

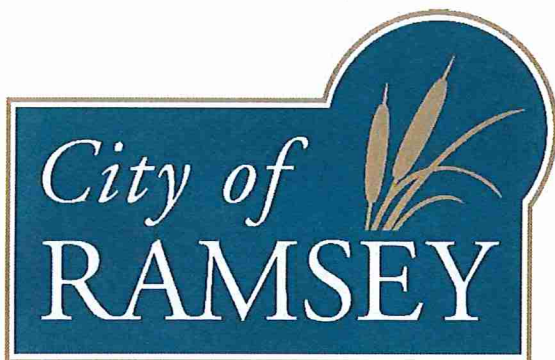


Real People. Real Solutions.

The COR Analysis

City of Ramsey

June 2018



Submitted by:

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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.

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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 stormwater 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 Zeolite 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	Bldg 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 Rhinestone 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 bioretention 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

<u>Improvement</u>	<u>Segment A-1</u>	<u>Segment A-2</u>	<u>Segment A-3</u>	<u>Segment A-4</u>
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

<u>Improvement</u>	<u>Segment B-1</u>	<u>Segment B-2</u>	<u>Segment C-1</u>	<u>Segment C-2</u>
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

<u>Improvement</u>	<u>Segment E</u>	<u>Segment F-1</u>	<u>Segment F-2</u>
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

<u>Improvement</u>	<u>Segment G*</u>	<u>Segment H</u>	<u>Segment I</u>
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.

<u>Segment</u>	<u>Location</u>	<u>Estimated Cost</u>
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.

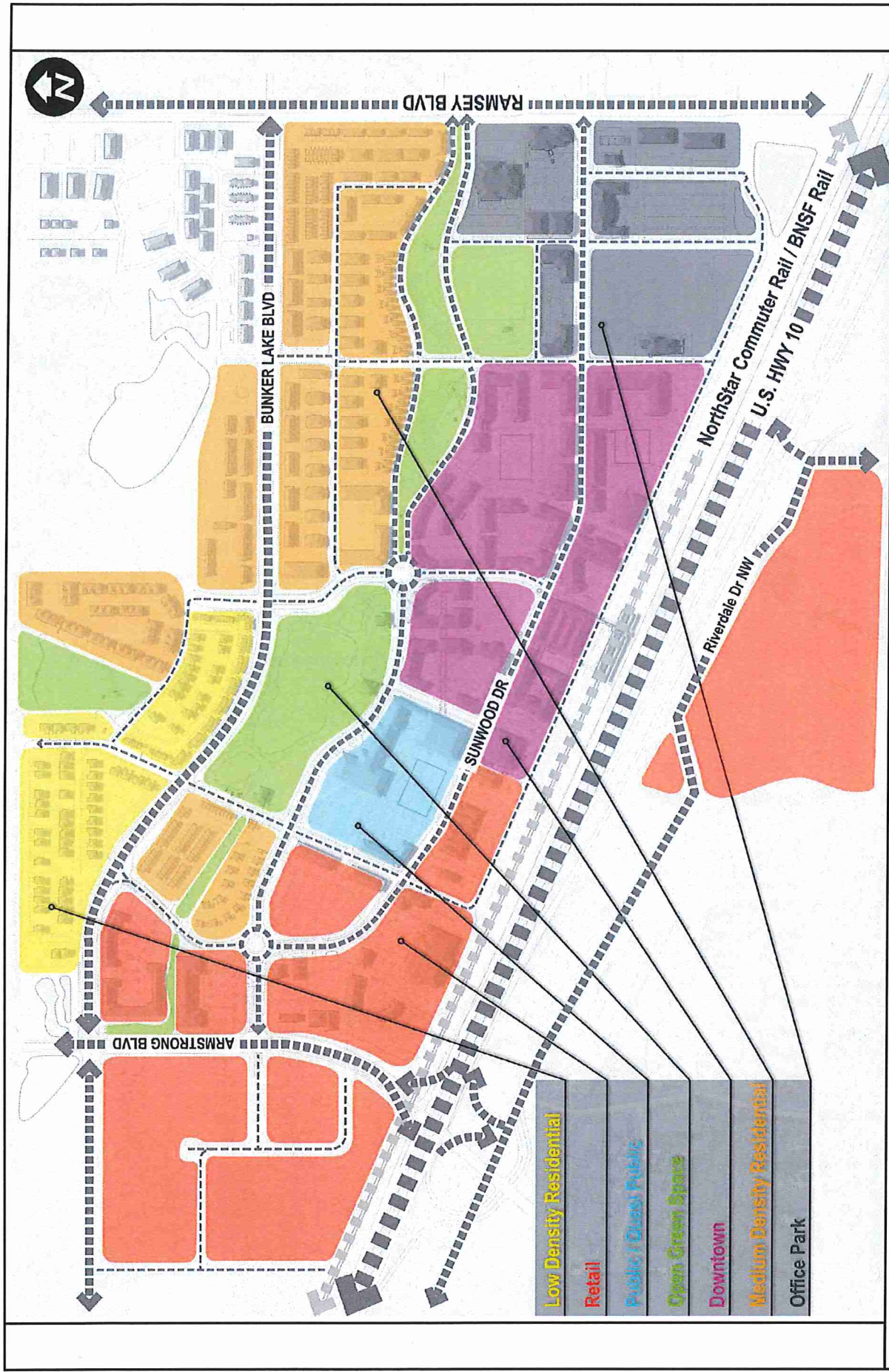
Other improvements were considered secondary and are typically the property owner's responsibility:

- 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



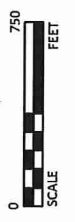
CENTER STREET AREA ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 THE COR LAND USE
 JANUARY 2015



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- Low Density Residential
- Retail
- Public / quasi Public
- Open Green Space
- Downtown
- Medium Density Residential
- Office Park

APPENDIX B: FIGURES



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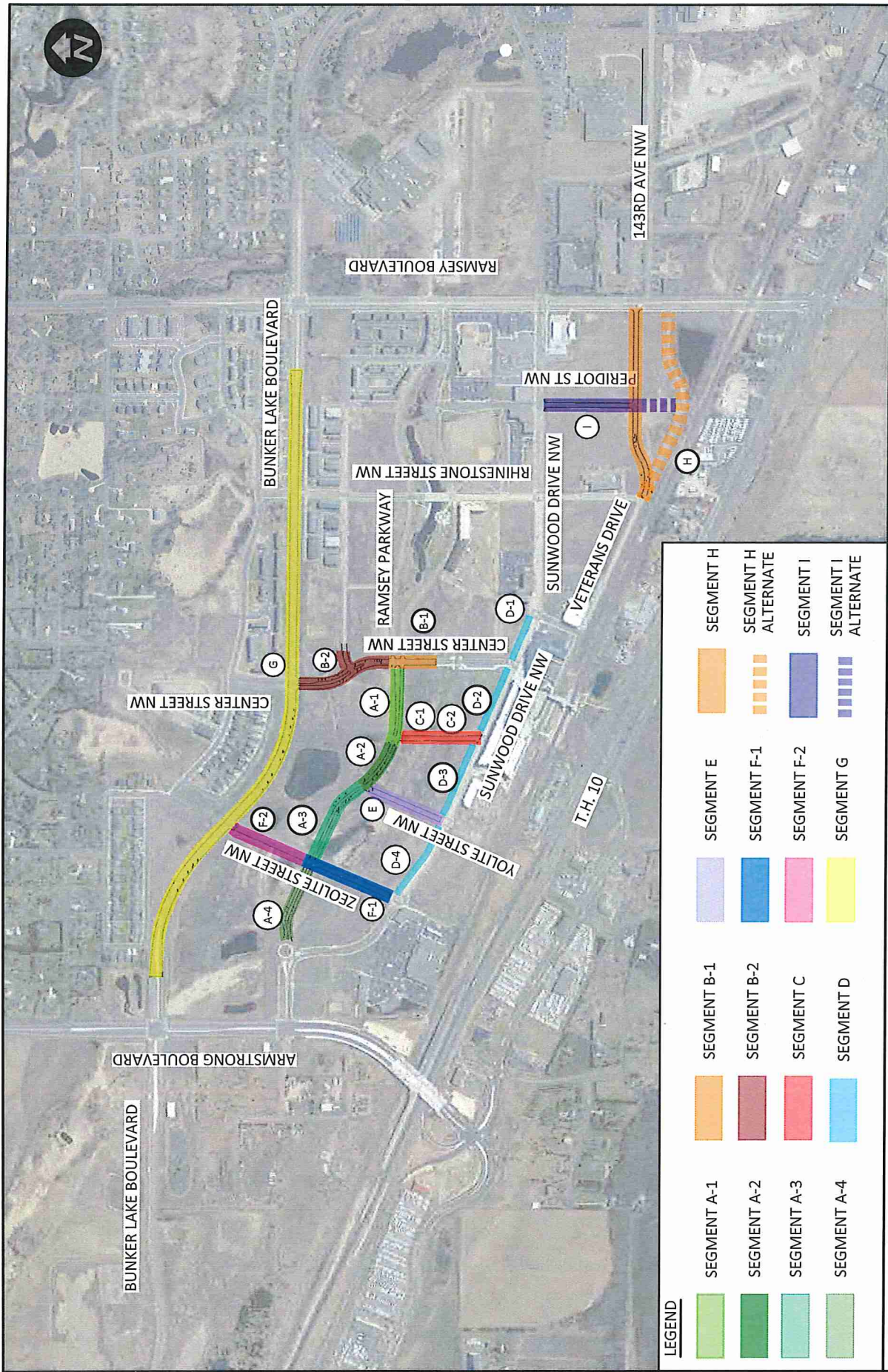
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COR BOUNDARY STUDY AREA



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SEGMENT A-1	SEGMENT B-1	SEGMENT E	SEGMENT H
SEGMENT A-2	SEGMENT B-2	SEGMENT F-1	SEGMENT H ALTERNATE
SEGMENT A-3	SEGMENT C	SEGMENT F-2	SEGMENT I
SEGMENT A-4	SEGMENT D	SEGMENT G	SEGMENT I ALTERNATE



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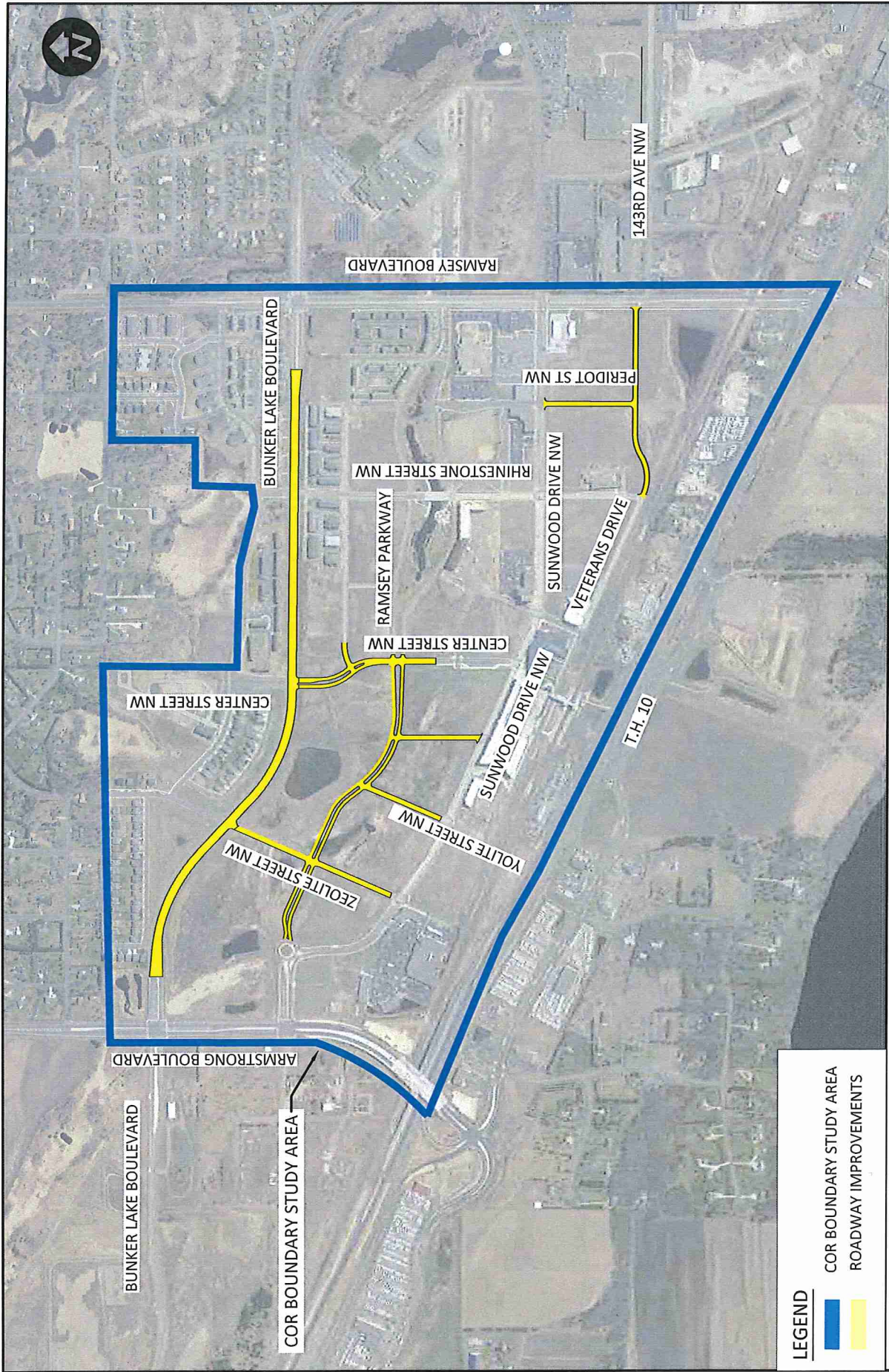
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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 2 - ROAD SEGMENTS
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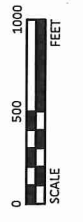


