CHAPTER 3: SUMMARY OF PROJECT ALTERNATIVES

The alternatives considered for the I-70 East EIS resulted from extensive agency involvement and public outreach, combined with detailed environmental and technical analyses. Information on alternative development since the beginning of the project is discussed in this chapter, starting with the most recent information.

This chapter provides a detailed description of alternatives and options that are evaluated in the Final EIS and identifies the project’s Preferred Alternative. It also discusses the design variations that were included in the Supplemental Draft EIS.

The chapter then reviews the initial alternatives that were developed. The goals and objectives are discussed, followed by the screening process that developed the alternatives evaluated in the 2008 Draft EIS and 2014 Supplemental Draft EIS. It also describes the reasons for elimination of the Reroute and Realignment Alternatives.
Chapter 3: Summary of Project Alternatives

3.1 What alternatives are fully evaluated in this document?

A range of reasonable alternatives has been considered during the development of this project, and they are discussed later in this chapter. The alternatives that are fully evaluated in this document include the No-Action Alternative and two Build Alternatives (the Revised Viaduct Alternative and the Partial Cover Lowered Alternative). Detailed descriptions of these alternatives are included in the following subsections.

3.1.1 No-Action Alternative

The No-Action Alternative includes existing, planned, and programmed roadway and transit improvements in the project area. These improvements also are part of all Build Alternatives considered and are defined by the DRCOG 2035 MVRTP (DRCOG, 2015b). Chapter 4, Transportation Impacts and Mitigation Measures, lists and explains existing and programmed roadway and transit improvements in more detail.

The No-Action Alternative does not meet the project’s purpose and need, but it provides a baseline against which the Build Alternatives can be compared, so it is analyzed in this document.

A no-action alternative for highway projects normally includes short-term safety and maintenance improvements that continue the operation of the roadway while avoiding substantial capital investment. Because of the deteriorating

Since the Supplemental Draft EIS was published in August 2014, additional analyses and content review have been performed for many of the resources discussed in this document. These updates, along with changes resulting from the comments received on the Supplemental Draft EIS, have been incorporated into this Final EIS. In this chapter, the updates include the following items:

- The Partial Cover Lowered Alternative design was updated and multiple connectivity options for this alternative were eliminated.
- The design variations for the Partial Cover Lowered Alternative were incorporated or eliminated.
- Capital and maintenance cost estimates were updated.
- Information on the state and regional transportation planning process was moved to Section 5.4, Land Use.
- Information from the 2008 Draft EIS was included to provide a more inclusive description of the initial alternatives and screening process.

Definition of a “reasonable” alternative

The term “reasonable” is defined by the CEQ as those alternatives that are “practical or feasible from the technical and economic standpoint and using common sense.” (CEQ’s "Forty Questions")

No-Action Alternative

While the No-Action Alternative is not a true no-build scenario, this document generally refers to the Build Alternatives (the Revised Viaduct Alternative and the Partial Cover Lowered Alternative) as those with additional capacity.
condition of the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard, the No-Action Alternative for this project includes a total replacement of the viaduct. This replacement is necessary to maintain safe operations of I-70. The No-Action Alternative does not include additional travel lanes, so the lane configuration is the same as the existing conditions and I-70 will remain three lanes in each direction. There are no improvements proposed between I-25 and Brighton Boulevard or Colorado Boulevard and Tower Road. Exhibit 3-1 illustrates the number of lanes for this alternative and shows which interchanges will be reconstructed or remain the same.

Exhibit 3-1  No-Action Alternative Lane Configuration and Interchange Reconstruction

The existing width of the highway bridge from Brighton Boulevard to Colorado Boulevard (three lanes in each direction, six lanes total) is approximately 85 feet.

There are two Expansion Options (see Exhibit 3-2) for reconstructing the viaduct with the No-Action Alternative: the North Option and the South Option.

The North Option pushes the north edge of the highway approximately 70 feet north of the existing viaduct, while the South Option pushes the south edge of the highway 60 feet south. To allow for phasing of construction by accommodating the traffic flow during construction, a 22-foot inside shoulder is included in the design for westbound I-70 for the North Option and eastbound I-70 for the South Option.
Reconstruction of the existing viaduct in the No-Action Alternative requires additional right of way to maintain traffic flow on I-70 during construction and to rebuild the viaduct in line with current highway design standards. The existing width of the highway bridge from Brighton Boulevard to Colorado Boulevard (three lanes in each direction, six lanes total) is approximately 85 feet. The reconstructed bridge increases the width by more than 50 feet to 140 feet, as shown in Exhibit 3-3. This increase in width is due to construction phasing, which will be required to maintain the traffic flow during construction, and the standard shoulder and lane widths, which are larger than the existing widths.
This alternative includes a drainage system north of I-70 to capture onsite water runoff from the viaduct through an underground storm drain pipe. The alignment for this drainage system is shown in Section 5.14, Floodplains and Drainage/Hydrology.

The No-Action Alternative also reconstructs 46th Avenue to existing conditions under the viaduct with no additional changes.

### 3.1.2 Build Alternatives

In addition to the No-Action Alternative, two Build Alternatives with options are evaluated.

#### Revised Viaduct Alternative

- **Expansion Options:**
  - North or South

- **Operational Options:**
  - General-Purpose Lanes
  - Managed Lanes

The Build Alternatives include existing, planned, and programmed roadway and transit improvements in the project area, as defined by the DRCOG 2035 MVRTP. They add capacity to I-70 from I-25 to Tower Road. Capacity is increased by restriping I-70 from I-25 to Brighton Boulevard and widening I-70 from Brighton Boulevard to Tower Road to accommodate additional lanes. The Build Alternatives range from a total of six lanes to 12 lanes, depending on the capacity needs along the corridor.

To address safety issues associated with the aging viaduct between Brighton Boulevard and Colorado Boulevard, the Build Alternatives will replace the existing viaduct or remove it completely (as discussed in the following subsections). The Build Alternatives also will modify all bridges and interchanges along the corridor between Brighton Boulevard and Tower Road. Because of safety issues related to existing substandard conditions, the Build Alternatives eliminate the York Street interchange.

As part of the Build Alternatives, 46th Avenue is redesigned and will continue to serve local traffic in the area. More details on 46th Avenue and local and regional connectivity are discussed in the following subsections for each alternative.
With both of the Build Alternatives, the proposed highway ranges from approximately 25 feet to 105 feet wider than the existing highway between Colorado Boulevard and Tower Road. Widening occurs equally to the north and south in this section.

East of Colorado Boulevard, the Build Alternatives include the following improvements:

- The existing slip ramps west of Dahlia Street and east of Monaco Street will be relocated to an improved Holly Street full interchange to avoid conflicts with the geometry of proposed ramp locations at Colorado Boulevard and Quebec Street, as well as to avoid traffic weaving issues.

