Ontario
SCHOOL DISTRICT 8C

Bob Bennett
Maintenance, & Grounds Supervisor
689 NW 6th Street • Ontario, Oregon 97914
Phone 541.881.1274 • Fax 541.889.8553
Cell phone 541.235.4006
bbennett@ontario.k12.or.us

June 11, 2024

# Addendum #1 To
# Football Field Lighting Upgrade RFP

1. Line 1 should be worded as follows; **Replace and relocate existing wooden light poles with new galvanized steel poles, concrete foundations, and LED sports lighting.** Underlined words have been added in this addendum.
2. Attached you will find a copy of the Pavement Geotechnical Investigation that has been completed for anticipated track replacement. Although boring was not done to a depth necessary for light pole replacement I believe you can find useful information in it.
3. Everyone's packet included emails and diagrams from Matt Oxnam Idaho Power's recommendations, measurements, guidelines, and requirements. This addendum also includes Idaho Powers most recent communication regarding pole location on the east side of the track. Contractors will be responsible for providing Matt with the requested pole deflection information for approval. Contractor will still be responsible for locating these coordinates, staking that location and contacting Matt Oxnam at Idaho Power to get final approval of the staked location prior to any excavation work beginning.
4. Staked location still needs to be outside of any other utility easements or right of ways such as the City Sewer running through the property going east to west along the north fence line and north to south along the east side of the track from Idaho Ave and any other easements.
5. There was some confusion on the lighting of the track and the football field. The intended purpose of the new lighting is to properly illuminate the football field itself. There is no intended purpose to provide lighting on the track surface for conducting night time track meets. Any reference to track lighting is directed at having light cast upon the track for the purpose of people walking the track at night to see if something is on the track that they might trip over. Much like a night light might be used in a residence.
6. District would like to see a cost comparison of having 50 foot candles and 30 foot candles illuminating the field.
7. Warranty information to be included in proposals for poles, lighting fixtures and systems, and labor.

8. Lighting design to include a grid of 72 points for football and 77 grid points for soccer. Grids should be no larger than 30 feet square.

9. Idaho Power is providing a new 50KVA overhead transformer. From that the contractor will have to furnish and install a 400 amp distribution panel board with dedicated breakers per pole for LED Sports field lights, CT Can, a meter base, and necessary breakers and circuits for additional east side LED track lights (2 total) and repurposed track and parking lot lighting (west side). Item 10 in the RFP should also have included language that electrical installation will also include trenching through soil, under asphalt and concrete on both east and west side of stadium. *Under scored wording has been added to this addendum above.*

10. Metal poles with concrete foundations seem to be the standard in the industry. If significant cost savings can be shown with comparable life spans, warranties, and engineering specs, wood poles may be considered. If proposing wood poles this needs to be clearly called out in the proposal. It could be shown as an alternate or a second proposal could be submitted by the proposer. All differences between wood and metal need to be clearly defined including installation methods, foundations if any, and any maintenance or inspection requirements for both metal and wood.

11. If proposing metal poles they must be galvanized steel poles.

12. LED lighting fixtures for the football field must be a LED Sports Lighting fixture and not just a LED flood style light fixture.

13. A photometric of the lighting plan should be included in the proposal showing illumination levels on the field, the grid points referenced earlier in this addendum, and the overflow of lighting to the neighboring properties. Care needs to be used in considering the glare that may impact players on the field, passing motorists, and neighboring property.

14. Upon completion of the project and final settings are made to light fixtures, contractor will be required to provide written documentation that field lighting and overflow lighting levels match the proposed light levels shown on the photometric.

15. Proposal should include documentation from a licensed engineer approved to perform work in Oregon and show pole specifications, foundation specifications, wind loading on the pole, and the requested deflection information requested by Idaho Power.

16. Question was raised about the color temperature and the CRI level. Ontario School District wishes to remain with the 5000K color temperature and wants a CRI level at or above 70.

17. Question was raised during site visits about leaving some or all of the existing wood poles along with current lighting fixtures and sound system. In the interest of time for this RFP, proposers should proceed with planning to remove all 4 of the existing wooden poles on the west side of the stadium to a level of 1 foot

below concrete surface. Installing industry standard fill material and compacting under concrete and pouring a concrete top to match surrounding concrete surface. This will include approved method of either abandoning or repurposing existing electrical conduits, phone communications, and speaker wiring.

18. Discussion was also had about bringing electrical wire to the northwest pole on the west side of the stadium and then continuing overhead to the southwest pole on the west side of the stadium. This is not going to be an acceptable option and proposer should continue with planning to run electrical service underground to all four of the new galvanized steel poles.

19. A recommendation was made to change the Uniformity Ratio from 2:1 to 2.5: 1. Ontario School District will remain with the 2:1 Uniformity Ratio.

Addendum 1 includes 19 points listed above as changes, clarifications, or additions to the original Request For ProposalFootball Field Lighting Upgrade / Replacement.

A copy of the Geotech Survey conducted in the Ontario High School football stadium.

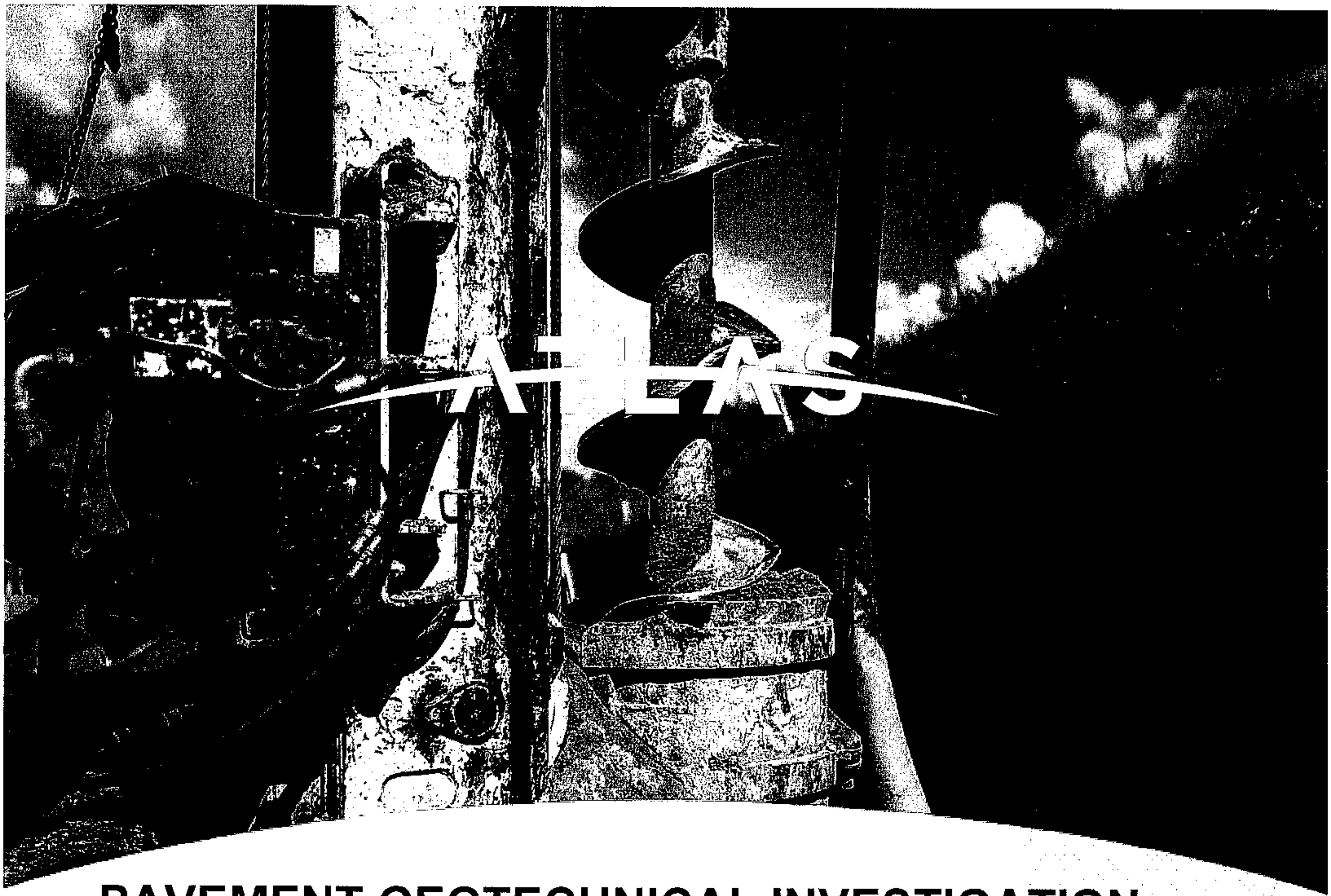
A copy of the most recent email from Matt Oxnam dated 6/10/2024 at 2:53 p.m. giving the coordinates for the east side poles and request for deflection information.

Proposal should include documentation acknowledging receipt of addendum.

Please keep in mind we discussed preparing proposals so that information is easily comprehended by individuals that may not have extensive field lighting experience. Top two proposers may be asked to review their proposals with the selection committee.

**NEW DUE DATE AND TIME FOR PROPOSALS WILL BE THURSDAY JUNE 20, 2024 AT 2 P.M. MDT.**

This concludes comments, clarifications, and changes to the Request For Proposal Football Field Lighting Upgrade / Replacement.



