City of Champlin

FEASIBILITY REPORT

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

CHAMPLIN | HENNEPIN COUNTY | MINNESOTA

November 12, 2024

Prepared for:

City of Champlin

11955 Champlin Drive

Champlin, MN 55316

CITY PROJECT NO. 22502

SAP 193-121-001

WSB PROJECT NO. 026077-000

November 12, 2024

Honorable Mayor and City Council
City of Champlin
11955 Champlin Drive
Champlin, MN 55316

Re: Feasibility Report
Goose Lake Parkway and Elm Creek Trail Area Project
City of Champlin Project No. 22502
SAP 193-121-001
WSB Project No. 026077-000

Dear Honorable Mayor and City Council Members:

The enclosed feasibility report identifies the recommended improvements, estimated cost, and proposed funding for street and utility improvements of the residential streets of Goose Lake Parkway, Elm Creek Trail N, Highview Court N, Hilltop Court N, Pondview Court N, Pondview Circle N, Oakview Court N, Norway Court N, and Magnolia Court N.

The project is proposed to be funded by special assessments to benefitting properties, Municipal State Aid funds, and City funding sources including the Capital Improvement Revolving Fund, Storm Sewer Fund, Sewer Revenue Fund, Water Revenue Fund, and Street Light Fund.

I am available at your convenience to discuss this report. If you have any questions, please do not hesitate to call me at 612.219.3500.

Sincerely,

WSB

Jennifer Edison, PE
Project Manager

Attachments

cc: Bret Heitkamp, City Administrator
Heather Nelson, PE, City Engineer

kkp

701 XENIA AVENUE S | SUITE 300 | MINNEAPOLIS, MN | 55416 | 763.541.4800 | WSBENG.COM

Table of Contents

Certification Sheet

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.

Jennifer Edison, PE

Date: November 12, 2024 Lic. No. 51721

Quality Control Review Completed By:

Brandon Movall, PE, ENV SP

Date: November 12, 2024 Lic. No. 60403

1. Executive Summary

The City's Capital Improvement Plan identifies the reconstruction of the residential streets of:

- Goose Lake Parkway
- Highview Court N
- Magnolia Court N
- Oakview Court N
- Pondview Court N
- Elm Creek Trail N
- Hilltop Court N
- Norway Court N
- Pondview Circle N

Goose Lake Parkway is a Municipal State Aid designated route. These streets are experiencing deterioration with general pavement failure due to cracking and settlement. The streets in the project area were originally constructed between 1987 and 2001, and seal coating was completed in 2015 on all streets in the project area except Goose Lake Parkway, which was seal coated in 2008. In 2003, Elm Creek Trail N from Goose Lake Parkway to Highview Court N received a 1.5" edge mill and overlay.

The total length of the streets is approximately 1.5 miles.

Based on the pavement condition and a geotechnical evaluation, the proposed improvements include street reconstruction by full depth reclamation with spot curb and gutter replacement. The streets will also be subcut eighteen (18) inches for soils to be replaced with non-frost susceptible granular fill based on the recommendations from the geotechnical investigation. The existing street layout and widths will be maintained.

Damaged or cracked sections of the existing sidewalk within the Elm Creek Trail neighborhood are proposed to be removed and replaced. The bituminous trail in the center median of Goose Lake Parkway west of Elm Creek Trail and the bituminous trail on the north side of Goose Lake Parkway from Highpointe Park to Hazelwood Lane N are proposed to be fully replaced and reconfigured. The bituminous trail in the median of Goose Lake Parkway east of Elm Creek Trail to Elm Creek Parkway was replaced in 2022 and will not be included within the scope of this project. The replacement of additional trail from Zachary Ln N to Hazelwood Ln N is included within the scope of this project, as this trail segment has been identified within the Parks & Recreation Capital Improvement Plan to receive improvements. All pedestrian ramps are proposed to be upgraded to comply with current ADA standards.

Storm sewer improvements are proposed to improve drainage conditions. Stormwater treatment surface BMPs are proposed throughout the project area to provide pollutant removals.

Existing street lighting that interferes with improvements within the boulevard is proposed to be salvaged and reinstalled. Streetlights at the front of cul-de-sac islands are proposed to be salvaged and reinstalled at the back of the islands. Conduit will be installed, and new streetlight wiring will be placed for all streetlights.

Stop signs will be replaced with new round posts. Street signs will be installed on top of the stop signs. All other impacted signs will be salvaged and reinstalled. No new mailboxes are proposed with the project.

Sanitary sewer manhole improvements will vary depending on the condition of each individual manhole. Structures in good condition will receive a frame and ring casting adjustment to match the proposed pavement surface. Structures in poor condition will receive a partial or full reconstruct depending on the depth and severity of the damage. Chimney seals will be installed in all sanitary manholes.

Watermain gate valve bolts will be replaced with stainless steel bolts to prevent corrosion. City staff reviewed all curb stops within the project area. The City standard is that any curb stop located within a driveway shall have Ford Meter A-1 lids to provide access and protect the curb stop. Any non-functioning or damaged curb stops will be repaired with this project. If the curb stop repair is in the yard area, the yard will be restored with the project. If the curb stop is within the driveway, the driveway will be sawcut around the curb stop and replaced in kind.

Figure 1 in ***Appendix A*** is a project location map for the street improvements.

The total estimated project cost for the project is $4,590,709 and includes a 10-15% contingency and 15% indirect costs for legal, engineering, administrative, and financing costs. The project is proposed to be funded with special assessments to benefitting property owners, Municipal State Aid funds, and City funding sources including the Capital Improvement Resolving Fund, Storm Sewer Fund, Sewer Revenue Fund, Water Revenue Fund, and Street Light Revenue Fund. The project is proposed to be completed in 2025.

The proposed improvements are feasible, necessary, and cost-effective from an engineering standpoint and should be constructed as proposed herein.

2. Introduction

2.1 Authorization

The City's 2025 Capital Improvement Plan identifies the followings streets to be rehabilitated:

- Goose Lake Parkway from Hazelwood Lane N to Elm Creek Parkway
- Elm Creek Trail N
- Highview Court N
- Hilltop Court N
- Pondview Court N
- Pondview Circle N
- Oakview Court N
- Norway Court N
- Magnolia Court N

The City Council authorized preparation of a feasibility study on July 8, 2024, to review the condition of bituminous streets, drainage, sanitary sewer, watermain, and street lighting and verify compliance with City Standards. This project is designated as Improvement Project No. 22502. A project location map is shown in ***Figure 1*** in ***Appendix A***.

2.2 Scope

The scope for this report includes reviewing streets within the project limits for pavement condition, public utility needs, and ADA compliance.

2.3 Pavement Management

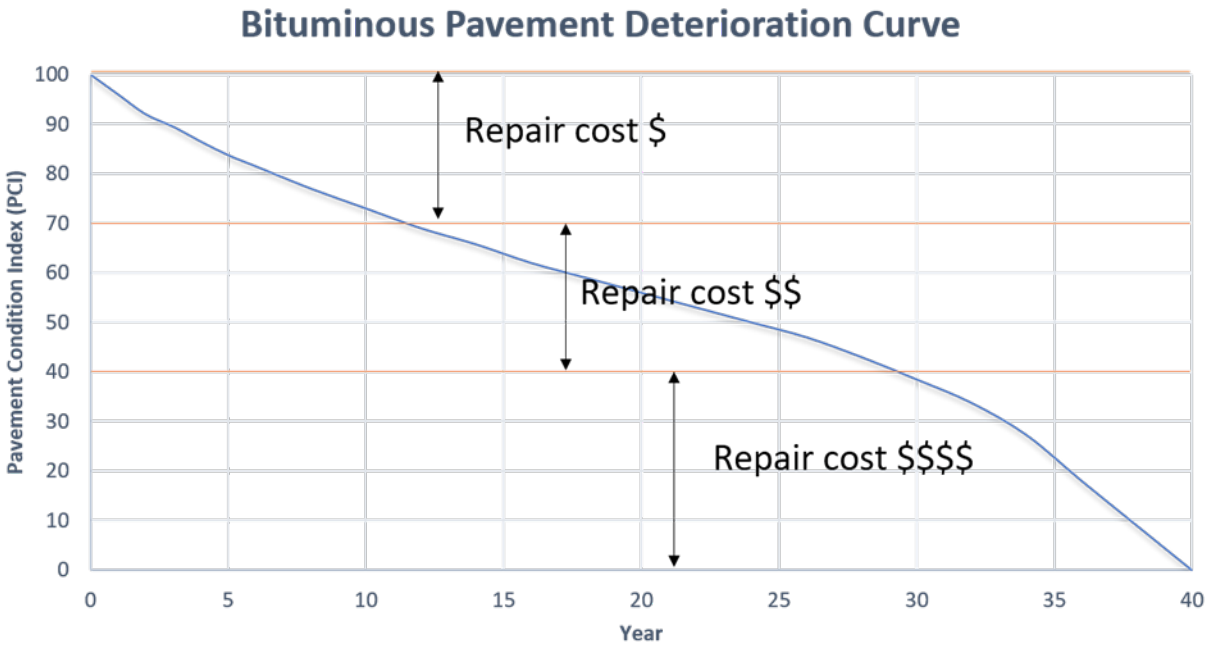
The City of Champlin contracts with a private independent pavement management company, Goodpointe Technology Inc., to rate the condition of the City's streets. These ratings are completed on a regular three-year cycle with one third (1/3) of the City rated each year. The pavement rating, known as Pavement Condition Index (PCI), ranks pavements on a scale according to the amount of pavement deterioration that is visually evident. This information is one factor that is used in developing the City's Capital Improvement Plan and prioritization of projects.

2.3.1 Pavement Life Cycle

All pavements will deteriorate over time. Typically, the pavement deterioration accelerates as it reaches the end of its life span. At first very few distresses are present, and the pavement stays in relatively good condition. As the pavement ages, more distresses develop, and the pavement deterioration is compounded. For instance, once a crack occurs, it becomes easier for water to infiltrate the asphalt layer, penetrating the aggregate base and weakening the subgrade. This cycle is exacerbated by the freeze and thaw cycles. Some

examples of typical pavement distresses include transverse and longitudinal cracking, block cracking, and alligator cracking.

The existing bituminous pavement condition for the streets in this study have been observed, deteriorations identified, and each street has been assigned a PCI value. The calculation of the PCI value for an individual street takes into account the area of distresses encountered as well as the severity of distress. An evaluation has been completed on the local streets identified to be reviewed, and the calculations of the PCI are based on the data and methods as described in the "Pavement Maintenance Management System" prepared by the U.S. Army Corps of Engineers.



Pavement Condition Index (PCI)

3 Existing Conditions

3.1 Surface

Goose Lake Parkway is an urban major collector and was constructed in 1998 and 2001. All other streets within the project area are residential streets that were constructed in 1987.

Improvements since initial construction have been primarily nonstructural except for a small portion of Elm Creek Trail. In 2003, Elm Creek Trail N from Goose Lake Parkway to Highview Court N received a 1.5" edge mill and overlay. Typical maintenance including seal coating has been performed on these roadways since their original construction.

Goose Lake Parkway is a Municipal State Aid designated route. Based on 2023 traffic volume counts, Goose Lake Parkway has an average annual daily traffic (AADT) volume of 1,690 vehicles per day.

The streets were most recently rated in 2022 with the PCI values shown in ***Table 1*** below.

Table 1

Existing PCI Values	
Street	**PCI (Projected from 2022)**
Goose Lake Parkway (EB)	32-62
Goose Lake Parkway (WB)	38-56
Elm Creek Trail N	60-80
Highview Court N	62
Hilltop Court N	81
Magnolia Court N	83
Norway Court N	83
Oakview Court N	82
Pondview Circle N	89
Pondview Court N	80-92

The existing bituminous surface conditions in general exhibit surface deterioration with significant cracking and settlement areas. It is becoming brittle due to age and general wear and tear and is showing signs of accelerated deterioration. Examples of the existing bituminous pavement are shown on ***Figure 4*** in ***Appendix A***.

A pavement Coring Report was completed by WSB in August 2024. Bituminous roadway cores were taken throughout the project. Pavement thickness ranges from 3.25 inches to 6.5 inches with 3 inches to 12+ inches of aggregate base. A large number of cores indicated raveling in the base course layer, which indicates that section of pavement contained loose gravel and was beginning to fall apart. The Coring Report can be found in ***Appendix D***.

A Geotechnical Report was completed by WSB. Pavement thicknesses range from 4 to 5 inches with 4 to 12+ inches of aggregate base. The underlaying soils are primarily clayey sands overlying lean clay soils. The Geotechnical Report can be found in ***Appendix D***.

3.1.1 Roadway Alignment

The residential streets have typical vertical and horizontal for a residential neighborhood. Goose Lake Parkway has a typical horizontal and vertical alignment for an urban major collector.

3.1.2 Right-of-Way

The existing rights-of-way widths for the project are 80-120 feet for Goose Lake Parkway and 60-90 feet for all other streets.

3.1.3 Street Section

Goose Lake Parkway in the designated project area has an existing street width of 16-24 feet for each side of the median with a 14-48 foot median running between the north and south road, and consists of an urban section with parkway style curb and gutter. Elm Creek Trail N in the designated project area has an existing street width of 28 feet and consists of an urban section with B618 curb and gutter. All other roads in the designated project area have an existing street width of 26-28 feet and consist of an urban section with B618 curb and gutter.

3.2 Drainage

Storm sewer exists throughout the project area consisting of 12 to 42-inch reinforced concrete pipe constructed between 1987 and 2001. Drainage from the project area is conveyed through multiple networks to the wetland west and north of the project area.

3.3 Watermain

Watermain exists throughout the project area and was constructed between 1987 and 2001. The existing watermain located on Goose Lake Parkway west of the Highpointe Park entrance is ten-inch DIP and east of the park entrance the pipe is eighteen-inch DIP. The existing watermain under Elm Creek Trail N is eight-inch DIP and under all other local roads in the project area is six-inch DIP. According to the City's utility department, there have not been significant maintenance needs for the existing watermain due to limited watermain breaks or operational issues. Maintenance on gate valves in this area has shown that gate valves are in fair to good condition, with a few valves leaking recently due to the deteriorating bolts.

3.4 Sanitary Sewer

Sanitary sewer exists throughout the project area and was constructed between 1987 and 2001. The existing sewer pipe is 8 to 15-inch PVC. All sanitary sewer pipes are gravity mains. Sanitary sewer manhole conditions vary throughout the project area. Some manholes are in good or fair condition, with minimal ring and frame damage,

while others have large mineral deposits indicating significant cracking and infiltration.

3.5 Street Lighting

Streetlights exist within the project area. Lighting is located at street intersections, mid-block, and on cul-de-sac islands. All streetlights within the project area are city-owned. Existing streetlight wiring is direct bury wire.

3.6 Sidewalks and Trails

A 5-foot concrete sidewalk exists along the inside of the Elm Creek Trail N loop. Crossings at the southern crossing of Highview Court N and the northern crossing of Pondview Circle N lack truncated domes and are therefore noncompliant with ADA standards. Some panels within the sidewalk display cracking or settlement.

A 9 to 10-foot bituminous trail exists along the median of Goose Lake Parkway from Elm Creek Parkway to the east entrance to Highpointe Park, where it crosses to the north side of the road and continues to Zachary Lane N. Cracking exists throughout the trail, and all pedestrian ramps and crossings on this trail segment except for those in the median east of Elm Creek Trail are currently noncompliant with ADA standards.

3.7 Criteria for Investigating

The streets identified to be reviewed for improvement will be reviewed against current City Standards and policy where applicable.

3.7.1. Steets

Mill and overlay is a rehabilitation effort that is completed on streets with a PCI ranging from 60 to 90. Mill and overlays are not practical on streets where the existing bituminous section is less than three and a half inches because a standard two-inch mill and overlay would remove all of the existing pavement section. This would not leave enough remaining pavement to provide a base for the overlay.

Reclamation or reconstruction are street reconstruction efforts that are completed on streets with a PCI ranging from 0 to 60.

PCI ratings are not the only factors in determining a street rehabilitation method. The geotechnical analysis provides a more detailed measure of the pavement layer condition, bonding and structural integrity and the resulting improvement method. Geotechnical analysis provides a recommendation for pavement section and soil corrections needed on the project based on MnDOT FlexPave granular equivalency.

3.7.2. Drainage

Elm Creek Watershed Management Commission Standards and MS4 permit standards will be utilized for storm water management and water quality design.

3.7.3. Watermain

Ten State Standards will be utilized for watermain design.

3.7.4. Sanitary Sewer

Ten State Standards will be utilized for sanitary sewer design.

3.7.5. Sidewalks and Trails

In accordance with the Americans with Disabilities Act (ADA), all pedestrian curb ramps within the project area must be reconstructed to current ADA standards.

4 Proposed Improvements

4.1 Streets

The streets within the Elm Creek Trail neighborhood were not constructed to current City standards and therefore lack a proper sand section between the aggregate section and clay subgrade. The existing clay subgrade beneath the streets in this area is susceptible to expansion and contraction, leaving the pavement vulnerable to significant cracking and settling over time. Without making subgrade corrections with the proposed improvements, the street would be at risk for accelerated deterioration compared to a road with a sand subgrade section. By replacing the subgrade in conjunction with the pavement repairs, all streets within the neighborhood will be constructed to current standards and will require less maintenance over a longer period of time as opposed to a less invasive pavement maintenance project that does not address the subgrade issues.

Based on the pavement analysis identified in the Geotechnical Report and the Pavement Coring Forensic Report, the project area is proposed to undergo a reconstruction by full depth reclamation. Damaged existing curb will be removed and replaced in-kind with new curb and gutter. The existing street width will be maintained.

4.1.1 Roadway Alignment

The proposed improvements will generally maintain the existing vertical and horizontal alignments of all streets within the project area.

4.1.2 Right-of-Way

All proposed roadway improvements and most proposed trail improvements are located within the platted right-of-way. No permanent easements will be required.

Temporary easements from property owners may be required for some of the proposed trail improvements on the west side of the project area and will be discussed with property owners during the final design and construction.

4.1.3 Street Section

The proposed street typical section consists of two lifts of bituminous pavement totaling four and one-half inches constructed on six inches of aggregate base, twelve inches of select granular fill, and a base layer of geotextile fabric. The depth of existing subgrade does not meet the current standard street section for the City. Therefore, following the full depth reclamation process, the reclaimed aggregate material shall be removed and the underlying material excavated to a depth sufficient to install a full pavement section including a base layer of geotextile fabric, twelve inches of select granular fill, six inches of aggregate base gravel, and four and one-half inches of bituminous. This section satisfies both the recommendations of the geotechnical report and the City's pavement section standards. Curb will be evaluated, and spot curb replacement is proposed to repair cracked or settled

sections of curb as needed. The existing street layout and widths will be maintained.

The proposed street typical sections are shown on ***Figure 3*** in ***Appendix A***.

Any stop signs on square posts will be replaced with new round posts. Street signs will be installed on top of the new stop sign posts. All other impacted signs will be salvaged and reinstalled.

Yard areas disturbed will be replaced with sod or hydroseed, depending on the area of the disturbance.

Only existing mailboxes impacted by spot curb or utility work will be salvaged and reinstalled. Temporary mailboxes are not anticipated for the project.

4.2 Drainage

Storm sewer improvements are proposed for the residential streets within the project area. Improvements include replacing or constructing new storm sewer pipe and structures to improve drainage conditions within the project area. Within Goose Lake Parkway, storm sewer is designed to be in compliance with State Aid standards for spread and run and pipe flow capacity. Surface BMPs are proposed throughout the project area to allow for removal of pollutants. The proposed storm sewer improvements are shown on ***Figure 2*** in ***Appendix A***.

4.3 Sanitary Sewer and Watermain

Sanitary sewer manhole improvements will vary depending on the condition of each individual manhole. Structures in good condition will receive a frame and ring casting adjustment to match the proposed pavement surface, and structures with minimal infiltration will receive an additional seal. Structures in poor condition will receive a partial or full reconstruct depending on the depth and severity of the damage. Chimney seals will be installed in all sanitary sewer manholes.

Watermain gate valves will be adjusted to match the proposed pavement surface. Gate valve bolts will be replaced with stainless steel bolts to prevent corrosion. City staff have reviewed all curb stops within the project area. City standard is that any curb stop located within a driveway shall have Ford Meter A-1 lids to provide access and protect the curb stop. Any non-functioning or damaged curb stops will be repaired with the project. If the curb stop is in the yard area, the yard will be restored with the project. If the curb stop is within the driveway, the driveway will be sawcut around the curb stop and replaced in kind.

Corroded gate valve bolts and non-functioning curb stops are two critical points where watermain leaks and failures could occur. By repairing these with the project, it likely will extend the need for full replacement of the watermain system as watermain pipe typically lasts 70-100 years. The existing watermain is currently 26-37 years old with no history of breaks or leaks except for limited leaking at gate valves due to deteriorating bolts.

4.4 Street Lighting

The majority of the streetlights located within the project area meet the spacing requirements defined in the City's policy. Streetlights conflicting with work occurring within the right-of-way will be salvaged and reinstalled. Streetlights located at the front of cul-de-sac islands will be reinstalled at the back of the island. Two inch conduit will be placed throughout the project area and all streetlights will be rewired.

4.5 Sidewalks and Trails

All non-ADA-compliant pedestrian curb ramps and crossings within the project area are proposed to be improved to meet the current ADA standards.

