



Transit, Bicycle, and Pedestrian Technical Report - I-270 Corridor Improvements Environmental Impact Statement

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Acronyms and Abbreviations

Acronym	Definition
BNSF	BNSF Railway
BRT	bus rapid transit
CDOT	Colorado Department of Transportation
CFR	Code of Federal Regulations
Commerce City	City of Commerce City
Denver	City and County of Denver
DRCOG	Denver Regional Council of Governments
DTR	CDOT's Division of Transit and Rail
EA	Environmental Assessment
EIS	Environmental Impact Statement
ELMP	Express Lanes Master Plan
FF5	Flatiron Flyer 5
FHWA	Federal Highway Administration
FRICO	Farmers Reservoir and Irrigation Company
GIS	geographic information systems
Golden	City of Golden
I-25	Interstate 25
I-270	Interstate 270
I-70	Interstate 70
I-76	Interstate 76
ITS	intelligent transportation systems
Littleton	City of Littleton
mph	miles per hour
NACTO	National Association of City Transportation Officials
NEPA	National Environmental Policy Act
NMIACS	North Metropolitan Industrial Area Connectivity Study
project	I-270 Corridor Improvements Project
ROD	Record of Decision
RRFB	Rectangular Rapid Flashing Beacon
RTD	Regional Transportation District
SCGRP	Sand Creek Greenway Regional Partnership
SOP	System Optimization Plan
U.S.	United States
UPRR	Union Pacific Railroad
US 36	United States Highway 36
US 6	United States Highway 6

1.0 Introduction

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The Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT) are preparing an Environmental Impact Statement (EIS) to evaluate potential improvements to the Interstate 270 (I-270) corridor. FHWA and CDOT are the lead agencies for this National Environmental Policy Act (NEPA) process, which was initiated in 2020, initially anticipating an Environmental Assessment (EA). Moving into 2023, CDOT determined a more detailed environmental review was needed and requested that an EIS be prepared.

This technical report evaluates and documents potential impacts to and recommended mitigation measures for transit (i.e., bus and rail), bicycle, and pedestrian travel mode facilities. Private auto travel and freight movement are evaluated separately in the Transportation and Traffic Technical Report. This technical report supports the analysis and conclusions in the EIS.

1.1 Project Description

I-270 in Colorado is a controlled-access interstate highway with two through lanes in each direction between Interstate 25 (I-25) and Interstate 70 (I-70) in central City and County of Denver (Denver) and the City of Commerce City (Commerce City) (Figure 1). It has a posted speed limit of 55 miles per hour (mph). The project limits include the I-270 interchanges with Interstate 76 (I-76), York Street, Vasquez Boulevard, and Quebec Street. The project will tie into the I-25 and I-70 system interchanges, but improvements to these interchanges are part of projects on I-25 and I-70 and will be designed and approved separately.

The purpose of the I-270 Corridor Improvements Project (project) is to implement transportation solutions that modernize the I-270 corridor to accommodate existing and forecasted transportation demands. The project needs are:

- Traveler safety on the corridor,
- Travel time and reliability on the corridor,
- Transit on the corridor,
- Bicycle and pedestrian connectivity across I-270, and
- Freight operations on the corridor.

In addition to addressing project needs, CDOT, FHWA, and Cooperating and Participating Agencies have established a key project goal: to minimize environmental and community impacts resulting from the project.

Figure 1. I-270 Corridor Improvements Proposed Project Limits



2.0 Alternatives

CDOT developed a range of potential alternatives for I-270 improvements. The alternatives ranged from no improvements to minimal infrastructure improvements without added highway capacity to alternatives that added one or two travel lanes in each direction, which could be operated as transit, general-purpose, or managed lanes (Express Lanes).

A two-level alternatives evaluation process was used to screen the alternatives based on the project's purpose and need and goal, and two build alternatives were carried forward for detailed analysis in the EIS:

- Three General-Purpose Lanes Alternative
- Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative

The No Action Alternative is also fully evaluated as a baseline for comparison.

Additional information on the alternatives development and evaluation process is included in the Alternatives Development Technical Report.

2.1 No Action Alternative

The No Action Alternative would maintain the existing highway configuration of two general-purpose travel lanes in each direction. Bridges and pavement would continue to be repaired, but underlying infrastructure deficiencies will remain. The typical section west of Vasquez Boulevard is shown on Figure 2 and east of Vasquez Boulevard is shown on Figure 3. Median and shoulder widths vary in the existing condition and would continue to vary under the No Action Alternative.

Figure 2. No Action Alternative (west of Vasquez Boulevard)

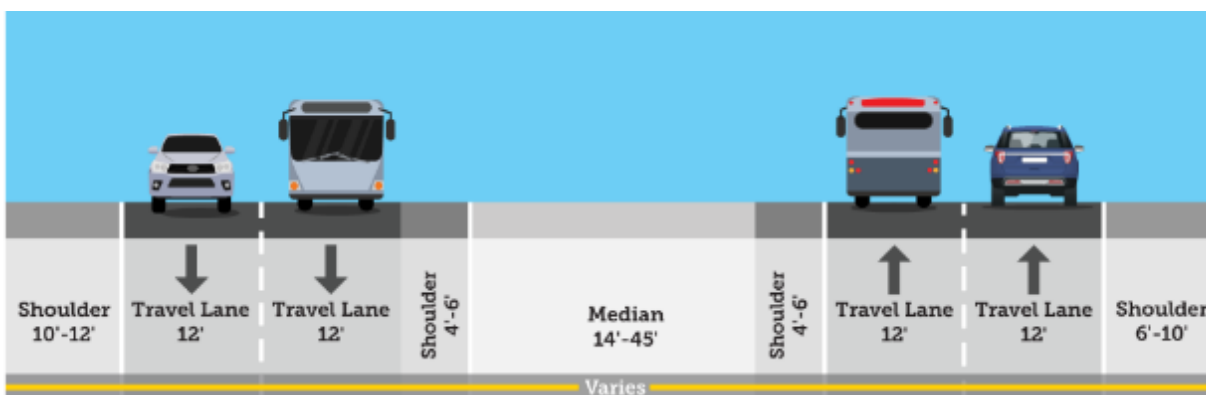
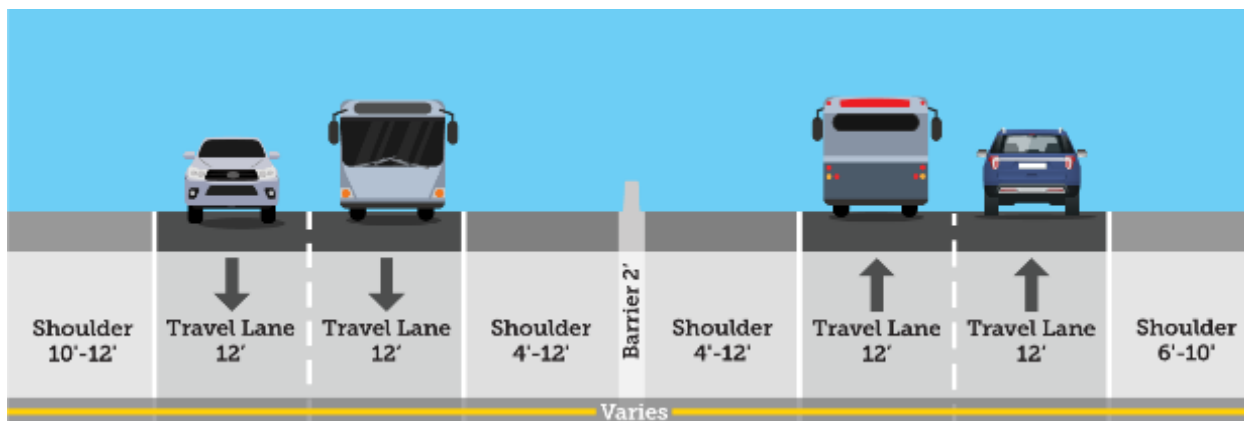


Figure 3. No Action Alternative (east of Vasquez Boulevard)



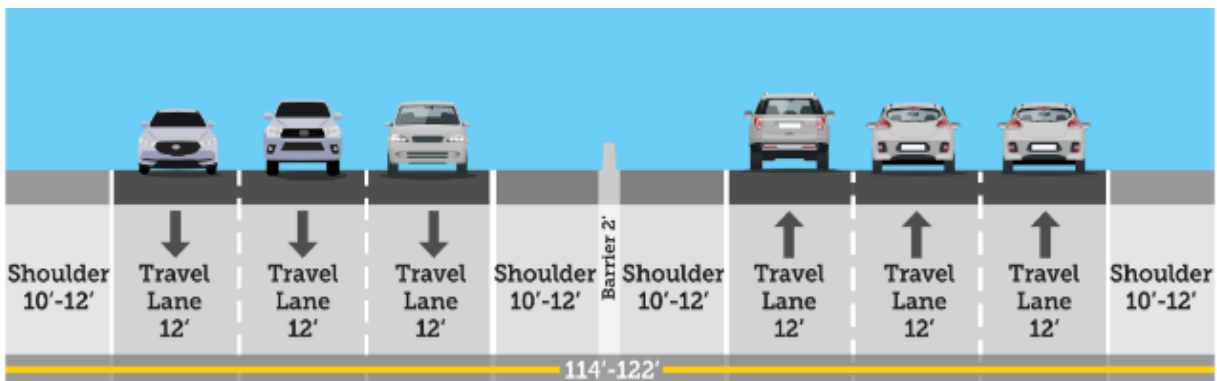
2.2 Build Alternatives

The build alternatives include improving the operational and physical conditions of the I-270 highway; reconfiguring interchanges and ramps; enhancing transit on the corridor; improving bicycle and pedestrian access across I-270; replacing deficient bridges and other infrastructure; and providing modern drainage, water quality, intelligent transportation systems (ITS), and other supporting infrastructure. Both add one new travel lane in each direction and have similar footprints, varying primarily by how the additional travel lane operates.

2.2.1 Three General-Purpose Lanes Alternative

This alternative would reconstruct I-270 to provide three general-purpose lanes in each direction, as shown in Figure 4.

Figure 4. Three General-Purpose Lanes Alternative



This alternative includes:

Mainline Improvements

- Providing three general-purpose lanes in each direction
- Widening shoulders to meet current standards
- Restriping of the westbound I-270 to northbound I-25 off-ramp to provide dual-exit lane capacity
- Adding emergency turnouts and turnaround
- Adding one continuous auxiliary lane in each direction between the I-76 and Vasquez Boulevard on-ramps and off-ramps

Interchange Improvements

- Adding an eastbound collector ramp to consolidate incoming movements from the I-76 on-ramps
- Separating the westbound I-270 York Street and I-76 off-ramps
- Improving the Vasquez Boulevard interchange design with improved westbound on-ramp acceleration lanes and the eastbound off-ramp deceleration lanes
- Improving the Quebec Street interchange ramp acceleration and deceleration lengths

Bridge Improvements

- Reconstructing bridges that are at, or will be reaching, the end of their useful life; bridges carrying travel lanes on I-270 include widening to accommodate additional lanes
 - Replacing the existing York Street bridge over I-270 to meet current bridge standards, accommodate an additional travel lane in each direction on York Street, include a 10-foot multi-use path and a 5-foot sidewalk, and enhance lighting
 - Replacing the existing I-270 bridges over the South Platte River Trail to meet current bridge standards, accommodate this project's bicycle and pedestrian improvements on the South Platte River Trail, and enhance lighting
 - Replacing the existing I-270 bridges over the Burlington Ditch to meet current bridge standards, accommodate future bicycle and pedestrian improvements, and enhance lighting
 - Replacing the existing I-270 bridges over Brighton Boulevard to meet current bridge standards, accommodate this project's bicycle and pedestrian improvements on Brighton Boulevard and future bicycle and pedestrian improvements by others, and enhance lighting
 - Replacing the existing I-270 bridges over East 60th Avenue and the BNSF Railway (BNSF) crossing to meet current bridge standards, accommodate future bicycle and pedestrian improvements, and enhance lighting
 - Replacing the existing I-270 bridges over East 56th Avenue to meet current bridge standards, accommodate this project's bicycle and pedestrian improvements, and enhance lighting
 - Replacing the existing Vasquez Boulevard bridge over Sand Creek to meet current bridge standards and accommodate this project's bicycle and pedestrian improvements

Bicycle and Pedestrian Improvements

- Improving the York Street I-270 ramp terminal intersections with crosswalks, curb ramps, and pedestrian indicators at the ramp terminal traffic signals
- Adding a new 5-foot sidewalk on the west side and reconstructing a 6-foot sidewalk on the east side of Brighton Boulevard under I-270
- Reconstructing East 56th Avenue under I-270 and adding an on-street bicycle lane, a 10-foot multi-use path, and 6-foot sidewalk connecting to existing sidewalks
- Improving the intersection at East 56th Avenue and South Sandcreek Drive to include curb ramps, crosswalks, and lighting that meet current standards
- Improving the intersection at East 56th Avenue and Eudora Street to include curb ramps, crosswalks, and lighting that meet current standards
- Adding attached sidewalks on the west side of South Sandcreek Drive; the new sidewalks would be 8 feet wide from Quebec Street to East 47th Avenue Drive and 6 feet wide from East 47th Avenue Drive to East 49th Avenue, with a pedestrian crosswalk across East 47th Avenue Drive connecting the two segments
- Improving wayfinding at key locations and guiding bicyclists and pedestrians to the nearest Regional Transportation District (RTD) bus stops, major road connections, or distances to the next trailhead to avoid out-of-direction travel

