# Lake Johanna Boulevard Trail
# Preliminary Design Development Report

*September 27, 2022*

Prepared for:

RAMSEY COUNTY

In cooperation with:

ARDEN HILLS

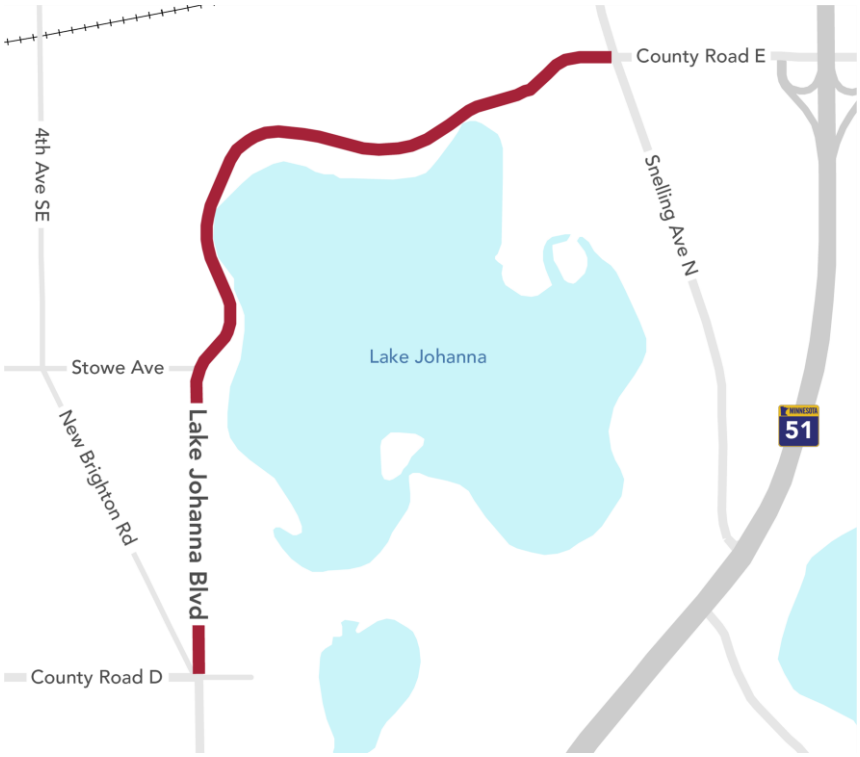


*Figure 1. Map of the Lake Johanna Boulevard Corridor*

Prepared by:

Kimley»Horn

# Lake Johanna Boulevard Trail Design Study

RAMSEY COUNTY

## Certification

I certify that this 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.

September 27, 2022

Gregory S. Brown, P.E. 22814

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# Project Summary / Background

This report provides a summary of the Lake Johanna Boulevard Trail Design Study activities between August 2021 and August 2022. The purpose of this design study, led by Ramsey County, is to develop conceptual trail designs for the Lake Johanna Boulevard corridor, which runs along the west and north sides of Lake Johanna from the intersection of County Road D and Fairview Avenue to the intersection of County Road E and Old Snelling Avenue in Arden Hills (see Figure 1).

The Lake Johanna Boulevard corridor includes long segments with a relatively narrow "buildable" cross-section due to steep topography adjacent to the lake. The minimal available buildable space has been a major impediment to the completion of a pedestrian and bicycle facility along this corridor. The desire for a safe and efficient mixed-use trail in this corridor has been strongly expressed by the City of Arden Hills and would also likely be heavily utilized by the larger community (New Brighton, Roseville, etc.) as it would tie into existing trail infrastructure including the Elmer Anderson Trail and existing trails at the eastern terminus of the project. This study explores options to construct a trail facility given sound engineering, budget constraints and the existing constraints of the corridor.

A Technical Advisory Committee (TAC) was formed for this study and includes representatives from:

- Ramsey County Public Works (Scott Mareck)
- Ramsey County Parks and Recreation (Scott Yonke)
- City of Arden Hills (David Swearingen)
- Active Living Ramsey Communities (Connie Bernardy, Rich Straumann, Gene Gjerdingen)

The TAC met four times throughout the course of the study and helped inform the development of alternatives and organization of the public engagement process. In addition to the four meetings, the project team completed a field walk with TAC members in the fall of 2021 to better understand the existing constraints and opportunities located along the corridor.

## Study Process

The following is a synopsis of the study process that was utilized to identify, test and develop recommendations for future trail improvements within the corridor.

1. Collect data and analyze existing conditions on a variety of corridor needs, including:
    a. Roadway traffic.
    b. Parking.
    c. Utilities.
    d. Pedestrian and cyclist experience.
    e. Natural environment (trees, lakefront, etc.)
    f. Private property.
    g. Public services (mail, snow removal operations, trash collection, emergency response).
2. Develop and implement a public engagement process to introduce the project, gather feedback and solicit input from the community about their ideas for the corridor. The engagement process will assist the TAC and design team with understanding the relationship/importance of corridor needs from the community perspective.
3. Develop draft conceptual designs, share them with the TAC and community and gather their feedback on what they like and dislike about each concept.
4. Revise the draft conceptual designs based on feedback from the TAC, community and elected officials.
5. Share the revised designs with the public and gather their feedback.
6. Prepare the layout of the revised designs and a corridor study report outlining the process, engagement feedback and design elements.

# Project Purpose and Need

The purpose statement of this study is:

*To identify design concepts that can safely and adequately accommodate pedestrians and bicyclists today and into the future for the Lake Johanna Boulevard Corridor between Snelling Ave N and County Road D in Arden Hills.*

The project was designed to meet the following needs:

- The Lake Johanna Boulevard Corridor has significant existing bicycle and pedestrian traffic, but currently there is no sidewalk or separated trail facility along the corridor.
- A greater number of pedestrians and cyclists have expressed a desire and need to utilize the corridor if a safe trail facility permitted them to do so.

The project goals/priorities include:

- Link to existing trail infrastructure and nearby destinations.
- Create a safe and comfortable walking/biking environment along and across Lake Johanna Boulevard.
- Construct improvements that can be easily maintained.
- Improve vehicle traffic mobility and safety.
- Minimize property impacts.
- Develop improvements that are financially feasible.

# Public Engagement Process

Three rounds of engagement were completed for the Lake Johanna Boulevard Trail Design Study.

## Round 1

During the first round of public engagement from October to November 2021, Ramsey County held an in-person open house on October 5, 2021 and a virtual open house on October 21, 2021. The purpose of the first round of engagement was to introduce the project to the public, share existing conditions information and ask the public about their experiences using Lake Johanna Boulevard and their visions for the corridor. Public feedback was shared through paper and online surveys which received 199 responses and an online interactive map which received 76 comments.

## Round 2

The county hosted a second virtual open house on March 1, 2022 to kick off the second round of public engagement which ran through April 1, 2022. In this round, the county shared draft trail design concepts and asked the public to provide feedback on them. The public was again able to provide feedback using an online survey and interactive map which received 20 responses and 77 comments, respectively.

## Round 3

The third and final round of public engagement took place from July 7 through August 7, 2022 starting with an in-person open house at Arden Hills City Hall. During this round of engagement, the county shared revised trail design concepts and asked the public to provide feedback on them. Feedback was received during the open house itself and through a short online survey which received 14 responses.

The meetings from each round of engagement were advertised in a variety of ways including postcards sent in the mail, social media notices, newspaper advertisements, yard signs around the project area, and e-blasts to the project distribution list.

The meetings were structured so that participants could opt to view a variety of materials prepared to outline the concepts and solicit feedback including:

- A short presentation providing overview of project and open house materials.
- Detailed layout drawings for each option presented during rounds 2 and 3.
- Project website updates including project meeting materials as well as general project information.
- An online interactive map to allow participants to provide location specific comments.
- A short online and/or paper survey.

## Open House Feedback Summary

In total, Ramsey County received 233 paper and/or online survey responses and 153 comments on the interactive map. Common themes from comments received in both applications are summarized below. More detailed information about the feedback received during each round of public engagement can be found in the engagement summaries located in **Appendices A - C.**

### Common Themes

- General support and excitement for the project.
- General sentiment that a trail separated from traffic/off-road is a needed safety improvement for community use of the corridor.
- Support for locating the trail on either side of the roadway was expressed, with the west side/north side location being slightly more favored especially as engagement progressed.

  - Respondents that preferred the east/south location noted it would be more enjoyable to walk lakeside.
  - Respondents that preferred the west/north location noted more spaciousness, less disruption to private properties, and better connections to existing trails.
- Desire for trail design to address the following interests/concerns:
  - Minimize property impacts.
  - Reduce vehicular speeds.
  - Improve visibility around curves in roadway.
  - Improve safety of crossings for pedestrians and cyclists.
- Desire for the project to proceed to construction as soon as possible.

# Corridor Context

## Corridor Character

Lake Johanna Boulevard (Ramsey County Road 49) is a 1.5 mile two-way, two-lane roadway with variable width shoulders and a cross-section that includes segments with ditches, bituminous curb, and concrete curb and gutter. A portion of the alignment abuts Lake Johanna with short private lots (accommodating boat docks) and public beach and boat access associated with Tony Schmidt Regional Park. The roadway runs north-south from County Road D then becomes curvilinear as it abuts Lake Johanna for the eastern portion of the corridor.

The majority of the abutting land use is residential although the corridor includes significant frontage through Tony Schmidt Regional Park and along the Presbyterian Homes Senior Living facility near the County Road D terminus. The corridor provides important access from local neighborhoods and the retirement community to Tony Schmidt Regional Park amenities. Lake Johanna Boulevard serves as an important link in Ramsey County's regional transportation network for the movement of traffic, pedestrians and cyclists. It also serves as a connection between existing trails system along County Road E and Old Snelling Avenue and the Elmer Anderson Trail.

Available right-of-way varies between 50 and 90 feet which is generally adequate to accommodate a trail and roadway; however, topographical, mature vegetation, private landscaping within the right-of-way, and lake/wetland constraints have largely precluded the construction of a separate facility for nonmotorized traffic to date. The current roadway posted speed is 30 MPH and existing vehicular traffic volumes along the corridor range from 4,000 to 5,000 vehicles per day.

*Figure 2: Looking north from County Road D towards Sandeen Road*

*Figure 3: Looking north from Sandeen Road towards Stowe Ave*

*Figure 4. Looking north from Stowe Ave towards County Road E*

*Figure 5: Tony Schmidt Regional Park segment with beach house (left) and Elmer Anderson Trail crossing (right)*

*Figure 6. Looking east from Tony Schmidt Regional Park towards Siems Court*

*Figure 7: Looking east from Siems Court towards Old Snelling Avenue*

## Private Property Impacts

Adjacent residential properties abut the roadway along the majority of the corridor and include varying setbacks from the edge of the pavement. Private homes and garages are located closer to the east side of the roadway right of way between Sandeen Road and Stowe Avenue than the west side. Driveways are typically wider on the east than west as well in this area. Between Tony Schmidt Regional Park and Siems Court several private homes and garages are located as close as ten feet from the right of way along the south side of the roadway.

The existing right of way widths are anticipated to accommodate the spatial needs for traffic and the trail without acquisition of additional right of way. However, proximity of private homes and garages and driveway parking are much closer and constrained along the east and south sides of the corridor as noted above and should be considered with selection of the trail location. Private landscaping improvements within the existing right of way, including landscaping, mailboxes, fences and walls will need to be evaluated for potential relocation as a part of detailed design. Preliminary review of the corridor does not indicate significant relocation needs for private elements.

## Storm Drainage Infrastructure

Existing storm drainage infrastructure includes a non-standard collection of ditches, culverts catch basins and piping constructed at different times and varying effectiveness in managing storm runoff. Existing stormwater runoff generated in the corridor is generally not treated or filtered prior to discharging or flowing to Lake Johanna or other natural receiving wetland areas. The project should consider the following improvements related to improving stormwater quality prior to discharging to natural water bodies:

- Explore and identify locations to intercept runoff and filter or infiltrate prior to entering Lake Johanna and the wetland complex within Tony Schmidt Regional Park.
- Consider stormwater basin design as visual amenities for trail users.
- Consider meandering of trail alignment to promote space for water quality infrastructure.

*Figure 8. Example of water quality basin incorporated with trail alignment*

## Trail Use Need

The roadway proximity to Tony Schmidt Regional Park, Lake Johanna, neighborhoods east and north of the lake, and trail connections result in a high number of pedestrians and cyclists using the corridor. The existing roadway does not include any dedicated space for pedestrians or cyclists who are forced to utilize the roadway shoulders as a result. Comments from the public received as a part of the engagement process stressed that existing shoulders are utilized by motorists to bypass turning traffic and are dangerous for pedestrians and cyclists as a result.

## Utility Impact

Existing overhead power and communication lines generally run along the east side of the corridor between County Road D and Lake Lane with some intermittent power poles on the west. Overhead lines run along the south side of the corridor between Tony Schmidt Regional Park and Old Snelling Avenue. Fire Hydrants are located along the east side of the corridor between Lake Lane and County Road D. The City of Arden Hills maintains sanitary sewer lift stations in the northwest corner of County Road E and Lake Johanna Boulevard (west of Tony Schmidt Regional Park) and the south side of the roadway near Siems Court. The trail alignment and grading in these areas will need to accommodate access to the lift station.

A topographic survey will need to conducted as a part of detailed design to confirm precise locations of surface and underground utilities and to determine the scope of utility relocation required for the project.

## Vegetative Impacts

The corridor generally consists of residential lawns with mature trees set back from the roadway edge. The Tony Schmidt Regional Park frontage includes both mowed turf areas with intermittent trees and natural wooded wetland areas with dense tree and plant growth. Based on the field walk and design concepts, impacts to existing trees in the corridor are not anticipated to be significant. The design concepts all include boulevard space between the trail and roadway edge that could accommodate new trees or other landscaping if desired.

A topographic survey will need to be conducted as a part of detailed design to confirm precise locations and sizes of existing trees and to determine scope of impacts. Adjustments to the proposed trail alignment should be considered where appropriate to avoid impacts to mature trees.

## Parking Access Impacts

On-street parking occurs throughout the corridor with the greatest intensity of use located near Lake Johanna Shores and Tony Schmidt Regional Park, including use by boaters when the boat launch parking area is at capacity. The design concepts developed generally provide for parking along one side of the corridor, including parking adjacent to Lake Johanna Shores. The north trail concept through Tony Schmidt Regional Park has potential for greater separation from the roadway which could allow parking on both sides of Lake Johanna Boulevard in the vicinity of the boat launch.

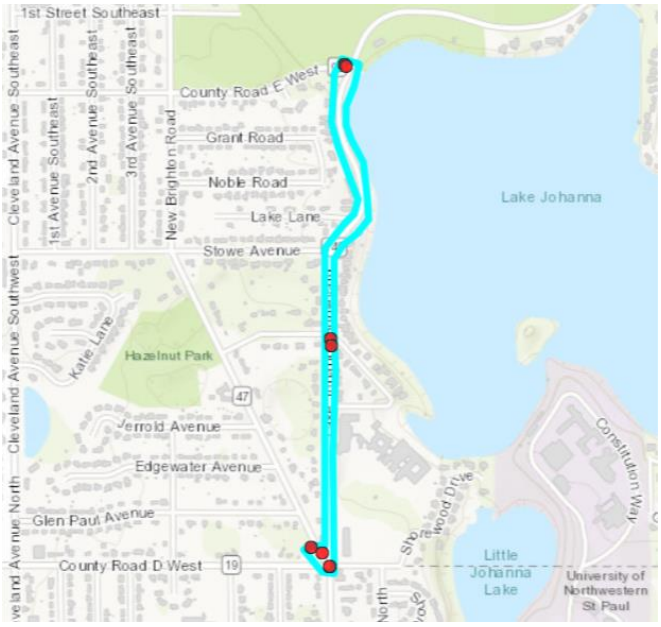
# Crash Analysis

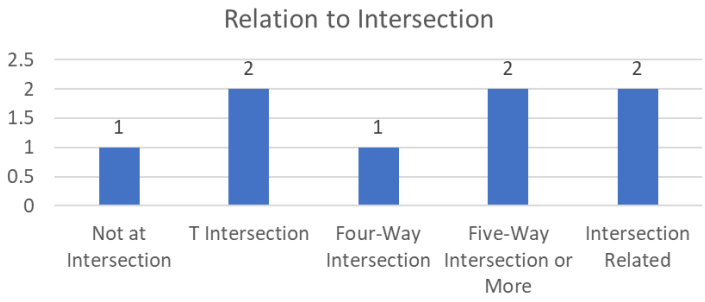
As part of this design study, the project team conducted a crash analysis, using 2016 – 2020 crash data from the Minnesota Crash Mapping Analysis Tool (MnCMAT2). The team looked at crash rates, both total crashes and fatal and serious injury crashes, as well as characteristics of the crashes along the Lake Johanna Boulevard corridor. The graphics below summarize the findings from the crash analysis. Both the total crash rate and fatal and serious injury crash rate have a critical index below one on both segments of the corridor, indicating that these segments do not deviate significantly from statewide trends. Listed below are definitions to assist in interpreting these results.

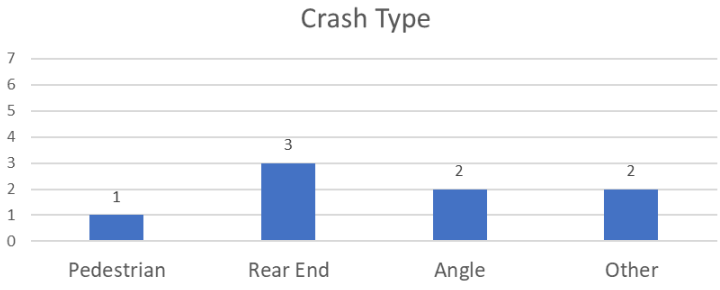
- **Total crash rate** is defined as the number of crashes per million vehicles miles traveled (or entering vehicles for intersections).
- The **fatal and serious injury crash rate** is defined as the number of fatal and incapacitating injury crashes per 100 million vehicle miles traveled (or entering vehicles for intersections).
- **Critical crash rates** provide a statistical threshold for screening sites. The critical crash rate is calculated by weighting the average crash rate for similar intersections or segments across Minnesota by the existing traffic volume.
- A **critical index** is reported as the ratio of the observed crash rate to the critical crash rate. A critical index exceeding 1.00 indicates there may be a safety concern at the site. When analyzing the critical index, a value at or below 1.00 implies that the site does not deviate significantly from statewide trends (i.e., it's performing within expectations). The total crash rate critical index is the total crash rate divided by the critical crash rate for total crashes. Similarly, the fatal and serious injury critical index is the fatal and serious injury crash rate divided by the critical crash rate for fatal and serious injury crashes.

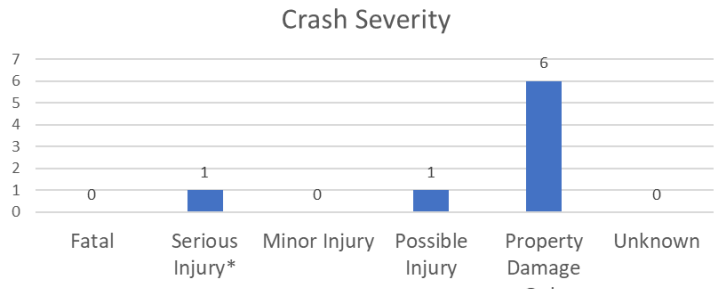
## County Road D to County Road E

Eight crashes, including intersection crashes.






**Serious injury crash occurred at County Road E intersection*

| Crashes by Crash Severity | |
|---|---|
| Fatal | 0 |
| Incapacitating Injury | 1 |
| Non-incapacitating Injury | 0 |
| Possible Injury | 1 |
| Property Damage | 6 |
| Total Crashes | 8 |

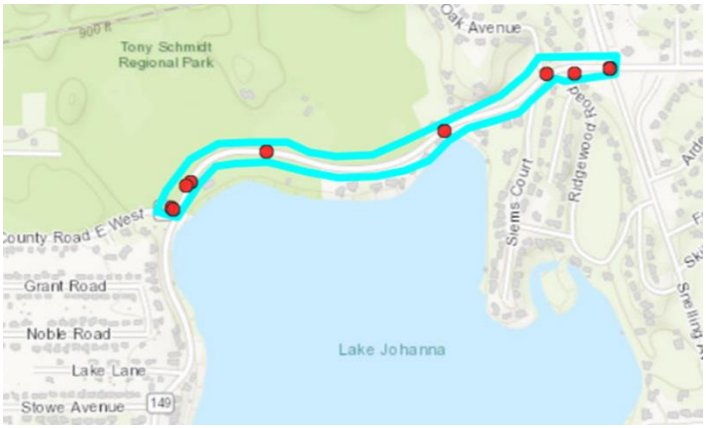
| Section Characteristics | |
|---|---|
| Length | 0.820 miles |
| Volume (ADT) | 4,100 |
| Environment | Suburban |
| Median Type | Undivided / No median |
| Number of Lanes | 2 |

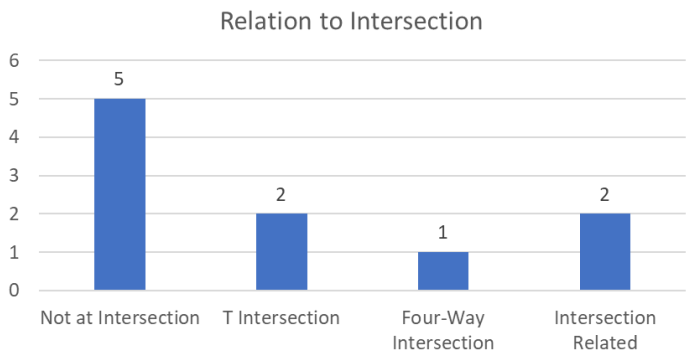
| Total Crash Rate | |
|---|---|
| Observed | 1.30 |
| Statewide Average | 1.32 |
| Critical Rate | 2.60 |
| **Critical Index** | **0.50** |

| Fatal & Serious Injury Crash Rate | |
|---|---|
| Observed | 16.29 |
| Statewide Average | 2.87 |
| Critical Rate | 19.78 |
| **Critical Index** | **0.82** |

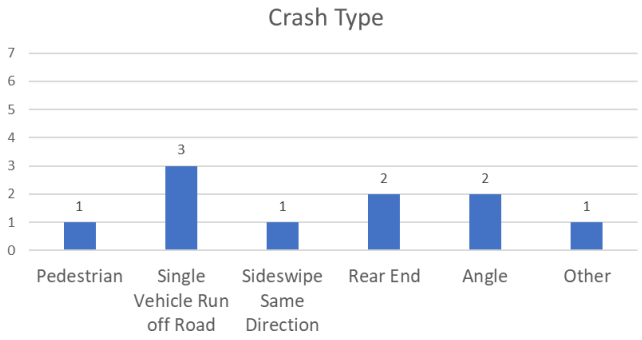
## County Road E to Snelling Avenue

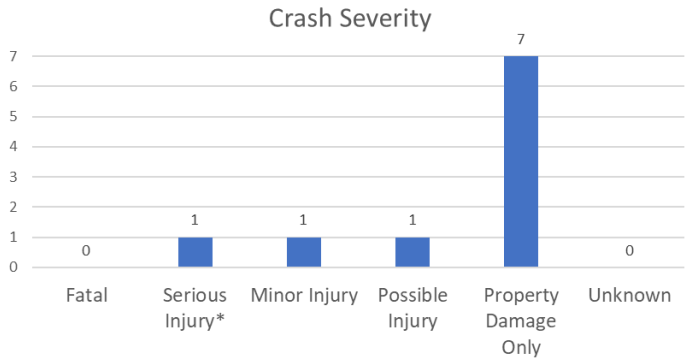
Ten crashes, including intersection crashes.



