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PROJECT OVERVIEW

Study Purpose

The Belleview Corridor Multimodal Transportation Plan was initiated by the City and County of Denver (the City) to understand and address the existing and future multimodal infrastructure needs surrounding the Belleview Station Area. A parallel study at the I-25 and Belleview interchange is currently underway. FHWA, CDOT, Greenwood Village, Arapahoe County, and Denver are working collaboratively to identify interchange and corridor improvements to address future 2040 traffic demands that will incorporate multimodal elements. This planning process builds upon several previous regional, city wide, and localized planning efforts. Specifically, the goals from the City’s Mobility Action Plan and the Mobility Goals established in the 2040 Comprehensive Plan were adopted, as they meet the needs of this study and ensure the City is pursuing consistent outcomes with each project and study that is undertaken.

Project Management Team

The project team for the Belleview Multimodal Corridor Transportation Plan was guided by Denver Public Works staff and included a Project Management Team (PMT) and transportation and engineering consultants. The PMT was established by the internal project team early on in the planning process and consisted of representatives from different City departments and regional partners. The PMT provided technical, policy, and strategic advice and guidance throughout the process. They also provided guidance on final recommendations.

Stakeholder Working Group

In addition to the PMT, a Stakeholder Working Group was convened to inform the planning process. The Stakeholder Working Group provided insight relevant to the lived experience of those who interact with the study area regularly. Members of the Stakeholder Working Group represented the following organizations:

- City of Denver Council District 4
- Transportation Solutions
- Denver South Economic Development Partnership
- City of Greenwood Village
- RTD
- CDOT
- Front Range Land and Development Co
- Shea Properties
- Stonebridge Companies
- Western Union
Data Collection & Analysis
The study area is defined by major corridors near the Belleview Light Rail Transit (LRT) Station and the City & County of Denver boundary. Existing conditions data was collected using site visits, the Denver Open Data Catalog, the Denver Regional Council of Governments (DRCOG) Open Data Catalog, CDOT traffic counts, data from the I-25 & Belleview Interchange NEPA Study, as well as vendor-collected observations and counts. More details on data sources can be found in the Appendix.

Previous Recommendations
Previous recommendations were identified through a review of previous plans related to the study area and the region. Of the previous recommendations, any recommendation not completed were identified and mapped.

Needs Assessment
The needs assessment is a summary of gaps and barriers in the study area related to multimodal transportation. The existing conditions assessment and stakeholder input informed this process.

Prioritization Process
A list of recommendations were developed based on previous plan recommendations and new recommendations were generated from the needs assessment and stakeholder input. The prioritization process began with the stakeholder workshop and continued with the project management team evaluating each recommendation based on Denver’s mobility goals. Through the project prioritization, the top recommendations were identified.

Recommendations
The infrastructure and program recommendations established through this planning effort provide strategies that will continue to move the Belleview Multimodal Corridor Study area toward the vision of becoming more multimodal in nature and help the City meet the mobility goals established in the 2040 Comprehensive Plan and the Mobility Action Plan. While improving multimodal travel is a clear City priority, implementation of these recommendations will generally occur over time as resources become available. Additionally, the recommendations from this study are intended to identify multimodal elements that will be incorporated into the I-25 & Belleview Interchange NEPA Study.

Project Timeline
- **EXISTING CONDITIONS**
  - Spring 2019
- **STAKEHOLDER ENGAGEMENT**
  - Summer 2019
- **RECOMMENDATIONS DEVELOPMENT**
  - Summer 2019
- **STAKEHOLDER ENGAGEMENT**
  - Fall 2019
- **FINAL PLAN**
  - Fall 2019
In June 2019, the Stakeholder Working Group participated in a half-day workshop. The purpose of this workshop was twofold:

- First, to provide the Stakeholder Working Group an opportunity to review the findings from the existing conditions established by the project team.
- Second, to facilitate a discussion with the Stakeholder Working Group as to their desired outcomes and actions of this multimodal transportation plan.

The workshop was hosted at a venue within the study area. This provided an opportunity for the Stakeholder Working Group to participate in a guided walking tour in a portion of the study area. Project staff highlighted constraints to the mobility system along the way as well as facilitated conversations about opportunities for multimodal improvements.

After the walking tour, the group returned to participate in two final activities. The first was a quick reflection of their experience of the study area on foot. Stakeholders were asked three questions:

1. Briefly describe your experience of the study area based on the walking tour.
2. What is your perception of the availability and convenience of multimodal choices within/to/from the study area?
3. What is your perception of comfort and safety for walking, biking, or using micromobility in the study area?