Damaged or cracked sections of the existing sidewalk within the Elm Creek Trail neighborhood are proposed to be removed and replaced. The bituminous trail in the center median of Goose Lake Parkway west of Elm Creek Trail and the bituminous trail on the north side of Goose Lake Parkway are proposed to be fully replaced and reconfigured to improve pedestrian safety.

4.6 Permits/Approvals

The anticipated permits and approvals required from the respective regulatory agencies are listed below:

- MN Pollution Control Agency NPDES — Erosion/Stormwater
- Elm Creek Watershed Management Commission — Stormwater

5 Financing

5.1 Opinion of Probable Cost

The total project cost is estimated at **$4,590,709** and includes all proposed improvements as well as a 10-15% contingency factor and 15% for indirect project costs, which includes engineering, legal, administrative, and financing costs. A detailed Opinion of Probable Cost can be found in ***Appendix B***.

The Opinion of Probable Cost is summarized as follows:

Goose Lake Parkway and Elm Creek Trail Area Project Opinion of Probable Cost	
	Estimated Cost
State Aid Surface Improvements	$1,182,269
Local Surface Improvements	$2,054,976
State Aid Drainage Improvements	$244,808
Local Drainage Improvements	$266,375
Sanitary Sewer Improvements	$81,473
Watermain Improvements	$107,209
Lighting Improvements	$233,414
Local Trail Improvements	$420,185
TOTAL	**$4,590,709**

5.2 Funding

The proposed funding for the improvements consists of a combination of City funds and special assessments to benefitting properties. Assessments will be levied to the benefitting properties as outlined in Minnesota Statute 429 and the City's assessment policy. The residential properties are proposed to be assessed according to the proposed 2025 Typical Lot Fee Schedule or up to 50% of the project cost for the improvement constructed. Each lot will be assessed only for the applicable improvements.

The proposed improvements consist of the following rates:

Lot Fee Category	Lot Fee (per unit)	No. of Lots
Reclaim and Pave Street (Residential)	$4,675	131

The assessment term is proposed to be 5 years with an interest rate that will be set at the assessment hearing using the prime rate in effect on August 1, 2025, plus one percent. There are 131 parcels proposed to be assessed within the project area. A preliminary assessment roll identifying proposed assessments is located in ***Appendix C***.

Other funding sources for the project are Municipal State Aid Funds as well as City funds including Capital Improvement Revolving Fund, Storm Sewer Fund, Sewer Revenue Fund, Water Revenue Fund, and Street Light Revenue Fund.

The project funding is summarized as follows:

Goose Lake Parkway and Elm Creek Trail Area Project Funding Summary	
Funding Source	**Proposed Funding**
Special Assessments	$612,425
Municipal State Aid Fund	$1,427,077
Capital Improvement Fund	$1,442,551
City Storm Revenue Fund	$266,375
City Sewer Revenue Fund	$81,473
City Water Revenue Fund	$107,209
City Street Lighting Fund	$233,414
City Parks & Recreation Fund	$420,185
TOTAL	**$4,590,709**

6 Legal Description

The legal description for Goose Lake Parkway and Elm Creek Trail Area Project is:

> All parcels adjacent to Goose Lake Parkway from Hazelwood Ln N to Elm Creek Parkway, Elm Creek Trail N, Highview Court N, Hilltop Court N, Magnolia Court N, Norway Court N, Oakview Court N, Pondview Circle N, and Pondview Court N, City of Champlin, Hennepin County, Minnesota.

7 Neighborhood Meeting

A neighborhood Open House for the Goose Lake Parkway and Elm Creek Trail Area Project was held on October 22, 2024. Preliminary information was presented to attendees regarding the proposed improvements, costs, funding, schedule, and impacts associated with the project. Residents were encouraged to fill out comment cards or email the City's general email with any comments on the project. A summary of correspondence received, and questions and answers provided at the Open House, is included in ***Appendix E***.

8 Project Schedule

The proposed schedule for this improvement is as follows:

Task Number	Task Description	Completion Date
1	City Approves Consultant Contract	July 8, 2024
2	City Authorizes Feasibility Report	July 8, 2024
3	Neighborhood Information Meeting	October 22, 2024
4	City Receives Feasibility Report	November 12, 2024
5	Public Hearing	November 12, 2024
6	Final Design	November 2024 – February 2025
7	Advertise for Bids	February 2025
8	Award Contract	March 2025
9	Neighborhood Meeting Prior to Start of Construction	April/May 2025
10	Construction	May 2025 – September 2025
11	Substantial Completion	September 2025
12	Assessment Hearing	October 2025
13	Final Completion	June 2026
14	First Payment Due with 2025 Taxes	May 2026

9 Feasibility and Recommendation

1. The identified streets have experienced surface deterioration with significant cracking and settlement areas.

2. The City's Pavement Management Program includes pavement ratings that identify street reconstruction as the best rehabilitative measure for the project area. Pavement analysis by soil borings identified pavement section deterioration. Based on the above factors, the recommended pavement rehabilitation method for the project area is a pavement reconstruction by full depth reclamation with spot curb replacement and subgrade correction.

3. It is the recommendation of WSB and City staff that the City Council accepts this feasibility report and call for a public hearing on the proposed improvements consistent with Minnesota State Statute No. 429 governing public improvements. Based on the information contained within this report, the proposed improvements as described can be considered to be necessary, cost-effective, and feasible from an engineering standpoint.

Appendix A

Figure 1 – Project Location Map

Figure 2 – Preliminary Layout

Figure 3 – Typical Sections

Figure 4 – Existing Pavement Examples

wsb

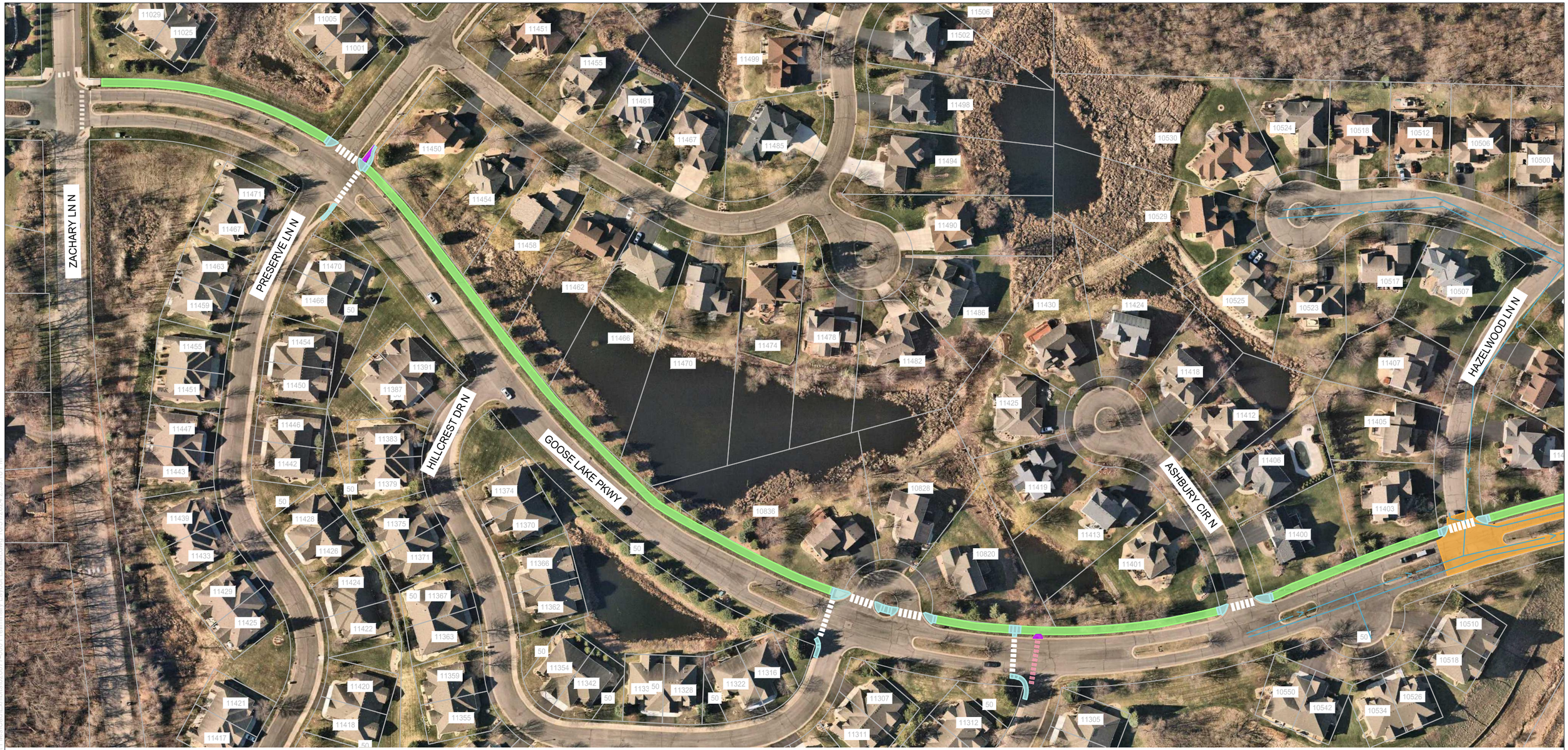
WSB PROJECT NO.:
026077-000

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

FIGURE 1 - PROJECT LOCATION MAP

CITY OF CHAMPLIN, MN

City of Champlin



LEGEND

- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SALVAGE AND INSTALL STREET LIGHT
- BITUMINOUS PAVEMENT REPLACEMENT
- CONCRETE VALLEY GUTTER REPLACEMENT
- BITUMINOUS TRAIL REPLACEMENT
- CONCRETE WALK REPLACEMENT
- BITUMINOUS TRAIL AND CONCRETE WALK REMOVAL
- PROPOSED STRIPING
- PROPOSED STORM
- REMOVE PAVEMENT MARKINGS

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GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

FIGURE 2 - PRELIMINARY LAYOUT

CITY OF CHAMPLIN, MN

City of Champlin

PROPOSED SEDIMENTATION BASIN

HAZELWOOD LN N

HIGHVIEW CT N

ELM CREEK TRL N

FRENCH DRAIN AND DRAIN TILE

GOOSE LAKE PKWY

MAPLEWOOD LN N

2022 IMPROVEMENT PROJECT LIMITS

LEGEND

- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SALVAGE AND INSTALL STREET LIGHT
- BITUMINOUS PAVEMENT REPLACEMENT
- CONCRETE VALLEY GUTTER REPLACEMENT
- BITUMINOUS TRAIL REPLACEMENT
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WSB PROJECT NO.:
026077-000

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT
FIGURE 2 - PRELIMINARY LAYOUT
CITY OF CHAMPLIN, MN

City of Champlin

LEGEND

- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SALVAGE AND INSTALL STREET LIGHT
- BITUMINOUS PAVEMENT REPLACEMENT
- CONCRETE VALLEY GUTTER REPLACEMENT
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- PROPOSED STORM
- REMOVE PAVEMENT MARKINGS

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SCALE IN FEET

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WSB PROJECT NO.: 026077-000

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT
FIGURE 2 - PRELIMINARY LAYOUT
CITY OF CHAMPLIN, MN

LEGEND

- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SALVAGE AND INSTALL STREET LIGHT
- BITUMINOUS PAVEMENT REPLACEMENT
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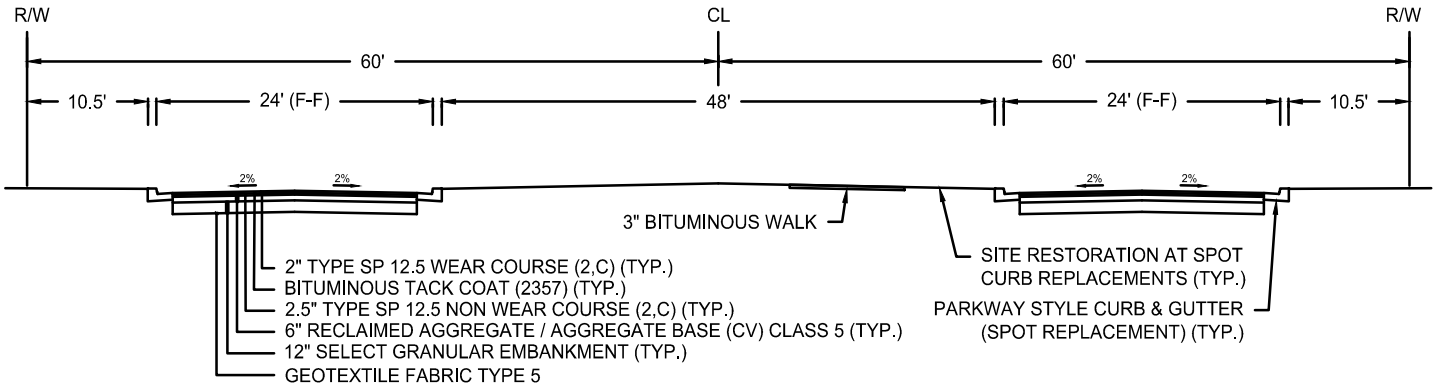
WSB PROJECT NO.:
026077-000

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

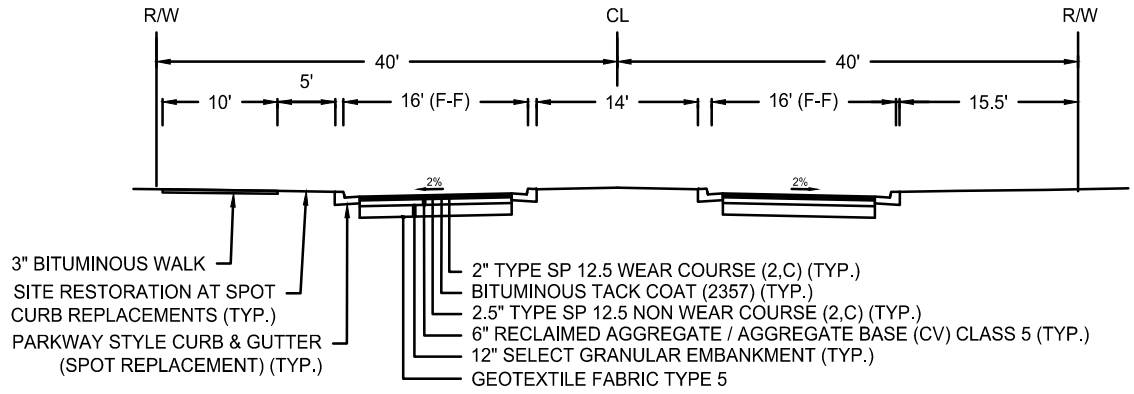
FIGURE 2 - PRELIMINARY LAYOUT

CITY OF CHAMPLIN, MN

City of Champlin



FULL DEPTH RECLAMATION WITH SUBGRADE CORRECTIONS & SPOT CURB & GUTTER REPLACEMENT
GOOSE LAKE PKWY
FROM HIGHPOINTE PARK TO ELM CREEK PKWY



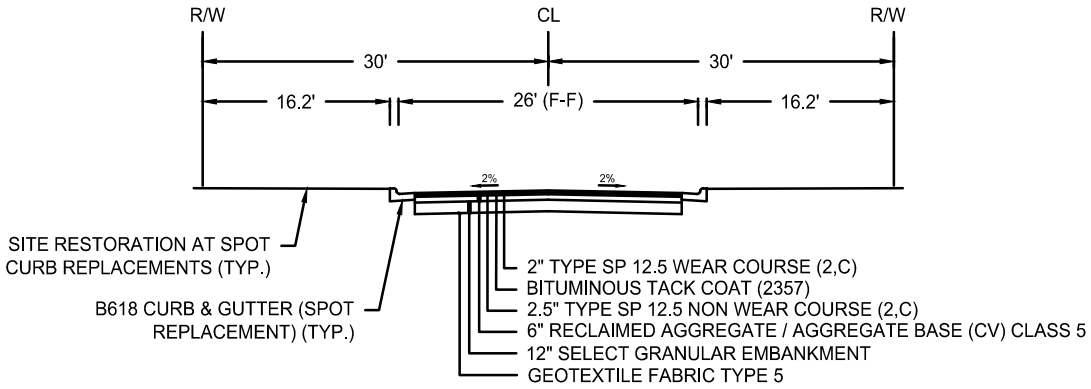
FULL DEPTH RECLAMATION WITH SUBGRADE CORRECTIONS & SPOT CURB & GUTTER REPLACEMENT
GOOSE LAKE PKWY
FROM HAZELWOOD LN N TO HIGHPOINTE PARK

WSB PROJECT NO.:
026077-000

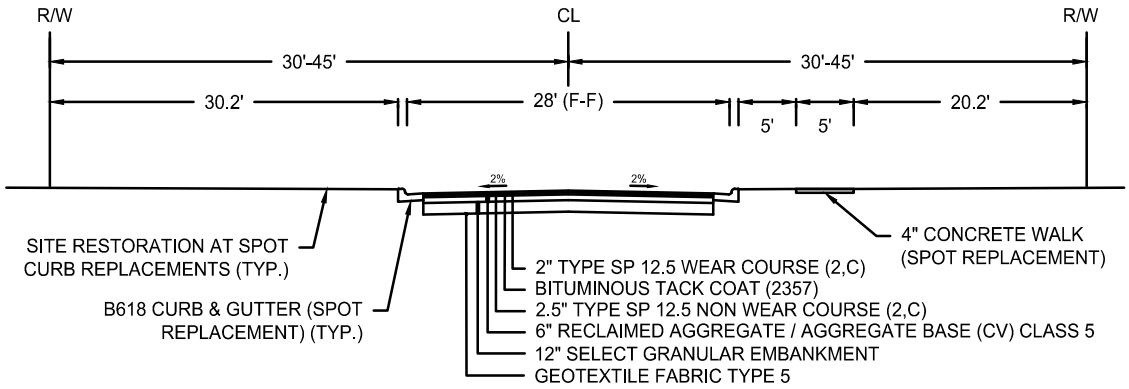
GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

FIGURE 3 - TYPICAL SECTIONS

CITY OF CHAMPLIN, MN



FULL DEPTH RECLAMATION WITH SUBGRADE CORRECTIONS & SPOT CURB & GUTTER REPLACEMENT
HILLTOP CT N, PONDVIEW CIR N, POND VIEW CT N, OAKVIEW CT N, NORWAY CT N, MAGNOLIA CT N



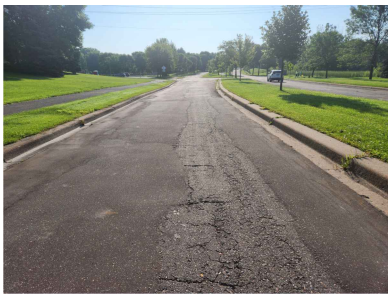
FULL DEPTH RECLAMATION WITH SUBGRADE CORRECTIONS & SPOT CURB & GUTTER REPLACEMENT
ELM CREEK TRL N

WSB PROJECT NO.:
026077-000

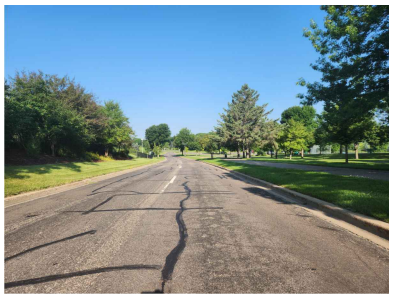
GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

FIGURE 3 - TYPICAL SECTIONS

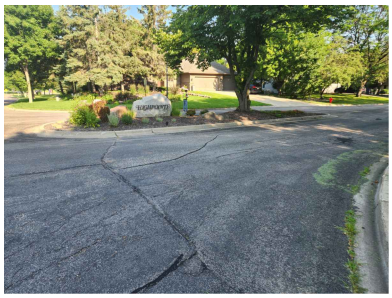
CITY OF CHAMPLIN, MN



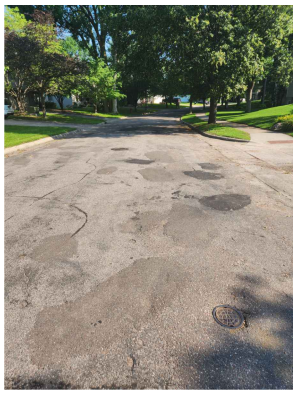
GOOSE LAKE PKWY



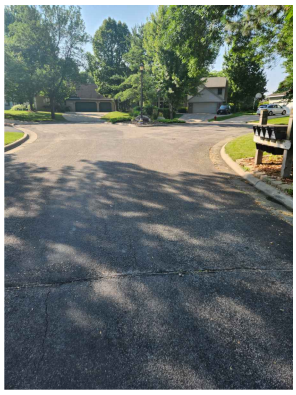
GOOSE LAKE PKWY (2)



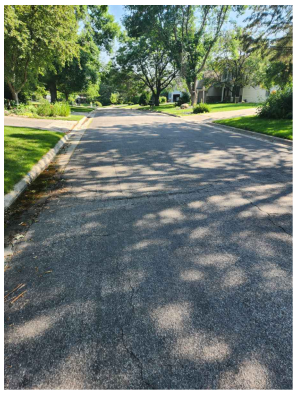
ELM CREEK TRL N



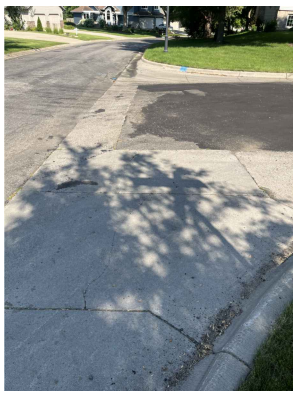
ELM CREEK TRL (2)



