Cliffside
Geotechnical Deliverable

CLIFFSIDE COMMUNICATION TOWER

Reference: ©2025 Google. No Scale Intended.

① PROJECT UNDERSTANDING

Existing Site Conditions

The proposed cellular tower site is situated north of the Kootenay River at the end of Cliffside Drive, off of a gravel access driveway to the Paul Nicely residence at 68 Cliffside Drive, Lincoln County, Montana. Property coordinates are Latitude: 48.44541, Longitude: -115.65288. The property is a moderately steep hillside extending upslope a considerable distance, and forest ground adjacent to the United States Forest Service property boundary. Power and communication lines are immediately adjacent to the south and west property boundaries. The site surface elevation is approximately 2,129 feet above mean sea level.

Proposed Construction

The cellular tower will be a self-supported structure with a maximum height of 199 feet and no guyed support system. The foundation system will include a mat slab and pedestal foundation bearing about 6 feet below the ground surface, pending structural design. The foundation footprint is expected to be triangular, with each side approximately 25 to 30 feet long. An equipment cabinet will also be constructed to house the power supply and cellular transmission equipment. The cabinet will be a pre-manufactured structure, founded on a mat slab or precast pedestal foundation, imposing relatively light structural loads (less than 1 kip per square foot).

Rock cuts approximately 15 feet in height are required to excavate north of the existing residence to provide construction and all-weather maintenance access. The cut material will be used as structural fill to level the tower site and construct a fill pad 5 to 8 feet in height and sloping south. The extended access driveway will be surfaced with crushed aggregate to improve support and provide construction access. Power and communication utilities will extend from the existing power lines located 200 feet southwest. The facility will be enclosed with a fence approximately 75 feet on each side.

Subsurface Conditions

The site soil and geologic conditions were explored via a single test pit logged by GPI on October 27, 2025, and previously excavated by Weis Towers. The test pit was positioned proximate to the planned tower location. Topsoil comprising forest duff with some vegetation and organics extended 1 foot below the surface with tree roots present somewhat deeper. Topsoil was silty sand with gravel that was dark brown, loose, and moist to wet. Below the topsoil, colluvial silty gravel with sand was encountered that was tan, loose to medium dense, and moist. The colluvial gravel graded to siltstone bedrock approximately 4 feet below the existing ground surface. The bedrock was moderately to highly weathered, highly fractured, very dense, and was tan with orange-brown mottling. The test pit was performed with the Caterpillar 312 excavator and appeared to extend until practical refusal due to the bedrock density at approximately 9.0 feet below the existing ground surface. Groundwater was not encountered within the depths or locations explored.

② REFERENCES

The field investigation and geotechnical analysis are based upon the authorized geotechnical service dated March 2, 2023, and the current ASTM International (ASTM) standards, Montana Department of Transportation (MDOT), Unified Soil Classification System (USCS), and other reference standards listed below:

Field Exploration
- D 2487 - Test method for classification of soils for engineering purposes (USCS)
- D 2488 - Practice for description & identification of soil (Visual-manual procedure)

Construction Material Standards
- 2022 MDOT Standard Specifications for Road and Bridge Construction (MDOT Standards)

Laboratory Investigation
- ASTM D6913 - Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- ASTM D2216-19 - Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil
- Electrode ASA 12-2.6 - Test method for measuring pH of soil for use in corrosion testing
- Conductivity Meter ASA 10-3.3 - Test method for electrical conductivity for soil resistivity measurements
- Western States Standard Methods Manual - Ion Chromatography (IC) Test Method for measuring sulfate content of soil.