# PAVEMENT GEOTECHNICAL INVESTIGATION

## ONTARIO HIGH SCHOOL TRACK RENOVATION

1115 West Idaho Avenue
Ontario, OR

**PREPARED FOR:**
James Traynor
Beynon Sports
4668 N. Sonora Avenue, Suite 101
Fresno, CA 93722

**PREPARED BY:**
Atlas Technical Consultants, LLC
2791 South Victory View Way
Boise, ID 83709

February 23, 2024
B240062g

ATLAS

2791 South Victory View Way
Boise, ID 83709
(208) 376-4748 | oneatlas.com

February 23, 2024

Atlas No. B240062g

James Traynor
Beynon Sports
4668 N. Sonora Avenue, Suite 101
Fresno, CA 93722

**Subject:** **Pavement Geotechnical Investigation**
**Ontario High School Track Renovation**
**1115 West Idaho Avenue**
**Ontario, OR**

Dear James Traynor:

In compliance with your instructions, Atlas has conducted a soils exploration and pavement evaluation for the above referenced development. Fieldwork for this investigation was conducted on January 30 and 31, 2024. Data have been analyzed to evaluate pertinent geotechnical conditions. Results of this investigation, together with our recommendations, are to be found in the following report. We have provided a PDF copy for your review and distribution.

Often, questions arise concerning soil conditions because of design and construction details that occur on a project. Atlas would be pleased to continue our role as geotechnical engineers during project implementation.

If you have any questions, please call us at (208) 376-4748.

Respectfully submitted,

Max Kasberger, PE (ID)
Geotechnical Engineer

Elizabeth Brown
Elizabeth Brown, PE
National Practice Manager - Geotechnical

REGISTERED PROFESSIONAL ENGINEER
102891PE
OREGON
MAY 10, 2023
ELIZABETH BROWN
EXPIRES: 12/31/2025

## CONTENTS

## TABLES

Copyright © 2024 Atlas Technical Consultants

## APPENDICES

Copyright © 2024 Atlas Technical Consultants

# 1. INTRODUCTION

This report presents results of a geotechnical investigation and analysis in support of data utilized in design of pavements. Information in support of groundwater and stormwater issues pertinent to the practice of Civil Engineering is included. Observations and recommendations relevant to the earthwork phase of the project are also presented. Revisions in plans or drawings for the proposed pavements from those enumerated in this report should be brought to the attention of the soils engineer to determine whether changes in the provided recommendations are required. Deviations from noted subsurface conditions, if encountered during construction, should also be brought to the attention of the soils engineer.

## 1.1 Project Description

The proposed development is in the City of Ontario, Malheur County, OR, and occupies a portion of the NE¼SW¼ of Section 4, Township 18 South, Range 47 East, Willamette Meridian. The site to be developed is approximately 5.4 acres. Site maps included in the **Appendix** show the project location. This project will consist of reconstruction of the existing running track with associated stormwater management facilities. Retaining walls are not anticipated as part of the project. Atlas has not been informed of the proposed grading plan.

## 1.2 Scope of Investigation

Our scope of work was completed in general accordance with our proposal dated January 3, 2024 and authorized on January 4, 2024. Said authorization is subject to terms, conditions, and limitations described in the Professional Services Contract entered into between Beynon Sports and Atlas.

Atlas' scope of services included the following:

- Subsurface exploration via borings.
- Infiltration testing for stormwater management planning.
- Field and laboratory testing of materials encountered and collected.
- Preparation of this report, which includes project description, site conditions, and our engineering analysis and evaluation for the project.

Copyright © 2024 Atlas Technical Consultants

# 2. SITE DESCRIPTION

## 2.1 Regional Geology

The subject site is located within the Western Snake River Flood Plain. Within this region, this geomorphological feature consists of a broad, deeply floored, thick sequence of alluvial silts, clays, sands and gravel. These sediments typically have been deposited on Miocene (24 to 5 million years ago) basalt flows and tuffaceous sediments of the eastern region of the Columbia Plateau. This thick sequence of generally fine-grained sediments, predominately derived from the Idaho Batholith, contains minor intercalated tuffs and basalt flows within the earliest deposits. Most of these sediments were placed during the latter part of the Miocene and are predominately of lacustrine origin.

## 2.2 General Site Characteristics

The following details regarding site conditions are based on visual observations and review of available geologic and topographic maps and imagery:

- **Current Site Conditions:** The site is approximately 5.4 acres. The site is used as a football field, with a perimeter asphalt surfaced track and associated track and field installations. Bleachers line the west side of the track. Ontario High School is present west of the facility, and residential develops are present to the north, south and east.
- **Vegetation:** Vegetation on the site consists of landscape grasses within the field areas.
- **Topography:** The site is relatively flat and level. However, the site appears to have sloped from west to east prior to development of the track and field.
- **Drainage:** Stormwater drainage for the site is achieved by both sheet runoff and percolation through surficial soils. Runoff predominates for the paved areas while percolation prevails across the landscaped areas. The site is situated so that it is unlikely that it will receive any drainage from off-site sources.

# 3. SOILS EXPLORATION

## 3.1 Exploration and Sampling Procedures

Field exploration conducted to determine engineering characteristics of subsurface materials included a reconnaissance of the project site and investigation by soil boring. A site map with boring locations and depths were provided to Atlas by James Traynor of Beynon Sports. Boring sites were located in the field by means of a Global Positioning System (GPS) device and are reportedly accurate to within ten feet. Borings were advanced by means of a truck-mounted drilling rig equipped with continuous flight hollow-stem augers. At specified depths, samples were obtained using a standard split-spoon sampler and Standard Penetration Test (SPT) blow counts were recorded. Uncorrected SPT blow counts are provided on logs, which can be found in the **Appendix**. At completion of exploration, borings were backfilled with bentonite holeplug.

Samples have been visually classified in the field, identified according to boring number and depth, placed in sealed containers, and transported to our laboratory for additional testing. Subsurface materials have been described in detail on logs provided in the **Appendix**. Results of field and laboratory tests are also presented in the **Appendix**. Atlas recommends that these logs not be used to estimate fill material quantities.

## 3.2 Laboratory Testing Program

Along with our field investigation, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of subsurface materials. Laboratory tests were conducted in accordance with current specifications. The laboratory testing program for this report included:

- Atterberg Limits Testing – ASTM D4318
- Grain Size Analysis – ASTM C117/C136
- Density and Unit Weight of Soil – ASTM D7263
- Expansion Index of Soils – ASTM D4829

Due to the dry nature of the fine-grained soils encountered at the site, in-situ samples were unable to be reliably collected. As such only 1 density and unit weight of soil test was able to be conducted. As to date the expansion index test has not been completed. Atlas will forward the results of testing in an addendum when the test is completed.

## 3.3 Soil and Sediment Profile

The profile below represents a generalized interpretation for the project site. Note that on site soils strata, encountered between boring locations, may vary from the individual soil profiles presented in the logs.

**Table 1 – Typical Soil Profiles**

| Soil Horizons | Approximate Depths | Soil Types | Consistency/Relative Density |
|---|---|---|---|
| Asphaltic Concrete and Fill Materials[1,2] | 0 to 1.5 feet | Silty Sand with Gravel Fill Materials | Medium Dense |
| Surficial Soils and Intermediate Soils[3] | 0 to 11.5 feet | Sandy Lean Clay, Sandy Silt, Silty Sand, Clayey Sand | Medium Stiff to Hard/ Medium Dense to Dense |
| Deeper Soils[4] | 6.5 to 15 feet | Poorly Graded Gravel with Sand | Medium Dense to Very Dense |

**[1] Fills were not encountered in boring 5.**
**[2] Masonry debris noted within portion of this horizon.**
**[3] Calcium carbonate cementation was noted within portions of these horizons.**
**[4] Poorly graded gravel with sand sediments were not encountered in Boring 6.**

Copyright © 2024 Atlas Technical Consultants

During excavation, boring sidewalls were generally stable. However, moisture contents will affect wall competency with saturated soils having a tendency to readily slough when under load and unsupported.

## 3.4 Groundwater

During this field investigation, groundwater was encountered in borings at depths ranging from 6.5 to 9.6 feet bgs. Atlas has previously performed 6 geotechnical investigations within 0.40 mile of the project site. Information from these investigations has been provided in the table below.

**Table 2 – Groundwater Data**

| Date | Approximate Distance from Site (mile) | Direction from Site | Groundwater Depth (feet bgs) |
|---|---|---|---|
| February 2011 | 0.05 | West | Not Encountered to 13.5 |
| August 2021 | 0.30 | Southeast | 9.0 |
| January 2008 | 0.34 | Northeast | 10.5 to 10.7 |
| January 2011 | 0.35 | Southeast | 10.9 to 11.2 |
| July 2017 | 0.41 | North | 6.4 to 8.4 |
| May 2011 | 0.44 | West | Not Encountered to 12.9 |

Based on evidence of this investigation and background knowledge of the area, Atlas has determined that the typical seasonal high groundwater should remain greater than approximately 5.5 feet bgs. This depth can be confirmed through long-term groundwater monitoring.

## 3.5 Soil Infiltration Rates

Soil permeability, which is a measure of the ability of a soil to transmit a fluid, was tested in the field. For this report, an estimation of infiltration is also presented using generally recognized values. Typical infiltration rates comprising the generalized soil profile for this study have been provided in the table below.