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LEGEND

- COR BOUNDARY STUDY AREA
- ROADWAY IMPROVEMENTS



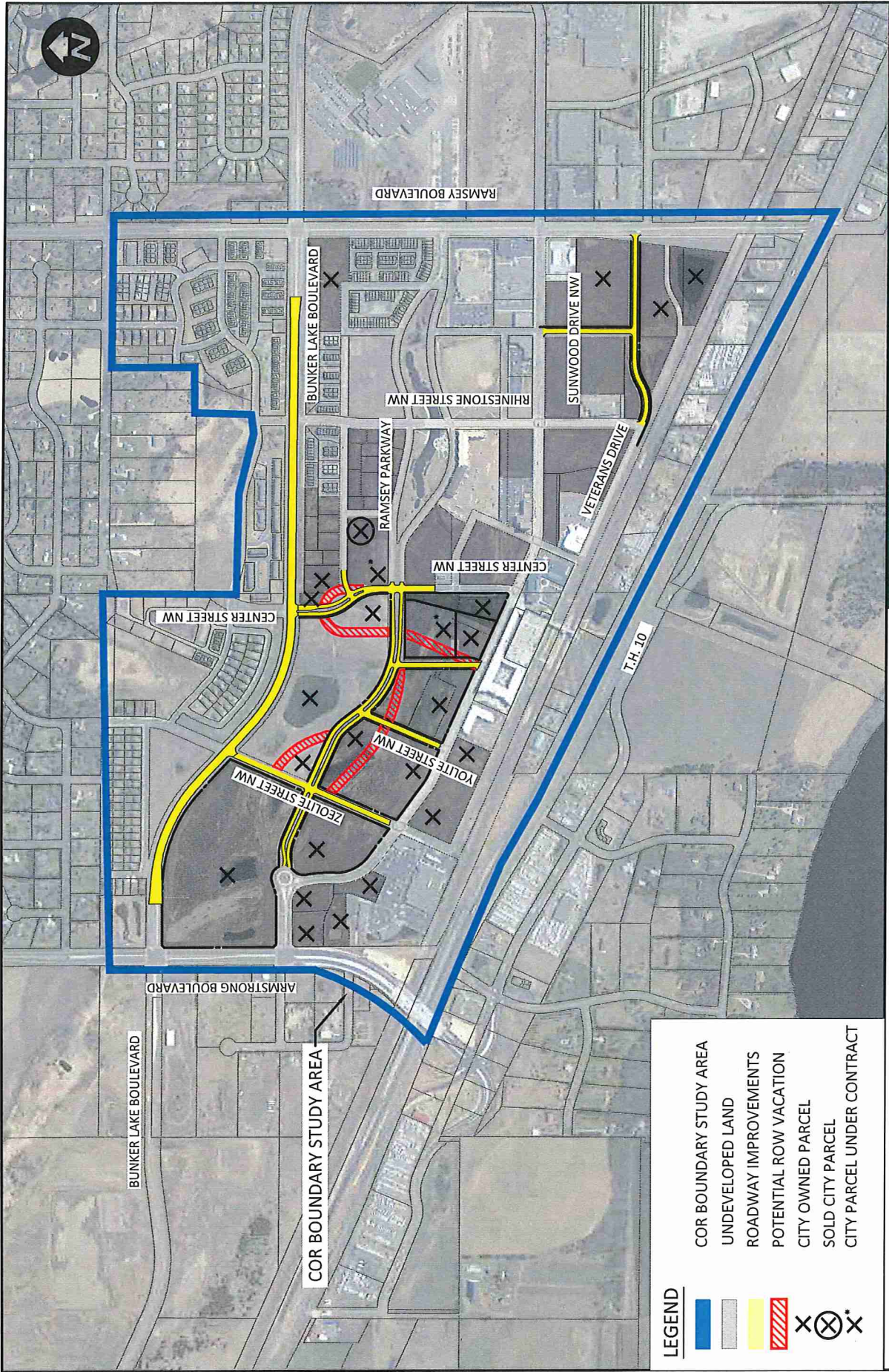
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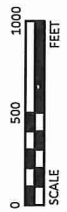
COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 3 - GEOMETRICS
MARCH 2018

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LEGEND

-  COR BOUNDARY STUDY AREA
-  UNDEVELOPED LAND
-  ROADWAY IMPROVEMENTS
-  POTENTIAL ROW VACATION
-  CITY OWNED PARCEL
-  SOLD CITY PARCEL
-  CITY PARCEL UNDER CONTRACT



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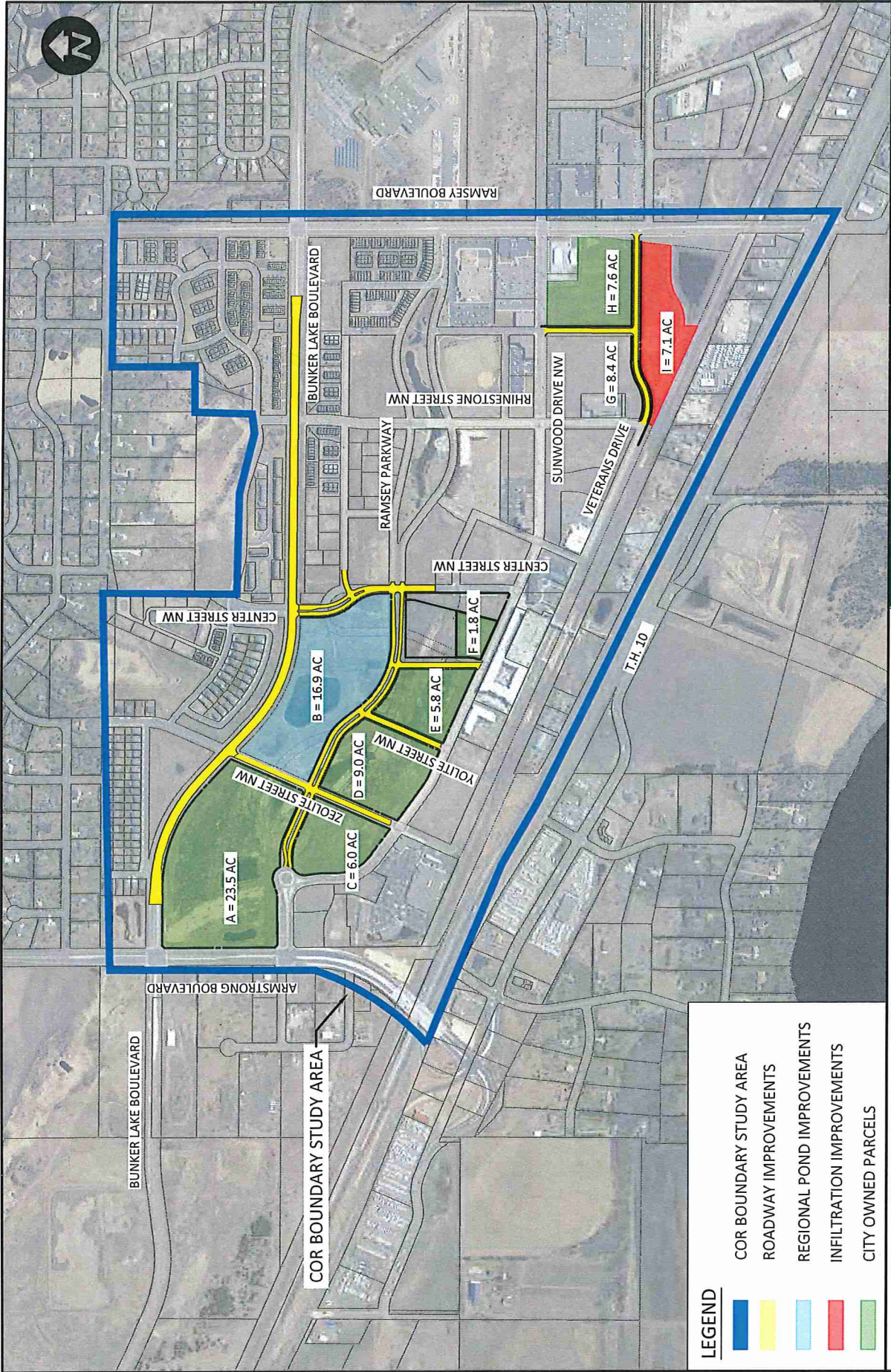


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COR ANALYSIS
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FIGURE 4 - ROW LAYOUT
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 FIGURE 5 - CITY PARCEL AREAS
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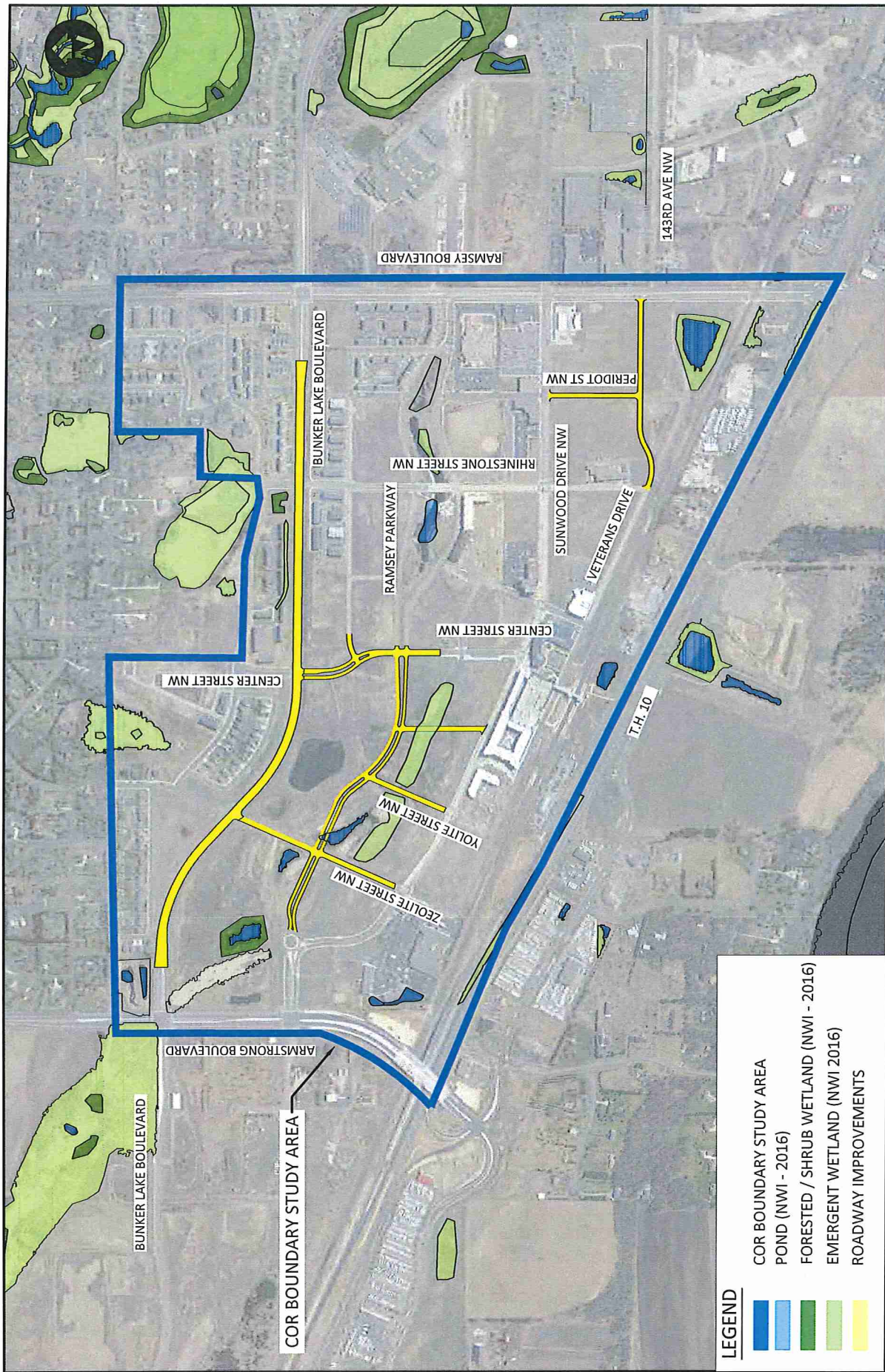
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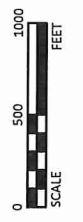
LEGEND

