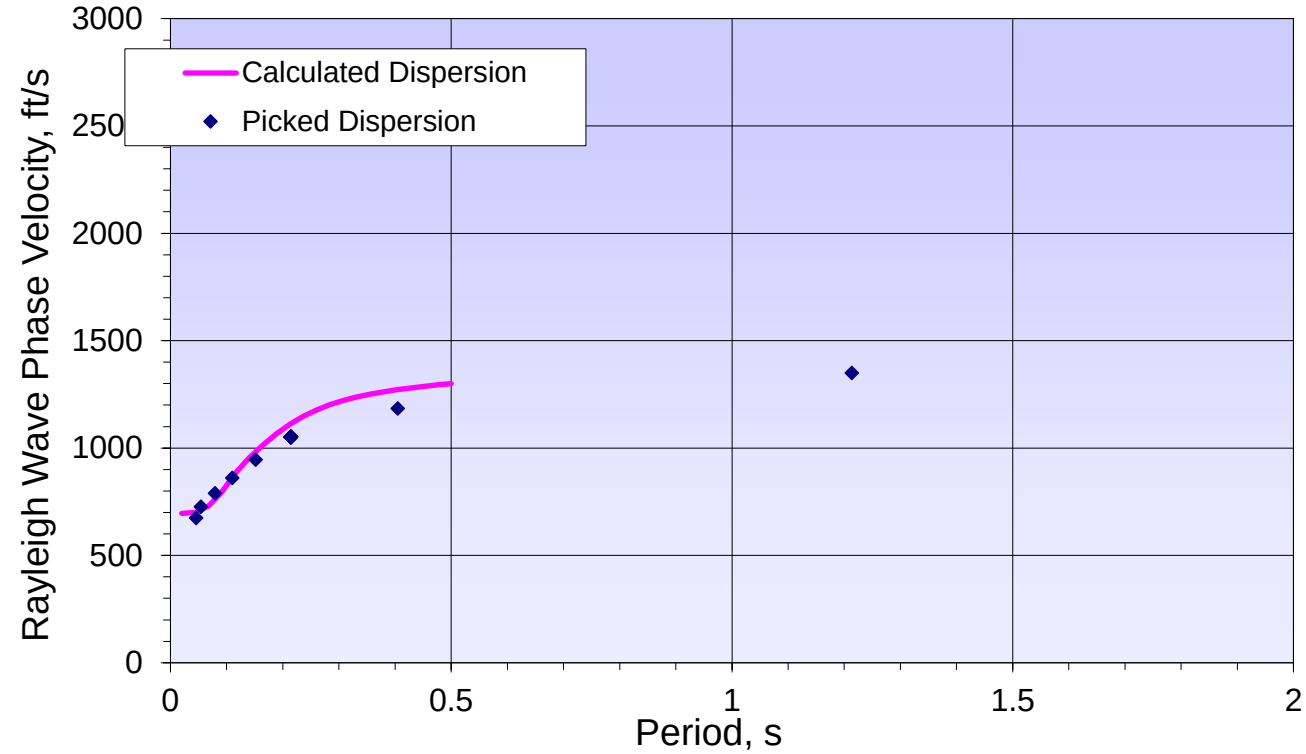
Shear Wave Velocity Profile Vs. Depth



intertek psi	**IBC Site Class**	**D**	
	Average Shearwave Velocity within 100 feet, V_s (ft/s)	**972**	

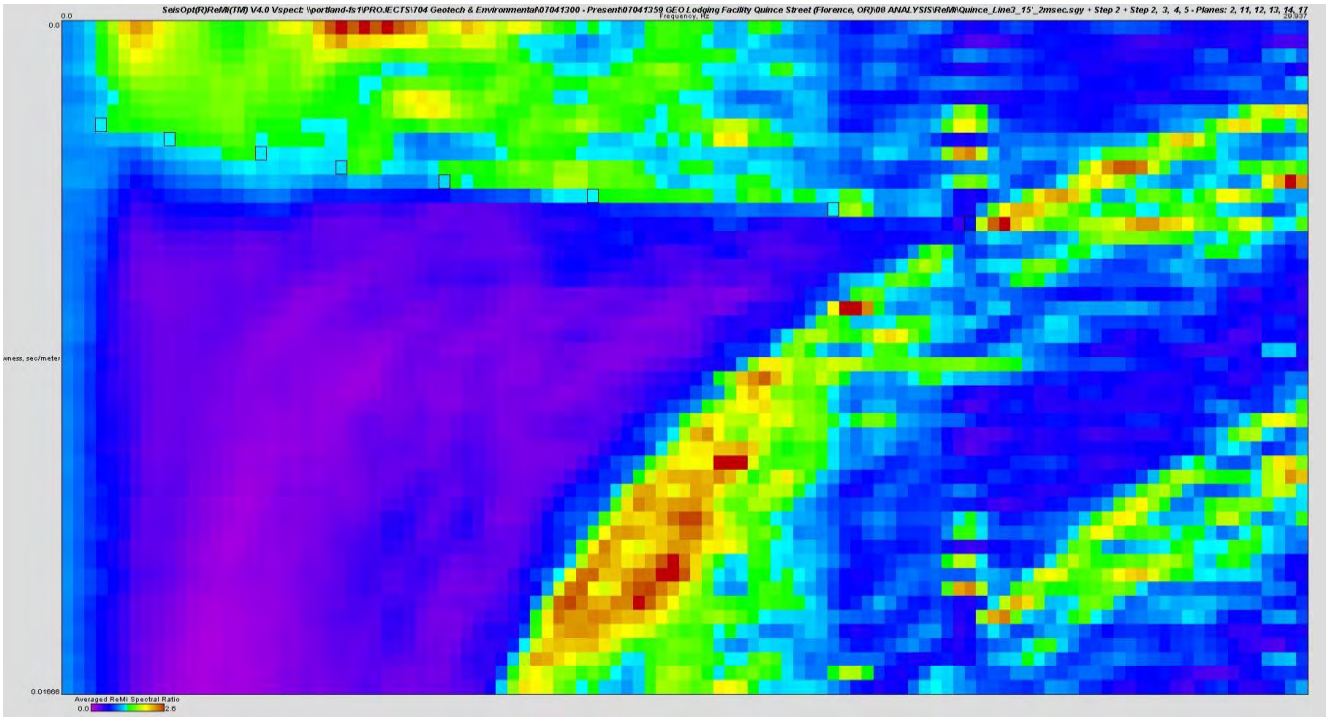
Line Number	**Array 2 (Geophones 1-24)**	
Project Number	07041434	
Project Name	Microtell Inn and Suites	
Location	43.972804, -124.100541 Florence, Oregon	Figure: A10

Dispersion Curve Showing Picks and Fit



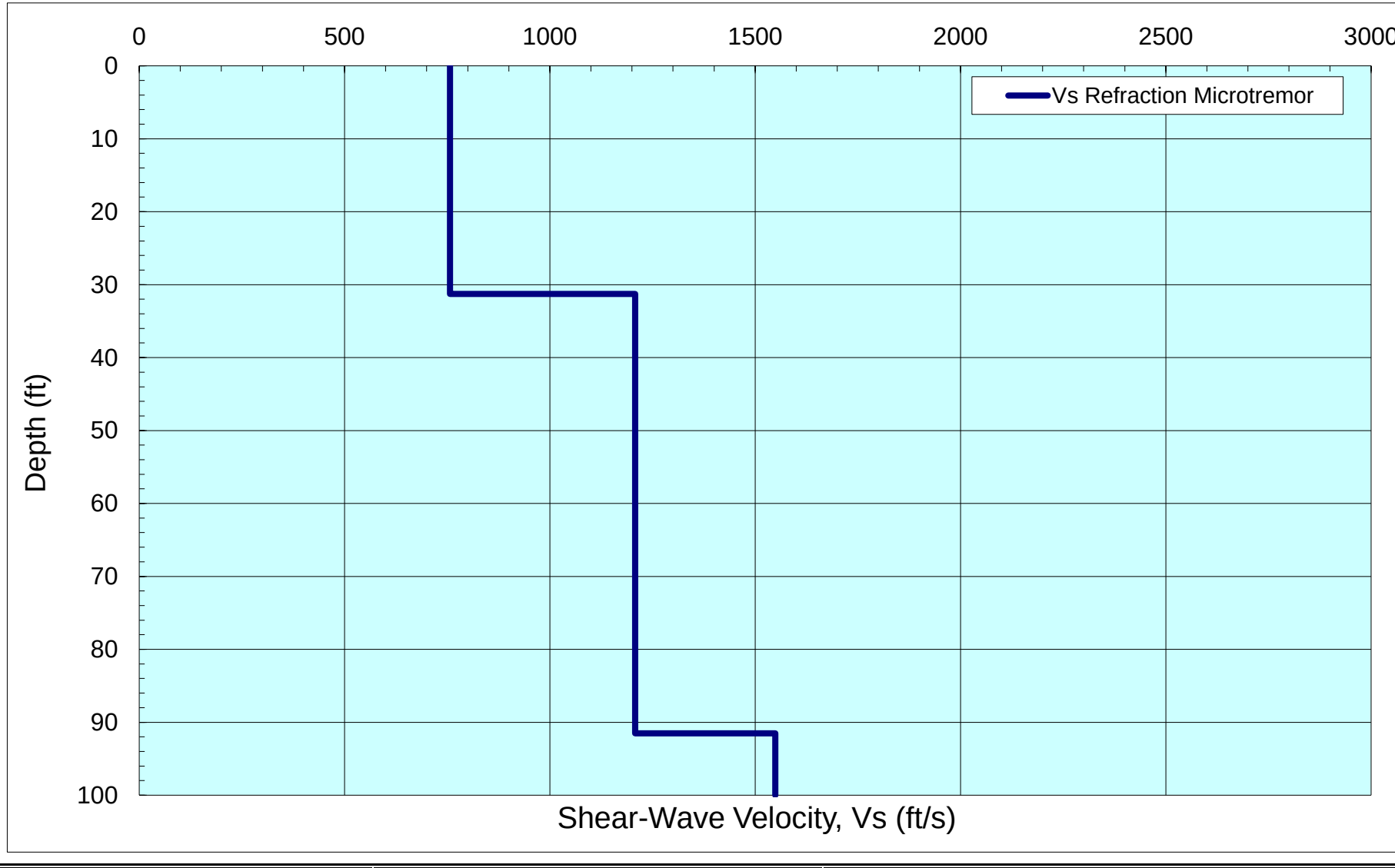
Geophone Spacing (ft) 15 Sampling Interval (ms) 2

p-f Image with Dispersion Modeling Picks



Line Number	Array 2 (Geophones 1-24)	
Project Number	07041434	
Project Name	Microtell Inn and Suites	
Location	43.972804, -124.100541 Florence, Oregon	Figure: A9

Shear Wave Velocity Profile Vs. Depth



intertek psi	**IBC Site Class**	**D**	
	Average Shearwave Velocity within 100 feet, V_s (ft/s)	**1,034**	

Line Number	**Array 2 (Geophones 1-24)**	
Project Number	07041434	
Project Name	Microtell Inn and Suites	
Location	43.972804, -124.100541 Florence, Oregon	Figure: A10

LABORATORY TESTING PROGRAM AND PROCEDURES

Soil samples obtained during the field explorations were examined in our laboratory. The physical characteristics of the samples were noted, and the field classifications were modified, where necessary. Representative samples were selected during the course of the examination for further testing.

Moisture Content

Natural moisture content determinations were made on selected soil samples in general accordance with ASTM D2216. The natural moisture content is defined as the ratio of the weight of water to the dry weight of soil, expressed as a percentage.

Visual-Manual Classification

The soil samples were classified in general accordance with guidelines presented in ASTM D2487. Certain terminology incorporating current local engineering practice, as provided in the Soil Classification Chart, included with, or in lieu of, ASTM terminology. The term which best described the major portion of the sample was used in determining the soil type (i.e., gravel, sand, silt or clay).

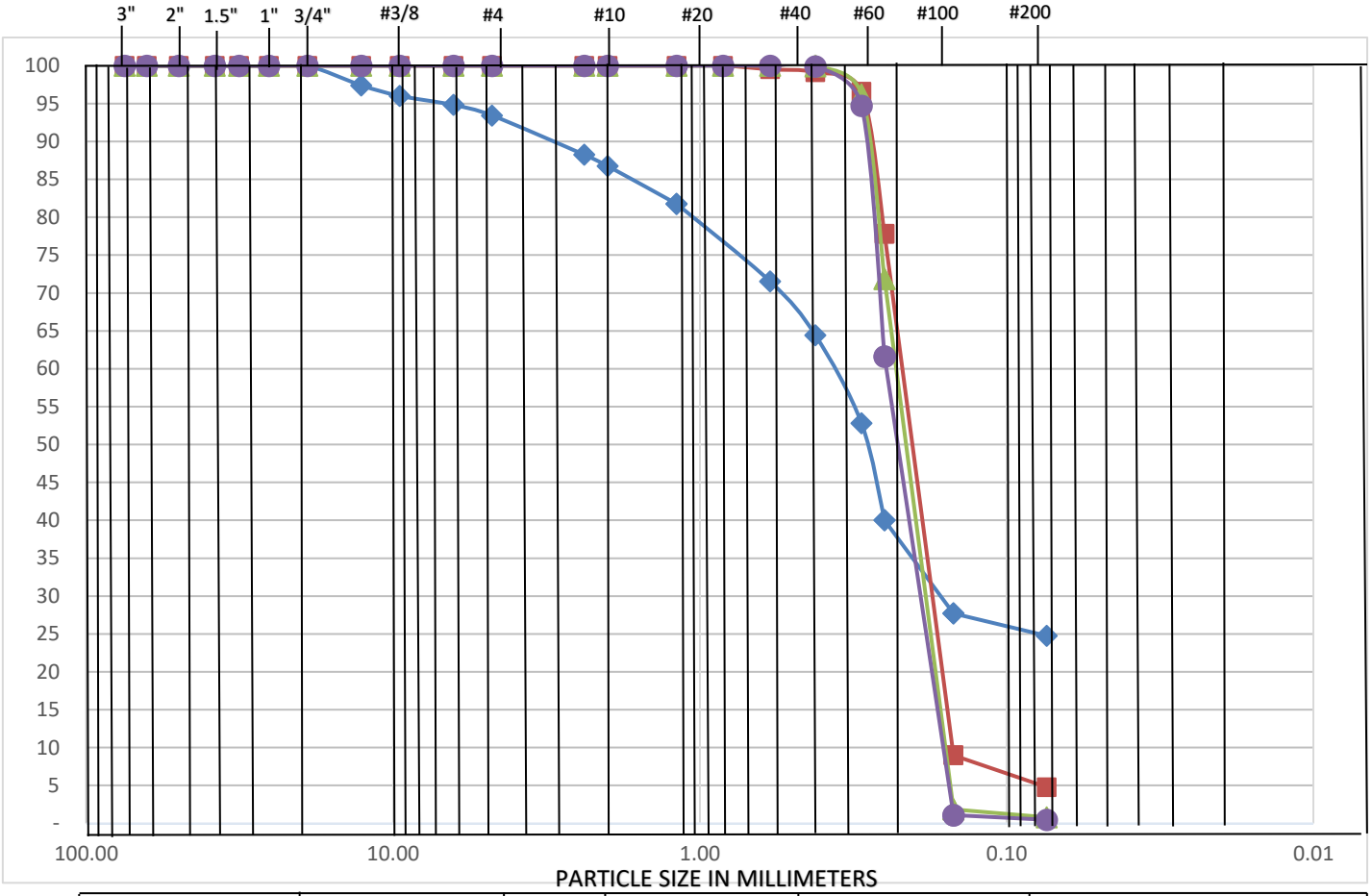
Sieve Analysis

The determination of the amount of material finer than the U.S. Standard No. 200 (75-µm) sieve was made on selected soil sample in general accordance with ASTM D1140. In general, the sample was dried in an oven and then washed with water over the No. 200 sieve. The mass retained on the No. 200 sieve was dried in an oven, and the dry weight recorded. Results from this test procedure assist in determining the fraction, by weight, of coarse-grained and fine-grained soils in the sample.

