



# ENVIRONMENTAL BOARD AGENDA

**Wednesday, September 24, 2025**

Broadcast on Cable TV Channel 16  
and [northmetrotv.com/lino-lakes-stream](http://northmetrotv.com/lino-lakes-stream)

## **ADVISORY BOARD MEETING, 6:30 P.M. Council Chambers (televised)**

1. Call to Order and Roll Call
2. Pledge of Allegiance
3. Public Comment (*sign-in prior to start of meeting per Rules of Decorum*)
4. Setting the Agenda: Addition or Deletion of Agenda Items
5. Approval of Minutes: July 30, 2025
6. Action Items
  - A. 7920 Lake Drive CUP (Lake Drive Dealership & Office Space)
7. Discussion Items
  - A. Recycling Updates
  - B. Heron Rookery Event

## **ADJOURNMENT**

Meeting guidelines on reverse side.

## **CITY OF LINO LAKES**

### **ADVISORY BOARD MEETING GUIDELINES**

Advisory boards are fact-finding bodies established to aid the City Council in specific areas. The decisions of any board are considered advisory only and all final decisions rest with the City Council. Board meetings shall operate in accordance with the procedures established by the City Council. The following meeting guidelines are derived from the City Council Rules of Decorum.

**Members of the Audience** – No person in the audience shall engage in disorderly or disruptive conduct such as audible commentary during a meeting, hand clapping, stamping of feet, whistling, using profane language, yelling and similar demonstrations, which conduct disturbs the peace and good order of the meeting.

**Public Comment**– Comments from the public will be accepted on any matter, whether on the agenda or not. Comments will not be accepted during specific agenda items unless a Public Hearing has been noticed. Please remember to be courteous and respectful and abide by the following guidelines:

- Sign-in prior to the start of the meeting
- Step up to the microphone when recognized by the Presiding Officer (Chair or Vice-Chair)
- State your name and address for the record
- State the subject to be discussed
- Limit comments to 4 minutes
- Address comments to the board as a whole, not any specific member
- No question may be asked of a board member or staff member without the permission of the Presiding Officer (Chair or Vice-Chair)
- Elect a spokesperson for a group of persons who wish to address the board on the same subject

**Public Hearing** – A public hearing is a separate item of business on the agenda. It gives the public an opportunity to comment on the topic identified. Please remember to be courteous and respectful and abide by the guidelines outlined for public comment (although no sign-in required). Typically, a public hearing proceeds as follows:

1. The Presiding Officer (Chair or Vice-Chair) will announce the agenda item and staff will present their report.
2. Board members have the opportunity to ask staff questions about the item.
3. The Presiding Officer (Chair or Vice-Chair) opens the public hearing and will recognize those who want to speak.
4. The Presiding Officer (Chair or Vice-Chair) shall close the public hearing.
5. The Board will then discuss the item. No further public comments are allowed.
6. The Board will make a recommendation and/or decision.

After a motion has been made or a public hearing has been closed, no member of the public shall address the board from the audience on the matter under consideration. The Presiding Officer (Chair or Vice-Chair) shall maintain strict order and etiquette at all meetings.

**CITY OF LINO LAKES  
ENVIRONMENTAL BOARD MEETING**

|                         |   |
|-------------------------|---|
| <b>DATE:</b>            | <b>July 30, 2025</b>  |
| <b>TIME STARTED:</b>    | <b>6:30 p.m.</b>  |
| <b>TIME ENDED:</b>      | <b>7:04 p.m.</b>  |
| <b>MEMBERS PRESENT:</b> | <b>Alex Schwartz, Julia Nelson, Mary Jo Stevenson<br/>Lindsay Buchmeier, Jonathan Parsons</b> |
| <b>MEMBERS ABSENT:</b>  | <b>Elizabeth Larkin, Shawn Holmes</b>   |
| <b>STAFF PRESENT:</b>   | <b>Marissa Ertel, Jennifer Alderink, Tom Hoffman,<br/>Mike Grochala, Liam Cronin</b>          |

**1. CALL TO ORDER AND ROLL CALL**

Chair Schwartz called the Environmental meeting to order at 6:30 p.m. on July 30, 2025.

**2. PLEDGE OF ALLEGIANCE**

**3. PUBLIC COMMENT (sign in prior to start of meeting per Rules of Decorum)**

Chair Schwartz opened public comment at 6:31 p.m.

There was no one present for public comment.

Chair Schwartz closed public comment at 6:31 p.m.

**4. SETTING THE AGENDA: Addition or Deletion of Agenda Items**

Chair Schwartz approved the agenda as provided.

**5. APPROVAL OF MINUTES**

Ms. Buchmeier made a motion to approve the minutes for June 25, 2025 meeting. Ms. Stevenson seconded. Motion carried 5 – 0.

## 6. ACTION ITEMS

### A. Lino Lakes Main Street Final AUAR

In September of 2024, the City Council approved a professional services contract with Kimley-Horn to prepare a master plan and complete an Alternative Urban Areawide Review (AUAR). Horn is to prepare a master plan and complete an Alternative Urban Areawide Review (AUAR). The study area includes 980 acres of the northwest portion of Lino Lakes. The process has included multiple community outreach opportunities, involvement of study area stakeholders, and review by the City advisory boards and City Council.

Leila Bunge from Kimley-Horn presented the report and was available for questions.

Mr. Schwartz had questions about how the AUAR document compares to the master plan.

Ms. Bunge stated that the AUAR looks more at an environmental lens of what development requirements would need to be followed. The master plan is more focused on land use, transportation, and utilities and lays out the city's vision for how the area will be developed in the next 20, 30, 40 years.

Mr. Schwartz inquired if the information contained in the AUAR document is going to also be part of the master plan or a separate document.

Ms. Bunge stated that it will be a separate document and is currently available on the [Mapping Northwest Main](#) website. Ms. Bunge also noted that the mitigation plan is one of the next steps that the development would have to comply with as they come forward but is more focused on the framework for the development.

Mr. Schwartz inquired as to whether Pine Street will become more of a major collector road going forward, as it is noted in the AUAR as such.

Mr. Grochala, Community Development Director for the City, said that within the City's comprehensive plan, Pine Street is identified as a collector's street along the northern boundary. He believes that Pine Street would most likely end up being a collector's road that goes through the sod farms but would drop down to a minor collector's street instead of a major collector's street.

Ms. Bunge noted that the AUAR does look at the full build. They looked at traffic at the interim phase, but overall, all the impacts and mitigation are listed out for a full build scenario.

Mr. Schwartz asked if anyone had any more questions related to the AUAR document.

Mr. Schwartz opened a motion to approve the Lino Lakes Main Street final AUAR.

Ms. Nelson motioned to approve. Mr. Parsons seconded the motion.

The motion passes 5 – 0.



## **B. Storm Water Pond Pilot Program**

City staff has received feedback from concerned residents regarding the aesthetic quality of storm pond RLA-010-B located in Birchwood Acres Park. This pond treats stormwater runoff. From nearly 70 properties located primarily on Hawthorn Road and Lonesome Pine Trail in the Park Grove development.

Communication has gone back several years to deal with concerns of vegetation, smell, and stormwater management.

Staff reported to the Environmental Board twice in spring of 2025 over the possibility of allowing private treatment of city stormwater ponds.

Recommendation at the time was to not allow private treatments and look into other opportunities and options and potential pilot projects.

Staff is looking for direction from the Environmental Board on recommendations for potential stormwater treatment pilot program.

Tom Hoffman, Environmental Coordinator for the City, spoke about the history of this action item. He said that they had a couple meetings this past spring talking about potential treatments of storm water ponds owned and maintained by the City as part of their MS4 system and doing a pilot program with chemical treatments, noting that there were some mixed reviews on allowing chemical treatments. Mr. Hoffman wanted to bring it back to the board to ensure there was interest in chemical treatments, and if not, wanted to look at updating ordinance to include options like aerators, bio engineering, filtration, etc.

Ms. Nelson noted that as a society, she thinks we have overdone chemicals when trying to solve problems and that she would be in favor trying non-chemical methods in this situation as well.

Mr. Schwartz said that he agrees with Ms. Nelson's statement. He would like to try alternative methods first and if those methods fail, they can then have a future discussion about chemicals. He noted that he, and others present, don't possess the knowledge on how that would impact the MS4 permit. If they were to begin entertaining the idea of allowing residents to treat city-owned ponds with chemicals, he would enlist the help of an engineering firm to show them blind spots and pitfalls of such actions.

Ms. Buchmeier also agreed with the Board's statements. She stated that more testing and understanding should be done before we allow the introduction of chemicals. She asked whether previous testing has been done on non-chemical treatments.

Mr. Hoffman stated that he will go back to the original parties involved and let them know that there are some options and possibilities the City can work with them on, but that the board does not seem comfortable moving forward with a pilot program at this time involving chemical treatments without further analysis. Mr. Hoffman also stated that he will reach out to some engineering firms that the City has connections with, as well as reach out to other metro cities that are doing similar things with their residents. As this evolves, there is potential that the City can bring this back with additional information leading to a pilot program.

Mr. Parsons inquired as to whether the chemicals just bind the nutrients, not letting them release into the environment. He then added that he believes it's more the odor that concerns people, so implementing an aeration system with a type of bio system might be beneficial.

Mr. Hoffman confirmed that with chemical treatments, it's just binding the material and not treating it, so it's not improving the water quality within the pond. Mr. Hoffman also explained that aeration may not address the underlying concern of odor coming from the pond. He noted that a lot of things can be cleared up from a staff level through ordinance updates to clarify what is and isn't allowed in the stormwater ponds to help reduce inputs of pollution. The long-term goal is to do something where eventually the ponds will be able to balance themselves out without interaction.

Ms. Buchmeier inquired if other cities are doing non-chemical options like aerators.

Mr. Hoffman stated that a lot of other cities will have aerators within ponds on private property that are under storm water easement, so it's still part of the storm water system, but the land isn't owned. He also said that it varies from city to city. He mentioned that it will take multiple years of data because of the fluctuation of weather and rain levels, which is why testing is so expensive.

Ms. Buchmeier asked if the plan is to update the city code to be more specific to what is and is not allowed.

Mr. Hoffman stated he'd like to have those discussions at future work sessions to see if they need to make those clarifications. Additionally, Mr. Hoffman noted that they've been handling cases internally so far and wanted to get a clear understanding of what is planned going forward so he can communicate that to residents.

Ms. Buchmeier wanted to confirm that there would not be a pilot program for the chemical treatment of storm ponds. She also would like to know what the next steps are going to be.

Mr. Hoffman reiterated that the pilot program was just for the chemical side of it. He noted that allowing aerators and other non-chemical methods would be something they would bring back to the board. These non-chemical methods would not be a lengthy

study, so Mr. Hoffman stated he would work with the residents to make sure they're all comfortable doing that. Mr. Hoffman concluded that he will reach out to Mary, to see the status of the pond is for them this year.

Mr. Parsons wanted to clarify that as a group, chemicals is not what they will be considering based on the requirements, testing, legal issues, etc.

Mr. Hoffman stated that they were just looking for direction from the board on whether to start a pilot program for chemically treating the storm water ponds, and after discussion, he's looking forward to doing other mitigation measures before moving forward with a chemical treatment evaluation.

Mr. Schwartz agreed with Mr. Hoffman's sentiment that before we consider chemical treatments, other methods should be tried and given time. He also noted that if they were to consider a pilot program, the board would have it be an administrative function that the city staff would not back up our political process.

Mr. Hoffman stated that if there are no other comments, he does not need a motion on that item. He just wanted to gauge the board's interest at this point and will then move forward and work with the residents.

### **C. DISCUSSION ITEMS**

#### **A. Recycling Updates**

Mr. Hoffman introduced the City's new recycling intern, Liam Cronin, who has been with the City for about a month and a half. He noted that Mr. Cronin has been helping with our first half score reporting, Recycle Saturdays, advertising for our organics and recycling program, as well as education and outreach.

Mr. Cronin presented the report and was available for questions. There were no questions.

### **D. ADJOURN**

Ms. Buchmeier made a motion to adjourn the meeting at 7:04 p.m.  
Motion was seconded by Ms. Nelson.  
Motion carried 5 – 0.

Respectfully submitted,  
Jennifer Alderink – Office Specialist

**ENVIRONMENTAL BOARD  
ITEM 6A**

STAFF ORIGINATOR: Tom Hoffman, Environmental Coordinator

DATE: September 24, 2025

REQUEST: Lino Lakes Dealership & Offices CUP

CASE NUMBER: CUP2025-0001  
SBPR2025-0005

APPLICANT: Tyler Hubsch  
10731 Hawthorn Trail  
Woodbury, MN 55129

OWNER: Skip and Teri Cook  
6314 Maple Ridge LN  
Excelsior, MN 55331

**INTRODUCTION**

The applicant, Tyler Hubsch, is proposing operating an automotive dealership and offices at 7920 Lake Drive.

The Land Use Application is for the following:

- Conditional Use Permit
- Site and Building Plan Review

This staff report is based on the followings plan sets:

- Civil Plan Set prepared by Plowe Engineering, Inc. dated September 9, 2025
- Photometric Plan prepared by Aid Electric dated September 3, 2025
- Stormwater Drainage Report prepared by Plowe Engineering, Inc. dated September 5, 2025
- Soil Borings prepared by Haugo GeoTechnical Services, LLC. dated August 27, 2025

**BACKGROUND**

Tyler Huebsch plans to operate a professional office space for independent dealership and office space for general business. The zoning would give the capability to utilize the office space for individual dealers who have their own LLC through the state. Each

dealership can have as many employees as they wish but will need the office space required for it. With each exterior office there will be 5 additional parking spots which fits the legal requirements to operate a dealership in Minnesota.

## **ANALYSIS**

### **Current Zoning and Land Use**

|                               |                   |
|-------------------------------|-------------------|
| <b>Current Zoning</b>         | Commercial        |
| <b>Current Land Use</b>       | Vacant-Commercial |
| <b>Future Land Use per CP</b> | Commercial        |
| <b>Utility Staging Area</b>   | 1A=2018-2025      |

### **Current Proposal**

The applicant is proposing to operate a professional office and dealership at 7920 Lake Drive.

### **General Site Characteristics**

The existing site is 2.79 acres. The site is relatively flat with elevations ranging from 908 to 900 ft. The existing site is vegetated and generally slopes to an existing stormwater management basin.

### **Land Cover**

Pre-settlement land cover (Marschner) was forested big woods.

### **Soils**

The borings encountered about a foot, or less, of sandy topsoil at the surface except that an apparent topsoil layer was not observed at boring SB-42. The topsoil was composed of silty sand that was brown to dark to black in color and contained some grass and roots.

The topsoil was underlain by native alluvial soils that extended to the termination depths of the borings. The alluvial soils consisted of fine grained silty sand, fine grained poorly graded sand with silt and fine grained poorly graded sand that were mostly brown in color.

Penetration resistance values (N-Values), shown as blows per foot (bpf) on the boring logs, within the sandy native alluvial soils ranged from 2 to 24 bpf, indicating a very loose to medium dense relative density.

Ground water was observed in most of the soil borings at depths from 7-12' below the ground surface corresponding to elevations ranging from 896-899.

#### **Rare, Unique, or Significant Resources**

A Rare plant survey was not required for the CUP.

#### **Stormwater Management**

Stormwater management for the site is provided from an existing regional stormwater basin. Rate control will be met from the existing stormwater management basin.

The project will be required to treat water quality volume from the new impervious surface. Proposed infiltration basins will meet the water quality requirements.

#### **Flood Plain**

There are no floodplains located on site.

#### **Shoreland District**

The subject property is not located within the Shoreland Management Overlay District.

#### **Wetlands**

There are no wetlands on site.

#### **Greenway System, Parks and Trails**

Not Applicable

#### **Tree Preservation**

A tree preservation plan was required for this project. There are 17 existing onsite trees, as part of the project 4 will be removed. The 4 trees to be removed are within the Basic Use Area and do not require replacement.

## **Landscaping**

Foundation landscaping requirements are 2 large trees + 4 large shrubs per 100lf of building facing public roads. The site has 403 lf of foundation frontage requiring 8 trees and 24 shrubs.

The plans show 25 shrubs meeting the requirements but only 2 large trees (4 medium trees) being proposed. Based on the design of the building with office frontage and doors to the sidewalk, additional tree planting is not feasible. City Code section 1007.049 4(d) states the city may allow flexible planting locations where service areas or other constraints make the standards difficult to meet. Staff believe this is the case in this situation.

Open area landscape requirements are 1 large tree + 2 shrubs per 2,500sf of open space. The proposed development has 7,621sf of open space requiring 3 trees + 6 shrubs. Currently 29 trees and 126 shrubs are being proposed, meeting the requirement.

Vehicular hardscape canopy coverage is required for commercial properties. When fully matured tree cover is required to provide canopy coverage for 40% of the hardcover. Based on the proposed plans 16,940 sf of coverage is being required. The proposed plan shows 17,150sf of coverage.

## **Environmental Review Considerations**

Not applicable

## **Drinking Water Protection**

The site will be served by municipal sewer and water.

## **RECOMMENDATIONS**

Staff has the following recommendations for consideration by the board:

1. CBMH 3 should be a sump structure to provide pretreatment before discharging into the infiltration basin. Otherwise, an additional structure should be proposed prior to the outlet as a sump.
2. Recommend planting native species or low mow fescue adjacent to the parking lot where the site drains to the stormwater bmp.
  - a. Filtration of additional buffer will be beneficial to soil stabilization, pollutant filtration, and wildlife/pollinator habitat.
3. Rock mulch bed for landscaping to be flush with ground level.

4. Remove tree plantings from within the infiltration basin 1 as this will lead to maintenance issues.
5. Infiltration Basin 1 is being proposed as a snow storage area, staff highly recommends storing snow outside of the basin. Storage within the basin will lead to higher sedimentation rates, increased chloride, and maintenance issues.
6. Infiltration Basin 1 shows being stabilized with sod, provide live plugs and native seed like Basin 2.
7. Plans show a 5' fence between the commercial and residential for screening.
  - a. Plans call for a 64" fence, verify the final height and confirm it matches the detail provided.
8. NPDES permit will be required for the project. Provide proof of permit before construction.
  - a. Provide inlet protection in both CB adjacent to Kelly Street
  - b. Add note that street sweeping of adjacent impervious surface is required by the authorization of the City Engineer.
  - c. Final Erosion control review will be completed with future submittals.

## **ATTACHMENTS**

1. General Location Map
2. 7920 Lake Drive Geo Report
3. Lino Lakes Dealership + Office Civil Plans
4. Photometric Plan



7920 Lake Drive





August 27, 2025

HGTS Project Number: 25-0563

Ms. Kristin Erickson  
Classic Construction, Inc.  
18542 Ulysses Street NE  
East Bethel, MN 55011

**Re: Geotechnical Exploration Report, Proposed Office Building, 7920 Lake Drive, Lino Lakes, Minnesota**

Dear Ms. Erickson:

We have completed the geotechnical exploration report for the proposed office building in Lino Lakes. A brief summary of our results and recommendations is presented below. Specific details regarding our procedures, results and recommendations follow in the attached geotechnical exploration report.

Ten soil borings were taken within the building, parking lots and pond areas that encountered about a foot or less of vegetation and topsoil underlain by native sandy alluvial soils that extended to the termination depths of the borings. Groundwater was encountered the soil borings at depths ranging from about 7 ½ to 12 ½ feet below the ground surface corresponding to elevations ranging from about 896 to 899 ½ feet above mean sea level (msl).

The vegetation and topsoil are not suitable for foundation support and will need to be removed from within the proposed building, pavements, utility and oversize areas and replaced, as needed, with suitable compacted engineered fill. It is our opinion that the underlying sandy alluvial soils are generally suitable for foundation support.

Thank you for the opportunity to assist you on this project. If you have any questions or need additional information, please contact Paul Gionfriddo at 612-729-2959.

Sincerely,  
Haugo GeoTechnical Services



Paul Gionfriddo, P.E.  
Senior Engineer

# GEOTECHNICAL EXPLORATION REPORT

## PROJECT:

Proposed Office Building  
7920 Lake Drive  
Lino Lakes, Minnesota 55014

## PREPARED FOR:

Classic Construction, Inc.  
18542 Ulysses Street NE  
East Bethel, MN 55011

## PREPARED BY:

Haugo GeoTechnical Services  
2825 Cedar Avenue South  
Minneapolis, Minnesota 55407

Haugo GeoTechnical Services Project: 25-0563

August 27, 2025

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Paul Gionfriddo, P.E.  
Senior Engineer  
License Number: 23093



## Table of Contents

|      |                                |    |
|------|--------------------------------|----|
| 1.0  | INTRODUCTION                   | 1  |
| 1.1  | Project Description            | 1  |
| 1.2  | Purpose                        | 1  |
| 1.3  | Site Description               | 1  |
| 1.4  | Scope of Services              | 1  |
| 1.5  | Documents Provided             | 2  |
| 1.6  | Locations and Elevations       | 2  |
| 2.0  | FIELD PROCEDURES               | 2  |
| 3.0  | RESULTS                        | 3  |
| 3.1  | Soil Conditions                | 3  |
| 3.2  | Groundwater                    | 3  |
| 3.3  | Laboratory Testing             | 4  |
| 3.4  | OSHA Soil Classification       | 4  |
| 4.0  | DISCUSSION AND RECOMMENDATIONS | 5  |
| 4.1  | Proposed Construction          | 5  |
| 4.2  | Discussion                     | 5  |
| 4.3  | Site Grading Recommendations   | 6  |
| 4.4  | Dewatering                     | 7  |
| 4.5  | Interior Slabs                 | 8  |
| 4.6  | Below Grade Walls              | 8  |
| 4.7  | Exterior Slabs                 | 8  |
| 4.8  | Site Grading and Drainage      | 9  |
| 4.9  | Utilities                      | 9  |
| 4.10 | Pavements                      | 10 |
| 4.11 | Estimated Infiltration Rates   | 11 |
| 5.0  | CONSTRUCTION CONSIDERATIONS    | 11 |
| 5.1  | Excavation                     | 11 |
| 5.2  | Observations                   | 12 |
| 5.3  | Backfill and Fills             | 12 |
| 5.4  | Testing                        | 12 |
| 5.5  | Winter Construction            | 12 |
| 6.0  | PROCEDURES                     | 12 |
| 6.1  | Soil Classification            | 12 |
| 6.2  | Groundwater Observations       | 13 |
| 7.0  | GENERAL                        | 13 |
| 7.1  | Subsurface Variations          | 13 |
| 7.2  | Review of Design               | 13 |
| 7.3  | Groundwater Fluctuations       | 13 |
| 7.4  | Use of Report                  | 13 |
| 7.5  | Level of Care                  | 14 |

### APPENDIX

Soil Boring Location Sketch, Figure 1

Soil Boring Logs, SB-33 thru SB-44 (10 logs, not sequential)

Descriptive Terminology

## **1.0 INTRODUCTION**

### **1.1 Project Description**

Classic Construction, Inc. (Classic) is preparing for construction of an approximate 8400 square foot office building in Lino Lakes, Minnesota. The project will also include new bituminous parking areas, underground utilities and stormwater ponds. Classic retained Haugo GeoTechnical Services (HGTS) to perform a geotechnical exploration to evaluate the suitability of site soil conditions to support the proposed office building.

### **1.2 Purpose**

The purpose of this geotechnical exploration was to characterize subsurface soil and groundwater conditions and provide recommendations for foundation and pavement design and construction.

### **1.3 Site Description**

The project site is an approximate 2.8 acres parcel that is located at 7920 Lake Drive. The project site was vacant at the time of our exploration. Based on a brief review of historical aerial photographs available on Google Earth it appears the site has been vacant dating back to at least 1991 however some grading of the site appears to have occurred around 2006. Construction equipment is visible on the site in the April 2006 aerial photograph and by September 2006 some of the vegetation has been removed and a pond is visible in the southeast corner of the site.

The site topography was relatively flat with ground surface elevations at the boring locations ranging from about 904 to 912 feet above mean sea level (msl).

### **1.4 Scope of Services**

Our services were performed in accordance with HGTS proposal 25-0563 dated July 1, 2025. Our services were performed under the terms of our General Conditions and limited to the following tasks:

- Completing 4 standard penetration test soil boring extending to a nominal depth of 10 feet and 5 borings extending to nominal depths of 20 feet.
- Sealing the borings in accordance with Minnesota Department of Health requirements.
- Obtaining GPS coordinates and ground surface elevations at the boring locations.
- Visually/manually classifying samples recovered from the soil borings.
- Performing laboratory moisture content and P-200 content tests on selected samples.
- Preparing soil boring logs describing the materials encountered and the results of groundwater level measurements.
- Preparing an engineering report describing soil and groundwater conditions and providing recommendations for foundation and pavement design and construction.

