JUNE 2021

Colorado Boulevard

ORCHARD ROAD TO COUNTY LINE ROAD MULTIMODAL CORRIDOR STUDY

PREPARED FOR

City of Centennial
13133 E. Arapahoe Rd.
Centennial, CO 80112

PREPARED BY

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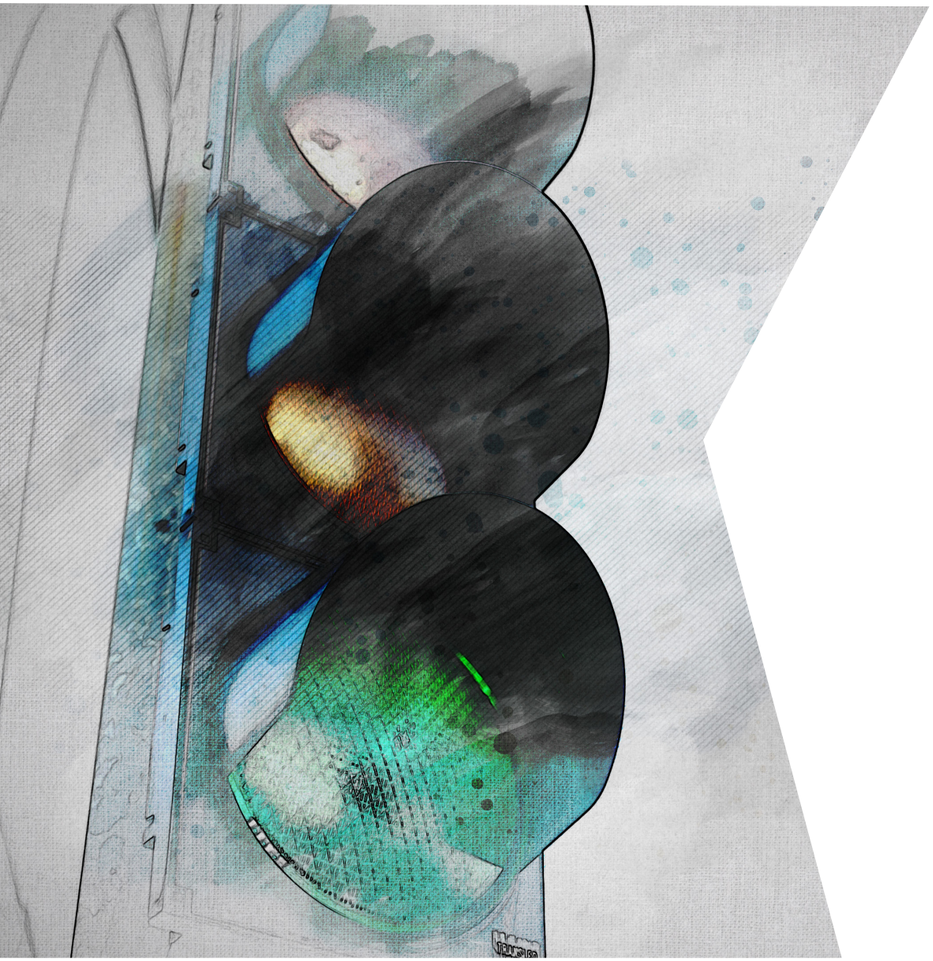

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Executive SUMMARY

PURPOSE

The purpose of this Colorado Boulevard Study is to identify, evaluate and select multimodal alternatives for the Colorado Boulevard corridor for inclusion in the City of Centennial's Transportation Master Plan.

GOALS AND OBJECTIVES

The objective of this study is to identify and prioritize a list of potential projects along the corridor to expand multimodal mobility options and improve the transportation system. Five goals were identified for the study:

- Identify multimodal opportunities
- Reflect community character through design
- Embrace citizen participation
- Provide connectivity for bikes and pedestrians
- Improve safety for all users

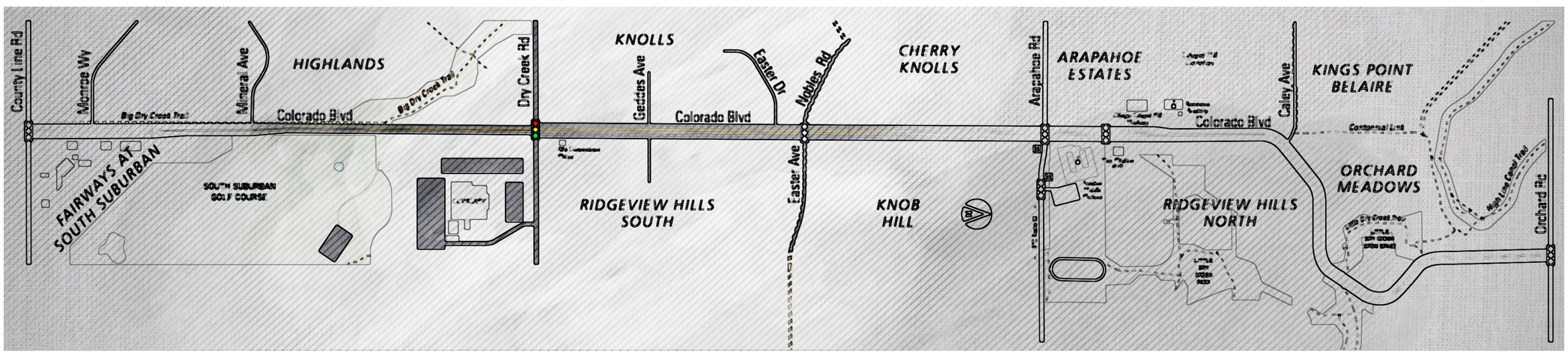
EXISTING CONDITIONS

The study area for this multimodal study includes Colorado Boulevard within the City of Centennial city limits. The Colorado Boulevard study area extends from County Line Road on the south to Orchard Road on the north. This segment of Colorado Boulevard intersects major east-west corridors such as County Line Road, Dry Creek Road, Arapahoe Road and Orchard Road.

There is no transit along Colorado Boulevard. However, RTD's bus route 66 travels along Arapahoe Road with bus stops on the east side of Colorado Boulevard. Route 66 travels from Arapahoe Community College to Parker Road stopping by The Streets at SouthGlenn, Arapahoe at Village Center Light Rail Station and Arapahoe County District Court.

Bicycle facilities along and near the corridor are limited. The major spines for bicycle movement in the area are the shared use trails that usually run from southeast to northwest following the topography and water flow of creeks. These trails are primarily located in the southern and northern sections of the corridor.

The majority of the corridor includes sidewalks on both sides of the corridor, with some of the southern and northern sections only having sidewalk on one side of the corridor. The type and width of sidewalk along the corridor varies from attached and detached sidewalk from 5 feet to 10 feet wide. Even though some of the pedestrian conditions along the corridor might not be optimal, north-south pedestrian movement along the corridor is mostly supported by the existing



infrastructure. East-west pedestrian movement across Colorado Boulevard is constrained to the few signalized intersections that cross the corridor.

Daily traffic volumes range from 6,000 vehicles per day near the northern end of the corridor to nearly 12,000 vehicles per day near the southern end of the corridor at County Line Road. Average vehicle speeds within the corridor range from 40 to 45 miles per hour, confirming frequent speeding along the length of the corridor. All signalized intersections operate at levels of average delay deemed acceptable per City of Centennial transportation standards. During the peak hours of daily travel each intersection operates at Level of Service D or better. A few individual movements experience degraded level of service E or F conditions for short durations during the day.

A full summary of existing conditions along the corridor can be found in the Colorado Boulevard Existing Conditions Report, June 2020.

ALTERNATIVES

More than ten multimodal alternatives were developed for the corridor. All alternatives were developed to accommodate vehicle, pedestrian and bicycle travel along and across Colorado Boulevard. The range of alternatives were evaluated based on the stated project goals, public input and City of Centennial review. The evaluation selected four alternatives to advance to a more detailed evaluation process.

- **Alternative 1:** 4-Lane Section with Directional Multimodal
- **Alternative 2:** 2-Lane Section with Buffered Directional Multimodal
- **Alternative 3:** 2-Lane Section with Raised Multimodal
- **Alternative 4:** 2-Lane Section with Shared Use Path and Amenity Zone

The four alternatives were presented to the public for comment and evaluated in more detail. The evaluation and public comment process resulted in the selection of a preferred alternative. A recommended implementation plan was developed for the preferred alternative.

RECOMMENDED IMPLEMENTATION PLAN

Alternative 2 was selected as the preferred alternative for the corridor. The preferred alternative utilizes the existing five-lane cross section to provide two vehicle travel lanes and a center left-turn lane. Buffered bike lanes are provided in each direction adjacent to the vehicle lanes. Sidewalks and landscaped areas are adjacent to the bike lanes.

Reducing the number of vehicle travel lanes will help reduce vehicle travel speeds. Based on the study's analysis, one through lane in each direction provides adequate capacity for both near- and long-term traffic volumes. The added bike lanes within the roadway keeps bikes separate from both pedestrians and vehicles. A separation buffer further increases bike safety and provides some additional separation for pedestrians from the vehicle travel lanes.

1.0 Introduction

1.1 PROJECT BACKGROUND

1.1.1 STUDY AREA EXTENTS

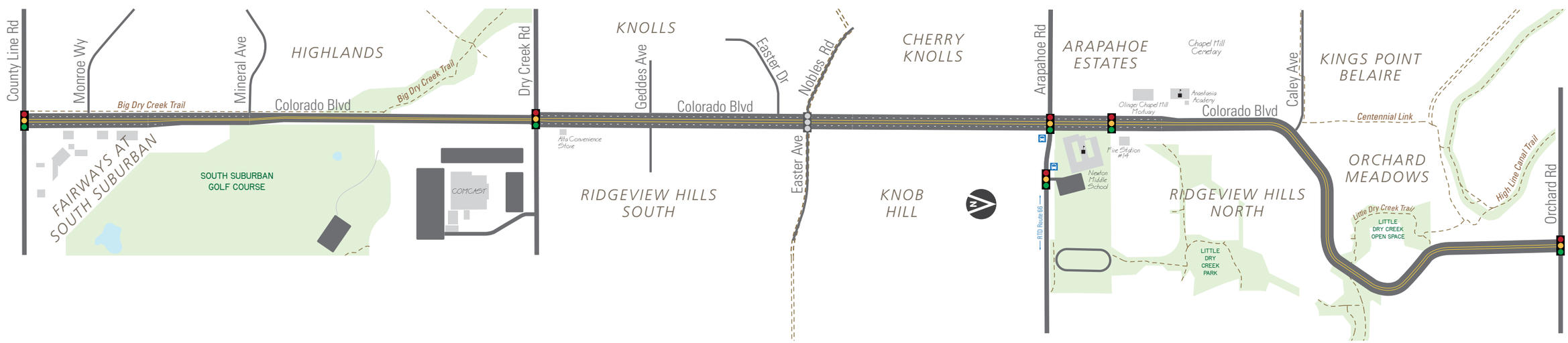
The study area (***Figure 1***) for this multimodal study includes Colorado Boulevard within the City of Centennial city limits. The Colorado Boulevard study area extends from County Line Road on the south to Orchard Road on the north. This segment of Colorado Boulevard intersects major east-west corridors such as County Line Road, Dry Creek Road, Arapahoe Road and Orchard Road. Colorado Boulevard has a straight north-south alignment between County Line Road and Caley Avenue. The northern-most three-quarter mile segment north of Caley Avenue becomes more curvilinear.

1.1.2 STUDY AREA CONTEXT

This segment of Colorado Boulevard is located within the municipality of Centennial and within Arapahoe County. Colorado Boulevard acts as a main north-south connection that connects Centennial to Highlands Ranch on the south by extending over C-470. To the north, Colorado Boulevard connects to a single-family neighborhood within Greenwood Village. Colorado Boulevard is intersected by four primary east-west corridors: County Line Road, Dry Creek Road, Arapahoe Road, and Orchard Road. These corridors connect Colorado Boulevard to major transportation corridors and activity centers. The I-25 corridor is located approximately 3 miles to the east providing commercial, office and mixed-use land uses, as well as RTD light rail service. The light rail stations along these east-west corridors include County Line, Dry Creek, Arapahoe at Village Center and Orchard stations which are served by lines E, F, and R. The south Broadway corridor is located approximately 2.5 miles to the west providing commercial, office and mixed-use land uses.

Orchard Road only provides access to the east to I-25. Arapahoe Road, Dry Creek Road and County Line Road all provide continuous access between Broadway and I-25. Both Dry Creek Road (via Mineral Avenue) and County Line Road provide extended connectivity to Santa Fe Drive an additional two miles west of Broadway.

Figure 1: Study Area



1.1.3 PREVIOUS PLANS REVIEW

2013 – Centennial Transportation Master Plan

The Centennial Transportation Master Plan is a comprehensive plan which includes the existing conditions and plans for multimodal transportation. The plan also outlines the short term and long-term roadway plans, bicycle and pedestrian plans, transit plans, and transportation demand management. This plan explains a deficiency in bicycle and pedestrian systems and outlines their needs. Some deficiencies outlined stated the community's desire for more sidewalks, complete continuity, intersection crossing improvements, connectivity from sidewalk to multiuse trail facilities, and more bike lanes along collector and arterial streets.

2017 – Centennial Trails and Recreation Plan

The Centennial Trails and Recreation Plan includes Arapahoe County Recreation District, Arapahoe Park and Recreation District, Smokey Hill Metro District, and South Suburban Parks and Recreation District. Colorado Boulevard lies within South Suburban Parks and Recreation District. The Centennial Trails and Recreation Plan primarily focuses on connecting the communities of this region via multimodal transportation and recreational facilities/parks and open space. The main points outlined are "Playing at Home, Connecting Communities, Serving an Active Population, and Protecting Our Natural Resources." This plan outlines a planned bike facility on Colorado Boulevard the entire length of the city from County Line Road to Orchard Road.

2017 – Arapahoe County Bicycle/Pedestrian Master Plan

The Arapahoe County Bicycle Pedestrian Master Plan includes all the different municipalities and unincorporated areas of the County. This region includes 16 communities with varying amounts of pedestrian and biking accommodations, thus calling for increased connectivity and more developed trails and pathways. The Arapahoe County Bicycle Pedestrian Master Plan outlines the policies, strategies, and performance measures. This plan calls for proposed separated bike lanes along Colorado Boulevard from County Line Road to Caley Avenue where it transitions to proposed bike lanes until Orchard Road.

2018 – Centennial NEXT 2040 Comprehensive Plan

Centennial NEXT 2040 Comprehensive Plan discusses land uses and some transportation goals. Land use along Colorado Boulevard is characterized as primarily residential, with some mixed use in the southern corners, as well as a large area to the east of Colorado Boulevard between County Line Road and Dry Creek Road which includes the South Suburban Golf Course. There are also two employment centers, one in the southeast corner of Colorado Boulevard and Dry Creek Road and the other one on the west side of Colorado Boulevard north of Arapahoe Road.

1.2 PROJECT GOALS AND OBJECTIVES

A set of project goals and objectives was established to guide the development and evaluation of alternatives for the Colorado Boulevard corridor. The goals and objectives were established to help balance the many visions and needs within the corridor. The City of Centennial Comprehensive Plan and public input were used to tailor the goals and objectives to Colorado Boulevard.

- Reflect community character through design
- Build and maintain attractive and landscaped thoroughfares
- Improve the transportation system through expanded mobility options and greater connectivity
- Define the character and function of streets based on land use
- Provide safe, convenient and enjoyable facilities to encourage walking and biking
- Improve pedestrian safety along and across the corridor
- Implement strategies to reduce vehicle speeds in the corridor
- Complete the pedestrian network within the corridor
- Improve trail connectivity
- Minimize increased congestion and mitigate existing congestion

2.0 Data COLLECTION

2.1 TRAFFIC DATA

Twenty-four-hour tube counts were collected on Tuesday, October 15, 2019 at three locations: north of Mineral Avenue, north of Davies Place, and south of Weaver Avenue. The average daily traffic (ADT) for the three locations are presented in ***Table 1***.

The average daily traffic on Colorado Boulevard decreases towards the north end of the corridor from approximately 11,400 to 6,200 vehicles per day. The twenty-four-hour tube counts also collected speed data for the three locations, which is presented in ***Table 2***.

Traffic volumes are typically recorded on Tuesday, Wednesday or Thursday to depict typical weekday traffic behavior. Counting traffic volumes on Friday, Saturday, Sunday or Monday is typically avoided unless specific conditions on those days are being analyzed.

Table 1: Colorado Boulevard Average Daily Traffic

LOCATION	DIRECTION	VEHICLES
1. North of Mineral Ave	Northbound	5,700
	Southbound	5,700
	Total	**11,400**
2. North of Davies Pl	Northbound	6,700
	Southbound	4,700
	Total	**11,400**
3. South of Weaver Ave	Northbound	2,300
	Southbound	3,900
	Total	**6,200**

Table 2: Colorado Boulevard Vehicle Speeds

LOCATION	DIRECTION	SPEED LIMIT	AVERAGE SPEED	MEDIAN SPEED	85TH PERCENTILE	95TH PERCENTILE	% VEHICLES OVER SPEED LIMIT
North of Mineral Ave	Northbound	40 mph	45 mph	45 mph	48 mph	51 mph	92%
	Southbound	40 mph	42 mph	42 mph	46 mph	49 mph	74%
North of Davies Pl	Northbound	40 mph	39 mph	38 mph	42 mph	44 mph	30%
	Southbound	40 mph	45 mph	45 mph	50 mph	53 mph	89%
South of Weaver Ave	Northbound	35 mph	39 mph	39 mph	43 mph	45 mph	84%
	Southbound	35 mph	39 mph	39 mph	44 mph	47 mph	83%

The average speed of vehicles on Colorado Boulevard ranges from one mile per hour below the speed limit to five miles per hour over the speed limit. Furthermore, up to 92 percent of all drivers exceed the speed limit in the corridor. The 85th percentile speed on Colorado Boulevard is approximately 46 miles per hour. This indicates that at least 15 percent of drivers travel faster than 46 miles per hour within the corridor. The high speeds in the corridor are further analyzed in ***Table 3***.

Table 3: Colorado Boulevard High Speeds

LOCATION	DIRECTION	# VEHICLES 55 MPH OR GREATER	MAX SPEED
North of Mineral Ave	Northbound	50	55-60 mph
	Southbound	9	55-60 mph
North of Davies Pl	Northbound	1	55-60 mph
	Southbound	129	60-65 mph
South of Weaver Ave	Northbound	3	55-60 mph
	Southbound	7	60-65 mph

A total of 199 vehicles were recorded speeding 55 mph or greater along Colorado Boulevard. The maximum speed recorded was between 60 mph and 65 mph. The recorded speeds within the corridor are toward the upper limit of desirable speeds to support the addition of bike lanes. However, the reduction in the number of traffic lanes within the corridor should help reduce vehicle speeds.

Intersection turning movement counts were collected on Tuesday, October 15, 2019 at five key intersections with Colorado Boulevard: County Line Road, Dry Creek Road, Arapahoe Road, Euclid Avenue, and Orchard Road. Turning movement counts were collected for the AM (7:00AM to 9:00AM) and PM (4:00PM to 6:00PM) peak periods. The AM and PM peak hours were determined based on 15-minute aggregation. The traffic counts also include bicycles and pedestrians.

Figure 2 displays the vehicular turning movement counts and ***Table 4*** displays the bicycle and pedestrian counts at the Colorado Boulevard and County Line Road intersection. While pedestrian and bicycle volumes are minimal, high vehicular volumes are seen in the east-west directions on County Line Road. Additionally, the northbound right turn experiences high volumes in the AM and is accompanied with a high volume for the westbound left turn in the PM, indicating heavy directional movements.

Figure 2: Colorado Blvd & County Line Rd Turning Movement Counts

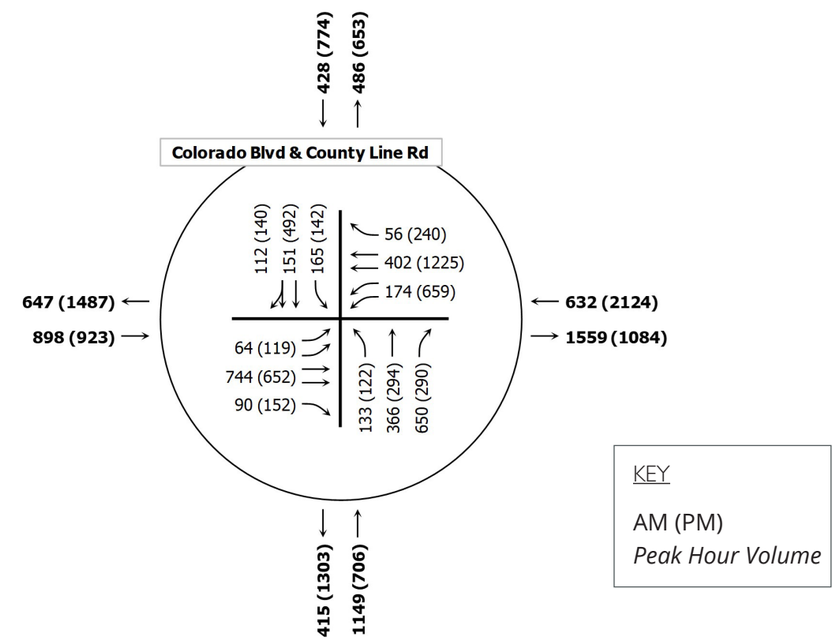


Table 4: Colorado Blvd & County Line Rd Bicycle and Pedestrian Counts

PEAK HOUR	WEST LEG		EAST LEG		SOUTH LEG		NORTH LEG	
	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS
AM	0	1	0	0	0	0	0	0
PM	2	1	2	0	0	0	0	0

The vehicular turning movement counts for Colorado Boulevard and Dry Creek Road are displayed in ***Figure 3***, and the bicycle and pedestrian counts are displayed in ***Table 5***. Most pedestrian activity is seen on the north and west legs of the intersection, and the highest vehicular volumes are the eastbound and westbound through movements.

Figure 3: Colorado Blvd & Dry Creek Rd Turning Movement Counts

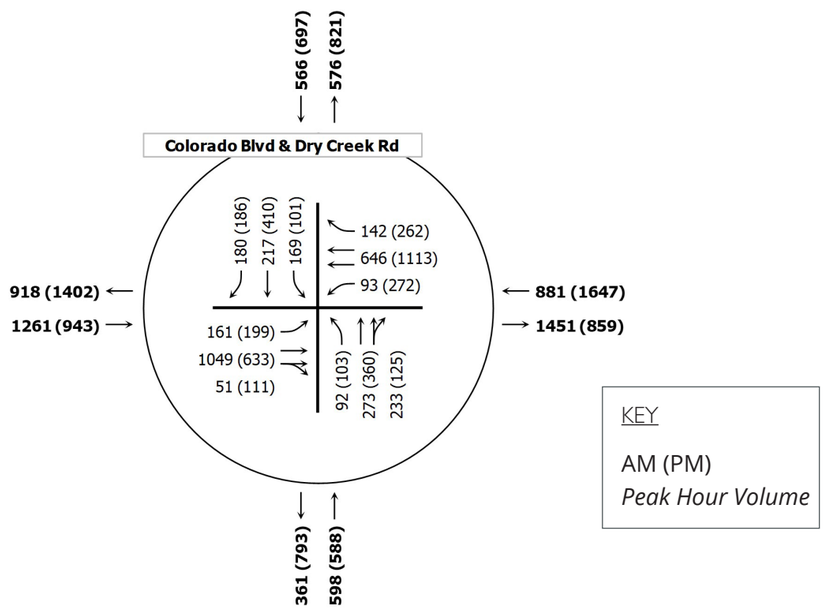


Table 5: Colorado Blvd & Dry Creek Rd Bicycle and Pedestrian Counts

PEAK HOUR	WEST LEG		EAST LEG		SOUTH LEG		NORTH LEG	
	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS
AM	0	3	0	0	0	1	0	2
PM	2	2	0	0	0	1	0	1

The vehicular turning movement counts for Colorado Boulevard and Arapahoe Road are displayed in ***Figure 4***, and the bicycle and pedestrian counts are displayed in ***Table 6***. Heavy vehicular movements include the eastbound and westbound through movements, especially eastbound through during the AM peak period. Significant pedestrian activity is seen on all four legs of the intersection during the AM peak period.

It is assumed that the heavy pedestrian movements are students commuting to Newton Middle School on the northeast corner of the intersection. Bicycle movements are minimal at this intersection, with only one bicyclist recorded traveling on the west leg during the PM peak period.

Figure 4: Colorado Blvd & Arapahoe Rd Turning Movement Counts

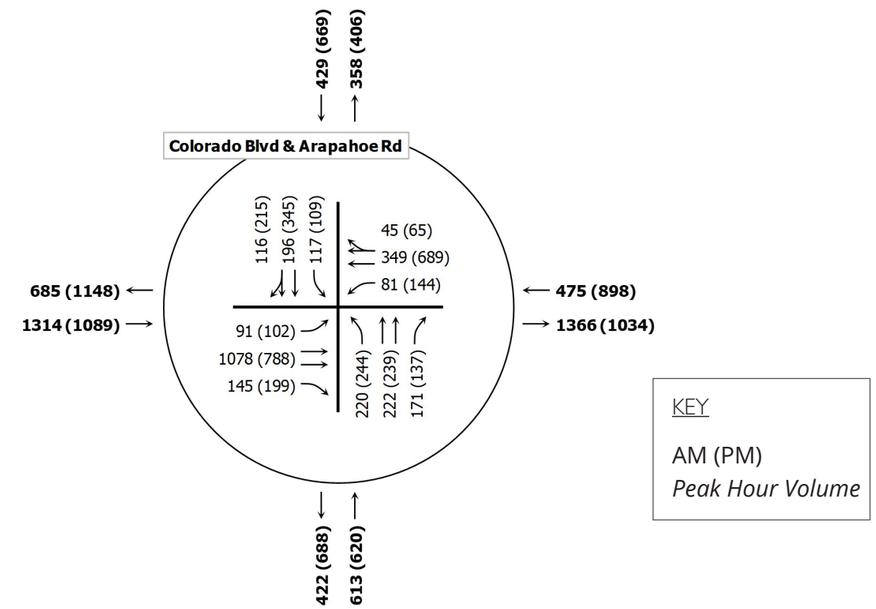


Table 6: Colorado Blvd & Arapahoe Rd Bicycle and Pedestrian Counts

PEAK HOUR	WEST LEG		EAST LEG		SOUTH LEG		NORTH LEG	
	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS
AM	0	38	0	25	0	17	0	18
PM	1	8	0	4	0	1	0	0

The vehicular turning movement counts for Colorado Boulevard and Euclid Avenue are presented in ***Figure 5***, and the bicycle and pedestrian counts are displayed in ***Table 7***. The heavy vehicular movements at this intersection are the northbound and southbound through movements. Heavy pedestrian activity is seen on the north and west legs of the intersection during the AM peak period, also assumed to be students commuting to Newton Middle School on the east leg.

Figure 5: Colorado Blvd & Euclid Ave Turning Movement Counts

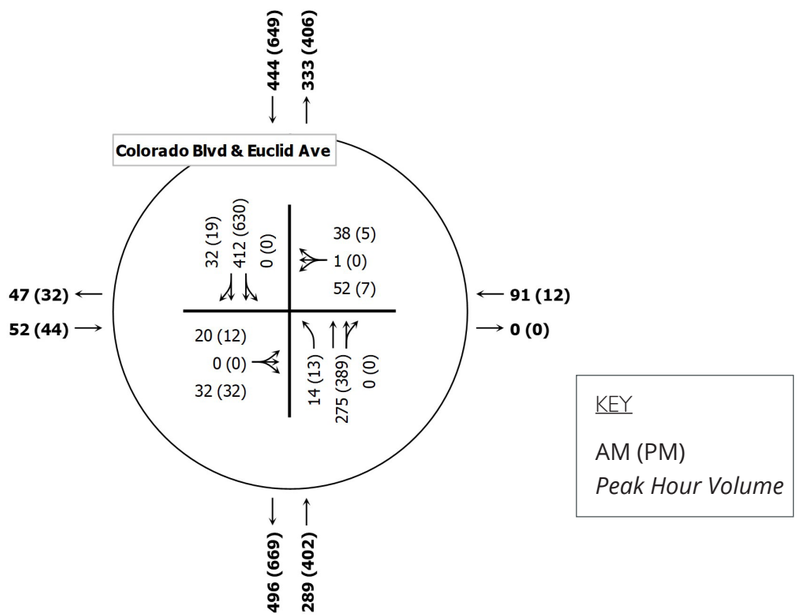


Table 7: Colorado Blvd & Euclid Ave Bicycle and Pedestrian Counts

PEAK HOUR	WEST LEG		EAST LEG		SOUTH LEG		NORTH LEG	
	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS
AM	0	25	0	4	0	0	0	56
PM	1	10	0	3	0	0	0	13

The vehicular turning movement counts for Colorado Boulevard and Orchard Road are displayed in ***Figure 6***, and the bicycle and pedestrian counts are displayed in ***Table 8***. The prominent vehicular turning movements are northbound right turn, eastbound through and westbound through movements. Bicyclist activity is most prominent during the PM peak period and on the north leg of the intersection.

Figure 6: Colorado Blvd & Orchard Rd Turning Movement Counts

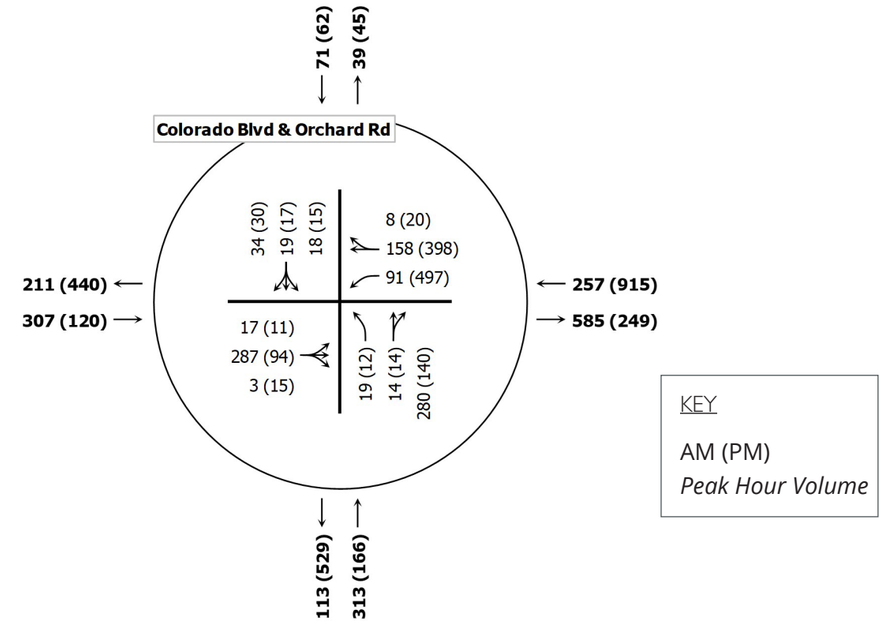


Table 8: Colorado Blvd & Orchard Rd Bicycle and Pedestrian Counts

PEAK HOUR	WEST LEG		EAST LEG		SOUTH LEG		NORTH LEG	
	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS	BIKES	PEDS
AM	0	2	0	1	1	5	0	7
PM	1	0	0	2	0	3	2	5

2.2 PUBLIC INPUT

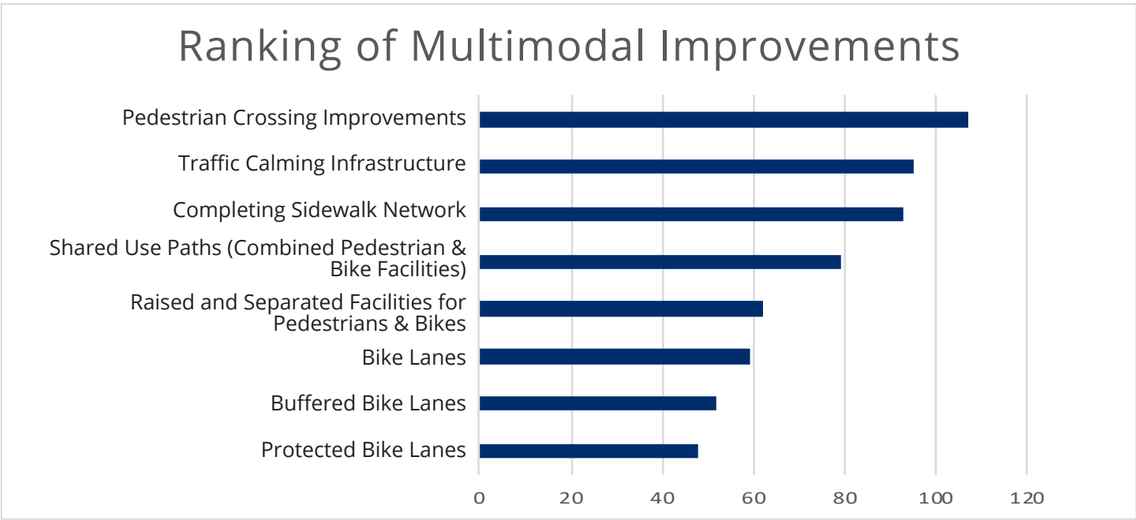
To better understand corridor issues and concerns, the project team initiated several public engagement activities to solicit public feedback along the Colorado Boulevard corridor. The project team attended the Centennial Council of Neighbors (CenCON) meeting on November 21, 2019 to notify HOA's along the corridor about the project starting and of upcoming pop-up events. The first pop-up event was held at Koebel library on December 11, 2019. The second pop-up event was at the Cherrywood King Soopers on January 21, 2020 and the last pop-up was held on February 1, 2020 with outdoor locations along both the Little Dry Creek trail and Big Dry Creek trail.

The goal of the pop-up events was to engage a wide cross section of corridor users and direct them to the project website and survey to gather their input about the corridor. In addition to providing online survey results, many people also provided comments during the events which were summarized by the project team and evaluated in conjunction with the results of the survey.

The survey also asked for people to identify what they feel are current issues along the corridor. The top three ranked issues are speeding, congestion, and unsafe intersection crossings. The lowest ranked issues included not having adequate bike facilities along the corridor and other issues not specifically identified.

Users were also asked to rank which types of multimodal improvements they would most like to see along the corridor. Improvements to enhance the safety of pedestrians crossing Colorado Blvd scored the highest. Results are summarized in the chart in ***Figure 7***.

Figure 7: Multimodal Improvement Ranking Results



16.1% Cars are speeding through the corridor

13.2% Congestion makes traveling by car difficult

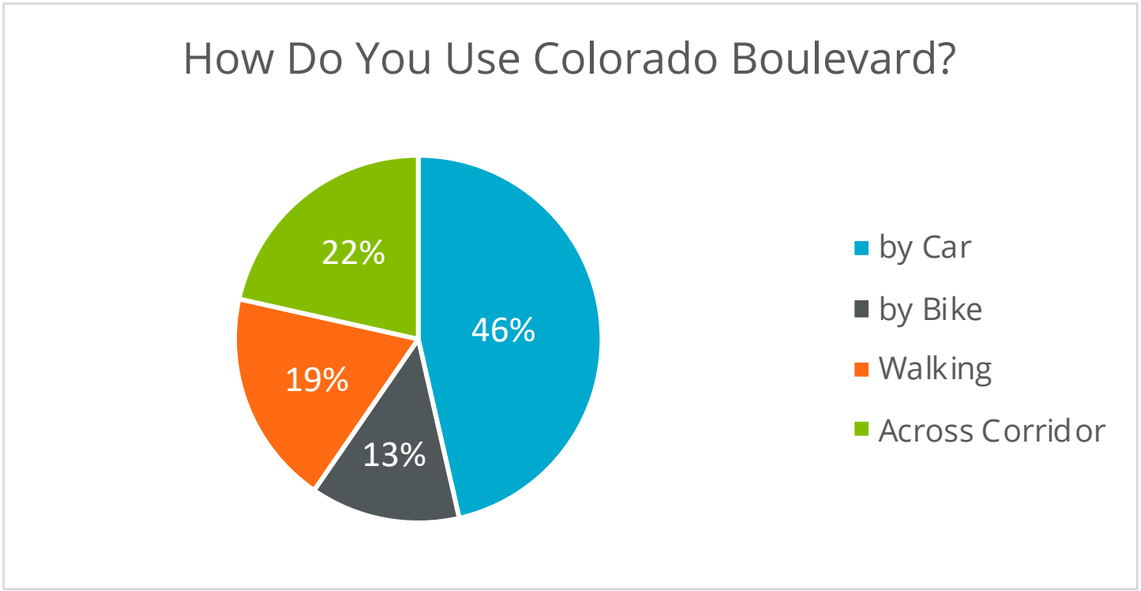
12.1% Walking across Colorado Blvd at intersections does not feel comfortable or safe

2.2.1 ONLINE SURVEY

The online survey had a great turnout with about 120 respondents. Over 50% of respondents indicated that they use the entire corridor. As shown in ***Figure 8***, most users indicated that they travel through the corridor by car, with the second highest use being to travel across the corridor to access other destinations.

Most respondents to the survey indicated that they are traveling to school, home, other trails, parks or shops when traveling through the corridor.

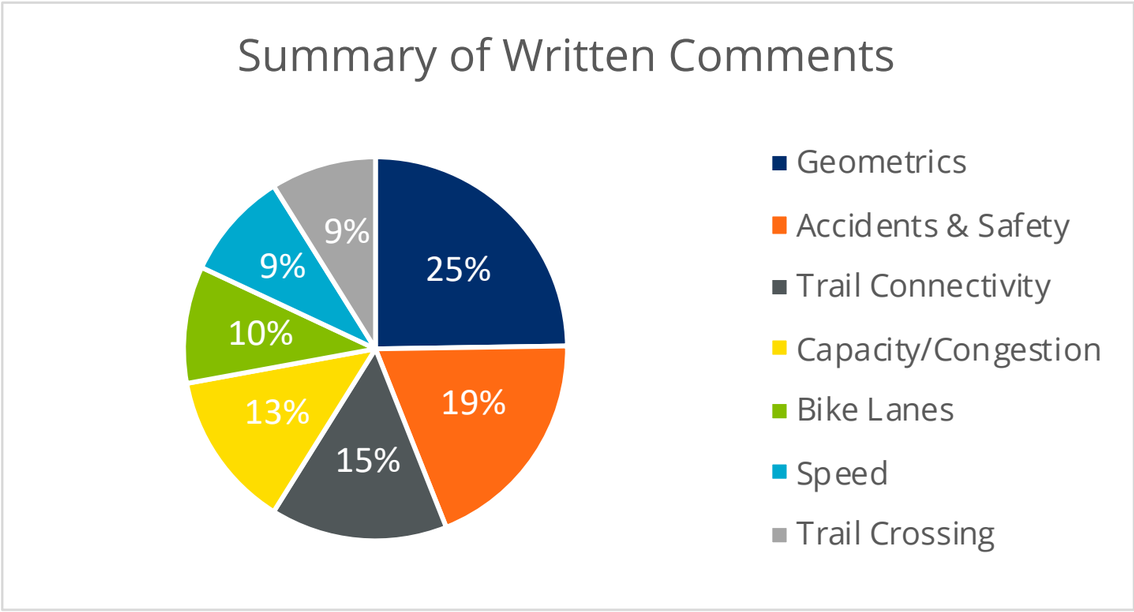
Figure 8: Travel Mode Survey Results



2.2.2 WRITTEN COMMENTS

Written comments provided online or during the pop-up events were collected and summarized. The top three areas of concern identified from written public comments were roadway geometrics, safety for corridor users and poor trail connectivity. ***Figure 9*** shows the full breakdown of the comments by subject.

Figure 9: Written Comments Subject Results



3.0 Existing CONDITIONS

3.1 CORRIDOR LAND USE

Colorado Boulevard serves as a primary north-south corridor that connects several residential neighborhoods to surrounding land uses. The primary land use along the corridor is single-family detached residential, with intermittent single-family attached residential neighborhoods (***Figure 10***). Other major land uses along the corridor include office space, commercial and retail uses, educational facilities and parks and open space.

The commercial and office centers are predominately located on the east side of Colorado Boulevard within a block of the intersection at both Dry Creek Road and County Line Road.

Many parcels are dedicated to civic uses, including schools and civic institutions. Newton Middle School anchors the intersection of Colorado Boulevard and Arapahoe Road and neighbors' other civic uses like the Salvation Army and several local churches.

Much of the land along and adjacent to the corridor is dedicated to parks and open space. Primary open space destinations include Chapel Hill Memorial Gardens, South Suburban Golf Course, and Arapaho Park and soccer fields. There are a total of four parks and three regional trails within the study area.

