



---

## TABLE OF CONTENTS

---

	<u>Page</u>
EXECUTIVE SUMMARY.....	ES-1
INTRODUCTION.....	ES-1
SETTING.....	ES-2
HISTORICAL OVERVIEW.....	ES-4
PURPOSE OF THE PROJECT.....	ES-4
NEED FOR THE PROJECT.....	ES-5
System Connectivity/Functionality.....	ES-5
Travel Demand/Capacity.....	ES-5
Travel Reliability.....	ES-5
Modal Inter-relationships.....	ES-5
ALTERNATIVES SCREENING PROCESS.....	ES-5
POST-SCREENING ACTIVITIES.....	ES-6
Design Modifications.....	ES-6
Footprint Reduction.....	ES-7
Section 4(f) <i>De minimis</i> Determination.....	ES-7
Refinement of Alternative through the City of Golden.....	ES-7
PUBLIC INVOLVEMENT.....	ES-7
Federal and State Agency Involvement.....	ES-7
Committee Involvement.....	ES-8
General Public Involvement.....	ES-8
ALTERNATIVES.....	ES-9
No Action Alternative.....	ES-12
Freeway Alternative.....	ES-14
Tollway Alternative.....	ES-16
Regional Arterial Alternative.....	ES-18
Combined Alternative.....	ES-20
FINANCIAL CONSIDERATIONS.....	ES-21
COMPARISON OF ALTERNATIVES AND IDENTIFICATION OF A RECOMMEND ALTERNATIVE.....	ES-21




---

## LIST OF FIGURES

---

		<u>Page</u>
Figure ES-1	Study Area and the Denver Metropolitan Area Transportation System.....	ES-3
Figure ES-2	No Action Alternative.....	ES-11
Figure ES-3	Freeway Alternative.....	ES-13
Figure ES-4	Tollway Alternative.....	ES-15
Figure ES-5	Regional Arterial Alternative.....	ES-17
Figure ES-6	Combined Alternative.....	ES-19

---

## LIST OF TABLES

---

		<u>Page</u>
Table ES-1	Project Goals.....	ES-6
Table ES-2	Characteristics of Transportation System-No Action Alternative.....	ES-12
Table ES-3	Summary of Major Environmental Impacts and Mitigation-No Action Alternative.....	ES-12
Table ES-4	Characteristics of Transportation System-Freeway Alternative.....	ES-14
Table ES-5	Summary of Major Environmental Impacts and Mitigation-Freeway Alternative.....	ES-14
Table ES-6	Characteristics of Transportation System-Tollway Alternative.....	ES-16
Table ES-7	Summary of Major Environmental Impacts and Mitigation-Tollway Alternative.....	ES-16
Table ES-8	Characteristics of Transportation System-Regional Arterial Alternative.....	ES-18
Table ES-9	Summary of Major Environmental Impacts and Mitigation-Regional Arterial Alternative.....	ES-18
Table ES-10	Characteristics of Transportation System-Combined Alternative.....	ES-20
Table ES-11	Summary of Major Environmental Impacts and Mitigation-Combined Alternative.....	ES-20



---

## EXECUTIVE SUMMARY

---

### INTRODUCTION

This chapter describes the iterative process of developing, screening, and refining alternatives based on evaluation criteria and project goals. The decision process integrated FHWA and U.S. Army Corps of Engineers (USACE) environmental analysis and documentation requirements. As described elsewhere in this document, the process was discontinued because federal and state funds for construction were not available in the foreseeable future.

This chapter retains the complete history of the evaluations and selections as they happened and was written during the NEPA process. Some NEPA language therefore remains, where it is necessary to maintain readability. The recommended alternative also remains, since it is a suitable conclusion of the comprehensive analysis and can serve as a planning vision for future efforts in the area.

In 2003, the Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), initiated a National Environmental Policy Act (NEPA) process to study the need, merits, and possible impacts of potential transportation improvements in the Northwest Corridor of the Denver metropolitan area.

The Notice of Intent to prepare an Environmental Impact Statement (EIS) appeared in the Federal Register dated July 21, 2003, and identified the proposed action as:

“an improved connection between the western terminus of the Northwest Parkway in Broomfield County and the SH 58, I-70, or C-470 freeway systems to the south in Jefferson County. This connection is considered necessary to address the need for system linkage, to provide for existing and projected transportation demand, to improve safety, and to enhance modal interrelationships, within the Northwestern Quadrant of the Denver Metropolitan Area.”

The notice also identified the alternatives under consideration, including but not limited to:

1. taking no action
2. construction of a new highway alignment
3. improvement of the existing highway network
4. improvement of the existing arterial system
5. implementation of transit options
6. expansion of the existing bus system

In 2007 and 2008, nearing completion of the Draft EIS, CDOT recognized that while transportation improvements in the northwest Denver metropolitan area are needed, federal and state funds are not available to meet these needs in the foreseeable future. The Northwest Corridor NEPA process was therefore discontinued and the Notice of Intent was rescinded. NEPA language and related commitments were removed from the document, to a practical extent, resulting in this *Northwest Corridor Transportation and Environmental Planning Study* which can serve as a foundation for future projects by CDOT or other entities.

The *Northwest Corridor Transportation and Environmental Planning Study* presents information related to the potential benefits and impacts of a No Action Alternative and four build alternatives: Freeway Alternative, Tollway Alternative, Regional Arterial Alternative, and Combined Alternative. The Combined Alternative has been identified as the recommended alternative.

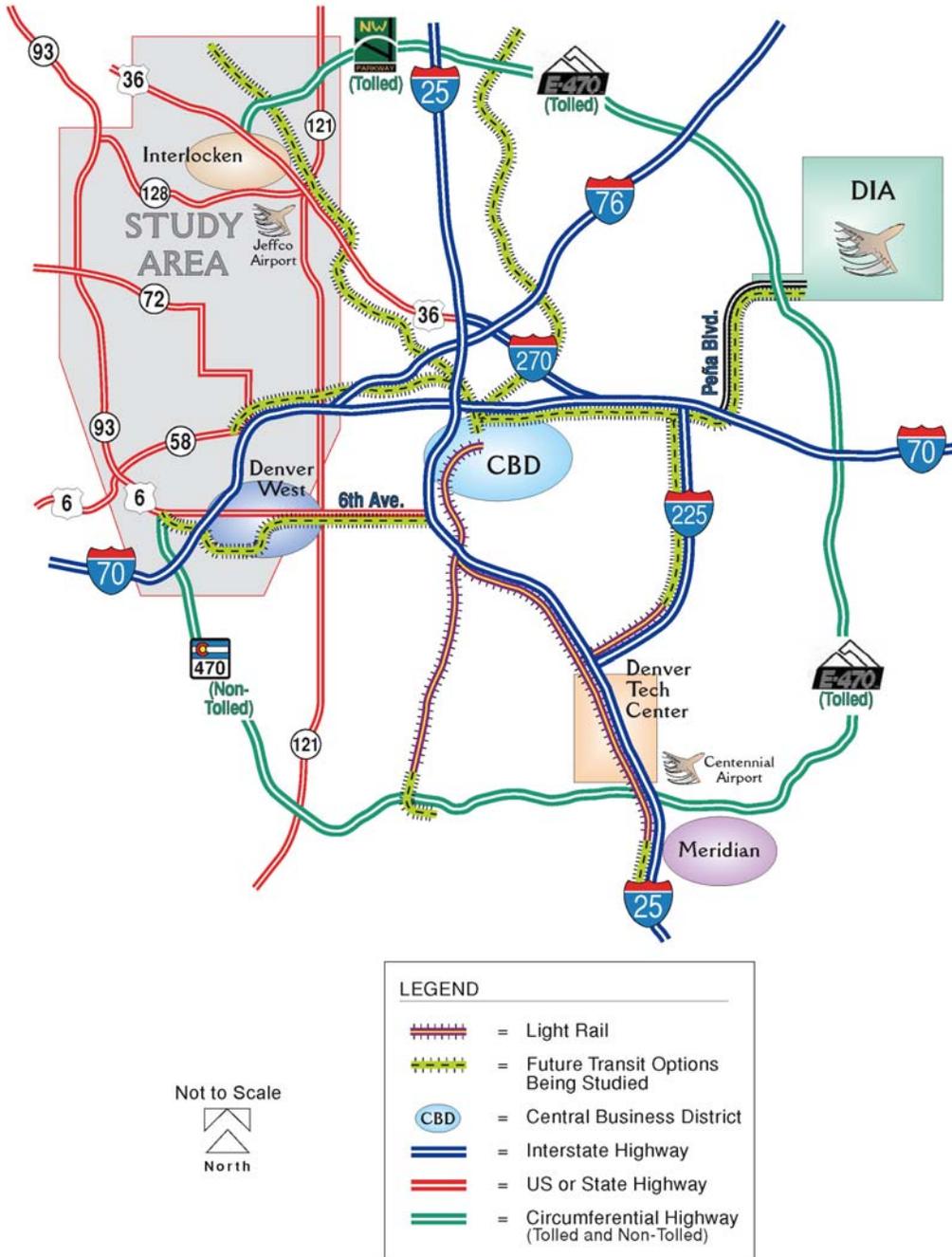


## *SETTING*

The Northwest Corridor study area (study area) extends from north of the Northwest Parkway and US 36 in Broomfield County, to south of US 6 and C-470 in Jefferson County. The study area also extends from west of SH 93 to east of Wadsworth Boulevard. It includes an interstate highway, several US and state highways, and numerous local roadways (see **Figure ES-1**).

The northern portion of the study area includes Rocky Mountain Metropolitan Airport (formerly Jefferson County Airport) and several commercial and light industrial developments. The central portion is primarily rural and open space. The southern portion is a mixture of residential, commercial, and light-industrial developments. The study area as a whole has a rich and diverse setting of natural resources.

*Figure ES-1 Study Area and the Denver Metropolitan Area Transportation System*



Source: Compiled by FHU 2007.



## ***HISTORICAL OVERVIEW***

A highway encircling the Denver metropolitan area was envisioned in the 1950s. It was originally intended to be part of the interstate highway system and named I-470. In 1975, I-470 was re-examined and was eventually withdrawn from the Interstate and Defense Access Highway System. The funding obtained for I-470 was to be used for other transportation projects as provided under federal law. As a result, the C-470 Parkway, a non-tolled highway, was completed from I-70 near 6<sup>th</sup> Avenue to I-25 near County Line Road in 1990. From 1988 to early 2003, the E-470 tollway was constructed in segments from C-470 at I-25 in the south to I-25 near 160<sup>th</sup> Avenue in the north. Later in 2003, the Northwest Parkway tollway was completed from E-470 at I-25 to just north of US 36.