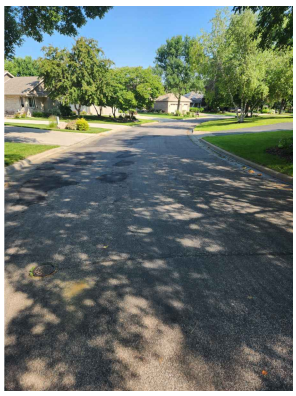
HIGHVIEW CT



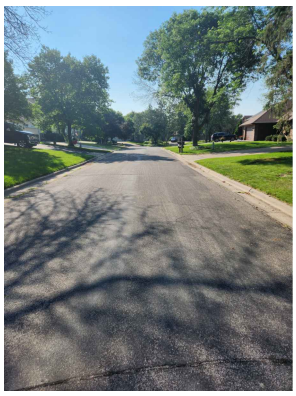
MAGNOLIA CT N



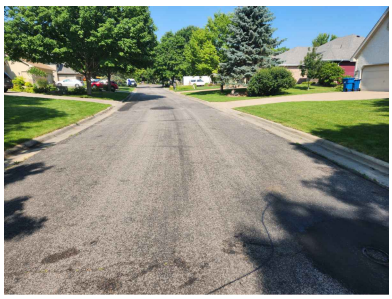
OAKVIEW CT N



PONDVIEW CT N



PONDVIEW CIR N



HILLTOP CT N

NORWAY CT N

WSB PROJECT NO.: 026077-000

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

FIGURE 4 - EXISTING PAVEMENT EXAMPLES

CITY OF CHAMPLIN, MN

City of Champlin

Appendix B

Opinion of Probable Cost

OPINION OF PROBABLE COST

WSB Project: GOOSE LAKE PARKWAY & ELM CREEK TRAIL AREA PROJECT
Project Location: CITY OF CHAMPLIN, MN
S.A.P.: 193-121-001
City Project No.: 22502
WSB Project No: 026077-000

Design By: HRD
Checked By: JDE
Date: 11/1/2024

Item No.	MnDOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
A. STATE AID SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LS	1	$ 53,000.00	$ 53,000.00
2	2101.502	CLEARING	EACH	3	$ 500.00	$ 1,500.00
3	2101.502	GRUBBING	EACH	3	$ 500.00	$ 1,500.00
4	2104.502	REMOVE SIGN	EACH	4	$ 45.00	$ 180.00
5	2104.502	SALVAGE SIGN	EACH	10	$ 45.00	$ 450.00
6	2104.502	REMOVE CASTING	EACH	2	$ 175.00	$ 350.00
7	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	L F	271	$ 4.00	$ 1,084.00
8	2104.503	REMOVE CURB & GUTTER	L F	1067	$ 8.00	$ 8,536.00
9	2104.518	REMOVE BITUMINOUS WALK	S F	17420	$ 3.00	$ 52,260.00
10	2104.601	SALVAGE AND REINSTALL LANDSCAPE STRUCTURES	LS	1	$ 5,000.00	$ 5,000.00
11	2106.507	EXCAVATION - COMMON	C Y	845	$ 35.00	$ 29,575.00
12	2106.507	EXCAVATION - SUBGRADE	C Y	3004	$ 35.00	$ 105,140.00
13	2106.507	SELECT GRANULAR EMBANKMENT (CV)	C Y	3004	$ 15.00	$ 45,060.00
14	2108.504	GEOTEXTILE FABRIC TYPE 5	S Y	9012	$ 4.00	$ 36,048.00
15	2112.519	SUBGRADE PREPARATION	RDST	39	$ 350.00	$ 13,650.00
16	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	40	$ 200.00	$ 8,000.00
17	2123.610	UTILITY CREW	HOUR	10	$ 700.00	$ 7,000.00
18	2130.523	WATER	MGAL	46	$ 60.00	$ 2,760.00
19	2211.507	AGGREGATE BASE (CV) CLASS 5	C Y	50	$ 60.00	$ 3,000.00
20	2215.504	FULL DEPTH RECLAMATION	S Y	9463	$ 2.00	$ 18,926.00
21	2215.507	HAUL FULL DEPTH RECLAMATION (LV)	C Y	1803	$ 15.00	$ 27,045.00
22	2331.603	JOINT ADHESIVE	L F	7114	$ 1.00	$ 7,114.00
23	2360.509	TYPE SP 12.5 WEARING COURSE MIX (2;C)	TON	1070	$ 95.00	$ 101,650.00
24	2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (2;C)	TON	1337	$ 95.00	$ 127,015.00
25	2504.602	ADJUST GATE VALVE & BOX	EACH	3	$ 600.00	$ 1,800.00
26	2504.602	IRRIGATION SYSTEM REPAIR	EACH	2	$ 200.00	$ 400.00
27	2506.602	CASTING ASSEMBLY SPECIAL	EACH	2	$ 1,300.00	$ 2,600.00
28	2521.518	6" CONCRETE WALK	S F	1149	$ 20.00	$ 22,980.00
29	2521.518	3" BITUMINOUS WALK	S F	17595	$ 8.00	$ 140,760.00
30	2531.503	CONCRETE CURB & GUTTER DESIGN SPECIAL 1	L F	1067	$ 35.00	$ 37,345.00
31	2531.618	TRUNCATED DOMES	S F	232	$ 70.00	$ 16,240.00
32	2563.601	TRAFFIC CONTROL	LS	1	$ 10,000.00	$ 10,000.00
33	2564.502	INSTALL SIGN	EACH	10	$ 140.00	$ 1,400.00
34	2564.518	SIGN PANELS TYPE C	S F	113	$ 60.00	$ 6,780.00
35	2573.501	STABILIZED CONSTRUCTION EXIT	LS	1	$ 10,000.00	$ 10,000.00
36	2573.502	STORM DRAIN INLET PROTECTION	EACH	15	$ 180.00	$ 2,700.00
37	2573.503	SILT FENCE; TYPE MS	L F	250	$ 3.00	$ 750.00
38	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	L F	500	$ 3.00	$ 1,500.00
39	2574.507	COMMON TOPSOIL BORROW	C Y	111	$ 50.00	$ 5,550.00
40	2574.508	FERTILIZER TYPE 3	LB	11	$ 2.00	$ 22.00
41	2575.504	SODDING TYPE LAWN	S Y	145	$ 20.00	$ 2,900.00
42	2575.508	HYDRAULIC STABILIZED FIBER MATRIX	LB	90	$ 3.00	$ 270.00
43	2575.523	WATER	MGAL	4	$ 50.00	$ 200.00
44	2575.604	SITE RESTORATION	S Y	855	$ 10.00	$ 8,550.00
45	2582.503	4" SOLID LINE MULTI COMP	L F	100	$ 1.00	$ 100.00
46	2582.503	4" BROKEN LINE MULTI COMP	L F	450	$ 1.00	$ 450.00
47	2582.518	PAVT MSSG MULTI COMP	S F	15	$ 8.00	$ 120.00
48	2582.518	CROSSWALK MULTI COMP	S F	1068	$ 5.00	$ 5,340.00
					CONSTRUCTION TOTAL	**$ 934,600.00**
					CONTINGENCY TOTAL (10%)	**$ 93,460.00**
					SUBTOTAL	**$ 1,028,060.00**
					INDIRECT COST TOTAL (15%)	**$ 154,209.00**
					TOTAL	**$ 1,182,269.00**

B. LOCAL SURFACE IMPROVEMENTS						
49	2021.501	MOBILIZATION	LS	1	$ 103,000.00	$ 103,000.00
50	2101.502	CLEARING	EACH	3	$ 500.00	$ 1,500.00
51	2101.502	GRUBBING	EACH	3	$ 500.00	$ 1,500.00
52	2104.502	REMOVE SIGN	EACH	2	$ 45.00	$ 90.00
53	2104.502	SALVAGE SIGN	EACH	7	$ 45.00	$ 315.00
54	2104.502	SALVAGE MAIL BOX SUPPORT	EACH	29	$ 175.00	$ 5,075.00
55	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	L F	1968	$ 4.00	$ 7,872.00
56	2104.503	SAWING BIT PAVEMENT (FULL DEPTH)	L F	328	$ 4.00	$ 1,312.00
57	2104.503	REMOVE CURB & GUTTER	L F	5495	$ 8.00	$ 43,960.00
58	2104.503	REMOVE CONCRETE GUTTER	L F	123	$ 12.00	$ 1,476.00
59	2104.504	REMOVE CONCRETE DRIVEWAY PAVEMENT	S Y	808	$ 15.00	$ 12,120.00
60	2104.504	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	S Y	93	$ 10.00	$ 930.00
61	2104.518	REMOVE CONCRETE WALK	S F	1486	$ 8.00	$ 11,888.00
62	2104.601	SALVAGE AND REINSTALL LANDSCAPE STRUCTURES	LS	1	$ 5,000.00	$ 5,000.00
63	2104.618	SALVAGE BRICK PAVERS	S F	136	$ 25.00	$ 3,400.00
64	2106.507	EXCAVATION - COMMON	C Y	2271	$ 35.00	$ 79,485.00
65	2106.507	EXCAVATION - SUBGRADE	C Y	5999	$ 35.00	$ 209,965.00
66	2106.507	SELECT GRANULAR EMBANKMENT (CV)	C Y	5999	$ 15.00	$ 89,985.00
67	2108.504	GEOTEXTILE FABRIC TYPE 5	S Y	17996	$ 4.00	$ 71,984.00
68	2112.519	SUBGRADE PREPARATION	RDST	62	$ 350.00	$ 21,700.00
69	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	100	$ 200.00	$ 20,000.00
70	2123.610	UTILITY CREW	HOUR	40	$ 700.00	$ 28,000.00
71	2130.523	WATER	MGAL	90	$ 60.00	$ 5,400.00
72	2211.507	AGGREGATE BASE (CV) CLASS 5	C Y	58	$ 60.00	$ 3,480.00
73	2215.504	FULL DEPTH RECLAMATION	S Y	17996	$ 2.00	$ 35,992.00
74	2215.507	HAUL FULL DEPTH RECLAMATION (LV)	C Y	3738	$ 15.00	$ 56,070.00
75	2331.603	JOINT ADHESIVE	L F	13442	$ 1.00	$ 13,442.00
76	2360.504	TYPE SP 9.5 WEAR CRS MIX(2,B)3.0" THICK	S Y	93	$ 40.00	$ 3,720.00
77	2360.509	TYPE SP 12.5 WEARING COURSE MIX (2;C)	TON	2136	$ 95.00	$ 202,920.00
78	2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (2;C)	TON	2669	$ 95.00	$ 253,555.00
79	2504.602	ADJUST GATE VALVE & BOX	EACH	13	$ 600.00	$ 7,800.00
80	2504.602	IRRIGATION SYSTEM REPAIR	EACH	40	$ 200.00	$ 8,000.00
81	2521.518	4" CONCRETE WALK	S F	1398	$ 17.00	$ 23,766.00
82	2521.518	6" CONCRETE WALK	S F	295	$ 20.00	$ 5,900.00
83	2531.503	CONCRETE CURB & GUTTER DESIGN SPECIAL	L F	136	$ 30.00	$ 4,080.00
84	2531.503	CONCRETE CURB & GUTTER DESIGN B618	L F	5495	$ 30.00	$ 164,850.00
85	2531.504	6" CONCRETE DRIVEWAY PAVEMENT	S Y	808	$ 65.00	$ 52,520.00
86	2531.618	TRUNCATED DOMES	S F	50	$ 70.00	$ 3,500.00
87	2540.602	INSTALL MAIL BOX SUPPORT	EACH	29	$ 250.00	$ 7,250.00
88	2540.618	INSTALL BRICK PAVERS	S F	136	$ 40.00	$ 5,440.00
89	2563.601	TRAFFIC CONTROL	LS	1	$ 5,000.00	$ 5,000.00
90	2564.502	INSTALL SIGN	EACH	7	$ 140.00	$ 980.00
91	2564.518	SIGN PANELS TYPE C	S F	9	$ 60.00	$ 540.00
92	2573.501	STABILIZED CONSTRUCTION EXIT	LS	1	$ 10,000.00	$ 10,000.00
93	2573.502	STORM DRAIN INLET PROTECTION	EACH	17	$ 180.00	$ 3,060.00
94	2573.503	SILT FENCE; TYPE MS	L F	350	$ 3.00	$ 1,050.00
95	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	L F	750	$ 3.00	$ 2,250.00
96	2574.507	COMMON TOPSOIL BORROW	C Y	147	$ 50.00	$ 7,350.00
97	2574.508	FERTILIZER TYPE 3	LB	16	$ 2.00	$ 32.00
98	2575.504	SODDING TYPE LAWN	S Y	212	$ 20.00	$ 4,240.00
99	2575.508	HYDRAULIC STABILIZED FIBER MATRIX	LB	131	$ 3.00	$ 393.00
100	2575.523	WATER	MGAL	5	$ 50.00	$ 250.00
101	2575.604	SITE RESTORATION	S Y	1110	$ 10.00	$ 11,100.00
					CONSTRUCTION TOTAL	**$ 1,624,487.00**
					CONTINGENCY TOTAL (10%)	**$ 162,448.70**
					SUBTOTAL	**$ 1,786,935.70**
					INDIRECT COST TOTAL (15%)	**$ 268,040.36**
					TOTAL	**$ 2,054,976.00**

C. STATE AID DRAINAGE IMPROVEMENTS						
102	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	3	$ 400.00	$ 1,200.00
103	2106.507	EXCAVATION - CHANNEL AND POND	C Y	2084	$ 25.00	$ 52,100.00
104	2108.504	GEOTEXTILE FABRIC TYPE 5	S Y	6	$ 4.00	$ 24.00
105	2451.607	SPECIAL FILTER AGGREGATE (LV)	C Y	42	$ 80.00	$ 3,360.00
106	2501.502	15" RC PIPE APRON	EACH	2	$ 1,200.00	$ 2,400.00
107	2501.602	TRASH GUARD FOR 15" PIPE APRON	EACH	2	$ 1,000.00	$ 2,000.00
108	2502.503	6" PERF PVC PIPE DRAIN	L F	377	$ 18.00	$ 6,786.00
109	2502.602	6" PVC PIPE DRAIN CLEANOUT	EACH	1	$ 500.00	$ 500.00
110	2503.503	12" RC PIPE SEWER DES 3006 CL V	L F	284	$ 70.00	$ 19,880.00
111	2503.503	15" RC PIPE SEWER DES 3006 CL V	L F	80	$ 90.00	$ 7,200.00
112	2503.503	24" RC PIPE SEWER DES 3006 CL V	L F	24	$ 140.00	$ 3,360.00
113	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	7	$ 1,000.00	$ 7,000.00
114	2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	4	$ 1,400.00	$ 5,600.00
115	2506.502	CASTING ASSEMBLY	EACH	3	$ 1,300.00	$ 3,900.00
116	2506.602	CONST DRAINAGE STRUCTURE DESIGN SPEC 1	EACH	7	$ 3,000.00	$ 21,000.00
117	2506.503	CONST DRAINAGE STRUCTURE DES 48-4020	L F	37	$ 1,000.00	$ 37,000.00
118	2506.503	CONST DRAINAGE STRUCTURE DES 72-4020	L F	7	$ 1,400.00	$ 9,800.00
119	2511.507	RANDOM RIPRAP CLASS III	C Y	10	$ 200.00	$ 2,000.00
					CONSTRUCTION TOTAL	**$ 185,110.00**
					CONTINGENCY TOTAL (15%)	**$ 27,766.50**
					SUBTOTAL	**$ 212,876.50**
					INDIRECT COST TOTAL (15%)	**$ 31,931.48**
					TOTAL	**$ 244,808.00**
D. LOCAL DRAINAGE IMPROVEMENTS						
120	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	6	$ 400.00	$ 2,400.00
121	2104.503	REMOVE SEWER PIPE (STORM)	L F	268	$ 12.00	$ 3,216.00
122	2106.507	EXCAVATION - CHANNEL AND POND	C Y	796	$ 25.00	$ 19,900.00
123	2108.504	GEOTEXTILE FABRIC TYPE 5	S Y	3	$ 4.00	$ 12.00
124	2451.607	SPECIAL FILTER AGGREGATE (LV)	C Y	136	$ 80.00	$ 10,880.00
125	2501.502	27" RC PIPE APRON	EACH	1	$ 1,200.00	$ 1,200.00
126	2501.602	TRASH GUARD FOR 27" PIPE APRON	EACH	1	$ 1,000.00	$ 1,000.00
127	2502.503	6" PERF PVC PIPE DRAIN	L F	90	$ 18.00	$ 1,620.00
128	2503.503	12" RC PIPE SEWER DES 3006 CL V	L F	47	$ 70.00	$ 3,290.00
129	2503.503	15" RC PIPE SEWER DES 3006 CL V	L F	20	$ 90.00	$ 1,800.00
130	2503.503	18" RC PIPE SEWER DES 3006 CL V	L F	458	$ 110.00	$ 50,380.00
131	2503.503	24" RC PIPE SEWER DES 3006 CL V	L F	27	$ 140.00	$ 3,780.00
132	2503.503	27" RC PIPE SEWER DES 3006 CL V	L F	41	$ 140.00	$ 5,740.00
133	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	4	$ 1,000.00	$ 4,000.00
134	2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	4	$ 1,400.00	$ 5,600.00
135	2506.502	CASTING ASSEMBLY	EACH	6	$ 1,300.00	$ 7,800.00
136	2506.602	CONST DRAINAGE STRUCTURE DESIGN SPEC 1	EACH	5	$ 3,000.00	$ 15,000.00
137	2506.503	CONST DRAINAGE STRUCTURE DES 48-4020	L F	44	$ 1,000.00	$ 44,000.00
138	2506.503	CONST DRAINAGE STRUCTURE DES 60-4020	L F	12	$ 1,100.00	$ 13,200.00
139	2506.503	CONST DRAINAGE STRUCTURE DES 72-4020	L F	4	$ 1,400.00	$ 5,600.00
137	2511.507	RANDOM RIPRAP CLASS III	C Y	5	$ 200.00	$ 1,000.00
					CONSTRUCTION TOTAL	**$ 201,418.00**
					CONTINGENCY TOTAL (15%)	**$ 30,212.70**
					SUBTOTAL	**$ 231,630.70**
					INDIRECT COST TOTAL (15%)	**$ 34,744.61**
					TOTAL	**$ 266,375.00**

