



I-70 East

Alternative Analysis Technical Report Addendum

January
2016

I-70 East Final Environmental Impact Statement

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LIST OF ACRONYMS

CDOT	Colorado Department of Transportation
Denver	City and County of Denver
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration

1 PURPOSE OF THIS REPORT

This addendum supports the Alternatives Analysis Technical Report prepared in August 2014 for the I-70 East Supplemental Draft EIS. It presents the additional analysis performed since the 2014 Supplemental Draft EIS was published. The information contained in the 2014 Alternatives Analysis Technical Report is still pertinent. Updated text has been cross-referenced using the page numbers contained within the 2014 Alternatives Analysis Technical Report.

2 ALTERNATIVES UNDER CONSIDERATION

The Final EIS fully evaluates the No-Action Alternative, Revised Viaduct Alternative, and Partial Cover Lowered Alternative. Descriptions of the No-Action Alternative and Revised Viaduct Alternative are included in the August 2014 Alternatives Analysis Technical Report. The Partial Cover Lowered Alternative with Managed Lanes Option is referred to hereinafter as the Preferred Alternative, and is described in the following subsection. A description of the phasing for the Preferred Alternative also is detailed.

2.1 Preferred Alternative

As a result of the comments received on the Supplemental Draft EIS and additional stakeholder outreach and agency coordination; the Partial Cover Lowered Alternative has been refined to include elements of both the Basic and the Modified Connectivity Options of the Partial Cover Lowered Alternative as they were analyzed in the Supplemental Draft EIS. This document includes updated analysis of the refined Partial Cover Lowered Alternative and does not include multiple Connectivity Options.

The Partial Cover Lowered Alternative as it is presented in the Final EIS removes the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard, lowering the highway below grade in this area. It adds additional lane(s) in each direction from Brighton Boulevard to Tower Road. It also adds capacity from I-25 to Brighton Boulevard by restriping.

This alternative includes a cover over the highway in the vicinity of Clayton Street and Columbine Street. As part of this alternative, 46th Avenue will be located on the north and south sides of the highway. It will be a two-way street between Josephine Street and Milwaukee Street on both sides of the highway and one way in the other locations. This alternative eliminates the portion of 46th Avenue north of I-70 between Columbine Street and Clayton Street to allow for a seamless connection between Swansea Elementary School and the highway cover. As part of this alternative, access to and from I-70 at the Steele Street/Vasquez Boulevard interchange is maintained.

Lowering I-70 requires capturing offsite surface runoff that currently flows south to north. The offsite drainage system included in this alternative is designed to prevent the lowered section of I-70 from flooding. This storm drain system will be conveyed south of I-70 through

Globeville Landing Park and discharge to the South Platte River. Additionally, an onsite drainage system is designed north of I-70 to drain runoff from the highway.

The Preferred Alternative includes an overall approach to design and construction that technically would not preclude construction of a second cover over the highway from west of the Steele Street/Vasquez Boulevard interchange to east of Cook Street. This second cover will not be included as part of the Preferred Alternative.

The Operational Options of the Partial Cover Lowered Alternative—General-Purpose Lanes and Managed Lanes—remain the same as those analyzed in the Supplemental Draft EIS. They include two scenarios about how the additional capacity with the Build Alternatives will be managed and operated. The General-Purpose Lanes Option will allow all vehicles to use all the lanes on the highway with no restrictions, while the Managed Lanes Option implements operational strategies (such as pricing) for only the additional lanes while keeping the rest as general-purpose lanes. With the Managed Lanes Option, the additional lanes are separated from the general-purpose lanes with a striped buffer and direct connections from the managed lanes to I-225, I-270, and Peña Boulevard are provided.

The Partial Cover Lowered Alternative with Managed Lanes Option is identified as the Preferred Alternative for this project. For more details on the Preferred Alternative, refer to Chapter 3, Summary of Project Alternatives, in the Final EIS.

2.2 Phasing of the Preferred Alternative

Revenue sources for the I-70 East project include allocations from various state and local sources, but there remains a gap between the estimated cost of the project and the revenue available to build it. Because of these funding limitations, the project will be constructed in phases over time. Phase 1 is the only defined phase for the project at this time. Future phases have not been determined and will rely on future funding; therefore, any future phases are referred to as Phase 2.

2.3 Phase 1

Phase 1 incorporates portions of the identified Preferred Alternative, the Partial Cover Lowered Alternative with Managed Lanes Option. It includes all construction and mitigation commitments incorporated in the Preferred Alternative from Brighton Boulevard to Chambers Road.

In general, Phase 1 includes the complete reconstruction of I-70 from Brighton Boulevard to I-270 with pavement width for the addition of two tolled express lanes in each direction. Only one lane will be open for use until traffic demand is met to open the second lane. It also includes widening the remaining stretch from I-270 to Chambers Road to accommodate one additional lane in each direction and restriping from I-25 to Brighton Boulevard.

Phase 1 includes the construction of the highway cover between the Clayton Street and Columbine Street bridges and the associated urban landscape area on the cover. It will reconstruct the frontage roads, 46th Avenue North and South between Brighton Boulevard and Colorado Boulevard and Stapleton Drive North and South between Colorado Boulevard

and Quebec Street. Phase 1 also includes the drainage requirements from the Preferred Alternative.

Similar to the Preferred Alternative, Phase 1 includes an overall approach to design and construction that technically would not preclude construction of a second cover over the highway from west of the Steele Street/Vasquez Boulevard interchange to east of Cook Street. However, this second cover will not be included as a part of the Preferred Alternative or Phase 1.