# Lake Johanna Boulevard Trail Design Study




**Serious injury crash occurred at County Road E intersection*

| Crashes by Crash Severity | |
|---|---|
| Fatal | 0 |
| Incapacitating Injury | 1 |
| Non-incapacitating Injury | 1 |
| Possible Injury | 1 |
| Property Damage | 7 |
| Total Crashes | 10 |

| Section Characteristics | |
|---|---|
| Length | 0.73 miles |
| Volume (ADT) | 5,100 |
| Environment | Suburban |
| Median Type | Undivided / No median |
| Number of Lanes | 2 |

| Total Crash Rate | |
|---|---|
| Observed | 1.47 |
| Statewide Average | 1.80 |
| Critical Rate | 3.20 |
| **Critical Index** | **0.46** |

| Fatal & Serious Injury Crash Rate | |
|---|---|
| Observed | 14.71 |
| Statewide Average | 2.77 |
| Critical Rate | 18.31 |
| **Critical Index** | **0.80** |

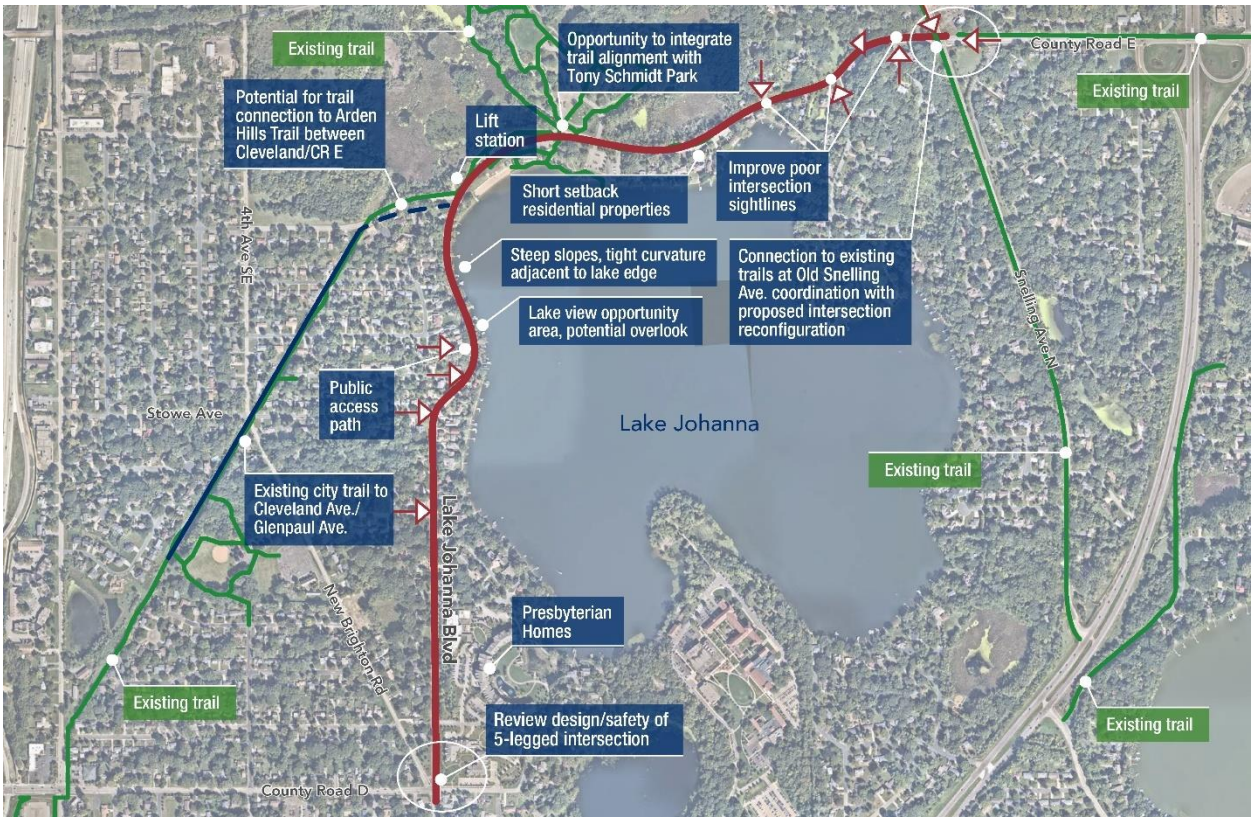
# Trail Connections

A key element of any successful trail system is how it improves connectivity to points of interest within a community and the broader region. The proposed Lake Johanna Boulevard trail improvements will provide critical connections between Arden Hills neighborhoods and Tony Schmidt Regional Park, Lake Johanna and Lake Johanna Shores community. The eastern terminus of the trail will complete connections to existing trails which extend northerly to Bethel College and Mounds View High School, easterly along the County Road E commercial district and most recently to the south along Old Snelling Avenue towards Roseville. The proposed trail will connect to the northern leg of the Elmer Anderson Trail within Tony Schmidt Regional Park. The trail could also connect to the southern leg of the Elmer Anderson Trail in conjunction with a short segment of trail that could be constructed along County Road E west of Lake Johanna.

The City of Roseville has expressed interest in extending a trail facility along Fairview Avenue south of County Road D to connect to their existing trail network at Lydia Avenue.

In addition to connecting to existing and proposed trail facilities, the project should include improvements to existing intersections to facilitate safe and visible connections between adjacent neighborhoods and the trail facility.

*Figure 9. Corridor Opportunities, Constraints and Connectivity*



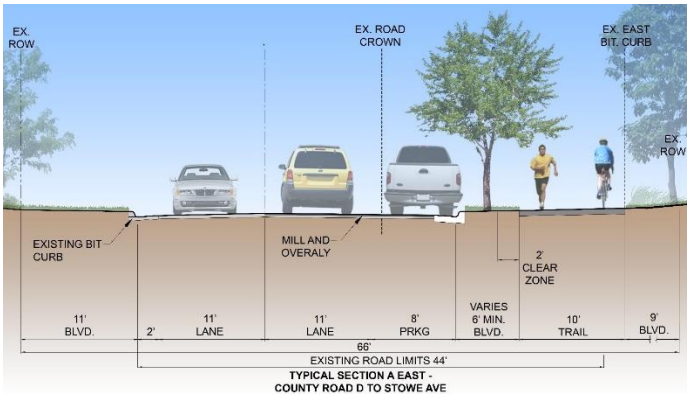
# Design Study Considerations

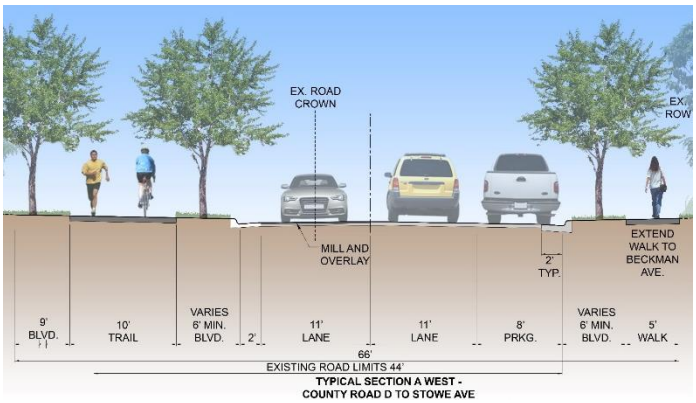
Design considerations were identified to develop, evaluate and prioritize the potential trail alignments. They included:

- **User Experience Criteria**: Sense of safety, intuitive wayfinding, proximity to natural areas and comfort.
- **Connectivity Criteria**: Connections to neighborhoods, local parks, Lake Johanna and trails.
- **Scope of Roadway Modification Improvements Criteria**: Scale of reconstruction and realignment.
- **Crossings/Conflicts Criteria**: Visibility at crossings, length of crosswalks, private driveways and local streets.
- **Grading/Retaining Wall Scope Criteria**: Scale of grading and/or wall construction necessary to fit trail.
- **Right of Way/Easement Needs Criteria**: Scale of anticipated property acquisition (temporary and permanent).
- **Surface Utility Conflicts Criteria**: Power poles, hydrants, manholes and communications pedestals.
- **Cost Criteria**: Estimated project costs including design, construction and right of way acquisition.

## Trail Design Concepts

*Figure 10. East/South Side Concept, Typical Section A (left) and West/North Side Concept, Typical Section A (right)*




The project team developed and evaluated two potential alignments, an east/south side option and a west/north side option. The draft trail design concepts are included in **Appendix D**. The following provides a synopsis of the key elements of these two potential alignments.

### Roadway Improvements

The existing roadway pavement is proposed to be narrowed to accommodate the trail while minimizing construction beyond existing roadway pavement limits. Portions of roadway pavement would require milling and overlay to accommodate the new roadway widths and centerline.

Roadway intersection treatments include curbed bump outs to improve safety of pedestrian crosswalks by narrowing the crosswalk lengths, enhancing visibility of pedestrians and providing space for ADA compliant ramp infrastructure.

### Trail Improvements

The proposed trail improvements include a continuous 10-foot-wide multi-use trail along one side of Lake Johanna Boulevard. A 6-foot turf boulevard will provide separation of the trail from the roadway as well as room for snow storage, signage, streetlighting and boulevard trees if desired by the City of Arden Hills. A minimum 2-foot clear

zone will be provided on both sides of the trail. Connections to sidewalks and trails at intersecting streets are proposed throughout the corridor.

In areas where right-of-way, private landscaping or topography constraints exist, the trail alignment could be shifted closer to the roadway by reduction of the 6-foot turf boulevard to a 2-foot paved maintenance strip directly abutting the surmountable curb.

### Public Utility Improvements

The existing roadway corridor includes watermain and sanitary sewer infrastructure to serve abutting properties. Existing hydrants in the corridor will need to be reviewed with City of Arden Hills staff and relocated as necessary to accommodate the new curb line and trail clear zone. Existing sanitary sewer infrastructure, including Lift Station #5 (near County Road E) and Lift Station #3 (north shore of Lake Johanna), is not anticipated to be impacted by the project based on the current design concepts.

### Private Utility Improvements

The existing corridor includes overhead power and communications lines along the entire length as well as underground gas, electric and communications facilities. Relocation of power poles and overhead wires required as a part of the roadway and trail construction will be completed by Xcel Energy at no cost to the project provided the infrastructure remains overhead.

### Storm Drainage Improvements

The existing storm drainage infrastructure in the corridor does not provide adequate drainage in many storm events. The conversion of the roadway from a rural section to an urban curbed section will necessitate the inclusion of storm sewer catch basins and supporting infrastructure. The proposed roadway improvements include storm sewer catch basins, manholes, culverts and ditches to route stormwater runoff to water quality infrastructure as well as manage drainage and alleviate existing nuisance flooding issue areas that may exist.

### Water Quality Improvements

The proposed roadway and trail improvements anticipate a slight reduction in impervious area compared to existing conditions. The City of Arden Hills stormwater regulations refer to Rice Creek Watershed District rules, which are triggered for linear projects by the creation or reconstruction of one or more acres of impervious surface. Therefore, the project as currently planned may not be required to install stormwater quality infrastructure. However, the concept layout plans have included potential areas that could be utilized for stormwater management if the project design results in additional impervious surfaces such that watershed rules are triggered or the City and County desire to provide water quality infrastructure regardless of regulatory requirements.

### Landscaping Improvements

Proposed landscaping improvements along the corridor may include replacement screening for private properties, boulevard trees and planting areas at intersections, water quality areas or other areas to enhance existing vegetation, create visual interest and enhance the effectiveness of water quality areas.

### Streetlighting Improvements

The preliminary plans have identified potential pedestrian scale streetlighting which could be constructed along the corridor within the 6-foot turf boulevard. A final decision on whether continuous streetlighting is incorporated into the project will be made by the city of Arden Hills.

### Right-of-Way Acquisition

The proposed improvements are depicted within existing Ramsey County right-of-way. The concept plans have not included construction limits however the scope of right-of-way acquisition is not anticipated to be significant and

likely limited to temporary easements for minor grading, water quality basins or driveway reconstruction versus permanent easement areas. A final determination of right of way acquisition needs will be made as a part of the detail design process.

## Trail Design Concept Evaluation

Evaluation matrices were created to understand how the trail options score against the design study considerations. The study did not identify a preferred roadway and trail design concept. However, based on the technical evaluation findings, input from the TAC and feedback received during public engagement, the west/north alignment is more favorable than the east/south alignment. A trail on the west/north side would best address project goals and likely result in fewer impacts. A formally recommended roadway and trail design will be determined in a future design phase. At the time this report was developed, no funding for the future trail or roadway design has been identified and there is no defined schedule for future construction.

| Criteria | West/North | East/South |
|---|---|---|
| User Experience | Consistent boulevard, Tony Schmidt natural area passage | Proximity to lake, narrower boulevards/confined feeling in areas |
| Connectivity | Direct neighborhood access | Direct beach access |
| Scope of Roadway Modifications Improvements | Minimal roadway modifications along Tony Schmidt Park frontage | Roadway modifications entire length |
| Crossings/Conflicts | 23 Driveways, 5 local streets | 37 driveways, 4 local streets |
| Grading/Retaining Wall Scope | Anticipated between Lake Lane and County Road E | Anticipated between Lake Lane and County Road E |
| ROW/Easement Needs | Minimal needs | Minimal needs |
| Surface Utility Conflicts | Intermittent power poles | Significant stretches with power poles, mailboxes, hydrants |
| Cost (in 2022 dollars) | $5.8M – $6.8M | $6.4M - $7.4M |

| Rating | Explanation |
|---|---|
| Excellent | Meets or exceeds project goal |
| Good | Meets project goal with less than ideal conditions |
| Fair | Meets project goal with some impacts |

More detailed evaluation matrices are included in **Appendix E**, and a layout of the west/north alignment is included in **Appendix F**.

# Project Cost Estimate

For the west/north alignment, the roadway and trail construction cost budgetary estimate totals approximately $5.19 million dollars. Soft costs, including right of way acquisition, engineering and construction administration, are anticipated to be 20% of the construction cost, which would total approximately $1.07 million dollars. The total calculated budgetary project cost is $6.26 million. However, the actual project cost is anticipated to range between $5.8 million and $6.8 million depending upon details of the final design, which will be determined during later phases of the project development.

For the east/south alignment, the roadway and trail construction cost budgetary estimate totals approximately $5.55 million dollars. Soft costs, including right of way acquisition, engineering and construction administration, are anticipated to be 20% of the construction cost, which would total approximately $1.31 million dollars. The total calculated budgetary project cost is $6.86 million. However, the actual project cost is anticipated to range between $6.4 million and $7.4 million depending upon details of the final design, which will be determined during later phases of the project development.

Primary elements differentiating the costs between the east/south and west/north alignments include the anticipated scope of retaining wall construction, driveway reconstruction and temporary easement areas. All of these elements are estimated to be greater for the east/south alignment due to the steep topography adjacent to Lake Johanna between Lake Lane and County Road E as well as the number and width of private driveways along the east/south side of the roadway. These assumptions will need to be examined in greater detail to adjust estimated costs appropriately as a part of the next phase of design related to the project.

A cost estimate table that includes detailed roadway and trail, acquisition, engineering and construction costs can be found in **Appendix G**.

# Appendix A. Round 1 Engagement Summary

# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 1 Engagement Summary – November 2021

### ENGAGEMENT STRATEGIES AND APPROACH

Three rounds of engagement are planned for the Lake Johanna Boulevard Roadway and Trail Design Study. Ramsey County has completed the first round of engagement. In this round, the county introduced the project, shared existing conditions information and asked the public about their experiences using Lake Johanna Boulevard and their visions for the corridor. This document summarizes the feedback received during the first round of engagement from October through November 2021.

### Engagement To-Date:

- In-person open house held Oct. 5, 2021
- Virtual open house held Oct. 12, 2021
- 199 paper and online survey responses
- 76 interactive feedback map comments
- 484 project introduction postcards mailed
- Email blasts to project distribution list
- Yard signs posted around the project area
- 12 posts on Ramsey County social media outlets
- Newspaper notices

### ROUND 1 COMMON FEEDBACK THEMES

- Generally supportive of having trail separated from traffic.
- Cars travel too fast on this road, causing accidents.
- Cars travel on/pass on the shoulders that pedestrians and cyclists are using.
- Roadway doesn't feel safe to walk, bike and/or push a stroller, especially with children.
- Curves in road make it hard to see oncoming traffic.
- Existing asphalt path along portion of west bank of the lake is too narrow and uneven.

### ONLINE AND PAPER SURVEY RESULTS

A snapshot of the online and paper survey results are displayed on the next page. Responses to the open-ended survey question regarding barriers to pedestrian and bicycle use are summarized below:

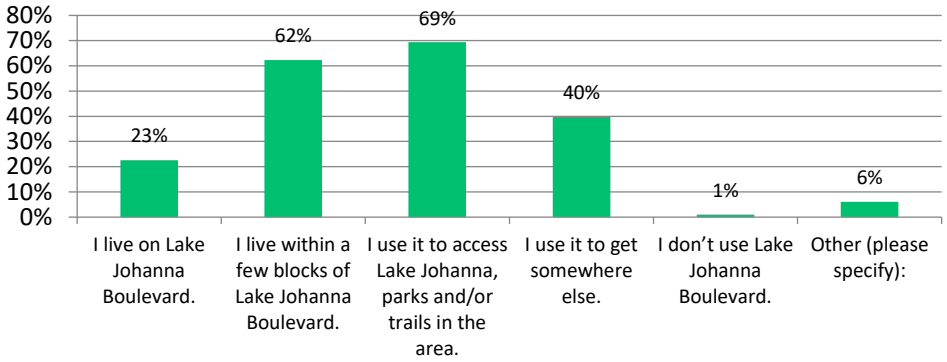
#### What barriers, if any, do you experience to using this stretch of Lake Johanna Boulevard?

- Cars travel and take turns too fast, drive on/pass on the road shoulders that pedestrians/bicyclists are using.
- Existing path along the lake is too narrow, uneven and close to traffic; people aren't able to pass each other or walk side-by-side; it isn't accessible for strollers on the south side near Lake Lane; existing path is not cleared of snow in winter.
- Many cars don't stop for people in the crosswalks (e.g., at the beach, at the trail head).
- Poor sightlines make using shoulders to walk unsafe/uncomfortable.
- Cars/trailers are often parked on shoulders blocking walkers and cyclists.

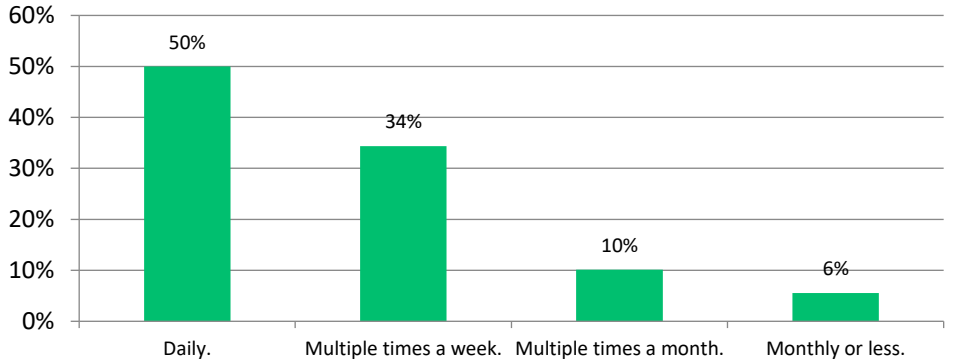
# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 1 Engagement Summary – November 2021

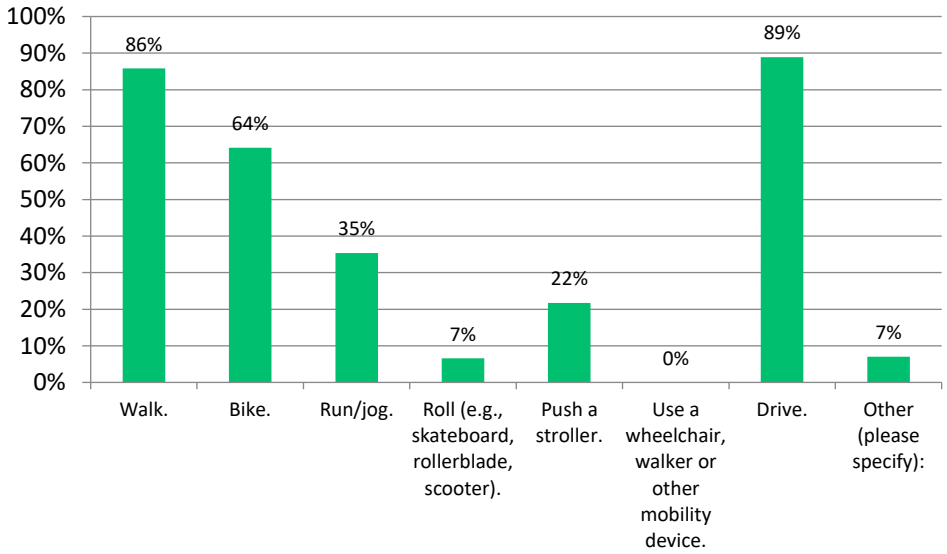
### What is/are your purpose(s) for using this stretch of Lake Johanna Boulevard? Select all that apply.