The number of soil borings and their depths were subsequently modified and included; 3 borings to nominal depths of 20 feet, 3 borings to nominal depths of 10 feet and 4 borings to nominal depths of 14 ½ feet.

## **1.5 Documents Provided**

To aid in our evaluation, we were provided with following plan sheets

- EX01 - Conceptual Site Plan that was prepared by Thielen & Green and dated June 23, 2025. The plan was stamped "Preliminary Not For Construction".
- EX02 - Conceptual Floor Plan that was prepared by Thielen & Green and dated June 23, 2025. The plan was stamped "Preliminary Not For Construction".
- Sheet SE - Surveying Exhibit that was prepared by Plowe Engineering Inc. that was dated July 18<sup>th</sup>, 2025. The plan showed a general layout of the site along with the boring locations and topographic contours and spot elevations.

Other than the document described above, we were not provided with specific civil, structural, or architectural plans.

## **1.6 Locations and Elevations**

The soil boring locations were selected HGTS and then modified by Plowe Engineering Inc (Plowe) or others. The borings were staked in the field by Plowe in advance of our field work. The approximate locations of the soil borings are shown on the Soil Boring Location Sketch in the Appendix. The sketch was prepared by HGTS using Plan Sheet EX01-Conceptual Site Plan, provided, as a base.

Ground surface elevations at the boring locations were obtained from the stakes placed at the boring locations.

## **2.0 FIELD PROCEDURES**

The standard penetration test borings were advanced on August 5<sup>th</sup>, 2025 by HGTS with a rotary drilling rig, using continuous flight augers to advance the boreholes. Representative samples were obtained from the borings, using the split-barrel sampling procedures in general accordance with ASTM Specification D-1586. In the split-barrel sampling procedure, a 2-inch O.D. split-barrel spoon is driven into the ground with a 140-pound hammer falling 30 inches. The number of blows required to drive the sampling spoon the last 12 inches of an 18-inch penetration is recorded as the standard penetration resistance value, or "N" value. The results of the standard penetration tests are indicated on the boring logs. The samples were sealed in containers and provided to HGTS for testing and soil classification.

A field log of each boring was prepared by HGTS. The logs contain visual classifications of the soil materials encountered during drilling, as well as the driller's interpretation of the subsurface conditions between samples and water observation notes. The final boring logs included with this report represents an interpretation of the field logs and include modifications based on visual/manual method observation of the samples.

The soil boring logs, general terminology for soil description and identification, and classification of soils for engineering purposes are also included in the appendix. The soil boring logs identify and describe the materials encountered, the relative density or consistency

based on the Standard Penetration resistance (N-value, “blows per foot”) and groundwater observations.

The strata changes were inferred from the changes in the samples and auger cuttings. The depths shown as changes between strata are only approximate. The changes are likely transitions; variations can occur beyond the location of the boring.

### 3.0 RESULTS

#### 3.1 Soil Conditions

The borings encountered about a foot, or less, of sandy topsoil at the surface except that an apparent topsoil layer was not observed at boring SB-42. The topsoil was composed of; silty sand, that was brown to dark to black in color and contained some grass and roots.

The topsoil was underlain by native alluvial soils that extended to the termination depths of the borings. The alluvial soils consisted of; fine grained silty sand, fine grained poorly graded sand with silt and fine grained poorly graded sand that were mostly brown in color.

Penetration resistance values (N-Values), shown as blows per foot (bpf) on the boring logs, within the sandy native alluvial soils ranged from 2 to 24 bpf, indicating a very loose to medium dense relative density.

#### 3.2 Groundwater

Groundwater was encountered in most of the soil borings at depths ranging from about 7 ½ to 12 ½ feet below the ground surface corresponding to elevations ranging from about 896 to 899 feet above mean sea level (msl). Table 1 summarizes the groundwater levels.

**Table 1. Summary of Groundwater Levels**

| Boring Number              | Estimated Surface Elevation (feet) | Approximate Depth to Groundwater (feet)* | Approximate Groundwater Elevation (feet)* |
|----------------------------|------------------------------------|--|---|
| <b>Building Borings</b>    |                                    |  |   |
| SB-33                      | 912.0                              | 12 ½                                     | 899 ½                                     |
| SB-34                      | 909.3                              | 12 ½                                     | 897                                       |
| SB-35                      | 909.4                              | 12 ½                                     | 897                                       |
| <b>Parking Lot Borings</b> |                                    |  |   |
| SB-38                      | 908.8                              | 10                                       | 899                                       |
| SB-43                      | 907.0                              | NE                                       | -   |
| SB-44                      | 908.0                              | 10                                       | 898                                       |
| <b>Pond Borings</b>        |                                    |  |   |
| SB-36                      | 904.1                              | 7 ½                                      | 896 ½                                     |
| SB-37                      | 906.0                              | 10                                       | 896                                       |
| SB-41                      | 906.5                              | 7 ½                                      | 899                                       |
| SB-42                      | 907.4                              | 10                                       | 897 ½                                     |

\* = Depths and elevations were rounded to the nearest ½ foot.

Water levels were measured on the dates as noted on the boring logs and the period of water level observations was relatively short. Groundwater monitoring wells or piezometers would be required to more accurately determine water levels. Seasonal and annual fluctuations in the groundwater levels should be expected.

### 3.3 Laboratory Testing

Laboratory moisture content and percent passing the number 200 sieve (P-200) tests were performed on selected samples recovered from the soil borings. The P-200 content is a measure of the silt and clay sized particles (fines) in the soils and is used as an aid in classifying the soil as well as estimating soil infiltration rates. Results of the laboratory tests are summarized in Table 2 and are also shown on the boring logs adjacent to the sample tested.

**Table 2. Summary of Laboratory Tests**

| Boring Number              | Sample Number | Depth (feet) | Moisture Content (%) * | P-200 (%) * |
|----------------------------|---------------|--------------|------------------------|-------------|
| <b>Building Borings</b>    |               |              |                        |             |
| SB-33                      | SS-19         | 5            | 13                     | -           |
| SB-34                      | SS-10         | 2 ½          | 14                     | -           |
| SB-34                      | SS-12         | 7 ½          | 16                     | -           |
| SB-35                      | SS-3          | 5            | 12                     | -           |
| <b>Parking Lot Borings</b> |               |              |                        |             |
| SB-38                      | SS-50         | 2 ½          | 14 ½                   | 19 ½        |
| SB-43                      | SS-26         | 2 ½          | 17 ½                   | 14 ½        |
| SB-44                      | SS-38         | 2 ½          | 16                     | 13 ½        |
| <b>Pond Borings</b>        |               |              |                        |             |
| SB-36                      | SS-32         | 5            | 19 ½                   | 15          |
| SB-36                      | SS-33         | 7 ½          | -                      | 4 ½         |
| SB-37                      | SS-43         | 2 ½          | 15 ½                   | 26 ½        |
| SB-37                      | SS-45         | 7 ½          | 19 ½                   | 45 ½        |
| SB-41                      | SS-56         | 5            | 16                     | 16          |
| SB-42                      | SS-62         | 2 ½          | 12                     | 24 ½        |
| SB-42                      | SS-64         | 7 ½          | 19 ½                   | 14 ½        |

\* = Moisture contents and P-200 tests were rounded to the nearest ½ percent.

### 3.4 OSHA Soil Classification

The soils encountered in the borings consisted of; silty sand, poorly graded sand with silt and poorly graded sand meeting the ASTM Classifications of SM, SP-SM and SP, respectively. These soils will generally be Type C soils under Department of Labor Occupational Safety and Health Administration (OSHA) guidelines.

An OSHA-approved qualified person should review the soil classification in the field. Excavations must comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches." This document states excavation safety is the responsibility of the contractor. The project specifications should reference these OSHA requirements.



## **4.0 DISCUSSION AND RECOMMENDATIONS**

### **4.1 Proposed Construction**

We understand the project will consist of constructing an approximate 8,400 square foot office building along with new parking and drive lanes, underground utilities and stormwater ponds.

Based on the plans provided the building will be a single-story slab in grade structure. Beyond that specific building plans were not available at the time of our exploration. For the purposes of this evaluation, we assume below grade construction will consist of cast in place concrete foundation walls supported on cast in-place concrete footings. We further assume above grade construction will consist of wood framing, a pitched roof and asphalt shingles.

Based on the assumed construction we estimate wall loadings will range from 3 to 4 kips (3,000 to 4,000 pounds) per lineal foot and column loads, if any, will be less than 100 kips (100,000 pounds). Based on the assumed/estimated structural loads we anticipate that a soil bearing pressure up to 3,000 pounds per square foot (psf) will be required for foundation support.

We assume that the finished floor grade will be constructed near or slightly above existing site grades corresponding to about elevation 910 feet. With the ground surface elevations at the boring location ranging from about 904 to 912 we anticipate that cuts and fill for permanent grade changes will be on the order of 2 to 8 feet.

We assume that the parking and drive lanes will be constructed at or near existing site elevations so that cuts or fills will generally be less than 3 feet.

We have attempted to describe our understanding of the project. If the proposed loads exceed these values or if the design or location of the proposed addition changes, we should be informed. Additional analyses and revised recommendations may be necessary.

### **4.2 Discussion**

The vegetation and topsoil are not suitable for foundation, pavement or utility support and will need to be removed from below these areas and the oversize areas and replaced, as needed, with suitable compacted engineered fill.

It is our opinion that the underlying sandy alluvial soils are suitable for foundation support. Portion of the soils had a very loose relative density and will need to be compacted prior to placing additional fill or foundations. Likewise, any soils disturbed during excavation and grading activities will also need to be compacted prior to placing additional fill or foundations.

Laboratory moisture contents of the soil ranged from about 12 to 19 ½ percent. These values indicate the soil were likely above their assumed optimum moisture content based on the standard Proctor test. Soils that will be used or reused as fill or backfill could require some moisture conditioning (drying) to achieve the recommended compaction levels.

Groundwater was encountered in the borings at depths ranging from about 7 ½ to 12 ½ feet below the ground surface corresponding to elevations ranging from about 896 to 899 ½ feet. With the floor slab anticipated to bear at about elevation 910 and the footings about 4 feet below that elevation we generally do not anticipate that groundwater will be encountered during foundation construction but could be encountered during utility installations and dewatering could be required.

### 4.3 Site Grading Recommendations

**Excavation** We recommend that all vegetation and topsoil and any soft or otherwise unsuitable soils, if encountered, be removed from below the proposed building, pavement, utility and oversize areas. Table 3 summarizes the anticipated excavation depths at the soil boring locations. It must be noted that the excavation depths presented in Table 3 do not account for foundation construction. Excavations for foundation construction will likely vary and could be deeper.

**Table 3. Anticipated Excavation Depths**

| Boring Number              | Estimated Surface Elevation (feet) | Anticipated Excavation Depth (feet)* | Anticipated Excavation Elevation (feet)* | Approximate Groundwater Elevation (feet)* |
|----------------------------|------------------------------------|--------------------------------------|--|---|
| <b>Building Borings</b>    |                                    |                                      |  |   |
| SB-33                      | 912.0                              | ½                                    | 911 ½                                    | 899 ½                                     |
| SB-34                      | 909.3                              | ½                                    | 909                                      | 897                                       |
| SB-35                      | 909.4                              | ½                                    | 909                                      | 897                                       |
| <b>Parking Lot Borings</b> |                                    |                                      |  |   |
| SB-38                      | 908.8                              | ½                                    | 908 ½                                    | 899                                       |
| SB-43                      | 907.0                              | ½                                    | 906 ½                                    | NE  |
| SB-44                      | 908.0                              | ½                                    | 907 ½                                    | 898                                       |
| <b>Pond Borings</b>        |                                    |                                      |  |   |
| SB-36                      | 904.1                              | ½                                    | 903 ½                                    | 896 ½                                     |
| SB-37                      | 906.0                              | ½                                    | 905 ½                                    | 896                                       |
| SB-41                      | 906.5                              | 1                                    | 905 ½                                    | 899                                       |
| SB-42                      | 907.4                              | <1                                   | 906 ½                                    | 897 ½                                     |

\* = Excavation and groundwater elevations were rounded to nearest ½ foot.

**Oversizing** In areas where the excavations extend below the proposed footing elevations, the excavations require oversizing. We recommend the perimeter of the excavation be extended a foot outside the proposed footprint for every foot below footing grade (1H:1V oversizing). The purpose of the oversizing is to provide lateral support of the foundation.

**Fill Material** Additional Fill required to attain site grades may consist of any debris-free, non-organic mineral soil. However, we recommend granular material, similar to the on-site materials, meeting the ASTM Classification of SM, SP or SP-SM soils for ease in compaction and to provide a uniform subgrade.

The on-site native alluvial soils appear suitable for reuse as structural fill, provided they are free of debris, organic matter or other deleterious material. Laboratory moisture contents of the soils ranged from about 12 to 19 ½ percent indicating that the soils were likely above their assumed optimum moisture content based on the standard Proctor test. Soils that will be used or reused as fill or backfill could require some moisture conditioning (drying) to achieve the recommended compaction levels.

Topsoil, organic soils or soils that are black in color are not suitable for reuse as structural fill or backfill.

**Backfilling** Prior to placing additional fill or foundations we recommend compacting any loose soils and soils disturbed during excavation and grading activities with a large self-propelled vibratory compactor operating in vibratory mode. We recommend a minimum of 6 passes in each perpendicular direction with a large vibratory compactor operating in vibratory mode.

We recommend that backfill placed to attain site grades be compacted to a minimum of 95 percent of its standard Proctor density (ASTM D 698). Granular fill classified as SP or SP-SM should be placed within 65 percent to 105 percent of its optimum moisture content as determined by the standard Proctor. Other fill soils should be placed within 3 percentage points above and 1 percentage point below its optimum moisture content as determined by the standard Proctor. All fill should be placed in thin lifts and be compacted with a large self-propelled vibratory compactor operating in vibratory mode.

In areas where fill depths will exceed 10 feet, if any, we recommend that compaction levels be increased to a minimum of 100 percent of the materials standard Proctor density. Even with the increased compaction levels a construction delay may be required to allow for post construction settlement of the fill mass.

**Foundations** We recommend the perimeter footings bear a minimum of 42 inches below the exterior grade for frost protection. Interior footings may be placed immediately below the slab provided construction does not occur during below freezing weather conditions. Foundation elements in unheated areas should bear at least 5 feet below exterior grade for frost protection.

We anticipate the foundations and floor slabs will bear on compacted engineered fill or native alluvial soils. With the building pad prepared as recommended, it is our opinion the footings can be designed for a net allowable bearing pressure up to 3,000 pounds per square foot (psf).

We estimate that total and differential settlements will be less than 1 inch and ½ inch respectively across an approximate 30-foot span

#### **4.4 Dewatering**

Groundwater was encountered in the soil borings at about 10 feet below the ground surface corresponding to elevations ranging from about 896 to 899 ½ feet above mean sea level. With the floor slab anticipated to bear at about elevation 910 and the footings about 4 feet below that elevation we generally do not anticipate that groundwater will be encountered during foundation construction and do not anticipate that dewatering will be required. However,

groundwater could be encountered during deeper utility installations and dewatering could be required.

In the event dewatering is required, we recommend the groundwater level be temporarily lowered to a minimum of 2 feet below the lowest anticipated excavation elevation to allow for construction. In sand soils, we do not recommend attempting to dewater from within the excavation. Upward seepage will loosen and disturb the excavation, resulting in a “quick condition.” Rather, we recommend groundwater to be drawn down below the anticipated excavation bottom.

#### **4.5 Interior Slabs**

The anticipated floor subgrade will consist of compacted sandy engineered fill or sandy native alluvial soils following soil corrections. It is our opinion a modulus of subgrade reaction,  $k$ , of 100 pounds per square inch per inch of deflection may be used to design the floor.

If floor coverings or coatings less permeable than the concrete slab will be used, we recommend that a vapor retarder or vapor barrier be placed immediately beneath the slab. Some contractors prefer to bury the vapor barrier or vapor retarder beneath a layer of sand to reduce curling and shrinkage, but this practice often traps water between the slab and vapor retarder or barrier. Regardless of where the vapor retarder or vapor barrier is placed, we recommend consulting the floor covering manufacturer regarding the appropriate type, use and installation of the vapor retarder or vapor barrier to preserve the warranty.

We recommend following all state and local building codes with regards to a radon mitigation plan beneath interior slabs.

#### **4.6 Below Grade Walls**

We understand the building will be a single-story slab on grade structure with no basements or below grade levels. Estimated soil parameters and recommendations for below grade wall design and construction can be provided if requested.

#### **4.7 Exterior Slabs**

Exterior slabs will likely be underlain by silty sand meeting the ASTM classification SM which are considered moderately to highly frost susceptible. If these soils become saturated and freeze, frost heave may occur. This heave can be a nuisance in front of doors and at other critical grade areas. One way to help reduce the potential for heaving is to remove the frost-susceptible soils below the slabs down to bottom of footing grades and replace them with non-frost-susceptible backfill consisting of sand having less than 5 percent of the particles by weight passing the number 200 sieve.

If this approach is used and the excavation bottoms terminate in non-free draining granular soil, we recommend a drain tile be installed along the bottom outer edges of the excavation to collect and remove any water that may accumulate within the sand. The bottom of the excavation should be graded away from the building.

If the banks of the excavations to remove the frost-susceptible soils are not sloped, abrupt transitions between the frost-susceptible and non-frost-susceptible backfill will exist along which unfavorable amounts of differential heaving may occur. Such transitions could exist between exterior slabs and sidewalks, between exterior slabs and pavements and along the slabs themselves if the excavations are confined to only the building entrances. To address this issue, we recommend sloping the excavations to remove frost-susceptible soils at a minimum 3:1 (horizontal:vertical) gradient.

Another alternative for reducing frost heave is to support the slabs on frost depth footings. A void space of at least 4 inches should be provided between the slab and the underlying soil to allow the soil to heave without affecting the slabs.

#### **4.8 Site Grading and Drainage**

We recommend the site be graded to provide positive run-off away from the proposed building. We recommend landscaped areas be sloped a minimum of 6 inches within 10 feet of the building and slabs be sloped a minimum of 2 inches. In addition, we recommend downspouts with long splash blocks or extensions.

We recommend the lowest floor grades be constructed to meet City of Lino Lakes requirements with respect to groundwater separation distances. In the absence of city requirements, we recommend maintaining at least a 4-foot separation between the lowest floor slab and the observed groundwater levels and at least a 2-foot separation between the lowest floor slab and the 100-year flood level of nearby wetlands, storm water ponds or other surface water features.

#### **4.9 Utilities**

We anticipate that new watermain, sanitary and storm sewer utilities will be installed as part of this project. At typical pipe invert elevations anticipate that new utilities will bear at depths ranging from about 5 to 10 feet below the ground surface. At these depths, we anticipate that the pipes will bear on compacted engineered fill or native alluvial soils, which in our opinion are suitable for pipe support. We recommend removing all vegetation, topsoil and any soft or otherwise unsuitable soils, if any, beneath utilities prior to placement.

We recommend bedding material be thoroughly compacted around the pipes. We recommend trench backfill above the pipes be compacted to a minimum of 95 percent beneath slabs and pavements, the exception being within 3 feet of the proposed pavement subgrade, where 100 percent of standard Proctor density is required. In landscaped areas, we recommend a minimum compaction of 90 percent.

Groundwater was encountered in the borings at depths ranging from about 7 ½ to 12 ½ feet below the ground surface. Depending in final site grades and pipe invert elevations, groundwater could be encountered and dewatering could be required. See section 4.4 for dewatering considerations.

#### 4.10 Pavements

**Traffic** Based on the plan sheet provided, the project will include constructing new parking and drive lanes that will encompass the building. It appears that parking areas will include about 183 stalls with most of the parking stall located on the east side of the building.

We assume the parking stalls will be used by automobiles and light trucks with weekly use by heavier vehicles such as garbage truck and delivery vans so that a light duty and heavy-duty pavement section will be required. Based on the assumed traffic types and number of parking stalls we estimate the pavements will be subjected to a maximum of 50,000 Equivalent Single Axle Loads (ESAL's) over a design life of 20 years.

**Subgrade R-Value** testing was beyond the scope of this project. The near surface soils below the topsoil consisted predominantly of silty sand corresponding to the ASTM Classification SM. These soils can have R-Values ranging from about 20 to 40 or more. It is our opinion that an R-Value of 30 can be used for pavement design.

**Subgrade Preparation** We recommend removing all vegetation, topsoil, and any soft or otherwise unsuitable materials from the within the pavement subgrade. Backfill, if needed, to attain pavement subgrade elevation can consist of any mineral soil provided it is free of organic material or other deleterious materials. Granular fill classified as SP or SP-SM should be placed within 65 percent to 105 percent of its optimum moisture content as determined by the standard Proctor. Other fill or backfill should be placed with moisture contents within a range of 1 percentage point below and 3 percentage points above its optimum moisture content. The upper 3 feet of fill and backfill should be compacted to a minimum of 100 percent of its standard Proctor maximum dry density.

Prior to placing the aggregate base, we recommend surface compacting the subgrade with a large self-propelled vibratory compactor or possibly proof-rolling the subgrade to identify soft, weak, loose or unstable areas that may require additional sub-cuts.

**Bituminous Pavement Sections** Based on an estimated R-value of 30 and a maximum of 50,000 ESAL's we recommend a light duty pavement section consisting of a minimum of 3 ½ inches of bituminous (1 ½ inches of wear course and 2 inches of base course) underlain by a minimum of 8 inches of aggregate base.

For heavy-duty pavements subjected to maximum of 50,000 ESALS we recommend a pavement section consisting of a minimum of 4 inches of bituminous (2 inches of wear course and 2 inches of base course) underlain by a minimum of 9 inches of aggregate base.

**Materials** We recommend aggregate base meeting MN/DOT Class 5 aggregate base. We recommend the aggregate base be compacted to 100 percent of its maximum standard Proctor dry density.

We recommend that the bituminous wear and base courses meet the requirement of MN/DOT Specification 2360 for bituminous mixes. We recommend the bituminous pavements be compacted to at least 92% of the maximum theoretical density.

We recommend specifying concrete that has a minimum 28-day compressive strength of 4,000 psi. We recommend specifying 5 to 8 percent entrained air for exposed concrete to provide resistance to freeze-thaw deterioration. We recommend slump, air content and compressive strength test of Portland cement concrete.

#### 4.11 Estimated Infiltration Rates

The project will include constructing stormwater ponds/infiltration basins (ponds) on the south and west sides of the site. We assume that the depth of the ponds will depend, in part, on soil and groundwater conditions but will likely be set within about 5 to 10 feet of the ground surface. Soil borings SB-36, SB-37, SB-4 and SB-42 were completed within or near the pond areas and at those depths the boring encountered fine-grained silty sand, fine grained poorly graded sand with silt and fine grained poorly graded sand corresponding to the ASTM classifications of SM, SP-SM and SP, respectively.

It is our opinion that the infiltration rates presented in Table 4, which were obtained from the Minnesota Storm Water Manual, can be used for infiltration basin design.

**Table 4. Estimated Design Infiltration Rates**

| Soil Description & ASTM Classification                         | Hydrologic Soil Group | Estimated Design Infiltration Rate (in/hr.) |
|--|-----------------------|---|
| Poorly Graded Sand & Poorly Graded Sand with Silt (SP & SP-SM) | A                     | 0.8   |
| Silty Sand (SM)  | B                     | 0.45  |

As described above, the soils encountered in the borings consisted of fine-grained sandy soils. Although these soils meet the ASTM classifications SM, SP-SM and SP, because of their fine-grained composition, they may not necessarily meet the infiltration rates presented in Table 4 and could infiltrate at rates less than the published values.

Further, infiltration rates can vary due to; soil moisture content, soil compaction, the placement or introduction of fine-grained soils, topsoil or biofiltration media and changes or variations in local groundwater levels. These variations may result in additional construction costs and it is suggested that a contingency be provided for this purpose.

Field tests (double ring infiltrometer) can be performed within the proposed basin areas to verify infiltration rates of the in-situ soils. We would be pleased to provide these services if required or requested.

## 5.0 CONSTRUCTION CONSIDERATIONS

### 5.1 Excavation

The soils encountered in the borings consisted of; silty sand, poorly graded sand with silt and poorly graded sand meeting the ASTM Classifications of SM, SP-SM and SP, respectively. These soils will generally be Type C soils under Department of Labor Occupational Safety and Health Administration (OSHA) guidelines.