- COR BOUNDARY STUDY AREA
- ROADWAY IMPROVEMENTS
- REGIONAL POND IMPROVEMENTS
- INFILTRATION IMPROVEMENTS
- CITY OWNED PARCELS





- LEGEND**
- COR BOUNDARY STUDY AREA
 - POND (NWI - 2016)
 - FORESTED / SHRUB WETLAND (NWI - 2016)
 - EMERGENT WETLAND (NWI 2016)
 - ROADWAY IMPROVEMENTS



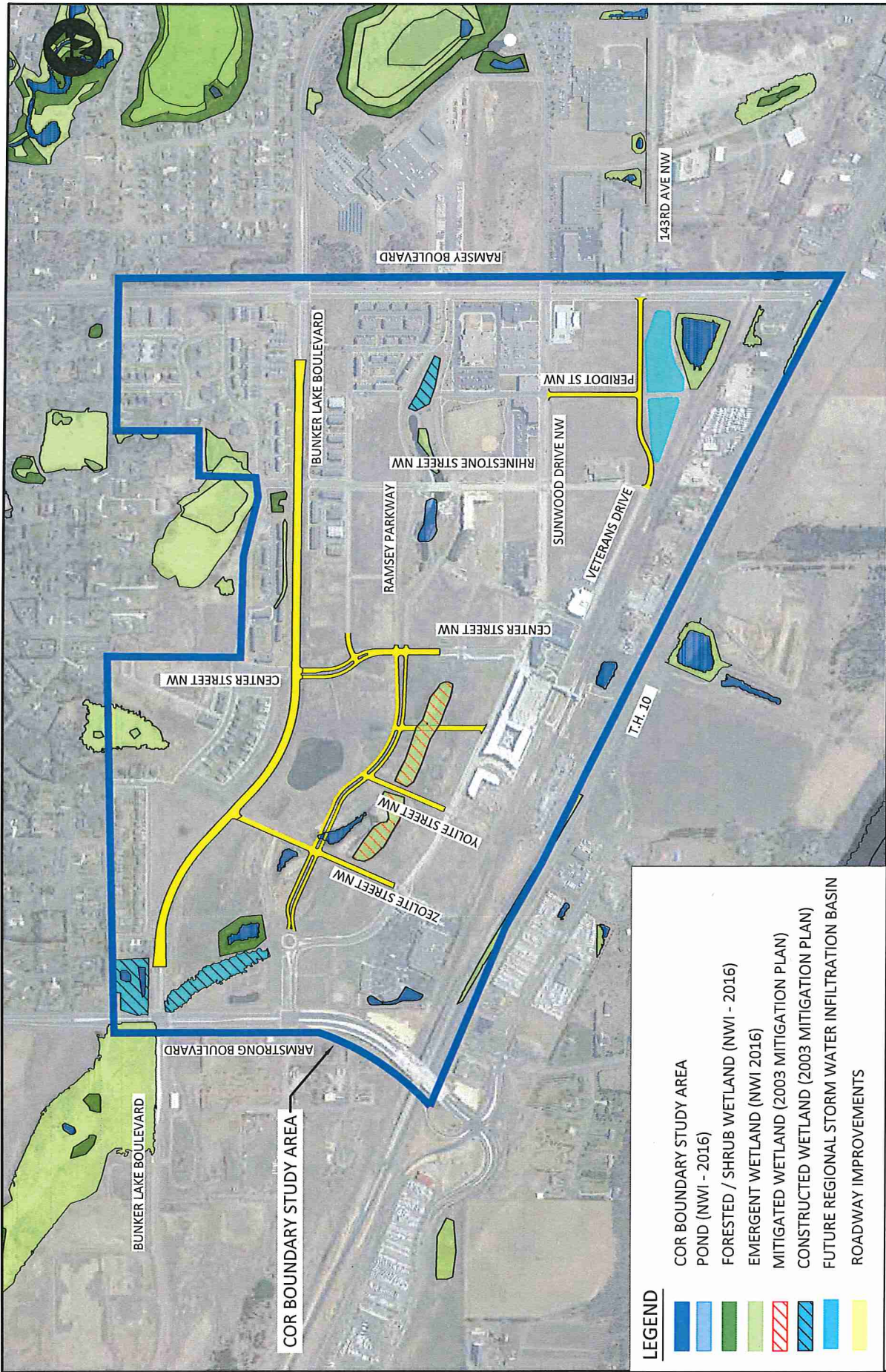
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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 6 - NATIONAL WETLAND INVENTORY
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- LEGEND**
- COR BOUNDARY STUDY AREA
 - POND (NWI - 2016)
 - FORESTED / SHRUB WETLAND (NWI - 2016)
 - EMERGENT WETLAND (NWI 2016)
 - MITIGATED WETLAND (2003 MITIGATION PLAN)
 - CONSTRUCTED WETLAND (2003 MITIGATION PLAN)
 - FUTURE REGIONAL STORM WATER INFILTRATION BASIN
 - ROADWAY IMPROVEMENTS



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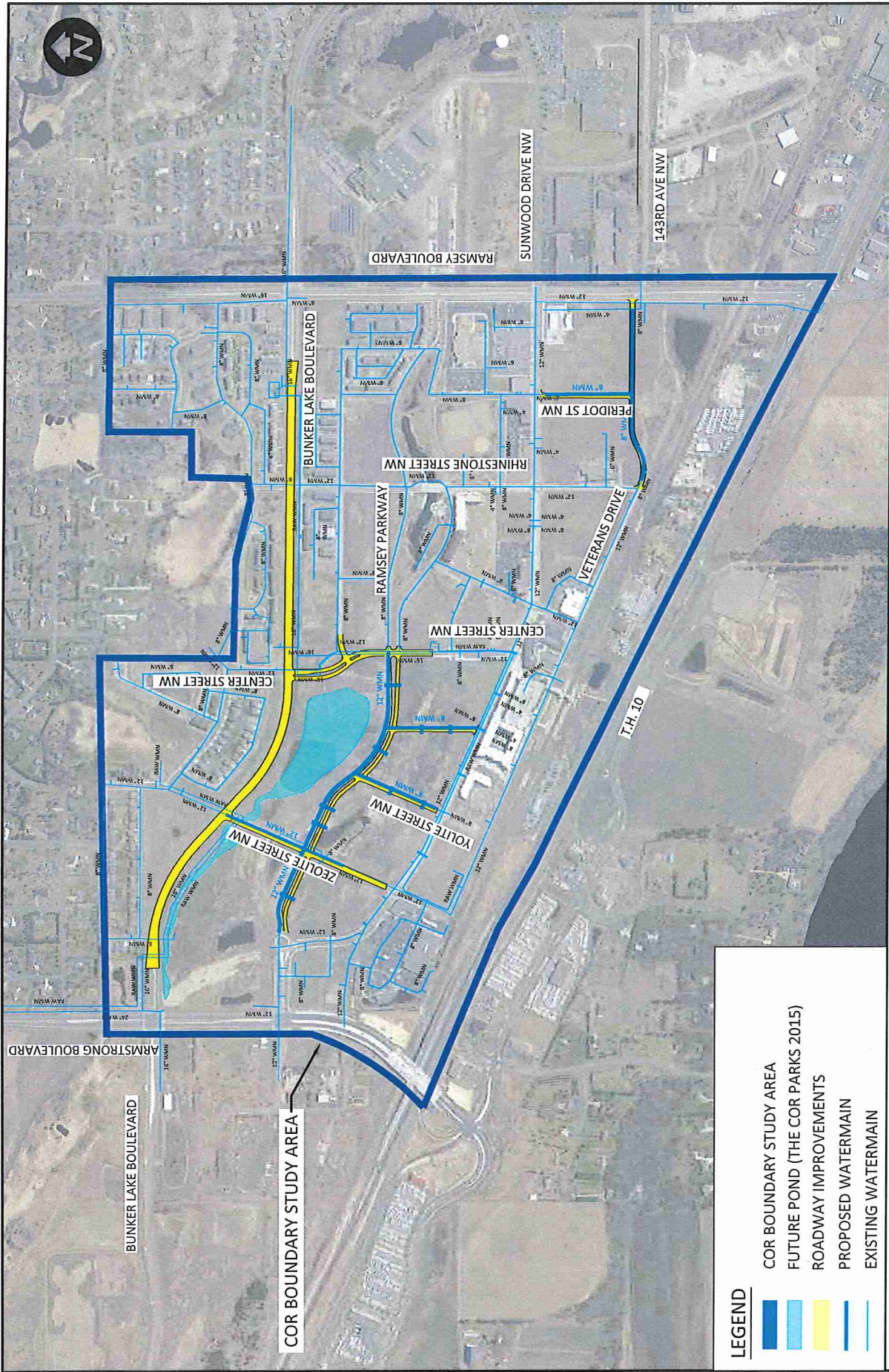
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COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 7 - 2003 WETLAND MITIGATION & REPLACEMENT PLAN
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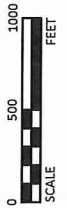


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LEGEND

- COR BOUNDARY STUDY AREA
- FUTURE POND (THE COR PARKS 2015)
- ROADWAY IMPROVEMENTS
- PROPOSED WATERMAIN
- EXISTING WATERMAIN

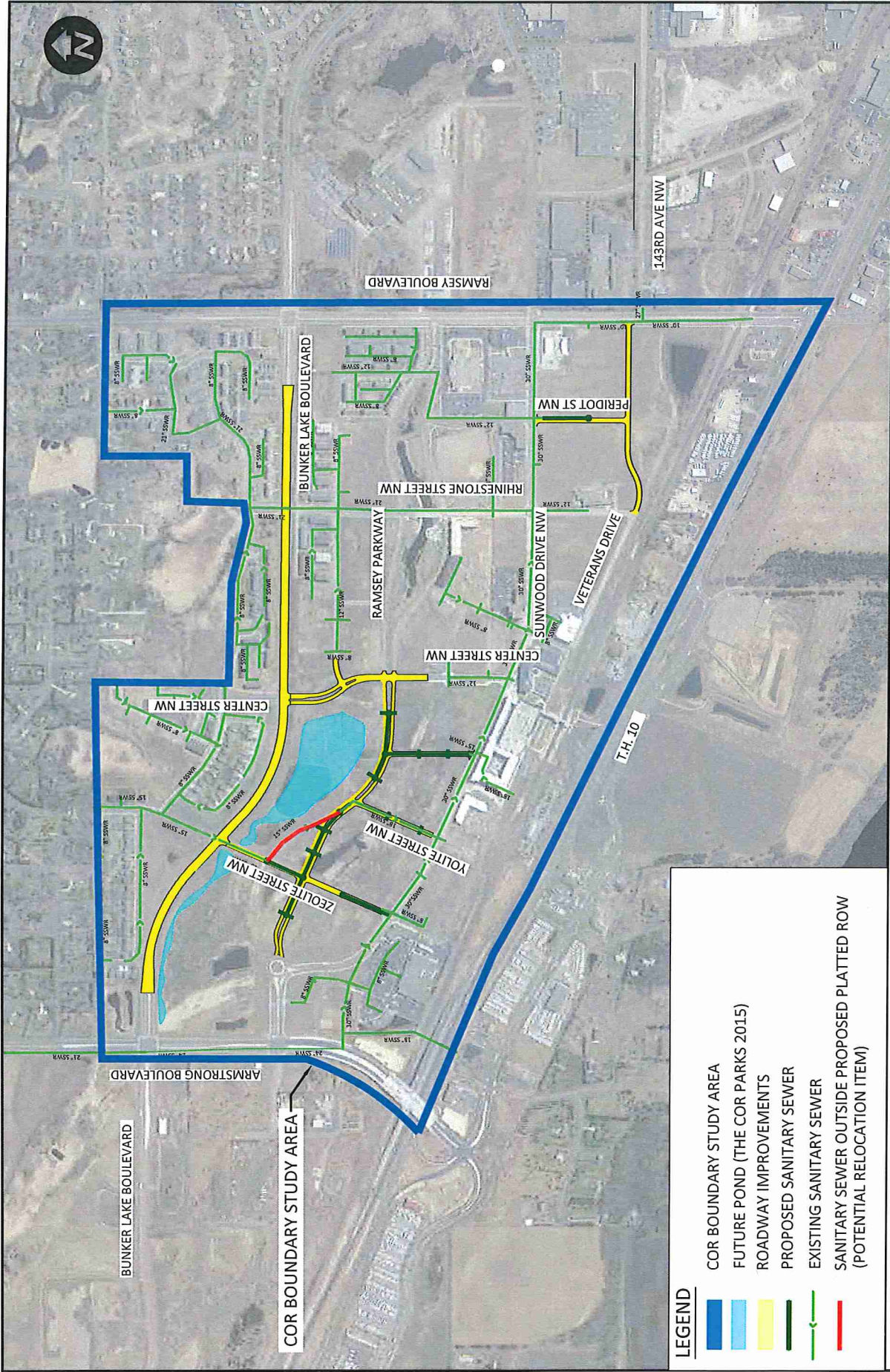


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 CITY OF RAMSEY, MINNESOTA
 FIGURE 8 - WATERMAIN UTILITIES
 MARCH 2018



