FEASIBILITY REPORT

Charlton Road Improvements and Sunfish Lake Outlet Improvements

City of Sunfish Lake
Dakota County, Minnesota

April 3, 2018

Prepared for:
City of Sunfish Lake

CITY PROJECT NOS. 2018-01 and 2018-02
WSB PROJECT NO. 1629-741

FEASIBILITY REPORT

CHARLTON ROAD IMPROVEMENTS
AND
SUNFISH LAKE OUTLETIMPROVEMENTS

FOR THE
CITY OF SUNFISH LAKE

CITY PROJECT 2018-01/ 2018-02

April 3, 2018

Prepared By:

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

April 3, 2018

Honorable Mayor and City Council
City of Sunfish Lake
15 Sunnyside Lane
Sunfish Lake, MN 55118

Re: Final Feasibility Report
Charlton Road Improvements
City of Sunfish Lake, MN
City Project 2018-01/ 2018-02
WSB Project No. 1629-741

Dear Mayor and City Council Members:

WSB & Associates, Inc. (WSB) is submitting the enclosed Final Feasibility Report for the reconstruction improvements to Charlton Road as requested by the City Council.

The study looked at three (3) alternatives for street improvements along with improvements to the outlet from Sunfish Lake. The final recommendation will involve input from the abutting residents, City Council, financing and cooperation from the abutting residents from which additional easement dedication will be required to construct the improvements. All three-options address drainage and recommend a paved surface, differentiated by the length of the roadway to be improved and project costs that vary accordingly. The project cost is proposed to be recovered by assessment to benefiting parcels, City financing, and ad-valorem taxes.

Once you have had an opportunity to review this report, if you have any questions or comments, please contact me at (763) 287-7189.

Sincerely,

WSB & Associates, Inc.

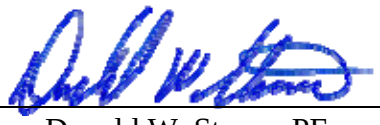
Donald W. Sterna, PE
Sr. Project Manager

Attachment

cc: Richard Williams, Jr., Mayor
Dan O'Leary., Council Member
Steve Bulach, Council Member
Mike Hovey, Council Member
Joanne Wahlstrom, Council Member
Timothy Kuntz, City Attorney
Jeff Sandberg, City Engineer
Cathy Iago, City Clerk

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.



Donald W. Sterna, PE

Date: April 3, 2018 License No. 19103

TABLE OF CONTENTS

TITLE SHEET
LETTER OF TRANSMITTAL
CERTIFICATION SHEET
TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1

2. INTRODUCTION 4

2.1 History 4

3. EXISTING CONDITIONS 6

3.1 Streets and Drainage 6
3.2 Traffic Conditions 6
3.3 Right of Way 6

4. RESIDENT SURVEY RESULTS 7

5. CHARLTON ROAD TASK FORCE 87

6. PROPOSED IMPROVEMENTS 9

6.1 Street and Drainage Improvements 9
6.2 Sunfish Lake Outlet Improvements 14
6.3 Permanent Roadway, Drainage, and Utility Easements 14

7. FINANCING 15

7.1 Opinion of Cost 15
7.2 Funding 15

8. PERMITS/APPROVALS 17

9. COUNCIL AUTHORIZATION 18

10. PROJECT SCHEDULE 19

11. RECOMMENDATIONS AND CONCLUSIONS 20

Appendix A

Figure 1 − Project Location Map
Figure 2 − Typical Sections
Figure 3 – Typical Sections
Figure 4 – Typical Sections
Figure 5 – Typical Sections
Figure 6 – Curve Realignment
Figure 7 – Right-of-Way
Figure 8 – Right-of-Way
Figure 9 – Charlton Road Assessment Map
Figure 10 – Sunfish Lake Outlet Assessment Map

Appendix B

Opinion of Probable Cost

Appendix C

Preliminary Assessment Roll

- Option 1
- Option 2
- Option 3
- Sunfish Lake Outlet
- Watermain Alternate No. 1
- Watermain Alternate No. 2

Appendix D

Soil Borings

1. EXECUTIVE SUMMARY

The Charlton Road Improvement Project involves reconditioning of the existing gravel roadway surface and subgrade, paving, and drainage system improvements. The feasibility report studies three (3) options for the Council to consider when determining what type of improvements should be made, project costs, proposed assessments and financing considerations for Charlton Road. Two other factors that will be discussed in this report is the concern of the residents relating to the current minimum city street width of 22 feet being applied to any improvements to Charlton Road along with an option for softening of the 90-degree curve on Charlton Road. This report outlines three (3) improvement options for the City Council and residents to evaluate for Charlton Road along with the "do-nothing" option of maintaining the current gravel roadway.

Option 1 involves reconstruction from TH 110 to the south property of St. Anne's Church or about 550 feet. Option 2 extends the reconstruction to the south property line of the Smith residents, which is 1,950 feet. Option 3 includes reconstruction of the entire length of Charlton Road to Delaware Avenue or 3,500 feet and softening the 90-degree curve. Additionally, the report discusses the "do-nothing" option, which is continuing the current maintenance options.

As a part of the project, this report also addresses options for improvements to the outlet from Sunfish Lake to needed due to high maintenance costs, but also improving the outlet capacity of the system to better regulate the lake levels and improve the drawdown efficiencies. The current outlet configuration has required higher than normal maintenance to maintain the capacity of the outlet. The report addresses options to lower the maintenance activity while increasing the outlet capacity with a more consistent discharge rate when lake levels exceed the Ordinary High Water (OHW) elevation of 937.1. By improving the outlet, the lake levels would be managed more effectively with minimal maintenance and increase dependability.

Options considered as part of the road reconstruction include the following:

1. The current city street width standard for new roadway is two 11-foot paved driving lanes with 1.5-foot gravel shoulders. The City developed a Rust Road standard for Acorn Road due to the original narrow and windy roadway, which carried less than 150 vehicles a day while maintaining a 20- foot wide drivable surface meeting Fire Code Standards. WSB has been asked to develop a new city street standard that more closely fits the existing roadway characteristics of Charlton Road.

2. Consider a new City Standard for Preservation Routes that would allow two 10-foot paved driving lanes with 1.5-foot aggregate shoulders. This proposed width meets MnDOT minimum design standards for rural reconditioning projects with ADT's less than 749 vehicles a day. Charlton Road traffic is on the order of 200 ADT.

3. Establish Charlton Road as an Urban District per Minnesota Statutes for 30 MPH minimum speed limit enforcement. Post at a cautionary 20 MPH advisory speed limit for the curves.

4. Customize the improvements to utilize a combination of urban section thru embankment cut areas and a rural section with ditches in the embankment fill areas. This option

minimizes the impacts to the adjoining properties while providing the necessary drainage for the roadway.

5. Provide an 8-foot-wide parking lane between St Ann's Church and TH 110 to accommodate 12 vehicles to accommodate larger events and provide an area for maintenance for service vehicles to park.

6. Provide opportunity for up to 2 maintenance bump outs to for use by maintenance vehicles and emergency responders.

7. Maintain an existing gravel surface with subgrade repairs and drainage improvements and continue to perform annual maintenance, "do-nothing" alternative on the roadway with no major improvements or repairs.

The proposed project requires expanded permanent street, drainage and utility easements with some temporary easements. A total of 15 parcels along Charlton Road would be involved with either dedication of easements or possibly the need by the city to condemn the property required to construct this project.

A discussion of each alternative and cost comparison is included in the following report, along with the history of previous studies of Charlton Road Improvements. The total estimated project costs vary between $120,000 to $841,000 depending on the design option selected. The total project costs for the improvements to Sunfish Lake Outlet is estimated at $41,000. This includes a 5% contingency and 30% indirect costs for legal, engineering, administration, financing and Right-of-Way Costs. Funding for this project will consist of a combination of special assessments, City financing and ad-valorem taxes as necessary. The proposed street assessment rate follows the current City assessment policy for collector roadways and ranges from $12,000 for option 1, $7,546 for option 2 and $10,852 for option 3 per assessable unit. The assessments will generate approximately 40% of the total project revenue. The proposed assessments for the improvements to the outlet from Sunfish Lake are estimated at $1,243 which generates 100% of the project costs by the property owners along the lake with no City financing involvement.

The Feasibility Study identified two (2) watermain add alternative improvements that the City Council could add into the project. The first add alternative No. 1 is to address the extension of an 8-inch watermain with a Hydrant under TH 62 (Old TH 110) for fire protection which would be an additional $1,562 per unit added to option 3. The second add alternative No. 2would be to reconstruct the watermain under Charlton Road at an additional per unit cost of $1,243 per unit added to option 3. The City Council could at the discretion add either one, both add alternates on elect not to include this work now to the project.

It is proposed that the design of the project could be completed in the spring of 2018, however, all required easements would not be able to be secured until the spring of 2019. Construction could begin in late summer of 2018 or spring of 2019 depending on the outcome of easement dedication and cooperation of the residents along Charlton Road, however we are recommending that all the construction be completed in one season which would push the project back in the spring of 2019. This would allow the city to resolve the remaining issues, acquire the remaining

Right-of-Way and easements, bid the project in the late winter to secure the best bidding climate and minimize construction disruption to the residents.

2. INTRODUCTION

The City Council authorized WSB to prepare a feasibility study for the consideration of reconstruction and surfacing of Charlton Road from CSAH 63 (Delaware Avenue) to TH 110. The project location is shown on ***Figure 1*** in ***Appendix A***. The purpose of this report is to evaluate the existing condition of Charlton Road and identify and recommend possible improvements options for the roadway and drainage facilities while preserving the topography, maintaining rural aesthetics and minimizing vegetation impacts while trying to meet acceptable street standards for safety, liability, drainage and functionality. This report will summarize the proposed improvements, associated project costs, project financing options and project schedule.

2.1 History

In early 1993, the City Council of Sunfish Lake authorized the preparation of a feasibility report for the upgrade of Charlton Road from State Trunk Highway 110 (TH 110) south to Delaware Avenue, CSAH 63. The report provided detailed cost estimates, discussions, and recommendations to improve Charlton Road by bituminous or aggregate surfacing. Design considerations were identified based on interests defined by the residents and City Council. The project selected consisted of culvert installations, ditch grading, subgrade corrections and geotextile fabric installation in the severely deteriorated sections of Charlton Road.

This work was completed in 1994 at a construction cost of $119,000, which involved subgrade improvements to several segments of Charlton Road with aggregate surfacing rehabilitation. The project did stabilize most of the deteriorated portions of the gravel roadway except for the south west end of Charlton Road which was constructed over a soft subgrade. The project did improve the driving surface and lessened some of the annual maintenance costs however the roadway still requires regrading and the addition of gravel 3 to 4 times a year. The assessment that was levied at the time was $2,886 per unit, which was approximately 73% of the project cost.

Gravel surfaced roadways require annual maintenance and periodic upgrades to sustain the road's stability. Only minor yearly maintenance has been completed on Charlton Road since 1994. A typical maintenance schedule for an aggregate surfaced roadway would have substantial regraveling and subgrade correction work completed every five years which has not been the case over the years for Charlton Road until recently.

Since the 1994 improvements, other areas have become soft and unstable due to poor subgrade soils underlying Charlton Road. These soils are very sensitive to moisture and frost heaves. This was evident in 2007 and previous years when the frost left the roadway during the spring thaw, which developed frost boils on the surface. During these years, additional maintenance was necessary to provide an adequate driving surface.

The City's maintenance costs between the years of 1996 through 2007 was $55,972, which averaged around $4,589 a year and ranged from $537 to $13,787. The City's maintenance cost from 2008 through 2016 was $92,863, which have more than doubled in the past 9 years ranging from $3,138 to $29,079 a year. The table on the following page summarizes the year to date maintenance expenses from 1996 through 2016.

Year To Date	Charlton Road Maintenance Expense
1996	$3,678
1997	$3,839
1998	$2,971
1999	$13,787
2000	$6,190
2001	$3,561
2002	$4,524
2003	$6,190
2004	$2,928
2005	$5,037
2006	$537
2007	$1,830
Total	$55,072
Average Costs/Year	$4,589

Year To Date	Charlton Road Maintenance Expense
2008	$3,683.40
2009	29,079.49
2010	5,284.71
2011	3,138.00
2012	8,675.76
2013	9,955.75
2014	10,135.50
2015	8,271.62
2016	14,639.13
Total	$92,863
Average Costs/Year	$10,318.15

Current maintenance costs for other bituminous surfaced roadways within Sunfish Lake are approximately $3,750 yearly per mile per year. This cost assumes that every 8 years a chip seal is applied. This equates to $2,500 per year for the length of Charlton Road if Charlton Road was paved.

3. EXISTING CONDITIONS

3.1 Streets and Drainage

Charlton Road is currently a rural gravel roadway section that extends approximately 3,500 feet between Delaware Avenue (CSAH 63) and TH 110. Charlton Road varies in width between 19 to 25 feet with a typical width of around 21 feet. The roadway consists of an aggregate surface with intermittent ditching along both sides with trees very close to the roadway edges and overhead utilities. The aggregate surface consists of 4 to 8 inches of class 5 aggregate base with spotty areas of little or no aggregate surfacing due to frost boils. The sub soils consist of silty sand, clayey sands and lean clay. The alignment of the road has several gradual curves with a sharp (90°) horizontal curve at the southern end of the road. The roadway cross slope generally drains to one side or the other and in a few locations, it is crowned in the middle to drain to both sides.

The outlet from Sunfish lake over the past several years has been blocked several times due to debris within the outlet pipe, which has in turn impacted lake levels. The existing outlet pipe connects into an existing concrete manhole at the 90-degree bend on Charlton road, which during large rain events carries gravel and debris into the outlet pipe thereby blocking its flow. The outlet eventually drains west and south into Mendota Heights as it works it way to the Minnesota River. Currently a Joint Power Agreement is in place allowing for this drainage to enter Mendota Heights. Any revisions to the outlet would require an amendment to this agreement with Mendota Heights along with a permit from the DNR.

3.2 Traffic Conditions

Traffic counts were completed on Charlton Road in May of 2006, which showed an average daily traffic (ADT) on weekdays and weekends is 190 and 138 vehicles respectively. New traffic counts were taken in April 2017 that showed the north end had an average of 204 ADT, the middle segment had an average of 143 ADT and the west end at Delaware Avenue had an average of 242 ADT. Based on these recent counts, traffic volumes have remained relatively consistent with basically no noticeable growth trend.

3.3 Right of Way

Charlton Road only has six of the 21 parcels fronting on Charlton Road with platted right-of-way (33-foot-wide measured from centerline of the roadway). The other15 parcels abutting the roadway only have prescriptive rights for the roadway and drainage to be maintained. This means that no permanent easements or dedicated right-of-way exists along the roadway on these 15 parcels outside of the prescriptive rights usage. Acquiring additional permanent easements for roadway, drainage and utility have in the past been the biggest hurdle to overcome for financing any improvements. Of the 15 parcels identified where easements were not formally dedicated, only easements from one parcel would need to be formally acquired by way of condemnation proceedings. For the remaining 14 parcels, the work proposed would be within the prescriptive rights area that the city currently occupies. The right-of-way maps are shown on ***Figures 7 and 8*** in ***Appendix A***.

4. RESIDENT SURVEY RESULTS

Residents that utilized Charlton Road for access and egress have been surveyed over the years regarding their thoughts and concerns for the roadway. Surveys have been conducted three times in the past 25 years. The first survey was completed in 1993 prior to the feasibility study for the 1994 improvements; another survey was conducted in 2003 when the City council again reviewed improvements to Charlton Road; a third survey was conducted in the spring of 2007 to obtain input for the feasibility study presented in 2009. In 2016, the City Council once again formed a task force to review the previous results and to take a fresh look at other potential options to see if a compromise solution could be developed.

