

# DOWNTOWN RENO CONCEPTUAL BICYCLE NETWORK REPORT

PREPARED FOR THE REGIONAL TRANSPORTATION  
COMMISSION OF WASHOE COUNTY

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# introduction



Source: Alta

This report conceptualizes a “core network” of low-stress bicycle facilities which is complementary to and offset from high-vehicle capacity downtown roadways in order to utilize excess capacity on adjacent roadways which may have lower volumes and speeds. This conceptual network (shown in the map on next page) prioritizes the movement, safety, and connectivity of micromodes while addressing known safety issues. The corridors included in this report were originally identified as part of the Downtown Circulation Study developed in support of the Regional Transportation Plan 2050 from the RTC.

This report highlights the existing conditions of each corridor including a summary of existing and projected traffic volumes, existing intersection controls, and an overview of the past five years of crash data. Corridor concepts include a description of the overall concept, existing and conceptual cross-sections by section, a plan view map with proposed enhancements and identified design considerations, and a planning level cost estimate. It is important to note that planning level estimates are noted in 2023 dollars using the most recent local bid tabulations available. Each project concept includes numerous safety enhancements, many of which have been identified by the FHWA as “Proven Safety Countermeasures” and have proven safety benefits. An example of the proven safety benefits of some enhancements included in the concepts:

- the addition of bicycle lanes to urban 2-lane roads can reduce crashes by up to 30%<sup>1</sup>; separated bicycle lanes have been proven to reduce collisions over traditional bicycle lanes by approximately 44-64%<sup>2</sup>
- high visibility crosswalks can reduce pedestrian crashes by 40%<sup>3</sup>, and
- roadway reconfiguration from four lanes to three lanes can reduce total crashes by 47%<sup>4</sup>

## A NETWORK APPROACH

Transportation planning research from across the country and abroad has shown that bicycling and the use of other “micromodes” can flourish when provided with networks of facilities which feel comfortable and safe to the most vulnerable roadway users such as kids and seniors. As with many things involving children and seniors, more care and attention is required than may be typical in order to ensure the highest level of safety when designing micro-mobility facilities for these users. This translates onto the roadway as creating more separation between micromodes and vehicles as they travel along the road and pass through intersections by using physical barriers, lane markings, and targeted traffic calming elements. While these treatments and design concepts are generally different from what is typical across the Truckee Meadows region for bicycle facilities they are intended to achieve a high enough level of safety for seniors and children to feel comfortable bicycling and for their loved ones to feel confident they will have a safe route to do so.



Source: Alta

<sup>1</sup> Avelar et al. Development of Crash Modification Factors for Bicycle Lane Additions While Reducing Lane and Shoulder Widths. FHWA, (2021).

<sup>2</sup> Federal Highway Administration, Developing Crash Modification Factors for Separated Bicycle Lanes (Washington, DC: 2023)

<sup>3</sup> Elvik, R. and Vaa, T. Handbook of Road Safety Measures. Oxford, United Kingdom, Elsevier, (2004).

<sup>4</sup> Evaluation of Lane Reduction “Road Diet” Measures on Crashes, FHWA-HRT-10-053, (2010).

# introduction

## PUBLIC FEEDBACK SUMMARY

The corridor concepts included in this report along with corresponding existing conditions information were provided to the public for review and comment from June 8th through 30th, 2023. In total, 292 individuals engaged with the outreach tool; including 185 complete ratings of corridors and implementation strategies. There were 107 respondents who only provided insights on the potential implementation approaches.

This virtual public outreach tool provided an overview of the project goals and information on low-stress connections and the types of facilities that are typically included in them.

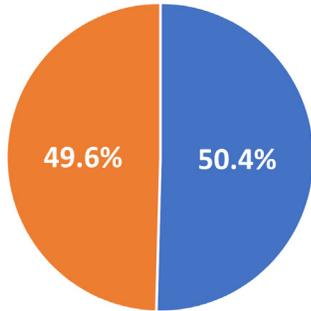
After reviewing the project goals and background information on low-stress connections, respondents were provided with details on the corridor existing conditions and the proposed concept including a summary of benefits and considerations with the proposed design. Cross-sections for each proposed section were also provided with a corresponding map of their location on the corridor.

Respondents were asked five rating questions to gauge their views of how the design would impact their frequency of using micromodes as well as their general support for the project.

Respondents were also asked their preference for implementation approaches between large-scale or small-scale improvements, however, results were split nearly evenly between the two options as shown to the right.

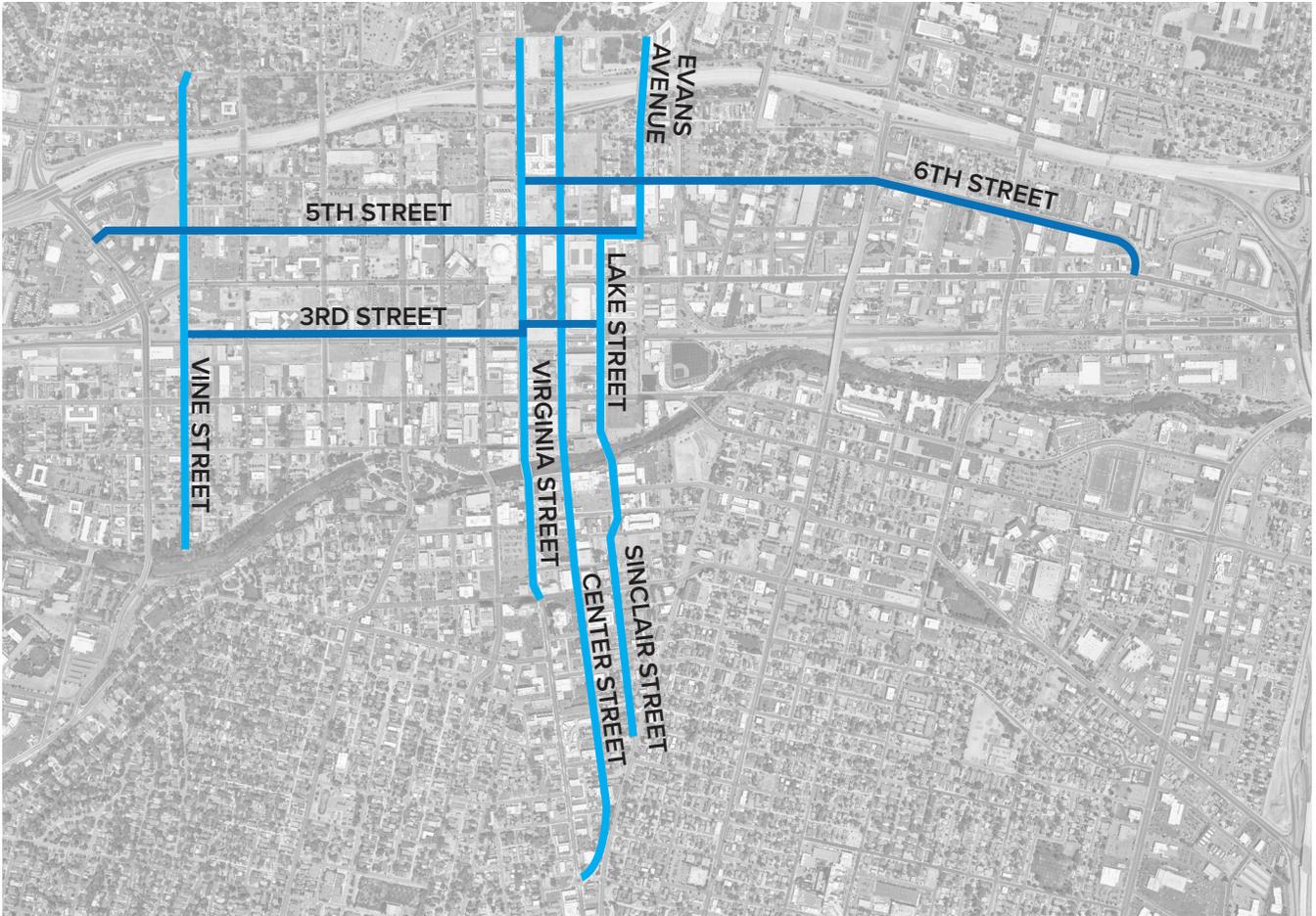
Responses to the rating questions for each corridor are included at the end of each corridor section along with a summary of the open-ended comments submitted for each.

Implementation Approach



- Make small-scale improvements to a larger number of streets (striping, low-cost buffer treatments, minor curb adjustments, etc.)
- Make large-scale improvements to a smaller number of streets (major curb adjustments, intersection modifications, pavement rehabilitations, etc.)





CORRIDORS INCLUDED IN STUDY

# 6TH STREET

# 6th street: existing conditions

## 6TH STREET

The 6th Street Corridor, extending from 4th Street to Virginia Street is a wide thoroughfare with posted speeds of 35 MPH. From 4th Street to Wells Avenue, the roadway has four lanes, a center turn lane, and parking on the north side. Adjacent uses are predominantly strip development. Wells Avenue becomes a major intersection with several slip lanes creating wide crossings. Between Wells Avenue and Virginia Street the roadway transitions to four lanes with parallel parking and no center turn lane. Land uses for this stretch are mostly residential to the north and industrial to the south.

TABLE 1: 6TH STREET EXISTING CONDITIONS

CORRIDOR EXTENT	Virginia Street to 4th Street
CORRIDOR LENGTH	1.17 MILES
2018 NDOT TRAFFIC VOLUMES	7,400
2050 FORECASTED VOLUMES	7,000
SIGNALIZED INTERSECTIONS	4th Street Sutro Street Wells Avenue Valley Road University Avenue Virginia Street
STOP CONTROLLED INTERSECTIONS	Montello Street (MINOR STREET STOP) Toano Street (MINOR STREET STOP) Quincy Street (MINOR STREET STOP) Spokane Street (MINOR STREET STOP) Morrill Avenue (MINOR STREET STOP) Eureka Avenue (MINOR STREET STOP) Elko Avenue (MINOR STREET STOP) Record Street (MINOR STREET STOP) Evans Avenue (AWS) Lake Street (MINOR STREET STOP)
PRIMARY TRUCK ROUTE	NO
EMERGENCY VEHICLE ROUTE	YES
TRANSIT ROUTE	YES

# 6th street: existing conditions

## 6TH STREET CRASH DATA

Between 2016 and 2020, a total of 147 crashes were recorded on 6th Street between Vine Street and 4th Street from 2016 to 2020 across all modes. Five of those crashes resulted in a fatality and all five were pedestrians. Two fatal crashes happened at Lake Street, two at Valley Road, and one at Evans Avenue. Looking at all crashes, two intersections had 20 or more crashes, Evans Avenue (30 with 18 injuries) and University Way (20 with 10 injuries). Four additional intersections had more than ten crashes:

- N Wells Avenue (17)
- N Virginia Street (16)
- Lake Street (15)
- Valley Road (13)

Seventy-two percent of crashes (106) occurred during daylight hours. Twenty-nine crashes occurred in dark conditions. Twenty-four of those occurred in spot lighting conditions, four in areas with continuous lighting, and one in an area with no light. The Lake Avenue intersection had eight dark crashes, four more than any other location. Four of the corridor’s five fatalities happened in dark conditions, two each at Lake Street and Valley Road.

Based on available data from 124 crashes, the top two most common vehicle factors were failing to yield right-of-way (47) and disregarding traffic signs, signals, and road markings (28).

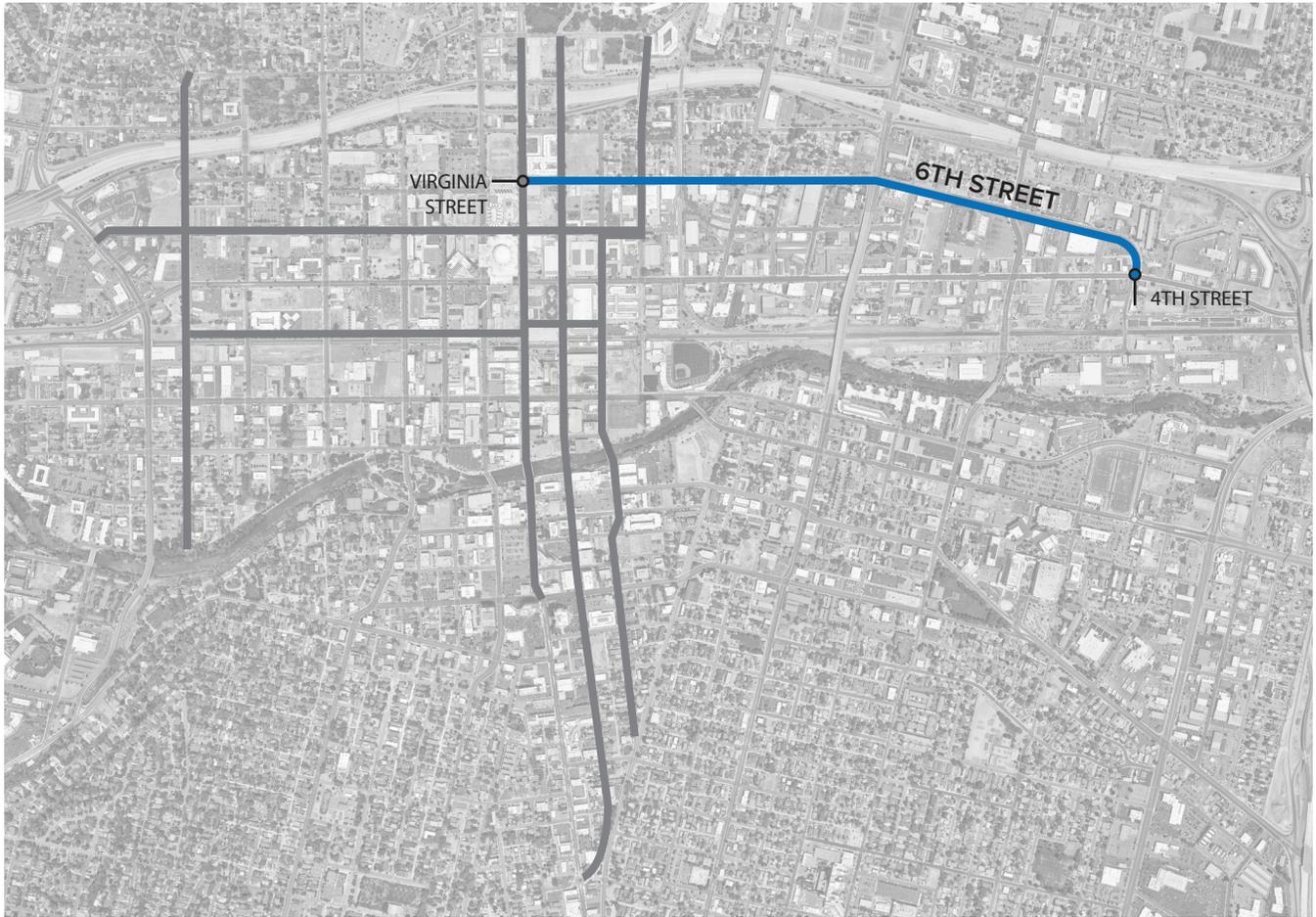
Eight crashes involved people walking, five of which resulted in pedestrian fatalities, and one resulted in a pedestrian injury. Three of the eight pedestrian crashes occurred at Lake Street and three at Valley Road. In six of the eight crashes, the vehicle was going straight. Along the corridor, six crashes involved people biking, and all six crashes resulted in an injury. The following three intersections had two bicycle-involved crashes: Evans Avenue, N Wells Avenue, and Spokane Street. Three crashes involved drivers turning right, and one involved a left turn.

Crashes on 6th Street most frequently occurred at Evans Avenue and University Way, but pedestrian crashes were more common on Lake Street and Valley Road. All five fatalities were pedestrians, and poor lighting likely contributed to four of the five pedestrian fatalities.

**TABLE 2: 6TH STREET CRASHES BY CROSS-STREET (2016-2020)**

STREET	FATAL ACCIDENT	INJURY ACCIDENT	PROPERTY DAMAGE ONLY	TOTAL
EVANS AVE	1	18	11	30
LAKE ST	2	3	10	15
UNIVERSITY WAY	0	10	10	20
N VIRGINIA ST	0	3	13	16
N WELLS AVE	0	7	10	17
VALLEY RD	2	3	8	13
ALL OTHER INTERSECTIONS	0	20	16	36
GRAND TOTAL	5	64	78	147

# 6th street: project concept



## PROJECT DESCRIPTION

This project concept will utilize the opportunity of a full-scale reconstruction of 6th Street to provide a parking protected bike lane from 4th Street to Virginia Street. This project will utilize existing excess capacity and transition from 4 lanes to two lanes with a center turn lane. This project will enhance safety throughout the corridor for pedestrians and bicyclists by reducing pedestrian crossing distances by 18 feet at each intersection along the corridor. Additionally, a raised median with or without landscaping may provide additional safety benefits along the corridor. If desired, this or other traffic calming design elements may be added as the project design is refined. The project will also enhance transit by creating floating bus stops which allow buses to stop in the travel lane for more efficient boarding and re-entering the flow of traffic. This project will reconstruct the intersection with Wells Avenue to remove the existing high-speed slip lanes and provide protection for bicyclists and pedestrians as they wait to cross. This project includes potential consideration of mini-roundabouts at Sutro Street, Evans Avenue, and Valley Road; these costs are not reflected in the planning level cost estimate.

6TH STREET	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
4th St. to Virginia St.	Curb-Protected Bike Lane
Sutro St, Valley Rd, and Evans Ave.	Optional Roundabouts
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
1 Protected Intersection	Conflict Markings
2 Sets of Protected Corners	Floating Bus Stops
	Two-Stage Turn Boxes
<b>PLANNING LEVEL COST ESTIMATE (NO ROUNDABOUTS)</b>	
<b>\$ 4,947,550</b>	
<b>PLANNING LEVEL COST ESTIMATE (WITH ROUNDABOUTS)</b>	
<b>\$ 10,987,550</b>	

# 6th street: project concept

## COUNTERMEASURES

SPEED MANAGEMENT	*Appropriate Speed Limits for All Roadway Users
PEDESTRIAN/ BICYCLIST	<ul style="list-style-type: none"> <li>*Separated Bike Lanes</li> <li>*Crosswalk visibility enhancements</li> <li>Bike boxes</li> <li>*Medians and pedestrian refuge islands (optional, see previous page)</li> <li>*Road diet</li> <li>Curb extensions</li> <li>Floating bus stops</li> </ul>
INTERSECTIONS	*Protected intersection

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Safer and more comfortable ride for cyclists
- Better intersection alignment
- Improved visibility and accessibility for pedestrians
- Reduced cross distances for pedestrians
- Bus stop improvements

## IMPACTS

### VEHICLE CAPACITY

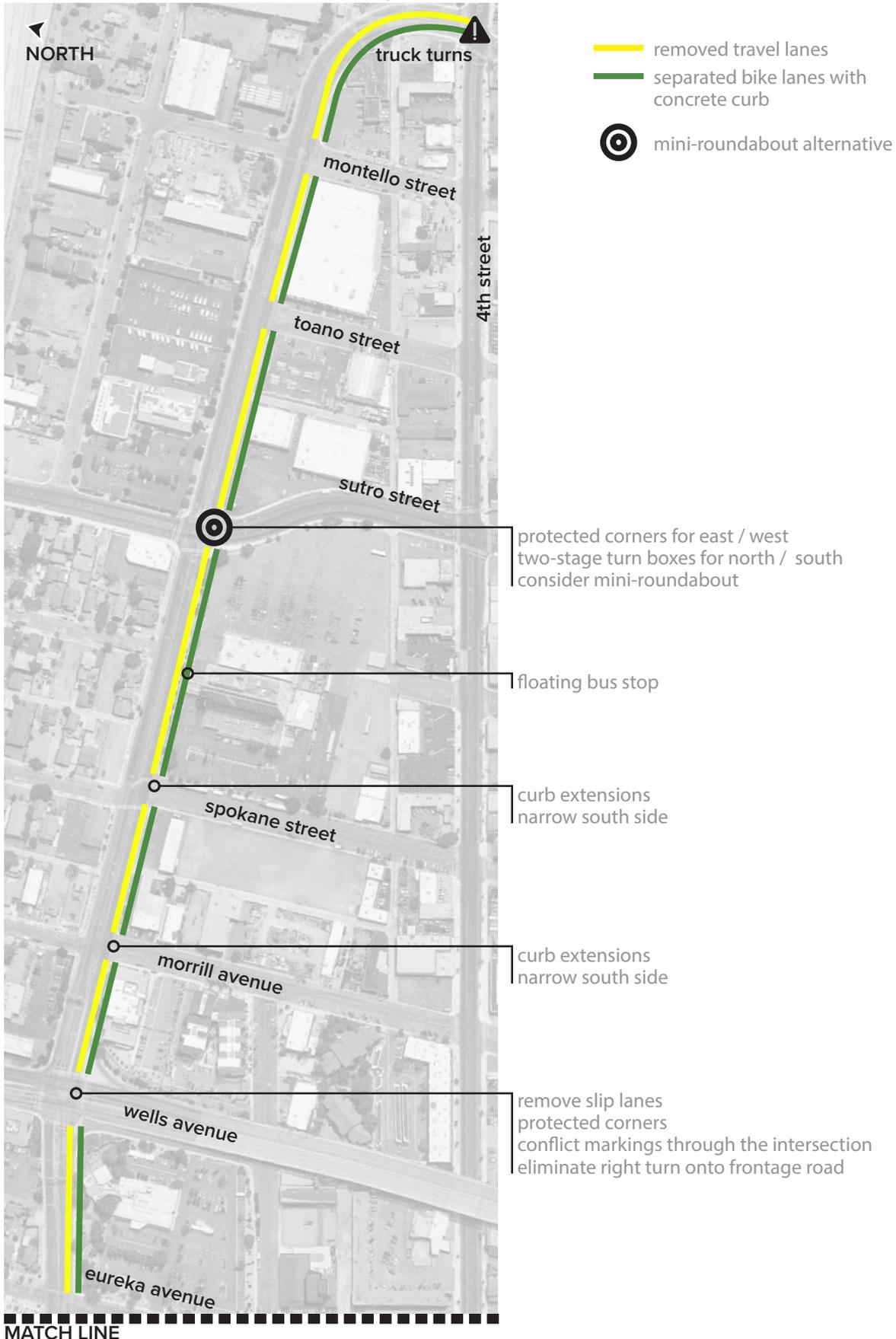
- Loss of travel lanes between Virginia and 4th (one in each direction)
- Lane narrowing where possible along corridor

### PARKING

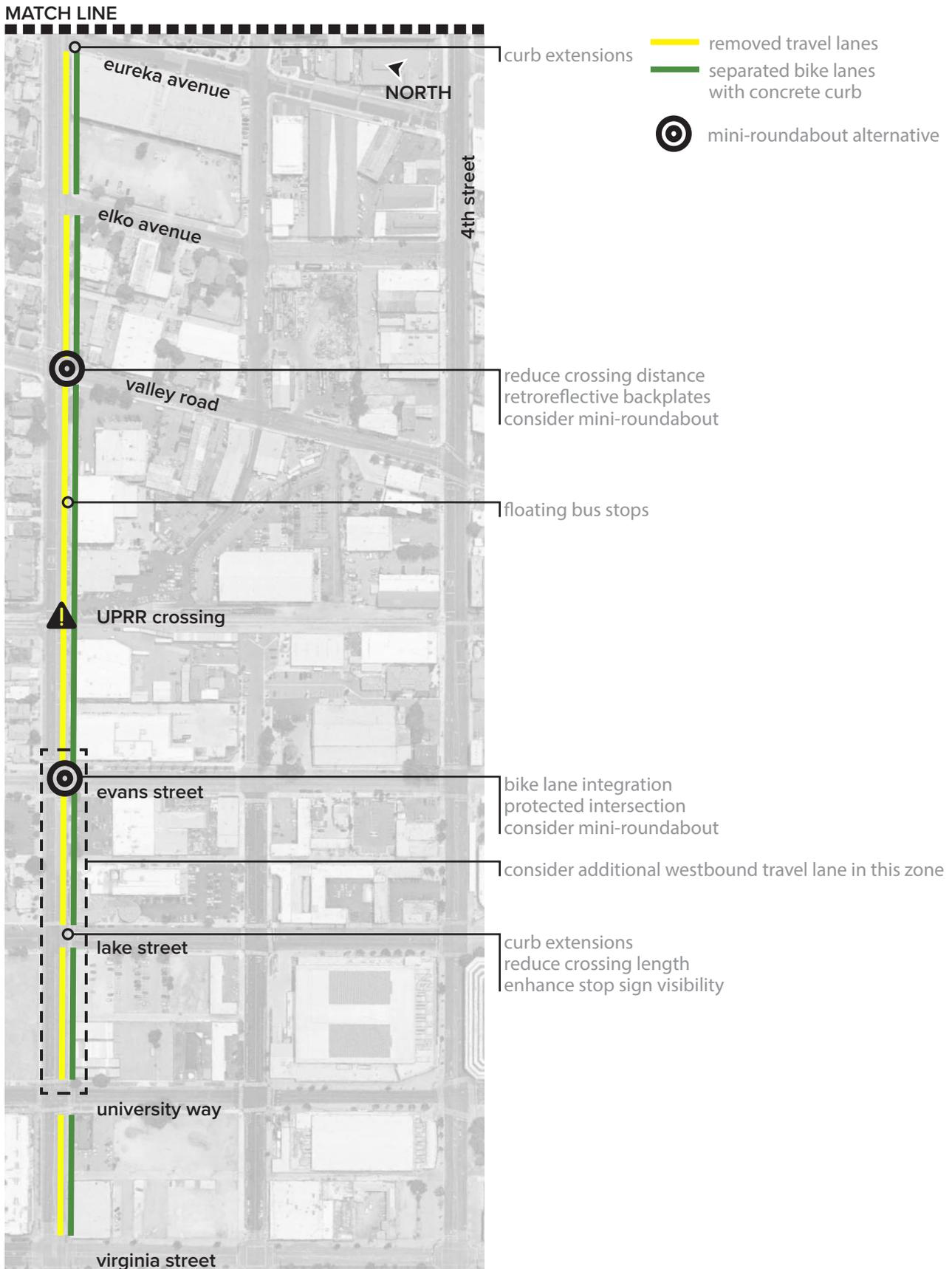
- Potential increase with new parking on south side between Wells and 4th
  - (48 stalls) between 4th and Sutro
  - (52 stalls) between Sutro and Wells
- Possible loss where curb extensions occur (18 stalls)

\*\* parking stall impacts are based on planning level estimates and are subject to change during design

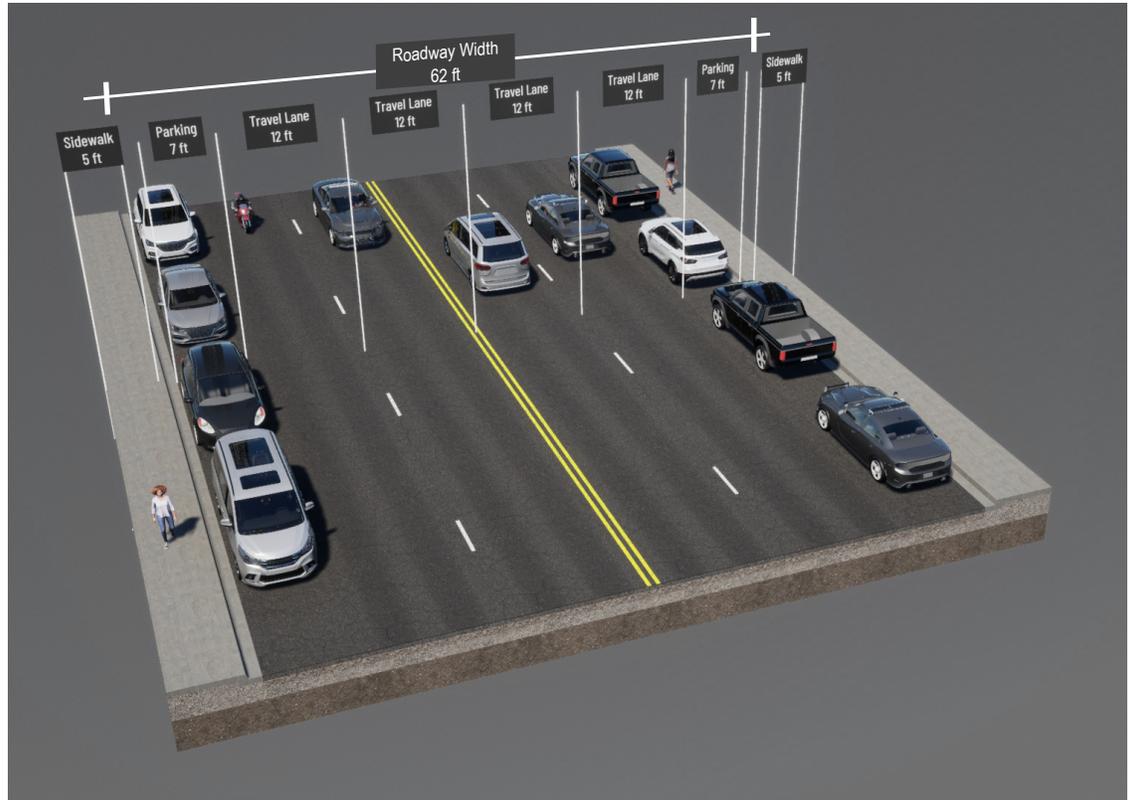
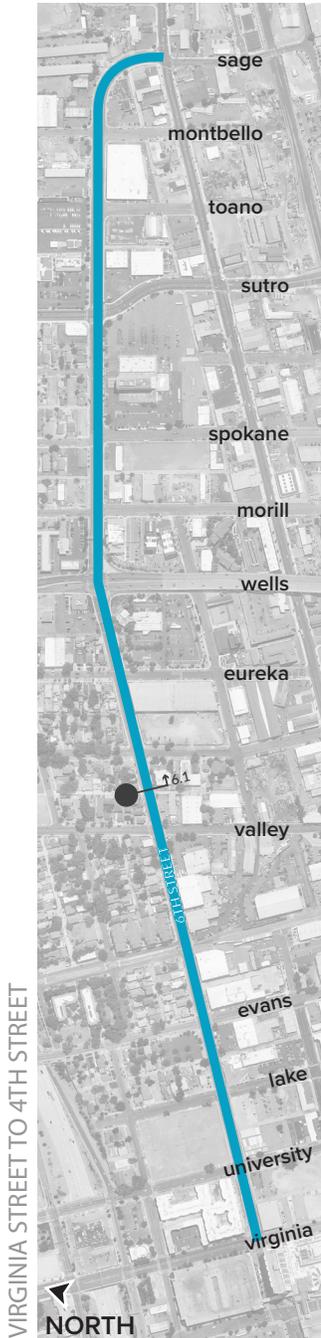
# 6th street: project concept



# 6th street: project concept

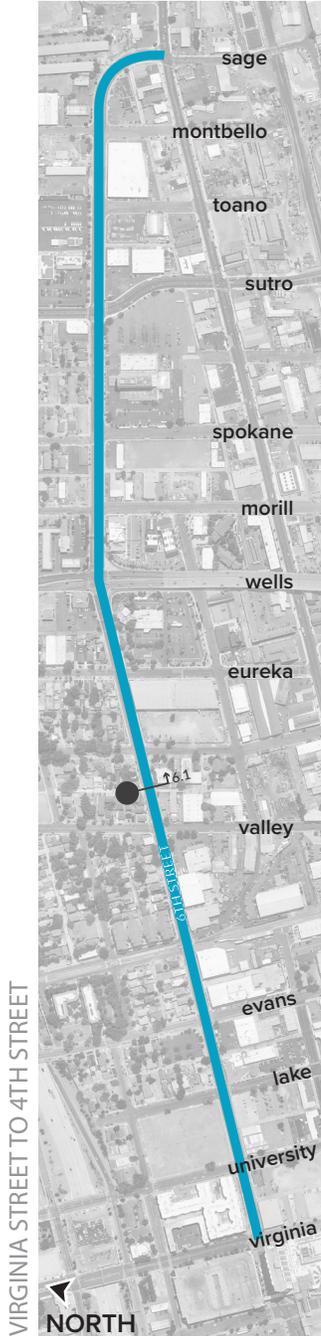


# 6th street: project concept



EXISTING CONDITION

# 6th street: project concept



## PROPOSED CONDITION

Cross-section highlights mid-block area. Turn pockets may be incorporated at major intersections.