Trail Improvements

- Reconfiguring the South Platte River Trail crossing under I-270 to improve bicycle and pedestrian visibility around tight curves and increase vertical clearance from the I-270 overpass
- Improving bicycle and pedestrian visibility on the Sand Creek Trail by straightening out tight curves, adding a center stripe, and enhancing lighting at the Vasquez Boulevard bridge over the Sand Creek Trail
- Adding a multi-use path with bicycle and pedestrian underpasses crossing under two free-flow interchange ramps on the east side of Vasquez Boulevard through the interchange with enhanced lighting
- Adding a multi-use path on the east and west sides of the Vasquez Boulevard bridge over Sand Creek and connecting users from the East 56th Avenue and Vasquez Boulevard intersection to a new connection to the Sand Creek Trail
- Adding a multi-use trail spur and connecting the proposed north-south Vasquez Boulevard multi-use trail to the East 56th Avenue and South Sandcreek Drive intersection
- Adding a multi-use path in the southeast corner of East 56th Avenue and South Sandcreek Drive
- Adding a 10-foot-wide bicycle and pedestrian overpass over I-270 and South Sandcreek Drive approximately halfway between East 56th Avenue and Quebec Street

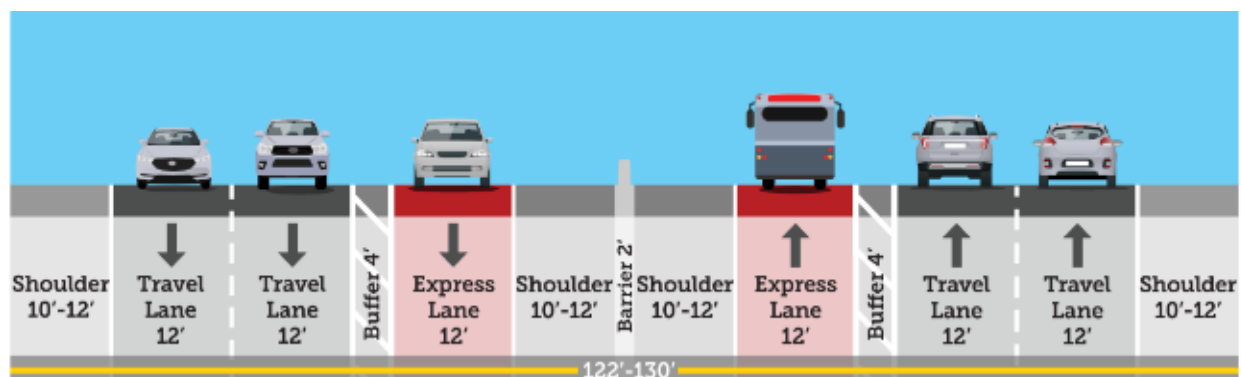
Transit Improvements

- Adding four new bus stops with connecting sidewalks and curb ramps on Quebec Street and South Sandcreek Drive near the I-270/Quebec Street interchange to improve access to RTD routes 88 and 37

2.2.2 Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative

This alternative would reconstruct I-270 with two general-purpose lanes and one Express Lane in each direction, as shown in Figure 5. Transit vehicles and high-occupancy vehicles (three or more people) could travel in the Express Lane, free of charge. Other travelers, including freight trucks, who choose to pay a fee could also use the new Express Lane.

Figure 5. Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative



This alternative includes:

Mainline Improvements

- Providing two general-purpose lanes and one transit-only lane in each direction
- Remainder of mainline improvements identified in the Three General-Purpose Lanes Alternative

Interchange Improvements

This alternative includes the same interchange improvements identified in the Three General-Purpose Lanes Alternative.

Bridge Improvements

This alternative includes the same bridge improvements identified in the Three General-Purpose Lanes Alternative.

Bicycle, Pedestrian, Trail, and Transit Improvements

This alternative includes the same bicycle, pedestrian, trail, and transit enhancements identified in the Three General-Purpose Lanes Alternative.

3.0 Regulatory Context

There is no regulatory context associated with this technical report.

4.0 Methods

This section describes methods for gathering data on transit, bicycle, and pedestrian resources and determining impacts as part of the project.

4.1 Data Gathering

Data for existing and planned transit, bicycle, and pedestrian resources, including spatial data, were gathered in 2020 and supplemented in 2024. Research involved identifying and field-verifying existing conditions and gaps in transit, bicycle, and pedestrian connectivity; gathering ideas around improving these modes in existing plans; and ground-truthing the team's assessment with the lived experience of stakeholders. The following data collection methods were used:

- Site visits
- Analysis of aerial photography
- Internet research
- Geographic information systems (GIS) analysis
- Reviewing travel pattern data collected through databases, such as Replica
- Community and industry stakeholder workshops, community pop-up events, public open houses, and stakeholder meetings between CDOT and RTD, Adams County, Commerce City, Sand Creek Regional Greenway Partnership (SCRGP)

- Collecting transit information for active and planned transit routes, rail and bus service frequency (15-minute peak/30-minute off-peak), span of service (days of week and hours of day the service operates), annual ridership (by stop, if available), connecting routes, and planned transit improvements in the project area from publicly available schedules and routes and through coordination with RTD
- Reviewing local and regional transportation, open space, and trail plans to understand how the overlapping patchwork of bicycle, pedestrian, and transit studies and plans converge within the project area; and how the build alternatives align with the transit, bicycle, and pedestrian vision for the corridor. Recent state and local transit, bicycle, and pedestrian planned studies can be found in Section 5.0
- Reviewing each jurisdiction's standard design practices and national best practices, such as National Association of City Transportation Officials (NACTO) for bicycle and pedestrian facilities, to determine the basis of standard design. The project-specific, bicycle-recommended, and pedestrian-recommended design criteria table are in Attachment A

4.2 Analysis Approach

Transit, bicycle, and pedestrian resources within a 0.25-mile buffer ("study area") from I-270 are documented in the existing conditions inventory (Figures 7 through 9). The study area was established to capture existing transit, bicycle, and pedestrian resources that could be directly or indirectly impacted by the construction of I-270 improvements.

Resources that overlap with the project footprint are considered for direct impacts, while resources within the study area but not overlapping with the project footprint are considered for indirect impacts. Following identification of impacts, mitigation measures are identified and discussed.

5.0 Existing Conditions

Providing high quality facilities and services that connect residents to key destinations within their community and regionally can increase demand for riding transit, walking, and biking. A well-connected community with good transit service and bicycle and pedestrian facilities can connect people to their neighbors and community resources, fostering a sense of belonging and community pride, increasing transit ridership, encouraging outdoor recreational activities, providing job opportunities for people who rely on public transportation to commute to work, and decreasing the number of single-occupancy cars on the road. However, existing I-270, Sand Creek, large scale industrial land uses, and the substandard bicycle and pedestrian facilities impede east-west connectivity locally and regionally. The lack of effective I-270 crossings creates inefficient transit routing, increases transit vehicle miles traveled, and precludes some trips from being made by bike or on-foot. Existing transit, bicycle, and pedestrian resources are summarized in this section.

5.1 State and Local Projects

The following relevant studies and plans collectively call for strengthening transit, bicycle, and pedestrian connections and services through the project area.

- **Advancing Adams County Comprehensive Plan** (Adams County, 2022a). Provides an update to Adams County’s 2012 plan by updating policies and land use classifications and an emphasis on considering all modes of transportation and connections to the County’s parks and trails system.
- **Colorado Express Lanes Master Plan** (ELMP, 2018). The Colorado High Performance Tolling Enterprise (renamed to Colorado Transportation Investment Office in 2021) created a comprehensive vision for Express Lanes. Improving transit, bicycle, and pedestrian travel options was identified as the highest priority stakeholder goal of the study (CDOT 2020a). The ELMP identifies the I-270 corridor as one of the top five priority Express Lane segments in the state. Express Lanes provide transit operations more travel time reliability during congested periods.
- **Commerce City Comprehensive Master Plan** (Commerce City, 2010). Guides Commerce City’s vision for future development, including parks and recreation. Relevant goals include improving community access to parks, improving amenities in existing parks, such as providing diverse amenities to attract people of different ages and preserving natural resources and tree canopy.
- **Denver Regional Active Transportation Plan** (Denver Regional Council of Governments [DRCOG], 2019). Provides a vision for walking and biking in the Denver region to inspire improvements within local jurisdictions. Objectives of the plan include expanding and connecting regional and local bicycle networks, improving bicycle and pedestrian access to transit, and providing access to bicycle and pedestrian networks.
- **2050 Metro Vision Regional Transportation Plan** (DRCOG, 2022). Establishes a plan to improve mobility for all users of the Denver region’s transportation system. Investments include, but are not limited to, a regional bus rapid transit (BRT) system that attracts high volumes of ridership, implements distinct transit visions for several Denver corridors, implements mobility hubs, and further develops the region’s high-comfort active transportation corridors by eliminating gaps in facilities to promote short-trip opportunities.
- **Transportation Demand Management Strategic Plan** (DRCOG, 2023). Aims to reduce traffic congestion and emissions by identifying strategies that help people use the transportation system more efficiently.
- **North Metropolitan Industrial Area Connectivity Study (NMIACS)** (Denver, Commerce City, and Adams County, 2018). Primary goal was to develop multimodal connections through the industrial area, which includes the I-270 project area. Supports establishing the multimodal vision for the corridor by identifying projects that create a second tier of connectivity beyond the interstate.
- **Walk.Bike.Fit Commerce City, A Multi-Modal Active Transportation Plan** (Commerce City, 2012). Proposes improvements to Commerce City’s bicycle and pedestrian network to integrate with the larger network.
- **Northeast Area Transit Evaluation II** (RTD, 2015). Identifies Quebec Street as an important transit corridor in the Quebec Street travel shed between 30th Avenue and 72nd Avenue.
- **Regional Bus Rapid Transit Feasibility Study** (RTD, 2020). Establishes RTD’s draft vision for fiscally constrained planned BRT network. Identifies the adjacent US-36 corridor as an operating/funded BRT corridor. The evaluation identified the I-270 corridor and nearby

bus routes as initial candidates for BRT, but these routes were eliminated from further consideration during early screening phases based on their limited potential for BRT ridership relative to the rest of the Denver region.

- **System Optimization Plan (SOP)** (RTD, 2022). Evaluates travel patterns, demographics, and transit routes, and makes recommendations for route modifications, including Flatiron Flyer, 49, 88, RX, 37, 88L.
- **Bus Stop Consolidation** (RTD, in progress). Consolidates bus stops to improve speed and reliability of transit.

5.2 Existing Public Transit Services

Residents and businesses located in the I-270 Corridor Improvements project area are served by RTD local, limited, and regional buses. One RTD commuter rail line, the N line, intersects the study area at the Burlington Ditch.

RTD bus services connect residents and businesses in the project area to downtown Denver, Denver International Airport, Commerce City, Northglenn, Thornton, and other Denver metropolitan destinations. Bus services crossing I-270 are provided along Washington Street, Colorado Highway (CO) 224, I-76, Vasquez Boulevard, and East 56th Avenue. There are RTD bus stops for local and limited transit services located on CO 224, East 60th Avenue, Vasquez Boulevard, Dahlia Street, East 58th Avenue, Eudora Street, East 56th Avenue, East 50th Avenue, East 49th Avenue, Quebec Street, and Northfield Boulevard within the study area. The Flatiron Flyer 5 (FF5) route travels on I-270, regionally connecting Boulder to the Fitzsimons medical campus of Aurora. However, frequent congestion and variable travel speeds on I-270 have resulted in RTD publishing an official route deviation to this service, at the discretion of the bus operator; the deviation uses I-70 and I-25 instead of I-270 (RTD, 2023b). Mitigating this transit delay is identified as a need in the purpose and need.

RTD's 2022 SOP recommends a number of changes to transit service within and near the I-270 corridor that RTD plans to implement by 2027 (RTD, 2022). The findings of this study do not impact bus services within the study area. Additionally, RTD began an inventory of the existing bus stop infrastructure in 2024 that will identify which bus stops are in compliance with current standards. This inventory, named Bus Stop Infrastructure Accessibility Assessment, will provide bus stop improvement recommendations, and the project is tentatively planned to be completed in 2026. If this study is finalized prior to this project's Record of Decision (ROD), it will be reviewed to determine whether any additional planned transit improvements fall within the project corridor, and if those improvements would be impacted.

Private transit operators (for example, Greyhound bus services) are not included in this analysis but are not precluded from using either build alternative.

5.3 Existing Bicycle and Pedestrian Resources

Figure 6 shows the existing roadways or non-motorized crossings of I-270 within the study area, with descriptions depicting whether there is bicycle, pedestrian, and/or vehicle access across I-270. Several of these crossings have bicycle and pedestrian connectivity, while other

crossings have no facilities for bicyclists or pedestrians at all. These outdated or non-existent facilities limit bicyclists' and pedestrians' abilities to cross the I-270 corridor, restricting travel between neighborhoods, access to other businesses or workplaces, or to connect to the Sand Creek Regional Greenway "Sand Creek Trail" safely and efficiently. The study area contains existing bicycle and pedestrian facilities in the form of sidewalks and local and regional trails (Figures 7 through 9) but often lack continuity and compliance with current standards.

