Planning Report

February 12, 2010

Pavement Management Plan

Prepared for:

Excelsior

City of Excelsior
339 3rd Street
Excelsior, MN 55331

WSB Project No. 1140-61

Prepared by:

701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416 (763) 541-4800

WSB & Associates, Inc.

PLANNING REPORT

PAVEMENT MANAGEMENT PLAN

FOR THE
CITY OF EXCELSIOR, MINNESOTA

February 12, 2010

Prepared By:

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February 12, 2010

Honorable Mayor and City Council
City of Excelsior
339 Thrid Street
Excelsior, MN 55331

Re: Planning Report
Pavement Management Plan
City of Excelsior, MN
WSB Project No. 1140-61

Dear Mayor and City Council Members:

Transmitted herewith for your review is a draft multi-year Pavement Management Plan along with Potential Funding Scenarios for the recommended improvements.

We would be happy to discuss this report with you at your convenience. Please contact me at 763-541-4800 if you have any questions regarding this report.

Sincerely,

WSB & Associates, Inc.

K. B. Kawlewski

Kevin B. Kawlewski, PE
Associate

Attachment

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.

Chris E. Hartzell, PE

Date: February 12, 2010 Lic. No. 47155

Quality Control Review Completed By:

Kevin B. Kawlewski, PE

Date: February 12, 2010 Lic. No. 25196

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report consists of creating a multi-year program for street improvements based on pavement field ratings completed in the fall of 2007. This report accounts for additional analysis to more accurately determine the need, level, or required method of improvement for each street section.

The 2010 - 2016 Pavement Management Plan consists of the following areas by year:

- **2010 – Reconstruction**
  - 1st Street – West Lake Street to Center Street
  - Linwood Avenue – West Lake Street to Courtland Street
  - Courtland Street – 1st Street to 2nd Street
  - Grove Street – Linwood Avenue to 1st Street

- **2010 – Mill and Overlay**
  - West Lake Street – 2nd Street to Lake Street
  - Lake Street – West Lake Street to Center Street
  - 1st Street – West Lake to Street to Lake Minnetonka
  - Alley from 1st Street to Courtland Street

- **2011 – Reconstruction**
  - Bell Street – West Lake Street to Center Street
  - Elm Street – West Lake Street to Bell Street
  - Courtland Street – 2nd Street to 3rd Street

- **2011 – Mill and Overlay** (This area will include spot replacement of curb and gutter.)
  - 2nd Street – West Lake Street to Center Street
  - West Lake Street – 3rd Street to 2nd Street
  - Bell Street – West Lake Street to Lake Minnetonka
  - 1st Street – West Lake to Street to Lake Minnetonka
  - Alley from 1st Street to Courtland Street

- **2012 - 2013 – MCES Reconstruction**
  - Excelsior Boulevard – 2nd Street to eastern City Limits

- **2014 - 2015 – MCES Reconstruction** (Note: The Metropolitan Council had originally indentified this area for sanitary sewer system improvements 2010-2012. The actual timing and extent of their project is unknown and shown here based on previous discussions with them. It is anticipated that the Metropolitan Council will reconstruct the streets affected by the improvements to the sanitary sewer system.)
  - **Beehre Avenue**
  - **George Street**
  - **Williams Street**
  - **College Avenue**
  - **Morse Avenue**

- **2016 – Reconstruction**
  - Academy Avenue
  - Grant Street – south of Academy Avenue

- **2016 – Mill and Overlay** (This area will include spot replacement of curb and gutter.)
  - Glencoe Road
  - Monroe Avenue
  - Grant Street
  - Pleasant Street

Estimated costs for the proposed improvements were calculated for each project year. The proposed improvements were prioritized based on several factors such as severity of road condition, utility condition, and available funding. From this information, a multi-year street improvement program has been developed to be utilized as a reference for future street improvement projects.

2. INTRODUCTION

2.1 Authorization

On November 30, 2007, the Excelsior City Council initially authorized the completion of Phase 2 and 3 of the Pavement Management Plan. Since the initiation of these original phases, the City Council has been working with staff to assess the costs and potential funding sources for these improvements. Project funding has been discussed at several workshop sessions and has resulted in the final development of an implementation plan.

2.2 Scope

This Pavement Management Plan provides a multi-year program for street reconstruction and pavement rehabilitation for several street segments as identified by the 2007 City of Excelsior Overall Condition Index (OCI).

The scope of the Pavement Management Plan has been split into three separate phases.

Phase 1 was authorized on August 20, 2007 and has been completed. Phase 1 consisted of field assessing each street within the city and applying an overall condition index (OCI) rating to each street segment . A map that depicts the current OCI rating for each City street segment is shown in ***Figure 1 of Appendix A***.

Phase 2 lays out a six-year Capital Improvement Plan (CIP) that defines projects to maintain the average overall condition index (OCI) rating determined in Phase 1. The CIP prioritizes the projects per year as determined by utilizing an OCI baseline for recommended surface remediation categories that is founded on U.S. Army Corps of Engineers Pavement Management Methodology, historical data of other Pavement Management Studies, and subsurface explorations. A cost estimate for each plan year was calculated and improvements are scheduled to fit the City's budget and future budget needs. A map depicting the project areas and corresponding year for construction is shown in ***Figure 2*** of ***Appendix A.***

Phase 3 develops an overall funding scenario for public improvements and researching alternate means of funding each type of improvement identified in the CIP.

2.3 Data Available

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

- City of Excelsior Utility Plans
- City of Excelsior Record Plans
- Field Observations of the Area
- Subsurface Explorations preformed on January 17, 2008

3. GENERAL BACKGROUND

3.1 Project Location

Street segments that were recognized by the Pavement Management Plan have been categorized into improvement areas over six separate years as listed below:

- 2010 – Lake Street, 1st Street, Linwood Avenue, West Lake Street north of 2nd Street, Grove Street and Courtland Street north of 2nd Street.
- 2011 – 2nd Street, Bell Street, Elm Street, West Lake Street and Courtland Street between 2nd and 3rd Street..
- 2012 - 2013 – Excelsior Boulevard from 2nd Street to the eastern City Limits
- 2014 - 2015 – Beehrle Avenue, George Street, Williams Street, College Avenue, Morse Avenue (north of the streetcar line),
- 2016 – Glencoe Road, Monroe Avenue, Grant Street, Academy Avenue, Pleasant Street, and Morse Avenue (south of the streetcar line).

The project location map can be found on ***Figure 2*** in ***Appendix A***.

3.2 Project History

The Pavement Management Program was created to help evaluate and monitor the condition of existing street surfaces to schedule timely maintenance and improvement activities. The Pavement Management Program consists of field review of City streets and establishment of an Overall Condition Index (OCI) based on the type and number of distresses in each roadway segment.

The general categories that define OCI rankings are as follows:

OCI	**Recommended Improvement**
91-100	Do Nothing
61-90	Routine Maintenance/Seal Coat/Crack Seal
31-60	Overlay
0-30	Total Reconstruct/Reclamation

The following table represents the streets included in the 2010 – 2016 Pavement Management Plan with the current OCI rating and the year in which it was built.

Street	2007 OCI Rating	Year Constructed
Center Street	36-65	**
West Drive	75	**
Water Street	75-84	1989
East Drive	67	**
Minnetonka Blvd	69	**
Old Log Way	69	**
Maclynn Road	76	1971
Division Street	72	1984
2nd Avenue	72-77	1984
3rd Avenue	60-77	1984
Lake Street	56-61	1969
2nd Street	43-63	1940
3rd Street	34-66	1940
West Lake Street	38-55	1969
Bell Street	17-35	1940
Elm Street	35	**
Courtland Street	14-43	1938
Grove Street	35	1938
Linwood Avenue	22-35	**
1st Street	19-35	1940
Glencoe Road	56	1969
Monroe Avenue	49	1969
Grant Street	64-82	1969
Academy Avenue	29-39	1969
Pleasant Street	52	1969
Morse Avenue	45	1977

** Unknown roadway construction

3.3 Existing Conditions/Proposed Improvements

3.3.1 Area 1

Existing Streets

Area 1 was identified in the original pavement plan and consisted of the following streets:

- Center Street from Lake Street to 3rd Street
- West Drive from 2nd Street to 3rd Street
- Water Street from Lake Street to College Avenue
- East Drive from 2nd Street to 3rd Street
- Minnetonka Blvd from the north city limits to Excelsior Blvd
- Old Log Way from Excelsior Blvd to end
- Maclynn Road from Excelsior Blvd to end
- Division Street from 2nd Avenue to the south city limits
- 2nd Avenue from Mill Street to Division Street
- 3rd Avenue from Mill Street to the east city limits

Overall, the streets in Area 1 were determined to be in good condition with OCI ratings ranging from 36 to 84.

In 2008, subsurface explorations were performed at various locations within the 2008 project area. The boring locations and existing materials are listed below:

1. 3rd Street west of Courtland Street
    - Approximately 7inches of bituminous pavement
    - 3 inches of aggregate base
    - 2 feet of clayey sand

2. 3rd Street between Center Street and West Drive
    - Approximately 6 inches of bituminous pavement
    - 4 inches of aggregate base
    - 2 feet of sandy lean clay

3. 3rd Street
    - Approximately 6 inches bituminous pavement
    - 2 feet of clayey sand

Proposed Streets

Given the existing conditions, Area 1 was proposed for crack filling and seal coating, to prolong the life of the bituminous roadway. The improvements identified on these streets were completed in 2008.

3.3.2 2010 – Reconstruction and Mill & Overlay

Existing Streets

The 2010 – Reconstruction area consists of the following streets:

- 1st Street – West Lake Street to Center Street
- Linwood Avenue – West Lake Street to Courtland Street
- Courtland Street – 1st Street to 2nd Street
- Grove Street – Linwood Avenue to 1st Street

The streets in the 2010 – Reconstruction area are in poor condition with OCI ratings ranging from 14-35.

The 2010 – Mill and Overlay area consists of the following streets:

- West Lake Street – 2nd Street to Lake Street
- Lake Street – West Lake Street to Center Street
- 1st Street – West Lake to Street to Lake Minnetonka
- Alley from 1st Street to Courtland Street

The streets in the 2010 – Mill & Overlay area are in fair condition with OCI ratings ranging from 34-66.

In 2008, subsurface explorations were performed at various locations within the 2010 project area. The boring locations and existing materials are listed below:

1. 1st Street at West Lake Street
    - Approximately 3 inches of bituminous pavement
    - 3 inches of aggregate base
    - 4 feet of clayey sand

2. Linwood Avenue west of Courtland Street
    - Approximately 6 inches of bituminous pavement
    - 3 inches of aggregate base
    - 2.5 feet of lean clay

Proposed Streets

The streets in the 2010 - Reconstruction area are being proposed for reconstruction. Roadway reconstruction includes removing of the existing bituminous pavement and subcutting the roadway to accommodate the following road section.

- 2 inches of wear course
- 2 inches of non-wear course
- 6 inches of class V aggregate base
- 2 foot of select granular material for subgrade correction

Broken and/or settling curb and gutter will be replaced as determined necessary during design to allow for proper drainage.

Given the existing conditions, the streets in the 2010 – Mill & Overlay area are proposed for a mill and overlay. Mill and overlay projects replace the wearing course of the road section by removing top 2-inches of the existing roadway and replacing it with 2-inches of new bituminous asphalt.

Existing Sanitary Sewer

An 8-inch sanitary sewer, constructed in 1938, currently services properties along Grove Street.

Proposed Sanitary Sewer

Due to the proposed street reconstruction and the age of the sanitary sewer system, it is proposed to remove the existing sanitary sewer system to the right-of-way line and replace it with a new 8-inch PVC sanitary sewer main and 4-inch sanitary sewer services. This improvement will upgrade the sanitary sewer from a clay sanitary sewer, which is brittle and prone to root intrusion, to a stronger PVC sanitary sewer.

Existing Water Main

A 4-inch cast iron water main currently services properties along 1st Street. A 6-inch cast iron watermain currently services properties along Linwood Avenue and Grove Street. The above-mentioned water main was constructed in 1940.

Proposed Water Main

Due to the proposed street reconstruction and the age of the water main, it is proposed to replace the entire water main system and upsize to 8-inch ductile iron pipe with 1-inch copper pipe services. Cast iron pipe tends to become more brittle with age and construction-related disturbances could cause breaks to occur. The water main replacement is also more cost effective given that the street is proposed for reconstruction.

Existing Storm Sewer

A 15-inch RCP storm sewer exists on Linwood Avenue from just east of Grove Street to West Lake Street. Stormwater collected by this system is discharged into Lake Minnetonka.

Proposed Storm Sewer

Replacing the sanitary sewer and water main will require the replacement of the aforementioned storm sewer.

3.3.3 2011 – Reconstruction and Mill & Overlay

Existing Streets

The 2011 – Reconstruction area consists of the following streets:

- Bell Street – West Lake Street to Center Street
- Elm Street – West Lake Street to Bell Street
- Courtland Street – 2nd Street to 3rd Street

The streets in the 2011 – Reconstruction area are generally in poor condition with OCI ratings ranging from 17-43. Bell Street, Elm Street, and Courtland Street have OCI ratings ranging from 17-43.

The 2011 – Mill and Overlay area consists of the following streets:

- 2nd Street – West Lake Street to Center Street
- West Lake Street – 3rd Street to 2nd Street
- Bell Street – West Lake Street to Lake Minnetonka
- 1st Street – West Lake to Street to Lake Minnetonka
- Alley from 1st Street to Courtland Street

The streets in the 2011 – Mill and Overlay area are generally in poor condition with OCI ratings ranging from 17-55. West Lake Street, 1st Street, and 2nd Street have OCI ratings ranging from 38-63,

In 2008, subsurface explorations were performed at various locations within the 2010 project area. The boring locations and existing materials are listed below:

1. Bell Street east of Elm Street
    - Approximately 6 inches of bituminous pavement
    - 2 inches of aggregate base
    - 2.5 feet of clayey sand

4. 2nd Street between Courtland Street and Center Street
    - Approximately 6 inches of bituminous pavement
    - 3 inches of aggregate base
    - 7 feet of silty clayey sand

5. 2nd Street between at School Avenue
    - Approximately 7 inches of bituminous pavement
    - 11 inches of aggregate base
    - 4 feet of silty clayey sand

3. 1st Street at West Lake Street
    - Approximately 3 inches of bituminous pavement

- 3 inches of aggregate base
- 4 feet of clayey sand

Proposed Streets

Given the existing conditions, West Lake Street is being proposed for mill and overlay.

Bell Street, Elm Street, and Courtland Street however are being proposed for reconstruction. Roadway reconstruction includes removing of the existing bituminous pavement and subcutting the roadway to accommodate the following road section.

- 2 inches of wear course
- 2 inches of non-wear course
- 6 inches of class V aggregate base
- 2 foot of select granular material for subgrade correction

Broken and/or settling curb and gutter will be replaced as determined necessary during design to allow for proper drainage.

Existing Sanitary Sewer

An 8-inch sanitary sewer, constructed in 1938, currently services properties along Courtland Street.

Proposed Sanitary Sewer

No sanitary sewer improvements are currently proposed on West Lake Street.

