



Alternatives Development Technical Report - I-270 Corridor Improvements Environmental Impact Statement

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Acronyms and Abbreviations

Acronym	Definition
a.m.	morning
BNSF	BNSF Railway
CDOT	Colorado Department of Transportation
CO	Carbon monoxide
CO	Colorado State Highway
Commerce City	City of Commerce City
CTIO	Colorado Transportation Investment Office
dBA	A-weighted decibels
DEIS	Draft Environmental Impact Statement
DRCOG	Denver Regional Council of Governments
EA	Environmental Assessment
EIS	Environmental Impact Statement
ELMP	2021 Colorado Express Lanes Master Plan
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HAP	Hazardous air pollutant
HAZMAT	Hazardous Materials
HOV	High-Occupancy Vehicle
HPTE	Colorado High Performance Transportation Enterprise
I-25	Interstate 25
I-270	Interstate 270
I-70	Interstate 70
I-70 Final EIS	I-70 East Final Environmental Impact Statement
I-76	Interstate 76
IDP	I-25/I-270/US 36 Express Lanes Direct Connects Interchange Development Plan
ITS	Intelligent Transportation Systems
mph	miles per hour
MSATs	mobile source air toxics
NEPA	National Environmental Policy Act
NO ₂	Nitrogen dioxide
NOI	Notice of Intent
NO _x	Nitrogen oxides
p.m.	Afternoon
PD	Policy Directive
PEL	Planning and Environmental Linkage



PM	particulate matter
PM _{2.5}	fine particulate matter (less than 2.5 microns in diameter)
PM ₁₀	coarse particulate matter (less than 10 microns in diameter)
project	Interstate 270 corridor
RCP	Reconnecting Communities Pilot Program
ROD	Record of Decision
ROW	right-of-way
RTD	Regional Transportation District
RTP	Regional Transportation Plan
SO ₂	Sulfur dioxide
SPF	Safety Performance Function
UPRR	Union Pacific Railroad
U.S.	United States
US 36	United States Highway 36
VOC	Volatile organic compounds

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 (project). 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. Moving into 2023, CDOT determined a more detailed environmental review was needed and requested that an EIS be prepared.

This technical report summarizes the alternatives development and evaluation process. The identification, consideration, and analysis of alternatives are essential to the NEPA process and supports the conclusions in the EIS. NEPA requires:

- Rigorous exploration and objective evaluation of all reasonable alternatives
- Discussion of the reasons for elimination of alternatives from detailed study
- Devotion of substantial treatment to each alternative considered in detail
- Inclusion of reasonable alternatives not within the jurisdiction of the lead federal agency (FHWA)
- Evaluation of the No Action Alternative

The preliminary alternatives, outlined in the August 2024 Notice of Intent (NOI) to prepare an EIS include:

- No Action Alternative
- Bicycle, Pedestrian, and Transit Enhancements Alternative
- Minimal Build Alternative¹
- Three General-Purpose Lanes Alternative
- Two General-Purpose Lanes and One Transit-Only Lane Alternative
- Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative
- Three General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative
- Two General-Purpose Lanes and Two Express Lanes that Accommodate Transit Alternative

¹ The Minimal Build Alternative was added after the seven Preliminary Alternatives were presented at the October 2023 Public Meeting and was included as the eighth alternative outlined in the NOI. This chapter summarizes the chronological development of alternatives; as such, the Minimal Build Alternative does not appear until Section 6.4, Addition of a New Minimal Build Alternative.



The remainder of this report discusses how these alternatives were developed, refined, and evaluated.

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 Denver and 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 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 Project Limits (I-25 to I-70)



2.0 Regulatory Context

2.1 Federal Context

NEPA is a U.S. federal law, enacted in 1970, that requires government agencies to assess the environmental effects of their proposed actions before making decisions. Conducting this EIS is part of NEPA. NEPA requires that a range of reasonable alternatives be developed and evaluated to determine the potential environmental impacts of improving I-270. Completing a NEPA review promotes transparency and public involvement by allowing stakeholders to provide input on the project. This Alternatives Development Technical Report describes the

analysis and public involvement that took place to support the development and evaluation of I-270 alternatives.

2.2 State and Local Context

CDOT has several policy directives that influence investment in the transportation system. These directives include:

- **Policy Directive (PD) 14: Transportation Planning Policy** - This policy guides the development of the statewide transportation plan and regional transportation plans, ensuring that investment decisions align with strategic priorities, such as safety, mobility, economic vitality, and environmental sustainability. Investment in the I-270 corridor is included in CDOT's Statewide Transportation Plan.
- **PD 1601: Interchange Approval Policy** - This directive ensures that new interchanges are planned and constructed in a manner that supports the state's transportation goals, including considerations for safety, traffic flow, and economic impact. The 1601 process will be completed for I-270 interchanges.
- **PD 1602.0 and 1602.1:** These directives require CDOT to accommodate the needs of bicycles and pedestrians in the planning, design, operation, and maintenance of transportation facilities. The needs of bicyclists and pedestrians are considered and included in the development and evaluation of I-270 alternatives. (CDOT 2017a, 2017b).
- **PD 1603.0: Managed Lanes Policy** - This directive establishes statewide guidelines for the evaluation of managed lanes. The PD requires managed lanes to be strongly considered during the planning and development of capacity improvements on state highway facilities. Managed lanes are included in the development and evaluation of I-270 alternatives.

3.0 Overview of the Alternatives Development Process

The EIS evaluated a range of reasonable alternatives. These alternatives were developed by considering the regulatory context (Section 2.0), addressing the project's purpose and need, building on recommendations from previous plans and studies, and incorporating stakeholder feedback.

NEPA emphasizes the importance of involving various stakeholders throughout all phases of the environmental review process to ensure informed and balanced decision making. Stakeholders include the public (including residents and community groups), cooperating and participating agencies, other interested parties (such as advocacy groups, freight operators and first responders), and industry representatives, businesses, and other entities with a vested interest in the environmental, transportation and/or land use implications of the project.

The Purpose and Need development process, which began in 2020 when the I-270 Corridor Improvements NEPA process was initiated, leveraged information from other studies in the project area and existing safety and operational analyses to identify project needs. The findings of these and additional analyses by the project team were used to develop the

project needs and develop high-level alternative concepts to facilitate stakeholder engagement, which occurred between 2020 and 2022.

In 2023, the project team reviewed past information and developed additional high-level alternative concepts. A public meeting was held in October 2023 to gather input and engage stakeholders in discussions surrounding the I-270 Corridor Improvements Project. The focus of the meeting was to address community concerns, explore alternative transportation options, and gather feedback on proposed improvements. The information gathered at the public meeting and subsequent listening sessions expanded the project team's understanding of the specific needs of the corridor and the surrounding community.

Not only did the initial feedback advance the development of the alternatives, but it also served as the catalyst for additional outreach and engagement activities to directly engage stakeholders in the alternatives development process. It led to the identification of new corridor alternatives and informed the identification of screening metrics. For example, at the October 2023 public meeting, the Bicycle, Pedestrian and Transit Enhancements Alternative did not include specifics of the types of improvements included in the alternative. A series of workshops and working groups guided the evaluation of specific enhancements and led to a refined and detailed Bicycle, Pedestrian and Transit Enhancements Alternative.

Refined alternatives were put through a Level 1 Screening process to evaluate how well each alternative was expected to address the purpose and need. Alternatives were further refined based on the findings of the Level 1 Screening and resulting alternatives were put through the Level 2 Screening process. Level 2 Screening provided a qualitative and quantitative assessment of the degree to which each remaining alternative addressed the purpose and need and project goal.

The preliminary project alternatives included in the NOI were initially presented at a second set of public meetings in April 2024. The purpose of the meeting was to provide updates on alternative designs and to seek feedback on the proposed screening metrics and initial screening results. This feedback was used to refine the screening results and identify the alternatives retained for full evaluation in the EIS.

4.0 Overview of the Project Purpose and Need

The project purpose and need identifies the following issues that need to be addressed on the corridor:

- Traveler safety on the corridor: The corridor experiences higher than expected crashes, including congestion-related crashes and crashes related to poor interchange operations.
- Travel time and reliability on the corridor: The I-270 corridor frequently operates at or over capacity (i.e., more vehicles are trying to use I-270 than I-270 can accommodate), resulting in substantial congestion and travel delays. By 2050, daily traffic on I-270 is expected to grow by at least 15 percent, with other nearby roads experiencing even higher growth, since I-270's growth is limited as it already operates over capacity.
- Transit on the corridor: Congestion and highly variable travel speeds results in unpredictable travel times and reduced transit schedule reliability. Frequent congestion and unpredictable travel speeds on I-270 have led the Regional Transportation District

(RTD) to develop an official route deviation allowing drivers to divert buses to I-70 and I-25 instead of I-270, highlighting the need to accommodate reliable transit solutions on the corridor.

- Bicycle and pedestrian connectivity across I-270: Bicyclists, pedestrians, micromobility devices, such as electric bicycles and scooters, and those using other non-vehicular modes have limited opportunities to cross the I-270 corridor, thereby limiting cyclists' and pedestrians' ability to travel between neighborhoods and to connect to the Sand Creek Regional Greenway and its associated trail safely and efficiently.
- Freight operations on the corridor: Multiple factors negatively impact the efficiency of freight movement in the I-270 corridor, including traffic congestion, poor road surface conditions, tight turns at interchange ramps, narrow shoulder widths, short acceleration and deceleration ramps at interchanges, and the occurrence of crashes involving freight vehicles.

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.

5.0 Development of Preliminary Alternatives

The EIS process for the I-270 Corridor Improvements Project is leveraging the findings from numerous studies conducted in the corridor and surrounding project area. These studies, including safety assessments, traffic analyses, and corridor studies, provided valuable data on the corridor's existing conditions, safety challenges, and operational deficiencies. Additionally, stakeholder input and preliminary traffic modeling played a critical role in shaping the analysis, ensuring that the preliminary alternatives aligned with community needs and anticipated traffic patterns, contributing to a more comprehensive and effective planning process.

Preliminary alternatives were developed based on the findings of the Purpose and Need evaluation and resulted in the identification of the following alternatives:

- No Action
- Two General-Purpose Lanes and Increased Bicycle, Pedestrian and Transit Enhancements
- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

These preliminary alternatives were presented with the draft Purpose and Need at the October 2023 public meeting for review by the project stakeholders. The primary purpose of the meeting was to gather stakeholder input on the proposed project purpose and need and preliminary alternatives to ensure that the project is understood, and the alternatives reflect the stakeholders' concerns and needs.

Attendees were encouraged to share their experiences using the corridor and opinions on the various design alternatives presented for consideration.

The following sections summarize the improvement options evaluated and how they were packaged into the preliminary alternatives.

5.1 No Action Alternative

Under NEPA, the No Action Alternative must be considered in the environmental review process even though it does not meet the project's purpose and need. It provides a comprehensive view of what would happen if no major improvements were undertaken as part of the I-270 project and is used as a baseline for comparison against the build alternatives.

The No Action Alternative helps in providing transparency to the stakeholders by showing all possible courses of action, including the option of doing nothing. This ensures that decision-makers and the stakeholders have a full understanding of the implications of not moving forward with a project. Additional elements of the No Action Alternative are discussed throughout this report and summarized (in detail in Section 7.2).

5.2 Mainline Improvement Options

Mainline improvements along the I-270 corridor are critical to address the existing safety, congestion, and operational challenges that impact both daily commuters and freight traffic. The current mainline experiences frequent bottlenecks, high crash rates, and inadequate lane capacity to handle growing traffic volumes. Additionally, the aging infrastructure, including bridges and road surfaces, contributes to further operational inefficiencies and safety hazards. To address these issues, several mainline improvement options were identified based on past project evaluations and focused on improving traffic flow and enhancing safety features, such as lane widening, shoulder improvements, and continuous auxiliary lanes.

5.2.1 General-Purpose and Express Lanes

In 2019, CDOT commissioned the I-270 Traffic Study (Atkins 2019) to document the existing traffic conditions, develop a calibrated traffic model to use for alternatives analysis, forecast design year (2040) traffic, and analyze operational performance of potential I-270 alternatives.

This study identified and analyzed several I-270 mainline operational options that added general-purpose lanes and/or Express Lanes. In general, the study found that three-lane capacity on I-270 would increase the traffic volume served, compared to the No Action Alternative while reducing travel times during both morning (a.m.) and afternoon (p.m.) peak periods. Alternatives with four lanes in each direction would serve higher traffic volume, but with increased traffic friction at the merge and diverge sections where the new lanes would start and terminate, particularly in the westbound direction where lanes are dropped, contributing to higher travel times during the p.m. peak period.

Express Lanes on I-270 were also discussed in the 2021 Colorado Express Lanes Master Plan (ELMP). The Colorado High Performance Transportation Enterprise (HPTE), renamed the Colorado Transportation Investment Office (CTIO) in 2021, created the ELMP as a

comprehensive vision for Express Lanes across the state, formalizing the strategic roadmap for prioritization, planning, and development of future Express Lane projects to deliver a statewide network (CDOT 2020a). The ELMP's identification of the I-270 corridor as a priority segment reinforces the corridor's critical role in enhancing connectivity between I-25 and I-70 and supporting the need to provide more reliable travel times as travel demand increases.

The importance of I-270 as a critical link between I-25 and I-70 was further reflected in the I-25/I-270/United States Highway 36 (US 36) Express Lanes Direct Connects Interchange Development Plan (IDP) and the I-70 East Final EIS and Section 4(f) Evaluation.

The project team reviewed stakeholder feedback provided on previous evaluations contemplating adding new lanes on I-270 in various configurations. Generally, there was support for exploring adding new lanes; however, there were differing opinions on the number of lanes, and whether the lanes should be general-purpose lanes and/or Express Lanes.

Adding a general-purpose lane or Express Lane to I-270 would improve safety by reducing congestion, which is a major cause of crashes, and would increase the corridor throughput capacity and reduce corridor wide travel times. Express Lanes, with managed pricing, could further improve reliability, especially during peak hours, and provide a reliable route for transit buses. Freight movement would also benefit from fewer delays and improved safety, especially at ramps and interchanges, helping goods move more efficiently through this key freight corridor.

New general-purpose lanes and Express Lanes in various configurations are captured in the following preliminary alternatives:

- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

5.2.2 Exclusive Transit Lanes

Existing congestion and reliability challenges not only impact passenger vehicles and freight vehicles but have substantial negative impacts on transit operations and reliability. While the Express Lane alternatives would improve transit operations and reliability on the corridor, the initial mainline improvements also included an exclusive transit-only lane alternative to maximize the ability of transit services on the corridor to provide a reliable transit option. This is captured in the following preliminary alternative:

- Two General-Purpose Lanes and One Transit-Only Lane

The dedicated transit lane would greatly improve the reliability of bus services along the I-270 corridor by allowing buses to avoid congestion, ensuring more consistent travel times, and making transit a more attractive option for commuters.

5.2.3 Shoulder Improvements

Currently, the narrow or non-existent shoulders limit space for vehicles to pull over in case of breakdowns, increasing the risk of accidents and congestion. Upgrading the shoulders would provide safer areas for disabled vehicles and emergency responders, reduce traffic disruptions, and help reduce secondary crashes by ensuring that incidents can be managed with limited impact to traffic flow. The intent would be to accommodate a minimum of 10 feet on the inside and outside shoulders throughout the corridor.

Widened shoulders are included in the following preliminary alternatives:

- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

5.2.4 Continuous Auxiliary Lanes

The safety evaluation identified the segment of I-270 between I-76/York Street and Vasquez Boulevard as having the highest concentrations of rear end and sideswipe same direction crashes. Stakeholder engagement activities to support traffic analyses in 2020 and 2021 aided in the identification of the following critical existing geometric deficiencies and challenges:

- Short weaving segments in both directions on I-270 caused by cloverleaf ramps at the Vasquez Boulevard interchange. The American Association of State Highway and Transportation Officials recommends a 1,500-foot minimum weaving distance (2018). The weaving distance is currently 550 feet in both directions on I-270.
- Consecutive eastbound I-270 on-ramps (spaced 900 feet apart) coming from eastbound and westbound I-76, both individually merging into the right lane on I-270.
- Limited uphill acceleration distance for heavy vehicles using the westbound I-270 on-ramp from southbound Vasquez Boulevard.

To address these challenges, auxiliary lanes between the I-76/York Street and Vasquez Boulevard interchanges in both directions were evaluated and found to provide more space for vehicles to accelerate, decelerate, and merge safely, and to better facilitate truck-climbing between Vasquez Boulevard and York Street.

Continuous auxiliary lanes between the I-76/York Street and Vasquez Boulevard interchanges are included in the following preliminary alternatives:

- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

These mainline alternative options formed the backbone of the preliminary alternatives to be paired with location-specific enhancements and improvements discussed in the next section.

5.3 Interchange Improvements

The I-270 corridor includes several critical interchanges that are key to regional and local transportation. These interchanges include system-to-system interchanges with I-25, US 36, I-76, and I-70 as well as local and arterial interchanges at York Street, Vasquez Boulevard, and Quebec Street. The I-270 interchanges currently face a range of operational and safety challenges associated with congestion, poor merging conditions, and outdated infrastructure. The interchange improvements evaluated as part of the alternatives development process include reconfiguring ramps, extending acceleration and deceleration lanes, upgrading facilities to meet current designs, and evaluation of alternative interchange configurations to better meet existing and projected travel patterns.

5.3.1 I-25/US 36 Interchange

The I-270, I-25, and US 36 system-to-system interchange plays a crucial role in the regional transportation network, serving as a key connection point between two major highways in the Denver metro area. This interchange supports substantial traffic volumes, with both commuter and freight vehicles using the route to access industrial areas, Denver International Airport, and other destinations. The interchange is especially important for freight traffic, as I-270 is a primary truck route connecting northern Colorado with the broader interstate system. However, the high volumes of traffic, particularly trucks, contribute to congestion and safety challenges.

CDOT Region 1 and HPTE (now CTIO) developed the IDP to evaluate the feasibility of adding direct connections for existing and proposed regional Express Lanes through the existing I-25/I-270/US 36 interchange and to establish a plan for the phasing and prioritization of the project that is compatible with and maximizes the existing infrastructure.

The IDP Direct Connects project is currently reflected in the Denver Regional Council of Governments (DRCOG) Regional Transportation Plan (RTP), and the I-25/I-270/US 36 Direct Connects have been included in the 2050 No Action and all build alternatives.

Preliminary traffic modeling noted benefits associated with increased exit lane capacity for the off-ramp from westbound I-270 to northbound I-25. To improve operations, the westbound I-270 ramp to northbound I-25 could be restriped to provide dual-exit lane capacity. This improvement has been included in the following preliminary alternatives:

- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

5.3.2 I-76 and York Street Interchange Improvements

5.3.2.1 Eastbound Collector I-270 On-Ramp from Eastbound/Westbound I-76

The I-76 and York Street interchanges on I-270 face several operational and safety challenges.

In the eastbound direction, the westbound I-76, eastbound I-76, and York Street on-ramps merge onto I-270 in rapid succession. The close spacing of these on-ramps introduces a

substantial amount of friction to mainline operations and contributes to a high concentration of rear end and sideswipe same direction crashes.

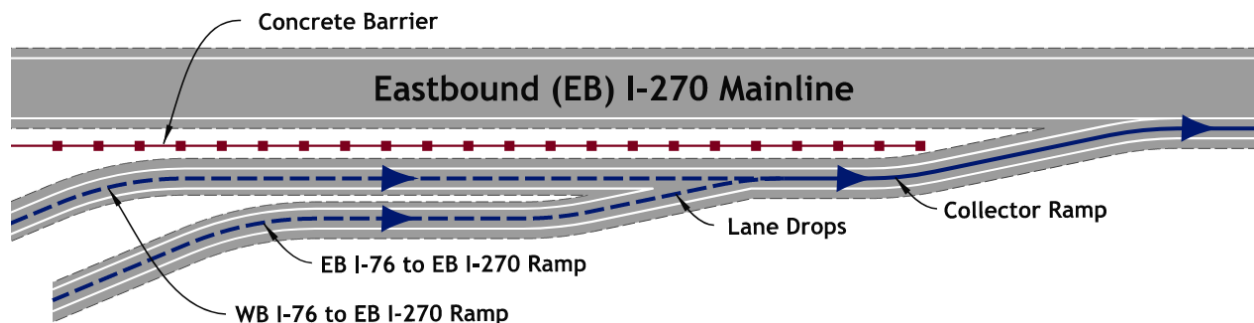
Adams County is currently advancing a project on York Street that includes widening York Street through the project area to a four-lane facility that provides two through lanes in the northbound and southbound directions. This widening project is reflected in the DRCOG RTP and travel demand model and has been included in the traffic modeling and design for the 2050 No Action Alternative and build alternatives.

A new eastbound collector ramp was identified to consolidate incoming movements from the I-76 on-ramps. The collector ramp would be barrier-separated from the I-270 mainline to reduce operational issues associated with closely spaced on-ramps and to address higher-than-average sideswipe crash patterns associated with ramp spacing. The collector ramp system would feed directly into the eastbound auxiliary lane that continues eastbound to Vasquez Boulevard (see Figure 2 below).

This eastbound collector ramp has been included in the following preliminary alternatives:

- Two General-Purpose Lanes and One-Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

Figure 2. Eastbound Collector Ramps for I-76 On-Ramps



5.3.2.2 Separation of Westbound I-270 York Street and I-76 Off-Ramps

In the westbound direction, there is a single off-ramp from I-270 that serves drivers heading to York Street, eastbound I-76, and westbound I-76. After exiting I-270, drivers must first decide whether to exit to York Street or continue toward I-76. A bit further ahead, those continuing to I-76 will face another decision, choosing between eastbound I-76 and westbound I-76. One of the main safety issues is created by the short distance and concrete barrier between the exit ramp to York Street and the system ramp for I-76.

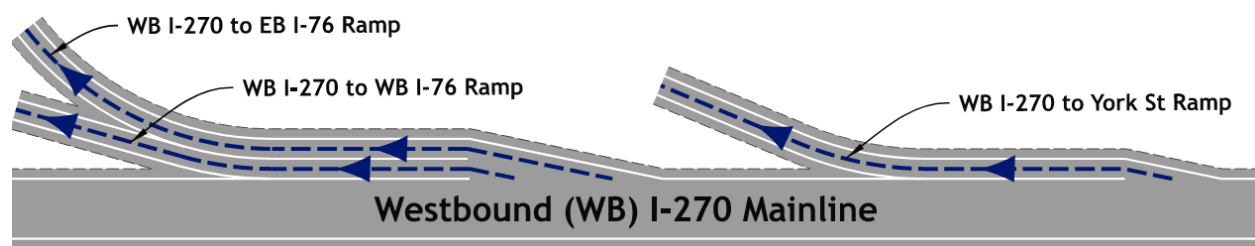
This area experiences the highest concentration of concrete barrier crashes on the corridor, and a high proportion of rear end and sideswipe same direction crashes. Many of these crashes are attributed to driver confusion navigating the ramp and high-speed differentials between slower traffic exiting to York Street and faster I-76 ramp traffic.

