City of Ramsey
Agenda
Public Works Committee
Tuesday, January 18, 2022
5:30 pm
Lake Itasca Room, 7550 Sunwood Drive NW

Remote Attendance available at www.cityoframsey.com/meetings. To maximize social distancing due to the COVID-19 Pandemic, those that can join remotely are encouraged to do so. Those joining remotely and requesting to speak are asked to use a webcam when speaking.

1. Call to Order

2. Citizen Input

3. Approve Agenda

4. Approve Minutes

5. Committee Business

1. Cost of Gravel Road Maintenance/Cost of Paving Remaining Gravel Roads
2. Consider Sound Wall Improvements East of State Highway 47, North of Xkimo Street
3. Review of Pavement Conditions on Bowers Dr.
4. Consider Site Improvements to Parcel 46 and The Waterfront in the COR
5. Consider Boulevard Trees for the Barren side of Sunwood Drive in The COR
6. Consider Recommendation for City Council to Reject Bids for Water Treatment Plant Trunk Watermain Improvements, Improvement Project #21-08

6. Committee/Staff Input

1. Receive Updates on Improvement Projects, Studies and Items of Interest
2. Review Future Topics Calendar

7. Adjournment

Public Works Committee **5. 1.**

Meeting Date: 01/18/2022

Submitted For: Grant Riemer, Engineering/Public Works

By: Grant Riemer, Engineering/Public Works

Title:

Cost of Gravel Road Maintenance/Cost of Paving Remaining Gravel Roads

Purpose/Background:

Purpose:

Provide estimated costs of summer time maintenance for gravel roads.

Background:

The city maintains approximately 2.41 miles of gravel roads throughout the city. Grading happens about once per month from April to October depending on rain fall. In the winter the motor grader is used in early winter and late spring when the roads are soft. Once the gravel roads freeze, plow trucks take over snow removal operations.

Timeframe:

10-15 Minutes

Observations/Alternatives:

The maintenance costs for this case are based off the 2019 FEMA Equipment Rates and our current salary structure for PW employees. The current salary for a senior equipment operator is $29.59/hour, and the 2019 FEMA rate for our motor grader is $67.50/hour. This gives us our hourly maintenance rate of $97.09. The average time to grade our 2.41 miles of gravel roads is 3.6 hours at a cost of $349.52.

This case is in response to an inquiry about the cost of paving Xenolith St/178th Ln in the northern part of the city. This section of Xenolith St has poor sub soils and would need substantial correction, before it could be paved. The recommendation would be to sub cut the existing road bed, add fabric and fill with 3 feet of granular base. Estimated cost would be $431,521.00 for Xenolith St and an additional cost of $153,843.49 for 178th ln. Total estimated project cost $585,365.00

Funding Source:

N/A

Recommendation:

Based on the fact that there is no dedicated funding source for this project at this time, staff recommends continuing with our current maintenance practice, until such time a funding source can be developed to pave the remaining gravel roads

Action:

Motion to council to continue with our current maintenance practice, until such time a funding source can be developed to pave the remaining gravel roads.

Attachments

Cost Estimates for Paving Gravel Roads

Gravel Road Summary

2021 Gravel Road Map

Form Review

Inbox	Reviewed By	Date
Kurt Ulrich	Kathy Schmitz	01/13/2022 02:53 PM

Form Started By: Grant Riemer
Started On: 01/13/2022 07:41 AM
Final Approval Date: 01/13/2022

2021 Cost Estimates for Paving Remaining Gravel Roads
Modified 11/10/2021

PLAT	NAME	DESCRIPTION	ROW (Feet)	STREET WIDTH (Feet)	STREET LENGTH (Feet)	STREET LENGTH (Miles)	RURAL VS. URBAN SECTION	PROPOSED SUBGRADE CORRECTION	PROPOSED PAVEMENT SECTION	SUBGRADE CORRECTION COST PER FOOT	ROAD CONSTRUCTION COST PER FOOT (1)	TOTAL CONSTRUCTION COST PER FOOT	TOTAL PROJECT COST PER SEGMENT (2)
Caroline Acres	178th Lane	CDS / Xenolith St	66	24	462.37	0.09	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$150.00	$150.00	$85,307.27
Caroline Acres	178th Lane	Xenolith St / CDS	66	24	371.47	0.07	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$150.00	$150.00	$68,536.22
Caroline Acres	Xenolith Street	178th Ln / N Line Section 4	66	24	1,525.35	0.29	Rural	3' SGB & fabric	4" Cl. 5, 3.5" Bit.	$100.00	$130.00	$230.00	$431,521.52
Gateway Industrial Park	Limonite Street	142nd Ave / 143rd Ave	66	24	400.00	0.08	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$150.00	$150.00	$73,800.00
Gateway Industrial Park 2	Basalt Street	141st Ave / S EOP	66	24	388.70	0.07	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$140.00	$140.00	$66,934.14
Itasca Heights	Beatty Avenue	Collins Dr / TH 10	66	24	359.61	0.07	Rural	2' SGB & fabric	4" Cl. 5, 3.5" Bit.	$70.00	$115.00	$185.00	$81,829.26
Itasca Heights	Collins Drive	NW EOP / W Termini	66	24	927.37	0.18	Rural	3' SGB & fabric	4" Cl. 5, 3.5" Bit.	$100.00	$160.00	$260.00	$296,572.93
Section 03 Unplatted	173rd Avenue	CSAH 5 / W Termini	40	24	1,612.15	0.31	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$110.00	$110.00	$218,123.90
Section 03 Unplatted	Garnet Street	CR 63 / Termini	40	24	507.97	0.10	Rural	2' SGB & fabric	4" Cl. 5, 3.5" Bit.	$70.00	$140.00	$210.00	$131,208.65
Section 16 Unplatted	157th Avenue	CR 83 / Variolite St	40	24	2,708.51	0.51	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$110.00	$110.00	$366,461.40
Section 23 Unplatted	Potassium Street	Old CR 5 / Termini	40	24	1,516.23	0.29	Rural	2' SGB & fabric	4" Cl. 5, 3.5" Bit.	$70.00	$140.00	$210.00	$391,642.21
Section 26 Unplatted	148th Lane	Nowthen Blvd / CDS	40	24	1,671.03	0.32	Rural	None	4" Cl. 5, 3.5" Bit.	$0.00	$140.00	$140.00	$287,751.37
			Totals		**12,450.76**	**2.36**							**$2,499,688.84**

Notes:

(1) Includes costs for cul-de-sacs, culverts, driveway connections, shouldering, turf establishment and appurtenant improvements.

(2) Includes 23-percent indirect costs for administration, engineering, finance and legal fees.

2021 Remaining Gravel Road Summary

6/10/2021

PLAT	NAME	DESCRIPTION	ROW	FEET	MILES
Caroline Acres	178th Lane	CDS / Xenolith St	66	462	0.09
Caroline Acres	178th Lane	Xenolith St / CDS	66	371	0.07
Caroline Acres	Xenolith Street	178th Ln / N Line Section 4	66	1,525	0.29
Gateway Industrial Park	Limonite Street	142nd Ave / 143rd Ave	66	661	0.13
Gateway Industrial Park 2	Basalt Street	141st Ave / S EOP	66	389	0.07
Itasca Heights	Beatty Avenue	Collins Dr / TH 10	66	360	0.07
Itasca Heights	Collins Drive	NW EOP / W Termini	66	927	0.18
Section 03 Unplatted	173rd Avenue	CSAH 5 / W Termini	40	1,612	0.31
Section 03 Unplatted	Garnet Street	CR 63 / Termini	40	508	0.10
Section 16 Unplatted	157th Avenue	CR 83 / Variolite St	40	2,709	0.51
Section 23 Unplatted	Potassium Street	Old CR 5 / Termini	40	1,516	0.29
Section 26 Unplatted	148th Lane	Nowthen Blvd / CDS	40	1,671	0.32
			Total	**12,712**	**2.41**

2021 - REMAINING GRAVEL ROADS

178TH LANE & XENOLITH STREET
'CAROLINE ACRES'

GARNET STREET
'SECTION 03 UNPLATTED'

173RD AVENUE
'SECTION 03 UNPLATTED'

157TH AVENUE
'SECTION 16 UNPLATTED'

POTASSIUM STREET
'SECTION 23 UNPLATTED'

148TH LANE
'SECTION 26 UNPLATTED'

BEATTY AVENUE & COLLINS DRIVE
'ITASCA HEIGHTS'

LIMONITE STREET
'GATEWAY INDUSTRIAL PARK'

BASALT STREET
'GATEWAY INDUSTRIAL PARK 2'

JARVIS ST · IMAN ST · HALAS ST · GUYON ST · FORTMANN ST · EATON ST · DRISCOLL ST · CARR ST · BAUGH ST · ANDRIE ST · ZEBRA ST · YAK ST · XERUS ST · WOLVERINE ST · VICUNA ST · UNICORN ST · TIGER ST · SLOTH ST · RABBIT ST · QUAGGA ST · PUMA ST · OKAPI ST · NUTRIA ST · MARMOSET ST · LLAMA ST · KANGAROO ST · JACKAL ST · IGUANA ST · HEDGEHOG ST · GIBBON ST · FERRET ST · ELAND ST · DOLPHIN ST · CHAMELEON ST · BISON ST · ALPACA ST · ZEOLITE ST · YOLITE ST · XENOLITE ST · WILLEMITE ST · VARIOLITE ST · URANIMITE ST · TRAPROCK ST · SAPPHIRE ST · RHINESTONE ST · QUARTZ ST · PERIDOT ST · OLIVINE ST · NACRE ST · MARBLE ST · LIMONITE ST · KAMACITE ST · JASPAR ST · IRONSTONE ST · HEMATITE ST · GARNET ST · FELDSPAR ST · EBONY ST · DOLOMITE ST · COQUINA ST · BASALT ST · AZURITE ST · ZIRCONIUM ST · YTTRIUM ST · XENON ST · WOLFRAM ST · VANADIUM ST · URANIUM ST · TUNGSTEN ST · SODIUM ST · RADIUM ST · QUICKSILVER ST · POTASSIUM ST · OSMIUM ST · NEON ST · MAGNESIUM ST · LITHIUM ST · KRYPTON ST · JUNKITE ST · IODINE ST · HELIUM ST · GERMANIUM ST · FLOURINE ST · ERKIUM ST · DYSPROSIUM ST · COBALT ST · BARIUM ST · ARGON ST · ZUNI ST · YAKIMA ST · XIMO ST · WACO ST · UTE ST · TONTO ST · SALISH ST · ROANOKE ST · QUAPAW ST · POTAWATOMI ST · ONEIDA ST · NAVAJO ST · MAKAH ST · LIPAN ST · KIOWA ST · JIVARO ST · INCA ST · HOPI ST · GUARANI ST · FOX ST · ELDORADO ST · DAKOTAH ST · CREE ST · BLACKFOOT ST

181ST AVE · 180TH AVE · 179TH AVE · 178TH AVE · 177TH AVE · 176TH AVE · 175TH AVE · 174TH AVE · 173RD AVE · 172ND AVE · 171ST AVE · 170TH AVE · 169TH AVE · 168TH AVE · 167TH AVE · 166TH AVE · 165TH AVE · 164TH AVE · 163RD AVE · 162ND AVE · 161ST AVE · 160TH AVE · 159TH AVE · 158TH AVE · 157TH AVE · 156TH AVE · 155TH AVE · 154TH AVE · 153RD AVE · 152ND AVE · 151ST AVE · 150TH AVE · 149TH AVE · 148TH AVE · 147TH AVE · 146TH AVE · 145TH AVE · 144TH AVE · 143RD AVE · 142ND AVE · 141ST AVE · 140TH AVE · 139TH AVE · 138TH AVE · 137TH AVE · 136TH AVE · 135TH AVE · 134TH AVE

CSAH 83 · BAUGH ST · ARMSTRONG BLVD · ANDRIE ST · ALPINE DR · CSAH 5 · NOWTHEN BLVD · ST FRANCIS BLVD · GREEN VALLEY RD · CO RD 63 · 179TH LN · CO RD 27 · ROANOKE ST · 175TH AVE · 173RD AVE · 167TH AVE · VARIOLITE ST · RAMSEY BLVD · SUNFISH LAKE BLVD · STATE HWY 47 · BUNKER LAKE BLVD · CO RD 116 · SUNWOOD DR · US HWY 10

Rogers Lake · Rum River Central Regional Park · Rum River Hills Golf Course · Rum River Boy Scout Camp · Lake Itasca · Eddy Lake · Sunfish Lake · Thorn Lake · Lake Itasca Park · Links Golf Course · Oakridge Park · Central Park · Alpine Park · Cottonwood Park · Emerald Pond · Elmcrest Park · Fox Park · Pederson Park · Rabbit Park · Sherwood Acres Park · Sport Haven North Park · Titterud Park · Greenbush Hills West Park · Greenbush Hills East Park · Woodsy's Park · Woodland Grove Park · Steinhope River Hills · Riverside Park · Ramsey Terrace Park · Flintbrook Terrace Park · Rivers Bend Park · Fred Rietz Park · Rivermead Hills Park · Riverwood Ridge North Park · Brookview Park · Bear Park · Wren Park · Rabbit Brook Trail Corridor

0 · 0.25 · 0.5 · 1 Miles

Legend

- GRAVEL STREETS
- Street Centerlines
- ScoutCamp
- Golf_Courses
- Parks
- Rivers
- Lakes_Ponds
- Creeks

Public Works Committee **5. 2.**

Meeting Date: 01/18/2022

By: Bruce Westby, Engineering/Public Works

Title:

Consider Sound Wall Improvements East of State Highway 47, North of Xkimo Street

Purpose/Background:

As discussed at the Public Works Committee meeting on October 19, 2021, the noise wall constructed as part of the three (3) single-family residential unit development called Ramsey Villas North, located in the northeast quadrant of State Highway 47 and Xkimo Street, was not constructed such that it will serve it's intended purpose as a noise barrier.

Though plans for this development, including the noise wall, were approved by the City, the wall was designed and constructed to extend downwards into a low area such that the top of the wall is lower than Highway 47, which prevents the wall from being effective at reducing traffic noise.

During the project approval process, several residents from Xkimo Court contacted City staff to ask what could be done to reduce traffic noise from Highway 47. The residents were informed that the developer would construct a noise wall similar to the existing wall east of Highway 47 roughly 600 feet to the north, and that the wall would extend along the west edge of the Ramsey Villas North plat.

Attached is a copy of an email received by the City Engineer from residents along Xkimo Court NW, east of State Highway 47 and north of Xkimo Court, following a meeting between the City Engineer and the residents on site on Monday, September 27, 2021. The email requests that the City consider the following items:

· Partner with MNDOT to determine if building an appropriate, effective noise wall would be their responsibility or the City's

· If MNDOT has the responsibility, then to partner and advocate for them to seek funding to build an effective noise wall on par with the height above street level of, and extending
to, the existing noise wall further north along cty 47

· If the City has the responsibility, pursue approval and prioritize allocating funding to build an effective noise wall on par with the height above street level of, and extending to, the existing noise wall further north along cty 47

· Establish a noise ordinance to discourage vehicles from excessive acceleration or jake-breaking at the 47/5 intersection

· Seek partnership with Ramsey PD and/or the Anoka County Sheriff, to establish a presence in the area [even if simply parking in-between calls or completing paperwork]
to discourage the above behavior

· Post signs on Hwy 47 to notify drivers of the noise ordinance and that it is enforced by the City of Ramsey

· Provide a plan timeline, along with regular communication on progress, regarding the above to the residents of Xkimo Ct. Nw.

After the Public Works Committee considered the residents request on October 19, 2021, the committee directed

Staff to contact the developer and their engineer to determine if either or both are willing to partner with the City to redesign, reconstruct and/or extend the noise wall to serve it's intended purpose. The Committee also directed Staff to return with estimated costs to reconstruct and/or extend the sound wall to the end of the plat and/or to connect to the existing wall to the north for consideration at a future meeting.

The City Engineer contacted the developer and received the attached letter in response. Based on this letter Staff does not anticipate that the developer will be willing to partner with the City to resolve the resident's concerns either by assisting with potential design modifications and/or by contributing to costs.

The City Engineer also contacted the project engineer with Bogart-Pederson to discuss this issue. The project engineer stated he would be discuss this issue in more detail after the Public Works Committee discussed this issue again this evening.

Construction of a sound wall could not begin until the ground thaws in the spring of 2022, at the earliest. This would require the collection of topo survey to determine where a sound wall could effectively be constructed along this corridor. For a sound wall to be effective it should be constructed to a height of 6-feet or more above the pavement of northbound Highway 47.

Attached is a figure showing how long the sound wall would need to extend to the north of the Ramsey Villas North plat to connect to the existing sound wall approximately 900 feet north. Staff estimates construction costs for a similar noise wall would be approximately $210 per linear foot at today's construction costs. This would equate to a minimum construction cost of $50,000 to salvage and reinstall the section of wall that extends below the grade of Highway 47 and to then extend the wall to the north end of the Ramsey Villas North plat, and a minimum construction cost of $125,000 to extend a similar wall along the undeveloped parcel to the north to connect to the existing wall. These costs do not include indirect costs or costs required to enter into a Limiter Use Permit with MnDOT if the wall needs to be constructed within their right-of-way.

Timeframe:

Staff estimates 20 minutes will be needed to present this case and respond to questions.

Observations/Alternatives:

Observations:

Staff contacted MnDOT and was informed that their preference would be for the wall to be on the private property. However, MnDOT did confirm that they would be willing to discuss construction of a wall in MnDOT right-of-way, but that they do not have funds to pay for such work. Also, the City would need to execute a Limited Use Permit to define the responsibilities of the City related to maintenance and removal of the wall, if necessary in the future.

Staff informed the Xkimo Court residents that this case would be presented at this evening's Public Works Committee meeting so Staff anticipates there will be several residents in attendance, either in person or remotely.

Alternatives:

Alternative #1 – Motion directing Staff to further explore noise wall improvements along the Ramsey Villas North plat.

Alternative #2 – Motion directing Staff to further explore noise wall improvements along the Ramsey Villas North plat, and to further explore noise wall improvements along the undeveloped parcel to the north.

Alternative #2 – Motion of other.

Funding Source:

To be determined based on the Committee's direction to Staff.

MnDOT does not have funds to share in any of these costs, and Staff is continuing to explore external funding sources for such sound wall improvements.

Recommendation:

Staff does not have a recommendation to offer at this time.

Action:

To be determined following discussions.

Attachments

Noise Wall Gap Figure

Xkimo Court residents email

Ltr re Riverside Development Company Ramsey

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Kathy Schmitz	01/13/2022 04:07 PM
Kurt Ulrich	Kathy Schmitz	01/13/2022 04:07 PM
Form Started By: Bruce Westby		Started On: 01/11/2022 10:40 AM
Final Approval Date: 01/13/2022		

TH 47 Sound Wall Gap

7/12/2021, 3:59:38 PM

0 0.0175 0.035 0.07 0.105 0.14 mi

From: Richardx.Bailey
To: Bruce Westby
Cc: Ted Blakley; Megan Blakley; angel.hughes129@gmail.com; Bertin Chabene; Richardx.Bailey
Subject: Xkimo Ct Nw Noise Wall Follow up and letter
Date: Friday, October 8, 2021 4:41:41 PM
Attachments: RE EXTERNAL RE Project 20-117.msg
Noise Wall 4.jpg
Noise Wall 1.jpg
Noise Wall 2.jpg
Noise Wall 3.jpg

Hi Bruce,

Thanks again for stopping out last week to discuss the ongoing noise issues we've been experiencing and for offering to take forward a letter highlighting our concerns, to help move towards resolution. Please find this letter below. Attached you'll find the email we referred to during our discussion regarding the originally communicated noise wall length as well as photos of what was built.

Please let us know if you have any questions…

****

Hello,

First off, thank you for taking the time to review the below concern and related requests from us, the residents of Xkimo Court Nw.

The chief concern, which we have raised before, is the increased noise levels in our cul-de-sac, which directly affects the 20+ people that call Xkimo Ct Nw 'home'.

We first began noticing the increased traffic noise when the city approved the construction of Stoney River directly across, and elevated above, Highway 47 from us; as there exists no noise barrier on our side of 47, we feel the effects of traffic noise deflected from Stoney River directly into our neighborhood.

Last year we were notified of the approved sale of the land on the west side of the cul-de-sac to a third party home builder. Since this meant the removal of what little natural noise protection [mature trees/growth] we had on those lots, we raised our concerns regarding the noise impact we anticipated and, unfortunately, have since realized. The cumulative traffic noise level is so high at times that it can be heard clearly inside homes and even requires pausing conversations when outside.

Prior to the development being approved, we had inquired regarding having a noise wall included with the construction on the site, and were subsequently provided a plat drawing/photo [see attached email] which indicated a noise wall *would* be built and *would* extend for a considerable length of the property as well as mirror the size the noise wall farther north along 47. Since we were advised this was the plan, we were satisfied with the accommodations to protect the interests of our families.

Unfortunately this accommodation was not followed through upon, to the detriment of our neighborhood and directly affects our quality of life. We were advised after the sale was approved, that a 'mistake' was made and the drawing shared wasn't actually correct; the noise wall would not equal the length we were told it would, but instead be less than ½ as long. In addition the "noise wall" that was constructed by the builder is completely ineffective and quite frankly, unacceptable. As shown by the photographs attached, the wall was not built using the street level as the baseline, but instead followed the undulating topography of the land itself; this resulted in an inferior "noise wall" who's top, in places, is below street level and can be described, at best, as an exercise in futility and who's appearance doesn't do any favors for the aesthetics or reputation of the city.

To rectify the above we respectfully request the following items be pursued by the City of Ramsey:

· Partner with MNDOT to determine if building an appropriate, effective noise wall would be their responsibility or the City's

  · If MNDOT has the responsibility, then to partner and advocate for them to seek funding to build an effective noise wall on par with the height above street level of, and extending to, the existing noise wall further north along cty 47

  · If the City has the responsibility, pursue approval and prioritize allocating funding to build an effective noise wall on par with the height above street level of, and extending to, the existing noise wall further north along cty 47

  · Establish a noise ordinance to discourage vehicles from excessive acceleration or jake-breaking at the 47/5 intersection

    · Seek partnership with Ramsey PD and/or the Anoka County Sheriff, to establish a presence in the area [even if simply parking in-between calls or completing paperwork] to discourage the above behavior

    · Post signs on Hwy 47 to notify drivers of the noise ordinance and that it is enforced by the City of Ramsey

  · Provide a plan timeline, along with regular communication on progress, regarding the above to the residents of Xkimo Ct. Nw.

Thank you in advance for your review and partnership on this matter that is of high importance to us; please let us know how we can support you in this pursuit.

QUINLIVAN & HUGHES, P.A.
ATTORNEYS AT LAW

Writer's Email: rbrandenburg@quinlivan.com
Writer's Direct Dial: (320) 258-7841

VIA EMAIL ONLY

January 7, 2022

Kurt Ulrich kulrich@cityoframsey.com
Ramsey, Minnesota City Administrator

Chloe McGuire Brigl CMcGuire@ci.ramsey.mn.us
Ramsey, Minnesota Senior City Planner

Bruce Westby bwestby@ci.ramsey.mn.us
Ramsey, Minnesota City Engineer

RE: Riverside Development Company – Ramsey
Villas North Noise Barrier Wall Completion

Dear Mr. Ulrich, Ms. McGuire Brigl, and Mr. Westby:

This letter is in follow up to my letter to you of November 8, 2021. I understand the City is seeking to convene a meeting of the Public Works Committee to discuss options for addressing issues raised by residents of the Ramsey involving the effectiveness of the noise barrier wall along Xkimo Court. Riverside Development Company, as the original developer of Ramsey Villas North, is willing to participate in these discussions, but only for the purpose of providing a history of what occurred in the past and to help, if asked, to determine what might be done as a part of a new City project to enhance the noise dampening effectiveness of the wall. The record is quite clear that the wall was designed and constructed in full compliance with the requirements imposed by the City in the Development Agreement dated May 3, 2021 and as directed by the City. As such, my client does not have and by agreeing to participate will not agree to assume any financial liability associated with the making of any subsequent changes to the wall. It is willing to offer its opinion on the potential making of such changes, if doing so is deemed to be helpful.

If you believe having a representative of the developer at the meeting would be beneficial, my client is willing to do so as long as it is agreed that its participation in the meeting is solely for the purpose of providing background information and, if asked, to offer suggestions for potential future changes by the City. Please let me know if you would like Riverside Development Company to attend the meeting under the conditions outlined above.

Sincerely,

Ronald W. Brandenburg
RWB/

C: Mari Freiberg
Riverside Development Company

Public Works Committee **5. 3.**

Meeting Date: 01/18/2022

By: Grant Riemer, Engineering/Public Works

Title:

Review of Pavement Conditions on Bowers Dr.

Purpose/Background:

Purpose:

Review current pavement conditions on Bowers Dr

Background:

Staff received several photos of pavement conditions on Bowers Drive. Staff will review those photos with the committee and explain treatment options. The majority of the photos indicate minor surface stripping and the beginning of alligator cracking in some areas.

Timeframe:

15 minutes

Observations/Alternatives:

The pavement management schedule for each street segment is adjusted based on actual pavement conditions. City staff annually reviews and rates the pavement condition of all public streets using the Pavement and Surface Evaluation Rating (PASER) system. PASER ratings range from 1 to 10, with 1 being a failed pavement section in total disrepair, and 10 being a brand new pavement section. Staff typically recommends reconstructing pavement sections with PASER ratings between 1 and 3. Overlays are typically recommended for pavement sections with PASER ratings between 4 and 6. Cracksealing is typically recommend for pavement sections with PASER ratings between 7 and 10.

After the 2021 inspection staff rated Bowers Drive at a Paser rating of 6, which indicates that the appropriate treatment would be a mill and overlay. Bowers Drive is not included in 2021-2030 Pavement Management Plan at this time. As mentioned earlier pavements are rated annually and if a pavement section deteriorates more quickly that anticipated it can be moved up in the program, if the budget allows. The areas of deterioration shown in the pictures can be repaired in house, with our milling equipment and staff.

Funding Source:

Anticipated repairs will be completed in house, using general budget funding.

Recommendation:

Staff recommendation is to make the necessary repairs to the pavement on Bowers drive during the summer of 2022 using in house staff and equipment

Action:

Motion to committee to have staff complete necessary temporary asphalt repairs to Bowers Drive during the summer of 2022

Attachments

Location map

Bowers Drive Asphalt

Form Review

Inbox	Reviewed By	Date
Kurt Ulrich	Kathy Schmitz	01/13/2022 02:51 PM

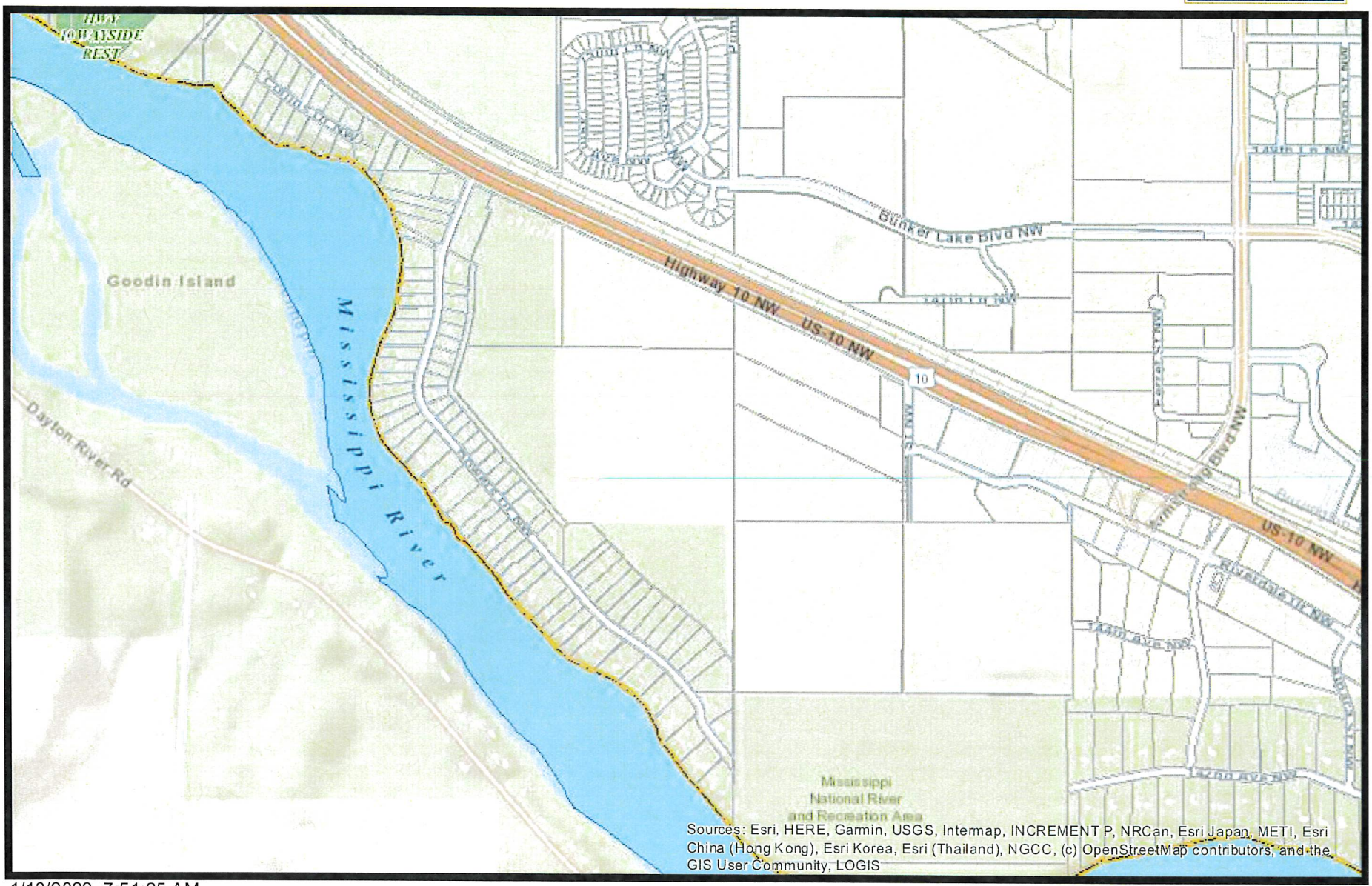
Form Started By: Grant Riemer
Started On: 01/07/2022 11:30 AM
Final Approval Date: 01/13/2022

val_Display_PID

val_CO_ADDR

val_Title

val_Comment



1/13/2022, 7:51:25 AM

0 0.075 0.15 0.3 0.45 0.6 mi

Public Works Committee **5. 4.**

Meeting Date: 01/18/2022

By: Sean Sullivan, Community Development

Title:

Consider Site Improvements to Parcel 46 and The Waterfront in the COR

Purpose/Background:

The purpose of this case if to obtain direction to consider making / funding site improvements to Parcel 46 and The Waterfront in the COR.

Staff has been working with CBRE to market Parcel 46 in the COR. The site is generally low and needs fill and compaction to make the site buildable. In addition, there is a wetland and a storm pond for Armstrong Blvd that do not let the site be developed efficiently and to its full potential. The non-buildable status of the site and the uncertainty in costs to make it developable has caused interested developers to pass on the site.

Over the past few years, we have had interest from developers showing the majority of the site being developed with twin and cottage homes. The development plans reserve areas for retail and mixed uses residential. The EDA, Planning Commission and City Council have generally accepted this development and the allocated land for each use. Discussion with the developers always lead to the site not being ready and the costs needed to improve the site for development and their uncertainty make the project unfeasible. The following items need to be addressed:

Fill Needed for Parcel 46

There have been several attempts to determine the amount of fill needed for for this site. Attached are graphics showing previous attempts to identify fill needs and sources. (Exhibit 1 - Fill for Parcel 46). This item needs to be reviewed to determine the amount of fill that is actually needed and the cost to acquire, place and compact on the site.

Wetland Mitigation and Relocation on Parcel 46

Staff is in the process of putting together a schedule and potential pricing to either mitigating impacts to the existing wetland at a 2:1 ratio by purchasing additional wetland credits in excess of what the existing City-owned banked wetland credits will not cover, or by relocating the wetland on the site by constructing a new wetland within The Waterfront park feature. Engineering will provide greater detail on this matter during the meeting. (See Site Location Map)

Stormwater Pond Relocation for Parcel 46

As part of the development of the site it is possible that the stormwater pond may need to be relocated. This could be done as part of an new private development project or the City could be proactive and relocate the pond strategically to another location when the fill work, and wetland relocation is being completed. (See Site location Map)

The Waterfront Excavation and Rough Grade

The timing of The Waterfront park project is not scheduled within a particular year at this time. However, plans for The Waterfront have envisioned enlarging and excavating the low area present on site as the beginning point for the park project. This grading (excavation) could be used as a source for fill for parcel 46. It would make sense to coordinate these activities if economically feasible. Additional things to consider include the ability/feasibility to relocate the wetland from Parcel 46 on this site, and the probable need to line the water feature to prevent infiltration since this site is within a wellhead protection area. Some preliminary work has been done with design and site work (See Exhibit 2 - Soil Boring Reports), and concept plans and cost estimates have been generated for

the park work.

Infrastructure Improvements

Zeolite Street NW needs to be reconstructed and brought up to current city street standards. Coordinating this project with the filling of Parcel 46 and relocation of the wetland would make sense due to the traffic and hauling of the dirt between Parcel 46 and The Waterfront. The connection of West Ramsey Parkway and related utilities should also be considered as part of this project. (See Bolton and Menk Study)

Timeframe:

In order to bring Parcel 46 to the market, Staff is asking for this project to be considered for 2022

Observations/Alternatives:

Alternatives include:

1) Direct Staff to gather more information on cost for each facet of the project internally and report back to Public Works Committee for further discussion.
2) Recommend to City Council to have Staff hire consultants and have staff gather more information for each facet of the project.
3) Recommend to City Council to commit to the project to obtain and place fill on Parcel 46, relocate the wetland and to coordinate with The Waterfront site planning and development.
3) Something else.

Funding Source:

To be determined. It is likely that different facets of this project would be handled by different funding sources. Potential funding sources include:

- PIR
- Sewer and/or Water Fund
- Park Dedication / Trust Fund,
- TIF
- EDA
- Wetland bank

Recommendation:

Direct Staff to gather more information on cost for each facet of the project internally and report back to the Public Works Committee for further discussion.

Action:

Based on discussion.

Attachments

Exhibit 1 - COR Cut and Fill Volumes
BMI COR Analysis Study
Site Location Map
Exhibit 2 - Soil Boring Reports
The Waterfront looking SW, Center St. at left

Form Review

Inbox	Reviewed By	Date
Bruce Westby	Bruce Westby	01/13/2022 02:14 PM
Mark Riverblood	Mark Riverblood	01/13/2022 02:59 PM

Brian Hagen	Brian Hagen	01/13/2022 03:02 PM
Grant Riemer	Grant Riemer	01/13/2022 03:25 PM
Kurt Ulrich	Kathy Schmitz	01/13/2022 03:44 PM
Form Started By: Sean Sullivan		Started On: 01/11/2022 02:01 PM
Final Approval Date: 01/13/2022		

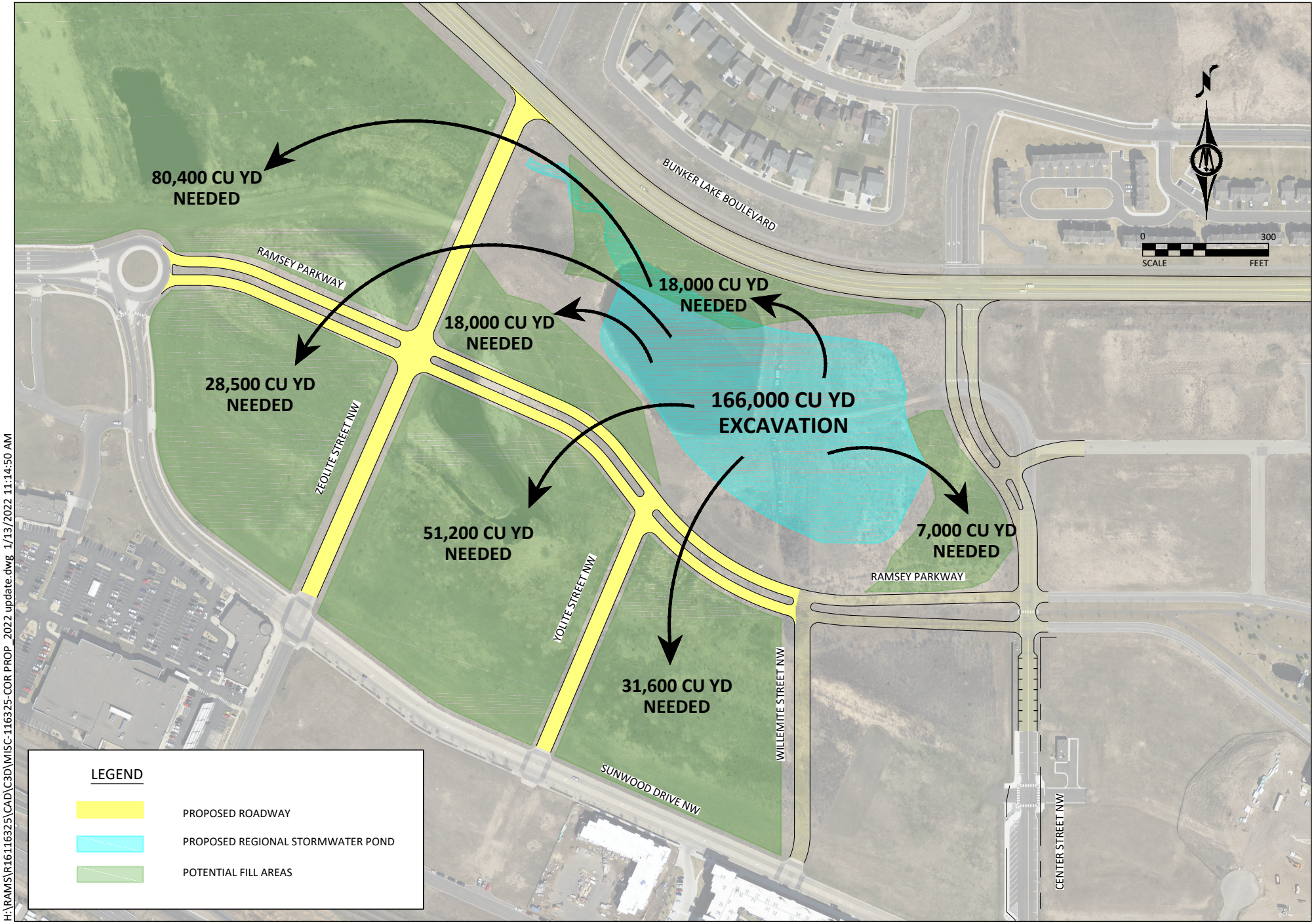
THE COR - POND EXCAVATION

CITY OF RAMSEY, MINNESOTA

CUT & FILL

JANUARY 2022

BOLTON & MENK



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BOLTON & MENK

Real People. Real Solutions.

The COR Analysis

City of Ramsey

June 2018

City of RAMSEY

Submitted by:
Bolton & Menk, Inc.
7533 Sunwood Drive NW #206
Ramsey, MN 55303
P: 763-433-2851
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EXECUTIVE SUMMARY

The City of Ramsey has identified the need to prepare for further development of The COR. While much of The COR has been developed, additional infill is anticipated in the near future. The purpose of this analysis is to determine the necessary public infrastructure and associated costs required to allow the remaining, undeveloped portions of The COR to develop.

For reference, the following figures and exhibits are contained in the appendix of this report:

- **Appendix A** includes a previously prepared Land Use Plan for The COR, along with roadway related graphics from The COR Design Framework plan and City's Comprehensive Plan.
- **Appendix B** includes figures referenced throughout this study, and
- **Appendix C** includes the traffic counts collected in The COR in 2017.

In addition to this analysis, there are several other studies being completed by the City at this time. Each of the studies has the potential to impact the developments within The COR area.