Due to the proposed street reconstruction on Bell Street, Elm Street, and Courtland Street and the age of the sanitary sewer system, it is proposed to remove the existing sanitary sewer system to the right-of-way line and replace it with a new 8-inch PVC sanitary sewer main and 4-inch sanitary sewer services. This improvement will upgrade the sanitary sewer from a clay sanitary sewer, which is brittle and prone to root intrusion, to a stronger PVC sanitary sewer.

Existing Water Main

A 6-inch cast iron watermain, constructed in 1940, currently services properties located on Bell Street.

Proposed Water Main

No water main improvements are currently proposed on West Lake Street.

Due to the proposed street reconstruction on Bell Street, Elm Street, and Courtland Street and the age of the water main, it is proposed to replace the entire water main system and upsize to 8-inch ductile iron pipe with 1-inch copper pipe services. Cast iron pipe tends

to become brittle with age and construction-related disturbances could cause breaks to occur. The water main replacement is cost effective given that the street is proposed for reconstruction.

Existing Storm Sewer

A 12-inch RCP storm sewer exists on Courtland Street from 3rd Street to Bell Street. Stormwater collected by this system is discharged to a ditch along Bell Street where it flows overland until it is received by a 15-inch storm sewer near Bell Street and Elm Street. The 15-inch storm sewer conveys the stormwater west along Bell Street to Lake Minnetonka.

Proposed Storm Sewer

Replacing the sanitary sewer and water main will require the replacement of the aforementioned storm sewer.

3.3.4 2012 – 2013 MCES Reconstruction

Existing Streets

The 2012 – 2013 MCES Reconstruction consist of the following streets

- Excelsior Boulevard to 2nd Street to the eastern City Limits

The streets in Area 6 are in poor condition with OCI ratings ranging from 25-53.

Proposed Improvements

The Metropolitan Council is proposing to construct a second force main interceptor sewer parallel to the existing force main that runs easterly along George St. and Excelsior Blvd to a gravity interceptor in the City of Shorewood. Excelsior Boulevard from Minnetonka Boulevard to Old Log Way is in poor condition with an average OCI rating of 25

Proposed Streets

Given the existing conditions, the streets in the 2012-2013 MCES Reconstruction area are being proposed for reconstruction. Roadway reconstruction includes removing of the existing bituminous pavement and subcutting the roadway to accommodate the following road section.

- 2 inches of wear course
- 2 inches of non-wear course
- 6 inches of class V aggregate base
- 2 foot of select granular material for subgrade correction

Broken and/or settling curb and gutter will be replaced as determined necessary during design to allow for proper drainage.

Existing Storm Sewer

A system of piping along Excelsior Boulevard collects the storm water runoff in this area and discharges directly to Lake Minnetonka.

Proposed Storm Sewer

The storm is proposed to be replaced in the reconstruction area.

3.3.5 2014 – 2015 MCES Reconstruction

The 2014 – 2015 MCES reconstruction area consists of the following streets:

- Beehrle Avenue from Oak Street to George Street
- George Street from Beehrle Avenue to Water Street
- Williams Street from Oak Street to College Avenue
- College Avenue from Williams Street to Water Street
- Morse Avenue north of the streetcar line to Excelsior Blvd

The streets in the 2014 – 2015 MCES Reconstruction area are in poor condition with OCI ratings ranging from 45-53.

Proposed Improvements

The Metropolitan Council is proposing improvements to its regional sanitary sewer facilities in and around the City of Excelsior. As part of the Metropolitan Council improvements, the above-mentioned streets will be reconstructed. The Metropolitan Council is proposing the following improvements:

- Upgrading the lift station located just east of the intersection of Beehrle St. and Oak St. in Excelsior.

- Installing a second force main interceptor sewer parallel to the existing force main that runs easterly along George St. and Excelsior Blvd. from the aforementioned lift station to an existing gravity interceptor sewer in Shorewood.
- Eliminating the lift station on Galpin Lake Rd. just south of Highway 7 in Shorewood and installing a gravity interceptor across Highway 7, down Water Street, College Avenue, and Williams Street, to the lift station on Beehrle St. and Oak St.

3.3.6 2016 – Reconstruction and Mill & Overlay

Existing Streets

The 2016 – Reconstruction area consists of the following streets:

- Grant Street from Academy Avenue to the end
- Academy Avenue from west city limits to Water Street

The streets in the 2016 Reconstruction area are generally in fair condition with OCI ratings ranging from 29-82.

The 2016 – Mill and Overlay area consists of the following streets:

- Glencoe Road from Williams Street to the city limits
- Monroe Avenue from Grant Street to the end
- Pleasant Street from Academy Avenue to the end
- Morse Avenue from Highway 7 to the streetcar line

The streets in the 2016 Mill and Overlay area are generally in fair condition with OCI ratings ranging from 49-82.

Earlier this year subsurface explorations were performed at various locations within the project area. The boring locations and existing materials are listed below:

1. Monroe Avenue
    - Approximately 5 inches of bituminous pavement
    - 3 inches of aggregate base
    - 4 feet of sandy lean clay

2. Pleasant Street north of Academy Avenue
    - Approximately 9 inches of bituminous pavement
    - 2 inches of aggregate base
    - 2 feet of sandy lean clay

Proposed Streets

Given the existing conditions, Glencoe Road, Monroe Avenue, Grant Street, and Pleasant Street are being proposed for mill and overlay.

Academy Avenue and Grant Street south of Academy Avenue however are being proposed for reconstruction. Roadway reconstruction includes removing of the existing bituminous pavement and subcutting the roadway to accommodate the following road section.

- 2 inches of wear course
- 2 inches of non-wear course
- 6 inches of class V aggregate base
- 2 foot of select granular material for subgrade correction

Broken and/or settling curb and gutter will be replaced as determined necessary during design to allow for proper drainage.

Existing Sanitary Sewer

A 10-inch sanitary sewer along Morse Avenue currently services the entire southeast portion of the City. An 8-inch sanitary sewer system, constructed between 1962-1964, currently services properties along Glencoe Road, Monroe Avenue, Grant Street, Pleasant Street, and Academy Avenue.

Proposed Sanitary Sewer

For the purposes of this study, it has been assumed that the 10-inch sanitary sewer along Morse Avenue will be replaced at the time of the street reconstruction; however, the existing system should be further analyzed for deficiencies during design. The sanitary sewer on Academy Avenue is being proposed for replacement with a new 8-inch PVC sanitary sewer main and 4-inch sanitary sewer services to the right-of-way line. This improvement will upgrade the sanitary sewer from a clay sanitary sewer, which is brittle and prone to root intrusion, to a stronger PVC sanitary sewer.

Existing Water Main

A 6-inch cast iron water main, constructed in 1938, services properties along Glencoe Road and acts as a loop to the water distribution system serving the southwest portion of the City. A 6-inch cast iron water main, constructed between1968-1969, currently services properties along Monroe Avenue, Grant Street, Pleasant Street, and Academy Avenue. An 8-inch ductile iron water main on Morse Street, constructed in 1977, provides service to properties along Morse Street, Elm Street, and Linden Street.

Proposed Water Main

Due to the proposed street reconstruction and the age of the water main, it is proposed to replace the water main on Academy Avenue. The proposed water main should be upsized to 8-inch ductile iron pipe with 1-inch copper pipe services. Cast iron pipe tends to become more brittle with age and construction-related disturbances could cause breaks to occur. The water main replacement is also more cost effective given that the street is proposed for reconstruction.

Existing Storm Sewer

A 15-inch RCP storm sewer provides drainage for the wetland located on the east side of Glencoe Road.

Proposed Storm Sewer

There are no storm sewer improvements proposed for this project.

3.4 Permits/Approvals

Permits and approvals may be required depending on the type of improvement involved in the Pavement Management Plan. Each area may require project-specific permitting which will be completed in final design.

3.5 Construction Traffic

Construction traffic will be reviewed for each specific project and detailed during final design. General construction traffic will most likely include an increase in truck traffic on the streets adjacent to the construction area. Residents will have access to their properties during construction; however, some minor inconvenience is anticipated.

The table below summarizes the proposed improvements documented in the following sections.

Proposed Improvements					
Project Description	**Project Location**	**Surface Improvements**	**Sanitary Sewer Improvements**	**Water Main Improvements**	**Storm Sewer Improvements**
2010 - Reconstruction	1st Street Linwood Avenue Courtland Street Grove Street	Street Reconstruction Subgrade Improvements Spot Curb Replacement	Replacement of Sanitary Sewer	Replacement of Water Main	Replacement of Storm Sewer
2010 - Mill and Overlay	West Lake Street Lake Street 1st Street Alley	Mill and Overlay & Spot Curb Replacement	None	None	None
2011 - Reconstruction	Bell Street Elm Street Courtland Street	Street Reconstruction Subgrade Improvements Spot Curb Replacement	Replacement of Sanitary Sewer	Replacement of Water Main	Replacement of Storm Sewer
2011 - Mill and Overlay	2nd Street West Lake Street Bell Street 1st Street Alley from 1st Street to Courtland Street	Mill and Overlay & Spot Curb Replacement	None	None	None
2012 - 2013 MCES Reconstruction	Excelsior Boulevard	Street Reconstruction Subgrade Improvements Spot Curb Replacement	None	None	Replacement of Storm Sewer
2014 - 2015 MCES Reconstruction	Beehre Avenue George Street Williams Street College Avenue Morse Avenue	Street Reconstruction Subgrade Improvements Curb Replacement	Replacement of Sanitary Sewer	Replacement of Water Main	Replacement of Storm Sewer

4. FINANCING

4.1 Opinion of Cost

Detailed opinions of cost can be found in ***Appendix D*** of this report. The opinions of cost incorporate estimated 2008 construction costs and include a 20% contingency and 30% for all related indirect costs (legal, administrative, engineering, and financing items).

The table below provides a summary of the opinions of cost for the 2008, 2009, 2010, 2011, and 2012 improvements:

DESCRIPTION	STREETS	SANITARY SEWER	WATER MAIN	STORM SEWER	TOTAL
2010 RECONSTRUCT	$498,600.00	$274,900.00	$327,800.00	$58,800.00	$1,160,100.00
2010 MILL & OVERLAY	$255,300.00	$ -	$ -	$ -	$255,300.00
2011 RECONSTRUCT	$417,900.00	$262,900.00	$248,300.00	$132,100.00	$1,061,200.00
2011 MILL & OVERLAY	$106,900.00	$ -	$ -	$ -	$106,900.00
2012-2013 MCES RECONSTRUCT	$1,513,300.00	$ -	$ -	$646,900.00	$2,160,200.00
2014-2015 MCES RECONSTRUCT	$1,456,600.00	$66,200.00	$ -	$558,100.00	$2,080,900.00
2016 MILL & OVERLAY	$175,500.00	$ -	$ -	$ -	$175,500.00
2016 RECONSTRUCT	$320,000.00	$116,100.00	$174,200.00	$ -	$610,300.00
TOTAL	$ 4,744,100	$ 720,100	$ 750,300	$1,395,900	$ 7,610,400

For projects constructed after 2008 project costs may increase due to inflation, material cost increases, and fuel escalations.

4.2 Funding

Funding for each project is expected to consist of a combination of Bonding options, potential Special Assessments, Street Capital Improvement Funds, Sanitary Sewer Funds, Water Main Funds, and Storm Sewer Funds. Funding will need to be determined independently for each project year as project costs and assessment policies change.

5. RECOMMENDATIONS

Due to deteriorating street conditions identified as part of the City of Excelsior's Pavement Management Plan, the following improvements are recommended for construction as outlined in this report. It should be noted that this report should be utilized as a reference for future feasibility reports and is not a comprehensive feasibility document for each of the given areas.

2010

- Reconstruction and Mill & Overlay – $1,415,400
  - Bituminous mill and overlay
  - Street reconstruction
  - Spot curb and gutter repair
  - Replace sanitary sewer
  - Replace water main
  - Replace storm sewer

2011

- Reconstruction and Mill & Overlay – $1,168,100
  - Bituminous mill and overlay
  - Street reconstruction
  - Spot curb and gutter repair
  - Replace sanitary sewer
  - Replace water main
  - Replace storm sewer

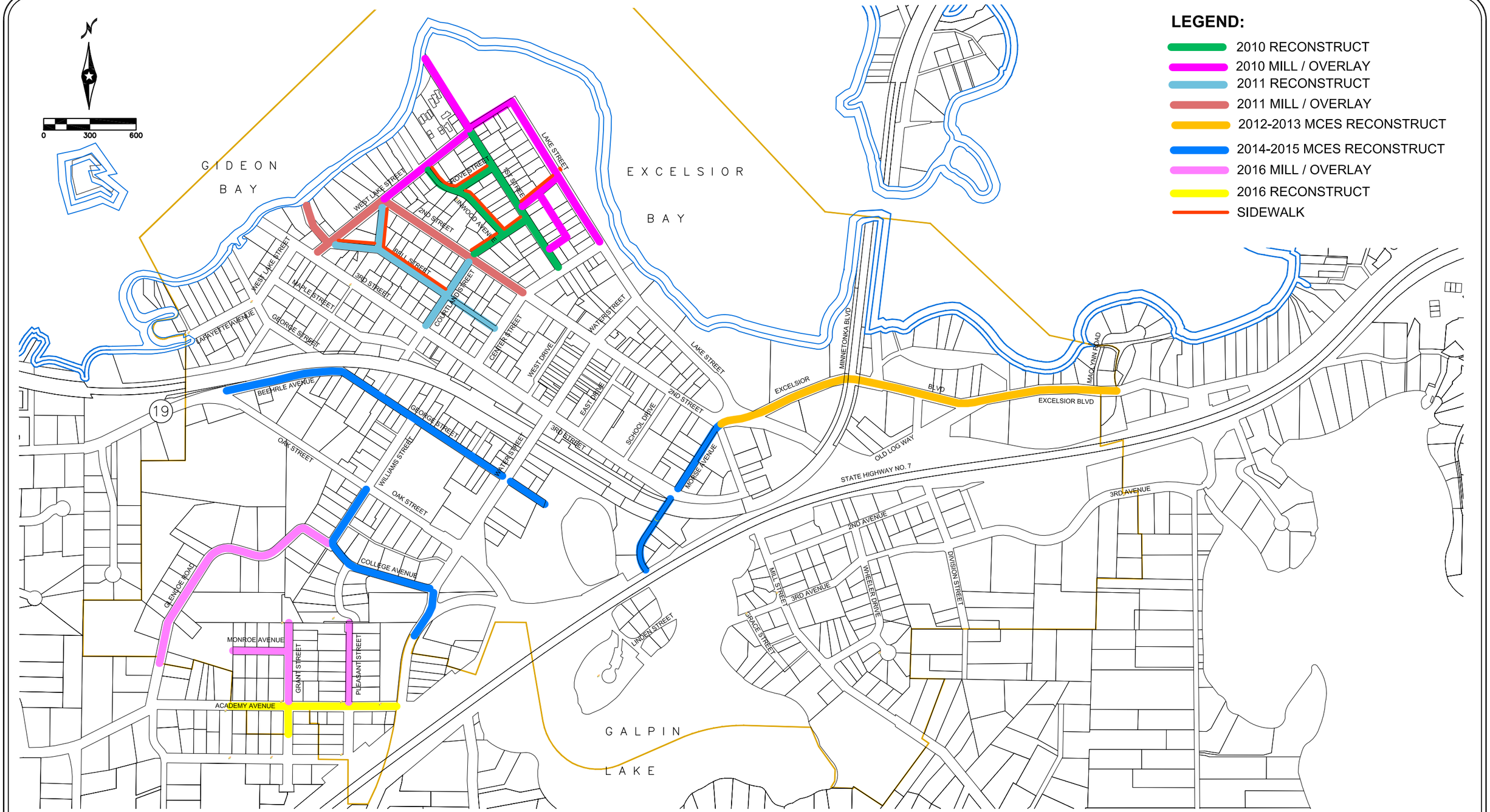
2012 - 2013

- MCES Improvements – $2,160,200
  - Bituminous mill and overlay
  - Street reconstruction
  - Spot curb and gutter repair
  - Replace storm sewer

It is the recommendation of WSB & Associates, Inc. that the City Council accept this Pavement Management Plan as proposed herein.

