Fehr & Peers

City of Thornton 88th Avenue Corridor Study

Prepared for:
City of Thornton

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Table of Contents

Appendices

List of Figures

List of Tables

Acknowledgements

This document summarizes the work that was conducted for the 88th Avenue Corridor Study. A special thank you to everyone who was involved in shaping future transportation improvements in Thornton on 88th Avenue.

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Residents and Community

- Thank you to everyone who was involved in shaping future transportation improvements on 88th Avenue

Introduction

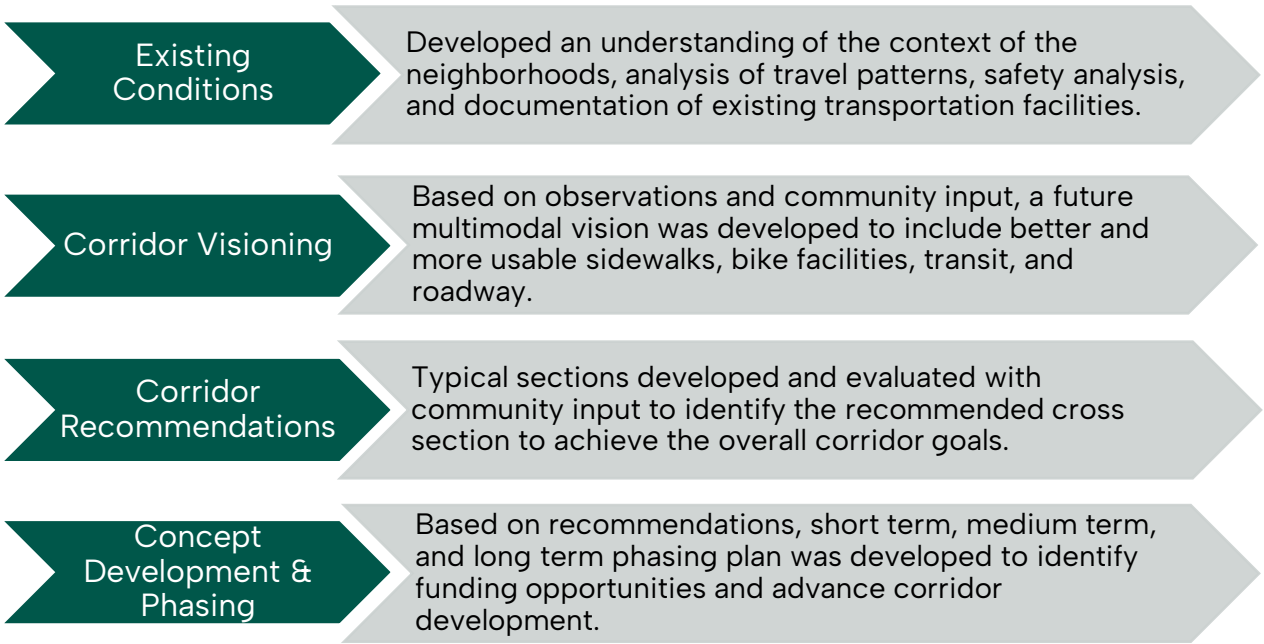
The City of Thornton conducted this corridor study to identify safety and multimodal capital improvements on 88th Avenue between Pecos Street and Dahlia Street. 88th Avenue connects recreational, educational, institutional, health, transit, employment, and residential areas. The project evaluated infrastructure to improve transportation-related safety and reliability for all users, including bicyclists and pedestrians, as identified in Thornton's Transportation and Mobility Master Plan (TMMP).

The 88th Avenue Corridor Study was spawned through Thornton's TMMP effort and addresses safety and travel for transit, bicycle, pedestrian, and vehicular travel with input from residents, businesses, and institutions along 88th Avenue. The corridor study also determines if the existing road configuration (vehicle lanes, sidewalks, bicycle lanes) can be modified to improve multimodal travel or if the proposed improvements will require additional right-of-way.

Study Process

The recommendations in this study resulted from a planning process that identified desired improvements based on identified issues. Each step in the process, shown in **Figure 1**, included engagement with community members along the corridor and agency leadership from adjacent jurisdictions, Colorado Department of Transportation (CDOT), and Regional Transportation District (RTD).

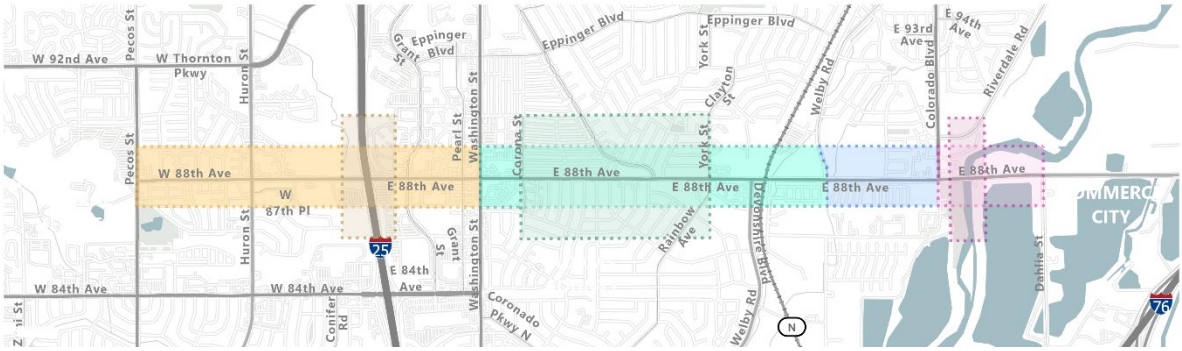
Figure 1: Corridor Study Phases



Study Area

The 4-mile corridor between Pecos Street and Dahlia Street varies in context, with a range of land uses, public right-of-way limitations, and varying community priorities. Due to these different contexts, the corridor was approached in four general segments for the evaluation with breakpoints at Pecos Street, Washington Street, Welby Road, Colorado Boulevard, and Dahlia Street. In addition to the general segments, three sub-segments including the bridge over I-25, a unique section with residential access concerns between Corona Street and York Street, and the bridge over the S. Platte River were evaluated individually. During the corridor study, the breakpoints were refined to reflect a more in depth understanding of specific needs and opportunities, and the resulting segmentation was used in the evaluation process shown in **Figure 2**.

Figure 2: 88th Corridor Study Area and Overall Segmentation



Pecos Street to Washington Street

The segment between Pecos Street and Washington Street connects multiple landmarks including Water World at the west end of the corridor, Niver Creek Open Space and RTD Park-n-Rides serving bus service near I-25 in the middle of the segment, and a proposed shopping center redevelopment at Washington Street. General characteristics of this segment are:

- Four-lane roadway with a 35 to 40 MPH speed limit and a two-way-left-turn lane
- Four to five feet striped on-street bike lane directly adjacent to vehicular traffic
- Mix of attached and detached sidewalk with a width range of four to eight feet
- Two transit routes operate through the segment with multiple bus stops on the corridor and two Thornton Park-and-Ride lots on either side of I-25:
    - Route 92 connects Wadsworth Boulevard and Thornton 88th Avenue Station
    - Route 93L connects Thornton Park-n-Rides (East) and Colorado Boulevard/138th Avenue
- Blocks between Grant Street, Pearl Street, and Washington Street were examined with more detailed variations in in sections during the concept development phase

Washington Street to Welby Road

Washington Street to Welby Road mainly consists of single-family housing and civic uses. Commercial land use exists on the west end of the segment including Mapleton School Skyview Campus, Thornton 88th Station, vacant land, and manufactured homes on the east. General characteristics of this segment are:

- Four-lane roadway with a 35 MPH speed limit west of Welby Road and 45 MPH through the rest of the segment
- Two-way-left-turn lane throughout the corridor
- Four to five feet striped on-street bike lane directly adjacent to vehicular traffic
- Missing sidewalk at the area of the manufactured homes, attached sidewalk throughout the single-family housing area, and detached sidewalk around the shopping center and vacant land
- Missing sidewalk east of the segment, south of the vacant land
- One transit route (Route 92) with multiple bus stops along the segment

A sub-segment was identified between Corona Street and York Street that has similar roadway characteristics as described above but is distinguished by many residential driveways directly connected to 88th Avenue with side-street stop control.

Welby Road to Colorado Boulevard

The segment between Welby Road and Colorado Boulevard is comprised of vacant land and a mix of multifamily and single-family housing north of the segment, and manufactured homes throughout the south side of the segment. General characteristics of this segment are:

- Four-lane roadway with a 45 MPH speed limit and a two-way-left-turn lane
- Four to five feet striped on-street bike lane directly adjacent to vehicular traffic
- Mix of attached and detached sidewalks north of the segment
- Missing sidewalks all through the area of the manufactured homes south of the segment
- One transit route (Route 88L) connecting Thornton & 88th Avenue Station and Commerce City – 72nd Station with directional bus stops in front of the manufactured homes entrance

Colorado Boulevard to Dahlia Street

The main land use around the segment of Colorado Boulevard to Dahlia Street is Pelican Ponds Open Space on the northern side, and Platte River Trail Park on the southern side. The segment does not provide great access for cyclists and pedestrians, particularly:

- Undivided four-lane roadway with a 45 MPH speed limit
- No bike lane
- Sidewalks present only on half of the northern side from Colorado Boulevard to South Platte River
- One transit route (Route 88L) with two bus stops (one for each direction) east of Dahlia Street

Complete Streets Approach

As part of the planning process, the DRCOG Regional Complete Streets Toolkit was referenced as a guide to identifying appropriate design elements for the corridor. Based on the toolkit, 88th Avenue is defined as a Neighborhood Connector Street which supports residential areas, schools, parks, and small retailers. They connect local streets to higher intensity street types such as regional connector streets. The model priority as defined by the Regional Complete Streets Toolkit includes a high priority for bicycles and pedestrians, a medium priority for buses and cars, and a low priority for trucks. Priority design elements shown in **Figure 3** for this type of street were considered into the corridor planning process.

Figure 3: DRCOG Complete Streets Toolkit Design Element Compatibility

Baseline Corridor Conditions

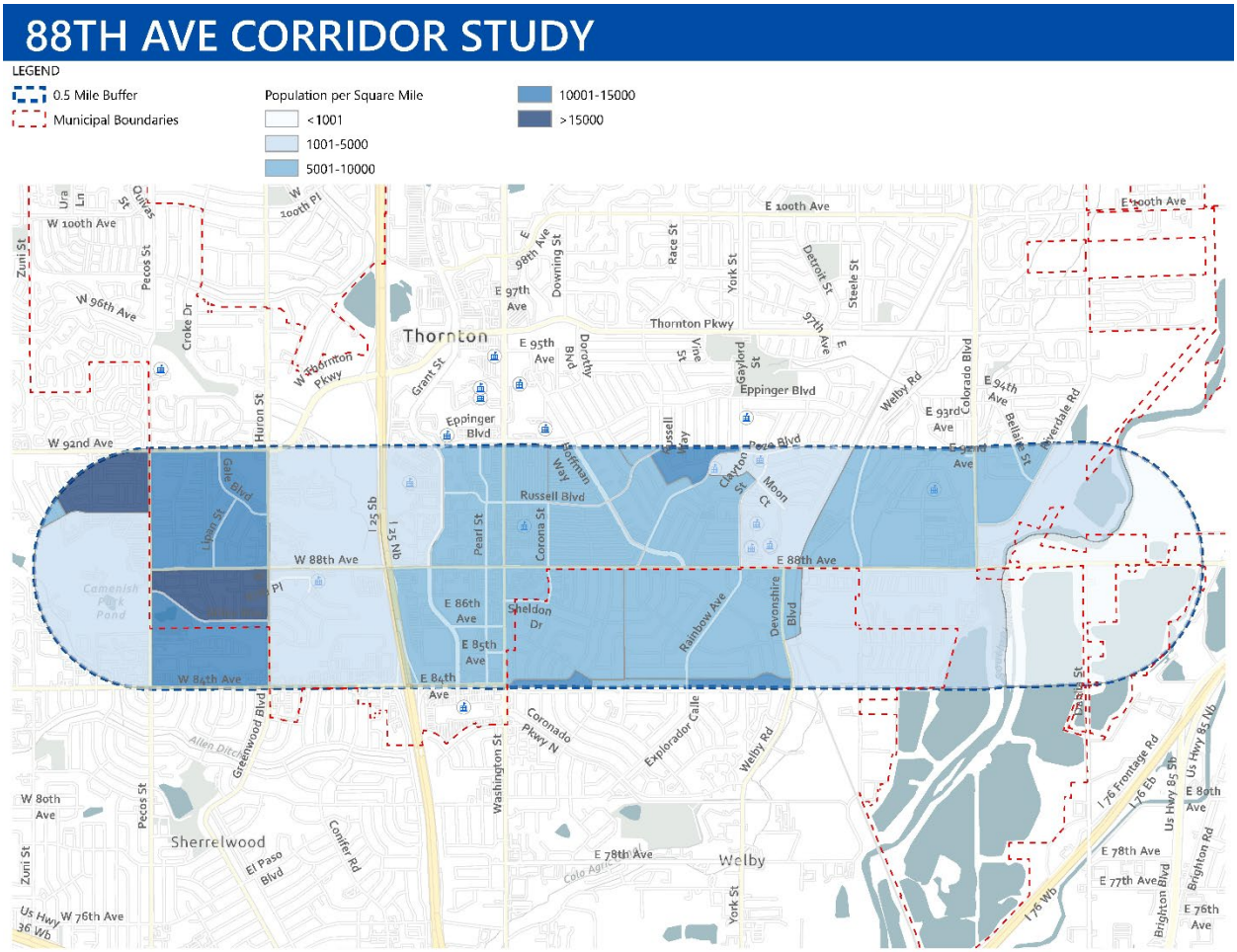
This chapter documents baseline existing characteristics for 88th Avenue including the surrounding community within a half mile. Understanding the existing demographics and transportation networks helps set a baseline and guide future transportation improvements. A more detailed assessment, included in Appendix A, documents existing corridor conditions including demographics, equity indicators, commute flow, existing mobility conditions (vehicle, transit, walking and biking), and crash history.

