Alternatives Development and Screening Report

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1.0 INTRODUCTION

This report is a detailed compilation of the alternatives development and evaluation effort that took place as part of the North I-25 EIS study process. The North I-25 EIS study area is illustrated in **Figure 1-1**.

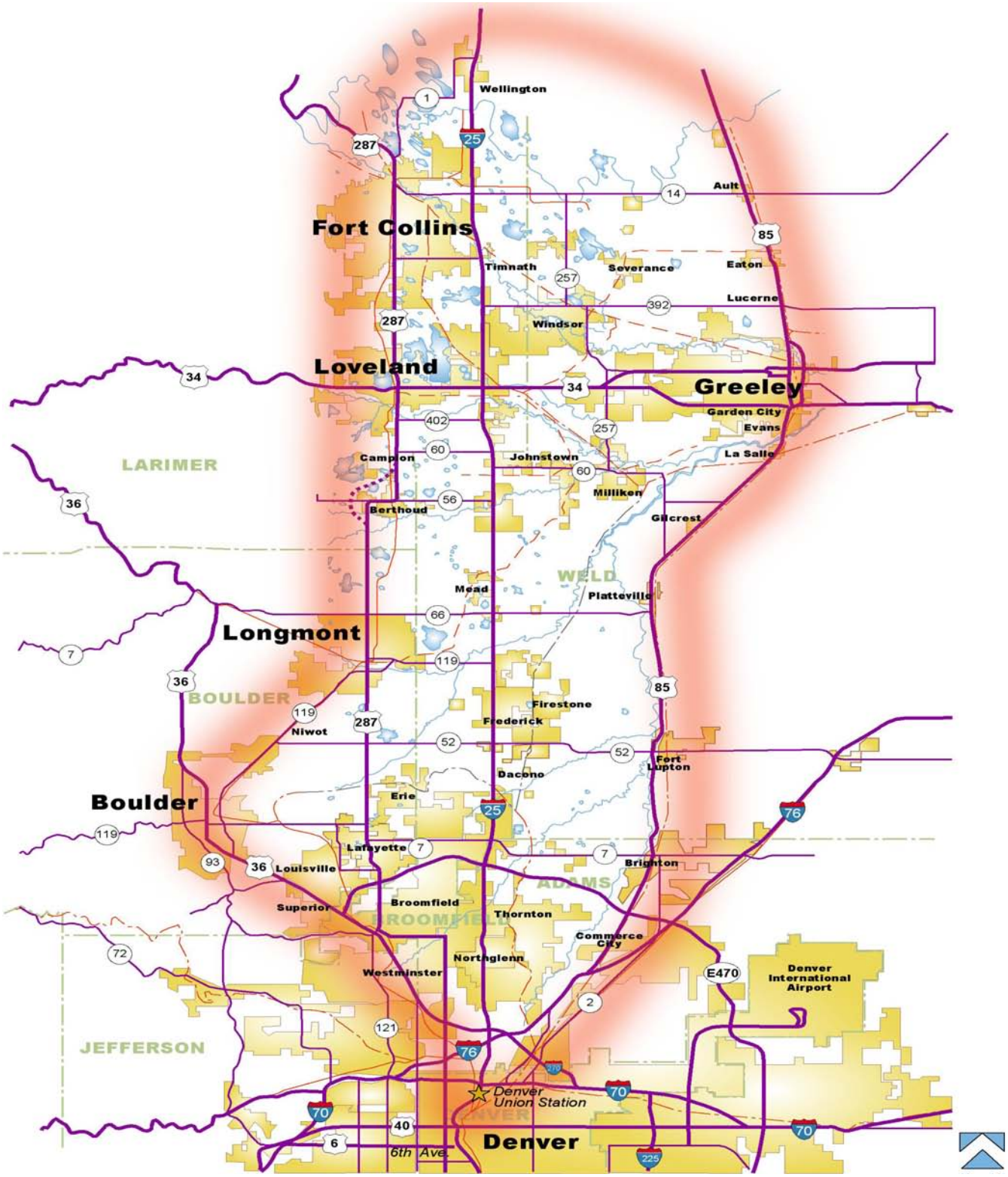
1.1 ALTERNATIVES DEVELOPMENT

The North I-25 EIS project purpose is defined as "…meeting long-term travel needs between the Denver metropolitan area and the rapidly growing population centers along the I-25 corridor north to the Fort Collins-Wellington area." The need for action identifies concerns about highway safety, mobility and accessibility, aging highway infrastructure, the lack of alternative interregional travel modes and the need to address economic growth demands. The complete Purpose and Need Statement is included in the North I-25 EIS.

The purpose and need for the project and stakeholder input provided the framework for alternatives development. The alternatives evaluation and screening process was conducted by defining a broad range of alternatives, and then conducting increasingly detailed evaluations of them as they were refined and narrowed down to the most promising solutions. A wide range of alternatives was developed: multiple transit technologies, on various feasible alignments, and highway improvements on both existing and new alignments.

Alternatives analysis was completed in three separate levels of screening. While highway and transit alternatives were evaluated separately in Levels One and Two, a combination of highway and transit improvements are necessary to fully address the project's purpose and need. In Level Three, transit and highway alternatives were combined to create packages of improvements that comprehensively address the project's purpose and need. After all three levels of screening were complete, alternatives were refined and presented for analysis in the Draft EIS; the Draft EIS evaluation led to the development of a Preferred Alternative that is presented in the Final EIS. After comments were received on the Draft EIS and CDOT and FHWA worked through a collaborative decision making process with stakeholders, elements from Package A and Package B were combined to form the Preferred Alternative.

Figure 1-1 Study Area



1.2 ALTERNATIVES SCREENING

The alternatives evaluation and screening process consisted of qualitative and then progressively detailed and quantitative analyses of alternatives relative to evaluation criteria. The criteria at every level of analysis described below were based on three areas of analysis: the purpose and need of the project, the alternatives' practicability, and the alternatives' potential effect on human and natural environmental resources. As the study progressed, the criteria became more specific, but still related to the three areas of analysis. The alternatives screening process is depicted in **Figure 1-2**. The three levels of screening prior to evaluation in the Draft EIS were:

Level One screening was primarily a qualitative "fatal flaw" assessment. It eliminated alternatives that were not practicable for implementation based on substantial faults related to cost, logistics, technology reliability or other characteristics that made them unreasonable in the study area and therefore unnecessary to study further.

Level Two screening separated alternatives into categories by improvement type (e.g. highway expansion-general purpose lanes, light rail, etc.) and, after some additional data collection and quantification, screened out those within each category that did not compare as well with others in meeting purpose and need, addressing practicability issues, or avoiding impacts to environmental resources. Evaluation used readily available information at this level to identify differences between alternatives within each category.

> **Level 2A** screening used existing data to assess the practicability of the remaining alternatives, and their potential to serve corridor travel patterns and markets.
>
> **Level 2B** screening used the initial results from Leve 2A screening and supplemented them with analysis from the travel demand model to comparatively analyze the remaining alternatives. The alternatives that performed best not only within categories, but overall were advanced to Level 3.

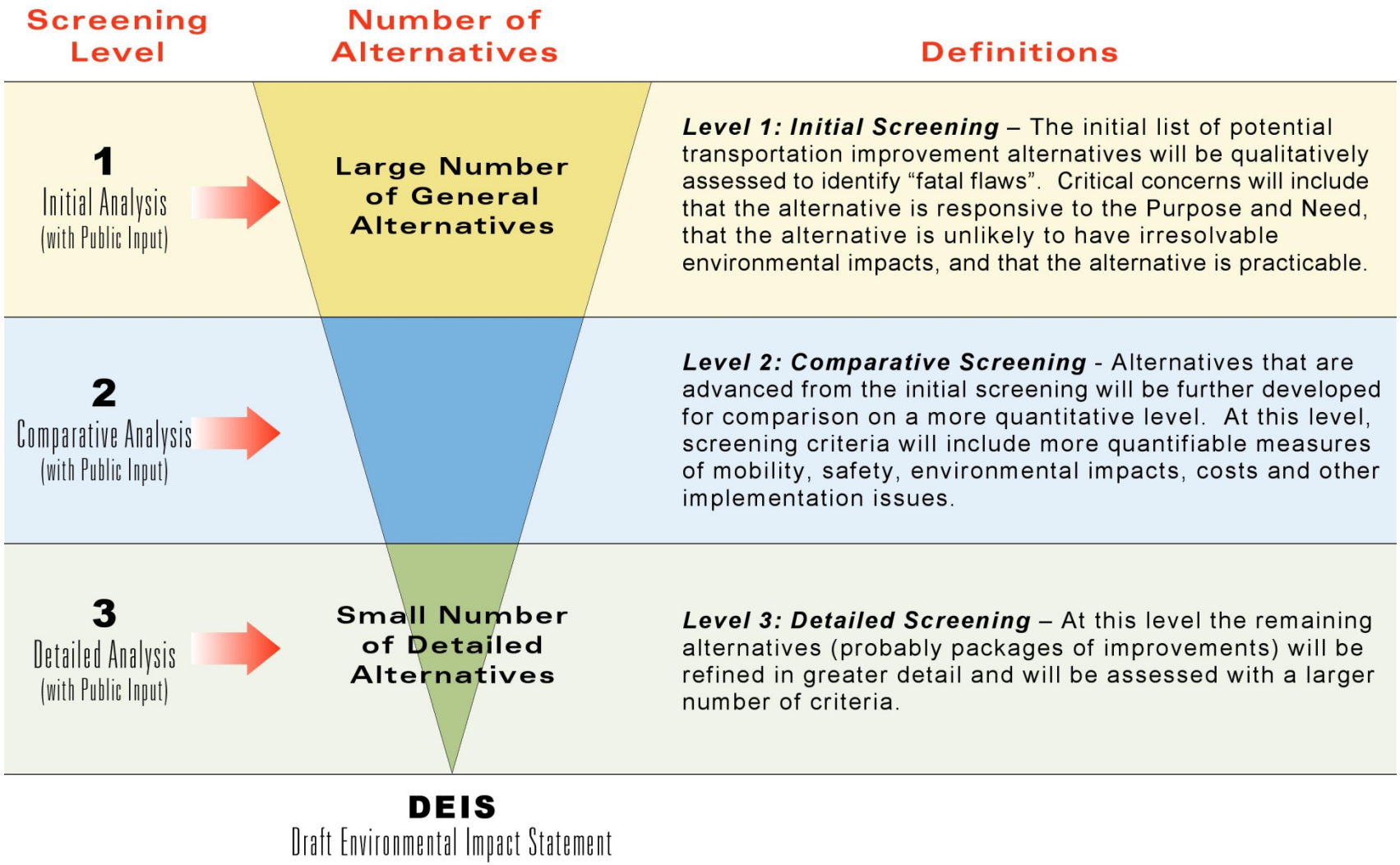
Level Three alternatives were packaged with the components advanced from Level 2B. The Level 2B components were refined and packaged in such a way as to measure discernable differences between a smaller number of alternatives.

Elements from Package A and Package B that were presented in the Draft EIS were combined to form the Preferred Alternative. All of these alternatives are now evaluated in the Final EIS.

The levels 1, 2, 3, and Draft EIS analysis were conducted using 2030 travel demand. For the Final EIS, the 2035 horizon year growth projections became available and therefore the Final EIS analysis was updated to 2035. The 2030 screening results remain valid as the level of travel demand is greater for 2035 than 2030.

At each of these levels, input was actively sought from the general public, the Regional Coordination Committee (RCC elected officials), the Technical Advisory Committee (TAC), and state and federal resource agencies.

Figure 1-2 Alternatives Screening Process



2.0 LEVEL ONE

2.1 LEVEL ONE ALTERNATIVES DEVELOPMENT

The North I-25 EIS project team developed a wide range of potential transportation alternatives to address the project's Purpose and Need Statement using the following information:

- Existing and planned road network
- State and federal requirements
- Section 404 of the Clean Water Act
- Section 106 of the National Historic Preservation Act
- Clean Air Act Amendments of 1990
- Section 4(f) of the US Department of Transportation Act
- Existing and future land uses
- Existing environmental resources
- Existing and future travel patterns
- Previous studies conducted in the area
- Mason Transportation Corridor
- Transportation Alternatives Feasibility Study (TAFS)
- Interstate 25, SH 7 to SH 66 Environmental Assessment
- US 85 Access Control Plan
- DRCOG Metro Vision
- RTD FasTracks
- Rail "Loop" Plan
- Front Range Rail
- Prairie Falcon Parkway
- Information provided by advisory committees
- Public input received during the scoping process

A total of 50 transportation technologies were identified that could have been implemented along I-25, US 287, US 85 or on a new travel corridor. These alternatives represented a reasonable range of alternatives. If an improvement type was not included in Level One, it was considered outside the reasonable range of alternatives.

Table 2-1 lists the transportation technologies considered and the corridors where they were considered. Descriptions of each of the alternatives are included after the table.

Table 2-1 Level One Improvement Alternatives and Corridors

Alternative	Location
No-Action	
01. No-Action	Corridor Wide
Highway	
02. Additional General Purpose Lanes	Existing Highway Corridors
03. Interchange Replacement/Upgrade	Existing Highway Corridors
04. Horizontal and Vertical Alignment Improvements	I-25
05. Intersection Upgrades	Corridor Wide
06. Frontage Road Revisions	I-25
07. Lane Width Reconfiguration	I-25
08. Double Deck Freeway	I-25
09. Express Lanes	Existing Highway Corridors
10. Climbing Lanes	Existing Highway Corridors
11. Truck Lanes	I-25
12. Limited Access Lanes	Existing Highway Corridors
13. New Highway	Corridor Wide
14. New Local Road	Corridor Wide
15. New Interchange	Existing Highway Corridors
Transit	
16. Bus Rapid Transit	Existing Highway Corridors in General Purpose Lanes
17. Bus Rapid Transit	Existing Highway Corridors in Exclusive or Semi Exclusive Lanes
18. Bus Rapid Transit	Freight Rail Corridors in Exclusive lanes
19. Bus Rapid Transit	New Alignment in Exclusive lanes
20. Express Bus	Existing Highway Corridors
21. Regional Bus	Existing Highway Corridors
22. Local Bus	Corridor Wide
23. Demand Responsive Bus	Corridor Wide
24. Jitney Service	Existing Highway Corridors
25. Commuter Rail	Existing Highway Corridors
26. Commuter Rail	Freight Rail Corridors
27. Commuter Rail	New Alignment
28. Personal Rapid Transit	Existing Highway Corridors
29. Personal Rapid Transit	Freight Rail Corridors
30. Personal Rapid Transit	New Alignment
31. Heavy Rail	Subway or Below Grade
32. Heavy Rail	Elevated
33. Heavy Rail	Existing Highway Corridors
34. Heavy Rail	Freight Rail Corridors

Table 2-1 Level One Improvement Alternatives and Corridors (cont'd)

Alternative	Location
35. Heavy Rail	New Alignment
36. Light Rail	Existing Highway Corridors
37. Light Rail	Freight Rail Corridors
38. Light Rail	New Alignment
39. Automated Guideway Transit (Including Monorail)	Existing Highway Corridors
40. Automated Guideway Transit (Including Monorail)	Freight Rail Corridors
41. Automated Guideway Transit (Including Monorail)	New Alignment
42. High Speed Rail 79-125 mph	Existing Highway Corridors
43. High Speed Rail 79-125 mph	Freight Rail Corridors
44. High Speed Rail 79-125 mph	New Alignment
45. Super High Speed Rail >125 mph	Existing Highway Corridors
46. Super High Speed Rail >125 mph	Freight Rail Corridors
47. Super High Speed Rail >125 mph	New Alignment
48. Mag-Lev	New Exclusive Corridors
49. Rail Transport Cars	Light Rail Corridors
Congestion Management	
50a. Travel Demand Management	Corridor Wide
50b. Intelligent Transportation Systems	Corridor Wide
50c. Transportation System Management	Corridor Wide
50d. Bike and Pedestrian Facilities	Corridor Wide

2.1.1 No-Action

The National Environmental Policy Act (NEPA) process requires analysis of a "No-Action Alternative". This alternative is fully assessed in the NEPA documentation and used as a baseline against which build alternatives are evaluated. The No-Action Alternative addresses acute safety and maintenance concerns that would need to be addressed if a build alternative is not selected. This alternative is required to be retained for comparative purposes throughout the screening process.

2.1.2 Highway

Highway improvements considered in Level One fell into three categories: modifying existing facilities, special purpose lanes, and new facilities. Each is described below.

2.1.3 Modifying Existing Facilities

Additional Lanes – Lanes added to any existing road in the study area. This is the most common method of adding travel capacity along a corridor.

Interchange Replacement/Upgrade – Includes improving or reconstructing existing interchanges that currently operate inefficiently or are expected to have operating deficiencies in the future.

Horizontal and Vertical Alignment – Improvements that address specific stretches of a road that have been identified as having inadequate or unsafe geometric configurations. This includes, but is not limited to, sight distance considerations and super elevation.

Intersection Upgrades – Upgrades that address lane configurations and safety issues at existing intersections and access points. This could include, but is not limited to, adding turn lanes, signalizing or restricting movements at an intersection.

Frontage Road Revisions – Improve the capacity and layout of the frontage roads along I-25.

Lane Width Reconfiguration – Restripe I-25 to provide additional lanes within the existing cross section. This improvement would create narrower lanes and shoulders.

Double Deck I-25 – Create additional lanes using the existing right-of-way by adding an elevated, limited access expressway on a viaduct over the existing lanes.

2.1.3.1 Special Purpose Lanes

Tolled Express Lanes/Managed Lanes – Lanes whose demand is managed to maintain reliable, fast operation even during peak periods. The lanes are managed by allowing use only by single-occupant vehicle drivers willing to pay a toll or by high-occupant vehicles. The lanes are separated from general purpose lanes by a striped buffer or a raised median barrier.

Climbing Lanes – Lanes added to the upgrade direction of a road where high traffic volumes and heavy truck traffic combine to cause delays and platooning along the facility. This type of improvement could be applied to any highway facility throughout the corridor.

Truck Lanes – Truck lanes would provide a new, exclusive lane in each direction reserved for large trucks to improve safety and capacity in the general traffic lanes. They could be separated from or adjacent to general purpose lanes and could provide only limited access to local intersections or interchanges. This type of improvement was considered along existing highway corridors.

Limited Access Lanes – Grade-separated lanes that carry motorists through an intersection or interchange without the ability to get on or off the facility at that location.

2.1.3.2 New Facilities

New Highway – Construction of a new, high-capacity highway alignment anywhere within the study area.

New Local Road – Construction of a new road with less capacity and more access than a "New Highway" anywhere within the study area.

New Interchanges – Grade separated access points between a highway and a local street or between two highways. New interchanges could be built along any of the existing highway corridors.

2.1.4 Transit

Transit alternatives considered in Level One fell into two categories: non-fixed guideway and fixed guideway. For this initial screening phase, no specific station areas were assigned to any of the transit modes. Rather characteristic station spacing and ridership capacity were assumed. The range of transit alternatives is described below.

2.1.4.1 Non-Fixed Guideway

Bus Rapid Transit – Powered by diesel fuel, natural gas, or hybrid power sources. Bus Rapid Transit operates in semi-exclusive (HOV, HOT, Toll) or exclusive roadway lanes (bus lanes) for at least 50% of its route (though it is physically capable of operating within shared lanes.) On freeway-based applications, it stops every 5 to 10 miles to function as a collector or distributor service at its ends-of-line. Local road applications have more frequent stops, half mile to 2 mile spacing. The average capacity is 20 to 100 seated passengers per bus.

Traditional Bus – The most common type of public transit, due largely to its flexibility, relatively low capital costs, and ability to serve a wide-range of travel markets. Buses typically operate in mixed traffic along roadways. Power is provided by a variety of sources including diesel fuel, compressed natural gas, and electricity along with hybrid combinations of power sources. Traditional buses can operate as express bus, regional bus, local bus and demand responsive bus service.

- ***Local Service –*** Provides the most access to riders as it can operate on large arterials or neighborhood-scale streets and stops the most frequently.
- ***Express Service –*** Runs in large arterial streets or freeways and stops infrequently, providing a travel time advantage over local bus service. With the addition of park-and-ride facilities, it can expand the capture area of transit service from within a quarter mile up to anywhere within five miles of the service route.
- ***Regional and/or Commuter Bus* service –** A commuter-oriented long distance transit service operating between regions with limited stops in order to operate faster than other bus services. This type of transit service usually operates on roads designated as arterials or higher and has park and-ride facilities located at its stops.
- ***Demand Response and Jitney services –*** Operate within a city or town but do not connect to other cities. Demand-responsive services provide curb-to-curb service within a specific geographic area for special needs population groups or for the general public as applicable. Jitneys typically involve passenger cars or shuttle vans operating on fixed routes (sometimes with minor deviations) as demand warrants without fixed schedules or fixed stops.

2.1.4.2 Fixed Guideway

Commuter Rail – Fueled by either diesel or electricity, commuter rail typically operates in freight rail corridors at speeds up to 90 mph with stops every 2 to 10 miles. Average capacity of a rail car is 75 to 250 seated passengers, and service is typically provided in corridors between 5 and 100 miles in length.

Personal Rapid Transit – These systems are designed to provide personalized service between specific origin and destination stations. PRT is an automated system of small vehicles that travel on elevated guideways and operate on demand.

Heavy Rail – Powered by electricity, heavy rail operates at a maximum speed of approximately 70 mph in exclusive underground or elevated corridors. Stops are typically located every half-mile to mile in dense urban areas, and approximately five miles in more suburban parts of the service area. The average capacity is 60 to 80 seated passengers per rail car.

Light Rail – Fueled by either diesel or electricity, light rail can operate in rail corridors or on city streets at speeds of up to 70 mph, with stops every half-mile to two miles. Average capacity of a rail car is 32 to 90 passengers seated, and service is typically provided in corridors 5 to 20 miles in length.

Automated Guideway Transit (AGT) – Powered by electricity, AGT operates at slower speeds (8 to 30 mph on average) on elevated guideways in dense urban areas with many stops. The average capacity is 30 to 100 seated passengers per car. AGT includes monorail technologies.

High Speed Rail – Typically powered by electricity, high-speed rail can operate at over 100 mph in an exclusive right-of-way. Stops are typically located in each major city along a corridor of 50 to 500 or more miles in length. The average capacity is 100 to 150 seated passengers per rail car.

Super High Speed Rail – Powered by electricity, super high-speed rail operates at speeds in excess of 150 mph in an exclusive right of way. There are typically few (if any) mid-line stops, and the service operates as a high-speed service between destinations and/or cities more than 50 miles apart. The average capacity is 100 to 150 seated passengers per rail car.

Magnetic Levitation – Powered by electric magnets, Mag-Lev operates at speeds in excess of 250 mph in an exclusive and sealed right-of-way. There are typically few (if any) mid-line stops, and the service operates as a “bullet train” from one destination to another. The average capacity is 150-300 seated passengers per rail car. This technology is not in common use today.

Rail Transport Cars – Involves train service that carries drivers in their vehicles on flat bed railroad cars that are each loaded for specific destination stations. It would operate with similar characteristics to a passenger rail line, but with reduced total travel times due to savings along trip segments between the car-accessible stations and driver origins and destinations. This technology is not in common use today.

2.1.5 Congestion Management

In Level One Screening congestion management strategies were researched and grouped together into four main categories: Transportation Demand Management (strategies that will reduce the number of peak hour trips), Intelligent Transportation Systems (technology-based

strategies that provide information to transportation system managers and users), Transportation System Management (strategies that will maximize the effectiveness of the

existing system facilities) and Bicycle and Pedestrian strategies. Each of the strategies is listed below by category.

2.1.5.1 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Ridesharing – Formal or informal agreements between neighbors or co-workers to share a vehicle and driving responsibilities from an agreed upon formal or informal park-and-ride facility to their common destination.

Carpools – Agreements between two or more people to ride to their common destination together. Carpools can form and be sustained without formal assistance, or rideshare "matches" can also be made through a ridesharing database of willing participants managed by a regional transportation agency, as they currently are through the NFRMPO and DRCOG.

Vanpools – More formal agreements between groups of 6 to 15 participants to lease a van from a regional transportation authority, designate a driver, and use the van to reach their common destination. Vans are procured and maintained, and participants can be matched and organized by regional transportation agencies, as they currently are through the NFRMPO and DRCOG. Employers can also initiate and sponsor vanpool services for their employees as a benefit.

Telecommuting – Arranging the capability to work offsite, thereby avoiding driving during peak-hour traffic, or perhaps avoiding having to make the trip to work at all.

Land Use Policies – The implementation and enforcement of land use policies intended to encourage/require development to increase mobility for residents and businesses by creating land use-transportation connections. Example policies include creating a range of housing choices; creating walkable neighborhoods; encouraging community collaboration; mixing land uses; preserving open spaces; providing a variety of transportation choices; and strengthening and directing development towards existing communities.

2.1.5.2 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Real Time Transportation Information – Can include static or dynamic information related to traffic conditions, real-time transit service or information on trip planning and transportation options accessible to the public. Information is disseminated on a variety of media including radio, websites, or variable message signs. Dynamic information relies on global positioning satellite (GPS) transponders, cameras, and other devices to relay information to the traveler.

2.1.5.3 TRANSPORTATION SYSTEM MANAGEMENT (TSM)

Reversible Lanes – Conversion of a general purpose lane to a special purpose or restricted access lane based on peak hour traffic flows. The lane may be designated as a High Occupancy Vehicle (HOV) lane, a limited access lane, a High Occupancy Toll (HOT) lane, or some combination of the three. Having been designated, the lane is open to peak hour traffic that meets its usage criteria. The lane is operated in the peak hour direction and reverses each peak period to serve the dominant flow of traffic.

Incident Management Program – A response program developed to reduce delay by removing obstructions caused by incidents (accidents, debris, stalled vehicles, etc.) through

the use of a comprehensive incident management service, including towing, alternative route designation, call boxes, traffic control, etc.

Signal Coordination and Prioritization – Traffic signals can be timed to aid peak hour traffic flows. In addition, signals can be programmed to change for approaching transit vehicles to ensure that transit vehicles are not delayed at intersections.

Ramp Metering – Signals can be placed at freeway ramps to regulate the flow of traffic accessing a highway facility. This reduces delay along the freeway by reducing congestion related to ramp merging.

Signage – Way finding can help reduce driver confusion and consequent delay or incidents by clearly marking entrances, exits, or approaching landmarks and popular destinations.

2.1.5.4 BICYCLE/PEDESTRIAN FACILITIES

These facilities would provide sidewalk and bike facility connectivity between residential areas and employment or activity centers; adequate shoulder space or bike lanes along major arterials; and adequate street features to encourage their use. Additional features can include lighting, trash receptacles, bike lockers, shade structures, crosswalks, landscaping, etc.

2.2 LEVEL ONE SCREENING

Level One screening was a fatal flaw evaluation to determine if the alternative was responsive to the project's purpose and need, if it was practicable and if it was likely to have irresolvable environmental impacts. These criteria are described in greater detail below.

Responsive to Purpose and Need – This criterion stated that alternatives that address the needs identified in the Purpose and Need Statement should be carried forward to Level Two screening. The needs included the potential to improve safety, replace aging infrastructure, address mobility and accessibility and provide multi modal travel options.

Practicability – Per USACE's 4049b)(1) guidelines, this criterion depends on costs, technical and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall purpose. This criterion evaluated the feasibility of an alternative based on cost, logistics and technology reliability. While detailed costs were not available at Level One of screening, general costs from peer systems or projects were available for comparison. These costs were applied to the range of alternatives as applicable, for comparison based on their order of magnitude. Therefore, alternatives that would likely cost substantially more than others and would provide a similar function were screened out. Similarly, if the logistics of construction or operation rendered an alternative infeasible, or if the alternative technology was not available, it was also screened out.

Likelihood of Irresolvable Environmental Impacts – This criterion screened alternatives that would have the potential for substantial environmental impacts and for which an alternative was clearly available. Level One Screening eliminated alternatives with impacts of such probable magnitude that NEPA approval or other permits would not be achievable.

Table 2-2 lists the range of alternatives developed and the results of the Level One screening evaluation.

Table 2-2 Level One Screening Results

Alternative	Description/ Location	Responsiveness to Purpose & Need	Likelihood of Irresolvable Environmental Impacts	Practicability	Pass to Level Two or Reason for Failing
No-Action					
No-Action	Corridor Wide	N/A	N/A	N/A	Pass
Highway					
Additional Lanes	Existing Highway Corridors	Pass	Pass	Pass	Pass
Interchange Replacement/ Upgrade	Existing Highway Corridors	Pass	Pass	Pass	Pass
Horizontal & Vertical Alignment Improvements	I-25	Pass	Pass	Pass	Pass
Intersection Upgrades /Upgrades Highway Classification	Corridor Wide	Pass	Pass	Pass	Pass
Frontage Road Revisions	I-25	Pass	Pass	Pass	Pass
Lane Width Reconfiguration	I-25	Fail	Pass	Pass	This alternative is not responsive to purpose and need because it would substantially compromise safety on I-25 by creating a geometric configuration that would be considered substandard according to accepted industry practices.
Double Deck I-25	I-25	Pass	Pass	Fail	This technology and alignment was screened due to its order of magnitude cost and complexity of construction. These characteristics make it impracticable for this project.
Express Lanes	Existing Highway Corridors	Pass	Pass	Pass	Pass
Climbing Lanes	Existing Highway Corridors	Pass	Pass	Pass	Retained as potential Congestion Management Strategy.

Table 2-2 Level One Screening Results (cont'd)

Alternative	Description/ Location	Responsiveness to Purpose & Need	Likelihood of Irresolvable Environmental Impacts	Practicability	Pass to Level Two or Reason for Failing
Truck Lanes	Existing Highway Corridors	Pass	Pass	Pass	Retained as potential Congestion Management Strategy.
Limited Access Lanes	Existing Highway Corridors	Pass	Pass	Pass	Pass
New Highway	Corridor Wide	Pass	Pass	Pass	Pass
New Local Road	Corridor Wide	Pass	Pass	Pass	Pass
New Interchange	Existing Highway Corridors	Pass	Pass	Pass	Pass
Transit					
Bus Rapid Transit Mixed Use Lanes	Existing Highway Corridors	Pass	Pass	Pass	Pass
Bus Rapid Transit Exclusive or Semi Exclusive Lanes	Existing Highway Corridors	Pass	Pass	Pass	Pass
Bus Rapid Transit Exclusive Lanes	Freight Rail Corridors	Pass	Pass	Pass	Pass
Bus Rapid Transit Exclusive Lanes	New Alignment	Pass	Pass	Pass	Pass
Express Bus	Existing Highway Corridors	Pass	Pass	Pass	Pass
Regional Bus	Existing Highway Corridors	Pass	Pass	Pass	Pass
Local Bus	Corridor Wide	Pass	Pass	Pass	Pass
Demand Responsive Bus	Corridor Wide	Pass	Pass	Pass	Pass

Table 2-2 Level One Screening Results (cont'd)

Alternative	Description/ Location	Responsiveness to Purpose & Need	Likelihood of Irresolvable Environmental Impacts	Practicability	Pass to Level Two or Reason for Failing
Jitney Service	Existing Highway Corridors	Fail	Pass	Pass	This type of technology has not been proven in revenue service. Complexity of operation in an interstate environment would render it impracticable for this project.
Commuter Rail	Existing Highway	Pass	Pass	Pass	Pass
Commuter Rail	Freight Rail Corridors	Pass	Pass	Pass	Pass
Commuter Rail	New Alignment	Pass	Pass	Pass	Pass
Personal Rapid Transit (PRT)	Existing Highway Corridors	Pass	Pass	Fail	This type of technology has not been proven in revenue service. Complexity and cost render it impracticable for this project.
Personal Rapid Transit (PRT)	Freight Rail Corridors	Pass	Pass	Fail	This type of technology has not been proven in revenue service. Complexity and cost render it impracticable for this project.
Personal Rapid Transit (PRT)	New Alignment	Pass	Pass	Fail	This type of technology has not been proven in revenue service. Complexity and cost render it impracticable for this project.
Heavy Rail	Subway or Below Grade	Pass	Pass	Fail	This technology and alignment was screened due to its order of magnitude cost and complexity of construction. These characteristics make it impracticable for this project.
Heavy Rail	Elevated	Pass	Pass	Fail	This technology and alignment was screened due to its order of magnitude cost and complexity of construction. These characteristics make it impracticable for this project.
Heavy Rail	Existing Highway Corridors	Pass	Pass	Fail	This technology and alignment was screened due to its order of magnitude cost and complexity of construction. These characteristics make it impracticable for this project.

Table 2-2 Level One Screening Results (cont'd)

Alternative	Description/ Location	Responsiveness to Purpose & Need	Likelihood of Irresolvable Environmental Impacts	Practicability	Pass to Level Two or Reason for Failing
Heavy Rail	Freight Rail Corridors	Pass	Pass	Fail	This technology and alignment was screened due to its order of magnitude cost and complexity of construction. These characteristics make it impracticable for this project.
Heavy Rail	New Alignment	Pass	Pass	Fail	This technology and alignment was screened due to its order of magnitude cost and complexity of construction. These characteristics make it impracticable for this project.
Light Rail	Existing Highway Corridors	Pass	Pass	Pass	Pass
Light Rail	Freight Rail Corridors	Pass	Pass	Pass	Pass
Light Rail	New Alignment	Pass	Pass	Pass	Pass
Automated Guideway Transit (Including Monorail)	Existing Highway Corridors	Pass	Pass	Fail	This type of technology would cost substantially more and have lower speeds than alternative transit technologies. Complexity and cost of higher speed technology would render it impracticable for this project.
Automated Guideway Transit (Including Monorail)	Freight Rail Corridors	Pass	Pass	Fail	This type of technology would cost substantially more and have lower speeds than alternative transit technologies. Complexity and cost of higher speed technology would render it impracticable for this project.
Automated Guideway Transit (Including Monorail)	New Alignment	Pass	Pass	Fail	This type of technology would cost substantially more and have lower speeds than alternative transit technologies. Complexity and cost of higher speed technology would render it impracticable for this project.
High Speed Rail 79-125 mph	Existing Highway Corridors	Pass	Pass	Pass	Pass
High Speed Rail 79-125 mph	Freight Rail Corridors	Pass	Pass	Pass	Pass

Table 2-2 Level One Screening Results (cont'd)

Alternative	Description/ Location	Responsiveness to Purpose & Need	Likelihood of Irresolvable Environmental Impacts	Practicability	Pass to Level Two or Reason for Failing
High Speed Rail 79-125 mph	New Alignment	Pass	Pass	Pass	Pass
Super High Speed Rail >125 mph	Freight Rail Corridors	Pass	Pass	Fail	This technology was screened due to its order of magnitude cost and complexity of construction. The technology is not readily available in the United States and is impracticable for this project.
Super High Speed Rail >125 mph	New Alignment	Pass	Pass	Fail	This technology was screened due to its order of magnitude cost and complexity of construction. The technology is not readily available in the United States and is impracticable for this project.
Super High Speed Rail < 125 mph	Existing Highway Corridors	Pass	Pass	Fail	This technology was screened due to its order of magnitude cost and complexity of construction. The technology is not readily available in the United States and is impracticable for this project.
Mag-Lev	New Sealed Corridor	Pass	Pass	Fail	This technology was screened due to its order of magnitude cost and complexity of construction. The technology is not readily available and is impracticable for this project.
Rail Transport Cars	Existing Freight Rail Corridors	Pass	Pass	Fail	This type of technology has not been proven in the United States. Its relatively experimental nature makes it impracticable for this project.
Travel Demand Management	Corridor Wide	Pass	Pass	Pass	Pass
Intelligent Transportation Systems	Corridor Wide	Pass	Pass	Pass	Pass
Transportation System Management	Corridor Wide	Pass	Pass	Pass	Pass

Table 2-2 Level One Screening Results (cont'd)

Alternative	Description/ Location	Responsiveness to Purpose & Need	Likelihood of Irresolvable Environmental Impacts	Practicability	Pass to Level Two or Reason for Failing
Bike & Pedestrian	Corridor Wide	Pass	Pass	Pass	Pass
Travel Demand Management	I-25	Pass	Pass	Pass	Pass (With the exception of reversible lanes n/o SH7)
Intelligent Transportation Systems	I-25	Pass	Pass	Pass	Pass
Transportation System Management	I-25	Pass	Pass	Pass	Pass (With the exception of signage and signal improvements)
Bike & Pedestrian	I-25	Fail	Pass	Pass	Not responsive to purpose and need because it would not address mobility needs or aging infrastructure on I-25

2.2.1 Highway

Level One evaluation of the potential highway alternatives found that all but two highway alternatives should advance to Level Two screening. Restriping the lanes along I-25 to accommodate additional lanes with narrower shoulders within the existing cross section failed because it would substantially compromise safety on I-25 by creating a geometric configuration that would be considered substandard according to accepted industry practices. Double-decking I-25 failed because it was considered impractical due to its order of magnitude cost (10 times more than widening at-grade) and complexity of construction that would require an increased number of phases, increased time for construction, specialty work, and construction of temporary detours, bridges, etc. All other highway alternatives were retained for further evaluation in Level Two.