③ GEOTECHNICAL DESIGN BASIS

- International Building Code (IBC), 2018
  - o IBC section 1809 - Shallow Foundations
- GPI's Field Exploration
  - o Test pit advanced on October 27, 2025
  - o Exploration Log - GT4
- Frost Depth: 4-Feet
- Seismic Site Class C referencing IBC
- Estimated Structural Loads
  - o Foundation load: 176 kips
  - o Maximum compression load per leg: 300 kips
  - o Maximum tension load per leg: 250 kips
  - o Horizontal maximum shear: 15 kips
  - o Overturning moment per leg: 5,000 kip-feet
  - o **To be verified by structural design**
- Displacement Tolerance Estimates:
  - o Cell Tower Foundation
    - a. Maximum total vertical settlement: 1.5-inches
    - b. Maximum differential settlement(30-ft-span): 1.0-inches
    - **c. To be verified by structural design**
  - o Equipment Cabinet Foundation
    - a. Maximum total vertical settlement: 1.0-inches
- Settlement Estimates are unfactored
- Bearing Capacity Failure, Factor of Safety (FOS) = 3 or greater

ISSUED FOR
- ☒ DESIGN USE
- ☐ PRELIMINARY REVIEW
- ☐ YOUR APPROVAL
- ☒ REFERENCE
- ☒ CONSTRUCTION
- ☒ DESTROY PREVIOUS PRINTS

REV	DATE	DESCRIPTION
1	11/11/25	DRAFT 1
2	11/18/25	FINAL

CHECK: TJW
FILE: MO25240F
PROJECT: CLIFFSIDE NOBLE MOUNTAIN COMMUNICATION TOWER LINCOLN COUNTY, MONTANA
GEOTECHNICAL ENGINEERING EVALUATION

DRAWN: AJS
DESIGN: TJW
PREPARED FOR: WEIS TOWERS 103 S 2ND STREET ROSLYN, WA 94941
ATTN: MR. SCOTT HEFT AND MR. NATHAN WEIS

WEIS TOWERS

MONTANA ANDREW J. ABRAMS No.18037PE LICENSED PROFESSIONAL ENGINEER

GeoProfessional Innovation®
GPI 6 O'Donnell Road Pullman, WA 99163 509.339.2000

GEOTECHNICAL DELIVERABLE

3

4 EARTHWORK

Site Preparation/Subgrading

1. Remove any soil containing vegetation and organics from beneath planned foundations plus 5-feet laterally. Surface soil containing moderate amounts of vegetation and organics extends 1.0-foot below the existing ground surface. Topsoil is not suitable for reuse as structural fill.
2. Exploratory test pit backfill must be relocated and remediated if the test pit location is within 10-feet of new foundations. Excavate loose backfill that remains below foundation bearing elevations and replace it with structural fill.
3. Prepare the tower and equipment shelter foundation subgrades to expose hard, competent bedrock free of loose soil, rock, and debris.
4. Alternatively, equipement shelpter foundations may bear of SF-1 compacted per Structual Fill requirements.
5. After achieving subgrade requirements, the contractor or Weis Towers shall protect the subgrade from becoming disturbed or frozen. The contractor must limit construction traffic to any prepared subgrades and reduce the subgrade's exposure to precipitation and water infiltration.
6. Grade subgrades aggressively (typically >5%) to direct surface water away from construction areas to avoid ponding. Specifically, divert storm water from the south side of tower away from tower base.

Over-Excavation

1. In areas that do not exhibit the required *Site Preparation/Subgrading* conditions, over-excavate to dense bedrock at the direction of Weis Towers and GPI.
2. Loose or soft soil over-excavation or other site conditions may occur, and that criteria shall be determined during construction with GPI. Over-excavations should extend at least 1-foot below the subgrade and laterally 1/2 the depth.
3. Replace these over-excavations with *Crushed Surfacing* (CS-1) as described in the *Structural Fill* section.