Note: Bike lanes are shown as green for diagrammatic purposes only

# 6th street: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

**Number of comments:** 102

Based on the public input, the major themes and key takeaways are as follows:

- Safety and Importance of Bike Lanes
- Connectivity and Wide Streets
- Preferred Routes and Access to Destinations
- Other Relevant Comments.

### SAFETY AND IMPORTANCE OF BIKE LANES

Many comments emphasize the need for protected bike lanes and overall safety for cyclists. Respondents express support for the corridor project, particularly when it comes to creating dedicated bike lanes separated from vehicle traffic. They highlight that protected lanes are essential to ensure the safety of cyclists, including children and seniors, and encourage more people to use bikes and scooters for commuting and recreation.

### CONNECTIVITY AND WIDE STREETS

Another recurring theme is the importance of creating connected routes and utilizing wide streets for bike infrastructure. Respondents mention the need for better routes and access to key destinations, as well as improved connectivity with other areas of town for cross-town riding. Some suggest that the project should extend further to enhance connectivity between neighborhoods and business areas.

### PREFERRED ROUTES AND ACCESS TO DESTINATIONS

The comments generally express support for the idea of improving bike routes and access to destinations, especially in the downtown and midtown areas. Some respondents mention that the proposed route on East 4th Street is not their preferred area to travel, but they appreciate its potential to connect East 4th Street with downtown and the university, making biking between Sparks and Reno smoother. Additionally, there is a suggestion to extend the project at least one block further to Sierra Street for better connectivity. Some concerns are raised about the impact on other routes,

## 6TH STREET: CORRIDOR RATINGS

On a scale from 1 - 10:	6th St
How useful would this route be for you?	5.8
Would this route enable you to bicycle or use micromodes more frequently?	5.7
Would you feel comfortable using this facility?	6.1
Would you feel comfortable using this facility with a child?	5.5
How supportive of this project concept are you?	6.4

like Wells Street, and the preference for putting bike traffic on streets with lower vehicle traffic. Overall, the respondents seem to value the concept of enhancing bike infrastructure and creating better east-west connections.

### OTHER RELEVANT COMMENTS

Several comments cover various aspects, including concerns about existing road conditions and maintenance, integration with other transportation modes, and the impact of bike facilities on vehicle traffic.

The public feedback on the 6th street corridor project shows diverse perspectives. Strong support for safer bike lanes and improved connectivity was evident, but there were also concerns about road infrastructure, traffic, and resource allocation.

# 5TH STREET

# 5th street: existing conditions

## 5TH STREET

5th Street is a two-lane shared roadway extending from Evans Avenue to Keystone Avenue. The roadway was redone in 2022 as part of the City of Reno Micromobility Pilot Project to allow for buffered and parking protected bike lanes. Due to these improvements, 5th Street is a fairly comfortable roadway for multi-modal users. Posted speed limit is 25 MPH. The street is characterized by predominantly strip development and some residential land uses. Between Arlington to Virginia, the street becomes much more urban with several loading areas and back of house functions for the nearby casinos.

**TABLE 3: 5TH STREET EXISTING CONDITIONS**

CORRIDOR EXTENT	Keystone Avenue to Evans Avenue
CORRIDOR LENGTH	.98 MILES
2018 NDOT TRAFFIC VOLUMES	6,200
2050 FORECASTED VOLUMES	7,000
SIGNALIZED INTERSECTIONS	University Way Virginia Street Sierra Street West Street Arlington Avenue Keystone Avenue
STOP CONTROLLED INTERSECTIONS	Evans Avenue (TWS) Lake Street (AWS) Nevada Street (MINOR STREET STOP) Ralston Street (AWS) Bell Street (MINOR STREET STOP) Washington Street (AWS) Vine Street (AWS)
PRIMARY TRUCK ROUTE	NO
EMERGENCY VEHICLE ROUTE	NO
TRANSIT ROUTE	YES

\*AWS = All-Way Stop, TWS = Two-Way Stop, OWS = One-Way Stop

# 5th street: existing conditions

## 5TH STREET CRASH DATA

Between 2016 and 2020, there were 80 crashes on 5th Street between Keystone Avenue and Evans Avenue, inclusive of all travel modes. Of the 80 crashes, 72 (90%) resulted in an injury. There were no fatalities. Three intersections had nine or more crashes:

- Ralston Street (11)
- Washington Street (10)
- Vine Street (9)

University Way, N Arlington Avenue, and West Street each had three crashes. Most crashes on 5th Street occurred at the intersection (62 crashes, 78%). Lighting data is available for 66 of the crashes which highlights that over two-thirds of the crashes (45 crashes, 68%) occurred during daylight hours. Twenty crashes occurred at or after dusk with seventeen of those crashes occurring in dark conditions; 13 occurred in an area with spot (non-continuous) lighting.

Four crashes involved people bicycling; two of these crashes occurred at Lake Street, one at N Sierra Street, and one at Vine Street. All four of these crashes resulted in an injury. One of these crashes was a hit-and-run crash. All four crashes occurred between 4:00 - 7:00 PM. Four crashes involved people walking. Three of the drivers failed to yield to a crossing pedestrian when turning left. Two crashes occurred at Keystone Avenue, one at Ralston Street, and one on West Street. All four crashes resulted in an injury. Three people walking were hit by trucks (two pickup trucks and one dump truck). Crashes on 5th Street were typically caused by drivers failing to yield or ignoring traffic signs, signals, or lane markings. Ralston Street, Washington Street, and Vine Street are the intersections with the largest crash history.

TABLE 4: 5TH STREET CRASHES BY CROSS-STREET (2016-2020)

STREET	INJURY ACCIDENT	PROPERTY DAMAGE ONLY	TOTAL
RALSTON ST	4	7	11
VINE ST	4	5	9
WASHINGTON ST	7	3	10
ALL OTHER INTERSECTIONS	27	9	36
GRAND TOTAL	48	32	80



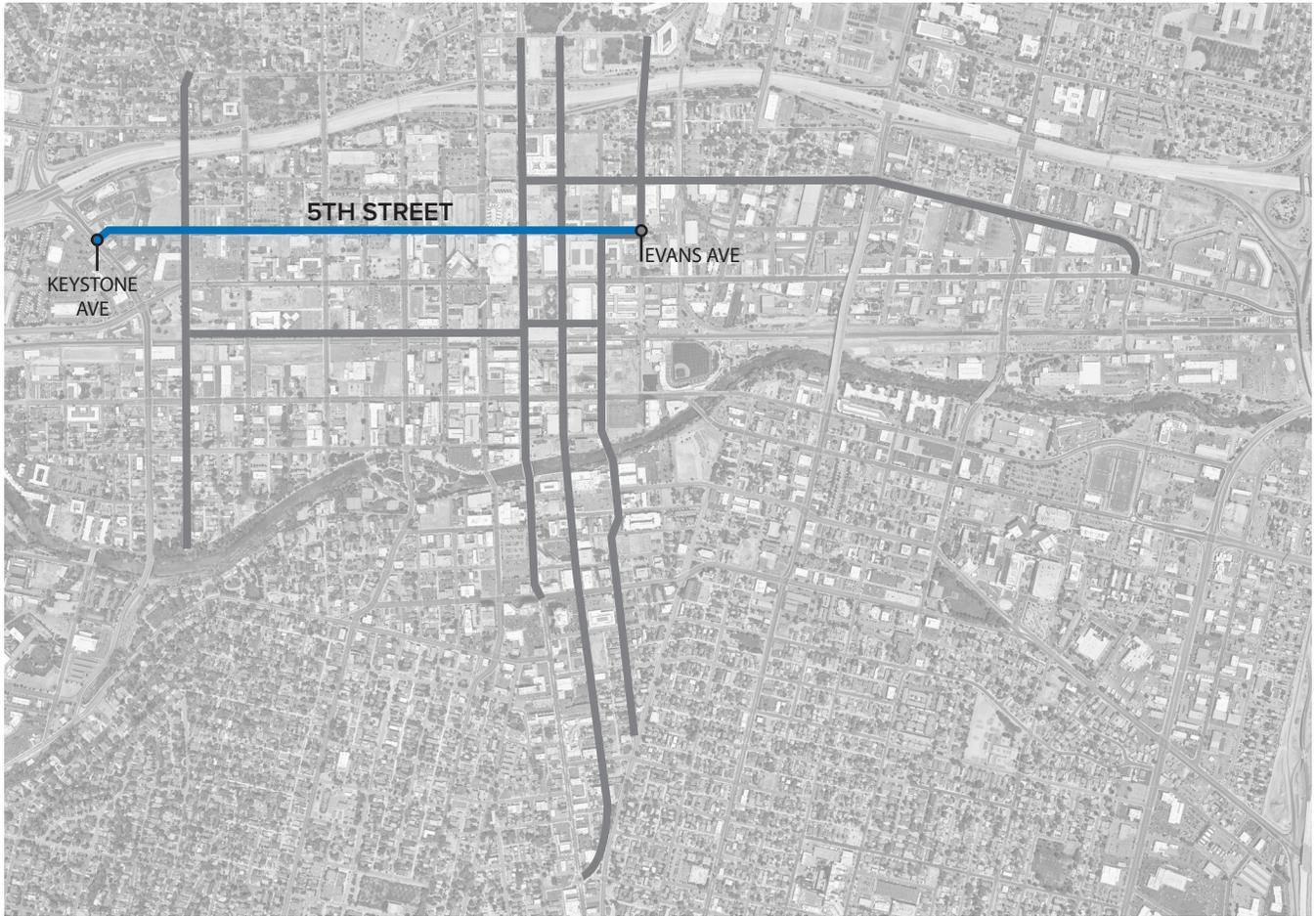
A high-quality bicycle facility on 5th Street will require attention to snow removal protocol and adjustments to parking spaces which are too close to driveways for sufficient sight distances.

Parking adjacent to a separated bike lane pushes vehicles further into the roadway, creating sight distance issues for drivers entering and exiting a driveway. To provide adequate sight distance, parking should be prohibited at least 20 ft from the edge of a driveway, on both sides.

Higher vehicle speeds and/or volumes may dictate longer parking restrictions. Delineator posts, parking stops, or concrete curb extensions may be included in this space to ensure that this area remains clear if paint alone does not enforce parking restrictions. (FHWA SBL guide).

Bicycle parking and shared-vehicle docking stations may be located within driveway clear zones to re-utilize space and increase parking options for multi-modes.

# 5th street: project concept



## PROJECT DESCRIPTION

This project will enhance the existing parking protected bicycle lane with a variety of improvements including hardening existing buffers and intersection islands, expanding the use of the protected intersection design, and wrapping the protected bike lane around loading zones between Virginia Street and West Street. This project envisions providing concrete buffers with bollards to provide a high level of protection for bicyclists. It is important to note that the section from Sierra Street to Lake Street may require a different treatment (i.e. painted buffers with removable bollards) to accommodate special events. In order to enhance sight distances and proactively improve safety, up to 41 parking spaces near driveways may need to be eliminated. Providing additional sight distance in these areas will enhance safety for people walking, biking, and driving as well as provide a space for new bicycle or scootershare parking areas.

5TH STREET	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
Evans Ave. to Keystone Ave.	Curb-protected bike lane (harden existing section)
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
5 Protected Intersections	Curb Extensions
Crossbike Markings	Pedestrian Islands
PLANNING LEVEL COST ESTIMATE	
<b>\$ 4,010,250</b>	

# 5th street: project concept

## COUNTERMEASURES

<b>SPEED MANAGEMENT</b>	
<b>PEDESTRIAN/ BICYCLIST</b>	<ul style="list-style-type: none"> <li>*Separated Bike Lanes</li> <li>*Crosswalk visibility enhancements</li> <li>*Medians and pedestrian refuge islands</li> <li>Curb extensions</li> <li>Hardening existing protected bicycle facility</li> </ul>
<b>CROSSCUTTING</b>	<ul style="list-style-type: none"> <li>Protected Intersection enhancements</li> <li>New protected intersections</li> <li>*Lighting (relocation of existing)</li> </ul>

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Improved safety and comfort for cyclists
- Improved visibility and accessibility for pedestrians
- Potential for additional bike and scooter parking in driveway clear zones

## IMPACTS

### VEHICLE CAPACITY

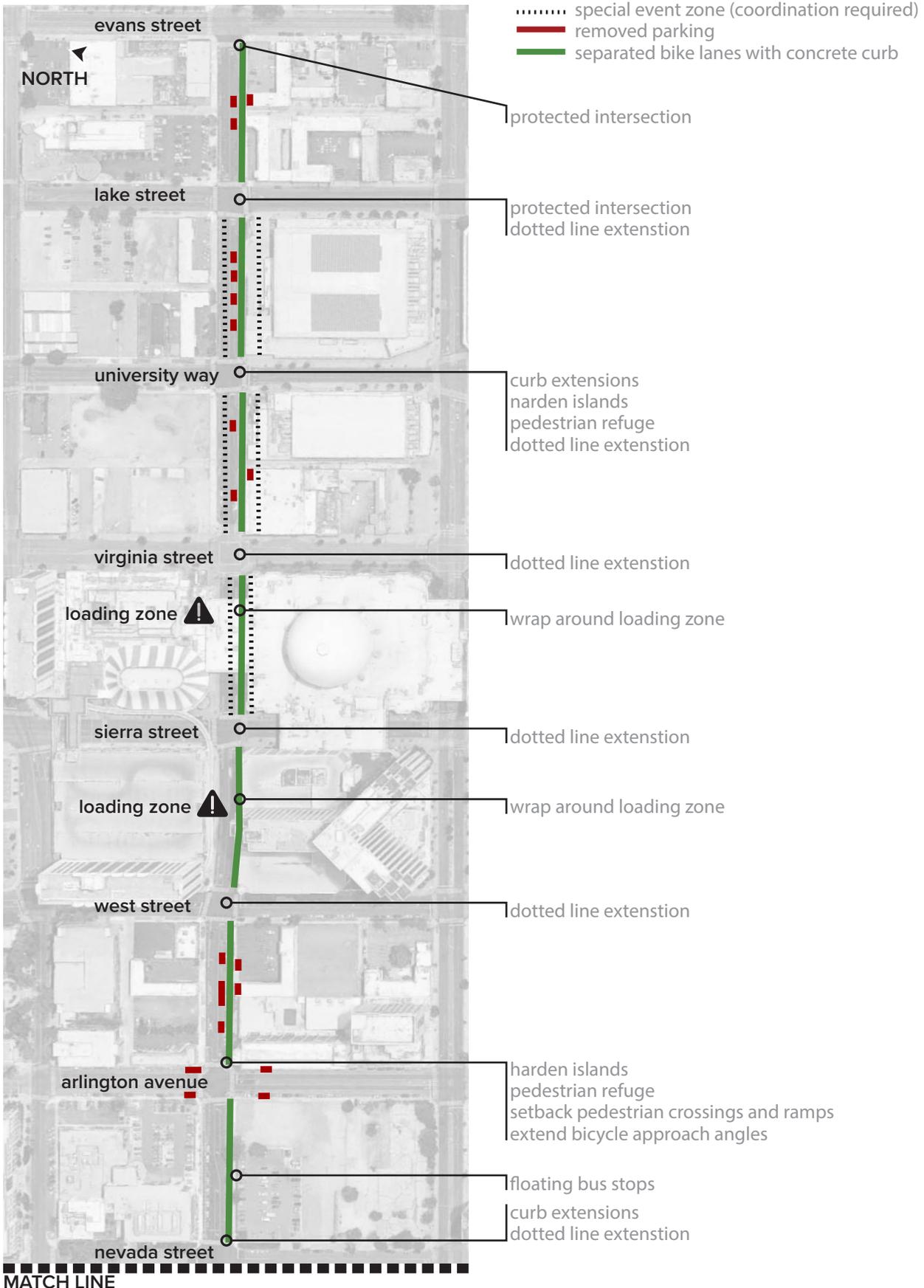
- None

### PARKING

- Probable loss near driveways where hardening of separated bike lanes occurs (bus stop locations could potentially be relocated to overlap and minimize parking loss)
  - (10 stalls)** between Virginia and Evans
  - (11 stalls)** between Ralston and West
  - (15 stalls)** between Keystone and Ralston
- Possible loss of parking near Arlington where approach angles are extended **(estimated 5 stalls)**

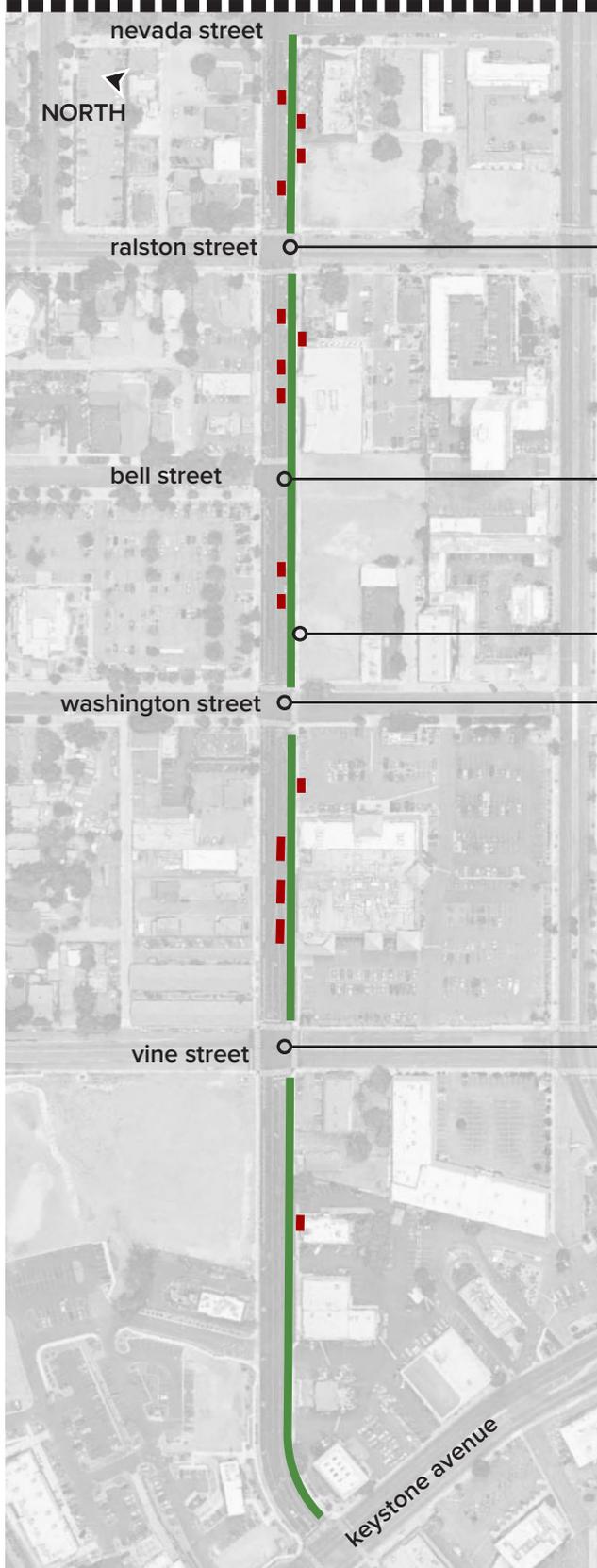
\*\* parking stall impacts are based on planning level estimates and are subject to change during design

# 5th street: project concept



# 5th street: project concept

MATCH LINE



- removed parking
- separated bike lanes with concrete curb

NORTH

nevada street

ralston street

bell street

washington street

vine street

keystone avenue

curb extensions  
connection to north/south bike lanes  
dotted line extension  
protected intersection

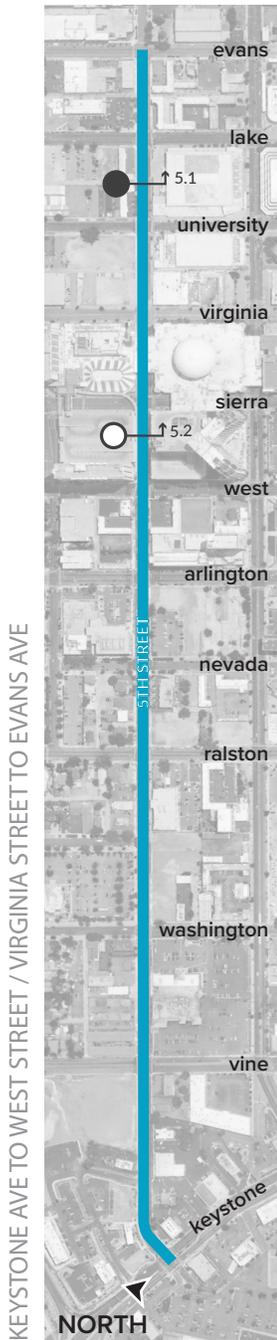
curb extensions  
continuous eastbound through for bicyclists  
dotted line extension

floating bus stops

curb extensions

bike boxes  
access to vine street improvements  
improved visibility east/west  
dotted line extension  
protected intersection

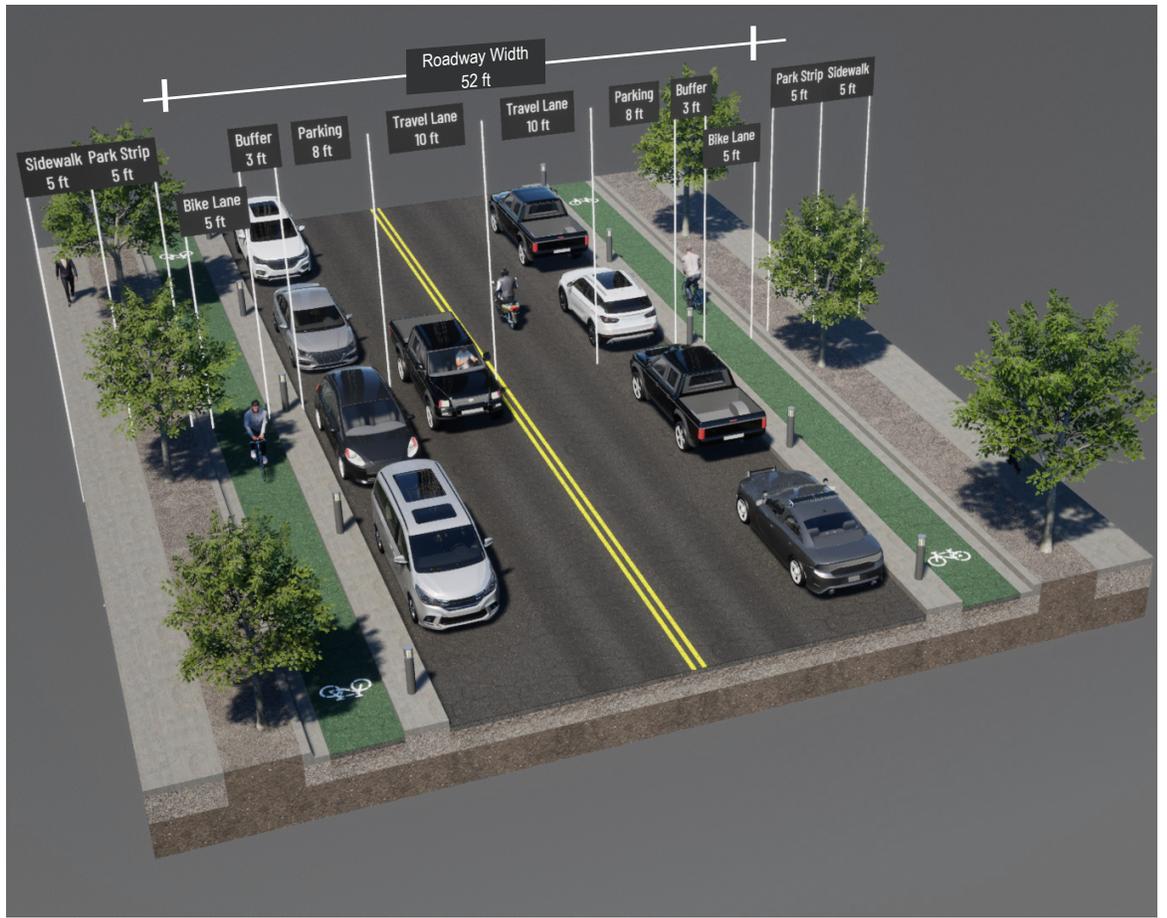
# 5th street: project concept



EXISTING CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

# 5th street: project concept



## PROPOSED CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

No changes to existing landscaping considered or included in this project concept

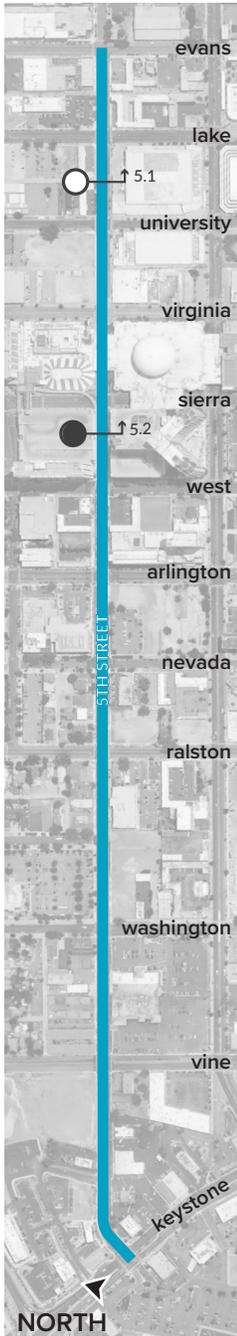
# 5th street: project concept



## EXISTING CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

# 5th street: project concept



## PROPOSED CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

# 5th street: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

**Number of comments: 83**

Based on the public input, the major themes and key takeaways are as follows:

- Safety and Importance of Bike Lanes
- Completing Ongoing Projects and Connectivity
- Environmental Considerations and Urban Design
- Concerns about Bike Lane Implementation

### SAFETY AND IMPORTANCE OF BIKE LANES

Safety is a significant concern for both cyclists and motorists. The public emphasizes the need for well-designed and protected bike lanes to separate cyclists from traffic and address potential conflicts at intersections. There are varying opinions on the effectiveness of the current infrastructure, with some supporting the existing parking-protected bike lanes, while others express concerns about collisions, wrong-way cycling, and obstacles in the lanes.

### COMPLETING ONGOING PROJECTS AND CONNECTIVITY

The public is in favor of completing ongoing projects, like the bike lanes on 5th Street, to create a connected network of safe and accessible micromobility infrastructure. Connectivity to key destinations, such as universities and downtown areas, is deemed essential for promoting cycling and micro-transportation use.

