

PROJECT OVERVIEW & OBJECTIVES

Project Background

The Silver Avenue Bike Boulevard was designated in 2009 following Resolution F/SR 07-268 which called for the creation of bicycle boulevards to serve all levels of cyclists. These bike boulevards were designed to utilize local streets to provide low-traffic routes with infrequent stops and detours for cyclists. The initial bicycle boulevard route ran from the Paseo Del Bosque Trail connection on Mountain Rd to San Mateo Blvd SE, connecting Old Town, the Bio Park, Downtown, CNM, UNM, Nob Hill and the Highland area.

Recently, the City of Albuquerque undertook improvements to Silver Ave and added the Fair Heights Bike Blvds, applying a series of techniques to increase motorist awareness, slow down vehicle traffic, and improve the comfort level and experience for bicyclists. The result is unique “branding” that clearly identifies these routes as safe places for bicyclists.

This study will examine opportunities to apply similar techniques to the already-designated bike boulevards along Silver Ave and 14th St. The study will also develop design concepts to address major challenges along the study area, including the I-25 underpass and the Railroad crossing.



Purpose of Project

The purpose of this project is to provide an evaluation of and recommendations for the portion of the Silver Ave Bike Boulevard that runs from Yale Boulevard SE west to the Paseo Del Bosque Trail. Since the Silver Ave Bicycle Boulevard was first designed and built there have been a number of changes in the general area, including the construction along Central Ave associated with the ART bus line, improvements to Lead Ave and Coal Ave, and new residential development in the area. Improvements to the Silver Ave Bike Blvd can compliment nearby developments and provide connections between Old Town, Downtown, and UNM, while providing a low-stress, low-traffic option for riders from age 8 to 80.

Project Objectives

- **Provide recommendations and design concepts to address the issues identified for the corridor.**
- **Review and consider portions of the Silver Ave Bike Blvd from Yale Blvd to 14th St and the 14th St Bike Blvd from Silver Ave to Mountain Rd for improvements.**
- **Apply techniques that have been developed along other Bike Blvd segments**
- **Qualitative evaluation of Mountain Rd. as a Bike Blvd**



BIKE BLVD CHARACTERISTICS

While experienced cyclists seek direct routes on major roadways, casual, concerned, and low-speed recreational cyclists often favor quieter streets and bike trails. Through bicycle boulevards, the City of Albuquerque utilizes infrastructure improvements and various traffic calming devices designed to control motor vehicle speeds to provide routes that are attractive to cyclists of all ages and abilities. Bicycle boulevards are generally multiple miles in length to allow for continuous trips and access to major destinations.

The following street elements characterize bicycle boulevards in the City of Albuquerque. These definitions are adapted from the 2009 resolution creating bicycle boulevards, the Bikeways & Trails Facilities Plan, and from the set of techniques that have been applied to the Silver Ave and Fair Heights Bicycle Boulevards. The principal design manual for bicycle boulevards is the *NACTO Urban Bikeway Design Guide*.



Signage & Street Markings

The City of Albuquerque has developed a series of street signs and pavement markings to provide identification of the facility as a bicycle boulevard and to ease the “barrier to entry” for inexperienced cyclists. The purple color and logo of these signs are unique to the bicycle boulevards, provide “branding,” and alert motorists to the unique character and operations of the facility. Pavement markings on bicycle boulevards include “sharrows” and bicycle stencils and are generally applied every block.



Local / Neighborhood Streets

Bicycle boulevards transform a residential or local street that typically feature low speeds, limited through traffic, and on-street parking into a formalized bike route that accommodates motor traffic but gives priority to cyclists. The designation of a neighborhood street as a bicycle boulevard is accompanied by the introduction of additional street elements to calm traffic and encourage cycling. Bicycle boulevards are typically located parallel to major streets to offer a low stress alternative.



Bicyclist Accommodation at Busy Intersections

Where bicycle boulevards cross or intersect with major roads, design techniques are applied to increase motorist awareness and provide protection for cyclists. Intersection treatments include median refuges that allow pedestrians and cyclists to cross one direction of traffic at a time, barriers or cycle tracks, and the use of HAWK signals. Intersection barriers can also limit motor vehicle through traffic.