Figure 10: Corridor Land Use

3.2 CORRIDOR ZONING

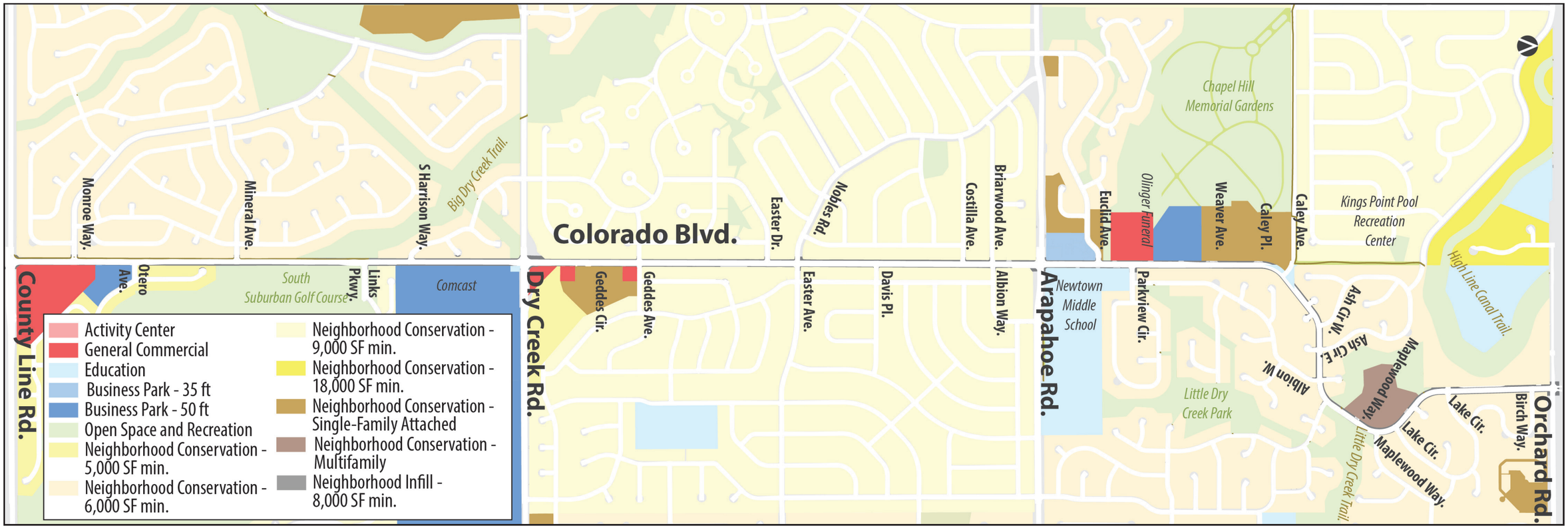
The majority of the area along and adjacent to Colorado Boulevard is zoned for neighborhood conservation of single-family residential (***Figure 11***). These neighborhood conservation districts allow single-family residential homes and any housing types already existing in the neighborhood. The minimum lot size and maximum building coverage in these districts vary.

The neighborhood along Maplewood Way and Colorado Boulevard is zoned for multi-family neighborhood conservation. This zoning district allows existing multi-family buildings only.

The primary non-residential zoning districts consists of General Commercial, Education, and Business Park districts, which are concentrated at the intersections of Arapahoe Road, Dry Creek Road, and County Line Road. General Commercial Districts allow for commercial and mixed-use development along corridors. Education Districts designate land for schools and educational institutions. Business Park Districts allow for office and light industrial uses in a campus-like setting.

Colorado Boulevard intersects with two Open Space and Recreation Districts. To the north, the Little Dry Creek Trail crosses Colorado Boulevard and connects to local parks. To the south, the Big Dry Creek Trail crosses Colorado Boulevard and connects to South Suburban Golf Course, Arapaho Park, and soccer fields.

Figure 11: Corridor Zoning



3.3 CORRIDOR MOBILITY AND TRANSPORTATION

3.3.1 VEHICLE NETWORK

The Colorado Boulevard corridor runs approximately 3.3 miles within the City of Centennial. The current number of lanes and lane configuration varies throughout the corridor (***Figure 12***). Existing configurations include 4 lanes and a turn lane, 2 lanes and a turn lane, and two lanes. The corridor is classified as a Minor Arterial from County Line Road to Arapahoe Road and as Major Collector from Arapahoe Road to Orchard Road. The speed limit varies from 40 mph between County Line Road and Arapahoe Road, 35 mph from Arapahoe Road to Caley Avenue, and 30 mph between Caley Avenue and Orchard Road. Additionally, there is a dynamic speed of 20 mph within the Newton Middle School school-zone. Major intersections include:

- Existing 4-way signalized intersection at Colorado Boulevard and County Line Road
- Existing 4-way signalized intersection at Colorado Boulevard and Dry Creek Road
- Planned signal at Colorado Boulevard and Easter Avenue/Nobles Road
- Existing signalized Intersection at Colorado Boulevard and Arapahoe Road

Besides these major intersections many of the other intersections with local road only connect to Colorado Boulevard rather than crossing it. Other minor intersections that cross Colorado Boulevard include:

- Colorado Boulevard and Monroe Way
- Colorado Boulevard and Geddes Avenue
- Colorado Boulevard and Briarwood Avenue/Albion Way
- Colorado Boulevard and Euclid Avenue, near Newton Middle School (existing 2-phase signal)
- Colorado Boulevard and Ash Circle
- Colorado Boulevard and Albion Way
- Colorado Boulevard and Lake Circle
- Colorado Boulevard and Orchard Road

Figure 12: Corridor Mobility

3.3.2 TRANSIT NETWORK

There is no transit along the Colorado Boulevard. However, RTD's bus route 66 travels along Arapahoe Road with bus stops on the east side of Colorado Boulevard. Route 66 travels from Arapahoe Community College to Parker Road stopping by The Streets at SouthGlenn, Arapahoe at Village Center Light Rail Station and Arapahoe County District Court.

3.3.3 BICYCLE NETWORK

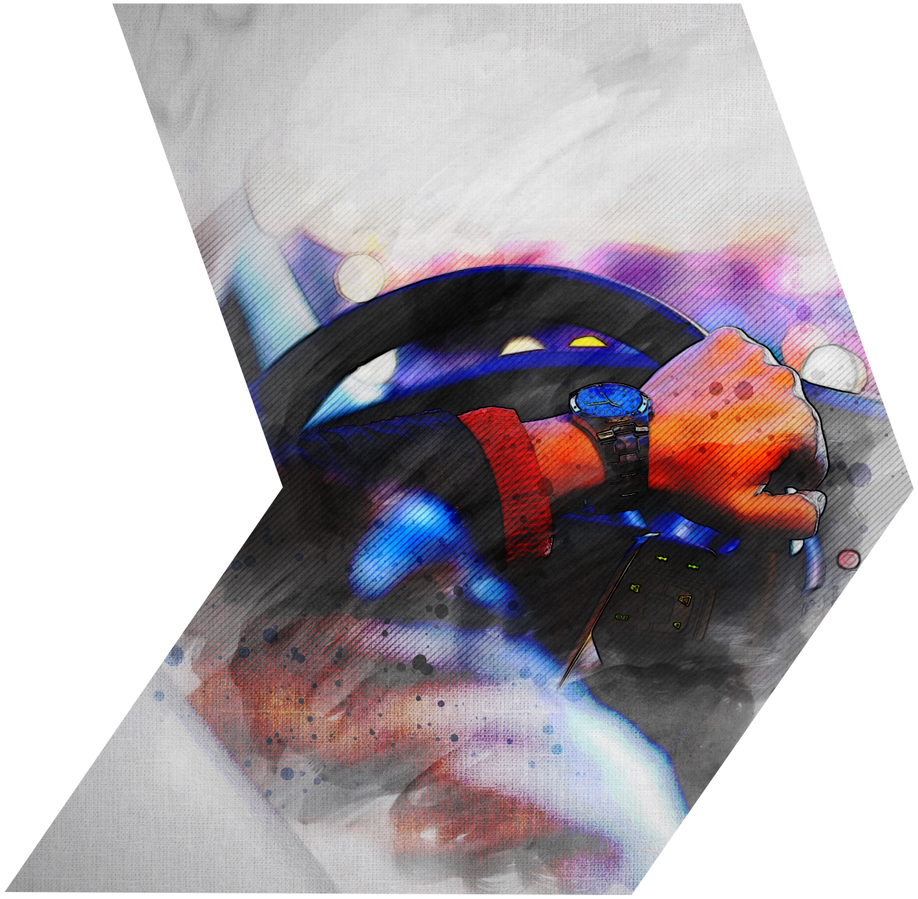
Bicycle facilities along and near the corridor are limited. The major spines for bicycle movement in the area are the shared use trails that usually run from southeast to northwest following the topography and water flow of creeks. These trails are located mostly on the southern and northern sections of the corridor. Big Dry Creek Trails runs on the southern end of the corridor, and Little Dry Creek Trail/High Line Canal Trail runs on the northern end of the corridor. East-west on-street bicycle facilities intersect Colorado Boulevard at Easter Avenue/Nobles Road.

The existing bicycle facilities provide east-west bicycle connectivity across Colorado Boulevard, mostly on the northern and middle sections of the corridor since the Big Dry Creek Trail on the southern section does not cross Colorado Boulevard. However, no north-south bicycle facilities exist that allow for bicycle movement between the neighborhoods along Colorado Boulevard.

3.3.4 PEDESTRIAN NETWORK

When talking about the pedestrian network, it is important to consider the distances that pedestrians are willing to travel. The full length of the corridor is around 3.3 miles. The segments between County Line Road and Dry Creek Road and between Dry Creek Road and Arapahoe Road are 1 mile long each. Because of the curvilinear nature of the segment between Arapahoe Road and Orchard Road its length is closer to 1.3 miles. The average walking speed of a human is 3 to 4 miles per hour or 1 mile every 15 to 20 minutes, therefore it is likely to take somebody up to 1 hour to walk the full length of the corridor.

Another important consideration when talking about the pedestrian network is land use and activity centers. Many of the pedestrian trips in this area are likely related to recreational, educational, commercial or retail uses. The majority of the corridor includes sidewalks on both sides of the corridor, with some of the southern and northern sections only having sidewalk on one side of the corridor. The type and width of sidewalk along the corridor varies from attached and detached sidewalk from 5 feet to 10 feet. Even though some of the pedestrian conditions along the corridor might not be optimal, north-south pedestrian movement along the corridor is mostly supported by the existing infrastructure. East-west pedestrian movement across Colorado Boulevard is constrained to the few signalized intersections that cross the corridor. Many of these signal-controlled crossings are located a mile apart with few other controlled or marked crossings, at intersections or mid-block, to safely convey pedestrians and bicyclists across Colorado Boulevard.



3.4 CORRIDOR SEGMENTS

The study corridor was divided into three distinct segments: south, center and north. The segments represent portions of the corridor with similar conditions in between major intersections.

3.4.1 SOUTH SEGMENT: COUNTY LINE ROAD TO DRY CREEK ROAD

The south segment extends from County Line Road to Dry Creek Road. ***Figure 13*** displays the varying existing cross sections within the segment. ***Figure 14*** presents the general characteristics of the corridor. The following sections present a summary of general characteristics for the segment.

Roadway Elements

- Minor Arterial
- 80' Right-of-Way (ROW)
- Signalized Intersections at County Line Road and Dry Creek Road

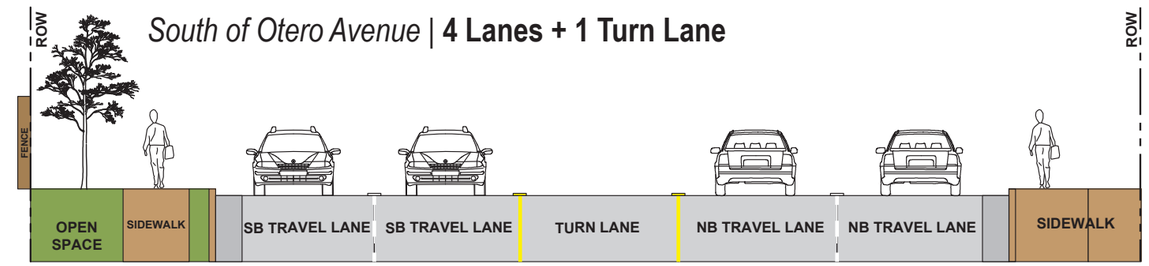
Multimodal Elements

- The Big Dry Creek trail runs on the west side of Colorado Boulevard from where it connects to the C-470 trail south of County Line Road until its intersection with Big Dry Creek when it starts following the creek. This trail travels northwest to near The Streets at SouthGlenn where it connects to the High Line Canal Trail which continues to travel west until South Broadway.
- The access point to Big Dry Creek Trail is located on the west side of Colorado Boulevard and aligns with the intersection of Links Parkway. The unmarked and uncontrolled nature of the crossing makes it unsafe for pedestrians and bicycles to cross Colorado Boulevard.
- No marked or controlled crossings of Colorado Boulevard between County Line Road and Dry Creek Road.
- No sidewalk on the east side from the golf course to Dry Creek Road.
- Sidewalks vary between attached and detached. Detached walks tend to be narrower than attached walks.

Traffic Volumes and Speeds

- 11,400 total ADT Volumes
- 85th Percentile Speeds of 46-48 mph

Figure 13: South Segment Cross Section - Looking North



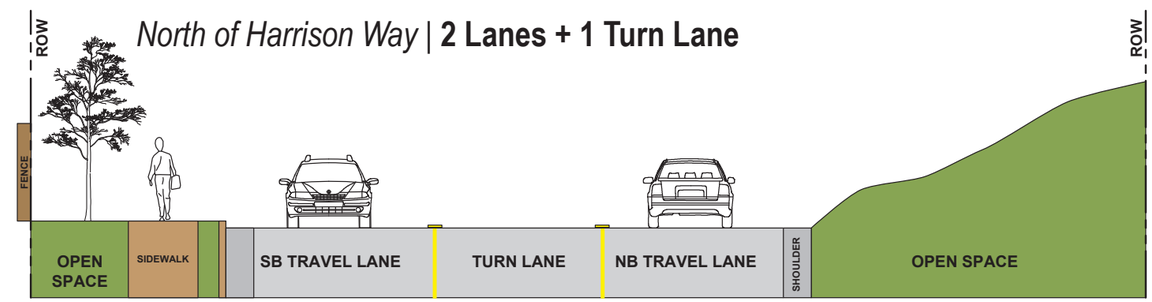
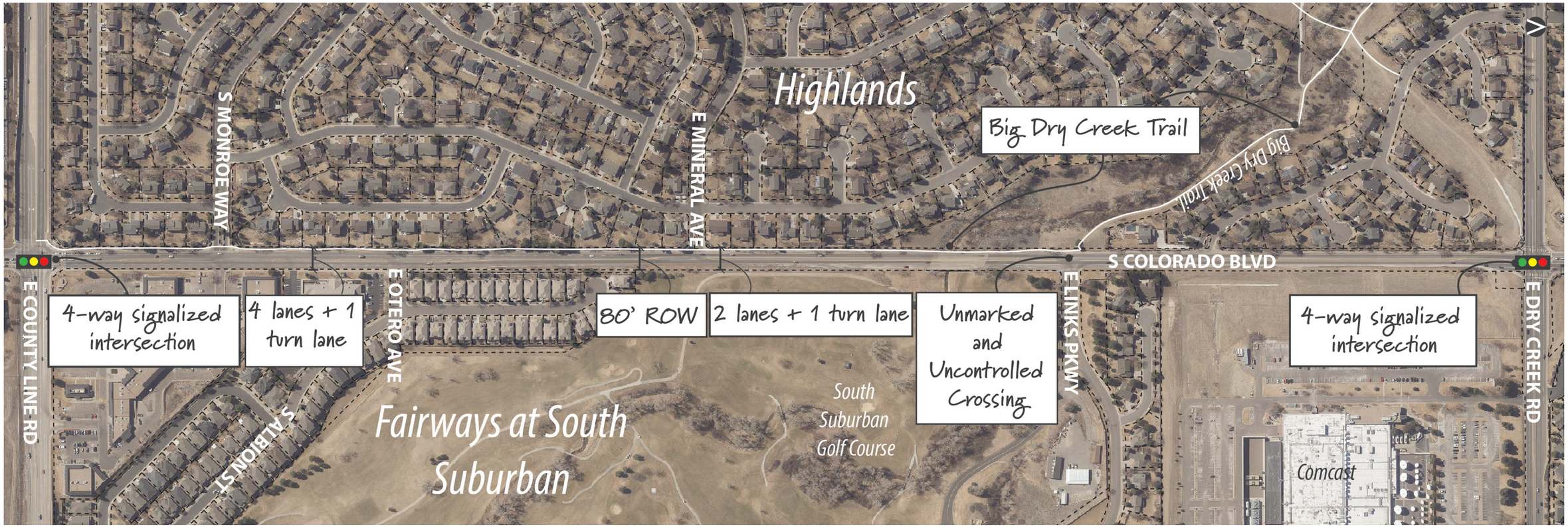


Figure 14: County Line Road to Dry Creek Road



3.4.2 CENTER SEGMENT: DRY CREEK ROAD TO ARAPAHOE ROAD

The center segment extends from Dry Creek Road to Arapahoe Road. ***Figure 15*** displays the existing roadway cross section within the segment. The following sections present a summary of general characteristics for the segment. ***Figure 16*** presents the general characteristics of the corridor.

Roadway Elements

- Minor Arterial
- 80' Right-of-Way (ROW)
- Signalized Intersections at Dry Creek Road and Arapahoe Road
- Planned Signal at Easter Avenue and Nobles Road

Multimodal Elements

- On-street bicycle facilities along Easter Avenue and Nobles Road. These bicycle facilities connect Holly Street and Willow Spring Open Space on the East with South Broadway on the West linking several parks, schools and The Streets at Southglenn. For most of the way these bicycle facilities are on-street dedicated bicycle lanes. However, near Colorado Boulevard the bicycle facilities are on-street shared lanes.
- RTD Route 66 along Arapahoe Road with stops close to Colorado Boulevard
- Small attached sidewalks (4.5' -5') along the corridor
- No current controlled or marked crossing between Dry Creek Road and Arapahoe Avenue. Planned signal at Easter Avenue and Nobles will provide a safer crossing at this critical node in the pedestrian and bicycle networks.

Traffic Volumes and Speeds

- Traffic Volumes and Speeds
- 11,400 total ADT Volumes
- 85th Percentile Speeds of 42-50 mph

Figure 15: Central Segment Cross Section - Looking North

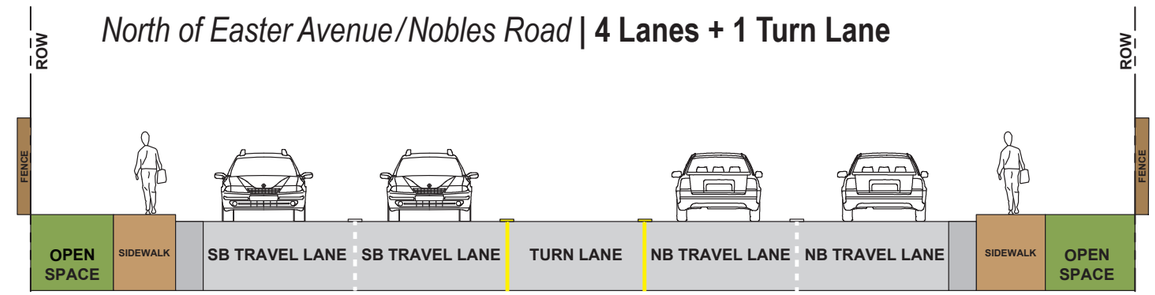
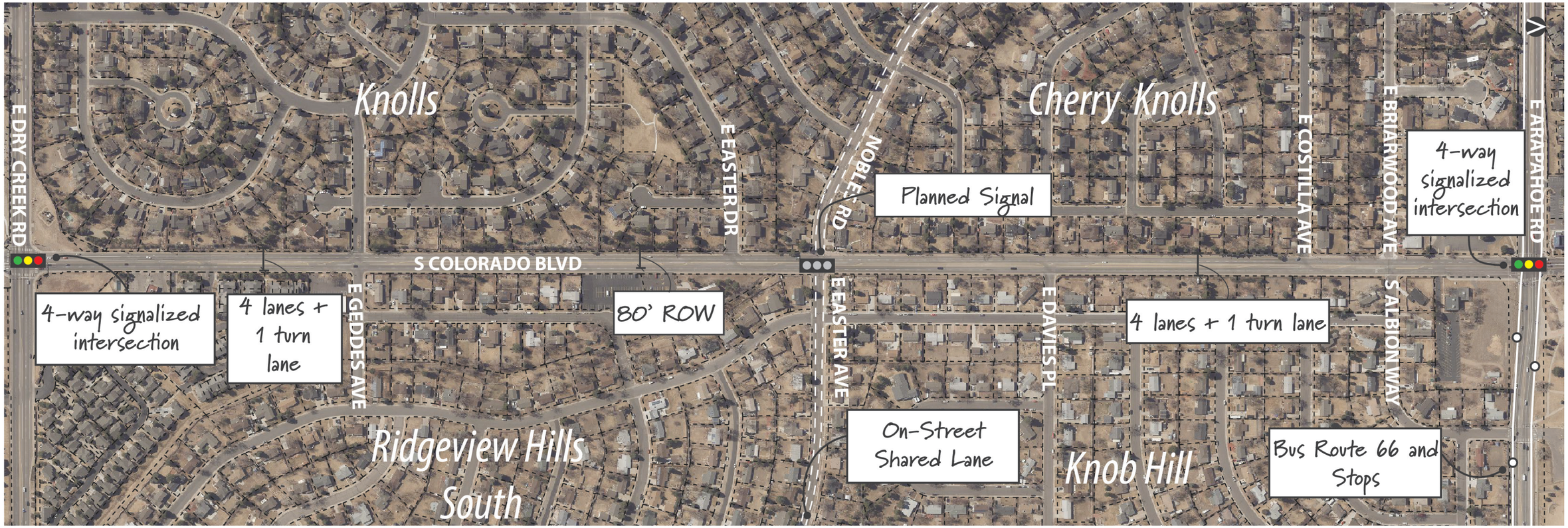


Figure 16: Dry Creek Road to Arapahoe Road



3.4.3 NORTH SEGMENT: ARAPAHOE ROAD TO ORCHARD ROAD

The north segment extends from Arapahoe Road to Orchard Road. ***Figure 17*** displays the varying existing cross sections within the segment. The following sections present a summary of general characteristics for the segment. ***Figure 18*** presents the general characteristics of the corridor.

Roadway Elements

- Minor Arterial
- 80' Right-of-Way (ROW)
- Signalized Intersection at Dry Creek Road and Arapahoe Road
- Curved roadway

Multimodal Elements

- RTD Route 66 along Arapahoe Road with stops close to Colorado Boulevard.
- Signalized 2-way intersection at Euclid Avenue. South Metro Fire Rescue Station 14 is located immediately north of the intersection.
- Newton Middle School is located in the northeast corner of the Arapahoe Road intersection, generating a high volume of crossing pedestrians at the intersection.
- Three shared use paths exist; Little Dry Creek Trail, the High Line Canal Trail and the Centennial Link Trail.
- The Little Dry Creek trail travels from East to Northwest starting at Yosemite Street, it crosses Colorado Boulevard at an existing underpass and joins the High Line Canal Trail and continues to travel northwest ending at the same location of the Big Dry Creek/High Line Canal Trail at South Broadway.
- The Centennial Link Shared use trail connects to segments of the High Line Canal Trail more directly by traveling east-west along the south side of Caley Avenue.
- Several uncontrolled and unmarked crossings of Colorado Boulevard exist on this segment.
- Crossing at Albion way to access Little Dry Creek Trail is uncontrolled, unmarked and located on a curve, with limited visibility.
- Little Dry Creek Trail crosses Colorado Boulevard south of Maplewood Way at an underpass. However, access to the trail is only on the east side, creating an at-grade crossing that is unmarked and uncontrolled to access trail located on a curve with limited visibility.
- Mid-block crossing south of Lake Circle to access the Little Dry Creek Trail is marked yet uncontrolled and located on the curve with limited visibility.
- No sidewalk is present on the west side of Colorado Boulevard from Albion Way to Orchard Road.

Traffic Volumes and Speeds

- 6,200 total ADT Volumes
- 85th Percentile Speeds of 43 mph

Figure 17: North Segment Cross Sections - Looking North

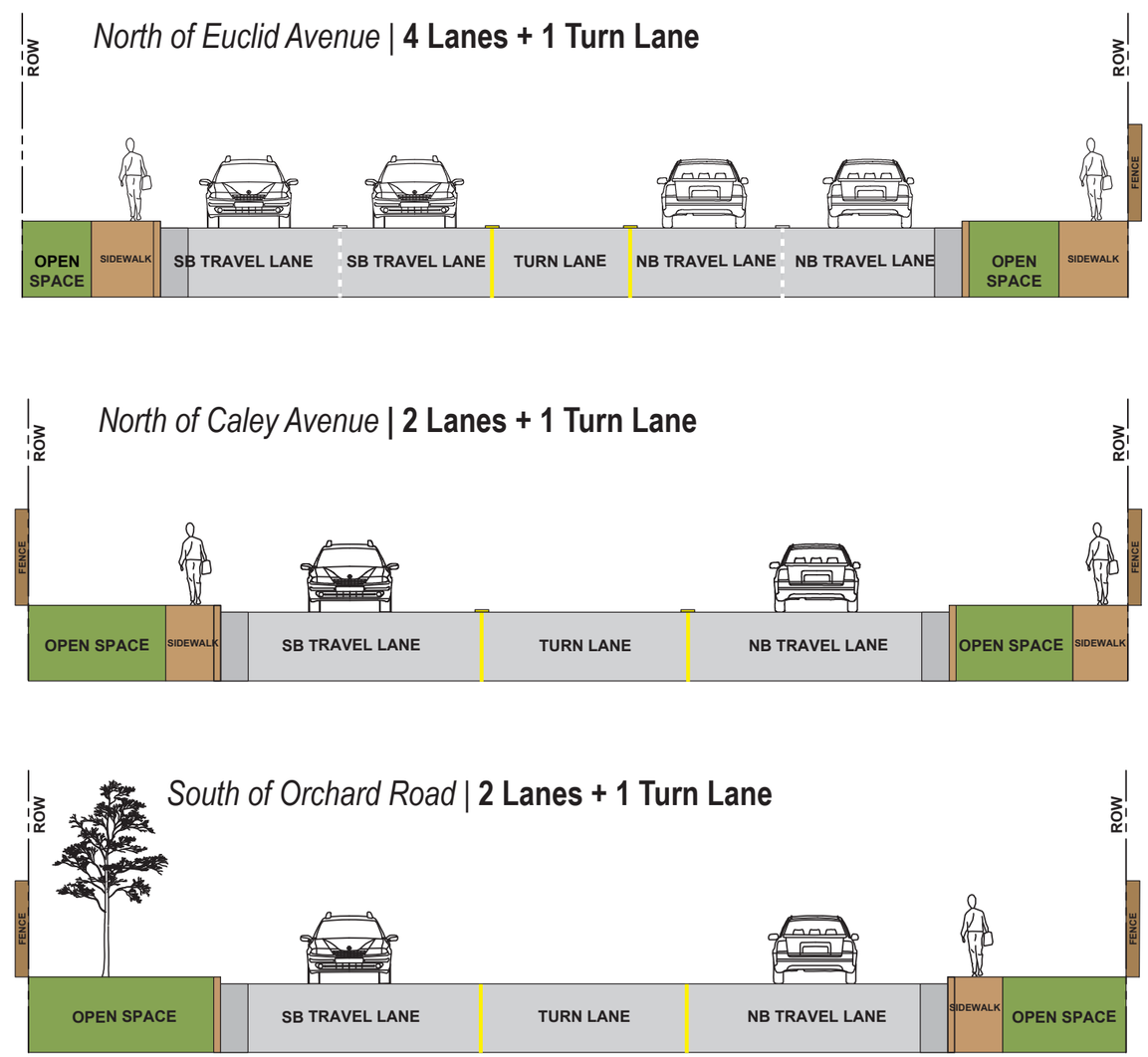


Figure 18: Arapahoe Road to Orchard Road

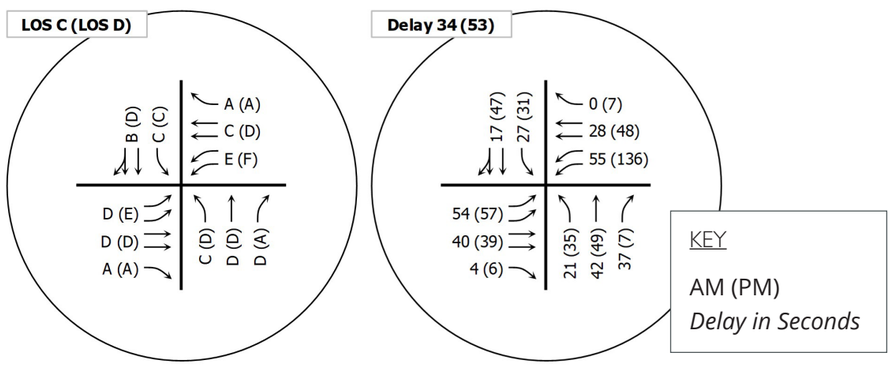
3.5 TRAFFIC OPERATIONS

3.5.1 TRAFFIC LEVEL OF SERVICE AND DELAY

The peak hour turning movement counts were utilized to assess the existing traffic conditions at the study intersections. The existing traffic operations in the Colorado Boulevard study area were analyzed using Synchro 10 analysis software. Existing signal timings for the signalized intersections on the study corridor were received from the City of Centennial and Douglas County. Using Synchro 10, the average vehicle delay and level of service (LOS) were calculated. The intersection LOS and delay for the Colorado Boulevard and County Line Road intersection are presented in ***Figure 19***.

Level of service (LOS) is a qualitative measure to describe the quality of motor vehicle service, primarily based on the average delay experienced per vehicle. LOS ranges from A (least delay) to F (most delay). Both signalized and unsignalized intersections have separate delay thresholds to define LOS.

Figure 19: Colorado Blvd & County Line Rd Intersection Delay and LOS

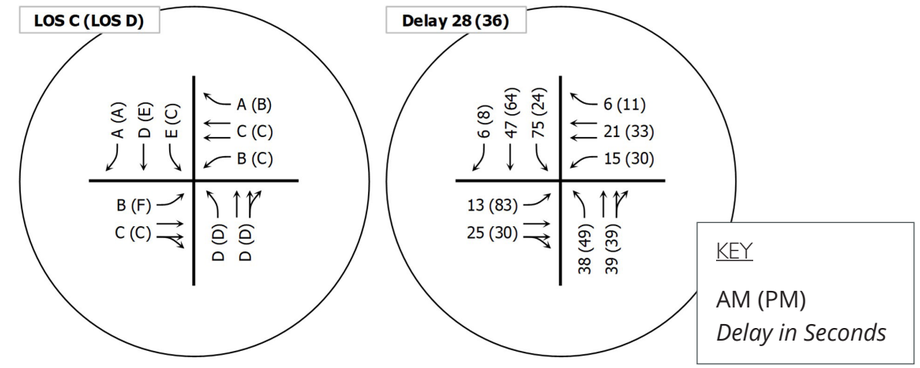


The intersection of Colorado Boulevard and County Line Road operates at LOS D or better during both peak hours. The following movements operate at LOS E or worse:

- The eastbound left turn operates at LOS E and a delay of 57 seconds per vehicle during the PM peak hour.
- The westbound left turn operates at LOS E and LOS F during the AM and PM peak hours, respectively. During the AM peak hour, this movement experiences a delay of 55 seconds per vehicle, and during the PM peak hour is experiences a delay of 136 seconds per vehicle.

The intersection LOS and delay for the Colorado Boulevard and Dry Creek Road intersection are presented in ***Figure 20***.

Figure 20: Colorado Blvd & Dry Creek Rd Intersection Delay and LOS

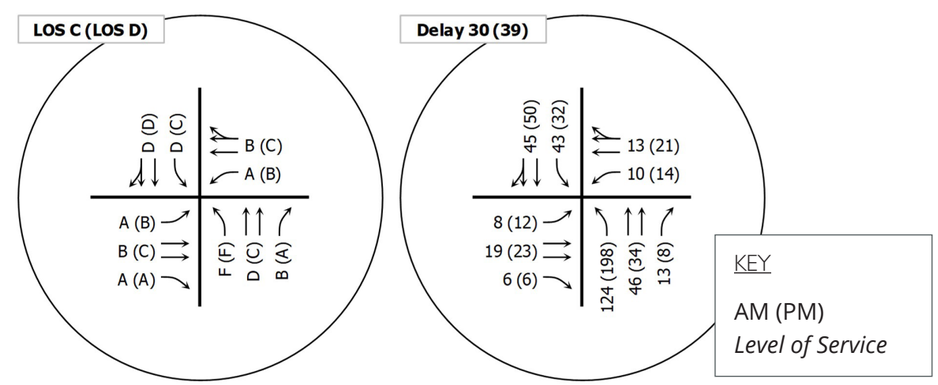


The intersection of Colorado Boulevard and Dry Creek Road operates at LOS D or better during both peak hours. The following movements operate at LOS E or worse:

- The eastbound left turn operates at LOS F during the PM peak hour with a delay of 83 seconds per vehicle.
- The southbound left turn operates at LOS E during the AM peak hour with a delay of 75 seconds per vehicle.
- The southbound through movement operates at LOS E during the PM peak hour with a delay of 64 seconds per vehicle.

The intersection LOS and delay for the Colorado Boulevard and Arapahoe Road intersection are presented in ***Figure 21***.

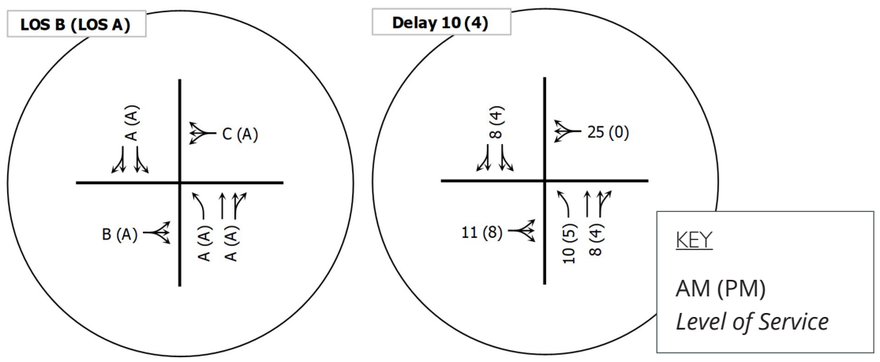
Figure 21: Colorado Blvd & Arapahoe Rd Intersection Delay and LOS



The intersection of Colorado Boulevard and Arapahoe Road operates at LOS D or better during both peak hours. The northbound left turn operates at LOS F during both peak hours. The delay is 124 and 198 seconds per vehicle during the AM and PM peak hours, respectively.

The intersection LOS and delay for the Colorado Boulevard and Euclid Avenue intersection are presented in ***Figure 22***.

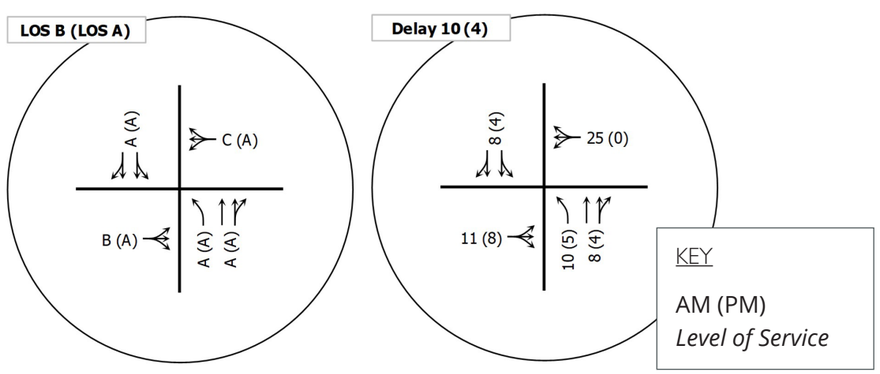
Figure 22: Colorado Blvd & Euclid Rd Intersection Delay and LOS



The intersection of Colorado Boulevard and Euclid Avenue operates at LOS B or better during both peak hours. All movements operate at LOS C or better.

The intersection LOS and delay for the Colorado Boulevard and Orchard Road intersection are presented in ***Figure 23***.

Figure 23: Colorado Blvd & Orchard Rd Intersection Delay and LOS



The intersection of Colorado Boulevard and Orchard Road operates at LOS D or better. The westbound left turn operates at LOS E during the PM peak hour with a delay of 41 seconds per vehicle.

3.5.2 PROJECTED GROWTH

A review of the forecast traffic outputs from the Denver Regional Council of Governments (DRCOG) regional travel demand models for the years 2015 and 2040 was used to establish the anticipated level of traffic growth along the Colorado Boulevard corridor. The anticipated traffic growth was used during the planning and evaluation process to verify the long-term viability of proposed alternatives. Based on the model output, Colorado Boulevard is forecast to see an increase in volume of approximately 3,000 vehicles per day over the 25-year period. This equates to an increase of approximately 25 percent compared to existing traffic volumes. This is equivalent to approximately 0.9 percent of growth each year, which is considered reasonable for the corridor.

3.6 CRASH HISTORY

An analysis of crashes that occurred in the corridor over a five-year period between January 1, 2014 and December 31, 2018 was conducted for the study corridor. The analysis of crash history included the investigation of crash severity, location and crash type.

A total of 92 crashes in the corridor occurred over the five-year period. In that time there were two injury crashes and two fatal crashes. No discernible patterns of injury or fatal crash frequency is displayed in the historic data. Most crashes in the corridor result in property damage without injury. ***Table 9*** presents the number and severity of crashes each year in the five-year period.

Table 9: Crash Severity History

YEAR	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
2014	16	2	0	18
2015	14	0	0	14
2016	22	0	1	23
2017	17	0	0	17
2018	19	0	1	20
TOTAL	**88**	**2**	**2**	**92**

The Colorado Boulevard corridor experienced multiple types of crashes during the five-year period. ***Table 10*** presents the predominant crash types experienced in the corridor. Most crash types were experienced ten times or fewer over that period. However, there were two primary crash types that accounted for over half of the crashes in the corridor. There were 31 broadside crashes and 29 rear end crashes along the corridor.

Table 10: Crash Type

CRASH TYPE	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
Curb	3	0	0	3
Fence	3	0	0	3
Head on (Front to Front)	6	0	0	6
Rear End (Front to Rear)	28	1	0	29
Broadside (Front to Side)	29	0	2	31
Side to Side – Same Direction	10	0	0	10

The crash analysis also investigated the locations of crashes along the corridor to discern any locations that may experience statistically higher numbers of crashes. The segment of Colorado Boulevard north of Arapahoe Road experienced 16 crashes (1 injury, 1 fatal). The center segment, between Dry Creek Road and Arapahoe Road, experienced 51 crashes (1 injury, 1 fatal). The segment south of Dry Creek Road experienced 25 crashes. The center segment experienced a disproportionate number of crashes, likely due to the higher daily traffic volumes as well as the five-lane roadway section, increasing exposure at unsignalized intersections.

Table 11 presents the number and severity of crashes at locations along the corridor where at least three crashes occurred over the five-year period. The two highest crash locations in the corridor are Dry Creek Road and Nobles Road/Easter Avenue. The number of crashes at each location is not statistically significant. 9 of the 16 crashes at Dry Creek Road were rear end crashes suggesting drivers may not be prepared for sudden stopping or queuing at the traffic signal. 10 of the 11 crashes at the Nobles Rd/Easter Ave intersection were broadside crashes. These crashes typically involved vehicles turning left to or from Colorado Boulevard. This crash pattern should be mitigated with the installation of the proposed traffic signal. However, protected/permissive left-turn phasing on Colorado Boulevard should be considered to further reduce this crash pattern. No other significant crash patterns were found within the corridor.