APPENDIX A

Figure 1 – Location Map



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INFRASTRUCTURE ENGINEERING PLANNING CONSTRUCTION

PAVEMENT MANAGEMENT PLAN

EXCELSIOR, MINNESOTA

EXCELSIOR

WSB Project No. 01140-61

February 12, 2010

FIGURE 1

File: K:\01140-61\GIS\Maps\PCI.mxd, Sep 02, 2008 2:01:32 PM

City of Excelsior

Current Overall Condition Index (OCI) Map
November 2007

Legend

- 0 - 35 Reconstruct
- 36 - 60 Overlay
- 61 - 90 Sealcoat
- 91 - 100 Do Nothing
- Not Maintained by City

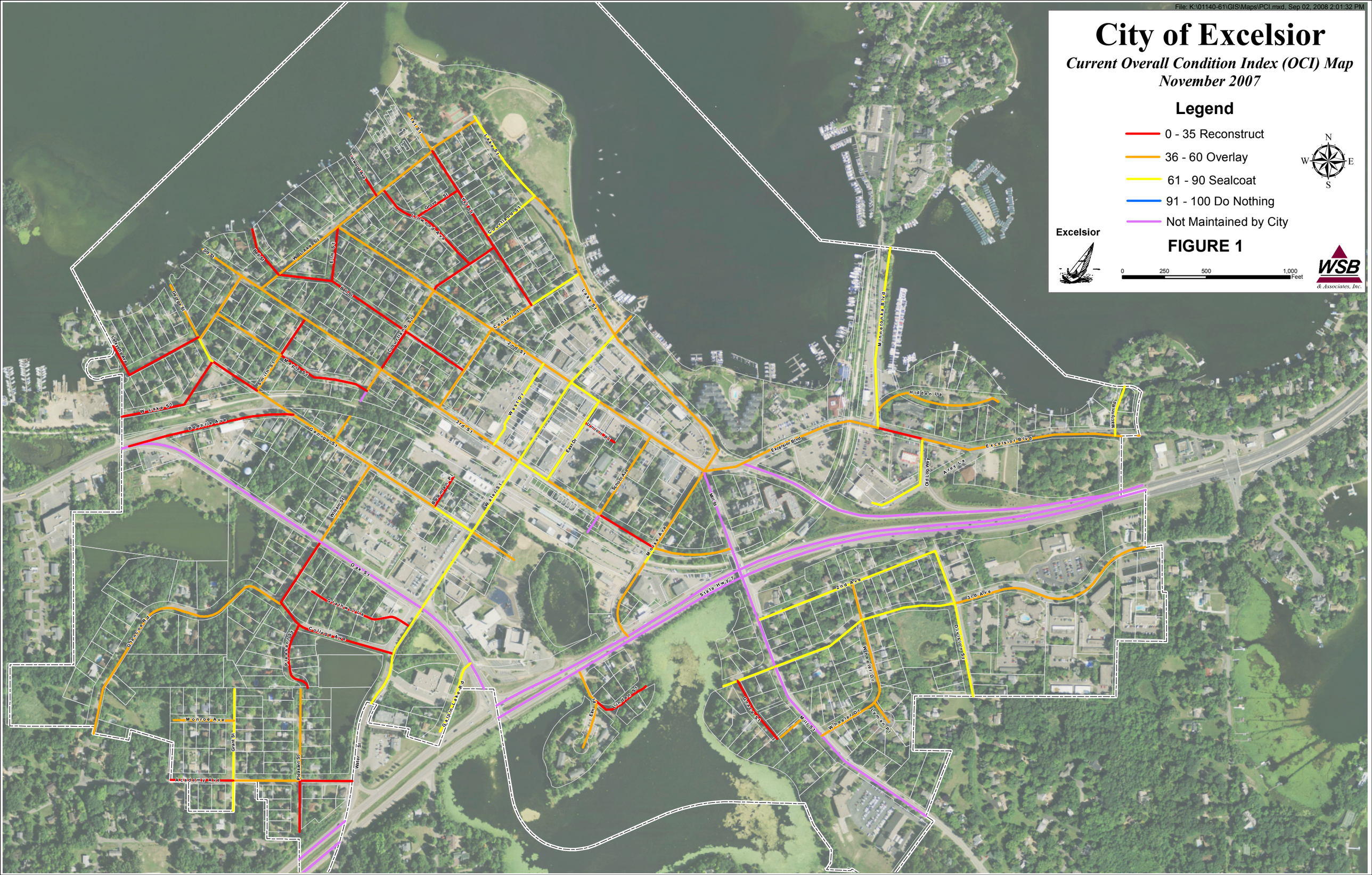
N
W E
S

Excelsior

FIGURE 1

0 250 500 1,000 Feet

WSB & Associates, Inc.



APPENDIX B

Subsurface Explorations

A Preliminary Geotechnical Evaluation Report

Street and Utility Reconstruction Projects
Various Streets
Excelsior, Minnesota

Prepared for

WSB & Associates, Inc.

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

Joshua J. Van Abel, PE
Project Engineer
License Number: 45108
February 11, 2008

Project BL-07-05782

Braun Intertec Corporation

Braun Intertec Corporation
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February 11, 2008

Project BL-07-05782

Mr. Anthony Aderhold, PE
WSB & Associates
701 Xenia Avenue, Suite 300
Minneapolis, MN 55416

Re: Preliminary Geotechnical Evaluation
Street and Utility Reconstruction Projects
Various Streets
Excelsior, Minnesota

Dear Mr. Aderhold:

We have completed the preliminary geotechnical evaluation for the preliminary study of future street and utility reconstructions in Excelsior, Minnesota. The purpose of the preliminary geotechnical evaluation was to provide preliminary geotechnical information and recommendations regarding the future reconstruction projects. Our evaluation was completed in general accordance with our Proposal for Preliminary Geotechnical Evaluation, dated December 20, 2007.

Please see the attached report for a detailed discussion on the field exploration and our recommendations. We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report, please contact Josh Van Abel at 952.995.2310 or Ray Huber at 952.995.2260.

Sincerely,

BRAUN INTERTEC CORPORATION

Joshua J. Van Abel, PE
Project Engineer

Ray A. Huber, PE
Vice President - Principal Engineer

Attachment:
Preliminary Geotechnical Evaluation Report

PrelimGeoRpt-Street & Utility

Table of Contents

A. Introduction

A.1. Project

The City of Excelsior is performing a preliminary study for future use in planning street and utility reconstruction projects. As part of a preliminary study, WSB and Associates (WSB), on behalf of the City of Excelsior, has contracted Braun Intertec to perform soil borings and a preliminary geotechnical evaluation.

A.2. Purpose

The purpose of the soil borings and preliminary geotechnical evaluation was to provide the City and WSB with preliminary geotechnical information regarding the existing pavement, soil, and groundwater conditions at the requested road locations and preliminary recommendations regarding road and utility design and reconstruction.

A.3. Scope

The following scope of services was established in our Proposal for Preliminary Geotechnical Evaluation, dated December 20, 2007.

Our scope of services was limited to:

- Staking prospective boring locations, determining surface elevations at the boring locations and coordinating the locating of underground utilities near the boring locations.
- Conducting fifteen standard penetration test borings to a nominal depth of 15 feet below grade.
- Classifying the samples and preparing boring logs.
- Completing limited laboratory tests on selected soil samples.
- Analyzing the results of the field and laboratory tests and formulating preliminary geotechnical recommendations for the design of roads and utilities, including an estimated R-value.
- Submitting this preliminary geotechnical evaluation report containing logs of the borings, our analysis of the field and laboratory tests and our preliminary geotechnical recommendations.

A.4. Available Information

WSB provided us with a Soil Boring Location Plan for the project. The plan was an aerial map denoting the requested soil boring locations. The plan did not include proposed or existing site elevations. The plan was prepared by WSB and was not dated.

B. Results

B.1. Boring Locations and Surface Elevations

We performed fifteen soil borings for the preliminary evaluation. The borings were denoted as ST-1 to ST-15 and were performed at the approximate locations shown on the Soil Boring Location Sketch included in the Appendix of this report. All of the borings were located within the existing roads and streets.

The boring locations were selected by WSB and Braun Intertec personnel and staked by Braun Intertec personnel. Surface elevations and locations were acquired with GPS technology through the use of the State of Minnesota's permanent GPS base station network.

B.2. Logs

Log of Boring sheets indicating the depths and identifications of the various soil strata, penetration resistances, laboratory test data and groundwater observations are attached. The strata changes were inferred from the changes in the penetration test samples and auger cuttings. The depths shown as changes between the strata are only approximate. The changes are likely transitions and the depths of the changes vary between the borings.

Geologic origins presented for each stratum on the Log of Boring sheets are based on the soil types, blows per foot, and available common knowledge of the depositional history of the site. Because of the complex glacial and post-glacial depositional environments, geologic origins can be difficult to ascertain. A detailed investigation of the geologic history of the site was not performed.

B.3. Soils

The soil profile at the boring locations generally consisted of a layer of previously placed fill over glacial soils to the boring termination depths. A thin layer of swamp deposited soils was also encountered below the fill at Boring ST-15. Some of the fill soils also contained variable amounts of organic material. The following subsections discuss the strata in more detail.

B.3.a. Existing Pavement Section

The existing pavement section typically consisted of a layer of bituminous pavement and in most locations, an underlying layer of aggregate base. However, a distinguishable layer of aggregate base

material was not encountered at all of the boring locations. The approximate measured thickness of the bituminous pavement and aggregate base layers encountered at the boring locations are listed in Table 1.

Please note, the aggregate base layer often becomes contaminated with the underlying subgrade soils over time and it can be difficult to ascertain the actual aggregate base thickness. Consequently, aggregate base thicknesses should be considered approximate.

Table 1. Approximate Pavement Section Thickness.

Boring	Location	Bituminous Thickness (inch)	Aggregate Base Thickness (inch)
ST-1	1st Street	3	3
ST-2	Linwood Avenue	6	3
ST-3	2nd Street	6	3
ST-4	2nd Street	7	11
ST-5	Bell Street	6	2
ST-6	3rd Street	7	3
ST-7	3rd Street	6	4
ST-8	3rd Street	6	-
ST-9	Maple Street	7	2
ST-10	Lafayette Avenue	7	-
ST-11	Monroe Avenue	5	3
ST-12	Pleasant Street	9	2
ST-13	Elm Place	5 1/2	5 1/2
ST-14	Grace Street	6	4
ST-15	Wheeler Drive	6	5

B.3.b. Fill

Fill soils were encountered below the pavement section at all of the boring locations. The fill extended to depths of 2 to 11 feet below grade and consisted of lean clay, lean clay with sand, sandy lean clay, clayey sand, silty clayey sand and silty sand. Some of the fill soils were classified as slightly organic to organic or contained layers of organic material. Slightly organic to organic fill soils were encountered at Borings ST-5, ST-6, ST-9 and ST-12. Trace amounts of bituminous fragments and concrete were also encountered within the fill at a couple of the boring locations.

The recorded penetration resistances (blow counts) in the fill soils ranged from 3 to 51 blows per foot (BPF). However, the penetration resistances at the 2 1/2 foot sample interval are likely elevated due to frozen soils encountered by the sampler and do not represent the actual soil densities.

B.3.c. Swamp Deposits

A layer of swamp deposited organic clay and lean clay was encountered below the fill at Boring ST-15. The swamp deposited layer was approximately 3 feet thick.

The recorded penetration resistances in the swamp deposits were 5 BPF.

B.3.d. Glacial Deposits

Glacial soils were encountered below the fill or swamp deposits at all of the boring locations. The glacial soils were variable, consisting of poorly graded sand, poorly graded sand with silt, silty sand, clayey sand, sandy lean clay and lean clay with sand. The glacial soils contained variable amounts of gravel, cobbles and possibly boulders.

The recorded penetration resistances in the cohesive glacial soils (clayey sand, sandy lean clay and lean clay with sand) ranged from 5 BPF to 110 blows for 8 inches of penetration, indicating rather soft to hard consistencies. However, the some of the higher penetration resistances were likely the result of gravel, cobbles or boulders encountered by the sampler.

The recorded penetration resistances in the non-cohesive glacial soils (poorly graded sand, poorly graded sand with silt and silty sand) ranged from 4 to 44 BPF, indicating very loose to dense relative densities.

B.4. Groundwater

Groundwater was only observed at Borings ST-5 and ST-12 during or immediately after drilling operations, prior to backfilling. At these borings, groundwater was observed at a depth of 7 feet below grade, corresponding to elevations of 938 to 954.

The groundwater observed at the boring locations may represent hydrostatic or perched groundwater levels. Given the layered clayey and sandy soils encountered at the boring locations, long term groundwater monitoring would be needed to determine hydrostatic groundwater levels. This was not included in our scope of services. Groundwater levels could be higher than those observed at the soil boring locations.

Annual and seasonal fluctuations of hydrostatic and perched groundwater levels should be expected.

C. Analyses and Preliminary Recommendations

C.1. Proposed Construction

We understand the City of Excelsior is performing a preliminary study of their existing roads for use in future planning of road and utility reconstruction projects. At this stage of the study, we understand preliminary design of the roads and utilities proposed for reconstruction has not been performed. However, future reconstruction projects are anticipated to consist of replacement of existing pavement sections and replacement and installation of new underground utilities.

C.2. Discussion and Analysis

C.2.a. Road Construction

In general, the pavement section consisted of 6 to 7 inches of bituminous pavement over a relatively thin layer of only a few inches of identifiable aggregate base. The thicker bituminous pavement layer is likely the result of bituminous overlays over the original pavement section.

The general soil profile encountered at the boring locations consisted of sandy and clayey fill soils over similar glacial soils. In general, we anticipate the subgrade soils should be suitable for fill, pavement and traffic support. However, some localized areas of soft, unstable clayey soils and/or organic soils requiring additional subgrade preparation or subcutting should also be anticipated.

Additional soil borings should be performed along the proposed alignments to further evaluate the subgrade soils for grading and pavement design and support.