2.2.2 Transit

Level One screening narrowed the range of alternative transportation improvements to those that were physically and functionally suited to the 70-mile study area and numerous population centers. Therefore, mag-lev, heavy rail, automated guideway transit, and super high-speed rail were screened from further analysis. (Individual white papers on these technologies and their lack of suitability to the North I-25 Corridor are available.) Commuter rail, bus rapid transit (BRT), light rail and high-speed rail technologies on various alignments were advanced to Level Two for further consideration.

2.2.3 Congestion Management

The strategies screened from further analysis in Level One include: reversible lanes, signal prioritization and coordination, signage and bicycle and pedestrian facilities. Preliminary traffic information did not exhibit a directional rush hour along the northern portion of the North I-25 corridor, making reversible lanes impracticable. Similarly, I-25 is not a signalized facility, making signal treatments impracticable. Signage and bicycle and pedestrian facilities were considered to be impracticable due to the size and scale of an interstate versus the limited localized influence of signage and bicycle and pedestrian facilities.

2.3 LEVEL ONE LESSONS LEARNED

2.3.1 Highway

The large study area provided a large range of possibilities for highway improvements. A variety of alternatives along US 287, US 85, I-25 and new corridors were retained for additional evaluation in Level Two.

2.3.2 Transit

In Level One, it was found that transit technology candidates must be able to serve both local and regional mobility needs. Although stakeholders expressed interest in transit services, especially rail with the capability of operating at high speeds, other stakeholders expressed an interest in serving multiple station areas to allow more access to the service. In addition, technologies requiring an exclusive corridor, whether elevated or not, were not considered feasible over the corridor's full length, due to the additional order of magnitude cost (10 to 20 times higher than other at-grade solutions) of construction and maintenance required.

2.3.3 Congestion Management

With the exception of reversible lanes, signal coordination and prioritization along I-25, signage along I-25, and bicycle and pedestrian facilities along I-25 these strategies met the tests for purpose and need, practicability and environment. However, they were also acknowledged to have limited potential to meet elements of the purpose and need such as improving mobility, replacing aging infrastructure, and increasing accessibility. Therefore, it was decided in Level Two Screening they should be analyzed both independently and as a group to determine their potential effect on the corridor's mobility needs.

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3.0 LEVEL TWO

In Level Two Screening, the range of alternatives was revised by defining further the No-Action Alternative, as well as stand-alone and complementary build alternatives. "Stand-alone alternatives" were defined as improvements that, on their own, would provide sufficient capacity to meet mobility goals. Other, "complementary", improvements, those that were not considered to add sufficient capacity, could be packaged with stand-alone improvements to fully meet the purpose and need of the project. In addition, stand-alone highway and transit alternatives were developed and evaluated separately by doing comparisons of alternatives within their same grouping. In this way, the best of each group would emerge for more detailed testing in future steps of the analysis.

By definition congestion management measures either enhance build alternatives or are used in combinations instead of them. For this reason, congestion management alternatives were evaluated independently and as a group to determine their assignment to either the stand-alone or complementary categories.

The Level Two analysis was conducted in two stages, Level 2A and Level 2B. Level 2A utilized existing and available data; Level 2B utilized criteria and data that were generated by the travel demand model.

3.1 LEVEL TWO ALTERNATIVES DEVELOPMENT

3.1.1 No-Action

The No-Action Alternative is a conservative estimate of safety improvements and maintenance requirements that would be necessary if a build alternative were not constructed. The No-Action Alternative is presented for comparison with the build alternatives in accordance with NEPA requirements. Because it will eventually be analyzed for impacts in the EIS, it is assumed to pass through all levels of Alternatives Development and Screening. No-Action Alternative improvements included in the EIS are summarized in **Section 6.1.**

3.1.2 Build Alternatives - Highway

Figures 3-2 through **Figure 3-7** illustrate the highway alternatives that were considered to be stand-alone alternatives because they had sufficient capacity to meet the project area's mobility goals. They include:

- Additional Lanes
- Upgrade Highway Classification
- Express Lanes
- Limited Access Lanes
- New Highway
- New Arterial Road

As show in the following figures, a range of both northern and southern termini was developed for each alternatives, and evaluated as part of the alternatives screening. The termini are discussed in detail in the **Southern Terminus Technical Memorandum**, *November 28, 2007 V6* and the **Northern Terminus Assessment**, *October, 2004*. Both of these can be found in **Appendix A**.

Potential northern termini included: US 34, SH 14 and SH 1

Potential southern termini included: SH 66, SH 7, E-470, I-76, US 36/84th Avenue

Figure 3-1 Level Two Alternatives – Additional Lanes

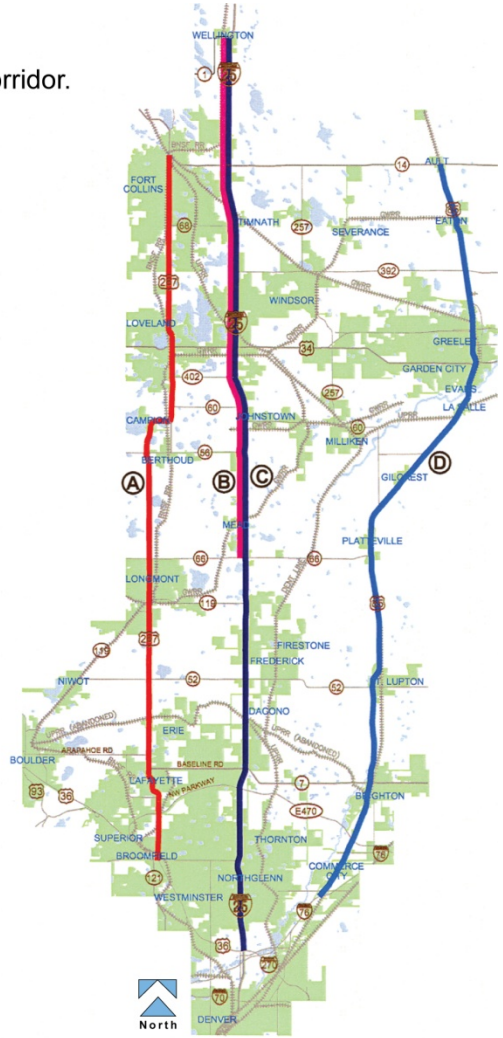
Additional lanes are the most common method of adding travel capacity along a corridor. Lanes could be added to any existing road in the corridor.

CHARACTERISTICS:

Capital Cost: $3 million to $5 million per lane mile (excludes right-of-way)

New Capacity: 1,300 to 2,600 people per hour per direction

ALTERNATIVE	A	B	C	D
DESCRIPTION	US 287 from Fort Collins to Broomfield	I-25 from Wellington to SH66	I-25 from Wellington to US 36	US 85 from Ault to I-76
LENGTH (miles)	49	35	61	52
ACCESS	Intersections	Interchanges	Interchanges	Interchanges and Intersections
RIGHT-OF-WAY (ROW)	4-6 lanes total	4-6 lanes total	4-6 lanes total	4-6 lanes total
TRAVEL TIME	Would improve travel time compared to the no action alternative	Would improve travel time compared to the no action alternative	Would improve travel time compared to the no action alternative	Would improve travel time compared to the no action alternative



Level One Alternative # 44

Figure 3-2 Level Two Alternatives – Upgrade Highway Classification

Upgrade Highway Classification is defined as improving an existing highway alignment to a multiple-lane limited access facility. Existing highways considered in this alternative would parallel I-25 and be at least four miles from I-25. Potential existing highways to reclassify and upgrade would be US 85 to the east and US 287.

CHARACTERISTICS:

Capital Cost: $3 million to $7 million per lane mile (excludes right-of-way)

New Capacity: 750 to 1,300 people per hour per direction

ALTERNATIVE	A	B	C	D
DESCRIPTION	Improve US 287 from Arterial to Expressway	Improve US 287 from Arterial to Freeway	Improve US 85 from Arterial to Expressway	Improve US 85 from Arterial to Freeway
LENGTH (miles)	43	43	53	53
ACCESS	Interchanges and Intersections	Interchanges	Interchanges and Intersections	Interchanges
RIGHT-OF-WAY (ROW)	Additional ROW at interchange	Additional ROW at interchange	Additional ROW at interchange	Additional ROW at interchange
TRAVEL TIME	Faster and more reliable than today's configuration	Faster and more reliable than an expressway	Faster and more reliable than today's configuration	Faster and more reliable than an expressway

Level One Alternative # 39

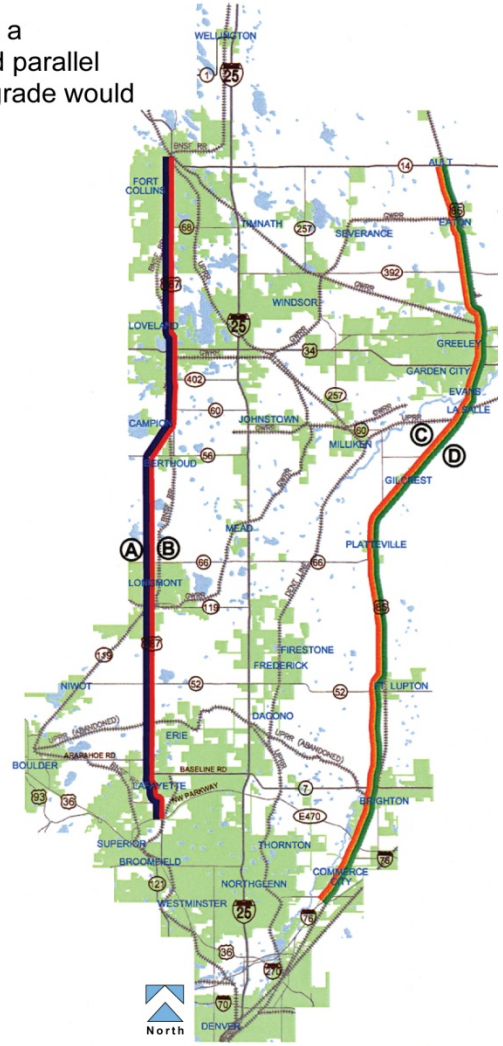


Figure 3-3 Level Two Alternatives – Express Lane

Express lanes include toll lanes, high-occupancy vehicle lanes (HOV) and high-occupancy toll lanes (HOT). HOV lanes are available only to buses and other high occupancy vehicles during peak travel periods but typically can be used as general purpose lanes outside of the peak periods. HOT lanes are available to buses and other high occupancy vehicles at no charge and to single-occupant vehicles that pay a toll. Toll lanes are available to all motorists willing to pay a toll. These types of improvements are focused along I-25.

CHARACTERISTICS:

Capital Cost: $4 million to $8 million per lane mile
(excludes right-of-way)

New Capacity: Toll Lanes: 3,000 to 4,000 people per hour per direction
HOT Lanes: 4,100 to 7,300 people per hour per direction
HOV Lanes: 4,300 to 7,200 people per hour per direction

ALTERNATIVE	A B	C D E F	G H I J
DESCRIPTION	HOV Lane from SH 14 or SH 66 to 84th Ave.	Toll lanes from SH 14, US 34 or SH 66 to 84th Ave.	HOT lanes from SH 14, US 34 or SH 66 84th Ave.
LENGTH (miles)	50	50	50
ACCESS	slip ramps	slip ramps	slip ramps
RIGHT-OF-WAY (ROW)	Possible conversion of new lanes between SH 7 and SH 66	Possible conversion of new lanes between SH 7 and SH 66, 2 additional lanes would be needed for a total of 4 lanes	Possible conversion of new lanes between SH 7 and SH 66, 2 additional lanes would be needed for a total of 4 lanes
TRAVEL TIME	More reliable than general purpose lanes but less reliable than toll or HOT lane	Very reliable, Dynamic toll increases as demand increases	Very reliable, Dynamic toll increases as demand increases

Level One Alternative # 46

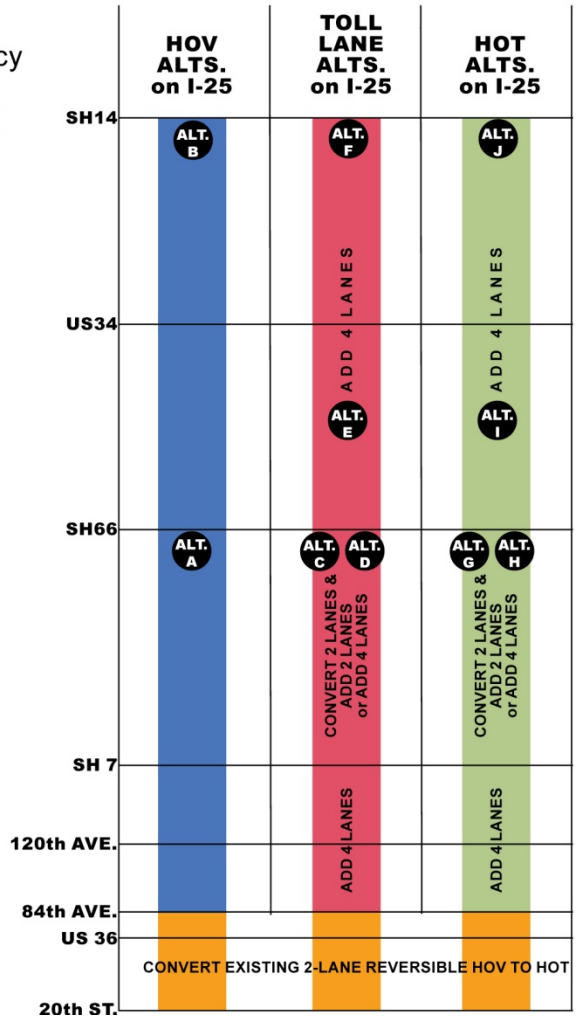


Figure 3-4 Level Two Alternatives – Limited Access Lanes

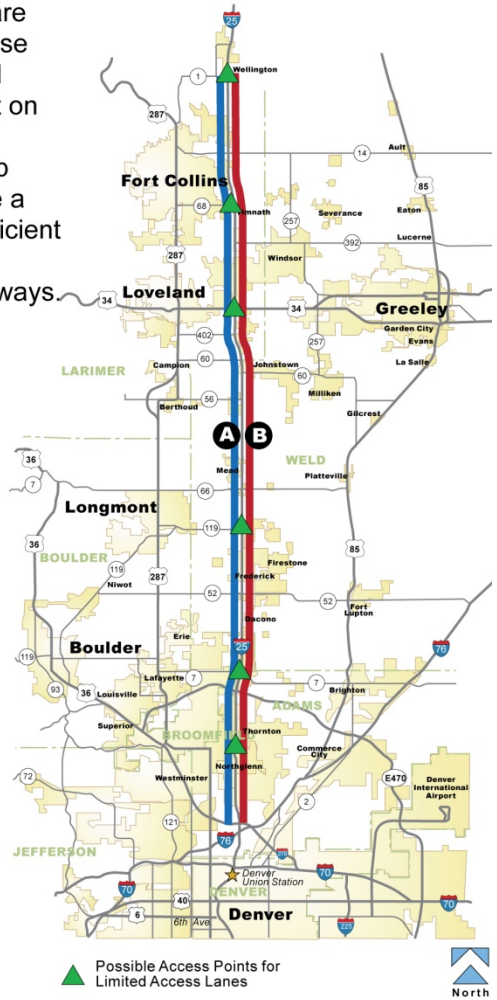
Limited access lanes are physically separated from general highway lanes to segregate long distance and short distance travel within a corridor. Limited access lanes allow motorists that are going longer distances to travel more freely than motorists using general highway lanes because there are less conflicting movements caused by vehicles entering or exiting a highway. Limited access lanes carry motorists through portions of the corridor without providing the ability to get on or off the facility at all locations where the general highway lanes have access. Limited access lanes have access points to the general highway lanes at locations where a high amount of trip origination/destination are generated (cities and/or highways). Minimizing access points will be a major factor in the overall operations of the access lanes. The more access points, the less efficient the Limited Access Facility will be. This type of improvement could be applied to the existing highway corridors. Limited Access Lanes have grade separated crossings of intersecting roadways.

CHARACTERISTICS:

Capital Cost: $4 to $5 million per lane mile (excludes right-of-way)

New Capacity: 4,800 to 5,300 people per hour per direction

ALTERNATIVE	A	B
DESCRIPTION	Widen I-25 and provide access and egress at Wellington, SH 68, US 34, SH 119, SH 7 and 120th Ave.	Widen I-25 and provide access and egress at Wellington, SH 68, US 34, SH 119, SH 7 and 120th Ave.
LENGTH (miles)	52	52
ACCESS	slip ramps	slip ramps
RIGHT-OF-WAY (ROW)	Convert 2 lanes and add 2 lanes to SH 66, add 4 lanes north of SH 66	Add 4 new lanes entire length
TRAVEL TIME	Improved for inter-regional trips	Improved for inter-regional trips



Level One Alternative # 48

Figure 3-5 Level Two Alternatives – New Highway

New highway has been defined as potential alignments for new four-lane limited-access expressways that in part could be built along new alignments. They could be built over segments of county roads, and could also connect to existing state highways that could be upgraded, with or without new lane additions. Alignments more than four miles from I-25 will be considered.

CHARACTERISTICS:

Capital Cost: $2 million to $4 million per lane mile
(excludes right-of-way)

ALTERNATIVE	A	B	C	D
DESCRIPTION	SH 1 west of Fort Collins to LCRs 14, 19, 21 and WCR 1	SH 14, GWRR, Two Rivers Pkwy. and upgrade US 85	SH 14, Two Rivers Pkwy. and upgrade US 85	WCR 49 from Ault to I-76
LENGTH (miles)	60	56	60	33
ACCESS	Interchanges and Intersections	Interchanges and Intersections	Interchanges and Intersections	Interchanges and Intersections
RIGHT-OF-WAY (ROW)	4 new lanes total	4-6 lanes total	4-6 lanes total	4 new lanes total
TRAVEL TIME	Would improve travel time on I-25 by providing an alternate route	Would improve travel time on I-25 by providing an alternate route	Would improve travel time on I-25 by providing an alternate route	Would improve travel time on I-25 by providing an alternate route

Level One Alternative # 42

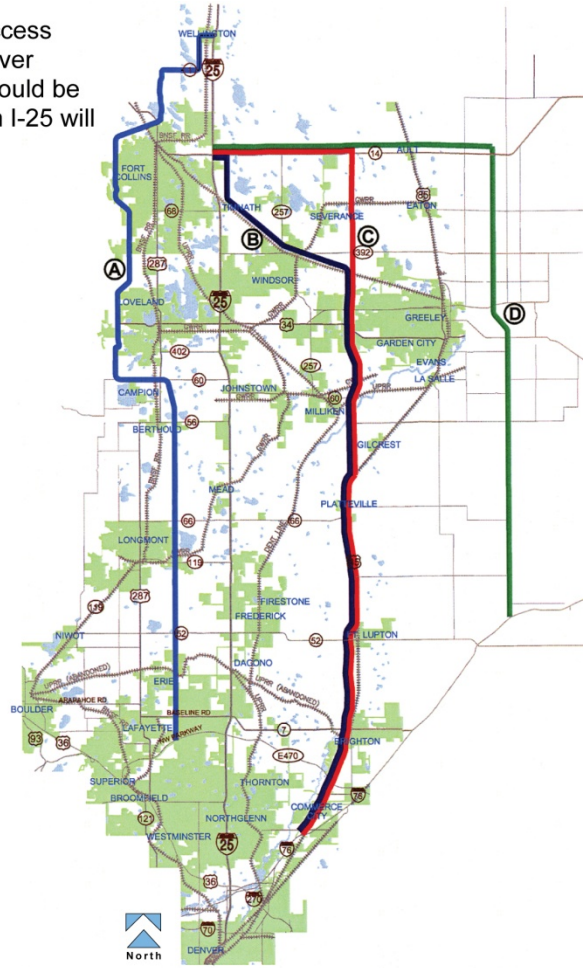


Figure 3-6 Level Two Alternatives – New Arterial Road

The New Arterial Roads category is defined as improvements to county and local roads within four miles of I-25. This includes Weld and Larimer County parallel arterial roads and WCR 13. Alternatives would connect to existing state highways near the north and south project limits, and could be built over segments of county roads. This alternative would have less access control and be closer to I-25 than New Highway alternatives.

CHARACTERISTICS:

Capital Cost: $1 million to $2 million per lane mile
(excludes right-of-way)

New Capacity: 2,400 to 2,800 people per hour per direction

ALTERNATIVE	A	B
DESCRIPTION	Weld County Parallel Arterial Study and the I-25 Corridor Plan roads	WCR 13 from SH 14 to Colorado Blvd. in Thornton
LENGTH (miles)	43 westside 42 eastside	42
ACCESS	Intersections	Intersections
RIGHT-OF-WAY (ROW)	4 lanes	4 lanes
TRAVEL TIME	Would provide options for local trips	Would provide options for local trips

NOTE: Combinations of these alignments could be viable

Level One Alternative # 43

Other highway alternatives carried forward from Level One were acknowledged to provide benefits in a study area but did not have the capacity to meet the project area's mobility goals or to substantially address other elements of the project's purpose and need. As such they became candidates for future use in project development if the stand-alone alternatives selected had the potential to be benefited by them. Designation as a complementary alternative did not guarantee inclusion in an alternative however.

Complementary highway improvements included:

East-West Highway Improvements – These would connect communities on the east or west side of the corridor with the main north-south highway facilities. Alone, these improvements would not address the project purpose of connecting northern Colorado to the Denver Metro area.

Interchange Replacement/Upgrade – These alternatives would include improving or reconstructing existing interchanges that currently operate inefficiently or are expected to have operational deficiencies in the future. These improvements alone would not have the ability to address mobility needs along I-25.

Horizontal and Vertical Alignment Improvements – These would improve the roadway alignment to meet current standards to improve safety and capacity. Alone, they would not have the ability to address mobility needs along I-25.

Climbing Lanes – Lanes added in the uphill direction along the highway to allow faster vehicles to pass slower ones in order to achieve a better level of service and to improve safety. This type of improvement would be used in locations where long grades, high traffic volumes and heavy vehicles combine to reduce travel speeds. Alone, these would not provide enough capacity to substantially address the project's mobility needs.

Frontage Road Improvements – These would address the need to improve the capacity, the safety and the layout of the frontage roads along I-25. These would not provide enough capacity to substantially address the project's mobility needs.

New Interchanges – New interchange would be built along the existing highway corridors to provide additional access or to reduce congestion at an existing intersection. These improvements alone would not have the ability to address mobility needs along I-25.

Truck Lanes – Exclusive lanes used by only truck traffic. They may be separated from general purpose lanes, and may provide only limited access to local intersections or interchanges. Alone, these would not substantially address the project's mobility needs.

3.1.3 Build Alternatives – Transit

Like the highway alternatives, transit alternatives were classified as stand-alone or complementary based on their capacity to meet the project area's mobility needs. This was interpreted as having the ability to provide service to regional commuters, to be able to respond to the regional nature of travel in the study area. The project study area includes both active and abandoned railroad right-of-way. It also includes I-25 as well as connecting highways and arterials. Therefore, there were a variety of potential operating environments and alignments to consider in the transit alternatives development phase.

By evaluating a variety of alignment options for both bus and rail service, Level Two Screening determined which kind of operating environment would provide the most benefits for each type of technology option. Operating characteristics such as number of stops and frequency of service were refined from the generalized Level One definition to more effectively fit the particular study corridor selected, but were still assigned based on a general station spacing only. (Exact station locations and parking allowances were not defined until Level Three Screening.)

I-25, US 85 and US 287 were analyzed as potential alignments for both bus and rail technologies. On existing highways it was assumed that the existing right-of-way would be expanded, or that lanes could be converted or shared for specific transit service.

The Burlington Northern Santa Fe line on the west side of the corridor; the Great Western Railroad lines in the central part of the corridor; and the Union Pacific lines throughout the corridor were all analyzed. Each of these lines had right-of-way, and in some cases, track, that could be utilized by passenger rail service. In addition, a new alignment along the I-25 corridor was also developed for analysis.

New corridors that would require all new construction were also evaluated for bus and rail service. However, where an existing transportation corridor was available, it was considered a preferable alignment, due to the probability for fewer impacts.

Due to the many alignments suggested, a range of northern termini were analyzed, but, after the FasTracks program Passed in November 2005, Denver Union Station was generally regarded as the most preferable southern terminus due to its wide variety of connection possibilities and its access to downtown Denver employment.

The following section includes descriptions and figures of Level Two stand-alone and complementary transit alternatives. **Figures 3-7** through **3-10** illustrate the stand-alone transit alternatives (those with the ability to serve regional trips in the project area) including:

- Bus Rapid Transit
- Commuter Rail
- Light Rail
- High Speed Rail

Figure 3-7 Level Two Alternatives – Bus Rapid Transit

Bus Rapid Transit (BRT) is a system that combines features of a passenger rail system with the flexibility of a bus system. It travels in exclusive lanes such as a separated travel way or a high occupancy vehicle lane.This type of technology could be implemented along existing or proposed travel corridors or along an existing freight rail line.

CHARACTERISTICS:

Operating Cost: $75 to $90 per revenue hour

Capital Cost: $0.5 million to $20 million per mile
(depending on the amount of right-of-way and new infrastructure needed)

New Capacity: 180 to 600 people per hour per direction
(assumes 3 to 10 buses per hour)

ALTERNATIVE	A	B	C	D	E	F
DESCRIPTION	US 287 from Fort Collins to Broomfield in new exclusive lanes	Fort Collins to Denver along rail corridors and I-25 in new exclusive lanes	I-25 - Wellington to Denver	Wellington to Denver via I-25 and the Dent Line	Ault to Denver via US 85, Dent Line and I-25	Ault to Denver via US 85 in new exclusive lanes
LENGTH (miles)	48	66	66	64	71	63
ACCESS	5-8 Stations	6-10 Stations	6-10 Stations	6-10 Stations	6-10 Stations	5-8 Stations
RIGHT-OF-WAY (ROW)	2 new bus lanes	2 new bus lanes	New busway	New busway	New busway	New busway
TRAVEL TIME	Reliable but increases as number of stops increase	Reliable but increases as number of stops increase	Reliable but increases as number of stops increase	Reliable but increases as number of stops increase	Reliable but increases as number of stops increase	Influenced by level of congestion and number of stops

Level One Alternative # 6, 7 & 8

Figure 3-8 Level Two Alternatives – Commuter Rail

Typically operates in freight rail right-of-way, uses shared freight track or its own track. May use locomotives with passenger cars or self-propelled passenger cars, known as diesel multiple unit (DMUs). Serves long distance commute trips (longer than 10 miles).

CHARACTERISTICS:

Operating Cost: $250 to $400 per revenue hour

Capital Cost: $2 million to $15 million per mile
(depending on the amount of right-of-way and new infrastructure needed)

New Capacity: 540 to 2,700 people per hour per direction
(2 to 6 3-car trains per hour; 90 to 150 passengers per car)

ALTERNATIVE	A	B	C	D	E	F	G
DESCRIPTION	BNSF RR -Wellington to Denver through Fort Collins and Boulder	BNSF RR / SH 119 / I-25 / UPRR - Fort Collins to Denver through Longmont and Thornton	UPRR / I-25 / GWRR / BNSF RR - Fort Collins to Denver through Mead and Boulder	I-25 / UPRR -SH 14 to Denver through Mead and Thornton	GWRR / I-25 / UPRR - Fort Collins to Denver through Mead and Thorton	UPRR / Dent Line / UPRR - Fort Collins to Denver through Milliken and Thornton	GWRR / UPRR - Fort Collins to Denver through Greeley and Brighton
LENGTH (miles)	74	68	73	61	64	69	77
ACCESS	6-10 Stations	5-9 Stations	5-9 Stations	4-8 Stations	4-8 Stations	4-8 Stations	5-9 Stations
RIGHT-OF-WAY (ROW)	May require widening of freight rail corridor	May require widening of freight rail & roadway corridors	May require widening of freight rail & roadway corridors	May require widening of highway corridor	May require widening of highway & freight rail corridors	May require acquisitions to restore corridor	May require widening of freight rail corridor
TRAVEL TIME	Requires operations with freight, possibly affecting travel time reliability	Requires operations with freight, possibly affecting travel time reliability	Requires operations with freight, possibly affecting travel time reliability	Exclusive corridor would provide good travel time reliability	Exclusive corridor would provide good travel time reliability	Exclusive corridor would provide good travel time reliability	Requires operations with freight, possibly affecting travel time reliability

Level One Alternative # 14, 15 &16

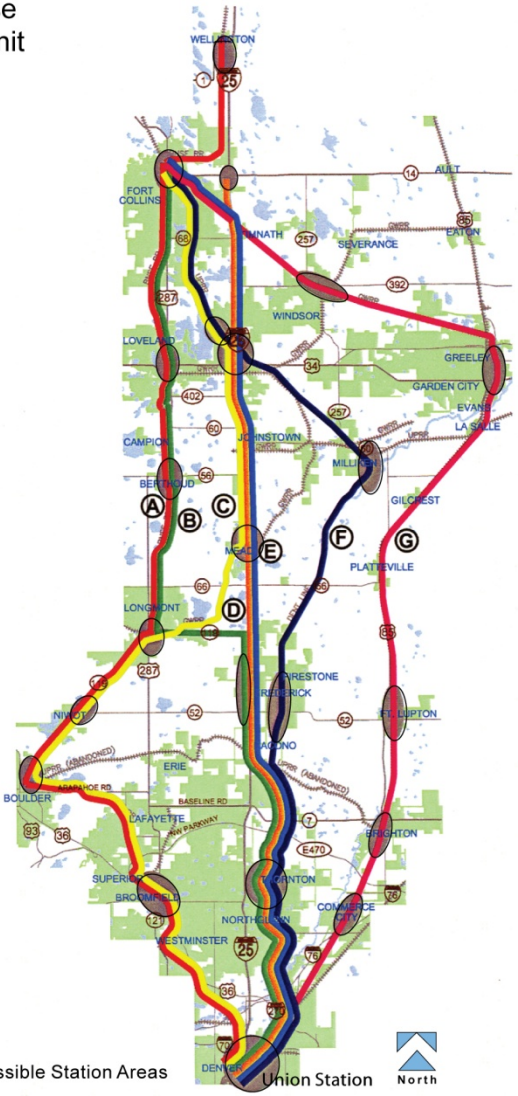


Figure 3-9 Level Two Alternatives – Light Rail

Light Rail Transit (LRT) provides service in urban areas connecting major population, employment and activity centers. Light Rail can operate in exclusive rights-of-way or share city streets. Power is generally provided by overhead electrical lines.

CHARACTERISTICS:

Operating Cost: $200 to $350 per revenue hour

Capital Cost: $25 million to $60 million per mile

New Capacity: 360 to 1,800 people per hour per direction
(2 to 10 3-car trains per hour)

ALTERNATIVE	A	B	C	D
DESCRIPTION	BNSF and US 287 from Fort Collins to Broomfield	US 287 from Fort Collins to Broomfield	I-25 from Fort Collins to 120th Ave.	I-25 from Fort Collins to Denver
LENGTH (miles)	48	48	65	77
ACCESS	20-30 Stations	20-30 Stations	20-25 Stations	20-25 Stations
RIGHT-OF-WAY (ROW)	Requires new track and coordination for use of the freight rail ROW	May require the conversion of general purpose lanes to light rail track or additional ROW for new track	May require the conversion of general purpose lanes to light rail track or additional ROW for new track	May require the conversion of general purpose lanes to light rail track or additional ROW for new track
TRAVEL TIME	Reliable but increases as number of stops increases	Reliable but increases as number of stops increases	Reliable but increases as number of stops increases	Reliable but increases as number of stops increases

Level One Alternative # 25 & 26

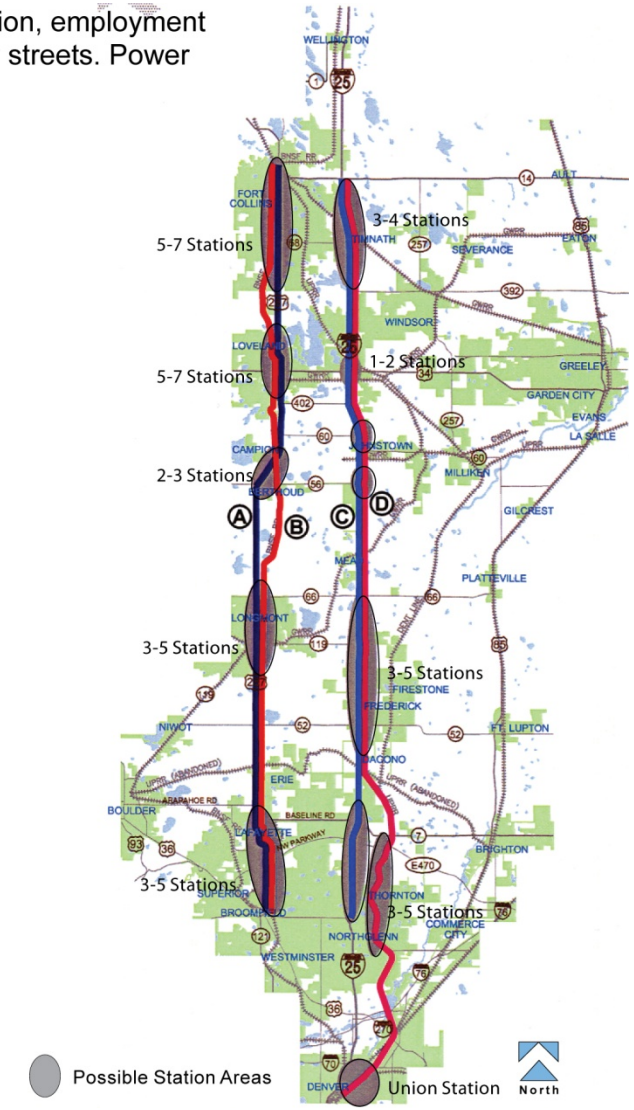


Figure 3-10 Level Two Alternatives – High Speed Rail

High-Speed Rail typically provides intercity service, operating on an exclusive guideway system of steel tracks that can be located at-grade, elevated or below ground. Power is usually provided by overhead electrical cables.

CHARACTERISTICS:

Operating Cost: $300 to $400 per revenue hour

Capital Cost: $25 million to $75 million per mile
(depending on the amount of right-of-way and new infrastructure needed)

New Capacity: 540 to 1,080 people per hour per direction
(2 to 4 3-car trains per hour)

ALTERNATIVE	A	B	C
DESCRIPTION	I-25 / UPRR -SH 14 to Denver through Mead and Thornton	UPRR / Dent Line / UPRR - Fort Collins to Denver through Milliken and Thornton	GWRR / UPRR - Fort Collins to Denver through Greeley and Brighton
LENGTH (miles)	61	69	77
ACCESS	3 Stations	3 Stations	3 Stations
RIGHT-OF-WAY (ROW)	Widening of freight rail and highway corridor anticipated	May require acquisitions to restore corridor	Widening of freight rail corridor anticipated
TRAVEL TIME	Limited stations provide improved travel time; exclusive corridor would provide good travel time reliability	Limited stations provide improved travel time; exclusive corridor would provide good travel time reliability	Limited stations provide improved travel time; exclusive corridor would provide good travel time reliability

Level One Alternative # 31, 32 & 33

Modes that served specifically local transit needs, or operated in such a way that would make them unattractive to a regional commuter, were characterized as complementary transit alternatives. As such they became candidate alternatives for combining with build alternatives later in the study if needed. However, designation as a complementary alternative did not guarantee future selection of use.