### ENVIRONMENTAL CONSIDERATIONS AND URBAN DESIGN

Some participants express the importance of incorporating greenery, trees, and plantings in the urban landscape to address climate change challenges, enhance walkability, and provide shade. The desire for wider park strips and tree planting aligns with the city’s identity as “The City of Trembling Leaves.”

### CONCERNS ABOUT BIKE LANE IMPLEMENTATION

While there is support for improving bike lanes, there are concerns about the design and placement of barriers,

## 5TH STREET: CORRIDOR RATINGS

On a scale from 1 - 10:	5th St
How useful would this route be for you?	6.6
Would this route enable you to bicycle or use micromodes more frequently?	6.7
Would you feel comfortable using this facility?	7.3
Would you feel comfortable using this facility with a child?	6.7
How supportive of this project concept are you?	7.4

particularly regarding cleaning, debris, and access to the roadway. The public also raises questions about the demand for bike lanes and the practicality of their usage during winter months with snow and ice.

Overall, the public input emphasizes the need for well-designed, safe, and connected bike lanes and micromobility infrastructure while taking into account environmental considerations and balancing the needs of different stakeholders. Addressing safety concerns, completing ongoing projects, and promoting connectivity are critical aspects that stand out in the data.

Additionally, there are suggestions for improvements, such as planting trees in the buffer zones and considering the needs of various users, including children and the elderly. Concerns the potential impact on delivery truck access are also mentioned.

Some comments express opposition to the project, questioning its practicality in certain areas and expressing doubts about the number of cyclists or scooter users who would benefit. There are also remarks about the need for education campaigns to ensure safe behavior among cyclists and scooter riders. Furthermore, winter weather conditions and snow removal concerns are raised, highlighting the need for effective maintenance during adverse weather.

# 3RD/PLAZA STREET

# 3rd/plaza street: existing conditions

## 3RD STREET / PLAZA STREET OVERVIEW

This study corridor extends three quarters of a mile from the RTC 4th Street Station on Lake Street to Vine Street by connecting 3rd Street and Plaza Street. 3rd Street and Plaza Street are low-volume local east-west roads in downtown Reno. Plaza Street connects a two block segment from Virginia Street to Lake Street under the National Bowling Stadium. 3rd Street is a one-way street heading west from Virginia Street out of downtown. It borders the railroad trench and a linear greenway on the south side. The corridor is a low volume street, but has a fairly high parking utilization. Posted speed is 25 MPH.

**TABLE 5: 3RD STREET / PLAZA STREET EXISTING CONDITIONS**

CORRIDOR EXTENT	Vine Street to Lake Street
CORRIDOR LENGTH	.76 MILES
2018 NDOT TRAFFIC VOLUMES	3,700
2050 FORECASTED VOLUMES	1,500
SIGNALIZED INTERSECTIONS	University Way Lake Street Plaza Street / Virginia Street
STOP CONTROLLED INTERSECTIONS	3rd Street / Virginia Street (NO CONTROL) Sierra Street (TWS) West Street (TWS) Arlington Avenue (TWS) Ralston Street (TWS) Washington Street (TWS) Vine Street (OWS)
PRIMARY TRUCK ROUTE	NO
EMERGENCY VEHICLE ROUTE	NO
TRANSIT ROUTE	NO

\*AWS = All-Way Stop, TWS = Two-Way Stop, OWS = One-Way Stop

# 3rd/plaza street: existing conditions

## 3RD/PLAZA STREET CRASH DATA

W 3rd Street between Vine Street and N Virginia Street had 11 crashes between 2016 and 2020. These 11 crashes resulted in four injuries and zero fatalities. Only two intersections had more than one crash; West Street had four, and N Virginia Street had two. Lighting data is available for eight crashes; just three occurred in dark conditions. Only one of the four injury crashes happened under dark conditions. Listed vehicle factors are highly varied along this corridor, including wrong-side/wrong-way driving, failure to yield, unsafe backing (from the section with angled parking), and hit-and-runs.

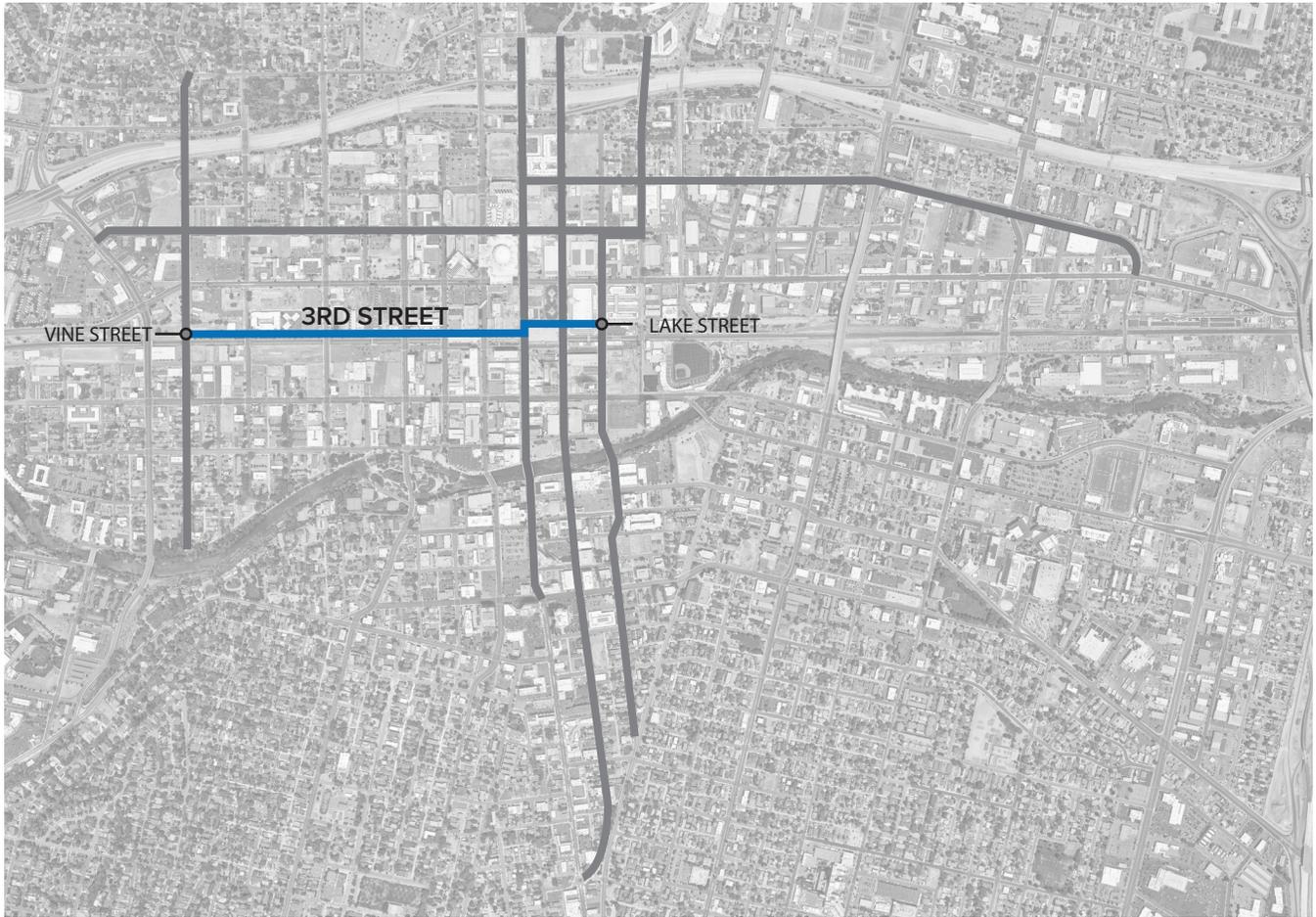
There was one pedestrian-involved and one bicycle-involved crash along the W 3rd Street corridor. Both of these crashes occurred at the West Street intersection. The bicycle crash was under daylight conditions, and the pedestrian crash was under dark conditions with no lighting. In both instances, drivers were traveling the correct direction (westbound) when the crash occurred. No vehicle factor was listed for the bicycle crash, but the pedestrian crash was a hit and run preceded by a failure to yield during a left turn.

West Street had the highest concentration of crashes along this corridor, including the pedestrian and bicycle crashes. Crash factors were highly varied for the W 3rd Street corridor, including wrong-way driving and the impacts of angled parking.



The existing train trench wall presents a potential sight distance issue for bicyclists and pedestrians crossing major streets

# 3rd/plaza street: project concept



## PROJECT DESCRIPTION

The 3rd/Plaza Street corridor provides a low-speed low-volume connection from the east to west side of downtown Reno. This project concept would establish a two-way cycle track on the south side of 3rd Street from Vine to Lake Street with some facilities on Plaza Street and Virginia Street to make the final connection. This concept includes a center median refuge on Virginia Street which would eliminate the existing left turn lane while improving safety for bicyclists, pedestrians, and the occasional tourist taking a picture of the Reno Arch. In order to address frequent stops along 3rd Street, the concept includes developing a sensor activated RRFB system that would identify a bicyclist riding and proactively activate the RRFBs as they approach. Other acceptable alternatives include options such as a half signal or a HAWK. These would be placed on the south side of 3rd Street intersections to better align with the cycle track and provide opportunities for reducing crosswalk distances and enhancing bicycle and pedestrian safety. A traffic study could be beneficial if significant crossing activity begins to impact traffic operations. This concept also includes using continuous sidewalks on cross-streets (Virginia Street, Sierra Street, etc.) to slow turning vehicles, enhance the pedestrian realm, and provide a physical cue to drivers of the change in context as they enter 3rd Street.

3RD/PLAZA STREET	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
Lake St. to Virginia St.	Shared-Use Path
Virginia St. to Vine St.	Sidewalk, Cycle Track, Planting, Mountable Curb
Vine St. to Keystone Ave.	Future Path Extension
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
Raised Crosswalks	Relocated Lighting
High Visibility Crosswalks	3 RRFBs
Ped. Refuge Islands	Curb Extensions at 7 Intersections
PLANNING LEVEL COST ESTIMATE	
<b>\$ 4,358,500</b>	

# 3rd/plaza street: project concept

## COUNTERMEASURES

<b>SPEED MANAGEMENT</b>	
<b>PEDESTRIAN/ BICYCLIST</b>	Continuous sidewalks on major cross streets
	Cycle Track
	*Crosswalk visibility enhancements
	*Medians and pedestrian refuge islands
	*Rectangular Rapid Flashing Beacons (RRFB)
	*Road diets
	Curb extensions
<b>INTERSECTIONS</b>	*Backplates with retroreflective borders
<b>CROSSCUTTING</b>	*Lighting (relocate existing)

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Improved east-west connectivity through downtown
- Enhanced pedestrian realm on major downtown cross-streets from continuous sidewalks
- Better integration with bike lanes at cross streets
- Greater visibility for pedestrians at intersections
- Photo opportunity on Virginia Street next to Locomotion Plaza with median and mid-block crossing

## IMPACTS

### VEHICLE CAPACITY

- None

### PARKING

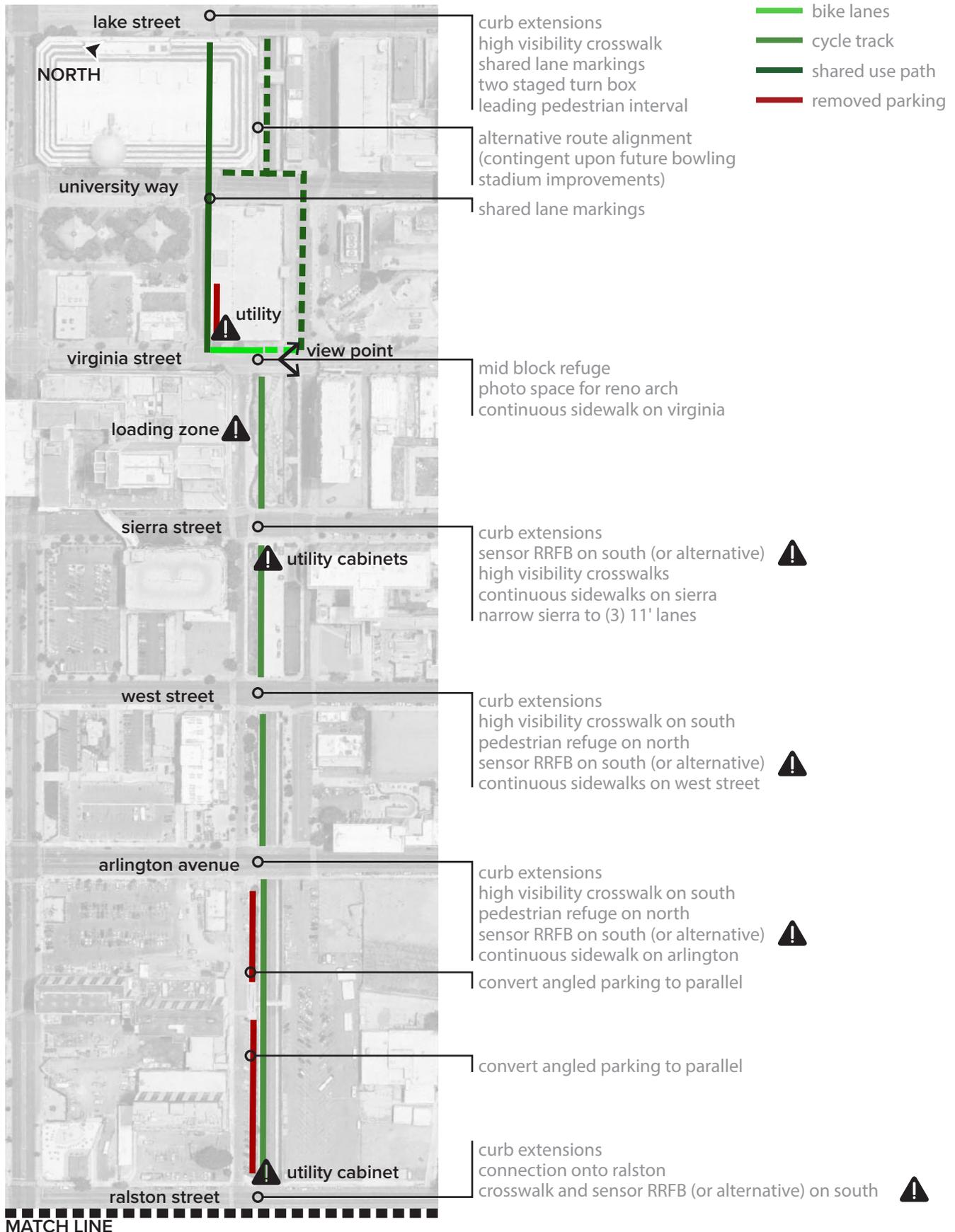
- Transition from angled parking to parallel parking between Ralston and Arlington. **(estimated loss: 24 stalls)**
- Loss of parking between Virginia and University: **loss of 2 stalls**

### OTHER

- Lane narrowing on Sierra
- Mid block crossing with refuge on Virginia

\*\* parking stall impacts are based on planning level estimates and are subject to change during design

# 3rd/plaza street: project concept



# 3rd/plaza street: project concept

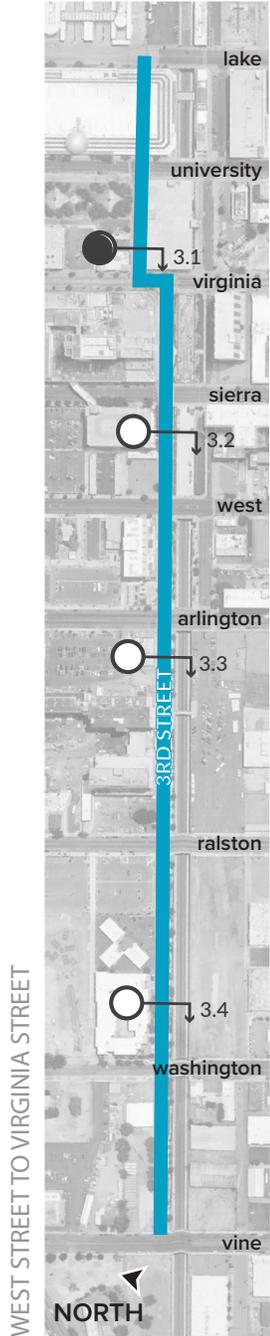
MATCH LINE



- cycle track
- removed parking
- - - shared use path

connection to vine street facility  
high visibility crosswalk  
bulb-outs  
refuge island in median  
future path extension

# 3rd/plaza street: project concept



EXISTING CONDITION

# 3rd/plaza street: project concept



PROPOSED CONDITION

# 3rd/plaza street: project concept



# 3rd/plaza street: project concept



## PROPOSED CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

Landscaping shown is intended to inform the planning process and is not representative of final landscaping concepts.

# 3rd/plaza street: project concept



EXISTING CONDITION

# 3rd/plaza street: project concept

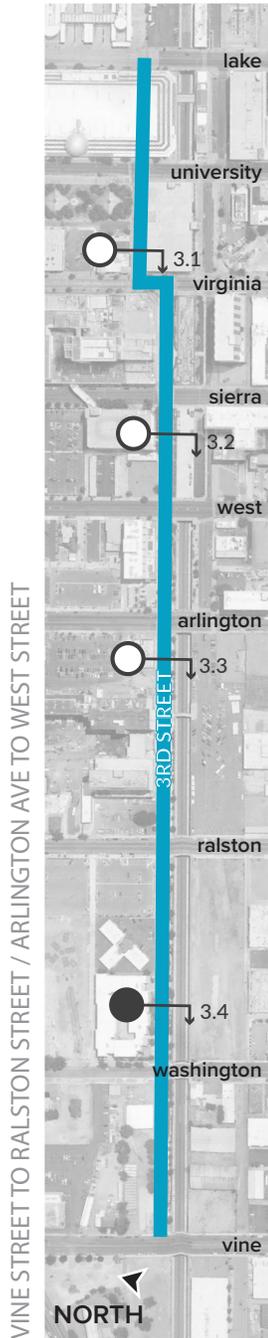


## PROPOSED CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

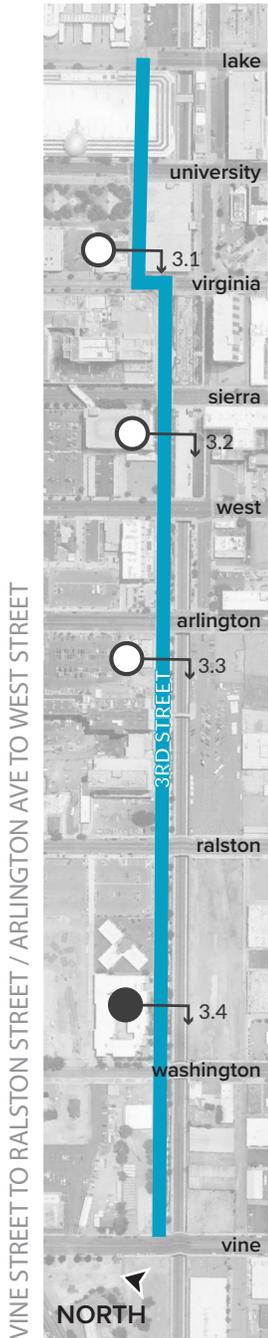
Landscaping shown is intended to inform the planning process and is not representative of final landscaping concepts.

# 3rd/plaza street: project concept



EXISTING CONDITION

# 3rd/plaza street: project concept



## PROPOSED CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

Landscaping shown is intended to inform the planning process and is not representative of final landscaping concepts.

# 3rd/plaza street: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

### Number of Comments: 80

Based on the public input, the major themes and key takeaways are as follows:

- Preferred Routes and Access to Destinations
- Safety and Importance of Bike Lanes
- Benefit for Future Businesses

## PREFERRED ROUTES AND ACCESS

Several comments express support for adding separated cycle tracks and bike lanes, especially on 3rd Street. Connecting these paths with other bike boulevards and improving connectivity to popular destinations, such as Rancho San Rafael and California St/Idlewild, is emphasized. Some users appreciate the potential for increased bike usage and the convenience of the proposed routes for their daily commute.

## SAFETY AND IMPORTANCE OF BIKE LANES

This theme received 14 comments emphasizing the need for better infrastructure and safety measures in the proposed micromobility corridor project. Participants expressed a desire for physical barriers to separate cyclists from traffic and highlighted concerns about potential conflicts between cyclists, pedestrians, and vehicles at street crossings. The feedback underscores the community's focus on enhancing the safety aspects of the project.

## BENEFIT FOR FUTURE BUSINESSES

Some users believe that implementing bike-friendly infrastructure could positively impact downtown businesses and make the area more vibrant and appealing. While some users acknowledge that they do not frequently use the area in question, they still recognize the value of the proposed enhancements in terms of general downtown safety and aesthetics. They believe that creating more space and better markings for pedestrians and bicycles would be beneficial.

## 3RD STREET: CORRIDOR RATINGS

On a scale from 1 - 10:	3rd St
How useful would this route be for you?	5.7
Would this route enable you to bicycle or use micromodes more frequently?	5.4
Would you feel comfortable using this facility?	5.7
Would you feel comfortable using this facility with a child?	5.0
How supportive of this project concept are you?	6.0

Additional themes based on relevance and frequency of mention indicate positive feedback about its aesthetics and potential to enhance the overall experience. Participants mentioned that the design is beautiful, inviting, and could complement existing routes, making them more likely to use it. Some highlighted the project's potential to improve downtown safety by providing more room and better markings for pedestrians and bicycles. Suggestions were made to retain trees in section 4 for added shade and to replace parked cars with trees for a greener environment. However, some individuals questioned the current number of cyclists justifying the project. Overall, the feedback indicates a positive reception to the proposed design and its potential benefits.

# LAKE STREET/ EVANS AVENUE

# lake and evans: existing conditions

## LAKE STREET AND EVANS AVENUE

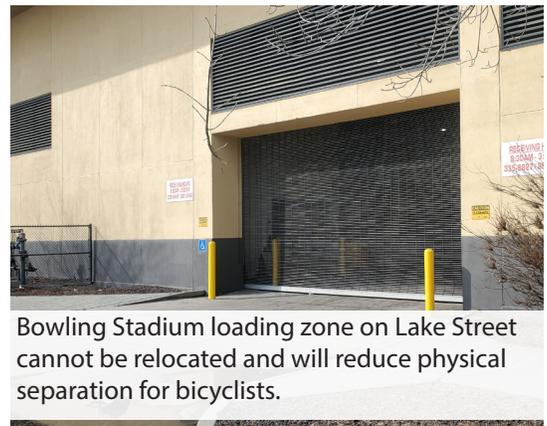
The Lake and Evans Corridor begins at 9th Street near the University of Nevada, Reno, and crosses Interstate 80 and extends south through Downtown to Midtown. This study corridor includes Evans Avenue from 9th Street to 5th; 5th Street from Evans Street to Lake Street; and Lake Street/Sinclair from 5th Street to Holcomb Avenue. Posted speeds for the corridor are 25 MPH. The section near the UNR campus, 9th Street to 6th Street, consists of a two lane roadway with bike lanes and parallel parking on both sides. Between 6th and 5th, the uses become more industrial and commercial. From 5th Street to 1st Street, the roadway transitions from one lane in each direction with a center turn lane to a four-lane configuration. The study corridor passes directly adjacent to the main transit station in Reno, RTC 4th Street Station, and provides access to numerous downtown specific uses including commercial and entertainment destinations. South of the Truckee River, the corridor enters Midtown and becomes much more residential in nature with one lane in each direction and parallel parking on both sides of the street. The Sinclair Street / Holcomb Avenue intersection represents the southern terminus of this study corridor. This intersection is currently under design for reconstruction by the RTC.



Bus bays at the RTC 4th Street Station reduce potential for maintaining physical separation between cyclists and vehicles



Midtown portion is residential in nature with high parking utilization between Liberty Street and Holcomb Avenue



Bowling Stadium loading zone on Lake Street cannot be relocated and will reduce physical separation for bicyclists.

# lake and evans: existing conditions

TABLE 6: LAKE STREET AND EVANS AVENUE EXISTING CONDITIONS

CORRIDOR EXTENT	9th Street to Holcomb Avenue
CORRIDOR LENGTH	1.3 MILES
2018 NDOT TRAFFIC VOLUMES	2,300 (Evans Ave) / 6,200 (Lake St)
2050 FORECASTED VOLUMES	3,500 (Evans Ave) / 12,500 (Lake St)
SIGNALIZED INTERSECTIONS	4th Street 2nd Street 1st Street Mill Street Liberty Street
STOP CONTROLLED INTERSECTIONS	9th Street (AWS) 8th Street (MINOR STREET STOP) 7th Street (MINOR STREET STOP) 6th Street (AWS) Evans / 5th Street (MINOR STREET STOP) 5th Street / Lake Street (AWS) Commercial Row (MINOR STREET STOP) State Street (MINOR STREET STOP) Pine Street (MINOR STREET STOP) Ryland Street (MINOR STREET STOP) Stewart Street (AWS) Moran Street (MINOR STREET STOP) Thoma Street (MINOR STREET STOP) Holcomb Avenue (OWS)
PRIMARY TRUCK ROUTE	NO
EMERGENCY VEHICLE ROUTE	YES
TRANSIT ROUTE	YES

\*AWS = All-Way Stop, TWS = Two-Way Stop, OWS = One-Way Stop

# lake and evans: existing conditions

## LAKE STREET AND EVANS AVENUE CRASH DATA

On the Lake Street/Sinclair Street corridor, there were a total of 53 crashes with 28 causing injuries and zero fatalities between 2016 and 2020. The 2nd Street intersection is the only location along the corridor with more than ten crashes (14). The 4th Street intersection had the second-most crashes (9). Lighting data is available for 45 crashes. Over two-thirds of crashes (31, 69%) occurred during daylight hours, and eleven occurred during dark conditions. The 2nd Street and 4th Street intersections both had four crashes in dark conditions. The most commonly noted vehicle factor involved drivers failing to yield right-of-way (16 of 44 crashes with available data).

Of the 53 crashes, 8 involved a pedestrian. All eight of these crashes resulted in an injury. Five of these crashes involved a carry-all vehicle (SUV, large vans, etc.) Seven of the eight crashes occurred on Lake Street between Mill Street and 5th Street; only one occurred on Sinclair Street at the E Liberty Street intersection. Two crashes each occurred at the 2nd Street, 4th Street, and Mill Street intersections. Pedestrian visibility is a leading safety issue on the corridor with seven of the pedestrian-involved crashes involving drivers making left turns; the eighth driver was going straight. Only one of these crashes occurred in dark conditions (no lighting at the 2nd Street intersection).

One crash involved people biking. The crash resulted in an injury at the 1st Street intersection. The driver moved to avoid something in the road and collided with the person biking.

Lake Street and Sinclair Street crashes were concentrated at the 2nd and 4th Street intersections; just under half of the corridor's crashes occurred at those intersections. Pedestrian crashes followed a similar location pattern. Most crashes resulted from failing to yield right-of-way, especially when turning.

**TABLE 7: LAKE ST AND EVANS AVE CRASHES BY CROSS-STREET (2016-2020)**

STREET	INJURY ACCIDENT	PROPERTY DAMAGE ONLY	TOTAL
2ND ST	7	7	14
4TH ST	6	3	9
6TH ST	1	5	6
E LIBERTY ST	3	2	5
MILL ST	4	3	7
RYLAND ST	2	1	3
ALL OTHER INTERSECTIONS	5	4	9
GRAND TOTAL	28	25	53

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# lake and evans: project concept



## PROJECT DESCRIPTION

This project concept prioritizes physical protection and low-stress routes for bicyclists in order to encourage more cycling for less experienced bicyclists. The concept would establish a protected bike lane from Holcomb Avenue to 5th Street on Sinclair / Lake Street, transition to Evans Avenue using the 5th Street parking protected bike lane and then create a protected bike lane from 5th Street to 9th Street on the west side with a standard bike lane on the east side. Each roadway in this corridor concept is identified as a Primary Emergency Vehicle Route (PEVR) which restricts the use of vertical deflection to reduce vehicle speeds; therefore no vertical deflection is incorporated into the project concept. Instead, the concept design relies on creating separation between uses in order to create a low-stress facility. Further traffic calming may be achieved through the use of modal filtering elements between Liberty Street and Holcomb Avenue. This concept would result in the loss of nearly 97 parking spaces including near UNR (42 stalls) and in the Midtown area (2 stalls). Additionally, maintaining protection for northbound bicyclists may not be feasible between 4th Street and E Plaza Street due to the presence of 5 RTC bus bays which have both ingress and egress movements along this stretch.