The determination of the gradation curve of the coarse-grained material was made on selected soil samples in general accordance with ASTM D6913. In general, the oven dried mass retained on the No. 200 sieve is passed over progressively smaller sieve openings, by agitating the sieves by hand or by a mechanical apparatus. The mass retained on each sieve is recorded as a fraction of the total sample, including the percent passing the No. 200 sieve.

PARTICLE SIZE ANALYSIS - ASTM (D-6913)

Project Name	Microtel Inn and Suites	Project Location	Florence, OR
Project Number	07041434	Tested By	Evans Linewire
Date of Sampling	2/23/2021	Date of Testing	2/28/2021
		Reviewed By	SRS



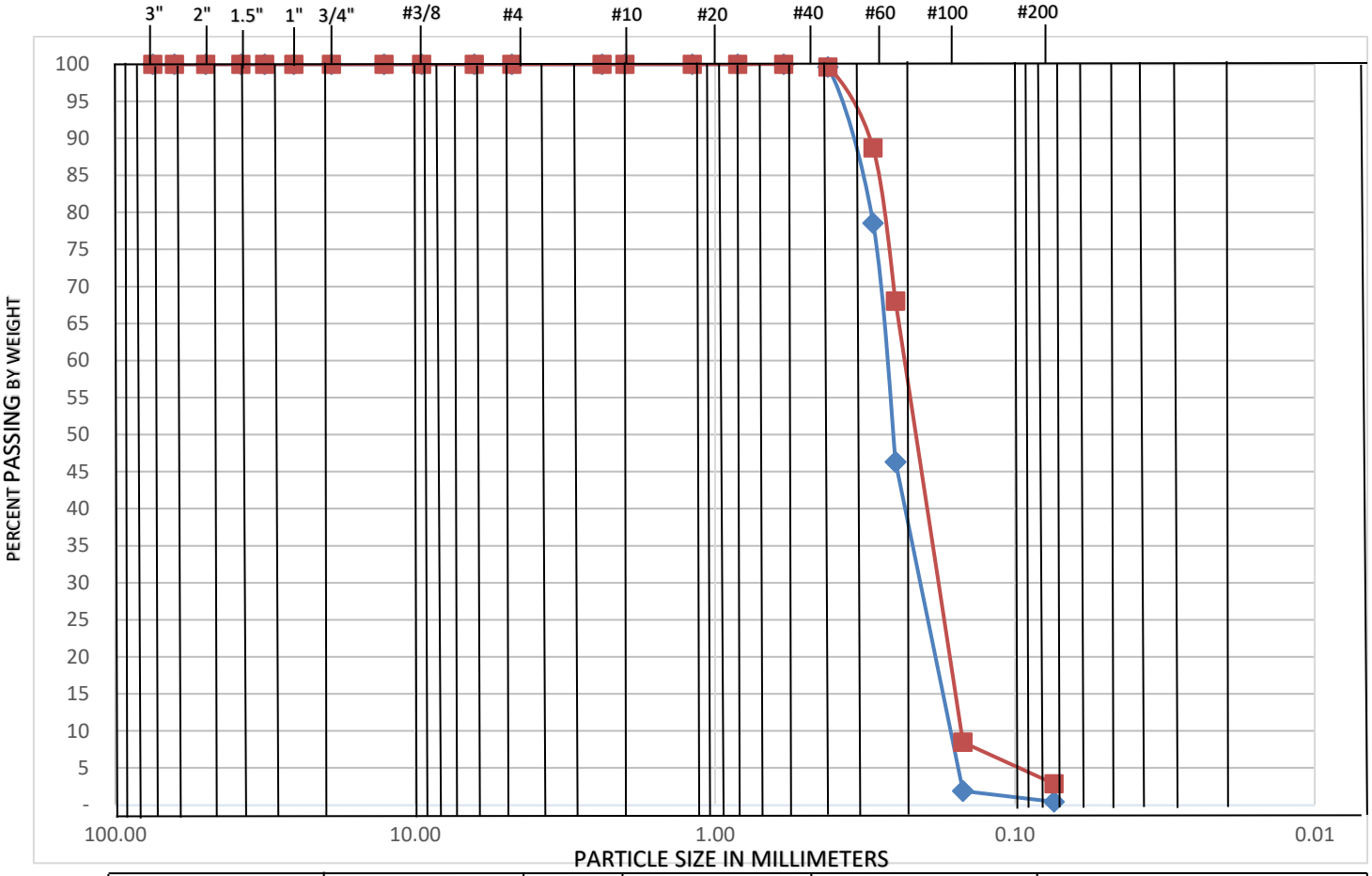
Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
Gravel		Sand			Fine Grained

Boring #	Depth (ft)	Gravel%	Sand%	Fines%	PL	LL	PI	Moisture%
GP1	0	7	69	25				46
GP1	6	0	95	5				7
GP1	13	0	99	1				6
GP1	16	0	100	0				7

Boring #	Depth	USCS Symbol	USCS Name	Plot Lines
GP1	0	SM	Well Graded Silty SAND	
GP1	6	SP	Poorly Graded SAND	
GP1	13	SP	Poorly Graded SAND	
GP1	16	SP	Poorly Graded SAND	

PARTICLE SIZE ANALYSIS - ASTM (D-6913)

Project Name	Microtel Inn and Suites	Project Location	Florence, OR
Project Number	07041434	Tested By	Evans Linewire
Date of Sampling	2/23/2021	Date of Testing	2/28/2021
		Reviewed By	SRS



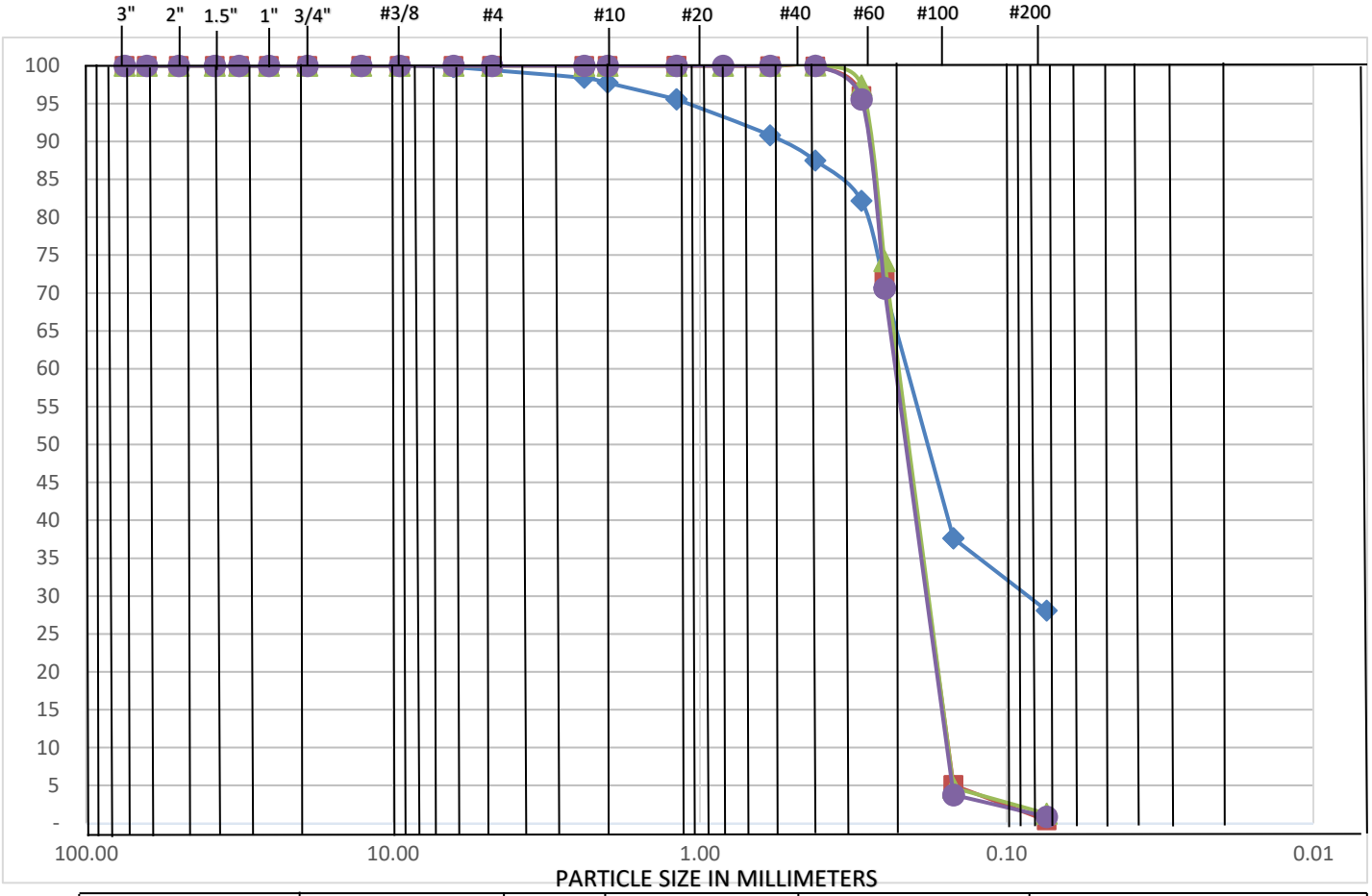
Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
Gravel		Sand			Fine Grained

Boring #	Depth (ft)	Gravel%	Sand%	Fines%	PL	LL	PI	Moisture%
GP1	34	0	100	0				6
GP1	36	0	97	3				18

Boring #	Depth	USCS Symbol	USCS Name	Plot Lines
GP1	34	SP	Poorly Graded SAND	
GP1	36	SP	Poorly Graded SAND	

PARTICLE SIZE ANALYSIS - ASTM (D-6913)

Project Name	Microtel Inn and Suites	Project Location	Florence, OR
Project Number	07041434	Tested By	Evans Linewire
Date of Sampling	2/23/2021	Date of Testing	2/28/2021
		Reviewed By	SRS



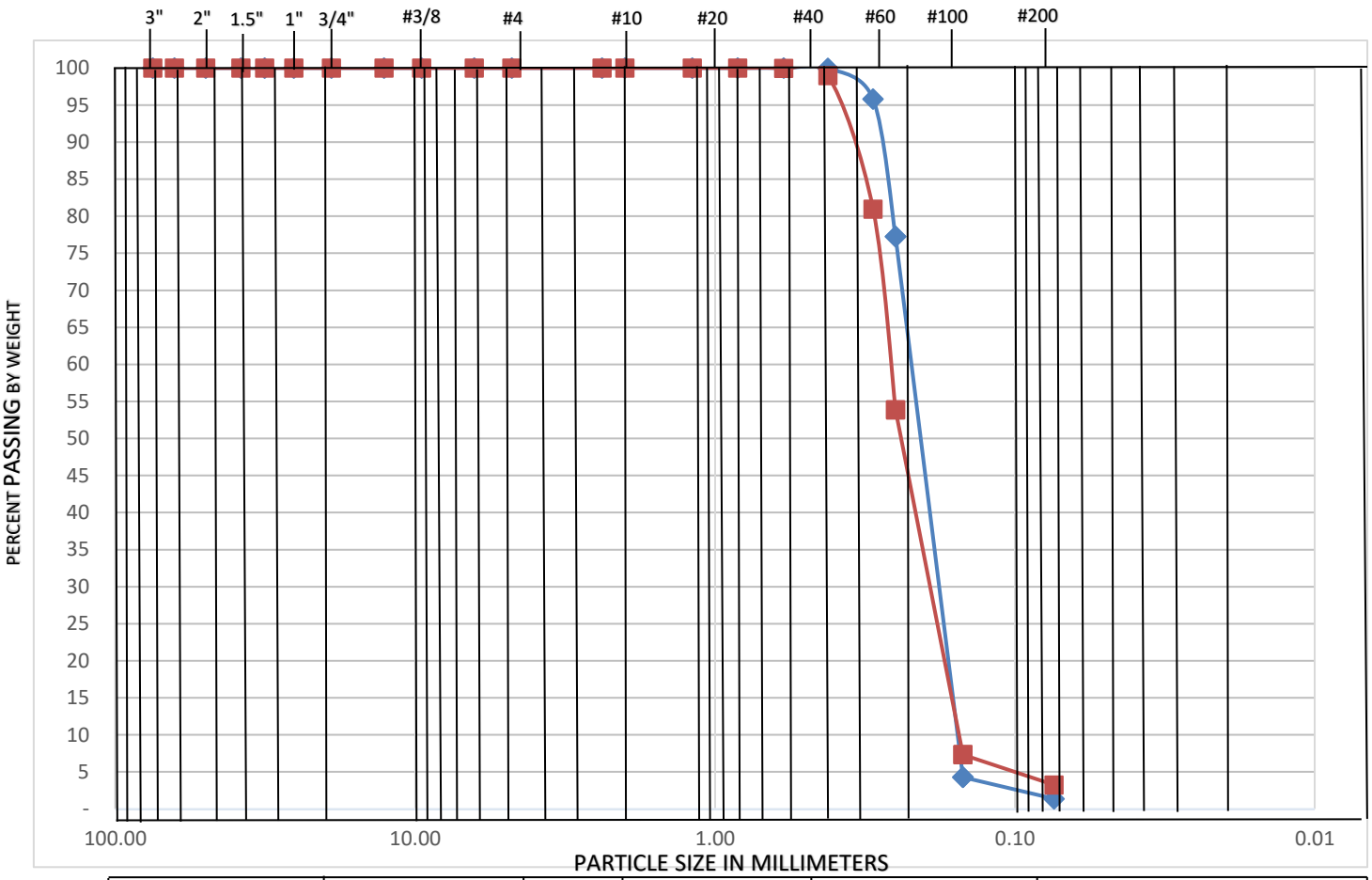
Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
Gravel		Sand			Fine Grained

Boring #	Depth (ft)	Gravel%	Sand%	Fines%	PL	LL	PI	Moisture%
GP2	0	0	72	28				45
GP2	2	0	100	0				5
GP2	21	0	99	1				5
GP2	26	0	99	1				5

Boring #	Depth	USCS Symbol	USCS Name	Plot Lines
GP2	0	SM	Poorly Graded Silty SAND	
GP2	2	SP	Poorly Graded SAND	
GP2	21	SP	Poorly Graded SAND	
GP2	26	SP	Poorly Graded SAND	

PARTICLE SIZE ANALYSIS - ASTM (D-6913)

Project Name	Microtel Inn and Suites	Project Location	Florence, OR
Project Number	07041434	Tested By	Evans Linewire
Date of Sampling	2/23/2021	Date of Testing	2/28/2021
		Reviewed By	SRS



Coarse	Fine	Coarse	Medium	Fine	Silt/Clay
Gravel		Sand			Fine Grained

Boring #	Depth (ft)	Gravel%	Sand%	Fines%	PL	LL	PI	Moisture
GP1	31	0	99	1				7
GP1	35	0	97	3				17

Boring #	Depth	USCS Symbol	USCS Name	Plot Lines
GP1	31	SP	Poorly Graded SAND	
GP1	35	SP	Poorly Graded SAND	

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97217
CCB No. 176269
Phone: (503) 289-1778
Fax: (503) 289-1918

Report No: MAT:07041434-1-S1
Issue No: 1

Material Test Report

Client: BRAUN DEVELOPMENT SERVICES
PO BOX 13223
PORTLAND, OR 97213

CC:

Project: MICROTEL INN AND SUITES

Approved Signatory: Staci Shub (Staff Engineer)
Date of Issue: 1/12/2022

Sample Details

Sample ID:	07041434-1-S1	**Feature:**	
Client Sample ID:		**Contractor:**	
Date Sampled:	12/30/21		
Sampled By:	Staci Shub		
Specification:	Proctor / Grad		
Supplier:			
Source:	Native		
Material:	Sand		
Sampling Method:	Sub-Surface Grab Sample		
General Location:	TP 4		
Location:			
Lift:			