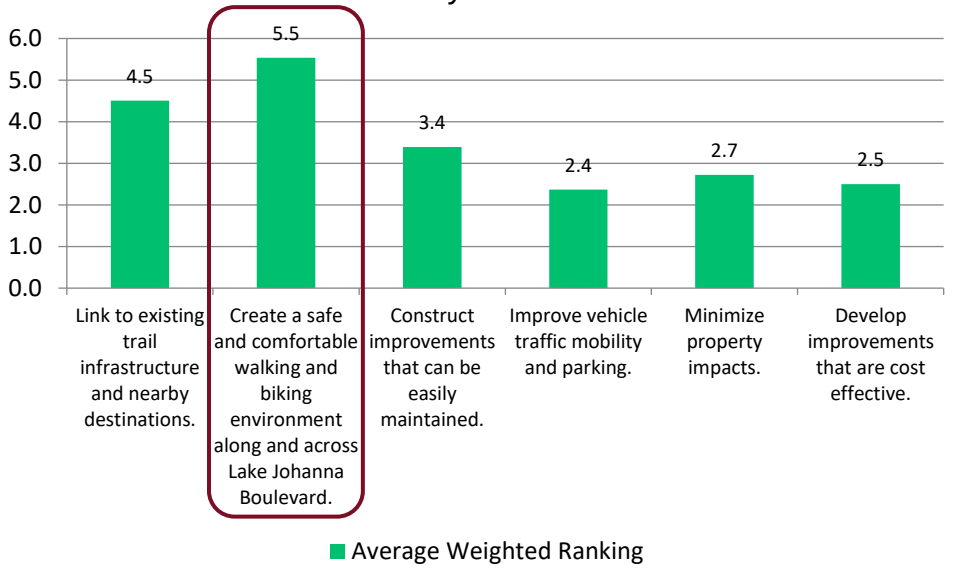

### How often do you travel along this stretch of Lake Johanna Boulevard?




### How do you travel along this stretch of Lake Johanna Boulevard? Select all that apply.




### Which of the following goals are most important to you?




RAMSEY COUNTY
Public Works

# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 1 Engagement Summary – November 2021

### INTERACTIVE MAP RESULTS

Users could select a pin and drop it in a location along the project corridor where they wanted to provide feedback. Pin categories included: amenities, needs improvement and important destinations. Common feedback is summarized by comment pin category.

## Important destinations

- Public boat landing parking lot often overflows on to Lake Johanna Boulevard; consider allowing boat trailers to park in the regional park parking lot north of Lake Johanna Boulevard.
- Ensure there are safe places for people to gather/enjoy activities along Lake Johanna.
- Trail location/design should create a good connection to the public beach.
- Ensure trail is ADA accessible and wide enough to allow strollers, wheelchairs, bicyclists and pedestrians to safely pass each other.
- Mixed feedback regarding preference for trail location along Lake Johanna Boulevard through Tony Schmidt Park and connection to Old Snelling Avenue:
    - Having a trail on the south side of the road would connect well with the existing trail on County Road E.
    - Concern from property owners along the lake that a south side trail would impact their yards and cause increased bike/pedestrian traffic very near their homes.

## Amenities

- Increase pedestrian safety of crosswalk near beach by adding flashing crosswalk lights and wide, raised crosswalk.

## Needs improvement

- Prioritize connections to existing trails to ensure continuous stretches of safe space for people walking and biking.
- The curves on Lake Johanna Boulevard are dangerous for walkers, bikers and pedestrians; many motorists drive in the shoulder creating unsafe conditions.
- Mixed feedback about preferences for traffic modifications/road closures along the west side of Lake Johanna:
    - Convert Lake Johanna Boulevard between County Road E and Lake Lane to pedestrian/bike space and remove vehicles; Cleveland Avenue and New Brighton Boulevard can accommodate traffic.
    - Consider making Lake Johanna Boulevard a one-way to divert through traffic to New Brighton Boulevard and/or Cleveland Avenue to provide more room for trail and to improve overall safety.
    - Do not close Lake Johanna Boulevard to vehicle traffic; would push more traffic to already busy, high-speed streets and make it harder to use the beach.
- Traffic calming needed, especially at south end of the corridor where the lanes are wider and roadway is straight.
- Consider extending trail 0.5 mile south to the existing trail on Fairview Avenue; would allow for better connections to trail network.

# Appendix B. Round 2 Public Engagement Summary

# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 2 Engagement Summary – March 2022

### ENGAGEMENT STRATEGIES AND APPROACH

Three rounds of engagement are planned for the Lake Johanna Boulevard Roadway and Trail Design Study. Ramsey County has completed the second round of engagement. In this round, the county shared initial trail design concepts and asked the public to provide feedback on them. This document summarizes the feedback received during the second round of engagement from March 1 through April 1, 2022.

**Round 2 engagement:**

- Virtual open house held March 1, 2022
- 20 online survey responses
- 77 interactive feedback map comments
- 484 virtual open house notices mailed
- Two email blasts to project distribution list (638 subscribers)
- Eight posts on Ramsey County social media outlets

### ROUND 2 COMMON FEEDBACK THEMES

- Support for both the east and west side options, with the west option being slightly more favored in public feedback.
    - Prefer east/south option because it's more enjoyable to walk lakeside.
    - Prefer the west/north option because there's more space, less disruption to private properties, better connections to existing trails.
- Prefer to limit the number of crossings if a hybrid of the east and west options is used.
- Concern about the trail's impacts to homeowners/private property.
- Motorists speed through this area; crossing is difficult when dealing with different visibilities and car speeds; feel these pedestrian/bicyclist safety improvements are greatly needed.
- Need for trails to be maintained during the winter for all-season use.

### VIRTUAL OPEN HOUSE

On March 1, 2022, Ramsey County hosted a virtual open house where project staff gave a live online presentation followed by question and answer. Around 60 people virtually attended the open house, and 62 comments/questions were submitted. Below are some of the common comments/questions received:

- Question if roundabouts are pedestrian friendly.
- Need to reduce motorists' speeds in this corridor and implement traffic calming measures.
- Mixed feedback about switching the trail from one side to the other versus keeping it on one side the whole length of the corridor.
- Mixed feedback about which side of the road the trail should be located on.
- Question if the roadway could be converted to a one-way.
- Question if parking would be allowed on Lake Johanna Boulevard for boat trailers because the parking lot near Tony Schmidt Regional Park fills quickly.
- Consider installing three-way stop at the Lake Johanna Boulevard/County Road E intersection.
- Questions/comments about winter maintenance:
    - Where will the snow go? Who will maintain/plow the snow?

    - Ensure the trail is plowed for all-season use.
- Consider making the path 6 – 8' instead of 10' in the pinch points around the lake.
- General support for this project and encouraging community involvement.

### ONLINE SURVEY RESULTS

A snapshot of the online survey results is displayed on the next page. Responses to the open-ended survey questions are summarized below:

## There are multiple options for each of the segments shown on the interactive map. What opportunities do you see with each option presented? What are your concerns with them?

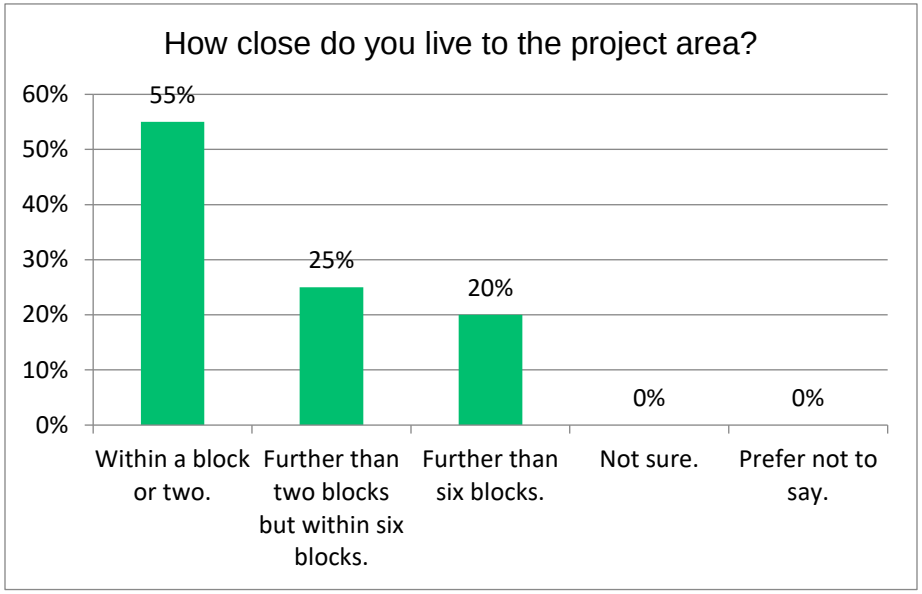
- A few support having the trail on the east side between County Road D and Tony Schmidt Regional Park, then having the trail on the north side between Tony Schmidt Regional Park and Old Snelling Avenue.
    - Feel this would avoid many conflict points (e.g., parking lots at Tony Schmidt Regional Park, homeowners' landscaping)
- Some feel it would be best for the trail to stay on one side of the street to limit the number of crossings, but there's mixed feedback about whether it should be on the west or east side.
    - Prefer the west side because there is greater separation between the road and trail, it seems less disruptive to private property, connects to existing trail infrastructure/ minimizes crossing.
    - Prefer the east side because it's close to the lake (feel that people would walk lakeside regardless).
- Concern about impacts trail could have on homeowners/private property (e.g., impacts to landscaping, bring trail to close to home).
- Ensure trail is maintained during the winter.

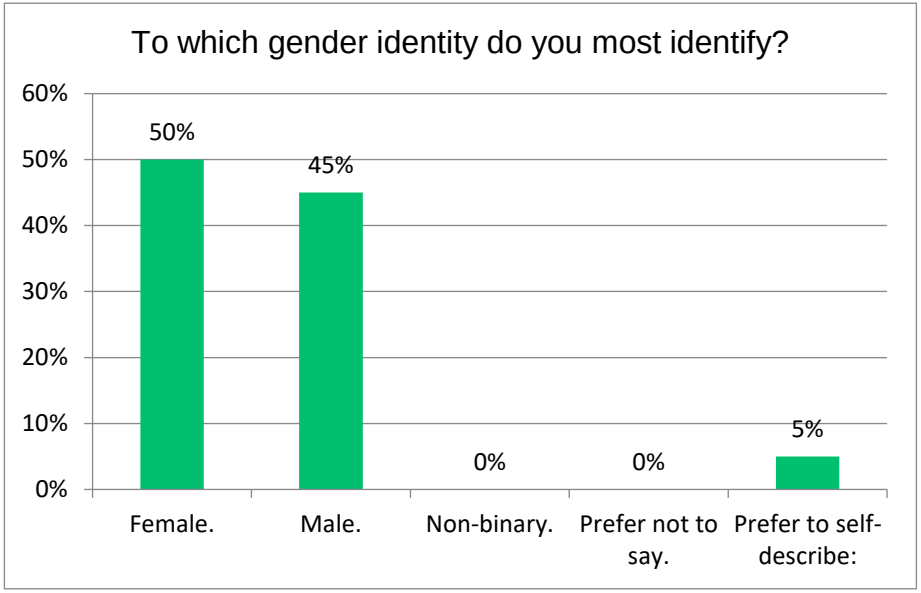
## Additional comments:

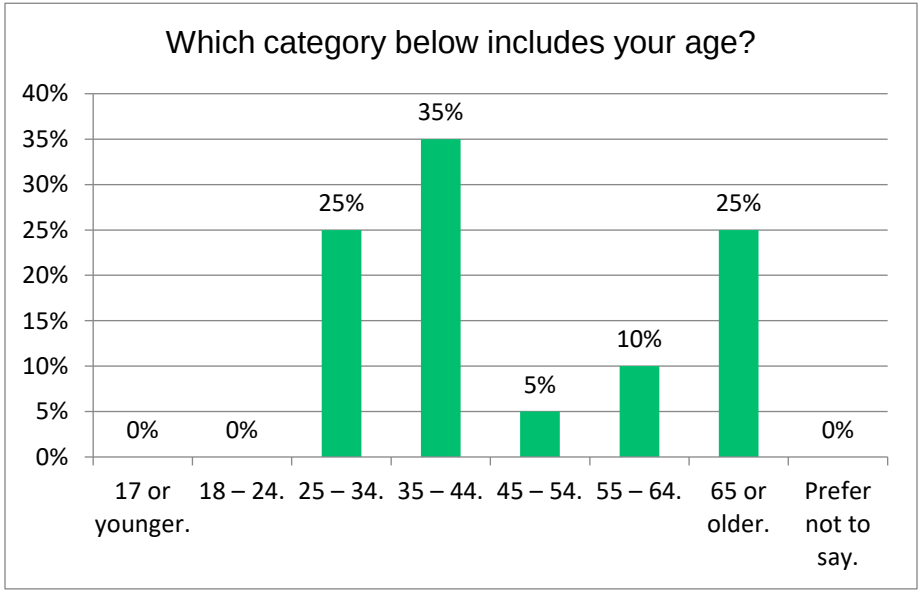
- Need to connect to other trails (e.g., Elmer Anderson trail, trail to the south on Fairview).
- Supportive of this project – feel it's very needed for improved pedestrian and bicyclists safety in this area.

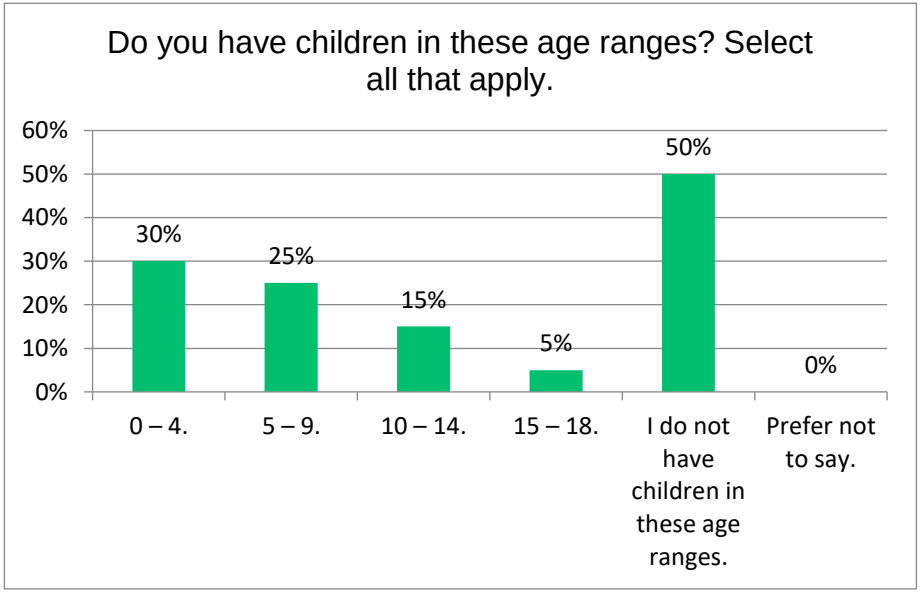
# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 2 Engagement Summary – March 2022

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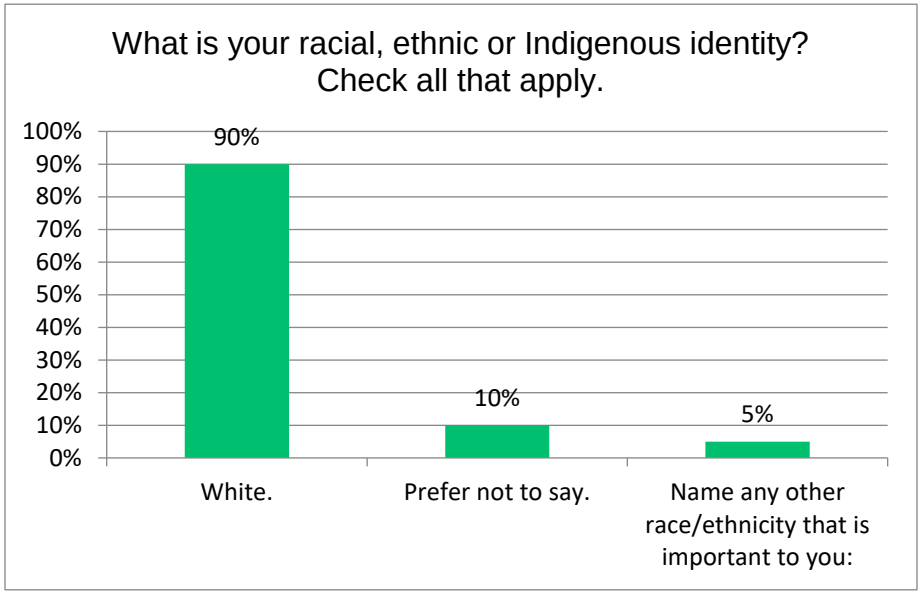
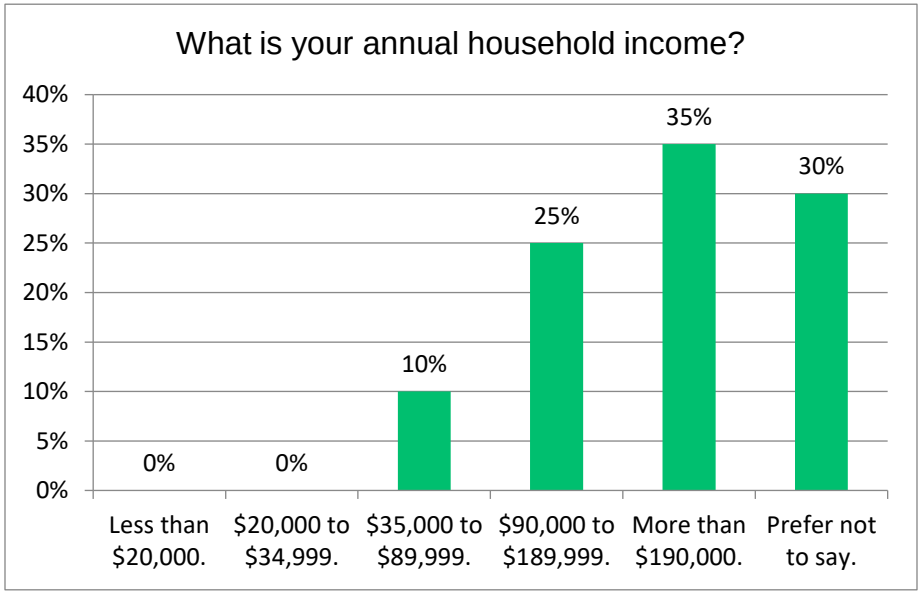
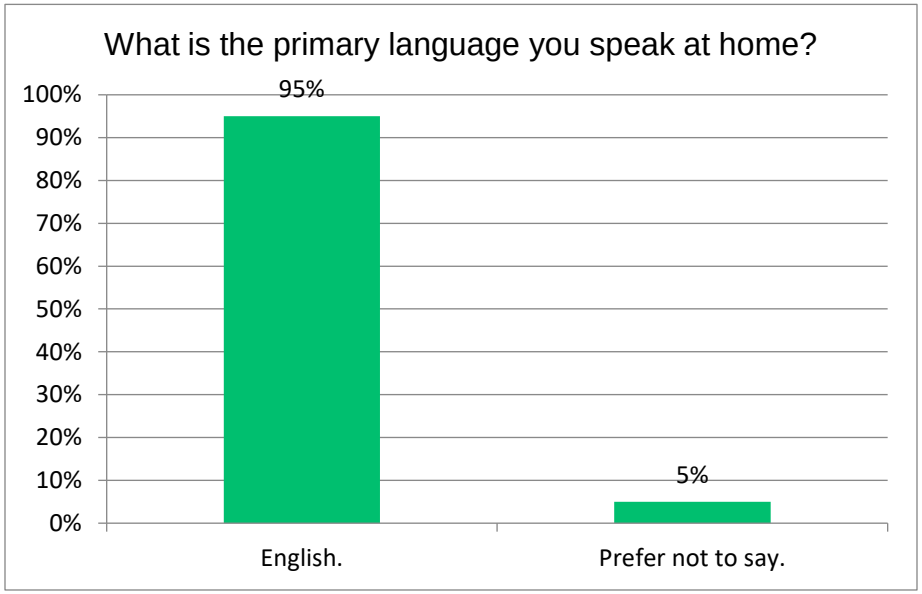
# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 2 Engagement Summary – March 2022

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# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 2 Engagement Summary – March 2022

### INTERACTIVE MAP RESULTS

The interactive map featured concept drawings of how the trail could fit and what it could look like on different segments throughout the project corridor. Users could leave feedback on the concept drawings or select a pin and drop it in a location along the project corridor where they wanted to provide feedback. Pin categories included: concern and opportunity. Common feedback is summarized by comment pin category.

## Concept Designs

### Overall

- Concern about impacts to homeowners – that trail would take property from homeowners, reduce property values and create security/privacy issues.