C.2.b. Utilities

The preliminary soil borings indicate the soils present at typical utility invert elevations will likely be suitable for pipe support. However, some limited zones of organic or unstable clayey soils may also be encountered at or below the pipe invert elevations.

Some of the on-site soils removed from the utility excavations will likely be above their optimum moisture contents and may require drying or some type of moisture conditioning prior to reuse as trench (and road) backfill to achieve the recommended compaction levels. Moisture conditioning may be difficult given the limited site areas. Some replacement or mixing of these soils should be anticipated to achieve recommended compaction levels and establish stable pavement subgrades.

Some groundwater was observed in the soil borings. Depending on the utility depths and construction methods, temporary dewatering of utility excavations may be necessary for utility installation.

C.2.c. Additional Investigation

If design of certain roads and utilities proceeds, we recommend further subsurface exploration be performed. The additional subsurface exploration should include additional soil borings along the proposed road and utility alignments, once the proposed alignments and grades have been determined. The additional soil borings will provide additional subsurface information in the road and utility areas and will allow us to finalize the recommendations regarding grading, pavement design and utility support. The additional soil borings will also allow earthwork contractors to provide more accurate estimates.

The recommendations within this report should be considered preliminary. The recommendations provided in this report may change or be revised based on additional soil boring information and/or site design information.

C.3. Pavements

C.3.a. Subgrade Preparation and Proofrolls

For reconstruction of existing roads, we anticipate pavement subgrades will primarily consist of the existing road subgrades or new utility trench backfill. Prior to the placement of the new aggregate base (of fill if needed), we recommend the subgrade soils be proofrolled with a loaded tandem-axle truck and observed by a geotechnical engineer. This will assist in identifying any soft or weak areas that will require additional soil correction work.

Areas that yield or rut more than 1 inch due to wheel traffic should be corrected. Failed areas should be compacted, or if too wet, we recommend that the upper 2 feet of the resulting subgrade be scarified, dried to a moisture content not more than 1 percent above optimum, and compacted to a minimum of 100 percent of its standard Proctor maximum dry density.

However, scarification and compaction of soft wet clayey or silty soils can be difficult. If the subgrade soils cannot be scarified and properly compacted, the next typical option is subcutting the soils and replacing them with soils that can be compacted, typically sand or gravel. Depending on the depth of subcut and underlying material, suitable subcut backfill material may consist of MnDot Select Granular Borrow or additional aggregate base.

The fill should be compacted to a minimum 95 percent of standard Proctor to within 3 feet of subgrade and 100 percent of standard Proctor in the upper 3 feet, however, compaction specifications should be reviewed in the final geotechnical report. The moisture content of the fill should be within 1 percent above and 2 percent below the optimum moisture content of the soil.

C.3.b. Preliminary R-Value

A pavement design can be prepared after proposed traffic loads and site grades are determined. For preliminary pavement design, we recommend using an assumed R-value of 10, given the variable subgrade soils.

C.4. Utility Support

C.4.a. Excavation and Support

The glacially deposited soils encountered by the preliminary borings generally appear suitable for utility support. However, if unstable glacial soils or fill soils are encountered, they should be subcut and replaced with crushed rock to prepare a proper subgrade for pipe support. Organic soils should also be removed below the pipe invert and replaced with engineered fill or crushed rock. Subcut depths below the pipe invert would be dependent on the soils encountered. Utility trench excavations should be observed by a geotechnical engineer prior to pipe placement.

All excavations must 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 these OSHA requirements should be included in the project specifications.

C.4.b. Backfill

Backfill of the utility trenches should consist of debris free, non-organic soils. All fills should be placed in thin lifts and compacted to minimum 95 percent of standard Proctor to within 3 feet of subgrade and 100 percent of standard Proctor in the upper 3 feet within paved areas.

D. Procedures

D.1. Drilling and Sampling

We performed the penetration test borings between January 11 and 18, 2008, with a core-and-auger drill equipped with 3 1/4-inch inside-diameter hollow-stem auger mounted on a truck carrier. Sampling for the borings was conducted in general accordance with ASTM D 1586, "Penetration Test and Split-Barrel Sampling of Soils." We advanced the boreholes with the hollow-stem auger to the desired test depths. A 140-pound hammer falling 30 inches was then used to drive the standard 2-inch split-barrel sampler a total penetration of 1 1/2 feet below the tip of the hollow-stem auger. The blows for the last foot of penetration were recorded and are an index of soil strength characteristics. Samples were taken at 2 1/2-foot vertical intervals to a depth of 15 feet below grade and then at 5-foot intervals to the test boring termination. A representative portion of each sample was then sealed in a glass jar.

D.2. Soil Classification

The drill crew chief visually and manually classified the soils encountered in the borings in general accordance with ASTM D 2488, "Description and Identification of Soils (Visual-Manual Procedure)." A summary of the ASTM classification system is attached. The samples were then returned to our laboratory for review of the field classifications by a soils engineer. Representative samples will remain in our Minneapolis office for a period of 30 days to be available for your examination.

D.3. Groundwater Observations

Immediately after taking the final samples in the bottoms of the borings, the holes were probed through the hollow-stem auger to check for the presence of groundwater. Immediately after withdrawal of the auger, the holes were again probed and the depths to water or cave-ins were noted. The borings were then backfilled.

E. General Conditions

E.1. Basis of Preliminary Recommendations

The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the attached sketch. Often, variations occur between these borings, the nature and extent of which do not become evident until additional exploration or construction is conducted. Additional borings may be necessary once final site development plans are conceived. The recommendations in this report should be viewed as preliminary and not applicable to final geotechnical design.

It is recommended that we be retained to perform the observation and testing program for the site preparation phase of this project. This will allow correlation of the soil conditions encountered during construction to the soil borings, and will provide continuity of professional responsibility.

E.2. Review of Design

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

validity of the recommendations, and whether our recommendations have been correctly interpreted and implemented in the design and specifications.

E.3. Groundwater Fluctuations

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

E.4. Use of Report

This report is for the exclusive use of WSB and their design team to use to for preliminary design the proposed road reconstructions and prepare construction documents. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. The data, analyses and recommendations may not be appropriate for other structures or purposes. We recommend that parties contemplating other structures or purposes contact us.

E.5. Level of Care

In performing our services, Braun Intertec has used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of our profession currently practicing in the same locality. No warranty, express or implied, is made.

Appendix

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-1**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/17/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
936.9	0.0							
936.4	0.5	FILL	FILL: 3 inches of Bituminous over 3 inches of Aggregate Base.					
		FILL	FILL: Sandy Lean Clay, fine- to medium-grained, with a trace of Gravel, with Silty Sand layers, dark brown, frozen.	7			15	P200 = 49% Benchmark: Ground surface elevations at the boring locations determined using GPS.
932.9	4.0	CL	SANDY LEAN CLAY, with a trace of Gravel, with occasional Silty Sand seams, brown to 10 feet then gray, wet, medium to rather stiff. (Glacial Till)	7		2		
				10		2 3/4		
				12		3		
				12				
920.9	16.0			7				
			END OF BORING. Water not observed with 14 1/2 feet of hollow-stem auger in the ground. Water not observed to cave-in depth of 13 feet immediately after withdrawing the auger. Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:39

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-2**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/17/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
946.3	0.0							
945.5	0.8	FILL	FILL: 6 inches of Bituminous over 3 inches of Aggregate Base.					
		FILL	FILL: Clayey Sand, fine- to medium-grained, with a trace of Gravel, dark brown, frozen.					
943.8	2.5	FILL	FILL: Sandy Lean Clay, with a trace of Gravel, dark brown and brown, frozen to wet.	16			24	P200 = 58%
				4				
939.3	7.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown to 14 feet then gray, wet, rather soft to stiff. (Glacial Till)	6		2		
				5		2		
				14		3 1/2		
930.3	16.0			9				
			END OF BORING.					
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.					
			Water not observed to cave-in depth of 12 feet immediately after withdrawing the auger.					
			Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-3**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/17/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	Tests or Notes
972.8	0.0						
972.0	0.8	FILL	FILL: 6 inches of Bituminous over 3 inches of Aggregate Base.				
		FILL	FILL: Silty Clayey Sand, fine- to medium-grained, with a trace of Gravel, brown and dark brown, frozen to wet.	10			
				3			
965.8	7.0	SC	CLAYEY SAND, with a trace of Gravel, brown, wet, rather stiff to stiff. (Glacial Till)	9		2 1/2	
				14		3 1/2	
960.8	12.0	CL	SANDY LEAN CLAY, with a trace of Gravel, with Poorly Graded Sand seams, brown, wet, stiff to rather stiff. (Glacial Till)	16			
				11			
956.8	16.0		END OF BORING.				

Water not observed with 14 1/2 feet of hollow-stem auger in the ground.

Water not observed to cave-in depth of 13 feet immediately after withdrawing the auger.

Boring immediately backfilled.

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-4**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/17/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	MC %	Tests or Notes
959.1	0.0						
957.6	1.5	FILL	FILL: 7 inches of Bituminous over 11 inches of Aggregate Base.				
955.1	4.0	FILL	FILL: Silty Sand, fine- to coarse-grained, with a trace to a little Gravel, brown, moist.	40			
948.1	11.0	FILL	FILL: Clayey Sand, with a trace of Gravel, with Silty Sand layers, brown, dark brown and black, wet.	11		15	
				6			
			Concrete at 10 feet.	NA*			* Encountered Concrete.
943.1	16.0	SP	POORLY GRADED SAND, fine- to coarse-grained, with Gravel and Cobbles, brown, moist, medium dense to dense. (Glacial Outwash)	28			
				44			
			END OF BORING.				
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.				
			Water not observed to cave-in depth of 10 feet immediately after withdrawing the auger.				
			Boring immediately backfilled.				

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-5**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/18/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
944.9	0.0							
944.2	0.7	FILL	FILL: 6 inches of Bituminous over 2 inches of Aggregate Base.					
		FILL	FILL: Clayey Sand, fine- to coarse-grained, with Gravel, dark brown to brown, frozen.					
942.4	2.5	FILL	FILL: Lean Clay, with a trace of Gravel, slightly Organic, black, frozen.	6			29	OC = 5%
940.4	4.5	FILL	FILL: Sandy Lean Clay, with a trace of Gravel and Bituminous, dark brown and brown, wet.	6				
937.9	7.0	FILL	FILL: Clayey Sand, with a trace of Gravel, non-to slightly Organic, dark brown and black, wet.	5	▽		23	An open triangle in the water level (WL) column indicates the depth at which groundwater was observed while drilling.
935.9	9.0	CL	SANDY LEAN CLAY, with a trace of Gravel, with occasional Cobbles, gray, wet, rather soft. (Glacial Till)	4		1		
930.9	14.0			10/8"				Encountered Cobble.
928.9	16.0	SC	CLAYEY SAND, with a trace of Gravel, gray, wet, medium. (Glacial Till)	6				
			END OF BORING.					
			Water observed at 7 feet with 7 feet of hollow-stem auger in the ground.					
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.					
			Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-6**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: 1/17/08 | SCALE: 1" = 4'

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
961.7	0.0							
960.8	0.9	FILL	FILL: 7 inches of Bituminous over 3 inches of Aggregate Base.					
959.7	2.0	FILL	FILL: Clayey Sand, with a trace of Gravel, brown, frozen.					
		FILL	FILL: Sandy Lean Clay, with a trace of Gravel, brown, frozen to wet.	17			18	
				4				
954.7	7.0	FILL	FILL: Sandy Lean Clay, with a trace of Gravel, non-to slightly Organic, dark brown and black, wet.	7				
951.7	10.0	CL	LEAN CLAY with SAND, with a trace of Gravel and Roots, gray and brown, wet, rather stiff. (Glacial Till)	10		2 3/4		
949.7	12.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown, wet, rather stiff to rather soft. (Glacial Till)	10		2		
				5		1 1/2		
945.7	16.0		END OF BORING.					

Water not observed with 14 1/2 feet of hollow-stem auger in the ground.

Water not observed to cave-in depth of 12 feet immediately after withdrawing the auger.

Boring immediately backfilled.

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-7**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/17/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
959.9	0.0							
959.0	0.9	FILL	FILL: 6 inches of Bituminous over 4 inches of Aggregate Base.					
		FILL	FILL: Sandy Lean Clay, with a trace of Gravel, dark brown, frozen.	51				
955.9	4.0	CL	LEAN CLAY with SAND, brown, wet, medium. (Glacial Till)	7		2	19	
952.9	7.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown, wet, rather stiff. (Glacial Till)	12		3 1/2		
				12				
947.9	12.0	SM	SILTY SAND, fine- to coarse-grained, with Gravel and Clayey Sand seams, brown, moist, medium dense. (Glacial Till)	12				
943.9	16.0			13				
			END OF BORING.					
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.					
			Water not observed to cave-in depth of 13 feet immediately after withdrawing the auger.					
			Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-8**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/17/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	Tests or Notes
962.3	0.0					
961.8	0.5	FILL	FILL: 6 inches of Bituminous.			
		FILL	FILL: Sandy Lean Clay, with a trace of Gravel, dark brown, frozen.			
960.3	2.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown, frozen, very stiff.	32		
958.3	4.0	CL	SANDY LEAN CLAY, with frequent Silty Sand layers, brown to light brown, moist to wet, stiff to very stiff. (Glacial Till)	20		
				14		
				21		
				27		
948.3	14.0	SM	SILTY SAND, fine- to medium-grained, brown, moist, medium dense. (Glacial Till)	16		
946.3	16.0		END OF BORING.			
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.			
			Water not observed with 10 feet immediately after withdrawing the auger.			
			Boring immediately backfilled.			

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-9**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/18/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
962.7	0.0							
961.9	0.8	FILL	FILL: 7 inches of Bituminous over 2 inches of Aggregate Base.					
		FILL	FILL: Sandy Lean Clay, with a trace of Gravel, with Silty Sand seams, dark brown, frozen.	15			21	P200 = 56%
958.2	4.5	FILL	FILL: Lean Clay with Sand, non-to slightly Organic, with a trace of Gravel, black and dark brown, wet.	9				
955.7	7.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown, wet, medium to rather stiff. (Glacial Till)	8		1 1/2		
				12		2 1/2		
				9				
946.7	16.0			8				
			END OF BORING.					

Water not observed with 14 1/2 feet of hollow-stem auger in the ground.

Water not observed to cave-in depth of 12 feet immediately after withdrawing the auger.

Boring immediately backfilled.

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-10**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/18/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
940.4	0.0							
939.8	0.6	FILL	FILL: 7 inches of Bituminous.					
		FILL	FILL: Clayey Sand, fine- to medium-grained, with a trace of Gravel, dark brown and brown, frozen.					
937.9	2.5	CL	SANDY LEAN CLAY, with a trace of Gravel, brown, frozen to wet, medium. (Glacial Till)	7			19	
936.4	4.0	SP-SM	POORLY GRADED SAND with SILT, fine- to medium-grained, brown, moist, loose. (Glacial Outwash)	9				
933.4	7.0	CL	SANDY LEAN CLAY, with a trace of Gravel and occasional Silty Sand seams, brown, wet, rather stiff to very stiff. (Glacial Till)	12		3		
				18		3 1/2		
				13				
924.4	16.0			10				
			END OF BORING.					
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.					
			Water not observed to cave-in depth of 12 feet immediately after withdrawing the auger.					
			Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:39

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-11**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/18/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	Tests or Notes
969.1	0.0						
968.4	0.7	FILL	FILL: 5 inches of Bituminous over 3 inches of Aggregate Base.				
		FILL	FILL: Sandy Lean Clay, with a trace of Gravel, dark brown, frozen.	36			
965.1	4.0	FILL	FILL: Clayey Sand, with a trace of Gravel, brown and dark brown, wet.	9			
962.1	7.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown, wet, rather stiff to very stiff. (Glacial Till)	12		2 1/2	
				13		3	
				14			
953.1	16.0			19			
			END OF BORING.				
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.				
			Water not observed to cave-in depth of 12 feet immediately after withdrawing the auger.				
			Boring immediately backfilled.				