- **Regional Stormwater Retention Pond Analysis (The Waterfront) -** Construction methodologies, sequencing strategies, and timing of pond construction.
- **The Waterfront -** Park features around the regional stormwater retention basin and along Center Street are in the schematic design phase at this time.
- **Regional Infiltration Basin -** The City is currently designing, and preparing to construct, a regional infiltration basin in the southeast portion of The COR.
- **Bunker Lake Boulevard -** Bunker Lake Boulevard from Ramsey Boulevard to Armstrong Boulevard is under the jurisdiction of Anoka County.
- **Traffic Counts -** Traffic counts were obtained at 17 strategic locations to obtain the Annual Average Daily Traffic (AADT).
- **Lot Size Analysis -** The results of this analysis have been incorporated into this report.

Costs estimates were developed for each improvement type. These estimates are based on past bid pricing and similar projects completed previously. All costs presented in the following pages are presented as 2018 costs:

- The total for the roadway, trail, sidewalk, street lighting, lateral sanitary sewer and water main improvements is estimated at $12,445,000.
- The total trunk related improvements for sanitary sewer and storm sewer is estimated at $285,000.
- The total landscaping improvements along Sunwood Drive from Zeolite Street to Sapphire Street is estimated at $691,000.

The costs are considered project costs and include 30% contingencies and project development costs (administrative, engineering, and fiscal).

The information presented in this report is intended to allow for discussions with property owners and developers, as well as allow the City to begin considering funding options.

Table of Contents

Appendix

I. INTRODUCTION

The City of Ramsey has identified the need to prepare for further development of The COR. While much of The COR has been developed, additional infill is anticipated in the near future. The purpose of this analysis is to determine the necessary public infrastructure and associated costs required to allow the remaining, undeveloped portions of The COR to develop.

At the time this study was being prepared, a development was under review at the City for a parcel located adjacent to Ramsey Parkway and Center Street, park improvements were being considered for the Center Street and The Waterfront areas, and studies are being completed for the regional stormwater retention pond (The Waterfront).

Our analysis consists of three separate components that, when combined, provide an overview of the study area needs:

- **Preliminary Design Layouts** – Provide graphical depictions of the public roadways and utilities,
- **Preliminary Project Cost Estimates –** Provides a baseline for fiscal planning of the improvements, and
- **Final Report** – Describes required infrastructure improvements, layouts and costs.

For reference, the following figures and exhibits are contained in the appendix of this report:

- Appendix A includes a previously prepared Land Use Plan for The COR, along with roadway related graphics from The COR Design Framework plan and City's Comprehensive Plan.
- Appendix B includes figures referenced throughout this study, and
- Appendix C includes the traffic counts collected in The COR in 2017.

Figure 1 in Appendix B depicts the general location of the study area associated with this analysis.

II. PRELIMINARY DESIGN LAYOUTS, FIGURES AND EXHIBITS

To complete the analysis, existing conditions and proposed improvements were conceptually designed to allow for estimating construction costs. The figures contained in Appendix B form the basis for much of the analysis. The following list summarizes the figures contained in Appendix B:

- Figures 1-5: Study Area Layouts
- Figures 6-7: National Wetland Inventory & Mitigation Plan
- Figures 8-10: Public Utilities
- Figures 11-13: Site Grading & Drainage
- Figures 14-26: Roadway Geometrics
- Figures 27-29: Typical Sections

III. ON-GOING AND RELATED STUDIES AND IMPROVEMENTS

In addition to this analysis, there are several other studies being completed by the City at this time. Each of the studies has the potential to impact the developments within The COR area.

Regional Stormwater Retention Pond Analysis

The regional stromwater retention pond located within The COR is often referred to as The Waterfront, and is proposed to be constructed north of Ramsey Parkway, South of Bunker Lake Boulevard, West of Center Street and East of Zeolite Street. The City is currently analyzing potential construction methodologies, sequencing strategies, and timing of pond construction.

The general pond configuration is depicted on the exhibits for this report, and the land use is considered in the analysis.

Lake Ramsey Regional Park

There are several park related improvements in the development stage at this time. Park features around The Waterfront and along Center Street are in the schematic design phase at this time.

As the current sketch plans are further refined, adjacent public infrastructure improvements may be influenced by those designs.

Regional Infiltration Basin

Much of The COR is restricted relative to storm water infiltration. The City is currently designing and preparing to construct a regional infiltration basin in the southeast portion of The COR. The final configuration of the infiltration basin could impact roadway alignments in that portion of The COR.

Bunker Lake Boulevard

Bunker Lake Boulevard, from Ramsey Boulevard to Armstrong Boulevard, is under the jurisdiction of Anoka County. Exhibits depicting the future configuration are included in this report and are based off of information from the Anoka County 2030 Transportation Plan.

Lane geometry and vertical grades were considered as a part of this analysis, as they have the potential to impact other roadways within The COR.

See Figures 11, 24 and 29 in Appendix B.

Traffic Counts

In order to gain an understanding of traffic patterns within The COR, traffic counts were obtained at 17 strategic locations to obtain the Annual Average Daily Traffic (AADT). Appendix C includes a figure depicting the locations of the traffic counts and the 17 locations where the counts were obtained.

Traffic counting is anticipated to be repeated annually, to provide the ability to analyze growth associated with development in, and adjacent to, The COR.

Lot Size Analysis

While performed separately from this study, the results of this analysis are contained in Appendix B. The roadways, and associated right-of-ways, form a grid pattern in The COR. The lot areas resulting from the roadway layouts then dictate available developable land on a block-by-block basis. While these are preliminary land areas based on GIS information, the information can be used in initial discussions with potential developers. The block-by-block land areas, based on the roadway geometrics in this study, are presented on figure 5 in Appendix B.

IV. BASE DATA AND GUIDANCE

Prior to initiating the study, the City of Ramsey provided record drawings, plan drawings and GIS information for use in creating an existing infrastructure base map. Additionally, the following information and guidance was given by the City for completing the study.

- Follow the guidance outlined in The COR Design Framework plan, dated February 28, 2012, including Amendment #1, dated November 27, 2012.
- The City is not requesting a master-planning effort for this analysis. It is unknown where internal driveways, and related curb-cuts, will be needed.
- Providing service lines for sewer and water utilities should be considered along all future roadways. While the precise locations of the service lines is unknown, costs associated with the improvements should be considered in the report.
- Cost estimating should be completed for: roadways, trails/sidewalks, storm water management features, street lighting, trunk water mains and trunk sanitary sewer mains.
- The City has adopted Comprehensive Sanitary Sewer and Water Plans. These plans should be reviewed and consulted for this analysis.
- Regional storm water considerations should be included in the study.

Significant planning has been completed for The COR. Understanding the thoughts behind previous studies can help avoid omissions when considering future improvements.

The following documents have been incorporated into this study by reference:

- The COR Design Framework (February 28, 2012)
    - The COR Amendment #1 (November 27, 2012)
- The COR Parks + Public Places, Public Realm Framework + Cost Evaluation (December 2015)
- The COR Land Use Plan (current version being completed with 2040 Comp Plan preparation)
- City of Ramsey, Engineering Design Standards (June 30, 2017)
- City of Ramsey, Capital Improvement Program 2018-2027
- Ramsey Town Center, On-Site Wetland Mitigation and Replacement Plan (October 3, 2003)
- City of Ramsey, Well Head Protection Plan
- Comprehensive Sanitary Sewer Study (June, 2012)
    - Update (September, 2017)
- Comprehensive Water System Study (June, 2012)
    - Update (September, 2017)
- City of Ramsey 2030 Transportation Plan (2009)
- Anoka County 2030 Transportation Plan (December, 2008)

V. EXISTING IMPROVEMENTS

Much of the eastern portion of The COR is developed, while larger tracts in the western portion remain vacant. The focus of this study involves public improvements required to develop the currently vacant parcels. A review of the existing infrastructure adjacent to the undeveloped parcels was completed to provide a basis of future improvements required to complete the infrastructure network in The COR.

Street and Trail Improvements

Sunwood Drive NW

The improvements completed in 2004 provided a fully developed concrete roadway adjacent to the undeveloped area located in the northwest area of The COR. The boulevard was designed to allow for future widening and expansion as development and other improvements occur.

Center Street NW

Improvements to Center Street NW were completed in 2014 and included construction of a 36-foot wide bituminous street with a 10 foot concrete sidewalk, angled parking along the west side, and parallel parking stalls along the east side of the street.

The extension of the full Center Street typical section was completed to 100-feet north of 145th Avenue NW. The remaining roadway was then constructed as a temporary street section with bituminous curb and a bituminous trail for a distance of approximately 220-feet to Ramsey Parkway.

The alignment of Center Street between Ramsey Parkway and Bunker Lake Boulevard followed the original plat of Ramsey Town Center. This does not match the revised 2012 COR master plan alignment. See Figure 4 in Appendix B.

Zeolite Street NW

Zeolite Street was constructed as a temporary rural section with bituminous surface in 2005 from Sunwood Drive to Bunker Lake Boulevard.

Utilities

All past improvements completed within The COR were consistent with the City's Sanitary Sewer and Water System Comprehensive Plans. See Figures 8-10 in Appendix B for the water, sanitary, and storm utility layouts.

Sanitary Sewer Improvements

In 2004, a 30-inch trunk sanitary sewer was extended along Sunwood Drive to serve The COR. In 2005, 15-inch and 18-inch sanitary sewer was installed from Bunker Lake Boulevard to Sunwood Drive. This main was installed in Zeolite Street from Bunker Lake Boulevard to the currently platted Ramsey Parkway alignment (from the Ramsey Town Center layout). This main then follows the un-platted Yolite Street alignment to Sunwood Drive.

The segment of sanitary sewer main that follows the platted Ramsey Parkway does not follow the revised 2012 master plan alignment of Ramsey Parkway. This main may need to be realigned when this segment of Ramsey Parkway is constructed.

The existing sanitary sewer trunk mains have capacity to provide service to The COR.

Water Distribution Improvements

The elevated storage for the City of Ramsey is adequate to provide fire flow to The COR. The trunk distribution system was also found to be adequate to serve The COR.

Storm Water Management

Center Street serves as an east/west watershed boundary within The COR. Portions of The COR located east of Center Street are routed to a pond located near Ramsey Boulevard and the BNSF railroad tracks. Portions of The COR located west of Center Street (north of Sunwood Drive) are routed to a regional storm water retention pond located north of Ramsey Parkway, just west of Center Street. The outlet from the regional stormwater retention pond is proposed to consist of storm water piping from the pond to an existing storm sewer system located in Sunwood Drive at Yolite Street. Some exceptions to the general flow patterns are anticipated, and each development will need to be reviewed to determine the most logical storm water routing on a case-by-case basis.

A storm sewer system was previously constructed in Sunwood Drive and Center Street. The system directed roadway runoff to regional ponds located to the east and south of Center Street. Approximately 400 feet of Sunwood Drive located west of Center Street flows to the east. The remainder of Sunwood Drive adjacent to Center Street flows to the south in a pipe located at the Yolite Street alignment.

The majority of the drainage for the area west of Center Street currently flow north from Sunwood Drive to the vacant parcels, wetlands and depressions west of Center Street. The storm water then infiltrates, or flows overland to a currently plugged outlet pipe near the Sunwood Drive and Yolite Street intersection.

The Veterans Drive and Peridot Street extension area currently drains to the existing wet pond located at the south east corner of The COR. The existing wet pond and proposed infiltration basin are shown in Figures 6 and 7 in Appendix B.

VI. ROADWAY CLASSIFICATIONS AND DESIGN CONSIDERATIONS

This analysis includes examining the feasibility of constructing roadways and other supporting public infrastructure in The COR. Roadways included in the study are as follows:

- **Ramsey Parkway** - Center Street NW to Sunwood Drive NW,
- **Center Street NW** - from the existing developed section north to Bunker Lake Boulevard,
- **Xenolith Street NW** - Sunwood Drive to Ramsey Parkway,
- **Yolite Street NW** - Sunwood Drive to Ramsey Parkway,
- **Bunker Lake Boulevard –** Armstrong Boulevard to Ramsey Boulevard - full 4-lane divided roadway,
- **Veterans Drive NW** - Rhinestone Street to Ramsey Boulevard,
- **Peridot Street NW** - Sunwood Drive to Veterans Drive.

Figures 2 and 3 in Appendix B depict the roadway segments and geometrics included in this analysis.

Street Hierarchy

The COR Design Framework plan establishes a street hierarchy designation for roadways within The COR (see Appendix A). The 2030 Comprehensive Plan establishes road classifications to create a safe and efficient roadway network throughout the City (see Appendix A). The following table presents a summary of roadway classifications.

Street Segment	From	To	The COR Framework	2030 Comp Plan
Center Street	Sunwood Drive	Ramsey Parkway	Downtown	Local
Center Street	Ramsey Parkway	Bunker Lake Blvd	Parkway	Local
Ramsey Parkway	Armstrong Blvd	Ramsey Boulevard	Parkway	Local
Xenolith Street	Sunwood Drive	Ramsey Parkway	Downtown	Local
Zeolite Street	Sunwood Drive	Bunker Lake Blvd	Connector	Local
Bunker Lake Blvd	Armstrong Blvd	Ramsey Boulevard	Arterial	A Minor Reliever

Roadway segments not depicted in the COR Design Framework and designated as local streets:

- Yolite Street from Sunwood Drive to Ramsey Parkway,
- Peridot Street from Veterans Drive to Sunwood Drive, and
- Veterans Drive from Rhinestone Street to Ramsey Boulevard.

Design Assumptions

The COR Design Framework establishes roadway, boulevard, and walk widths in The COR. The table below shows the design assumptions that were used for this analysis. The notes following the table describe differences between The COR Design Framework and the design assumptions used.

Street Segment	Parking Lane(s)	F-F Width*	Center Median	Blvd Width	Walk Width	ROW Width
Center Street (South)	10' (1 Side)	44'	NA	NA	10' (1 Side)	60'
Center Street (North)	10'	24' Each	20'	6'	6'	60'-105'
Ramsey Parkway	10'	24' Each	20'	6'	6'	92'
Xenolith Street	10' (1 Side)	36'	NA	6'	6'	60'
Yolite Street	10' (1 Side)	36'	NA	6'	6'	60'
Zeolite Street	8'	40'	NA	6'	6'	80'
Veteran's Drive	8' (1 Side)	36'	NA	6'	6'	60'
Peridot Street	8' (1 Side)	36'	NA	6'	6'	60'
Bunker Lake Blvd	8' Shoulders	32' Each	12'	8'	10' N Side	120'

** Face of Curb to Face of Curb Width*

Design Notes:

Center Street – For the analysis, the existing Center Street configuration (south of Ramsey Parkway) was used for that section of roadway. Between Ramsey Parkway and Bunker Lake Boulevard, a parkway section was used per The COR Framework plan.

Xenolith Street – The COR Design Framework plan depicts the section as 50 ft face-to-face, 6 ft boulevards, and 10 ft walks.

Yolite Street – The COR Design Framework plan depicts the section as 36 ft face-to-face, 6 ft boulevards, and 10 ft walks. This is a local Street, bordering on Subdistricts 1 and 2a.

Zeolite Street - The COR Design Framework plan depicts this roadway as a Connector street. Within The COR, Rhinestone Street, Zeolite Street and Veterans Drive (between Rhinestone Street and Zeolite Street) are considered Connector Streets. Our analysis matches the previously constructed Rhinstone Street cross section, which consists of a 40 ft face-to-face street section with 6 ft boulevards, and 6 ft walks.

Veterans Drive - The COR Design Framework plan depicts this roadway as a Local street, located within Subdistrict 3, and requiring 6 ft boulevards and 10 ft walks.

Peridot Street - The COR Design Framework plan depicts this roadway as a Local street, located within Subdistrict 3, and requiring 6 ft boulevards and 10 ft walks.

Bunker Lake Boulevard – The Anoka County 2030 Comprehensive plan identifies this roadway as a 4-lane, divided highway.

VII. ADDITIONAL PUBLIC INFRASTRUCTURE ANALYSIS

As a portion of this analysis, we reviewed the City Comprehensive Plans for sanitary sewer and water main needs. The following is a summary of results for the various analyses and reviews.

Sanitary Sewer

The segment of trunk sanitary sewer main following the currently platted Ramsey Parkway does not follow the revised 2012 master plan alignment. This main may need to be realigned when this segment of Ramsey Parkway is constructed.

An 8-inch gravity sanitary sewer main will be adequate to convey flows from the area. For this analysis, we included an allowance for 8-inch service lines to be extended to properties along the corridors.

Water Main

Ramsey Parkway includes a 12-inch watermain, which completes an east-west trunk system through The COR. All existing streets include provisions to extend 8-inch watermain into the study area. Future roadway construction (other than Ramsey Parkway) should include 8-inch watermain to complete looping in the study area. In the case that a high water user plans to develop within the project area, additional flow analysis should be performed to verify they will have adequate flow and pressure for their individual needs.

Figure 8 in Appendix B depicts watermain and Figure 9 depicts the sanitary sewer improvements within the study area.

Storm Water Management

Storm water management concepts were developed to maintain existing drainage patterns and preserve the conveyance and flood storage capacity of the existing site.

Storm water runoff west of Center Street is generally planned to flow north from Sunwood Drive and to a large future regional pond proposed on the north side of Ramsey Parkway. The outlet for this regional pond will most likely be extended along the future Yolite Street, where an existing 30-inch arch pipe has been extended into the study area from Sunwood Drive. The upstream watershed associated with the regional pond is depicted on Figure 13 in Appendix B.

The existing hydraulic model was reviewed to allow for the analysis of storm water within The COR area. Preliminary storm water management conditions and requirements were then developed to determine the elevations required for building pads in the area.

The sub-watersheds were modeled using future land use conditions to generally size the regional storm water basin. The basin was sized to ensure proposed discharge rates were equal to existing flow rates. The pond was also reviewed with respect to potential storm sewer depths and potential aesthetic park function.

The pond footprint used in the analysis is as shown in The COR Parks + Public Places, December 2015. The normal water level was determined by using the elevation of the outlet pipe located near Sunwood Drive. Additional design parameters and regional storm water management planning should be further refined as the areas begin to develop. Figures 10-13 show the general shape and location of the pond used in the analysis.

No cost estimating was performed related to construction of the pond for this analysis. Along with the final pond configuration, proposed construction methodologies, including the requirement for pretreatment of all stormwater (public and private) prior to discharge to the regional pond, are currently being considered by the City.

The COR is located within a Drinking Water Supply Management Area. Because of this, the required infiltration (1 inch over all new impervious area) is provided by the City in a regional infiltration basin. Developers then pay a share of the cost for creation of the regional facility.

An analysis was performed to determine the benefits and costs associated with construction of a bioretention basin in the median area of Ramsey Parkway. The benefits associated with a bio-retention basin include: water quality improvements, potential traffic calming and creation of a landscaping feature within this area of The COR. The City has decided to proceed with construction of the biofiltration basin in the median from Center Street to Xenolith Street, and will likely continue the construction to Zeolite Street.

The alignment of Veterans Drive is proposed to provide a 5-acre infiltration area on the south side of Veterans Drive to follow the 2003 Wetland Mitigation Plan and allow regional infiltration of the storm water. No sizing or modeling was performed on this infiltration basin as part of this report. Additional analysis should be performed prior to constructing Veterans Drive.

Site Grading

Existing hydraulic modeling was reviewed to analyze storm water conditions for future development scenarios. The regional stormwater retention pond elevation will be used to determine the minimum elevations required for building pads in the area.

The results of the modeling indicate the regional stormwater retention pond could reach a high water elevation of 866.5 during a 100-year storm event. This should be considered a preliminary result at this time, as the actual pond size and shape could be revised based upon other studies occurring at the City.

The Lower Rum River Watershed Management Organization requires the lowest floor elevation be a minimum of 2-feet above the 100-year high water level. Based on that requirement, the minimum building elevation should be 868.5.

Figure 12 depicts the average existing lot elevations, the proposed minimum lot elevations required, and an approximate fill volume required to raise each of the sites to the minimum elevation. Each site requires an average of approximately 3-feet of fill to meet minimum elevations required.

A new City park, located directly adjacent to Center Street NW, is in the planning stages at the City. The costs associated with importing fill for this parcel have been included in the alternate cost analysis section of this report.

Street Lighting

Street lighting will be in conformance with The COR Design Framework's Master Streetlight Plan. The locations and types of fixtures are depicted on the roadway geometrics Figures 14-26 in Appendix B of this report.

The costs included for street lighting were derived from recent projects within the City of Ramsey and are considered to be reasonable costs associated with providing street and pedestrian lighting along the corridors. Costs include conduit, wiring and the actual light fixtures to be installed. The density of the lighting fixtures is similar to the level provided along Riverdale Drive, east of Armstrong Boulevard. The costs provided are considered conservative and may be reduced depending upon the types of developments proposed and the density of lighting required.

Trails/Sidewalks

Trails were previously constructed along the center of the Ramsey Parkway median east of Center Street. A bio-retention basin is proposed in the Ramsey Parkway median west of Center Street. 6-foot concrete walk is proposed on the north and south side of Ramsey Parkway to extend the pedestrian facilities to the west.

A 10-foot concrete sidewalk is proposed along the west side of Center Street. All other roadways are proposed to include a 6-foot concrete sidewalk on either side of the road segment. Figures 14-29 in Appendix B show these layouts and typical sections.

Landscaping

The base project includes a very utilitarian approach to landscaping for the area. Bituminous trails, trees and lighting were included, but other features, such shrubs, decorative features and monuments are not included in the estimated project costs. Developers will be responsible to construct boulevard landscaping

improvements consistent with the City's zoning code. The exception to this is Sunwood Drive NW, where the boulevard costs include continuing the landscaping along the north side of Sunwood Drive as it exists east of Sapphire Street.

The Ramsey Parkway median is being developed as a filtration median, with plantings typical for bioretention basins.

Right-of-Way Requirements

The COR was originally platted as Ramsey Town Center in 2003, with roadway rights-of-way (ROW) being established over a portion of the area. Future improvements within The COR will be primarily development driven, and ROW secured through the platting process. Understanding and documenting potential ROW needs will allow the City to plan in advance for acquisitions. Additionally, currently platted ROW can be vacated during the development process, allowing for larger areas of development.

Figure 4 shows the existing ROW that does not follow the current master plan roadway alignments, and also shows new ROW required for future public improvements.

The ROW depicted on the exhibits takes into account the width required for streets, boulevards, sidewalks, etc. as depicted in The COR Design Framework plan.

National Wetland Inventory

The National Wetland Inventory (NWI) shows multiple wetland areas within the study area. These areas are shown in Figure 6 in Appendix B.

The City has planned in advance for wetland impacts that may occur within a portion of The COR. In 2003 the City delineated these wetlands and completed a wetland mitigation strategy for replacement of impacted wetlands shown in Figure 7 in Appendix B.

The mitigation plan was titled "On-Site Wetland Mitigation and Replacement Plan" and provided for the construction of four replacement wetlands. We anticipate the City will provide that documentation to developers as they begin to consider development options.

Anoka County Regional Trail

The Central Anoka County Regional Trail follows Bunker Lake Boulevard, and currently terminates at Ramsey Boulevard. The trail had been proposed to follow Ramsey Boulevard to the south, crossing TH 10 and connecting to Anoka County's Mississippi West Regional Park. A new alignment is now being proposed, which ultimately takes advantage of the proposed Mississippi Skyway for crossing TH 10. The new alignment follows Bunker Lake Boulevard further to the west, before turning south at Center Street. The trail then follows Center Street through much of the COR, connecting to the transit station on the north side of TH 10.

Jurisdictional Authority/Approvals/Permits

As the project moves from the planning stages to design and construction, permits will be required from various agencies. Understanding and planning for requirements associated with obtaining permits and approvals at this time will be critical to the ultimate success of the process. The following agencies will be permitting entities for considered improvements:

- Minnesota Department of Transportation (MnDOT) State Aid: Sunwood Drive NW is a State Aid route,
    - Zeolite Street is anticipated to become a State Aid street.
- Minnesota Pollution Control Agency (MPCA): NPDES Storm Water Permit,
- Metropolitan Council Environmental Services (MCES): Sanitary Sewer Extension Review,
- Minnesota Pollution Control Agency (MPCA): Sanitary Sewer Extension Permit,
- Minnesota Department of Health (MDH): Watermain Extension,
- Department of Natural Resources (DNR): Dewatering,
- Lower Rum River Watershed Management Organization: Storm Water.

Timing of Improvements

While the improvements discussed and depicted in the figures will be required to support the area, timing of the improvements will most likely be dependent upon each proposed development.

As individual developments are considered, the public infrastructure will need to be reviewed and determinations made as to its adequacy to serve the properties. As upgrades, extensions and improvements are determined to be necessary, funding strategies will need to be developed which may include full or partial assessments to benefitting properties.

VIII. DESIGN SUMMARY

While there is a general understanding of the total public improvements required to serve the area, sequencing of the improvements will allow for planning and fiscal responsibility. Our understanding of the most likely individual segments to be developed are shown in Figure 2 in Appendix B, and include:

- **Ramsey Parkway - Segments A-1, A-2, A-3 and A-4: (Figures 14,15,16 & 27)**
    - Extension of Ramsey Parkway from Center Street NW to Sunwood Drive Roundabout.
        - Two 24-foot one way roadways
            - 6-foot concrete sidewalks on the north and south sides
        - Construct bioretension basin in median
            - Line basin to prevent infiltration
    - Extension of sanitary sewer, storm sewer and watermain.
        - Reroute existing 18-inch sanitary sewer to new alignment if required with A-3.
- **Center Street - Segment B-1 and B-2: (Figures 17,18 & 27)**
    - Extension of Center Street NW to Bunker Lake Boulevard.
        - Extend the existing typical section from the south to Ramsey Parkway.
        - Widen Center Street to a Parkway from Ramsey Parkway to Bunker Lake Boulevard
            - Alternate: match into existing roadway at 146th Avenue.
    - Extension of storm sewer as needed for roadway drainage.
- **Xenolith Street - Segments C-1 and C-2: (Figures 19 & 28)**
    - Construction of Xenolith Street NW from Sunwood Drive to Ramsey Parkway.
        - 36-foot roadway with 6-foot sidewalks on both sides.
    - Extension of sanitary sewer, storm sewer and watermain.
- **Sunwood Drive Boulevard - Segments D-1, D-2, D-3 and D-4: (Figures 20 & 28)**
    - Construction of sidewalk and plantings along the north side of Sunwood Drive.

        - Extend the existing boulevard layout used east of Sapphire Street NW
    - Extension of irrigation for planting areas.
- **Yolite Street - Segment E: (Figures 21 & 28)**
    - Construction of Yolite Street NW from Sunwood Drive to Ramsey Parkway.
        - 36-foot roadway with 6-foot sidewalks on both sides
    - Extension of watermain.
    - Extension of storm sewer for regional pond outlet.
- **Zeolite Street - Segment F-1 and F-2: (Figures 22, 23 & 28)**
    - Construction of Zeolite Street NW from Sunwood Drive to Bunker Lake Boulevard.
        - 40-foot roadway with 6-foot sidewalks on both sides.
    - Adjust watermain to proposed grades
    - Extension of storm sewer for roadway drainage
    - Extension of sanitary sewer for service to adjacent parcels
- **Bunker Lake Boulevard - Segment G: (Figures 24 & 29)**
    - Construction of Bunker Lake Boulevard from Armstrong Boulevard to Ramsey Boulevard.
        - 4-lane divided roadway with concrete median as depicted in the Anoka County 2030 Transportation Plan
    - Anoka County State Aid Highway 116
- **Veterans Drive - Segment H: (Figures 25 & 28)**
    - Construction of Veterans Drive from Rhinestone Street to Ramsey Boulevard.
        - 36-foot roadway with 6-foot sidewalks on both sides.
    - Construct Right-in/Right-out intersection on Ramsey Boulevard.
        - Subject to Anoka County approval.
    - Extension of watermain.
    - Extension of storm sewer for roadway drainage.
- **Peridot Street - Segment I: (Figures 26 & 28)**
    - Construction of Peridot Street NW from Sunwood Drive to Veterans Drive.
        - 36-foot roadway with 6-foot sidewalks on both sides.
    - Extension of sanitary sewer south from Sunwood Drive.
    - Extension of watermain.
    - Extension of storm sewer for roadway drainage.

Estimated project costs for each segment were developed to allow for the City to plan for the sequenced implementation of the improvements and are summarized later in this report.

IX. COST ANALYSIS

Costs estimates were developed for each improvement type. These estimates are based on past bid pricing and similar projects completed previously. The segments are depicted on Figure 2 in Appendix B. All costs presented in the following pages are 2018 costs.

	Ramsey Parkway			
Improvement	**Segment A-1**	**Segment A-2**	**Segment A-3**	**Segment A-4**
Roadway	$ 460,000	$ 317,000	$ 538,000	$ 470,000
Trails/Sidewalks	$ 52,000	$ 41,000	$ 57,000	$ 52,000
Street Lighting	$ 28,000	$ 20,000	$ 32,000	$ 22,000
Storm Sewer	$ 115,000	$ 26,000	$ 98,000	$ 39,000
Trunk Storm Sewer	$ 52,000	$ 0	$ 0	$ 0
Watermain	$ 128,000	$ 96,000	$ 134,000	$ 104,000
Sanitary Sewer	$ 74,000	$ 36,000	$ 64,000	$ 57,000
Total Costs	$ 909,000	$ 536,000	$ 923,000	$ 636,000

	Center Street		Xenolith Street	
Improvement	**Segment B-1**	**Segment B-2**	**Segment C-1**	**Segment C-2**
Roadway	$ 160,000	$ 542,000	$ 184,000	$ 72,000
Trails/Sidewalks	$ 35,000	$ 147,000	$ 75,000	$ 30,000
Street Lighting	$ 13,000	$ 32,000	$ 17,000	$ 7,000
Storm Sewer	$ 35,000	$ 89,000	$ 43,000	$ 17,000
Watermain	$ 57,000	$ 0	$ 98,000	$ 38,000
Sanitary Sewer	$ 0	$ 0	$ 77,000	$ 31,000
Total Costs	$ 300,000	$ 810,000	$ 494,000	$ 195,000

	Yolite Street	Zeolite Street	
Improvement	**Segment E**	**Segment F-1**	**Segment F-2**
Roadway	$ 240,000	$ 284,000	$ 233,000
Trails/Sidewalks	$ 98,000	$ 113,000	$ 93,000
Street Lighting	$ 22,000	$ 25,000	$ 21,000
Storm Sewer	$ 68,000	$ 38,000	$ 31,000
Trunk Storm Sewer	$ 65,000	$ 0	$ 27,000
Watermain	$ 127,000	$ 102,000	$ 83,000
Sanitary Sewer	$ 27,000	$ 41,000	$ 0
Total Costs	$ 647,000	$ 603,000	$ 488,000

	Bunker Lake Boulevard	Veterans Drive	Peridot Street
Improvement	**Segment G***	**Segment H**	**Segment I**
Roadway	$ 3,650,000	$ 483,000	$ 255,000
Trails/Sidewalks	$ -	$ 224,000	$ 118,000
Street Lighting	$ -	$ 50,000	$ 26,000
Storm Sewer	$ 530,000	$ 62,000	$ 21,000
Watermain	$ 340,000	$ 149,000	$ 87,000
Sanitary Sewer	$ 0	$ 0	$ 53,000
Total Costs	$ 4,520,000	$ 968,000	$ 560,000

*Segment G prices from the City of Ramsey Capital Improvement Program 2018-2027

Segments D-1, D-2, D-3 and D-4 include trails, sidewalks and miscellaneous street scape improvements along Sunwood Drive. The Segments, and associated costs, are presented in the following table.

Segment	Location	Estimated Cost
D-1	Center Street to Sapphire Street	$ 113,000
D-2	Xenolith Street to Center Street	$ 176,000
D-3	Yolite Street to Xenolith Street	$ 198,000
D-4	Zeolite Street to Yolite Street	$ 204,000
Total		$ 691,000

The above costs are considered project costs and include 30% contingencies and project development costs. Project development costs include administrative, engineering, and fiscal related costs.

Summary of Costs

The total for the roadway, trail, sidewalk, street lighting, lateral sanitary sewer, storm sewer and water main improvements is estimated at $12,445,000.

The total trunk related improvements for sanitary sewer and storm sewer is estimated at $285,000.

The total landscaping improvements along Sunwood Drive from Zeolite Street to Sapphire Lane is estimated at $691,000.

General Cost Estimating Assumptions

- Dewatering will be required for sewer and water installation.
- Fill will be required for all roadways.
- Borrow material cost does not assume use of regional pond excavation.
- Aggregate base cost does not assume use of City stockpile.
- Costs associated with creating the bioretention basin are included in the roadway portions of Ramsey Parkway (Segments A-1, A-2, A-3, and A-4).

Segment A-1 Assumptions

- Removal of existing 42-inch storm sewer included in trunk storm sewer cost.
- Sanitary sewer is assumed to extend to midpoint of last parcels serviced by sewer line.
- Roadway costs include tapering the roadway from a 47 ft wide median to a 20 ft wide median.
- Includes an allotment for (2) 6 ft wide sidewalks along the roadway boulevard areas.
- Costs for the median include restoration and plantings.

Segment A-3 Assumptions

- The trunk 18-inch sanitary sewer was assumed to remain in place, outside the future Ramsey Parkway alignment.
    - If the trunk sanitary sewer main needs to be relocated to provide buildable area in the northwest quadrant of the Ramsey Parkway and Zeolite Street intersection, the relocation is estimated to cost $141,000.
- 8-inch sanitary sewer is assumed to extend to midpoint of last parcels serviced by sewer line.

Segment B-2 Assumptions

- Realignment of Center Street as shown in the COR Framework Plan included in the project cost.
    - The cost for B-2 could be eliminated from the project if the existing roadway were to remain in place.

Segment E Assumptions

- 30-inch regional pond outlet pipe included in trunk storm sewer cost.
- Extension of sanitary sewer laterals to the right of way included in sanitary sewer cost.

Segments H & I Assumptions

- Realignment of Veterans Drive to create a 5-acre parcel to the south included in the project cost.
    - Should Veterans Drive be constructed in the existing road ROW alignment and Peridot Street extends further south, the additional project cost is estimated to be $259,000.

Additional Assumptions

- No costs associated with construction of individual storm water ponds are included, as it is anticipated the regional pond will address all storm water runoff requirements. The regional pond will be sized to address all impervious surfaces within the developable area including the public improvements and all individual site development within the study area west of Center Street.
- Park Fill is the estimated cost to grade the proposed City park parcel, fill the site to an elevation equal to the adjacent streets, place 4 inches of topsoil and seed and mulch the entire site. The estimated project cost to fill the site, topsoil, seed, and hydromulch is approximately $231,000.

X. COST ALLOCATION

The costs, or a portion of the costs, of the improvements are typically allocated back to adjacent properties through the use of assessments, fees and other methods. The costs are typically allocated in a way that is equitable to the properties benefitting from the improvements. Public improvements that will become City owned and maintained are typically constructed through a public process, while secondary improvements are constructed by the property owner. For our analysis, we assumed the following items would be constructed through the public process:

- Roadways, including storm water conveyance systems,
- Water System Facilities,
- Sanitary Sewer Facilities,
- Trails,
- Street Lighting, and
- City Parks

While the street lights will most likely be installed by a private utility and the trails could potentially be constructed by the property owner, we have included these items as public improvements.

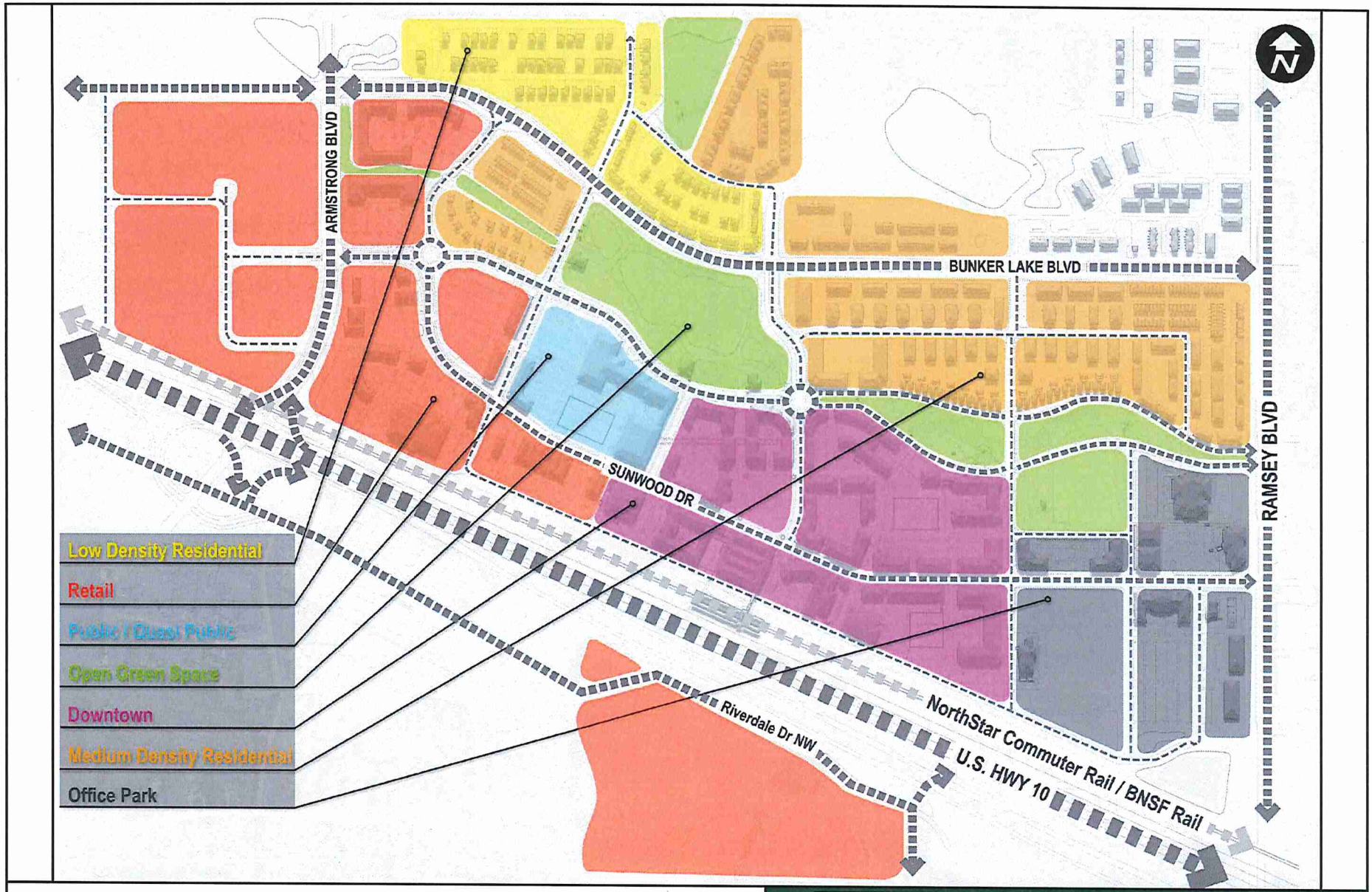
Other improvements were considered secondary and are typically the property owner's responsibility:

- Sanitary Sewer Service Extensions,
- Water Service Extensions,

- Natural Gas Lines to Buildings,
- Telephone Service to Buildings,
- Electric Service to Buildings,
- Site Grading,
- Site Landscaping,
- Site Storm Water Conveyance, and Easement Dedication.

These types of improvements are typically inspected by the City for conformity with applicable codes and standards, but are constructed by the property owner.