Other Test Results

Description	Method	Result	Limits
Maximum Dry Unit Weight (lbf/ft³)	ASTM D 1557	102.8	
Corrected Maximum Dry Unit Weight (lbf/ft³)		102.8	
Optimum Water Content (%)		8.2	
Corrected Optimum Water Content (%)		8.2	
Method		A	
Preparation Method		Moist	
Rammer Type		Mechanical	

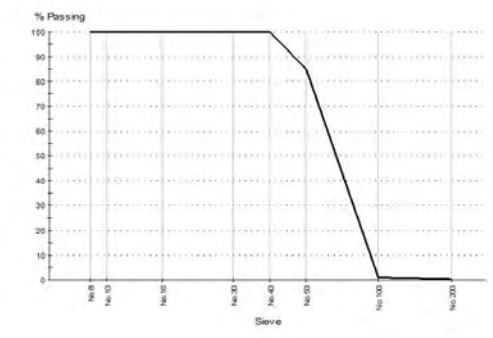
Particle Size Distribution

Method: ASTM C 136, ASTM C 117

Date Tested:
Tested By:

Sieve Size	% Passing	Limits
No.8 (2.36mm)	100	
No.10 (2.0mm)	100	
No.16 (1.18mm)	100	
No.30 (600µm)	100	
No.40 (425µm)	100	
No.50 (300µm)	85	
No.100 (150µm)	1	
No.200 (75µm)	0.20	

Chart



Comments

N/A

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97217
CCB No. 176269
Phone: (503) 289-1778
Fax: (503) 289-1918

Report No: PTR:07041434-1-S1
Issue No: 1

Proctor Report

Client: BRAUN DEVELOPMENT SERVICES
PO BOX 13223
PORTLAND, OR 97213

CC:

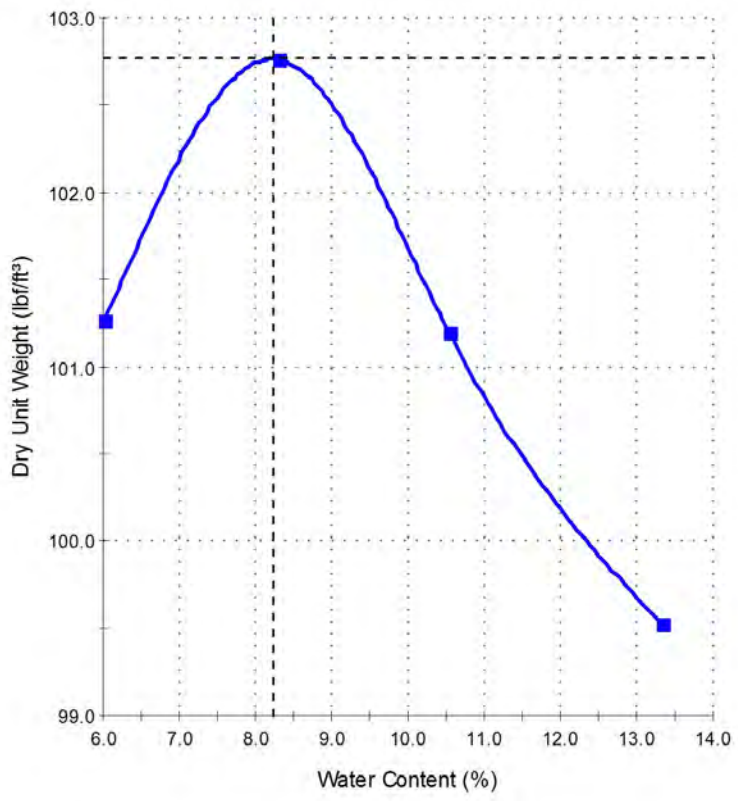
Project: MICROTEL INN AND SUITES

Approved Signatory: Staci Shub (Staff Engineer)
Date of Issue: 1/12/2022

Sample Details

Sample ID:	07041434-1-S1	**Date Sampled:**	12/30/2021
Sampled By:	Staci Shub	**Specification:**	Proctor / Grad
Source:	Native	**Material:**	Sand
Sampling Method:	Sub-Surface Grab Sample	**General Location:**	TP 4
Location:			

Dry Unit Weight - Water Content Relationship



Test Results

ASTM D 1557

Maximum Dry Unit Weight (lbf/ft³):	**102.8**
Optimum Water Content (%):	**8.2**
Method:	A
Preparation Method:	Moist
Rammer Type:	Mechanical
Tested By:	
Date Tested:	

Comments

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97217
CCB No. 176269
Phone: (503) 289-1778
Fax: (503) 289-1918

Report No: MAT:07041434-1-S2
Issue No: 1

Material Test Report

Client: BRAUN DEVELOPMENT SERVICES
PO BOX 13223
PORTLAND, OR 97213

CC:

Project: MICROTEL INN AND SUITES

Approved Signatory: Staci Shub (Staff Engineer)
Date of Issue: 1/12/2022

Sample Details

Sample ID: 07041434-1-S2
Client Sample ID:
Date Sampled:
Sampled By: Staci Shub
Specification: Proctor / Grad
Supplier:
Source: Native
Material: Sand
Sampling Method: Sub-Surface Grab Sample
General Location: TP 6
Location:
Lift:

Feature:
Contractor:

Other Test Results

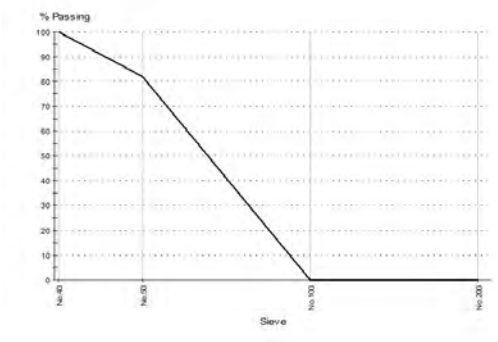
Description	Method	Result	Limits
Maximum Dry Unit Weight (lbf/ft³)	ASTM D 1557	102.2	
Corrected Maximum Dry Unit Weight (lbf/ft³)		102.2	
Optimum Water Content (%)		9.5	
Corrected Optimum Water Content (%)		9.5	
Method		A	
Preparation Method		Moist	
Rammer Type		Mechanical	

Particle Size Distribution

Method: ASTM C 136, ASTM C 117
Drying By: Oven
Date Tested:
Tested By:

Sieve Size	% Passing	Limits
No.40 (425µm)	100	
No.50 (300µm)	82	
No.100 (150µm)	0	
No.200 (75µm)	0.10	

Chart



Comments

N/A

Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97217
CCB No. 176269
Phone: (503) 289-1778
Fax: (503) 289-1918

Report No: PTR:07041434-1-S2
Issue No: 1

Proctor Report

Client: BRAUN DEVELOPMENT SERVICES
PO BOX 13223
PORTLAND, OR 97213

CC:

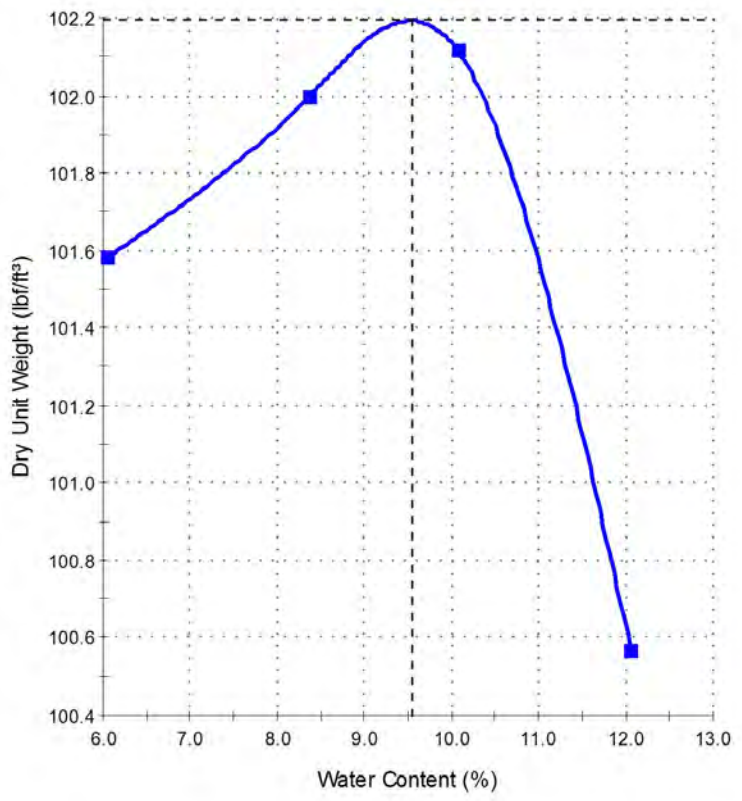
Project: MICROTEL INN AND SUITES

Approved Signatory: Staci Shub (Staff Engineer)
Date of Issue: 1/12/2022

Sample Details

Sample ID:	07041434-1-S2	**Date Sampled:**	
Sampled By:	Staci Shub	**Specification:**	Proctor / Grad
Source:	Native	**Material:**	Sand
Sampling Method:	Sub-Surface Grab Sample	**General Location:**	TP 6
Location:			

Dry Unit Weight - Water Content Relationship



Test Results

ASTM D 1557

Maximum Dry Unit Weight (lbf/ft³):	**102.2**
Optimum Water Content (%):	**9.5**
Method:	A
Preparation Method:	Moist
Rammer Type:	Mechanical
Tested By:	
Date Tested:	

Comments

APPENDIX B

LIQUEFACTION RESULTS

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
http://www.intertek.com/building

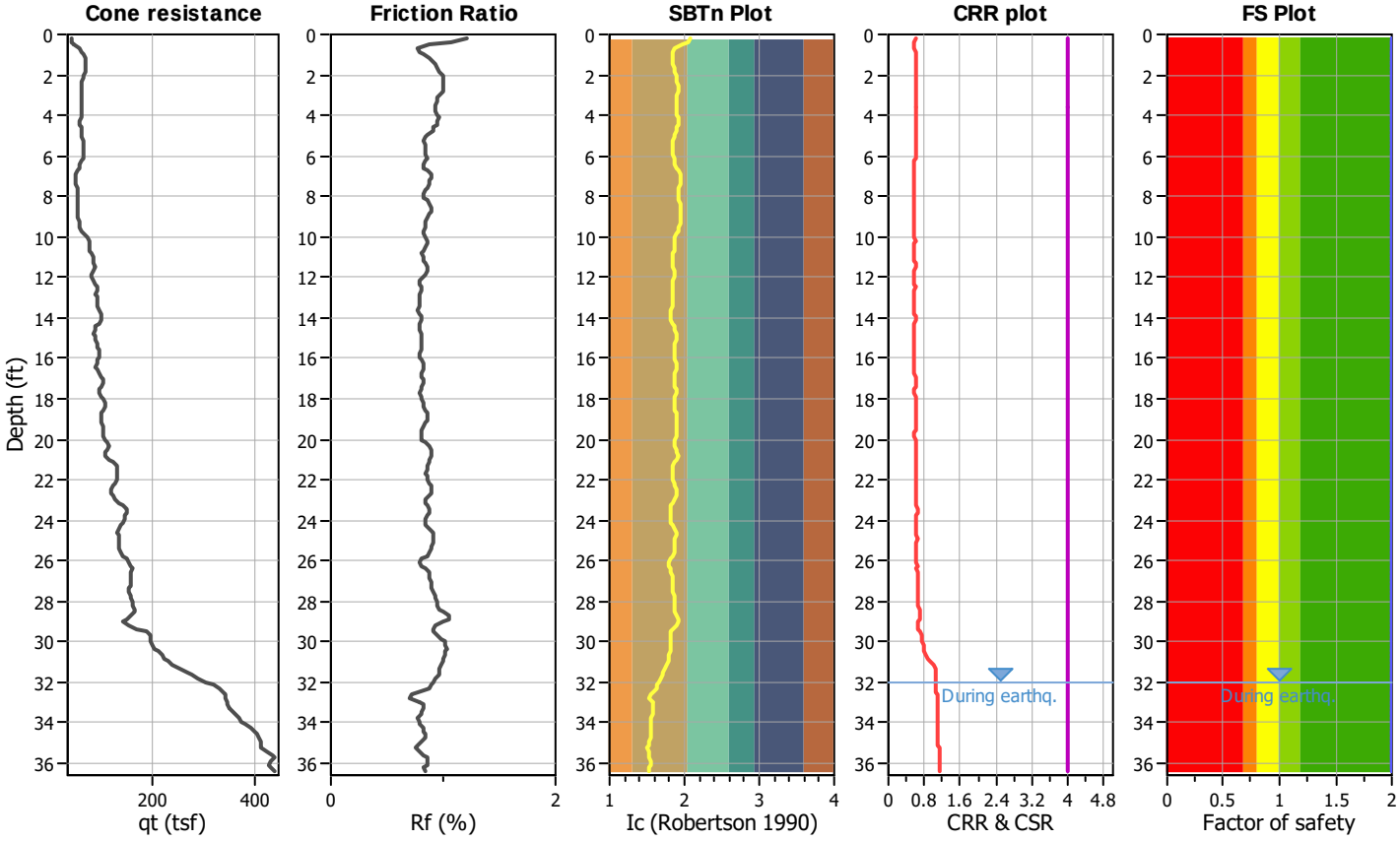
LIQUEFACTION ANALYSIS REPORT

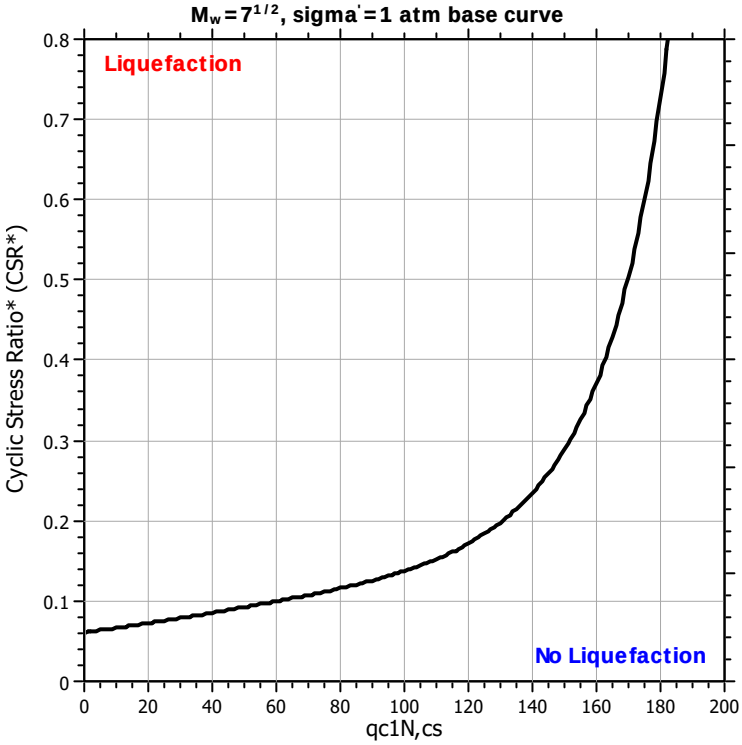
Project title : Microtel Inn and Suites **Location : Florence, OR**

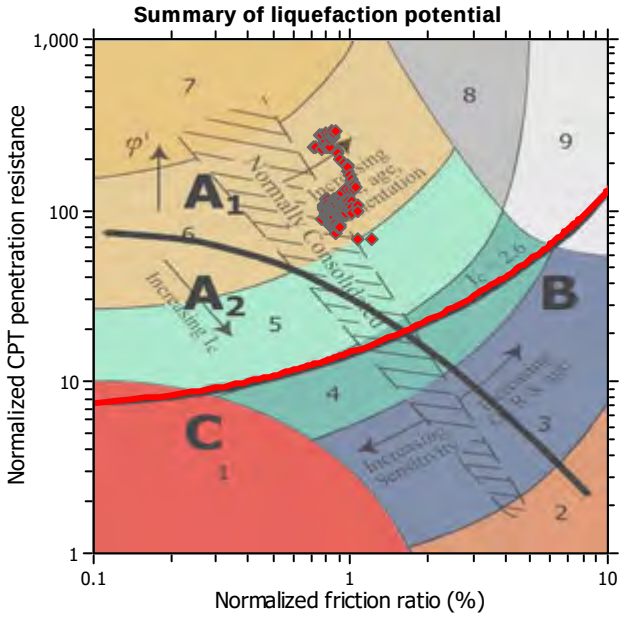
CPT file : 21020 CPT-1 Text File Input

parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	32.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	32.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	9.10	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	I&B, 2008
Peak ground acceleration:	0.78	Unit weight calculation:	Based on SBT	K_σ applied:	No		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