- North-south connections are maintained at Dahlia Street, Holly Street, Monaco Street, Quebec Street, Central Park Boulevard, Havana Street, Peoria Street, Chambers Road, Airport Road, and Tower Road.

- I-270 southbound to I-70 eastbound flyover structure will be replaced to accommodate the widened highway.

- Existing interchange accesses at Quebec Street, Havana Street, Peoria Street, Chambers Road, Airport Road, and Tower Road will remain.

- Existing highway crossing over the Denver Rock Island Railroad (DRIR) west of Quebec Street will be maintained.

Because the Central Park Boulevard overpass was recently constructed with sufficient width for the widened highway, it will not be disturbed or modified.

Two Operational Options to help handle the added capacity are considered for the Build Alternatives from I-25 to Tower Road: General-Purpose Lanes and Managed Lanes. Attachment A, Alternative Maps, shows details about the lane configurations of the General-Purpose Lanes and Managed Lanes Options.

**Operational Options: General-Purpose Lanes or Managed Lanes**

General-purpose lanes are traffic lanes that do not apply any restrictions to the vehicles using them. Managed lanes implement pricing strategies that will be adjusted based on...
real-time traffic demand on the highway facility. This is accomplished by providing a specially managed travel lane for vehicles to avoid congestion and travel at a higher speed than the general-purpose lanes. The purpose is to provide a reliable, congestion-free option along the highway and provide a way to manage congestion over the long term to reduce the need for future expansion.

The Managed Lanes Option only includes operational strategies for the additional lanes while keeping the rest as general purpose lanes. The Managed Lanes Option and the General-Purpose Lanes Option are designed with the same width of approximately 197 feet between Brighton Boulevard and Colorado Boulevard. However, the shoulder widths will be decreased for managed lanes, compared to general-purpose lanes, because of the need for a four-foot buffer between managed and general-purpose lanes in each direction.

There are no additional impacts to the surrounding neighborhoods or environments between the two options except at the locations of direct connections. The construction limits for the Managed Lanes Option increases where there are direct connections from the managed lanes to interchanges. Three proposed direct connections are planned from the managed 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.

**Revised Viaduct Alternative**

The Revised Viaduct Alternative replaces the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard. It adds one to two additional lane(s) in each direction from Brighton Boulevard to Tower Road. It also adds capacity from I-25 to Brighton Boulevard by restriping.

The Revised Viaduct Alternative includes two Expansion Options from Brighton Boulevard to Colorado Boulevard: the North Option or the South Option. Each Expansion Option moves the centerline of the highway approximately 70 feet north or south of the existing centerline. The North Option pushes the north edge of the highway up to 160 feet north from the existing highway edge in some areas. The South Option pushes the south edge of the highway up to 140 feet south of the existing highway edge. This is needed to accommodate the larger footprint resulting from additional

**Expansion Options**

Expansion Options refer to the North or South Options of the No-Action Alternative and the Revised Viaduct Alternative. These move the north edge of the highway north or the south edge of the highway south of the existing facility from Brighton Boulevard to Colorado Boulevard.
lanes, wider lanes, and shoulders. The Revised Viaduct Alternative also includes two Operational Options from I-25 to Tower Road: General-Purpose Lanes or Managed Lanes (shown in Exhibit 3-4). These are described in detail in the previous subsection.

**Exhibit 3-4 Revised Viaduct Alternative and Options**

The Revised Viaduct Alternative does not provide direct access from westbound I-70 to Steele Street/Vasquez Boulevard or from Steele Street/Vasquez Boulevard to eastbound I-70. Access at Steele Street/Vasquez Boulevard and Colorado Boulevard is provided by a split-diamond interchange.

An acceleration/deceleration lane is provided in each direction at the ramp junctions between Brighton Boulevard and Steele Street/Vasquez Boulevard to make it easier for vehicles to safely enter or exit between two facilities with different operating speeds. These additional lanes result in a viaduct width of 197 feet for both the General-Purpose Lanes Option and the Managed Lanes Option, more than two times wider than the existing width.

**Exhibit 3-5** illustrates the number of lanes for this alternative and shows which interchanges will be reconstructed or remain the same.

**Exhibit 3-6** shows a typical section for the General-Purpose Lanes Option and Managed Lanes Option for the Revised Viaduct Alternative between Brighton Boulevard and Colorado Boulevard.

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**Split-diamond interchange**

A split-diamond interchange is used where local streets are too close to each other to allow for safe operations of the entrance and exit ramps. Ramps are combined and a one-way frontage road is used between the local streets.
The Revised Viaduct Alternative provides local north-south connectivity across I-70 at York Street, Josephine Street, Columbine Street, Clayton Street, Fillmore Street, Milwaukee Street, Steele Street/Vasquez Boulevard, and Monroe Street, as shown in Exhibit 4-22 in Chapter 4, Transportation Impacts and Mitigation Measures. Access to Elizabeth Street will be available from 46th Avenue; however, Elizabeth Street will not connect across I-70.

As part of this alternative, 46th Avenue will run underneath the highway as a two-lane road with turn lanes to provide local east-west connectivity. The minimum height under the viaduct is 16.5 feet, which provides sufficient clearance for large vehicles. There are five-foot sidewalks located 10 feet from the north and south edges of the viaduct to move pedestrians away from the viaduct structure.
Exhibit 3-6  Revised Viaduct Alternative Typical Section
(between Brighton Boulevard and Colorado Boulevard)
To keep 46th Avenue farther away from the Swansea Elementary School property, it is located under the viaduct below the eastbound direction of I-70. The additional space under the viaduct below the westbound lanes of I-70 adjacent to 46th Avenue could be used as a space for community and neighborhood activities.

This alternative includes a drainage system north of I-70 to capture onsite water runoff from the viaduct through an underground storm drain pipe. The alignment for this drainage system is shown in Section 5.14, Floodplains and Drainage/Hydrology.

The Revised Viaduct Alternative east of Colorado Boulevard includes the improvements discussed earlier.

**Partial Cover Lowered 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 Option and the Modified Option 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 Basic and Modified Options.

Generally, the refined Partial Cover Lowered Alternative maintains interchange access to I-70 at Steele Street/Vasquez Boulevard, as included in the Basic Option, in addition to including the 46th Avenue and local street connectivity improvements and access to I-70 at Colorado Boulevard from the Modified Option.

The Partial Cover Lowered Alternative removes the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard and lowers the highway below grade in this area. It includes one to two additional lane(s) in each direction from Brighton Boulevard to Tower Road by restriping the existing highway from I-25 to Brighton Boulevard to provide transitions between existing and new construction. The Partial Cover Lowered Alternative also includes two Operational Options from I-25 to Tower Road: the General-Purpose Lanes Option or the Managed Lanes Option (shown in Exhibit 3-7).
The highway starts descending west of Brighton Boulevard to a maximum depth of approximately 40 feet below existing ground surface just east of the UPRR. This depth is necessary to allow the lowered highway to cross below the existing UPRR railroad crossing. The remaining portion of the lowered section has an average depth of approximately 25 feet below grade. The lowered highway ascends just east of the Burlington Northern Santa Fe (BNSF) Denver Market Lead Railroad to reach the existing grade east of the Colorado Boulevard interchange.