SINCLAIR ST / LAKE ST/ EVANS AVE	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
I-80 to Liberty Street	Buffered Bike Lane & Flex Posts (Bike Lane between 5th St & I80)
Liberty St to Holcomb Ave.	Bike Boulevard (Speed Cushions and Curb Extensions)
Alt Route (Plaza to 5th)	Shared Use Path
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
Intersection Lighting	Curb Extensions at 5 Intersections
2 Protected Intersections	Speed Cushions
High Visibility Crosswalks	
PLANNING LEVEL COST ESTIMATE	
<b>\$ 3,299,750</b>	

# lake and evans: project concept

## COUNTERMEASURES

<b>SPEED MANAGEMENT</b>	
<b>PEDESTRIAN/ BICYCLIST</b>	*Protected bike lanes
	*Crosswalk visibility enhancements
	Bike boxes
	*Road diet
	Curb extensions Floating bus stops
<b>INTERSECTIONS</b>	*Backplates with retroreflective borders
	Protected intersection
<b>CROSSCUTTING</b>	*Lighting

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Safer and more comfortable ride for cyclists
- Improved visibility and accessibility for pedestrians
- Traffic calming with curb extensions implementation

## IMPACTS

### VEHICLE CAPACITY

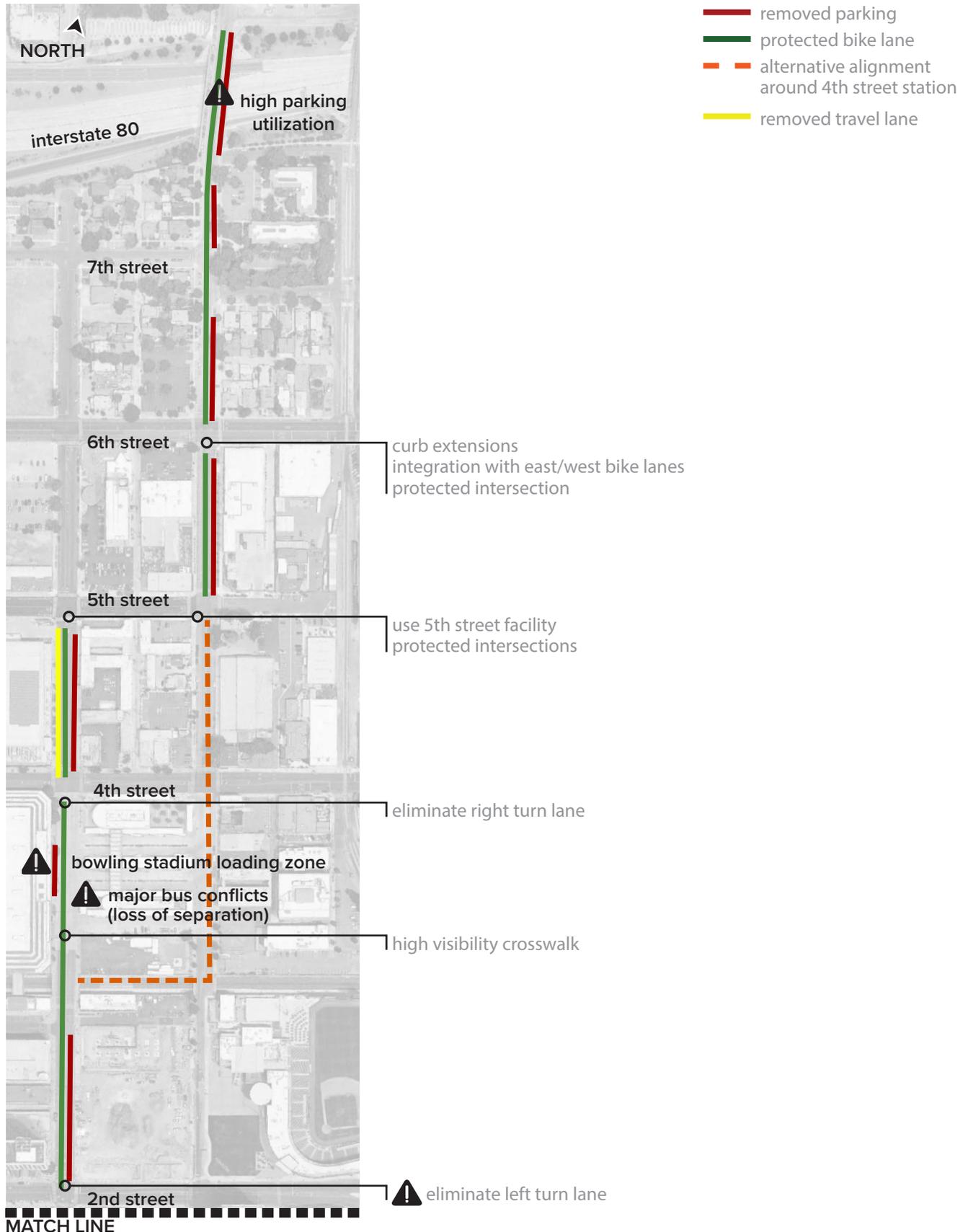
- Removed left turn lanes (Mill Street, 1st Street, 2nd Street, 4th Street, south side of 5th Street)

### PARKING

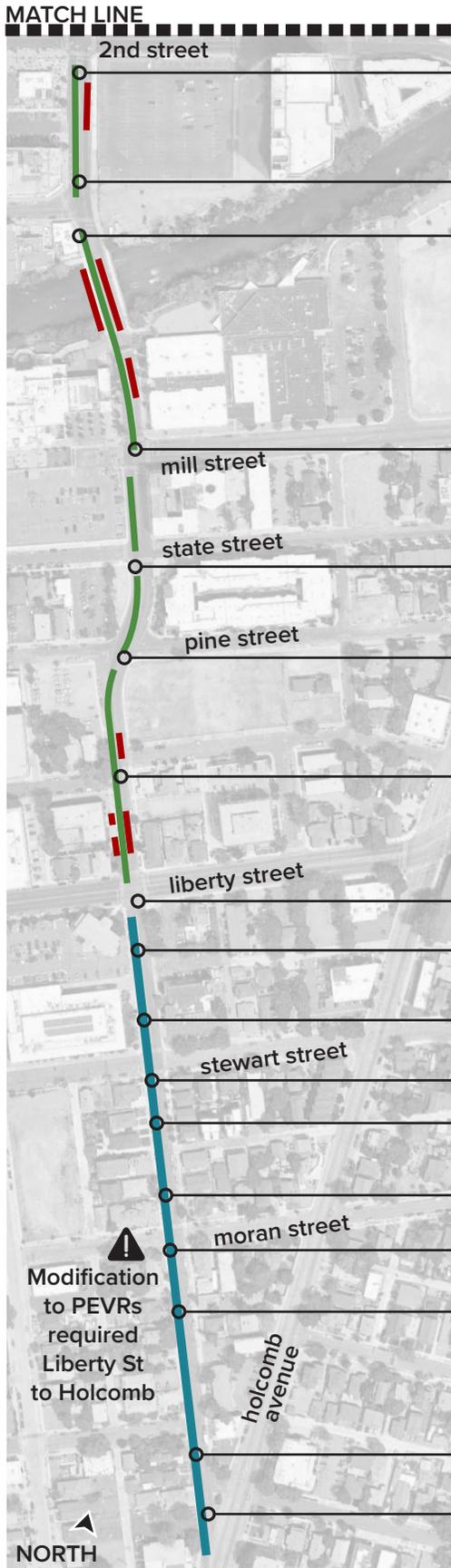
- Loss of parking mostly along east side of corridor
  - (42 stalls)** between 9th and 5th (east side only)
  - Loss of parking on I-80 overpass (high utilization)
  - (30 stalls)** between 5th and 1st
  - (25 stalls)** between 1st and Liberty

\*\* parking stall impacts are based on planning level estimates and are subject to change during design

# lake and evans: project concept



# lake and evans: project concept



- removed parking
- protected bike lane
- bike boulevard

curb adjustment

consolidate to three lanes  
restrict future left turn  
⚠ eliminate left turn

⚠ eliminate left turn

curb extensions  
lighting

smaller corner radii  
crosswalks  
consider intersection reconstruction to reduce speeds

curb extensions

curb extensions

speed cushions

speed cushions

curb extensions (or traffic circle)

speed cushions

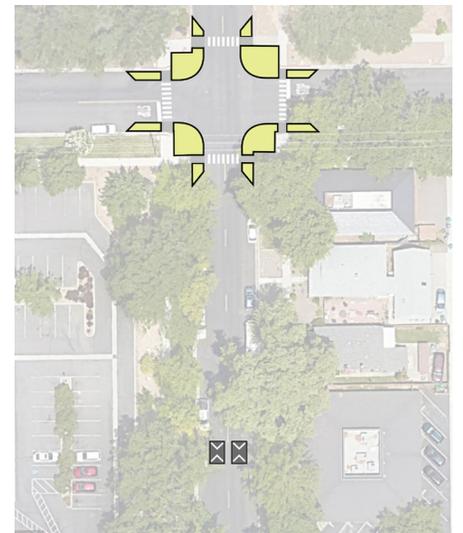
speed cushions

⚠ Modification to PEVRs required Liberty St to Holcomb

speed cushions

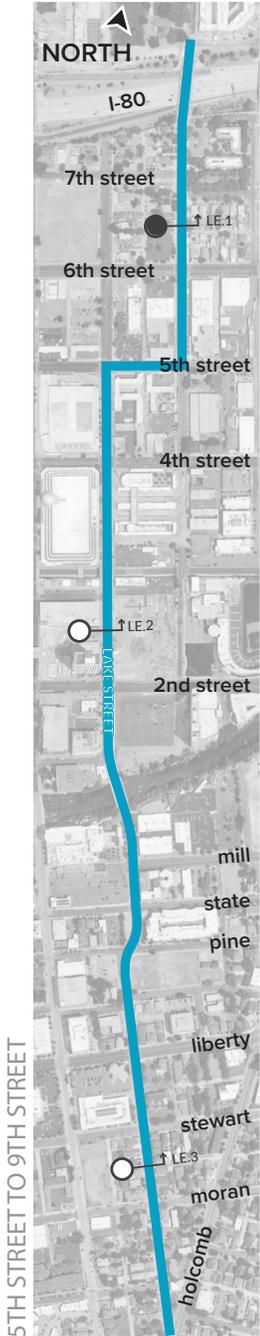
speed cushions

integration with holcomb avenue design



Curb extensions and Speed Cushions

# lake and evans: project concept



## EXISTING CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

# lake and evans: project concept

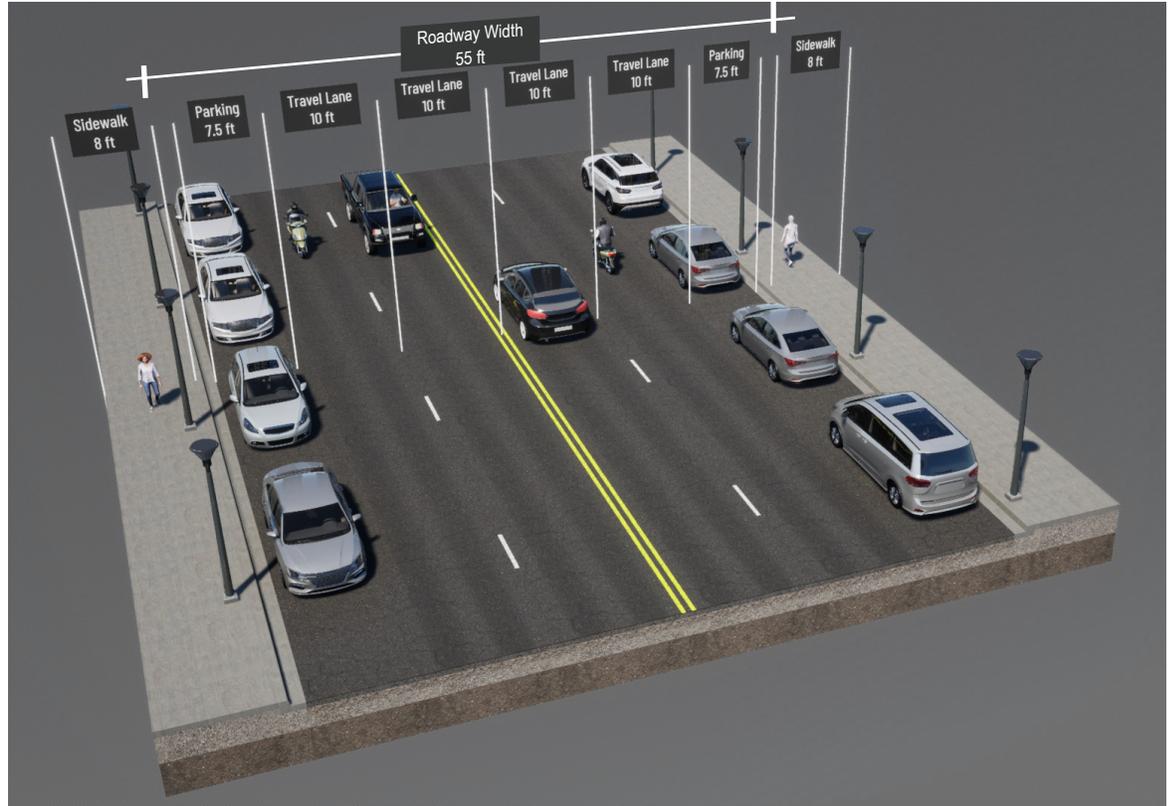


## PROPOSED CONDITION

Note: Bike lanes are shown as green for diagrammatic purposes only

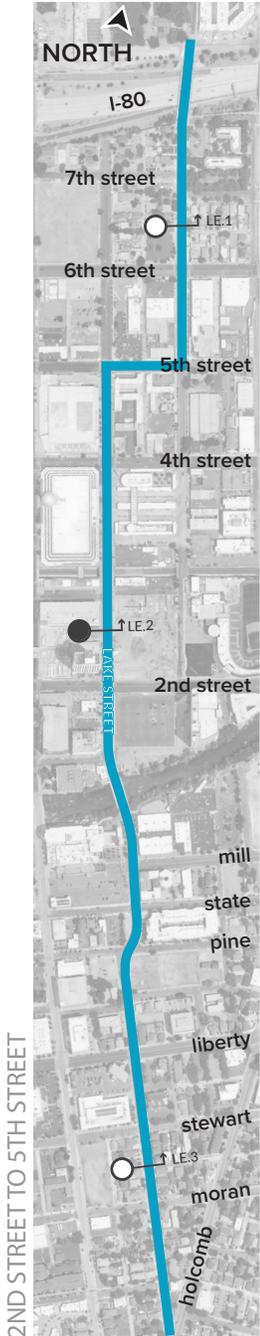
No changes to existing landscaping considered or included in this project concept

# lake and evans: project concept



EXISTING CONDITION

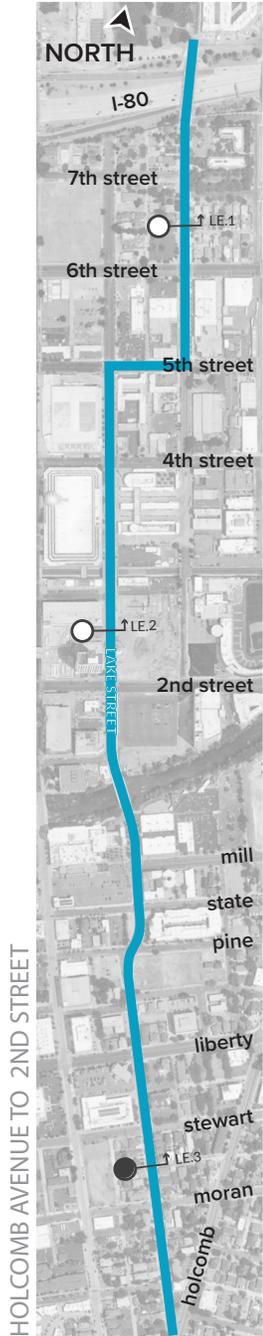
# lake and evans: project concept



PROPOSED CONDITION

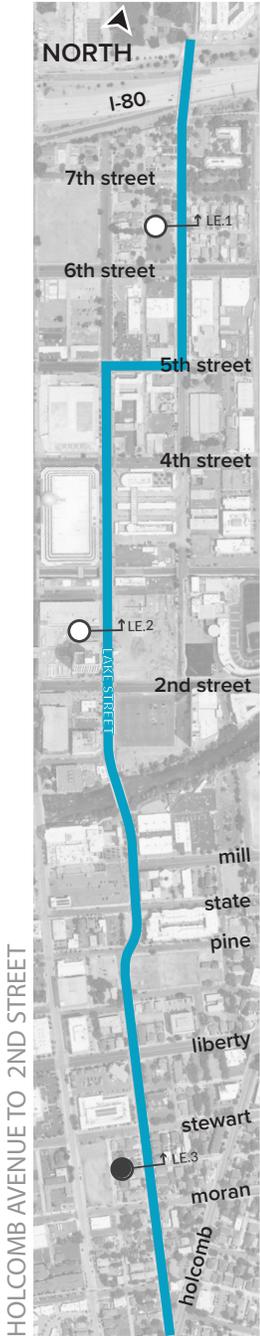
Note: Bike lanes are shown as green for diagrammatic purposes only

# lake and evans: project concept



EXISTING CONDITION

# lake and evans: project concept



PROPOSED CONDITION

Note: Semi-permanent bollards and concrete are shown to highlight the range of potential material options for curb extensions. Concrete curbing was used for cost estimating purposes.

No changes to existing landscaping considered or included in this project concept

# lake and evans: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

### Number of Comments: 95

Based on the public input, the major themes and key takeaways are as follows:

- Support for the Corridor Project
- Concerns about Bike Lane Implementation
- Traffic Analysis, Intersection Safety, and Street Design

## SUPPORT FOR THE CORRIDOR PROJECT

Many participants expressed positive feedback and support for the proposed micromobility corridor. They see it as an important connection to the bus station and a key link between midtown, UNR, and downtown. They appreciate the potential benefits of enhanced bike accessibility and safer routes.

## CONCERNS ABOUT BIKE LANE IMPLEMENTATION

Some individuals have reservations about the implementation of bike lanes in certain sections. They express concerns about the safety of shared lanes, the need for more physically protected lanes, and potential conflicts between cyclists and pedestrians or vehicles. There are also concerns about the impact on parking and the effectiveness of certain design choices to slow the speed of vehicles.

### Example:

- In Section 3, users express concern about the loss of parking spaces due to the proposed bike lane implementation. They believe that the street is wide enough to accommodate both parking and bike lanes, suggesting that retaining parking is essential for the convenience of drivers.
- In the case of Sinclair Street, some participants express discomfort sharing the same lane with motorized vehicles, preferring physically protected bike lanes. This highlights the importance of dedicated and safe infrastructure to encourage cyclists to use the proposed routes.

## LAKE AND EVANS STREETS: CORRIDOR RATINGS

On a scale from 1 - 10:	Lake/Evans
How useful would this route be for you?	6.4
Would this route enable you to bicycle or use micromodes more frequently?	6.3
Would you feel comfortable using this facility?	7.0
Would you feel comfortable using this facility with a child?	6.3
How supportive of this project concept are you?	6.6

## TRAFFIC ANALYSIS, INTERSECTION SAFETY, AND STREET DESIGN

These comments mainly address concerns and suggestions related to road design and safety. There is opposition to wider car travel lanes, with a focus on prioritizing wider sidewalks or park strips instead. The use of sharrows is strongly discouraged due to perceived dangers. The idea of using flower/tree planter boxes to separate bike lanes from cars is proposed as a safe and aesthetic alternative. Additionally, there are considerations about the necessity of the project given the proximity of other north-south routes. Some individuals express feeling safer with protected lanes, emphasizing the importance of safety measures for cyclists. Participants mention consistent snowplowing on bike lanes during winter, underscoring the importance of considering weather-related challenges in planning, design, and maintenance.

Additional feedback highlights perceived safety concerns and the blighted nature of certain areas in downtown Reno, underscoring the importance of addressing these issues before investing in micromobility infrastructure along Lake Street and Evans Avenue. There is also an emphasis on engaging with the unhoused population and addressing their concerns related to safety and access to foster an inclusive and equitable transportation system. Participants stress the need to strike a balance between accommodating various transportation modes and preserving parking options along the corridor. To encourage greater adoption of micromobility options, they call for implementing physically protected bike lanes and addressing intersection safety along the corridor.

**CENTER /  
UNIVERSITY WAY**

# center/university: existing conditions

## CENTER STREET / UNIVERSITY WAY OVERVIEW

This study corridor extends one and a half miles from 9th Street to Virginia Street by following the University Way and Center Street corridor. This corridor is a one-way street from south to north except for the portion between 9th Street and Maple Street. As such, it is a significant corridor for moving traffic into and through downtown and accessing the university. The street passes under two skybridges in downtown (at Cal Neva and Reno City Center) and also has a busy bus route along its length. Posted speed is 30 MPH.

**TABLE 8: CENTER STREET / UNIVERSITY WAY EXISTING CONDITIONS**

CORRIDOR EXTENT	9th Street to Virginia Street	
CORRIDOR LENGTH	1.5 MILES	
2018 NDOT TRAFFIC VOLUMES	9,850 (I-80 Ramps)	
	5,600 (4th to Truckee)	
	3,700 (Truckee to Moran)	
2050 FORECASTED VOLUMES	12,721 (I-80 Ramps)	
	11,669 (4th to Truckee)	
	8,892 (Truckee to Moran)	
SIGNALIZED INTERSECTIONS	8th Street	Plaza Street
	Maple Street	2nd Street
	6th Street	1st Street
	5th Street	Liberty Street
	4th Street	
STOP CONTROLLED INTERSECTIONS	9th Street (AWS)	
	7th Street (TWS)	
	Commercial Row (OWS)	
	State Street (TWS)	
	Pine Street (TWS)	
	Ryland Street (OWS)	
	Stewert Street (TWS)	
	Moran Street (TWS)	
	Thoma Street (OWS)	
	Cheney Street (TWS)	
	Taylor Street (OWS)	
Virginia Street (ROUNDAABOUT)		
PRIMARY TRUCK ROUTE	NO	
EMERGENCY VEHICLE ROUTE	YES	
TRANSIT ROUTE	YES	

\*AWS = All-Way Stop, TWS = Two-Way Stop, OWS = One-Way Stop

# center/university: existing conditions

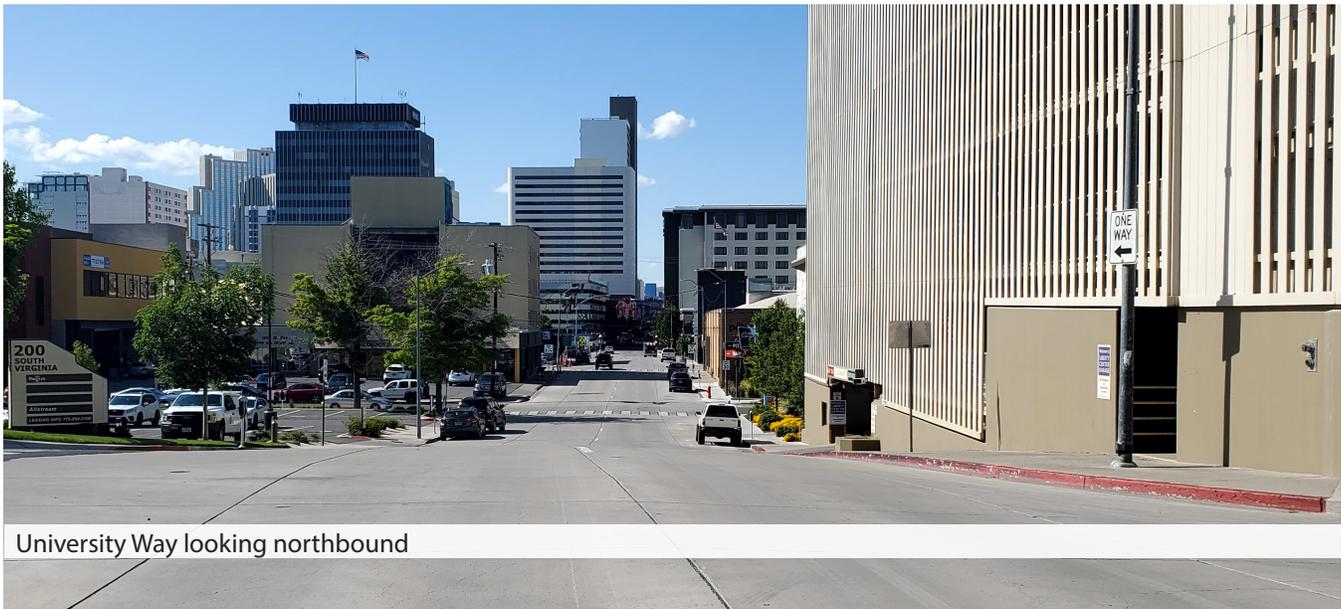
## CENTER STREET / UNIVERSITY WAY CRASH DATA

Center Street / University Way between Virginia Street and 9th Street had 115 total crashes between 2016 and 2020. Of these 115, there were 23 injuries and zero fatalities. Of the data available, only two intersections had more than one crash; 2nd Street and 5th Streets each had two. Lighting data is available for 43 of the crashes, with only 8 of those occurring in dark conditions. There were two pedestrian-involved and zero bicycle-involved crashes along the Center Street / University Way Corridor.

The vast majority of crashes were angle types (see table below). These are crashes that occurred at intersections with a vehicle turning onto the corridor and failing to yield to oncoming traffic. Factors behind this disproportionate crash type can include roadway width, obstructions within the sight triangle, and overall poor intersection design.

TABLE 9: CENTER STREET / UNIVERSITY WAY CRASHES BY TYPE (2016-2020)

CRASH TYPE	INJURY CRASH	PROPERTY DAMAGE ONLY	TOTAL
ANGLE	31	45	76
BACKING	0	3	3
NON-COLLISION	2	2	4
REAR-END	4	10	14
SIDESWIPE, MEETING	3	7	10
SIDESWIPE, OVERTAKING	3	5	8
GRAND TOTAL	43	72	115



University Way looking northbound

# center/university: project concept



## PROJECT DESCRIPTION

This project concept includes constructing a two-way cycle track along University Way from 9th Street to S. Virginia Street.

University Way begins at 9th Street on the University of Nevada, Reno (UNR) campus and connects through downtown and Midtown before ending at the intersection with S. Virginia Street. This project concept will construct a two-way cycle track on the west side of University Way and provide space for bi-directional bicycle traffic. This facility is placed on the left side because University Way is currently a one-way street. This configuration reduces potential conflicts with two-way vehicle traffic and transit stops and also creates protected crossings for bicyclists at signals. This physically separated bicycle facility would enhance bicycle connectivity and improve pedestrian crossing distances along the corridor. The conceptual design includes reallocating existing vehicle capacity and repurposing parking spaces in some locations along the corridor. The proposed facility would allow for side-by-side riding and passing movements between intersections while also being wide-enough to support a truck-mounted plow or sweeper rather than a specialized street sweeper.

CENTER STREET / UNIVERSITY WAY	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
9th St to Stewart St	Two-way cycle track
Stewart St to Moran Str	Bike lane with mountable curb separation
Moran St to Virginia St	Northbound shared lane and southbound contraflow bike lane
5th St to 9th St	Sidewalk enhancements and replacement
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
Reduced crossing distances	Bicycle signals and dedicated bicycle signal phase
Two-staged turn boxes	
PLANNING LEVEL COST ESTIMATE	
<b>\$11,080,000</b>	

# center/university: project concept

## COUNTERMEASURES

<b>SPEED MANAGEMENT</b>	
<b>PEDESTRIAN/ BICYCLIST</b>	<ul style="list-style-type: none"> <li>Continuous sidewalks on major cross streets</li> <li>Cycle Track</li> <li>Bicycle signal</li> <li>ADA ramp upgrades</li> <li>*Crosswalk visibility enhancements</li> <li>*Road diets</li> <li>Curb extensions</li> </ul>
<b>INTERSECTIONS</b>	<ul style="list-style-type: none"> <li>*Backplates with retroreflective borders</li> <li>Two-stage turn boxes</li> </ul>
<b>CROSSCUTTING</b>	<ul style="list-style-type: none"> <li>*Lighting (relocate existing)</li> </ul>

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Enhanced connectivity between UNR, Downtown, Midtown
- Enhanced pedestrian crossings
- Improved safety for all users
- Improved comfort for bicyclists
- Improved traffic signals throughout corridor
- Left-side configuration eliminates conflicts with transit vehicles and impacts to existing stations

## IMPACTS

### VEHICLE CAPACITY

- Reduction of one vehicle lane between 9th & 8th, 6th & 1st, Liberty St to Cheney St. Protected left-turn movements for safety.