The Stakeholder Working Group noted the following observations:

- Noise and high speeds of the vehicle traffic
- Fear of vehicles at intersections
- Car-oriented environment
- Multimodal options are lacking or underrepresented
- Lack of perceived safety and comfort

From previous planning efforts, many recommendations have been made to improve the multimodal environment in this area. Stakeholders were given a numbered list of twenty previous recommendations and asked to prioritize which recommendations should be implemented first and which could wait to be implemented. In addition to prioritizing existing recommendations, the Stakeholder Working Group also had a chance to write their own recommendations to be considered for implementation; 24 unique new recommendations were shared. The Stakeholder-prioritized recommendations were part of the ranking criteria to be considered in the final set of recommendations set forth in this report.
Previous Plans Summary

The purpose of the plan review is to identify all previously completed plans related to the study area. Each plan’s recommendations can provide guidance for future recommendations as well as context for the types of conflicts and issues that arise in the study area. Plans reviewed include local area studies as well as major City plans such as Blueprint Denver. The full plan review report can be found in the Appendix. The following plans were reviewed:

City & County of Denver Plans

- Denver Comprehensive Plan 2040 Draft #2 (2019)
- Blueprint Denver Draft #2 (2019)
- Transit Oriented Denver: Transit Oriented Development Strategic Plan (2014)
- Denver Moves: Making Bicycle and Multi-Use Connections (2011)
- Belleview Station TOD Traffic Impact Study – Phase 1 (2007)
- Belleview Station Transit Oriented Development General Development Plan (2005)

Related Plans by Others

- RTD Regional Bus Rapid Transit Feasibility Study (2019 – in progress)
- Denver South Blueprint Draft #2 (2018)
- North-South Regional Bicycle Corridors Study (2018)
- Denver South TMA First and Last Mile Program Evaluation
- Regional Trail Connections Study (2017)
- South I-25 Urban Corridor Study (2016)
- Belleview Avenue Corridor Study: Existing Transportation Conditions (2015)
- Belleview Station Site Analysis and TOD Standard Scoring
- Planning and Environmental Linkages (PEL) Report for Interstate Highway 225 (2014)
- Last One-Half Mile Transportation Solutions (2012)
PREVIOUS PLANS

Outstanding Previous Plan Recommendations

The next step in the plan review process was to identify all outstanding multimodal recommendations not yet carried out within the study area. The following list was developed and then mapped to better understand the recommendations.

1. Install missing sidewalks (Denver Moves: Pedestrians & Trails)
2. Provide median refuges at the intersection of S Quebec St and E Belleview Ave (Last One-Half Mile Transportation Solutions)
3. Install pedestrian crosswalks along S Quebec St north of E Belleview Ave, at Chenango Ave and the former Extended Stay America hotel (Last One-Half Mile Transportation Solutions)
4. Widen existing 8’ sidewalk on Monaco St to a 10’ multiuse path (North-South Regional Bicycle Corridors Study)
5. Construct shared-use trail and vegetated swale amenity along light rail tracks north of Union Ave (Belleview Station Transit Oriented Development General Development Plan)
6. Construct east-west trail connections between multi-use trail along light rail tracks and Newport Way (Belleview Station Transit Oriented Development General Development Plan)
7. Improve the intersection at Monaco St and Belleview Ave (North-South Regional Bicycle Corridors Study)
8. Upgrade street crossing on the Goldsmith Gulch Trail at Tufts Ave (Denver Moves: Pedestrians & Trails)
10. Widen Goldsmith Gulch Trail within George Wallace Park and north of Tufts Avenue to Mansfield Avenue (Denver Moves: Pedestrians & Trails, North-South Regional Bicycle Corridors Study)
11. Maintain or improve north-south bicycle or pedestrian connectivity under I-225 along Yosemite Street (PEL Report for I-225)
12. Improve the intersection at DTC Blvd and Belleview Ave (North-South Regional Bicycle Corridors Study)
13. Stripe on-street bike lanes along S Quebec St south of station (Last One-Half Mile Transportation Solutions)
14. Provide bicycle parking and locker information at station (Last One-Half Mile Transportation Solutions)
15. Identified as a future bicycle priority street and proposed bike lane (Blueprint Denver Draft 2019, Denver Moves Bicycle and Pedestrian Connections)
16. Identified for further study (Denver Moves Bicycle and Pedestrian Connections)
17. Install wayfinding signage to station entrance at Union Ave (Last One-Half Mile Transportation Solutions)
18. Install large station sign at Union Ave entrance near elevator and staircase entry (Last One-Half Mile Transportation Solutions)
19. Improve lighting through station tunnel (Last One-Half Mile Transportation Solutions)
20. Identified as a future transit priority street and Tier 3 BRT corridor (Blueprint Denver Draft 2019, RTD BRT Feasibility Tier 2 Evaluation Results)
21. Install signage to bus gates G and H, additional signage within the station to bus gates (Last One-Half Mile Transportation Solutions)
22. Install safe crossing signs (look left, and look right) at the station platform (Last One-Half Mile Transportation Solutions)
23. Install traffic signal at Union Ave and Newport St (Belleview Station Transit Oriented Development General Development Plan)
24. Prohibit U-turns at NB Niagara Street and Chenango Avenue (Belleview Station TOD Traffic Impact Study – Phase 1)
25. Identified as a commercial arterial future street type (Blueprint Denver Draft 2019)
EXISTING CONDITIONS