Intertek PSI
6032 N Cutter Circle #480
Portland, OR 97217
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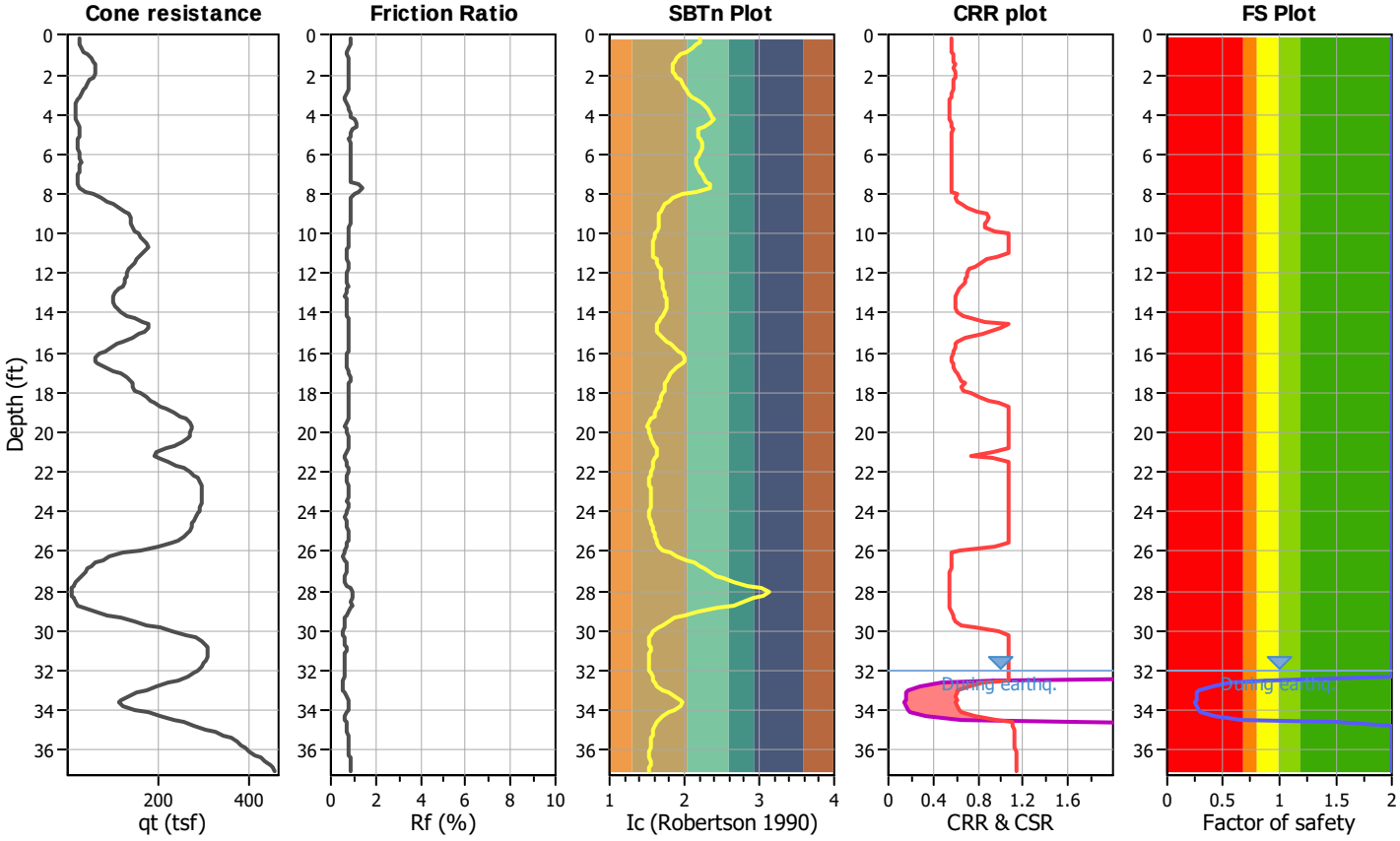
LIQUEFACTION ANALYSIS REPORT

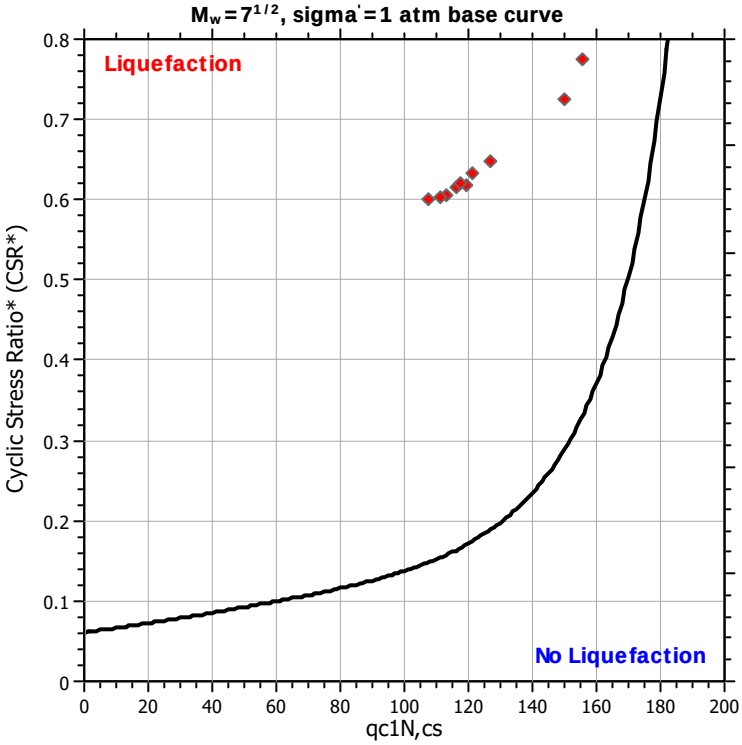
Project title : Microtel Inn and Suites **Location : Florence, OR**

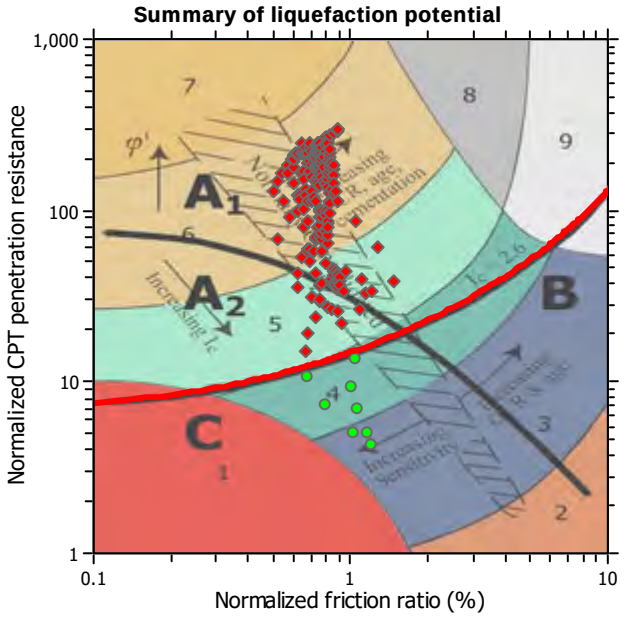
CPT file : 21020 CPT-2 Text File Input

parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	32.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	32.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	9.10	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	I&B, 2008
Peak ground acceleration:	0.78	Unit weight calculation:	Based on SBT	K_σ applied:	No		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
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Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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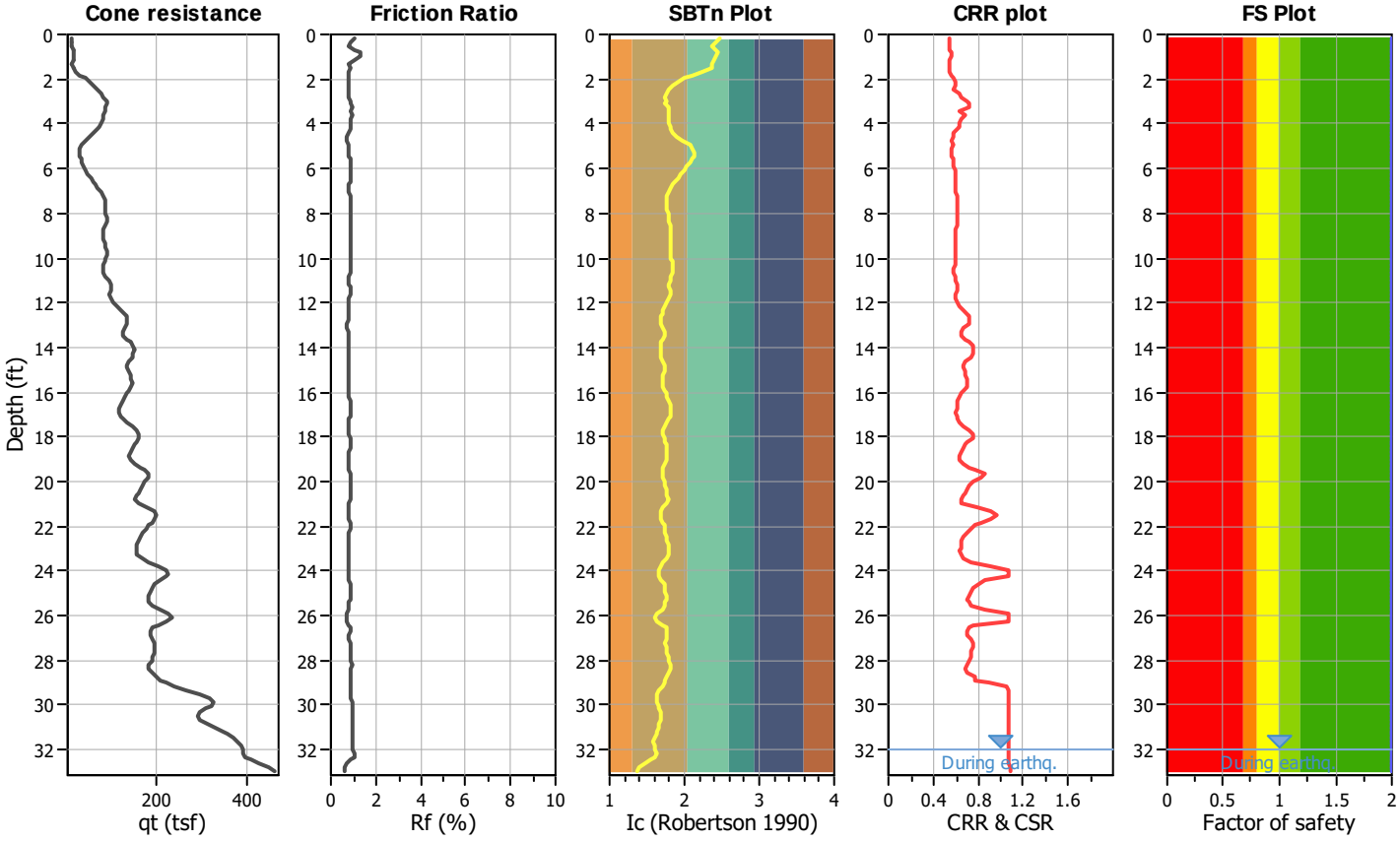
LIQUEFACTION ANALYSIS REPORT

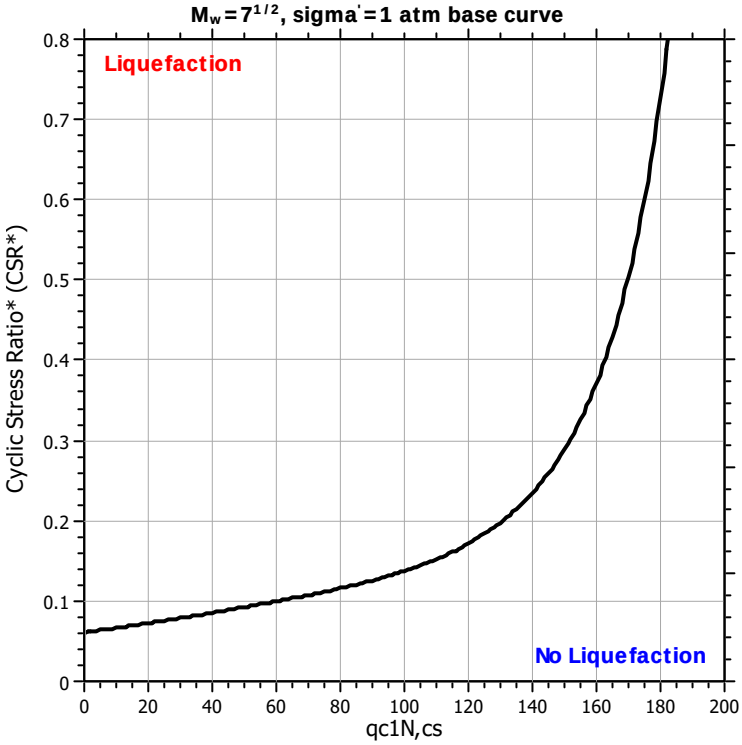
Project title : Microtel Inn and Suites **Location : Florence, OR**