Temporary excavations in Type C soils should be constructed at a minimum of 1 ½ foot horizontal to every 1 foot vertical within excavations. Slopes constructed in this manner may still exhibit surface sloughing. If site constraints do not allow the construction of slopes with these dimensions, then temporary shoring may be required.

## **5.2 Observations**

A geotechnical engineer or qualified engineering technician should observe the excavation subgrade to evaluate if the subgrade soils are similar to those encountered in the borings and adequate to support the proposed construction.

## **5.3 Backfill and Fills**

We recommend moisture conditioning all soils that will be used as fill or backfill in accordance with Section 4.3 above. We recommend that fill and backfill be placed in lifts not exceeding 4 to 12 inches, depending on the size of the compactor and materials used.

## **5.4 Testing**

We recommend density tests of backfill and fills placed for the proposed building foundations. Samples of the proposed materials should be submitted to our laboratory prior to placement for evaluation of their suitability and to determine their optimum moisture content and maximum dry density (Standard Proctor).

## **5.5 Winter Construction**

If site grading and construction is anticipated to proceed during cold weather, all snow and ice should be removed from cut and fill areas prior to additional grading and placement of fill. No fill should be placed on frozen soil and no frozen soil should be used as fill or backfill.

Concrete delivered to the site should meet the temperature requirements of ASTM and/or ACI. Concrete should not be placed on frozen soil. Concrete should be protected from freezing until the necessary strength is obtained. Frost should not be permitted to penetrate below the footings.

# **6.0 PROCEDURES**

## **6.1 Soil Classification**

The drill crew chief visually and manually classified the soils encountered in the borings in general accordance with ASTM D 2488, "Description and Identification of Soils (Visual-Manual Procedure)." Soil terminology notes are included in the Appendix. The samples were returned to our laboratory for review of the field classification by a soils engineer. Samples will be retained for a period of 30 days.



## **6.2 Groundwater Observations**

Immediately after taking the final samples in the bottom of the boring, the hole was checked for the presence of groundwater. Immediately after removing the augers from the borehole the hole was once again checked and the depth to water and cave-in depths were noted.

## **7.0 GENERAL**

### **7.1 Subsurface Variations**

The analyses and recommendations presented in this report are based on data obtained from a limited number of soil borings. Variations can occur away from the boring, the nature of which may not become apparent until additional exploration work is completed, or construction is conducted. A reevaluation of the recommendations in this report should be made after performing on-site observations during construction to note the characteristics of any variations. The variations may result in additional foundation costs and it is suggested that a contingency be provided for this purpose.

It is recommended that we be retained to perform the observation and testing program during construction to evaluate whether the design is as expected, if any design changes have affected the validity of our recommendations, and if our recommendations have been correctly interpreted and implemented in the designs, specifications and construction methods. This will allow correlation of the soil conditions encountered during construction to the soil borings and will provide continuity of professional responsibility.

### **7.2 Review of Design**

This report is based on the design of the proposed structures as related to us for preparation of this report. It is recommended that we be retained to review the geotechnical aspects of the design and specifications. With the review, we will evaluate whether any changes have affected the validity of the recommendations and whether our recommendations have been correctly interpreted and implemented in the design and specifications.

### **7.3 Groundwater Fluctuations**

We made water level measurements in the borings at the times and under the conditions stated on the boring log. The data was interpreted in the text of this report. The period of observation was relatively short and fluctuations in the groundwater level may occur due to rainfall, flooding, irrigation, spring thaw, drainage, and other seasonal and annual factors not evident at the time the observations were made. Design drawings and specifications and construction planning should recognize the possibility of fluctuations.

### **7.4 Use of Report**

This report is for the exclusive use of Classic Construction, Inc. and their design team to use to design the proposed structures and prepare construction documents. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. The data, analysis and recommendations may not be appropriate for

other structures or purposes. We recommend that parties contemplating other structures or purposes contact us.

## **7.5 Level of Care**

Haugo GeoTechnical Services has used the degree of skill and care ordinarily exercised under similar circumstance by members of the profession currently practicing in this locality. No warranty expressed or implied is made.

## **APPENDIX**





Haugo GeoTechnical Services  
2825 Cedar Ave South  
Minneapolis, MN, 55407  
Telephone: 612-729-2959  
Fax: 763-445-2238

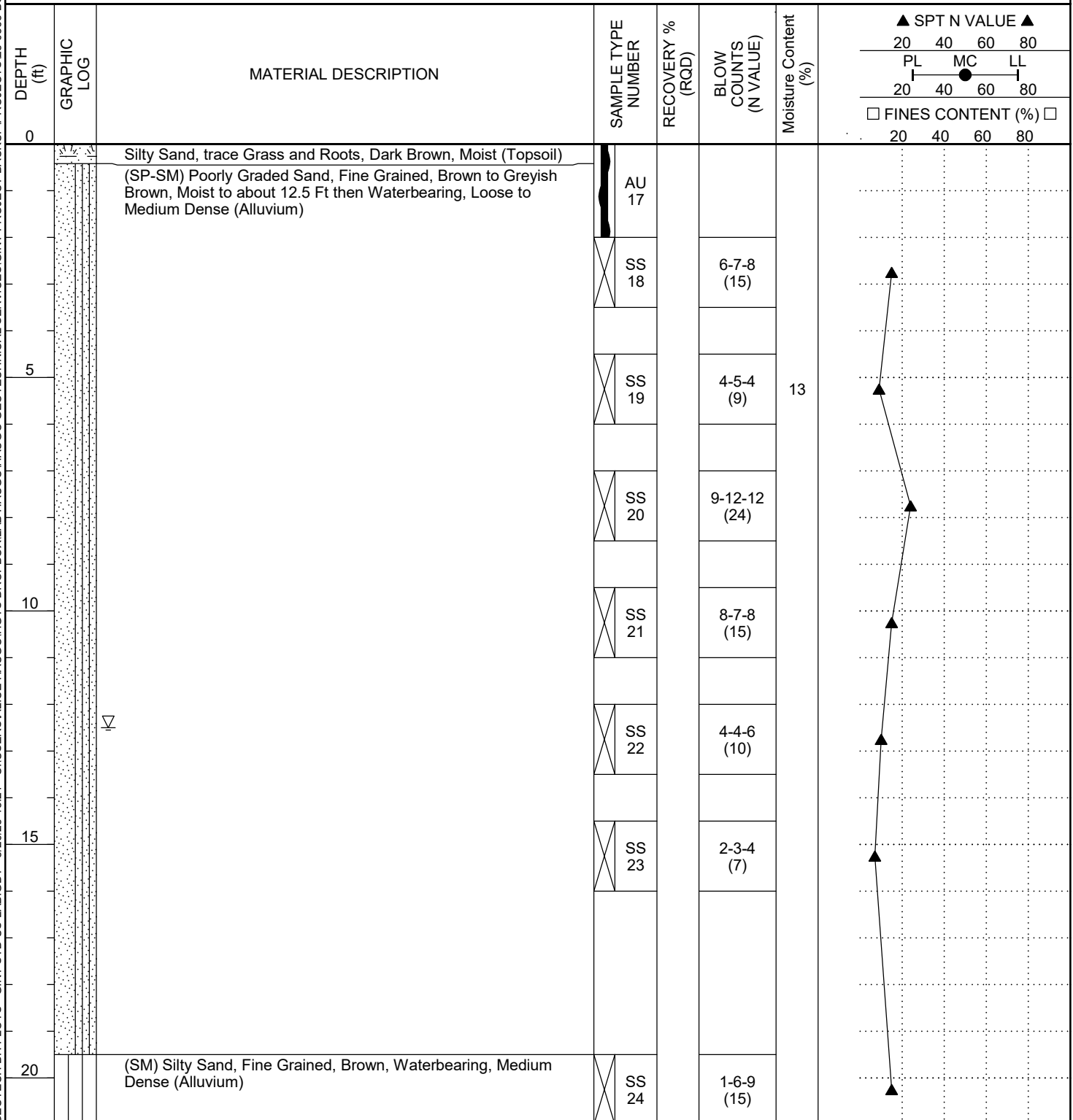
# BORING NUMBER SB-33

PAGE 1 OF 1

CLIENT Classic Construction  
PROJECT NUMBER 25-0563  
DATE STARTED 8/5/25 COMPLETED 8/5/25  
DRILLING CONTRACTOR HGTS- 45  
DRILLING METHOD Hollow Stem Auger/Split Spoon  
LOGGED BY NC/MS CHECKED BY PG  
NOTES \_\_\_\_\_

PROJECT NAME 7920 Lake Drive  
PROJECT LOCATION Lino Lakes, MN  
GROUND ELEVATION 912 ft HOLE SIZE 3 1/4 inches  
GROUND WATER LEVELS:  
▽ AT TIME OF DRILLING 12.50 ft / Elev 899.50 ft  
AT END OF DRILLING ---  
AFTER DRILLING ---

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Bottom of borehole at 21.0 feet.



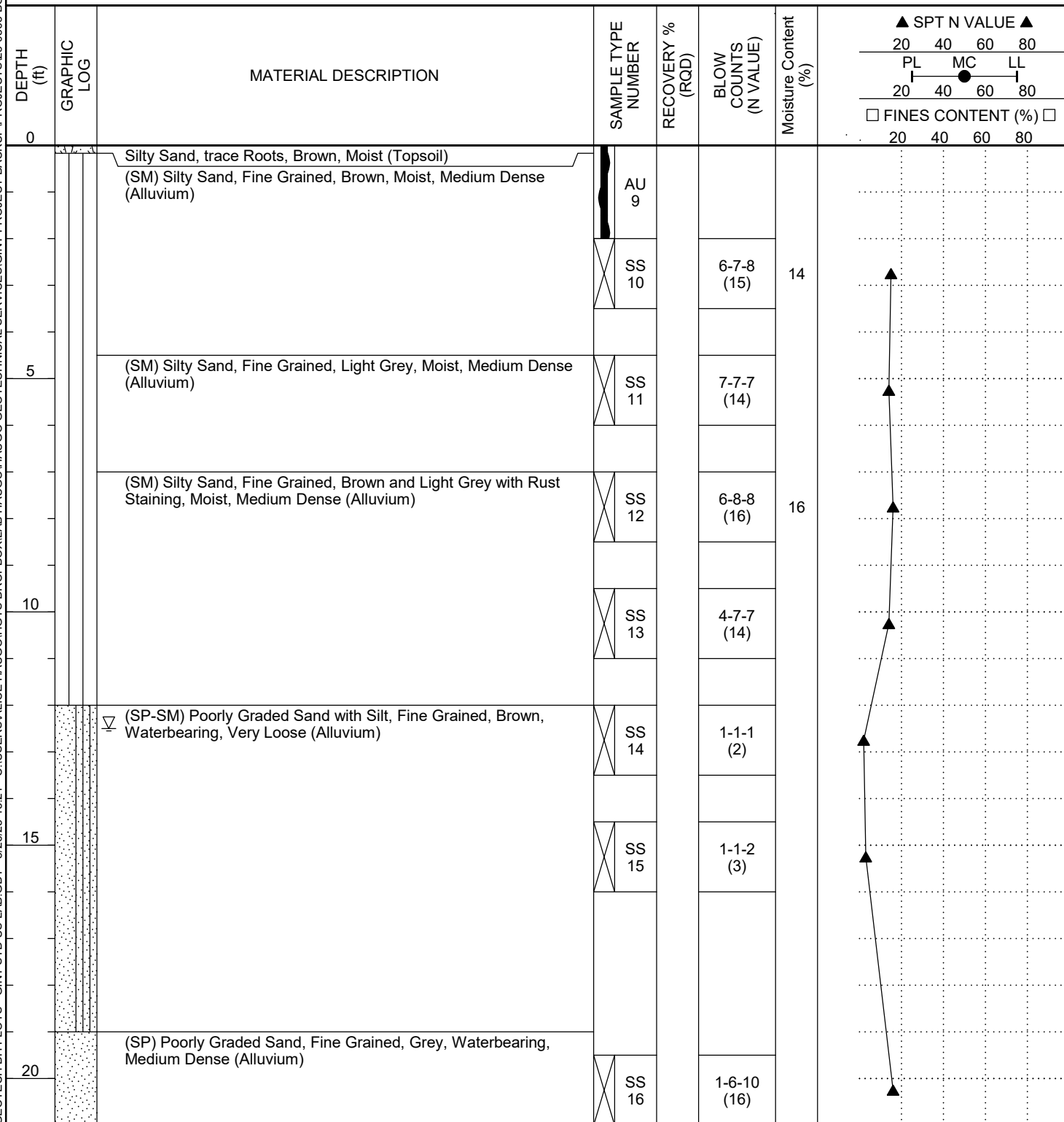
Haugo GeoTechnical Services  
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Fax: 763-445-2238

# BORING NUMBER SB-34

PAGE 1 OF 1

|                     |                               |                       |                           |
|---------------------|-------------------------------|-----------------------|---------------------------|
| CLIENT              | Classic Construction          | PROJECT NAME          | 7920 Lake Drive           |
| PROJECT NUMBER      | 25-0563                       | PROJECT LOCATION      | Lino Lakes, MN            |
| DATE STARTED        | 8/5/25                        | COMPLETED             | 8/5/25                    |
| DRILLING CONTRACTOR | HGTS- 45                      | GROUND ELEVATION      | 909.3 ft                  |
| DRILLING METHOD     | Hollow Stem Auger/Split Spoon | HOLE SIZE             | 3 1/4 inches              |
| LOGGED BY           | NC/MS                         | CHECKED BY            | PG                        |
| NOTES               |                               |                       |                           |
|                     |                               | GROUND WATER LEVELS:  |                           |
|                     |                               | ▽ AT TIME OF DRILLING | 12.50 ft / Elev 896.80 ft |
|                     |                               | AT END OF DRILLING    | ---                       |
|                     |                               | AFTER DRILLING        | ---                       |

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Bottom of borehole at 21.0 feet.



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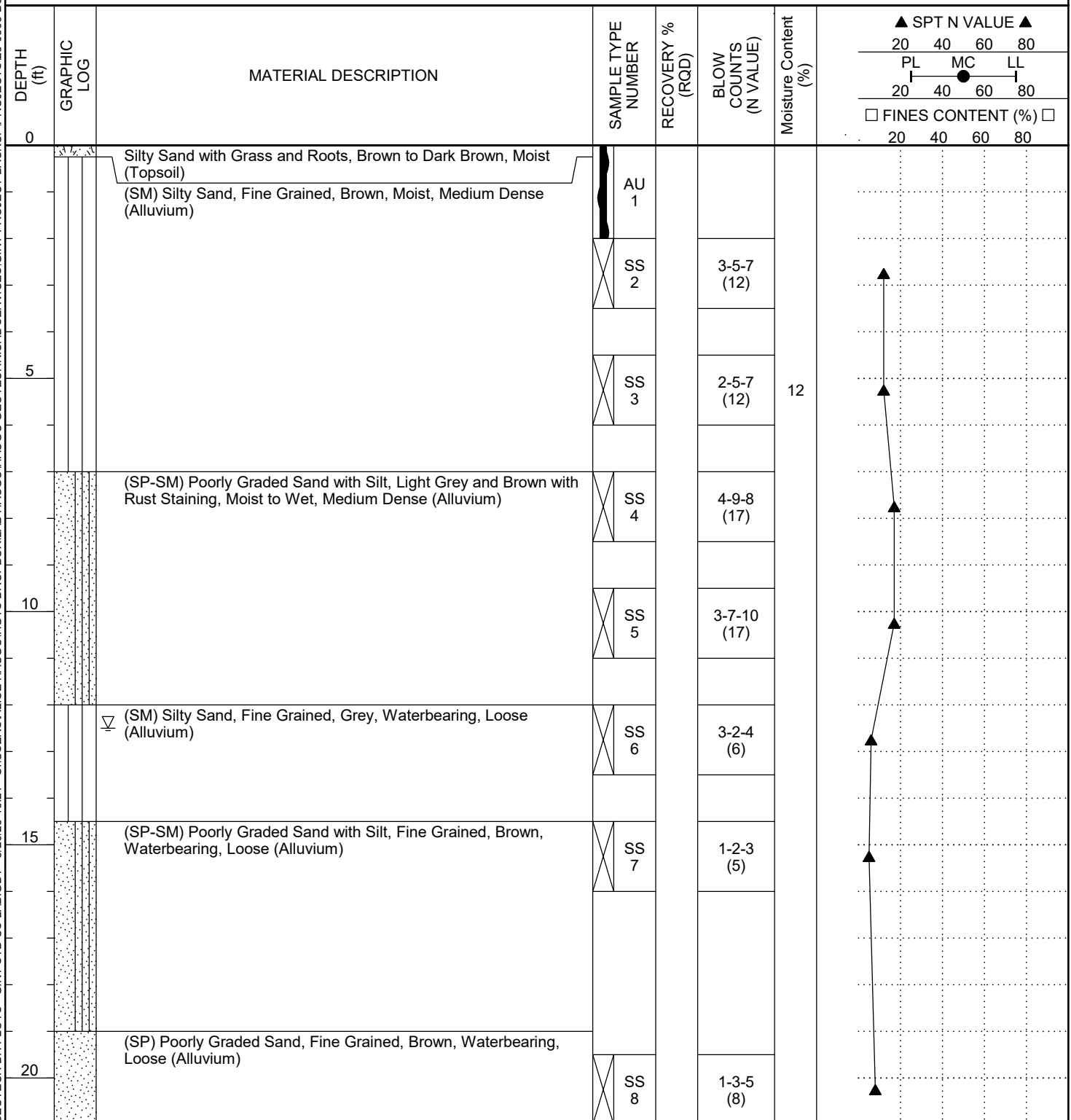
# BORING NUMBER SB-35

PAGE 1 OF 1

CLIENT Classic Construction  
PROJECT NUMBER 25-0563  
DATE STARTED 8/5/25 COMPLETED 8/5/25  
DRILLING CONTRACTOR HGTS- 45  
DRILLING METHOD Hollow Stem Auger/Split Spoon  
LOGGED BY NC/MS CHECKED BY PG  
NOTES \_\_\_\_\_

PROJECT NAME 7920 Lake Drive  
PROJECT LOCATION Lino Lakes, MN  
GROUND ELEVATION 909.4 ft HOLE SIZE 3 1/4 inches  
GROUND WATER LEVELS:  
▽ AT TIME OF DRILLING 12.50 ft / Elev 896.90 ft  
AT END OF DRILLING ---  
AFTER DRILLING ---

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Bottom of borehole at 21.0 feet.





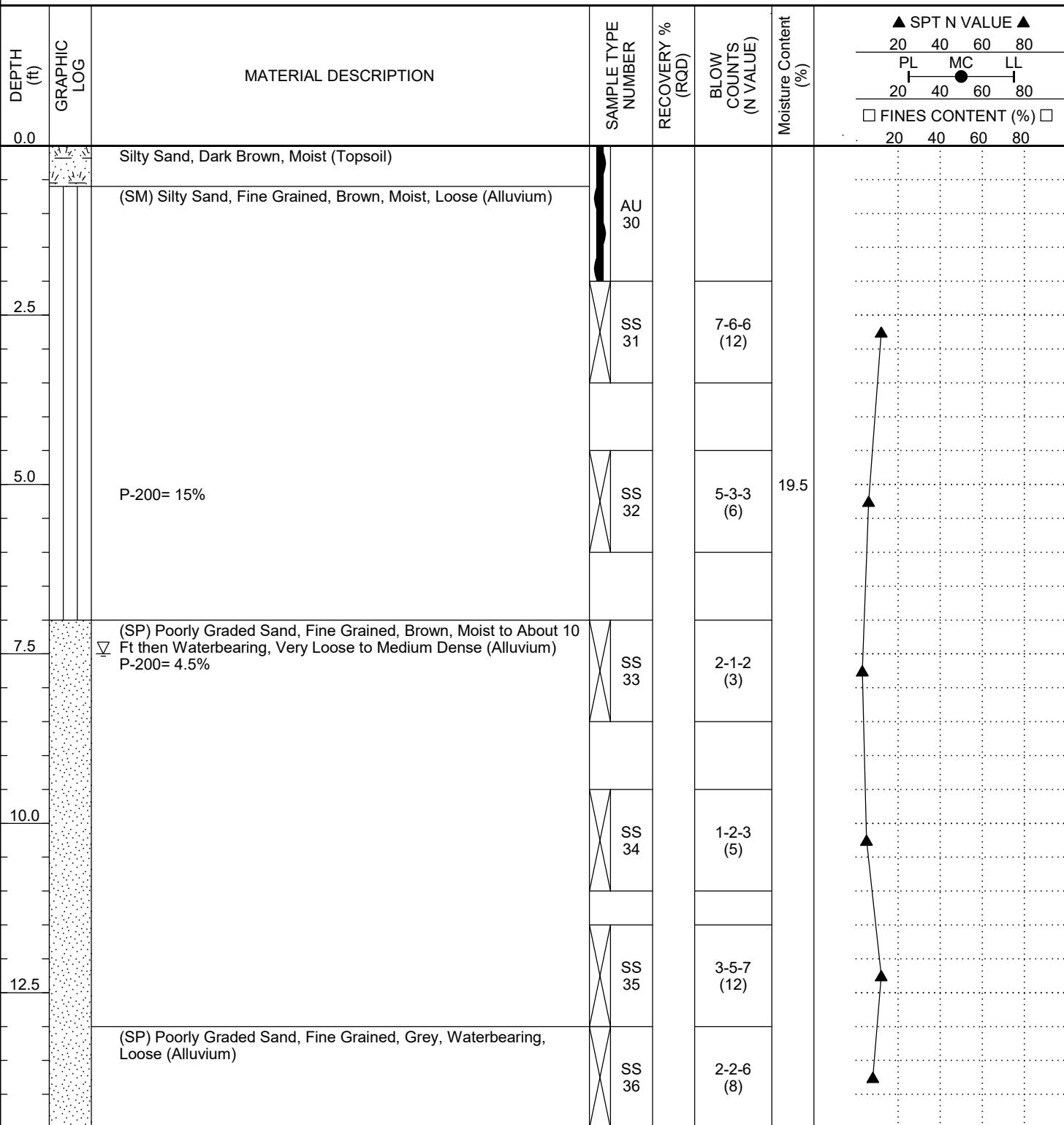
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# BORING NUMBER SB-36

PAGE 1 OF 1

|                     |                               |                       |                          |
|---------------------|-------------------------------|-----------------------|--------------------------|
| CLIENT              | Classic Construction          | PROJECT NAME          | 7920 Lake Drive          |
| PROJECT NUMBER      | 25-0563                       | PROJECT LOCATION      | Lino Lakes, MN           |
| DATE STARTED        | 8/5/25                        | COMPLETED             | 8/5/25                   |
| DRILLING CONTRACTOR | HGTS- 45                      | GROUND ELEVATION      | 904.1 ft                 |
| DRILLING METHOD     | Hollow Stem Auger/Split Spoon | HOLE SIZE             | 3 1/4 inches             |
| LOGGED BY           | NC/MS                         | CHECKED BY            | PG                       |
| NOTES               |                               |                       |                          |
|                     |                               | GROUND WATER LEVELS:  |                          |
|                     |                               | ▽ AT TIME OF DRILLING | 7.50 ft / Elev 896.60 ft |
|                     |                               | AT END OF DRILLING    | ---                      |
|                     |                               | AFTER DRILLING        | ---                      |

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 8/26/25 15:21 - C:\USERS\ALICE HAUGO\HGTS DROPBOX\LAB HAUGO\HAUGO GEOTECHNICAL SERVICES\GINT PROJECT BACKUP\PROJECTS\25-0563 BORING LOG DRAFTS.GPJ



Bottom of borehole at 14.5 feet.