In the late 1980s, CDOT, Jefferson County, and the City of Golden collaborated to plan, fund, and dedicate right-of-way for the construction of the SH 93 Bypass to the west of Golden. It was built in 1992 and extended SH 93 from Washington Avenue to the intersection of US 6 and SH 58.

In 2001, Jefferson County and the Cities of Arvada, Golden, Lakewood, Westminster, and Wheat Ridge commissioned the *Northwest Quadrant Feasibility Study* (NWQFS). The purpose of the study was to develop transportation improvements, both regional and local, that would increase mobility, improve safety, and provide a reliable transportation system by the year 2020.

In August 2002, the City of Golden commissioned a study titled *Golden's Plan for the Highway 6 & 93 Corridor* (commonly referred to as the Muller Study). The purpose of the study was to accommodate regional traffic needs on US 6 and SH 93 through Golden.

In 2003 Jefferson County, the City and County of Broomfield, and the City of Arvada created The Jefferson Parkway Not for Profit entity to examine the benefits and impacts of completing a tollway from SH 128 near Interlocken Loop to SH 93 near 64<sup>th</sup> Parkway.

In November 2003, CDOT began a formal EIS process to study transportation improvements that would provide a connection between the Northwest Parkway and C-470. The EIS process ensures that environmental impacts are avoided and minimized where possible and that mitigation is included for environmental impacts that cannot be avoided. Public participation is encouraged throughout the process to assist transportation agencies in making informed decisions.

In June 2004, the City of Arvada conducted a separate analysis titled *Tollway Corridor Investigation Study* to assess the feasibility of a tolled segment between SH 128 and SH 93 at 64<sup>th</sup> Parkway. This was a limited analysis that studied only a portion of the corridor and was not associated with this EIS.

In November 2004, RTD's FasTracks initiative was passed to fund several transit corridors throughout the Denver metropolitan area. Transit corridors along US 36 and US 6 will connect the Denver central business district with the study area.

## ***PURPOSE OF THE PROJECT***

The purpose of transportation improvements in the Northwest Corridor is to enhance the connectivity, functionality, and capacity of the inter-regional and regional system from the vicinity of US 36 and the Northwest Parkway to the vicinity of SH 58, I-70, or C-470. This enhanced system will better accommodate the movement of people, goods, and services.



## ***NEED FOR THE PROJECT***

The current ineffective and incomplete roadway system has the following needs:

### **SYSTEM CONNECTIVITY/FUNCTIONALITY**

*Enhance the corridor's inter-regional and regional system for a more direct, well connected and functional roadway system.*

The existing roadway system is not direct, well-connected, or easily understandable by long-distance travelers or those unfamiliar with the region. Roadways with relatively low-speeds and low capacity provide north and south travel within the study area. The forecasted change in land use will result in changing trip purposes. The study area lacks an effective transportation system for needed access and movement to support inter-regional, regional, and local trips. The regional transportation planning process has identified the need for a connection to enhance the connectivity and functionality of the regional transportation network.

### **TRAVEL DEMAND/CAPACITY**

*Expand and enhance the system capacity to respond to future demand increases and improve inter-regional and regional movements of people, goods and services.*

Population is forecasted to increase by 26 percent and employment by 42 percent between 2005 and 2030 within the study area. Additional transportation capacity is necessary to support this growth. Future travel demand is projected to exceed the capacity of the existing roadway system resulting in greater travel delays. Increased demand justifies the need to expand future corridor capacity.

### **TRAVEL RELIABILITY**

*Reduce the variability of travel times and improve driver expectancy.*

The existing roadway system does not provide for the effective management of traffic accidents and other incidents that could affect travel time consistency. Speed limits vary from 35 to 55 mph, which can affect driver expectancy and system reliability. Travelers can better predict travel times with an improved transportation system.

### **MODAL INTER-RELATIONSHIPS**

*Expand highway systems to provide enhanced access to transit choices to improve mobility through intermodal connections.*

Future travel demand will create greater need for highway and transit choices to improve mobility. Four transit improvements are anticipated, extending between the Denver central business district and the study area: the West Corridor (light rail), the Gold Line (light rail), US 36 Bus Rapid Transit, and US 36 Commuter Rail. There is a long-range need to connect the study area transportation network with these rapid transit corridors.

## ***ALTERNATIVES SCREENING PROCESS***

Alternatives were created and evaluated through the following extensive process and included public and agency involvement. Project goals determined alternative screening criteria (see **Table ES-1**). Several levels of screening reduced the number of alternatives. Each level of screening included greater detail using environmental resource data and transportation performance analysis. A No Action Alternative was carried through the process.



- **Level 1 Screening** broadly determined areas and alternatives that were not practical and feasible using existing information on cost, engineering feasibility and constructability, technology, and environmental impacts. This initial screening reduced the universe of alternatives to 73 build alternatives.
- **Level 2 Screening** eliminated alternatives based on how well they met purpose and need, minimized environmental impacts, and their engineering feasibility. A moderate level of analysis evaluated environmental impacts and transportation performance. This screening reduced the number of build alternatives from 73 to 23.
- **Level 3 Screening** eliminated alternatives based on how well they met purpose and need, minimized environmental impacts, and their transportation performance. More detailed analysis, including future traffic modeling, evaluated environmental impacts and transportation performance. Some alternatives were combined and analyzed during this step. This screening reduced the number of build alternatives from 23 to 4.

The remaining four build alternatives, the Freeway Alternative, Tollway Alternative, Regional Arterial Alternative, and Combined Alternative are considered the reasonable choices for more detailed analysis. These alternatives consistently performed better than the other build alternatives. In the following analyses, the No Action Alternative will be analyzed simultaneously for comparison with the build alternatives.

*Table ES-1 Project Goals*

Category	Goal
Purpose and Need	System Connectivity—Enhance the corridor’s regional and inter-regional system for a more direct, well-connected, and functional roadway system.
	Travel Demand—Expand and enhance the system capacity to respond to future demand increases and improve inter-regional and regional movements of people, goods, and services.
	Travel Reliability—Reduce the variability of travel times and improve driver expectancy.
	Modal Inter-relationships—Expand highway systems to provide enhanced access to transit choices to improve mobility through intermodal connections.
Practicality and Feasibility	Make use of existing technology, meet engineering requirements, are constructible, and fall within reasonable budgetary constraints.
Environmental Considerations	Minimize impacts to the human or natural environment.

### **POST-SCREENING ACTIVITIES**

The remaining four build alternatives were further refined after the initial three screening processes. Design modifications and footprint reductions were performed to enhance each alternative.

### **DESIGN MODIFICATIONS**

After the alternative screening process, a group of resource specialists and roadway engineers considered whether or not the four build alternatives could be modified to avoid or minimize impacts to the natural environment and the built and social environment. Modifications were made to better fit the alternatives into the community context.



To better incorporate the alternatives into the natural environment, alignments were refined to integrate water quality ponds and wildlife corridor crossings. Bridges and enlarged drainage structures were used to provide wildlife crossings.

To better incorporate the alternatives into the built and social environment, alignments were shifted to minimize impacts to parks and recreation areas, eligible historic features, and archaeological resources. In addition, retaining walls and modified interchange designs were incorporated to further reduce impacts.

The Combined Alternative was modified in its northern portion to improve local access to the Interlocken Business District and Flatiron Crossing retail center. A regional arterial roadway replaced the proposed tollway segment which would reduce the overall cost of the alternative. This modification was presented to local officials and is incorporated into the definition of the Combined Alternative.

### **FOOTPRINT REDUCTION**

Discussions with RTD concluded no transit systems were planned for this corridor in the next 20 years. Therefore, right-of-way preservation was no longer necessary. To minimize impacts to various resources, the transit envelope was removed resulting in a reduced footprint.

### **SECTION 4(F) *DE MINIMIS* DETERMINATION**

Section 4(f) legislation allows for minimal use of land from publicly owned parks, recreational areas, wildlife refuges, or historical sites after impacts have been avoided, minimized, and mitigated and when the agency with jurisdiction concurs with the *de minimis* determination. Design modifications were incorporated into each of the four build alternatives where possible to achieve avoidance or *de minimis* use of all Section 4(f) resources.

### **REFINEMENT OF ALTERNATIVE THROUGH THE CITY OF GOLDEN**

In 2007, as work on the DEIS neared completion, workshops were held with the City of Golden in effort to achieve greater consensus for the recommended alternative. Several design concessions, some of which would have required the City of Golden's agreement for *de minimis* use of recreational areas, were discussed and were in progress when the City of Golden determined that the alternative was still not nearly enough like the conceptual Golden Plan. Further compromise efforts were discontinued, and the recommended alternative was not altered.

### ***PUBLIC INVOLVEMENT***

Following FHWA and CDOT guidance, meeting with and listening to the public began early in the process. This public involvement process influenced the development of the project. For these purposes, the public is composed of three main groups: federal and state agencies, local government officials, and the general public.

### **FEDERAL AND STATE AGENCY INVOLVEMENT**

Federal and state agency involvement began in January 2004 at the Agency Scoping Meeting. These agencies provide continuous regulatory and technical guidance regarding the evaluation of existing environmental conditions, impacts, and mitigation strategies. The USACE agreed to be a cooperating agency functioning as a wetland permitting authority, as identified in Section 404 of the Clean Water Act. The USEPA also agreed to be a cooperating agency to provide guidance on environmental justice, air quality, water quality, and wetlands. Additional federal and state agencies have provided support for the project:

- Colorado Department of Public Health and Environment–Air Quality Control Division
- Colorado Department of Public Health and Environment–Water Quality Control Division
- Colorado Division of Wildlife



- U.S. Fish and Wildlife Service
- U.S. Department of Energy
- Colorado Department of Minerals and Geology
- State Preservation Historic Officer

## COMMITTEE INVOLVEMENT

To gain cooperation and consensus for this project, CDOT created two committees. The Corridor Consensus Committee (CCC) is composed of elected officials and regional economic and environmental representatives. The Technical Support Committee (TSC) is composed of technical staff members appointed by the CCC. These committees meet regularly with FHWA and CDOT to provide feedback about the project. The CCC and TSC consist of members from these entities:

Boulder County	City of Louisville
Jefferson County	City of Wheat Ridge
City and County of Broomfield	City of Superior
City of Arvada	DRCOG
City of Boulder	Jefferson County Economic Council
City of Golden	Sierra Club
City of Lakewood	An Environmental Group Coalition

## GENERAL PUBLIC INVOLVEMENT

Input from the public has been considered throughout the process. The following opportunities to engage the public were provided by CDOT:

**Scoping Meetings**—Three scoping meetings were held in January 2004. The purpose of the meetings was to share information with the public about the proposed action, identify public concerns and needs, and offer transportation and environmental protection suggestions.