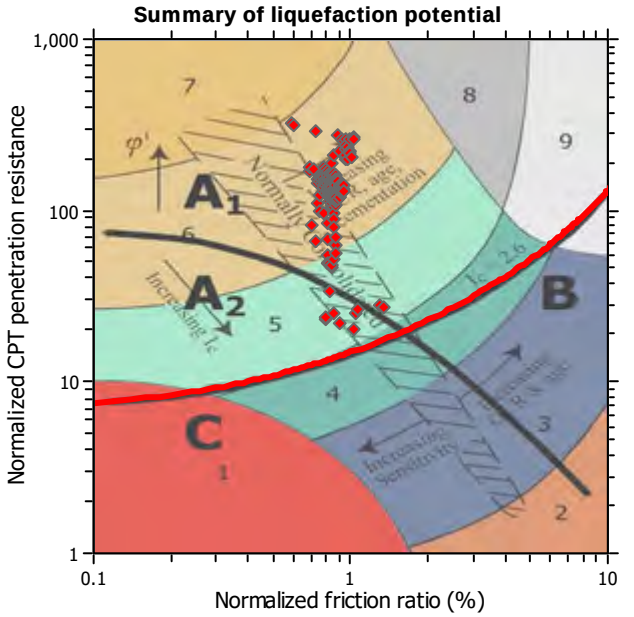
CPT file : 21020 CPT-3 Text File Input

parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	32.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	32.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	9.10	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	I&B, 2008
Peak ground acceleration:	0.78	Unit weight calculation:	Based on SBT	K_σ applied:	No		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
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Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
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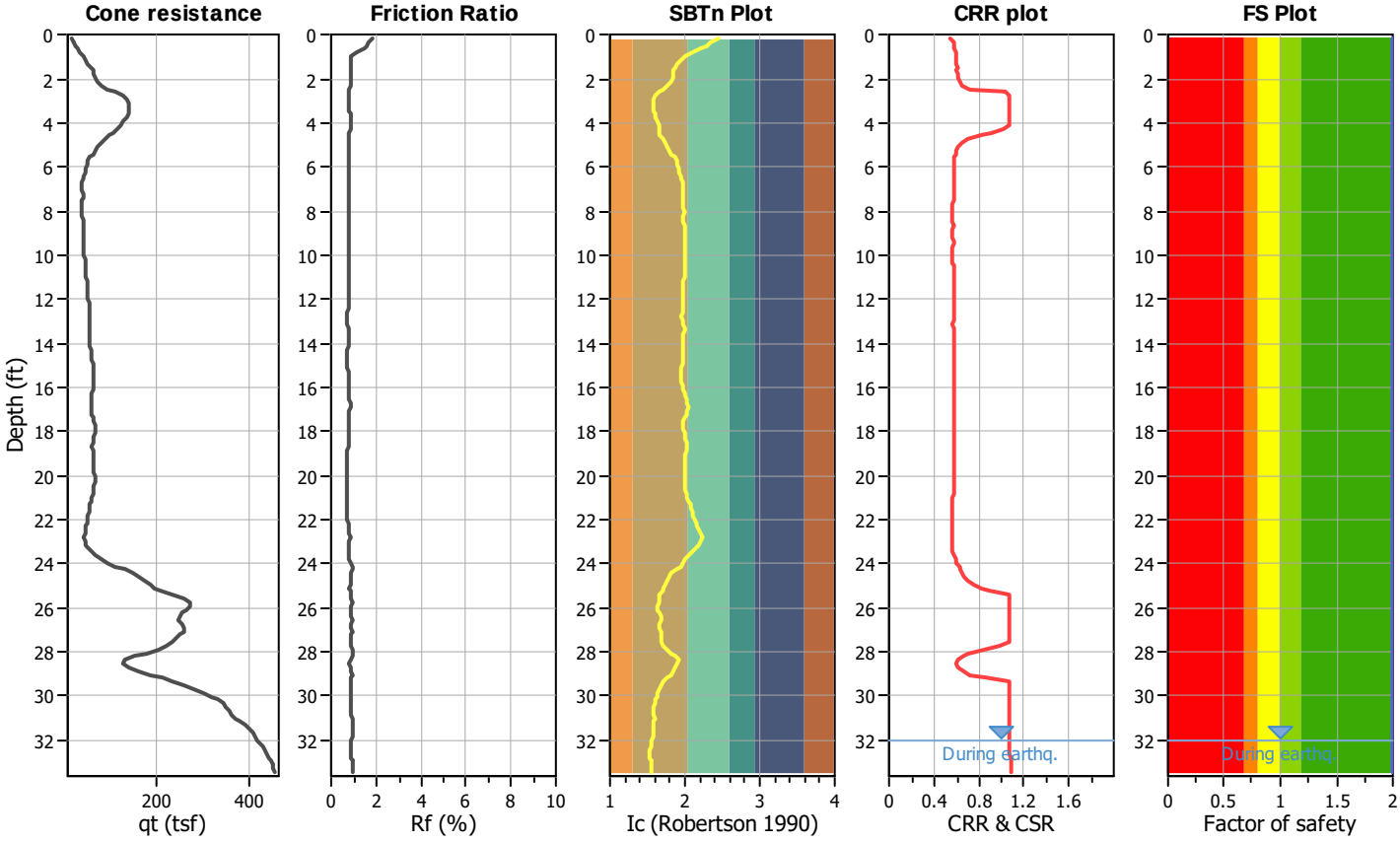
LIQUEFACTION ANALYSIS REPORT

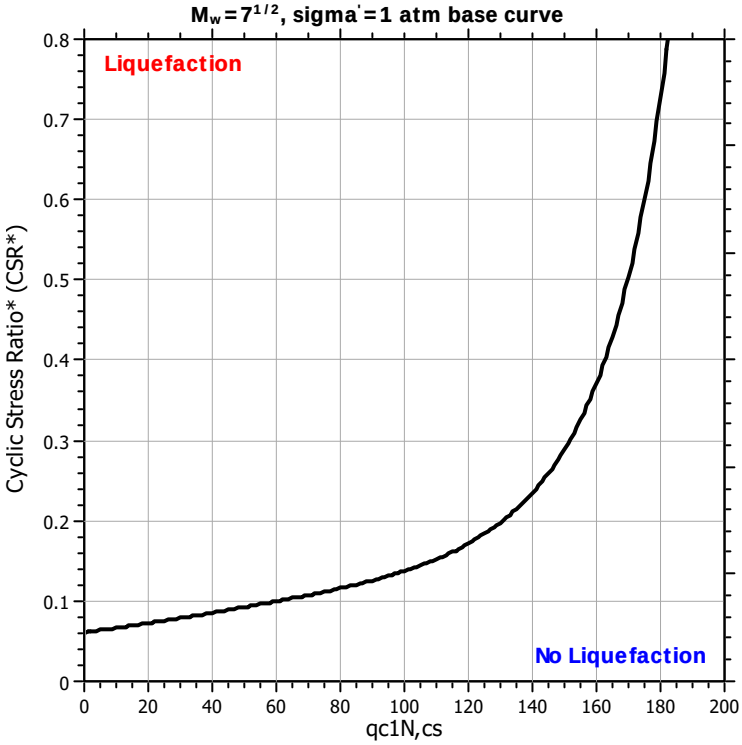
Project title : Microtel Inn and Suites **Location : Florence, OR**

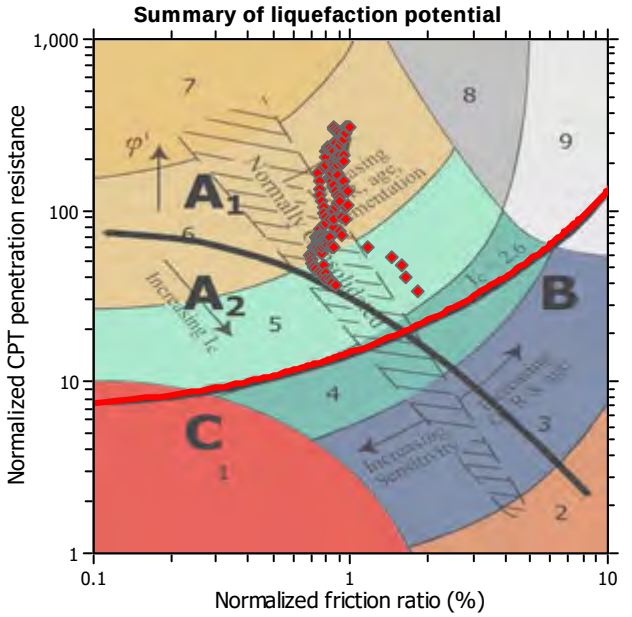
CPT file : 21020 CPT-4 Text File Input

parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	32.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	32.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	9.10	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	I&B, 2008
Peak ground acceleration:	0.78	Unit weight calculation:	Based on SBT	K_σ applied:	No		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
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Portland, OR 97217
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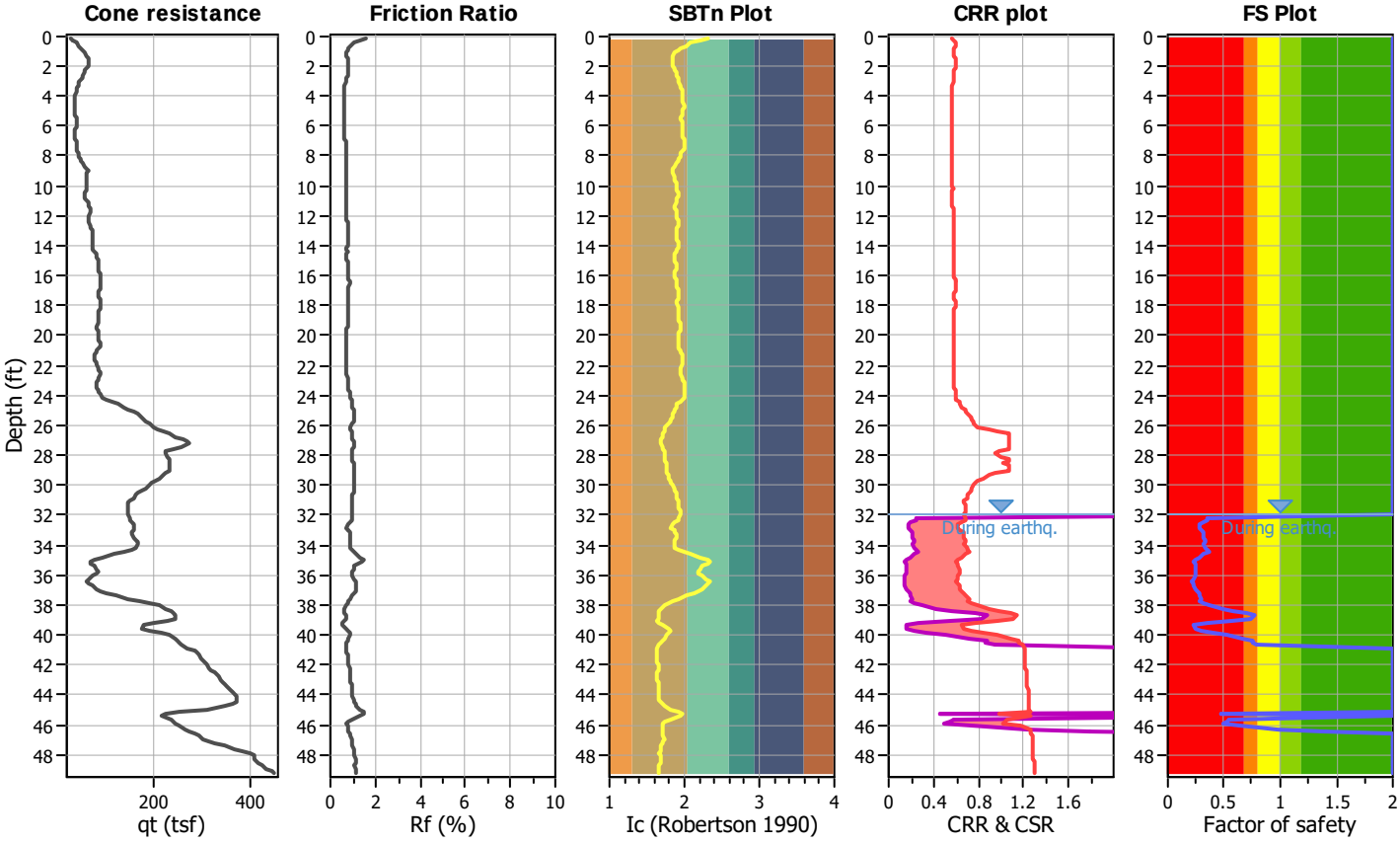
LIQUEFACTION ANALYSIS REPORT

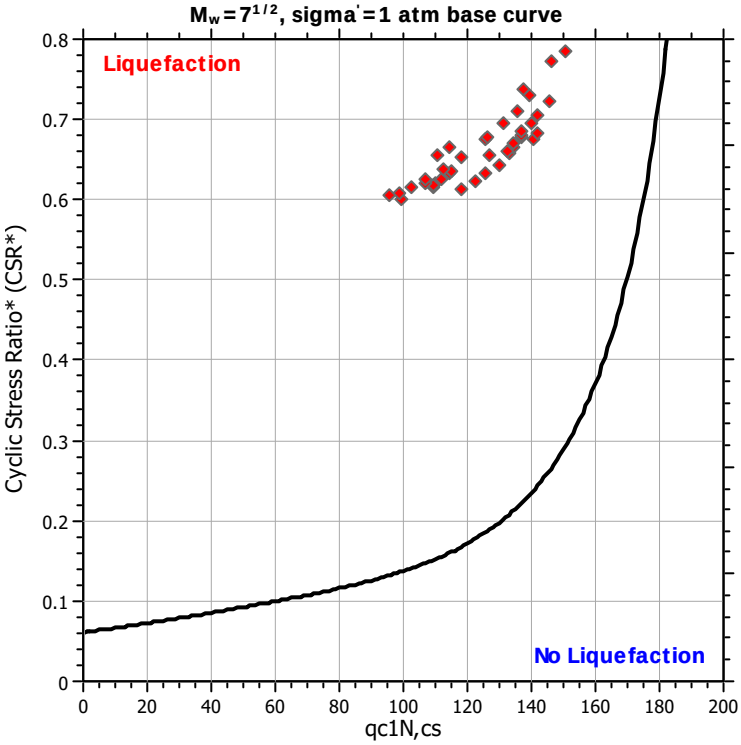
Project title : Microtel Inn and Suites **Location : Florence, OR**

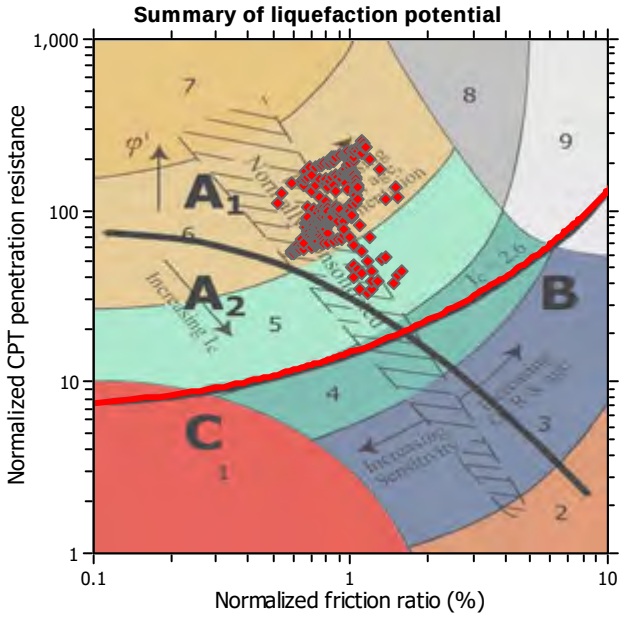
CPT file : 21020 CPT-5 Text File Input

parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	32.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	32.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	9.10	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	I&B, 2008
Peak ground acceleration:	0.78	Unit weight calculation:	Based on SBT	K_σ applied:	No		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
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Portland, OR 97217
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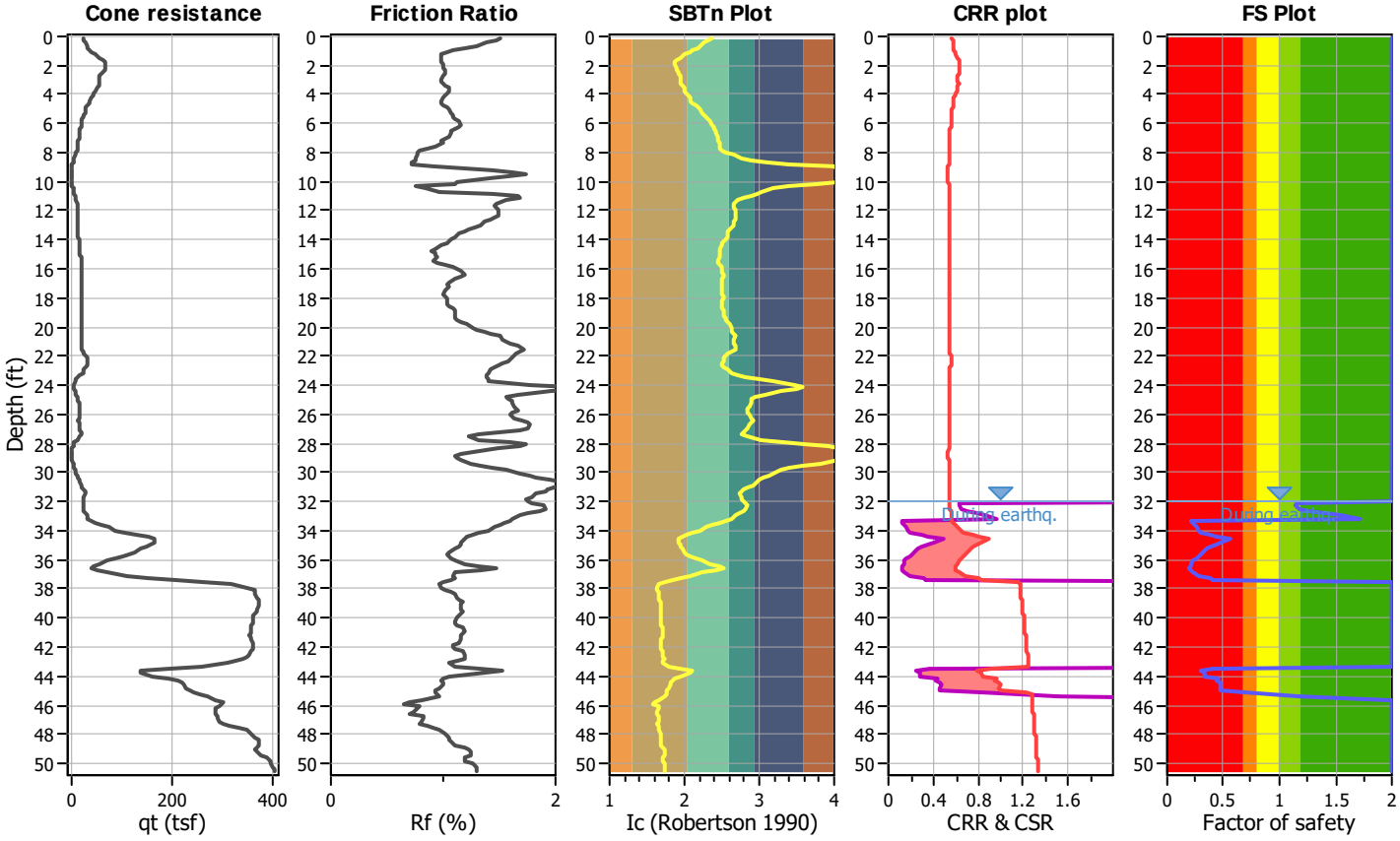
LIQUEFACTION ANALYSIS REPORT