Figure 24: Crash Location Map

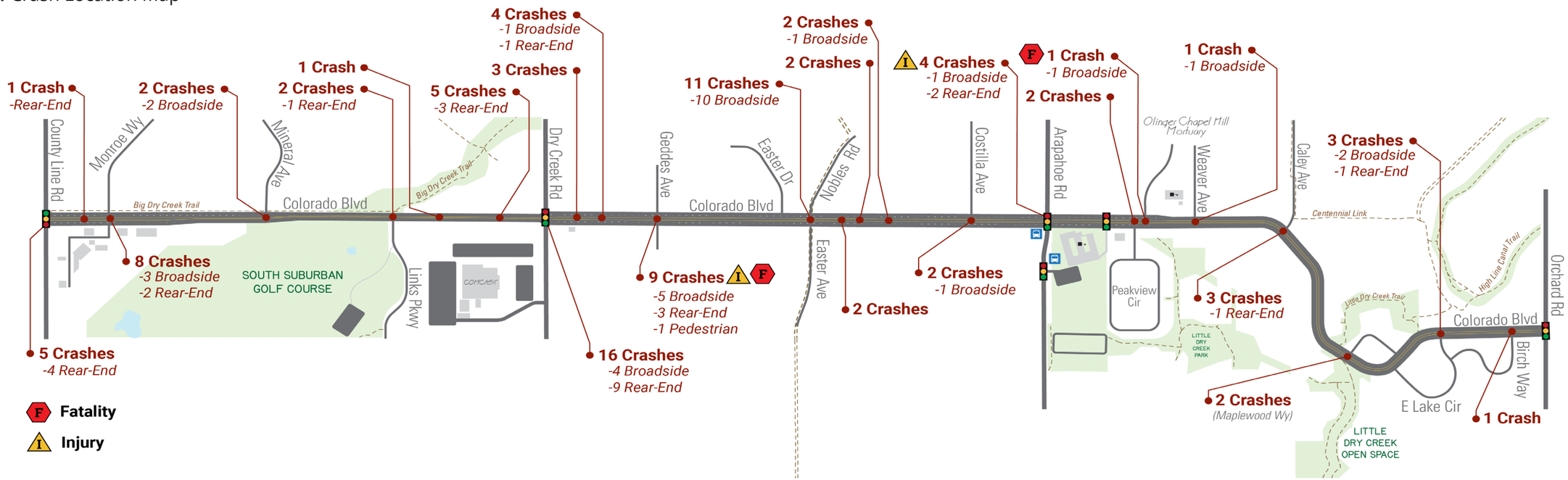


Table 11: Crash Location (3 or More Crashes)

LOCATION	INJURY	FATAL	TOTAL	PRIMARY CRASH TYPE
Lake Circle	0	0	3	Broadside (2)
Caley Ave	0	0	3	None
Arapahoe Rd	1	0	4	Rear End (2)
Nobles Rd/ Easter Ave	0	0	11	Broadside (10)
Geddes Ave	1	1	9	Broadside (5)
Geddes Circle	0	0	4	None

LOCATION	INJURY	FATAL	TOTAL	PRIMARY CRASH TYPE
Farm Crest Store	0	0	3	Side to Side – Same Direction
Dry Creek Rd	0	0	16	Rear End (9)
7600 S (Mid-Block)	0	0	5	Rear End (3)
Monroe Way	0	0	8	Broadside (3)
County Line Rd	0	0	5	Rear End (4)
Total	**2**	**1**	**71**	

3.7 MISSING CONNECTIONS

The Colorado Boulevard corridor has several missing multimodal connections between Dry Creek Road and Orchard Road. These missing connections include discontinuous sidewalks, absent bicycle facilities and difficult or missing crossings of Colorado Boulevard.

Portions of sidewalk are missing in two primary locations. Sidewalk is missing on the east side Colorado between Mineral Avenue and Dry Creek Road. In addition, there is no sidewalk on the west side of Colorado between Albion Way and Orchard Road.

Bicycle connections are missing throughout the Colorado Boulevard corridor. Bike access is provided to Colorado Boulevard at Big Dry Creek Trail and Little Dry Creek Trail/Highline Canal Trail. However, continuous bicycle access is not provided along Colorado.

The corridor also includes several trail crossings that do not provide markings or other improvements to increase the safety and visibility of pedestrians and bicyclists crossing the corridor. The candidate locations include the Big Dry Creek Trail crossing at Links Parkway, the Little Dry Creek Trail crossing at Maplewood Way and the Little Dry Creek Trail crossing south of Lake Circle North.

4.0 Alternatives Development AND SELECTION

4.1 RANGE OF ALTERNATIVES CONSIDERED

Many multimodal improvements were considered before developing alternatives for layouts of Colorado Boulevard. Both multimodal design best practices and community input preferences were considered during the development of alternatives. The improvements considered have potential to be combined if the combination does not have mutually exclusive characteristics. Multimodal elements considered include:

- Bike Lanes
- Buffered Bike Lanes
- Protected Bike Lanes
- Raised and Separated Facilities for Pedestrian and Bicycles
- Shared Use Paths (Combined Pedestrian and Bike Facilities)
- Pedestrian Crossing Improvements
- Traffic Calming Infrastructure
- Completing Sidewalk Network

Nine initial alternatives were developed for evaluation. The alternatives provided varying types and levels of accommodation for pedestrians, bicycles and vehicles. The following provides a summary of the nine initial alternatives.

- 4-lanes Directional Shared Use Path: Maintains current roadway cross section and converts the areas behind the curb line to provide attached direction shared use bike paths.
- 2-lanes Protected Directional Multimodal: Restripes current roadway to provide three travel lanes and protected bike lanes in each direction. Five-foot attached sidewalks are maintained.
- 2-lanes Two-way Protected Bike Lanes: Restripes current roadway to provide three travel lanes. A two-way protected bike lane would be striped on one side of the road. Five-foot attached sidewalks are maintained. Striped buffers would be installed between vehicles and pedestrians.
- 4-lanes Two-way Protected Bike Lanes: Restripes the existing roadway to provide four travel lanes. A two-way protected bike lane would be striped on one side of the road. Five-foot attached sidewalks are maintained.
- 2-lanes Raised Multimodal: Reconstructs the roadway to provide three vehicle lanes. Raised two-way bike lanes would be installed on one side of the roadway. A ten-foot sidewalk and eight-foot amenity zone would be installed adjacent to the bike lanes.
- 2-lanes Directional Raised Multimodal: Reconstructs the roadway to provide three vehicle lanes. Raised directional bike lanes would be installed on each side of the roadway. Eight-foot sidewalks and four-foot utility areas would be provided on each side.
- 4-lanes Directional Raised Multimodal: Reconstructs the roadway to provide four vehicle lanes. Raised directional bike lanes would be installed on each side of the roadway. A one-foot buffer and eight-foot sidewalks would complete the cross section.
- 2-lanes Shared Use Path and Amenity Zone: Reconstructs the roadway to provide three vehicle lanes. Twelve-foot shared use paths would be installed on each side of the roadway. A ten-foot amenity zone would separate the shared use paths from the roadway.
- 4-lanes Shared Use Path and Amenity Zone: Reconstructs the roadway to provide four vehicle lanes. Ten-foot shared use paths would be installed on each side of the roadway. A seven-foot amenity zone would separate the shared use paths from the roadway.

The initial alternatives were evaluated based on the established goals and objectives for the corridor. This narrowed the list of alternatives considered for more detailed evaluation and public comment from nine to four.

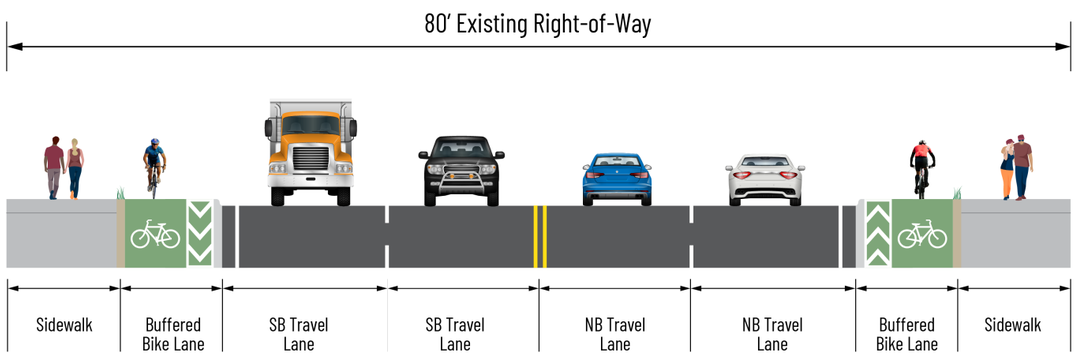
4.2 ALTERNATIVES PRESENTED

Four alternatives were advanced for detailed evaluation and assessment, including public comment and input. The four advanced alternatives are presented below.

4.2.1 ALTERNATIVE 1: 4-LANES DIRECTIONAL RAISED MULTIMODAL

This alternative reduces the curb-to-curb width of Colorado Boulevard to four vehicle lanes, two in each direction without a left turn lane. This section provides separate raised bicycle and pedestrian areas, as shown in ***Figure 25***.

Figure 25: Alternative 1 Cross Section

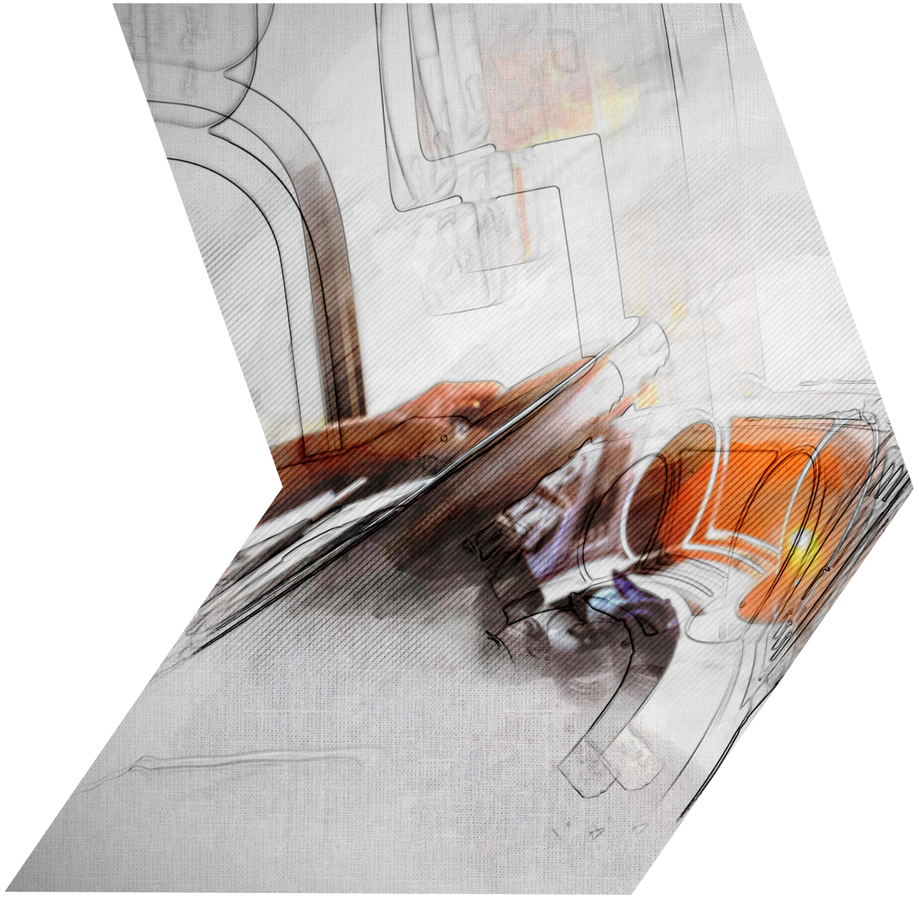


One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road. This section eliminates the existing landscaping and utility areas. Benefits provided by this cross section include:

- Maintains existing vehicle capacity.
- Raised bikeway increases bike safety and bicycle visibility.
- One-way bike travel improves intersection transitions.
- Pedestrians are separated from vehicle travel lanes.
- Narrow buffers separate bikes and pedestrians.
- Sidewalk width is increased to eight feet.

Shortcomings of this cross section include:

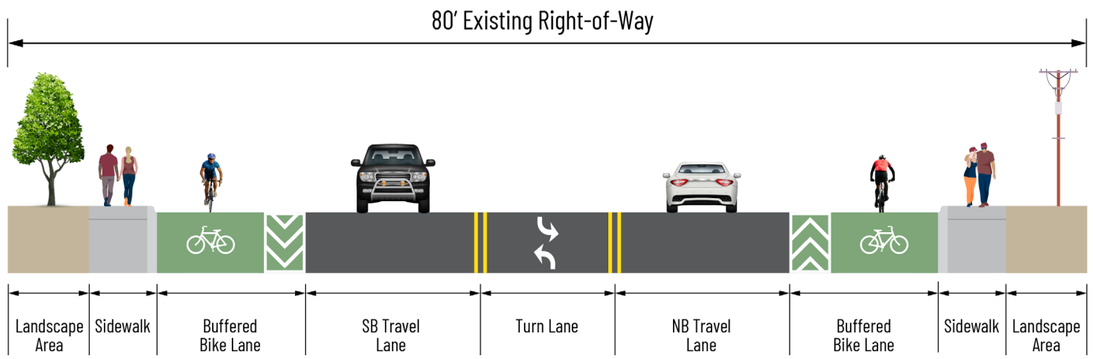
- Speed reduction is unlikely.
- No left turn lanes are provided, which may increase slowing and stopped vehicles throughout the corridor.
- There are no landscaped areas.
- Requires major reconstruction of the corridor.



4.2.2 ALTERNATIVE 2: 2-LANES PROTECTED DIRECTIONAL MULTIMODAL

This alternative maintains the existing width of Colorado Boulevard. The cross section is reduced to three vehicular lanes, a through lane in each direction, and a dedicated center left-turn lane. This section provides separate bicycle and pedestrian areas, as shown in ***Figure 26***.

Figure 26: Alternative 2 Cross Section



Buffered bike lanes are shown in this section, however, depending on the City's preference and maintenance capabilities, protected/buffered bike lanes could be installed instead. Benefits provided by this cross section include:

- Decreased travels speeds due to the narrower roadway width; fewer lanes help to reduce average travel speeds.
- One through lane in each direction provides adequate capacity for both near- and long-term traffic volumes.
- Added bike lanes provide bike-specific areas within the roadway and keeps bikes separate from both pedestrians and vehicles.
- Provides increased bike safety with the use of a separation buffer and potential vertical separation.
- Pedestrians are separated from vehicle travel lanes.

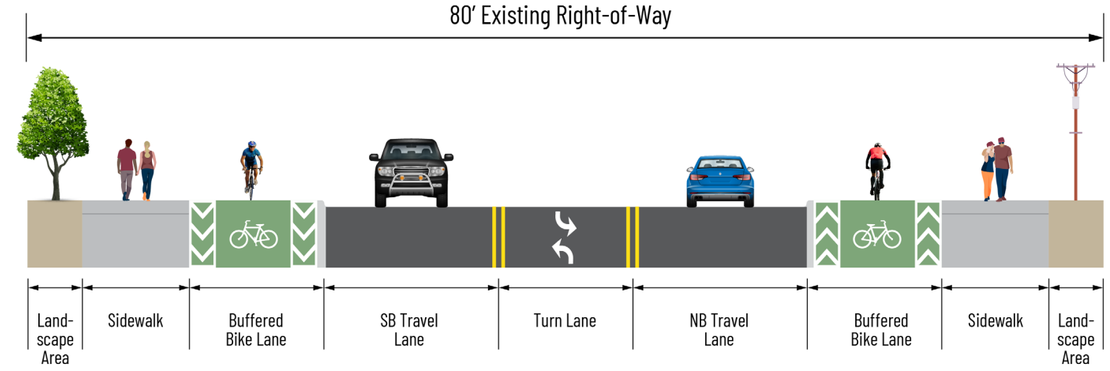
Shortcomings of this cross section include:

- Sidewalk width is not increased.
- Pedestrians are adjacent to the roadway curb.
- There is no increased room for landscaping.

4.2.3 ALTERNATIVE 3: 2-LANES DIRECTIONAL WITH RAISED MULTIMODAL

This alternative reduces the curb-to-curb width of Colorado Boulevard to three vehicle lanes, one lane in each direction and a center left-turn lane. This section provides separate raised bicycle and pedestrian areas, as shown in ***Figure 27***.

Figure 27: Alternative 3 Cross Section



One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road. This section reduces the landscape area to four feet wide on each side. Benefits provided by this cross section include:

- Decreased travel speeds due to the narrower roadway width; fewer lanes help to reduce average travel speeds.
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Raised bikeway increases bike safety and bicycle visibility.
- One-way bike travel improves intersection transitions.
- Pedestrians are separated from vehicle travel lanes.
- Bike lane buffers separate bikes and pedestrians.
- Sidewalk widths are increased to eight feet.

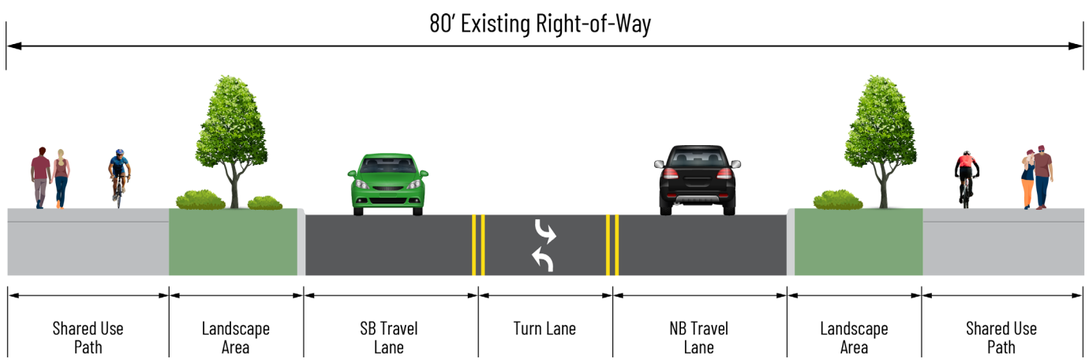
Shortcomings of this cross section include:

- Reduced room for landscaping and utilities.
- Gutter width is included in the travel lane width.
- Requires major reconstruction of the corridor.
- One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road. This section reduces the landscaped area to four feet wide on each side.

4.2.4 ALTERNATIVE 4: 2-LANES SHARED USE PATH AND AMENITY ZONE

This alternative reduces the curb-to-curb width of Colorado Boulevard to three vehicle lanes, one lane in each direction and a center left-turn lane. This section provides separate raised bicycle and pedestrian areas, as shown in ***Figure 28***

Figure 28: Alternative 4 Cross Section



Bike lanes and pedestrian areas are located behind the curb line on both sides of the road. The section adds separation between vehicles and non-motorized users with a wide, landscaped amenity zone. Benefits provided by this cross section include:

- Decreased travel speeds due to narrower roadway width; fewer lanes help to reduce average travel speeds.
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Added shared use paths increase the area for both pedestrians and bicycles.
- Shared use path width provides adequate separation between pedestrians and bicycles.
- Landscaped amenity zone separates vehicles from pedestrians and bicycles.

Shortcomings of this cross section include:

- No separate facilities for pedestrians and bicycles.
- Intersection transitions for the shared path is more difficult.
- Requires major reconstruction of the corridor and extensive utility relocations.

4.3 EVALUATION CRITERIA

This study used the following criteria and performance measures to evaluate the cross sections and crossing locations for Colorado Boulevard multimodal improvements. A full explanation of the Evaluation Criteria can be found in Appendix C.

- Efficacy/Efficiency: Evaluates alternatives based on cost/impacts versus improved safety and use.
- Adaptability: Evaluates alternatives based on their flexibility for future improvements and/or expansion.
- Provides Regional and Local Route Connectivity: Improves continuity for north/south pedestrian and bicyclist movement. Reduce barriers for east/west pedestrian and bicyclist movement.
- Access to Transit: Improves connectivity to transit stops.
- Comfort of Pedestrian and Bicyclist Environment: Improves the level of comfort in the pedestrian and bicyclist environment.
- Impacts to Vehicular Traffic: Results in noticeable changes in vehicular Level of Service (LOS) and vehicle speeds.
- Consistent with Local Plans: Implements or accommodates planned improvements from local plans.
- Complexity of Application/Improvement: Physical, structural, or natural challenges that make it complex to implement the application/improvement.
- Sufficient Right-Of-Way (ROW) to Accommodate Improvements: Results in ROW impacts and acquisition requirements.

4.4 ALTERNATIVES EVALUATION

The four advanced alternatives, as well as a no action alternative were evaluated compared to the developed evaluation criteria. Each alternative was scored as -1, 0 or 1 for each criterion based on the anticipated performance of each alternative. The total score for each alternative was then used, in conjunction with results of the public input process to select a recommended plan.

4.4.1 EFFICACY/EFFICIENCY

Each alternative was evaluated based on the cost and impact of implementation versus the resulting improved safety and use within the corridor.

NO ACTION: This alternative would not implement improvements resulting in no improved safety or use. Nor does the alternative have associated costs. SCORE: **0**

ALTERNATIVE 1: This alternative would reduce the curb-to-curb roadway width by 12 feet to provide raised bicycle tracks and wider sidewalks along Colorado Blvd. Because modification of the existing curb and gutter would be required under this alternative, these improvements would result in a good ratio (as opposed to the best ratio) of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements. SCORE: **0**

ALTERNATIVE 2: Given that this alternative would maintain the existing 58-foot curb-to-curb roadway width, improvements would only involve restriping. No curb and gutter modifications would be required; therefore, these improvements would result in the best ratio of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements. SCORE: **1**

ALTERNATIVE 3: This alternative would reduce the curb-to-curb roadway width by 22 feet to provide raised bicycle tracks along Colorado Blvd. Because modification of the existing curb and gutter would be required under this alternative, these improvements would result in a good ratio (as opposed to the best ratio) of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements. SCORE: **0**

ALTERNATIVE 4: Alternative 4 would also reduce the curb-to-curb roadway width from 58 to 36 feet. This improvement would preclude modification and/or addition of future improvements to the roadway cross-section given that the 36-foot width would only be sufficient to accommodate a single vehicular lane in each direction and a two-way left-turn lane. The alternative also requires the full relocation of utilities within the corridor. SCORE: **-1**

4.4.2 ADAPTABILITY

Each alternative was evaluated based on their flexibility for future improvements and/or expansion.

NO ACTION: This alternative would maintain the existing curb-to-curb roadway width of 58 feet. This would result in the most opportunities for modification and/or for the addition of future improvements to the roadway cross-section. SCORE: **1**

ALTERNATIVE 1: This alternative would reduce the curb-to-curb roadway width from 58 to 46 feet resulting in a few to moderate amount of opportunities for modification and/or for the addition of future improvements to the roadway cross-section. SCORE: **0**

ALTERNATIVE 2: This alternative would repurpose 22 feet of roadway width currently used for vehicular lanes to provide buffered bike lanes; however, it would maintain the existing curb-to-curb roadway width of 58 feet. This would result in the most opportunities for modification and/or for the addition of future improvements to the roadway cross-section. SCORE: **1**

ALTERNATIVE 3: Alternative 3 would reduce the curb-to-curb roadway width from 58 to 36 feet. This improvement would preclude modification and/or addition of future improvements to the roadway cross-section given that the 36-foot width would only be sufficient to accommodate a single vehicular lane in each direction and a two-way left-turn lane. SCORE: **-1**

ALTERNATIVE 4: Alternative 4 would also reduce the curb-to-curb roadway width from 58 to 36 feet. This improvement would preclude modification and/or addition of future improvements to the roadway cross-section given that the 36-foot width would only be sufficient to accommodate a single vehicular lane in each direction and a two-way left-turn lane. SCORE: **-1**

4.4.3 PROVIDES REGIONAL AND LOCAL ROUTE CONNECTIVITY

Each alternative was evaluated based on improving continuity for north/south pedestrian and bicyclist movement and reducing barriers for east/west pedestrian and bicyclist movement. This criterion was evaluated as two separate criteria, one for north/south continuity and one for east/west connectivity.

NO ACTION: The No Action Alternative would not change barriers to north/south travel for pedestrians and bicyclists. This no-build alternative would not change barriers to east/west travel for pedestrians and bicyclists. SCORES: **0/0**. TOTAL SCORE: **0**

ALTERNATIVE 1: Alternative 1 would reduce barriers to north/south travel for pedestrians and bicyclists by widening and connecting the existing 5-foot sidewalks to 8 feet and providing raised bicycle tracks along Colorado Blvd. The alternative would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails; however, the alternative continues to have four travel lanes and eliminates the potential for median refuge islands. SCORES: **1/-1**. TOTAL SCORE: **0**

ALTERNATIVE 2: Alternative 2 would reduce barriers to north/south travel for pedestrians and bicyclists by providing continuous sidewalks and buffered bike lanes along Colorado Blvd. The alternative would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails with the potential for median refuges; therefore, the improvements would reduce barriers to east/west travel as well. SCORES: **1/1**. TOTAL SCORE: **2**

ALTERNATIVE 3: Alternative 3 would reduce barriers to north/south travel for pedestrians and bicyclists by providing raised bicycle tracks along Colorado Blvd and creating the potential for widening and connecting the existing 5-foot sidewalks to 8 feet. The alternative would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails with the potential for median refuges; therefore, the improvements would reduce barriers to east/west travel for pedestrians and bicyclists. SCORES: **1/1**. TOTAL SCORE: **2**

ALTERNATIVE 4: Alternative 4 would reduce barriers to north/south travel for pedestrians and bicyclist by providing 12-foot shared use paths on both sides of Colorado Blvd. The alternatives would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails with the potential for median refuges; therefore, the improvements would reduce barriers to east/west travel for pedestrians and bicyclists. SCORES: **1/1**. TOTAL SCORE: **2**

4.4.4 ACCESS TO TRANSIT

Each alternative was evaluated based on improving connectivity to transit stops.

NO ACTION: The No Action Alternative would not change access to transit facilities near the Colorado Boulevard Corridor. SCORE: **0**

ALTERNATIVE 1: There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops. However, the alternative also maintains existing levels of vehicular access and travel minimizing the need for transit connectivity. SCORE: **0**

ALTERNATIVE 2: There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops. SCORE: **1**

ALTERNATIVE 3: There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops. SCORE: **1**

ALTERNATIVE 4: There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops. SCORE: **1**

4.4.5 COMFORT OF PEDESTRIAN AND BICYCLISTS ENVIRONMENT

Each alternative was evaluated based on improving the level of comfort in the pedestrian and bicyclist environment.

NO ACTION: This alternative would not change the level of comfort for pedestrians and bicyclists. SCORE: **0**

ALTERNATIVE 1: This alternative would improve the level of comfort for pedestrians and bicyclists by widening the existing sidewalks from 5 to 8 feet, completing the sidewalk network, and by providing raised bicycle tracks. The grade-separated bikeway would provide a high level of comfort for pedestrians and bicyclists. SCORE: **1**

ALTERNATIVE 2: This alternative would improve the level of comfort for pedestrians and bicyclists by providing continuous sidewalks and buffered bike lanes along Colorado Blvd. The painted buffer between the vehicle lane and the bicycle lane improves the level of comfort in the bicyclist environment and the additional separation between vehicles and pedestrians improves comfort for pedestrians. SCORE: **1**

ALTERNATIVE 3: This alternative would improve the level of comfort for pedestrians and bicyclists by creating additional separation between pedestrian and vehicles and potential to widen the existing sidewalks from 5 to 8 feet and by providing raised bicycle tracks. The raised bikeway would provide a high level of comfort for bicyclists. SCORE: **1**

ALTERNATIVE 4: This alternative would improve the level of comfort for pedestrians and bicyclists by providing 12-foot shared use paths on both sides of Colorado Blvd. This alternative would also include a 10-foot wide amenity zone separating the roadway and the shared use paths. This separation from vehicular traffic and dedication to a wide pedestrian and bicycle facility would provide a high level of comfort to its users in comparison to existing conditions. SCORE: **1**

4.4.6 IMPACTS TO VEHICULAR TRAFFIC

Each alternative was evaluated based on anticipated noticeable changes in vehicular Level of Service (LOS) or delay resulting from the implementation of the alternative. The impact potential impact on existing vehicular speeds was also assessed.

NO ACTION: The No Action Alternative would not change the level of service at intersections and roadway segments from existing conditions. SCORE: **0**

ALTERNATIVE 1: This alternative provides no significant improvements or degradation to existing levels of service. Nor does it degrade existing levels of service. SCORE: **0**

ALTERNATIVE 2: This alternative provides no significant improvements or degradation to existing levels of service. Nor does it degrade existing levels of service. Vehicular speeds would be expected to decrease. SCORE: **0**

ALTERNATIVE 3: This alternative provides no significant improvements or degradation to existing levels of service. Nor does it degrade existing levels of service. Vehicular speeds would be expected to decrease. SCORE: **0**

ALTERNATIVE 4: This alternative provides no significant improvements or degradation to existing levels of service. Nor does it degrade existing levels of service. Vehicular speeds would be expected to decrease. SCORE: **0**

4.4.7 CONSISTENT WITH LOCAL PLANS

Each alternative was evaluated based on the accommodation of planned improvements from local plans within the corridor.

NO ACTION: This alternative would accommodate future installation of multimodal planned improvements but would not initiate elements of local plans. SCORE: **0**

ALTERNATIVE 1: Local plans such as the Centennial Trails and Recreation Plan, 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans. SCORE: **1**

ALTERNATIVE 2: Local plans such as the Centennial Trails and Recreation Plan, 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans. SCORE: **1**

ALTERNATIVE 3: Local plans such as the Centennial Trails and Recreation Plan, 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans. SCORE: **1**

ALTERNATIVE 4: Local plans such as the Centennial Trails and Recreation Plan, 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans. SCORE: **1**

4.4.8 COMPLEXITY OF APPLICATION/IMPROVEMENT

Each alternative was evaluated based on physical, structural, or natural challenges that make it complex to implement the alternative or elements of the alternative.

NO ACTION: The No Action Alternative does not require implementation. SCORE: **1**

ALTERNATIVE 1: This alternative would be implemented with some localized challenges to implementation since the curb lines would be relocated and reconstructed along the length of the corridor. This would also require the modification of drainage facilities and driveways as well as extensive utility relocations. SCORE: **-1**

ALTERNATIVE 2: This alternative would be easily implemented with no challenges to implementation given the existing physical width of roadway will be maintained. SCORE: **1**

ALTERNATIVE 3: This alternative would be implemented with some localized challenges to implementation since the curb lines would be relocated and reconstructed along the length of the corridor. This would also require the modification of drainage facilities and driveways. SCORE: **0**

ALTERNATIVE 4: This alternative would be implemented with some localized challenges to implementation since the curb lines would be relocated and reconstructed along the length of the corridor. This would also require the modification of drainage facilities and driveways as well as the relocation of utilities. SCORE: **0**

4.4.9 SUFFICIENT ROW TO ACCOMMODATE IMPROVEMENTS

Each alternative was evaluated based on creating ROW impacts or other property acquisition requirements.

NO ACTION: This alternative would have no ROW impacts. SCORE: **1**

ALTERNATIVE 1: This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW. SCORE: **1**

ALTERNATIVE 2: This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW. SCORE: **1**

ALTERNATIVE 3: This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW. SCORE: **1**

ALTERNATIVE 4: This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW. SCORE: **1**

For all alternatives other than the No Action alternative, some temporary impacts may be required. The segment between County Line Road and Dry Creek Road is very inconsistent geometrically. In order to make this part of the corridor more uniform, construct necessary improvements to improve traffic operations, and still remain within City ROW, construction of retaining walls is anticipated.

4.5 PUBLIC PROCESS

As discussed in Section 2.2, several public engagement activities to solicit public feedback along the Colorado Boulevard corridor were initiated by the project team. There were three pop-up events held at the Koebel Library, Cherrywood King Soopers, and along Little Dry Creek Trail and Big Dry Creek Trail. The goal of the pop-up events was to engage a wide cross section of corridor users and direct them to the project website and survey to gather their input about the corridor. In addition to providing online survey results, many people also provided comments during the events which were summarized by the project team and evaluated in conjunction with the results of the survey.

4.5.1 PUBLIC MEETING

After public comment was collected and evaluated, the City of Centennial was able to formulate alternatives to present to the public in a Virtual Public Meeting on the city's website. The information from the pop-up meetings indicated that the top three issues according to the public along the corridor are speeding, congestion, and unsafe intersection crossings. The Virtual Public Meeting was active from November 2 until November 23, 2020. The meeting was composed of a short project description, a video on existing conditions, a video on alternatives development, project documents and an opportunity to comment. The video on existing conditions summarized what was learned about the corridor through data collection. More specific information on what was presented related to existing conditions can be found in the Public Meeting Video Script in ***Appendix B***.

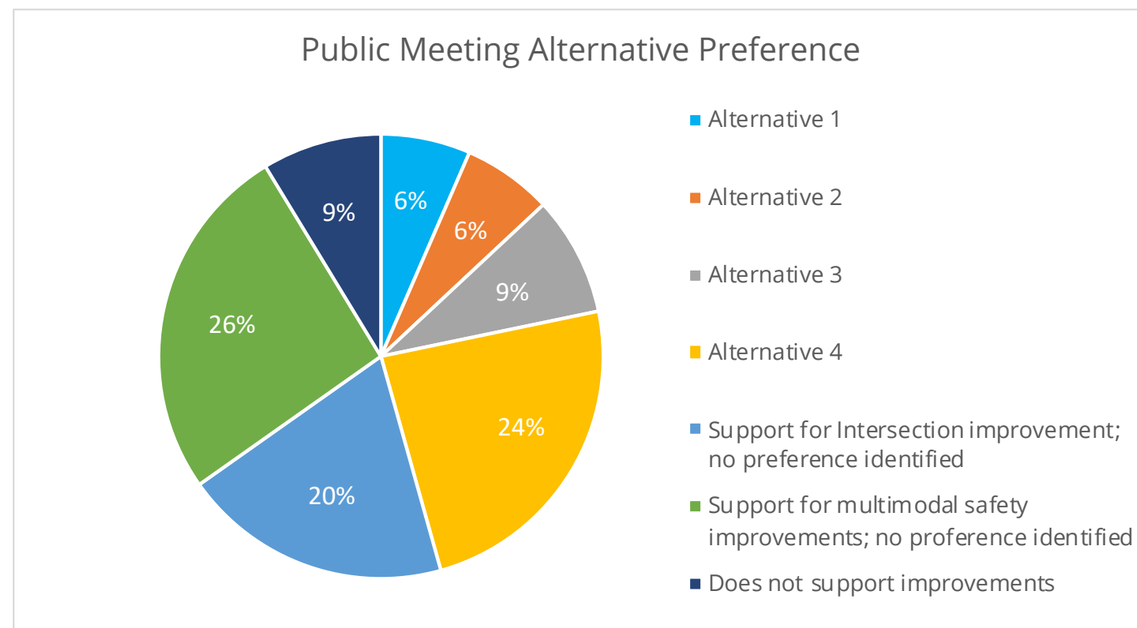
The second video outlined the four alternatives. The first alternative reduces the curb-to-curb width of Colorado Boulevard to four vehicle lanes, two in each direction without a left turn lane. It also provides separate raised bicycle and pedestrian areas. The second alternative is generally based on the City of Centennial standard cross section for a Major Collector Street. The overall width of this cross section is seventy-eight feet, two feet narrower than the existing Colorado corridor. This alternative provides three vehicle lanes, one lane in each direction as well as a dedicated center left-turn lane. Standard bike lanes are provided. Behind the curb, the pedestrian and utility areas would be adjacent to the roadway. The third alternative reduces the curb-to-curb width of Colorado Boulevard to three vehicle lanes, one lane in each direction and a center left turn lane. It provides separate raised bicycle and pedestrian areas. One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road. The fourth and final alternative reduces the curb-to-curb width of Colorado to a three-lane section, one lane in each direction and a center left turn lane. This section provides separate shared bicycle/pedestrian shared use paths separated from the street by landscaped amenity areas. Additional information related to the public meeting presentation on alternatives can be found in ***Appendix B***.

4.5.2 PUBLIC MEETING FINDINGS

After reviewing the meeting materials, visitors had the opportunity to leave comments on the alternatives presented. In total, 55 comments were received which were responded to with specific feedback from the project team. Comments provided during the public meeting were summarized to ascertain general thoughts on the alternatives presented. ***Figure 29*** shows the preference of alternatives from the comments received. Support for multimodal safety improvements; no preference identified and Support for intersection improvement; no preference identified indicates commenters who provided feedback on the project, their experiences in the corridor, or specific suggestions for the corridor but did not specify a preference for any alternative. "Does not support public improvements" indicates the commenter expressed that the corridor should remain in its current condition.

The recommend alternative is based on the information collected during the Virtual Public Meeting as well as the results from the detailed evaluation of each alternative relative to project goals and objectives.

Figure 29: Alternative Preference from Public Meeting Comments



5.0 Recommended Plan AND IMPLEMENTATION

5.1 RECOMMENDED PLAN

Alternative 2 was selected as the recommended alternative to implement along Colorado Boulevard in the near term with the ultimate goal of implementing Alternative 3 or 4. While Alternatives 3 and 4 were preferred more often by the public, Alternative 2 provides all the same multimodal amenities without the need to reconstruct the entire Colorado Boulevard corridor. Implementation of Alternative 2 provides for near-term implementation for the full corridor allowing for phased long-term reconstruction for Alternatives 3 or 4 as funding becomes available.

The recommended plan will install a buffered bike lane in each direction of Colorado Boulevard from Orchard Road to County Line Road. The bike lane and accompanying striped buffer will be accommodated by removing a through lane in each direction of Colorado and restriping the existing roadway width. This will result in a singular vehicular lane in each direction as well as a center left-turn lane at intersections and access points. Left- and right-turn auxiliary lanes will be provided at signalized intersection as necessary to maintain existing traffic operations and level of service.

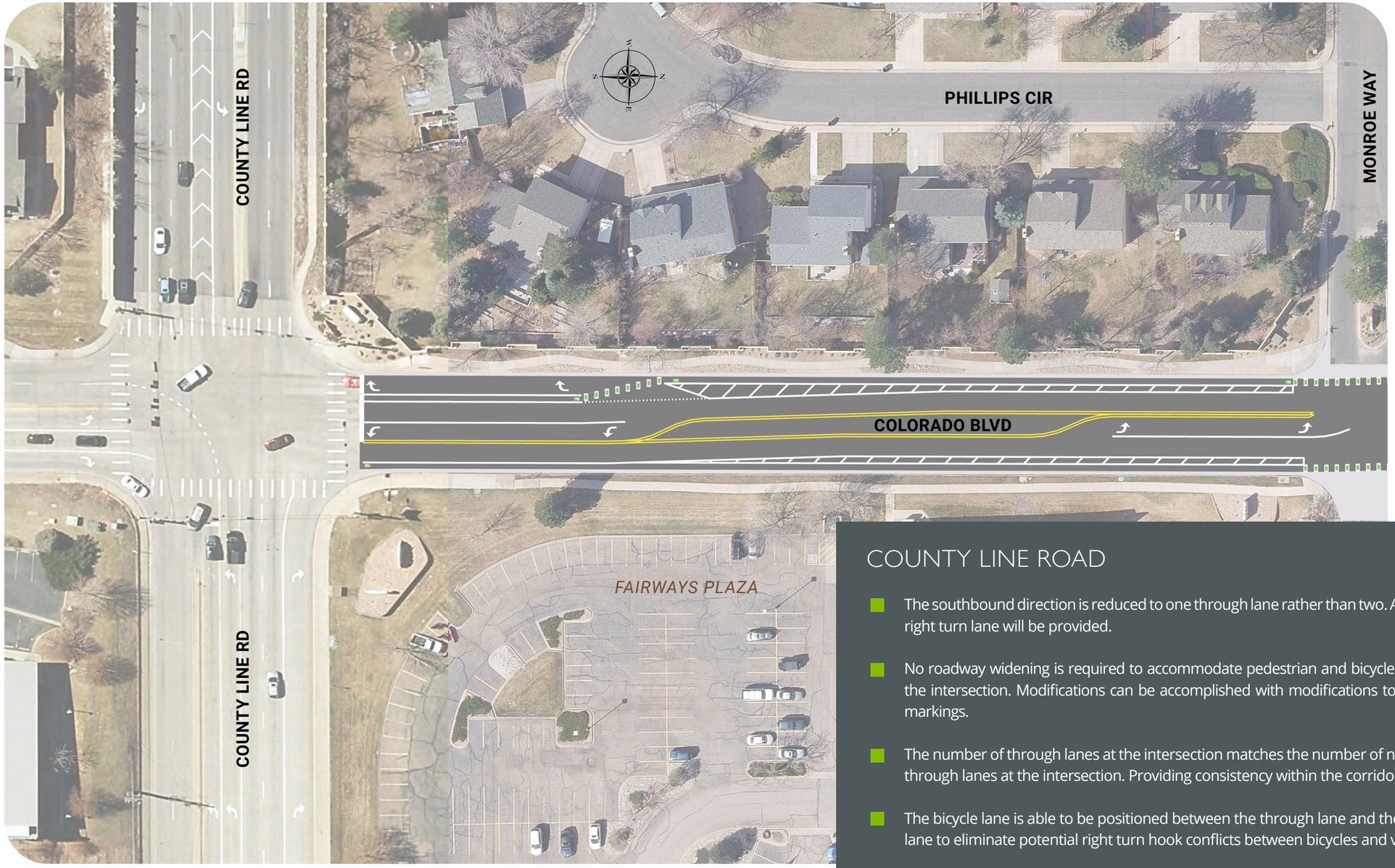
Existing sidewalks will be maintained in their “attached” condition with additional sidewalk connections constructed to connect any existing gaps in sidewalk continuity. Existing utilities will be maintained in their current location.