2.4 Phase 2

Phase 2 incorporates the remaining improvements needed for the Preferred Alternative. This phase would stripe in an additional tolled express lane from Brighton Boulevard to Quebec Street—Phase 1 constructed this section of I-70 wide enough to accommodate the additional lane.

From Quebec Street to Chambers Road, I-70 would be widened for an additional tolled express lane in each direction, one going eastbound and one going westbound. From Chambers Road to Tower Road, capacity is increased by widening to accommodate additional tolled express lanes. Three proposed direct connections are planned from the tolled express lanes to I-270, I-225, and Peña Boulevard to accommodate regional and airport traffic. These direct connections result in a shift of eastbound I-70 to create room for the connections.

3 KEY ISSUES IDENTIFIED IN THE COMMENTS AND HOW THEY WERE ADDRESSED

As a result of comments received on the Supplemental Draft EIS, additional stakeholder outreach, and agency coordination, the Partial Cover Lowered Alternative has been refined to include elements of both the Basic and the Modified Connectivity Options of the Partial Cover Lowered Alternative as it was analyzed in the Supplemental Draft EIS. In general, the refined Partial Cover Lowered Alternative maintains the Steele Street/Vasquez Boulevard interchange access to I-70 as included in the Basic Option. The refined alternative also includes the 46th Avenue and local street connectivity improvements from the Modified Option.

No other issues relating to alternatives analysis were identified in the Supplemental Draft EIS comments that required additional analysis or revisions to the analyses or findings presented in the 2014 Technical Report.

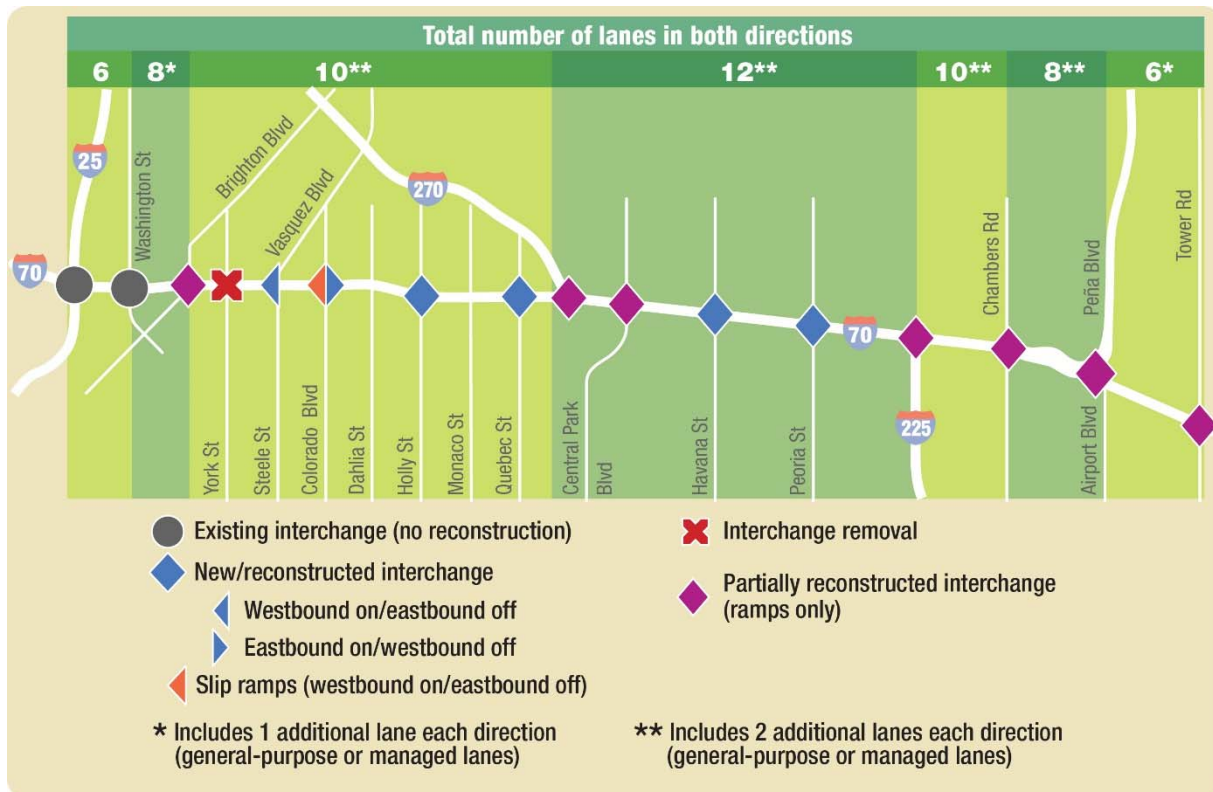
4 ADDITIONAL ANALYSIS COMPLETED SINCE THE SUPPLEMENTAL DRAFT EIS

4.1 Connectivity options

Section 5.3.2 on page 31 of the 2014 Technical Report was identified as Connectivity Options. However, as noted above, the Basic Option and Modified Option previously included with the Partial Cover Lowered Alternative have been combined into the refined alternative.

Highway access for the Partial Cover Lowered Alternative is provided through a split-diamond interchange at Colorado Boulevard and Steele Street/Vasquez Boulevard. Figure 1 illustrates the number of lanes and shows which interchanges will be reconstructed or remain the same.