Traffic Calming

Design techniques may be used to slow down vehicle traffic and discourage vehicle through trips via stop sign placement and the use of barriers. Other traffic calming measures found on bicycle boulevards include diverters, speed humps, and mini-roundabouts, as well as the removal of center striping and the delineation of on-street parking in order to narrow the roadway and encourage lower speeds. The distance between stop signs or traffic signals is generally between 0.25 and 0.5 miles to limit vehicle speeds while allowing cyclists to travel without stopping.



Wayfinding

Wayfinding signs for bicycle boulevards provides directions and distances to key destinations, while pavement markings provide additional guidance for cyclists when the bicycle boulevard turns or changes direction along its route. Wayfinding signs utilizes a purple color and bicycle logo to reinforce the route as a bicycle boulevard.



Shared-Use Facility

Bicycle boulevards are roadways in which cyclists share the pavement with motor vehicles but the facility is optimized in favor of the bicycle. While many roadways have cyclists ride alongside of traffic in dedicated bike lanes, bicycle boulevards are typically narrow and designed to ensure low vehicle speeds, allowing cyclists to ride with the flow of traffic.



Low Speed

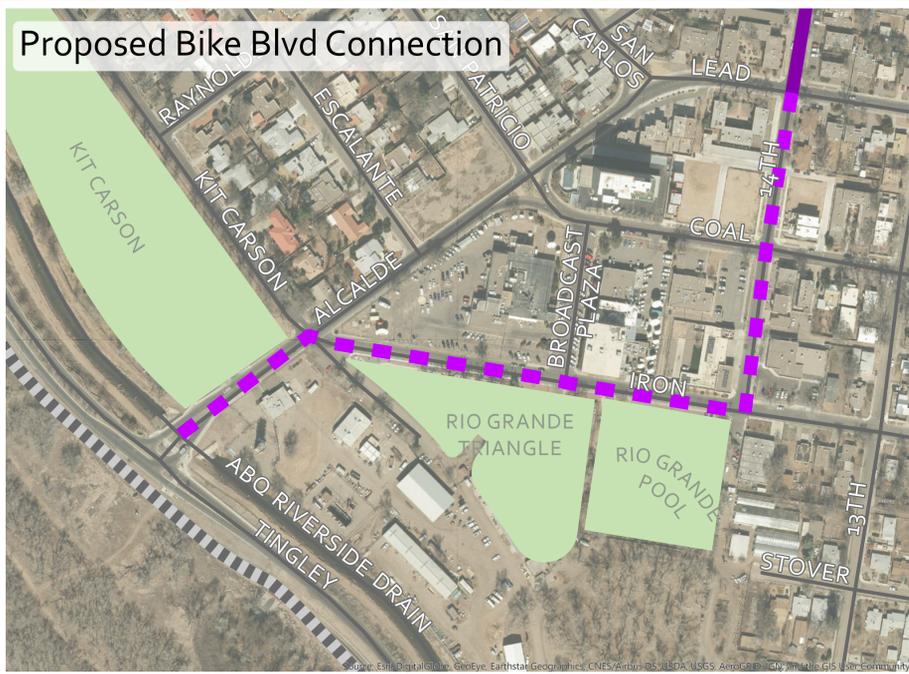
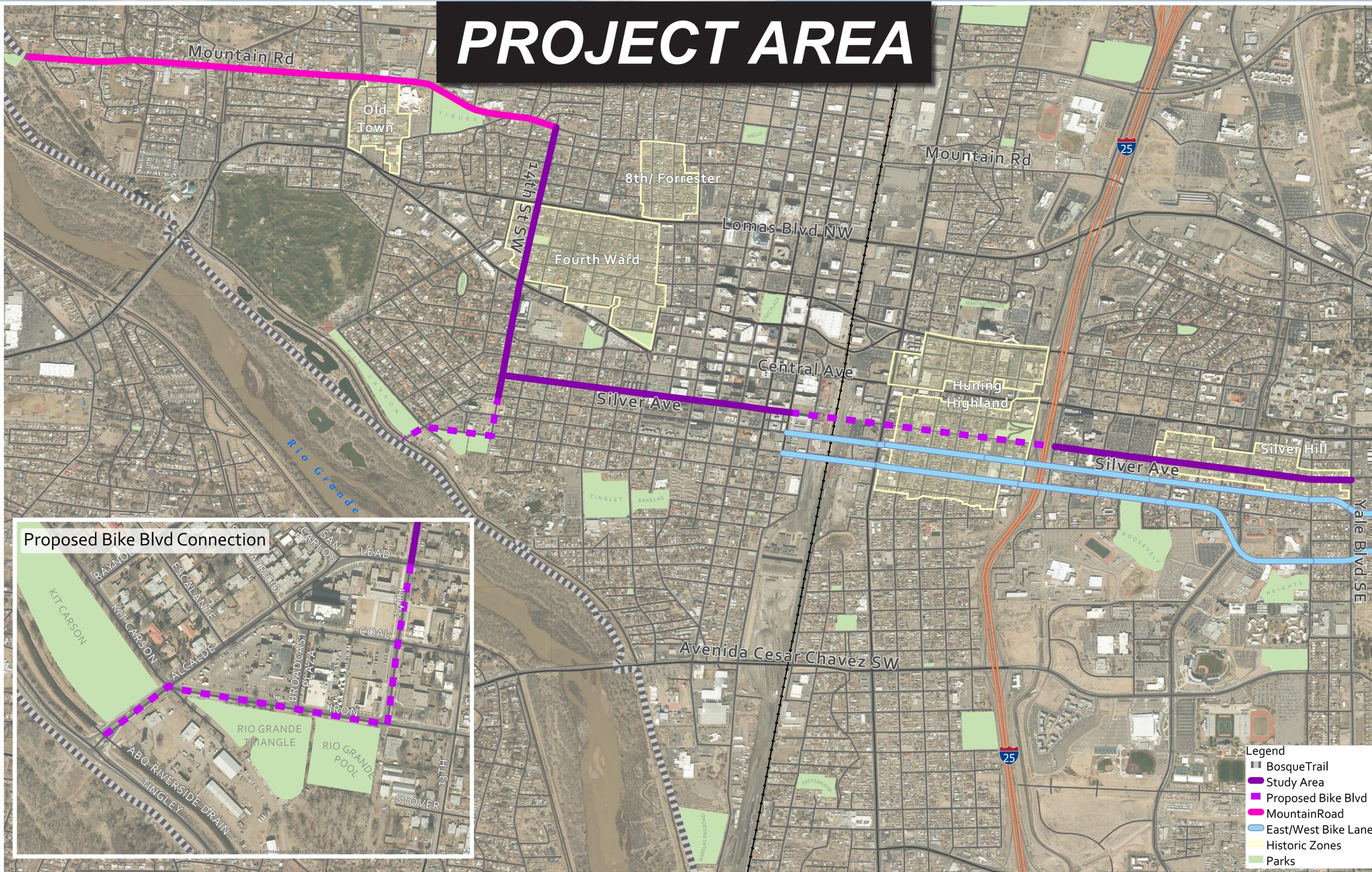
Bicycle boulevards feature posted speed limits of 18 MPH, which is lower than the typical neighborhood or local street speed limit of 25 MPH. The non-typical speed limit is intended to call attention to the increased presence of cyclists. A lower design speed (i.e. safe operating level for motorists) and target speed (i.e. intended speed of motorists) are the result of traffic calming measures and allow cyclists to more comfortably ride with the flow of traffic.



Low Traffic Volumes

Low levels of vehicle traffic are intended to make bicycle boulevards appealing to cyclists of all experience levels. The low vehicle volumes enable cars to pass safely using the full street width, with no need for the separation provided by a bike lane stripe. The use of “sharrows” to indicate a shared-use facility, as characterized by bicycle boulevards, is most appropriate when traffic volumes are below 3,000 vehicles per day. In practice, most bicycle boulevards in the City Albuquerque have traffic volumes below 1,000 vehicles per day.