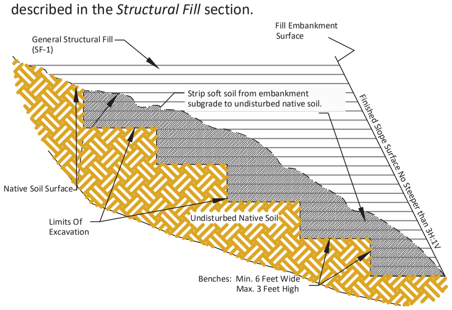


Figure G2.1: Slope Construction Schematic

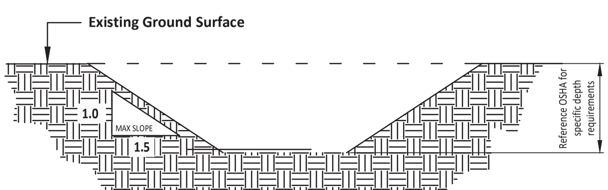


Figure G2.2: Excavation Sloping

Excavation Characteristics

1. Site soil is expected to be excavatable with conventional equipment.
2. Bedrock excavation is necessary to achieve the planned foundation subgrade.
   - Large track hoes with ripper shanks and hydraulic breakers may be required to accomplish excavation into bedrock.
   - Bedrock excavation shall be preformed with late-model, track mounted hydraulic excavators (Caterpiller 320 or larger); equipped with short-tip-radius bedrock buckets; rated at not less than 150-hp net flywheel power with a bucket-curling force of no less than 28,000 lbf and stick-crowd force of not less than 18,500 lbf
   - A minimum 7,500ft-lb hydraulic breaker is required to breakout competent bedrock with not fractured or weathered. Contractor shall maintain contingencies for mobilizing such equipment.
   - For reuse as structural fill, bedrock excavation must reduce the excavation spoils to a maximum 0.5-foot particle size unless oversize bedrock boulders are removed from the structural fill products.
3. Temporarily excavate, slope, shore or brace excavations in accordance with the *Occupational Safety and Health Act* (OSHA) guidelines. Regulations outlined in OSHA part 1926 provide temporary construction slope requirements for various soil types and slopes and configurations.
4. The on site soil is classified as Type C soil referencing OSHA, and must be temporarily sloped back at least 1.5H:1V (horizontal:vertical).
5. Competent bedrock is classified as Type A material referencing OSHA, and must be temporarily sloped back at least 3/4H:1V.
6. Construction vibrations, seepage, or surface loading can cause excavations to ravel or cave and should be avoided or construction slopes flattened.
7. Ultimately, the contractor is solely responsible for site safety, excavation configurations, and maintaining OSHA-approved personnel for excavation monitoring.

Wet Weather/Wet Soil Construction

1. This project may not occur during dry weather conditions (typically May through November).
2. The contractor shall prepare subgrades and stage earthwork noting wet weather and wet soil may exist.
3. The site soil along access roads and surrounding the tower can be susceptible to pumping or rutting from heavy vehicle and equipment loads.
4. Complete earthwork by track-mounted equipment that reduces pressure applied to the soil subgrades.
5. Stage construction, specifically excavation and backfilling, to avoid traffic on subgrades.
6. Coordinate construction activities and excavation backfilling as rapidly as possible following excavation to reduce the potential for subgrades to degrade under construction traffic.
7. Plan excavations carefully, allowing water collection points and utilizing conventional sumps and pumps to remove nuisance water from runoff, seeps, springs, or precipitation.

5 STRUCTURAL FILL

Material Requirements

1. The site soil free of vegetation and organics may be reused as *General Structural Fill* (SF-1) provided it can be moisture conditioned and processed to meet the criteria presented in Table G2.1.
2. Material requirements for structural fill reference the MDOT Standards.
3. All fill for this project shall be structural fill meeting the product measurements are described in Table G2.1 below.
4. Where fill is placed on existing slopes steeper than 5H:1V, key new fill into native soil as shown in Figure G2.1.

Table G2.1: Structural Fill Specifications and Allowable Use

SF-1	General Structural Fill	All site grading, foundation backfill, utility trench backfill outside pipe zone	- Soil classified as GW, GP, GM, SP, SM, and SW according to the USCS. - Soil must contain less than 3 percent (by weight) of organics, vegetation, wood, metal, plastic, or other deleterious substances. - Soil may not contain particles larger than 0.5-feet in diameter. - Coarse granular soil locally know as "shotrock" or "pitrun" may also be used as SF-1.
CB-1	Crushed Base	SF-1 uses, foundation support aggregate, over-excavations, access road surfacing	– Meeting requirements in MDOT Standards Section 701.02.4 Crushed Base Course Type "A"
PB	Pipe Bedding	- Utility pipe and culvert bedding within 0.5 of the pipe invert and 1-foot over the pipe	- Meeting requirements in MDOT Standards *Section 701.04.1 - Material Bedding*

Earthwork Testing

The firm retained to verify subgrade conditions, soil bearing units, and compaction shall become the geotechnical engineer-of-record for construction. At a minimum the following earthwork testing frequencies shall be implemented:

1. Geotechnical engineer shall review exposed rock bearing unit to confirm foundation design bearing pressures.
2. Geotechnical engineer shall also document clearing and grubbing efforts at the base of embankments
3. Utility Trench Backfill – Minimum 1 compaction test every 100 linear feet (lf) of trench and minimum 3 tests per testing event, whichever results in the greater number of tests, per each fill lift.
4. Structural Fill Placement – Minimum 3 compaction tests every fill lift for foundation and embankment backfill.