**Public Meetings**—Three public meetings were held in January 2004, three in April 2004, four in October 2004, and three in May 2005. Public meetings provide an opportunity for community members to discuss the project with experts, express concerns, and make suggestions to the study team.

**Citizen Working Groups**—Seven citizen working groups were held in May 2004 and seven were held in July/August 2005. These groups provide community members an opportunity to interact with study team members in a smaller setting and discuss specific concerns in detail.

**Neighborhood Association and Organization Meetings**—Four neighborhood association and organization meetings were held throughout the year in 2004 and 14 were held in 2005. At these meetings, the study team provides presentations and discusses concerns and issues related to neighborhoods and organizations.

**Project Web Site**—Offers the public current information related to the project and provides an opportunity to submit comments. A link to a Spanish version of the information is available on the home page.

**Newsletters**—These are distributed in print and electronically to present information about the progress of the study and upcoming meetings to communities within the study area. Newsletters contain information in both English and Spanish.

**Phone Hotline**—This provides both English- and Spanish-speaking community members a channel to express comments about the project.



More than 6,500 public comments have been received throughout this process. These comments are managed in a computer database that ensures a response has been sent to each commenter. Comments are summarized on a quarterly basis and posted on the website. These public comments are reviewed and discussed by FHWA, CDOT, and the study team (see **Northwest Corridor Supporting Technical Documents—Quarterly Public Involvement**).

### ***ALTERNATIVES***

A description of the overall features and the total cost is presented for each build alternative. The transportation characteristics of each build alternative are summarized and the benefits from those characteristics are compared to those of the other build alternatives (see **Tables ES-4, ES-6, ES-8, and ES-10**). The major environmental impacts for each build alternative are summarized and compared to those of the other build alternatives. Mitigation strategies for these impacts are summarized for each build alternative (see **Table ES-5, ES-7, ES-9, and ES-11**).

A description of the transportation system associated with the No Action Alternative is provided. Its transportation characteristics are summarized and the benefits from those characteristics are compared to those of the build alternatives (see **Table ES-2**). The major environmental impacts for the No Action Alternative are summarized and compared to those of the build alternatives and suggested mitigation strategies are summarized for the No Action (see **Table ES-3**).



Northwest Corridor  
A TRANSPORTATION ENVIRONMENTAL STUDY

This Page Left Intentionally Blank

**Figure ES-2 No Action Alternative**

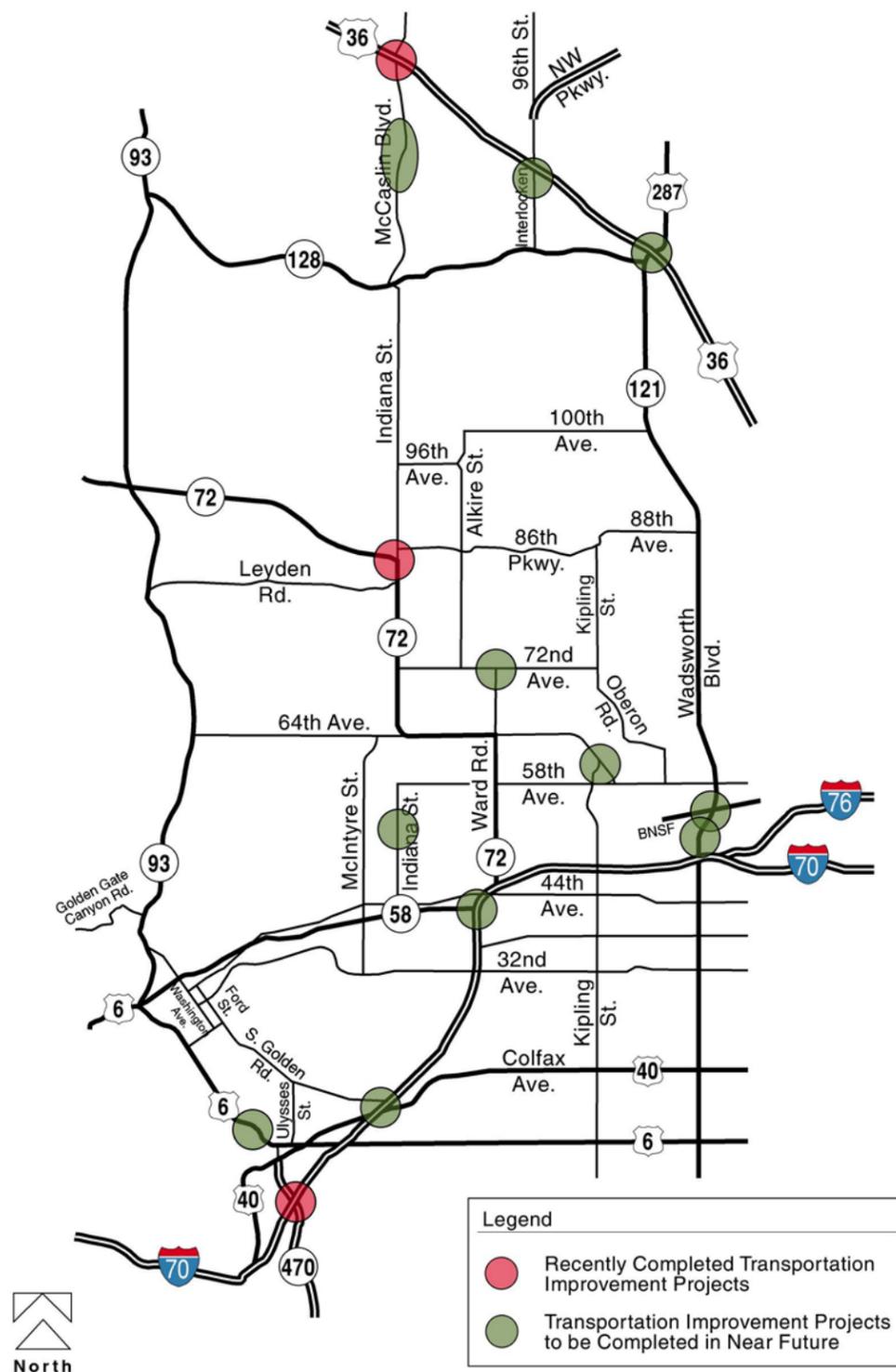
The No Action Alternative consists of the existing roadway system as well as projects with committed funding. The No Action Alternative sets a baseline for environmental impacts and transportation performance compared to those of the build alternatives.

The following improvement projects have been recently completed:

- Improvements to the I-70/C-470 Interchange, including ramp movements between I-70 to the west and the C-470 to the north
- Construction of the southwest loop ramp at the US 36/McCaslin Boulevard interchange
- Intersection improvements at SH 72/Indiana Street

Transportation improvement projects to be completed in the near future:

- Completion of the I-70/SH 58 Interchange, including ramp movements between SH 58 to the west and I-70 to the southwest
- FasTracks West Corridor
- Construction of a grade separation on the Wadsworth Bypass at the Burlington Northern and Santa Fe Railway
- Indiana Street: Croke Canal Bridge Replacement
- Intersection improvements at 120<sup>th</sup> Avenue/Wadsworth Parkway
- Signal improvements to I-70 and Colfax Avenue Signals
- Operational improvements at 72<sup>nd</sup> Avenue/Ward Road
- Zip Shuttle System, US 36 and 96<sup>th</sup> Street Bus Service
- Zip Shuttle System, Purchase Vehicles
- Intersection improvements at 58<sup>th</sup> Avenue/Kipling Parkway
- Signal Improvements at SH 121 and West 52<sup>nd</sup> Avenue and SH 121 and West 53<sup>rd</sup> Avenue
- Pedestrian and Bicycle Projects, Rock Creek Trail Link: at US 287 to Northwest Parkway, McCaslin Link, and Coal Creek to Rock Creek



Source: Compiled by FHU, 2006.

## NO ACTION ALTERNATIVE

The following definition of the No Action Alternative used for the Northwest Corridor Transportation and Environmental Planning Study was developed in consultation with the other ongoing metro area transportation projects and with FHWA: existing transportation facilities, including recently completed projects; and transportation improvement projects that are included in the six-year regional Transportation Improvement Program or have funding identified in a short-term city or county Capital Improvement Program or RTD's Transit Development Plan (see **Figure ES-2**). Improvement projects have been identified through input from city and county officials as meeting this definition. The characteristics of the transportation system with the No Action Alternative, and the transportation benefits of the No Action Alternative compared to the other build alternatives are summarized as they relate to the major needs of the project (see **Table ES-2**). The environmental impacts associated with the No Action Alternative and how they compare to the other build alternatives are summarized for each major environmental resource. Suggested mitigation strategies for these impacts are provided (see **Table ES-3**).