Existing and Future Land Use

Currently, most of the land uses in the Belleview study area consist of office and multi-unit residential (Figure 5). The surrounding area consists of residential neighborhoods and commercial development. Many of the parcels around the Belleview Station area are vacant or are in development, with the exception of the new mixed use development near Belleview Avenue (Figure 6). Blueprint Denver takes a different approach and categorizes future land uses as “Future Places” (Figure 8). Much of the study area is categorized as a regional center. Blueprint Denver defines a regional center as a “dynamic environment of residential, dining, entertainment and shopping, while incorporating a diverse set of employment options.” Additionally, a regional center should provide multimodal mobility including high capacity transit and pedestrian and bicycle movement to, from, and within the area (Blueprint Denver 2019). Figure 6 shows an example of the new mixed use development consisting of multi-unit residential and ground floor retail. Figure 7 shows the master plan for the area south of Union Avenue. The majority of the land in the station area is owned by Front Range Land and Development.

Figure 5: Existing Land Uses

Figure 6: Existing Mixed Use Development

Figure 7: Master Plan by Front Range Land and Development
Figure 8: Future Places (Blueprint Denver 2019)

Sources: Blueprint Denver 2019
EXISTING CONDITIONS

People Walking

Most sidewalks within the study area provide adequate sidewalk width and often are detached from the roadway with landscaping. However, there are some sidewalk areas on the west side of I-25 that are missing and will be installed as development occurs. Many streets, including Monaco St, Belleview Ave, Union Ave, Ulster St, and DTC Blvd are wide multi-lane streets with long crossing distances, which increases pedestrian exposure time to fast-traveling vehicles. Additionally, many intersections on the larger streets have channelized right turn lanes, allowing vehicles to turn at higher speeds where pedestrians are trying to cross.

As part of the pedestrian existing conditions assessment, a 10 minute walkshed analysis (Figure 12) was performed to understand how accessible destinations are from the Belleview LRT Station. The walkshed makes it apparent that I-25 is a barrier for people walking to the east side of the station area which serves as a major employment center.

Crash data from the City & County of Denver’s open data was reviewed to understand where the majority of crashes are occurring. Several pedestrian crashes occurred where there is higher pedestrian activity and within parking lots. A more detailed analysis of crash records could provide the information needed to understand the types of crashes and appropriate countermeasures needed to enhance safety at specific intersections or midblock locations.
**EXISTING CONDITIONS**

**Figure 12: Existing Infrastructure for People Walking**

Sources: Denver Open Data Catalog, Union Ave Pedestrian Counts (2019), Google Earth Imagery
EXISTING CONDITIONS

People Biking

Many of the roadways in the Belleview study area have multiple lanes and higher speed limits of 35 mph or more. The existing bike facilities within the study area include:

- Union Avenue bike lane ranging from 6-7-feet wide with some buffers
- Ulster Street buffered bike lane ranging from 6-7 feet wide with a 1-2 foot buffer

Bicyclists on Union Avenue were observed using the transit lanes over the bridge, likely to further separate themselves from the vehicular general purpose lanes. In addition to the bike lanes there are two multiuse paths within the study area:

- Goldsmith Gulch Trail which parallels DTC Boulevard
- “Monaco Trail” which parallels Monaco Street to the west

Although the multiuse paths provide a high level of comfort for bicyclists, these facilities have barriers and frequently disconnect. The Goldsmith Gulch trail loses comfort and quality through the I-225 interchange. The sidewalks narrow and channelized right turns make it challenging for non-motorized users to travel through these intersections. The “Monaco Trail” does not provide a safe crossing at Belleview Avenue and becomes disconnected near the Monaco Row Apartments.

Yosemite Street and a section of Quincy Avenue (Figure 14) are mapped as shared roadways; however the traffic volumes and speed limits of 35 mph are not conducive to a shared bicycle condition per the Denver Bikeway Design Guidelines.

The following corridors were identified as future bicycle priority streets in Blueprint Denver (2019):

- Monaco Street
- Quincy Avenue
- Ulster Street
- Goldsmith Gulch Trail (DTC Boulevard)
- Yosemite Street
Figure 16: Existing Infrastructure for People Biking

Sources: Denver Open Data Catalog, DRCOG Open Data, Union Ave Bicycle Counts (2019), Google Earth Imagery
EXISTING CONDITIONS

People Taking Transit

RTD provides several types of transit service within the Belleview Station area including five local bus routes, three light rail lines, and FlexRide (on demand service). Additionally, Bustang, operated by CDOT, provides regional bus service between Colorado Springs and Denver. Most transit service provides a higher frequency during peak hours on weekdays to serve commuters working in the DTC area (Table 1). There are two “transit hubs” that provide the best transfer options as well as stop amenities such as benches and shelters: one located at the Belleview Light Rail Station and one on Ulster Street between Union Avenue and Tufts Ave (Figure 18).