PROJECT AREA



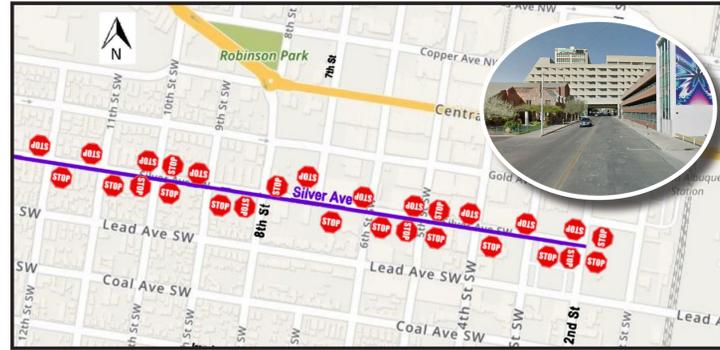
SILVER AVE BIKE BOULEVARD REVIEW

RECOMMENDED IMPROVEMENTS: DOWNTOWN & HUNING HIGHLAND



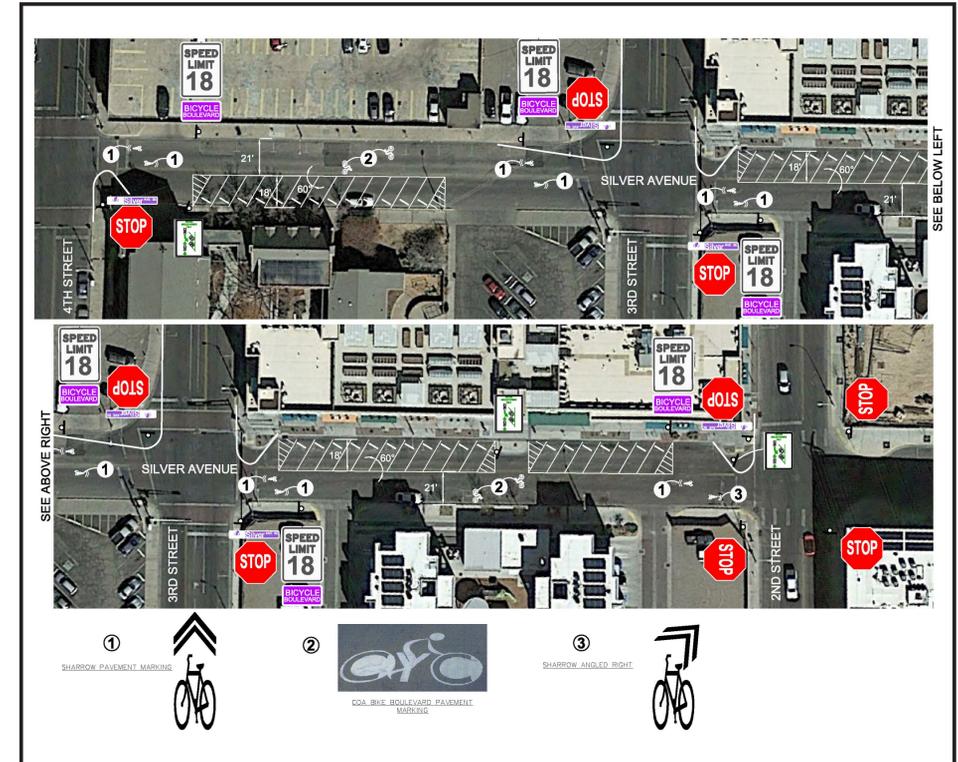
Broadway to I-25

The stretch of Silver Ave from Locust St to Broadway Blvd should be improved as a bicycle boulevard. Minimal changes are required to this area, with primary improvements consisting of signing and pavement markings. The presence of on-street parking and the lack of through traffic ensure that traffic operates at low speeds. While on-street parking is already delineated, individual spaces could be striped to clarify the purpose of the pavement markings. No revisions to the stop sign alignment are required.



Downtown Silver Ave Stop Sign Alignment

Changes have been proposed to the stop sign alignment along Silver Ave through Downtown in a number of studies; however, those proposed changes are sometimes in conflict. The recommendations proposed here are generally consistent with the Downtown Signals-to-Stop Signs Conversion Evaluation completed in 2016. With this arrangement, cyclists would only have to stop along Silver at 2nd St, 5th St, and 8th St, resulting in a free-flow distance of 0.2 miles at a time (the recommended range of stops for a bicycle boulevard is 0.25 to 0.5 miles).