The last meeting with the residents in 2016 showed a real interest in improvements to Charlton Road and cooperation on dedication of the necessary easements required to construct and maintain the roadway. The direction from this meeting was to request the City Council to develop more detailed plans that would minimize the paved surface width, improve drainage, and preserve and protect the natural features along the roadway. A more customized roadway approach with a narrower roadway foot print utilizing curb and gutter to manage drainage was suggested. Additionally, the residents requested a solution that also minimizes easement dedication widths such as a narrower roadway easement with variable drainage and utility easements.

The detailed results of the 2003 and 2007, resident surveys were included in past feasibility reports and can be provided if requested by the Council or current residents. The major concerns were cut through traffic and speed of the vehicles. The City has conducted several traffic counts over the years and the traffic results were similar suggesting the vehicles using Charlton Road are mainly residents of the area. The following are a few suggestions from the public along with the pros and cons of the suggested solutions.

a.) **Cul-De-Sac Charlton Road near the mid-way point.;** Cities typically limit Cul-De-Sacs to less than 1500 feet for public safety reasons. Cul-De-Sacs longer than 1500 feet become difficult for emergency access, fire response and prone to obstruction such as trees falling across the roadway that can prevent access. Additionally, long Cul-De-Sacs can be confused as a thru roadway by nonresidents. The City on two (2) occasions has experienced trees falling across long Cul-De-Sac on Acorn Drive and Angell Road that blocked traffic during storm events. The lack of city staff and equipment makes it difficult for the city to respond quickly in emergencies and could prevent access by emergency responders and residents from accessing or vacating the area in case of an emergency.

b.) **Speed Bumps to calm Traffic;** The City does not allow speed bumps but has allowed the use of speed tables that have proven effective to reduce speed near the location of the speed table. The concern with speed tables are that vehicles tend to speed up after the tables to make up time lost slowing down as they cross the tables. Another concern is that speed tables slow emergency response times and are tough on buses and other long wheel based heavy vehicles. The City Council is receptive to the use of one and no more than 2 speed tables along Charlton Road to address the residents' concerns.

5. CHARLTON ROAD TASK FORCE

A new grass roots task force committee formed in 2016 to work with the Council and engineer to look at developing a new roadway standard. The goals of this committee have been to identify ways to customize the roadway geometrics to fit with the current usage of the roadway, provide for service vehicle parking to avoid obstructing traffic flow, which in turn could also benefit fire protection vehicles along the roadway. A field walk with the task force was undertaken to review Charlton Road and identify roadway deficiencies, evaluate roadway options and identify potential improvements. The task force will be instrumental in assisting in reaching out to other residents as well as a proponent for the improvements with input into final project design aspects if or when it moves forward to construction. Future meetings are anticipated to finalize the preliminary design as we work our way toward construction.

As this project has moved through public discussion and City Council meetings, speed bumps have become less desirable to implement. The final direction from residents was that they would prefer not to have any vehicle bump outs and have requested that the City Council pass a No-Parking Resolution for the entire length of Charlton Road.

6. PROPOSED IMPROVEMENTS

6.1 Street and Drainage Improvements

For the three "build" options to be presented, the proposed improvements involve both reconstruction and reconditioning sections of Charlton Road to improve the poor subgrade conditions on the south west end and utilize the remaining gravel surface to economize on the design over the sound subgrade areas depending on the option selected by the City Council. A new Preservation Route design standard would need to be developed utilizing 20-foot paved surface widths and narrower roadway right-of-way widths of 15-feet each side of centerline by the City Council. We are also recommending in areas of narrower right-of-way widths that permanent roadway, along with drainage and utility easements, be dedicated varying in widths from 10 to 15 feet.

We recommend that only the reconstruction areas use the full city pavement section while the recondition areas utilize the in place aggregate base as part of the required aggregate base section thereby minimizing costs. Concrete curb and gutter is recommended over ditches in embankment cut areas to minimize impacts to the vegetation and preserve the natural terrain along the roadway to manage drainage.

The roadway section from Delaware Avenue to the 90-degree bend is recommended to be sub cut 1.5 feet with fabric placed on the bottom and 1.5 feet of select granular borrow with drain tile be constructed to support the roadway and prevent the subgrade from becoming saturated. The adjacent wetland on the north side may be impacted, which may require the purchase of wetland credits to lower the high ground water through this area. Bituminous surfacing will consist of a minimum 20-foot wide pavement section with the placement of 4 inches of bituminous asphalt and 1.5-foot aggregate shoulders along the rural sections meeting a nine (9) ton roadway design. The proposed project area is shown on ***Figure 1*** in ***Appendix A.***

Option No. 1 – TH 110 to the southern Church property line

The improvements proposed as part of Option No. 1 is 550 feet in length. This option will involve the reconditioning of the street surface with a street section of 20 to 22 -foot-wide paved surface and 1.5-foot-wide aggregate shoulders and concrete curb and gutter in place of the aggregate shoulders where needed to avoid property impacts and control drainage. This street width closely matches the existing width of Charlton Road. A 2-inch-thick gravel base with 4-inches of bituminous pavement would be constructed over the approved subgrade.

The additional parking width proposed on the west side of Charlton Road for additional Church parking was removed from the project after lengthy discussion with the Church. The concern was the impacts that the additional paved surface would have on their property and they would not be willing to dedicate the necessary easements. Therefore, the pavement width was reduced to an 11-foot lane which allowed the ability to narrow up the easement needs. The Church indicated that if the city made these changes, that they most likely would be willing to dedicate their easements.

The advantages of Option 1 are:

- Establishes a good drainage system that is maintainable.
- Pavement will have a longer life expectancy before major repairs are necessary.
- Lower annual maintenance costs.
- Provides adequate lane width for emergency vehicles to pass.
- Improves snow storage and reduced snow and ice maintenance issues.
- Has the most surface area for multiple users to occupy i.e. pedestrians, joggers and bicyclers.
- Eliminates the current dust problem.
- Provides parking areas for service vehicles.
- Provides areas to fire protection equipment to utilize.
- Least impact on the adjacent vegetation.

The disadvantages of this street section are:

- Will require some brushing and clearing of vegetation adjacent to the roadway.
- Is the more expensive alternative than gravel.
- Change in surface characteristics.
- Only improves 550 feet of the Charlton Road.
- Has the highest per parcel assessment rate.
- Does NOT address the safety issues with the 90 degree curve.

A detailed Engineer's Opinion of Cost for the construction of Alternative 1 is attached to this report in ***Appendix B***. The costs, as shown, include a 10% construction contingency and indirect costs in the amount of 25% of the estimated construction cost.

Option No. 2 – TH 110 to 1950 -Feet South

The improvements associated with option no. 2 would extend the improvement area for option 1 southerly past the corner commonly named Crandall Corner (1,950 feet in total). The roadway is proposed to be shifted slightly to align with the platted right-of-way. A 2-inch-thick gravel base with 4-inches of bituminous pavement would be constructed over the approved subgrade. This section as well is proposed to utilize concrete curb and gutter to minimize the impacts to the hill on the west side of the roadway along Crandall Corner.

Bituminous bump out parking areas adequately sized to accommodate emergency vehicles were discussed with the residents but were removed from the project at their request. The residents along Charlton Road will be required to work with their lawn care service providers and require them to park within their property.

The advantages of Option 2 are:

- Establishes a good drainage system that is maintainable.
- Pavement will have a longer life expectancy before major repairs are necessary.
- Lower annual maintenance costs.
- Provides adequate lane width for emergency vehicles to pass.
- Improves snow storage and reduced snow and ice maintenance issues.

- Has the most surface area for multiple users to occupy i.e. pedestrians, joggers and bicyclers.
- Eliminates the current dust problem.
- Provides parking areas for service vehicles.
- Provides areas to fire protection equipment to utilize
- Least impact on the adjacent vegetation.

The disadvantages of this street section are:

- Will require some brushing and clearing of vegetation adjacent to the roadway.
- Is the more expensive alternative than gravel.
- Change in surface characteristics.
- Only improves 1,950 feet of the Charlton Road.
- Does NOT address the safety issues with the 90 degree curve.

Option No. 3 – Complete Reconstruction from TH 110 to Delaware

The improvements associated with Option No. 3 extends the improvement all the way to Delaware Avenue utilizing similar roadway sections as proposed in Option No. 1 and 2. The areas of poor subgrade material on the south west end would be excavated within the roadway to a depth of 1.5 feet below the gravel and geotextile fabric would be placed under the sand subgrade. The geotextile fabric will prevent the migration of the poor soils beneath the subgrade excavation into the sand layer providing greater stability to the gravel surface. The 90-degree curve on the south end is proposed to be softened to improve safety and visibility. The sharp radius curve located at the south end of Charlton Road was proposed to be reconstructed in the 1993 feasibility study however was never implemented. This was also identified as part of the proposed improvement with the 2003 and 2009 feasibility reports. The location of the curve realignment is shown on ***Figure 6*** in ***Appendix A***. The sharp curve requires a driver to slow their vehicle to navigate the curve. During slippery and winter conditions, and at other times, vehicles have missed the curve ending up on the property to the south and hitting the cable guard rail. The new property owner on the northwest corner of the curve is in favor of expanding the radius onto their property so this would be a good time to make this improvement. Residents' opinions of the curve vary somewhat, although a recently a higher percentage favors fixing the curve.

The existing curve is a safety hazard to traffic, and softening the curve by constructing a larger radius is in the best interest of the City and the public that utilizes the roadway. Realignment of Charlton Road at the sharp radius will require permanent street easement acquisition or dedication from this parcel. Previous design layouts identified the easement area needed to be 0.063 acres on the northwest side of the curve to construct a curve that meets 25 mph design criteria. This radius curve would still be below the minimum roadway design speed of 30 mph for a typical suburban residential road, but is a significant improvement. The City Council would be requested to prepare and adopt a Findings-of-Fact resolution outlining the reasons why a larger curve meeting 30 mph design speed could not be achieved.

Concrete curb and gutter is also proposed along cut sections to improve drainage and minimize property impacts in these areas. The water will be collected in a series of drainage structures and outlet to a small treatment pond just to the east of the existing wetland on the north side of Charlton Road. The pond would be necessary to meet water quality requirements prior to discharging to the wetland. A culvert will also be installed in the area to improve the drainage from the wetland to the south side of Charlton Road prior to entering the existing ditch along Delaware Avenue.

The advantages of this street section are:

- The entire roadway will be paved, which will minimize dust and yearly regrading and maintenance.
- Establishes a good drainage system that is maintainable.
- Pavement will have a longer life expectancy before major repairs are necessary.
- Lower annual maintenance costs.
- Provides adequate lane width for emergency vehicles to pass.
- Improves snow storage and reduced snow and ice maintenance issues.
- Has the most surface area for multiple users to occupy i.e. pedestrians, joggers and bicyclers.
- Eliminates the current dust problem.
- Provides parking areas for service vehicles.
- Provides areas to fire protection equipment to utilize.
- Least impact on the adjacent vegetation.
- Safer driving conditions along the roadway.
- Improve drainage throughout the corridor.
- Eliminates roadside swales from filling in with aggregate from the roadway.

The disadvantages of this street section are:

- Highest initial cost among all the options.
- Will require some brushing and clearing of vegetation adjacent to the roadway.

Option No. 4 – Complete Annual Maintenance as Needed – "Do Nothing"

The "do-nothing" alternative will consist of maintaining the existing roadway surface and drainage system as situations arise. Annual maintenance costs are identified in the existing condition section and have an average annual cost currently estimated in the Capital Improvement Program (CIP) of around $9,700 annually. Typical annual maintenance consists of road grading three times, adding class 5 aggregate as needed, dust control and drainage ditch maintenance as needed. Even with annual maintenance, the structural integrity of the roadway deteriorates. This is what is currently occurring with the aggregate surface. The poor soils are working their way closer to the surface due to poor drainage and frost action and will increase the current annual maintenance costs over time.

6.2 Watermain Improvement Options

Currently a private 6-inch water line along with an 8-inch sanitary sewer line runs under Charlton road for about 480-feet east from Delaware Avenue and then south and up a private driveway to provide services to 6 residents. The area within the private drive was the only portion of the service line extension which dedicated a public drainage and utility easement. The lines constructed under Charlton Road were installed without the dedication of similar easements and therefore were installed without the permission of the property owner on the north side of Charlton Road. These lines were constructed back in early1980 under a private agreement between the private properties and the St. Paul Water Department. The public sanitary sewer is owned and maintained by Mendota Heights under a Joint Powers Agreement. The 6 properties served by these services experienced drain field and septic issues in the late 1970's that could only be solved by extending sewer service. Because of extending sewer services, building and health department codes required the abandonment of their wells. The watermain is private and the residents are 100% responsible for any and all maintenance and repairs not only to the water service line but to the City roadway.

Since this is a private watermain, the city would have to receive permission from all 6 residents that own the watermain to relocate or do any work on this private water service. The proposed improvements would require one hydrant to be relocated on the north side which will fall under a new City Utility Easement that will be required as part of the improvements. The residents would be 100% responsible for all other maintenance and repairs costs. Options available to the City and residents are as follows.

- Option 1; The City relocates the one hydrant and constructs the proposed street improvements over the private existing sanitary and water service lines within the prescriptive rights that exist today for Charlton Road. No other improvements to the private water line nor sanitary sewer would occur. Residents would be responsible for all maintenance and repair costs including roadway restoration if utility repairs are needed in the future.

- Option 2; The City would reconstruct the water service outside of the existing Charlton Road only under the following agreed upon conditions from all 6 effected property owners. All 6 residents dedicate the identified roadway, drainage and utility easements to the city. The water service line would remain privately owned and operated. The City would include the costs for water line relocation as part of the project costs. This would require approval by the City Council.

- Option 3; The City could take ownership of the water service line up to the individual curb stops under the following agreed upon conditions from all 6 effected property owners. All 6 residents dedicate the identified roadway, drainage and utility easements to the city and wave their rights to appeal the proposed assessments. This would require approval by the City Council.

The other watermain issue that arose during the development of the Charlton Road Feasibility Report was a potential to extend an 8-inch watermain under TH 62 (Old TH 110) from the north side in West St. Paul to the southside in Sunfish Lake for fire protection. This would require

jacking a carrier pipe under TH 62 (Old TH 110) and sliding an 8-inch watermain through the carrier pipe and installing one hydrant along Charlton Road. This would require permits from both West St. Paul and MnDOT along with an agreement to connect to the watermain from St. Paul Water Department. Previous conversations with St. Paul Water Department indicated they would be acceptable to this connection.

6.3 Sunfish Lake Outlet Improvements

The proposed improvements include removing the existing outlet control pipe from Sunfish Lake and replacing it with a new higher capacity hydraulically designed outlet that would reduce the likelihood of the outlet being blocked. Discharge capacity could be increased while providing a consistent discharge rate during time of high water levels. The improvements would allow for more efficient lowering of high water levels thereby minimizing future damage to lake shore property and improve the usability of the lake during high water levels. The outlet discharge would be directed along the north side of Charlton road, thereby eliminating the consistent flow of lake water discharge along residential properties. A new storm sewer pipe would be placed along the Charlton Road near Delaware Avenue to convey the water to the ditch along Delaware Avenue.

6.4 Permanent Roadway, Drainage, and Utility Easements

For the proposed improvements, it is recommended to have a permanent 30-foot-wide roadway easement, 15 each side of centerline, with either 5, 10 or 15-foot-wide drainage and utility easements along each side of Charlton Road to be dedicated from the parcels in which Charlton Road does not have platted right-of-way. This would provide the proper roadway easement widths for roadway and drainage and allow the City access whenever maintenance is necessary. The existing right-of-way and parcels with proposed easement areas are shown on ***Figures 6 and 7***, proposed easements plan sheets in ***Appendix A***. There are a few areas that would need either a right to enter agreement or temporary easement to tie in the grading.

7. FINANCING

7.1 Opinion of Cost

Detailed opinions of cost can be found in ***Appendix B*** of this report. The opinions incorporate estimated 2018 construction costs and include a 5% contingency factor and all related indirect costs, which are estimated at 30%. The indirect costs include legal, engineering, and financing, as well as other administrative items. This cost does not include any easements or easement acquisition costs.

The construction quantities utilized for the cost estimates are estimated and would be adjusted when construction plans and final design are complete.