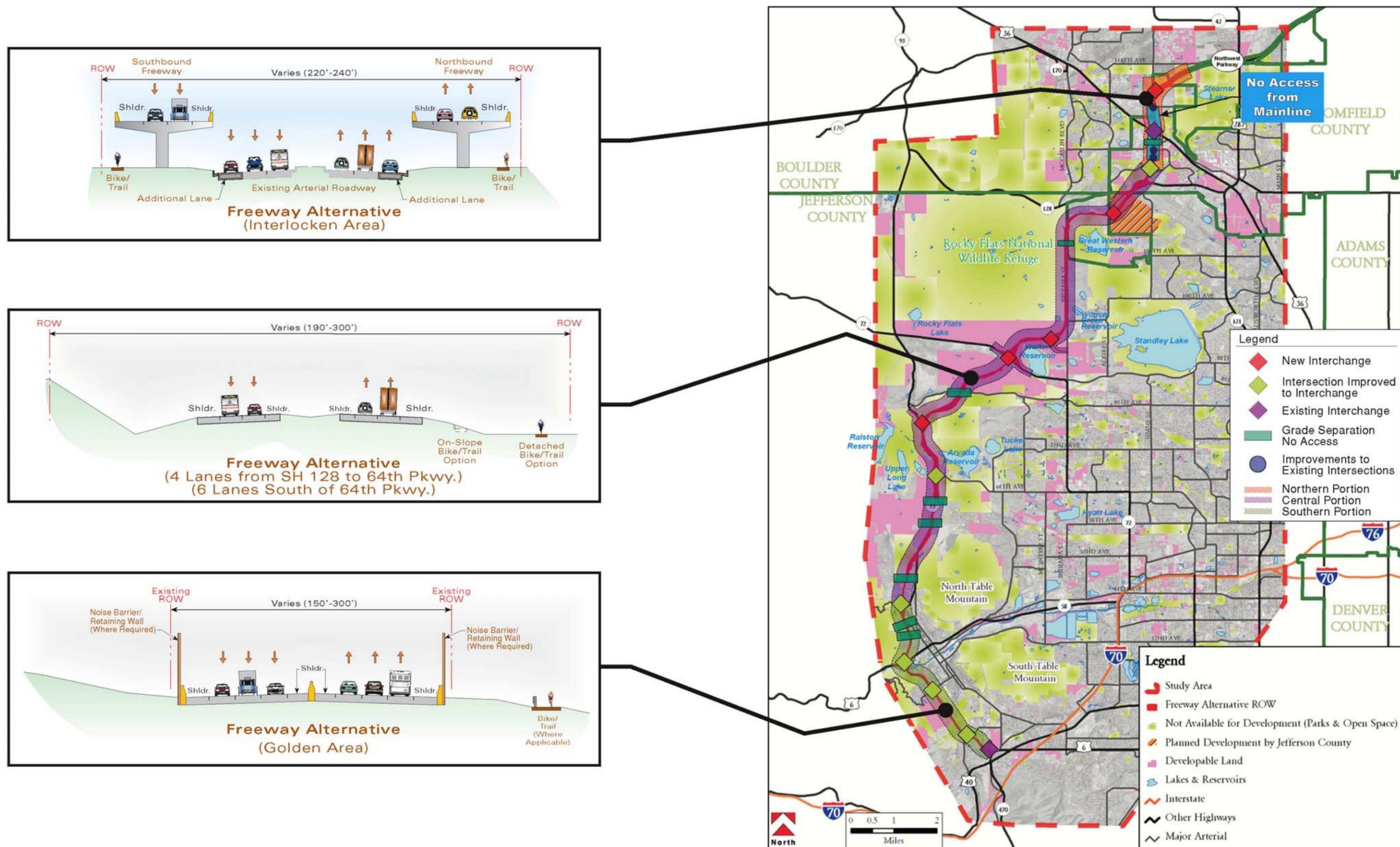
**Table ES-2 Characteristics of Transportation System-No Action Alternative**

Major Project Needs	Transportation Characteristics	Benefits Relative to Build Alternatives
<b>System Connectivity/Functionality</b>	Would require travel on various two and four lane roadways with multiple turns at signalized intersections due to an indirect connection between the northern and southern ends of the corridor.	Fewer connectivity and functionality benefits than the build alternatives. Would require at least 15 additional minutes to travel between the northern and southern ends of the corridor compared to any build alternative.
<b>Travel Demand/Capacity</b>	Would attract 31,000 vehicles per day (vpd) in the northern portion and 62,000 vpd in the southern portion of the corridor on existing roadways. Of the 28 intersections analyzed along the corridor, 14 would operate at level of service (LOS) F.	Fewer benefits in attracting traffic throughout the corridor than the build alternatives. Would result in the greatest traffic congestion.
<b>Travel Reliability</b>	Would result in at least 10,000 more vehicle hours traveled per day than the build alternatives. The No Action Alternative has a calculated accident rate of 3.05 per 100 million vehicle miles traveled (VMT).	Fewer benefits in reducing travel time than the build alternatives. Fewer safety benefits than the build alternatives. Fewer benefits in accommodating inter-regional and regional trips than the build alternatives.
<b>Modal Inter-relationships</b>	Would not enhance the existing pedestrian or bicycle trails in the study area. Would not provide an efficient route to accommodate express bus service. Would not enhance movements between remote neighborhoods and transit stations.	Fewer benefits to modal inter-relationships than the build alternatives because of a disorganized roadway network.

**Table ES-3 Summary of Major Environmental Impacts and Mitigation-No Action Alternative**

Major Environmental Resource	Impact Summary	Impacts Relative to Build Alternatives	Suggested Mitigation Strategies
<b>Land Use</b>	Would not change land use to transportation useage. Continued population and employment growth are expected in the area.	Fewer impacts than build alternatives	No mitigation needed
<b>Right-of-Way</b>	Would not result in right-of-way purchases for transportation improvements.	Fewer impacts than build alternatives	No mitigation needed
<b>Air</b>	Impacts do not exceed air quality standards.	Greater impacts than the build alternatives because of higher emissions resulting from greater congestion in localized areas.	Employment of congestion management techniques.
<b>Noise</b>	Would result in 56 residential noise receiver impacts and no commercial receiver impacts.	Fewer impacts than build alternatives	No mitigation needed
<b>Water Quality</b>	Would create additional impervious surface area from continued growth that would contribute to water quality impacts.	Fewer impacts than build alternatives	Implementation of BMPs on all planned and committed projects.
<b>Wetlands</b>	Would result in no impact other than those associated with planned or committed projects.	Fewer impacts than build alternatives	No mitigation needed
<b>Wildlife</b>	Would result in no impact other than those associated with continued growth within the study area.	Fewer impacts than build alternatives	No mitigation needed
<b>Visual</b>	Would result in no visual impacts.	Fewer impacts than build alternatives	No mitigation needed
<b>Rocky Flats National Wildlife Refuge</b>	Would not disturb Rocky Flats National Wildlife Refuge.	Fewer impacts than build alternatives	No mitigation needed
<b>Parks and Recreation</b>	Would result in no impact other than those associated with continued growth within the study area.	Fewer impacts than build alternatives	No mitigation needed
<b>Other</b>	<i>Historic, Floodplains, Paleontological, Hazardous Materials, Farmlands, and Geology would not be impacted as a result of the No Action Alternative.</i>		

Figure ES-3 Freeway Alternative



### FREEWAY ALTERNATIVE

The Freeway Alternative is a 20.3 mile high-speed facility (55-65 mph posted speed) within the study area that connects the Northwest Parkway in Broomfield with C-470 in Golden. Access to and from the facility is provided exclusively through 11 new interchanges at various locations along the alignment. The Freeway Alternative consists of four to six through lanes with an overall roadway width ranging from 122 feet to 144 feet as measured from the edge of outside shoulder to the edge of outside shoulder (see **Figure ES-3**). A regional bike trail will also be provided along the alignment of the Freeway Alternative. The total probable cost for this alternative, including both construction and right-of-way costs, is \$1,157 Million in 2005 dollars. The characteristics of the transportation system with the Freeway Alternative, and the transportation benefits of the Freeway Alternative compared to the other build alternatives are summarized as they relate to the major needs of the project (see **Table ES-4**). The environmental impacts associated with the Freeway Alternative and how they compare to the other build alternatives are summarized for each major environmental resource. Suggested mitigation strategies for these impacts are provided (see **Table ES-5**).

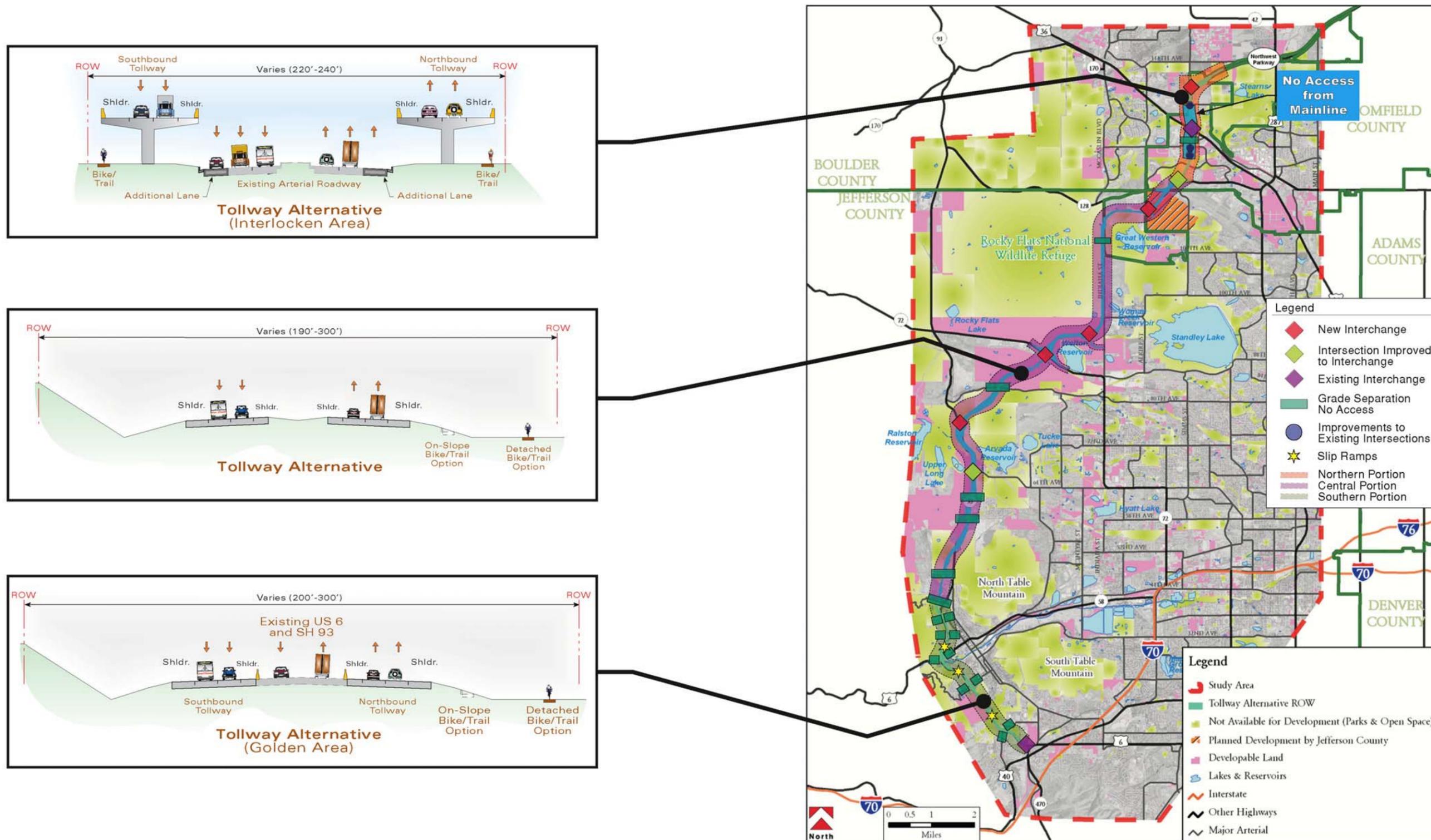
**Table ES-4 Characteristics of Transportation System-Freeway Alternative**

Major Project Needs	Transportation Characteristics	Benefits Relative to Other Build Alternatives
<b>System Connectivity/Functionality</b>	Would enhance system connectivity by creating a direct route to accommodate inter-regional and regional travel between the northern and southern ends of the corridor. The Freeway Alternative would have high functionality with fully access-controlled facilities integrating best with surrounding freeway and tollway facilities.	Same connectivity and functionality benefits as the Tollway Alternative. Greater benefits than the Regional Arterial Alternative because of a more direct route. Greater benefits than the Combined Alternative because of higher speed and capacity.
<b>Travel Demand/Capacity</b>	Would attract 29,000 vehicles per day (vpd) in the northern portion and 108,000 vpd in the southern portion of the corridor.	Greater ability to attract traffic throughout the corridor compared to the other build alternatives.
<b>Travel Reliability</b>	Would result in a reduction of approximately 10,000 vehicle hours of travel per day as determined in the 2030 traffic forecast. Would reduce overall accident rates by constructing interchanges and combining access points. Would accommodate the highest volume of inter-regional and regional trips. The Freeway Alternative has a calculated accident rate of 2.76 per 100 million vehicle miles traveled (VMT).	Fewer benefits in reducing travel time compared to the other build alternatives. Same safety benefits as the Tollway Alternative, greater benefits than the Regional Arterial Alternative and Combined Alternative. Greater benefits in accommodating inter-regional and regional trips compared to the other build alternatives.
<b>Modal Inter-relationships</b>	Would provide a more efficient route to accommodate express bus service. Would enhance movements between remote neighborhoods and transit stations to promote use of transit corridors.	Greater benefits to modal inter-relationships than the Tollway Alternative because of the toll cost. Greater benefits than the Regional Arterial Alternative because of a more direct route. Greater benefits than the Combined Alternative because of higher speed and capacity.