APPENDIX A: LAND USE EXHIBIT



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CENTER STREET AREA ANALYSIS
CITY OF RAMSEY, MINNESOTA
THE COR LAND USE
JANUARY 2018

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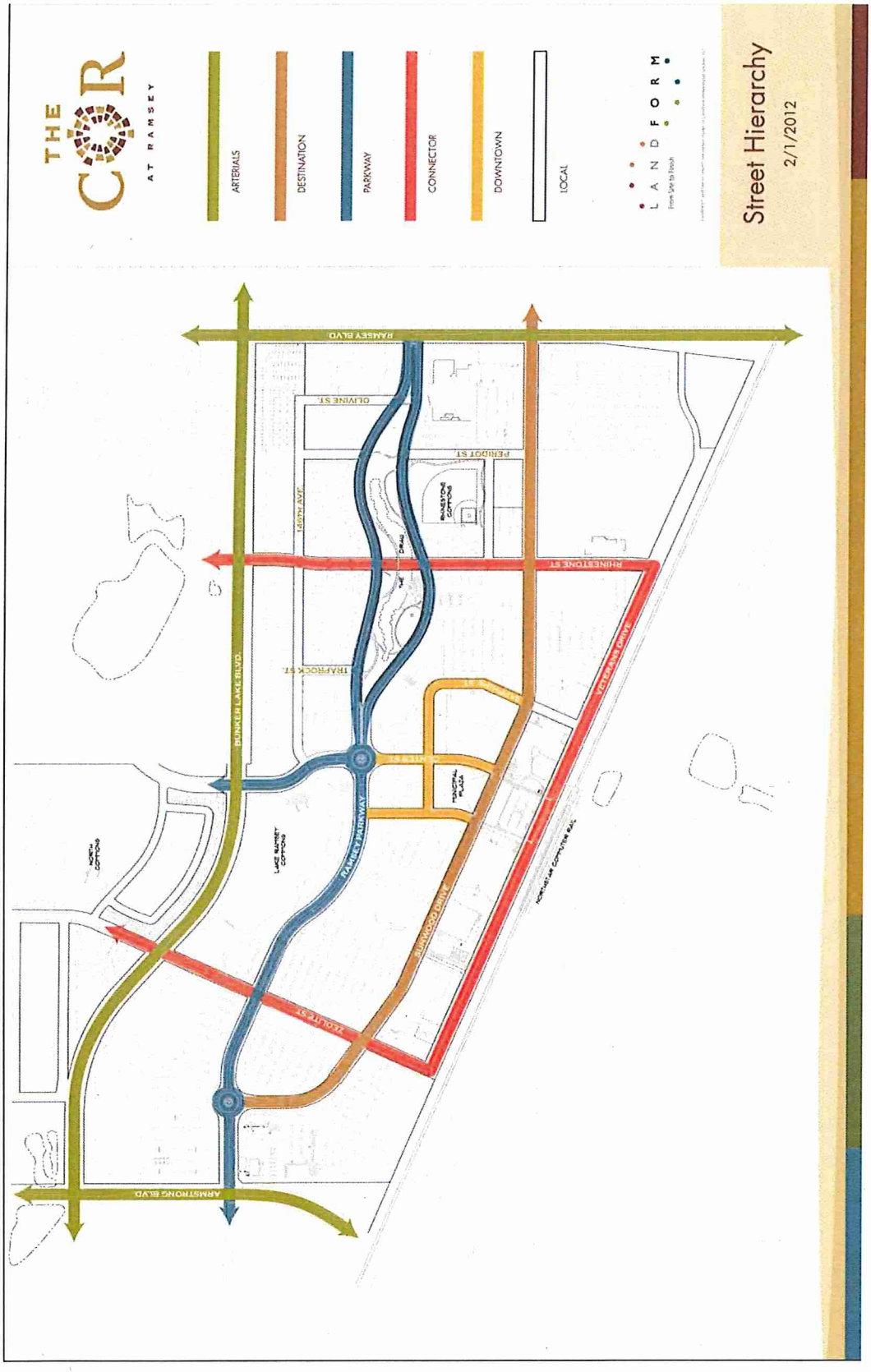


Figure 1: Street Hierarchy Map

Figure 6-1 Existing Roadway Jurisdiction, Classification and Volumes

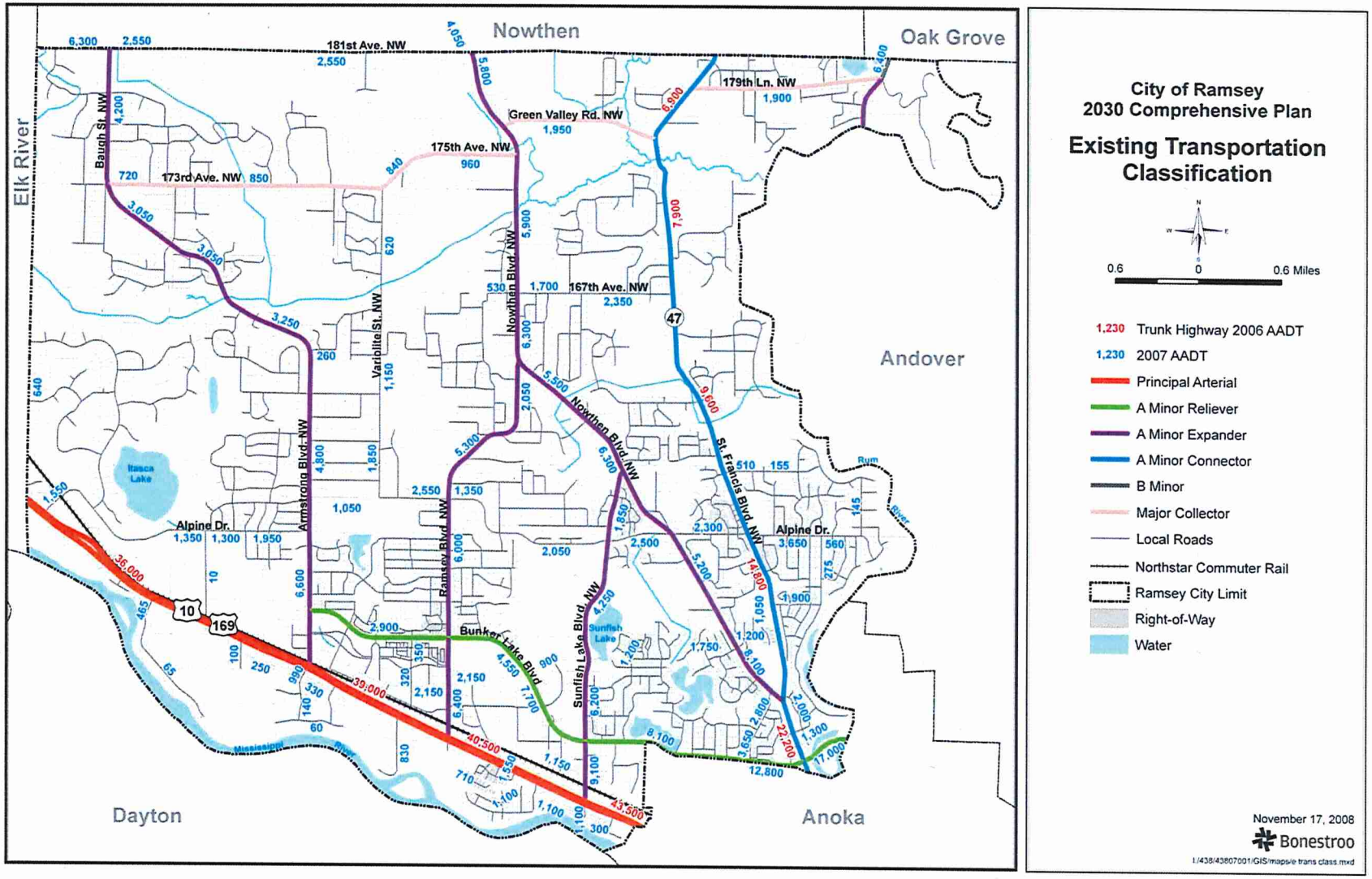
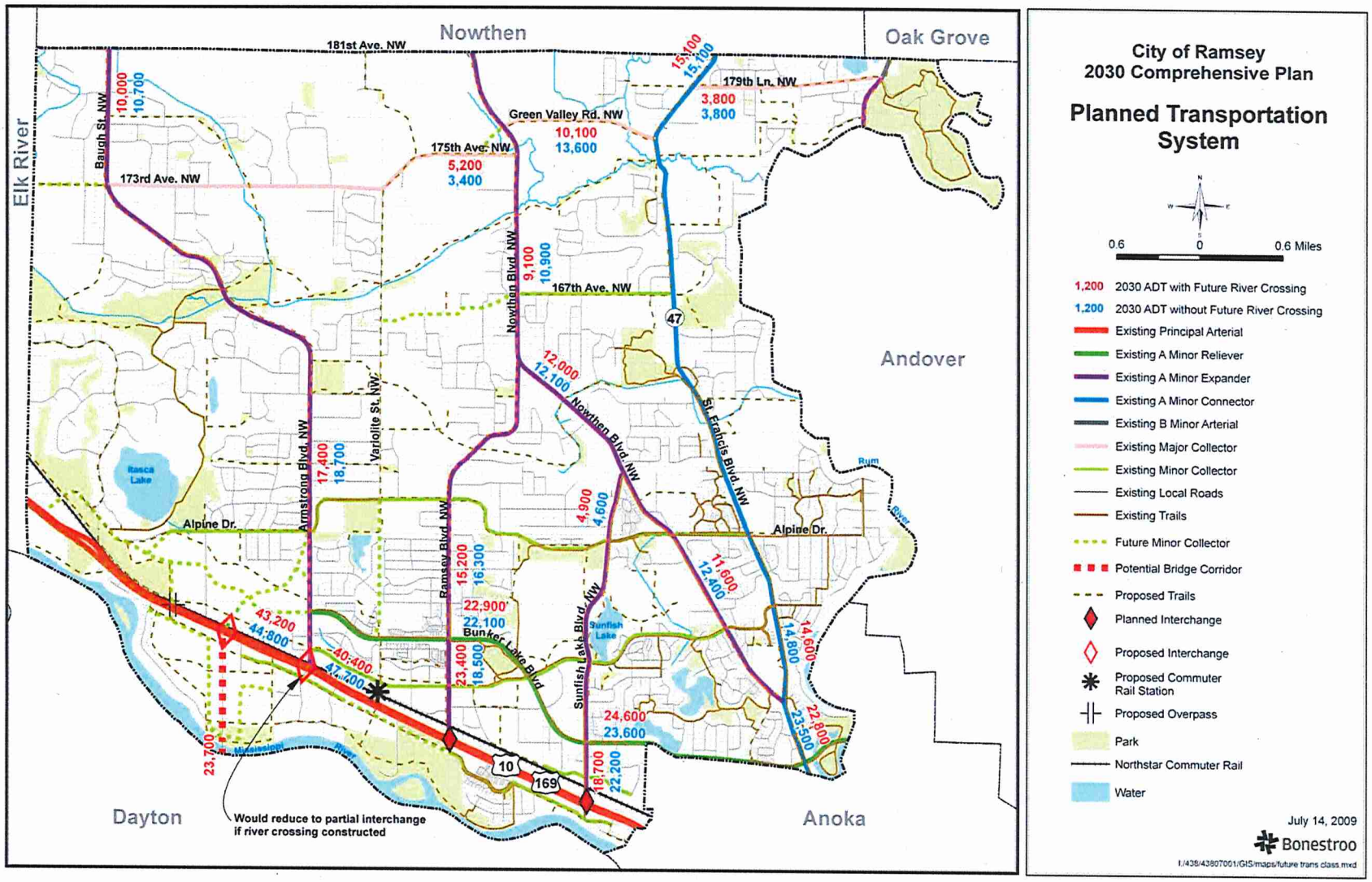
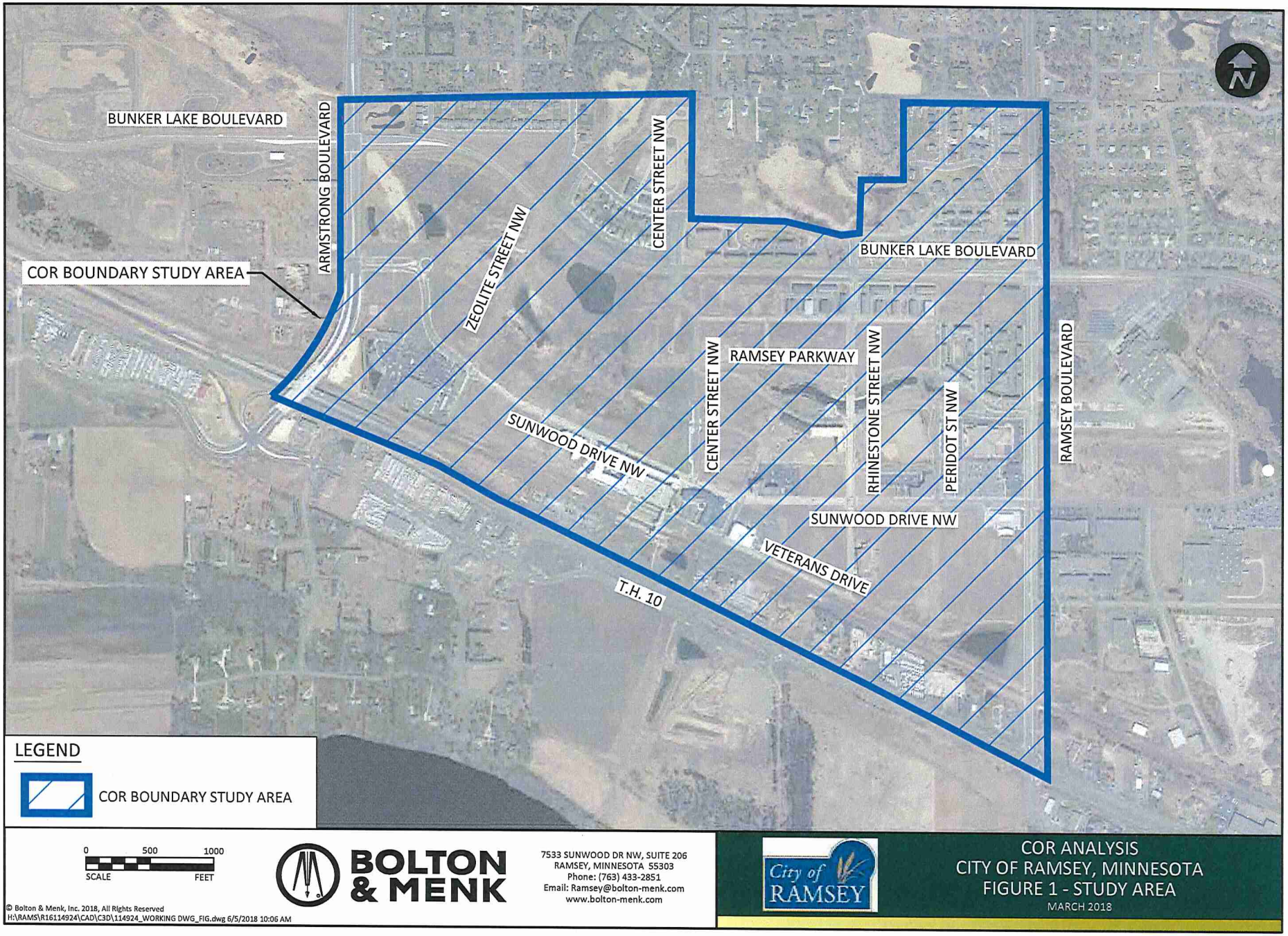


Figure 6-2 Planned Transportation System



APPENDIX B: FIGURES



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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 1 - STUDY AREA

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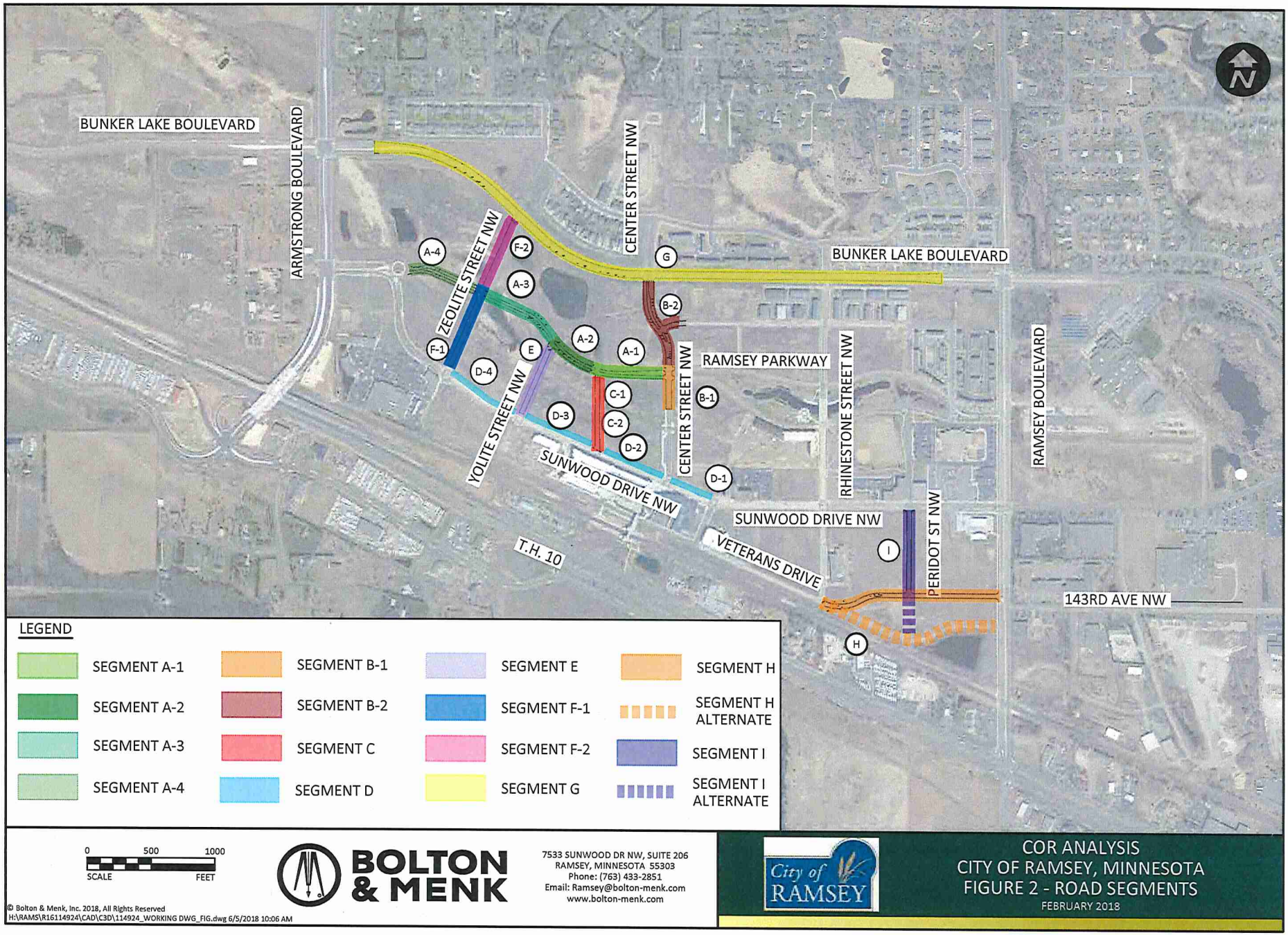

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COR ANALYSIS
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FIGURE 2 - ROAD SEGMENTS
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COR ANALYSIS
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FIGURE 3 - GEOMETRICS

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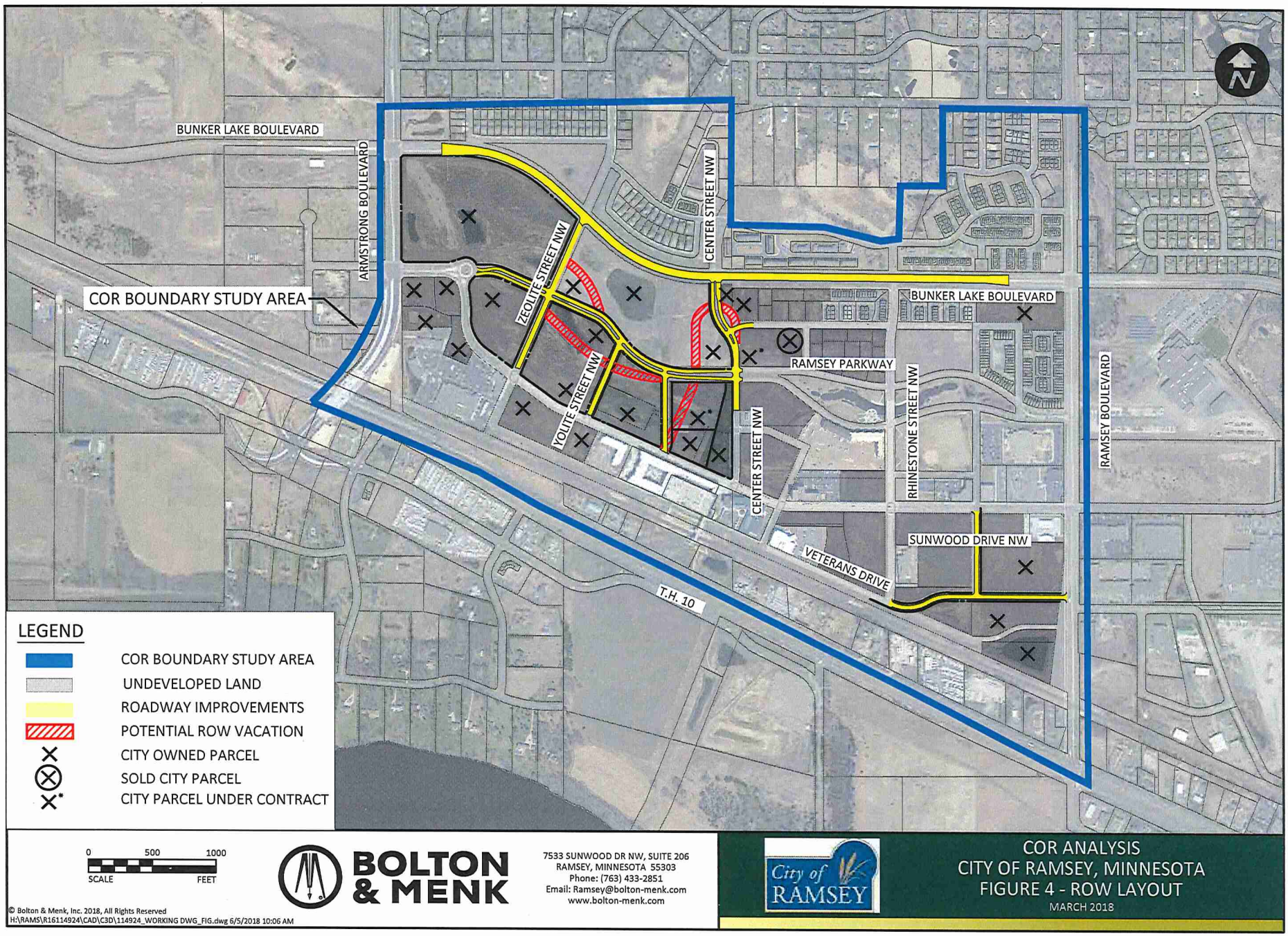

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FIGURE 4 - ROW LAYOUT
MARCH 2018

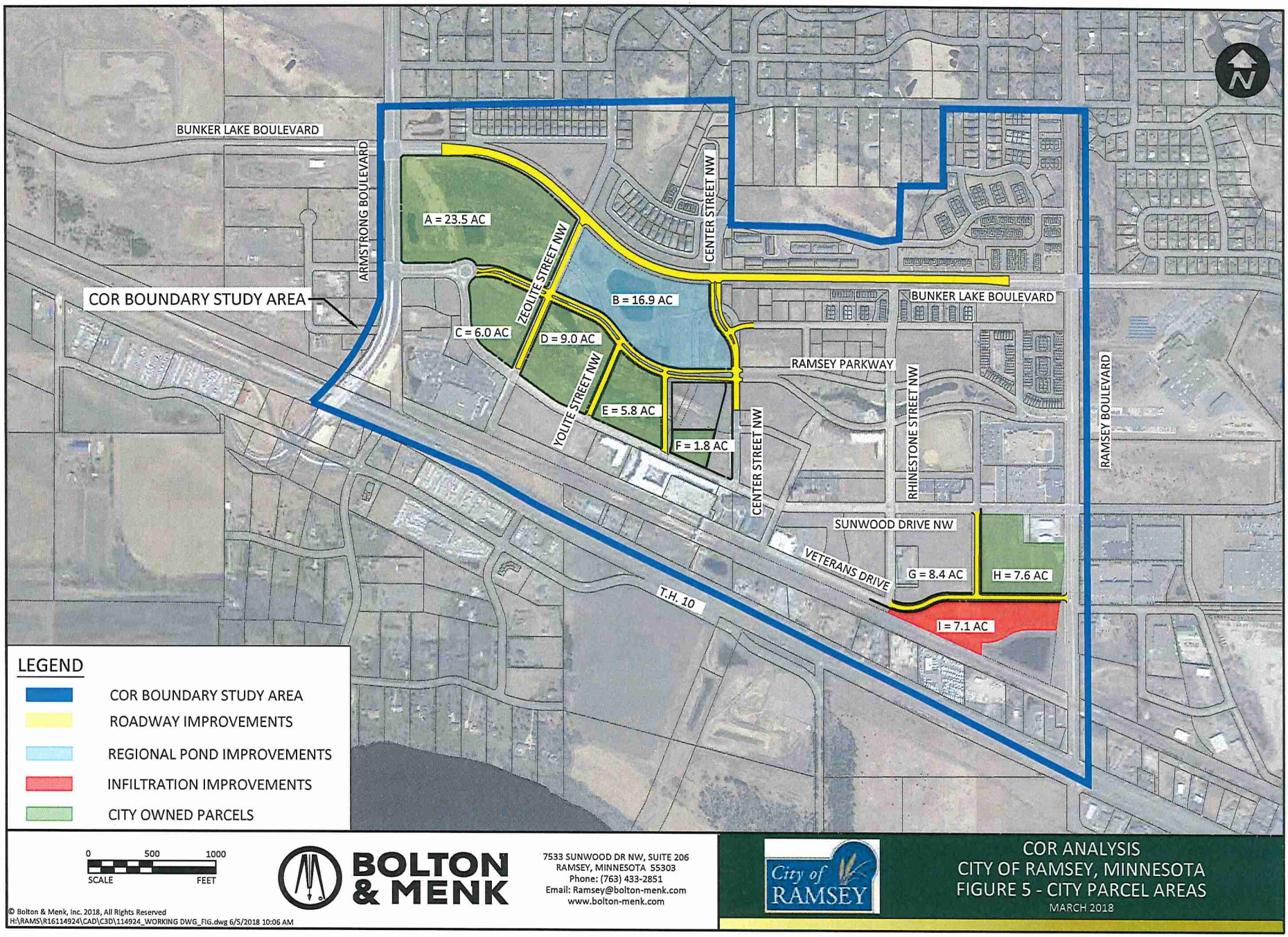

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FIGURE 5 - CITY PARCEL AREAS
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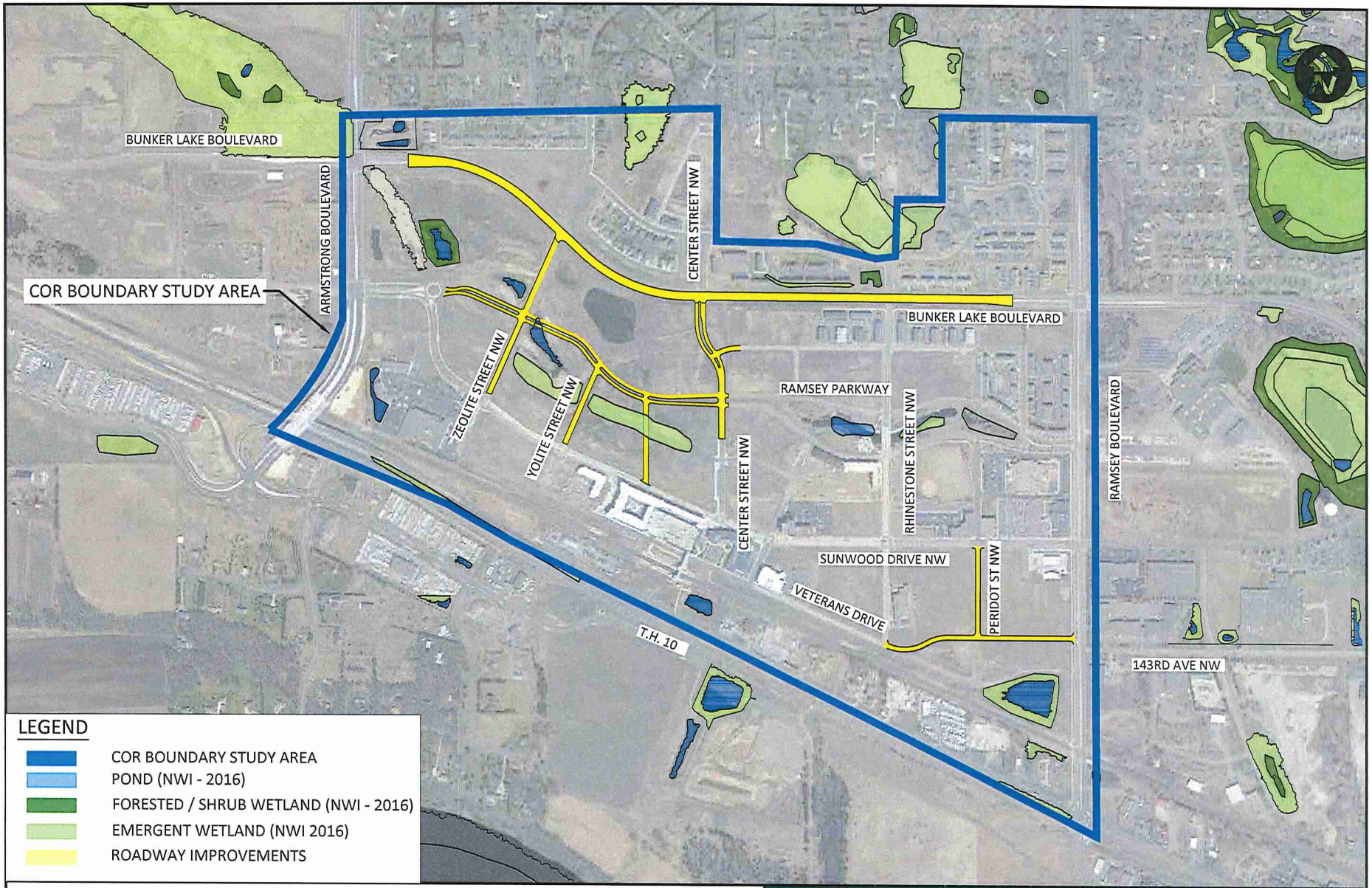

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FIGURE 6 - NATIONAL WETLAND INVENTORY
MARCH 2018

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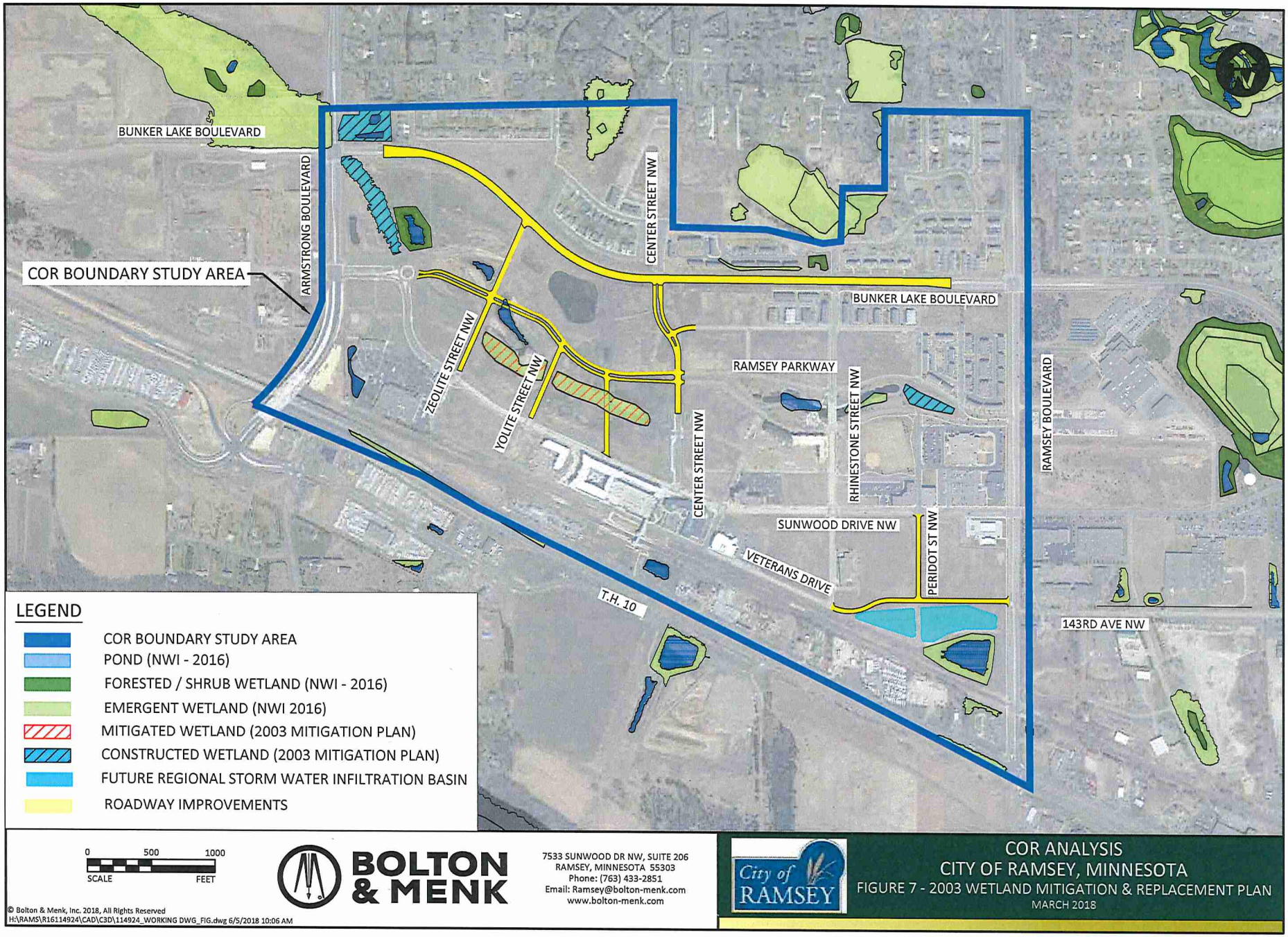

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FIGURE 7 - 2003 WETLAND MITIGATION & REPLACEMENT PLAN
MARCH 2018

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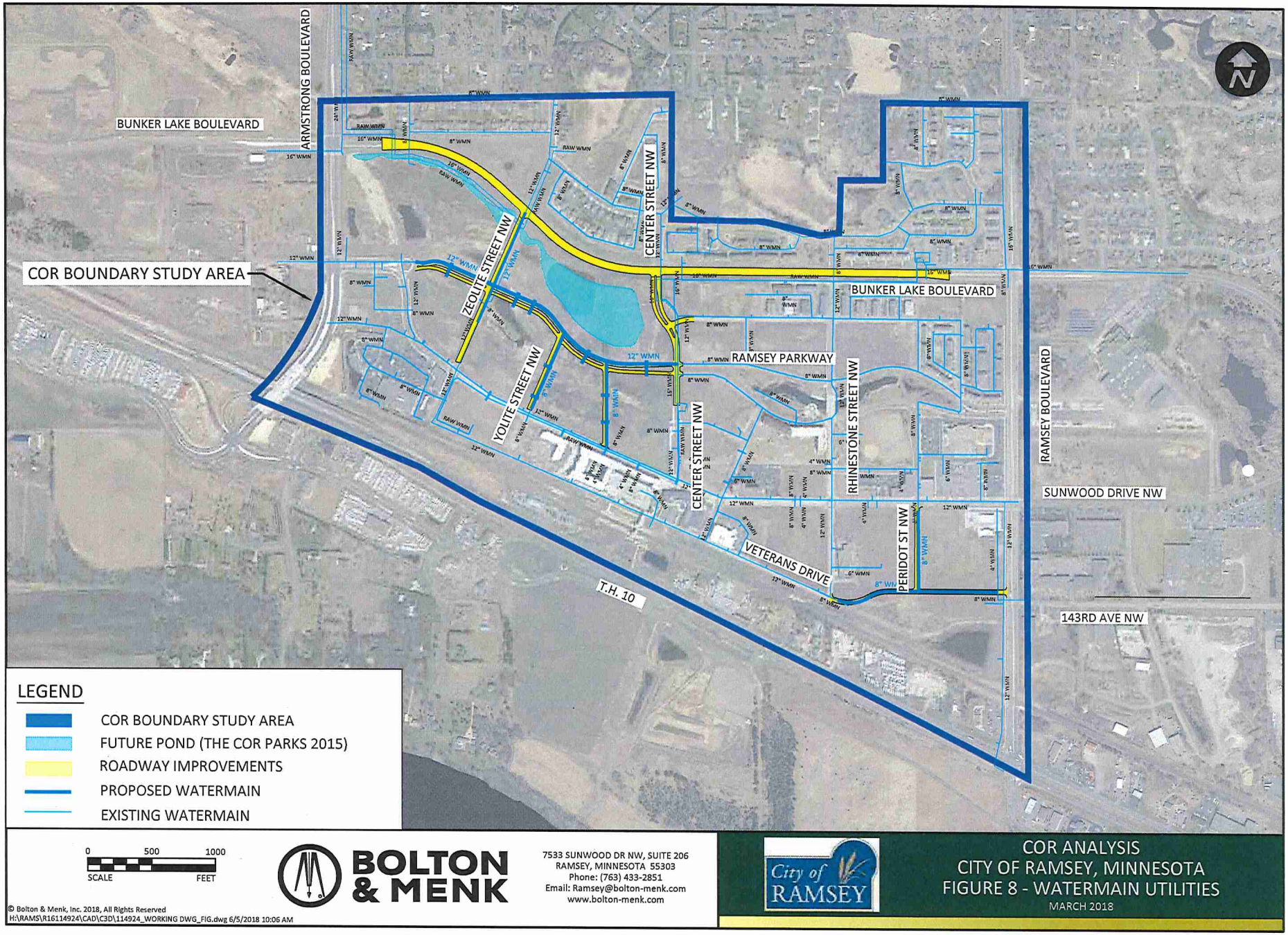

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FIGURE 8 - WATERMAIN UTILITIES
MARCH 2018

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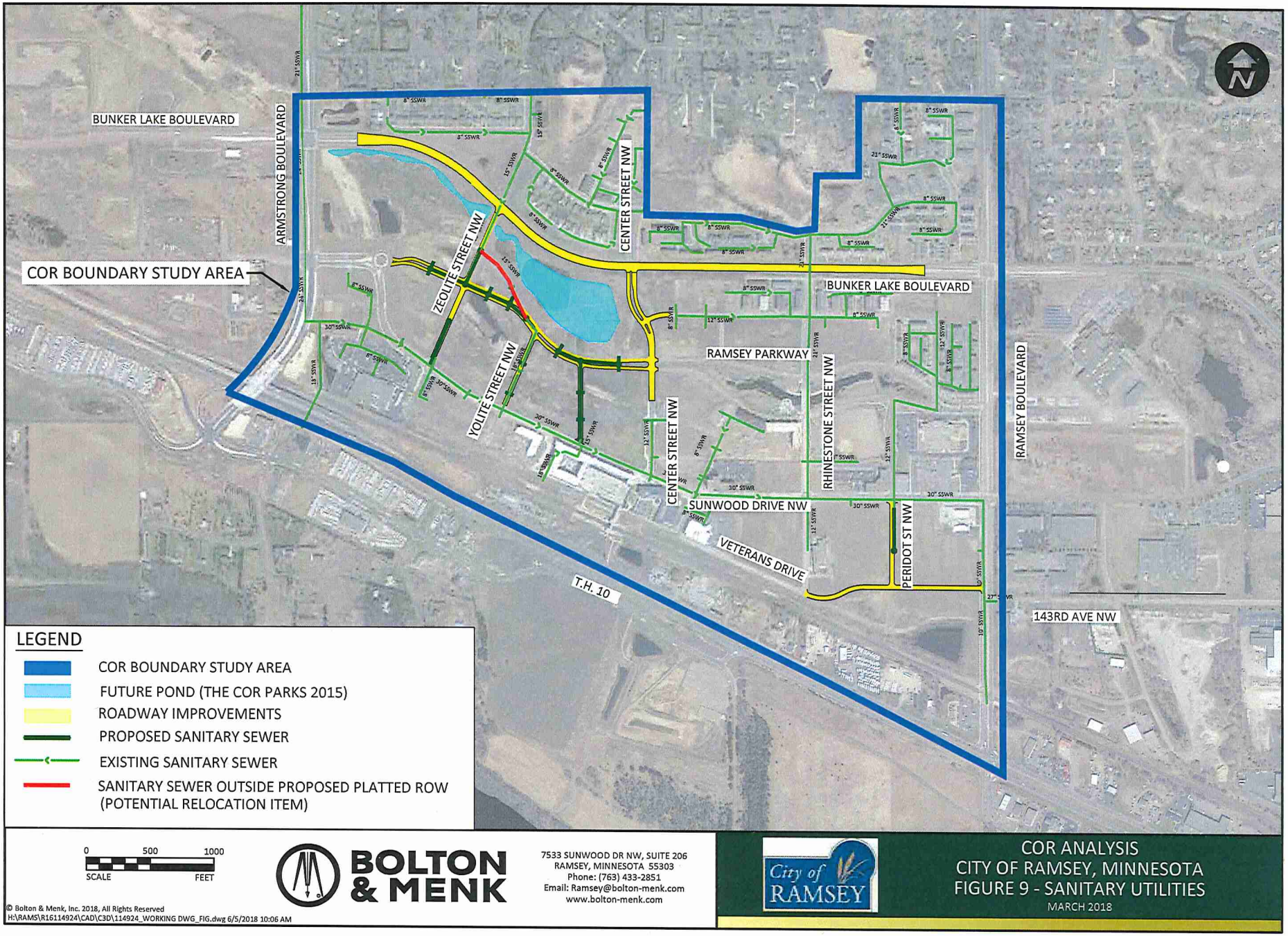