7.2 Funding

Projects of this type are typically financed through the sale of municipal bonds. The bond proceeds are used to pay for the project costs. The payments are typically recovered by a combination of special assessments, City financing and ad-valorem taxes.

The method of assessment for the improvements to Charlton Road project is recommended to be by the residential unit, which would range between 4 and 31 depending on the improvement option selected by the City Council. The method of assessment to the benefited property owners and percentage of the project borne by the City is recommended to follow the adopted City Assessment Policy. Charlton Road is classified as a collector roadway, which identifies assessment of 40% of the improvements to the benefitting property owners.

The following assessments are recommended for each Improvement Option on Charlton Road. Utilizing the costs associated with each Improvement Option; the unit assessment based on 40% of the project cost being assessed would be calculated as follows:

CHARLTON ROAD IMPROVEMENTS Without Water Service Line Reconstruction

1. **Option 1:**
   $120,000 X 40% = $48,000 Assessable Project Costs
   $48,000 Project Costs / 4 Units = $12,000 Unit

2. **Option 2:**
   $415,000 X 40% = $166,000 Assessable Project Costs
   $166,000 Project Costs / 22 Units = $7,546/Unit

3. **Option 3:**
   $841,000 X 40% = $336,400 Assessable Project Costs
   $336,000 Project Costs / 31 Units = $10,852/Unit

CHARLTON ROAD IMPROVEMENTS With Water Service Line Reconstruction

4. **Add Alternate No.1:**
$121,000 X 40% = $48,400 Assessable Project Costs
$48,400 Project Costs / 31 Units = $1,562/Unit

5. **Add Alternate No. 2:**
$85,000 X 40% = $85,000 Assessable Project Costs
$85,000 Project Costs / 33 Units = $1,097/Unit

SUNFISH LAKE OUTLET IMPROVEMENTS
$41,000 at 100% Assessable Project Costs
$41,000 Project Costs / 33 Units = $1,243/Unit

Benefit to the adjacent parcels that is equal to or greater than the proposed assessment amount would have to be determined by an appraiser.

The City's share of the proposed improvements would range between $72,000 for Option No. 1 to $504,600 for Option No. 3. The City Council also needs to decide what if any watermain Add Alternates will be included as part of the project. This amount could be financed from the City's street fund and ad-valorem taxes.

The watermain Add Alternate No.1 is $72,600 to extend watermain under TH 62 (Old TH 110) and for Add Alternate No. 2 is $51,000 for reconstructing the watermain on Charlton Road. This cost participation assumed for the watermain improvements were based on the same assessment policy as Charlton Road. If the City Council decides that the watermain improvements are to be paid 100% by the residents on Charlton Road, then the per unit assessments would increase from what are shown in the Feasibility Report and the report would need to be amended to reflect this change in cost participation.

Right-of-way acquisition is only recommended for one parcel on the west end of Charlton roads north side. Cost right-of-way acquisition can be included in the total project cost, which would slightly increase the unit assessment. This amount could be financed from the City's street fund and ad-valorem taxes.

It is also recommended that the approved improvement project by the City Council includes improvements to the outlet from Sunfish Lake which is recommended to be financed 100% by the property owners around the lake. No additional easements are required to construct the improvements for the Sunfish Lake Outlet.

8. PERMITS/APPROVALS

This project will need a NPDES permit from the MPCA. Due to the small size of the project, only an erosion control plan will be required for the permit. Also, if improvements are made to the outlet from Sunfish Lake, then a DNR permit would need to be acquired along with review and approval from the City of Mendota Heights, which accepts the water from Sunfish Lake. Wetland impacts will be necessary if Option 2 and 3 are chosen, which would require wetland credits to be acquired.

9. COUNCIL AUTHORIZATION

The report is presented to the City Council for review and comment on the proposed alternatives and proposed financing. If the Council accepts the report with recommendations, the Council can receive the report and order a public hearing. Prior to the public hearing, it is recommended that a neighborhood meeting be held with the residents to review and discuss the proposed improvements in an informal setting. Public comments can then be completed and presented to the public and City Council at a public hearing. At that time, the council can choose an Option and /or any watermain Add Alternative for the improvements.

If an agreeable Improvement is selected, construction plans and specifications would be prepared. Prior to obtaining bids for the project, the City Council would approve the plans and specifications and authorize Advertisement for Bids. The successful bid would be presented to the Council for Award of Contract.

Upon completion of the project, a final assessment role would be prepared and presented to the City Council and benefiting property owners at a public Assessment hearing. The Council would determine the final assessment amounts and the amount to be financed.

10. PROJECT SCHEDULE

The preliminary project schedule identifies the estimated time schedule to complete the various tasks. The project schedule is based on 100% dedication of the necessary easements north of the 90-degree bend obtained by May 1, 2018 (north- south section) and the remaining easements obtained by March 2019 for the south-western section of Charlton Road (east-west section). The Council would have the option to push all the construction activity to the year 2019 if the schedule becomes an issue.

2018- 2019 CONSTRUCTION SCHEDULE

Receive Final Feasibility Study	April 3, 2017
Accept Feasibility Report and Order Public Hearing	May 1, 2018
Public Hearing	June 5, 2018
Order Plans and Specifications	June 5, 2018
Approve Plans and Specifications and Authorize Ad for Bids	July 3, 2018
Receive Bids	August 15, 2018
Award Contract	September 4, 2018
Begin Construction (Stage 1)	Mid-September 2018
Complete Construction (Stage 1)	Late-October 2018
Begin Construction (Stage 1)	Mid-June 2019
Complete Construction (Stage 2)	Mid-July 2019
Assessment Hearing	September 3, 2019

2019 CONSTRUCTION SCHEDULE

Receive Final Feasibility Study	April 3, 2017
Accept Feasibility Report and Order Public Hearing	May 1, 2018
Public Hearing	June 5, 2018
Order Plans and Specifications	August 7, 2018
Approve Plans and Specifications and Authorized Ad for Bids	October 2, 2018
Receive Bids	February 2019
Award Contract	March 2019
Begin Construction	Early-June 2019
Complete Construction (Stage 2)	Mid-August 2019
Assessment Hearing	September 3, 2019

11. RECOMMENDATIONS AND CONCLUSIONS

The total estimate project cost of the Charlton Road street and utility improvements ranges from $120,000 to $845,000. The total estimated project costs for the Sunfish Lake Outlet is estimated at $41,000. Funding for these improvements will be provided through a combination of special assessments and ad-valorem taxes. The project could begin constructed in late summer 2018 with the south west section of the roadway and the outlet construction be completed in the spring of 2019. The preferred project schedule is for the city to complete the design and order the project later in 2018 for an early summer 2019 construction time frame which would allow the project to be completed in one construction season and allow the project to be bid in the prime bidding season in late winter of 2019. By sliding the entire project into 2019, it allows the city to secure the remaining easements and resolve the last project issues in 2018 and allows construction to be completed in one year.

This project is feasible and cost-effective from an engineering standpoint if the required easements are dedicated to the City. If easements need to be acquired one more than one parcel, the costs of land acquisition would make this project to become financially unfeasible. Therefore, the success of the project is in the hands of the residents that this project will benefit. It is our recommendation that the drainage and street improvements along Charlton Road be implemented as outlined in this report for Option No. 3 without the watermain reconstruction on Charlton Road. Furthermore, our recommendation is for the City Council to focus on Charlton Road improvements and improvements to the outlet from Sunfish Lake now and leave the option open for a future project to extend the watermain under TH 62 (Old TH 110). We would propose any improvements to be constructed in one construction season during the summer months.

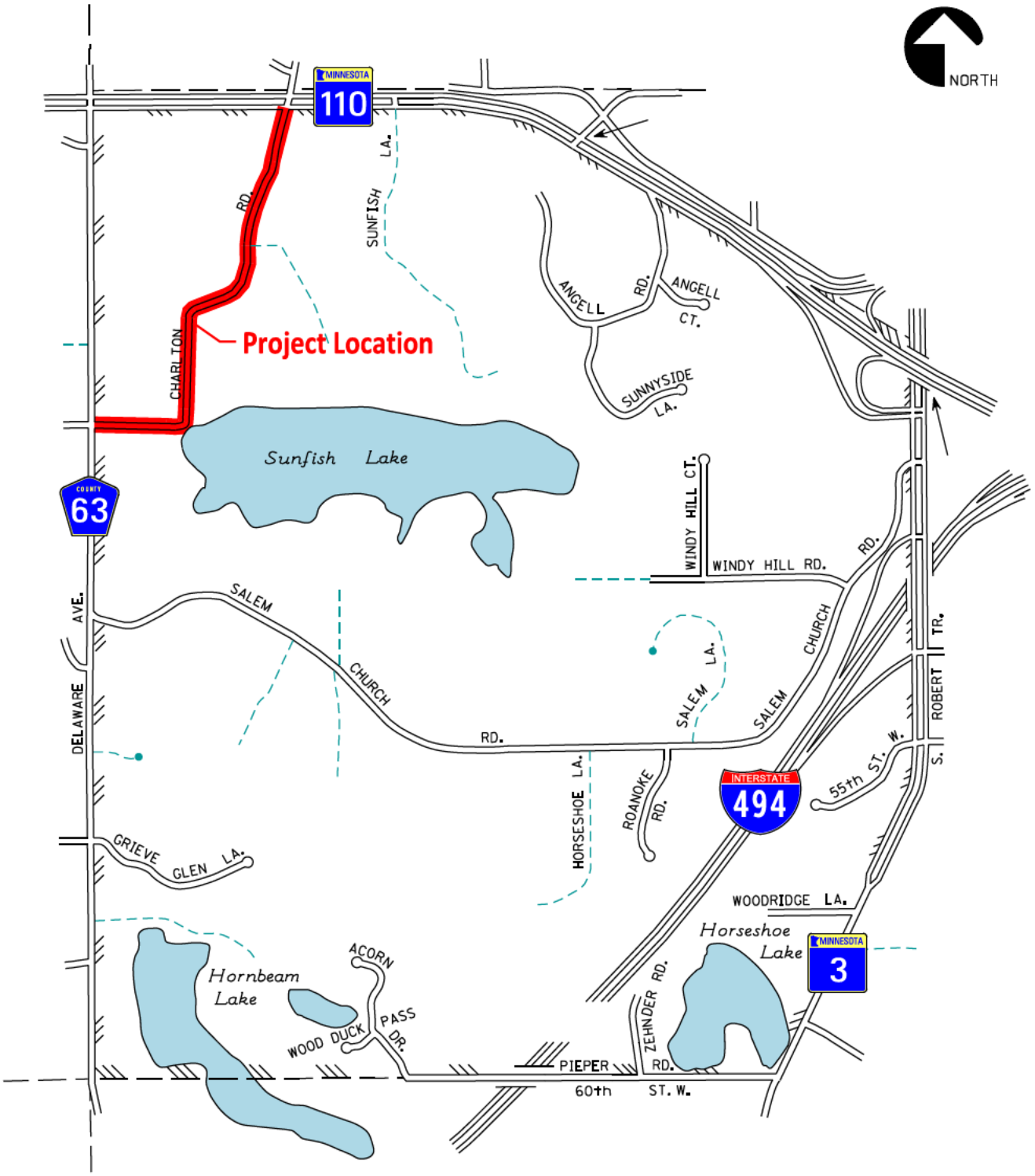
It is the recommendation of WSB & Associates, Inc. that the City Council accepts this feasibility report and select Option 3 without the water service line reconstruction or extensions and schedule the public hearing as proposed for the project to be fully constructed in summer of 2019.

APPENDIX A

Figure 1 − Project Location Map
Figure 2 − Typical Sections
Figure 3 – Typical Sections
Figure 4 – Typical Sections
Figure 5 – Typical Sections
Figure 6 – Curve Realignment
Figure 7 – Right-of-Way
Figure 8 – Right-of-Way
Figure 9 – Charlton Road Assessment Map
Figure 10 – Sunfish Lake Outlet Assessment Map

WSB

CITY OF Sunfish Lake MINNESOTA



Charlton Road Improvements

Sunfish Lake, Minnesota

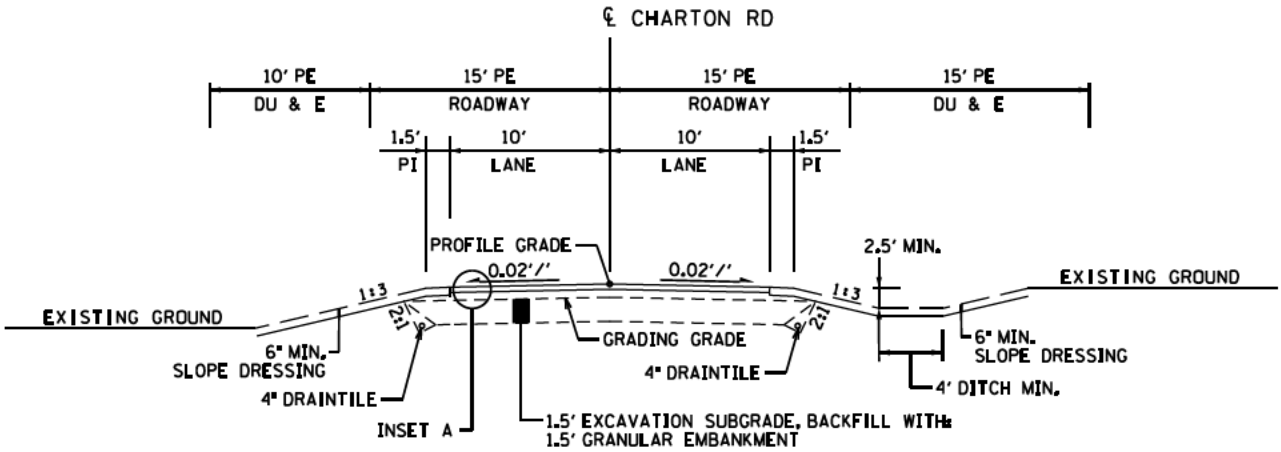
Figure Number 1

Project Location Map

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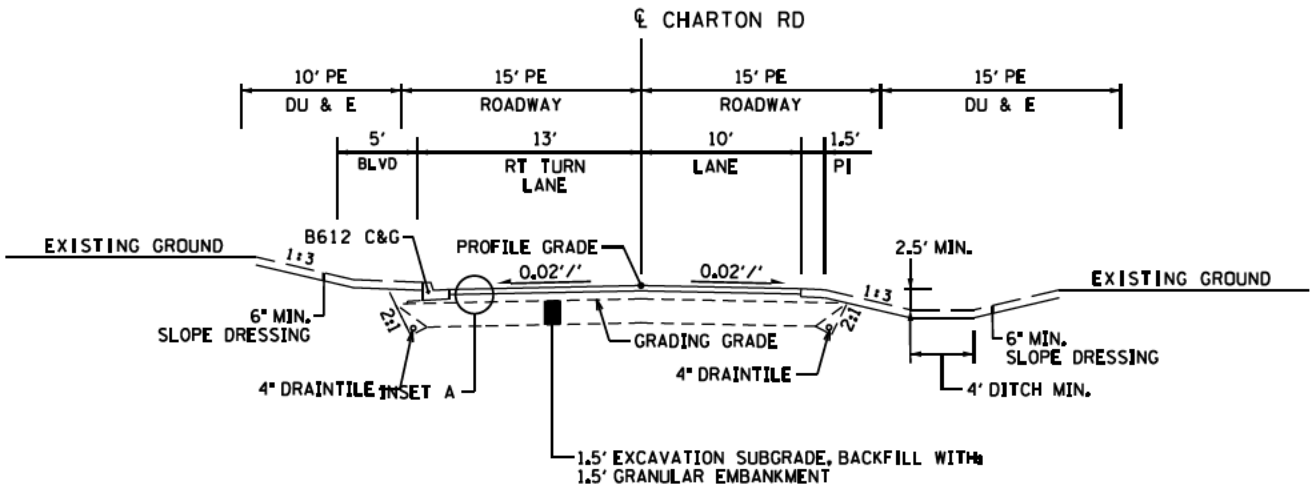
CHARLTON ROAD - SECTION 2

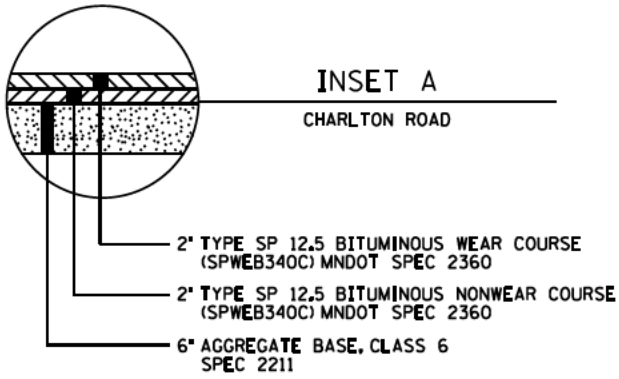
STA 12+70 E.B. TO STA 15+90 E.B.



