

# FEASIBILITY REPORT

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## 170<sup>TH</sup> STREET IMPROVEMENT PROJECT

CITY PROJECT NO. 20-04



OCTOBER 21, 2019



## CERTIFICATION

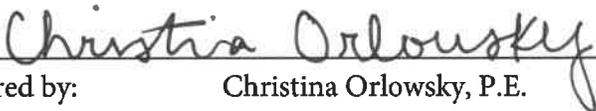
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

  
Zachary Johnson, P.E.

Date: October 21, 2019

Lic. No. 42839

  
Prepared by: Christina Orlowsky, P.E.

Date: October 21, 2019

Lic. No. 57283

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Assessment Map ID

Preliminary Assessment Roll

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2019 Geotechnical Report – Log of Test Borings

## 1. EXECUTIVE SUMMARY

The 170<sup>th</sup> Street Improvement Project, City Project No. 20-04, was initiated based on the City's Pavement Management Program and the adopted 5-year Capital Improvement Plan. The 170<sup>th</sup> Street Reconstruction Project includes that portion of 170<sup>th</sup> Street from Flagstaff Avenue to Pilot Knob Road (CSAH 31), totaling approximately 5,290 feet (1.0 mile).

The 170<sup>th</sup> Street Improvement Project includes roadway reclamation improvements based on the current roadway conditions. Reclamation of the existing bituminous pavement and aggregate base, and roadway rehabilitation consisting of subgrade correction and new bituminous pavement is recommended for the entire length of the project.

Rehabilitating portions of public utility infrastructure in need of maintenance with programmed roadway improvements minimizes life-cycle costs, maintains the integrity and function of public utility systems and minimizes construction and schedule impacts. Proposed utility improvements include the following:

- Repair or replacement of damaged or deficient storm sewer structures
- Replacement of existing water main
- Preventative maintenance of existing sanitary sewer structures

Completing trail improvements with programmed roadway improvements reduces construction and schedule impacts, achieves construction efficiencies and economies of scale, and preserves public park assets. Proposed trail improvements include trail reclamation, and trail rehabilitation consisting of subgrade correction and new bituminous pavement, along both sides of 170<sup>th</sup> Street.

The total estimated project cost for the 170<sup>th</sup> Street Improvement Project is **\$2,618,206** and includes a 10% contingency and 28% indirect costs for legal, engineering, administrative, and financing costs. The project is proposed to be funded through special assessments to benefitting property owners and City funds.

The project is proposed to be substantially completed in 2020, including restoration. The project is feasible, necessary, and cost-effective from an engineering standpoint and should be constructed as proposed herein.

## **2. STREET AND UTILITY IMPROVEMENT PROJECT**

### **2.1 Introduction**

#### ***2.1.1 Authorization***

On September 3, 2019, the Lakeville City Council authorized the preparation of an engineering feasibility report for the 170<sup>th</sup> Street Improvement Project. This project is included in the City's adopted 5-year Capital Improvement Plan and designated as City Project No. 20-04.

#### ***2.1.2 Scope***

This report investigates the feasibility of proposed roadway improvements identified through the City's Pavement Management Program and programmed for 2020 construction in the adopted 5-year Capital Improvement Plan. The 170<sup>th</sup> Street Improvement Project was initially considered because of poor existing surface conditions that severely impact the ride quality of the roadway. The average Overall Condition Index (OCI) value for 170<sup>th</sup> Street is 25 using an OCI scale of 0 to 100 (with zero representing a failing street section and 100 representing a new street section free of deficiencies).

Improvements outlined within this report include bituminous roadway and trail pavement reclamation, spot curb and gutter repairs, watermain replacement and minor utility repairs and maintenance.

#### ***2.1.3 Data Available***

Information and materials used in the preparation of this report include the following:

- Record Plans
- Water Main Repair Records
- Dakota County Topography Maps
- Field Observations of the Area
- Geotechnical Evaluation Report, Braun Intertec, dated October 2019
- Land Survey, Alliant Engineering, Inc., dated October 2019
- Televising Reports for the Sanitary Sewer System
- City of Lakeville Special Assessment Policy Relating to the Rehabilitation of Roadways

## 2.2 General Background

### 2.2.1 Project Location

170<sup>th</sup> Street, from Flagstaff Avenue to Pilot Knob Road (CSAH 31) is proposed to be reconstructed as a part of the 170<sup>th</sup> Street Reconstruction Project. The project area is shown in the figure contained within *Appendix A* of this report.

## 2.3 Existing Conditions

### 2.3.1 Roadway Surface

170<sup>th</sup> Street is classified as a major collector roadway in the City's Comprehensive Transportation Plan and is constructed as an urban two-lane roadway with turn lanes at the intersections of Flagstaff Avenue and Pilot Knob Road. 170<sup>th</sup> Street includes dedicated westbound right and left turn lanes at Flagstaff Avenue, and a dedicated eastbound turn lane and share thru-left turn lane at Pilot Knob Road, and right-turn lanes into North Trail Elementary School. The entire length of the project area is urbanized, with concrete curb and gutter and storm sewer to collect runoff from the roadway and provide drainage for the street. The segment of 170<sup>th</sup> Street within the project limits was last reconstructed in 1996.

Within the project limits, 170<sup>th</sup> Street is aging and experiencing various severities of distresses including: alligator, transverse and longitudinal cracking, potholes and rutting. The City's Public Works Department completes patching of the potholes on a yearly basis to maintain the drivable surface of the roadway. The majority of the curb and gutter is in fair condition with instances of cracking and settlements resulting in drainage issues.

The project area contains trees, landscaping, irrigation systems and a variety of other private improvements beyond the edge of the roadway within City right-of-way.

Along the north and south sides of 170<sup>th</sup> Street there are existing 8-foot wide bituminous trails. The bituminous trail along the south side and segments along the north side of 170<sup>th</sup> Street were constructed in 1996 as a part of the last 170<sup>th</sup> Street reconstruction project. The trail along the northeast portion of 170<sup>th</sup> Street, from Fieldcrest Avenue to Pilot Knob Road, was constructed with residential development construction in the early 2000's. Generally, existing pedestrian ramps do not meet the current Americans with Disabilities Act (ADA) design standards.

The photos below illustrate the pavement distresses along 170<sup>th</sup> Street.



Geotechnical soil borings were completed during the fall of 2019, to determine the existing street section. A copy of the geotechnical soil boring logs may be found in *Appendix D* of this report.