**Table ES-5 Summary of Major Environmental Impacts and Mitigation-Freeway Alternative**

Major Environmental Resource	Impact Summary	Build Alternative Impact Ranking from Greatest to Least	Suggested Mitigation Strategies
<b>Land Use</b>	Converts 807 acres to transportation use. Potential change to timing and density of development.	Combined Alternative → Tollway Alternative → <b>Freeway Alternative</b> → Regional Arterial Alternative	Integrate development with transportation plans. CDOT does not govern land use designations.
<b>Right-of-Way</b>	Requires three residential and two business relocations.	Combined Alternative → Tollway Alternative → Regional Arterial Alternative → <b>Freeway Alternative</b>	Provide eligible displaces with assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.
<b>Air</b>	Impacts do not exceed air quality standards.	<b>Freeway Alternative</b> = Tollway Alternative = Combined Alternative = Regional Arterial Alternative	Implement dust control techniques during construction.
<b>Noise</b>	Results in 276 residential and 19 business noise receptor impacts.	<b>Freeway Alternative</b> → Combined Alternative → Tollway Alternative → Regional Arterial Alternative	Construct noise barriers in areas where feasible and reasonable. Noise mitigation in five areas is recommended.
<b>Water Quality</b>	299.0 acres of impervious surface area contributing to water quality impacts.	Regional Arterial Alternative → Combined Alternative → <b>Freeway Alternative</b> → Tollway Alternative	Incorporate water quality detention/retention ponds and/or grass swales where practicable.
<b>Wetlands</b>	Directly impacts 15.6 acres which results in 5.26 acres of weighted wetlands impacts.	Regional Arterial Alternative → Combined Alternative → <b>Freeway Alternative</b> → Tollway Alternative	Mitigate all impacted wetlands on a 1:1 basis. Wetland banking will be preferred, except when on-site mitigation can maintain locally important wetland functions and values.
<b>Wildlife</b>	Impacts 730 acres of vegetation and various wildlife habitats.	Tollway Alternative → Combined Alternative → <b>Freeway Alternative</b> → Regional Arterial Alternative	Construct wildlife crossing structures to maintain or improve wildlife movement within the corridor.
<b>Visual</b>	Causes visual impacts to occur in certain areas of the corridor due to constructed features.	<b>Freeway Alternative</b> = Tollway Alternative → Combined Alternative → Regional Arterial Alternative	Consider the visual character of the disturbed area when developing a final grading and revegetation plan. Aesthetic issues for structural features to be addressed by local jurisdictions.
<b>Rocky Flats National Wildlife Refuge</b>	Requires acquisition of 80 acres from Rocky Flats National Wildlife Refuge for transportation use.	<b>Freeway Alternative</b> = Tollway Alternative = Combined Alternative → Regional Arterial Alternative	CDPHE will propose methods to protect public health and the environment from potential soil contamination near Rocky Flats National Wildlife Refuge during construction.
<b>Parks and Recreation</b>	Directly impacts 13.08 acres of parks and recreation areas.	Combined Alternative → Tollway Alternative → <b>Freeway Alternative</b> → Regional Arterial Alternative	Mitigate on a parcel-by-parcel basis with input from park property owners.
<b>Other</b>	<i>Impacts to Historic, Floodplains, Paleontological, Hazardous Materials, Farmlands, and Geology resources are sufficiently similar among all build alternatives and impacts will be mitigated as appropriate.</i>		

Figure ES-4 Tollway Alternative



### TOLLWAY ALTERNATIVE

The Tollway Alternative is a 20.3 mile high-speed facility (55-65 mph posted speed) within the study area that connects the Northwest Parkway in Broomfield with C-470 in Golden. Access to and from the facility is provided through seven new interchanges at various locations along the alignment and three sets of slip ramps in the Golden area. Slip ramps provide access between two parallel facilities. This feature is used in the area where US 6 and SH 93 run parallel to the tolled facility. The Tollway Alternative consists of four tolled lanes throughout its entire length that will be located to ensure that no general purpose lanes are impacted by the footprint of the tollway. The overall roadway width of the tollway is 144 feet as measured from the edge of outside shoulder to the edge of outside shoulder when not parallel to existing facilities (see **Figure ES-4**). Tolls will be collected electronically with transponders. A regional bike trail will be provided along the alignment of the Tollway Alternative. The total probable cost for this alternative, including both construction and right-of-way costs, is \$1,176 Million in 2005 dollars. The characteristics of the transportation system with the Tollway Alternative, and the transportation benefits of the Tollway Alternative compared to the other build alternatives are summarized as they relate to the major needs of the project (see **Table ES-6**). The environmental impacts associated with the Tollway Alternative and how they compare to the other build alternatives are summarized for each major environmental resource. Suggested mitigation strategies for these impacts are provided (see **Table ES-7**).

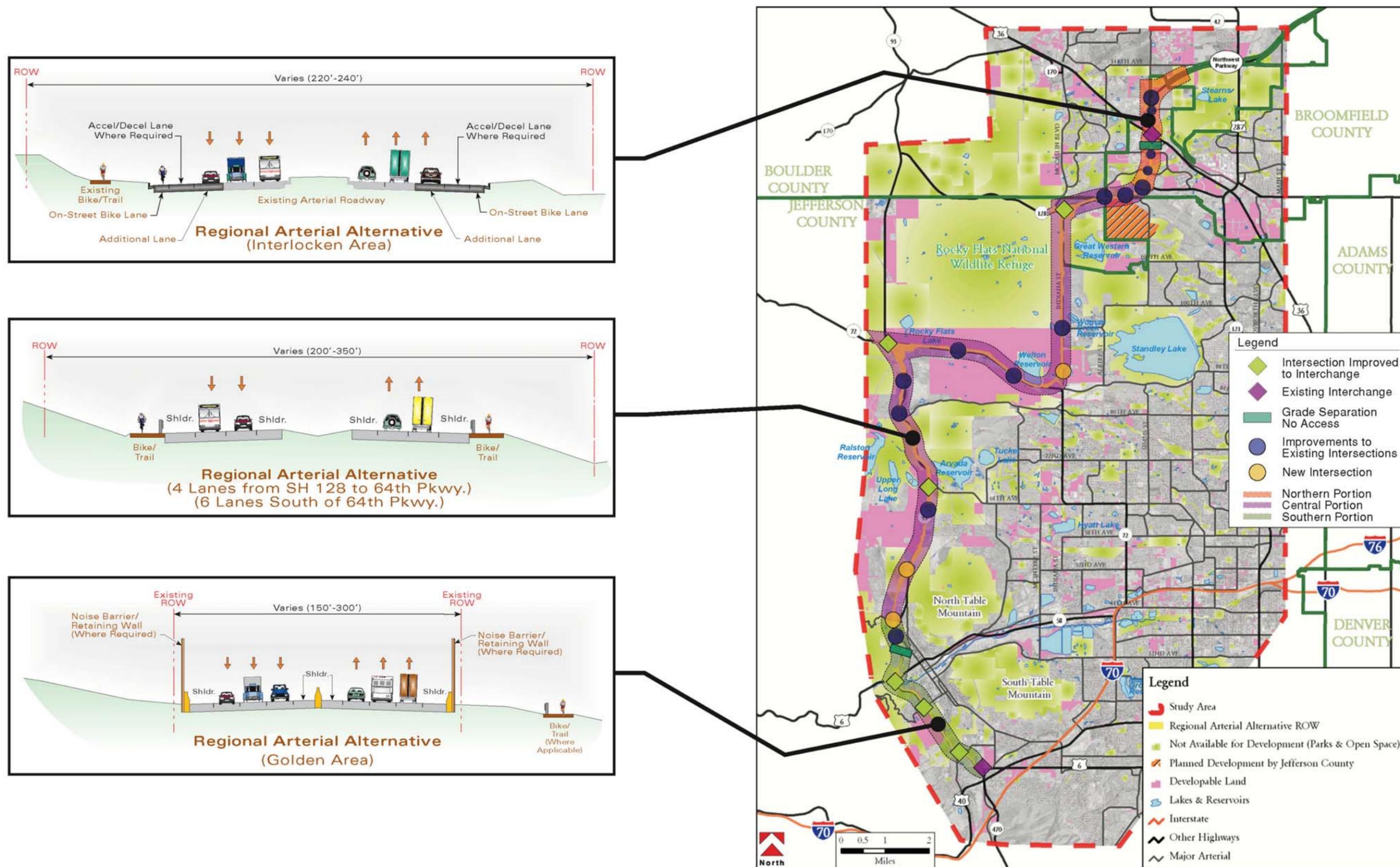
**Table ES-6 Characteristics of Transportation System-Tollway Alternative**

Major Project Needs	Transportation Characteristics	Benefits Relative to Other Build Alternatives
<b>System Connectivity/Functionality</b>	Would enhance system connectivity by creating a direct route to accommodate inter-regional and regional travel between the northern and southern ends of the corridor. The Tollway Alternative would have high functionality with fully access-controlled facilities integrating best with surrounding freeway and tollway facilities.	Same connectivity and functionality benefits as the Freeway Alternative. Greater benefits than the Regional Arterial Alternative because of a more direct route. Greater benefits than the Combined Alternative because of higher speed and capacity.
<b>Travel Demand/Capacity</b>	Would attract 18,000 vehicles per day (vpd) in the northern portion and 37,000 vpd in the southern portion of the corridor. These volumes are in addition to traffic on existing facilities.	Fewer benefits in attracting traffic throughout the corridor compared to the other build alternatives.
<b>Travel Reliability</b>	Would result in a reduction of approximately 162,000 vehicle hours of travel per day as determined in the 2030 traffic forecast. Would reduce overall accident rates by constructing interchanges and combining access points. The Tollway Alternative has a calculated accident rate of 2.93 per 100 million vehicle miles traveled (VMT). Tolling provides for better congestion management on facility.	Greater benefits in reducing travel time compared to the other build alternatives. Same safety benefits as the Freeway Alternative, greater benefits than the Regional Arterial Alternative and the Combined Alternative. Greater benefits than the Regional Arterial Alternative in accommodating inter-regional and regional trips, fewer benefits than the Freeway Alternative and the Combined Alternative.
<b>Modal Inter-relationships</b>	Would provide a more efficient route to accommodate express bus service. Would enhance movements between remote neighborhoods and transit stations to promote use of transit corridors.	Fewer benefits to modal inter-relationships than the Freeway Alternative because of the toll cost. Greater benefits than the Regional Arterial Alternative because of a more direct route. Greater benefits than the Combined Alternative because of higher speed and capacity.