The area surrounding 88th Avenue, particularly near Washington Street, had significant development in the late 1950s. This included the establishment of Thornton's first shopping center, which became a central hub for the community and is now being evaluated for new development. Over the years, the areas surrounding 88th Avenue have undergone change and have been recognized by the City of Thornton as needing improvement. Improving mobility along the corridor is an important element of investing in the community.

Community Characteristics

The area surrounding the 88th Avenue corridor has greater residential density and a greater proportion of senior population compared with average demographic characteristics of the City of Thornton. It also includes more low-income households, more people of color, more people with no access to a vehicle, and more people with disabled community members compared to other areas within the city. Much of the area along 88th Avenue consists of single-family homes with similar densities found throughout Thornton, which consist of around 5,001-15,000 people per square mile. The west end of the corridor between Pecos Street and Huron Street is denser with more than 15,000 people per square mile, as shown in **Figure 4**.

Figure 4: Population Density along 88th Avenue



Commute Flow

The majority (97.7%) of 88th Avenue residents living within half of a mile of the corridor commute outside of the corridor area for work as shown in **Figure 5**. Most people (96.4%) who work in the 88th Avenue area commute from outside of the community. 248 people live and work within the corridor. 88th Avenue is a significant east/west connection that serves residents on their commutes as well as workers traveling to the area.

Figure 5: Inflow/Outflow of All Jobs of 88th Avenue Communities within Half a Mile

Source: US Census LEHD

More than half of residents living near 88th Avenue who work beyond half a mile from the corridor travel less than 10 miles from the corridor, mostly to Denver, other areas of Thornton, Westminster, and Commerce City. Another 36% of the residents work within 10-24 miles from the corridor, mostly in the Aurora and Lakewood areas, and less than 10% work beyond 25 miles from the community as shown in **Figure 6**. Safe and reliable transit and multimodal options could result in mode shift from single occupancy vehicles for residents commuting out of the area. The Thornton Transit Study, adopted as Appendix D in the TMMP, provides actions to implement over 10 years to increase access without using a private vehicle.

Figure 6: Commute Distances of 88th Avenue Residents (2021)

Source: US Census LEHD

Existing Mobility Infrastructure and Services

The infrastructure along 88th Avenue consists of a multi-lane roadway, multiple transit services and hubs, and bike lane and sidewalk conditions that vary throughout the corridor. The west end of the corridor has more connected multimodal networks, with bike lanes along the road and a combination of attached sidewalks and detached sidewalks. East of the RTD rail line, some sidewalks and bike lanes are missing.

Vehicle Mobility

88th Avenue is a 4-lane arterial road with daily traffic volumes ranging from 11,500 on the western end to more than 25,000 on the eastern end as shown in **Figure 7**. Speed limits range from 35 MPH to 45 MPH as shown in **Figure 8**. The corridor consists of a mix of signalized intersections at arterial and collector streets, commercial and residential driveways, and other side streets controlled by two-way stop signs on minor streets. Arterial and collector roads intersect the corridor, from west to east including Pecos Street, Huron Street, Grant Street, Pearl Street, Washington Street, Corona Street, Hoffman Way, Poze Boulevard, York Street/Rainbow Avenue, Devonshire Boulevard, Welby Road, Colorado Boulevard, and Dahlia Street.

Figure 7: Roadway Classification, Traffic Signals, and Daily Traffic Volumes (2022-2024)

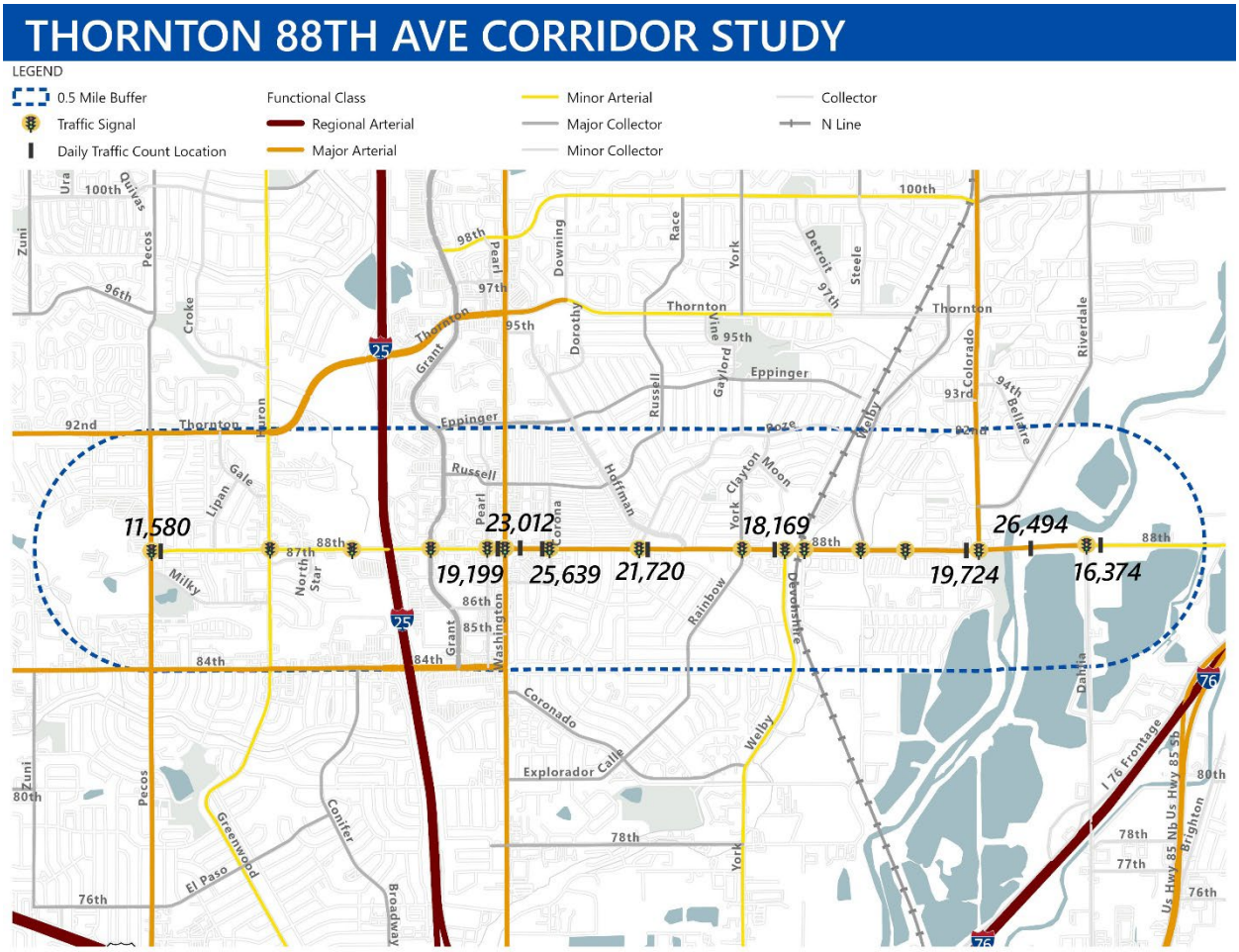
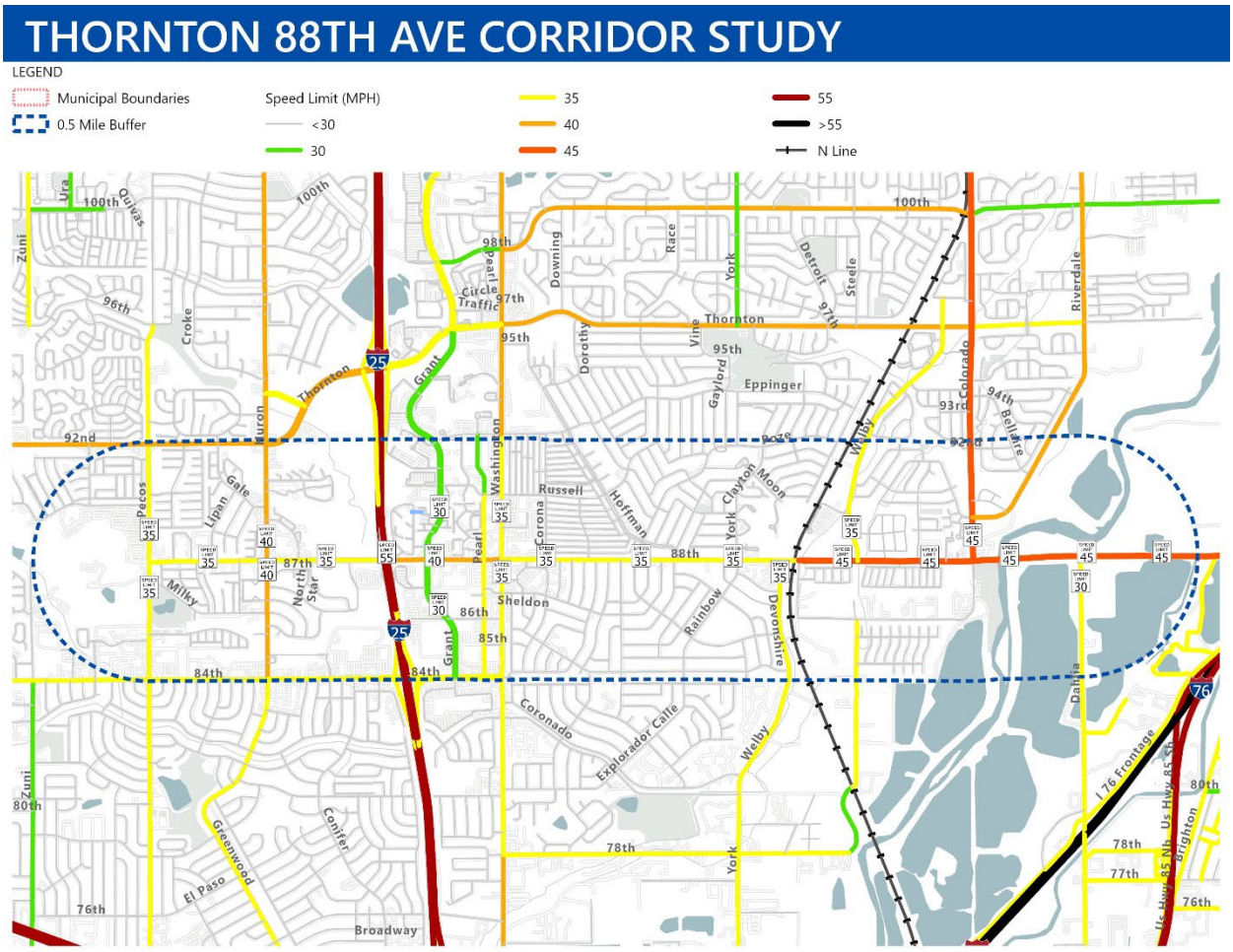


