

Multimodal Technical Report

I-270 Corridor Improvements

March 2022

Prepared for:
CDOT Region 1
2829 West Howard Place
Denver, CO 80204

CDOT Project No.
STU 2706-043

CDOT Project Code
23198

Consultant Work Product - Jacobs Engineering
-Not CDOT Approved-

Contents

Acronyms and Abbreviations	v
1.0 Introduction	1
2.0 Regulatory Context	2
2.1 Federal Context.....	2
2.2 State and Local Context	3
3.0 Methods	6
3.1 Data Gathering.....	6
3.2 Analysis Approach.....	6
4.0 Existing Conditions	7
4.1 Land Use.....	7
4.2 Freight Railroads	10
4.3 Bicycle and Pedestrian Facilities	12
4.4 On-Street Facilities.....	14
4.4.1 70 th Avenue (SH 224)	15
4.4.2 York Street	16
4.4.3 Brighton Boulevard.....	16
4.4.4 East 60 th Avenue (East Crossing).....	18
4.4.5 East 60 th Avenue (West Crossing).....	18
4.4.6 Vasquez Boulevard	19
4.4.7 East 56 th Avenue	21
4.4.8 Quebec Street	21
4.5 Off-Street Trails.....	22
4.6 Planned Bicycle and Pedestrian Facilities	23
4.7 Public Transit and Rail Facilities.....	26
4.8 Planned Public Transit and Rail Facilities.....	28
4.9 Transit Dependency	28
5.0 Impacts Assessment	29
5.1 No Action Alternative	29
5.1.1 Freight Railroads	29
5.1.2 Bicycle and Pedestrian Facilities	29
5.1.3 Public Transit (Bus and Rail).....	29
5.2 Proposed Action.....	29
5.2.1 Freight Railroads	29
5.2.2 Bicycle and Pedestrian Facilities	30
5.2.3 Public Transit (Bus and Rail).....	32
5.2.4 Construction Impacts.....	33
6.0 Mitigation Measures	35
7.0 Required Permits	35
8.0 Stakeholder Coordination	35
9.0 References	36

Figures

Figure 1-1. Project Location 1

Figure 4-1. Multimodal Corridors 8

Figure 4-2. Looking Southwest from I-270..... 8

Figure 4-3. Land Use..... 9

Figure 4-4. Existing Freight Railroads..... 11

Figure 4-5. Piers and Pier Protection Wall within the Railroad Right-of-Way 12

Figure 4-6. Existing Bicycle and Pedestrian Facilities..... 13

Figure 4-7. Washington Street 14

Figure 4-8. Washington Street Bicycle and Pedestrian Connectivity Plan View 14

Figure 4-9. 70th Avenue (SH 224) 15

Figure 4-10. Plan View of 70th Avenue (SH 224) Bicycle and Pedestrian Connectivity..... 15

Figure 4-11. York Street 16

Figure 4-12. Plan View of York Street Bike/Ped Connectivity..... 16

Figure 4-13. Brighton Boulevard 17

Figure 4-14. Plan View of Brighton Boulevard and East 60th Avenue Bicycle and Pedestrian
Connectivity 17

Figure 4-15. East 60th Avenue (East Crossing)..... 18

Figure 4-16. East 60th Avenue (West Crossing)..... 19

Figure 4-17. Plan View of East 60th Avenue West Crossing Bicycle and Pedestrian Connectivity 19

Figure 4-18. Vasquez Boulevard 20

Figure 4-19. Plan View of Vasquez Boulevard and 56th Avenue Bicycle and Pedestrian Connectivity..... 20

Figure 4-20. Quebec Street 21

Figure 4-21. East 56th Avenue 21

Figure 4-22. Plan View of Quebec Street Bicycle and Pedestrian Connectivity..... 22

Figure 4-23. Locally Planned Bicycle and Pedestrian Facilities 25

Figure 4-24. RTD N Line..... 26

Figure 4-25. Existing Transit Facilities..... 27

Figure 5-1. Proposed Action Bicycle and Pedestrian Improvements at York Street..... 30

Figure 5-2. I-270/Vasquez Interchange Trail Underpass Visualization 31

Figure 5-3. Proposed Action Bicycle and Pedestrian Improvements at Vasquez Boulevard and East
56th Avenue 32

Figure 5-4. Overview of Trail Impact Areas..... 34

Tables

Table 2-1. Recent Multimodal Studies and Plans 4

Table 4-1. Trails 23

Table 4-2. Planned Bicycle and Pedestrian Facilities 24

Table 4-3. Occupied Households without Vehicle Access 28

Table 5-1. Trail Detour Details 34

Table 6-1. Mitigation Measures..... 35

Acronyms and Abbreviations

Acronym	Definition
BNSF	Burlington Northern Santa Fe Railway Company
BRT	Bus Rapid Transit
CDOT	Colorado Department of Transportation
DRCOG	Denver Regional Council of Governments
DTR	Division of Transit and Rail
EA	Environmental Assessment
ELMP	Express Lane Master Plan
FAST	Fixing America's Surface Transportation
FF	Flatiron Flyer
FHWA	Federal Highway Administration
HPTE	High Performance Transportation Enterprise
I-#	Interstate #
ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	Intelligent Transportation System
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	Metropolitan Planning Organization
NMIACS	North Metropolitan Industrial Area Connectivity Study
PD	Policy Directive
RTD	Regional Transportation District
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SH	State Highway
SCRGP	Sand Creek Regional Greenway Partnership
STIP	State Transportation Improvement Program
TAP	Transportation Alternatives Program
TIP	Transportation improvement program
UPRR	Union Pacific Railroad

1.0 Introduction

The Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA), in conjunction with local partners Adams County and Commerce City, are proposing improvements to 6 miles of Interstate 270 (I-270) in Adams County, Commerce City, and the City and County of Denver, Colorado, primarily between Interstate 25 (I-25) and Interstate 70 (I-70) (Figure 1-1). CDOT and FHWA are preparing an Environmental Assessment for the project, referred to as the I-270 Corridor Improvements project. Sections 1 and 2 of the EA, and EA Appendix A, contain the project setting and a detailed description of alternatives.

The multimodal transportation system reflects a holistic consideration of how people and goods move through an area, including but also extending beyond the automobile-centric view of travel that shaped the development of the nation’s transportation system post World War II. A multimodal transportation system considers any available travel means (e.g., train, bicycle, airplane, vehicle, etc.). In the I-270 corridor, the range of travel modes includes passenger vehicles and freight movement on the interstate and local roadway network, regional and local bus service along the interstate and local roadway network, commuter rail on the Regional Transportation District (RTD) N Line, and bicycle and pedestrian movements along the trails and sidewalks. To understand how these multimodal resources are used within the corridor and where gaps in connectivity inhibit their use, the project team engaged with RTD, Adams County, Commerce City, and other local agencies early in the development of the Proposed Action. The purpose of this technical report is to evaluate the existing and planned multimodal resources in the study area and analyze how the No Action and Proposed Action alternatives would impact those resources.

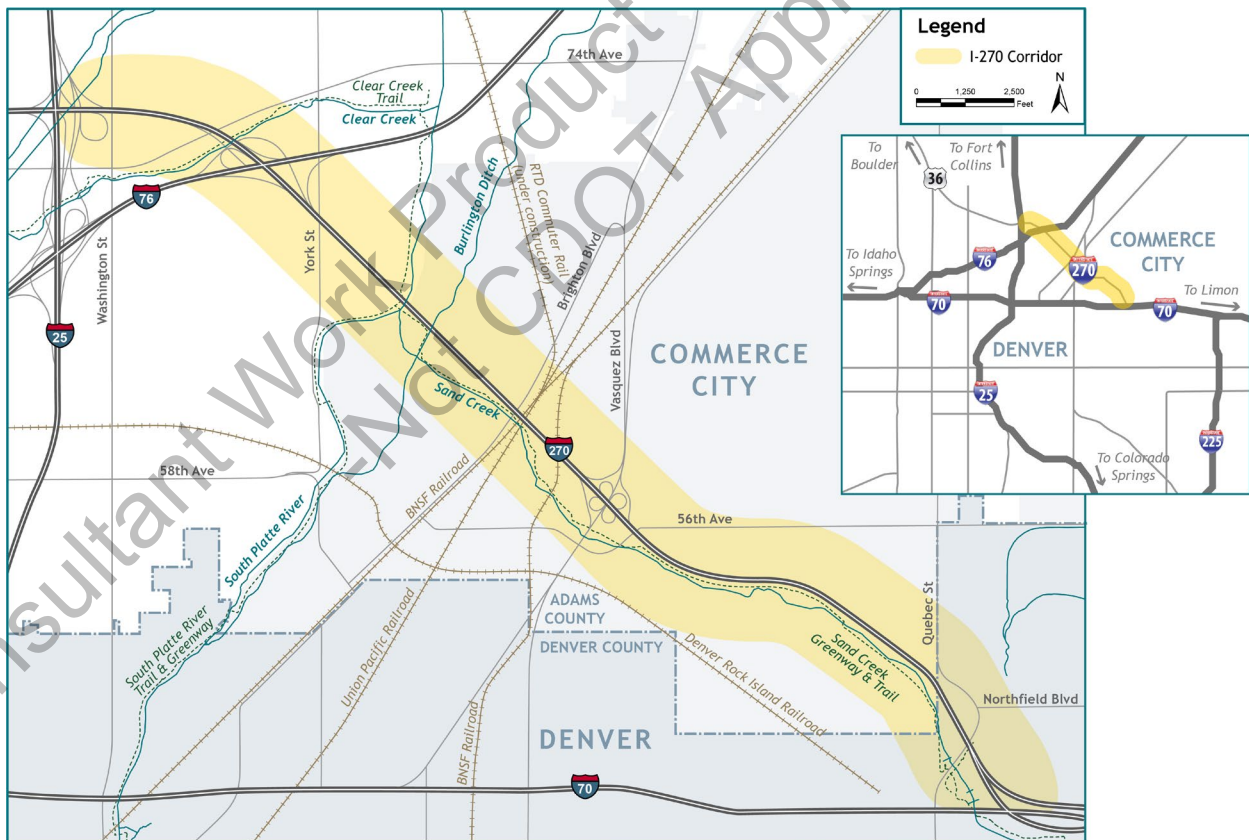


Figure 1-1. Project Location

Source: Jacobs

Although the primary mode of travel through the I-270 corridor is motorized vehicles using the interstate, the corridor also has a well-developed system of regional trails and public transit facilities that facilitate the movement of people to and from destinations within the study area and beyond. The Sand Creek Greenway Trail parallels eastbound I-270 from its intersection with the South Platte River Trail for approximately 4 miles through the southern extent of the study area. The Clear Creek Trail and The South Platte River Trail are perpendicular to I-270, crossing the interstate at the I-76/I-270 interchange and confluence with the South Platte River respectively (see Figure 1-1).

Because motorized light and heavy vehicles are evaluated separately in the *Traffic Technical Report* (refer to Appendix A of the EA), this technical report focuses on transit (i.e., bus and rail), freight rail, and bicycle and pedestrian travel modes.

2.0 Regulatory Context

2.1 Federal Context

Beginning in the early 1990s with passage of the Intermodal Surface Transportation Efficiency Act (ISTEA), federal transportation policy evolved from focusing on the interstate highway system to integrating multimodal travel. The ISTEA is a landmark transportation bill that formed a framework of transportation planning principles carried through the subsequent major transportation infrastructure bills, including the following:

- Transportation Equity Act for the 21st Century (TEA-21) 1998
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) 2005
- Moving Ahead for Progress in the 21st Century Act (MAP-21) 2012
- Fixing America's Surface Transportation Act (FAST) 2015

At the heart of ISTEA is the recognition that evaluating transportation improvements within the confines of automobile travel falls short of understanding the diverse ways people move from place to place, and therefore, is limited in the effectiveness of identifying wholistic and blended approaches to improve the multimodal transportation system. Equally important, the ISTEA provided state and local governments with additional authority and flexibility to plan and implement transportation improvements that meet each area's needs. For example, the ISTEA required urbanized areas to create planning organizations—often in the form of metropolitan planning organizations (MPOs)—that produce a transportation improvement program of all projects to be funded under the National Highway System. In large, urban areas with populations greater than 200,000, the planning process emphasizes multimodal considerations, requiring transportation plans to identify “public transportation facilities, intercity bus facilities, multimodal and intermodal facilities, nonmotorized transportation facilities, and intermodal connectors that should function as an integrated metropolitan transportation system” (23 U.S.C. 134 (i)(2)(A)(i)).

Bicycle and pedestrian facilities are a key component of the multimodal transportation system, as reflected by increased planning and accommodation of bicycle and pedestrian movement. Under federal law, states and MPOs are required to incorporate appropriate provisions for bicycling and walking into the state transportation improvement program (STIP) and transportation improvement programs (TIPs). The federal government defines the transportation system to include “accessible pedestrian walkways, bicycle transportation facilities, and intermodal facilities that support intercity transportation” (23 U.S.C. 134 (c)(2)). In addition, each state is required to establish a bicycle and pedestrian coordinator position in its state department of transportation (23 U.S.C. 217 (d)). FHWA has issued bicycle and pedestrian planning and development guidance for states and MPOs to use when developing state and

local bicycle and pedestrian plans (FHWA 2006). CDOT's first-ever statewide Bicycle and Pedestrian Plan was adopted in 2012 and is discussed in the state-level planning context of this analysis.