Preliminary safety assessments indicated that separating ramps would better meet driver expectations and reduce driver confusion, thereby improving ramp operations and safety. Additional signage and improved pavement markings would also help drivers navigate the interchange area (see Figure 3).

This separation of the westbound I-270 York Street and I-76 off-ramps has been included in the following preliminary alternatives:

- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

Figure 3. I-270 Westbound York Street and I-76 Off-Ramps



5.3.2.3 I-76/I-270 Partial Interchange - Missing Eastbound I-270 to Westbound I-76 Ramp

In the eastbound direction on I-270, there is a missing ramp to exit onto southbound I-76. In response to stakeholder inquiries, the project team evaluated the possibility of adding this movement as part of the I-270 Corridor Improvements Project. The project team has evaluated this movement and found that there would be safety and traffic operations issues introduced if this missing movement were added (CDOT 2021).

Traffic modeling indicates that future demand for this movement would be low and the existing ramp network at the nearby roadway network can continue to accommodate the demand for this movement. Eastbound traffic on this portion of I-270 would enter the corridor from eastbound US 36 or southbound I-25. Drivers traveling from US 36 can use US 287 to directly merge onto westbound I-76. Vehicles traveling from southbound I-25 can use the I-25 exit ramp to westbound I-76. Adding the missing ramp would not meet requirements for weaving length, lane reduction, and lane balance, and would introduce conflicts with high-crash areas along I-270 and I-76, particularly given the proximity of surrounding interchanges. These factors mean that adding the ramp would not improve safety or reduce congestion.

The I-270 Corridor Improvements Project, however, does not preclude this missing ramp from being re-evaluated in the future, and possibly constructed if conditions change.

5.3.2.4 I-76/I-270 Partial Interchange - Missing Eastbound I-76 to Westbound I-270 Ramp

In the eastbound direction on I-76, there is a missing ramp to exit onto westbound I-270; and ultimately access to westbound US 36 (I-270 ends to the west of the I-76 interchange). The



project team has received questions from stakeholders about whether this movement would be included as part of the I-270 Corridor Improvements Project. The project team has evaluated this movement and found that there would be safety and traffic operations issues introduced if this missing movement were added (CDOT 2021).

The 2021/2022 Traffic Analysis revealed low demand for this movement, and the existing network already provides several viable routes to complete this. The existing I-76/I-25 Interchange and alternate routes using US 287 or Pecos Street provide viable routes to access westbound US 36.

Furthermore, the congested nature of this section of westbound I-270, with multiple system ramps converging, would make construction unfeasible, as the ramp would not meet necessary standards for weaving length, lane reduction, and lane balance.

The I-270 Corridor Improvements Project, however, does not preclude this missing ramp from being re-evaluated in the future, and possibly constructed if conditions change.

5.3.2.5 I-270/York Street Partial Interchange - Missing York Street to Westbound I-270 Ramp

There is no on-ramp from York Street to enter westbound I-270. The project team has received questions from stakeholders about whether this movement would be included as part of the I-270 Corridor Improvements Project. The project team has evaluated this movement and found that there would be safety and traffic operations issues introduced if this missing movement were added (CDOT 2021).

Due to the close spacing between the I-270/York Street and I-270/I-76 interchanges—only 1,930 feet apart, compared to the recommended 1-mile (5,280 feet) minimum for safe full-access interchanges—adding this ramp would introduce safety and operational challenges. Braided ramps are often needed to accommodate ramp movements with less spacing between interchanges. Even with a braided ramp configuration to address the tight spacing, this design was found to create friction between local traffic with interstate traffic and increased risks of crashes associated with speed differentials and unexpected driver maneuvers. Given the proximity to the I-76 and I-25 interchanges, a westbound ramp from York Street would compromise safety and traffic flow.

This movement is accommodated by taking York Street to CO 224, entering westbound I-76, and then entering westbound I-270.

The I-270 Corridor Improvements Project, however, does not preclude this missing ramp from being re-evaluated in the future, and possibly constructed if conditions change.

5.3.2.6 I-270/York Street Partial Interchange - Missing Eastbound I-270 to York Street Ramp

The York Street Interchange currently lacks an exit ramp from eastbound I-270, prompting questions from stakeholders about the opportunity to add this missing ramp as part of the I-270 Corridor Improvements Project. The project team has evaluated this movement and found that there would be safety and traffic operations issues introduced if this missing movement were added (CDOT 2021).

Due to the interchange's proximity to the I-76 system interchange, adding an eastbound exit ramp would introduce high-speed merging conflicts and introduce weaving conflicts with other merging and exiting activity at existing ramps. This overlap would increase safety risks due to high speed differentials and the need for additional lane changes. Instead, drivers can reach York Street from eastbound I-270 by exiting to eastbound I-76, taking the Colorado State Highway (CO) 224 exit and then proceeding to York Street, a route that avoids these safety and operational issues.

The I-270 Corridor Improvements Project, however, does not preclude this missing ramp from being re-evaluated in the future, and possibly constructed if conditions change.

5.3.3 Vasquez Boulevard Interchange

The Vasquez Boulevard interchange presents several challenges and opportunities for improvement, including addressing poor mobility, heavy congestion, and safety issues.

A safety analysis of the corridor was conducted to support the development of the project's purpose and need. The analysis highlighted high concentrations of rear end, sideswipe same direction, and fixed object guardrail crashes in the vicinity of the Vasquez Boulevard interchange. The safety data confirmed safety and operational challenges identified in previous plans and studies associated with the difficulties navigating the tight loop ramps, substandard merging lanes, and congestion at the interchange.

Situated in the middle of the I-270 corridor, the Vasquez Boulevard interchange provides critical access to the adjacent communities, as there are no other interchanges within 1 mile of the interchange. CDOT, in coordination with FHWA, has recommended this interchange be converted into a full interchange, adding the northbound Vasquez Boulevard to eastbound I-270 ramp. The inclusion of this movement was supported by stakeholders, especially the freight industry, who noted that it is necessary and challenging to navigate three of the existing loop ramps to complete this movement today.

In 2018, CDOT, in cooperation with FHWA and local agencies, conducted a Planning and Environmental Linkages (PEL) study for Vasquez Boulevard, including the interchange of I-270 and Vasquez Boulevard. Driven by identified needs within the PEL study area, the purpose of the PEL study was to identify transportation improvements that would "improve operations, mobility, and safety for vehicles and freight at the I-270 and Vasquez Boulevard interchange; improve its connection to Vasquez Boulevard and 56th Avenue and Vasquez Boulevard and 60th Avenue intersections, on Vasquez Boulevard, and the surrounding local road system; and improve transportation connectivity for all modes."

The PEL study evaluated and screened over 20 alternatives against the purpose and need of the PEL study. In addition to Vasquez Boulevard interchange alternatives, the PEL study included improvements at other nearby Vasquez Boulevard intersections. In March 2024, CDOT completed the Vasquez Boulevard, I-270 to 64th Avenue, Environmental Assessment and Finding of No Significant Impact (Vasquez EA and FONSI), which advanced identification and design of improvements at the Vasquez Boulevard/60th Avenue (including restrictions to existing movements) and the Vasquez Boulevard/62nd Avenue intersections, and new sidewalks and pedestrian crossings to fill gaps in the existing infrastructure and enhanced connectivity. The Vasquez EA and FONSI improvements are reflected in the DRCOG Regional

Transportation Plan and travel demand model and have been included in the 2050 No Action Alternative.

Four interchange alternatives for the I-270 interchange advanced through the PEL study screening process, which included a partial cloverleaf, a diverging diamond, one-way pairs, and viaduct alternatives. These alternatives were identified to best address safety and operational issues at the interchange and improved travel times on I-270.

Partial Cloverleaf: The partial cloverleaf interchange solution would remove the existing I-270 exit loop ramps that are identified to pose safety and operational concerns and create two new signalized intersections along Vasquez Boulevard at proposed I-270 exit ramps (eastbound and westbound).

Diverging Diamond: The diverging diamond solution would convert the cloverleaf interchange into a diverging diamond interchange, featuring two new traffic signals along Vasquez Boulevard at proposed I-270 ramp intersections. In between two new traffic signals, Vasquez Boulevard through traffic would shift to the opposite side of the roadway, creatively increasing interchange capacity and reducing intersection conflict points.

One-way Pairs: The one-way pairs elevated solution would split the existing Vasquez Boulevard (between East 56th Street and Highway 2) into one-way streets: northbound to remain along existing Vasquez Boulevard and southbound to use existing Clermont Street. The I-270/Vasquez Boulevard interchange is within these limits and would be redesigned.

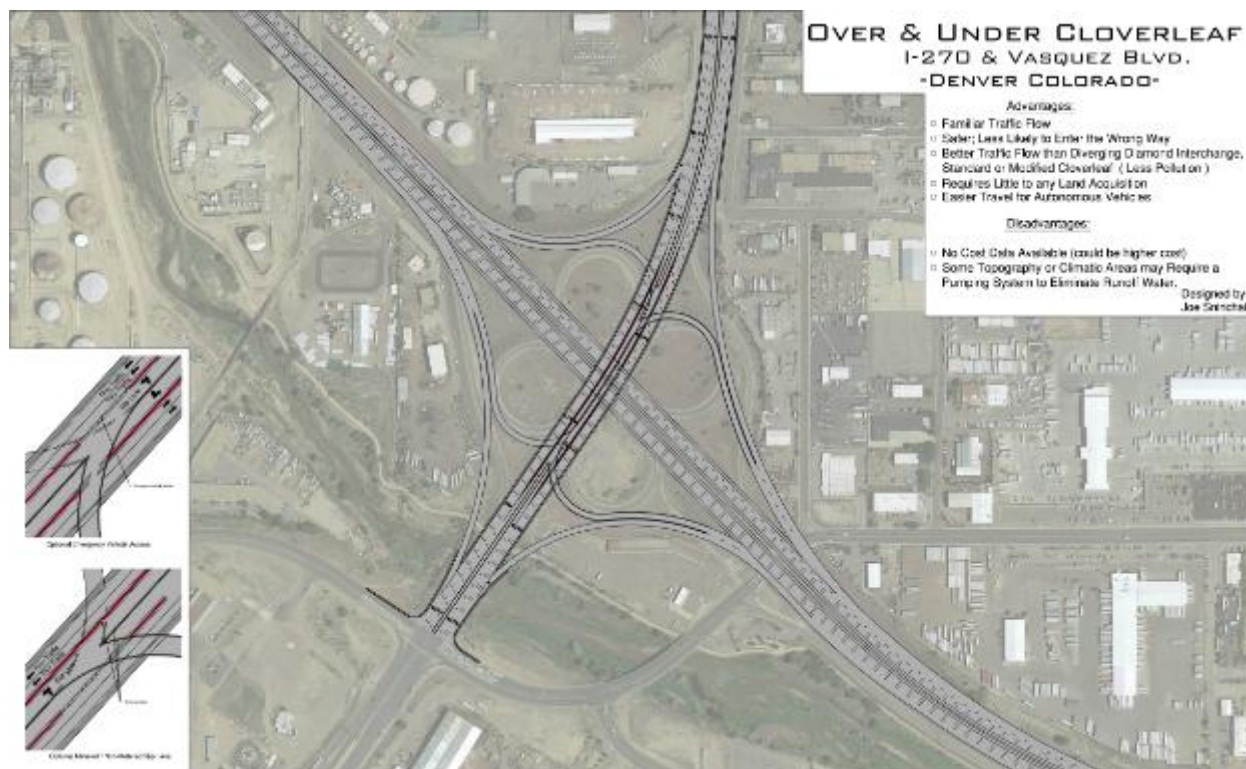
Viaduct: The elevated viaduct solution would elevate the bypass lanes along existing Vasquez Boulevard (between Colorado Boulevard and Highway 2), effectively widening North Vasquez Boulevard. The I-270/Vasquez Boulevard interchange is within these limits and would be redesigned.

The PEL study did not identify a recommended Vasquez Boulevard interchange configuration and in 2022, CDOT completed a further evaluation and analysis of the interchange. For this additional evaluation, a key requirement was to use the existing I-270 bridge over Vasquez Boulevard (bridge number E-17-WZ). While several I-270 bridges are in poor condition, this bridge, built in 2000, is expected to remain functional through 2050. For the four PEL study interchange alternatives, the viaduct alternative would require replacing bridge E-17-WZ, the partial cloverleaf and diverging diamond could use the existing bridge, and the one-way pairs alternative would split the interchange (underutilizing the existing bridge) and would require four new bridge structures. The viaduct and one-way pairs alternatives were eliminated from further consideration.

Citizen-Submitted Design: The evaluation also received a citizen-submitted interchange design (Figure 4), which proposed the grade separation for one direction of Vasquez Boulevard (either southbound or northbound). This design aimed to reduce interchange delays compared to the partial cloverleaf alternative. One advantage of the citizen-submitted option, compared to the other grade-separated alternatives evaluated in the PEL study, was its lower funding requirements. It also avoided adding new signals to Vasquez Boulevard. However, it was found to have a significantly larger footprint than the partial cloverleaf design, and the proposed grade separation would be limited by the available space between

nearby intersections at 60th Avenue and 56th Avenue. An analysis of the vertical profile, with the intent to re-use bridge number E-17-WZ (the newer I-270 bridge), determined that there is not enough room between East 56th Avenue and I-270 to elevate one direction of Vasquez Boulevard over the I-270 mainline. Due to this constraint, the construction of an elevated structure over I-270 was deemed impractical and eliminated from consideration.

Figure 4. I-270/Vasquez Boulevard Citizen-Submitted Interchange Design



The I-270 preliminary traffic analysis determined that the partial cloverleaf was the most favorable interchange configuration because the PEL study's grade-separated solutions exceeded project funding limitations. While the diverging diamond and partial cloverleaf interchanges both would introduce new signals to Vasquez Boulevard, the PEL study analysis concluded that the partial cloverleaf was projected to operate at a higher level of service and introduce fewer vehicle delays when compared to the diverging diamond interchange (CDOT 2018a). The partial cloverleaf interchange configuration selected for inclusion in the following alternatives is shown in Figure 5.

Figure 5. I-270/Vasquez Boulevard Partial Cloverleaf Interchange

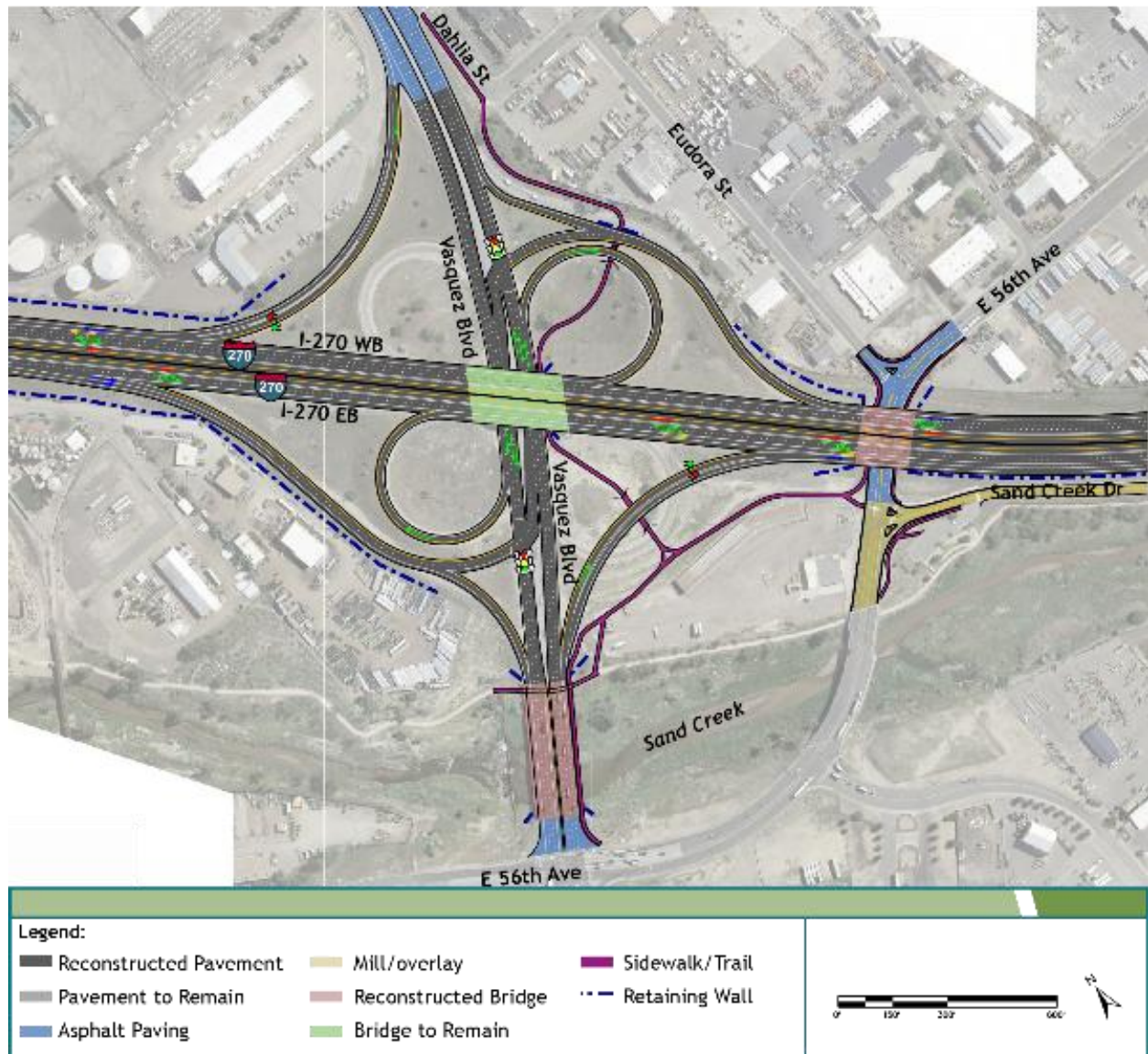
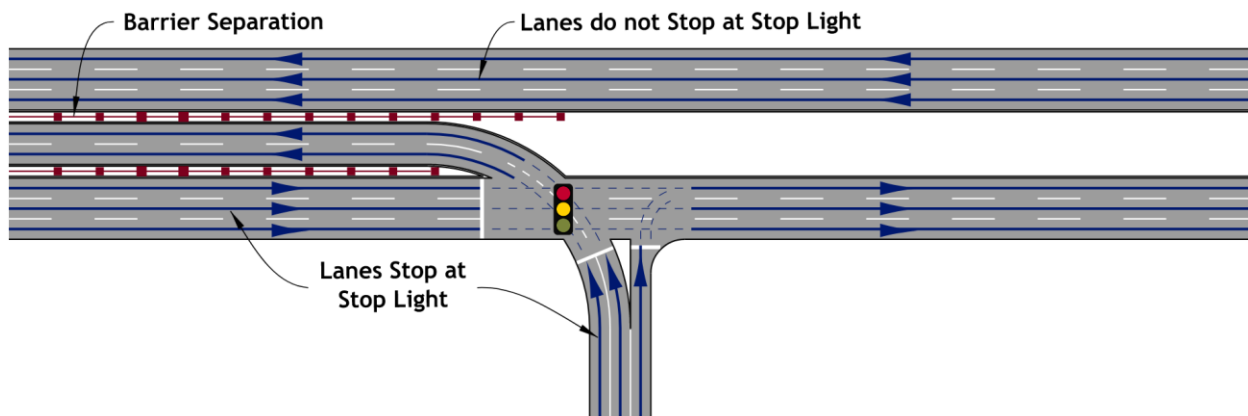


Figure 5 illustrates the PEL concept as refined as part of the 2022 traffic evaluation. The partial cloverleaf interchange configuration provided opportunities to limit the impact of the introduction of the new traffic signals on Vasquez Boulevard by using a “Turbo T-intersection” configuration (see Figure 6). Unlike a standard T-intersection, the Turbo T uses channelized left turns from I-270 off-ramps to maintain free flow traffic for non-conflicting through movement on Vasquez Boulevard.

Figure 6. I-270/Vasquez Boulevard Turbo T-intersection

The Vasquez Boulevard intersection currently has ramp metering on the southbound Vasquez Boulevard to the westbound I-270 on-ramp. Consistent with metro area-wide efforts, CDOT Region 1 traffic requested evaluating adding ramp meters to all on-ramps. Early interchange analysis and discussions with the trucking industry identified an opportunity to pair ramp metering with bypass lanes that would allow freight (and transit) vehicles to avoid idling and queuing the ramp meter, reducing delays for transit and freight vehicles, and allowing them to maintain speed merging onto I-270. While ramp meters with freight bypass lanes are indicated on the concept (included in Figure 5), it was determined that an additional evaluation would be required to finalize ramp meter and ramp lane configurations.

This initial concept was presented at the October 2023 public meeting and during engagement activities with the freight industry stakeholders; refinements to this design and concept are discussed in Section 6.2 below.

The partial cloverleaf at the Vasquez Boulevard interchange is included in the following preliminary alternatives:

- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

5.3.4 Quebec Street Interchange

The Quebec Street interchange includes ramps to/from the west: (1) eastbound off-ramp to Quebec Street and (2) westbound on-ramp from Quebec Street. Ramp placement is constrained by the proximity of the interchange to Sand Creek and South Sandcreek Drive. Currently, the eastbound I-270 exit ramp is a far-side loop ramp that terminates on the southern side of Quebec Street, unlike typical exits that terminate on the northern side. This "fishhook" design requires eastbound traffic to pass under the Quebec Street bridge and loop back to the intersection (see Figure 7).

Figure 7. I-270/Quebec Street Interchange

The safety analysis indicated that both ramps experienced a higher than expected number of crashes; rear end, sideswipe same direction, and fixed object crashes were most frequent. There is also an overrepresentation of night-time crashes and run-off-the-road incidents in this area. The exact cause of these crashes is unclear but may be related to the unexpected configuration of the off-ramp and slowing required to safely navigate the fishhook ramp.

The lengthening of the deceleration lane would be expected to improve operations and safety at the interchange. Providing additional deceleration lane length is likely to improve operations and safety of eastbound I-270 by providing drivers more time to exit the general-purpose through lanes, prior to decelerating to safely navigate the loop ramp.

Similarly, the extended acceleration lane for vehicles entering westbound I-270 from Quebec Street will provide adequate space for vehicles to accelerate from the ramp meter and merge at-speed into general traffic.

There are also opportunities to improve advanced signage and pavement markings. Enhanced signage and lane guidance can improve driver awareness, especially for drivers unfamiliar with the interchange layout. Clear lane markings and directional signage will aid in reducing potential driver confusion associated with the atypical intersection configuration.

Ramp acceleration and deceleration length improvements are included in the following preliminary alternatives:

- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit

- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

5.3.4.1 I-270/Quebec Street Partial Interchange - Missing Westbound I-270 to Quebec Street Ramp

There is no exit ramp from westbound I-270 to Quebec Street. In response to stakeholder inquiries, the project team evaluated the feasibility of adding this movement as part of the I-270 Corridor Improvements Project. The assessment found that constructing this ramp would negatively impact traffic operations on I-70 and Quebec Street, pose environmental challenges, and create difficulties in safely merging at the ramp's end due to the area's complex topography and geometric constraints (CDOT 2021).