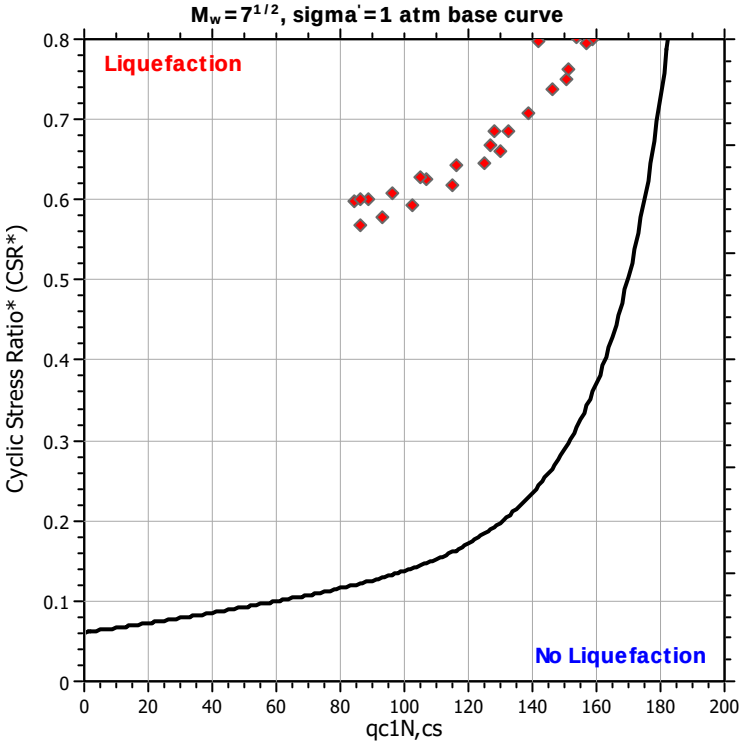
Project title : Microtel Inn and Suites **Location : Florence, OR**

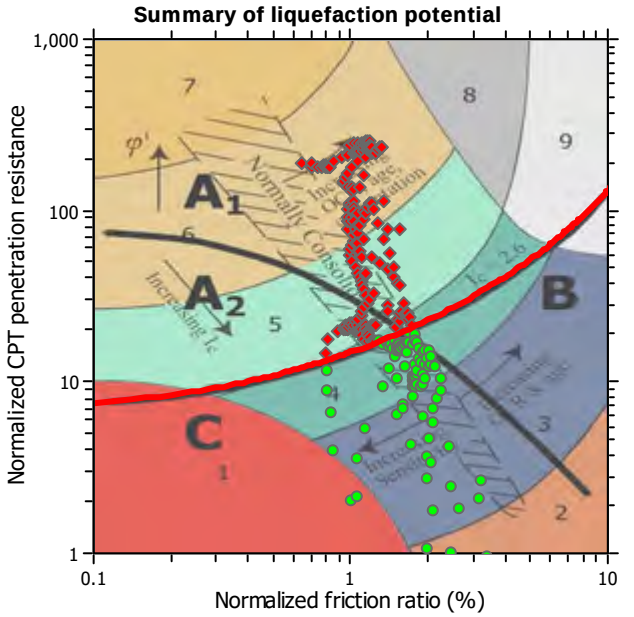
CPT file : 21020 CPT-6 Text File Input

parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	32.00 ft	Use fill:	No	Clay like behavior applied:	Sand & Clay
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	32.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	9.10	Ic cut-off value:	2.60	Trans. detect. applied:	No	MSF method:	I&B, 2008
Peak ground acceleration:	0.78	Unit weight calculation:	Based on SBT	K_σ applied:	No		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

APPENDIX C: Runoff Calculations

Watershed Model Schematic

Legend

Hyd.	Origin	Description
1	SCS Runoff	Developed Site
2	Reservoir	Infiltration

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)							Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	0.730	-------	-------	1.338	1.721	-------	2.343	Developed Site
2	Reservoir	1	-------	0.000	-------	-------	0.000	0.000	-------	0.000	Infiltration

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.730	1	480	13,433	------	------	------	Developed Site
2	Reservoir	0.000	1	673	0	1	98.30	752	Infiltration

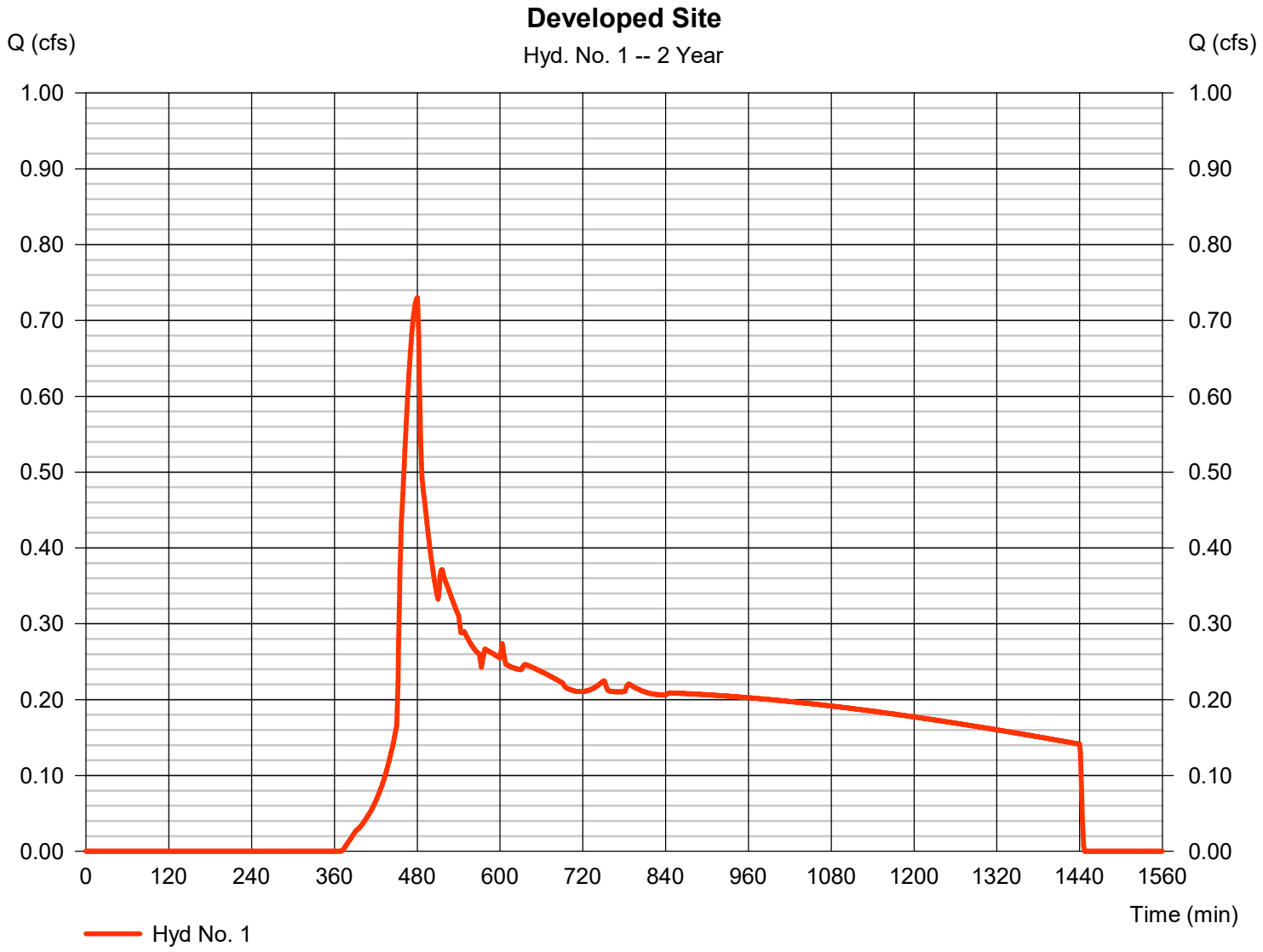
Hydrograph Report

Hyd. No. 1

Developed Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.730 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	1 min	Hyd. volume	=	13,433 cuft
Drainage area	=	3.210 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	4.00 min
Total precip.	=	3.46 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.860 x 98) + (1.350 x 39)] / 3.210



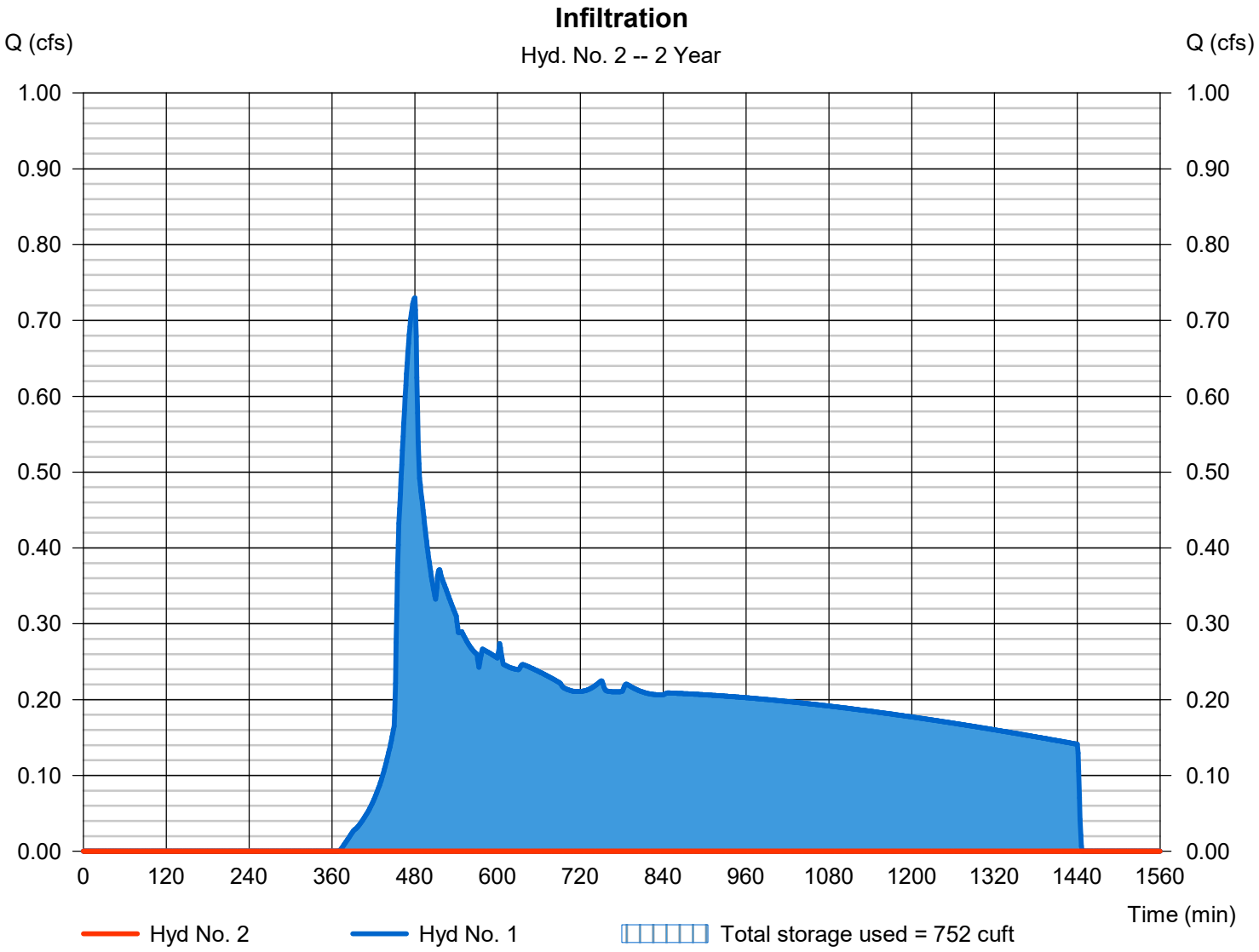
Hydrograph Report

Hyd. No. 2

Infiltration

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	673 min
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Developed Site	Max. Elevation	=	98.30 ft
Reservoir name	=	Detention Pond	Max. Storage	=	752 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - Detention Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 38.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	38.50	153	0	0
0.50	39.00	277	106	106
1.50	40.00	580	419	525
2.50	41.00	955	760	1,285
3.50	42.00	1,399	1,170	2,455
4.50	43.00	1,899	1,642	4,097

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	0.00	0.00
Span (in)	= 3.20	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 97.00	96.50	0.00	0.00
Length (ft)	= 1.00	50.00	0.00	0.00
Slope (%)	= 0.10	5.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 25.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	38.50	0.00	0.00	---	---	---	---	---	---	0.000	---	0.000
0.50	106	39.00	0.00	0.00	---	---	---	---	---	---	0.160	---	0.160
1.50	525	40.00	0.00	0.00	---	---	---	---	---	---	0.336	---	0.336
2.50	1,285	41.00	0.00	0.00	---	---	---	---	---	---	0.553	---	0.553
3.50	2,455	42.00	0.00	0.00	---	---	---	---	---	---	0.810	---	0.810
4.50	4,097	43.00	0.00	0.00	---	---	---	---	---	---	1.099	---	1.099

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.338	1	478	21,913	------	------	------	Developed Site
2	Reservoir	0.000	1	478	0	1	99.42	1,771	Infiltration