### County Road D to Sandeen Road

- Mixed feedback about preference for east or west concepts:
    - Prefer trail on the west side – affords more space when it gets to the narrower portion of the road, limits potential of accidents and disruptions to traffic due to crossing.
    - Prefer trail on the east side – feel that it respects homeowners on the west side/wouldn't take their property, feel that the trail should be on one side the whole way and having it on the lake side would be more enjoyable.

### Sandeen Road to Stowe Avenue

- Like that both options use the existing road width and don't take land from homeowners on either side.
- Need for traffic calming in this area (e.g., narrowing roadway, trees/greening in the boulevard).

### Stowe Avenue to County Road E

- Mixed feedback about trail preference:
    - Some prefer the trail on the west side – better connects to trail systems (e.g, around Bethel/Old Snelling Ave to Tony Schmidt Regional Park), minimizes trail crossings; feel it is safer (boulevard separation).
    - Some prefer the trail on the east side – feel it would be less expensive (steep hills and landscaping on west side), wouldn't impact homeowners as much, would stabilize current shoreline, more pleasant to be on lakeside, better connection to senior housing.

### Tony Schmidt Park Area

**North side concept**

- Like this option – separated from roadway, connects to rest of proposed trails, more scenic.
- Need for improvements to crosswalk here.
- Support of the trail being further from the road (unconstrained option) but concerned about flooding; prefer trail to be the same level as road for this reason.

**South side concept**

- More support for this option than north side option – wouldn't require as much modification as north side, already heavily used by parkgoers and residents.
- This concept would be of benefit to both park users and neighbors to the east.
  - If needed, residents could utilize parking lots and walk to their houses on the trail.

### Tony Schmidt Park to Siems Court

**North side concept**

- Concern about where families on the east side would cross.
- Prefer this option because it's more scenic and the south side has too many driveway crossings, causes safety concerns for bikers and pedestrians.

**South side concept**

- Although there are many driveways on this side, feel that it makes sense to have it on the south so residents don't have to cross the street to use the trail.
- Mixed feedback about need for parking along this stretch.
  - Some feel parking is needed because boat parking overflows from Tony Schmidt Regional Park.
  - Some feel there shouldn't be parking unless safely separated from trail; current parked cars are a major hazard.

### Siems Court to Old Snelling Avenue

**North side concept**

- Feel that having a crossing at Siems Court makes the most sense, better visibility from both directions.
- No need for crossing at Ridgeway Road right after the intersection, prefer a sidewalk to the intersection instead.

**South side concept**

- Mixed feedback about this option.
  - Some prefer the trail on the east/south side of the road to limit crossing.
  - Concern that this option would impact houses more.

# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 2 Engagement Summary – March 2022

### Concerns Expressed

- Need for safer crossing for pedestrians/bicyclists at the Lake Johanna Boulevard and Snelling Avenue N intersection and the Lake Johanna Boulevard and County Road D intersection.
- Bulk of speeding occurs near Lake Johanna shores, like the narrowing of the road; planting trees may also provide natural tightening of space.
    - Prefer east side option if there's already a sidewalk that stops short of Sandeen Road.
- Between Lake Lane and County Road E:
    - If trail were on the east side, would need breaks in the railing to allow access to private docks; concern this would attract trespassers.
    - Prefer west side option without railing; railing would obstruct views and would require more maintenance to keep level on unstable lakeshore.

### Opportunities Expressed

- At Lake Johanna Avenue/Beckman Avenue intersection, feel this is a good spot for a crosswalk; many people south and north of Beckman Avenue, as well as kids on Sandeen Road, use Lake Johanna Boulevard to get to Hazelnut Park.
- Corners on Lake Johanna Boulevard at Stowe Avenue and Lake Lane are tough/blind spots; people speed through here, difficult for drivers and pedestrians to anticipate each other's movements, consider extra signage.
- Question whether the trail needs to be 10 feet the whole way; consider 8-foot or 6-foot wide trail to give more space for buffer and maintenance.
- Would like the trail to connect to the one on County Road E (connects the longer route from Hazelnut Park up to the trails north of the lake).
- If a hybrid of the east and west options is used, feel that the most logical crossing would be at the Tony Schmidt Regional Park area; consider adding traffic calming through the park area.
- (Outside the scope of this project) Consider having a trail connecting the Lake Johanna Boulevard trail up with the Langton Lake trails.
- Consider a roundabout at the five-way intersection at Lake Johanna Boulevard/New Brighton Road/County Road D to improve multi-modal movements through the area.

# Appendix C. Round 3 Public Engagement Summary

# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 3 Engagement Summary – July/August 2022

### ENGAGEMENT STRATEGIES AND APPROACH

Ramsey County has completed the third and final round of engagement for the Lake Johanna Boulevard Roadway and Trail Design Study. In this round, the county shared refined trail design concepts and asked the public to provide feedback on them. This document summarizes the feedback received during the third round of engagement from July 7 through August 7, 2022.

**Round 3 Engagement:**

- In-person open house held July 7, 2022 at Arden Hills City Hall
- 14 online survey responses
- 484 open house notices mailed
- 2 email blasts to project distribution list (691 subscribers)
- 11 posts on Ramsey County social media outlets

### ROUND 3 COMMON FEEDBACK THEMES

- General support and excitement for this project; it is a needed safety improvement for the community.
- Support for north/west trail and separation of trail from traffic.
- Support for pedestrian safety improvements and traffic calming measures; desire for additional measures to reduce vehicle speeds.
- Concerns about implementation timeframe, property impacts, vehicle speeds, and safety at roadway crossings.

### OPEN HOUSE

On July 7, 2022, Ramsey County hosted an in-person open house at Arden Hills City Hall where project staff gave a presentation followed by question and answer. Around 57 people attended the open house, and 23 comments/questions were submitted. Below are some of the common comments/questions received:

*Figure 1. Attendees ask project staff questions during the open house.*

- Need for this project to happen soon.
- Support for the north/west trail as well as off-road aspect – keeps pedestrian and bikers safe.
- Concerns about property impact.
- Concerns about vehicle speeds and proximity to pedestrians – particularly in the narrow, curved stretches of the road.

# Lake Johanna Boulevard Roadway and Trail Design Study

## Round 3 Engagement Summary – July/August 2022

- Like safety considerations – crosswalks, sidewalks, medians.
- Like the inclusion of Tony Schmidt Park.
- Questions about the following:
    - Property taxes.
    - Parking impacts.
    - Whether Arden Hills is prioritizing this trail project.
    - Solutions in the short term (e.g., rumble strips, visible crosswalks, enforced speeding and parking rules).
    - Stormwater management and preventing erosion of the lakeshore.
    - Tools to help community members support and advance this project.


*Figure 2.. Project staff review the trail designs with open house attendees.*

### ONLINE SURVEY RESULTS

Responses to the two open-ended survey questions are summarized below:

## What do you like and dislike about the refined trail design concepts?

- General support for the project and that it addresses some major safety concerns.
- Some mixed feedback about trail location:
    - Some agree that the west/north trail option is the best option.
    - Some prefer for a trail closer to the lake when possible – particularly from Stowe Ave to County Road E.
- Several respondents mentioned that they like the following about the refined trail design:
    - The road narrowing and bump outs as cues for drivers to reduce speeds as well as make pedestrians more visible at crossings.
    - That the shoulders are designed to stop drivers from passing on the shoulder.
    - The boulevard between the trail and the road as a buffer.
    - The inclusion of on-street parking.
    - That the plan uses the existing road width and does not take property from either side.
    - Stormwater considerations.
- Mixed feedback about trail width:
    - Some would like a 10 foot trail width to allow for safe shared use of the trail.

    - Would like a narrower trail along the west side of Lake Johanna Blvd along the lake – less expensive and more feasible with the lack of usable space.
- Concern about speeding – need additional bump outs or traffic calming measures.
- Like the proposed trail connections to Elmer Anderson Trail and other potential trails along County Road D and along Fairview Avenue North into Roseville.
- Concern that private homeowners might be negatively impacted.
- Concern about visibility at the crosswalk between Siems Court and Oak Avenue.
- Need for additional boat parking as well as signage to prevent overflow parking along streets.
- Desire for a crosswalk from County Road E to the beach.

## Do you have any additional feedback about the project that you would like to share?

- Appreciation for the community engagement opportunities, transparency in the design process and work that is being done to improve walking and biking.
- Need for safety improvements in the short-term.
- Desire for homeowners to receive information about trail impacts to landscaping and driveways.
- Desire to get the Arden Hills City Council on board with providing funding to Ramsey County.
- Would like more information on funding and timeline of the project.