The shift from automobile-focused transportation planning that dominated the post-World War II expansion of the nation's highway system has only begun to be realized at the federal level during the past 30 years. The evolution of this shift in thinking toward a more wholistic view is evident in the last major surface transportation act passed in 2015, the FAST Act. The FAST Act established a new National Multimodal Freight Policy to "address the conditions and performance of the multimodal freight system, identify strategies and best practices to improve intermodal connectivity and performance of the national freight system, and mitigate the impacts of freight movement on communities" (FHWA 2016). Evaluating freight movement from a multimodal perspective is a good example of how federal transportation policy has evolved from the automobile-centric planning of the post-World Word II transportation era. Coincidentally, state and local transportation planning has evolved to emphasize multimodal connectivity and create unique, multimodal improvements that align with state and local needs.

2.2 State and Local Context

The importance of considering the complete transportation system that includes multimodal travel is expressly stated in CDOT's mission, "To provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods, and information" (CDOT 2021). CDOT conducts a continuing, comprehensive, and cooperative (3C) multimodal transportation planning process that involves all 15 Transportation Planning Regions across the state. At CDOT, the Multimodal Planning Branch supports and delivers an integrated, multimodal transportation system across the state, working with local partners to plan and construct multimodal projects.

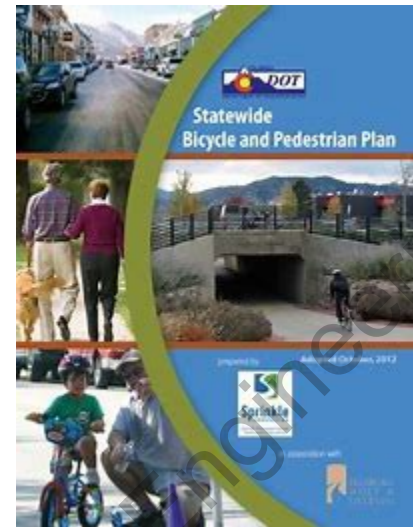
In 2010, CDOT issued Policy Directive (PD) 1602.0 "Bike and Pedestrian," which was codified into state law in 2012 under Colorado Revised Statutes Title 43, Transportation, Section 43-1-120. PD 1602.0 requires CDOT to accommodate the needs of bicycles and pedestrians in the planning, design, operation, and maintenance of transportation facilities. In 2017, CDOT issued an updated bicycle and pedestrian PD 1602.1, "Elevating Bicycle and Pedestrian Opportunities in Colorado." The updated PD clarifies accommodation of walking and biking movements and strengthens CDOT's decision-making processes by establishing a management review panel for high-priority bicycle and pedestrian corridors.

In October 2012, in accordance with the federal regulations previously described, CDOT created and adopted its first statewide Bicycle and Pedestrian Plan (CDOT 2012), which established a broad set of goals, including the following:

- Enhance safety
- Increase bicycling and walking activity
- Expand recreational opportunities and enhance quality of life
- Improve public health
- Improve environment, air quality, and fossil fuel independence
- Provide transportation equity
- Maximize transportation investments
- Improve state/regional economy

CDOT is now in the second phase of its statewide bicycle and pedestrian planning process. The following are the primary objectives of Phase II:

- Review and evaluate criteria and performance measures in the current plan
- Provide input on the Transportation Alternatives Program (TAP) funding guidelines and application process to assure compatibility with the Statewide Bicycle and Pedestrian Plan (CDOT 2012)
- Develop system-level performance measures related to plan goals for statewide tracking purposes
- Effectively integrate bicycle and pedestrian modes into the statewide transportation plan



CDOT's first Statewide Bicycle and Pedestrian Plan was adopted in 2012.

Table 2-1 lists the recent studies and plans with multimodal components have been developed at the state and local level that relate to the study area.

Table 2-1. Recent Multimodal Studies and Plans

Study Name	Author, Year	Relation to Proposed Action
<i>Imagine Adams County: Adams County Comprehensive Plan</i>	Adams County, 2012c	Establishes Adams County transportation vision and goals. Identifies I-270 as a strategic interstate and managed lane corridor that promotes economic vitality.
<i>Blueprint Denver: An Integrated Land Use and Transportation Plan</i>	City and County of Denver, updated 2019	Supplements Denver's 2040 Comprehensive Plan with a focus on complete neighborhoods and complete networks. Applies to Denver portion of Proposed Action (i.e., east of Vasquez Boulevard)
<i>North Metropolitan Industrial Area Connectivity Study</i>	City and County of Denver, the City of Commerce City, and Adams County, 2018	Supports establishing the multimodal vision for the corridor by identifying projects that create a second tier of connectivity beyond the interstate
<i>C3 Vision Comprehensive Plan</i>	City of Commerce City, 2010	Establishes Commerce City's 2045 vision, goals, and policies to help guide development and investment decisions in the I-270 corridor and beyond
<i>Colorado Strategic Highway Safety Plan</i>	CDOT, 2020d	Establishes a collaborative and shared vision and mission for transportation safety in the I-270 corridor and statewide.
<i>Colorado Freight and Passenger Rail Plan</i>	CDOT, 2018a	Most recent comprehensive plan to address freight and passenger rail transportation across the state
<i>Planning and Environmental Linkages Study for Vasquez Boulevard</i>	CDOT, 2018b	Supports identification of key mobility and environmental issues adjacent to the I-270/Vasquez Boulevard interchange.
<i>Colorado Express Lane Master Plan</i>	CDOT, 2020a	Establishes the vision for a connected express lane system including I-270 and portions of US-36, I-70, and I-25 that intersect the I-270 corridor.

Table 2-1. Recent Multimodal Studies and Plans

Study Name	Author, Year	Relation to Proposed Action
<i>2040 Metro Vision Regional Transportation Plan</i>	Denver Regional Council of Governments, 2020	Establishes the DRCOG region's unconstrained vision for a multimodal transportation system needed to respond to future growth and demographic trends. Identifies I-270 as one corridor where interstate widening would especially benefit freight movements.
<i>Northeast Area Transit Evaluation II</i>	RTD, 2015	Identifies Quebec Street as an important transit corridor in the Quebec Street travel shed between 30 th Avenue and 72 nd Avenue.
<i>Regional Bus Rapid Transit Feasibility Study</i>	RTD, 2018	Establishes RTD's draft vision for fiscally constrained planned bus rapid transit (BRT) network. Identifies the adjacent US-36 corridor as an operating/funded BRT corridor.

Source: Jacobs

DRCOG = Denver Regional Council of Governments

NMIACS = North Metropolitan Industrial Area Connectivity Study

RTD = Regional Transportation District

Although these documents differ in purpose and focus area, they collectively call for strengthening multimodal connections and service through the study area and provide an array of strategies to do so.

In 2018, CDOT completed its Colorado Freight and Passenger Rail Plan. The Class I railroads and recent passenger rail line opening through the study area are discussed in Section 5, Existing Conditions. CDOT recognizes the importance of efficiently moving goods as a characteristic of a highly functioning multimodal system:

- “Freight rail plays a vital role in Colorado’s multimodal transportation system by providing safe and efficient transport of critical heavy weight or hazardous materials, by providing long-distance and interstate connections for Colorado producers and consumers, and by supporting the economic competitiveness of Colorado’s communities and regional economies” (CDOT 2018a).
- NMIACS is also notable because its primary goal was to develop multimodal connections through the industrial area, which includes the I-270 study area. The study represented a collaborative effort between Adams County, C3, and the City and County of Denver to establish the multimodal vision for the industrial area (City and County of Denver, the City of Commerce City, and Adams County 2018). NMIACS and other studies and plans listed previously form the local planning context wherein potential adverse impacts and potential opportunities to improve multimodal connectivity within the study area are evaluated. Ongoing bus and rail operations within the study area also form an important part of the multimodal context and are included in this evaluation.

I-270 is one segment within CDOT’s larger shared vision of a connected system of express lanes throughout the Denver metropolitan area. In 2018, the Colorado High Performance Tolling Enterprise (renamed to Colorado Transportation Investment Office in 2021) created a comprehensive vision for express lanes. In 2020, this vision was formalized through the issuance of the *Colorado Express Lane Master Plan (ELMP)* with the stated intent of creating a “strategic road map for the prioritization, planning, and development of future express lane projects to deliver a statewide network” (CDOT 2020a). The ELMP identifies the I-270 corridor as one of the top five priority express lane segments in the state and is currently being advanced for a Level II traffic and revenue study anticipated to be complete in the spring of 2022. Among dozens of goals and objectives discussed during stakeholder workshops, improving multimodal travel options was identified as the highest priority stakeholder goal of the study (CDOT 2020a).

3.0 Methods

The multimodal transportation system was evaluated in two ways. The first way was by assessing each alternative's impact to the existing and planned multimodal transportation system. For example, the Proposed Action may necessitate a temporary trail closure, a bus route detour, or accommodate a future planned on-street bike lane. Potential impacts are not confined to the negative; an alternative may impact the multimodal transportation system in a way that benefits user mobility. Any anticipated benefits from the Proposed Action are also identified in the Section 6 of this report. Second, the evaluation measures the Proposed Action's ability to meet the purpose and need of modernizing the I-270 corridor to meet transportation demand. Modernizing the I-270 corridor from a multimodal perspective means understanding how the overlapping patchwork of multimodal studies and plans converge within the study area and how the Proposed Action aligns with the multimodal vision for the corridor.

The study area for the multimodal resource evaluation consists of the consists of the temporary and permanent disturbance areas resulting from construction and operation of the Proposed Action. This area includes temporary impacts from equipment and raw material staging and needed work areas to construct the Proposed Action. Because evaluating potential impacts to the multimodal transportation requires understanding of local and regional multimodal projects (e.g., Bustang service and locally planned bicycle and pedestrian improvements), discussion is expanded beyond the study area where appropriate.

3.1 Data Gathering

Evaluating multimodal resources within the study area required gathering data from a wide range of state and local sources. In addition to reviewing the studies and plans identified in Section 1.2, the following data collection methods were implemented for this evaluation:

- Collecting transit information from publicly available schedules and routes as well as through coordination with RTD, including bus and rail stop locations, active and planned transit routes through the study area, 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 study area.
- Compiling and synthesizing bicycle and pedestrian data from community plans, local agency-planned improvements, existing and future trail plans, local land developers, open space and parks trail information, community interest groups, and informal conversations with facility users during field reviews.
- Reviewing each jurisdiction's standard design practices for bicycle and pedestrian facilities to determine a basis of standard design within each community.
- Identifying gaps in connectivity identified in the collected data through field reviews. The project team also coordinated with Commerce City, Adams County, and the City and County of Denver to ensure the data used in the EA analysis accurately reflected the existing and planned multimodal facilities within the study area.
- Engaging UPRR and BNSF to identify existing and future freight rail facilities and to coordinate design review.

3.2 Analysis Approach

To identify potential areas of conflict with existing or planned multimodal facilities, the study area is compared with the existing and planned multimodal data in graphical or Geographic Information System form. Bicycle and pedestrian facilities that intersect with the study area are identified, categorized, and

compared to current design standards. Existing and planned transit facilities are identified and categorized based on mode type and service frequency. After identifying areas where existing or planned multimodal facilities intersect the study area, design solutions to accommodate planned improvements or avoid conflicts with existing multimodal facilities are developed. This approach minimizes potential disruption of multimodal travel during the construction and operation of the Proposed Action. It also harmonizes the Proposed Action with the multimodal vision for the corridor and facilitates the construction of multimodal projects in the adjacent areas.

4.0 Existing Conditions

The multimodal travel options in the I-270 corridor consist of bus, rail, and bicycle and pedestrian modes. Multimodal facilities are present within the study area parallel to I-270 along the Sand Creek Greenway and perpendicular to I-270 at the major arterial, rail, and stream crossings. The interstate, rail, and stream features create corridors that facilitate the movement of people and goods, but they also represent barriers to perpendicular travel and the formation of an interconnected system of multimodal travel. For example, the UPRR, BNSF, and RTD railroad tracks form a critical multimodal corridor for freight and light rail movements while simultaneously presenting challenges for bicycle and pedestrian connectivity where trails and major arterial roads intersect the tracks at-grade. In this respect, both natural and human-made barriers to multimodal travel are present in the study area, including the South Platte River, Sand Creek, Clear Creek, multiple railroad lines, I-270 itself, and the connecting arterials.

4.1 Land Use

Land use and the multimodal transportation network are interrelated and influence each other. The industrial and commercial land uses that dominate the corridor developed from their strategic position at the confluence of two Class I railroads. Heavy industry (for example, refineries and grain elevators) moved into the area in the 1930s and 1940s as industrial land uses spread north from Denver along the railroad, replacing farms. The combination of Class I and short line railroad facilitated the development of heavy industrial manufacturing along the I-270 corridor. Private railroad spurs connect into industrial businesses, creating a direct link to the national freight network. The interstate also supports efficient access to freight and rail shipping on a local, regional, and national scale.