### **2.3.2 Storm Sewer**

Storm sewer facilities within the 170<sup>th</sup> Street Reconstruction Project area are comprised of concrete curb and gutter and the public storm sewer system. Runoff collected along 170<sup>th</sup> Street is conveyed via storm sewer either to North Creek south of 170<sup>th</sup> Street or stormwater management basins along the project area.

Historically, the existing curb and gutter and storm sewer system along 170<sup>th</sup> Street have functioned adequately with isolated segments of settling resulting in drainage issues. Due to the flat profile of the roadway, the centerline crown has continued to wear away over time. The lack of roadway crown has caused isolated drainage issues and has contributed to the pavement deterioration along the roadway due to standing water.

### **2.3.3 Water Main**

The existing water main located within the 170<sup>th</sup> Street Reconstruction Project is 12-inch cast iron pipe (CIP) and was installed in the early 1970's. Maintenance records indicate there have been at least two (2) recorded water main breaks along 170<sup>th</sup> Street since the watermain was installed.

### **2.3.4 Sanitary Sewer**

The sanitary sewer located within the 170<sup>th</sup> Street Reconstruction Project is primarily located in local streets perpendicular to 170<sup>th</sup> Street and consists of 8-inch and 10-inch polyvinylchloride pipe (PVC) that was installed in the 1990's.

In the fall of 2019, the City's Public Works Department televised the sanitary sewer and inspected all of the sanitary sewer manholes. No repairs were identified with the inspection.

### **2.3.5 Wetlands**

No wetland impacts are anticipated with the proposed improvement project.

## 2.4 Proposed Improvements

### 2.4.1 Roadway Surface

Surface improvements proposed with the 170th Street Reconstruction Project include the full-depth reclamation of the roadway with isolated subgrade corrections as necessary, full-depth reclamation of the bituminous trails and spot curb and gutter replacement. Reclamation is the process by which the existing deteriorating roadway surface is reused as aggregate roadway base for the new street or trail section.

The street grades are proposed to closely match the existing grades so as to minimize construction impacts to adjacent properties. Minor changes in street grade will occur in isolated locations to improve roadway drainage.

170th Street will be reclaimed and reconstructed such that the street section will better resist rutting and fatigue. It is proposed that 170<sup>th</sup> Street consist of the following minimum section: 5-inches of bituminous wear course and 9-inches of reclaimed aggregate base over an acceptable subgrade. 170th Street will be reconstructed to match the existing roadway width, which generally measures 36-feet (from face of curb to face of curb).

A Special Assessment to one benefitting property along the corridor is proposed to fund 40% of the roadway surface improvements adjacent to that property identified for the project, with the remaining 60% funded using City Street and Utility Funds. The remainder of the project will be funded using City Street, Utility and Park Funds.

### 2.4.2 Storm Sewer

Reconstruction of 170<sup>th</sup> Street provides the opportunity to improve drainage conditions by repairing and replacing existing storm sewer facilities. Potential drainage improvements to be evaluated with final design of the project include: replace existing drainage structures, adjusting frame ring and castings, and minor ditch grading.

A Special Assessment to one benefitting property is proposed to fund 40% of the storm sewer improvements identified for the project adjacent to the property with the remaining 60% funded using City Street and Utility Funds.

### ***2.4.3 Water Main Improvements***

The existing water main is approaching end of life and has experienced at least two recorded water main breaks within the project area and is susceptible to increased breaks due to the age and condition of the pipe. The reconstruction of 170<sup>th</sup> Street provides the opportunity to replace the water main with PVC pipe and improve the overall system. City Utility Funds are proposed to fund the water main improvement costs.

### ***2.4.4 Sanitary Sewer Improvements***

No repairs were identified with the sanitary sewer inspection, the only proposed modifications are to adjust manhole frame ring and castings. Inflow and infiltration enhancements will be made to the infrastructure with this project. City Utility Funds are proposed to fund the sanitary sewer improvement costs.

### ***2.4.5 Street Sign Replacement***

All existing street signs within the project will be replaced with new street signs that meet the Federal Highway Administration's (FHWA) requirements for retro-reflectivity.

A Special Assessment to one benefitting property is proposed to fund 40% of the street sign improvements identified for the project adjacent to the property with the remaining 60% funded using City Street Funds.

### ***2.4.6 Mailbox Impacts***

No mailboxes are located within the 170<sup>th</sup> Street right-of-way; all mailboxes are located within the side streets for each property. Therefore, no impacts to mail delivery are anticipated.

### ***2.4.7 Permits/Approvals***

A National Pollutant Discharge Elimination System (NPDES) permit for construction activity will be required due to more than one (1) acre being disturbed by construction activities associated with the project.

A Department of Health (DOH) Permit for watermain installation is required.

#### **2.4.8 Construction Access/Staging**

The contractor will be responsible for providing access to all properties throughout the project. Adequately signed detours will be identified to direct traffic around the construction zones and notify users of the increased truck and construction activity.

Construction will take place under traffic. Construction will likely begin in June of 2020 to minimize impacts to school traffic. Detailed construction phasing plans will be developed with final design of the project.

#### **2.4.9 Public Involvement**

A public information meeting was held for the project to present the proposed improvements to property owners within the proposed project area. The neighborhood meeting was held on September 30, 2019 and included information regarding the proposed improvements, impacts, schedule and funding associated with the project. The intent of the meeting was to provide information to property owners regarding the roadway improvements and utility improvements and solicit comments from the property owners. The primary concerns that were shared at the meeting included: high speeds, construction truck hauling, roadway weight restrictions, and poor pavement conditions.

### 3. FINANCING

#### 3.1 Opinion of Cost

Detailed opinions of cost for the project can be found in *Appendix B* of this report. The opinions of cost incorporate estimated 2020 construction costs and include a 10% contingency factor. Indirect costs are projected at 28% of the construction cost and include engineering, legal, financing, and administrative costs.

*Table 2* below provides a summary of the opinions of probable cost for the 170<sup>th</sup> Street Reconstruction Project.

<b>Table 2 – 170th Street Reconstruction Project</b>	
<b>Summary of Cost</b>	
<b>Schedule</b>	<b>Amount</b>
Schedule A – Street Improvements	\$1,175,258
Schedule B – Storm Sewer Improvements	\$192,938
Schedule C – Water Main Improvements	\$737,862
Schedule D – Sanitary Sewer Improvements	\$3,661
Schedule E – Trail Improvements	\$508,487
<b>TOTAL</b>	<b>\$2,618,206</b>

#### 3.2 Funding

Financing for the 170<sup>th</sup> Street Reconstruction Project will come from City Funds and Special Assessments.