Figure 6. Map of Existing Bicycle and Pedestrian Crossings Across I-270



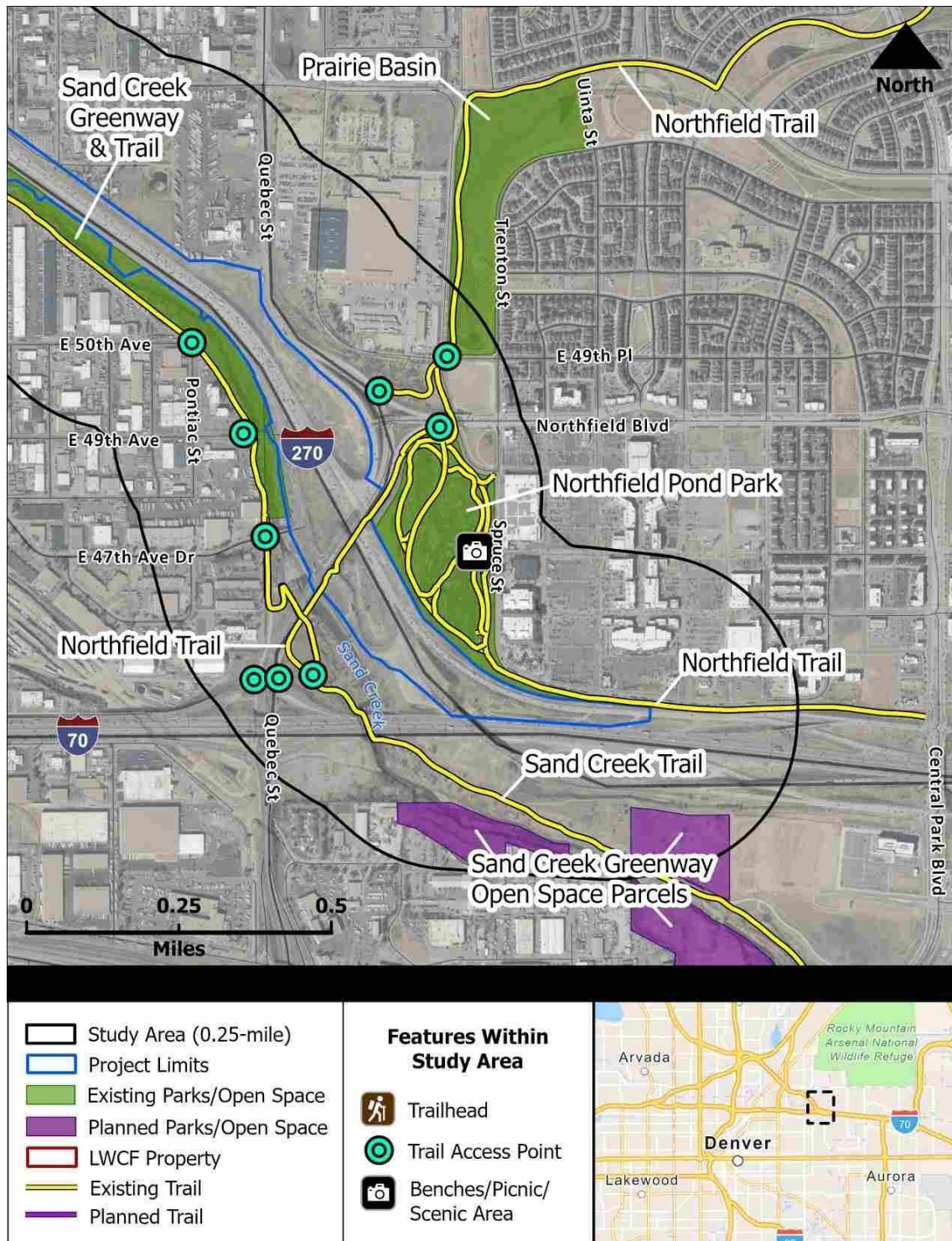
Figure 7. Existing Bicycle and Pedestrian Facilities, West Section



Figure 8. Existing Bicycle and Pedestrian Facilities, Central Section



Figure 9. Existing Bicycle and Pedestrian Facilities, East Section Map



5.3.1 Existing Bicycle and Pedestrian Facilities - Trails

A trail network exists within the I-270 study area (Figures 7 through 9) that is used by bicycle and pedestrians. The Clear Creek Trail, South Platte River Trail, and Sand Creek Trail provide

regional connectivity along their drainages, connecting with on-street sidewalks at access points, identified in the sections below. Although the Sand Creek, South Platte River, and Clear Creek trails provide regional connectivity as far west as Golden and as far south as Littleton, the lack of bicycle and pedestrian facilities on roadways that cross I-270 limit access to the trails, reducing their intended regional function. In addition to the three regional trails in the study area, two local trails (Northfield Trail and Wetland Loop Trail) provide park circulation access to the Northfield Pond Park and Wetland Park.

The trails listed above are owned and maintained by:

- Adams County: Clear Creek Trail and South Platte River Trail within the study area
- SCRGP, a 501(c)3 non-profit organization: Sand Creek Regional Greenway
- Denver: Northfield Trail
- Commerce City: Wetland Loop Trail

Additional existing features are listed below.

5.3.1.1 Clear Creek Trail

The Clear Creek Trail is a primarily hard surfaced 23-mile-long trail, averaging 8 feet in width through the study area that provides commuter and recreational access to walking, biking, and equestrian use. It begins in the City of Golden (Golden) and ends at its connection to the South Platte River Trail north of I-76 in Adams County just outside the project study area. The trail runs parallel to Clear Creek and crosses under I-270 between CO 224 and I-76. There are no connections to bicycle or pedestrian facilities on roadways that cross I-270 or to other regional trails within the study area.

5.3.1.2 South Platte River Trail

The South Platte River Trail is a primarily hard-surfaced trail that is 32 miles long and averages 10 feet in width through the study area that provides access to walking, biking, and equestrian use. It is a regional trail for the Denver Metropolitan area, running from the City of Brighton to the City of Littleton (Littleton). The trail runs parallel to the South Platte River and crosses under I-270. On the south side of I-270, the South Platte River Trail connects to the Sand Creek Trail just west of a pedestrian bridge over the South Platte River. This connection is the only access to the South Platte River Trail within the study area. There are no connections to bicycle or pedestrian facilities on roadways that cross I-270 within the study area.

5.3.1.3 Sand Creek Regional Greenway (“Sand Creek Trail”)

The Sand Creek Regional Greenway (commonly referred to as the Sand Creek Trail) is a primarily hard-surfaced, 13-mile-long trail, averaging 10 feet in width through the study area that provides access to walking, biking, equestrian use, and bird watching. It begins at its connection point with the South Platte River Trail east of York Street in Commerce City and runs southeast to Sand Creek Park at Peoria Street and North Fitzsimmons Parkway in Aurora outside the study area. The trail parallels I-270 and Sand Creek throughout the study area. There are several access points to this trail within the study area.

- Northfield Trail at the intersection of Quebec Street and South Sandcreek Drive
- East 50th Avenue and Pontiac Street
- Wetland Park Trailhead at the east end of East 52nd Avenue, offering vehicle parking spaces in an off-street parking lot
- Dahlia Trailhead at the intersection of East 56th Avenue and South Sandcreek Drive offering vehicle spaces in an off-street parking lot
- Brighton Boulevard under I-270 via a spur trail
- West terminus at the South Platte River Trail

5.3.1.4 Wetland Loop Trail

The Wetland Loop Trail is a 0.5-mile concrete loop trail that can be accessed by a paved trailhead. This trail provides pedestrians, cyclists, and equestrians access to the Sand Creek Trail via a pedestrian bridge over Sand Creek.

5.3.1.5 Northfield Trail

The Northfield Trail is a primarily hard-surfaced trail that averages 10 feet in width through the study area. The trail extends northeast of I-270, connecting users of Sand Creek Trail to Northfield Pond Park and other recreational resources within the Central Park neighborhood.

5.3.2 Existing Bicycle and Pedestrian Facilities - Sidewalks and On-Street Facilities

The study area also contains sidewalks or locations where bicycles share the road with vehicular traffic across I-270, in addition to the trail network discussed above (Figures 7 through 9). These facilities, which vary in type, age, and condition, are limited to existing streets that cross I-270 at Washington Street, CO 224, York Street, Brighton Boulevard, Vasquez Boulevard, East 56th Avenue, and Quebec Street (Figure 6). East 60th Avenue crosses I-270 at two locations, but there are no existing bicycle or pedestrian facilities at either crossing. There is only one designated on-street bicycle lane near the study area on Holly Street and it does not cross I-270.

5.3.2.1 Washington Street

Washington Street is a six-lane facility, with a posted speed limit of 40 mph, a painted median, and attached, 5-foot sidewalks on both sides of the street, extending outside the study area (Figure 10). The 5-foot sidewalk does not provide adequate width to accommodate both pedestrians and bicycles separated from motor vehicle traffic, and there are no designated bicycle lanes on Washington Street. Bicyclists currently share the road with vehicles.

Figure 10. Washington Street at I-270 Looking Northbound



5.3.2.2 CO 224 and Clear Creek Trail

CO 224 crossing under I-270 is a two-lane facility (Figure 11), with a posted speed limit of 50 mph, and a painted median and shoulder. Bicyclists or pedestrians, if not using the Clear Creek Trail (detailed above), use the existing CO 224 shoulder, which varies in width from approximately 4 feet to 8 feet through the project area.

Figure 11. CO 224 Crossing Under I-270, Looking East



Source: Google Maps

5.3.2.3 York Street

York Street is a four-lane facility, with a posted speed limit of 35 mph, a painted median and a mix of attached and detached sidewalk (Figure 12). The York Street bridge over I-270 has less than 3 feet of concrete between the pedestrian fence and the existing guardrail. It is unclear if this space was intended for pedestrian use. If this space was intended for pedestrian use, it does not meet current minimum sidewalk width standards. The guardrail alignment blocks a connection to sidewalks north and south of the York Street on-ramp and off-ramp terminals. There are no sidewalk connections between ramp terminals or 68th Street and the York Street structure itself. The only location that provides a crosswalk and direct connection from the York Street sidewalk to the York Street bridge is the northwest corner, via a narrow gravel opening between guardrail end sections, which is not compliant with current standards. Bicyclists on York Street currently share the road with vehicles; there are no designated bicycle lanes or paved shoulders.

Figure 12. York Street at I-270, Looking Southbound



5.3.2.4 Burlington Ditch

The Burlington Ditch, owned and operated by the Farmers Reservoir and Irrigation Company (FRICO), crosses underneath I-270 within the study area (Figure 13). Two service access roads run the length of the ditch within the study area and cross I-270. These are private roads, and do not accommodate pedestrian or bicycle access across I-270. East 64th Avenue dead-ends on the west side of the Burlington Ditch north of I-270, where it transitions to a dirt access road for two parcels to the west and does not cross I-270. Bicycles and pedestrians cannot cross I-270 at this location.

Figure 13. Burlington Ditch Crossing Under I-270, Plan View



5.3.2.5 Brighton Boulevard and Union Pacific Railroad (UPRR)/BNSF Crossings under I-270

There are five unique crossing features at this location: Brighton Boulevard, the Sand Creek Trail spur trail, East 60th Avenue, UPRR, and BNSF (Figure 14). Each feature is described in more detail below.

Figure 14. Brighton Boulevard and UPRR/BNSF Crossings Under I-270, Plan View



The Sand Creek Trail spur is approximately 6 feet wide and connects bicycle and pedestrian users from the trail to Brighton Boulevard under the I-270 bridge. Brighton Boulevard is a two-lane, non-rural, arterial facility crossing under I-270 and over Sand Creek, with a posted speed limit of 35 mph (Figure 15). Brighton Boulevard does not have bike lanes or continuous sidewalks wide enough to accommodate both pedestrians and bicycles in the study area. Bicyclists must share the road with vehicles. Brighton Boulevard's existing features include:

- Bridge over Sand Creek:
 - West side: approximately 5-foot, attached sidewalk with curb and gutter and pedestrian bridge railing
 - East side: approximately 6-foot, attached sidewalk with curb and gutter and pedestrian bridge railing
- Under I-270:
 - West side: curb and gutter with bridge slope paving and no sidewalk
 - East side: concrete and metal guardrail protecting existing bridge piers with a 5-foot concrete sidewalk separated from Brighton Boulevard by the existing bridge piers
- North of I-270:
 - West side:
 - Curb and gutter with no sidewalk between I-270 and the Waste Management access road
 - Curb and gutter with an attached, 5-foot sidewalk between the Waste Management access road and Colorado Boulevard
 - No shoulder or sidewalk north of Colorado Boulevard
 - East side:
 - Curb and gutter with an attached, 6-foot sidewalk between I-270 and East 60th Avenue
 - No shoulder or sidewalk north of East 60th Avenue

East 60th Avenue under I-270 is a low-speed, two-lane roadway, with a painted centerline and narrow painted shoulders that vary in width from approximately 0 feet to 4 feet (Figure 16). Approximately 200 feet east (measured from Brighton Boulevard), East 60th Avenue crosses under three narrow railroad structures that only have 9 feet of vertical clearances. Eastbound and westbound lanes split to avoid railroad piers that sit in the center of the road (Figure 17), with narrow lane widths ranging from 8 feet to 10 feet and with no edge stripes and limited sight lines. East 60th Avenue under I-270 at Brighton Boulevard and the railroad bridges do not have pedestrian facilities or designated bicycle lanes. Bicyclists must share the road with vehicles.

Figure 15. Brighton Boulevard Crossing Under I-270, Looking South



Figure 16. East 60th Avenue Under I-270 Parallel to Brighton Boulevard, Looking South



Figure 17. East 60th Avenue Crossing Under UPRR and BNSF Bridges, Looking West



5.3.2.6 East 60th Avenue and BNSF

There are two unique crossing features at this location: East 60th Avenue and the BNSF tracks.