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:39

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-12**

LOCATION: See attached sketch.

DRILLER: Mike Rowland | METHOD: 3 1/4" HSA Autohammer | DATE: **1/18/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
961.1	0.0							
960.1	1.0	FILL	FILL: 9 inches of Bituminous over 2 inches of Aggregate Base.					
959.1	2.0	FILL	FILL: Sandy Lean Clay, with a trace of Gravel, dark brown, frozen.					
957.1	4.0	FILL	FILL: Clayey Sand, non- to slightly organic, with a trace of Gravel, dark brown and black, frozen.	14			25	
949.1	12.0	SM	SILTY SAND, fine- to medium-grained, brown, moist to waterbearing, loose. (Glacial Till)	7 8 9	▽			An open triangle in the water level (WL) column indicates the depth at which groundwater was observed while drilling.
945.1	16.0	CL	SANDY LEAN CLAY, with a trace of Gravel, brown and gray, wet, rather soft to medium. (Glacial Till)	5 8		1 1/2 2		
			END OF BORING. Water observed at 7 feet with 7 feet of hollow-stem auger in the ground. Water not observed with 14 1/2 feet of hollow-stem auger in the ground. Water not observed to cave-in depth of 12 feet immediately after withdrawing the auger. Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:41

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-13**

LOCATION: See attached sketch.

DRILLER: Scott McLean | METHOD: 3 1/4" HSA Autohammer | DATE: **1/11/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	Tests or Notes
948.2	0.0						
947.3	0.9	FILL	FILL: 5 1/2 inches of Bituminous over 5 1/2 inches of Aggregate Base				
946.2	2.0	FILL	FILL: Sandy Lean Clay, with a trace of gravel, dark brown, frozen.				
		SM	SILTY SAND, fine-grained, brown and gray, moist, loose to very loose. (Glaciofluvium)	6			
				4			
941.2	7.0	SC	CLAYEY SAND, brown, wet, medium. (Glaciofluvium)	6			
939.2	9.0	CL	SANDY LEAN CLAY, with a trace of Gravel, with occasional Silty Sand seams, brown, wet, stiff to very stiff. (Glacial Till)	17		3 1/2	
				18			
932.2	16.0			19			
			END OF BORING.				
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.				
			Water not observed to cave-in depth of 13 feet immediately after withdrawing the auger.				
			Boring immediately backfilled.				

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:39

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-14**

LOCATION: See attached sketch.

DRILLER: Scott McLean | METHOD: 3 1/4" HSA Autohammer | DATE: **1/11/08** | SCALE: 1" = 4'

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	Tests or Notes
980.0	0.0					
979.1	0.9	FILL	FILL: 6 inches of Bituminous over 4 inches of Aggregate Base.			
978.0	2.0	FILL	FILL: Clayey Sand, fine- to medium-grained, with a trace of Gravel, dark brown to brown, frozen.			
		FILL	FILL: Poorly Graded Sand with Silt, fine- to coarse-grained, with a trace of Gravel, with Silty Sand seams, brown and dark brown, frozen to moist.	5		
				3		
973.0	7.0	SP-SM	POORLY GRADED SAND with SILT, fine- to coarse-grained, with a trace of Gravel, brown, moist, loose. (Glacial Outwash)	6		
				7		
968.0	12.0	SP	POORLY GRADED SAND, fine- to coarse-grained, with a trace of Gravel, light brown, moist, loose. (Glacial Outwash)	7		
				7		
964.0	16.0		END OF BORING. Water not observed with 14 1/2 feet of hollow-stem auger in the ground. Boring immediately backfilled.			

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

BRAUN INTERTEC

LOG OF BORING

Braun Project BL-07-05782
PRELIMINARY GEOTECHNICAL EVALUATION
Excelsior Road Reconstruction Project
Excelsior, Minnesota

BORING: **ST-15**

LOCATION: See attached sketch.

DRILLER: Scott McLean | METHOD: 3 1/4" HSA Autohammer | DATE: **1/11/08** | SCALE: **1" = 4'**

Elev. feet	Depth feet	ASTM Symbol	Description of Materials (ASTM D2488 or D2487)	BPF	WL	qu tsf	MC %	Tests or Notes
950.7	0.0							
949.7	1.0	FILL	FILL: 6 inches of Bituminous over 5 inches of Aggregate Base.					
		FILL	FILL: Sandy Lean Clay, with a trace of Gravel, dark brown and brown, frozen to wet.	6				
				7				
943.7	7.0							
942.7	8.0	FILL	FILL: Lean Clay, with a trace of Gravel, dark brown and gray, wet.	5				
941.7	9.0	OL	ORGANIC CLAY, black, wet. (Swamp Deposit)					
		CL	LEAN CLAY, slightly Organic, black, wet. (Swamp Deposit)	5			33	OC = 4%
939.7	11.0							
		CL	SANDY LEAN CLAY, with a trace of Gravel, light gray, wet, rather soft to medium. (Glacial Till)	5		1 1/4		
				7		1 1/2		
934.7	16.0							
			END OF BORING.					
			Water not observed with 14 1/2 feet of hollow-stem auger in the ground.					
			Water not observed to cave-in depth of 13 1/2 feet immediately after withdrawing the auger.					
			Boring immediately backfilled.					

(See Descriptive Terminology sheet for explanation of abbreviations)

BRAUN BASIC LOG 05782.GPJ BRAUN.GDT 2/11/08 12:40

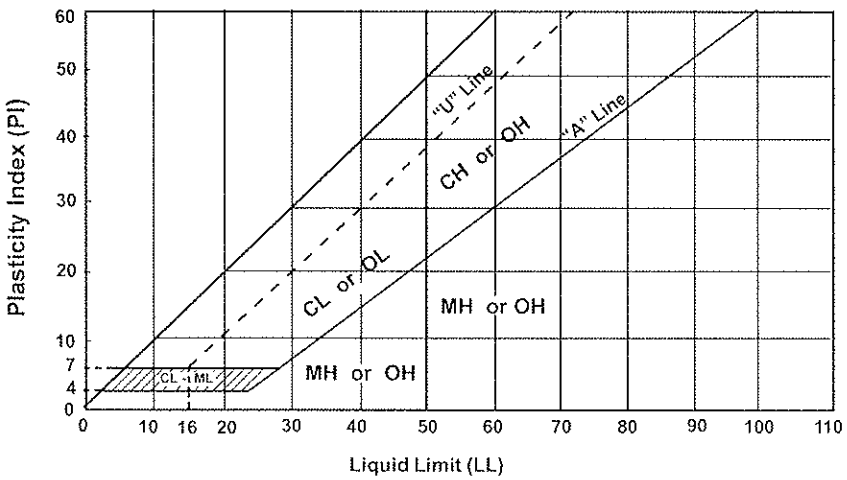
BRAUN INTERTEC

Descriptive Terminology of Soil

Standard D 2487 - 00
Classification of Soils for Engineering Purposes
(Unified Soil Classification System)

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

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



Laboratory Tests

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

Particle Size Identification

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

Relative Density of Cohesionless Soils

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

Consistency of Cohesive Soils

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

Drilling Notes

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

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

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

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

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

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

TW indicates thin-walled (undisturbed) tube sample.

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

DENOTES APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING

200' 0 400'

SCALE: 1" = 400'

BRAUN INTERTEC

11001 Hampshire Avenue So.
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

Base Dwg Provided By:

SOIL BORING LOCATION SKETCH
PRELIMINARY GEOTECHNICAL EVALUATION
PROPOSED ROAD RECONSTRUCTION PROJECT
EXCELSIOR, MINNESOTA

Project No:	BL0705782
Drawing No:	BL0705782
Scale:	1" = 400'
Drawn By:	MRG
Date Drawn:	1/29/08
Checked By:	JJV
Last Modified:	1/29/08
Sheet: of	Fig:

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APPENDIX C

Opinion of Probable Cost

2010 Reconstruction
and Mill & Overlay

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
West Lake Street: 2nd Street - Lake Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	4140	$13.95	$57,753.00
					Subtotal Schedule A - Surface Improvements	$57,753.00
					+ 20% Contingencies	$11,600.00
					Subtotal	**$69,400.00**
					+ 20% Indirect Cost	$13,900.00
					Schedule A Total - Surface Improvements	**$83,300.00**
					Grand Total	**$83,300.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Lake Street: West Lake Street - Center Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	4980	$13.95	$69,471.00
2	2521.501	4" CONCRETE WALK	SQ FT	125	$4.00	$500.00

Subtotal Schedule A - Surface Improvements	$69,971.00
+ 20% Contingencies	$14,000.00
Subtotal	**$84,000.00**
+ 20% Indirect Cost	$16,800.00
Schedule A Total - Surface Improvements	**$100,800.00**
Grand Total	**$100,800.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* MJJ
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 2/10/2010

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Courtland Street: 1st Street - Lake Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	740	$13.95	$10,323.00
2	2521.501	4" CONCRETE WALK	SQ FT	1550	$4.00	$6,200.00
					Subtotal Schedule A - Surface Improvements	$16,523.00
					+ 20% Contingencies	$3,300.00
					Subtotal	**$19,800.00**
					+ 20% Indirect Cost	$4,000.00
					Schedule A Total - Surface Improvements	**$23,800.00**
					Grand Total	**$23,800.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* MJJ
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 2/10/2010

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
1st Street Alley: First Street - Courtland Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	890	$13.95	$12,415.50
					Subtotal Schedule A - Surface Improvements	$12,415.50
					+ 20% Contingencies	$2,500.00
					Subtotal	**$14,900.00**
					+ 20% Indirect Cost	$3,000.00
					Schedule A Total - Surface Improvements	**$17,900.00**
					Grand Total	**$17,900.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* MJJ
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 2/10/2010