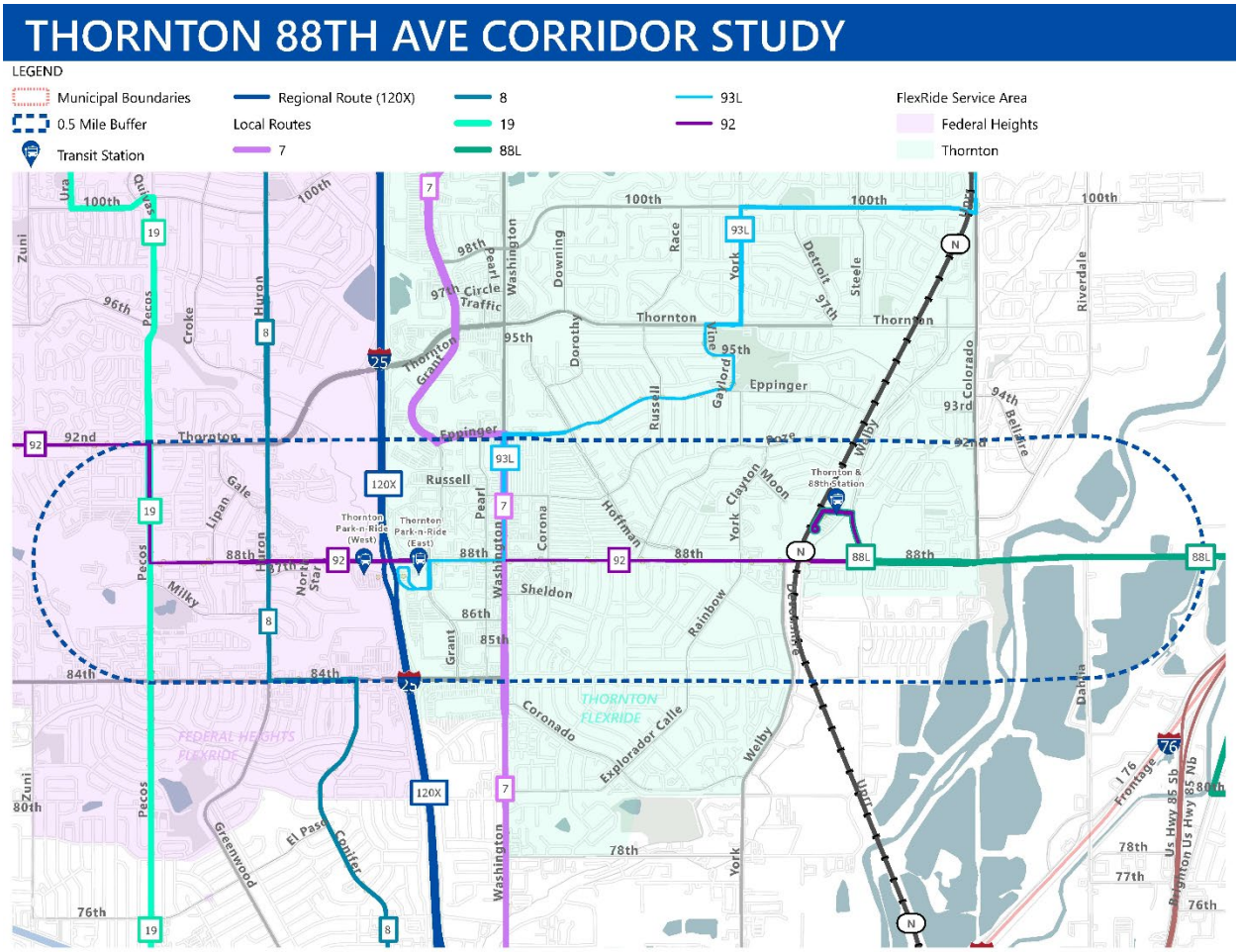
Figure 8: Speed Limits



Existing Transit Service and Ridership

Within a mile buffer from 88th Avenue, RTD operates seven fixed routes, two on-demand FlexRide transit services, and one commuter rail station, as shown in **Figure 9**.

Figure 9: Transit Coverage within a half mile of the 88th Avenue corridor



Out of 7 RTD fixed bus routes serving the corridor listed in **Table 1**, one is regional transit (120X) serving Thornton and Denver with 15 minute AM and PM peak service and 30-60 minute frequencies during non-peak hours. The other 6 local bus routes connect neighboring communities with 30-60 minute frequencies. Characteristics of the two major RTD transit facilities located along the corridor at the Thornton PnR and at the original Thornton – 88th Station serving the RTD N-Line commuter rail between Denver Union Station and Eastlake & 14th Station are shown in **Table 2.**

Table 1: Existing Bus Routes and Frequency in Study Area

Route	Route Description	Service Hours (Days)	Frequency Peak (Off-Peak)	Transit Facility / Bus Stop near 88th Avenue
120X	Union Station / Wagon Rd PnR	5 am – 11 pm (M-F) 10 am – 11 pm (Sa)	15 (30-60) 30 (60)	**Thornton PnR East** **Thornton PnR West**
7	38th & Blake Station / Northglenn – 112th Station	5 am – 12 am (M-F) 5 am – 11 pm (Sa-S)	30 (30) 60 (60)	Washington St & 88th Ave
8	Civic Center Station / Wagon Road PnR	6 am – 7 pm (M-F) 6 am – 7 pm (Sa) 8 am – 7 pm (S)	30 (30) 60 (60) 60 (60)	Huron St & W 88th Ave
19	Civic Center Station / 106th & Melody Transfer Center	5 am – 7 pm (M-F) 6 am – 7 pm (Sa) 7 am – 7 pm (S)	30 (30) 60 (60) 60 (60)	Pecos St & W 88th Ave
88L	Original Thornton – 88th Station / Commerce City – 72nd Station	6 am – 8 pm (M-F) 6 am – 8 pm (Sa) 8 am – 6 pm (S)	60 (60) 60 (60) 60 (60)	**Thornton – 88th Station**
92	Wadsworth & 84th Way / Original Thornton – 88th Station	5 am – 9 pm (M-F) 5 am – 9 pm (Sa) 9 am – 7 pm (S)	30 (60) 30 (60) 60 (60)	**Thornton – 88th Station** **Thornton PnR East**
93L	Colorado Boulevard & 138th Avenue / Thornton PnR	6 am – 8 pm (M-F) 7 am – 8 pm (Sa) 9 am – 6 pm (S)	60 (60) 60 (60) 60 (60)	**Thornton PnR East**

Table 2: RTD Park-n-Ride and Station Facilities

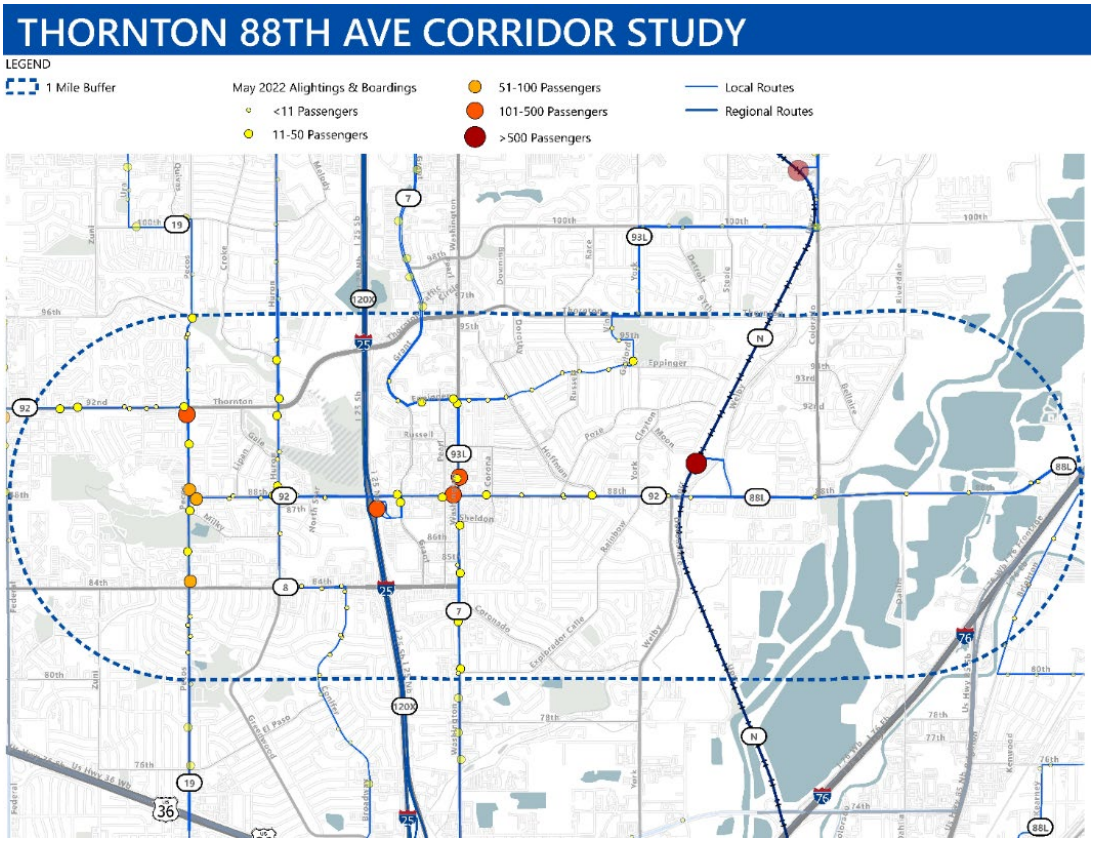
Facility	Parking Spaces	Bike Racks? / Bike Lockers?	Pedestrian Ease of Access (High, Medium, Low)	Routes Served
Thornton – 88th Station	550	No / No	High	N Rail, 88L, 92
Thornton PnR (East)	435	Yes / Yes	High	92, 93L, 120X
Thornton PnR (West)	600	Yes / Yes	High	120X

Transit ridership on 88th Avenue ranges with higher concentrations at transit hubs, major transfer points along routes, and at major destinations such as commercial/business areas on Washington Street and Highland Parks & Recreational Site on Pecos Street. The five highest ridership stops shown in **Table 3** includes a comparison between weekend and weekday ridership and connecting transit routes. Overall transit ridership in the corridor study area is shown in **Figure 10**.

Table 3: Highest Ridership Bus Stops

Bus Stop	Weekday Boardings and Alightings	Weekend Boardings and Alightings	Connecting Routes
Original Thornton / 88th Ave (Track 1, 2, Gate A, B)	1,262	1,218	N Rail, 88L, 92
Thornton PnR (Gate A, B, C)	471	246	120X, 92, 93L
Washington St/88th Ave	158	231	12, 93L
88th Ave/Washington St	119	133	92, 93L
Pecos St/W 92nd Ave	103	133	19, 92

Figure 10: Fixed Route Ridership

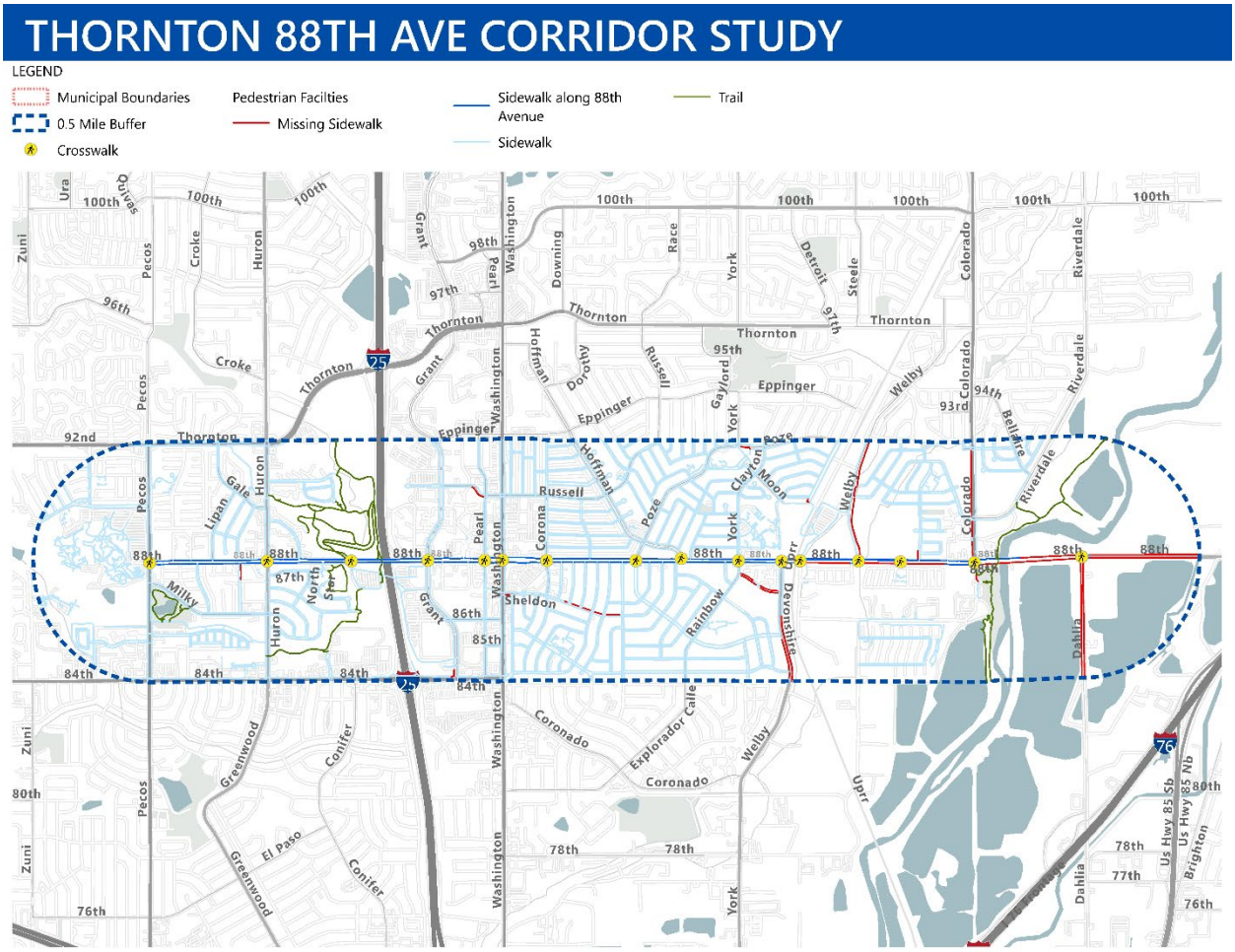


RTD FlexRide provides extended bus service to help with first- and last-mile connections. Riders can reserve a ride anywhere within the FlexRide service area, and RTD offers a subscription service for people who regularly need a ride at a set time on certain days. The 88th Avenue communities are served by the Thornton and Federal Heights FlexRide services which each include two buses. Wait times for these services can be significant as they both serve a large geographic area, and RTD does not provide a flexible number of buses based on hourly demand.