CHARLTON ROAD - SECTION 1

STA 10+20 E.B. TO STA 12+70 E.B.





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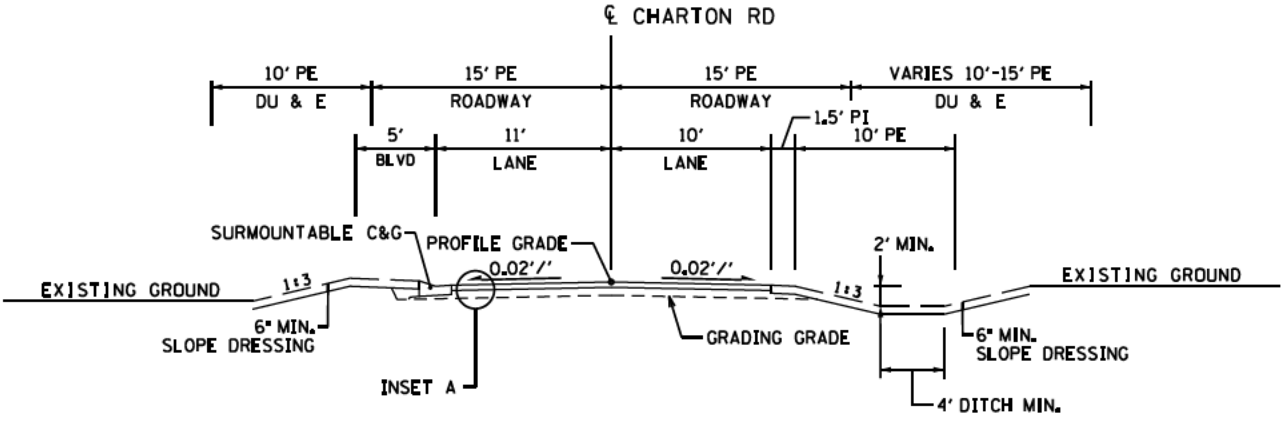
Charlton Road Improvements
Sunfish Lake, Minnesota

Figure Number 2

Typical Sections

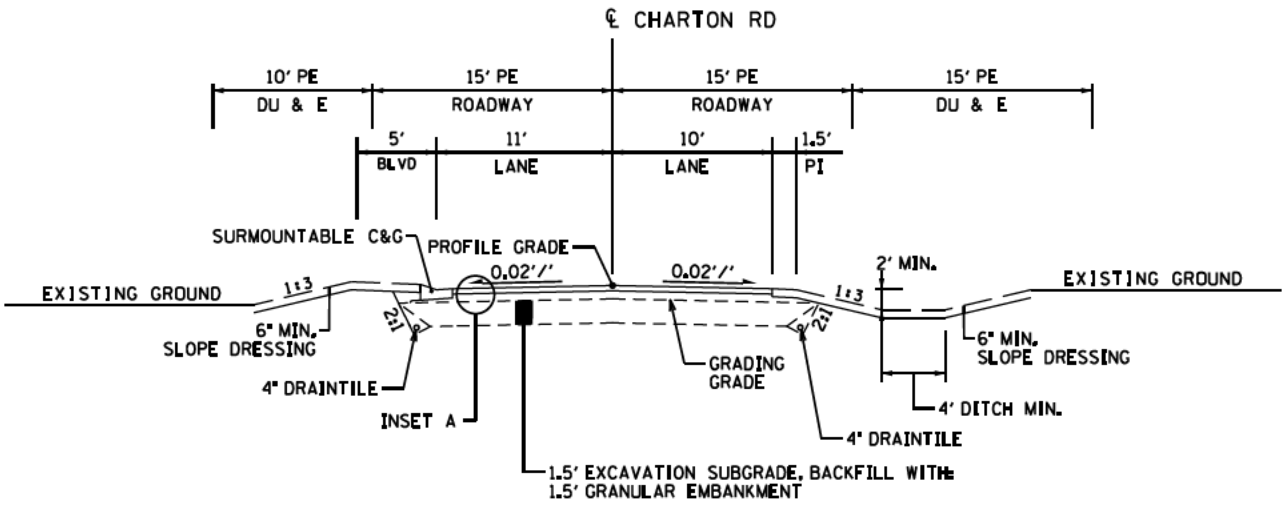
CHARLTON ROAD - SECTION 4

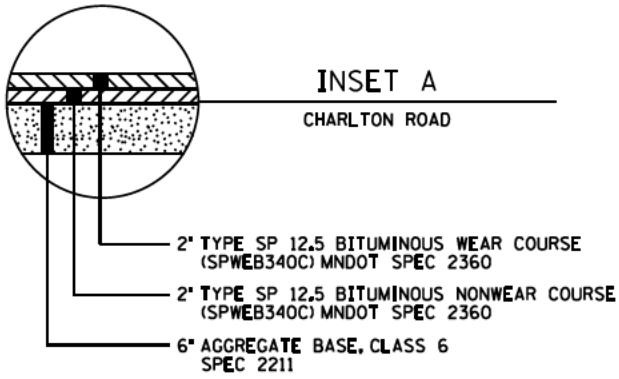
STA 16+50 E.B. TO STA 18+00 E.B.
STA 29+66 E.B. TO STA 32+75 E.B.



CHARLTON ROAD - SECTION 3

STA 15+90 E.B. TO STA 16+50 E.B.





Charlton Road Improvements
Sunfish Lake, Minnesota

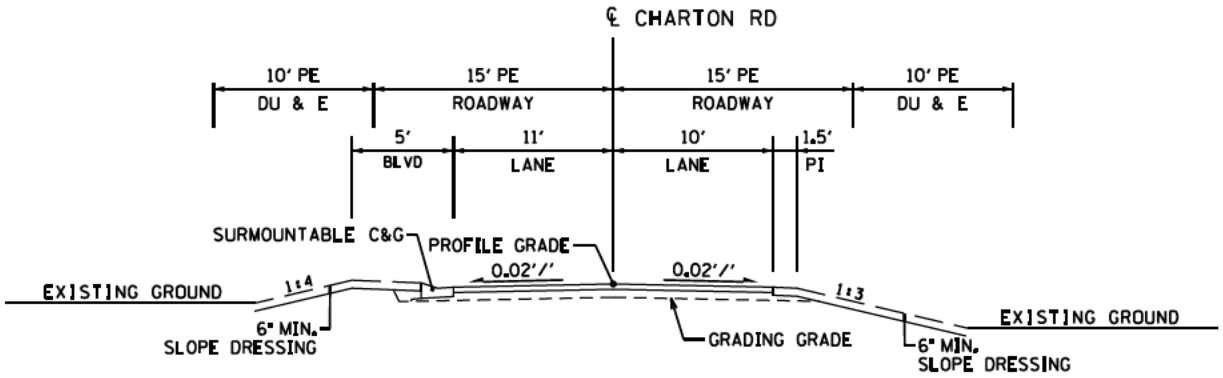
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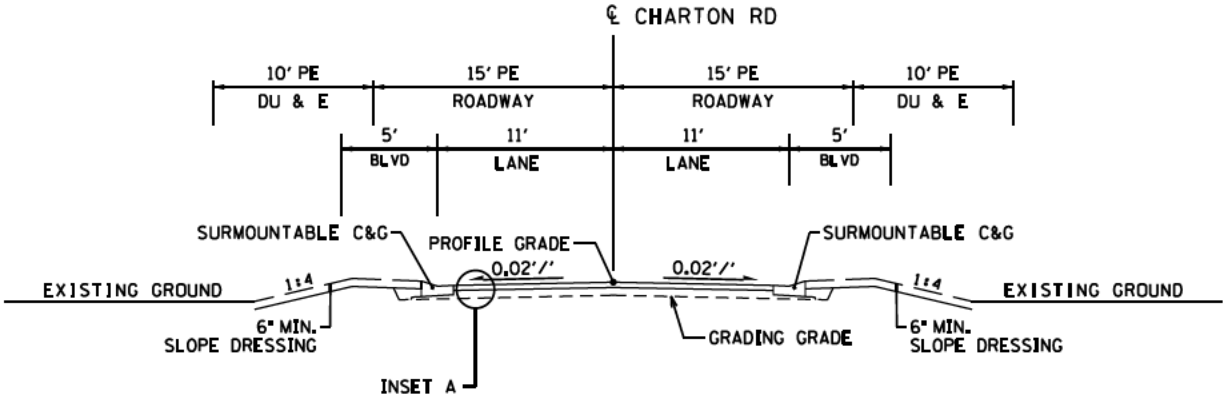
CHARLTON ROAD - SECTION 6

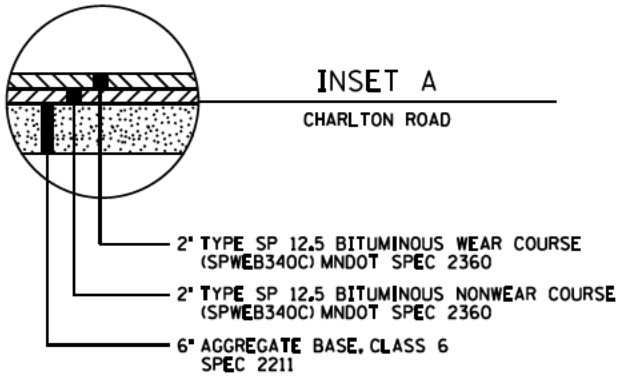
STA 29+66 E.B. TO STA 32+75 E.B.



CHARLTON ROAD - SECTION 5

STA 18+00 E.B. TO STA 23+40 E.B.
STA 27+63 E.B. TO STA 29+66 E.B.





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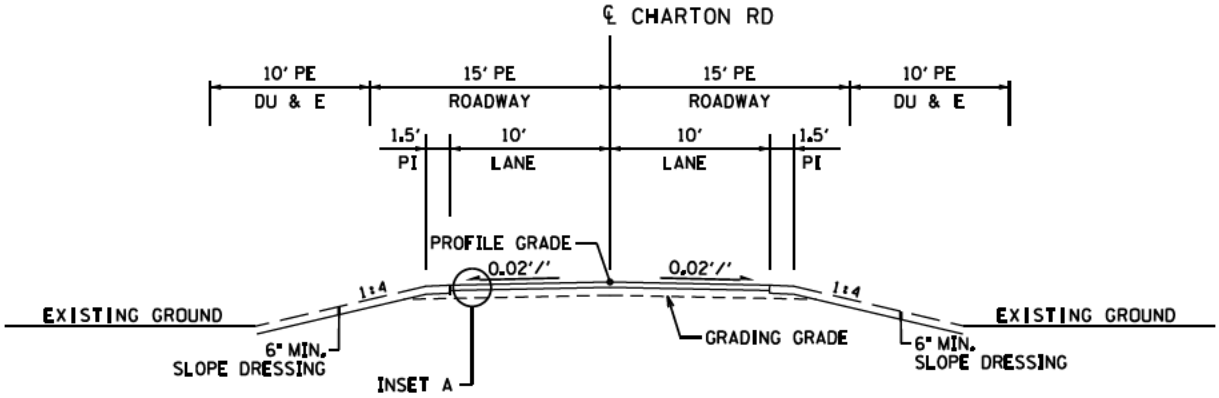
Charlton Road Improvements
Sunfish Lake, Minnesota

Figure Number 4

Typical Sections

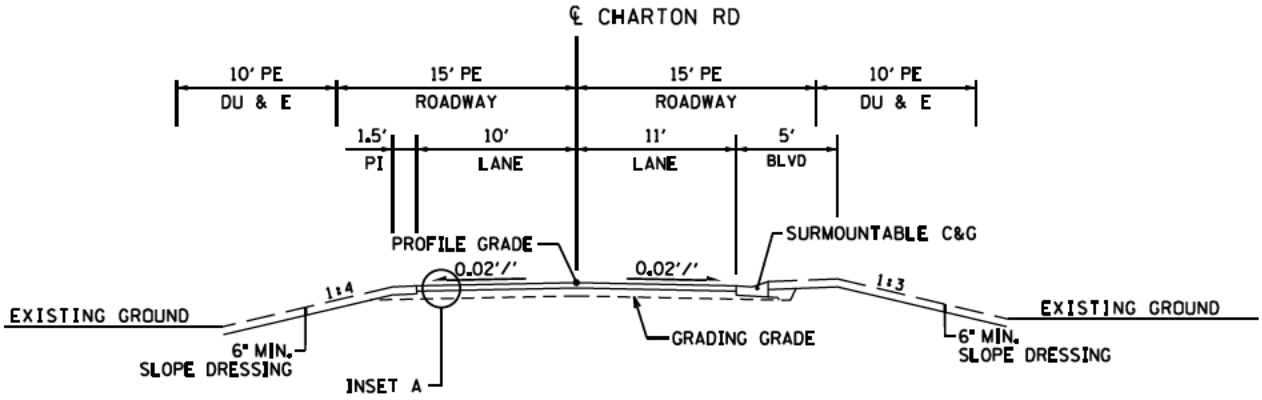
CHARLTON ROAD - SECTION 8

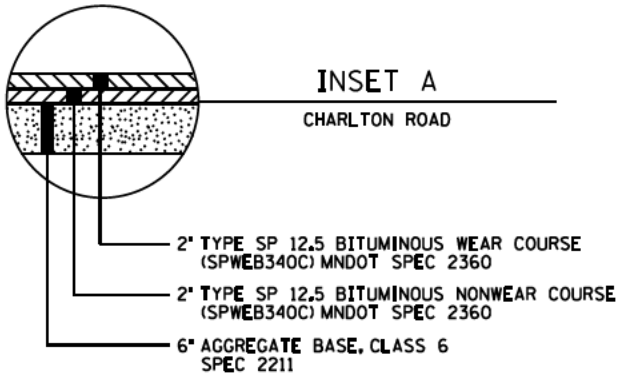
STA 32+75 E.B. TO STA 35+80 E.B.
STA 43+75 E.B. TO STA 44+32 E.B.



CHARLTON ROAD - SECTION 7

STA 23+40 E.B. TO STA 27+63 E.B.
STA 35+80 E.B. TO STA 43+75 E.B.