Exhibit 3-8 shows a profile view of the Partial Cover Lowered Alternative from Brighton Boulevard to Colorado Boulevard.
The Partial Cover Lowered Alternative does not provide direct access from westbound I-70 to Steele Street/Vasquez Boulevard or from Steele Street/Vasquez Boulevard to eastbound I-70. Access at Steele Street/Vasquez Boulevard and Colorado Boulevard is provided by a split-diamond interchange. In addition, slip ramps are included to provide an eastbound off-ramp and westbound on-ramp at Colorado Boulevard.

An acceleration/deceleration lane is provided in each direction at the ramp junctions between Brighton Boulevard and Steele Street/Vasquez Boulevard to make it easier for vehicles to safely enter or exit between two facilities with different operation speeds.

These additional lanes—and space needed for 46th Avenue from Brighton Boulevard to Colorado Boulevard—result in a total width that is approximately three times greater than the existing highway width for both the General-Purpose Lanes Option and the Managed Lanes Option. **Exhibit 3-9**
shows total number of lanes and interchange reconstruction as part of the Partial Cover Lowered Alternative.

**Exhibit 3-9** Partial Cover Lowered Alternative Lane Configuration and Interchange Reconstruction

Exhibit 3-10 shows a typical section for the General-Purpose Lanes Option and Managed Lanes Option for the Partial Cover Lowered Alternative between Brighton Boulevard and Colorado Boulevard. The typical sections shown in these exhibits do not represent the configuration in the covered area of the highway.

The Partial Cover Lowered Alternative continues to provide north-south connectivity at York Street, Josephine Street, Columbine Street, Clayton Street, Fillmore Street, and Steele Street/Vasquez Boulevard. It also provides additional north-south connectivity over I-70 at Cook Street and Monroe Street over the lowered, reconstructed highway as shown in **Exhibit 4-23** in Chapter 4, Transportation Impacts and Mitigation Measures.
46th Avenue is no longer located underneath I-70, but is a one-way couplet between Brighton Boulevard and Josephine Street and between Milwaukee Street and Colorado Boulevard, with eastbound travel on the south side of I-70 and westbound travel on the north side of I-70. Between Josephine Street and Milwaukee Street, 46th Avenue has two-way operations on both sides of I-70.

Additionally, on the north side of I-70, 46th Avenue will be discontinued between Clayton Street and Columbine Street to allow for a seamless connection between the school and the cover facility. This alternative eliminates the portion of
Elizabeth Street north of 46th Avenue and south of 47th Avenue. All other north-south streets within this area end at either eastbound or westbound 46th Avenue.

As part of the Partial Cover Lowered Alternative, the existing UPRR bridge structure that currently passes under the existing viaduct and over 46th Avenue will be reconstructed to allow both I-70 and 46th Avenue to cross below the UPRR. For the BNSF Market Lead railroad, a new bridge crossing over I-70 and at-grade crossings at 46th Avenue will be provided.

46th Avenue extends across Colorado Boulevard and connects with the existing one-way couplet of Stapleton Drive North and Stapleton Drive South. These streets are extended to the east and connect to the Quebec Street ramps to allow for connectivity between Colorado Boulevard and Quebec Street.

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 capture runoff from the highway. The alignment for this drainage system is shown in Section 5.14, Floodplains and Drainage/Hydrology.

Denver is in the planning stages of their Two Basin Drainage Project which will provide redundant drainage capacity in the project area. Depending on the timing of Denver’s construction of the Two Basin Drainage Project it could allow for the outflow of I-70 East Offsite system to be modified, eliminating the need to construct the offsite system through Globeville Landing Park and reducing I-70 East impacts for the Partial Cover Lowered Alternative.

The Partial Cover Lowered Alternative east of Colorado Boulevard includes the improvements discussed earlier.
**Highway Cover (Partial Cover Lowered Alternative only)**

The Partial Cover Lowered Alternative provides a cover over the highway, located generally between Clayton Street and Columbine Street in the proximity of Swansea Elementary School. The length of the cover is designed to be less than 1,000 feet due to fire and safety restrictions. A preliminary design for the highway cover is shown on Exhibit 3-11.

**Exhibit 3-11  Partial Cover Lowered Alternative Preliminary Cover Design**

Note: Preliminary design, will be revised during the public input process

The cover is intended to be a shared, active space between the surrounding community and Swansea Elementary School. Maintaining the status of the school as a community center in the neighborhood, it is important to provide an active and safe space on the highway cover. The communal design of the highway cover will have a direct impact on the perception of safety and can influence an individual’s willingness to use the space. Designing for safety includes meeting the needs of its users, providing diverse and interesting features, and connecting people with place.

The FHWA Livability and Sustainability principles were utilized on this project during the development of the Partial Cover Lowered Alternative and the design of the cover.
Incorporation of the highway cover will reconnect the surrounding areas and provide easy and safe connections between these communities for all users, especially pedestrians and bicyclists. The inclusion of the highway cover helps achieve some broader community goals of livability, quality schools, and safe streets, along with supporting the existing communities along the corridor.

In addition, the highway cover reduces noise impacts in adjacent areas. The cover also will directly contribute to improved air quality, resulting in PM$_{10}$ concentrations that are lower at Swansea Elementary School than future conditions without the cover (No-Action Alternative) and indirectly by encouraging more walking and bicycling for short trips to local destinations. Please see Chapter 5, Affected Environment, Environmental Consequences, and Mitigation, for more information.

As part of the Partial Cover Lowered Alternative, Elizabeth Street between 46th Avenue and 47th Avenue will be closed to accommodate the proposed redesign of the Swansea Elementary School site to use adjacent parcels.

The landscaped highway cover also supports social connections in the Elyria and Swansea Neighborhood by creating a place where residents and visitors can gather and interact. Based on community input and area needs, the amenities and design in these spaces—such as playgrounds or sports fields (to be determined by the community)—will encourage users to stay and interact. Additional information about the cover planning efforts is available in Attachment P, Cover Planning.

Maintenance of the features and landscaping on the cover has not been determined at this time. CDOT is working with Denver and Denver Public Schools to develop agreements for shared use on the cover and long-term operations and maintenance of the cover. These agreements will be finalized before construction begins.
Capital cost estimates for the proposed alternatives are based on conceptual design engineering and are complete project costs, including design, construction management, construction engineering, indirect costs, and construction costs. The construction costs include earthwork, utility relocation, roadway and structure construction, and right of way. Exhibit 3-12 summarizes the preliminary capital cost estimates for the project alternatives.