Utility and Culvert Trench Backfill

1. Remove all saturated, loose, or disturbed soil from the bottom of the utility and culvert trenches prior to placing *Pipe Bedding*.
2. Accomplish bedding for culvert pipes and utility trenches in accordance with MDOT Standards.
3. Backfill the remainder of utility and culvert trenches in accordance with the *Structural Fill* specification and Tables G2.1 and G2.2. Segregate large cobbles and boulders from utility trench backfill.
4. Utility trench backfill on slopes steeper than 5H:1V must be keyed and compacted to Structural Fill requirements and appropriate erosion protection applied.

Required Compaction

Backfill to support the tower structure, equipment cabinet, or driveway improvements must be compacted to the structural fill requirements presented in Table G2.2 below.

Table G2.2: Required Structural Fill Products for Designated Project Areas

Project Area	Required Structural Fill Product	Compaction Requirement[A]
In-situ subgrades below cell tower, and equipment cabinet foundations	Bedrock	N/A[B]
Roadway and equipment cabinet subgrades	SF-1	95%
Foundation support aggregate (if necessary) and roadway surfacing	CB-1	95%
Foundation/utility trench backfill	SF-1	95%

Table G2.2 Notes:
A. Relative compaction requirement compared to the maximum dry density of the soil as estimated by ASTM D 1557 (Modified Proctor).
B. Bedrock subgrades must be excavated to maintain an undisturbed surface free of loose soil, rock protrusions, and debris.
C. Some granular structural fill products require method compaction efforts (reference *Coarse Fill* section).

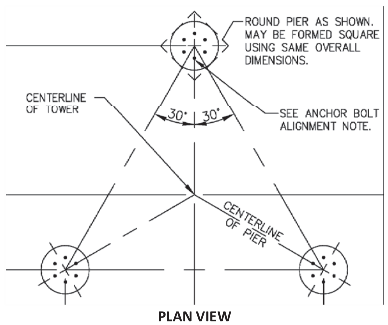
1. Fill placed 10 lateral feet outside the cell tower footing or equipment cabinet foundation can be placed as non-structural fill (i.e., landscape fill), providing there are no structures planned directly above the landscape fill and the landscape fill is not on a slope greater than 5H:1V (horizontal:vertical).
2. Structural fill shall not contain particles of frozen soil, mud, snow, or ice. Structural fill shall not be placed on frozen subgrades.
3. Structural fill products must be moisture conditioned to near optimum moisture content, placed and compacted in maximum 1-foot-thick, loose lifts, providing compaction equipment weighs a minimum of 5 tons. If smaller or lighter compaction equipment is provided, reduce the lift thickness to meet the compaction requirements presented herein.

Coarse Fill

1. Any material with greater than 30 percent retained above the ¾-inch sieve is too coarse for Proctor density testing, but may be used as SF-1. Thistle soil, rock cap, pit run, and shotrock are 3 typical materials which are too coarse for density testing. Coarse fill must be compacted using a "method specification" developed during construction that is based on the material characteristics and the contractor's means and methods.
2. At a minimum, place all oversize material in maximum 1.5-foot lifts and compact with 5 complete passes of a 10-ton vibratory roller.
3. Vibratory rollers must have a dynamic force of at least 30,000 pounds per impact per vibration and at least 1,000 vibrations per minute. Coarse fill must be compacted to a dense, interlocking, and unyielding surface. Vibratory rollers can negatively impact nearby structures and must be used with caution.