Figure 1. Partial Cover Lowered Alternative lane configuration and interchange reconstruction



4.2 Capital and Maintenance Costs

Capital and maintenance costs have been updated since the Supplemental Draft EIS. See Table 1 and Table 2.

Table 1. Project alternatives capital cost summary

Alternatives/Options	Capital Cost, I-25 to Tower Road (in millions of 2016 dollars)	
	General-Purpose Lanes Option	Managed Lanes Option
No-Action Alternative, North Option	\$510	N/A
No-Action Alternative, South Option	\$600	N/A
Revised Viaduct Alternative, North Option	\$1,330	\$1,450
Revised Viaduct Alternative, South Option	\$1,450	\$1,570
Partial Cover Lowered Alternative	\$1,580	\$1,700

Table 2. Project alternatives maintenance cost summary

Alternatives/Options	Annual Maintenance Cost (in millions of 2016 dollars per year)
No-Action Alternative	\$9.3
Revised Viaduct Alternative	\$16.0
Partial Cover Lowered Alternative	\$11.3

Additionally, the economic output and the number of jobs created by construction of each alternative has been updated based on the new construction costs (see Table 3).

Table 3. Jobs created

Alternative/Option	Millions of 2016 dollars			Total Jobs (Person Years of Employment)
	Construction Value including Engineering ¹	Regional Economic Output	Total Earnings	
No Action Alternative, North Option	471.0	828.9	216.7	4,300
No Action Alternative, South Option	465.3	818.9	214.0	4,200
Revised Viaduct Alternative, North Option with General- Purpose Lanes	1,202.0	2,115.6	552.9	10,900
Revised Viaduct Alternative, South Option with General- Purpose Lanes	1,204.1	2,119.1	553.9	11,000
Revised Viaduct Alternative, North Option with Managed Lanes	1,322.5	2,327.6	608.4	12,000
Revised Viaduct Alternative, South Option with Managed Lanes	1,324.5	2,331.2	609.3	12,100
Partial Cover Lowered Alternative, with General- Purpose Lanes	1,408.3	2,478.6	647.8	12,800
Partial Cover Lowered Alternative with Managed Lanes	1,528.8	2,690.7	703.3	13,900

Sources: A.L. Politano and Carol J. Roadifer, Regional Economic Impact Model for Highway Systems, Transportation Research Record 1229, Transportation Research Board, Washington D.C., 1989. (Model adjusted to reflect inflation.) Atkins, 2015

1. Construction value does not include right-of-way costs.

4.3 Design variations from the Supplemental Draft EIS

Design variations were considered for the preliminarily identified Preferred Alternative from the Supplemental Draft EIS. They were not fully evaluated in that document, but CDOT and FHWA continued to seek feedback from the community, stakeholders, and public agencies regarding these variations.

The variations that were considered relate to the following elements:

- Access to I-70 at Steele Street/Vasquez Boulevard
- Highway cover
- Frontage roads
- North-south connectivity

These variations were analyzed further after publication of the Supplemental Draft EIS and were eliminated or moved forward as part of the Partial Cover Lowered Alternative in the Final EIS, as discussed in the following subsections.

4.3.1 Access to I-70 at Steele Street/Vasquez Boulevard

Recognizing that a full closure of the interchange at Steele Street/Vasquez Boulevard presented significant concerns to the City of Commerce City, Adams County, the Colorado Motor Carriers Association, and the business community at large, access to I-70 at Steele Street/Vasquez Boulevard is included as part of the Preferred Alternative, as discussed in this document.

The design variations for this interchange included a split diamond configuration with Colorado Boulevard that incorporates roundabouts or a signalized intersection at the ramp junction, as well as differences in ramp and frontage road locations and connections. After publication of the Supplemental Draft EIS, the project team analyzed and evaluated these variations.

The analysis considered both one-way and two-way frontage roads between Steele Street/Vasquez Boulevard and Colorado Boulevard. Based on the analysis, the roundabout variation did not perform as well as the signalized intersection. The roundabout resulted in excessive queuing and a potential to create a gridlock in the surrounding roadway network while the signalized intersection minimizes these issues. As a result of this analysis and due to additional opportunities to improve the design with the signalized intersection, the roundabout variation was eliminated from further consideration.

The analysis also identified the need to have one-way frontage roads between Steele Street/Vasquez Boulevard and Colorado Boulevard to improve operations and allow for maximum flexibility in the future design of the interchanges and frontage road system during the next phases of the project.

4.3.2 Highway Cover

Variations to the highway cover in front of Swansea Elementary School included differences in the length of the cover. The cover can be substantially extended eastward to Fillmore Street, or minimally extended beyond Clayton Street and Columbine Street. Although the extended cover improves the north-south community connectivity and provides additional useful public space in the neighborhood, it may create air quality implications and may result in a violation of regional air quality standards.

To minimize requirements related to fire, ventilation, and life safety, the cover's length is designed to be less than 1,000 feet. Additional cover length is proposed both easterly from the edge of Columbine Street and westerly from the edge of Clayton Street not to exceed 1,000 feet. This space is intended to increase the distance from the urban space on the cover and Swansea Elementary School to the edge of the cover. It will serve as a transition area that would decrease noise levels in the cover area and at the school from the highway. It also allows for the inclusion of certain aesthetic treatments.

Although a second cover is not included as part of the Preferred Alternative, the design of the highway does not preclude construction of a second cover at a later date.

4.3.3 Frontage Roads

Several different frontage road systems were evaluated between Brighton Boulevard and Quebec Street on both sides of I-70, including two-way frontage roads for the entire length, a combination of one-way and two-way roads, and one-way roads for the entire length.