### Exhibit 3-12  Project Alternatives Capital Cost Summary

<table>
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<th>Alternatives/Options</th>
<th>Capital Cost, I-25 to Tower Road (in millions of 2016 dollars)</th>
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<tbody>
<tr>
<td></td>
<td>General-Purpose Lanes Option</td>
</tr>
<tr>
<td>No-Action Alternative, North Option</td>
<td>$510</td>
</tr>
<tr>
<td>No-Action Alternative, South Option</td>
<td>$600</td>
</tr>
<tr>
<td>Revised Viaduct Alternative, North Option</td>
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<tr>
<td>Revised Viaduct Alternative, South Option</td>
<td>$1,450</td>
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<tr>
<td>Partial Cover Lowered Alternative</td>
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</tbody>
</table>

The maintenance costs were estimated for each alternative using an annual unit cost for bridge, retaining walls, and pavement. For the Partial Cover Lowered Alternative, additional costs for the cover associated with the potential urban landscape, ventilation, fire, and life safety features were included. The annual anticipated maintenance costs for the project’s alternatives are listed in Exhibit 3-13.

For the Managed Lanes Option, the total costs for the operations and maintenance of the managed lanes are estimated to be approximately $1.7 million a year in addition to the costs listed in Exhibit 3-13. This cost includes equipment replacement, CDOT/HPTE staff, and back office support associated with the toll collection.

### Exhibit 3-13  Project Alternatives Maintenance Cost Summary

<table>
<thead>
<tr>
<th>Alternatives/Options</th>
<th>Annual Maintenance Cost (in millions of 2016 dollars per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Action Alternative</td>
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<tr>
<td>Revised Viaduct Alternative</td>
<td>$16.0</td>
</tr>
<tr>
<td>Partial Cover Lowered Alternative</td>
<td>$11.3</td>
</tr>
</tbody>
</table>
 FHWA and CDOT have identified the Partial Cover Lowered Alternative with Managed Lanes Option as the Preferred Alternative for the I-70 East project. This alternative and associated option is identified as the Preferred Alternative because it meets the project purpose and need, addresses community and stakeholder concerns in the most comprehensive manner, has the most community and agency support as compared to the other alternatives under consideration, and—with the proposed mitigations—causes the least overall impact.

### 3.3.1 Factors involved in the decision

Many factors were considered in identifying the Preferred Alternative. The deciding factors are listed below and are described in the following subsections.

- Support from the community
- Environmental justice mitigation measures
- Neighborhood cohesion
- Support from local officials
- Swansea Elementary School location
- Visual and aesthetic qualities
- Drainage

**Support from the community**

The project team used an extensive public involvement approach leading up to and following the release of the 2008 Draft EIS and the 2014 Supplemental Draft EIS. Throughout the many opportunities to provide input, the majority of the public who are directly impacted by the project and live within the project area have consistently expressed a preference for the Partial Cover Lowered Alternative. For additional information regarding the project’s extensive community involvement see Chapter 10, Community Outreach and Agency Involvement.
Environmental justice mitigation measures

All evaluated alternatives include environmental justice mitigation measures. However, the Partial Cover Lowered Alternative includes additional mitigation measures to alleviate the highway impacts to the low-income and minority populations living in the project area.

The Preferred Alternative will include a highway cover with urban landscaping adjacent to Swansea Elementary School. The cover was developed as mitigation to reconnect the communities that were divided by the viaduct. The school property will be redesigned to reconstruct the school playground in a configuration to utilize the additional space from the cover and the closed Elizabeth Street.

The mitigation measures and benefits unique to the Partial Cover Lowered Alternative are:

- Greatest visual benefit, by removing the viaduct’s visual barrier between Brighton Boulevard and Colorado Boulevard
- Minimizing the presence of the highway in this area since it is below grade and is covered
- Reducing highway noise and air quality impacts to the school and adjacent properties by placing a cover over the highway
- Construct a cover over the highway to mitigate community impacts and design an urban area on top of the highway cover adjacent to Swansea Elementary School. This will provide for greater community cohesion than other alternatives
- Provide two million dollars to develop affordable housing units in the Elyria and Swansea Neighborhood through available programs.

Neighborhood cohesion

All evaluated alternatives will maintain connectivity in the project area with minor modifications. The Partial Cover Lowered Alternative also maintains the existing local north-south street network and it provides a greater sense of neighborhood cohesion by removing the dominant visual barrier created by the highway structure in this neighborhood. The cover connects the Elyria and Swansea Neighborhood back together.
Support from local officials

A letter supporting the Partial Cover Lowered Alternative was received on June 6, 2013, from Commissioner Eva Henry of Adams County, Mayor Michael Hancock of Denver, and Mayor Sean Ford of Commerce City. Their preference for this alternative is based on improved pedestrian connections and facilities assimilated with the highway cover, as well as overall improvement to north-south and east-west movement in the corridor. A proclamation also was signed by all of the Denver City Council members in support of the Partial Cover Lowered Alternative on April 7, 2014. Additionally, Mayor Michael Hancock submitted a letter after publication of the Supplemental Draft EIS reiterating Denver’s support of the Partial Cover Lowered Alternative.

Swansea Elementary School location

The Swansea Elementary School has been identified as an important and valuable resource in the Elyria and Swansea Neighborhood. The Partial Cover Lowered Alternative provides the best solution compared to the other alternatives to keep the school in the neighborhood at its current location. The Partial Cover Lowered Alternative also redesigns and expands the school grounds and provides upgrades to the school building.

Visual and aesthetic qualities

The Partial Cover Lowered Alternative includes noise walls or safety barriers of 10 feet to 20 feet in height, which will provide an opportunity for inclusion of meaningful artwork in the neighborhood. Noise walls or safety barriers will not be required in the area where the cover is located, providing a clear north/south view across the highway. The dominating visual presence of the highway will greatly decrease with this alternative.

Drainage

With the Partial Cover Lowered Alternative, an extensive drainage system is required on the north and south sides of I-70. Although the Revised Viaduct Alternative also improves the drainage system, the Partial Cover Lowered Alternative greatly improves drainage in the surrounding neighborhoods. The drainage system south of I-70 with the Partial Cover Lowered Alternative will capture the water flow and eliminate water from running into the proposed
below-grade highway, while also alleviating flooding in the neighborhood north of it.

3.3.2 Why is the Managed Lanes Option identified as part of the Preferred Alternative?

The Managed Lanes Option is identified as the Operational Option of the Preferred Alternative because of its long-term operational flexibility and mobility. Managed lanes provide drivers with flexibility by allowing them to pay a fee to bypass congestion on general-purpose lanes. This can improve reliability in travel times. It also allows CDOT to manage congestion over the long term, thereby reducing the need for future expansion. The Managed Lanes Option also has a higher through-put potential in terms of accommodating more people at a given time. This option accommodates express buses, vanpools, and other high-occupancy vehicles and, therefore, it can provide increased service to those riders. This option also promotes the use of carpools to avoid congestion.