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FIGURE 9 - SANITARY UTILITIES
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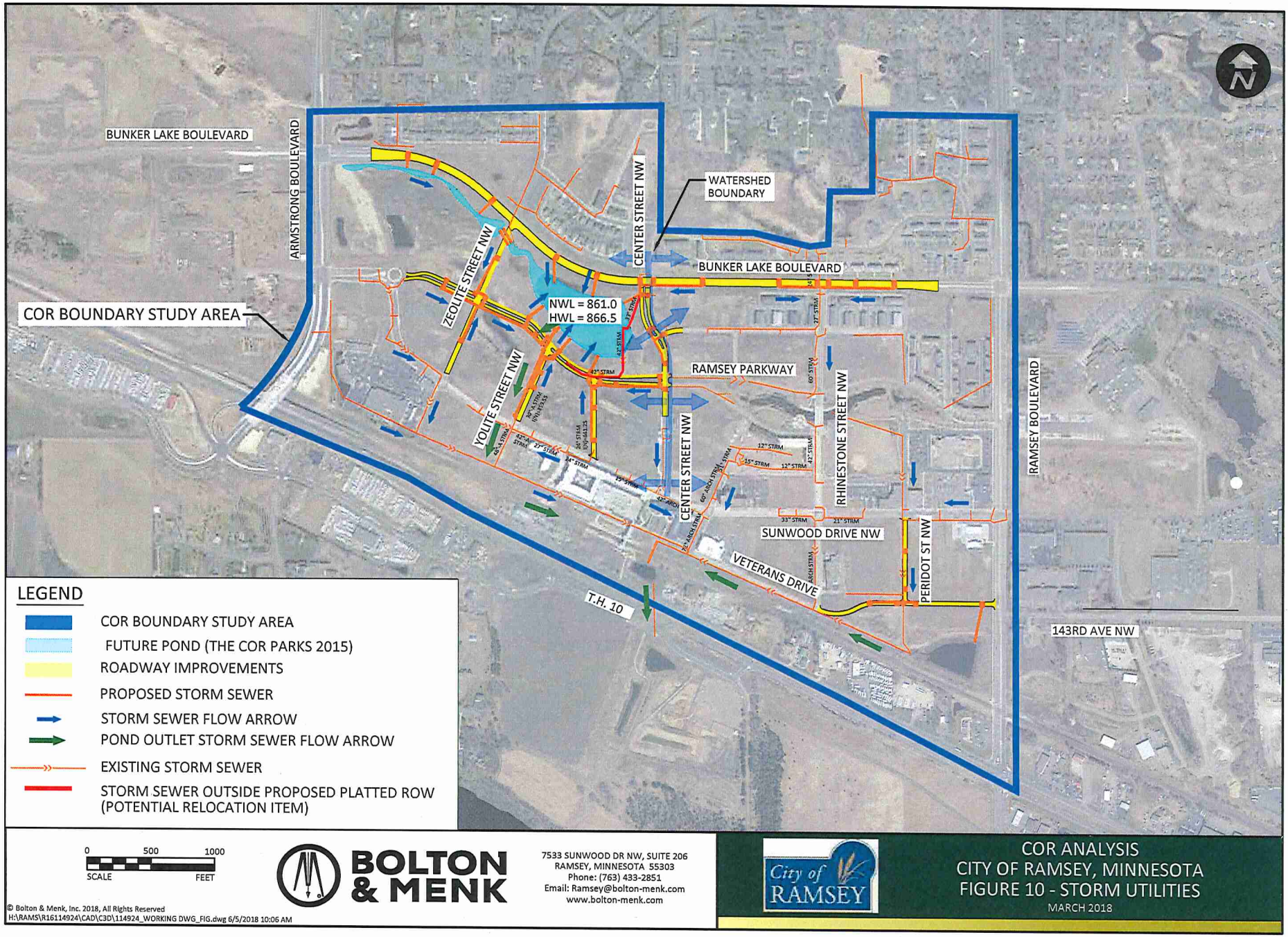

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FIGURE 10 - STORM UTILITIES

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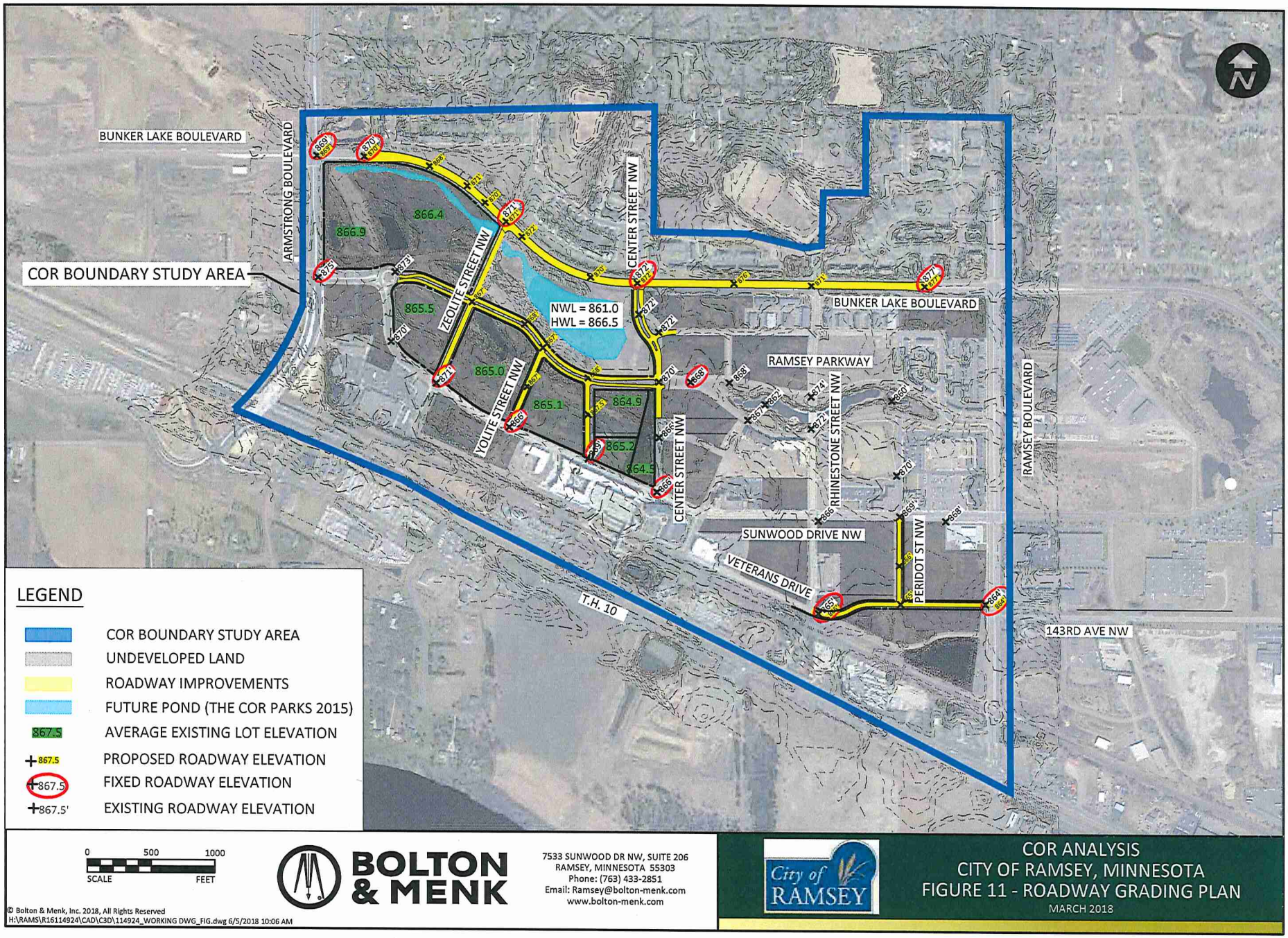

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FIGURE 11 - ROADWAY GRADING PLAN
MARCH 2018

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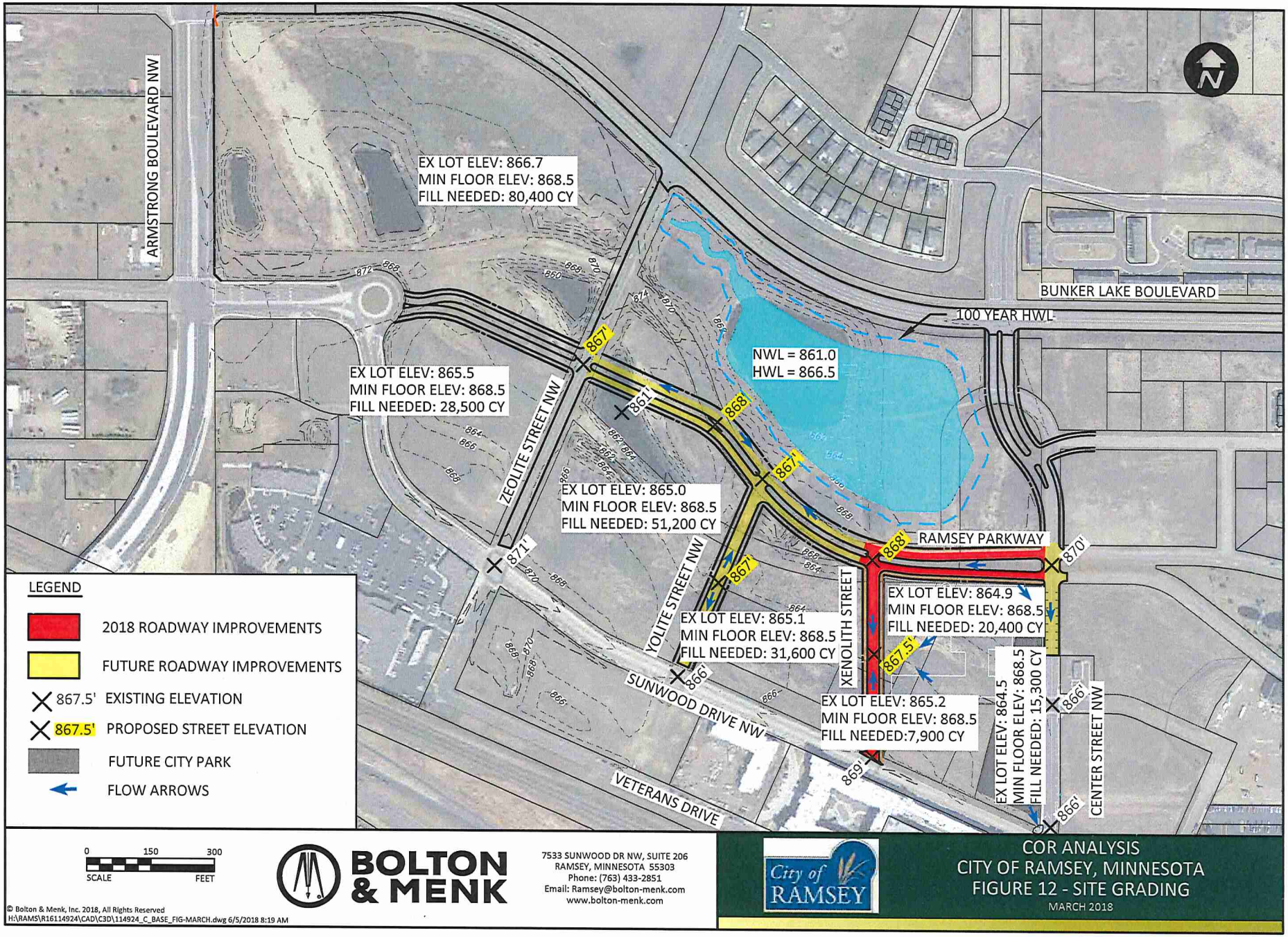

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FIGURE 12 - SITE GRADING
MARCH 2018

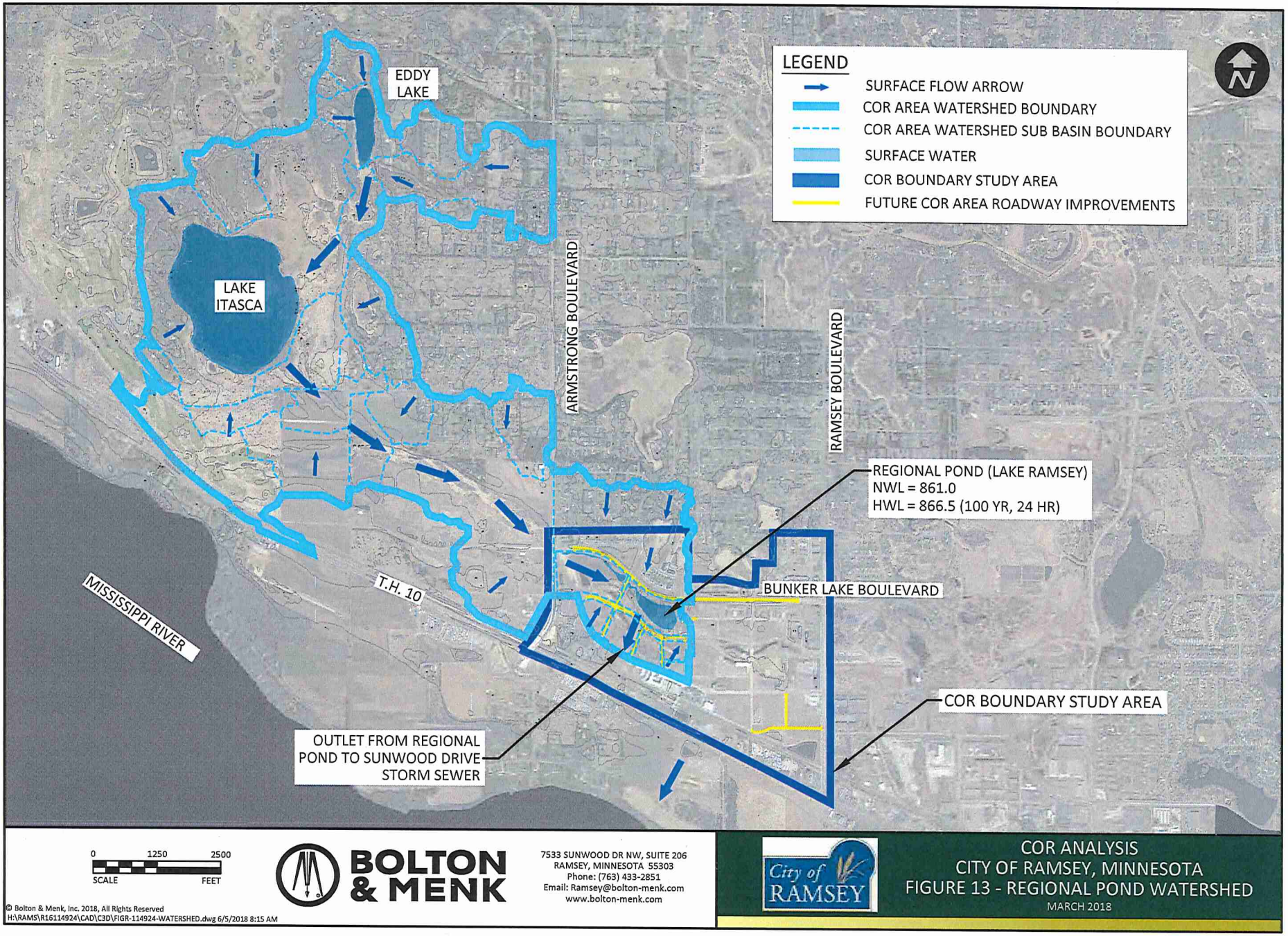

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FIGURE 13 - REGIONAL POND WATERSHED
MARCH 2018

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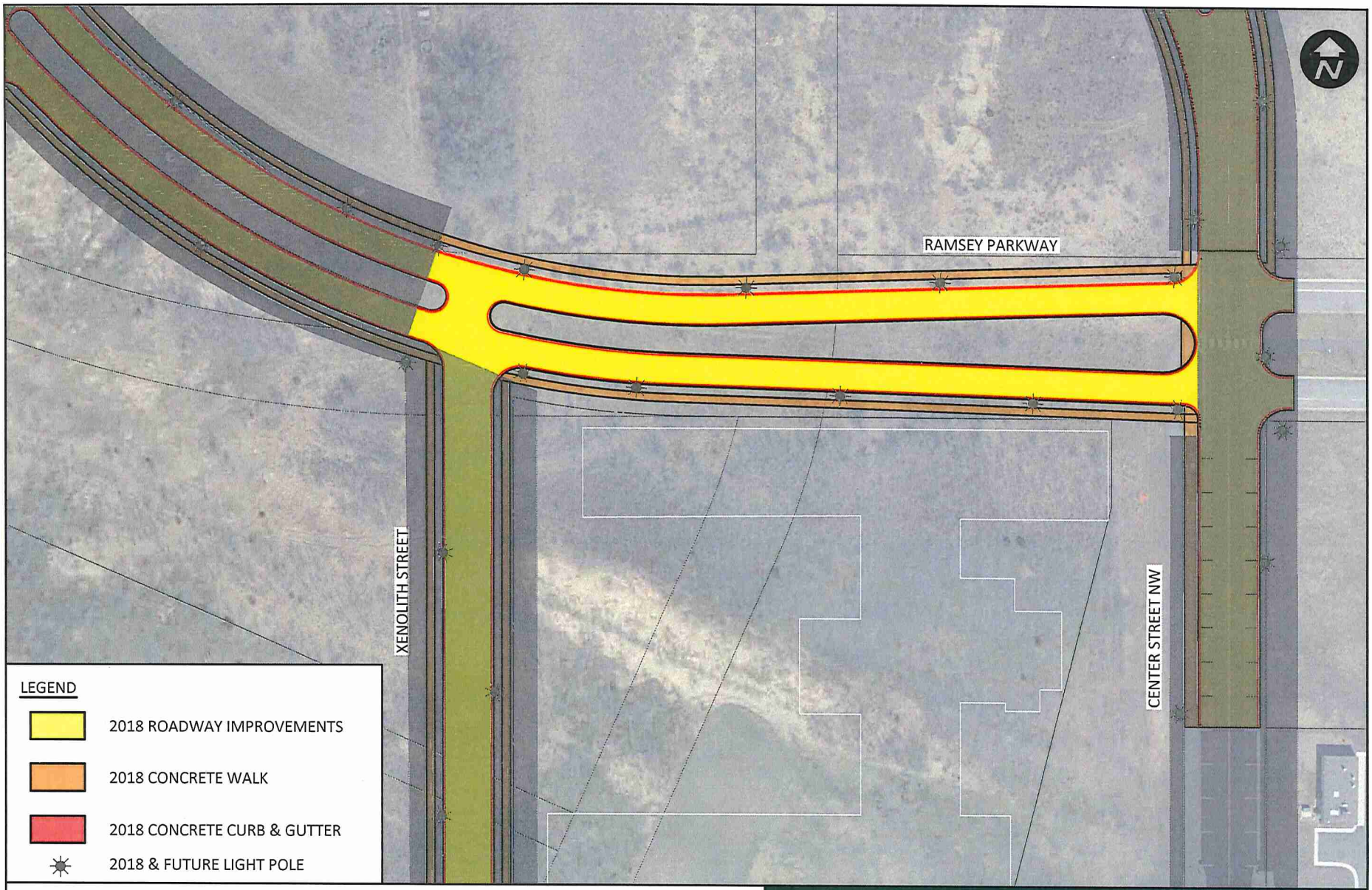

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FIGURE 14 - SEGMENT A-1 GEOMETRICS

MARCH 2018

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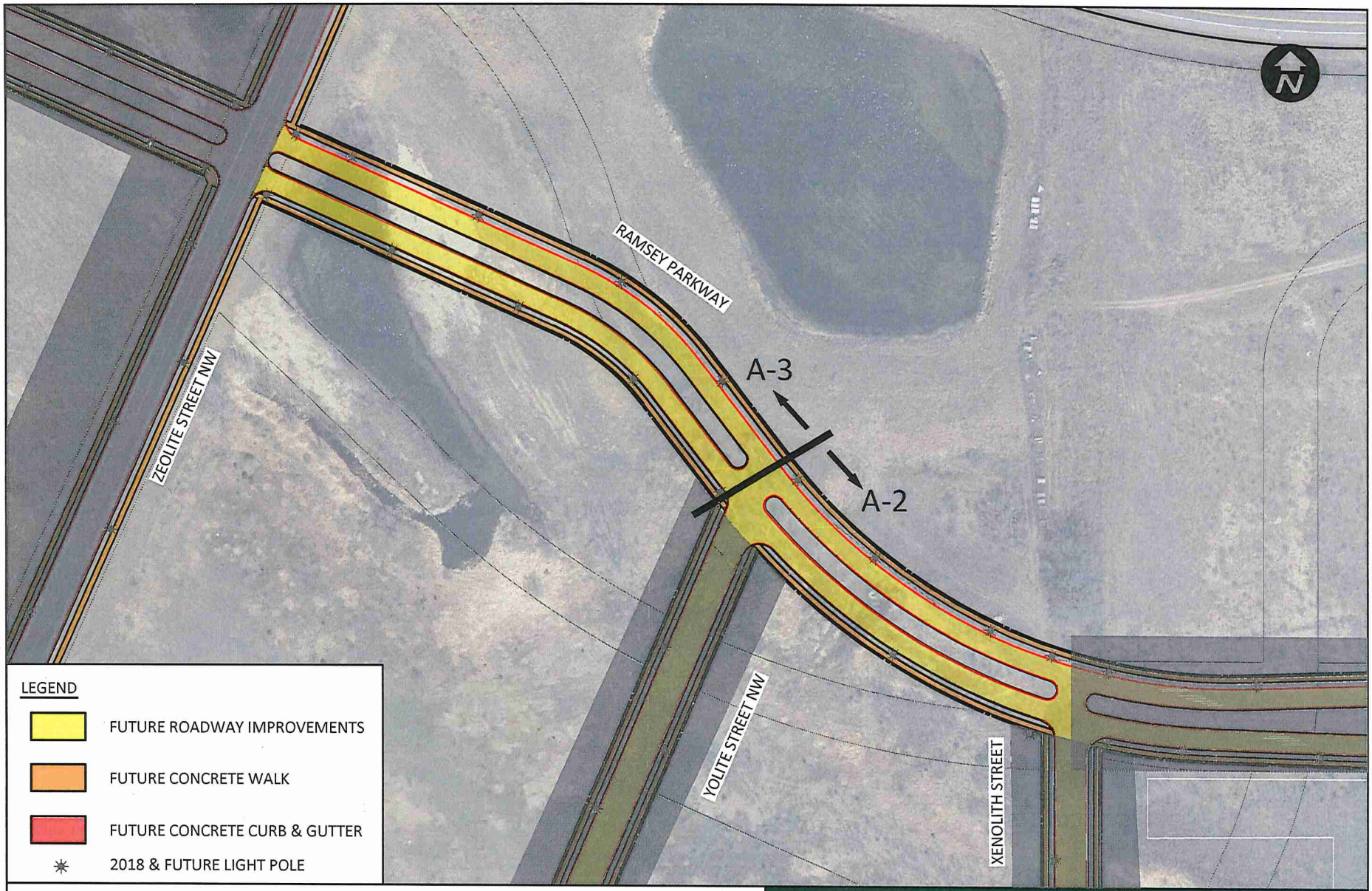

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COR ANALYSIS
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FIGURE 15 - SEGMENTS A-2 & A-3 GEOMETRICS

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COR ANALYSIS
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FIGURE 16 - SEGMENT A-4 GEOMETRICS

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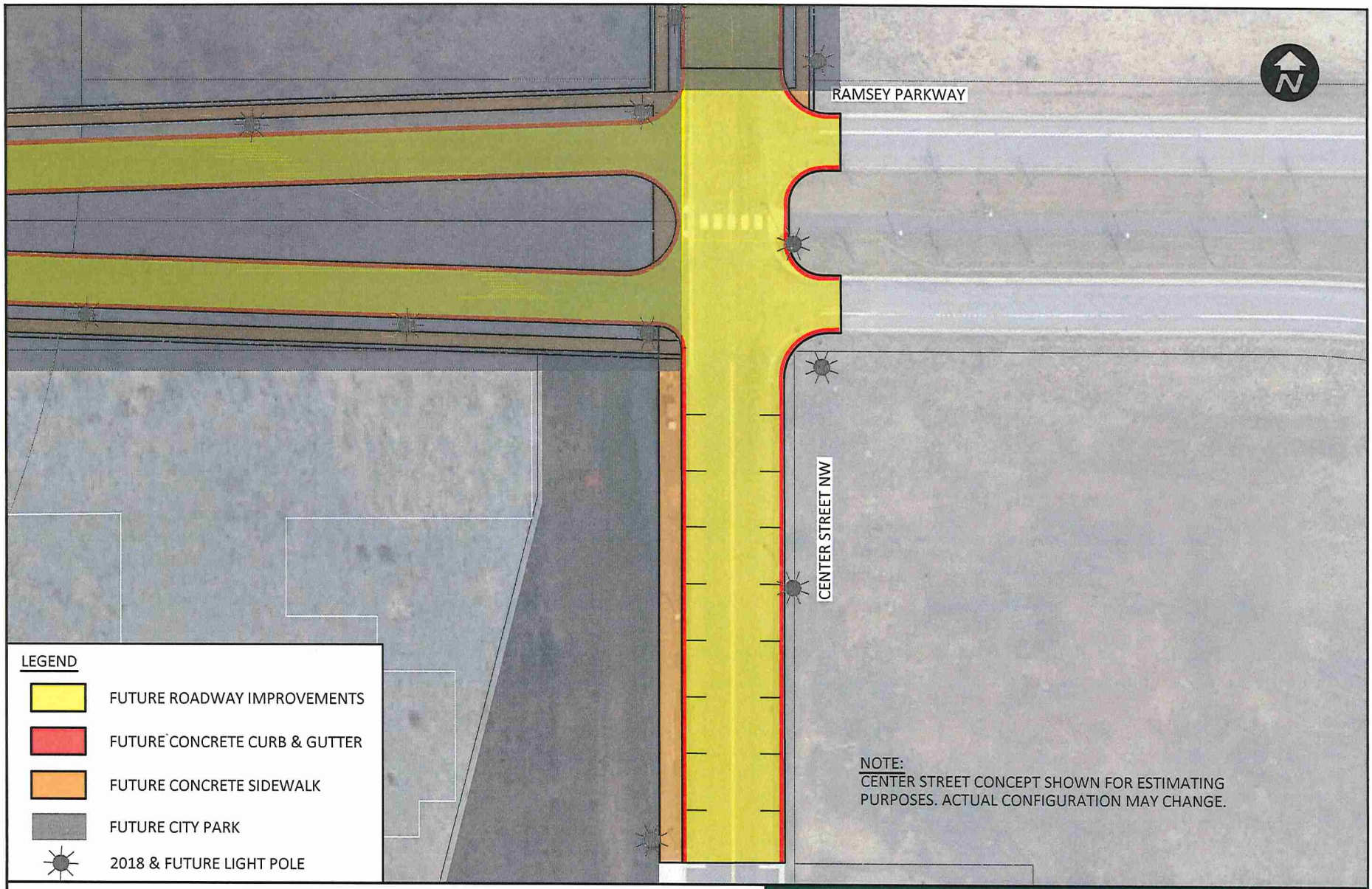

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City of RAMSEY

COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 17 - SEGMENT B-1 GEOMETRICS
MARCH 2018

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FIGURE 18 - SEGMENT B-2 GEOMETRICS

MARCH 2018

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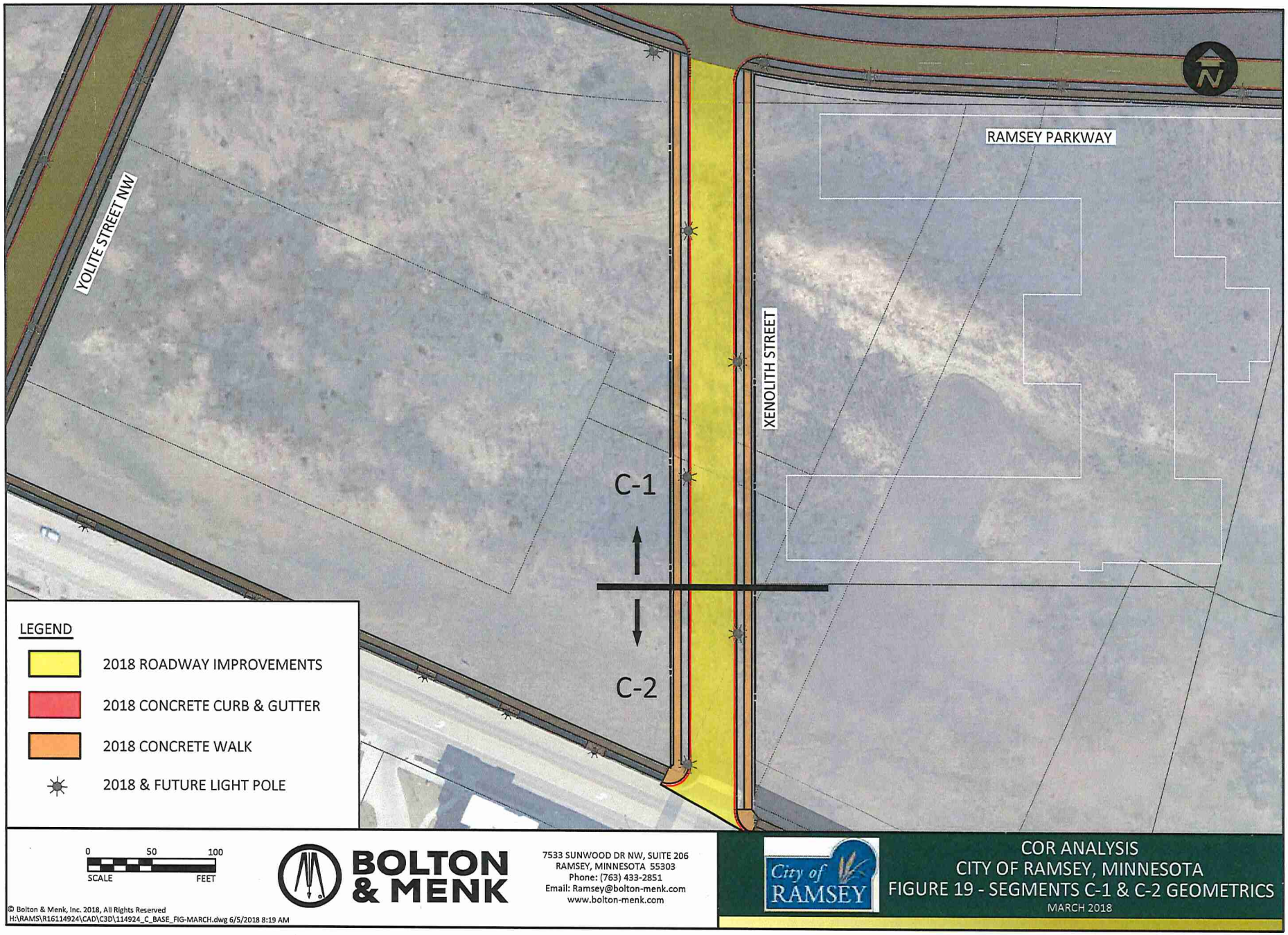

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FIGURE 19 - SEGMENTS C-1 & C-2 GEOMETRICS

MARCH 2018

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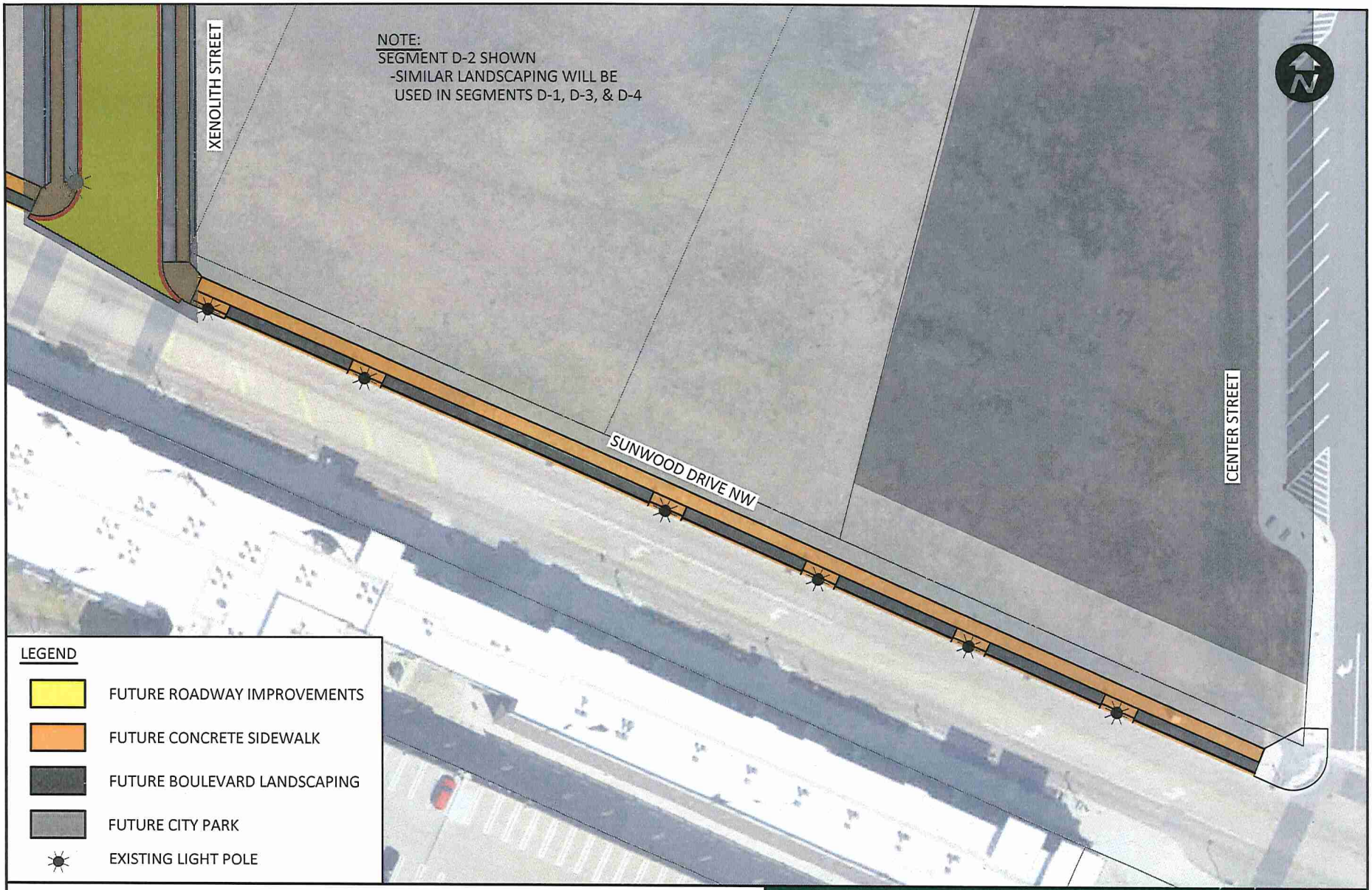

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FIGURE 20 - SEGMENT D LANDSCAPING

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CITY OF RAMSEY, MINNESOTA
FIGURE 21 - SEGMENT E GEOMETRICS
MARCH 2018

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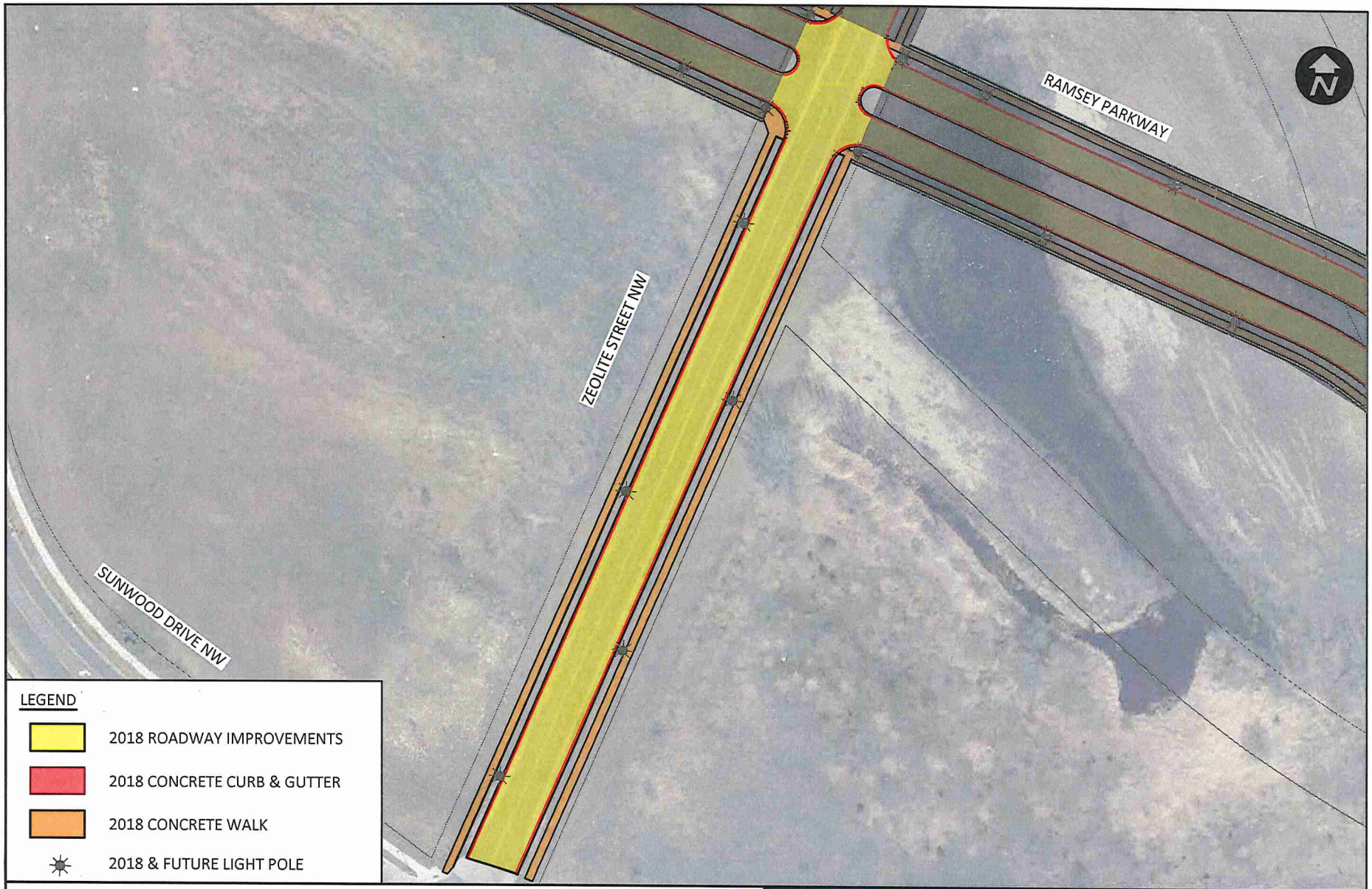