**Table ES-7 Summary of Major Environmental Impacts and Mitigation-Tollway Alternative**

Major Environmental Resource	Impact Summary	Build Alternative Impact Ranking from Greatest to Least	Suggested Mitigation Strategies
<b>Land Use</b>	Converts 868 acres to transportation use. Potential change to timing and density of development.	Combined Alternative → <b>Tollway Alternative</b> → Freeway Alternative → Regional Arterial Alternative	Integrate development with transportation plans. CDOT does not govern land use designations.
<b>Right-of-Way</b>	Requires three residential and seven business relocations.	Combined Alternative → <b>Tollway Alternative</b> → Regional Arterial Alternative → Freeway Alternative	Provide eligible displaces with assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.
<b>Air</b>	Impacts do not exceed air quality standards.	Freeway Alternative = <b>Tollway Alternative</b> = Combined Alternative = Regional Arterial Alternative	Implement dust control techniques during construction.
<b>Noise</b>	Results in 118 residential and 10 business noise receptor impacts.	Freeway Alternative → Combined Alternative → <b>Tollway Alternative</b> → Regional Arterial Alternative	Construct noise barriers in areas where feasible and reasonable. Noise mitigation in five areas is recommended.
<b>Water Quality</b>	Contributes 289.9 acres of impervious surface area to water quality impacts; however, much greater overall impact due to the current road operations.	Regional Arterial Alternative → Combined Alternative → Freeway Alternative → <b>Tollway Alternative</b>	Incorporate water quality detention/retention ponds and/or grass swales where practicable.
<b>Wetlands</b>	Directly impacts 15.2 acres which results in 5.25 acres of weighted wetlands impacts.	Regional Arterial Alternative → Combined Alternative → Freeway Alternative → <b>Tollway Alternative</b>	Mitigate all impacted wetlands on a 1:1 basis. Wetland banking will be preferred, except when on-site mitigation can maintain locally important wetland functions and values.
<b>Wildlife</b>	Impacts 776 acres of vegetation and various wildlife habitats.	<b>Tollway Alternative</b> → Combined Alternative → Freeway Alternative → Regional Arterial Alternative	Conduct wildlife crossing structures to maintain or improve wildlife movement within the corridor.
<b>Visual</b>	Causes visual impacts to occur in certain areas of the corridor due to constructed features.	Freeway Alternative = <b>Tollway Alternative</b> → Combined Alternative → Regional Arterial Alternative	Consider the visual character of the disturbed area when developing a final grading and revegetation plan. Aesthetic issues for structural features to be addressed by local jurisdictions.
<b>Rocky Flats National Wildlife Refuge</b>	Requires acquisition of 80 acres from Rocky Flats National Wildlife Refuge for transportation use.	Freeway Alternative = <b>Tollway Alternative</b> = Combined Alternative → Regional Arterial Alternative	CDPHE will propose methods to protect public health and the environment from potential soil contamination near Rocky Flats National Wildlife Refuge during construction.
<b>Parks and Recreation</b>	Directly impacts 15.71 acres of parks and recreation areas.	Combined Alternative → <b>Tollway Alternative</b> → Freeway Alternative → Regional Arterial Alternative	Mitigate on a parcel-by-parcel basis with input from park property owners.
<b>Other</b>	<i>Impacts to Historic, Floodplains, Paleontological, Hazardous Materials, Farmlands, and Geology resources are sufficiently similar among all build alternatives and impacts will be mitigated as appropriate.</i>		

Figure ES-5 Regional Arterial Alternative



### REGIONAL ARTERIAL ALTERNATIVE

The Regional Arterial Alternative is a 22.4 mile facility (45-55 mph posted speed) within the study area that connects the Northwest Parkway in Broomfield with C-470 in Golden. Access to and from the facility is provided through six new interchanges at various locations along the alignment and numerous new or improved intersections. The Regional Arterial Alternative consists of four to six through lanes with an overall roadway width ranging from 122 feet to 144 feet as measured from the edge of outside shoulder to the edge of outside shoulder (see **Figure ES-5**). A regional bike trail will be provided along the alignment of the Regional Arterial Alternative. The total probable cost for this alternative, including both construction and right-of-way costs, is \$672 Million in 2005 dollars. The characteristics of the transportation system with the Regional Arterial Alternative, and the transportation benefits of the Regional Arterial Alternative compared to the other build alternatives are summarized as they relate to the major needs of the project (see **Table ES-8**). The environmental impacts associated with the Regional Arterial Alternative and how they compare to the other build alternatives are summarized for each major environmental resource. Suggested mitigation strategies for these impacts are provided (see **Table ES-9**).

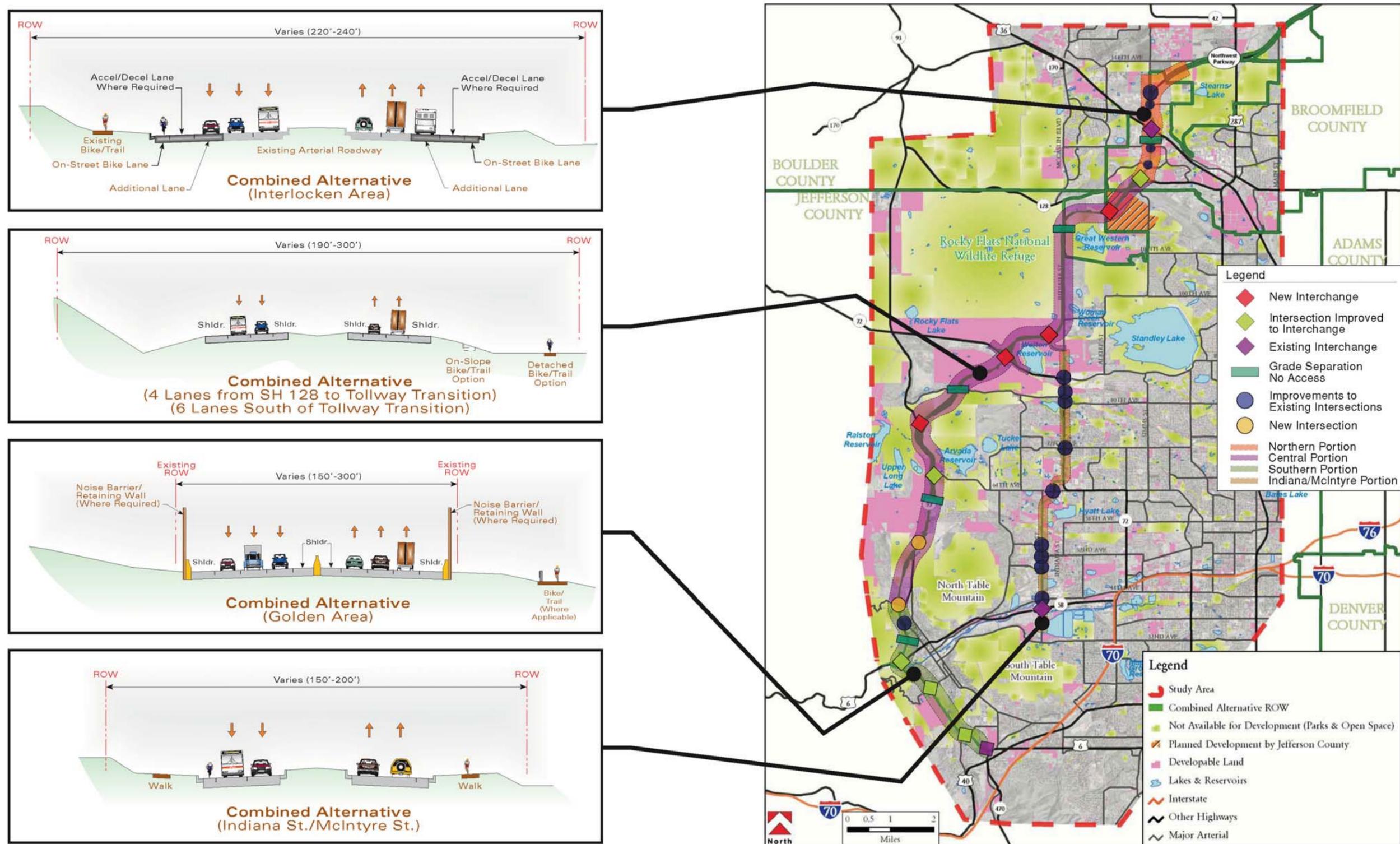
**Table ES-8 Characteristics of Transportation System-Regional Arterial Alternative**

Major Project Needs	Transportation Characteristics	Benefits Relative to Other Build Alternatives
<b>System Connectivity/Functionality</b>	Would enhance system connectivity by creating a direct route to accommodate inter-regional and regional travel between the northern and southern ends of the corridor. Greatly improves functionality but would be limited by the at-grade intersections present throughout the corridor.	Fewer connectivity and functionality benefits than the Freeway Alternative, the Tollway Alternative, and the Combined Alternative because of a less direct route and a greater number of signalized intersections.
<b>Travel Demand/Capacity</b>	Would attract 51,000 vehicles per day (vpd) in the northern portion and 78,000 vpd in the southern portion of the corridor.	Greater benefits in attracting traffic throughout the corridor than the Tollway Alternative and the Combined Alternative, but fewer benefits than the Freeway Alternative.
<b>Travel Reliability</b>	Would result in a reduction of approximately 12,000 vehicle hours of travel per day as determined in the 2030 traffic forecast. Would reduce accident rates by constructing interchanges and combining access points. The Regional Arterial Alternative has a calculated accident rate of 2.98 per 100 million vehicle miles traveled (VMT).	Greater benefits in reducing travel time than the Freeway Alternative, but fewer benefits than the Tollway Alternative and the Combined Alternative. Fewer safety benefits than the other build alternatives. Fewer benefits in accommodating inter-regional and regional trips than the other build alternatives.
<b>Modal Inter-relationships</b>	Would provide a more efficient route to accommodate express bus service. Would enhance movements between remote neighborhoods and transit stations to promote use of transit corridors.	Fewer benefits to modal inter-relationships than the other build alternatives because of the less direct route and the greater number of signalized intersections.