3.4 What happened to the design variations that were introduced in the Supplemental Draft EIS?

Design variations were considered for the preliminarily identified Preferred Alternative, the Partial Cover Lowered Alternative. They were not fully evaluated in the Supplemental Draft EIS, but CDOT and FHWA continued to seek feedback from the community, stakeholders, and public agencies on 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 developed to respond to community concerns and to balance community, business, and transportation needs.
The following goals helped to develop these variations:

- Maintain the Steele Street/Vasquez Boulevard access to I-70 as an important local and regional access point for businesses needing access to the interstate for commerce
- Maximize north-south and east-west connectivity across and adjacent to I-70 for all modes of transportation
- Minimize the impact of the Steele Street/Vasquez Boulevard interchange on adjoining properties and the neighborhoods
- Consider traffic operations, including access to potentially developable properties in and around the highway interchanges
- Explore the expansion of the Swansea cover to the east and west as far as technically and financially feasible; and understand the technical and financial feasibility of a cover east of Steele Street/Vasquez Boulevard
- Consider the possibility of shifting connectivity from Monroe Street to Jackson Street

These variations do not substantially change the impacts to most resources and do not increase the project’s construction limits. Traffic, noise, and air quality analysis may change slightly if these variations are implemented.

Further analysis of these variations was conducted after publication of the Supplemental Draft EIS and were eliminated or moved forward as part of the Partial Cover Lowered Alternative, as discussed in the following subsections.

### 3.4.1 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 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 Partial Cover Lowered 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 such 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. Based on the additional analysis, a split diamond interchange with slip ramps was designed to fulfill the traffic needs at Colorado Boulevard, while maintaining access at Steele Street/Vasquez Boulevard.

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.

3.4.2 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.

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, but not to exceed 1,000 feet. This space is intended to serve as a transition area that would decrease noise levels from the highway in the cover area and

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Second cover

To accommodate Denver’s interest in constructing a second cover in the future, the Partial Cover Lowered Alternative includes an overall approach to design and construction that would not preclude the construction of a second cover over the highway from west of the Steele Street/Vasquez Boulevard highway crossing to east of Cook Street.

This second cover is not included as a part of the alternative.
at the school. 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.

### 3.4.3 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 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, and one-way between Milwaukee Street and Quebec Street.

Further analysis indicated the potential to improve safety around Swansea Elementary 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.

### 3.4.4 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, modified, 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: two-way vehicular connection across I-70 is added
- Madison Street: vehicular connection to 46th Avenue South is maintained; access to 46th Avenue must be made via the new Monroe Street connection one block east; access across I-70 does not currently exist
- Monroe Street: two-way vehicular connection across I-70 is added; 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 the new Monroe Street connection
- 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
How were the initial alternatives developed and what did they include?

Alternatives were developed based on input from the community at corridor-wide meetings in December 2003 and February 2004 and through involvement with impacted agencies at scoping and committee meetings in late 2003 and early 2004. Alternatives also were obtained from previous studies and new concepts were developed by the project team.

Nearly 90 different transportation elements were evaluated during the screening process. Alternative elements were initially developed within categories: alignments, interchanges, lane types, and local system improvements. Later on in the evaluation process, these elements were combined to form corridor alternatives. Alternative elements are listed by category in the following subsections.

3.5.1 Alignments

Alignments include improvements to the existing I-70 and possible relocation of the highway. In addition, different horizontal and vertical shifts and cross sections were considered.

- Existing I-70 vertical and/or horizontal alignment
- Lower I-70 below existing ground
- Add a level to the viaduct
- Enclose I-70
- Put I-70 at-grade
- Triple level section of I-70 (below ground)
- I-70 tunnel
- I-70 above and below with 46th Avenue at ground level
- Improve I-270 and reclassify I-70
- Realign the I-70 westbound lanes north
- Realign the I-70 eastbound lanes to Smith Road
- Move I-70 to the north of Elyria and Swansea neighborhood
3.5.2 Interchanges

During the development and screening of alternatives, consideration was given to adding new interchanges. Locations for providing new access to I-70 and other interchange modifications that were considered include:

- Picadilly Road (new interchange)
- Central Park Boulevard (new interchange)
- Additional access to Globeville area
- I-270/Quebec Street improvements
- Eliminate or combine accesses/existing interchanges

Improvements or other changes to existing interchanges and interchange ramps may be required for many different reasons, including geometric deficiencies, safety concerns, and excessive traffic volumes. In addition, access needs, I-70 operations, or other considerations may call for other access or interchange modifications.

3.5.3 Lane types

Lane types are defined by the use allowed in the lane; they range from general-purpose lanes—where anyone can use the lane—to special-purpose lanes—where only certain users (e.g., buses, high-occupancy vehicles [HOV], toll payers, or special trips) would be allowed. The following lane types were considered:

- Dedicated lane for commuters, for DIA travelers, for buses, or for trucks
- Reversible expressway lane
- HOV lane
- Toll lane or high occupancy toll lanes
- General-purpose lane
- Connector-distributor (CD) roads
- Emergency lane
- Frontage roads
- Auxiliary lanes
- Truck-only ramps at Steele Street/Vasquez Boulevard
- Braided ramps
- Dual-divided highway
3.5.4 Local system improvements

Local system improvements would serve as an alternate to improving I-70 and would divert trips from I-70, thereby reducing the need for additional capacity on the highway. Local system improvements in the study area include:

- Connect I-76 to DIA
- Improve 56th Avenue, Smith Road, and/or 6th Avenue
- Improve intersections where the railroad crosses
- Extend Smith Road
- Connect tolling options to E-470
- Remove through trucks from I-70
- At-grade crossings
- Outer loop
- Improve I-270

3.5.5 Transportation demand management/transportation system management strategies

Transportation demand management/transportation system management (TDM/TSM) strategies are programs designed to reduce travel demand and improve the use of the current transportation system, while reducing the need for major capital investment. TDM strategies would address traffic congestion by reducing travel demand rather than increasing transportation capacity. TSM strategies would help improve traffic flow on the existing transportation system. TDM/TSM strategies include:

- Improved pedestrian and bicycle facilities
- Enhanced bus service
- Ride sharing
- Vary business work schedules (flex time)
- Intelligent Transportation Systems (ITS)
- Freight transport management
- Road pricing/congestion pricing
TDM/TSM strategies were not evaluated as stand-alone alternatives since they do not individually address the project purpose and need, but could be combined with other alternatives as necessary to improve overall operations. TDM/TSM strategies represent operating policies applicable to any highway alternative to better address project goals and objectives.

3.6 What are the project’s goals and objectives?

The results of the public and agency scoping process helped define the corridor purpose and need, as well as the values expressed by residents and employees within the corridor. These values, plus the project purpose and need, then were used to create the goals and objectives shown in Exhibit 3-14.