E. SANITARY SEWER IMPROVEMENTS						
138	2104.502	REMOVE CASTING	EACH	39	$ 175.00	$ 6,825.00
139	2104.603	ABANDON SANITARY SEWER	L F	140	$ 12.00	$ 1,680.00
140	2506.602	CASTING ASSEMBLY SPECIAL	EACH	39	$ 1,300.00	$ 50,700.00
141	2506.602	CHIMNEY SEAL	EACH	41	$ 225.00	$ 9,225.00
					CONSTRUCTION TOTAL	**$ 61,605.00**
					CONTINGENCY TOTAL (15%)	**$ 9,240.75**
					SUBTOTAL	**$ 70,845.75**
					INDIRECT COST TOTAL (15%)	**$ 10,626.86**
					TOTAL	**$ 81,473.00**
F. WATERMAIN IMPROVEMENTS						
142	2504.602	ADJUST CURB STOP	EACH	10	$ 200.00	$ 2,000.00
143	2504.602	RECONSTRUCT CURB STOP	EACH	5	$ 1,500.00	$ 7,500.00
144	2504.602	GATE VALVE BOLT REPLACEMENT	EACH	16	$ 4,500.00	$ 72,000.00
145	2506.602	CASTING ASSEMBLY SPECIAL 1	EACH	13	$ 250.00	$ 3,250.00
					CONSTRUCTION TOTAL	**$ 84,750.00**
					CONTINGENCY TOTAL (10%)	**$ 8,475.00**
					SUBTOTAL	**$ 93,225.00**
					INDIRECT COST TOTAL (15%)	**$ 13,983.75**
					TOTAL	**$ 107,209.00**
G. LIGHTING IMPROVEMENTS						
146	2104.502	SALVAGE LIGHTING UNIT	EACH	10	$ 500.00	$ 5,000.00
147	2104.502	REMOVE HANDHOLE	EACH	1	$ 550.00	$ 550.00
148	2545.502	HANDHOLE	EACH	1	$ 2,500.00	$ 2,500.00
149	2545.503	2" NON-METALLIC CONDUIT	L F	751	$ 10.00	$ 7,510.00
150	2545.503	2" NON-METALLIC COND (DIRECTIONAL BORE)	L F	6759	$ 15.00	$ 101,385.00
151	2545.503	UNDERGROUND WIRE 1/C 8 AWG	L F	30036	$ 2.00	$ 60,072.00
152	2545.602	INSTALL LIGHTING UNIT	EACH	10	$ 750.00	$ 7,500.00
					CONSTRUCTION TOTAL	**$ 184,517.00**
					CONTINGENCY TOTAL (10%)	**$ 18,451.70**
					SUBTOTAL	**$ 202,968.70**
					INDIRECT COST TOTAL (15%)	**$ 30,445.31**
					TOTAL	**$ 233,414.00**
H. LOCAL TRAIL IMPROVEMENTS						
153	2021.501	MOBILIZATION	LS	1	$ 16,000.00	$ 16,000.00
154	2102.518	PAVEMENT MARKING REMOVAL	S F	190	$ 10.00	$ 1,900.00
155	2104.502	SALVAGE SIGN	EACH	3	$ 45.00	$ 135.00
156	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	L F	20	$ 4.00	$ 80.00
157	2104.503	REMOVE CURB & GUTTER	L F	374	$ 8.00	$ 2,992.00
158	2104.518	REMOVE CONCRETE WALK	S F	440	$ 8.00	$ 3,520.00
159	2104.518	REMOVE BITUMINOUS WALK	S F	17850	$ 3.00	$ 53,550.00
160	2104.601	SALVAGE AND REINSTALL LANDSCAPE STRUCTURES	LS	1	$ 3,000.00	$ 3,000.00
161	2106.507	EXCAVATION - COMMON	C Y	42	$ 35.00	$ 1,470.00
162	2504.602	RELOCATE HYDRANT	EACH	1	$ 4,000.00	$ 4,000.00
163	2521.518	4" CONCRETE WALK	S F	440	$ 17.00	$ 7,480.00
164	2521.518	6" CONCRETE WALK	S F	1675	$ 20.00	$ 33,500.00
165	2521.518	3" BITUMINOUS WALK	S F	16700	$ 8.00	$ 133,600.00
166	2531.503	CONCRETE CURB & GUTTER DESIGN SPECIAL 1	L F	374	$ 35.00	$ 13,090.00
167	2531.618	TRUNCATED DOMES	S F	316	$ 70.00	$ 22,120.00
168	2563.601	TRAFFIC CONTROL	LS	1	$ 4,000.00	$ 4,000.00
169	2564.502	INSTALL SIGN	EACH	3	$ 140.00	$ 420.00
170	2564.518	SIGN PANELS TYPE C	S F	121	$ 60.00	$ 7,260.00
171	2573.502	STORM DRAIN INLET PROTECTION	EACH	13	$ 180.00	$ 2,340.00
172	2573.503	SILT FENCE; TYPE MS	L F	200	$ 3.00	$ 600.00
173	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	L F	400	$ 3.00	$ 1,200.00
174	2574.507	COMMON TOPSOIL BORROW	C Y	107	$ 50.00	$ 5,350.00
175	2575.604	SITE RESTORATION	S Y	959	$ 10.00	$ 9,590.00
176	2582.518	CROSSWALK MULTI COMP	S F	993	$ 5.00	$ 4,965.00
					CONSTRUCTION TOTAL	**$ 332,162.00**
					CONTINGENCY TOTAL (10%)	**$ 33,216.20**
					SUBTOTAL	**$ 365,378.20**
					INDIRECT COST TOTAL (15%)	**$ 54,806.73**
					TOTAL	**$ 420,185.00**
					GRAND TOTAL	**$ 4,590,709.00**

DISCLAIMER:

In review of this Opinion of Probable Cost, the Client understands that the Consultant has no control over the availability of labor, equipment or materials, market conditions, or the Contractor's method of pricing. This Opinion of Probable Cost is made on the basis of the Consultant's professional judgment and experience. The Consultant makes no warranty, expressed or implied, regarding the ultimate bids or negotiated cost of the Work.

Appendix C

Assessment Map

Preliminary Assessment Roll

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WSB PROJECT NO.:
026077-000

GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

PROPOSED ASSESSMENT MAP

CITY OF CHAMPLIN, MN

City of Champlin

PRELIMINARY ASSESSMENT ROLL
GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

Date: 11/1/2024
WSB Project No.: 026077-000

ID	PID NO	OWNER NAME	BLDG_NUM	ADDRESS	MAILING ADDRESS	CITY	ST	ZIP CODE	USE	NO. UNITS RESID.	RECLAIM AND PAVE STREET $4,675.00
1	3612022130001	JOSHUA L VIDOR	10180	ELM CREEK TR N	10180 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
2	3612022130002	J C HAIRRELL & J A HAIRRELL	10172	ELM CREEK TR N	10172 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
3	3612022130003	R R DIEDERICHS ET AL	10164	ELM CREEK TR N	10164 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
4	3612022130004	MARK D PETERSEN	10156	ELM CREEK TR N	10156 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
5	3612022130005	ANDREW BENSON/RAVYN BENSON	10144	ELM CREEK TR N	10144 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
6	3612022120002	R D MUSTO & K A MUSTO	10136	ELM CREEK TR N	10136 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
7	3612022120003	SHANE M EWANIKA/C M EWANIKA	10128	ELM CREEK TR N	10128 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
8	3612022120004	P TAYLOR & J PETERSON-TAYLOR	10120	ELM CREEK TR N	10120 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
9	3612022120005	D D PUST & P J PUST	10139	HILLTOP CT N	10139 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
10	3612022120006	PETER KRAUSE/DANIELLE KRAUSE	10147	HILLTOP CT N	10147 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
11	3612022120007	J M LANDGRAFF/N J LANDGRAFF	10201	HILLTOP CT N	10201 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
12	3612022120008	R C HALL & R L HALL	10209	HILLTOP CT N	10209 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
13	3612022120009	THOMAS B BZDOK/MARY C BZDOK	10217	HILLTOP CT N	10217 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
14	3612022120010	M R BOROWICZ & S M BOROWICZ	10223	HILLTOP CT N	10223 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
15	3612022120011	P BULLER/R BULLER/Z METZLER	10231	HILLTOP CT N	10231 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
16	3612022120012	JAY J SHIN/REBEKAH K S SHIN	10239	HILLTOP CT N	10239 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
17	3612022120013	D J PARKINSON/K L PARKINSON	10247	HILLTOP CT N	10247 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
18	3612022120014	J A POQUETTE & I G POQUETTE	10248	HILLTOP CT N	10248 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
19	3612022120015	M MCELWAIN & E MCELWAIN	10240	HILLTOP CT N	10240 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
20	3612022120016	M R MAGNUSON & R M MAGNUSON	10232	HILLTOP CT N	10232 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
21	3612022120017	M K LARSON & G LUNDEEN	10224	HILLTOP CT N	10224 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
22	3612022120018	J J FISH & K M KONDRAK-FISH	10216	HILLTOP CT N	10216 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
23	3612022120019	D S & T M HOGLUND	10208	HILLTOP CT N	10208 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
24	3612022120020	J MCBROOM & B MCBROOM	10200	HILLTOP CT N	10200 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
25	3612022120021	N HOWARD & M HOWARD	10152	HILLTOP CT N	10152 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
26	3612022120022	S J WILLIE & E WILLIE	10144	HILLTOP CT N	10144 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
27	3612022120023	DENISE D LOMAURO REV TRUST	10136	HILLTOP CT N	10136 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
28	3612022120024	DAVID GREGORY/WILLIE GREGORY	10128	HILLTOP CT N	10128 HILLTOP CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
29	3612022120025	MICHAEL J AYDT & GWEN R AYDT	11509	POND VIEW CT N	11509 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
30	3612022120026	R J & L RAJTAR JT LIV TRUST	11517	POND VIEW CT N	11517 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
31	3612022120027	MARCUS TUPY & KRISTIE TUPY	11525	POND VIEW CT N	11525 PONDVIEW COURT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
32	3612022120028	M L LIEBRENZ & J L LIEBRENZ	11533	POND VIEW CT N	11533 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
33	3612022120029	K S ELDER & C A ELDER	11611	POND VIEW CT N	11611 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
34	3612022120030	LEMUEL P & ARLENE E ARRIOLA	11619	POND VIEW CT N	11619 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
35	3612022120031	D R ELIZONDO & K S ELIZONDO	11625	POND VIEW CT N	11625 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
36	3612022120032	MARK R FRUEN/NADENE B FRUEN	11633	POND VIEW CT N	11633 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
37	3612022120033	SUSAN RAINEY & JOHN BOLLER	11641	POND VIEW CT N	11641 PONDVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
38	3612022120034	S FAVREAU & CHELSEA FAVREAU	11649	POND VIEW CT N	11649 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
39	3612022120035	KATHY A & NEAL GIESELMAN	11657	POND VIEW CT N	11657 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
40	3612022120036	REED & WILSON LIVING TRUST	11665	POND VIEW CT N	11665 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
41	3612022120037	N SLONEKER & A BRENDEMUHL	11673	POND VIEW CT N	11673 PONDVIEW COURT	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
42	3612022120038	J T & E A FRENKEL	11678	POND VIEW CT N	11678 PONDVIEW CT	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
43	3612022120039	J G & J M SPANGLER	11670	POND VIEW CT N	11670 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
44	3612022120040	DIANE GRANT	11662	POND VIEW CT N	11662 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
45	3612022120041	MARK J DUEVEL/MOLLY J DUEVEL	11654	POND VIEW CT N	11654 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
46	3612022120042	AMY K LACHINSKI REV TRUST	11646	POND VIEW CT N	11646 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
47	3612022120043	E P LANGER & J LANGER	11638	POND VIEW CT N	11638 POND VIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
48	3612022120044	DAVID J & HEATHER C CASELLA	11615	OAKVIEW CT N	11615 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
49	3612022120045	S W CROSS & N J CROSS	11623	OAKVIEW CT N	11623 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
50	3612022120046	R H HANSEY ET AL TRUSTEES	11631	OAKVIEW CT N	11631 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
51	3612022120047	K G & C S ULRICH	11639	OAKVIEW CT N	11639 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
52	3612022120048	T A FIX & S J FIX	11647	OAKVIEW CT N	11647 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
53	3612022120049	ASHLEY EVANS & KACEY EVANS	11655	OAKVIEW CT N	11655 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
54	3612022120050	D M & P H SAWYER	11663	OAKVIEW CT N	11663 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
55	3612022120051	JODY ANNE LEVY	11671	OAKVIEW CT N	11671 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
56	3612022120052	MARSHALL K & CHERYL L FELLER	11680	OAKVIEW CT N	11680 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
57	3612022110055	P V & S J MCNELLY	11672	OAKVIEW CT N	11672 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
58	3612022110056	J M & L A SCHOCH	11664	OAKVIEW CT N	11664 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
59	3612022120053	M J DOYLE & C L ADAIR	11656	OAKVIEW CT N	11656 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
60	3612022120054	CATHERINE V TRESCONY TRUST	11648	OAKVIEW CT N	11648 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675

PRELIMINARY ASSESSMENT ROLL
GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

Date: 11/1/2024
WSB Project No.: 026077-000

ID	PID NO	OWNER NAME	BLDG_NUM	ADDRESS	MAILING ADDRESS	CITY	ST	ZIP CODE	USE	NO. UNITS RESID.	RECLAIM AND PAVE STREET $4,675.00
61	3612022120055	BRIAN D MORAWCZYNSKI ET AL	11640	OAKVIEW CT N	11640 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
62	3612022120056	JOHN D SCHAFFHAUSEN ET AL	11632	OAKVIEW CT N	11632 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
63	3612022120057	S H & C A DOCKENDORF	11624	OAKVIEW CT N	11624 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
64	3612022120058	CORY FLINN & AMBER FLINN	11616	OAKVIEW CT N	11616 OAKVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
65	3612022120059	RACHEL LANGER/RUSSELL LANGER	9964	ELM CREEK TR N	9964 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
66	3612022120060	ERIK PFEIFER/DANIELLE HAUGEN	9956	ELM CREEK TR N	9956 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
67	3612022120061	K P SCHIK & P KORSMAN	9948	ELM CREEK TR N	9948 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
68	3612022110057	WENDY J TROMBLEY	11633	NORWAY CT N	11633 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
69	3612022110058	BYONG IM CHOI	11641	NORWAY CT N	11641 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
70	3612022110059	SARAH WEGMUELLER	11649	NORWAY CT N	11649 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
71	3612022110060	GREGORY L HIGGINS	11657	NORWAY CT N	11657 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
72	3612022110061	MARK A BELLRICHARD ET AL	11665	NORWAY CT N	11665 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
73	3612022110062	DENNIS SAEWERT	11673	NORWAY CT N	11673 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
74	3612022110063	J V & L K KAUPHUSMAN	11681	NORWAY CT N	11681 NORWAY CT	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
75	3612022110064	K A BEARDSLEY/E M BEARDSLEY	11680	NORWAY CT N	11680 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
76	3612022110065	JONATHAN EICHTEN	11672	NORWAY CT N	11672 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
77	3612022110066	MICHAEL MCCARTHY/C MCCARTHY	11664	NORWAY CT N	11664 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
78	3612022110067	A LANGENFELD/E AYERS-JOHNSON	11656	NORWAY CT N	11656 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
79	3612022110068	COLE JENSEN & ANGELA JENSEN	11648	NORWAY CT N	11648 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
80	3612022110069	A J & C M HOFDAHL	11640	NORWAY CT N	11640 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
81	3612022110070	J V OLSON & K H OLSON	11632	NORWAY CT N	11632 NORWAY CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
82	3612022110071	T D KROENING-SMITH ET AL TR	11615	MAGNOLIA CT N	11615 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
83	3612022110072	D M LADUE & P J MCLELLAN	11623	MAGNOLIA CT N	11623 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
84	3612022110073	D K BURNS & D M BURNS	11631	MAGNOLIA CT N	11631 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
85	3612022110074	J D UNVERZAGT/K I UNVERZAGT	11639	MAGNOLIA CT N	11639 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
86	3612022110075	PAUL C DAHLEN REV TRUST	11647	MAGNOLIA CT N	11647 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
87	3612022110076	B D LAUFERS & T M LAUFERS	11655	MAGNOLIA CT N	11655 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
88	3612022110077	J T BELL & J R BELL	11663	MAGNOLIA CT N	11663 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
89	3612022110078	JANA B HARRER	11671	MAGNOLIA CT N	11671 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
90	3612022110079	THOMAS R SMITH	11678	MAGNOLIA CT N	11678 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
91	3612022110080	CARMELITA A NELSON	11670	MAGNOLIA CT N	11670 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
92	3612022110081	DANIEL OLSEN & JESSICA OLSEN	11662	MAGNOLIA CT N	11662 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
93	3612022110082	NATHAN ANDERSON	11654	MAGNOLIA CT N	11654 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
94	3612022110083	STEVEN OLLIG & DEANNA OLLIG	11646	MAGNOLIA CT N	11646 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
95	3612022110084	D R KAHLER & M C KAHLER	11638	MAGNOLIA CT N	11638 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
96	3612022110085	JENNY U NGUYEN	11630	MAGNOLIA CT N	11630 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
97	3612022110086	C E STIFTER & K A STIFTER	11622	MAGNOLIA CT N	11622 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
98	3612022110087	JOSEPH M ADEMINO ET AL	11614	MAGNOLIA CT N	11614 MAGNOLIA CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
99	3612022110088	S R & K M ZELENAK	9824	ELM CREEK TR N	9824 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
100	3612022110089	PAMELA M BROWN	9816	ELM CREEK TR N	9816 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
101	3612022110090	C W BELLING & C PHILLIPS	9800	ELM CREEK TR N	9800 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
102	3612022110104	B R COUTURE & S L COUTURE	9801	ELM CREEK TR N	9801 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
103	3612022110103	SEAN LINDHOLM & TIFFANY OTT	9809	ELM CREEK TR N	9809 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
104	3612022110102	SEDRICK L HARRIS	9817	ELM CREEK TR N	9817 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
105	3612022110101	B A LARSON & G S LARSON	9825	ELM CREEK TR N	9825 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
106	3612022110100	C T DEGEL & B G DEGEL	9833	ELM CREEK TR N	9833 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
107	3612022110099	JASON R & DUA H HARRIS	9841	ELM CREEK TR N	9841 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
108	3612022110098	N SCHUMACHER/K SCHUMACHER	9947	ELM CREEK TR N	9947 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
109	3612022110097	B P VANHOUTEN/M J VANHOUTEN	9955	ELM CREEK TR N	9955 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
110	3612022120069	D L OLSON & L A OLSON	9952	PONDVIEW CIR N	9952 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
111	3612022110096	T MALTMAN & M MALTMAN	9944	PONDVIEW CIR N	9944 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
112	3612022110095	VALERIE BOESER	9936	PONDVIEW CIR N	9936 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
113	3612022110094	MICHAEL V & RENEE I NELSON	9928	PONDVIEW CIR N	9928 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
114	3612022110093	PAULA JEAN CUTLER	9920	PONDVIEW CIR N	9920 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
115	3612022110092	D J & P A BAZDELL	9921	PONDVIEW CIR N	9921 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
116	3612022110091	M D & D A FIERECK	9929	PONDVIEW CIR N	9929 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
117	3612022120068	DANIEL A & JERILYN A HUSEBY	9937	PONDVIEW CIR N	9937 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
118	3612022120067	D W & R M GARRISON	9945	PONDVIEW CIR N	9945 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
119	3612022120066	T D STOLL & L A STOLL	9953	PONDVIEW CIR N	9953 PONDVIEW CIR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
120	3612022120065	SCOTT ROBERT LUND	10009	ELM CREEK TR N	10009 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675

PRELIMINARY ASSESSMENT ROLL
GOOSE LAKE PARKWAY AND ELM CREEK TRAIL AREA PROJECT

Date: 11/1/2024
WSB Project No.: 026077-000

ID	PID NO	OWNER NAME	BLDG_NUM	ADDRESS	MAILING ADDRESS	CITY	ST	ZIP CODE	USE	NO. UNITS RESID.	RECLAIM AND PAVE STREET $4,675.00
121	3612022120064	D E STOHL & L M STOHL TRSTES	10017	ELM CREEK TR N	10017 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
122	3612022120063	STEVEN J AHRENHOLZ TRUST	10025	ELM CREEK TR N	10025 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
123	3612022120062	P B MAHER & M W MAHER	10129	ELM CREEK TR N	10129 ELM CREEK TR N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
124	3612022130013	B J LODGE & D A LODGE SR	10052	HIGHVIEW CT N	10052 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
125	3612022130012	R G BOIKE & I M HOLTZ	10044	HIGHVIEW CT N	10044 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
126	3612022130011	S & J PETERSON	10036	HIGHVIEW CT N	10036 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
127	3612022130010	A SEIDLITZ & K HAUSHILDT	10028	HIGHVIEW CT N	10028 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
128	3612022130009	D A ROLL & C J ROLL	10020	HIGHVIEW CT N	10020 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
129	3612022130008	T IHLENFELD & A IHLENFELD	10029	HIGHVIEW CT N	10029 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
130	3612022130007	CHAO MOUA & XAY XIONG	10037	HIGHVIEW CT N	10037 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
131	3612022130006	B WHITWORTH & J WHITWORTH	10045	HIGHVIEW CT N	10045 HIGHVIEW CT N	CHAMPLIN	MN	55316	RESIDENTIAL	1	$4,675
132	3612022120070	CITY OF CHAMPLIN	50	ADDRESS UNASSIGNED	12001 HIGHWAY 52	CHAMPLIN	MN	55316	VACANT LAND-RESIDENTIAL	0	$0
133	3612022120071	CITY OF CHAMPLIN	50	ADDRESS UNASSIGNED	12001 HIGHWAY 52	CHAMPLIN	MN	55316	VACANT LAND-RESIDENTIAL	0	$0
										131	$612,425

Appendix D

Coring Report

Geotechnical Report

Pavement Investigation Report

To: City of Champlin
11955 Champlin Dr
Champlin, MN, 55316

Date: August 29, 2024

Re: Pavement Investigation
Elm Creek Trail Neighborhood/Goose Lake Pkwy Improvements
R-026077-000

WSB is pleased to submit this report detailing the results of our field pavement investigation and recommendations for pavement rehabilitation.

Our field investigation included documenting the existing pavement conditions, obtaining pavement cores, power or hand auger drilling through any existing aggregate base and measuring and visually classify both the aggregate base and the immediate underlying subbase or subgrade material.

Based on the field data obtained and summarized in our report, we are providing recommendations on reconstruction or rehabilitation techniques that we feel would be both viable and bring the most value to meet the project goals. The recommendations provided are based solely on our understanding of those goals. Therefore many other pavement rehabilitation techniques may also be feasible.

An aerial map with the approximate core locations and a summary table of the field data obtained at each location are presented in this report. Photographs of the pavement cores obtained, along with photographs of the existing pavement surface conditions at those locations can be found in the **Appendix.**

We appreciate the opportunity to provide our professional services as part of your project and we look forward to working with you again.

If you have any questions about this report or the recommendations it contains, please don't hesitate to contact us.

Sincerely,

Matt Indihar, PE
Pavement Management
mindihar@wsbeng.com
218.341.3614

Sam Lundquist
Pavement Management
slundquist@wsbeng.com
612.214.5949

540 GATEWAY BLVD | BURNSVILLE, MN | 55337 | 952.737.4660 | WSBENG.COM

Project Understanding:

We understand the City of Champlin is seeking to improve their existing bituminous pavements at Elm Creek Trail Neighborhood and Goose Lake Pkwy through reconstruction or rehabilitation construction techniques. We understand our services were requested to aid the design team in preparing projects plans and specifications. The proposed pavement rehabilitation area includes multiple streets in the Elm Creek Trail Neighborhood and Goose Lake Pkwy from Hazelwood Lane N to Elm Creek Pkwy. We have assumed the roadways receive standard daily traffic for a residential streets.