Downtown On-Street Parking

Back-in angle parking is the preferred parking method – where space allows – in the recently updated City of Albuquerque Development Process Manual. Back-in angle parking offers safety benefits for cyclists and motorists through improved visibility and can increase the total number of available parking spaces, depending on the width of the street.

Silver Ave between 2nd St and 4th St is an appropriate location for on-street parking; the approximately 40' curb-to-curb cross-section provides ample space for back-in angle design (spaces require 18' perpendicular to the curb using a 60°).



Locust St Connection

The pedestrian connection on Locust St to Lead Ave should be improved with an ADA-accessible ramp and widened to accommodate cyclists.



Recommended Signage and Pavement Markings



Purple Street Signs



Sharrows



Bicycle Stencils



Speed Limit Signs



Regulatory Signing

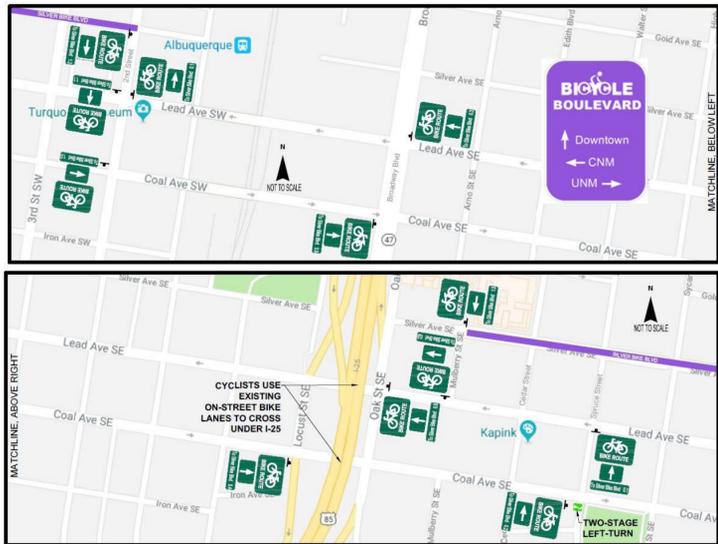


Wayfinding



RECOMMENDED IMPROVEMENTS: I-25 CROSSING

I-25 Crossing Option 1

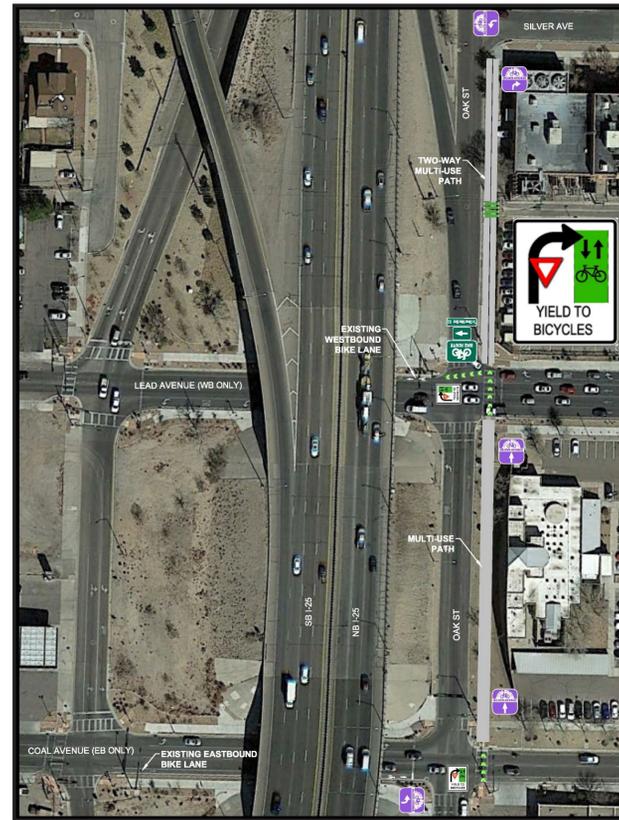


Increased Signing:

Use Lead Ave and Coal Ave with Low-Cost Treatments

Cyclists would utilize Lead Ave and Coal Ave to cross I-25 and would use North-South streets such as Mulberry St or Spruce St to access the bicycle boulevard. Additional signing would guide cyclists to the continuation of the bicycle boulevard on either side of the interstate.