Complementary transit improvements include:

- ***Local Bus Service –*** Local buses typically stop every few blocks on local streets in order to provide the most access to neighborhoods and employment centers. While inappropriate for fulfilling a regional transit need, they can be very effective as "feeders" or connector services to more mainline, higher-capacity services.
- ***Express Bus Service –*** Express Transit Service typically operates in shared lanes on existing highways with fewer stops than local transit service, but it provides no travel time advantage and is very often unreliable, due to operating in shared lanes that are subject to roadway congestion. Although it can be operated as a north-south transit service (similar to the Front Range Express, operating from Colorado Springs to Denver) it seats approximately 40 people per bus, which is too little capacity to act as a stand-alone alternative in the study area.
- **Regional/Commuter Bus Service –** Although it is designed for long-distance trips, Regional/Commuter Bus service was considered to have insufficient capacity to serve the level of trip demand being generated in the project area. (However, as a complementary alternative, it was retained for future combination with other build alternatives.)
- ***East/West Transit Service –*** The purpose and need specifically describes the need to connect the North Front Range to the Denver area. Therefore, east-west mobility is secondary to serving north-south travel needs; however, it will be designed and tested as a supporting system to facilitate access to the main north-south transit service.
- ***City-to-City Rail –*** The purpose and need specifically describes the need to connect the North Front Range to the Denver area, therefore, city-to-city rail that stops short of connecting to Denver will not serve the regional mobility need, but need not be precluded by the design of the regional transit service.
- ***Demand Responsive/Call-n-Ride –*** This service is typically operated in rural and ex-urban areas to serve passengers with special needs, and is not designed to serve a regional, higher-capacity commuter need across large distances. Although impracticable as a stand-alone alternative, it can certainly be encouraged among communities to facilitate access to a higher capacity fixed guideway alternative.

3.1.4 Build Alternatives - Congestion Management

Although by definition congestion management measures do not include major capacity improvements, an analysis of congestion management elements was initiated during Level Two Screening to ascertain (and document) whether the congestion management strategies could manage I-25 capacity efficiently enough to preclude consideration of building additional capacity. The analysis was conducted considering each of the congestion management strategies independently as well as in combination with the others as an overall group. Travel Demand Management, Intelligent Transportation Systems and Transportation System Management strategies advanced from Level One were evaluated in Level Two.

3.2 LEVEL 2A SCREENING – BUILD ALTERNATIVES

In Level 2A, highway alternatives were compared to each other, and transit alternatives were compared to each other to determine which could better meet purpose and need, would be more practicable and would have less potential for negative environmental impacts. Alternatives that performed well in a majority of analysis areas were advanced to Level 2B.

3.2.1 Highway Criteria

The Level 2A evaluation and screening criteria for highway alternatives are described below:

3.2.1.1 PURPOSE AND NEED AND PRACTICABILITY CRITERIA

The safety, mobility, and aging highway infrastructure criteria are used to determine how well each alternative addresses the project's purpose and need.

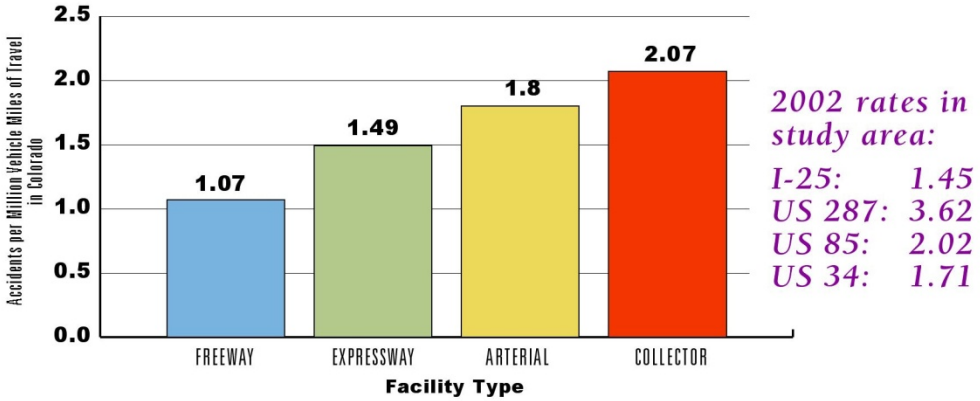
- ***Safety –*** Evaluation of safety was based on the functional classification of each alternative. Alternatives with a higher functional classification would have fewer crossings (restricted access) and therefore fewer conflicts. Alternatives with less access control were not considered as safe. **Figure 3-11** compares crash rates for different facility types.
- ***Mobility –*** Improving the mobility of travelers between northern Colorado communities and the Denver metropolitan area can be accomplished by increasing capacity of I-25, US 85 or US 287 or by reducing the vehicular demand along these routes. **Figure 3-11** compares the vehicular capacity for different facility types.
    - Preliminary 2030 traffic projections along I-25, US 287 and US 85 between SH 7 and SH 1 were developed with the North Front Range MPO 2030 travel model and the DRCOG 2030 travel model. Based on these preliminary projections, the 2030 unmet demand is approximately 55,000 vehicles daily on I-25. Alternatives with the ability to accommodate this unmet demand were retained for additional evaluation.
- ***Aging Highway Infrastructure –*** Alternatives were compared to determine which would replace the most aging infrastructure along I-25. **Figure 3-12** compares the amount of aging infrastructure replaced with different alternatives along I-25.
- ***Practicability –*** Per USACE's 4049b)(1) guidelines, this criterion depends on costs, technical and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall purpose. Alternatives were compared to determine which was the most cost effective, and was a proven technology.

3.2.1.2 ENVIRONMENTAL CRITERIA

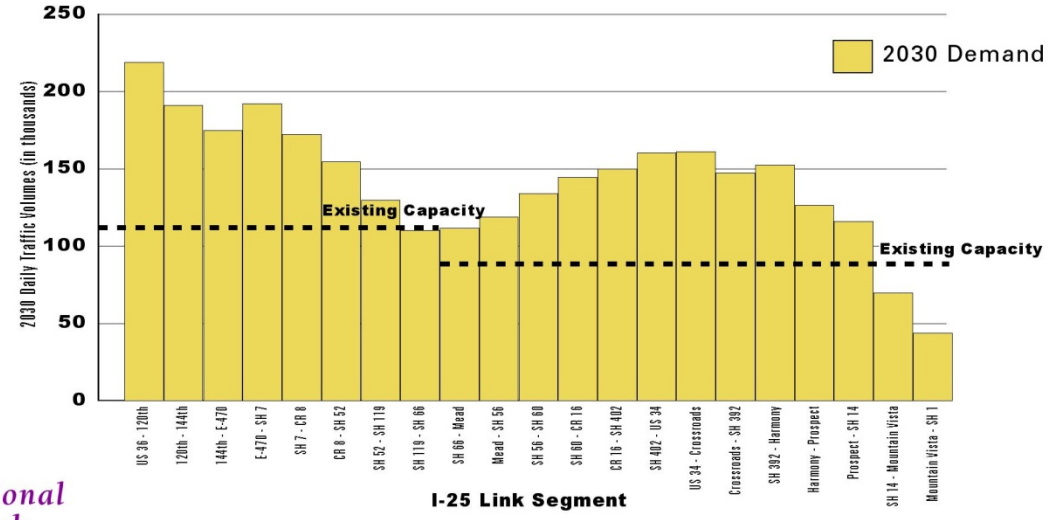
The data sources used in the evaluation of Level 2A alternatives were readily available data from census, file review, field reconnaissance and county and municipality planning documents. Both quantitative and qualitative measures were used to evaluate the potential for and of the highway or transit alternatives being evaluated to adversely impact natural and built environment resources. The evaluation criteria are shown in **Figure 3-13.**

Figure 3-11 Purpose and Need – Safety and Mobility

SAFETY



MOBILITY



Average additional capacity needed: 55,000 daily vehicles

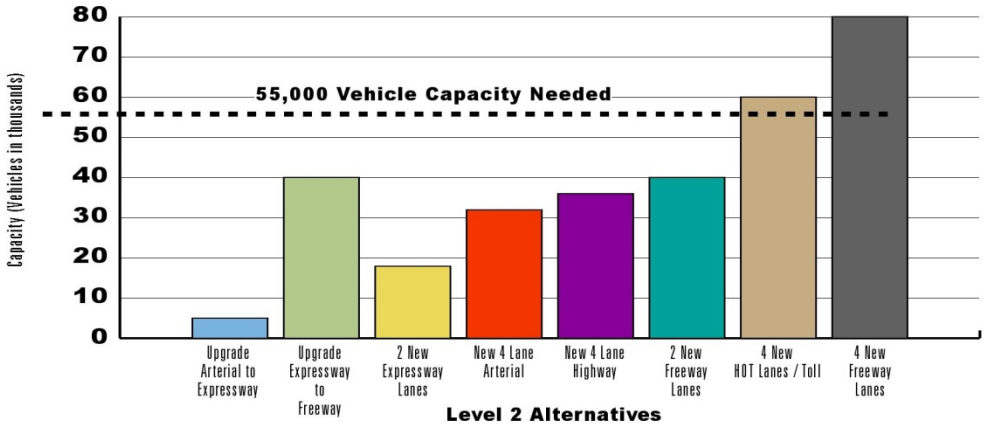


Figure 3-12 Purpose and Need Evaluation – Aging Infrastructure

Alternative	Number of Deficient Railroad Structures Replaced	Number of Deficient Drainage Structures Replaced	VMT on Poor/ Fair Pavement
No Action	●	●	●
HOV to SH 66	●	●	●
HOV to SH 14	◔	◑	○
Toll to SH 66	●	●	●
Toll to US 34	◑	◕	◑
Toll to SH 14	◔	◑	○
HOT to SH 66	●	●	●
HOT to US 34	◑	◕	◑
HOT to SH 14	◔	◑	○
Limited Access Lanes to SH 1	○	○	○
6 General Purpose Lanes	○	○	○
8 General Purpose Lanes	○	○	○

○ Best Rating ● Worst Rating

Figure 3-13 Measurements Used for Environmental Screening in Level Two

Resource Category	Measurement Used
Section 4(f) Resources (parks and wildlife areas) 	• Total number of Section 4(f) resources potentially impacted
Land Use 	• Rating of compatibility with existing land use and planned future land use; • Potential to induce growth
Economic 	• Provision of access to future economic activity centers
Air Quality 	• Rating of potential to affect congestion or potential to affect vehicle miles or hours of travel
Traffic Noise 	• Developed land within 600 feet of the transportation improvement, number of sensitive receptors
Transit Noise and Vibration 	• Proximity of residential uses to the transit improvement
Water Resources 	• Total number of lakes and streams potentially impacted
Wildlife/Threatened, Endangered or Rare Species  	• Bald eagle nests within half mile; • Bald eagle communal roosts within half mile; • Preble's mouse known habitat; • Mountain plover habitat; • Swift fox known range; • Potential impact to rare fish species
Wetlands 	• Potential impact to wetlands and streams
Environmental justice 	• Potential to provide direct access to low income and/or minority; • Potential to have an adverse impact on low income and/or minority
Visual 	• Potential impact to highly scenid views; • Potential impact from added pavement width
Historic Resources 	• Number of existing and potential historic sites within 1000 feet of corridor
Hazardous Materials 	• Number of known hazardous materials sites (Superfund, Resource Conservation and Recovery Act or Comprehensive Environmental Response, Compensation and Liability Information Systems) that could be potentially impacted
Social 	• Number of communities potentially bisected; • Potential for improved travel time; • Improvement in accessibility?, alternative mode of transportation added?
Bicyclists and Pedestrians 	• Number of regional trail crossings; • Measure of impact to local routes; • Potential impact to planned trails

3.2.2 Highway Screening

The following section describes the key findings from the Level 2A highway screening. **Figures 3-14** through **Figure 3-19** illustrate the results of the Level 2A highway screening.

Additional Lanes – Adding lanes on US 287 or US 85 would reduce I-25 travel by four percent to ten percent. This reduction is not adequate to address the mobility needs along I-25 in 2030. In addition, these alternatives would not address safety concerns on I-25 or replace aging infrastructure on I-25. In general, impacts to environmental resources were not discerning at this level. Alternatives were conceptual and could potentially be designed to avoid environmental resources. Alternatives with additional lanes on I-25 were retained for additional evaluation.

Upgrade Parallel Roadways – Alone, upgrading on US 287 and US 85 would not adequately address mobility needs along I-25. However, based on community support, the US 85 expressway alternative was retained for further evaluation in Level 2B. The other three alternatives were screened out in part due to their impacts to the human environment along the corridor and their limited ability to address mobility along I-25.

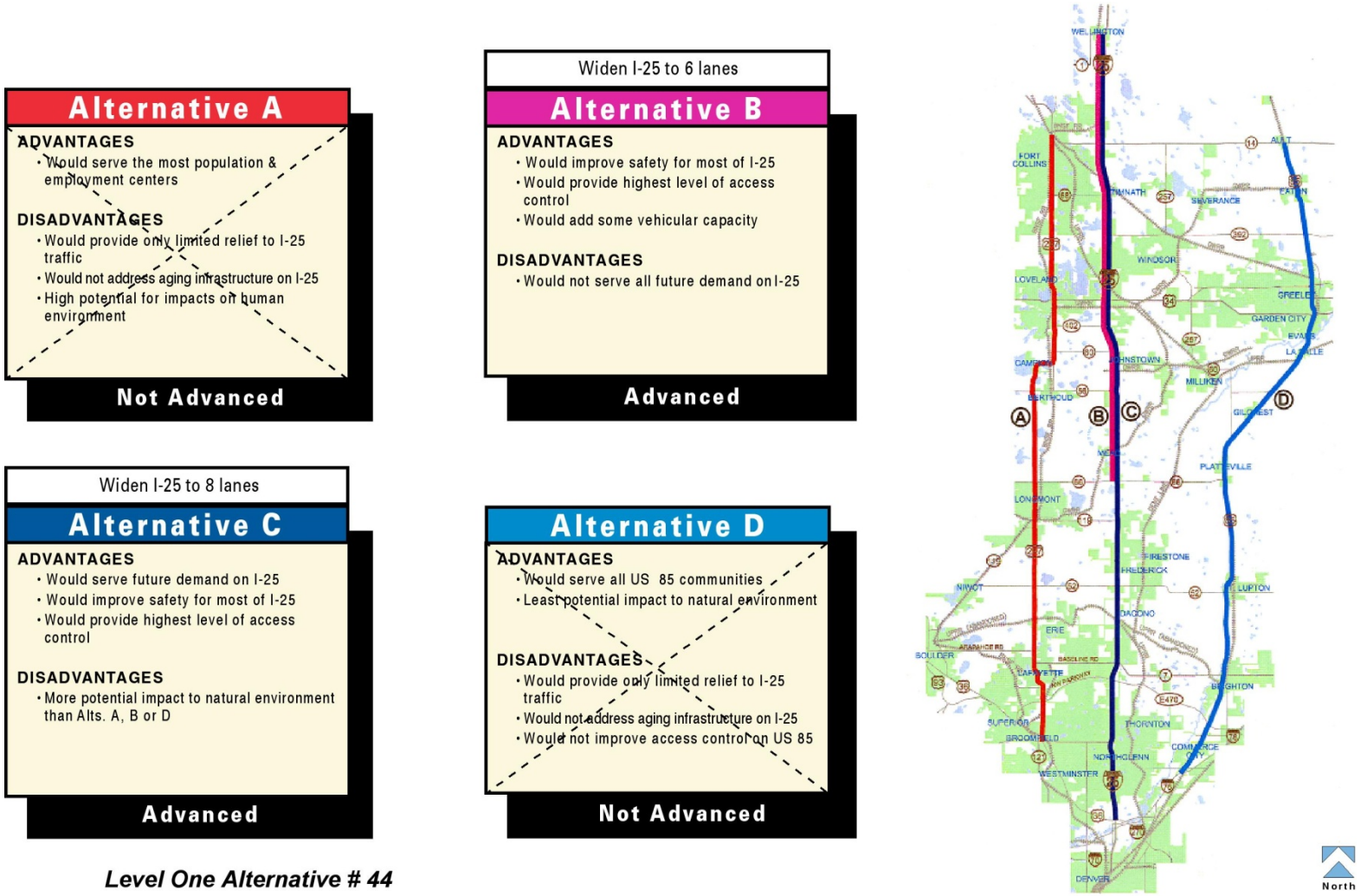
Express Lanes – Alternatives of shorter lengths would not adequately address safety concerns, capacity needs or replace aging infrastructure along I-25 in the northern portion of the study area. While the HOV lane alternative to SH 14 addressed many of these concerns, it would require additional capacity to address the mobility needs; it was retained for additional evaluation in Level 2B. HOT and Toll lane alternatives to SH 14 were also retained.

Limited Access Lanes – Alternative B, two additional lanes in each direction, would have more environmental impacts than converting one lane and adding one lane south of SH 66 to a limited-access lane (Alternative A). The wide cross-section required for this alternative impacted vegetation, wetland, and wildlife. Alternative A was retained as a more appropriate solution for tying into the existing lane configuration on the south end of the study area and adequately addressing mobility needs on I-25.

New Highway Alignments – Four new highway alignments were evaluated. All four were eliminated from further consideration as they did not improve safety on I-25, divert sufficient traffic from I-25 to sufficiently improve mobility, and they had the most potential to impact farmland, hazardous materials and were inconsistent with planned land use.

New Arterials – Neither diverted enough traffic to improve mobility sufficiently on I-25. In addition, these alternatives would not address safety concerns on I-25 or replace aging infrastructure on I-25. However, either alternative could potentially be combined with other stand-alone highway improvements. Both were retained as candidates to complement other transportation improvements and improve accessibility along the corridor.

Figure 3-14 Level 2A Preliminary Screening Results – Additional Lanes



Level One Alternative # 44

Figure 3-15 Level 2A Preliminary Screening Results – Upgrade Highway Classification

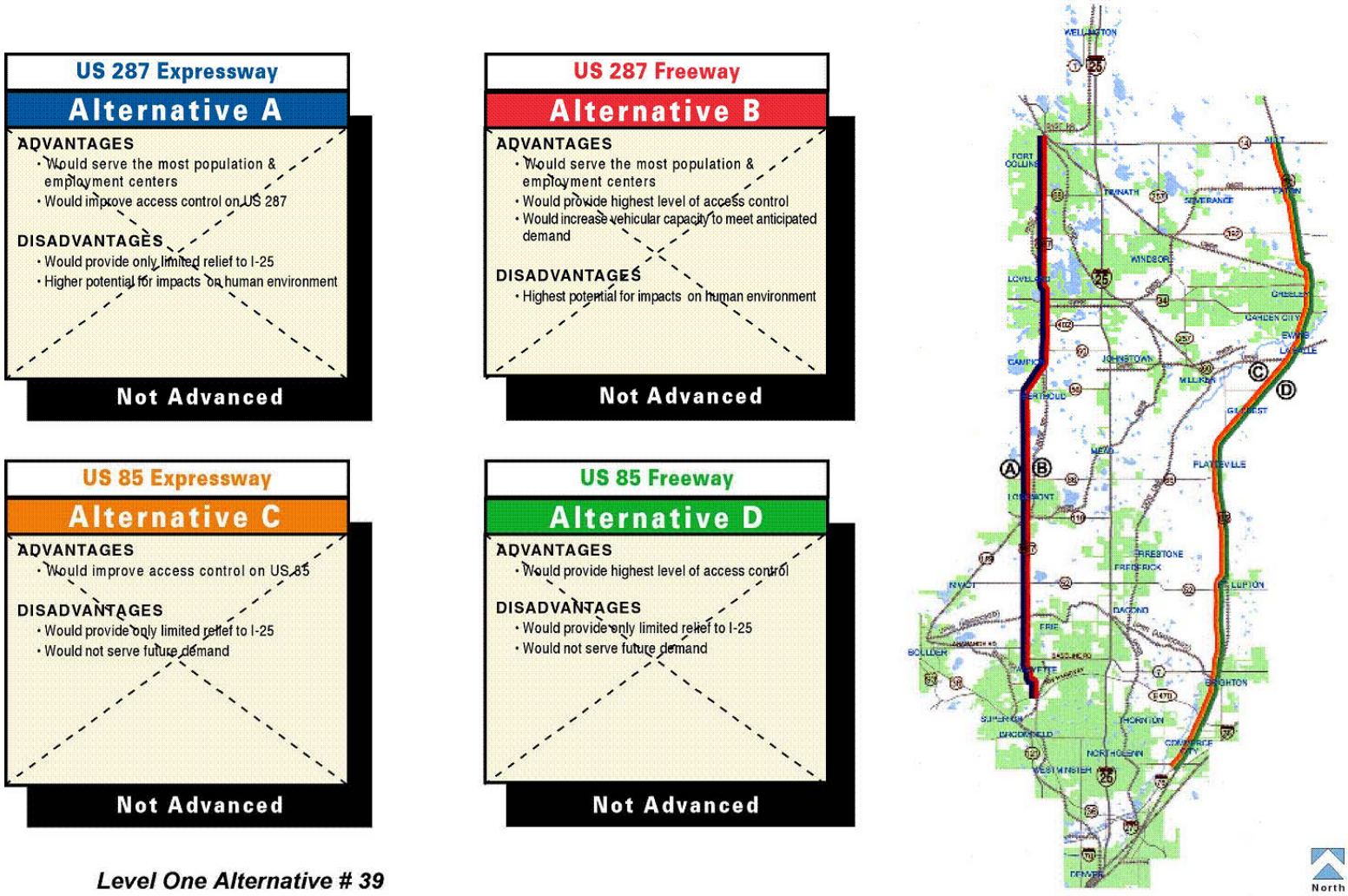


Figure 3-16 Level 2A Preliminary Screening Results – Express Lanes on I-25

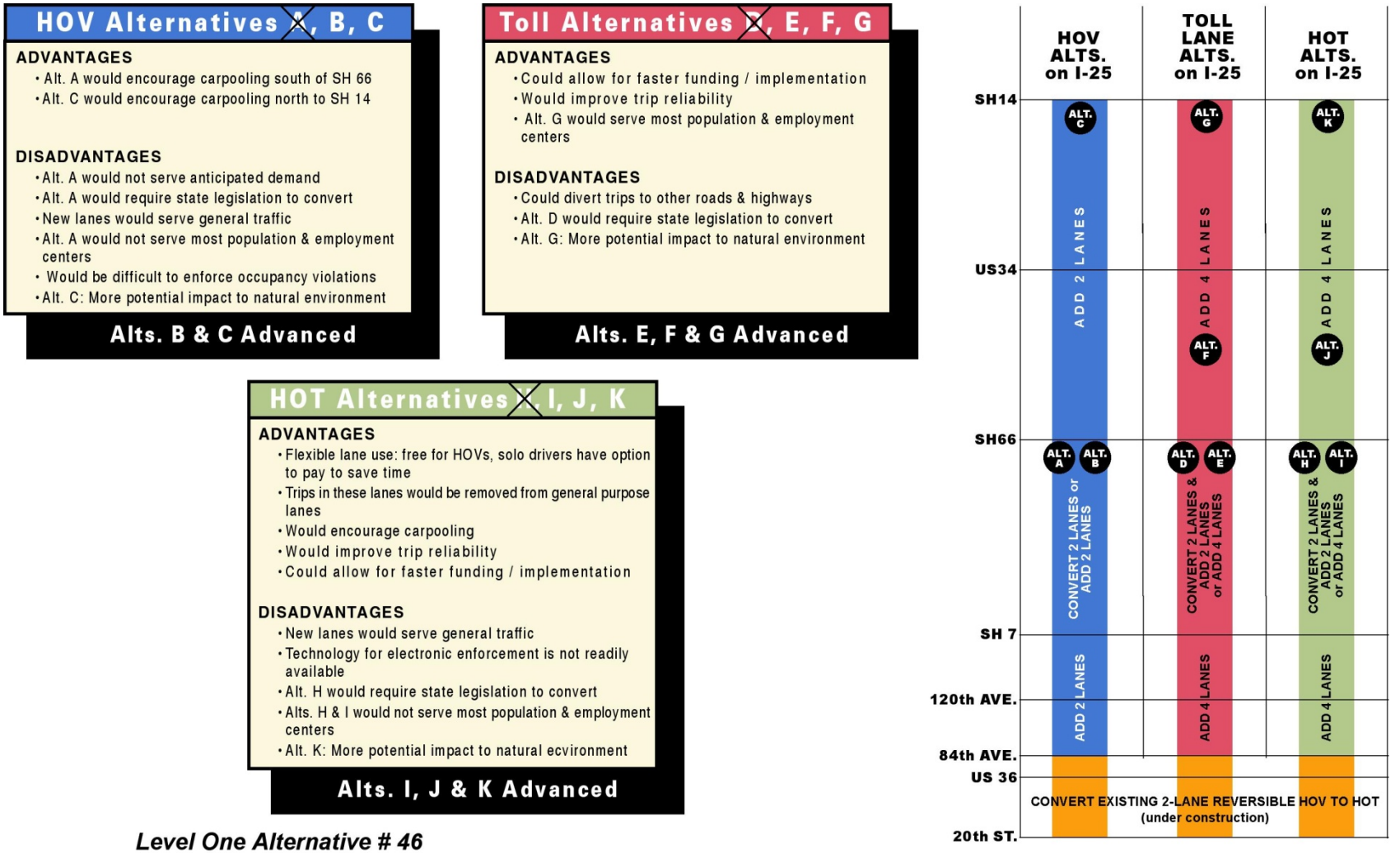


Figure 3-17 Level 2A Preliminary Screening Results – Limited Access Lanes on I-25

Convert 2 lanes & add 2 lanes to SH 66, add 4 north

Alternative A

ADVANTAGES
- Would serve future demand on I-25
- Would improve service for longer trips on I-25
- No restrictions with regard to vehicle-type, occupancy or tolls
- Would allow more ROW width for other uses compared to Alt. B

DISADVANTAGES
- Would have higher capital cost than most I-25 alts.

Advanced

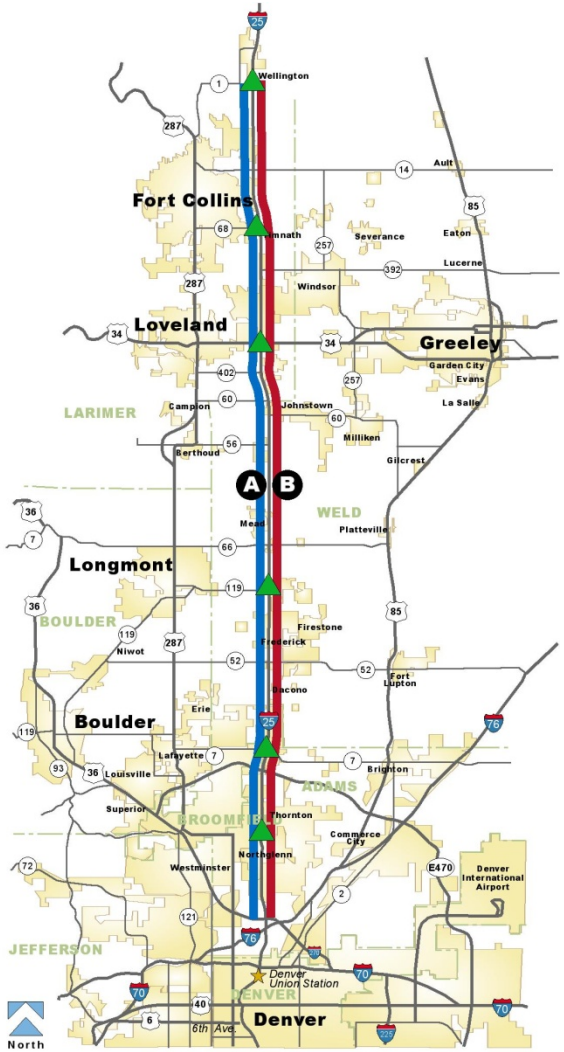
Add 4 new lanes entire length

Alternative B

ADVANTAGES
- Would serve future demand on I-25
- Would improve service for longer trips on I-25
- No restrictions with regard to vehicle-type, occupancy or tolls

DISADVANTAGES
- Would have higher capital cost than Alt. A
- 10 lanes (3 general purpose, 2 limited access) south of SH 66 would exceed demand
- More potential impact to natural environment than Alt. A

Not Advanced



▲ Possible Access Points for Limited Access Lanes

Level One Alternative # 48

Figure 3-18 Level 2A Preliminary Screening Results – New Highway

Alternative A

ADVANTAGES
- Would serve the most population & employment centers
- Could divert more trips from I-25 than Alts. ,B, C or D

DISADVANTAGES
- Would not address aging infrastructure on I-25
- Most potential impact to human and natural environment
- High maintenance costs from increase in lane-miles

Not Advanced

Alternative B

ADVANTAGES
- Could divert trips from I-25 & US 34
- Would upgrade Two Rivers Pkwy. south of Greeley and possibly US 85
- Could serve DIA trips

DISADVANTAGES
- Would not address aging infrastructure on I-25
- High maintenance costs from increase in lane-miles
- Would serve fewer economic centers
- More potential impact to natural environment than Alts. A, C & D

Not Advanced

Alternative C

ADVANTAGES
- Could divert trips from I-25 & US 34
- Could serve DIA trips

DISADVANTAGES
- Would not address aging infrastructure on I-25
- High maintenance costs from increase in lane-miles
- Would serve fewer economic centers

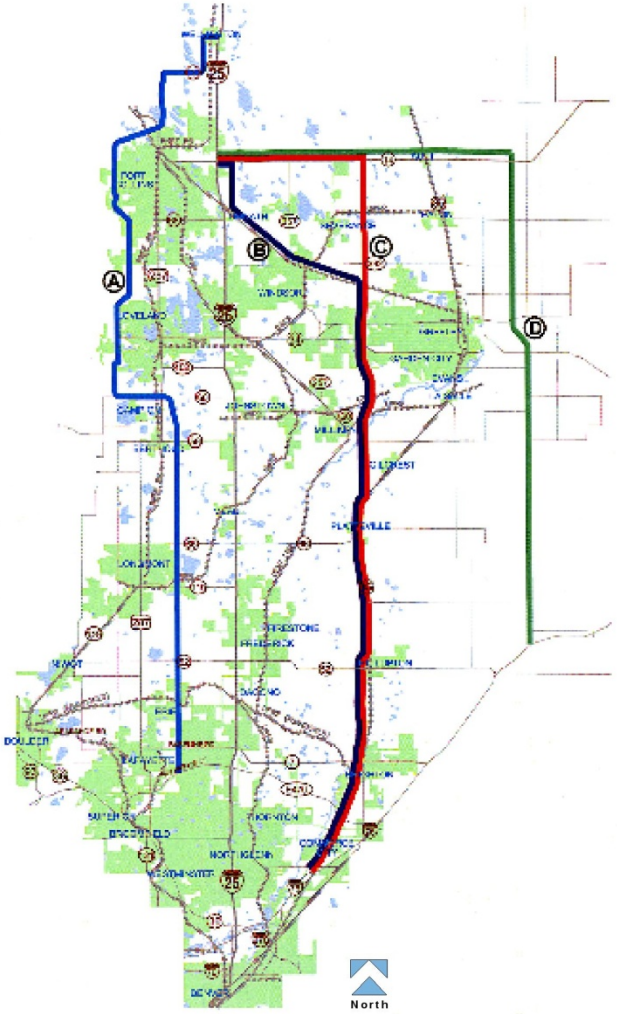
Not Advanced

Alternative D

ADVANTAGES
- Easier to limit access control
- Responds to expressed interest in the (1985) Front Range Toll Road
- Could serve DIA trips

DISADVANTAGES
- Would not address aging infrastructure on I-25
- Longest out-of-direction travel
- High maintenance costs from largest increase in lane-miles
- Would serve far fewer economic centers

Not Advanced



Level One Alternative # 42

Figure 3-19 Level 2A Preliminary Screening Results – New Arterial Road\

I-25 Parallel Arterials (2 recent studies)

Alternative A

ADVANTAGES

- Would increase vehicular capacity to serve most of the future demand north of SH 7
- Alt A would serve more population & employment centers on both sides of I-25
- Would divert trips off of I-25
- Could support economic development

DISADVANTAGES

- Would not serve long regional trips
- Would not serve trips south of SH 7
- Would not address aging infrastructure on I-25
- Less access control and longer travel times than I-25

Not Advanced

WCR 13 (Co. Blvd. extension)

Alternative B

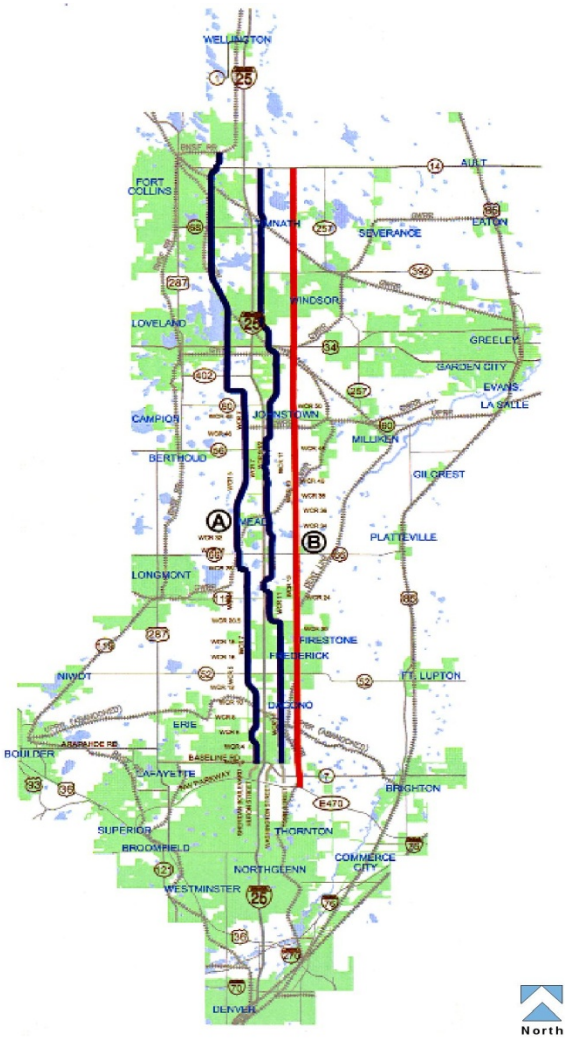
ADVANTAGES

- Would increase vehicular capacity, but not fully serve future demand for I-25 north of SH 7
- Would divert trips off of I-25
- Could support economic development
- Less potential impact to natural environment than Alt. A

DISADVANTAGES

- Would not serve long regional trips
- Would not serve trips south of SH 7
- Would not address aging infrastructure on I-25
- Less access control and longer travel times than

Not Advanced



Level One Alternative # 43

3.2.3 Transit Criteria

In Level 2A transit alternatives were evaluated using various available data such as Census information and National Transit Database information on peer transit systems. For example, reliability of each operating environment was qualitatively described based on the physical condition of each alignment (exclusive, grade-separated, shared, etc). A general description of the evaluation criteria is provided below:

3.2.3.1 Purpose and Need and Practicability

Safety – Alternatives were compared to determine which had the fewest number of at-grade road crossings.

Improve Mobility, Provide Modal Options and Support Economic Development – Alternatives were compared to determine which:

- Served the highest concentration of employment and population centers in the study area: Analyzed through the use of 2000 Census numbers for communities along each alignment
- Connected to other transit systems: Analyzed through mapping other transit systems (TransFort, The Bus, FoxTrot and RTD)
- Had the fastest travel times: Analyzed through measuring the distance of each alignment and applying the average operating speed of each transit mode (no station dwell time allowance was included at this level of screening)
- Served anticipated trip patterns: Analyzed through comparing the alignments to the Census 2000 Journey to Work data

Practicability – Per USACE's 4049b)(1) guidelines, this criterion depends on costs, technical and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall purpose. Alternatives were compared to determine which was the most cost effective (based on an average cost per mile and cost of technology obtained through peer systems), and was a proven technology.

3.2.3.2 Environmental Criteria

The data sources used in the evaluation of Level 2A alternatives were readily available data from Census, file review, field reconnaissance and county and municipality planning documents. Both quantitative and qualitative measures were used to evaluate the potential for the highway or transit alternatives being evaluated to adversely impact natural and built environment resources. The evaluation criteria are shown in **Figure 3-20**.