Field Exploration:

WSB performed the field exploration outlined in this report on July 20, 2024. A total of twenty-nine (29) locations were cored and bored within the proposed pavement rehabilitation area. Precise core locations were selected to best represent the pavement condition in the vicinity surrounding the core. The approximate locations investigated and presented in this report are shown in **Figure 1**.

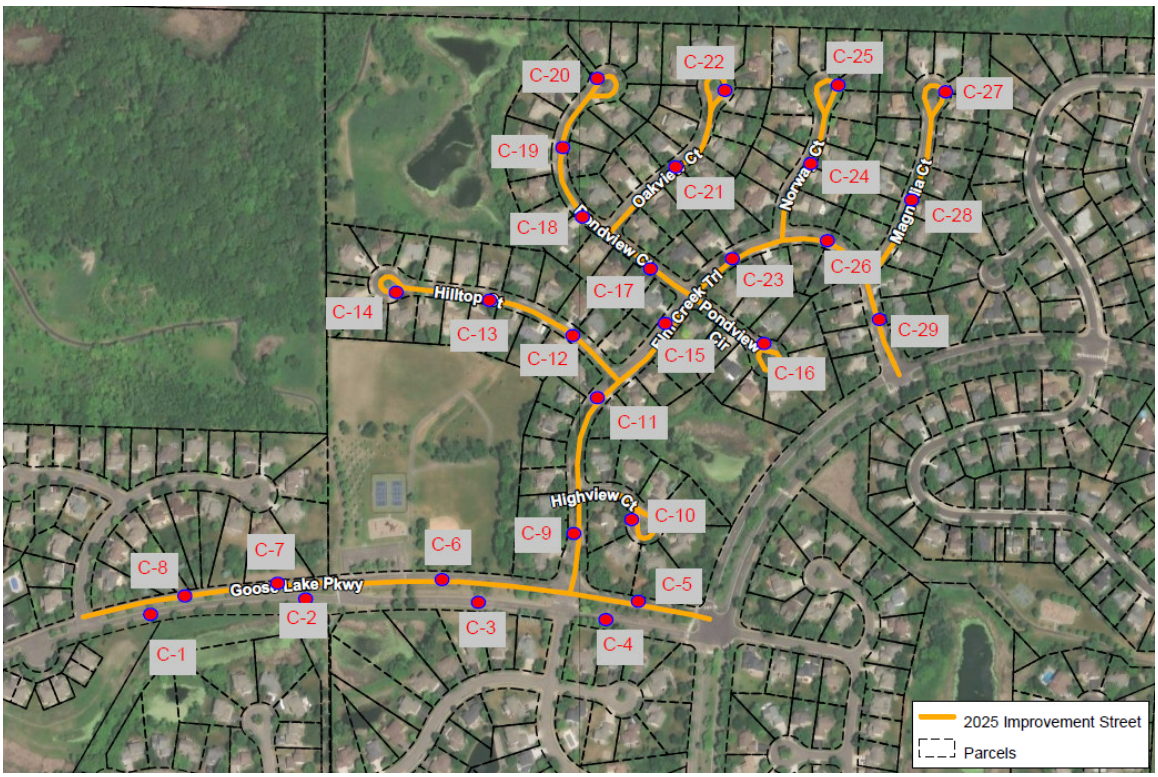


Figure 1: Core Location Map

Summary of Field Exploration:

Summary of field coring was broken up in to two sections. Core locations 1-8 on Goose Lake Pkwy and core locations 9-29 in the Elm Creek Trail neighborhood.

Goose Lake Pkwy

The eight (8) cores obtained in this area had bituminous depths ranging from 3.5 inches to 5 inches, with a wear or top lift ranging from 1.25 inches to 2.5 inches and a base or bottom lift ranging from 1 inch to 2.75 inches. The condition of each core and it's apparent lifts of asphalt were classified based on condition, and the condition of the cores and lifts ranged from poor to fair condition with poor cores exhibiting raveling and cracking. The aggregate base appeared to be sand with trace gravel, brown in color, and ranged in depths from 4.5 inches to 11 inches. The subbase in general was identified as fine-coarse grained sand, brown in color. Locations 7 and 8 were not wide enough for safe coring to be performed. See location photos in the photo log for reference. The pavement in the Project Area exhibited various amounts of surface stripping and transverse and longitudinal cracking, and some patching throughout. Refer to field notes for more detailed distresses for each sample location.

Elm Creek Trail Neighborhood

The twenty-one (21) cores obtained is this area had bituminous depths ranging from 3.25 inches to 6.5 inches, with a wear or top lift ranging from 1.5 inches to 3 inches with a base or bottom lift ranging from 1.25 inches to 3 inches with locations 11-13 and 29 having 3+ lifts of material at each location. The condition of each core and it's apparent lifts of asphalt were classified based on condition, and the condition of the cores and lifts ranged from poor to fair condition with poor cores exhibiting raveling and cracking. The aggregate base appeared to be sand with trace gravel, brown in color, and ranged in depths from 3 inches to greater than 12+ inches. The subbase varied greatly between locations and clay, clayey sand, sand, and sand with trace gravel were noted. The pavement in the Project Area exhibited various amounts of surface stripping and transverse and longitudinal cracking, and some alligator cracking throughout. Refer to field notes for more detailed distresses for each sample location.

Our Field Data is further detailed in **Table 1** and the **Photo Log** located in the Appendix.

Recommendations for Rehabilitation:

Based on the conditions of the existing bituminous and subsurface data gathered by WSB, we are recommending two rehabilitation techniques be considered.

One option we recommend is full depth pavement removal and replacement. This would entail of the complete removal and disposal of the existing bituminous pavements. The underlying base should be compacted, shaped and test rolled immediately prior to bituminous paving.

Another option we recommend would be to specify a Full Depth Reclamation (FDR) technique. This process involves grinding up the full section of existing bituminous and mixing it into the existing underling base material. The resultant product acts as a new aggregate base layer providing direct support for the new bituminous pavement section. Performing an FDR will provide additional strength and uniformity in the aggregate base layer and remove any memory cracking that might have been present in the existing section. Please see the *Key Considerations* section below for further information.

The deciding factor between these possible options may be largely dependent on the price difference at the time of bidding, project timelines and contractor availability. Both options presented should provide a long-term solution with similar maintenance requirements and total life expectancies.

Key Considerations:

The import or export of any excess base aggregates associated with the recommended rehabilitation techniques should be considered. The quantity will be highly dependent on designed profiles and structure limitations such as utility structures and any adjacent curb/gutter or driveway tie in elevations.

Any unstable base soils discovered during a test roll would likely require sub cutting and replacement. Potential costs associated with these corrections should be anticipated.

Pavement Design:

The new bituminous pavement section and pavement mix type should be designed and specified by a Civil Engineer in consideration of the loads, climate, desired life expectancy and other key factors. If requested, WSB can provide a pavement design for this project.

Limitations:

The field data presented should be considered approximate and only valid for the location investigated. We have assumed smooth transitions of the similar materials between locations when formulating the recommendations provided.

Our recommendations are based solely on the data obtained through our limited field investigations and our experience with similar reconstructive and rehabilitation work for the locale. We consider local contractor experience and industry costs associated with the various rehabilitation techniques available in conjunction with project specific details.

Appendix:

- Table 1 Existing Pavement Section Details
- Photographs of Cores
- Photographs of Existing Surface Condition

Appendix

Table 1: Existing Pavement Section Details

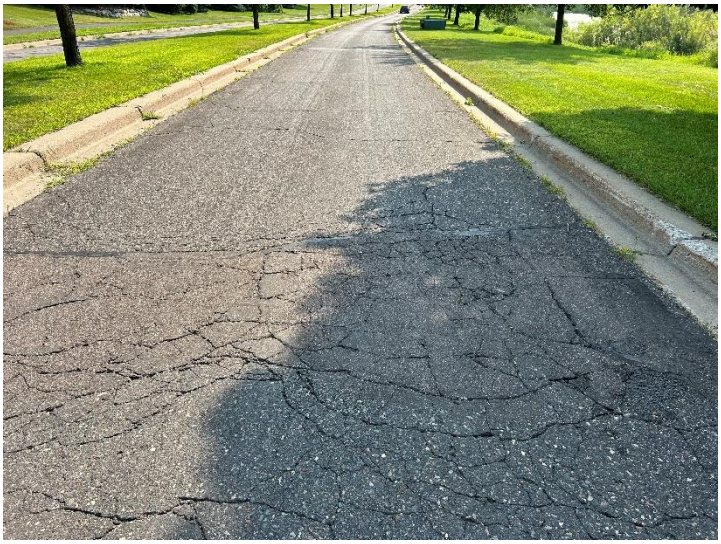
Core ID	Location	Number of Lanes	Pavement Width (ft)	Curb and Gutter	Surface Distresses	Bituminous Depth (in)	Lift Thickness (in) and Condition	Base Depth and Description	Subbase or Subgrade Description
1	Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Alligator, transverse cracking	4	1.25" - Wear 2.75" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown
2	Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Transverse, longitudinal cracking	4.5	2.5" - Wear 2" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown
3	Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Transverse cracking	4.5	2.25" - Wear 2.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-c Sand, brown
4	Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Longitudinal cracking	5	2.5" - Wear 2.5" - Base Fair - Some raveling	4.5" - Sand trace gravel, brown	f-c Sand, brown
5	Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Longitudinal cracking	3.5	2.5" - Wear 1" - Base Poor - Completely Raveled	6" - Sand trace gravel, brown	f-c Sand, brown
6	Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Some transverse, longitudinal cracking	4.75	2" - Wear 2.75" - Base Poor - Raveling	3" - Sand trace gravel, brown	f-c Sand, brown
7	Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Patching, Transverse cracking		WB lane width did not allow for safe coring (See location photos for Core 7)		
8	Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Longitudinal, transverse cracking		WB lane width did not allow for safe coring (See location photos for Core 8)		
9	Elm Creek Trail	2	24	Yes	Surface stripping	4.25	2.25" - Wear 2" - Base Poor - Raveling	12+" - Sand trace gravel, brown	Did not reach apparent change in material
10	Highview Ct	2	22	Yes	Surface stripping, some transverse cracking	3.75	1.75" - Wear 2" - Base Fair - Some raveling	3.5" - Sand trace gravel, brown	f-m Sand, brown

Core ID	Location	Number of Lanes	Pavement Width (ft)	Curb and Gutter	Surface Distresses	Bituminous Depth (in)	Lift Thickness (in) and Condition	Base Depth and Description	Subbase or Subgrade Description
11	Elm Creek Trail	2	25	Yes	Surface stripping, transverse cracking	6.5	2.5" - Wear (3+ Lifts of Material) Fair - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown
12	Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking	6	2" - Wear (3+ Lifts of material) Fair - Some base layer raveling	3" - Sand with gravel, light brown	Clay, light brown
13	Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking	5.5	2" - Wear (3+ Lifts of material) Poor - Base layer raveling	12" - Sand with gravel, light brown	Clay, light brown
14	Hilltop Ct	2	32	Yes	Surface stripping, Some transverse cracking	4.5	1.5" - Wear 3" - Base Fair - Some raveling	5" - Sand with gravel, light brown	Clay, light brown
15	Elm Creek Trail	2	24	Yes	Surface stripping, transverse cracking	4.5	2" - Wear 2.5" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown
16	Pondview Circle	2	22	Yes	Surface stripping, transverse cracking	3.75	1.75" - Wear 2" - Base Fair - Some base layer raveling	6" - Sand trace gravel, brown	f-m Sand, brown
17	Pondview Ct	2	21	Yes	Surface stripping, Some alligator, transverse cracking	5	2.5" - Wear 2.5" - Base Poor - Base layer raveling	4" - Gravel, light brown	Clayey Sand, Light brown
18	Pondview Ct	2	24	Yes	Surface stripping, patching, transverse cracking	5	2.5" - Wear 2.5" - Base Poor - Raveling	7" - Gravel, Light brown	Clay, brown
19	Pondview Ct	2	24	Yes	Surface stripping, transverse, longitudinal cracking	5	2.25" - Wear 2.75" - Base Fair - Some base layer raveling	8.5" - Sand with gravel, light brown	Clay, brown
20	Pondview Ct	2	24	Yes	Surface stripping, Some transverse cracking	5	2.5" - Wear 2.5" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clay, brown

Core ID	Location	Number of Lanes	Pavement Width (ft)	Curb and Gutter	Surface Distresses	Bituminous Depth (in)	Lift Thickness (in) and Condition	Base Depth and Description	Subbase or Subgrade Description
21	Oakview Ct	2	22	Yes	Surface stripping, transverse cracking	4	1.75" - Wear 2.25" - Base Poor - Raveling	6" - Sand with gravel, light brown	Clayey Sand, brown
22	Oakview Ct	2	24	Yes	Surface stripping, transverse cracking	5.5	2.5" - Wear 3" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clayey Sand, brown
23	Elm Creek Trail	2	24	Yes	Surface stripping, transverse, longitudinal cracking	4	2.25" - Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown
24	Norway Ct	2	24	Yes	Surface stripping, transverse cracking	3.5	2" - Wear 1.5" - Base Good Condition	4" - Sand trace gravel, brown	f-m Sand, brown
25	Norway Ct	2	24	Yes	Surface stripping, alligator, transverse cracking	3.5	1.75" - Wear 1.75" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown
26	Elm Creek Trail	2	24	Yes	Surface stripping, patching, transverse cracking	4	2.25" Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	Sand trace gravel, brown
27	Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking	3.25	2" - Wear 1.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-m Sand, brown
28	Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking	4.5	3" - Wear 1.5" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown
29	Elm Creek Trail	2	28	Yes	Surface stripping, patching, transverse cracking	6.25	2.25" - Wear (3+ Lifts of material) Poor - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 1

Street Photos



Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Alligator, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	1.25" - Wear 2.75" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown

Core 2

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	2.5" - Wear 2" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown

Core 3

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	2.25" - Wear 2.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-c Sand, brown

Core 4

Street Photos

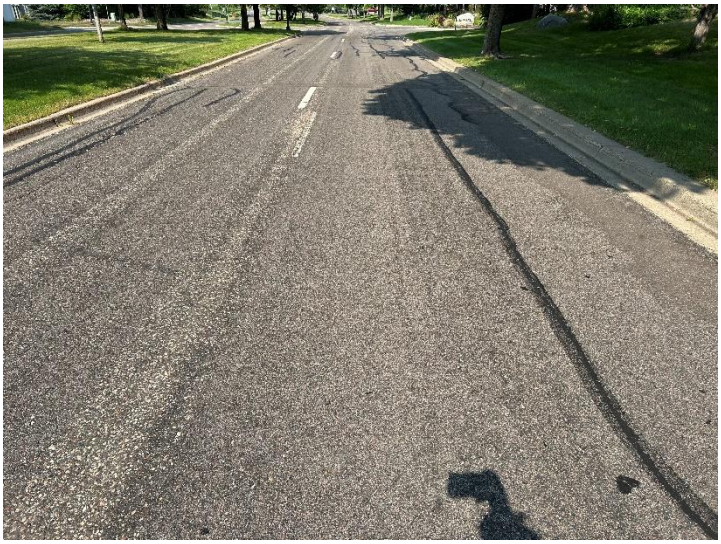
Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Fair - Some raveling	4.5" - Sand trace gravel, brown	f-c Sand, brown

Core 5

Street Photos



Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.5	2.5" - Wear 1" - Base Poor - Completely Raveled	6" - Sand trace gravel, brown	f-c Sand, brown

Core 6

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Some transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.75	2" - Wear 2.75" - Base Poor - Raveling	3" - Sand trace gravel, brown	f-c Sand, brown

Core 7

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Patching, Transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
	WB lane width did not all for safe coring	(see photos above)	

Core 8

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Longitudinal, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
	WB lane width did not all for safe coring	(see photos above)	

Core 9

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.25	2.25" - Wear 2" - Base Poor - Raveling	12+" - Sand trace gravel, brown	Did not reach apparent change in material

Core 10

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Highview Ct	2	22	Yes	Surface stripping, some transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.75	1.75" - Wear 2" - Base Fair - Some raveling	3.5" - Sand trace gravel, brown	f-m Sand, brown

Core 11

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	25	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
6.5	2.5" - Wear (3+ Lifts of Material) Fair - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 12

Street Photos

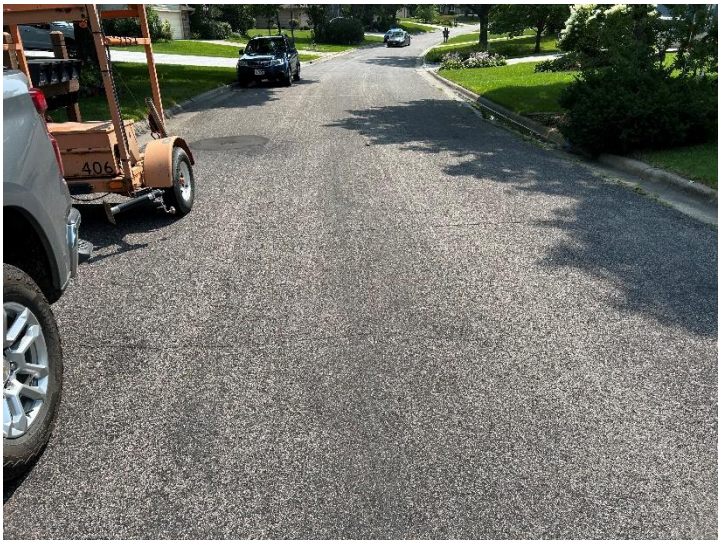
Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
6	2" - Wear (3+ Lifts of material) Fair - Some base layer raveling	3" - Sand with gravel, light brown	Clay, light brown

Core 13

Street Photos



Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5.5	2" - Wear (3+ Lifts of material) Poor - Base layer raveling	12" - Sand with gravel, light brown	Clay, light brown

Core 14

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Hilltop Ct	2	32	Yes	Surface stripping, Some transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	1.5" - Wear 3" - Base Fair - Some raveling	5" - Sand with gravel, light brown	Clay, light brown

Core 15

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	2" - Wear 2.5" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 16

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Circle	2	22	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.75	1.75" - Wear 2" - Base Fair - Some base layer raveling	6" - Sand trace gravel, brown	f-m Sand, brown

Core 17

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	21	Yes	Surface stripping, Some alligator, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Poor - Base layer raveling	4" - Gravel, light brown	Clayey Sand, Light brown

Core 18

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	24	Yes	Surface stripping, patching, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Poor - Raveling	7" - Gravel, Light brown	Clay, brown

Core 19

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	24	Yes	Surface stripping, transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.25" - Wear 2.75" - Base Fair - Some base layer raveling	8.5" - Sand with gravel, light brown	Clay, brown

Core 20

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	24	Yes	Surface stripping, Some transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clay, brown

Core 21

Street Photos

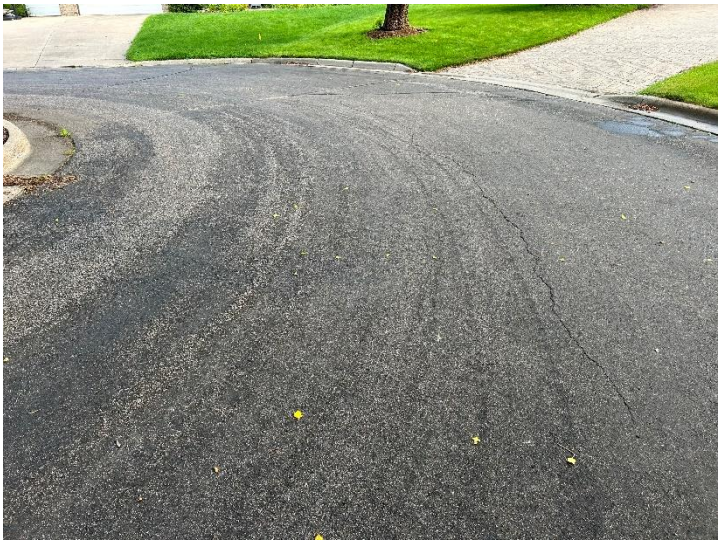
Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Oakview Ct	2	22	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	1.75" - Wear 2.25" - Base Poor - Raveling	6" - Sand with gravel, light brown	Clayey Sand, brown

Core 22

Street Photos



Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Oakview Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5.5	2.5" - Wear 3" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clayey Sand, brown

Core 23

Street Photos

Core Photos

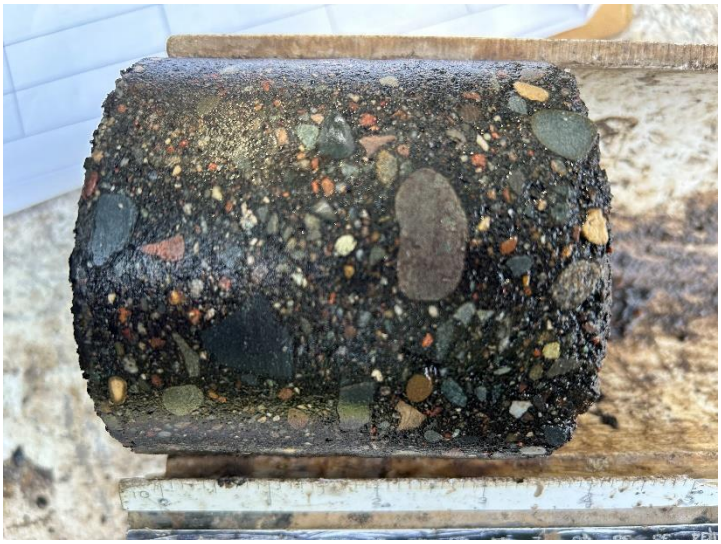
Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping, transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	2.25" - Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 24

Street Photos

Core Photos



Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Norway Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.5	2" - Wear 1.5" - Base Good Condition	4" - Sand trace gravel, brown	f-m Sand, brown

Core 25

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Norway Ct	2	24	Yes	Surface stripping, alligator, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.5	1.75" - Wear 1.75" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 26

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping, patching, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	2.25" Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	Sand trace gravel, brown

Core 27

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.25	2" - Wear 1.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-m Sand, brown

Core 28

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	3" - Wear 1.5" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 29

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	28	Yes	Surface stripping, patching, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
6.25	2.25" - Wear (3+ Lifts of material) Poor - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

City of Champlin

GEOTECHNICAL REPORT

ELM CREEK TRAIL NEIGHBORHOOD AND GOOSE LAKE PARKWAY IMPROVEMENTS

CHAMPLIN, MINNESOTA

November 4, 2024

Prepared for:
City of Champlin
11955 Champlin Drive
Champlin, MN 55316

WSB PROJECT NO. 026077-000

wsb

GEOTECHNICAL REPORT

ELM CREEK TRAIL NEIGHBORHOOD AND GOOSE LAKE PARKWAY IMPROVEMENTS

FOR
CITY OF CHAMPLIN

November 4, 2024

CERTIFICATION

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.