Table 1: Transit Service Summary

<table>
<thead>
<tr>
<th>Route</th>
<th>Name</th>
<th>Type</th>
<th>Days of Operation</th>
<th>Peak Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>East Yale Ave</td>
<td>Local Bus</td>
<td>Monday-Friday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>46</td>
<td>South Dahlia</td>
<td>Local Bus</td>
<td>Monday-Friday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>65*</td>
<td>Monaco Pkwy</td>
<td>Local Bus</td>
<td>Monday-Sunday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>73</td>
<td>Quebec St</td>
<td>Local Bus</td>
<td>Monday-Sunday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>105</td>
<td>Havana St</td>
<td>Local Bus</td>
<td>Monday-Sunday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>E</td>
<td>E Line</td>
<td>Light Rail</td>
<td>Monday-Sunday</td>
<td>15 minutes</td>
</tr>
<tr>
<td>F</td>
<td>F Line</td>
<td>Light Rail</td>
<td>Monday-Friday</td>
<td>15 minutes</td>
</tr>
<tr>
<td>R</td>
<td>R Line</td>
<td>Light Rail</td>
<td>Monday-Sunday</td>
<td>15 minutes</td>
</tr>
<tr>
<td></td>
<td>Belleview FlexRide</td>
<td>FlexRide</td>
<td>Monday-Friday</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Bustang</td>
<td>Bustang: DTC/Co Springs</td>
<td>Regional Bus</td>
<td>Monday-Friday</td>
<td>35-60 minutes</td>
</tr>
</tbody>
</table>

*Route 65 terminates at the Southmoor Station on weekends
Figure 20: Existing Infrastructure for People Taking Transit

Sources: RTD GIS Data, RTD August 2018 Average Weekday Boardings, CDOT Bustang 2019 Ridership
EXISTING CONDITIONS

People Driving

The study area’s street system is comprised of over 20 roadways of various lengths and widths and has four functional classifications for the streets; highways, arterials, collectors, and local. The streets in the study area were developed in conjunction with the Denver Technology Center (DTC) in the 1960’s and 1970’s, which reflect more of a suburban form. As a result, streets in the area are typically curvilinear and connectivity is more circuitous, encouraging less pedestrian and bicycle usage. Additionally, there are a number of private streets that are not maintained by the City and County of Denver.

Much of the area’s congestion is caused by the lack of grid network, which typically helps disperse traffic throughout the system. Consequently, there is more reliance on a limited number of major streets, such as, I-25, Belleview Avenue, Quincy Avenue, S. Ulster Street, and DTC Boulevard, which may contribute to the congestion along these facilities. The City in conjunction with Greenwood Village, Arapahoe County, and the Colorado Department of Transportation is currently studying the I-25 and Belleview interchange to identify alternatives intended to improve congestion at the interchange and east/west along Belleview Avenue, while looking at ways to improve mobility for people, walking, biking, and taking transit. Figure 21 shows the existing maximum queues during the PM peak period on the corridors surrounding Belleview Ave and Union Ave. Traffic queues can indicate where roadways are experiencing the most congestion.

Figure 21: Existing PM Peak Maximum Queues (I-25 & Belleview Interchange NEPA Study)

People Parking

Overall, the DTC area has many surface parking lots as well as structured parking. In the central Belleview Station area, there is an RTD Park-n-Ride with 59 spaces, restricted and unrestricted on-street parking, and some structured parking as part of the new development. As the area continues to develop, parking needs may change and all on-street parking will likely have restrictions.

Observations show that many people use the unrestricted on-street parking during the week to park and complete their commute using the light rail. To understand the travel patterns of these users, a license plate survey was conducted. The survey consists of collecting license plate numbers and retrieving the vehicle registration residence locations. The survey showed that over 23% of people live within two miles of the station, providing good opportunities for an active transportation trip (Table 2).