Haugo GeoTechnical Services  
2825 Cedar Ave South  
Minneapolis, MN, 55407  
Telephone: 612-729-2959  
Fax: 763-445-2238

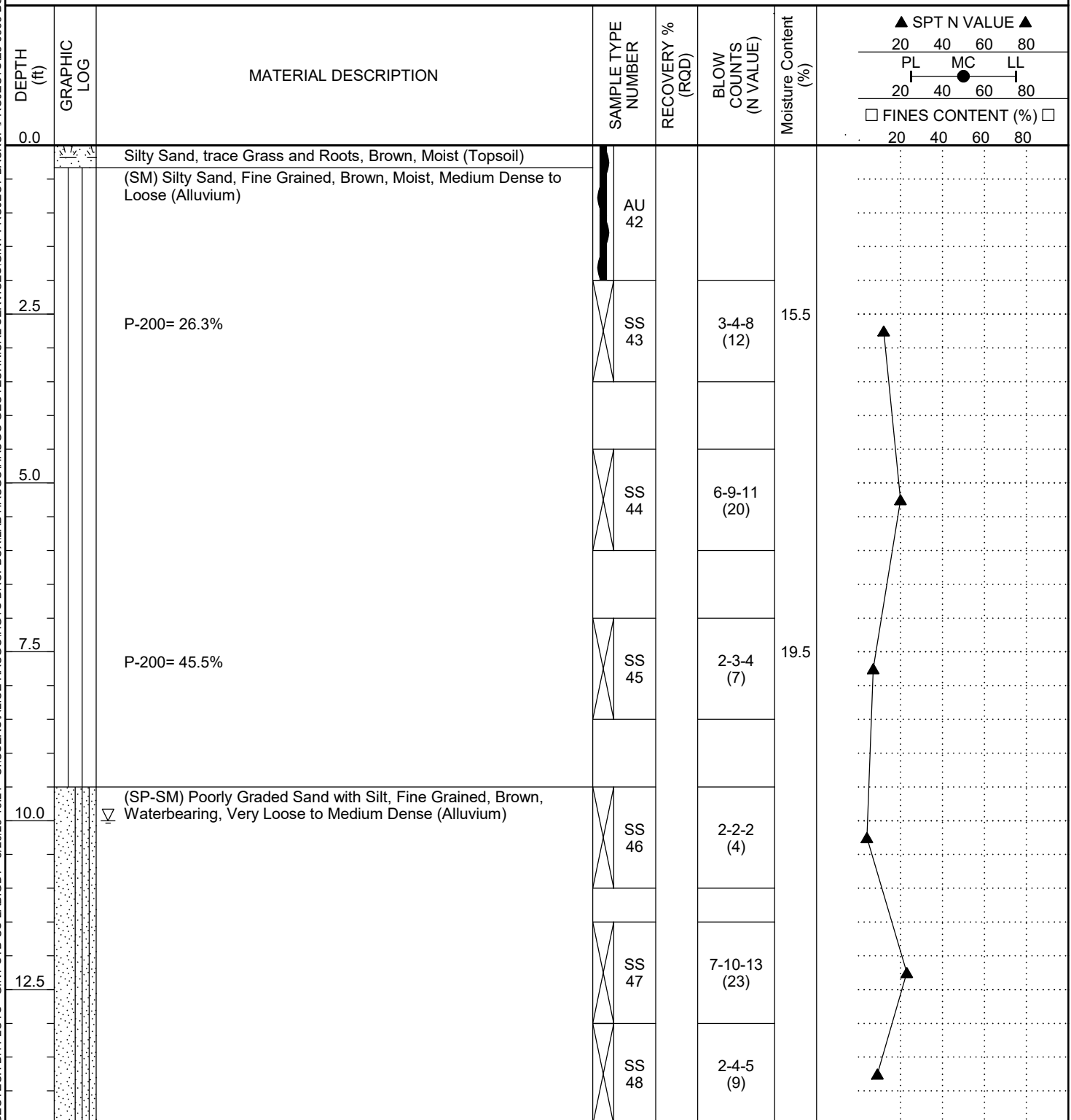
# BORING NUMBER SB-37

PAGE 1 OF 1

CLIENT Classic Construction  
PROJECT NUMBER 25-0563  
DATE STARTED 8/5/25 COMPLETED 8/5/25  
DRILLING CONTRACTOR HGTS- 45  
DRILLING METHOD Hollow Stem Auger/Split Spoon  
LOGGED BY NC/MS CHECKED BY PG  
NOTES \_\_\_\_\_

PROJECT NAME 7920 Lake Drive  
PROJECT LOCATION Lino Lakes, MN  
GROUND ELEVATION 906 ft HOLE SIZE 3 1/4 inches  
GROUND WATER LEVELS:  
▽ AT TIME OF DRILLING 10.00 ft / Elev 896.00 ft  
AT END OF DRILLING ---  
AFTER DRILLING ---

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Bottom of borehole at 14.5 feet.



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Fax: 763-445-2238

# BORING NUMBER SB-38

PAGE 1 OF 1

CLIENT Classic Construction

PROJECT NAME 7920 Lake Drive

PROJECT NUMBER 25-0563

PROJECT LOCATION Lino Lakes, MN

DATE STARTED 8/5/25 COMPLETED 8/5/25

GROUND ELEVATION 908.8 ft HOLE SIZE 3 1/4 inches

DRILLING CONTRACTOR HGTS- 45

GROUND WATER LEVELS:

DRILLING METHOD Hollow Stem Auger/Split Spoon

▽ AT TIME OF DRILLING 10.00 ft / Elev 898.80 ft

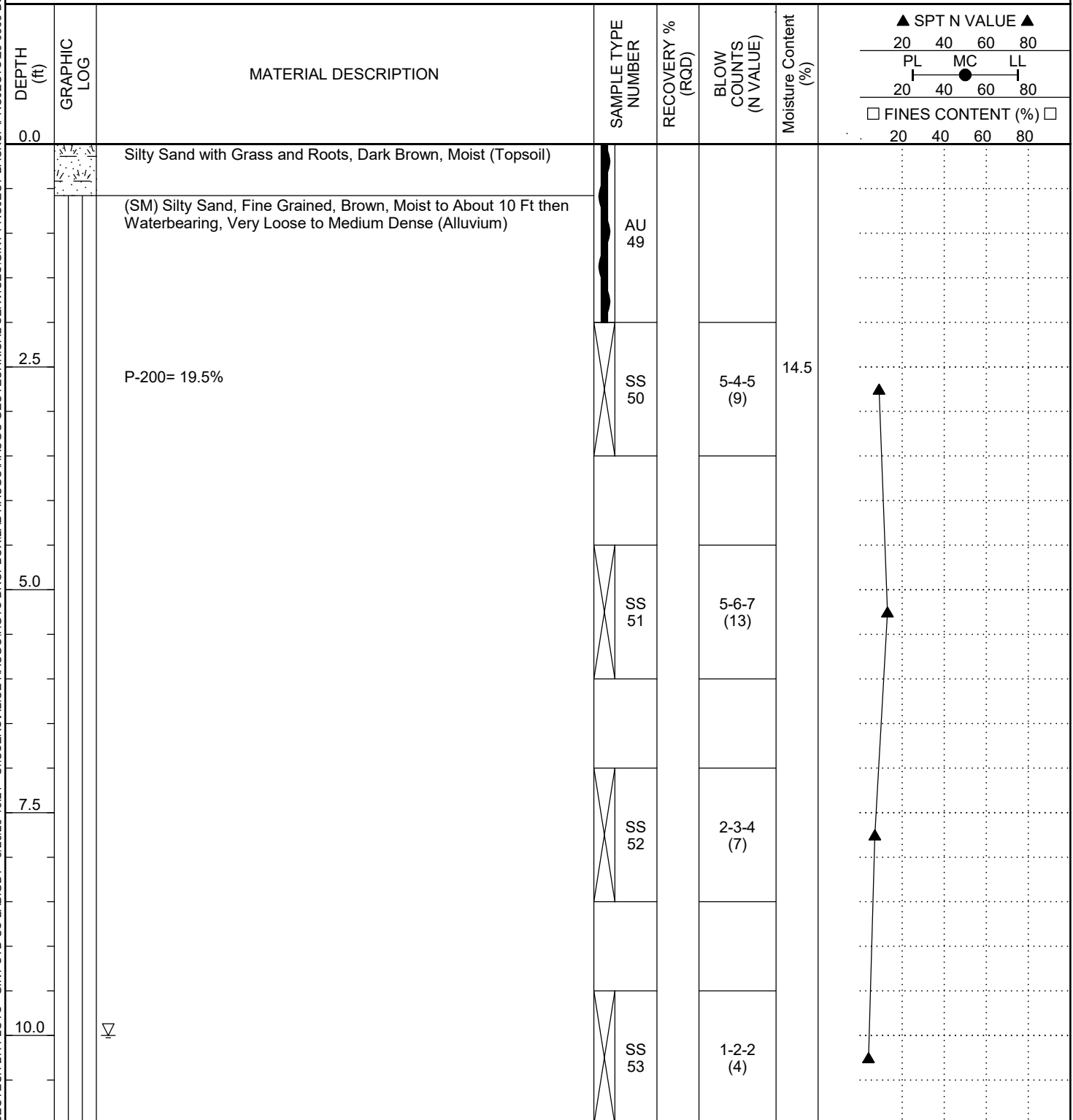
LOGGED BY NC/MS CHECKED BY PG

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

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Minneapolis, MN, 55407  
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Fax: 763-445-2238

# BORING NUMBER SB-41

PAGE 1 OF 1

CLIENT Classic Construction

PROJECT NAME 7920 Lake Drive

PROJECT NUMBER 25-0563

PROJECT LOCATION Lino Lakes, MN

DATE STARTED 8/5/25 COMPLETED 8/5/25

GROUND ELEVATION 906.5 ft HOLE SIZE 3 1/4 inches

DRILLING CONTRACTOR HGTS- 45

GROUND WATER LEVELS:

DRILLING METHOD Hollow Stem Auger/Split Spoon

▽ AT TIME OF DRILLING 7.50 ft / Elev 899.00 ft

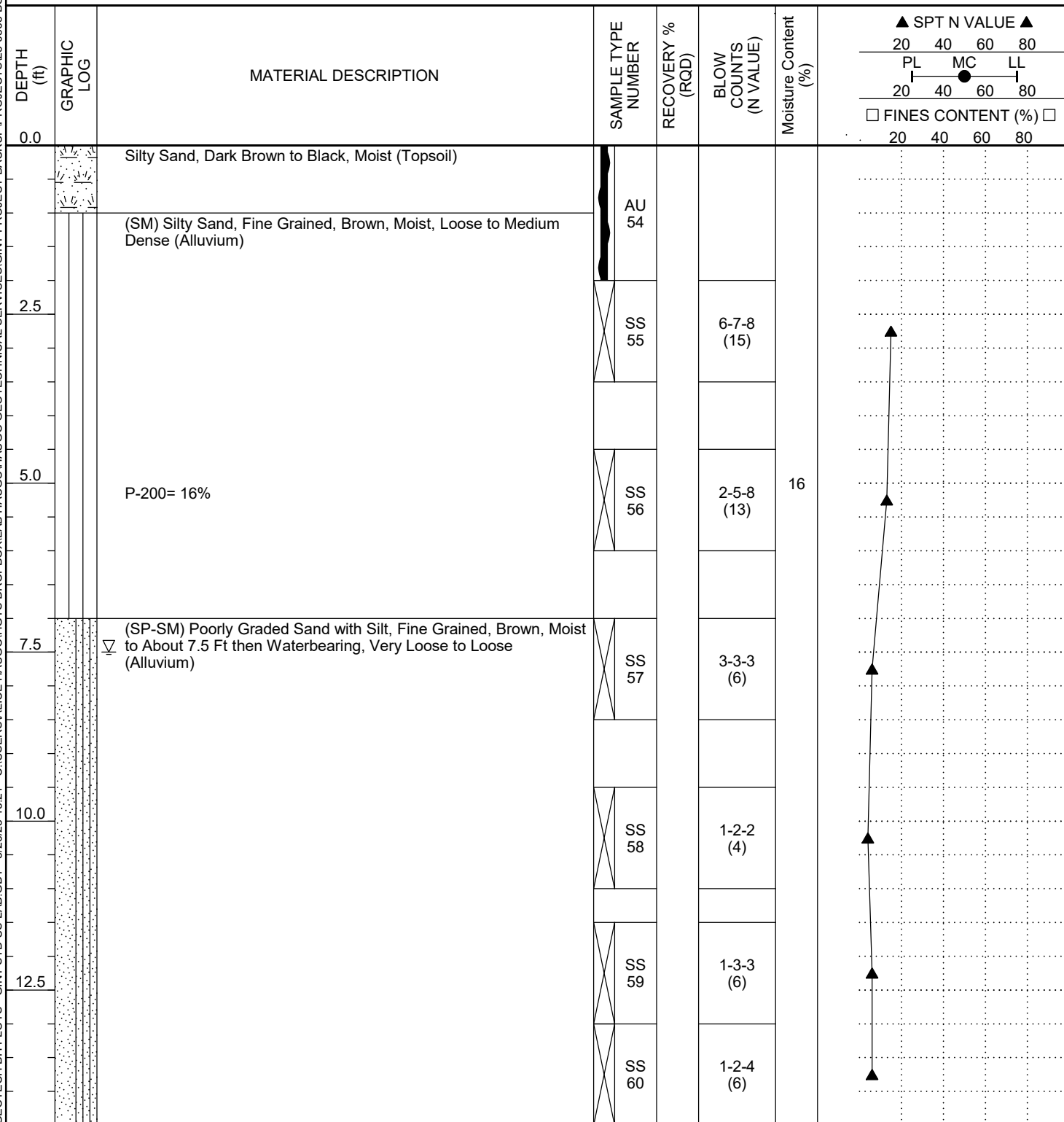
LOGGED BY NC/MS CHECKED BY PG

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

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2825 Cedar Ave South  
Minneapolis, MN, 55407  
Telephone: 612-729-2959  
Fax: 763-445-2238

# BORING NUMBER SB-42

PAGE 1 OF 1

CLIENT Classic Construction

PROJECT NAME 7920 Lake Drive

PROJECT NUMBER 25-0563

PROJECT LOCATION Lino Lakes, MN

DATE STARTED 8/5/25 COMPLETED 8/5/25

GROUND ELEVATION 907.4 ft HOLE SIZE 3 1/4 inches

DRILLING CONTRACTOR HGTS- 45

GROUND WATER LEVELS:

DRILLING METHOD Hollow Stem Auger/Split Spoon

▽ AT TIME OF DRILLING 10.00 ft / Elev 897.40 ft

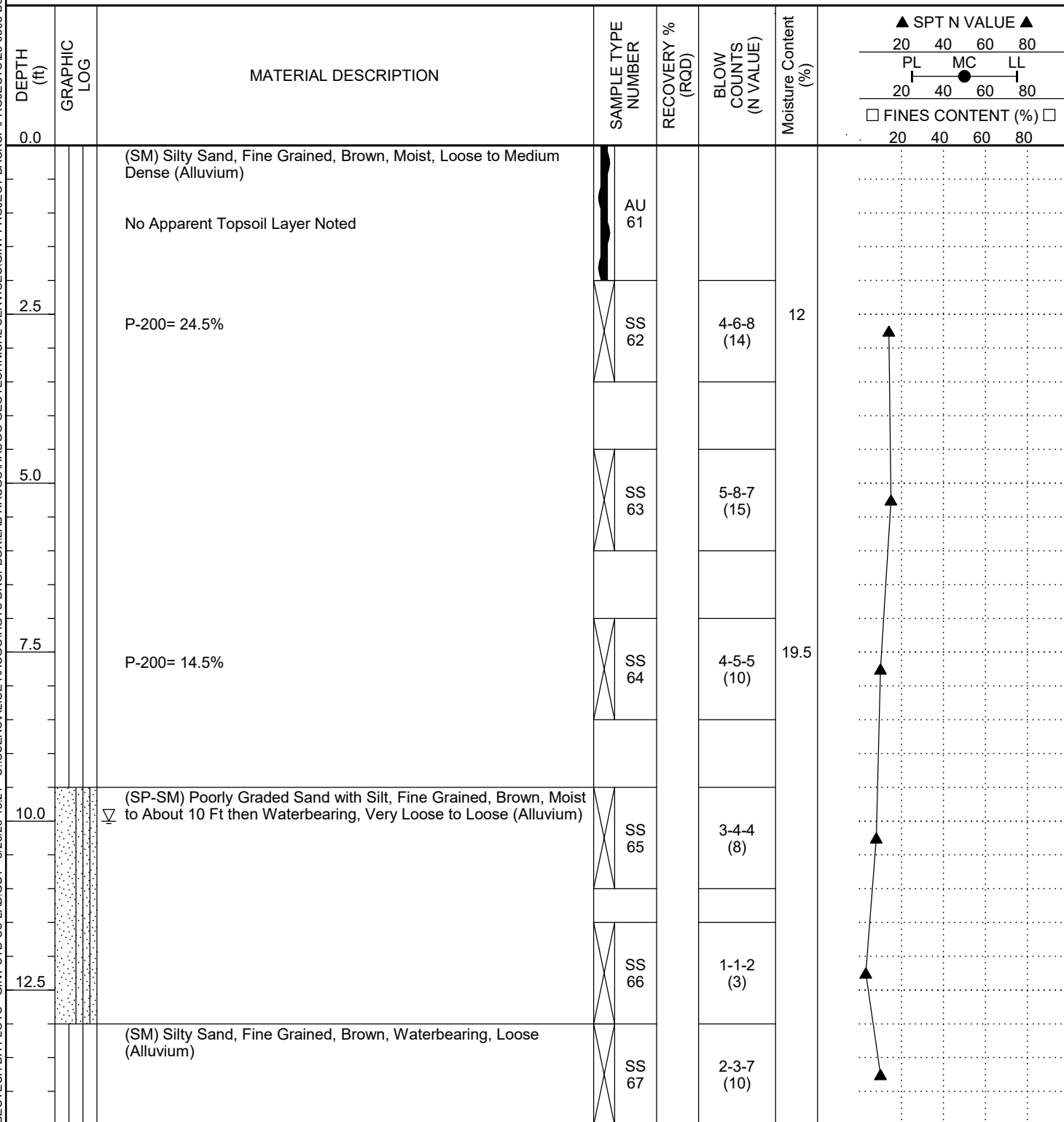
LOGGED BY NC/MS CHECKED BY PG

AT END OF DRILLING ---

NOTES No Apparent Topsoil Layer

AFTER DRILLING ---

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 8/26/25 15:21 - C:\USERS\ALICE HAUGO\HGTS DROPBOX\LAB HAUGO\HAUGO GEOTECHNICAL SERVICES\GINT PROJECT BACKUP\PROJECTS\25-0563 BORING LOG DRAFTS.GPJ



Bottom of borehole at 14.5 feet.



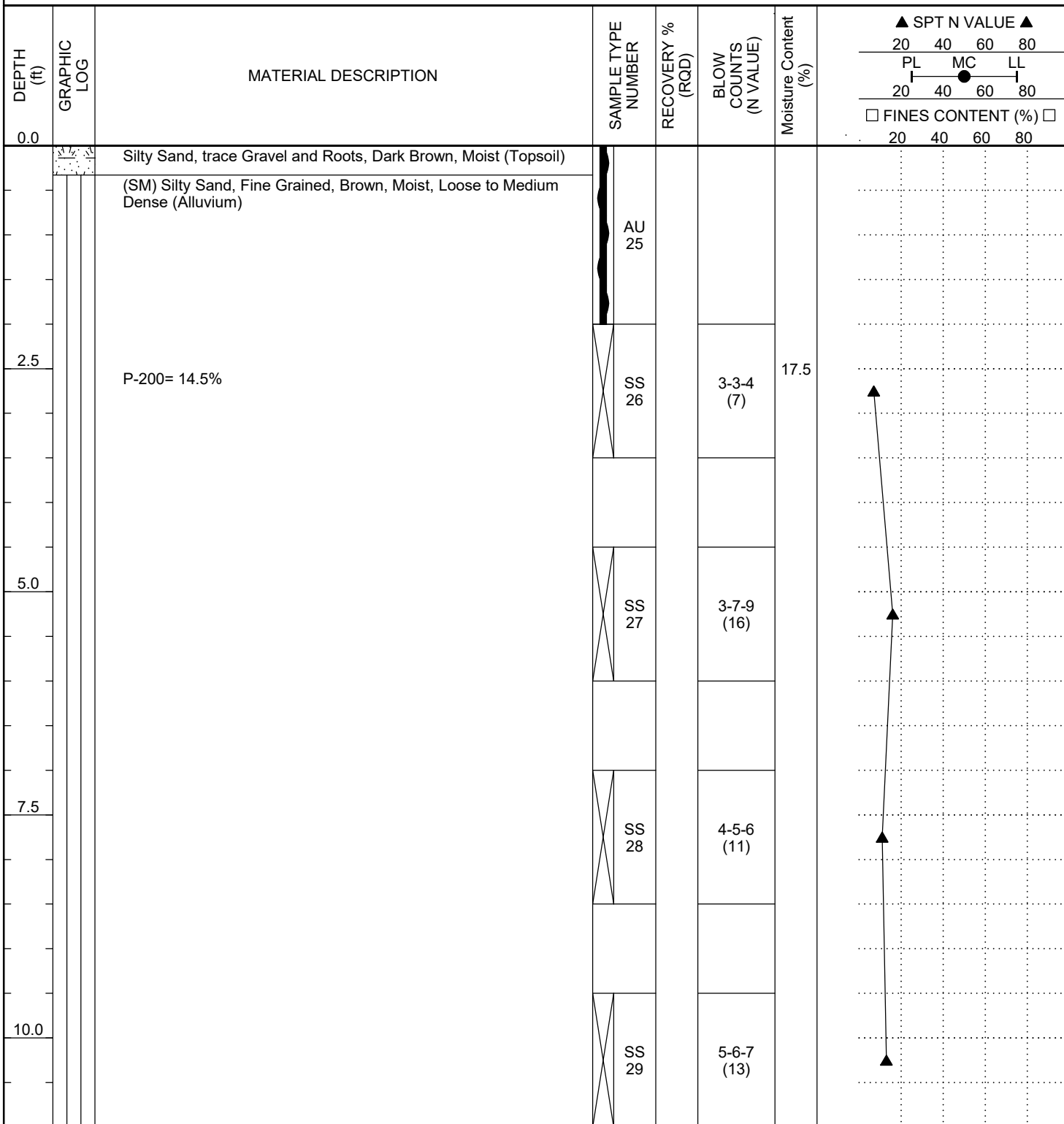
Haugo GeoTechnical Services  
2825 Cedar Ave South  
Minneapolis, MN, 55407  
Telephone: 612-729-2959  
Fax: 763-445-2238

# BORING NUMBER SB-43

PAGE 1 OF 1

|                     |                                    |                      |                     |
|---------------------|------------------------------------|----------------------|---------------------|
| CLIENT              | Classic Construction               | PROJECT NAME         | 7920 Lake Drive     |
| PROJECT NUMBER      | 25-0563                            | PROJECT LOCATION     | Lino Lakes, MN      |
| DATE STARTED        | 8/5/25                             | COMPLETED            | 8/5/25              |
| GROUND ELEVATION    | 907 ft                             | HOLE SIZE            | 3 1/4 inches        |
| DRILLING CONTRACTOR | HGTS- 45                           | GROUND WATER LEVELS: |                     |
| DRILLING METHOD     | Hollow Stem Auger/Split Spoon      | AT TIME OF DRILLING  | --- Not Encountered |
| LOGGED BY           | NC/MS                              | CHECKED BY           | PG                  |
| AT END OF DRILLING  | --- Not Encountered                |                      |                     |
| NOTES               | AFTER DRILLING --- Not Encountered |                      |                     |

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 8/26/25 15:21 - C:\USERS\ALICE HAUGO\HGTS DROPBOX\LAB HAUGO\HAUGO GEOTECHNICAL SERVICES\GINT PROJECT BACKUP\PROJECTS\25-0563 BORING LOG DRAFTS.GPJ



Bottom of borehole at 11.0 feet.