As shown on Figure 4-1, the South Platte River generally divides the study area into two jurisdictions: unincorporated Adams County is northwest of the river and Commerce City (also within Adams County) is southeast of it. A small section of the study area lies within the City and County of Denver near I-70. Welby Reservoir is adjacent to unincorporated Adams County's eastern boundary between I-270 and I-76 just west of the South Platte River. Welby Reservoir and adjacent Bambi-Walker Reservoir within Commerce City are part of Denver Water's Downstream Reservoir Water Storage Program and comprise its South Reservoir Complex, under which Denver Water stores and releases water using depleted former gravel mines (Denver Water 2020). The South Platte River and accompanying South Platte River Trail travel north-south between the two reservoirs. A large triangle of undeveloped land, indicated as Public/Quasi-Public on Figure 4-3, is south of I-270 adjacent to the Metro Wastewater Reclamation plant opposite the reservoirs.

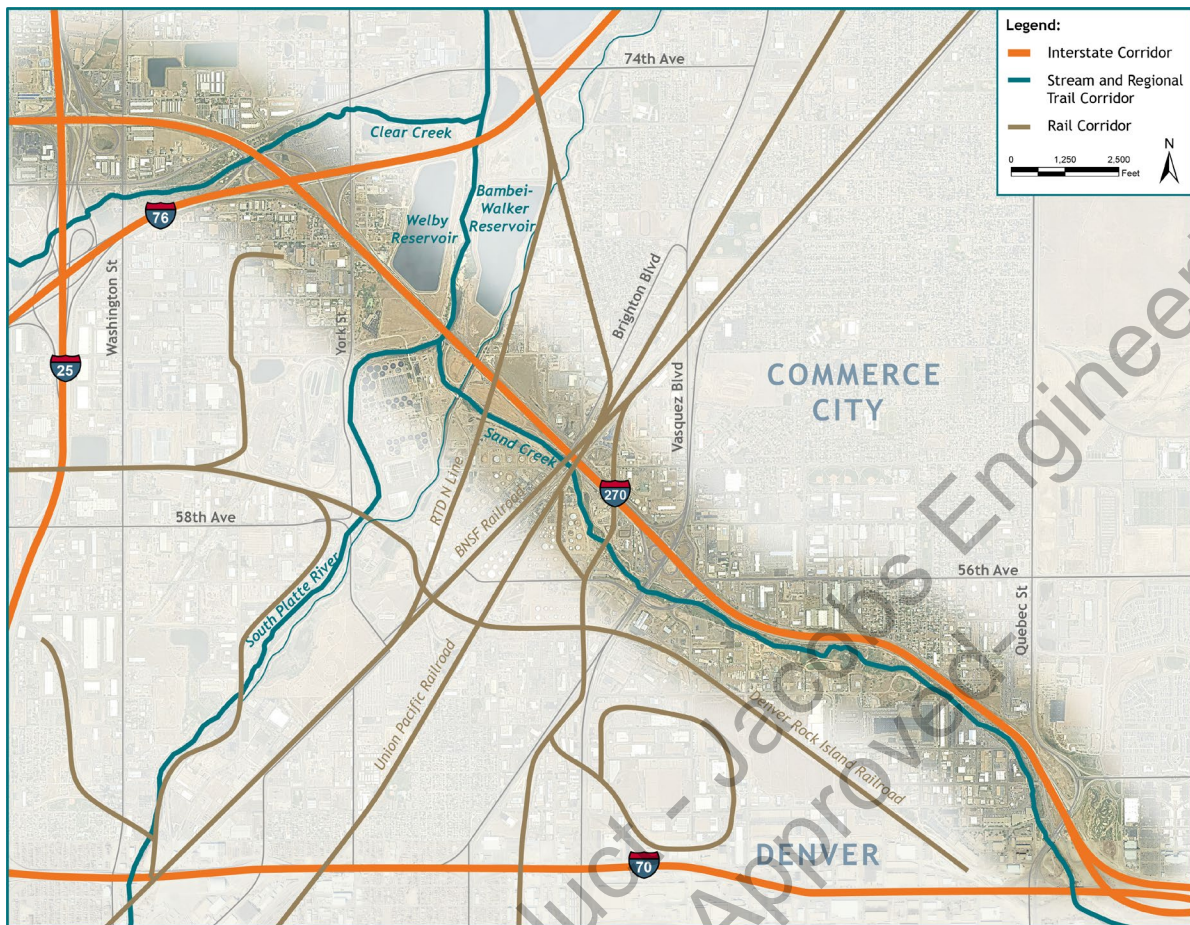


Figure 4-1. Multimodal Corridors
Source: Jacobs; Aerial from DRCOG



Figure 4-2. Looking Southwest from I-270
The BNSF and UPRR railroad lines converge at the Suncor Oil Refinery.
Source: Jacobs

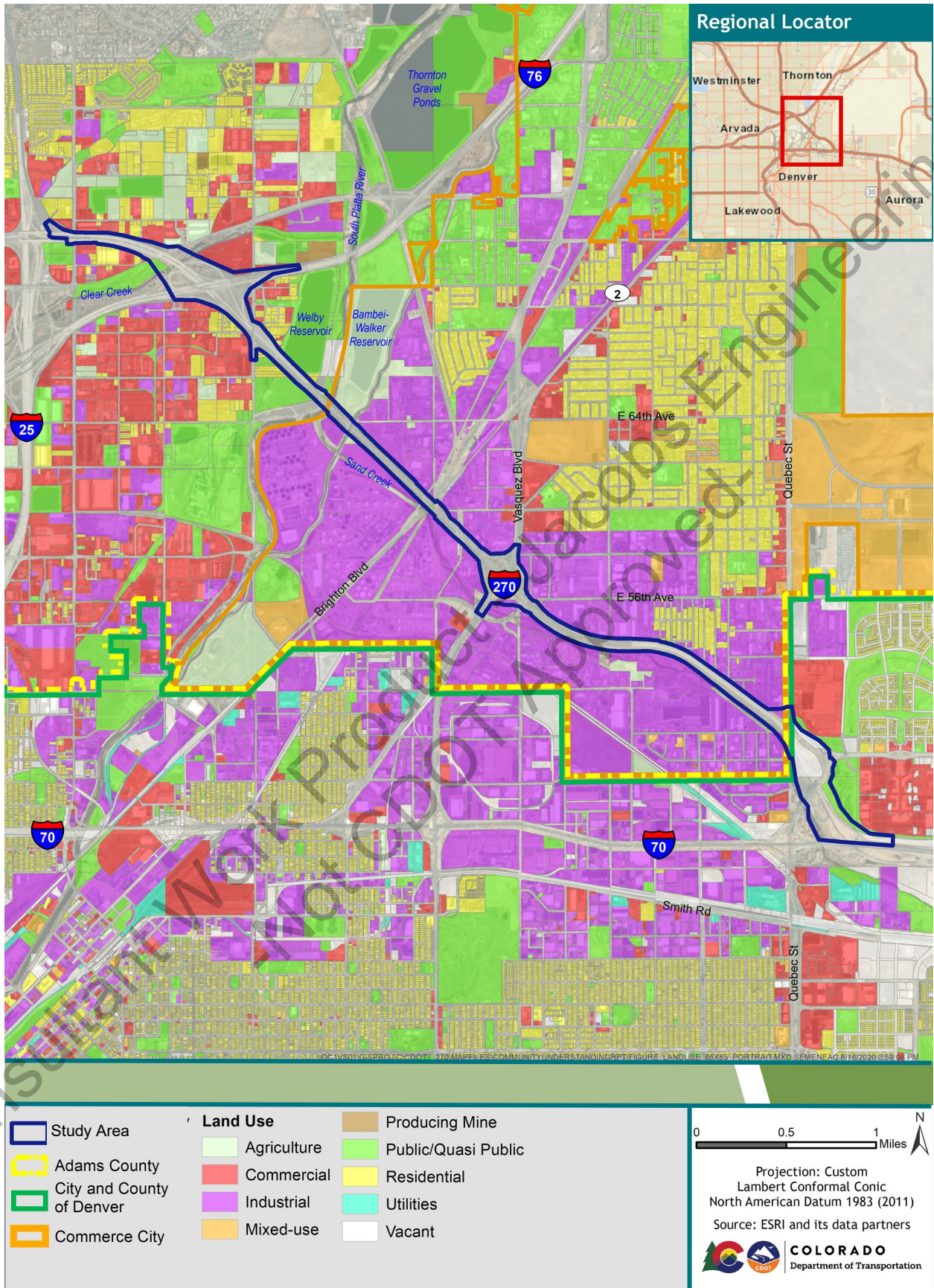


Figure 4-3. Land Use

Clear Creek, which is paralleled by the Clear Creek Trail, flows between I-76 and SH 224. Sand Creek enters the South Platte River on the south side of I-270 at Commerce City's western boundary. Sand Creek and the Sand Creek Regional Greenway Trail roughly parallel the south side of I-270 from that point to I-70. Industrial uses and some commercial uses occupy the land north of I-270 within Commerce City and the City and County of Denver.

Few residential areas are adjacent to I-270, located as follows:

- A small residential area is north of I-270 and east of I-25 on the south side of 73rd Avenue.
- A small residential area is along 71st Avenue between I-270 and I-76 east of I-25.
- A small residential area is southwest of I-76 and I-270 at Race Street and the east end of 68th Avenue. An existing noise barrier separates these residences from I-270.
- A small residential area abuts the south side of I-76 between I-270 and Welby Reservoir along Clayton Street. An existing noise barrier separates these residences from I-76. A few residences are also opposite I-270 in this area primarily on either side of 68th Place and Elizabeth Street.
- A larger residential area comprised of numerous small subdivisions half-way between Vasquez Boulevard and Quebec Street extends north of I-270 to East 56th Avenue; it is bordered generally by Niagara Street to the east and Krameria and Kearney Streets to the west.

Quebec Street crosses I-270 just west of I-270's intersection with I-70, traveling north to south and generally representing the City and County of Denver boundary. Denver's Central Park (formerly Stapleton) neighborhood is east of Quebec Street, within which exists Conservatory Green, a large residential area north of Northfield Boulevard primarily between Spruce Way and Central Park Boulevard (Brookfield Properties 2019, 2020). A large commercial shopping area extends south of Northfield Boulevard to I-70, identified as a commercial land use. Small, mostly linear swaths of open space traverse the area. Denver's northeast Park Hill neighborhood is west of Central Park and directly north of I-70. Land uses on either side of I-70 within this neighborhood are identified primarily as industrial.

Existing CDOT right-of-way in the study area is irregular because of current ramp alignments. Right-of-way widths along I-270 are approximately 300 feet, enlarging considerably around interchanges to encompass ramps.

In addition to land use, the *Community Understanding Report* (CDOT 2020c) prepared for this Proposed Action identifies and evaluates anticipated impacts to community resources such as parks, trails, and open spaces.

4.2 Freight Railroads

The BNSF and UPRR are the two Class I railroads operating in Colorado, and both cross I-270 near the Proposed Action's midway point (west of Vasquez Boulevard). The Suncor Energy Commerce City refinery is the state's only oil refinery and directly serves both the BNSF and UPRR lines, near where the railroads converge before crossing beneath I-270. The 98,000-barrel-per-day refinery produces gasoline, diesel fuel, and paving-grade asphalt (Suncor 2020). The Denver Rock Island Rail, one of 12 short railroads in Colorado, connects the two Class I railroads to the heavy industrial manufacturing areas concentrated along the south side of the I-270 corridor.