In an effort to maximize local connectivity, the analysis indicated the best option was to use a combination of one-way and two-way frontage roads. The final solution was to have one-way frontage roads between Brighton Boulevard and Josephine Street, two-way between Josephine Street and Milwaukee Street, one-way between Milwaukee Street and Quebec Street.

Further analysis indicated the potential to improve safety around the school and to promote better accessibility to the cover would be achieved through the elimination of the frontage road between Columbine Street and Clayton Street on the north side of I-70.

4.3.4 North-South Connectivity

Design variations included additional connections across the highway for all transportation modes, including vehicles, bicycles, and pedestrians. Design variations for north-south crossings included a new multimodal crossing at Fillmore Street, and moving the Monroe Street crossing to Jackson Street.

The following north/south connections from Brighton Boulevard to Quebec Street are included, maintained, or eliminated based on the analysis and continued coordination:

- Brighton Boulevard: vehicular connection under I-70 remains
- York Street: vehicular connection across I-70 is maintained as a one-way street
- Josephine Street: vehicular connection across I-70 is maintained as a one-way street
- Columbine Street: vehicular connection across I-70 is maintained as a two-way street
- Elizabeth Street: direct vehicular connection south of I-70 does not currently exist; Elizabeth Street between 47th Avenue and 46th Avenue North will be vacated to accommodate the school improvements
- Thompson Court: vehicular connection to 46th Avenue is maintained; access across I-70 does not currently exist
- Clayton Street: vehicular connection across I-70 is maintained as a two-way street
- Fillmore Street: vehicular connection across I-70 is added as a two-way street

- Milwaukee Street: vehicular connection to 46th Avenue is maintained; access across I-70 does not currently exist
- Steele Street/Vasquez Boulevard: vehicular connection across I-70 is maintained as a two-way street
- Cook Street: vehicular connection across I-70 is added as a two-way street
- Madison Street: vehicular connection to 46th Avenue South is maintained; access to 46th Avenue must be made via proposed Monroe Street one block east; access across I-70 does not currently exist
- Monroe Street: vehicular connection across I-70 is added as a two-way street; new roadway is extended north and south to replace the eliminated Garfield Street connection
- Garfield Street: connection across I-70 is eliminated and replaced by proposed Monroe Street
- Colorado Boulevard: vehicular connection over I-70 remains
- Dahlia Street: vehicular connection under I-70 remains
- Holly Street: vehicular connection under I-70 remains
- Monaco Street: vehicular connection under I-70 remains
- Quebec Street: vehicular connection under I-70 remains

5 TECHNICAL REPORT ERRATA

The following listing shows revisions and clarifications to the Alternatives Analysis Technical Report of the I-70 East Supplemental Draft EIS that do not constitute new findings or analysis.

5.1 I-270/I-76 Reroute

New text noting congestion and safety conditions had been added. It reads as follows:

“The I-270/I-76 reroute does not meet the project’s purpose and need because it would add safety and congestion problems rather than improving those that exist today. While, in sense, removing I-70 would “eliminate” the current congestion and safety problems the project seeks to remedy (as there would no longer be an I-70 on that alignment), after its removal, traffic volumes on local streets will increase and transfer the safety and mobility problems from I-70 to the local network. In essence, the same issues that underlay the present need for the project would only be duplicated and compounded in the same location, albeit on different infrastructure, by the removal and reroute of I-70.”

The text describing negative mobility impacts has been revised to read as follows:

“The I-270/I-76 reroute increases out-of-direction travel, causing mobility issues. Even small increases in mileage can have large effects on fuel consumption, costs, and emissions. As shown in the figure to the right, approximately 50 percent of the traffic heading west on I-70 continues past I-25, staying on I-70. The Reroute Alternative adds two miles of out-of-direction travel for these vehicles. Thirty-five percent of the traffic heading west on I-70 exits to southbound I-25. This alternative adds four miles of out-of-direction travel for these vehicles resulting in additional travel times.”

New text noting financial feasibility had been added. It reads as follows:

“The I-270/I-76 reroute requires more than 12 miles (5.5 miles of which are east of I-25) of major highway widening along I-270 and I-76 to accommodate the relocated traffic and is estimated to cost approximately \$4 billion. This would increase the project construction cost twice as much as the alternatives on the current alignment removing the chances of near-term funding for the project. This estimate was prepared by the project team and verified by Denver staff for accuracy.

This estimate is a high-level cost analysis based on typical construction costs for bridge and highway construction per lane mile and average right-of-way costs. However, it is likely to be a conservative estimate because it does not include the cost of converting the current I-70 and 46th Avenue to a major arterial. Estimates also do not include improvements to I-25 between I-76/I-270 and existing I-70 to accommodate traffic traveling south on I-25 towards downtown Denver. Further, this estimate does not account for possible contaminants in this heavy manufacturing and warehousing area, or the cost of mitigating impacts to other important environmental resources and communities.”

Appendix A of this addendum presents a technical memorandum explaining the reasons, in more detail, why the I-270/I-76 Reroute Alternative was eliminated.

5.2 Operational Options, Managed Lanes Option

Figure 33, Typical Section of Managed Lanes Option between I-225 and I-270. This graphic displayed a 10-lane cross section when it should have displayed a 12-lane cross section. An additional general-purpose lane in each direction should have been included on the figure.