Mark W. Osborn, PE

Date: November 4, 2024 Lic. No. 41362

November 4, 2024

Heather Nelson
City Engineer
City of Champlin
11955 Champlin Drive
Champlin, MN 55316

Re: Geotechnical Report
Elm Creek Trail Neighborhood and Goose Lake Parkway Improvements
WSB Project No.: 026077-000

We have conducted a geotechnical subsurface exploration program for the above-mentioned project. This report contains our soil boring and core logs, an evaluation of the conditions encountered in the borings and our recommendations for subgrade improvements, underground utilities, estimated R-Value, pavement design, and other geotechnical related design and construction considerations.

If you have questions concerning this report or our recommendations, or for construction material testing for this project, please call us at 952.737.4660.

Sincerely,

WSB

Mark Osborn, PE
Senior Geotechnical Engineer

Alex Wacek, EIT
Graduate Geotechnical Engineer

Attachment:
Geotechnical Report

MWO/ams

540 GATEWAY BLVD | BURNSVILLE, MN | 55337 | 952.737.4660 | WSBENG.COM

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Project Location

The site is in Champlin, Minnesota. Borings were taken along Goose Lake Parkway, Elm Creek Trail, and Hilltop Court. One boring was also taken in greenspace at Highpointe Park. The approximate soil boring locations can be found on the Soil Boring Exhibit in ***Appendix A***.

1.2 Project Description

We understand the following roads are planned to receive street improvements and a limited storm sewer improvement: Goose Lake Parkway, Elm Creek Trail, Highview Court, Hilltop Court, Pondview Circle, Pondview Court, Oakview Court, Norway Court and Magnolia Court. A stormwater infiltration pond is planned to be constructed at Highpointe Park.

We understand that the vertical and horizontal alignment of the roadway will remain similar to existing conditions.

WSB has developed recommendations for this project in consideration of the proposed layout and configurations as understood at this time. When the designer develops additional information about final design or other significant factors, the recommendations presented herein may no longer apply. WSB should be made aware of the revised or additional information to evaluate the recommendations for continued applicability.

1.3 Purpose and Project Scope of Services

The City of Champlin authorized this scope of service. In order to assist the design team in preparing plans and specifications, we have developed recommendations for designing subgrades and pavements. As such, we have completed a subsurface exploration program and prepared a geotechnical report for the referenced site. This stated purpose was a significant factor in determining the scope and level of service provided. Should the purpose of the report change the report immediately ceases to be valid and use of it without WSB's prior review and written authorization should be at the user's sole risk.

Our authorized scope of work has been limited to:

1. Clearing underground utilities utilizing Gopher State One Call.
2. Mobilization / demobilization of a truck mounted drill rig.
3. Drilling 6 standard penetration borings to about 5-foot depths.
4. Drilling 1 standard penetration borings to about 10-foot depths.
5. Sealing the borings per Minnesota Department of Health procedures.
6. Perform soil classification and analysis.
7. Review of available project information and geologic data.
8. Providing this geotechnical report containing:
    a. Summary of our findings.
    b. Discussion of subsurface soil and groundwater conditions and how they may affect the proposed utilities and pavements.
    c. Estimated R-value of the soils.
    d. Recommended pavement section.
    e. A discussion of soils for use as structural fill and site fill.
9. Core bituminous pavement at 29 locations and provide:
    a. Data obtained from coring and included pictures of each core.

2. PROCEDURES

2.1 Boring Layout and Soil Sampling Procedures

WSB completed 7 standard penetration soil borings and drilled 29 bituminous cores at the project site. WSB recommended the boring depths and selected the desired locations. Our field crew staked the borings using the supplied site plan. The approximate boring locations are shown on the Soil Boring Exhibit in ***Appendix A*** which is an aerial photo. The ground surface elevations at the borings were estimated by using LIDAR data with 2 foot contours. These maps should be accurate to within +/- one foot (1') provided ground surface modifications at this site have not been completed since LIDAR data was obtained.

We completed the borings on September 16, 2024, with a truck-mounted CME-55 drill rig operated by a two-person crew. The drill crew advanced the borings using continuous hollow stem augers. The drilling information is provided on the boring logs.

Generally, the drill crew sampled the soil in advance of the auger tip at two and one-half (2 ½) foot intervals to the termination depth of the borings. The soil samples were obtained using a split-barrel sampler which was driven into the ground during standard penetration tests in accordance with ASTM D 1586, Standard Method of Penetration Test and Split-Barrel Sampling of Soils. The materials encountered were described on field logs and representative samples were containerized and transported to our laboratory for further observation and testing.

The samples were visually observed to estimate the distribution of grain sizes, plasticity, consistency, moisture condition, color, presence of lenses and seams, and apparent geologic origin. We classified the soils according to type using the Unified Soil Classification System (USCS). A chart describing the USCS is included in ***Appendix A***.

The bituminous core drilling was conducted on July 20, 2024, with a truck mounted core drill utilizing a 4" diameter core barrel. The bituminous cores were labeled, photographed and retained for further review at the laboratory. After extracting the bituminous core, an auger was used to measure aggregate base thickness, and the underlying subgrade was sampled and visually identified. During coring operations, the field crew also noted the conditions witnessed in the field including surface distresses and drainage conditions. A spreadsheet containing this information is included in Appendix A.

2.2 Groundwater Measurements and Borehole Abandonment

The drill crew observed the borings for free groundwater while drilling and after completion of the borings. These observations and measurements are noted on the boring logs. The crew then backfilled the borings to comply with Minnesota Department of Health regulations.

2.3 Boring Log Procedures and Qualifications

The subsurface conditions encountered by the borings are illustrated on the Logs of Test Borings in ***Appendix A***. Similar soils were grouped into the strata shown on the boring logs, and the appropriate estimated USCS classification symbols were also added. The depths and thickness of the subsurface strata indicated on the boring logs were estimated from the drilling results.

The transition between materials (horizontal and vertical) is approximate and is usually far more gradual than shown. Information on actual subsurface conditions exists only at the specific locations indicated and is relevant only to the time exploration was performed. Subsurface conditions and groundwater levels at other locations may differ from conditions found at the indicated locations. The nature and extent of these conditions would not become evident until exposed by construction excavation. These stratification lines were used for our analytical purposes and due to the aforementioned limitations, should not be used as a basis of design or construction cost estimates.

3. EXPLORATION RESULTS

3.1 Site and Geology

The borings were drilled directly on the roadway and in greenspace. Boring elevations ranged from 870.5 to 902.5 feet.

Geologic origins can be difficult to determine solely from boring samples. We referenced online geologic data of the area and used our experience to help determine geologic origin of the soils, however only a detailed geologic exploration would accurately determine the geologic history of the site.

The Hennepin County Geologic Atlas indicates the surficial geology of the area is glacial till, consisting of mixtures of sands, silts, and clays with scattered cobbles and gravel.

3.2 Subsurface Soil and Groundwater Conditions

The boring profile generally consisted of topsoil and a pavement section overlying fills and glacial till deposits.

Topsoil

The topsoil encountered in the borings generally consisted of about 4-inches of lean clay.

Pavement Section

The pavement section encountered in the borings consisted of 4 – 5 inches of bituminous pavement overlying 4 – 12 inches of aggregate base. The aggregate base materials generally consisted of sands with gravel, except for Boring B-6 which had crushed limestone.

Fills

The fills encountered in the borings generally consisted of clayey sands, sands, and lean clays. These soils were 1 – 6 feet in thickness where encountered.

Glacial

The glacial deposits encountered in the borings generally consisted of lean clays and clayey sands. The lean clays were brown, brown with grayish brown, and gray in color and were wet. The clayey sands were brown, light brown, and light grayish brown in color and were wet.

Boring Profiles

Tables 1 below presents the existing roadway pavement section and subgrade profiles.

Table 1: Existing Profiles – Borings

Boring No.	Bituminous Thickness (inches)	Aggregate Base Thickness (inches)	Topsoil Thickness (inches)	Subgrade Soils (Upper 4 feet)
B-1	n/a	n/a	4	Clayey Sand (fill)
B-2	4	12+	n/a	Sand (fill), Sandy Lean Clay
B-3	4	4	n/a	Sand (fill), Clayey Sand (fill)
B-4	4	4	n/a	Sand (fill), Lean Clay (fill), Sandy Lean Clay
B-5	4.5	4.5	n/a	Clayey Sand
B-6	5	4.5	n/a	Sandy Lean Clay, Clayey Sand
B-7	n/a	n/a	4	Sandy Lean Clay (fill)

Table 2: Existing Profiles – Coring

Core No.	Location	Bituminous Thickness (inches)	Aggregate Base Thickness (inches)	Condition	Surface Distresses
C-1	Goose Lake Parkway (EB)	4	11	Poor – raveling	Surface stripping, alligator and transverse cracking
C-2	Goose Lake Parkway (EB)	4.5	11	Poor – raveling	Surface stripping, Transverse and longitudinal cracking
C-3	Goose Lake Parkway (EB)	4.5	5	Poor – raveling	Surface stripping, Patching, Transverse cracking
C-4	Goose Lake Parkway (EB)	5	4.5	Fair – some raveling	Surface stripping, Patching, Longitudinal cracking
C-5	Goose Lake Parkway (WB)	3.5	6	Poor – complete raveled	Surface stripping, Longitudinal cracking
C-6	Goose Lake Parkway (WB)	4.75	3	Poor – raveling	Surface stripping, Some transverse, longitudinal cracking
C-7	Goose Lake Parkway (WB)	Coring not performed			Surface stripping, patching, transverse cracking
C-8	Goose Lake Parkway (WB)	Coring not performed			Surface stripping, longitudinal and transverse cracking
C-9	Elm Creek Trail	4.25	12+	Poor – raveling	Surface stripping
C-10	Highview Ct	3.75	3.5	Fair – some raveling	Surface stripping, some transverse cracking
C-11	Elm Creek Trail	6.5	4	Fair – base layer raveling	Surface stripping, transverse cracking
C-12	Hilltop Ct	6	3	Fair – some base layer raveling	Surface stripping, transverse cracking
C-13	Hilltop Ct	5.5	12	Poor – base layer raveling	Surface stripping, transverse cracking
C-14	Hilltop Ct	4.5	5	Fair – some raveling	Surface stripping, Some transverse cracking
C-15	Elm Creek Trail	4.5	4	Fair – some base layer raveling	Surface stripping, transverse cracking

Core No.	Location	Bituminous Thickness (inches)	Aggregate Base Thickness (inches)	Condition	Surface Distresses
C-16	Pondview Circle	3.75	6	Fair – some base layer raveling	Surface stripping, transverse cracking
C-17	Pondview Ct	5	4	Poor – base layer raveling	Surface stripping, Some alligator and transverse cracking
C-18	Pondview Ct	5	7	Poor – raveling	Surface stripping, patching, transverse cracking
C-19	Pondview Ct	5	6.5	Fair – some base layer raveling	Surface stripping, transverse and longitudinal cracking
C-20	Pondview Ct	5	5	Poor – raveling	Surface stripping, Some transverse cracking
C-21	Oakview Ct	4	6	Poor – raveling	Surface stripping, transverse cracking
C-22	Oakview Ct	5.5	5	Poor – raveling	Surface stripping, transverse cracking
C-23	Elm Creek Trail	4	4	Fair – some base layer raveling	Surface stripping, transverse and longitudinal cracking
C-24	Norway Ct	3.5	4	Good	Surface stripping, transverse cracking
C-25	Norway Ct	3.5	4	Poor – raveling	Surface stripping, alligator and transverse cracking
C-26	Elm Creek Trail	4	4	Fair – some base layer raveling	Surface stripping, patching, transverse cracking
C-27	Magnolia Ct	3.25	5	Poor – raveling	Surface stripping, transverse cracking
C-28	Magnolia Ct	4.5	4	Poor – raveling	Surface stripping, transverse cracking
C-29	Elm Creek Trail	6.25	4	Poor – base layer raveling	Surface stripping, patching, transverse cracking

3.3 Strength Characteristics

The penetration resistance N-values of the materials encountered were recorded during drilling and are indicated as blows per foot (BPF). Those values provide an indication of soil strength characteristics and are located on the boring log sheets. Also, visual-manual classification techniques and apparent moisture contents were also utilized to make an engineering judgment of the consistency of the materials.

Table 3 presents a summary of the penetration resistances (N-value which are indicated by Blows Per Foot BPF) in the soils for the borings completed and remarks regarding the material strengths of the soils.

Table 3: Penetration Resistances

Soil Type	Classification	Penetration Resistances	Remarks
Fill (cohesionless)	SP, SP-SC, SC	4 – 7 BPF	Very loose to loose
Fill (cohesive)	CL	3 – 5 BPF	Very soft to soft
Glacial (cohesionless)	SC	4 – 6 BPF	Very loose to loose
Glacial (cohesive)	CL	3 – 9 BPF	Very soft to firm

The preceding is a generalized description of soil conditions at this site. Variations from the generalized profile exist and should be assessed from the boring logs, the normal geologic character of the deposits, and the soils uncovered during site excavation.

3.4 Groundwater Conditions

WSB took groundwater level readings in the exploratory borings, reviewed the data obtained, and discussed its interpretation of the data in the text of the report. Note that groundwater levels may fluctuate due to seasonal variations (e.g. precipitation, snowmelt and rainfall) and/or other factors not evident at the time of measurement.

No groundwater was encountered during the drilling process; however, moist to wet soils were noted. Gray colored soils were encountered in Borings B-1, B-2, B-6, and B-7. Gray colored soils can be an indication of long-term saturation conditions and could show potential groundwater elevations. The shallow groundwater could present an issue to excavations and placement of foundations and for utility installation. It is our opinion that wet soils, waterbearing sand lenses, and perched groundwater could be encountered at this site and could affect construction operations.

Goose Lake is located approximately two-thirds of a mile to the southeast of the project. According to online data from the Minnesota Department of Natural Resources, Goose Lake has an ordinary high-water level of 875 feet.

The bore holes were only left open for a short period of time, and groundwater levels may not have stabilized.

It should be noted that groundwater readings are difficult to obtain in cohesive soils such as the lean clays indicated in the boring logs. These soils have a low permeability and take a long period of time to obtain groundwater readings in. If more accurate subsurface water levels are needed, we recommend piezometers be installed to determine the groundwater level over several months. Monitoring groundwater table elevation could occur up to the time of construction. This work was outside our scope of services.

4. ENGINEERING ANALYSIS AND RECOMMENDATIONS

4.1 Discussion

Organic soils and vegetated root zones are not suitable for structural support and should be removed from the roadway and engineered fill areas.

Many of the soils encountered were wet. Wet soils encountered in our borings will likely be wet when excavated and require significant drying prior to reuse as structural backfill and fill. Drying of wet clayey soils is generally accomplished via discing and drying which requires time and an area to place and spread the wet soils. Considering utility trenches typically need to be backfilled shortly after placing the utilities, time is a factor and many project sites do not plan an area for drying or have the room to spread the soils. In addition, construction during wet and cooler times of the year will inhibit the effectiveness of this method. In such conditions excavation and replacement of wet soils or chemical stabilization/drying such as the use of lime may be considered. We suggest the contractors bidding on the work have a soil moisture conditioning plan to allow for reuse of as much onsite soils as possible and to reduce import of sand. A cost for removal and replacement of wet clays should also be provided.

The existing fills below the pavement areas consisted of sand, clayey sand, and lean clays. We did not encounter any organic materials or debris within the existing fills. These fills have been in place for years to support the roadway; therefore it is our opinion they are suitable to remain in place below roadway areas or to be used as fill materials if they meet the compaction and moisture requirements. The fills should be carefully observed during excavations for the presence of any organics or debris that would require additional removals.

Based on the results of our borings, the glacially deposited soils generally appear capable of supporting the roadway.

The cores indicated poor to fair conditions of the bituminous asphalt. The cores were noted as having raveling in the layers indicating deterioration of the materials. We also noted surface stripping, patching, alligator cracking, transverse and longitudinal cracking. Based on these observations it is our opinion that full pavement reconstruction is the best option.

General

Generally, the soils in the upper 4 feet of the subgrade influence pavement performance the most. The soils within the pavement subgrade consist of clayey soils, which are frost susceptible soils. Consideration should be given to partially subcutting these soils and replacing them with a non-frost susceptible granular fill to reduce the potential frost heave below the pavement section.

4.2 Backfill and Fill Selection and Compaction

The on-site non-organic soils may be reused as backfill and fill, provided they are moisture conditioned and can be compacted to their specified densities. Wet soils that are excavated would need to be dried before being reused as an engineered fill. We recommend using a minimum of 2 feet of clean coarse sand with less than 50 percent passing the #40 sieve and less than 5 percent passing the #200 sieve when backfilling the bottom of a wet excavation.

Gravel or cobbles larger than 2 inches in diameter should not be placed within 2 feet of grading grade or utilities. We recommend that clayey soils be moisture conditioned to within +/-2 percent of the optimum moisture content as determined from their standard Proctor tests (ASTM D-698). Granular fills should be moisture conditioned to between -4% and +2% of the optimum moisture content. Fill should be spread in lifts of 6 inches, depending on the size and type of compaction equipment used.

Table 4 provides the recommended compaction levels.

Table 4: Recommended Level of Compaction for Backfill and Fill

Area	Percent of Standard Proctor Maximum Dry Density
Pavement: Within 3 feet of bottom of aggregate base	100
Pavement: Greater than 3 feet below aggregate base	95
Utility Trench and Utility Structure Backfill	100
Landscaping (non-structural)	90

4.3 Pavement Subgrade Preparation and Stability

We recommend excavation of organics below the pavement areas.

The soils at the bottom of the excavation should be prepared in accordance with MnDOT Specification 2112, Subgrade Preparation. Before placement of the sand subbase, the final subgrade should have proper stability within three vertical feet of grading grade (grade which contacts the bottom of the aggregate base). This will generally be achieved in fill areas with proper compaction of embankment materials and in cut areas through proper subgrade preparation. The stability of the pavement subgrade should be evaluated prior to placement of the sand subbase using the test roll procedure (MnDOT 2111), except a fully loaded tandem axle dump truck or a full water truck should be utilized for the test roll. If unstable soils are found under the test roll, these soils should be improved by means of scarification, moisture conditioning, and re-compaction, or by subcutting and replacement.

4.4 Pavement Area

Once the site has been prepared as recommended, we anticipate the prepared subgrade soils will consist mostly of sands, clayey sands, and lean clays. Based on the MnDOT Flexible Pavement Guide from 2020, the R-values of the subgrade soils would range between 10 and 70. We used a design R-value of 15 for the roadway.

We used historical traffic data from the MnDOT Traffic Mapping Application to determine the estimated Equivalent Single Axle Loads (ESAL's) for roadway design to be approximately 238,000. Our design is based on a standard twenty (20) year design life of the urban pavement section and a 10-ton road design.

Based on MnDOT's FlexPave excel design utilizing granular equivalent charts, we recommend the granular equivalent be a minimum of 20.40. Our recommended pavement section is indicated below in Table 5.

Table 5: Recommended Flexible Pavement Section

Section	Thickness (inches)	Granular Equivalent
Bituminous Course, MnDOT 2360 SPWEB240C	2	4.5
Bituminous Course, MnDOT 2360 SPNWB240C	2	4.5
Aggregate Base, MnDOT 3138 (Class 5)	6	6
Select Granular, MnDOT 3149.2.B.2	12	6
Geotextile Fabric, MnDOT 3733.1, Type 9	Yes	-
Subgrade Preparation, MnDOT 2112	Yes	-
TOTAL	-	21

Aggregate base placement for pavement support should meet the gradation and quality requirements for Class 5 per MnDOT specification 3138. Aggregate base material should be compacted to 100 percent of its standard Proctor maximum dry density.

Within several years after initial paving, some thermal shrinkage cracks will develop. We recommend routine maintenance be performed to improve pavement performance and increase pavement life. Pavement should be sealed with a liquid bitumen sealer to retard water intrusion into the base course and subgrade. Localized patch failures may also develop where trucks or buses turn on the pavement. When these occur, they should be cut out and patch repaired.