East 60th Avenue runs parallel to the Sand Creek Trail, turns north paralleling west of the BNSF tracks, and turns east, crossing the BNSF tracks and continues to Vasquez Boulevard. East 60th Avenue is a low-speed, two-lane roadway, with a painted centerline and narrow painted shoulders that vary in width from approximately 0 feet to 4 feet (Figure 18).

There are no pedestrian facilities or designated bicycle lanes on East 60th Avenue between approximately 4250 East 60th Avenue until East 60th Avenue crosses the railroad tracks north of I-270 near 4400 East 60th Avenue. Once East 60th Avenue crosses the railroad tracks near 4400 East 60th Avenue, there are sections of an approximately 5-foot-wide sidewalk on the south side until Vasquez Boulevard and on the north side from Clermont Street to Vasquez Boulevard. However, these 5-foot, attached sidewalks are not continuous from the railroad crossing to Vasquez Boulevard, with some developed parcels not containing a sidewalk. The existing sidewalks are in poor condition because of extensive road debris on the sidewalks. There are no existing designated bicycle lanes on East 60th Avenue. Bicyclists must share the road with vehicles.

Figure 18. East 60th Avenue Crossing Under I-270, Looking South



5.3.2.7 Vasquez Boulevard

Vasquez Boulevard is a six-lane, principal, arterial facility crossing under I-270 and over Sand Creek, with a posted speed limit of 45 mph. Vasquez Boulevard has free-flowing interchange ramps at the I-270 interchange and experiences heavy passenger, commercial, and freight vehicular traffic. Vasquez Boulevard does not have bicycle facilities or continuous sidewalks in the study area, resulting in limited bicycle and pedestrian access across I-270. The lack of continuous bicycle and pedestrian facilities on Vasquez Boulevard restrict bicycles and pedestrians to access transit, businesses, neighborhoods, and the Sand Creek Trail. Additional details regarding where sidewalks are available are described below.

Vasquez Boulevard's existing features include:

- Bridge over Sand Creek (Figure 19):
 - Cross section: eight through lanes, with one turn lane, and a raised median ranging from approximately 1 foot to 10 feet wide
 - West and east: approximately 4-foot, attached sidewalk with curb and gutter and pedestrian bridge railing. The pedestrian bridge railing posts are within the sidewalk, likely reducing the sidewalk width to 3 feet
- Between interchange ramps and under I-270 (Figure 20):
 - Cross section: six through lanes, with two acceleration and deceleration lanes between the free-flowing interchange ramps, a raised median ranging from approximately 10 feet to 14 feet wide, and curb and gutter. There are no crosswalks, advanced pedestrian warning signs, or signals at the free-flowing interchange ramps.
 - West side:
 - Between the I-270 eastbound off-ramp and the southbound Vasquez Boulevard to I-270 eastbound on-ramp, there is no sidewalk, but a dirt social path is visible, indicating pedestrian use
 - Between the southbound Vasquez Boulevard to the I-270 eastbound on-ramp and the I-270 westbound to southbound Vasquez Boulevard off-ramp, an approximately 8-foot sidewalk begins attached, transitions to a detached sidewalk, and re-attaches before ending approximately 100 feet south of the ramp
 - Between the I-270 westbound to the southbound Vasquez Boulevard off-ramp and the southbound Vasquez Boulevard to the I-270 westbound on-ramp, there is no sidewalk, but a dirt social path is visible, indicating pedestrian use
 - East side:
 - Between the Sand Creek bridge and the I-270 eastbound to the northbound Vasquez Boulevard off-ramp, there is no sidewalk, but a dirt social path is visible, indicating pedestrian use
 - Between the I-270 eastbound to the northbound Vasquez Boulevard off-ramp and the northbound Vasquez Boulevard to the I-270 westbound on-ramp, an 8-foot sidewalk begins attached (approximately 100 feet north of the on-ramp),

- transitions to a detached sidewalk, and re-attaches before ending approximately 50 feet south of the ramp
- Between the northbound Vasquez Boulevard to the I-270 westbound on-ramp and the I-270 westbound to northbound Vasquez Boulevard off-ramp, there is no sidewalk, but a dirt social path is visible, indicating pedestrian use. This social path appears to cross the free-flowing off-ramp and ends at Dahlia Street/East 58th Avenue
 - Between the I-270 westbound to the northbound Vasquez Boulevard off-ramp and the northbound Vasquez Boulevard to the westbound I-270 on-ramp to East 60th Avenue (Figure 21):
 - Cross section: eight through lanes, two left turn lanes added near the intersection of East 60th Avenue, with a raised median ranging from 14 feet to 2 feet wide, curb and gutter, and guardrail
 - There is no sidewalk on the east or west sides of Vasquez Boulevard

Figure 19. Vasquez Boulevard Bridge Over Sand Creek, Plan View

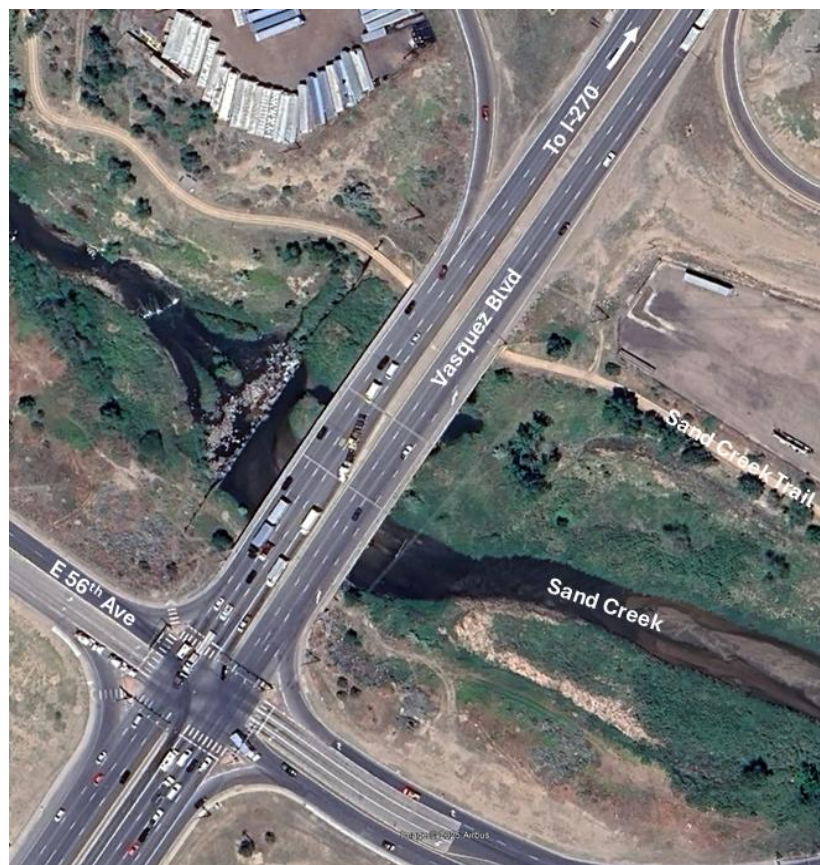


Figure 20. Vasquez Boulevard Under I-270, Plan View

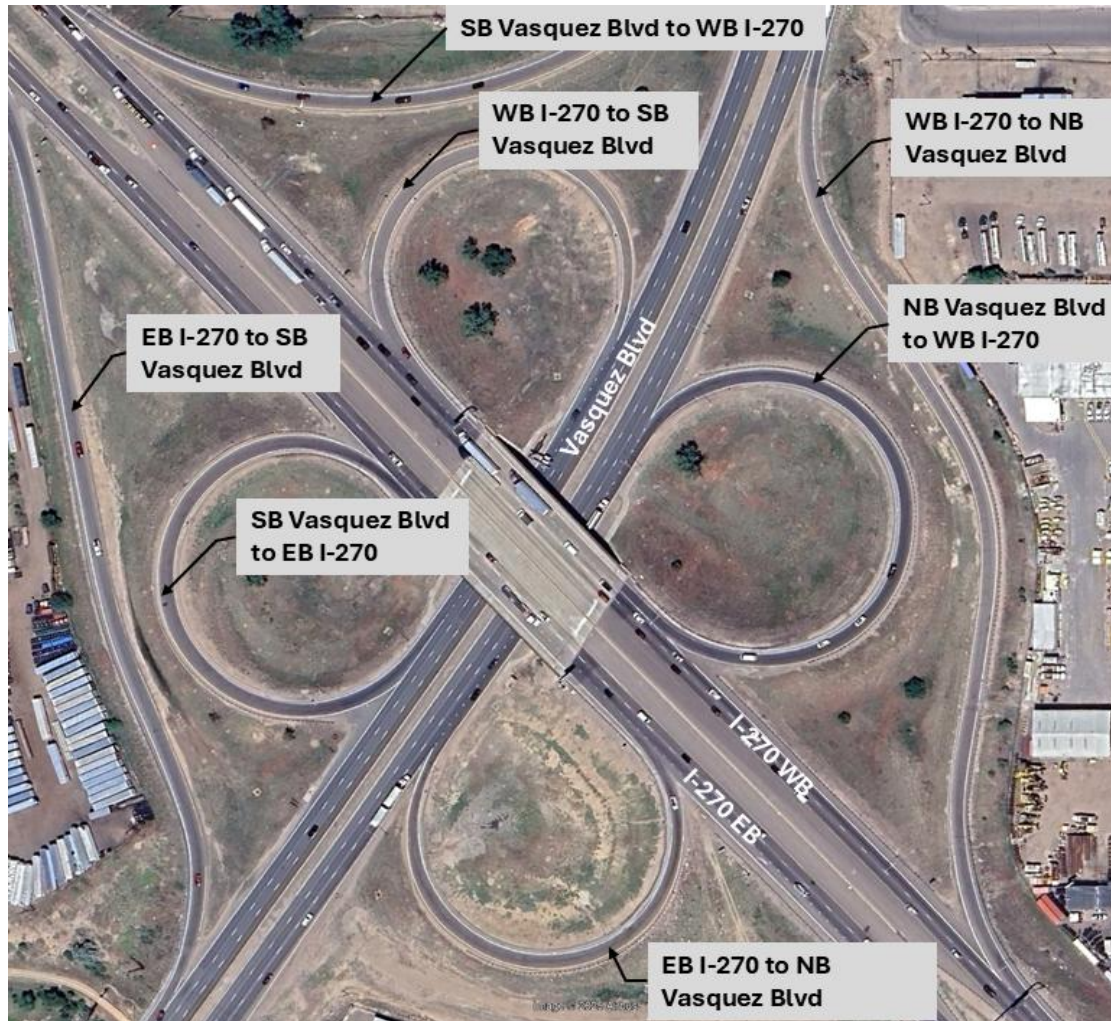


Figure 21. Vasquez Boulevard North of I-270, Plan View



5.3.2.8 East 56th Avenue

East 56th Avenue is a two-lane roadway crossing over Sand Creek and under I-270, with a 30-mph posted speed limit. East 56th Avenue does not have bike lanes or continuous sidewalks in the study area. Bicyclists share the road with vehicles. Available sidewalks are in poor condition due to extensive road debris. Additional details regarding where sidewalks are available are described and shown in Figure 22 below.

East 56th Avenue's existing features include:

- Between East 56th Avenue over Sand Creek Bridge and south of the intersection with South Sandcreek Drive



- Four through lanes, with curb and gutter, and a painted median approximately 17 feet wide. One of the through lanes transitions to a right turn lane only to eastbound South Sandcreek Drive.
- There are no sidewalks on either side of East 56th Avenue, but there is a dirt social path connecting to the Sand Creek Trail and the Dahlia Trailhead parking lot, indicating pedestrian use
 - South Sandcreek Drive between East 56th Avenue and Dahlia Trailhead
 - Two through lanes, with curb and gutter on both sides of the road. The north side of South Sandcreek Drive has an attached, 6-foot sidewalk at the intersection that transitions to a detached, 6-foot sidewalk with a midblock crossing, indicated by a crosswalk, pedestrian warning signs, and a Rectangular Rapid Flashing Beacon (RRFB) sign on the east side of the Dahlia Trailhead access. There is no sidewalk on the south side of South Sandcreek Drive.
 - Between the East 56th Avenue intersections of South Sandcreek Drive and Eudora Street (under I-270)
 - Cross section: two through lanes, with left turn lanes, and curb and gutter on both sides that transition to concrete guardrail under I-270
 - West side: there is no curb and gutter between the intersections and the I-270 bridge overpass. There is substantial debris buildup between the concrete guardrail and bridge slope paving, but it appears there is an established sidewalk under I-270 until the intersection with Eudora Street.
 - East side: there is an attached and detached, 6-foot concrete sidewalk from the intersection with South Sandcreek Drive to the intersection with Eudora Street
 - Intersection of East 56th Avenue and Eudora Street
 - There are attached sidewalks on all corners of the intersection, but there are no crosswalks or pedestrian curb ramps
 - East 56th Avenue between Eudora Street and Fairfax Street
 - Begins with two through lanes, one right turn lane, a painted median approximately 10 feet wide, curb and gutter, and attached, 5-foot sidewalk. Section transitions to four through lanes, with a painted striped median, curb and gutter, and attached, 5-foot sidewalk.
 - Eudora Street north of East 56th Avenue intersection
 - Two through lanes, with curb and gutter, and approximately 5-foot, attached sidewalk

Figure 22. East 56th Avenue Crossing Under I-270, Plan View



5.3.3 Quebec Street

Quebec Street is a six-lane, principal, arterial facility crossing over Sand Creek and I-270, with a posted speed limit of 40 mph. Quebec Street is not a designated bicycle route but has shoulders that could accommodate bicyclists, and the Northfield Trail runs parallel on the east side of Quebec Street, providing bicycle and pedestrian access. Additional existing features are described below and shown in Figure 23.