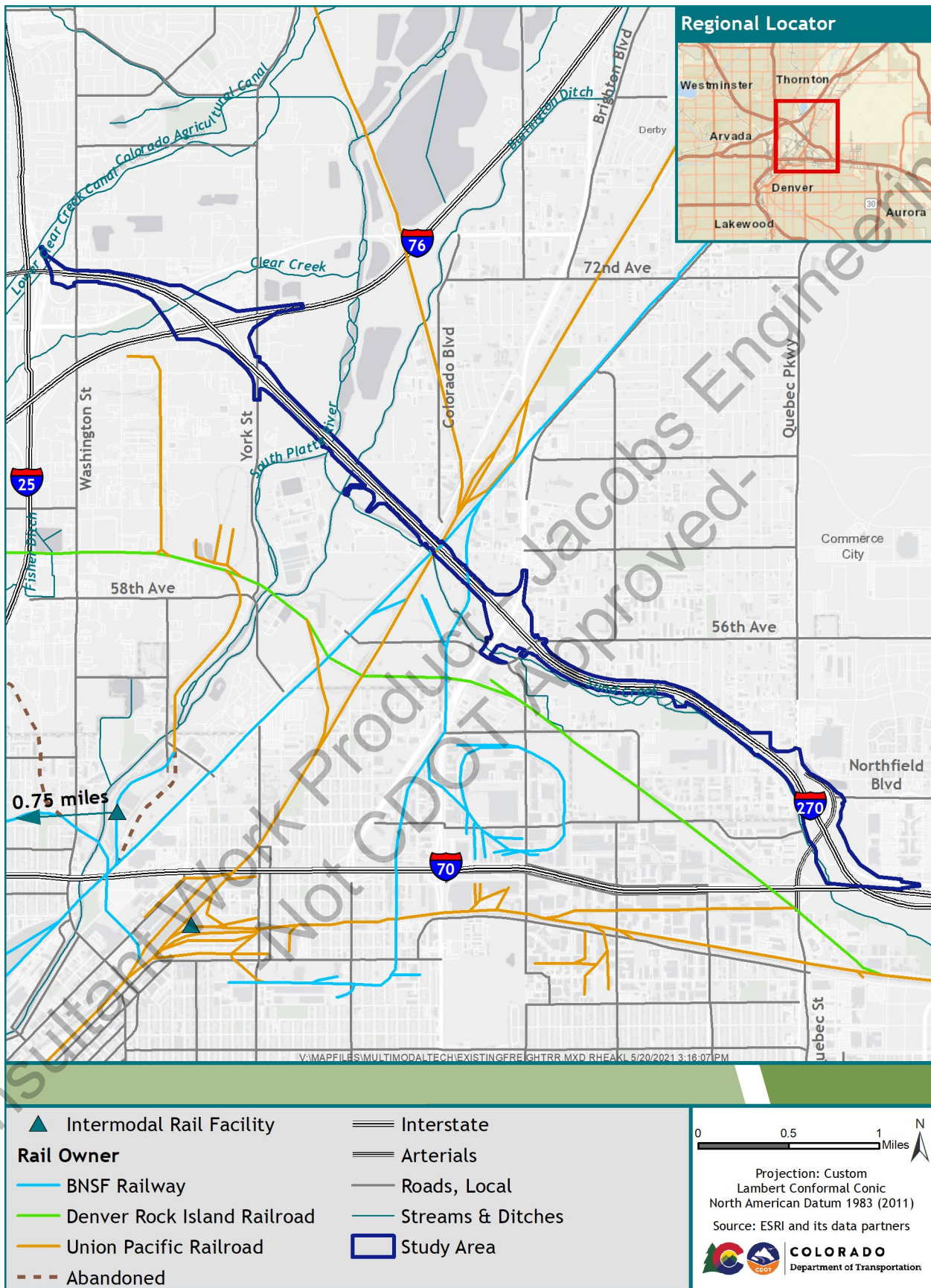


Figure 4-4. Existing Freight Railroads

Both the BNSF and UPRR have intermodal freight hubs (that is, facilities where goods are transferred from rail to trucks) within a few miles of the study area that tie into the short line. Extending from the UPRR intermodal hub at 40th Avenue/York Street, the UPRR track travels through the study area then connects into a national network of UPRR freight lines that serve communities from the west coast to the Mississippi River (UPRR 2020). Similarly, the BNSF track that crosses beneath I-270 connects with intermodal lines which serve the entire nation. A BNSF intermodal facility is present approximately 2 miles southwest of the study area at the I-25/I-70 interchange (BNSF 2019).



Figure 4-5. Piers and Pier Protection Wall within the Railroad Right-of-Way

Source: Google Earth

Within the study area, I-270 is carried over the railroad right-of-way with a four-span bridge that also spans Brighton Boulevard and East 60th Avenue. Within the railroad right-of-way, one pier is present for each direction of I-270. Those two piers are connected by a pier protection wall (that is, a train crash wall). The study team has coordinated with BNSF and UPRR representatives to understand their needs, clearance requirements, and expansion plans. Although no specific expansion plans were identified for either railroad during coordination with the BNSF and UPRR, the right-of-way limit was identified as the limit of future expansion for the purposes of identifying any impacts to future rail operations. Stakeholder outreach, including both Class I railroads, is summarized in the EA. Coordination with the railroads will remain ongoing throughout the design process.

4.3 Bicycle and Pedestrian Facilities

The study area contains bicycle and pedestrian resources in the form of sidewalks and both local and regional trails; however, no on-street bike lanes are present in the study area (Figure 4-6). The designated bicycle facilities in the study area include South Platte River Trail, Clear Creek Trail, Sand Creek Trail, and Stapleton Link Trail. Clear Creek Trail, South Platte River Trail, and Sand Creek Trail provide regional connectivity north and south of Denver. The South Platte River Trail is also part of the Front Range Trail, which will eventually stretch from Wyoming to New Mexico. The sole connection between the designated trails and on-street bicycle and pedestrian facilities occurs where Stapleton Link Trail connects users into Sand Creek Regional Trail. Figure 4-6 displays both the sidewalks and trails within the study area.

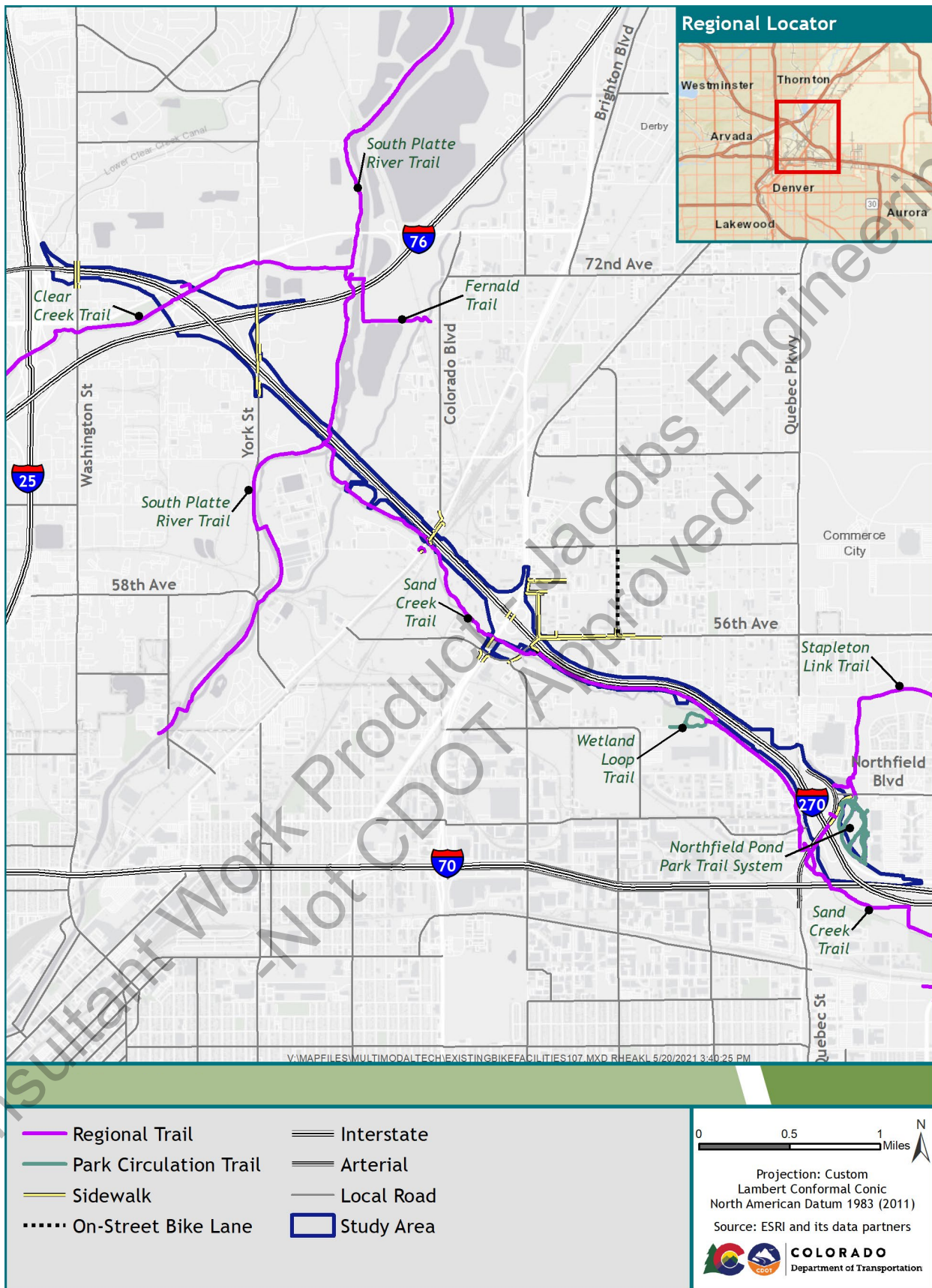


Figure 4-6. Existing Bicycle and Pedestrian Facilities

4.4 On-Street Facilities

On-street bicycle and pedestrian connectivity across I-270 is limited to the existing facilities on the streets crossing the interstate: Washington Street, 70th Avenue (SH 224), York Street, Brighton Boulevard, East 60th Avenue, Vasquez Boulevard, East 56th Avenue, and Quebec Street. The bicycle and pedestrian facilities associated with these arterials vary in age and condition, as described in the following sections.

Washington Street is a six-lane facility with a painted median and attached 5.5-foot sidewalks on both sides. These sidewalks are present along Washington Street in and beyond the study area, thereby providing adequate pedestrian connectivity north-south across the interstate. However, there are no designated bicycle lanes on Washington Street, and the 5.5-foot sidewalk does not provide adequate width to accommodate both pedestrians and bicycles. Bicyclists currently share the road with vehicles.



Figure 4-7. Washington Street
 Washington Street under I-270 looking north.
 Source: ACL Engineering



Figure 4-8. Washington Street Bicycle and Pedestrian Connectivity Plan View
 Source: Jacobs

4.4.1 70th Avenue (SH 224)

70th Avenue (SH 224) is a two-lane facility with a painted median and shoulder. South of 70th Avenue, Clear Creek Trail closely follows Clear Creek. In the study area, connectivity from 70th Avenue to Clear Creek Trail is limited to social paths (earthen trails formed by informal use), located at Washington Street and various locations east of the interstate. Bicyclists, if not using Clear Creek Trail, use the existing 70th Avenue shoulder, which varies in width from approximately 4 to 8 feet through the study area.



Figure 4-9. 70th Avenue (SH 224)
 70th Avenue (SH 224) under I-270 looking east.
 Source: ACL Engineering



Figure 4-10. Plan View of 70th Avenue (SH 224) Bicycle and Pedestrian Connectivity
 Source: Jacobs

4.4.2 York Street

York Street is a four-lane facility with a painted median and a mix of attached sidewalk, detached sidewalk, and painted shoulder. Both north and south of the I-270 structure, York Street has a 5-foot-wide attached sidewalk. The York Street bridge over I-270 also has an attached sidewalk separated by guardrail.

However, the sidewalk on the structure does not connect to the sidewalk on York Street in three of the four locations because of the guardrail alignment at the ends of the structure. In addition, at three of the four corners of the structure, no sidewalk connections exist between the on- and off-ramps of the structure and the York Street structure itself. The only location that provides a direct connection from the York Street sidewalk to the York Street structure is the northwest corner. However, it is also here that the condition of the walk deteriorates in width and condition due to weeds and road debris. Bicyclists on York Street currently share the road with vehicles; there are no designated bicycle lanes.

4.4.3 Brighton Boulevard

Brighton Boulevard is a two-lane facility with a painted centerline and a mix of attached sidewalk, detached sidewalk, and painted shoulder. The west side of Brighton Boulevard has a 5-foot attached sidewalk from, and including, Sand Creek bridge to the I-270 bridge. There is a gap with no sidewalk under the bridge, then a 5-foot attached sidewalk from the bridge to 60th Avenue. The east side of Brighton Boulevard has a 5-foot attached sidewalk that extends from Sand Creek bridge to the I-270 bridge, where the sidewalk becomes detached. Under the I-270 bridge, the east sidewalk ties into the 6-foot sidewalk attached to Brighton Boulevard that connects to Sand Creek Trail and 60th Avenue. No sidewalk exists on either side of Brighton Boulevard north of 60th Avenue, and the sidewalk attached to Sand Creek bridge is in poor condition because of extensive road debris on the sidewalks. No designated bicycle lanes exist on Brighton Boulevard, so bicyclists must share the road with vehicles.



Figure 4-11. York Street
 York Street Crossing I-270 Looking South
 Source: ACL Engineering



Figure 4-12. Plan View of York Street
 Bike/Ped Connectivity
 Source: Jacobs



Figure 4-13. Brighton Boulevard
Brighton Boulevard crossing I-270 looking south.
Source: ACL Engineering



Figure 4-14. Plan View of Brighton Boulevard and East 60th Avenue Bicycle and Pedestrian Connectivity
Source: Jacobs

4.4.4 East 60th Avenue (East Crossing)

East 60th Avenue crosses I-270 in two locations. At the easternmost crossing, East 60th Avenue is a two-lane roadway with a painted centerline and no shoulder. No pedestrian facilities or designated bicycle lanes exist on East 60th Avenue where it crosses under eastbound I-270. At this location, the railroad is next to East 60th Avenue to the east, and as East 60th continues under I-270 and turns west, sight distance is limited. North of the I-270 structure, East 60th Avenue crosses the railroad and turns east, paralleling I-270. Sidewalk on East 60th Avenue begins north of the I-270 bridge and east of the railroad crossing and runs along the south side of East 60th Avenue. This 5-foot attached sidewalk is not consistent as it runs east to Vasquez Boulevard. One block has no sidewalk, and the sidewalk that does exist is not Americans with Disabilities Act-compliant as it crosses multiple access locations.