3.2.4 Transit Screening

Level 2A Screening used readily available data to screen the transit alternatives within their modal categories in order to narrow the total number that would undergo travel demand forecasting. Therefore, the best of high-speed rail alternatives, commuter rail alternatives, BRT and light rail alternatives were selected based on the transit screening. Level 2A Screening narrowed the potential options to the following:

- Bus Rapid Transit
  A and C
- Commuter Rail
  A-F
- High Speed Rail
  A

Figure 3-20 Measurements Used for Environmental Screening

Resource Category	Measurement Used
Section 4(f) Resources (parks and wildlife areas) 	• Total number of Section 4(f) resources potentially impacted
Land Use 	• Rating of compatibility with existing land use and planned future land use; • Potential to induce growth
Economic 	• Provision of access to future economic activity centers
Air Quality 	• Rating of potential to affect congestion or potential to affect vehicle miles or hours of travel
Traffic Noise 	• Developed land within 600 feet of the transportation improvement, number of sensitive receptors
Transit Noise and Vibration 	• Proximity of residential uses to the transit improvement
Water Resources 	• Total number of lakes and streams potentially impacted
Wildlife/Threatened, Endangered or Rare Species   	• Bald eagle nests within half mile; • Bald eagle communal roosts within half mile; • Preble's mouse known habitat; • Mountain plover habitat; • Swift fox known range; • Potential impact to rare fish species
Wetlands	• Potential impact to wetlands and streams
Environmental justice 	• Potential to provide direct access to low income and/or minority; • Potential to have an adverse impact on low income and/or minority
Visual 	• Potential impact to highly scenid views; • Potential impact from added pavement width
Historic Resources 	• Number of existing and potential historic sites within 1000 feet of corridor
Hazardous Materials 	• Number of known hazardous materials sites (Superfund, Resource Conservation and Recovery Act or Comprehensive Environmental Response, Compensation and Liability Information Systems) that could be potentially impacted
Social 	• Number of communities potentially bisected; • Potential for improved travel time; • Improvement in accessibility?, alternative mode of transportation added?
Bicyclists and Pedestrians 	• Number of regional trail crossings; • Measure of impact to local routes; • Potential impact to planned trails

Due to the range of transit options still being considered, the northern termini varied, and would be tested further in Level 2B screening. **Figures 3-21** through **Figure 3-24** illustrate the major findings and results of Level 2A Transit Screening. No Light Rail alternatives were advanced because the travel times were so high (over two hours on each line tested) and both project advisory committees (the TAC and the RCC) agreed that it was a poor choice of technology to select over such a long distance when other more efficient transit technologies were available.

Other transit alternatives that were screened out include:

BRT B and BRT D – Compared to other BRT alternatives, it caused out-of-direction travel for passengers trying to reach Denver, which would lengthen the travel time, and faster, more direct, and more cost-effective options were available on either I-25 or US 287. The alternatives also had the potential to negatively impact future land use, wildlife and hazardous materials.

BRT E – This alignment serves very few population centers, and uses no direct highway routes to reach Denver. In addition, as with BRT B and D, more direct and cost-effective alignments were available along existing roadways that would not require railroad ROW conversion to a BRT guideway. The alternatives also had the potential to negatively impact future land use, wildlife and hazardous materials.

BRT F – In the highway alternatives analysis, it was decided that US 85 would be upgraded only as a supplement to the improvement selected along I-25. Therefore, without substantial upgrades, BRT service was considered to be unfeasible along US 85. By contrast, BRT could be possible in special-purpose or managed lanes along I-25. Similarly, communities along the US 287 corridor were supportive of widening or converting lanes in certain areas to support transit improvements, though a continuous BRT-only lane would not be possible.

Commuter Rail G – Compared to other commuter rail alternatives, this alignment would require out-of-direction travel for passengers from the Western side of the corridor trying to reach Denver. There would also be a prohibitive amount of coordination with the UP for track space and time along the main line as well as through the Sand Creek Junction that enables railroad access into Denver Union Station.

HSR B – Of the three HSR alternatives, this alignment had the most potential to impact natural resources, due to proximity to wetlands. It also served the least number of population and employment centers.

HSR C – This HSR alignment would require the most travel time of the three alternatives under consideration. It would also require the highest capital cost expenditure due to the alignment's length.

LRT A, B, C and D – The travel times of all the LRT lines were comparatively high compared to other transit alternatives, and high enough to make travel from the northern to the southern terminus extremely unlikely due to the long travel time and the characteristics of the vehicle that make it uncomfortable over long distances. Therefore, no light rail alternatives were carried forward for further analysis.

Figure 3-21 Level 2A Preliminary Screening Results – Bus Rapid Transit

Alternative A

ADVANTAGES
- Serves the most population & employment centers
- Serves the most work trips
- Least capital costs
- Flexible end points

DISADVANTAGES
- Less reliable travel time
- Does not improve aging infrastructure
- Requires construction phasing and traffic coordination

Advanced

Alternative B

ADVANTAGES
- More reliable travel times
- Flexible end points

DISADVANTAGES
- Serves few population or employment centers
- Serves few work trips
- Most potential to impact natural resources
- Does not improve aging infrastructure

Not Advanced

Alternative C

ADVANTAGES
- Improves aging infrastructure from Wellington to Denver
- Flexible end points
- Least travel time of BRT alternatives
- Reliable travel times

DISADVANTAGES
- Serves few population or employment centers

Advanced

Alternative D

ADVANTAGES
- More reliable travel times
- Flexible end points
- Improves aging infrastructure

DISADVANTAGES
- Serves few population or employment centers
- Most potential to impact natural resources
- Serves few work trips

Not Advanced

Alternative E

ADVANTAGES
- More reliable travel times
- Flexible end points

DISADVANTAGES
- Serves few population or employment centers
- Most potential to impact natural resources
- Serves few work trips
- Does not improve aging infrastructure

Not Advanced

Alternative F

ADVANTAGES
- Low capital cost
- Flexible end points

DISADVANTAGES
- Serves few population or employment centers
- Serves few work trips
- Less reliable travel time
- Does not improve aging infrastructure

Not Advanced

Pittsburgh (BRT Example)

Figure 3-22 Level 2A Preliminary Screening Results – Commuter Rail

Alternative A

ADVANTAGES
- Serves the most population & employment centers
- Serves the most work trips
- More reliable travel times
- Least capital costs

DISADVANTAGES
- Most potential to impact natural resources
- Does not improve aging infrastructure
- Highest travel time of commuter rail alternatives

Advanced

Alternative B

ADVANTAGES
- Serves population & employment centers
- Serves work trips
- More reliable travel times

DISADVANTAGES
- Does not improve aging infrastructure

Advanced

Alternative C

ADVANTAGES
- Serves population & employment centers
- Serves work trips
- More reliable travel times
- Improves aging infrastructure

DISADVANTAGES
- Highest travel time of commuter rail alternatives

Advanced

Alternative D

ADVANTAGES
- Improves aging infrastructure
- More reliable travel times
- Lower travel time of commuter rail alternatives

DISADVANTAGES
- Serves few population or employment centers
- Serves few work trips

Advanced

Alternative E

ADVANTAGES
- Improves aging infrastructure
- More reliable travel times
- Lower travel time of commuter rail alternatives

DISADVANTAGES
- Serves few population or employment centers
- Serves few work trips

Advanced

Alternative F

ADVANTAGES
- Least potential to impact human environmental resources
- More reliable travel times
- Lower travel time of commuter rail alternatives

DISADVANTAGES
- Serves few population or employment centers
- Most potential to impact natural resources
- Serves few work trips
- Does not improve aging infrastructure

Advanced

Alternative G

ADVANTAGES
- Least potential to impact human or natural environmental resources
- More reliable travel times

DISADVANTAGES
- Serves few population or employment centers
- Serves few work trips
- Does not improve aging infrastructure

Not Advanced

Trinity Railway Express (Commuter Rail Example)

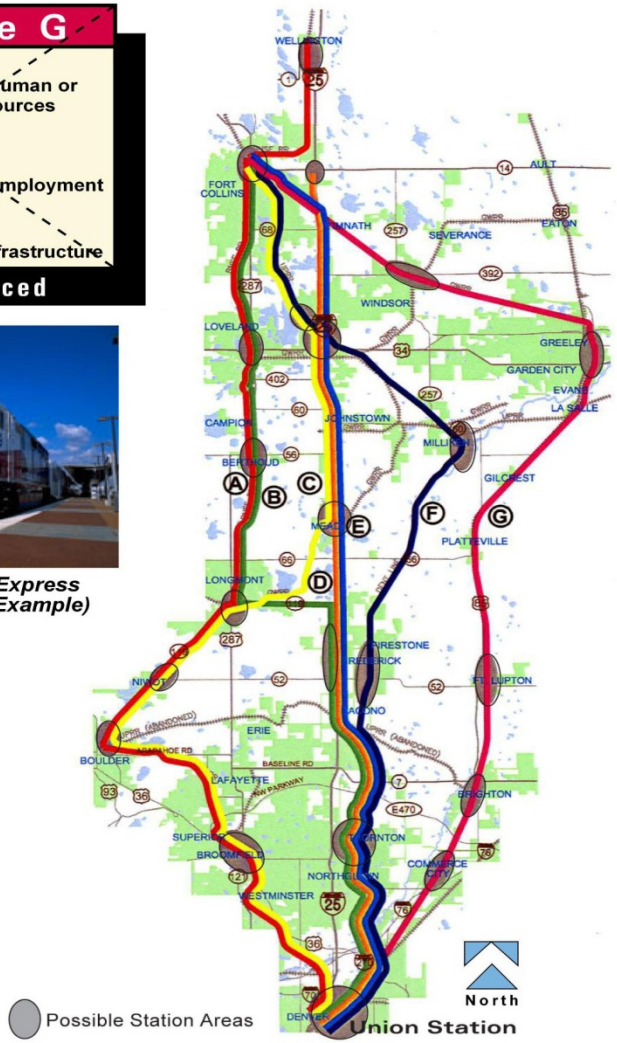


Figure 3-23 Level 2A Preliminary Screening Results – High Speed

Alternative A

ADVANTAGES
- Travel time advantage
- High capacity
- Improves aging infrastructure

DISADVANTAGES
- Highest capital costs
- Minimal service to population & employment centers
- Highest construction demands

Advanced

Alternative C

ADVANTAGES
- Travel time advantage
- High capacity
- Least potential to impact human or natural environmental resources

DISADVANTAGES
- Highest capital costs
- Least service to population & employment centers
- Does not improve aging infrastructure

Not Advanced

Alternative B

ADVANTAGES
- Travel time advantage
- High capacity

DISADVANTAGES
- Highest capital costs
- Least service to population & employment centers
- Most potential to impact natural resources
- Does not improve aging infrastructure

Not Advanced

Acela - Northeast U.S.
(High Speed Rail Example)

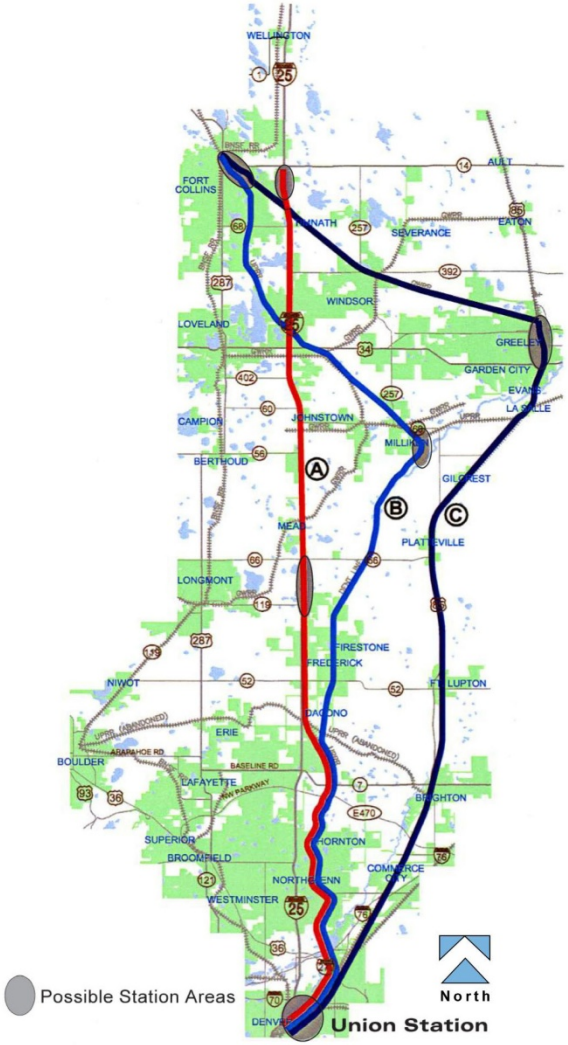


Figure 3-24 Level 2A Preliminary Screening Results – Light Rail

Alternative A

ADVANTAGES
- Serves the most population & employment centers
- Serves work trips

DISADVANTAGES
- Shared ROW - unreliable travel time
- Higher travel times
- Does not improve aging infrastructure
- Higher capital costs
- Higher potential to impact human resources

Not Advanced

Alternative C

ADVANTAGES
- Improves aging infrastructure
- Serves work trips

DISADVANTAGES
- Serves fewest population or employment centers
- Higher capital costs
- Higher travel times
- Unproven technology along this corridor length

Not Advanced

Alternative B

ADVANTAGES
- Serves the most population & employment centers
- Serves work trips

DISADVANTAGES
- Higher travel times
- Does not improve aging infrastructure
- Higher capital costs
- Higher potential to impact human resources

Not Advanced

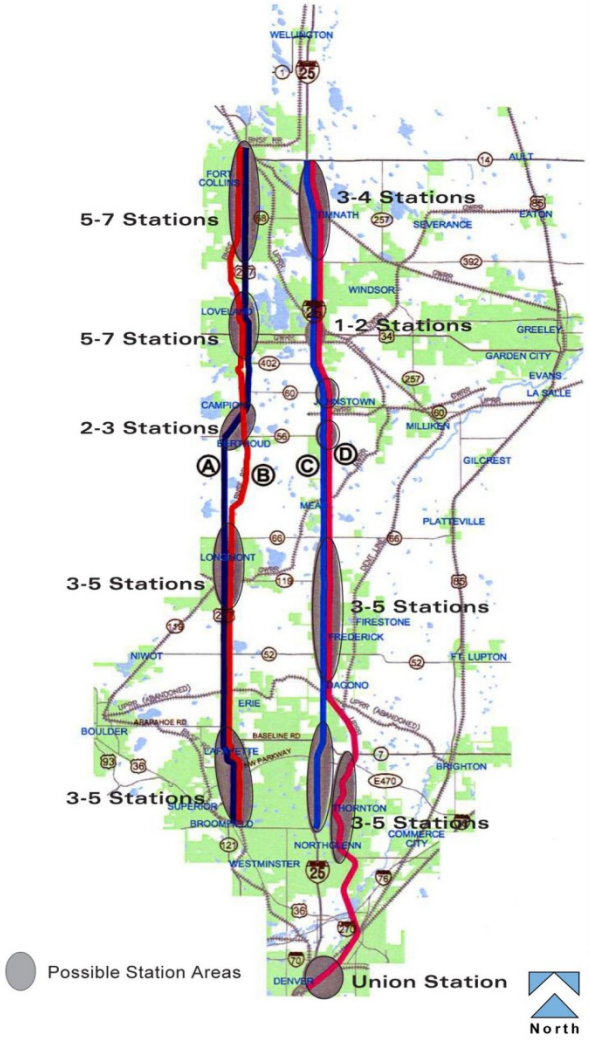
Alternative D

ADVANTAGES
- Improves aging infrastructure

DISADVANTAGES
- Serves fewest population or employment centers
- Higher capital costs
- Higher travel times
- Unproven technology along this corridor length

Not Advanced

RTD Denver
(Light Rail Example)



3.2.5 Congestion Management Criteria

The Congestion Management criteria included practicability for implementation along the congested sections of I-25, as well as the maximum potential for trip reduction and management relative to the estimated level of congestion. **Table 3-1** illustrates the potential level of effectiveness associated with different congestion management methods and alternatives according to regional data, CDOT data and third party research. The **Congestion Management Alternative Technical Report of February 2006** contains this and other detailed information, and is available for review. This report is included in **Appendix B**. repetitive

Table 3-1 Congestion Management Strategies Measures of Effectiveness

Strategy	Method	Options	Typical Effectiveness Measure
Transportation Demand Management	Public Transit	Express Service	2 to 3% share of all trips
	Ridesharing	Carpools	11.5% work trips
		Vanpools	5% work trips
	Employer Programs	Telecommuting	4.7% work trips
	Land Use Policies		3% reduction in VMT
Transportation Systems Management	Incident Management Program		5% reduction in delay[1]
Intelligent Transportation Systems	Real Time Transportation Information		22% reduction in VHT[2]

[1]Time savings are only realized if there has been an incident; this is not a consistent time-saving strategy due to the haphazard nature of incidents. Traffic Congestion and Reliability: Linking Solutions to Problems, Final Report. Cambridge Systematics for FHWA, July 19, 2004.

[2]Time savings are realized only when there is delay; this is not a consistent time-saving strategy due to the changing nature of freeway conditions. Litman, Todd. Guide to Calculating Transportation Demand Management Benefits. Victoria Transport Policy Institute, 1999.

Understanding that I-25 needs to be able to accommodate approximately 55,000 additional daily trips by 2030 (roughly doubling current traffic volumes), trip reductions ranging from 2 percent of all trips to 12 percent of work trips would not accommodate the need for additional capacity. More specifically, in 2030 many segments of I-25 would be congested (above a 0.9 V/C ratio.) (see **Table 3-2**).

Table 3-2 2030 North I-25 AM and PM Volume/Capacity Ratios

Location	2030 Volume-to-Capacity (V/C) Ratios			
	AM Peak Hour		PM Peak Hour	
	Northbound	Southbound	Northbound	Southbound
North of SH 1	0.43	0.32	0.49	0.31
Mountain Vista to SH 1	0.28	0.44	0.38	0.32
SH 14 to Mountain Vista	0.47	0.79	0.66	0.55
SH 14 to SH 68	0.99	0.89	0.95	0.96
SH 68 to SH 392	1.36	1.01	1.07	1.19
SH 392 to SH 34	1.26	1.00	1.06	1.15
SH 34 to SH 402	1.41	0.76	1.07	1.25
SH 402 to SH 60	1.22	0.88	1.02	1.14
SH 60 to SH 60	1.22	0.88	1.02	1.09
SH 60 to SH 56	1.22	0.97	1.03	1.07
SH 56 to Great Western	0.94	0.98	1.02	1.01
Great Western to SH 66	0.86	1.03	1.02	0.94
SH 66 to SH 119	0.57	0.71	0.66	0.62
SH 119 to SH 52	0.69	0.90	0.84	0.80
SH 52 to Union Pacific	0.79	1.09	1.02	0.93
Union Pacific to SH 7	0.93	1.22	1.15	1.03
SH 7 to E-470	1.27	1.19	1.02	1.24
E-470 to 120th Avenue	1.07	1.12	1.05	1.05
120th Avenue to US 36	0.97	1.39	1.28	1.11
US 36 to I-70	1.03	1.14	1.19	0.97
I-70 to Denver Union Station	1.01	1.10	1.15	1.03

Even a 12 percent decrease in work trips (which constitute roughly 30 percent of all trips) in these congested segments will not reduce the V/C to uncongested levels (see **Table 3-3**).

Table 3-3 2030 North I-25 AM and PM Volume/Capacity Ratios with Maximum Congestion Management

Location	2030 Volume-to-Capacity (V/C) Ratios 2030 Volume-to-Capacity (V/C) Ratios (Work Trips decreased 12%)			
	AM Peak Hour		PM Peak Hour	
	Northbound	Southbound	Northbound	Southbound
North of SH 1	Not Applicable			
Mountain Vista to SH 1				
SH 14 to Mountain Vista				
SH 14 to SH 68	1.0	0.9	0.9	0.9
SH 68 to SH 392	1.3	1.0	1.0	1.1
SH 392 to SH 34	1.2	1.0	1.0	1.1
SH 34 to SH 402	1.4	0.7	1.0	1.2
SH 402 to SH 60	1.2	0.8	1.0	1.1
SH 60 to SH 60	1.2	0.8	1.0	1.1
SH 60 to SH 56	1.2	0.9	1.0	1.0
SH 56 to Great Western	0.9	0.9	1.0	1.0
Great Western to SH 66	0.8	1.0	1.0	0.9
SH 66 to SH 119	Not Applicable			
SH 119 to SH 52				
SH 52 to Union Pacific	0.8	1.1	1.0	0.9
Union Pacific to SH 7	0.9	1.2	1.1	1.0
SH 7 to E-470	1.2	1.1	1.0	1.2
E-470 to 120th Avenue	1.0	1.1	1.0	1.0
120th Avenue to US 36	0.9	1.3	1.2	1.1
US 36 to I-70	1.0	1.1	1.1	0.9
I-70 to Denver Union Station	1.0	1.1	1.1	1.0

The potential benefit of congestion management measures is calculated by applying the measure of effectiveness to the total number of trips passing through the congested locations. This represents the maximum savings the congestion management strategy could have. Then, after each strategy has been evaluated individually, they are combined to estimate the effectiveness of a comprehensive Congestion Management Alternative: the combined trips reduced from transit, ride-sharing, and telecommuting. Reductions in VHT are not counted, as they do not actually decrease trips. The potential benefits and associated change to volume to capacity ratios are shown in **Table 3-4.**

Table 3-4 Trip Reduction Due to Combined Congestion Management Methods

Location	Estimated Peak Hour Incremental Benefit	New V/C	Still congested?
SH 14 to SH 68	227 Trips	0.92	Yes
SH 392 to SH 34	824 Trips	1.03	Yes
SH 34 to SH 402	125 Trips	1.11	Yes
SH 402 to SH 60	252 trips	1.04	Yes
SH 52 to Union Pacific	161 Trips	0.94	Yes
Union Pacific to SH 7	962 Trips	1.00	Yes
SH 7 to E-470	1,217 Trips	1.09	Yes
E-470 to 120th Avenue	1,096 Trips	0.98	Yes
120th Avenue to US 36	1,203 Trips	1.10	Yes
US 36 to I-70	1,751 Trips	0.99	Yes
I-70 to Denver Union Station	1,489 Trips	0.98	Yes

The potential benefits cannot meet the future traffic demand, and would not substantially enhance connectivity or direct travel within the corridor. However, the congestion management methods described can reduce trips, VMT, and VHT. As a result, they are recommended as complementary solutions to be implemented alongside any Build alternative that is selected.

3.2.5.1 CONGESTION MANAGEMENT SCREENING

Regardless of whether the Congestion Management strategies were implemented independently or as a group, they could not reduce the trips in the congested segments of I-25 to a point below what is considered “congested” by the regional governments (a volume to capacity ratio over 0.9). Therefore, the combined congestion management strategies were screened from further analysis as potential “stand-alone” alternatives, and were not analyzed further in Level 2B Screening. However, they were preserved for further consideration as individual complementary improvements for the build alternatives that could be considered in the draft EIS.

Table 3-5 summarizes the congestion management strategies that should be considered to enhance the selected stand-alone alternative, and in what locations they could be most effectively applied.

Table 3-5 Recommended Congestion Management Strategies as Complementary Improvements

Congestion Management Strategies	Along I-25	In Local Communities (Enhancing Access to I-25)	Local Interest*
Express Transit Service	No	Yes	NFRMPO, Longmont, Fort Collins, Loveland, Greeley
Carpool	Yes	Yes	NFRMPO CDOT
Vanpool	Yes	Yes	NFRMPO CDOT
Telecommuting	Yes	Yes	City/County of Denver
Land Use Policies	Yes	Yes	City/County of Denver, NFRMPO
Incident Management Program	Yes	Yes	Thornton, Northglenn, Adams County
Ramp Metering	Yes	No	CDOT (Region IV ITS Plan)
Real Time Transportation Information	Yes	Yes	CDOT (Region IV ITS Plan) City/County of Denver Broomfield Thornton, Northglenn, Adams County

**Source: Summary of Stakeholder Interviews, Fall 2004.*

3.3 LEVEL 2B ALTERNATIVES DEVELOPMENT

Based on the results of Level 2A screening, selected alternatives were carried forward for additional analysis in Level 2B. Data derived from the travel forecasting model were used to supplement the Level 2A evaluation and to conduct the Level 2B screening.

3.3.1 No-Action Alternative

By the time the project had progressed to Level 2B alternatives development, the "FasTracks" referendum had passed in the Regional Transportation District (RTD) serving the Denver metropolitan area. As a result, two rail lines extending north towards the North Front Range

acquired a dedicated funding source and could be considered funded, committed and part of the No-Action Alternative. This affected alternatives development and analysis in the North I-25 EIS, because, through coordination with RTD, it was determined that potential North Front Range alternatives could either connect to FasTracks stations, or be interlined with FasTracks rail service (depending on the alternative).Therefore, Level 2B rail alternatives included the cost of construction only up to the FasTracks line, and some additional incremental cost paid to RTD to interline with their system.

3.3.2 Build Alternatives – Highway

In Level 2B many highway alternatives were still being considered for evaluation. Some alternatives were variations of each other and would have similar results from a travel demand-forecasting run. Therefore, instead of exhaustively testing each separate alternative, a strategic method was used to perform model runs to assess demand, access, function, and location as described below and illustrated in **Figure 3-25**. A comprehensive summary of the travel demand forecasting effort is included in **Appendix G**.

Demand – The model assigned traffic to eight-lane I-25 between US 36 and SH 1. Based on the level of traffic assigned to I-25, a determination was made about the need for four, six and eight-lane cross sections.

Access – Seven new interchange locations were added at existing crossroads between SH 7 and SH 1 to determine what impact providing more access has on I-25.

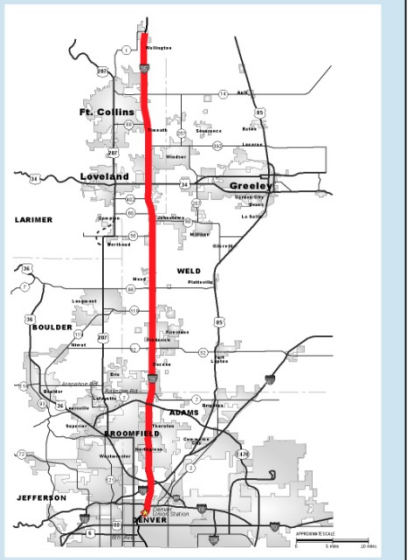
Function – Three models were run to test the effect of a new lane's function on I-25 operation.

- The first assumed four general-purpose lanes (two in each direction) and two HOV lanes (one in each direction) from SH 66 to SH 14. Six general-purpose lanes and two HOV lanes were assumed from US 36 to SH 66. Both included existing interchanges only.
- The second was used to identify the influence of toll lanes on I-25 and assumed four general-purpose lanes (two in each direction) and four special-use lanes (two in each direction) from SH 66 to SH 14. Six general purpose lanes and four toll lanes were assured from US 36 to SH 66. HOT alternatives and shorter segments of Toll and HOV alternative were determined using the results of these two model runs.
- The third model tested how limiting access to new lanes would impact demand.

Location – This model run was used to identify how well US 85, as a freeway, could relieve anticipated congestion along I-25 in the study area. This was completed at the request of the Technical Advisory Committee even though this alternative was screened in Level 2A.

Figure 3-25 Level 2B Highway Modeling Approach

Demand

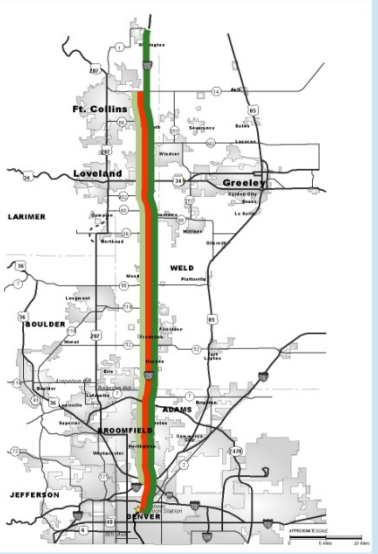


Run 1: 8 general purpose lanes (17 existing interchanges)

Access

Run 2: 8 general purpose lanes with additional interchanges (6 added to test the effects of additional access)

Function

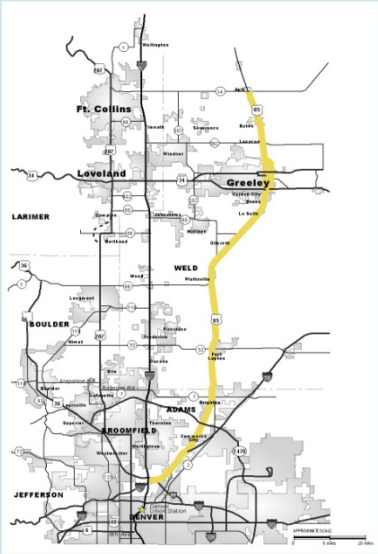


Run 3: HOV (1 new high occupancy vehicle lane in each direction)

Run 4: Toll (2 new toll lanes in each direction)

Run 5: Limited Access (2 new limited access lanes in each direction)

Location



Run 6: US 85 upgraded to a freeway; and I-25 No Action

Note: Evaluation of remaining level 2A alternatives will be synthesized using these six model runs and additional off-model analysis.

3.3.3 Build Alternatives – Transit

Similar to the process used for highway analysis, to accommodate the still large number of alternatives requiring modeling, a specific set of model alternatives were chosen from the remaining 2A alternatives to test the difference in operating characteristics as well as locational differences that can affect ridership.

The travel demand model provided information on the:

Alignment – Commuter rail lines were tested on western, mid-western, central and interior alignments to determine any difference in ridership attributed to the location.

All of the transit alternatives had similar headways (20-minute peak and 60-minute off-peak). In addition, similar access was assumed to each alternative in the form of a common bus feeder network, and drive access allowed at station areas. (Large capture areas were assumed for the stations, as exact station locations were not identified. In addition, a similar amount of station areas was assumed for each mode.)

Speed – An alternative with better travel times (due to simulated higher speeds) was tested along the central alignment (and compared to the central alignment run in the "location" test) to determine what additional ridership increment could be captured with higher speeds.

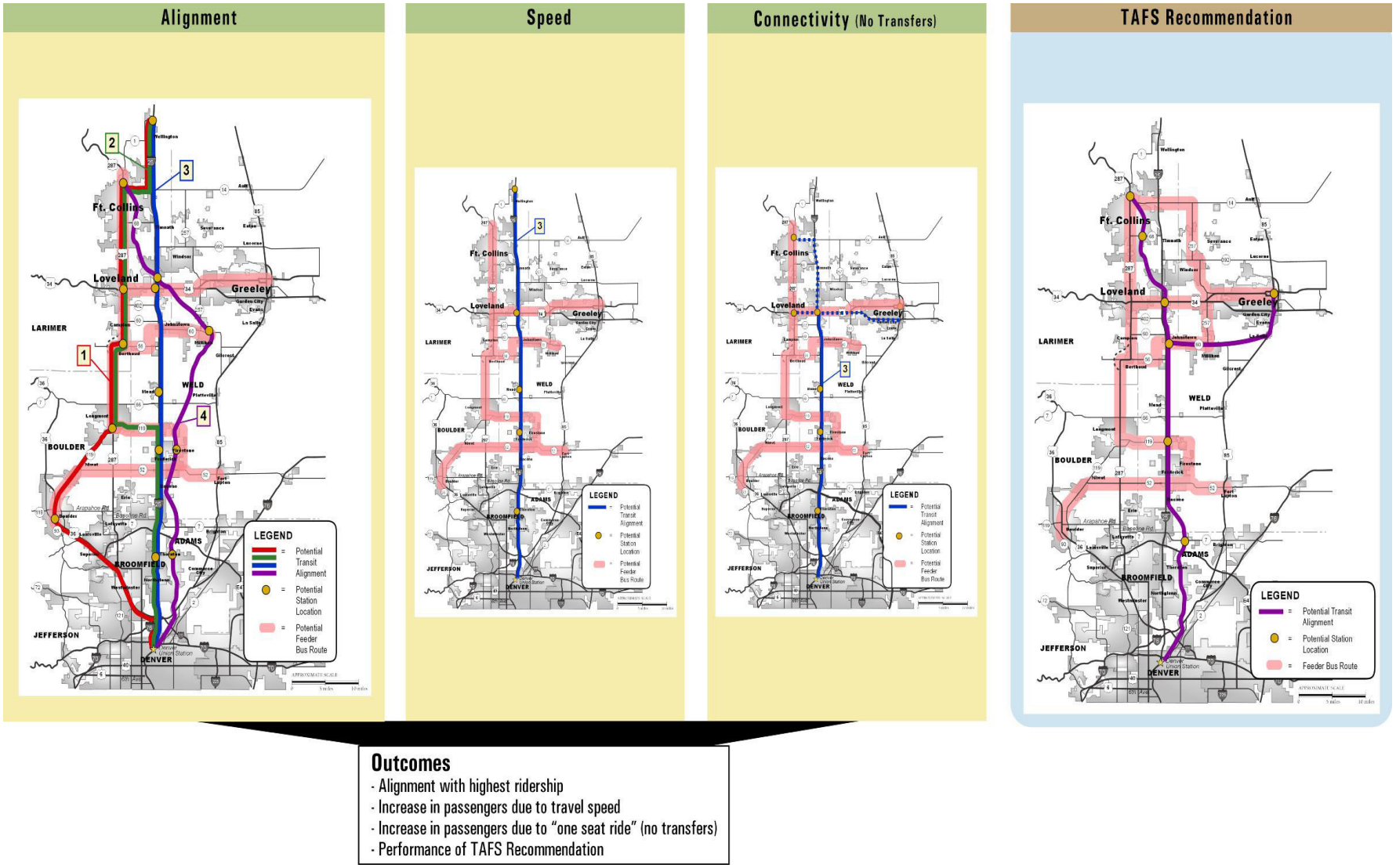
To differentiate between modes, a maximum operating speed of 75 mph was assumed for high speed rail. a maximum operating speed of 65 mph was assumed for rail alternatives, and 60 mph was assumed for the BRT alternative. It should be noted that "rail bias" is included in the travel model (calibrated to observed base-year conditions) to account for the increase in ridership that often accompanies rail service.

Connectivity – To determine the effect of forcing people to drive to the central alignment, a test was conducted of the central alignment with alternating direct service to Fort Collins, Loveland and Greeley.

Assessing the difference in ridership would clarify the ridership benefit of a "one-seat ride" – direct service with no transfer.

TAFS Test – The final test was a run to determine what level of ridership would result from the rail alignment recommended in the previous Transportation Alternatives Feasibility Study that was conducted for northern Colorado. This was conducted as a point of reference for the Technical Advisory Committee. Many members had participated in the TAFS study and were interested in how new alternatives would compare. **Figure 3-26** illustrates Level 2B Transit Model Runs.

Figure 3-26 Level 2B Screening – Transit Model Runs



3.4 LEVEL 2B SCREENING

The modeling effort primarily focused on providing an evaluation of mobility to supplement the evaluation conducted in Level 2A. General screening results were as follows:

- Highway alternatives with the potential to provide an average volume to capacity ratio of 0.90 between SH 66 and SH 14 were advanced, see **Figure 3-27**.
- Transit alternatives with travel time competitive with private auto were advanced.
- Transit alternatives with the highest estimated ridership were advanced, see **Figure 3-28**.
- Based on ridership and cost per user volume to capacity ratio, transit and highway alternatives were analyzed by comparing their utilization (v/c and ridership) to their costs to determine the cost per user. More favorable alternatives were less costly. (At this level of analysis, costs were based on average per mile costs from similar systems and were not based on engineering estimates). Highway costs are illustrated in **Figure 3-29**. Transit costs are illustrated in **Figure 3-30.**
- Alternatives which had the least potential to adversely impact natural resources, and human and social environment were carried forward from Level 2A. In general, environmental criteria used in Level Two were not a discerning factor. At this stage most of the proposed alignments could be shifted during the next level of design to avoid resources. Those alternatives carried forward from Level 2A were supplemented with modeling results to select alternatives to be carried forward into Level Three.