These goals and objectives were discussed at project committee meetings and corridor-wide public meetings to incorporate public and agency comments and ensure that the project area concerns were factors in determining the alternatives evaluated in detail. Relative to the needs identified in Chapter 2, Purpose and Need, and in combination with public and agency scoping comments, nine major goals were established: access, capacity, community, environment, implementation, infrastructure, mobility, safety, and security.
### Exhibit 3-14 Project Goals and Objectives

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objective</th>
<th>Responsive to&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access</strong>&lt;br&gt;Provide for reasonable access to transportation facilities</td>
<td>• Balance the need for access with adverse effects on system performance.&lt;br&gt;• Provide access to transportation facilities for a variety of users.&lt;br&gt;• Facilitate connections between residential and business activity centers.</td>
<td>Increased transportation demand</td>
</tr>
<tr>
<td><strong>Capacity</strong>&lt;br&gt;Provide for realistic capacity expansion and minimize future congestion</td>
<td>• Provide sufficient transportation system capacity to ensure the efficient movement of people.&lt;br&gt;• Provide sufficient transportation system capacity to ensure the efficient movement of goods.&lt;br&gt;• Minimize transportation system delay.</td>
<td>Limited transportation capacity</td>
</tr>
<tr>
<td><strong>Community</strong>&lt;br&gt;Support community plans and avoid, minimize, and mitigate adverse effects to neighborhoods</td>
<td>• Maximize consistency with existing local, regional, and state plans.&lt;br&gt;• Minimize adverse effects to residential, business, and institutional properties.&lt;br&gt;• Minimize adverse economic effects to local businesses.&lt;br&gt;• Minimize adverse effects to community cohesiveness.&lt;br&gt;• Address transportation-related community effects associated with air quality, water quality, hazardous materials, and noise.</td>
<td>Values: community concerns that may offset defined transportation needs</td>
</tr>
<tr>
<td><strong>Environment</strong>&lt;br&gt;Avoid, minimize, and mitigate adverse effects to the natural, social, and cultural environment</td>
<td>• Minimize adverse effects to historic resources.&lt;br&gt;• Ensure consistency with regional air quality model to help achieve federal and state air quality standards.&lt;br&gt;• Minimize adverse effects on minority and low-income populations.&lt;br&gt;• Minimize adverse effects to wetlands and other waters of the U.S.&lt;br&gt;• Minimize adverse effects to recreational and open space resources.&lt;br&gt;• Minimize public exposure to highway noise.&lt;br&gt;• Minimize adverse effects associated with hazardous materials.&lt;br&gt;• Incorporate design standards that minimize visual effects and enhance aesthetics.</td>
<td>Values: community concerns that may offset defined transportation needs</td>
</tr>
<tr>
<td><strong>Implementation</strong>&lt;br&gt;Provide a cost-effective transportation solution that can be implemented</td>
<td>• Provide a cost-effective, long-term transportation solution.&lt;br&gt;• Provide flexibility for future expansion and modification.&lt;br&gt;• Provide technologies that are practical and implementable.&lt;br&gt;• Maximize the opportunity that federal, state, local, and/or private funding will be available to fund improvements.</td>
<td>Limited transportation capacity</td>
</tr>
<tr>
<td><strong>Infrastructure</strong>&lt;br&gt;Address deteriorating transportation infrastructure</td>
<td>• Address problems with maintenance and structural deficiencies on the I-70 viaduct and other structures.&lt;br&gt;• Provide a transportation solution that addresses drainage and flooding effects.</td>
<td>Transportation infrastructure deficiencies</td>
</tr>
<tr>
<td><strong>Mobility</strong>&lt;br&gt;Enhance mobility by providing transportation choices</td>
<td>• Enhance system reliability.&lt;br&gt;• Balance the transportation needs of local, regional, and national users.</td>
<td>Increased transportation demand</td>
</tr>
<tr>
<td><strong>Safety</strong>&lt;br&gt;Address safety needs and upgrade facilities to current standards</td>
<td>• Optimize safety and minimize crashes.&lt;br&gt;• Conform with engineering design and safety standards and with standard practices for construction, maintenance, and operations.&lt;br&gt;• Provide access for emergency response and evacuation situations.</td>
<td>Safety concerns</td>
</tr>
<tr>
<td><strong>Security</strong>&lt;br&gt;Provide a secure transportation system</td>
<td>• Minimize potential security threats to the National Interstate System.&lt;br&gt;• Develop and maintain a transportation system that supports national homeland security objectives.</td>
<td>Safety concerns</td>
</tr>
</tbody>
</table>

<sup>1</sup> Refers to project needs defined in Chapter 2, Purpose and Need
What was the screening process that developed the alternatives evaluated in the Draft EIS?

The project purpose, need, goals, and objectives were used to develop screening criteria to evaluate alternatives. A four-level screening process, shown in Exhibit 3-15, was used to screen down the full range of potential alternatives considered to the set of reasonable alternatives that received full evaluation in the 2008 Draft EIS, as listed below:

- No-Action
- Alternative 1—Existing Alignment with general-purpose lanes
- Alternative 3—Existing Alignment with tolled-express lanes
- Alternative 4—Realignment with general-purpose lanes
- Alternative 6—Realignment with tolled-express lanes

Alternatives were evaluated with increasing levels of detailed analysis at each screening level: initial screening, comparative screening, detailed screening, and alternative refinement. This process included extensive public and agency scrutiny through corridor-wide meetings, project committees, and community working groups, as described in Chapter 10, Community Outreach and Agency Involvement.

The following subsections briefly describe the screening process. For more detail on the screening process, refer to the Alternative Analysis Technical Report in the 2008 Draft EIS and the 2014 Supplemental Draft EIS.
Exhibit 3-15  Alternative Screening Process through the Supplemental Draft EIS

Level One
Initial Screening
(of Alternative Elements)

- Qualification evaluation for:
  - “Fatal flaws”
  - Purpose and Need agreement
  - Unreasonable environmental impacts
  - Practicality

Level Two
Comparative Screening
(of Alternative Elements)

- Qualitative assessment for:
  - Mobility
  - Safety
  - Environmental impacts
  - Cost
  - Implementation issues

Level Three
Detailed Screening
(of Corridor Alternatives)

- Quantitative assessment for:
  - Larger number of criteria and greater details

Level Four
Alternative Refinement
(of Corridor Alternatives)

- Quantitative assessment for:
  - Engineering feasibility
  - Resource-specific evaluation
  - Cost analysis

Draft EIS Alternatives
- No-Action
- Existing Alignment
- Realignment

Enhancement and Modification
(of 2008 Draft EIS Alternatives)

Reevaluation of alternatives:
- PACT process
- Agency outreach
- Extensive public involvement

Supplemental Draft EIS Alternatives
- No-Action
- Revised Viaduct
- Partial Cover Lowered

Corridor-Wide Meetings
- DEC ’03
- FEB ’04
- MAY ’04
- FEB ’05
- OCT ’05
- MAY ’06
- MAY ’08
- DEC ’08
- MAY ’11
- MAY ’12
- NOV ’12
- APR ’13
- SEP ’14

Public Hearing

ONGOING COMMUNITY OUTREACH
3.7.1 Initial screening (Level One)

Alignments, interchanges, lane types, and local system improvements were evaluated as independent elements during initial and comparative screening. The first level of evaluation, initial screening, eliminated unreasonable alignments and local system improvements that did not meet the project’s purpose and need; would result in adverse environmental and community effects; were not located in the project area; or would not provide the necessary access, capacity, safety, or mobility benefits. A series of yes or no questions based on the project purpose, need, goals, and objectives were used to evaluate alternative elements during initial screening.