The I-70/Quebec Street interchange and the I-270/I-70 interchange are spaced approximately 6,000 feet apart along I-270 and designed to facilitate westbound and eastbound movements between the two interstates. Given that eastbound I-270 ultimately leads to eastbound I-70, an additional entrance ramp from Quebec Street to eastbound I-270 is unnecessary, as this movement is already accommodated by the full interchange at I-70 and Quebec Street.

Furthermore, the I-70/Quebec Street interchange was recently upgraded as part of the Central 70 project, which added increased lane capacity and improved signage and pavement markings as well as installed new traffic signals with protected left-turn-only phases for southbound Quebec Street traffic turning onto eastbound I-70.

The I-270 Corridor Improvements Project, however, does not preclude this missing ramp from being re-evaluated in the future, and possibly constructed if conditions change.

5.3.4.2 I-270/Quebec Street Partial Interchange - Missing Quebec Street to Eastbound I-270 Ramp

There is no entrance ramp from Quebec Street to eastbound I-270. The project team has received questions from stakeholders about whether this movement would be included as part of the I-270 Corridor Improvements Project. Although the ramp is technically feasible, the team determined it should not be constructed due to concerns over redundancy, safety, and environmental impact. This ramp would duplicate the movement already served by the nearby I-70/Quebec Street interchange, making it unnecessary (CDOT 2021).

Additionally, constructing the ramp would require encroachment on an adjacent Section 4(f) recreational area, which is highly undesirable and protected under federal law. Signage on I-70 for this ramp would likely add driver confusion in the area, and the ramp's location could negatively impact the existing high crash rate in this section.

The I-270 Corridor Improvements Project, however, does not preclude this missing ramp from being re-evaluated in the future, and possibly constructed if conditions change.

5.4 Bicycle, Pedestrian, and Transit Enhancements

In December 2022, CDOT received a corridor wide alternative submission that suggested, "The EIS should model a full range of alternatives, including at least one scenario that includes similar capital expenditure on multimodal network expansion and no added lane capacity on I-270. In addition, the no-action scenario should include safety improvements to the bridges, without adding additional lanes, as CDOT plans to proceed with that project



separately” (GreenLatinos et al, 2022). Upon receipt of this letter, CDOT began a more in-depth evaluation of bicycle, pedestrian, and transit network needs.

Because the I-270 project is relatively constrained to the corridor project area, the Purpose and Need evaluation included an evaluation of nearby facilities and existing corridor crossings. The evaluation found limited and outdated facilities for non-motorized users, such as sidewalks and trails, hindering east-west mobility across I-270. Existing sidewalks and bicycle paths vary in condition and location, often lacking continuity. Key crossing points, such as York Street, Vasquez Boulevard, East 56th Avenue, and Quebec Street, could benefit from upgrades or new facilities to improve safety and connectivity. For example, sidewalks in some areas are narrow, confined between two types of guardrails, and do not meet current design standards; while at other locations, there are no facilities for cyclists or pedestrians at all.

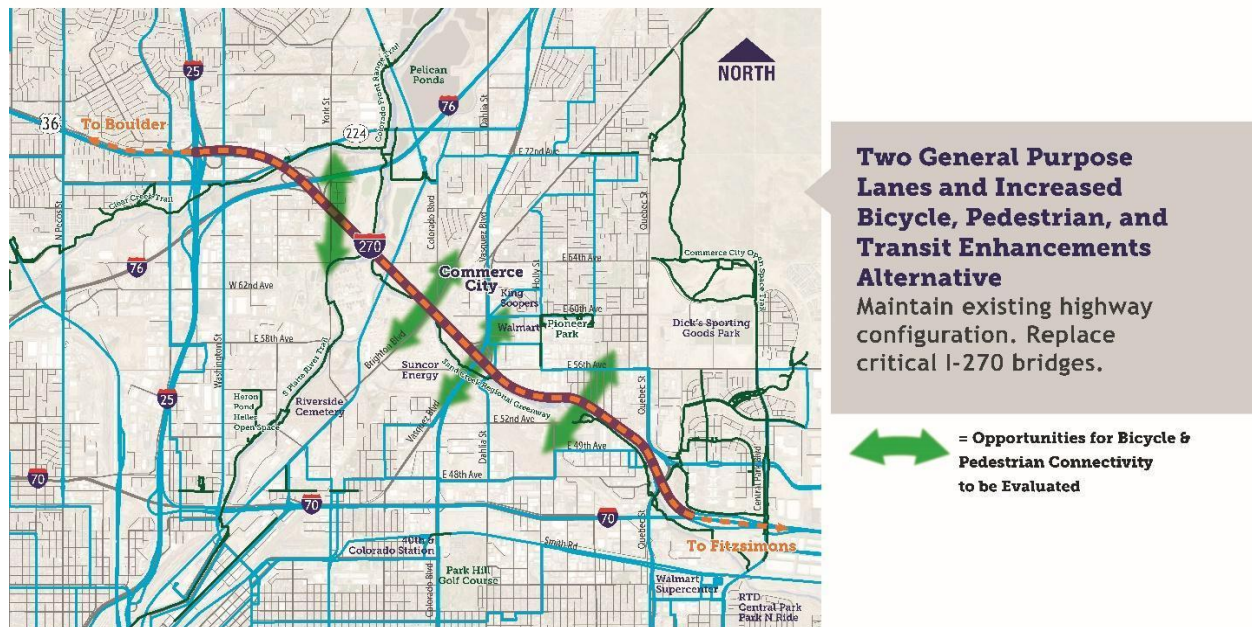
In June 2023, stakeholders and community members participated in a bike tour to observe connectivity challenges firsthand. Participants emphasized the need for improved wayfinding signage, better lighting under bridges, and stronger connections between existing sidewalks and bike lanes. Participants identified a need for alternative routes to use during high water and flooding. Additionally, the tour highlighted opportunities to enhance trail design by adding mid-line stripes for increased visibility and addressing sight distance issues to improve safety, especially considering the growing popularity of electric bikes which travel at higher speeds and may necessitate modernization of trail design guidelines.

The alternative recommendation and initial assessment led to the identification of an alternative that would retain the existing corridor and interchange configurations with new and improved bicycle, pedestrian, and transit connectivity in the project study area:

- Two General-Purpose Lanes and Increased Bicycle, Pedestrian, and Transit Enhancements (later renamed the Bicycle, Pedestrian, and Transit Enhancements Alternative)

The alternative (Figure 8) was presented at the October 2023 public meeting, and stakeholder input was specifically sought to contribute to the identification of specific improvements and projects to improve bicycle, pedestrian, and transit connectivity in the project area.

Figure 8. Two General-Purpose Lanes and Increased Bicycle, Pedestrian and Transit Enhancements Alternative Shared at the October 2023 Public Meeting



5.5 Addressing Aging and Deficient Infrastructure

The existing infrastructure, including bridges, road surfaces, and safety barriers, was designed decades ago and is now struggling to handle current traffic volumes. Over time the wear and tear on this highway has resulted in deteriorating conditions for safety and efficiency. The existing bridge decks are in poor condition and will further deteriorate, creating a need for future long-term closures of I-270 to conduct emergency repairs. Additionally, I-270 sits on an old landfill that continues to settle. This settling is resulting in inconsistent road grades, cracked pavement, and is stressing the bridge integrity which will lead to more ongoing planned and emergency repairs.

The No Action Alternative would include ongoing maintenance and the rehabilitation of 19 existing structures, including seven locations that have structures that are at, or will soon be reaching, the end of their useful life. As the existing bridges continue to age, the on-going maintenance will occur more frequently to counteract the deterioration. The age of the structures, recent bridge inspections, and current ongoing maintenance costs, both planned and emergency maintenance, determine if a structure is or will be reaching the end of its useful life. The seven structure locations along the I-270 corridor that are or will soon be reaching the end of their useful life are as follows:

- Vasquez Bridge over Sand Creek (E-17-AT)
- York Street Bridge over I-270 (E-17-IC)
- I-270 over South Platte River Eastbound and Westbound Bridges (E-17-IE & E-17-ID)
- I-270 over Burlington Ditch Eastbound and Westbound Bridges (E-17-IG & I-17-IF)

- I-270 over Brighton Boulevard, Union Pacific Railroad (UPRR), and BNSF Railway (BNSF) Eastbound and Westbound Bridges (E-17-II & E-17-IH)
- I-270 over 60th Avenue & BNSF Eastbound and Westbound Bridges (E-17-IK & E-17-IJ)
- I-270 over East 56th Avenue Eastbound and Westbound (E-17-IO & E-17-IN)

The following preliminary alternatives would include major reconstruction of these structures that have reached the end of their useful life:

- Two General-Purpose Lanes and Increased Bicycle, Pedestrian and Transit Enhancements
- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

6.0 Summary of Stakeholder Input and Resulting Alternative Refinements

Stakeholder involvement is essential to the EIS process, and the project team committed to developing alternatives with stakeholder input. The stakeholder outreach process after the October 2023 public meeting included additional public meetings, community listening sessions, and stakeholder workshops. The input received reflected the community's priorities for traffic management and maintenance, safety improvements, environmental considerations, and multimodal transportation options, consistent with the purpose and need.

Key themes and resulting alternative refinements after October 2023 are summarized below.

6.1 Traffic Congestion and Safety Concerns

Stakeholders consistently expressed concerns about congestion, safety, and the deteriorating state of I-270's infrastructure. They identified frequent congestion as a significant issue, especially during peak hours when backups stretched beyond the corridor. Stakeholders consistently expressed frustration that what was once limited to "rush hour" congestion now occurs throughout the day, leading many drivers to avoid I-270 entirely and instead use local side streets, which are also becoming more congested. Additional concerns highlighted how lane closures for maintenance and disabled vehicles and crashes that cannot fully move out of the travel lanes, contribute to further congestion. Preliminary traffic and safety analyses validated these concerns, showing that high traffic volumes, combined with merging and exiting activity at interchanges, contribute to slow travel speeds and congestion. Speed data showed inconsistent speeds throughout the corridor with certain segments showing travel speeds well below posted speeds. In contrast, segments immediately downstream of several merging locations showed higher speeds, which indicates that the short merge distances lead to artificially reduced throughput capacity resulting in congestion.

Stakeholder comments repeatedly emphasized the deteriorating condition of the I-270 infrastructure, particularly the aging bridges and extensive potholes, which pose safety hazards and contribute to traffic slowdowns and congestion. Poor surface conditions of the



roadway not only reduce travel speeds, but also increase the likelihood of vehicle damage, as several community members reported multiple flat tires caused by these conditions. These safety hazards are compounded by narrow shoulders that provide limited space to pull over safely, potentially obstructing traffic and increasing the risk of secondary accidents. Stakeholder feedback strongly urged safety improvements, including the need for wider shoulders to accommodate disabled vehicles, reduce congestion, and improve overall traffic flow.

Emergency responders reiterated the need for wider shoulders along the entire I-270 corridor to improve their ability to respond effectively to accidents and incidents. They explained that narrow shoulders make it difficult for emergency vehicles to access crash sites and navigate around disabled vehicles, leading to slower response times and increased safety risks. Wider shoulders would also allow vehicles involved in minor accidents or breakdowns to move off the road, reducing congestion and preventing secondary crashes.

With frequent crashes and breakdowns throughout the corridor, emergency responders recommended upgrading the infrastructure to enable faster clearance of incidents. This includes adding designated emergency vehicle turnouts or access points at key locations to allow emergency services to respond quickly without further disrupting traffic.

Improving on- and off-ramp designs was another priority for emergency responders; poorly designed ramps worsen congestion and make it harder for emergency vehicles to enter or exit the highway. Upgrading these ramps could enhance traffic flow and improve emergency access, allowing for quicker response times to incidents on I-270.

Stakeholder feedback supported the following improvements:

- **Widen Shoulders:** Expand highway shoulders to allow vehicles to pull over safely, improving safety and reducing the risk of secondary crashes.
- **Improve Ramp Configurations and Lengthen Merge and Acceleration/Deceleration Lanes:** Redesign and extend on- and off-ramps at key interchanges, like Vasquez Boulevard, to give drivers more space to merge safely and reduce congestion at bottlenecks.
- **Address Poor Pavement Conditions and Replace Aging Bridges:** Address concerns about deteriorating infrastructure by repairing potholes and replacing aging bridges to improve road safety and traffic flow.

One additional mainline improvement identified through stakeholder input included:

- **Emergency Turnouts and Turnarounds:** Provide designated emergency vehicle turnouts and turnaround locations to ensure quicker access to crash sites and faster response times.

Emergency turnouts and turnarounds were added for further evaluation and inclusion in the following alternatives as safety enhancements:

- Two General-Purpose Lanes and Increased Bicycle, Pedestrian and Transit Enhancements
- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes

- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

6.2 Freight and Industrial Needs

Stakeholders from the freight and industrial sectors stressed the importance of I-270 as a critical freight route. They highlighted the need for reliable and efficient freight movement, noting that additional congestion on I-270 could negatively impact the delivery of goods, particularly hazardous materials, and oversized loads.

Freight operators consistently raised concerns about heavy congestion and stop-and-go traffic along I-270, which leads to increased operational costs and delays in the movement of goods. They emphasized that the corridor is a critical link for regional and statewide freight movement. The industry frequently reiterated the importance of I-270 to the statewide freight network; I-270 is the only approved east-west hazardous materials (hazmat) route through central Denver, and it also supports a significant number of oversized and overweight loads due to restrictions on I-25 and I-70.

Like first responders, freight operators emphasized the safety hazards posed by narrow shoulders. The lack of adequate shoulders for breakdowns or mechanical failures creates unsafe conditions for drivers and increases the likelihood of secondary crashes.

Trucks require more space to merge onto and off the highway, and freight operators highlighted safety and operational challenges merging onto and off I-270. Tight loop ramps at the Vasquez Boulevard interchange require drivers to navigate at slow speeds to avoid overturning. Short acceleration and deceleration lanes create dangerous situations as trucks, which require more time and distance to reach highway speeds, must merge immediately with faster-moving vehicles or must slow in flowing traffic to safely exit the highway.

A specifically challenging area is the Vasquez Boulevard interchange. The existing Vasquez Boulevard interchange cloverleaf configuration is shown in Figure 9. Freight trucks must navigate tight loop ramps with sharp curves and short deceleration lanes, which creates a high risk for crashes, particularly as trucks struggle to slow down quickly from highway speeds. Similarly, the freight industry noted challenges quickly getting up to speed to merge onto I-270 given the existing short merge areas. At Vasquez Boulevard, merging issues are further compounded by the poor pavement conditions that require freight and passenger vehicles to both slow down to avoid potholes. The interchange's current configuration also requires trucks to use up to three loop ramps to complete the movement from northbound Vasquez Boulevard to eastbound I-270; the northbound Vasquez Boulevard to eastbound I-270 movement is the only missing movement at the interchange. While the free-flow nature of cloverleaf interchange ramps helps maintain arterial flow through the interchange, freight operators noted that the Vasquez Boulevard interchange and spacing of adjacent intersections create additional operational challenges.

Figure 9. Existing Vasquez Interchange Configuration



For example, vehicles exiting eastbound I-270 to southbound Vasquez Boulevard and wishing to make the subsequent left turn at 56th Avenue struggle to find sufficient gaps to merge across three lanes of southbound traffic to complete the left turn. Feedback received at the second set of public meetings in April 2024 identified the opportunity to modify the partial cloverleaf concept, to provide a second signalized right turn option at the intersection, and to allow vehicles to safely exit I-270, turn right onto southbound Vasquez and safely merge

across southbound through traffic to complete the subsequent, immediate southbound left-turn movement onto 56th Avenue.

Lastly, the freight industry shared that while they support improvements to address the maintenance, operational, and safety issues on the corridor, there is a need to carefully plan construction phasing and management to avoid major disruptions to I-270 as a critical freight route.

Stakeholder feedback supported the following freight-related improvements:

- **Lengthen Acceleration and Deceleration Lanes:** Extend merge lanes at key interchanges, like Vasquez Boulevard and Quebec Street, to provide trucks with more space to safely merge onto and exit the highway, reducing the risk of collisions.
- **Widen Shoulders:** Expand highway shoulders to give trucks more room to pull over safely in case of breakdowns or mechanical issues, improving both safety and traffic flow.
- **Improve Pavement Conditions:** Repair potholes and resurface deteriorating sections of I-270 to reduce damage to trucks and improve overall road safety for freight and other vehicles.
- **Add Freight-Specific Infrastructure:** Add climbing lanes or dedicated truck lanes, where possible, to separate slower-moving trucks from general traffic, improving safety and reducing congestion. Add truck bypass lanes at ramps with ramp metering to allow trucks to maintain speed merging onto the highway.

Additional Vasquez Boulevard interchange improvements identified through stakeholder input included:

- **Add Signalized Right Turns onto Vasquez Boulevard:** Add signalized right turns, specifically for vehicles exiting eastbound I-270 to southbound Vasquez Boulevard and wishing to make the subsequent left turn at 56th Avenue; signalization will provide vehicles sufficient gaps to merge across the three lanes of southbound traffic to complete the left turn.

Based on the feedback and input received, the Vasquez Boulevard interchange improvement was revisited and updated to add signalized right-turn movements at the ramp terminal intersections for vehicles exiting eastbound and westbound I-270, provide freight bypass lanes for ramp meters on the directional ramps (northbound Vasquez Boulevard to eastbound I-270 and southbound Vasquez Boulevard to westbound I-270), and ramp modifications to the loop ramp on-ramps (northbound Vasquez Boulevard to westbound I-270 and southbound Vasquez Boulevard to eastbound I-270).

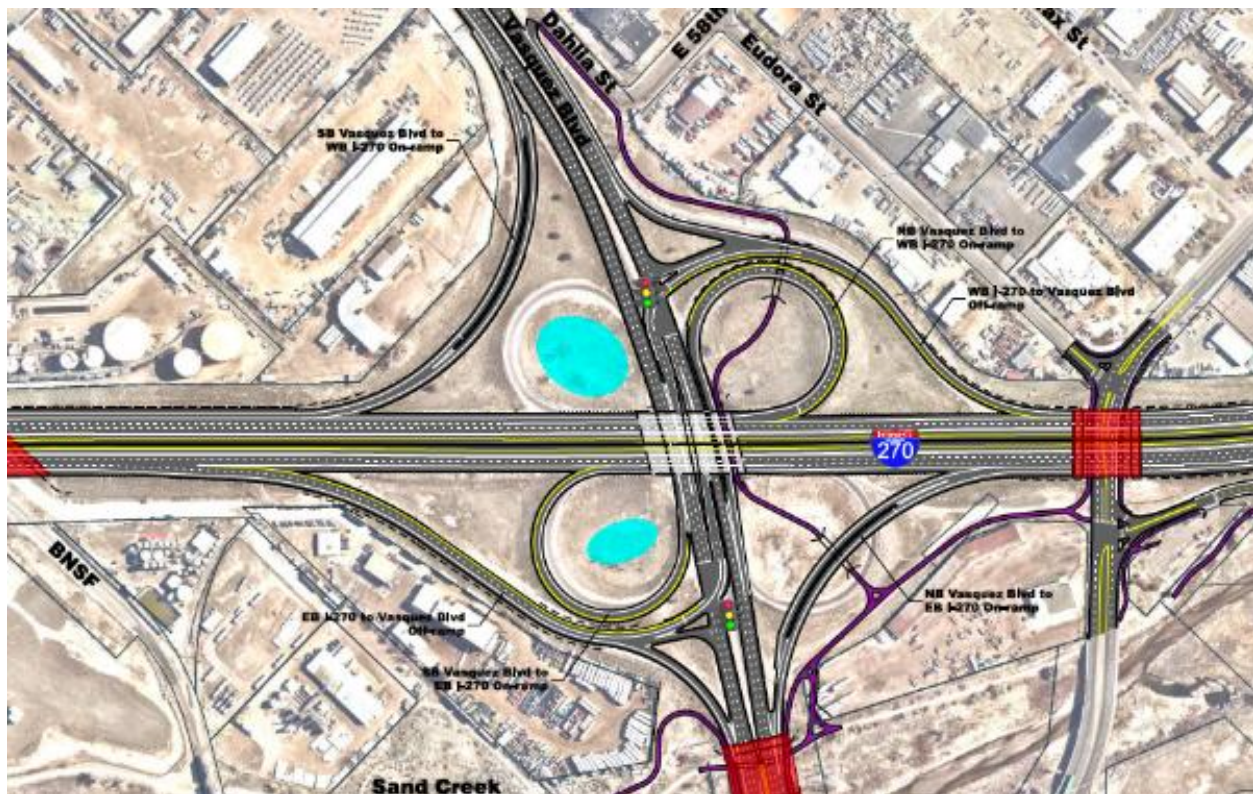
As a relatively low-volume movement, ramp metering was removed from consideration for the southbound Vasquez Boulevard to eastbound I-270 movement to eliminate the need for heavy vehicles (freight and transit vehicles) to quickly accelerate from the ramp meter and merge into the through traffic.

Higher volume northbound Vasquez Boulevard to westbound I-270 loop ramp lanes and ramp metering was revisited to balance ramp and mainline operations. Initially retained as a one lane ramp, the interchange design was revisited as a two-lane ramp to provide additional storage for vehicles queuing to merge onto I-270. Existing queues at this location also create

challenges on Vasquez Boulevard as vehicles seek to merge to the right to use the ramp. The design was refined to include two lanes on the ramp with separation between vehicles using the ramp and northbound through vehicles on Vasquez Boulevard. The ramp did retain ramp metering to balance accommodating ramp demand and the on-ramp influence on mainline operations. Challenges posed by heavy vehicles accelerating from ramp meters were determined to be alternatively addressed by the addition of the continuous westbound acceleration lane between Vasquez Boulevard and the I-76 interchange. The continuous auxiliary lane would form from the northbound Vasquez Boulevard to westbound I-270 loop on-ramp.

Lastly, the revised Vasquez Boulevard interchange design was revisited to maximize the turning radii of the loop ramps and to minimize the challenges posed to freight vehicles when navigating the loop ramps (see Figure 10).

Figure 10. Revised I-270/Vasquez Boulevard Partial Cloverleaf Interchange



The refined Vasquez Interchange design was updated in the following alternatives as safety enhancements:

- Two General-Purpose Lanes and Increased Bicycle, Pedestrian, and Transit Enhancements
- Two General-Purpose Lanes and One Transit-Only Lane
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

6.3 Bicycle, Pedestrian, and Transit Enhancements

6.3.1 Bicycle, Pedestrian, and Transit Enhancements Alternative Development

The Two General-Purpose Lanes and Increased Bicycle, Pedestrian, and Transit Enhancements Alternative presented in October 2023 (Figure 8) was advanced and shaped by additional stakeholder engagement. This included collecting stakeholder comments, a corridor bicycle tour, and stakeholder workshops, all of which provided critical feedback to inform the development of viable solutions. The focus was on addressing the need for better east-west connectivity across I-270 and enhancing bicycle, pedestrian, and transit options beyond the immediate corridor.