### PARKING

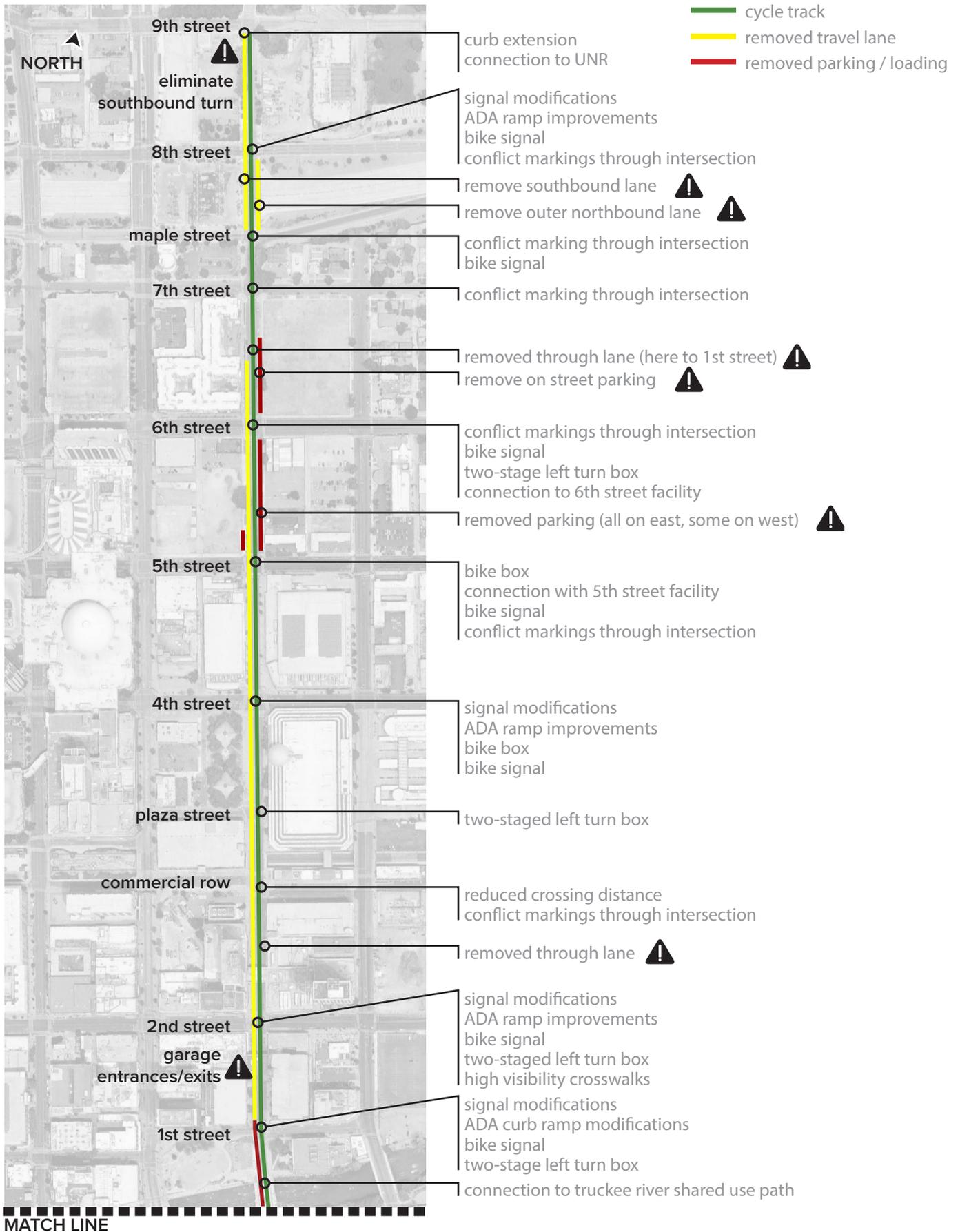
- 9th Street to 4th Street: **19 stalls**
- 1st Street to Moran Street: **27 stalls**
- Possible loss where curb extensions occur **(52 stalls)**
- Parking Additions (4th Street to 1st Street): **5 stalls**

### OTHER

- Unsignalized intersections will require enhancements including paint and signage to increase awareness from all road users. Special care needed around City parking garage access. Disruption to Pioneer Center loading zone.

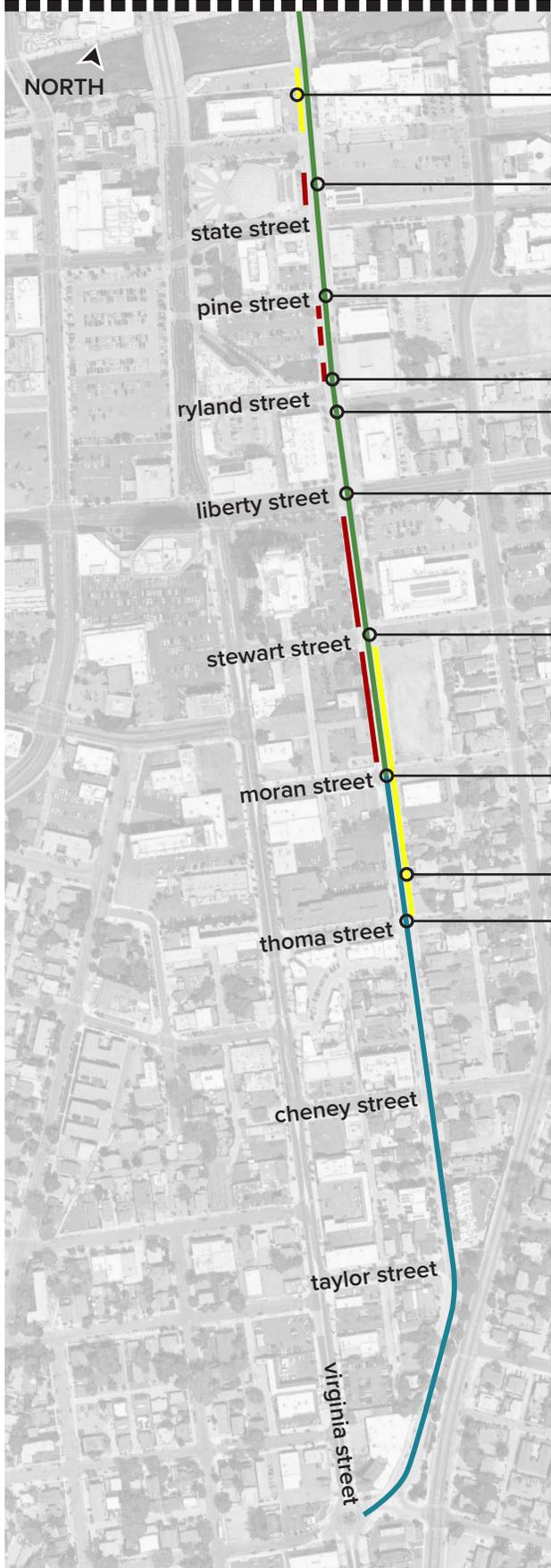
\*\* parking stall impacts are based on planning level estimates and are subject to change during design

# center/university: project concept



# center/university: project concept

MATCH LINE



- bike lane & sharrows
- cycle track
- removed travel lane
- removed parking / loading

removed parking turn lane

loading zone relocation 

reduced pedestrian crossing distance  
high visibility crosswalk  
intersection conflict markings

parking removed 

reduced pedestrian crossing distance

reduced pedestrian crossing distance  
signal modifications  
bike signal  
two-staged left turn box

reduced pedestrian crossing distance  
intersection conflict markings

two-staged left turn box  
reduced pedestrian crossing distance  
high visibility crosswalk

removed travel lane

reduced pedestrian crossing distance

state street

pine street

ryland street

liberty street

stewart street

moran street

thoma street

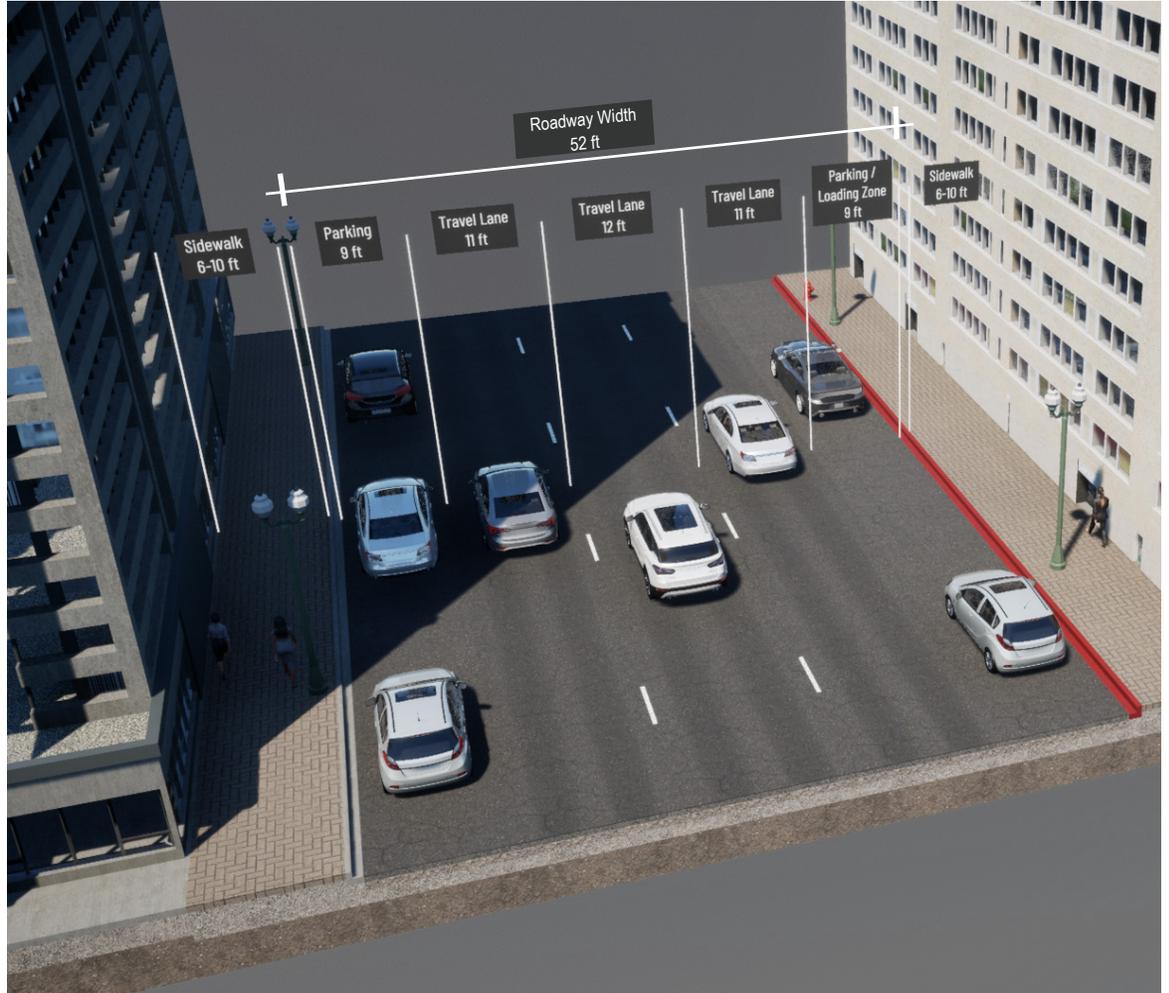
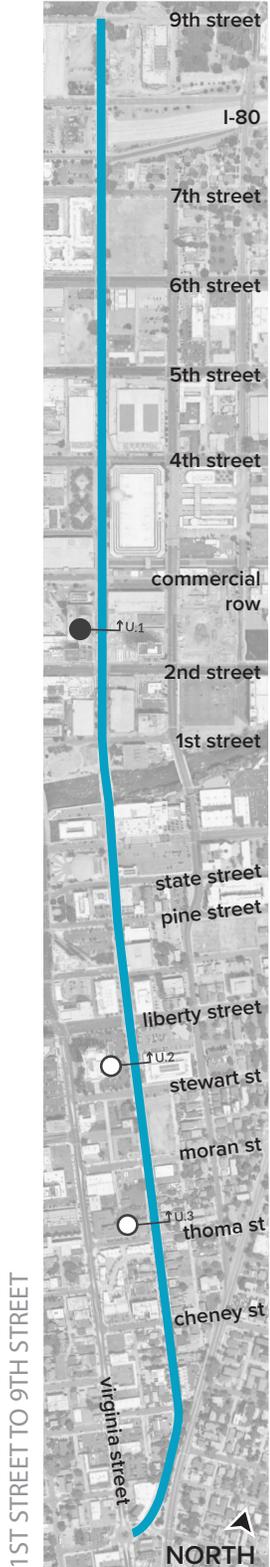
cheney street

taylor street

virginia street

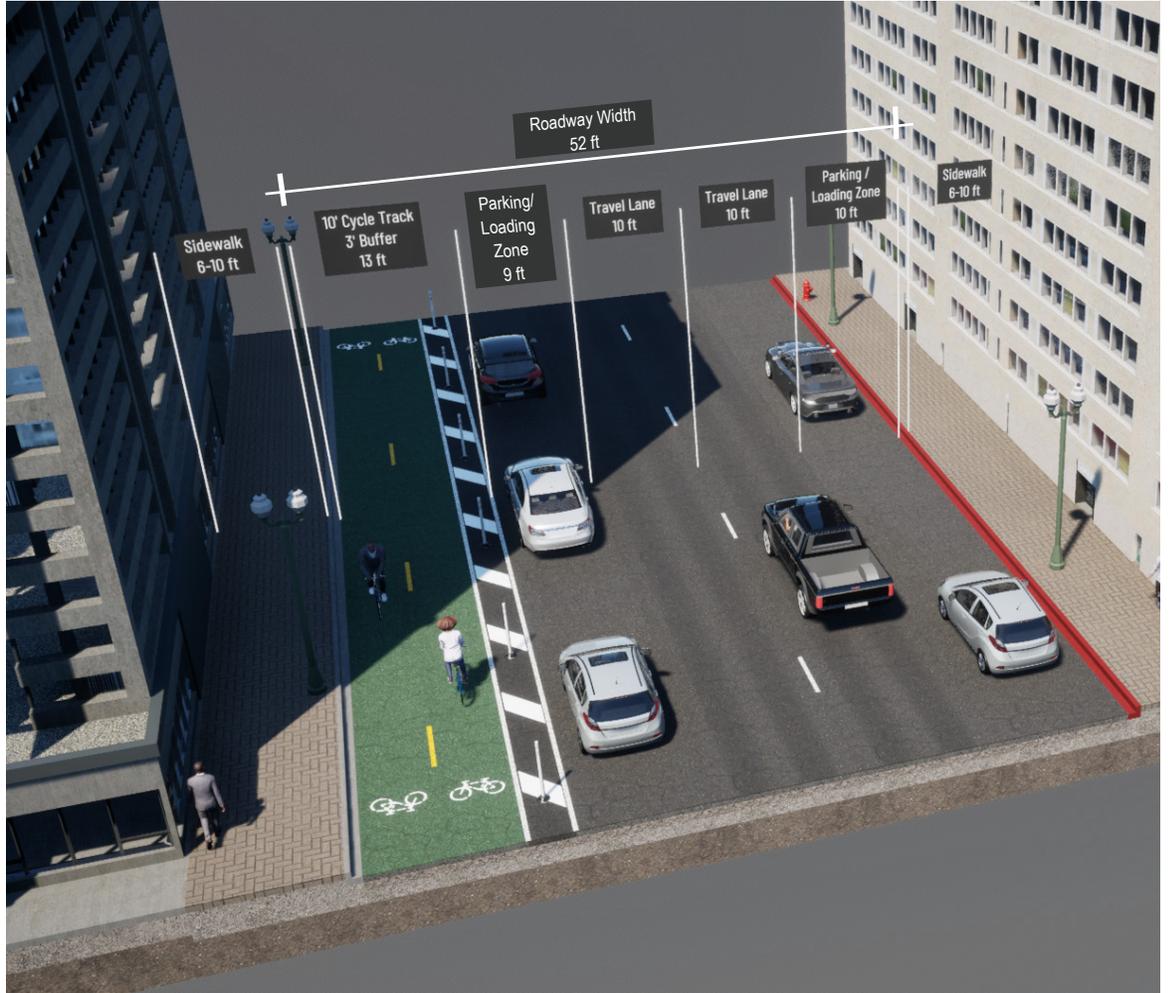
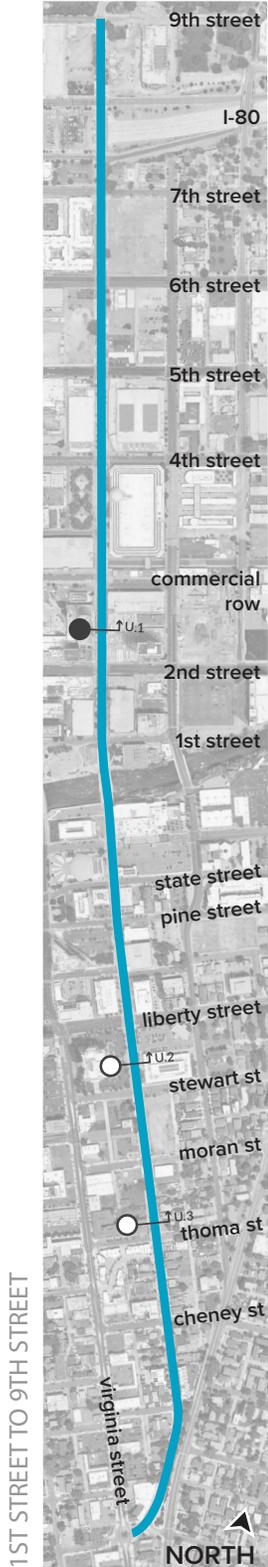
NORTH

# center/university: project concept



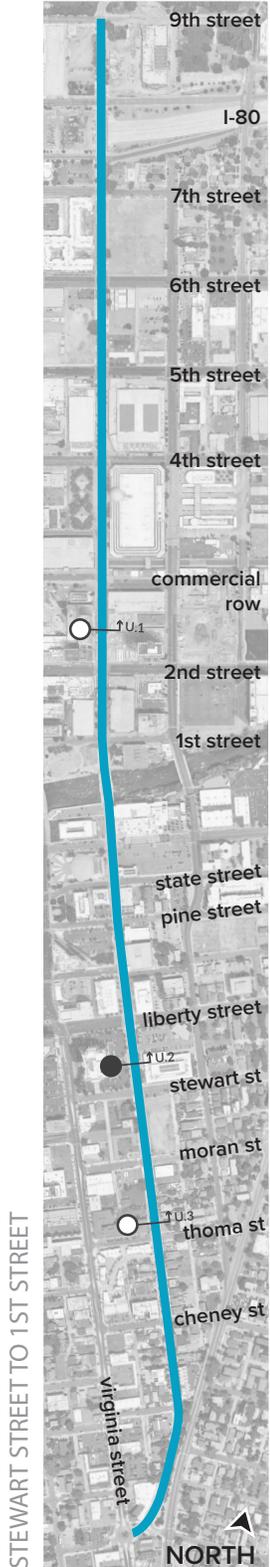
EXISTING CONDITION

# center/university: project concept



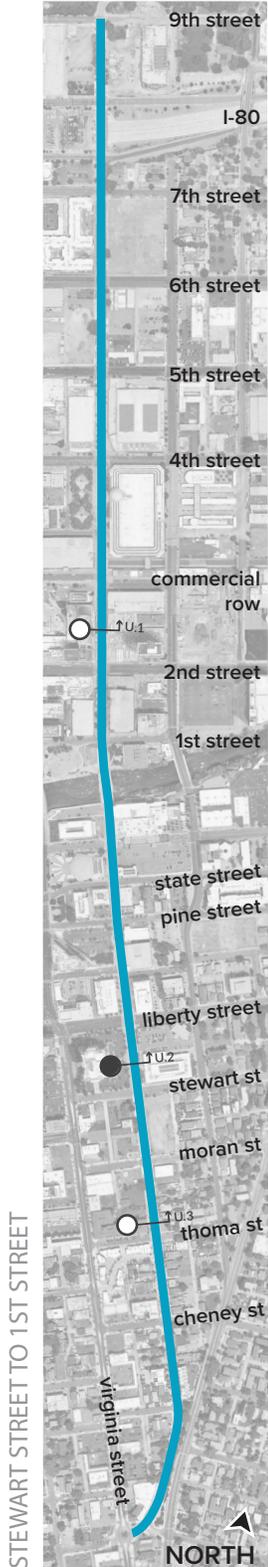
PROPOSED CONDITION

# center/university: project concept



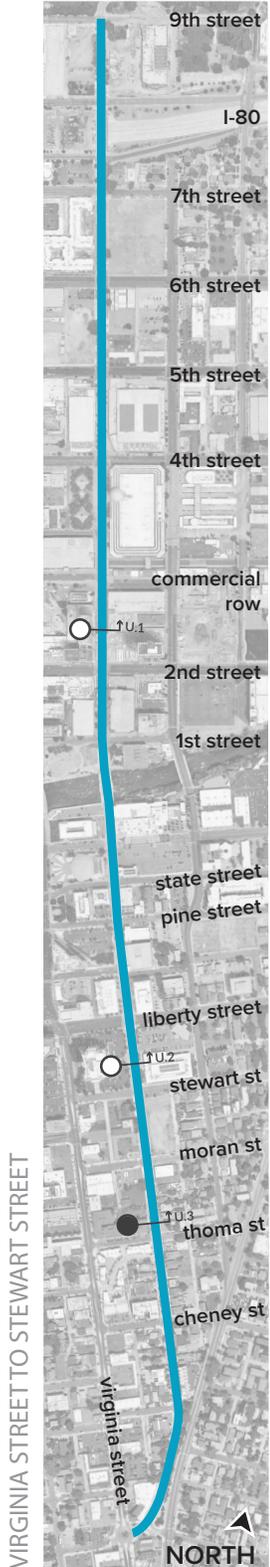
EXISTING CONDITION

# center/university: project concept



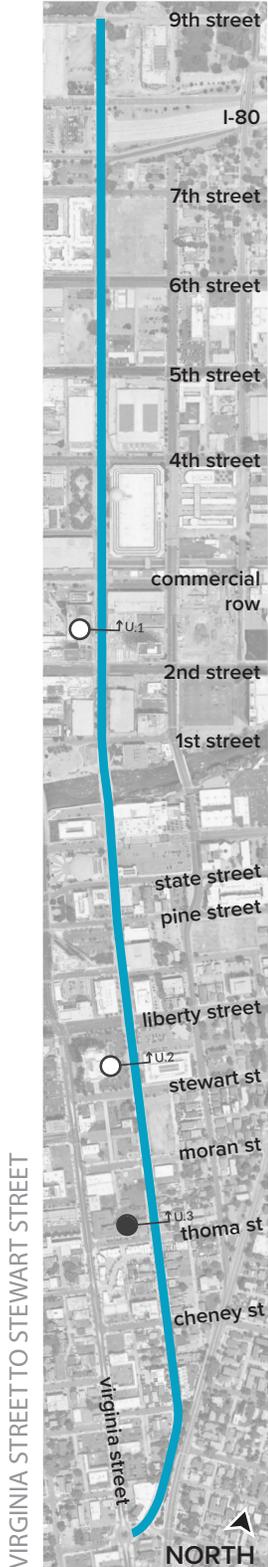
PROPOSED CONDITION

# center/university: project concept



EXISTING CONDITION

# center/university: project concept



PROPOSED CONDITION

# center/university: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

**Number of Comments:** 90

Based on the public input, the major themes and key takeaways are as follows:

- Safety and Importance of Bike Lanes
- Preferred Routes and Access
- Concerns about Bike Lane Implementation
- Support for the Corridor Project

## SAFETY AND IMPORTANCE OF BIKE LANES

Several comments express the importance of having safe and separated bike lanes to improve cyclist safety. Participants emphasize the need for physical barriers, such as raised medians or sturdy metal posts, to protect cyclists from motorized traffic.

## PREFERRED ROUTES AND ACCESS

Participants highlight the significance of creating a direct and efficient north-south corridor connecting the University, Downtown, and Midtown areas. They believe that such a route would encourage more people to use micromobility options and reduce traffic congestion.

## CONCERNS ABOUT BIKE LANE IMPLEMENTATION

Some comments raise concerns about the implementation of bike lanes on certain streets, particularly on Center Street. Issues related to traffic flow, parking spaces, and potential disruption to businesses are among the key concerns.

## SUPPORT FOR THE CORRIDOR PROJECT

Several participants express strong support for the project, citing the need for better transportation options and improved safety for cyclists. They appreciate that the project has a professional traffic study backing it and is already at an advanced design stage.

## CENTER/UNIVERSITY STREETS: CORRIDOR RATINGS

On a scale from 1 - 10:	Center/University
How useful would this route be for you?	7.5
Would this route enable you to bicycle or use micromodes more frequently?	7.5
Would you feel comfortable using this facility?	7.7
Would you feel comfortable using this facility with a child?	6.9
How supportive of this project concept are you?	7.9

The comments on the University Way and Center Street corridor project reveal varying perspectives on its potential economic benefits, with hopes of attracting more visitors and encouraging micro-mobility usage alongside concerns about feasibility and current cyclist population. Winter conditions and snow mitigation are also important design considerations. However, parking, safety, and cost-effectiveness remain areas of concern that need to be addressed.

Other key takeaways from the comments include the desire for aesthetically pleasing streets with vegetation and flower planter boxes, which can complement safety measures. Accessibility for people with physical and sensory disabilities is highlighted as an essential aspect to consider. Moreover, the significance of the University Way route in connecting UNR to other areas demonstrates the project's potential positive impact on the university community and the wider Reno population.

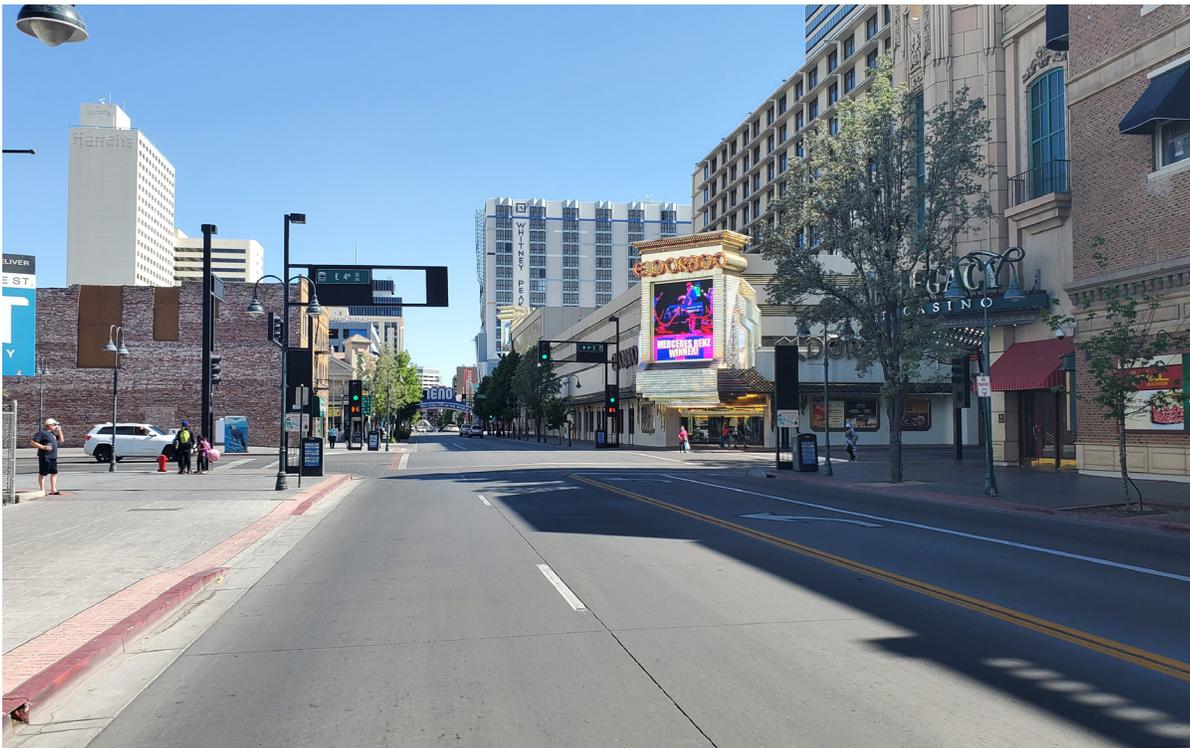
# VIRGINIA STREET

# virginia street: existing conditions

## INTRODUCTION

The Virginia Street corridor represents the central core of downtown Reno and a vital north/south connection between the University of Nevada-Reno, Downtown Reno, and Midtown. As the corridor connects these areas, the surrounding land uses and contexts change and the way that residents and visitors interact with the corridor changes with it. The northern portion between 9th Street and 8th Street is the gateway to the UNR campus with a major transit connection and recently completed roadway improvements. Between 8th Street and 6th Street the corridor is largely auto-oriented with access to I-80 on and off ramps and five total vehicle lanes. The corridor transitions between 6th Street and 4th Street to a narrower and more pedestrian oriented context with wide sidewalks and fewer vehicle travel lanes. Between 4th Street and 1st Street the corridor is heavily pedestrian oriented with high levels of pedestrian foot traffic, typically slower vehicle speeds, and frequent pedestrian crossings. The Reno Arch, a major local tourist attraction, is located on the southern side of the Commercial Row intersection in this portion of the corridor. Tourists and locals frequently stop on the sidewalk to take a picture underneath the Reno Arch and often will step into vehicle travel lanes in order to get a better angle which creates a potential safety hazard. South of 1st Street the corridor passes by multiple civic (and previously civic) buildings including the old Post Office, Washoe County Court office, and the Pioneer Center theater. Following a recent pilot project from the City of Reno, the parking protected bike lanes which were piloted from Liberty Street to 1st Street were made permanent.

The level of vehicle volumes also varies along the corridor based on the land use context, as shown on the following page. The northern portion which connects UNR to downtown over I-80 has a much higher level of vehicle traffic (15,300 ADT) and building setbacks as compared to the section in the entertainment portion of the corridor between 4th Street and 1st Street in downtown (5,326 ADT). The traffic surrounding the I80 ramps is projected to increase to approximately 21,500 ADT by 2050 based on the RTC Travel Demand Model where the traffic volumes in the entertainment core are projected to decrease to 5,326 by 2050.



Looking south through the 4th Street intersection, Virginia Street narrows to a single thru lane in each direction between Liberty Street and 4th Street.