Table 2: People Who Park Near Belleview Station

<table>
<thead>
<tr>
<th>Distance from Belleview Station</th>
<th>Percent Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within .5 mile</td>
<td>4%</td>
</tr>
<tr>
<td>Within 1 mile</td>
<td>12%</td>
</tr>
<tr>
<td>Within 2 miles</td>
<td>23%</td>
</tr>
<tr>
<td>Within 5 miles</td>
<td>46%</td>
</tr>
<tr>
<td>5 miles or further</td>
<td>54%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RTD Boundary</th>
<th>Percent Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within RTD Boundary</td>
<td>87%</td>
</tr>
<tr>
<td>Outside RTD Boundary</td>
<td>13%</td>
</tr>
</tbody>
</table>
Figure 22: Existing Infrastructure for People Driving

Sources: CDOT AADT, Google Earth Imagery, HCS v/c Analysis

Belleview Corridor Multimodal Transportation Plan 2019

Legend
- Schools
- Traffic Signal
- Travel Lanes & Speed Limit
- Annual Average Daily Traffic & Volume/Capacity Ratio

Legend
- Schools
- Traffic Signal
- Travel Lanes & Speed Limit
- Annual Average Daily Traffic & Volume/Capacity Ratio

Miles
0 0.125 0.25 0.5

Sources: CDOT AADT, Google Earth Imagery, HCS v/c Analysis
Belleview Corridor Multimodal Transportation Plan 2019 | 20
NEEDS ASSESSMENT

The needs assessment is a summary of gaps and barriers related to multimodal transportation in the study area. These mobility challenges were identified during the existing conditions assessment and plan review performed by the project team as well as during the stakeholder engagement efforts.

1. Belleview Avenue is a barrier for users of the “Monaco Trail.”
2. Gap in “Monaco Trail” behind Monaco Row apartments north of Union Avenue.
3. Long crossing of a high-speed arterial at Monaco Street and Belleview Avenue intersection can be uncomfortable and challenging for bicycles and pedestrians to navigate.
4. Monaco Street lacks a bicycle facility between Belleview Avenue and Quincy Avenue. Current roadway has three vehicle travel lanes in each direction from Belleview Avenue to Newport Way and two vehicle travel lanes in each direction from Newport Way to Quincy Avenue. These roadway segments are under capacity.
5. Lack of sidewalk or multi-use path connection over Quincy Bridge.
6. Long east-west crossing distances of Niagara Street and observed/perceived vehicular speeding issues lead to unnecessary pedestrian exposure.
7. Higher speed, channelized right turn lanes throughout the study area create comfort and safety concerns for people walking and biking.
8. Due to higher speed traffic and higher turning movements, walking through the I-25 & Belleview interchange feels uncomfortable and unsafe.
9. Crosswalks are lacking at some intersections where there are controlled stops near the Belleview LRT Station.
Belleview LRT Station platform is very loud due to its close proximity to I-25.

Bicycle and pedestrian wayfinding signage is lacking around the Belleview LRT Station area. It can be confusing to navigate when walking and bicycling.

The RTD Park-n-Ride is at or over capacity during an average weekday.

Many light rail riders use the unrestricted on-street parking in the station area.

Based on travel time runs and observations, vehicles using Union Avenue travel over the speed limit of 35 mph.

Long crossing distances and higher vehicle speeds make it difficult for people walking to cross Union Avenue at Newport Street to get to and from the Belleview LRT Station from the northwest residential areas.

Some bicyclists use the transit lanes over the bridge on Union Avenue instead of the bicycle lanes next to the travel lanes. Additionally, buses cross the bike lane twice to get in and out of the transit lanes.

Quincy Avenue lacks a bicycle facility between Monaco Street and DTC Boulevard.

Multiple crashes have been reported at the unmarked crossing on Quincy Avenue at Olive Street.

The Goldsmith Gulch Trail is substandard between Tufts Avenue and Quincy Avenue (only an attached sidewalk is available).

Safety improvements are needed for crossings at the I-225 interchanges.

Long distances between destinations, long block lengths, and street network design discourage people from walking in the study area.
RECOMMENDATIONS

Prioritization

A list of recommendations for multimodal improvements within the study area were developed based on previous plan recommendations, stakeholder input, and new recommendations from the needs assessment. The next step was to prioritize each recommendation based on the City and County of Denver goals, stakeholder priorities, and the feasibility to implement. The project management team participated in a prioritization exercise that used the Denver Comprehensive Plan 2040 mobility goals as criteria for ranking. Once this step was completed, each recommendation was then ranked based on the estimated cost to implement and the ability to implement. Although some recommendations were ranked lower, they should still be considered if the ability to implement becomes feasible. For more information on this process, reference the prioritization table located in the Appendix.

Recommendations

Many of the top recommendations have been grouped as larger corridor projects or station area projects that can be further studied and implemented together. Each corridor or area provides detail on what the recommendations are, why these recommendations were identified, and how the recommendations can be implemented. Some recommendations are mentioned in multiple sections due to intersecting corridors. Additional details on all recommendations identified can be found in the Appendix.