In locations where the existing roadway is not wide enough to accommodate the proposed cross section, the roadway will be widened to provide sufficient width.

5.1.1 SIGNALIZED INTERSECTION CONCEPT PLANS

Plan sheets were developed to display the recommended improvements at several intersections along Colorado Boulevard based on the implementation of Alternative 2. The plan sheets present how the vehicle and bicycle lanes provided in Alternative 2 transitions at each intersection to provide adequate long-term vehicle capacity and turn lane storage. Also, the plan sheets show where roadway widening is necessary to accommodate the selected alternative.

Figure 30: County Line Road Intersection (North)

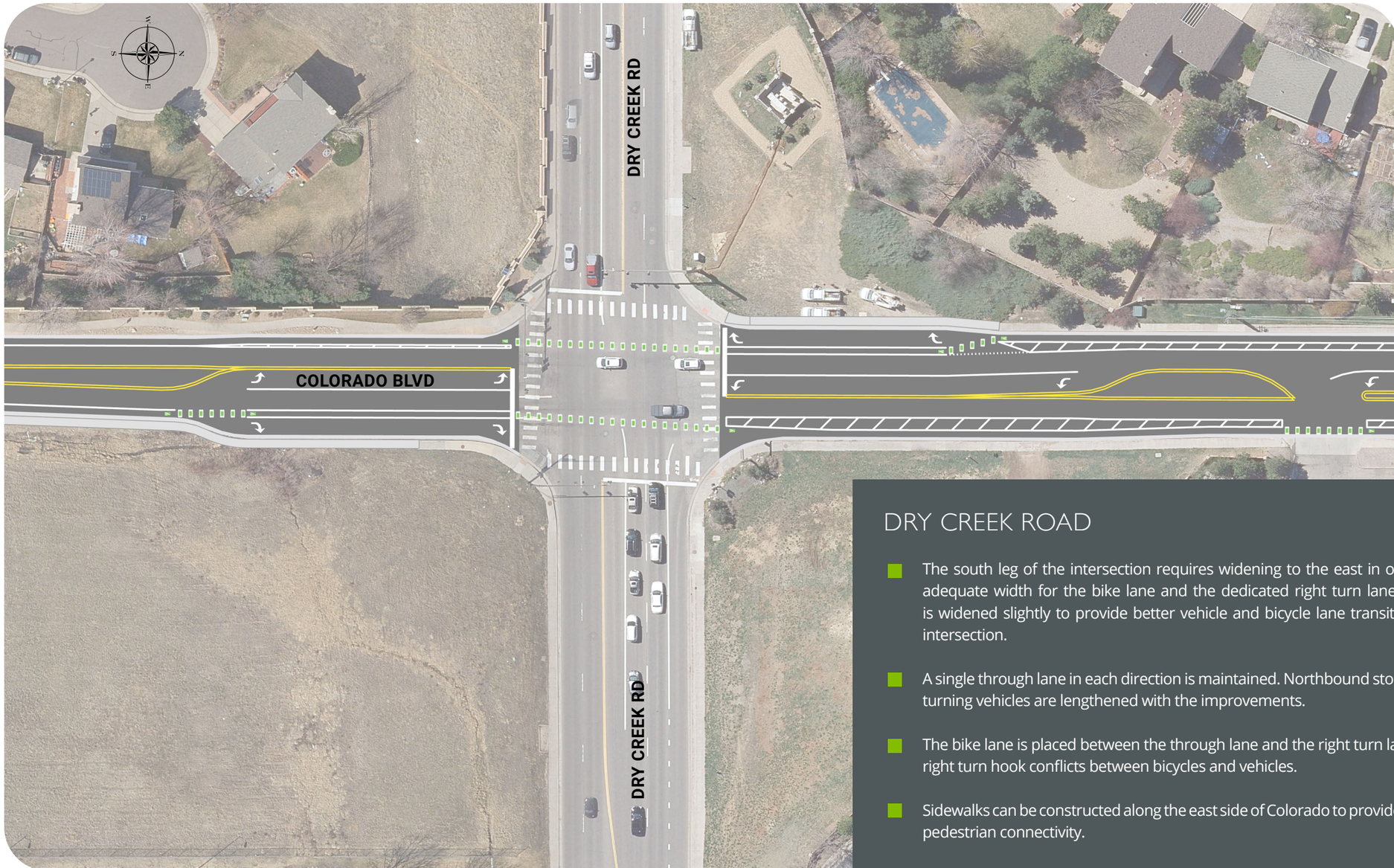


The north leg of the County Line Road intersection (***Figure 30***) will be restriped to provide a single through lane in each direction. Southbound Colorado Boulevard would also provide a left-turn lane and a right-turn lane. The remaining roadway width will be striped to provide bike lanes in each direction. Striped buffers between bike lanes and vehicle lanes will be provided where adequate space is available. In addition, the eastbound left-turn from County Line Road will be restriped to provide only one left-turn lane, rather than two.

COUNTY LINE ROAD

- The southbound direction is reduced to one through lane rather than two. A dedicated right turn lane will be provided.
- No roadway widening is required to accommodate pedestrian and bicycle facilities at the intersection. Modifications can be accomplished with modifications to pavement markings.
- The number of through lanes at the intersection matches the number of northbound through lanes at the intersection. Providing consistency within the corridor.
- The bicycle lane is able to be positioned between the through lane and the right turn lane to eliminate potential right turn hook conflicts between bicycles and vehicles.
- Bicyclists are given the opportunity to transition to sidewalks on the south side of County Line Road where bike lanes are not present.

Figure 31: Dry Creek Road Intersection



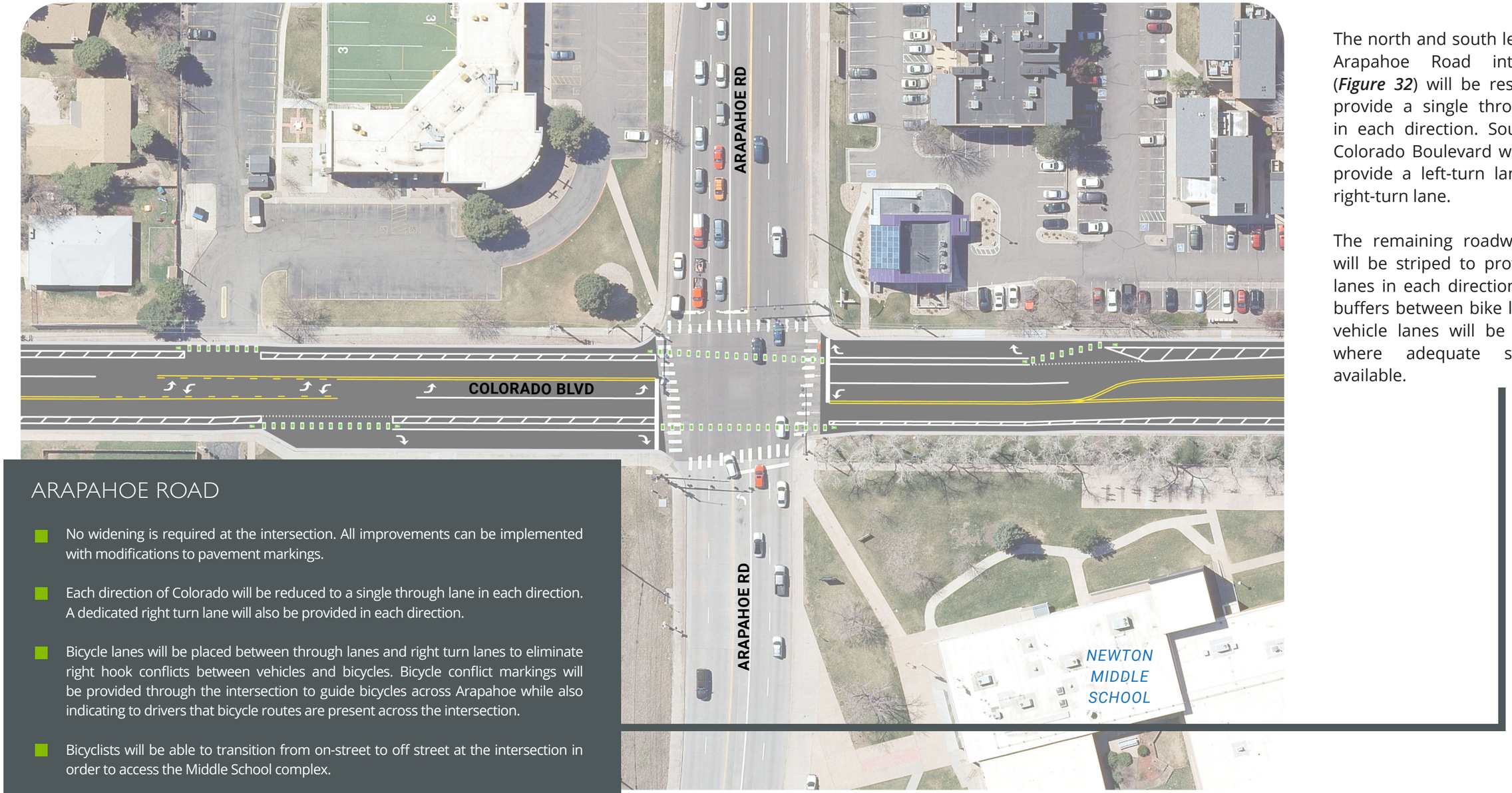
The south leg of the intersection (***Figure 31***) will be widened in order provide a single through lane in each direction, accommodate an improved right-turn lane, and complete the missing sidewalk connection on the east side of the street.

Northbound left- and right-turn lanes will be provided. Bike lanes will be added to the intersection with striped buffers where adequate space is available. The north leg of the intersection will also be restriped to provide the same number of lanes as the south leg.

DRY CREEK ROAD

- The south leg of the intersection requires widening to the east in order to provide adequate width for the bike lane and the dedicated right turn lane. The north leg is widened slightly to provide better vehicle and bicycle lane transitions across the intersection.
- A single through lane in each direction is maintained. Northbound storage lengths for turning vehicles are lengthened with the improvements.
- The bike lane is placed between the through lane and the right turn lane to eliminate right turn hook conflicts between bicycles and vehicles.
- Sidewalks can be constructed along the east side of Colorado to provide uninterrupted pedestrian connectivity.
- Bicycle conflict markings through the intersection alert drivers that a designated bike facility crosses the intersection. The markings also provides cyclists with an understand of the appropriate path through the intersection.

Figure 32: Arapahoe Road Intersection



The north and south legs of the Arapahoe Road intersection (***Figure 32***) will be restriped to provide a single through lane in each direction. Southbound Colorado Boulevard would also provide a left-turn lane and a right-turn lane.

The remaining roadway width will be striped to provide bike lanes in each direction. Striped buffers between bike lanes and vehicle lanes will be provided where adequate space is available.

ARAPAHOE ROAD

- No widening is required at the intersection. All improvements can be implemented with modifications to pavement markings.
- Each direction of Colorado will be reduced to a single through lane in each direction. A dedicated right turn lane will also be provided in each direction.
- Bicycle lanes will be placed between through lanes and right turn lanes to eliminate right hook conflicts between vehicles and bicycles. Bicycle conflict markings will be provided through the intersection to guide bicycles across Arapahoe while also indicating to drivers that bicycle routes are present across the intersection.
- Bicyclists will be able to transition from on-street to off street at the intersection in order to access the Middle School complex.
- All improvements are consistent with the redevelopment plans at Newton Middle School and will tie in with the new school improvements.
- Shorten northbound left turn lane and extend two-way left turn lane across existing driveways to improve access into Calvary Church.

Figure 33: Euclid Avenue Intersection

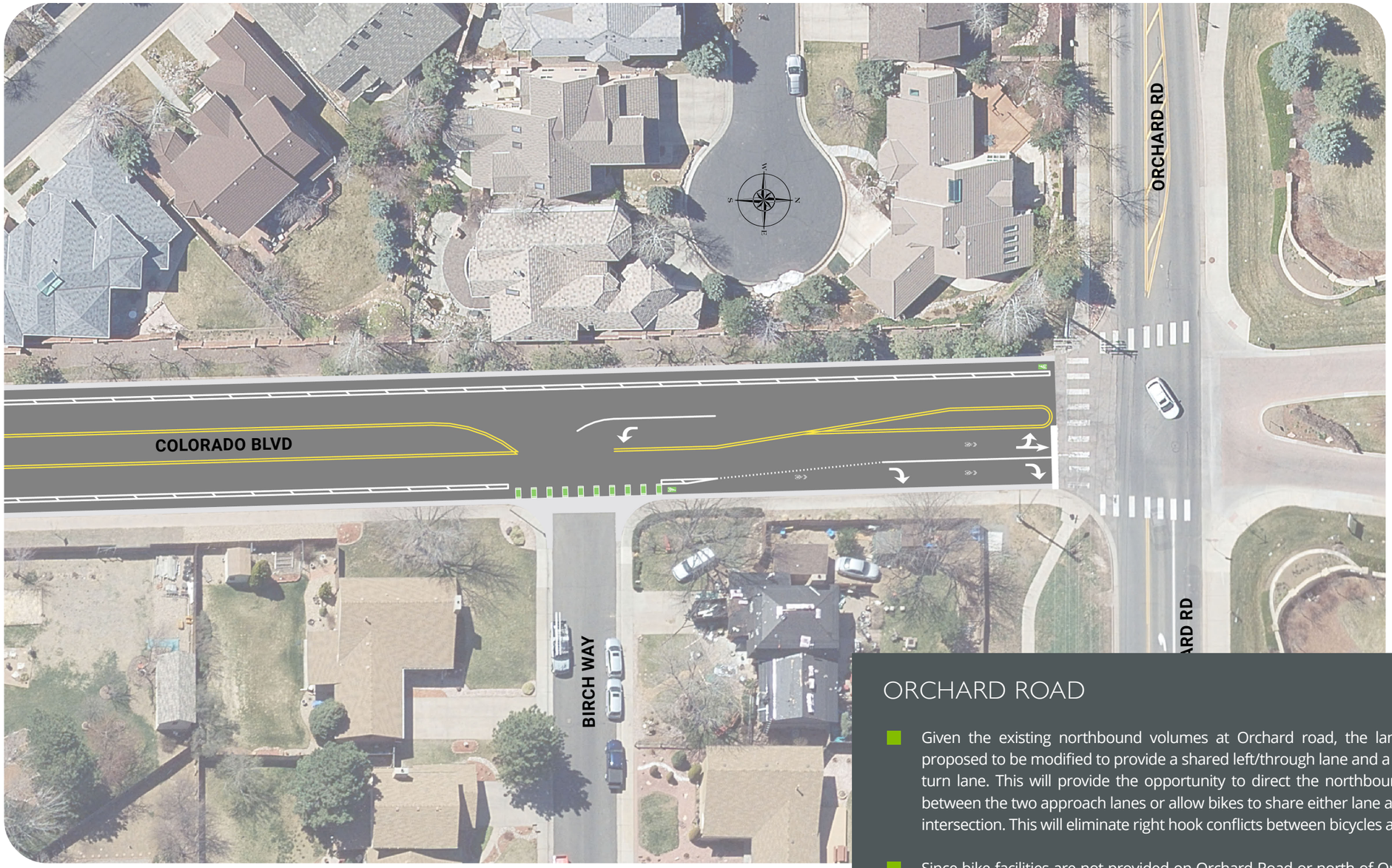
The Colorado Boulevard at Euclid (***Figure 33***) corridor will be restriped to provide a single through lane and buffered bicycle lane in each direction. The intersection will be striped to coordinate with the new access point to the Newton Middle School secondary access.

Left-turn lanes will be provided on Colorado Boulevard as necessary based on new school access locations.

EUCLID AVENUE

- The intersection will be converted to only serve school bus access as part of the reconstruction of the Middle School Complex. Personal vehicles will access the school from Arapahoe Road.
- Existing signal will be removed and pedestrian crossing will be relocated to either the north or south side of the intersection. The fire station signal will be relocated further north. This will streamline operations based on the middle school improvements.
- Northbound and southbound Colorado will be reduced to a single lane in each direction. Dedicated right turn lanes are not warranted based on low turning volumes at the intersection.
- Bike conflict markings will delineate the bike lanes through the intersection alerting drivers to the presence of bicyclists.
- All improvements are consistent with the redevelopment plans at Newton Middle School and will tie in with the new school improvements.

Figure 34: Orchard Road Intersection



Orchard Road (***Figure 34***) will be the north termination point of the buffered bike lanes. Northbound Colorado will be striped to provide a shared left/through lane and a separate right-turn lane.

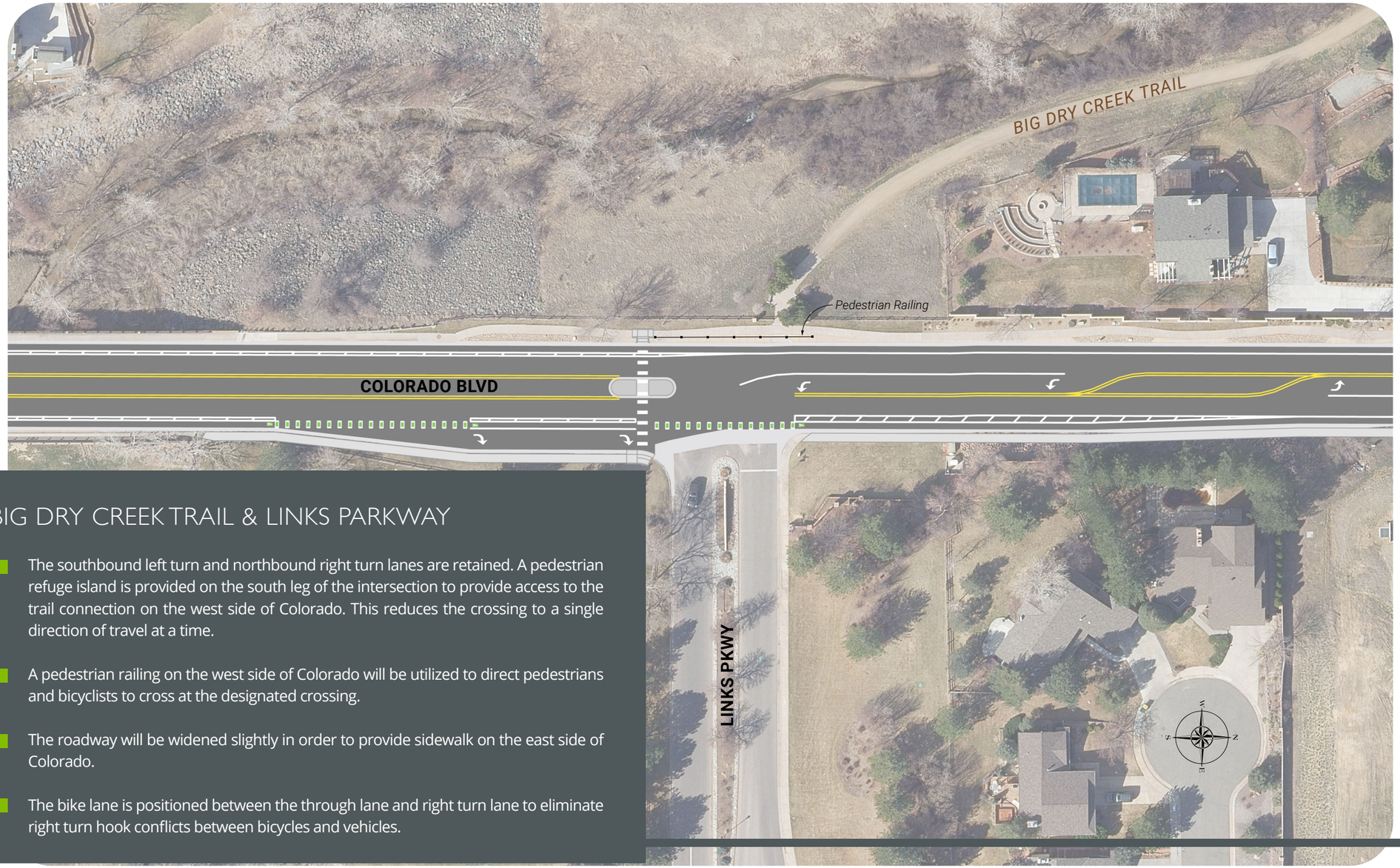
Northbound bicyclists will be given the option to utilize either lane. The remaining pavement will be marked as a center painted median.

ORCHARD ROAD

- Given the existing northbound volumes at Orchard road, the lane geometry is proposed to be modified to provide a shared left/through lane and a dedicated right turn lane. This will provide the opportunity to direct the northbound bike lane in between the two approach lanes or allow bikes to share either lane approaching the intersection. This will eliminate right hook conflicts between bicycles and vehicles.
- Since bike facilities are not provided on Orchard Road or north of Orchard Road on Colorado Boulevard, the bicycle facilities will be designed so that cyclists can choose to turn left, right or continue through as desired.

5.1.2 TRAIL CROSSING CONCEPT PLANS

Figure 35: Links Parkway/Big Dry Creek Trail Intersection Plan Sheet



BIG DRY CREEK TRAIL & LINKS PARKWAY

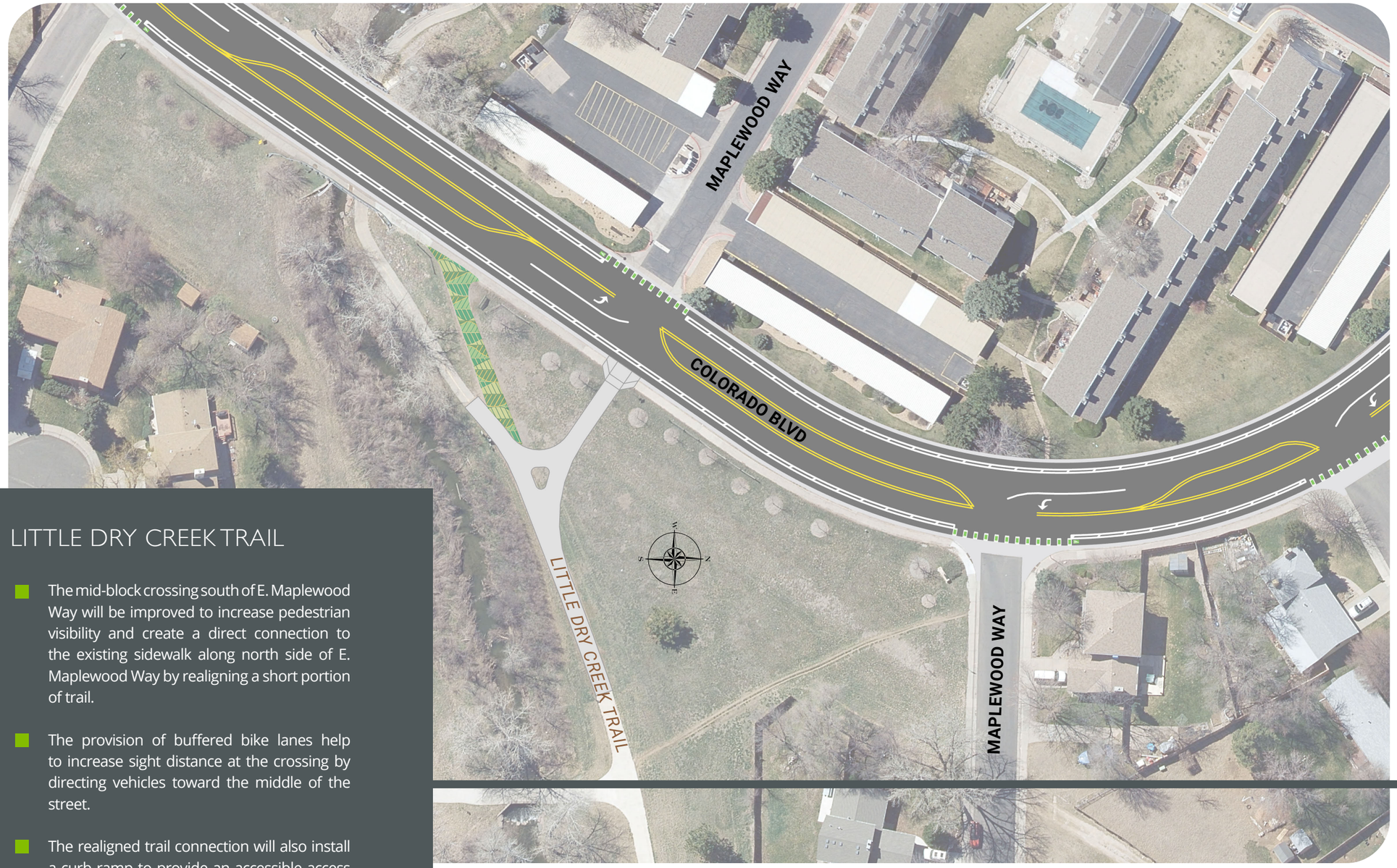
- The southbound left turn and northbound right turn lanes are retained. A pedestrian refuge island is provided on the south leg of the intersection to provide access to the trail connection on the west side of Colorado. This reduces the crossing to a single direction of travel at a time.
- A pedestrian railing on the west side of Colorado will be utilized to direct pedestrians and bicyclists to cross at the designated crossing.
- The roadway will be widened slightly in order to provide sidewalk on the east side of Colorado.
- The bike lane is positioned between the through lane and right turn lane to eliminate right turn hook conflicts between bicycles and vehicles.

Concept designs were developed to display the recommended improvements at trail crossing locations along Colorado Boulevard. The goal of the trail crossing designs was to provide median refuge areas where pedestrians and bicyclists can cross Colorado Boulevard one direction of travel at a time. The following figures present each crossing, from south to north along the corridor:

The current informal crossing of Colorado Boulevard at the Links Parkway intersection (***Figure 35***) will be formally established with a crosswalk on the south leg of the intersection. A median refuge island will be constructed between the northbound and southbound vehicle lanes.

The pedestrian ramp on the west side of Colorado Boulevard will be relocated to align with the new crosswalk. Pedestrian railing will be extended along the west side of Colorado Boulevard from the Big Dry Creek Trail to the new pedestrian ramp to direct users to the crossing.

Figure 36: Little Dry Creek Trail Crossing Plan Sheet



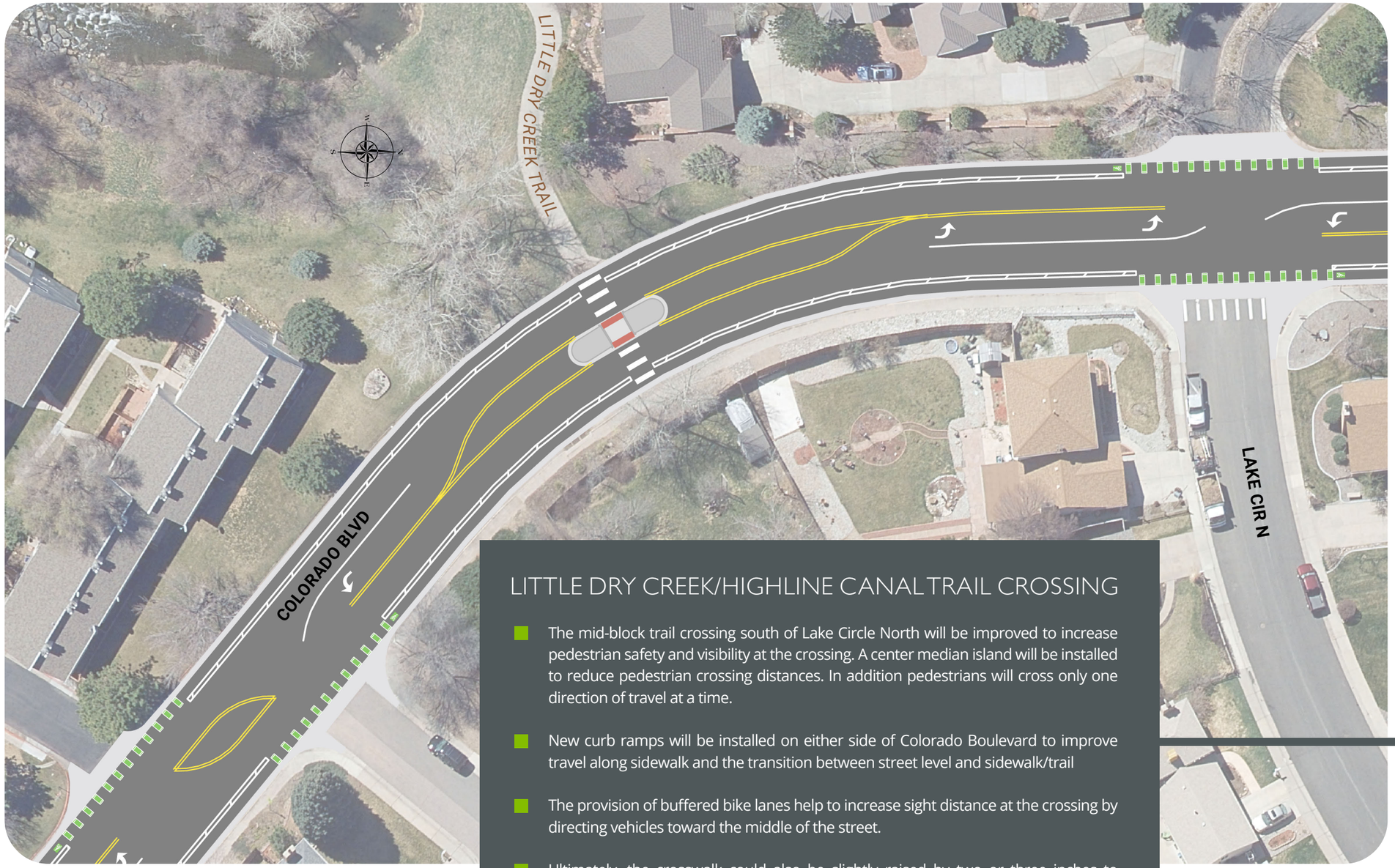
The existing unpaved connection from Colorado Boulevard to the Little Dry Creek Trail (***Figure 36***) will be relocated and paved to align with the north leg of the Maplewood Way intersection.

A pedestrian ramp will be provided on the east side of Colorado Boulevard; however, a marked crossing of Colorado will not initially be provided. A future marked crossing and median refuge can be accommodated if warranted in the future.

LITTLE DRY CREEK TRAIL

- The mid-block crossing south of E. Maplewood Way will be improved to increase pedestrian visibility and create a direct connection to the existing sidewalk along north side of E. Maplewood Way by realigning a short portion of trail.
- The provision of buffered bike lanes help to increase sight distance at the crossing by directing vehicles toward the middle of the street.
- The realigned trail connection will also install a curb ramp to provide an accessible access point to the trail system from the townhomes.

Figure 37: Little Dry Creek/Highline Canal Trail Crossing Plan Sheet



LITTLE DRY CREEK/HIGHLINE CANAL TRAIL CROSSING

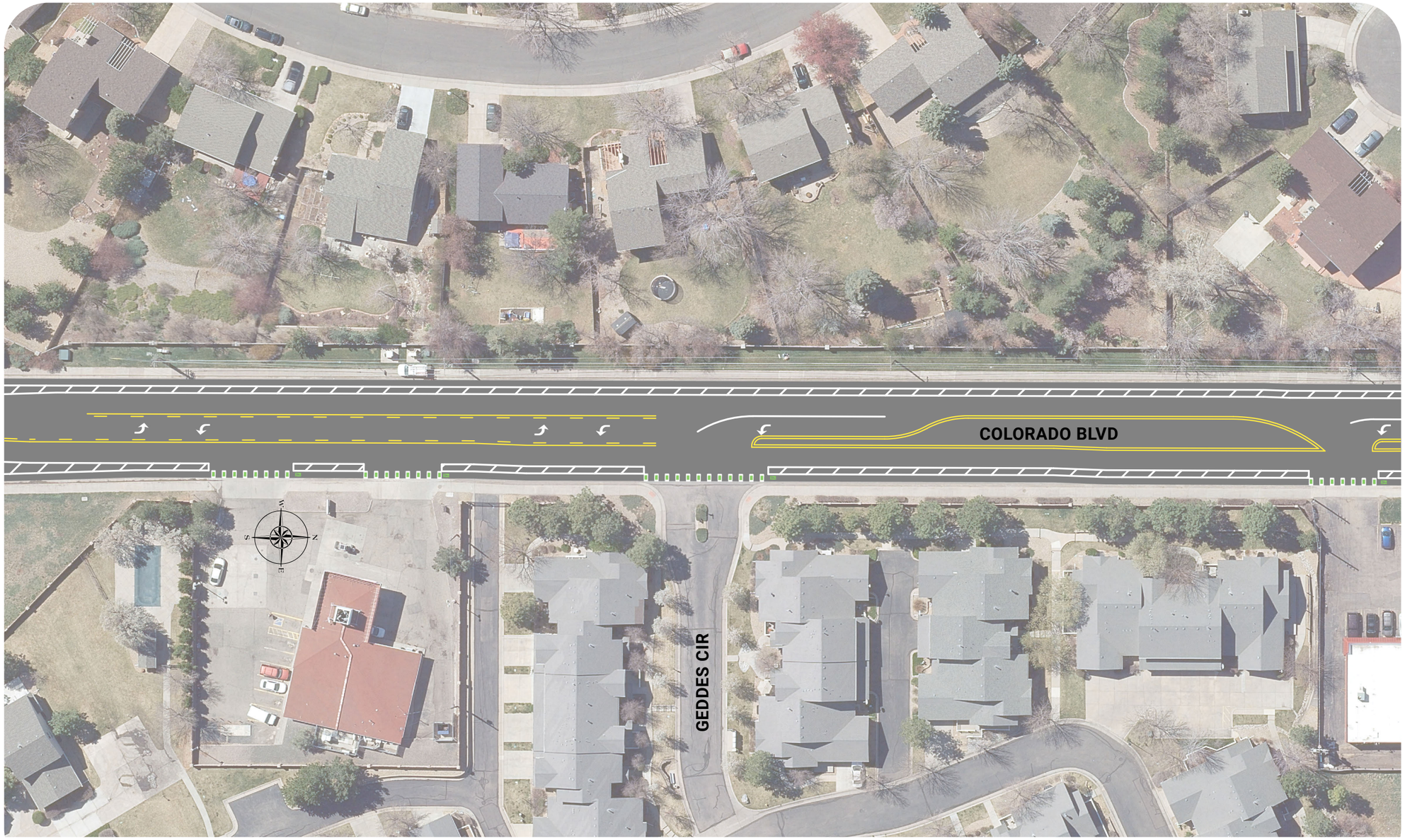
- The mid-block trail crossing south of Lake Circle North will be improved to increase pedestrian safety and visibility at the crossing. A center median island will be installed to reduce pedestrian crossing distances. In addition pedestrians will cross only one direction of travel at a time.
- New curb ramps will be installed on either side of Colorado Boulevard to improve travel along sidewalk and the transition between street level and sidewalk/trail
- The provision of buffered bike lanes help to increase sight distance at the crossing by directing vehicles toward the middle of the street.
- Ultimately, the crosswalk could also be slightly raised by two or three inches to additionally help to reduce vehicle speeds at the crossing, further increasing pedestrian safety.

A formal mid-block crossing of the Little Dry Creek/Highline Canal Trail (***Figure 37***) will be installed south of Lake Circle North.

A median refuge island will be installed between the vehicular lanes to enable crossings a single lane and direction of travel at a time and improve visibility between motorists and pedestrians

5.1.3 UNSIGNALIZED INTERSECTION CONCEPT PLANS

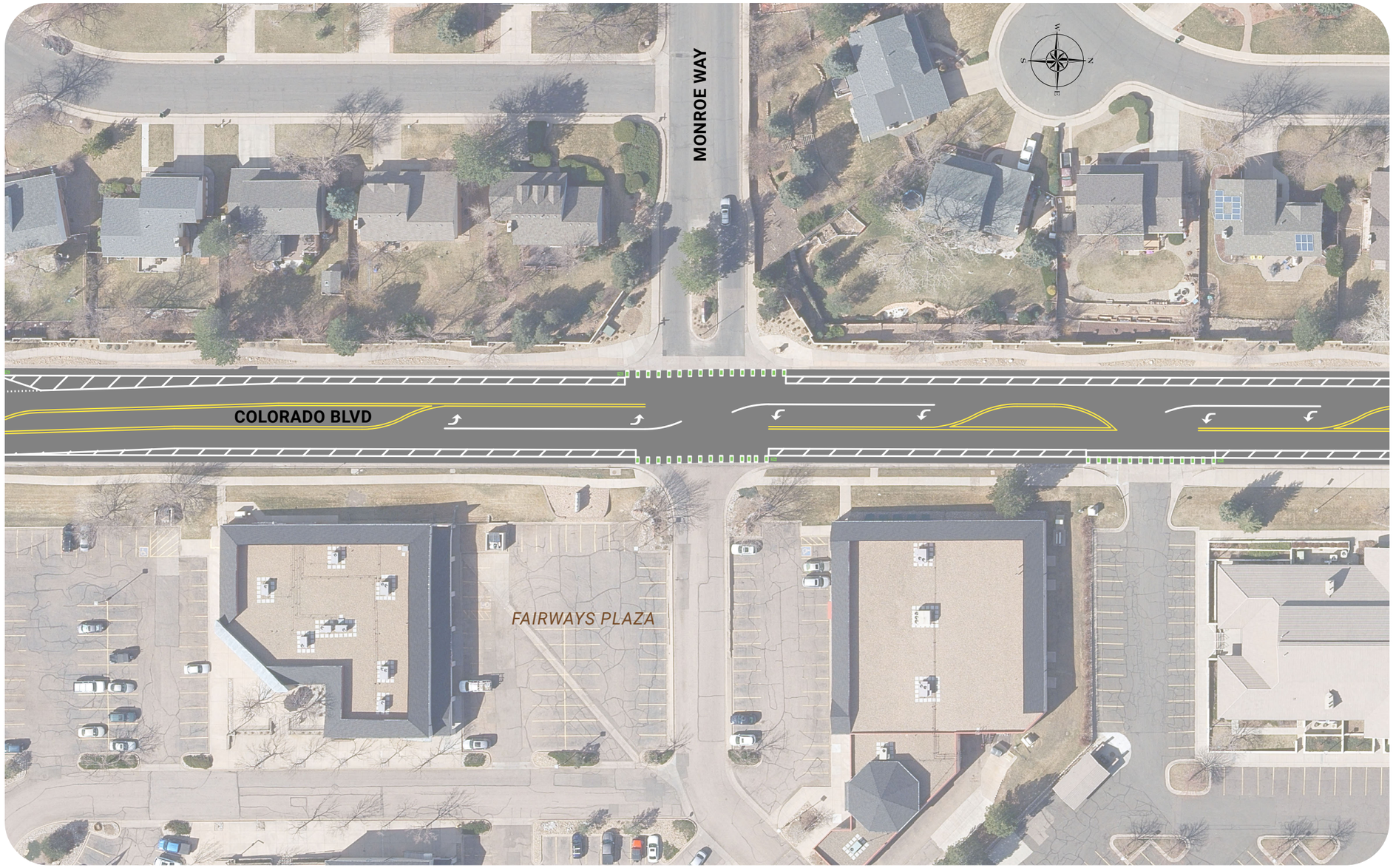
Figure 38: Typical 3-leg intersection (Geddes Circle)



Most of the intersections along Colorado Boulevard are unsignalized. Typical intersections along the corridor have three or four legs at the intersection. Colorado Boulevard is uncontrolled, while the intersecting cross streets are stop controlled. A typical intersection template will be used to add the Alternative 2 improvements to each intersection. The following figures depict typical unsignalized intersection applications at representative locations.

A typical three-leg intersection along Colorado Boulevard (***Figure 38***) will provide a single vehicular lane in each direction on Colorado. A buffered bike lane will also be provided in each direction. A center left-turn lane will be provided in the appropriate direction of travel. A painted median with a potential median pedestrian refuge would be installed on the remaining leg. The cross street will remain stop controlled. Depending on volumes and available roadway width, either one or two approach lanes will be provided to access Colorado Boulevard.

Figure 39: Typical 4-leg intersection (Monroe Way)



A typical four-leg intersection along Colorado Boulevard at Monroe Way (***Figure 38***) will provide a single vehicular lane in each direction on Colorado. A buffered bike lane will also be provided in each direction.

A center left-turn lane will be provided in direction of travel. Median pedestrian refuges would be able to be installed at this typical intersection.

The cross street will remain stop controlled. Depending on volumes and available roadway width, either one or two approach lanes will be provided to access Colorado Boulevard.

5.1.4 SIDEWALK GAP CONNECTIONS

There are several locations along the Colorado Boulevard corridor with gaps in existing sidewalk. One of the multimodal priorities for the corridor will be to fill the gaps in existing sidewalk connectivity. The following list presents the location and length of current gaps in sidewalk connectivity. These gaps will be included in the prioritized list of improvements to provide a fully connected pedestrian network along Colorado Boulevard.