Attachment C – Appendix A.
Elimination of I-270/I-76 Reroute
Alternative



Technical Memorandum

To: CDOT and FHWA Management
From: I-70 Project Team
Date: June 2012 – Updated August 2015
Subject: Elimination of I-270/I-76 Reroute Alternative

Due to the intense public interest regarding the I-270/I-76 reroute alternative, the I-70 Project Team prepared this memorandum to explain in detail why this alternative is not reasonable given the purpose and need for the project and will not be fully evaluated in the range of alternatives for the I-70 East project.

1.0 BACKGROUND

Currently, I-70 between I-25 and Tower Road is one of the most heavily traveled and congested highway corridors in the region and state. The corridor provides a number of important transportation functions including interstate and intrastate travel along I-70; regional access from downtown Denver and the metropolitan area to Denver International Airport; linkage as an inner beltway between I-225 and I-270; and access to adjacent employment areas, neighborhoods, and new development centers. In July 2003, Colorado Department of Transportation (CDOT) initiated a study to improve transportation along the I-70 highway corridor from I-25 to Tower Road. Using input from scoping, data gathering, and technical analysis, the project purpose and need was developed.

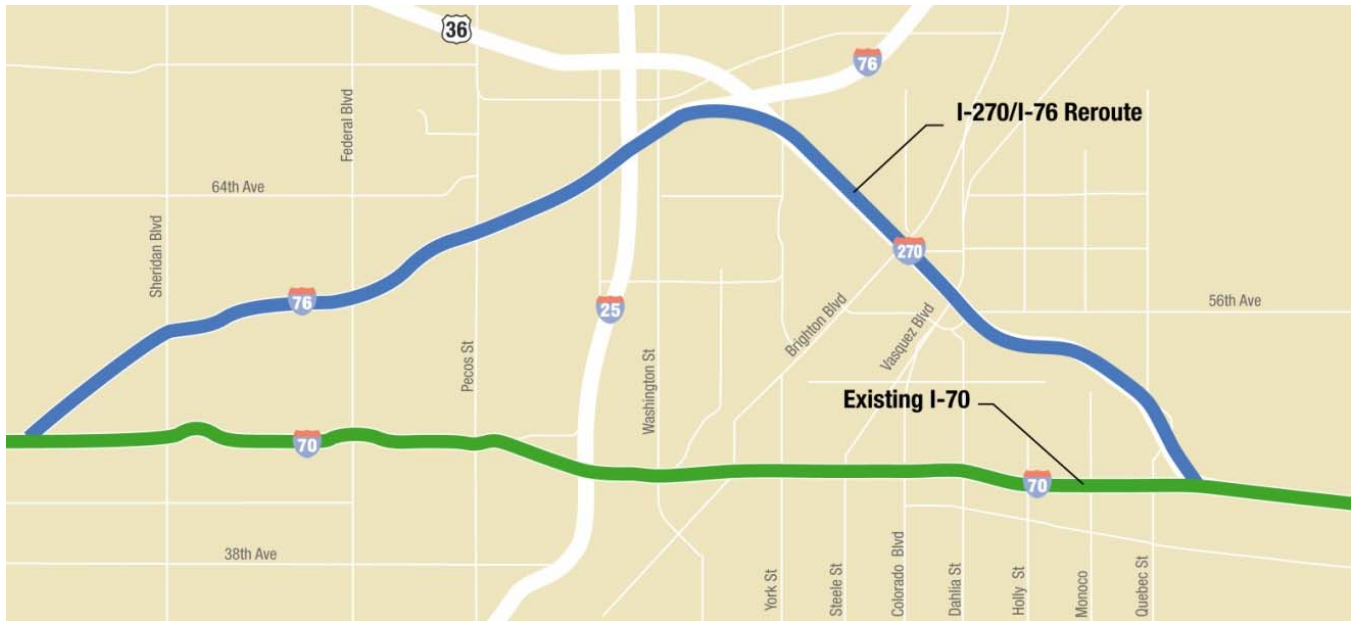
The purpose of the project is to implement a transportation solution that improves safety, access, and mobility and addresses congestion on I-70 in the project area. The need for this project results from the following issues:

- Transportation infrastructure deficiencies
- Increased transportation demand
- Limited transportation capacity
- Safety concerns

Several alternatives for the project were developed based on input from the community at corridor-wide meetings, through involvement with affected agencies at scoping and committee meetings, and from previous studies and new concepts developed by the project team.

One of the alternatives initially considered would reroute I-70 along I-270 and I-76 (shown in Figure 1). The existing viaduct between Brighton Boulevard and Colorado Boulevard would be removed leaving 46th Avenue in place, and the remaining portion of I-70 from Colorado Boulevard to I-270 would be converted to a city street. This alternative also would require the reconstruction of the I-76/I-25 interchange and major widening of I-25, I-270, and I-76 (currently 4 lanes each) for approximately 12 miles to accommodate relocated traffic.

Figure 1
I-270/I-76 Reroute Alternative



After identifying the initial alternatives, the project team performed a four-level screening process to refine and evaluate the alternatives using more detailed goals and objectives that were developed based on the project's purpose and need. CDOT and Federal Highway Administration (FHWA) eliminated the I-270/I-76 reroute alternative from consideration as part of the first level of this screening process as documented in the 2008 Draft EIS.

After the 2008 Draft EIS was published, based on requests and comments received from the public, the project team reexamined the I-270/I-76 reroute alternative as part of a comprehensive review of past decisions. The intent of this reexamination was to ensure that past decisions and assumptions were still valid given new information and community feedback.