Special Assessments to benefitting properties include one parcel as it has direct driveway access to 170<sup>th</sup> Street. The assessment is proposed to fund 40% of the street and storm sewer improvements adjacent to that parcel with the remaining 60% funded using City Funds. The assessment for this project was calculated on a per residential equivalent unit (REU) basis consistent with the City’s Assessment Policy.

The total assessable frontage for the 170th Street Reconstruction Project is 733.94 linear feet (6.9% of the total project length). The special assessment was calculated as follows:

Street	Estimated Surface and Storm Sewer Improvement Costs	Prorated for Assessable Frontage (6.9%)	Assessable Costs (40%)	Residential Equivalent Units (REU)	Estimated Assessment Amount per REU
170 <sup>th</sup> Street	\$1,368,196	\$94,406	\$37,762	7	\$5,394.57

The funding level anticipated through the levy of Special Assessments to benefitting property owners for street improvements is \$37,762 with the following proposed assessments:

Residential Equivalent Unit Assessment Rate..... \$5,394.57 per REU

The proposed assessment roll is included in *Appendix C* of this report, along with an Assessment Map ID highlighting the benefitting property and the assessment calculations for the benefitting property owner.

<b>Table 3 – 170th Street Improvement Project</b>	
<b>Funding Summary</b>	
<b>Funding Source</b>	<b>Amount</b>
GO Improvement bonds - Taxes	\$1,330,434
GO Improvement bonds – Special Assessments	\$37,762
City Sanitary Sewer Operating Fund	\$3,661
City Water Operating Fund	\$737,862
City Trail Improvement Fund	\$508,487
<b>TOTAL</b>	<b>\$2,618,206</b>

#### 4. PROJECT SCHEDULE

The proposed project schedule for the 170<sup>th</sup> Street Reconstruction Project is as follows:

Order Feasibility Report.....	September 3, 2019
Accept Feasibility Report/Order Public Hearing.....	October 21, 2019
Public Hearing/Order Project/Authorize Ad for Bids .....	November 18, 2019
Open Bids/Compute Assessments.....	February 20, 2020
Declare Costs/Set Assessment Hearing.....	March 2, 2020
Assessment Hearing/Award Contract.....	April 6, 2020
Begin Construction* .....	June 2020
Final Completion. . . . .	November 2020
Certify Assessments to County .....	December 2020

\* The project start date will be coordinated such that construction activity will commence after the 2019-2020 school year.

## 5. FEASIBILITY AND RECOMMENDATION

The 170<sup>th</sup> Street Reconstruction Project includes roadway reclamation, subgrade correction as necessary, trail reclamation, spot curb and gutter repairs, watermain replacement, and minor utility repairs.

The total estimated cost for the 170th Street Reconstruction Project including roadway, storm sewer, water main, sanitary sewer, and trail improvements is **\$2,618,206**. Proposed funding for the project is provided through a combination of Special Assessments and City Funds.

This project is feasible, necessary, and cost-effective from an engineering standpoint. The project feasibility is subject to financial review by the City. Based on the information contained in this report, it is recommended to proceed with the improvements as outlined in this report.

## APPENDIX A

### Figure 1: Location Map



## **APPENDIX B**

### **Opinion of Probable Cost**

**CITY OF LAKEVILLE****170TH ST IMPROVEMENT PROJECT ESTIMATE**

CITY PROJECT 20-04

DATE: 10/21/2019

ITEM	DESCRIPTION	UNIT	UNIT COST	QUANTITY	PRICE
<b>SCHEDULE A: STREETS</b>					
1	MOBILIZATION	LS	\$125,000.00	1	\$125,000.00
2	CLEARING	TREE	\$500.00	10	\$5,000.00
3	GRUBBING	TREE	\$500.00	10	\$5,000.00
4	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	\$4.75	115	\$546.25
5	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	\$2.50	680	\$1,700.00
6	REMOVE CURB & GUTTER	LF	\$7.00	2125	\$14,875.00
7	CONCRETE CURB AND GUTTER DESIGN B618	LF	\$30.00	2125	\$63,750.00
8	7" CONCRETE VALLEY GUTTER	LF	\$45.00	45	\$2,025.00
9	7" CONCRETE DRIVEWAY	SY	\$80.00	35	\$2,800.00
10	REMOVE BITUMINOUS PAVEMENT	SY	\$15.00	540	\$8,100.00
11	SELECT GRANULAR EMBANKMENT - SUBGRADE CORRECTION	CY	\$20.00	770	\$15,400.00
12	EXCAVATION - SUBGRADE CORRECTION	CY	\$15.00	770	\$11,550.00
13	COMMON LABORERS	HOUR	\$55.00	30	\$1,650.00
14	STREET SWEEPER W/ PICKUP BROOM	HOUR	\$150.00	50	\$7,500.00
15	WATER	MGAL	\$50.00	200	\$10,000.00
16	FULL DEPTH RECLAMATION	SY	\$2.00	22980	\$45,960.00
17	FINISH GRADING - STREET	SY	\$1.00	23515	\$23,515.00
18	SALVAGE AND RESPREAD RECLAIMED MATERIAL	CY	\$11.00	220	\$2,420.00
19	BITUMINOUS MATERIAL FOR TACK COAT	GAL	\$1.00	2355	\$2,355.00
20	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TON	\$60.00	6642	\$398,520.00
21	IRRIGATION SYSTEM REPAIR	EACH	\$500.00	5	\$2,500.00
22	INVISIBLE FENCE REPAIR	EACH	\$500.00	5	\$2,500.00
23	TRAFFIC CONTROL	LS	\$25,000.00	1	\$25,000.00
24	EROSION CONTROL SUPERVISOR	LS	\$5,000.00	1	\$5,000.00
25	STORM DRAIN INLET PROTECTION	EACH	\$200.00	41	\$8,200.00
26	CULVERT END CONTROL	EACH	\$150.00	2	\$300.00
27	SILT FENCE, TYPE MS	LF	\$4.00	1550	\$6,200.00
28	FLOTATION SILT CURTAIN - TYPE MOVING WATER	LF	\$20.00	20	\$400.00
29	TOPSOIL BORROW	CY	\$35.00	200	\$7,000.00
30	FERTILIZER TYPE 3	LB	\$0.50	1500	\$750.00
31	SEEDING	AC	\$100.00	5	\$500.00
32	SEEDING MIXTURE 25-131	LB	\$3.00	1100	\$3,300.00
33	HYDRAULIC BONDED FIBER MATRIX	LB	\$1.00	12500	\$12,500.00
34	4" SOLID LINE - LATEX	LF	\$0.20	1180	\$236.00
35	4" BROKEN LINE _ LATEX	LF	\$0.50	2379	\$1,189.50
36	12" SOLID LINE - LATEX	LF	\$2.00	220	\$440.00
37	4" DOUBLE SOLID LINE - LATEX	LF	\$0.40	2384	\$953.60
38	CROSSWALK BLOCKS - LATEX	SF	\$1.50	410	\$615.00
39	PAVEMENT MESSAGE - LATEX	SF	\$50.00	189	\$9,450.00
<b>SUBTOTAL SCHEDULE A: STREETS</b>					<b>\$834,700.35</b>
<b>10% CONTINGENCY</b>					<b>\$83,470.04</b>
<b>TOTAL SCHEDULE A: STREETS</b>					<b>\$918,170.39</b>
<b>SCHEDULE B: STORM SEWER</b>					
40	ADJUST FRAME & RING CASTING	EACH	\$600.00	37	\$22,200.00
41	REMOVE DRAINAGE STRUCTURE	EACH	\$400.00	8	\$3,200.00
42	REMOVE PIPE APRON	EACH	\$150.00	1	\$150.00
43	FILL SUMP DRAINAGE STRUCTURE	EACH	\$600.00	9	\$5,400.00
44	CONST DRAINAGE STRUCTURE DESIGN 48" ROUND	EACH	\$4,000.00	3	\$12,000.00
45	CONST DRAINAGE STRUCTURE DESIGN SPECIAL- 2'x3'	EACH	\$2,000.00	4	\$8,000.00
46	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	\$18,000.00	1	\$18,000.00
47	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 2	EACH	\$14,000.00	1	\$14,000.00
48	28" RC PIPE APRON AND SHEET PILING AND HEADWALL	EACH	\$5,000.00	1	\$5,000.00
49	RANDOM RIPRAP CLASS III	CY	\$150.00	14	\$2,100.00
50	RECONSTRUCT DRAINAGE DITCH	SY	\$20.00	356	\$7,120.00
51	REGRADE EXISTING DRAINAGE DITCH	SY	\$10.00	23	\$230.00
52	REMOVE SEWER PIPE (STORM)	LF	\$20.00	278	\$5,560.00