Charlton Road Improvements
Sunfish Lake, Minnesota

Figure Number 5

Typical Sections

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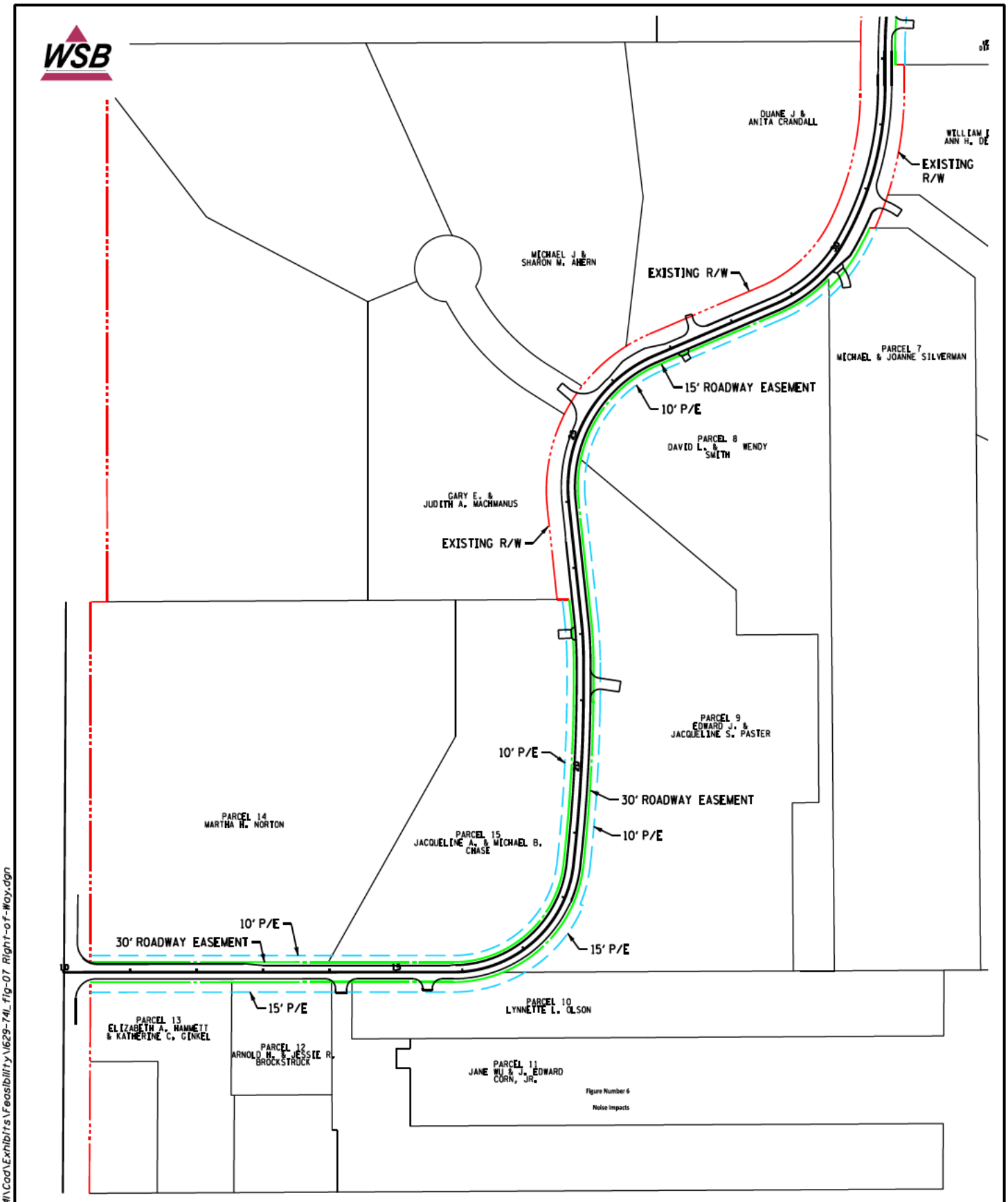
Charlton Road Improvements

Sunfish Lake, Minnesota

Figure Number 6

Curve Realignment

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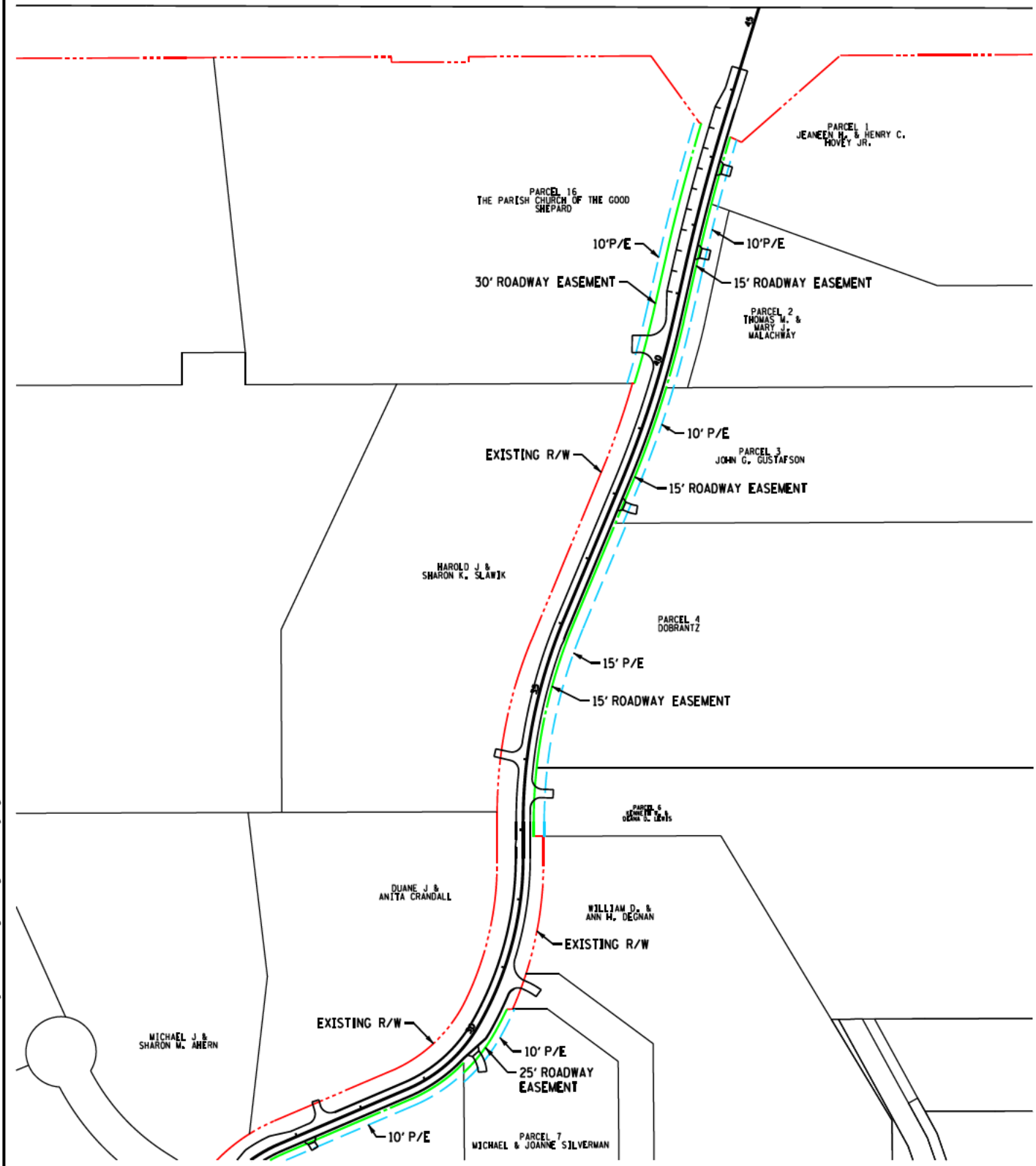
Charlton Road Improvements

Sunfish Lake, Minnesota

Figure Number 7

Right-of-Way

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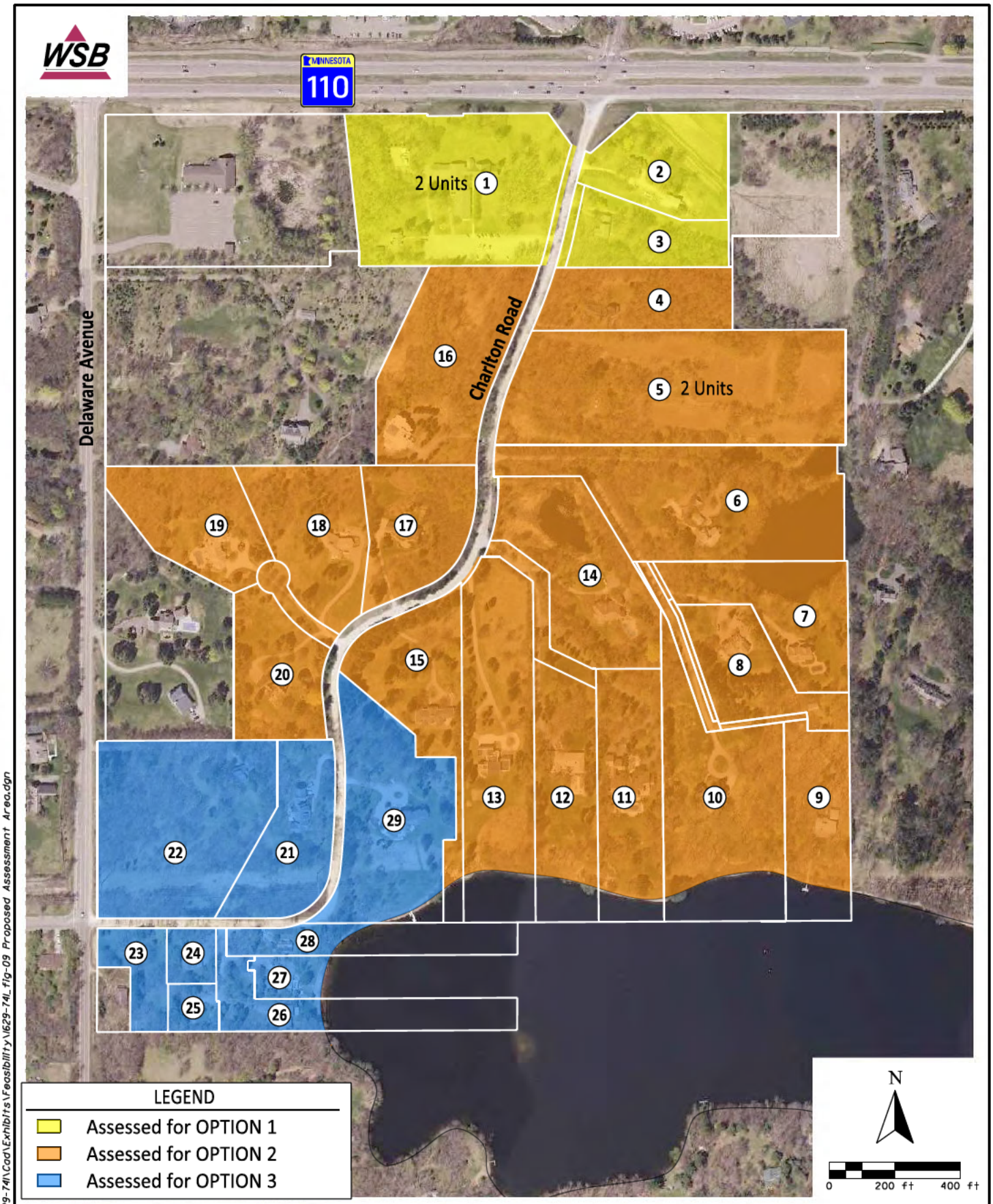
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Charlton Road Improvements

Sunfish Lake, Minnesota

Figure Number 8

Right-of-Way



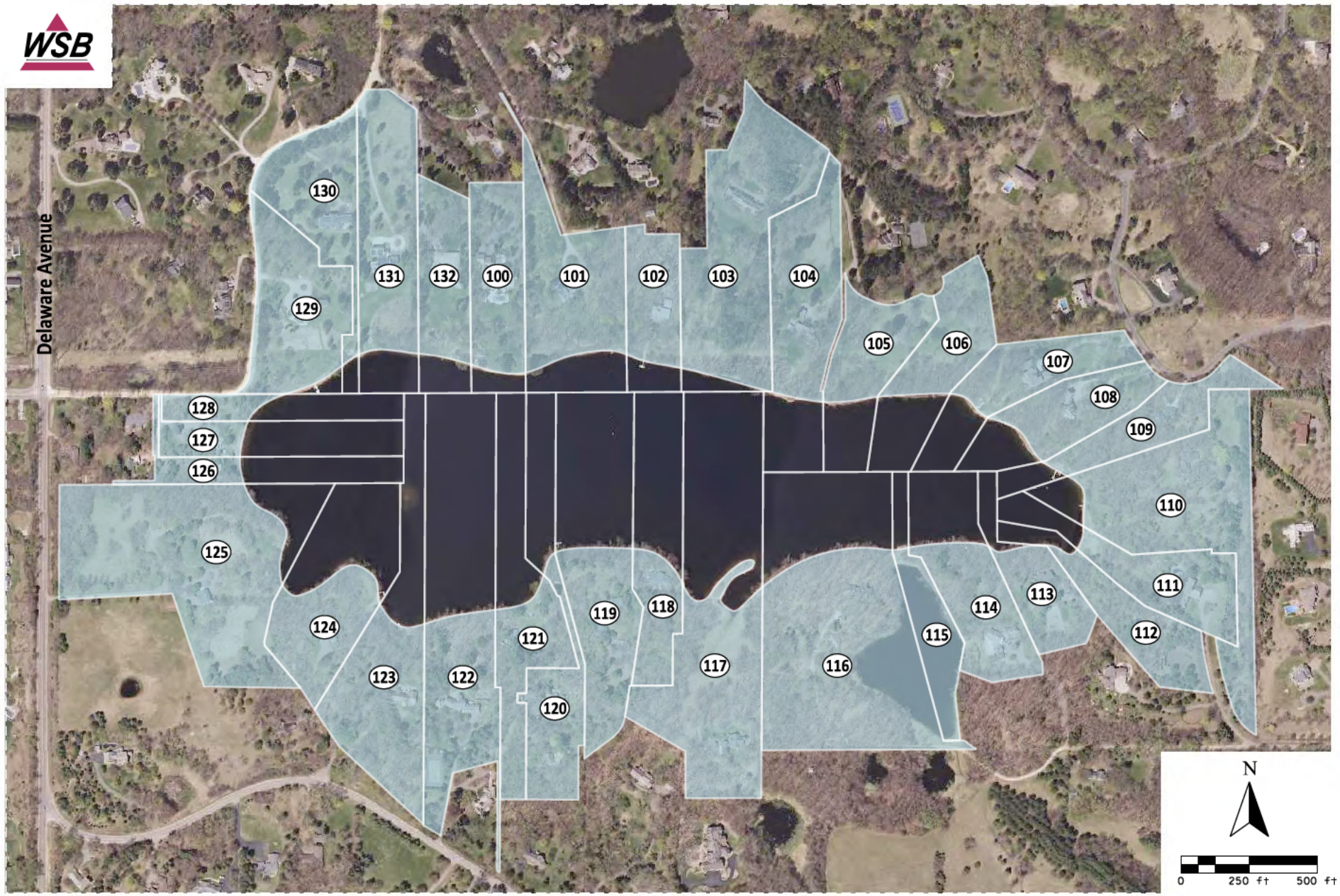
Date: Printed: 4/28/2017
WSB Filename: K:\0629-741\Cad\Exhibits\Feasibility\1629-74L_fig-09 Proposed Assessment Area.dgn

Charlton Road Improvements

Sunfish Lake, Minnesota

Figure 9

Proposed Assement Area



Sunfish Lake Outlet

Sunfish Lake, Minnesota

33 Assessment Units

Proposed Assement Area

Date: Printed: 4/28/2017
WSB Filename: K:\01629-74\Cad\Exhibits\Feasibility\1629-74L_fig-10 Proposed Assessment Area - Lake Outlet.dgn

APPENDIX B

Opinion of Probable Cost

Charlton Road Options

WSB Project: Charlton Road Improvements
Project Location: City of Sunfish Lake, Dakota County, MN
Project No: 01629-741
Date: 4/3/2018