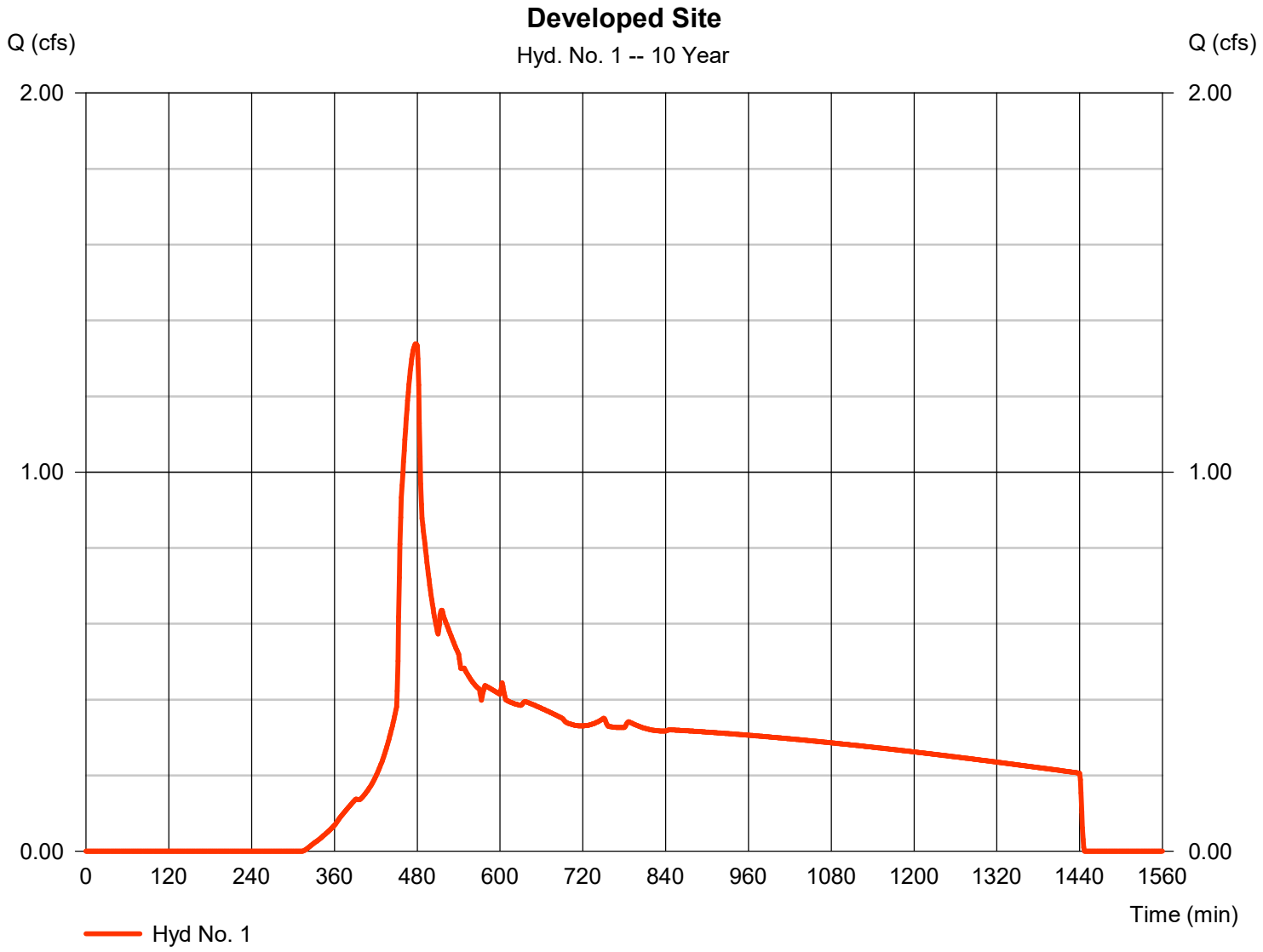
Hydrograph Report

Hyd. No. 1

Developed Site

Hydrograph type	= SCS Runoff	Peak discharge	= 1.338 cfs
Storm frequency	= 10 yrs	Time to peak	= 478 min
Time interval	= 1 min	Hyd. volume	= 21,913 cuft
Drainage area	= 3.210 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 4.00 min
Total precip.	= 4.48 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.860 x 98) + (1.350 x 39)] / 3.210



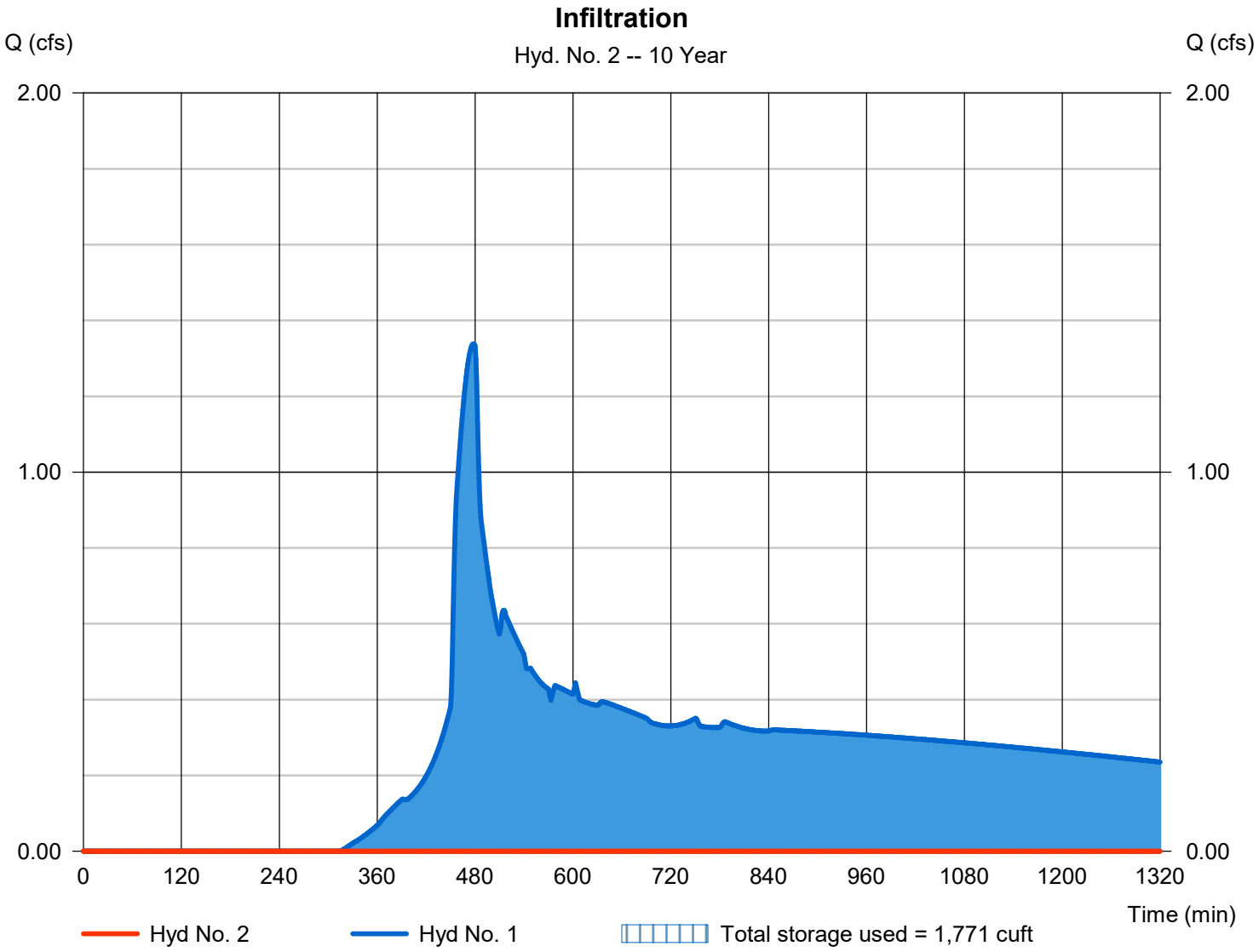
Hydrograph Report

Hyd. No. 2

Infiltration

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	478 min
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Developed Site	Max. Elevation	=	99.42 ft
Reservoir name	=	Detention Pond	Max. Storage	=	1,771 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.721	1	477	27,122	------	------	------	Developed Site
2	Reservoir	0.000	1	538	0	1	100.02	2,492	Infiltration

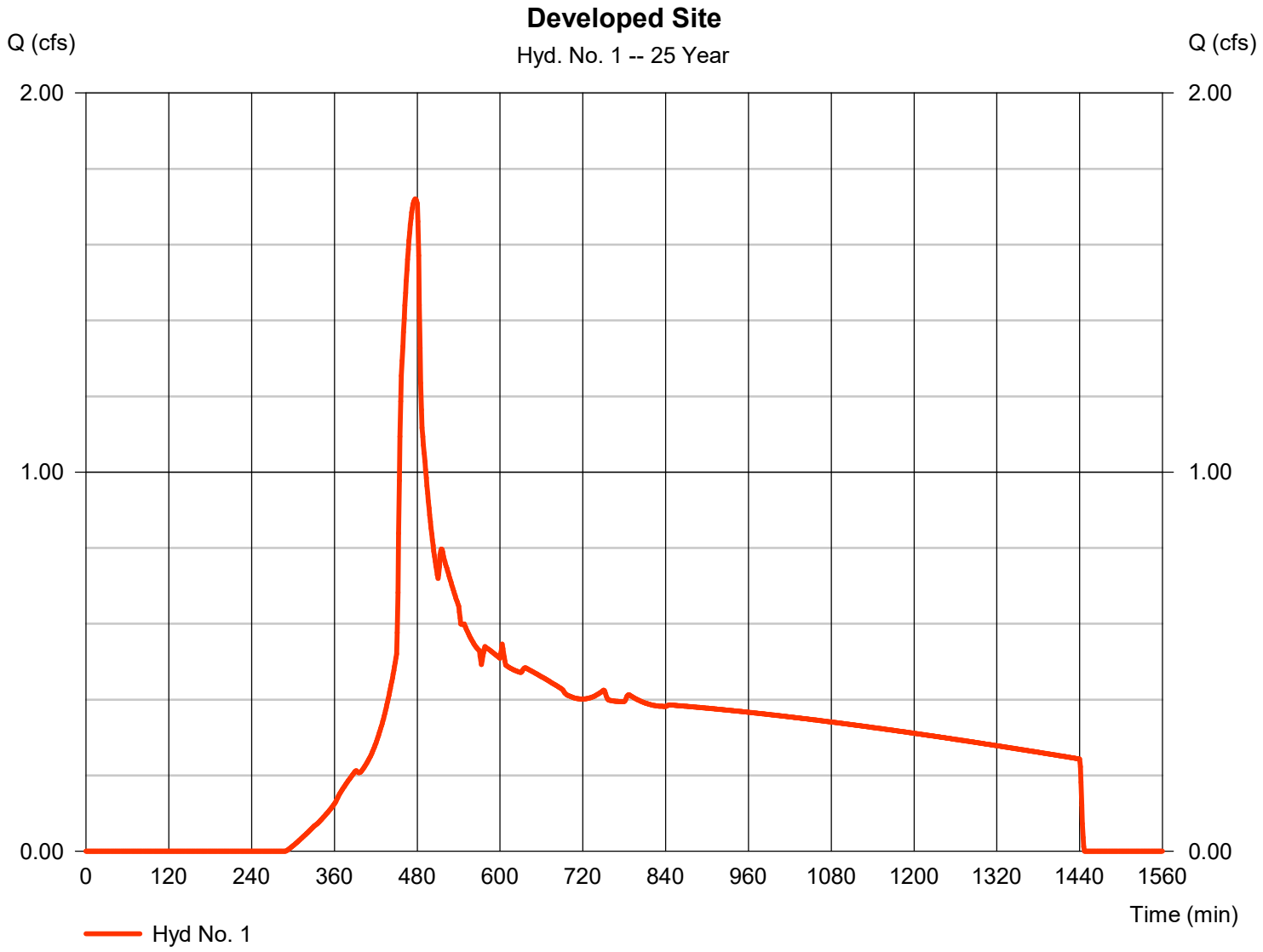
Hydrograph Report

Hyd. No. 1

Developed Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.721 cfs
Storm frequency	=	25 yrs	Time to peak	=	477 min
Time interval	=	1 min	Hyd. volume	=	27,122 cuft
Drainage area	=	3.210 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.06 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.860 x 98) + (1.350 x 39)] / 3.210



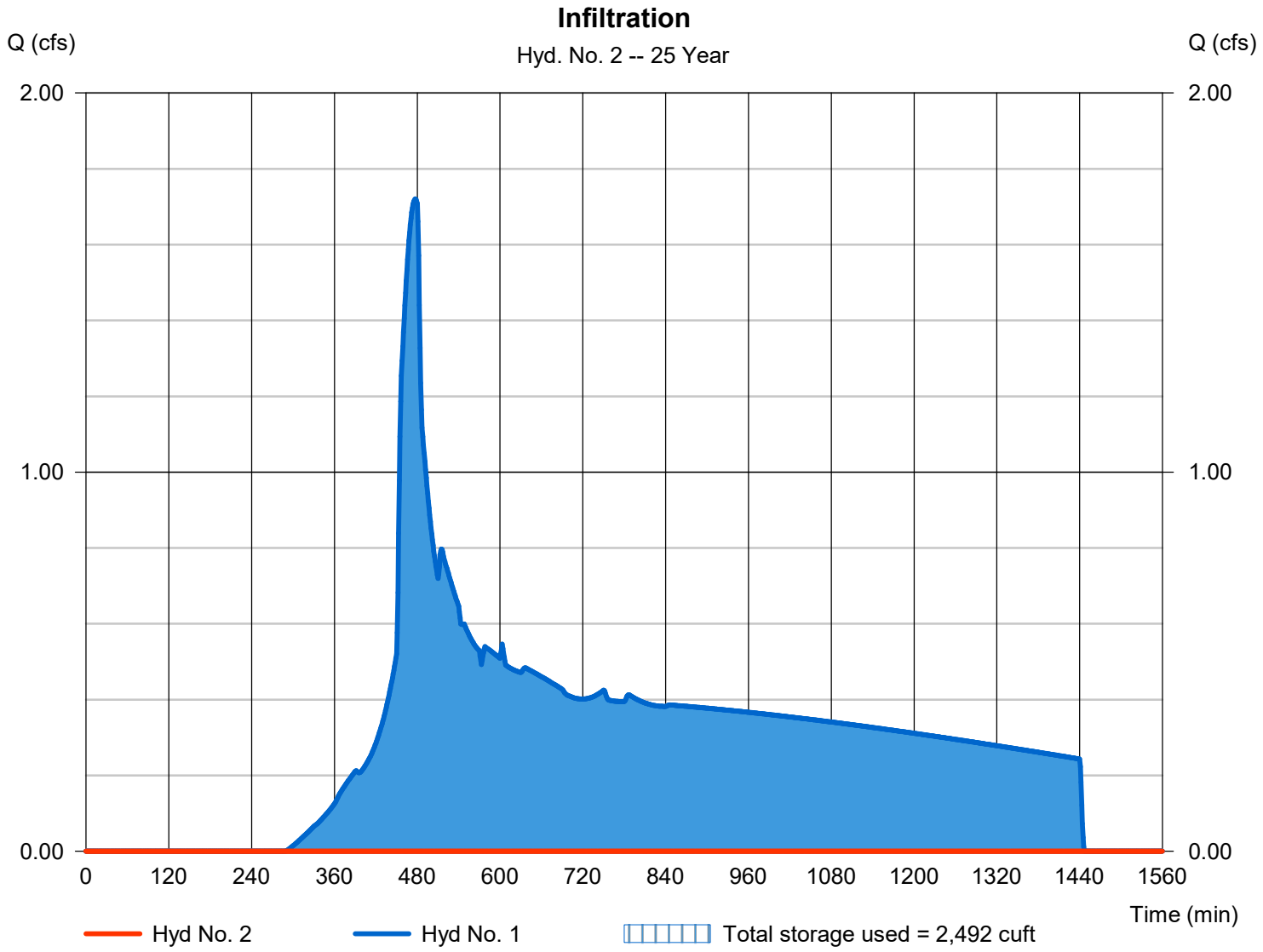
Hydrograph Report

Hyd. No. 2

Infiltration

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	538 min
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Developed Site	Max. Elevation	=	100.02 ft
Reservoir name	=	Detention Pond	Max. Storage	=	2,492 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.343	1	476	35,507	------	------	------	Developed Site
2	Reservoir	0.000	1	504	0	1	100.81	3,783	Infiltration