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
1st Street: West Lake Street - North Dead End (2010)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	1470	$13.95	$20,506.50
					Subtotal Schedule A - Surface Improvements	$20,506.50
					+ 20% Contingencies	$4,100.00
					Subtotal	**$24,600.00**
					+ 20% Indirect Cost	$4,900.00
					Schedule A Total - Surface Improvements	**$29,500.00**
					Grand Total	**$29,500.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Grove Street: Linwood Avenue - 1st Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	700	$51.50	$36,050.00
2	2521.501	4" CONCRETE WALK	SQ FT	1400	$4.00	$5,600.00
					Subtotal Schedule A - Surface Improvements	$41,650.00
					+ 20% Contingencies	$8,300.00
					Subtotal	**$50,000.00**
					+ 30% Indirect Cost	$15,000.00
					Schedule A Total - Surface Improvements	**$65,000.00**
B. SANITARY SEWER						
3	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	252	$10.00	$2,520.00
4	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	5	$250.00	$1,250.00
5	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$1,000.00	$1,000.00
6	2503.602	8"X4" PVC WYE	EACH	5	$100.00	$500.00
7	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	5	$600.00	$3,000.00
8	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	150	$20.00	$3,000.00
9	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	252	$30.00	$7,560.00
10	2503.603	TELEVISE SANITARY SEWER	LIN FT	252	$2.00	$504.00
					Subtotal Schedule B - Sanitary Sewer	$19,334.00
					+ 20% Contingencies	$3,900.00
					Subtotal	**$23,200.00**
					+ 30% Indirect Cost	$7,000.00
					Schedule B Total - Sanitary Sewer	**$30,200.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Grove Street: Linwood Avenue - 1st Street (2010)						
C. WATERMAIN						
11	2104.501	REMOVE WATER MAIN	LIN FT	270	$9.00	$2,430.00
12	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	2	$300.00	$600.00
13	2104.509	REMOVE GATE VALVE AND BOX	EACH	1	$300.00	$300.00
14	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$500.00	$500.00
15	2504.602	RECONNECT WATER SERVICE	EACH	2	$300.00	$600.00
16	2504.602	1" CORPORATION STOP	EACH	2	$90.00	$180.00
17	2504.602	1" CURB STOP AND BOX	EACH	2	$140.00	$280.00
18	2504.602	8" GATE VALVE AND BOX	EACH	1	$1,200.00	$1,200.00
19	2504.603	1" TYPE K COPPER PIPE	LIN FT	60	$30.00	$1,800.00
20	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	270	$40.00	$10,800.00
21	2504.608	DUCTILE IRON FITTINGS	POUND	500	$3.00	$1,500.00
					Subtotal Schedule C - Water Main	$20,190.00
					+ 20% Contingencies	$4,000.00
					Subtotal	**$24,190.00**
					+ 30% Indirect Cost	$7,300.00
					Schedule C Total - Water Main	**$31,500.00**
					Grand Total	**$126,700.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Linwood Avenue: West Lake Street - Grove Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	730	$51.50	$37,595.00
2	2521.501	4" CONCRETE WALK	SQ FT	1125	$4.00	$4,500.00
					Subtotal Schedule A - Surface Improvements	$42,095.00
					+ 20% Contingencies	$8,400.00
					Subtotal	**$50,500.00**
					+ 30% Indirect Cost	$15,200.00
					Schedule A Total - Surface Improvements	**$65,700.00**
					Grand Total	**$65,700.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Linwood Avenue: Grove Street - Courtland Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	730	$51.50	$37,595.00
2	2521.501	4" CONCRETE WALK	SQ FT	1950	$4.00	$7,800.00
					Subtotal Schedule A - Surface Improvements	$45,395.00
					+ 20% Contingencies	$9,100.00
					Subtotal	**$54,500.00**
					+ 30% Indirect Cost	$16,400.00
					Schedule A Total - Surface Improvements	**$70,900.00**
B. SANITARY SEWER						
3	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	180	$10.00	$1,800.00
4	2104.509	REMOVE MANHOLE (SANITARY)	EACH	2	$1,000.00	$2,000.00
5	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	6	$250.00	$1,500.00
6	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$1,000.00	$1,000.00
7	2503.602	8"X4" PVC WYE	EACH	6	$100.00	$600.00
8	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	6	$600.00	$3,600.00
9	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	180	$20.00	$3,600.00
10	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	180	$30.00	$5,400.00
11	2503.603	TELEVISE SANITARY SEWER	LIN FT	180	$2.00	$360.00
12	2506.516	CASTING ASSEMBLY	EACH	2	$500.00	$1,000.00
13	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	24	$225.00	$5,400.00
					Subtotal Schedule B - Sanitary Sewer	$26,260.00
					+ 20% Contingencies	$5,300.00
					Subtotal	**$31,600.00**
					+ 30% Indirect Cost	$9,500.00
					Schedule B Total - Sanitary Sewer	**$41,100.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Linwood Avenue: Grove Street - Courtland Street (2010)						
C. WATERMAIN						
14	2104.501	REMOVE WATER MAIN	LIN FT	120	$9.00	$1,080.00
15	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	6	$300.00	$1,800.00
16	2104.509	REMOVE HYDRANT AND VALVE	EACH	1	$650.00	$650.00
17	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$500.00	$500.00
18	2504.602	RECONNECT WATER SERVICE	EACH	6	$300.00	$1,800.00
19	2504.602	1" CORPORATION STOP	EACH	60	$90.00	$5,400.00
20	2504.602	1" CURB STOP AND BOX	EACH	6	$140.00	$840.00
21	2504.602	HYDRANT ASSEMBLY	EACH	1	$2,200.00	$2,200.00
22	2504.602	6" GATE VALVE AND BOX	EACH	1	$900.00	$900.00
23	2504.603	1" TYPE K COPPER PIPE	LIN FT	180	$30.00	$5,400.00
24	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	120	$40.00	$4,800.00
25	2504.603	6" WATER MAIN-DUCT IRON CL 52	LIN FT	15	$45.00	$675.00
26	2504.608	DUCTILE IRON FITTINGS	POUND	750	$3.00	$2,250.00
					Subtotal Schedule C - Water Main	$28,295.00
					+ 20% Contingencies	$5,700.00
					Subtotal	**$34,000.00**
					+ 30% Indirect Cost	$10,200.00
					Schedule C Total - Water Main	**$44,200.00**
D. STORM SEWER						
27	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	430	$10.00	$4,300.00
28	2502.541	4" PERF PVC PIPE DRAIN	LIN FT	100	$10.00	$1,000.00
29	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	430	$30.00	$12,900.00
30	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	1	$1,000.00	$1,000.00
31	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	20	$300.00	$6,000.00
32	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1 (2X3)	EACH	1	$1,500.00	$1,500.00
33	2506.516	CASTING ASSEMBLY	EACH	2	$500.00	$1,000.00
34		STORMWATER IMPROVEMENTS	LUMP SUM	1	$10,000.00	$10,000.00
					Subtotal Schedule D - Storm Sewer	$37,700.00
					+ 20% Contingencies	$7,540.00
					Subtotal	**$45,240.00**
					+ 30% Indirect Cost	$13,570.00
					Schedule D Total - Storm Sewer	**$58,800.00**
					Grand Total	**$215,000.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Courtland Street: 1st Street - 2nd Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	980	$51.50	$50,470.00
2	2521.501	4" CONCRETE WALK	SQ FT	1850	$4.00	$7,400.00
					Subtotal Schedule A - Surface Improvements	$57,870.00
					+ 20% Contingencies	$11,600.00
					Subtotal	**$69,500.00**
					+ 30% Indirect Cost	$20,900.00
					Schedule A Total - Surface Improvements	**$90,400.00**
B. SANITARY SEWER						
3	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	268	$10.00	$2,680.00
4	2104.509	REMOVE MANHOLE (SANITARY)	EACH	2	$1,000.00	$2,000.00
5	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	2	$250.00	$500.00
6	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$500.00	$500.00
7	2503.602	8"X4" PVC WYE	EACH	2	$100.00	$200.00
8	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	2	$600.00	$1,200.00
9	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	60	$20.00	$1,200.00
10	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	268	$30.00	$8,040.00
11	2503.603	TELEVISE SANITARY SEWER	LIN FT	268	$2.00	$536.00
12	2506.516	CASTING ASSEMBLY	EACH	2	$500.00	$1,000.00
13	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	20	$225.00	$4,500.00
					Subtotal Schedule B - Sanitary Sewer	$22,356.00
					+ 20% Contingencies	$4,500.00
					Subtotal	**$26,900.00**
					+ 30% Indirect Cost	$8,100.00
					Schedule B Total - Sanitary Sewer	**$35,000.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Courtland Street: 1st Street - 2nd Street (2010)						
C. WATERMAIN						
14	2104.501	REMOVE WATER MAIN	LIN FT	420	$9.00	$3,780.00
15	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	2	$300.00	$600.00
16	2104.509	REMOVE HYDRANT AND VALVE	EACH	1	$650.00	$650.00
17	2104.509	REMOVE GATE VALVE AND BOX	EACH	1	$300.00	$300.00
18	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$500.00	$500.00
19	2504.602	RECONNECT WATER SERVICE	EACH	2	$300.00	$600.00
20	2504.602	1" CORPORATION STOP	EACH	2	$90.00	$180.00
21	2504.602	1" CURB STOP AND BOX	EACH	2	$140.00	$280.00
22	2504.602	HYDRANT ASSEMBLY	EACH	1	$2,200.00	$2,200.00
23	2504.602	8" GATE VALVE AND BOX	EACH	1	$1,200.00	$1,200.00
24	2504.602	6" GATE VALVE AND BOX	EACH	1	$900.00	$900.00
25	2504.603	1" TYPE K COPPER PIPE	LIN FT	60	$30.00	$1,800.00
26	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	420	$40.00	$16,800.00
27	2504.603	6" WATER MAIN-DUCT IRON CL 52	LIN FT	15	$45.00	$675.00
28	2504.608	DUCTILE IRON FITTINGS	POUND	1,000	$3.00	$3,000.00

Subtotal Schedule C - Water Main	$33,465.00
+ 20% Contingencies	$6,700.00
Subtotal	**$40,170.00**
+ 30% Indirect Cost	$12,100.00
Schedule C Total - Water Main	**$52,300.00**
Grand Total	**$177,700.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
1st Street: West Lake Street - Center Street (2010)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	2570	$51.50	$132,355.00
					Subtotal Schedule A - Surface Improvements	$132,355.00
					+ 20% Contingencies	$26,500.00
					Subtotal	**$158,900.00**
					+ 30% Indirect Cost	$47,700.00
					Schedule A Total - Surface Improvements	**$206,600.00**
B. SANITARY SEWER						
2	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	1100	$10.00	$11,000.00
3	2104.509	REMOVE MANHOLE (SANITARY)	EACH	2	$1,000.00	$2,000.00
4	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	31	$250.00	$7,750.00
5	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$2,000.00	$2,000.00
6	2503.602	8"X4" PVC WYE	EACH	31	$100.00	$3,100.00
7	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	2	$1,500.00	$3,000.00
8	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	31	$600.00	$18,600.00
9	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	930	$20.00	$18,600.00
10	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	1,100	$30.00	$33,000.00
11	2503.603	TELEVISE SANITARY SEWER	LIN FT	1,100	$2.00	$2,200.00
12	2506.516	CASTING ASSEMBLY	EACH	2	$500.00	$1,000.00
13	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	26	$225.00	$5,850.00
					Subtotal Schedule B - Sanitary Sewer	$108,100.00
					+ 20% Contingencies	$21,600.00
					Subtotal	**$129,700.00**
					+ 30% Indirect Cost	$38,900.00
					Schedule B Total - Sanitary Sewer	**$168,600.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
1st Street: West Lake Street - Center Street (2010)						
C. WATERMAIN						
14	2104.501	REMOVE WATER MAIN	LIN FT	1025	$9.00	$9,225.00
15	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	31	$300.00	$9,300.00
16	2104.509	REMOVE HYDRANT AND VALVE	EACH	3	$650.00	$1,950.00
17	2104.509	REMOVE GATE VALVE AND BOX	EACH	4	$300.00	$1,200.00
18	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$2,000.00	$2,000.00
19	2504.602	RECONNECT WATER SERVICE	EACH	31	$300.00	$9,300.00
20	2504.602	1" CORPORATION STOP	EACH	31	$90.00	$2,790.00
21	2504.602	1" CURB STOP AND BOX	EACH	31	$140.00	$4,340.00
22	2504.602	HYDRANT ASSEMBLY	EACH	3	$2,200.00	$6,600.00
23	2504.602	8" GATE VALVE AND BOX	EACH	4	$1,200.00	$4,800.00
24	2504.602	6" GATE VALVE AND BOX	EACH	3	$900.00	$2,700.00
25	2504.603	1" TYPE K COPPER PIPE	LIN FT	930	$30.00	$27,900.00
26	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	1,025	$40.00	$41,000.00
27	2504.603	6" WATER MAIN-DUCT IRON CL 52	LIN FT	45	$45.00	$2,025.00
28	2504.608	DUCTILE IRON FITTINGS	POUND	1,000	$3.00	$3,000.00

Subtotal Schedule C - Water Main	$128,130.00
+ 20% Contingencies	$25,600.00
Subtotal	**$153,730.00**
+ 30% Indirect Cost	$46,100.00
Schedule C Total - Water Main	**$199,800.00**
Grand Total	**$575,000.00**

2011 Reconstruction
and Mill & Overlay

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
West Lake Street: 3rd Street - 2nd Street (2011)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	2110	$13.95	$29,434.50
					Subtotal Schedule A - Surface Improvements	$29,434.50
					+ 20% Contingencies	$5,900.00
					Subtotal	**$35,300.00**
					+ 20% Indirect Cost	$7,100.00
					Schedule A Total - Surface Improvements	**$42,400.00**
					Grand Total	**$42,400.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
2nd Street: West Lake Street - Center Street (2011)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	2500	$13.95	$34,875.00
					Subtotal Schedule A - Surface Improvements	$34,875.00
					+ 20% Contingencies	$7,000.00
					Subtotal	**$41,900.00**
					+ 20% Indirect Cost	$8,400.00
					Schedule A Total - Surface Improvements	**$50,300.00**
					Grand Total	**$50,300.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* MJJ
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 2/10/2010