- Mineral Avenue to Dry Creek Road, east side, 3,000 feet in length (would be installed with associated roadway widening to accommodate the recommended plan)
- Albion Way to Orchard Road, west side, 2,700 feet in length. Sidewalk infill in this area would connect to the Little Dry Creek Trail and support multimodal activity from the Rembrandt Place Townhomes (evaluate as a stand along project due to highly constrained area).

5.1.5 FUTURE CONSIDERATIONS FOR IMPLEMENTATION

Multiple conditions within the corridor may require future consideration in order to implement the recommended plan. These considerations include physical attributes and constraints within the corridor as well as corresponding processes and standards.

Environmental

The Colorado Boulevard Corridor Study is intended to provide a framework for the implementation of the recommended alternative as funding becomes available. As projects are identified, the level and amount of environmental documentation will be determined early during the scoping or design stage. Local, state and federal requirements may be applicable to projects to address water quality, stormwater, utilities, tree removal/replacement and right-of-way. Any projects funded by federal-aid dollars would be subject to National Environmental Policy Act (NEPA) documentation and potentially CDOT Local Agency coordination prior to construction. It is important to identify environmental requirements early to adequately assess project timelines and incorporate ample time for CDOT and federal agency review and approval if applicable.

Drainage

The Colorado Boulevard corridor crosses and runs adjacent to several water bodies and drainages. The corridor crosses Big Dry Creek between Mineral Avenue and Links Parkway. At the Dry Creek Road intersection, an existing drainage on the east side of Colorado Boulevard will require additional drainage structures and modification in order to support the widening of the adjacent roadway. The corridor also crosses Little Dry Creek between Clermont Court and Maplewood Way. In addition, as curb lines as adjusted within the corridor, additional modifications to existing inlets and drainage infrastructure may also be required.

Structures (Big Dry Creek bridge and walls in various locations)

The improvement of the corridor will require the consideration of existing as well as new structures to support the recommended plan. The bridge crossing Big Dry Creek is too narrow to support the full cross section of the recommended plan. Until the bridge can be replaced, the cross section will be modified to fit across the existing span. Retaining walls will be necessary on the east side of Colorado Boulevard north of Links Parkway in order to establish the full cross section of the recommended plan. Due to the presence of permanent water quality features, golf course amenities and a private swimming pool directly adjacent to the roadway limiting the opportunity for large excavations, the wall type is expected to be variable along this stretch with a costly, drilled shaft wall required adjacent to the swimming pool area. The improvements to the Dry Creek Road intersection will require the installation of additional drainage structures to convey the existing drainage under the proposed roadway improvements. Another existing structure exists over the Little Dry Creek crossing. It currently provides adequate width to support the proposed cross section.

Utilities

Utilities are located on both sides of the corridor, under and adjacent to the attached sidewalks. Overhead power lines are located on both sides through much of the length of the corridor. While existing utilities can generally be maintained in place with the implementation of the recommended alternative, future improvements may require the relocation of utilities to accommodate additional changes to the corridor. It is recommended that a subsurface utility investigation be completed as a part of the widening along the east side of Colorado south of Dry Creek Road to more fully understand impacts to utilities.

ADA

Implementing the recommended plan provides the opportunity for the corridor to be improved to meet current ADA standards. This includes reconstructing pedestrian ramps, modifying driveway curb cuts and removing obstructions from existing sidewalks. These aspects can be addressed as part of phased improvements or a corridor-wide ADA improvement program can be implemented separately. Ultimately if the corridor is modified to narrow the roadway width, ADA improvements should be implemented with those corridor-wide improvements to reduce near term work that may require removal to construct ultimate conditions.

5.2 PRIORITIZED LIST OF IMPROVEMENTS/PROJECTS

The implementation of Alternative 2 along the length of the corridor provides the opportunity to phase improvements based on available budget and ease of installation. Since Alternative 2 maintains the existing five lane width of roadway and uses pavement markings and signs to designate the bicycle lanes, these elements of the selected alternative are relatively inexpensive and quick to install. Other elements which require roadway widening, physical construction of sidewalks or roadway pavement can be prioritized based on available funding to ensure continuous multimodal facilities are available after each phase of construction.

5.2.1 PRIORITIZED LIST OF CORRIDOR IMPROVEMENTS

The recommended plan includes multiple elements of improvements of varying sizes and complexity that require implementation. The elements include segments of roadway widening, signing and pavement markings, sidewalk construction and crossing improvements. These elements do not require simultaneous implementation but rather can be phased with the improvements of highest importance and benefit being constructed first. Each following phase of improvements would continue to complete the vision of the corridor.

The following outlines a prioritized listing of improvements to complete the implementation of the recommended plan. Each set of improvements within each level of priority were considered to be of equal importance.

High Priority Improvements

The highest priority improvements include locations that require widening so the full recommended plan can be implemented from Orchard Road to County Line Road. Prioritizing these locations will allow for full corridor connectivity of all modes of travel in later phases of implementation.

- Intersection widening at Dry Creek Road: The west side of the north leg of the intersection would be widened to better align the southbound lanes of Colorado Boulevard. This would modify the existing curb, gutter and sidewalk.

- Roadway widening, Mineral Avenue to Links Parkway: The corridor will be widened to provide the required width for vehicle and bicycle lanes as well as sidewalk on the east side of Colorado. The roadway widening will be modified in the vicinity of the Big Dry Creek bright to match the existing width of the bridge. Bridge replacement is not a proposed element of the recommended plan.

- Roadway widening, Links Parkway to Dry Creek Road: The corridor will be widened to provide the required width for vehicle and bicycle lanes as well as sidewalk on the east side of Colorado. Retaining walls will be required for approximately 300 feet north of Links Parkway to address existing grade differences.

Next Priority Improvements

The next level of improvements includes the installation of the continuous bicycle and pedestrian facilities along the length of the corridor. This includes the signing and marking of bike lanes as well as the completion of remaining sidewalk gaps. Improved crossings of Colorado Boulevard would also be included in this level of improvements.

- Corridor restriping/Bike Lane installation: The entire length of Colorado Boulevard would be restriped to implement the recommended plan, includes restriping signalized intersections. Signing along Colorado Boulevard would be installed to indicate the presence of bike lanes and the updated number of vehicular lanes.

- Crossing improvements: Improved crossings of Colorado Boulevard at Links Parkway and Little Dry Creek would be installed, including median refuges. In addition, Little Dry Creek Trail would be realigned at Maplewood Way in order to provide a crossing aligned across the north leg of that intersection.

- Sidewalk installation, Albion Way to Orchard Road: A five-foot sidewalk would be installed on the west side of Colorado Boulevard between Albion Way and Orchard Road. This element will complete the sidewalk network between County Line Road and Orchard Road

Low Priority Improvements

The lowest priority improvements include elements that would potentially require additional modification if either Alternative 3 or Alternative 4 are implemented in the future. Since those alternatives require the relocation of curb lines along the length of Colorado Boulevard, these improvements may be considered best addressed in conjunction with that construction. However, if Alternative 2 is determined to be the ultimate level of improvement for the corridor, these elements would constitute the final improvements to complete corridor implementation.

- Utility Relocation: Utility relocation constitutes a high cost improvement that is best implemented in conjunction with other major construction improvements. Since most Alternative 2 improvements require only signing and pavement marking changes, the relocation of existing utilities is not required except where roadway widening is required.

- Sidewalk obstructions: Existing utility pole locations obstruct portions of sidewalk. These improvements would be coordinated with the relocation of existing utilities. These improvements would be more appropriate to implement if larger improvements for Alternative 3 or 4 are implemented in the future.

- Corridor-wide ADA improvements: Many of the pedestrian ramps along the corridor do not meet existing ADA standards. However, since future implementation of Alternative 3 or 4 require the relocation of curb lines, it would be best to hold these improvements until the decision to implement those modifications is made. This will allow the ramps to be reconstructed at the same time curb lines re modified. If Alternative 2 is determined to be the ultimate level of improvement for the corridor, a corridor-wide ADA improvement program should be developed and implemented in order to complete all ADA-related improvements for the full corridor.

5.2.2 CONCEPTUAL LEVEL COST ESTIMATES

Based on the prioritized list of improvements presented above, a set of preliminary cost estimates was developed to estimate the cost of implementation of the recommended plan. The estimates include the cost of both design and construction of the proposed improvements as stand along projects. Cost estimates for specific improvements would be refined during the design process.

High Priority Improvements

- Intersection widening at Dry Creek Road: $830,000. These improvements include the slight widening of the west side of Colorado Boulevard. The cost estimate includes the construction of curb, gutter and sidewalk.

- Roadway widening, Mineral Avenue to Links Parkway: $3,920,000. These improvements include the widening of Colorado Boulevard to the east. Additional roadway will be constructed as well as new sidewalk. Utility relocations will also be included and necessary with these improvements.

- Roadway widening, Links Parkway to Dry Creek Road: $4,600,000. These improvements include the widening of Colorado Boulevard to the east. Additional roadway will be constructed as well as new sidewalk. Retaining walls will be required for approximately 300 feet north of Links Parkway to stabilize existing rock slopes. In addition, large drainage improvements would be installed at the Dry Creek Road intersection to maintain existing drainage patterns.

Next Priority Improvements

- Sidewalk installation, Albion Way to Orchard Road: $620,000. These improvements include the installation of a five-foot sidewalk on the west side of Colorado Boulevard from Albion Way to Orchard Road. These improvements will include the installation of ADA ramps at each intersection in this segment.

- Corridor restriping/Bike Lane installation: $1,630,000. These improvements include the restriping and signing of the entire length of the Colorado Boulevard corridor. Pavement markings will be used to designate both vehicle and bicycle lanes as well as the striped buffer separating vehicles and bikes. Additional signing will also be added to indicate the bicycle facilities.

- Crossing improvements: $480,000. These improvements include the installation and improvement of three crossings of Colorado Boulevard. These locations include Links Parkway, Little Dry Creek Trail at Maplewood Way and Little Dry Creek Trail south of Lake Circle South.

Low Priority Improvements

Since the low priority improvements may be included in future long-term improvements and also constitute very large improvement programs for the corridor, costs estimates were not developed for these improvements. These improvements could be included as part of the long-term implementation of Alternative 3 or 4, which would result in a more cost-effective approach to completing the listed improvements. If utility relocation and ADA improvements are addressed separately, the anticipated costs would be anticipated to be several million dollars.

What's Next

Projects identified in the Colorado Blvd Corridor Study encourage the expansion of multimodal options and improve the transportation system while reflecting the community character through enhanced design. As the City moves forward with implementation, look for updates on the website and opportunities to stay involved.

- City to develop consistent implementation approach for corridor projects
- Seek funding for high priority projects
- Engage public during design phase to obtain reasonable public acceptance
- Notify public of upcoming construction activities
- Provide construction updates and photos for community newsletters and communication
- Enjoy your new multimodal corridor!

Appendix A
SUMMARY OF PUBLIC INVOLVEMENT EFFORTS

COLORADO BLVD
CORRIDOR STUDY

MEMORANDUM

Project: Colorado Boulevard Multimodal Corridor Summary

To: Rolando Melgoza, City of Centennial

From: Karen Fuhr, Muller Engineering Company

Date: February 27, 2020

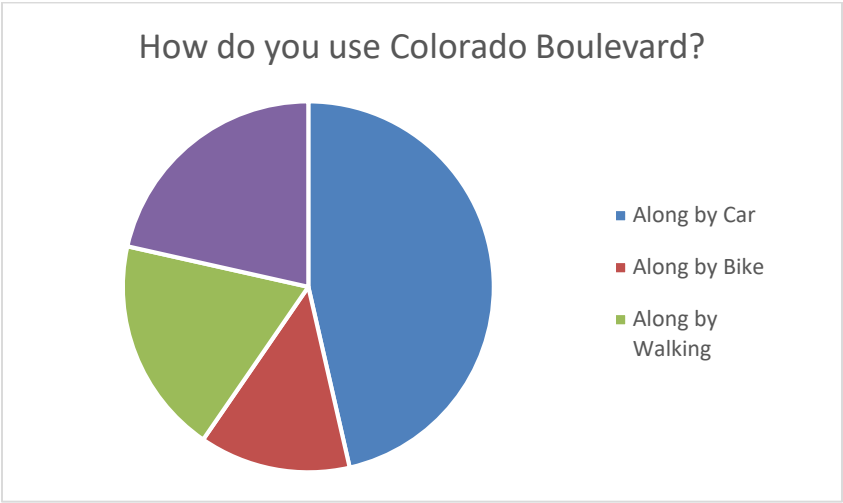
Subject: Summary of Public Input

The initial public involvement effort for this project consisted of attending several events to solicit public feedback along the Colorado Boulevard corridor. The project team attended the CenCom meeting on November 21, 2019 to notify HOA's along the corridor about the project starting and of upcoming pop-up events. The first pop-up event was held at Koebel library on December 11, 2019. The second pop-up event was at the Cherrywood King Soopers on January 21, 2020 and the last pop-up was held on February 1, 2020 with locations along both the Little Dry Creek trail and Big Dry Creek trail.

The goal of the pop-up events was to engage a wide cross section of corridor users and direct them to the project website and survey to gather their input about the corridor. In addition to providing online survey results, many people also provided comments during the events which were summarized by the project team and evaluated in conjunction with the results of the survey.

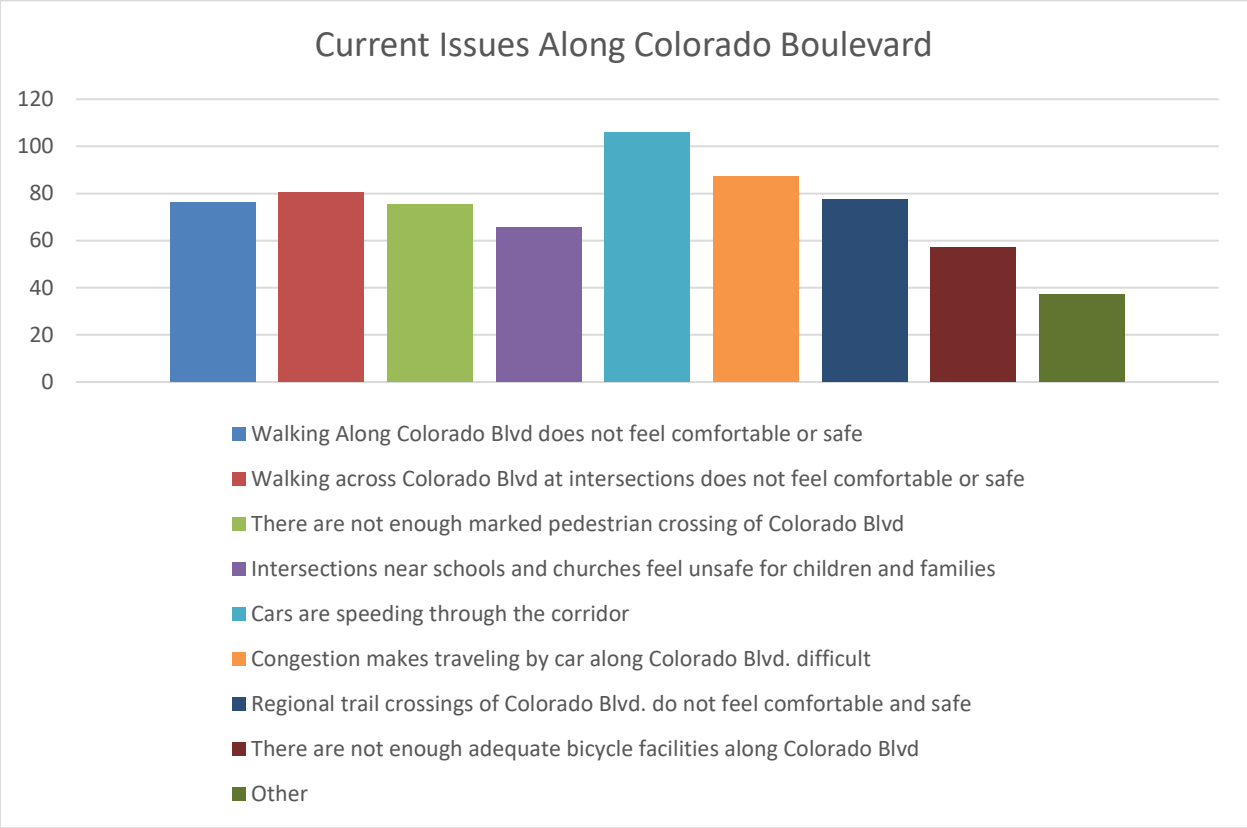
ONLINE SURVEY

The online survey had a great turnout with about 120 respondents. Over 50% of respondents indicated that they use the entire corridor. As shown below, most users indicate that they travel through the corridor by car, with the second highest use being to travel across the corridor to access other destinations.



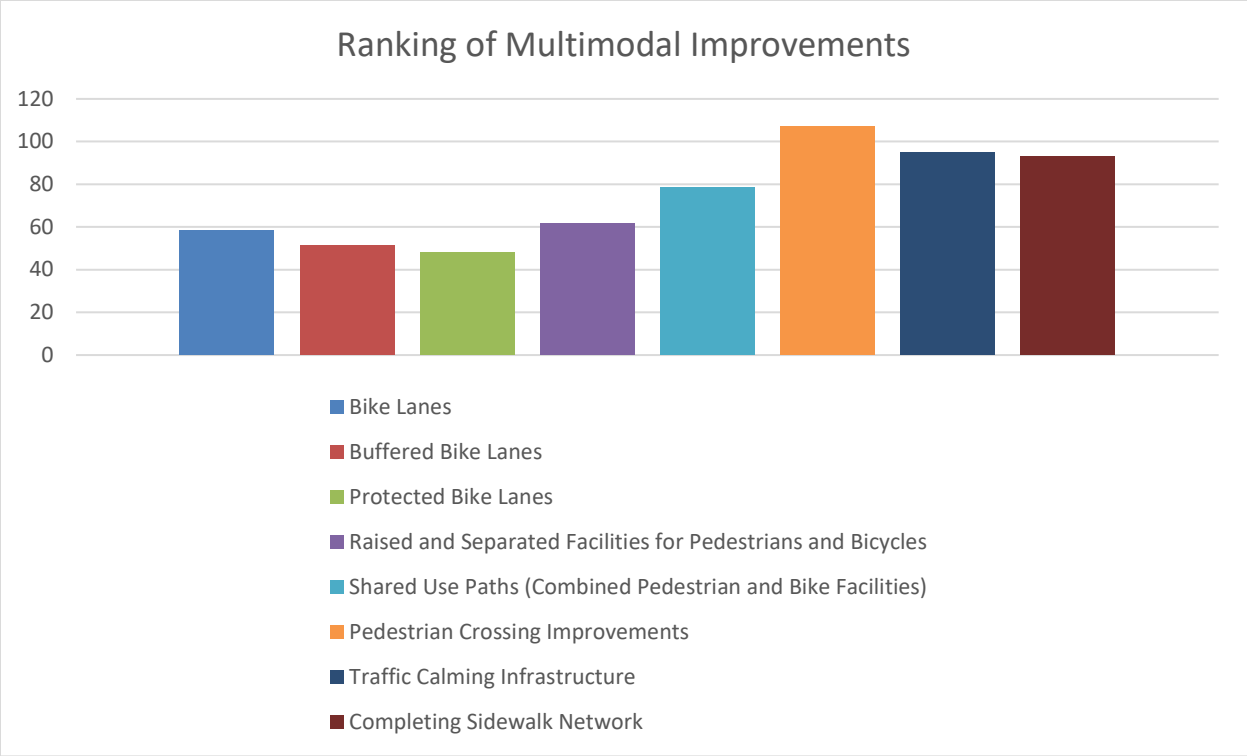
Most respondents to the survey indicated that they are traveling to other trails, parks, shopping, school, or home when traveling through the corridor.

The survey also asked for people to identify what they feel are current issues along the corridor. Results are shown below.



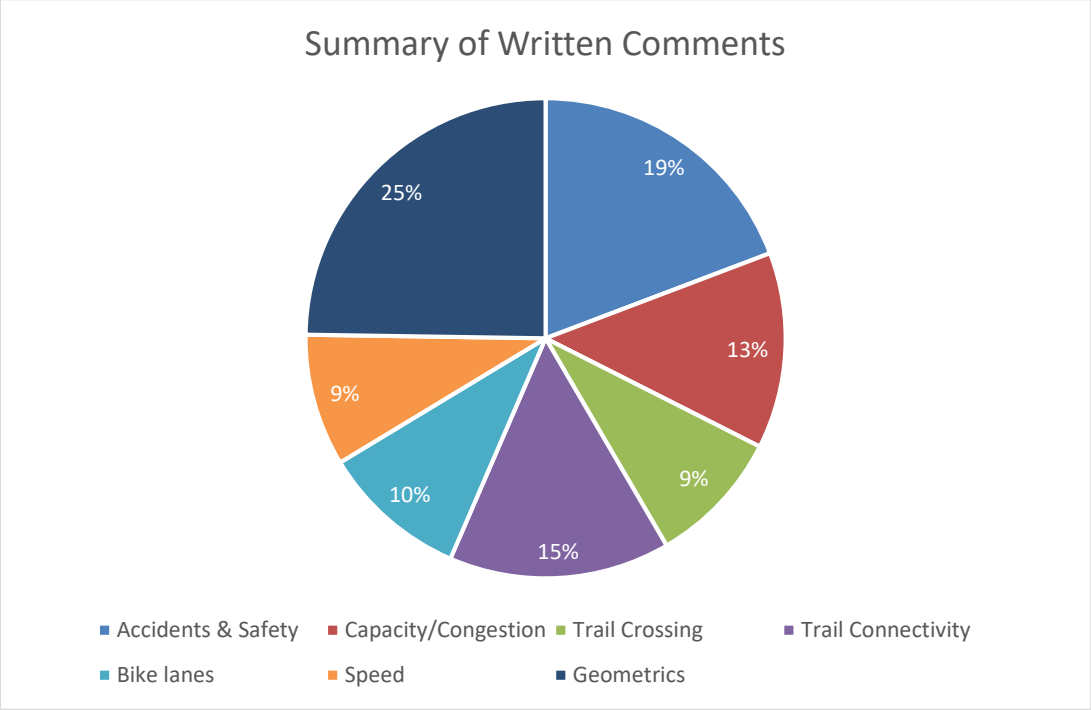
The top three ranked issues and the bottom three ranked issues are speeding, congestion, and unsafe intersection crossings. The lowest ranked issues included not having adequate bike facilities along the corridor and other issues not specifically identified.

Users were also asked to rank which types of multimodal improvements that they would most like to see along the corridor. Improvements to enhance the safety of pedestrians crossing Colorado Blvd scored the highest. Results are summarized in the table on the following page.



WRITTEN COMMENTS

Written comments provided online or during the pop-up events were collected and summarized. The top three areas of concern identified from written public comments were roadway geometrics, safety for corridor users, and poor trail connectivity. The graph below shows the full breakdown of results.



NEXT STEPS

In the upcoming months, the study team will evaluate existing conditions information to validate the identified concerns (accidents, geometry, etc.). Then we will be working to develop evaluation criteria and possible alternatives to address the identified concerns. Once these tasks are complete, we will be presenting our findings at a public meeting in the spring.

MEMORANDUM

Project: Colorado Boulevard Multimodal Corridor Public Meeting Summary

To: ROLANDO MELGOZA, PM, CITY OF CENTENNIAL

From: Muller Engineering Company

Date: January 6, 2021

Subject: Summary of Virtual Public Meeting

Following the initial public involvement effort for this project which consisted of holding three pop-up events, a Virtual Public Meeting was held. The pop-up events were held at Koebel Library, Cherrywood King Soopers, Little Dry Creek Trail and Big Dry Creek Trail. The goal of the pop-up events was to engage a wide cross section of corridor users and direct them to the project website and survey to gather their input about the corridor. In addition to providing online survey results, many people also provided comments during the events which were summarized by the project team and evaluated in conjunction with the results of the survey.

VIRTUAL PUBLIC MEETING

After public comment was collected and evaluated, the City of Centennial was able to formulate alternatives to present to the public in a Virtual Public Meeting on the city's website. The information from the pop-up meetings indicated that the top three issues according to the public along the corridor are speeding, congestion, and unsafe intersection crossings. The Virtual Public Meeting was active from November 2 until November 23, 2020. The meeting was composed of a short project description, a video on existing conditions, a video on alternatives development, project documents, and an opportunity to comment. The video on existing conditions summarized what was learned about the existing corridor through survey, pedestrian, bicycle, and traffic data. The second video outlines the four alternatives presented by the project team. More specific information on the existing conditions and alternatives development can be found in the Public Meeting Video Script in Appendix A.

ALTERNATIVE 1: 4-LANE SECTION WITH DIRECTIONAL MULTI-MODAL

This alternative reduces the curb-to-curb width of Colorado to four vehicle lanes, two in each direction without a left turn lane. This section provides separate raised bicycle and pedestrian areas. One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road.
This section eliminates the existing landscaping/utility areas.

Benefits provided by this cross section:

- Maintain existing vehicle capacity.
- Raised bikeway increases bike safety and increased bicycle visibility
- One-way bike travel improves intersection transitions
- Pedestrians separated from vehicle travel lanes
- Narrow buffers separate bikes and pedestrians
- Sidewalk width increased to 8 feet

Shortcomings of this cross section:

- Speed reduction unlikely
- No left turn lanes provided, increased slowing and stopped vehicles throughout the corridor
- No landscaping areas
- Requires full reconstruction of corridor

An assessment of the three metrics shows that this alternative would likely experience some increased congestion since left turns would be completed from shared through lanes. This would have a positive impact on speed, however overall vehicular safety may be negatively impacted. Multimodal connections are slightly improved by providing bicycle-specific facilities and reducing the crossing width for pedestrians.

ALTERNATIVE 2: 2-LANE SECTION WITH BUFFERED DIRECTIONAL MULTI-MODAL

This alternative is based on the City of Centennial standard cross section for a Major Collector Street. The typical width of this cross section is seventy-eight feet, two feet narrower than the existing Colorado corridor. The section provides three vehicle lanes, one lane in each direction as well as a dedicated center left-turn lane. Standard bike lanes are provided. Behind the curb, the pedestrian areas are separated from the roadway by the landscaping area/utility area.

Benefits provided by this cross section:

- Decreased travel speeds (narrower roadway width and fewer lanes help to reduce average travel speeds)
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Added bike lanes provide bike-specific areas within the roadway. Keeps bikes separate from pedestrians and vehicles.
- Provides separation between pedestrians and vehicular lanes. Could convert from buffered to protected in the future
- Increases area available for landscaping

Shortcomings of this cross section:

- No vertical separation between bicycles and vehicles

An assessment of the three metrics shows that this alternative would likely experience some increased congestion with the reduction to single through lanes at some intersections in order to accommodate on-street bicycles. However, delays would still be anticipated to be within acceptable limits based on City operational standards. The alternative would be expected to have a positive impact on speeds, slowing down vehicles in the corridor by providing a single through lane. Multimodal connections are also slightly improved by providing bicycle-specific facilities and reducing the crossing width for pedestrians.

ALTERNATIVE 3: 2-LANE SECTION WITH RAISED MULTI-MODAL

This alternative reduces the curb-to-curb width of Colorado to three vehicle lanes, one lane in each direction and a center left turn lane. This section provides separate raised bicycle and pedestrian areas. One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road. The section reduces the landscape area to four feet wide on each side.

Benefits provided by this cross section:

- Decreased travel speeds (narrower roadway width and fewer lanes help to reduce average travel speeds)
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Raised bikeway increases bike safety and increased bicycle visibility
- One-way bike travel improves intersection transitions
- Pedestrians separated from vehicle travel lanes
    - Bike lane buffers separate bikes and pedestrians
    - Sidewalk widths increased to 8 feet

Shortcomings of this cross section:

- Reduced room for landscaping
- Gutter width included in travel lane width
- Requires full reconstruction of the corridor

An assessment of the three metrics shows that this alternative would likely experience some increased congestion with the reduction to single through lanes at major intersections in order to accommodate space for bicycles. However, delays would still be anticipated to be within acceptable limits based on City operational standards. The alternative would be expected to have a positive impact on speeds, slowing down vehicles in the corridor by physically narrowing the roadway. Multimodal connections are also improved by providing bicycle-specific facilities which are vertically separated from vehicles and reducing the crossing width for pedestrians.

ALTERNATIVE 4

This alternative reduces the curb-to-curb width of Colorado to a three-lane section, one lane in each direction and a center left turn lane. This section provides separate shared bicycle/pedestrian multi use paths separated from the street by landscaped amenity areas.

Benefits provided by this cross section:

- Decreased travel speeds (narrower roadway width and fewer lanes help to reduce average travel speeds)
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Added multi use paths increase the area for both pedestrian and bicycles
- Multi use path width provides adequate separation between pedestrians and bicycles
- Landscaped amenity zone separates vehicles from pedestrians and bicycles

Shortcomings of this cross section:

- No separate facilities for pedestrians and bicycles
- Intersection transitions for shared path more difficult
- Requires full reconstruction of corridor

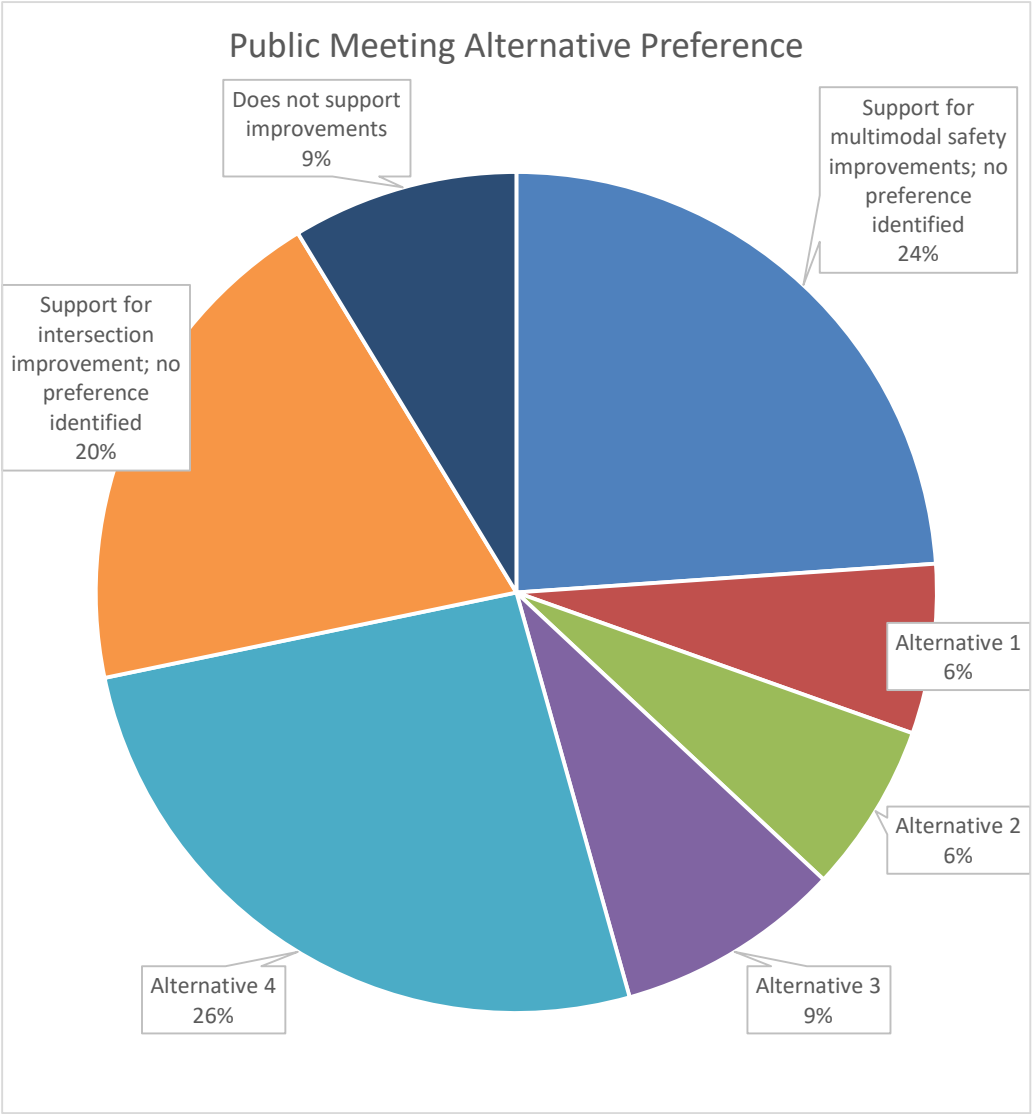
This alternative is anticipated to have a positive impact on all three metrics. The off-street nature of bicycle and pedestrian facilities will provide the opportunity to better address any congestion issues at major intersections, the alternative would be expected to have a positive impact on speeds, slowing down

a majority of vehicles in the corridor by physically narrowing the street. Multimodal connections are also slightly improved by providing bicycle-specific facilities and reducing the crossing width for pedestrians.

FINDINGS

After reviewing the meeting materials, visitors had the opportunity to leave comments on the alternatives presented. In total, 106 comments were made, 51 of which were comments made by the public, 4 were responses to other comments by the public, and 51 were responses addressing questions posed and acknowledging feedback from the project team. Comments provided during the public meeting were summarized to ascertain general thoughts on the alternatives presented. Error! Reference source not found. shows the distribution of the preference of alternatives from comments. “Support for multimodal safety improvements; no preference identified” and “Support for intersection improvement; no preference identified” indicates commenters who provided feedback on the project, their experiences in the corridor, or specific suggestions for the corridor but did not specify a preference for any alternative. “Does not support public improvements” indicates the commenter believes that the corridor should remain in its current condition.

Figure 1: Alternative Preference from Public Meeting Comments



NEXT STEPS

In the upcoming months, the study team will utilize the comments provided through the public meeting to consider which alternatives to pursue further. The project team will continue to develop the alternatives based on the feedback received, evaluate their potential efficacy in the Colorado Blvd. corridor, and ultimately a recommendation will be submitted to the City of Centennial.

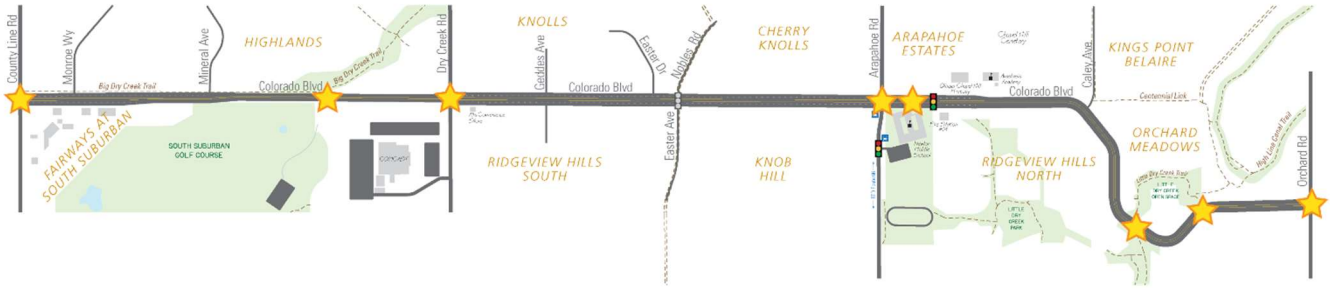
APPENDIX A

VIRTUAL PUBLIC MEETING OUTLINE

The following series of videos and images has been created to walk you through the Colorado Blvd project. The order of the information is meant to provide you a comprehensive look at data we have gathered along the corridor, alternatives that are being developed, and next steps for the project – just as if you were at an in-person public meeting.

1) WEBSITE ONLY: Reason for the Project
   a. This project was developed as an initiative by the City of Centennial to collect data to determine existing conditions within segment of Colorado Blvd, create a list of improvements with public input, analyze improvement costs, and develop an implementation plan.
   b. As a part of the City's Comprehensive Plan, Centennial NEXT, the intended outcome of this study will be to improve the transportation system within the corridor by providing expanded mobility options, greater connectivity and improved safety for all users. This study will identify and prioritize a list of potential projects along the corridor but is not intended to provide final design or construction documents. The overall goals of the project are:
      - Identify multimodal opportunities
      - Reflect community character through design
      - Embrace citizen participation
      - Provide connectivity for bikes and pedestrians
      - Improve safety for all users

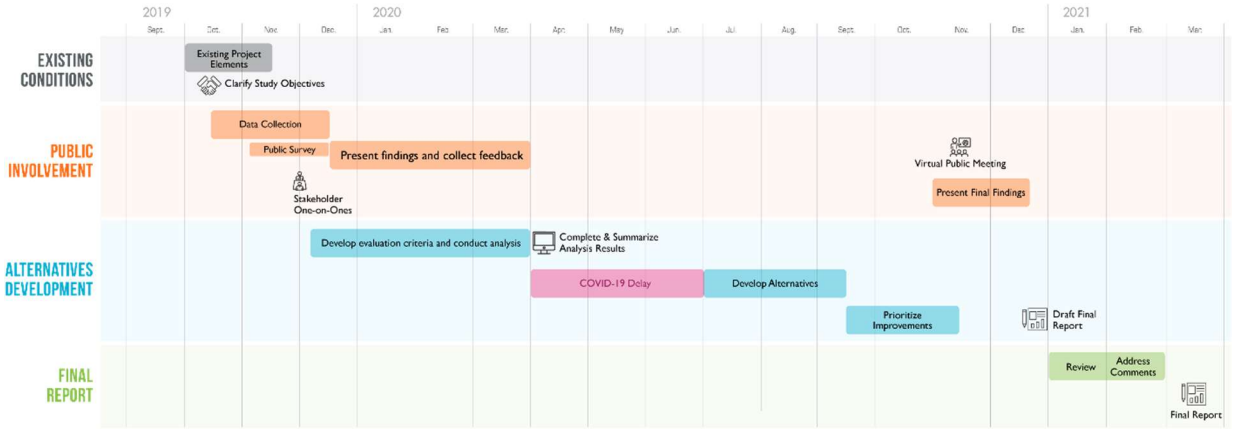
2) WEBSITE ONLY: Project Description
   a. This planning project focuses on Colorado Blvd from County Line Road to Orchard Road. Colorado Blvd is a major corridor connecting Centennial to Highlands Ranch. Four major east-west corridors intersect the project corridor which includes major transportation corridors and activity centers. Areas of focus and coordination include:
      - Intersections – Countyline, Dry Creek, Arapahoe, Orchard
      - Newton Middle School - high potential for multi modal improvement due to high student traffic and potential to connect with local residential areas through the trail system
      - Links Pkwy/Big Dry Creek Crossing
      - Little Dry Creek Trail Crossing
      - Highline Canal Crossings



3) WEBSITE ONLY: Schedule/Activities to Date
   a. The first step in the project was understanding the existing conditions along the corridor. This included engaging the public and stakeholders to understand the issues in the corridor and what

a successful project would look like to users of the corridor. Once we understood some of the issues, we were able to prepare alternatives and evaluation criteria to help us determine which alternatives might work best to improve multimodal connectivity and corridor safety.

b. Link to Schedule



JASON

4) VIDEO 1: Existing Conditions: What We have Heard and Data Collection

Public Engagement

a. Slide 1 - The City of Centennial kicked off this project in late 2019. The first task for the City was to engage with users of the corridor to better understand their experiences and concerns.
b. Slide 2 - The project team scheduled public input opportunities so they could better understand corridor issues. Three pop-up events were held to engage with a wide variety of corridor users at:
    a. Koebel Library December 2019
    b. Cherrywood King Sooper January 2020
    c. Little Dry Creek Trail and Big Dry Creek Trail February 2020

Slide 3 - Additionally, an on-line Survey was prepared and administered through the City's project website.

Slide 4 - Information collected from all these events provided the following results.

- Walking along/across Colorado Blvd. does not feel comfortable or safe
- Not enough marked pedestrian crossings
- Intersections near schools and churches feel unsafe for children and families
- Cars speeding through corridor
- Congestion makes traveling by car difficult
- Regional trail crossings do not feel comfortable and safe
- There are not enough adequate facilities along the corridor

Slide 5 – A question surveyed the top needed multimodal improvements, and pedestrian crossings won by a landslide. The highest ranked multimodal improvements options from the online survey included pedestrian crossing improvements, traffic calming infrastructure, and completing the sidewalk network.

Slide 6- The top three issues identified from the pop-up events and the online survey: **speeding, congestion, and unsafe intersection crossings**.

What do we know about the corridor?

c. Slide 7 – Let's talk about what we know about the corridor.

d. Slide 8 - Before alternatives for the corridor are developed, an understanding of the current operating conditions of the corridor is important. Roadway geometry, traffic volumes, travel speeds, crash patterns, pedestrian and bicycle travel patterns and barriers are all existing characteristics that were collected and reviewed to establish a baseline for the corridor. This is what we learned:

e. Slide 9 - This is a typical section of the existing roadway corridor between Dry Creek and Arapahoe Road. The corridor provides a mix of one to two through lanes in each direction. A center left-turn lane or painted center median is provided throughout the corridor. This results in pavement widths ranging from three to five lanes wide. At the signalized intersections along the corridor, typically a single left-turn lane is provided as well as one to two through lanes. At some locations, dedicated right-turn lanes are provided.