⑥ FOUNDATION DESIGN

A mat and pedestal foundation is planned to support the cell tower and typical mat-slab or precast pedestal foundations will support the equipment cabinet. Construct foundations on subgrades prepared per the *Site Preparation/Subgrading* section on sheet GT2. Expose undisturbed, dense native soil for tower mat and equipment foundations or recompact site soil per Table G2.2. Schematics illustrating the tower mat foundation and a typical equipment mat-slab foundation are shown in Figures G3.1 and G3.2 below. Figures G3.1 and G3.2 **are not structural details** and must be verified by the structural designer and manufacturer.



PLAN VIEW

Reference: Previous self support tower Structural Designs

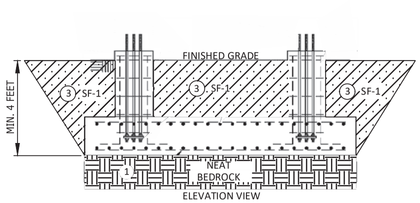


Figure G3.1: Cell Tower Mat Foundation Schematic To Be Verified and Dimensioned by Tower Designer

	Prepare subgrade per *Subgrading* section requirements For all other Structural Fill Products see Table G2.1
①	Siltstone bedrock cut neat and free of debris
②	CB-1 Compacted to 95% ASTM D1557
③	SF-1 Compacted to 95% ASTM D1557

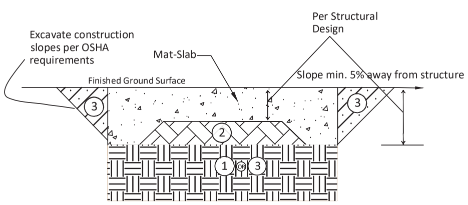


Figure G3.2: Equipment Shelter Foundation Schematic To Be verified and Dimensioned by Tower Designer

Foundation Parameters

1. Maximum allowable cell tower mat foundation bearing pressure on argillite bedrock (exposed in cut): 8,000 psf
2. Maximum allowable equipment cabinet bearing pressure on recompacted site soil: 3,000 psf
3. Maximum 33 percent increase allowed for short term load increases such as wind or seismic.
4. Estimated mat foundation vertical settlement:
   - Total vertical settlement: 0.8-inches
   - Total differential settlement: 0.5-inches across the foundation
5. Estimated equipment cabinet foundation vertical settlement bearing on compacted site soil:
   - Total vertical settlement: 0.9-inches
6. Lateral load resistance:
   - Foundation base friction coefficient:
     - o 0.5 for foundations cast directly on siltstone bedrock.
     - o 0.4 for foundations cast directly on dense, undisturbed or recompacted native gravel with sand.
     - o Reduce friction coefficient by 1/3 for precast concrete
   - Passive soil resistance on foundation sides (structurally backfilled SF-1):
     - o Equivalent fluid pressure: 420 pcf on-site soil (SF-1)
     - o Requires 3/4-inch lateral movement to mobilize full resistance.
     - o Reduce proportionally for less allowable lateral movement.
7. All footings are considered exterior and must extend at least 4.0-feet below the final ground surface grade to help protect against frost action. Expect frost action on equipment cabinet if foundations are not embedded below frost requirements.
8. The structural engineer must calculate the soil required to resist lateral and overturning loads applied to the cell tower. Utilize a moist unit weight of 135 pcf for site soil and broken rock compacted over the finished cell tower foundation.

Soil Corrosivity

1. pH = 6.2 - slightly acidic
2. Resistivity = 3,450 ohm-cm - low corrosivity
3. Sulfates = 9.0 ppm - very low
4. Account for the soil's moderate corrosion potential by placing reinforcing steel with maximum clearances established through structural design.
5. Based on these corrosion parameters, special cathodic protection or other methods of corrosion protection for buried structures will not extend their practical useful life.
6. Applicable for Type I/II and 1L cement.
7. There is an adequate soil profile for grounding.

Seismicity

1. Site geology correlates to a seismic site soil profile Class C.
2. Seismic design shall reference the parameters provided in Table G3.1. based on the soil conditions and project location.
3. Subsurface conditions encountered in our explorations are comprised of dense to very dense well graded gravel. Groundwater is estimated to be in excess of 100-feet below the ground surface. Based on these conditions, liquefaction potential is low at the site.
4. The design spectral acceleration parameters provided in Table G3.1 are equal to 67 percent of the Risk Targeted MCER acceleration parameters.