Early in the stakeholder engagement activities, attendees consistently voiced concerns about the lack of safe, efficient ways to cross I-270. Specific issues raised included inadequate sidewalks, a lack of safe crosswalks, a lack of bicycle facilities crossing I-270, and poor pedestrian and bicycle access to key destinations, such as the Sand Creek Greenway. Stakeholders also stressed the need for better transit options, emphasizing the desire for new services along I-270, enhanced access to regional transit services, and improved connectivity to neighborhoods.

Additional improvements were identified in local municipal and community planned projects near the study area and were used to identify solutions that would provide more regional connectivity throughout the corridor.

The following bicycle and pedestrian enhancements were developed for further evaluation and included in the Bicycle, Pedestrian, and Transit Enhancements Alternative:

- Replacing the existing York Street bridge over I-270 to meet current bridge standards, accommodate an additional travel lane in each direction, a 10-foot multi-use path, and a 5-foot sidewalk as well as improve crosswalks, curb ramps, lighting, and pedestrian indicators at the ramp terminal traffic signals.
- Replacing the existing I-270 major structures over the South Platte River Trail to meet current bridge standards, reconfigure the South Platte River Trail crossing under I-270 to improve the bicycle and pedestrian visibility around tight curves, increase vertical clearance from the I-270 overpass, and enhance lighting.
- Replacing the existing I-270 major structures over the Burlington Ditch. These bridges are replaced to meet 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 a new 5-foot sidewalk on the west side of Brighton Boulevard under I-270 connecting to existing sidewalks on either side of I-270, reconstruct a 6-foot sidewalk on the east side of Brighton Boulevard under I-270 impacted by the bridge construction, accommodate future bicycle and pedestrian improvements, and enhance lighting.
- Replacing the existing I-270 bridges over East 60th Avenue and the BNSF crossing to meet current bridge standards, accommodate future bicycle and pedestrian improvements, and enhance lighting.



- Improving the intersection at Colorado Boulevard and Brighton Boulevard to include curb ramps, crosswalks, and lighting that meet current standards.
- Replacing the existing I-270 bridges over East 56th Avenue to meet current bridge standards and improve vehicle, bicycle, and pedestrian users' visibility around tight curves on East 56th Avenue.
- Reconstructing East 56th Avenue under I-270 to add an on-street bicycle lane and a 10-foot and 6-foot sidewalk connecting to existing sidewalks and enhance lighting. The eastern sidewalk connects users north of I-270 to the existing sidewalk south of I-270, which provides existing access to the Dahlia Trailhead. The western sidewalk connects the proposed north-south multi-use path on Vasquez Boulevard to the intersection improvements at East 56th Avenue and South Sandcreek Drive.
- Improving the East 56th Avenue and South Sandcreek Drive intersection to include curb ramps, crosswalks, and lighting that meet current standards. These intersection improvements provide a new bicycle and pedestrian connection to the Dahlia Trailhead.
- Improving the East 56th Avenue and Eudora Street intersection to include curb ramps, crosswalks, and lighting that meet current standards.
- Widening the existing sidewalk on the east side of Quebec Street from Northfield Boulevard to East 53rd Place.
- Adding a sidewalk on the west side of Quebec Street between the existing RTD bus stop, in front of the TA Travel Center truck stop, to East 53rd Place.
- 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, guiding bicyclists and pedestrians to the nearest RTD bus stops, major road connections, or distances to the next trailhead to avoid out-of-direction travel.

The following trail enhancements were developed to improve regional trail connectivity and are included in the Bicycle, Pedestrian, and Transit Enhancement Alternative:

- Adding a trail on the south side of I-270, connecting York Street sidewalk improvements to the South Platte River Trail.
- Adding a commuter trail on the north side of I-270, connecting York Street to Quebec Street.
- Improving bicycle and pedestrian visibility on the Sand Creek Trail by straightening out tight curves to better accommodate E-bikes, adding a center stripe encouraging trail users to remain on designated side of the trail, and enhancing lighting at the Vasquez Boulevard bridge overpass.
- 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. This multi-use path provides a new connection to the Sand Creek Trail and extends north to East 58th Place.
- Adding a multi-use path on the east side of the Vasquez Boulevard Bridge over Sand Creek, connecting users from the East 56th Avenue and Vasquez Boulevard intersection to

a new connection to the Sand Creek Trail. This multi-use path requires replacement of the Vasquez Boulevard Bridge over Sand Creek to accommodate this multi-use path.

- Adding a multi-use path on the west side of the Vasquez Boulevard Bridge over Sand Creek, connecting users from the East 56th Avenue and Vasquez Boulevard intersection to a new connection to the Sand Creek Trail. This multi-use path requires replacement of the Vasquez Boulevard Bridge over Sand Creek to accommodate this multi-use path.
- Adding a multi-use trail spur, 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. This multi-use path matches the existing sidewalk on the East 56th Avenue Bridge over Sand Creek and provides two new connections to the Dahlia Trailhead; one connection at the midpoint of the Dahlia Trailhead parking lot and a second connection at the Dahlia Trailhead access road on 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 connecting the Sand Creek Trail to North Sandcreek Drive.

The following transit enhancements were developed for further evaluation and included in the Bicycle, Pedestrian, and Transit Enhancement Alternative:

- Constructing loading areas with seating and shelter at the existing RTD bus stop on the east and west side of Quebec Street, in front of the TA Travel Center truck stop.
- Adding bus stops at Quebec Street and South Sandcreek Drive to improve access to RTD routes 88 and 37. 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 the regional transit connectivity. If this new transit stop is added, RTD would reroute existing route 88 across I-270 to utilize this new transit stop.
- Implementing a bus-on-shoulder concept, which would allow buses to use the highway shoulder during peak hours. This was viewed as a potential cost-effective solution to keep buses running on schedule and reduce delays without a large infrastructure investment to serve peak hour transit operations.

6.3.2 Refinement of Bicycle, Pedestrian, and Transit Enhancements Alternative

The list of bicycle, pedestrian, and transit enhancements discussed above were presented during stakeholder engagement activities between March 2024 and May 2024. Stakeholder input was specifically sought to verify the specific enhancement options to improve bicycle, pedestrian, and transit connectivity in the project area.

The following enhancements were eliminated from further consideration after considering the safety implications of the enhancement:

- **Bus-on-Shoulder:** Widening shoulders to accommodate bus-on-shoulder transit operations can introduce safety and operational challenges, particularly when transit service is infrequent. Inconsistent shoulder usage may confuse motorists who typically expect shoulders to be reserved for emergencies, leading to increased crash risks when buses use the lanes, and disabled vehicles are pulled off on the shoulder. When not visibly occupied by a bus, excessively wide paved shoulders can create driver confusion; while wider

shoulders generally enhance safety by providing recovery space, overly wide shoulders in high-density traffic areas may be mistaken for travel lanes, particularly during peak congestion, low-visibility, or snowy conditions. This misinterpretation can lead to vehicles unintentionally entering the shoulder, causing potential conflicts and rear end collisions. Furthermore, wide shoulders in urban areas may encourage improper use, such as unauthorized vehicle access to bypass congestion. This concept was eliminated due to potential challenges operating bus-on-shoulder operations on high freight traffic corridors, operational and safety concerns confirmed by the Colorado State Patrol, and the ability of other transit-focused improvements to more safely improve transit operations on the corridor.

The following enhancements are retained in the Bicycle, Pedestrian, and Transit Enhancements Alternative to focus on similar capital expenditure on the bicycle, pedestrian, and transit network. However, these were not considered in the remaining build alternatives based on stakeholder feedback, they are included in local municipal and community planned project, and because they do not effectively address the project's purpose and need to provide bicyclists, pedestrians, and users of non-vehicular modes with safe and efficient opportunities to cross the I-270 corridor, connecting neighborhoods, the Sand Creek Regional Greenway and its associated trail, and businesses:

- **Commuter trail:** Stakeholder feedback determined a commuter trail on the north side of I-270 connecting York Street to Quebec Street would provide a redundant trail to the existing Sand Creek Trail and stakeholders directed the project to focus on targeted improvements to bicycle and pedestrian crossings along I-270.
- **New trail on the south side of I-270 connecting York Street to the South Platte River Trail:** This enhancement has additional property impacts. Stakeholder feedback recommended the project focus on targeted improvements to bicycle and pedestrian crossings along I-270 that minimize property impacts.
- **Brighton Boulevard/Colorado Boulevard intersection:** This enhancement does not directly address connectivity across I-270 and is an improvement identified in Commerce City's Walk.Bike.Fit plan.

6.4 Addition of a New Minimal Build Alternative

The Minimal Build Alternative emerged based on stakeholder feedback received during the October 2023 public meeting, where participants requested an alternative to evaluate the potential to meet the purpose and need with an alternative that would focus on safety improvements on I-270 and safety, bicycle, pedestrian, and transit enhancements rather than adding capacity. This alternative was developed to include reconstruction of the existing four-lane interstate without adding additional lanes, addressing infrastructure deterioration, and improving safety through measures, such as widened shoulders, upgraded ramps, and the reconstruction of aging structures. It also incorporated improvements from the Bicycle, Pedestrian, and Transit Enhancements Alternative to enhance multimodal connectivity.

Improvements included in the Minimal Build Alternative include:

Mainline Improvements

- Providing two general-purpose lanes in each direction along the same alignment.
- Widening shoulders to meet standard requirements.
- Restriping of the westbound I-270 to northbound I-25 off-ramp to provide dual-exit lane capacity
- Adding emergency turnouts and turnarounds

Interchange Improvements

- Adding an eastbound collector ramp was identified 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, consistent with the corresponding Build Alternative)
 - 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 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 Enhancements

- 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, guiding bicyclists and pedestrians to the nearest RTD bus stops, major road connections, or distances to the next trailhead to avoid out-of-direction travel.

Trail Enhancements

- 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, 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, 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 Enhancements

- 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.

6.5 Summary of Additional Stakeholder Concerns and Enhancements

Stakeholder engagement has continued since the October 2023 public meeting through stakeholder workshops, pop-up listening sessions, event attendance, presentations requested by agencies and other stakeholder groups, and a set of public meetings in April 2024.

The purpose of the April 2024 public meetings was to provide a project update, including sharing how the feedback from the October 2023 public meeting and other stakeholder outreach activities aided in alternative refinements, contributed to the refinement of the Bicycle, Pedestrian, and Transit Enhancements Alternative, and lead to the identification of the Minimal Build Alternative. In addition to presenting the refined alternatives, CDOT shared the results of the preliminary alternatives screening process, outlining which alternatives were being recommended for further analysis.

Attendees were invited to review the proposed alternatives, share their thoughts on which options should be explored further, and suggest additional features or considerations to better meet transportation and community needs. Feedback was not limited to the public meeting; interested stakeholders were also able to provide input through online comment forms, interactive webinar polls, and hard copy comment sheets available at the meetings, ensuring that a wide range of voices could be heard regarding the alternatives and preliminary screening results.

6.5.1 General Project/Alternative Comments

Attendees generally expressed strong support for the project, emphasizing that improvements to the I-270 corridor were long overdue, particularly in areas, like Commerce City, which have been neglected compared to other parts of the Denver metro area. Many participants agreed with the preliminary screening results and viewed the Three General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative and the Two General-Purpose Lanes and Two Express Lanes Alternative as most effective for alleviating traffic congestion. There was also broad support for incorporating bicycle, pedestrian, and transit enhancements, either as a standalone alternative or as part of the broader highway improvement strategy.

As previously noted, stakeholder feedback from the freight industry at the April 2024 public meetings led to design refinements at the Vasquez Boulevard interchange and the inclusion of signalized right turns at off-ramp intersections.

Attendees continued to highlight location-specific concerns, such as the need for improvements at the Vasquez Boulevard and Quebec Street interchanges and requested better lighting and safety measures at Sand Creek access points. There were mixed views on the implementation of Express Lanes, with some concerned about the impact of tolls on low-income communities. Some comments favored an approach where Express Lane revenue would be used to reinvest in the local community.

Stakeholders have alerted CDOT to the need for improved transportation connections along East 60th Avenue and CO 224. East 60th Avenue is owned and maintained by Commerce City and not within CDOT jurisdiction. While improvements to this facility are excluded from this project, CDOT has partnered with Commerce City to apply for the Reconnecting Communities

Pilot Program (RCP) for this East 60th Avenue Multimodal Connections Study - Brighton Boulevard to Vasquez Boulevard. Commerce City was awarded this grant and will study bicycle, pedestrian, and safety alternatives as a separate project. Similarly, while improvements to CO 224 are not included in this project, this project is coordinating with another CDOT project to incorporate sidewalks within the corridor.

6.5.2 Citizen-Proposed Alternative

During the meeting, a citizen proposed a new alternative that would add continuous auxiliary lanes to the Minimal Build Alternative in both directions between the Quebec Street and Vasquez Boulevard interchanges and between the Vasquez Boulevard and I-76/York Street interchanges. The citizens felt that this configuration would better accommodate congestion and existing bottlenecks between these interchanges without introducing new lanes that they felt would create new bottlenecks at either ends of the corridor (US 36/I-25 and I-70).

While this configuration could provide short-term congestion relief, the long-term effectiveness would depend on the direct connect projects at the ends of the corridor at I-25/US 36 and I-70. These projects, as outlined in the No Action Alternative, aim to improve freeway connections and smooth traffic flow across the corridor by reducing merging conflicts and preventing bottlenecks, and add capacity entering and exiting the corridor to accommodate an additional lane on I-270. In the long-term future, with the direct connects, the proposed auxiliary lanes alone may not fully leverage the potential congestion relief offered by future lane configurations entering and exiting the corridor.

Therefore, it was determined that the benefits of the suggested auxiliary lanes are already addressed within the existing build alternatives, and this concept will not be advanced as a new, standalone alternative for further screening.

6.5.3 Other Feedback

Beyond the I-270 project itself, there were recommendations for CDOT to invest in sustainable development within adjacent neighborhoods, including improvements to sidewalks, bike lanes, and transit infrastructure. These enhancements were seen as long overdue and important for promoting balanced and comprehensive transportation planning. These types of improvements have not been explicitly identified for inclusion or exclusion from project alternatives and are viewed as complementary improvements.

For a summary of all options considered and their status, see Attachment A.

7.0 Alternatives Developed for Evaluation

The resulting preliminary alternatives developed for evaluation are summarized below. Each of these alternatives includes a combination of vehicular, bicycle, pedestrian, and transit elements and attempts to address the project's purpose and need. As noted in the previous sections, the alternatives were developed based on the traffic and safety analysis, other studies completed, and stakeholder and agency input.



7.1 Programmed Improvements

The No Action Alternative and all build alternatives include consideration of existing, planned, and programmed roadway and transit improvement projects in the project area. These improvements are defined by the DRCOG 2050 Metro Vision RTP (DRCOG 2024) and included in the travel demand model. These projects are incorporated into the No Action Alternative and all build alternatives for traffic modeling and design integration purposes.

Table 1 summarizes the programmed improvement projects which are included in the DRCOG RTP and travel demand model near the I-270 corridor.

In addition, RTD's System Optimization Plan identifies increased regional bus service for Route FF5 to 30-minute service in the a.m. and p.m. peak periods.

Table1. Programmed Improvement Projects List

Programmed Improvement Project	Source	Project Description	Staging Period	Project Sponsor
New US 36/I-270 Direct Connects Express Lane and General-Purpose Ramps	I-25/I-270/US 36 Express Lanes Direct Connects Interchange Development Plan	New freeway “direct connects” at US-36	2030-2039	CDOT
New I-25/I-270 Direct Connects Express Lane and General-Purpose Ramps	I-25/I-270/US 36 Express Lanes Direct Connects Interchange Development Plan	New freeway “direct connects” at I-25	2030-2039	CDOT
New I-270/I-70 Direct Connect Express Lane Ramps	I-70 East Final Environmental Impact Statement (I-70 Final EIS) and Section 4(f) Evaluation	New freeway “direct connects” at I-70	2030-2039	CDOT
Vasquez 60th Avenue Intersection Improvements	Vasquez Boulevard PEL and Vasquez Boulevard, I-270 to 64th Avenue EA and FONSI - Intersection improvements, including access and movement modifications	Intersection Improvements	2020-2029	CDOT
Widen York Street from 2 to 4 Lanes from 58th Avenue to 88th Avenue	Adams County York Street Widening Project - The York Street bridge is not included for widening and reconstruction as part of the Adams County Project	Widen from 2 lanes to 4 lanes	2020-2029	Adams County
I-25, US 36 to 104th Avenue	I-25, US 36 to 104th Avenue Environmental Assessment (in process)	Operational improvements and a general-purpose lane	2040-2050	CDOT

7.2 No Action Alternative

The No Action Alternative evaluates operations of I-270, if a build alternative would not occur along the corridor. It does not address the project's purpose and need but is carried forward as a baseline for comparison. The No Action Alternative would maintain the existing highway configuration of two general-purpose travel lanes in each direction. Bridges and pavement would be maintained and repaired continuously, but underlying infrastructure deficiencies would remain and would include all programmed improvements as discussed in Section 7.1.

The No Action Alternative cross sections, shown on Figure 11 and Figure 12, represent the typical roadway section on the I-270 corridor but do not capture variations such as bridges or auxiliary lanes.

Figure 11. No Action Alternative (West of Vasquez Boulevard)

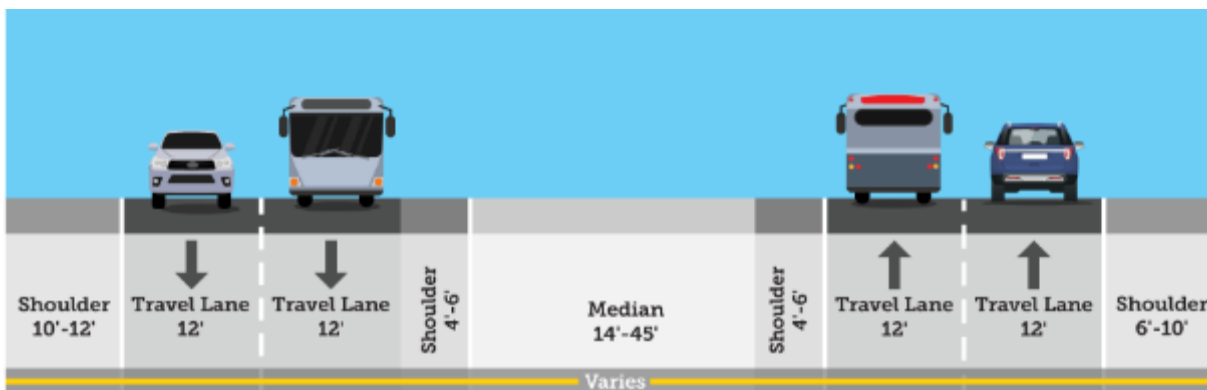
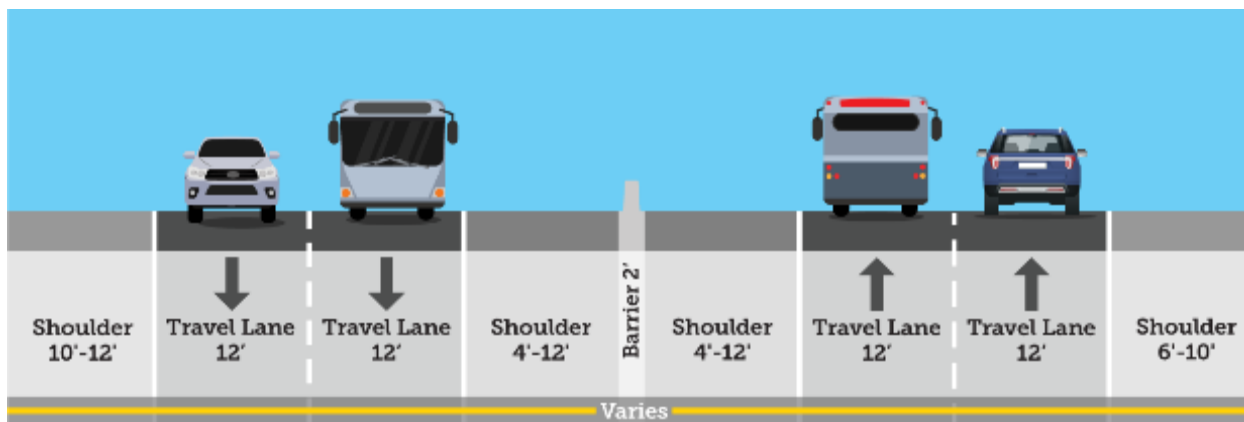


Figure 12. No Action Alternative (East of Vasquez Boulevard)



7.3 Bicycle, Pedestrian, and Transit Enhancements Alternative

The Bicycle, Pedestrian, and Transit Enhancements Alternative focuses on improvements to bicycle, pedestrian, and transit connections in the community in lieu of additional highway capacity. It would include substantial ongoing maintenance and rehabilitation of existing highway structures and pavement and would retain the existing highway configuration. The Bicycle, Pedestrian, and Transit Enhancements Alternative includes all programmed improvements in the No Action. Section 5.4 and Section 6.3 provide additional information

regarding how the alternative was developed. Figure 13 illustrates the elements in this alternative.

Figure 13. Bicycle, Pedestrian, and Transit Enhancements Alternative



The Bicycle, Pedestrian, and Transit Enhancements Alternative includes:

Bicycle and Pedestrian Improvements

- Replacing the existing York Street bridge over I-270 to meet current bridge standards, accommodate an additional travel lane in each direction, a 10-foot multi-use path, and a 5-foot sidewalk as well as improve crosswalks, curb ramps, lighting, and pedestrian indicators at the ramp terminal traffic signals.



- Replacing the existing I-270 major structures over the South Platte River Trail to meet current bridge standards, reconfigure the South Platte River Trail crossing under I-270 to improve the bicycle and pedestrian visibility around tight curves, increase vertical clearance from the I-270 overpass, and enhance lighting.
- Replacing the existing I-270 major structures over the Burlington Ditch. These bridges are replaced to meet 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 a new 5-foot sidewalk on the west side of Brighton Boulevard under I-270 connecting to existing sidewalks on either side of I-270, reconstruct a 6-foot sidewalk on the east side of Brighton Boulevard under I-270 impacted by the bridge construction, accommodate future bicycle and pedestrian improvements, and enhance lighting.
- Replacing the existing I-270 bridges over East 60th Avenue and the BNSF crossing to meet current bridge standards, accommodate future bicycle and pedestrian improvements, and enhance lighting.
- Improving the intersection at Colorado Boulevard and Brighton Boulevard to include curb ramps, crosswalks, and lighting that meet current standards.
- Replacing the existing I-270 bridges over East 56th Avenue to meet current bridge standards and improve vehicle, bicycle, and pedestrian users' visibility around tight curves on East 56th Avenue.
- Reconstructing East 56th Avenue under I-270 to add an on-street bicycle lane and a 10-foot and 6-foot sidewalk connecting to existing sidewalks, and enhance lighting. The eastern sidewalk connects users north of I-270 to the existing sidewalk south of I-270, which provides existing access to the Dahlia Trailhead. The western sidewalk connects the proposed north-south multi-use path on Vasquez Boulevard to the intersection improvements at East 56th Avenue and South Sandcreek Drive.
- Improving the East 56th Avenue and South Sandcreek Drive intersection to include curb ramps, crosswalks, and lighting that meet current standards. These intersection improvements provide a new bicycle and pedestrian connection to the Dahlia Trailhead.
- Improving the East 56th Avenue and Eudora Street intersection to include curb ramps, crosswalks, and lighting that meet current standards.
- Widening the existing sidewalk on the east side of Quebec Street from Northfield Boulevard to East 53rd Place.
- Adding a sidewalk on the west side of Quebec Street between the existing RTD bus stop, in front of the TA Travel Center truck stop, to East 53rd Place.
- 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, guiding bicyclists and pedestrians to the nearest RTD bus stops, major road connections, or distances to the next trailhead to avoid out-of-direction travel.