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CITY OF RAMSEY, MINNESOTA
FIGURE 22 - SEGMENT F-1 GEOMETRICS

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FIGURE 23 - SEGMENT F-2 GEOMETRICS
MARCH 2018

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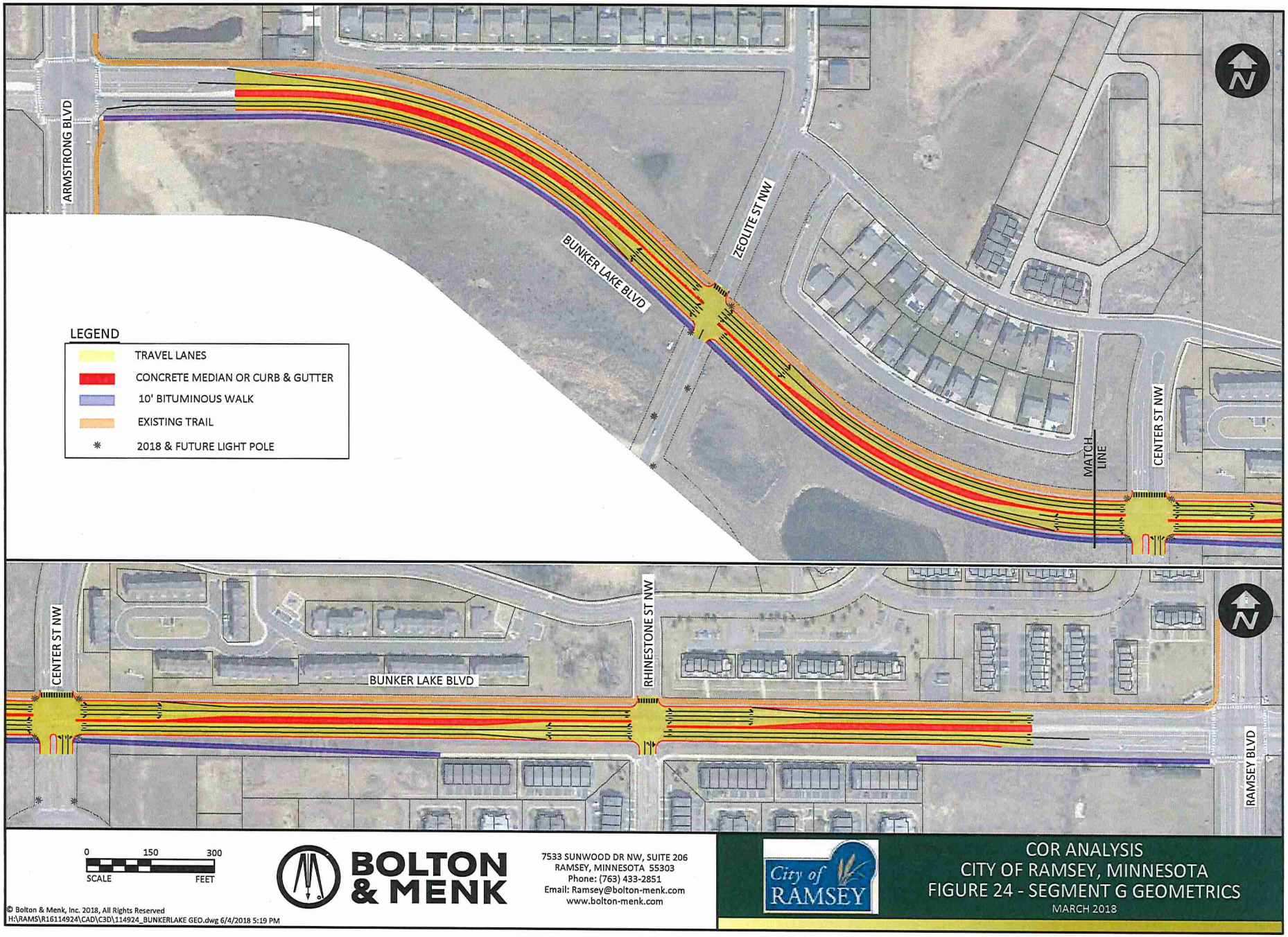

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FIGURE 24 - SEGMENT G GEOMETRICS
MARCH 2018

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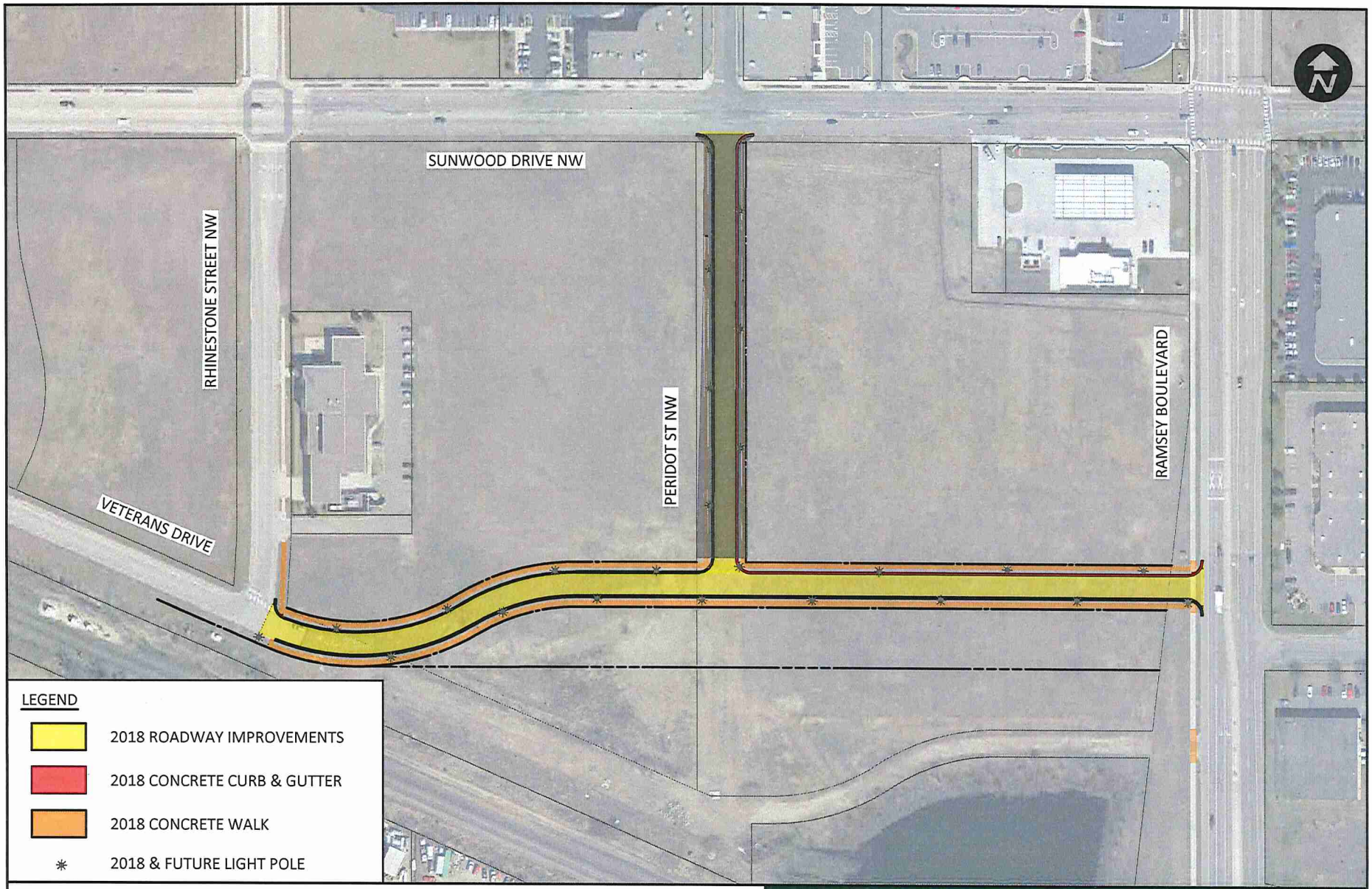

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CITY OF RAMSEY, MINNESOTA
FIGURE 25 - SEGMENT H GEOMETRICS
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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 26 - SEGMENT I GEOMETRICS
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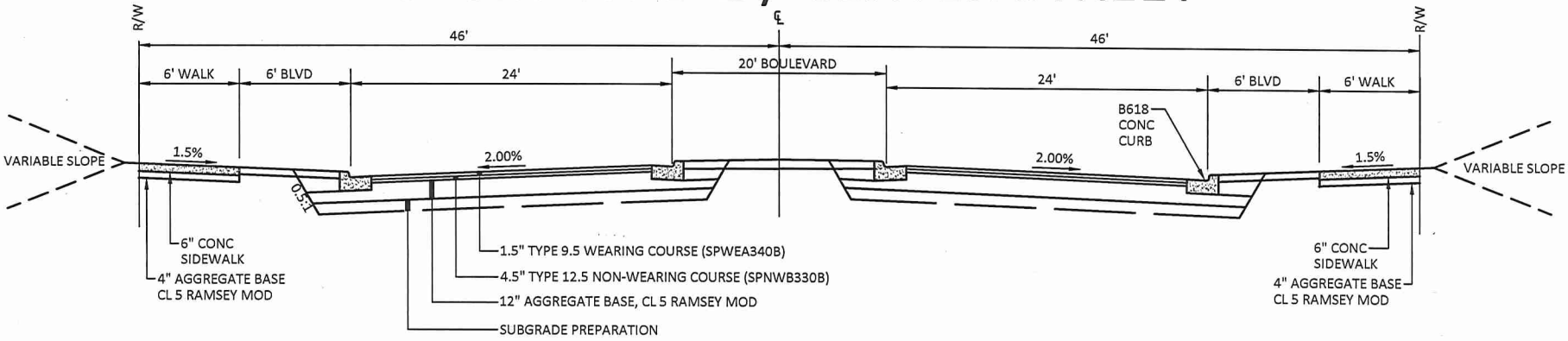
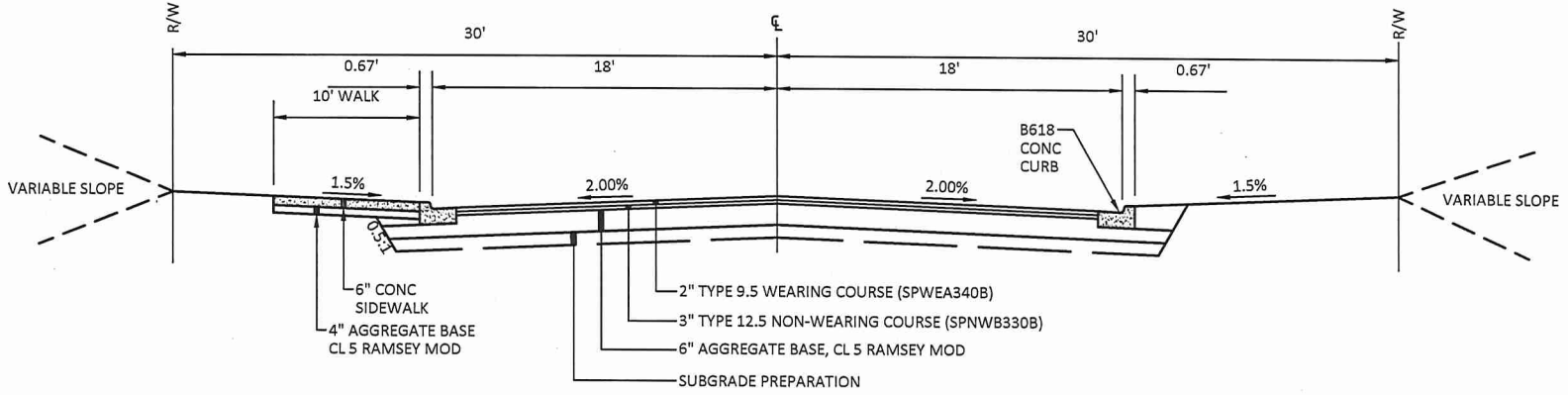
SEGMENT A / RAMSEY PARKWAY
SEGMENT B-2 / CENTER STREET



SEGMENT B-1 / CENTER STREET



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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 27 - TYPICAL SECTIONS
MARCH 2018

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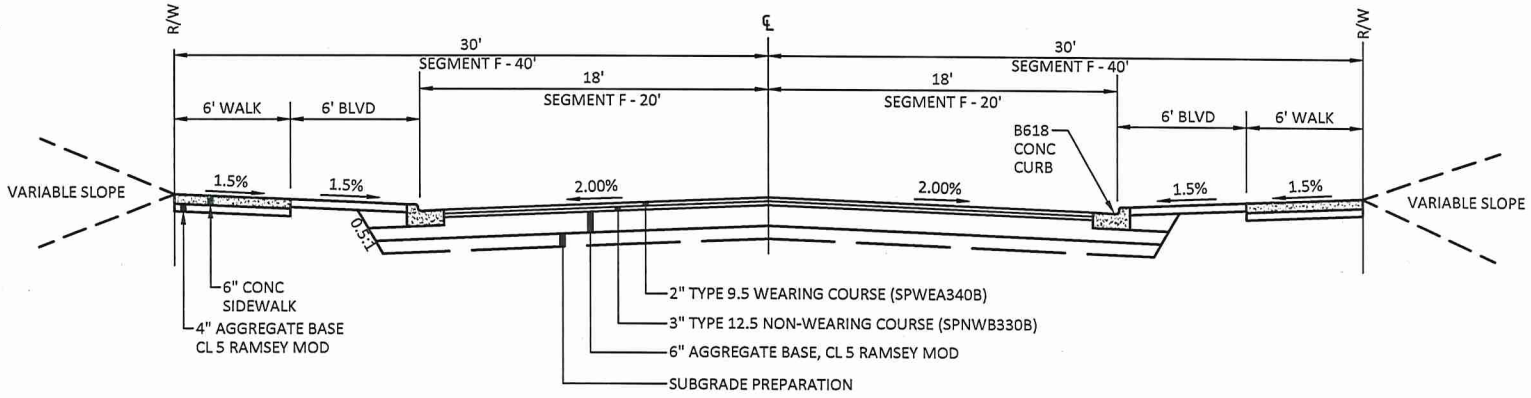
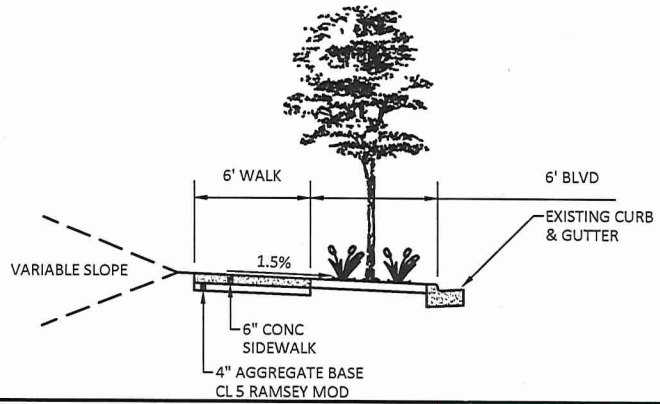
SEGMENT C, E, F, H, I/XENOLITH STREET & YOLITE STREET NW VETERANS DRIVE, PERIDOT STREET NW, & ZEOLITE STREET NW



SEGMENT D / SUNWOOD DRIVE BOULEVARD (LANDSCAPING IMPROVEMENTS)



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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 28 - TYPICAL SECTIONS
MARCH 2018

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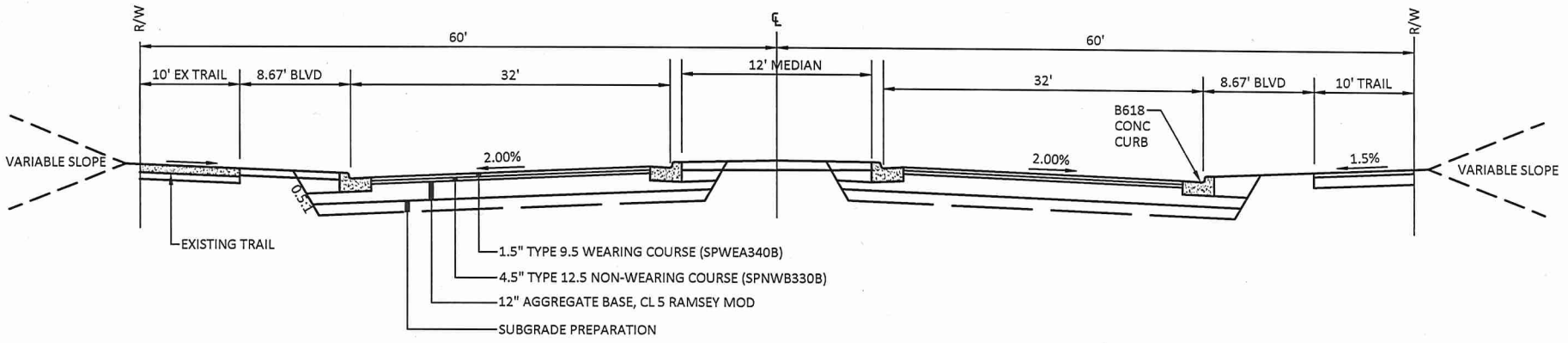
SEGMENT G / BUNKER LAKE BOULEVARD



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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 29 - TYPICAL SECTIONS
MARCH 2018

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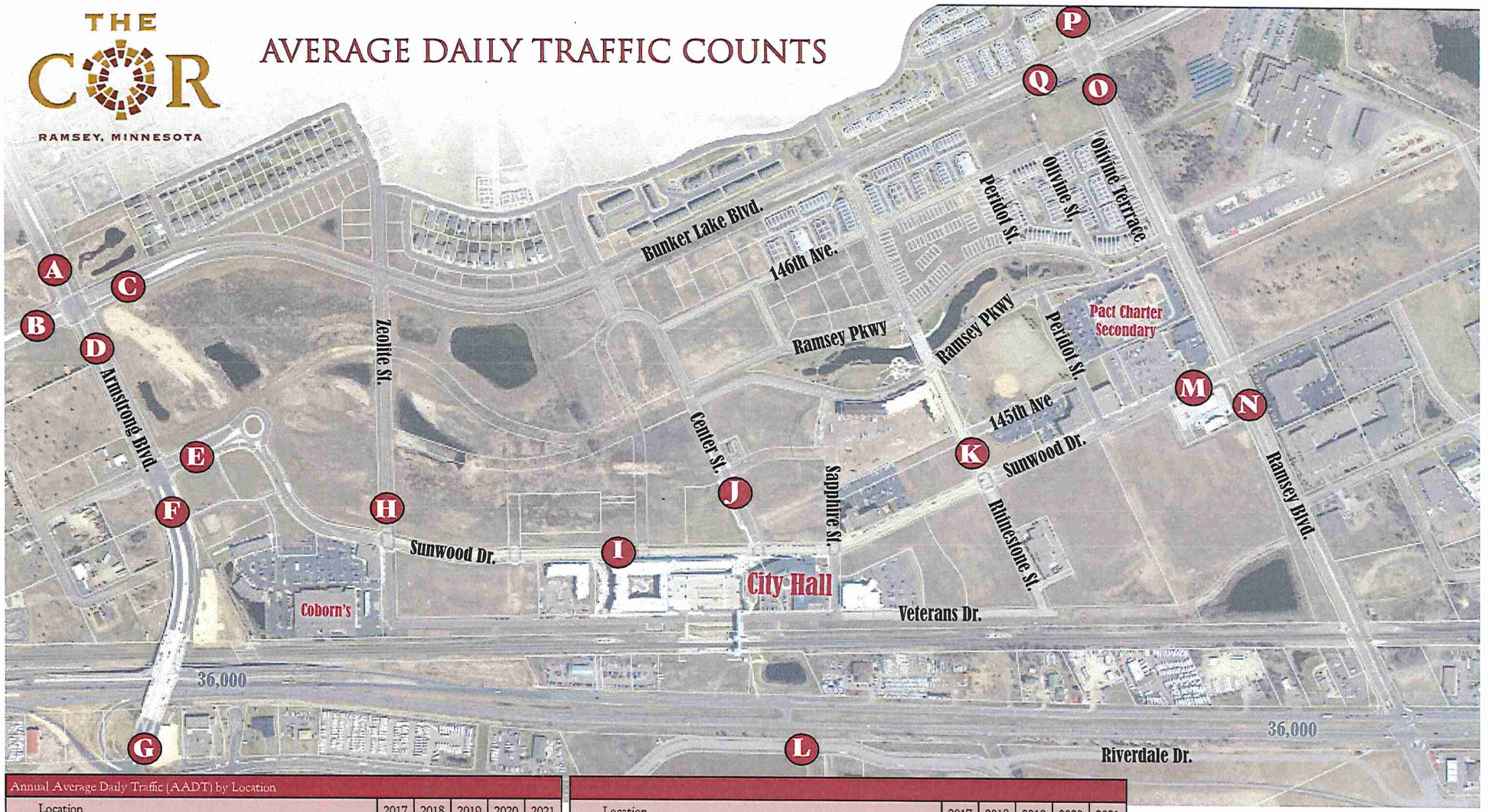
APPENDIX C: TRAFFIC COUNT EXHIBIT

THE COR
RAMSEY, MINNESOTA

AVERAGE DAILY TRAFFIC COUNTS



Annual Average Daily Traffic (AADT) by Location						
	Location	2017	2018	2019	2020	2021
A	Armstrong Boulevard - North of Bunker	6650	-	-	-	-
B	Bunker Lake Blvd - West of Armstrong	300	-	-	-	-
C	Bunker Lake Blvd - East of Armstrong	3050	-	-	-	-
D	Armstrong Boulevard - South of Bunker	6150	-	-	-	-
E	Sunwood Drive - East of Armstrong	3250	-	-	-	-
F	Armstrong Boulevard - South of Sunwood Drive/147th Avenue	7300	-	-	-	-
G	Armstrong Boulevard - between TH 10 Ramps	4350	-	-	-	-
H	Zeolite Street	1000	-	-	-	-
I	Sunwood Drive - City Hall	3150	-	-	-	-

	Location	2017	2018	2019	2020	2021
J	Center Street	200	-	-	-	-
K	Rhinestone Street	650	-	-	-	-
L	Riverdale Drive	200	-	-	-	-
M	Sunwood Drive - West of Ramsey Blvd	6100	-	-	-	-
N	Ramsey Boulevard - South of Sunwood Drive	8850	-	-	-	-
O	Ramsey Boulevard - South of Bunker	5400	-	-	-	-
P	Ramsey Boulevard - North of Bunker	5900	-	-	-	-
Q	Bunker Lake Blvd - West of Ramsey Blvd	4000	-	-	-	-

LEGEND

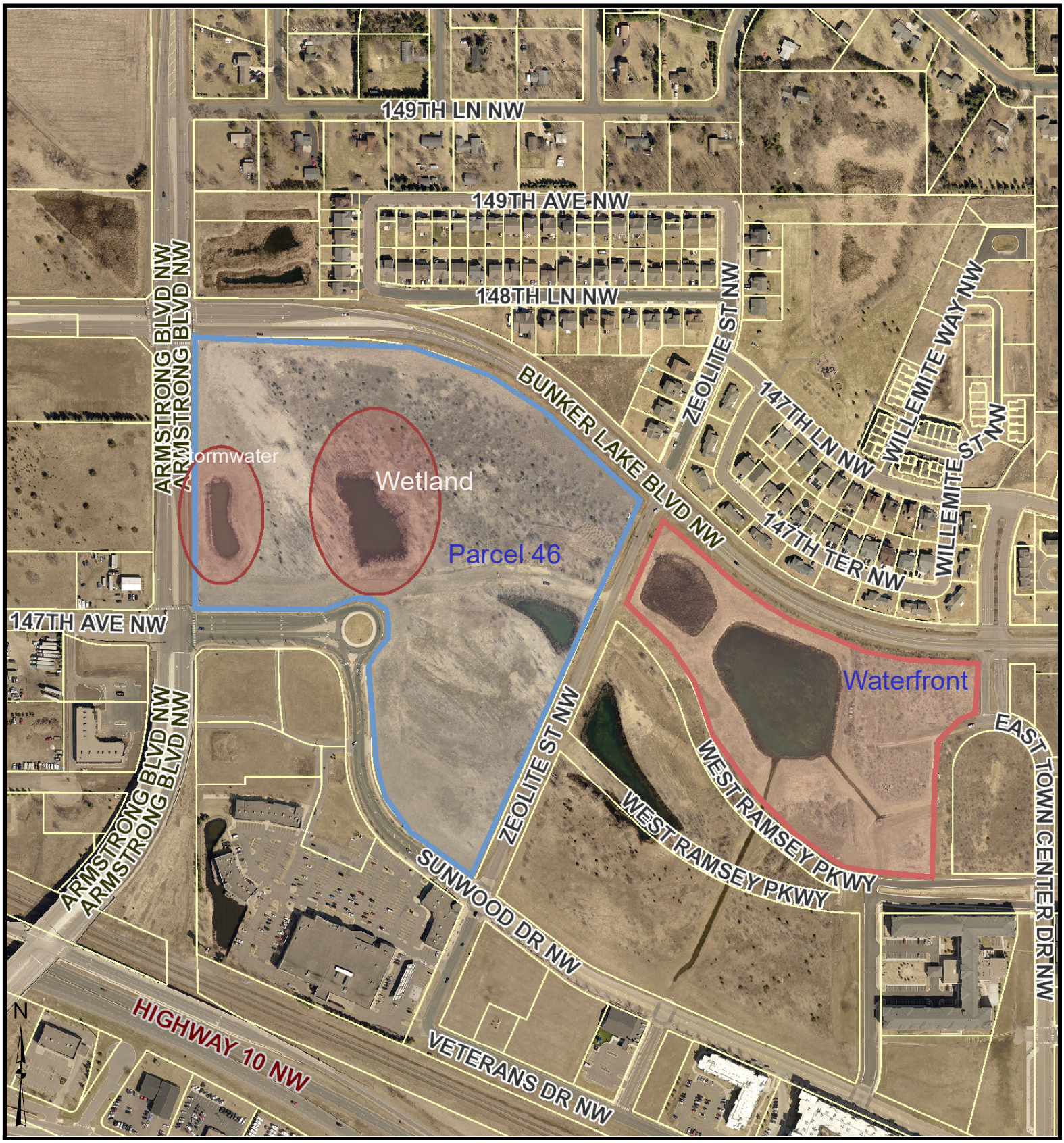
A — LOCATION MARKER

1,000 — ANNUAL AVERAGE DAILY TRAFFIC (AADT)

N

0 500 Feet

Site Location Map (Parcel 46 /Waterfront)



Parcel Information:
28-32-25-12-0008
7446 149TH AVE NW
RAMSEY
MN 55303
Plat: PINEVIEW ESTATES 2ND ADDITION

Approx. Acres: 2.35
Commissioner: MATT LOOK

Owner Information:

Sean Sullivan | 1:4,800 | Date: 1/12/2022

FACTUAL

GEOTECHNICAL EXPLORATION AND ENGINEERING REVIEW

Lake Front

Zeolite Street NW and Bunker Lake Boulevard

Ramsey

Minnesota

NTI Project No. 18.MSP05470.000

***Prepared For**:*

Bolton & Menk, Inc.
7533 Sunwood Drive NW, Suite 206
Ramsey, Minnesota 55303

NTI
NORTHERN TECHNOLOGIES, LLC

6160 Carmen Avenue East
Inver Grove Heights, MN 55076
P: 651.389.4191 F: 651.389.4190

www.NTIgeo.com

Unearthing confidence™

June 27, 2018

Bolton & Menk, Inc.
7533 Sunwood Drive NW, Suite 206
Ramsey, Minnesota 55303

Attention: Mr. Kevin KP. Kielb, P.E.

Subject: Factual Geotechnical Exploration and Engineering Review
Lake Front
Ramsey, Minnesota
NTI Project No. 18.MSP05470.000

Dear Mr. Kielb,

In accordance with your request and subsequent authorization, Northern Technologies, LLC (NTI) conducted a Geotechnical Exploration for the above referenced project. Our services included advancement of nine (9) standard penetration test (SPT) soil borings, and the preparation of a factual engineering report with the results of our fieldwork. Our work was performed in general accordance with our proposal dated May 3, 2018.

Soil samples obtained at the site will be held for 60 days at which time they will be discarded. Please advise us in writing if you wish to have us retain them for a longer period. You will be assessed an additional fee if soil samples are retained beyond 60 days.

We appreciate the opportunity to have been of service on this project. If there are any questions regarding the soils explored or our review and recommendations, please contact us at your convenience at (651) 389-4203.

Northern Technologies, LLC

Morgan Bakeman, E.I.T.
Staff Engineer

Steven D. Gerber, P.E.
Senior Engineer

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.

Steven D. Gerber
Date: 6/27/2018 Reg. No. 45298

Contents

1.0 INTRODUCTION

1.1 Site / Project Description

The proposed project consists of the utilizing the on-site materials for construction in various locations.

1.2 Scope of Services

The purpose of this factual report is to present a summary of our geotechnical exploration and provide the soil conditions encountered at the project area. Our "Scope of Services" was limited to the following:

1. Explore the project subsurface by means of nine (9) SPT soil borings. Six (6) SPT borings were advanced to depths between 23 and 30 feet and three (3) SPT borings were advanced to depths of approximately 14.5 feet existing grade.
2. Conduct laboratory test(s) on representative samples for characterizing the index and engineering properties of soils strata.
3. Provide a factual geotechnical report with the results of our field and laboratory tests.

2.0 EXPLORATION PROGRAM RESULTS

2.1 Exploration Scope

Site geotechnical exploration began on May 15, 2018, with individual SPT soil borings advanced to varying feet below existing grade at approximate locations as presented on the diagram within the appendices. Soil samples were taken at 2 ½-foot intervals to termination depth of the borings.

NTI located the borings relative to existing site features, and determined the approximate elevation of the borings using MnTOPO LiDAR maps. Boring elevations should be considered to be approximate. Please refer to the Boring/Probe Location Diagram and the Boring Logs in Appendix C.

The boreholes were backfilled with auger cuttings, or were abandoned using high solids bentonite or neat cement grout as per appropriate local and state statutes. Minor settlement of the boreholes will occur. Owner is responsible for final closure of the boreholes.

2.2 Subsurface Conditions

Please refer to the boring logs within the appendices for a detailed description and depths of stratum at the boring locations.

2.3 Groundwater Conditions

The drill crew observed the boreholes for groundwater (if any) during and at the completion of drilling activities. Table 1 details the approximate elevations where groundwater was observed.

Table 1: Apparent elevation of groundwater

Borehole	Estimated Ground Surface Elevation[1] (ft)	Boring Depth to Groundwater	Apparent Elevation of Groundwater
SB-1	867	5.5	861.5
SB-2	869	4.0	865.0
SB-3	868	5.5	862.5
SB-4	869	9.0	860.0
SB-5	871	8.0	863.0
SB-6	869	10.0	859.0
SB-7	868	10.5	857.5
SB-8	872	8.0	864.0
SB-9	871	10.5	860.5

1: Elevations were estimated using MnTopo LiDAR maps.

2.4 Laboratory Test Program

Our analysis and recommendations of this report are based upon our interpretation of the standard penetration test resistance determined while sampling soils, laboratory test results and experience with similar soils from other sites near the project. The results of such tests are summarized on the boring logs or attached laboratory test reports.

3.0 CLOSURE

As the widely spaced, small diameter borings provide only a limited amount of data regarding the existing fill, the existing fill may contain soft zones, debris or significantly greater amounts of unsuitable materials than could be reasonably inferred from the boring information. Unsuitable materials may not be discovered during construction and may remain buried within the fill below the slabs and pavements, resulting in greater than anticipated settlements of the slabs and pavements. These risks cannot be eliminated without completely removing the fill, but can be reduced by thorough exploration and testing during site preparation and construction.

The scope of services for this project does not include either specifically or by implication any environmental or biological assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of Bolton & Menk, Inc. and their agents for specific application to the proposed Lake Front project in Ramsey, Minnesota. Northern Technologies, LLC has endeavored to comply with generally accepted geotechnical engineering practice common to the local area. Northern Technologies, LLC makes no other warranty, express or implied.

Northern Technologies, LLC

Morgan Bakeman, E.I.T.
Staff Engineer

Steven D. Gerber, P.E.
Senior Engineer

APPENDIX A

GEOTECHNICAL EVALUATION OF RECOVERED SOIL SAMPLES

FIELD EXPLORATION PROCEDURES

GENERAL NOTES

WATER LEVEL SYMBOL

DESCRIPTIVE TERMINOLOGY

RELATIVE PROPORTIONS

PARTICLE SIZES

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

GEOTECHNICAL EVALUATION OF RECOVERED SOIL SAMPLES

We visually examined recovered soil samples to estimate distribution of grain sizes, plasticity, consistency, moisture condition, color, presence of lenses and seams, and apparent geologic origin. We then classified the soils according using the Unified Soil Classification System (ASTM D2488). A chart describing this classification system and general notes explaining soil sampling procedures are presented within appendices attachments.

The stratification depth lines between soil types on the logs are estimated based on the available data. In-situ, the transition between type(s) may be distinct or gradual in either the horizontal or vertical directions. The soil conditions have been established at our specific boring locations only. Variations in the soil stratigraphy may occur between and around the borings, with the nature and extent of such change not readily evident until exposed by excavation. These variations must be properly assessed when utilizing information presented on the boring logs.

We request that you, your design team or contractors contact NTI immediately if local conditions differ from those assumed by this report, as we would need to review how such changes impact our recommendations. Such contact would also allow us to revise our recommendations as necessary to account for the changed site conditions.

FIELD EXPLORATION PROCEDURES

Soil Sampling – Standard Penetration Boring:

Soil sampling was performed according to the procedures described by ASTM D-1586. Using this procedure, a 2 inch O.D. split barrel sampler is driven into the soil by a 140-pound weight falling 30 inches. After an initial set of six inches, the number of blows required to drive the sampler an additional 12 inches is recorded (known as the penetration resistance (i.e. “N-value”) of the soil at the point of sampling. The N-value is an index of the relative density of cohesionless soils and an approximation of the consistency of cohesive soils.

Soil Sampling – Power Auger Boring:

The boring(s) was/were advanced with a 6-inch nominal diameter continuous flight auger. As a result, samples recovered from the boring are disturbed, and our determination of the depth, extend of various stratum and layers, and relative density or consistency of the soils is approximate

Soil Classification:

Soil samples were visually and manually classified in general conformance with ASTM D-2488 as they were removed from the sampler(s). Representative fractions of soil samples were then sealed within respective containers and returned to the laboratory for further examination and verification of the field classification. In addition, select samples were submitted for laboratory tests. Individual sample information, identification of sampling methods, method of advancement of the samples and other pertinent information concerning the soil samples are presented on boring logs and related report attachments.

GENERAL NOTES

DRILLING and SAMPLING SYMBOLS		*LABORATORY TEST SYMBOLS*	
SYMBOL	**DEFINITION**	**SYMBOL**	**DEFINITION**
C.S.	Continuous Sampling	W	Moisture content-percent of dry weight
P.D.	2-3/8" Pipe Drill	D	Dry Density-pounds per cubic foot
C.O.	Cleanout Tube	LL, PL	Liquid and plastic limits determined in accordance with ASTM D 423 and D 424
3 HSA	3 ¼" I.D. Hollow Stem Auger	Q_U	Unconfined compressive strength-pounds per square foot in accordance with ASTM D 2166-66
4 FA	4" Diameter Flight Auger		
6 FA	6" Diameter Flight Auger		
2 ½ C	2 ½" Casing		
4 C	4" Casing		
D.M.	Drilling Mud	Pq	Penetrometer reading-tons/square foot
J.W.	Jet Water	S	Torvane reading-tons/square foot
H.A.	Hand Auger	G	Specific Gravity – ASTM D 854-58
NXC	Size NX Casing	SL	Shrinkage limit – ASTM 427-61
BXC	Size BX Casing	Ph	Hydrogen ion content-meter method
AXC	Size AX casing	O	Organic content-combustion method
SS	2" O.D. Split Spoon Sample	M.A.	Grain size analysis
2T	2" Thin Wall Tube Sample	C*	One dimensional consolidation
3T	3" Thin Wall Tube Sample	Q_C	Triaxial Compression
		* See attached data Sheet and/or graph	

WATER LEVEL SYMBOL

Water levels shown on the boring logs were determined at the time and under the conditions indicated. In sand, the indicated levels can be considered relatively reliable for most site conditions. In clay soils, it is not possible to determine the ground water level within the normal scope of a test boring investigation, except where lenses or layers of more pervious water bearing soil are present; and then a long period of time may be necessary to reach equilibrium. Therefore, the position of the water level symbol for cohesive or mixed soils may not indicate the true level of the ground water table. The available water level information is given at the bottom of the log sheet.

DESCRIPTIVE TERMINOLOGY

RELATIVE DENSITY		*CONSISTENCY*	
TERM	**N_{60} Value** (corrected)	**TERM**	**N_{60} Value** (corrected)
Very Loose	0 – 4	Soft	0-4
Loose	5 – 8	Medium	5-8
Medium Dense	9 – 16	Rather Stiff	9 – 15
Dense	16 – 30	Stiff	16 – 30
Very Dense	Over 30	Very Stiff	Over 30

RELATIVE PROPORTIONS

TERMS	**RANGE**
Trace	0 – 5%
A little	5 – 15%
Some	15 – 30%

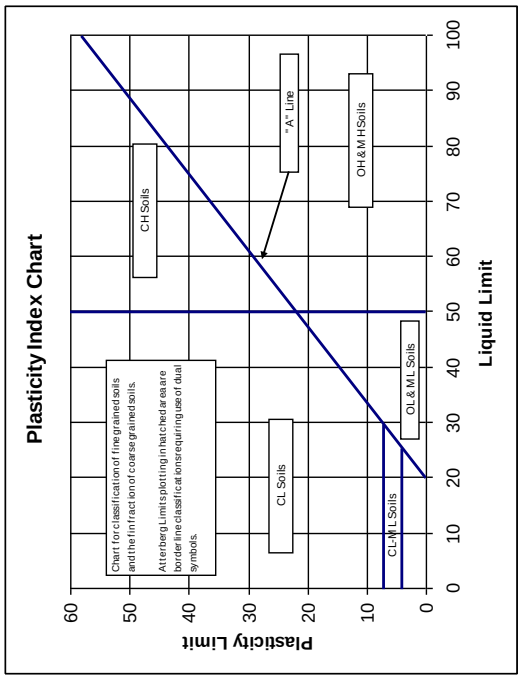
PARTICLE SIZES

MATERIAL	**DESCRIPTION**	**U.S. SIEVE SIZE**
Boulders		Over 3"
Gravel	Coarse	3" to ¾"
	Medium	¾" to #4
Sand	Coarse	#4 to #10
	Medium	#10 to #40
	Fine	#40 to #200
Silt and Clay	Determined by Hydrometer Test	

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

ASTM Designation D-2487 and D2488 (Unified Soil Classification System)

Major Divisions			Group Symbol	Typical Name	Classification Criteria		
Course Grained Soils: More than 50% retained on No. 200 sieve *	Gravels: 50% or more of coarse fraction retained on No. 4 sieve.	Clean Gravels	GW	Well –graded gravels and gravel-sand mixtures, little or no fines.	**Classification on basis of percentage of fines.** Less than 5% passing No. 200 Sieve: GW, GP, SW, SP. More than 12% passing No. 200 Sieve: GM, GC, SM, SC. From 5% to 12% passing No. 200 Sieve: Borderline Classification requiring use of duel symbols.	Cu = D60 / D10 greater than 4. Cz = (D30)2 / (D10 x D60) between 1 & 3.	
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines.		Not meeting both criteria for GW materials.	
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures.		Atterberg limits below "A" line, or P.I. less than 4.	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols.
			GC	Clayey gravels, gravel-sand-clay mixtures.		Atterberg limits above "A" line with P.I. greater than 7.	
	Sands: More than 50% of coarse fraction passes No 4 sieve.	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines.		Cu = D60 / D10 greater than 6. Cz = (D30)2 / (D10 x D60) between 1 & 3.	
			SP	Poorly-graded sands and gravelly sands, little or no fines.		Not meeting both criteria for SW materials.	
		Sands with Fines	SM	Silty sands, sand-silt mixtures.		Atterberg limits below "A" line, or P.I. less than 4.	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols.
			SC	Clayey sands, sand-clay mixtures.		Atterberg limits above "A" line with P.I. > 7.	
Fine Grained Soils More than 50% passes No. 200 sieve *	Silts and Clays: Liquid Limit of 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.			
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.			
			OL	Organic silts and organic silty clays of low plasticity.			
	Silts and Clays: Liquid Limit greater than 50%.		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts.			
			CH	Inorganic clays of high plasticity, fat clays.			
			OH	Organic clays of medium to high plasticity.			
	Highly Organic Soils		Pt	Peat, muck and other highly organic soils.			