Opinion of Probable Cost

					ROADWAY IMPROVEMENTS						WATERMAIN IMPROVEMENTS					
					OPTION 1		OPTION 2		OPTION 3		ADD ALTERNATE NO. 1 TH 62 (Old TH 110) Watermain Crossing		ADD ALTERNATE NO. 2 Charlton Road Watermain Reconstruct		SUNFISH LAKE OUTLET	
Item Number	Description	Unit	Notes	Unit Price	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost
2021.501	MOBILIZATION	LUMP SUM		$20,000.00	0.15	$3,000.00	0.50	$10,000.00	0.96	$19,200.00					0.05	$1,000.00
2101.501	CLEARING	ACRE		$3,000.00	0.1	$300.00	0.5	$1,500.00	1	$3,000.00					0.1	$300.00
2101.506	GRUBBING	ACRE		$3,000.00	0.5	$1,500.00	0.9	$2,700.00	1.4	$4,200.00					0.1	$300.00
2104.501	REMOVE CURB AND GUTTER	LIN FT		$8.00	80	$640.00	80	$640.00	80	$640.00						
2104.501	REMOVE PIPE CULVERTS	LIN FT		$8.00	45	$360.00	325	$2,600.00	870	$6,960.00					70	$560.00
2104.501	REMOVE WATER MAIN	LIN FT		$6.00									510	$3,060.00		
2104.501	REMOVE CABLE GUARDRAIL	LIN FT		$9.00					150	$1,350.00						
2104.503	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	LIN FT		$5.00							350	$1,750.00				
2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD		$8.00	258	$2,064.00	844	$6,752.00	983	$7,864.00						
2104.509	REMOVE SIGN TYPE C	EACH		$30.00	7	$210.00	8	$240.00	15	$450.00						
2104.509	REMOVE HYDRANT	EACH		$500.00					1	$500.00						
2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT		$3.75	4	$15.00	4	$15.00	4	$15.00						
2104.513	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT		$3.75	76	$285.00	170	$637.50	222	$832.50						
2104.523	SALVAGE SIGN TYPE C	EACH		$75.00					2	$150.00						
2104.523	SALVAGE SIGN TYPE SPECIAL	EACH		$150.00					1	$150.00						
2105.501	COMMON EXCAVATION	CU YD		$12.00	1200	$14,400.00	2650	$31,800.00	4750	$57,000.00						
2105.507	SUBGRADE EXCAVATION	CU YD		$14.00					950	$13,300.00						
2105.522	SELECT GRANULAR BORROW (CV)	CU YD		$18.00					1200	$21,600.00						
2105.601	DEWATERING	LUMP SUM		$25,000.00									1	$25,000.00		
2105.604	GEOTEXTILE FILTER TYPE V	SQ YD		$2.00					1500	$3,000.00						
2112.501	SUBGRADE PREPARATION	ROAD STA	6	$225.00	4.75	$1,068.75	19.75	$4,443.75	34	$7,650.00						
2118.607	AGGREGATE SURFACING (CV) CLASS 2	CU YD		$32.00	12	$384.00	82	$2,624.00	152	$4,864.00						
2211.503	AGGREGATE BASE (CV) CLASS 5	CU YD		$30.00	139	$4,170.00	509	$15,270.00	1027	$30,810.00	35	$1,050.00				
2301.602	DRILL & GROUT REINF BAR (EPOXY COATED)	EACH		$18.00					4	$72.00						
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	2	$2.75	95	$261.25	380	$1,045.00	620	$1,705.00						
2360.501	TYPE SP 12.5 WEARING COURSE MIX (3;C)	TON		$68.00	340	$23,120.00	1244	$84,592.00	2018	$137,224.00	6.6	$448.80				
2360.503	TYPE SP 12.5 WEARING CRS MIX (3;C) 2.5" THICK	SQ YD		$25.00	40	$1,000.00	128	$3,200.00	207	$5,175.00						
2451.607	PIPE BEDDING	CU YD	1	$22.00	8	$176.00	53	$1,166.00	98	$2,156.00	30	$660.00	40	$880.00		
2501.511	15" CS PIPE CULVERT	LIN FT		$35.00			59	$2,065.00	104	$3,640.00						
2501.511	18" CS PIPE CULVERT	LIN FT		$40.00			84	$3,360.00	115	$4,600.00						

Charlton Road Options

WSB Project: Charlton Road Improvements
Project Location: City of Sunfish Lake, Dakota County, MN
Project No: 01629-741
Date: 4/3/2018

Opinion of Probable Cost

Item Number	Description	Unit	Notes	Unit Price	ROADWAY IMPROVEMENTS						WATERMAIN IMPROVEMENTS				SUNFISH LAKE OUTLET	
					OPTION 1		OPTION 2		OPTION 3		ADD ALTERNATE NO. 1 TH 62 (Old TH 110) Watermain Crossing		ADD ALTERNATE NO. 2 Charlton Road Watermain Reconstruct			
					Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost
2501.515	15" GS PIPE APRON	EACH		$285.00			4	$1,140.00	6	$1,710.00						
2501.515	18" GS PIPE APRON	EACH		$325.00			4	$1,300.00	6	$1,950.00						
2501.515	15" RC PIPE APRON	EACH		$325.00	2	$650.00	5	$1,625.00	5	$1,625.00					1	$325.00
2501.515	18" RC PIPE APRON	EACH		$375.00			1	$375.00	2	$750.00						
2501.515	24" RC PIPE APRON	EACH		$450.00			2	$900.00	2	$900.00						
2501.569	18" RC SAFETY APRON	EACH		$450.00					2	$900.00						
2502.521	4" PERF PE PIPE DRAIN	LIN FT		$4.50					1200	$5,400.00						
2502.521	4" TP PIPE DRAIN	LIN FT		$7.00					30	$210.00						
2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT		$32.00	67	$2,144.00	548	$17,536.00	717	$22,944.00					275	$8,800.00
2503.541	18" RC PIPE SEWER DES 3006 CL III	LIN FT		$34.00			57	$1,938.00	479	$16,286.00						
2503.541	24" RC PIPE SEWER DES 3006 CL III	LIN FT		$40.00			36	$1,440.00	36	$1,440.00						
2503.603	16" HDPE CASING PIPE	LIN FT		$175.00							212.5	$37,187.50				
2503.603	VIDEO TAPE PIPE SEWER	LIN FT	7	$5.00			36	$180.00	1386	$6,930.00						
2504.602	HYDRANT	EACH		$3,750.00	1	$3,750.00	1	$3,750.00	2	$7,500.00	1	$3,750.00				
2504.602	6" GATE VALVE & BOX	EACH		$1,750.00							2	$3,500.00	2	$3,500.00		
2504.602	8" GATE VALVE & BOX	EACH		$2,000.00							2	$4,000.00	1	$2,000.00		
2504.602	12"X8" WET TAP & VALVE	EACH		$2,500.00							1	$2,500.00				
2504.602	CONNECT TO EXISTING WATER MAIN	EACH		$850.00									2	$1,700.00		
2504.603	6" WATERMAIN DUCTILE IRON CL 52	LIN FT		$45.00							24	$1,080.00	510	$22,950.00		
2504.603	8" WATERMAIN DUCTILE IRON CL 52	LIN FT		$50.00							675	$33,750.00				
2504.608	DUCTILE IRON FITTINGS	POUNDS		$7.25							200	$1,450.00	250	$1,812.50		
2506.501	CONST DRAINAGE STRUCTURE DESIGN H	LIN FT		$375.00	3.1	$1,162.50	11.4	$4,275.00	11.4	$4,275.00						
2506.501	CONST DRAINAGE STRUCTURE DESIGN SD-48	LIN FT		$375.00					3	$1,125.00					3.4	$1,275.00
2506.501	CONST DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT		$375.00	6.2	$2,325.00	20.5	$7,687.50	42.6	$15,975.00					7.9	$2,962.50
2506.502	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	5	$1,600.00	1	$1,600.00	8	$12,800.00	11	$17,600.00						
2506.502	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 2	EACH	5	$6,000.00					1	$6,000.00						
2506.502	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 3	EACH	5	$1,600.00											1	$1,600.00
2506.502	CONST DRAINAGE STRUCTURE DESIGN SPECIAL 4	EACH	5	$6,000.00											1	$6,000.00
2506.516	CASTING ASSEMBLY	EACH		$750.00	2	$1,500.00	7	$5,250.00	12	$9,000.00					2	$1,500.00
2506.522	ADJUST FRAME AND RING CASTING	EACH		$350.00					2	$700.00						
2511.501	RANDOM RIPRAP CLASS III	CU YD	4	$120.00	4.8	$576.00	39.6	$4,752.00	62.1	$7,452.00					26.4	$3,168.00
2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD		$5.00	20.8	$104.00	163	$815.00	236.1	$1,180.50					65.6	$328.00
2531.501	CONCRETE CURB AND GUTTER DESIGN D412	LIN FT		$16.00	480	$7,680.00	1957	$31,312.00	3626	$58,016.00						
2531.501	CONCRETE CURB AND GUTTER DESIGN B612	LIN FT		$17.00					241	$4,097.00						
2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD		$60.00	24	$1,440.00	60	$3,600.00	99	$5,940.00						
2563.601	TRAFFIC CONTROL	LUMP SUM		$2,500.00	0.15	$375.00	0.50	$1,250.00	0.96	$2,400.00					0.05	$125.00

Charlton Road Options

WSB Project: Charlton Road Improvements
Project Location: City of Sunfish Lake, Dakota County, MN
Project No: 01629-741
Date: 4/3/2018

Opinion of Probable Cost

Item Number	Description	Unit	Notes	Unit Price	ROADWAY IMPROVEMENTS						WATERMAIN IMPROVEMENTS				SUNFISH LAKE OUTLET	
					OPTION 1		OPTION 2		OPTION 3		ADD ALTERNATE NO. 1 TH 62 (Old TH 110) Watermain Crossing		ADD ALTERNATE NO. 2 Charlton Road Watermain Reconstruct			
					Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost	Estimated Quantity	Estimated Cost
2564.531	SIGN PANELS TYPE C	SQ FT		$45.00	52	$2,340.00	67	$3,015.00	122	$5,490.00						
2564.531	SIGN PANELS TYPE SPECIAL	SQ FT	3	$350.00					1	$350.00						
2564.537	INSTALL SIGN TYPE C	EACH		$150.00					2	$300.00						
2564.537	INSTALL SIGN TYPE SPECIAL	EACH		$250.00					1	$250.00						
2573.502	SILT FENCE, TYPE MS	LIN FT		$2.50	650	$1,625.00	2000	$5,000.00	3500	$8,750.00					150	$375.00
2573.505	FLOTATION SILT CURTAIN TYPE STILL WATER	LIN FT		$2.50											60	$150.00
2573.530	STORM DRAIN INLET PROTECTION	EACH		$250.00	3	$750.00	15	$3,750.00	24	$6,000.00						
2573.533	SEDIMENT CONTROL LOG TYPE STRAW	LIN FT		$3.50	300	$1,050.00	800	$2,800.00	1500	$5,250.00					100	$350.00
2573.535	STABILIZED CONSTRUCTION EXIT	LUMP SUM		$2,000.00	0.5	$1,000.00	0.5	$1,000.00	1	$2,000.00						
2574.508	FERTILIZER TYPE 3	POUND		$17.00	71	$1,207.00	321	$5,457.00	527	$8,959.00					12	$204.00
2574.525	COMMON TOPSOIL BORROW	CU YD		$17.00	50	$850.00	150	$2,550.00	250	$4,250.00						
2575.505	SODDING TYPE LAWN	SQ YD		$4.50					2000	$9,000.00					200	$900.00
2575.523	SEEDING	ACRE		$1.85	0.3	$0.56	1.2	$2.22	2.1	$3.89					0.1	$0.19
2575.523	SEED MIXTURE 25-121	POUND		$1.85	5	$9.25	30	$55.50	37	$68.45	10	$18.50				
2575.523	SEED MIXTURE 35-241	POUND		$1.85	7	$12.95	26	$48.10	56	$103.60					2	$3.70
2575.523	EROSION CONTROL BLANKETS CATEGORY 3N	SQ YD		$1.85	959	$1,774.15	3502	$6,478.70	7457	$13,795.45	410	$758.50			287	$530.95
2575.560	HYDRAULIC STABILIZED FIBER MATRIX	POUND		$2.25	269	$605.25	1515	$3,408.75	1883	$4,236.75						
2575.572	RAPID STABILIZATION METHOD 4	SQ YD		$2.00	700	$1,400.00	1900	$3,800.00	3300	$6,600.00					200	$400.00
2582.502	4" SOLID LINE EPOXY	LIN FT		$0.75	200	$150.00	200	$150.00	200	$150.00						
2582.502	4" DOUBLE SOLID LINE EPOXY	LIN FT		$1.50	250	$375.00	250	$375.00	250	$375.00						
SUBTOTAL BASE BID CONSTRUCTION COST (INCLUDES 5% CONTINGENCY)						$89,409.66		$314,466.02		$616,345.14		$91,903.30		$60,902.50		$31,157.34
5% CONTINGENCY						$4,470.48		$15,723.30		$30,817.26		$4,595.17		$3,045.13		$1,557.87
TOTAL CONSTRUCTION COSTS						$93,880.14		$330,189.32		$647,162.39		$96,498.47		$63,947.63		$32,715.20
30% INDIRECT COSTS						$28,164.04		$99,056.80		$194,148.72		$28,949.54		$19,184.29		$9,814.56
R/W ACQUISITION COSTS										$30,000.00						
ESTIMATE TOTAL PROJECT COSTS						*$117,573.70*		*$413,522.82*		*$840,493.85*		*$120,852.84*		*$80,086.79*		*$40,971.90*

NOTES:
1. AS DIRECTED BY THE ENGINEER.
2. TACK COAT ASSUMED TO BE APPLIED AT 0.07 GAL/SQ YD.
3. SIGN PANEL TYPE SPECIAL IS DOUBLE SIDED - 2 PANELS PER SIDE.
4. RIPRAP TO BE FIELD STONE.
5. INCLUDES CASTING PAYMENT.
6. QUANTITY TO SCARIFY AND RECOMPACT AGGREGATE SURFACE THAT IS TO REMAIN IN PLACE.
7.VIDEO TAPE SANITARY SEWER BEFORE AND AFTER CONSTRUCTION FROM THE INTERSECTION OF DELAWARE AVE AND CHARLTON RD TO THE MANHOLE SOUTH OF CHARLTON ROAD ALONG THE PRIVATE DRIVE AT STATION 14+20.
(P) DENOTES PLAN QUANTITY.