Trail Enhancements

- Adding a trail on the south side of I-270, connecting York Street sidewalk improvements to the South Platte River Trail.
- Adding a commuter trail on the north side of I-270, connecting York Street to Quebec Street.
- Improving bicycle and pedestrian visibility on the Sand Creek Trail by straightening out tight curves to better accommodate E-bikes, adding a center stripe encouraging trail users to remain on designated side of the trail, and enhancing lighting at the Vasquez Boulevard bridge overpass.
- 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. This multi-use path provides a new connection to the Sand Creek Trail and extends north to East 58th Place.
- Adding a multi-use path on the east side of the Vasquez Boulevard Bridge over Sand Creek, connecting users from the East 56th Avenue and Vasquez Boulevard intersection to a new connection to the Sand Creek Trail. This multi-use path requires replacement of the Vasquez Boulevard Bridge over Sand Creek to accommodate this multi-use path.
- Adding a multi-use path on the west side of the Vasquez Boulevard Bridge over Sand Creek, connecting users from the East 56th Avenue and Vasquez Boulevard intersection to a new connection to the Sand Creek Trail. This multi-use path requires replacement of the Vasquez Boulevard Bridge over Sand Creek to accommodate this multi-use path.
- Adding a multi-use trail spur, 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. This multi-use path matches the existing sidewalk on the East 56th Avenue Bridge over Sand Creek and provides two new connections to the Dahlia Trailhead; one connection at the midpoint of the Dahlia Trailhead parking lot and a second connection at the Dahlia Trailhead access road on 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 connecting the Sand Creek Trail to North Sandcreek Drive.

Transit Enhancements

- Constructing loading areas with seating and shelter at the existing RTD bus stop on the east and west side of Quebec Street, in front of the TA Travel Center truck stop.
- Adding bus stops at Quebec Street and South Sandcreek Drive to improve access to RTD routes 88 and 37. 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 the regional transit connectivity. If this new transit stop is added, RTD would reroute existing route 88 across I-270 to utilize this new transit stop.

7.4 Minimal Build

The Minimal Build Alternative would not add lane capacity to I-270 but would rebuild infrastructure, including replacing bridges that are reaching the end of their useful life, and

addressing pavement condition and subsurface settling. It would also include safety improvements, such as widening shoulders and redesigning the I-76, York Street, Vasquez Boulevard, and Quebec Street interchange on- and off-ramps to provide adequate acceleration and deceleration lanes to meet design standards. Figure 14 illustrates this alternative's mainline, interchange and bicycle, pedestrian, and transit improvements.

Improvements included in the Minimal Build Alternative include:

Mainline Improvements

- Providing two general-purpose lanes in each direction along the same alignment.
- Widening shoulders to meet standard requirements.
- Restriping of the westbound I-270 to northbound I-25 off-ramp to provide dual-exit lane capacity.
- Adding emergency turnouts and turnarounds.

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, consistent with the corresponding Build Alternative)
 - 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 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.

Bicycle and Pedestrian Enhancements

- 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, guiding bicyclists and pedestrians to the nearest RTD bus stops, major road connections, or distances to the next trailhead to avoid out-of-direction travel.

Trail Enhancements

- 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, 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, 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 Enhancements

- 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.

Figure 14. Minimal Build Alternative



7.5 Three General-Purpose Lanes Alternative

The Three General-Purpose Lanes Alternative would include the safety improvements and interchange reconfigurations included in the Minimal Build Alternative. It would also add one

general-purpose travel lane in each direction, for a total of three general-purpose lanes in each direction through the corridor. It would reconstruct other highway infrastructure to accommodate the widened highway footprint and modernize the existing infrastructure. Transit would remain in the general-purpose lanes as service exists today. Figure 15 illustrates this alternative's mainline and interchange improvements only. Bicycle, pedestrian, trail, and transit improvements from the Minimal Build Alternative are included in this alternative and are shown in Figure 14 and are not reflected on Figure 15.

This alternative includes:

Mainline Improvements

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

Interchange Improvements

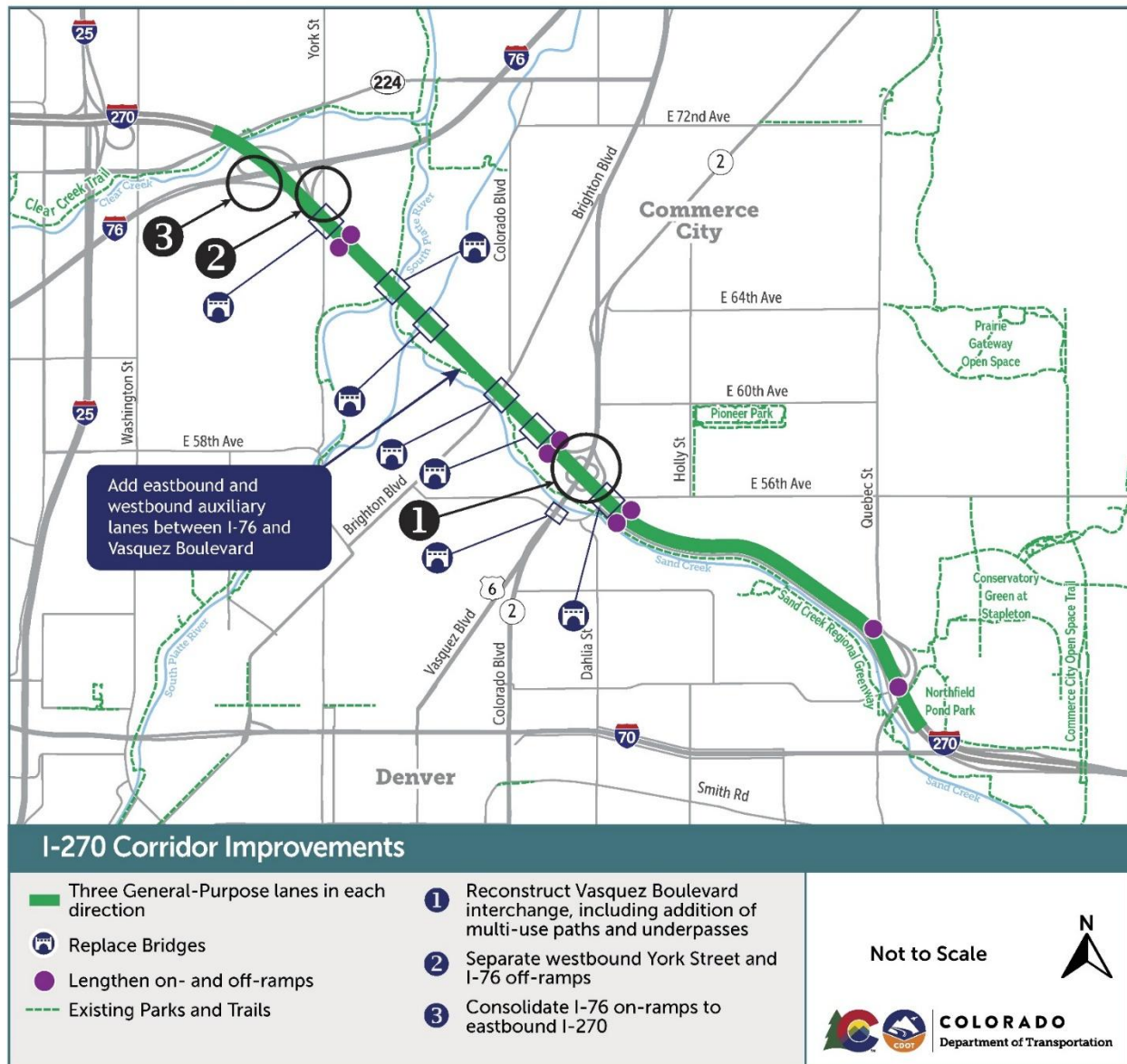
- Redesigning the I-270 on-ramps and off-ramps at I-76, York Street, Vasquez Boulevard, and Quebec Street to provide adequate acceleration and deceleration lanes to meet design standards and address safety issues along the corridor.
- Consolidating the I-76 off-ramps to eastbound I-270 to merge onto I-270 at a single location.
- Separating the westbound I-76 and York Street shared exit to provide two separate exit ramps.
- Reconfiguring the Vasquez Boulevard interchange to a partial cloverleaf, including the addition of a northbound Vasquez Boulevard to eastbound I-270 on-ramp.

Bridge Improvements

This alternative includes the same bridge improvements identified in the Minimal Build Alternative.

Bicycle, Pedestrian, Trail, and Transit Improvements

This alternative includes the same bicycle, pedestrian, trail, and transit enhancements identified in the Minimal Build Alternative.

Figure 15. Three General-Purpose Lanes Alternative


7.6 Two General-Purpose Lanes and One Transit-Only Lane Alternative

The Two General-Purpose Lanes and One Transit-Only Lane Alternative would include the safety improvements and interchange reconfigurations included in the Minimal Build Alternative. It would also add one new transit-only travel lane in each direction through the corridor for a total of two general-purpose lanes and one transit-only lane in each direction through the corridor. It would reconstruct other highway infrastructure to accommodate the widened highway footprint and modernize the existing infrastructure. Figure 16 illustrates this alternative's mainline and interchange improvements only. Bicycle, pedestrian, trail, and transit improvements from the Three General-Purpose Lanes Alternative are included in this alternative and are shown in Figure 14 and are not reflected on Figure 16.



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.

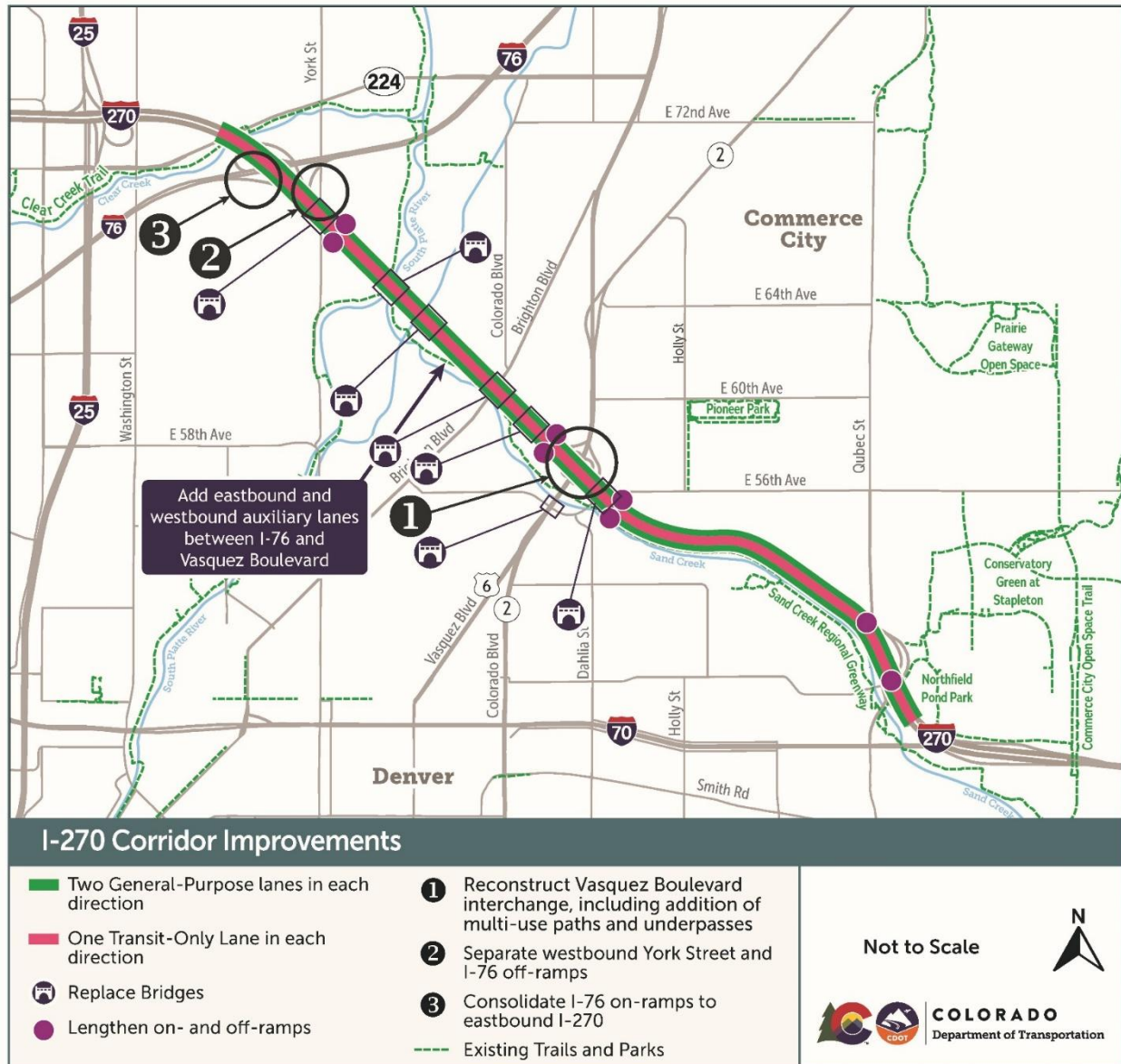
Bridge Improvements

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.

Figure 16. Two General-Purpose Lanes and One Transit-Only Lane Alternative



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

The Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative would include the safety improvements and interchange reconfigurations included in the Minimal Build Alternative. It would add one new travel lane in each direction through the corridor. The new lane would be operated as an Express Lane. Transit vehicles and high-occupancy vehicles (HOV) (3 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. It would reconstruct other highway infrastructure to accommodate the widened highway footprint and modernize the existing infrastructure. Figure 17 illustrates this

alternative's mainline and interchange improvements only. Bicycle, pedestrian, trail, and transit improvements from the Three General-Purpose Lanes Alternative are included in this alternative and are shown in Figure 14 and are not reflected on Figure 17.

Figure 17. Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative



This alternative includes:

Mainline Improvements

- Providing two general-purpose lanes and one Express Lane that accommodates transit 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.

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

The Three General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative would include the safety improvements and interchange reconfigurations included in the Minimal Build Alternative. It would add two travel lanes in each direction: one general-purpose lane and one Express Lane for an overall configuration of three general-purpose lanes and one Express Lane in each direction through the corridor. Transit vehicles and HOVs (3 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. It would reconstruct other highway infrastructure to accommodate the widened highway footprint and modernize the existing infrastructure. Figure 18 illustrates this alternative's mainline and interchange improvements only. Bicycle, pedestrian, trail, and transit improvements from the Three General-Purpose Lanes Alternative are included in this alternative and are shown in Figure 14 and are not reflected on Figure 18.

This alternative includes:

Mainline Improvements

- Providing three general-purpose lanes and one Express Lane that accommodates transit in each direction.
- Remainder of mainline improvements identified in the Three General-Purpose Lanes Alternative.

Figure 18. Three General-Purpose Lanes and One Express Lane that Accommodates Transit 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.

7.9 Two General-Purpose Lanes and Two Express Lanes that Accommodate Transit Alternative

The Two General-Purpose Lanes and Two Express Lanes that Accommodate Transit Alternative would include the safety improvements and interchange reconfigurations included in the Minimal Build Alternative. It would add two new travel lanes in each direction. The two new lanes would be operated as Express Lanes. Transit vehicles and HOVs (3 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 Lanes. It would reconstruct other highway infrastructure to accommodate the widened highway footprint and modernize the existing infrastructure. Figure 19 illustrates this alternative's mainline and interchange improvements only. Bicycle, pedestrian, trail, and transit improvements from the Three General-Purpose Lanes Alternative are included in this alternative and are shown in Figure 14 and are not reflected on Figure 19.

This alternative includes:

Mainline Improvements

- Providing two general-purpose lanes and two Express Lanes that accommodate transit 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.

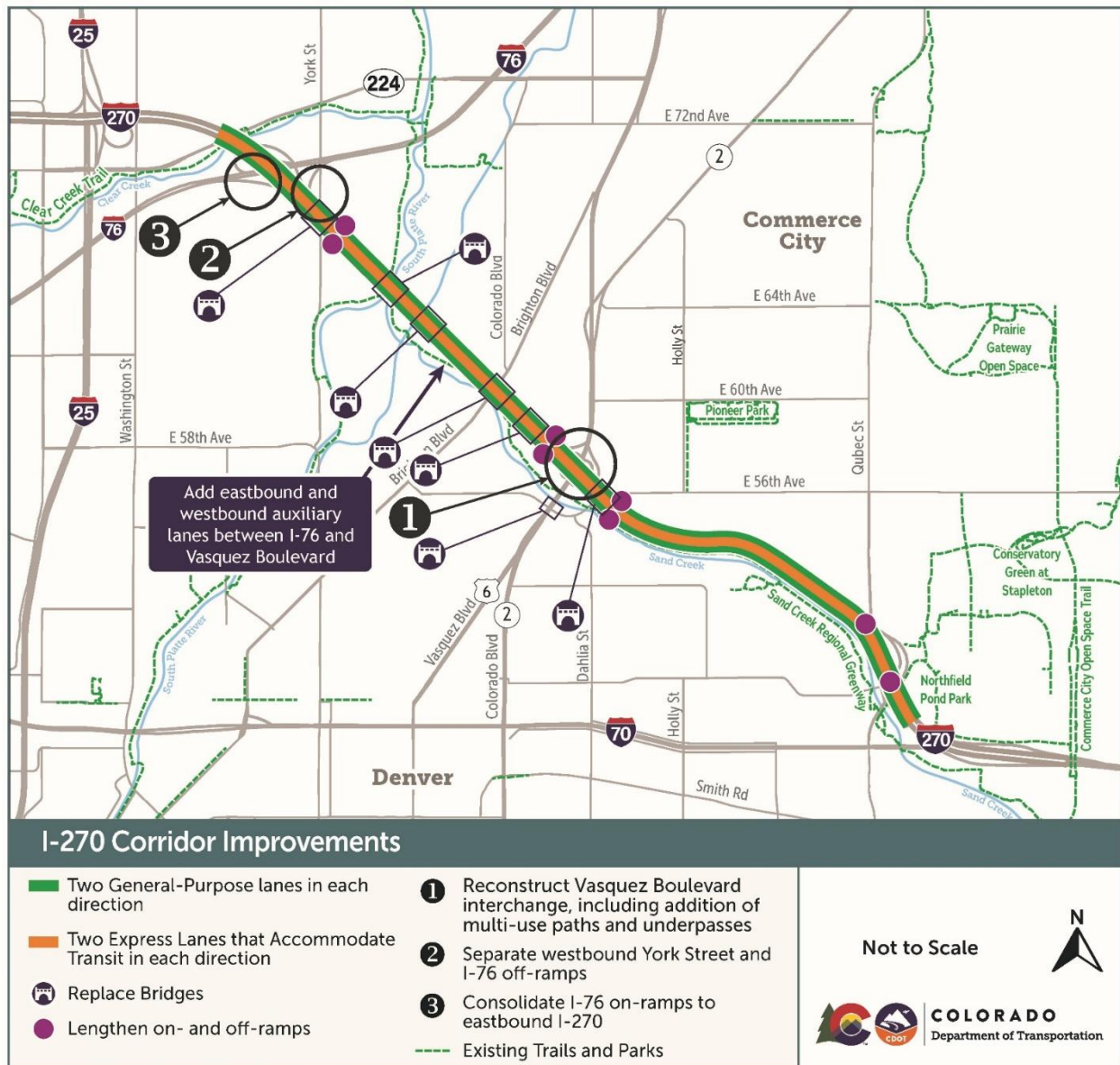
Bridge Improvements

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.

Figure 19. Two General-Purpose Lanes and Two Express Lanes that Accommodate Transit Alternative



8.0 Alternatives Evaluation and Screening Results

The I-270 Corridor Improvements Project conducted three levels of screening before preliminarily identifying a preferred alternative.

- Concept Screening to Evaluate Responsiveness to Purpose and Need (Level 1)
- Refinement and Qualitative Evaluation (Level 2)
- Detailed Quantitative Evaluation (EIS)

8.1 Level 1 Screening

The Level 1 Screening included an initial evaluation to determine if the alternative has the potential for each alternative to be responsive to the project's purpose and need. The Purpose and Need criterion determined which alternatives have the potential to address two or more needs that should be carried forward to Level 2 Screening. Alternatives determined to not have the potential to address at least two elements of the project's purpose and need were not retained for Level 2 Screening. Elements of alternatives that were not retained in Level 1 Screening were further evaluated for inclusion in other alternatives for Level 2 Screening. Table 2 summarizes and highlights the results of Level 1 Screening.

Table 2. Level 1 Screening Results

Alternative	Responsive to Purpose and Need?	Retained?
No Action	N/A	Retained for comparison to build alternatives.
Bicycle, Pedestrian, and Transit Enhancements	Partial - Alternative partially addresses project needs	Eliminated as a standalone alternative. Does not adequately address safety, travel time and reliability, transit on the corridor and freight operations. The majority of the elements from this alternative were incorporated into the retained Build Alternatives.
Minimal Build	Pass - Alternative addresses the project needs	Retained
Three General-Purpose Lanes	Pass - Alternative addresses the project needs	Retained
Two General-Purpose Lanes and One Transit-Only Lane	Pass - Alternative addresses the project needs	Retained
Two General-Purpose Lanes and One Express Lane That Accommodates Transit	Pass - Alternative addresses the project needs	Retained
Three General-Purpose Lanes and One Express Lane That Accommodates Transit	Pass - Alternative addresses the project needs	Retained
Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit	Pass - Alternative addresses the project needs	Retained

The following sections summarize each need, and the alternative elements identified to address each of the needs.

8.1.1 Need: Traveler Safety on the Corridor

- There is a need to reduce overrepresented crash types on the corridor.
- There is a need to address locations with higher-than-expected crashes.

The following alternative elements (Table 3) have been identified as having the potential to address the known safety needs on the corridor and were used as indicators of addressing the traveler safety on the corridor need.