Denver’s Mobility Goals (Comprehensive Plan 2040)

1. Deliver a multimodal network that encourages more trips by walking, rolling, biking, and transit.
2. Provide a safe transportation system that serves all users.
3. Maximize the public right-of-way to create great places.
4. Create an equitable and connected multimodal network that improves access to opportunity and services.
5. Ensure the development of a frequent, high-quality and reliable transit network.
7. Expand funding options for multimodal infrastructure.
8. Strengthen multimodal connections in mixed-use centers and focus growth near transit.
9. Advance innovative curb lane management and parking policies.
10. Embrace innovations in transportation policy and technologies to improve movement throughout the city.
RECOMMENDATIONS: BELLEVIEW AVENUE CORRIDOR

Summary

Belleview Avenue is a major arterial that provides vehicular access to and from I-25 and the DTC area. Belleview Avenue currently carries between an average of 20,000 and 40,000 vehicles per day. There are three travel lanes and turn lanes in each direction with a speed limit of 40 mph west of I-25 and 35 mph east of I-25.

This corridor was identified during the needs assessment as a barrier for multimodal travel due to long crossing distances, high speed channelized right turn lanes, and inadequate sidewalks in some segments. Additionally, the Belleview and I-25 interchange is considering alternatives to redesign the interchange and improve east/west vehicular capacity. This provides an opportunity to improve multimodal movements through the interchange.

1. Channelized Right Turn Lanes

Most intersections along the Belleview corridor are signalized and provide a pedestrian phase; however, many intersections have channelized right turn lanes that allow vehicles to free flow through crosswalks (Figure 24).

Figure 25: Channelized Right Turn Lane Conversion (SF Better Streets Guide)

Larger radius results in faster turns and less visibility of pedestrians waiting to cross.

Smaller radius results in need for vehicles to slow to enter traffic, as well as improved visibility of pedestrians and oncoming traffic.

Removing channelized right turn lanes results in shorter crossings for pedestrians, safer conditions at the intersection, and space for amenities.

1A. Remove Unwarranted Channelized Right Turn Lanes

It is recommended to reevaluate channelized right turn lanes and remove where unwarranted. Construct new corners with tight radii to reduce vehicular turning speeds (See Figure 25 example of right turn lane conversion).

1B. Modify Right Turn Bypass Islands

Where channelized right turn lanes are warranted, modify the existing geometry to pedestrian-friendly channel islands at 70 degrees. Tightening the corner radius and the right turn bypass islands will reduce vehicular turning speeds.

Figure 26: Existing Belleview/Monaco Intersection
**1C. Construct Raised Crossing**

Where channelized right turn lanes are warranted, evaluate drainage and crash history to determine if a raised crossing should be installed (Figures 27 and 28). Raised crossings improve visibility for pedestrians, improve accessibility, and help to mitigate the speed of right-turning vehicle traffic.

*Figure 27: Diagram of Raised Crossings*

**Figure 28: Raised Crossing in Boulder, CO**

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**2 Interchange Improvements**

The I-25 & Belleview interchange project should provide an alternative that balances vehicular movement with multimodal safety and comfort. The I-25 & Belleview interchange alternative should minimize pedestrian and bicycle exposure at high speed, uncontrolled movements or at crossings with limited sight distance. The biggest concern for multimodal travelers in the interchange is high speed traffic making channelized right turns and potentially left turns depending on the new interchange design (Figure 29). The design is recommended to be modified to include safe movements that minimize or control conflicting vehicular movements. Install Rectangular Rapid Flashing Beacons (RRFB) signing at uncontrolled on- and off-ramps with pedestrian-activated advanced warning signs (Figure 30).

*Figure 29: Existing I-25/Belleview Interchange*

*Figure 30: Example of RRFB at Highway On-Ramp*

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**Path to Implementation**

1. Collect and evaluate turning movement volumes, crash data, and other existing conditions.
2. Perform engineering analysis of proposed improvements (RRFBs, raised crossings, stop control, etc.) to identify needs and constraints.
3. Continue partnerships among stakeholders and identify funding.
4. Conduct public and neighborhood outreach, as needed.
5. Prepare design plans based on CCD, Greenwood Village, and CDOT design specifications as required.
RECOMMENDATIONS: MONACO STREET CORRIDOR

Summary
The Monaco Street corridor serves as a north-south connection through the Belleview Station area. This corridor has been identified in multiple plans as well as during the needs assessment as a future bicycle priority street. Providing a bicycle facility on Monaco Street will add a key segment to the regional bicycle network and provide local connectivity for residents, commuters, and visitors. It is recommended to design and implement a bicycle lane (buffered or protected where space allows) on Monaco Street between Belleview Avenue and Happy Canyon Road (Figures 32, 33, and 34). Additionally, the intersection of Happy Canyon Road, Monaco Street, and Quincy Avenue has been identified for safety improvements for all modes.

Future Bicycle Priority Street
On bicycle priority streets, design and operation prioritizes people riding bicycles over other modes. This includes bikeways where people riding bikes are separated from moving traffic by a physical barrier and busy intersections are designed to easily be crossed on a bike (Blueprint Denver 2019).