**CITY OF LAKEVILLE**

**170TH ST IMPROVEMENT PROJECT ESTIMATE**

CITY PROJECT 20-04

DATE: 10/21/2019

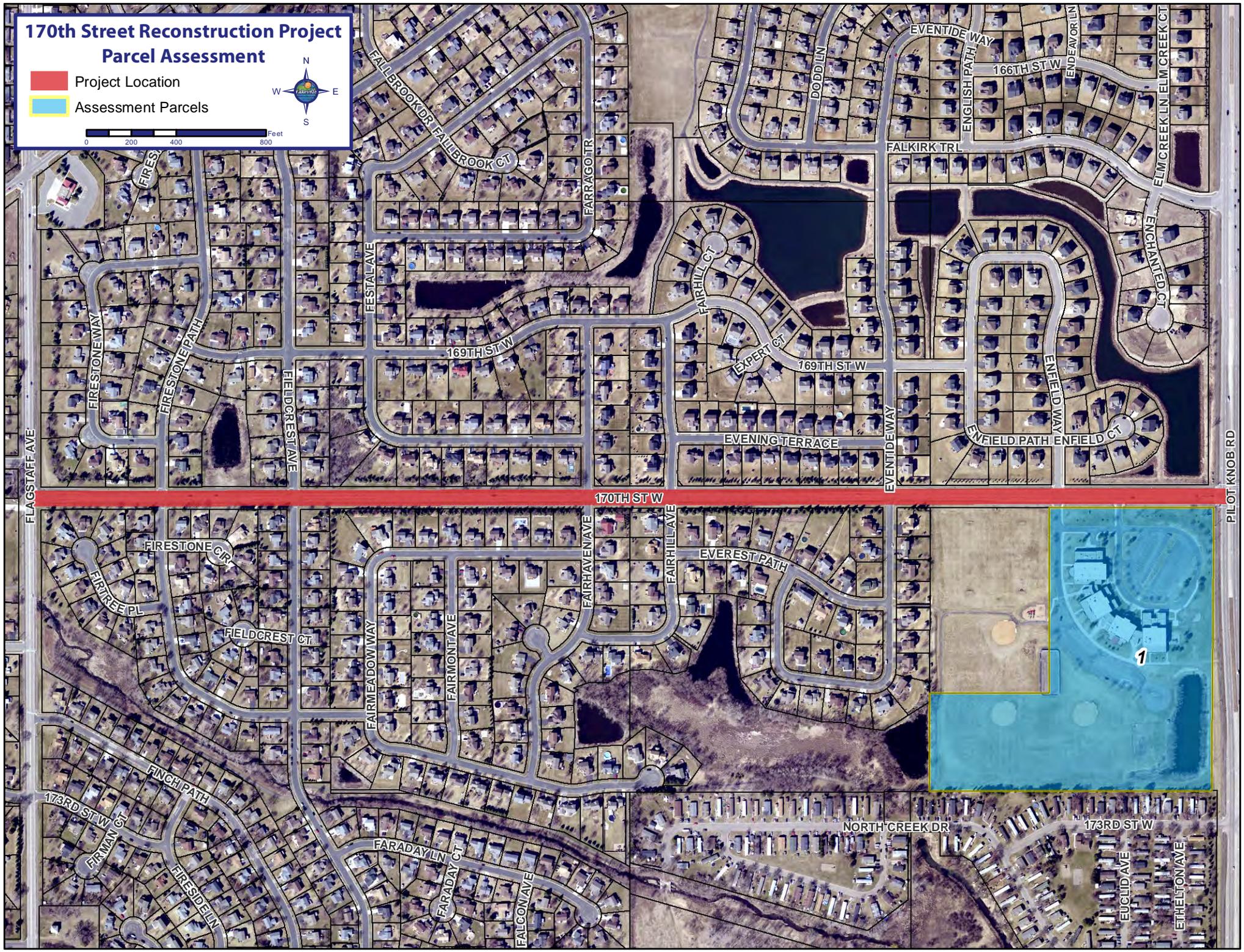
ITEM	DESCRIPTION	UNIT	UNIT COST	QUANTITY	PRICE
53	12" RC PIPE SEWER CLASS V	LF	\$60.00	204	\$12,240.00
54	15" RC PIPE SEWER CLASS V	LF	\$65.00	42	\$2,730.00
55	18" RC PIPE SEWER CLASS V	LF	\$75.00	24	\$1,800.00
56	SALVAGE CONCRETE PIPE STORM SEWER	LF	\$50.00	24	\$1,200.00
57	INSTALL CONCRETE PIPE STORM SEWER	LF	\$50.00	24	\$1,200.00
58	RC PIPE-ARCH SEWER CL IIA	LF	\$300.00	8	\$2,400.00
59	REMOVE AND REPLACE TOP SLAB	EACH	\$700.00	2	\$1,400.00
60	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	\$400.00	2	\$800.00
61	DRAIN TILE	LF	\$20.00	10	\$200.00
62	TRASH GUARD FOR 36" PIPE APRON	EACH	\$800.00	1	\$800.00
63	REPAIR DRAINAGE STRUCTURE	EACH	\$200.00	19	\$3,800.00
64	CONNECT TO EXISTING STORM SEWER	EACH	\$400.00	13	\$5,200.00
65	CONNECT TO EXISTING DRAIN TILE	EACH	\$300.00	1	\$300.00
<b>SUBTOTAL SCHEDULE B: STORM SEWER</b>					<b>\$137,030.00</b>
<b>10% CONTINGENCY</b>					<b>\$13,703.00</b>
<b>TOTAL SCHEDULE B: STORM SEWER</b>					<b>\$150,733.00</b>
<b>SCHEDULE C: WATERMAIN</b>					
66	REMOVE DIP WATERMAIN	LF	\$12.00	415	\$4,980.00
67	ABANDON EXISTING WATERMAIN	LF	\$8.00	5165	\$41,320.00
68	4" INSULATION	SY	\$45.00	12	\$540.00
69	BORE WM	LF	\$400.00	70	\$28,000.00
70	CONNECT TO EXISTING WATERMAIN	EACH	\$1,500.00	12	\$18,000.00
71	8" GATE VALVE & BOX	EACH	\$2,000.00	7	\$14,000.00
72	12" GATE VALVE & BOX	EACH	\$3,000.00	2	\$6,000.00
73	6" WATERMAIN DUCTILE IRON CL 52	LF	\$45.00	15	\$675.00
74	8" PVC C-900 WATERMAIN	LF	\$40.00	745	\$29,800.00
75	12" PVC C-900 WATERMAIN	LF	\$55.00	6110	\$336,050.00
76	DUCTILE IRON FITTINGS	LB	\$11.00	3885	\$42,735.00
77	ADJUST VALVE BOX	EACH	\$450.00	2	\$900.00
78	REMOVE HYDRANT	EACH	\$750.00	1	\$750.00
79	REMOVE GATE VALVE	EACH	\$300.00	1	\$300.00
<b>SUBTOTAL SCHEDULE C: WATERMAIN</b>					<b>\$524,050.00</b>
<b>10% CONTINGENCY</b>					<b>\$52,405.00</b>
<b>TOTAL SCHEDULE C: WATERMAIN</b>					<b>\$576,455.00</b>