Quebec Street's existing features include:

- Bridge over Sand Creek
 - Six through lanes, two left turn lanes, a painted double yellow line, and curb and gutter. There are no sidewalks on this stretch of Quebec Street, but the Northfield trail runs parallel to Quebec Street on a grade separated bridge on the east side of the road. There are no facilities on the west side of Quebec Street.
- Between bridge over Sand Creek and Northfield Boulevard

- Cross Section: six through lanes, one southbound Quebec Street right turn lane to Sandcreek Drive, two left turn lanes, a raised median ranging from approximately 1 foot to 18 feet in width, and curb and gutter on both sides of the road
- West side: there is no sidewalk, but a dirt social path is visible between the bridge overpass and the intersection with South Sandcreek Drive, indicating pedestrian use. There is an approximately 4-foot shoulder that could accommodate bicycles but does not have designated crossings at intersections on either end of the bridge.
- East side: there is an approximately 4-foot shoulder that could accommodate bicycles but does not have designated crossings at intersections on either end of the bridge. The Northfield Trail parallels Quebec Street and is 12 feet wide, which can accommodate both bicycle and pedestrian users. It crosses at the intersection of the off-ramp and Quebec Street, utilizing curb ramps, crosswalks, and pedestrian signals. The trail attaches to Quebec Street over I-270, before it becomes detached and follows Northfield Boulevard.

Figure 23. Quebec Street Crossing over I-270, Looking North



5.4 Planned Bicycle and Pedestrian Resources Not Included in this Project

Local municipalities and communities recognize the importance of improving the bicycle and pedestrian network throughout this industrial area and outlying residential areas to provide its residents with opportunities to safely commute to work, visit local businesses and community events, or access recreation facilities and open space. Municipal and community planned improvements near the study area shown in Table 1 and Figure 24 are in different phases of planning and design and would be constructed by the Local Agency or Organization Planning Lead listed below. It is important to note that I-270 often limits agencies' ability to implement these plans, because the existing infrastructure is too narrow to accommodate the improvements without reconstruction.

Additionally, CDOT's Division of Transit and Rail (DTR) currently has no existing plans for transit or rail improvement projects in the I-270 corridor.

Figure 24. Municipal and Community Planned Bicycle and Pedestrian Projects

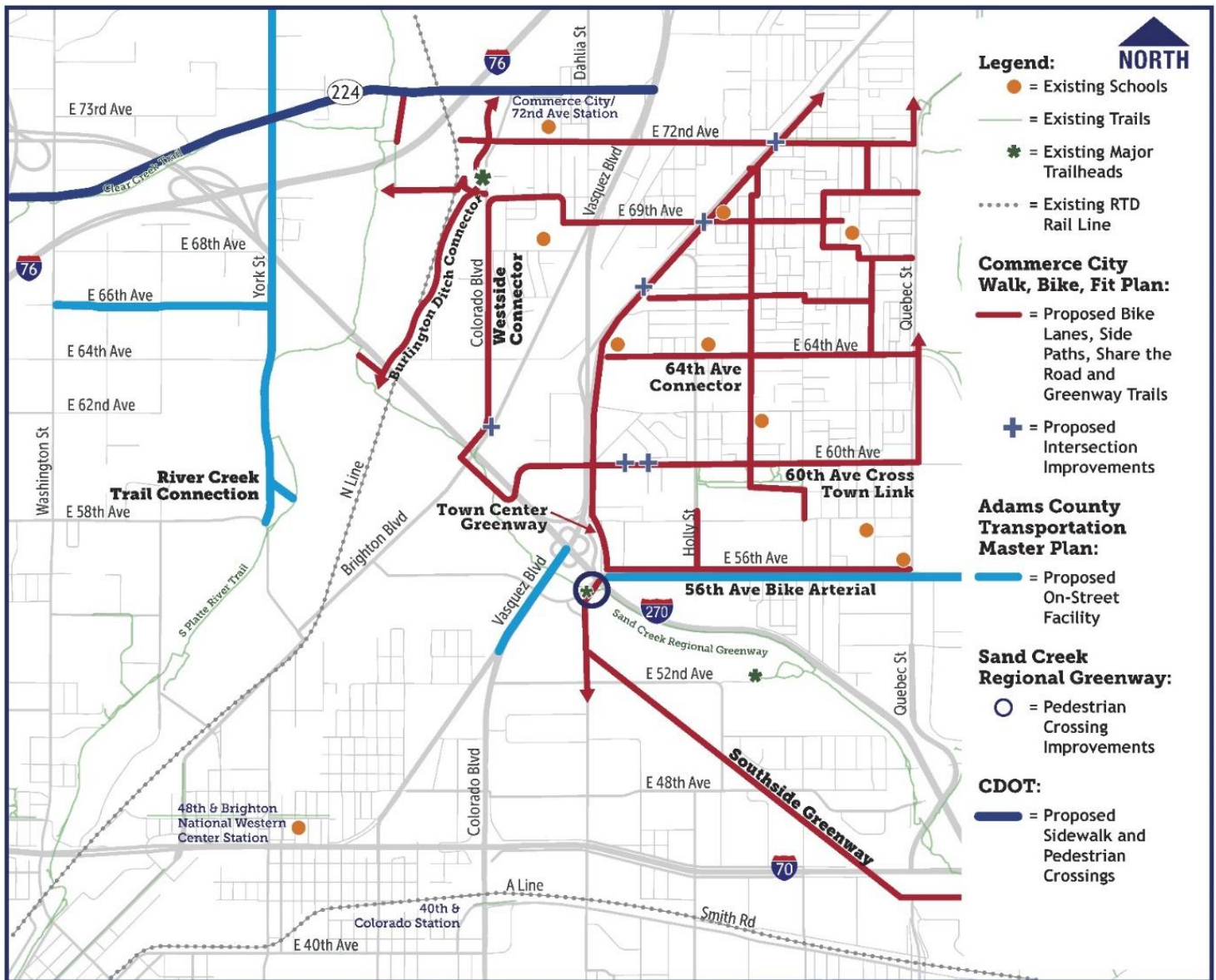


Table 1. Municipal and Community Planned Bicycle and Pedestrian Projects

Name	Local Agency / Organization Planning Lead	Location	Description	Source	Funded? (Yes or No)
York Street Widening Phase III	Adams County	York Street, 58th Avenue to CO 224 (excluding over I-270)	Roadway capacity improvements, including pedestrian and multimodal facilities	Adams County active design project; Adams County Transportation Master Plan (Adams County, 2022)	Yes
Burlington Ditch Connector	Commerce City	O'Brian Canal/Burlington Ditch from Sand Creek Trail to Barr Lake	Paved and soft surface trail and greenway	Walk.Bike.Fit (Commerce City, 2012) Adams County Open Space, Parks & Trails Master Plan	No
Westside Connector	Commerce City	Colorado Boulevard, Brighton Boulevard to 72nd Avenue	On-street bike lanes, improved sidewalk	Walk.Bike.Fit (Commerce City, 2012)	No
60th Avenue Cross Town Link	Commerce City	60th Avenue, Brighton Boulevard to Quebec Parkway	On-street bike lanes, improved sidewalk, off-street trails	Walk.Bike.Fit (Commerce City, 2012)	No
Town Center Greenway	Commerce City	Vasquez Boulevard, Dahlia Trailhead to Fairfax Park	Off-street trail	Walk.Bike.Fit (Commerce City, 2012)	No
56th Avenue Bike Arterial	Commerce City	56th Avenue, Dahlia Street to Quebec Parkway	Buffered bike lanes	Walk.Bike.Fit (Commerce City, 2012)	No
56th Avenue	Adams County	56th Avenue, Eudora Street to E-470	On-street facility	Adams County Transportation Master Plan (Adams County, 2022)	No

Name	Local Agency / Organization Planning Lead	Location	Description	Source	Funded? (Yes or No)
66th Avenue	Adams County	66th Avenue, Washington Street to York Street	On-street facility	Adams County Transportation Master Plan (Adams County, 2022)	No
Town Center Greenway Trail Connection	Commerce City	Off-street trail, Vasquez Boulevard to 56th Avenue and Dahlia Trailhead	Off-street trail connection from the Town Center Greenway along Vasquez Boulevard to 56th Avenue and the Dahlia Trailhead	Walk.Bike.Fit (Commerce City, 2012)	No
56th Avenue Sidewalk Connection	SCGRP	56th Avenue, Vasquez Boulevard to Dahlia Trailhead	Improved sidewalk from Vasquez Boulevard to Dahlia Trailhead; traffic signal retiming at 56th Avenue and Vasquez Boulevard to better accommodate pedestrian crossing	Walk2Connect pedestrian access to Sand Creek Regional Greenway from Elyria Swansea Neighborhoods: report on walk audit activities (SCGRP, 2019)	No
CO 224 Overlay from United States Highway 36 (US 36) to US 6	CDOT	CO 224 from US 36 to United States Highway 6 (US 6)	Active CDOT project currently includes new sidewalks and pedestrian crossings	CDOT active design project	Yes

6.0 Impacts Assessment

This section summarizes the improvements to be implemented as part of this project and assesses impacts to transit, bicycle, and pedestrian resources intersecting the project limits that would result from the No Action Alternative and each build alternative.

6.1 No Action Alternative

The No Action Alternative would not have impacts to transit, bicycle, and pedestrian resources. The lack of bicycle and pedestrian facilities, along with gaps in connectivity across the I-270 corridor, would continue to hinder transit, bicycle, and pedestrian movements.

6.2 Build Alternatives

The I-270 project improvements are intended to complement the planned projects not included in this project, described in Table 1 and Figure 24. The I-270 project improvements will not preclude these projects. The benefits of the collective improvements (I-270 and planned projects by Local Agencies or Organizations not included in this project) will exceed those of the individual benefits of any standalone improvement.

Improvements and impacts to transit, bicycle, and pedestrian resources would be the same under the Three General-Purpose Lanes Alternative as under the Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative.

6.2.1 Public Transit Resources

The existing RTD bus stops located on CO 224, East 60th Avenue, Vasquez Boulevard, Dahlia Street, East 58th Avenue, Eudora Street, East 56th Avenue, East 50th Avenue, East 49th Avenue, Quebec Street, and Northfield Boulevard are outside of the project limits—and no improvements to these existing stops are planned as part of this project.

Although buses do not currently use the I-270 and Vasquez Boulevard interchange as part of RTD's regional or local services, the planned peak period queue jumps included for this project at the northbound Vasquez Boulevard to eastbound I-270 and southbound Vasquez Boulevard to westbound I-270 on-ramps provide the opportunity for future travel time reliability transit benefits, should RTD develop service requiring the interchange's use.

Existing RTD routes 37 and 88 currently do not cross I-270 at Quebec Street. However, in coordination and agreement with RTD, routes 37 and 88 present an opportunity to be rerouted and in return optimize RTD bus route service across I-270. Access from RTD route 88 to RTD route 37 provides riders more opportunities to connect to additional east-west transit and light rail stops south of the project corridor, improving regional transit connectivity. A new transit stop with four new RTD bus stops and connecting sidewalks are proposed for this project at the intersection of Quebec Street and South Sandcreek Drive (Figure 25). This new transit stop provides an opportunity to transfer between RTD routes 37 and 88, improving regional connectivity. Once this new transit stop is added, RTD will reroute the existing route 88 across I-270 to utilize this new transit stop.

Figure 25. New Quebec Street Transit Stop Design



Existing transit routes, such as routes 37, 48, 49, and 88, traveling near I-270 at Vasquez Boulevard, East 56th Avenue, 50th Avenue, South Sandcreek Drive, or Quebec Street would experience minor, temporary disruptions in service during construction due to traffic delays associated with construction activities. However, at least one lane of travel would be maintained in each direction. Existing bus routes would remain operational throughout construction. Existing RTD bus stops are outside of the project impact limits and will not be impacted.

In accordance with CDOT's Maintenance of Traffic requirements, lane closures on I-270 would be limited to overnight work and off-peak hours to minimize construction-related temporary impacts from travel delays for transit passengers. The detour route for the FF5 bus route, (mentioned in the existing conditions section above) allows the FF5 to operate during construction outside of the I-270 corridor, and therefore, avoid congestion associated with construction activities.

The build alternatives would reduce congestion on I-270, benefiting all interstate users, including buses. The improved travel times anticipated with the build alternatives may entice more users to use transit rather than vehicles, further improving congestion on I-270 and positively impacting the community with improved travel time and reliability. Additional information regarding congestion and travel time reliability can be found in the Transportation and Traffic Technical Report.

6.2.2 Bicycle and Pedestrian Resources - Trails

The following proposed modifications to the trail network are planned as part of this project and are aimed at maintaining regional connectivity and to improve substandard design elements to optimize the user experience and safety. The descriptions listed below summarize the improvements and impacts. Refer to the Recreational, Section 4(f) Non-Historic, and Section 6(f) Resources Technical Report for more detailed analysis and temporary impact requirements associated with each trail.

6.2.2.1 Clear Creek Trail

While the Clear Creek Trail intersects the project study area via the I-270 underpass west of the I-270/I-76 interchange, there are no planned improvements to the Clear Creek Trail. The existing I-270 bridges over Clear Creek are wide enough to accommodate additional, proposed lanes along I-270 and do not need to be replaced. Improvements along I-270 above the trail would constitute roadway resurfacing and lane reconfiguration via striping and could be completed within the limits of the roadway. There is potential for temporary impacts to occur via trail closures due to falling debris from overhead construction activities. However, this impact will be avoided with protective measures during construction. Therefore, no impacts would occur as a result of the build alternatives.