Existing Pedestrian Network

Sidewalks on 88th Avenue are more connected in the west and middle sections of the corridor compared to the east section as shown in **Figure 11**. The long stretch between Pecos Street and Devonshire Boulevard has sidewalks on both sides of the corridor, with only a few missing crosswalks on local streets intersecting with 88th Avenue. The sidewalks largely degrade east of Devonshire Boulevard with most areas between Devonshire Boulevard and Colorado Boulevard only having sidewalks on one side of the road. Sidewalks are minimally present east of Colorado Boulevard.

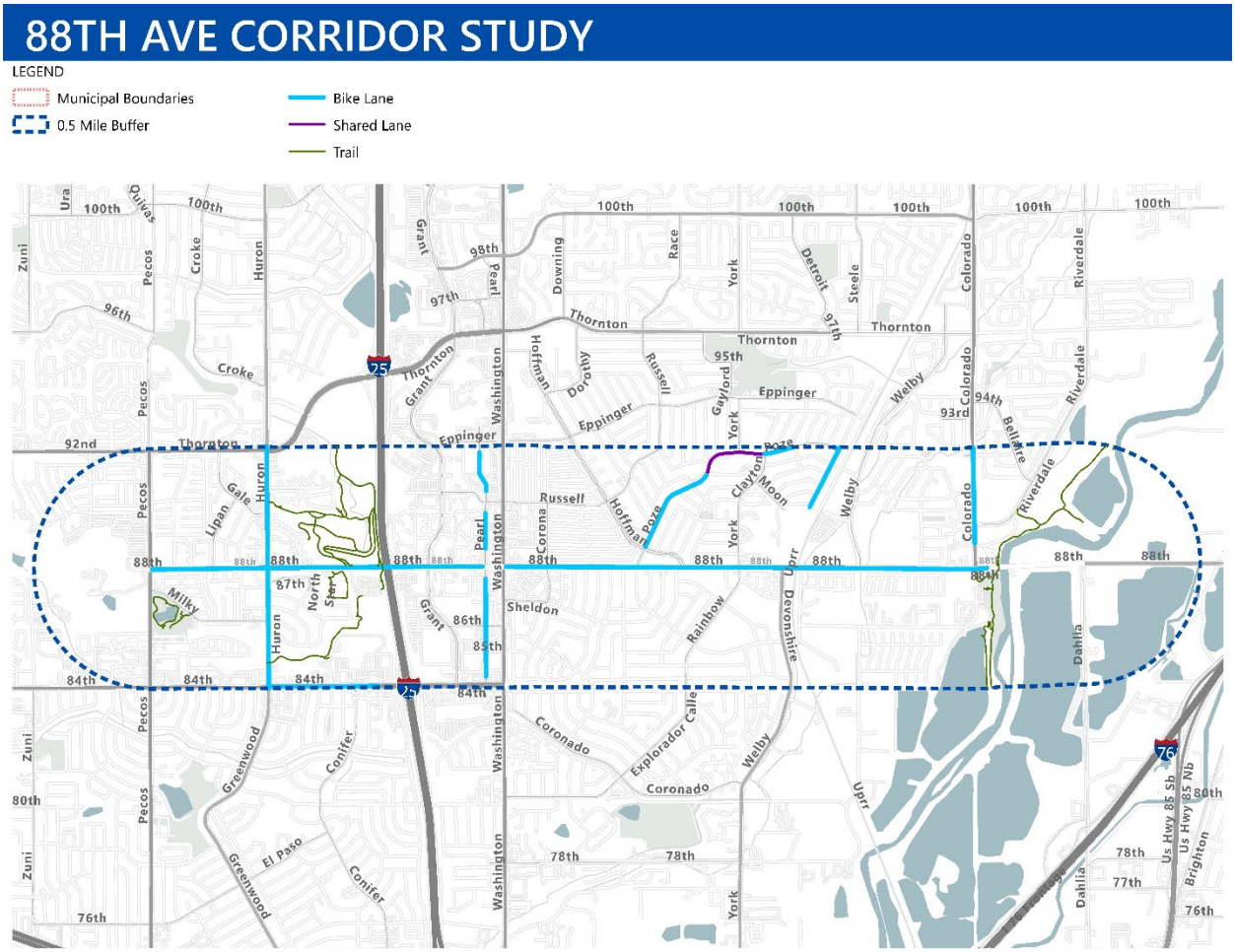
Figure 11: Pedestrian Facilities along 88th Avenue



Existing Bicycle Network

On street bike lanes are present on the majority of the corridor with a few gaps between Pearl Street and Washington Street and the area east of Colorado Boulevard to Dahlia Street as shown in **Figure 12**. The bike lane is not well utilized largely due to the narrow usable width between four and six feet and proximity directly adjacent to higher speed traffic without a buffer or vertical barrier. The bike lane connects to trails along the corridor including the Niver Creek Trail and the S. Platte River Trail.

Figure 12: Bicycle Facilities on and connecting to 88th Avenue



Safety Analysis

Based on 5 years of crash data from 2018 through 2022, nearly 600 crashes were reported on the corridor. Intersection and intersection-related crashes accounted for 64% of crashes along the corridor, followed by non-intersection crashes (26%) as shown in **Figure 13**. During this 5 year period, twenty crashes on the corridor resulted in severe injuries, and 75% of these severe-injury crashes were located at intersection or intersection related as shown in **Figure 14**.

Figure 13: Location of All Crashes on 88th Avenue

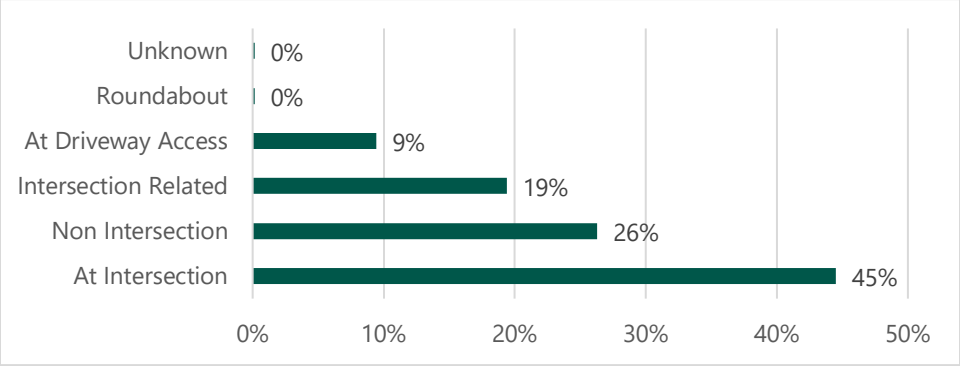
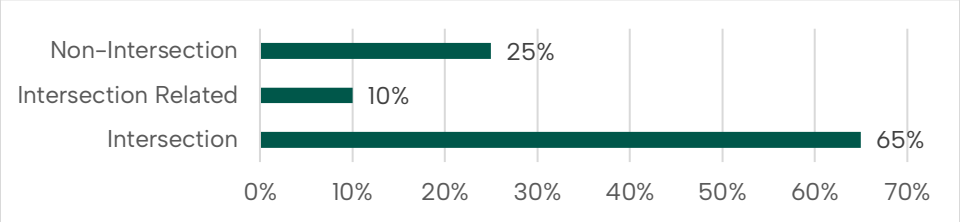


Figure 14: Location of Killed or Serious Injury (KSI) Crashes on 88th Avenue



Top Intersections of Concern

Intersection-related crashes for the five-year period from January 2018 to December 2022 were summed, and locations with the highest number of crashes are shown in **Table 4** with the Level of Service of Safety (LOSS)[1] ranking for total crashes and severe/fatal crashes. LOSS is a mathematical model based on type of intersection and volume of traffic which helps to identify locations with higher than expected crash frequencies. Using these calculations helps to identify locations where implementing crash reduction countermeasures could have a higher potential for crash reduction. The LOSS rating scale is a four-point scale used to assess the safety problem. **LOSS-I** indicates a low potential for crash reduction, **LOSS-II** indicates better-than-expected safety performance, **LOSS-III** indicates less-than-expected safety performance, and **LOSS-IV** indicates a high potential for crash reduction.

[1] Level of Service of Safety Conceptual Blueprint and Analytical Framework, Jake Kononov and Bryan Allery

Table 4: Top Intersection Crash Locations with LOSS Ranking

Map ID	Intersection		Total Crashes	Property Damage Only (PDO)	Possible Injury	Minor Injury	Serious Injury	Fatal	LOSS Total (All Crashes)	LOSS Severity (Severe and Fatal Crashes)
1	***88th Ave***	***Washington St***	69	58	8	2	1	0	II	I
2	***88th Ave***	***Colorado Blvd***	54	44	7	1	2	0	II	I
3	***88th Ave***	***Pearl St***	54	34	11	6	3	0	**IV***	**IV**
4	***88th Ave***	***Huron St***	44	26	12	5	1	0	**III**	**IV**
5	***88th Ave***	***Grant St***	42	34	3	3	2	0	**III**	II
6	***88th Ave***	***Corona St***	24	17	5	0	2	0	**II***	**II***
7	***88th Ave***	***Pecos St***	30	24	3	2	1	0	**IV**	**III**
8	***88th Ave***	***Welby Rd***	34	25	6	1	2	0	**IV**	**IV**
9	***88th Ave***	***York St / Rainbow Ave***	23	12	4	5	2	0	II	II
10	***88th Ave***	***Dahlia St***	23	18	4	1	0	0	**III**	II
11	***88th Ave***	***Devonshire Blvd***	22	17	4	0	1	0	**III**	II
12	***88th Ave***	***Poze Blvd / McElwain Blvd***	10	7	2	0	1	0	I	II

*AADT data of the side roads without volume data estimated at 5,000. Source: Fehr & Peers

Planned Future Development and Improvements

Coordinating with planned and potential redevelopment and other infrastructure improvements on and near 88th Avenue is an important element of this corridor study. At the time of this corridor study, the City of Thornton was in the process of determining a neighborhood-based reuse vision for the development of the former Thornton Shopping Center site on the northwest corner of 88th Avenue and Washington Street. Regardless of the selected redevelopment alternative, establishing safe and convenient multimodal connections along 88th Avenue will provide greater access and connectivity between adjacent neighborhoods and the site.

Additional concurrent projects and improvements intersecting the corridor include a protected bike lane study being conducted on Pecos Street and Huron Street and the CDOT center running transit improvements on I-25 which will require replacement of the existing 88th Avenue bridge over I-25. Design decisions from these projects need to be considered and aligned with recommendations from the 88th Avenue Corridor Study.

Community Involvement

The 88th Avenue Corridor Study was informed by multiple rounds of community engagement using a variety of formats. Input gathered from the community significantly enhanced and impacted the understanding of the current conditions and selection of final alternatives and recommendations. This chapter summarizes input gathered from community members and stakeholders in Thornton and those who regularly travel along 88th Avenue. A detailed summary of the process is included in Appendix B. Public input was solicited during two main phases of the project, and institutional and organizational stakeholders were also engaged throughout the project through stakeholder committee meetings.