LEGEND

-  COR BOUNDARY STUDY AREA
-  FUTURE POND (THE COR PARKS 2015)
-  ROADWAY IMPROVEMENTS
-  PROPOSED SANITARY SEWER
-  EXISTING SANITARY SEWER
-  SANITARY SEWER OUTSIDE PROPOSED PLATTED ROW (POTENTIAL RELOCATION ITEM)

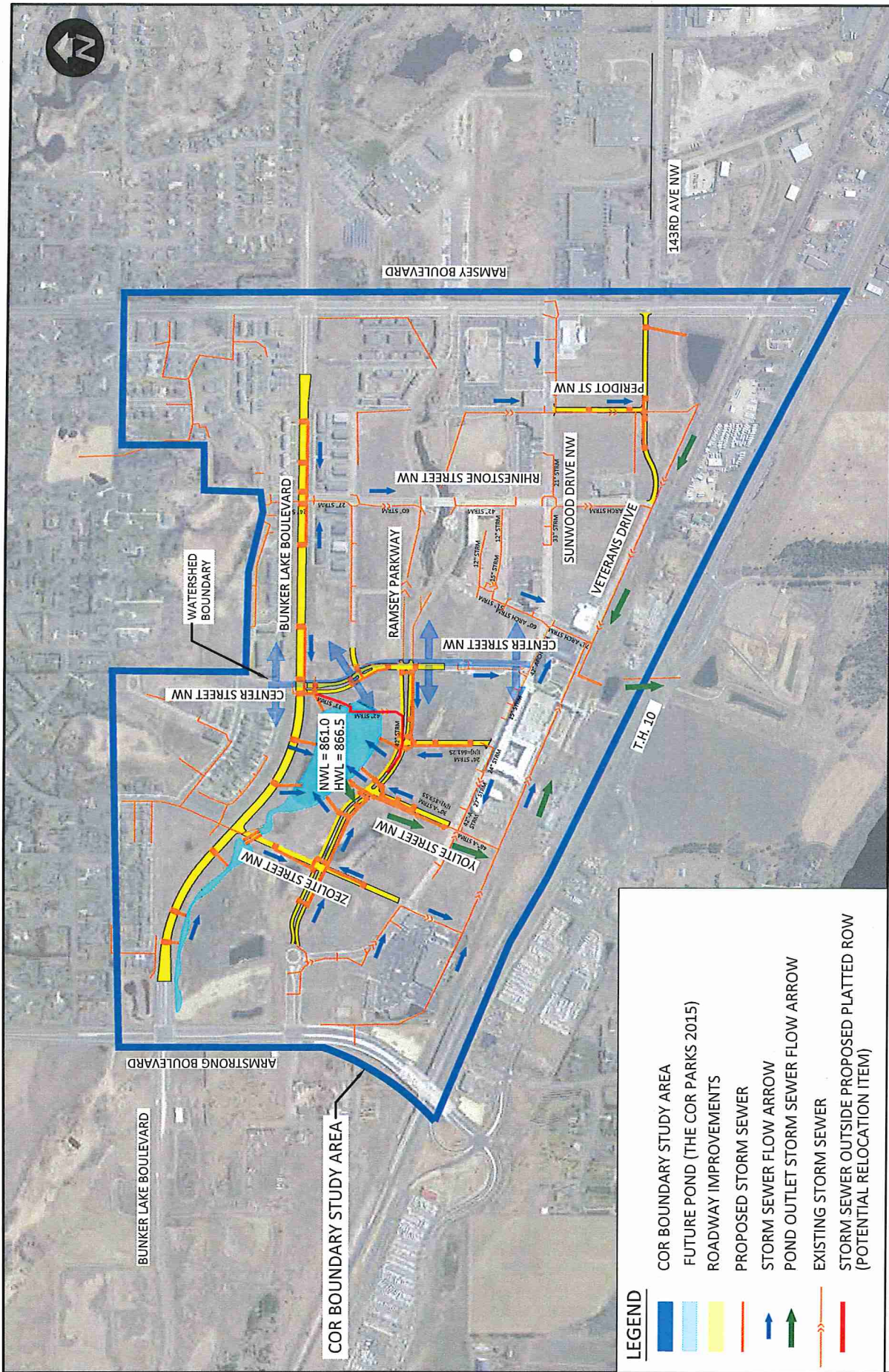


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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 9 - SANITARY UTILITIES
 MARCH 2018



LEGEND

- COR BOUNDARY STUDY AREA
- FUTURE POND (THE COR PARKS 2015)
- ROADWAY IMPROVEMENTS
- PROPOSED STORM SEWER
- STORM SEWER FLOW ARROW
- POND OUTLET STORM SEWER FLOW ARROW
- EXISTING STORM SEWER
- STORM SEWER OUTSIDE PROPOSED PLATTED ROW (POTENTIAL RELOCATION ITEM)

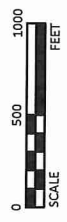


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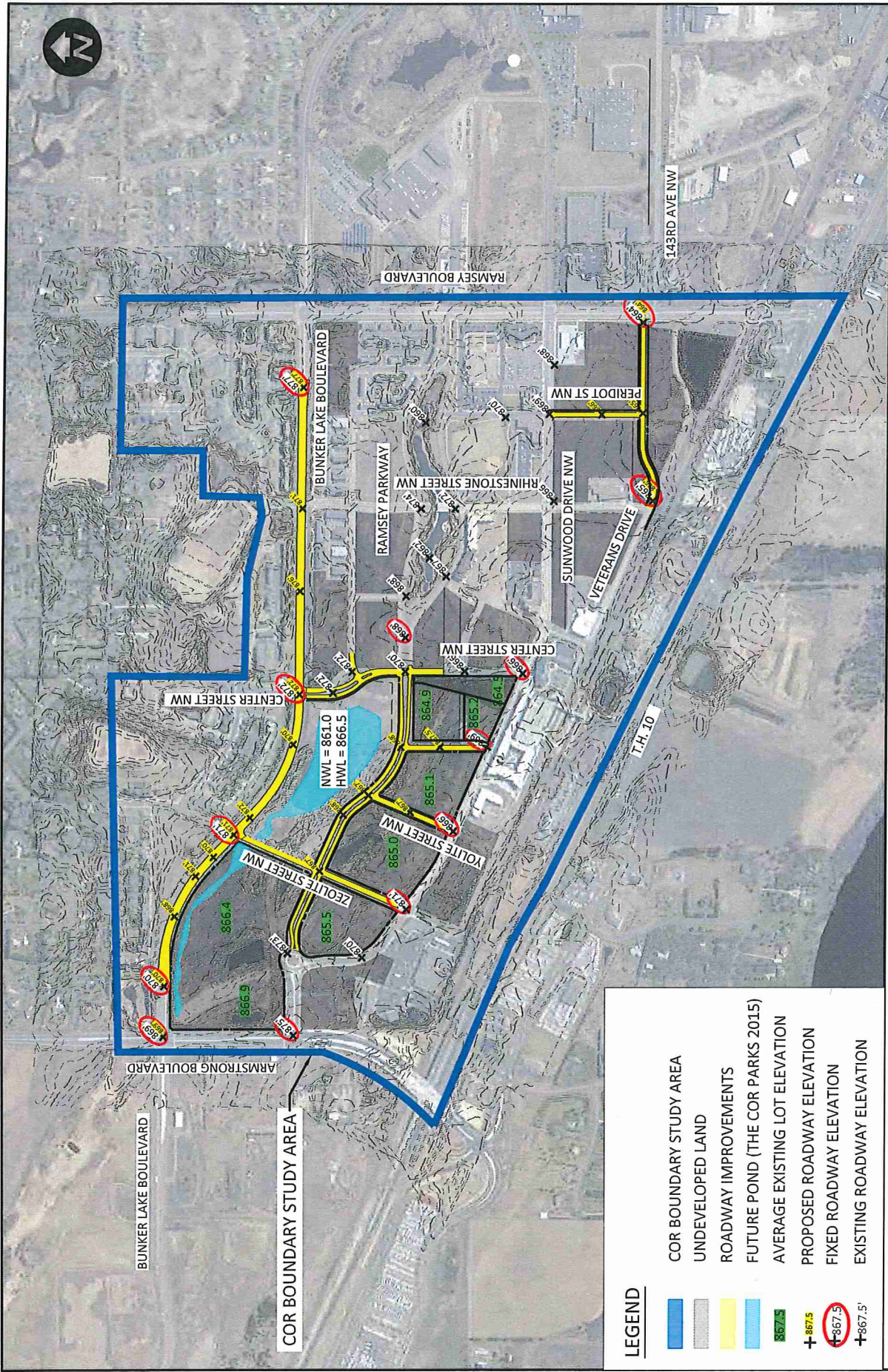
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COR ANALYSIS
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FIGURE 10 - STORM UTILITIES
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- COR BOUNDARY STUDY AREA
- UNDEVELOPED LAND
- ROADWAY IMPROVEMENTS
- FUTURE POND (THE COR PARKS 2015)
- AVERAGE EXISTING LOT ELEVATION
- PROPOSED ROADWAY ELEVATION
- FIXED ROADWAY ELEVATION
- EXISTING ROADWAY ELEVATION



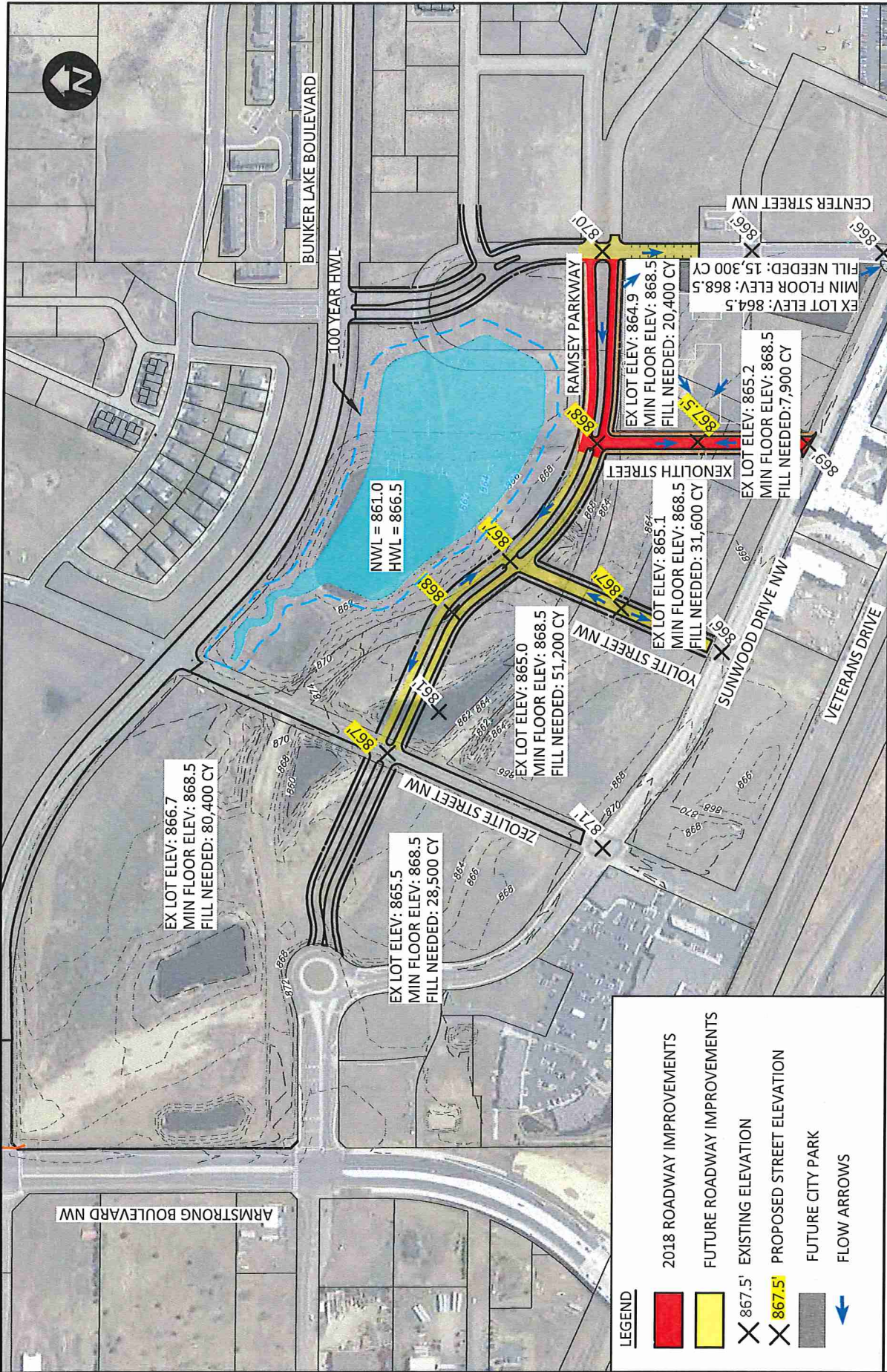
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COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 11 - ROADWAY GRADING PLAN
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EX LOT ELEV: 866.7
MIN FLOOR ELEV: 868.5
FILL NEEDED: 80,400 CY