**Table 3 – Generalized Soil Infiltration Rates**

| Soil Type | Typical Infiltration Rate (inches per hour) |
|---|---|
| Sandy Lean Clay | <2 |
| Sandy Silt | 2 to 4* |
| Clayey Sand | 2 to 6 |
| Silty Sand | 4 to 8 |
| Poorly Graded Gravel with Sand | >12** |

***The presence of cementation may reduce infiltration rates to near zero.**
****Infiltration into and/or within close proximity to groundwater may reduce infiltration rates to near zero.**

Copyright © 2024 Atlas Technical Consultants

### 3.6 Infiltration Testing

Infiltration testing was conducted using an open boring method. Test locations were presoaked prior to testing. Pre-soaking increases soil moistures, which allows the tested soils to reach a saturated condition more readily during testing. Saturation of the tested soils is desirable in order to isolate the vertical component of infiltration by inhibiting horizontal seepage during testing.

Testing was conducted on January 31, 2024. Details and results of testing are as follows:

**Table 4 – Infiltration Test Results**

| Test Location | Test Depth (feet bgs) | Soil Type | Stabilized Infiltration Rate (inches/hour) |
|---|---|---|---|
| B-7 | 4.0 | Sandy Silt | 1.68 |
| B-8 | 4.1 | Sandy Silt | 1.92 |
| HB-1 | 2.0 | Sandy Silt | 2.16 |

Appropriate factors of safety have been applied to the stabilized infiltration rates achieved during testing to obtain the design infiltration rates listed below.

**Table 5 – Infiltration Test Results**

| Test Location | Test Depth (feet bgs) | Soil Type | Design Infiltration Rate (inches/hour) |
|---|---|---|---|
| B-7 | 4.0 | Sandy Silt | 0.84 |
| B-8 | 4.1 | Sandy Silt | 0.96 |
| HB-1 | 2.0 | Sandy Silt | 1.08 |

The reason for the decreased infiltration rate is to account for long term saturation of the soils and the potential for less permeable soils to settle into the bottom of the infiltration facilities. Atlas recommends that all infiltration facilities be constructed in accordance with the local municipality requirements.

## 4. PAVEMENT DISCUSSION AND RECOMMENDATIONS

The following are minimum thickness requirements based on research of similar tracks in the athletic industry and drawings supplied by Beynon Sports. Depending on site conditions, additional work, e.g. soil preparation, may be required to support construction equipment. Atlas recommends that materials used in the construction of asphaltic concrete pavements meet requirements of the ODOT Standard Specification for Highway Construction. Construction of the pavement section should be in accordance with these specifications and should adhere to guidelines recommended in the section on **Common Pavement Section Construction Issues.** A structural analysis has not been performed for the following pavement section.

Copyright © 2024 Atlas Technical Consultants

## 4.1 Track Pavement Recommendations

**Table 6 - Running Track Flexible Pavement Specifications**

| Pavement Section Component | Running Track Section |
|---|---|
| Asphaltic Concrete – Surface Course | 1.5 Inches |
| Asphaltic Concrete – Intermediate Course | 1.5 Inches |
| Crushed Aggregate Base | 8.0 Inches |
| Structural Subbase | 12.0 Inches |
| Compacted Subgrade[1] | See **Running Track Pavement Subgrade Preparation** Section |

**[1] It will be required for Atlas personnel to verify subgrade competency at the time of construction.**

- Asphaltic Concrete: Asphalt mix design shall meet the requirements of ODOT, Section 810. Materials shall be placed in accordance with ODOT's Oregon Standard Specifications for Construction for Asphalt Concrete Pavement (Section 00740).
- Aggregate Base: Material complying with ODOT's Oregon Standard Specifications for Construction for Crushed Aggregate Materials (Section 02630, Dense-Graded Aggregate, ¾").
- Structural Subbase: Granular structural fill material complying with the requirements detailed in the **Structural Fill** section of this report except that the maximum material diameter is no more than $^2/_3$ the component thickness. Gradation and suitability requirements shall be per ODOT's Oregon Standard Specifications for Construction for Subbase Materials (Section 00641).

## 4.2 Running Track Pavement Subgrade Preparation

Uncontrolled fill was encountered in portions of the site. Atlas recommends that these fill materials be completely removed to expose native undisturbed soils. Once final grades have been determined, Atlas is available to provide additional recommendations

## 4.3 Common Pavement Section Construction Issues

The subgrade upon which above pavement sections are to be constructed must be properly stripped, compacted (if indicated), inspected, and proof-rolled. Proof rolling of subgrade soils should be accomplished using a heavy rubber-tired, fully loaded, tandem-axle dump truck or equivalent. Verification of subgrade competence by Atlas personnel at the time of construction is required. Fill materials on the site must demonstrate the indicated compaction prior to placing material in support of the pavement section. Atlas anticipated that pavement areas will be subjected to moderate traffic. Subgrade clayey and silty soils near and above optimum moisture contents may pump during compaction. Pumping or soft areas must be removed and replaced with granular structural fill.

Fill material and aggregates, in support of the pavement section must be compacted to no less than 95 percent of the maximum dry density as determined by ASTM D698 for flexible pavements and by ASTM D1557 for rigid pavements. If a material placed as a pavement section component cannot be tested by usual compaction testing methods, then compaction of that material must be approved by observed proof rolling. Minor deflections from proof rolling for flexible pavements are allowable. Deflections from proof rolling of rigid pavement support courses should not be visually detectable.

## 5. CONSTRUCTION CONSIDERATIONS

### 5.1 Earthwork

Excessively organic soils, deleterious materials, or disturbed soils generally undergo high volume changes when subjected to loads, which is detrimental to subgrade behavior in the area of pavements, exterior flatwork, and structural fills. Thick grasses with associated root systems were noted at the time of our investigation. It is recommended that organic or disturbed soils, if encountered, be removed to depths of 1 foot (minimum), and wasted or stockpiled for later use. Stripping depths should be adjusted in the field to assure that the entire root zone or disturbed zone or topsoil are removed prior to placement and compaction of fill materials. Exact removal depths should be determined during grading operations by Atlas personnel, and should be based upon subgrade soil type, composition, and firmness or soil stability. If underground storage tanks, underground utilities, wells, or septic systems are discovered during construction activities, they must be decommissioned then removed or abandoned in accordance with governing Federal, State, and local agencies. Excavations developed as the result of such removal must be backfilled with fill materials as defined in the **Structural Fill** section.

Atlas should oversee subgrade conditions (i.e., moisture content) as well as placement and compaction of new fill (if required) after native soils are excavated to design grade. Recommendations for structural fill presented in this report can be used to minimize volume changes and differential settlements that are detrimental to the behavior of pavements. Sufficient density tests should be performed to properly monitor compaction.

### 5.2 Grading

Positive grades must be maintained surrounding pavements, including exterior slabs. The interface of plant bedding materials and underlying soils should be graded to provide drainage away from site elements. Otherwise, bedding materials may direct water to underlying fine-grained soils, which increases the potential for localized heave. Excessive watering of landscaping should be avoided.

Copyright © 2024 Atlas Technical Consultants

## 5.3 Dry Weather

If construction is to be conducted during dry seasonal conditions, many problems associated with soft soils may be avoided. However, some rutting of subgrade soils may be induced by shallow groundwater conditions related to springtime runoff or irrigation activities during late summer through early fall. Solutions to problems associated with soft subgrade soils are outlined in the **Soft Subgrade Soils** section. Problems may also arise because of lack of moisture in native soils and fill materials at time of placement. This will require the addition of water to achieve near-optimum moisture levels. Low-cohesion soils exposed in excavations may become friable, increasing chances of sloughing or caving. Measures to control excessive dust should be considered as part of the overall health and safety management plan.

## 5.4 Wet Weather

If construction is to be conducted during wet seasonal conditions (commonly from mid-November through May), problems associated with soft soils must be considered as part of the construction plan. During this time of year, fine-grained soils such as silts and clays will become unstable with increased moisture content, and eventually deform or rut. Additionally, constant low temperatures reduce the possibility of drying soils to near optimum conditions.

## 5.5 Soft Subgrade Soils

Shallow fine-grained subgrade soils that are high in moisture content should be expected to pump and rut under construction traffic. Throughout construction, soft areas may develop after the existing asphalt is removed and heavy rubber tired equipment drives over the site. In addition, areas where significant cracking has occurred will likely have soft subgrade soils because of moisture infiltration and will be prone to pumping and rutting. During periods of wet weather, construction may become very difficult if not impossible. The following recommendations and options have been included for dealing with soft subgrade conditions:

- Track-mounted vehicles should be used to remove the existing asphalt and to perform any other necessary excavations. Heavy rubber-tired equipment should be prohibited from operating directly on the native subgrade and areas in which fill materials have been placed. Construction traffic should be restricted to designated roadways that do not cross, or cross on a limited basis, proposed roadway or parking areas.
- Soft areas can be over-excavated and replaced with granular structural fill.
- Construction roadways on soft subgrade soils should consist of a minimum 2-foot thickness of large cobbles of 4 to 6 inches in diameter with sufficient sand and fines to fill voids. Construction entrances should consist of a 6-inch thickness of clean, 2-inch minimum, angular drain-rock and must be a minimum of 10 feet wide and 30 to 50 feet long. During the construction process, top dressing of the entrance may be required for maintenance.
- Scarification and aeration of subgrade soils can be employed to reduce the moisture content of wet subgrade soils. After stripping is complete, the exposed subgrade should be ripped or disked to a depth of 1½ feet and allowed to air dry for 2 to 4 weeks. Further disking should be performed on a weekly basis to aid the aeration process.