Engagement Phase	Feedback Collected	Engagement Activities
Phase 1 – January–March 2024	Identification of issues and input on Existing Conditions	Virtual open house, online survey #1, intercept events
Phase 2 – June–August 2024	Input on alternatives development and selection	Virtual open house, online survey #2, intercept events

Community Engagement (Phase I)

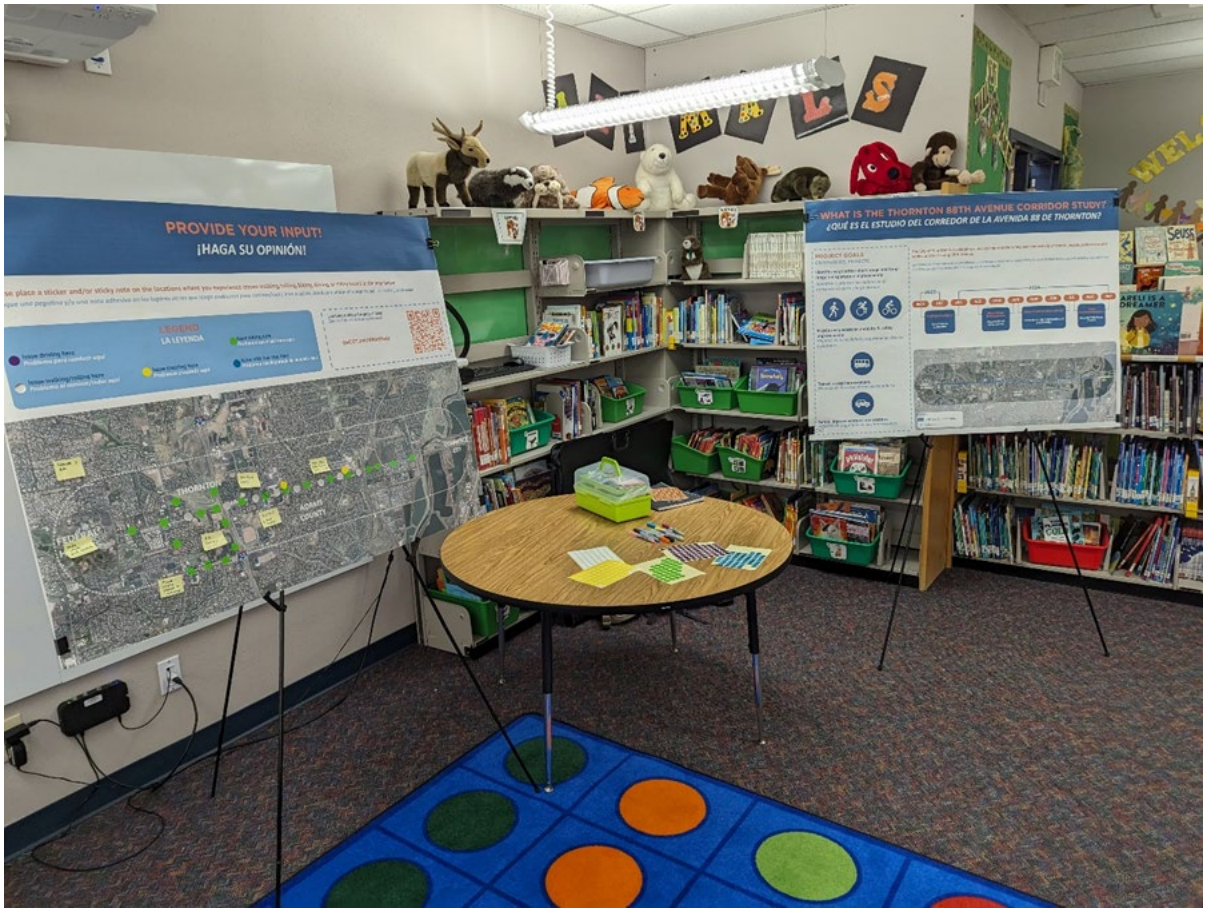
During the first phase of community engagement, the project team gathered input from community members on how they travel as well as transportation and transportation-safety-related concerns or issues they experience along the corridor. A key component of the first round of engagement included a virtual public meeting to introduce the Thornton 88th Avenue Corridor Study, share existing conditions findings, and obtain feedback from the community on what they would like to see from the project.

Public Meeting and Popup Events

Intercept events at two in-person community events were attended to understand where community members have issues walking, rolling, biking, driving, and riding transit. General comments and key findings included:

- Sidewalks are not American Disability Act (ADA) compliant and missing in many locations.
- Better bike lanes are desired.
- 88th Avenue should look cohesive and beautiful.
- There should be an emphasis on safety and multimodal transportation options.
- There is a desire for improved traffic operations, bike lanes, and sidewalks.
- Difficulty of connecting on a bike to the South Platte River Trail. The existing bike lane on 88th Avenue is too narrow and not considered a viable alternative.
- Lack of sidewalks and inadequate/narrow sidewalks was the top identified issue that needs improvement.
- 88th Avenue & Washington – High levels of congestion, as well as speeding. Community members also noted issues crossing at this location and issues with the bus stop.

- 88th Avenue & York Street – High levels of traffic and congestion, and there are a lot of crossing issues and pedestrian conflicts with vehicles.
- West end of the corridor – sidewalks are not wide enough and people in motorized wheelchairs are forced to travel in the bike lane because sidewalks are insufficient. There are also issues with speeding and motorists drag racing.



Online Survey #1

An online survey was open to the public to capture a broad range of community perspectives. 70% of respondents typically travel on 88th Avenue daily, followed by weekly at 20%. 93% of respondents typically use their personal vehicles, 3% of participants indicated that they typically walk or roll, and 3% of participants indicated that they typically bike along the corridor.

What are Three Words that Describe Your Vision of 88th Avenue? (Top Words & Themes)

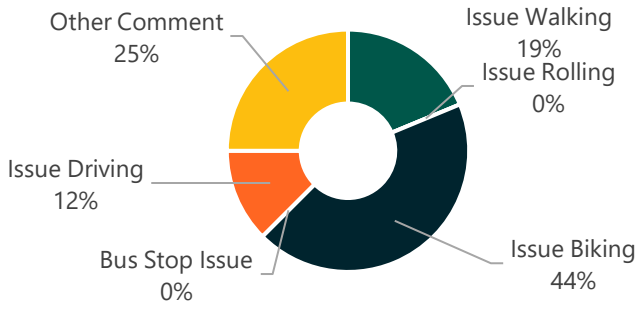
- Safety
- Multimodal infrastructure
- Better pedestrian and bicycle facilities
- Clean
- Efficient
- Smooth

Do You Have Any Other Comments Related to Transportation on 88th Avenue? (Top Themes)

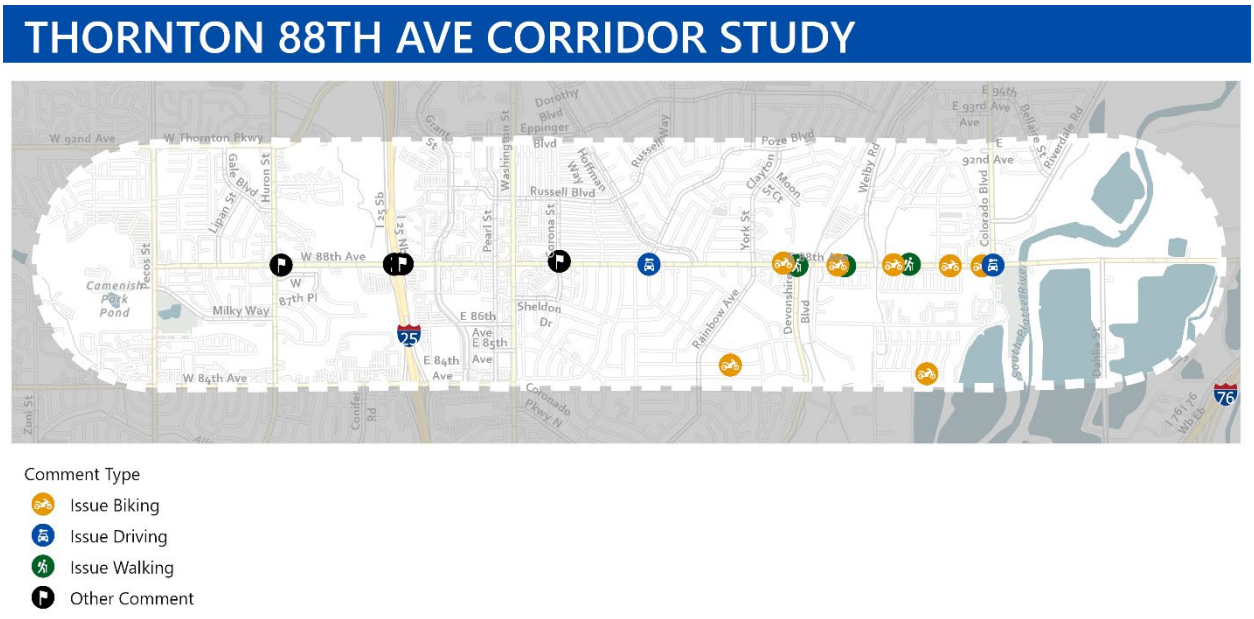
- The corridor needs better lighting.
- Better speed management is needed due to a lot of speeding.
- 88th Avenue & York Street has a lot of congestion due to the school.
- The corridor is not safe for bicyclists or pedestrians.

Interactive maps included identification of issues, walking, rolling, biking, driving, and other comments with ideas surrounding traffic calming to slow speeds and suggestions for repurposing travel lanes for pedestrian and bicycle use.

Types of Comments



Interactive Map Comments



Community Engagement (Phase II)

The second phase of community engagement was focused on obtaining feedback on the development of alternatives for the corridor to inform the selection of final, recommended alternatives.

Public Meeting and Popup Events

A second virtual open house and intercept events were held to present and obtain feedback on the draft alternatives for the different sections of the corridor.Key items identified by the public during these events include:

- Improvements focused on pedestrians were identified as a top priority.
- Seek funding in phases and potentially easily implementable projects in the near term.
- Community members would like to see more greenery, street trees, and other natural and cooling features integrated into their roadways if they do not obstruct visibility.
- Significant support for separating bicyclists from the roadway and for upgrading sidewalks to become ADA accessible.
- Community members were generally pleased that work is being done to improve 88th Avenue.
- Community members were most open to removing travel lanes between Pecos Street and Washington Street.

Online Survey #2

The second online survey measured public interest in various types of improvements. A strong interest was shown for roadway improvements including improved traffic flow, pedestrian and bicycle crossing improvements, and multimodal paths or widened sidewalks. The top rated bicycle improvement that would make people feel comfortable biking on 88th Avenue was protected bike lanes with vertical elements such as bollards, raised curbs, and medians. The top pedestrian improvements people would like to see included pedestrian crossing improvements with high visibility crosswalks, median refuge islands, and consideration of new controlled pedestrian crossings. When asked to rank public transit improvements, the top scoring item included improved multimodal connections and crossings, improved streetscape and bus stop amenities, and more reliable on-time performance. There was mixed opinion about repurposing some vehicular travel lanes along the corridor.

Stakeholder Engagement

Stakeholder meetings were held four times with a group of key City of Thornton and organizational stakeholders including DRCOG, RTD, City of Federal Heights, Adams County, and Commerce City.

Stakeholder Committee Meeting #1

The first Stakeholder Committee Meeting shared initial findings from the existing conditions and crash analysis and shared the proposed community engagement plan. Key feedback included:

- School districts affect the traffic volumes on 88th Avenue.
- Commute patterns will be affected as long term land uses change.
- Add Thornton Economic Group to community engagement plan to help with business outreach.
- The existing I-25 pedestrian crossing is uncomfortable and needs more separation.
- Ridership on RTD route 92 is almost 20-25 passengers/hour.

Stakeholder Committee Meeting #2

Stakeholder Committee #2 shared the project goals, key issues, schedule of the project, and discussion regarding the development of alternatives. Key discussion included:

- Specific input on the size of travel lanes and sidewalks for each segment.
- CDOT will likely construct a new bridge in late 2026, so it may be helpful to develop the alternative with the assumption that a new bridge will be built.
- Capacity of the roadway and feasibility of lane reductions.
- New developments along the corridor.