APPENDIX B

BORING/PROBE LOCATION DIAGRAM

SOIL BORING LOGS


Center Street NW
Bunker Lake Boulevard
Zeolite Street NW
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-7
SB-8
SB-9

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-1

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 866.5 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 5.50 ft / Elev 861.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.5 TOPSOIL (6.0 Inches)	866.0	SS 1	89	3-3-4 (7)							
		POORLY GRADED SAND WITH SILT, (SP-SM) brown, medium to coarse grained, moist, loose, trace gravel (Glacial Outwash)		SS 2	78	2-3-3 (6)							6
		3.0 POORLY GRADED SAND WITH SILT, (SP-SM) light brown, medium to coarse grained, moist, loose to medium dense, trace gravel (Glacial Outwash)	863.5	SS 3	89	2-4-3 (7)							
5		▽		SS 4	89	3-4-4 (8)							
				SS 5	78	4-5-4 (9)							
10				SS 6	56	5-5-4 (9)							
		14.5	852.0	SS 7	89	3-4-5 (9)							

Bottom of borehole at 14.5 feet.

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-2

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 862 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 4.00 ft / Elev 858.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.2 TOPSOIL (2.0 Inches)	861.8	SS 1	44	3-3-4 (7)							
		1.5 POORLY GRADED SAND WITH SILT, (SP-SM) brown, medium to coarse grained, moist, loose, trace gravel (FILL)	860.5	SS 2	89	4-5-7 (12)							
		▽ POORLY GRADED SAND WITH SILT, (SP-SM) light brown, medium to coarse grained, moist, loose to medium dense, trace gravel (Glacial Outwash)		SS 3	56	4-7-7 (14)							
5				SS 4	78	3-3-3 (6)							
		NOTE: Soil gray at 8.0 feet		SS 5	89	4-4-4 (8)							
10				SS 6	100	4-5-4 (9)							
		NOTE: Soil light brown at 13.0 feet.		SS 7	89	5-5-6 (11)							
15													
		NOTE: Gravel layer at 18.0 feet. NOTE: Soil gray at 18.0 feet.		SS 8	56	5-7-7 (14)							
20													
		24.5	837.5	SS 9	67	5-5-5 (10)							

Bottom of borehole at 24.5 feet.

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-3

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 868 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 5.50 ft / Elev 862.50 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.3 TOPSOIL (3.0 Inches) 867.7										
		POORLY GRADED SAND WITH SILT, (SP-SM) brown, medium to coarse grained, moist, loose to medium dense, trace gravel (Glacial Outwash)	SS 1	33	4-5-5 (10)							
		NOTE: Slight iron oxide staining at 1.5 feet.	SS 2	100	5-7-7 (14)							
			SS 3	100	3-4-5 (9)							
5		▽										
			SS 4	78	3-3-3 (6)							
			SS 5	100	1-3-3 (6)							
10												
			SS 6	44	4-5-6 (11)							
			SS 7	44	4-5-7 (12)							
15												
		NOTE: Soil gray at 18.0 feet.	SS 8	56	5-6-7 (13)							
20												
25												
		27.0 841.0	SS 9	56	5-5-7 (12)							
		Bottom of borehole at 27.0 feet.										

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-4

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 868 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 9.00 ft / Elev 859.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.3 TOPSOIL (3.0 Inches)	867.8	SS 1	89	2-4-4 (8)							
		1.5 POORLY GRADED SAND WITH SILT, (SP-SM) dark brown, medium to coarse grained, moist, loose, trace gravel (FILL)	866.5	SS 2	100	3-4-5 (9)							
		POORLY GRADED SAND WITH SILT, (SP-SM) light brown, medium to coarse grained, moist, loose to medium dense, trace gravel (Glacial Outwash)		SS 3	100	3-4-3 (7)							
5				SS 4	100	3-3-3 (6)							
		▽		SS 5	78	3-3-5 (8)							
10		NOTE: Gray soil at 10.5 feet.		SS 6	56	3-6-5 (11)							
		NOTE: Brown soil layer at 13.0 feet.		SS 7	56	3-3-4 (7)							
15													
				SS 8	56	4-5-7 (12)							
20													
25		25.0	843.0	SS 9	78	4-5-5 (10)							

Bottom of borehole at 25.0 feet.

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-5

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 871.5 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 8.00 ft / Elev 863.50 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		1.0 TOPSOIL (1.0 Inches) 870.5	SS 1	78	3-3-3 (6)							
		POORLY GRADED SAND WITH SILT, (SP-SM) brown, medium to coarse grained, moist, loose to dense, trace gravel (Glacial Outwash)	SS 2	67	3-4-3 (7)							
		NOTE: Slight iron oxide staining at 3.0 feet.	SS 3	67	4-3-3 (6)							
5			SS 4	78	4-5-5 (10)							
		▽	SS 5	33	5-7-7 (14)							
10			SS 6	78	7-8-9 (17)							
			SS 7	78	6-7-8 (15)							
15		NOTE: Gravel layer at 18.0 feet.	SS 8	22	6-10-9 (19)							
20												
25		NOTE: Gray soil at 25.5 feet.	SS 9	67	7-7-10 (17)							1
		27.0 844.5 Bottom of borehole at 27.0 feet.										

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-6

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 871 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 10.00 ft / Elev 861.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.2 TOPSOIL (2.0 Inches) 870.8										
		POORLY GRADED SAND WITH SILT, (SP-SM) brown, fine to coarse grained, moist, very loose to loose, trace gravel (FILL)	SS 1	44	1-1-1 (2)							
		NOTE: Organic soil layer at 1.5 feet.	SS 2	100	2-3-3 (6)							1
		4.5 866.5	SS 3	100	3-4-4 (8)							
5		POORLY GRADED SAND WITH SILT, (SP-SM) brown, fine to coarse grained, moist, very loose to medium dense, trace gravel (Glacial Outwash)	SS 4	89	4-4-4 (8)							
		NOTE: Slight iron oxide staining at 4.5 feet.	SS 5	100	2-2-2 (4)							
10		▽	SS 6	100	4-5-5 (10)							
			SS 7	100	4-5-6 (11)							
15												
		NOTE: Soil light brown below 18.0 feet.	SS 8	56	3-4-5 (9)							
20												
			SS 9	78	4-5-5 (10)							
25												
		29.5 841.5	SS 10	67	5-5-6 (11)							

Bottom of borehole at 29.5 feet.

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-7

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 870.5 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 10.50 ft / Elev 860.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.2 TOPSOIL (2.0 Inches) 870.3										
		POORLY GRADED SAND WITH SILT, (SP-SM) brown, fine to coarse grained, moist, loose to medium dense, trace gravel (FILL)	SS 1	78	1-2-2 (4)							
			SS 2	100	5-7-7 (14)							
		4.5 866.0	SS 3	100	3-3-4 (7)							
5		POORLY GRADED SAND WITH SILT, (SP-SM) light brown, fine to coarse grained, moist, loose to dense, trace gravel (Glacial Outwash)	SS 4	100	4-5-4 (9)							1
			SS 5	100	3-4-4 (8)							
10		▽	SS 6	100	3-3-3 (6)							
			SS 7	100	4-5-7 (12)							
15												
			SS 8	78	5-7-8 (15)							
20												
		NOTE: Soil gray below 23.0 feet.	SS 9	100	7-9-11 (20)							
25												
		29.5 841.0	SS 10	100	6-7-7 (14)							

Bottom of borehole at 29.5 feet.

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-8

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 869 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 8.00 ft / Elev 861.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		0.9 TOPSOIL (10.0 Inches)	868.1	SS 1	89	3-4-5 (9)							
		POORLY GRADED SAND WITH SILT, (SP-SM) dark brown, fine to coarse grained, moist, trace gravel, trace organics (Fill)		SS 2	89	3-3-3 (6)							
		3.0	866.0	SS 3	78	3-4-4 (8)							3
5		POORLY GRADED SAND WITH SILT, (SP-SM) light brown, medium to coarse grained, moist, loose, trace gravel, iron oxide staining (Glacial Outwash)		SS 4	100	3-3-3 (6)							
		▽		SS 5	100	3-3-4 (7)							
10				SS 6	89	3-4-4 (8)							
		14.5	854.5	SS 7	100	2-3-4 (7)							

Bottom of borehole at 14.5 feet.

NTI NORTHERN TECHNOLOGIES, LLC

Inver Grove Heights
6160 Carmen Avenue East
Inver Grove Heights, MN, 55076
P: 651-389-4191

BORING NUMBER SB-9

CLIENT Bolton & Menk, Inc. **PROJECT NAME** Lake Front

PROJECT NUMBER 18.MSP.05470.000 **PROJECT LOCATION** Ramsey, MN

DATE STARTED 5/15/18 **COMPLETED** 5/15/18 **GROUND ELEVATION** 870.5 feet **HOLE SIZE** 6 1/2 in.

DRILLING CONTRACTOR NTI **GROUND WATER LEVELS:**

DRILLING METHOD 3 1/4 in H.S.A ▽ **AT TIME OF DRILLING** 10.50 ft / Elev 860.00 ft

LOGGED BY Morgan Bakeman **CHECKED BY** Steve Gerber **AT END OF DRILLING** ---

CAVE IN (ft) --- **FROST DEPTH (ft)** --- **AFTER DRILLING** ---

NOTES Elevations provided by client.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES
0		POORLY GRADED SAND WITH SILT, (SP-SM) brown, medium to coarse grained, moist, loose, trace gravel (Fill)	SS 1	100	2-3-3 (6)							
			SS 2	100	3-3-3 (6)							
			SS 3	100	3-2-3 (5)							
4.5		866.0										
5		POORLY GRADED SAND WITH SILT, (SP-SM) light brown, medium to coarse grained, moist, loose to medium dense, trace gravel (Glacial Outwash)	SS 4	89	3-4-4 (8)							
			SS 5	100	3-2-3 (5)							
10		▽ NOTE: Soil coarse grained at 11.0 feet.	SS 6	100	3-4-4 (8)							
			SS 7	89	4-5-5 (10)							7
14.5		856.0										

Bottom of borehole at 14.5 feet.

LEGEND

SOIL BORING TO ELEVATION 840

SOIL BORING 14.5' DEPTH

TOTAL DEPTH = 203.5' (9 BORINGS)

ZEOLITE STREET NW

BUNKER LAKE BOULEVARD

RAMSEY PARKWAY

YOLITE STREET NW

CENTER STREET NW

SB 1 (448949.3922, 173654.6629)
DEPTH = 14.5'

SB 2 (449095.6128, 173865.4412)
DEPTH = 23'

SB 3 (449194.3152, 173551.3984)
DEPTH = 26'

SB 4 (449583.1433, 173699.7979)
DEPTH = 25'

SB 5 (449426.7864, 173285.3400)
DEPTH = 26'

SB 6 (449740.0574, 173231.0245)
DEPTH = 30'

SB 7 (449775.4894, 173452.6973)
DEPTH = 30'

SB 8 (450019.4373, 173169.7307)
DEPTH = 14.5'

SB 9 (449827.2039, 173071.0393)
DEPTH = 14.5'

861 POND
C-222,700 CY

842
850
860
866
868
870
872
874
876
878

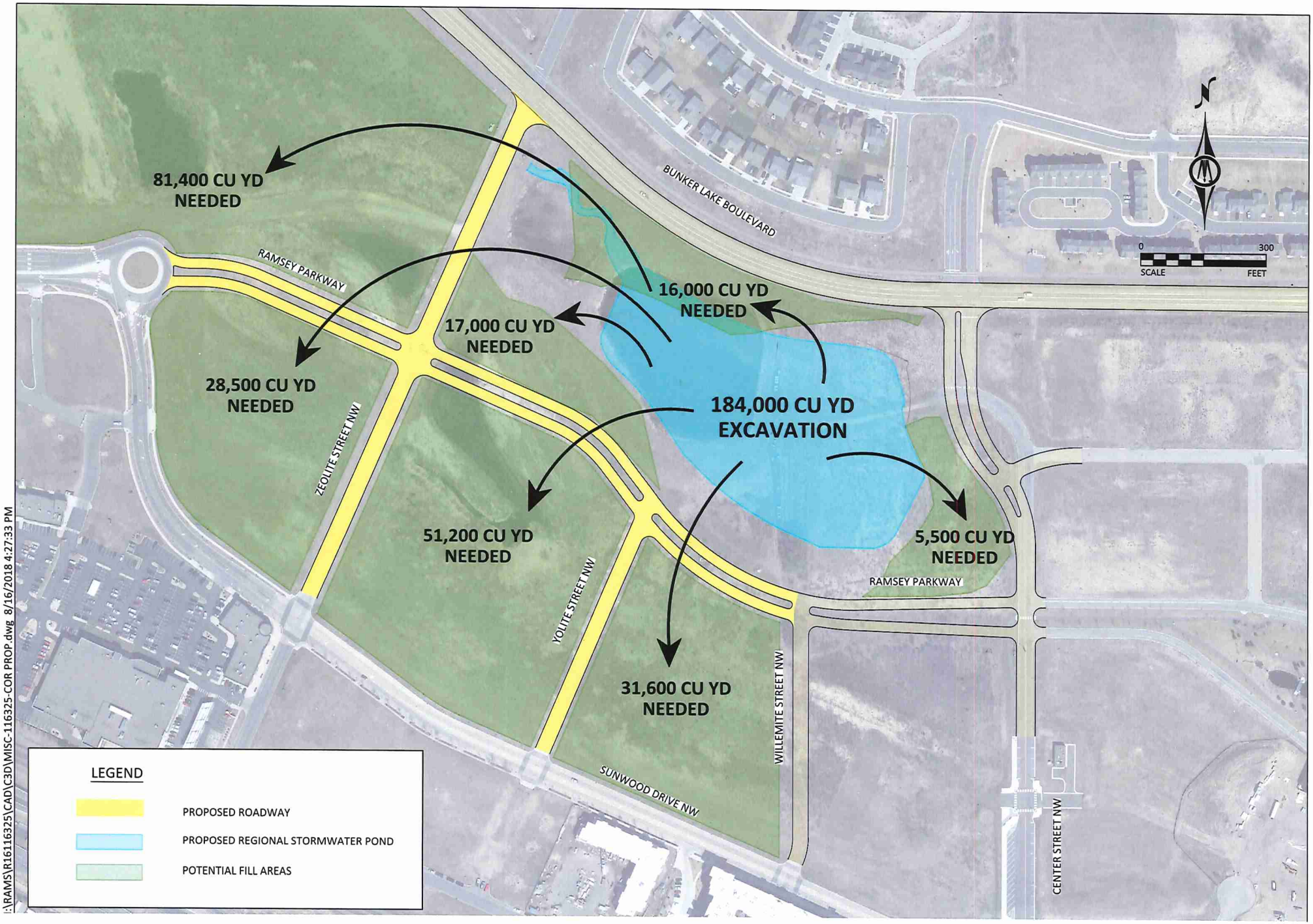
COR AREA DEVELOPMENT - POND EXCAVATION

CITY OF RAMSEY, MINNESOTA

Figure 3

AUGUST 2018

BOLTON & MENK



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Public Works Committee **5. 5.**

Meeting Date: 01/18/2022

By: Mark Riverblood, Engineering/Public Works

Title:

Consider Boulevard Trees for the Barren side of Sunwood Drive in The COR

Purpose/Background:

Street trees provide many environmental and community benefits, including beautification of urban areas, and creating shady sidewalks for pedestrians. Sunwood Drive is essentially Ramsey's 'main street', with boulevard trees, sidewalk, street scape and irrigation installed on alternating halves' of the approximately one mile arterial roadway in 2008. Planting trees on the opposite side sooner than later, will minimize the disparity in the height and canopy size of essentially a decade and a half differential in planting times for these new trees. In addition to the contract installation of approximately one hundred, 2 1/2 inch diameter trees and soil amendments, the project would include the installation of a basic irrigation system behind the curb to ensure the establishment and viability of the shade trees. This work includes: Single row of heads back of curb, irrigating a 5’ strip approx. 4000’ long, 2” PVC mainline, underground road crossings with bored sleeves, valves, wire, decoders, misc. fittings & appurtenances, with labor.

Timeframe:

It is expected that staff will take up to 5 minutes to provide background on this proposed project, for the Committee's discussion.

Observations/Alternatives:

Observations

Planting the the trees in 2022, versus waiting years for individual parcels to develop along Sunwood will lesson the future visual lopsidedness of boulevard trees along Ramsey's most prominent street. Completing the trees on both sides of this street will also improve the overall aesthetic in this area of the downtown, improve property values there, and will have traffic calming benefits. The installation of the trees and irrigation will also reduce future costs for private developers for sites that abut Sunwood Drive—thus the use of Tax Increment Financing may be considered.

It should be noted that this project only includes trees and irrigation; the future sidewalk, landscape, outdoor furnishings (benches trash receptacles, etc.) are not envisioned with this project—these would be installed as individual development occurs on Sunwood Drive.

Alternatives

Alternatives to this project as proposed, include scaling the project to just select areas, or doing nothing at this time. While the whole of The COR is half built out, it may be many years before all of the parcels along 'main street' are purchased for development.

Funding Source:

The proposed funding source is TIF #14, which has a 2021 year end cash balance of approximately $1M.

Recommendation:

Staff recommends issuing an RFP for this project, before Spring/Summer of 2022, with a wide window for contractor completion of the work (for best pricing), possibly with a alternative quotation option of a Spring of 2023 completion. City Council can assess the value, and consider authorizing the addition of boulevard trees to Sunwood Drive once quotes are received.

Action:

Motion to authorize an RFP for the installation of boulevard trees and irrigation, consistent with the proposed Capital Improvement Project.

Attachments

Scope of work and tree size comparison

CIP worksheet

Illustrative Benefits

2018 Tree Report

Development Plan

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	12/27/2021 09:28 AM
Kurt Ulrich	Kurt Ulrich	12/30/2021 10:01 AM
Diana Lund	Diana Lund	01/03/2022 02:14 PM
Kurt Ulrich	Kurt Ulrich	01/05/2022 03:58 PM
Form Started By: Mark Riverblood		Started On: 12/14/2021 01:37 PM
Final Approval Date: 01/05/2022		


Yellow bar represents approximate
tree height of 2 ½ inch B & B tree


2 ½ inch B & B tree planted two years ago
to replace 'car killed' tree


The Draw
The Draw
The Draw
Scope of work
Mississippi West
Regional Park

Capital Improvement Program

2022 *thru* 2031

City of Ramsey, Minnesota

Project # 22-PARK-002

Project Name Boulevard Trees - Sunwood Drive in COR

Department Park Improvements
Contact
Type Improvement
Useful Life 50 Years
Category Park Improvement
Priority 2-New Addition (High)
Status Active

Total Cost $80,000

Description

Sunwood Drive in The COR is essentially Ramsey's main street, and boulevard trees, sidewalk and streetscape and irrigation were installed on alternating halves' of the approximately one mile arterial roadway in 2008. Planting trees on the opposite side, sooner than later, will minimize the disparity in the height and canopy size of basically a decade and a half differential in planting time for these new trees. In addition, to contract installation of approximately 100, 2-1/2 inch diameter trees and soil amendments, the project would include the installation of irrigation behind the curb to ensure the establishment and viability of the shade trees.

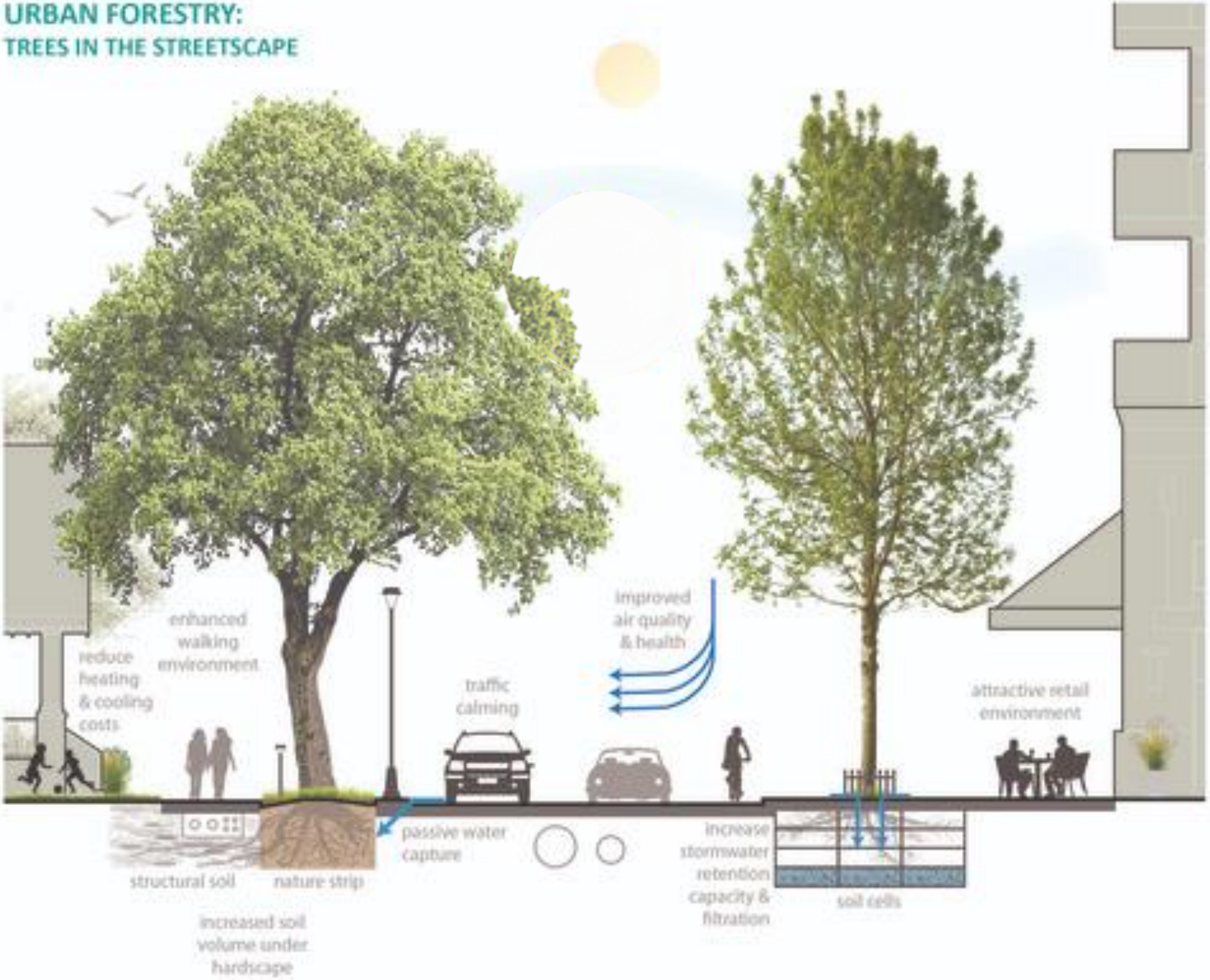
Justification

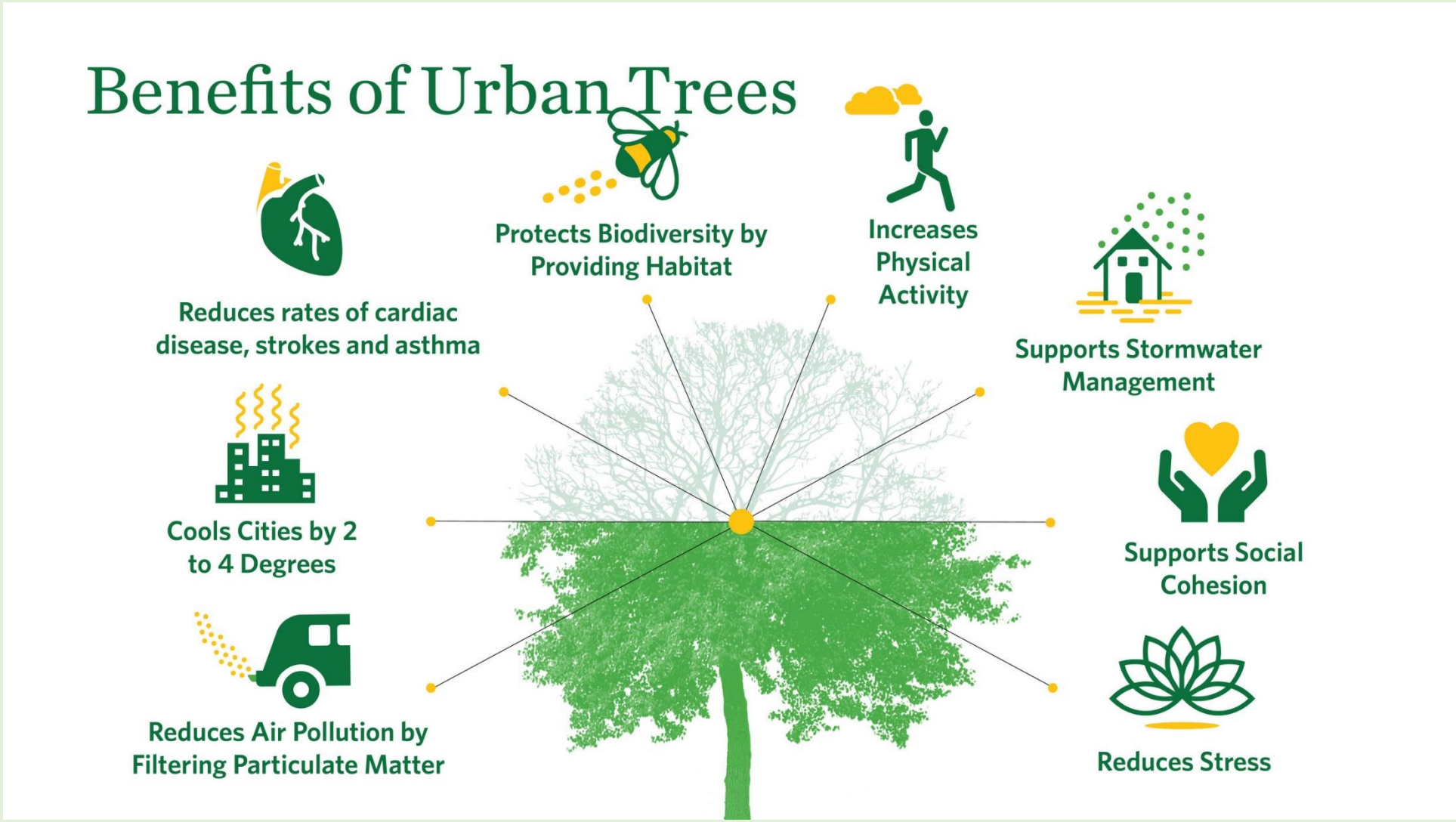
The above description calls attention to the intervention to minimize the future lopsided boulevard trees in Ramsey's most prominent street. Completing the trees along this street will also improve the overall aesthetic in this area of the downtown and include traffic calming benefits. The installation of trees and irrigation will also reduce future costs for private developer for sites that abut Sunwood Drive.

Expenditures	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Improvements Other than Building Cost	80,000										80,000
Total	**80,000**										**80,000**

Funding Sources	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Tax Increment Fund #14	80,000										80,000
Total	**80,000**										**80,000**

URBAN FORESTRY:
TREES IN THE STREETSCAPE





Illustrative Benefits of Street Trees

Money Does Grow on Trees!
Investing in Ramsey's Streetside Urban Forest

Prepared by
Ada Moreno Gomez, Nick Kieser, and
Victoria Dan

Students in PA 5211 Land Use Planning
Instructor: Dr. Fernando Burga
Hubert H. Humphrey School of Public Affairs

Prepared in Collaboration with
Chris Anderson
City Planner
City of Ramsey

City of RAMSEY

Resilient Communities Project
University of Minnesota
Building community-university partnerships for sustainability

The project on which this report is based was completed in collaboration with the City of Ramsey as part of the 2017–2018 Resilient Communities Project (RCP) partnership. RCP is a program at the University of Minnesota's Center for Urban and Regional Affairs (CURA) that connects University faculty and students with Minnesota communities to address strategic projects that advance local resilience and sustainability.

The contents of this report represent the views of the authors, and do not necessarily reflect those of RCP, CURA, the Regents of the University of Minnesota, or the City of Ramsey.

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Money Does Grow on Trees!

Investing in Ramsey's Streetside Urban Forest

1

Introduction

Planting ahead: Ramsey's street tree inventory

as a proactive approach to planning for a resilient city

Tree inventories are used to assess and manage forest and community trees. As a tool for Urban Forest Management, they guide and inform public officials to **prioritize and budget for the proactive management of public trees.** Beyond aesthetic appeal, trees provide a multitude of **ecosystem services (stormwater benefits, pollution mitigation, and energy savings)** to individuals, businesses, and visitors alike. An inventory can be used for management and policy recommendations, to quantify the dollar value of a city's urban forest, and to educate residents about the benefits of a well-managed community forest.

A regularly updated inventory provides Ramsey with crucial data for maintaining its trees, enabling Ramsey to eventually **manage larger and more complex urban forests**. Well-managed trees will ensure that **future generations of Ramsey residents** will share in the benefits of **more engaging public spaces** and a **connected community**.

Improved Drainage

Trees **reduce stormwater runoff** by absorbing the water down their trunks and into the earth below. They act as natural sponges by filtering water and **preventing stormwater from carrying pollutants** into natural waterways like rivers and lakes.

Energy Savings

Trees benefit neighborhoods and homes by **reducing energy costs.** During hot summer months their shade can reduce **air conditioning** use and during the winter they provide wind barriers to decrease the need for **heating**.

Vibrant Community

Embracing the ecosystem services and property value added by trees will lead to smart planting practices, which in turn benefits the well-being of communities. Trees promote community vibrancy by improving **health, safety,** and **neighborhood satisfaction.**

Cleaner Air

Trees improve air quality by **absorbing and storing CO_2** while **releasing oxygen** back into the atmosphere. They clean the air by absorbing odor and pollutants and filtering out **airborne particles.**

Added Property Value

Trees improve the value of homes and the aesthetic appeal of a neighborhood. In addition to providing **shade** and **privacy**, a well maintained landscape adds **curb appeal** and increases the value the property.

We have three main objectives

for developing a street tree planting framework

Information • Provide the City of Ramsey with the information and resources necessary to make better budgetary and management decisions for their upcoming Comprehensive Plan

Pilot • Examine the value of an inventory through a "micro" pilot of Sunwood Drive, which assesses tree genus, diameter at breast height (DBH), location, and canopy quality

Vision • Suggest a long-range vision for tree planting in Ramsey, which can be made possible through regular inventorying and assessment

We will see the benefits of a tree inventory in the following posters...

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Resilient Communities Project — University of Minnesota Driven to Discover℠ — City of Ramsey

References:
PennState Extension. (2017). *Conducting a Community Tree Inventory*. Retrieved from https://extension.psu.edu/conducting-a-community-tree-inventory
United States Forest Service. i-Tree Design (Version 6.0) [web application]. Available from https://design.itreetools.org/

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Investing in Ramsey's Streetside Urban Forest

2 Benefits

An appreciative tree advantage:

A look at the 20-year benefits of street trees

Trees are unique assets to cities and properties because they generally appreciate in value as they grow and age. Some trees do survive the urban environment for over a century, but most city street trees have a lifespan of up to 20 years.

Even so, in two decades a tree can impart significant benefits, and as the tree ages it adds to **property values** and more efficiently provides **ecosystem services** to owners and the wider community. With patience, young trees will start generating more value than the cost of planting and maintenance.

Over the next 20 years, these two oak trees outside Ramsey City Hall will perform valuable services and increase property value as the canopy grows...

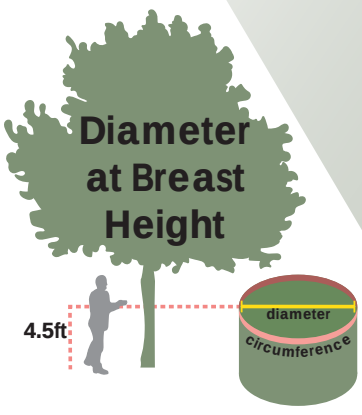
2017 $47 → 2037 $154 → 20 years $1,168

Return on Investment
over one year

$1 spent on tree management

$4 returned to the community

Diameter at Breast Height



A tree's age and size is inferred from its Diameter at Breast Height (DBH), which is the trunk diameter at 4.5 ft from the ground. Measuring DBH is non-invasive: find the diameter using a diameter tape or by calculating from the circumference.

CO_2 Removal

10,676 LB

Equivalent to the annual emission of a typical passenger vehicle

Electricity Savings

1,461 KWH

Enough to power a household microwave for **81 days**

More Property Value

$44 if each tree grows to 10" DBH

Compared to **$23 in 2017** with approximately 4"-5" DBH

Stormwater Interception

19,093 GALLONS

Stores and filters enough runoff to fill **477 bathtubs**

Natural Gas Savings

285 THERMS

Enough to operate a household dryer for **59 days**

Trees Generate Diverse Benefits and Savings

Trees are nature's workhorse, and they provide significant and measurable benefits to communities. Street trees **clean the air, reduce energy expenses, filter stormwater,** and **increase property values**. We will first explore how street trees help **maximize stormwater management by reducing surface water pollution**.

Stormwater

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City of Ramsey

References:
Casey Trees & Davey Tree Expert Co. National Tree Benefit Calculator (Beta) [web application]. Available from http://www.treebenefits.com/calculator/
United States Forest Service. i-Tree Design (Version 6.0) [web application]. Available from https://design.itreetools.org/

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Investing in Ramsey's Streetside Urban Forest

3 Stormwater

Improving Runoff Drainage

Each year, Ramsey receives 14 to 15 billion gallons of rainfall. New development expands **impervious surface area**, which includes surfaces like parking lots and roofs that are impenetrable by water. Stormwater systems mitigate flooding by channeling rainfall to stormwater ponds and other surface waters (e.g. wetlands, lakes, and rivers).

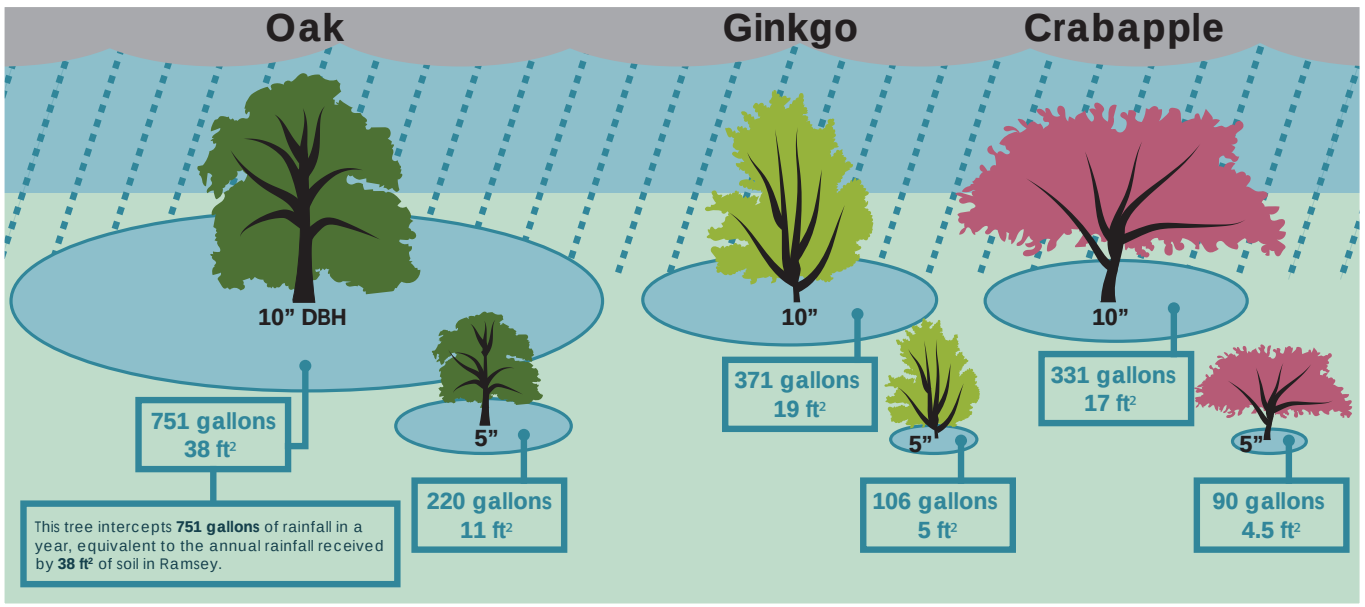
However, **runoff contaminates surface water** when it carries oil, litter, and other pollutants. Trees improve stormwater management by promoting infiltration (movement of water into soil), which helps **filter pollutants** and **recharge aquifers**.

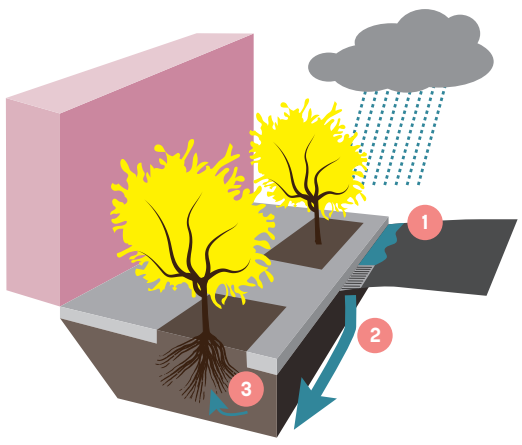
Rainfall Interception

A tree will absorb more water as its **Diameter at Breast Height (DBH)** increases. However, **water interception also varies by species.** In areas that experience heavy runoff, oaks would be effective at intercepting large volumes of water. However, **oaks grow large** and may not fare well in narrow spaces. **Ginkgos** can grow large, but they are **slower-growing** and would be more appropriate in **confined spaces.** In small planting spaces with less runoff, **small trees like crabapples** would be a good alternative.

Annual Rainfall

More development means less surface soil for water infiltration; trees make up for this loss by intercepting water and promoting infiltration.



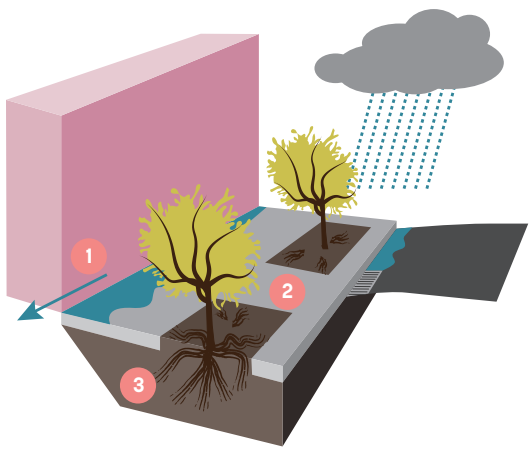


Prototypical perspectival section

Stormwater Flow

1. Stormwater flows into inlet
2. Water distributes and infiltrates through soil
3. Tree roots take up and hold water

Filtered and excess water flows through pipes into the stormwater sewer.