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Fax: 763-445-2238

# BORING NUMBER SB-44

PAGE 1 OF 1

|                     |                               |                       |                           |
|---------------------|-------------------------------|-----------------------|---------------------------|
| CLIENT              | Classic Construction          | PROJECT NAME          | 7920 Lake Drive           |
| PROJECT NUMBER      | 25-0563                       | PROJECT LOCATION      | Lino Lakes, MN            |
| DATE STARTED        | 8/5/25                        | COMPLETED             | 8/5/25                    |
| GROUND ELEVATION    | 908 ft                        | HOLE SIZE             | 3 1/4 inches              |
| DRILLING CONTRACTOR | HGTS- 45                      | GROUND WATER LEVELS:  |                           |
| DRILLING METHOD     | Hollow Stem Auger/Split Spoon | ▽ AT TIME OF DRILLING | 10.00 ft / Elev 898.00 ft |
| LOGGED BY           | NC/MS                         | CHECKED BY            | PG                        |
| AT END OF DRILLING  | ---                           | AFTER DRILLING        | ---                       |
| NOTES               |                               |                       |                           |

| DEPTH<br>(ft) | GRAPHIC<br>LOG | MATERIAL DESCRIPTION   | SAMPLE TYPE<br>NUMBER | RECOVERY %<br>(RQD) | BLOW<br>COUNTS<br>(N VALUE) | Moisture Content<br>(%) | ▲ SPT N VALUE ▲ |    |    |    |
|---------------|----------------|--|-----------------------|---------------------|-----------------------------|-------------------------|-----------------|----|----|----|
|               |                |  |                       |                     |                             |                         | 20              | 40 | 60 | 80 |
| 0.0           |                | Silty Sand with Grass and Roots, Dark Brown, Moist (Topsoil)   |                       |                     |                             |                         |                 |    |    |    |
|               |                | (SM) Silty Sand, Fine Grained, Brown, Moist to About 10 Ft then Waterbearing, Loose to Medium Dense (Alluvium) |                       |                     |                             |                         |                 |    |    |    |
| 2.5           |                | P-200= 13.5%   | AU 37                 |                     | 3-3-4 (7)                   | 16                      |                 |    |    |    |
| 5.0           |                |  | SS 38                 |                     | 5-6-6 (12)                  |                         |                 |    |    |    |
| 7.5           |                |  | SS 39                 |                     | 2-3-4 (7)                   |                         |                 |    |    |    |
| 10.0          |                |  | SS 40                 |                     | 2-3-4 (7)                   |                         |                 |    |    |    |
|               |                |  | SS 41                 |                     |                             |                         |                 |    |    |    |

Bottom of borehole at 11.0 feet.

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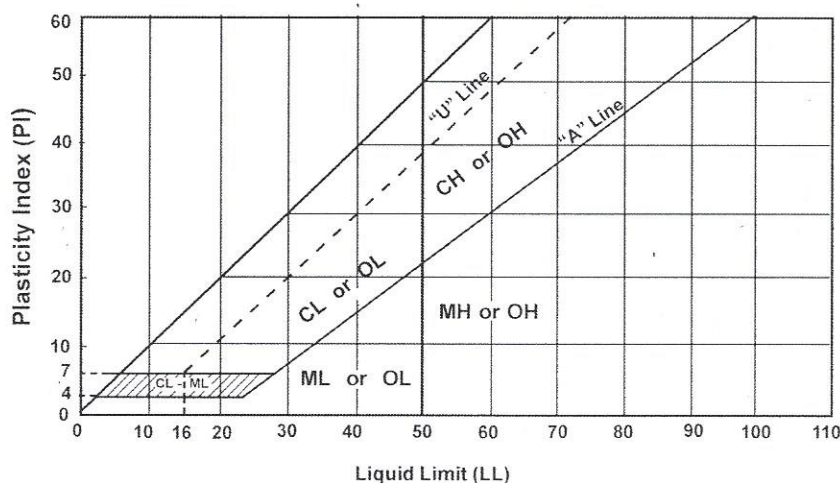


Standard D 2487 - 00

Classification of Soils for Engineering Purposes  
(Unified Soil Classification System)

| Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests <sup>a</sup> |   |  |  |    | Soils Classification              |                         |
|--|---|--|--|----|-----------------------------------|-------------------------|
|  |   |  |  |    | Group Symbol                      | Group Name <sup>b</sup> |
| Coarse-grained Soils<br>more than 50% retained on No. 200 sieve                          | Gravels<br>More than 50% of coarse fraction retained on No. 4 sieve | Clean Gravels<br>5% or less fines <sup>e</sup>           | $C_u \geq 4$ and $1 \leq C_c \leq 3$ <sup>c</sup>  | GW | Well-graded gravel <sup>d</sup>   |                         |
|  |   |  | $C_u < 4$ and/or $1 > C_c > 3$ <sup>c</sup>        | GP | Poorly graded gravel <sup>d</sup> |                         |
|  |   | Gravels with Fines<br>More than 12% fines <sup>e</sup>   | Fines classify as ML or MH                         | GM | Silty gravel <sup>d f g</sup>     |                         |
|  |   |  | Fines classify as CL or CH                         | GC | Clayey gravel <sup>d f g</sup>    |                         |
|  | Sands<br>50% or more of coarse fraction passes No. 4 sieve          | Clean Sands<br>5% or less fines <sup>i</sup>             | $C_u \geq 6$ and $1 \leq C_c \leq 3$ <sup>c</sup>  | SW | Well-graded sand <sup>h</sup>     |                         |
|  |   |  | $C_u < 6$ and/or $1 > C_c > 3$ <sup>c</sup>        | SP | Poorly graded sand <sup>h</sup>   |                         |
|  |   | Sands with Fines<br>More than 12% <sup>i</sup>           | Fines classify as ML or MH                         | SM | Silty sand <sup>f g h</sup>       |                         |
|  |   |  | Fines classify as CL or CH                         | SC | Clayey sand <sup>f g h</sup>      |                         |
| Fine-grained Soils<br>50% or more passed the No. 200 sieve                               | Silt and Clays<br>Liquid limit less than 50                         | Inorganic  | PI > 7 and plots on or above "A" line <sup>j</sup> | CL | Lean clay <sup>k i m</sup>        |                         |
|  |   |  | PI < 4 or plots below "A" line <sup>j</sup>        | ML | Silt <sup>k i m</sup>             |                         |
|  |   | Organic  | Liquid limit - oven dried < 0.75                   | OL | Organic clay <sup>k i m n</sup>   |                         |
|  |   |  | Liquid limit - not dried                           | OL | Organic silt <sup>k i m o</sup>   |                         |
|  | Silt and clays<br>Liquid limit 50 or more                           | Inorganic  | PI plots on or above "A" line                      | CH | Fat clay <sup>k i m</sup>         |                         |
|  |   |  | PI plots below "A" line                            | MH | Elastic silt <sup>k i m</sup>     |                         |
|  |   | Organic  | Liquid limit - oven dried < 0.75                   | OH | Organic clay <sup>k i m p</sup>   |                         |
|  |   |  | Liquid limit - not dried                           | OH | Organic silt <sup>k i m q</sup>   |                         |
| Highly Organic Soils   |   | Primarily organic matter, dark in color and organic odor |  | PT | Peat                              |                         |

- a. Based on the material passing the 3-in (75mm) sieve.  
b. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders or both" to group name.  
c.  $C_u = D_{60}/D_{10}$   $C_c = (D_{30})^2 / (D_{10} \times D_{60})$   
d. If soil contains  $\geq 15\%$  sand, add "with sand" to group name.  
e. Gravels with 5 to 12% fines require dual symbols:  
GW-GM well-graded gravel with silt  
GW-GC well-graded gravel with clay  
GP-GM poorly graded gravel with silt  
GP-GC poorly graded gravel with clay  
f. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.  
g. If fines are organic, add "with organic fines" to group name.  
h. If soil contains  $\geq 15\%$  gravel, add "with gravel" to group name.  
i. Sands with 5 to 12% fines require dual symbols:  
SW-SM well-graded sand with silt  
SW-SC well-graded sand with clay  
SP-SM poorly graded sand with silt  
SP-SC poorly graded sand with clay  
j. If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.  
k. If soil contains 10 to 29% plus No. 200, add "with sand" or "with gravel" whichever is predominant.  
l. If soil contains  $\geq 30\%$  plus No. 200, predominantly sand, add "sandy" to group name.  
m. If soil contains  $\geq 30\%$  plus No. 200 predominantly gravel, add "gravelly" to group name.  
n. PI  $\geq 4$  and plots on or above "A" line.  
o. PI  $< 4$  or plots below "A" line.  
p. PI plots on or above "A" line.  
q. PI plots below "A" line.



Laboratory Tests

|      |                             |        |                                      |
|------|-----------------------------|--------|--------------------------------------|
| DD   | Dry density, pcf            | OC     | Organic content, %                   |
| WD   | Wet density, pcf            | S      | Percent of saturation, %             |
| MC   | Natural moisture content, % | SG     | Specific gravity                     |
| LL   | Liquid limit, %             | C      | Cohesion, psf                        |
| PL   | Plastic limit, %            | $\phi$ | Angle of internal friction           |
| PI   | Plasticity index, %         | qu     | Unconfined compressive strength, psf |
| P200 | % passing 200 sieve         | qp     | Pocket penetrometer strength, tsf    |

## Particle Size Identification

|          |   |
|----------|---|
| Boulders | over 12"  |
| Cobbles  | 3" to 12"                                       |
| Gravel   |   |
| Coarse   | 3/4" to 3"                                      |
| Fine     | No. 4 to 3/4"                                   |
| Sand     |   |
| Coarse   | No. 4 to No. 10                                 |
| Medium   | No. 10 to No. 40                                |
| Fine     | No. 40 to No. 200                               |
| Silt     | < No. 200, PI < 4 or below "A" line             |
| Clay     | < No. 200, PI $\geq 4$ and on or above "A" line |

## Relative Density of Cohesionless Soils

|              |              |
|--------------|--------------|
| Very loose   | 0 to 4 BPF   |
| Loose        | 5 to 10 BPF  |
| Medium dense | 11 to 30 BPF |
| Dense        | 31 to 50 BPF |
| Very dense   | over 50 BPF  |

## Consistency of Cohesive Soils

|              |              |
|--------------|--------------|
| Very soft    | 0 to 1 BPF   |
| Soft         | 2 to 3 BPF   |
| Rather soft  | 4 to 5 BPF   |
| Medium       | 6 to 8 BPF   |
| Rather stiff | 9 to 12 BPF  |
| Stiff        | 13 to 16 BPF |
| Very stiff   | 17 to 30 BPF |
| Hard         | over 30 BPF  |

## Drilling Notes

Standard penetration test borings were advanced by 3 1/4" or 6 1/4" ID hollow-stem augers unless noted otherwise. Jetting water was used to clean out auger prior to sampling only where indicated on logs. Standard penetration test borings are designated by the prefix "ST" (Split Tube). All samples were taken with the standard 2" OD split-tube sampler, except where noted.

Power auger borings were advanced by 4" or 6" diameter continuous-flight, solid-stem augers. Soil classifications and strata depths were inferred from disturbed samples augered to the surface and are, therefore, somewhat approximate. Power auger borings are designated by the prefix "B."

Hand auger borings were advanced manually with a 1 1/2" or 3 1/4" diameter auger and were limited to the depth from which the auger could be manually withdrawn. Hand auger borings are indicated by the prefix "H."

BPF: Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler was set 6" into undisturbed soil below the hollow-stem auger. Driving resistances were then counted for second and third 6" increments and added to get BPF. Where they differed significantly, they are reported in the following form: 2/12 for the second and third 6" increments, respectively.

WH: WH indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WR: WR indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

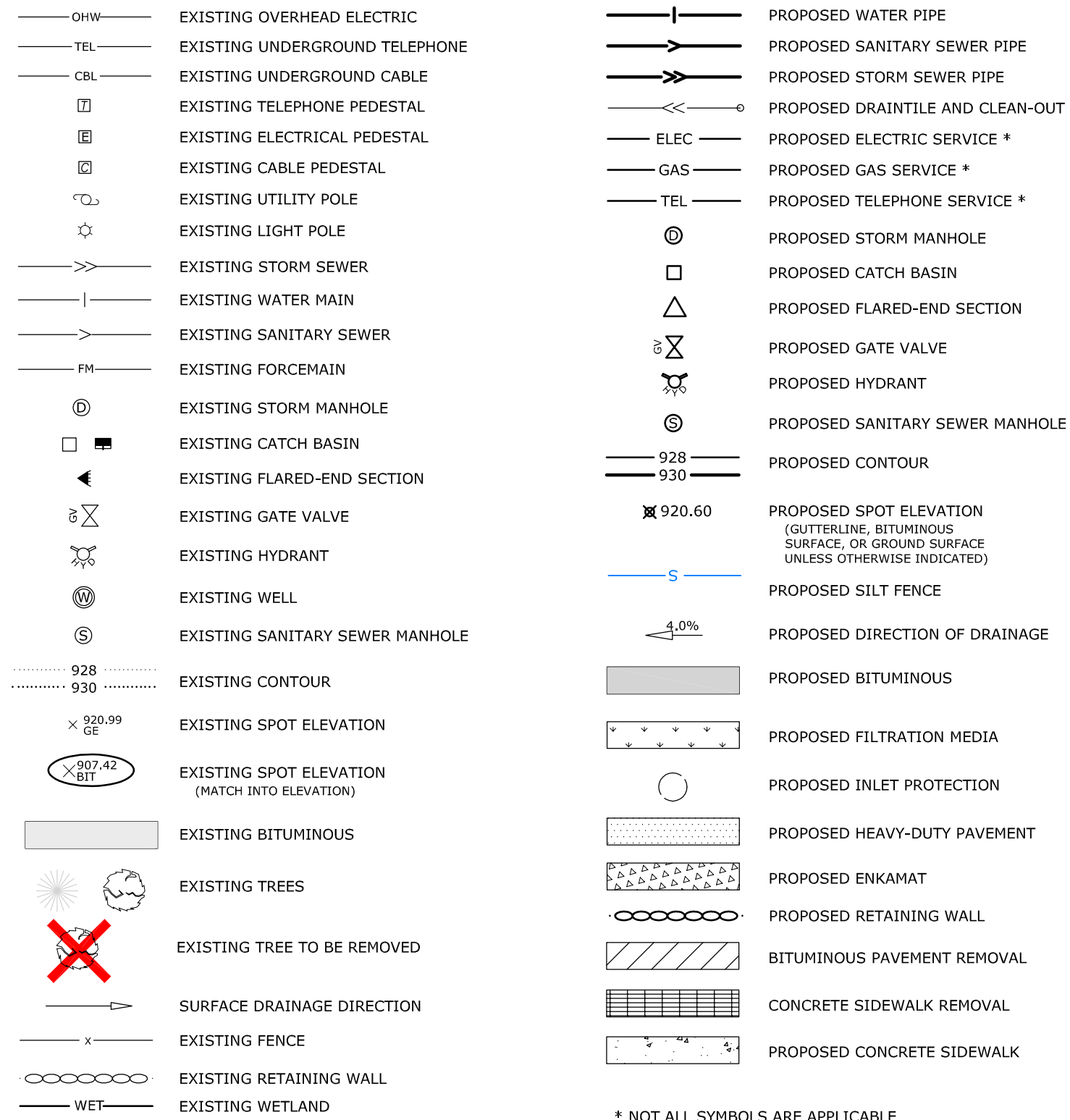
TW indicates thin-walled (undisturbed) tube sample.

Note: All tests were run in general accordance with applicable ASTM standards.



# **LINO LAKES DEALERSHIP + OFFICE** **TITLE SHEET, LEGEND, EXISTING CONDITIONS & REMOVAL PLAN** **LINO LAKES, MINNESOTA**

## LEGEND \*



## GENERAL NOTES

THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF EXISTING UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UTILITIES AS NECESSARY TO AVOID DAMAGE TO THESE UTILITIES.

CALL "811" FOR EXISTING UTILITIES LOCATIONS PRIOR TO ANY EXCAVATIONS.

THE CONTRACTOR SHALL FIELD VERIFY SIZE, ELEVATION, AND LOCATION OF EXISTING SANITARY SEWER, STORM SEWER, AND WATER MAIN AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO THE START OF INSTALLATIONS.

INSTALLATIONS SHALL CONFORM TO THE CITY STANDARD SPECIFICATIONS AND DETAIL PLATES.

ALL UTILITIES THAT WILL BE OWNED AND MAINTAINED BY THE CITY AFTER CONSTRUCTION SHALL BE BUILT TO CITY STANDARDS.

THE CONTRACTOR SHALL NOTIFY CITY PUBLIC WORKS DEPARTMENT A MINIMUM OF 24 HOURS PRIOR TO THE INTERRUPTION OF ANY SEWER OR WATER SERVICES TO EXISTING HOMES OR BUSINESSES.

THE CONTRACTOR SHALL OBTAIN A RIGHT-OF-WAY PERMIT FROM THE CITY PRIOR TO ANY WORK.

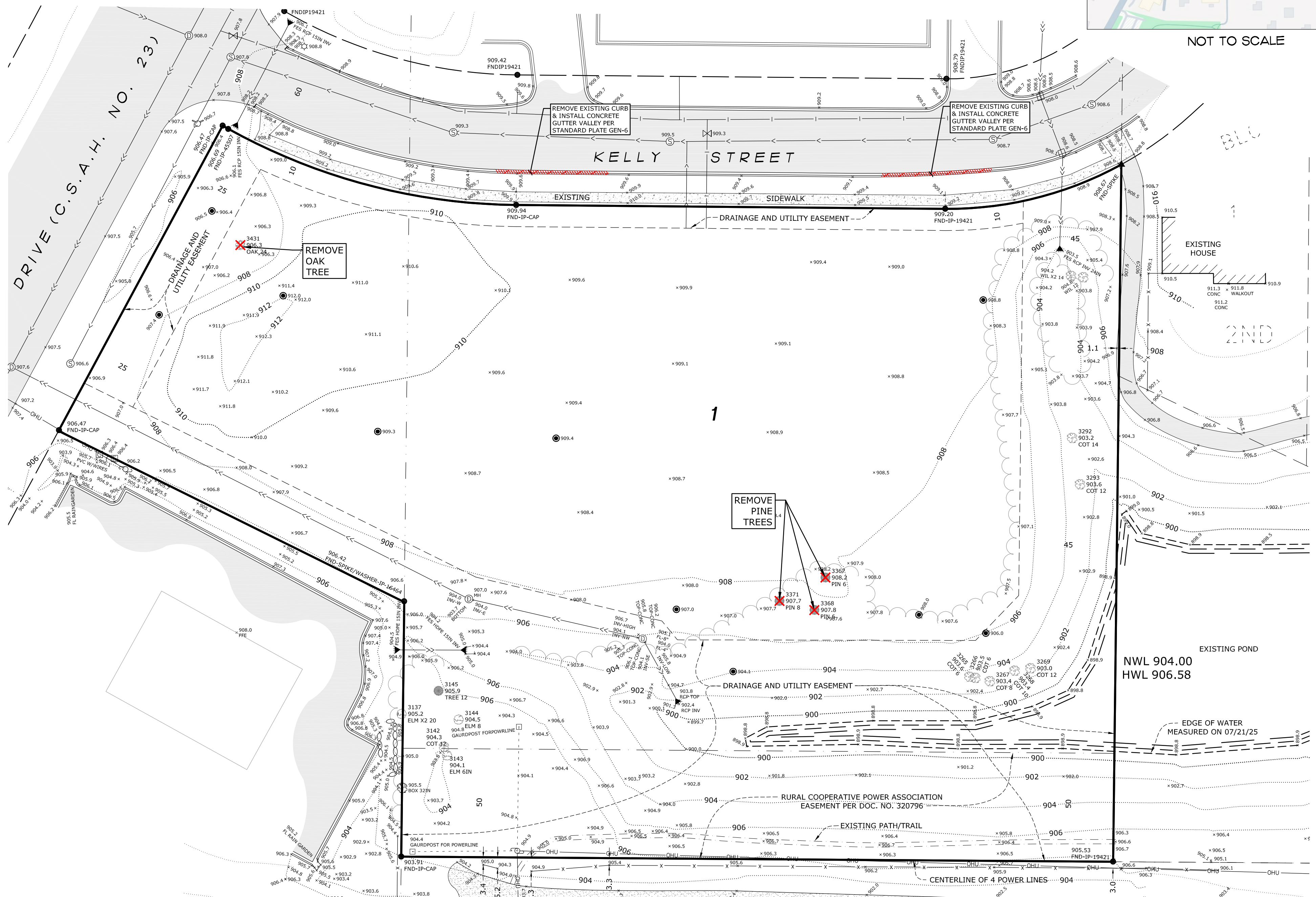
STORAGE OF MATERIALS OR EQUIPMENT SHALL NOT BE ALLOWED ON PUBLIC STREETS OR WITHIN PUBLIC RIGHT-OF-WAY.

NOTIFY CITY A MINIMUM OF 48 HOURS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

ALL ELECTRIC, TELEPHONE, AND GAS EXTENSIONS INCLUDING SERVICE LINES SHALL BE CONSTRUCTED TO THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS. ALL UTILITY DISCONNECTIONS SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY.



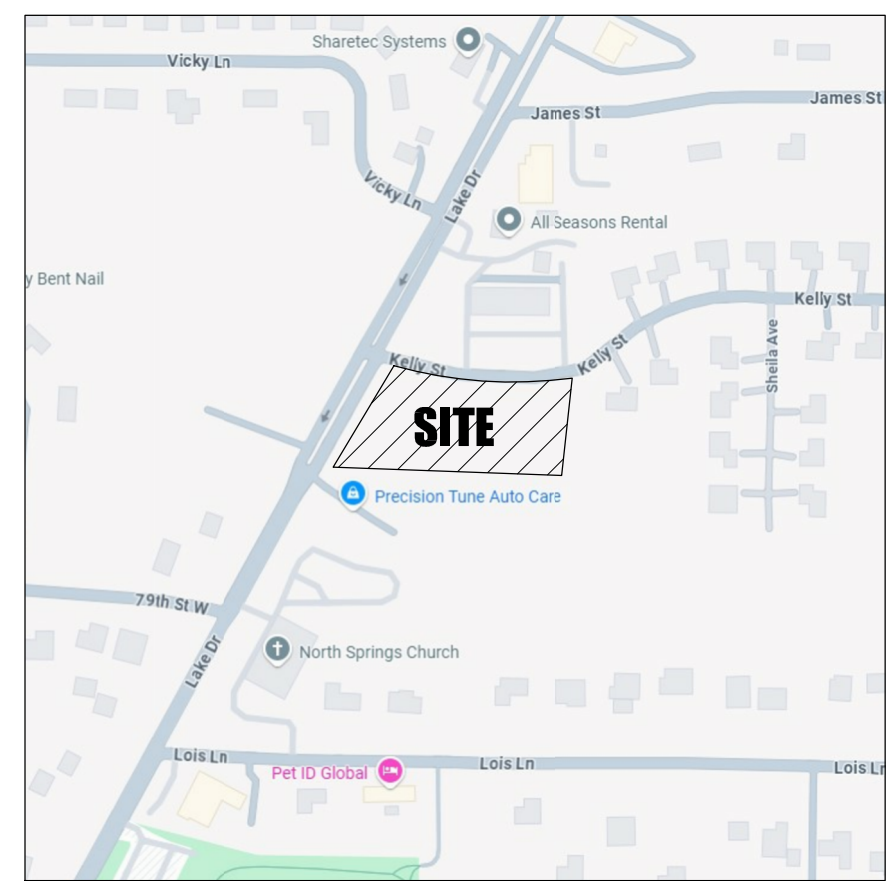
below.  
**Call before you dig.**



## SHEET INDEX

|             |  |
|-------------|--|
| C0          | TITLE SHEET, LEGEND, EXISTING CONDITIONS, & REMOVAL PLAN |
| C1          | CIVIL SITE PLAN  |
| C2          | GRADING, DRAINAGE & EROSION CONTROL PLAN                 |
| C3          | UTILITY PLAN   |
| C4.1 - C4.3 | DETAILS & NOTES  |
| C5.1 - C5.2 | STORM WATER POLLUTION PREVENTION PLAN                    |
| C6          | TREE INVENTORY & PRESERVATION PLAN                       |

### VICINITY MAP



NOT TO SCALE

[illegible]

hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

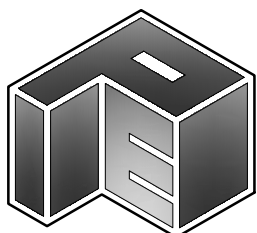
QASEM M. ABUGHAZLEH  
DATE: 09.05.2025 LIC. NO. 56299

**10 LAKES DEALERSHIP +  
OFFICE**

**LINO LAKES, MINNESOTA**

TITLE SHEET, LEGEND, EXISTING  
CONDITIONS, AND REMOVAL PLAN

PREPARED FOR:  
TYLER HUEBSCH



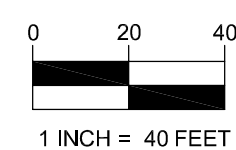
SITE PLANNING  
& ENGINEERING

**PLOWE**  
**ENGINEERING, INC.**

6776 LAKE DRIVE  
SUITE 110  
LINO LAKES, MN 55014

PHONE: (651) 361-8210  
FAX: (651) 361-8701

**NORTH**



CO



GENERAL SITE INFORMATION:

SITE AREA = 121,566 SF (2.791 ACRES)  
PROPOSED BUILDING = 8,410 SF (0.193 ACRES)  
NEW IMPERVIOUS (OTHER) = 47,536 SF (1.091 ACRES)  
TOTAL IMPERVIOUS AREA = 55,946 SF (46.02%)  
TOTAL PERVIOUS AREA = 65,620 SF (53.98%)