EX LOT ELEV: 865.5
MIN FLOOR ELEV: 868.5
FILL NEEDED: 28,500 CY

EX LOT ELEV: 865.0
MIN FLOOR ELEV: 868.5
FILL NEEDED: 51,200 CY

EX LOT ELEV: 865.1
MIN FLOOR ELEV: 868.5
FILL NEEDED: 31,600 CY

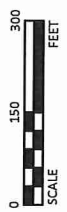
EX LOT ELEV: 865.2
MIN FLOOR ELEV: 868.5
FILL NEEDED: 7,900 CY

EX LOT ELEV: 864.5
MIN FLOOR ELEV: 868.5
FILL NEEDED: 15,300 CY

NWL = 861.0
HWL = 866.5

LEGEND

- 2018 ROADWAY IMPROVEMENTS
- FUTURE ROADWAY IMPROVEMENTS
- X 867.5' EXISTING ELEVATION
- X 867.5' PROPOSED STREET ELEVATION
- FUTURE CITY PARK
- ➔ FLOW ARROWS

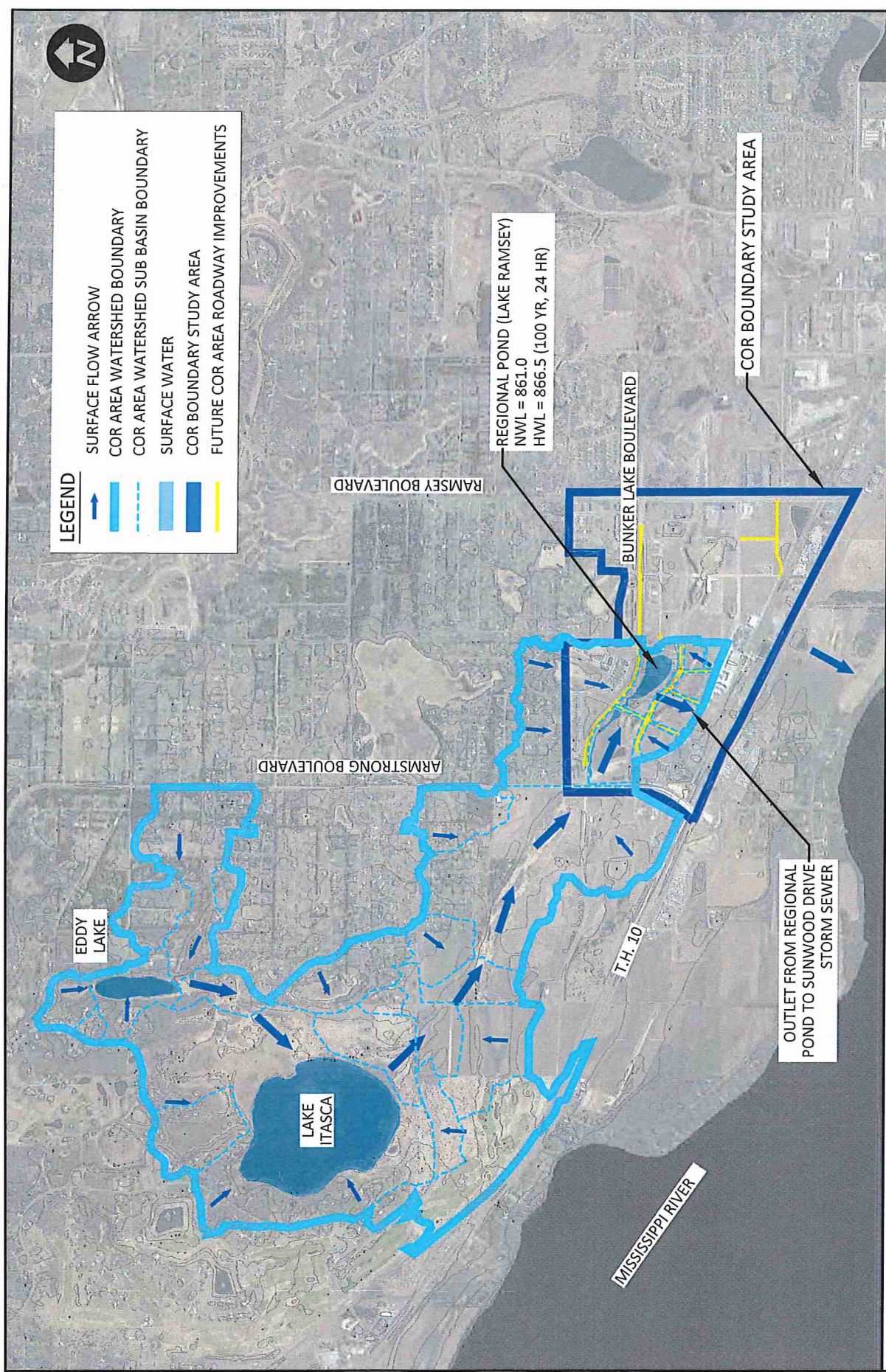


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CITY OF RAMSEY, MINNESOTA
FIGURE 12 - SITE GRADING
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LEGEND

- SURFACE FLOW ARROW
- COR AREA WATERSHED BOUNDARY
- COR AREA WATERSHED SUB BASIN BOUNDARY
- SURFACE WATER
- COR BOUNDARY STUDY AREA
- FUTURE COR AREA ROADWAY IMPROVEMENTS

REGIONAL POND (LAKE RAMSEY)
 NWL = 861.0
 HWL = 866.5 (100 YR, 24 HR)

OUTLET FROM REGIONAL
 POND TO SUNWOOD DRIVE
 STORM SEWER



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COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 13 - REGIONAL POND WATERSHED
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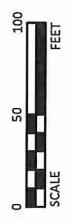
RAMSEY PARKWAY

CENTER STREET NW

XENOLITH STREET

LEGEND

- 2018 ROADWAY IMPROVEMENTS
- 2018 CONCRETE WALK
- 2018 CONCRETE CURB & GUTTER
- 2018 & FUTURE LIGHT POLE

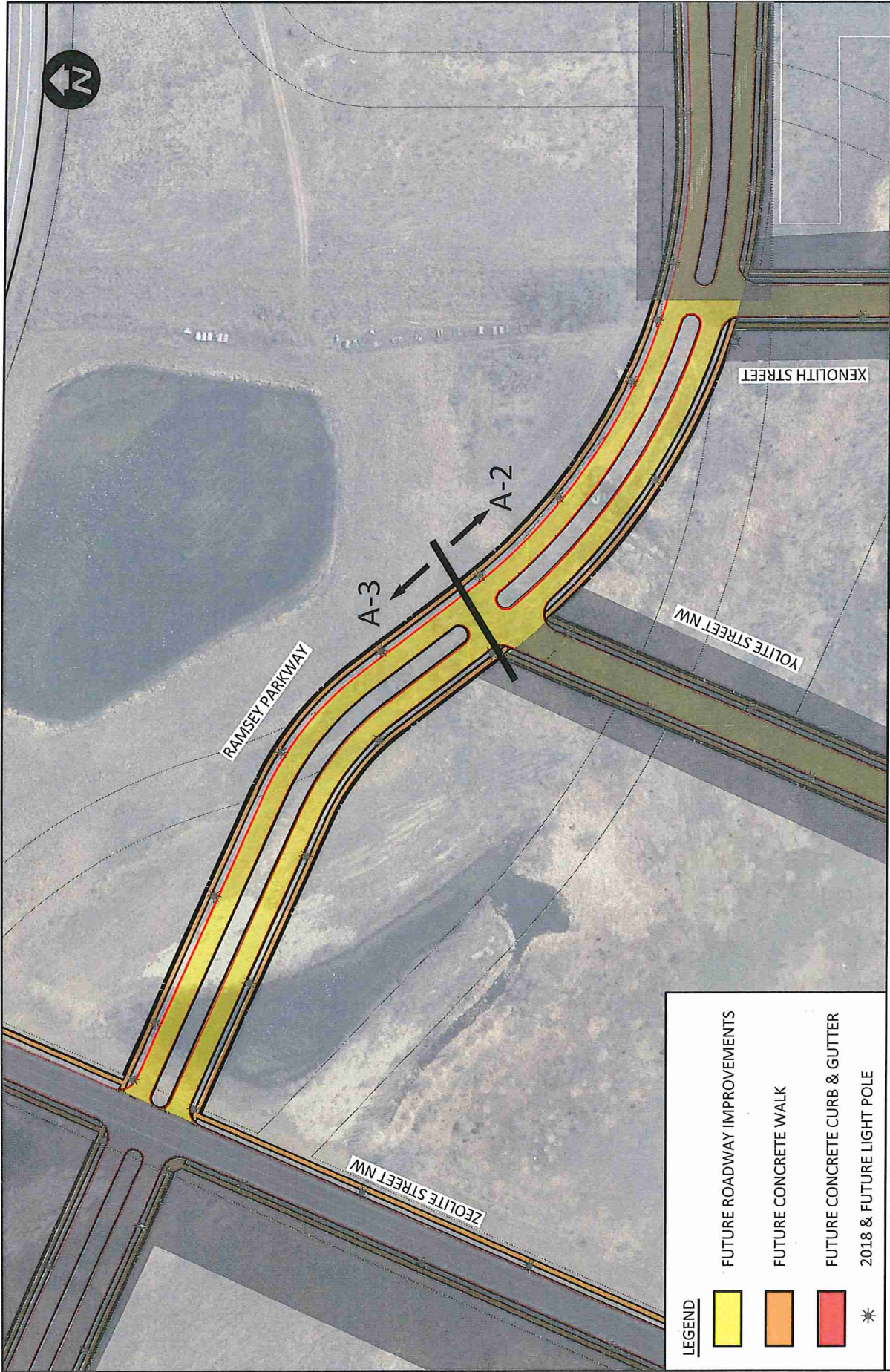


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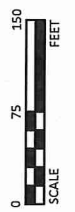


COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 14 - SEGMENT A-1 GEOMETRICS
 MARCH 2018



LEGEND

- FUTURE ROADWAY IMPROVEMENTS
- FUTURE CONCRETE WALK
- FUTURE CONCRETE CURB & GUTTER
- * 2018 & FUTURE LIGHT POLE



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



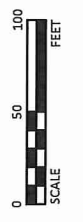
COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 15 - SEGMENTS A-2 & A-3 GEOMETRICS
MARCH 2018

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LEGEND

-  2018 ROADWAY IMPROVEMENTS
-  2018 CONCRETE CURB & GUTTER
-  2018 CONCRETE WALK
-  2018 & FUTURE LIGHT POLE



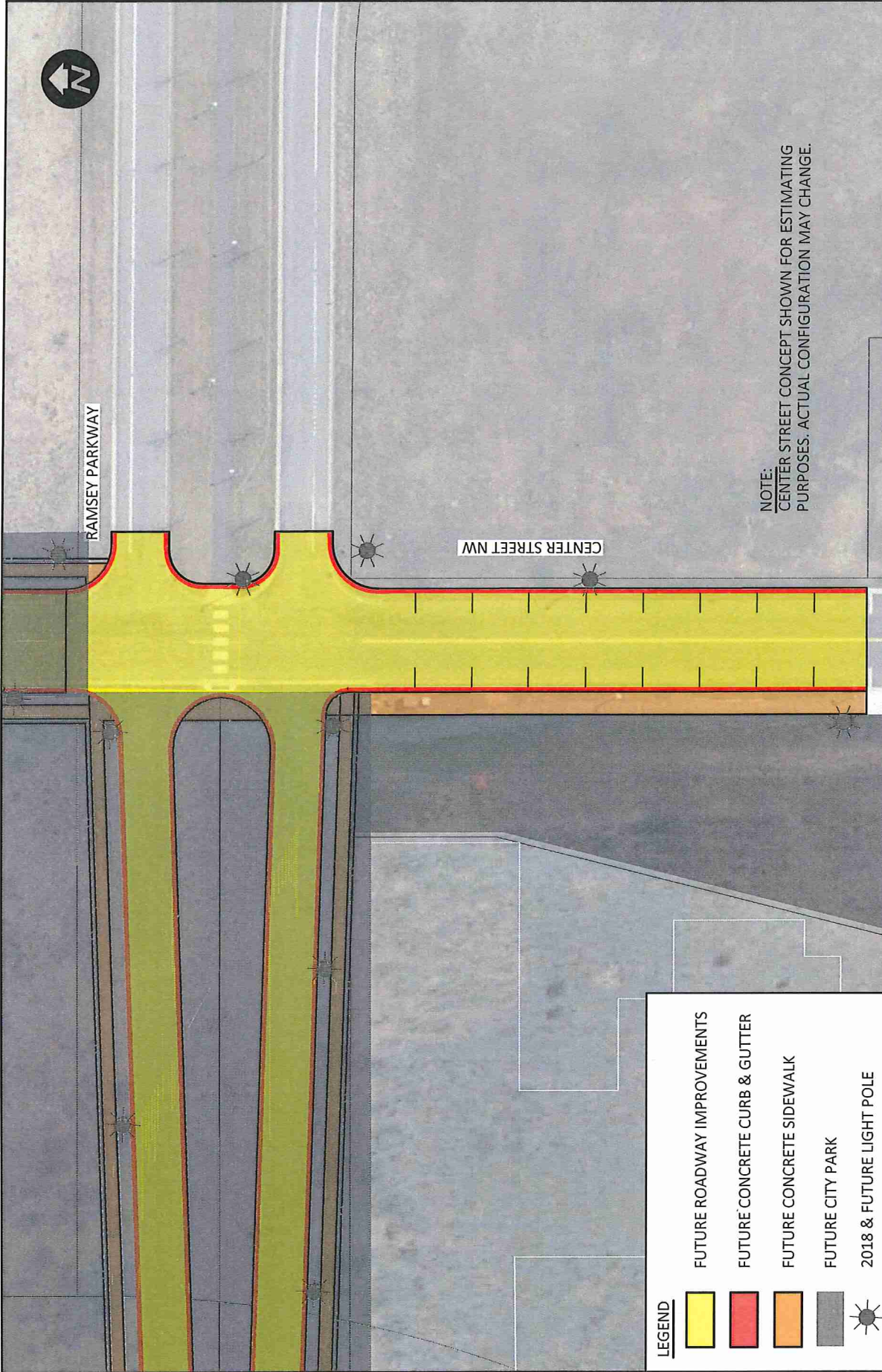
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COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 16 - SEGMENT A-4 GEOMETRICS
MARCH 2018