6.2.2.2 South Platte River Trail

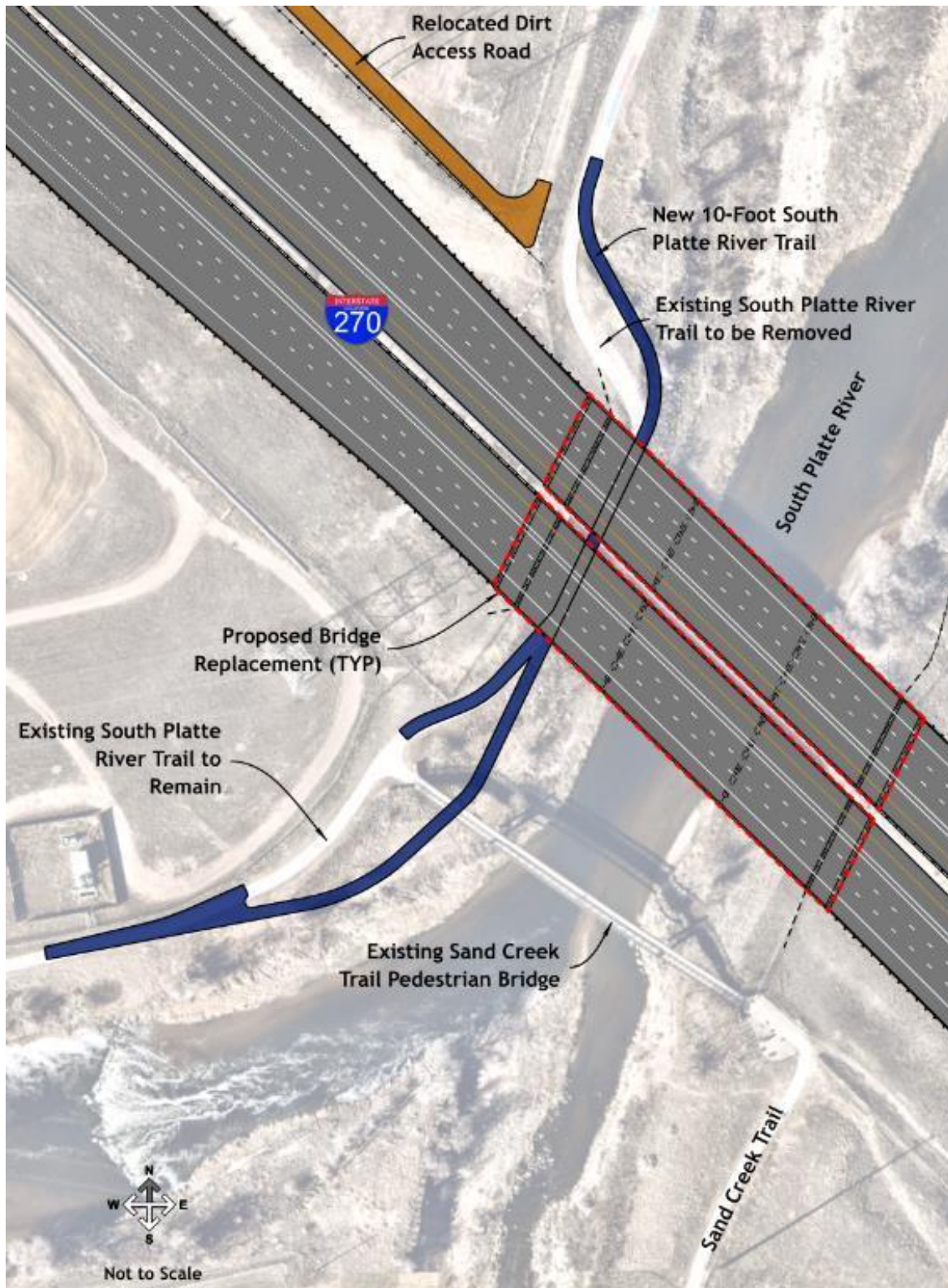
Approximately 900 feet of the South Platte River Trail would be reconstructed beginning approximately 250 feet north of I-270, cross under the I-270 overpass and Sand Creek Trail Pedestrian Bridge, and tie into the existing trail approximately 500 feet south of I-270 (Figure 26). The proposed alignment will be built to current standards, improve blind curves, and

increase vertical clearances under I-270. Spur connections from the new trail alignment to the Sand Creek Trail pedestrian bridge will be provided. The spur to be constructed south of the pedestrian bridge will provide access to the pedestrian bridge designed to current standards. The spur to be constructed north of the pedestrian bridge will provide access to the pedestrian bridge but will not be built to current standards, matching the existing grades. This results in an on-going safety benefit to trail users by addressing the existing geometric safety concerns along the trail and providing a trail that is in compliance with current design requirements.

The existing South Platte River Trail will be temporarily impacted during construction to realign the existing South Platte River Trail under I-270, improve the grades along the trail, and to construct the new I-270 bridge overpass. A temporary trail would be constructed to maintain access along the South Platte River Trail during construction. Temporary trail detours will be provided during construction to maintain bicycle and pedestrian access to the South Platte River Trail, with overnight trail closures anticipated. Protective measures would be in place to protect trail users along the temporary trail from construction activities required to construct the new bridge and trail. Flaggers and signage would be utilized to manage trail traffic if a short closure is required to allow construction equipment to cross the trail, or if the temporary trail cannot be constructed to the minimum standard width to accommodate both users.

Several overnight closures of the temporary trail would be required to accommodate placement of the bridge girders, and trail users would not be able to travel under I-270 during these times for safety reasons.

Figure 26. South Platte River Trail Design



6.2.2.3 Sand Creek Trail

There are multiple segments of the Sand Creek Trail between the South Platte River Trail to a location approximately 0.75 miles east of Dahlia Trailhead that are planned to be improved or impacted as a part of this project. Figures 27 through 31 noted in the following Sand Creek Trail improvements list can be found in Section 6.2.3.

- An underground pipe outfall is proposed to be installed directly east of the Burlington Ditch under the trail and approximately 40 feet of the trail will be reconstructed to complete this construction. The work would be completed in a manner that would allow trail continuity to be maintained within the established operating hours. Flaggers would be utilized to manage trail traffic if a short closure is required to allow construction equipment to cross the trail.
- A spur trail providing a connection to the Sand Creek Trail from Brighton Boulevard would be temporarily closed during replacement of the I-270 bridges that span over Brighton Boulevard, East 60th Avenue, and UPRR and BNSF Railway. The spur trail is in close proximity to existing bridge piers to be removed and reconstructed, creating a need to close the trail temporarily during bridge construction. Additional work requiring the temporary spur trail closure includes reconstruction of an existing retaining wall along the west side of the spur trail to accommodate the new bridge pier locations. Approximately 250 feet of the spur trail would be reconstructed and its connection to Brighton Boulevard would be improved as part of the project (Figure 27). East 60th Avenue is further away from existing piers than the spur trail, which provides a safe and feasible location for a trail detour. Therefore, to maintain access from Brighton Boulevard to the Sand Creek Trail, a temporary trail would be constructed to detour trail users onto East 60th Avenue by installing a temporary concrete barrier to protect pedestrians and bicyclists, installing temporary pavement on the east side of East 60th Avenue, and shifting vehicle traffic onto the temporary pavement to accommodate vehicle traffic. In addition, signage would be placed strategically along East 60th Avenue to warn oncoming drivers about the change in roadway configuration. The spur trail would be reopened following construction in this area.
- Approximately 470 feet of the trail approaching and crossing under Vasquez Boulevard would be temporarily closed to accommodate the replacement of the Vasquez Boulevard bridge over Sand Creek and installation of new, 10-foot-wide sidewalk connections between Sand Creek Trail and the east and west sides of Vasquez Boulevard (Figure 28). Temporary trails would be constructed to maintain access along the Sand Creek Trail. Temporary trail detours will be provided during construction to maintain bicycle and pedestrian access to the Sand Creek Trail, with overnight trail closures anticipated. Protective measures would be in place to protect trail users along the temporary trail from construction activities required to construct the new bridge and trail. Flaggers and signage would be utilized to manage trail traffic if a short closure is required to allow construction equipment to cross the trail, or if the temporary trail cannot be constructed to the minimum standard width to accommodate both users. Several overnight closures of the temporary trail would be required to accommodate placement of the bridge girders, and trail users would not be able to travel under Vasquez Boulevard during these times for safety reasons.

- New sidewalk and trail connections will be constructed between Vasquez Boulevard and the Dahlia Trailhead. See Figure 29 for a visualization of a trail underpass.
- An approximately 400-foot-long segment of the trail would be temporarily closed adjacent to the Dahlia Trailhead to accommodate realigning the trail. The trail realignment would address an existing blind curve along the trail, which creates a safety issue (Figure 30). A temporary trail would be constructed that would maintain access from the Dahlia Trailhead parking area to the trail and detour users around the construction area. The trail would be reopened following construction at this location.
- Underground pipe outfalls extending between I-270 and the Sand Creek would be installed under the Sand Creek Trail at eight locations between approximately 900 feet east of East 56th Avenue to Krameria Street. The work would be completed in a manner that would allow trail continuity to be maintained within the established operating hours. Flaggers would be utilized to manage trail traffic if a short closure is required to allow construction equipment to cross the trail.
- A pedestrian overpass would be built that would connect with the Sand Creek Trail south of I-270, cross over South Sandcreek Drive and I-270, and connect with North Sandcreek Drive at East 53rd Way north of I-270 (Figure 31). An approximately 800-foot-long segment of the Sand Creek Trail would be closed during installation of the pedestrian overpass and for reconstruction of the trail. A temporary trail would be constructed to detour trail users around the construction area and maintain access along the Sand Creek Trail. The trail would be reopened following reconstruction of the trail and construction of the pedestrian bridge.
- Approximately eight short segments of trail will be replaced between East 56th Avenue and Quebec Street to construct proposed storm sewer outfall improvements.

There will be beneficial impacts to trail users, including adding new trail connections that increases trail access to the adjacent neighborhoods and businesses and improves geometric safety concerns along the trail. Temporary trail detours will be provided during construction to maintain bicycle and pedestrian access to the Sand Creek Trail, with overnight trail closures anticipated.

6.2.2.4 Wetland Loop Trail

While the Wetland Loop Trail intersects the project study area, there are no planned improvements to the Wetland Loop Trail, and impacts to the trail would not occur as a result of the build alternatives.

6.2.2.5 Northfield Trail

While the Northfield Trail intersects the project study area, there are no planned improvements to the Northfield Trail. The I-270 eastbound off-ramp to Quebec Street will be resurfaced and may impact the crosswalk associated with the trail. However, there are no planned improvements to the Northfield Trail, and the trail would be maintained during construction.