3.4.1 Highway

Additional detailed results pertaining to the highway alternatives evaluated are as follows:

Additional Lanes on I-25 – When eight lanes were assigned to I-25 between US 36 and SH 1, demand increased along the entire I-25 corridor. The largest increases were experienced between US 36 and 144th Avenue, and SH 60 and SH 14. In these two areas, demand grew by about 20%. Between 144th and SH 60, demand increased by approximately 10 percent. Demand for eight lanes extends from US 36 to SH 119 and between SH 56 and Prospect. North of Prospect, demand drops to a six and four-lane facility demand. Six and eight general purpose lanes on I-25 had the lowest average cost per mile compared to the other highway alternatives. Both six and eight-lane alternatives were retained for additional evaluation in Level Three.

Upgrade Parallel Roadways – Alone, upgrading US 85 would not adequately address mobility needs along I-25. However, based on community support, the alternative was retained for potential inclusion as an improvement to complement other stand-alone alternatives.

Express Lanes – HOT and Toll lane alternatives represented the highest average cost per mile to construct but were found to have the ability to address safety concerns, mobility and replace aging infrastructure. HOT and Toll alternatives extending to SH 14 were retained for additional evaluation.

Figure 3-27 Purpose and Need Evaluation – Highway Mobility

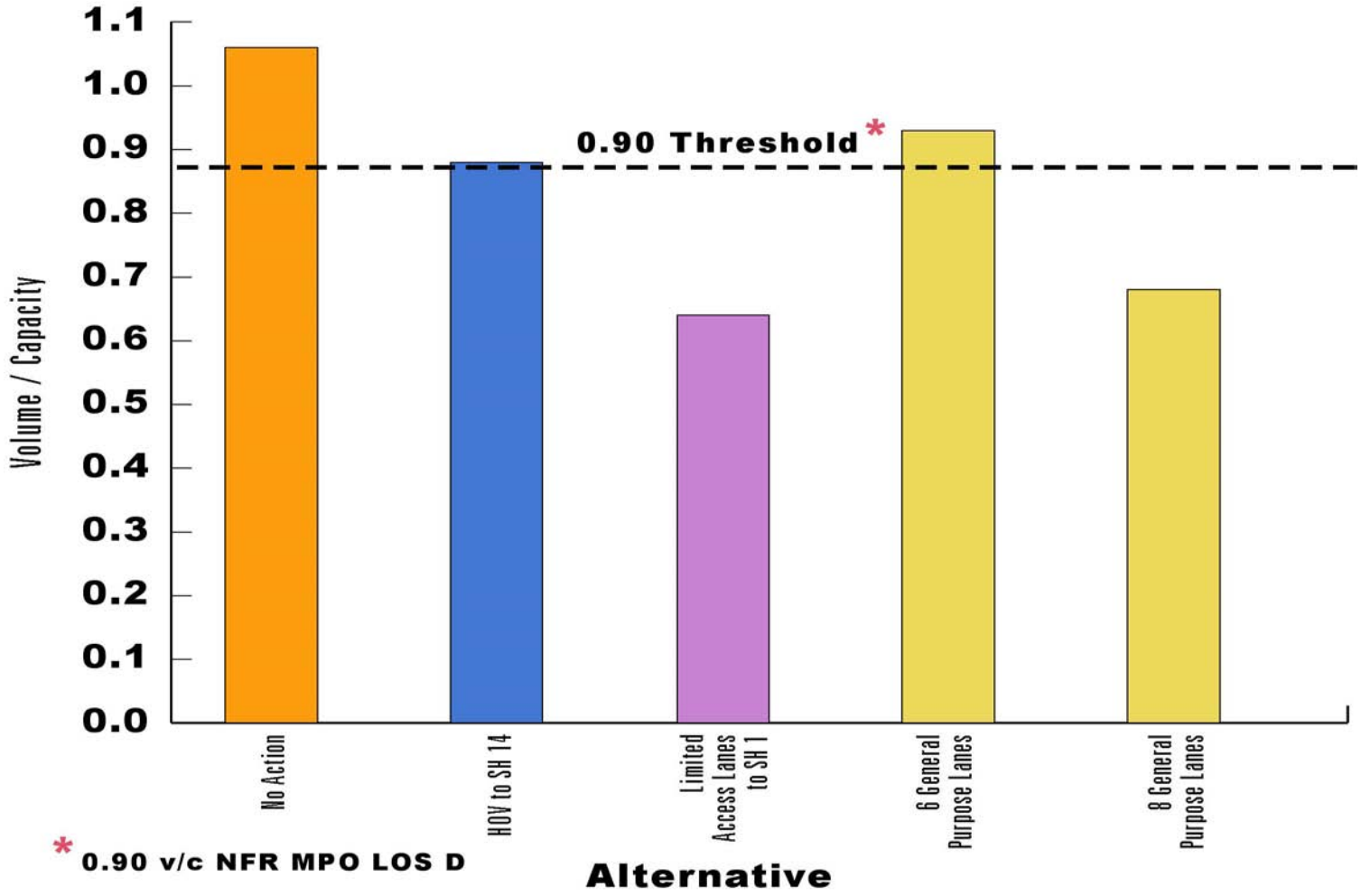


Figure 3-28 Purpose and Need Evaluation – Transit Mobility

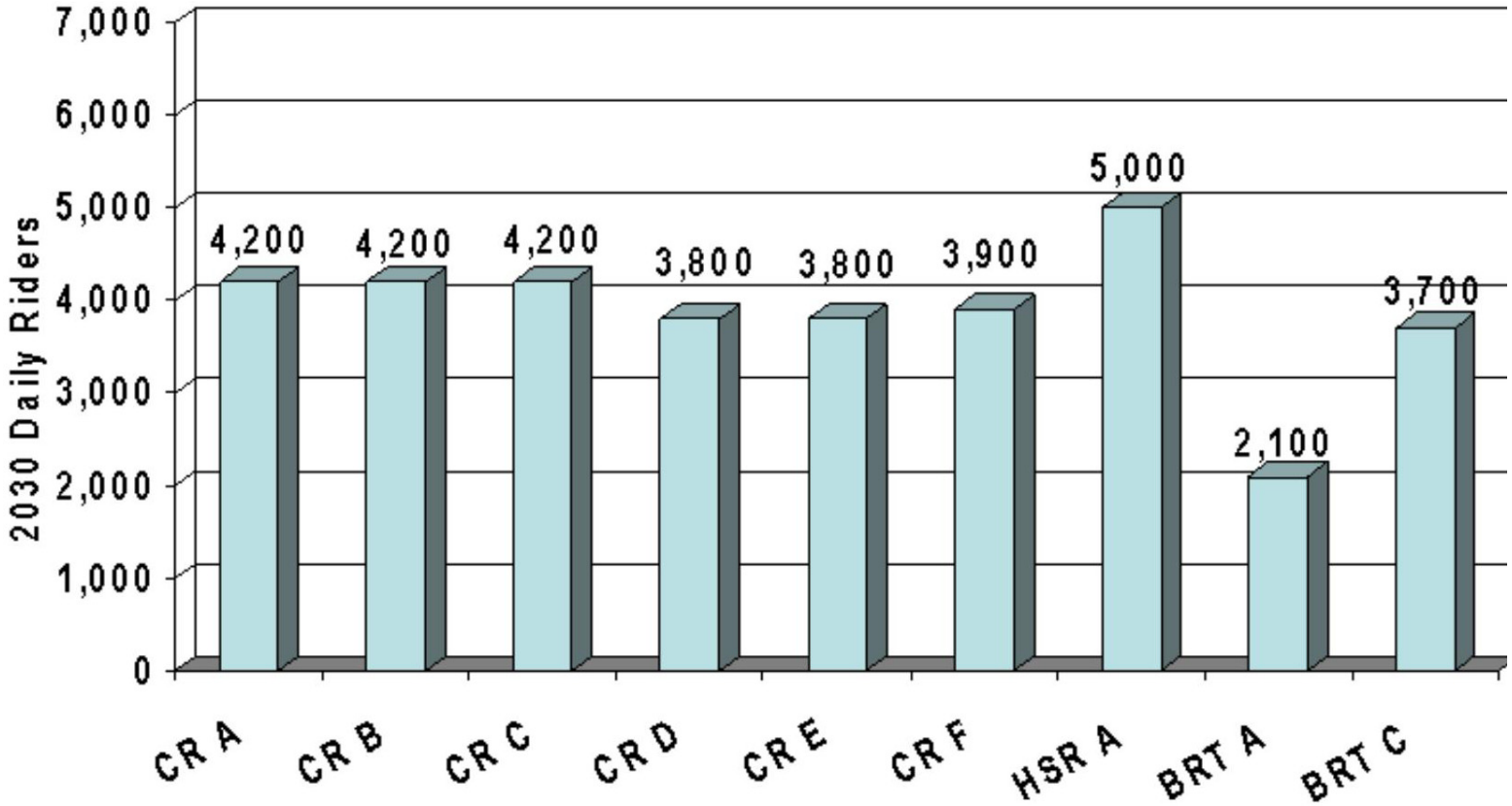


Figure 3-29 Cost Chart for Highway

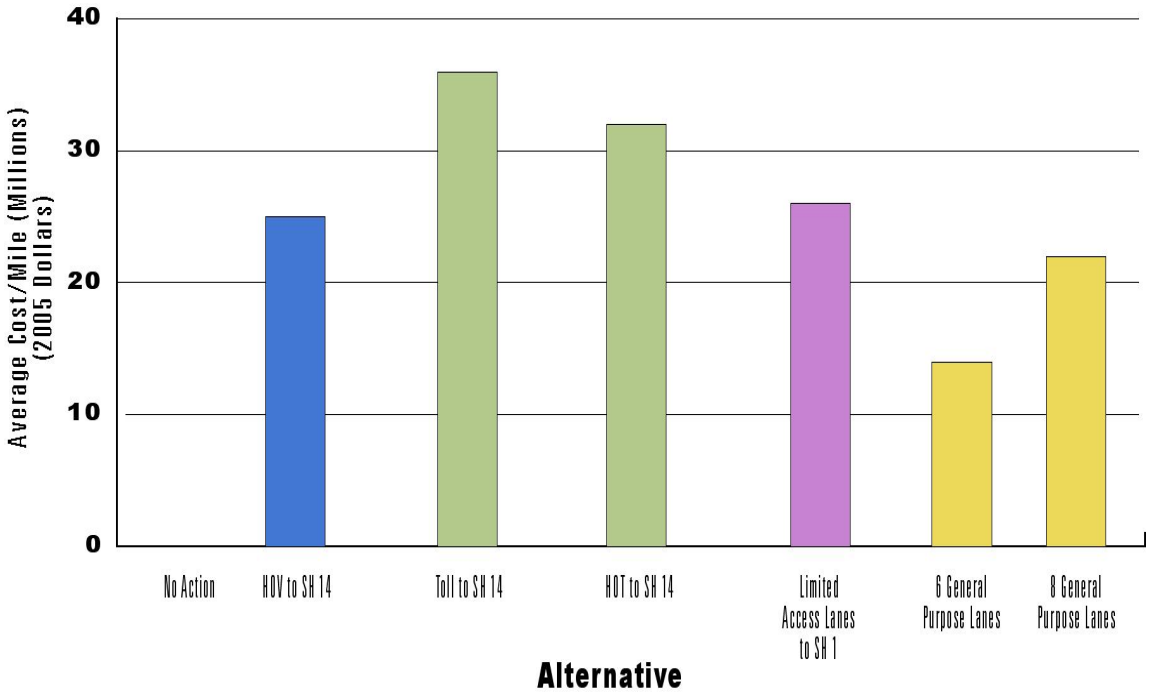
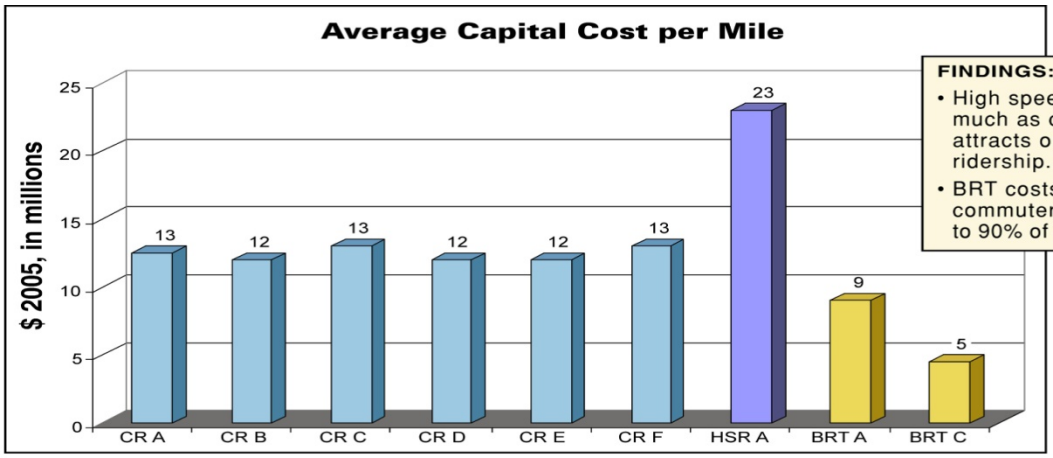


Figure 3-30 Practicability Evaluation – Average Capital Cost Per Mile



COST ESTIMATES ASSUME:

- Average cost per mile from end-to-end
- Grade separations at state highways
- Signals and traffic coordination
- Acquisition of right-of-way
- Transit improvements only - costs do not include associated or related highway improvements
- The use of FasTracks corridors with minimal improvements

- While the HOV lane alternative to SH 14 addressed many of the purpose and need goals at lower costs than Toll or HOT, it did not provide substantial improvement in North I-25 general purpose lanes; however, it was retained for additional evaluation in Level Three
- Express lane alternatives that did not extend north of SH 66 would not adequately address safety concerns, capacity/mobility needs or replace aging infrastructure along I-25 in the northern portion of the study area.

Limited Access Lanes – Average cost per mile was somewhat higher than adding general purpose lanes to I-25 but not as high as additional barrier-separated HOT or Toll lanes. (see **Figure 3-30)**

3.4.2 Transit

Level 2B screening utilized the model's results, along with other data, to make further conclusions about the transit alternatives and to forward a selected set for further study in Level Three. In addition to the ridership forecasts, the North I-25 Travel Model predicted station boarding, feeder bus network ridership, and the 2030 (No-Build) Travel Patterns that the transit alternatives would be trying to serve.

Costs for each of the alternatives were developed using peer system per-mile capital costs, and applying an average cost per mile for right-of-way purchases along the alignment. In order to account for the changes in operating environment (rural versus urban development adjacent to the alignment) both rural and urban peer rail systems were considered. In addition, general costs were estimated for grade separations, track signalization and track electrification based on peer systems. In this analysis BRT had substantially lower capital costs because it assumed the widening of I-25 (a construction cost) without the purchase of right-of-way.

The results can be summarized as follows:

- Commuter rail service will attract approximately 4,000 riders, regardless of the alignment's location.
- High Speed Rail service attracts 20 percent more passengers at double the cost.
- Bus Rapid Transit attracts 1/3 less ridership compared to 50 percent less cost.
- Local ridership on the feeder bus network was relatively high.
- Transit serves a high percentage of commuters from the North Front Range to Denver, but the total number of commuters is not a large number.
- Alternatives along the western side of the corridor had a higher potential for physical environmental impacts.
- Alternatives along the interior alignment had a higher potential to impact aquatic resources.

As a result of Level 2B Screening, the following alternatives were screened out from further analysis:

Commuter Rail F – Compared to other commuter rail alternatives, this alignment served very few population or employment centers, and resulted in out-of-direction travel for passengers trying to reach Denver. In addition, it required the restoration of the portion of the Dent Line through Frederick and Firestone to an active railway, rather than a recreational trail

3.5 LEVEL TWO LESSONS LEARNED

Figures 3-31 through Figure 3-43 summarize the major findings of the Level Two evaluation effort. To aid in presentation to the public, the alternatives were given a "final grade" of satisfactory, needs improvement or unsatisfactory. The "final grade" definitions are described below.

Satisfactory

- Sufficiently addresses the evaluation criteria identified.
- Will be considered as a stand-alone alternative, meaning that the alternative could be a primary component of an acceptable transportation solution.
- Moves forward to Level Three.

Needs Improvement

- May not meet the criteria, but if modified or combined with other improvements, may justify further consideration.
- Will be considered complementary, meaning the alternative could be used to improve the functionality of a stand-alone alternative.
- May move forward to Level Three if it can be combined with a "satisfactory" alternative.

Unsatisfactory

- Does not sufficiently address criteria and is not being recommended for further evaluation.
- Determined that the alternative is too costly, does not serve a substantial number of travelers, or has the most comparative potential for environmental impacts.
- Does not move forward to Level 3.

Figure 3-31 Level Two Grading Results – Additional Lanes

Report Card
Alt. A: Widen US 287

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
			✔

NOTES:
- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- High potential for impact to human environment*
- Most potential for impact to bikes and pedestrians, hazardous materials, historic properties, noise at residential areas*

Report Card
Alt. B: Widen I-25 to 6 Lanes

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
		✔	

NOTES:
- Attempts to address safety concerns on I-25 north of SH 66
- Could provide adequate capacity with some additional improvements
- Replaces aging infrastructure north of SH 66
- Low potential for impact to the human environment*
- Low potential for impact to the natural environment*

Report Card
Alt. C: Widen I-25 to 8 Lanes

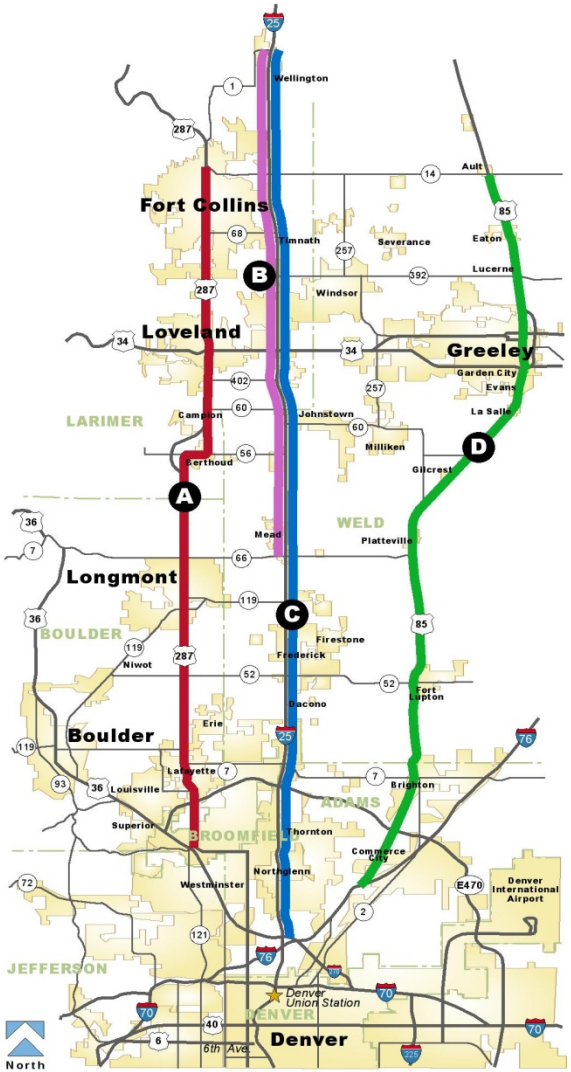
GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
	✔		

NOTES:
- Attempts to address safety concerns on I-25
- Provides adequate capacity to meet future demand
- Replaces aging infrastructure on I-25
- Low potential for impact to the human environment*
- Most potential for impact to air quality and wetlands*

Report Card
Alt. D: Widen US 85

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
			✔

NOTES:
- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- Moderate potential for impact to social cohesion, noise at residential areas, hazardous materials, farmland and environmental justice*



* *When compared to other highway alternatives*

Level One Alternative #44

Figure 3-32 Level Two Grading Results – Upgrade Highway Classification

Report Card
Alt. A: US 287 Expressway

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
			✔

NOTES:
- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- Most potential to impact wetlands, historic properties, hazardous materials and bikes & pedestrians*
- Most potential to cause noise impact to residences*

Report Card
Alt. B: US 287 Freeway

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
			✔

NOTES:
- Does not divert sufficient traffic from I-25
- High potential for impact to human environment
- Most potential to impact wetlands, historic properties, hazardous materials and bikes & pedestrians*
- Most potential to cause noise impact to residences*

Report Card
Alt. C: US 85 Expressway

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
		✔	

NOTES:
- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- Moderate potential for impacts to air quality, environmental justice, noise*

Report Card
Alt. D: US 85 Freeway

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
			✔

NOTES:
- Does not divert sufficient traffic from I-25
- High potential for impact to human environment*
- Moderate potential for impacts to air quality, environmental justice, noise*

* *When compared to other highway alternatives*

Level One Alternative #39

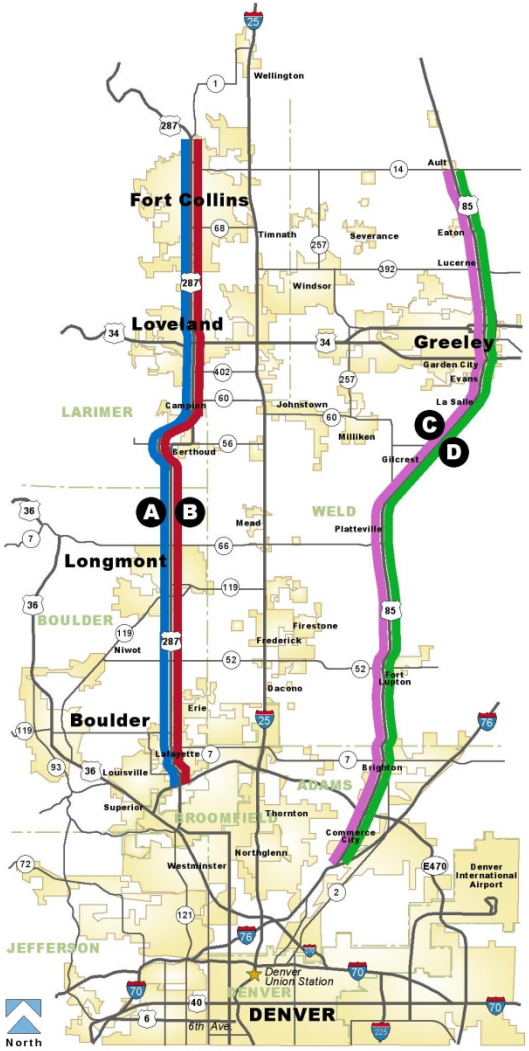


Figure 3-33 Level Two Grading Results – Express Lanes

Report Card
Alt. A/B: High Occupancy Vehicle Lane to SH 66
A: Convert an existing lane
B: Add a new lane in each direction

GRADE:	S	NI	U
			✔
	Satisfactory	Needs Improvement	Unsatisfactory

NOTES:
- Does not address safety concerns on I-25 north of SH 66
- Does not provide adequate capacity north of SH 66 to meet future demand
- Low potential for environmental impact*

Report Card
Alt. C: High Occupancy Vehicle Lane to SH 14
(One new lane in each direction)

GRADE:	S	NI	U
		✔	
	Satisfactory	Needs Improvement	Unsatisfactory

NOTES:
- Attempts to address safety concerns on I-25
- Could provide adequate capacity with some additional improvements
- Replaces aging infrastructure on I-25
- Provides opportunity for multi-modal travel
- Low potential for environmental impact*

Report Card
Alt. D/E: Toll to SH 66
D: Convert an existing lane and add a lane
E: Add two new tolled lanes in each direction

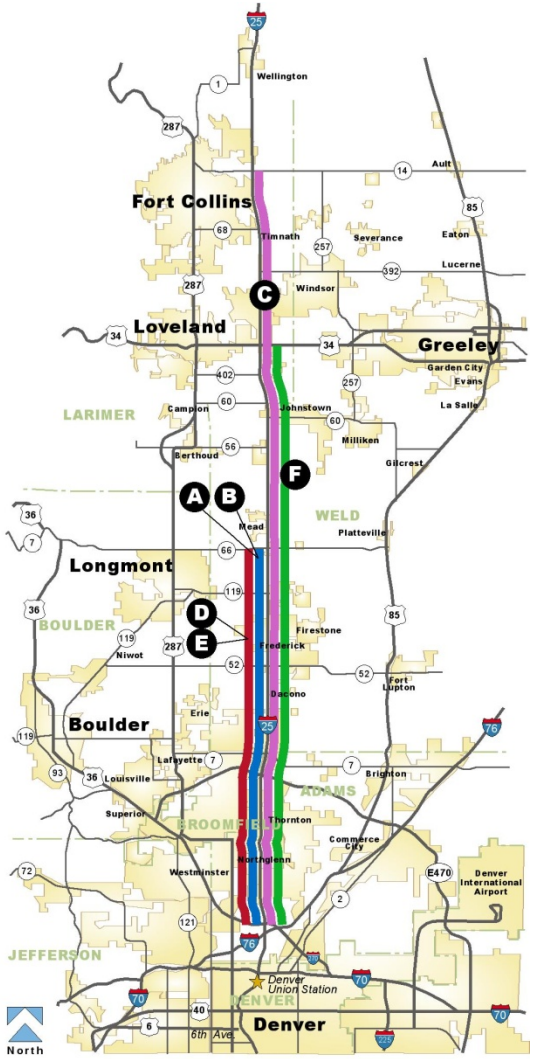
GRADE:	S	NI	U
			✔
	Satisfactory	Needs Improvement	Unsatisfactory

NOTES:
- Does not address safety concerns on I-25 north of SH 66
- Does not provide adequate capacity north of SH 66 to meet future demand
- Low potential for environmental impact*

Report Card
Alt. F: Toll to US 34
(Two new tolled lanes in each direction)

GRADE:	S	NI	U
			✔
	Satisfactory	Needs Improvement	Unsatisfactory

NOTES:
- Does not address safety concerns on I-25 north of US 34
- Does not provide adequate capacity north of US 34 to meet future demand
- Low potential for environmental impact*



* *When compared to other highway alternatives*

Level One Alternative #46

Figure 3-34 Level Two Grading Results – Express Lanes

Report Card
Alt. G: Toll to SH 14
(Two new tolled lanes in each direction)

GRADE:	S	NI	U
	✔ Satisfactory	Needs Improvement	Unsatisfactory

NOTES:
- Attempts to address safety concerns on I-25
- Provides adequate capacity to meet future demand
- Replaces aging infrastructure on I-25
- Low potential for impact to the human environment*
- Low potential for impact to the natural environment*

Report Card
Alt. H/I: High Occupancy / Toll Lanes to SH 66
H: Convert an existing lane and add a lane
I: Add two new lanes in each direction

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	✔ Unsatisfactory

NOTES:
- Does not address safety concerns on I-25 north of SH 66
- Does not provide adequate capacity north of SH 66 to meet future demand
- Low potential for environmental impact*

Report Card
Alt. J: High Occupancy / Toll Lanes to US 34
(two new HOT lanes in each direction)

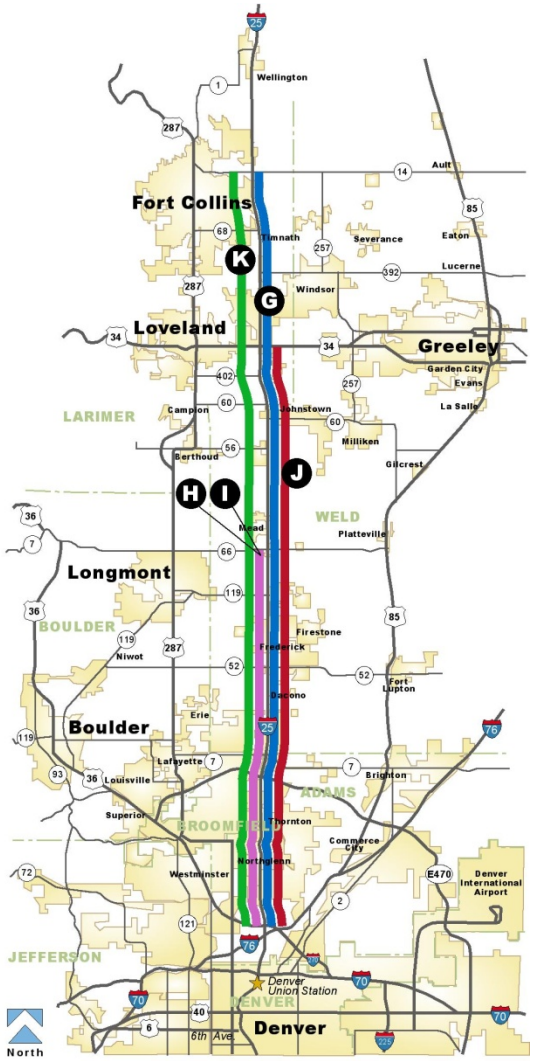
GRADE:	S	NI	U
	Satisfactory	Needs Improvement	✔ Unsatisfactory

NOTES:
- Does not address safety concerns on I-25 north of US 34
- Does not provide adequate capacity north of US 34 to meet future demand
- Low potential for environmental impact*

Report Card
Alt. K: High Occupancy / Toll Lanes to SH 14
(two new HOT lanes in each direction)

GRADE:	S	NI	U
	✔ Satisfactory	Needs Improvement	Unsatisfactory

NOTES:
- Attempts to address safety concerns on I-25
- Provides adequate capacity to meet future demand
- Replaces aging infrastructure on I-25
- Provides opportunity for multi-modal travel
- More potential for impact to the human environment*
- More potential for impact to the natural environment*



* *When compared to other highway alternatives*

Level One Alternative #46

Figure 3-35 Level Two Grading Results – Limited Access Lanes

Report Card

Alt. A: Convert 1 existing lane and add 1 lane south of SH66, add 2 lanes each direction north of SH66

GRADE:	S	NI	U
	✔		
	Satisfactory	Needs Improvement	Unsatisfactory

NOTES:

- Attempts to address safety concerns on I-25
- Provides adequate capacity to meet future demand
- Replaces aging infrastructure on I-25
- Moderate potential for impact to the human environment ✻
- Moderate potential for impact to the natural environment ✻

Report Card

Alt. B: Add 2 lanes each direction

GRADE:	S	NI	U
		✔	
	Satisfactory	Needs Improvement	Unsatisfactory

NOTES:

- Attempts to address safety concerns on I-25
- Provides adequate capacity to meet future demand
- Replaces aging infrastructure on I-25
- Most potential for impact to air quality, farmland, wetlands and wildlife ✻

✻ *When compared to other highway alternatives*

Level One Alternative #48

▲ Possible Access Points for Limited Access Lanes

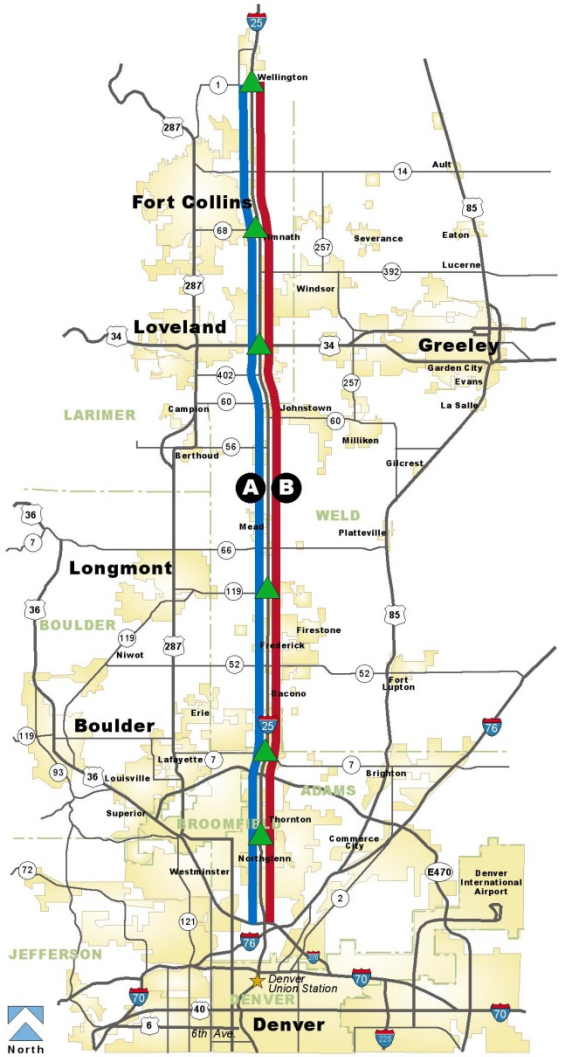


Figure 3-36 Level Two Grading Results – New Highway

Report Card
Alt. A: West Alignment

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- Most potential to impact farmland, hazardous materials, land use, and wildlife including endangered species*

Report Card
Alt. B: US85 / Rail Alignment

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Does not improve safety on I-25
- Provides minimal capacity improvement south of SH 66
- Most potential to impact farmland, hazardous materials, land use, water resources, and wetlands*

Report Card
Alt. C: US85/Two Rivers Pkwy.

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

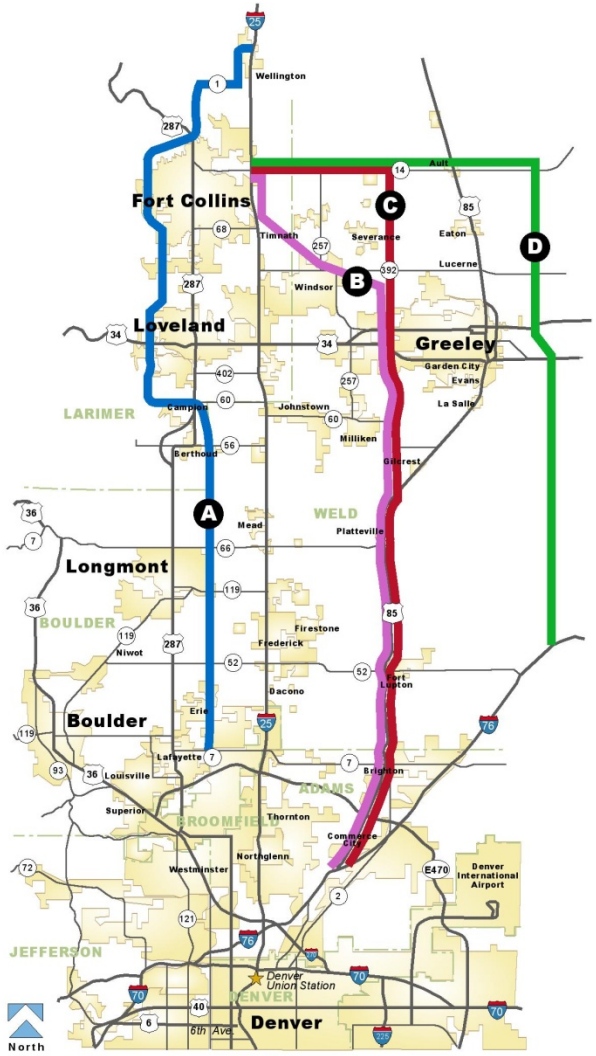
NOTES:
- Does not improve safety on I-25
- Provides minimal capacity improvements south of SH 66
- Most potential to impact farmlands, hazardous materials, land use *

Report Card
Alt. D: Front Range Toll Align.