<b>SCHEDULE D: SANITARY SEWER</b>					
80	ADJUST FRAME AND RING CASTING WITH INFI-SHIELD (SANITARY)	EACH	\$650.00	4	\$2,600.00
<b>SUBTOTAL SCHEDULE D: SANITARY SEWER</b>					<b>\$2,600.00</b>
<b>10% CONTINGENCY</b>					<b>\$260.00</b>
<b>TOTAL SCHEDULE D: SANITARY SEWER</b>					<b>\$2,860.00</b>
<b>SCHEDULE E: TRAIL</b>					
81	REMOVE BITUMINOUS TRAIL	SF	\$2.00	40000	\$80,000.00
82	RECLAIM BITUMINOUS TRAIL FULL DEPTH	SF	\$3.00	39500	\$118,500.00
83	REMOVE CONCRETE WALK	SF	\$2.00	1910	\$3,820.00
84	TYPE SP 9.5 WEARING COURSE MIXTURE (2,B)	TON	\$60.00	1592	\$95,520.00
85	5" CONCRETE WALK	SF	\$7.75	125	\$968.75
86	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	\$3.00	680	\$2,040.00
87	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	\$4.50	145	\$652.50
88	CONCRETE PEDESTRIAN CURB RAMP	SF	\$14.00	2820	\$39,480.00
89	TRUNCATED DOMES	SF	\$45.00	448	\$20,160.00
<b>SUBTOTAL SCHEDULE E: TRAIL</b>					<b>\$361,141.25</b>
<b>10% CONTINGENCY</b>					<b>\$36,114.13</b>
<b>TOTAL SCHEDULE E: TRAIL</b>					<b>\$397,255.38</b>
<b>CONSTRUCTION SUBTOTAL:</b>					<b>\$2,045,473.76</b>
<b>28% INDIRECT COST TOTAL</b>					<b>\$572,732.65</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$2,618,206.41</b>

## **APPENDIX C**

### **Assessment Map ID Preliminary Assessment Roll**

# 170th Street Reconstruction Project Parcel Assessment

-  Project Location
-  Assessment Parcels



PILOT KNOB RD

1

**170th Street Reconstruction Project**

Project Name: 170th Street Reconstruction Project

Date: 10/21/2019

City Project No. 20-04

Project Location: 170th Street: Flagstaff Avenue to Pilot Knob Road (CSAH 31)

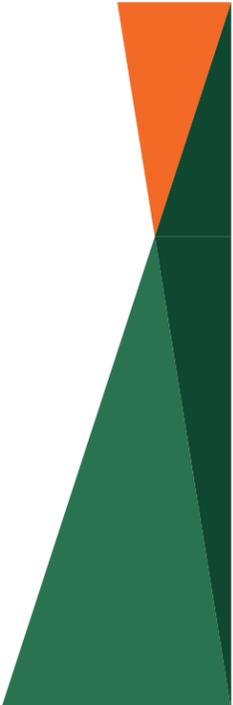
MAP ID	PID	FEE OWNER	FEE OWNER ADDRESS	FEE OWNER ADDRESS (CONT.)	CITY/STATE	ZIP CODE	PROPERTY ADDRESS	BUSINESS NAME	USE DESCRIPTION	SF RES. EQUIV. UNITS	UNIT ASSESSMENT RATE	PROPOSED ASSESSMENT
1	222650001010	INDEPENDENT SCHOOL DIST 192	ATTN: ACCOUNTS PAYABLE	20655 FLAGSTAFF AVE	FARMINGTON MN	55024	5580 170TH ST W	NORTH TRAIL ELEMENTARY	RESIDENTIAL	7	\$ 5,394.57	\$ 37,762.00