Figure 4-15. East 60th Avenue (East Crossing)

East 60th Avenue (East Crossing I-270) looking south.

Source: ACL Engineering

4.4.5 East 60th Avenue (West Crossing)

East 60th Avenue (West Crossing) is a two-lane roadway with a painted centerline and narrow painted shoulder that varies in width from approximately 0 to 4 feet. East 60th Avenue (West Crossing) has no pedestrian facilities or designated bicycle lanes. Just south of the I-270 structure, the Sand Creek side path ties into the Brighton Boulevard sidewalk. South of I-270, East 60th Avenue crosses under three narrow railroad structures having very low clearance. The eastbound and westbound lanes of East 60th Avenue split to avoid the railroad piers that sit in the center of the road. Under these railroad structures, each lane is approximately 10 feet wide with no edge stripe.



Figure 4-16. East 60th Avenue (West Crossing)
 East 60th Avenue (West Crossing) crossing I-270 looking south.
 Source: ACL Engineering



Figure 4-17. Plan View of East 60th Avenue West Crossing Bicycle and Pedestrian Connectivity
 Source: Jacobs

4.4.6 Vasquez Boulevard

Vasquez Boulevard is a six-lane facility with a raised median and has a mix of attached sidewalk, detached sidewalk, and sections with no sidewalk. No designated bicycle lanes exist on Vasquez Boulevard. On the east side starting at 56th Avenue, Vasquez has no sidewalk other than the 4-foot sidewalk that is attached to the Sand Creek structure. From the Sand Creek structure north to the I-270 cloverleaf off-ramp, there is no sidewalk, but a worn social path exists. Directly under the I-270 structure

the east side of Vasquez has an 8-foot detached sidewalk, becoming attached just north of the structure for approximately 30 feet, where it then becomes another dirt social path to the I-270 on-ramp. The social path continues north along Vasquez Boulevard as it appears to cross the eastbound to northbound Vasquez off-ramp and ends at the corner of East 58th Avenue and Dahlia Street. The west side of Vasquez Boulevard has similar features. The only pedestrian facility is a detached 8-foot-wide sidewalk directly under the I-270 structure, becoming attached on either side of the structure. Otherwise, all pedestrian facilities are worn social paths along the side of Vasquez Boulevard.



Figure 4-18. Vasquez Boulevard

Vasquez Boulevard crossing I-270 looking north.

Source: ACL Engineering



Figure 4-19. Plan View of Vasquez Boulevard and 56th Avenue Bicycle and Pedestrian Connectivity

Source: Jacobs

4.4.7 East 56th Avenue

East 56th Avenue is a two-lane roadway with a painted centerline and a mix of attached sidewalk, detached sidewalk, and no sidewalk. No designated bicycle lanes exist on East 56th Avenue. The Dahlia Trailhead for the Sand Creek Trail is located at the intersection of East 56th Avenue and Sand Creek Drive. Sidewalk exists along East 56th Avenue between Vasquez and Dahlia along the south side, however, there is only a worn social path on the north side of East 56th Avenue. Starting at Dahlia, East 56th Avenue curves to the north and has a 5-foot attached sidewalk on the east side, separated by guardrail, across the Sand Creek structure. The sidewalk ends as the structure ends. The sidewalk starts again at the Dahlia Trailhead for the Sand Creek Trail, crosses Sand Creek Drive and runs, detached, to East 56th Avenue. At East 56th Avenue, it becomes briefly attached around the corner then detaches again to cross under the I-270 structure. The sidewalk is 5 feet wide along this entire stretch. There is no sidewalk on the west side of East 56th Avenue from Vasquez to Eudora. To the north of the I-270 structure, there is a 5-foot attached sidewalk on both East 56th Avenue and Eudora Street.



Figure 4-21. East 56th Avenue
 East 56th Avenue crossing I-270 looking north.
 Source: ACL Engineering

4.4.8 Quebec Street

Quebec Street is a six-lane roadway with a raised median, painted shoulder, and a separated 12-foot multi-use bicycle and pedestrian facility on the east side of the street following its own alignment. This multi-use path connects the Sand Creek Regional Trail to a variety of trails north of the interstate in the Northfield area and beyond.



Figure 4-20. Quebec Street
 Quebec Street crossing I-270 looking north.
 Source: ACL Engineering



Figure 4-22. Plan View of Quebec Street Bicycle and Pedestrian Connectivity

Source: Jacobs

4.5 Off-Street Trails

The bicycle and pedestrian facilities not including sidewalks or on-street bike lanes are considered off-street trails for the purposes of this analysis. Table 4-1 describes off-street trails in the study area.

These trails provide regional connectivity along their drainages, connecting with on-street sidewalks at access points identified in the table. The trails along Clear Creek, South Platte River, and Sand Creek are paved and are 10 feet wide running parallel to the floodplain. These trails make use of the existing bridge infrastructure where arterial or interstate crossings are needed to maintain trail continuity. In addition to the three regional trails in the study area, two local trails providing park circulation are present at Northfield Pond Park and Wetland Park.

Two of the three regional trails in the study area have associated stakeholder advocacy groups. The South Platte River Conservancy and Sand Creek Greenway Foundation participated in stakeholder scoping meetings that occurred in spring 2020, and both groups will continue to be engaged through the final design and construction phases of the Proposed Action. Section 9, Stakeholder Coordination, provides a complete list of stakeholders and how they relate to this multimodal analysis.

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 on-street bicycle and pedestrian facilities and trail connections limit access to the trails, reducing their intended regional function.

Table 4-1. Trails

Name	Location	Description	Access Points within Study Area
Trails			
Sand Creek Trail	Parallels south side of I-270 from South Platte River Trail traveling southeast, eventually terminating in Aurora	Allows hiking, biking, and equestrian use; identified in 2012 Adams County Colorado Open Space, Parks & Trails Master Plan as bird watching area; plan proposes developing bird watching facilities	<ul style="list-style-type: none"> Wetland Loop trail east end of 52nd Avenue south of I-270; paved parking Dahlia Trailhead, intersection of 56th Avenue and Sand Creek Drive; paved parking Corner of 50th Avenue and Pontiac Street; no parking
Northfield Pond Park trail system	Short 0.25-mile spur off Sand Creek Greenway Spur near Quebec Street parallels south side of Quebec Street in the City and County of Denver	Connects to unnamed trail on north side of I-270, which leads to Northfield Pond Park and eventually Rocky Mountain Greenway Trail, Prairie Gateway Open Space, Rocky Mountain Arsenal Wildlife Refuge, and other routes to the north	Sand Creek Greenway
South Platte River Trail	Travels north-south from Thornton to Littleton, passing through study area along west side of the South Platte River; crosses I-270 near confluence with Sand Creek just south of the highway	Allows hiking, biking, and equestrian use	<ul style="list-style-type: none"> York Trailhead, intersection of 64th Avenue and York Street: unpaved parking and trail access approximately 0.4 mile south of I-270 Fernald Trail, intersection of Colorado Boulevard and 70th Avenue, provides access to the South Platte River Trail approximately 0.8 mile north of I-270; paved parking South end of Columbine Street, dead-ends at South Platte River Trail; provides unofficial access south of Welby Reservoir immediately adjacent to I-270
Clear Creek Trail	Connects to South Platte River Trail just north of I-76. Parallels Clear Creek and crosses I-270 just north of the I-76 interchange	Travels approximately 23 miles west to Golden; allows hiking, biking, and equestrian use	Fernald Trail via short segment of the South Platte River Trail
Wetland Loop Trail	East end of 52 nd Avenue south of I-270	Short loop trail within Wetland Park	East end of 52 nd Avenue south of I-270

Source: Jacobs 2020

4.6 Planned Bicycle and Pedestrian Facilities

Recognizing the importance of improving the multimodal transportation network throughout the industrial area and outlying residential areas, local communities have identified several future projects in the I-270 corridor (Table 4-2 and Figure 4-23).

Table 4-2. Planned Bicycle and Pedestrian Facilities

Map Key/Name	Jurisdiction	Location	Description	Source
1 – York Street Widening	Adams County	York Street, 58 th Avenue to SH 224	Active project: roadway capacity improvements, including pedestrian and multimodal facilities	Adams County (C/O EST, Inc) Open House Documents February 18, 2020
2 – O’Brian Canal Trail (part of Northern Range Loop Trail)	Commerce City Adams County	O’Brian Canal/Burlington Ditch from Sand Creek Regional Greenway to Barr Lake	Paved and soft surface trail and greenway	Bike.Walk.Fit Adams County Open Space, Parks & Trails Master Plan
3 – Westside Connector	Commerce City	Colorado Boulevard, Brighton Boulevard to 72 nd Avenue	On-street bike lanes, improved sidewalk	Bike.Walk.Fit
4 – Cross Town Link	Commerce City	60 th Avenue, Brighton Boulevard to Quebec Parkway	On-street bike lanes, improved sidewalk, off-street trails	Bike.Walk.Fit
5 – Town Center Greenway	Commerce City	Vasquez Boulevard, Dahlia Trailhead to Fairfax Park	Off-street trail	Bike.Walk.Fit
6 – 56 th Avenue Bike Arterial	Commerce City	56 th Avenue, Dahlia Street to Quebec Parkway	Buffered bike lanes	Bike.Walk.Fit
7 – Regional Bike Loop	Adams County	56 th Avenue, Dahlia Trailhead to Hudson Road	56 th Avenue is part of a planned regional on-street bike loop	Adams County Open Space, Parks & Trails Master Plan
8 – Town Center Greenway Trail Connection	Commerce City	Off-street trail, Vasquez Boulevard to 56 th Avenue and Dahlia Trailhead	Off-street trail connection from the Town Center Greenway along Vasquez Boulevard to 56 th Avenue and the Dahlia Trailhead	Bike.Walk.Fit
9 – 56 th Avenue Sidewalk Connection	Sand Creek Regional Greenway Foundation	56 th Avenue, Vasquez Boulevard to Dahlia Trailhead	Improved sidewalk from Vasquez Boulevard to Dahlia Trailhead; traffic signal retiming at 56 th 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

Source: Jacobs

The Proposed Action does not preclude the development of any of these planned improvements. At York Street, Vasquez Boulevard, and East 56th Avenue, the Proposed Action facilitates the connection of bicycle and pedestrian movement across I-270.