The pavement sections above provide options to meet the ESAL requirements. Other pavement design options would be acceptable if they meet the minimum requirements for bituminous thickness, aggregate base thickness, and can meet the ESAL requirements.

Drainage of the sand subbase is recommended. Drainage of the sand subbase may be accomplished by daylighting to adjacent ditches or the use of drain tile. Drain tile wrapped in a sock should be placed at the base of the sand subbase and tied into catch basins.

4.5 Optional Frost-Free Pavement Design

Optionally, the use of a non-frost susceptible sand cushion will help reduce the effects of frost heave. In our opinion, placement of 20 inches of select granular fill below the Class 5 Aggregate Base should generally provide for a non-frost susceptible subgrade per MnDOT Standards. It should be noted that any sand cushion placed below the pavement section will provide positive benefits for reduced potential frost heave. The owner and/or design team should evaluate the costs and benefit of this option to determine if it should be incorporated into the pavement design.

Drainage of the sand cushion is recommended. Drainage of the sand cushion may be accomplished by daylighting to adjacent ditches or the use of drain tile. Drain tile wrapped in a sock should be placed at the base of the sand cushion and tied into catch basins. We recommend the sand cushion contain a select granular sand with less than 12% passing the #200 sieve. Alternately, a 3 inch minus rock fill could be placed instead of a select granular sand and drain tile.

For transitioning the thickness of the sand subbase along the profile of the roadway, we recommend the thickness have a longitudinal taper of no steeper than 10H:1V. A taper of 4H:1V can be used perpendicular to the centerline for cross street/driveway connections. The placement of the sand subbase should extend slightly beyond the outer edge of the curbs to maintain subgrade uniformity for frost movement.

4.6 Infiltration

We understand that The City would like to construct an infiltration pond at Highpointe Park.

A 200 Wash test was conducted on soils encountered in Boring B-7 to determine the percentage of fines present in the soil. The depth chosen for the test was about 10-feet below existing grade. The result was 98% fines, meaning 2% of the soil sample consists of sand. We would classify the soil as Lean Clay (CL). Due to the composition of the soil, the soils encountered at Boring B-7 would be considered very poor for construction of infiltration ponds.

Table 6 below presents the estimated infiltration rates of soils across the entire site based on the Unified Soil Classification System are recommendations by the Minnesota Stormwater Design Manual (updated April 5, 2023).

Table 6: Estimated Infiltration Rates per MN Stormwater Design Manual

Soil Classification USCS	Estimated Infiltration Rate (Inches / Hour)
CL, SC, OL	0.06

4.7 Utilities

Invert elevations for the storm utilities are anticipated to be within 5 feet of existing grades. Based on the borings, the subgrade soils for the utilities will consist chiefly of clayey sands and lean clays.

Underground utilities are expected to be installed by backhoes completing the excavations and placing fills. Soil compactors should be used to compact fills in even lifts to the specified densities.

4.8 Dewatering

Wet and saturated soils were encountered in the borings at shallow excavations. Groundwater could enter the excavations. Dewatering can likely be accomplished with sumps and pumps placed at low points in the utility trenches.

4.9 Construction Considerations

Good surface drainage should be maintained throughout the work so that the site is not vulnerable to ponding during or after a rainfall. If water enters the excavations, it should be promptly removed prior to further construction activities. Under no circumstances should fill or concrete be placed into standing water.

Soil corrections at this site for foundations and pavement subgrades may not be continuous. We recommend tapering the fills back to native soils at a ten to one (10H:1V) slope.

It is important to review the fill limits and total depth of fill when placing structures upon compacted materials and when filling the excavation. The location of the footings should allow for at least a one to one (1:1) slope from the bottom of the footing to the outside limits of the engineered fill.

It is important to check this at the time of construction that during filling, unsuitable soils do not encroach within the one to one (1:1) slope limits and extend downward and outward from future footings.

4.10 Construction Safety

All excavations should comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P "Excavations and Trenches". This document states that excavation safety is the responsibility of the contractor. Reference to this OSHA requirement should be included in the job specifications.

The responsibility to provide safe working conditions on this site, for earthwork, building construction, or any associated operations is solely that of the contractor. This responsibility is not borne in any manner by WSB.

4.11 Cold Weather Construction

It is our understanding that construction is unlikely to occur during the winter months. However, if the construction does continue into the winter months we recommend the following guidelines.

Roadbeds should not be constructed during periods when the material freezes while being placed and compacted, nor should material be placed on soil that is frozen to a depth greater than 4 inches. When the soils are frozen to a depth exceeding 4 inches, at a time when weather conditions are such that construction could be continued without the material freezing as it is being placed and compacted, the contractor may be permitted to excavate the frozen soil and proceed with the construction for so long as the weather permits. The frozen soils should be pulverized or replaced with other suitable soils. Only unfrozen fill should be used.

Placement of fill and/or foundation concrete should not be permitted on frozen soil, and the bearing soils under footings or under the floor slab should not be allowed to freeze after concrete is placed, because excessive post-construction settlement could occur as the frozen soils thaw.

4.12 Field Observation and Testing

The soil conditions illustrated on the Logs of Test Borings in ***Appendix A*** are indicative of the conditions only at the boring locations. For this reason, we recommend that excavations at this site be observed by a soil engineer or technician prior to fill or backfill placement or construction of foundation elements to determine if the soils can support the fill backfill and/or foundation loads. These observations are recommended to judge if the unsuitable materials have been removed from within the planned construction area and an appropriate degree of lateral oversize has been provided.

WSB also recommends a representative number of field density tests be taken in engineered fill and backfill placed to aid in judging its suitability. Fill placement and compaction should be monitored and tested to determine that the resulting fill and backfill conforms to specified density, strength or compressibility requirements. We recommend at least one compaction test for every 2,000 square feet of building area at vertical intervals not exceeding two (2) feet, and one compaction test for every 150 feet of utility trench at a vertical interval of two (2) feet. Prior to use, proposed fill and backfill material should be submitted to the WSB laboratory for testing to verify compliance with recommendations and project specifications.

Dynamic Cone Penetrometer (DCP) tests can be completed in the aggregate base in lieu of density testing. We recommend following MnDOT Specification 2211.3.D.2.c.

WSB would be pleased to provide the advised field observation, monitoring and testing services during construction.

4.13 Plan Review and Remarks

The observations, recommendations and conclusions described in this report are based primarily on information provided to WSB, obtained from our subsurface exploration, our experience, several assumptions and the scopes of service developed for this project and are for the sole use of our client. We recommend that WSB be retained to perform a review of final design drawing and specifications to evaluate that the geotechnical engineering report has not been misinterpreted. Should there be changes in the design or location of the structures related to this project or if there are uncertainties in the report we should be notified. We would be pleased to review project changes and modify the recommendations in this report or provide clarification in writing.

The entire report should be kept together; for example, boring logs should not be removed and placed in specifications separately.

The boring and core logs and related information included in this report are indicators of the subsurface conditions only at the specific locations indicated on the Soil Boring Exhibit and Core Exhibit and times noted on the Logs of Test Boring sheets in ***Appendix A***. The subsurface conditions, including groundwater levels, at other locations on the site may differ significantly from conditions that existed at the time of sampling and at boring locations.

The test borings were completed by WSB solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.

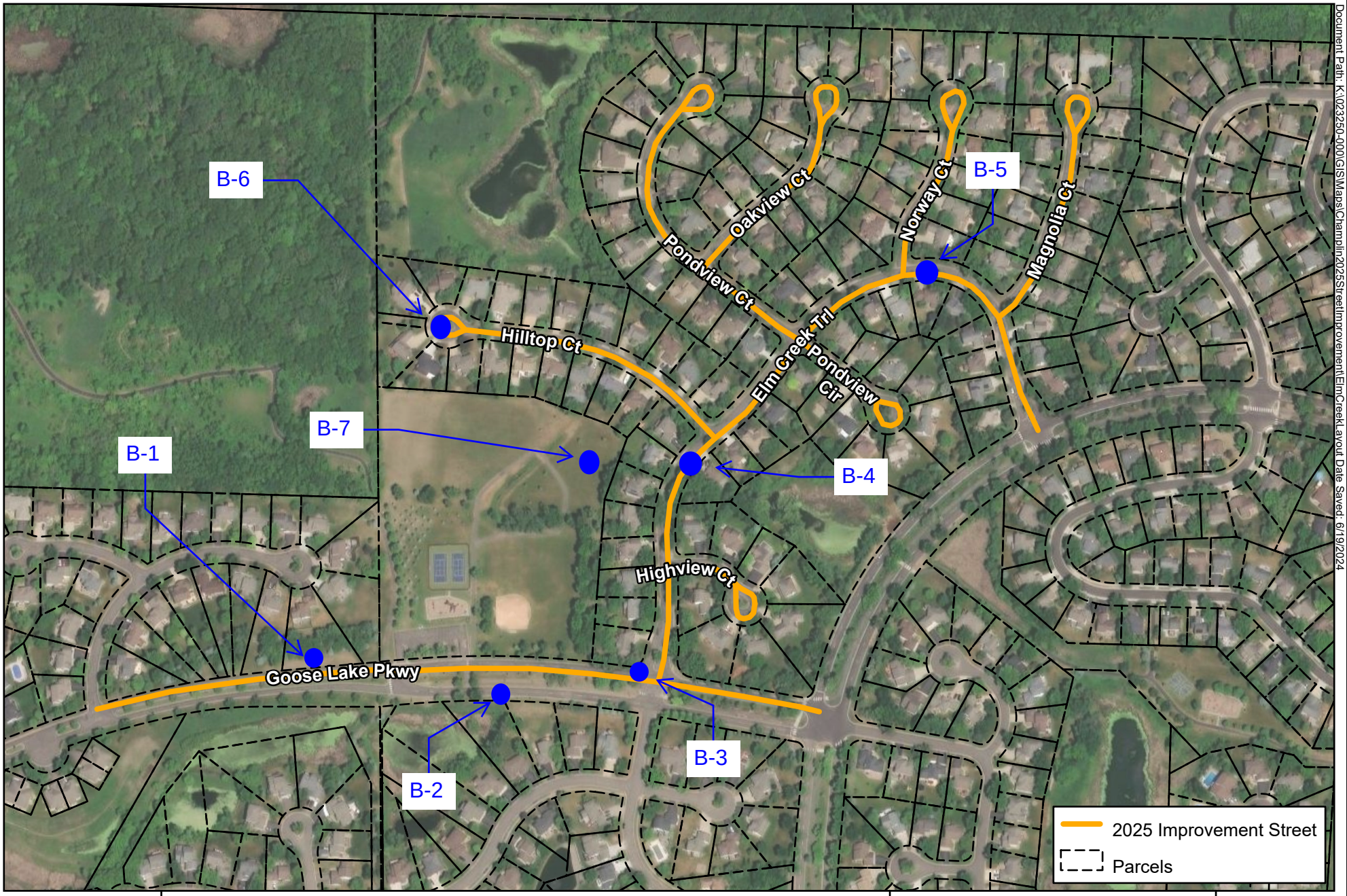
WSB has not performed observations, investigations, explorations, studies or testing that are not specifically listed in the scope of service. WSB should not be liable for failing to discover any condition whose discovery required the performance of services not authorized by the Agreement.

5. STANDARD OF CARE

The recommendations and opinions contained in this report are based on our professional judgment. The soil testing and geotechnical engineering services performed for this project have been performed with the level of skill and diligence ordinarily exercised by reputable members of the same profession under similar circumstances, at the same time and in the same or a similar locale. No warranty, either expressed or implied, is made.

APPENDIX A

Soil Borings Exhibit
Core Exhibit
Core Photo Log
Logs of Test Borings
Symbols and Terminology on Test Boring Log
Notice to Report Users Boring Log Information
Unified Soil Classification Sheet (USCS)



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2025 Street Improvement Project

Elm Creek Trail Neighborhood/ Goose Lake Parkway
Champlin, MN

N

0 350 Feet

1 inch = 350 feet

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 880 ft

BORING NUMBER B-1

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	WL	Drilling Operation	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines	N-Value Plot
		4" TOPSOIL: Lean Clay, dark brown, wet		Topsoil								
		CLAYEY SAND, light brown, wet	Fill	Fill								
1	879						AU	1		19		
2	878											
		CLAYEY SAND WITH LITTLE GRAVEL, brown, moist to wet	Fill				SB	2	7	18		7
3	877											
4	876						HSA					
		LEAN CLAY, brown with grayish brown, wet, soft	CL	Glacial Till								
5	875						SB	3	7	27		7
6	874											

End of Boring 6.0 ft.

WATER LEVEL MEASUREMENTS							START: 9/16/2024	END: 9/16/2024	
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief: D. Bailey	Logged By: A. Wacek
9/16/2024	9:00 am	6	4.5	2	None		3.25" HSA 0' - 4.5'	Notes:	

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 878 ft

BORING NUMBER B-2

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	WL	Drilling Operation	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines	N-Value Plot
0	878	4" BITUMINOUS 12"+ AGGREGATE: Sand with Gravel, brown, moist		Pavement Section								
1	877	SAND WITH CLAY, brown, moist	Fill	Fill			AU	1				
2	876	SANDY LEAN CLAY, brown with grayish brown, wet, firm	CL	Glacial Till			SB	2	9	16	54	
3	875											
4	874	SANDY LEAN CLAY, brown with grayish brown, wet, very soft	CL				HSA					
5	873						SB	3	3	21	54	
6	872	End of Boring 6.0 ft.										

N-Value Plot: 0 — 6.5 — 13

WATER LEVEL MEASUREMENTS							START: 9/16/2024	END: 9/16/2024	
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								D. Bailey	A. Wacek
9/16/2024	9:45 am	6	4.5	3	None		3.25" HSA 0' - 4.5'	Notes:	

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 887.5 ft

BORING NUMBER B-3
PAGE 1 OF 1

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines
		4.5" BITUMINOUS 4" AGGREGATE: Sand with Clay and gravel, dark brown, moist		Pavement Section					
1	887	SAND WITH CLAY, brown, moist	Fill	Fill	AU	1		14	14
2	886								
		CLAYEY SAND, grayish brown, wet	Fill		SB	2	4	18	
3	885								
4	884	CLAYEY SAND, grayish brown, wet	Fill		HSA				
								18	
5	883	CLAYEY SAND, fine to coarse grained, brown, wet, loose	SC	Glacial Till	SB	3	5	24	
6	882	End of Boring 6.0 ft.							

N-Value Plot: 0 — 4,5 — 9

WATER LEVEL MEASUREMENTS							START: 9/16/2024	END: 9/16/2024
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief: D. Bailey / Logged By: A. Wacek
9/16/2024	10:30 am	6	4.5	3	None		3.25" HSA 0' - 4.5'	Notes:

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 888.5 ft

BORING NUMBER B-4
PAGE 1 OF 1

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	WL	Drilling Operation	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines	N-Value Plot
		4" BITUMINOUS 4" AGGREGATE: Sand with Gravel, brown, moist		Pavement Section								
		SAND, brown, moist	Fill	Fill								
1	888						AU	1				
		LEAN CLAY WITH SAND, brown, wet	Fill							20		
2	887											
		SANDY LEAN CLAY, brown, wet, soft	CL	Glacial Till			SB	2	5	16	51	5
3	886											
4	885						HSA					
5	884						SB	3	8	17		8
6	883	End of Boring 6.0 ft.										

N-Value Plot: 0, 6, 12

WATER LEVEL MEASUREMENTS							START: 9/16/2024	END: 9/16/2024
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief: D. Bailey / Logged By: A. Wacek
9/16/2024	11:15 am	6	4.5	2	None		3.25" HSA 0' - 4.5'	Notes:

GEOTECHNICAL N-PLOT - WSB.GDT - 10/9/24 09:55 - M:\026077-000\GEOTECH-CMT\GEOTECH\MISCELLANEOUS\CHAMPLIN - BORING LOGS.GPJ

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 902.5 ft

BORING NUMBER B-5
PAGE 1 OF 1

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	WL	Drilling Operation	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines	N-Value Plot
		4.5" BITUMINOUS 4.5" AGGREGATE: Sand with Gravel, brown, moist		Pavement Section								
1	902	CLAYEY SAND, fine to coarse grained, light brown, wet, loose to very loose	SC	Glacial Till			AU	1		16		
2	901						SB	2	6	15		
3	900											
4	899						HSA					
5	898						SB	3	4	19		
6	897	End of Boring 6.0 ft.										

N-Value Plot: 0 5 10

WATER LEVEL MEASUREMENTS

START: 9/16/2024
END: 9/16/2024

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD
9/16/2024	12:00 pm	6	4.5	3	None		3.25" HSA 0' - 4.5'

Crew Chief: D. Bailey
Logged By: A. Wacek
Notes:

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 886 ft

BORING NUMBER B-6

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	WL	Drilling Operation	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines	N-Value Plot
		5" BITUMINOUS 4.5" CRUSHED LIMESTONE		Pavement Section								
1	885	SANDY LEAN CLAY, brown, wet	CL	Glacial Till			AU	1		15	50	
2	884											
3	883	CLAYEY SAND, fine to coarse grained, light brown, wet, loose	SC				SB	2	6	17		6
4	882						HSA					
5	881	CLAYEY SAND, fine to coarse grained, light grayish brown, wet, loose	SC				SB	3	5	17		5
6	880	End of Boring 6.0 ft.										

N-Value Plot: 0 5 10

WATER LEVEL MEASUREMENTS

START: 9/16/2024
END: 9/16/2024

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD
9/16/2024	1:00 pm	6	4.5	2	None		3.25" HSA 0' - 4.5'

Crew Chief: D. Bailey
Logged By: A. Wacek
Notes:

LOG OF TEST BORING

PROJECT NAME: Elm Creek Trail Neighborhood
CLIENT/WSB #: 026077-000
PROJECT LOCATION: Champlin, MN
SURFACE ELEVATION: 870.5 ft

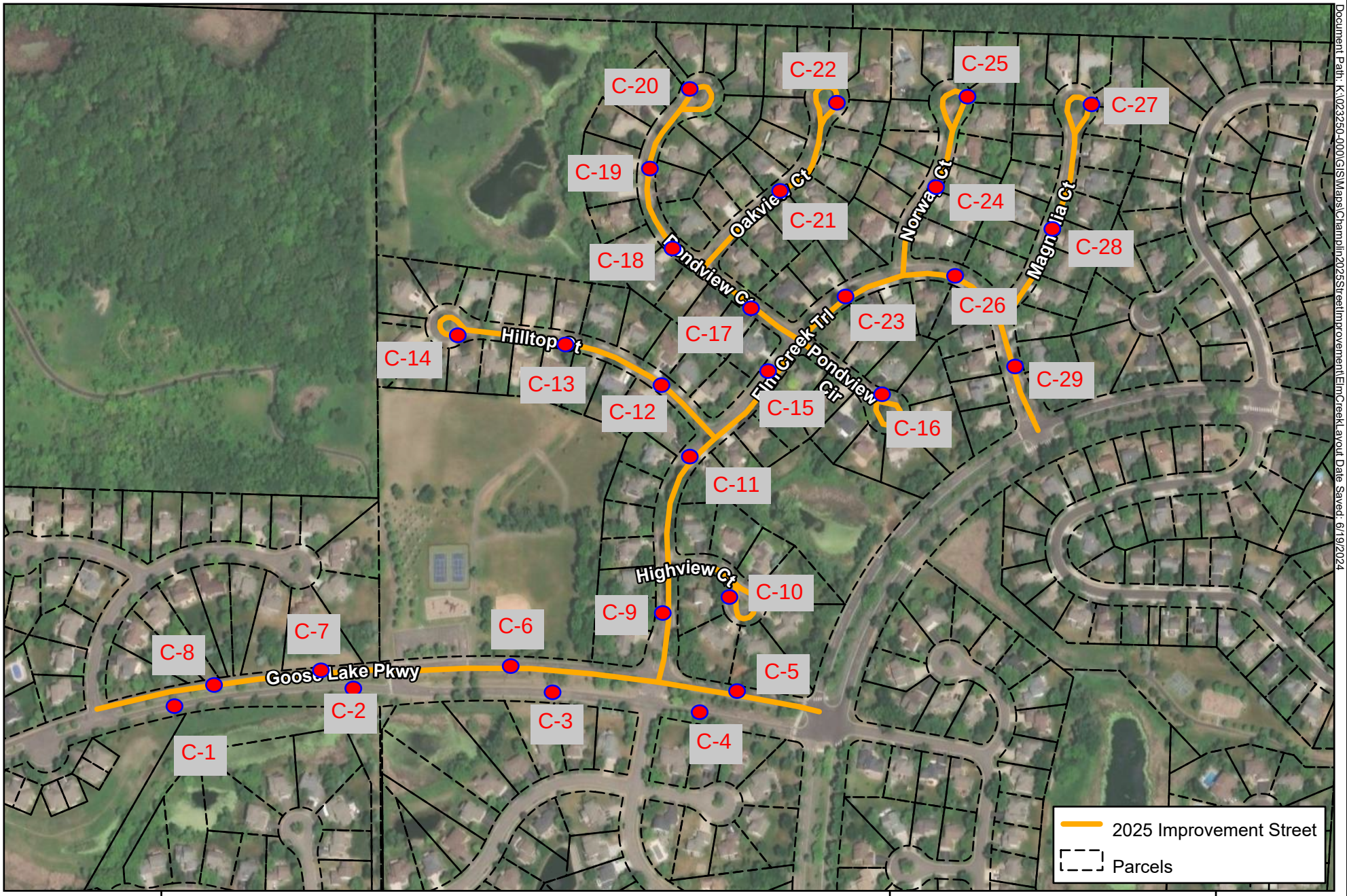
BORING NUMBER B-7
PAGE 1 OF 1

DEPTH (ft)	ELEV. (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	WL	Drilling Operation	SAMPLE TYPE	SAMPLE No.	N	MC %	%Fines	N-Value Plot
		4" TOPSOIL: Lean Clay, dark brown, moist		Topsoil								
		SANDY LEAN CLAY, slightly organic, dark brown, wet	Fill	Fill								
1	870						AU	1		21		
2	869						SB	2	4	19		
3	868											
4	867						HSA					
5	866						SB	3	3			
6	865	LEAN CLAY, grayish brown, wet, very soft	CL	Glacial Till			HSA			25		
7	864											
		LEAN CLAY, gray, wet, very soft	CL				SB	4	4	38		
8	863											
9	862						HSA					
10	861						SB	5	4	32	98	
11	860	End of Boring 11.0 ft.										