Table G3.1: Seismic Response Criteria (ASCE 7-16)[1]

Period (seconds)	MCER Spectral Acceleration Parameters for Site Class C (g)[3]	Design Spectral Acceleration Parameters for Site Class C (g)
0.0 (Peak)	$PGA_M = 0.17$	-
0.2 (Short)	$S_{MS} = 0.4$	$S_{DS} = 0.27$
1.0	$S_{M1} = 0.15$	$S_{D1} = 0.099$

1. Values for location Latitude: 48.44541°N, Longitude: -115.65288°W.
2. Acceleration based on 2% probability of exceedance in 50 years (2,475 year return period).
3. Values for an ASCE Risk Category III.

⑦ SITE DRAINAGE

Surface Grading

1. Significant impervious areas will not occur as part of this project. Site grading design and construction must allow for positive drainage of surface runoff water away from the proposed structures and not be allowed to infiltrate foundation subgrades.
2. Maintain existing drainage paths to facilitate positive flow away from the tower and equipment cabinet.
3. Per IBC Section 1804, slope all surfaces within 10 feet of the structure(s) away from foundations.
4. Construct ditches (see Figure G3.3) along the access driveway to maintain existing drainage paths and to control runoff from tower pad and access roadway. Establish necessary erosion control measures to reduce erosion in newly constructed areas. Excessive water can saturate nearby slopes and cause slope failures, roadbed degradation, and other issues for Weis Towers.
5. Groundwater is estimated to be in excess of 50-feet below the ground surface at the tower site and will not impact site drainage or infiltration.
6. We did not identify surface expressions of groundwater proximate to the tower site at the time of exploration.

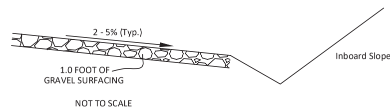


Figure G3.3: Access Road Cross Section

⑧ ACCESS ROAD

Road Construction

1. Expect excavation and improvement for the access driveway to the tower site from the residence. Rock excavation is required.
2. Remove topsoil and forest duff during access road improvements to allow construction and maintenance equipment access. Soil free of vegetation and debris may be used as SF-1.
3. The access road shall be gravel surfaced for traction and all weather travel. Strip topsoil per *Earthwork*, Section 4 on Sheet GT2. Moisture condition and compact the subgrade with at least 5 complete passes of a 10-ton or larger vibratory roller.
4. Construct appropriate culvert crossings as necessary.
5. Maintain stormwater conveyance ditches on the inboard side of the roadway. Place rock check dams every 100 feet on ditch grades steeper than 10% and install culverts as necessary to direct runoff. See Figure G3.4.
6. Place all fill as structural fill meeting the requirements in Tables G2.1 and G2.2.
7. Place a minimum of 1.0 foot of CB-1 above prepared subgrades to create the finished roadway surface.

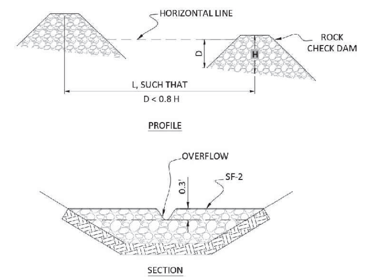


Figure G3.4: Typical Rock Check Dam

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	2	11/18/25	FINAL

CHECK: TJW
FILE: MO25240F
PROJECT: CLIFFSIDE NOBLE MOUNTAIN COMMUNICATION TOWER LINCOLN COUNTY, MONTANA
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WEIS TOWERS

MONTANA ANDREW J. ABRAMS No.18037PE LICENSED PROFESSIONAL ENGINEER

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FOUNDATION DESIGN, SITE DRAINAGE, ACCESS ROAD

3

9 EXPLORATION LOG

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
				GP	POORLY-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
		GRAVEL WITH FINES		GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES.
				GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURES.
	SAND	CLEAN SAND		SW	WELL-GRADED SAND, GRAVELLY SAND.
				SP	POORLY-GRADED SAND, GRAVELLY SAND.
		SAND WITH FINES		SM	SILTY SAND, SAND-SILT MIXTURES.
				SC	CLAYEY SAND, SAND-CLAY MIXTURES.
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILT, SANDY OR CLAYEY SILT.
				CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, SANDY OR SILTY CLAY.
				CL-ML	INORGANIC MIXED CLAY AND SILT.
				OL	ORGANIC SILT AND CLAY OF LOW PLASTICITY.
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILT, MICA- CEOUS SILT, PLASTIC SILT.
				CH	INORGANIC CLAY OF HIGH PLASTICITY, FAT CLAY.
				OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY.
				PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS.