PROPERTY OWNER  
SKIP AND TERRI COOK  
7920 LAKE DR  
LINO LAKES, MN 55014  
CONTACT NAME: SKIP COOK  
CONTACT PHONE: (612) 750-4767  
CONTACT E-MAIL: CODYCOOK2498@GMAIL.COM

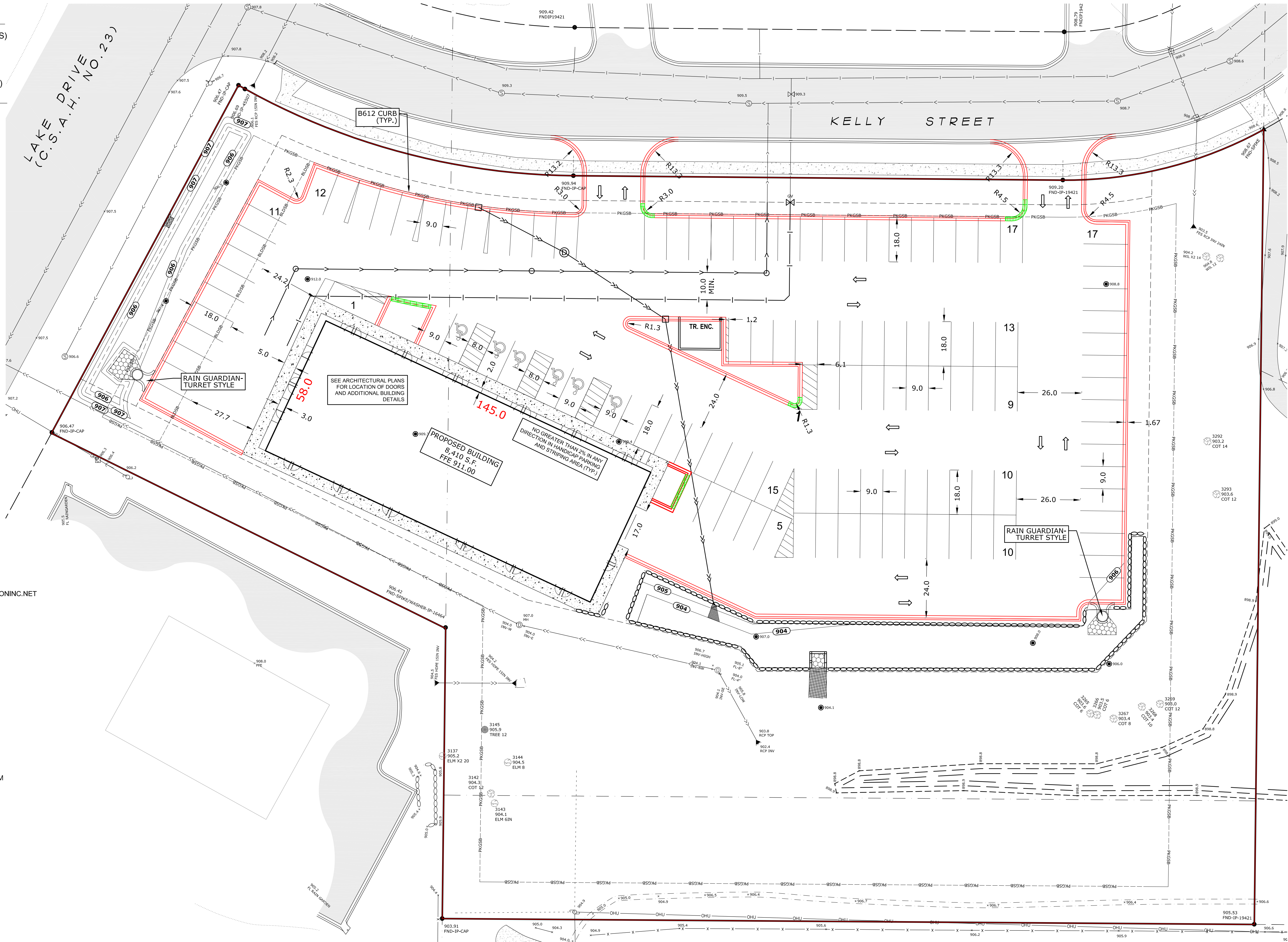
DEVELOPER  
TYLER HUEBSCH DBA  
10731 HAWTHORN TRAIL  
WOODBURY, MN 55129  
CONTACT NAME: TYLER HUEBSCH  
CONTACT PHONE: (651) 442-9334  
CONTACT E-MAIL: TJHUEBSCH@GMAIL.COM

CIVIL ENGINEER  
PLOWE ENGINEERING  
6776 LAKE DR NE  
LINO LAKES, MN 55014  
CONTACT NAME: MOHAMMAD ABUGHAZLEH  
CONTACT PHONE: (651) 361-8237  
CONTACT E-MAIL: MOE@PLOWE.COM

GENERAL CONTRACTOR  
CLASSIC CONSTRUCTION  
18542 ULYSSES ST. NE  
EAST BETHEL, MN 55011  
CONTACT NAME: KRISTIN ERICKSON  
CONTACT PHONE: (763) 434-8870  
CONTACT E-MAIL: KRISTIN@CLASSICCONSTRUCTIONINC.NET

ARCHITECT  
THIELEN & GREEN  
7455 VILLAGE DRIVE STE. 110  
LINO LAKES, MN 55014  
CONTACT NAME: KRIS THIELEN  
CONTACT PHONE: (763) 553-7927  
CONTACT E-MAIL: KMT@TANDGARCH.COM

LANDSCAPE ARCHITECT  
CALYX DESIGN GROUP  
475 CLEVELAND AVE. NORTH SUITE 101A  
ST. PAUL, MN 55104  
CONTACT NAME: BEN HARTBERG  
CONTACT PHONE: (651) 788-9018  
CONTACT E-MAIL: BEN@CALYXDESIGNGROUP.COM



SITE PLAN  
7920 LAKE DRIVE

DRAWN BY: M.Q.A. DESIGN BY: Q.M.A.  
CHKD BY: M.Q.A. PROJ. NO. 25-2210  
ORIGINAL DATE: AUGUST 1, 2025

| DATE | REVISION DESCRIPTION |
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I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
QASEM M. ABUGHAZLEH  
DATE: 09.05.2025 LIC. NO. 56299

LINO LAKES DEALERSHIP +  
OFFICE  
LINO LAKES, MINNESOTA  
SITE PLAN  
PREPARED FOR:  
TYLER HUEBSCH

SITE PLANNING  
& ENGINEERING  
**PLOWE**  
ENGINEERING, INC.  
6776 LAKE DRIVE  
SUITE 110  
LINO LAKES, MN 55014  
PHONE: (651) 361-8210  
FAX: (651) 361-8701

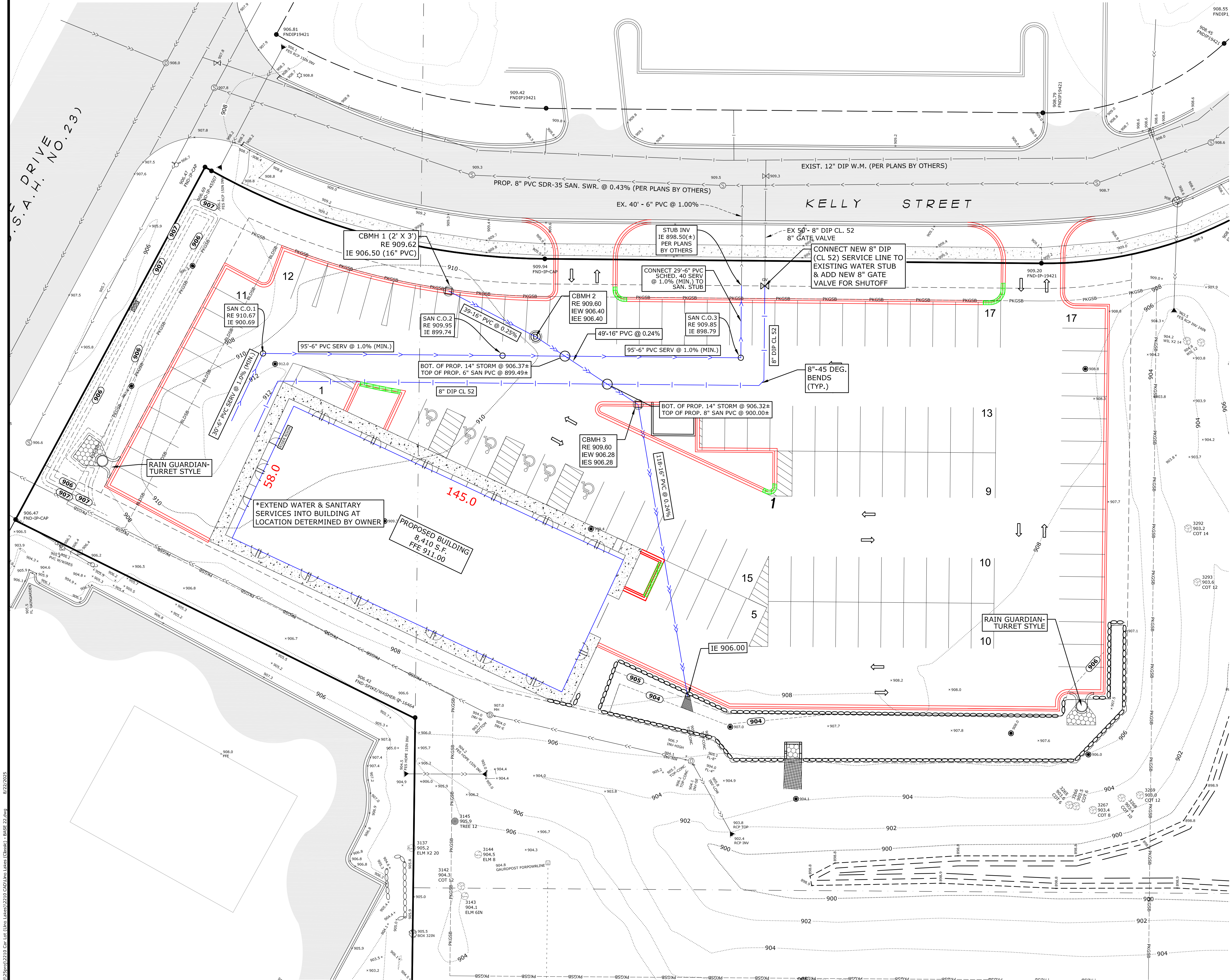
NORTH  
0 10 20  
1 INCH = 20 FEET

C1









## WATER MAIN NOTES

EXISTING WATER MAIN LOCATION AND SIZE SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY INSTALLATIONS.

PROVIDE PIPE INSULATION WHERE SEWER (SANITARY OR STORM) CROSSES WITHIN 18" OF WATER MAIN.

PROPOSED WATER SERVICE SHALL BE 8" DIP CL 52.

MECHANICAL JOINTS SHALL BE USED FOR WATER MAIN PIPES 4" IN DIAMETER AND LARGER. RUBBER GASKETS SHALL CONFORM TO AWWA C111 (ANSI A21.11).

MAINTAIN MINIMUM 7.5-FT COVER TO TOP OF ALL WATER MAIN PIPE.

ALL COMPONENTS OF THE WATER SYSTEM, UP TO THE WATER METER OR FIRE SERVICE EQUIPMENT, SHALL UTILIZE PROTECTIVE INTERNAL COATINGS MEETING CURRENT ANSI/AWWA STANDARDS FOR CEMENT MORTAR LINING OR SPECIAL COATINGS.

COMBINATION FIRE AND DOMESTIC SERVICES MUST TERMINATE WITH A THREAD-ON FLANGE OR AN MJ-TO-FLANGE ADAPTER.

## SANITARY SEWER NOTES

EXISTING SANITARY SEWER LOCATION, SIZE, AND ELEVATION SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY INSTALLATIONS.

PROPOSED SANITARY SEWER SERVICE SHALL BE 6" PVC SCHEDULE 40.

SEE CITY STANDARDS FOR TRACER WIRE INSTALLATION.

## STORM SEWER NOTES

FIELD VERIFY SIZE, ELEVATION, AND LOCATION OF EXISTING STORM SEWER AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY INSTALLATIONS.

PROPOSED STORM PIPES (INCLUDING THE ROOF DRAIN LEADS SHOULD THEY BE INSTALLED AND APPROVED BY CITY OF LINO LAKES AND APPLICABLE ENTITIES SUCH AS MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY) SHALL BE PVC SCHEDULE 40.

WHEN CALLED OUT (PIPE INTO CITY STRUCTURE), STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (RCP) ANSI C76 WITH R-4 GASKETS OR, IF ALLOWED BY CITY, HDPE PIPE MAY BE USED. (SEE PLAN FOR LOCATIONS WHERE RCP IS REQUIRED.) HDPE PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M294, TYPE S WITH WATERTIGHT CONNECTIONS. USE SAND/GRANULAR MATERIAL FOR BACKFILLING AND COMPACTION OF HDPE/PVC PIPE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM 2321.

ALL PORTIONS OF THE STORM SEWER SYSTEM LOCATED WITHIN 10 FEET OF THE BUILDING OR WATER SERVICE LINE MUST BE TESTED IN ACCORDANCE WITH MINNESOTA RULES, PART 4715.2820.

STORM SEWER PIPES TO BE JOINED TO THE CATCH BASIN MANHOLES W/ APPROVED RESILIENT RUBBER JOINTS TO MAKE THEM GASTIGHT OR WATERTIGHT. CEMENT MORTAR JOINTS ARE PERMITTED ONLY FOR REPAIRS AND CONNECTIONS OF EXISTING LINES CONSTRUCTED WITH SUCH JOINTS.

SEE CITY STANDARDS FOR TRACER WIRE INSTALLATION.

ALL PERMITS, INCLUDING BUT NOT LIMITED TO PERMITS FROM CITY OF LINO LAKES, RCWD, ANOKA COUNTY, AND THE MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY, SHALL BE OBTAINED PRIOR TO ORDERING OF MATERIAL AND STARTING OF CONSTRUCTION. NO INSTALLATION OF UTILITIES SHALL BE PERMITTED UNTIL ALL APPLICABLE PERMITS ARE RECEIVED BY THE CONTRACTOR.

INSTALLATION OF UTILITIES SHALL BE CONSTRUCTED TO MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY STANDARDS AND CITY STANDARDS AS IDENTIFIED IN THE PUBLIC WORKS/ENGINEERING STANDARDS.



Know what's below.  
Call before you dig.

UTILITY PLAN  
7920 LAKE DRIVE

DRAWN BY: M.Q.A. DESIGN BY: Q.M.A.  
CHKD BY: M.Q.A. PROJ. NO. 25-2210

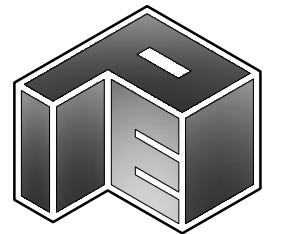
ORIGINAL DATE: AUGUST 1, 2025

| DATE | REVISION DESCRIPTION |
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I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
QASEM M. ABUGHAZLEH LIC. NO. 56299  
DATE: 09.05.2025

LINO LAKES DEALERSHIP +  
OFFICE  
LINO LAKES, MINNESOTA  
UTILITY PLAN

PREPARED FOR:  
TYLER HUEBSCH



SITE PLANNING  
& ENGINEERING

**PLOWE**  
ENGINEERING, INC.

6776 LAKE DRIVE  
SUITE 110  
LINO LAKES, MN 55014

PHONE: (651) 361-8210  
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NORTH



0 10 20  
1 INCH = 20 FEET

**C3**



- PRIOR TO ANY GRADING OPERATIONS, THE CONTRACTOR SHALL INSTALL ROCK CONSTRUCTION ENTRANCE (LOCATIONS TO BE DETERMINED - COORDINATE WITH OWNER) AND PERIMETER SILT FENCE AS SHOWN ON PLAN. (CONTACT CITY TO INSPECT EROSION CONTROL MEASURES PRIOR TO GRADING OPERATIONS, IF NECESSARY.) ADDITIONAL SILT FENCE MAY BE NECESSARY IF LOCAL CONDITIONS REQUIRE.

- | ITEM   | MNDOT SPECIFICATION/NOTES   |
|--|---|
| SOD  | 3878  |
| SEED **  | 3876  |
| * FOR TURF ESTABLISHMENT<br>COMMERCIAL TURF<br>RESIDENTIAL TURF                                    | MNDOT MIX 25-131 (220 LBS/ACRE)<br>MNDOT MIX 25-131 (120 LBS/ACRE)  |
| TEMPORARY FALL COVER<br>SPRING/SUMMER<br>SOIL-BUILDING COVER<br>1-2 YEARS COVER<br>2-5 YEARS COVER | MNDOT MIX 21-112 (100 LBS/ACRE)<br>MNDOT MIX 21-111 (100 LBS/ACRE)<br>MNDOT MIX 21-113 (110 LBS/ACRE)<br>MNDOT MIX 22-111 (30.5 LBS/ACRE)<br>MNDOT MIX 22-112 (40 LBS/ACRE) |
| MULCH  | 3882 (TYPE 1 - DISC ANCHORED)   |
| FERTILIZER   | 3881  |
| WOOD FIBER BLANKET   | 3885 (CATEGORY 2)   |

\* MOW A MINIMUM OF ONCE PER 2 WEEKS

\*\* SEEDED AREAS SHALL BE EITHER MULCHED OR COVERED BY FIBROUS BLANKETS TO PROTECT SEEDS AND LIMIT EROSION.

- ALL EXPOSED SOILS MUST HAVE TEMPORARY EROSION CONTROL PROTECTION OR PERMANENT COVER WITHIN SEVEN (7) DAYS.

- THE CONTRACTOR SHALL PAY SPECIAL ATTENTION TO ALL ADJACENT PROPERTY LINES AND MAKE SURE THE EROSION CONTROL PRACTICES INPLACE IN THOSE AREAS PREVENT MIGRATION OF SEDIMENT ONTO ADJACENT PROPERTIES.

- THE CONTRACTOR SHALL MAINTAIN SILT FENCE, INCLUDING THE REMOVAL OF ACCUMULATED SEDIMENT, THROUGH COMPLETION OF BUILDING CONSTRUCTION. SILT FENCE TO BE REMOVED ONLY AFTER COMPLETION OF BUILDING CONSTRUCTION AND UPON ESTABLISHMENT OF VEGETATION.

- THE CONTRACTOR SHALL PROVIDE WOOD FIBER BLANKET FOR ALL AREAS OF CONCENTRATED FLOW AND FOR ALL SLOPES 3:1 OR GREATER

- PROTECT ALL STORM WATER MANAGEMENT FACILITIES FROM CONSTRUCTION RUN-OFF. CONTRACTOR TO INSTALL AND CONSTRUCT SAID FACILITIES ONCE SITE HAS BEEN STABILIZED.

- IF ANY SLOPES APPEAR TO BE FAILING, THE CONTRACTOR SHALL PROVIDE ADDITIONAL SILT FENCE, BIOROLLS AND EROSION CONTROL BLANKET AS NEEDED.

- THE CONTRACTOR SHALL FINAL GRADE SWALE AREAS UPON STABILIZATION OF UPSTREAM AREAS

- THE CONTRACTOR SHALL SOD ALL DISTURBED DRAINAGE AREAS, INCLUDING SWALES & OVERFLOWS.

- UPON GRADING COMPLETION THE CONTRACTOR SHALL PROVIDE NATIVE TOPSOIL WITH SOD OR SEED, AND MULCH ANCHORED WITH A STRAIGHT SET DISC WITHIN 48 HOURS OF FINAL GRADING.

- EXCESS SOIL SHOULD BE TREATED LIKE OTHER EXPOSED SOIL AND STABILIZED WITHIN 72 HOURS. ANY SOIL STOCKPILES ARE TO HAVE SILT FENCE PLACED ON DOWNSTREAM SIDES.

CONSTRUCTION WASTE MATERIALS - ALL WASTE MATERIALS GENERATED AS A RESULT OF SITE CONSTRUCTION SHALL BE COLLECTED AND REMOVED ACCORDING TO ALL LOCAL AND/OR STATE WASTE MANAGEMENT REGULATIONS BY A LICENSED SOLID WASTE MANAGEMENT COMPANY. THE CONTRACTOR WILL ENSURE THAT ALL SITE PERSONNEL ARE INSTRUCTED IN THESE PRACTICES.

HAZARDOUS WASTES - ALL HAZARDOUS WASTE MATERIALS SHALL BE STORED PROPERLY TO PREVENT SPILLS AND VANDALISM. WHEN NECESSARY, HAZARDOUS WASTES WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL AND/OR STATE REGULATION OR BY THE MANUFACTURER.

SANITARY WASTE - ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS BY A LOCAL, LICENSED WATER MANAGEMENT COMPANY, AS REQUIRED BY LOCAL REGULATION.

SANITARY WASTE - ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS BY A LOCAL, LICENSED WATER MANAGEMENT COMPANY, AS REQUIRED BY LOCAL REGULATION.

OFFSITE VEHICLE TRACKING - A ROCK CONSTRUCTION ENTRANCE HAS BEEN PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. IF A STREET, ALLEY, SIDEWALK OR OTHER PUBLIC PLACE SHOULD BECOME SOILED OR LITTERED, THE CONTRACTOR SHALL CAUSE SUCH SOILING OR LITTERING TO BE CLEANED UP BY SWEEPING NOT LATER THAN THE END OF THE WORKING DAY IN WHICH SUCH SOILING OR LITTERING SHALL HAVE OCCURRED OR BEEN OBSERVED. DUMP TRUCKS HAULING LOOSE MATERIALS (SAND, TOPSOIL, ETC.) TO AND/OR FROM THE SITE SHALL BE COVERED WITH A TARPULIN.

VEHICLE CLEANING - NO ENGINE DEGREASING IS ALLOWED ON-SITE. EXTERNAL WASHING OF VEHICLES TO BE CONFINED TO A DEFINED AREA ("BONE YARD") ON-SITE. CONTRACTOR TO PROVIDE DESIGNATED TRUCK WASHOUT AREA WITH APPROPRIATE SIGNAGE. WASHOUT AREA IS TO BE A MINIMUM OF 50' FROM DITCHES, PONDS, OR OTHER STORMWATER FEATURES. ALL LIQUID AND SOLID WASTE GENERATED BY WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER (E.G. COMPACTED CLAY LINER, IMPERMEABLE GEO-MEMBRANE) AND DISPOSED OF PROPERLY.