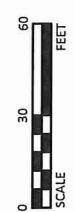
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NOTE:
 CENTER STREET CONCEPT SHOWN FOR ESTIMATING
 PURPOSES. ACTUAL CONFIGURATION MAY CHANGE.

LEGEND

-  FUTURE ROADWAY IMPROVEMENTS
-  FUTURE CONCRETE CURB & GUTTER
-  FUTURE CONCRETE SIDEWALK
-  FUTURE CITY PARK
-  2018 & FUTURE LIGHT POLE

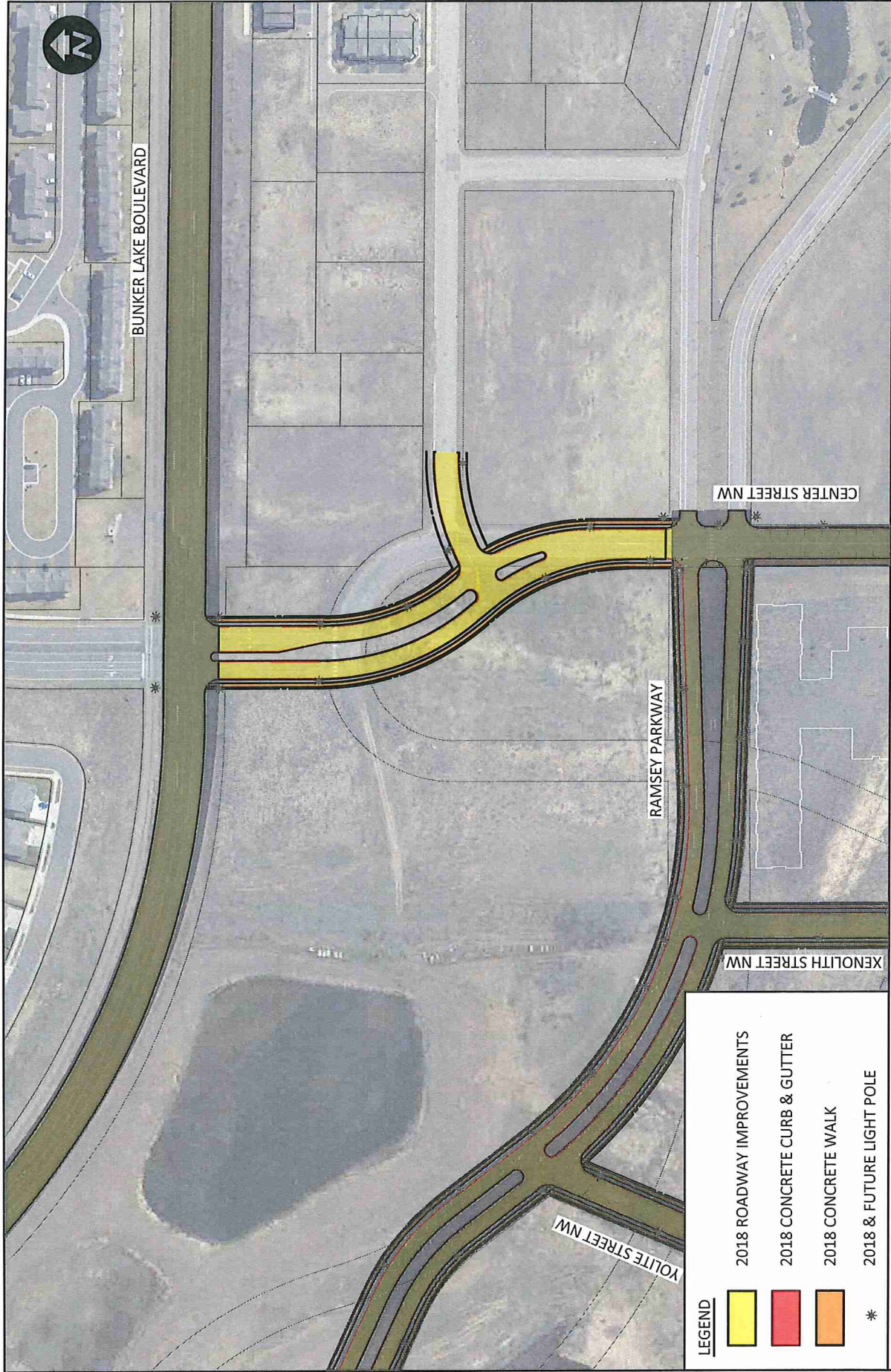


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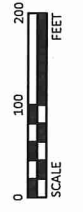


COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 17 - SEGMENT B-1 GEOMETRICS
 MARCH 2013



LEGEND

- 2018 ROADWAY IMPROVEMENTS
- 2018 CONCRETE CURB & GUTTER
- 2018 CONCRETE WALK
- * 2018 & FUTURE LIGHT POLE



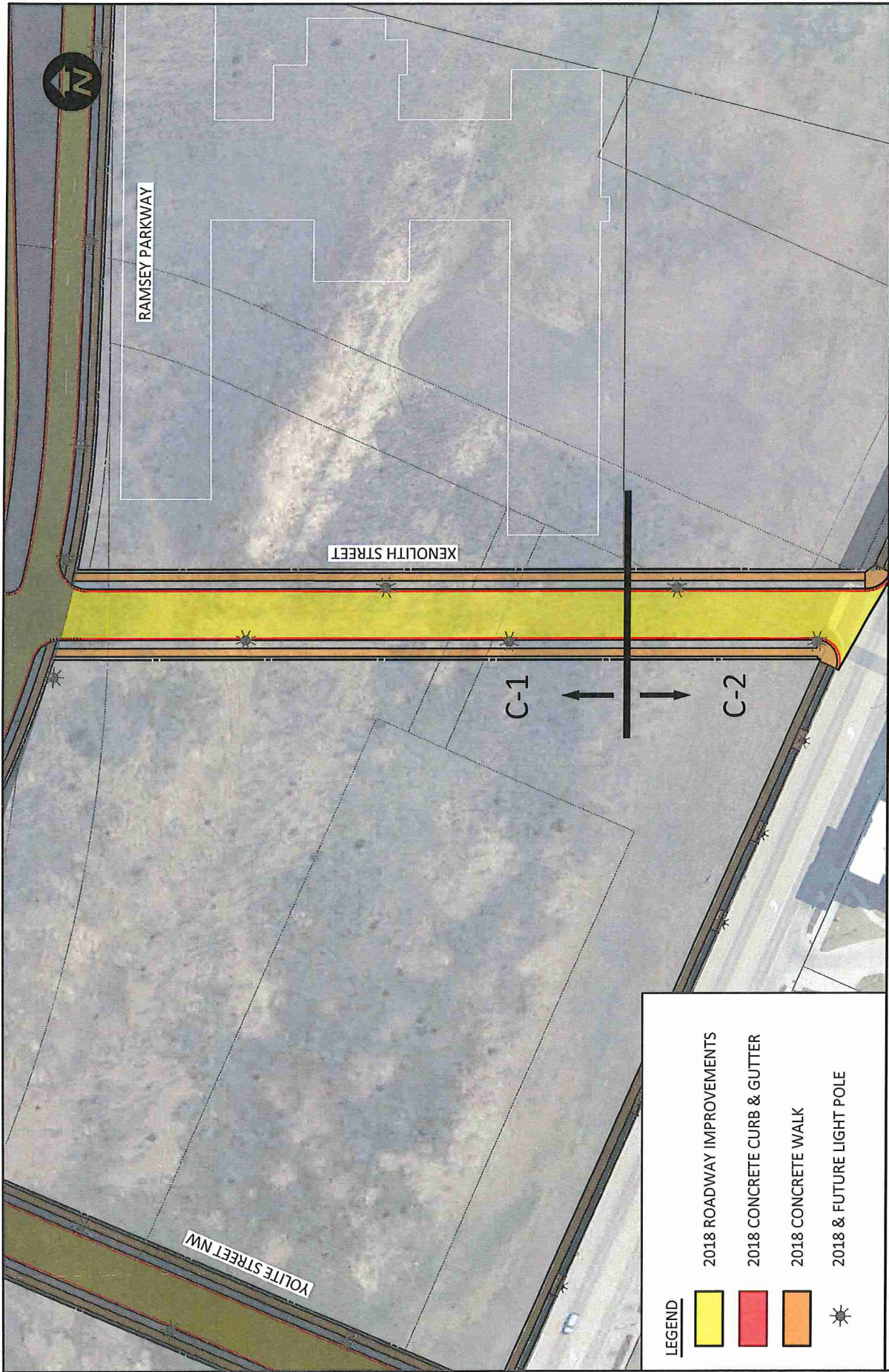
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CITY OF RAMSEY, MINNESOTA
FIGURE 18 - SEGMENT B-2 GEOMETRICS
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COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 19 - SEGMENTS C-1 & C-2 GEOMETRICS
 MARCH 2018

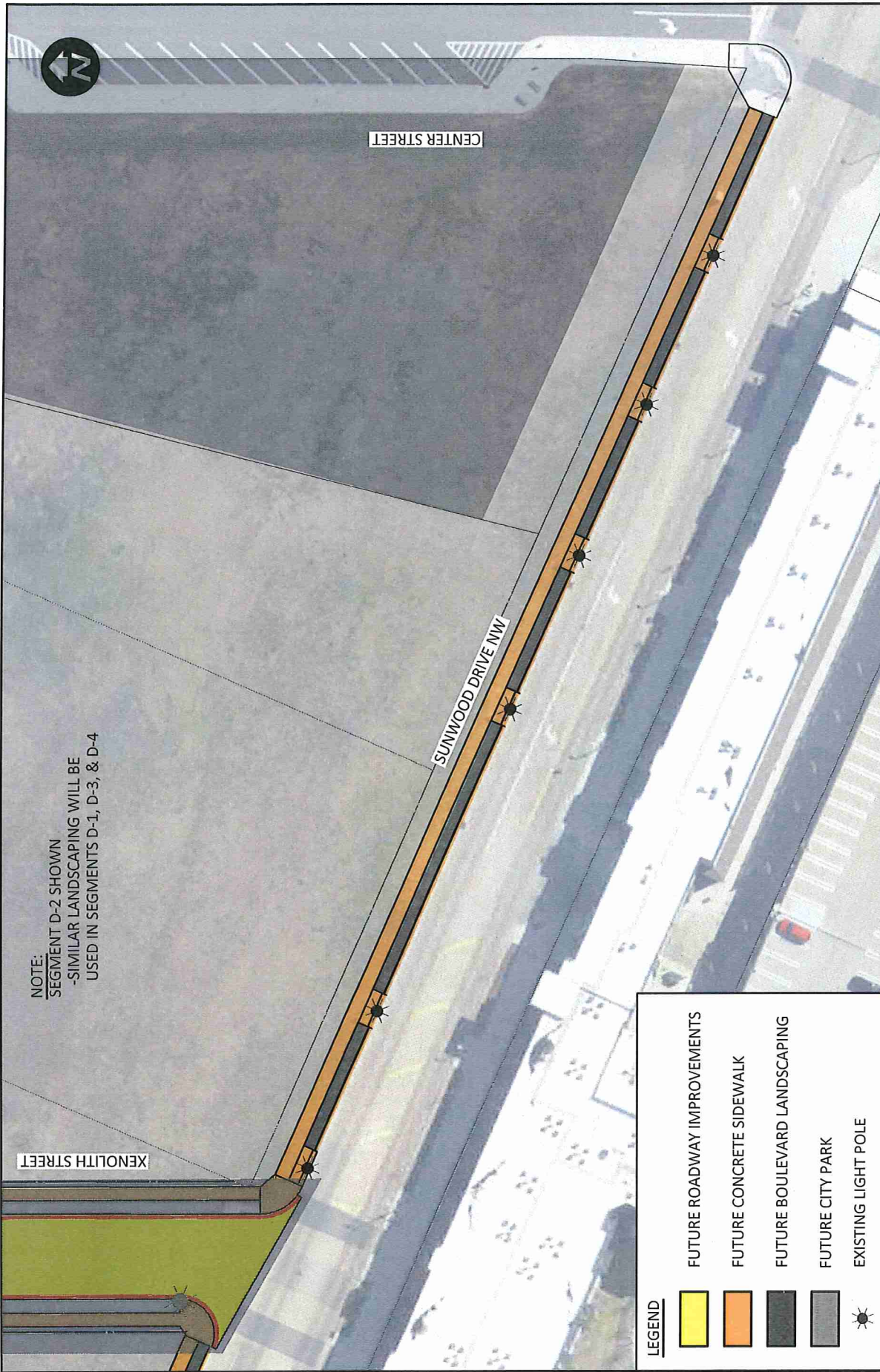


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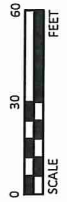
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NOTE:
 SEGMENT D-2 SHOWN
 -SIMILAR LANDSCAPING WILL BE
 USED IN SEGMENTS D-1, D-3, & D-4