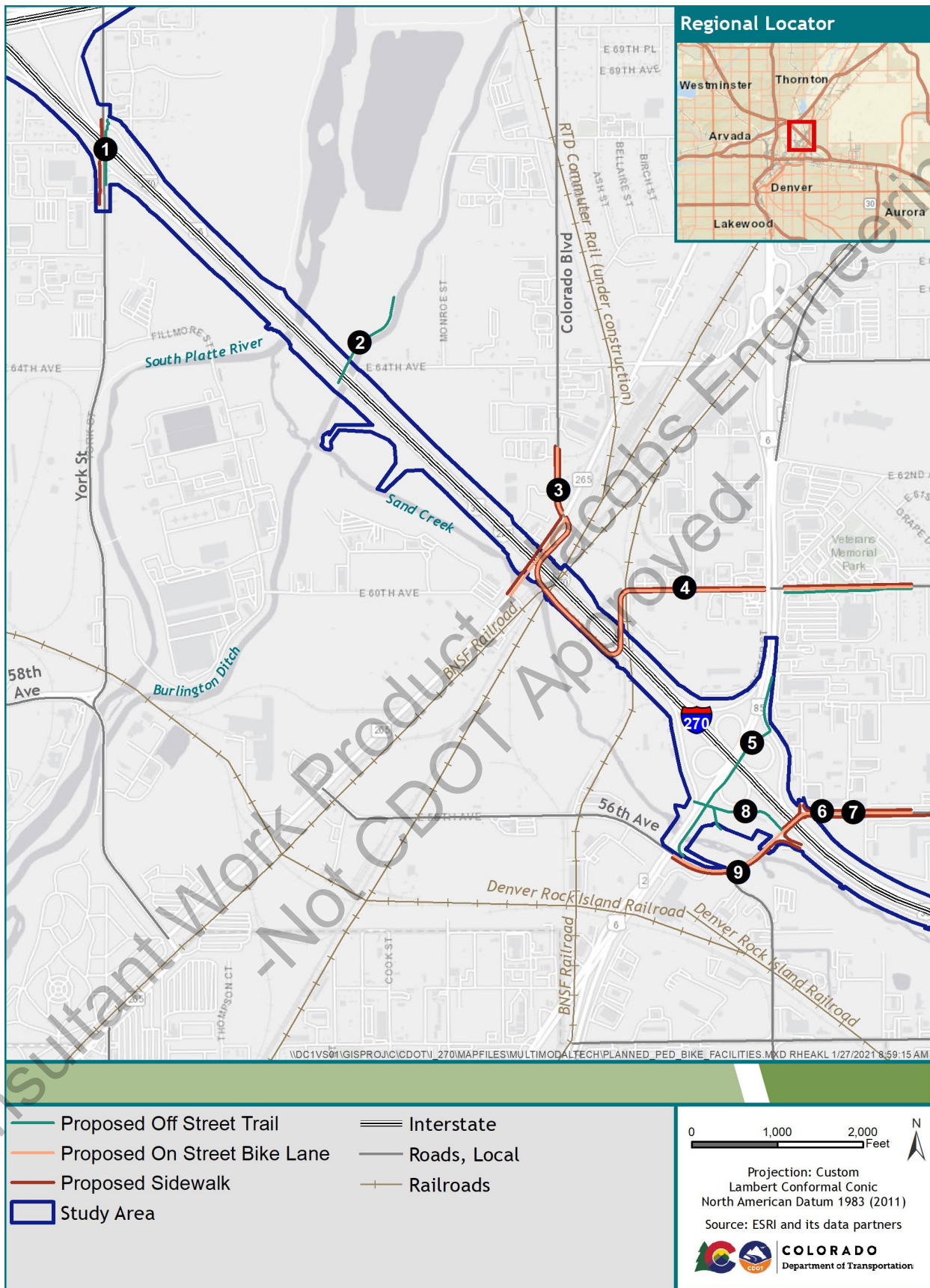


Figure 4-23. Locally Planned Bicycle and Pedestrian Facilities

4.7 Public Transit and Rail Facilities

Existing public transit service in the study area consists of local, limited, express, regional, and Sky Ride bus routes. In September 2020, the North Metro Rail Line (N Line) was opened to the public as part of RTD's commuter and light rail system that connects the Denver metropolitan area. The N Line is an important multimodal improvement through the study area, consisting of a new 13-mile segment of the commuter rail system that travels through Denver, Commerce City, Northglenn, and Thornton. At its southern terminus, the N Line connects into Denver Union Station where riders can access other commuter or light rail lines to destinations across the Denver metropolitan area and commuter rail that extends east to Denver International Airport. Although no light rail stations are located within the study area, rail stations are located at 48th Avenue/Brighton Boulevard (National Western Center) and at 72nd Avenue in Commerce City, providing access to the rail transit system in less than 2 miles either north or south of I-270. RTD has modified two of its bus routes (Figure 4-24) to tie into the new N Line stations.

As shown on Figure 4-25, a patchwork of transit stations and routes surrounds the I-270 corridor, providing local service between residential and commercial areas and regional service that connects the I-270 corridor communities to the larger Denver metropolitan area and other Front Range communities, such as Boulder. Bus stations for local bus service are concentrated in the residential areas in Commerce City northeast of the study area; however, bus stations serving RTD Route 12 are also present along Washington Street. At the I-270/Vasquez Boulevard interchange, bus stations are located south and north of I-270 in both directions of Vasquez Boulevard. These stations provide local access to RTD Routes 44 and 48 that serve Commerce City's residential areas. Route 48 is a local route that connects residential areas which buffer the heavy industrial core along I-270. Route RC serves destinations within Commerce City during peak hours.

On a regional level, I-270 is part of the Flatiron Flyer (FF) regional Bus Rapid Transit service route connecting Denver to Boulder via US-36, a high-traffic commuting and recreational corridor that was widened to construct an express lane which opened in March 2016. The Denver FF connection at Fitzsimmons Medical Campus necessitates that FF buses use I-270 before connecting with the US-36 express lanes within which FF buses generally travel. The US-36 project also involved widening the outside highway shoulders that can accommodate bus-on-shoulder travel when congestion or accidents cause travel in the general purpose lanes to drop below 35 miles per hour (RTD 2020). Route 104X provides express service between Commerce City and Denver via I-76 and US-85. The RX lines provide express service between Brighton and Denver.

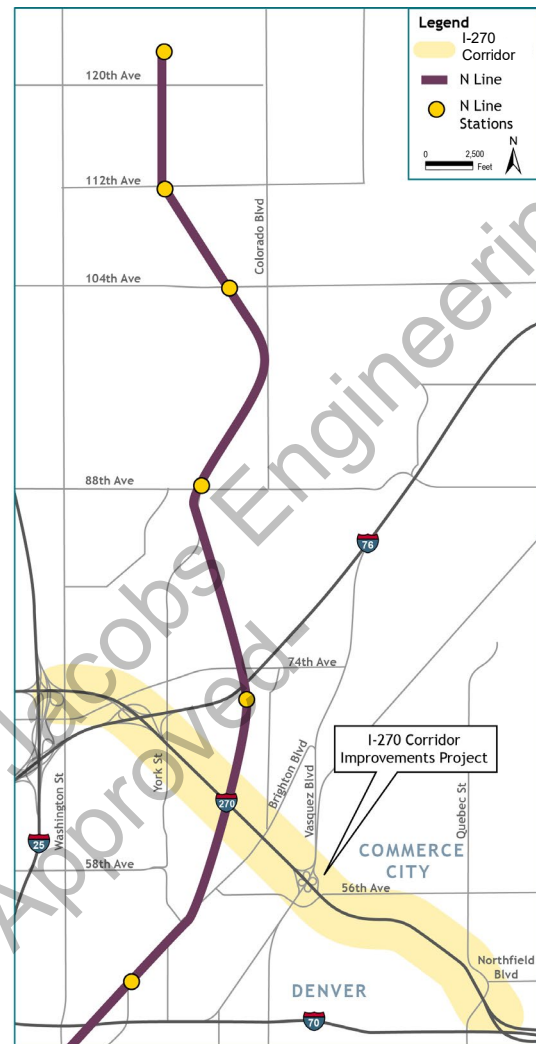


Figure 4-24. RTD N Line

Source: Jacobs

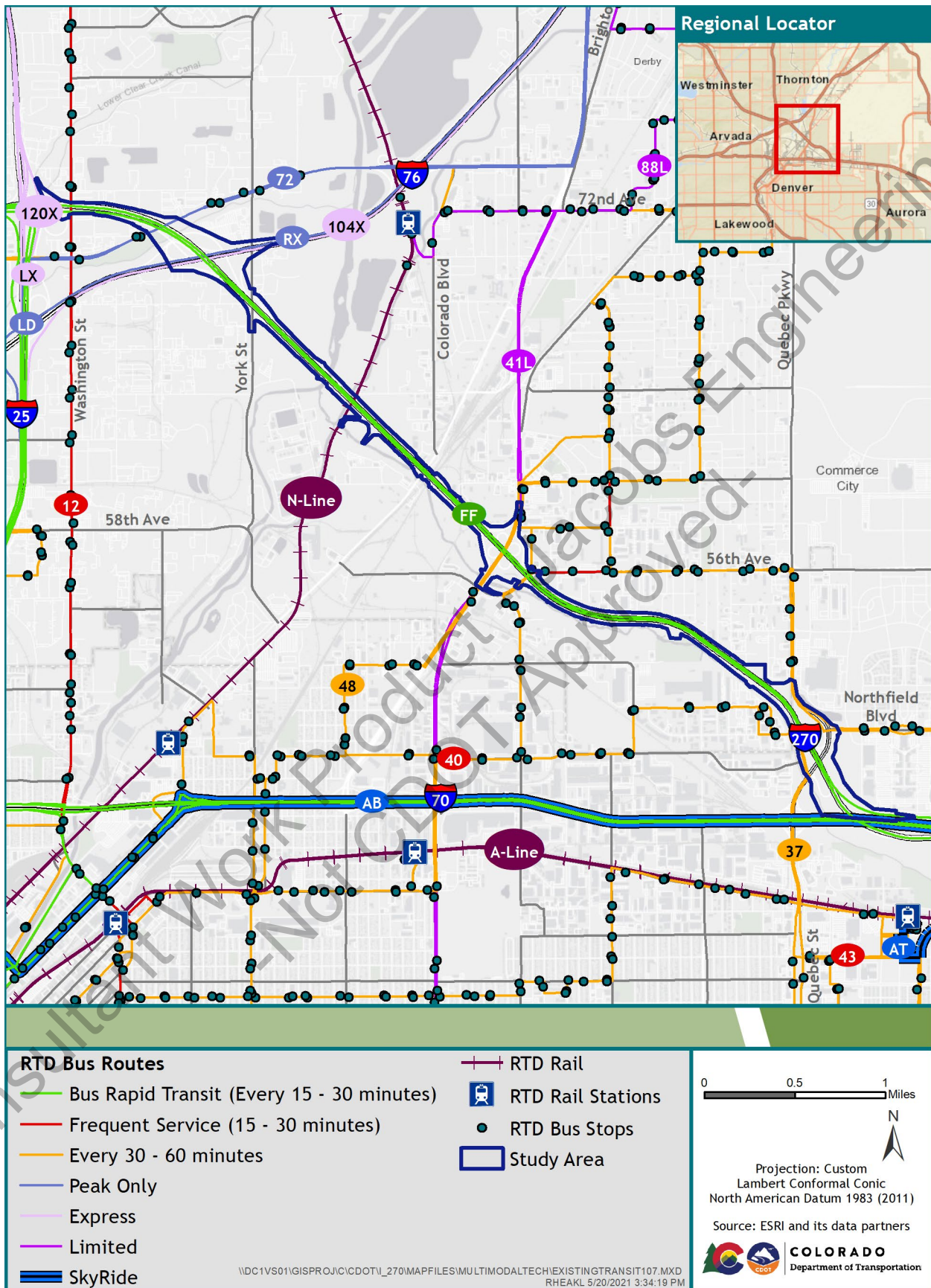


Figure 4-25. Existing Transit Facilities

4.8 Planned Public Transit and Rail Facilities

Currently, no bus or rail capital projects are identified in RTD's 2020-2025 Financial Plan within the I-270 corridor (RTD 2019). As discussed in Section 8 of this report, the project team met with RTD in January and September of 2021 and verified that no capital improvements or service expansions are currently planned in the corridor. CDOT's Division of Transit and Rail (DTR) was also included in coordination and confirmed that DTR has no existing plans for transit or rail improvement projects in the I-270 corridor. Existing bus services identified in Section 4.7 are anticipated to continue operating under the active service plan.

4.9 Transit Dependency

As identified in the Community Understanding Report (CDOT 2020c), most of the block groups in the study area have been identified as low-income, environmental justice communities. A low-income household is less likely to own a vehicle and more likely to depend on transit for mobility. Transit riders who do not always have access to a vehicle or may be physically, legally, or financially unable to own/operate a vehicle are considered transit dependent (CDOT 2015). The American Community Survey 5-year household characteristics include vehicle access data to inform the identification of transit-dependent areas (U.S. Census Bureau 2018).

Table 4-3. Occupied Households without Vehicle Access

Jurisdiction	Census Tract Number ^a	Households without Access to a Vehicle
Adams County	Countywide	4.7%
	87.09	15.9%
	89.01	7.1%
	90.02	2.1%
	93.07	1.7%
	93.08	5%
	95.53	4.6%
	150	5.7%
City and County of Denver	Countywide	10%
	35	5.5%
	41.01	13.5%
	41.02	11.3%
	41.06	2%
	41.07	3.7%

Source: U.S. Census Bureau 2018

^a Includes all census tracts within or intersected by a 0.5-mile Proposed Action buffer.

The zero vehicle availability data identifies the percent of occupied households with vehicle access ranges from approximately 1 percent to 16 percent depending on the tract. The average number of households within the tracts intersected by the study area without access to a vehicle is 6.5 percent. This compares with a national average of 8.7 percent and a Colorado statewide average of 4.7 percent. Within Adams County and the City and County of Denver, the average rates are 4.7 percent and 10 percent, respectively (U.S. Census Bureau 2018).

Census tract 87.09 in Adams County and tracts 41.01 and 41.02 in the City and County of Denver reported zero vehicle availability rates substantially higher than the other tracts within the study and the county, state, and national averages. The environmental justice analysis findings identified two of these three tracts (87.09 and 41.01) as low-income (CDOT 2020c). Both the demographic and household characteristic census data reinforce the relationship of low-income households to households with no vehicle availability, underscoring the importance of transit service to low-income communities that border the heavily industrial core of the I-270 corridor. RTD Route 48 directly serves households in these areas (Figure 4-25).

5.0 Impacts Assessment

5.1 No Action Alternative

5.1.1 Freight Railroads

The No Action Alternative would have no impact to existing freight railroads. In absence of modernizing the corridor and replacing infrastructure nearing the end of its design life, maintenance frequency and costs to the bridges over the UPRR and BNSF tracks would increase, potentially resulting in future disruptions to railroad operations crossing beneath I-270.