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Does not improve safety on I-25
- Provides minimal relief to I-25 due to far eastern alignment
- Most potential to impact air quality, farmlands, hazardous materials, social cohesion*

* *When compared to other highway alternatives*



Level One Alternative #42

Figure 3-37 Level Two Grading Results – New Arterial

Report Card
Alt. A: Two I-25 Parallel Arterials

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:

- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- Most potential to impact farmland, hazardous materials, visual quality and wetlands*

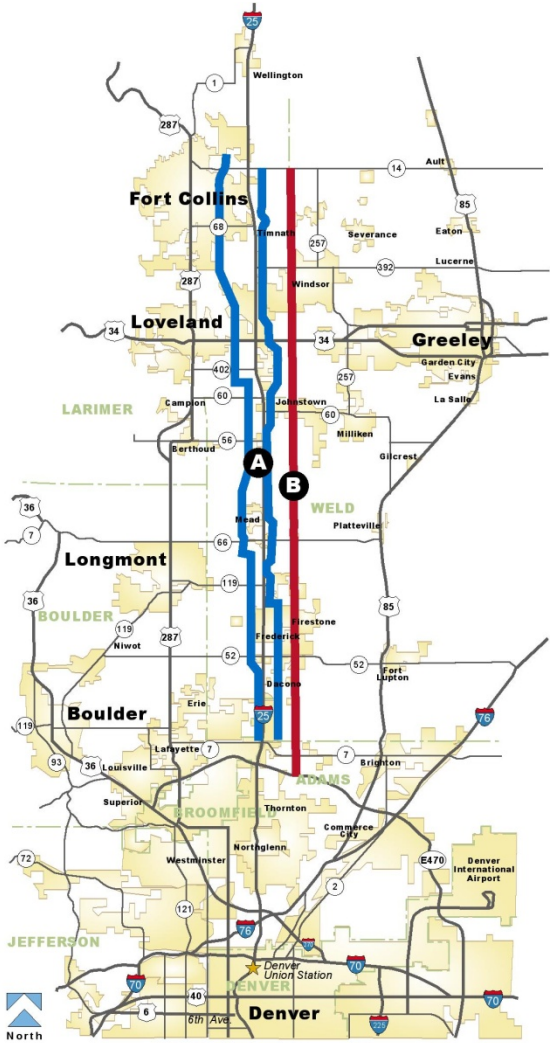
Report Card
Alt. B: WCR13 (Colorado Blvd. extension)

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:

- Does not improve safety on I-25
- Does not divert sufficient traffic from I-25
- Most potential to impact farmland, hazardous materials and land use*

* *When compared to other highway alternatives*



Level One Alternative #43

Figure 3-38 Level Two Grading Results – Bus Rapid Transit – Result 1

Report Card
Bus Rapid Transit A

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Serves population and employment centers**
- Serves some prominent work trip patterns**
- Connects to and/or aligns with FasTracks rail service
- Low ridership
- High potential to increase noise levels*

Report Card
Bus Rapid Transit B

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Serves few population and employment centers**
- Serves few prominent work trip patterns**
- High travel time*
- Requires maximum coordination with railroads
- Most potential to impact natural resources*
- Most potential to impact neighborhoods*

Report Card
Bus Rapid Transit C

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Low travel time*
- Serves some prominent travel patterns**
- Low ridership

Report Card
Bus Rapid Transit D

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Serves few population and employment centers**
- Serves few prominent work trip patterns**
- High travel time*
- Requires maximum coordination with railroads
- Most potential to impact wetlands, endangered species and hazardous materials*

* *Compared to other transit alternatives*
** *Compared to the study corridor*

Figure 3-39 Level Two Grading Results – Bus Rapid Transit – Result 2

Report Card
Bus Rapid Transit E

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
	☐	☐	☑

NOTES:

- Serves few population and employment centers**
- Serves few prominent work trip patterns**
- High travel time*
- Requires maximum coordination with railroads
- Most potential to impact neighborhoods, threatened or endangered species, and hazardous materials*

Report Card
Bus Rapid Transit F

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory
	☐	☐	☑

NOTES:

- Serves few population and employment centers**
- Serves few prominent work trip patterns**
- High travel time*
- Requires maximum coordination with railroads
- Most potential to impact hazardous materials and increase noise*

* *Compared to other transit alternatives*
** *Compared to the study corridor*

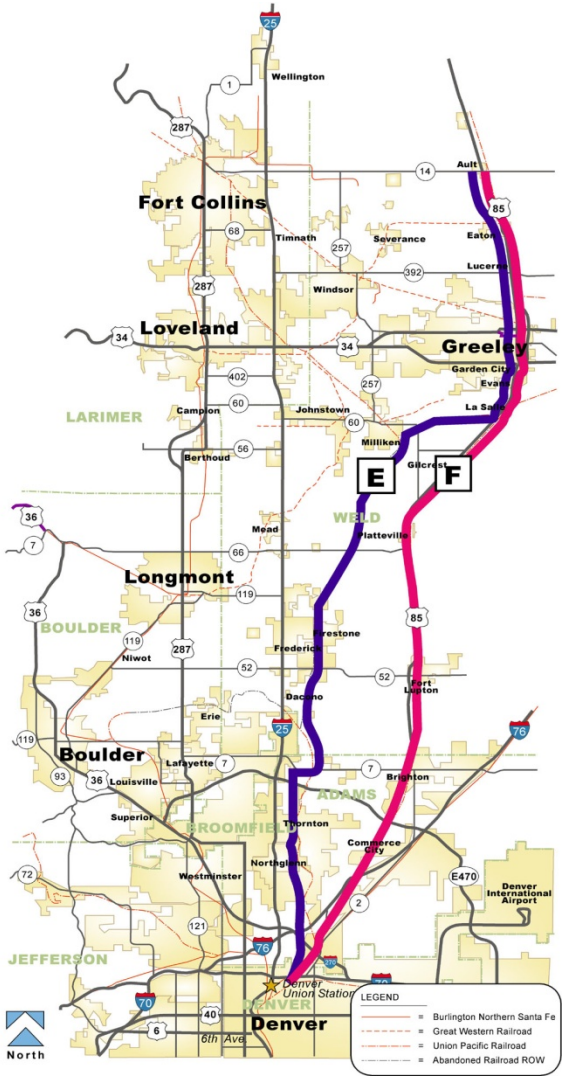


Figure 3-40 Level Two Grading Results – Commuter Rail – Result 1

Report Card
Commuter Rail A

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Serves population and employment centers**
- Serves some prominent work trip patterns**
- Connects to and/or aligns with FasTracks rail service
- High travel time*
- Most potential to impact natural resources*
- Low ridership
- Most potential to impact historic properties*
- Impact to residential uses from noise and vibration

Report Card
Commuter Rail B

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Serves population and employment centers**
- Serves more prominent work trip patterns**
- Connects to and/or aligns with two FasTracks rail services
- Low ridership
- High travel time*

Report Card
Commuter Rail C

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Connects to and/or aligns with two FasTracks rail services
- Serves some prominent travel patterns**
- Highest travel time*
- Low ridership

Report Card
Commuter Rail D

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Lower travel time*
- Connects to and/or aligns with FasTracks rail service
- Less potential to impact the human environment*
- Less potential to impact the natural environment*
- Serves few population or employment centers**
- Serves few prominent work trip patterns**
- Low ridership

* Compared to other transit alternatives
** Compared to the study corridor

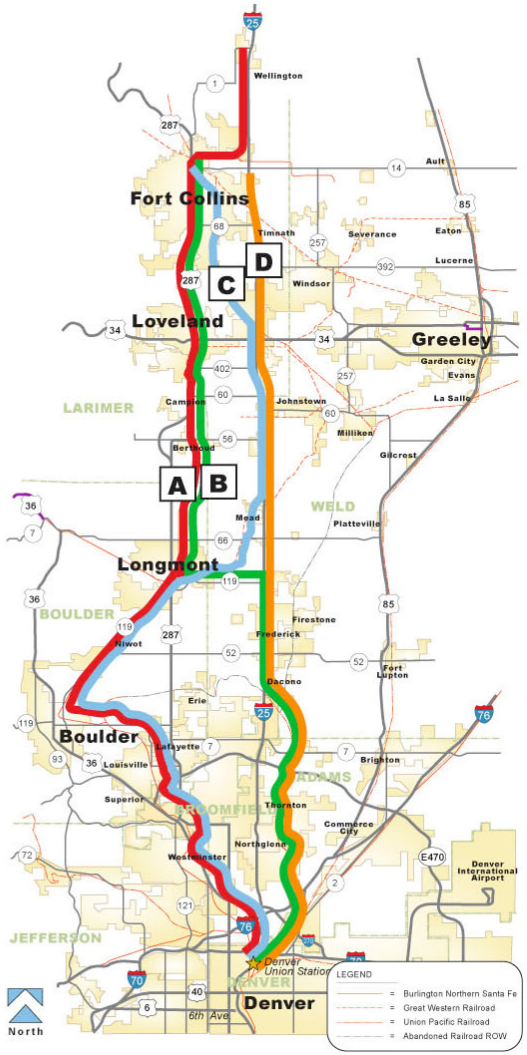


Figure 3-41 Level Two Grading Results – Commuter Rail – Result 2

Report Card
Commuter Rail E

GRADE:	S	NI	U
	Satisfactory	Needs Improvement ✔	Unsatisfactory

NOTES:
- Low travel time*
- Connects to and/or aligns with FasTracks rail service
- Less potential to impact the human environment*
- Less potential to impact the natural environment*
- Serves few population or employment centers**
- Serves few prominent work trip patterns**
- Low ridership

Report Card
Commuter Rail F

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Serves few population and employment centers**
- Serves few prominent work trip patterns**
- Most potential to impact natural resources*
- Low ridership
- Most potential to impact residential land uses*

Report Card
Commuter Rail G

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Serves few population and employment centers**
- Serves few prominent work trip patterns**
- High travel time*
- Requires maximum coordination with railroads
- Connects to corridor preservation for FasTracks

* *Compared to other transit alternatives*
** *Compared to the study corridor*

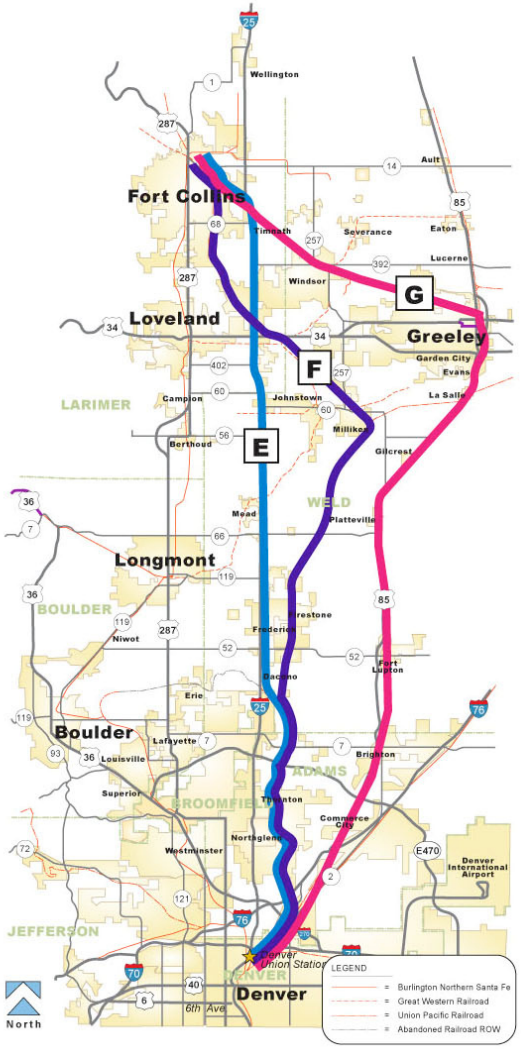
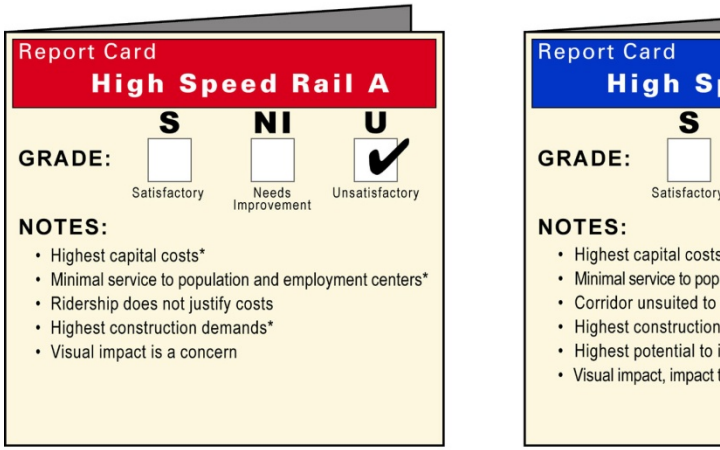
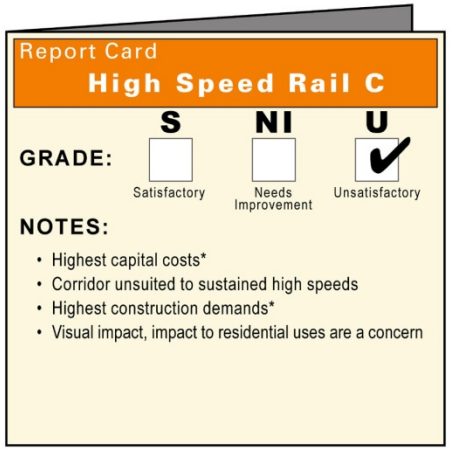


Figure 3-42 Level Two Grading Results – High Speed





* *Compared to other transit alternatives*

Figure 3-43 Level Two Grading Results – Light Rail

Report Card
Light Rail A

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Unreliable travel times
- High travel time*
- Higher potential to impact historic resources*
- High capital costs*
- Vehicles unsuited to long distance trips

Report Card
Light Rail B

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- High travel time*
- Higher potential to impact historic resources*
- High capital costs*
- Vehicles unsuited to long distance trips

Report Card
Light Rail C

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

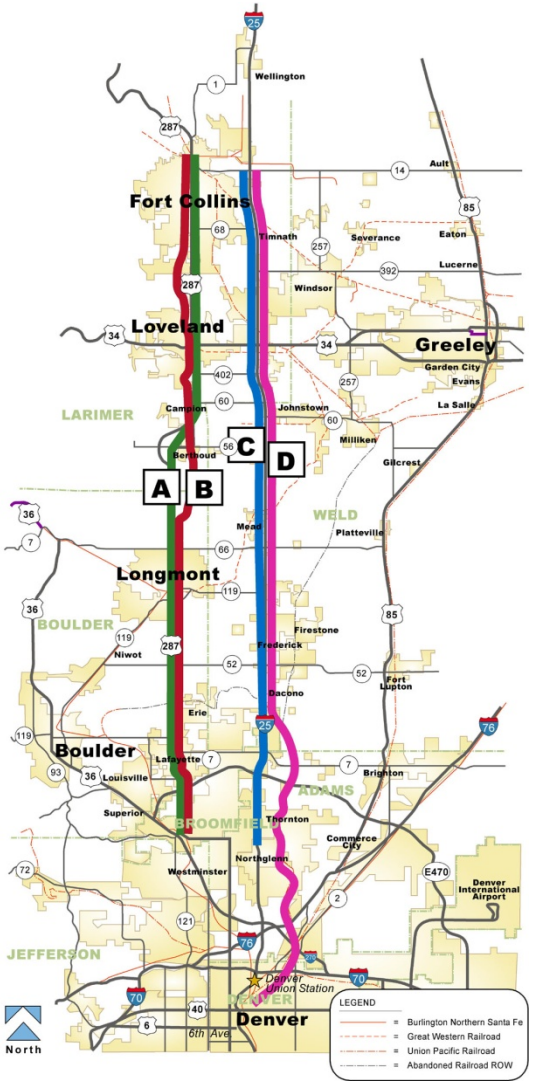
NOTES:
- Serves few population or employment centers**
- High travel time*
- Serves few major trip patterns**
- High capital costs*
- Vehicles unsuited to long distance trips
- Unproven technology for this corridor length

Report Card
Light Rail D

GRADE:	S	NI	U
	Satisfactory	Needs Improvement	Unsatisfactory ✔

NOTES:
- Serves few population or employment centers**
- High travel time*
- Serves few major trip patterns**
- High capital costs*
- Vehicles unsuited to long distance trips
- Unproven technology for this corridor length

* *Compared to other transit alternatives*
** *Compared to the study corridor*



3.5.1 Highway Lessons Learned

Freeway alternatives along I-25 would provide the most potential to improve safety, aging infrastructure and mobility.

Improvements extending only to SH 66 or US 34 would not address the safety concerns, aging infrastructure or the demand anticipated in the northern portion of the study area.

Variation in 2030 travel demand along the corridor indicated that some sections of I-25 might be adequately served by six lanes while others may require a wider, eight-lane cross section.

New highways had the greatest potential to adversely affect natural resources such as water quality, wetlands, wildlife and vegetation; especially those between US 85 and I-25. New arterials did not serve existing populations as well or comply with future land use plans. Express lanes had the least potential to adversely impact social and natural resources.

During Level Two the southern terminus for highway alternatives was reviewed. It was found that general-purpose lane and toll alternatives extending south to E-470 adequately addressed the project's purpose and need. HOT and HOV alternatives would best address the projects purpose and need by extending further south to the existing reversible HOV section at US 36. These findings are documented in the project's southern terminus paper included in **Appendix A**.

3.5.2 Transit Lessons Learned

The main message of Level Two Screening is that the total number of trips between the North Front Range and Downtown Denver is small; therefore, although transit attracts a high percentage of the trips, total ridership is relatively small. By contrast, the percentage of travelers who remain within their own towns is very high, therefore, the local bus network and the feeder bus network ridership was comparatively high. As a result of these findings, none of the transit alternatives were recommended as stand-alone alternatives for implementation. However, several of them were recommended for further consideration packaged with highway improvements, and other transportation improvements, to serve the demand for transit, and to fulfill the project's identified need to implement a multi-modal solution. Practical northern termini would be developed for each individual alternative when transit alternatives were paired with other build alternatives in the future.

The alternatives that were recommended for further analysis were located on the central or western side of the corridor. In the case of rail service, this facilitated connections to FasTracks corridors, which increased mobility while decreasing capital costs and mandatory coordination with the railroads. In the case of bus service this maximized the improvements being considered along I-25. Both bus and rail service is made more feasible where there are a greater number of large and dense communities that will benefit from the service; the land use patterns favor either a western or central alignment over an eastern alignment for that reason.

Mid-central bus rapid transit and rail alignments had the most potential to adversely impact natural resources.

Western commuter rail alignments had the most positive effect on economic and social resources.

High-speed rail on the eastern half of the study area did not serve populations and had the most potential to adversely impact natural resources.

Light rail alignment along I-25 had the least potential to impact environmental resources but did not meet purpose and need and practicability criteria.

3.5.3 Congestion Management

Although the congestion management strategies did not provide sufficient capacity either independently or as a group to preclude a Build Alternative, several strategies were retained for future consideration to complement build alternatives. These include:

- Carpool
- Vanpool
- Telecommuting
- Land Use
- Incident Management program
- Ramp Metering
- Real Time Transportation Information

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4.0 LEVEL THREE

Level Three combined the highway and transit alternatives advanced from Level Two to create packages of improvements. The packages tested the influence of different transit and highway improvements on each other, and ranged from largely highway with minimal transit improvements to largely transit with minimal highway improvements. However, to address all the elements of the purpose and need, all packages included both highway and transit improvements.

4.1 ALTERNATIVES DEVELOPMENT

4.1.1 No-Action Alternative Assumptions

The No-Action Alternative did not change since Level 2B Screening and was not analyzed in Level 3.

4.1.2 Highway Assumptions

As a result of the Level Two screening, seven I-25 improvements were considered for further evaluation. These included:

- 8 general purpose lanes
  (E-470 to SH 14)
- Toll lanes
  (E-470 to SH 14)
- HOT lanes
  (US 36 to SH 14)
- Limited access lanes
  (E-470 to SH 14)
- 6 general purpose lanes paired with two TEL lanes
  (E-470/US 36 to SH 14 depending on type of managed lane)
- 6 general purpose lanes
  (SH 66 to SH 14)
- HOV lanes
  (US 36 to SH 14)

Each of these alternatives would include improvement to the horizontal and vertical alignment of I-25 and existing interchanges. Existing frontage roads impacted by development of an alternative were assumed to be replaced.

4.1.3 Interchange Assumptions

Interchanges considered geometrically substandard were assumed to be reconfigured and upgraded to improve safety and achieve current design standards. In addition, preliminary operational analyses were conducted during Level Three to determine the interchange configuration necessary to achieve Level of Service D (LOS). LOS D was considered the minimum acceptable LOS. For the initial evaluation of highway alternatives, existing

interchange locations with upgraded configurations were included. Interchange configuration remained the same for all packages. More detailed information about the access planning process is included in **Appendix E**.

4.1.4 Transit Assumptions

In the Level Two evaluation, it was clear that no transit line would generate enough ridership to form an alternative on its own. The remaining transit options were generalized into four transit alternatives, and advanced for testing with the different highway options. Therefore, BRT Alternatives A and C and Commuter Rail Alternatives A, B, C, D, and E were advanced as four general alternatives:

- BRT along US 287
- BRT along I-25
- Commuter rail service along the Burlington Northern Santa Fe (BNSF) line connecting to FasTracks in Longmont (US 36 line)
- Commuter rail service along I-25 connecting to FasTracks service in Thornton (North Metro line)

Because the purpose and need elements of the North I-25 project include “modal options” and “mobility”, a complementary alternative of Commuter Bus was added in some packages to ensure that in each packaged alternative transit service would be provided to each part of the study area. Commuter Bus differed from BRT in that it would travel in lanes shared with private autos. Commuter Bus, Bus Rapid Transit and Commuter Rail provide different levels of transit service quality as well as capacity. Therefore they were considered a “reasonable range” of transit alternatives to package with highway alternatives that were forwarded to Level Three.

4.1.5 Station Assumptions

General station locations were developed for inclusion in the Level Three transit alternatives by considering the following:

- Station spacing appropriate to the mode (approximately every 4-6 miles for commuter rail; approximately every 10 miles for BRT; approximately every 15 miles for Commuter bus)
- Connectivity and access to east and west highways
- Proximity to population centers
- Proximity to activity centers (such as campuses, hospitals, or major employment centers)
- Connectivity to other transit systems
- Committee and stakeholder support

At this level, only the intersection or interchange was identified; a specific station layout was not designed, nor was a specific parcel or site selected. In addition, each of the stations assumed walk, drive, and bus access with the exception of the station near CSU which was considered pedestrian and connecting bus access only. A full **Stations Screening Report** was developed in January 2007 and is included in **Appendix C**.

4.1.6 Maintenance and Storage Facility Assumptions

Maintenance and storage facilities are used for transit vehicle fueling, vehicle repair, vehicle cleaning, parts storage, vehicle storage during overnight or other non-revenue service times, and other system upkeep functions. Depending on the size and scope of the system, they can be operated from a large, central location, or in a series of smaller locations. It was determined that even if the North I-25 transit elements interline with the RTD system, a maintenance and storage facility would be required in the study area, and utilizing an existing or planned RTD facility for the majority of the I-25 vehicle needs would be infeasible. Therefore, it was assumed that the main or major facility would be located in the study area, and additional minor facility needs in the RTD area could be coordinated after the operations plan was finalized. In addition, because of the distribution of the transit modes, it was determined that a combined bus/rail facility was impracticable due to the likelihood for substantial "deadhead service"—the distance buses would have to travel from a maintenance facility on the western side of the corridor to either the central or eastern routes being planned. Appropriate maintenance and storage facilities were assumed as part of the packages. The screening process to develop and analyze them is described in detail in the **Maintenance and Storage Facility Technical Report** of January 2006. This is included in **Appendix D**.

4.1.7 Congestion Management Assumptions

The congestion management elements that were advanced from screening in Level Two were included in the alternative packages as appropriate. Their inclusion and placements were dependent on the elements being tested (transit signal priority and queue jumps were included on bus routes only, for example.) They are described in the package descriptions as being either "on I-25", applicable to freeway access and egress and managing congestion through avoiding it (through VMS signs), or removing it (incident management plan. They are also listed as being applicable to the study area, i.e. supporting existing carpooling and vanpooling programs through the maintenance of carpool lots.

4.1.8 Packaging Assumptions

Level Two Screening determined that transit could not be implemented as the sole improvement in the North I-25 study area, but that it could be implemented alongside a highway improvement to fulfill the project's commitment to providing multi-modal transportation services. Therefore, Level Three Screening developed and screened alternatives that would test various combinations of transit and highway improvements to be able to select the best "package."

Commuter Rail services tested the potential public preference for rail service, as well as the benefits of expanding the planned FasTracks infrastructure north. It was best paired with lower capacity highway alternatives as it provided the greatest transit capacity.

Bus Rapid Transit provides less ridership capacity than commuter rail, but relies on an exclusive or semi-exclusive operating environment to maintain a comparable service quality. It served as the best transit option to pair with express lanes, as they provided a semi-exclusive operating environment that is critical to the definition and viability of Bus Rapid Transit services. In addition, due to the travel time savings of operating in a less-congested express lane, BRT could also provide greater accessibility by stopping more often.

Commuter Bus does not have physical facility improvements; instead it would operate in mixed traffic. It offers less ridership capacity, and less service quality than bus rapid transit, and was therefore best paired with high capacity highway alternatives.

The goal of testing the transit and highway alternatives in packages was:

- to determine the influence of each kind of transit alternative on the highway alternatives, and
- to identify the best performing (highest utilized, relative to its capacity) transit and highway alternatives.

The packages would also answer specific questions raised during the previous levels of evaluation. These include:

- Which type of transit service is most effective: commuter bus vs. BRT vs. commuter rail?
- Can a transit connection to Denver International Airport (DIA) be justified?
- Which commuter rail alignment works best: central or west?
- Does a commuter rail connection between the northern areas of Denver and Longmont improve effectiveness?
- Can a commuter rail spur to Greeley be justified?
- Where do volumes merit six lanes, eight lanes and / or auxiliary lanes on I-25?
- Which is better, managed lanes or general purpose lanes?
- Which is better: HOV, HOT, Toll or limited access lanes?
- Which is better for managed lanes: a buffer or raised median?
- Where on I-25 are managed lanes optimal?

The packages are described below and illustrated in **Figures 4-1** through **Figure 4-8**.

4.1.8.1 PACKAGE 1 – 8 GENERAL PURPOSE LANES WITH COMMUTER BUS

Highway Description:

I-25 would be widened from four general-purpose lanes to **eight general-purpose lanes** between SH 66 and SH 14. From E-470 to SH 66 the six general purpose lanes (included in the No-Action network) would also be widened to eight general purpose lanes. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded. Other optional highway improvements that could be included in this package to improve operation of I-25 or to sufficiently meet the purpose and need of the project include parallel arterials and upgrading US 85.

Transit Description:

Bus service would operate within shared general purpose lanes at all times. **Commuter bus** service would operate from Fort Collins to Denver along:

- Harmony Road from Mason Street to I-25;
- I-25 from Harmony Road to Denver Union Station (DUS).

Transit service also includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

If ridership projections and cost estimates indicate that service to DIA is viable, a bus transit line to DIA could be added to this package.

Congestion Management:

Throughout study area:

- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

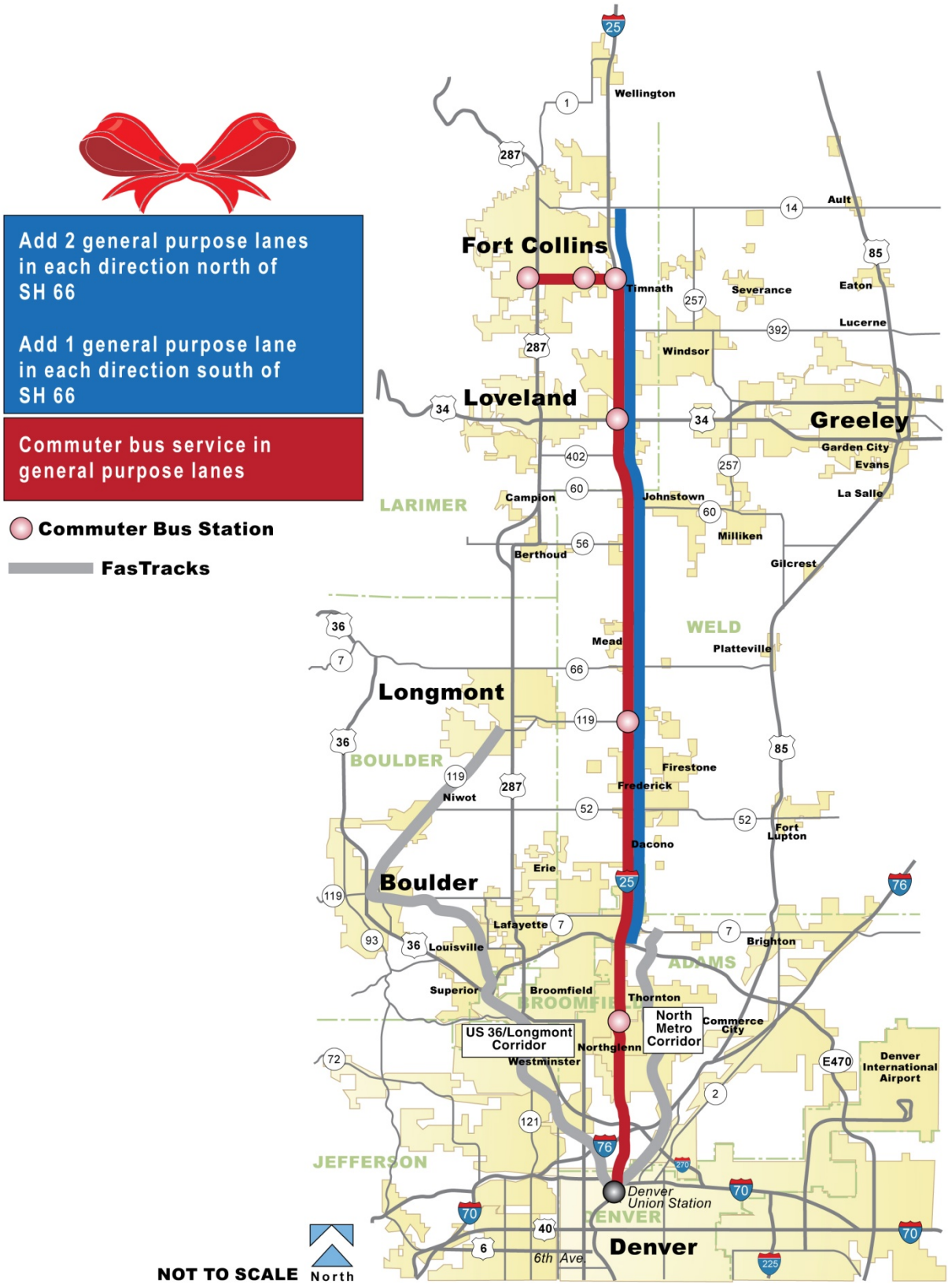
On I-25:

- Variable message signing
- Incident management
- Ramp metering

Background:

Eight available general purpose lanes provide relatively free-flowing freeway conditions, allowing the bus to achieve acceptable speeds. This alternative combines a high quality (high capacity, fast travel time) highway improvement with a lower quality (longer and less reliable travel time) transit improvement.

Figure 4-1 Package 1: 8 General Purpose Lanes with Commuter Bus



4.1.8.2 PACKAGE 2 – TOLL LANES WITH COMMUTER BUS

Highway Description:

This package would include adding **two new Toll** lanes in each direction on **I-25** from E-470 to SH 14. All users in these new lanes would be tolled. Users in the existing general purpose lanes would not pay a toll. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded.

Transit Description:

Commuter bus service would operate from Fort Collins to Denver along:

- Harmony Road from Mason Street to I-25; and
- I-25 from Harmony Road to DUS.

Bus service would operate in shared lanes along Harmony Road, and within the barrier-separated toll lanes on I-25. Access and egress would be provided from the toll lanes at each interchange allowing buses to access the station areas.

A second commuter bus service would operate in shared lanes along US 287 from Fort Collins to Longmont, and a third commuter bus service would operate on US 85 from Greeley to DUS and on US 85, E-470 and Pena from Greeley to the Airport. US 85 service would have alternating destinations with one run serving DUS and the next run serving DIA.

Transit service also includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

Congestion Management:

Throughout study area:
- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

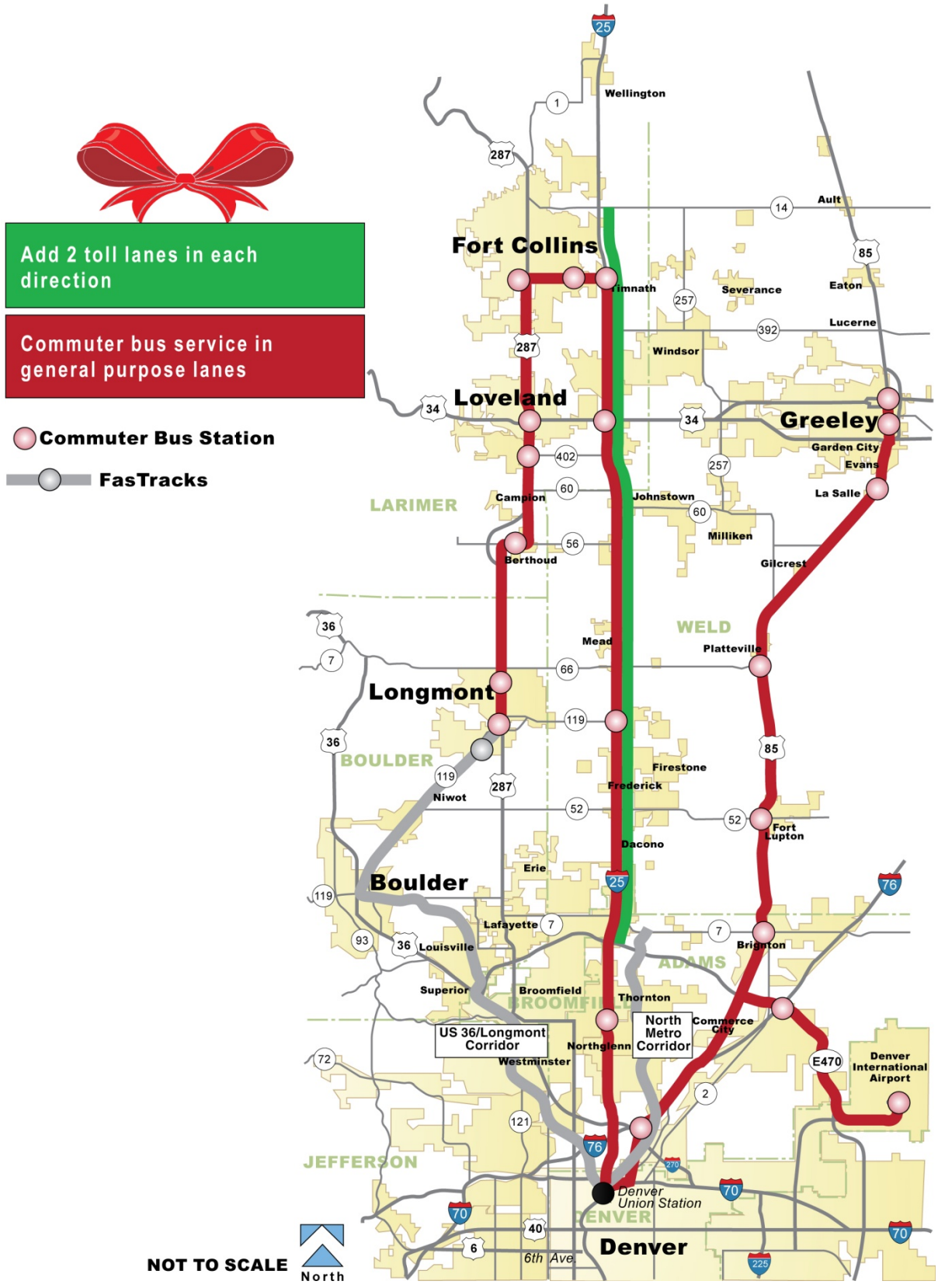
On I-25:
- Variable message signing
- Incident management
- Ramp metering
- Pedestrian/Bike Improvements

On US 287 and US 85 :
- Transit signal priority
- Signal coordination
- Bus queue jump

Background:

On I-25, toll lanes would provide a less-congested operating environment than general purpose lanes, but would not provide the more exclusive operating environment necessary to operate BRT with median stations. Because toll lanes restrict general access to the improved lane by charging a toll for its use, it was paired with transit improvements on the western central and eastern side of the corridor that would stop in several communities. This effectively combines a highway improvement with less access to a transit improvement with more access.

Figure 4-2 Package Toll Lanes with Commuter Bus



4.1.8.3 PACKAGE 3 – HIGH-OCCUPANCY/TOLL LANES WITH BUS RAPID TRANSIT

Highway Description:

This package would include adding **two new High-Occupancy/Toll lanes in each direction** on **I-25** from US 36 to SH 14. All single-occupant vehicles in the new lanes would be tolled. Users with two or more occupants could use the new lanes for free. Users in the existing general purpose lanes would not pay a toll. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded.

Transit Description:

BRT service would operate from Fort Collins to Denver along:

- Harmony Road from Mason Street to I-25; and
- I-25 from Harmony Road to DUS.

BRT service would operate in shared lanes along Harmony Road, and within the barrier-separated HOT lanes on I-25.