3.7.2 Comparative screening (Level Two)

The second level of analysis, comparative screening, evaluated the alignments, lane types, and local system improvements that were not eliminated during initial screening. The evaluation was conducted within the same alternative categories using a qualitative approach to decide which elements were more effective at meeting the purpose, need, goals, and objectives. No further refinements or screening of interchange forms were conducted in comparative screening.

During initial and comparative screening, a substantial number of the alternative elements were eliminated from further consideration because they represented unreasonable alternatives that would not adequately address purpose, need, goals, and objectives.

3.7.3 Detailed screening (Level Three)

As a result of the first two screening levels, the remaining alternative elements were combined to form six corridor alternatives that included different alignments, interchanges, and lane types. In addition to these build alternatives, the No-Action Alternative was developed as well. Six alternatives were evaluated in detailed screening using quantitative analysis. These alternatives include:

- Alternative 1—Add general-purpose lanes on the existing alignment
- Alternative 2—Add HOV lanes on the existing alignment
Alternative 3—Add tolled express lanes on the existing alignment

Alternative 4—Realignment with general-purpose lanes

Alternative 5—Realignment with HOV lanes

Alternative 6—Realignment with toll lanes

While the detailed screening analysis only led to the elimination of two total alternatives (Alternative 2 and Alternative 5), it also resulted in recommendations to refine or eliminate several components of alternatives and several of the alignment options when compared to other alternative components or alignment options. These refinements included changes in laneage, tolling, realignment location, and 46th Avenue reconfiguration.

### 3.7.4 Alternative refinement (Level Four)

Alternatives that remained following detailed screening were developed in more detail and were further analyzed as part of alternative refinement. The evaluation was more in depth than the detailed screening analysis and was used to determine the alternatives most responsive to the project purpose, need, goals, and objectives. This fourth level of screening considered engineering feasibility; potential effects on social, environmental, and economic resources; and an analysis of capital, operation, and maintenance costs. The four alternatives with design options included:

- Alternative 1—Add general-purpose lanes on the existing alignment
- Alternative 3—Add tolled express (managed) lanes on the existing alignment
- Alternative 4—Realignment with general-purpose lanes
- Alternative 6—Realignment with tolled express (managed) lanes

Design options for Alternatives 1 and 3 included one or two general-purpose lanes in each direction between I-25 and I-225, below grade or existing grade between Brighton Boulevard and Colorado Boulevard, and shifting the alignment to the north or to the south between Brighton Boulevard and I-270.
Design options for Alternatives 4 and 6 included an eastern or western connection back to existing I-70 near Brighton Boulevard.

The process of alternative refinement included analysis that resulted in additional alternative options being eliminated because they did not meet the project purpose, need, goals and objectives, or because they were considered unreasonable in comparison to other alternatives. Two of these design options that were eliminated included adding one general-purpose lane in each direction and the below-grade design option between Brighton Boulevard and Colorado Boulevard.

3.8 How were alternatives modified after the Draft EIS and what alternatives were evaluated in the Supplemental Draft EIS?

CDOT and FHWA released the Draft EIS for public review in November 2008. During the public hearings for the 2008 Draft EIS, CDOT committed to select a preferred alternative during the next phases of the EIS process in partnership with the corridor communities and stakeholders.

After the comment period for the 2008 Draft EIS ended, none of the evaluated alternatives had received overwhelming support. This prompted CDOT and FHWA to undertake a more aggressive public involvement process to better identify the needs of the local communities.

A collaborative process involving the public, businesses, and agency stakeholders was initiated. Many one-on-one meetings with the impacted community members and elected officials were included in this collaborative process. CDOT and FHWA revisited and re-examined the 2008 Draft EIS analysis to modify and enhance the alternatives while addressing public comments and continuing to meet the project’s purpose and need. Exhibit 3-15 also shows how this enhancement and modification process relates to the overall development and screening of alternatives.

3.8.1 Enhancement and modification process

The alternatives enhancement and modification process started when the 2008 Draft EIS received more than 300 comments from the public and affected agencies. As a part of
this process, the PACT was formed, which included representatives from CDOT, FHWA, Adams County, Aurora, Commerce City, Denver, impacted communities, and business associations. More details about the PACT process and outcomes are discussed in Chapter 10, Community Outreach and Agency Involvement.

Because there was no strong support for any of the alternatives evaluated in the 2008 Draft EIS, the project team reviewed the alternatives in more detail. As a result of this review, the 2008 Draft EIS alternatives were modified to create the Supplemental Draft EIS alternatives. Additionally, a new alternative was developed to meet the project’s purpose, need, goals, and objectives while also addressing the public and agency comments and expectations.

Based on the 2008 Draft EIS public comments, the PACT process, and additional outreach, numerous changes were made to the alternatives. The Existing Alignment Alternatives (Alternatives 1 and 3) were revised to reduce impacts, the Realignment Alternatives (Alternatives 4 and 6) were eliminated from further consideration, and a new alternative (the Partial Cover Lowered Alternative) was introduced. During this process, the name of the Existing Alignment Alternative was changed to the Revised Viaduct Alternative for clarity. Exhibit 3-16 shows the changes to the alternatives from the 2008 Draft EIS to the Supplemental Draft EIS.

Exhibit 3-16 Alternative Modification from the 2008 Draft EIS to the Supplemental Draft EIS
3.8.2 Supplemental Draft EIS alternatives

In addition to the No-Action Alternative, two Build Alternatives with options were evaluated in the Supplemental Draft EIS.

Revised Viaduct Alternative
- **Expansion Options:**
  - North or South
- **Operational Options:**
  - General-Purpose Lanes
  - Managed Lanes

Partial Cover Lowered Alternative
- **Connectivity Options:**
  - Basic or Modified
- **Operational Options:**
  - General-Purpose Lanes
  - Managed Lanes

These alternatives, with the exception of the Connectivity Options evaluated for the Partial Cover Lowered Alternative, also are evaluated in this document.