- Alternative soil stabilization methods include use of geotextiles, lime, and cement stabilization. Atlas is available to provide recommendations and guidelines at your request.

## 5.6 Frozen Subgrade Soils

Prior to placement of fill materials, frozen subgrade soils must either be allowed to thaw or be stripped to depths that expose non-frozen soils and wasted or stockpiled for later use. Stockpiled materials must be allowed to thaw and return to near-optimal conditions prior to use as fill.

The onsite shallow clayey and silty soils are susceptible to frost heave during freezing temperatures. For exterior flatwork and other structural elements, adequate drainage away from subgrades is critical. Compaction and use of granular structural fill will also help to mitigate the potential for frost heave. Complete removal of frost susceptible soils for the full frost depth, followed by replacement with a non-frost susceptible granular structural fill, can also be used to mitigate the potential for frost heave. Atlas is available to provide further guidance/assistance upon request.

## 5.7 Structural Fill

The following table defines the types of fill material that is suitable for use on the project.

**Table 7 – Fill Material Criteria**

| Fill Type | Material | Lift Thickness* |
|---|---|---|
| Granular Structural Fill | ODOT Standard Specifications Section 02630 or 00641.10 | 12 inches |
| Aggregate Base Material | ODOT Standard Specifications Section 0263.10 and 02630.11 for Subbase Aggregate | 12 inches |
| Subbase Material | ODOT Standard Specifications Section 02630 for Base Aggregate | 12 inches |
| Suitable Structural Fill | Onsite/imported ML, SM, and GM soils that are free of organics and debris | 6 inches |

***Initial loose thickness, prior to compaction.**
****Onsite CL soils are unsuitable for use as fill material.**

## 5.8 Fill Placement and Compaction

Requirements for fill material type and compaction effort are dependent on the planned use of the material. The following table specifies material type and compaction requirements based on the placement location of the fill material.

Copyright © 2024 Atlas Technical Consultants

**Table 8 – Fill Placement and Compaction Requirements**

| Fill Location | Material Type | Compaction |
|---|---|---|
| Below Flexible Pavement Subgrade and Exterior Flatwork Areas | Granular Structural Fill or Suitable Structural Fill | 95% of ASTM D698 or<br>92% of ASTM D1557 |
| Utility Trench Backfill | Granular Structural Fill or Suitable Structural Fill | Per ODOT Standard Specifications Section 405 |

Prior to placement of fill materials, surfaces must be prepared as outlined in the **Earthwork** section. Fill must be placed in horizontal lifts not exceeding 6-inches in thickness for fine-grained soils and 12-inches in thickness for granular structural fill, aggregate base material, and subbase material. All fill material must be moisture-conditioned to achieve optimum moisture content prior to compaction. During placement all fill materials must be monitored and tested to confirm compaction requirements have been achieved, as specified above, prior to placement of subsequent lifts. In addition, compacted surfaces must be in a firm and unyielding condition. Atlas personnel should be onsite to verify suitability of subgrade soil conditions, identify whether further work is necessary, and perform in-place moisture density testing.

Sufficient density tests should be performed to properly monitor compaction. At a minimum, Atlas recommends one test per lift as follows:

- Pavement and Exterior Flatwork Areas – 1 test every 10,000 square feet
- Utility Trench Backfill – 1 test every 100 linear feet

Silty soils require very high moisture contents for compaction, require a long time to dry out if natural moisture contents are too high, and may also be susceptible to frost heave under certain conditions. Therefore, these materials can be quite difficult to work with as moisture content, lift thickness, and compactive effort becomes difficult to control. If silty soil is used for fill, lift thicknesses should not exceed 6 inches (loose), and fill material moisture must be closely monitored at both the working elevation and the elevations of materials already placed. Following placement, the exposed surface must be protected from degradation resulting from construction traffic or subsequent construction. It is anticipated that fine-grained soils will not be suitable for reuse during the wet season.

If material contains more than 40 percent but less than 50 percent oversize (greater than ¾-inch) particles, compaction of fill must be confirmed per ISPWC Section 202.3.8.C.3. Material should contain sufficient fines to fill void spaces and must not contain more than 50 percent oversize particles.

Copyright © 2024 Atlas Technical Consultants

## 5.9 Excavations

Shallow excavations that do not exceed 4 feet in depth may be constructed with side slopes approaching vertical. Below this depth, it is recommended that slopes be constructed in accordance with Occupational Safety and Health Administration (OSHA) regulations, Section 1926, Subpart P. Based on these regulations, on-site soils are classified as type "C" soil, and as such, excavations within these soils should be constructed at a maximum slope of 1½ feet horizontal to 1 foot vertical (1½:1) for excavations up to 20 feet in height. Excavations in excess of 20 feet will require additional analysis. Note that these slope angles are considered stable for short-term conditions only, and will not be stable for long-term conditions.

During the subsurface exploration, test pit sidewalls generally exhibited little indication of collapse; however, for deep excavations, native granular sediments cannot be expected to remain in position. These materials are prone to failure and may collapse, thereby undermining upper soil layers. This is especially true when excavations approach depths near the water table. Care must be taken to ensure that excavations are properly backfilled in accordance with procedures outlined in this report.

## 6. GENERAL COMMENTS

When plans and specifications are complete, or if significant changes are made in the character or location of the proposed pavements, consultation with Atlas should be arranged as supplementary recommendations may be required. Suitability of subgrade soils and compaction of fill materials must be verified by Atlas personnel at time of construction. Additionally, monitoring and testing should be performed to verify that suitable materials are used for fill and that proper placement and compaction techniques are utilized.

Copyright © 2024 Atlas Technical Consultants

## 7. REFERENCES

American Society for Testing and Materials (ASTM) (2017). Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing: ASTM C117. West Conshohocken, PA: ASTM.

American Society for Testing and Materials (ASTM) (2019). Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates: ASTM C136. West Conshohocken, PA: ASTM.

American Society for Testing and Materials (ASTM) (2021). Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort: ASTM D698. West Conshohocken, PA: ASTM.

American Society for Testing and Materials (ASTM) (2021). Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort: ASTM D1557. West Conshohocken, PA: ASTM.

American Society for Testing and Materials (ASTM) (2017). Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System): ASTM D2487. West Conshohocken, PA: ASTM.

American Society for Testing and Materials (ASTM) (2017). Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils: ASTM D4318. West Conshohocken, PA: ASTM.

Oregon Department of Transportation (2021). Oregon Standard Specifications for Construction. Salem, OR: Author.

U.S. Department of Labor, Occupational Safety and Health Administration (2020). CFR 29, Part 1926, Subpart P Appendix A: Safety and Health Regulations for Construction, Excavations. Washington D.C.: OSHA.

Copyright © 2024 Atlas Technical Consultants

## Appendix I WARRANTY AND LIMITING CONDITIONS

Atlas warrants that findings and conclusions contained herein have been formulated in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology only for the site and project described in this report. These engineering methods have been developed to provide the client with information regarding apparent or potential engineering conditions relating to the site within the scope cited above and are necessarily limited to conditions observed at the time of the site visit and research. Field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for the purposes cited above.

### Exclusive Use

**This report was prepared for exclusive use of the property owner(s), at the time of the report, and their retained design consultants ("Client").** Conclusions and recommendations presented in this report are based on the agreed-upon scope of work outlined in this report together with the Contract for Professional Services between the Client and Materials Testing and Inspection ("Consultant"). Use or misuse of this report, or reliance upon findings hereof, by parties other than the Client is at their own risk. Neither Client nor Consultant make representation of warranty to such other parties as to accuracy or completeness of this report or suitability of its use by such other parties for purposes whatsoever, known or unknown, to Client or Consultant. Neither Client nor Consultant shall have liability to indemnify or hold harmless third parties for losses incurred by actual or purported use or misuse of this report. No other warranties are implied or expressed.

### Report Recommendations are Limited and Subject to Misinterpretation

There is a distinct possibility that conditions may exist that could not be identified within the scope of the investigation or that were not apparent during our site investigation. Findings of this report are limited to data collected from noted explorations advanced and do not account for unidentified fill zones, unsuitable soil types or conditions, and variability in soil moisture and groundwater conditions. To avoid possible misinterpretations of findings, conclusions, and implications of this report, Atlas should be retained to explain the report contents to other design professionals as well as construction professionals.

Since actual subsurface conditions on the site can only be verified by earthwork, note that construction recommendations are based on general assumptions from selective observations and selective field exploratory sampling. Upon commencement of construction, such conditions may be identified that require corrective actions, and these required corrective actions may impact the project budget. Therefore, construction recommendations in this report should be considered preliminary, and Atlas should be retained to observe actual subsurface conditions during earthwork construction activities to provide additional construction recommendations as needed.

Copyright © 2024 Atlas Technical Consultants

Since geotechnical reports are subject to misinterpretation, **do not** separate the soil logs from the report. Rather, provide a copy of, or authorize for their use, the complete report to other design professionals or contractors. Locations of exploratory sites referenced within this report should be considered approximate locations only. For more accurate locations, services of a professional land surveyor are recommended.

This report is also limited to information available at the time it was prepared. In the event additional information is provided to Atlas following publication of our report, it will be forwarded to the client for evaluation in the form received.