# Appendix D. Trail Design Concepts

*Figure 11: East Side Concept – County Road D to Sandeen Road*


*Figure 12. Typical Section A – County Road D to Sandeen Road East Side Concept*

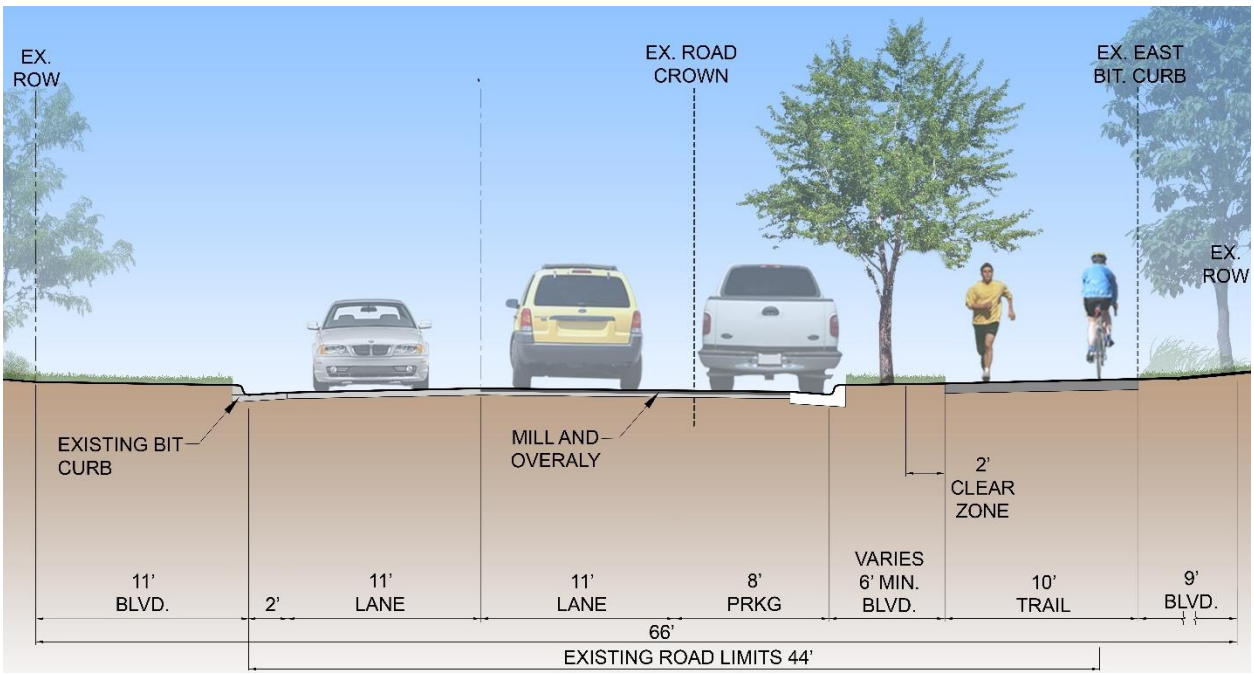


*Figure 13: West Side Concept – County Road D to Sandeen Road*


*Figure 14.Typical Section A – County Road D to Sandeen Road West Side Concept*

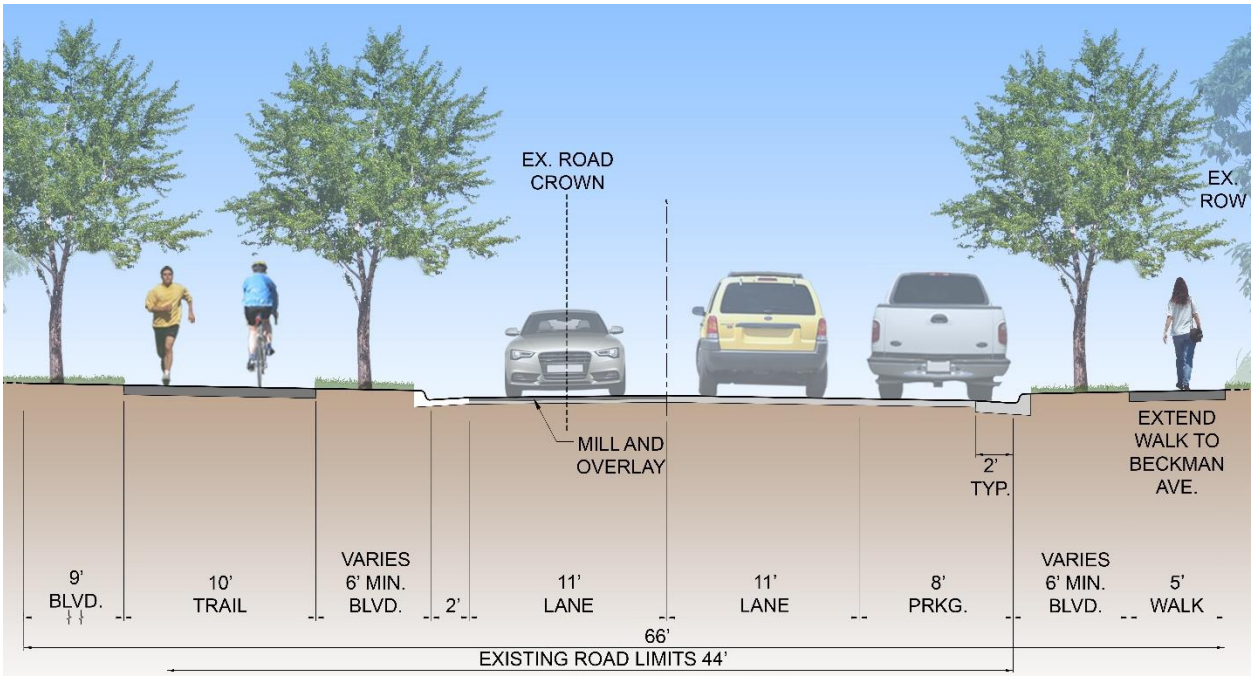


*Figure 15: East Side Concept – Sandeen Road to Stowe Avenue*


*Figure 16. Typical Section A – Sandeen Road to Stowe Avenue East Side Concept*

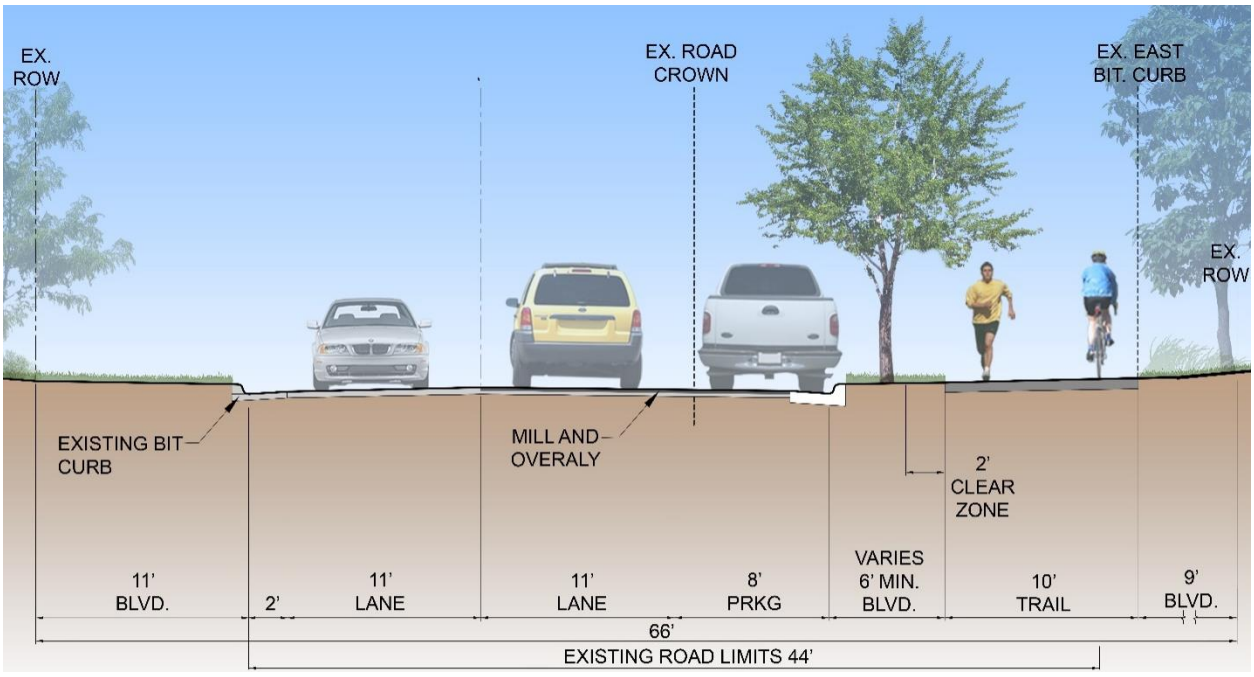


*Figure 17: West Side Concept – Sandeen Road to Stowe Avenue*


*Figure 18: Typical Section A – Sandeen Road to Stowe Avenue West Side Concept*

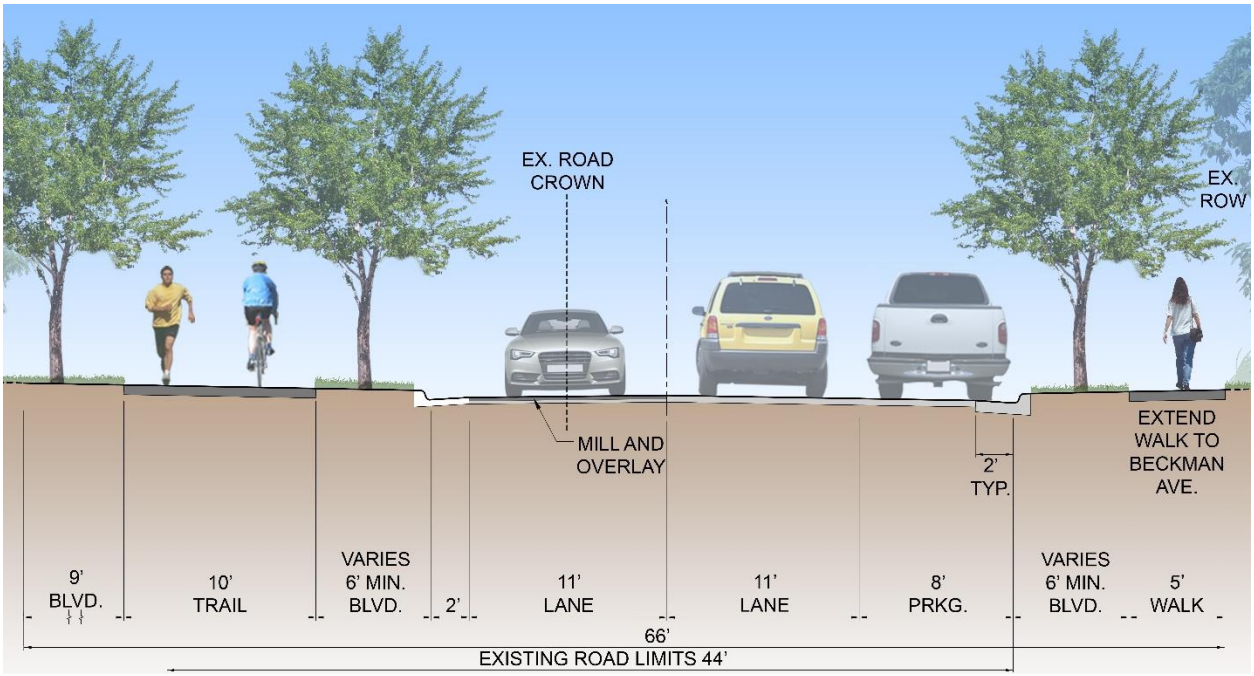


*Figure 19: East Side Concept – Stowe Avenue to County Road E*

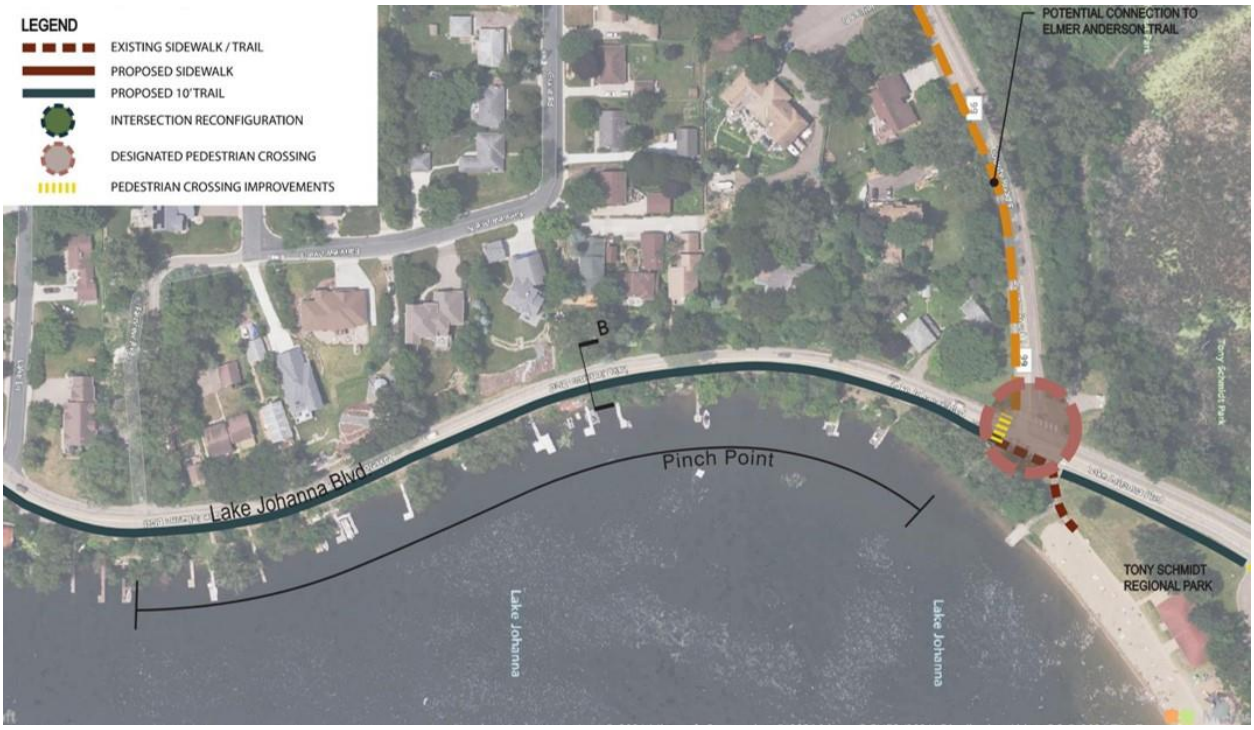



*Figure 20: Typical Section B – Stowe Avenue to County Road E East Side Concept*

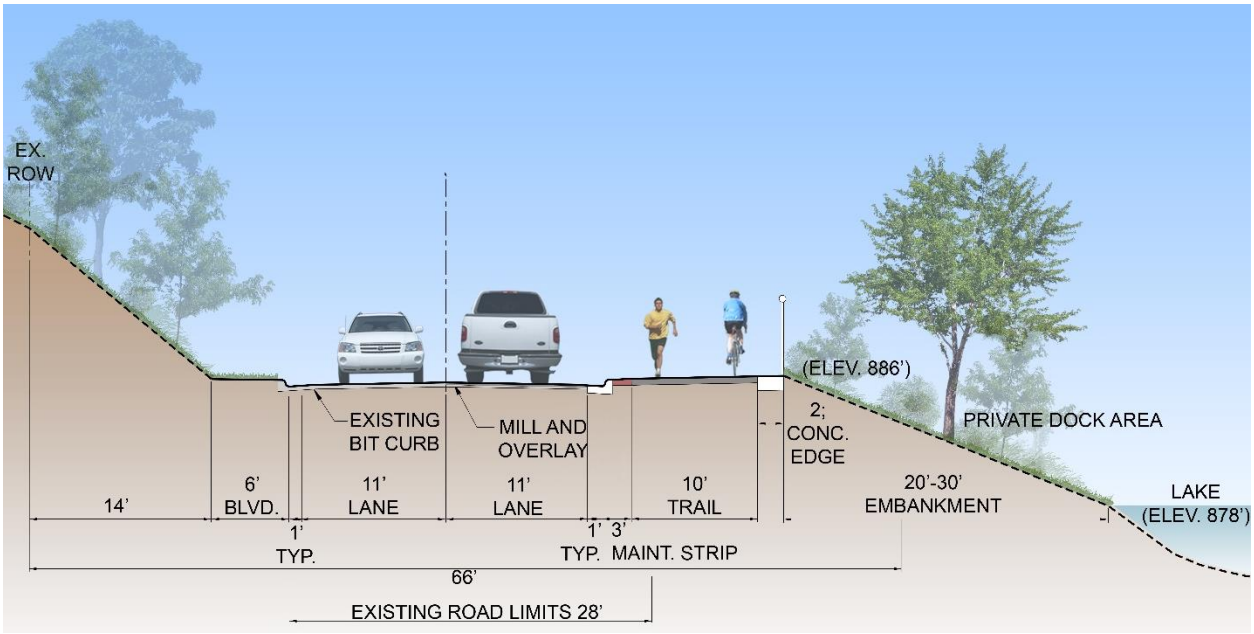


*Figure 21: West Side Concept – Stowe Avenue to County Road E*

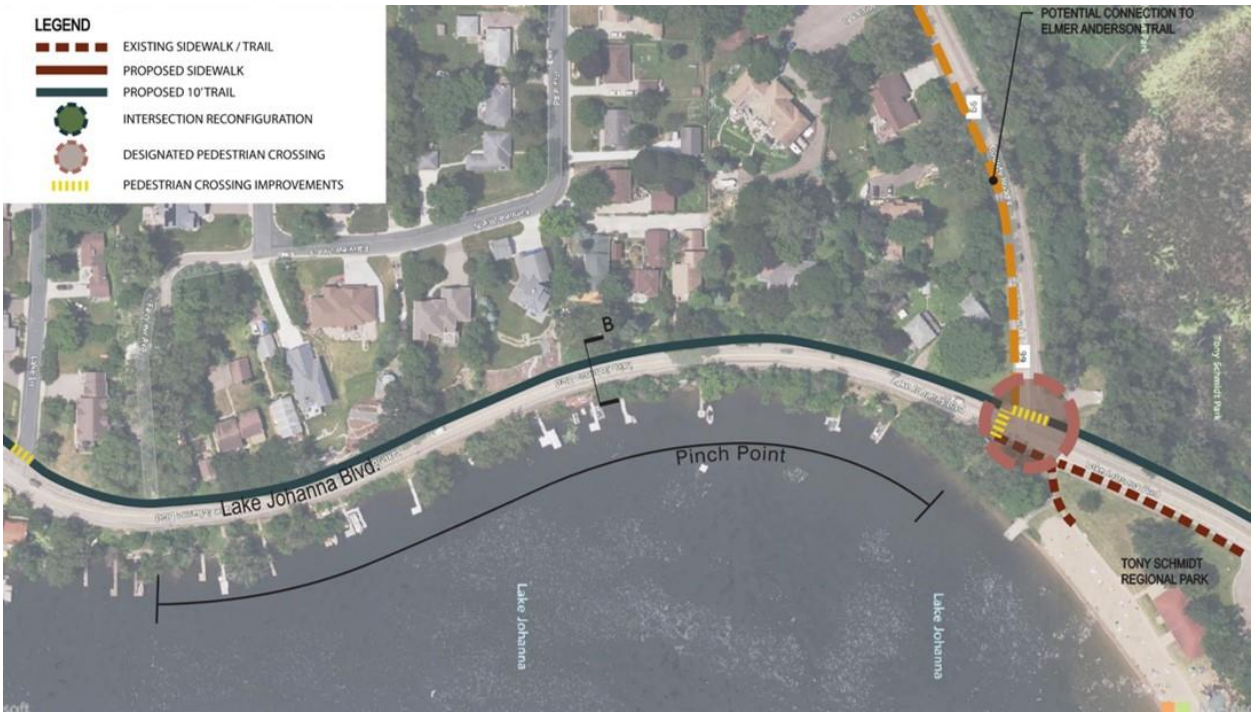



*Figure 22: Typical Section B – Stowe Avenue to County Road E West Side Concept*

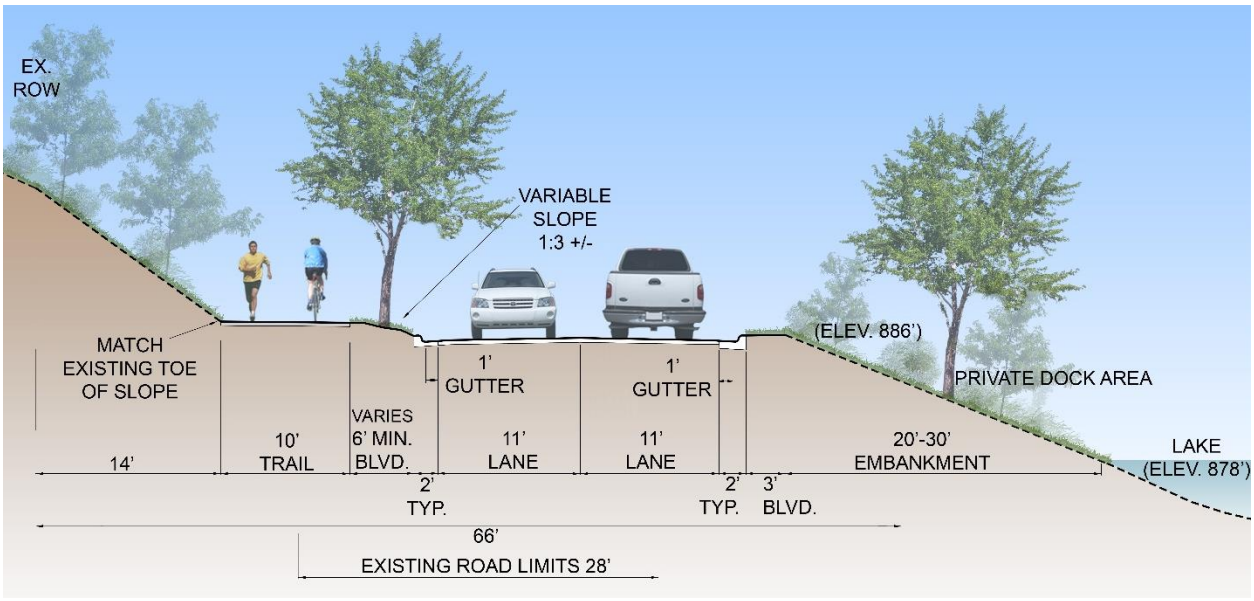


*Figure 23: South Side Concept – Tony Schmidt Regional Park Area*

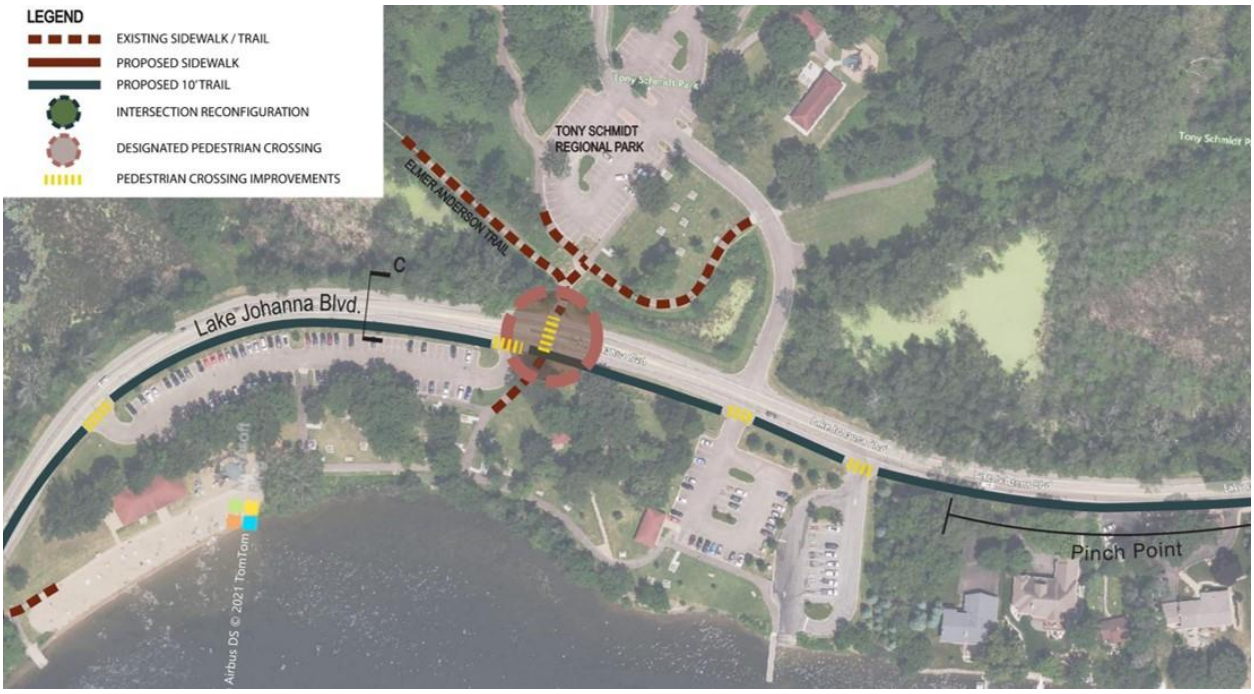



*Figure 24: Typical Section C – Tony Schmidt Regional Park Area South Side Concept*

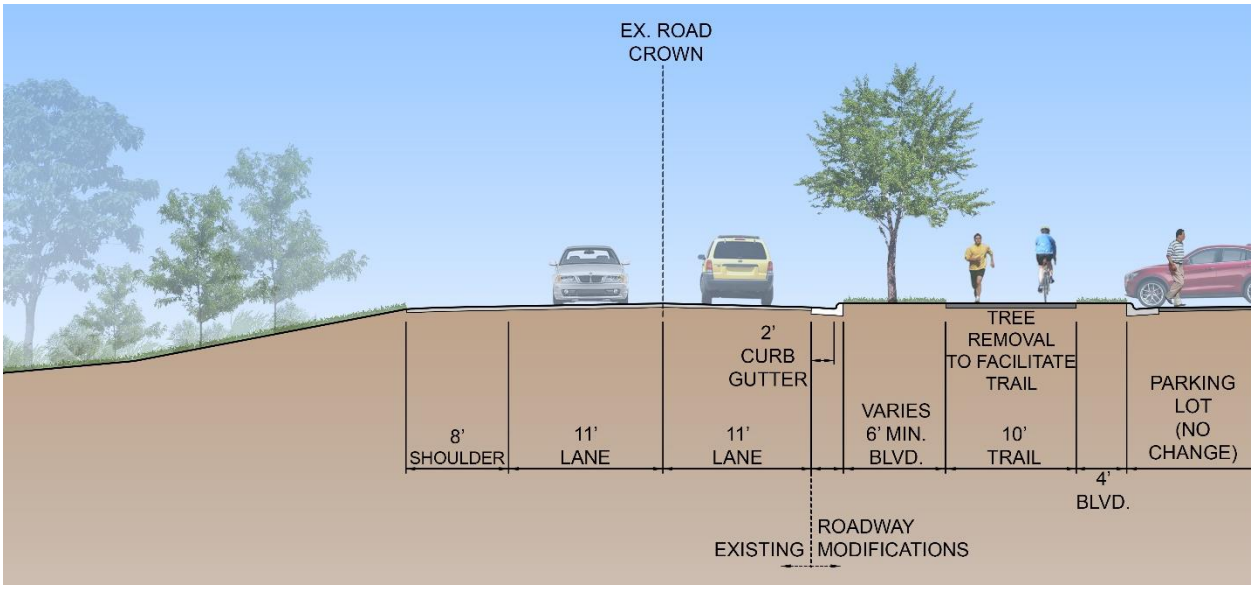


*Figure 25: North Side Concept – Tony Schmidt Regional Park Area*

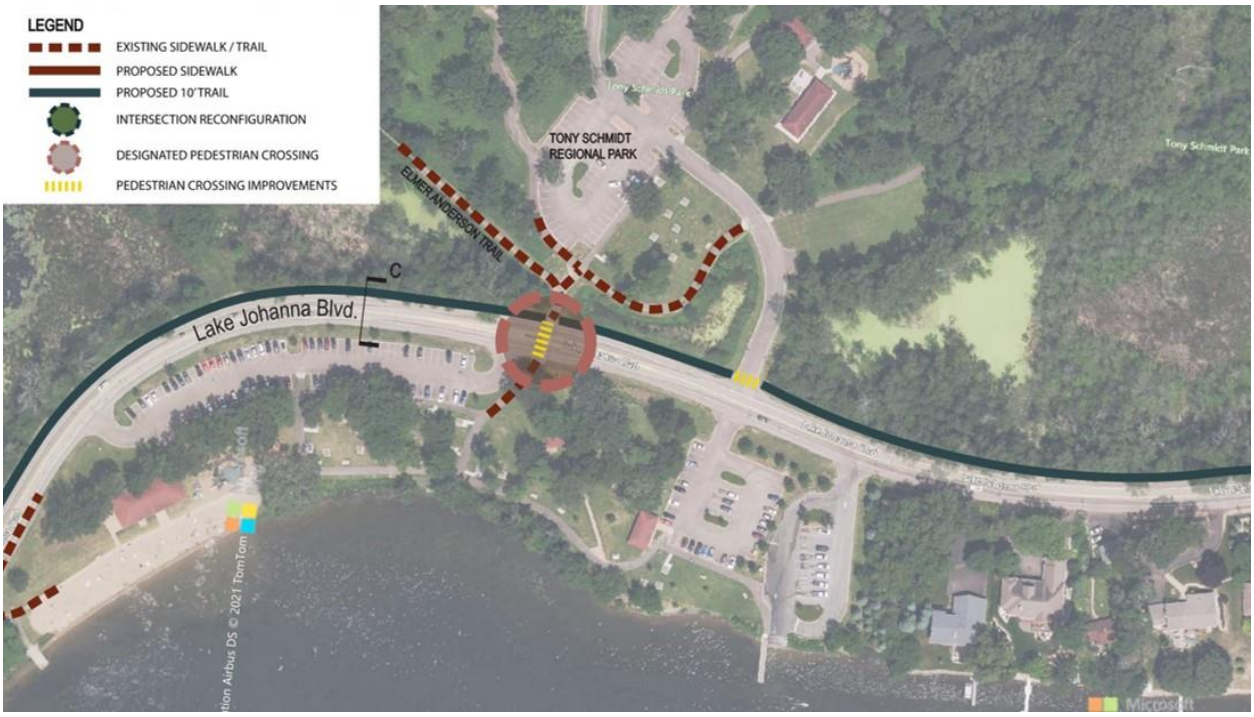



*Figure 26: Typical Section C – Tony Schmidt Regional Park Area North Side Concept – Unconstrained Condition*

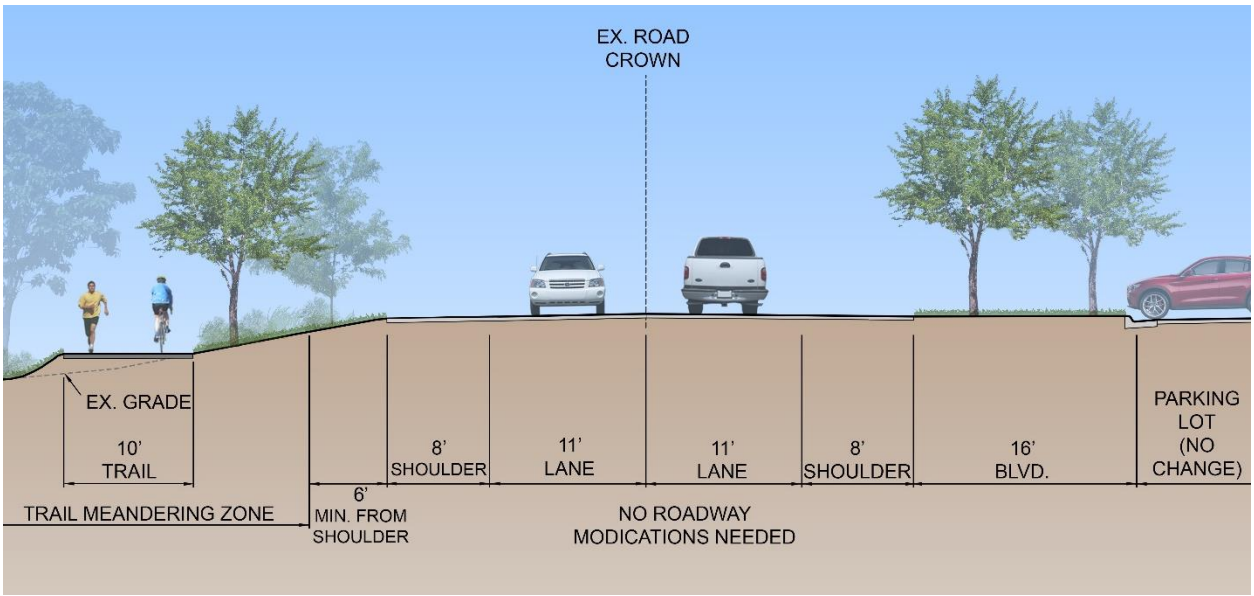


*Figure 27: North Side Concept – Tony Schmidt Regional Park Area*

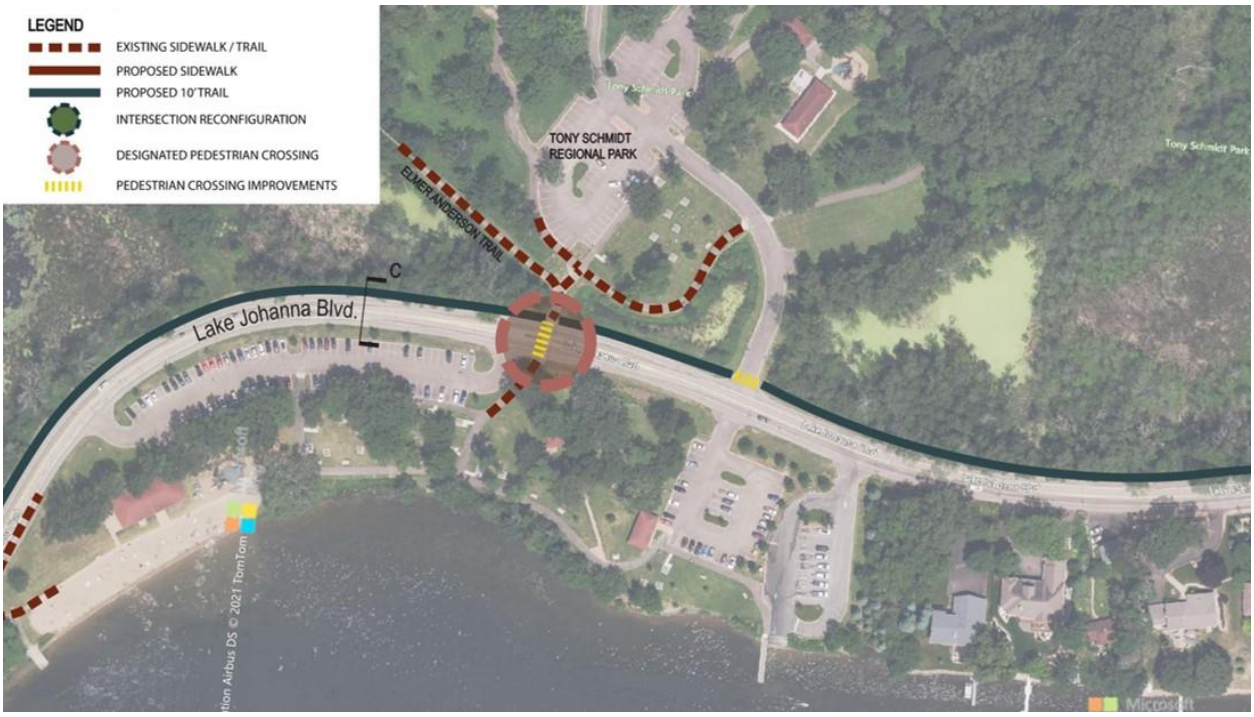



*Figure 28: Typical Section C – Tony Schmidt Regional Park Area North Side Concept – Constrained Condition*