5.1.2 Bicycle and Pedestrian Facilities

The No Action Alternative would not improve the level of bicycle and pedestrian connectivity within the I-270 corridor. None of the existing streets crossing the interstate have designated bicycle lanes and only Quebec Street has sidewalk that connects to both side of the interstate (Figure 4-22). In the absence of the improvements included in the Proposed Action, the locally planned bicycle and pedestrian projects adjacent to I-270 shown in Figure 4-23 ,and described in Table 4-2, would be much less effective because the gap in connectivity across the I-270 corridor would continue to be a major barrier to bicycle and pedestrian movements.

5.1.3 Public Transit (Bus and Rail)

The No Action Alternative would not impact existing or known future public transit and rail resources. RTD's N Line and local and regional bus routes would continue to operate across and along the I-270 corridor and serve the outlying residential areas.

5.2 Proposed Action

The Proposed Action includes several elements that would improve the multimodal transportation network in the I-270 corridor. While these improvements would occur within the study area, they provide connections to adjacent planned multimodal improvement projects and facilitate the continued improvement of the multimodal system in the surrounding areas within C3, Denver, and Adams County. In this respect, the improvements included in the Proposed Action area have a positive impact that extends well beyond the immediate Proposed Action limits and into the surrounding communities. Both an express lane and general purpose lane operating option are being considered for the additional lane. Where there are differences in the operating options as they relate to the multimodal transportation network, those differences are explained for the relevant travel mode.

5.2.1 Freight Railroads

The existing four-span twin bridges that cross both Class I railroad rights-of-way, Brighton Boulevard, and East 60th Avenue would be replaced with a single two-span bridge. Because the replacement bridge has less spans, less piers are required to support the bridge structure. As a result, two of the four piers that currently exist in the railroad right-of-way would be eliminated. These two piers currently bisect the UPRR and BNSF rights-of-way and are protected by a cement crash wall. The removal of piers from within the railroad right-of-way is a direct operational and safety benefit to freight railroads because it

increases the functional operating area within the railroad right-of-way and eliminates the potential for a pier strike at this location. The crash wall would not be needed as part of the Proposed Action.

5.2.2 Bicycle and Pedestrian Facilities

The Proposed Action includes on-street and off-street elements that improve bicycle and pedestrian movement within the I-270 corridor:

- York Street would be widened by approximately 36 feet to accommodate an attached 10-foot-wide multi-use path along the eastern side and a 5-foot attached sidewalk along the western side. This widened York Street template would tie into improvements currently planned as a separate project as part of the Adams County Transportation Plan (2012a). The Adams County York Street Phase 3 project, currently in design, improves York Street from East 58th Avenue to I-270 and from I-270 to SH 224, but does not include improvements across I-270. The Proposed Action would fill this connectivity gap by tying directly into Adams County's York Street Phase 3 project north and south of the interstate. The Proposed Action creates an important link in Adams County vision for York Street to provide bicycle and pedestrian connectivity from East 58th Avenue to 88th Avenue.
- Along Vasquez Boulevard the Proposed Action would create a new 10-foot-wide, off-street trail and sidewalk combination connecting East 56th Avenue to East 60th Avenue, including new bicycle and pedestrian movement through the Vasquez Boulevard/ I-270 interchange. Beginning at the Vasquez Boulevard/East 56th Avenue interchange, as part of the replacement of the Sand Creek bridge, a new sidewalk would be added along northbound Vasquez Boulevard until it crosses Sand Creek. After crossing Sand Creek, the sidewalk turns east before encountering a new trail connection with the Dahlia Trailhead. Continuing east, trail users have the option to turn north and go through the Vasquez/I-270 interchange or continue east until the trail ties into the existing sidewalk on Eudora Street. Trail users who turn north move through the reconfigured interchange via a new paved trail with trail underpasses in the two locations where the trail intersects the reconfigured ramps (Figure 5-3). The two new trail underpasses eliminate any at-grade bicycle and pedestrian crossings along Vasquez Boulevard through the interchange (Figure 5-2).
- Currently there are no sidewalks or on-street bike lanes along Vasquez Boulevard through the interchange. This new bicycle and pedestrian movement through the I-270/Vasquez Boulevard interchange would substantially improve the multimodal network in the I-270 corridor by connecting the regionally accessible Sand Creek Trail with the local street network, the type of regional-local connection lacking in the existing condition.
- This improvement comprises a portion of the Town Center Greenway (Sand Creek Trail at Dahlia Trailhead to Fairfax Park), a planned trail identified in Commerce City's Walk.Bike.Fit Plan (2012). According to the plan, the Town Center Greenway "provides a north/south spine linking key destinations



Figure 5-1. Proposed Action Bicycle and Pedestrian Improvements at York Street

Source: Jacobs

in the west central area of the Historic City, providing access to key shopping and employment areas, restaurants, recreational, and civic destinations.” These key destinations include Walmart and the adjacent bus stop at the Vasquez Boulevard/East 60th Avenue intersection, which was identified by RTD as an important transit hub and destination for Commerce City residents (RTD 2020a).

- Where East 56th Avenue crosses beneath I-270 immediately east of the Vasquez Boulevard/I-270 interchange, the Proposed Action would construct a missing sidewalk link from the East 56th Avenue bridge over Sand Creek to Sand Creek Drive south of the Dahlia Trailhead. This segment of missing sidewalk was identified in the Walk2Connect walk audit (SCRGP 2019). This improvement creates a continuous bicycle and pedestrian connection between East 56th Avenue and the Sand Creek Greenway, thereby improving the local-regional multimodal resource interface and overall accessibility to bicycles and pedestrians.
- Moving north along East 56th Avenue, on-street bike lanes and attached sidewalks would be constructed from Sand Creek Drive to Eudora Street, and East 56th Avenue would be widened to accommodate four through lanes with a turn lane and bike lanes in each direction. In addition, the Proposed Action would construct a 5-foot attached sidewalk on the east side of East 56th Avenue and a 10-foot trail on the west side of East 56th Avenue that connects to the new trail through the Vasquez Boulevard/I-270 interchange. The sidewalk improvements would tie directly to the existing sidewalk and crossing of Sand Creek Drive. This improvement also ties directly into the Adams County Open Space proposed regional on-street bike loop (Adams County 2012b) that includes East 56th Avenue from Dahlia Street to Hudson Road and the Walk.Bike.Fit-recommended project East 56th Avenue “Bike Arterial” (Dahlia to Quebec). The East 56th Avenue improvements provide multimodal connectivity under I-270 from Dahlia Street and the Sand Creek Greenway to the commercial and residential areas north of I-270, improving the bicycle and pedestrian accessibility in the I-270 corridor.

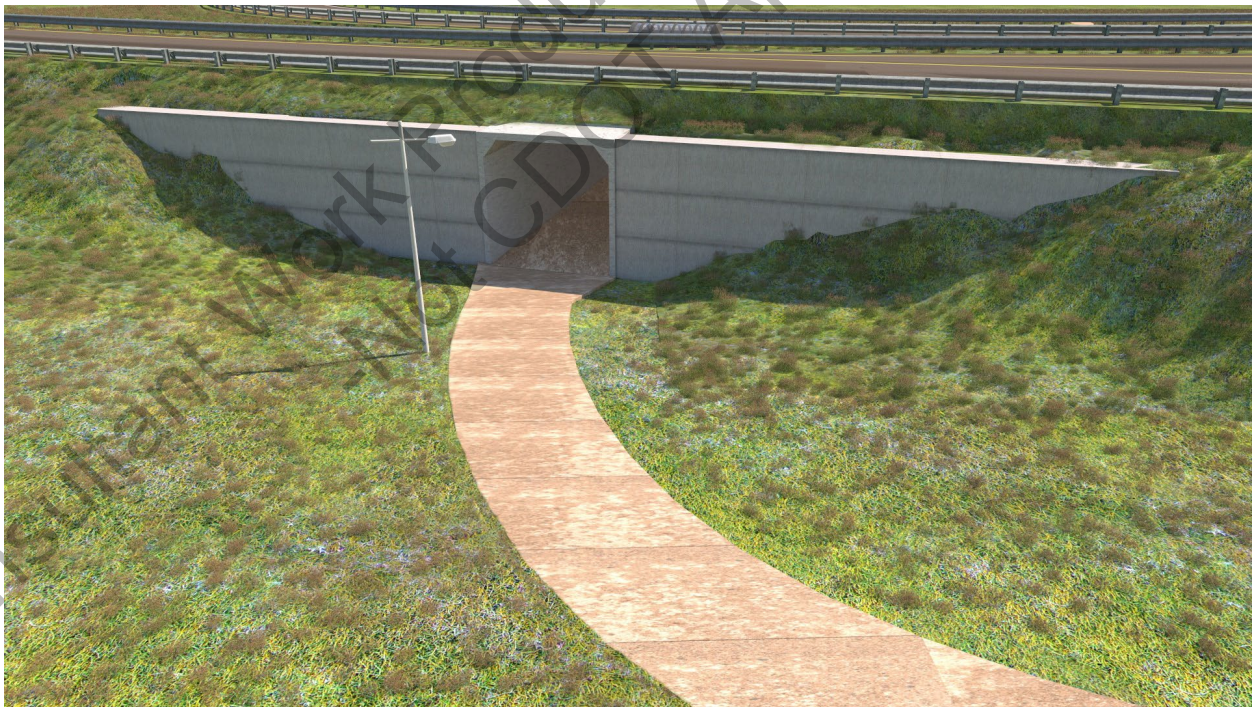


Figure 5-2. I-270/Vasquez Interchange Trail Underpass Visualization

Source: Jacobs

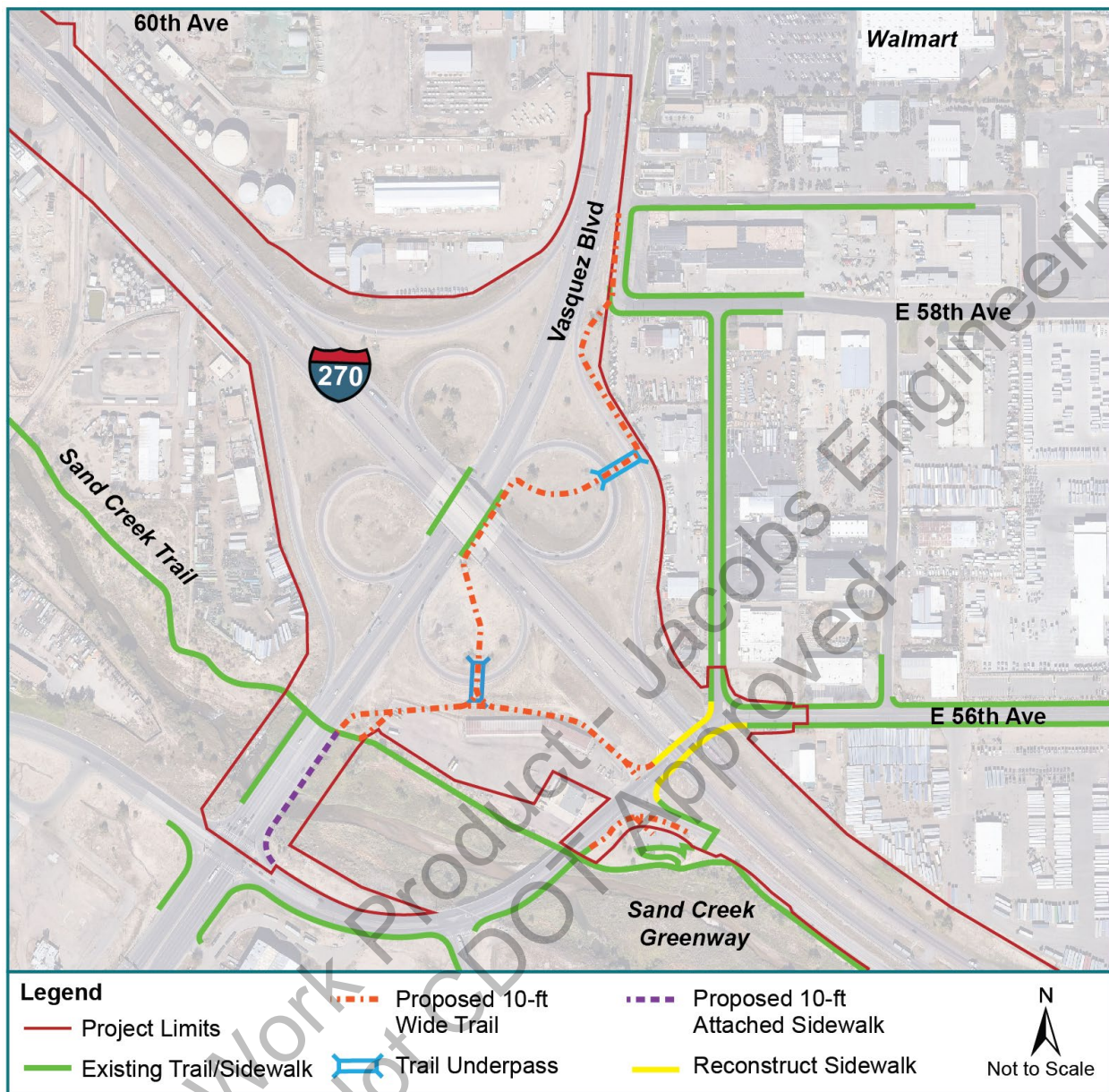


Figure 5-3. Proposed Action Bicycle and Pedestrian Improvements at Vasquez Boulevard and East 56th Avenue

Source: Jacobs; Aerial provided by DRCOG

5.2.3 Public Transit (Bus and Rail)

The Proposed Action would not adversely impact existing transit services because it would not permanently impact bus/rail routes or frequency along I-270 or along the arterial roads that cross the interstate. Conversely, the Proposed Action would reduce congestion on I-270, benefiting all interstate users, including buses.