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Bell Street: West Lake Street - North Dead End (2011)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	700	$13.95	$9,765.00
					Subtotal Schedule A - Surface Improvements	$9,765.00
					+ 20% Contingencies	$2,000.00
					Subtotal	**$11,800.00**
					+ 20% Indirect Cost	$2,400.00
					Schedule A Total - Surface Improvements	**$14,200.00**
					Grand Total	**$14,200.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Courtland Street: 2nd Street - 3rd Street (2011)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	1600	$51.50	$82,400.00
					Subtotal Schedule A - Surface Improvements	$82,400.00
					+ 20% Contingencies	$16,500.00
					Subtotal	**$98,900.00**
					+ 30% Indirect Cost	$29,700.00
					Schedule A Total - Surface Improvements	**$128,600.00**
B. SANITARY SEWER						
2	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	564	$10.00	$5,640.00
3	2104.509	REMOVE MANHOLE (SANITARY)	EACH	1	$1,000.00	$1,000.00
4	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	8	$250.00	$2,000.00
5	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$500.00	$500.00
6	2503.602	8"X4" PVC WYE	EACH	8	$100.00	$800.00
7	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	2	$1,500.00	$3,000.00
8	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	8	$600.00	$4,800.00
9	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	240	$20.00	$4,800.00
10	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	564	$30.00	$16,920.00
11	2503.603	TELEVISE SANITARY SEWER	LIN FT	564	$2.00	$1,128.00
12	2506.516	CASTING ASSEMBLY	EACH	1	$500.00	$500.00
13	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	11	$225.00	$2,475.00
					Subtotal Schedule B - Sanitary Sewer	$43,563.00
					+ 20% Contingencies	$8,700.00
					Subtotal	**$52,300.00**
					+ 30% Indirect Cost	$15,700.00
					Schedule B Total - Sanitary Sewer	**$68,000.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Courtland Street: 2nd Street - 3rd Street (2011)						
C. WATERMAIN						
14	2104.501	REMOVE WATER MAIN	LIN FT	475	$9.00	$4,275.00
15	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	8	$300.00	$2,400.00
16	2104.509	REMOVE GATE VALVE AND BOX	EACH	2	$300.00	$600.00
17	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$500.00	$500.00
18	2504.602	RECONNECT WATER SERVICE	EACH	8	$300.00	$2,400.00
19	2504.602	1" CORPORATION STOP	EACH	8	$90.00	$720.00
20	2504.602	1" CURB STOP AND BOX	EACH	8	$140.00	$1,120.00
21	2504.602	8" GATE VALVE AND BOX	EACH	2	$1,200.00	$2,400.00
22	2504.603	1" TYPE K COPPER PIPE	LIN FT	240	$30.00	$7,200.00
23	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	475	$40.00	$19,000.00
24	2504.608	DUCTILE IRON FITTINGS	POUND	750	$3.00	$2,250.00
					Subtotal Schedule C - Water Main	$42,865.00
					+ 20% Contingencies	$8,600.00
					Subtotal	**$51,470.00**
					+ 30% Indirect Cost	$15,400.00
					Schedule C Total - Water Main	**$66,900.00**
D. STORM SEWER						
25	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	300	$10.00	$3,000.00
26	2503.541	12" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	300	$30.00	$9,000.00
27	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	1	$1,000.00	$1,000.00
					Subtotal Schedule D - Storm Sewer	$13,000.00
					+ 20% Contingencies	$2,600.00
					Subtotal	**$15,600.00**
					+ 30% Indirect Cost	$4,700.00
					Schedule D Total - Storm Sewer	**$20,300.00**
					Grand Total	**$283,800.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Elm Street: West Lake Street - Bell Street (2011)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	580	$51.50	$29,870.00
2	2521.501	4" CONCRETE WALK	SQ FT	1275	$4.00	$5,100.00
					Subtotal Schedule A - Surface Improvements	$34,970.00
					+ 20% Contingencies	$7,000.00
					Subtotal	**$42,000.00**
					+ 30% Indirect Cost	$12,600.00
					Schedule A Total - Surface Improvements	**$54,600.00**
B. WATERMAIN						
3	2104.501	REMOVE WATER MAIN	LIN FT	300	$9.00	$2,700.00
4	2104.509	REMOVE HYDRANT AND VALVE	EACH	1	$650.00	$650.00
5	2104.509	REMOVE GATE VALVE AND BOX	EACH	1	$300.00	$300.00
6	2504.602	HYDRANT ASSEMBLY	EACH	1	$2,200.00	$2,200.00
7	2504.602	8" GATE VALVE AND BOX	EACH	1	$1,200.00	$1,200.00
8	2504.602	6" GATE VALVE AND BOX	EACH	1	$900.00	$900.00
9	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	300	$40.00	$12,000.00
10	2504.608	DUCTILE IRON FITTINGS	POUND	500	$3.00	$1,500.00
					Subtotal Schedule B - Water Main	$21,450.00
					+ 20% Contingencies	$4,300.00
					Subtotal	**$25,750.00**
					+ 30% Indirect Cost	$7,700.00
					Schedule B Total - Water Main	**$33,500.00**
					Grand Total	**$88,100.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Bell Street: West Lake Street - Courtland Street (2011)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	1620	$51.50	$83,430.00
2	2521.501	4" CONCRETE WALK	SQ FT	3900	$4.00	$15,600.00
					Subtotal Schedule A - Surface Improvements	$99,030.00
					+ 20% Contingencies	$19,800.00
					Subtotal	**$118,800.00**
					+ 30% Indirect Cost	$35,600.00
					Schedule A Total - Surface Improvements	**$154,400.00**
B. SANITARY SEWER						
3	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	1060	$10.00	$10,600.00
4	2104.509	REMOVE MANHOLE (SANITARY)	EACH	3	$1,000.00	$3,000.00
5	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	19	$250.00	$4,750.00
6	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$1,000.00	$1,000.00
7	2503.602	8"X4" PVC WYE	EACH	19	$100.00	$1,900.00
8	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	1	$1,500.00	$1,500.00
9	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	19	$600.00	$11,400.00
10	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	570	$20.00	$11,400.00
11	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	1,060	$30.00	$31,800.00
12	2503.603	TELEVISE SANITARY SEWER	LIN FT	1,060	$2.00	$2,120.00
13	2506.516	CASTING ASSEMBLY	EACH	3	$500.00	$1,500.00
14	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	26	$225.00	$5,850.00
					Subtotal Schedule B - Sanitary Sewer	$86,820.00
					+ 20% Contingencies	$17,400.00
					Subtotal	**$104,200.00**
					+ 30% Indirect Cost	$31,300.00
					Schedule B Total - Sanitary Sewer	**$135,500.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Bell Street: West Lake Street - Courtland Street (2011)						
C. WATERMAIN						
15	2104.501	REMOVE WATER MAIN	LIN FT	535	$9.00	$4,815.00
16	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	15	$300.00	$4,500.00
17	2104.509	REMOVE GATE VALVE AND BOX	EACH	1	$300.00	$300.00
18	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$1,000.00	$1,000.00
19	2504.602	RECONNECT WATER SERVICE	EACH	15	$300.00	$4,500.00
20	2504.602	1" CORPORATION STOP	EACH	15	$90.00	$1,350.00
21	2504.602	1" CURB STOP AND BOX	EACH	15	$140.00	$2,100.00
22	2504.602	8" GATE VALVE AND BOX	EACH	1	$1,200.00	$1,200.00
23	2504.603	1" TYPE K COPPER PIPE	LIN FT	450	$30.00	$13,500.00
24	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	535	$40.00	$21,400.00
25	2504.608	DUCTILE IRON FITTINGS	POUND	1,000	$3.00	$3,000.00
					Subtotal Schedule C - Water Main	$57,665.00
					+ 20% Contingencies	$11,500.00
					Subtotal	**$69,200.00**
					+ 30% Indirect Cost	$20,800.00
					Schedule C Total - Water Main	**$90,000.00**
D. STORM SEWER						
26	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	900	$10.00	$9,000.00
27	2104.509	REMOVE PIPE APRON	EACH	4	$750.00	$3,000.00
28	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	11	$150.00	$1,650.00
29	2502.541	4" PERF PVC PIPE DRAIN	LIN FT	200	$10.00	$2,000.00
30	2503.541	12" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	360	$30.00	$10,800.00
31	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	540	$30.00	$16,200.00
32	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	1	$1,000.00	$1,000.00
33	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	15	$300.00	$4,500.00
34	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1 (2X3)	EACH	8	$1,500.00	$12,000.00
35	2506.516	CASTING ASSEMBLY	EACH	3	$500.00	$1,500.00
36		STORMWATER IMPROVEMENTS	LUMP SUM	1	$10,000.00	$10,000.00
					Subtotal Schedule D - Storm Sewer	$71,650.00
					+ 20% Contingencies	$14,300.00
					Subtotal	**$86,000.00**
					+ 30% Indirect Cost	$25,800.00
					Schedule D Total - Storm Sewer	**$111,800.00**
					Grand Total	**$491,700.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Bell Street: Courtland Street - Center Street (2011)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	1000	$51.50	$51,500.00
					Subtotal Schedule A - Surface Improvements	$51,500.00
					+ 20% Contingencies	$10,300.00
					Subtotal	**$61,800.00**
					+ 30% Indirect Cost	$18,500.00
					Schedule A Total - Surface Improvements	**$80,300.00**
B. SANITARY SEWER						
2	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	410	$10.00	$4,100.00
3	2104.509	REMOVE MANHOLE (SANITARY)	EACH	1	$1,000.00	$1,000.00
4	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	8	$250.00	$2,000.00
5	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$500.00	$500.00
6	2503.602	8"X4" PVC WYE	EACH	8	$100.00	$800.00
7	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	2	$1,500.00	$3,000.00
8	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	8	$600.00	$4,800.00
9	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	240	$20.00	$4,800.00
10	2503.603	6" PVC PIPE SEWER - SDR 35	LIN FT	30	$25.00	$750.00
11	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	410	$30.00	$12,300.00
12	2503.603	TELEVISE SANITARY SEWER	LIN FT	410	$2.00	$820.00
13	2506.516	CASTING ASSEMBLY	EACH	1	$500.00	$500.00
14	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	12	$225.00	$2,700.00
					Subtotal Schedule B - Sanitary Sewer	$38,070.00
					+ 20% Contingencies	$7,600.00
					Subtotal	**$45,700.00**
					+ 30% Indirect Cost	$13,700.00
					Schedule B Total - Sanitary Sewer	**$59,400.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Bell Street: Courtland Street - Center Street (2011)						
C. WATERMAIN						
15	2104.501	REMOVE WATER MAIN	LIN FT	410	$9.00	$3,690.00
16	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	8	$300.00	$2,400.00
17	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$500.00	$500.00
18	2504.602	RECONNECT WATER SERVICE	EACH	8	$300.00	$2,400.00
19	2504.602	1" CORPORATION STOP	EACH	8	$90.00	$720.00
20	2504.602	1" CURB STOP AND BOX	EACH	8	$140.00	$1,120.00
21	2504.602	8" GATE VALVE AND BOX	EACH	1	$1,200.00	$1,200.00
22	2504.603	1" TYPE K COPPER PIPE	LIN FT	240	$30.00	$7,200.00
23	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	410	$40.00	$16,400.00
24	2504.608	DUCTILE IRON FITTINGS	POUND	500	$3.00	$1,500.00

Subtotal Schedule C - Water Main	$37,130.00
+ 20% Contingencies	$7,400.00
Subtotal	**$44,530.00**
+ 30% Indirect Cost	$13,400.00
Schedule C Total - Water Main	**$57,900.00**
Grand Total	**$197,600.00**

2012 - 2013 MCES Reconstruction

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* MJJ
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 2/10/2010

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Excelsior Boulevard: East City Limits - 2nd Street (MCES 2012-2013)						
A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$30,000.00	$30,000.00
2	2104.501	REMOVE CURB AND GUTTER	LIN FT	7830	$2.00	$15,660.00
3	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	16570	$1.00	$16,570.00
4	2105.501	COMMON EXCAVATION (P)	CU YD	15670	$9.00	$141,030.00
5	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	12540	$12.00	$150,480.00
6	2112.501	SUBGRADE PREPARATION	ROAD STA	39.5	$100.00	$3,950.00
7	2211.501	AGGREGATE BASE CLASS 5	TON	6560	$10.00	$65,600.00
8	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	1960	$55.00	$107,800.00
9	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	1960	$52.00	$101,920.00
10	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	790	$3.00	$2,370.00
11	2411.604	RETAINING WALL	SQ FT	2500	$20.00	$50,000.00
12	2521.501	4" CONCRETE WALK	SQ FT	39120	$4.00	$156,480.00
13	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	7825	$12.00	$93,900.00
14	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$10,000.00	$10,000.00
15	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	6960	$3.50	$24,360.00

Subtotal Schedule A - Surface Improvements	$970,120.00
+ 20% Contingencies	$194,000.00
Subtotal	**$1,164,100.00**
+ 30% Indirect Cost	$349,200.00
Schedule A Total - Surface Improvements	**$1,513,300.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* MJJ
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 2/10/2010

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Excelsior Boulevard: East City Limits - 2nd Street (MCES 2012-2013)						
B. STORM SEWER IMPROVEMENTS						
16	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	1000	$5.00	$5,000.00
17	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	10	$350.00	$3,500.00
18	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	650	$26.00	$16,900.00
19	2503.541	21" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	200	$37.00	$7,400.00
20	2503.541	24" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	900	$42.00	$37,800.00
21	2503.541	30" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	850	$48.00	$40,800.00
22	2503.541	48" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	250	$100.00	$25,000.00
23	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	30.0	$220.00	$6,600.00
24	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	48.0	$320.00	$15,360.00
25	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 72-4020	LIN FT	56.0	$420.00	$23,520.00
26	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	18	$1,300.00	$23,400.00
27	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	18	$525.00	$9,450.00
28		STORMWATER IMPROVEMENTS	LUMP SUM	1	$200,000.00	$200,000.00

Subtotal Schedule B - Storm Sewer	$414,730.00
+ 20% Contingencies	$82,900.00
Subtotal	**$497,600.00**
+ 30% Indirect Cost	$149,300.00
Schedule B Total - Storm Sewer	**$646,900.00**
Grand Total - Excelsior Boulevard	**$2,160,200.00**

2014 - 2015 MCES Reconstruction

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Morse Avenue: 2nd Street - 200' South of 3rd Street (MCES 2014-2015)						
A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$3,500.00	$3,500.00
2	2104.501	REMOVE CURB AND GUTTER	LIN FT	1300	$2.00	$2,600.00
3	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	1700	$1.00	$1,700.00
4	2105.501	COMMON EXCAVATION (P)	CU YD	1800	$9.00	$16,200.00
5	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	1400	$12.00	$16,800.00
6	2112.501	SUBGRADE PREPARATION	ROAD STA	6.5	$100.00	$650.00
7	2211.501	AGGREGATE BASE CLASS 5	TON	750	$10.00	$7,500.00
8	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	200	$55.00	$11,000.00
9	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	200	$52.00	$10,400.00
10	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	80	$3.00	$240.00
11	2521.501	4" CONCRETE WALK	SQ FT	6550	$4.00	$26,200.00
12	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	1300	$12.00	$15,600.00
13	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$2,000.00	$2,000.00
14	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	1200	$3.50	$4,200.00
					Subtotal Schedule A - Surface Improvements	$118,590.00
					+ 20% Contingencies	$23,700.00
					Subtotal	**$142,300.00**
					+ 30% Indirect Cost	$42,700.00
					Schedule A Total - Surface Improvements	**$185,000.00**
B. STORM SEWER IMPROVEMENTS						
15	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	200	$5.00	$1,000.00
16	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	4	$350.00	$1,400.00
17	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	175	$26.00	$4,550.00
18	2503.541	30" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	400	$48.00	$19,200.00
19	2503.541	48" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	400	$100.00	$40,000.00
20	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	24.0	$320.00	$7,680.00
21	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 72-4020	LIN FT	32.0	$420.00	$13,440.00
22	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	7	$1,300.00	$9,100.00
23	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	7	$525.00	$3,675.00
					Subtotal Schedule B - Storm Sewer	$100,045.00
					+ 20% Contingencies	$20,000.00
					Subtotal	**$120,000.00**
					+ 30% Indirect Cost	$36,000.00
					Schedule B Total - Storm Sewer	**$156,000.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan
Project Location: City of Excelsior
WSB Project No: 1140-61

Design By: JPK
Checked By:
Date: 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Morse Avenue: 2nd Street - 200' South of 3rd Street (MCES 2014-2015)						
					Grand Total - Morse Avenue	**$341,000.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Morse Avenue: Trunk Highway 7 - Trail (MCES 2014-2015)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	990	$51.50	$50,985.00
					Subtotal Schedule A - Surface Improvements	$50,985.00
					+ 20% Contingencies	$10,200.00
					Subtotal	**$61,200.00**
					+ 30% Indirect Cost	$18,400.00
					Schedule A Total - Surface Improvements	**$79,600.00**
B. SANITARY SEWER						
2	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	385	$10.00	$3,850.00
3	2104.509	REMOVE MANHOLE (SANITARY)	EACH	2	$1,000.00	$2,000.00
4	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	6	$250.00	$1,500.00
5	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$1,000.00	$1,000.00
6	2503.602	10"X4" PVC WYE	EACH	6	$120.00	$720.00
7	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	2	$1,500.00	$3,000.00
8	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	6	$600.00	$3,600.00
9	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	180	$20.00	$3,600.00
10	2503.603	10" PVC PIPE SEWER - SDR 35	LIN FT	385	$35.00	$13,475.00
11	2503.603	TELEVISE SANITARY SEWER	LIN FT	385	$2.00	$770.00
12	2506.516	CASTING ASSEMBLY	EACH	2	$500.00	$1,000.00
13	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	35	$225.00	$7,875.00
					Subtotal Schedule B - Sanitary Sewer	$42,390.00
					+ 20% Contingencies	$8,500.00
					Subtotal	**$50,900.00**
					+ 30% Indirect Cost	$15,300.00
					Schedule B Total - Sanitary Sewer	**$66,200.00**
					Grand Total	**$145,800.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

George Street: Beehrle Avenue - 200' East of Water St. (MCES 2014-2015)

A. SURFACE IMPROVEMENTS

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
1	2021.501	MOBILIZATION	LUMP SUM	1	$10,000.00	$10,000.00
2	2104.501	REMOVE CURB AND GUTTER	LIN FT	3020	$2.00	$6,040.00
3	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	5450	$1.00	$5,450.00
4	2105.501	COMMON EXCAVATION (P)	CU YD	5300	$9.00	$47,700.00
5	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	4250	$12.00	$51,000.00
6	2112.501	SUBGRADE PREPARATION	ROAD STA	15	$100.00	$1,500.00
7	2211.501	AGGREGATE BASE CLASS 5	TON	2240	$10.00	$22,400.00
8	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	650	$55.00	$35,750.00
9	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	650	$52.00	$33,800.00
10	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	260	$3.00	$780.00
11	2521.501	4" CONCRETE WALK	SQ FT	15100	$4.00	$60,400.00
12	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	3020	$12.00	$36,240.00
13	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$5,000.00	$5,000.00
14	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	2700	$3.50	$9,450.00

Subtotal Schedule A - Surface Improvements	$325,510.00
+ 20% Contingencies	$65,100.00
Subtotal	**$390,600.00**
+ 30% Indirect Cost	$117,200.00
Schedule A Total - Surface Improvements	**$507,800.00**

B. STORM SEWER IMPROVEMENTS

15	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	100	$5.00	$500.00
16	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	2	$350.00	$700.00
17	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	350	$26.00	$9,100.00
18	2503.541	18" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	500	$32.00	$16,000.00
19	2503.541	21" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	400	$37.00	$14,800.00
20	2503.541	24" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	500	$42.00	$21,000.00
21	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	80.0	$220.00	$17,600.00
22	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	10	$1,300.00	$13,000.00
23	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	10	$525.00	$5,250.00

Subtotal Schedule B - Storm Sewer	$97,950.00
+ 20% Contingencies	$19,600.00
Subtotal	**$117,600.00**
+ 30% Indirect Cost	$35,300.00
Schedule B Total - Storm Sewer	**$152,900.00**