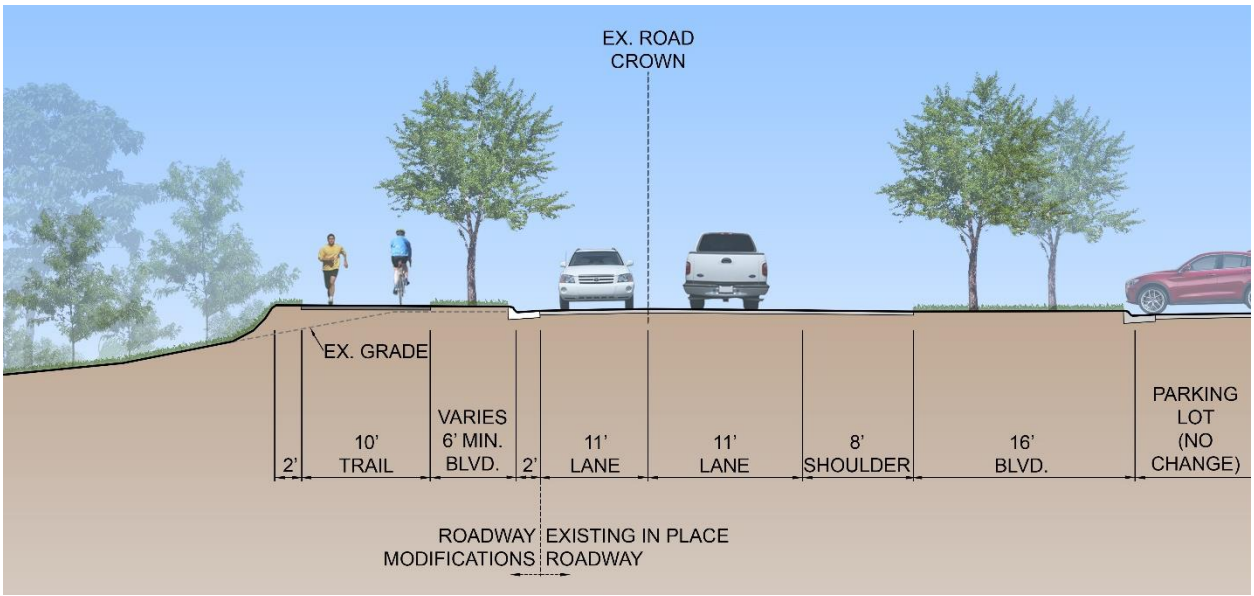


*Figure 29: South Concept – Tony Schmidt Regional Park to Siems Court*


*Figure 30: Typical Section D – Tony Schmidt Regional Park to Siems Court South Side Concept*

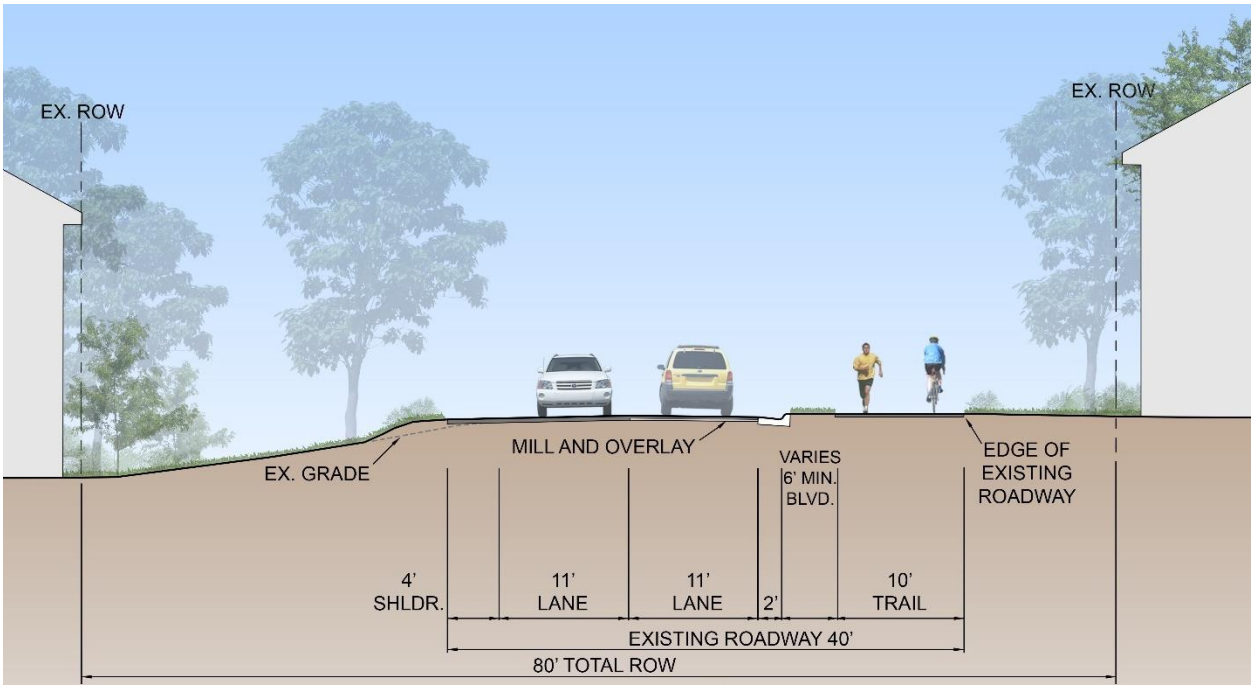


*Figure 31: North Concept – Tony Schmidt Regional Park to Siems Court*


*Figure 32: Typical Section D – Tony Schmidt Regional Park to Siems Court North Side Concept*

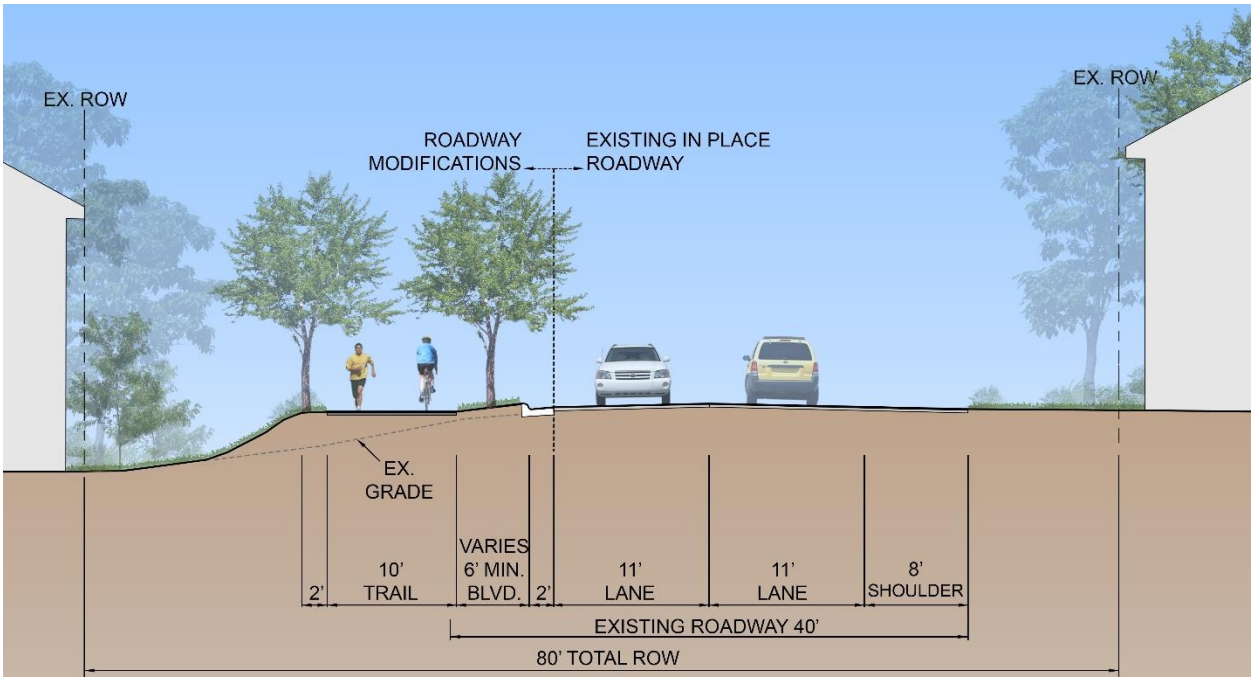


*Figure 33: South Concept – Siems Court to Old Snelling Avenue*


*Figure 34: Typical Section E – Siems Court to Old Snelling Avenue South Side Concept*

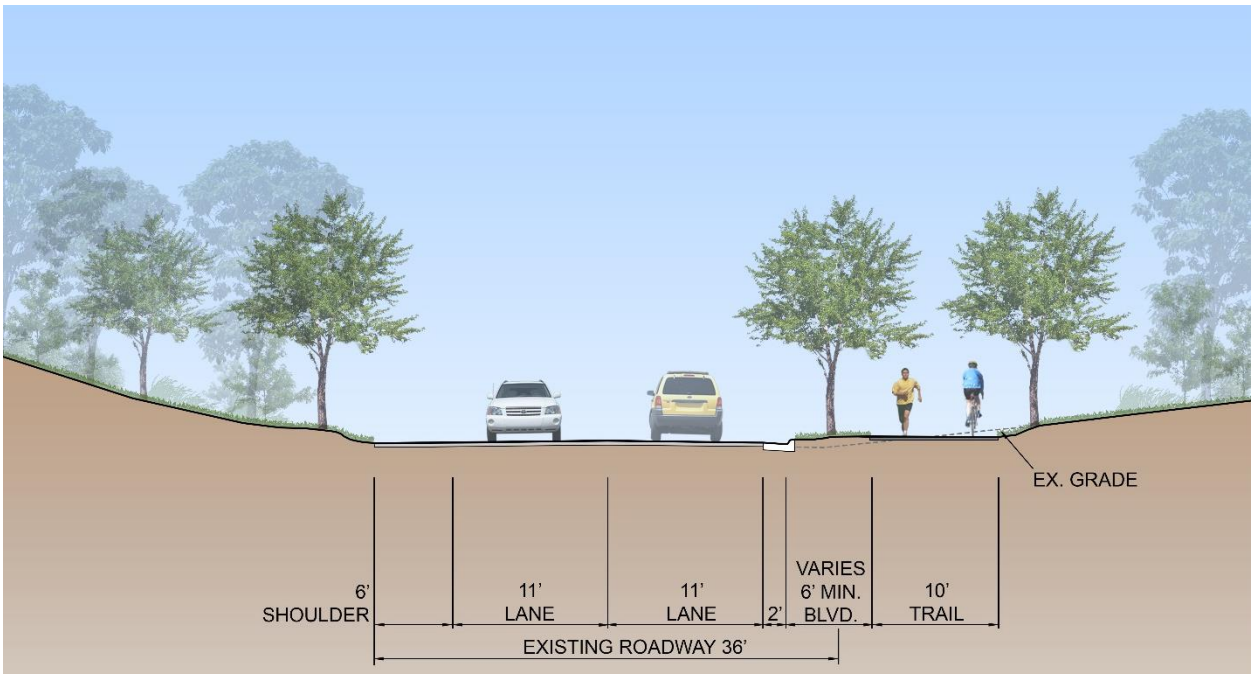


*Figure 35: North Concept – Siems Court to Old Snelling Avenue*

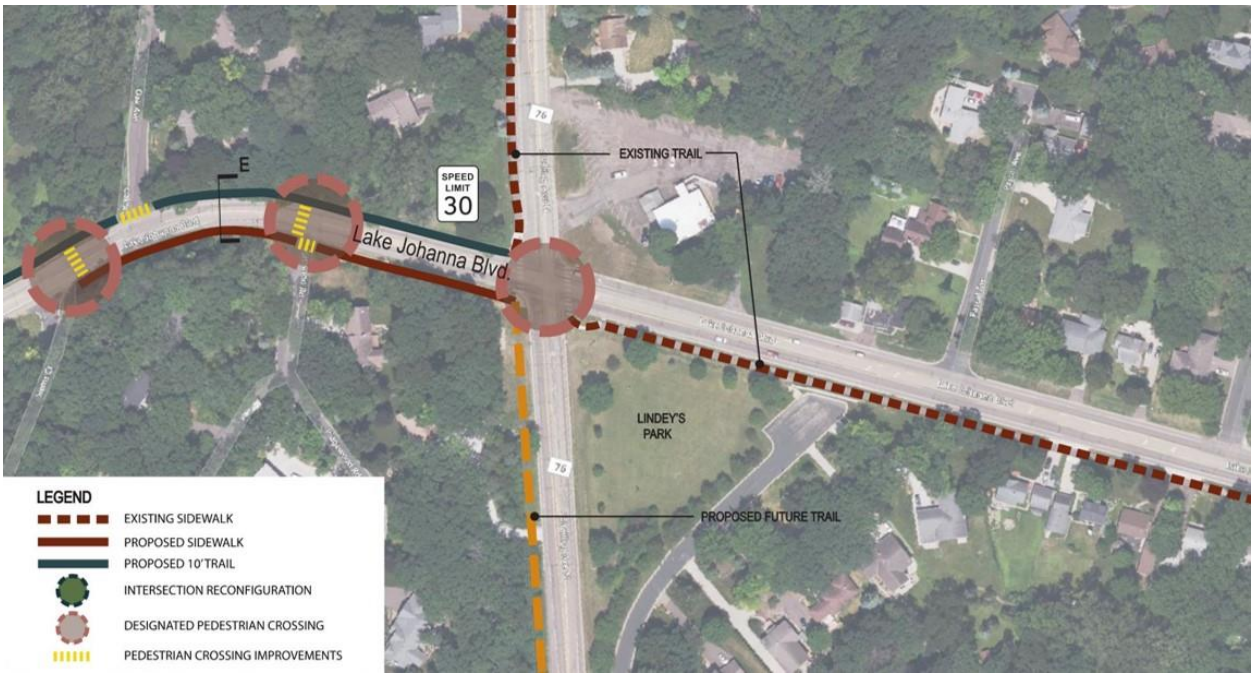
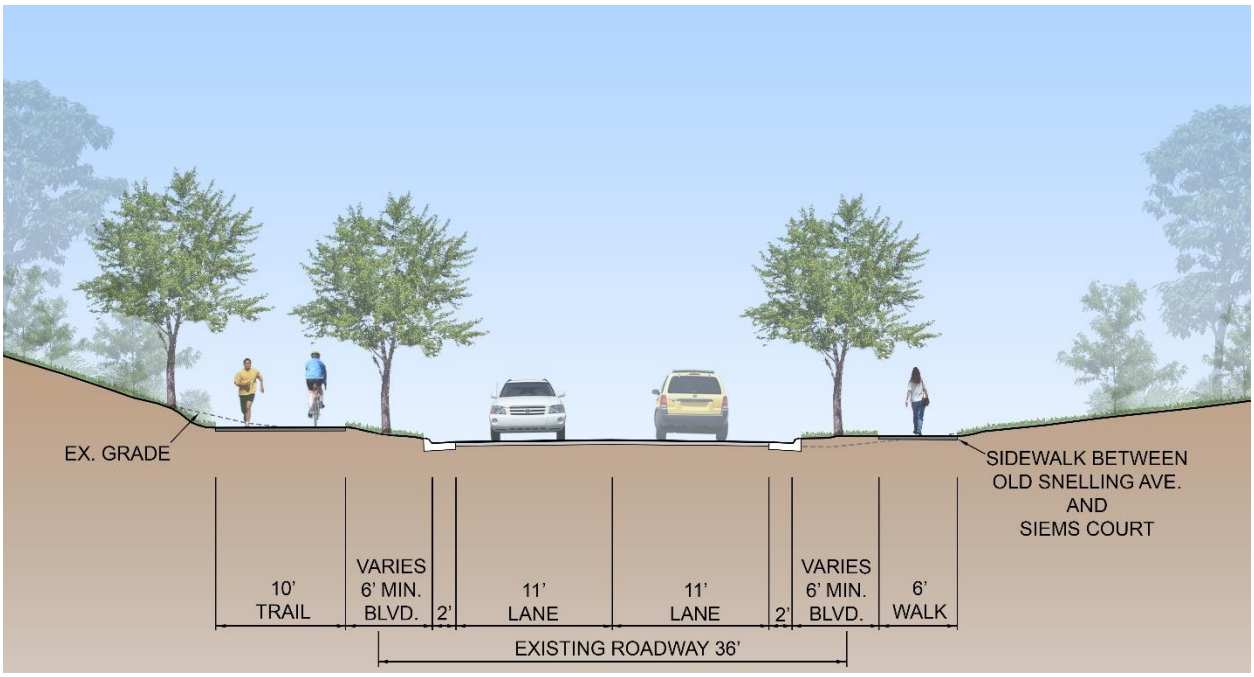



*Figure 36: Typical Section E – Siems Court to Old Snelling Ave North Concept*



# Appendix E: Detailed Evaluation Matrices

| | | Segment 1 West<br>County Road D to Stowe Avenue | Segment 1 East<br>County Road D to Stowe Avenue | Segment 2 West<br>Stowe Avenue to County Road E | Segment 2 East<br>Stowe Avenue to County Road E |
|---|---|---|---|---|---|
| # | Criteria | | | | |
| 1 | **User Experience** (Directness, comfort, wayfinding, conflicts) | + Trail separated by boulevard, curb<br>+ Boulevard could include trees | + Trail separated by boulevard, curb<br>+ Boulevard could include trees | + Trail separated by boulevard, curb<br>+ Boulevard could include trees<br>- Steeper boulevard grades | - Minimal boulevard (2 feet)<br>+ Adjacent to lake |
| 2 | **Connectivity** (Residential neighborhoods, parks, regional trails) | - Serves neighborhoods well to west<br>- Presbyterian Homes users need to cross street | - Serves Presbyterian Homes well<br>- Aligns with trail along Fairview Avenue (at County Road C2) | - Serves neighborhoods well to west<br>- Presbyterian Homes users need to cross street | - Neighborhoods need to cross street<br>+ Aligns with beach area at Tony Schmidt Regional Park |
| 3 | **Scope of Roadway Modifications Improvements** | + Limited mill and overlay, new curb<br>- Loss of parking on one side | + Limited mill and overlay, new curb<br>- Loss of parking on one side | + Limited mill and overlay, new curb<br>- Loss of shoulders<br>- Roadway narrowing | - Full roadway reconstruction |
| 4 | **Crossings/ Conflicts** (Safety) | - 16 Driveways<br>- 2 Local Streets | - 15 Driveways<br>- 2 Local Streets<br>- Several wide driveways<br>- Limited off street parking area | - 2 Driveways<br>- 1 Local street | - 3 Driveways<br>- 0 Local Streets |
| 5 | **Parking Impacts** | - Half parking capacity removed | - Half parking capacity removed | - Both shoulders removed | - Both shoulders removed |
| 6 | **Grading/ Retaining Wall Scope** | - Minor amount of grading, low wall potential | + Less grading, no wall potential | - Modest amount of grading, medium wall potential | - Modest amount of grading, medium wall potential |
| 7 | **Right of Way/Easement Needs** | + None anticipated | + None anticipated | + None anticipated | + None anticipated |

| | | | | | |
|---|---|---|---|---|---|
| 9 | **Surface Utility Conflicts (Overhead (OH) Power Poles Hydrants)** | + Intermittent power poles (services, lights) | - Continuous OH power poles<br>- Hydrants<br>- Mailboxes | + No OH power<br>+ No hydrants | + OH power poles end at Lake Lane<br>+ No hydrants |
| 10 | **Cost** | **$$** | **$$** | **$$$** | **$$$$**<br>Full road reconstruction |

| | | **Segment 3 North**<br>Tony Schmidt Regional Park Area | **Segment 3 South**<br>Tony Schmidt Regional Park Area | **Segment 4 North**<br>Tony Schmidt Regional Park to Old Snelling Avenue | **Segment 4 South**<br>Tony Schmidt Regional Park to Old Snelling Avenue |
|---|---|---|---|---|---|
| **#** | **Criteria** | | | | |
| 1 | **User Experience** (Directness, comfort, wayfinding, conflicts) | + Trail separated by wide boulevard<br>+ Boulevard could include trees | + Trail separated by boulevard<br>+ Boulevard could include trees<br>- Existing tree impacts adjacent to parking lot | + Trail separated by boulevard, curb<br>+ Boulevard could include trees | - Trail/roadway very close to existing homes<br>- Minimal boulevard (2 feet) |
| 2 | **Connectivity** (Residential neighborhoods, parks, regional trails | + Connects Elmer Anderson trail segments without need to cross Lake Johanna Boulevard<br>- Crossing needed to access beach area at Tony Schmidt Regional Park | + Serves beach area at Tony Schmidt Regional Park well<br>- Road crossing to access Elmer Anderson trail | + Serves neighborhoods well to north (low density)<br>- Crossings required to serve Siems Court and Ridgewood Road | + Serves neighborhoods to south well (medium density)<br>+ Aligns with beach area at Tony Schmidt Regional Park |
| 3 | **Scope of Roadway Modifications Improvements** | + Minimal roadway impacts | + Limited mill and overlay, new curb<br>- Loss of shoulder on one side | + Limited mill and overlay, new curb<br>- Loss of shoulders<br>- Roadway narrowing | + Limited mill and overlay, new curb<br>- Loss of shoulder on one side |
| 4 | **Crossings/ Conflicts** (Safety) | - 1 Driveway (park access) | - 4 Driveways (park access) | - 4 Driveways<br>- 1 Local street | - 15 Driveways<br>- 2 Local streets |

| | | | | | |
|---|---|---|---|---|---|
| 5 | **Parking Impacts** | - No shoulder impacts | - One shoulder removed | - Both shoulders removed | - One shoulder removed |
| 6 | **Grading/ Retaining Wall Scope** | - Minor amount of grading, low wall potential | - Minor amount of grading, low wall potential | - Modest amount of grading, medium wall potential | - Modest amount of grading, medium wall potential |
| 7 | **Right of Way/Easement Needs** | + None anticipated | + None anticipated | + None anticipated | + None anticipated |
| 9 | **Surface Utility Conflicts (Overhead (OH) Power Poles Hydrants)** | + No OH power<br>+ No hydrants | + No OH power<br>+ No hydrants | + Intermittent OH power<br>+ No hydrants | - OH power poles (continuous)<br>+ No hydrants<br>- Mailboxes |
| 10 | **Cost** | **$** | **$$** | **$$$** | **$$** |

RAMSEY COUNTY

# Appendix F: West/North Trail Design Layout

*Figure 37. County Road D to Sandeen Road*

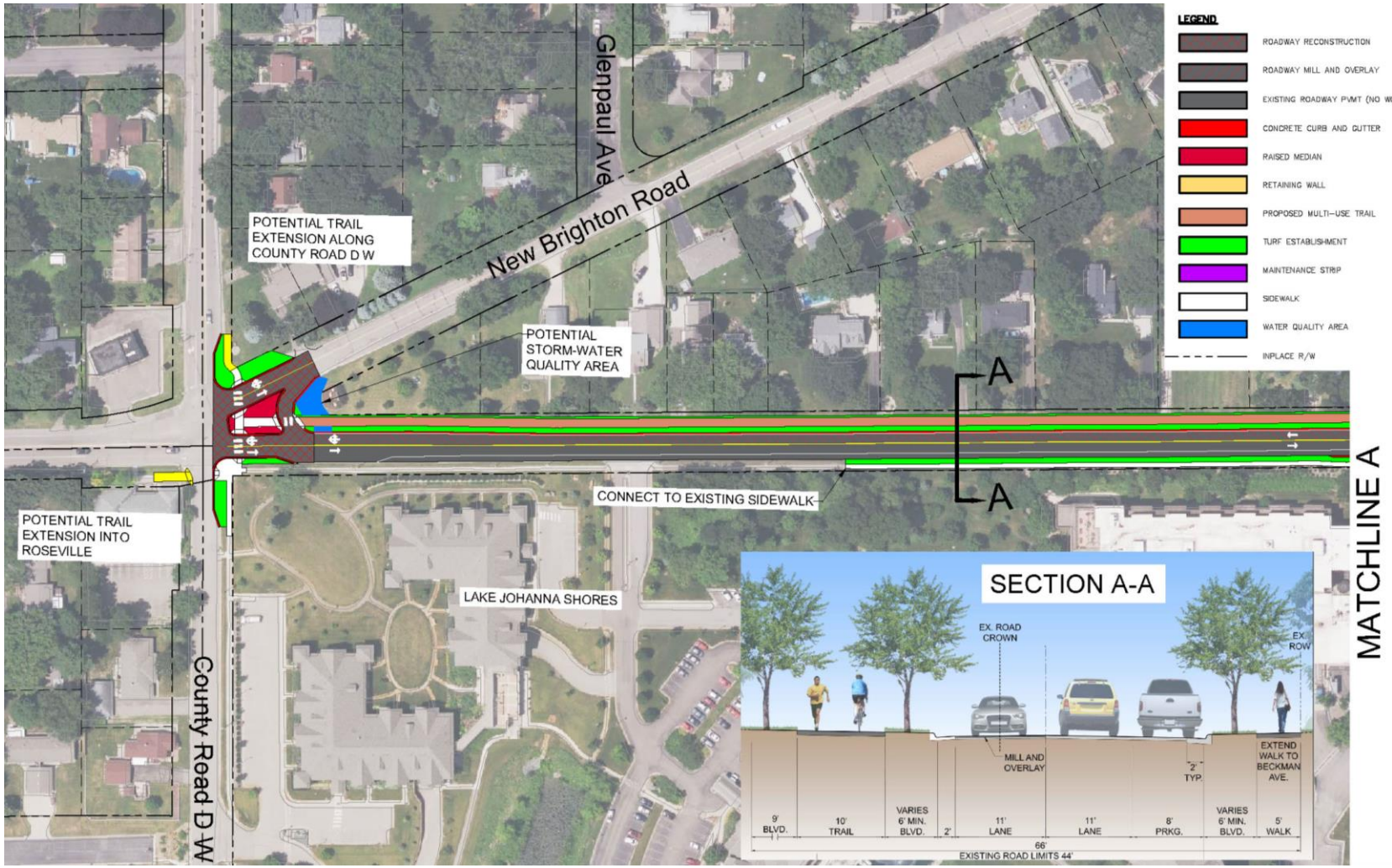


*Figure 38. Sandeen Road to Stowe Avenue*

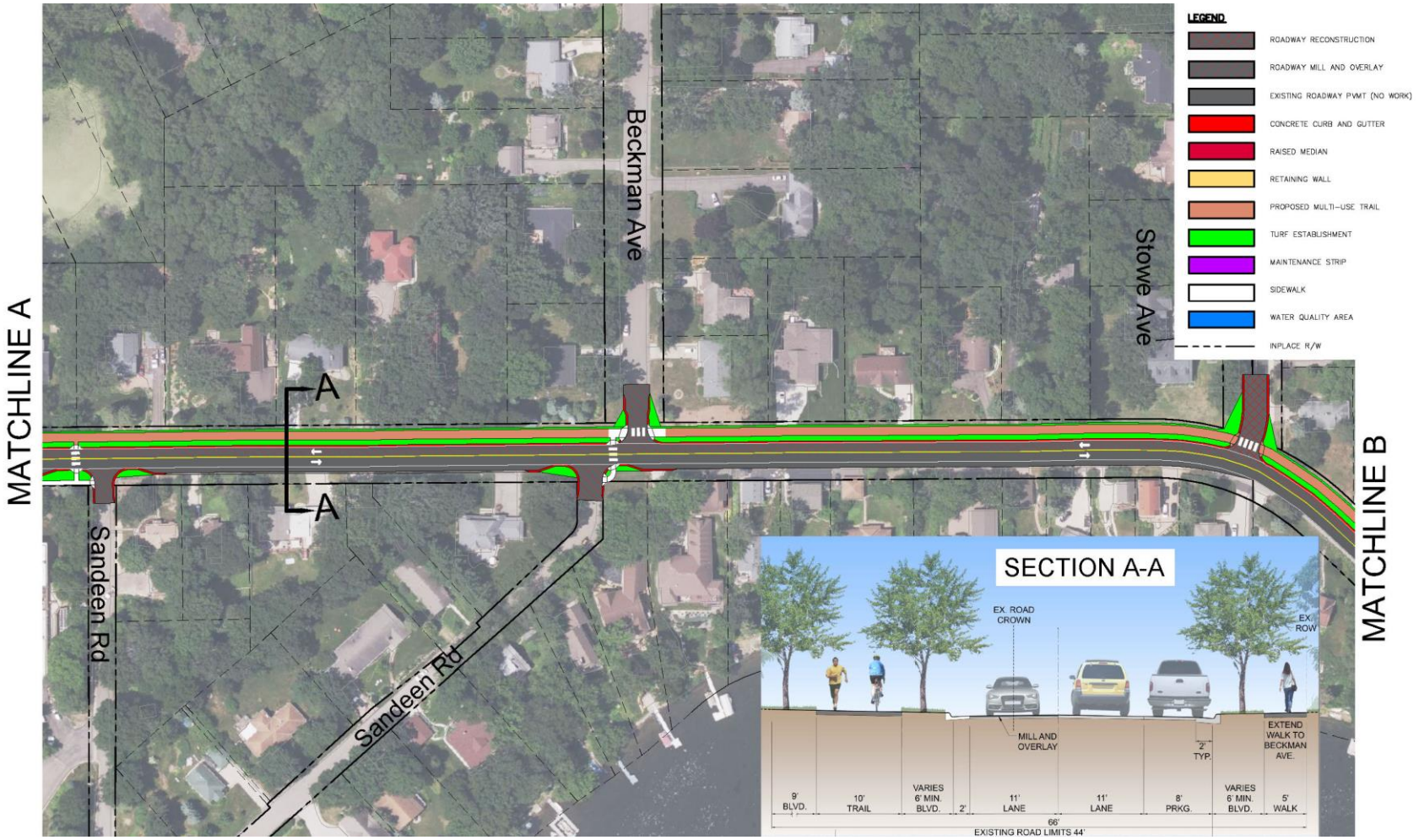


*Figure 39. Stowe Avenue to County Road E*

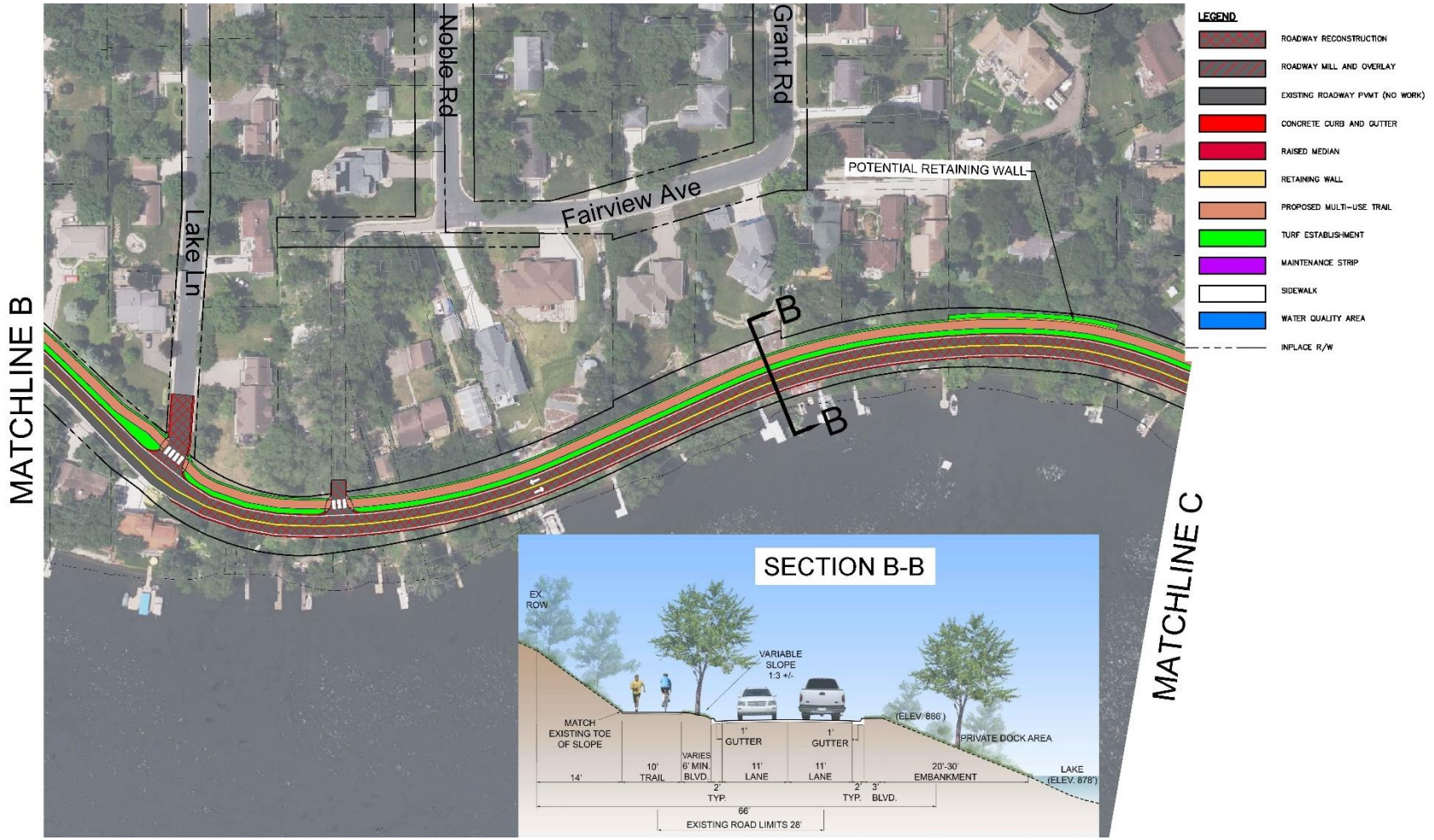


*Figure 40. Tony Schmidt Regional Park Area – Unconstrained*

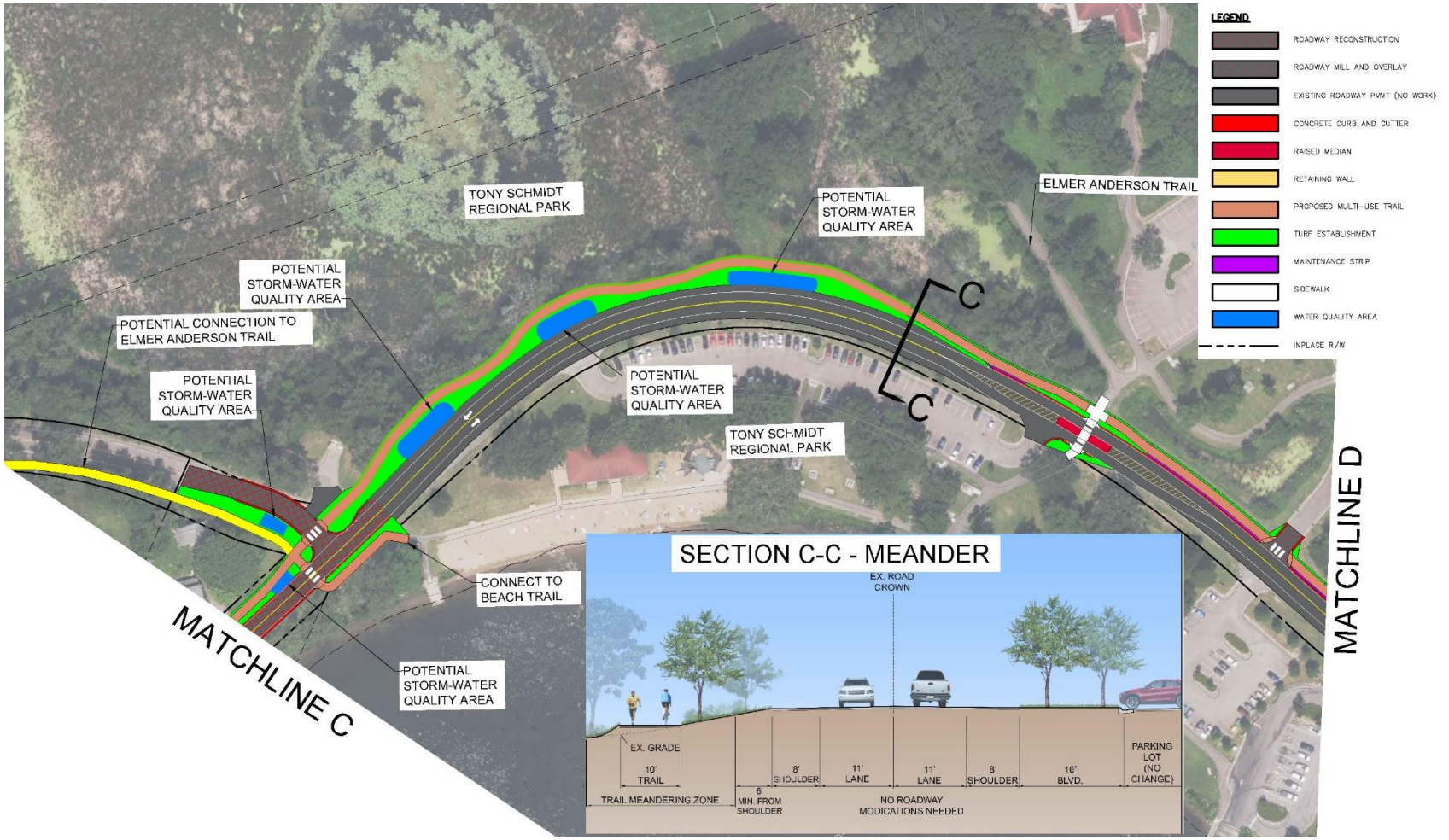


*Figure 41. Tony Schmidt Regional Park Area - Constrained*

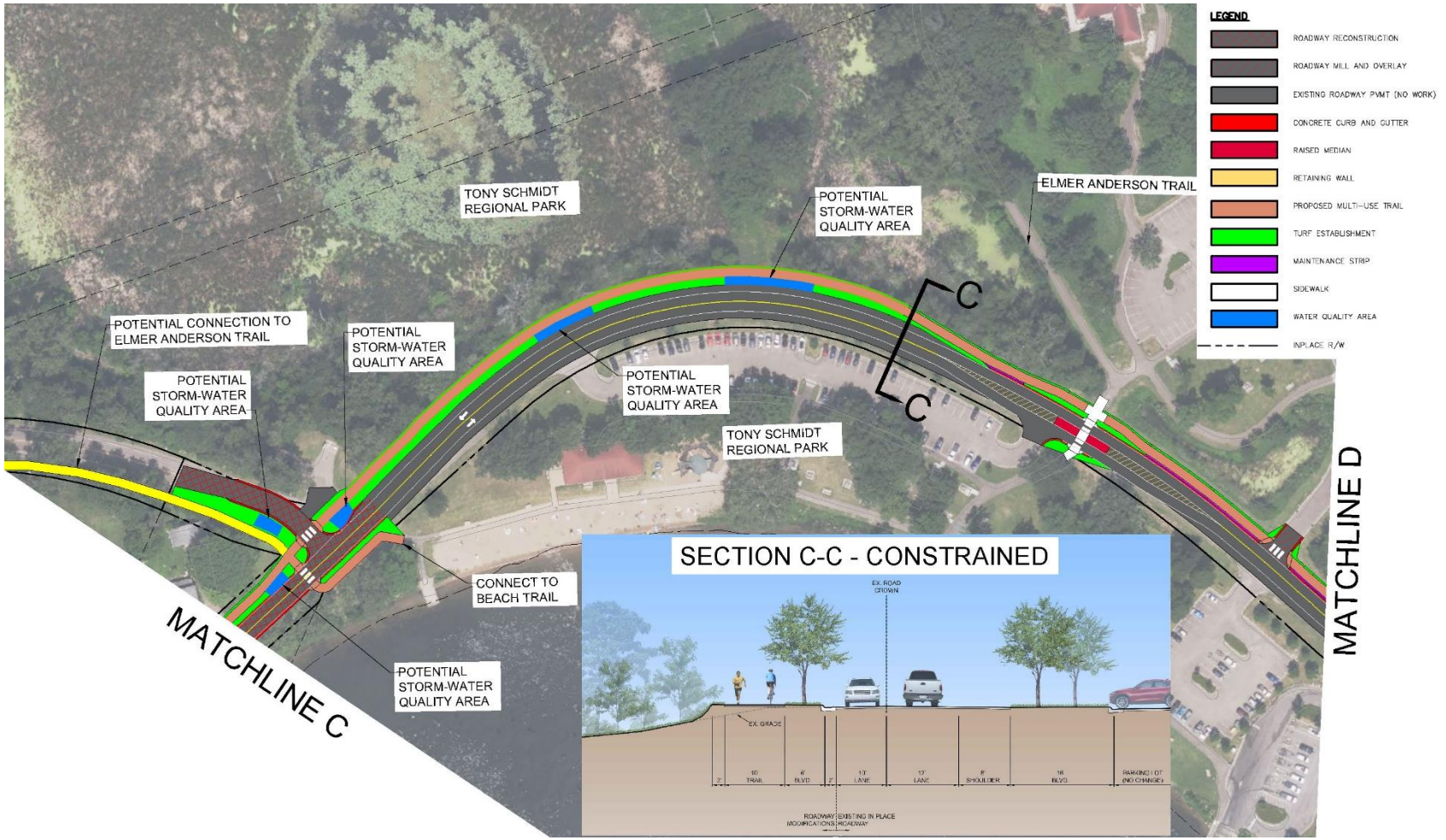
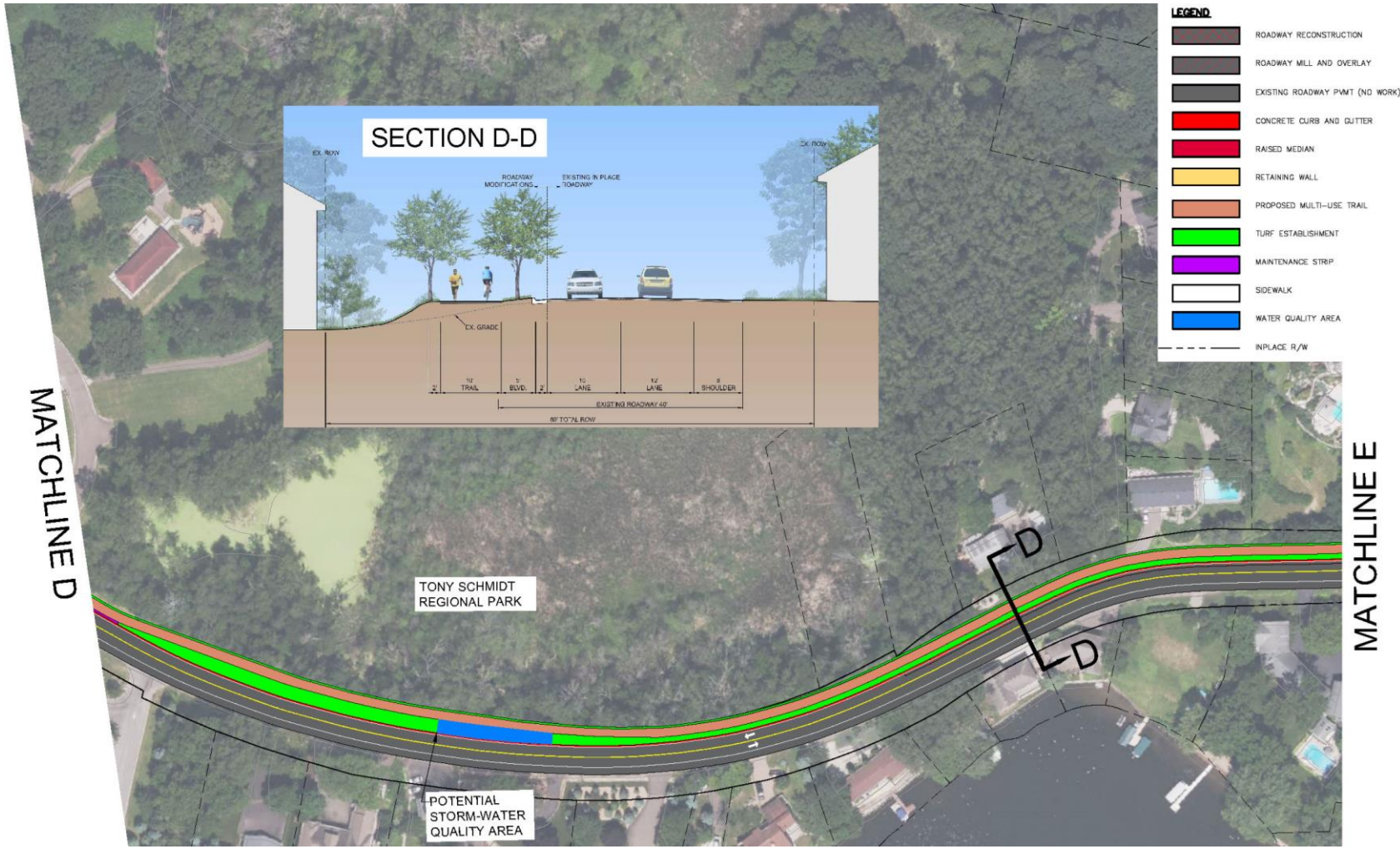
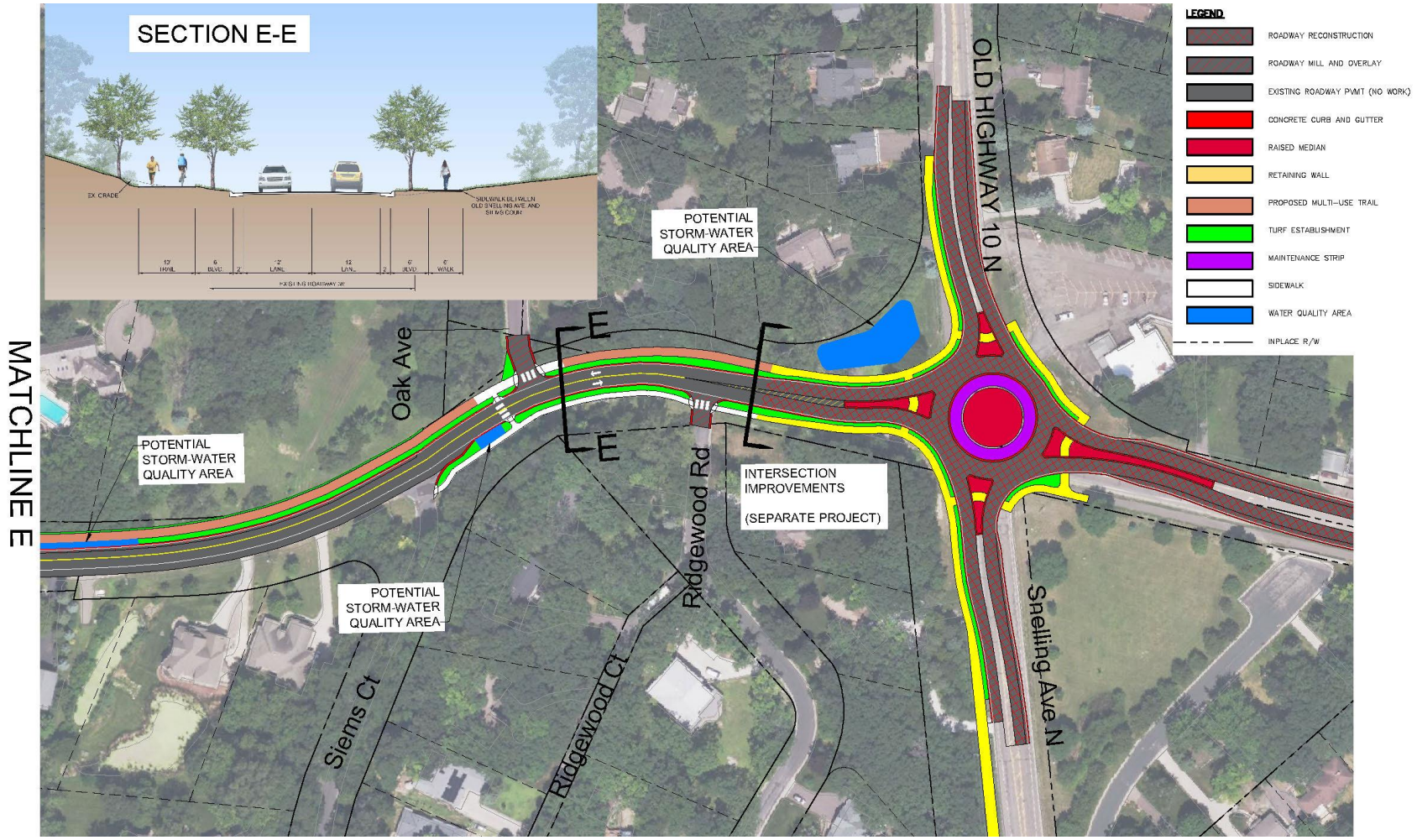


*Figure 42: Tony Schmidt Regional Park to Siems Court*



RAMSEY COUNTY

*Figure 43: Siems Court to Old Snelling Avenue*



# Appendix G. Detailed Cost Estimate

## West/North Alignment

| Item No. | Item Description | Unit | Unit Cost | Total Estimated Quantities | Total Estimated Cost | | Agency Cost Splits | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Local Cost Participation | Arden Hills | Ramsey County |
| 2021.501 | MOBILIZATION | LUMP SUM | $360,000.00 | 1 | $360,000 | 0% | $ - | $360,000 |
| 2021.601 | CONSTRUCTION SURVEYING | LUMP SUM | $60,000.00 | 1 | $60,000 | 0 | $ - | $60,000 |
| 2031.502 | FIELD OFFICE TYPE D | EACH | $40,000.00 | 1 | $40,000 | 0% | $ - | $40,000 |
| | | | | | | | | |
| 2101.524 | CLEARING AND GRUBBING ALLOWANCE | LUMP SUM | $20,000.00 | 1 | $20,000 | 0% | $ - | $20,000 |
| | | | | | | | | |
| 2104.503 | REMOVE SEWER PIPE/CULVERT | LIN FT | $10.00 | 500 | $5,000 | 0% | $ - | $5,000 |
| 2104.503 | SAWING BIT PAVEMENT (FULL DEPTH) | LIN FT | $8.00 | 6600 | $52,800 | 0% | $ - | $52,800 |
| 2104.503 | REMOVE CURB & GUTTER | LIN FT | $8.00 | 400 | $3,200 | 0% | $ - | $3,200 |
| 2104.504 | REMOVE PAVEMENT | SQ YD | $15.00 | 10000 | $150,000 | 0% | $ - | $150,000 |
| 2104.504 | REMOVE DRIVEWAY PAVEMENT | SQ YD | $25.00 | 1600 | $40,000 | 0% | $ - | $40,000 |
| 2104.518 | REMOVE CONCRETE SIDEWALK | SQ FT | $3.50 | 1000 | $3,500 | 0% | $ - | $3,500 |
| 2104.601 | MISCELLANEOUS REMOVALS ALLOWANCE | LUMP SUM | $10,000.00 | 1 | $10,000 | 0% | $ - | $10,000 |
| | | | | | | | | |
| 2106.507 | SELECT GRANULAR EMBANKMENT (CV) | CU YD | $35.00 | 1800 | $63,000 | 0% | $ - | $63,000 |
| 2106.507 | EXCAVATION - COMMON | CU YD | $30.00 | 1500 | $45,000 | 0% | $ - | $45,000 |
| 2106.507 | COMMON EMBANKMENT (CV) | CU YD | $15.00 | 1000 | $15,000 | 0% | $ - | $15,000 |
| | | | | | | | | |
| 2211.507 | AGGREGATE BASE (CV) CLASS 5 | CU YD | $50.00 | 3000 | $150,000 | 0% | $ - | $150,000 |
| | | | | | | | | |
| 2232.504 | MILL BITUMINOUS SURFACE (2.0") | SQ YD | $10.00 | 5000 | $50,000 | 0% | $ - | $50,000 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2360.509 | TYPE SP 12.5 WEARING COURSE MIX (5;L) | TON | $95.00 | 1200 | $114,000 | 0% | $ - | $114,000 |
| 2360.509 | TYPE SP 12.5 BIT PATCHING MIX (4;L) | SY | $60.00 | 1400 | $84,000 | 0% | $ - | $84,000 |
| | | | | | | | | |
| 2411.603 | RETAINING WALL | SQ FT | $50.00 | 500 | $25,000 | 0% | $ - | $25,000 |
| | | | | | | | | |
| 2503.503 | STORM SEWER PIPE | LIN FT | $90.00 | 8000 | $720,000 | 0% | $ - | $720,000 |
| 2506.502 | STORM SEWER STRUCTURE | EACH | $4,500.00 | 40 | $180,000 | 0% | $ - | $180,000 |
| 2506.601 | WATER QUALITY ALLOWANCE | LUMP SUM | $250,000.00 | 1 | $250,000 | 0% | $ - | $250,000 |
| | | | | | | | | |
| 2521.518 | 4" CONCRETE WALK | SQ FT | $8.00 | 9500 | $76,000 | 50% | $38,000 | $38,000 |
| 2521.518 | 6" CONCRETE WALK | SQ FT | $12.00 | 2500 | $30,000 | 50% | $15,000 | $15,000 |
| 2521.518 | 3" BITUMINOUS WALK | SQ FT | $4.00 | 78000 | $312,000 | 50% | $156,000 | $156,000 |
| | | | | | | | | |
| 2531.503 | CONCRETE CURB & GUTTER DESIGN B624 | LIN FT | $35.00 | 10500 | $367,500 | 75% | $275,625 | $91,875 |
| 2531.504 | 6" CONCRETE DRIVEWAY PAVEMENT | SQ YD | $90.00 | 1200 | $108,000 | 0% | $ - | $108,000 |
| 2531.504 | TRAIL LIGHTING ALLOWANCE | LUMP SUM | $100,000.00 | 1 | $100,000 | 100% | $100,000 | $ - |
| 2531.618 | TRUNCATED DOMES | SQ FT | $65.00 | 640 | $41,600 | 50% | $20,800 | $20,800 |
| | | | | | | | | |
| 2563.601 | TRAFFIC CONTROL ALLOWANCE | LUMP SUM | $60,000.00 | 1 | $60,000 | 0% | $ - | $60,000 |
| | | | | | | | | |
| 2571.524 | LANDSCAPING ALLOWANCE | LUMP SUM | $100,000.00 | 1 | $100,000 | 100% | $100,000 | $ - |
| 2573.601 | EROSION CONTROL ALLOWANCE | LUMP SUM | $50,000.00 | 1 | $50,000 | 0% | $ - | $50,000 |
| 2574.507 | BOULEVARD TOPSOIL BORROW | CU YD | $35.00 | 1800 | $63,000 | 0% | $ - | $63,000 |
| 2575.504 | SODDING TYPE SALT TOLERANT | SQ YD | $10.00 | 14000 | $140,000 | 0% | $ - | $140,000 |
| | | | | | | | | |
| 2582.501 | SIGNING AND STRIPING ALLOWANCE | LUMP SUM | $100,000.00 | 1 | $100,000 | 0% | $ - | $100,000 |
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **CONTINGENCY (30%)** | **LUMP SUM** | **$1,200,000** | **1** | **$1,200,000** | **10%** | **$210,000** | **$990,000** |
| | | | | | | | | |
| | **SUBTOTAL ROADWAY AND TRAIL CONSTRUCTION** | | | | **$5,190,000** | | **$920,000** | **$4,270,000** |
| | ROW ACQUISITION - PE LAKEFRONT PARCELS | SF | $40.00 | 0 | $ - | 50% | 0 | 0 |
| | ROW ACQUISITION - TE LAKEFRONT PARCELS | SF | $10.00 | 1000 | $10,000 | 50% | $5,000 | $10,000 |
| | ROW ACQUISITION - PE LANDSIDE PARCELS | SF | $16.00 | 0 | $ - | 50% | 0 | 0 |
| | ROW ACQUISITION - TE LANDSIDE PARCELS | SF | $5.00 | 3500 | $17,500 | 50% | $8,750 | $17,500 |
| | **SUBTOTAL ROW ACQUISITION** | | | | **$30,000.00** | | **$10,000** | **$30,000** |
| | | | | | | | | |