APPENDIX C

Preliminary Assessment Roll
Option 1
Option 2
Option 3
Sunfish Lake Outlet
Watermain Alternate No. 1
Watermain Alternate No. 2

Cost Distribution Calculations for Option 1

WSB Project:	Charlton Road Improvements	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No.:	1629-741	*Date:*	4/3/2018

Special Assessments

Surface & Drainage Improvements

Total Assessable Units within the Project	4
Total Surface Improvement Cost	$ 120,000.00
City Costs	$ 72,000.00
Total Assessable Costs	$ 48,000.00
Assessment Cost per Assessable Unit	**$12,000.00**

Special Assessment per Unit	**$12,000.00**

Preliminary Assessment Roll for Option 1

WSB Project: Charlton Road Improvements *Design By:* DWS
Project Location: City of Sunfish Lake *Checked By:*
City Project No.:
WSB Project No: 1629-741 *Date:* 4/3/2018

Assessment/Funding Source										
No.	**Property Identification No.**		**Property Owner**	**Property Owner Address**	**Total Assessable Units**	**40% Assessment Per City Policy**	**60% City Costs**		**Recommended Assessment**	**City Costs**
1	PID:	38-03000-50-030	Parish Ch of the Good Shepard	2035 Charlton Road Sunfish Lake, MN 55118-4704	2	$24,000.00	$36,000.00		$24,000.00	$36,000.00
2	PID:	38-03000-51-010	Michael A. & Margaret Hovey	2030 Charlton Road Sunfish Lake, MN 55118-4705	1	$12,000.00	$18,000.00		$12,000.00	$18,000.00
3	PID:	38-03000-51-020	Mary Jo Malachway	2040 Charlton Road Sunfish Lake, MN 55118	1	$12,000.00	$18,000.00		$12,000.00	$18,000.00
				TOTAL	**4**	**$48,000.00**	**$72,000.00**		**$48,000.00**	**$72,000.00**

Cost Distribution Calculations for Option 2

WSB Project:	Charlton Road Improvements	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No.:	1629-741	*Date:*	4/3/2018

Special Assessments

Surface & Drainage Improvements

Total Assessable Units within the Project	22
Total Surface Improvement Cost	$ 415,000.00
City Costs	$ 249,000.00
Total Assessable Costs	$ 166,000.00
Assessment Cost per Assessable Unit	**$7,545.45**

Special Assessment per Unit	**$7,545.45**

Preliminary Assessment Roll for Option 2

WSB Project:	Charlton Road Improvements	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No:	1629-741	*Date:*	4/3/2018

Assessment/Funding Source									
No.	**Property Identification No.**	**Property Owner**	**Property Owner Address**	**Total Assessable Units**	**40% Assessment Per City Policy**	**60% City Costs**		**Recommended Assessment**	**City Costs**
1	PID: 38-03000-50-030	Parish Ch of the Good Shepard	2035 Charlton Road Sunfish Lake, MN 55118-4704	2	$15,090.90	$22,636.36		$15,090.90	$22,636.36
2	PID: 38-03000-51-010	Michael A. & Margaret Hovey	2030 Charlton Road Sunfish Lake, MN 55118-4705	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
3	PID: 38-03000-51-020	Mary Jo Malachway	2040 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
4	PID: 38-03000-51-030	John Gary Gustafson	3411 Pine Grove Ln Kalamazoo, MI 49008	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
5	PID: 38-03000-52-013	Gladys & Raymond Dobrantz	9240 Arnold Ave Inver Grove Heights, MN 55077	2	$15,090.90	$22,636.36		$15,090.90	$22,636.36
6	PID: 38-03000-52-020	Aydin & Rebecca Moradian	2120 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
7	PID: 38-13300-01-010	Calvin S & Claire E Noble	2130 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
8	PID: 38-13300-01-020	Catharine Ubel Tste Nye	2140 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
9	PID: 38-13300-01-030	Karin J Klarer	2144 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
10	PID: 38-13300-01-040	Douglas & Nancy Beedon	2150 Charlton Road Saint Paul, MN 55118-4737	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
11	PID: 38-84200-01-020	Dennis J & Jacquline Tursso	2152 Charlton Road Saint Paul, MN 55118-4737	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
12	PID: 38-84200-01-030	John J & Shannon Nelson	2154 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
13	PID: 38-03000-54-031	Michael & Joanne Silverman	2158 Charlton Road Sunfish Lake, MN 55118-4737	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
14	PID: 38-84200-01-010	William D. & Ann H Degnan	2156 Charlton Road Sunfish Lake, MN 55118	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
15	PID: 38-03000-54-021	David L. & Wendy Smith	2162 Charlton Road Sunfish Lake, MN 55118-4737	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
16	PID: 38-57650-01-010	Makoto & Akiko Ishii	2099 Charlton Road Sunfish Lake, MN 55118-4704	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
17	PID: 38-57600-01-010	Duane J. & Anita Crandall	2157 Charlton Road Saint Paul, MN 55118-4738	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
18	PID: 38-57600-01-020	Michael J. & Sharon M. Ahern	2159 Charlton Road Saint Paul, MN 55118-4738	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
19	PID: 38-57600-01-030	Jerrol M. & Alleen C. Tostrud	2161 Charlton Road Saint Paul, MN 55118-4738	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
20	PID: 38-57600-01-060	Gary E. Macmanus	2163 Charlton Road Saint Paul, MN 55118-4738	1	$7,545.45	$11,318.18		$7,545.45	$11,318.18
			TOTAL	**22**	**$165,999.90**	**$249,000.00**		**$165,999.90**	**$249,000.00**

Cost Distribution Calculations for Option 3

WSB Project:	Charlton Road Improvements	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No.:	1629-741	*Date:*	4/3/2018

Special Assessments

Surface & Drainage Improvements

Total Assessable Units within the Project	31
Total Surface Improvement Cost	$ 841,000.00
City Costs	$ 504,600.00
Total Assessable Costs	$ 336,400.00
Assessment Cost per Assessable Unit	**$10,851.61**

Special Assessment per Unit	**$10,851.61**

Preliminary Assessment Roll for Option 3

WSB Project: Charlton Road Improvements — *Design By:* DWS
Project Location: City of Sunfish Lake — *Checked By:*
City Project No.:
WSB Project No: 1629-741 — *Date:* 4/3/2018

No.	Property Identification No.		Property Owner	Property Owner Address	Total Assessable Units	40% Assessment Per City Policy	60% City Cost		Recommended Assessment	City Costs
	Assessment/Funding Source									
1	PID:	38-03000-50-030	Parish Ch of the Good Shepard	2035 Charlton Road Sunfish Lake, MN 55118-4704	2	$21,703.22	$32,554.84		$21,703.22	$32,554.84
2	PID:	38-03000-51-010	Michael A. & Margaret Hovey	2030 Charlton Road Sunfish Lake, MN 55118-4705	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
3	PID:	38-03000-51-020	Mary Jo Malachway	2040 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
4	PID:	38-03000-51-030	John Gary Gustafson	3411 Pine Grove Ln Kalamazoo, MI 49008	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
5	PID:	38-03000-52-013	Gladys & Raymond Dobrantz	9240 Arnold Ave Inver Grove Heights, MN 55077	2	$21,703.22	$32,554.84		$21,703.22	$32,554.84
6	PID:	38-03000-52-020	Aydin & Rebecca Moradian	2120 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
7	PID:	38-13300-01-010	Calvin S & Claire E Noble	2130 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
8	PID:	38-13300-01-020	Catharine Ubel Tste Nye	2140 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
9	PID:	38-13300-01-030	Karin J Klarer	2144 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
10	PID:	38-13300-01-040	Douglas & Nancy Beedon	2150 Charlton Road Saint Paul, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
11	PID:	38-84200-01-020	Dennis J & Jacquline Tursso	2152 Charlton Road Saint Paul, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
12	PID:	38-84200-01-030	John J & Shannon Nelson	2154 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
13	PID:	38-03000-54-031	Michael & Joanne Silverman	2158 Charlton Road Sunfish Lake, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
14	PID:	38-84200-01-010	William D. & Ann H Degnan	2156 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
15	PID:	38-03000-54-021	David L. & Wendy Smith	2162 Charlton Road Sunfish Lake, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
16	PID:	38-57650-01-010	Makoto & Akiko Ishii	2099 Charlton Road Sunfish Lake, MN 55118-4704	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
17	PID:	38-57600-01-010	Duane J. & Anita Crandall	2157 Charlton Road Saint Paul, MN 55118-4738	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
18	PID:	38-57600-01-020	Michael J. & Sharon M. Ahern	2159 Charlton Road Saint Paul, MN 55118-4738	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
19	PID:	38-57600-01-030	Jerrol M. & Alleen C. Tostrud	2161 Charlton Road Saint Paul, MN 55118-4738	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
20	PID:	38-57600-01-060	Gary E. Macmanus	2163 Charlton Road Saint Paul, MN 55118-4738	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
21	PID:	38-03000-53-022	Shannon Werb, Margaret Gehrig	2165 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
22	PID:	38-03000-53-021	Martha H. Norton	2148 Delaware Avenue Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
23	PID:	38-03100-27-010	Elizabeth Ann Hammett Katherine Carol Ginkel	5306 Forest Breeze Ct Saint Cloud, FL 34771-7743	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
24	PID:	38-03100-27-020	John & Sharon Hutchinson	2194 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
25	PID:	38-03100-27-080	William & Elizabeth Hammett	2196 Charlton Road Saint Paul, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
26	PID:	38-03100-27-060	J Edward & Jane WU Corn	2190 Charlton Road Sunfish Lake, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
27	PID:	38-03100-27-075	Michael S & Suzanne Macdonald	2184 Charlton Road Saint Paul, MN 55118-4737	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
28	PID:	38-03100-27-040	Brent J & Rebecca A Brooks	2672 91st Ave NE Blaine, MN 55449	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
29	PID:	38-03000-54-011	Rebecca Ann Debertin	2166 Charlton Road Sunfish Lake, MN 55118	1	$10,851.61	$16,277.42		$10,851.61	$16,277.42
				TOTAL	**31**	**$336,399.91**	**$504,600.02**		**$336,399.91**	**$504,600.02**

Cost Distribution Calculations for Sunfish Lake Outlet

WSB Project:	Sunfish Lake Outlet	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No.:	1629-741	*Date:*	4/3/2018

Special Assessments

Surface & Drainage Improvements

Total Assessable Units within the Project	33
Total Surface Improvement Cost	$ 41,000.00
Total Assessable Costs	$ 41,000.00
Assessment Cost per Assessable Unit	**$1,242.42**

Special Assessment per Unit	**$1,242.42**

Preliminary Assessment Roll for Sunfish Lake Outlet

WSB Project:	Sunfish Lake Outlet	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No:	1629-741	*Date:*	4/3/2018

Assessment/Funding Source								
No.	**Property Identification No.**	**Property Owner**	**Property Owner Address**	**Total Assessable Units**	**100% Assessment**		**Recommended Assessment**
100	PID: 38-84200-01-020	Dennis J & Jacquelin Tursso	2152 Charlton Rd Saint Paul, MN 55118-4737	1	$1,242.42		$1,242.42
101	PID: 38-13300-01-040	Douglas & Nancy Beedon	2150 Charlton Rd Saint Paul, MN 55118-4737	1	$1,242.42		$1,242.42
102	PID: 38-13300-01-030	Karin J Klarer	2144 Charlton Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
103	PID: 38-11850-01-020	Arnulf & Denis Tste Svendsen	1 Sunfish Ln Saint Paul, MN 55118-4722	1	$1,242.42		$1,242.42
104	PID: 38-03000-83-020	Roger R Conant	2 Sunfish Ln Saint Paul, MN 55118-4721	1	$1,242.42		$1,242.42
105	PID: 38-42600-01-021	[redacted]	[redacted]	1	$1,242.42		$1,242.42
106	PID: 38-42600-01-031	H William & Mary Jo Park	15 Sunnyside Ln Saint Paul, MN 55118-4723	1	$1,242.42		$1,242.42
107	PID: 38-42600-01-060	Michael F McFadden	25 Sunnyside Ln Sunfish Lake, MN 55118-4723	1	$1,242.42		$1,242.42
108	PID: 38-42600-01-070	Thomas P & Julie K Hurley	27 Sunnyside Ln Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
109	PID: 38-42600-01-080	Daniel K II & Kay O Halvorsen	37 Sunnyside Ln Saint Paul, MN 55118-4723	1	$1,242.42		$1,242.42
110	PID: 38-73202-01-010	Kurt L & Katherine A Larson	11 Salem Ln Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
111	PID: 38-72302-01-020	James H & Ann H Ohagan	35 Windy Hill Rd Inver Grove Heights, MN 55077-1424	1	$1,242.42		$1,242.42
112	PID: 38-73202-01-030	James H & Ann H Ohagan	35 Windy Hill Rd Inver Grove Heights, MN 55077-1424	1	$1,242.42		$1,242.42
113	PID: 38-84300-01-010	John D Jr & Frances Lamey	55 Windy Hill Rd Inver Grove Heights, MN 55077-1424	1	$1,242.42		$1,242.42
114	PID: 38-03100-03-012	Janet C Tste Riley	75 Windy Hill Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
115	PID: 38-03100-01-010	Richard H Jr Bancroft	100 Windy Hill Rd Inver Grove Heights, MN 55077-1425	1	$1,242.42		$1,242.42
116	PID: 38-03800-06-013	Richard H Jr & Debor Bancroft	100 Windy Hill Rd Inver Grove Heights, MN 55077-1425	1	$1,242.42		$1,242.42
117	PID: 38-45400-01-030	Thomas & Michelle Schlehuber	325 Salem Church Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
118	PID: 38-03100-26-015	Sena A Kihtir	331 Salem Church Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
119	PID: 38-03700-02-014	Sarah Pennie Thompson	335 Salem Church Rd Sunfish Lake, MN 55118-4720	1	$1,242.42		$1,242.42
120	PID: 38-32000-01-020	Robert J Riesberg	343 Salem Church Rd West Saint Paul, MN 55118	1	$1,242.42		$1,242.42
121	PID: 38-32000-01-010	Joseph M & Linda A Schaefer	345 Salem Church Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
122	PID: 38-03700-05-051	Elizabeth S Tste Driscoll	30 7th Street East Suite 2000 Saint Paul, MN 55101	1	$1,242.42		$1,242.42
123	PID: 38-03700-05-010	Mark T & Stacy L Roszkowski	369 Salem Church Rd West Saint Paul, MN 55118	1	$1,242.42		$1,242.42
124	PID: 38-03700-05-020	James C Stowell	389 Salem Church Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
125	PID: 38-11750-01-010	2250 Delaware LLC	2250 Delaware Ave Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
126	PID: 38-03100-27-060	J Edward & Jane Wu. Corn	2190 Charlton Road Saint Paul, MN 55118-4737	1	$1,242.42		$1,242.42
127	PID: 38-03100-27-075	Michael S & Suzanne Macdonald	2184 Charlton Road Saint Paul, MN 55118-4737	1	$1,242.42		$1,242.42
128	PID: 38-03100-27-040	Brent J & Rebecca A Brooks	2672 91st Ave NE Blaine, MN 55449	1	$1,242.42		$1,242.42
129	PID: 38-03000-54-011	Rebecca Ann Debertin	2166 Charlton Road Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
130	PID: 38-03000-54-021	David L. & Wendy Smith	2162 Charlton Road Saint Paul, MN 55118-4737	1	$1,242.42		$1,242.42

Preliminary Assessment Roll for Sunfish Lake Outlet

WSB Project:	Sunfish Lake Outlet	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No:	1629-741	*Date:*	4/3/2018

Assessment/Funding Source								
No.	**Property Identification No.**		**Property Owner**	**Property Owner Address**	**Total Assessable Units**	**100% Assessment**		**Recommended Assessment**
131	PID:	38-03000-54-031	Michael & Joanne Silverman	2158 Charlton Rd Saint Paul, MN 55118-4737	1	$1,242.42		$1,242.42
132	PID:	38-84200-01-030	John J Jr & Shannon Nelson	2154 Charlton Rd Sunfish Lake, MN 55118	1	$1,242.42		$1,242.42
				TOTAL	**33**	**$40,999.86**		**$40,999.86**

Cost Distribution Calculations for Option Add Alternate No. 1

WSB Project:	Charlton Road Improvements	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No.:	1629-741	*Date:*	4/3/2018

Special Assessments

Surface & Drainage Improvements

Total Assessable Units within the Project	31
Total Surface Improvement Cost	$ 121,000.00
City Costs	$ 72,600.00
Total Assessable Costs	$ 48,400.00
Assessment Cost per Assessable Unit	**$1,561.29**

Special Assessment per Unit	**$1,561.29**

Preliminary Assessment Roll for Option Add Alternate No. 1

WSB Project: Charlton Road Improvements — *Design By:* DWS
Project Location: City of Sunfish Lake — *Checked By:*
City Project No.:
WSB Project No: 1629-741 — *Date:* 4/3/2018