Table 3. Alternative Element to Address the Need for Traveler Safety

Alternative Element	Traveler Safety Evaluation
Add Continuous Auxiliary Lanes Between I-76/York Street and Vasquez Boulevard	Potential for reduced rear end and sideswipe same direction crashes by providing adequate space for merging vehicles to get up to speed and enter the flow of traffic.
New Eastbound Collector I-270 On-Ramp from Eastbound/Westbound I-76	Potential for reduced rear end and sideswipe same direction crashes by reducing the number of merging conflict areas.
Reconstruct Vasquez Boulevard Interchange as Partial Cloverleaf	Potential for reduced rear end and sideswipe same direction crashes by eliminating back-to-back and short weave sections.
Improve Acceleration and Deceleration Lengths at all Interchanges	Potential for reduced rear end, sideswipe same direction crashes and guard rail crashes by providing adequate space for vehicles to safely accelerate and decelerate when merging into or exiting the flow of traffic.
Separation of Westbound I-270 York Street and I-76 Off-Ramps	Potential for reduced concrete barrier crashes by reducing driver confusion and removing existing concrete barrier separation.

The following alternatives were determined to have the potential to address the need to improve traveler safety on the corridor:

- Minimal Build
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Transit-Only Lane
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

8.1.2 Need: Travel Time and Reliability on the Corridor

- There is a need to reduce delays on the corridor.
- There is a need to improve travel speeds on the corridor

The following alternative elements (Table 4) have been identified to address the need for travel time reliability on I-270.

Table 4. Alternative Element to Address Need for Travel Time Reliability

Alternative Element	Travel Time Reliability Evaluation
Adding One General-Purpose Lane	Potential to improve travel time reliability by increasing capacity of the roadway to reduce delay and bottlenecks on the corridor.
Adding One or Two Express Lanes	Potential to improve travel time reliability by providing a reliable lane or lanes for travel through the corridor.
Add Continuous Auxiliary Lanes Between I-76/York Street and Vasquez Boulevard	Potential to reduce bottlenecks by providing adequate space for vehicles to safely accelerate and decelerate when merging into or exiting the flow of traffic.

The following alternatives were determined to have the potential to address the need to improve travel time reliability on the corridor:

- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Transit-Only Lane
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

8.1.3 Need: Transit on the Corridor

There is a need to increase transit speed on the corridor. The following alternative elements (Table 5) have been identified to address the need for transit on the corridor.

Table 5. Alternative Element to Address Need for Transit on the Corridor

Alternative Element	Transit on the Corridor Evaluation
Adding One or Two Express Lanes	Potential to increase transit speeds by allowing transit vehicles to travel consistent speeds in semi-exclusive lanes and improve on time performance making transit a more reliable option for commuters.
Adding One Transit-Only Lane	Potential to increase transit speeds by allowing transit vehicles to travel consistent speeds in dedicated lanes and improve on time performance making transit a more reliable option for commuters.
Adding One General-Purpose Lane	Potential to benefit from corridor wide capacity and operational enhancements that reduce congestion. While transit vehicles would be traveling in general purpose lanes, improvements to overall corridor travel speeds and reliability would also apply to transit vehicles.

The following alternatives were determined to have the potential to address the need to improve travel time reliability on the corridor:

- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Transit-Only Lane
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit



8.1.4 Need: Bicycle and Pedestrian Connectivity Across I-270

- There is a need to increase bike/ped connectivity across I-270.
- There is a need to improve regional bike/ped connectivity.

The following alternative elements (Table 6) have been identified to address the need for bicycle and pedestrian connectivity across I-270.

Table 6. Alternative Element to Address Need for Bicycle & Pedestrian Connectivity Across I-270

Alternative Element	Bicycle and Pedestrian Evaluation
New or Improved Bicycle and Pedestrian Connectivity Across I-270	Potential to increase bicycle and pedestrian connectivity by adding new or improving existing bicycle and pedestrian connections across the corridor.
Enhancements to the Regional Bicycle and Pedestrian Network	Potential to improve bicycle and pedestrian connectivity by enhancing the regional bicycle and pedestrian network.

During the Level 1 Screening, only the Bicycle, Pedestrian, and Transit Enhancements Alternative identified specific improvements to improve bicycle and pedestrian connectivity across I-270. The Bicycle, Pedestrian, and Transit Enhancements Alternative was intended to capture the most comprehensive improvements to address the need for bicycle and pedestrian connectivity across I-270, and the improvements would be evaluated for inclusion in the other alternatives.

8.1.5 Need: Freight Operations on the Corridor

- There is a need to improve freight operations merging onto and exiting off I-270.
- There is a need to improve travel time and reliability for freight on the corridor.

The following alternative elements (Table 7) have been identified to address the need to improve freight operations on the corridor.

Table 7. Alternative Element to Address Need for Freight Mobility

Alternative Element	Freight Operations Evaluation
Improve Acceleration and Deceleration Lengths at all Interchanges	Potential for reduced crashes involving freight vehicles by providing adequate space for freight vehicles to safely accelerate and decelerate when merging into or exiting the flow of traffic.
Add Continuous Auxiliary Lanes Between I-76/York Street and Vasquez Boulevard	Potential for reduced crashes involving freight vehicles by providing adequate space for merging freight vehicles to get up to speed and enter the flow of traffic.
Reconstruct Vasquez Boulevard Interchange as Partial Cloverleaf	Potential for reduced crashes involving freight vehicles by eliminating loop ramps with small turning radii and eliminating back-to-back and short weave sections and providing ramp meter freight bypass lanes for freight vehicles to safely accelerate when merging into the flow of traffic.
Adding One General-Purpose Lane	Potential to improve freight travel time reliability by increasing capacity for general purpose lanes to reduce delay and bottlenecks on the corridor.

8.1.6 Conclusions of Level 1 Screening

The following alternatives were determined to have the potential to address the need to improve freight operations on the corridor:

- Minimal Build
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Transit-Only Lane
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

These alternatives were retained for Level 2 Screening. Additionally, the No Action Alternative was retained for comparative purposes.

As shown, the Bicycle, Pedestrian, and Transit Enhancements Alternative was eliminated under Level 1 Screening as a standalone alternative. The Bicycle, Pedestrian, and Transit Enhancements Alternative does not address traffic congestion, and therefore, has the potential to experience increased safety issues and travel times and decreased reliability. In addition, it would not improve transit speed or freight operations.

However, elements of the alternative were evaluated for inclusion in the other alternatives to bolster the ability of each retained alternative to address the need to improve bicycle, pedestrian, and transit connectivity across I-270.

8.2 Level 2 Screening

Level 2 Screening included a comparative analysis of alternatives to identify the alternatives that best meet the purpose and need and meet the project goal to minimize environmental and community impacts resulting from the project. Table 8 summarizes the results of the



Level 2 Screening, and the subsequent sections provide additional information about the comparative analysis of the alternatives for each screening criterion.

**Table 8. Level 2 Screening Results**

Alternative	Travel Safety (Reduce crashes)	Travel Time and Reliability (Improve travel time and reliability)	Transit on the Corridor (Improve transit speed)	Bicycle and Pedestrian Connectivity (Increase connectivity across I-270)	Freight Operations (Improve freight operations)	Natural and Human Environment (Minimize environmental and community impacts)	Recommendations
No Action	Low	Low	Low	Low	Low	High	Retained for comparison to build alternatives
Minimal Build	Low	Low	Low	Moderate	Low	High	Eliminated
Three General-Purpose Lanes	High	High	Moderate	Moderate	High	Moderate	Retained
Two General-Purpose Lanes and One Transit-Only Lane	Low	Low	High	Moderate	Low	Moderate	Eliminated
Two General-Purpose Lanes and One Express Lane That Accommodates Transit	High	High	High	Moderate	Moderate	Moderate	Retained
Three General-Purpose Lanes and One Express Lane That Accommodates Transit	Moderate	Moderate	High	Moderate	High	Low	Eliminated
Two General-Purpose Lanes and Two Express Lanes that Accommodate Transit	Moderate	Moderate	High	Moderate	Moderate	Low	Eliminated

The following alternatives were eliminated in the Level 2 Screening:

- **Minimal Build - Eliminated:** The Minimal Build Alternative does not address traffic congestion as well as the other alternatives and therefore, has the potential to experience increased safety issues and travel times and decreased reliability. In addition, it would not improve transit speed or freight operations as well as the other alternatives.
- **Two General-Purpose Lanes and One Transit-Only Lane - Eliminated:** The Two General-Purpose Lanes and One Transit-Only Lane Alternative does not address traffic congestion as well as the other alternatives and therefore, has the potential to experience increased safety issues and travel times and decreased reliability. In addition, it would not improve freight operations as well as the other alternatives.
- **Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit - Eliminated:** The eight lane alternatives have the potential to introduce new crash risks and impact the natural and human environment.
- **Three General-Purpose Lanes and One Express Lane That Accommodates Transit - Eliminated:** The eight lane alternatives have the potential to introduce new crash risks and impact the natural and human environment.

The subsequent sections provide more information for the Level 2 screening metrics and the supporting comparative qualitative/quantitative analyses for each project need. For example, Section 8.2.1, Traveler Safety on the Corridor explains why the eight lane alternatives were determined to have the potential to introduce more new crash risks than the six-lane alternatives. Additionally, these sections summarize how analyses informed the high, moderate, and low rankings applied to the alternatives for each metric.

8.2.1 Traveler Safety on the Corridor

Addressing traveler safety on the I-270 corridor is a critical need identified through stakeholder feedback and traffic safety analyses. The corridor experiences a high rate of crashes, including rear end collisions, sideswipe incidents, and fixed-object crashes, particularly near interchanges and merge points. Many of these safety concerns are attributed to short merge distances, weaving conflicts, and high volumes of freight traffic, which create a mix of speeds and driving behaviors. Stakeholders expressed concerns about the lack of safe emergency pull-off areas, the difficulty for emergency responders to access crash sites, and the potential for secondary incidents caused by disabled vehicles remaining in travel lanes. The safety analysis confirmed these issues, showing crash hotspots along the corridor, particularly at York Street, Quebec Street, and the I-76 interchange. Improving safety on I-270 will require infrastructure upgrades that reduce conflict points, improve merging and weaving conditions, and create safer access for all roadway users, including passenger vehicles, trucks, and non-motorized travelers.

The evaluation of traveler safety on I-270 considers the expected crash rate, which is influenced by the number of vehicles using the road daily and the number of lanes in each design option and considers the known safety challenges on the corridor to be addressed through a range of proposed improvements.

The existing conditions safety analysis revealed that I-270 experiences more crashes than similar four-lane facilities across Colorado. Existing traffic data shows that segments of I-270

serve around 100,000 vehicles per day. The safety analysis and safety performance across the state of Colorado indicates that when traffic exceeds 60,000 vehicles per day, increasing the number of lanes from four to six may help reduce crashes. Additionally, once traffic reaches 100,000 vehicles per day, four-lane roads cannot effectively and safely handle the number of vehicles trying to use the highway and congestion-related crash types, such as those observed on I-270, rear end, and sideswipe same direction crashes, occur more frequently.

In addition, under the 2050 horizon, I-270 is expected to experience demand to serve 125,000-150,000 vehicles per day in 2050, depending on the alternative. This level of demand is best accommodated by a six-lane facility and falls well below the demand of 175,000 vehicles per day that is typically associated with an eight-lane facility.

However, it is important to acknowledge that while adding lanes to reduce congestion can lead to fewer crashes related to traffic backups and overcrowded roadways, expanding roadways can also introduce new safety risks. Each additional lane increases the number of conflict points, locations where vehicles merge, or can change lanes, which can raise the risk of sideswipe- and merging-related crashes. While more lanes help alleviate congestion, an increased number of lanes can make the roadway more complex to navigate, increasing driver decision points and the potential for errors. As a result, the safety benefits of reducing congestion must be balanced with the added risks that come with more lanes and higher vehicle interactions.

In the Level 2 screening, each alternative was assigned a ranking of low, moderate, or high based on its expected safety performance:

- **High** - Alternatives with six lanes received a high ranking due to the projected ability to balance the need to accommodate additional traffic and the introduction of new conflict points.
- **Moderate** - Alternatives with eight lanes received a moderate ranking as eight-lane facilities are typically designed for traffic volumes of 150,000 vehicles or more per day. The eight-lane facilities introduce the greatest number of new conflict points, increasing the potential for crashes while adding additional capacity that exceeds projected demand.
- **Low** - Alternatives retaining the existing four-lane configuration received a low ranking because four-lane alternatives cannot adequately handle the projected traffic volumes, leading to higher congestion and crash rates, particularly as traffic exceeds the capacity.

8.2.2 Travel Time and Reliability on the Corridor

Addressing travel time and reliability on the I-270 corridor is essential to improve the efficiency of both commuter traffic and freight movement. Stakeholder feedback highlighted frequent delays, with congestion often extending beyond traditional rush hours and causing substantial variability in travel times. Current travel time reliability on the I-270 corridor is heavily influenced by bottleneck formation on the corridor. As previously noted, bottlenecks typically occur at points where traffic merges or lanes reduce, leading to slowdowns as vehicles attempt to move through a constricted space. These bottlenecks disrupt the smooth flow of traffic, causing unpredictable delays and reducing the overall reliability of travel times.

Traffic analyses confirmed these concerns, showing that high traffic volumes, combined with short merge distances, weaving conflicts, and interchange bottlenecks, contribute to inconsistent speeds along the corridor. These conditions create unpredictable travel times, making it challenging for drivers to plan their trips effectively. The corridor's role as a key freight route further emphasizes the need for improvements, as unreliable travel times affect goods movement, regional commerce, and economic efficiency. Enhancing travel time reliability will require infrastructure improvements that increase capacity, reduce congestion, and improve the flow of traffic, helping ensure the corridor can meet both current and future transportation needs.

Projected 2050 peak hour volumes and alternative lane configurations were used to estimate corridor wide travel times. These peak hour traffic models included the connections to US 36, I-25, and I-70.

Table 9 illustrates the predicted end-to-end corridor travel time for each alternative, as calculated, by using travel demand model peak hour volumes and deterministic traffic models.

Table 9. 2050 I-270 Travel Time Estimates

Alternative	2050 Travel Time Estimate (Peak Hour Minutes) General-Purpose/Express, Eastbound	2050 Travel Time Estimate (Peak Hour Minutes) General-Purpose/Express, Westbound
No Action	21/NA	26/NA
Bicycle, Pedestrian, and Transit Enhancements	21/NA	26/NA
Minimal Build	20/NA	25/NA
Three General-Purpose Lanes	13/NA	21/NA
Two General-Purposes Lanes and One Transit-Only Lane	19/NA	24/NA
Two General-Purposes Lanes and One Express Lane that Accommodates Transit	15/14	19/15
Three General-Purposes Lanes and One Express Lane that Accommodates Transit	13/13	20/15
Two General-Purposes Lanes and Two Express Lanes that Accommodates Transit	22/12	27/14

NA - Not applicable

Source: Highway Capacity Software Freeway Facilities Analysis

The preliminary traffic analysis found that alternatives that add an additional travel lane that can be used by the traveling public (the Two General-Purposes Lanes and One Express Lane that Accommodates Transit and Three General-Purpose Lanes Alternatives) are projected to experience a 5- to 8-minute travel time savings when compared to the No Action Alternative.

This analysis revealed that adding more capacity to I-270 than what US 36, I-25, and I-70 can handle ultimately works against the goal of improving travel time and reliability, because it creates bottlenecks at the points where these highways merge. While additional lanes can help reduce congestion in the middle sections of I-270, the limited capacity of the receiving highways at each end causes new bottlenecks to form. As vehicles try to merge from I-270 into these smaller-capacity roads, queues form, slowing down traffic, and negating any time savings gained from the added lanes. This mismatch between I-270's increased capacity and the limited capacity of the connecting highways results in more congestion, reduced speeds, and longer travel times, diminishing the benefits of the extra lanes.

While the travel time analysis aided in understanding which alternatives are most likely to experience peak hour bottlenecks, contributing to reduced reliability, as several alternatives also included Express Lanes. Express Lanes can help improve travel time reliability by providing a dedicated lane for faster-moving vehicles, particularly during peak hours. However, if the demand for Express Lanes exceeds their capacity, or if merging into and out of these lanes creates additional conflict points, they can also introduce new bottlenecks. In general, Express Lanes were found to improve travel time reliability by offering an alternative to congested general-purpose lanes, and there was a need to further evaluate their design and operation. As previously noted, the No Action Alternative (and all build alternatives) include new Express Lane direct connect ramps on both ends of the corridor. Like the general-purpose lanes, adding more Express Lanes does not automatically translate into faster travel times due to the potential for bottleneck formation, where there is less capacity in receiving lanes than in approach lanes. As with the four general-purpose lanes alternatives, when more Express Lanes approach fewer Express Lanes, it causes bottlenecks.

Overall, the preliminary analysis showed that more lanes do not automatically translate to faster travel times. In fact, the impact of travel time and reliability depends on how well the added capacity aligns with the overall traffic flow, especially at merging points. Projected travel time savings and opportunities to provide a more reliable corridor travel time resulted in a high, moderate, or low rank for each alternative:

- High - Six-lane alternatives (three lanes in each direction) that add capacity through either an Express Lane or an additional general-purpose lane that best matches capacity flow into and out of the corridor to adjacent facilities and showed the greatest potential to improve both travel time and reliability, earning a high ranking.
- Moderate - Eight-lane alternatives (four lanes in each direction) were found to provide more capacity than the merging points at the ends of the corridor can handle, creating new bottlenecks. This added congestion reduced reliability and travel time savings and resulted in a moderate ranking for these alternatives.
- Low - Four-lane alternatives (two lanes in each direction) do not adequately address congestion, leading to longer travel times and low reliability, which resulted in a low ranking.

Overall, while more lanes can help improve travel times, adding too many lanes can lead to diminishing returns due to increased congestion at key bottlenecks.

8.2.3 Transit on the Corridor

The evaluation of transit on the corridor correlates to the ability of an alternative to improve transit travel time and transit reliability.

The impact of various capacity improvements on transit operations along the corridor varies significantly. Alternatives with no added capacity provide little to no improvement for transit operations, as buses remain subject to the same congestion and traffic conditions as general-purpose vehicles, leading to unreliable travel times. Existing congestion and unreliability of corridor travel times have led RTD to approve alternate routes, so that buses avoid I-270.

Adding general-purpose capacity has the potential to improve transit travel times by reducing overall congestion; but since transit vehicles share these lanes with regular traffic, they still face potential delays during peak periods and are subject to the same delays as the general public. While this provides some benefits, it does not offer the consistency needed for reliable and attractive transit service.

In contrast, alternatives that include Express Lanes or exclusive transit lanes offer the greatest improvement to transit operations. These lanes allow transit vehicles options to bypass congestion, ensuring faster and more reliable travel times. By providing a dedicated or managed space for transit, these alternatives significantly enhance both the speed and dependability of transit services on the corridor. However, transit-only lanes only benefit transit vehicles whereas the alternatives with Express Lanes that accommodate transit also are projected to improve transit operations and provide reliable travel time options for other vehicles.

The ability for different alternatives to provide capacity enhancements that benefit transit operations, reliability, and travel times resulted in a high, moderate, or low ranking for each alternative:

- **High** - Alternatives that provide transit lanes or Express Lanes that can be used by transit vehicles will improve transit operations (e.g., travel time and reliability) beyond general-purpose lane operations and rank high.
- **Moderate** - Alternatives that provide additional general-purpose lane capacity are expected to improve transit operations equivalent to general-purpose operations, but do not provide the same level of continuous reliability that a dedicated transit lane or Express Lane, received a moderate ranking.
- **Low** - Alternatives that do not add any capacity or transit-specific improvements were ranked low as they fail to address the existing congestion and unreliable travel times, offering no significant benefit to transit operations.

8.2.4 Bicycle and Pedestrian Connectivity Across I-270

Improving bicycle and pedestrian connectivity across the I-270 corridor is vital to provide safer routes for bicycles and pedestrians. The corridor currently acts as a barrier between communities, with limited safe crossings and gaps in the pedestrian and bicycle network. Many existing crossings lack infrastructure that meets current standards, and there are safety concerns related to narrow sidewalks, inadequate lighting, and unmarked crossings. Stakeholder feedback emphasized the need for better connections to transit stops, schools,

parks, and the Sand Creek Greenway. Addressing these challenges will involve creating new pedestrian and bicycle facilities, upgrading existing infrastructure, and ensuring all improvements meet all applicable safety and design requirements and standards. Improved bicycle and pedestrian connectivity will not only promote active transportation but also improve access within the surrounding communities.

The Bicycle, Pedestrian, and Transit Enhancement Alternative was eliminated during the Level 1 screening; however, bicycle, pedestrian, and transit enhancements were retained for inclusion in all Level 2 alternatives, except for the No Action Alternative. As a result, the criteria for bicycle and pedestrian connectivity across I-270 received only low and moderate rankings as the new and improved bicycle and pedestrian connections were assumed to be identical across all build alternatives:

- High - No alternatives ranked high because not every considered bicycle and pedestrian improvement that stakeholders recommended was included in the alternatives.
- Moderate - Alternatives that provide new and improved bicycle and pedestrian crossings of I-270 rank moderate.
- Low - Alternatives that do not improve bicycle and pedestrian crossings and do not add new crossings rank low.

8.2.5 Freight Operations on the Corridor

Improving freight operations on the I-270 corridor is critical to supporting the region's economy and ensuring the efficient movement of goods. Stakeholders from the freight and industrial sectors emphasized the importance of I-270 as a critical freight route, citing its significance for regional and statewide goods movement, particularly for hazardous materials and oversized loads.

However, congestion, unreliable travel times, and safety challenges create substantial obstacles for trucking operations, leading to increased costs, delayed deliveries, and reduced efficiency. Stakeholders, including freight carriers and local businesses, have expressed concerns about bottlenecks at interchanges, short merge distances, and the lack of dedicated lanes for freight traffic. Addressing these issues will require improvements that increase capacity, reduce conflict points, and provide smoother traffic flow. Enhancing freight efficiency on I-270 will not only improve regional commerce but also contribute to supply chain reliability and help maintain competitive market access for Colorado businesses.

The feedback highlighted several key needs, including the widening of shoulders to allow trucks more room for safer merging and breakdowns, extending acceleration and deceleration lanes at interchanges, like Vasquez Boulevard and Quebec Street, to improve safety, and enhancing ramp configurations to better accommodate truck movements. Additional recommendations included addressing pavement deterioration, upgrading the Vasquez Boulevard interchange to facilitate more efficient freight operations, and incorporating freight-specific infrastructure, such as bypass lanes at ramp meters to reduce delays for trucks. Stakeholder engagement with the freight industry resulted in many of these improvements being incorporated into all build alternatives, ensuring the project addresses critical freight operational needs while improving overall safety and traffic flow on I-270.

The degree to which alternatives improve freight operations and safety was found to be closely tied to the capacity improvements included in each option. The ability for different alternatives to provide capacity enhancements that benefit freight operations, reliability, and safety resulted in a high, moderate, or low ranking for each alternative:

- **High** - Alternatives that provide additional general-purpose lanes offer the greatest benefit to freight operations as they enhance overall capacity, reduce congestion, and allow for more efficient movement of goods, earning these alternatives a high ranking for the freight operations criterion.
- **Moderate** - Alternatives that include Express Lanes provide moderate improvements to freight operations. These moderate-ranked alternatives offer some relief to congestion due to the Express Lanes attracting passenger vehicles out of general-purpose lanes, but do not fully address the needs of freight vehicles.
- **Low** - Alternatives that do not add capacity are ranked low because they fail to address existing congestion, leaving freight operators to navigate the same delays and safety risks they currently face.