Stakeholder Committee Meeting #3

Stakeholder Committee Meeting #3 goals were to present and obtain feedback on the traffic operations analysis, bicycle and pedestrian level of traffic stress methodology, alternatives evaluation process, community engagement recap and update, and next steps in the project. Key discussion included:

- Consider impacts on transit stops and the need for bus pullouts in the alternatives
- Lane elimination west of Washington makes sense
- Consider trail/bike crossing connections on the bridge over I-25

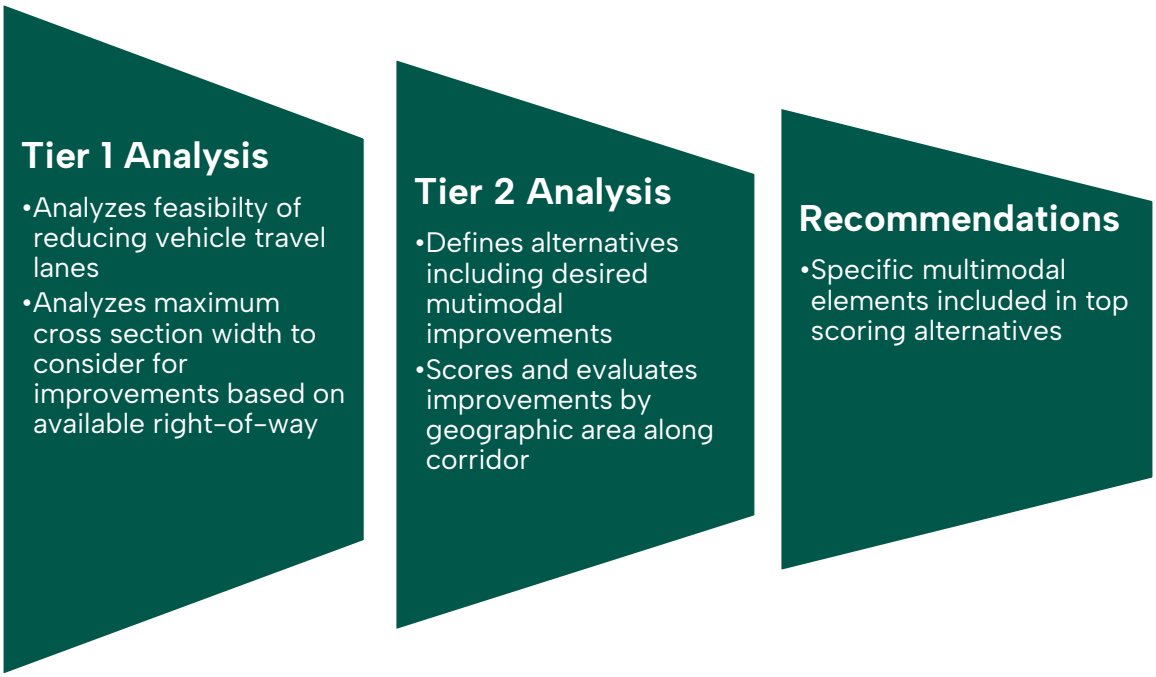
Stakeholder Committee Meeting #4

The final Stakeholder Committee Meeting was held to present the draft recommendations, and key feedback included following up on RTD bus stop consolidation and cross section recommendation for the CDOT I-25 bridge.

Alternatives Evaluation

Transportation improvement alternatives were identified to meet the goals of the project, and this included technical analysis and community feedback obtained throughout the process. These alternatives represent a variety of potential roadway and sidewalk configurations that can be implemented throughout the 88th Avenue corridor and were evaluated by a set of quantitative and qualitative criteria described in this chapter. The alternatives evaluation resulted in a set of recommended improvements for the different sections of the corridor. To help identify the most appropriate recommendation, all alternatives were run through two tiers of screening processes. The first tier of screening evaluates what potential space is available for improvements by evaluating impact on traffic operations of removing vehicle lanes and estimating available right-of-way. Some desired roadway configurations are not feasible as they do not fit within the constraints defined in this first tier screening and would have undesirable impacts on vehicular traffic and adjacent parcels. Some early alternatives presented for public feedback were determined not feasible during this first tier of analysis.

The second tier of screening defines and evaluates alternatives based on how well they achieve the multimodal and safety goals of the project including improvements to bicycle infrastructure, sidewalk infrastructure, and transit operations. The second tier of screening also considers community feedback obtained through the project's engagement efforts as well as technical feasibility and high-level cost estimates. During this screening process, alternatives receive a 1 (lowest) to 5 (highest) score for each criterion (multimodal benefit, cost, community support etc.) and the higher scoring alternatives are recommended for implementation.



Evaluation Criteria Summary

A series of evaluation criteria were developed in conjunction with the stakeholder group and public feedback to measure how well each alternative meets the safety and multimodal goals of the project, and these were used in the Tier 1 and Tier 2 screening process. The evaluation criteria were also generated to capture additional benefits and impacts of each alternative and aid in the selection process. In conjunction with stakeholders, these criteria were identified to align with the project's goals and objectives and were used to select a preferred corridor configuration and recommendations.

For each criterion, a 1 (lowest/worst) to 5 (highest/best) scoring rubric was developed to measure the potential impact of each option. The scoring rubric for each criterion is summarized below in **Table 5** and expanded upon methodology and scoring are included in Appendix C.

Table 5: Evaluation Criteria Summary

Criteria	Definition	Level of Impact
Tier 1 Screening		
Roadway Capacity	Intersection capacity measured with Intersection Level of Service (LOS)	Identifies which intersections can consider lane reductions and which ones would not operate at acceptable levels.
Right-Of-Way Impact	Level of Right of Way Impact	Measures how complicated an option is as far as need for right of way acquisition or easements.
Tier 2 Analysis		
Bicycle Comfort & Safety	Bicycle Level of Traffic Stress (LTS)	Measures how well a bike option provides a low stress facility to meet project goals.
Pedestrian Comfort & Safety	Pedestrian Level of Traffic Stress (LTS)	Measures how well a sidewalk or trail option provides a low stress facility to meet project goals.
Transit Operations	Level of potential impact on transit operations	Most street reconfigurations can adequately accommodate efficient transit operations.
Community Support	Level of support gauged through online surveys and outreach meetings	Upgrading multimodal facilities that have community support is an important element of the process.
Additional Feasibility Considerations	Technical conflicts such as utility, overhead distribution lines, gas lines, etc.	Important in some locations but less impactful at the typical section decision.
Planning Level Cost Estimate	Order of magnitude capital cost estimate	Level of cost is important for decision making and timeline of implementation.

Tier 1 Screening: Traffic Flow and Right-of-Way Impacts

What types of improvements can be incorporated in the various sections of the corridor to meet the goals of the project are constrained by having enough space to fit the desired roadway and multimodal components. Additional space for multimodal improvements can come from available public right-of-way, impact to adjacent right-of-way, or reducing the number of vehicle travel lanes to provide extra space to expand multimodal improvements. Both strategies for allocating space to expand multimodal improvements were considered in the evaluation process and were determined as key decision-making drivers. Due to the magnitude of impact that available right-of-way can have on the feasibility of an alternative, an evaluation of the corridor traffic operations and right-of-way was conducted first to evaluate where additional space for multimodal improvements could be obtained. The purpose is to screen out improvement options that are not feasible from a vehicular capacity and right-of-way impact level.

Roadway Capacity Evaluation

Additional space needed for multimodal improvements could be obtained by reducing vehicle travel lanes. Reducing travel lanes, commonly referred to as a road diet, includes reductions in travel lanes on roads that meet certain vehicle volume and intersection operation levels. An evaluation was conducted to determine if lane reductions are feasible and whether the impact to traffic operations is within acceptable levels according to City standards. This evaluation was conducted to ensure that the improvement options being considered will not severely impede vehicle flow and traffic operations along the corridor. It should be noted that during the development of the TMMP, the community input rejected additional through lanes as it only improved travel time at the most one minute a mile and the widening and right-of-way impacts would not be worth the improvement.

A intersection level traffic operations capacity analysis was conducted for 14 signalized intersections along 88th Avenue. The analysis used the Synchro 11 software program, which is based on procedures outlined in the *Highway Capacity Manual 6th Edition (HCM)*. Level of service (LOS) is an analysis metric that characterizes the operational conditions of an intersection's traffic flow, ranging from LOS A to LOS F. LOS A indicates free flow traffic conditions with little or no vehicle delay. LOS F represents significant travel delay, increased crash potential, and inefficient motor vehicle operation. HCM defines LOS using delay in seconds per vehicle; these thresholds are shown in **Table 6**.

Table 6: Level of Service for Signalized Intersections

Level of Service (LOS)	Delay (in seconds)
A	0 – 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	80+

LOS analysis focuses on measuring vehicle operations and congestion. This type of analysis can help define where congestion is occurring and where mitigations for vehicles and other users may need to be considered. It can also be beneficial when evaluating the potential impacts of alternatives implementation, both for vehicle operations and safety considerations of all users. While it is a useful tool for understanding vehicle operations, the LOS metric is not intended to be used alone in decision-making.

Lane Reduction and Horizon Year Scenarios

The capacity analysis was utilized to evaluate the operational impact of reducing the number of general-purpose vehicle lanes on 88th Avenue. To achieve this, two geometric scenarios for 3 different horizon years were modeled to assist decision making on alternatives development. **Table 7** summarizes the assumptions made for each of the analysis scenarios.

Table 7: Capacity Analysis Scenarios

Configuration	Horizon Year	Assumptions
Existing	***2024***	Existing traffic volumes, existing lane configuration and intersection geometry, and existing signal timings.
4 General Purpose Lanes	***2028***	Background average annual traffic growth rate of 1.25% applied, existing lane configuration and intersection geometry maintained, and signal timings optimized
4 General Purpose Lanes	***2048***	Background average annual traffic growth rate of 1.25% applied, existing lane configuration and intersection geometry maintained, and signal timings optimized.
2 General Purpose Lanes	***2024***	Existing traffic volumes, EB & WB through movements along 88th reduced to 1 lane each direction, NB & SB double left turn lanes reduced to single left turn lane, EB & WB existing shared through-right lanes replaced with right turn only lanes, all other existing lane configuration and intersection geometry maintained, and signal timings optimized.
2 General Purpose Lanes	***2028***	Background average annual traffic growth rate of 1.25% applied, EB & WB through movements along 88th reduced to 1 lane each direction, NB & SB double left turn lanes reduced to single left turn lane, EB & WB existing shared through-right lanes replaced with right turn only lanes, All other existing lane configuration and intersection geometry maintained, and signal timings optimized
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Eastbound (EB), Westbound (WB), Northbound (NB), Southbound (SB)

Level of Service (LOS) by Intersection

AM(PM) peak hour intersection LOS results are included in **Table 8.** To highlight intersections not operating within acceptable delay, LOS E is shown in orange and LOS F in red.

Table 8: AM and PM Peak Hour LOS Summary

Intersection	2024 Existing AM (PM)	2024 2-Lane AM (PM)	2028 4-Lane AM (PM)	2028 2-Lane AM (PM)	2048 4-Lane AM (PM)	2048 2-Lane AM (PM)
88th Ave & Pecos St	B(C)	B(C)	B(C)	B(C)	C (C)	C(C)
88th Ave & Huron St	C(C)	C(C)	C(C)	C(C)	C(D)	C(D)
88th Ave & Conifer Rd	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
88th Ave & Grant St	B(C)	B(B)	B(B)	B(B)	B(B)	B(C)
88th Ave & Pearl St	A(B)	A(B)	B(B)	B(C)	A(B)	C(C)
88th Ave & Washington St	D(D)	D***(E)***	D(D)	D***(E)***	D(D)	***E(F)***
88th Ave & Corona St	B(A)	A(B)	A(A)	B(B)	A(B)	***E***(D)
88th Ave & McElwain Blvd / Poze Blvd	A(B)	B(B)	A(A)	B(A)	B(A)	D(B)
88th Ave & Rainbow Ave / York St	***E***(D)	***F***(D)	D(B)	***F***(D)	***E***(C)	***F(E)***
88th Ave & Devonshire Blvd	A(A)	A(A)	A(A)	A(A)	A(A)	A(B)
88th Ave & Welby Rd (South)	A(B)	A(C)	A(B)	C(C)	A(C)	C***(E)***
88th Ave & Welby Rd (North)	A(A)	D(A)	B(A)	D(A)	B(B)	***F***(D)
88th Ave & Colorado Blvd	C(D)	***F(F)***	D(D)	***F(F)***	D***(F)***	***F(F)***
88th Ave & Dahlia St	A(B)	A***(E)***	A(B)	A***(E)***	A(B)	A***(F)***

Lane Reduction Feasibility

LOS was determined for all movements at all signalized locations on the corridor for all scenarios. Intersections that operate at an intersection LOS of D or better in 2048 are considered valid for consideration of inclusion in a road diet lane reduction scenario. Some segments received a greater evaluation and analysis based on segment specific situations. Grant Street to Pearl Street evaluated the transition zone between the 2-lane cross-section to the West and the 4-lane cross-section to the East. Pearl Street to Washington Street tested the reduction of turn lanes for the Eastbound approach at Washington Street to create space for an on-street bike facility. Corona Street to York Street evaluated a lane reduction scenario within the context of the high number of driveways and other accesses. Welby Road (South) to Monroe Street analyzed lane reduction, removal of center turn lane, and removal of lane turn access to create space for a sidewalk on the South-side. **Table 9** defines recommendations by segment of road based on the traffic capacity analysis for the 2048 horizon years.