   Traffic volumes were found to decrease as you travel from the south to north through the corridor. Daily traffic volumes are approximately 12,000 vehicles per day at the County Line, Dry Creek, and Arapahoe intersections and decrease to approximately 6,000 vehicles per day north of Arapahoe. The corresponding peak hour volumes and turning movements at the major intersections reflect the daily volumes that were counted. Based on current forecasting tools for the area, the roadway is forecast to experience an increase in traffic of about 15 percent over the next 25 years.

   Primary signalized intersections along the corridor were found to operate at the City's acceptable level of service. On average vehicles traveling along Colorado Boulevard may experience up to 40 seconds of delay at the signalized intersections at County Line, Dry Creek and Arapahoe. A few select movements experience more delay during the highest volume peak hours, which is mostly a result of the signals being timed to prioritize east/west movements across Colorado Boulevard. In general, the volume of vehicles turning off of Colorado at the primary intersections exceeds the volume to vehicles traveling along Colorado Boulevard.

f. Slide 10 –Observations of the corridor concluded that speeding in the corridor is a widespread problem. The corridor speed limit south of Arapahoe Road is 40 miles per hour. North of Arapahoe Road, the speed limit reduces to 35 miles per hour. Speeds of 60 miles per hour were recorded in all sections of the corridor. Speed data was collected in six locations within the corridor, three in each direction. Each location was placed approximately half-way between the major signalized intersections. At five of the six locations, seventy-five percent of traffic was recorded traveling at speeds higher than the speed limit. At three of the six locations, the average travel speed was in excess of the speed limit. The one location that displayed slower speeds compared to the remainder of the corridor was northbound between Dry Creek and Arapahoe. However, speeding was also recorded at this location as well.

   Slide 11 – Crash data for the corridor was collected over a five-year period from 2014 through 2018. A total of 92 crashes were reported during that time distributed throughout the 3-mile length of the corridor as shown in the graphic. The number of crashes recorded do not exceed the number expected on a corridor with similar attributes. Of those, twenty-nine of the crashes were rear end crashes primarily at the signalized intersections. Another thirty-one crashes were broadside crashes between left-turning vehicles and oncoming vehicles. These crashes occurred primarily at unsignalized intersections. Upon future investigation of the broadside crashes, the number of travel lanes and vehicle speeds appeared to play a major role in these crashes. The broadside crash pattern can be reduced by reducing the number of travel lanes on the corridor which will also result in the reduction of travel speeds.

g. Slide 12 – Pedestrian and bicycle activity was also monitored throughout the corridor. The primary location for pedestrian and bicycle activity is at the Arapahoe intersection. Newton Middle School is a primary generator of pedestrian and bicycle trips on a daily basis. Other locations with higher pedestrian and bicycle activity were all mid-block trail crossing locations. Crossings of the Little Dry Creek and Highline Canal trails between Clermont Court and Lake Circle North were observed to have frequent pedestrian and bicycle crossings of Colorado Boulevard. Frequent crossings at the Big Dry Creek trail near Links Parkway were also observed. Since these three crossing are all unsignalized, and in some cases unmarked, the demand to cross Colorado at these locations may be higher than recorded.

   Based on the understanding gained from assessing the existing conditions of vehicle, pedestrian and bicycle modes of travel in the corridor several potential alternatives were developed for the corridor. The primary focus of the alternatives development was speed reduction, pedestrian and bicycle accommodation, and adequate long-range vehicle capacity.

h. Slide 13 - The next step in the process is to further evaluate alternatives to determine which are best fit for the corridor. Alternatives are based on public input, technical criteria, and cost. Please watch Video 2 to learn more about alternatives developed for this Corridor.

5) VIDEO 2: Alternatives

a. Slide 2 - Based on our knowledge of the corridor and the information we collected from you, we started the process of developing alternatives. The alternatives are based on typical cross sections that could be established for the entire length of the corridor from County Line to Orchard. The typical cross sections would be modified and adjusted and major intersections to account for conditions specific to each intersection. Each alternative presented will be assessed on three metrics; the ability to ease congestion, reduction of vehicle speeds and improved multimodal connections.

b. Slide 3 – We started with the existing corridor width to implement improvements.
   The existing cross section between Dry Creek and Arapahoe was chosen to represent the typical section for the corridor. As you can see the corridor is defined with five wide travel lanes, which aids with the high travel speeds within the corridor. The pedestrian space is limited to five feet on either side of Colorado. There is no bicycle-specific space defined in the existing corridor. The proposed alternatives build upon this general cross section, taking into account all of the existing conditions data that was collected for each portion of the corridor.

   The existing corridor was designed to provide the least amount of congestion, so it rates well for that metric. However, the lack of congestion has a negative effect on travel speeds, as such the existing condition rates poorly for high travel speeds. It also rates poorly on multimodal connections because of long crossings across five lanes of traffic, narrow sidewalks and no provisions for bicycles.

   In order to address concerns expressed during the initial public outreach regarding the corridor, the following alternatives were created. I will walk you through each alternative and answer some of the questions we think you might have.

   We are going to look at a few cross sections that could be applied to the length of the corridor. Birds eye views of potential improvements at major intersections along the corridor are also available on the website.

   Slide 4 - **<u>Alternative 1:</u> 4-lane Section with Directional Multi-modal**

This alternative reduces the curb to curb width of Colorado to four vehicle lanes, two in each direction without a left turn lane.

This section provides separate raised bicycle and pedestrian areas. One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road.
This section eliminates the existing landscaping/utility areas.

Benefits provided by this cross section:

- Maintain existing vehicle capacity.
- Raised bikeway increases bike safety and increased bicycle visibility
- One-way bike travel improves intersection transitions
- Pedestrians separated from vehicle travel lanes
- Narrow buffers separate bikes and pedestrians
- Sidewalk width increased to 8 feet

Shortcomings of this cross section:

- Speed reduction unlikely
- No left turn lanes provided, increased slowing and stopped vehicles throughout the corridor
- No landscaping areas
- Requires full reconstruction of corridor

An assessment of the three metrics shows that this alternative would likely experience some increased congestion since left turns would be completed from shared through lanes. This would have a positive impact on speed, however overall vehicular safety may be negatively impacted. Multimodal connections are slightly improved by providing bicycle-specific facilities and reducing the crossing width for pedestrians.

Slide 5 - **Alternative 2: 2-lane Section with Buffered Directional Multi-modal**
This alternative is based on the City of Centennial standard cross section for a Major Collector Street. The typical width of this cross section is seventy-eight feet, two feet narrower than the existing Colorado corridor.
The section provides three vehicle lanes, one lane in each direction as well as a dedicated center left-turn lane. Standard bike lanes are provided. Behind the curb, the pedestrian areas are separated from the roadway by the landscaping area/utility area.

Benefits provided by this cross section:

- Decreased travel speeds (narrower roadway width and fewer lanes help to reduce average travel speeds)
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Added bike lanes provide bike-specific areas within the roadway. Keeps bikes separate from pedestrians and vehicles.
- Provides separation between pedestrians and vehicular lanes. Could convert from buffered to protected in the future
- Increases area available for landscaping

Shortcomings of this cross section:

- No vertical separation between bicycles and vehicles

An assessment of the three metrics shows that this alternative would likely experience some increased congestion with the reduction to single through lanes at some intersections in order to accommodate on-street bicycles. However, delays would still be anticipated to be within acceptable limits based on City operational standards. The alternative would be expected to have a positive impact on speeds, slowing down vehicles in the corridor by providing a single through lane. Multimodal connections are also slightly improved by providing bicycle-specific facilities and reducing the crossing width for pedestrians.

Slide 6 - **Alternative 3: 2-lane Section with Raised Multi-modal**

This alternative reduces the curb to curb width of Colorado to three vehicle lanes, one lane in each direction and a center left turn lane.

This section provides separate raised bicycle and pedestrian areas. One-way bike lanes and pedestrian areas are located behind the curb line on both sides of the road.

The section reduces the landscape area to four feet wide on each side.

Benefits provided by this cross section:

- Decreased travel speeds (narrower roadway width and fewer lanes help to reduce average travel speeds)
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Raised bikeway increases bike safety and increased bicycle visibility
- One-way bike travel improves intersection transitions
- Pedestrians separated from vehicle travel lanes

- Bike lane buffers separate bikes and pedestrians

-Sidewalk widths increased to 8 feet

Shortcomings of this cross section:

- Reduced room for landscaping
- Gutter width included in travel lane width
- Requires full reconstruction of the corridor

An assessment of the three metrics shows that this alternative would likely experience some increased congestion with the reduction to single through lanes at major intersections in order to accommodate space for bicycles. However, delays would still be anticipated to be within acceptable limits based on City operational standards. The alternative would be expected to have a positive impact on speeds, slowing down vehicles in the corridor by physically narrowing the roadway. Multimodal connections are also improved by providing bicycle-specific facilities which are vertically separated from vehicles and reducing the crossing width for pedestrians.

Slide 7 - **Alternative 4: 2-lane Section with Shared Use Path and Amenity Zone**

This alternative reduces the curb to curb width of Colorado to a three-lane section, one lane in each direction and a center left turn lane.

This section provides separate shared bicycle/pedestrian multi use paths separated from the street by landscaped amenity areas.

Benefits provided by this cross section:

- Decreased travel speeds (narrower roadway width and fewer lanes help to reduce average travel speeds)
- One through lane in each direction provides adequate capacity for near- and long-term traffic volumes.
- Added multi use paths increase the area for both pedestrian and bicycles
- Multi use path width provides adequate separation between pedestrians and bicycles
- Landscaped amenity zone separates vehicles from pedestrians and bicycles

Shortcomings of this cross section:

- No separate facilities for pedestrians and bicycles
- Intersection transitions for shared path more difficult
- Requires full reconstruction of corridor

This alternative is anticipated to have a positive impact on all three metrics. The off-street nature of bicycle and pedestrian facilities will provide the opportunity to better address any congestion issues at major intersections, The alternative would be expected to have a positive impact on speeds, slowing down a majority of vehicles in the corridor by physically narrowing the street. Multimodal connections are also slightly improved by providing bicycle-specific facilities and reducing the crossing width for pedestrians.

Slide 8 - Planview Sections:
The stars on the map represent locations where intersection-specific improvements are recommended. Please view the Project Documents section of the website to see the planview of the proposed improvement. The improvements shown are based on the implementation of Alternative 2 which was presented earlier.

6) WEBSITE ONLY: Next Steps
   a. Show what's next with the project and where we are headed. We will include information about how they can provide feedback, stay involved, and share with neighbors/others.
   b. Based on the information we've collected; we will refine our alternatives and submit a recommendation to the City this winter. There are additional opportunities for you to provide comments and stay involved with the project.

APPENDIX B

WEBSITE

Home / Residents / Have Your Say Centennial! / Colorado Boulevard Meeting

Colorado Boulevard Meeting

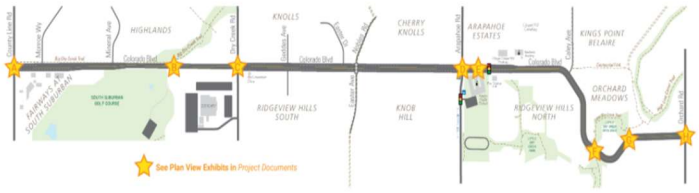
Welcome

Welcome to our "Virtual Community Meeting". The following series of videos and images has been created to walk you through the Colorado Blvd project. The order of the information is meant to provide you a comprehensive look at data we have gathered along the corridor, alternatives that are being developed, and next steps for the project – just as if you were at an in-person public meeting.

The intent of this Colorado Blvd. Study is to identify alternative transportation options to include in the City's Transportation Master Plan. Please note, this is the initial step of many and that no projects is currently planned for the Colorado Blvd. Corridor.

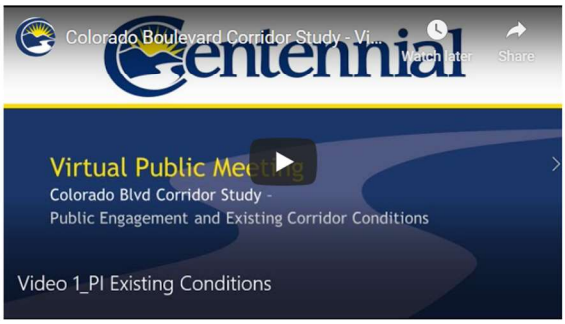
Project Description

This planning project focuses on Colorado Blvd from County Line Road to Orchard Road. Colorado Blvd is a major corridor connecting Centennial to Highlands Ranch. Four major east-west corridors intersect the project corridor which includes major transportation corridors and activity centers.



View the Community Meeting Information

Existing Conditions: What We have Heard and Data Collection



Development of Alternatives

Timeline

- December 2019 - February 2020: Initial Public Outreach
- March 2020: Criteria evaluation and alternatives development
- Community Meeting: Click here to share comments and questions
  All comments are due by November 23, 2020.
- Submit Draft Report
  Estimated to occur Winter 2020
- Submit Final Report
  Estimated to occur First Quarter 2021

Questions

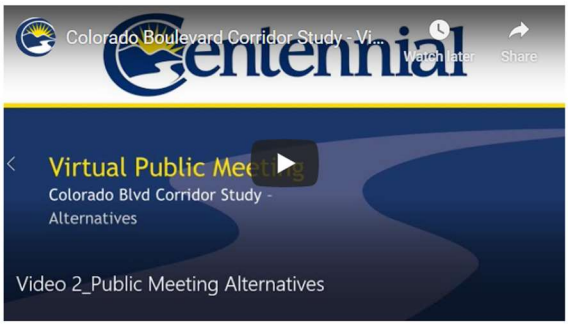
Questions

Email us:
rmelgoza@centennialco.gov
Call us: 303-325-8000
We will respond within 1-2 business days.

Related Information

Colorado Boulevard Multimodal Study

Development of Alternatives



View Project Documents

- Existing Conditions Typical Section (PDF, 103KB)
- Alternative 1 Typical Section (PDF, 126KB)
- Alternative 2 Typical Section (PDF, 129KB)
- Alternative 3 Typical Section (PDF, 136KB)
- Alternative 4 Typical Section (PDF, 130KB)
- Plan View Exhibit A: County Line Road (PDF, 2MB)
- Plan View Exhibit B: Links Parkway/Big Dry Creek (PDF, 2MB)
- Plan View Exhibit C: Dry Creek Road (PDF, 2MB)
- Plan View Exhibit D: Arapahoe Road (PDF, 2MB)
- Plan View Exhibit E: Euclid Avenue (PDF, 2MB)
- Plan View Exhibit F: Little Dry Creek (PDF, 2MB)
- Plan View Exhibit G: Little Dry Creek/Highline Canal (PDF, 2MB)
- Plan View Exhibit G: Little Dry Creek/Highline Canal (PDF, 2MB)
- Plan View Exhibit H: Orchard Road (PDF, 2MB)
- Existing Conditions Report (PDF, 2MB)
- Overall Corridor Map (PDF, 147KB)
- Traffic Safety Map (PDF, 175KB)

*All Plan View Exhibits are based on the implementation of Alternative 2 and are intended to provide an idea of how intersection improvements could look

Share Your Thoughts

Click on the green 'Discussions' bar below to share comments and questions.

Discussions ⊕

Reason for the Project ⊕

Schedule and Activities to Date ⊕

Next Steps ⊕

APPENDIX C

COMMUNICATION PACKET

Colorado Boulevard Multimodal Study:

Communications Packet

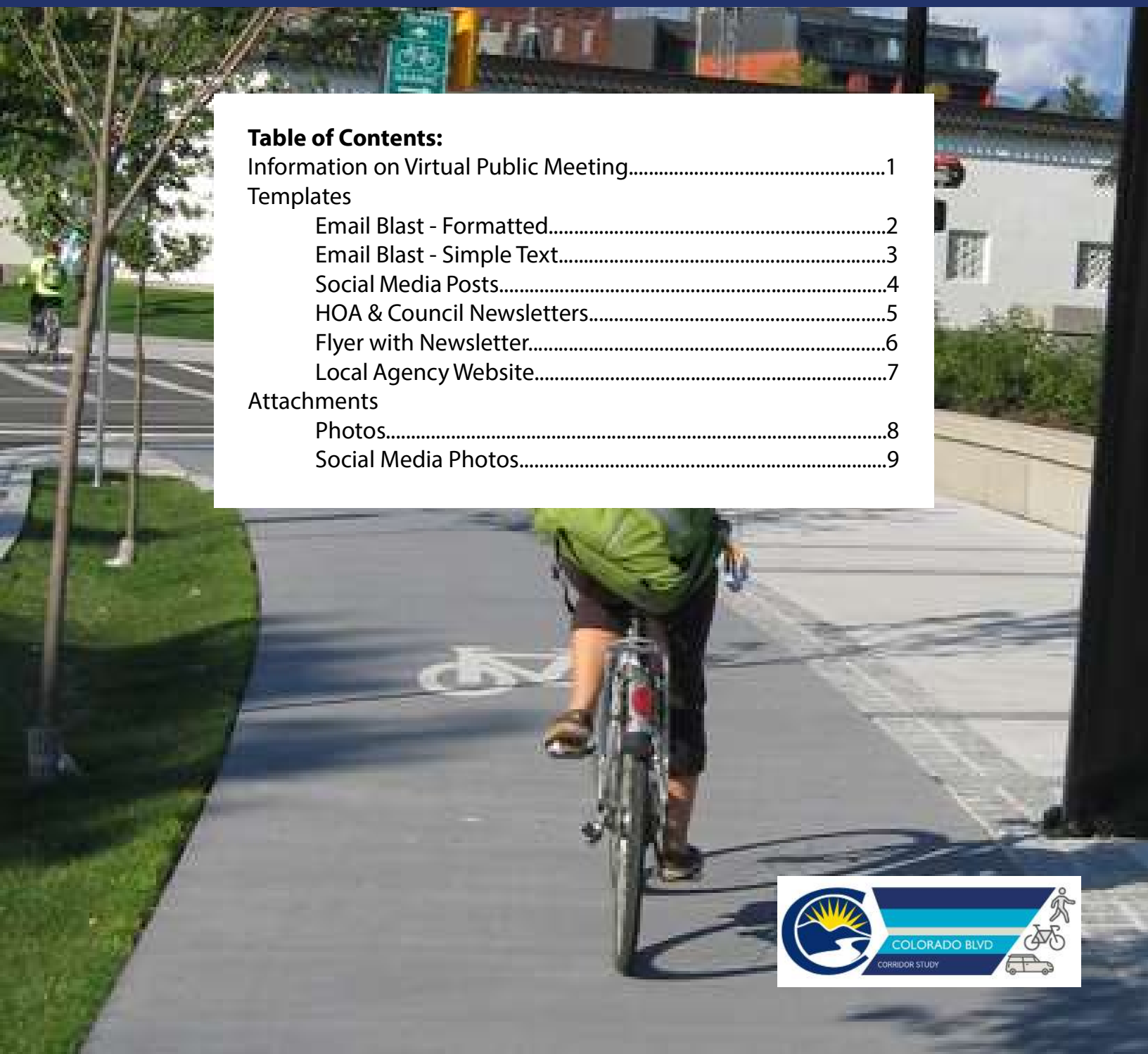


Table of Contents:

COLORADO BLVD
CORRIDOR STUDY

INFORMATION ON VIRTUAL PUBLIC MEETING

The City of Centennial along with the consultant team will be hosting a Virtual Public Meeting on the Colorado Boulevard Multimodal Project as a part of the City's Comprehensive Plan, Centennial NEXT. The meeting will be held through November 23rd, 2020 and will include sharing ideas to make Colorado Boulevard between County Line Road and Orchard Road safer for pedestrians and bicyclists.

Public engagement is a priority for the City and we sincerely hope you can join this Virtual Public Meeting to provide your input for this conversation about Colorado Boulevard. You may join the meeting by visiting centennialco.gov/coloradomeeting through November 23rd.

Participants can also access project information directly by visiting bit.ly/ColoradoMultimodal or contacting Rolando Melgoza at (303) 325-8000 or rmelgoza@centennialco.gov.

Thank you for your help in promoting this Virtual Public Meeting!

Template

EMAIL BLAST - FORMATTED

Join the City of Centennial at our

Virtual Public Meeting

Dear Community Members,

Do you travel along Colorado Boulevard? We need your help to improve the multimodal network in your community! Join our Virtual Public Meeting through November 23rd, 2020 to provide your feedback on the latest concept designs for Colorado Boulevard between Orchard Road and County Line Road.

We are excited to be working with the City of Centennial on the Colorado Boulevard Multimodal Study as part of the Centennial NEXT Comprehensive Plan. This project will define short-term goals and long-term vision, prioritizing transportation improvement projects along the corridor that meet the community's stated desires for improved multimodal facilities while meeting relevant technical criteria and City standards. At this meeting, we want to hear what is important to you for the future of Colorado Boulevard.

Meeting Details

Available through November 23rd

Provide your input by visiting
centennialco.gov/coloradomeeting

Do you have questions or comments? If so, please contact Rolando Melgoza at (303) 325-8000 or rmelgoza@centennialco.gov.

You can access all of the information in this email and more by visiting the project homepage at bit.ly/ColoradoMultimodal.

Thank you for your continued involvement!
The Colorado Boulevard Multimodal Project Team

EMAIL BLAST - PLAIN TEXT

Dear Community Members,

Do you travel along Colorado Boulevard? We need your help to improve the multimodal network in your community! Join our Virtual Public Meeting through November 23rd, 2020 to provide your feedback on the latest concept designs for Colorado Boulevard between Orchard Road and County Line Road.

We are excited to be working with the City of Centennial on the Colorado Boulevard Multimodal Study as part of the Centennial NEXT Comprehensive Plan. This project will define short-term goals and long-term vision, prioritizing transportation improvement projects along the corridor that meet the community's stated desires for improved multimodal facilities while meeting relevant technical criteria and City standards. At this meeting, we want to hear what is important to you for the future of Colorado Boulevard.

If you are interested in participating, join us at centennialco.gov/coloradomeeting through November 23rd, 2020.

Do you have questions or comments? If so, please contact Rolando Melgoza at (303) 325-8000 or rmelgoza@centennialco.gov.

You can access all of the information in this email and more by visiting the project homepage at bit.ly/ColoradoMultimodal.

Thank you for your continued involvement!
The Colorado Boulevard Multimodal Project Team

SOCIAL MEDIA POSTS (FACEBOOK, NEXTDOOR, INSTAGRAM, ETC)

WEEKS OUT

Do you travel along Colorado Boulevard on a regular basis? Do you have suggestions for improvements along the corridor? Join the conversation! Participate in an upcoming Virtual Public Meeting by visiting centennialco.gov/coloradomeeting through November 23rd to tell @Centennialgov what improvements you would like to see along Colorado Boulevard.

Have you heard about the planned multimodal improvements on Colorado Boulevard? @Centennialgov is coming up with concept designs along the corridor and want your input. Participate in the Virtual Public Meeting through November 23rd by visiting centennialco.gov/coloradomeeting to share your vision and ideas for the corridor. Visit bit.ly/ColoradoMultimodal for more information.

How do you use Colorado Boulevard? Are you a commuter, cyclist, pedestrian, or a student walking to/from school? Maybe a local business bringing in customers? Our partners at @Centennialgov want to hear about your experience on Colorado Boulevard and your vision for its future. Participate in our Virtual Public Meeting through November 23rd by visiting centennialco.gov/coloradomeeting for meeting details. Your feedback is important to us!

WEEK BEFORE CLOSING

Have you participated in the Colorado Boulevard Multimodal Study Virtual Public Meeting yet? Visit centennialco.gov/coloradomeeting to learn about the project and tell us what you want to see along the Colorado Boulevard corridor in the future. Open comments for this meeting will end on November 23rd.

LAST WEEK OF MEETING

This is the last week to provide feedback on the Colorado Boulevard Multimodal Study Virtual Public Meeting! If you're interested in providing input about the future of Colorado Boulevard, visit centennialco.gov/coloradomeeting to join the conversation!

HOA & COUNCIL NEWSLETTERS

Do you travel on Colorado Boulevard frequently? Do you ever think about ways the road could be improved?
You're invited to join our partners at the City of Centennial for a Virtual Public Meeting to discuss the latest concept designs and your vision for this corridor. The Virtual Public Meeting materials and recorded meeting will be available through November 23, 2020. You can join by visiting centennial-co.gov/coloradomeeting. You can learn more about the project and previous public outreach at bit.ly/ColoradoMultimodal. Your feedback is important to us!

COLORADO BLVD

CORRIDOR STUDY

JOIN US AT OUR

Virtual Public Meeting

Participation available through

November 23rd

Visit ***centennialco.gov/coloradomeeting***

for more information

COLORADO BOULEVARD

The City of Centennial is preparing a corridor Study for Colorado Boulevard from County Line Road to Orchard Road to improve the transportation system by providing expanded mobility options and greater connectivity.

LOCAL AGENCY WEBSITE

Colorado Boulevard
Multimodal Study
- Virtual Public Meeting

Come see the latest concept designs and provide your feedback!

Do you travel on Colorado Boulevard frequently? Do you ever think about ways the road could be improved?
You're invited to join our partners at the City of Centennial for a Virtual Public Meeting to discuss the latest concept designs and your vision for this corridor. The Virtual Public Meeting materials and participation will be available through November 23, 2020. You can join by visiting centennialco.gov/coloradomeeting. You can learn more about the project and previous public outreach at bit.ly/ColoradoMultimodal. Your feedback is important to us!

PHOTOS

SOCIAL MEDIA POSTS

OUTREACH SCHEDULE

	September			October										
Outreach Materials	**Week 1**					**Week 2**					**Week 3**			
	28	29	30	1	2	5	6	7	8	9	12	13	14	15
HOA & Council Newsletters (TBD on when local/HOA newsletters go out) HIGH PRIORITY														
Social Media Posts														
Email Blasts														
Local Agency Website														
Flyering (electronic with newsletters for HOA to give out)														

APPENDIX D

COMMENT RESPONSE DOCUMENT

1 Steve Tuttle 11/3/20

I cross Colorado at Links Parkway to use the Big Dry Creek Trail often and the proposed pedestrian refuge on the south leg will be a great improvement. This will make crossing Colorado much more comfortable as a pedestrian. A striped crosswalk on the east leg (north-south) would be helpful in conjunction with this improvement as pedestrians will now cross this leg as well, to access from the NW corner sidewalk to the SW corner to use the new ped refuge/crossing.

Reply 11/3/20

Chris Vogelsang Colorado Blvd. Multimodal Project Team about 22 hours ago

Steve- thank you for the support and the thoughtful suggestion. We will evaluate the intersection marking and signing needs and develop a more detailed plan with this information in mind.

2 Andrea Suhaka 11/3/20

I think sidewalks don't need to be wider than 5'; isn't that ADA? Bikes don't need a raised bikeway, just a clear path of their own. I certainly don't favor bikes & peds in the same pathway. Does this include finally completing the widening of Colo. Blvd. south of Dry Creek? I agree that a turn lane is really needed. Could it be a passing lane when not a turning lane?

Reply 11/4/20

Andrea – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. You are correct that ADA does not require sidewalks to be in excess of 5-feet wide. However, when a sidewalk is placed adjacent to travel lanes a wider width provides additional comfort and safety for the user. Currently, 5-feet is the minimum width that we are considering in this corridor. Thank-you for your comments regarding raised bikeways and shared-use paths, your preference is noted. Based on the plan views provided south of Dry Creek (Exhibits A-C), Colorado Blvd will be widened to provide auxiliary lanes at the Dry Creek intersection, complete the sidewalk network on both sides of Colorado, and provide a continuous center turn lane/painted median between County Line and Dry Creek. A center turn lane/painted median cannot be used as a passing lane when not being used as a turn lane. Reducing the corridor to a single lane in each direction will help manage vehicle speeds, which were identified as a major concern by both corridor users and collected traffic data.

3 Christi and Doug Johnson – submitted to Rolando via email on 11/9/20

From: Christi Proffitt Johnson <christipj@gmail.com>
Sent: Monday, November 9, 2020 1:38 PM
To: Rolando Melgoza <rmelgoza@centennialco.gov>
Subject: Colorado Blvd options

We offer these ideas/concerns/questions:
Not in order of concerns etc

1. Why no stoplight at Colorado and Easter? It is a main exit onto Colorado Blvd. heading south or north from neighborhoods.

2. Why widen the streets with all the costs for bicycles? There are numerous streets with painted broken lines or raised dividers indicating bikes?

3. What about using existing right of way from curbs to fencing for bikes/pedestrians?

4. Adding any vegetation areas is wasteful for the vegetation as well as money. If we watch over time, all vegetation seems to die due to the pollution caused by our vehicles. Not to mention the crazy insertion of sprinkler systems. Doesn't provide any lasting improvement to the corridors.

We live at 6750 S Clermont St.
Thank you for your consideration
Christi and Doug Johnson

Reply 11/4/20
Christi and Doug,

Thank-you for your interest in the corridor and reviewing the virtual meeting materials. I'm a member of the Colorado Blvd. Multimodal project team and Rolando Melgoza requested that I respond to your questions about the corridor. Please see responses to your individual questions below.

1. Why no stoplight at Colorado and Easter? It is a main exit onto Colorado Blvd. heading south or north from neighborhoods. A traffic signal has been designed for installation at the Easter/Nobles intersection. As such, that traffic signal will be assumed to be an existing condition for any selected alternative chosen for the corridor.
2. Why widen the streets with all the costs for bicycles? There are numerous streets with painted broken lines or raised dividers indicating bikes? All alternatives were created to address multiple issues in the corridor including speeding, congestion, and bicycle/pedestrian safety and connectivity. None of the alternatives presented at the meeting will result in widening the street. Alternatives 1 and 2 maintain the existing curb line and adjust the striping while Alternatives 3 and 4 move the curb lines inward to accommodate bicyclists and pedestrians outside the street area.

3. What about using existing right of way from curbs to fencing for bikes/pedestrians? Each alternative presented shows varying approaches to accommodate bicycles and pedestrians within the existing right of way. Pedestrian facilities are shown between curb and edge of right of way in each alternative. Depending on the alternative, bicycle facilities are either shown on street or behind the curb. None of the presented alternatives requires the acquisition of additional right of way.

4. Adding any vegetation areas is wasteful for the vegetation as well as money. If we watch over time, all vegetation seems to die due to the pollution caused by our vehicles. Not to mention the crazy insertion of sprinkler systems. Doesn't provide any lasting improvement to the corridors. With the addition of additional non-motorized uses within the corridor, the provision of natural and vegetated areas becomes important to provide a more user-friendly environment to pedestrians and bicycles. In many ways the natural areas become buffers which help separate and protect more vulnerable users from vehicles traveling the corridor.

Reply from Mrs. Johnson on 11/11/20 (email to Karen only – passed on to Rolando)

Thank you for your response. Vegetation is a waste of money and is unsound ecologically NO MATTER WHAT! Moving curbs is a very expensive proposition. When we bought our house and our first summer water bills were 600.00 we attended classes from the Denver Water Dept. on alternative options. Hell strips and mediums were heavily discouraged due to the H2O needs. Our climate is in danger and adding things that take monstrous amounts of attention and water are inappropriate!

4 Susan Palmer 11/11/20

As a driver, and as a multimodal user (both on foot and by bike) Alternative 2 appears to provide a great solution for all users and require the least amount of re-construction of the roadway. I thought there were plans for a light at Colo and Nobles Road? Have those been tabled in lieu of the entire corridor project?

Reply 11/13/20

Susan – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternative 2 has been recorded. The City is still planning to install a new signal at the Easter/Nobles intersection. Utility work began over the summer and the new signal is expected to be operational by Spring, 2021.

5 Barbara Shangraw 11/11/20

I prefer Alternative 4. I think it will be better looking than the other alternatives since the landscape will be next to the road and buffer the bikers and walkers from the cars. I don't think we need higher bike lanes than the road.

Reply 11/13/20

Barbara – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternative 4 has been recorded.

6 Eric Miller 11/11/20

Your study found no unusual levels of traffic accidents, only two pedestrian-related incidents and ZERO incidents involving a bicyclist.

Why do we pay for deputies to work exclusively in Centennial? Have the traffic unit crack down on speeders and increase much-needed revenue.

Most of Colorado south of Arapahoe is devoid of pedestrians and bikes.

This is an expensive solution looking for a problem.

Spend the money to make the area around Newton as safe as possible, build an appropriate crossing at Links and finish the east sidewalk south of Dry Creek.

Then spend the rest fixing Arapahoe so it's not a parking lot during rush hour. You can start by using the fiber backbone we paid for to time the traffic lights so we don't have to stop at every intersection between Colorado and I-25.

Reply 11/13/20 – Rolando to respond

7 Elizabeth Runberg 11/12/20

I'm very happy to hear that there will be a pedestrian crossing at Linksview Parkway and Colorado Blvd. It is way past due! I'm not sure this is the right venue for this comment but I would recommend entrance/exit ramps to E470 from Colorado Blvd, if possible. I know there are issues with the landfill but even if there are entrance/exit only on the south side for the westbound E470 lanes, that would help.

Reply 11/13/20

Elizabeth – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of the crossing at Links Parkway has been recorded.
Second concern related to ramps at C-470 directed to Rolando – confirmed on 11/12 he would respond

8 Stefan B 11/12/20

As a driver and cyclist, I would recommend Alternative 4 or 3. Keep pedestrians and bikes grade separated from the road. A painted stripe is not a magic shield that protects them from increasingly distracted drivers. I think 4 would be best as it has buffer trees for beautification and protection. Assuming the path is wide enough, I can't imagine too much contention between cyclists and pedestrians. Also consider decreasing the curb radius at intersections to ensure vehicles slow down enough to check the crosswalks.

Reply 11/13/20

Stefan – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 3 and 4 has been recorded. Curb radii are based on what is required to accommodate turning vehicles. Prior to any construction in the corridor, improvements will undergo a full design phase and details such as this will be evaluated. As mentioned in the presentation, several of the alternatives should decrease speeds in the corridor which will also help address your issue.

9 Kelly Brandner 11/14/20

I strongly support proposed options 2-3 that reduce traffic to 2 lanes only vs. 4, because--as the report noted--"fewer traffic lanes within the corridor may help reduce vehicle speeds." Reducing accidents and speeds, which make the corridor safer for biking and walking is wonderful and welcomed!

As residents who live very close to Colorado Blvd., we use this corridor daily by car and frequently use to connect to the trail system for biking. Biking to trails feels risky right now--and we often ride on the west sidewalk to avoid cars. This isn't ideal or safe, but the alternative is a lengthly ride through our hilly neighborhood to connect to trails more safely (by trail) near University and Arapahoe.

With our own experience, my family prefers the 2 options that separate walking and bike lanes if possible. We think this would ENCOURAGE walking/biking use of the corridor.

I would also like to note our family (and other bikers we often) also use Colorado Blvd. southbound by bike to connect to the PAVED 470 bike trail. Access is just south of County Line Rd., which is not in Centennial boundaries and not mentioned in the report. Considering that benefit as another advantage for bikers to safely connect safely to a highly-used trail system feels relevant. It also supports choosing options with designated bike lanes (vs. combined bike/pedestrian lanes). Road bikers may be more likely to use this trail pattern more often that connecting to the unpaved trail system existing in Centennial (and included in the report).

One question is whether current use of Colorado Blvd. for biking is fairly represented by the report data tracking that occurred on Oct. 15? We use--and see bike use--much more in other seasons. I would like to note that consideration, so that the options for fewer car lanes and better bike and walking lanes be strongly considered rather than concluding the road is NOT currently used by bikes.

Thank you for considering and helping to improve this important corridor!

Reply 11/16/20

Kelly - Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 2 and 3 has been recorded. None of the alternatives presented preclude the ability to connect to the C-470 trail, which lies outside of the study area. The focus of implementation will be to provide appropriate transition to off-street paths south of County Line Road regardless of alternative selected.

Regarding the bicycle and pedestrian counts, the current cross section of Colorado Blvd. creates a restrictive environment for pedestrians and bicycles. As such, no count will accurately reflect the desired use of the corridor which was obtained through public outreach and comments. The proposed alternatives are designed to adequately serve the expected uses (vehicular, pedestrian, and bicycle) along the corridor once implemented.

10 John Ramsey 11/14/20

Alternative 4 would provide a much safer way for children to travel to and from school.

Reply 11/16

John - Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 4 has been recorded.

11 Dave Reichert 11/15/20

I travel this corridor (from S Ash Cir W to County Line and back) daily on my commute, and have done so for 9+ years. It is a rare occasion that I actually see a cyclist on Colorado Blvd, and I feel like a lot is being changed to be more accommodating to a group that doesn't really use the corridor much to begin with.

There is also a major issue in this corridor that I don't see a solution for within the plans. The bridge south of Links Pkwy needs to be fixed for good. SB traffic consistently crosses the double yellow to avoid the dip on the southern edge of the bridge. I see this multiple times a day. Attempts have been made to fix this dip, but they have all been only temporary as the repairs have not lasted. ROLANDO

Additionally, I did not see the intersection with Colorado and E Caley Ave mentioned anywhere. I'm assuming the issue there will be fixed as a part of the other changes, but would like confirmation. Currently, the left lane on NB traffic ends as a left turn onto Caley. Too many drivers miss the signs for this (likely too busy on their phones), and make sudden lane changes after the line is solid white or worse, keeping their speed and continuing straight through the intersection into the double yellow "median" before making the lane change. The accident study shows 3 accidents in 5 years at this intersection, but there have been many more near misses that are not on that report. Since it looks like Colorado would only be one lane through the Arapahoe intersection, is it safe to assume that NB traffic would have a dedicated turn lane for Caley?

Thanks!

Reply 11/16

Dave – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. The current cross section of Colorado Blvd. creates a restrictive environment for pedestrians and bicycles. Also, the majority of pedestrians and bicyclists use the corridor outside of peak commuting hours. The desired use of the corridor which was obtained through public outreach and comments trends much higher than current use.

Regarding the intersection with Caley Ave., the reduction of Colorado to a single lane in each direction will eliminate the current condition. A northbound left turn pocket will be provided, which is consistent with the other left turn treatments along the corridor.

12 Stacey Clune 11/15/20

I definitely prefer the plans (Alternatives 2, 3, & 4) that reduce lanes of travel in each direction to 1 and maintain a turn lane between them for the benefits already presented, but also because the turn lane space helps make the travel lanes feel a little more comfortable with some distance separating oncoming traffic.

From a budget perspective, Alternative 2 seems reasonable and functional since it doesn't require a complete overhaul of the corridor. My concern is that the bike lanes are still part of the traffic flow level and might not be as protective for biking safety for the kids traveling to/from Newton on a daily basis. From my observations, that seems to be a large portion of the bike traffic in that area at high traffic times of day and speeding is a rampant problem even when school zones are flashing. I see more adult bicycle commuters south of that area that probably need the street level lane to allow them to travel at high speeds more safely than a sidewalk-level/adjacent area might provide.

Alternative 3 improves on the bike safety nature for kids (not necessarily for adult bike commuters) by raising the lane to curb level and I like the slight widening of the sidewalk, but it also seems to require a bigger budget to change so much of the profile and therefore, may not be the best choice.

If budget were not an issue, I prefer Alternative 4 because it makes the pedestrian/bike area feel safer with the green space buffer between that and the traffic, plus it is also more attractive. The downside, aside from cost, is that adult bike commuters might need to reduce their speed to travel safely on a shared path with pedestrians, which might create other issues.

Thank you for this informative presentation and helpful update to proposed ideas.

Reply 11/16
Stacey – Thank-you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 2, 3, and 4 has been recorded. As a part of the final report, cost estimates will be prepared for each alternative to help inform future capital expenditures in the corridor. Alternative 2 does not require changes to the curb line, so would allow for a phased implementation as funding becomes available. Also, a combination of alternatives could potentially both be applied within the corridor depending on the mix of user types. For example, Alternatives 3 or 4 may be more appropriate near the middle school while Alternative 2 may be more appropriate south of Costilla Ave.

13 Dennis MAURER 11/16/20
I would definitely prefer alternative 4 but realize economically it is probably not feasible. So I would vote for alternative 2. The only other comment I have is about the intersection at S. Monroe Way. I do not see any pedestrian improvements noted and I can say from experience this is a very difficult intersection to cross for bikes and cars, especially at rush hour. Your safety study shows quite a few crashes at this location. This project when completed will be great. Thank You

Reply 11/18/20

Dennis – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 4 and 2 has been recorded. It should be noted that even if Alternative 4 is not economically feasible at this time, that a phased implementation from Alternative 2 to Alternative 4 is possible as funding is identified for the corridor. Alternatives 2-4 will all reduce traffic lanes to one lane in each direction which will make crossings for pedestrians and cyclists at S. Monroe Way shorter. Specific details will be developed in the future once the project moves from the study phase into the design phase.