Grand Total - George Street	**$660,700.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Beehrle Avenue: George Street - Oak Street (MCES 2014-2015)						
A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$5,000.00	$5,000.00
2	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	2000	$1.00	$2,000.00
3	2105.501	COMMON EXCAVATION (P)	CU YD	2100	$9.00	$18,900.00
4	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	1700	$12.00	$20,400.00
5	2112.501	SUBGRADE PREPARATION	ROAD STA	8	$100.00	$800.00
6	2211.501	AGGREGATE BASE CLASS 5	TON	880	$10.00	$8,800.00
7	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	250	$55.00	$13,750.00
8	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	250	$52.00	$13,000.00
9	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	100	$3.00	$300.00
10	2521.501	4" CONCRETE WALK	SQ FT	7800	$4.00	$31,200.00
11	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	1550	$12.00	$18,600.00
12	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$2,000.00	$2,000.00
13	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	1400	$3.50	$4,900.00
					Subtotal Schedule A - Surface Improvements	$139,650.00
					+ 20% Contingencies	$27,900.00
					Subtotal	**$167,600.00**
					+ 30% Indirect Cost	$50,300.00
					Schedule A Total - Surface Improvements	**$217,900.00**
B. STORM SEWER IMPROVEMENTS						
14	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	100	$26.00	$2,600.00
15	2503.541	30" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	800	$48.00	$38,400.00
16	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	40.0	$320.00	$12,800.00
15	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	4	$1,300.00	$5,200.00
16	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	4	$525.00	$2,100.00
					Subtotal Schedule B - Storm Sewer	$61,100.00
					+ 20% Contingencies	$12,200.00
					Subtotal	**$73,300.00**
					+ 30% Indirect Cost	$22,000.00
					Schedule B Total - Storm Sewer	**$95,300.00**
					Grand Total - Beehrle Street	**$313,200.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
William Street: Oak Street - College Drive (MCES 2014-2015)						
A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$2,000.00	$2,000.00
2	2104.501	REMOVE CURB AND GUTTER	LIN FT	850	$2.00	$1,700.00
3	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	1100	$1.00	$1,100.00
4	2105.501	COMMON EXCAVATION (P)	CU YD	1150	$9.00	$10,350.00
5	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	900	$12.00	$10,800.00
6	2112.501	SUBGRADE PREPARATION	ROAD STA	4.5	$100.00	$450.00
7	2211.501	AGGREGATE BASE CLASS 5	TON	480	$10.00	$4,800.00
8	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	130	$55.00	$7,150.00
9	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	130	$52.00	$6,760.00
10	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	50	$3.00	$150.00
11	2521.501	4" CONCRETE WALK	SQ FT	4250	$4.00	$17,000.00
12	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	850	$12.00	$10,200.00
13	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$1,000.00	$1,000.00
14	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	750	$3.50	$2,625.00
					Subtotal Schedule A - Surface Improvements	$76,085.00
					+ 20% Contingencies	$15,200.00
					Subtotal	**$91,300.00**
					+ 30% Indirect Cost	$27,400.00
					Schedule A Total - Surface Improvements	**$118,700.00**
B. STORM SEWER IMPROVEMENTS						
15	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	100	$26.00	$2,600.00
16	2503.541	21" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	400	$37.00	$14,800.00
17	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	15.0	$220.00	$3,300.00
18	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	2	$1,300.00	$2,600.00
19	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	2	$525.00	$1,050.00
					Subtotal Schedule B - Storm Sewer	$24,350.00
					+ 20% Contingencies	$4,900.00
					Subtotal	**$29,300.00**
					+ 30% Indirect Cost	$8,800.00
					Schedule B Total - Storm Sewer	**$38,100.00**
					Grand Total - William Street	**$156,800.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
College Avenue: William Street - Water Street (MCES 2014-2015)						
A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$5,000.00	$5,000.00
2	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	2300	$1.00	$2,300.00
3	2105.501	COMMON EXCAVATION (P)	CU YD	2350	$9.00	$21,150.00
4	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	1900	$12.00	$22,800.00
5	2112.501	SUBGRADE PREPARATION	ROAD STA	8	$100.00	$800.00
6	2211.501	AGGREGATE BASE CLASS 5	TON	1000	$10.00	$10,000.00
7	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	280	$55.00	$15,400.00
8	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	280	$52.00	$14,560.00
9	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	110	$3.00	$330.00
10	2521.501	4" CONCRETE WALK	SQ FT	7770	$4.00	$31,080.00
11	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	1550	$12.00	$18,600.00
12	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$2,000.00	$2,000.00
13	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	1400	$3.50	$4,900.00
					Subtotal Schedule A - Surface Improvements	$148,920.00
					+ 20% Contingencies	$29,800.00
					Subtotal	**$178,700.00**
					+ 30% Indirect Cost	$53,600.00
					Schedule A Total - Surface Improvements	**$232,300.00**
B. STORM SEWER IMPROVEMENTS						
14	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	50	$5.00	$250.00
15	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	4	$350.00	$1,400.00
16	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	100	$26.00	$2,600.00
17	2503.541	21" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	400	$37.00	$14,800.00
18	2503.541	36" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	300	$60.00	$18,000.00
19	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	35.0	$320.00	$11,200.00
20	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	4	$1,300.00	$5,200.00
21	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	4	$525.00	$2,100.00
					Subtotal Schedule B - Storm Sewer	$55,550.00
					+ 20% Contingencies	$11,100.00
					Subtotal	**$66,700.00**
					+ 30% Indirect Cost	$20,000.00
					Schedule B Total - Storm Sewer	**$86,700.00**
					Grand Total - College Avenue	**$319,000.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Water Street: College Ave. - 350' South of College Ave. (MCES 2014-2015)						
A. SURFACE IMPROVEMENTS						
1	2021.501	MOBILIZATION	LUMP SUM	1	$2,000.00	$2,000.00
2	2104.501	REMOVE CURB AND GUTTER	LIN FT	700	$2.00	$1,400.00
3	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	1250	$1.00	$1,250.00
4	2105.501	COMMON EXCAVATION (P)	CU YD	1200	$9.00	$10,800.00
5	2105.522	SELECT GRANULAR BORROW (CV)	CU YD	950	$12.00	$11,400.00
6	2112.501	SUBGRADE PREPARATION	ROAD STA	3.5	$100.00	$350.00
7	2211.501	AGGREGATE BASE CLASS 5	TON	500	$10.00	$5,000.00
8	2350.501	TYPE LV 3 WEARING COURSE MIXTURE (C)	TON	150	$55.00	$8,250.00
9	2350.502	TYPE LV 3 NON WEARING COURSE MIXTURE (C)	TON	150	$52.00	$7,800.00
10	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	60	$3.00	$180.00
11	2521.501	4" CONCRETE WALK	SQ FT	3500	$4.00	$14,000.00
12	2531.501	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	700	$12.00	$8,400.00
13	2563.601	TRAFFIC CONTROL	LUMP SUM	1	$1,000.00	$1,000.00
14	2575.505	SODDING TYPE LAWN (INCL. TOPSOIL & FERT.)	SQ YD	600	$3.50	$2,100.00
					Subtotal Schedule A - Surface Improvements	$73,930.00
					+ 20% Contingencies	$14,800.00
					Subtotal	**$88,700.00**
					+ 30% Indirect Cost	$26,600.00
					Schedule A Total - Surface Improvements	**$115,300.00**
B. STORM SEWER IMPROVEMENTS						
15	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	50	$5.00	$250.00
16	2104.509	REMOVE DRAINAGE STRUCTURE	EACH	3	$350.00	$1,050.00
17	2503.541	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	400	$26.00	$10,400.00
18	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	15.0	$220.00	$3,300.00
19	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	2	$1,300.00	$2,600.00
20	2506.602	CASTING ASSEMBLY (CATCH BASIN)	EACH	2	$525.00	$1,050.00
					Subtotal Schedule B - Storm Sewer	$18,650.00
					+ 20% Contingencies	$3,700.00
					Subtotal	**$22,400.00**
					+ 30% Indirect Cost	$6,700.00
					Schedule B Total - Storm Sewer	**$29,100.00**
					Grand Total - Water Street	**$144,400.00**

2016 Reconstruction
and Mill & Overlay

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Academy Avenue: West City Limits - Water Street (2016)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	3525	$51.50	$181,537.50
					Subtotal Schedule A - Surface Improvements	$181,537.50
					+ 20% Contingencies	$36,300.00
					Subtotal	**$217,800.00**
					+ 30% Indirect Cost	$65,300.00
					Schedule A Total - Surface Improvements	**$283,100.00**
B. SANITARY SEWER						
1	2104.501	REMOVE SEWER PIPE (SANITARY)	LIN FT	735	$10.00	$7,350.00
2	2104.509	REMOVE MANHOLE (SANITARY)	EACH	5	$1,000.00	$5,000.00
3	2104.509	REMOVE SANITARY SEWER SERVICE	EACH	11	$250.00	$2,750.00
4	2503.601	SANITARY SEWER BYPASS PUMPING	LUMP SUM	1	$500.00	$500.00
5	2503.602	8"X4" PVC WYE	EACH	11	$100.00	$1,100.00
6	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	2	$1,500.00	$3,000.00
7	2503.602	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	11	$600.00	$6,600.00
8	2503.603	4" PVC PIPE SEWER - SDR 26	LIN FT	330	$20.00	$6,600.00
9	2503.603	8" PVC PIPE SEWER - SDR 35	LIN FT	735	$30.00	$22,050.00
10	2503.603	TELEVISE SANITARY SEWER	LIN FT	735	$2.00	$1,470.00
11	2506.516	CASTING ASSEMBLY	EACH	4	$500.00	$2,000.00
12	2506.603	CONSTRUCT 8" OUTSIDE DROP	LIN FT	14	$180.00	$2,520.00
13	2506.603	CONST 48" DIA SAN SEWER MANHOLE	LIN FT	60	$225.00	$13,500.00
					Subtotal Schedule B - Sanitary Sewer	$74,440.00
					+ 20% Contingencies	$14,900.00
					Subtotal	**$89,300.00**
					+ 30% Indirect Cost	$26,800.00
					Schedule B Total - Sanitary Sewer	**$116,100.00**
C. WATERMAIN						
14	2104.501	REMOVE WATER MAIN	LIN FT	1115	$9.00	$10,035.00
15	2104.509	REMOVE WATER SERVICE AND CURB STOP	EACH	11	$300.00	$3,300.00
16	2104.509	REMOVE HYDRANT AND VALVE	EACH	2	$650.00	$1,300.00
17	2104.509	REMOVE GATE VALVE AND BOX	EACH	2	$300.00	$600.00
18	2504.601	TEMPORARY WATER SYSTEM	LUMP SUM	1	$2,000.00	$2,000.00
19	2504.602	RECONNECT WATER SERVICE	EACH	11	$300.00	$3,300.00
20	2504.602	1" CORPORATION STOP	EACH	11	$90.00	$990.00
21	2504.602	1" CURB STOP AND BOX	EACH	11	$140.00	$1,540.00

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Academy Avenue: West City Limits - Water Street (2016)						
22	2504.602	HYDRANT ASSEMBLY	EACH	2	$2,200.00	$4,400.00
23	2504.602	8" GATE VALVE AND BOX	EACH	8	$1,200.00	$9,600.00
24	2504.602	6" GATE VALVE AND BOX	EACH	2	$900.00	$1,800.00
25	2504.603	1" TYPE K COPPER PIPE	LIN FT	330	$30.00	$9,900.00
26	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	1,115	$40.00	$44,600.00
27	2504.603	6" WATER MAIN-DUCT IRON CL 52	LIN FT	30	$45.00	$1,350.00
28	2504.608	DUCTILE IRON FITTINGS	POUND	1,500	$3.00	$4,500.00

Subtotal Schedule C - Water Main	$99,215.00
+ 20% Contingencies	$19,800.00
Subtotal	**$119,000.00**
+ 30% Indirect Cost	$35,700.00
Schedule C Total - Water Main	**$154,700.00**
Grand Total	**$553,900.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* PO
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 12/28/2007

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Grant Street: Academy Avenue - South City Limits (2016)						
A. SURFACE IMPROVEMENTS						
1	2105.604	STREET RECONSTRUCTION	SQ YD	460	$51.50	$23,690.00
					Subtotal Schedule A - Surface Improvements	$23,690.00
					+ 20% Contingencies	$4,700.00
					Subtotal	**$28,400.00**
					+ 30% Indirect Cost	$8,500.00
					Schedule A Total - Surface Improvements	**$36,900.00**
B. WATERMAIN						
2	2104.501	REMOVE WATER MAIN	LIN FT	200	$9.00	$1,800.00
3	2504.602	8" GATE VALVE AND BOX	EACH	1	$1,200.00	$1,200.00
4	2504.603	8" WATER MAIN-DUCT IRON CL 52	LIN FT	200	$40.00	$8,000.00
5	2504.608	DUCTILE IRON FITTINGS	POUND	500	$3.00	$1,500.00
					Subtotal Schedule B - Water Main	$12,500.00
					+ 20% Contingencies	$2,500.00
					Subtotal	**$15,000.00**
					+ 30% Indirect Cost	$4,500.00
					Schedule B Total - Water Main	**$19,500.00**
					Grand Total	**$56,400.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Glencoe Road: William Street - South City Limits (2016)						
A. SURFACE IMPROVEMENTS						
1	2356.604	Mill & Overlay	SQ YD	5170	$13.95	$72,121.50

Subtotal Schedule A - Surface Improvements	$72,121.50
+ 20% Contingencies	$14,400.00
Subtotal	**$86,500.00**
+ 20% Indirect Cost	$17,300.00
Schedule A Total - Surface Improvements	**$103,800.00**
Grand Total	**$103,800.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Monroe Avenue: Grant Street - West End (2016)						
A. SURFACE IMPROVEMENTS						
1	2356.604	Mill & Overlay	SQ YD	890	$13.95	$12,415.50
					Subtotal Schedule A - Surface Improvements	$12,415.50
					+ 20% Contingencies	$2,500.00
					Subtotal	**$14,900.00**
					+ 20% Indirect Cost	$3,000.00
					Schedule A Total - Surface Improvements	**$17,900.00**
					Grand Total	**$17,900.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Grant Street: Academy Avenue - North Dead End (2016)						
A. SURFACE IMPROVEMENTS						
1	2356.604	Mill & Overlay	SQ YD	1430	$13.95	$19,948.50
					Subtotal Schedule A - Surface Improvements	$19,948.50
					+ 20% Contingencies	$4,000.00
					Subtotal	**$23,900.00**
					+ 20% Indirect Cost	$4,800.00
					Schedule A Total - Surface Improvements	**$28,700.00**
					Grand Total	**$28,700.00**

Opinion of Probable Cost

WSB Project: Pavement Management Plan — *Design By:* JPK
Project Location: City of Excelsior — *Checked By:*
WSB Project No: 1140-61 — *Date:* 11/17/2009

Item No.	MN/DOT Specification No.	Description	Unit	Estimated Total Quantity	Estimated Unit Price	Estimated Total Cost
Pleasant Street: Academy Avenue - North Dead End (2016)						
A. SURFACE IMPROVEMENTS						
1	2356.604	MILL & OVERLAY	SQ YD	1250	$13.95	$17,437.50

Subtotal Schedule A - Surface Improvements	$17,437.50
+ 20% Contingencies	$3,500.00
Subtotal	**$20,900.00**
+ 20% Indirect Cost	$4,200.00
Schedule A Total - Surface Improvements	**$25,100.00**
Grand Total	**$25,100.00**