Figure 31: Monaco Street Corridor Recommendation Locations

Monaco Street Bike Lane (Belleview Ave to Newport Way)

Figure 32: Monaco Street Existing Roadway Cross Section (Belleview Ave to Newport Way)

Figure 33: Monaco Street Proposed Cross Section Roadway (Belleview Ave to Newport Way)
**RECOMMENDATIONS: MONACO STREET CORRIDOR**

2 **Monaco Street Bike Lane (Newport Way to Happy Canyon Rd)**

*Figure 34: Monaco Street Proposed Roadway Cross Section (Newport Way to Happy Canyon Rd)*

| 8’ sidewalk | 6’ landscape | 6’ bike lane | 11’ travel lane | 10’ travel lane | 15’ median | 10’ travel lane | 11’ travel lane | 6’ bike lane | 11’ amenity zone | 8’ sidewalk |

Safety improvements for the intersection at Monaco St, Quincy Ave, and Happy Canyon Rd includes removing channelized right turn lanes and making the turning radii smaller to reduce vehicle speeds (Figure 35).

3 **Intersection Improvements**

Intersection improvements for the intersection at Monaco St, Quincy Ave, and Happy Canyon Rd includes removing channelized right turn lanes and making the turning radii smaller to reduce vehicle speeds (Figure 35).

4 **Pedestrian & Bicycle Connections**

The Monaco Street bikeway project should directly tie into facilities on Happy Canyon Rd as well as a future bicycle facility on Quincy Ave (Figure 35). Currently, Quincy Ave is missing a sidewalk on the south side between Happy Canyon Rd and Olive St. It is recommended to develop a multiuse path for this segment to provide a missing bicycle and pedestrian connection where there is limited right-of-way.

**Path to Implementation**

1. Collect and evaluate turning movement volumes, crash data, and other existing conditions.
2. Perform engineering analysis of proposed improvements (RRFBs, raised crossings, stop control, etc.) to identify needs and constraints.
3. Conduct public and neighborhood outreach, as needed.
4. Prepare design plans based on CCD and/or CDOT design specifications as required.
5. Construct improvements.
RECOMMENDATIONS: UNION AVENUE CORRIDOR

Summary
Union Avenue corridor serves as an east-west connection for all modes to and from Belleview Station and the DTC area. This corridor was identified during the needs assessment and stakeholder workshop as an opportunity to provide a key multimodal network connection over the barrier of I-25. However, in order to meet the future multimodal needs of the area, the following recommendations are:

- Provide multimodal safety improvements at specific intersections
- Upgrade bike lane to accommodate micromobility
- Dedicate a travel lane for advanced technology such as an autonomous shuttle pilot
- Implement Transit Street elements to support bus rapid transit (BRT) that meets the unique needs of the community and assures that optimal performance can be met

1. Protected Intersections
Redesign intersections along Union Ave at Monaco St and Ulster St where bicycle lanes intersect.

2. Upgrade Bicycle Lanes
Upgrade existing bike lane to accommodate micromobility devices and provide a higher quality facility. “To fully realize the potential of shared micromobility, cities must redesign their streets so that everyone has a safe, low-stress network of places to ride. Poor or inadequate infrastructure leads to increased injuries and fatalities” (NACTO Shared Micromobility Guidelines 2019).

3. Autonomous Shuttle Pilot
Evaluate repurposing a travel lane to pilot new technology such as an autonomous shuttle to provide frequent first and last mile connections to and from the Belleview LRT Station.

4. Transit Street
Redesign Union Ave to better accommodate transit (Figure 37).
- Provide in-lane transit stops
- Provide floating bus islands
“Converting to in-lane stops with boarding islands can improve transit speeds and bicycle comfort and safety at the same time, while also making it easier to access transit by bicycle” (NACTO Transit Street Design Guide).

Figure 37: Dexter Avenue, Seattle Example

Path to Implementation
1. Complete a corridor-specific Complete Street study.
2. Work with RTD to provide for transit accommodation across the I-25 bridge that also safely conveys bicycles.
4. Implement a public and stakeholder engagement plan.
Summary

The DTC Boulevard and Goldsmith Gulch corridor serves as north-south connection for all modes traveling through the DTC area and provides interchange access to I-225. This corridor provides an off-street multiuse trail (Goldsmith Gulch Trail) for the majority of the corridor; however there is a major disconnect through the I-225 interchange. It is recommended to provide a multimodal facility through the interchange that improves safety, comfort, and connectivity for people walking and biking.

Figure 38: Monaco Street Corridor
Recommendation Locations

1. **On & Off Ramp Stop Control**
   Install Rectangular Rapid Flashing Beacons (RRFB) signing at uncontrolled on- and off-ramps with pedestrian-activated advanced warning signs (Figure 39 and 40).

2. **Trail Connection**
   Widen the sidewalk through the interchange to at least 10 feet on both sides of DTC Blvd to accommodate bicycles and pedestrians and connect the Goldsmith Gulch Trail (Figure 40).