# virginia street: existing conditions

TABLE 10: VIRGINIA STREET EXISTING CONDITIONS

CORRIDOR EXTENT	9th Street to Liberty Street	
CORRIDOR LENGTH	1.01 MILES	
2021 NDOT TRAFFIC VOLUMES	15,300 (I-80 Ramps) 7,350 (Reno Arch) 16,600 (South of Liberty Street)	
2050 FORECASTED VOLUMES	21,575 (I-80 Ramps) 5,326 (Reno Arch) 15,425 (South of Liberty Street)	
SIGNALIZED INTERSECTIONS	9th Street 8th Street Maple Street 6th Street 5th Street 4th Street	Plaza Street 2nd Street 1st Street State Street Liberty Street
STOP CONTROLLED INTERSECTIONS	7th Street 3rd Street Commercial Row	Mill Street Pine Street Ryland Street
PRIMARY TRUCK ROUTE	NO	
EMERGENCY VEHICLE ROUTE	YES	
TRANSIT ROUTE	YES	

\*AWS = All-Way Stop, TWS = Two-Way Stop, OWS = One-Way Stop

# virginia street: existing conditions

## VIRGINIA STREET CRASH DATA

Virginia Street between Liberty Street and 10th Street had a total of 233 crashes between 2016 and 2020, including 104 injury crashes and 129 property damage only crashes. Angle crashes were the most common with 103 total angled crashes, followed by rear-end crashes with 66 crashes. There were 19 crashes involving pedestrians, with all but two resulting in injuries; during this period there were just three bicycle-involved crashes which all resulted in an injury and were spread out along the corridor. Of the pedestrian involved injury crashes, nine occurred when the driver was turning left, seven while the driver was going straight, and one when the driver was turning right. Left-turning vehicles can pose a significant risk to pedestrians, as drivers may not always yield properly or may have limited visibility of pedestrians in crosswalks. This highlights that pedestrians are over-represented in injury crashes as they accounted for 8% of total crashes along the corridor but 16% of injury crashes. More than half of the pedestrian-involved crashes (12 total) occurred in low light (dark / dawn) conditions. This may indicate a need for increase nighttime visibility. It is important to note that all bicycle involved crashes which resulted in injuries occurred between 4 am and 10 am.

**TABLE 11: CRASHES BY YEAR ON VIRGINIA STREET (10TH ST TO LIBERTY ST)**

YEAR	INJURY CRASH	PROPERTY DAMAGE ONLY	TOTAL
2016	23	35	58
2017	25	28	53
2018	27	32	59
2019	19	23	42
2020	10	11	21
TOTAL	104	129	233

Intersections represent a significant safety challenge on the corridor with 17 out of the 19 pedestrian-involved crashes occurring at intersections. Intersections in the northern portion of the corridor between 6th Street and 9th Street had the highest number of crashes, with 8th Street having the most with a total of 28 (17 injury crashes and 11 property damage only crashes). Other intersections with multiple pedestrian-involved crashes during the same period were 7th Street with 3 pedestrian injury crashes, 10th Street with 2, and Maple Street with 2.

**TABLE 12: PEDESTRIAN-INVOLVED CRASHES ON VIRGINIA STREET (10TH ST TO LIBERTY ST)**

YEAR	INJURY CRASH	PROPERTY DAMAGE ONLY	TOTAL
2016	1	0	1
2017	6	0	6
2018	6	0	6
2019	4	1	5
2020	0	1	1
TOTAL	17	2	19

# virginia street: existing conditions

**TABLE 13: LIGHTING CONDITIONS FOR PEDESTRIAN INVOLVED CRASHES ON VIRGINIA STREET (2016 - 2020)**

LIGHTING CONDITION	PEDESTRIAN INVOLVED CRASHES ON VIRGINIA STREET
DARK - CONTINUOUS LIGHTING	3
DARK - SPOT LIGHTING	8
DAWN	1
DAYLIGHT	6
UNKNOWN	1
GRAND TOTAL	19

The concentration of crashes at specific intersections, particularly between 6th Street and 9th Street, suggests the need for targeted improvements in this portion of the corridor. Intersections with multiple pedestrian-involved crashes (7th Street, 10th Street, and Maple Street) may require special attention to assess and implement appropriate safety measures, such as improved crosswalk markings, pedestrian crossing signals, and traffic calming measures. As student housing options are constructed south of I-80 this need may increase with a greater number of students travel to and from the UNR campus.

In conclusion, the crash data highlights numerous safety concerns for pedestrians at intersections along Virginia Street between Liberty Street and 10th Street, particularly between 6th Street and 9th Street. The concentration of crashes at intersections in this portion of the corridor highlights the need to create a safer and more accommodating crossing for pedestrians and bicyclists over I-80 as one of the most critical aspects of creating a strong connection between UNR and downtown Reno.

**TABLE 14: TOP 10 CRASH INTERSECTIONS ON VIRGINIA STREET BETWEEN 10TH ST AND LIBERTY ST (2016 - 2020)**

INTERSECTION	INJURY CRASH	PROPERTY DAMAGE ONLY	GRAND TOTAL
8TH ST	17	11	28
MAPLE ST	11	6	17
9TH ST	2	13	15
7TH ST	9	6	15
6TH ST	6	9	15
E 5TH ST	2	7	9
E 2ND ST	4	5	9
LIBERTY ST	1	6	7
W 10TH ST	4	3	7
COURT ST	0	6	6

\* All other intersections had four crashes or less between 2016 – 2020

# virginia street: project concept



## PROJECT DESCRIPTION

This project concept builds off of recent concepts developed through the Downtown Circulation Study and Virginia Street Downtown Placemaking Study aimed at improving safety for all users, enhancing connectivity, and bolstering the unique sense of place in downtown Reno. This concept incorporates street furniture and placemaking elements but is focused on the changes to the roadway and transportation network; cost estimates for street furniture and placemaking elements are not reflected in the project cost estimate to the right.

The concept focuses on enhancing the current parking protected bike lanes south of 1st Street and applying similar treatments throughout the corridor as possible. Between Liberty Street and 1st Street, the concept will formalize the existing buffer between parked vehicles and the bike lane with concrete curbing and improved crossing treatments at the intersections. Between 1st Street and 6th Street, the project concept will construct a buffered bike lane with removable bollards and remove the center median & turn lanes at most intersections in this portion; removable bollards will allow for this portion of the corridor to continue to accommodate special events with vendor booths. This

VIRGINIA STREET	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
Liberty St to 1st St.	Curb-Protected Bike Lane
1st Street to 6th Street	Buffered Bike Lane
6th Street to 9th Street	Curb-Protected Bike Lane
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
Protected intersections	Pedestrian refuges
Reduced corner radii	Reduced crossing distances
High-visibility crosswalks	
PLANNING LEVEL COST ESTIMATE	
<b>\$ 3,979,750</b>	

# virginia street: project concept

concept will also create a pedestrian refuge between Commercial Row and 3rd Street in order to reduce crossing distances, improve crossings, integrate with the planned 3rd Street facility, and provide a safer alternative for tourists to capture photos with the Reno Arch. Between 6th and 7th the concept includes potential options for adding parking or accommodating enhancing transit service with floating bus stops. In order to improve safety for pedestrians and bicyclists traveling through the northern portion of the corridor, this concept includes a concrete buffer between the bike lane and travel lane from 6th Street to 9th Street. In order to achieve the enhanced connection over I-80, the concept includes the removal of one vehicle travel lane on Virginia Street in both directions between 5th Street and 8th Street. This concept would create extended transit stops which function as mini-floating bus stops between 8th and 9th Streets in order to provide a protected bike lane and maintain enhanced transit service while preserving the existing right of way. This will require adjusting the configuration of the recently constructed center median.

## COUNTERMEASURES

PEDESTRIAN/ BICYCLIST	*Separated Bike Lanes
	*Crosswalk visibility enhancements
	Bike boxes
	*Pedestrian Refuges
	*Road diet
	*Curb extensions
	Floating bus stops
INTERSECTIONS	Protected intersection

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Enhanced connectivity between UNR, Downtown, Midtown
- Reduced vehicle speeds through Virginia Street
- Enhanced pedestrian crossings
- Improved safety for all users
- Bolstered placemaking elements
- Refinements to existing pilot design (1st Street to Liberty Street)
- Better photo opportunities with the Reno Arch

## IMPACTS

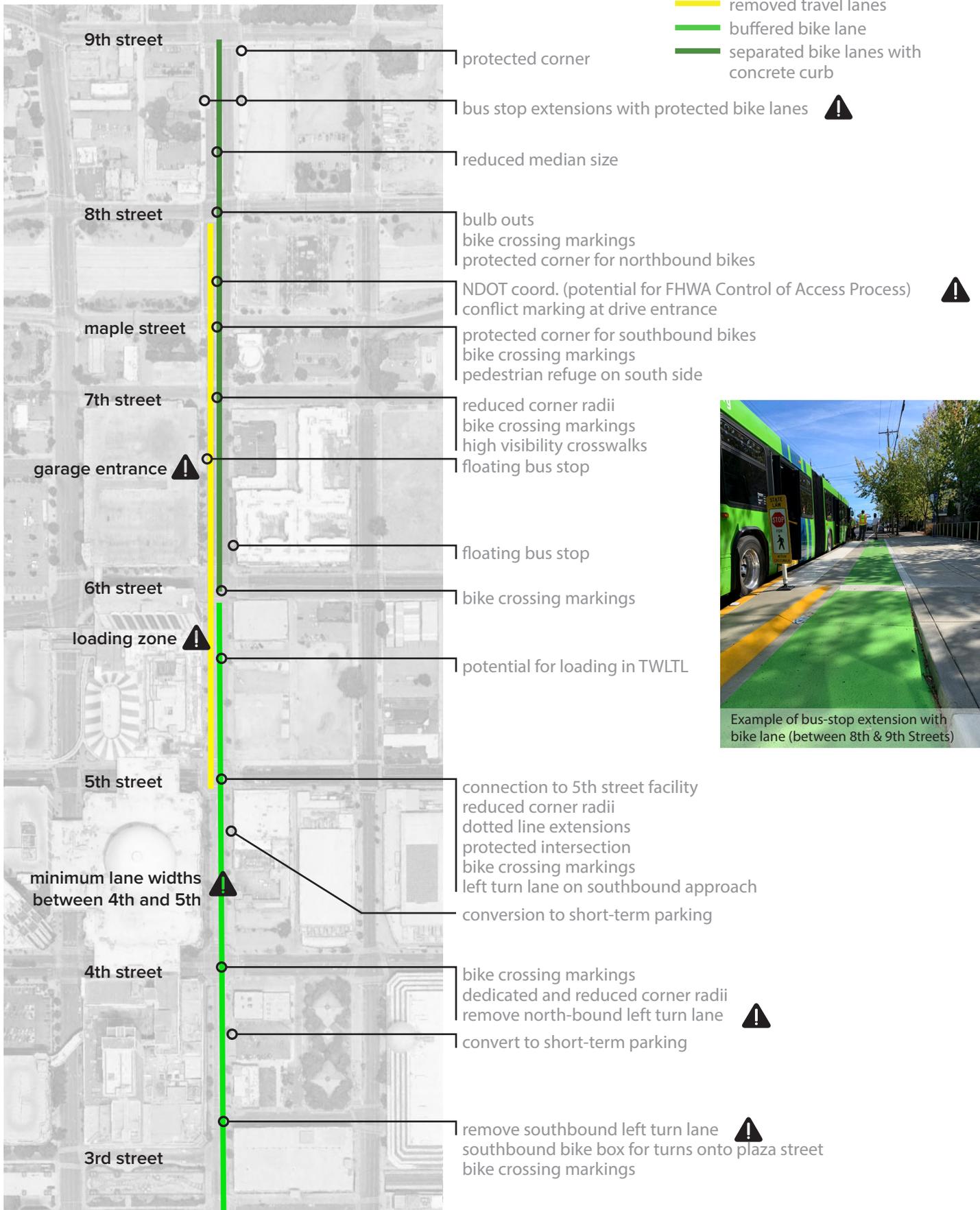
### VEHICLE CAPACITY

- Reduces travel lanes between 8th Street and 5th Street
- Removes turn lanes between 4th Street and 1st Street and from Mill Street to Ryland Street
- Provides minimum lane widths between 5th Street and 4th Street

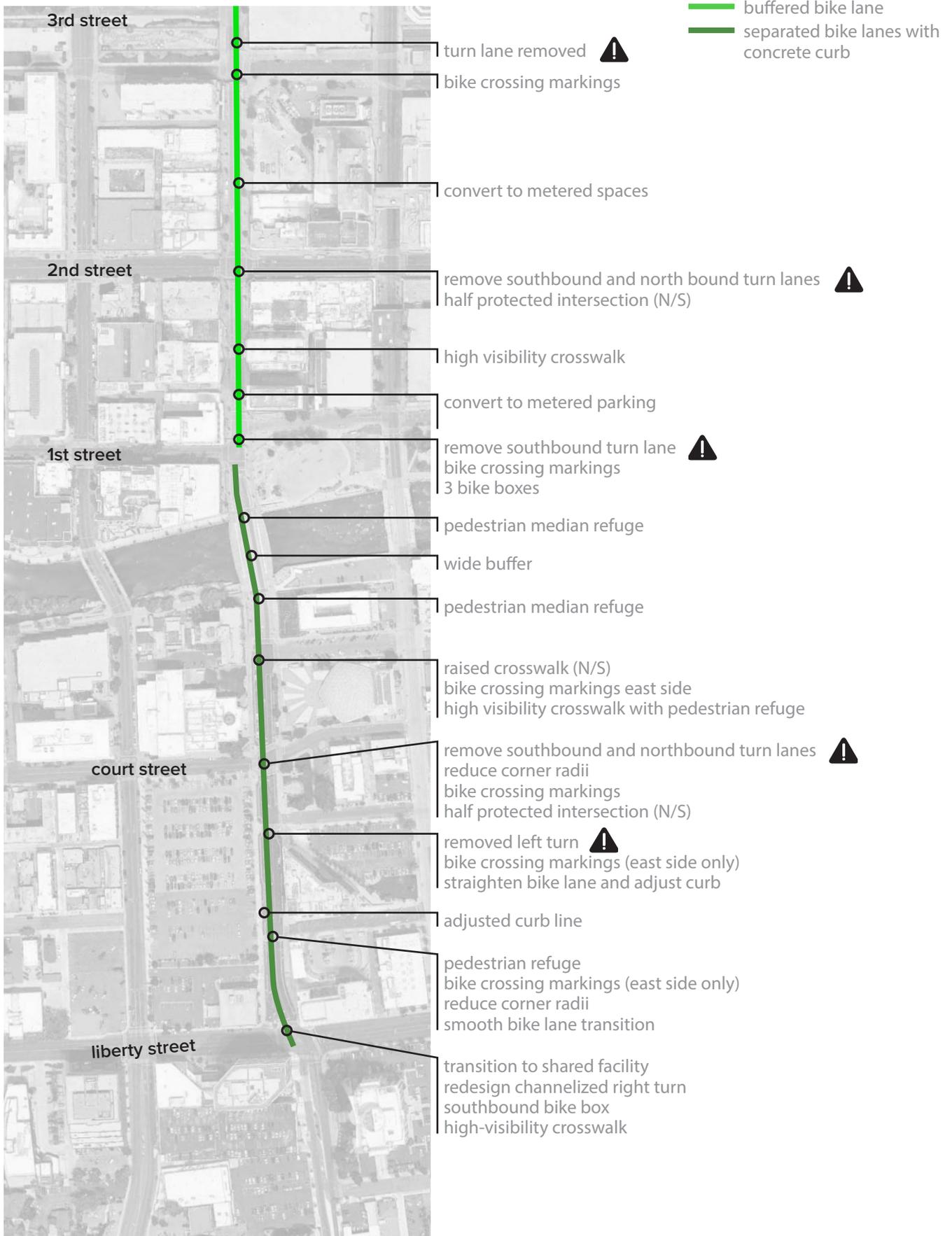
### PARKING

- Adjusted loading zone spaces to short-term metered parking
- Potential additional parking between 6th Street and 7th Street  
**(alternatives: pages 20-21)**

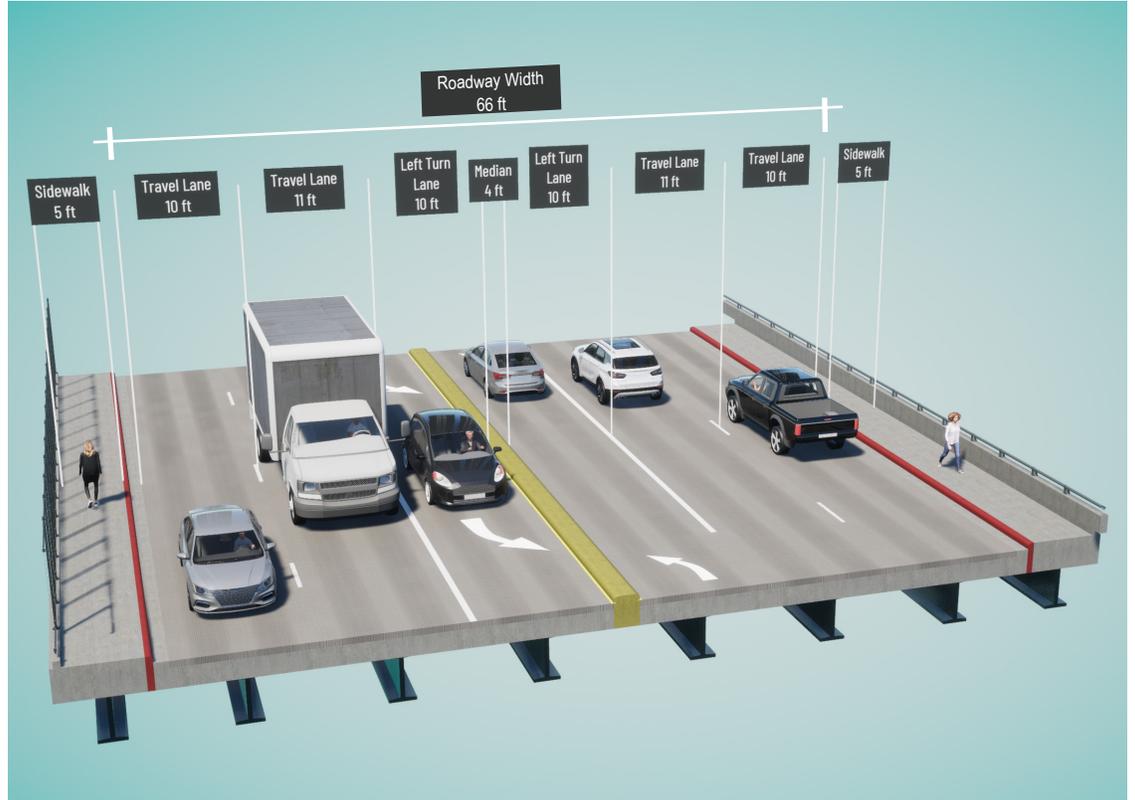
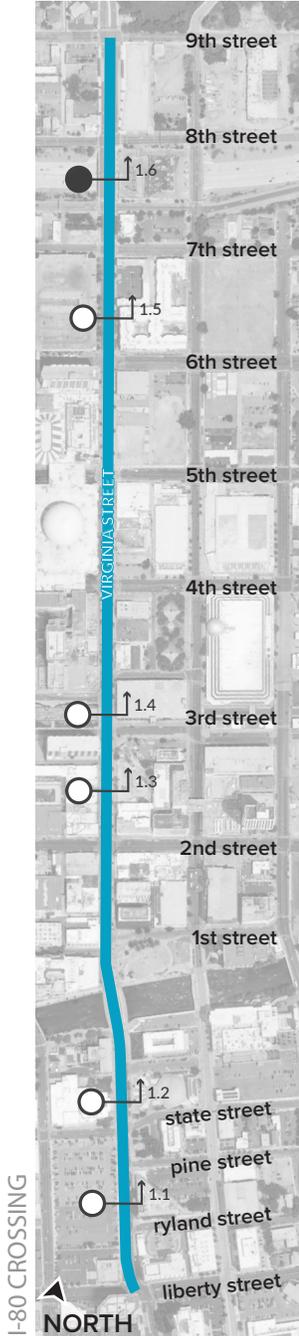
# virginia street: project concept



# virginia street: project concept

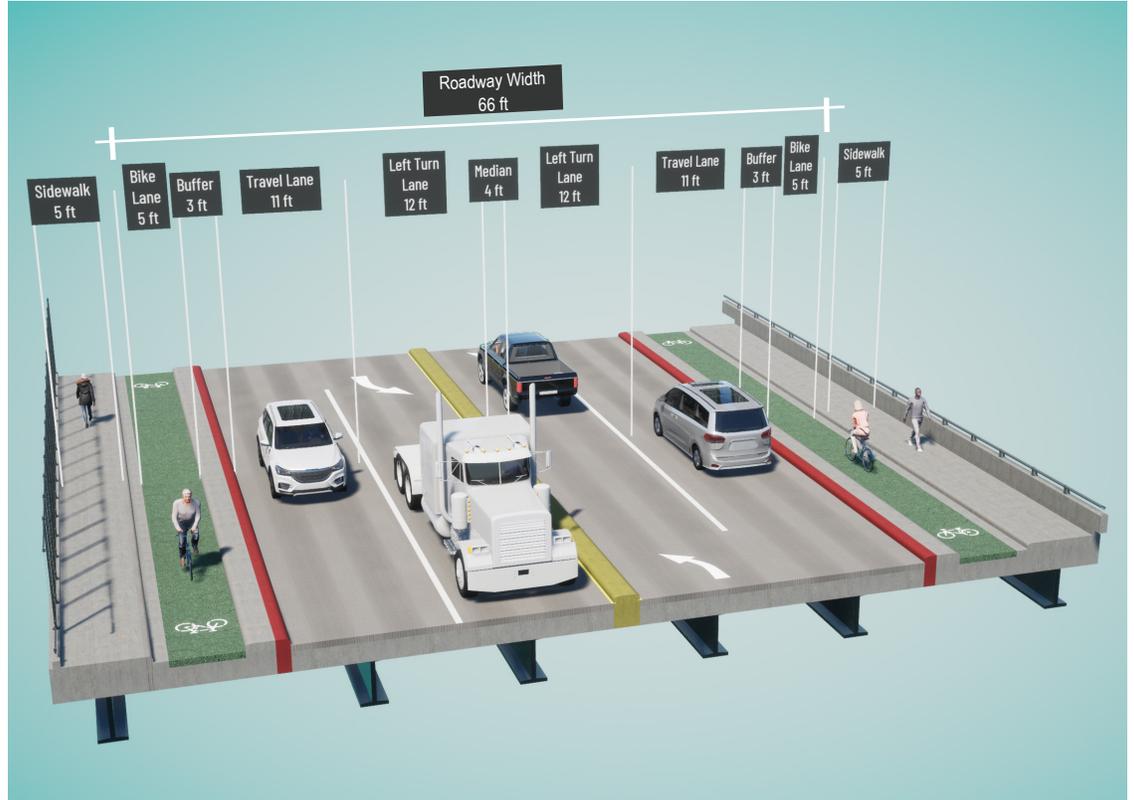
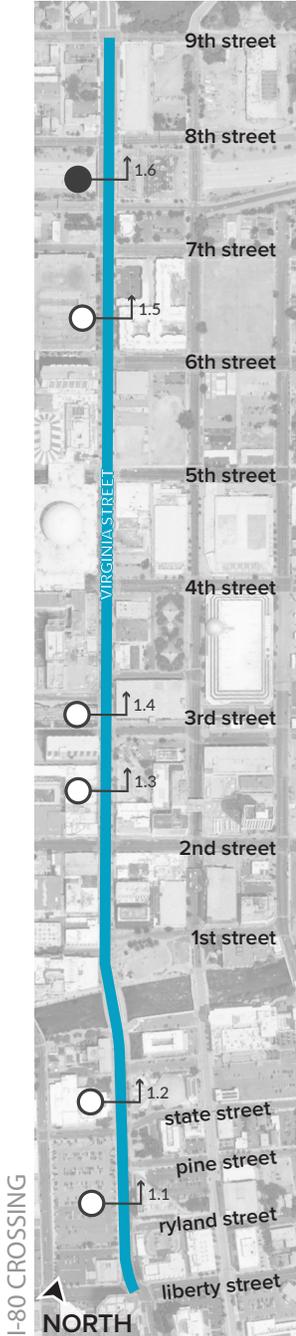


# virginia street: project concept



EXISTING CONDITION

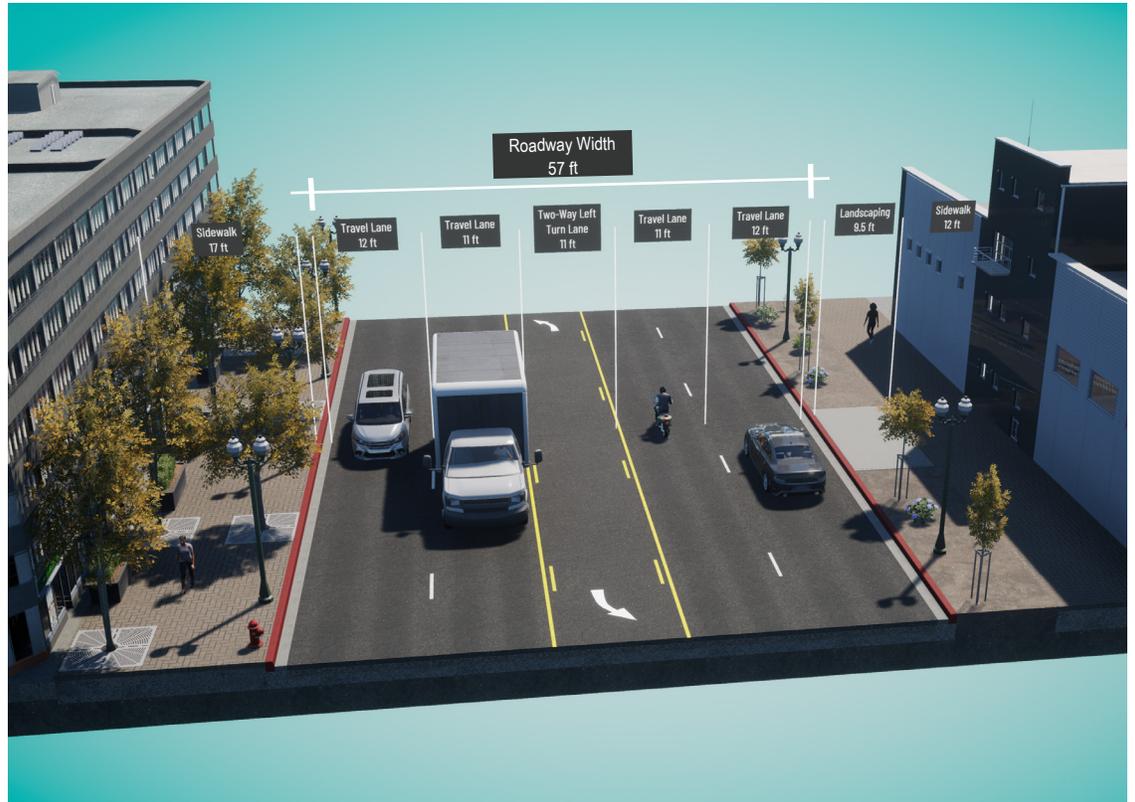
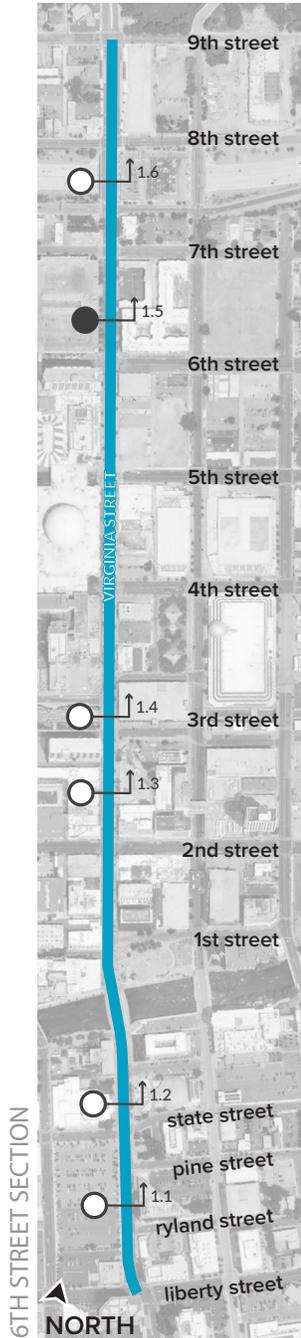
# virginia street: project concept



## PROPOSED CONDITION

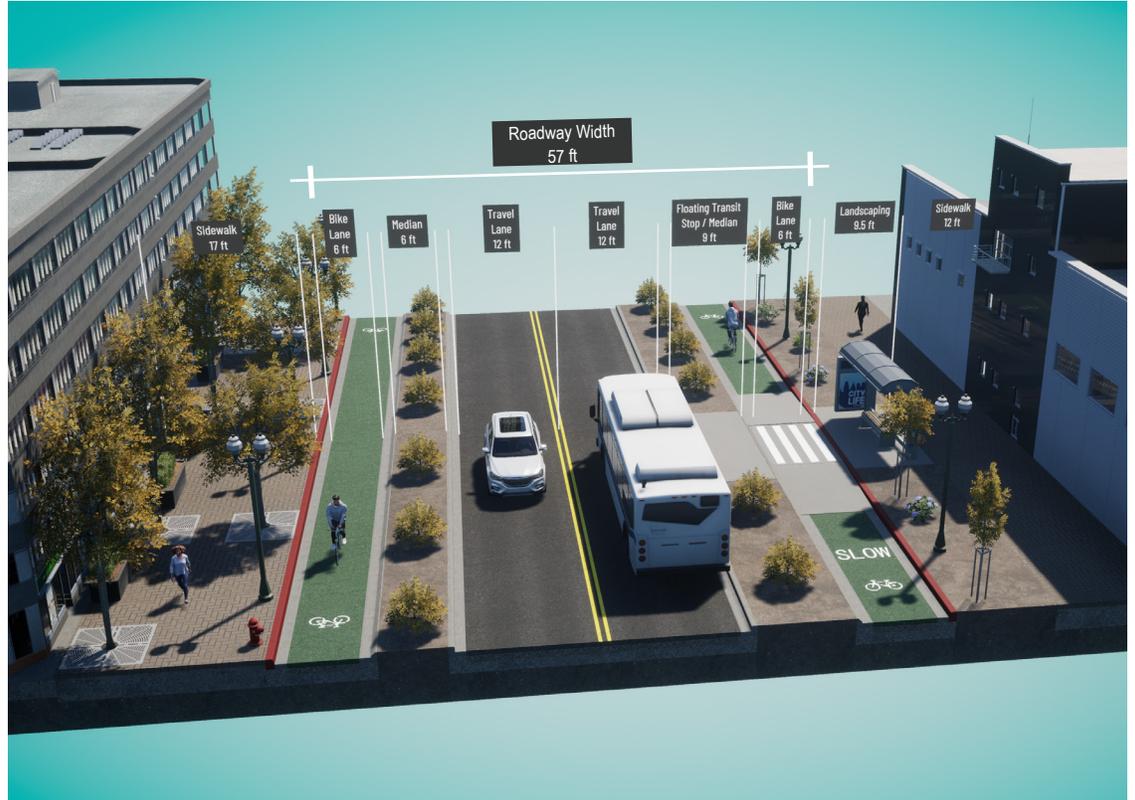
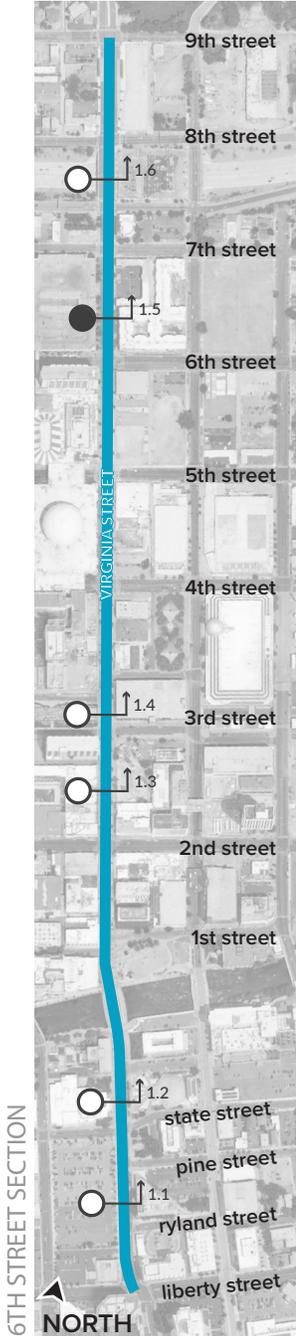
Removing one travel lane in each direction between 5th and 8th Streets may result in traffic operational impacts to the corridor. Impacts to the 8th Street and Maple Street intersections and the removal of lanes over I-80 will likely require coordination with NDOT. A review of the road network surrounding the I-80 ramps may shed light on the potential for rerouted traffic throughout the larger network beyond a focused corridor analysis.