8.2.6 Project Goal - Minimize Environmental Impacts

As part of the EIS process, minimizing the impact of the project on the natural and human environment is a critical objective. To support this goal, the screening of alternatives conducted a preliminary evaluation of potential environmental impacts. This initial assessment focused on the physical footprint of each alternative. A larger project footprint is more likely to have physical impacts on adjacent land uses and the environment. Alternatives were given a high, moderate, or low ranking based on the potential to impact the surrounding environment:

- **High** - Alternatives with the narrowest footprint (not including widening associated with new lanes) are expected to have the least potential to disturb the surrounding environment and were given a high ranking for environmental impact, as they are more likely to minimize disruption to both natural habitats and human communities.
- **Moderate** - Alternatives that add one lane may involve some encroachment but are less likely to result in significant environmental harm, received a moderate ranking.
- **Low** - Alternatives with the widest footprint have the greatest risk of environmental and community impacts due to potential right of way (ROW) expansion and disruption to adjacent areas.

8.3 Screening Summary

Recommendations for alternatives advancing from Level 1 and Level 2 screenings in the EIS are shown in Table 10.

The alternatives development and evaluation process resulted in three alternatives being retained for full evaluation in the EIS:

- No Action Alternative
- Three General-Purpose Lanes Alternative
- Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative

**Table 10. Summary of Screening Results**

Alternative	Traveler Safety on the Corridor (Reduce crashes)	Travel Time and Reliability (Improve travel time and reliability)	Transit on the Corridor (Improve transit speed)	Bicycle and Pedestrian Connectivity (Increase connectivity across I-270)	Freight Operations (Improve freight operations)	Environmental and Community Impact (Have potential to meet the project goal)	Recommended for Detailed Evaluation in the EIS
No Action	Low	Low	Low	Low	Low	High	Yes
Bicycle, Pedestrian, and Transit Enhancements	N/A ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	No
Minimal Build	Low	Low	Low	Moderate	Low	High	No
Three General-Purpose Lanes	High	High	Moderate	Moderate	High	Moderate	Yes
Two General-Purpose Lanes and One Transit-Only Lane	Low	Low	High	Moderate	Low	Moderate	No
Two General-Purpose Lanes and One Express Lane That Accommodates Transit	High	High	High	Moderate	Moderate	Moderate	Yes
Three General-Purpose Lanes and One Express Lane that Accommodates Transit	Moderate	Moderate	High	Moderate	High	Low	No
Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit	Moderate	Moderate	High	Moderate	Moderate	Low	No

¹Not included in Level 2 screening. Set aside as a standalone alternative in the Level 1 screening because it does not have the potential to meet the project's purpose and need. Elements of this alternative will be evaluated to include in the other build alternatives.

8.3.1 No Action Alternative

The No Action Alternative does not reduce crashes or improve travel time and reliability. In addition, it would not improve transit or freight operations on the corridor. This alternative is retained for comparison to build alternatives. It will be fully evaluated in the EIS and evaluated as a baseline for comparison.

8.3.2 Minimal Build Alternative

The Minimal Build Alternative does not address traffic congestion and therefore, has the potential to experience increased safety issues and travel times and decreased reliability. In addition, it would not improve transit speed or freight operations.

This alternative was eliminated because all other alternatives retained from Level 1 Screening performed the same as or better than the Minimal Build Alternative for all six Level 2 screening criteria.

8.3.3 Three General-Purpose Lanes Alternative

The Three General-Purpose Lanes Alternative scored high on the potential to reduce crashes and improve travel time and reliability; the alternative was one of two alternatives that scored high for these two criteria, scoring better than all but one alternative in the Level 2 Screening.

Also, the alternative scored high on the potential to improve freight operations; the alternative was one of two alternatives that scored high for these two criteria, scoring better than all but one alternative in the Level 2 Screening.

The alternative received a moderate score for the potential to improve transit operations, showing improvement over the No Action but was outscored by all alternatives that provided transit lanes or Express Lanes that can be used by transit vehicles.

The alternative received a moderate score for the potential to impact the natural and human environment due to the larger footprint associated with the additional lane; however, it scored better than all of the four-lane alternatives.

The alternative scored moderate to high for all Level 2 Screening criteria and was retained and will be fully evaluated in the EIS.

8.3.4 Two General-Purpose Lanes and One Transit-Only Lane Alternative

The Two General-Purpose Lanes and One Transit-Only Lane Alternative scored low on the potential to reduce crashes, improve travel time and reliability and improve freight operations. The alternative scored the same as the No Build and Minimal Build Alternatives for these criteria and worse than all other build alternatives.

The only criterion where the alternative received a high score was for the potential to improve transit operations on the corridor. This alternative was eliminated because other alternatives that also scored high on the ability to improve transit speeds on the corridor, scored better on the potential to reduce crashes, improve travel time and reliability, and improve freight operations.

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

The Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative scored high on the potential to reduce crashes and improve travel time and reliability. The alternative was one of two alternatives that scored high for these two criteria, scoring better than all but one alternative in the Level 2 Screening.

Also, the alternative scored high on the potential to improve transit speeds on the corridor. The alternative was one of four alternatives that scored high for these two criteria.

The alternative received a moderate ranking for improving freight operations as alternatives that include Express Lanes are not expected to provide as much benefit to freight operations as alternatives that add general-purpose lanes.

The alternative received a moderate score for the potential to impact the natural and human environment due to the larger footprint associated with the additional lane; however, it scored better than all four-lane alternatives.

The alternative scored moderate to high for all Level 2 Screening criteria and was retained and will be fully evaluated in the EIS.

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

The Three General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative scored high on the potential to improve transit speed and freight operations.

As an eight-lane alternative, the alternative received a moderate ranking for safety as eight-lane facilities introduce the greatest number of new conflict points, increasing the potential for crashes while adding additional capacity that exceeds projected demand. Similarly, the alternative received a moderate ranking for its ability to improve travel time and flow due to the expected minimal incremental benefits over the six-lane alternatives due to the impacts of providing more capacity than the ends of the corridor can handle, creating new bottlenecks.

The alternative received a low score for the potential to impact the natural and human environment due to the larger footprint associated with eight lane alternatives.

The two criteria where the alternative received a high score were for the potential to improve transit operations on the corridor and improve freight operations on the corridor. This alternative was eliminated because retained alternatives that also scored high on transit on the corridor and freight operations scored better on the potential to reduce crashes, improve travel time and reliability, and minimizing impact to the natural and human environment.

8.3.7 Two General-Purpose Lanes and Two Express Lanes that Accommodate Transit

The Two General-Purpose Lanes and Two Express Lanes Alternative has the potential to improve transit speed on the corridor.

As an eight-lane alternative, the alternative received a moderate ranking for potential to improve safety and a moderate ranking for its ability to improve travel time. The alternative received a moderate ranking for improving freight operations as alternatives that include Express Lanes are not expected to provide as much benefit to freight operations as alternatives that add general-purpose lanes.

The alternative received a low score for the potential to impact the natural and human environment due to the larger footprint associated with eight lane alternatives.

The only criterion where the alternative received a high score was the potential to improve transit operations on the corridor. This alternative was eliminated because other alternatives that also scored high on the ability to improve transit speeds on the corridor scored better on the potential to reduce crashes, improve travel time and reliability and improve freight operations.

8.3.8 Conclusions of Level 2 Screening

The following alternatives were retained for detailed analysis to aid in the identification of a Preliminary Preferred Alternative:

- No Action Alternative - retained for comparison to Build Alternatives
- Three General-Purpose Lanes
- Two General-Purpose Lanes and One Express Lane That Accommodates Transit

The following alternatives were eliminated in the Level 2 Screening from further consideration as the Preliminary Preferred Alternative:

- Minimal Build
- Two General-Purpose Lanes and One Transit-Only Lane
- Two General-Purpose Lanes and Two Express Lanes That Accommodate Transit
- Three General-Purpose Lanes and One Express Lane That Accommodates Transit

9.0 Preliminary Identification of the Preferred Alternative

FHWA and CDOT have preliminarily identified the Two General-Purpose Lanes and One Express Lane that Accommodates Transit Alternative as the Preferred Alternative for the I-270 Corridor Improvements Project. This alternative was selected because it meets the project purpose and need, has stakeholder support, best addresses community concerns related to congestion and safety, and, with the proposed mitigations, appears to cause the least overall impact.

Preliminary identification of a preferred alternative in the Draft EIS allows the project to move forward into early action items, such as agency coordination, ROW acquisition, and

hazardous material site assessments. This advanced work can help the project progress and be ready for construction shortly after the ROD is completed. FHWA and CDOT will consider feedback provided during the Draft EIS public review process before identifying and selecting a preferred alternative in the Final EIS and ROD.

Many factors were considered in preliminarily identifying the Preferred Alternative. These factors included:

- Ability of the alternatives to reduce crashes and address known safety challenges on the corridor
- Ability of the alternatives to improve travel time and reliability on the corridor
- Ability of the alternatives to improve transit speeds on the corridor
- Ability of the alternatives to improve freight operations and safety on the corridor
- Support from Stakeholders
- Comparison of potential impacts to the environment

Each of these factors is explained in the following subsections.

9.1 Reduce Crashes and Address Known Safety Challenges on the Corridor

Addressing known safety challenges on the I-270 corridor is a project need, given its history of congestion related crashes and merging, exiting and weaving conflicts. The *Safety Assessment Report* identified the following recurring safety challenges:

- High Frequency of Rear End and Sideswipe Crashes: These crashes occur due to sudden braking and lane changes in congested conditions.
- Insufficient Shoulder Widths and Emergency Access: Narrow or nonexistent shoulders increase the likelihood of secondary crashes when disabled vehicles cannot clear travel lanes.
- Short Merge and Weaving Segments at Interchanges: These conditions contribute to frequent sideswipe and rear end collisions, especially near Vasquez Boulevard and I-76.

The Preferred Alternative improves safety compared to the Three General-Purpose Lanes Alternative by addressing these issues in the following ways.

Both the Three General-Purpose Lanes Alternative and the Preferred Alternative include improvements to acceleration and deceleration lanes at major interchanges, allowing vehicles to merge and exit at safer speeds, reducing crashes associated with abrupt lane change and sudden braking maneuvers.

A persistent issue along I-270 is the lack of space for disabled vehicles, emergency responders, and tow trucks to operate safely. Both alternatives provide inside and outside shoulders to accommodate disabled vehicles and reduce the likelihood of secondary crashes. The Safety Performance Function (SPF) analysis (included in the *Safety Technical Report*) indicates that as congestion increases, the likelihood of crashes rises disproportionately. While both the Three General-Purpose Lanes Alternative and the Preferred Alternative add an additional lane in each direction to increase capacity, the Preferred Alternative provides a designated area for entering and exiting the Express Lane, which substantially improves

traffic predictability and reduces crash risks. By limiting entry and exit points, this alternative helps prevent abrupt lane changes and last-minute merging decisions, which are leading contributors to rear end and sideswipe crashes along the I-270 corridor. A major contributor to crash severity is speed differentials between lanes. In the Three General-Purpose Lanes Alternative, congestion remains a concern, with fluctuating speeds and unpredictable traffic conditions increasing the risk of high-impact crashes.

Furthermore, recent enforcement efforts across the state to ensure proper use of Express Lanes (including increased patrol presence and automated toll enforcement) have resulted in notable crash reductions in other Express Lane corridors, reinforcing the safety benefits of Express Lane operations. The Preferred Alternative offers safety benefits not only within the Express Lane itself, but across the entire I-270 corridor. Drawing from CTIO data on other Express Lane corridors, implementation of Express Lanes, when combined with safe design elements such as adequate shoulders and buffers, and supported by active enforcement, has led to measurable reductions in crashes. The Preferred Alternative applies these same proven strategies to enhance safety throughout the corridor.

Unlike a third general-purpose lane, which can create unpredictable traffic patterns and encourage sudden lane changes, the Preferred Alternative introduces a controlled, Express Lane environment that uses defined entry and exit points, dynamic toll pricing, and consistent enforcement to limit weaving and reduce driver conflict. This design maintains free-flow conditions in the Express Lane, especially during peak periods, separating faster-moving vehicles from slower ones and creating more orderly traffic flow.

The Express Lane reduces demand on the adjacent general-purpose lanes by maintaining a lane that does not reach saturation and maintains consistent flow, even during peak hours. Traffic modeling showed that this not only improves speeds across all lanes but also stabilizes driver behavior, minimizing the turbulence, merging, and stop-and-go conditions; conditions found to contribute to rear-end and sideswipe crashes. The Preferred Alternative directly addresses the root causes of I-270's most frequent and severe crashes by improving lane discipline, managing access points, maintaining consistent traffic flow, and applying proven safety Express Lane design strategies to deliver a comprehensive solution to the corridor's longstanding safety challenges.

9.2 Improved Travel Time and Reliability and Congestion Management

Traffic congestion along the I-270 corridor is one of the most commonly reported stakeholder challenges, with recurring bottlenecks, unpredictable travel times, and degraded mobility, particularly during peak hours. The Preferred Alternative best addresses travel time reliability and congestion management.

The Preferred Alternative is designed to provide a consistently reliable option for traversing the corridor by maintaining near free-flow conditions in the Express Lane through dynamic pricing and priority vehicle use for transit vehicles and other vehicles with three or more passengers. Unlike the Three General-Purpose Lanes Alternative, which can still experience congestion as all lanes operate under the same conditions, the Preferred Alternative ensures that at least one lane remains uncongested, providing a reliable travel time option for eligible vehicles, including transit, HOV, and toll-paying drivers. The Preferred Alternative:

- Maintains higher operational speeds in the Express Lane and enhances overall vehicle throughput by optimizing traffic flow and preventing the complete breakdown of traffic flow due to peak hour congestion. Traffic modeling results show that vehicles in the Express Lane maintain average speeds between 29 and 41 mph during peak periods, while general-purpose lanes experience much lower speeds, ranging from 9 to 15 mph
- The Express Lane also manages congestion by reducing lane-changing conflicts, as drivers using the Express Lane are required to use designated entry and exit zones, rather than making unpredictable lane changes. By absorbing a portion of corridor traffic, the Preferred Alternative alleviates pressure on general-purpose lanes, resulting in higher overall speeds and less stop-and-go congestion across all lanes.

Microsimulation modeling reported in the *Traffic Technical Report* indicates that by shifting a portion of traffic from the general-purpose lanes into the Express Lane, the overall corridor congestion is reduced, benefiting all travelers, not just those using the Express Lane. This redistribution effect results in:

- Lower congestion levels in the general-purpose lanes, reducing stop-and-go conditions.
- Reduced variability in travel times, ensuring that drivers can better anticipate their commute durations. The Preferred Alternative supports reliable travel times by using dynamic toll pricing to prevent the express lane from reaching a congested state, ensuring a dependable option remains available for time-sensitive trips
- Improved consistency in traffic flow, minimizing speed fluctuations that contribute to crash risks. For example, traffic modeling indicates that the Express Lane Alternative reduces total PM peak hour travel time across the I-270 corridor by 53 percent, compared to only 26 percent under the Three General-Purpose Lanes Alternative.

Lastly, a key feature of the Express Lane in the Preferred Alternative is the opportunity to use dynamic toll pricing as a congestion management tool. Dynamic pricing allows the price of the toll to adjust based on traffic conditions to ensure that the Express Lane does not reach a congested state. This means that the Express Lane ensures that there is always a reliable option for time-sensitive trips, giving corridor users a predictable travel time option.

9.3 Transit on the Corridor

The Preferred Alternative is also specifically designed to support both existing transit service on the corridor and regional transit expansion by providing dedicated access for transit vehicles to use the Express Lane. The Express Lane provides faster and more reliable travel times for transit users, providing the opportunity for existing transit and expanded transit service to be more competitive with vehicles in the general-purpose lanes.

In the eastbound direction, average a.m. peak travel time for transit is approximately 26 minutes under the Three General-Purpose Lanes Alternative, compared to nearly 18 minutes for the Preferred Alternative, resulting in a projected transit travel time savings of over 8 minutes. During the p.m. peak, the same eastbound transit trip takes 41 minutes under the Three General-Purpose Lanes Alternative versus 25 minutes in the Preferred Alternative, resulting in a transit travel time savings of approximately 16 minutes.

In the westbound direction, a.m. peak transit travel time is projected to be approximately 31 minutes under the Three General-Purpose Lanes Alternative, while Preferred Alternative transit travel time is projected at 20 minutes, saving nearly 11 minutes. For the p.m. peak, westbound transit travel time is estimated at 29 minutes in the Three General-Purpose Lanes Alternative compared to 18 minutes in the Preferred Alternative, yielding a savings of approximately 11 minutes.

While the Three General-Purpose Lanes Alternative is also projected to see 5-10 minutes of peak period travel time saving compared to the No Action Alternative, transit vehicles would continue to operate with general-purpose vehicles and the alternative does not offer an option for “better than general-purpose” vehicle travel time benefits. The Preferred Alternative delivers substantially greater travel time savings and reliability in both directions and during both peak periods.

9.4 Improved Freight Operations on the Corridor

Freight mobility is a key consideration for the I-270 Corridor Improvements Project, as the corridor serves as a critical link in Colorado’s statewide freight network, connecting I-25, I-70, and I-76 while supporting major industrial hubs, distribution centers, and intermodal facilities. Additionally, I-270 is the designated hazardous materials (HAZMAT) and oversized load route through the Denver metropolitan area, as HAZMAT-carrying vehicles are restricted from using I-70. Ensuring efficient and reliable freight movement is therefore essential for both economic competitiveness and transportation safety.

Freight movement on I-270 is currently hindered by recurring congestion, particularly during peak periods when travel speeds drop significantly. The *Traffic Technical Report* highlights how bottlenecks at interchanges, frequent stop-and-go conditions, and slow travel speeds impact freight efficiency, leading to delays and higher operational costs.

Both the Three General-Purpose Lanes Alternative and the Preferred Alternative offer substantial benefits to freight operations along the I-270 corridor by expanding capacity, improving roadway geometry, and enhancing safety. Freight vehicles will benefit from the addition of a new lane in each direction, which will help reduce congestion, increase throughput, and improve overall traffic flow. Both alternatives also include upgraded interchange designs, longer acceleration and deceleration lanes, and widened shoulders, which will provide safer merging conditions and reduce lane-weaving conflicts that currently contribute to freight-related crashes. Additionally, the replacement of aging bridges and pavement rehabilitation will result in a more durable and reliable roadway surface, reducing maintenance-related disruptions and minimizing wear and tear on heavy trucks.

As reported in the *Traffic Technical Report*, freight vehicles are projected to experience similar travel time improvements under the a.m. peak hour; however, during the p.m. peak hour, the Preferred Alternative is projected to result in corridor-wide truck travel times that are approximately 15 minutes faster than the Three General-Purpose Lanes Alternative. The previously discussed ability of the Express Lane to serve as a congestion management tool that provides benefits to vehicles in both the Express Lane and the general-purpose lanes extends to projected benefits to freight operations on the corridor.

While the Three General-Purpose Lanes Alternative expands capacity that benefits freight operations by adding an additional lane in each direction, it does not include any active congestion management strategies, such as dynamic tolling or restricted access points. As a result, all lanes remain subject to the same demand and congestion patterns, which limits the corridor's ability to maintain consistent traffic flow during peak periods. This unmanaged condition makes the Three General-Purpose Lanes Alternative less effective for supporting long-term freight efficiency, especially as volumes grow.

In contrast, the Preferred Alternative includes an Express Lane that uses dynamic pricing to maintain free-flow conditions, preventing the lane from becoming saturated even during peak hours. While freight operational benefits were conservatively reported as truck travel times in general-purpose lanes, truck travel times still improved significantly under the Express Lane Alternative. For example, during the p.m. peak hour, eastbound truck travel time drops from 41 minutes (Three General-Purpose Lanes Alternative) to 25 minutes (Express Lane Alternative), reflecting a freight travel time savings of 16 minutes. Similarly, average truck speeds in general purpose lanes nearly double compared to the Three General-Purpose Lanes Alternative, improving from 8.94 mph to 14.94 mph eastbound, and from 9.86 mph to 17.72 mph westbound.

These outcomes demonstrate that the Preferred Alternative not only provides reliable trip options for freight vehicles that use the Express Lane, but improves freight operations in general-purpose lanes, leading to more reliable and efficient freight movement. By actively managing demand, the Preferred Alternative offers a more adaptable, long-term solution for supporting freight mobility on this critical statewide corridor.

The traffic analysis conservatively assumed that freight vehicles would not use the I-270 Express Lanes in the Preferred Alternative to better understand the impacts to freight operations. The travel time benefits for freight vehicles captured in the Traffic Technical Report would be expected to exist without relying on the potential for freight vehicles to use the Express Lanes.

9.5 Support from Stakeholders

The project team used an extensive stakeholder involvement approach leading up to the publication of this Draft EIS, which included community members; businesses in the corridor; trucking and freight companies; local interest groups, such as the Sand Creek Regional Greenway Partnership; and federal, state, and local agencies. During stakeholder outreach activities, the project team received feedback that stakeholders are supportive of moving a project forward quickly due to their concerns related to congestion and safety. Both the additional general-purpose lane and Express Lane have support and there is no clear preference for one lane type over the other. For more information, see the *Public and Stakeholder Involvement Technical Report*.

9.6 Construction and Operating Costs

The Three General-Purpose Lanes Alternative is estimated to cost \$789 million which includes the remaining preconstruction and construction costs as well as money spent to date on NEPA and other corridor improvements. The Preferred Alternative is estimated to cost \$806 million

which also includes the remaining preconstruction and construction costs as well as money spent to date on NEPA and other corridor improvements. The Preferred Alternative is expected to cost approximately \$17 million more (in 2025 dollars) than the Three General-Purpose Lanes Alternative, primarily due to the costs to design and construct the additional 8-foot for the Express Lane buffer area and the additional Intelligent Transportation Systems (ITS) and tolling equipment costs associated with that alternative.

While the Preferred Alternative requires a larger capital investment and increases total operating and maintenance costs, it also provides a potential source of capital funding and on-going operating and maintenance funds.

9.7 Financial Flexibility

While the Preferred Alternative requires more capital investment and increases total operating and maintenance costs, it also brings another source of capital to the project that could be critical within the current financial environment. Financial analysis is still underway to assess the financial feasibility of the Preferred Alternative and whether net revenue after operations, maintenance, and debt service will be contributed to the project; thus, reducing the need for traditional federal and state gas tax revenue. While it is unlikely that the Preferred Alternative tolls will pay for the entire cost of the project, it seems far more likely that tolls will support reasonably allocated costs, which can be attributed to tolling (for example, tolling infrastructure and tolls operations).

9.8 Comparison of Potential Impacts to the Environment

Slight differences in environmental impacts occur for Air Quality, Water Quality, and Visual Resources. These differences are summarized in the following subsections.

9.8.1 Air Quality

Quantitative emissions inventories were completed for criteria pollutants and mobile source air toxics (MSATs).

As shown in Table 11 (winter) and Table 12 (summer) below, the Preferred Alternative exhibits lower emissions than or the same emissions (Sulfur dioxide [SO₂]) as the Three General-Purpose Lanes Alternative due to the reduction in congestion.