BORING LOG SYMBOLS	TEST PIT LOG SYMBOLS	GROUNDWATER SYMBOLS
STANDARD 2 INCH OD SPLIT SPOON SAMPLE	GRAB BAG SAMPLE (BG)	GROUNDWATER AFTER 24 HOURS
CALIFORNIA MODIFIED 3 INCH OD SPLIT SPOON SAMPLE	BULK SAMPLE (BK)	GROUNDWATER AT TIME OF DRILLING
ROCK CORE	RING SAMPLE (RG)	GROUNDWATER AT THE END OF DRILLING
SHELBY TUBE 3 INCH OD UNDISTURBED SAMPLE		

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
(SM) FOREST DUFF - SILTY SAND, dark brown, loose, wet	0.0	SM								Some vegetation and organics encountered to 1.0 foot.
(GM) COLLUVIUM - SILTY GRAVEL WITH SAND, tan to reddish brown, loose to medium dense, humid to moist	2.5	GM		BK	0.1		7.8			Ph = 6.2 Resistivity = 3,400 ohm-cm Sulfates = 9.0 mg/kg
(RX) SILTSTONE, tan with iron staining, highly fractured, moderately to highly weathered, dense to very dense	5.0 7.5	RX								

Test Pit Terminated at 9.0 Feet.

Client: Weis Towers	Test Pit Number: TP-25240F-1	GeoProfessional Innovation	EXPLORATORY TEST PIT LOG
Project: Cliffside Tower	Date Excavated: 10-27-2025		
Backhoe: CATERPILLAR 312	Bucket Width: 3'		
Depth to Groundwater: N.E.	Logged By: TJW		Sheet 1 Of 1

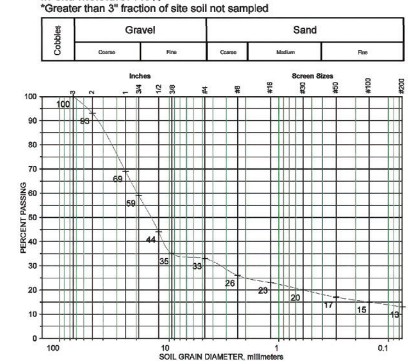
Test Pit TP-25240F-1 Photograph

10 LABORATORY TESTS

GRADATION ANALYSIS

ASTM D6913

Project Name: Cliffside Communication Tower
Project Number: MO25240F
Client: Weis Towers
Sample Location: TP-25240F-1 @ 3.0-4.0 feet BGS
Sample Classification: Silty Gravel with Sand (GM)
Date Tested: 11/4/2025 By: MK
pH: 6.2 Resistivity: 3,450 Ω·cm Sulfate: 9.0
In-situ Moisture: 7.8%
*Greater than 3" fraction of site soil not sampled



Reviewed by: ________

GeoProfessional Innovation.

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☒ DESIGN USE ☐ PRELIMINARY REVIEW ☐ YOUR APPROVAL ☒ REFERENCE ☒ CONSTRUCTION ☒ DESTROY PREVIOUS PRINTS	1 2	11/11/25 11/18/25	DRAFT 1 FINAL	FILE: MO25240F PROJECT: CLIFFSIDE NOBLE MOUNTAIN COMMUNICATION TOWER LINCOLN COUNTY, MONTANA GEOTECHNICAL ENGINEERING EVALUATION	DESIGN: TJW PREPARED FOR: WEIS TOWERS 103 S 2ND STREET ROSLYN, WA 94941 ATTN: MR. SCOTT HEFT AND MR. NATHAN WEIS

WEIS TOWERS

MONTANA ANDREW J. ABRAMS No. 18037PE LICENSED PROFESSIONAL ENGINEER

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