The additional analysis confirmed the earlier decision to remove the I-270/I-76 reroute alternative from consideration. Described below are the primary reasons for not advancing this alternative as a result of the additional analysis.

2.0 REASONS FOR ELIMINATION OF THE I-270/I-76 REROUTE

The main reason for the elimination of this alternative is that it does not meet the project's purpose and need, which is to implement a transportation solution that improves safety, access, and mobility and addresses congestion on I-70. Specifically, CDOT examined the following issues to make this determination.

2.1 Does not improve congestion and safety conditions

The I-270/I-76 reroute does not meet the project's purpose and need because it would add safety and congestion problems rather than improving those that exist today. While, in sense, removing I-70 would "eliminate" the current congestion and safety problems the project seeks to remedy (as there would no longer be an I-70 on that alignment), after the its removal, traffic volumes on local streets will increase and transfer the safety and mobility problems from I-70 to the local network. In essence, as explained further below, the same issues that underlay the present need for the project would only be duplicated and compounded in the same location, albeit on different infrastructure, by the removal and reroute of I-70.

A travel analysis was performed using the Denver Regional Council of Governments (DRCOG) 2035 Regional Travel Demand Model, which simulated the rerouting of I-70 between Wadsworth and Central Park Boulevards on the I-270 and I-76 corridors in conjunction with a new 46th Avenue/48th Avenue arterial. I-270 and I-76 would be widened to 6-lanes in each direction, and the new 46th/48th Avenue would be either 4 or 6 lanes. For more information regarding the reroute modeling efforts and assumptions please refer to the “FEIS_2035_ReRoute Scenario Travel Demand Summary_2_13_15” memo that can be found in the appendix of this document.

Currently there are 684 businesses within the quarter-mile buffer on each side of I-70 between I-25 and I-270 with approximately 11,408 employees that would lose highway access with rerouting I-70 and will be forced to use surface streets. Rerouting I-70 while leaving 46th Avenue at its current location encourages highway users needing to access these locations to use 46th Avenue to reach their destinations rather than staying on I-70. Rerouting I-70 will also force delivery trucks and other large vehicles to use 46th Avenue frequently to reach the industrial areas and businesses that located near the existing I-70. The resulting high traffic volumes and the truck traffic on 46th Avenue could degrade the quality of the neighborhood and cause safety concerns for neighborhoods, pedestrians, bicyclists, and motorists.

Figure 2 shows the potential effect on daily traffic on arterial roadways (4-lane 46th/48th Avenue scenario) if I-70 were rerouted. Roadways that are shown in green would attract lower traffic levels if I-70 was re-routed while those in orange and red would carry higher levels of traffic. As shown in the figure, some arterials close to the I-70 alignment are relieved, while some arterials close to the expanded I-270/I-76 corridor realize increases in traffic. The arterial grid connecting downtown to the east corridor encounters high levels of traffic volumes. An additional scenario, with a 6-lane principal arterial (Figure 3) for 46th Avenue, was also modeled for a comparison.