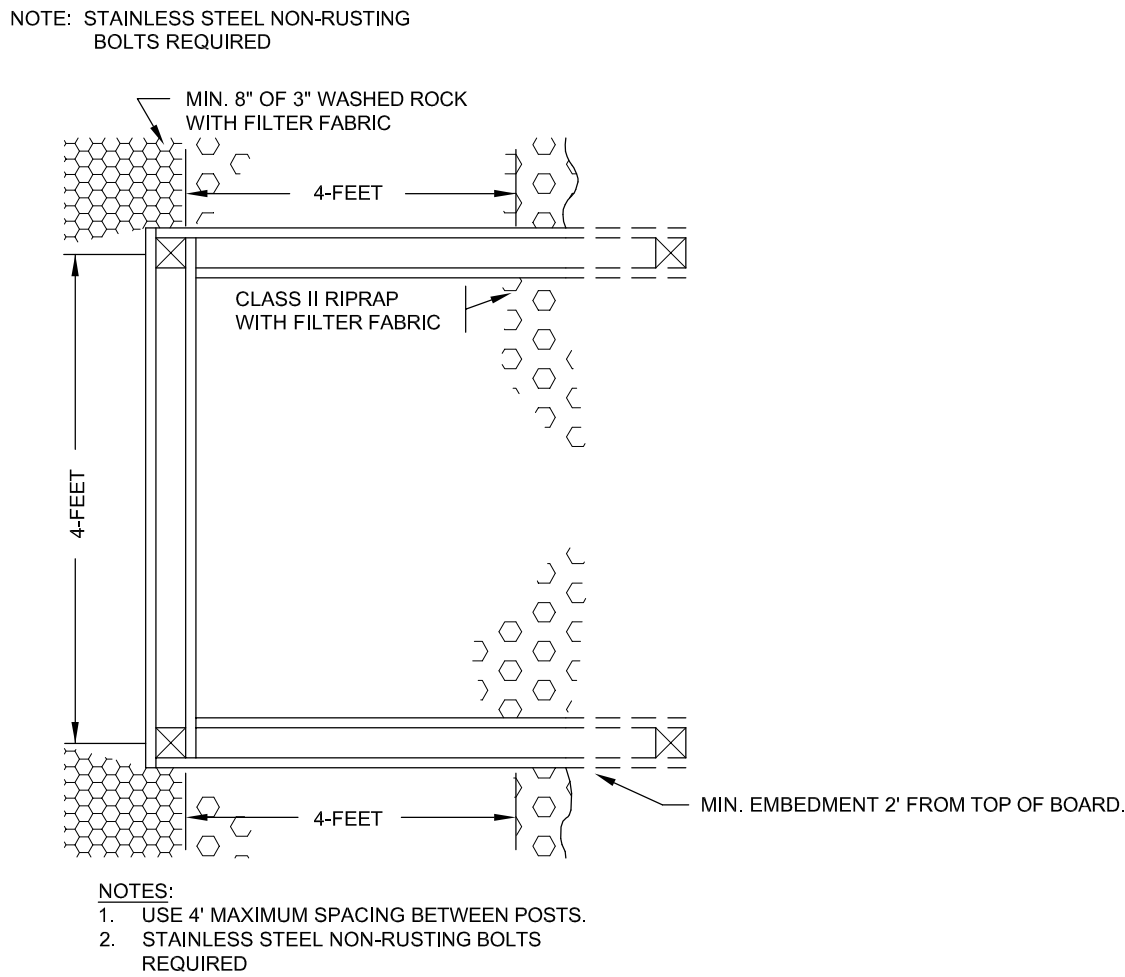
SPILL PREVENTION AND CONTROL - ALL VEHICLES WILL BE CHECKED FOR LEAKING OIL AND FLUIDS. VEHICLES LEAKING FLUIDS WILL NOT BE ALLOWED ON-SITE. SPILL KITS WILL BE STORED ON-SITE AND ALL SPILLS WILL BE CLEANED UP IMMEDIATELY DISCOVERY. SPENT ABSORBENT MATERIALS AND RAGS WILL BE HAULED OFF-SITE IMMEDIATELY AFTER THE SPILL IS CLEANED UP AND PROPERTY DISPOSED OF. SPILL PREVENTION AND CONTROL MEASURES SHALL BE IMPLEMENTED ONCE CONSTRUCTION BEGINS.

**SOIL STOCKPILES -** INSTALL SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS AROUND ALL TEMPORARY SOIL STOCKPILES. LOCATE SOIL OR DIRT STOCKPILES SUCH THAT DOWNSLOPE DRAINAGE LENGTH IS NO LESS THAN 8 M (25 FEET) FROM THE TOE OF THE PILE TO A SURFACE WATER, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER. IF REMAINING FOR MORE THAN 7 DAYS, STABILIZE THE STOCKPILES BY MULCHING, COVERING, OR OTHER MEANS. DURING STREET REPAIR, COVER CONSTRUCTION SOIL OR DIRT STOCKPILES LOCATED CLOSER THAN 8 M (25 FEET) TO A ROADWAY OR DRAINAGE CHANNEL WITH TARPS, AND PROTECT STORM SEWER INLETS WITH SILT SOCKS OR STAKED SILT FENCE.

PROVIDE WIMCO (OR APPROVED EQUAL) FOR INLET PROTECTION AT ALL EXISTING STORM SEWER INLETS THAT WILL RECEIVE RUN-OFF DURING CONSTRUCTION. INLET PROTECTION TO REMAIN IN-PLACE UNTIL AT LEAST 70% OF SITE VEGETATION HAS BEEN ESTABLISHED.

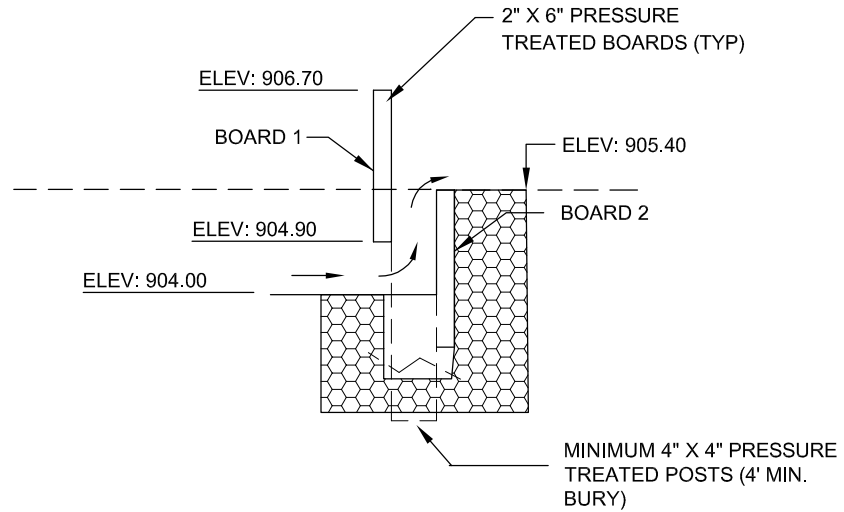
CONTRACTOR TO PROVIDE DESIGNATED CONCRETE TRUCK WASHOUT AREA WITH APPROPRIATE SIGNAGE. KEEP WASHOUT AREAS AS FAR AS PRACTICAL FROM STORM DRAINS, DITCHES AND PONDS. DO NOT ALLOW RUN-OFF FROM THIS AREA BY CONSTRUCTING A TEMPORARY PIT OR BERMED AREA LARGE ENOUGH FOR LIQUID AND SOLID WASTE. AFTER WASTE CONCRETE IS SET, BREAK-UP AND DISPOSE OF PROPERLY.

THE CONTRACTOR MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATERS RELATED TO DEWATERING (E.G., PUMPED DISCHARGES, TRENCH/DITCH CUTS FOR DRAINAGE) TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE UNLESS INFEASIBLE. THE CONTRACTOR MAY DISCHARGE FROM THE TEMPORARY OR PERMANENT SEDIMENTATION BASINS TO SURFACE WATERS IF THE BASIN WATER HAS BEEN VISUALLY CHECKED TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED IN THE BASIN AND THAT NOISANCE FROM THE BASIN WILL NOT BE A PROBLEM. DISCHARGE OF TURBID OR SEDIMENT-LADEN WATERS CANNOT BE DISCHARGED TO A PERMANENT SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BMPs, SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM PROPERTIES.



### BAFFLE WEIR FOR INFILTRATION BASIN (INF-1)

N.T.S.



NOTES

1. MARK-OFF BASIN AREA (E.G. FENCING, SILT FENCE, ETC.) TO PREVENT CONSTRUCTION TRAFFIC FROM ENTERING BASIN AREA.
2. USE LOW-IMPACT, EARTH MOVING EQUIPMENT (WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT-EQUIPMENT WITH TUBE-TYPE TIRES) WITHIN BASIN.
3. PROTECT BASIN FROM RUN-OFF DURING CONSTRUCTION ACTIVITIES.
4. DO NOT EXCAVATE BASIN TO FINAL GRADE UNTIL UPSTREAM DRAINAGE AREAS HAVE BEEN STABILIZED.
5. REMOVE ANY TOPSOIL AND/OR UNSUITABLE SOILS WITHIN INFILTRATION BASIN FOOTPRINT. ANY SEDIMENT THAT IS WASHED INTO THE BASIN SHALL BE REMOVED.
6. NO MINING OF SANDY SOILS ALLOWED IN BASIN AREA.
7. EXCAVATE BASIN TO FINAL GRADE ONLY. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREAS, ALLEViate ANY COMPACTED SOILS DUE TO FINAL GRADING OPERATIONS PRIOR TO SEEDING.

PROVIDE NATIVE SEED MIX (E.G., INDOT 32-361 @ 5% LES) ALONG BASIN BOTTOM

EROSION CONTROL BLANKET SUITABLE FOR SEEDING (E.G. STRAW-COCOON BLANKET)

TOP OF RETAINING WALL = 905.0 TO 910.0 (VARIES\*)

OUTLET = 905.40

BOT. OF RETAINING WALL = 904.0 TO 906.0 (VARIES\*\*)

BOTTOM OF BASIN

\*\* IN-SITU SOILS

\* SEE SHEET C2 FOR WALL ELEVATIONS.

\*\* EXPOSED ELEVATION. DOES NOT INCLUDE BOTTOM OF BURIED WALL.

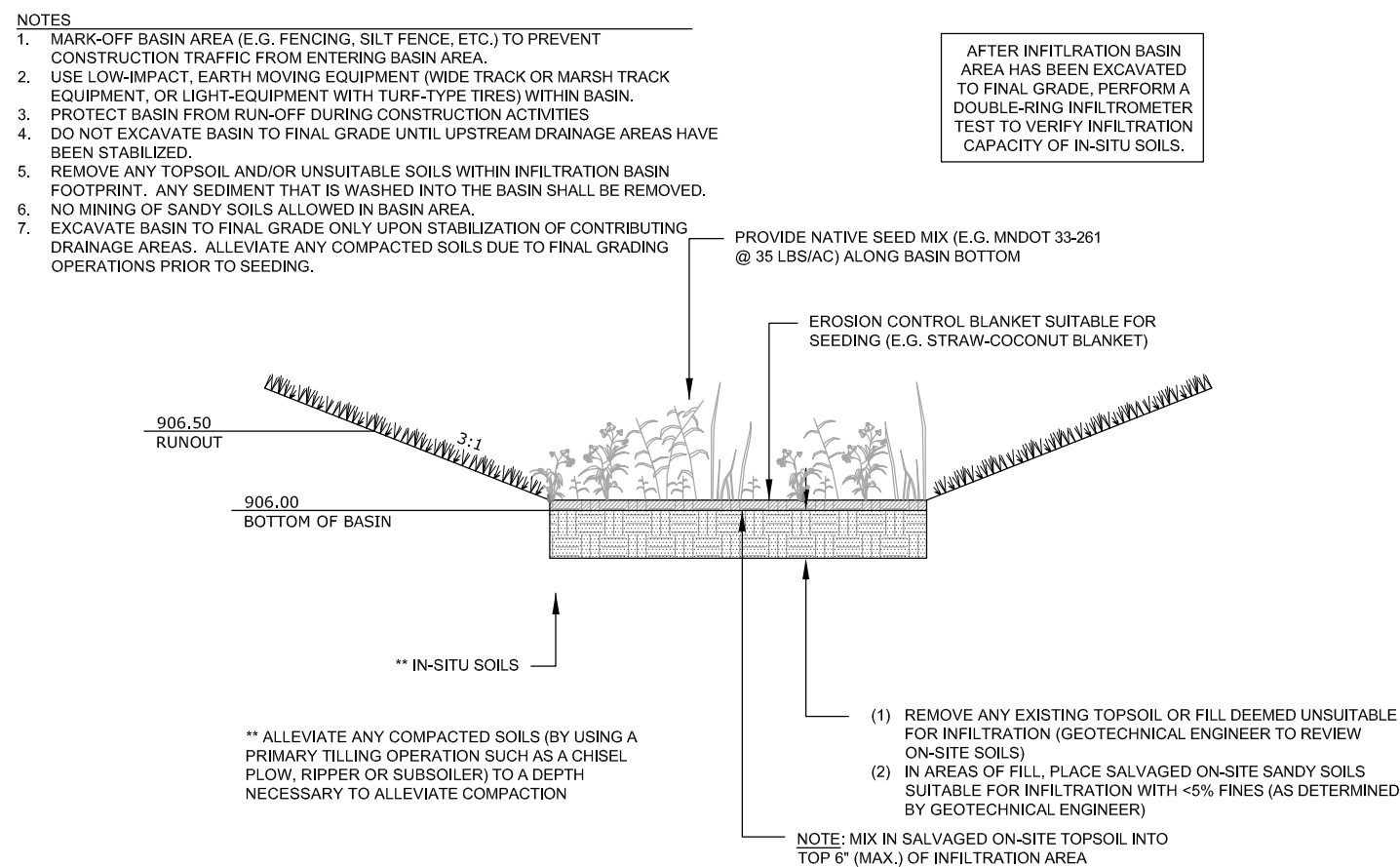
(1) REMOVE ANY EXISTING TOPSOIL OR FILL DEEMED UNSUITABLE FOR INFILTRATION (AS DETERMINED BY GEOLOGICAL ENGINEER TO REVIEW ON-SITE SOILS)

(2) IN AREAS OF FILL, PLACE SALVAGED ON-SITE SANDY SOILS SUITABLE FOR INFILTRATION (WITH 5% FINES AS DETERMINED BY GEOLOGICAL ENGINEER)

NOTE: MIX IN SALVAGED ON-SITE TOPSOIL INTO TOP 5" MAX. OF INFILTRATION AREA.

AFTER INFILTRATION BASIN AREA HAS BEEN EXCAVATED TO FINAL GRADE, PERFORM DOUBLING-INFLUENCEMETER TEST TO VERIFY INFILTRATION CAPACITY OF IN-SITU SOILS.

N.T.S.



N.T.S.

[illegible]

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

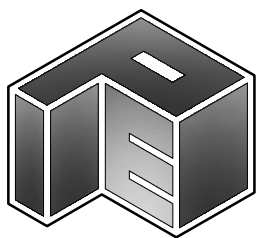
QASEM M. ABUGHAZLEH  
09.05.2025 LIC. NO. 56299

## DETAILS & NOTES

**INO LAKES DEALERSHIP +  
OFFICE**

## LINO LAKES, MINNESOTA

PREPARED FOR:  
TYLER HUEBSCH



**SITE PLANNING  
& ENGINEERING**

**PLOWE**  
**ENGINEERING, INC.**

PHONE: (651) 361-8210  
FAX: (651) 361-8701

# DETAILS & NOTES

## 7920 LAKE DRIVE

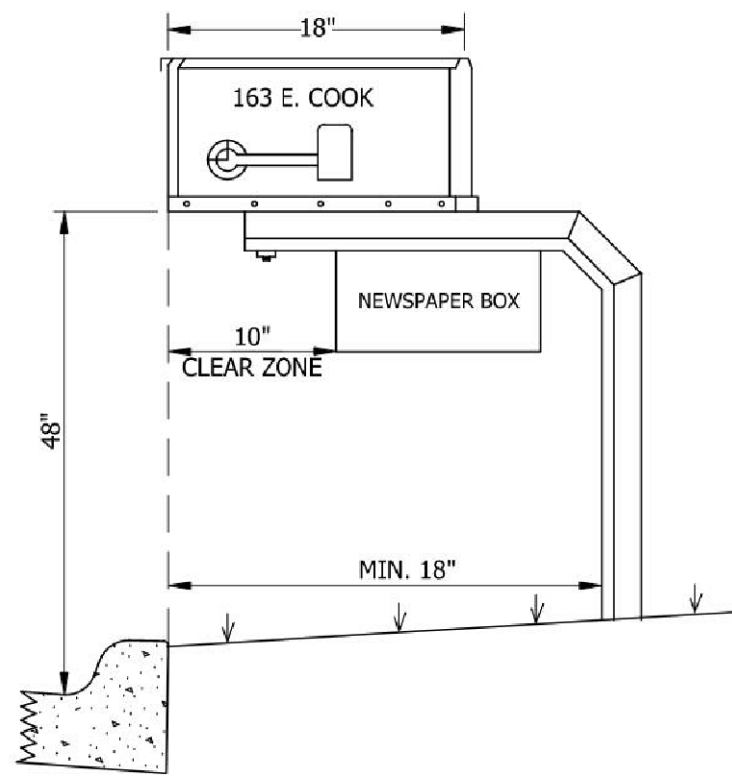
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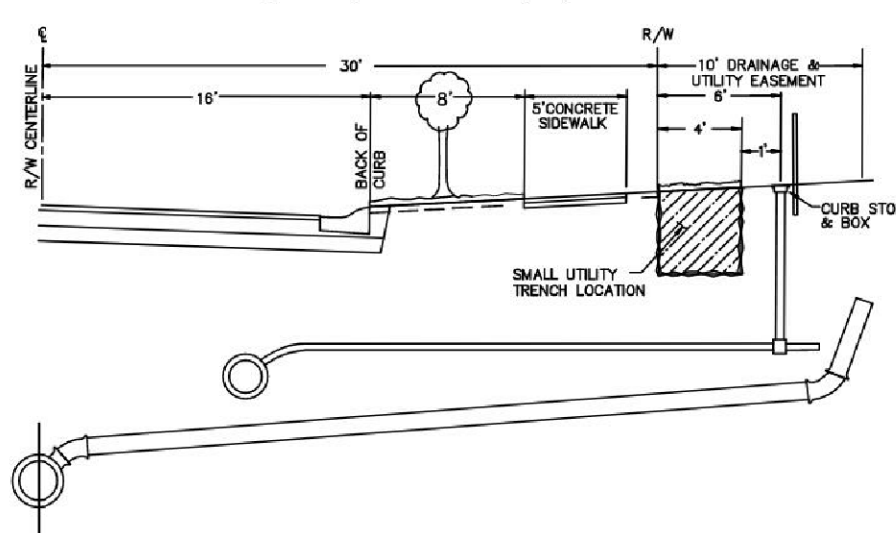
NOTES:  
DIMENSIONS AS PER U.S. POSTAL SERVICE  
ADDRESS MUST BE ON SIDE OF BOX FROM WHICH CARRIER APPROACHES IN LETTERS ABOUT ONE INCH HIGH (OR ON FRONT WHERE BOXES ARE GROUPED).



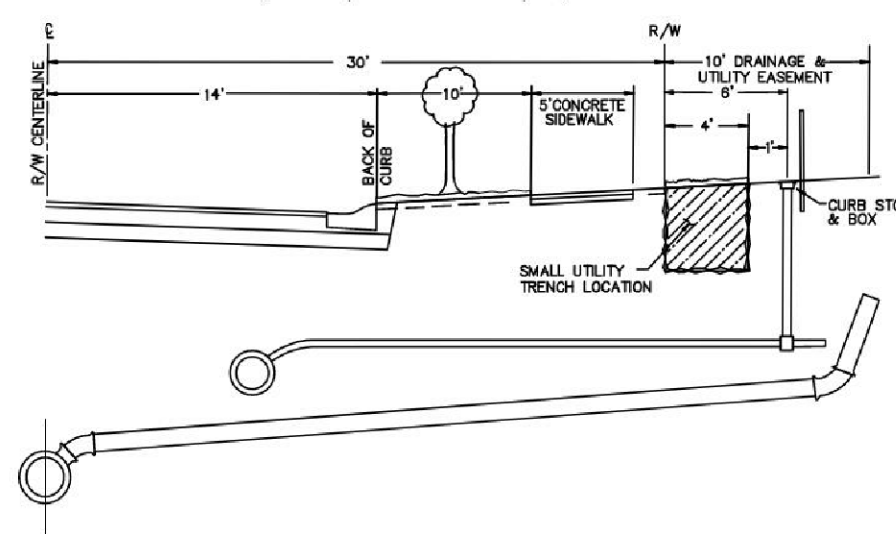
MAIL BOX

JANUARY, 2024  
GEN-20

STREET SECTION  
SIDEWALK, SMALL UTILITY TRENCH  
& CURB STOP LOCATION  
(60' R/W - 32' B/B)

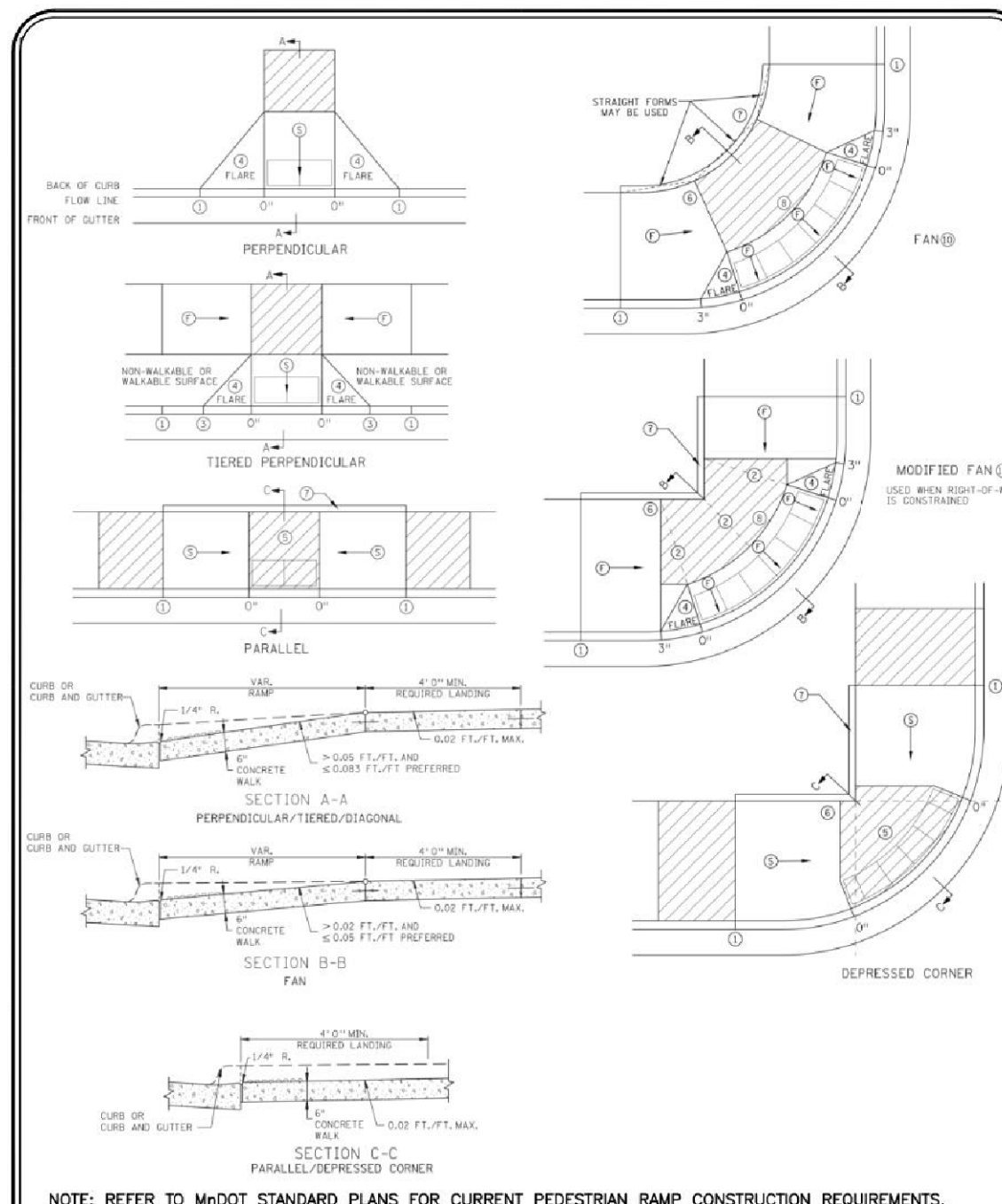


STREET SECTION  
SIDEWALK, SMALL UTILITY TRENCH  
& CURB STOP LOCATION  
(60' R/W - 28' B/B)