N-Value Plot: 0 4 8

WATER LEVEL MEASUREMENTS							START: 9/16/2024	END: 9/16/2024	
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief: D. Bailey	Logged By: A. Wacek
9/16/2024	2:00 pm	11	9.5	9	None		3.25" HSA 0' - 9.5'	Notes:	

GEOTECHNICAL N-PLOT - WSB.GDT - 10/9/24 09:55 - M:\026077-000\GEOTECH-CMT\GEOTECH\MISCELLANEOUS\CHAMPLIN - BORING LOGS.GPJ



2025 Street Improvement Project

Elm Creek Trail Neighborhood/ Goose Lake Parkway
Champlin, MN

N

0 350 Feet

1 inch = 350 feet

City of Champlin

wsb

Table 1: Existing Pavement Section Details

Core ID	Location	Number of Lanes	Pavement Width (ft)	Curb and Gutter	Surface Distresses	Bituminous Depth (in)	Lift Thickness (in) and Condition	Base Depth and Description	Subbase or Subgrade Description
1	Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Alligator, transverse cracking	4	1.25" - Wear 2.75" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown
2	Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Transverse, longitudinal cracking	4.5	2.5" - Wear 2" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown
3	Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Transverse cracking	4.5	2.25" - Wear 2.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-c Sand, brown
4	Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Longitudinal cracking	5	2.5" - Wear 2.5" - Base Fair - Some raveling	4.5" - Sand trace gravel, brown	f-c Sand, brown
5	Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Longitudinal cracking	3.5	2.5" - Wear 1" - Base Poor - Completely Raveled	6" - Sand trace gravel, brown	f-c Sand, brown
6	Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Some transverse, longitudinal cracking	4.75	2" - Wear 2.75" - Base Poor - Raveling	3" - Sand trace gravel, brown	f-c Sand, brown
7	Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Patching, Transverse cracking		WB lane width did not allow for safe coring (See location photos for Core 7)		
8	Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Longitudinal, transverse cracking		WB lane width did not allow for safe coring (See location photos for Core 8)		
9	Elm Creek Trail	2	24	Yes	Surface stripping	4.25	2.25" - Wear 2" - Base Poor - Raveling	12+" - Sand trace gravel, brown	Did not reach apparent change in material
10	Highview Ct	2	22	Yes	Surface stripping, some transverse cracking	3.75	1.75" - Wear 2" - Base Fair - Some raveling	3.5" - Sand trace gravel, brown	f-m Sand, brown

Core ID	Location	Number of Lanes	Pavement Width (ft)	Curb and Gutter	Surface Distresses	Bituminous Depth (in)	Lift Thickness (in) and Condition	Base Depth and Description	Subbase or Subgrade Description
11	Elm Creek Trail	2	25	Yes	Surface stripping, transverse cracking	6.5	2.5" - Wear (3+ Lifts of Material) Fair - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown
12	Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking	6	2" - Wear (3+ Lifts of material) Fair - Some base layer raveling	3" - Sand with gravel, light brown	Clay, light brown
13	Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking	5.5	2" - Wear (3+ Lifts of material) Poor - Base layer raveling	12" - Sand with gravel, light brown	Clay, light brown
14	Hilltop Ct	2	32	Yes	Surface stripping, Some transverse cracking	4.5	1.5" - Wear 3" - Base Fair - Some raveling	5" - Sand with gravel, light brown	Clay, light brown
15	Elm Creek Trail	2	24	Yes	Surface stripping, transverse cracking	4.5	2" - Wear 2.5" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown
16	Pondview Circle	2	22	Yes	Surface stripping, transverse cracking	3.75	1.75" - Wear 2" - Base Fair - Some base layer raveling	6" - Sand trace gravel, brown	f-m Sand, brown
17	Pondview Ct	2	21	Yes	Surface stripping, Some alligator, transverse cracking	5	2.5" - Wear 2.5" - Base Poor - Base layer raveling	4" - Gravel, light brown	Clayey Sand, Light brown
18	Pondview Ct	2	24	Yes	Surface stripping, patching, transverse cracking	5	2.5" - Wear 2.5" - Base Poor - Raveling	7" - Gravel, Light brown	Clay, brown
19	Pondview Ct	2	24	Yes	Surface stripping, transverse, longitudinal cracking	5	2.25" - Wear 2.75" - Base Fair - Some base layer raveling	8.5" - Sand with gravel, light brown	Clay, brown
20	Pondview Ct	2	24	Yes	Surface stripping, Some transverse cracking	5	2.5" - Wear 2.5" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clay, brown

Core ID	Location	Number of Lanes	Pavement Width (ft)	Curb and Gutter	Surface Distresses	Bituminous Depth (in)	Lift Thickness (in) and Condition	Base Depth and Description	Subbase or Subgrade Description
21	Oakview Ct	2	22	Yes	Surface stripping, transverse cracking	4	1.75" - Wear 2.25" - Base Poor - Raveling	6" - Sand with gravel, light brown	Clayey Sand, brown
22	Oakview Ct	2	24	Yes	Surface stripping, transverse cracking	5.5	2.5" - Wear 3" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clayey Sand, brown
23	Elm Creek Trail	2	24	Yes	Surface stripping, transverse, longitudinal cracking	4	2.25" - Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown
24	Norway Ct	2	24	Yes	Surface stripping, transverse cracking	3.5	2" - Wear 1.5" - Base Good Condition	4" - Sand trace gravel, brown	f-m Sand, brown
25	Norway Ct	2	24	Yes	Surface stripping, alligator, transverse cracking	3.5	1.75" - Wear 1.75" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown
26	Elm Creek Trail	2	24	Yes	Surface stripping, patching, transverse cracking	4	2.25" Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	Sand trace gravel, brown
27	Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking	3.25	2" - Wear 1.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-m Sand, brown
28	Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking	4.5	3" - Wear 1.5" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown
29	Elm Creek Trail	2	28	Yes	Surface stripping, patching, transverse cracking	6.25	2.25" - Wear (3+ Lifts of material) Poor - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 1

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Alligator, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	1.25" - Wear 2.75" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown

Core 2

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	1	13	Yes	Surface stripping, Transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	2.5" - Wear 2" - Base Poor - Raveling	11" - Sand trace gravel, brown	f-c Sand, brown

Core 3

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	2.25" - Wear 2.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-c Sand, brown

Core 4

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway East Bound	2	22	Yes	Surface stripping, Patching, Longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Fair - Some raveling	4.5" - Sand trace gravel, brown	f-c Sand, brown

Core 5

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.5	2.5" - Wear 1" - Base Poor - Completely Raveled	6" - Sand trace gravel, brown	f-c Sand, brown

Core 6

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	2	22	Yes	Surface stripping, Some transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.75	2" - Wear 2.75" - Base Poor - Raveling	3" - Sand trace gravel, brown	f-c Sand, brown

Core 7

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Patching, Transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
	WB lane width did not all for safe coring	(see photos above)	

Core 8

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Goose Lake Parkway West Bound	1	13	Yes	Surface stripping, Longitudinal, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
	WB lane width did not all for safe coring	(see photos above)	

Core 9

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.25	2.25" - Wear 2" - Base Poor - Raveling	12+" - Sand trace gravel, brown	Did not reach apparent change in material

Core 10

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Highview Ct	2	22	Yes	Surface stripping, some transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.75	1.75" - Wear 2" - Base Fair - Some raveling	3.5" - Sand trace gravel, brown	f-m Sand, brown

Core 11

Street Photos

Core Photos

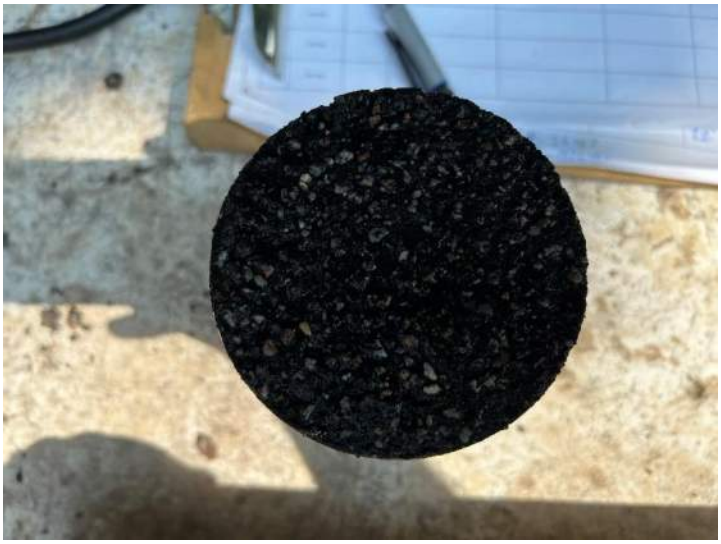
Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	25	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
6.5	2.5" - Wear (3+ Lifts of Material) Fair - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 12

Street Photos

Core Photos



Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
6	2" - Wear (3+ Lifts of material) Fair - Some base layer raveling	3" - Sand with gravel, light brown	Clay, light brown

Core 13

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Hilltop Ct	2	21	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5.5	2" - Wear (3+ Lifts of material) Poor - Base layer raveling	12" - Sand with gravel, light brown	Clay, light brown

Core 14

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Hilltop Ct	2	32	Yes	Surface stripping, Some transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	1.5" - Wear 3" - Base Fair - Some raveling	5" - Sand with gravel, light brown	Clay, light brown

Core 15

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	2" - Wear 2.5" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 16

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Circle	2	22	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.75	1.75" - Wear 2" - Base Fair - Some base layer raveling	6" - Sand trace gravel, brown	f-m Sand, brown

Core 17

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	21	Yes	Surface stripping, Some alligator, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Poor - Base layer raveling	4" - Gravel, light brown	Clayey Sand, Light brown

Core 18

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	24	Yes	Surface stripping, patching, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Poor - Raveling	7" - Gravel, Light brown	Clay, brown

Core 19

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	24	Yes	Surface stripping, transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.25" - Wear 2.75" - Base Fair - Some base layer raveling	8.5" - Sand with gravel, light brown	Clay, brown

Core 20

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Pondview Ct	2	24	Yes	Surface stripping, Some transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5	2.5" - Wear 2.5" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clay, brown

Core 21

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Oakview Ct	2	22	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	1.75" - Wear 2.25" - Base Poor - Raveling	6" - Sand with gravel, light brown	Clayey Sand, brown

Core 22

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Oakview Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
5.5	2.5" - Wear 3" - Base Poor - Raveling	5" - Sand with gravel, light brown	Clayey Sand, brown

Core 23

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping, transverse, longitudinal cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	2.25" - Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 24

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Norway Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.5	2" - Wear 1.5" - Base Good Condition	4" - Sand trace gravel, brown	f-m Sand, brown

Core 25

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Norway Ct	2	24	Yes	Surface stripping, alligator, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.5	1.75" - Wear 1.75" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 26

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	24	Yes	Surface stripping, patching, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4	2.25" Wear 1.75" - Base Fair - Some base layer raveling	4" - Sand trace gravel, brown	Sand trace gravel, brown

Core 27

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
3.25	2" - Wear 1.25" - Base Poor - Raveling	5" - Sand trace gravel, brown	f-m Sand, brown

Core 28

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Magnolia Ct	2	24	Yes	Surface stripping, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
4.5	3" - Wear 1.5" - Base Poor - Raveling	4" - Sand trace gravel, brown	f-m Sand, brown

Core 29

Street Photos

Core Photos

Location	Number of Lanes	Roadway Width (ft)	Curb and Gutter	Surface Distresses
Elm Creek Trail	2	28	Yes	Surface stripping, patching, transverse cracking

Bituminous Depth (in)	Lift Thickness and Condition	Base Depth and Description	Subbase or Subgrade Description
6.25	2.25" - Wear (3+ Lifts of material) Poor - Base layer raveling	4" - Sand trace gravel, brown	f-m Sand, brown

SYMBOLS AND TERMINOLOGY ON TEST BORING LOG

SYMBOLS

Drilling and Sampling

Symbol	Description
HSA	3 1/4" LD. Hollow Stem Auger
FA	Flight Auger
HA	Hand Auger
RC	Size A, B, or N rotary casing
CS	Continuous split barrel sampling
DM	Drilling Mud
JW	Jetting Water
SB	2" O.D. split barrel sampling
_L	2 1/2" or 3 1/2" OD split barrel liner sampler
_T	2" or 3" thin walled tube sample
W	Wash sample
B	Bag sample
P	Test Pit sample
_Q	BQ, NQ, or PQ wire line system
_X	AX, BX, or NX double tube barrel
N	Standard penetration test, blow per foot
CR	Core recovery, percent
WL	Water level
n/a	no measurement recorded

Laboratory Testing

Symbol	Description
MC	Moisture content, % (ASTM D2216)
DD	Dry Density, pcf
LL	Liquid Limit (ASTM D4318)
PL	Plastic Limit (ASTM D4318)
	- Inserts in last column
Qu	Unconfined compressive strength, psf (ASTM D2166)
Pq	Penetrometer Reading, tsf (ASTM D1558)
Ts	Torvane Reading, ts
G	Specific Gravity (ASTM D854)
SL	Shrinkage limits (ASTM D427)
OC	Organic Contenct (ASTM D2974)
SP	Swell Pressure, tsf (ASTM D4546)
PS	Percent swell under pressure (ASTM D4546)
FS	Free swell, % (ASTM D4546)
SS	Shrink swell, % (ASTM D4546)
pH	
SC	Sulfate content, parts/million or mg/l
CC	Chloride content, parts/million or mg/l
C	One dimensional consolidation (ASTM D2435)
Qc	Triaxial compression (ASTM D2850 and D4767)
DS	Direct Shear (ASTM D3080)
K	Coefficient of permeability, cm/sec (ASTM D2434)
P	Pinhole Test (ASTM D4647)
DH	Double hydrometer (ASTM D4221)
MA	Particle size analysis (ASTM D422)
R	Laboratory electreical resistivity, ohm-cm (ASTM G57)
VS	Field vane shear (ASTM D2573)
RQD	Rock quality designation, percent
IR	Infiltration Test (ASTM D3385)

TERMINOLOGY

Particle Sizes

Type	Size Range
Boulders	> 12"
Cobbles	3" - 12"
Coarse gravel	3/4" - 3"
Fine gravel	#4 sieve - 3/4"
Coarse sand	#4 sieve - #10 sieve
Medium sand	#10 sieve - #40 sieve
Fine sand	#40 sieve - #200 sieve
Silt	100% passing #200 sieve, and > 0.002mm
Clay	100% passing #200 sieve, and < 0.002mm

Soil Layering and Moisture

Term	Visual Observation
Lenses	Small pockets of different soils
Lamination	< 1/4" thick stratum
Layer	1/4" - 12" thick stratum
Stratified	Altering lenses of varying materials or colors
Varved	Altering laminations of clay, silt, fine sand, or colors
Dry	Powdery, no noticeable water
Moist	Damp, below saturation
Wet	MC above plastic limit
Waterbearing	Pervious soil below water table
Saturated	Cohesive soil with MC above liquit limit

Gravel Content

Coarse-Grained Soils

% Gravel	Description
2 - 15	A little gravel
16 - 30	With gravel
31 - 49	Gravelly

Fine-Grained Soils

% Gravel	Description
2 -5	Trace of gravel
5 -15	a little gravel
16 - 30	with gravel
31 - 49	Gravelly

Standard Pentration Resistance (N-value)

Cohesionless Soils

N-Value	Relative Density
0 - 4	Very loose
5 - 10	Loose
11 - 30	Medium dense
31 - 50	Dense
>50	Very dense

Cohesive Soils

N-Value	Consistency
0 - 4	Very soft
5 - 8	Soft
9 - 15	Firm
16 - 30	Hard
>30	Very hard

NOTICE TO REPORT USERS BORING LOG INFORMATION

Subsurface Profiles

The subsurface stratification lines on the graphic representation of the test borings show an approximate boundary between soil types or rock. The transition between materials is approximate and is usually far more gradual than shown. Estimating excavation depths, soil volumes, and other computations relying on the subsurface strata may not be possible to any degree of accuracy.

Water Level

WSB & Associates, Inc. took groundwater level readings in the exploratory borings, reviewed the data obtained, and discussed its interpretation of the data in the text of this report. The groundwater level may fluctuate due to seasonal variations caused by precipitation, snowmelt, rainfalls, construction or remediation activities, and/or other factors not evident at the time of measurement.

The actual determination of the subsurface water level is an interpretive process. Subsurface water level may not be accurately depicted by the levels indicated on the boring logs. Normally, a subsurface exploration obtains general information regarding subsurface features for design purposes. An accurate determination of subsurface water levels is not possible with a typical scope of work. The use of the subsurface water level information provided for estimating purposes or other site review can present a moderate to high risk of error.

The following information is obtained in the field and noted under "Water Level Measurements" at the bottom of the log.

Sample Depth:	The lowest depth of soil sampling at the time a water level measurement is taken.
Casing Depth:	The depth to the bottom of the casing or hollow stem auger at the time of water level measurement.
Cave-in Depth:	The depth at which a measuring tape stops in the bore hole.
Water Level:	The point in the bore hole at which free-standing water is encountered by a measure device from the surface.

Obstruction Depths

Obstructions and/or obstruction depths may be noted on the boring logs. Obstruction indicates the sampling equipment encountered resistance to penetration. It must be realized that continuation of drilling, the use of other drilling equipment or further exploration may provide information other than that depicted on the logs. The correlation of obstruction depths on the log with construction features such as rock excavation, foundation depths, or buried debris cannot normally be determined with any degree of accuracy. For example, penetration of weathered rock by soil sampling equipment may not correlate with removal by certain types of construction equipment. Using this information for estimating purposes often results in a high degree of misinterpretation.

Accurately identifying the obstruction or estimating depths where hard rock is present over the site requires a scope of service beyond the normal geotechnical exploration program. The risk of using the information noted on the boring logs for estimating purposes must be understood.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

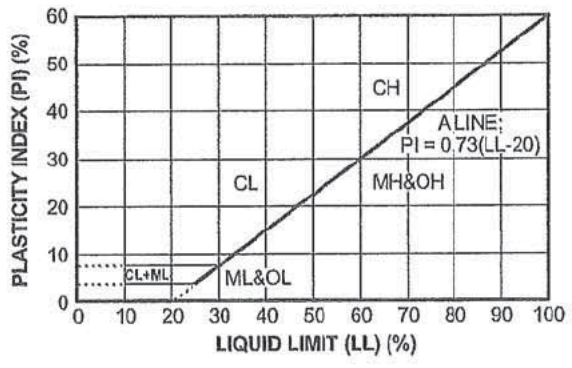
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



Appendix E

Neighborhood Meeting Summary

City of Champlin

Goose Lake Pkwy & Elm Creek Tr Project

Name: Patty Maher

Address: 10129 Elm Creek Tr N

Phone: 612-715-4317 Email: pattybmaher@gmail.com

Would you like to receive construction updates via email? ☒ Yes ☐ No

Comments: Please add Stop signs on the cul-da-sac streets onto Elm Creek. The delivery drivers and other non-residents do not know to stop for traffic. It is hazardous.

Sidewalk at my address needs to be replaced.

Thank you!

Goose Lake Pkwy & Elm Creek Tr Project

City of Champlin

~~Jefferson Hwy/Elm Creek Pkwy/Signals Project~~

Name: Ken Schik

Address: 9948 Elm Creek Trl. N.

Phone: 763-227-1648 Email: KSCHIK4756@gmail.com

Comments: Your comment regarding drain tile interests me. Our sump pump runs frequently, like this spring and early summer. Our house sits somewhat higher then our neighbors. So - if it's worth a chat, please contact me.

Thanks, Ken

City of Champlin

Goose Lake Pkwy & Elm Creek Tr Project

Name: BARB MCBROOM

Address: 10200 Hilltop Ct.

Phone: 763-421-0651 Email: mcbroom5@comcast.net

Would you like to receive construction updates via email? ☒ Yes ☐ No

Comments:

City of Champlin

Goose Lake Pkwy & Elm Creek Tr Project

Name: Jana Harrer

Address: 11671 Magnolia Court

Phone: 763-710-1588 Email: aerosmithchick14@comcast.net

Would you like to receive construction updates via email? ☒ Yes ☐ No

Comments: