



WELCOME TO THE CLIFF ROAD STUDY  
**OPEN HOUSE!**  
*Please Sign In*

**CLIFF ROAD STUDY**  
DAKOTA COUNTY - EAGAN



**Tonight's Meeting: What to Expect**

**4:45 & 5:20**  
A brief overview of the Open House content will be shared at 4:45 and 5:20. This announcement will include a brief overview of the meeting content including where preferred improvements have been identified, where alternatives are still being vetted and how to share your input on each.

**Meeting To-Do List**

- Review content
- Talk with project staff about questions/clarifications
- Provide your input on the provided form

Share your input! Make sure to pick up a form from the sign-in station.



# Welcome!

## OPEN HOUSE - MAY 13, 2019

# CLIFF ROAD STUDY

DAKOTA COUNTY - EAGAN

### Introduction

Dakota County, in cooperation with the City of Eagan and MnDOT, is working to complete a corridor study of Cliff Road (County Road 32) from Lexington Avenue to Trunk Highway 3 in Eagan.

The corridor study will include review of current and future traffic operations, potential for any future roadway and/or intersection improvements, trail locations along the corridor, pedestrian crossings, and the location for a grade separated crossing of Cliff Road for the Mendota Lebanon Hills Greenway.

Fall/Winter 2018/19

### Investigate

- Data collection
- Identify issues
- Explore vision

Winter/Spring 2019

### Develop Alternatives

- Explore opportunities
- Develop and evaluate solutions

Summer/Fall 2019

### Recommendation

- Identify recommended alternative

>>> Opportunities for public input throughout study process >>>

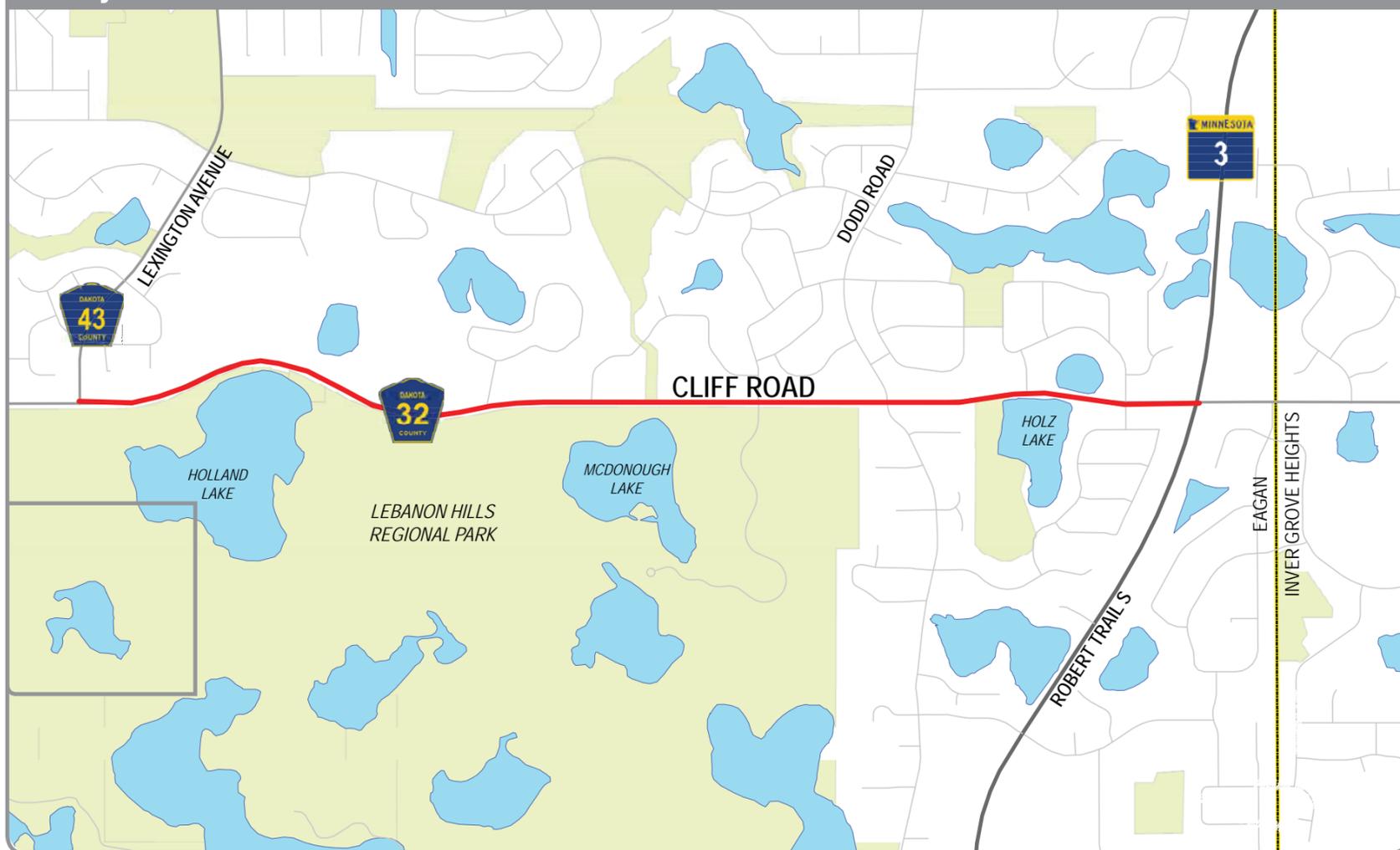
OPEN HOUSE 1  
Goals, Issues, Opportunities

OPEN HOUSE 2  
Present Improvements/Alternatives

OPEN HOUSE 3  
Highlight Corridor Improvements & Implementation Plan

A fourth Open House may be scheduled later in the project if deemed necessary by the Project Management Team (PMT).

### Study Area



### Study Purpose & Goals

#### Purpose

Through this study, improvements will be identified that align with the City and County Comprehensive Plans and ensure safe and efficient travel for pedestrians, bicyclists, and the 7,800 to 9,500 motorists traveling the corridor daily. Proposed improvements will address current and forecasted issues, strengthen corridor opportunities, and respect the corridor context including: the greater roadway network; multi-modal transportation needs; surrounding land uses; and surrounding environmental assets.

#### Goals

- Safely accommodate all users along the corridor
- Provide a comprehensive network for multimodal transportation that is compatible with local and regional needs
- Provide efficient and reliable vehicle mobility for the corridor
- Provide infrastructure improvements compatible with the natural and human environment
- Develop a financially responsible infrastructure implementation plan



### Follow Study Progress!



Visit the project website by searching "Cliff Road Study" on **Dakota County's website** ([www.co.dakota.mn.us](http://www.co.dakota.mn.us)) or use the following link:

<https://www.co.dakota.mn.us/Transportation/TransportationStudies/Current/Pages/cliff-road-corridor.aspx>

### Project Contacts

**Kristi Sebastian**, Traffic Engineer (Dakota County)  
(952) 891-7178 - [kristi.sebastian@co.dakota.mn.us](mailto:kristi.sebastian@co.dakota.mn.us)

**John Gorder**, City Engineer (City of Eagan)  
(651) 675-5645 - [jgorder@cityofeagan.com](mailto:jgorder@cityofeagan.com)

**Chris Chromy**, Project Manager (Bolton & Menk, Inc.)  
(612) 756-1236 - [chris.chromy@bolton-menk.com](mailto:chris.chromy@bolton-menk.com)



### Map Legend

- Crash & Operations Concerns\*
- Crash Concerns\*
- Mendota to Lebanon Hills Greenway
- Proposed Greenway Linking Route
- Sidewalk
- On-Road Bikeways
- Park
- Average Annual Daily Traffic (AADT) Volumes - 2015
- Average Annual Daily Traffic (AADT) Projected - Volumes

\*NOTE: Crash concerns indicate that the crash rate is Above the Statewide Average Rate and either approaching or exceeding the Critical Rate (Dodd is approaching the critical rate and TH 3 is exceeding the critical rate)

### Key Takeaway(s)

Potential corridor improvements will need to consider and address the following elements:

- Intersections and segments with crash and operations concerns
- Speed and roadway curvature
- Gaps in the pedestrian/bicycle network
- Projected traffic volumes and areas of possible development
- Environmental considerations and constraints
- Utility constraints



## CLIFF ROAD STUDY

### November 8, 2017 Neighborhood Meeting

Attendees: 34

- Missing turn lanes & illegal bypass - cars go around those trying to turn off Cliff Road
- Excessive speeds
- Difficult to cross Cliff Road
- Additional lanes on Cliff Road will make it harder to cross
- Add traffic control (roundabout or signal)
- So many accidents
- Poor lighting
- Pedestrian and cyclist safety and access
- Noise level

### January 17, 2019 Open House

**Purpose:** This open house aimed to build a common understanding of current and forecasted conditions. The study purpose, timeline, and goals were presented. Participants provided comment on their experience of the roadway by identifying issues and opportunities.

**Attendees:** 113 people signed in.

**How was the meeting advertised?**

- Dakota County & City of Eagan Websites
- Social Media (Facebook, NextDoor)
- 3 Email blasts
- 1 newsletter
- 1 postcard
- Sun This Week events calendar

#### What We Heard

Desire for **additional turn lanes**, especially where illegal bypassing and poor sight lines are a concern. *Worried about getting rear-ended when turning off of Cliff!*

Concern for impacts of possible four-lane expansion

Need for enforcement and education on traffic laws - speeds, illegal passing, pedestrian right-of-way

Wildlife mortality concerns

**Speeding!**

Noise concerns - traffic volumes, truck traffic

Pedestrian safety concerns - missing sidewalks and crosswalks. Generally supportive of under- or overpass

Neighborhood **cut-through traffic** as existing issue to avoid Cliff and concern with impacts of potential improvements

**Traffic controls at Dodd** - desire for roundabout or signal with designated turn lanes. Any improvements need to create better pedestrian crossing facilities - *like playing a game of Frogger today!*

**Traffic problems:**  
- back-ups at TH 3  
- difficult taking lefts onto cliff  
- poor sight lines

Desire for **separated trail** or added bike lanes - do not include greenway into Lebanon Hills

Inadequate lighting  
Avoid light pollution

#### Attendance

113

People signed in

**How did attendees hear about the open house?**

<b>15</b> Email	<b>74</b> Mailing
<b>9</b> Word of Mouth	<b>16</b> Social Media
<b>5</b> Web	<b>8</b> Other*

\*Sun This Week Newspaper, Eagan Park Commission, Public Interest, Joe Atkins Newsletter

**Did awareness increase?**  
Study update subscriptions increased from

158 to 235

### November 2018 - April 2019 INPUTiD

**Purpose:** Brief description here As part of the ongoing Cliff Road Study, INPUTiD - an online comment map - was used to collect community input on the issues and opportunities along Cliff Road. This information as well as a more quantitative site inventory (traffic counts, crash data, natural resources, etc.) will be combined to help identify potential corridor improvements for the segment of Cliff between Trunk Highway (TH) 3 and Lexington Ave S.

172

# of Comments/Replies

**How did people hear about INPUTiD?**

- Mailing
- Website
- Social Media
- Open House/Meeting
- Other

#### What We Heard

#### Most Popular Topics

Turning and Bypass Lanes

Non-Motorized Facilities

Intersection Controls

### May 1, 2019 Neighborhood Meeting

**Purpose:** This meeting was held to discuss potential improvement options being considered related to access at Lakewood Hills Drive, Oak Pond Road, and the private driveways along Cliff Road. Residents in those areas were invited to this small group meeting to discuss their use of Cliff Road, existing concerns, and potential impacts from alternative improvements.

**Attendees:**

Residents off of Lakewood Hills Road, Oak Pond Road/Circle, and the private drives between Lexington and North Hay Lake Road were invited to attend this meeting. *Residents were invited through a direct mailing.*

**Topics Discussed:**

- Resident issues/opportunities with existing Cliff Road conditions
- Typical section alternatives
- Study access management alternatives under considerations
- Access to private drives off of Cliff Road
- Potential impacts of improvements to neighborhoods dependent on Cliff
- Potential neighborhood connections



# Improvement Alternative Legend

## CLIFF ROAD STUDY

Review information on this board first in order to understand the ratings identified with the other meeting information.

### Improvement Categories

#### 1 Typical Sections

A typical section identifies the cross sectional features of a roadway including: number of lanes & width; shoulder width; sidewalk or trail location & width; etc. Typical sections do not generally show where turn lanes occur.



#### 2 Access Management Alternatives

Designates where and how vehicles access and exit a roadway.

**P Primary Access**  
*intersection examples:* traffic signal, roundabout, all-way stop, thru/side street stop

**S Secondary Access**  
*intersection examples:* partial access intersection (examples - right-in/right-out, thru/side street stop, 3/4 access

#### 3 Traffic Control Improvements

Intersection control improvements were explored at Lexington Ave, Dodd Rd, and Highway 3/S Robert Trail.



### Held up to Study Goals

#### User Safety

Safely accommodate all users along the corridor

Objectives Evaluated: pedestrian network safety and continuity; Reasonable and responsible roadway access; crash reduction opportunities

#### Support Multimodal Network

Provide a comprehensive network for multimodal transportation that is compatible with local and regional needs

Objectives Evaluated: existing mobility concerns; vehicle and pedestrian accommodations needs; potential pedestrian crossing treatment

#### Vehicle Mobility

Provide efficient and reliable vehicle mobility for the corridor

Objectives Evaluated: current and future traffic operations including - intersection delays, corridor reliability, capacity analysis

#### Environment Compatibility

Provide infrastructure improvements compatible with the natural and human environment

Objectives Evaluated: right-of-way impacts; wetland/vegetation impacts; impacts to parks; air and noise pollution

#### Financially responsible

Develop a financially responsible infrastructure implementation plan

Objectives Evaluated: construction impacts; feasibility of construction; funding and schedule considerations

### Assigned Rating

Alternative improvements for each category were reviewed against the individual study goals. Scores were averaged to determine which would best support the corridor vision.

OVERALL SCORE - **Does not meet measure**

OVERALL SCORE 0 **Minimally meets measure**

OVERALL SCORE + **Somewhat meets measure**

OVERALL SCORE ++ **Meets measure**

OVERALL SCORE +++ **Exceeds measure**

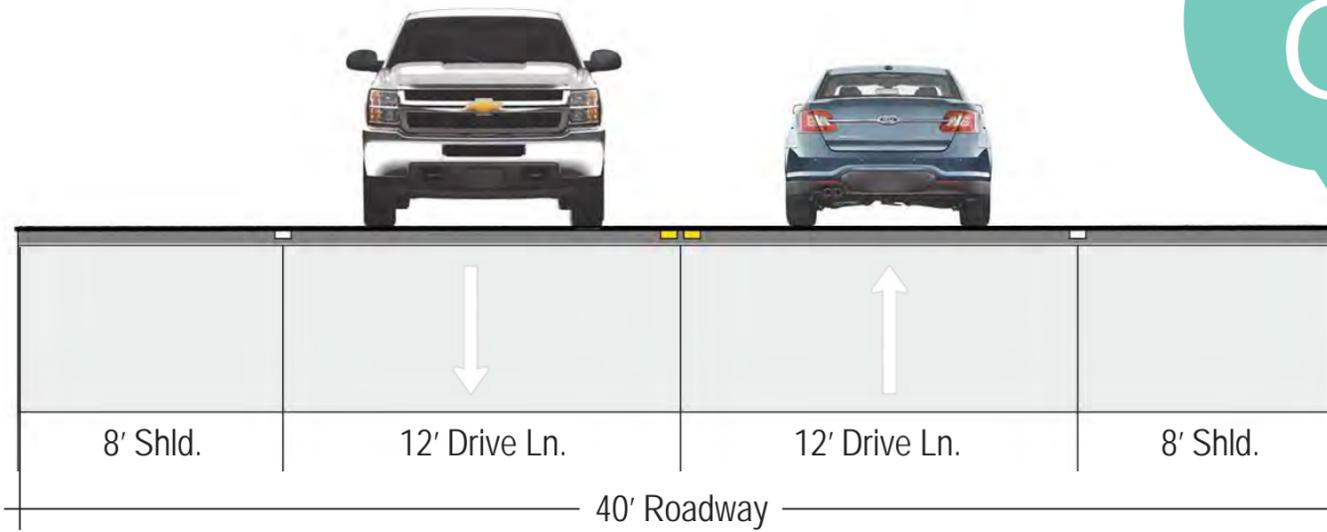
### What is a Typical Section?

A typical section identifies the cross sectional features of a roadway including: number of lanes & width; shoulder width; sidewalk or trail location & width; etc. Typical sections do not generally show where turn lanes occur.

### What are the existing issues with this typical section?

- Traffic passing turning vehicles using shoulder and/or turn lanes
- High speed roadway and limited number of turn lanes increases risk for rear-end crashes
- Poor sight lines at intersections and driveways
- Reduced vehicle mobility (more congestion) with projected traffic volumes

### Existing Typical Section



**OVERALL RATING**

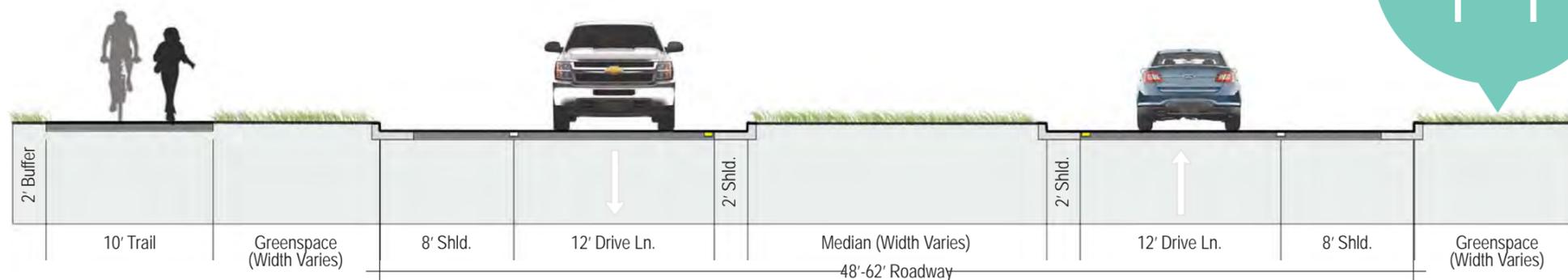
○

- User Safety -
- Support Multimodal Network ○
- Vehicle Mobility ○
- Environment Compatibility +
- Financially responsible ○

**What do you think?**  
 Review the recommended typical section on the following board and let us know what you think on the provided handout.



### Recommended Alternative: Two-Lane Divided



**OVERALL RATING**  
++

	User Safety	+++
	Support Multimodal Network	++
	Vehicle Mobility	+++
	Environment Compatibility	++
	Financially responsible	++

- Anticipated Outcomes:**
- Center median reduces crashes
  - Reduced conflict points by restricting access
  - Median provides room for left turn lanes at key intersections
  - More reliable vehicle mobility (more predictable)
  - Allows for flexibility in design (variable median width to reduce environmental impacts)

### Three-Lane



**OVERALL RATING**  
++

	++
	++
	++
	+
	++

- Why not a three-lane section?**
- Two-way center left turn lanes are not desired on winding, high volume, and high speed roadways
  - Does not reduce conflict points
  - Less reliable vehicle mobility (more random)
  - Design concerns along “curvy” segments near Holland Lake (greater environmental impacts)

### Four-Lane Divided



**OVERALL RATING**  
+

	++
	++
	+++
	0
	0

**Long-Term Option:** If traffic volumes exceed current expectations and mobility levels cannot be managed with a two-lane divided section, than a four-lane divided section may be appropriate. *This is not foreseen as necessary through current traffic volume projections (projections extend to 2040).*

### What is Access Management?

- Planning and control of the location, spacing, design, and operation of driveways, median openings, and street connections to a roadway.
- Designates where and how vehicles access and exit a roadway.
- Helps protect public investment in roadways by:
  - Preserving mobility
  - Reducing delay
  - Minimizing crashes
  - Reducing conflict points

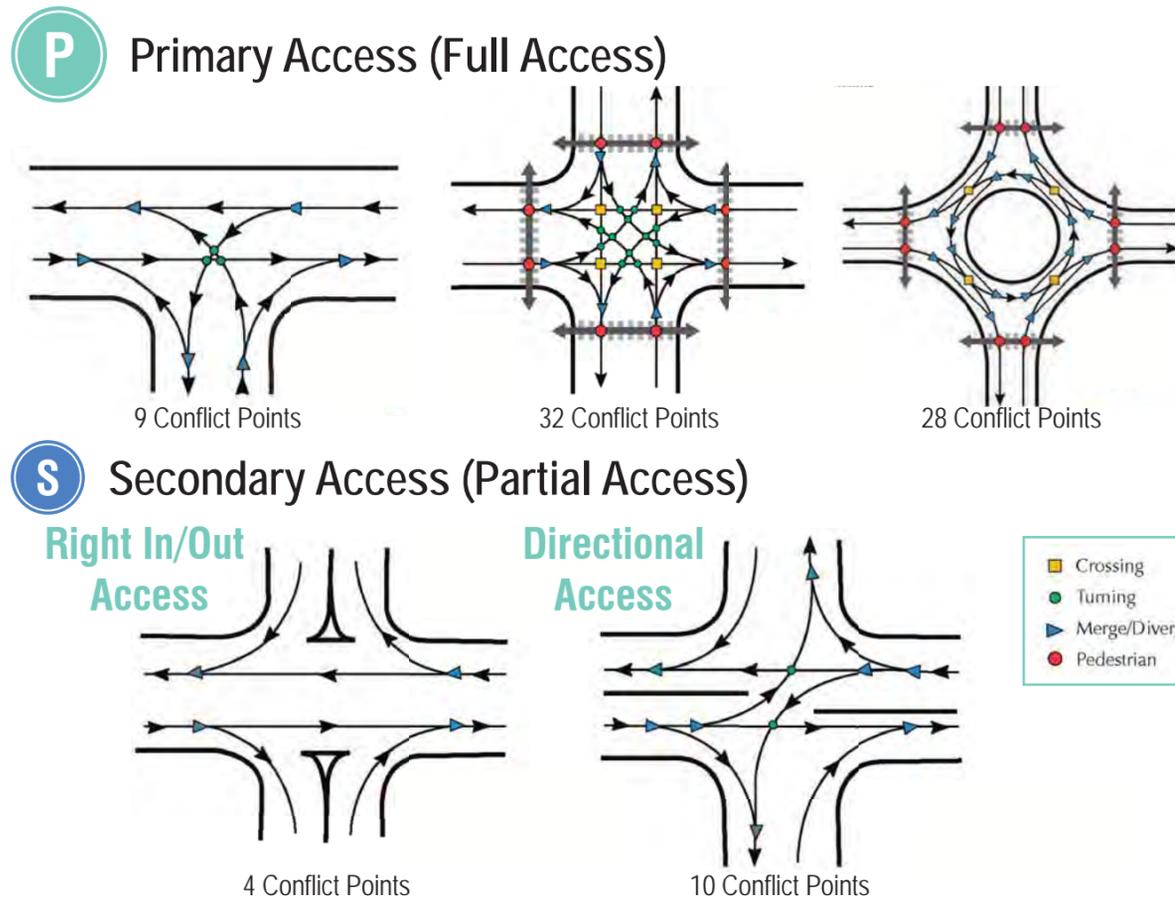
### County Access Spacing Guidelines



Classification	Purpose (Typical Trip Length <sup>1</sup> )	Percentage of Dakota County System <sup>2</sup>	Access Spacing <sup>2</sup>	
			Primary	Secondary <sup>3</sup>
Principal Arterial	Region to Region Connection (greater than 5 miles trips)	4%	1/2 mile (3 per mile)	1/4 mile (5 per mile)
Minor Arterial	City to Region Connection (3 to 5 mile trips)	50%	1/4 mile (5 per mile)	1/8 mile (10 per mile)
Collector	Neighborhood to Neighborhood Connection (less than 3 miles)	42%	1/4 mile (5 per mile)	-
Local	Local Connection	4%	-	-

(1.) Typical Trip length from MnDOT access Management Manual  
 (2.) Information from Dakota County Transportation Plan (2030)  
 (3.) Right-in/Right-out access *may be* permitted at ~1/8 mile for public or private streets if deemed appropriate

### Access Conflict Points and Connection Safety



### Reduced Conflict Intersections (RCI)

#### What are they?

Reduced Conflict Intersections are intersections that decrease fatalities and injuries caused by broadside crashes. In some parts of the country, RCIs are sometimes referred to as J-turns or RCUTs.

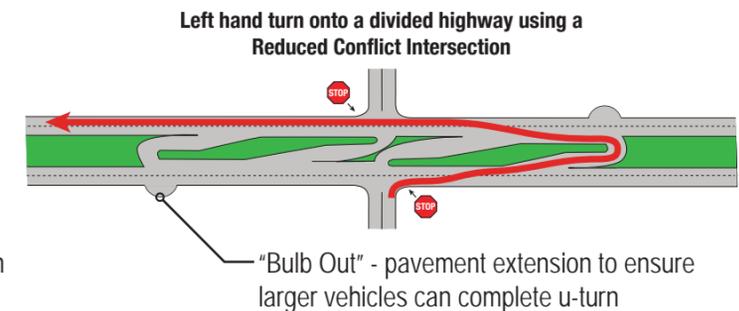


#### Why does it work?

Drivers from the side street are only concerned with one direction of traffic on the highway at a time - you don't need to wait for a gap in both directions to cross a major road.

#### How does it work?

- Drivers always make a right turn, followed by a U-turn.
- Motorists approaching divided highways from a side street are not allowed to make left turns or cross traffic; instead, they are required to turn right onto the highway and then make a U-turn at a designated median opening.
- This reduces potential conflict points and increases safety.
- Generally, the delay caused by a signal is greater than the delay caused by the RCI.



What do you think? Review the following alternatives and let us know which you can support on the provided handout.

### Alternative 1: Reduced Access at Oak Pond Road



**OVERALL RATING**  
++

	User Safety	++
	Support Multimodal Network	++
	Vehicle Mobility	++
	Environment Compatibility	++
	Financially responsible	++

\* Illustrated alignment for diagrammatic purposes only. Roadway curvature along entire corridor will be evaluated in all alternatives - possible adjustments to curves will be identified later in the design process to improve corridor safety.

P Primary Access S Secondary Access

### Alternative 2: Reduced Access at Lakewood Hills Road



**OVERALL RATING**  
++

	User Safety	++
	Support Multimodal Network	++
	Vehicle Mobility	++
	Environment Compatibility	+
	Financially responsible	++

P Primary Access S Secondary Access

### Alternative 3: Reduced Access at Oak Pond Road & Lakewood Hills Road



**OVERALL RATING**  
++

	User Safety	++
	Support Multimodal Network	++
	Vehicle Mobility	++
	Environment Compatibility	+
	Financially responsible	++

P Primary Access S Secondary Access

### Long Term Option - Enhanced Mobility



	User Safety	++
	Support Multimodal Network	++
	Vehicle Mobility	+++
	Environment Compatibility	+
	Financially responsible	++

### When/Why would this occur?



#### When/Why

If safety concerns arise at Greenleaf Drive W or N Hay Lake Road

If traffic volumes exceed current expectations and mobility levels cannot be managed with access alternatives 1 or 2 (see other access board)

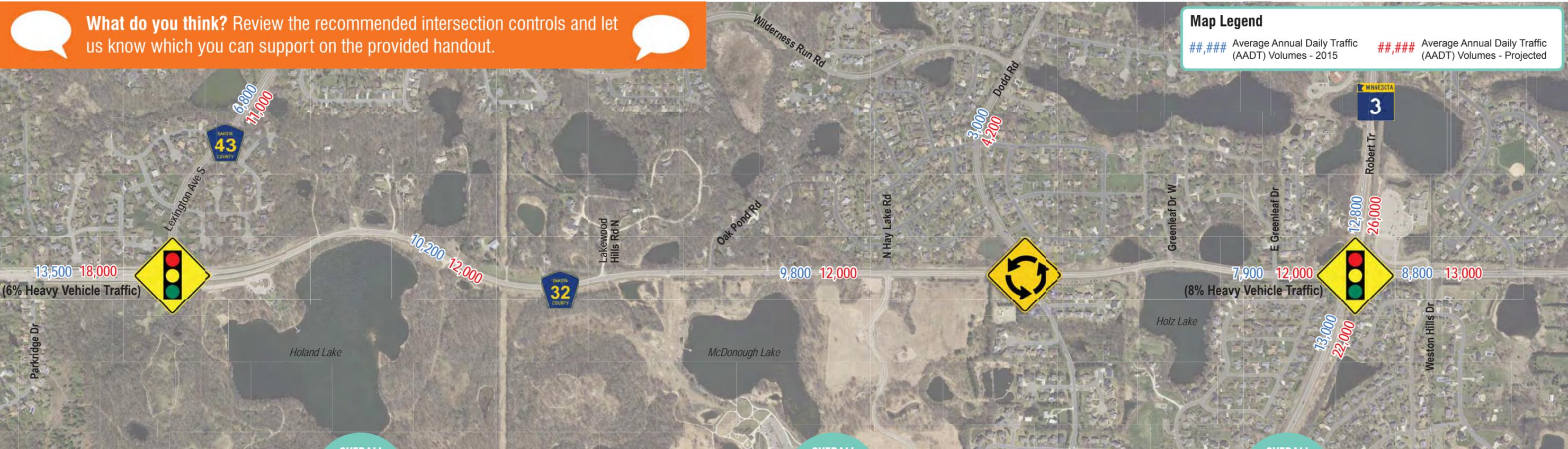


#### Additional Benefits

Better satisfies County access spacing guideline (1/4 mile intervals)

## CLIFF ROAD STUDY

**What do you think?** Review the recommended intersection controls and let us know which you can support on the provided handout.



**Map Legend**

###,### Average Annual Daily Traffic (AADT) Volumes - 2015      ###,### Average Annual Daily Traffic (AADT) Volumes - Projected

### Lexington Ave

Recommended Traffic Control: Traffic Signal

OVERALL RATING  
++

	User Safety	++
	Support Multimodal Network	++
	Vehicle Mobility	++
	Environment Compatibility	++
	Financially responsible	+++

**Other Controls Considered**

- Roundabout (Overall Rating +)

### Dodd Rd

Recommended Traffic Control: Single Lane Roundabout

OVERALL RATING  
++

	User Safety	+++
	Support Multimodal Network	++
	Vehicle Mobility	++
	Environment Compatibility	+
	Financially responsible	++

**Other Controls Considered**

- Traffic signal - traffic volumes *do not* meet signal warrants
- Side street stop (Overall Rating +)
- Side street stop including turn lanes (Overall Rating +)

### TH 3/Robert Tr

Recommended Traffic Control: Traffic Signal

OVERALL RATING  
++

	User Safety	++
	Support Multimodal Network	++
	Vehicle Mobility	++
	Environment Compatibility	++
	Financially responsible	++

**Other Controls Considered**

- Multi-Lane Roundabout (Overall Rating o)
- Interchange (Overall Rating +)

**What will change at this intersection?**  
It is recommended that TH 3/Robert Trail be expanded to include two thru lanes in each direction for approximately 1/2 mile to improve mobility through this intersection.

**Why won't a roundabout work?**  
The proximity of the railroad to the TH 3/Robert Trail and Cliff Road intersection is the primary limitation to the feasibility of a roundabout at this location.

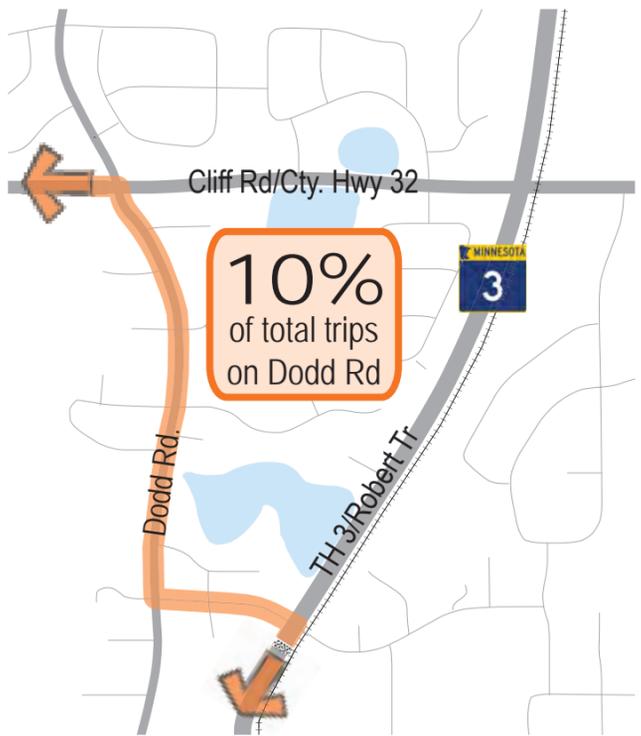
## CLIFF ROAD STUDY

### Where are vehicles coming from?

Neighborhood cut-through traffic and traffic volumes using Dodd Rd. to avoid the Cliff Rd/TH 3 intersection were common concerns on INPUTiD and at public meetings. The following data was collected using *Streetlight Insights* to better understand the breakdown of who is driving through the area and their origin/destination.

#### Regional Trips

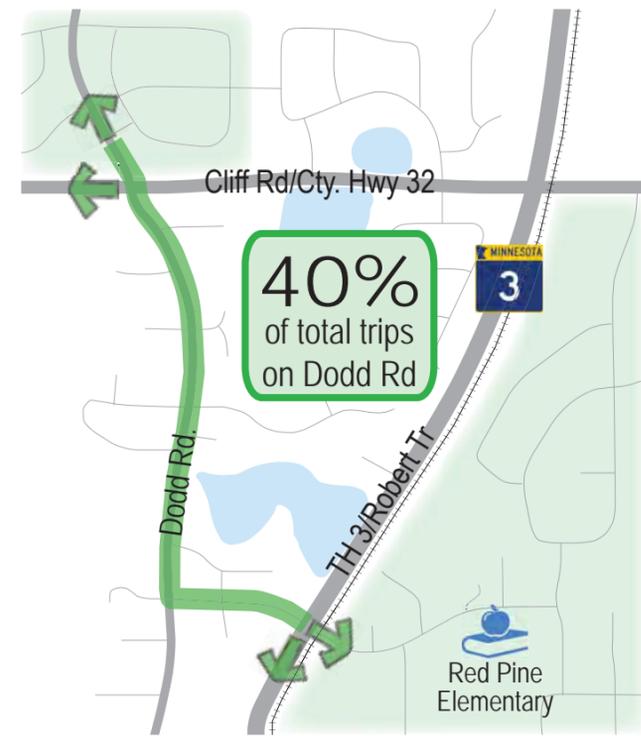
##### “Cut-Through” Traffic



10-percent of the total vehicular trips through the area are due to regional cut-through traffic. These are drivers with origin/destinations outside of the local area and are using Dodd Rd as a cut-through to avoid the Cliff Rd/TH 3 intersection.

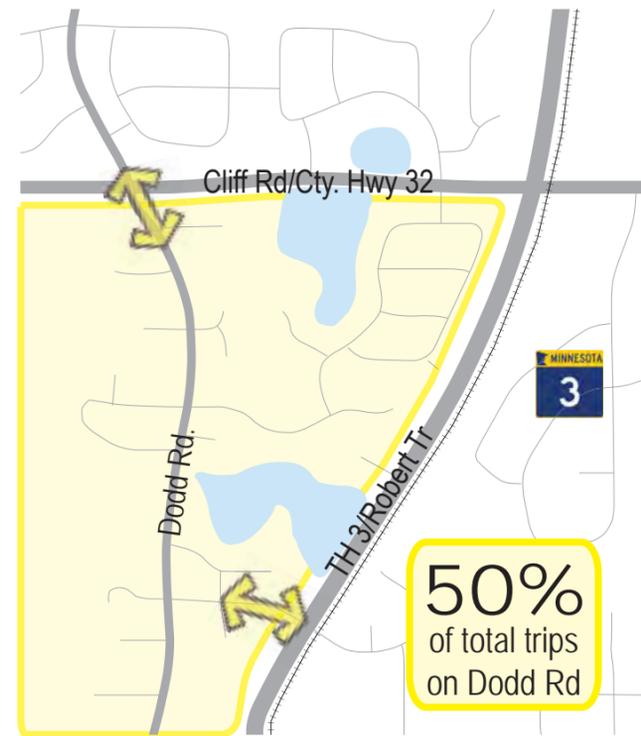
#### Local Trips

##### “Cut-Through” Traffic



40-percent of the total vehicular trips are to or from nearby destinations in the city of Eagan. These are drivers with origins/destinations outside of the neighborhood, but within the area.

##### Neighborhood Traffic



50-percent of the total vehicular trips through the area are local. These are drivers with origins/destinations within the neighborhood.



### Key Takeaway

90% of traffic traveling Dodd Road on a daily basis are trips expected on a Minor Collector roadway. The remaining 10% of regional trip “cut through” traffic will be better served with capacity improvements to the TH 3 and Cliff Road intersection.

### Dodd Road is a Minor Collector roadway.

Collectors provide connection between neighborhoods and to minor business concentrations. Assigning roadway classifications is part of county-wide transportation planning and ensures that there are roadways to serve all functions and trip types. 41-percent of Dakota County’s roadway system is designated as collector roadways.



# Intersection traffic control

## All-way stops are used for

- Moderate traffic volumes.
- Balanced traffic.
- Speed limits of 40 mph or less.

### Drawbacks

- Inefficient and cause delay.
- Multiple lanes can increase crash risk.
- Increased crash risk when disregarded.
- Constant stopping/acceleration is noisy.



## Traffic signals are used for

- Consistently high volume of traffic.
- Collector or arterial corridor intersections.

### Drawbacks

- Introduces additional decision making.
- Increased crash risk when disregarded.
- Increased risk of fatal or serious injury crashes.
- Creates delay, particularly for higher volume movements.



## Roundabouts are used for

- Moderate to high traffic volumes.
- Improving traffic flow.

### Drawbacks

- May have higher construction cost and right-of-way needs.
- Potential for more property damage crashes.
- Not suitable for six-lane or principal arterial roadways.





# Traffic signals

## Traffic signals are effective because they

- Manage high volumes of traffic conflicts.
- Provide crossing opportunities.
- Can improve intersection efficiency.
- Can reduce right-angle crashes.



## New signals are added with caution because

- Crashes often increase, especially rear-end crashes.
- Crashes at signals are typically more severe.
- They typically result in higher delays throughout the day.

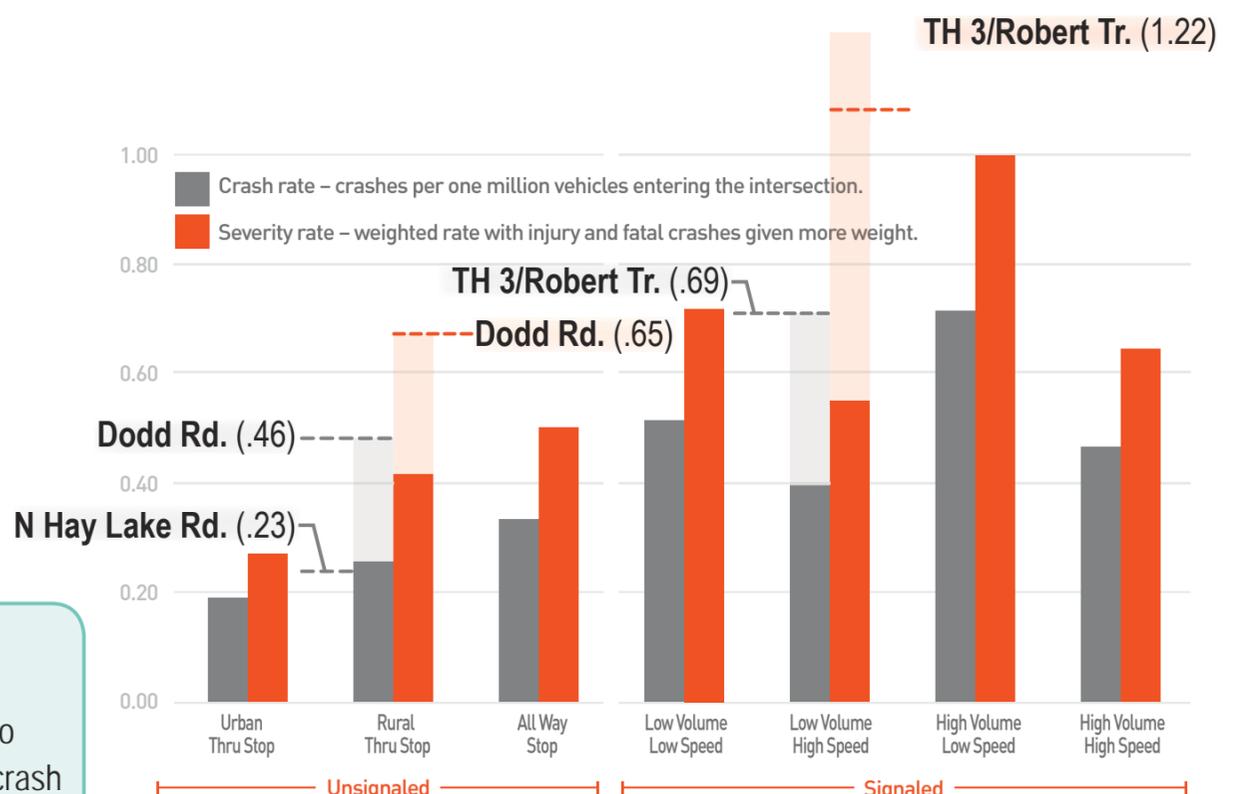


## The decision to install signals is based on

- Traffic volumes.
- Vehicle delays.
- Crash history.
- Anticipated crash rate.

## In Dakota County

- Approximately 10% of intersections are signalized.
- 47% of fatal and serious injury crashes occur at signalized intersections.



Intersections that exceed or are approaching acceptable crash rate thresholds are called out in the chart to the right. All other intersections have crash rates within expected ranges.

# Speed limits

## Speed limits are important because they

- Make roads safer by reducing variability in vehicle speeds.
- Help unfamiliar drivers know the appropriate speed.
- Help law enforcement curb dangerous behavior.

## Speed limits are established through Minnesota Statute 169.14. The statute

- Defines speeds for certain roadway types.
- Establishes a process for the State to determine speeds.

## Speed studies examine

- Actual speeds of vehicles using the roadway.
- Roadway type, condition and length.
- Location of intersections and driveways.
- Traffic volume and crash history.
- Sight distance limitations caused by curves or hills.

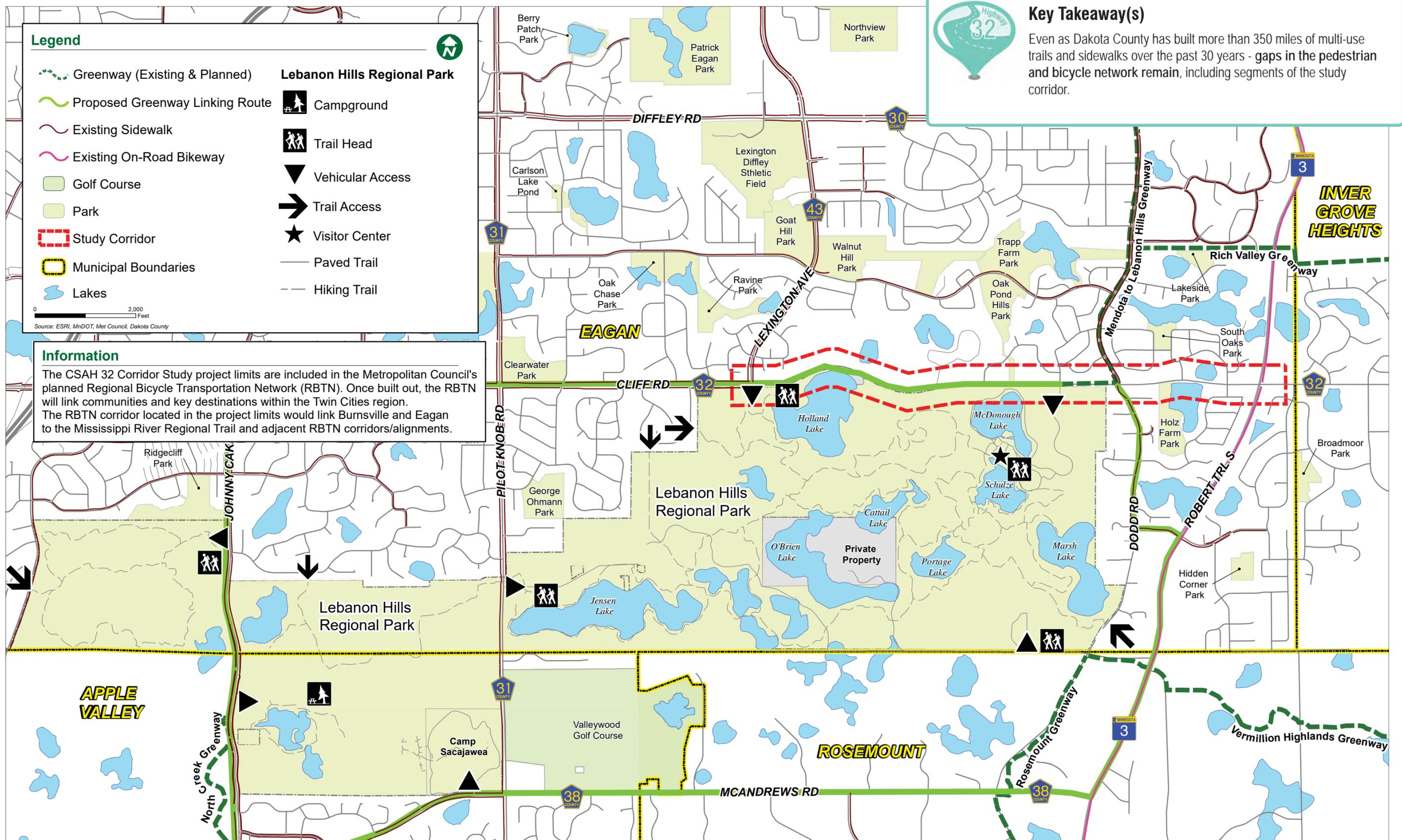
After a speed study is conducted, a speed limit is set by the State. Posted limits reflect speeds for ideal road and weather conditions.

## Speed limit facts

- Lowering the posted speed limit will not slow traffic.
- Most people drive what is comfortable and safe to them regardless of posted speeds.
- Lowering a posted speed limit does not reduce crashes.
- Improperly set speed limits decrease safety.



## CLIFF ROAD STUDY



### Legend

- Greenway (Existing & Planned)
- Proposed Greenway Linking Route
- Existing Sidewalk
- Existing On-Road Bikeway
- Golf Course
- Park
- Study Corridor
- Municipal Boundaries
- Lakes

### Lebanon Hills Regional Park

- Campground
- Trail Head
- Vehicular Access
- Trail Access
- Visitor Center
- Paved Trail
- Hiking Trail

Scale: 0 to 2,000 Feet  
Source: ESRI, MnDOT, Met Council, Dakota County

### Key Takeaway(s)

Even as Dakota County has built more than 350 miles of multi-use trails and sidewalks over the past 30 years - gaps in the pedestrian and bicycle network remain, including segments of the study corridor.

### Information

The CSAH 32 Corridor Study project limits are included in the Metropolitan Council's planned Regional Bicycle Transportation Network (RBTN). Once built out, the RBTN will link communities and key destinations within the Twin Cities region. The RBTN corridor located in the project limits would link Burnsville and Eagan to the Mississippi River Regional Trail and adjacent RBTN corridors/alignments.

This grade separated crossing is being explored with the Cliff Road Study to ensure corridor solutions will support future parks greenway plans.

### Why consider a grade-separated crossing?

The Cliff and Dodd Road intersection was identified as a recommended location for a grade-separated crossing as part of the Mendota-Lebanon Hills Greenway Master Plan (2013).

Grade-separated crossings:

- promote regional connectivity for non-motorized activities
- reduce barriers of crossing roads with high traffic volumes
- provide highly visible landmarks/gateways

View the map to the right to see the proposed greenway alignment with existing and recommended grade-separated crossing locations.

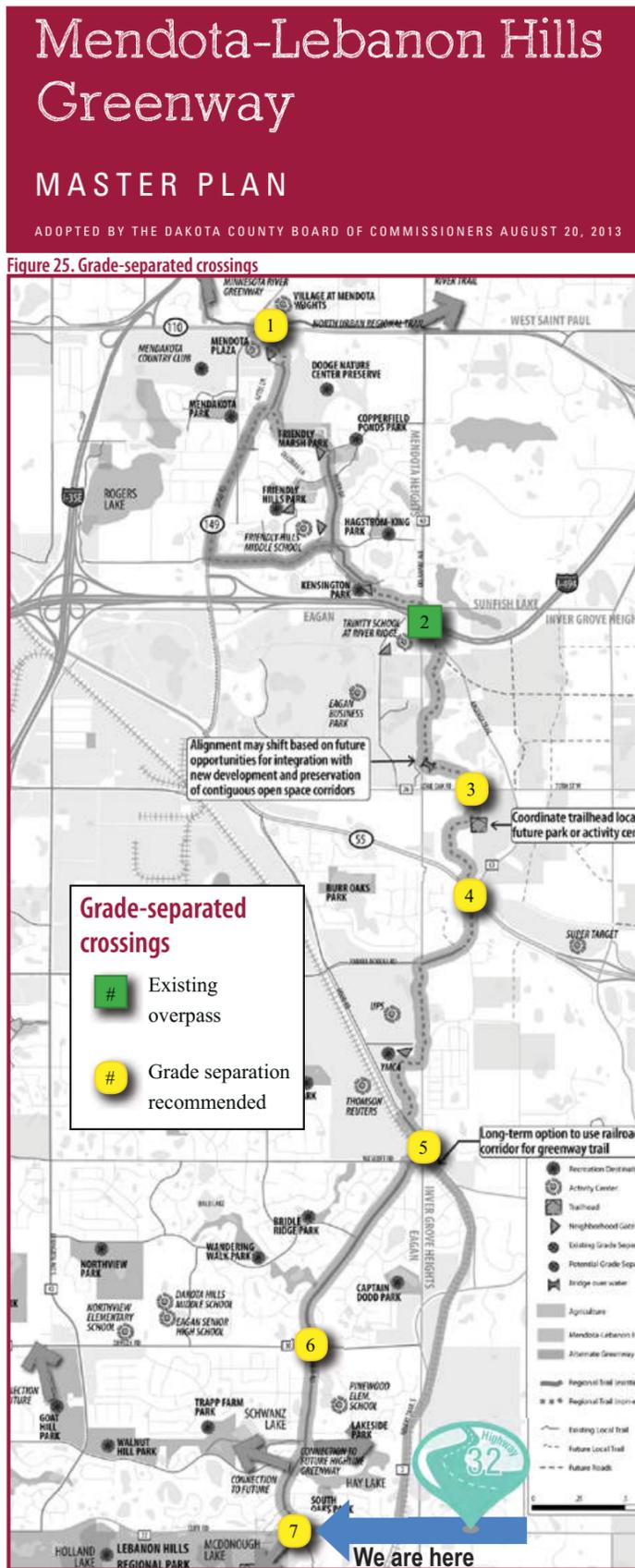
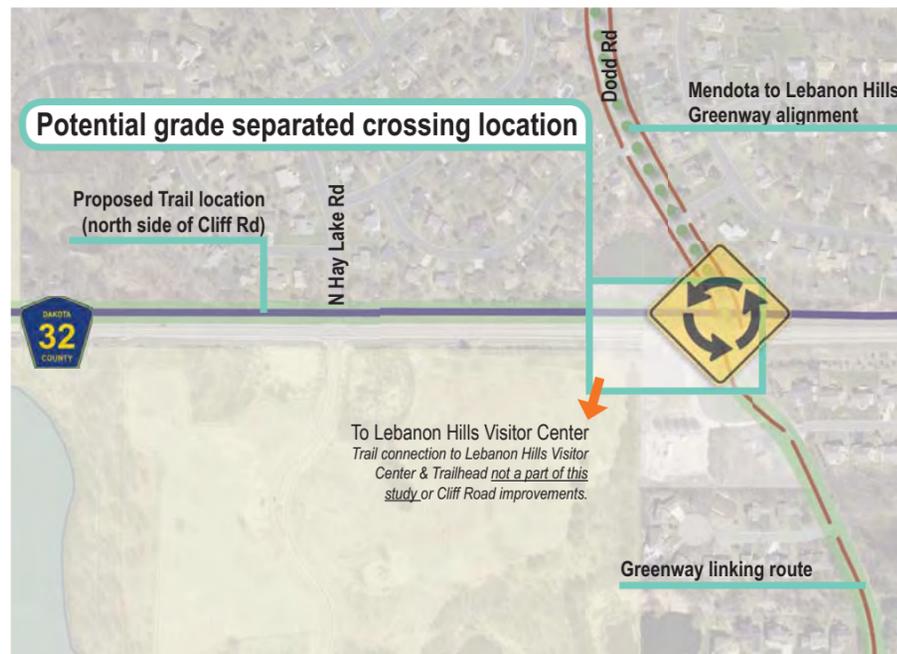