LEGEND

- FUTURE ROADWAY IMPROVEMENTS
- FUTURE CONCRETE SIDEWALK
- FUTURE BOULEVARD LANDSCAPING
- FUTURE CITY PARK
- EXISTING LIGHT POLE



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COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 20 - SEGMENT D LANDSCAPING
 MARCH 2018



LEGEND

-  FUTURE ROADWAY IMPROVEMENTS
-  FUTURE CONCRETE CURB & GUTTER
-  FUTURE CONCRETE SIDEWALK
-  2018 & FUTURE LIGHT POLE



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



COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 22 - SEGMENT F-1 GEOMETRICS
 MARCH 2018



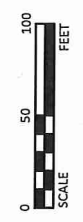
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LEGEND

- 2018 ROADWAY IMPROVEMENTS
- 2018 CONCRETE CURB & GUTTER
- 2018 CONCRETE WALK
- 2018 & FUTURE LIGHT POLE

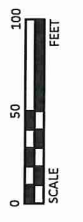


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LEGEND

- 2018 ROADWAY IMPROVEMENTS
- 2018 CONCRETE CURB & GUTTER
- 2018 CONCRETE WALK
- 2018 & FUTURE LIGHT POLE



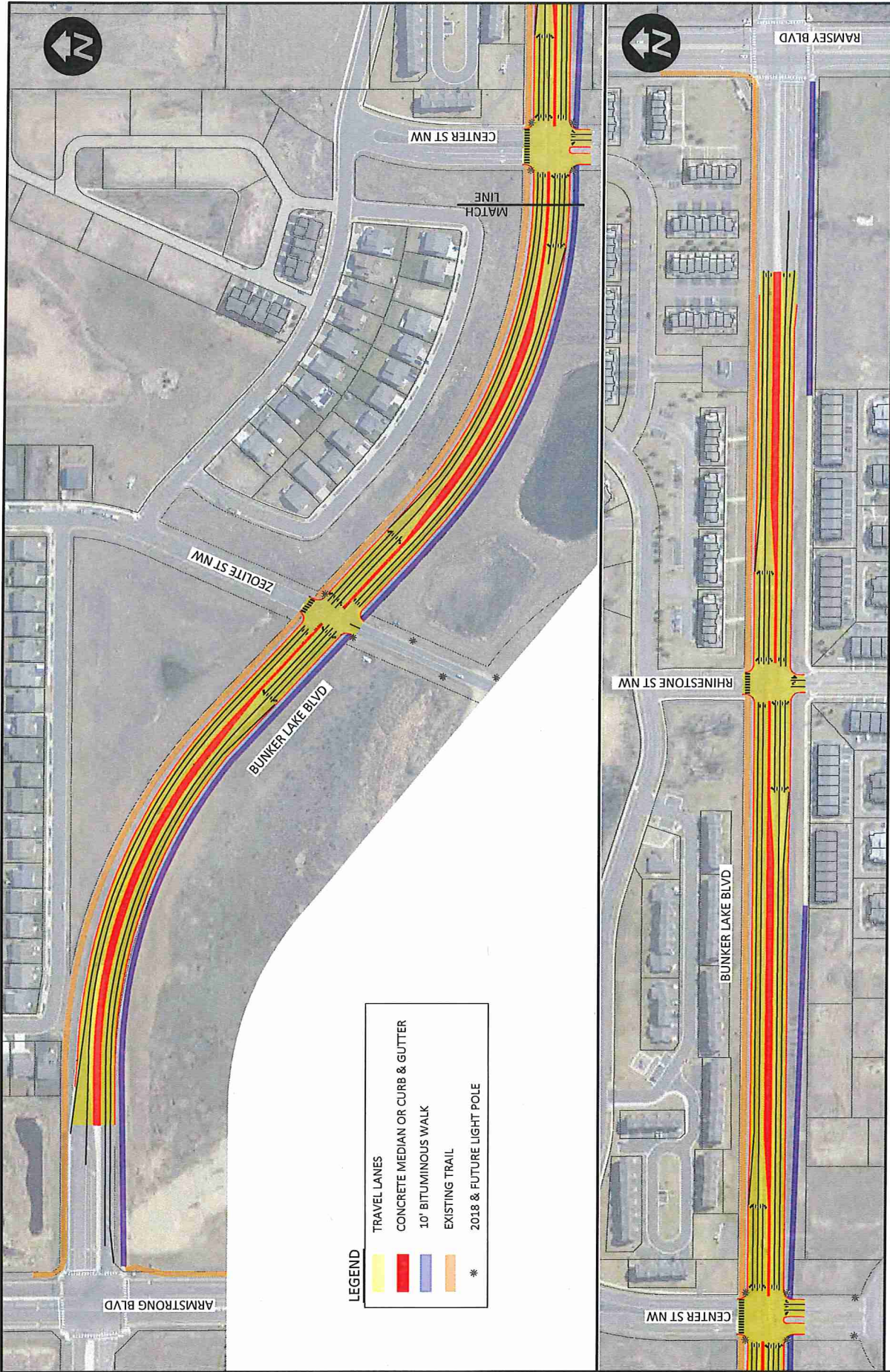
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COR ANALYSIS
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FIGURE 23 - SEGMENT F-2 GEOMETRICS
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LEGEND

	TRAVEL LANES
	CONCRETE MEDIAN OR CURB & GUTTER
	10' BITUMINOUS WALK
	EXISTING TRAIL
*	2018 & FUTURE LIGHT POLE

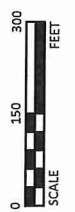


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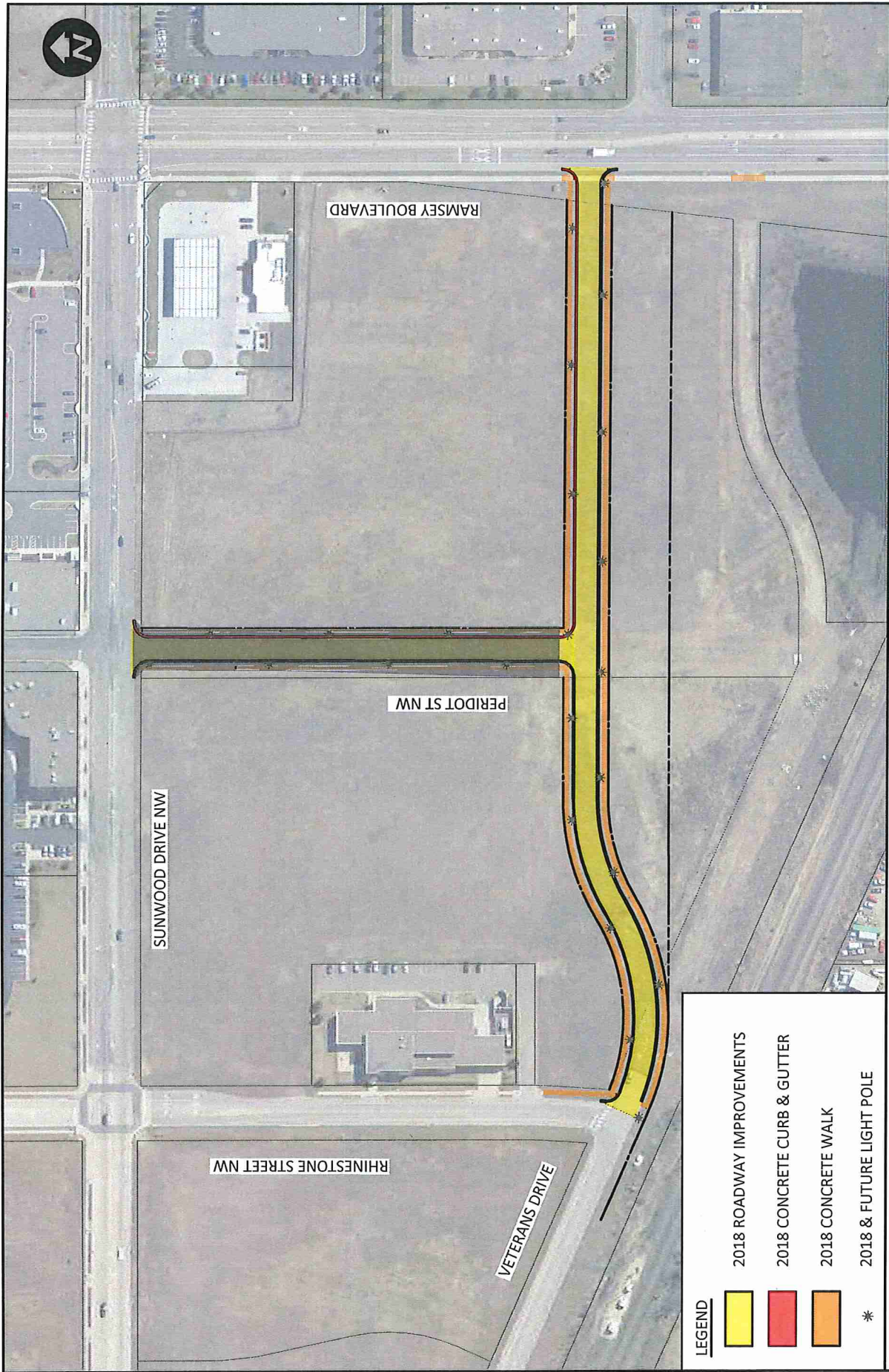
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COR ANALYSIS
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 FIGURE 24 - SEGMENT G GEOMETRICS
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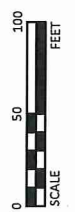