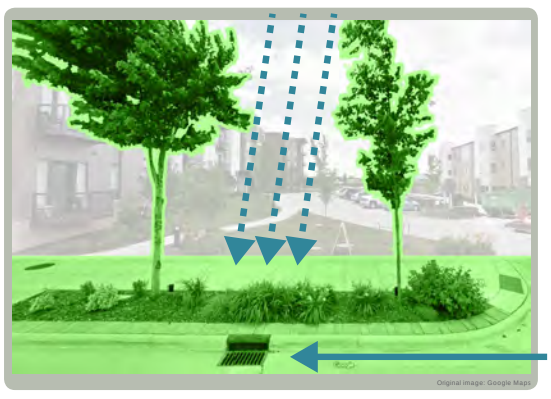
Prototypical perspectival section

Common Issues

1. Water pools away from drainage sites
2. Trees lacking moisture and oxygen send roots to the surface
3. Compacted soil and insufficient root space prevents stormwater absorption

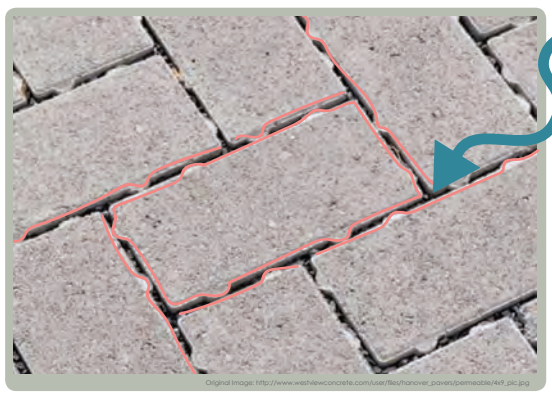
Trees underperform in poor site conditions

Optimizing Stormwater Systems



Original image: Google Maps

In the COR, tree pits combine with planters, and these connect to stormwater sewer inlets. This maximizes the runoff capture from direct rainfall and inlet flow.



Original image: http://www.westviewconcrete.com/user/files/hanover_pavers/permeable/4x9_pic.jpg

Permeable pavers enhance street tree systems by allowing water to pass through small spaces in the sidewalk. This ensures that more water moves into the soil instead of pooling away from trees.

Trees Protect Our Cities from Storms

No one wants to be caught unprepared in a rainstorm. Fortunately, street trees are on the first line of defense when it comes to **intercepting stormwater pollutants**. Next, we see how Ramsey can utilize street trees to **improve air quality by filtering pollutants and reducing pollutant emissions.**

Air Quality

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References:
United States Environmental Protection Agency. (2013). *Stormwater to Street Trees: Engineering Urban Forests for Stormwater Management*. Retrieved from https://www.epa.gov/sites/production/files/2015-11/documents/stormwater2streettrees.pdf
United States Environmental Protection Agency. (2016). *Stormwater Trees: Technical Memorandum*. Retrieved from https://www.epa.gov/sites/production/files/2016-11/documents/final_stormwater_trees_technical_memo_508.pdf

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4

Air Quality

Breathing Cleaner Air

Trees in urban areas significantly affect local and regional air quality. It is commonly known that trees **release oxygen** and **capture carbon dioxide**, but the impact of trees on urban air quality is broad and complex. Trees alter the urban atmosphere and affect air quality in cities by **reducing temperatures**, **removing air pollutants**, changing building energy use, and releasing volatile organic compounds. Using a tree inventory, city officials can improve the air quality within their cities and build healthier communities by planting tree species that reduce the formation of smog.

Temperature Reduction

Air temperature decreases when trees transpire and water vapor from their leaves is released into the atmosphere. By reducing air temperatures, **trees provide cooler summer months**. The **distribution of trees** also **affects temperature**, which is why **an informed and organized tree planting plan** not only **contributes to a healthy** and **well maintained community forest**, but to **increased wellbeing for Ramsey's residents**.

Release of Volatile Organic Compounds (VOCs)

Some tree species are better suited for congested streets as they can **reduce the formation of smog**. Although trees give off chemicals called volatile organic compounds (VOCs), tree species differ in the amount of VOCs they emit. Cities should plan ahead to plant lower VOC-emitting trees along streets with heavy traffic.

Removing Air Pollutants

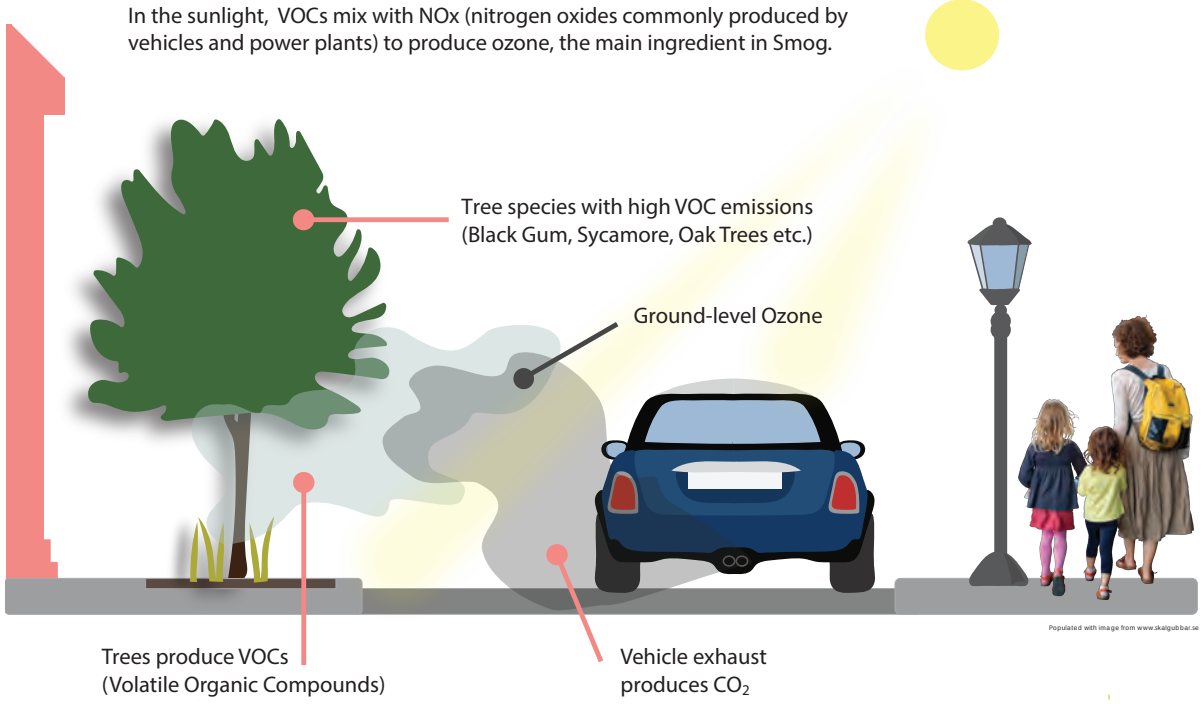
Trees remove air pollution by intercepting and absorbing airborne particles. The larger tree canopy cover a city has, the greater total pollution removal.

Changing Building Energy Use

Trees change building energy use by providing shade during the summer and blocking winds during the winter. As a building's energy use decreases, so do the pollutants being emitted. **Improper tree placement** can lead to **higher utility bills**, so Urban Forest Management allows cities to maximize a tree's energy conservation benefits.

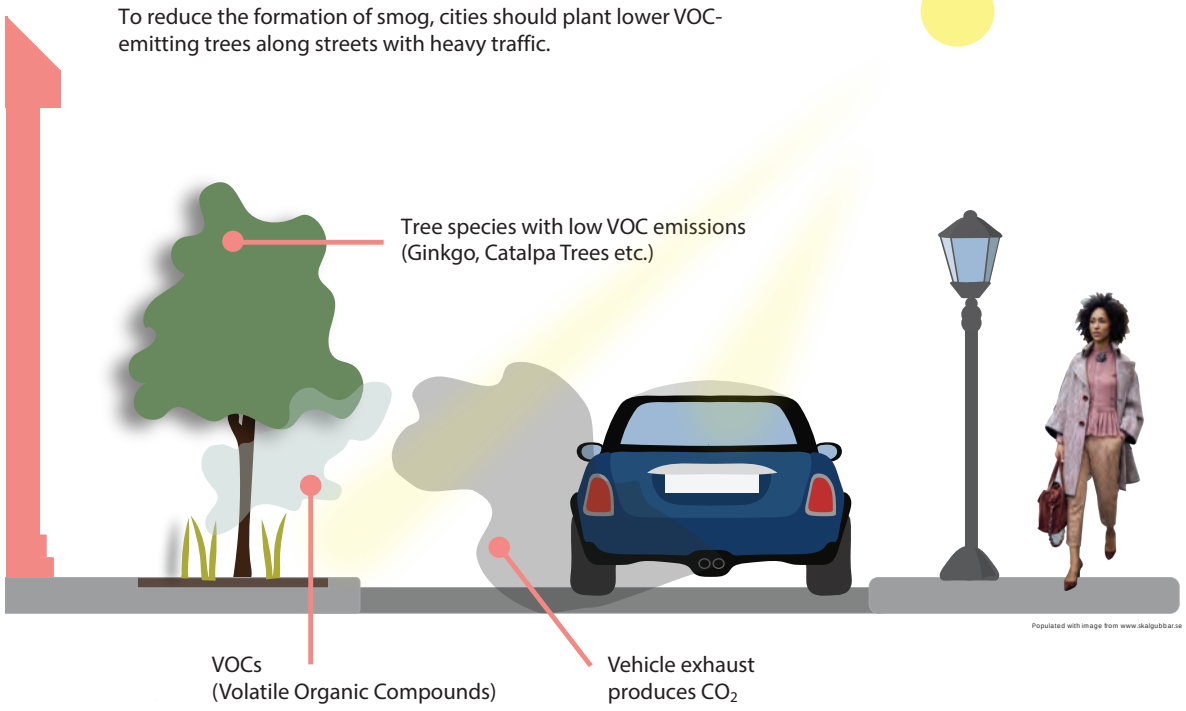
City Street with Poor Air Quality

In the sunlight, VOCs mix with NOx (nitrogen oxides commonly produced by vehicles and power plants) to produce ozone, the main ingredient in Smog.



City Street with Good Air Quality

To reduce the formation of smog, cities should plant lower VOC-emitting trees along streets with heavy traffic.



Trees Make Clean Air

As the number of cars and industries in Ramsey grows, **strategic tree planting initiatives** could **reduce carbon emissions** and **prevent respiratory diseases**. Planting trees with low VOC emissions in congested streets ensures the amount of airborne chemicals in the atmosphere remains low. Likewise, **an informed plan for tree planting guarantees economic returns** for the city and its residents by **raising property values**.

Energy + Property

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References:
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Nowak, D. J., Greenfield, E. J., Hoehn, R. E., & Lapoint, E. (2013). Carbon storage and sequestration by trees in urban and community areas of the United States. *Environmental Pollution 178*, 229-236. Retrieved from http://dx.doi.org/10.1016/j.envpol.2013.03.019

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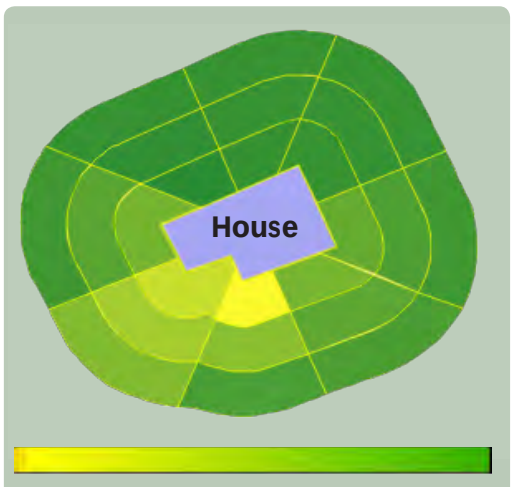
5

Energy + Property

Reducing Energy Expenses

Trees planted in a strategic manner are able to conserve energy for homes and reduce energy bills. In the summer, the leaves of trees provide shade that will reduce the amount of air conditioning a house will use. In the winter, deciduous trees allow more sunlight into homes, which can reduce the amount of heating that is needed. Trees that are planted to the south are the least prioritized. Trees that give shade to an air conditioner can increase the efficiency by 10%. This type of strategic planning is called smart landscaping.



Digital Resource: i-Tree

i-Tree is an easy to use online application that can provide essential information to Ramsey officials and residents. The picture to the left depicts a function of i-Tree; it shows where it is most beneficial to plant a tree on a specific property. i-Tree can also determine the money saved from the existing trees.

The U.S. Department of Energy predicts that the proper placement of only 3 trees can save an average household between $100 and $250 in energy costs annually. Evergreen trees are beneficial to plant in areas that will not shade the home in the winter, but will serve as a windbreak. On average, evergreen trees that are placed properly as a windbreak will decrease a home's fuel consumption by **25%.**

The energy savings from the street trees in the above photo total **$41.34** in 2017. As these trees mature, their canopy will increase which will result in higher savings.

Adding to Property Values

Street trees increase the property values of every property. The trees bring an aesthetic appeal along with their other benefits, which can increase the value of the property. The U.S. Forest Service estimates that mature street trees can increase a property's value by **10%** on average. As property values increase then the revenue that is acquired from taxes will increase as well bringing more money into the local municipality.

1.7 days + **$88**

Homes that are within 100 ft of a street tree have an average reduction of 1.7 days on the market which adds **$88** on average to the selling price.

= **$7,000**

A mature street tree that has a 300 square foot canopy cover can add approximately **$7,000** to the property value.

From → **To**

10% tree canopy cover increase = **$1,371**

A study done in Ramsey and Dakota Counties concluded that a **10%** increase in tree cover that is within 100 meters of a house will add approximately **$1,371** to the market value.

Trees Save Energy and Add Property Value

Street trees provide energy savings and increase property value, most notably in the residential areas. i-Tree is an easy and informative tool that residents in Ramsey can use to maximize the benefits of planting trees on their property. The benefit of street trees that is most evident is the added vibrancy and health to the community.

Community

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References:
City and County of San Francisco. (2014). *San Francisco Urban Forest Plan* [Report]. Retrieved from http://www.sf-planning.org/ftp/files/plans-and-programs/planning-for-the-city/urban-forest-plan/Urban_Forest_Plan_Final-092314.pdf
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Investing in Ramsey's Streetside Urban Forest

6 Community

Creating Vibrant Community

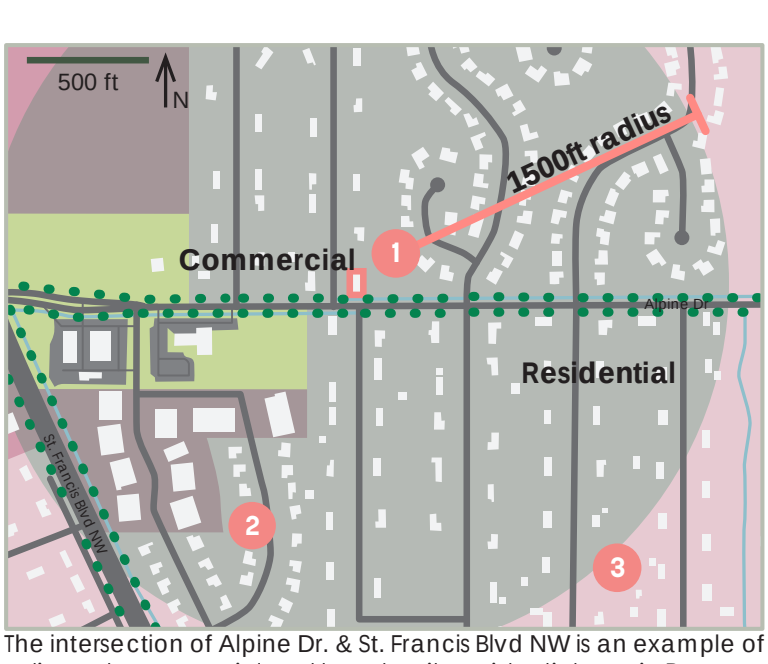
The long-lasting benefit of street trees is that they add to a more vibrant and healthy community. Street trees impact how people interact with, move through, and perceive their environment. As Ramsey grows, it is important that residents and visitors continue to feel **safe**, **connected**, and **comfortable**. The community will experience big changes as Ramsey develops, and the City can proactively support this transition with street tree planting solutions.

Tree Attraction

In spaces where commercial and residential uses overlap or are proximal, **street trees help mediate the relationship between places that would otherwise be in conflict.**

Street trees can impact driving behavior and route choice, and they can be used to **attract people to retail, restaurants, and other destinations.**

Residents will also have a **higher quality of life** in neighborhoods with dense street tree planting.



The intersection of Alpine Dr. & St. Francis Blvd NW is an example of adjacent commercial and low-density residential uses in Ramsey.

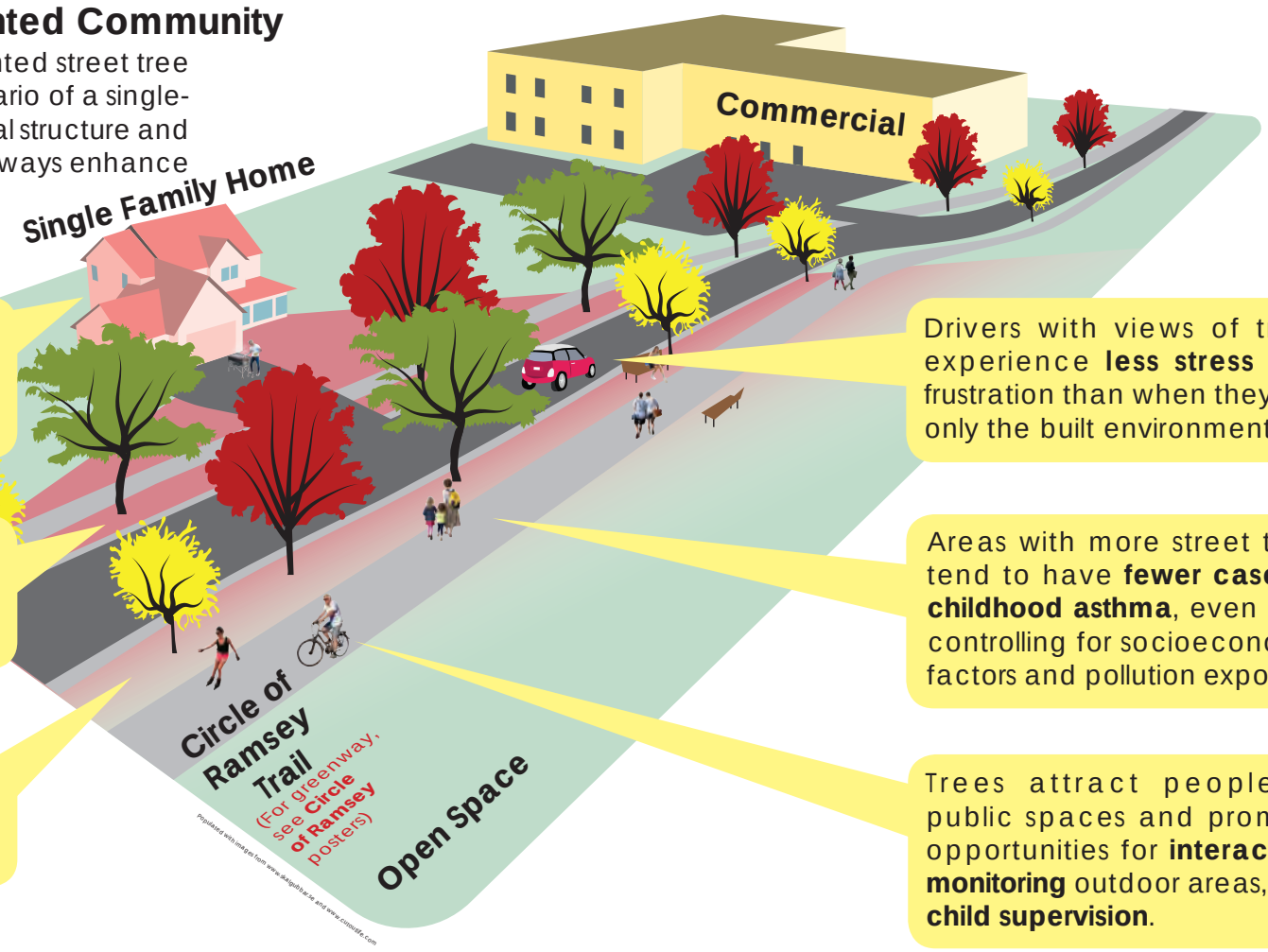
1. Because it generates traffic, nearby retail reduces neighborhood satisfaction for residents living in single-family homes; for these residents, trees within 1500ft **improve satisfaction**.

2. More than half the time, local residents will **choose scenic driving routes** over faster routes. Planting trees on arterial roads can mitigate thru-traffic on residential streets.

3. On suburban roads, people **drive slower** where there are street trees.

Envisioning a Tree-Oriented Community

An example of community-oriented street tree planting in a hypothetical scenario of a single-family home next to a commercial structure and open space. Sidewalks and bikeways enhance the functions of street trees.



Residents who can **see trees from their living rooms** have higher neighborhood satisfaction.

On the rural-urban fringe, residents prefer environments of **rural character**, which can be evoked with tree planting.

A public tree in right-of-way is 40% more effective at **reducing crime** than a private tree.

Drivers with views of trees experience **less stress** and frustration than when they see only the built environment.

Areas with more street trees tend to have **fewer cases of childhood asthma**, even after controlling for socioeconomic factors and pollution exposure.

Trees attract people to public spaces and promote opportunities for **interaction**, **monitoring** outdoor areas, and **child supervision**.

Trees Create Communities

Trees bring communities alive by enhancing the experiences of residents and visitors. They promote the **well-being of all people**--drivers and pedestrians, young and old, locals and out-of-towners. Next, we will learn the **benefits and disadvantages of planting specific kinds of trees** on Ramsey streets.

Diversity

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City of Ramsey

References:
Burden, D. (2008). *22 Benefits of Urban Street Trees*. Retrieved from http://www.fcstreetsforpeople.org/sites/fcstreetsforpeople.org/files/22%20Benefits%20of%20Urban%20Street%20Trees.pdf
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7

Diversity

Good planting for a growing city

starts with putting the right trees in the right places

A **tree inventory** will provide the City of Ramsey with **valuable information** to **guide future tree planting initiatives**. It is crucial cities undertake **tree planting programs** to **maximize the ecosystem services** trees provide and **prevent economic losses**. However, it is equally important to assess the diversity of a city's Urban Forest to select tree species that can adapt and bring benefits to their surroundings. Cities, businesses, and community members can determine the best trees for planting based on tree qualities (e.g. shading, ornamentation) as well as restrictions on planting conditions (e.g. soil type, limited space). **Below we show the Tree species in Ramsey.**

Catalpa (genus *Catalpa*)

Original image: http://bit.ly/2krVjs5

Traits:
- Bean-like seed pods
- Large leaves
- Irregular crown
- Height: 60'
- Canopy: 25'

Benefits:
- Fast growth rate
- Adapts to urban stress
- Tolerates air pollution and drought
- Shading canopy
- Fragrant blossoms

Weaknesses:
- Weak structure
- Falling flowers and fruit need clean-up
- Threatened by verticillium wilt, leaf spots, and powdery mildew

Catalpas are resilient, but they require cleanup.

Crabapple (genus *Malus*)

Original image: http://bit.ly/2BOTDYw

Traits:
- Dense, rounded tree
- Grows small fruit
- Height: 30'
- Canopy: 20'

Benefits:
- Low maintenance
- Adapts to urban stress
- Tolerates salt, alkaline soil, and drought
- Profuse spring flowering

Weaknesses:
- Susceptible to disease and fungus, including fireblight and scab
- Requires full sun

Crabapples fare well in urban conditions and are low-maintenance.

Ginkgo (genus *Ginkgo*)

Original image: http://bit.ly/2AWadrY

Traits:
- Short branches
- Fan-shaped leaves
- Height: 80'
- Canopy: 30'

Benefits:
- Low Maintenance
- Adapts to urban stress
- Tolerates air pollution, salt, confined spaces
- Grows in alkaline, acidic, and compacted soil
- Shading canopy
- Leaves turn bright yellow in fall

Weaknesses:
- Slow growth rate
- Requires full sun

Ginkgos adapt well to the city, although they are slow-growing.

Maple (genus *Acer*)

Original image: http://bit.ly/2kukuk9

Traits:
- 5-lobed leaves
- Round/oval growth
- Height: 50'-90'
- Canopy: 35'-40'

Benefits:
- Native species
- Adapts to urban stress
- Tolerates drought
- Grows in alkaline and anaerobic soil
- Shading canopy
- Colorful fall foliage

Weaknesses:
- Limited tolerance to compaction, salt, and confined spaces
- Branch loss
- Weakened by the Asian Longhorned Beetle

Maples are attractive shading trees, but they are sensitive to site conditions.

Trees in Ramsey

Cities should follow the **10-20-30 guide** for tree planting: no more than **10% any species**, no more than **20% of any genus**, and no more than **30% of any family**. This is crucial for urban forest resilience against disease and invading insects. Ash trees (bottom right) are not recommended for new planting due to the prevalence of Emerald Ash Borers.

Honey Locust (genus *Gleditsia*)

Original image: http://bit.ly/2AwNtO8

Traits:
- Compound leaves
- Height: 70'
- Canopy: 40'

Benefits:
- Native species
- Fast growth rate
- Adapts to urban stress
- Tolerates salt and drought
- Grows in alkaline soil
- Strong branches
- Colorful fall foliage

Weaknesses:
- Susceptible to insect attacks
- Pods require clean-up

Honey Locusts are fast-growing and adaptable, but require clean-up.

Elm (genus *Ulmus*)

Original image: http://bit.ly/2AV7j6P

Traits:
- Toothed leaves
- Umbrella-like crown
- Height: 70'
- Canopy: 40'

Benefits:
- Native species
- Moderate to fast growth rate
- Adapts to urban stress
- Tolerates salt, moisture, drought, and wind
- Shading canopy

Weaknesses:
- Requires full sun
- Susceptible to Dutch Elm Disease

Consider planting Elm varieties that are resistant to Dutch Elm Disease.

Oak (genus *Quercus*)

Original image: http://bit.ly/2AyQNsD

Traits:
- Narrow crown
- Large acorns
- Height: 80'-100'
- Canopy: 40'-60'

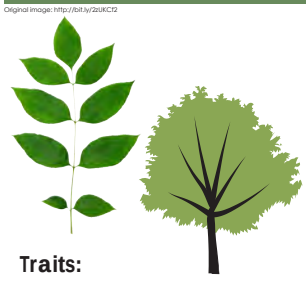
Benefits:
- Native species
- Fast growth rate
- Adapts to urban stress
- Tolerates pollution
- Grows in most soil textures
- Colorful fall leaves

Weaknesses:
- Intolerant of salt
- Requires full sun
- Susceptible to Oak Wilt

Oaks need space and should be planted apart to prevent the spread of Oak Wilt.

Ash (genus *Fraxinus*)

Original image: http://bit.ly/2zUKCf2



Traits:
- Compound leaves
- Rounded crown
- Height: 65'-90'
- Canopy: 20'-40'

Benefits:
- Native species
- Fast growth rate
- Tolerates salt
- Grows in compacted and alkaline soil
- Shading canopy
- Tough, elastic wood

Weaknesses:
- Lower tolerance for drought conditions
- Requires full sun
- Threatened by the Emerald Ash Borer

Ash trees should not be newly planted due to the threat of Emerald Ash Borers.

Tree Diversity Matters

No two trees are alike, and cities that respect these differences will achieve successful street planting projects. **Planting diverse trees** that are appropriate for site conditions **ensures a resilient urban forest** yielding **diverse benefits**. In the following poster, we will assess and evaluate the population of street trees in The COR along Sunwood Dr. in Ramsey.

Methods

PA 5211 Land Use Planning • **TEAM:** Ada Moreno Gomez, Nick Kieser, Victoria Dan • **INSTRUCTOR:** Fernando Burga, Ph.D.

Resilient Communities Project
University of Minnesota
Driven to Discover
City of Ramsey

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Money Does Grow on Trees!

Investing in Ramsey's Streetside Urban Forest

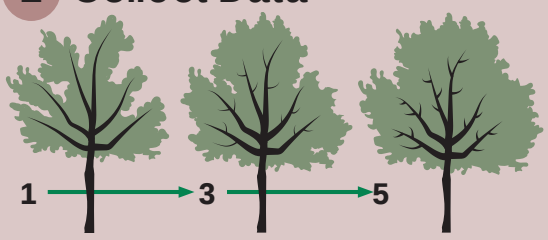
Methods

how we completed the COR and residential tree inventories

For our tree inventories we collected data on a total of 130 trees in The COR and in a residential neighborhood. For each tree we collected the diameter at breast height (DBH), geographic coordinates, tree species, and the quality of the canopy cover. Once the data was collected, we calculated the age, size and monetary benefits for each tree. The data that we collected for each tree inventory can be seen on the next two posters. **Our methods for data collection can be used as a model for future tree inventories in Ramsey at more locations.**

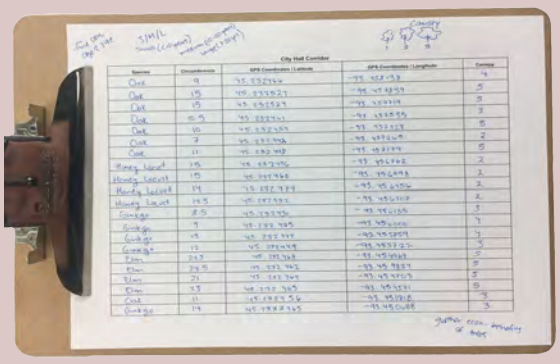
1 Gather Tools

2 Collect Data



These trees show the difference between high and low quality canopy cover. In our inventories, we used a rating scale of 1-5. **The trees with a higher quality canopy cover maximize the benefits.**

The ruler that we used is called a diameter tape. This tape is used by foresters to determine **DBH**.



The two pictures above show our completed data collection forms. **The pictures show the forms we filled out to record tree species, DBH, coordinates and the tree canopy cover quality.** Once we had our field data we transferred the data into an Excel sheet. With this data, we calculated the age and averages of the diameter and canopy cover quality. We also calculated the monetary value for each tree in our inventories which led to our average monetary value for each tree for the area.

To determinine the location of each tree, we used a coordinate system app on our smartphones. The app is called *Coordinates* and can be found in the iPhone app store. In future tree inventories, **we suggest using a GPS locator** rather than this app because GPS locators are able to determine the location of the trees more precisely.

3 Analysis

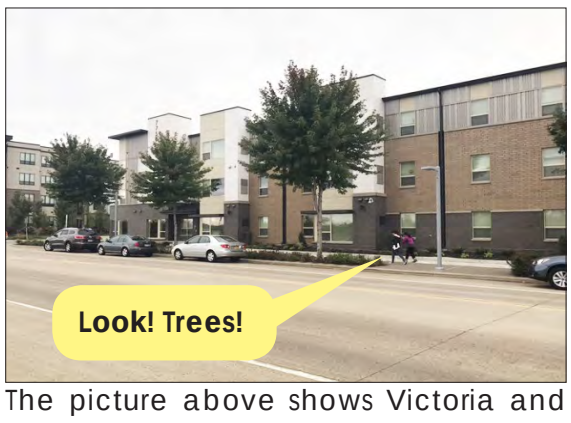
The two Excel sheets to the right show the iteration of our tree inventory data after inputing our data into Excel. **The Excel sheets also show our calculations for each tree to determine the monetary value, size, age and circumference of each tree.** These show only a portion of the trees that were inventoried.

City Hall Corridor

Species	Circumference	GPS Coordinates / Latitude	GPS Coordinates / Longitude	Canopy	DBH	Overall Benefits per Year	Age	Size
Oak	11	45.23309	-93.461181	4	3.5	$14.00	14	M
Crab Apple	8	45.232433	-93.461467	2	2.5			
Crab Apple	9	45.233275	-93.461734	2	2.9			
Crab Apple	8.5	45.233295	-93.461834	2	2.7			
Crab Apple	10	45.233368	-93.461965	3	3.2			
Maple	10	45.23334	-93.462201	3	3.2	$10.00	18	M
Maple	8	45.23339	-93.462246	2	2.5	$7.00	14	M
Maple	18	45.233508	-93.462648	5	5.7	$28.00	32	L
Maple	16	45.233539	-93.462768	5	5.1	$22.00	28	L
Maple	23	45.23361	-93.462893	5	7.3	$44.00	40	L
Maple	13	45.23361	-93.462948	4	4.1	$15.00	23	L
Maple	18	45.233675	-93.463152	3	3.2	$10.00	18	M
Maple	28.5	45.233716	-93.463320	5	9.1	$62.00	50	L
Maple	19.5	45.233739	-93.463445	5	6.2	$33.00	34	L
Maple	29.5	45.233756	-93.463550	5	9.4	$66.00	52	L
Oak	20	45.233825	-93.463715	5	6.4	$34.00	25	L
Oak	18	45.23386	-93.463833	5	5.7	$28.00	23	L
Oak	21	45.233905	-93.463936	5	6.7	$36.00	27	L
Oak	20.5	45.233955	-93.464048	5	6.5	$35.00	26	L
Oak	21	45.233992	-93.464153	5	6.7	$36.00	27	L
Oak	21	45.234008	-93.464264	5	6.7	$36.00	27	L
Elm	32	45.234131	-93.464724	5	10.2	$68.00	41	L
Elm	32.5	45.23417	-93.464852	5	10.4	$70.00	41	L
Elm	16	45.23421	-93.464943	3	5.1	$23.00	20	M
Elm	18	45.234258	-93.465070	4	5.7	$28.00	23	L
Maple	27	45.234292	-93.465242	4	8.6	$57.00	47	L
Maple	24	45.234328	-93.465374	5	7.6	$47.00	42	L
Maple	22.5	45.23438	-93.465471	5	7.2	$43.00	39	L
Maple	20	45.234514	-93.465722	3	6.4	$35.00	35	L
Maple	21	45.234567	-93.465829	3	6.7	$38.00	37	L
Maple	29	45.234642	-93.465935	3	9.2	$63.00	51	L
Maple	23	45.234698	-93.466066	3	7.3	$44.00	40	L
Maple	28	45.234743	-93.466198	4	8.9	$60.00	49	L
Maple	26.5	45.234807	-93.466295	4	8.4	$55.00	46	L
Maple	28	45.234846	-93.466386	5	8.9	$60.00	49	L
Maple	27.5	45.234906	-93.466478	5	8.8	$59.00	48	L
					Total Benefits	$2,328.00		

Residential Corridor

Species	Circumference	GPS Coordinates / Latitude	GPS Coordinates / Longitude	Canopy	DBH	Overall Benefits per Year	Age	Size
Elm	26.5	45.237919	-93.416367	4	8.4	$68.00	34	L
Elm	24	45.237934	-93.416163	3	7.6	$60.00	31	L
Elm	25	45.418033	-93.418033	3	8.0	$64.00	32	L
Elm	27	45.237940	-93.417880	4	8.6	$70.00	34	L
Elm	32	45.237940	-93.417733	4	10.2	$88.00	41	L
Elm	24.5	45.327947	-93.417561	3	7.8	$62.00	31	L
Elm	26	45.237939	-93.417361	3	8.3	$67.00	33	L
Elm	26.5	45.237894	-93.417209	4	8.4	$68.00	34	L
Elm	30	45.237992	-93.417045	3	9.6	$81.00	38	L
Elm	38	45.237964	-93.416879	4	12.1	$112.00	48	L
Elm	20.5	45.237959	-93.416731	3	6.5	$46.00	26	L
Elm	30	45.237999	-93.416574	3	9.6	$81.00	38	L
Elm	30.5	45.237970	-93.416382	3	9.7	$82.00	39	L
Elm	31	45.237988	-93.416211	2	9.9	$85.00	39	L
Elm	39	45.237954	-93.416050	4	12.4	$115.00	50	L
Elm	45	45.237973	-93.415864	4	14.3	$136.00	57	L
Elm	44	45.237954	-93.415726	4	14.0	$135.00	56	L
Elm	14	45.23799	-93.415210	2	4.5	$28.00	18	M
Maple	5.5	45.238049	-93.415443	1	1.8	$4.00	10	S
Elm	10.5	45.238056	-93.415618	2	3.3	$20.00	13	S
Elm	21.5	45.238069	-93.415756	3	6.8	$51.00	27	L
Elm	22	45.238042	-93.415979	3	7.0	$53.00	28	L
Elm	14	45.238054	-93.416141	1	4.5	$28.00	18	M
Elm	30	45.238099	-93.416520	4	9.6	$81.00	38	L
Elm	42.5	45.238079	-93.416401	5	13.5	$129.00	54	L
Elm	43	45.238058	-93.416579	5	13.7	$131.00	55	L
Elm	32.5	45.23806	-93.416773	4	10.4	$91.00	41	L
Elm	35	45.238043	-93.417310	3	11.1	$99.00	45	L
Linden	14.5	45.23808	-93.417499	4	4.6	$22.00	14	M
Elm	29.5	45.238082	-93.417640	3	9.4	$79.00	38	L
Elm	27.5	45.238053	-93.417789	3	8.8	$72.00	35	L
Elm	28	45.238026	-93.417973	5	8.9	$73.00	36	L
Elm	39	45.238028	-93.417136	5	12.4	$115.00	50	L
Elm	23.5	45.23802	-93.416311	3	7.5	$59.00	30	L
Elm	30	45.238037	-93.416407	4	9.6	$81.00	38	L



The picture above shows Victoria and Ada on Sunwood Drive, completing the COR tree inventory.

Calculating Street Trees

These methods will be built upon by a **class in spring semester as a part of the RCP partnership**. It is important to **keep the methods of Ramsey's tree inventories consistent** so the results are as accurate as possible, so the spring class can evaluate our methods to determine the optimal way to complete the inventories. In the following poster, we will **assess and evaluate the population of street trees** in The COR along Sunwood Drive in Ramsey.

COR Inventory

PA 5211 Land Use Planning • **TEAM:** Ada Moreno Gomez, Nick Kieser, Victoria Dan • **INSTRUCTOR:** Fernando Burga, Ph.D.

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9

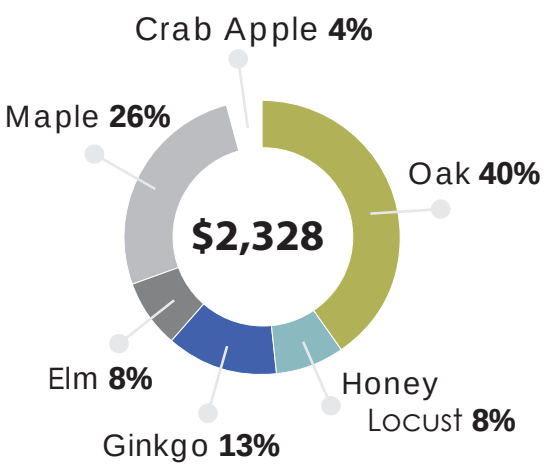
COR Inventory

The COR trees as place-makers

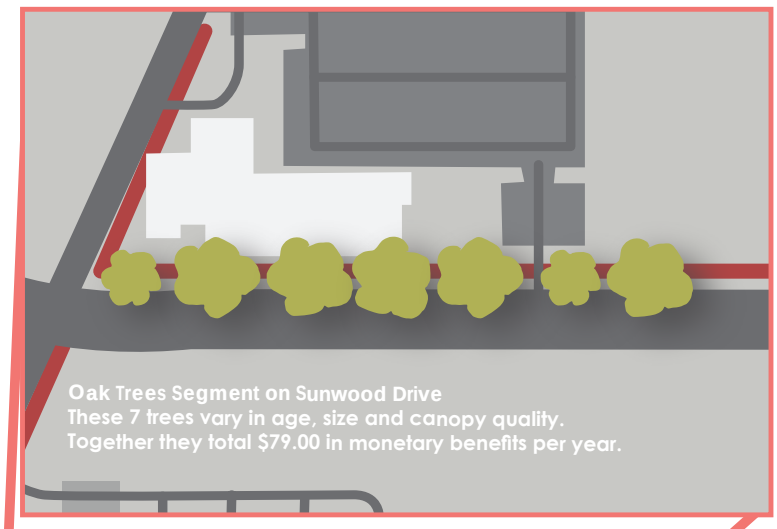
enhance downtown character through diverse street tree planting

A **pilot tree inventory** was taken on **Sunwood Drive** on what is defined as a **'destination street'** throughout The COR. A total of **97 trees** were inventoried comprised of 6 species of trees: t**he Bicolor Oak, Skyline Honey Locust, Ginkgo, Accolade Elm, Sienna Glenn Maple** and **Crabapple**. The trees along Sunwood Drive **provide variety**, **ensuring protection against diseases** and **visual aesthetics** for a street projected to support commerce and attract shoppers and employees. The age of the trees inventoried ranged from 9 to 50 years of age. However, to guarantee trees don't wither and decay at the same time, they should be **planted sparsely**. If a large section of trees reaches the end of its life span at the same time the cost of replacement will be higher for Ramsey.