3.9 What alternatives off of the existing alignment were considered and why were they eliminated?

The I-70 East project team initially considered multiple alternatives off of the existing alignment to minimize impact to the Elyria and Swansea Neighborhood. However, after evaluating these alternatives in detail, they were found not to be reasonable. The I-270/I-76 Reroute Alternative and the Realignment Alternative, which are the two main alternatives off of the existing alignment, and the reasons why they were eliminated are discussed in more detail in the following subsections.

3.9.1 I-270/I-76 Reroute

The I-270/I-76 Reroute Alternative was eliminated in the early stages of the 2008 Draft EIS alternatives analysis process because it did not meet the project’s purpose and need. The I-270/I-76 Reroute Alternative realigned I-70 around Denver using I-270 and I-76, as shown in Exhibit 3-17. After publication of the 2008 Draft EIS, some residents and stakeholders questioned the elimination of the I-270/I-76 Reroute Alternative. As a result, the project team performed additional analysis on this concept to confirm the validity of its elimination from further consideration.
After this additional analysis, elimination of the alternative was reaffirmed because it does not meet the project’s purpose to implement a transportation solution that improves safety, access, and mobility and it does not address congestion on I-70. It is not a reasonable alternative because:

- 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. Because of this, there would be a substantial increase in traffic volumes on 46th Avenue, which introduces safety, access, and mobility issues in the surrounding neighborhoods and also creates a barrier for bicyclists and pedestrians moving through the community.

- Based on the traffic analysis, the average daily traffic on 46th Avenue with the I-270/I-76 Reroute will increase to 30,000 to 60,000 vehicles a day if 46th Avenue is a four-lane arterial and 40,000 to 75,000 vehicles a day if 46th Avenue is a six-lane arterial in 2035, resulting in congested conditions. Rerouting I-70 also would force delivery trucks and other large vehicles to use 46th Avenue frequently to reach the industrial areas and businesses located near the existing I-70.
• 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.

• There will no longer be multiple east-west highway route choices in the area. The multiple route choices are beneficial for emergency access.

• This alternative requires more than 12 miles of major highway widening along I-270 and I-76. This increases the project construction cost to approximately $4 billion, which is twice as much as existing alignment alternatives.

• Many stakeholders, including Commerce City, Adams County, North Area Transportation Alliance, and the Colorado Motor Carriers Association, have expressed continued opposition to this alternative for a number of reasons including the impacts to National Western Stock Show Complex and planned economic growth for surrounding areas.

Appendix A of Attachment C, Alternative Analysis Technical Report Addendum, included in the Final EIS document, presents a technical memorandum explaining the reasons, in more detail, why the I-270/I-76 Reroute Alternative was eliminated.

3.9.2 Realignment Alternative

The 2008 Draft EIS fully analyzed the Realignment Alternatives (shown in Exhibit 3-18). Additional analysis was performed following the 2008 Draft EIS, during the alternatives enhancement and modification process. Using additional data and community input, the analysis ultimately concluded that the Realignment Alternatives were not reasonable. Consequently, they are not analyzed further in this document.
During the alternative enhancement and modification process, there was major support from the public and stakeholders to eliminate the Realignment Alternatives. The community comments and input resulted in additional analysis by the project team, which showed the Realignment Alternatives were not reasonable.

The main reason for the elimination of the Realignment Alternatives is that they do 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 in the project area. Although the Realignment Alternatives improved mobility on the highway, they diverted some of the highway traffic onto local streets, introducing safety, access, and mobility issues at the local street level, and, therefore, failing to meet the mobility purpose of the project. The Realignment Alternatives diverted a high volume of vehicles from the highway to 46th Avenue, increasing the forecasted daily traffic to 50,000 vehicles per day, which is 10 to 20 times higher than the current volume. Adding more traffic on 46th Avenue will cause congestion concerns in the surrounding neighborhoods.

Safety would not be improved with the Realignment Alternatives. Delivery trucks and other large vehicles would need to use local streets frequently to reach the future highway location from the industrial and warehousing...
businesses located near the existing highway. The high traffic volumes on 46th Avenue and the truck traffic could degrade the quality of the area neighborhoods and cause safety concerns for neighborhoods, pedestrians, bicyclists, and motorists.

Additional reasons these alternatives are not reasonable include:

- They do not minimize the impacts to the Sand Creek Regional Greenway or the South Platte River. The Realignment Alternatives create a permanent loss of 1.06 acres of wetlands compared to 0.31 acre for the Revised Viaduct Alternative. Because the greenway is an essential natural resource for the community, the Realignment Alternatives are not reasonable due to greater impacts to the greenway.

- They do not allow the National Western Stock Show to continue to operate in its current location with its current programs. This facility is identified as a major historic resource in the community. It has been at its current location for 106 years and its mission is to serve producers and consumers throughout the world with a premier stock show, rodeo, and horse show in January of each year.

- They do not maintain the current location/plan for the FasTracks National Western Stock Show Station on the North Metro Line and limit the potential for transit-oriented development in the area. Based on Denver’s Transit-Oriented Development Strategic Plan, published in August 2006 and updated in 2014, this area offers a great opportunity for transit-oriented development as an urban center in the long term. While there is little immediate demand for housing or even higher density employment uses in this area, Denver has performed some preliminary planning around the station area. Denver’s main focus in the area is to prevent interim development uses in the surrounding area that reduce the future transit-oriented development potential.
• They do not maintain two major east-west highways in the area (I-70 and I-270) for safety, multiple route choices, and emergency access. With the Realignment Alternatives, the redundancy of the highway network, which is important for emergency response in the area, is limited. If I-70 was realigned to combine with I-270, there would be no alternate east-west highway connecting the Denver neighborhoods to the rest of the region.

• They add visual barriers and do not maintain access to the South Platte River and the Riverside Cemetery. Riverside Cemetery is listed in the National Register of Historic Places. Although there will be no right of way needed from the Riverside Cemetery property, there would be noise, visual, and historic setting changes in the area. The construction of the realigned, elevated freeway and noise barriers would introduce a major highway facility between the cemetery and community, approximately 150 feet southeast of the cemetery property, where none currently exists. As a result, the highway would be placed on fill on either side of the bridge that would go over the cemetery driveway and it would push the driveway under the bridge at existing grade.

• They create additional curves and lane miles on I-70. The Realignment Alternatives require additional maneuvers approaching the new curves, which may limit safety in hazardous conditions, especially during the winter months. There will be one mile added to I-70 with the Realignment Alternatives. The extra mile with the Realignment Alternatives will result in unnecessary additional cost and travel time for all motorists.

Attachment C of the 2014 Supplemental Draft EIS, *Alternative Analysis Technical Report*, includes more details on the reasons for eliminating the Realignment Alternatives. CDOT and FHWA presented the recommendation to eliminate the Realignment Alternatives during the corridor-wide meetings held on May 2 and 3, 2012, and November 13 and 14, 2012, and asked for comments on the recommendation. Over 650 individuals collectively attended these meetings, and comments from attendees overwhelmingly agreed that the Realignment Alternatives should be eliminated.