Figure 2
 Change in daily traffic with 46th Avenue as a 4-lane arterial

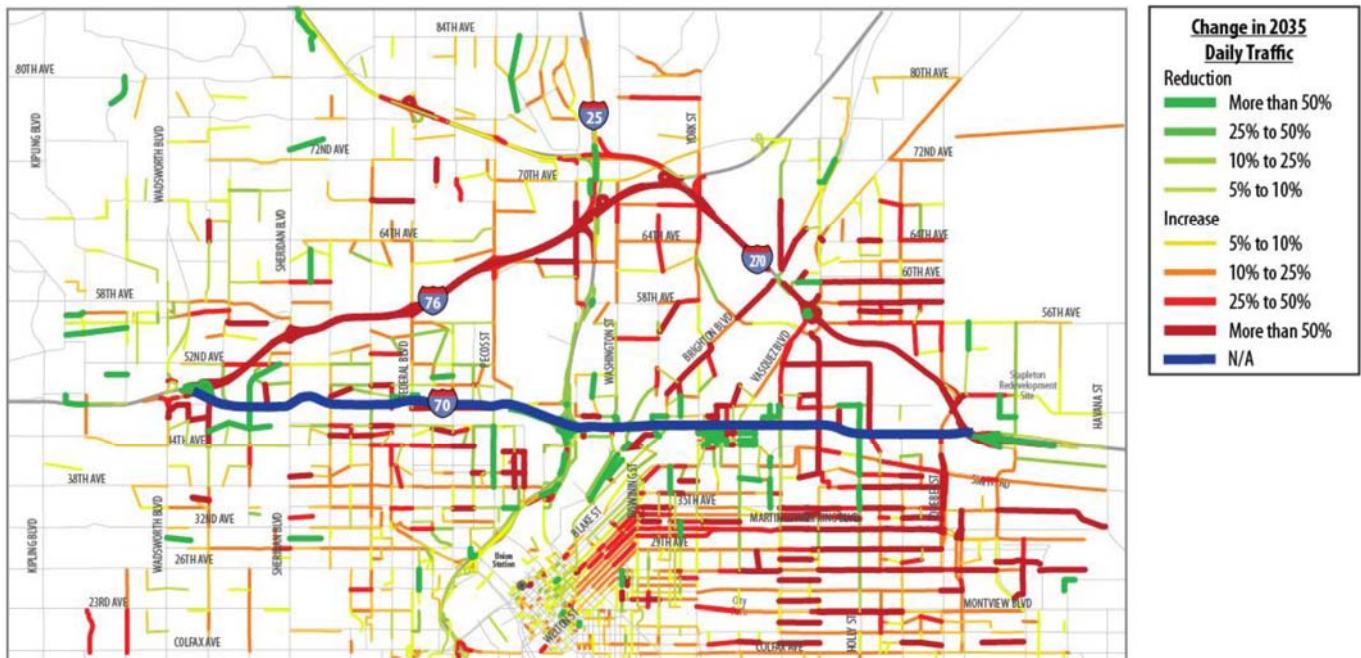
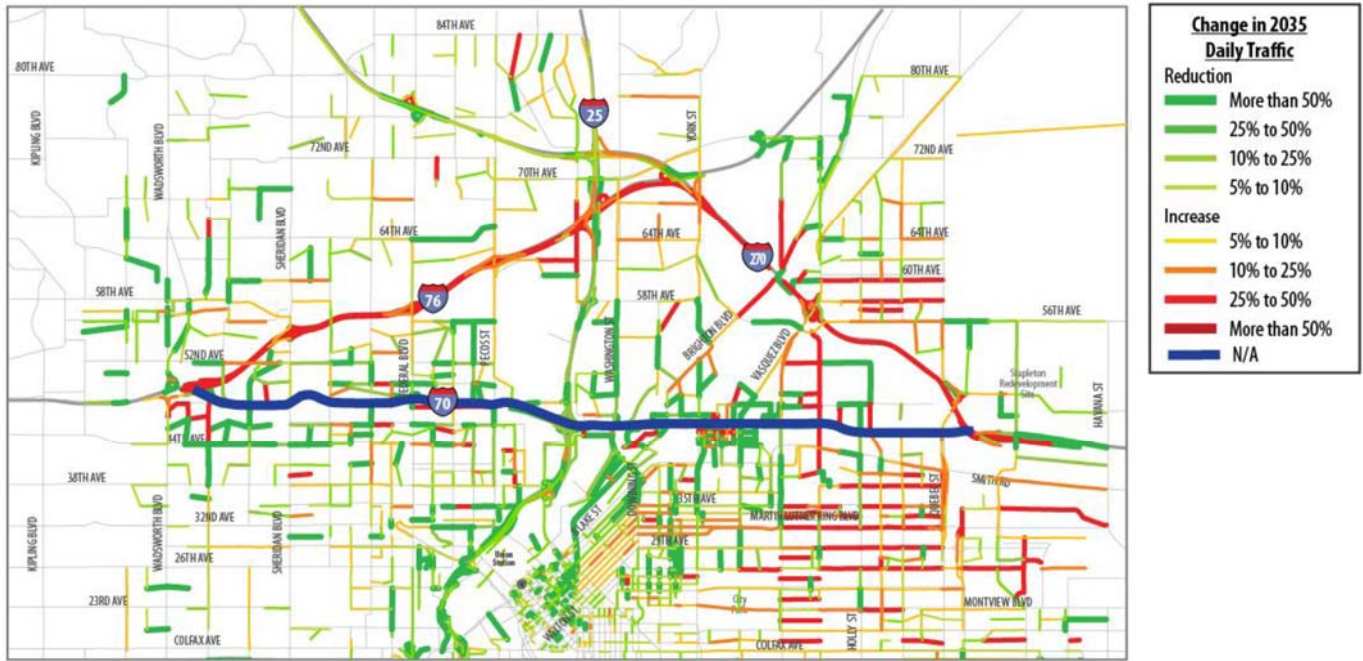


Figure 3
 Change in daily traffic with 46th Avenue as a 6-lane principal arterial



As seen in Figure 2 and Figure 3, the analysis shows that the traffic on the arterials west of I-25 is reduced with the I-270/I-76 reroute; however, this reduction results in major traffic increase in the arterials east of I-25. The local street networks east of I-25 do not have the capacity to hold the forecasted traffic volumes; therefore, the increase in the local street traffic will result in safety issues and major delays. The responsibility for improving these problems would then fall on the local jurisdictions.

Table 1 shows the increased traffic on 46th/48th Avenue. The average daily traffic for both Reroute scenarios (4-lane and 6-lane 46th/48th Avenue), ranges from 30,000 to 60,000 (as 4-lane) and from 40,000 to 75,000 vehicles a day (as 6-lane) in 2035, resulting in congested conditions. The 6-lane scenario processes higher volumes in comparison to the 4-lane scenario resulting in a reduction in the amount of additional traffic on other arterials in the traffic impact analysis area. The traffic volumes on 46th/48th Avenue in the re-route analysis are typically 4-6 times higher than the traffic volumes in the Partial Covered Lowered Alternative and 10 to 15 times higher than on the levels on 46th Avenue in 2012.