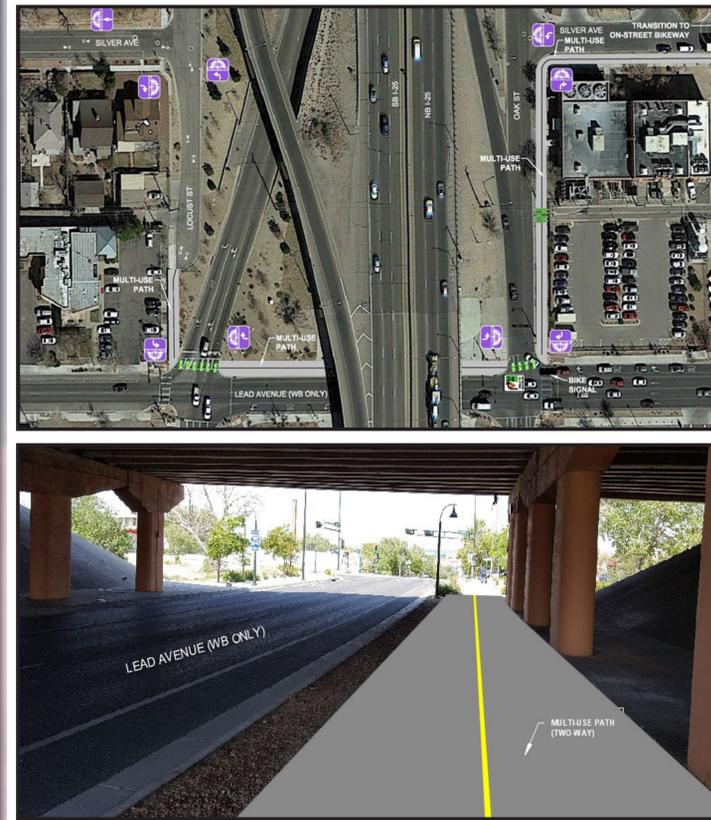
I-25 Crossing Option 2



Use Lead Ave and Coal Ave with Oak St for Connection

Cyclists would use the existing bike lanes on Lead Ave and Coal Ave to cross under I-25. However, rather than using neighborhood streets as connections to Silver Ave, this option would make improvements through a multi-use path along Oak St as the north-south connection.

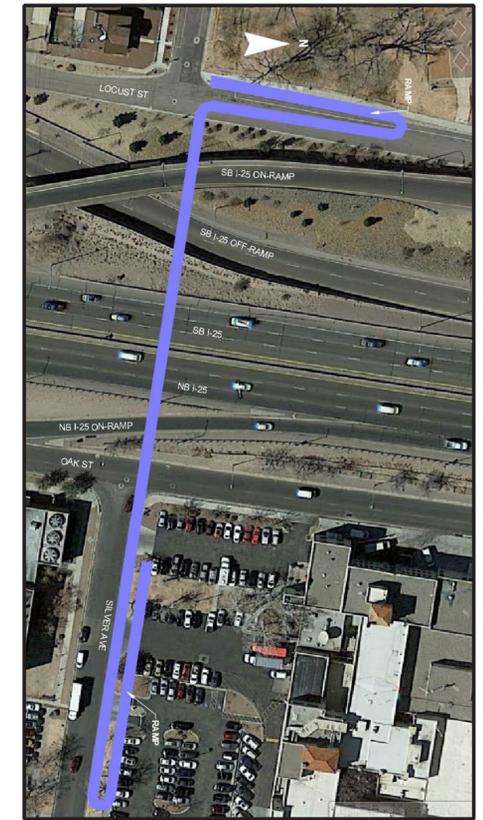
I-25 Crossing Option 3



Multi-use Path Along Lead Ave and Oak St

As a way of keeping cyclists off of busy streets, I-25 Crossing Option 3 would create a multi-use path along the east side of Oak St from Silver Ave to Lead Ave, along the north side of Lead Ave underneath I-25, and as an extension of Locust St north of Lead Ave. The multi-use paths would be 10' wide and replace the existing sidewalks. Cyclists would cross the on- and off-ramps at existing crosswalks

I-25 Crossing Option 4



Pedestrian-Bicyclist Overpass

The most direct route for cyclists would be to ride over I-25 on a new pedestrian-bicyclist bridge following the Silver Ave alignment between the area south of Presbyterian Hospital and Highland Park. Such a bridge would be expensive – the Bear Canyon Arroyo overpass cost about \$4M – and would take many years to implement.