Tree Diversity on Sunwood Dr.

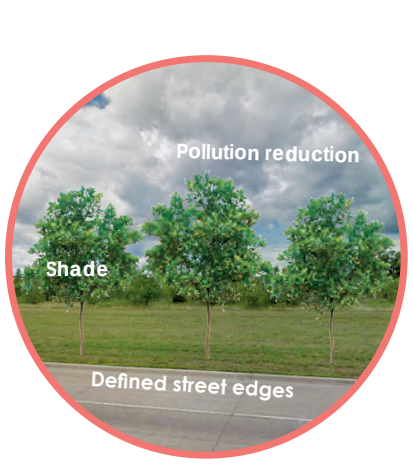


Total Monetary Benefits Per Year	$2,328.00
Average Monetary Benefits Per Tree	$25.58
Average Canopy Quality	3.7
Average Diameter	5.1 Inches



Current View

Future Possibility



Proper placement is vital to enhance the **ecosystem services** trees provide. This young **Oak tree** located in front of **Ramsey's City Hall** provides **aesthetic appeal** to destination streets.

Trees Define Destinations

The **97 street trees inventoried** on The COR's Sunwood Drive total **$2,328 in economic benefits** for the City of Ramsey. The trees planted vary in species and age, but as more trees are planted throughout destination and downtown streets, **city officials must consider the lifespan of trees** and their **cost of replacement.** These considerations must also extend to other arteries within The COR, and street planting in residential areas.

Residential Inventory

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10 Residential Inventory

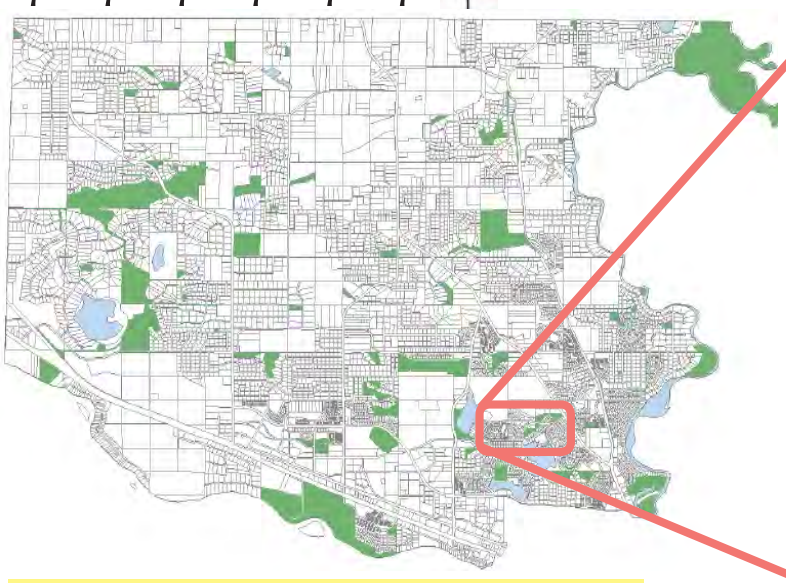
Residential trees as local heritage

show the lasting benefits of neighborhood street trees

The r**esidential tree inventory** was taken on **Sunwood Drive**, between Potassium Street and 147th Street. The trees in this inventory are more mature compared to the trees in The COR inventory. From this small sample, the **main issue** with the trees in the residential corridor is the **lack of diversity**. The **majority of the trees** sampled were **Elms** with **only one Maple** and **one Linden**. With the **lack of diversity**, there is a **higher chance of all the trees dying** from a species- specific disease. If all of the Elms died from a disease, then there would be **great financial**, **environmental and social burdens** put on Ramsey to replace those trees.

Tree Diversity between Potassium St. and 147th St.

Total Monetary Benefits Per Year	$2,640.00
Average Monetary Benefit Per Tree	$75.43
Average Canopy Quality	3.4
Average Diameter	8.9 Inches



Sunwood Drive is a good example of a **residential street** that has **good quality mature street trees.** The picture to the right shows Potassium Street south of Sunwood Drive. The benefits that are laid out in the earlier posters show how **residents can benefit from having street trees in their neighborhood**. To maximize the benefits of street trees, there needs to be a **system in place** to plant a more **diverse group of trees** in residential areas. In this small tree inventory, there is an overwhelming number of Elm trees. If a more **diverse group of trees** is planted then there will be **less risk of spreading diseases**.

Current View

Future Possibility

Trees Make a Home

These mature street trees along Sunwood Drive are a good example to show how Ramsey can showcase the benefits of residential street trees. These images also show what the future neighborhoods can look like if street trees are planted. A tree inventory is essential for all of Ramsey to calculate the existing tree population and to check the quality of each tree.

Conclusion

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11

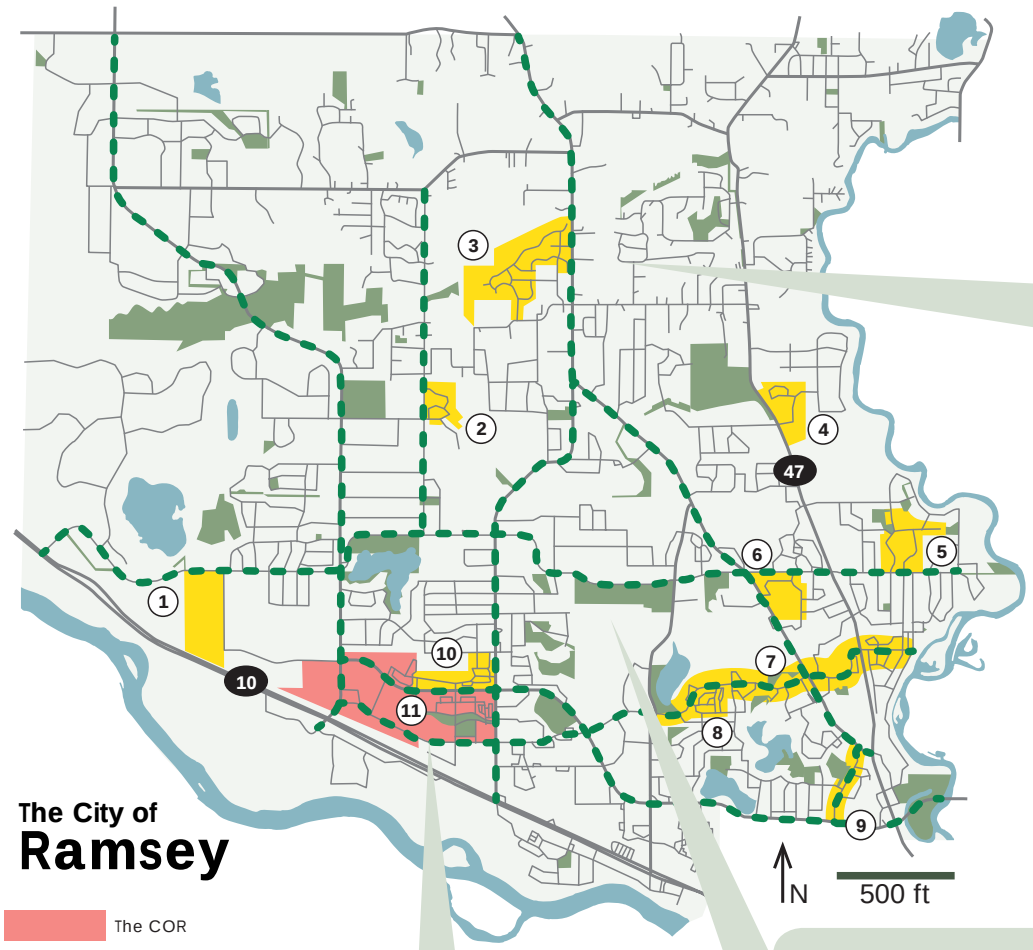
Conclusion

Envision all trees lead to the COR

in a street tree network concept for Ramsey

Each street tree bestows unique benefits, but **collectively a street tree network can create a green roadmap serving an entire community**. Ramsey's most ambitious street tree planting is occuring in the COR, the mixed use downtown development that will provide jobs, housing, retail, and recreation for a growing city. Within a network, street trees would serve as **guideposts for directing movement in and out of The COR**; they would also **create a spatial narrative about moving and experiencing the city and enhance Ramsey's identity through place-making**.

Our concept for a potential street tree network in Ramsey.



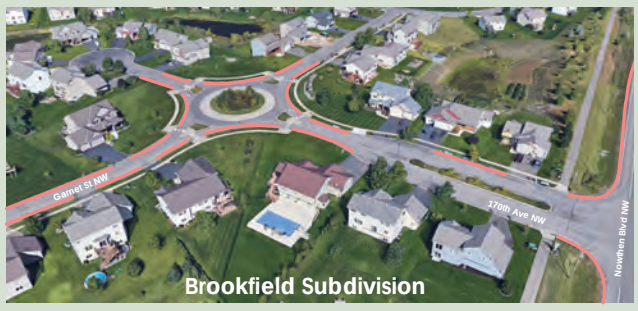
The City of
Ramsey

- The COR
- Residential area of interest
- Park + open space
- Street tree planting

① Riverstone
② Sweetbay Ridge*
③ Brookfield*
④ Estates of Silver Oaks*
⑤ Highlands at River Park
⑥ Meadow*
⑦ Sunwood Dr NW
⑧ Village of Sunfish Lake*
⑨ Dysprosiumn St NW
⑩ Town Center Gardens*
⑪ The COR*

**Major housing development with 51-2200 units planned*

In a potential street tree network, spokes of trees radiate from the COR, **centralizing connections** along arterials and congested local roads. This would encourage **travel choices** along major routes while also generating **traffic calming** benefits.



Brookfield Subdivision

Brookfield with Street Trees

Street trees create **visual transitions** into residential spaces to encourage **safe driving**, promote **outdoor activity**, and **buffer residents from the noise and sight of traffic**. As place-making tools, street trees can enhance the **aesthetic character** of neighborhoods like Brookfield by creating **unique spaces**.

Some public spaces are **vehicle-oriented rather than pedestrian-oriented.** At Apline Park, an adjacent neighborhood has crosswalk access, but there is no crossing signal or stop sign. Trees can enhance **safety** by **calming traffic** leading up to the crosswalk, while leaving space for **visibility** at the immediate crosswalk area. This approach can be used with streets at **parks, schools, and shopping areas** where pedestrian safety can be improved.

Existing
Alpine Park

Proposed
Alpine Park withStreet Trees

Street trees tell a story: This is Ramsey.

In many ways, Ramsey will **change**, **grow**, and **mature** as a city. Street trees are a smart investment that generates **savings from ecostystem services** while also **enhancing the social character of a community.** Furthermore, a **network of trees** connects **people to places** as well as **people to ideas** of **identity**, **pride**, and **values** that are vital to a city's integrity.

PA 5211 Land Use Planning • **TEAM:** Ada Moreno Gomez, Nick Kieser, Victoria Dan • **INSTRUCTOR:** Fernando Burga, Ph.D.

Resilient Communities Project
University of Minnesota
Driven to Discover
City of Ramsey


Armstrong Blvd
Ramsey Blvd
Bunker Lake Blvd
Sunwood Dr
169
10
wsb

Public Works Committee **5. 6.**

Meeting Date: 01/18/2022

By: Bruce Westby, Engineering/Public Works

Title:

Consider Recommendation for City Council to Reject Bids for Water Treatment Plant Trunk Watermain Improvements, Improvement Project #21-08

Purpose/Background:

Purpose:

The purpose of this case is to consider a recommendation for the City Council to reject bids for the Water Treatment Plant Trunk Watermain Improvements, Improvement Project #21-08.

Background:

On March 9, 2021, the Ramsey City Council adopted Resolution #21-061 awarding a contract to SEH Inc. to prepare plans and specifications for Improvement Project #21-08, Water Treatment Plant Trunk Watermain Improvements. A copy of this resolution is attached.

Plans were prepared with a base bid and an alternate bid.

- Base bid – Specifies a combination of construction methods whereby open trenching of plastic (PVC) watermain is specified along the south side of Bunker Lake Boulevard and the north side of 143rd Avenue, while directional drilling of plastic (PVC) watermain is specified at intersections, through Cottonwood Park, under Sunwood Drive, and under the stormwater pond between Hoya and Anderson Dahlen north of 143rd Avenue.
- Alternate bid – Specifies directional drilling of plastic (PVC) watermain across as much of the project area as feasible.

Copies of the title sheet and general layout are attached for reference and the general layout shows all locations of the proposed open trenching and direction drilling for the base bid.

Bids were publicly opened on Tuesday, January 4, 2022, at 10:00 a.m. A total of two (2) bids were received. Bids ranged from a high of $8,391,994.66 to a low of $6,737,287.45 across two bid schedules. Schedule 1 reflected the base bid (combination of open trench and horizontal directional drilling (HDD) installation methods), while Schedule 2 reflected the alternate bid (only HDD installation method). Below is a table showing the two bids received.

Contractor	**Total Schedule 1 Bid**	**Total Schedule 2 Bid**
Park Construction Co.	$6,737,287.45	$7,059,102.16
Forest Lake Contracting, Inc.	$7,652,529.55	$8,391,994.66
Engineer's Estimate	*$4,875,068.50*	*$4,916,194.50*

The low bid received is reflected in the Schedule 1 bid and was submitted by Park Construction Company, of Minneapolis, MN in the amount of $6,737,287.45. This bid was approximately 38% higher than the Engineer's Estimate of $4,875,068.50 due mainly to highly inflated PVC pipe costs, which is reflected in both bids.

Timeframe:

Staff anticipates 15 minutes will be required to present and discuss this case.

Observations/Alternatives:

Observations:
The bidding environment for utility pipes has grown increasingly volatile since 2020. This is due to an overall shortage of pipe and appurtenant materials for various material types. The 2020 winter ice storms caused refineries in Texas to shut down for an extended period of time, which resulted in a shortage of resin needed to manufacture plastic pipe that continues to this day. In addition, a general shortage of pipe and appurtenant materials exists due to continued supply chain disruptions caused primarily by a shortage of drivers resulting from the pandemic, as well as from previous shipping lane blockages and extreme weather events. All this is resulting in inflated pipe costs and long delays between the time materials are ordered and the time they are delivered.

The attached memo from SEH's project manager Chad Setterholm further details the reasons for the volatile pipe bidding environment and goes on to say that at this time it is not known when this volatile bidding environment may subside.

This project was ultimately bid to allow an extended bidding window of 2 months, and to allow bidders to substantially complete their work by mid-2023 to allow the trunk watermain to be operational before the new Water Treatment Facility is proposed to be commissioned in October of 2023. This was done to allow bidders as much time as possible to work with materials suppliers to receive the best bid prices possible.

Unfortunately, both bids that were received were significantly higher that the engineer's estimate, with the low bid being $1,862,218.95 (38-percent) higher. Because of this and the other reasons noted in the attached bid rejection recommendation letter, the design engineer recommends rejecting both bids and not awarding a contract at this time to allow material and construction costs to be monitored during 2022 in anticipation that bidding the project again later in 2022 or in early 2023 will present more favorable bids and additional bidders to help reduce project costs.

Since bids came in high for this project it is not unreasonable to expect inflated bids for the Water Treatment Facility as well. Staff therefore believes it is prudent to work to reduce costs for the both the Trunk Watermain Improvements and the Water Treatment Facility projects to avoid a need to either spend down the sewer and water enterprise funds, or to have to bond for a portion of the improvements.

Alternatives:
Alternative #1 – Motion to recommend that the City Council reject bids for the Water Treatment Plant Trunk Watermain Improvements, Improvement Project #21-08.

Alternative #2 – Motion of other.

Funding Source:
SEH's fees for designing the trunk watermain improvements and preparing plans and specifications = $235,895.

The preliminary construction cost estimate per the feasibility study was $3,424,750.

Construction cost estimates based on final plans and specifications for the base and alternate bids are;

- Base bid = $ 4,875,068.50
- Alternate bid = $ 4,916,194.50

The $1.4+M difference in costs between the preliminary construction cost estimate and estimated construction costs based on final plans and specification is due to the inflated unit bid prices for PVC pipe materials.

Funding for this project is proposed to come from sewer and water enterprise funds. For almost two decades, municipal water users have been contributing to a future water treatment plant, which includes off-site trunk watermain improvements required to provide the plant with raw water, and to transport treated (finished) water out to the distribution mains.

Recommendation:

Staff and SEH recommend approving alternative #1. Upon approval from the Public Works Committee, Staff will present a case to the City Council to reject bids on January 25, 2022.

Action:

Motion to recommend that the City Council reject bids for the Water Treatment Plant Trunk Watermain Improvements, Improvement Project #21-08.

Attachments

Resolution 21-061

Title Sheet and Layout

Inflated Bids Memo

No Award Letter

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	01/13/2022 02:52 PM
Kurt Ulrich	Kathy Schmitz	01/13/2022 02:53 PM
Form Started By: Bruce Westby		Started On: 01/11/2022 10:43 AM
Final Approval Date: 01/13/2022		

Councilmember Musgrove introduced the following resolution and moved for its adoption:

RESOLUTION #21-061

RESOLUTION ORDERING PLANS AND SPECIFICATIONS FOR IMPROVEMENT PROJECT #21-08, WATER TREATMENT PLANT TRUNK WATERMAIN IMPROVEMENTS

WHEREAS, pursuant to Ramsey City Council Resolution #19-248 adopted October 8, 2019, five (5) proposals were accepted and a professional services contract was awarded to SEH, Inc. for the purpose of analyzing the City's municipal water supply system source water, developing a water system model, and preparing a preliminary design report for a centralized water treatment plant to ensure that the City's municipal water supply system will continue to provide adequate quantities of safe drinking water into the foreseeable future; and

WHEREAS, SEH, Inc. has completed the tasks required by the contract such that all required off-site trunk watermain improvements needed to serve the proposed water treatment plant have been identified well enough to complete preliminary and final design efforts; and

WHEREAS, to ensure that the required off-site trunk watermain improvements can be constructed as cost-effectively as possible the City must complete construction of the trunk watermain improvements along Bunker Lake Boulevard before Anoka County begins construction of their proposed Bunker Lake Boulevard interim improvements project on or after September 7, 2021; and

WHEREAS, at the request of City Staff, SEH, Inc. submitted a proposal for design and construction services to allow the necessary trunk watermain improvements to be designed, bid, and constructed in 2021; and

WHEREAS, funds required to pay for the trunk watermain improvements have been collected from municipal water supply users and are available to fund the improvements in 2021; and

WHEREAS, City Staff recommends accepting the professional services proposal from SEH, Inc. based on the value the City will receive by completing construction of the trunk watermain improvements along Bunker Lake Boulevard before Anoka County begins construction of their proposed Bunker Lake Boulevard interim improvements project.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF RAMSEY, ANOKA COUNTY, STATE OF MINNESOTA, as follows:

1) The Mayor and City Administrator are hereby authorized and directed to enter into a contract with SEH for said professional services for and on behalf of the City of Ramsey.

The motion for the adoption of the foregoing resolution was duly seconded by Councilmember Howell, and upon vote being taken thereon, the following voted in favor thereof:

Mayor Kuzma
Councilmember Musgrove
Councilmember Howell
Councilmember Heineman
Councilmember Riley
Councilmember Specht
Councilmember Woestehoff

and the following voted against the same:

None

and the following abstained:

None

and the following were absent:

None

Whereupon said resolution was declared duly passed and adopted by the Ramsey City Council this the 9th day of March, 2021.

Mayor

ATTEST:

City Clerk

EXISTING

- RIGHT OF WAY
- PERMANENT EASEMENT
- DRAINAGE AND UTILITY EASEMENT
- PROPERTY LINE
- HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- BURIED FIBER OPTIC CABLE AND MANHOLE
- BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- BURIED TV CABLE, PEDESTAL AND MANHOLE
- BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WETLAND
- BUILDING
- FENCE (UNIDENTIFIED)
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- ELECTRIC WIRE FENCE
- WOOD FENCE
- WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL

PROPOSED

- STREET CENTERLINE
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

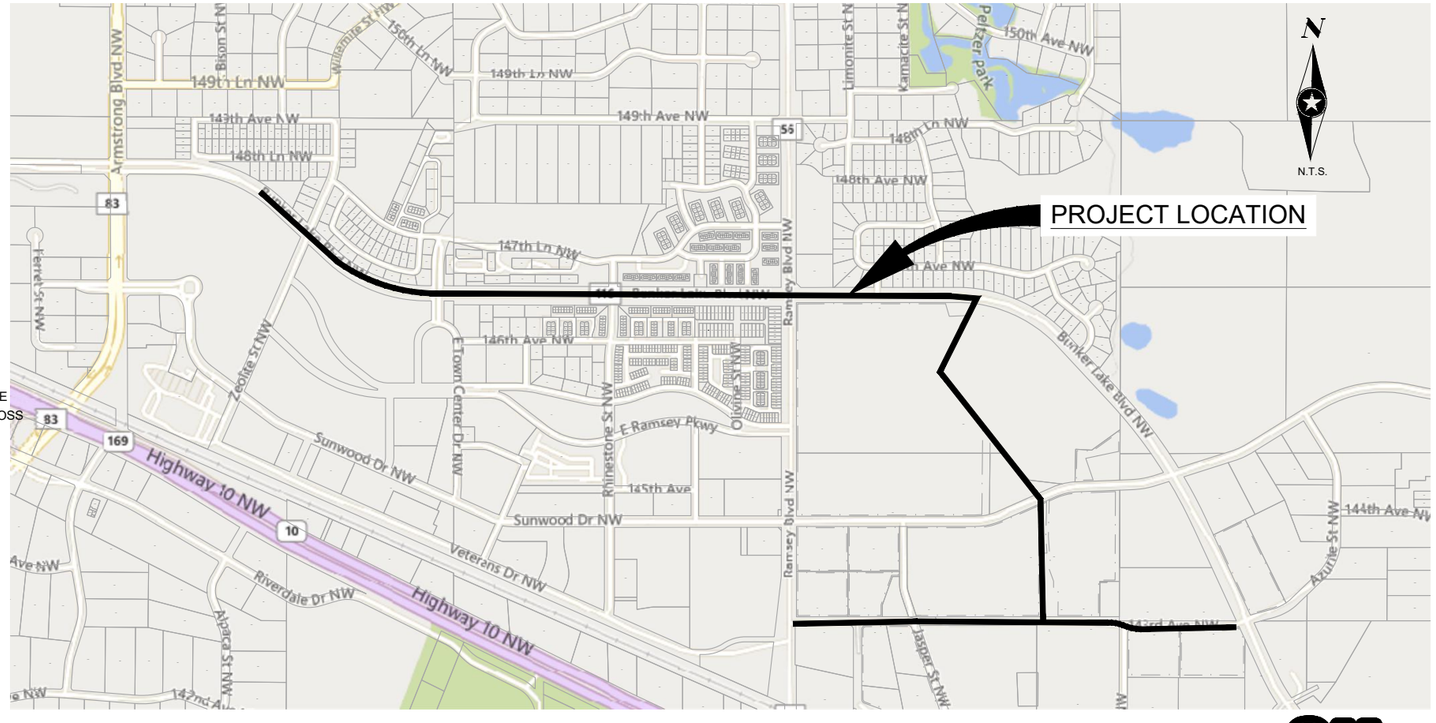
CITY OF
RAMSEY, MINNESOTA

CONSTRUCTION
PLANS FOR

WATER MAIN INSTALLATION, EXCAVATION, HORIZONTAL DIRECTIONAL DRILLING, GRADING, BITUMINOUS PAVING, & RESTORATION

WATER TREATMENT PLANT TRUNK WATER MAIN IMPROVEMENTS

CITY PROJECT NO. 21-08



NOTE:
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL CALL THE GOPHER STATE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

811 Know what's **below.** **Call** before you dig.

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

THIS PLAN CONTAINS 45 SHEETS.

PROJECT LOCATION

CITY OF RAMSEY, ANOKA COUNTY

RAMSEY, MINNESOTA

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

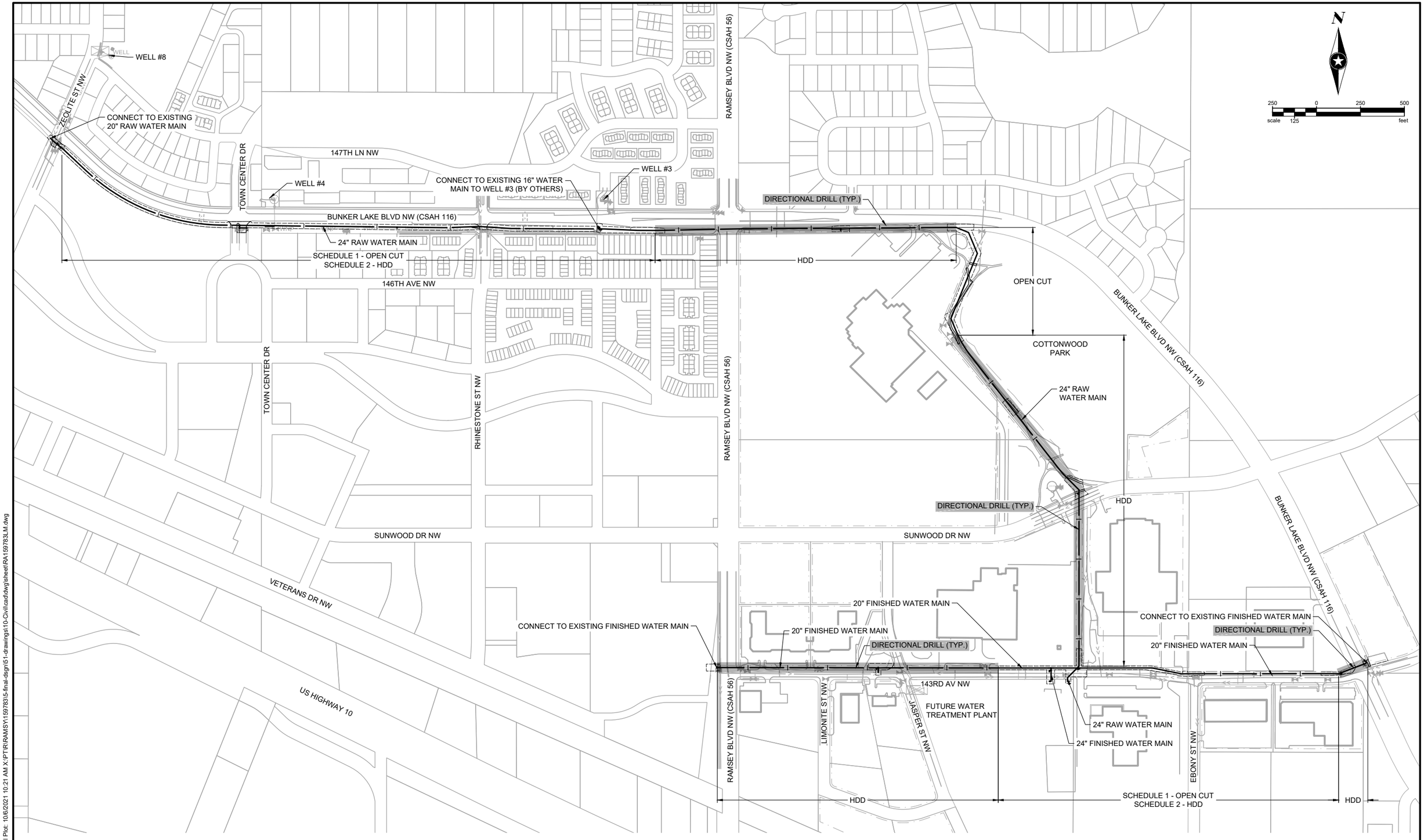
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MN.

Signature Stephen R. Prall

Date: 10-01-2021 Lic. No. 54949

FILE NO. Ramsy159783

Save: 10/1/2021 7:20 AM sprall Plot: 10/6/2021 10:21 AM X:\PT\R\RAMSY\159783\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\RA159783TL.dwg



Save: 10/1/2021 1:53 PM sprall Plot: 10/6/2021 10:21 AM X:\PT\R\RAMSY\159783\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\RA159783LM.dwg

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	Ramsy159783	.			.		
Drawn By	JRB, SRP	.			.		
Designed By	KLK	.			.		
Checked By	CES	.			.		

SEH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MN.

Stephen R. Prall

DATE 10-01-2021

LICENSE NO. 54949

WATER TREATMENT PLANT
TRUNK WATER MAIN IMPROVEMENTS

Ramsey, Minnesota

PROJECT OVERVIEW

Building a Better World for All of Us®

MEMORANDUM

TO: Mr. Bruce Westby

FROM: Chad Setterholm, PE (Lic.MN))

DATE: January 12, 2022

RE: Water Treatment Plant Trunk Watermain Improvements - Elevated Bid Costs
SEH No. RAMSY 159783 14.00

On Tuesday, January 4, 2022, at 10:00 a.m., two (2) bids were received for the above-referenced project. The bids ranged from a high of $8,391,994.66 to a low of $6,737,287.45 across two bid schedules. Schedule 1 reflected a combination of open cut and horizontal directional drilling (HDD) installation methods for PVC watermain construction while Schedule 2 reflected only the HDD installation method.

	Contractor	Total Schedule 1 Bid	Total Schedule 2 Bid
1	Park Construction Co.	$6,737,287.45	$7,059,102.16
2	Forest Lake Contracting, Inc.	$7,652,529.55	$8,391,994.66
Engineer's Estimate		$4,875,068.50	$4,916,194.50

The low bid received was reflected in the Schedule 1 bid and was submitted by Park Construction Company, of Minneapolis, MN in the amount of $6,737,287.45. This bid was approximately 38% higher than the Engineer's Estimate of $4,875,068.50, mainly due to highly inflated PVC pipe costs reflected in both bids.

Due to current volatility within the supply chain for components such as resin used for manufacturing PVC pipe and a lingering shortage of pipe extruder labor as manufacturing scaled down due to chemical shortages of available components needed for making PVC pipe. Resin shortages are largely associated with chemical plant shutdowns in Texas and Louisiana during the severe freezing temperatures in early 2021 which also affected pipe manufacturing plant operations. This scenario and the ongoing pandemic drove pipe material and construction costs up substantially by the end of 2021.

If costs continue to rise in 2022, it will increase the likelihood of change orders as contractors pursue claims to recover unforeseen costs not recognized in their bids. This will add additional fiscal challenges for the project.

The low number of bids received was likely reflective of the highly inflated pipe material costs adding to the fiscal risk of prime contractor bonding for the high cost associated with the work being performed by the subcontractor performing the horizontal directional drilling component of the watermain installation. This may have caused some contractors to not submit bids if it reduced the bond capacity available for other projects they were pursuing or were currently under contract.

Accordingly, we recommend the project not be awarded at this time to allow material and construction costs to be monitored during 2022 with the anticipation a rebid for late 2022 or early 2023 will present more favorable bids and additional bidders for 2023 construction of the improvements. While it is difficult

to predict future trends with the construction market, waiting to rebid allows time for supply chain and pandemic issues possibly work themselves out and influence costs to a lesser degree.

It is also recommended to evaluate the economics of utilizing ductile iron pipe (DIP) as material alternate for areas of the project associated with open cut installation of the water main along with the feasibility of increasing the amount of open cut pipe installation to evaluate any additional cost savings.

Also note, DIP pipe has a current lead time of approximately 30 weeks. If it is determined DIP pipe will be included in the rebid, lead times will need to be evaluated at that time to allow a bid opening date to be set that allows for timely delivery of pipe materials.

ces

c: file

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Building a Better World
for All of Us®

January 12, 2022

RE: City of Ramsey, Minnesota
Water Treatment Plant Trunk
Watermain Improvements
SEH No. RAMSY 159783 14.00

Honorable Mayor & City Council
City of Ramsey
7550 Sunwood Drive NW
Ramsey, MN 55303

Dear Mayor & City Council Members:

On Tuesday, January 4, 2022, at 10:00 a.m., two (2) bids were received for the above-referenced project. The bids ranged from a high of $8,391,994.66 to a low of $6,737,287.45 across two bid schedules. Schedule 1 reflected a combination of open cut and horizontal directional drilling (HDD) installation methods for PVC watermain construction while Schedule 2 reflected only the HDD installation method.

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The low bid received was reflected in the Schedule 1 bid and was submitted by Park Construction Company, of Minneapolis, MN in the amount of $6,737,287.45. This bid was approximately 38% higher than the Engineer's Estimate of $4,875,068.50, mainly due to highly inflated PVC pipe costs reflected in both bids.

Current volatility within the supply chain for components such as resin used for manufacturing PVC pipe and labor challenges due to the pandemic drove pipe material and construction costs up substantially by the end of 2021. If costs continue to rise in 2022, it will increase the likelihood of change orders as contractors pursue claims to recover unforeseen costs not recognized in their bids. This will add additional fiscal challenges for the project. The low number of bids received was likely reflective of the highly inflated pipe material costs adding to the fiscal risk of prime contractor bonding for the work being performed by a subcontractor performing the horizontal directional drilling component of the watermain installation.

Accordingly, we recommend the project not be awarded at this time to allow material and construction costs to be monitored during 2022 with the anticipation a rebid will present more favorable bids and additional bidders.

Sincerely,

Chad E. Setterholm, PE
Project Manager
(Lic. MN)

ah
x:\pt\r\ramsy\159783\6-bid-const_no recommendation of award letter.docx

Public Works Committee **6. 1.**

Meeting Date: 01/18/2022

By: Bruce Westby, Engineering/Public Works

Title:

Receive Updates on Improvement Projects, Studies and Items of Interest

Purpose/Background:

The purpose of this case is to update the Public Works Committee on current and proposed City, County and MnDOT improvement projects and studies, and on other items of interest to the Committee.

City Improvement Projects

- **Wetland 114P Outlet Control Improvements (#19-07)**
  - Work requested by Minnesota DNR
  - Construction proposed for 2022
- **2022 PMP project updates**
  - Plans are being prepared and will be presented at a future meeting with a request for City Council recommendation of approval.
- **Riverdale Drive Reconstruction – Feldspar St. to Sunfish Lake Blvd. (#21-00)**
  - Construction complete
  - Final payment 2022
- **Tiger Street Reconstruction (#21-02)**
  - Construction complete
  - Final payment 2022
- **Business Park 95 Street Reconstructions (#21-03)**
  - Construction complete
  - Final payment 2022
- **2021 Neighborhood Pavement Overlay Improvements (#21-04)**
  - Construction complete
  - Final payment 2021/22
- **2021 MSA Pavement Overlay Improvements (#21-05)**
  - Construction complete
  - Final payment 2021/22
- **2021 WTP Trunk Watermain Improvements (#21-08)**
  - Presented as a separate case this evening
- **2021 Water Treatment Plant (#21-09)**
  - Design 2021/22
  - Construction proposed 2022/23
- **2021 Additional Pavement Overlay Improvements (#21-12)**
  - Construction complete
  - Final payment 2021/22

Anoka County Improvement Projects

- **Roundabout at Armstrong Boulevard/CSAH 83 and Alpine Drive**
  - Anoka County received $1.35M in HSIP funds (est. project cost = $1.5M)
  - Anoka County and City of Ramsey share is $150,000 each (per $1.5M est.)
  - Construction proposed for 2023, pending City & County approvals
  - Anoka County is preparing preliminary plans

- Staff will provide an update on the public open house held January 12, 2022
- **CSAH 116 Interim Improvements**
  - Construction substantially complete
  - Sunwood Drive signal system will be installed February/March 2022

MnDOT Improvement Projects

- **US 10 / 169 & Ferry Street / TH 47 Interchange**
  - Construction scheduled for 2022 – 2023
- **Ferry Street / Trunk Highway 47 Grade Separation @ BNSF Rail Crossing**
  - Preliminary design on hold
  - MnDOT exploring realignment of Highway 47 to remove S-curve
  - $45M in bonds authorized October 2020
  - Tentatively proposed for construction in 2024 or later
- **Rum River Bridge Replacement**
  - Construction scheduled for 2022 – 2023
  - Proposing three lanes between Highway 47 and 7th Street

Studies & Items of Interest

- **5805 148th Lane NW**
  - Update anticipated in February or March 2022
- **FYA Improvements at Sunwood Drive and Ramsey Boulevard**
  - SEH completing Feasibility Analysis
- **Elk River Highway 10 Study**
  - Update anticipated in February or March 2022
- **Anoka Solution Highway 10 Improvements**
  - Construction scheduled for 2022 – 2023
- **Ramsey Gateway Highway 10 Improvements**
  - Preliminary design is being completed
  - Final design is ready to begin
  - Fully funded (per preliminary cost estimates)

Timeframe:

Staff estimates up to 15 minutes will be needed for updates and discussion.

Observations/Alternatives:

N/A

Funding Source:

N/A

Recommendation:

N/A

Action:

No formal action required. For Committee review and discussion purposes only.

Attachments

No file(s) attached.

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	01/13/2022 02:48 PM
Kurt Ulrich	Kathy Schmitz	01/13/2022 02:53 PM
Form Started By: Bruce Westby		Started On: 01/11/2022 10:30 AM
Final Approval Date: 01/13/2022		

Public Works Committee **6. 2.**

Meeting Date: 01/18/2022

By: Bruce Westby, Engineering/Public Works

Title:

Review Future Topics Calendar

Purpose/Background:

Attached is a calendar of future topics for review and discussion by the Public Works Committee. The calendar includes topics drawn from Committee requests received during meetings and/or unresolved topics previously discussed by the Committee. Calendar dates are subject to change based on the availability of information and required attendees, staff workload, and competing interests and objectives.

Timeframe:

Staff estimates less than 5 minutes will be necessary to review the future topics calendar and address questions.

Observations/Alternatives:

N/A

Funding Source:

N/A

Recommendation:

Staff recommends reviewing the attached calendar and to either approve the calendar by consensus or to direct Staff to revise the calendar as follows; _____.

Action:

No formal action required. For Committee review and discussion purposes only.

Attachments

PWC Calendar Jan2022

Form Review

Inbox	Reviewed By	Date
Grant Riemer	Grant Riemer	01/13/2022 02:49 PM
Kurt Ulrich	Kathy Schmitz	01/13/2022 02:52 PM
Form Started By: Bruce Westby		Started On: 01/11/2022 10:32 AM
Final Approval Date: 01/13/2022		

Public Works Committee Future Topics Calendar *

Date	Topics for Discussion – Committee Action
February 2022	Sunfish Lake Sedimentation Basin Improvements *(Westby)*
February 2022	Available Funding Assistance for Wet Basement Repairs *(Westby)*
Future/TBD	Sunwood Drive Roundabout Landscaping *(Riemer)*
Date	**Topics for Discussion – Regulatory**
Future/TBD	Sunfish Lake Boulevard Speed Study Results *(Westby)*
Future/TBD	Bunker Lake Boulevard Speed Study Results *(Westby)*
~~Future/TBD~~	~~County Ditch Maintenance / Buffer Law *(Westby)*~~
Future/TBD	MnDOT Speed Study Results (CSAH 116, CSAH 57, CR 63)
Date	**Topics for Discussion – Policy**
Future/TBD	Landscaped Median Maintenance Policy *(Riemer)*
March 2022	Draft Trail Maintenance Policy *(Westby)*
March 2022	Draft Stormwater Pond Maintenance Policy *(Westby)*
Date	**Topics for Discussion – Planning and Budget**
April 2022	Review 1996 and 2007 (unadopted) TH 47 Corridor Studies *(Westby)*
Future/TBD	Asset Management Program *(Westby)*
Future TBD	Replace City monument sign TH 47 & Bunker Lk Blvd *(Westby)*
Future/TBD	Targeted Trail Gap Connection Planning *(Riemer)*
Date	**Topics for Discussion – Staff Updates**
~~Ongoing~~	~~Water Conservation Opportunities / Incentives *(Westby)*~~
Ongoing	Elk River Highway 10 Corridor Study *(Westby)*
Ongoing	Anoka County Nowthen Blvd/CSAH 5 Corridor Study *(Westby)*

* Dates subject to change based on availability of information, required attendees, staff workload, and competing interests and objectives.