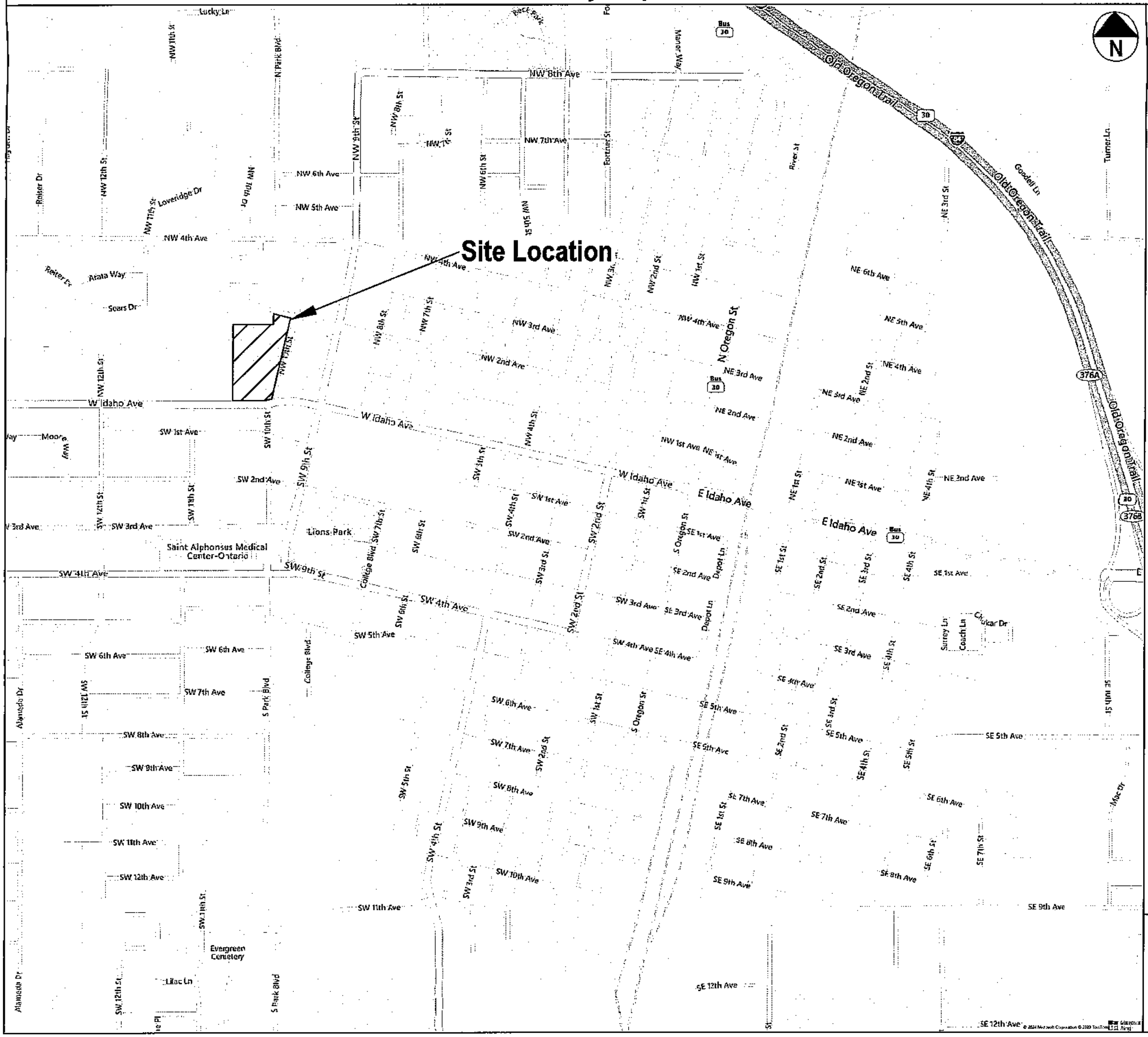
## Environmental Concerns

Comments in this report concerning either onsite conditions or observations, including soil appearances and odors, are provided as general information. These comments are not intended to describe, quantify, or evaluate environmental concerns or situations. Since personnel, skills, procedures, standards, and equipment differ, a geotechnical investigation report is not intended to substitute for a geoenvironmental investigation or a Phase II/III Environmental Site Assessment. If environmental services are needed, Atlas can provide, via a separate contract, those personnel who are trained to investigate and delineate soil and water contamination.

Copyright © 2024 Atlas Technical Consultants

# Vicinity Map

Figure 1



**MAP NOTES:**

- Not to Scale

**LEGEND**

| | |
|---|---|
| Approximate Site Location | ▨ |

**Ontario High School Track Renovation**
1115 West Idaho Avenue
Ontario, ID

Modified by: MPK
January 29, 2024
Drawing: B240062g

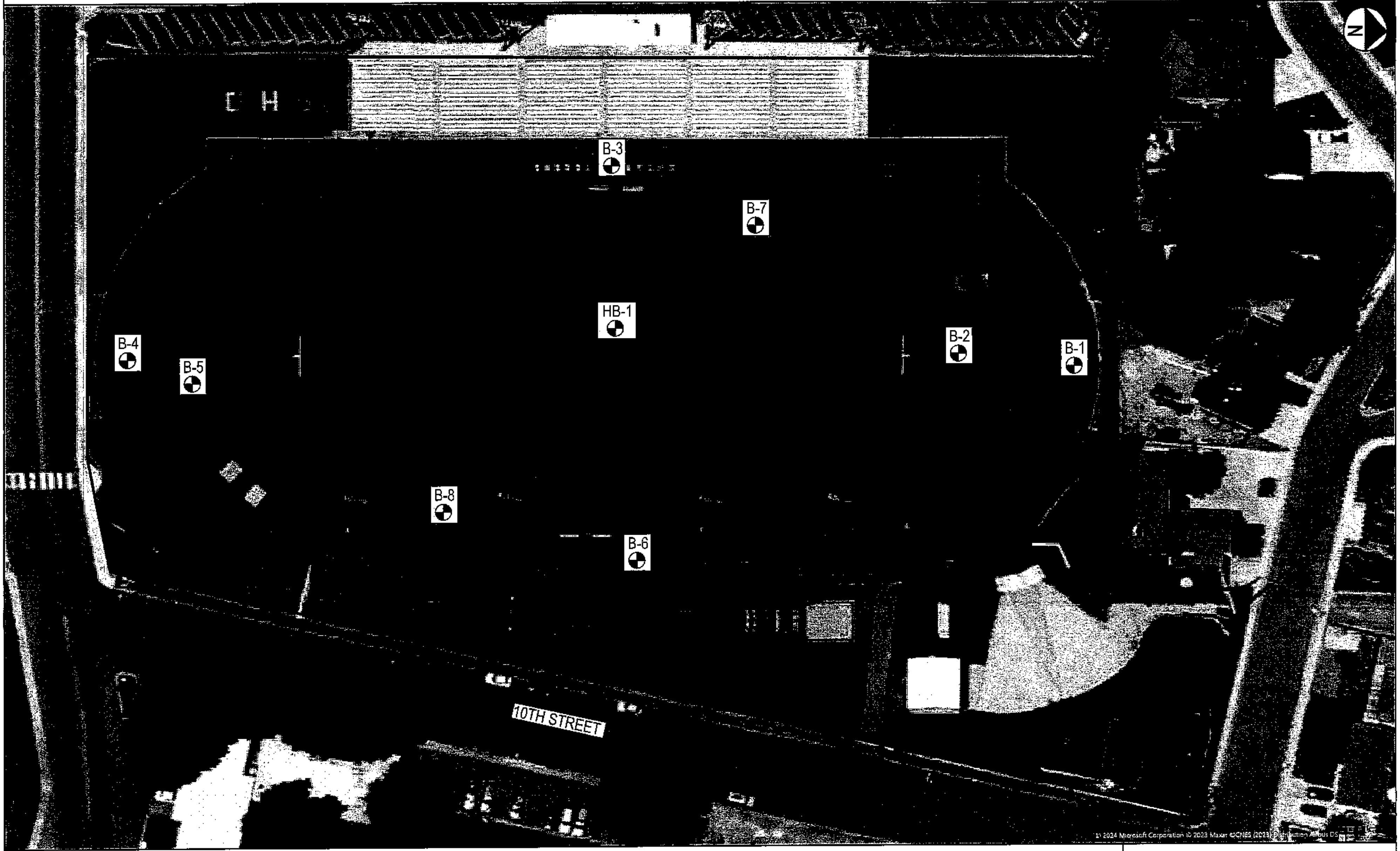
ATLAS

2791 S. Victory View Way
Boise, ID 83709

Phone: (208) 376-4748
Fax: (208) 322-6515
Web: oneatlas.com

# Site Map

Figure 2



**NOTES:**

- Not to Scale

**LEGEND**

| | |
|---|---|
| Approximate Site Boundary | ▬ |
| Approximate Atlas Boring Location | ⊕ |

**Ontario High School Track Renovation**
1115 West Idaho Avenue
Ontario, ID

Modified by: MPK
January 29, 2024
Drawing: B240062g

ATLAS

2791 S. Victory View Way
Boise, ID 83709

Phone: (208) 376-4748
Fax: (208) 322-6515
Web: oneatlas.com

ATLAS

# FIELD BORING LOG

**BORING NO.:** B-1
**TOTAL DEPTH:** 16.5'
**GROUNDWATER DEPTH:** 7.5'

## PROJECT INFORMATION

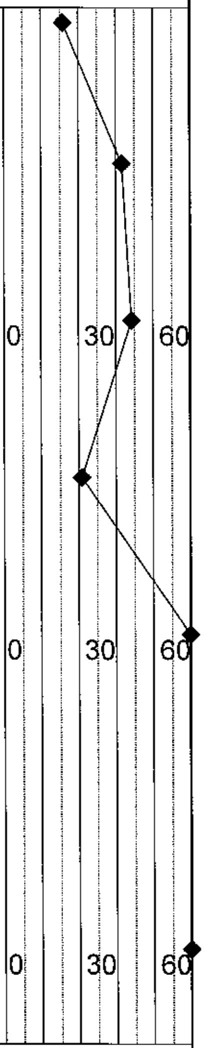
**PROJECT:** Ontario High School Track Renovation
**LOCATION:** 1115 West Idaho Avenue
Ontario, OR
**JOB NO.:** B240062g
**LOGGED BY:** Gavin Marron, EI