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LEGEND

- 2018 ROADWAY IMPROVEMENTS
- 2018 CONCRETE CURB & GUTTER
- 2018 CONCRETE WALK
- * 2018 & FUTURE LIGHT POLE

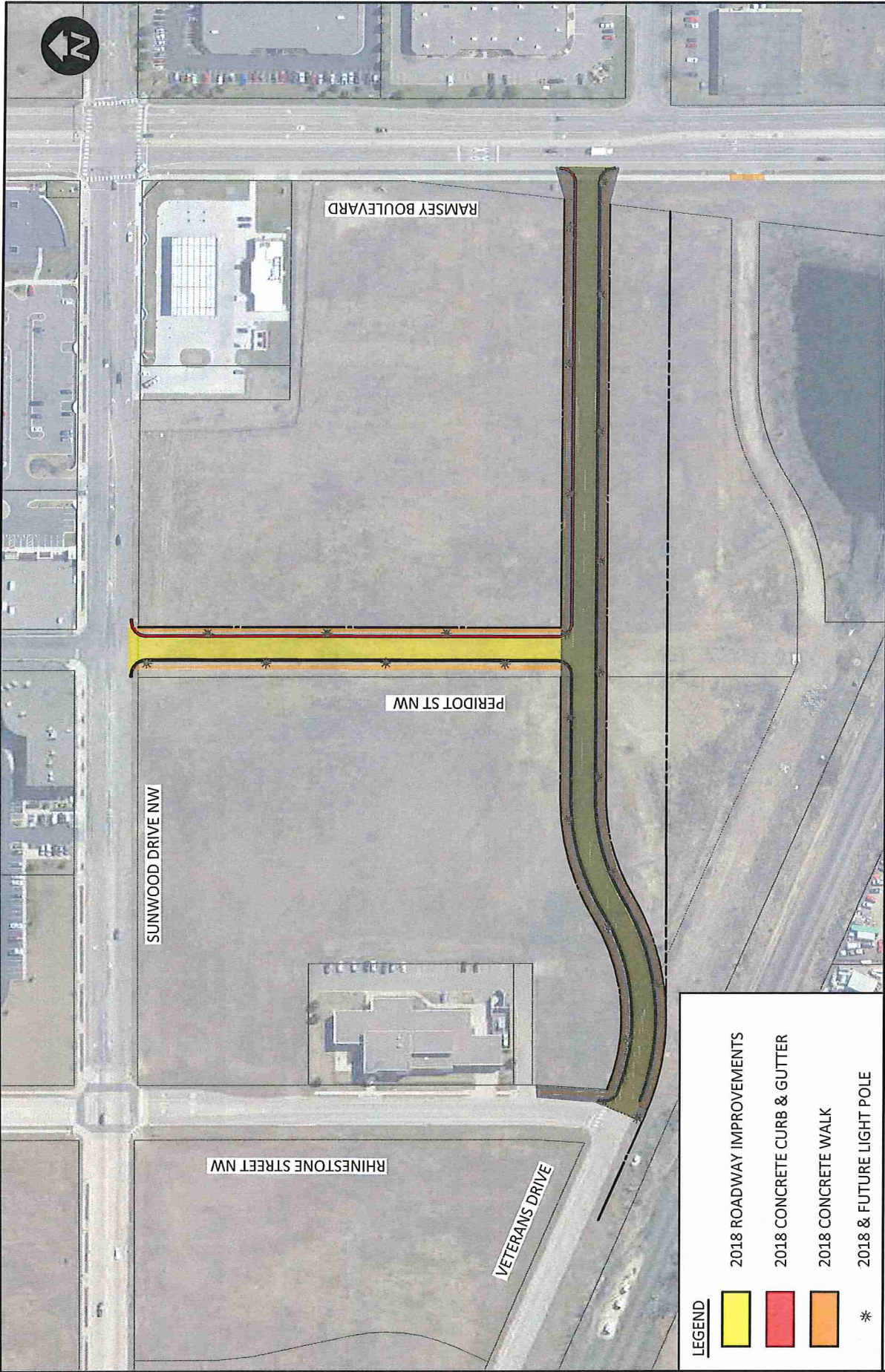


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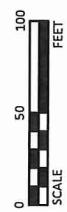


COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 25 - SEGMENT H GEOMETRICS
MARCH 2018



LEGEND

-  2018 ROADWAY IMPROVEMENTS
-  2018 CONCRETE CURB & GUTTER
-  2018 CONCRETE WALK
-  2018 & FUTURE LIGHT POLE



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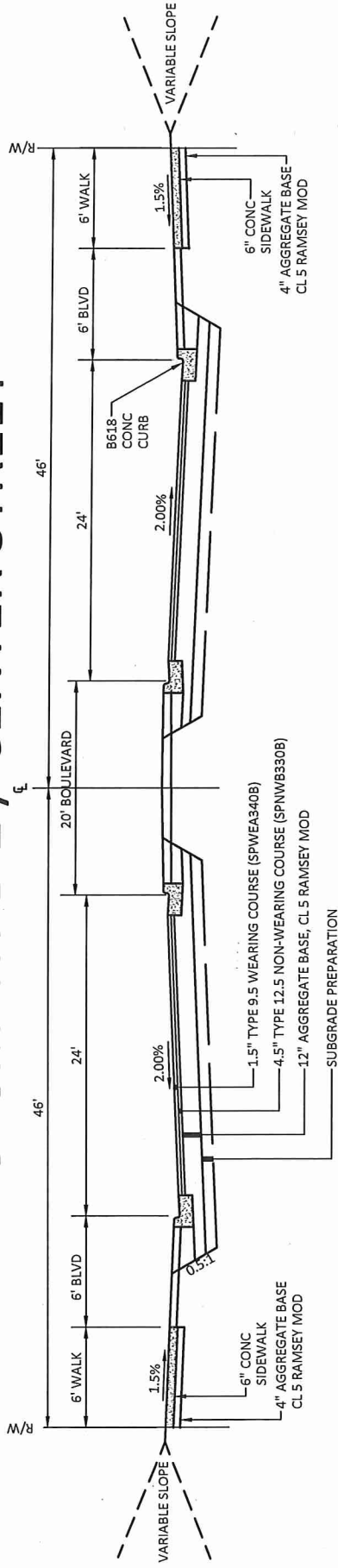


COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 26 - SEGMENT I GEOMETRICS
 MARCH 2018

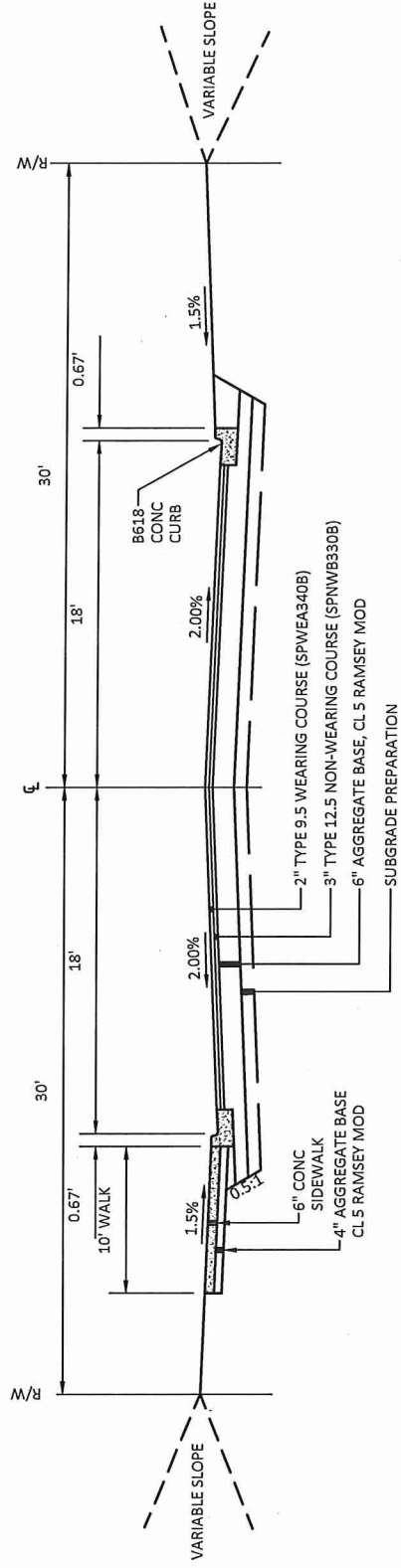
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SEGMENT A / RAMSEY PARKWAY SEGMENT B-2 / CENTER STREET



SEGMENT B-1 / CENTER STREET



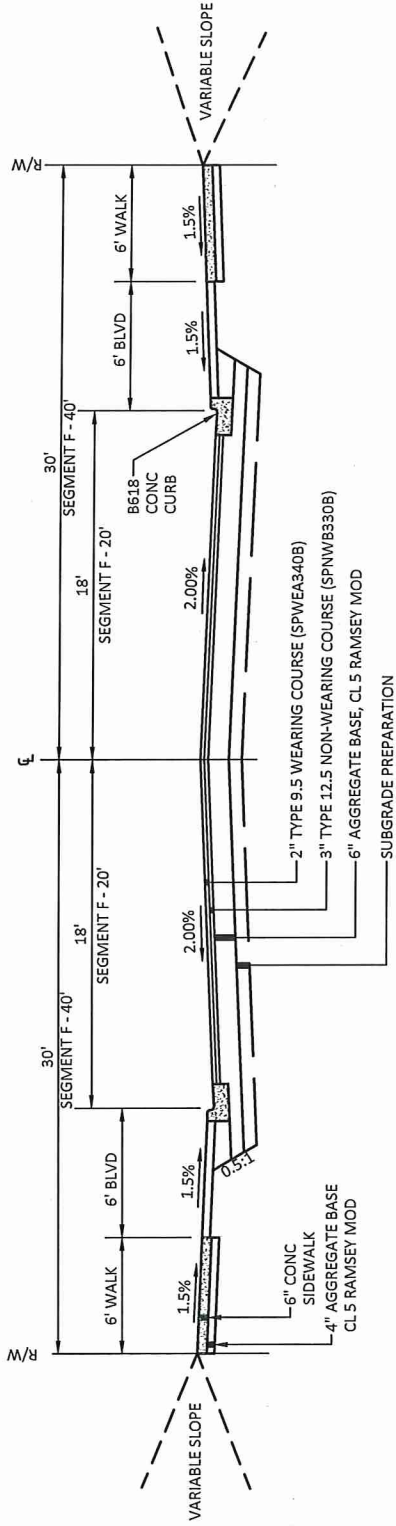
COR ANALYSIS
 CITY OF RAMSEY, MINNESOTA
 FIGURE 27 - TYPICAL SECTIONS
 MARCH 2018



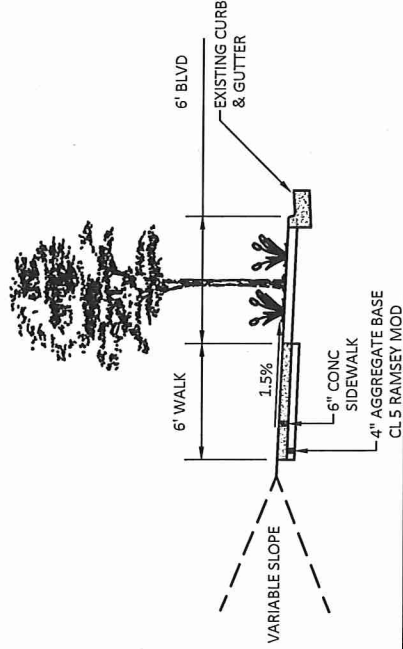
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SEGMENT C, E, F, H, I/XENOLITH STREET & YOLITE STREET NW VETERANS DRIVE, PERIDOT STREET NW, & ZEOLITE STREET NW



SEGMENT D / SUNWOOD DRIVE BOULEVARD (LANDSCAPING IMPROVEMENTS)



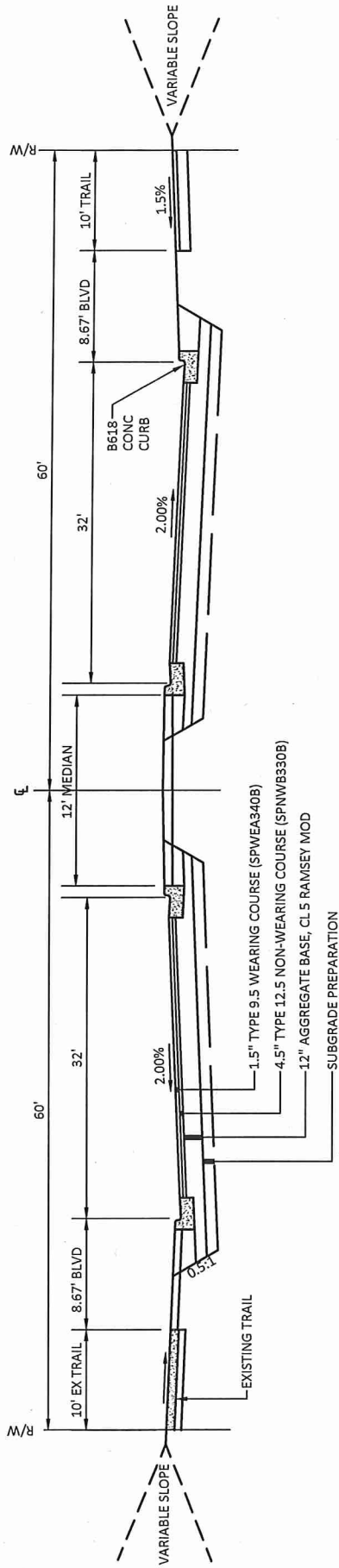
COR ANALYSIS
CITY OF RAMSEY, MINNESOTA
FIGURE 28 - TYPICAL SECTIONS
MARCH 2018



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SEGMENT G / BUNKER LAKE BOULEVARD



COR ANALYSIS
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 FIGURE 29 - TYPICAL SECTIONS
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APPENDIX C: TRAFFIC COUNT EXHIBIT

AVERAGE DAILY TRAFFIC COUNTS



LEGEND

- A** LOCATION MARKER
- 1,000** ANNUAL AVERAGE DAILY TRAFFIC (AADT)

0 500 Feet

Location	2017	2018	2019	2020	2021
A ARMSTRONG BOULEVARD - NORTH OF BUNKER	6630	-	-	-	-
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/47TH AVENUE	7300	-	-	-	-
G ARMSTRONG BOULEVARD - BETWEEN TH 10 RAMPS	4350	-	-	-	-
H ZEOLITE STREET	1000	-	-	-	-
I SUNWOOD DRIVE - CITY HALL	3150	-	-	-	-
J CENTER STREET	200	-	-	-	-
K RHINESTONE STREET	630	-	-	-	-
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	-	-	-	-