14 Rebecca Parnell 11/16

Regarding CO corridor: thank you for keeping PEDs. and bikes as a major priority. I ride my bike along the entire Colorado stretch 2-6 times a week , depending on safety and weather. (No sidewalk access / clearance when bad weather!) Only concern is whether or not cars exiting on Geddes , going east can get out of neighborhood during rush hour. Thanks for this study- well done

Reply 11/18/20

Rebecca – Thank you for your interest in the corridor and reviewing the virtual meeting materials. The implementation of Alternatives 2 -4 would reduce the number of through lanes on Colorado from 2 lanes in each direction to a single lane in each direction in the area of Geddes Cir. These alternatives will also help reduce speeds along the corridor making turning movements onto Colorado easier.

14 Rebecca Parnell 11/16

For those who say little pedestrian and bicycling between Arapahoe and Dry Creek, don't see school kids everyday!! And cyclist traveling south to get to the c470 bikeway- everyday, there are cyclists traveling from Orchard to C470. So glad Centennial is thinking of users other than just cars.

Reply 11/18/20

Rebecca – Thank you for your interest in the corridor and reviewing the virtual meeting materials and for your observation regarding pedestrian and bicycle use in the corridor from children traveling between school and home. Your support of alternatives that support bicyclists and pedestrians has been recorded.

15 Kevin Hodge 11/16

Certainly not feasible to add a light at every intersection along Colorado (which could be justified.) Can't you add turnabouts to primary intersections (e.g. intersection of Easter/Colorado,) trade off the unused center lane of Colorado between Dry Creek and Arapahoe to make for bike lanes and add a second lane to northbound Colorado between SouthSuburban golf course and Dry Creek.

Reply 11/18/20

Kevin – Thank you for your interest in the corridor and reviewing the virtual meeting materials. The City is currently in the process of installing a new signal at the intersection at Easter/Nobles with an

anticipated completion date of Spring, 2021. That intersection currently meets warrants that guide when a traffic signal is installed at an intersection. Other intersections along the corridor do not currently meet warrants. Since there is no raised median on Colorado, U-turn movements should be unnecessary within the corridor.

16 Christian Marsh-Frydenlund 11/17:

Alternatives 2-4 are the best options for the entire community. However, Alternative 4 presents the best option for making Centennial a great place for all users of the corridor. Our City is growing with diverse users who will enjoy accessing what the corridor offers through Alternative 4, which is a safe means of walking and cycling with a reduced speed limit for vehicle traffic. The current configuration prohibits users from safely accessing the corridor for walking, cycling, taking children to school, and enjoying this great part of town. If we don't make the investment in Alternative 4 now, it will only get more expensive in the future. Why not select the option that satisfies all metrics of the study while significantly improving the aesthetic of the corridor? Other cities in our metropolitan area have faced similar challenges and have made investments which significantly improved the overall feel of challenging traffic corridors while improving safety for all users; consider the City of Golden and City of Arvada as a few examples. Let's leave the corridor in better condition than where we see it today and make investments which benefit our great City!

Reply 11/18/20

Christian – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 2-4 and preference for Alternative 4 has been recorded.

17 Ken Garry 11/17:

These changes reducing the the number of through lanes will make it almost impossible to turn left onto Colorado Blvd from non traffic light streets. More cars using 1 lane will not allow long enough breaks to turn. several of the ideas do not factor in snow plow issues. The snow with the MagCloride will be thrown up onto grass. On other plans it will be put onto the bike and pedestrian lanes. There is NO need for an 8 foot sidewalk. By eliminating left turn lanes the number of rear end collisions will increase. If you want to reduce speeds have more police presence. It appears to me that you are trying to accommodate more for bikes and pedestrians which probably represent 10% of the use of the street with 90% use by vehicles.

Reply 11/18/20

Ken – Thank you for your interest in the corridor and reviewing the virtual meeting materials. While left turn delay may increase during the highest peak volume times of day (less than 2 hours), delay during the remainder of the day will remain similar to existing conditions or improve.

Tree lawns are designed to store plowed snow and allow sidewalks to remain clear during winter months. They also add additional buffer between pedestrians and vehicles, increasing the comfort for users of the corridor. In alternatives where there is no tree lawn, the sidewalk will also be plowed to maintain a useable surface. An 8-foot sidewalk enables access for a pick-up mounted snowplow.

The only alternative that eliminates the left turn lane is Alternative 1 – all other alternatives maintain a center left turn lane. As mentioned in the video, the lack of left turn lane increases slowing and stopped vehicles throughout the corridor, increasing the chance for collisions.

Per the goals established for this corridor in coordination with the City of Centennial, the focus of this study was to examine the feasibility of accommodating all modes of travel on the corridor in a balanced manner.

Tim Gural 11/17/20

Eric, I agree with you comments! Why are we looking at reducing roadway capacity? Is the population in the area decreasing?

No Reply since it was in response to someone else's comment.

18 Tim Gural 11/17/20

I'm for alternative 1. Once our vast network of wonderful paths gets as congested as our roads, then we should consider replacing roadways with more paths. Until then, we should probably focus on our main mode of transportation.
I guess I must be one of only a few around here that plan to drive a car for the foreseeable future. I love walking and I love riding my bike but I don't have the option, whether desire nor is it realistic, to ride a bike to work; I ride it for pleasure. I used to regularly ride my bike from my house near Newton middle school down past Broadway and mineral, and it is amazing how many amazing trails there are back through the neighborhoods. Between those trails and riding through the neighborhood street on my bike, it was a very pleasant experience. I chose to use the neighborhood streets rather than drive alongside a road like Dry Creek, Arapahoe or, heaven forbid, University as it is much safer and much more pleasant. I fear that if we start closing down lanes and limiting capacity on major roads so the bikes can ride on them occasionally, then the cars are going to start cutting through the neighborhood streets. Then that is going to wind up being the next thing that will have to try to deal with. I don't think society is ready to give up on the automobile and I don't think the number of people in the area is decreasing, therefore we're going to have to have somewhere for the cars to drive.

Has anyone ever stopped to ask why there was so much traffic on and going faster than they should, down Steele Street between Caley and Orchard so much so that speed bumps were installed? The answer is pretty obvious - it's because a major "every mile" road, Orchard, does not go straight through between Colorado and University. If we continue to make it more difficult for cars to go down the major "every mile" roads then we will wind up with far worse traffic problems on the neighborhood streets.

I do agree that bike and pedestrian crossings should be better marked, signed and protected, like they are in so many other locations, ie. Lights, obvious yield signs and/or medians.

Reply 11/18/20

Tim – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your preference for Alternative 1 as well as your support for improved crossings has been recorded.

19 Jessica Roe 11/17

We need a pedestrian crosswalk at the bottom of Colorado Blvd. before you end up with a death in this county, and I see near accidents weekly. We have kids who bike to school; who ride from Heritage Greens onto the Little dry creek trail; adults just getting out for exercise who have to beg the traffic to stop or run much faster than their bodies are suited for to safety; darting in-and-out between cars going north and south on Colorado Blvd. These drivers have no clue there's people trying to cross at that intersection, because there's no worthwhile notices posted WARNING TRAFFIC, "SLOW DOWN, CROSSWALK AHEAD" or much less, an actual CROSSWALK! Yes, it may have been more than 30 years since we've had a death there - but for YEARS residents in the area have asked for one, and still, no single crosswalk. My neighbor's daughter was killed at that intersection late at night as a pedestrian when I was in high school. It's PITCH BLACK. I'm surprised there have not been more accidents - or even another death - in all this time. This is where I enter in to, and out of, my neighborhood of Heritage Greens, and where I make a dangerous left turn just to get to half of my destinations, because cars are speeding BOTH ways since it's the bottom of the hill and they hit top MPHs. PLEASE MIKE SUTHERLAND and city council friends, do not let another year go by without putting a crosswalk in this area. Then again, there is SO MUCH traffic going north and south and so many people crossing over Colorado on foot, that continual stopping for a crosswalk may tie up traffic so much that a study would show an actual traffic light with pacing might serve everyone better. I'm not the expert, your people are. Please, PLEASE look into it... for my family today... in memory of those lost in the past.

Reply 11/18/20

Rolando will reply.

20 Joyce Bresloff 11/15 via email to Rolando

I found this report to be very informative…you all put a lot of thought into coming up with suggestions…

I am disappointed that there was no mention of any kind of improvements to the intersection of Otero and Colorado Blvd by the Fairways of South Suburban community…I live here with many other “older” adults who enjoy walking our neighborhood plus the areas of Highlands 460, Heritage Greens and the Highline Canal trail…unfortunately for us, we are taking our lives in our hands when we try to cross Colorado Blvd to get to the west side where there is a sidewalk to connect us to our desired routes…(to get to Heritage Greens and the golf course we need to cross once again to get back to the east side)…

PLEASE consider some alternatives for us.

Thank you.

Joyce B

Reply 11/18/20

Joyce – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Alternatives 2-4 will all reduce traffic lanes to one lane in each direction which will make crossings for pedestrians and cyclists at Otero shorter. Although not shown specifically at the meeting, the study recommends the completion of the sidewalk network along the east side of Colorado. The study primarily focused on mid-block trail crossing locations. Intersection crossing details will be developed in the future once the project moves from the study phase into the design phase.

21 Alex Strickland 11/18/20

I live in the Fairways neighborhood located off COLORADO between COUNTY LINE and DRY CREEK. I ride my bike regularly over the entire corridor and I very much like alternative 4 with landscaping between cars and bikes/pedestrians. This makes it feel much safer which will increase the utilization by pedestrians and bikes. Anything short of this alternative is less safe and will have lower utilization. This alternative moves the city in the correct direction for our futures of less automotive trips and more walking/biking. Thank you for this improvement

Reply 11/18/20

Alex – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your preference for Alternative 4 has been recorded.

22 Daniel Long 11/18/20

Alternative 4 is the best choice, but I also recognize it's the most costly. Like others, I support making the investment now which will pay dividends well into the future. I'm not supportive of alternative 1 as I don't believe it fundamentally addresses the concerns. I live along the corridor and ride my bike regularly. I avoid Colorado at all costs - just way too many distracted drivers traveling way too fast.
I'm curious if there's a way to quantify who is using the corridor? I suspect that 70%+ of the peak traffic is from folks living in Highlands Ranch. By reducing the speeds and limiting traffic to one lane in each direction, I'd imagine that we would see a significant reduction in those non-residents driving through our community. Hence, also eliminating the concerns from others about more congestion.
This certainly isn't the forum for it, but how about we include a license plate toll for this corridor that is applied to anyone living in Douglas county? Let's recoup some of our costs from those that don't pay taxes....

Reply 11/20/20

Daniel – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your preference for Alternative 4 and lack of support for Alternative 1 have been recorded.

23 Barbara Young 11/18/20

I very much appreciate the research that has been done and I appreciate your commitment to helping slow down the traffic on Colorado Blvd. between County Line and Arapahoe Rd.
I live in the Fairways of South Suburban, just north of the shopping center that is on the corner of County Line and Colorado Blvd.
My concern is that your drawing does clearly not show the plans for the far right northbound lane, which currently allows traffic to turn right into the shopping center, into the Mormon church parking lot, and into the Fairways of South Suburban without hindering the flow of traffic. Would it be possible to make that a "right-turn" only lane so that traffic going past Otero would need to be in the left of the two northbound lanes?
Leaving the lanes as they currently are would work. I would just like to suggest that the "merge" sign be illuminated with blinking lights so that drivers going beyond Otero get out of the right lane in plenty of

time. There are currently many dangerous instances of cars merging at the last minute when the lane ends just north of Otero.

Thank you for listening and considering the thoughts of those of us who live along the Colorado Blvd. corridor.

Reply 11/20/20

Barbara – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Dedicated right turn lanes to specific access points will be assessed at a future stage, once the project moves into design. Alternatives 2-4 would eliminate the existing merge condition as northbound Colorado will be reduced to a single through lane.

24 Scott Bechler 11/18/20 via email to Rolando

Hi Randy,

I think you and your team are doing a great job with this study to determine best and safest alternative. As a nearby Centennial resident (I live on S. Albion St), I use the sidewalks, bike paths and roads in this study all the time. Since I am a frequent biker, I have seen a couple other municipalities already using two of the alternatives you are studying. (You may have already know this.)On many busy streets, Highland Ranch already uses Alternative #2 and Greenwood Village uses Alternative #4. Can you/your team provide use and accident data from those two municipalities, in the near future?

Lastly, as an avid bicyclist for over 50 years and walker for over 60 years, in my opinion having bikers and walkers sharing the same common path is a recipe for more accidents. My experience comes from riding and walking shared paths along the both ocean coasts, and here in Colorado. Look at the wide sidewalk path for C470. It was originally designed for bikers, however over time more and more people walk it. I can't tell you how many accidents I have seen with thoughtless bikers going too fast, as they approaching from behind walkers, and naive walkers walking out in front of a bicycle that they didn't hear or bother to look before crossing.

However, today, there is definitely not enough space for bikers and walkers and the cars are definitely going too fast on Colorado Blvd. So I am so so glad you and your team on working on making Colorado Blvd safer here in Centennial. I am certain which ever solution you recommend will be a lot better than what we have today.

Keep doing a great job on the study and thanks for sharing it with us.

Scott Bechler

Reply 11/20/20

Scott,

Thank you for your interest in the corridor and reviewing the virtual meeting materials. I'm a member of the Colorado Blvd. Multimodal project team and Rolando Melgoza requested that I respond to your comments about the corridor and confirm with you that your comments have been recorded.

We appreciate your comments, especially regarding shared use paths. We do not have access to access to the accident data that you requested.

25 Donna Holben 11/19/20

Making it only two lanes is preposterous! How many bike do you ever see versus cars?? The road was built for cars. Let's keep 4 lanes, or traffic will back up horribly. Why don't you try to keep Highlands Ranch traffic off this road entirely? That would solve a lot of speed and volume issues.

Reply 11/20/20

Donna – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your preference for Alternative 1 and lack of support for Alternatives 2-4 have been recorded.

26 Tony Frydenlund 11/19/20

I thought the presentations for the data collected and the alternatives were very informational. The one thing I would add is - I live and work along the corridor so I use it everyday and in numerous incidents I see students from Newton walking along the corridor south of Arapahoe, they hug as close as possible to the fences and walk in the rocks to avoid the speeding cars. There are more families moving into the area with children who will attend our local schools. The best alternative for now and the future would be Alternative 4. It is the only one that ticks all of the boxes of the top three concerns as laid out in the survey.

Reply 11/20/20

Tony – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your preference for Alternative 4 has been recorded. Increasing the separation between pedestrians and vehicles in the corridor is a priority of Alternatives 2-4.

27 Billy Paluch 11/19/20

Thank you for the wonderful and well thought out presentation. Colorado Boulevard could significantly benefit from improvements to multimodal transportation and reducing vehicle speeds. Option 3 or 4 are the best options to reduce vehicle speeds as well as provide safe and comfortable biking/walking options.

We need to consider those who are walking/biking may not be comfortable riding in the road with traffic. CO Blvd goes through many parks, schools and shopping areas, thus we need it to be safe for all riding abilities. We need to consider all of those who may choose to ride a bike from ages 5 to 85. This again supports options 3 and 4. Option 4 being the most ideal to completely separate bikes/peds from vehicles.

The goal should be to get more people to walk/bike contributing to less of an environmental impact as well as reducing vehicle congestion. If we provide safe options where people feel comfortable riding/walking, more will do it and the entire county will be better off with cleaner air and water.

Reply 11/20/20

Billy – Thank you for your interest in the corridor and reviewing the virtual meeting materials. A range of alternatives have been provided to balance cost of improvements with the goals that you outlined. Your support for Alternatives 3 & 4 with a preference for Alternative 4 has been recorded.

28 John Caligaris 11/19

Bicycle travel from Arap/Colorado north to the trails (and back) is a challenge. East side of Colorado sidewalks are in poor condition. Bike lane and blind curve going north leads to pinching between cars and bikes. Better to improve/expand bike lane on west side of Colorado or create bike lane/markings onto S. Albion Way to avoid Colorado.

Reply 11/20/20

John – Thank you for your interest in the corridor and reviewing the virtual meeting materials. The goals of Alternatives 2-4 are to define specific spaces for vehicles, pedestrians and bicycle, which would eliminate the pinching that you reference. Bike facilities have been found to be most efficient when placed on a continuous street, routing cyclists onto parallel side streets usually results in cyclists continuing to use the most direct route.

29 Louise Crosby 11/19

We've lived off E Geddes Drive for decades. I know there a few very vocal cyclists and that "multimodal" transportation is very in vogue at this time, but given how little bike or pedestrian traffic there is on Colorado Blvd. between County Line Rd. on the south and Arapahoe Rd. on the north, I think the city surely has many roads in more urgent need of repair/improvement. Furthermore, traffic going south at the traffic light on Colorado at Dry Creek has increased exponentially over the last 6-8 years, resulting in traffic being backed up sometimes to E. Geddes Drive because only one lane goes through. Since there are so few streets going south from Arapahoe Rd. to County Line Rd., the automobile traffic on Colorado has continued to increase significantly. It hardly seems like a logical time to be reducing lanes. If the transportation department just has to proceed with this project to meet a perceived need to be "contemporary", I would be in favor of whatever is the least expensive and disruptive option, probably Alternative 1. The only fatality that I'm aware of in the last 5 years was caused by a speeding motorcycle and an inattentive driver. There was a much more serious, double fatality north of Arapahoe Rd. on Colorado Blvd. by the fire station, again caused by a speeder. Neither of those accidents were likely to have been prevented by having only one lane in each direction. The effect of the installation of the new traffic light at Colorado and Easter/Nobles should be evaluated after a year or two to determine the need to narrow Colorado to one lane in each direction before proceeding with this contemplated project. That is the most dangerous intersection along Colorado between County Line and Arapahoe, and the new traffic light will slow traffic down. In addition, putting appropriate street lighting along Colorado Blvd. is a long overdue safety measure - there have been no improvements in lighting between County Line and Arapahoe in at least forty years - and more likely 50 years.

Reply 11/20/20

Louise – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your lack of support for reducing Colorado to one lane in each direction has been recorded. While pedestrians and bicyclists may not be currently visible in high volumes in the corridor, many local residents have expressed the desire to use the Colorado corridor either by walking or cycling during the public input process. The alternatives presented are intended to reduce barriers and increase comfort for non-motorized users and Alternatives 2-4 will also slow traffic. The selected alternative will be assessed during the design process to confirm vehicle capacity meets City standards for intersection operations. The improvements associated with the selected alternative will provide the opportunity to address street lighting and other amenities along the corridor.

30 Chip Brunk 11/19/20

Great job and very exciting! As an avid cyclist, I like alternative 3 given it's the safest - removed from traffic and other pedestrians. However, alternative 2 would be a good lower-cost alternative and I do think cyclists would use it. I like the concept behind the Orchard Road cyclist turn lane which removes the greatest danger for cyclists... the right hook when a car turns right while looking left. However, I'd make the bike lane/area into the turn area more noticeable with stripes on both sides of the lane like in Highlands Ranch.

Reply 11/20/20

Chip – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your support of Alternatives 2 and 3 with preference for Alternative 3 has been recorded. Thank you for your input and suggestions regarding bicycle markings and lane treatments. These aspects will be refined based on the selected alternative.

31 Dakotah Braun 11/20/20

Thank you to the county of Centennial for coming up with this very thoughtful and forward thinking plan. As CO BLVD sits today, it is in much need of a safety and multimodal upgrade. Our kids are walking/biking to school, our elderly are walking/biking to the park or the store, and we have a right to get around this area safely outside of a motor vehicle.

Option 3 or 4 provide the best result for decreasing motor speeds, increasing safety and improving walking and biking in the area. We need to think forward and we need options that are going to help provide sustainable transportation options in the years to come. We are all in fighting climate change together and this is a fantastic first step.

Thanks to all involved in helping make our community more sustainable and healthy for the residents!

Reply 11/20/20

Dakotah – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your support for Alternatives 3 and 4 has been recorded.

32 Andrea Suhaka 11/20/20

I now have to agree that making the road 2 lanes will only increase congestion and force drivers into the neighborhoods to escape it. Walnut Hills has dealt with Arapahoe Rd. & Dry Creek Rd. Congestion for

over 20 years and has complained constantly. As cars are still the major mobility means, we cannot do that to the neighborhoods along Colorado. I'm sure many have already found alternate routes to Arapahoe Rd. I know I have in that area. Easter Ave. west of Colorado is already suffering from this issue. Island refuges in Colo. are really needed to help bike/peds cross where there are trails on the other side of the street.

Reply 11/20/20
Andrea – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Your preference to not eliminate any travel lanes on Colorado as well as your support for improved crossings has been recorded.

33 Daniel Smith 11/20/20

The vast majority of adults along this corridor use motor vehicles. All of these alternatives are going to increase road congestion. I don't understand why the city would pay millions of dollars to make life and travel more difficult for citizens. Taking out left turn lanes, in particular, is going to greatly increase driver frustration. If you want to add a bike lane, add it along the side of the existing road.

Reply 11/23/20

Daniel – Thank you for your input regarding the corridor and reviewing the virtual meeting materials. Based on the data collected at intersections along Colorado, one travel lane in each direction would be sufficient to serve existing and future traffic volumes while also helping to slow driving speeds, which were identified as the number one issue for residents along the corridor. Alternatives 2 through 4 maintain a center left turn lane within the corridor. The current roadway cross section does not provide adequate space along the side of the road, within right-of-way, to provide room for both pedestrians and bicyclists. As such, the alternatives seek to best balance the available space for all modes of travel.

34 Gabe Reed 11/20/20

On behalf of Calvary Summitview, 6700 S. Colorado Blvd., we appreciate the opportunity to provide comments on the Alternative proposed Street Sections and the conceptual Bird's eye plan view showing possible improvements to the Colorado Blvd. corridor immediately adjacent to our place of worship at the southeast corner of E. Arapahoe Road and S. Colorado Boulevard.
As the City of Centennial's team begins to evaluate the combination of alternatives and prepares cost estimates and an implementation plan, we are looking forward to working with you to insure that a left turn lane is provided into our property for southbound vehicles. By designing a dedicated left turn lane the project will help avoid additional rear end collisions like the one that involved a church member earlier this year as he was waiting in the southbound center through lane for a break in traffic so he could turn left into the church driveway. The individual who hit him received a traffic citation but we don't want anyone else to have to go through this experience. Others in our congregation have come close to being rear ended while waiting to turn into the driveway at the southwest corner of the church property. We feel that there is an opportunity to increase the stacking of northbound to westbound vehicles approaching the traffic light at Arapahoe Road while also improving the situation at our driveway, making a win-win for all concerned. Thank you.

Reply 11/23/20

Gabe – Thank you for your interest in the corridor and reviewing the virtual meeting materials. Thank you for providing specific information regarding your access point and the recent collision. The plan view of the Arapahoe Road intersection provided on the public meeting website focused primarily on the Arapahoe Road intersection to provide a glimpse of what the intersection may look like with bike lanes added. Once an alternative for the corridor is selected, the specific designs for access points along the corridor will be developed. The provision of a southbound left-turn lane into Calvary Summitview will be considered at that time when the designs to accommodate vehicles, bicycles and pedestrians are fully developed. Your input at your specific location will help develop a design that strives to best meet all access and safety needs.

35 Jennifer Ouellette 11/21/20

I do not approve of ANY plan that takes away vehicle traffic lanes. Why would we do that when traffic is getting worse? That will only make the situation much worse. Especially for those of that live on the Colo corridor. Not to mention a new LPS stadium is going up on the corner of Colo Blvd and Arapahoe.

Reply 11/23/20

Jennifer – Thank you for your input regarding the corridor and reviewing the virtual meeting materials. Excessive speeding along Colorado Boulevard was identified as the primary concern of residents who provided feedback for the project. Excessive speed typically indicates there are too many through lanes provided for the number of vehicles using the corridor. Data collected for the project confirmed excessive speeds throughout the corridor. The alternatives presented take into account existing (pre-COVID) traffic volumes as well as the planned campus improvements at Newton Middle School and work to provide a balanced approach to the corridor to serve pedestrians, bicyclists and drivers.

36 Deb Armbruster 11/22/20

The proposed pedestrian crossing and related improvements at Links Parkway will provide a much safer crossing to and from the Big Dry Creek trail. This is a needed improvement, based on the volume of persons on foot and bicycles crossing here.

Reply 11/23/20

Deb – Thank you for reviewing the virtual meeting materials and providing input regarding the Links Parkway Crossing. Your support for an improved crossing at Links Parkway has been recorded.

37 Mike Bradley 11/22/20

Option 4 is nice. It’s going to be very important with the new Newton for kids to safely walk or bike down Colorado and the landscape buffer provides that safety. Single lanes will slow traffic, maybe we’ll have less cars going into the fence in the winters, and a light at Nobel is going to make things a lot safer all around.

Reply 11/23/20

Mike – Thank you for reviewing the virtual meeting materials. Your support for Alternative 4 has been recorded.

38 Craig Steele 11/23/20

After looking over the potential redesign for Colorado Blvd., it seems apparent that planners believe the volume of car traffic will not be increasing. That doesn't make a lot of sense for the section from County Line to Arapahoe Rd. There are few conduits from Highlands Ranch going north. Colorado Blvd will likely be used by more and more cars and trucks. I have lived in Heritage Village for 27 years and traffic has definitely increased steadily in this section with the exception of the recession years and 2020. If anything, the portion of Colorado between County Line and Dry Creek should have more motor vehicle lanes than currently exist.

With the dearth of foot traffic on any part of this corridor other than a smattering of Newton kids walking a couple of blocks at most along it 2 times a day (which may decrease with the school's new location), the obvious Alternative is #1 or some version of a multi modal lane to preserve the 4 lanes for motor vehicles and maybe a hard barrier for the multi modal lane.

Relative to the section from Arapahoe Rd. north, this too has seen significant traffic increases over the years but primarily it is during rush hours, as Orchard has become far busier. If Greenwood Village allows further development near I-25, it will surely grow as well.
I can foresee long lines of traffic at Colorado and Orchard trying to clear the 4-way stop during future rush hours and leading to a traffic signal there. Moreover, with any reduction of southbound lanes from Euclid to Arapahoe, I can see similar lines of traffic backed up at evening rush hour there.

I applaud the redesign of all crosswalks and support better accommodations for bikes. I would gladly support less grass/trees along this corridor to make this possible and to retain/add motor vehicle lanes or, better yet, have the city widen the corridor to make room for landscaping as well.

Thanks for your consideration of these comments.

Reply 11/24/20

Mike – Thank you for reviewing the virtual meeting materials. Your support for Alternative 1 has been recorded. While pedestrians and bicyclists may not be currently visible in high volumes in the corridor, many local residents have expressed the desire to use the Colorado corridor either by walking or cycling during the public input process. The goal of the presented alternatives is to provide a corridor that works to balance the needs of pedestrians, bicyclists and drivers. The project is constrained by the existing Colorado Boulevard right-of-way. Additional width cannot be acquired since this would require impacting the back yards of residents along the corridor.

Traffic data collected for the project indicates that the majority of traffic that uses Colorado Boulevard to cross C-470 turns onto County Line Road and does not continue north along Colorado. The data also confirmed that outside of the four highest traveled hours of the day, traffic volumes are well below thresholds that would indicate the need for two lanes in each direction. The alternatives that propose the reduction to a single lane in each direction have two primary goals, speed reduction and reduction of cut through traffic. Providing extra vehicle lanes has been found to have the reverse impact, higher speeds and more cut through traffic, which contradict the stated desires of residents along the corridor.

39 Gerry Cummins 11/23/20

A left hand turn lane on Colorado south of Arapahoe Rd is needed. If the road is narrowed to only one lane in each direction, I think that rear-end crashes are inevitable. While I have observed some bike traffic south of Arapahoe Rd., there doesn't seem to be enough bike traffic to warrant extensive reconstruction of the corridor in this area.

Reply 11/24/20

Gerry – Thank you for reviewing the virtual meeting materials. All proposed alternatives, other than Alternative 1, provide a left turn lane throughout the length of the corridor to serve left turns with the reduction to a single lane in each direction. While pedestrians and bicyclists may not be currently visible in high volumes in the corridor, many local residents have expressed the desire to use the Colorado corridor either by walking or cycling during the public input process. The alternatives presented are intended to reduce barriers and increase comfort for non-motorized users.

40 Mark Richards 11/23/20

As a Knolls resident for over a decade, vehicle speeds on Colorado between Arapahoe and County Line need to be reduced somehow. (Is there some reason the limit can't be 35 mph or the lanes narrowed? The latter has been demonstrated to reduce vehicle speeds.) The biggest factor affecting the outcome of a vehicle hitting a cyclist is vehicle speed, it gets worse exponentially with increased speed. As a cyclist who rides on Colorado year-round (from where it becomes Highlands Ranch Parkway to Orchard, in both directions), any kind of a striped/buffered, street-level bike lane would help. Many major streets in Highlands Ranch have striped sections with 45-mph speed limits and feel considerably safer than Colorado Blvd south of Arapahoe. I understand street-level bike lanes may not be sufficient for non-adults or casual cyclists.

I haven't read all the comments and responses, but noticed several statements about there not being a lot of cyclists on Colorado. Part of the reason is likely that there is not any accommodation for them. Also, during commuting times, many cyclists especially avoid riding on Colorado as the volume and speed of traffic make cycling on the roadway particularly dangerous.

Finally, I think the survey could have been constructed better. There were three 'flavors' of bike lanes. If there were only one "bike accommodations" option, it likely would have placed higher in the ranking. Similarly, there were two 'flavors' of shared bike/ped accommodations.

Thanks for the study and the consideration of bike/ped accommodations. Any of them would be better than what we have now.

Reply 11/24/20

Mark – Thank you for reviewing the virtual meeting materials and providing input and your observations regarding bike lanes on similar corridors. With regards to the speed limit, traffic engineering studies has shown that reducing speed limits typically has no impact on operating speeds. A physical narrowing of the roadway tends to provide more reliable reductions in travel speeds. Since this was a primary goal expressed by residents along the corridor, most of the proposed alternatives include a narrowing of Colorado.

Your inference regarding the current low volume of bicyclists along Colorado aligns with the public input provided during the course of the project. Many more people would like to use the corridor but feel unsafe doing so.

41 Mark Richards 11/23/20

Question: will the traffic signals at Nobles also incorporate Easter Dr on the west side of Colorado? I could imagine difficulty trying to make a left onto northbound Colorado during commute times with a light so close to the north. Lines of cars could be longer with a single lane and traffic stopped at the light may stretch far enough south to prevent turning from Easter Dr.

Regarding "hardly anyone cycles on Colorado" comments: Strava (an activity tracking app) makes available heatmaps of activity. The following link will show you Colorado from CLR to Orchard and the line (from Nobles to the south) is nearly as bright as the line for the C470 bike trail. It's not absolutely accurate data (only Strava users, who are likely more experienced cyclists), but it is representative.

https://www.strava.com/heatmap#13.87/-104.94258/39.58552/hot/ride

Reply 11/24/20

Mark – Thank you for your additional information provided from the Strava site. That data helps confirm that while bicycles may not be readily observed by drivers in the corridor, they certainly are present.

With regards to the traffic signal at Nobles/Easter Ave, the traffic signal will not incorporate Easter Drive. The majority of time at the traffic signal will be given to Colorado Boulevard which will reduce the amount of queuing that could potentially impact Easter Drive. This condition will be checked during the design process once an alternative for the corridor is selected. One benefit of reducing Colorado Boulevard to a single lane in each direction is that pedestrians crossing distances are reduced, which requires less time at traffic signals, again reducing potential queuing on Colorado.

42 Roger Crosby 11/23/20

Dear Colorado Blvd., Multimodal Project Team, Your video states that the increased traffic congestion which will be caused by the two-lane solutions are within the city's "operational standards" for collector streets. What does that exactly mean?
The upcoming signalized intersection at Nobles and Colorado Blvd. will dramatically slow north and south bound traffic and will also allow for safe pedestrian and bicycle crossings east and west. In my view the proposed north and south bound solutions for nonexistent bicycle and pedestrian usage will just lead to an untenable situation for The Knolls residents trying to access Colorado Blvd at East Geddes and at East Easter intersections. Although I don't believe that bicycle and pedestrian usage will increase north and south, I have the following suggestion, after the signal is put in at Nobles, put up traffic cones north to south simulating alternative #2 and see what happens over a 30 day period! If implemented, each of your proposals will also cause increased neighborhood traffic seeking alternatives away from Colorado Blvd.

Reply 11/24/20

Roger – Thank you for reviewing the virtual meeting materials and providing input. The planned traffic signal at Nobles is not intended to control speeds along Colorado and likely will have minimal impact on

travel speeds since Colorado Boulevard will receive a green light a majority of the time. The primary purpose on the traffic signal is to reduce an existing crash pattern at the intersection. The alternatives for the corridor provide the opportunity for a phased approach where multimodal facilities can be added to the corridor without changing the existing curbline.

43 Ali Imansepahi 11/23/20

Alternative #3 is an excellent choice as it provides a physical separation between the proposed bike lane and the travel lanes if not cost-prohibitive. If it is, then I think Alternative 2 may be the next best option. A buffer separated bike lane as depicted for this alternative still provides a much safer pathway for cyclists than the current setting. I also think Alternative #4 is definitely the most expensive option and will probably blow the budget. Alternative #1 is the worst one by far as it still leaves two lanes of travel in each direction which is unnecessary while it apparently eliminates the two-way turn lane in the corridor.

Reply 11/24/20

Ali – Thank you for reviewing the virtual meeting materials. Your support for Alternative 3 has been recorded.

43 Ali Imansepahi 11/23/20

Some folks commented that they hardly see cyclists on South Colorado Blvd between Ash Circle and County Line Rd. I'm not sure what time of day they travel as there are many cyclists that use Colorado Blvd to access the C-470 Trail or continue south into Highlands Ranch. That number literally grows substantially during weekends and warmer months. Also, prior to the Covid pandemic and hopefully in the near future, there are many commuters who use this route to travel to and from work.

Reply 11/24/20

Ali – Thank you for your input regarding existing bicycle use along the corridor.

43 Ali Imansepahi 11/23/20

Alternative #3 is an excellent choice as it provides a physical separation between the proposed bike lane and the travel lanes if not cost-prohibitive. If it is, then I think Alternative 2 may be the next best option. A buffer separated bike lane as depicted for this alternative still provides a much safer pathway for cyclists than the current setting. I also think Alternative #4 is definitely the most expensive option and will probably blow the budget. Alternative #1 is the worst one by far as it still leaves two lanes of travel in each direction which is unnecessary while it apparently eliminates the two-way turn lane in the corridor.
Some folks commented that they hardly see cyclists on South Colorado Blvd between Ash Circle and County Line Rd. I'm not sure what time of day they travel as there are many cyclists that use Colorado Blvd to access the C-470 Trail or continue south into Highlands Ranch. That number literally grows substantially during weekends and warmer months. Also, prior to the Covid pandemic and hopefully in the near future, there are many commuters who use this route to travel to and from work.

Reply 11/24/20

This is a repeat of Ali's previous comments (it was entered multiple times on the website)

44 R Harris 11/23/20

Since reading up on the proposed alterations to Colorado Blvd. I have driven this stretch for the past week and various times of the day to track how many pedestrians and bicyclists actually use this area. My finding? Literally 2 bicycles and 2 people walking !!! Now I'm a bicyclist myself and have used this stretch for many years so I'm not against this group. But when your study states up to 12,000 cars per day I ask - who are we accommodating and at what cost? When you plan to spend hundreds of thousands of tax payers dollars, shouldn't we be getting more for our money than spending that much money to accommodate such a small group? One option that I didn't see in your study is to have one side of the street dedicated to bikes and pedestrians instead of both sides. Such a low head count certainly doesn't warrant the expense or inconvenience to the masses (cars). I know we're trying to slow down the speed of the cars but won't that be accomplished with the new traffic light scheduled to go in at Nobles?

Reply 11/24/20

R – Thank you for reviewing the virtual meeting materials and providing input. While pedestrians and bicyclists may not be currently visible in high volumes in the corridor, many local residents have expressed the desire to use the Colorado corridor either by walking or cycling during the public input process. The alternatives presented are intended to reduce barriers and increase comfort for non-motorized users. Alternatives that provided multimodal facilities on one side of the street were considered during the alternatives development process, but based on selection criteria developed to address public input and accessibility were not advanced forward for further consideration.

The planned traffic signal at Nobles/Easter is not anticipated to slow driving speeds along Colorado. Traffic signals are not implemented as traffic calming measures. The primary purpose of the new signal is to improve safety for vehicles turning to or from Colorado at that intersection based on a specific set of warrants used to assess when a traffic signal should be installed.

45 S Harris 11/23/20

have lived off Colorado Blvd for almost 30 years. I have seen the traffic increase dramatically during that time. I do not think the traffic will decrease in the next 30 years. I have also had children walk to Newton and never complain about the traffic bothering them. I travel in and out of my neighborhood via Colorado Blvd several times a day. Depending on the time of day it is very difficult to get out of the neighborhood with the current 4 lanes. Alternative 2, 3, and 4 will make it impossible to exit the neighborhood. I prefer the current situation but if that is not possible then Alternative 1 would be consistent with the current situation. Alternative 2, 3 and 4 will frustrate the drivers and they will take routes through the neighborhoods as opposed to staying on Colorado Blvd. The neighborhoods would have the increase car traffic and the speeding vehicles, not what homeowners want.

Colorado Blvd (from Arapahoe to Dry Creek) is not a scenic area. The view is of fences until you go south of Dry Creek. It appears to be a "way to get somewhere else". There are many trails for cyclists that are more scenic than this patch. Maybe just the wider sidewalk will allow them to get to where they want to go but not hinder the car traffic.

I don't want to potentially ruin the quiet neighborhood streets to provide a scenic byway with taxpayer dollars.

Reply 11/24/20

S – Thank you for reviewing the virtual meeting materials and providing input. Your preference of the current condition of the corridor has been recorded.

46 Jane Webster 11/23/20

I would like to see it stay as it exists now, But to add a stop light or 2 between Arapahoe and Dry Creek. I would suggest widening the current sidewalk to allow a shared use for both bikes and pedestrians. Also bring the overhead power lines.

Reply 11/24/20

Jane – Thank you for reviewing the virtual meeting materials and providing input. A traffic signal is planned at the Nobles/Easter intersection; however, traffic signals can only be installed when an intersection meets a specific set of traffic signal warrants. Other intersections along the corridor currently do not meet these warrants. In many locations within the corridor the existing sidewalk cannot be widened to the width necessary to be designated for both pedestrians and bicycles. Other locations would require the removal of landscaping and modification of walls and fences. Sidewalks are currently not provided in many sections of the corridor as well. The removal of the overhead power lines would likely be included as part of Alternatives 3 and 4.

47 Deborah Haberer 11/23/20

Greetings City of Centennial Council Members & Muller Engineering:
Thank you for all the efforts given by many residents for this Pedestrian, Bicycle and Road Safety Study on Colorado Blvd. My husband, Bill and I, are recreational bicyclists and have lived in the Knolls for 5 years. We were astonished upon moving here, how unsafe, and outdated Colorado Blvd was for multi-modal usage. The Traffic Safety Map showing 92 Accidents, with many broadside vehicular and several RECENT fatalities and injuries is very telling how unsafe the current conditions are. I have personally witnessed several of these recent roll-overs and fatality accidents. I would like to see immediate development on the crosswalks and stoplights near the Geddes and Noble/Easter intersections. I look forward to seeing the Stoplight installed at Easter / Noble that is long overdue! This could also prevent many accidents that are near the Littleton Ames Elementary and Newton Middle School. Both recent school construction renovations and upgrades are great to see, so now it is time to offer safety improvements for the many CHILDREN who walk and bicycle to these schools and other activities nearby.
ALSO, we do see many residents biking, jogging, and walking everyday along our sidewalks and roads. Our Colorado Blvd is part of the Regional Bike Route and we are asking our Centennial Transportation and Planning Offices to provide better connectivity and safety to encourage and offer improvements for EVERYONE. Yes, even vehicles...need accountability to stay safer and SHARE THE ROAD.
We believe Option Two (2) gives Colorado Blvd a cost reasonable approach with the pedestrian sidewalk and bike lanes buffered and ideally can allow usage for cars, to also use this as a right turn lane, while also keeping our center turn lane. We also believe a few island landscaped medians in the center lanes can also offer a sense of place and encourage reduced speeds and driver awareness. Option 4 seems to be the most expensive option.