## **APPENDIX D**

### **2019 Geotechnical Report – Log of Test Boring**



● Denotes Location of Standard Penetration Test Boring



Drawing Information

Project No:  
B1908307

Drawing No:  
B1908307\_Bores

Drawn By: CMF  
Drawn Date: 8/1/2019  
Checked By: NL  
Last Modified: 8/28/2019

Project Information

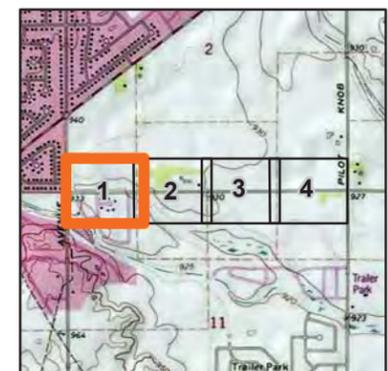
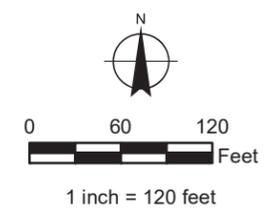
Geotechnical Evaluation

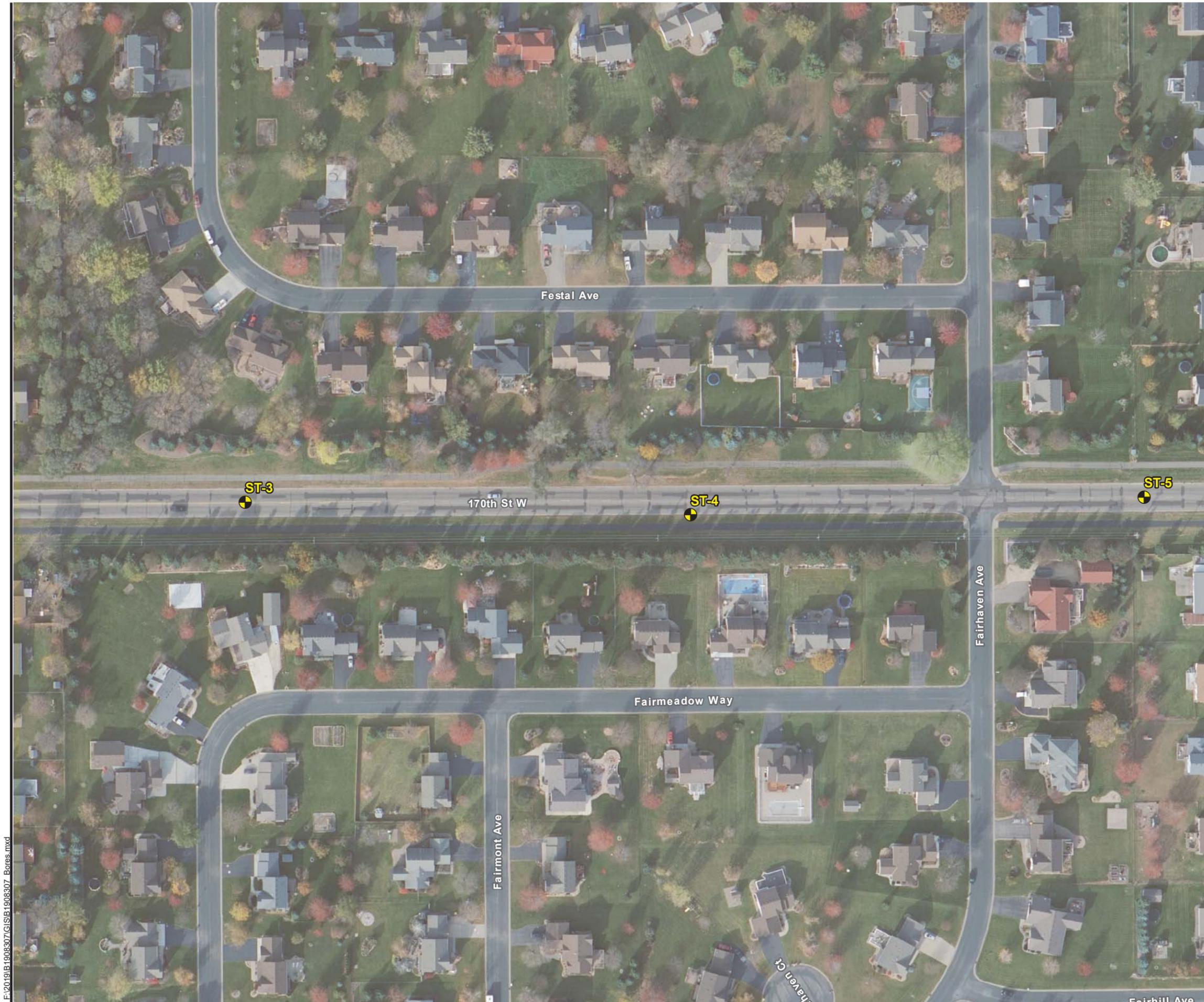
170th Street West  
Reconstruction Project