Figure 25. Grade-separated crossings



### Overpass



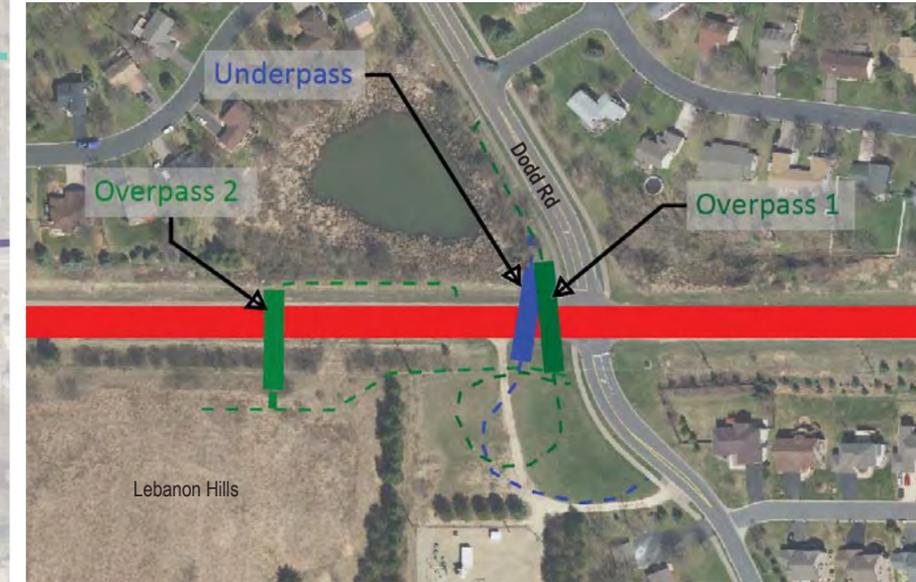
Overpass at Zoo Blvd and McAndrews Rd

### Underpass



River to River Greenway Underpass

### Crossing Alternatives

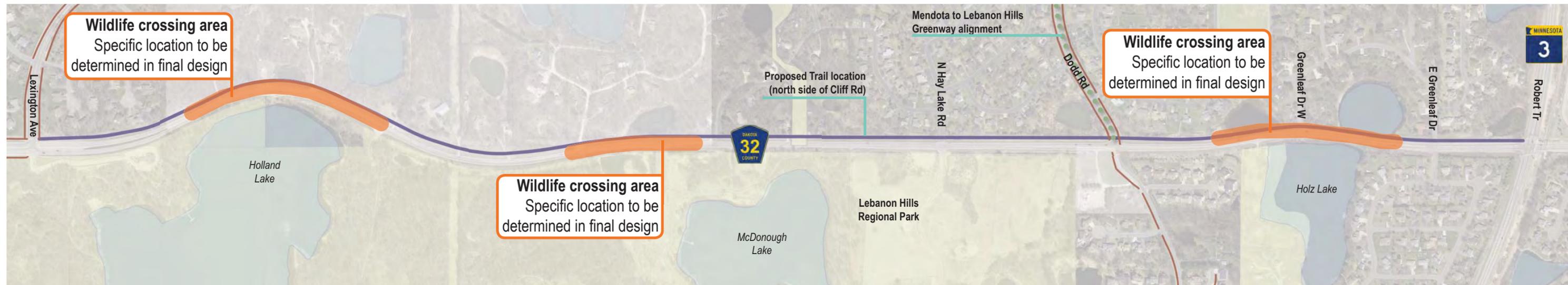


### Common Considerations

- Grade separated crossings promote safety by reducing conflicts with motorized traffic
- Creates trail continuity - more efficient and enjoyable experience
- Crossings should be high quality to ensure safety, security, and creation of a unique local and regional resource
- Complete cost estimates (including grading, right-of-way needs, retaining walls, design and construction costs, etc.)

### Additional considerations with Cliff Road crossing

- Proximity of crossing to Dodd Road intersection
- Coordination with recommended intersection traffic control
- Impacts to public waters



### Wet Underpass



### Dry Underpass



### Wildlife Mortality Studies

Dakota County and the Minnesota Zoo have conducted wildlife mortality studies in the study area. The three areas identified on the map have a high concentration of mortalities with the crossing area at Holland Lake having an especially high concentration of turtle mortalities.

The seasonal inventory to the right started in early July 2018 and includes 47 turtle deaths (this did not include any Blanding's Turtles). The majority of turtle movement occurs in May and June, therefore the 2019 counts are expected to be higher with this period included.



### Purpose

Identifying locations for "critter crossings" along the corridor will serve several purposes, including providing safe crossing for threatened species and therefore reducing total mortalities. Other small animals may also benefit from these crossings (frogs, ducks, muskrats, etc.) which will keep them off the roadway.

### Common Considerations

- Mortality rates, species, and locations
- Elevations on either side of roadway
- Guidance systems to channel movements to defined crossing point
- Length of proposed tunnel and lighting conditions

### Blanding's Turtle



Photo Credit: Minnesota DNR

The Blanding's Turtle is considered to be a threatened species in Minnesota (MnDNR). These turtles have been spotted in the area of this study.