Commuter bus service would be operated within shared lanes on US 287 from Fort Collins to Longmont and on US 85 from Greeley to DUS.

Transit service also includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

If ridership projections and cost estimates indicate that service to DIA is viable, a bus transit line to DIA could be added to this package.

Congestion Management:

Throughout study area:

- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

On I-25:

- Variable message signing
- Incident management
- Ramp metering

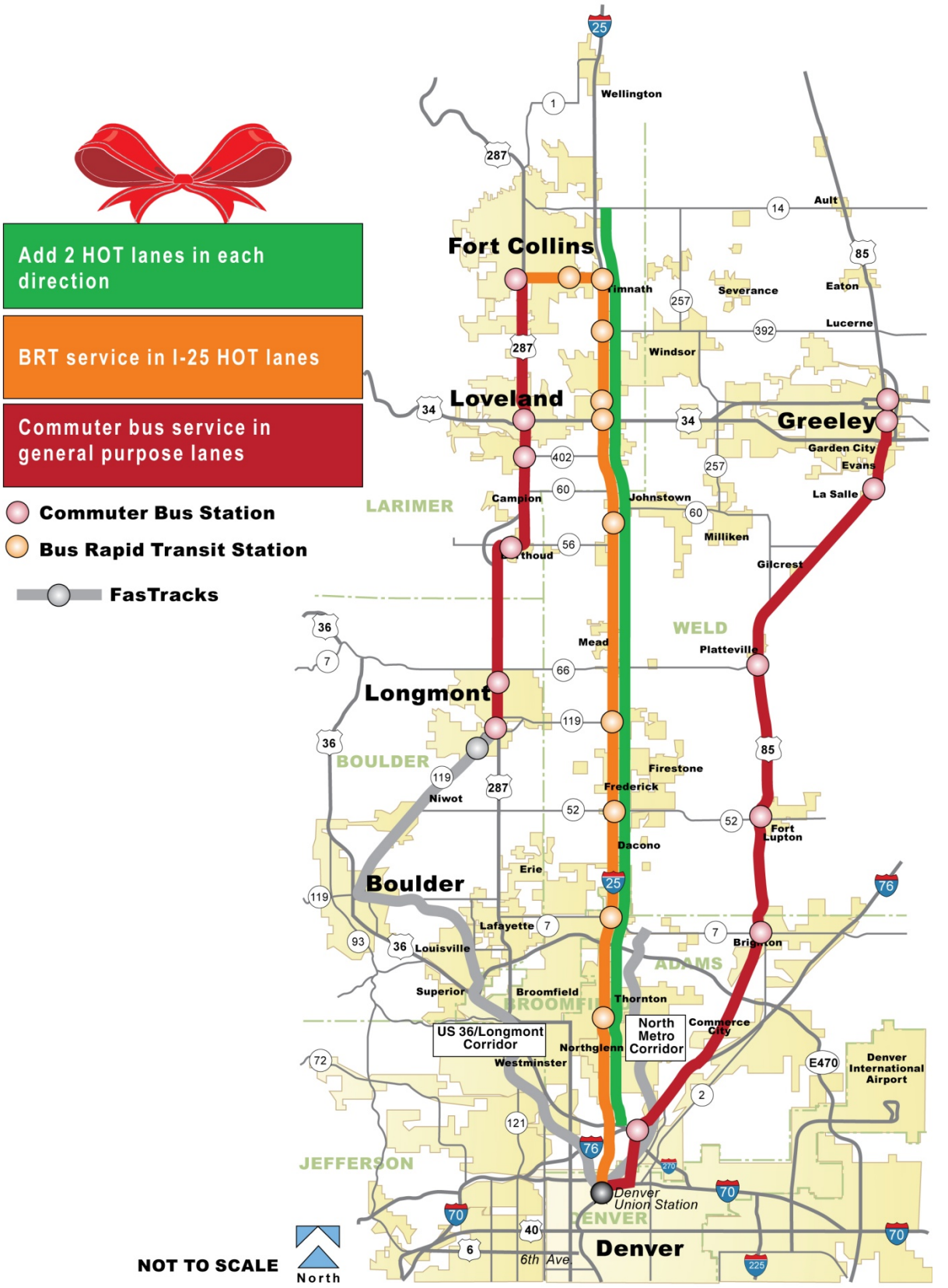
On US 287 and US 85 :

- Transit signal priority
- Signal coordination
- Bus queue jump
- Pedestrian/Bike Improvements

Background:

When compared to Package 2, this alternative will directly test the incremental difference in ridership between BRT and commuter bus service on I-25, and service on US 85 to DUS and DIA instead of service only to DUS.

Figure 4-3 Package 3: High-Occupancy/Toll Lanes with Bus Rapid Transit



4.1.8.4 PACKAGE 4 – LIMITED-ACCESS LANES WITH COMMUTER BUS

Highway Description:

This package would include adding **two new Limited-Access lanes in each direction** on **I-25** from SH 66 to SH 14 and one new lane in each direction from E-470 to SH 66. Two lanes in each direction would be barrier separated from the two general purpose lanes from E-470 to SH 14. Access and egress points to and from the barrier separated lanes would be limited to E-470, SH 119, US 34 and SH 14. Because of the limited access/egress points, the lanes would be used by long-distance travelers. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded. Other optional highway improvements that could be included in this package to improve operation of I-25 or to sufficiently meet the purpose and need of the project include parallel arterials and upgrading US 85.

Transit Description:

Commuter bus service would operate from Fort Collins to Denver and the airport along:

- Harmony Road from Mason Street to I-25
- I-25 from Harmony Road to DUS;
- E-470 from I-25 to Pena;
- Pena from E-470 to DIA.

Transit service would be in shared lanes at all times. (The nature of the limited access lanes makes it impractical for the bus to enter and exit the limited access lanes.) Operations assume a service that alternates southern endpoints between DUS and DIA.

Transit service also includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

Congestion Management:

Throughout study area:

- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

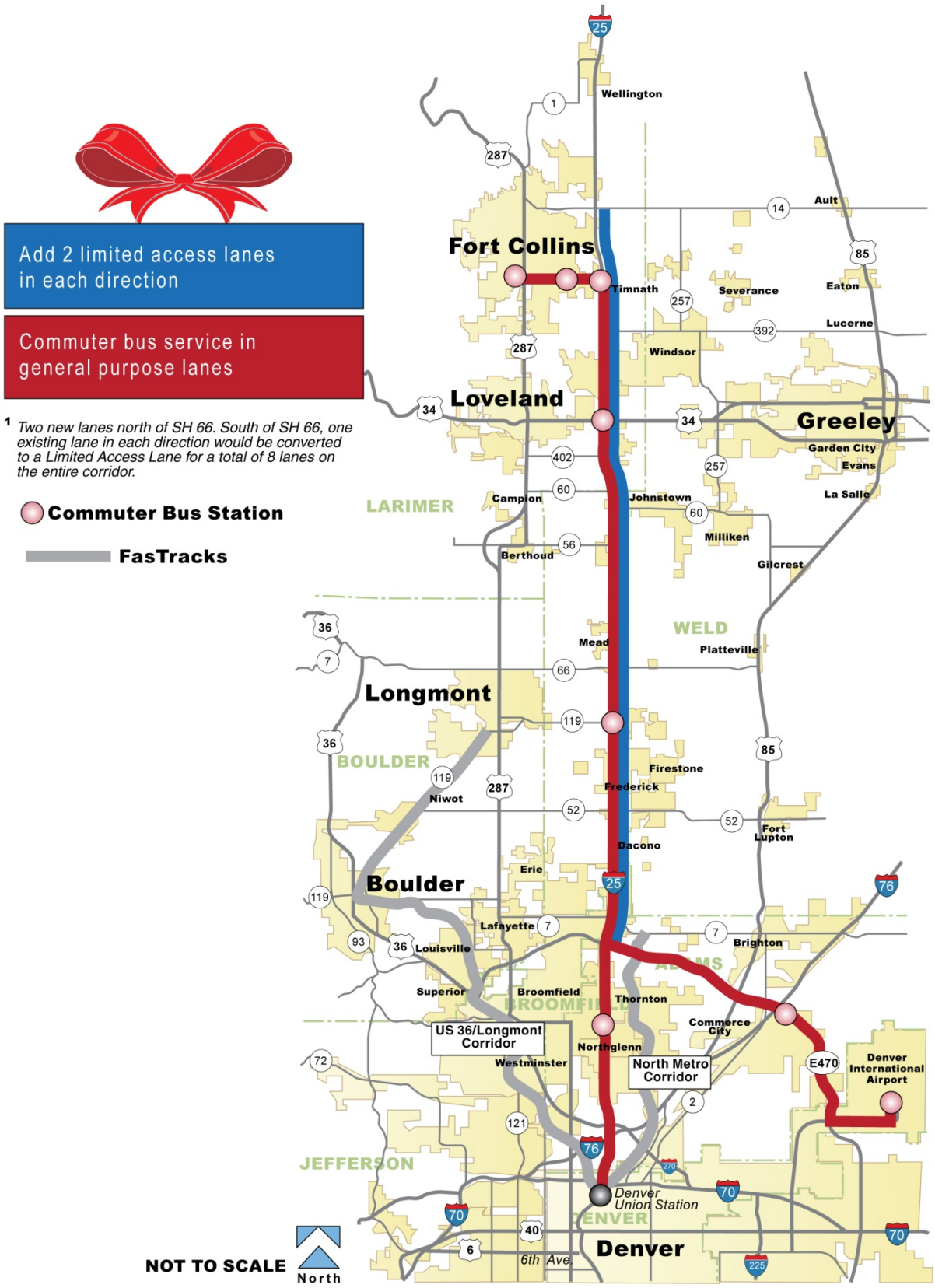
On I-25:

- Variable message signing
- Incident management
- Ramp metering

Background:

When compared with Package 1, this alternative tests the incremental difference in ridership between service to DUS only and service to DUS and DIA using I-25. In addition, it tests the difference in ridership to DIA between a central and eastern alignment. From a highway perspective, this package compares the demand on I-25 created by long-distance travelers that would benefit from limited-access lanes to the demand for shorter trips.

Figure 4-4 Package 4: Limited-Access Lanes with Commuter Bus



4.1.8.5 PACKAGE 5 – 6 GENERAL PURPOSE LANES, 2 EXPRESS LANES WITH BUS RAPID TRANSIT

Highway Description:

This package would extend the **six-lane** widening on **I-25** from SH 66 to SH 14 and **add one buffer-separated express lane in each direction** to create an eight-lane cross section. The **two express lanes** could be high-occupancy vehicle lanes, high-occupancy/toll lanes, toll lanes or limited access lanes. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded.

Transit Description:

BRT service would operate from Fort Collins to Denver along:

- Harmony Road from Mason Street to I-25; and
- I-25 from Harmony Road to DUS.

BRT service would operate in shared lanes along Harmony Road, and within the barrier-separated managed lanes on I-25 from Harmony Road to DUS.

Commuter bus service would also operate in shared lanes along US 287 from Fort Collins to Longmont and on US 85 from Greeley to DUS.

If ridership projections and cost estimates indicate that service to DIA is viable, a bus transit line to DIA could be added to this package.

Transit service also includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

Congestion Management:

Throughout study area:
- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

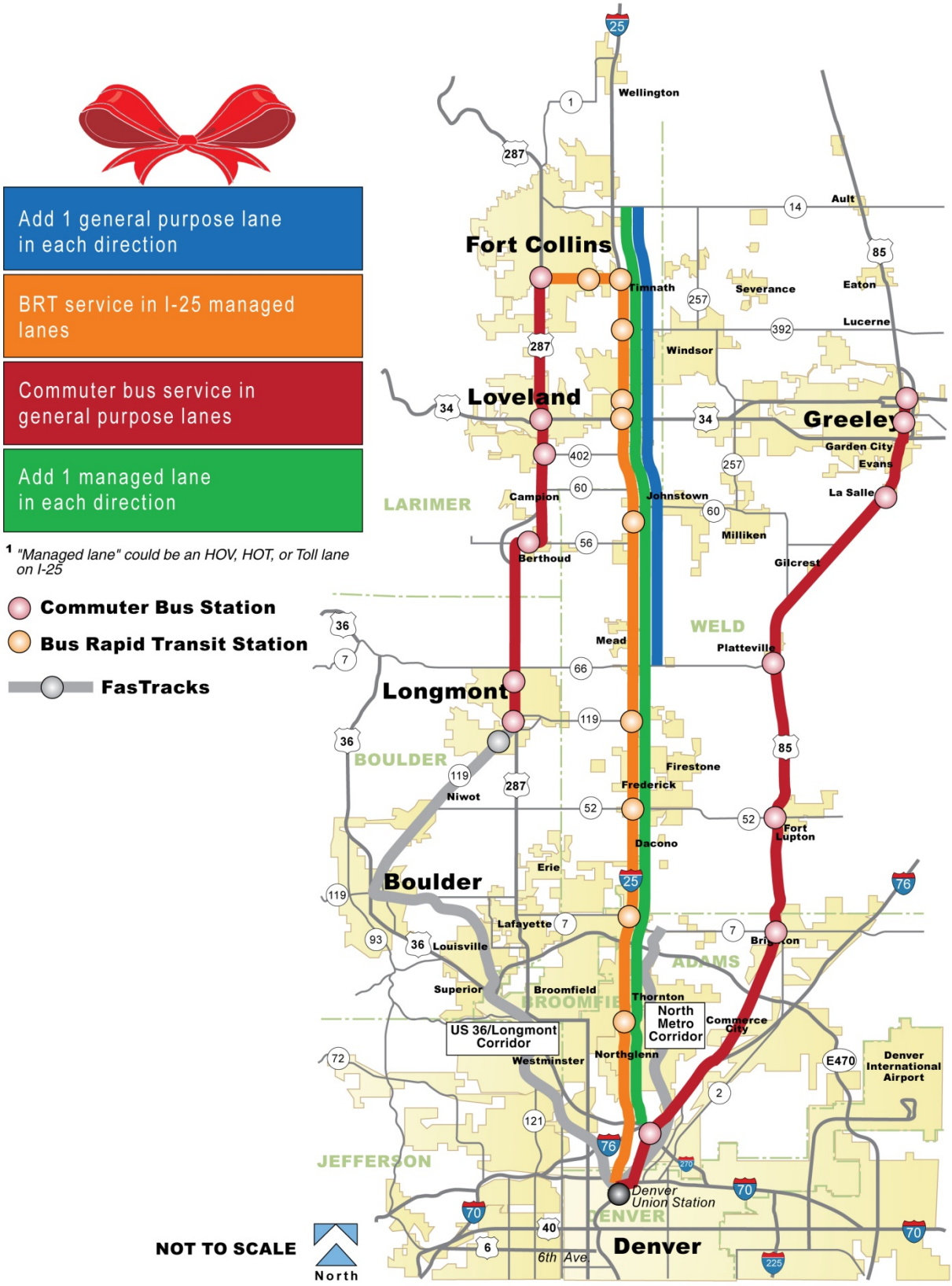
On I-25:
- Variable message signing
- Incident management
- Ramp metering
- Pedestrian/Bike Improvements

On US 287 and US 85 :
- Transit signal priority
- Signal coordination
- Bus queue jump

Background:

This alternative is comparable to Package 2 and, especially to Package 3. This alternative will test the difference in transit ridership when there are fewer highway alternatives compared to transit alternatives. This will directly compare the utilization of lanes whose use requires that a toll be paid, compared to the utilization of lanes whose use requires carpooling (two or more passengers).

Figure 4-5 **Package 5: 6 General Purpose Lanes, 2 Express Lanes with Bus Rapid Transit**



4.1.8.6 PACKAGE 6 – 6 GENERAL PURPOSE LANES WITH CENTRAL COMMUTER RAIL

Highway Description:

This package would complete the **six-lane widening** on **I-25** from SH 66 to SH 14. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded. Other optional highway improvements that could be included in this package to improve operation of I-25 or to suitably meet the purpose and need of the project include parallel arterials, upgrading US 85 and climbing lanes on I-25.

Transit Description:

Commuter rail service along I-25 would operate on the western side of I-25 (within the right-of-way) from Harmony Road to approximately SH 119, cross I-25 north of Frederick/Firestone and continue on the east side of I-25 to Dacono, where it would connect to the Dent line, becoming a "FasTracks" service at the North Metro end-of-line station, and continuing to DUS. Commuter rail improvements also include extending the rail service across SH 119 into Longmont. It is assumed that the rail service would provide a single seat ride from Fort Collins to downtown Denver via the North Metro FasTracks line. A transfer would be required at SH 119 to access Longmont and Boulder.

If ridership projections and cost estimates indicate that a spur to Greeley is viable, a rail transit line to Greeley could be added to this package.

Transit service includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

Congestion Management:

Throughout study area:

- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

On I-25:

- Variable message signing
- Incident management
- Ramp metering

Background:

This alternative pairs the highest quality transit service with less invest on the highway when compared to Package 1. It is comparable to Package 7 and 8 which test commuter rail on the western side of the study corridor.

Figure 4-6 Package 6: 6 General Purpose Lanes + Central Commuter Rail

4.1.8.7 PACKAGE 7 – 6 GENERAL PURPOSE LANES WITH WESTERN COMMUTER RAIL

Highway Description:

This package would complete the **six-lane widening** on **I-25** from SH 66 to SH 14. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded. Other optional highway improvements that could be included in this package to improve operation of I-25 or to suitably meet the purpose and need of the project include parallel arterials, upgrading US 85 and climbing lanes on I-25.

Transit Description:

Commuter rail would operate along the BNSF right-of-way from Fort Collins to Longmont, becoming FasTracks service in Longmont and continuing to Denver via Boulder.

If ridership projections and cost estimates indicate that a spur to Greeley is viable, a rail transit line to Greeley could be added to this package. The rail improvement could also include extending the North Metro line north along I-25 and east along SH 119 to connect into the proposed line, if ridership and cost estimates indicate this extension viable. A transfer would be required in Longmont to access the North Metro line.

Commuter bus service would operate in shared lanes along US 85 from Greeley with alternating endpoints at DUS and DIA.

Transit service includes feeder bus service east and west to connect the northern Colorado communities to the I-25 transit service.

Congestion Management:

Throughout study area:
- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

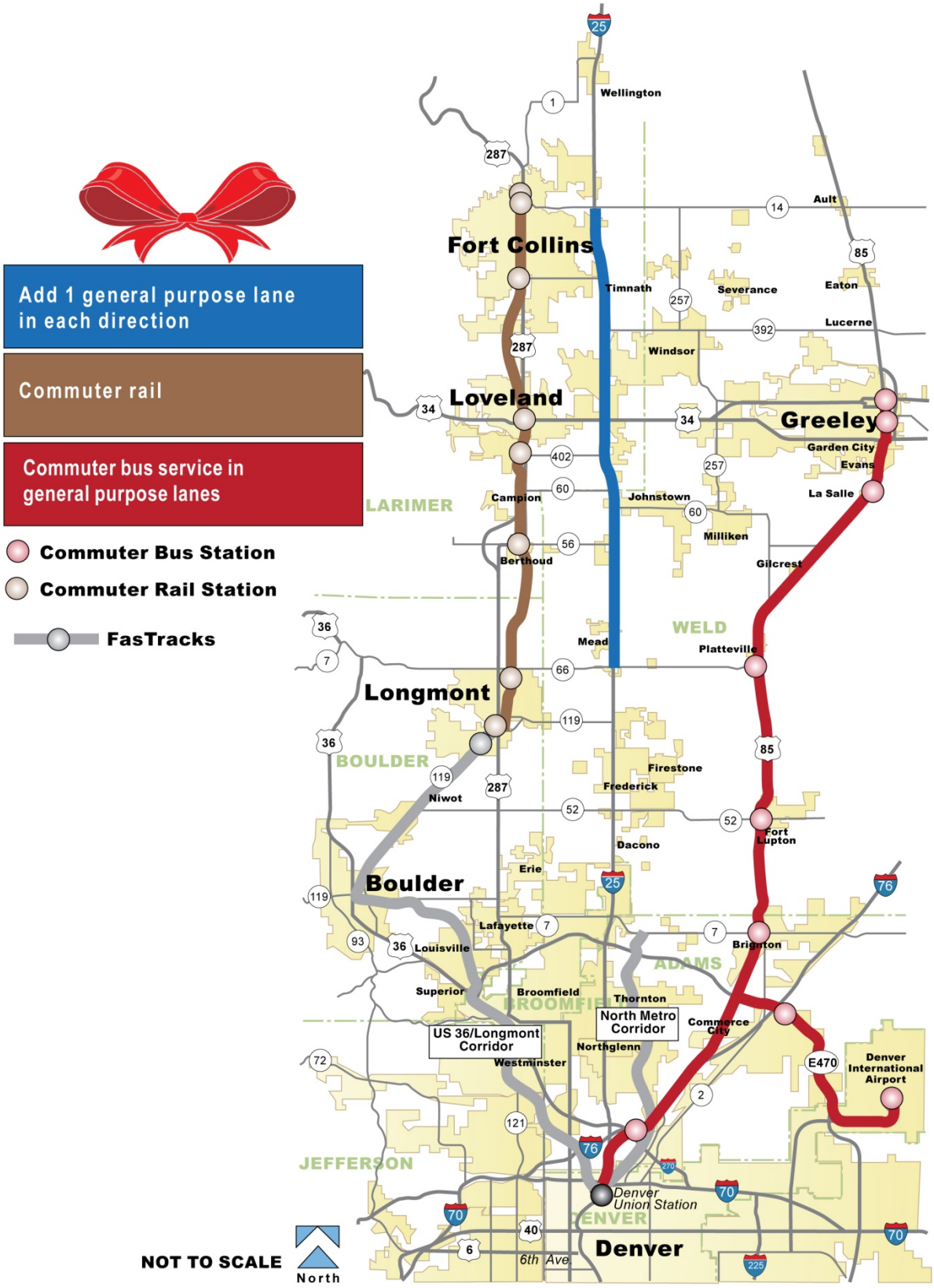
On I-25:
- Variable message signing
- Incident management
- Ramp metering
- Pedestrian/Bike Improvements

On US 85 :
- Transit signal priority
- Signal coordination
- Bus queue jump

Background:

This alternative will test the ridership difference with rail on the western side, and bus service on the eastern side but no transit service directly along I-25.

Figure 4-7 Package 7: 6 General Purpose Lanes with West Commuter Rail



4.1.8.8 PACKAGE 8 – WEST COMMUTER RAIL, HIGH-OCCUPANCY VEHICLE LANES WITH BUS RAPID TRANSIT

Highway Description:

This package would **add one buffer-separated, high-occupancy vehicle (HOV) lane in each direction** along **I-25** between US 36 and SH 14. North of SH 66 there would be a total of six lanes. South of SH 66 there would be a total of eight lanes. Deficient interchanges as well as locations with deficient vertical/horizontal alignments along I-25 would be upgraded. Other optional highway improvements that could be included in this package to improve operation of I-25 or to suitably meet the purpose and need of the project include parallel arterials, upgrading US 85 and climbing lanes on I-25.

Transit Description:

Commuter rail would operate along the BNSF right-of-way and provide a one-seat ride between Fort Collins and downtown Denver via Longmont and Boulder. The North Metro line would be extended north along I-25 and east along SH 119 to connect into the proposed BNSF line. A transfer would be required in Longmont to access the North Metro line.

If ridership projections and cost estimates indicate that a spur to Greeley is viable, a rail transit line to Greeley could be added to this package.

BRT service would operate from Fort Collins to Denver along:

- Harmony Road from Mason Street to I-25; and
- I-25 from Harmony Road to DUS.

BRT service would operate in shared lanes along Harmony Road, and within the barrier-separated HOV lanes on I-25 from Harmony Road to DUS.

Commuter bus service would operate in shared lanes along US 85 from Greeley to DUS, and along shared lanes on US 85, E-470 and Pena Boulevard from Greeley to DIA.

Congestion Management:

Throughout study area:
- Carpool
- Vanpool
- Telecommuting
- Support sustainable growth

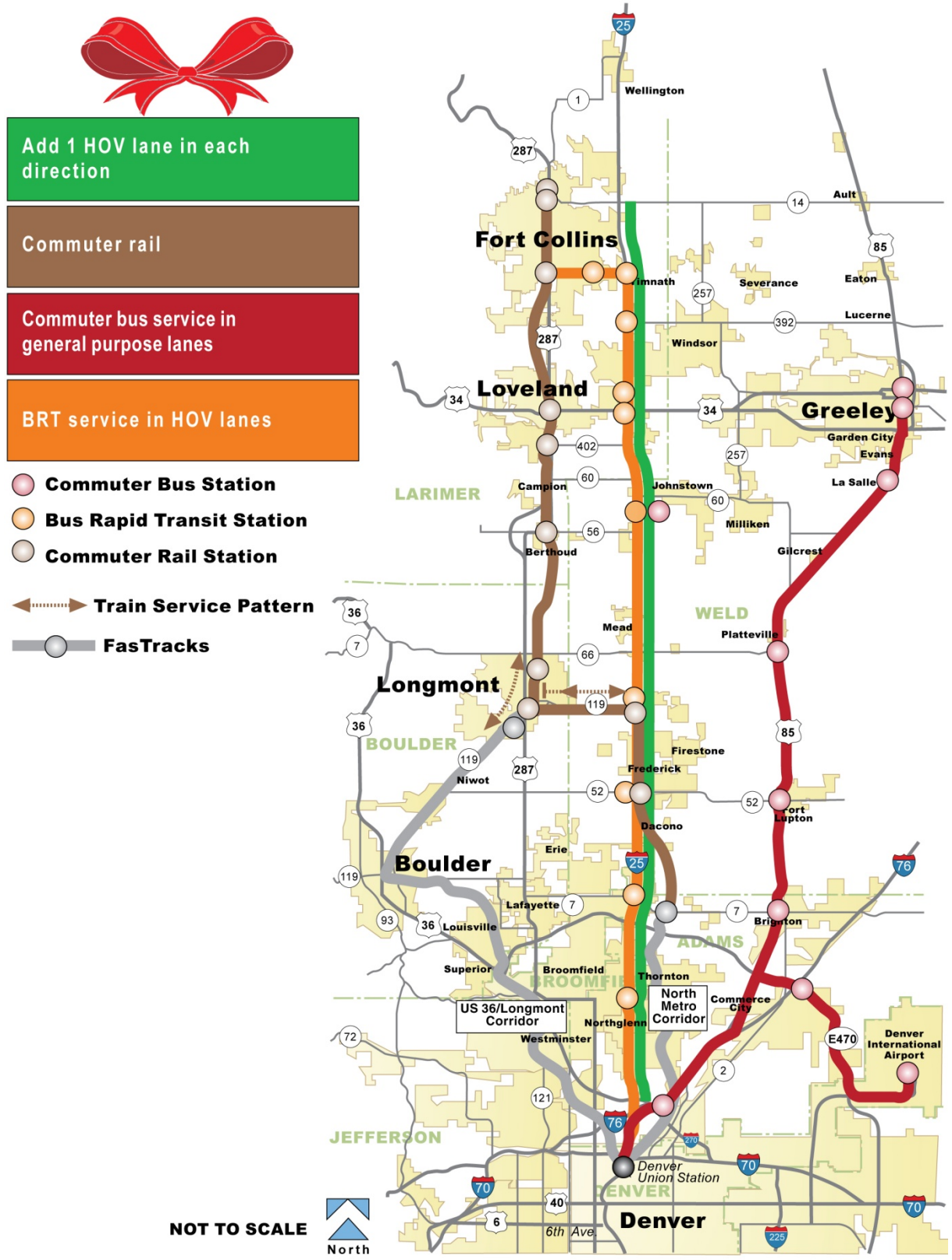
On I-25:
- Variable message signing
- Incident management
- Ramp metering
- Pedestrian/Bike Improvements

On US 85 :
- Transit signal priority
- Signal coordination
- Bus queue jump

Background:

This alternative includes the most capacity and highest quality transit services with a limited highway improvement. The commuter rail alignment will compare with Package 6, which offered a “one-seat-ride” to both Denver and Boulder, but along a central alignment.

Figure 4-8 **Package 8: West Commuter Rail, High Occupancy Vehicle Lanes with Bus Rapid Transit**



4.2 ALTERNATIVES SCREENING

Evaluation was conducted by package as well as by the individual package components in order to identify the most effective elements and repackage them as appropriate for the Draft EIS. Level Three evaluation criteria are listed below

4.2.1 Evaluation Criteria

Level Three packages were evaluated on using new quantifiable criteria available from the travel demand model, engineering costs estimates, how well they address the project's purpose and need, their practicability (in terms of the USACE 404(b)(1) guidelines) and their potential to impact environmental resources, and other detailed sources of data. The evaluation criteria used to evaluation the improvement packages and their components are described below.

4.2.2 Purpose and Need Criteria

Purpose and need evaluation looks at an alternative's ability to address safety concerns alongI-25, replace aging infrastructure along I-25, address mobility and accessibility needs and provide modal alternatives. Each criterion is described below.

Highway Safety

Accident projections were based on existing, historical accident information provided by the Colorado Department of Transportation, Traffic and Safety Engineering department. The methodology used three key data inputs, and two analysis methodologies to estimate the expected accident experience for the year 2030. The available accident history for the previous five-years (1999-2003), the average annual daily traffic (AADT) volumes for each year, and the roadway geometry and length are the primary data required to create the baseline from which projections can be made.

For each of the alternatives involving 4 lanes in each direction with no physical barrier separating any travel lanes in the same direction, an average accident rate methodology was used. In this method, an accident rate was derived using the historical accident data, segment length, and AADT for each of the five-year history. These rates were averaged in order to provide an estimate of accident experience that will scale with changes to the AADT. Using this derived rate, and the projected 2030 AADT, the potential future accident experience was calculated.

For each of the alternatives involving 3 lanes in each direction, or when a physical barrier is present separating travel-lanes in the same direction, a more advanced methodology is available. CDOT has derived Safety Performance Functions (SPF) that relate the number of Accidents per Mile per Year (APMPY) to the AADT based on an analysis of accident experience along state highways that share similar characteristics such as number of lanes and urban or rural characteristics. Using the relationship described by the SPF methods, the historical data and AADT are used to define a curve that scales expected APMPY as the AADT changes for each lane-configuration. Therefore, for a 2-lane section separated by a barrier from a 3-lane section, the historic accident data and AADT are used to define SPF curves separately for the 2-lane and 3-lane portions. Once defined, the AADT projected for the year 2030 is applied to the individual functions and added together to describe the expected future year accident experience for the complex facility arrangement.

Aging Highway Infrastructure

Four different criteria were used to evaluate an alternative's ability to replace aging infrastructure. The criteria used included the following:

- Ability to replace aging infrastructure, which was considered a benefit.
- Need to replace new structures, which was considered a drawback.
- Ability to replace deficient pavement, which was considered a benefit.
- Need to replace good pavement, which was considered a drawback.

Transit and Highway Mobility

A number of criteria were used to evaluate an alternative's ability to address mobility needs in 2030; these included congestion on the highway, transit ridership and travel time.

Highway Congestion – Highway congestion was evaluated using two measurements. The first was miles of congestion which was measured by identifying the number of miles on I-25 general purpose lanes from SH 14 to E-470 that have a volume to capacity ratio of 0.90 used in Level 3 or higher during the PM peak hour in 2030. Hours of congestion were the second congestion criteria; this was an estimate of the number of hours of the day each segment of I-25 would have a volume to capacity ratio over 0.90, averaged over all I-25 segments between SH 14 and E-470.

Transit Ridership – Transit mobility was evaluated by comparing the number of northern Colorado riders using the proposed transit alternative.

Highway and Transit Travel Time – For highway alternatives travel time was evaluated by comparing the PM peak hour private auto travel time, in minutes, on I-25 general purpose lanes between E-470 and SH 14 in 2030. For transit alternatives travel time was measured from the new Fort Collins South Transit Center to Denver Union Station in 2030.

Transit and Highway Accessibility

Accessibility was used to evaluate both highway and transit elements.

Highway accessibility was evaluated by comparing the reduction the vehicle hours of travel to increases in vehicle miles of travel compared to the No-Action Alternative. Ideally, alternatives should reduce the vehicle hours of travel without a disproportionate increase in vehicle miles of travel in 2030.

Transit accessibility was evaluated by comparing the 2030 population and employment located within a half-mile of potential transit stations. Transit lines with high population and employment in the vicinity were consider more desirable.

Modal Options

Modal options was evaluated based on the percentage of the total work trips from northern Colorado (the study area north of SH 66) to the Denver metropolitan area using transit versus private autos.

4.2.3 Practicability Criteria

Practicability criteria include capital cost, operating and maintenance costs, logistics of expandability and constructability. The practicability criteria are described below.

4.2.3.1 HIGHWAY AND TRANSIT COSTS

Capital cost estimates were based on present day construction costs. Estimates were calculated using a combination of calculated construction quantities multiplied by applicable unit prices, plus percentages of the quantified costs for imprecise items such as utility relocates and construction traffic control. All costs were considered inclusive of all materials, equipment and labor associated with each construction item.

Unit costs and percentages were based on the following:

Roadway – CDOT construction bid data from January 1, 2005 thru October 28, 2005 plus select projects bid prior to this time period.

Commuter Rail – Recent projects and studies (I-70 EIS, US 36, I-225, North Metro Corridor and the I-595 Project) with costs adjusted for inflation, plus information from rail suppliers.

Transit Stations – Cost data from recent RTD and CDOT projects.

Rail Fleet – 1999 RTD guidance manual + 6 years of 2 percent inflation; unit costs do not include fleet replacement.

Bus Fleet – North American Bus Industries; unit costs include the present cost of fleet replacement in twelve years.

ROW – Assessors' 2005 property data information from Adams, Boulder, Broomfield, Larimer and Weld Counties.

Replacement of the rail and bus fleets was considered as part of the Level Three capital cost estimates. To be consistent with the methodology used for calculating user costs, i.e. capital costs spread over twenty-five years, using the current prime interest rate of seven percent (n = 25 years, I = 7%); fleet replacement costs were calculated using the same time period and interest rate.

Based on a twenty-four year life expectancy for the rail fleet, and twelve-year life expectancy for the bus fleet, replacement of the rail fleet was not included in the capital cost estimates, and one replacement of the bus fleet was included in the estimates. Unit cost of the bus fleet was calculated as the initial cost plus the present value of fleet replacement.

Total rail and bus fleet capital costs were based on additional fleet requirements above and beyond the no-build alternative.

Highway Maintenance Costs

Roadway maintenance cost estimates were based on actual maintenance costs of the I-25 corridor from milepost 243 to milepost 269 for the years 2001 through 2005; average cost equaled $14,150 per lane mile plus an escalation of $1,000 per lane mile per year.

Maintenance costs were calculated by multiplying the additional I-25 lane miles per package times the average cost per lane mile (adjusted for the yearly escalation) times 25 years. The time period of 25 years and an interest rate of seven percent were used in these calculations to be consistent with the methodology used for calculating average user costs.

Transit Operating and Maintenance Costs

Maintenance and operating cost for transit alternatives were based on annual revenue hour projections multiplied by the cost per revenue hour. For feeder, local and commuter bus service the cost per revenue hour factor of $68.85 was based on the existing data reported by each of the three primary transit providers in northern Colorado. This factor was increased for more premium service to $90.64 per revenue hour. Operating and maintenance cost for rail service was based on the cost estimating method use for the US 36 Corridor Draft EIS.[1]

Transit Cost per User

The total capital cost amortized over 25 years and annual operations and maintenance costs of the transit system divided by the total number of annual transit users.

Highway Expandability

Two different criteria were used to screen for expandability, which included the following:

- Potential to phase the investment to meet the region's needs (within the 2030 study horizon)
- Ability to increase capacity to meet longer-term needs (beyond the 2030 study horizon)
- Packages and components that could best meet both of these criteria were considered favorable.

Transit Operational Expandability

A qualitative measure of the physical capacity of the line to accommodate increased services; and the potential additional costs of the subsequent expansions (i.e. larger platforms, additional train sets or bus vehicles, etc).

Transit and Highway Constructability

Impact to existing users and adjacent property owners was used as the criteria for this measure. More detailed information is necessary to provide a quantitative analysis and summary; therefore, a qualitative summary was used for this evaluation. The construction of specific segments of each package was reviewed to determine which would be the most disruptive to both existing users and property owners. Segment criteria were ranked from the most disruptive to the least disruptive and have been identified below.