No.	Property Identification No.	Property Owner	Property Owner Address	Total Assessable Units	40% Assessment Per City Policy	60% City Cost		Recommended Assessment	City Costs
	Assessment/Funding Source								
1	PID: 38-03000-50-030	Parish Ch of the Good Shepard	2035 Charlton Road Sunfish Lake, MN 55118-4704	2	$3,122.58	$4,683.88		$3,122.58	$4,683.88
2	PID: 38-03000-51-010	Michael A. & Margaret Hovey	2030 Charlton Road Sunfish Lake, MN 55118-4705	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
3	PID: 38-03000-51-020	Mary Jo Malachway	2040 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
4	PID: 38-03000-51-030	John Gary Gustafson	3411 Pine Grove Ln Kalamazoo, MI 49008	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
5	PID: 38-03000-52-013	Gladys & Raymond Dobrantz	9240 Arnold Ave Inver Grove Heights, MN 55077	2	$3,122.58	$4,683.88		$3,122.58	$4,683.88
6	PID: 38-03000-52-020	Aydin & Rebecca Moradian	2120 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
7	PID: 38-13300-01-010	Calvin S & Claire E Noble	2130 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
8	PID: 38-13300-01-020	Catharine Ubel Tste Nye	2140 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
9	PID: 38-13300-01-030	Karin J Klarer	2144 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
10	PID: 38-13300-01-040	Douglas & Nancy Beedon	2150 Charlton Road Saint Paul, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
11	PID: 38-84200-01-020	Dennis J & Jacquline Tursso	2152 Charlton Road Saint Paul, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
12	PID: 38-84200-01-030	John J & Shannon Nelson	2154 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
13	PID: 38-03000-54-031	Michael & Joanne Silverman	2158 Charlton Road Sunfish Lake, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
14	PID: 38-84200-01-010	William D. & Ann H Degnan	2156 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
15	PID: 38-03000-54-021	David L. & Wendy Smith	2162 Charlton Road Sunfish Lake, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
16	PID: 38-57650-01-010	Makoto & Akiko Ishii	2099 Charlton Road Sunfish Lake, MN 55118-4704	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
17	PID: 38-57600-01-010	Duane J. & Anita Crandall	2157 Charlton Road Saint Paul, MN 55118-4738	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
18	PID: 38-57600-01-020	Michael J. & Sharon M. Ahern	2159 Charlton Road Saint Paul, MN 55118-4738	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
19	PID: 38-57600-01-030	Jerrol M. & Alleen C. Tostrud	2161 Charlton Road Saint Paul, MN 55118-4738	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
20	PID: 38-57600-01-060	Gary E. Macmanus	2163 Charlton Road Saint Paul, MN 55118-4738	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
21	PID: 38-03000-53-022	Shannon Werb, Margaret Gehrig	2165 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
22	PID: 38-03000-53-021	Martha H. Norton	2148 Delaware Avenue Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
23	PID: 38-03100-27-010	Elizabeth Ann Hammett Katherine Carol Ginkel	5306 Forest Breeze Ct Saint Cloud, FL 34771-7743	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
24	PID: 38-03100-27-020	John & Sharon Hutchinson	2194 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
25	PID: 38-03100-27-080	William & Elizabeth Hammett	2196 Charlton Road Saint Paul, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
26	PID: 38-03100-27-060	J Edward & Jane WU Corn	2190 Charlton Road Sunfish Lake, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
27	PID: 38-03100-27-075	Michael S & Suzanne Macdonald	2184 Charlton Road Saint Paul, MN 55118-4737	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
28	PID: 38-03100-27-040	Brent J & Rebecca A Brooks	2672 91st Ave NE Blaine, MN 55449	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
29	PID: 38-03000-54-011	Rebecca Ann Debertin	2166 Charlton Road Sunfish Lake, MN 55118	1	$1,561.29	$2,341.94		$1,561.29	$2,341.94
			TOTAL	**31**	**$48,399.99**	**$72,600.14**		**$48,399.99**	**$72,600.14**

Cost Distribution Calculations for Option Add Alternate No. 2

WSB Project:	Charlton Road Improvements	*Design By:*	DWS
Project Location:	City of Sunfish Lake	*Checked By:*	
City Project No.:			
WSB Project No.:	1629-741	*Date:*	4/3/2018

Special Assessments

Surface & Drainage Improvements

Total Assessable Units within the Project	31
Total Surface Improvement Cost	$ 85,000.00
City Costs	$ 51,000.00
Total Assessable Costs	$ 34,000.00
Assessment Cost per Assessable Unit	**$1,096.77**

Special Assessment per Unit	**$1,096.77**

Preliminary Assessment Roll for Option Add Alternate No. 2

WSB Project: Charlton Road Improvements — *Design By:* DWS
Project Location: City of Sunfish Lake — *Checked By:*
City Project No.:
WSB Project No: 1629-741 — *Date:* 4/3/2018

No.	Property Identification No.	Property Owner	Property Owner Address	Total Assessable Units	40% Assessment Per City Policy	60% City Cost		Recommended Assessment	City Costs
	Assessment/Funding Source								
1	PID: 38-03000-50-030	Parish Ch of the Good Shepard	2035 Charlton Road Sunfish Lake, MN 55118-4704	2	$2,193.54	$3,290.32		$2,193.54	$3,290.32
2	PID: 38-03000-51-010	Michael A. & Margaret Hovey	2030 Charlton Road Sunfish Lake, MN 55118-4705	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
3	PID: 38-03000-51-020	Mary Jo Malachway	2040 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
4	PID: 38-03000-51-030	John Gary Gustafson	3411 Pine Grove Ln Kalamazoo, MI 49008	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
5	PID: 38-03000-52-013	Gladys & Raymond Dobrantz	9240 Arnold Ave Inver Grove Heights, MN 55077	2	$2,193.54	$3,290.32		$2,193.54	$3,290.32
6	PID: 38-03000-52-020	Aydin & Rebecca Moradian	2120 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
7	PID: 38-13300-01-010	Calvin S & Claire E Noble	2130 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
8	PID: 38-13300-01-020	Catharine Ubel Tste Nye	2140 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
9	PID: 38-13300-01-030	Karin J Klarer	2144 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
10	PID: 38-13300-01-040	Douglas & Nancy Beedon	2150 Charlton Road Saint Paul, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
11	PID: 38-84200-01-020	Dennis J & Jacquline Tursso	2152 Charlton Road Saint Paul, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
12	PID: 38-84200-01-030	John J & Shannon Nelson	2154 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
13	PID: 38-03000-54-031	Michael & Joanne Silverman	2158 Charlton Road Sunfish Lake, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
14	PID: 38-84200-01-010	William D. & Ann H Degnan	2156 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
15	PID: 38-03000-54-021	David L. & Wendy Smith	2162 Charlton Road Sunfish Lake, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
16	PID: 38-57650-01-010	Makoto & Akiko Ishii	2099 Charlton Road Sunfish Lake, MN 55118-4704	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
17	PID: 38-57600-01-010	Duane J. & Anita Crandall	2157 Charlton Road Saint Paul, MN 55118-4738	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
18	PID: 38-57600-01-020	Michael J. & Sharon M. Ahern	2159 Charlton Road Saint Paul, MN 55118-4738	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
19	PID: 38-57600-01-030	Jerrol M. & Alleen C. Tostrud	2161 Charlton Road Saint Paul, MN 55118-4738	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
20	PID: 38-57600-01-060	Gary E. Macmanus	2163 Charlton Road Saint Paul, MN 55118-4738	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
21	PID: 38-03000-53-022	Shannon Werb, Margaret Gehrig	2165 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
22	PID: 38-03000-53-021	Martha H. Norton	2148 Delaware Avenue Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
23	PID: 38-03100-27-010	Elizabeth Ann Hammett Katherine Carol Ginkel	5306 Forest Breeze Ct Saint Cloud, FL 34771-7743	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
24	PID: 38-03100-27-020	John & Sharon Hutchinson	2194 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
25	PID: 38-03100-27-080	William & Elizabeth Hammett	2196 Charlton Road Saint Paul, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
26	PID: 38-03100-27-060	J Edward & Jane WU Corn	2190 Charlton Road Sunfish Lake, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
27	PID: 38-03100-27-075	Michael S & Suzanne Macdonald	2184 Charlton Road Saint Paul, MN 55118-4737	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
28	PID: 38-03100-27-040	Brent J & Rebecca A Brooks	2672 91st Ave NE Blaine, MN 55449	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
29	PID: 38-03000-54-011	Rebecca Ann Debertin	2166 Charlton Road Sunfish Lake, MN 55118	1	$1,096.77	$1,645.16		$1,096.77	$1,645.16
			TOTAL	**31**	**$33,999.87**	**$50,999.96**		**$33,999.87**	**$50,999.96**

APPENDIX D

Soil Borings



Charlton Road Improvements
City of Sunfish Lake, Minnesota

10' Boring (6 total)
5' Road Core (6 total)

Boring Map

K:\0629-14 Capital Exhibits\Boring Maps\629-14 Boring Map - Charlton.dgn

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER B1

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	11" AGGREGATE BASE, Frozen to 3 1/2"		Pavement Section								
1	FILL, mostly Silty Sand, brown		Fill			1	HSA				
2	CLAYEY SAND, brown, moist, soft	SC	Mixed Alluvium								
3				8		2	SB				
4											
5	SILTY SAND, brown, moist, loose	SM	Coarse Alluvium								
6				8		3	SB				
7											
8				8		4	SB				
9	CLAYEY SAND, brown, moist, soft	SC	Mixed Alluvium								
10											
11				8		5	SB				
	End of Boring 11.0 ft.										
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/26/2017 END: 1/26/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/26/2017	8:30 am	11	9.5		None		3 1/4" HSA 0' - 9.5'	Notes:	

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER B2

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
1	20" AGGREGATE BASE		Pavement Section			1	HSA				
2	FILL, mostly Lean Clay, a little Silty Sand, brown, dark brown		Fill								
3				9		2	SB				
4											
5											
6				8		3	SB				
7	LEAN CLAY WITH ORGANICS, greyish brown, wet, very soft	CL	Fine Alluvium								
8				4		4	SB				
9											
10											
11				4		5	SB				
12	SILTY SAND WITH GRAVEL, dark brown, wet, medium dense	SM	Coarse Alluvium								
13				21		6	SB				
14											
15											
16				15		7	SB				
	End of Boring 16.0 ft.										
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/26/2017 END: 1/26/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
1/26/2017	9:30 am	16	14.5		None		3 1/4" HSA 0' - 14.5'	J. Tatro	DAJ
								Notes:	

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER B3

PAGE 1 OF 1

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LAB: MC (%)	LAB: DD (pcf)	LAB: LL (%)	LAB: PL (%)
0	3" AGGREGATE BASE, Frozen to 3"		Pavement Section								
1	FILL, mostly Lean Clay, brown		Fill			1	HSA				
2	CLAYEY SAND, brown, wet, very soft to soft	SC	Mixed Alluvium								
3				4		2	SB				
4											
5											
6				6		3	SB				
7	LEAN CLAY, brown to grayish brown, saturated, very soft	CL	Fine Alluvium								
8						4	SB				
9											
10											
11	SILTY SAND WITH GRAVEL, brown, wet, loose	SM	Coarse Alluvium	9		5	SB				
12											
13				7		6	SB				
14	End of Boring 13.5 ft.										
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/26/2017 END: 1/26/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/26/2017	10:30 am	13.5	12		None		3 1/4" HSA 0' - 12'	Notes:	

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements
CLIENT/WSB #: 01629-741
PROJECT LOCATION: Sunfish Lake, MN

BORING NUMBER B4

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	5 1/2" AGGREGATE BASE		Pavement Section								
	FILL, a mixture of Lean Clay, Clayey Sand, brown, gray		Fill			1	HSA				
3				8		2	SB				
6				6		3	SB				
7	SANDY LEAN CLAY WITH A LITTLE GRAVEL, brown, moist, firm	CL	Glacial Till								
8				12		4	SB				
10				12		5	SB				
11	End of Boring 11.0 ft.										

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION
1/24/2017	10:15 am	11	9.5		None	

START: 1/24/2017 END: 1/24/2017

METHOD: 3 1/4" HSA 0' - 9.5'

Crew Chief: J. Tatro
Logged By: DAJ

Notes:

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER B5

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	24" AGGREGATE BASE		Pavement Section								
1						1	HSA				
2	FILL, mostly Lean Clay, dark brown		Fill								
3				14		2	SB				
4											
5											
6				5		3	SB				
7	SILTY SAND, brown, moist, loose	SM	Coarse Alluvium								
8				10		4	SB				
9	SANDY LEAN CLAY WITH A LITTLE GRAVEL, brown, moist, firm	CL	Glacial Till								
10											
11				13		5	SB				
11	End of Boring 11.0 ft.										
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	10:45 am	11	9.5		None		3 1/4" HSA 0' - 9.5'	Notes:	

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN **BORING NUMBER B6**

CLIENT/WSB #: 01629-741 PAGE 1 OF 1

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	6" AGGREGATE BASE		Pavement Section								
1	FILL, mostly Clayey Sand, brown		Fill			1	HSA				
2											
3				15		2	SB				
4	SANDY LEAN CLAY WITH A LITTLE GRAVEL, brown, moist, firm	CL	Glacial Till								
5											
6				9		3	SB				
7											
8				12		4	SB				
9											
10											
11				15		5	SB				
	End of Boring 11.0 ft.										
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	11:50 am	11	9.5		None		3 1/4" HSA 0' - 9.5'	Notes:	

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER C1

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	4" AGGREGATE BASE		Pavement Section								
	FILL, a mixture of Lean Clay, Silty Sand, brown		Fill								
1						1	HSA				
2											
3				-		2	SB				
4											
5											
				20		3	SB				
6	End of Boring 6.0 ft.										
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	12:30 pm	6	4.5		None		3 1/4" HSA 0' - 4.5'	Notes:	

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ

WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER C2

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
	4" AGGREGATE BASE		Pavement Section								
	FILL, a mostly Lean Clay, brown		Fill								
1						1	HSA				
2											
3				14		2	SB				
4											
5				13		3	SB				
6	End of Boring 6.0 ft.										
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	12:15 pm	6	4.5		None		3 1/4" HSA 0' - 4.5'	Notes:	

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WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER C3

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LAB TESTS MC (%)	LAB TESTS DD (pcf)	LAB TESTS LL (%)	LAB TESTS PL (%)
0	3" AGGREGATE BASE		Pavement Section								
	FILL, mostly Silty Sand, brown		Fill								
1						1	HSA				
2											
3				18		2	SB				
4											
5	LEAN CLAY, brown, wet, very soft	CL	Fine Alluvium								
				4		3	SB				
6	End of Boring 6.0 ft.										
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	9:35 am	6	4.5		None		3 1/4" HSA 0' - 4.5'	Notes:	

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WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER C4

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
	7" AGGREGATE BASE		Pavement Section								
1	FILL, a mixture of Clayey Sand, Silty Sand, Lean Clay, brown		Fill			1	HSA				
2											
3				20		2	SB				
4											
5				7		3	SB				
6	End of Boring 6.0 ft.										
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	9:50 am	6	4.5		None		3 1/4" HSA 0' - 4.5'	Notes:	

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WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements PROJECT LOCATION: Sunfish Lake, MN

CLIENT/WSB #: 01629-741

BORING NUMBER C5

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	3" AGGREGATE BASE		Pavement Section								
	CLAYEY SAND, brown, moist, firm	SC	Mixed Alluvium								
1						1	HSA				
2											
3				14		2	SB				
4											
5				12		3	SB				
6	End of Boring 6.0 ft.										
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

START: 1/24/2017 END: 1/24/2017

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION	METHOD	Crew Chief:	Logged By:
								J. Tatro	DAJ
1/24/2017	11:40 am	6	4.5		None		3 1/4" HSA 0' - 4.5'	Notes:	

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WSB & Associates, Inc.

LOG OF TEST BORING

PROJECT NAME: Carlton 2016 St Improvements
CLIENT/WSB #: 01629-741
PROJECT LOCATION: Sunfish Lake, MN

BORING NUMBER C6

DEPTH (ft)	DESCRIPTION OF MATERIAL	USCS	GEOLOGIC ORIGIN	N	WL	SAMPLE No.	SAMPLE TYPE	LABORATORY TESTS MC (%)	DD (pcf)	LL (%)	PL (%)
0	18" AGGREGATE BASE		Pavement Section								
1						1	HSA				
1.5	FILL, mostly Clayey Sand, brown		Fill								
2											
3				22		2	SB				
4											
5											
6				8		3	SB				
	End of Boring 6.0 ft.										
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER DEPTH	WATER ELEVATION
1/24/2017	11:00 am	6	4.5		None	

START: 1/24/2017 END: 1/24/2017

METHOD: 3 1/4" HSA 0' - 4.5'

Crew Chief: J. Tatro

Logged By: DAJ

Notes:

WSB BORING LOG - WSB.GDT - 1/27/17 11:31 - K:\01629-741\GEOTECH-CMT\CHARLTON 2016 ST IMPROVEMENTS, SUNFISH LAKE, MN.GPJ