Path to Implementation

1. Collect and evaluate turning movement volumes, crash data, and other existing conditions.
2. Perform engineering analysis of proposed improvements (RRFBs, raised crossings, stop control, etc.) to identify needs and constraints.
3. Conduct public and neighborhood outreach, as needed.
4. Prepare design plans based on CCD and/or CDOT design specifications as required.
5. Construct improvements.

Figure 39: Example of RRFB at Highway On-Ramp

Figure 40: Proposed Interchange Stop Control
RECOMMENDATIONS: CENTRAL STATION AREA

Summary
Envisioned as an Urban Center that will ultimately serve as a destination for surrounding neighborhoods and commercial districts, the Central Station area is intended to have a high level of transit access, and bicycle and pedestrian activity. Based on proximity to the light rail station and recent development, the walking network is fairly complete and will be completed as development continues to move forward. However, Niagara Street and a few other key intersections were identified as a corridor and “hot spots” that need enhancements to better accommodate people accessing the light rail station or simply navigating through the area (Figure 41).

Figure 41: Central Station Area Recommendation Locations

1 Pedestrian System Enhancements
As development occurs, the missing sidewalks will be installed and missing crosswalks at controlled intersections should be implemented to enhance pedestrian safety and provide better connectivity throughout the area.

Additionally, the General Development plan recommends installing a network of multiuse paths in the property located northeast of Union Ave and Newport Way to allow access to the light rail station platform.

2 Mobility Hub Treatment & Wayfinding
During the needs assessment, the Belleview Station area was identified as lacking wayfinding and real-time information. A mobility hub treatment may include additional wayfinding signage (planned as part of RTD’s upcoming wayfinding project), integration with mobile phone applications, as well as Public Information Displays (PIDs). An electronic PID would allow station visitors to get real-time transit information, bicycle parking and locker information, area maps with destinations, and other relevant resources (Figure 42 and 43).

Figure 42: Example of Public Information Display

Figure 43: Citymapper Mobile Application
3 Placemaking
As development occurs, the pedestrian and bicycle experience should be considered in the streetscape design and placemaking features. Some of the area has started to establish a feeling of place, including Newport Street between Bellevue Avenue and Chenango Avenue where there is a mix of uses with ground floor retail (Figure 44).

Figure 44: Placemaking on Newport St

4 Niagara Street Multimodal Improvements
Niagara Street is wide and presents an opportunity to create a complete street that enhances the multimodal network. The existing condition is four lanes (two in each direction) with a center median and turn lanes. The roadway is approximately 95 feet curb-to-curb which creates long crossing distances for pedestrians. Additionally, the new development on the west side of Niagara Street is a senior living community that needs safer and more intuitive access to the light rail station and other amenities in the station area. Figure 45 and 46 show a complete street design with bike lanes and pedestrian refuge islands.

Figure 45: Niagara Street Proposed Roadway Cross Section (Bellevue Ave to Union Ave)

5 Parking District
Currently, the RTD Bellevue LRT Station Park-n-Ride has 59 spaces and is at 95% of capacity on an average weekday. It has been observed that many commuters use the unrestricted on-street parking and then take the light rail. The parking license plate survey showed that 56% of people parking in the area live further than five miles from Bellevue Station. As the area continues to develop, parking demand will change and create new challenges; therefore a parking district should be considered.

The City & County of Denver uses Parking Area Management Plans (AMPs) to “address an area’s changing conditions and acknowledge the needs of diverse user groups. The AMP process engages stakeholders to identifying parking management tools and improve the way on-street parking restrictions address demand (denvergov.org).
CONCLUSION

Summary

The Belleview Corridor Multimodal Transportation Plan is intended to propose recommendations for accelerating multimodal transportation changes within the study area. This plan is also setting the multimodal framework for the ongoing I-25 & Belleview Interchange NEPA Study, which is focused on identifying interchange and corridor improvements which meet 2040 traffic demands and that also accommodates multimodal elements. The framework will ensure the streets in the study area safely and efficiently meet the needs of all users, regardless of age, ability, or chosen mode of transportation. Additionally, data and information gleaned from this study will be passed along and used to inform future studies, such as the upcoming Southeast Mobility Hub study that will take a deeper dive into mobility surrounding Yale Station, Southmoor Station, and Belleview Station. As recommendations begin to be discussed further and move toward implementation, project partners will need to reconvene and evaluate the potential solutions to ensure they are meeting the existing and future conditions.

If implemented, the Belleview Multimodal Corridor Study will help the City and County of Denver reach the goals set forth in Denver’s Mobility Action Plan and those established during the planning process. The plan recommendations will also improve mobility for existing residents, business owners, and employees. Additionally, creating better connections to the Belleview light rail station will leverage the significant investments already made in transit in the area and the region. Finally, the combined improvements established in this plan will help complete a transportation system that is safer, more livable, and better connected for all users.