Table 9: Lane Reduction Recommendations

Segment	Lane Recommendation
Pecos Street to Grant Street	1 lane EB, 1 lane WB – Traffic volumes and operations are suitable for lane reduction.
Grant Street to Pearl Street	1 lane EB, 2 lanes WB – Traffic volumes and operations are suitable for lane reduction EB. 2 lanes WB allows vehicles to clear away from the Washington intersection.
Pearl Street to Washington Street	2 lanes EB, 2 lanes WB – Traffic volumes and operations at Washington require 2 lanes in each direction. Double EB left turn at Washington could be reduced to 1 left turn lane to allow more space for bike lanes. This could also be achieved through lane narrowing.
Washington Street to Corona Street	2 lanes EB, 2 lanes WB – Traffic volumes and operations at Washington require 2 lanes in each direction.
Corona Street to York Street	2 lanes EB, 2 lanes WB – High volumes are not suitable for lane reduction WB and traffic operations are not suitable for lane reduction EB. This segment has 63 accesses in 0.8 miles which is expected to have greater operational impacts in a lane reduction scenario.
York Street to Welby Road	2 lanes EB, 2 lanes WB – Transition zone between 4-lane segments
Welby Road (South) to Monroe Street	2 lanes EB, 2 lanes WB – High volumes are not suitable for lane reduction WB and Traffic operations are not suitable for lane reduction EB. High left turn volumes require existing left turn lanes EB and WB for traffic operations. Removal of turn lanes would increase crash risk and is not recommended. Removal of left turn access is not recommended due to >1 mile rerouting or no alternate route.
Monroe Street to Colorado Boulevard	2 lanes EB, 2 lanes WB – Transition zone between 4-lane segments.
Colorado Blvd to Dahlia Street	2 lanes EB, 2 lanes WB – Traffic volumes and operations at Colorado requires 2 lanes in each direction. Heavy movements between Dahlia and Colorado recommend 2 through lanes in each direction and 2 WB right turn lanes at Colorado.

Eastbound (EB), Westbound (WB), Northbound (NB), Southbound (SB)

Public Right-of-Way Availability and Evaluation of Potential Impacts

Public right-of-way is land owned by the City of Thornton or other public agency for the purpose of public use typically for roads, sidewalks, and public utilities. The availability of public right-of-way is crucial in determining what improvements might be feasible to fit within the constraints of the roadway. A preliminary assessment of right-of-way boundaries was measured using the distance between assessor parcel boundaries on the north and south sides of 88th Avenue as shown in **Figure 15**. In addition, right-of-way limits were previously measured by City of Thornton comprised of a reasonable search of deeds, plats, and road petitions. These initial planning level assessments serve as a tool to guide the development of capital improvements along 88th Avenue, but a more extensive title search and site survey are recommended for future design efforts. Based on the parcel data, the widest sections of right-of-way exist in a few short runs between Santa Fe Drive and Huron Street, between Pearls Street and Emerson Court, and east of Colorado Boulevard. The narrowest section is in a few segments between Corona Street and Faraday Street, Franklin Street to York Street, and between Thornton Estates and Colorado Boulevard. The assumed right-of-way assumptions for this corridor study are listed in **Table 10** to establish the maximum typical section to be considered. These assumptions limit potential alternatives that are unfeasible due to impact on structures, parking, or private right-of-way based on a block by block visual assessment.

Figure 15: Right of Way Estimates along 88th Avenue Based on Parcel Data

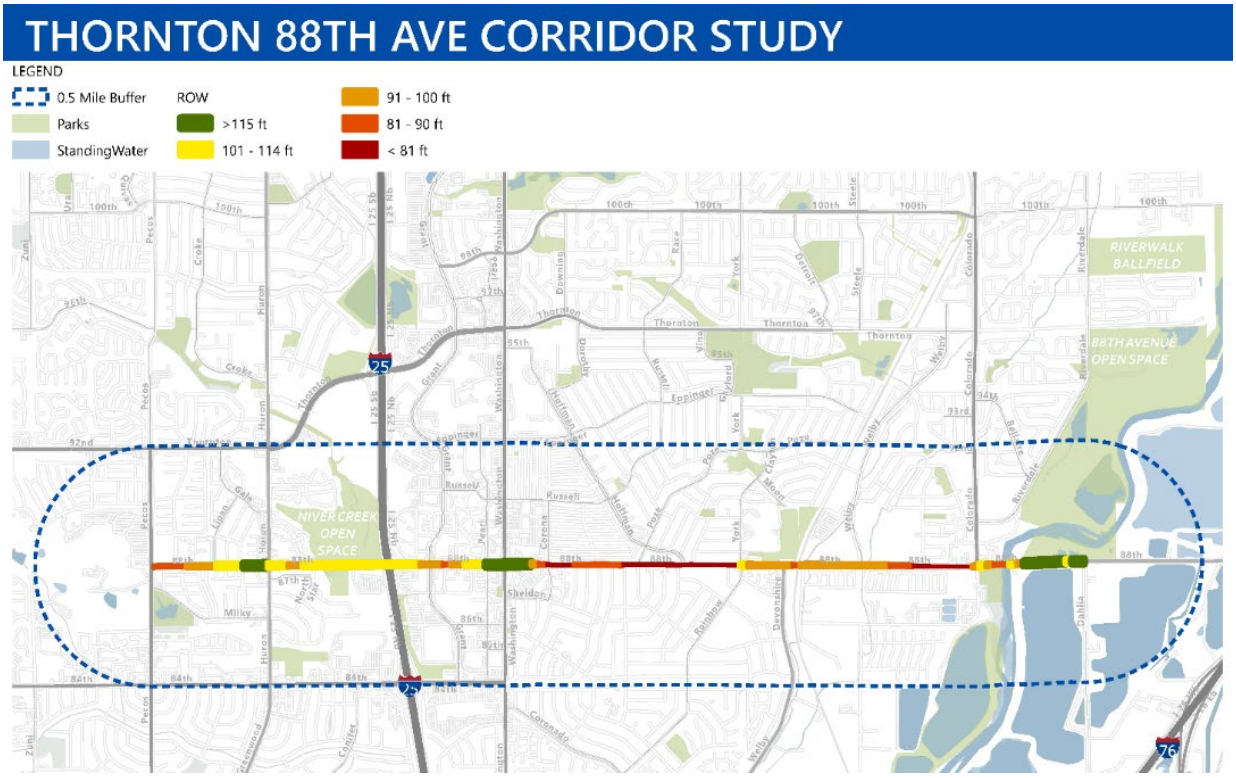

Table 10: Maximum Width for Consideration

Roadway Segment	Public Right-of-Way Width	Additional Considerations	Maximum Width for Consideration (Visual Assessment)
Pecos Street to Fox Drive	100′ (106′ for half block e/o Huron Street)	Wider not feasible without impacts	100′
Fox Drive to Grant Street	100′	Consider expansion north into Niver Creek open space starting 300′ east of Fox Drive and southeast of Conifer Street. Wider bridge over I-25 is feasible with CDOT bridge reconstruction.	120′
Grant Street to Pearl Street	100′	Wider not feasible without impacts	100′
Pearl Street to Washington Street	100′	Existing sidewalk to sidewalk is 115′	115′
Washington Street to Corona Street	100′ (varies +/- with easements)	Existing sidewalk is 120′-130′ near Washington Street	130′
Corona Street to York Street	80′	Limited expansion opportunity without significant property impact	80′
York Street to UPRR	70′-90′	80′ appears to be widest available for consideration	80′
UPRR to Monroe Street	80′	Vacant parcel on north side could be used for wider roadway footprint	100′
Monroe Street to Colorado Boulevard	80′	East of Monroe Street has little availability, and approaching Colorado Blvd has potential for expansion to vacant land on the south	80′
Colorado Boulevard to South Platte River Bridge	80′	Colorado Blvd intersection is 100′ existing, approach toward S. Platte River Bridge necks down to 70′ bridge	80′
East of South Platte River Bridge to Dahlia Street	80′	The existing road is 60′, but no physical constraints to widening	100′

Tier Two: Multimodal Improvement Alternative Screening

Based on the results from the Tier 1 analysis which included traffic capacity evaluation and known right-of-way information, a series of typical sections were developed to evaluate improvement options along the corridor to meet the project goals and fit within the constraints of the vehicular capacity and right-of-way limitations.

For each road segment, a series of alternatives were generated that incorporate one or more of these improvement options to meet project goals. The scoring methodology for each Tier 2 evaluation criteria is included in Appendix C.

For each geographic section, a series of alternatives were defined including vehicle travel lane configurations, bicycle facilities, and sidewalks. In summary, the alternatives focused on differentiating decision-making elements including:

- **Type of Bicycle Facility:** Options evaluated include existing on-street lanes, wider buffered or protected bicycle lanes, raised protected bicycle lanes, and multi-use paths.
- **Type of Pedestrian Facility:** Options evaluated include existing narrow sidewalks, wider attached sidewalks, detached sidewalks with medians, and multi-use paths.
- **Vehicular Configuration:** Options evaluated include maintaining existing lane configuration with two vehicle travel lanes in each direction or reducing number of vehicle travel lanes.
- **Transit Configuration:** Transit could be accommodated in any option. Dedicated bus-only lanes were not evaluated as part of the corridor selection process, but BRT treatments such as queue jumps at congested intersections and signal priority could be evaluated in a later design phase.
- **Rough Order of Magnitude Cost (ROM):** High level cost determined to define the level of investment needed to achieve each of alternatives. Cost influences phasing recommendations into short term and long term horizons.

Alternative 1: Road Diet Maintaining Existing Curbline

Alternative 1 reduces vehicle lanes, adds improved wider protected bicycle lanes, and widens the sidewalk to 8 feet where feasible within the existing public right-of-way or with some acceptable impacts to adjacent parcels. Future design decisions can either incorporate a center median with turn bays at intersections as shown in **Figure 16** and moved forward as 1a or could maintain the existing two way left turn lane and add buffer between sidewalk and bike lane as shown in **Figure 17** as Alternative 1b. Depending upon the context of the corridor, a mix of these could be implemented, and both would not require major roadway reconstruction or moving the curbline.

Figure 16: Alterative 1a with Center Median

Figure 17: Alterative 1b with two way left turn lane and sidewalk median

Alternative 2: Sidewalk Widening Only

Alternative 2 keeps the existing roadway intact and includes widening and improving sidewalks. The sidewalk widening is assumed to be a pedestrian improvement only that doesn't result in an improved bicycle facility. Depending on corridor context, this could be implemented as an attached sidewalk as shown in **Figure 18** or with a detached sidewalk as shown in **Figure 19**.

Figure 18: Alternative 2a with Attached Sidewalk

Figure 19: Alternative 2b with Detached Sidewalk

Alternative 3: Reduce roadway width, reduce vehicle lanes, add raised protected bike lanes, and widen sidewalks

Alternative 3 includes a lane reduction and narrowing of the road including moving curb and gutter inward to provide above the curb space for a protected bicycle lane adjacent to a sidewalk. Variations of the configuration of the bike lane and median are shown in **Figure 20** and **Figure 21**.

Figure 20: Alternative 3a with median between bike lane and travel lane

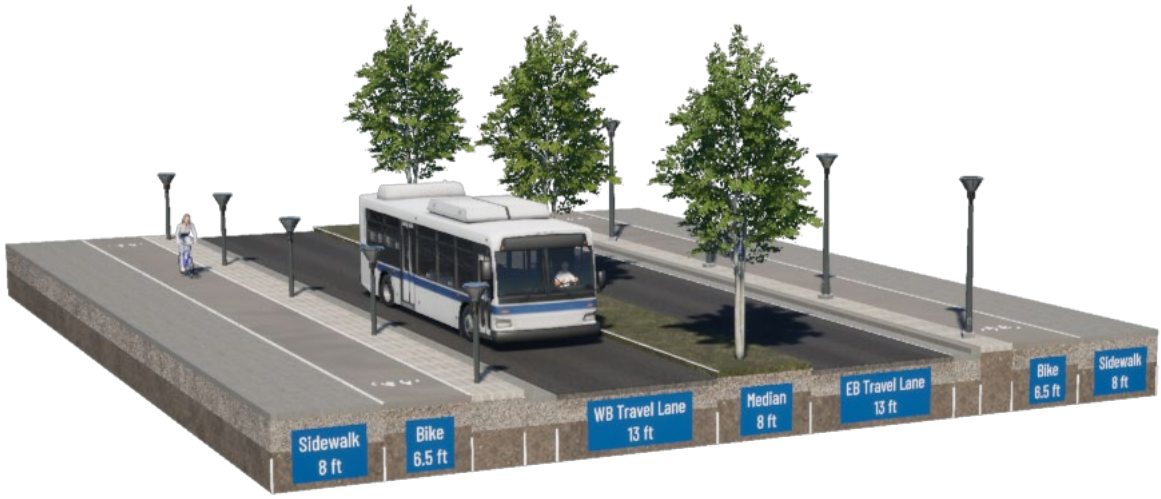

Figure 21: Alternative 3b with attached bike lane

Alternative 4: Maintain existing vehicle lanes, add protected bike lanes, widen sidewalk

Alternative 4 includes widening of the existing roadway to accommodate raised protected bicycle lanes and sidewalk improvements and maintain four vehicular travel lanes. Achieving this configuration would require right-of-way acquisition and reconstruction of the roadway to push multimodal elements further out.