Flagstaff Avenue to  
Pilot Knob Road

Lakeville, Minnesota

**Soil Boring  
Location  
Sketch**

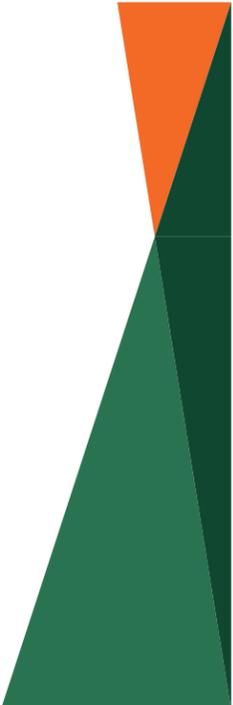




● Denotes Location of Standard Penetration Test Boring

**BRAUN  
INTERTEC**  
The Science You Build On.

11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com



Drawing Information

Project No:  
B1908307

Drawing No:  
B1908307\_Bores

Drawn By: CMF  
Drawn Date: 8/1/2019  
Checked By: NL  
Last Modified: 8/28/2019

Project Information

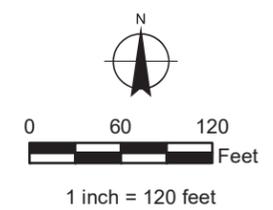
Geotechnical Evaluation

170th Street West  
Reconstruction Project

Flagstaff Avenue to  
Pilot Knob Road

Lakeville, Minnesota

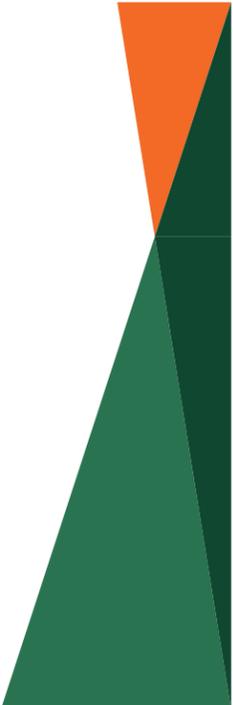
**Soil Boring  
Location  
Sketch**





● Denotes Location of Standard Penetration Test Boring

**BRAUN  
INTERTEC**  
The Science You Build On.  
11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com



Drawing Information

Project No:  
B1908307  
Drawing No:  
B1908307\_Bores  
Drawn By: CMF  
Drawn Date: 8/1/2019  
Checked By: NL  
Last Modified: 8/28/2019

Project Information

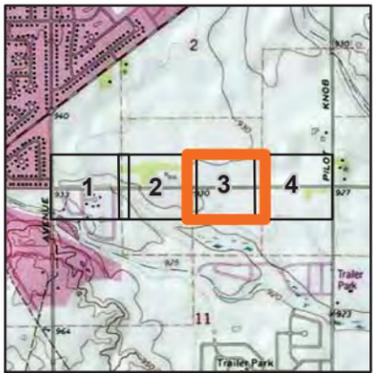
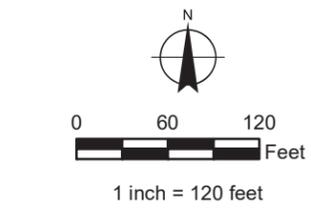
Geotechnical Evaluation

170th Street West  
Reconstruction Project

Flagstaff Avenue to  
Pilot Knob Road

Lakeville, Minnesota

Soil Boring  
Location  
Sketch

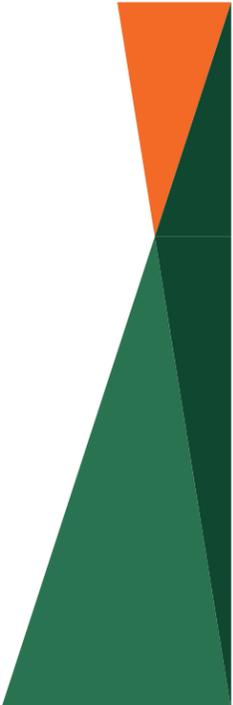


F:\2019\B1908307\GIS\B1908307\_Bores.mxd



● Denotes Location of Standard Penetration Test Boring

**BRAUN  
INTERTEC**  
The Science You Build On.  
11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com



Drawing Information

Project No:  
B1908307  
Drawing No:  
B1908307\_Bores  
Drawn By: CMF  
Drawn Date: 8/1/2019  
Checked By: NL  
Last Modified: 8/28/2019

Project Information

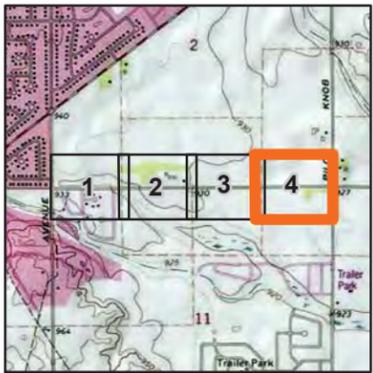
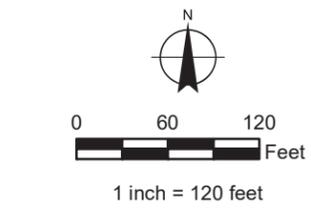
Geotechnical Evaluation

170th Street West  
Reconstruction Project

Flagstaff Avenue to  
Pilot Knob Road

Lakeville, Minnesota

Soil Boring  
Location  
Sketch



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See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B1908307</b>				<b>BORING: ST-3</b>	
<b>Geotechnical Evaluation</b>				LOCATION: See attached sketch	
<b>170th Street W Reconstruction</b>				NORTHING: 184271 EASTING: 532620	
<b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b>				START DATE: 08/07/19 END DATE: 08/07/19	
<b>Lakeville, Minnesota</b>				SURFACING: Bituminous WEATHER:	
DRILLER: J. Chermak		LOGGED BY: M. Rajaei			
SURFACE ELEVATION: 930.5 ft	RIG: 7519	METHOD: 3 1/4" HSA			

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
929.5		PAVEMENT, 6 inches of bituminous over 6 1/2 inches of aggregate base					
1.0		POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		11-13-16 (29) 17"			
924.5			5	8-10-8 (18) 17"			
6.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					Water not observed to cave-in depth of 3.5 feet immediately after withdrawal of auger.
			10				
			15				
			20				
			25				
			30				

<b>Project Number B1908307</b>					<b>BORING: ST-4</b>		
<b>Geotechnical Evaluation</b>					LOCATION: See attached sketch		
<b>170th Street W Reconstruction</b>					NORTHING: 184255	EASTING: 533178	
<b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b>					START DATE: 08/07/19	END DATE: 08/07/19	
<b>Lakeville, Minnesota</b>							
DRILLER: J. Chermak		LOGGED BY: M. Rajaei		SURFACE ELEVATION: 932.2 ft		RIG: 7519	
				METHOD: 3 1/4" HSA		SURFACING: Bituminous	
				WEATHER:			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
931.2		PAVEMENT, 6 inches of bituminous over 6 inches of aggregate base					
1.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, with Gravel, trace Silty Sand, dark brown to brown, moist		6-8-10 (18) 18"			
			5	9-11-13 (24) 18"			
925.2		POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		9-9-14 (23) 18"			
7.0			10	8-7-8 (15) 17"		9	
921.2	▼	END OF BORING					Water not observed while drilling.
11.0		Boring then backfilled with auger cuttings					Water observed at 10.0 feet with 10.0 feet of tooling in the ground at end of drilling.
			15				Water not observed to cave-in depth of 6.5 feet immediately after withdrawal of auger.
			20				
			25				
			30				