## DRILLING INFORMATION

**DRILLING CO.:** Haztech Drilling, Inc.
**METHOD OF DRILLING:** 6" Hollow Stem Auger
**SAMPLING METHODS:** Split Spoon
**DATES DRILLED:** January 30, 2024
**LATITUDE/LONGITUDE:** 44.030152, -116.976072

▼ Water level during drilling ◣ Standard Split Spoon ☒ Auger Sample ▮ California Sampler

| DEPTH | SOIL TYPE | DESCRIPTION | MOISTURE (%) | LL/PI | % < #4 | % < #200 | SAMPLE | BLOWS | BLOWS PER FOOT (N) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | ASPHALTIC CONCRETE: 3 inches thick. | | | | | ◣ | 3,8,11 | |
| | | SILTY GRAVEL WITH SAND FILL (GM-FILL): Brown, dry to slightly moist, medium dense, with fine to coarse-grained sand.<br>--Masonry debris encountered throughout. | | | | | ▮ | 7,15,23 | |
| 5 | | SANDY SILT (ML): Brown, slightly moist to moist, vhard, with fine-grained sand.<br>--Moderate to strong calcium carbonate cementation encountered throughout.<br>--Dry unit wieght at 2.5 feet bgs is 88.1 psf | | | | | ◣ | 10,17,24 | |
| ▼ | | SANDY LEAN CLAY (CL): Brown, saturated, very stiff, with fine-grained sand. | | | | | ◣ | 6,12,13 | |
| 10 | | POORLY GRADED GRAVEL WITH SAND (GP): Brown, saturated, very dense, with fine to coarse-grained sand and fine to coarse gravel. | | | | | ◣ | 7,29,38 | |
| 15 | | | | | | | ◣ | 20,40, 50 for 4" | |



ATLAS

# FIELD BORING LOG

**BORING NO.: B-2**
**TOTAL DEPTH: 11.5'**
**GROUNDWATER DEPTH: 7.3'**

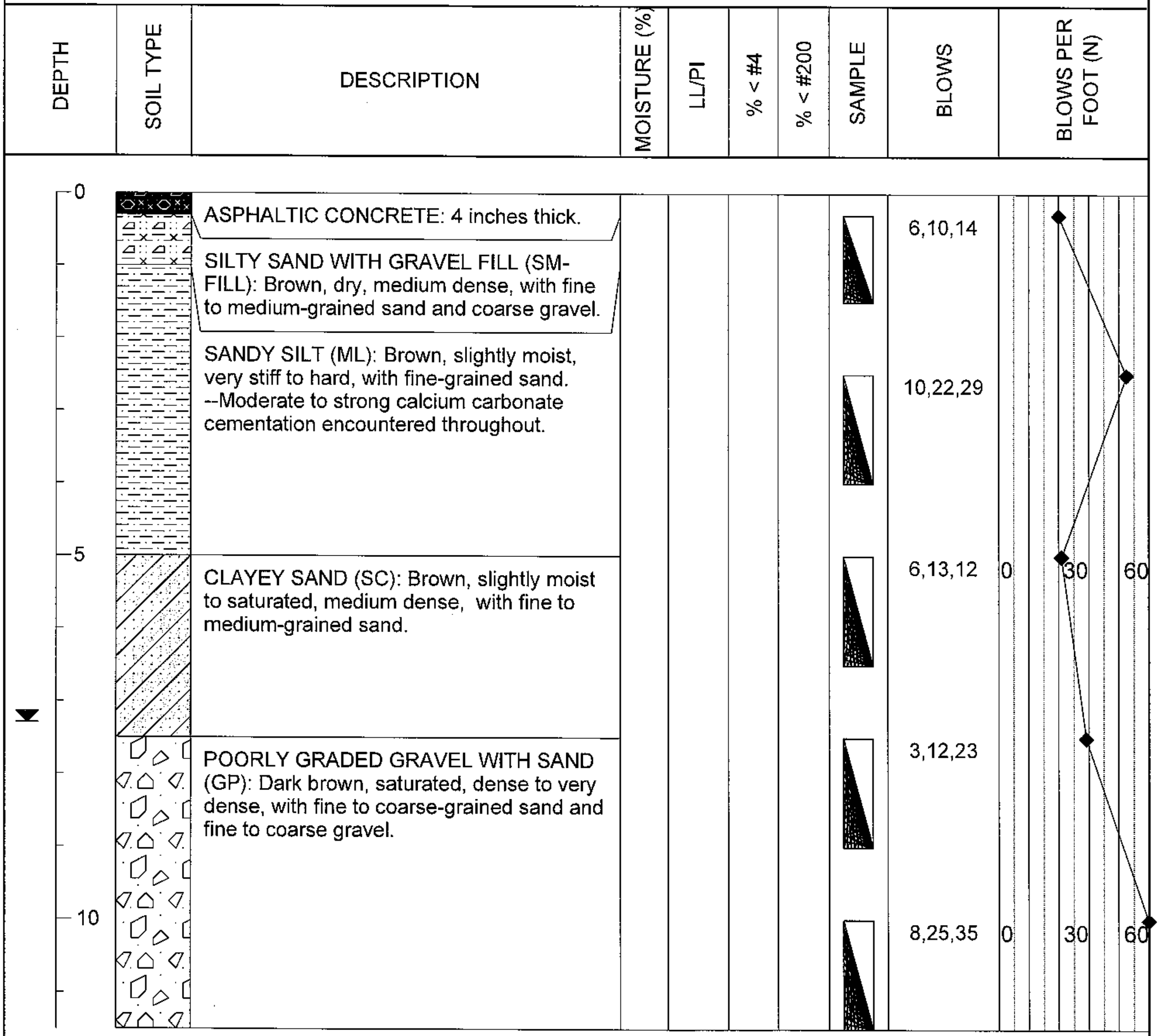
## PROJECT INFORMATION

| | |
|---|---|
| **PROJECT:** | Ontario High School Track Renovation |
| **LOCATION:** | 1115 West Idaho Avenue<br>Ontario, OR |
| **JOB NO.:** | B240062g |
| **LOGGED BY:** | Gavin Marron, EI |

## DRILLING INFORMATION

| | |
|---|---|
| **DRILLING CO.:** | Haztech Drilling, Inc. |
| **METHOD OF DRILLING:** | 6" Hollow Stem Auger |
| **SAMPLING METHODS:** | Split Spoon |
| **DATES DRILLED:** | January 30, 2024 |
| **LATITUDE/LONGITUDE:** | 44.029986, -116.976109 |

▼ Water level during drilling ◩ Standard Split Spoon ☒ Auger Sample ▮ California Sampler



| DESCRIPTION | BLOWS |
|---|---|
| ASPHALTIC CONCRETE: 4 inches thick. | 6,10,14 |
| SILTY SAND WITH GRAVEL FILL (SM-FILL): Brown, dry, medium dense, with fine to medium-grained sand and coarse gravel. | |
| SANDY SILT (ML): Brown, slightly moist, very stiff to hard, with fine-grained sand. --Moderate to strong calcium carbonate cementation encountered throughout. | 10,22,29 |
| CLAYEY SAND (SC): Brown, slightly moist to saturated, medium dense, with fine to medium-grained sand. | 6,13,12 |
| POORLY GRADED GRAVEL WITH SAND (GP): Dark brown, saturated, dense to very dense, with fine to coarse-grained sand and fine to coarse gravel. | 3,12,23<br>8,25,35 |

# ATLAS

# FIELD BORING LOG

**BORING NO.: B-3**
**TOTAL DEPTH: 16.5'**
**GROUNDWATER DEPTH: 7.7'**

## PROJECT INFORMATION

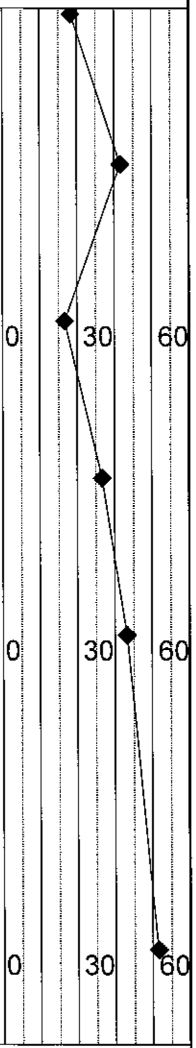
**PROJECT:** Ontario High School Track Renovation
**LOCATION:** 1115 West Idaho Avenue
Ontario, OR
**JOB NO.:** B240062g
**LOGGED BY:** Gavin Marron, EI

## DRILLING INFORMATION

**DRILLING CO.:** Haztech Drilling, Inc.
**METHOD OF DRILLING:** 6" Hollow Stem Auger
**SAMPLING METHODS:** Split Spoon
**DATES DRILLED:** January 30, 2024
**LATITUDE/LONGITUDE:** 44.029760, -116.975079