Figure 27. Brighton Boulevard Crossing under I-270 Design

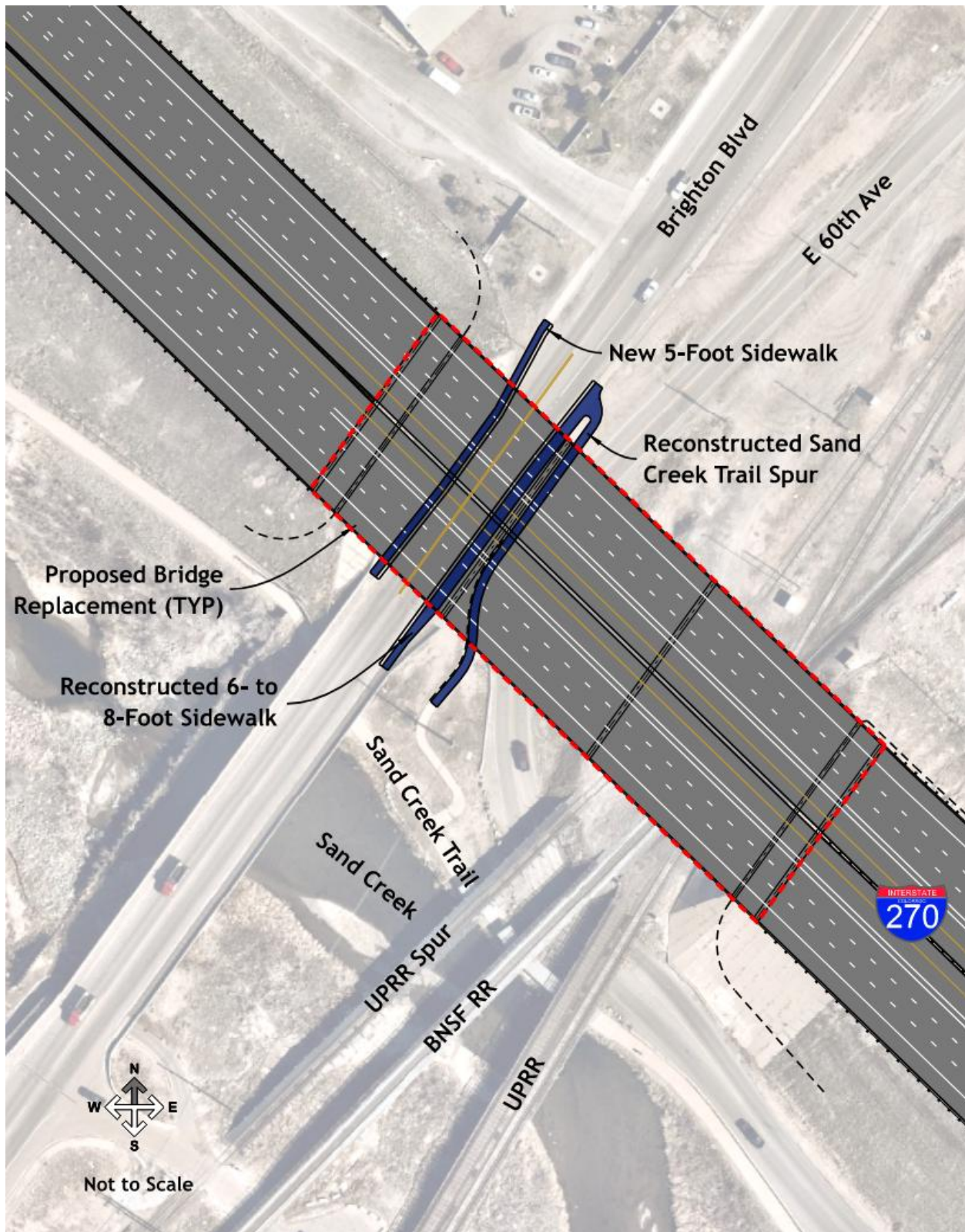


Figure 28. Vasquez Boulevard Crossing under I-270 Design



Figure 29. Vasquez Boulevard Trail Underpass Visualization



Source: Jacobs

Figure 30. East 56th Avenue Crossing under I-270 Design

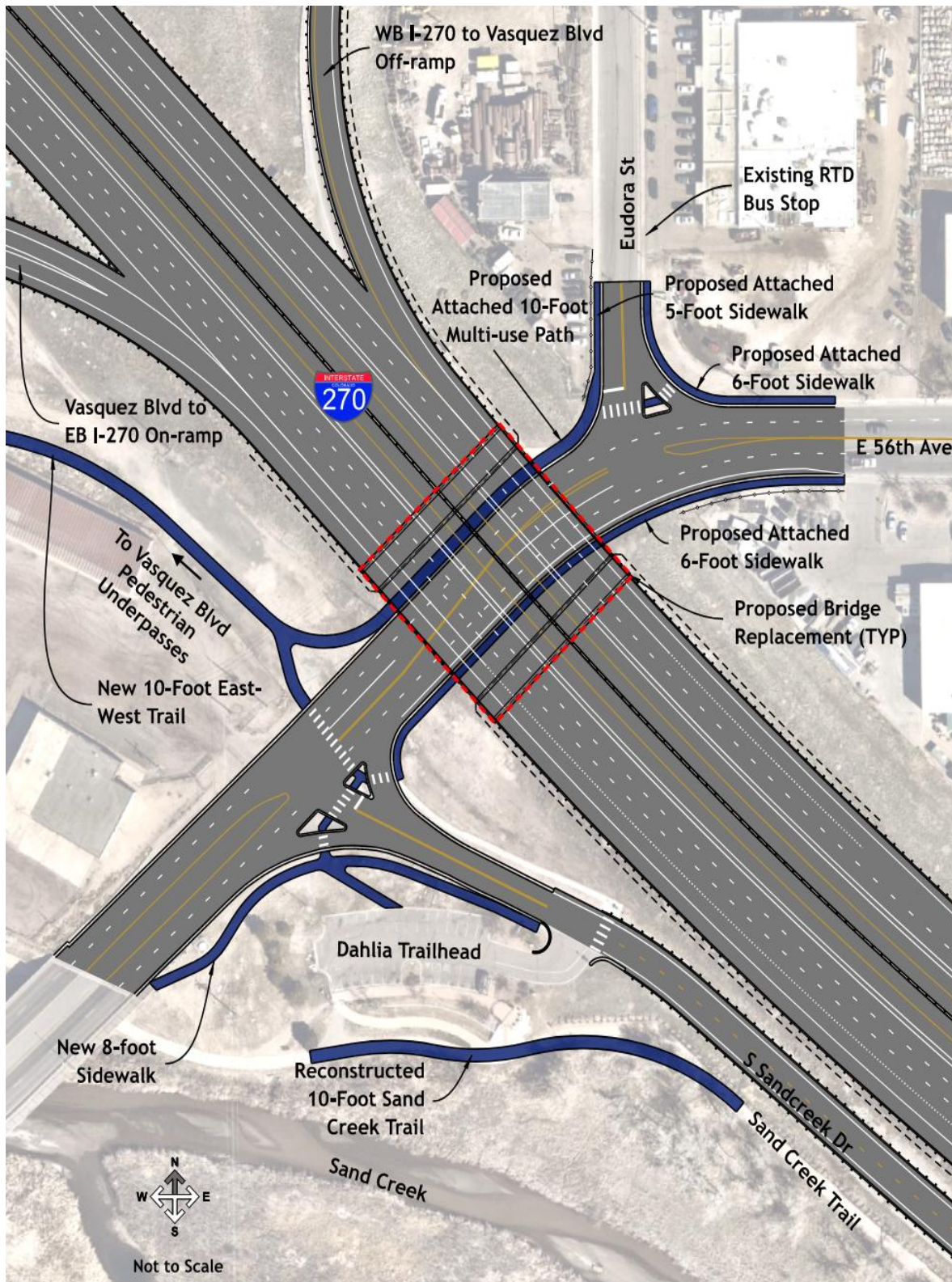


Figure 31. Pedestrian Overpass Design



6.2.3 Bicycle and Pedestrian Resources - Sidewalks and On-Street Facilities

The following bicycle and pedestrian facilities are planned as part of this project to address the existing east-west connectivity gaps across I-270 by improving the existing substandard sidewalks and on-street facilities and providing bicycle and pedestrian crossings that do not exist today.

6.2.3.1 Washington Street Crossing under I-270

There are no planned improvements to the existing facilities on Washington Street, and no impacts are anticipated as part of this project.

6.2.3.2 CO 224 Crossing under I-270

There are no planned improvements to the existing facilities on CO 224 under I-270, and no impacts are anticipated as part of this project.

6.2.3.3 York Street Crossing over I-270

The York Street Crossing over I-270 for this project includes reconstructing the York Street bridge over I-270 with a 10-foot, multi-use path suitable for bicyclists and pedestrians on the east side of York Street and a 5-foot sidewalk for pedestrians on the west side of York Street (Figure 32). The improvements planned with this project will ultimately tie directly into the Adams County Transportation Master Plan (Adams County, 2022) York Street widening from

East 58th Avenue to I-270 and from I-270 to CO 224 (Table 1 and Figure 24). This project's improvements will beneficially impact the community by providing a continuous bicycle and pedestrian network, giving more regional access to businesses, trails, and neighborhoods.

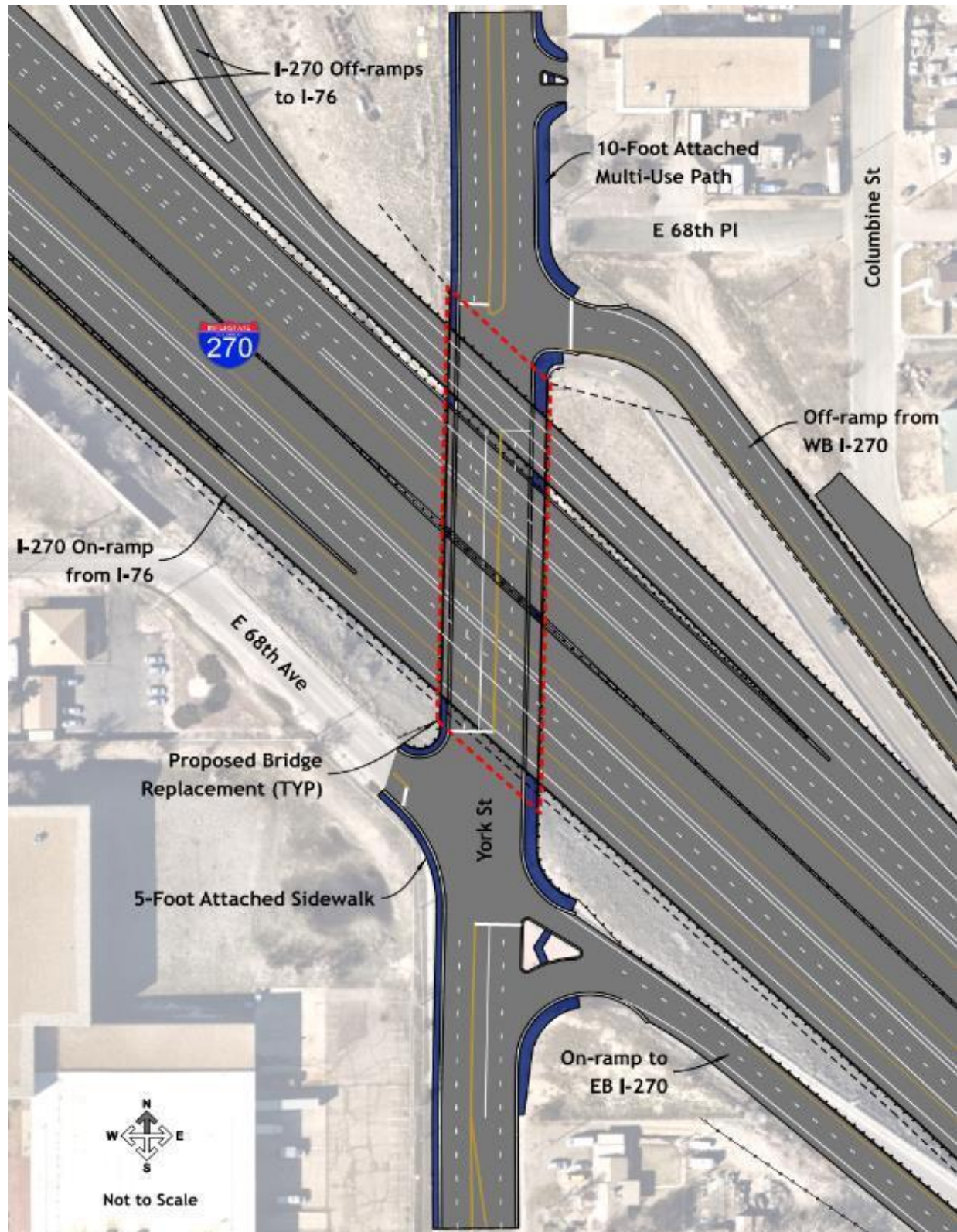
The existing bicycle facilities will be temporarily impacted during construction. There is no feasible detour option in this area that would utilize the existing trails or sidewalks to maintain access across I-270. York Street is a critical roadway network connection across I-270 and vehicle, bicycle, and pedestrian access would be maintained during construction. The Construction Phasing Plan, to be developed during final design, would identify a suitable sequence of construction to construct the new bridge while maintaining access for users. Temporary pedestrian detours would be implemented that detour pedestrians off existing facilities and onto the York Street travelway by installing a temporary concrete guardrail to protect pedestrians from vehicle travel. Bicyclists would continue to use the road, with vehicle travel. Flaggers would be utilized to manage bicycle, pedestrian, and vehicle access, should the existing roadway section need to be narrowed to accommodate construction of the bridge. Signage would be placed in advance of the construction zone to warn drivers, bicyclists, and pedestrians about the change in roadway configuration.

Bridge girder placement may necessitate the need for a full closure of York Street overnight. Bicycles and pedestrians would not be able to utilize the I-270 overpass during these times for safety reasons. These overnight full closures should result in negligible impacts to bicycle and pedestrian access. The public would be notified in advance of overnight closures.

6.2.3.4 Burlington Ditch Crossing under I-270

There are no planned bicycle and pedestrian improvements, as a part of this project, under I-270 along the Burlington Ditch. However, this project will reconstruct the existing I-270 bridges to not preclude Commerce City's Walk.Bike.Fit Plan (Commerce City, 2012) for a new greenway trail called the Burlington Ditch Connector (Table 1 and Figure 24). This project's planned improvements provide a beneficial impact for the community, because it removes the narrow existing I-270 bridges that would otherwise not accommodate the Commerce City's plans to improve bicycle and pedestrian connectivity at this location.

Figure 32. York Street Crossing over I-270 Design



6.2.3.5 Brighton Boulevard, East 60th Avenue, and UPRR/BNSF Crossings under I-270

This project will reconstruct the existing I-270 bridges to accommodate Commerce City's Walk.Bike.Fit plans (Commerce City, 2012) for two new bicycle and pedestrian connections called the 60th Avenue Crosstown Link and the Westside Connector (Table 1 and Figure 24). The new bridges provide a beneficial impact for the community, because they remove the narrow existing I-270 bridges that would otherwise not accommodate Commerce City's plans to improve bicycle and pedestrian connectivity at this location. This project will impact the existing sidewalk on northbound Brighton Boulevard, and the sidewalk will be reconstructed as an attached, 8-foot sidewalk in front of the bridge piers and tie into the existing, 6-foot sidewalks to maintain pedestrian connectivity across I-270. The Sand Creek Trail spur connection will be reconstructed to avoid the new pier locations. Additionally, a new attached, 5-foot sidewalk will be constructed on the west side of Brighton Boulevard under I-270, connecting to existing sidewalks on either side of I-270 (Figure 27).