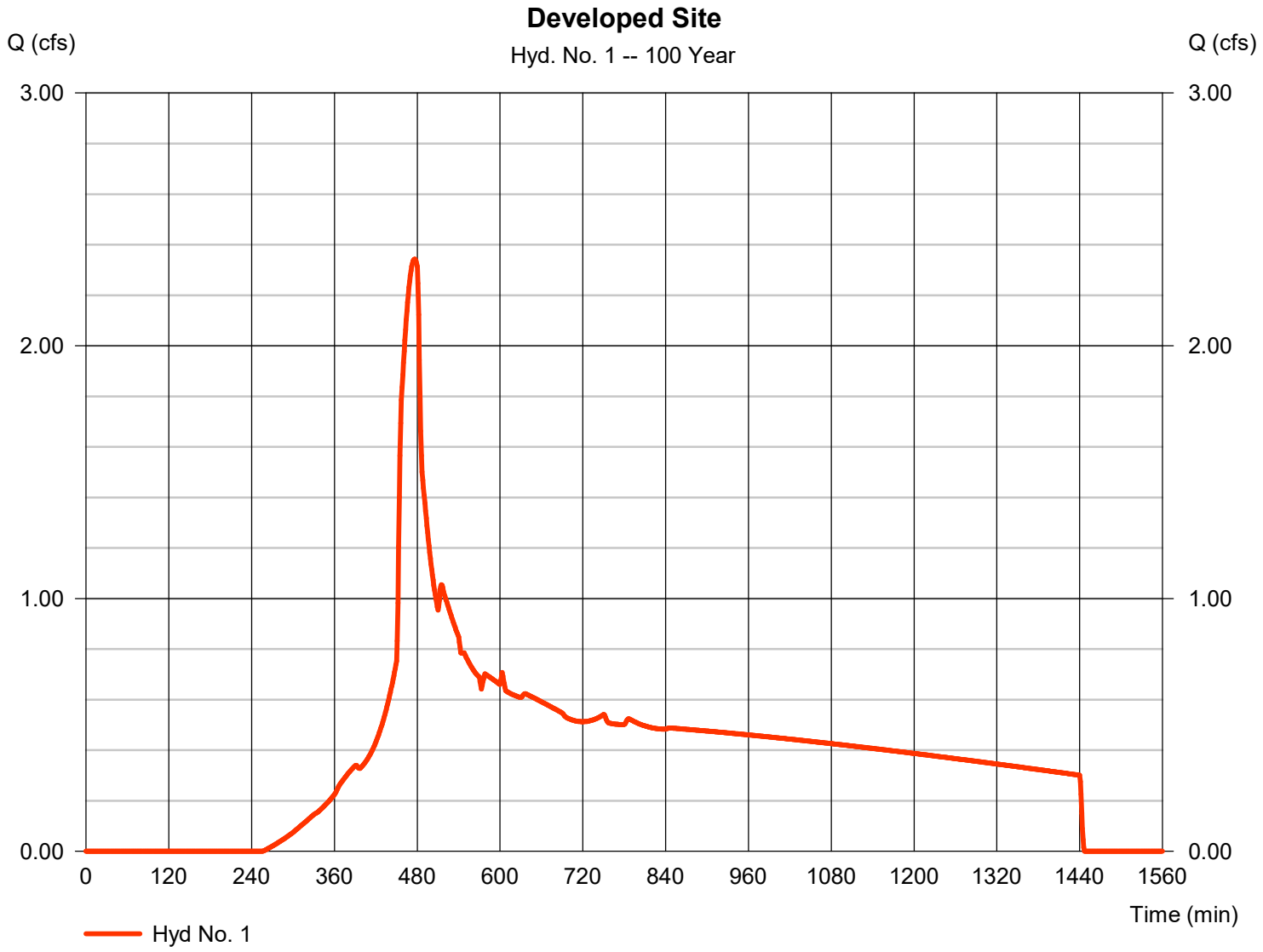
Hydrograph Report

Hyd. No. 1

Developed Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.343 cfs
Storm frequency	=	100 yrs	Time to peak	=	476 min
Time interval	=	1 min	Hyd. volume	=	35,507 cuft
Drainage area	=	3.210 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.95 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.860 x 98) + (1.350 x 39)] / 3.210



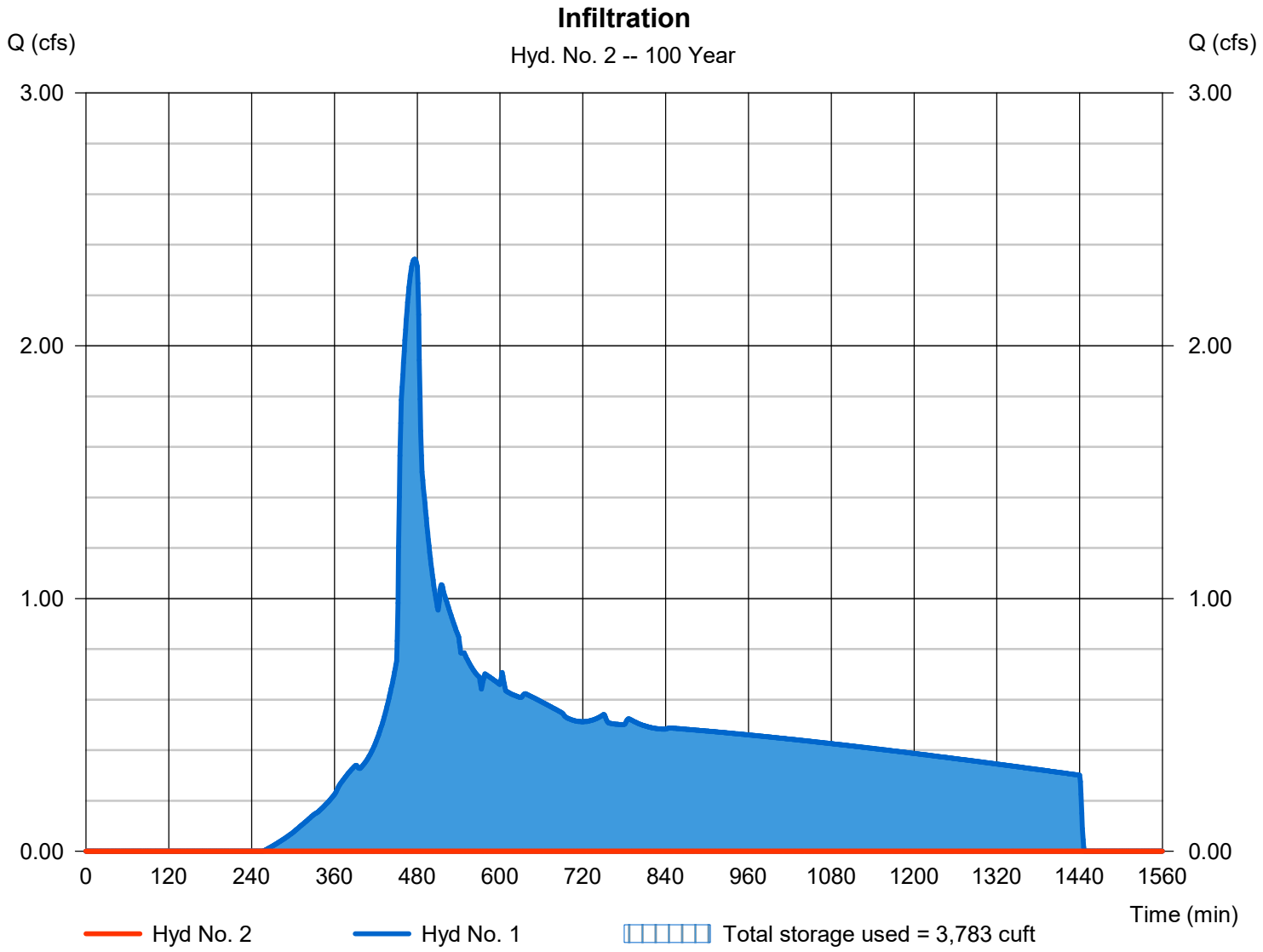
Hydrograph Report

Hyd. No. 2

Infiltration

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	504 min
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Developed Site	Max. Elevation	=	100.81 ft
Reservoir name	=	Detention Pond	Max. Storage	=	3,783 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



APPENDIX D: Operations & Maintenance

After Recording Return to:
Name:
Address:

Place Recording Label Here

APPENDIX A.4

Form O&M: Operations and Maintenance Plan

Permit Application No ._____

Owner Name: _____

Phone: (*area code required)* _____

Mailing Address: *(return address for records)* _____

City/State/Zip:_____

Site Address: _____

City/State/Zip:_____

Site Legal Description:

_____

_____

_____

1 Responsible Party for Maintenance (*check one)*

_ Homeowner association _ Property Owner _ Other *(describe)*

_____

2 Contact Information for Responsible Party(ies) if Other than Owner

Daytime Phone: (*area code required)* _____- _____-_____
Emergency/After Hours Phone: _____- _____-_____
Contact Name and Address:

_____

_

Instructions

Simplified Sizing Approach: *Attach O&M Specifications from the Florence Stormwater Design Manual Appendix H.*

Presumptive and Performance Sizing Approach: *Attach the site-specific O&M Plan (See Stormwater Design Manual Section 6).*

3 Site Plan
Show all facility locations in relation to labeled streets, buildings, or other permanent features on the site. Also show the sources of runoff entering the facility, and the final onsite/offsite discharge point.
Please complete the table below

Maintaining the stormwater management facility on this site plan is a required condition of building permit approval for the identified property. The property owner is required to operate and maintain this facility in accordance with the O&M specifications or plan on file with the City of Florence. That requirement is binding on all current and future

owners of the property. Failure to comply with the O&M specifications or plan may result in enforcement action, including penalties. The O&M specifications or plan may be modified by written consent of new owners and written approval by re-filing with the Community Development Department.

Complete and recorded O&M Forms shall be submitted to:
Community Development Department, 250 Highway 101, Florence, OR, 97439
Office hours are 8 - 5, Monday through Friday. Call 541-997-3436 for assistance.

Required Site Plan (insert here or attach separate sheet)

☐ I Have Attached a Site Plan

Please complete this table

Facility Type	Size (sf)	Drainage is from:	Impervious Area Treated (sf)	Discharge Point	

BY SIGNING BELOW *filer accepts and agrees to the terms and conditions contained in this O&M Form and in any document executed by filer and recorded with it. To be signed in the presence of a notary.*

_____
Filer signature

INDIVIDUAL Acknowledgement
STATE of OREGON county of:

This instrument was acknowledged before me on:

By:

Notary Signature:

My Commission Expires: _____ *for notary seal*

CORPORATE Acknowledgement
STATE of OREGON county of:

_____

This instrument was acknowledged before me on:

_____

By:

_____

As (title):

_____

Of (corporation):

_____

Notary Signature:

_____

My Commission Expires: _____

(SAMPLE)
STORMWATER MANAGEMENT FACILITY
CITY OF FLORENCE, OREGON
OPERATION & MAINTENANCE AGREEMENT

Sediment and other pollutants that degrade water quality will accumulate in urban stormwater facilities. The operation and maintenance of stormwater management facilities including the implementation of pollution reduction facilities is essential to the protection of the city's water quality. Removal of accumulated pollutants and sediment is important for proper operation. All property owners are expected to conduct business in a manner that promotes resource protection. This agreement contains specific provisions with respect to city maintenance of private stormwater management facilities and use of pollution reduction facilities.

Property Address:

Legal description:

Whereas, _____, herein referred to as Owner, has constructed improvements, including but not limited to buildings, pavement, and stormwater management facilities on the property described above. In order to further the goals of the City of Florence to ensure the protection and enhancement of water quality, the City of Florence and Owner hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

Recitals

1. Owner owns the above described property within the City of Florence, Lane County, Oregon.
2. Owner owns and operates stormwater management facilities approved and permitted as required by land use permit _____.
3. Owner has requested the city to provide the functional maintenance of the facility.
4. City approved construction plans dedicating the drainage system conveying the runoff from the residential properties to the stormwater facility as a public drainage system are on file.
5. Access routes for maintenance have been located within a dedicated public easement on private or commonly held property, within the public right-of-way or on city owned property.
6. Sufficient easement area, right-of-way width or property have been provided to accommodate the construction and maintenance of all existing and proposed utilities and public infrastructure.

Owner shall:

1. Implement the stormwater management plan included herein as Attachment "A". (Stormwater disposal and pollution reduction construction details, and source control protection, etc.)
2. Implement the stormwater maintenance plan included herein as Attachment "B". (Owner responsibilities such as vegetation control, debris pickup, etc.)
3. Inspect the facilities monthly and after significant storm events to determine if maintenance activity is warranted.
4. Maintain maintenance and inspection records (in the form of a log book) of steps taken to implement the programs referenced in (1) and (2) above. The log book shall be available for inspection by appointment at _____. The log book shall catalog any action taken, who took the action, when it was taken, how it was done, and any problems encountered or follow-on actions recommended. Maintenance items ("problems") listed in Attachment "A" shall be inspected as specified in the attached instructions or more often if necessary. The Owner and Users are encouraged to photocopy the individual checklists in Attachment "A" and use them to complete its inspections. These completed checklists would then, in combination, comprise the logbook.
5. Submit an annual report to the City of Florence regarding implementation programs referenced in (1) and (2) above. The report must be submitted on or before June 30 of each calendar year after execution of this agreement. At a minimum, the following items shall be included in the report:
    a. Name, address, and telephone number of the businesses, persons, or firms responsible for maintenance plan implementation, and the persons completing the report.

   b. Time period covered by the report.
   c. A chronological summary of activities conducted to implement the program and plan referenced in (1) and (2) above. A photocopy of the applicable sections of the logbook with any additional explanations needed shall suffice. For any activities conducted by paid parties, include a copy of the invoice for services.
   d. Any outline planned activities for the upcoming year.
6. Allow the City of Florence staff to inspect stormwater management facilities at the above referenced site.

City of Florence shall:

1. Execute the following periodic major maintenance on the subdivision's pollution reduction facilities: sediment removal from facilities, resetting orifice sizes and elevations, and adding baffles.
2. Maintain all stormwater management facility elements within the public rights of way and dedicated easements, such as catch basins, weirs, oil-water separators, and pipes.
3. Provide technical assistance to the Owner in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request and as the City of Florence's time and resources permit.
4. Review the annual report and conduct a minimum of one (1) site visit per year to discuss performance and problems with the stormwater management facilities.
5. Review the agreement with the Owner and modify it as necessary at least once every three (3) years.

Remedies:

1. If the City of Florence determines that maintenance that maintenance or repair work is required to be done to the stormwater management facilities located in the subdivision, the City of Florence shall give the Owner notice of the specific maintenance and/or repair required. The City of Florence shall set a reasonable time in which such work is to be completed the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by the City of Florence, written notice will be sent to the Owner stating the City of Florence's intention to perform such maintenance and bill the Owner for all incurred expenses.
2. If, at any time, the City of Florence determines that the existing facility creates any imminent threat to public health, safety, or welfare, the City of Florence may take immediate measures to remedy said threat. No notice to the persons listed in Remedies (1), above shall be required under such circumstances. All other

Owner responsibilities shall remain in effect.

1. The Owner shall grant unrestricted authority to the City of Florence for access to any and all stormwater management facilities for the purpose of performing maintenance or repair as may become necessary under Remedies (1) and/or (2).
2. The Owner shall assume responsibility for the cost of maintenance and repairs to the stormwater management facilities, except for those maintenance actions explicitly assumed by the City of Florence in the preceding section. Such responsibility shall include reimbursement to the City of Florence within 90 days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate for liquidated judgments. If legal action ensues, any costs or fees incurred by the City of Florence will be borne by the parties responsible for said reimbursements. This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the City of Florence. It shall run with the land and be binding on all parties having or acquiring any right, title, or interest or any part thereof, of real property in the subdivision. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof or interest therein, and to the benefit of all citizens of the City of Florence.

This instrument is intended to be binding upon the parties hereto, their heirs, successors and assignees.

In Witness whereof, the undersigned has executed this instrument on this _____ day of _____,20____.

OWNER(s):

Signature _____

_____
(print name)

STATE OF OREGON,
County of Lane, ss:
This instrument was acknowledged before me this _____ day of _____,
20__,by _____, owner(s) of the above described premises.

_____
Notary Public for Oregon

_____
My commission expires

MANAGER, CITY OF FLORENCE
In Witness whereof, the undersigned agent of the City of Florence has executed this instrument and acknowledged
the said instrument to be free and voluntary act and deed on this _____ day of _____,
20____ for the purposes herein mentioned and on oath states he is authorized to execute said instrument.

_____
City Manager

STATE OF OREGON,
County of Lane, ss:
This instrument was acknowledged before me this _____ day of _____,
20__, by _____, owner(s) of the above described premises.

_____
Notary Public for Oregon

_____
My commission expires