▼ Water level during drilling ◩ Standard Split Spoon ☒ Auger Sample ▥ California Sampler

| DEPTH | SOIL TYPE | DESCRIPTION | MOISTURE (%) | LL/PI | % < #4 | % < #200 | SAMPLE | BLOWS | BLOWS PER FOOT (N) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | ASPHALTIC CONCRETE: 1 inch thick. | | | | | ◩ | 5,10,12 | |
| | | SILTY SAND WITH GRAVEL FILL (SM-FILL): Brown, slightly moist, medium dense, with fine to coarse-grained sand and coarse gravel.<br>--Masonry debris encountered throughout. | | | | | ▥ | 10,14,24 | |
| 5 | | SILTY SAND (SM): Brown, slightly moist to moist, medium dense to dense with fine-grained sand. | 22.2 | NP | 100 | 38.9 | ▥ | 6,9,11 | |
| ▼ | | POORLY GRADED GRAVEL WITH SAND (GP): Dark brown, moist to saturated, dense to very dense, with fine to coarse-grained sand and fine to coarse gravel. | | | | | ◩ | 12,17,15 | |
| 10 | | | | | | | ◩ | 8,20,20 | |
| 15 | | | | | | | ◩ | 5,28,22 | |



# ATLAS

# FIELD BORING LOG

**BORING NO.:** B-4
**TOTAL DEPTH:** 16.5'
**GROUNDWATER DEPTH:** 7.1'

## PROJECT INFORMATION

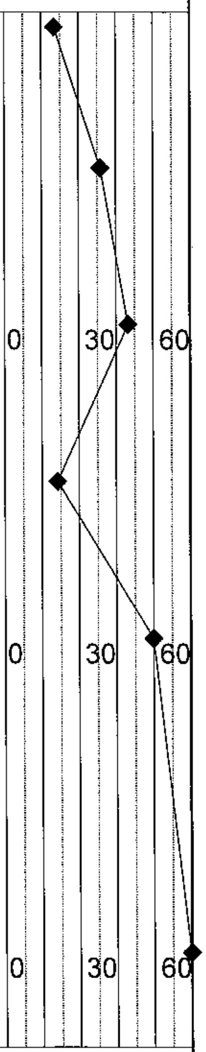
**PROJECT:** Ontario High School Track Renovation
**LOCATION:** 1115 West Idaho Avenue
Ontario, OR
**JOB NO.:** B240062g
**LOGGED BY:** Gavin Marron, EI

## DRILLING INFORMATION

**DRILLING CO.:** Haztech Drilling, Inc.
**METHOD OF DRILLING:** 6" Hollow Stem Auger
**SAMPLING METHODS:** Split Spoon
**DATES DRILLED:** January 30, 2024
**LATITUDE/LONGITUDE:** 44.028617, -116.976184

▼ Water level during drilling ◩ Standard Split Spoon ☒ Auger Sample ▥ California Sampler

| DEPTH | SOIL TYPE | DESCRIPTION | MOISTURE (%) | LL/PI | % < #4 | % < #200 | SAMPLE | BLOWS | BLOWS PER FOOT (N) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | ASPHALTIC CONCRETE: 3 inches thick. | | | | | ◩ | 6,7,9 | |
| | | SILTY SAND WITH GRAVEL FILL (SM-FILL): Brown, slightly moist, medium dense, with fine to coarse-grained sand and fine to coarse gravel. | 24.7 | 35/11 | 100 | 82.0 | ◩ | 7,16,15 | |
| 5 | | LEAN CLAY WITH SAND (CL): Brown, slighlty moist to saturated, hard, with fine-grained sand. | | | | | ▥ | 10,20,20 | |
| ▼ | | POORLY GRADED GRAVEL WITH SAND (GP): Dark brown, saturated, medium dense to very dense, with fine to coarse-grained sand and fine to coarse gravel. | | | | | ◩ | 4,6,11 | |
| 10 | | | | | | | ◩ | 7,22,26 | |
| 15 | | | | | | | ◩ | 13,42,41 | |



# FIELD BORING LOG

**BORING NO.:** B-5
**TOTAL DEPTH:** 11.5'
**GROUNDWATER DEPTH:** 6.5'

## PROJECT INFORMATION

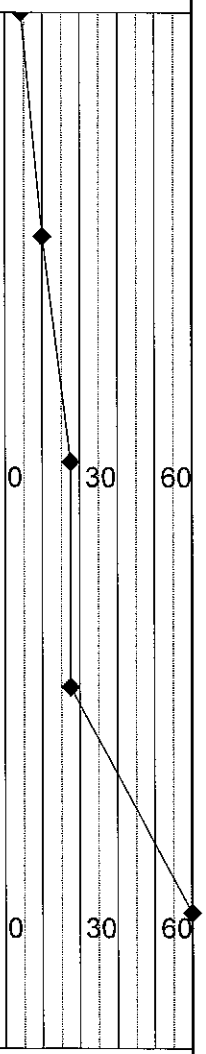
| | |
|---|---|
| **PROJECT:** | Ontario High School Track Renovation |
| **LOCATION:** | 1115 West Idaho Avenue<br>Ontario, OR |
| **JOB NO.:** | B240062g |
| **LOGGED BY:** | Gavin Marron, EI |

## DRILLING INFORMATION

| | |
|---|---|
| **DRILLING CO.:** | Haztech Drilling, Inc. |
| **METHOD OF DRILLING:** | 6" Hollow Stem Auger |
| **SAMPLING METHODS:** | Split Spoon |
| **DATES DRILLED:** | January 30, 2024 |
| **LATITUDE/LONGITUDE:** | 44.028796, -116.976109 |

▼ Water level during drilling ◪ Standard Split Spoon ☒ Auger Sample ▥ California Sampler

| DEPTH | SOIL TYPE | DESCRIPTION | MOISTURE (%) | LL/PI | % < #4 | % < #200 | SAMPLE | BLOWS | BLOWS PER FOOT (N) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | SANDY SILT (ML): Brown, dry to moist, medium stiff to very stiff, with fine-grained sand. | | | | | ◪ | 2,4,1 | |
| | | | 25.1 | NP | 99 | 50.7 | ◪ | 4,6,6 | |
| 5 | | | | | | | ◪ | 3,9,12 | |
| ▼ | | POORLY GRADED GRAVEL WITH SAND (GP): Brown, saturated, medium dense to very dense, with fine to coarse-grained sand and fine to coarse gravel. | | | | | ◪ | 2,8,13 | |
| 10 | | | | | | | ◪ | 9,26,37 | |



ATLAS

# FIELD BORING LOG

**BORING NO.:** B-6
**TOTAL DEPTH:** 11.5'
**GROUNDWATER DEPTH:** 9.6'

## PROJECT INFORMATION

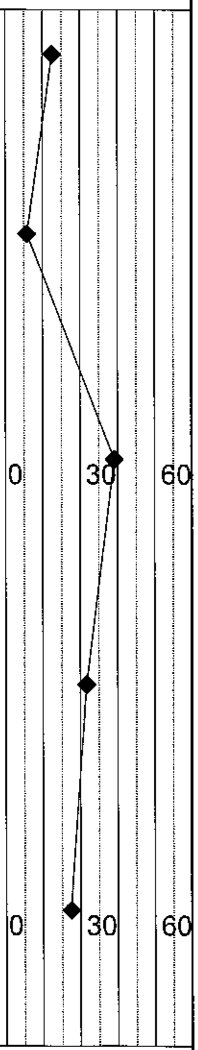
| | |
|---|---|
| **PROJECT:** | Ontario High School Track Renovation |
| **LOCATION:** | 1115 West Idaho Avenue<br>Ontario, OR |
| **JOB NO.:** | B240062g |
| **LOGGED BY:** | Gavin Marron, EI |

## DRILLING INFORMATION

| | |
|---|---|
| **DRILLING CO.:** | Haztech Drilling, Inc. |
| **METHOD OF DRILLING:** | 6" Hollow Stem Auger |
| **SAMPLING METHODS:** | Split Spoon |
| **DATES DRILLED:** | January 30, 2024 |
| **LATITUDE/LONGITUDE:** | 44.029385, -116.975668 |

▼ Water level during drilling ◪ Standard Split Spoon ☒ Auger Sample ▥ California Sampler

| DEPTH | SOIL TYPE | DESCRIPTION | MOISTURE (%) | LL/PI | % < #4 | % < #200 | SAMPLE | BLOWS | BLOWS PER FOOT (N) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | ASPHALTIC CONCRETE: 5 inches thick | | | | | | | |
| | | SILTY SAND WITH GRAVEL FILL (SM-FILL): Brown, slightly moist, medium dense, with fine to coarse-grained sand and coarse gravel. | | | | | ◪ | 10,5,10 | |
| | | SANDY SILT (ML): Brown, slightly moist to saturated, medium stiff to hard, with fine-grained sand. | | | | | ▥ | 4,4,3 | |
| 5 | | --Calcium carbonate cementation encountered from 5 to 11.5 feet bgs. | | | | | ◪ | 2,19,16 | |
| | | | | | | | ◪ | 9,10,16 | |
| ▼<br>10 | | | | | | | ◪ | 7,12,9 | |



# GEOTECHNICAL INVESTIGATION BORING LOG

**Boring Log #:** B-7
**Date Advanced:** January 30, 2024
**Excavated by:** Haztech Drilling, Inc.
**Logged by:** Gavin Marron, EI