# virginia street: project concept



EXISTING CONDITION

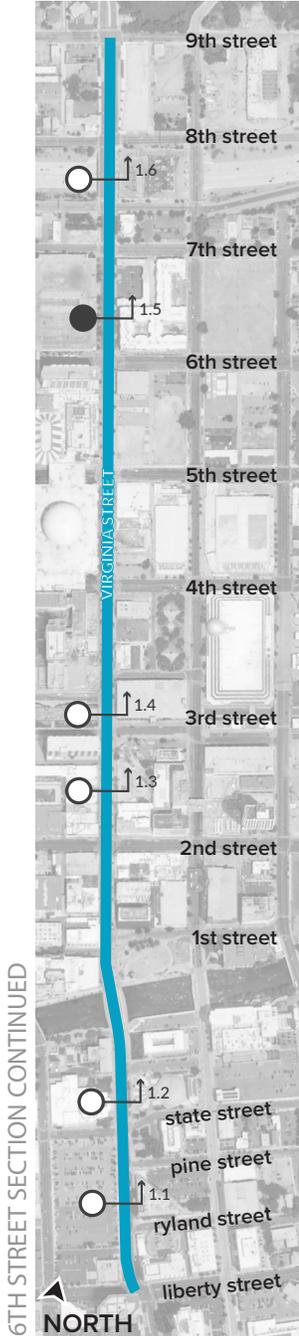
# virginia street: project concept



## PROPOSED CONDITION: FLOATING BUS STOPS

Virginia Street between 6th Street and 7th Street presents an opportunity to enhance existing transit service by creating floating bus stops which allow the bus to stop within the travel lane and provide more efficient and reliable service. This also presents an opportunity to enhance corridor greening away from areas which may impact adjacent basements.

# virginia street: project concept

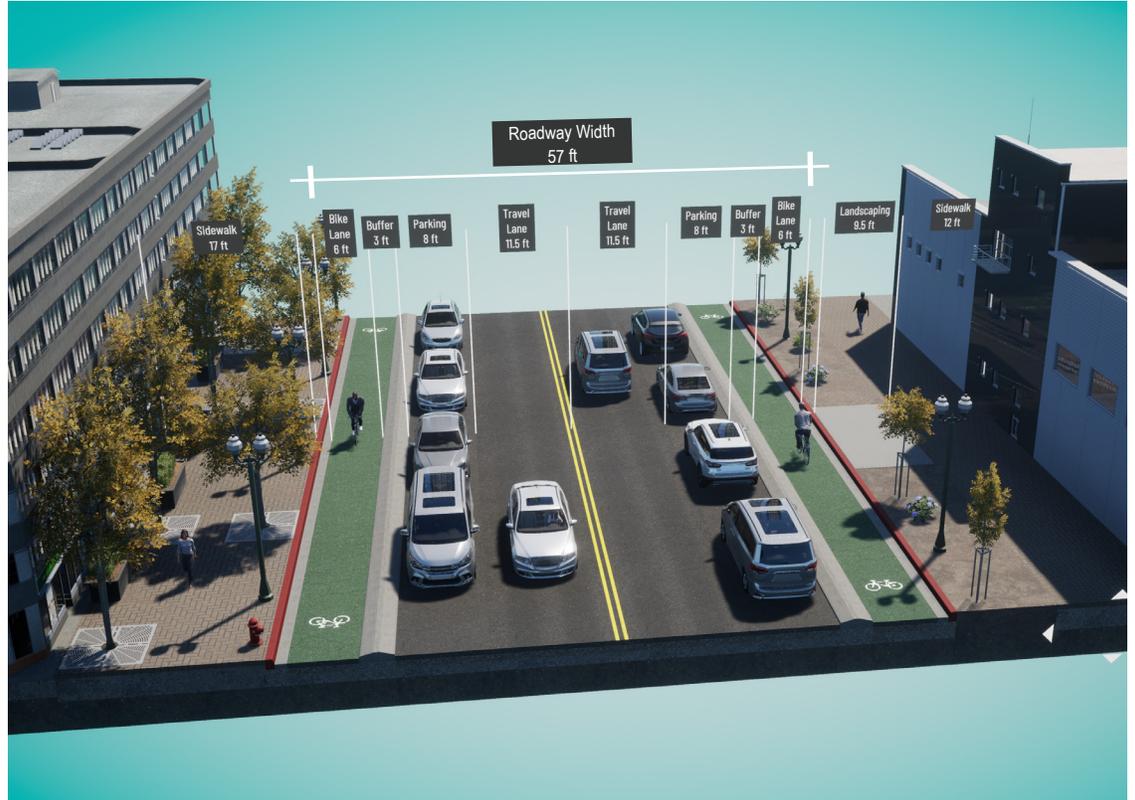
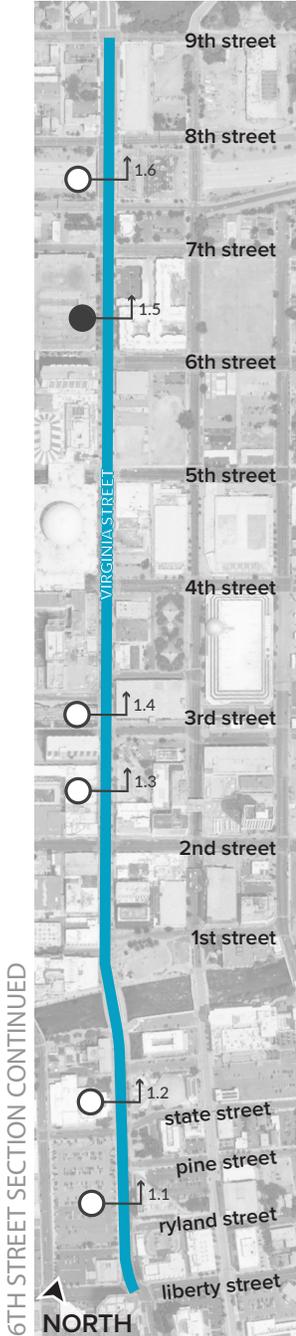


## ALTERNATIVE CONFIGURATION: SINGLE SIDED PARKING

With adjustments to the roadway lanes widths, there is the potential to add on-street parking to the section of Virginia Street between 6th and 7th Street. The two alternatives on this page and the next highlight the potential configuration for parking on one-side with a center turn lane, and parking on both sides with the center turn lane removed.

It is important to note that the cost estimate reflects the floating bus stops rather than parking focused alternatives shown here.

# virginia street: project concept

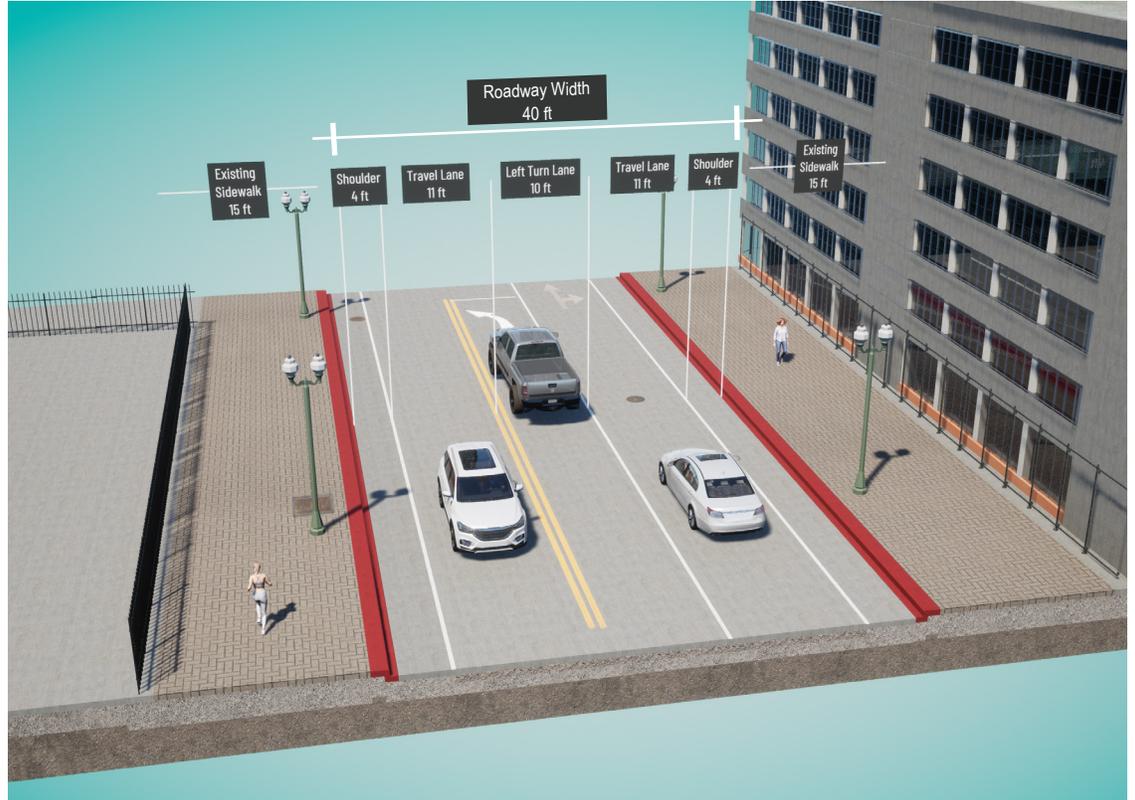
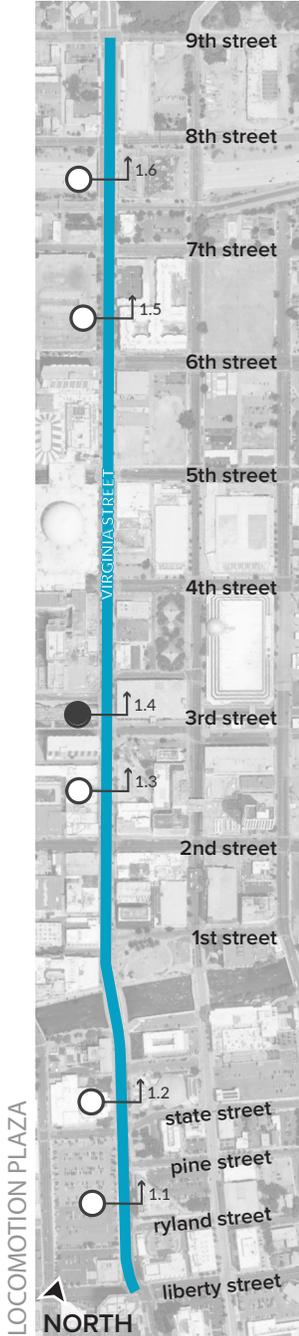


## ALTERNATIVE CONFIGURATION: DOUBLE SIDED PARKING

With adjustments to the roadway lanes widths, there is the potential to add on-street parking to the section of Virginia Street between 6th and 7th Street. The two alternatives on this page and the previous highlight the potential configuration for parking on one-side with a center turn lane, and parking on both sides with the center turn lane removed.

It is important to note that the cost estimate reflects the floating bus stops rather than parking focused alternatives shown here.

# virginia street: project concept

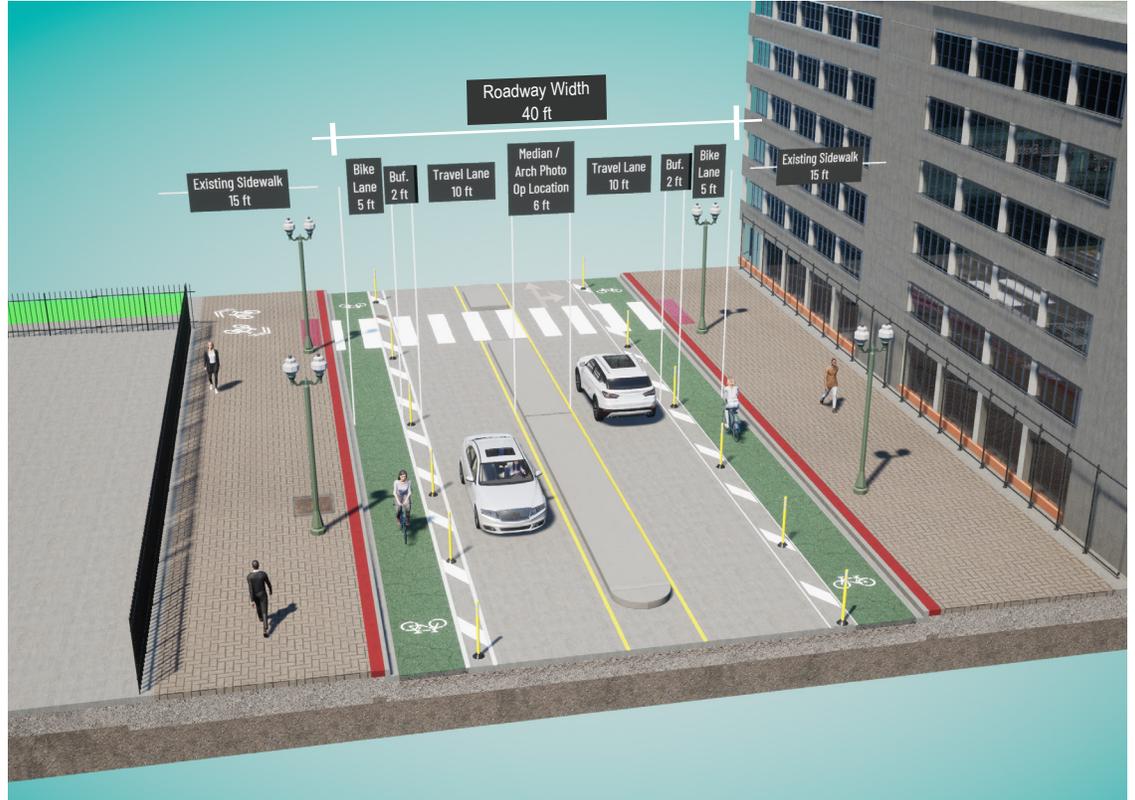
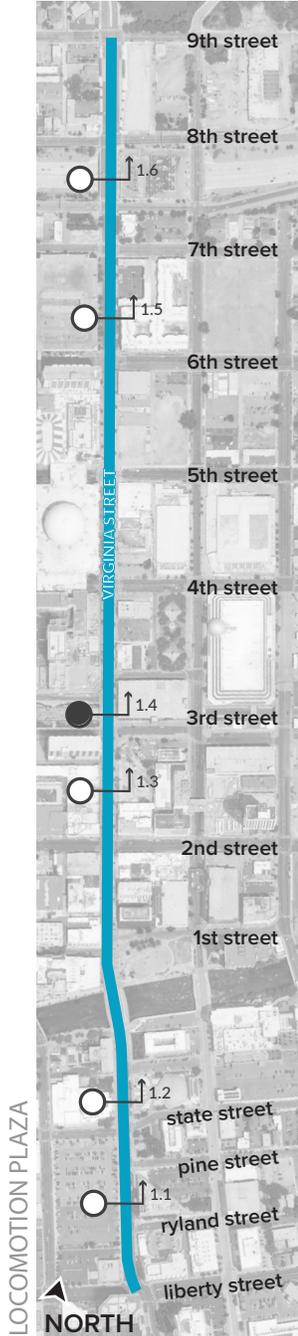


## EXISTING CONDITION

The existing loading zones may be converted to short-term parking in order to increase the number of designated parking spaces along Virginia Street.

The existing curb and gutter provide some additional space which may be used by a bicycle, however, the concrete seam between the gutter pan and the roadway pavement can create a hazard for smaller tires such as road bikes, scooters, skateboards, or rollerblades.

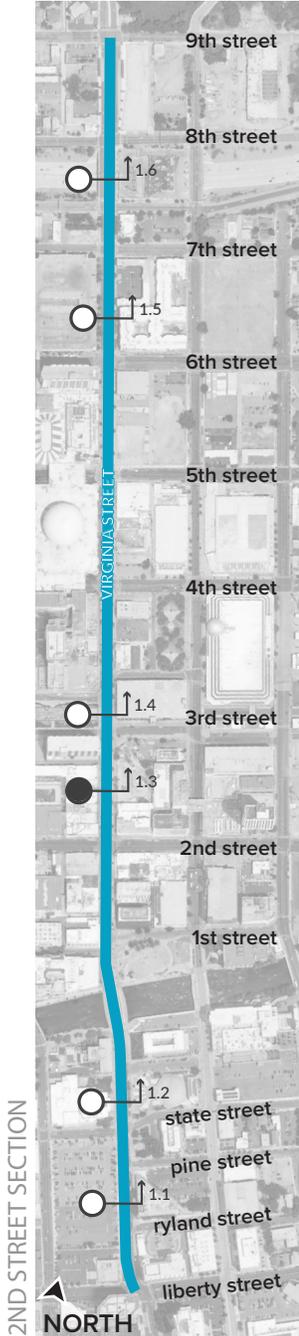
# virginia street: project concept



## PROPOSED CONDITION

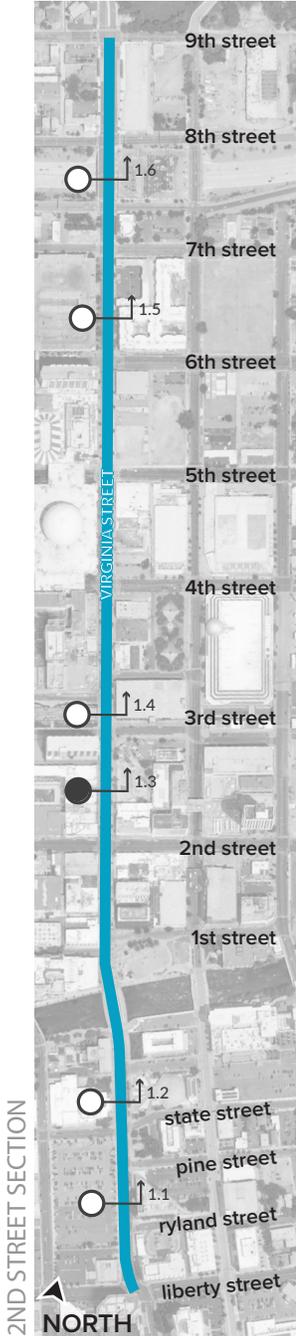
This project concept would add a pedestrian refuge island and a high visibility crosswalk which would create an enhanced connection to the planned 3rd / Plaza Street bike path as well as creating a location out of the roadway where tourists and others could take a photo under the Reno Arch. This concept would remove the existing northbound left turn lane at the 3rd Street intersection.

# virginia street: project concept



EXISTING CONDITION

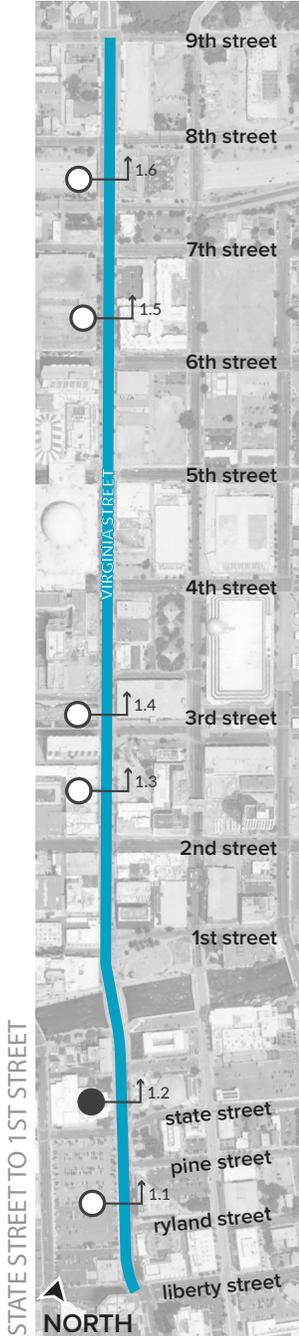
# virginia street: project concept



## PROPOSED CONDITION

The proposed condition will incorporate seating, vegetation, and bicycle parking options within an expanded furnishing zone as recommended in the Virginia Street Downtown Placemaking Study; costs for these improvements are not included in the project cost estimate identified in this document.

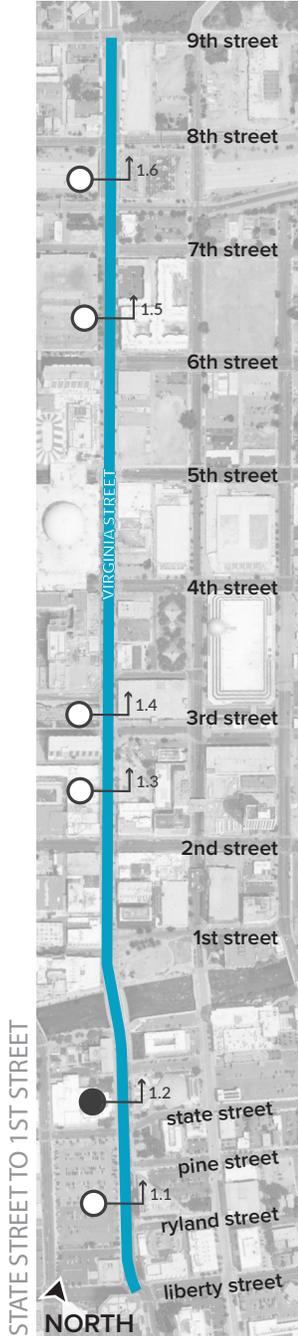
# virginia street: project concept



## EXISTING CONDITION

The curb to curb width from Pine Street to Mill Street is approximately 50 feet. Between Mill Street and 1st Street the roadway narrows to approximately 48'.

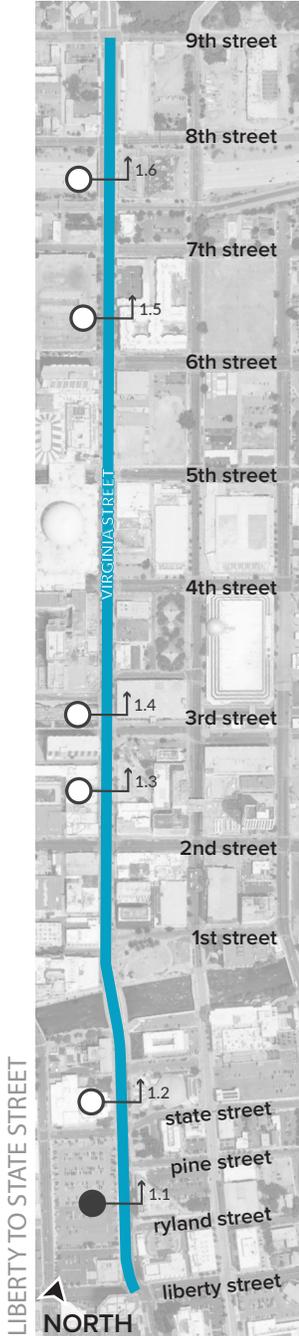
# virginia street: project concept



## PROPOSED CONDITION

The proposed concept would continue over the bridge to 1st Street with a wider buffer in place of parking on the bridge deck.

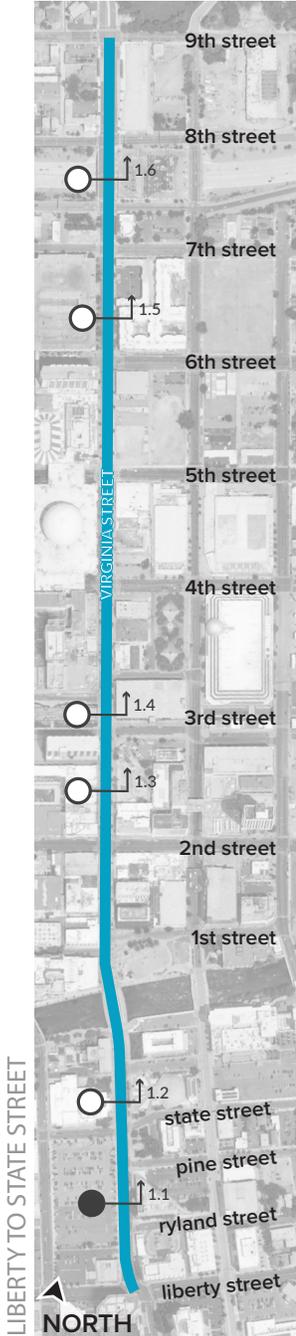
# virginia street: project concept



## EXISTING CONDITION

The width of the roadway (curb lip to curb lip) varies from 56-58 feet between Pine Street and Liberty Street.

# virginia street: project concept



PROPOSED CONDITION

# virginia street: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

**Number of Comments:** 117

Based on the public input, the major themes and key takeaways are as follows:

- Traffic Analysis, Intersection Safety, and Street Design
- Preferred Routes and Access to Destinations
- Connectivity and Wide Streets
- Safety and Importance of Bike Lanes

### TRAFFIC ANALYSIS, INTERSECTION SAFETY, AND STREET DESIGN

Users voice concerns about the impact of proposed changes on traffic flow and potential disruptions caused by special events. Some argue that reducing lanes or closing Virginia Street would worsen congestion and suggest focusing on constant improvements to optimize traffic signal timing and beautify the corridor. Others voiced worries about the impact on traffic flow, particularly with reduced lanes and intersections near freeway on/off ramps.

### PREFERRED ROUTES AND ACCESS TO DESTINATIONS

Feedback from users emphasizes the need to establish preferred routes that lead to popular destinations like the university area and under the arch. Improving accessibility to these places is seen as vital to making downtown more vibrant and attractive to both residents and visitors.

However, some concerns are raised about the northern section of the proposed route, which involves a steeper uphill climb compared to other alternatives like University Way or Evans, potentially making it less practical for certain users. In response to the proposed route, participants express interest in extending it, particularly on the south end. They suggest exploring connections to other micromobility routes, such as Ryland or Pine Street, to enhance overall connectivity within the city.

## VIRGINIA STREET: CORRIDOR RATINGS

On a scale from 1 - 10:	Virginia St
How useful would this route be for you?	5.9
Would this route enable you to bicycle or use micromodes more frequently?	5.9
Would you feel comfortable using this facility?	6.6
Would you feel comfortable using this facility with a child?	5.7
How supportive of this project concept are you?	6.6

### CONNECTIVITY AND WIDE STREETS

The feedback suggests transforming Virginia Street into a bike boulevard and promenade with speed calming measures. Users propose using pavers and nooks to reduce through-traffic and create a pedestrian safety zone. The aim is to make the street more walkable, bikeable, and scooterable, with better connectivity between different areas. Some users suggest funneling car traffic through parallel streets like Sierra and Center.