Please NARROW the road and reduce the speeds between Dry Creek and Arapahoe Roads! Let us prevent accidents, before a child is injured or killed. We do not need a highway or a road as wide as an airport runway between all these schools and neighborhoods. Please PRIORITIZE Colorado Blvd and include Traffic Safety for roads within residential areas of 1/2 to 1 mile of Schools and Recreational Trails, as a top rating in your ranking criteria. Considering exploring the many Grants available for funding in addition to the needed Cities Transportation investment of these roads that are long overdue to make Colorado Blvd a key landmark of the City of Centennial.
Thank you again for thinking progressively in 2020, as we know our residents of the City of Centennial are ready to see the Action Plan to redesign and build Colorado Blvd for safe multi-modal usage!
Sincerely,
Deb & Bill Haberer

Reply 11/24/20

Deborah and Bill – Thank you for reviewing the virtual meeting materials and providing input. Your support for Alternative 2 has been recorded.

48 Bruce Bunch 11/23/20

I believe CO blvd should stay 2 lanes for both north and south from Dry Creek through to Caley (as it presently is). It typically carries a lot of traffic at certain times during the work week. And I note there are also plans to build a future HS stadium on the NE corner of Arapahoe and CO in an area which also looks to have dubious parking to support such a stadium - aka more congestion. That will also tend to increase traffic load, intensity and aggravate public ingress and egress safety concerns when events are held in what looks to be a rather crammed future area.

I also have concerns about our city in general regarding speeding and lack of compliance which many of the driving public regularly demonstrate (speed, failure to fully stop at red lights before right turns, failure to stop at intersection stop signs, etc). I note CO Blvd is a rather significant traffic artery in this immediate area. Why spend good money to make it a further choke point? Backtracking from dual to "single lanes" to “slow” traffic is a rather twisted/manipulative way to slow traffic down on what is fundamentally a primary traffic artery. We have adequate laws. We need enforcement. I view traffic compliance and unsafe driving as primarily a matter of devoting adequate law enforcement resources to patrol and ticket offenders.

I ride my bike quite bit. The modern move towards allocating/intertwining/etc/etc a number of special areas with paint is in my opinion making navigation much more confusing. Please use the common sense “KISS” principle. This intertwined concept is just a chaotic mess - asking for bikes and vehicles to suddenly get confused, make the wrong moves, overreact, be surprised while in motion at significant speeds in traffic, etc. I believe you will wind up maiming and killing more with complexity rather than a simple sidewalk, if there is room a modest bike lane, and straightforward motor vehicle lanes – AND don’t unnecessarily weave them in and out.

I ride my bike from Nobles Road North on down to the various cutoffs around Albion Way and Little Dry Creek Trail to get access to the Highland Canal Trail.
I rarely see much in the way of bikes or even pedestrians on the sidewalk.
Briefly when Jr High starts or gets out there are some students that thin out pretty rapidly and feed north or south to/from Newton. Most do not walk far because they go a short distance only to get in

cars to be driven home.

Given no more pedestrian and bike traffic than I've witnessed over the years the existing CO Blvd sidewalks and their width are fine to accommodate both infrequent bikes and pedestrians.
When I bike ride along these busy blvds I prefer being on the "elevated" sidewalk facing traffic because there are a few too many driving a little too aggressively.

Regarding some of the 4 Alternative Cross Sections I see no need for Buffered Bike Lanes that would be "built up" and/or physically separated with extensive new construction using what looks to be expensive purpose build concrete "edging" to raise the bike land above the street.
The existing “road” with ROW is what it is. It is a constraint. But once again Keep It Simple and be prudent with money. Just because there is a study does not necessarily translate into we have to change everything.

I also do not like the idea of a traffic signal at Nobles Road and Co Blvd. The West side of Colorado along Nobles and then East Easter Ave is my neighborhood area.
During rush hours Nobles Rd/East Easter Ave already carries a lot of “cut through” traffic “short cutting” into what are fundamentally residential feeder streets simply because they want to avoid traffic and lights along University, Arapahoe, Dry Creek, and CO boulevards. Thus, hurry, hurry.
A light would just encourage much more of that busy time of day cut through.
I turn left and

Reply 11/24/20

Bruce – Thank you for reviewing the virtual meeting materials and providing input regarding corridor. A physical narrowing of the roadway tends to provide more reliable reductions in travel speeds. Since this was a primary goal expressed by residents along the corridor, most of the proposed alternatives include a narrowing of Colorado. Experience from other cities within the Denver metro area has found that increased law enforcement does not result in prolonged speed reduction within corridors. Physical changes to the roadway have been found to be more effective speed reduction and control measures.

49 Matthew Smith 11/23/20

I have walked my dog from the trail access point south of Dry Creek to beyond the fire station north of Arapahoe road many a Saturday. I love the big wide sidewalks. Outside of the few road bike enthusiasts, headed to the 470 path its always been just me and the dog. These plans appear to narrow the lanes to create "multimodal" bike lanes but for what real purpose? People drive, to get to school and the store, this seems like the Denver road diet fad come to the suburbs to cause congestion. There is a fine trail system all the way to Park Meadows if you care to take it.

Reply 11/24/20

Matthew – Thank you for reviewing the virtual meeting materials and providing input. While pedestrians and bicyclists may not be currently visible in high volumes in the corridor, many local residents have expressed the desire to use the Colorado corridor either by walking or cycling during the public input process. The alternatives presented are intended to reduce barriers and increase comfort for non-motorized users.

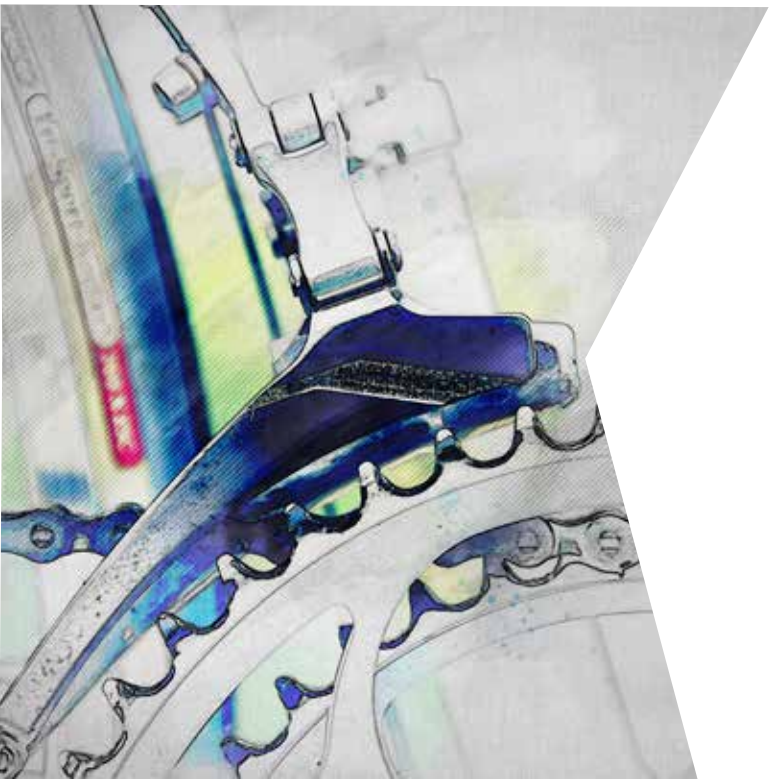
50 Brent Hoggan 11/23/20

I have lived in the Knolls for 10 years and use Colorado Blvd. for my daily commute. I am also an avid cyclist, but I often intentionally avoid riding on Colorado Blvd. because there isn't a dedicated bike lane, especially when I am riding with my children. I support this project to slow traffic and make Colorado Blvd. safer for bikes and pedestrians. Of the options presented, I prefer option 4, which provides a landscape buffer between the road and the sidewalk/bike lanes.

Reply 11/24/20

Brent – Thank you for reviewing the virtual meeting materials and providing your support for the project. Your support for Alternative 4 has been recorded.

Appendix B
INITIAL ALTERNATIVE SCREENING



COLORADO BLVD
CORRIDOR STUDY

Alternatives Screening Matrix

Performance Measures	No Action		
	Rating	# Rating	Reasoning
Evaluates alternatives based on cost/impacts vs improved safety and use	No Change	0	This alternative would not implement improvements, nor does it have a cost associated with it.
Evaluates alternatives based on their flexibility for future improvements and/or expansion	Fully Adaptable	1	This alternative would maintain the existing curb-to-curb roadway width of 58 feet. This would result in the most opportunities for modification and/or for the addition of future improvements to the roadway cross-section.
Improves continuity for north/south pedestrian and bicyclist movement	No Change	0	The no-build alternative would not change barriers to north/south travel for pedestrians and bicyclists.
Reduce barriers for east/west pedestrian and bicyclist movement	No Change	0	This no-build alternative would not change barriers to east/west travel for pedestrians and bicyclists.
Improves connectivity to transit stop	No Change	0	The no-build scenario would not change access to transit facilities near the Colorado Boulevard Corridor.
Improvement to the level of comfort in the pedestrian and bicyclist environment	No Change	0	This alternative would not change the level of comfort for pedestrians and bicyclists.
Change in Level of Service (LOS)	No Change	0	This application would not change the level of service at intersections and roadway segments from existing conditions.
Implements or accommodates planned improvements from local plans	Accomodates	0	This alternative would accommodate future installation of multimodal planned improvements.
Physical, structural, or natural challenges that make it complex to implement the application/improvement	Not Complicated	1	The no-build alternative does not require implementation.
Does the improvement require ROW impacts	No Impacts	1	This alternative would have no ROW impacts.

Total Combined Rating **3**

Alternatives Screening Matrix

Performance Measures	Alternative 1 4-lane Seciton with Directional Multimodal		
	Rating	# Rating	Reasoning
Evaluates alternatives based on cost/impacts vs improved safety and use	Medium	0	This alternative would reduce the curb-to-curb roadway width by 12 feet to provide raised bicycle tracks and wider sidewalks along Colorado Blvd. Because modification of the existing curb and gutter would be required under this alternative, these improvements would result in a good ratio (as opposed to the best ratio) of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements.
Evaluates alternatives based on their flexibility for future improvements and/or expansion	Partially Adaptable	0	This alternative would reduce the curb-to-curb roadway width from 58 to 46 feet resulting in a few to moderate amount of opportunities for modification and/or for the addition of future improvements to the roadway cross-section.
Improves continuity for north/south pedestrian and bicyclist movement	Improves	1	Alternative 1 would reduce barriers to north/south travel for pedestrians and bicyclists by widening the existing 5-foot sidewalks to 8 feet and providing raised bicycle tracks along Colorado Blvd.
Reduce barriers for east/west pedestrian and bicyclist movement	No Change	-1	The alternatives would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails; however, the alternative continues to have four travel lanes and elminates the potential for median refuge islands
Improves connectivity to transit stop	No Change	0	There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops. However, the alternative also maintains existing levels of vehiclular access and travel minimizing the need for transit connectivity.
Improvement to the level of comfort in the pedestrian and bicyclist environment	Improves	1	This application would improve the level of comfort for pedestrians and bicyclists by widening the existing sidewalks from 5 to 8 feet, completing the sidewalk network, and by providing raised bicycle tracks. The grade-separated bikeway would provide a high level of comfort for pedestrians and bicyclists.
Change in Level of Service (LOS)	No Change	0	This alternative provides no significant improvements to existing levels of service. Nor does it degrade existing levels of service.
Implements or accommodates planned improvements from local plans	Fully Implements	1	Local plans such as the *Centennial Trails and Recreation Plan* , 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans.
Physical, structural, or natural challenges that make it complex to implement the application/improvement	Very Complicated	-1	This application would be easily implemented with no challenges to implementation given that the corridor does not include any structural elements or steep grades and since the surrounding area is already built-out potentially indicating that there are no nearby sensitive natural resources.
Does the improvement require ROW impacts	No Impacts	1	This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW

Total Combined Rating **2**

Alternatives Screening Matrix

Performance Measures	Alternative 2 2-lane Section with Buffered Directional Multimodal		
	Rating	# Rating	Reasoning
Evaluates alternatives based on cost/impacts vs improved safety and use	High	1	Given that this alternative would maintain the existing 58-foot curb-to-curb roadway width, improvements would only involve restriping. No curb and gutter modifications would be required; therefore, these improvements would result in the best ratio of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements.
Evaluates alternatives based on their flexibility for future improvements and/or expansion	Fully Adaptable	1	This alternative would repurpose 22 feet of roadway width currently used for vehicular lanes to provide buffered bike lanes; however, it would maintain the existing curb-to-curb roadway width of 58 feet. This would result in the most opportunities for modification and/or for the addition of future improvements to the roadway cross-section.
Improves continuity for north/south pedestrian and bicyclist movement	Improves	1	Alternative 2 would reduce barriers to north/south travel for pedestrians and bicyclists by providing continuous sidewalks and buffered bike lanes along Colorado Blvd.
Reduce barriers for east/west pedestrian and bicyclist movement	Improves	1	The alternatives would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails; therefore, the improvements would reduce barriers to east/west travel for pedestrians and bicyclists.
Improves connectivity to transit stop	Improves	1	There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops.
Improvement to the level of comfort in the pedestrian and bicyclist environment	Improves	1	This application would improve the level of comfort for pedestrians and bicyclists by providing continuous sidewalks and buffered bike lanes along Colorado Blvd. The painted buffer between the vehicle lane and the bicycle lane improves the level of comfort in the bicyclist environment and the additional separation between vehicles and pedestrians improves comfort for pedestrians.
Change in Level of Service (LOS)	No Change	0	This alternative provides no significant improvements to existing levels of service. Nor does it degrade existing levels of service.
Implements or accommodates planned improvements from local plans	Fully Implements	1	Local plans such as the *Centennial Trails and Recreation Plan* , 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans.
Physical, structural, or natural challenges that make it complex to implement the application/improvement	Not Complicated	1	This application would be easily implemented with no challenges to implementation given the existing physical width of the roadway will be maintained.
Does the improvement require ROW impacts	No Impacts	1	This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW

Total Combined Rating **9**

Alternatives Screening Matrix

Performance Measures	Alternative 3 2-lane Section with Raised Multimodal		
	Rating	# Rating	Reasoning
Evaluates alternatives based on cost/impacts vs improved safety and use	Medium	0	This alternative would reduce the curb-to-curb roadway width by 22 feet to provide raised bicycle tracks along Colorado Blvd. Because modification of the existing curb and gutter would be required under this alternative, these improvements would result in a good ratio (as opposed to the best ratio) of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements.
Evaluates alternatives based on their flexibility for future improvements and/or expansion	Not Adaptable	-1	Alternative 3 would reduce the curb-to-curb roadway width from 58 to 36 feet. This improvement would preclude modification and/or addition of future improvements to the roadway cross-section given that the 36-foot width would only be sufficient to accommodate a single vehicular lane in each direction and a two-way left-turn lane.
Improves continuity for north/south pedestrian and bicyclist movement	Improves	1	Alternative 3 would reduce barriers to north/south travel for pedestrians and bicyclists by providing raised bicycle tracks along Colorado Blvd and creating the potential for widening the existing 5-foot sidewalks to 8 feet.
Reduce barriers for east/west pedestrian and bicyclist movement	Improves	1	The alternatives would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails with the potential for median refuge; therefore, the improvements would reduce barriers to east/west travel for pedestrians and bicyclists.
Improves connectivity to transit stop	Improves	1	There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops.
Improvement to the level of comfort in the pedestrian and bicyclist environment	Improves	1	This application would improve the level of comfort for pedestrians and bicyclists by creating additional separation between pedestrican and vehicles and potentail to widen the existing sidewalks from 5 to 8 feet and by providing raised bicycle tracks. The grade-separated bikeway would provide a high level of comfort for bicyclists.
Change in Level of Service (LOS)	No Change	0	This alternative provides no significant improvements to existing levels of service. Nor does it degrade existing levels of service.
Implements or accommodates planned improvements from local plans	Fully Implements	1	Local plans such as the *Centennial Trails and Recreation Plan* , 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans.
Physical, structural, or natural challenges that make it complex to implement the application/improvement	Somewhat Complicated	0	This alternative would be implemented with some localized challenges to implementation since the curb lines would be relocated and reconstructed along the length of the corridor. This would also require the modification of drainage facilities and driveways.
Does the improvement require ROW impacts	No Impacts	1	This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW

Total Combined Rating **5**

Alternatives Screening Matrix

Performance Measures	Alternative 4 2-lane Section with Shared Use Path and Amenity Zone		
	Rating	# Rating	Reasoning
Evaluates alternatives based on cost/impacts vs improved safety and use	Low	-1	This alternative would reduce the curb-to-curb roadway width by 22 feet to provide raised shared use paths along Colorado Blvd. Extensive utility relocations combined with the modification of the existing curb and gutter under this alternative means these improvements would result in a low ratio (as opposed to a good ratio) of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements.
Evaluates alternatives based on their flexibility for future improvements and/or expansion	Not Adaptable	-1	Alternative 4 would also reduce the curb-to-curb roadway width from 58 to 36 feet. This improvement would preclude modification and/or addition of future improvements to the roadway cross-section given that the 36-foot width would only be sufficient to accommodate a single vehicular lane in each direction and a two-way left-turn lane.
Improves continuity for north/south pedestrian and bicyclist movement	Improves	1	Alternative 4 would reduce barriers to north/south travel for pedestrians and bicyclist by providing 12-foot shared use paths on both sides of Colorado Blvd.
Reduce barriers for east/west pedestrian and bicyclist movement	Improves	1	The alternatives would include improved crossings of Colorado Blvd at intersections and at the Little and Big Dry Creek Trails; therefore, the improvements would reduce barriers to east/west travel for pedestrians and bicyclists.
Improves connectivity to transit stop	Improves	1	There are currently no existing bus stops on Colorado Blvd from East County Line Rd to East Orchard Rd. The nearest bus stops to the corridor are located on East Arapahoe Rd just east of Colorado Blvd. Through the provision of bicycle and pedestrian improvements along Colorado Blvd, this alternative would provide a more complete network, thereby improving access to the transit stops.
Improvement to the level of comfort in the pedestrian and bicyclist environment	Improves	1	This application would improve the level of comfort for pedestrians and bicyclists by providing 12-foot shared use paths on both sides of Colorado Blvd. This alternative would also include a 10-foot wide amenity zone separating the roadway and the shared use paths. This separation from vehicular traffic and dedication to a wide pedestrian and bicycle facility would provide a high level of comfort to its users.
Change in Level of Service (LOS)	No Change	0	This alternative provides no significant improvements to existing levels of service. Nor does it degrade existing levels of service.
Implements or accommodates planned improvements from local plans	Fully Implements	1	Local plans such as the *Centennial Trails and Recreation Plan* , 2017 indicate the provision of bicycle lanes along Colorado Blvd from East County Line Rd to E Orchard Rd; therefore, this alternative would implement multimodal planned improvements consistent with local plans.
Physical, structural, or natural challenges that make it complex to implement the application/improvement	Somewhat Complicated	0	This alternative would be implemented with some localized challenges to implementation along the length of the corridor.This would also required modification of drainage facilities and driveways as well as the relocation of utilities.
Does the improvement require ROW impacts	No Impacts	1	This alternative would have no ROW impacts given that the improvements would be contained within the available 80-foot ROW

Total Combined Rating **4**

Appendix C
EVALUATION CRITERIA MEMO

COLORADO BLVD
CORRIDOR STUDY

Colorado Boulevard Evaluation

This goal of this study is to identify the short and long-term multimodal improvements throughout the corridor that meet the community's stated desires for improved facilities while meeting relevant technical criteria and City standards. Improvements will incorporate context sensitive solutions that focus on safety, the corridor experience, active living, connections to the existing trail network, bicycle facilities, access to transit, regional collaboration, and collaboration with Littleton Public Schools.

This study will use the following process to identify the appropriate improvements for the corridor that accomplish the study goal while following the public input and technical criteria described below.

Step 1: Public Input Elements

What elements should the plan include to address public concerns? Community outreach has identified the following desires:

- Improved pedestrian safety along the corridor and specifically at crossings along Colorado Boulevard.
- Traffic calming applications to improve the issue of cars speeding along the corridor
- Complete pedestrian network (sidewalks) along and across the corridor that connects to trails
- Roadway geometrics improvements
- Improved trail connectivity for bicyclists and pedestrians
- Improvements should not increase congestion and try to mitigate existing traffic congestion

Step 2: Technical Criteria Elements for Facility Selection

Technical evaluation for pedestrian and bicycle elements will use the following guidance documents to select an appropriate facility type.

- Urban Bikeway Design Guide from National Association of City Transportation Officials (NACTO) speed and volume thresholds.
- AASHTO Geometric Design Guide
- CDOT Chapter 14 Bicycle and Pedestrian Facilities Roadway Design Guidelines

Step 3: Appropriate Facility Types (separated vs shared)

What facility types will best incorporate the above public input and technical criteria elements? Should the facilities be separate or shared based on pedestrian and bicyclist volumes?

Step 4: Midblock Crossings

Location

- Use ITE, NACTO Guidelines, and CDOT Roadway Design Guide Chapter 14 for midblock crossings location evaluation.
- Public input
- Trail system connections

Step 5: Develop Facility Typical Sections and Crossing Location Exhibits.

Step 6: Facility Evaluation: Technical Criteria

The following table outlines the criteria, performance measures and ratings to evaluate the cross sections and crossing locations for Colorado Boulevard multimodal improvements.

Criteria	Performance Measure	Rating
Efficacy / Efficiency	Evaluates alternatives based on cost/impacts vs improved safety and use	**[1] High:** Improvements would result in the best ratio of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements **[0] Medium:** Improvements would result in a Improvement would result in a good ratio of corridor and location specific improvements to multimodal safety and mobility to the cost and impacts of implementing those improvements **[-1] Low:** Improvement would result in a poor ratio of benefits to safety and multimodal improvements to the cost and impacts of implementing the improvements
Adaptability	Evaluates alternatives based on their flexibility for future improvements and/or expansion	**[1] Fully Adaptable:** This improvement would result in the *most opportunities* for modification and/or for the addition of future improvements to the roadway cross-section. **[0] Partially Adaptable:** This improvement would result in *a few to moderate amount of opportunities* for modification and/or for the addition of future improvements to the roadway cross-section. **[-1] Not Adaptable:** This improvement would *preclude* modification and/or addition of future improvements to the roadway cross-section.

Criteria	Performance Measure	Rating
Provides regional and local route connectivity	Improves continuity for north/south pedestrian and bicyclist movement	**[1] Improves:** This application would *reduce* barriers to north/south travel for pedestrians and bicyclists. **[0] No Change:** This application would *not change* barriers to north/south travel for pedestrians and bicyclists. **[-1] Worsens:** This application would *create additional* barriers to north/south travel for pedestrians and bicyclists.
	Reduce barriers for east/west pedestrian and bicyclist movement	**[1] Improves:** This improvement would *reduce* barriers to east/west travel for pedestrians and bicyclists. **[0] No Change:** This improvement would *not change* barriers to east/west travel for pedestrians and bicyclists. **[-1] Worsens:** This improvement would *create additional* barriers to east/west travel for pedestrians and bicyclists.
Access to transit	Improves connectivity to transit stop	**[1] Improves:** This application would *improve* access to transit facilities near the Colorado Boulevard corridor. **[0] No Change:** This application would *not change* access to transit facilities near the Colorado Boulevard Corridor. **[-1] Worsens:** This application would *reduce* access to transit facilities near the Colorado Boulevard corridor.
Comfort of pedestrian and bicyclist environment	Improvement to the level of comfort in the pedestrian and bicyclist environment	**[1] Improves:** This application would *improve* the level of comfort for pedestrians and bicyclists. **[0] No Change:** This application would *not change* the level of comfort for pedestrians and bicyclists. **[-1] Worsens:** This application would *reduce* the level of comfort for pedestrians and bicyclists.
Traffic Volumes and Facility Types	Facility types based on traffic volumes and speeds	Use guidance documents mentioned above to select appropriate pedestrian and bicycle facility elements.

Impacts to vehicular traffic	Change in Level of Service (LOS)	**[1] Improves:** This application would *improve* the level of service at intersections and roadway segments by one or more letter grade from existing conditions. **[0] No Change:** This application would *not change* the level of service at intersections and roadway segments from existing conditions. **[-1] Worsens:** This application would *worsen* the level of service at intersections and roadway segments by one or more letter grade from existing conditions.
Consistent with local plans	Implements or accommodates planned improvements from local plans	**[1] Fully Implements:** This improvement would *implement* multimodal planned improvements. **[0] Partially Implements/Accommodates:** This improvement would *accommodate* multimodal planned improvements. **[-1] Precludes:** This improvement would *preclude* multimodal planned improvements.
Complexity of application/ improvement	Physical, structural, or natural challenges that make it complex to implement the application/ improvement	**[1] Not Complicated:** This application would be easily implemented with *no challenges* to implementation. **[0] Somewhat Complicated:** This application would encounter *some challenges* to implementation. **[-1] Very Complicated:** This application would encounter *many challenges* to implementation.
Sufficient ROW to accommodate improvements	Does the improvement require ROW impacts	**[1] No Impacts:** This improvement would have *no* ROW impacts. **[0] Some Impacts:** This improvement would have *minimal* ROW impacts. **[-1] Many Impacts:** This improvement would have *significant* ROW impacts.

Appendix D
PLANNING-LEVEL COST ESTIMATES

COLORADO BLVD
CORRIDOR STUDY

Colorado Blvd. Corridor Study

SUMMARY OF CORRIDOR IMPROVEMENTS

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

CORRIDOR IMPROVEMENTS	
Intersection Widening - Dry Creek	$830,000
Roadway Widening - Mineral Ave to Links Pkwy	$3,920,000
Roadway Widening - Links Pkwy to Dry Creek Rd	$4,600,000
Corridor Restriping - Bikeway Installation	$1,630,000
Crossing Improvements	$480,000
Sidewalk Installation	$620,000
TOTAL	**$12,080,000**

Colorado Blvd. Corridor Study

INTERSECTION WIDENING - DRY CREEK

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

ITEM NO.	ITEM NAME	UNIT	QUANTITY	UNIT COST	COST
203	EARTHWORK (24" THICKNESS)	CY	420	$18	$7,560
203	CHANNEL REGRADING	LF	120	$100	$12,000
304	AGGREGATE BASE COURSE (CLASS 6)(12" FOR ROADWAY AND 6" FOR SIDEWALKS)	CY	160	$70	$11,200
403	HMA PAVEMENT (8" THICK)	CY	60	$120	$7,200
411	EMULSIFIED ASPHALT (SLOW SETTING)	GAL	30	$20	$600
608	CONCRETE SIDEWALK (6 INCH)	SY	180	$70	$12,600
609	CURB AND GUTTER (TYPE 2)(SECTION IIB)	LF	320	$35	$11,200
614	PARTIAL SIGNAL INSTALLATION	LS	1	$150,000	$150,000
A	***SUB-TOTAL OF MAJOR ITEMS***				**$212,000**
B	CLEARING AND GRUBBING	LS	3.0%	of A	$6,000
C	REMOVALS, RESETS AND ADJUSTMENTS	LS	5.0%	of A	$11,000
D	EROSION CONTROL	LS	5.0%	of A	$11,000
E	SEEDING, MULCHING, MINOR LANDSCAPING	LS	4.0%	of A	$8,000
F	DRAINAGE/STORM SEWER ADJUSTMENTS	LS	20.0%	of A	$42,000
G	SIGNING	LS	5.0%	of A	$11,000
H	CONSTRUCTION TRAFFIC CONTROL	LS	20.0%	of A to G	$60,000
I	MOBILIZATION	LS	6.0%	of A to G	$18,000
J	CONSTRUCTION SURVEYING	LS	3.0%	of A to I	$11,000
K	***TOTAL OF CONSTRUCTION ITEMS***				**$390,000**
L	CONTINGENCY	LS	30.0%	of K	$117,000
M	MINOR CONTRACT REVISIONS / FORCE ACCOUNTS	LS	15.0%	of K	$59,000
N	UTILITY RELOCATIONS	LS	2.0%	of K	$8,000
O	***SUB-TOTAL OF CONSTRUCTION COST***				**$574,000**
P	DESIGN ENGINEERING/SURVEYING/GEOTECHNICAL/SUE	LS	18.0%	of O	$103,000
Q	CONSTRUCTION ENGINEERING	LS	26.0%	of O	$149,000
	TOTAL PROJECT CONSTRUCTION COST				***$830,000***

Colorado Blvd. Corridor Study

ROADWAY WIDENING - MINERAL AVENUE TO LINKS PARKWAY

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

ITEM NO.	ITEM NAME	UNIT	QUANTITY	UNIT COST	COST
203	EARTHWORK (24" THICKNESS)	CY	1,500	$18	$27,000
304	AGGREGATE BASE COURSE (CLASS 6) (12" FOR ROADWAY AND 6" FOR SIDEWALK")	CY	510	$70	$35,700
403	HMA PAVEMENT (8" THICK)	CY	170	$120	$20,400
411	EMULSIFIED ASPHALT (SLOW SETTING)	GAL	75	$20	$1,500
504	STRUCTURAL SOIL NAIL WALL (APPROX. EXPOSED HEIGHT=8')	LF	670	$1,500	$1,005,000
608	CONCRETE SIDEWALK (6 INCH)	SY	700	$70	$49,000
608	CONCRETE CURB RAMP	SY	25	$200	$5,000
609	CURB AND GUTTER (TYPE 2)(SECTION IIB)	LF	1,040	$35	$36,400
A	***SUB-TOTAL OF MAJOR ITEMS***				**$1,180,000**
B	CLEARING AND GRUBBING	LS	2.0%	of A	$24,000
C	REMOVALS, RESETS AND ADJUSTMENTS	LS	5.0%	of A	$59,000
D	EROSION CONTROL	LS	5.0%	of A	$59,000
E	SEEDING, MULCHING, MINOR LANDSCAPING	LS	4.0%	of A	$47,000
F	DRAINAGE/STORM SEWER ADJUSTMENTS	LS	5.0%	of A	$59,000
G	SIGNING	LS	7.5%	of A	$89,000
H	CONSTRUCTION TRAFFIC CONTROL	LS	10.0%	of A to G	$152,000
I	MOBILIZATION	LS	6.0%	of A to G	$91,000
J	CONSTRUCTION SURVEYING	LS	3.0%	of A to I	$53,000
K	***TOTAL OF CONSTRUCTION ITEMS***				**$1,813,000**
L	CONTINGENCY	LS	30.0%	of K	$544,000
M	MINOR CONTRACT REVISIONS / FORCE ACCOUNTS	LS	15.0%	of K	$272,000
N	UTILITY RELOCATIONS	LS	5.0%	of K	$91,000
O	***SUB-TOTAL OF CONSTRUCTION COST***				**$2,720,000**
P	DESIGN ENGINEERING/SURVEYING/GEOTECHNICAL/SUE	LS	18.0%	of O	$490,000
Q	CONSTRUCTION ENGINEERING	LS	26.0%	of O	$707,000
	TOTAL PROJECT CONSTRUCTION COST				***$3,920,000***

Colorado Blvd. Corridor Study

ROADWAY WIDENING - LINKS PARKWAY TO DRY CREEK RD

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

ITEM NO.	ITEM NAME	UNIT	QUANTITY	UNIT COST	COST
203	EARTHWORK (24" THICKNESS)	CY	1,710	$18	$30,780
304	AGGREGATE BASE COURSE (CLASS 6) (X" THICK)	CY	635	$70	$44,450
403	HMA PAVEMENT (8" THICK)	CY	235	$0	$0
411	EMULSIFIED ASPHALT (SLOW SETTING)	GAL	105	$20	$2,100
504	STRUCTURAL DRILLED SHAFT WALL (APPROX. EXPOSED HEIGHT=8')	LF	185	$2,900	$536,500
504	STRUCTURAL CAST IN PLACE CANTILEVER WALL (APPROX. EXPOSED HEIGHT=8')	LF	485	$1,400	$679,000
608	CONCRETE SIDEWALK (6 INCH)	SY	735	$70	$51,450
608	CONCRETE CURB RAMP	SY	0	$200	$0
609	CURB AND GUTTER (TYPE 2)(SECTION IIB)	LF	1,245	$35	$43,575
A	***SUB-TOTAL OF MAJOR ITEMS***				**$1,388,000**
B	CLEARING AND GRUBBING	LS	2.0%	of A	$28,000
C	REMOVALS, RESETS AND ADJUSTMENTS	LS	5.0%	of A	$69,000
D	EROSION CONTROL	LS	5.0%	of A	$69,000
E	SEEDING, MULCHING, MINOR LANDSCAPING	LS	4.0%	of A	$56,000
F	DRAINAGE/STORM SEWER ADJUSTMENTS	LS	5.0%	of A	$69,000
G	SIGNING	LS	7.5%	of A	$104,000
H	CONSTRUCTION TRAFFIC CONTROL	LS	10.0%	of A to G	$178,000
I	MOBILIZATION	LS	6.0%	of A to G	$107,000
J	CONSTRUCTION SURVEYING	LS	3.0%	of A to I	$62,000
K	***TOTAL OF CONSTRUCTION ITEMS***				**$2,130,000**
L	CONTINGENCY	LS	30.0%	of K	$639,000
M	MINOR CONTRACT REVISIONS / FORCE ACCOUNTS	LS	15.0%	of K	$320,000
N	UTILITY RELOCATIONS	LS	5.0%	of K	$107,000
O	***SUB-TOTAL OF CONSTRUCTION COST***				**$3,196,000**
P	DESIGN ENGINEERING/SURVEYING/GEOTECHNICAL/SUE	LS	18.0%	of O	$575,000
Q	CONSTRUCTION ENGINEERING	LS	26.0%	of O	$831,000
	TOTAL PROJECT CONSTRUCTION COST				***$4,600,000***

Colorado Blvd. Corridor Study

CORRIDOR RESTRIPING - BIKEWAY INSTALLATION

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

ITEM NO.	ITEM NAME	UNIT	QUANTITY	UNIT COST	COST
627	EPOXY PAVEMENT MARKINGS	GAL	370	$450	$166,500
627	PREFORMED PLASTIC PAVEMENT MARKINGS (TYPE I)(INLAID)	SF	3,450	$11	$37,950
627	PREFORMED PLASTIC PAVEMENT MARKINGS (WORD-SYMBOL)	SF	1,865	$25	$46,625
627	PREFORMED PLASTIC PAVEMENT MARKINGS (XWALK-STOP)	SF	4,215	$20	$84,300
627	PREFORMED PLASTIC PAVEMENT MARKING (GREEN)(TYPE I)(INLAID)	SF	9,395	$25	$234,875
A	***SUB-TOTAL OF MAJOR ITEMS***				**$570,000**
B	CLEARING AND GRUBBING	LS	0.0%	of A	$0
C	REMOVALS, RESETS AND ADJUSTMENTS	LS	5.0%	of A	$29,000
D	EROSION CONTROL	LS	5.0%	of A	$29,000
E	SEEDING, MULCHING, MINOR LANDSCAPING	LS	0.0%	of A	$0
F	DRAINAGE/STORM SEWER ADJUSTMENTS	LS	0.0%	of A	$0
G	SIGNING	LS	15.0%	of A	$86,000
H	CONSTRUCTION TRAFFIC CONTROL	LS	10.0%	of A to G	$71,000
I	MOBILIZATION	LS	6.0%	of A to G	$43,000
J	CONSTRUCTION SURVEYING	LS	3.0%	of A to I	$25,000
K	***TOTAL OF CONSTRUCTION ITEMS***				**$853,000**
L	CONTINGENCY	LS	30.0%	of K	$256,000
M	MINOR CONTRACT REVISIONS / FORCE ACCOUNTS	LS	5.0%	of K	$43,000
N	UTILITY RELOCATIONS	LS	0.0%	of K	$0
O	***SUB-TOTAL OF CONSTRUCTION COST***				**$1,152,000**
P	DESIGN ENGINEERING/SURVEYING/GEOTECHNICAL/SUE	LS	15.0%	of O	$173,000
Q	CONSTRUCTION ENGINEERING	LS	26.0%	of O	$300,000
	TOTAL PROJECT CONSTRUCTION COST				***$1,630,000***

CROSSING IMPROVEMENTS

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

ITEM NO.	ITEM NAME	UNIT	QUANTITY	UNIT COST	COST
203	EARTHWORK (24" THICKNESS)	CY	530	$18	$9,540
304	AGGREGATE BASE COURSE (CLASS 6) (12" BELOW ROADWAY AND 6" BELOW SIDEWALK)	CY	125	$70	$8,750
403	HMA PAVEMENT (2" THICK)	CY	20	$40	$800
411	EMULSIFIED ASPHALT (SLOW SETTING)	GAL	20	$20	$400
412	CONCRETE PAVEMENT (8" THICK)	SY	25	$90	$2,250
514	PEDESTRIAN RAILING	LF	95	$200	$19,000
608	CONCRETE SIDEWALK (6 INCH)	SY	335	$70	$23,450
608	CONCRETE CURB RAMP	SY	95	$200	$19,000
609	CURB AND GUTTER (TYPE 2)(SECTION IB)	LF	220	$35	$7,700
610	MEDIAN COVER MATERIAL	SF	755	$25	$18,875
627	EPOXY PAVEMENT MARKINGS	GAL	30	$450	$13,500
627	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS (WORD-SYMBOL)	SF	20	$25	$500
627	PREFORMED THERMOPLASTIC PAVEMENT MARKINGS (XWALK-STOP)	SF	370	$20	$7,400
627	PREFORMED PLASTIC PAVEMENT MARKING (GREEN)(TYPE I)(INLAID)	SF	90	$25	$2,250
A	***SUB-TOTAL OF MAJOR ITEMS***				**$133,000**
B	CLEARING AND GRUBBING	LS	2.0%	of A	$3,000
C	REMOVALS, RESETS AND ADJUSTMENTS	LS	10.0%	of A	$13,000
D	EROSION CONTROL	LS	5.0%	of A	$7,000
E	SEEDING, MULCHING, MINOR LANDSCAPING	LS	4.0%	of A	$5,000
F	DRAINAGE/STORM SEWER ADJUSTMENTS	LS	5.0%	of A	$7,000
G	SIGNING	LS	5.0%	of A	$7,000
H	CONSTRUCTION TRAFFIC CONTROL	LS	10.0%	of A to G	$18,000
I	MOBILIZATION	LS	6.0%	of A to G	$11,000
J	CONSTRUCTION SURVEYING	LS	10.0%	of A to I	$20,000
K	***TOTAL OF CONSTRUCTION ITEMS***				**$224,000**
L	CONTINGENCY	LS	30.0%	of K	$67,000
M	MINOR CONTRACT REVISIONS / FORCE ACCOUNTS	LS	15.0%	of K	$34,000
N	UTILITY RELOCATIONS	LS	5.0%	of K	$11,000
O	***SUB-TOTAL OF CONSTRUCTION COST***				**$336,000**
P	DESIGN ENGINEERING/SURVEYING/GEOTECHNICAL/SUE	LS	18.0%	of O	$60,000
Q	CONSTRUCTION ENGINEERING	LS	26.0%	of O	$87,000
	TOTAL PROJECT CONSTRUCTION COST				***$480,000***

Colorado Blvd. Corridor Study

SIDEWALK INSTALLATION

ENGINEER'S OPINION OF PROBABLE COSTS - PLANNING

ITEM NO.	ITEM NAME	UNIT	QUANTITY	UNIT COST	COST
203	EARTHWORK (18" THICKNESS)	CY	990	$18	$17,820
304	AGGREGATE BASE COURSE (CLASS 6) (6" BELOW SIDEWALK)	CY	275	$70	$19,250
608	CONCRETE SIDEWALK (6 INCH)	SY	1,410	$70	$98,700
608	CONCRETE CURB RAMP	SY	220	$200	$44,000
A	***SUB-TOTAL OF MAJOR ITEMS***				**$180,000**
B	CLEARING AND GRUBBING	LS	5.0%	of A	$9,000
C	REMOVALS, RESETS AND ADJUSTMENTS	LS	10.0%	of A	$18,000
D	EROSION CONTROL	LS	5.0%	of A	$9,000
E	SEEDING, MULCHING, MINOR LANDSCAPING	LS	4.0%	of A	$7,000
F	DRAINAGE/STORM SEWER ADJUSTMENTS	LS	5.0%	of A	$9,000
G	SIGNING	LS	2.0%	of A	$4,000
H	CONSTRUCTION TRAFFIC CONTROL	LS	8.0%	of A to G	$19,000
I	MOBILIZATION	LS	6.0%	of A to G	$14,000
J	CONSTRUCTION SURVEYING	LS	3.0%	of A to I	$8,000
K	***TOTAL OF CONSTRUCTION ITEMS***				**$277,000**
L	CONTINGENCY	LS	30.0%	of K	$83,000
M	MINOR CONTRACT REVISIONS / FORCE ACCOUNTS	LS	15.0%	of K	$42,000
N	UTILITY RELOCATIONS	LS	10.0%	of K	$28,000
O	***SUB-TOTAL OF CONSTRUCTION COST***				**$430,000**
P	DESIGN ENGINEERING/SURVEYING/GEOTECHNICAL/SUE	LS	18.0%	of O	$77,000
Q	CONSTRUCTION ENGINEERING	LS	26.0%	of O	$112,000
	TOTAL PROJECT CONSTRUCTION COST				***$620,000***