**Table ES-9 Summary of Major Environmental Impacts and Mitigation-Regional Arterial Alternative**

Major Environmental Resource	Impact Summary	Build Alternative Impact Ranking from Greatest to Least	Suggested Mitigation Strategies
<b>Land Use</b>	Converts 694 acres to transportation use. Potential change to timing and density of development.	Combined Alternative → Tollway Alternative → Freeway Alternative → <b>Regional Arterial Alternative</b>	Integrate development with transportation plans. CDOT does not govern land use designations.
<b>Right-of-Way</b>	Requires six residential and three business relocations.	Combined Alternative → Tollway Alternative → <b>Regional Arterial Alternative</b> → Freeway Alternative	Provide eligible displaces with assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.
<b>Air</b>	Impacts do not exceed air quality standards.	Freeway Alternative = Tollway Alternative = Combined Alternative = <b>Regional Arterial Alternative</b>	Implement dust control techniques during construction.
<b>Noise</b>	Results in 104 residential and 20 business noise receptor impacts.	Freeway Alternative → Combined Alternative → Tollway Alternative → <b>Regional Arterial Alternative</b>	Construct noise barriers in areas where feasible and reasonable. Noise mitigation in five areas is recommended.
<b>Water Quality</b>	Contributes 348.0 acres of impervious surface area to water quality impacts.	<b>Regional Arterial Alternative</b> → Combined Alternative → Freeway Alternative → Tollway Alternative	Incorporate water quality detention/retention ponds and/or grass swales where practicable.
<b>Wetlands</b>	Directly impacts 20.9 acres which results in 7.14 acres of weighted wetlands impacts.	<b>Regional Arterial Alternative</b> → Combined Alternative → Freeway Alternative → Tollway Alternative	Mitigate all impacted wetlands on a 1:1 basis. Wetland banking will be preferred, except when on-site mitigation can maintain locally important wetland functions and values.
<b>Wildlife</b>	Impacts 671 acres of vegetation and various wildlife habitats.	Tollway Alternative → Combined Alternative → Freeway Alternative → <b>Regional Arterial Alternative</b>	Construct wildlife crossing structures to maintain or improve wildlife movement within the corridor.
<b>Visual</b>	Causes visual impacts to certain areas of the corridor due to constructed features.	Freeway Alternative = Tollway Alternative → Combined Alternative → <b>Regional Arterial Alternative</b>	Consider the visual character of the disturbed area when developing a final grading and revegetation plan. Aesthetic issues for structural features to be addressed by local jurisdictions.
<b>Rocky Flats National Wildlife Refuge</b>	Requires the acquisition of 98 acres from Rocky Flats National Wildlife Refuge for transportation use.	Freeway Alternative = Tollway Alternative = Combined Alternative → <b>Regional Arterial Alternative</b>	CDPHE will propose methods to protect public health and the environment from potential soil contamination near Rocky Flats National Wildlife Refuge during construction.
<b>Parks and Recreation</b>	Directly impacts 8.19 acres of parks and recreation areas.	Combined Alternative → Tollway Alternative → Freeway Alternative → <b>Regional Arterial Alternative</b>	Mitigate on a parcel-by-parcel basis with input from park property owners.
<b>Other</b>	<i>Impacts to Historic, Floodplains, Paleontological, Hazardous Materials, Farmlands, and Geology resources are sufficiently similar among all build alternatives and impacts will be mitigated as appropriate.</i>		

Figure ES-6 Combined Alternative



## COMBINED ALTERNATIVE

The Combined Alternative is a merged and packaged alternative with three different roadway classifications; tollway, major regional arterial, and principal arterial. From the Northwest Parkway to SH 128, the facility is classified as a major regional arterial. From SH 128 to just south of 64<sup>th</sup> Parkway, the facility is classified as a tollway. From this point south to C-470, the facility is classified as a major regional arterial. The total length of this alignment is 20.1 miles. This alignment is packaged with a 7.5 mile principal arterial alignment on Indiana Street and McIntyre Street. The alignment between Northwest Parkway and C-470 is a mixture of a high speed tollway facility (55-65 mph posted speed) that is fully access controlled with interchanges and a lower speed major regional arterial facility (45-55 mph posted speed) that is access controlled with interchanges and intersections. The Indiana Street/McIntyre Street alignment is a principal arterial that is a lower speed facility (40-50 mph posted speed) that is access controlled with the use of intersections and driveways. The alignment between Northwest Parkway and C-470 consists of four to six through lanes with an overall width ranging from 122 feet to 144 feet as measured from edge of outside shoulder to edge of outside shoulder. On the Indiana Street/McIntyre Street alignment, the roadway width varies from 109 to 145 feet as measured from edge of sidewalk to edge of sidewalk (see **Figure ES-6**). A regional bike trail will be provided along the alignment of the Combined Alternative. The total probable cost for this alternative, including both construction and right-of-way costs, is \$922 Million in 2005 dollars. The characteristics of the transportation system with the Combined Alternative, and the transportation benefits of the Combined Alternative compared to the other build alternatives are summarized as they relate to the major needs of the project (see **Table ES-10**). The environmental impacts associated with the Combined Alternative and how they compare to the other build alternatives are summarized for each major environmental resource. Suggested mitigation strategies for these impacts are provided (see **Table ES-11**).

**Table ES-10 Characteristics of Transportation System-Combined Alternative**

Major Project Needs	Transportation Characteristics	Benefits Relative to Other Build Alternatives
<b>System Connectivity/Functionality</b>	Would enhance system connectivity by creating a direct route to accommodate inter-regional and regional travel between the northern and southern ends of the corridor. Greatly improves functionality but would be limited by the signalized intersections present at the northern and southern ends of the corridor.	Greater benefits than the Regional Arterial Alternative because of a more direct route and fewer signalized intersections. Fewer benefits than the Freeway Alternative and the Tollway Alternative because of lower speeds and lower capacity.
<b>Travel Demand/Capacity</b>	Would attract 46,000 vehicles per day (vpd) in the northern portion and 69,000 vpd in the southern portion of the corridor. Volumes are in addition to traffic on existing facilities in the tolled portion of the alignment. Would also attract 30,000 to 40,000 vpd in the Indiana Street/McIntyre Street portion.	Greater benefits in attracting traffic throughout the corridor than the Tollway Alternative and the Regional Arterial Alternative, but fewer benefits than the Freeway Alternative.
<b>Travel Reliability</b>	Would result in a reduction of approximately 17,000 vehicle hours of travel per day as determined in the 2030 traffic forecast. Would reduce overall accident rates by constructing interchanges and combining access points. The Combined Alternative has a calculated accident rate of 3.04 per 100 million vehicle miles traveled (VMT). Tolling provides for better congestion management on facility.	Greater benefits in reducing travel time than the Freeway Alternative and the Regional Arterial Alternative, but fewer benefits than the Tollway Alternative. Greater safety benefits than the Regional Arterial Alternative, but fewer benefits than the Freeway Alternative and the Tollway Alternative. Greater benefits in accommodating inter-regional and regional trips than the Tollway Alternative and the Regional Arterial Alternative, but fewer benefits than the Freeway Alternative.
<b>Modal Inter-relationships</b>	Would provide a more efficient route to accommodate express bus service. Would enhance movements between remote neighborhoods and transit stations to promote use of transit corridors.	Greater benefits to modal inter-relationships than the Regional Arterial Alternative because of a more direct route fewer signalized intersections. Fewer benefits than the Freeway Alternative and the Tollway Alternative because of lower speeds and lower capacity.

**Table ES-11 Summary of Major Environmental Impacts and Mitigation-Combined Alternative**

Major Environmental Resource	Impact Summary	Build Alternative Impact Ranking from Greatest to Least	Suggested Mitigation Strategies
<b>Land Use</b>	Convert 900 acres to transportation use. Potential change to timing and density of development.	<b>Combined Alternative</b> → Tollway Alternative → Freeway Alternative → Regional Arterial Alternative	Integrate development with transportation plans. CDOT does not govern land use designations.
<b>Right-of-Way</b>	Requires 29 residential and nine business relocations.	<b>Combined Alternative</b> → Tollway Alternative → Regional Arterial Alternative → Freeway Alternative	Provide eligible displacees with assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.
<b>Air</b>	Impacts do not exceed air quality standards.	Freeway Alternative = Tollway Alternative = <b>Combined Alternative</b> = Regional Arterial Alternative	Implement dust control techniques during construction.
<b>Noise</b>	Results in 133 residential and 14 business noise receptor impacts.	Freeway Alternative → <b>Combined Alternative</b> → Tollway Alternative → Regional Arterial Alternative	Construct noise barriers in areas where feasible and reasonable. Noise mitigation in five areas is recommended.
<b>Water Quality</b>	Contributes 325.6 acres of impervious surface area to water quality impacts.	Regional Arterial Alternative → <b>Combined Alternative</b> → Freeway Alternative → Tollway Alternative	Incorporate water quality detention/retention ponds and/or grass swales where practicable.
<b>Wetlands</b>	Directly impacts 18.2 acres which results in 6.31 acres of weighted wetlands impacts.	Regional Arterial Alternative → <b>Combined Alternative</b> → Freeway Alternative → Tollway Alternative	Mitigate all impacted wetlands on a 1:1 basis. Wetland banking will be preferred, except when on-site mitigation can maintain locally important wetland functions and values.
<b>Wildlife</b>	Impacts 775 acres of vegetation and various wildlife habitats.	Tollway Alternative → <b>Combined Alternative</b> → Freeway Alternative → Regional Arterial Alternative	Construct wildlife crossing structures to maintain or improve wildlife movement within the corridor.
<b>Visual</b>	Causes visual impacts to occur in certain areas of the corridor due to constructed features. Additional impacts will occur on Indiana Street and McIntyre Street.	Freeway Alternative = Tollway Alternative → <b>Combined Alternative</b> → Regional Arterial Alternative	Consider the visual character of the disturbed area when developing a final grading and revegetation plan. Aesthetic issues for structural features to be addressed by local jurisdictions.
<b>Rocky Flats National Wildlife Refuge</b>	Requires the acquisition of 80 acres from Rocky Flats National Wildlife Refuge for transportation use.	Freeway Alternative = Tollway Alternative = <b>Combined Alternative</b> → Regional Arterial Alternative	CDPHE will propose methods to protect public health and the environment from potential soil contamination near Rocky Flats National Wildlife Refuge during construction.
<b>Parks and Recreation</b>	Directly impacts 15.93 acres of parks and recreation areas.	<b>Combined Alternative</b> → Tollway Alternative → Freeway Alternative → Regional Arterial Alternative	Mitigate on a parcel-by-parcel basis with input from park property owners.
<b>Other</b>	<i>Impacts to Historic, Floodplains, Paleontological, Hazardous Materials, Farmlands, and Geology resources are sufficiently similar among all build alternatives and impacts will be mitigated as appropriate.</i>		