Table 11. NEPA Comparative Analysis of Criteria Air Pollutant and Ozone Precursor Emissions (in U.S. tons per day) in January (Typical Weekday)

Pollutant	2023 Existing	2050 No Action	2050 3GPL	2050 2GPL+1EL
PM ₁₀	0.327	0.456	0.518	0.488
PM _{2.5}	0.033	0.011	0.011	0.010
CO	2.945	0.614	0.679	0.634
SO ₂	0.002	0.001	0.001	0.001
NO ₂	0.070	0.030	0.031	0.028
NO _x	0.906	0.160	0.167	0.153
VOC	0.172	0.061	0.069	0.065

PM₁₀ - coarse particulate matter (less than 10 microns in diameter)

PM_{2.5} - fine particulate matter (less than 2.5 microns in diameter)

CO - carbon monoxide

NO₂ - Nitrogen dioxide

NO_x - Nitrogen oxides

VOC - Volatile organic compounds

Table 12. NEPA Comparative Analysis of Criteria Air Pollutant and Ozone Precursor Emissions (in U.S. tons per day) in July (Typical Weekday)

Pollutant	2023 Existing	2050 No Action	2050 3GPL	2050 2GPL+1EL
PM ₁₀	0.275	0.374	0.422	0.397
PM _{2.5}	0.033	0.011	0.011	0.010
CO	3.411	0.699	0.777	0.726
SO ₂	0.002	0.001	0.001	0.001
NO ₂	0.061	0.023	0.024	0.022
NO _x	0.790	0.122	0.127	0.117
VOC	0.215	0.066	0.075	0.071

Toxic air pollutants, also known as hazardous air pollutants (HAPs), are those known to cause cancer or other serious health effects. The United States Environmental Protection Agency (EPA) identified a subset of this list that is now considered the nine priority MSATs: 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. As shown in Table 13 (winter) and Table 14 (summer), all priority MSATs with the exception of 1,3-butadiene are lower under the Preferred Alternative than the Three General-Purpose Lanes Alternative and 1,3-butadiene is the same across alternatives.

Table 13. NEPA Comparative Analysis of MSAT Air Pollutant Emissions (pounds per day) in January (Typical Weekday)

Pollutant	2023 Existing	2050 No Action	2050 3GPL	2050 2GPL+1EL
1,3-butadiene	0.549	0.000	0.000	0.000
Acetaldehyde	3.274	0.352	0.369	0.340
Acrolein	0.438	0.022	0.023	0.022
Benzene	4.898	0.832	0.939	0.882
Diesel PM	53.093	0.819	0.876	0.800
Ethylbenzene	5.058	2.037	2.317	2.177
Formaldehyde	5.941	0.388	0.414	0.383
Naphthalene	0.699	0.020	0.022	0.021
Polycyclic Organic Matter	0.360	0.009	0.010	0.009

Table 14. NEPA Comparative Analysis of MSAT Air Pollutant Emissions (pounds per day) in July (Typical Weekday)

Pollutant	2023 Existing	2050 No Action	2050 3GPL	2050 2GPL+1EL
1,3-butadiene	0.616	0.000	0.00	0.000
Acetaldehyde	3.317	0.358	0.376	0.346
Acrolein	0.445	0.024	0.025	0.023
Benzene	6.662	1.206	1.367	1.285
Diesel PM	53.093	0.819	0.876	0.800
Ethylbenzene	5.331	2.110	2.403	2.258
Formaldehyde	6.107	0.407	0.436	0.404
Naphthalene	0.717	0.023	0.026	0.024
Polycyclic Organic Matter	0.367	0.010	0.011	0.011

9.8.2 Water Quality

The Three General-Purpose Lanes Alternative would result in 128 acres of new impervious surface while the Preferred Alternative would result in 133 acres of new impervious surface, a result of the 8-foot buffer for the Express Lane. All other impacts would be the same under either Build Alternative.

9.8.3 Visual Resources

Long-term visual changes for both Build Alternatives would result primarily from widening I-270 to accommodate new travel and auxiliary lanes, widening bridges and shoulders, reconfiguring existing interchanges, and to a lesser extent, flattening some curves. Changes would be most noticeable to travelers driving on I-270. Although the highway would occupy a wider footprint and introduce some new highway features, changes would be compatible with

the visual character of the landscape, as they would have similar lines, colors, and textures, and repeat transportation elements already in the landscape.

The additional impacts for the Preferred Alternative include tolling infrastructure, such as overhead signage, toll cameras, and a slightly wider footprint to accommodate a buffer between the general-purpose lanes and Express Lane.

9.8.4 Right-of-Way

The existing right-of-way along the I-270 corridor is wide. The Build Alternatives require minor property acquisitions and easements. There is no difference between the Build Alternatives in terms of the amount of required proposed right-of-way.

9.8.5 Other Resources

There is very little or no difference between the build alternatives in terms of impacts to other resources. With mitigation, most project impacts can be avoided or minimized.

10.0 References

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Attachment A. Summary of Improvements Considered

All reasonable improvements identified from previous studies, through stakeholder engagement, and the project purpose and need are summarized in Table 1 through Table 4 below. The tables include a description of each improvement evaluated, the source of the improvement, and, where applicable, how the improvement was refined through the alternative development process. Retained improvements also indicate each alternative the improvement is included in, and eliminated improvements include a brief explanation as to why the improvement has been eliminated from further consideration.



Table 1 summarizes the mainline improvements considered, detailing each improvement's description, origin, development, and refinement/elimination process. As the alternative development process progressed, improvements were refined to better meet the project's purpose and need based on stakeholder feedback and the alternatives screening process. This table provides an overview of how each improvement evolved through the development process, to its final status in the build alternatives.

Table 1. Mainline Improvements Evaluated

Improvement Description and Other Information	Source	Elim ²	NA ³	BPT ⁴	MB ⁵	Two GPL and One TL ⁶	Three GPL	Two GPL and One EL ⁷	Two GPL and Two EL	Three GPL and One EL
Reconstruct Existing I-270 Lanes	Stakeholder feedback and comments CDOT maintenance feedback				X	X	X	X	X	X
Adding One General-Purpose Lane	2019 I-270 Traffic Study						X			X
Adding One or Two Express Lanes	2021 Colorado Express Lanes Master Plan - Express Lanes on I-270 were a high priority recommendation							X	X	X
Adding One Transit Only Lane	Identified by CDOT as a potential improvement to provide improve travel time reliability for transit vehicles					X				

² Elim - Eliminated as an option

³ NA - No Action Alternative

⁴ BPT - Bicycle, Pedestrian, and Transit Enhancements Alternative

⁵ Minimal Build Alternative

⁶ GPL - General-Purpose Lane, TL - Transit Only Lane

⁷ EL - Express Lane



Improvement Description and Other Information	Source	Elim²	NA³	BPT⁴	MB⁵	Two GPL and One TL⁶	Three GPL	Two GPL and One EL⁷	Two GPL and Two EL	Three GPL and One EL
Peak Hour Bus-on-Shoulder Transit Operations - Bus-on-shoulder operations were eliminated due to high freight traffic volumes and safety concerns. In addition, Colorado State Patrol had concerns about operational safety related to the bus-on-shoulder improvement. Alternatives advanced other improvements to more safely improve transit operations on the corridor.	RTD coordination meetings	X								



Improvement Description and Other Information	Source	Elim ²	NA ³	BPT ⁴	MB ⁵	Two GPL and One TL ⁶	Three GPL	Two GPL and One EL ⁷	Two GPL and Two EL	Three GPL and One EL
Solar-Powered Monorail System - The solar-powered monorail was eliminated from further consideration due to the high costs, technical challenges, and ability to accommodate transit on the corridor with less capital cost-intensive improvements	Public meeting suggestion	X								
Add Continuous Auxiliary Lanes Between I-76/York Street and Vasquez Boulevard	I-270 Traffic Analysis					X	X	X	X	X
Widen Inside and Outside Shoulders	Stakeholder feedback and comments				X	X	X	X	X	X
Add Emergency Turnouts and Turnarounds	Emergency and first responder stakeholder comments - included for further evaluation of safety and compatibility with other corridor improvements				X	X	X	X	X	X

Table 2 summarizes the interchange improvements considered within each alternative for the I-270 project. The table includes a description, original source, or rationale for its inclusion; any refinements made during the alternatives development process; and, where applicable, the reasons for its elimination. Improvements were refined based on engineering evaluations, community input, and alignment with environmental and operational goals. Some improvements were ultimately eliminated due to feasibility challenges and/or the ability of other improvements to better address the project's purpose and need.

Table 2. Interchange Improvements Evaluated

Improvement Description and Other Information	Source	Elim ⁸	NA ⁹	BPT ¹⁰	MB ¹¹	Two GPL and One TL ¹²	Three GPL	Two GPL and One EL ¹³	Two GPL and Two EL	Three GPL and One EL
Add one Westbound I-270 to Northbound I-25 Ramp Lanes	I-270 Traffic Analysis				X	X	X	X	X	X
New Eastbound Collector I-270 On-Ramp from Eastbound/Westbound I-76	I-270 Traffic Analysis				X	X	X	X	X	X
Separation of Westbound I-270 York Street and I-76 Off-Ramps	I-270 Traffic Analysis				X	X	X	X	X	X

⁸ Elim - Eliminated as an option

⁹ NA- No Action Alternative

¹⁰ BPT - Bicycle, Pedestrian, and Transit Enhancements Alternative

¹¹ Minimal Build Alternative

¹² GPL - General-Purpose Lane, TL - Transit Only Lane

¹³ EL - Express Lane



Improvement Description and Other Information	Source	Elim⁸	NA⁹	BPT¹⁰	MB¹¹	Two GPL and One TL¹²	Three GPL	Two GPL and One EL¹³	Two GPL and Two EL	Three GPL and One EL
Reconstruct Vasquez Boulevard Interchange as Partial Cloverleaf - Refined to include signalized right turns at the ramp terminal intersections based on stakeholder feedback.	Initially evaluated in the Vasquez Boulevard PEL Study - selected based on refined evaluation as part of the 2021/2022 I-270 Traffic Analysis, Freight stakeholder comments				X	X	X	X	X	X
Reconstruct Vasquez Boulevard Interchange as Diverging Diamond Interchange - Eliminated based on the ability of Partial Cloverleaf configuration to better address arterial operations on Vasquez Boulevard.	Initially evaluated in the Vasquez Boulevard PEL Study	X								
Reconstruct Vasquez Boulevard Interchange as Viaduct - Eliminated based on preliminary traffic analysis	Initially evaluated in the Vasquez Boulevard PEL Study	X								



Improvement Description and Other Information	Source	Elim⁸	NA⁹	BPT¹⁰	MB¹¹	Two GPL and One TL¹²	Three GPL	Two GPL and One EL¹³	Two GPL and Two EL	Three GPL and One EL
Reconstruct Vasquez Boulevard Interchange with One-Way Pairs Elevated Solution that would split the existing Vasquez Boulevard into one-way streets - Eliminated by the PEL Study	Initially evaluated in the Vasquez Boulevard PEL Study	X								
Reconstruct Vasquez Boulevard Interchange as Grade Separated Partial Cloverleaf - Alternative was eliminated from further consideration due to space constraints between East 56th Avenue and I-270	Citizen submitted alternative interchange design	X								
Improve Acceleration and Deceleration Lengths for Quebec Street Interchange Ramps	I-270 Traffic Analysis				X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim⁸	NA⁹	BPT¹⁰	MB¹¹	Two GPL and One TL¹²	Three GPL	Two GPL and One EL¹³	Two GPL and Two EL	Three GPL and One EL
Reconstruct I-76 Interchange as Full Movement Interchange - adding ramps to/from the west - Improvement was eliminated from further consideration due to adverse safety and traffic operations concerns	Stakeholder feedback and comments, I-270 Traffic Analysis	X								
Reconstruct York Street Interchange as Full Movement Interchange - adding ramps to from the west - Improvement was eliminated from further consideration due to adverse safety and traffic operations concerns	Stakeholder feedback and comments, I-270 Traffic Analysis	X								



Improvement Description and Other Information	Source	Elim⁸	NA⁹	BPT¹⁰	MB¹¹	Two GPL and One TL¹²	Three GPL	Two GPL and One EL¹³	Two GPL and Two EL	Three GPL and One EL
Reconstruction Quebec Street Interchange as Full Movement Interchange - adding ramps to from the east - Improvement was eliminated from further consideration due to adverse operational, safety, and environmental impacts	Stakeholder feedback and Comments, I-270 Traffic Analysis	X								

Table 3 provides an overview of the bicycle, pedestrian, and transit improvements identified for the purpose of improving and enhancing connectivity across I-270. Improvements were identified to address critical gaps in non-motorized and transit connectivity along the corridor and to provide safer crossings for pedestrians, bicyclists, and transit users. Each improvement is described along with its original source or rationale, any modifications made during the alternatives development process, and, if applicable, the reasons for its elimination.

Table 3. Bicycle, Pedestrian, and Transit Connectivity Improvements Evaluated

Improvement Description and Other Information	Source	Elim ¹⁴	NA ¹⁵	BPT ¹⁶	MB ¹⁷	Two GPL and One TL ¹⁸	Three GPL	Two GPL and One EL ¹⁹	Two GPL and Two EL	Three GPL and One EL
Add Wayfinding at Intersections and at Trail Junctions	Stakeholder feedback and comments, Sand Creek Regional Greenway Partnership plans			X	X	X	X	X	X	X
Reconstruct Tight Curves on the Sand Creek and South Platte River Trails - Refined to provide a center stripe on the trail on tighter curves to encourage trail users to remain on designated side of the trail	June 2023 Bike Tour, Stakeholder feedback and comments			X	X	X	X	X	X	X

¹⁴ Elim - Eliminated as an option

¹⁵ NA - No Action Alternative

¹⁶ BPT - Bicycle, Pedestrian, and Transit Enhancements Alternative

¹⁷ Minimal Build Alternative

¹⁸ GPL - General-Purpose Lane, TL - Transit Only Lane

¹⁹ EL - Express Lane



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
Bicycle and Pedestrian Enhancements on York Street over I-270	Stakeholder feedback and comments, Adams County Transportation Master Plan - York Street Widening Project			X	X	X	X	X	X	X
Reconfiguration of the South Platte River Trail Crossing	Stakeholder feedback and comments			x	X	X	X	X	X	X
Enhanced Lighting at the Burlington Ditch Underpass	Stakeholder feedback and comments			X	X	X	X	X	X	X
Colorado Boulevard/Brighton Boulevard Pedestrian Intersection Improvements While included in the Bicycle, Pedestrian, and Transit Enhancements Alternative, it does not directly address connectivity across I-270 and is an improvement identified in Commerce City's Walk.Bike.Fit plan	Stakeholder feedback and comments, Commerce City Walk.Bike.Fit. Plan			X						
Enhanced Lighting at the Brighton Boulevard Underpass	Stakeholder feedback and comments			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
New Multi-Use Path and Underpasses through the Vasquez Boulevard Interchange Area	Stakeholder feedback and comments			X	X	X	X	X	X	X
New Multi-Use Path on the East Side of the Vasquez Boulevard Bridge over Sand Creek	Stakeholder feedback and comments			X	X	X	X	X	X	X
New Multi-Use Path on the West Side of the Vasquez Boulevard Bridge over Sand Creek	Stakeholder feedback and comments			X	X	X	X	X	X	X
New Multi-Use Path Connection (Spur) from the West Side of the Vasquez Boulevard Bridge to Sand Creek Trail	Stakeholder feedback and comments			X	X	X	X	X	X	X
New 56th Avenue Sidewalks	Stakeholder feedback and comments, Commerce City Walk.Bike.Fit. Plan, Sand Creek Regional Greenway Partnership Walk2Connect Plan			X	X	X	X	X	X	X
South Sandcreek Drive and East 56th Avenue Connections to the Sand Creek Trail	Stakeholder feedback and comments, Sand Creek Trail Partnership Walk2Connect Plan			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim ¹⁴	NA ¹⁵	BPT ¹⁶	MB ¹⁷	Two GPL and One TL ¹⁸	Three GPL	Two GPL and One EL ¹⁹	Two GPL and Two EL	Three GPL and One EL
Sandcreek Drive and East 56th Avenue Intersection Improvements (Curb Ramps, Crosswalks)	Stakeholder feedback and comments, Commerce City Walk.Bike.Fit. Plan			X	X	X	X	X	X	X
Eudora Street and 56th Avenue Intersection Improvements (curb Ramps, Crosswalks)	Stakeholder feedback and comments			X	X	X	X	X	X	X
New Grade-Separated Bicycle and Pedestrian Overpass Over I-270 - A new overpass is proposed. An underpass connection below I-270 was eliminated due to challenges associated with the Sand Creek floodplain	Stakeholder feedback and comments			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
New Sidewalk on West Side of Quebec Street between Existing RTD Bus Stop (Stop Number 330320) and East 53rd Place - While included in the Bicycle, Pedestrian, and Transit Enhancements Alternative, these improvements are not in other build scenarios because improvements end at the truck stop and do not provide added connectivity across I-270	Stakeholder feedback and comments			X						



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
Widen Existing Sidewalk on East Side of Quebec Street between Northfield Boulevard and East 53rd Place - While included in the Bicycle, Pedestrian and Transit Enhancements Alternative, these improvements are not in other build scenarios because there is already an existing facility providing connectivity across I-270	Stakeholder feedback and comments			X						



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
Select Upgrades to Existing RTD Bus Stops on Quebec Street, in Front of TA Travel Center Truck Stop - While included in the Bicycle, Pedestrian, and Transit Enhancements Alternative, these improvements are not in other build scenarios because they do not provide added connectivity across I-270	Stakeholder feedback and comments			X						
New RTD Bus Stop at Quebec Street and Sandcreek Drive	Stakeholder feedback and comments			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
New Commuter Trail on the North Side of I-270 Connecting York Street to Quebec Street - While included in the Bicycle, Pedestrian, and Transit Enhancements Alternative, stakeholder feedback determined this provides a redundant trail to the existing Sand Creek trail and directed the project to focus on targeted improvements to pedestrian and bicycle crossings at key locations along I-270	Stakeholder feedback and comments			X						



Improvement Description and Other Information	Source	Elim¹⁴	NA¹⁵	BPT¹⁶	MB¹⁷	Two GPL and One TL¹⁸	Three GPL	Two GPL and One EL¹⁹	Two GPL and Two EL	Three GPL and One EL
New Trail on the South Side of I-270 Connecting York Street to South Platte River Trail - This enhancement has additional property impacts. While included in the Bicycle, Pedestrian, and Transit Enhancements Alternative, stakeholder feedback recommended the project focus on targeted improvements to pedestrian and bicycle crossings at key locations along I-270 that minimize property impacts	Stakeholder feedback and comments			X						



Table 4 summarizes the bridge replacements and improvements considered in each of the build alternatives for the I-270 project. Bridge replacements are required to address structural deficiencies, enhance safety, and improve traffic flow by ensuring that aging infrastructure meets current standards. Bridge replacements along the I-270 corridor were also evaluated to ensure that the I-270 Corridor Improvements Project would not limit future non-CDOT bicycle and pedestrian connectivity projects in the study area.



Table 4. Bridge Replacements and Improvements Evaluated

Improvement Description and Other Information	Source	Elim ²⁰	NA ²¹	BPT ²²	MB ²³	Two GPL and One TL ²⁴	Three GPL	Two GPL and One EL ²⁵	Two GPL and Two EL	Three GPL and One EL
I-270 Eastbound and Westbound Bridges over the South Platte River - Replacement of existing I-270 bridges over South Platte River Trail was refined to accommodate reconfiguration of the South Platte River Trail crossing under I-270 to improve user visibility around curves, increase vertical clearance from the I-270 overpass, and enhance lighting	Structure Inspection and Inventory Reports, Stakeholder feedback and comments			X	X	X	X	X	X	X

²⁰ Elim - Eliminated as an option

²¹ NA - No Action Alternative

²² BPT - Bicycle, Pedestrian, and Transit Enhancements Alternative

²³ Minimal Build Alternative

²⁴ GPL - General-Purpose Lane, TL - Transit Only Lane

²⁵ EL - Express Lane



Improvement Description and Other Information	Source	Elim²⁰	NA²¹	BPT²²	MB²³	Two GPL and One TL²⁴	Three GPL	Two GPL and One EL²⁵	Two GPL and Two EL	Three GPL and One EL
I-270 Eastbound and Westbound Bridges over the Burlington Ditch - Bridges are being replaced due to their age and deficiencies; design was refined to accommodate bicycle and pedestrian improvements included in the Commerce City Walk.Bike.Fit Plan	Structure Inspection and Inventory Reports, Stakeholder feedback and comments			X	X	X	X	X	X	X
I-270 Eastbound and Westbound Bridges over the Brighton Boulevard and UPRR and BNSF Railroads - Bridges are being replaced due to their age and deficiencies; design was refined to accommodate bicycle and pedestrian improvements included in the Commerce City Walk.Bike.Fit Plan	Structure Inspection and Inventory Reports, Stakeholder feedback and comments			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim²⁰	NA²¹	BPT²²	MB²³	Two GPL and One TL²⁴	Three GPL	Two GPL and One EL²⁵	Two GPL and Two EL	Three GPL and One EL
I-270 Eastbound and Westbound Bridges over 60th Avenue and BNSF Railroad - Bridges are being replaced due to their age and deficiencies; design was refined to accommodate bicycle and pedestrian improvements included in the Commerce City Walk.Bike.Fit Plan	Structure Inspection and Inventory Reports, Stakeholder feedback and comments			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim²⁰	NA²¹	BPT²²	MB²³	Two GPL and One TL²⁴	Three GPL	Two GPL and One EL²⁵	Two GPL and Two EL	Three GPL and One EL
York Street Bridge Over I-270 - Adams County Transportation Master Plan identified widening from East 58th Avenue to I-270 and from I-270 to SH2 44, but not over I-270. The bridge replacement design was refined to accommodate the number of through lanes and sidewalk improvements planned in the Adams County Transportation Master Plan	Structure Inspection and Inventory Reports, Adams County Transportation Master Plan - York Street Widening Project			X	X	X	X	X	X	X
Vasquez Bridge Over Sand Creek - Bridge is being replaced due to its age and deficiencies; design was refined to accommodate new bicycle and pedestrian improvements from Vasquez Boulevard to the Sand Creek Trail	Structure Inspection and Inventory Reports, Stakeholder feedback and comments			X	X	X	X	X	X	X



Improvement Description and Other Information	Source	Elim²⁰	NA²¹	BPT²²	MB²³	Two GPL and One TL²⁴	Three GPL	Two GPL and One EL²⁵	Two GPL and Two EL	Three GPL and One EL
Eastbound and Westbound I-270 over 56th Avenue Bridges - Bridges are being replaced due to their age and deficiencies; design was refined to improve vehicle, bicycle and pedestrian visibility around curves, add two 6-foot sidewalks, add on-street bicycle lanes, and enhance lighting	Structure Inspection and Inventory Reports, Stakeholder feedback and comments			X	X	X	X	X	X	X