<b>Project Number B1908307</b> <b>Geotechnical Evaluation</b> <b>170th Street W Reconstruction</b> <b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b> <b>Lakeville, Minnesota</b>					BORING: <b>ST-6</b>		
					LOCATION: See attached sketch		
					NORTHING: 184262	EASTING: 534340	
DRILLER: J. Chermak	LOGGED BY: M. Rajaei		START DATE: 08/07/19	END DATE: 08/07/19			
SURFACE ELEVATION: 929.5 ft	RIG: 7519	METHOD: 3 1/4" HSA	SURFACING: Bituminous	WEATHER:			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
928.5		PAVEMENT, 6 inches of bituminous over 6 inches of aggregate base					
1.0		FILL: CLAYEY SAND (SC), contains layers of Poorly Graded Sand, with Silty Sand, trace Gravel, dark brown, moist		6-5-7 (12) 17"			
925.5		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, with Gravel, brown, moist	5	6-8-9 (17) 17"			
4.0							
922.5		POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		8-8-9 (17) 17"			
7.0							
918.5	▼		10	4-5-8 (13) 17"		15	Water not observed while drilling.
11.0		END OF BORING					Water observed at 10.0 feet with 10.0 feet of tooling in the ground at end of drilling.
		Boring then backfilled with auger cuttings					Water not observed to cave-in depth of 6.5 feet immediately after withdrawal of auger.
			15				
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B1908307</b>				<b>BORING: ST-7</b>	
<b>Geotechnical Evaluation</b>				LOCATION: See attached sketch	
<b>170th Street W Reconstruction</b>				NORTHING: 184285      EASTING: 534800	
<b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b>				START DATE: 08/07/19      END DATE: 08/07/19	
<b>Lakeville, Minnesota</b>				SURFACING: Bituminous      WEATHER:	
DRILLER: J. Chermak		LOGGED BY: M. Rajaei			
SURFACE ELEVATION: 927.7 ft		RIG: 7519		METHOD: 3 1/4" HSA	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
926.7		PAVEMENT, 6 inches of bituminous over 6 inches of aggregate base					
1.0		POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)		17-14-16 (30) 18"			
921.7			5	8-10-9 (19) 1"			
6.0		END OF BORING					Water not observed while drilling.
		Boring then backfilled with auger cuttings					Water not observed to cave-in depth of 4.0 feet immediately after withdrawal of auger.
			10				
			15				
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B1908307</b>				<b>BORING: ST-8</b>	
<b>Geotechnical Evaluation</b>				LOCATION: See attached sketch	
<b>170th Street W Reconstruction</b>				NORTHING: 184269 EASTING: 535275	
<b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b>				START DATE: 08/07/19 END DATE: 08/07/19	
<b>Lakeville, Minnesota</b>				SURFACING: Bituminous WEATHER:	
DRILLER: J. Chermak		LOGGED BY: M. Rajaei			
SURFACE ELEVATION: 927.0 ft	RIG: 7519	METHOD: 3 1/4" HSA			

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
926.0		PAVEMENT, 6 inches of bituminous over 6 inches of aggregate base					
1.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, contains layers of Silty Sand, trace Gravel, brown and dark brown, moist		9-11-16 (27) 17"			
923.0		POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)	5	8-9-8 (17) 17"			
921.0		END OF BORING					Water not observed while drilling.
6.0		Boring then backfilled with auger cuttings					Water not observed to cave-in depth of 3.5 feet immediately after withdrawal of auger.
			10				
			15				
			20				
			25				
			30				

<b>Project Number B1908307</b> <b>Geotechnical Evaluation</b> <b>170th Street W Reconstruction</b> <b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b> <b>Lakeville, Minnesota</b>					<b>BORING: ST-9</b>		
					LOCATION: See attached sketch		
DRILLER: J. Chermak			LOGGED BY: M. Rajaei		NORTHING: 184305	EASTING: 535814	
SURFACE ELEVATION: 928.1 ft			RIG: 7519		METHOD: 3 1/4" HSA		
			SURFACING: Bituminous		WEATHER:		
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	$q_p$ tsf	MC %	Tests or Remarks
926.9		PAVEMENT, 6 inches of bituminous over 8 inches of aggregate base					
1.2		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, contains layers of Sandy Lean Clay, trace Gravel, trace organic, brown and dark brown, moist		16-14-16 (30) 18"			
924.1		POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist, medium dense (GLACIAL OUTWASH)	5	13-17-14 (31) 12"			
4.0							
922.1		END OF BORING					
6.0		Boring then backfilled with auger cuttings					Water not observed while drilling.
			10				Water not observed to cave-in depth of 3.5 feet immediately after withdrawal of auger.
			15				
			20				
			25				
			30				

<b>Project Number B1908307</b>					<b>BORING: ST-10</b>		
<b>Geotechnical Evaluation</b>					LOCATION: See attached sketch		
<b>170th Street W Reconstruction</b>					NORTHING: 184266 EASTING: 536111		
<b>170th Street W, Flagstaff Avenue to Pilot Knob Road</b>					START DATE: 08/07/19 END DATE: 08/07/19		
<b>Lakeville, Minnesota</b>					SURFACING: Bituminous WEATHER:		
DRILLER: J. Chermak		LOGGED BY: M. Rajaei		SURFACE ELEVATION: 927.3 ft		RIG: 7519	METHOD: 3 1/4" HSA
Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
926.3		PAVEMENT, 6 inches of bituminous over 6 inches of aggregate base					
1.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, contains layers of Silty Sand, trace Gravel, brown, moist		13-14-18 (32) 216"			
923.3		POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist to wet, medium dense to dense (GLACIAL OUTWASH)		11-13-19 (32) 216"			
4.0			5	8-8-9 (17) 216"			
916.3			10	7-7-7 (14) 204"			
11.0		END OF BORING					Water observed at 8.0 feet with 8.0 feet of tooling in the ground while drilling.
		Boring then backfilled with auger cuttings					Water observed at 10.0 feet with 10.0 feet of tooling in the ground at end of drilling.
			15				Water not observed to cave-in depth of 6.5 feet immediately after withdrawal of auger.
			20				
			25				
			30				