There is no feasible detour option in this area that would detour bicycles and pedestrians away from the construction zone. Therefore, temporary pedestrian detours would be provided. The Construction Phasing Plan—to be developed during final design—would identify a suitable sequence of construction to construct the new bridge and install pedestrian detour routes during construction. The new southbound sidewalk construction will not have an impact on pedestrian access, since there is not an existing sidewalk under I-270. Pedestrians using the northbound Brighton Boulevard sidewalk would be detoured across Brighton Boulevard to utilize either the new sidewalk, if constructed already, or a temporary sidewalk on southbound Brighton Boulevard between the Colorado Boulevard intersection north of I-270 and business accesses south of I-270. These crossings of Brighton Boulevard would not occur at signalized intersections, and therefore, would need to have flaggers managing pedestrian crossings at all times. Another option would allow pedestrians using the northbound Brighton Boulevard sidewalk to be detoured off existing facilities and onto the Brighton Boulevard travel way by installing a temporary concrete guardrail to protect pedestrians from vehicle travel. Bicycles would continue to use the road with vehicle travel. Flaggers would be utilized to manage bicycle, pedestrian, and vehicle access should the existing roadway section need to be narrowed to accommodate construction of the bridge. Signage would be placed in advance of the construction zone to warn drivers, bicyclists, and pedestrians about the change in roadway configuration.

Bridge girder placement may necessitate the need for a full closure of Brighton Boulevard overnight. Bicycles and pedestrians would not be able to utilize the I-270 overpass during these times for safety reasons. These overnight full closures should result in negligible impacts to bicycle and pedestrian access. The public would be notified in advance of overnight closures.

6.2.3.6 East 60th Avenue and BNSF Railway Crossing under I-270

There are no planned bicycle or pedestrian improvements as part of this project. However, this project will reconstruct the existing I-270 bridges over East 60th Avenue and the BNSF to not preclude Commerce City's Walk.Bike.Fit Plan (Commerce City, 2012) for a new bicycle and pedestrian connection called the 60th Avenue Crosstown Link (Table 1 and Figure 24). This project's improvements provide a beneficial impact to the community, because it

removes the narrow existing I-270 bridges that would otherwise not accommodate Commerce City's plans to improve bicycle and pedestrian connectivity at this location.

6.2.3.7 Vasquez Boulevard Crossing under I-270

The following improvements as a result of this project on Vasquez Boulevard will improve adjacent neighborhoods access to key destinations, such as Walmart and the RTD bus stops at Vasquez Boulevard and East 60th Avenue, by providing safe bicycle and pedestrian connectivity across I-270 without having to traverse a heavily vehicle-traveled roadway (Figures 28 and 29). Additionally, this project's improvements will connect to Commerce City's Walk.Bike.Fit (Commerce City, 2012) planned trail project called the Town Center Greenway (Table 1 and Figure 24), further improving bicycle and pedestrian access in the Denver Metro area and locally to neighborhoods, businesses, and employment areas surrounding Vasquez Boulevard.

This project's bicycle and pedestrian improvements include:

- A 10-foot, multi-use path will be added to the west side of Vasquez Boulevard bridge over Sand Creek. The sidewalk will connect bicycles and pedestrians from the East 56th Avenue and Vasquez Boulevard intersection to the Sand Creek Trail.
- A 10-foot, multi-use path will be added to the east side of the Vasquez Boulevard bridge over Sand Creek. This sidewalk will connect bicycles and pedestrians from the East 56th Avenue and Vasquez Boulevard intersection to the Sand Creek Trail and to the proposed, grade separated, multi-use path mentioned below.
- New east-west 10-foot, multi-use path between the Vasquez Boulevard bridge over Sand Creek to the intersection of East 56th Avenue and South Sandcreek Drive, with an ultimate connection to the Dahlia Trailhead.
- New north-south, 10-foot, multi-use path will begin at the new east-west path mentioned above; travel north and cross underneath the free-flow on-ramp, utilizing a box culvert; attach to the proposed curb and gutter on Vasquez Boulevard under the existing I-270 bridge; detach and continue north crossing underneath the two free-flow interchange ramps utilizing a box culvert; and then turns north, attaching to the curb and gutter on Dahlia Street and end at the intersection of East 58th Place. These proposed improvements eliminate bicycle and pedestrian conflicts with free-flow traffic at the interchange ramps.
- There are no proposed sidewalk or bicycle improvements on the west side of Vasquez Boulevard from the bridge over Sand Creek to the north. The existing sidewalk on Vasquez Boulevard would be removed.

Additional on-going beneficial impacts include adding a new trail connection and improving the existing geometric safety concerns along the trail underneath the Vasquez Boulevard bridge over Sand Creek. Approximately 175 feet of the Sand Creek Trail would be temporarily impacted to construct the new trail connection and improved trail alignment. Temporary trail detours would be provided during construction to maintain connectivity along the Sand Creek Trail.

6.2.3.8 East 56th Avenue Crossing under I-270

The following improvements as a result of this project on East 56th Avenue will provide beneficial impacts to connectivity across I-270 by addressing the missing sidewalk connections across I-270 and to the Dahlia Trailhead. Additionally, this project's improvements will connect to the Adams County Transportation Master Plan (Adams County, 2022) and Commerce City's Walk.Bike.Fit (Commerce City, 2012) planned bicycle arterial improvements (Table 1 and Figure 24), further improving bicycle and pedestrian access to transit stops and key destinations in the Denver Metro area and locally to neighborhoods, businesses, and employment areas surrounding East 56th Avenue. This project will construct bicycle and pedestrian improvements shown in Figure 30 and listed below.

- Replacing the existing I-270 bridges over East 56th Avenue to improve vehicle, bicycle, and pedestrian visibility around the tight curve on East 56th Avenue.
- Intersection improvements at East 56th Avenue and South Sandcreek Drive include curb ramps, crosswalks, and enhanced lighting designed to current standards. These intersection improvements provide a new bicycle and pedestrian connection to the Dahlia Trailhead.
- Intersection improvements at the East 56th Avenue and Eudora Street intersection include curb ramps, crosswalks, and enhanced lighting designed to current standards.
- The following improvements are added to the southbound side of East 56th Avenue:
 - An attached, 10-foot sidewalk from the new east-west, multi-use path (described under the Vasquez Boulevard section) to the intersection of East 56th Avenue and Eudora Street. The 10-foot sidewalk transitions to an attached, 5-foot sidewalk on Eudora Street north of this intersection, where it ties into the existing sidewalks.
 - An attached, 6-foot sidewalk in the northeast corner of Eudora Street and East 56th Avenue ties into the existing sidewalks.
- The following improvements are added to the northbound side of East 56th Avenue:
 - An on-street bicycle lane from South Sandcreek Drive until approximately 200 feet east of Eudora Street.
 - A detached, 8-foot sidewalk connection from the East 56th Avenue bridge over Sand Creek to the Dahlia Trailhead.
 - An attached, 5-foot sidewalk ties into the existing sidewalk on South Sandcreek Drive, traverses under I-270, and ties into the existing sidewalk north of I-270. No crosswalk across East 56th Avenue at Eudora Street is proposed at this location because of limited visibility, resulting from the roadway geometry.

There are no feasible detour options in this area during construction that would detour existing bicycles and pedestrians away from the construction zone. Therefore, temporary pedestrian detours would be implemented, but bicycles would continue to use the road with vehicle travel. The Construction Phasing Plan—to be developed during final design—would identify a suitable sequence of construction to construct the new bridge and install pedestrian detour routes during construction. The existing sidewalk on the west side of East 56th Avenue is not continuous. Pedestrians using this corridor would continue using the East 56th Avenue sidewalk on the east side, while the proposed sidewalk on the west side is

constructed. Once the new sidewalk is constructed, pedestrians would be detoured across East 56th Avenue to utilize this new sidewalk between South Sandcreek Drive and Dahlia Street. These crossings are not signalized intersections but are at locations where new crosswalks are to be installed. Flaggers would be utilized at these crossings. The existing sidewalk on the north side of South Sandcreek Drive would be maintained in its current location, while the proposed curb and gutter is constructed. There are no existing bicycle or pedestrian facilities on the south side of South Sandcreek Drive to Dahlia Trailhead, and no impacts are anticipated.

During construction, flaggers would be utilized to manage bicycle, pedestrian, and vehicle access, should the existing roadway section need to be narrowed to accommodate construction of the bridge. Signage would be placed in advance of the construction zone to warn drivers, bicyclists, and pedestrians about the change in roadway configuration.

In addition to temporary detours, bridge girder placement may necessitate the need for a full closure of East 56th Avenue overnight. Bicycles and pedestrians would not be able to utilize the I-270 overpass during these times for safety reasons. These overnight full closures should result in negligible impacts to bicycle and pedestrian access. The public would be notified in advance of overnight closures.

6.2.3.9 Between East 56th Avenue and Quebec Street Crossing

Neighborhoods and parks north of I-270 do not have access across I-270 for approximately 2 miles between East 56th Avenue and Quebec Street. This project will construct a new 12-foot-wide pedestrian overpass approximately halfway between East 56th Avenue and Quebec Street (Figure 31). This overpass begins on the south side of I-270 connecting to the Sand Creek Trail, crosses over South Sandcreek Drive and I-270, and ties into North Sandcreek Drive at the intersection of East 53rd Way with a designated crosswalk and new curb ramps. This improvement provides the neighborhoods surrounding Leyden Park north of I-270 with a connection to the regionally significant Sand Creek Trail, and bicycle and pedestrian users on Sand Creek Trail can safely access Leyden Park, Monaco Park, and Pioneer Park via this pedestrian crossing. Ultimately, this crossing will complement Commerce City's Walk.Bike.Fit plan (Commerce City, 2012) for the East 56th Avenue Bike Arterial, not included in this project, improving opportunities to access recreation, businesses, or commuting options that are not currently available.

6.2.3.10 Quebec Street Crossing over I-270

In addition to the new transit stop improvements mentioned in Section 6.2.1, this project will construct new attached sidewalks on the west side of South Sandcreek Drive. The new sidewalks are 8 feet wide from Quebec Street to East 47th Avenue Drive and 6 feet wide from East 47th Avenue Drive to East 49th Avenue, with a pedestrian crosswalk across East 47th Avenue Drive connecting the two segments (Figure 25). These pedestrian sidewalks provide connections from the new transit stop to existing RTD bus routes along East 49th Avenue. There are no bicycle specific improvements at this location, and bicycles would continue to use South Sandcreek Drive.

The proposed sidewalks that complement the new transit stop provide the community with more access to businesses along South Sandcreek Drive, as well as recreation and commuting opportunities with additional connections to multiple trails, including the Sand Creek Trail and Northfield Trail.

There are no existing bicycle and pedestrian facilities on the west side of Quebec Street. However, there may be temporary impacts to cyclists who use the vehicle travel lanes on Quebec Street to construct new sidewalks and RTD bus stops. The Northfield Trail runs parallel to Quebec Street on the east side and may be temporarily impacted to construct a new curb and gutter at the I-270 eastbound off-ramp but would not be physically impacted by this project.

7.0 Mitigation Measures

Construction of the build alternatives would result in the temporary disruption of transit, bicycle, and pedestrian travel within the project area. CDOT will coordinate with RTD, Adams County, Commerce City, Denver, SCRGP, and Call and Ride Transit services in advance of construction to avoid and minimize potential conflicts and disruptions with transit, bicycle, and pedestrian services and facilities.

Segments of the South Platte River Trail and the Sand Creek Trail would be temporarily impacted by construction activities. Refer to the Recreational, Section 4(f) Non-Historic, and Section 6(f) Resources Technical Report for detailed mitigation measures associated with these resources.

Table 2 shows a summary of the impacts and mitigations for the build alternatives.

Table 2. Summary of Impacts and Mitigation for Build Alternatives

Activity Triggering Mitigation	Location of Activity	Impact	Mitigation	Responsible Branch	Timing/Phase that Mitigation will be Implemented
Bridge demolition, reconstruction, and interstate widening	Study Area	Temporary disruption of transit travel on RTD routes FF5, 37, 48, 49, and 88	Notify the public of anticipated construction disruptions utilizing the CDOT project website, COtrip, RTD service update notifications, portable changeable message. Maintain two open lanes in each direction during peak hours; ensuring at least one lane remains open in each direction during off-peak hours in accordance with CDOT's Lane Closure Strategy. Lane closures may not be scheduled during special events that affect traffic conditions along state highway facilities in accordance with CDOT's Lane Closure Strategy.	CDOT Engineering and Public Involvement, and Contractor	Pre-Construction and Construction
Bridge demolition, reconstruction, and interstate widening	Study area	Temporary disruption of bicycle and pedestrian travel	Develop a construction phasing plan identifying a sequence of construction that maintains vehicle, bicycle, and pedestrian access. Detour pedestrians on to the roadway using wayfinding signage, protected from vehicle travel by concrete guardrail. Full closures are only to be implemented overnight. Flaggers will be used to manage vehicle, bicycle, and pedestrian access, should a narrower cross section be required during construction. Place signage in advance of construction zones warning of upcoming detours. Notify the public of anticipated construction disruptions utilizing CDOT project website, COtrip, and portable changeable message sign.	CDOT Engineering and Public Involvement, and Contractor	Pre-Construction and Construction

8.0 Required Permits and Coordination

No permits are required for transit, bicycle, or pedestrian resources. Table 3 lists the coordination that will be required for transit, bicycle, and pedestrian resources.

Table 3. Required Coordination by Agency and Project Phase

Agency	Permit/Coordination	Phase
Adams County, Commerce City, Denver, RTD, and SCRGP	Coordination with local agencies on design of temporary detours, in line with mitigation commitments.	Pre-construction

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Attachments



Attachment A. Recommended Bicycle and Pedestrian Design Criteria

NOTE: This attachment is not able to be included with the EIS at this time due to accessibility. If you would like a copy of this attachment or to sit down with a project team member to review this attachment, please contact the project team at cdot_i270@state.co.us or 303-512-4270.