| | **FINAL DESIGN ENGINEERING - ASSUME 12% of CONSTRUCTION COST** | | | | **$620,000** | | **$110,000** | **$510,000** |
| | | | | | | | | |
| | **CONSTRUCTION ENGINEERING - ASSUME 8% of CONSTRUCTION COST** | | | | **$420,000** | | **$70,000** | **$340,000** |
| | | | | | | | | |
| | **GRAND TOTAL PROJECT COSTS** | | | | **$6,260,000** | | **$1,110,000** | **$5,150,000** |

## East/South Alignment

| Item No. | Item Description | Unit | Unit Cost | Total Estimated Quantities | Total Estimated Cost | | Agency Cost Splits | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Local Cost Participation | Arden Hills | Ramsey County |
| 2021.501 | MOBILIZATION | LUMP SUM | $390,000.00 | 1 | $390,000 | 0% | $ - | $ 390,000 |
| 2021.601 | CONSTRUCTION SURVEYING | LUMP SUM | $60,000.00 | 1 | $60,000 | 0% | $ - | $ 60,000 |
| 2031.502 | FIELD OFFICE TYPE D | EACH | $40,000.00 | 1 | $40,000 | 0% | $ - | $ 40,000 |
| | | | | | | | | |
| 2101.524 | CLEARING AND GRUBBING ALLOWANCE | LUMP SUM | $15,000.00 | 1 | $15,000 | 0% | $ - | $ 15,000 |
| | | | | | | | | |
| 2104.503 | REMOVE SEWER PIPE/CULVERT | LIN FT | $10.00 | 500 | $5,000 | 0% | $ - | $5,000 |
| 2104.503 | SAWING BIT PAVEMENT (FULL DEPTH) | LIN FT | $8.00 | 8000 | $64,000 | 0% | $ - | $64,000 |
| 2104.503 | REMOVE CURB & GUTTER | LIN FT | $8.00 | 800 | $6,400 | 0% | $ - | $6,400 |
| 2104.504 | REMOVE PAVEMENT | SQ YD | $15.00 | 8400 | $126,000 | 0% | $ - | $126,000 |
| 2104.504 | REMOVE DRIVEWAY PAVEMENT | SQ YD | $25.00 | 3200 | $80,000 | 0% | $ - | $80,000 |
| 2104.518 | REMOVE CONCRETE SIDEWALK | SQ FT | $3.50 | 5000 | $17,500 | 0% | $ - | $17,500 |
| 2104.601 | MISCELLANEOUS REMOVALS ALLOWANCE | LUMP SUM | $20,000.00 | 1 | $20,000 | 0% | $ - | $20,000 |
| | | | | | | | | |
| 2106.507 | SELECT GRANULAR EMBANKMENT (CV) | CU YD | $35.00 | 1500 | $52,500 | 0% | $ - | $52,500 |
| 2106.507 | EXCAVATION - COMMON | CU YD | $30.00 | 1200 | $36,000 | 0% | $ - | $36,000 |
| 2106.507 | COMMON EMBANKMENT (CV) | CU YD | $15.00 | 1000 | $15,000 | 0% | $ - | $15,000 |
| | | | | | | | | |
| 2211.507 | AGGREGATE BASE (CV) CLASS 5 | CU YD | $50.00 | 3000 | $150,000 | 0% | $ - | $150,000 |
| | | | | | | | | |
| 2232.504 | MILL BITUMINOUS SURFACE (2.0") | SQ YD | $10.00 | 9000 | $90,000 | 0% | $ - | $90,000 |
| | | | | | | | | |
| 2360.509 | TYPE SP 12.5 WEARING COURSE MIX (5;L) | TON | $95.00 | 1080 | $102,600 | 0% | $ - | $102,600 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2360.509 | TYPE SP 12.5 BIT PATCHING MIX (4;L) | SY | $60.00 | 1600 | $96,000 | 0% | $ - | $96,000 |
| | | | | | | | | |
| 2411.603 | RETAINING WALL | SQ FT | $50.00 | 3500 | $175,000 | 0% | $ - | $175,000 |
| | | | | | | | | |
| 2503.503 | STORM SEWER PIPE | LIN FT | $90.00 | 8000 | $720,000 | 0% | $ - | $720,000 |
| 2506.502 | STORM SEWER STRUCTURE | EACH | $4,500.00 | 40 | $180,000 | 0% | $ - | $180,000 |
| 2506.601 | WATER QUALITY ALLOWANCE | LUMP SUM | $250,000.00 | 1 | $250,000 | 0% | $ - | $250,000 |
| | | | | | | | | |
| 2521.518 | 4" CONCRETE WALK | SQ FT | $8.00 | 3500 | $28,000 | 50% | $14,000 | $14,000 |
| 2521.518 | 6" CONCRETE WALK | SQ FT | $12.00 | 4800 | $57,600 | 50% | $28,800 | $28,800 |
| 2521.518 | 3" BITUMINOUS WALK | SQ FT | $4.00 | 78000 | $312,000 | 50% | $156,000 | $156,000 |
| | | | | | | | | |
| 2531.503 | CONCRETE CURB & GUTTER DESIGN B624 | LIN FT | $35.00 | 8200 | $287,000 | 75% | $215,250 | $71,750 |
| 2531.504 | 6" CONCRETE DRIVEWAY PAVEMENT | SQ YD | $90.00 | 2400 | $216,000 | 0% | $ - | $216,000 |
| 2531.504 | TRAIL LIGHTING ALLOWANCE | LUMP SUM | $100,000.00 | 1 | $100,000 | 100% | $100,000 | $ - |
| 2531.618 | TRUNCATED DOMES | SQ FT | $65.00 | 750 | $48,750 | 50% | $24,375 | $24,375 |
| | | | | | | | | |
| 2563.601 | TRAFFIC CONTROL ALLOWANCE | LUMP SUM | $60,000.00 | 1 | $60,000 | 0% | $ - | $60,000 |
| | | | | | | | | |
| 2571.524 | LANDSCAPING ALLOWANCE | LUMP SUM | $100,000.00 | 1 | $ 100,000 | 100% | $100,000 | $ - |
| 2573.601 | EROSION CONTROL ALLOWANCE | LUMP SUM | $50,000.00 | 1 | $50,000 | 0% | $ - | $50,000 |
| 2574.507 | BOULEVARD TOPSOIL BORROW | CU YD | $35.00 | 1800 | $63,000 | 0% | $ - | $63,000 |
| 2575.504 | SODDING TYPE SALT TOLERANT | SQ YD | $10.00 | 14000 | $140,000 | 0% | $ - | $140,000 |
| | | | | | | | | |
| 2582.501 | SIGNING AND STRIPING ALLOWANCE | LUMP SUM | $100,000.00 | 1 | $100,000 | 0% | $ - | $100,000 |
| | | | | | | | | |
| | **CONTINGENCY (30%)** | **LUMP SUM** | **$1,300,000** | **1** | **$1,300,000** | **30%** | **$200,000** | **$1,100,000** |
| | | | | | | | | |
| | **SUBTOTAL ROADWAY AND** | | | | **$ 5,550,000** | | **$ 840,000** | **$ 4,710,000** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **TRAIL CONSTRUCTION** | | | | | | | |
| | ROW ACQUISITION - PE LAKEFRONT PARCELS | SF | $40.00 | 0 | $ - | 50% | $ - | $ - |
| | ROW ACQUISITION - TE LAKEFRONT PARCELS | SF | $10.00 | 20000 | $200,000 | 50% | $100,000 | $100,000 |
| | ROW ACQUISITION - PE LANDSIDE PARCELS | SF | $16.00 | 0 | $ - | 50% | $ - | $ - |
| | ROW ACQUISITION - TE LANDSIDE PARCELS | SF | $5.00 | 950 | $4,750 | 50% | $2,375 | $2,375 |
| | **SUBTOTAL ROW ACQUISITION** | | | | **$200,000** | | **$100,000** | **$100,000** |
| | | | | | | | | |
| | **FINAL DESIGN ENGINEERING - ASSUME 12% of CONSTRUCTION COST** | | | | **$670,000** | | **$100,000** | **$570,000** |
| | | | | | | | | |
| | **CONSTRUCTION ENGINEERING - ASSUME 8% of CONSTRUCTION COST** | | | | **$440,000** | | **$70,000** | **$380,000** |
| | | | | | | | | |
| | **GRAND TOTAL PROJECT COSTS** | | | | **$6,860,000** | | **$1,110,000** | **$5,760,000** |