**Latitude:** 44.029664
**Longitude:** -116.976408
**Depth to Water Table:** Not Encountered
**Total Depth:** 4.0 feet bgs

| Depth (feet bgs) | Field Description and USCS Soil and Sediment Classification | Sample Type | Sample Depth (feet bgs) | Qp | Lab Test ID |
|---|---|---|---|---|---|
| 0.0-4.0 | Sand Silt (ML): Brown, dry to slightly moist, medium stiff, with fine-grained sand.<br>--Organic material encountered to 0.3 foot bgs. | | | | |

**Notes: See Site Map for test pit location.**
**Infiltration testing conducted at a depth of 4.0 feet bgs.**

Copyright © 2024 Atlas Technical Consultants

# GEOTECHNICAL INVESTIGATION BORING LOG

| | |
|---|---|
| **Boring Log #:** B-8 | **Latitude:** 44.0291478 |
| **Date Advanced:** January 30, 2024 | **Longitude:** -116.975784 |
| **Excavated by:** Haztech Drilling, Inc. | **Depth to Water Table:** Not Encountered |
| **Logged by:** Gavin Marron, EI | **Total Depth:** 4.1 feet bgs |

| Depth (feet bgs) | Field Description and USCS Soil and Sediment Classification | Sample Type | Sample Depth (feet bgs) | Qp | Lab Test ID |
|---|---|---|---|---|---|
| 0.0-4.1 | Sand Silt (ML): Brown, dry to slightly moist, medium stiff, with fine-grained sand.<br>--Organic material encountered to 0.3 foot bgs. | | | | |

**Notes: See Site Map for test pit location.**
**Infiltration testing conducted at a depth of 4.1 feet bgs.**

Copyright © 2024 Atlas Technical Consultants

# GEOTECHNICAL INVESTIGATION HAND BORING LOG

**Boring Log #:** HB-1
**Date Advanced:** January 30, 2024
**Excavated by:** Atlas Personnel
**Logged by:** Gavin Marron, EI

**Latitude:** 44.029417
**Longitude:** -116.976152
**Depth to Water Table:** Not Encountered
**Total Depth:** 2.0 feet bgs

| Depth (feet bgs) | Field Description and USCS Soil and Sediment Classification | Sample Type | Sample Depth (feet bgs) | Qp | Lab Test ID |
|---|---|---|---|---|---|
| 0.0-2.0 | Sand Silt (ML): Brown, dry to slightly moist, medium stiff, with fine-grained sand.<br>--Organic material encountered to 0.4 foot bgs. | | | | |

**Notes: See Site Map for test pit location.**
**Infiltration testing conducted at a depth of 2.0 feet bgs.**

Copyright © 2024 Atlas Technical Consultants

# Appendix V GEOTECHNICAL GENERAL NOTES

**Unified Soil Classification System**

| Major Divisions | | Symbol | Soil Descriptions |
|---|---|---|---|
| Coarse-Grained Soils < 50% passes No.200 sieve | Gravel & Gravelly Soils < 50% coarse | GW | Well-graded gravels; gravel/sand mixtures with little or no fines |
| | | GP | Poorly-graded gravels; gravel/sand mixtures with little or no fines |
| | | GM | Silty gravels; poorly-graded gravel/sand/silt mixtures |
| | | GC | Clayey gravels; poorly-graded gravel/sand/clay mixtures |
| | Sand & Sandy Soils > 50% coarse fraction | SW | Well-graded sands; gravelly sands with little or no fines |
| | | SP | Poorly-graded sands; gravelly sands with little or no fines |
| | | SM | Silty sands; poorly-graded sand/gravel/silt mixtures |
| | | SC | Clayey sands; poorly-graded sand/gravel/clay mixtures |
| Fine-Grained Soils > 50% passes No.200 sieve | Silts & Clays LL < 50 | ML | Inorganic silts; sandy, gravelly or clayey silts |
| | | CL | Lean clays; inorganic, gravelly, sandy, or silty, low to medium-plasticity clays |
| | | OL | Organic, low-plasticity clays and silts |
| | Silts & Clays LL > 50 | MH | Inorganic, elastic silts; sandy, gravelly or clayey elastic silts |
| | | CH | Fat clays; high-plasticity, inorganic clays |
| | | OH | Organic, medium to high-plasticity clays and silts |
| Highly Organic Soils | | PT | Peat, humus, hydric soils with high organic content |

**Relative Density and Consistency Classification**

| Coarse-Grained Soils | SPT Blow Counts (N) |
|---|---|
| Very Loose: | < 4 |
| Loose: | 4-10 |
| Medium Dense: | 10-30 |
| Dense: | 30-50 |
| Very Dense: | > 50 |
| | |
| **Fine-Grained Soils** | **SPT Blow Counts (N)** |
| Very Soft: | < 2 |
| Soft: | 2-4 |
| Medium Stiff: | 4-8 |
| Stiff: | 8-15 |
| Very Stiff: | 15-30 |
| Hard: | > 30 |

**Moisture Content and Cementation Classification**

| Description | Field Test |
|---|---|
| Dry | Absence of moisture, dry to touch |
| Slightly Moist | Damp, but no visible moisture |
| Moist | Visible moisture |
| Wet | Visible free water |
| Saturated | Soil is usually below water table |
| | |
| **Description** | **Field Test** |
| Weak | Crumbles or breaks with handling or slight finger pressure |
| Moderate | Crumbles or breaks with considerable finger pressure |
| Strong | Will not crumble or break with finger pressure |

**Particle Size**

| | |
|---|---|
| Boulders: | > 12 in. |
| Cobbles: | 12 to 3 in. |
| Gravel: | 3 in. to 5 mm |
| Coarse-Grained Sand: | 5 to 0.6 mm |
| Medium-Grained Sand: | 0.6 to 0.2 mm |
| Fine-Grained Sand: | 0.2 to 0.075 mm |
| Silts: | 0.075 to 0.005 mm |
| Clays: | < 0.005 mm |

**Acronym List**

| | |
|---|---|
| GS | grab sample |
| LL | Liquid Limit |
| M | moisture content |
| NP | non-plastic |
| PI | Plasticity Index |
| $Q_p$ | penetrometer value, unconfined compressive strength, tsf |
| V | vane value, ultimate shearing strength, tsf |

Copyright © 2024 Atlas Technical Consultants

# Important Information about This

# Geotechnical-Engineering Report

**Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.**

**While you cannot eliminate all such risks, you can manage them. The following information is provided to help.**

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

## Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will <u>not</u> likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will <u>not</u> be adequate to develop geotechnical design recommendations for the project.

*Do <u>not</u> rely on this report* if your geotechnical engineer prepared it:
- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do <u>not</u> rely on an executive summary. Do <u>not</u> read selective elements only. *Read and refer to the report in full.*

## You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:
- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes - even minor ones - and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept* *responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

## This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

## This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

## Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

## Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

## Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

**GEOPROFESSIONAL BUSINESS ASSOCIATION**

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Copyright 2019 by Geoprofessional Business Association (GBA). Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with GBA's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of GBA, and only for purposes of scholarly research or book review. Only members of GBA may use this document or its wording as a complement to or as an element of a report of any kind. Any other firm, individual, or other entity that so uses this document without being a GBA member could be committing negligent or intentional (fraudulent) misrepresentation.

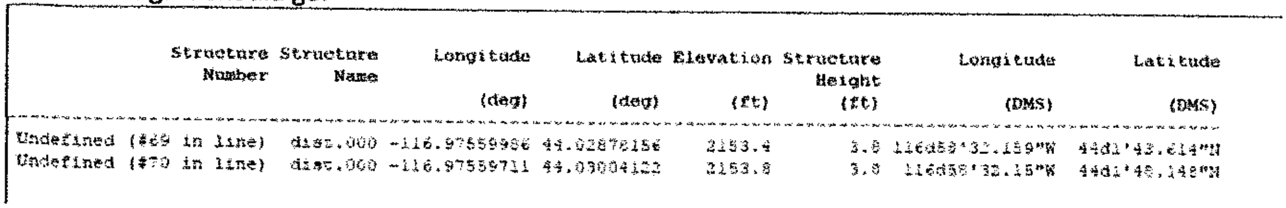
## Bob Bennett - RE: Ontario HS New Light poles- Idaho Power Transmission Lines- Slatercom

**From:** "Oxnam, Matthew" <MOxnam@idahopower.com>
**To:** 'mts slatercom.com' <mts@slatercom.com>
**Date:** 6/10/2024 2:53 PM
**Subject:** RE: Ontario HS New Light poles- Idaho Power Transmission Lines- Slatercom
**Cc:** Bob Bennett <bbennett@ontario.k12.or.us>

---

If you place the light poles in the coordinates below we should not have any clearance issues, given the light structures do not deflect too much. How much deflection do these light structures have?

Light pole coordinates. You should be able to use these in google maps or google earth to get an idea where the lights should go.



```
              Structure Structure     Longitude     Latitude Elevation Structure       Longitude       Latitude
                 Number      Name                                         Height
                                          (deg)        (deg)      (ft)      (ft)           (DMS)          (DMS)
------------------------------------------------------------------------------------------------------------------
Undefined (#69 in line)  dist.000 -116.97559986 44.02878156    2153.4       3.8 116d58'32.159"W  44d1'43.614"N
Undefined (#70 in line)  dist.000 -116.97559711 44.03004122    2153.8       3.8  116d58'32.15"W  44d1'48.148"N
```

Before building, I would like to have your locations staked so I can survey them in to insure they are in the correct location. to make sure they are in the correct spot.

Thanks,
Matt