Criteria	Option 1	Option 2	Option 3	Option 4
1. User Comfort Level	Red	Yellow	Green	Green
2. Connectivity to Silver Ave	Red	Yellow	Green	Green
3. Safety (based on conflict points)	Red	Yellow	Green	Green
4. Cost	Green	Green	Green	Red
5. Feasibility	Green	Green	Green	Red

Favorable / High Benefit: Green
 Neutral / Moderate Benefit: Yellow
 Unfavorable / Negative Impact: Red

Evaluation of I-25 Crossings

The evaluation matrix depicts the extent to which each option meets the purpose and need of the Silver Ave Bicycle Boulevard Review. **User Comfort Level** refers to the appeal of the option for less confident cyclists. **Connectivity to Silver Ave** refers to the directness of the option and the ability for users to easily access Silver Ave both east and west of I-25. **Safety** is based on the number of intersections and conflict points that need to be navigated by users. **Costs** reflect the magnitude of financial investment required to implement each option. **Feasibility** refers to the ease of implementation of each option.



RECOMMENDED IMPROVEMENTS: RAILROAD CROSSING

Railroad Crossing Option 1



Barrier-Protected Bike Lanes on Lead Ave to Coal Ave

The existing on-street bike lane on Lead Ave over the railroad is separated with striping only; a pedestrian walking area is separated from both the vehicle traffic and the bike lane on the north side of the bridge with a concrete wall barrier. Railroad Crossing Option 1 would continue to route **westbound** cyclists over the Lead Ave bridge, but would provide physical separation for cyclists using a raised curb and flex posts. **Eastbound** cyclists on the Silver Ave Bicycle Boulevard would be directed to the bike lane over the railroad on Coal Ave. Flex posts would be added to provide an additional buffer. An improved connection to Silver Ave would be provided from Broadway Blvd.

Railroad Crossing Option 2



Two-Way Cycle Track on Lead Ave

Westbound and eastbound cyclists would cross on the Lead Ave bridge. The existing concrete barrier on the Lead Ave bridge would be removed and reconfigured to combined bicycle and pedestrian space into a two-way multi-use path on the north side of the street that is separated from the driving lanes with raised curb and flex posts. This option would provide the most benefit to eastbound cyclists as it would not require them to cross both Lead Ave and Coal Ave on 2nd St to access the bike lanes on the south side of Coal Ave to cross the railroad. An improved connection to Silver Ave would be provided from Broadway Blvd.

Railroad Crossing Option 3



Pedestrian-Bicyclist Overpass

The most direct route for cyclists would be to ride over the railroad on a new pedestrian-bicyclist bridge following the Silver Ave alignment. The overpass would need to span the 300-foot wide railroad and the gated parking lot (another 200 feet) to the east and would need to negotiate the existing transit facilities to provide for connections to Silver Ave. Similar to an overpass over I-25, such a bridge would cost several million dollars and would take several years to implement. (An at-grade crossing was considered for this project but was determined to not be feasible at this time.)

Railroad Crossing Options

As with I-25, the presence of the railroad on the east edge of Downtown presents an obstacle for continuous travel along the Silver Ave Bicycle Boulevard. Silver Ave currently terminates at Broadway Blvd and 1st St, though cyclists may cross the railroad using the on-street bike lanes on Lead Ave (westbound) and Coal Ave (eastbound). Potential improvements over the railroad are also shaped by the fact that at present there are no signing or pavement markings along Silver Ave between Broadway Blvd and I-25 (the designated bicycle boulevard resumes at Mulberry St to the east of I-25), though the area has been identified as a bicycle boulevard in the Long Range Bikeway System.



1. <https://bikefriendlyoc.org/2011/03/24/updates-from-day-3-at-velo-city-conference-in-seville-spain/>