## ***FINANCIAL CONSIDERATIONS***

The 2030 Statewide Transportation Plan and DRCOG 2030 Metro Vision Regional Transportation Plan do not yet identify funding sources for the construction of any build alternative in the Northwest Corridor. Potential funding sources for the construction and maintenance of a safe and reliable roadway could include federal, state, county, or local resources. Proceeds from the sale of bonds are a supplemental source of funding for alternatives with tolling. The forecasted toll revenues generated by travelers limit the value of bonds that could be sold. Expected bond proceeds would partially cover the total construction cost of an alternative and would cover initial roadway maintenance, tolling operations, and debt service. Once the roadway is constructed, tolling revenues would cover the costs of on-going maintenance, tolling operations, and debt service.

The No Action Alternative contains committed transportation projects that have identified funding in the 2030 Statewide Transportation Plan and DRCOG 2030 Metro Vision Regional Transportation Plan. These projects will be completed regardless of whether a build alternative is selected or not selected.

## ***COMPARISON OF ALTERNATIVES AND IDENTIFICATION OF A RECOMMENDED ALTERNATIVE***

All four of the final build alternatives meet the project purpose and need. A brief discussion of the transportation performance, environmental impacts, and constructability for each alternative is provided in the following section. Community acceptance and the ability to gain project funding are examples of constructability factors that are considered throughout the study. A recommended alternative is identified as the alternative that provides the optimal balance of all these measures.

The Freeway Alternative has a direct connection from the Northwest Parkway to C-470. The functionality of this alternative is enhanced by its controlled access. This will attract more vehicle trips per day than the other build alternatives and provide safer driving conditions. This alternative would reduce the number of highly congested intersections Level of Service (LOS) F by eight over the future no action conditions. This alternative would also improve the movement of vehicles between neighborhoods and transit stations because of its higher speeds. The environmental impacts resulting from this alternative are of a similar magnitude to those of other alternatives, but it has large noise and visual impacts. The cost of this alternative is estimated to be \$1,157 million and there is little potential for additional funding other than federal and state funds. The elevated sections of this alternative in the Interlocken area would be difficult to construct and would result in more temporary impacts to local economic centers during construction. It also does not provide as direct an access to the Interlocken economic centers because of this elevated configuration. This alternative does not perform as well as others with respect to community acceptance because of cost, noise, local impacts and because it does not provide improvements along the Indiana Street/McIntyre Street alignment.

The Tollway Alternative has a direct connection from the Northwest Parkway to C-470. The functionality and safety of this alternative are enhanced by its controlled access, but it would attract less vehicle trips per day than the other build alternatives because of tolling. This alternative would reduce the number of highly congested LOS F intersections by four over the future no action conditions. It would also improve the movement of vehicles between neighborhoods and transit stations because of its high speeds and lack of congestion, but would be used by fewer travelers because of tolling. The environmental impacts resulting from this alternative are of a similar magnitude to those of other alternatives, except that its extra lanes in Golden and elevated sections in Interlocken create visual intrusions to local residents. The cost of this alternative is estimated to be \$1,176 million and would be partially funded by tolls. The elevated sections of this alternative and the need to construct tolled lanes adjacent to existing US 6 and SH 93 would result in difficult construction conditions and temporary impacts to local economic centers and residential neighborhoods. It also does not provide as direct an access to the Interlocken economic centers because of



this elevated configuration. The visual intrusions, local impacts, lack of community acceptance to tolling, and lack of improvements along the Indiana Street/McIntyre Street alignment reduce the preference for this alternative.

The Regional Arterial Alternative has a less-direct connection from the Northwest Parkway to C-470 than the other alternatives because of out-of-direction travel along SH 72. The functionality of this alternative is reduced by the number of signalized intersections and slower speeds. The potential accident rate for this alternative would be greater than that for other alternatives because of numerous intersections along the alignment. This alternative would reduce the number of highly congested LOS F intersections by four over the future no action conditions, but would be used by a lower volume of inter-regional and regional travelers than the other alternatives because of its lower functional classification and out-of-direction travel. This alternative would also improve the movement of vehicles between remote neighborhoods and transit stations but to a lesser extent than the other alternatives because of its lower speeds, indirect route, and greater number of intersections. The environmental impacts associated with this alternative are of a lesser magnitude than those of the other alternatives except for impacts to wetlands and water quality. The cost of this alternative is estimated to be \$672 million, and there is little potential for additional funding besides federal and state funds. The reduced ability of this alternative to accommodate inter-regional and regional trips, its impacts to the aquatic environment, and lack of improvements along the Indiana Street/McIntyre Street alignment reduces its desirability.

The Combined Alternative has a direct connection from the Northwest Parkway to C-470 and an additional connection to SH 58. This is the only alternative that provides improvements along Indiana Street/McIntyre Street. The functionality of this alternative is enhanced by its two alignments. The safety characteristics of this alternative are enhanced in the tolled section where access is controlled. This alternative would reduce the number of highly congested LOS F intersections by eight over the future no action conditions and would accommodate a high volume of inter-regional and regional trips. This alternative would also improve the movement of vehicles between neighborhoods and transit stations because of the two improved alignments. The environmental impacts associated with this alternative are of a higher magnitude to those of other alternatives because of its greater length. This additional length results in more residential and business displacements. The cost of this alternative is estimated to be \$922 million, \$107 million of which is for improvements to the Indiana Street/McIntyre Street alignment. There would be a source of funding from tolling and the potential for local-agency funding because a portion of the alignment is off the state highway system. Public acceptance of this alternative would be enhanced by its improved access to local economic centers, lower speeds in developed areas, consistency with local and regional transportation and land-use plans, and the potential to incorporate context-sensitive design elements along Indiana Street/McIntyre Street. This is the only alternative that improves access and traffic flow to commercial developments located near the intersection of 64<sup>th</sup> Avenue and Indiana Street/McIntyre Street (see **Figure 4.4-3**). This alternative best balances environmental impacts with transportation benefits and constructability considerations.

**The Combined Alternative has been identified as the recommended alternative.** It best satisfies the need for improved access and mobility to the community/economic activity centers of the local area. It best fits the context of its location (regional arterial or principal arterial) through populated areas and conforms well to local and regional transportation and land-use plans. It provides improvements across the entire study area and distributes the burden of future traffic increases between the SH 93 and Indiana Street/McIntyre Street corridors. The lower-speed facilities of the Combined Alternative reduce traffic noise and provide more opportunities for context-sensitive design elements.



The Freeway Alternative and Combined Alternative satisfy the project's purpose and need. The estimated cost of the Freeway Alternative is \$1,157 million with no identified funding source. The estimated cost of the Combined Alternative is \$922 million with potential funding from tolling. The difference in cost between these two alternatives is between \$370 and \$465 million after including funding from tolling. This difference in project cost is unacceptably high (see **Table 2.5-2**). In addition, some important community impacts, such as noise and local access, are better addressed by the Combined Alternative. The addition of the principal arterial alignment of the Combined Alternative provides more transportation benefits to the entire study area than the Freeway Alternative because it improves capacity along two alignments.

The project cost for the Tollway Alternative is similar to that of the Combined Alternative after including funding from tolling. The Tollway alternative would also require an additional cost of approximately \$400 million in modifications to avoid Section 4(f) properties in Golden. This additional cost to the project was determined to not be prudent or feasible and thus was unacceptable to CDOT. Additionally, community comments regarding the acceptability of the Tollway Alternative were generally unfavorable because it would require eight lanes in Golden to maintain the existing lanes with additional tolled lanes. This would be a substantial increase in the alignment's footprint over the existing condition. The addition of the principal arterial alignment of the Combined Alternative provides more transportation benefits to the entire study area than the Tollway Alternative because it improves capacity along two alignments. The Combined Alternative also does not have the same community concerns because it best fits the context of its location through populated areas and does not create as much disturbance to the communities.

Although the Regional Arterial Alternative satisfies the purpose and need, it does not do so as well as the Combined Alternative. The project cost for the Regional Arterial Alternative is similar to that of the Combined Alternative after including funding from tolling and may be greater after including funding from local agencies. The Regional Arterial Alternative performs worse with more LOS F intersections (11) than the Combined Alternative (7). Additionally, the Combined Alternative carries 7,600 more inter-regional and regional trips per day than the Regional Arterial Alternative across the northern portion of the study area and 9,400 more inter-regional and regional trips per day across the southern portion. The Regional Arterial Alternative requires out-of-direction travel along SH 72, and has greater impact on wetlands than the Combined Alternative. The addition of the principal arterial alignment of the Combined Alternative provides more transportation benefits to the entire study area than the Regional Arterial Alternative because it improves capacity along two alignments. Additionally, the Combined Alternative is consistent with local and regional transportation plans.

The Combined Alternative best meets the purpose and need considering system connectivity and functionality, future travel demand and capacity, travel reliability and modal interrelationships. This alternative balances these transportation benefits with environmental impacts better than the other alternatives. The alternative has multiple potential sources of funding including toll revenues and local agency participation. The alternative is affordable, and can be funded over an acceptable period of time. Access to commercial centers in the northern, central and southern portions would be enhanced by this alternative and it would contribute to the economic growth of Jefferson and Broomfield counties. Public acceptability of this alternative is enhanced by its ability to distribute future traffic growth, its slower speeds in developed areas, its consistency with local and regional transportation and land-use plans, and its ability to incorporate context-sensitive design elements on the Indiana Street/McIntyre Street portion.



Northwest Corridor  
A TRANSPORTATION ENVIRONMENTAL STUDY

This Page Left Intentionally Blank