### SAFETY AND IMPORTANCE OF BIKE LANES

Safety is a crucial concern, and users stress the need for protected and separated bike lanes to avoid conflicts with pedestrians and vehicles. Some express dissatisfaction with flimsy plastic poles and prefer physical barriers or metal poles to enhance safety.

Several key insights have emerged from the discussions. The top priority is ensuring safety and accessibility for all road users. Participants emphasize the need for safety measures, such as protective barriers and raised curbs, to prevent potential vehicle-bicycle collisions and enhance overall safety for cyclists and pedestrians. Moreover, the proposed bike lanes and improvements have garnered significant enthusiasm and support from the community. Participants believe that the separated bike lanes, separated from both traffic and pedestrian areas, will not only promote safety but also encourage more people to take up cycling in the area. Some even suggest the addition of trees and plantings in the buffer areas to enhance the corridor's aesthetics and mitigate the Urban Heat Island effect.

# VINE STREET

# vine street: existing conditions

## VINE STREET OVERVIEW

Extending from University Terrace south to Riverside Drive, Vine Street is a relatively low volume road with posted speed limit of 25 MPH. The north end is characterized by the Vine Street overpass, crossing Interstate 80. There are a series of one-way frontage roads along the bridge creating a complicated biking and walking scenario. From 5th Street to 2nd Street is a four lane roadway with parallel parking passing through commercial and industrial uses. In the area from 2nd Street to Riverside Drive, the road narrows to two lanes with parallel parking and mostly single family residential uses on either side.

TABLE 15: VINE STREET EXISTING CONDITIONS

CORRIDOR EXTENT	University Terrace to Riverside Drive
CORRIDOR LENGTH	.86 MILES
2018 NDOT TRAFFIC VOLUMES	2,200
2050 FORECASTED VOLUMES	2,500
SIGNALIZED INTERSECTIONS	4th Street
STOP CONTROLLED INTERSECTIONS	University Terrace (AWS) 5th Street (AWS) 3rd Street (MINOR STREET STOP) 2nd Street (TWS) 1st Street (TWS) Jones Street (MINOR STREET STOP) Riverside Drive (OWS)
PRIMARY TRUCK ROUTE	NO
EMERGENCY VEHICLE ROUTE	NO
TRANSIT ROUTE	NO

\*AWS = All-Way Stop, TWS = Two-Way Stop, OWS = One-Way Stop

# vine street: existing conditions

## VINE STREET CRASH DATA

On Vine Street between University Terrace and Riverside Drive, 11 crashes resulted in nine injuries (only one two-injury crash) with zero fatalities between 2016 and 2020. Of the 11 crashes, four occurred at 4th Street, and two occurred at both Jones Street and 5th Street. Lighting data is available for all but one crash. Only two crashes occurred in dark conditions; one at University Terrace and one at 5th Street. Failure to yield right-of-way was the most cited vehicle factor (six crashes).

There was one pedestrian-involved crash and no bicycle-involved crashes. The pedestrian-involved crash occurred at the 4th Street intersection and resulted in one injury. While a vehicle factor was not officially listed with this crash, the data did note that the driver was turning right. This crash happened during the day under good lighting conditions.

Along this corridor, 4th Street was the location with the most crashes. Failure to yield the right of way and low lighting were the leading crash factors.

TABLE 16: VINE STREET CRASHES BY CROSS-STREET (2016-2020)

STREET	INJURY ACCIDENT	PROPERTY DAMAGE ONLY	TOTAL
JONES ST	2	0	2
W 4TH ST	3	1	4
ALL OTHER INTERSECTIONS	2	1	3
GRAND TOTAL	7	2	9



Safety at the Vine Street / 4th Street intersection may be improved by reducing pedestrian crossing distances, improving signal heads, and consider Leading Pedestrian Intervals

# vine street: project concept



## PROJECT DESCRIPTION

The Vine Street corridor connects the west side of downtown Reno with University Terrace which is a key connection to the University of Nevada, Reno. This project will enhance the intersection of Vine Street and University Terrace with a peanut roundabout which will reduce vehicle speeds and enhance intersection safety. This project will add bike lanes to the roadway from University Terrace to 5th Street where the bicycle facility will transition to the outside edge of the roadway and cross the service road access from adjacent businesses and residences. Between 5th Street and 2nd Street this design concept will maintain vehicle parking and provide a parking protected bicycle lane while reutilizing excess roadway capacity in order to provide a thru lane in each direction with a center-turn lane. The conceptual facility would transition from a parking protected bicycle lane to a neighborhood greenway south of 2nd Street including corner bulb-outs, an RRFB at 1st Street and 2nd Streets, enhanced lighting and a crosswalk at Riverside Drive, and speed cushions placed at the mid-block to maintain low-vehicle speeds. This segment of Vine Street is not listed as a Primary Emergency Vehicle Route (PEVR) which allows for the use of vertical deflection elements; further traffic calming effects may be achieved through use of modal filtering elements at 1st, 2nd, and 5th Streets.

VINE STREET	
CORRIDOR SEGMENT	IMPROVEMENT CONCEPT
University Ter. to 5th St.	Bike Lanes
5th St. to 2nd St.	Parking Protected Bike Lanes
2nd St. to Riverside Dr.	Bike Boulevard (Speed Cushions and Curb Extensions)
INCLUDED CONCEPTUAL INTERSECTION ENHANCEMENTS	
Intersection Lighting	2 RRFBs
Peanut Roundabout	4 Sets of Curb Extensions
2 Protected Intersections	Median Refuge Island
High Visibility Crosswalks	Speed Cushions
PLANNING LEVEL COST ESTIMATE	
<b>\$ 2,884,750</b>	

# vine street: project concept

## COUNTERMEASURES

<b>SPEED MANAGEMENT</b>	Speed Cushions
<b>PEDESTRIAN/ BICYCLIST</b>	*Bicycle lanes
	*Crosswalk visibility enhancements
	*Medians and pedestrian refuge islands
	*Rectangular Rapid Flashing Beacons (RRFB)
	*Road diets
	Curb extensions Bike Boxes
<b>INTERSECTIONS</b>	*Backplates with retroreflective borders
	*Reduced left turn conflicts
	Half protected intersection
	Peanut roundabout
<b>CROSSCUTTING</b>	*Lighting

\* from list of Proven Safety Countermeasures per FHWA

## BENEFITS

- Traffic calming along corridor
- Better integration with bike lanes at cross streets
- Greater visibility for pedestrians at intersections
- Added turn lane for safer and easier turning and smoother traffic flow

## IMPACTS

### VEHICLE CAPACITY

- Loss of travel lanes between 5th Street and 2nd Street (1 in each direction)

### PARKING

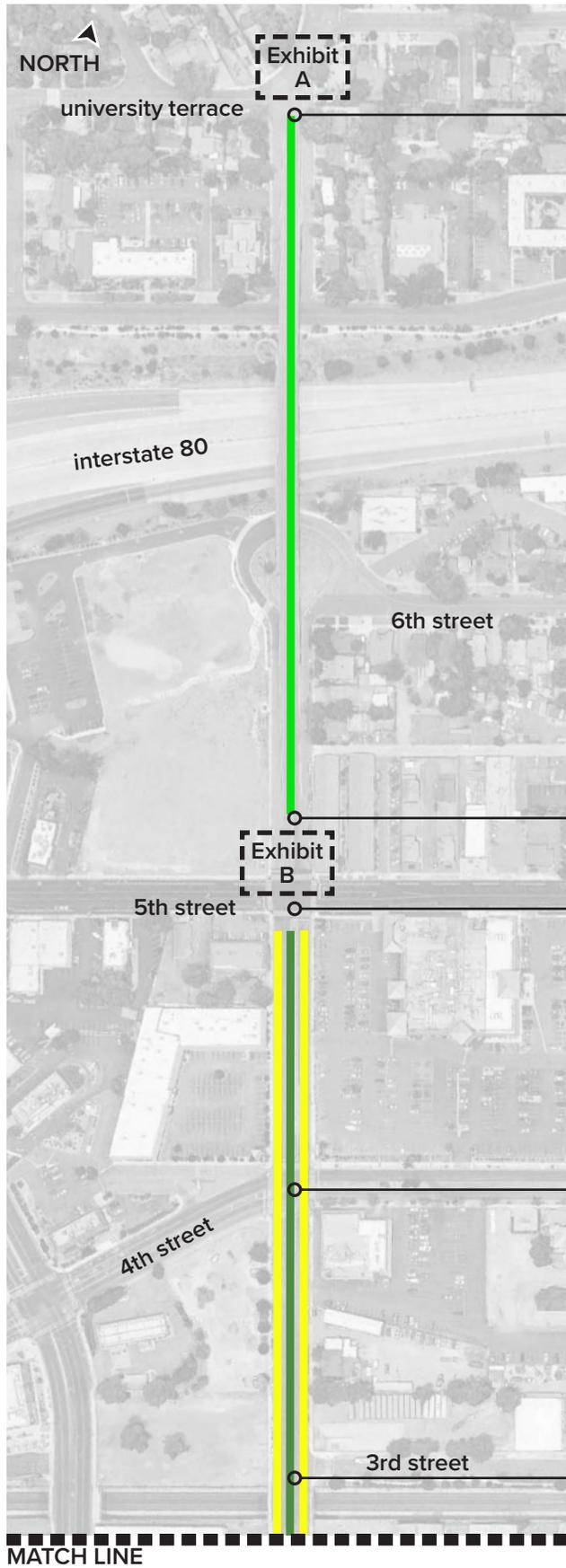
- Possible loss of stalls (**estimated 20 total**) near intersections where curb extensions would be located.

### OTHER

- Slowing of traffic along Vine Street bridge
- 5th Street and University Terrace intersection modifications for traffic calming
- Shared lanes from 2nd Street to Riverside Drive

\*\* parking stall impacts are based on planning level estimates and are subject to change during design

# vine street: project concept



- removed travel lanes
- bike lanes
- parking protected bike lane

peanut roundabout

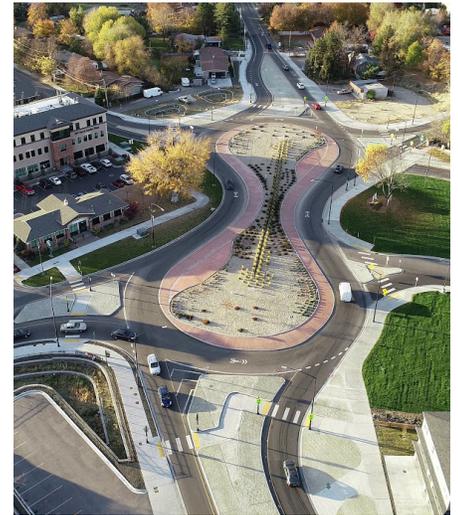


Exhibit A: Peanut Roundabout

curb extensions

shared lane markings  
protected intersection

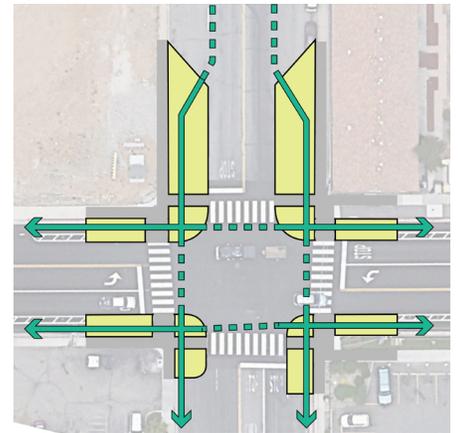


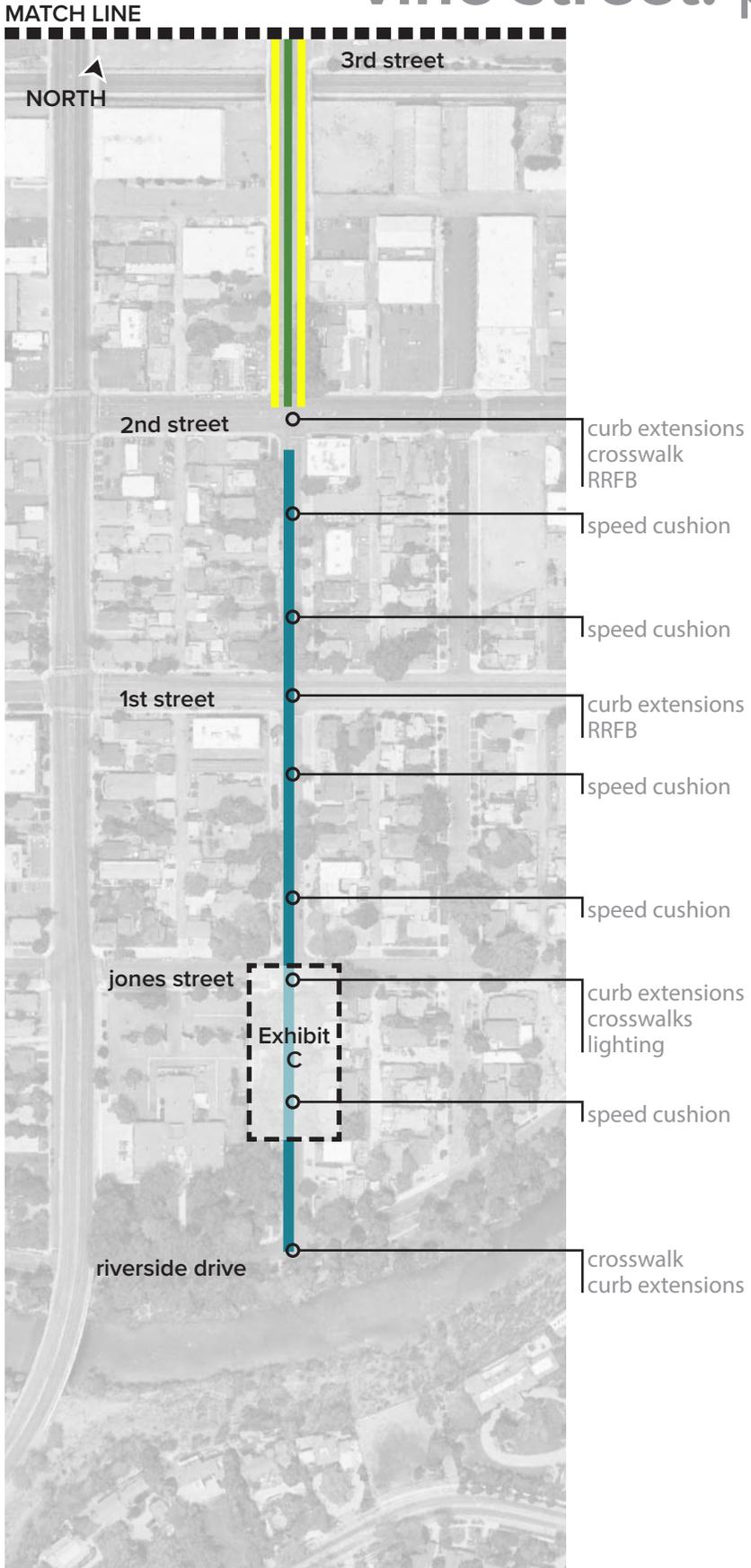
Exhibit B: 5th and Vine Intersection

half protected intersection  
shared lane markings  
enhanced lighting  
retroreflective backplates  
add flashing yellow arrow

connection with vine street facility  
high visibility crosswalk  
bulb-outs  
refuge island in median

MATCH LINE

# vine street: project concept



- removed travel lanes
- bike lanes
- parking protected bike lane
- bike boulevard

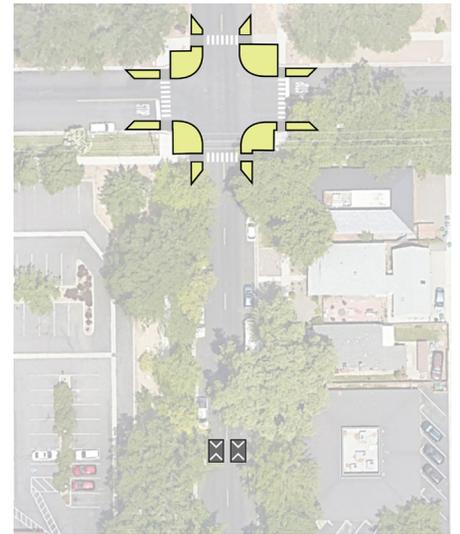
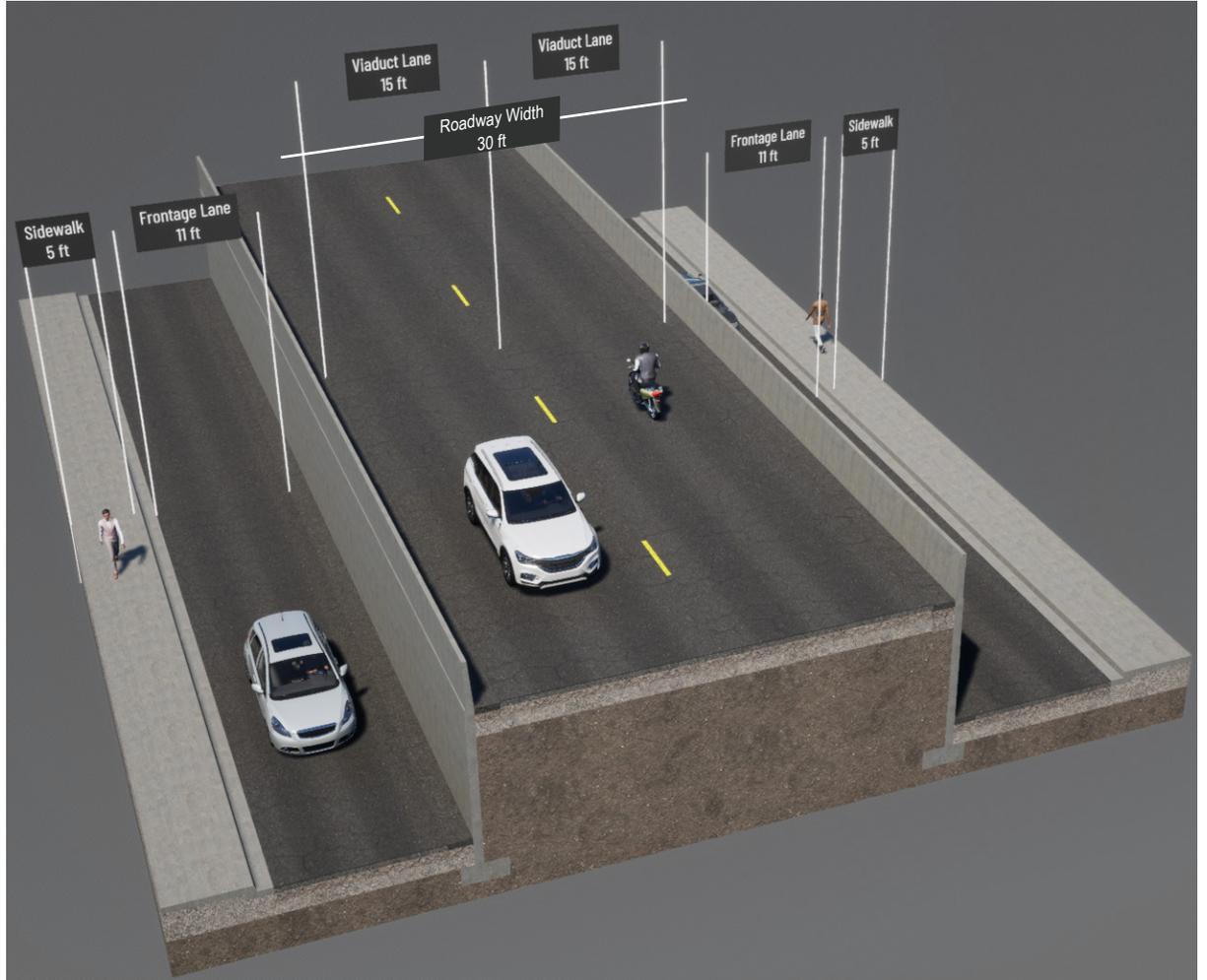
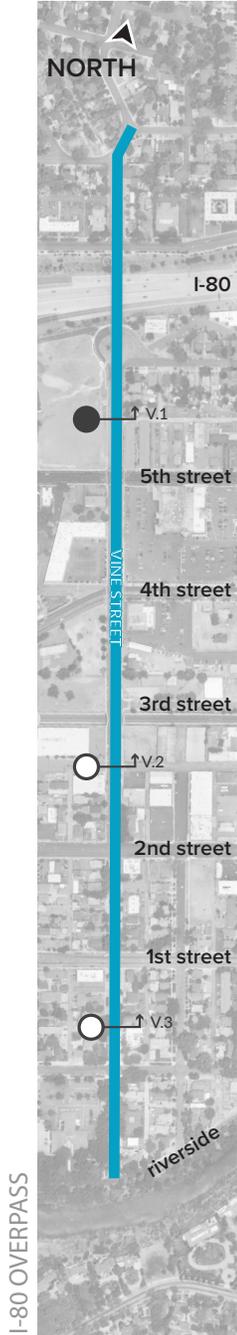


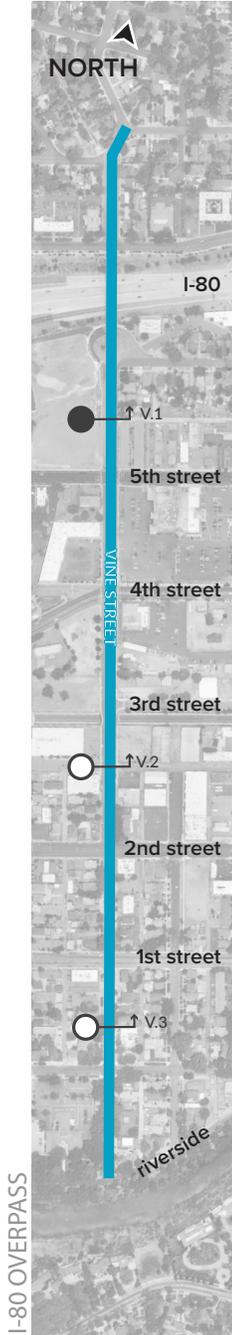
Exhibit C: Curb extensions and Speed Cushions

# vine street: project concept



EXISTING CONDITION

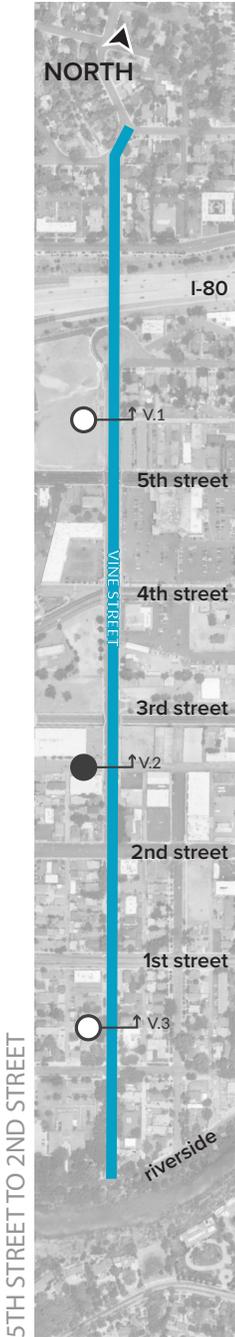
# vine street: project concept



## PROPOSED CONDITION

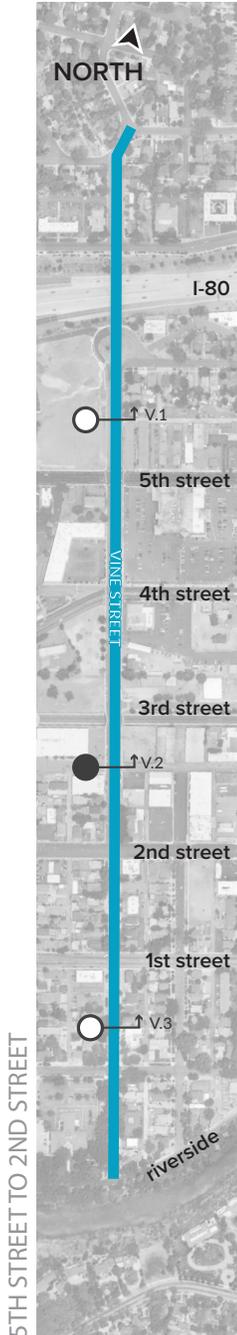
Note: Bike lanes are shown as green for diagrammatic purposes only

# vine street: project concept



EXISTING CONDITION

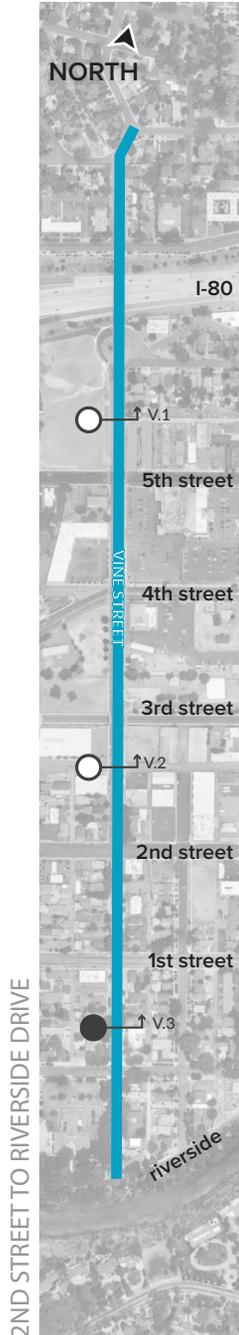
# vine street: project concept



## PROPOSED CONDITION

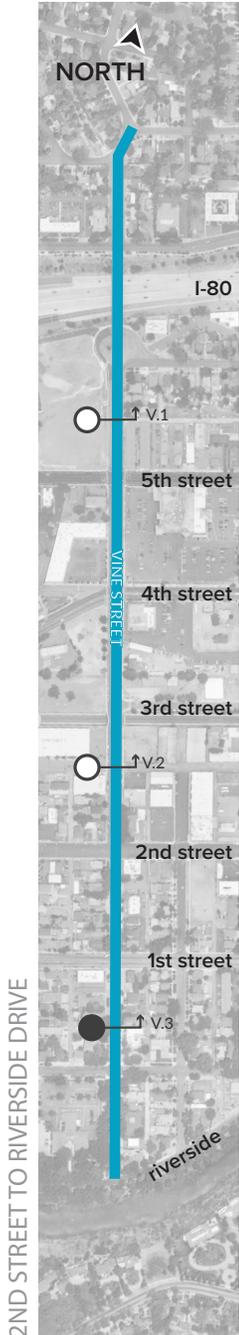
Note: Bike lanes are shown as green for diagrammatic purposes only

# vine street: project concept



EXISTING CONDITION

# vine street: project concept



## PROPOSED CONDITION

Note: Semi-permanent bollards and concrete are shown to highlight the range of potential material options for curb extensions. Concrete curbing was used for cost estimating purposes.

No changes to existing landscaping considered or included in this project concept

# vine street: public outreach summary

## OPEN-ENDED COMMENTS BY THEME

**Number of Comments:** 90

Based on the public input, the major themes and key takeaways are as follows:

- Preferred Routes and Access to Destinations
- Concerns about Bike Lane Implementation
- Safety and Importance of Bike Lanes
- Connectivity and Wide Streets

## PREFERRED ROUTES AND ACCESS TO DESTINATIONS

Approximately 25% of respondents mentioned their preferred routes and destinations, emphasizing the importance of considering connectivity to significant locations like San Rafael Park, Rancho San Rafael, and other parks. Some respondents also expressed a preference for alternative routes such as Washington St, Ralston St, or University Terrace for their commute. Overall, the data indicates a preference for the bike corridor to be on Washington Street rather than Vine Street due to its better connectivity to destinations like Rancho San Rafael, 7th Street, and other parks. Additionally, some individuals voiced support for the project but recommended adding trees in section 2 (2nd St to 5th St) to improve the tree canopy along the corridor.

## CONCERNS ABOUT BIKE LANE IMPLEMENTATION

Respondents express concerns about the proposed bike lane design on Vine Street and mention issues related to safety, lack of physical barriers, shared lanes with cars, and potential dangers for cyclists. Respondents emphasize the need for safer bike lanes and dedicated cycle tracks. Some respondents suggest the inclusion of physical barriers between bike lanes and motorized vehicles to ensure cyclist safety.

## CONNECTIVITY AND WIDE STREETS

Comments highlight the importance of having wider streets and better connectivity between different neighborhoods and destinations. Users suggest

## VINE STREET: CORRIDOR RATINGS

On a scale from 1 - 10:	Vine St
How useful would this route be for you?	6.0
Would this route enable you to bicycle or use micromodes more frequently?	6.1
Would you feel comfortable using this facility?	6.9
Would you feel comfortable using this facility with a child?	5.9
How supportive of this project concept are you?	6.6

improvements to various connecting streets to enhance overall connectivity.

## OTHER KEY TAKEAWAYS

Respondents consistently advocate for better connections between neighborhoods and destinations through street improvements. Additionally, there is a strong emphasis on accessibility for pedestrians with disabilities, ensuring that bike lanes and pedestrian facilities are designed to accommodate all users without conflicts.

Another notable aspect of the feedback is the desire for increased tree cover and foliage along the proposed routes, reflecting a shared interest in enhancing the overall environment and aesthetics of the corridor. Respondents also stress the importance of traffic safety and intersection improvements to address concerns about cyclist and pedestrian safety. In conclusion, the feedback underscores the significance of safety, connectivity, and dedicated bike lanes over sharrows for the success of the micromobility corridor project on Vine Street.

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