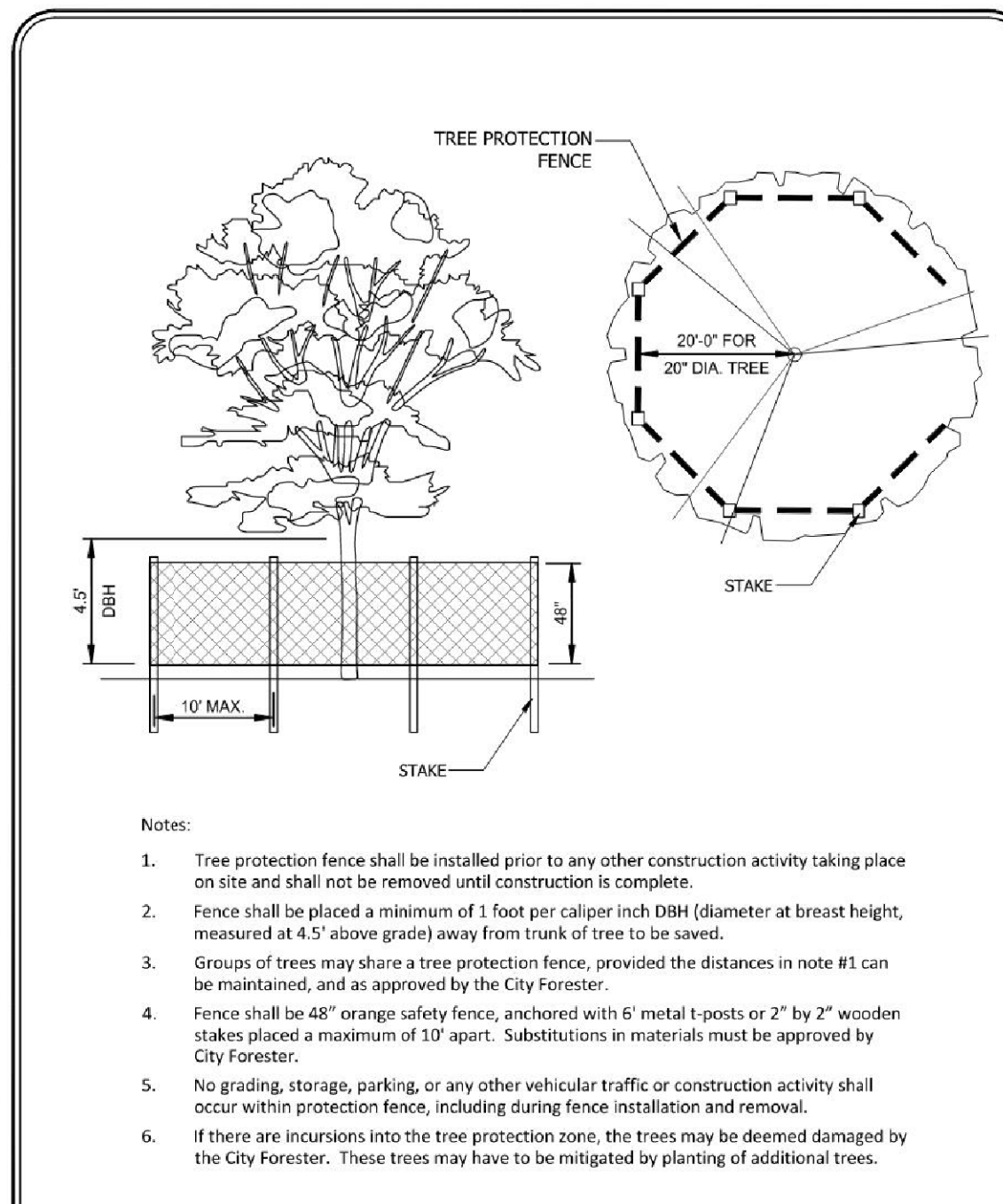
STREET SECTION  
SMALL UTILITY TRENCH DETAIL

JANUARY, 2024  
GEN-25



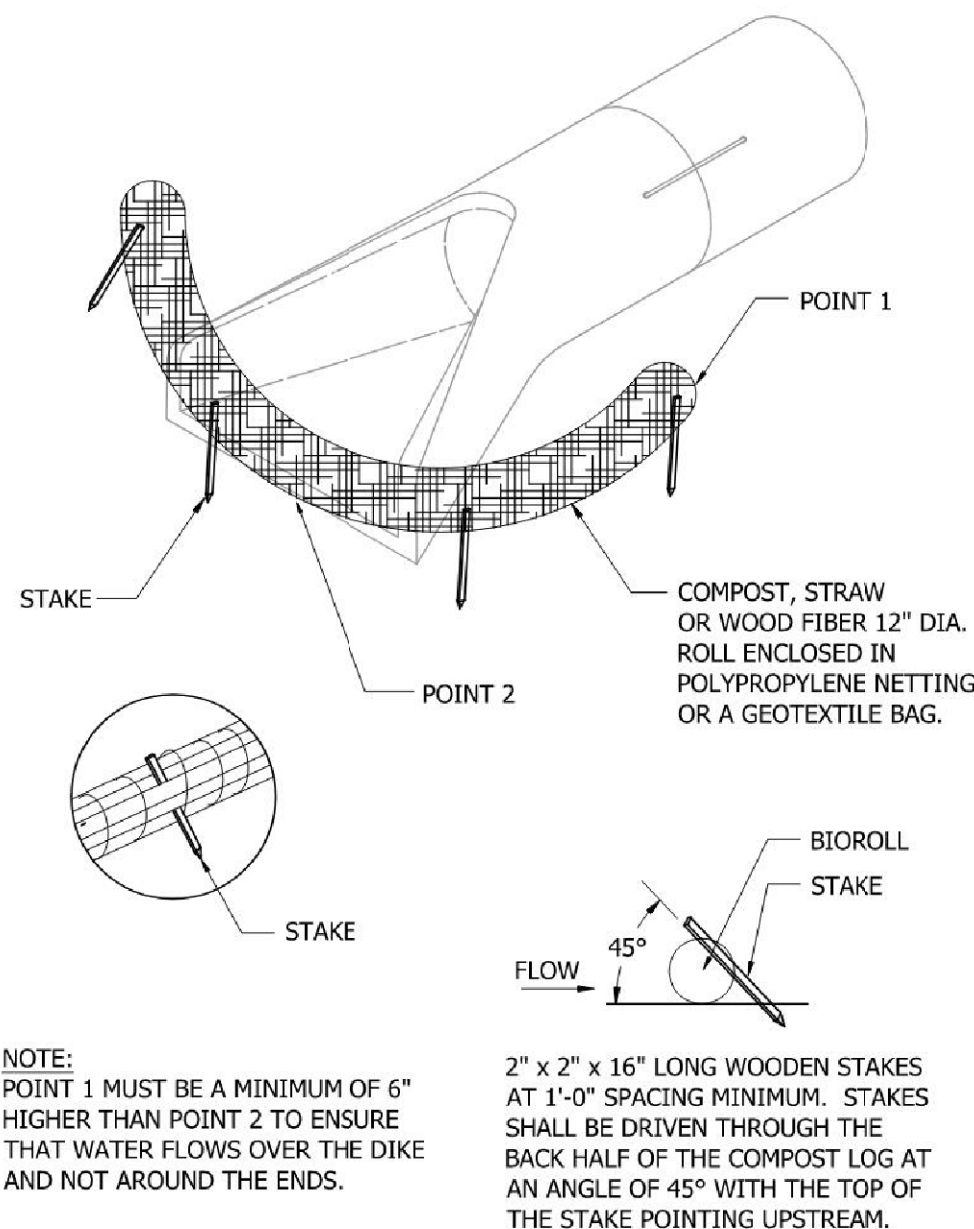
ACCESSIBLE SIDEWALK  
PEDESTRIAN RAMP  
(1 of 2)

JANUARY, 2024  
GEN-26



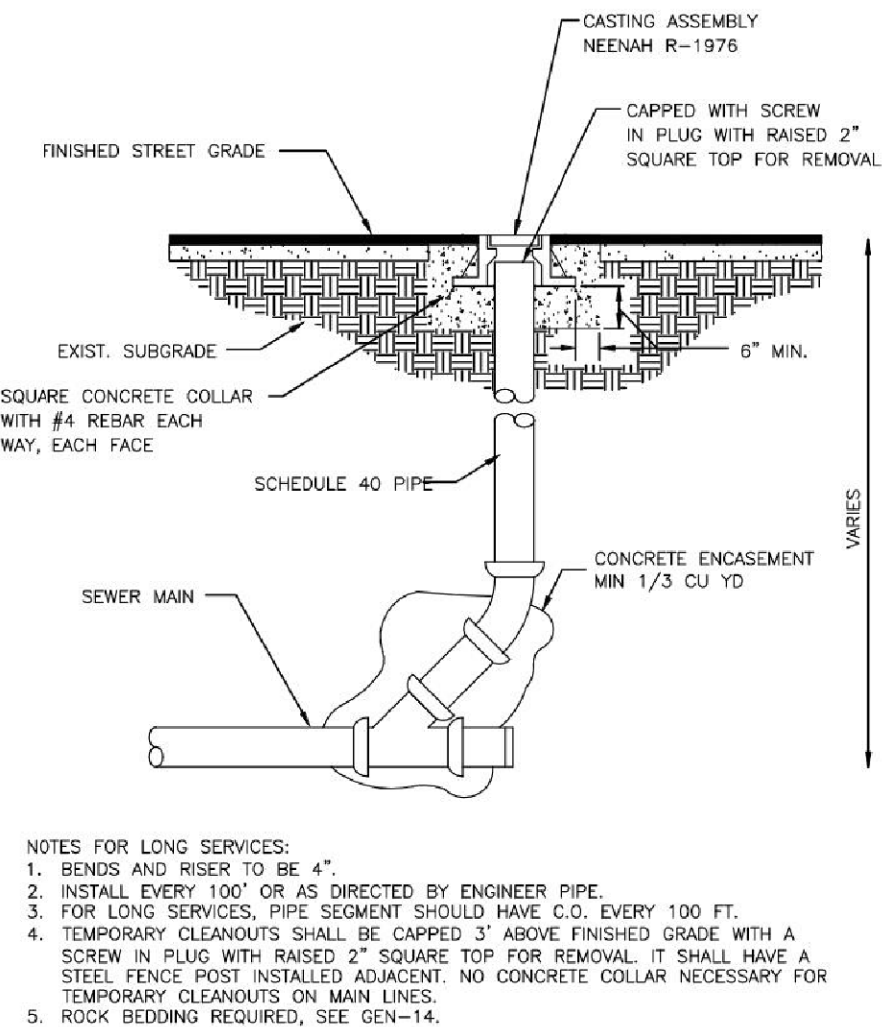
TREE PROTECTION  
FENCE DETAIL

JANUARY, 2024  
GEN-27



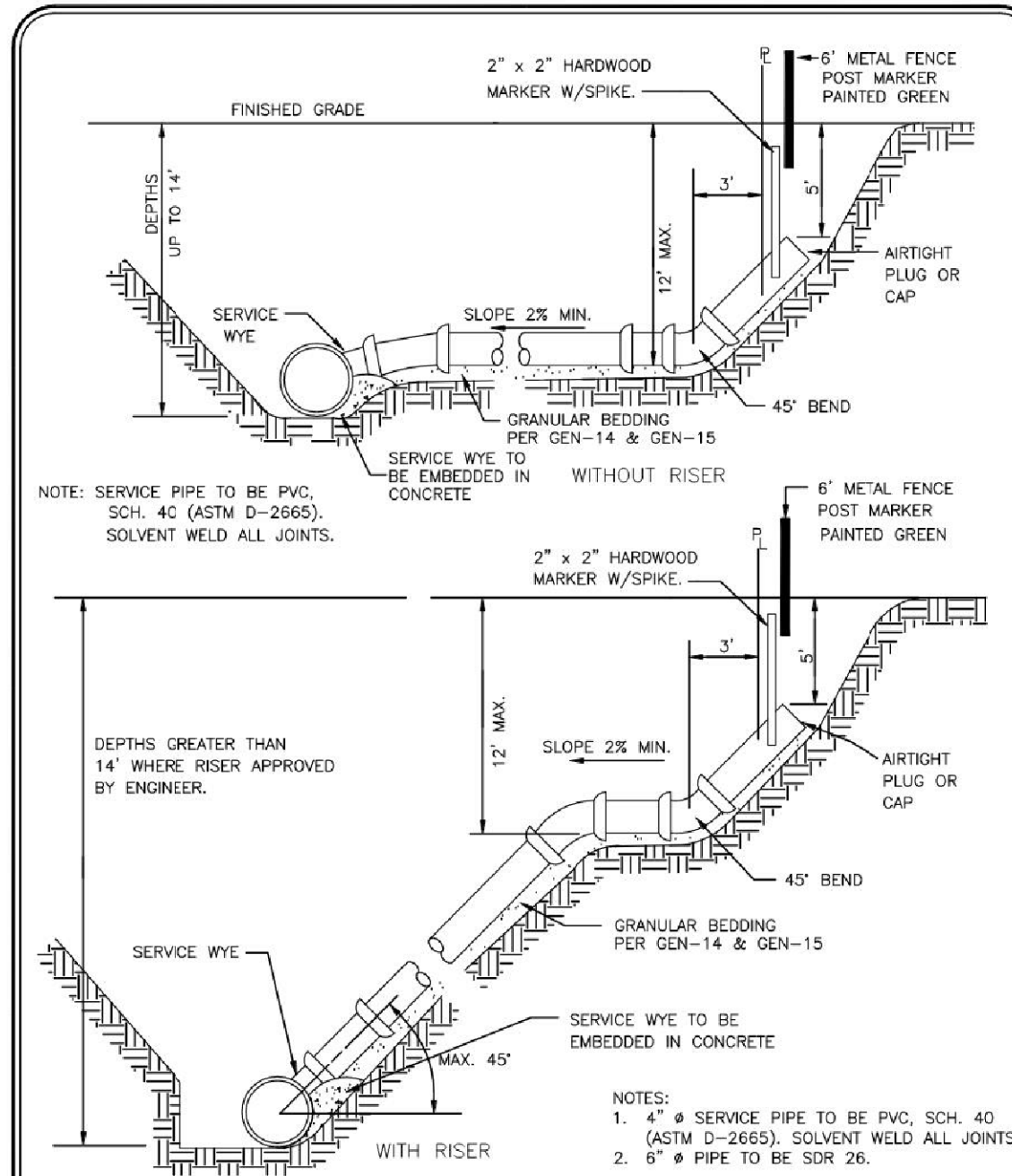
PIPE CHECK  
BIOROLL WEIR

JANUARY, 2024  
GEN-28



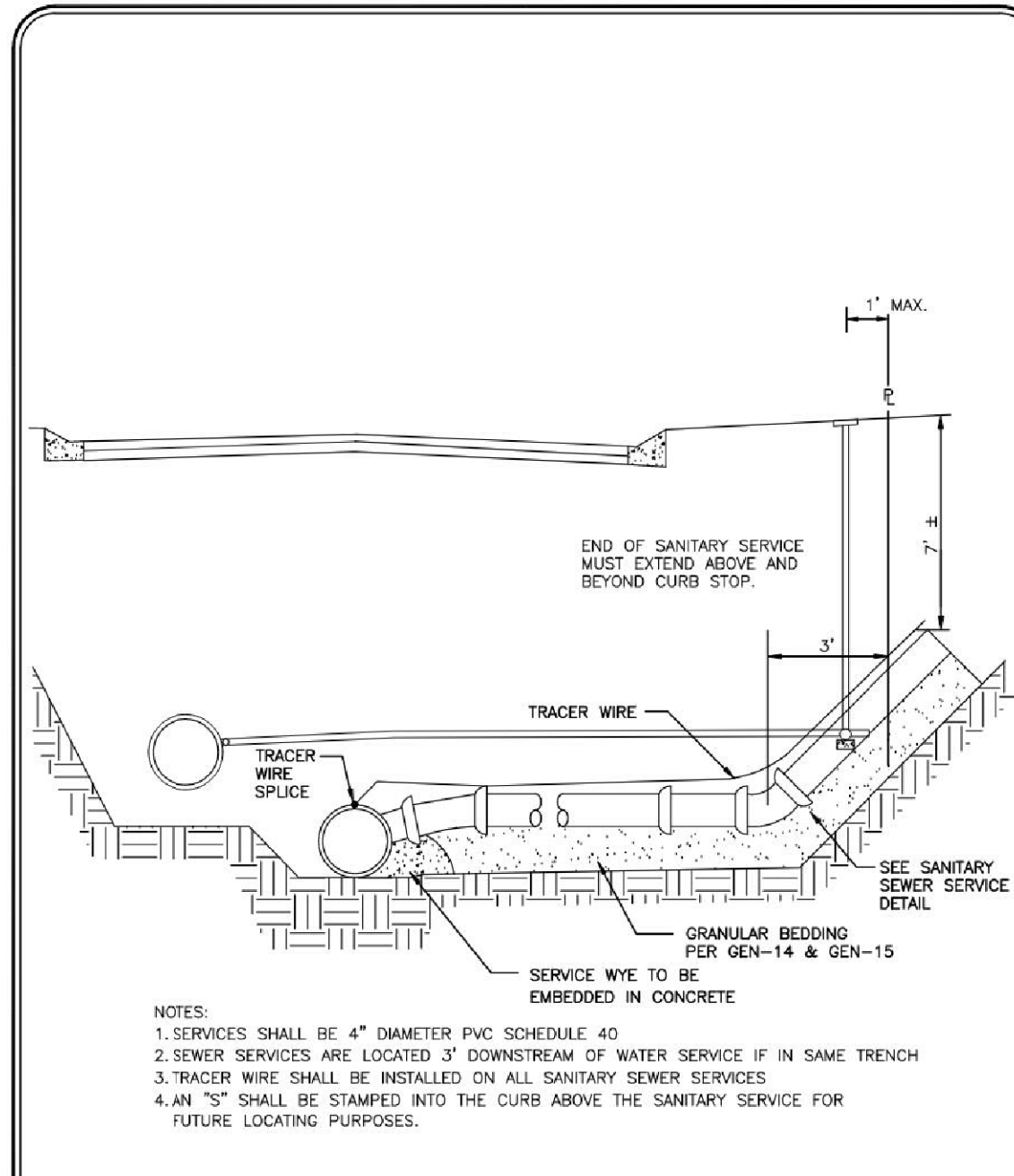
SANITARY SEWER  
SERVICE CLEANOUT

JANUARY, 2024  
SAN-5



SANITARY SEWER  
SERVICE

JANUARY, 2024  
SAN-6



SERVICE  
DETAILS

JANUARY, 2024  
SAN-7



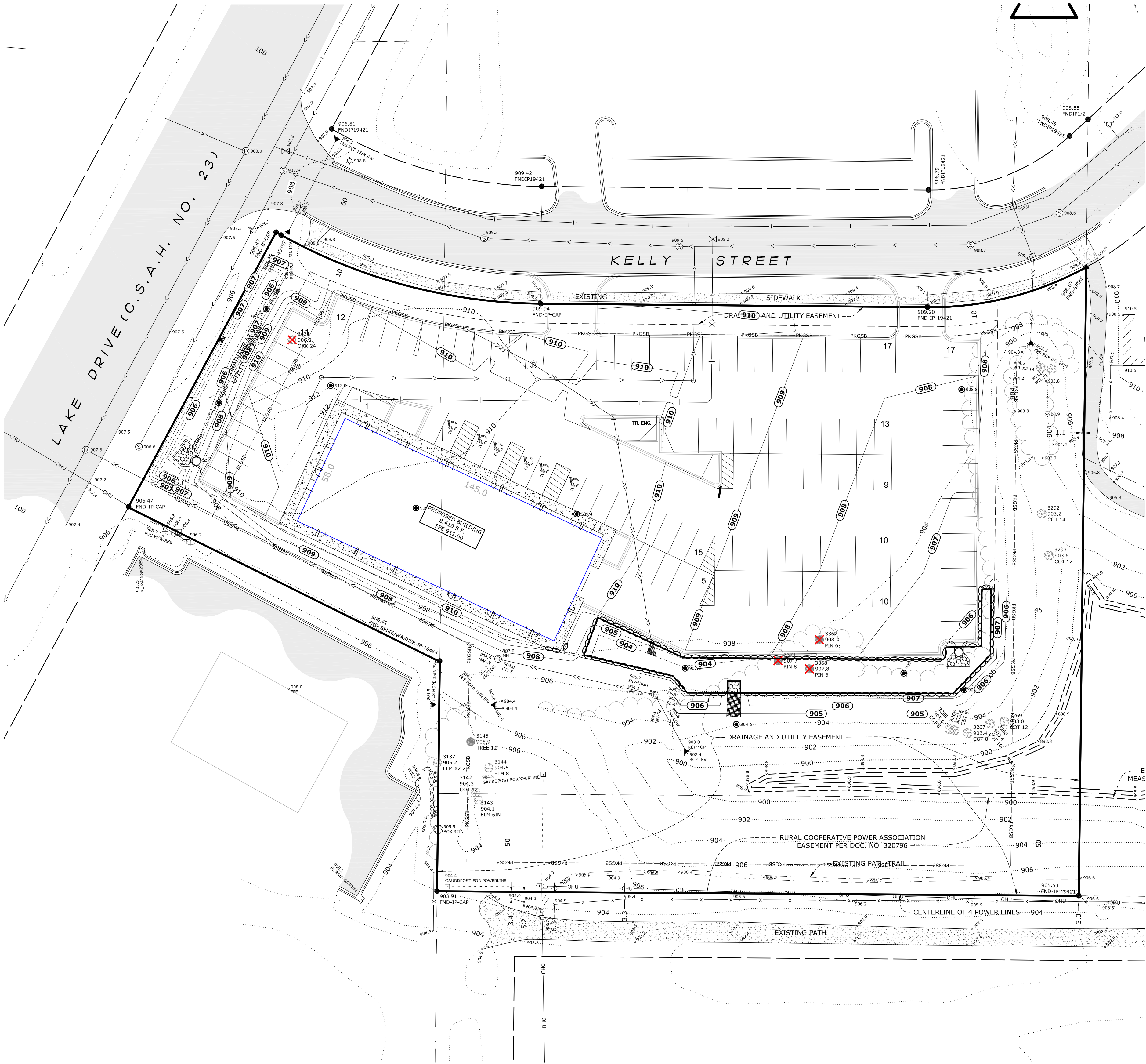








TREE INVENTORY & PRESERVATION PLAN



TREE DETAIL

- DENOTES POINT NUMBER
- DENOTES ELEVATION
- DENOTES TREE QUANTITY
- DENOTES TREE SIZE IN INCHES
- DENOTES TREE TYPE
- ✗ DENOTES TREE TO BE REMOVED

| TAG # | SPECIES    | CALIPER | TREE TO BE REMOVED |
|-------|------------|---------|--------------------|
| 3137  | ELM        | 20      |                    |
| 3137  | ELM        | 20      |                    |
| 3142  | COTTONWOOD | 12      |                    |
| 3143  | ELM        | 6       |                    |
| 3144  | ELM        | 8       |                    |
| 3145  | TREE       | 12      |                    |
| 3265  | COTTONWOOD | 6       |                    |
| 3266  | COTTONWOOD | 6       |                    |
| 3267  | COTTONWOOD | 8       |                    |
| 3268  | COTTONWOOD | 10      |                    |
| 3269  | COTTONWOOD | 12      |                    |
| 3292  | COTTONWOOD | 14      |                    |
| 3293  | COTTONWOOD | 12      |                    |
| 3367  | PINE       | 6       | X                  |
| 3368  | PINE       | 6       | X                  |
| 3371  | PINE       | 8       | X                  |
| 3431  | OAK        | 24      | X                  |

DRAWN BY: M.Q.A. DESIGN BY: Q.M.A.  
CHKD BY: M.Q.A. PROJ. NO. 25-2210  
ORIGINAL DATE: AUGUST 1, 2025

| DATE | REVISION DESCRIPTION |
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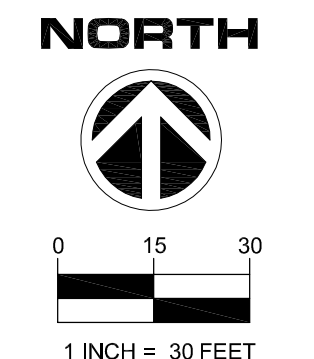
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

QASEM M. ABUGHAZLEH  
DATE: 09.05.2025 LIC. NO. 56299

LINO LAKES DEALERSHIP + OFFICE  
LINO LAKES, MINNESOTA  
TREE INVENTORY & PRESERVATION PLAN

PREPARED FOR:  
TYLER HUEBSCH

SITE PLANNING & ENGINEERING  
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6776 LAKE DRIVE  
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LINO LAKES, MN 55014  
PHONE: (651) 361-8210  
FAX: (651) 361-8701






**C6**

TREE INVENTORY & PRESERVATION PLAN  
7920 LAKE DRIVE





| Calculation Summary   |     |             |             |                                 |      |       |                  |                 |             |  |  |
|---|-----|-------------|-------------|---------------------------------|------|-------|------------------|-----------------|-------------|--|--|
| Label   |     | CalcType    | Units       | Avg                             | Max  | Min   | Avg/Min          | Max/Min         |             |  |  |
| Ground_Planar   |     | Illuminance | Fc          | 2.00                            | 19.5 | 0.0   | N.A.             | N.A.            |             |  |  |
| Luminaire Schedule  |     |             |             |                                 |      |       |                  |                 |             |  |  |
| Symbol  | Qty | Label       | Arrangement | Description                     |      | LLF   | Luminaire Lumens | Luminaire Watts | Total Watts |  |  |
|  | 18  | WP          | Single      | WFV LS70 G2 FSK-5700Lm-40K      |      | 0.910 | 5696             | 36              | 648         |  |  |
|  | 1   | DD          | Single      | ALF LS500 T5 G2 FSK-42000Lm-40K |      | 0.910 | 44880            | 264             | 264         |  |  |
|  | 4   | FF          | Single      | ALF LS500 T4 G2 FSK-42000Lm-40K |      | 0.910 | 41976            | 264             | 1056        |  |  |