Table 1
46th/48th Avenue 2035 traffic volumes

46th/48th Ave Section Between	2035 Average Daily Traffic			
	Existing* (2012)	Partial Cover Lowered Alternative**	Reroute 4-Lanes 46 th Ave	Reroute 6-Lanes 46 th Ave
I-270 Ramps & Quebec St.	-	-	57,800	75,175
Quebec St. & Monaco St.	-	24,100	55,200	73,800
Monaco St. & Ivy St.	-	8,100	40,150	55,400
Ivy St. & Holly St.	-	8,400	39,500	55,200
Holly St. & Dahlia St.	-	11,100	40,100	54,150
Dahlia St. & Colorado Blvd.	-	10,200	33,900	47,450
Colorado Blvd. & Steele St.	2,800	23,250	34,900	49,750
Steele St. & Clayton St.	7,000	7,050	47,000	62,400
Clayton St. & Josephine St.	6,500	11,050	47,100	63,900
Josephine St. & York St.	5,900	13,800	47,050	63,500
York St. & Brighton Blvd.	2,900	13,200	45,800	62,000
Brighton Blvd. & E 47th Ave.	3,800	14,800	36,200	49,000
E 47th Ave. & Washington St.	-	-	36,400	49,000
Washington St. & Lincoln St.	-	-	59,400	75,500
Lincoln St. & I-25 Ramps	-	-	62,800	77,600
Pecos St. & I-25 Ramps	-	-	37,650	43,750
Pecos St. & Zuni St.	-	-	33,600	40,200
Zuni St. & Federal Blvd.	-	-	32,050	39,050
Federal Blvd. & Lowell Blvd.	-	-	40,000	49,100
Lowell Blvd. & Tennyson St.	-	-	38,500	48,050
Tennyson St. & Sheridan Blvd.	-	-	39,700	48,750
Sheridan Blvd. & Harlan St.	-	-	38,050	45,500
Harlan St. & I-76 Ramps	-	-	37,900	42,700

* The existing conditions daily traffic volumes were estimated based on the available 2012 peak traffic counts.

**46th Avenue volumes are forecasted with a split diamond interchange at Colorado and Vasquez/Steele Boulevard and 46th Avenue is configured as two lane one way frontage roads on either side of I-70. Note that there is no arterial similar to 46th/48th Avenues west of I-25

As these projections demonstrate, the increase in 46th/48th Avenue traffic introduces safety, access, and mobility issues in the surrounding neighborhoods and therefore fails to address the project's purpose and need.

2.2 Negatively affects Mobility

There would be an increase in out-of-direction travel, causing mobility issues. Of the traffic heading west on I-70, approximately 50 percent continues past I-25, staying on I-70. The Reroute Alternative adds two miles of out-of-direction travel for these vehicles. Thirty-five percent of the traffic heading west on I-70 exits to southbound I-25. This alternative adds four miles of out-of-direction travel for these vehicles resulting in additional travel times.

2.3 Eliminates Emergency Access and redundancy, reducing Safety

The 2008 Draft EIS did not fully describe the importance of I-270 serving as the alternate route to I-70 for emergency access during major incidents or extreme congestion. I-70 and I-270 serve as reliever routes when one highway or the other becomes congested or closed due to accidents. With the reroute, the redundancy of the highway network, which is important for emergency response in the area, is limited. If I-70 was rerouted to combine with I-270, there would be no alternate highway connecting the Denver neighborhoods to the rest of the region.

2.4 Financial Feasibility

This alternative requires more than 12 miles (5.5 miles of which are east of I-25) of major highway widening along I-270 and I-76 to accommodate the relocated traffic and is estimated to cost approximately \$4 billion. This would increase the project construction cost twice as much as the alternatives on the current alignment removing the chances of near-term funding for the project. This estimate was prepared by the project team and verified by City and County of Denver staff for accuracy.

This estimate is a high-level cost analysis based on typical construction costs for bridge and highway construction per lane mile and average right-of-way costs. However, it is likely to be a conservative estimate because it does not include the cost of converting the current I-70 and 46th Avenue to a major arterial. Estimates also do not include improvements to I-25 between I-76/I-270 and existing I-70 to accommodate traffic traveling south on I-25 towards downtown Denver. Further, this estimate does not account for possible contaminants in this heavy manufacturing and warehousing area, or the cost of mitigating impacts to other important environmental resources and communities.

2.5 Additional Considerations

CDOT has invested nearly a decade seeking public input on this project; particularly from the adjacent neighborhoods and the communities most impacted by the project alternatives. The Preferred Alternative Collaborative Team (PACT), consisting of community, business, and stakeholder agency representatives, was initiated after the publication of the Draft EIS in 2008 to identify the preferred alternative for the project. Based on additional analysis and community input, the group reached a consensus to keep I-70 at its current location. The PACT determined that keeping I-70 at its current location rather than rerouting or realigning it is the most beneficial to the surrounding communities, businesses, and the transportation system, because of the amount of traffic that would be on 46th Avenue if the highway was moved.

In addition, CDOT continues to receive statements from Commerce City, the North Area Transportation Alliance, and Colorado Motor Carriers Association restating their opposition to rerouting I-70 from its current location. Commerce City has expressed continued opposition to any reroute of I-70, citing the decision of the PACT and concern with the impact to the city's planned economic development along I-270. In addition to Commerce City, the I-270/I-76 reroute would affect several additional communities including Adams County, Jefferson County, and Arvada. A letter from Commissioner Eva Henry of Adams County; Mayor Michael Hancock of Denver; and Mayor Sean Ford of Commerce City was received on June 6th expressing Adams County, City and County of Denver, and Commerce City's opposition to move the highway from its current location. Based on input received to date, support for the I-270/I-76 reroute primarily comes from neighborhoods outside of the impacted area.

This alternative also creates new impacts to Clear Creek and the South Platte River by crossing Clear Creek multiple times and the South Platte River once.

3.0 CONCLUSION

Based on the reasons discussed earlier in this memorandum, the project team eliminated the I-270/I-76 reroute in early stages of the alternatives screening process. The I-270/I-76 reroute alternative was reexamined and reevaluated based on the most recent available data during the Supplemental Draft EIS analysis process. The additional analysis confirmed that this alternative does not address the project's purpose and need (safety, mobility, access) and therefore is not considered a reasonable and viable alternative