Figure 22: Alternative 4 maintaining 4 lanes and improved multimodal facilities

Alternative 5: Maintain vehicle lanes with multiuse path

Alternative 5 includes maintaining the existing roadway vehicular configuration but adding a multiuse path on both sides (as shown in **Figure 23**) or one side of the road (as shown in **Figure 24**) to provide a lower stress facility for bicyclists and pedestrians.

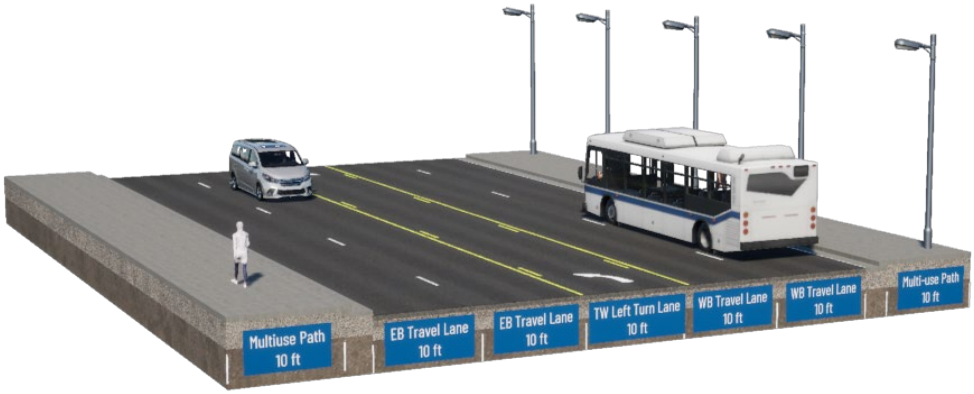

Figure 23: Alternative 5 with Multiuse Path on Both Sides

Figure 24: Alternative 5 with Multiuse Path on North Side Only

Alternatives Analysis Summary

The evaluation of alternatives was conducted based on technical analysis and stakeholder input. There is not a single cross section that is recommended for the full corridor based on the differences found throughout, but the recommendations included a scoring of criteria to best meet the project goals with lower cost short term improvements and longer term ultimate improvements. Based on the alterative scoring and the order of magnitude cost estimate, a preferred alternative is identified for the ultimate using the highest scoring alternative and for the short term and medium term the highest scoring alternative in the lower cost categories is selected.

Table 11: Alternatives Analysis Summary and Outcome

Road Section	Alt 1 Road Diet Maintaining Existing Curbline	Alt 2 Sidewalk Widening Only	Alt 3 Road Diet with Raised Protected Bike Lanes and Wide Sidewalks	Alt 4 Maintain Number of Vehicle Lanes with Protected Bike Lanes and Wide Sidewalks	Alt 5 Maintain Number of Vehicle Lanes Single Side 2-way Multiuse Path	Short Term and Medium Term Preferred	Long-Term Preferred
Pecos St to Washington St (variation applied from Grant St to Washington St)	16 ($ or $$)	12 ($)	16 ($$$)	15 ($$$)	14 ($$)	**Alt 1**	**Alt 3**
Bridge over I-25	16 ($ or $$)	12 ($)	13 ($$)	15 ($$$)	15 ($$)	**Alt 1**	**Alt 3**
Washington St to Corona St		11 ($)		15 ($$$)	14 ($$)	**Alt 2**	**Alt 4**
Corona St to Welby Rd (South)		11 ($)				**Alt 2**	**Alt 2 (and consider MUP)**
Welby Rd (South) to Colorado Blvd (variation applied between Thornton Estates to Colorado Blvd)		13 ($$)		15 ($$$)		**Alt 2**	**Alt 4**
Colorado Blvd to Dahlia Street		10 ($$)			11($$)	**Alt 5**	**Alt 5**

Recommendations

The City of Thornton and stakeholders identified multimodal priorities and studied the feasibility of transportation improvements on 88th Avenue. The outcome consists of phased recommendations to help identify and advance funding opportunities to design and construct an improved roadway that meets transportation needs. Other stakeholders will need to continue to be involved.

Transportation improvements will transform 88th Avenue into a safer, more accessible, and vibrant space for all users. Prioritizing safety and infrastructure supports the diverse needs of Thornton's residents and visitors. A theme that emerged was a desire to adequately facilitate the movement of automobile traffic but also improve the pedestrian and bicycle environment on 88th Avenue. Appropriate infrastructure improvements were determined using various planning tools to examine the efficiency of vehicular improvements while balancing the needs of transit users, bicyclists, and pedestrians. Recommendations are classified as short-term, medium-term, or long-term.

- **Short Term improvements (<5 years)** are typically designed for implementation within a five-year time frame. They are generally, though not always, confined to the existing right-of-way and include projects which can be constructed relatively quickly. Funding may not be immediately available and additional prioritization within this category may be necessary.
- **Medium Term improvements (5-10 years)** are often alternatives to long term recommendations if the long-term improvements are determined to be cost prohibitive. Sidewalk improvements are considered in this category if they require capital investment but not as much investment as complete roadway reconstruction.
- **Long Term improvements (10+ years)** require more extensive infrastructure investment including more extensive engineering, right-of-way, negotiation with property owners, funding, and investment. Typically, more expensive improvements such as roadway reconstruction are classified as long-term. However, some bigger improvements such as the new CDOT bridge over I-25 are already in the planning and design phase.

Short-Term Recommendations (< 5 years)

The vehicular capacity analysis determined that a road diet on the area between Pecos Street and Pearl Street will operate acceptably with reduced vehicle through lanes which allows additional space within the public right-of-way to be reallocated to multimodal improvements. This can be achieved in the short term with a combination of lower cost improvements including signing, striping, and quick build materials for a protected bicycle lane. The road diet and some other lower cost projects that could be implemented in the short term are listed in **Table 12.** A conceptual design and cost estimate for short term roadway improvements is included in Appendix D.

Short term road diet between Pecos Street and Washington Street

Table 12: Short Term Recommendations (<5 years)

Category and Location	Recommendation	Cost
Road Diet: Pecos Street to Washington Street	Maintain below the curb road width, reduce through vehicle lanes from 4 to 2 and add protected bike lanes using pavement markings and quick build materials (no roadway reconstruction). (shown in Appendix D). Road lane reduction tapers between Grant Street and Pearl Street and does not include lane reductions between Grant Street and Washington Street due to capacity constraints at that intersection.	$1.1M
Traffic Flow Optimization: Pecos Street to Washington Street	Signal Retiming in conjunction with road diet	low
Evaluate Signalized Left Turn Operations: Pecos Street, Huron Street, Grant Street, Pearl Street, and Corona Street	Evaluate adjusting left turn operations as identified in Vision Zero Plan when implementing road diet	low
Leading Pedestrian Interval: Colorado Boulevard	Consider implementing Leading Pedestrian Interval (LPI) to improve pedestrian and bicycle safety at the intersection.	low
Prohibit Right Turn on Red: Grant Street, Washington Street, Rainbow Ave/York St, and Welby, and Colorado Boulevard	Prohibit Right Turn on Red (will have some impact on intersection delay)	low
Pedestrian Accessibility Improvements: Washington Street	At grade crossing improvements at the intersection in conjunction with Thornton Shopping Center redevelopment	varies
Evaluate protected right turn signal: Colorado Boulevard	Evaluate a protected WB right turn with no right on red onto Colorado Boulevard to allow for a pedestrian/bicycle phase for users crossing on the north side of 88th Avenue. Add a double right turn to increase capacity. Analysis shows it degrades LOS but may still be considered with increased pedestrian and bicycle activity.	low
Bus Stop Consolidation: Santa Fe Drive and Fox Drive	In conjunction with road diet, remove underutilized and closely spaced bus stops at Santa Fe Drive (EB only stop) and Fox Drive (EB and WB)	low
Trail Connection: Niver Creek Trail	Coordinate with CDOT I-25 project to connect 88th Avenue to Niver Creek Trail on north and south sides of 88th Avenue at Conifer Road	low
Wayfinding Signage: Trail Junctions and at regular intervals on 88th Avenue	Destination based wayfinding to Niver Creek Trail, S. Platte River Trail.	low

Medium-Term Recommendations (5-10 years)

Medium-term recommendations are intended to take place in the next 5 to 10 years. Some of the improvements such as sidewalk widening in some locations could be implemented as a medium term improvement if the ultimate long term roadway reconstruction is determined to be too far off in the future. In these cases, if a sidewalk was constructed it may need to be rebuilt with the ultimate long term roadway reconstruction if it happens.

Table 13: Medium-Term Recommendations (5-10 years)

Category	Location	Recommendation	Cost
Bridge	88th Avenue / I-25 Bridge	Reconstruct Bridge as part of CDOT I-25 project (constructed by CDOT)	Determined as part of CDOT I-25 Project
Sidewalk Widening and Repairs	Varies throughout corridor	If long-term roadway reconstruction is not advanced, replace existing sidewalks with wider 8' sidewalks	Varies
Trail Connection	S. Platte River Trail	Widen / improve ramp access to S. Platte River Trail to provide convenient access from the north side of 88th Avenue.	low

Long-Term Recommendations (10+ years)

Long-term recommendations are the ultimate improvements identified during the corridor study. These generally include higher cost roadway reconstruction projects that will have the largest benefits. A summary of improvements by location on the corridor is shown in **Table 14**. A long-term conceptual roadway design and cost estimate is included in Appendix E.

Table 14: Long-Term Recommendations (10+ years)

Category and Location	Recommendation		Cost
Roadway Reconstruction: Pecos Street to Washington Street (excluding bridge over I-25)	8' sidewalks, 6.5' raised protected bike lanes, 2 through travel lanes, and center turn lane	 **Pecos Street to Washington Street (Excluding bridge over I-25)**	**$8.6M**
Roadway Reconstruction: Washington Street to Welby Road	Between Washington Street and Corona Street, widen road to accommodate improved widened sidewalks and raised protected bicycle lanes (will require usage of space outside of public right-of-way). Between Corona Street and Welby Road, accommodate narrow public right-of-way by shifting curbs inward, expanding sidewalk into a 10'-12' multiuse path, and maintain vehicular configuration with 4 through lanes and a center turn lane	 **Washington Street to Corona Street**  **Corona Street to Welby Road**	**$8.9M**

Category and Location	Recommendation		Cost
Roadway Reconstruction: Welby Road to Thornton Estates	Shift roadway north into open space to accommodate multimodal additions. Section includes 8' sidewalk, raised protected bike lanes, 4 through vehicle lanes, and a center turn lane	 **Welby Road to Thornton Estates**	**$3.2M**
Multimodal Path(s): Thornton Estates to Dahlia Street	Between Thornton Estates and Colorado Boulevard, add 10'–12' multiuse path on both sides of road to accommodate bicycles and pedestrians in both directions on both sides. South side will cross Colorado Blvd and connect to S. Platte River Trail access. East of Colorado Boulevard, add a north 10'–12' multiuse path utilizing the existing S. Platte River bridge. Path could continue east of Dahlia Street into Commerce City. South sidewalk not needed due to low pedestrian demand and preference for all users to be on north side (optimizes roadway capacity for Dahlia Street to Colorado Boulevard movements)	 **Thornton Estates to S. Platte River Bridge**  **S. Platte River Bridge to Dahlia Street**	**$4.7M**

Potential Funding

To advance the recommendations within this corridor study, it is recommended that the City of Thornton seek local, regional, and federal funding opportunities in addition to or instead of capital improvement project funding. Some potential programs for consideration are shown in **Table 15**.

Table 15: Potential Funding Programs

Program	Administering Agency	Description
Transportation Improvement Projects (TIP)	DRCOG	DRCOG program identifies all current federal and state funded transportation projects to be completed in the Denver region over a 4 year period
DRCOG Set Asides Program	DRCOG	DRCOG program with application process for agencies to obtain funding.
BUILD (previously known as RAISE)	US DOT	Discretionary grant program for investments in surface transportation infrastructure that will have a significant local or regional impact.
Safe Streets and Roads for All (SS4A) Implementation Grant	FHWA	Discretionary program with goal of zero roadway deaths using a Safe System Approach
Bridge Investment Program	FHWA	Discretionary program focused on existing bridges to reduce the overall number of bridges in poor or fair condition.
Active Transportation Infrastructure Investment Program	FHWA	Competitive grant program to construct projects that provide safe and connected active transportation facilities.

Next Steps

The City of Thornton is committed to enhancing the 88th Avenue corridor. This corridor plan includes a range of short, medium, and long-term recommendations organized to improve accessibility, safety, and overall quality of life for residents and commuters. While some recommendations are lower cost, others will require significant additional resources to implement. The City will explore necessary funding and partnerships to ensure the successful implementation of recommendations to benefit the community surrounding 88th Avenue.

Appendix A. Existing Conditions Assessment

Appendix B. Community Involvement Summary

Appendix C. Alternatives Analysis and Traffic

Appendix D. Short Term Concept Plan

Appendix E. Long Term Concept Plan