In comparison to the general purpose lane operating option, the express lane operating option provides additional benefit to public transit because buses would be able to use the express lane, thereby increasing trip reliability for transit users. Trip reliability is analyzed in detail in the Traffic Technical Report included in Appendix A of the EA. The express lane operating option directly benefits RTD's popular FF Bus Rapid Transit service between Denver and Boulder. As discussed in Section 5 of this report, congestion on the I-270 segment of the FF route as the US-36 express lanes end results in departure and arrival delays for RTD. An express lane operating option on I-270 would improve express

lane continuity from US-36, forming a near-continuous express lane between Denver and Boulder. Further, the I-270 express lane is part of CDOT's larger vision for a system of express lanes throughout the Denver metropolitan area. This vision includes express lanes on I-270 that connect with US-36 and I-25 where express lanes are already operating, on I-76 where express lanes are planned, and I-70 where express lanes are currently under construction. Because the express lane operating option aligns with CDOT's vision for a connected express lane system, it has greater cumulative beneficial impact to the multimodal transportation system across the Denver Metro area when compared with the general purpose operating option or the No Action Alternative.

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

5.2.4 Construction Impacts

Construction of the Proposed Action would result in the minor, temporary disruption of multimodal travel within the study area. Because the existing twin bridges over the UPRR and BNSF railroads at Milepost 1.9 would be replaced with a new, wider bridge with fewer piers, bridge demolition would require the temporary closure of the railroad tracks for safety protocol reasons. To minimize potential conflicts with rail movements, CDOT will coordinate with BNSF and UPRR in advance of bridge demolition to avoid and minimize conflicts between freight movements and track closures.

RTD local bus routes cross I-270 at Vasquez Boulevard and Quebec Street. These routes would not be impacted during construction because at least one lane of travel would be maintained in each direction on both Vasquez Boulevard and Quebec Street during construction. At least one lane of traffic in each direction of I-270 would also be maintained during construction. In accordance with CDOT's Maintenance of Traffic requirements, lane closures would be limited to overnight work and off-peak hours to minimize construction-related travel delays for transit passengers. RTD's recently completed N Line bridge over I-270 at Milepost 1.0 would not be impacted, and no impacts to N Line operations would occur.

Several small segments of the South Platte River Trail and the Sand Creek Greenway Trail would be temporarily impacted by construction activities, resulting in the need to provide minor detours (less than approximately 800 feet in length) for bicyclists and pedestrians until construction activities in the area are complete.

In addition to the temporary detours, bridge girder placement may necessitate the need for full trail closure of the South Platte River Trail where it crosses beneath I-270 and the Sand Creek Trail where it crosses beneath Vasquez Boulevard. Table 5-1 identifies the location, approximate length, and reason for detour. By limiting any trail closures to overnight hours and maintaining trail connectivity during construction, negligible impacts would occur to bicyclists and pedestrians. *The Section 4(f) and Section 6(f) Resources Technical Memorandum* in Appendix A of the EA contains details on the locations and durations of trail closures.



Figure 5-4. Overview of Trail Impact Areas

Source: Jacobs

Table 5-1. Trail Detour Details

Affected Trail	Location	Approximate Length (in linear feet)	Detour Reason
South Platte River Trail	I-270	600	Bridge construction
Sand Creek Regional Greenway Trail	O'Brien Canal/ Burlington Ditch	50	Construction of pipe and outfall to Sand Creek
Sand Creek Regional Greenway Trail	Brighton Boulevard/ E. 60 th Ave	400	Bridge and embankment construction
Sand Creek Regional Greenway Trail	UPRR/E. 60 th Ave	200	Construction of pipe and outfall to Sand Creek
Sand Creek Regional Greenway Trail	Vasquez Boulevard	500	Bridge construction
Sand Creek Regional Greenway Trail	East of Dahlia Trailhead	800	Construction of storm drain outfalls to Sand Creek

Source: Jacobs

6.0 Mitigation Measures

Minor temporary impacts to bicycle and pedestrian movements along the South Platte River Trail and Sand Creek Greenway are anticipated during construction of the Proposed Action. These impacts are minor because they do not require out-of-direction travel or interrupt the ability to use the trail. The recommended mitigation measures that would be implemented for the Proposed Action are summarized in Table 6-1.

Table 6-1. Mitigation Measures

Activity Triggering Mitigation	Location of Activity	Impact	Mitigation Commitment	Responsible Branch	Timing/Phase that Mitigation will be Implemented
Bridge demolition, reconstruction, drainage improvements, and interstate widening	The South Platte River Trail crossing of I-270 The Sand Creek Greenway at Brighton Boulevard, Vasquez Boulevard, and between Holly Street and Newport Street	Minor, temporary trail detours and overnight closures	CDOT and the contractor will coordinate trail detours, closures, and signage with Denver, Commerce City, Adams County, and the Sand Creek Greenway Foundation as needed. The duration of detours will be minimized. Any trail closures for bridge girder placement will occur during nighttime hours.	CDOT Engineering and contractor	Pre-construction/Construction
Bridge demolition and construction	The I-270 bridges over UPRR/BNSF	Potential disruption of freight movement	CDOT will coordinate with BNSF and UPRR in advance of bridge demolition to avoid and minimize conflicts between freight movements and track closures.	CDOT Engineering and contractor	Pre-construction/Construction

Source: Jacobs

7.0 Required Permits

The following permits related to multimodal resources may be required as part of the Proposed Action.

- To perform bridge demolition and construction activities within the railroad right-of-way, temporary occupancy permits would be required from the BNSF and UPRR. Temporary occupancy permits would follow bridge plan review and approval by the railroads.

8.0 Stakeholder Coordination

Improving the multimodal transportation system is a goal of the Proposed Action that aligns with the goals of the three jurisdictions in the corridor. The shared recognition of the need to improve the multimodal transportation system in the I-270 corridor has driven coordination between CDOT and local communities. Representatives from the Adams County, Commerce City, and Denver planning and parks departments were engaged early during scoping and continued to be engaged during the development of the existing and planned multimodal improvements, identifying potential impacts and developing appropriate mitigations. The project team met with RTD and DTR in January and August of 2021 to confirm planned projects or initiatives in the I-270 corridor were being identified, evaluated, and supported in the context of the Proposed Action. County commissioners from the three jurisdictions participated in an I-270 corridor bus tour in September 2021 led by CDOT's Executive Director that also included RTD leadership and transportation commission representation.

Anticipated minor and temporary trail impacts detailed in this technical report were coordinated with the jurisdictions in January 2021. The BNSF and UPRR railroads were engaged during scoping and will continue to be involved through the plan review and construction phases of the Proposed Action.

In addition to the public agencies, the Sand Creek Regional Greenway Partnership (SCRGP) has been an engaged participant throughout development of the Proposed Action, including one-on-one coordination meetings with SCRGP leadership and CDOT in January 2021. The local jurisdictions and SCRGP will remain an integral part of the NEPA process with future coordination points when the EA is published and the Proposed Action enters its permitting and construction phases.

9.0 References

Adams County. 2012a. Adams County Transportation Plan.

<https://www.adcogov.org/sites/default/files/2776.pdf>

Adams County 2012b. Adams County Open Space, Parks & Trails Master Plan. <https://www.adcogov.org/sites/default/files/Parks%2C%20Open%20Space%20and%20Trails%20Plan.pdf>

Adams County 2012c. *Imagine Adams County: Adams County Comprehensive Plan*. Brookfield Properties. 2019. Land Use Map. <https://denver80238.com/wp-content/uploads/2017/01/Stapleton-Land-Use-Map-Residential.pdf>.

Brookfield Properties. 2020. Conservatory Green Neighborhood. <https://www.stapletondenver.com/community/the-neighborhoods/conservatory-green/>.

Burlington Northern Santa Fe (BNSF) Railroad Company. 2019. *Intermodal Map*. <https://www.bnsf.com/ship-with-bnsf/maps-and-shipping-locations/pdf/small-intermodal-map.JPG>.

City and County of Denver. 2019. *Blueprint Denver: An Integrated Land Use and Transportation Plan*.

City and County of Denver, the City of Commerce City, and Adams County. 2018. *North Metropolitan Industrial Area Connectivity Study (NMIACS)*. June. <https://capitalprojects.c3gov.com/home/showpublisheddocument?id=6714>.

City of Commerce City. 2010. *C3 Vision Comprehensive Plan*.

City of Commerce City. 2012. *Walk.Bike.Fit.: A Multi-Modal Active Transportation Plan*. <https://www.c3gov.com/home/showpublisheddocument?id=4392>.

Colorado Department of Transportation (CDOT). 2012. *Statewide Bicycle and Pedestrian Plan*. October. Amended 2015. https://www.codot.gov/programs/bikeped/building-a-bike-ped-friendly-community/Bike_Ped_Plan/BikePedStatePlan.

Colorado Department of Transportation (CDOT). 2015. *Statewide Transit Plan: connecting people across Colorado*. March. <https://www.codot.gov/programs/transitandrail/plans-studies-reports/statewidetransitplan/statewide-transit-plan>.

Colorado Department of Transportation (CDOT). 2016. *I-70 East Final Environmental Impact Statement and Section 4(f) Evaluation*. January. <http://www.i-70east.com/reports.html>

Colorado Department of Transportation (CDOT) 2018a. *Colorado Freight and Passenger Rail Plan*. Final. Prepared by the Rail Plan Working Group and Adopted by the Transportation Commission. August 16. <https://www.codot.gov/programs/transitandrail/plans-studies-reports/statewidetransitplan/2018-colorado-freight-and-passenger-rail-plan.pdf>.

Colorado Department of Transportation (CDOT) 2018b. *Planning and Environmental Linkages Study for Vasquez Boulevard*.

Colorado Department of Transportation (CDOT). 2020a. *Colorado Express Lane Master Plan*. Final. Prepared by Colorado HPT. February. <https://www.codot.gov/programs/expresslanes/assets/elp-final-report.pdf/>.

Colorado Department of Transportation (CDOT). 2020b. "Bridge Enterprise Frequently Asked Questions." November. <https://www.codot.gov/programs/BridgeEnterprise/BridgeFAQs>.

Colorado Department of Transportation (CDOT). 2020c. I-270 Corridor Improvements: *Community Understanding Report*. I-270 Corridor Improvements Environmental Assessment, Appendix A.

Colorado Department of Transportation (CDOT). 2020d. *Colorado Strategic Highway Safety Plan*.

Colorado Department of Transportation (CDOT). 2021. *About CDOT: Mission, Vision and Values*. <https://www.codot.gov/about/mission-and-vision.html>.

Denver Regional Council of Governments. 2020. *2040 Metro Vision Regional Transportation Plan*.

Denver Water. 2020. Downstream Reservoir Program. <https://www.denverwater.org/your-water/water-supply-and-planning/downstream-reservoir-program>.

Federal Highway Administration (FHWA). 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation: Lesson 4: Bicycle and Pedestrian Planning*. <https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/chapt4.cfm>.

Federal Highway Administration (FHWA). 2016. "The FAST Act: Freight Provisions." <https://www.transportation.gov/fastact/freight-factsheet>.

Metropolitan Transportation Planning. *United States Code* (U.S.C.) Title 23, Section 134.

Metropolitan Transportation Planning. *United States Code* (U.S.C.) Title 23, Section 217.

Regional Transportation District (RTD). 2015. *Northeast Area Transit Evaluation II*.

Regional Transportation District (RTD). 2018. *Regional Bus Rapid Transit Feasibility Study*.

Regional Transportation District (RTD). 2019. 2020-2025 Mid-Term Financial Plan. <https://www.rtd-denver.com/sites/default/files/files/2020-01/2020-2025%20MFTP.pdf>.

Regional Transportation District (RTD). 2020. CDOT coordination meeting with RTD. October 23.

Sand Creek Greenway Regional Partnership (SCGRP). 2019. Pedestrian Access to Sand Creek Regional Greenway from Elyria-Swansea Neighborhoods: Report on Walk Audit Activities.

Suncor. 2020. *About Us, Refining*. <https://www.suncor.com/en-ca/about-us/refining>.

Union Pacific Railroad. 2020. *UP Railroad Service Units & Regions*. https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_natedocs/pdf_service_unit_map.pdf.

United States (U.S.) Census Bureau. 2018. Selected Housing Characteristics, American Community Survey 5-Year Estimates Data Profiles.