- Commuter Rail (CR) along US 287 - this segment is highly urbanized and has high traffic volumes and would include substantial improvements.
- Segment length of overall improvements – more impacts with longer segments due to number of properties impacted and longer construction duration.

[1] Transit Operating Plans, Operating Statistics and O&M Costs for Level 3 North I-25 Packages, Manuel Padron and Associates, 12-30-05.

- Commuter Bus (CB) along US 287 - this segment is highly urbanized and has high traffic volumes; however, not as many impacts as CR.
- Commuter Bus (CB) along US 85 - this segment is urbanized and has relatively high traffic volumes; however, not as many impacts as US 287 CB.

Based on the above criteria, the packages that were the least disruptive were considered favorable.

4.2.4 Environmental Criteria

The Level Three environmental evaluation coupled the previous quantitative evaluation with more qualitative criteria. Evaluation at this level was done by package only and not component. The evaluation criteria are listed below in **Table 4-1**.

Table 4-1 Environmental Evaluation Criteria

Subject	Criteria
4(f)	What number of known parks and recreation and/or wildlife refuges properties will the proposed transportation improvements impact? Of the properties impacted, which ones will incur impacts to important property features?
Air Quality	Will the alternative affect air quality?
Archaeology	Would any known archaeological resources be impacted from the proposed transportation improvements?
Bicycle and Pedestrian	To what degree will the alignment alternative disrupt existing and proposed bike and pedestrian circulation? Will the transit station locations be easily accessible from existing and proposed bike and pedestrian facilities?
Paleontology	Would any known or unknown paleontological resources be impacted from the proposed transportation improvements?
Economic	Will the alternative provide access to existing and future employment and economic activity areas in the study area? To what degree will the alternative disrupt existing employment/economic activity areas?
Energy	How much fuel will be consumed per day (compared among alternatives)?
Environmental Justice	Will the alternative enhance or split the communities sense of place? Will the proposed alternative enhance or split specifically definable community groups or their community resources?
Geology	Would any known underground mine (potential subsidence) areas be impacted from the proposed transportation improvements?
Hazardous Materials	What type of hazardous material sites will be encountered by the proposed transportation improvements? Of the sites encountered, how many would incur substantial clean up costs (liability) or pose a threat to worker health and safety?
Historic Resources	How many known historic sites would be impacted by the proposed transportation improvements?
Land Use and Zoning	Are the proposed transportation improvements compatible with general land use? What impact does the proposed transportation improvement have on existing residential areas? Does the proposed improvement provide greater access to planned mixed use development?

Table 4-1 Environmental Evaluation Criteria (cont'd)

Subject	Criteria
Noise (Roadway)	How many sensitive noise receivers would be impacted by the proposed transportation improvements?
Noise (Bus/CR)	What is the maximum number of potentially-affected noise sensitive receivers that could be impacted by the proposed transportation improvements? Is there a possibility of a severe impact (as defined by FTA)?
Parks and Recreation	Would there be direct impacts to any park and recreation areas directly adjacent to proposed corridors?
Prime and Unique Farmland	To what degree will the alternative require the conversion of farmlands to transportation uses?
Right-of-Way	What is the total number of properties that the proposed transportation improvements potentially impact?
Safety and Security	Are there safety and security issues of concern?
Social	Will the alternative accommodate planned growth in the study area? Will the proposed improvements enhance access to social centers and community resources for neighborhoods/residential population areas? Will the proposed improvements bisect or create a barrier within a high density residential area?
T&E Species/Wildlife	How many known or potential areas of state threatened and endangered and/or species of concern habitat are impacted by the proposed transportation improvements? What number of these areas could be classified as high quality?
Vibration (CR)	What is the maximum number of potentially affected receivers that could be impacted by vibration?
Visual	How many viewsheds will be impacted by the proposed improvement? Which of these has a high level of scenic integrity?
Water	What is the number of impacts to water resources, including drinking water associated with the proposed transportation improvements? What number of these impacted resources could be classified as sensitive?
Wetlands	How much wetland area will the proposed corridor impact? What is the quality of the wetlands being impacted?
Safety and Security	Are there safety and security issues of concern?

4.2.5 Package Evaluation

Table 4-2 summarizes the results of the purpose and need and practicability evaluation.

Table 4-3 summarizes the results of the main differentiators for the environmental evaluation.

Table 4-4 summarizes the results of the other environmental evaluation that were conducted, but not considered a differentiator in the comparison of packages.

The results of the package analysis are summarized below.

Safety – The safety evaluation attempted to compare safety for the various packages and improvement components by predicting accidents in 2030 between SH 14 and E-470. However, the differing methodologies needed to predict accidents for different cross sections did not provide a consistent comparison between them. All alternatives equally addressed and

improved safety concerns associated with substandard geometric configurations such as sight distance, horizontal alignments, and vertical curves. Based on this, the accident prediction was completed but not used to evaluate or screen alternatives. All alternatives were considered to equally address safety concerns associated with geometric deficiencies.

Aging infrastructure – Packages with longer improvements on I-25 would replace more aging structures along I-25 then those off I-25.

Mobility – Packages 1 through 5 resulted in fewer miles of congestion than packages 6 through 8. There is less difference in hours of congestion among the alternatives. However, expanding to an 8-lane cross section with managed or general purpose lanes results in the lowest private auto travel time (Package 1, 4, and 5). Transit travel times were lowest using managed lanes.

Accessibility – Package 8, serving the western side of the study area with rail served the highest amount of population and employment concentrations. Packages 1, 4 and 6, with improvements primarily along I-25, serve the least amount of population and employment.

Modal Options – Packages with more transit capacity (6, 7 and 8) attracted more transit users, and a greater share of the commuting market to Denver.

Practicability – Package 3 would add two additional barrier-separated travel lanes in each direction on I-25. This would require design variances at E-470 and each of the new interchange structures south of E-470. This would result in numerous variations in the cross section width along that stretch of I-25 and could create speed differentials that reduce overall capacity and safety of the section.

Environment – The Level Three environmental evaluation revealed that there were several analysis areas where the impacts associated with the packages resulted in similar impacts to the natural environment and the built environment, this analysis is shown in **Table 4-4**. There were a number of analysis areas where there were a large range of impacts between packages associated with each of the resources, these area served as the main differentiators and are shown on **Table 4-3**. Conclusions drawn from that analysis are summarized below:

Generally, the packages which utilized existing corridors, Package 1, 2 and 4 had the least potential to impact resources because the proposed improvements were in or on existing transportation corridors.

- *Package 1*, eight general purpose lanes and commuter bus on I-25 had the least impact to resources, because much of the improvement could occur on existing right-of-way.
- *Package 8*, western commuter rail plus HOV/BRT had the most impacts to resources because there were improvements on several alignments including western commuter rail. Impacts associated with these alignments resulted in impacts to stream crossings, wetlands area and potential noise and vibration impacts associated with commuter rail.
- *Packages 7 and 8* with western commuter rail provided the most increased access to existing and future economic and employment centers in the study area.

Table 4-2 Level Three Package Evaluation

	Safety	Aging Infrastructure	Mobility				Accessibility			Modal Options		Practicability						
Packages	Safety (Annual predicted crashes on I-25 E-470 to SH 14)	Number of aging structures replaced on I-25	Miles of congestion in general purpose lanes PM NB/SB E470 to SH 14	Hours of congestion in general purpose lanes (averaged) Daily NB/SB	Transit travel time from FC new south transit center/northern terminus to Denver CBD (minutes)	Private auto travel time on I-25 GP lanes E-470 to SH 14 PM NB/SB (minutes)	Change in vehicle miles of travel in northern Colorado from No Action (Freeways and Expressways)	Change in vehicle hours of travel in northern Colorado from No Action (Freeways and Expressways)	Transit access to nearby development (population/employment)	Transit share of work trips from northern Colorado to Denver CBD/Boulder CBD	Daily transit users (NFR users/ FasTracks users)	Capital cost (Total in billions/25-year annual cost in millions)	New annual transit operating & maintenance costs (millions)	New annual highway maintenance costs (millions)	Cost per new trip (25-year annualized capital, maintenance and operating costs (transit only))	Could be phased (to meet travel needs within the 2030 planning horizon)	Ability to be expanded to address long-term travel needs	Constructability (Disruption to existing users and adjacent property owners)
na	1,050	0/0%	26/21	5.5/5.9	na	56/63	9,633,000	197,800	na	na	na	na	na	na	na	na	na	na
1 - 8 GP	1,150	54/79%	0/0	2.4/2.8	90	40/40	606,000	-8,500	13,000/17,000	41/2	2,100	$1.17/$100.1	$7	$3	$6	√	√	Minimally disruptive
2 - Toll	1,350	57/84%	0/4	4.0/4.4	90	43/46	164,000	-6,200	41,000/52,000	44/3	3,400	$1.70/$145.8	$12	$4	$10	√		
3 - HOT	1,350	68/100%	0/2.5	2.5/3.1	83	43/46	240,000	-8,400	45,000/50,000	38/3	3,600	$1.99/$170.8	$13	$4	$9	√		
4 - LAL	1,100	57/84%	0/2	2.5/2.9	90	41/42	395,000	-11,300	14,000/29,000	40/2	2,300	$1.51/$129.7	$9	$3	$9	√		Minimally disruptive
5 - 6GP+2 ML	1,100	54-65/79%-96%	0-4/0-2	2.4/3.0	83	41/42	416,000	-9,100	44,000/51,000	39/3	3,600	$1.74/$149.1	$13	$4	$8	√	√	
6 - 6GP+CCR	1,000	54/79%	4/10	2.8/3.5	105/82	46/48	365,000	-6,000	9,000/13,000	47/3	3800/11,000[2]	$1.57/$135.0	$25	$1	$11	√	√	Least disruptive
7 - 6GP+WCR	1,000	54/79%	4/5	2.9/3.3	97	45/47	223,000	-9,400	38,000/60,000	48/7	4600/9,000[3]	$1.22/$105.0	$21	$1	$13	√	√	
8 - HOV+WCR	1,000	65/96%	7/14	4.4/5.2	83	46/52	128,000	-5,500	56,000/87,000	45/7	6000/9,000[3]	$2.34/$200.5	$32	$3	$17	√	√	Most disruptive

1. Operating cost for new highway users calculated by multiplying the annual increase in VMT (compared to no action alternative) by 0.485, the federal reimbursement rate.
2. North Metro FasTracks ridership estimates, RTD 2004.
3. US 36 FasTracks ridership estimates, RTD 2004.

Table 4-3 Level Three Environmental Evaluation - Main Differentiators

	4(f) - Known Parks, Known Wildlife, and Open Space	Archaeology	Economic	Environmental Justice	Hazardous Materials	Historic Resources	Land Use and Zoning	Noise (CR) and Vibration (CR)	T&E Species/Wildlife	Water	Wetlands
No Action	No Anticipated Impacts to 4(f) Areas	No Known Eligible Sites Would be Impacted	128K 2030 Jobs Served by System	No Anticipated Impacts to EJ Communities	No Impacts Anticipated	No Known Eligible Sites Would be Impacted	No Impacts Anticipated	No Noise Impacts Anticipated No Vibration Impacts Anticipated	No Impacts Anticipated	No Impacts Anticipated	No Impacts Anticipated
Package 1	7 Parcels Impacted 2 of these have Facilities	18 Known NRHP Eligible Archaeological Sites.	167K 2030 Jobs Served by System 22 Activity Centers within 1/2 Mile Poor Rating 52990 2000 Jobs Adjacent to Construction Moderate Rating	Potential adverse effects to 45 blocks or block groups. Potential mobility benefits to 38 blocks or block groups. No adverse effects to community resources. Potential mobility benefits to 1 community resource.	49 Sites with Environmental Concerns	1 Historic Resource Impacted	1 Mile of Existing Residential Landuse Within 100 FT. Buffer	N/A N/A	8 Sites with Sensitive Species Habitat Impacted. 5 Sites with High Quality Sensitive Species Habitat Impacted.	63 Stream Crossings	38 Acres Potentially Impacted. 9 Station Areas with Potential Moderate to High Wetland Impacts.
Package 2	10 Parcels Impacted 3 of these have Facilities	18 Known NRHP Eligible Archaeological Sites.	202K 2030 Jobs Served by System 27 Activity Centers within 1/2 Mile Moderate Rating 78,438 2000 Jobs Adjacent to Construction Moderate Rating	Potential adverse effects to 104 blocks or block groups. Potential mobility benefits to 161 blocks or block groups. No adverse effects to community resources. Potential mobility benefits to 2 community resources.	232 Sites with Environmental Concerns	1 Historic Resource Impacted	1 Mile of Existing Residential Landuse Within 100 FT. Buffer	N/A N/A	6 Sites with Sensitive Species Habitat Impacted. 5 Sites with High Quality Sensitive Species Habitat Impacted.	63 Stream Crossings	45 Acres Potentially Impacted. 4 Station Areas with Potential Moderate to High Wetland Impacts.
Package 3	12 Parcels Impacted 5 of these have Facilities	21 Known NRHP Eligible Archaeological Sites.	202K 2030 Jobs Served by System 30 Activity Centers within 1/2 Mile Moderate Rating 79,000 2000 Jobs Adjacent to Construction Moderate Rating	Potential adverse effects to 95 blocks or block groups. Potential mobility benefits to 164 blocks or block groups. No adverse effects to community resources. Potential mobility benefits to 1 community resource.	281 Sites with Environmental Concerns	14 Historic Resources Impacted	5.8 Miles of Existing Residential Landuse Within 100 FT. Buffer	N/A N/A	7 Sites with Sensitive Species Habitat Impacted. 5 Sites with High Quality Sensitive Species Habitat Impacted.	77 Stream Crossings	55 Acres Potentially Impacted. 15 Station Areas with Potential Moderate to High Wetland Impacts.
Package 4	10 Parcels Impacted 3 of these have Facilities	18 Known NRHP Eligible Archaeological Sites.	213K 2030 Jobs within TAZ 23 Activity Centers within 1/2 Mile Moderate Rating 70,708 2000 Jobs Adjacent to Construction Moderate Rating	Potential adverse effects to 49 blocks or block groups. Potential mobility benefits to 38 blocks or block groups. No adverse effects to community resources. Potential mobility benefits to 1 community resource.	52 Sites with Environmental Concerns	1 Historic Resource Impacted	1 Mile of Existing Residential Landuse Within 100 FT. Buffer	N/A N/A	6 Sites with Sensitive Species Habitat Impacted. 5 Sites with High Quality Sensitive Species Habitat Impacted.	62 Stream Crossings	43 Acres Potentially Impacted. 9 Station Areas with Potential Moderate to High Wetland Impacts.
Package 5	11 Parcels Impacted 3 of these have Facilities	21 Known NRHP Eligible Archaeological Sites.	201K 2030 Jobs within TAZ 30 Activity Centers within 1/2 Mile Moderate Rating 78,635 2000 Jobs Adjacent to Construction Moderate Rating	Potential adverse effects to 115 blocks or block groups. Potential mobility benefits to 166 blocks or block groups. No adverse effects to community resources. Potential mobility benefits to 2 community resources.	269 Sites with Environmental Concerns	14 Historic Resources Impacted	5.1 Miles of Existing Residential Landuse Within 100 FT. Buffer	N/A N/A	7 Sites with Sensitive Species Habitat Impacted. 5 Sites with High Quality Sensitive Species Habitat Impacted.	78 Stream Crossings	45 Acres Potentially Impacted. 8 Station Areas with Potential Moderate to High Wetland Impacts.
Package 6	25 Parcels Impacted 4 of these have Facilities	23 Known NRHP Eligible Archaeological Sites.	134K 2030 Jobs Served by System 11 Activity Centers within 1/2 Mile Poor Rating 18,486 2000 Jobs Adjacent to Construction Good Rating	Potential adverse effects to 33 blocks or block groups. Potential mobility benefits to 7 blocks or block groups. No adverse effects to community resources. No known mobility benefits to community resources.	125 Sites with Environmental Concerns	2 Historic Resources Impacted	5.5 Miles of Existing Residential Landuse Within 100 FT. Buffer	300 Potential Noise Impacts. Using SH 119 301 Potential Noise Impacts Using GWRR. 33 Potential Vibration Impacts Using SH 119 56 Potential Vibration Impacts Using GWRR.	8 Sites with Sensitive Species Habitat Impacted. 5 Sites with High Quality Sensitive Species Habitat Impacted.	102 Stream Crossings	48 Acres Potentially Impacted. 10 Station Areas with Potential Moderate to High Wetland Impacts.
Package 7	22 Parcels Impacted 3 of these have Facilities	32 Known NRHP Eligible Archaeological Sites.	270K 2030 Jobs Served by System 18 Activity Centers within 1/2 Mile Moderate Rating 68,171 2000 Jobs Adjacent to Construction Moderate Rating	Potential adverse effects to 109 blocks or block groups. Potential mobility benefits to 235 blocks or block groups. Adverse effects to 1 community resource. Potential mobility benefits to 8 community resources.	126 Sites with Environmental Concerns	1 Historic Resource Impacted	10.5 Miles of Existing Residential Landuse Within 100 FT. Buffer	2738 Potential Noise Impacts. 1054 Potential Vibration Impacts.	10 Sites with Sensitive Species Habitat Impacted. 8 Sites with High Quality Sensitive Species Habitat Impacted.	78 Stream Crossings	39 Acres Potentially Impacted. 1 Station Area with Potential Moderate to High Wetland Impacts.
Package 8	25 Parcels Impacted 4 of these have Facilities	37 Known NRHP Eligible Archaeological Sites.	317K 2030 Jobs within TAZ 35 Activity Centers within 1/2 Mile Good Rating 149,218 2000 Jobs Adjacent to Construction Poor Rating	Potential adverse effects to 150 blocks or block groups. Potential mobility benefits to 272 blocks or block groups. Adverse effects to 1 community resource. Potential mobility benefits to 8 community resources.	193 Sites with Environmental Concerns	15 Historic Resources Impacted	16.0 Miles of Existing Residential Landuse Within 100 FT. Buffer	2894 Potential Noise Impacts Using SH 119 2887 Potential Noise Impacts Using GWRR. 1055 Potential Vibration Impacts Using SH 119 1078 Potential Vibration Impacts Using GWRR.	10 Sites with Sensitive Species Habitat Impacted. 9 Sites with High Quality Sensitive Species Habitat Impacted.	119 Stream Crossings	55 Acres Potentially Impacted. 8 Station Areas with Potential Moderate to High Wetland Impacts.

Legend

= Alternative with least impacts to resource

= Alternative with most impacts to resource

Table 4-4 Level Three Environmental Evaluation - Other Analysis Areas

	Air Quality	Bicycle & Pedestrian	Paleontology	Energy	Geology	Noise (Roadway)	Prime & Unique Farmland	Right-of-Way	Safety & Security	Social	Visual
No Action	Least VMT* Highest VHT** Lowest Speeds	No Impacts to Existing or Proposed Bicycle and Pedestrian Facilities	No Known or Unknown Resources Would be Impacted	1,242,544 Gallons of Fuel Used Per Day	No Impacts Anticipated	743 Receivers Impacted in 2030	No Impacts Anticipated	No Right-of-Way Impacts Anticipated	No Impacts Anticipated	No Impacts Anticipated	No Impacts Anticipated
Package 1	Package 1 VMT increases 1.5% over the No Action VMT, but VHT decreases 3.2%	6,213 FT. Regional Facilities Impacted - Good 94,555 FT. of Total Facilities Impacted - Good 31 Local Facilities within 1 Mile of Station Sites - Poor 4 Regional Facilities within 1 Mile of Station Sites - Poor	Yes, known and unknown resources may be impacted	1,260,696 gallons of fuel used per day.	Mine Subsidence & Related Issues Throughout.	719 Receivers Impacted	2436 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along I-25 only; no additional ROW for stations (same as Package 4).	Transit: No new railroad grade crossings; (See P&N Safety analysis for highway).	62K 2030 HH Served by Improvements (Poor). 13 Community Resources within 1 Mile (Poor).	4 Views Impacted 3 Highly Scenic Views
Package 2	There is virtually no overall change in VMT between No Action and Package 2	8,831 FT. of Regional Facilities Impacted - Moderate 102,751 FT. of Total Facilities Impacted - Moderate 69 Local Facilities within 1 Mile of Station Sites - Moderate 9 Regional Facilities within 1 Mile of Stations Sites - Moderate	Yes, known and unknown resources may be impacted	1,242,068 gallons of fuel used per day	Mine Subsidence & Related Issues Throughout.	750 Receivers Impacted	2747 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along I-25, with additional intermittent ROW takes along 287 and 85 (queue jumps); no additional ROW for stations.	Transit: No new railroad grade crossings; (See P&N Safety analysis for highway).	88K 2030 HH Served by Improvements (Moderate). 41 Community Resources within 1 Mile (Moderate).	8 Views Impacted 5 Highly Scenic Views
Package 3	Package 3 VMT decreases 0.1% over the No Action VMT, and VHT decreases 3.9%	17,566 FT. of Regional Facilities Impacted - Poor 127,216 FT. of Total Facilities Impacted - Poor 91 Local Facilities within 1 Mile of Station Sites - Moderate 13 Regional Facilities within 1 Mile of Station Sites - Good	Yes, known and unknown resources may be impacted	1,241,448 gallons of fuel used per day	Mine Subsidence & Related Issues Throughout.	671 Receivers Impacted	2828 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along I-25 with additional ROW required for stations; and intermittent ROW takes along 287 and 85 (queue jumps).	Transit: No new railroad grade crossings; (See P&N Safety analysis for highway).	90K 2030 HH Served by Improvements (Moderate). 41 Community Resources within 1 Mile (Moderate).	10 Views Impacted 5 Highly Scenic Views
Package 4	Package 4 VMT decreases 0.5% over the No Action VMT, and VHT decreases 4.1%	8,047 FT. of Regional Facilities Impacted - Moderate 101,746 FT. of Total Facilities Impacted - Poor 31 Local Facilities within 1 Mile of Station Sites - Poor 4 Regional Facilities within 1 Mile of Station Sites - Poor	Yes, known and unknown resources may be impacted	1,248,261 gallons of fuel used per day	Mine Subsidence & Related Issues Throughout.	739 Receivers Impacted	2661 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along I-25 only; no additional ROW for stations (same as Package 1).	Transit: No new railroad grade crossings; (See P&N Safety analysis for highway).	76K 2030 HH Served by Improvements (Moderate). 13 Community Resources within 1 Mile (Poor).	4 Views Impacted 3 Highly Scenic Views
Package 5	Package 5 VMT decreases 0.6% over the No Action VMT, and VHT decreases 3.8%	16,400 FT. of Regional Facilities Impacted - Poor 120,976 FT. of Total Facilities Impacted - Moderate 91 Local Facilities within 1 Mile of Station Sites - Moderate 13 Regional Facilities within 1 Mile of Station Sites - Good	Yes, known and unknown resources may be impacted	1,249,690 gallons of fuel used per day	Mine Subsidence & Related Issues Throughout.	741 Receivers Impacted	2557 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along I-25 with additional ROW required for stations along I-25 (same as Package 3, with smaller footprint south of 66); and intermittent ROW takes along 287 and 85 (queue jumps) .	Transit: No new railroad grade crossings; (See P&N Safety analysis for highway)	90K 2030 HH Served by Improvements (Moderate). 41 Community Resources within 1 Mile (Moderate).	3 Views Impacted 3 Highly Scenic Views
Package 6	Package 6 VMT decreases 0.6% over the No Action VMT, and VHT decreases 3.1%	4,611 FT. of Regional Facilities Impacted - Good 99,105 FT. of Total Facilities Impacted - Good 26 Local Facilities within 1 Mile of Station Sites - Poor 6 Regional Facilities within 1 Mile of Station Sites - Poor	Yes, known and unknown resources may be impacted	1,249,690 gallons of fuel used per day	Mine Subsidence Issues Throughout.	731 Receivers Impacted	2112 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along I-25 and SH 119 with additional ROW required for stations.	Transit: New grade crossings along SH 119; I-25 crossings will be grade-separated.	55K 2030 HH Served by Improvements (Poor). 3 Community Resources within 1 Mile (Poor).	3 Views Impacted 2 Highly Scenic Views
Package 7	Package 7 VMT decreases 0.2% over the No Action VMT, and VHT decreases 4%	2,583 FT. of Regional Facilities Impacted - Good 132,900 FT. of Total Facilities Impacted - Poor 95 Local Facilities within 1 Mile of Station Sites - Good 9 Regional Facilities within 1 Mile of Station Sites - Moderate	Yes, known and unknown resources may be impacted	1,240,257 gallons of fuel used per day	No construction planned through mined areas (I-25 MM 230.5 to 236.9).	712 Receivers Impacted	1772 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along BNSF (plus additional ROW for stations); Continuous ROW takes along I-25 (though less than any other I-25 alt); and intermittent ROW takes along 85 (queue jumps).	Transit: More frequent grade crossings along BNSF (higher incident probability).	142K 2030 HH Served by Improvements (Good). 43 Community Resources within 1 Mile (Moderate).	3 Views Impacted 0 Highly Scenic Views
Package 8	Package 8 VMT decreases 0.1% over the No Action VMT, and VHT decreases 3.2%	17,187 FT. of Regional Facilities Impacted - Poor 177,106 FT. of Total Facilities Impacted - Poor 135 Local Facilities within 1 Mile of Station Sites - Good 16 Regional Facilities within 1 Mile of Station Sites - Good	Yes, known and unknown resources may be impacted	1,241,448 gallons of fuel used per day	Mine Subsidence & Related Issues Throughout.	698 Receivers Impacted	2789 Acres of Prime & Important Farmland Impacted.	Continuous ROW takes along BNSF and Sh 119 with addition ROW required for stations; Continuous ROW takes along I-25 with additional ROW required for stations; Intermittent ROW takes along 85 (queue jumps).	Transit: New grade crossings along SH 119; more frequent grade crossings along BNSF Note: Personal security at station areas will be evaluated in the DEIS	172K 2030 HH Served by Improvements (Good). 53 Community Resources within 1 Mile (Good).	7 Views Impacted 3 Highly Scenic Views

* VMT = vehicle miles traveled
** VHT = vehicle hours traveled

4.3 SCREENING RESULTS

The Level Three evaluation was designed to answer a specific set of questions. Each of these questions is answered below:

Which type of transit service is most effective: commuter bus versus BRT versus commuter rail?

- Effectiveness was measured in two ways: the alternative's ability to attract riders, and the number of riders attracted compared to the cost of the alternative. Commuter rail attracted the most riders, generating ridership ranging between 3500 and 4500 riders. By contrast, BRT generated between 2500 and 3000 riders and commuter bus generated between 1500 and 2000 riders. When the ridership is compared to cost, the bus options were much more cost effective: Commuter Bus packages cost less than half for each new transit trip than commuter rail packages ($6 per new transit trip vs. $11 to $13 per new transit trip.) New passenger trips on BRT packages cost about a third less than commuter rail packages ($8 to $9 per trip.)

Can a transit connection to Denver International Airport be justified?

- Service to DIA attracted approximately 20 percent more riders than transit service to DUS only. Therefore, bus service to DIA was retained as a justified service. Rail service to DIA was not considered, due to the RTD service planned as part of the FasTracks system, and the comparatively small transit market to DIA compared to DUS. Compared to overall North Front Range travel patterns, only 2-3 percent of all NFR trips travel to the Denver area. An even smaller percent travel to DIA. Whereas 20 percent more ridership on bus was justifiable compared to the cost, 20 percent more on rail was too low to merit the rail extension in a corridor where rail is already being extended.

Which commuter rail alignment works best: central or west?

- Commuter rail lines along the BNSF and I-25 attracted similar levels or ridership, but the I-25 alignment would cost twice as much, largely due to the need for all new right-of-way and the need for all new bridges and other crossing treatments. By comparison, the BNSF line allowed the use of an existing track (halving the cost of a new double-track alignment), and the crossings are already built.

Does a commuter rail connection between the northern areas of Denver and Longmont improve effectiveness?

- The Longmont/North metro connection did not substantially improve ridership (adding between 10 percent and 20 percent more riders), and compared to its cost likely another 2/3 the cost of the BNSF alignment, was not considered justified. However, stakeholder meetings held at the conclusion of Level Three produced large public interest in an alternative connection to Denver that would not force them to travel through Boulder. Therefore, it was carried into the Draft EIS for additional screening.

Can a commuter rail spur to Greeley be justified?

- When the Western alignment was selected over the Central alignment, the feasibility of a spur to Greeley decreased substantially due to the additional cost, and the service to a market that is not directly related to the purpose and need. There is a proven transit market between Greeley and Loveland and Greeley and Fort Collins. However, serving that market is secondary to serving the transit demand to Denver. Whereas a bus alternative would travel directly south from Greeley to Denver, a rail alternative would force Greeley passengers to travel out-of-direction to the Western side of the corridor to then go south. The trip demand from Greeley to Denver could be served more directly and more efficiently with a bus service.

Where do volumes merit six lanes, eight lanes and / or auxiliary lanes on I-25?

- Travel demand estimates generated using the travel forecasting model during Level Three indicated that six general purpose lanes would be sufficient along much of I-25 in 2030; eight lanes and/or auxiliary lanes would be required south of SH 52 and through the Fort Collins/Loveland area.

Which is better, managed lanes or general purpose lanes?

- General purpose lanes are less expensive, better utilized, and have fewer environmental impacts than the managed lanes (limited access lanes, toll, HOT or HOV). However, HOT and HOV lanes enable multimodal travel.

Which is better: HOV, HOT, Toll or limited access lanes?

- Of the express-lane alternatives, HOT lanes would provide the most reduction in congestion of the general purpose lanes and would have the highest utilization of the three types of managed lanes considered.

Which is better for managed lanes: a single buffer-separated lane or two barrier-separated lanes?

- A single buffer-separated express lane would accommodate travel demand in most of the corridor. Two barrier-separated lanes would be necessary to accommodate demand through the Fort Collins/Loveland area. Two barrier-separated lanes would require a wider cross section and would have more potential to negatively impact environmental resources. Barrier-separated lanes would cost more.

Where on I-25 are managed lanes optimal?

- Managed lanes have the highest demand and utilization in the Denver metro area and through the Fort Collins/Loveland area.

In addition, through the Level Three analyses, the following was determined:

- Greeley is best served by an independent Commuter Bus or Bus Rapid Transit alignment, rather than a rail spur. A rail spur would require coordinating operating plans to match the 30 minute service to the FasTracks end-of-line in Thornton. To match the 30 minute service, trains from both Greeley and Fort Collins would have to depart every 60 minutes, which decreases ridership, or a train from Greeley to the main line would have to depart every 30 minutes, and passengers would have to transfer to the main line. Forcing

transfers also decreases ridership. By contrast, commuter bus service could leave every 30 minutes along the US85 corridor, or every 30 minutes along the I-25 corridor, and still be much more cost effective than rail service.

- Fort Collins is best served by the western alignment with the northern terminus at the North Transit Center. Because the Central alignment was not selected, a spur to Fort Collins did not require analysis. The North Transit Center is easily accessible by both the street system as well as transit services, and is located immediately south of an existing freight yard which would allow the commuter rail vehicles to turn around easily.
- Service to DIA should be retained as it adds ridership to the main line. For Commuter Bus along US 85 services to DIA attracted an additional 500 riders; which equates to an increase in ridership of approximately 20%.

4.4 LEVEL THREE LESSONS LEARNED

The following conclusions were drawn and used to help identify the best improvement packages for evaluation in the Draft EIS.

- Additional lanes would be necessary on I-25 regardless of the transit improvements provided.
- Regardless of the highway improvement selected, interchanges and structures require improvement along the I-25 alignment.
- Transit services along I-25 and either US 85 or US 287 compete for ridership. Either all transit should be concentrated along the central alignment, or transit service would be offered along the western alignment and US 85 alignment. In this way the services avoid drawing riders from similar geographic areas.

4.4.1 Highway Lessons Learned

- Limited access lanes would provide capacity comparable to eight general purpose lanes but would not be as well utilized and would cost more than general purpose lanes. Capital cost for the limited-access lanes was $1.44 billion. The comparable eight general purpose lanes were $1.10 billion. Limited access lanes were dropped from further consideration
- High Occupancy Vehicle Lanes would experience seven to 14 miles of congestion in the PM peak hour northbound and southbound, respectively. A comparable six general purpose lane cross section would have about half as much congestion. HOV lanes were dropped from further consideration.
- For managed-lanes, two barrier-separated lanes may be necessary along sections of the corridor but a single buffer-separated lane in each direction provides adequate capacity along much of the corridor and costs less than a barrier-separated section.
- Of the managed-lane alternatives, high-occupancy/toll lanes would provide the most congestion relief and would have the highest utilization of the express-lane options.

- Eight general purpose lanes may be necessary in select locations while six lanes would be adequate along much of the corridor.
- Package B includes a combination of barrier and buffer-separated express lanes evaluated in the EIS.

4.4.2 Transit Lessons Learned

- Western commuter rail attracted similar ridership as well as market share to Denver when compared to central commuter rail, but the transit elements cost less and attracted more riders to Boulder. For these reasons, Western commuter rail was evaluated in the EIS as part of Package A and the Preferred Alternative; the Central Commuter Rail alignment was dropped from further consideration.
- I-25 BRT attracted 30 percent fewer riders than rail alternatives but also cost about 80 percent less, and so BRT along I-25 was evaluated in the EIS as part of Package B.
- I-25 Commuter Bus attracted the least amount of ridership. Commuter Bus on US 85 attracted the highest ridership, but the commuter bus service on US 287 attracted the least of all the transit components. Therefore, the Western and Central Commuter Bus alignments were dropped from further consideration, but Commuter Bus service along US 85 was evaluated in the EIS as part of Package A and the Preferred Alternative.

4.5 SUMMARY OF SCREENING

Table 4-5 summarizes all highway, transit, and congestion management alternatives considered during the process and lists why they were either screened out or retained. Information is provided in the two columns about the NEPA and USACE practicability screening. These criteria are described below:

- **NEPA Screening –** Responsiveness to criteria that determine how reasonable it is. The definition of reasonable includes whether or not it is practical or feasible from a technical and economic standpoint, whether or not it meets purpose and need, and whether or not it has environmental impacts that are acceptable.
- **USACE Practicability –** Per USACE's 4049b)(1) guidelines, this criterion depends on costs, technical and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall purpose. This column also identifies whether or not an alternative has greater impacts to the aquatic environment.

Each alternative retained through this process was evaluated in more detail in the EIS.

Table 4-5 Screening Summary of All Alternatives Considered

Alternative Description	NEPA Screening Summary	USACE Practicability Summary
No-Action Alternative	**Retained.** As required by CEQ**.**	**Retained**
Highway Alternatives		
TAFS recommended highway elements. Managed lane/bus lane: SH 66 to E-470. Managed lane/bus lane: E-470 to US 36.	**Retained. Reasonable.** In conjunction with other improvements, these improvements could address the mobility and multimodal needs in the corridor.	**Retained. Practicable.** In conjunction with other improvements, these improvements could address the mobility and multimodal needs in the corridor.
Highway Alternatives not along -25		
Improve US 287 or US 85 with additional lanes or higher roadway classification	**Screened. Not Reasonable.** Did not meet purpose and need because these alternatives diverted less than 20% of the needed 55,000 daily trips from I-25 and they would not improve safety on I-25.	**Screened. Not Practicable.** Did not meet purpose and need because these alternatives diverted less than 20% of the needed 55,000 daily trips from I-25 and they would not improve safety on I-25.
New highway or parallel arterial	**Screened. Not Reasonable.** Did not meet purpose and need because these alternatives diverted less than 20% of the needed 55,000 daily trips from I-25 and they would not improve safety on I-25.	**Screened. Not Practicable.** Did not meet purpose and need because it does not replace aging infrastructure on I-25 and it does not address safety on I-25.
Prairie Falcon Parkway	**Screened. Not Reasonable.** Did not meet purpose and need because these alternatives diverted less than 20% of the needed 55,000 daily trips from I-25 and would not improve safety on I-25.	**Screened. Not Reasonable.** Did not meet purpose and need because these alternatives diverted less than 20% of the needed 55,000 daily trips from I-25 and would not improve safety on I-25.
Lane width reconfiguration along I-25	**Screened. Not Reasonable.** Did not meet purpose and need because it would substantially compromise safety on I-25 by creating a substandard geometric configuration.	**Screened. Not Practicable.** Did not meet purpose and need because it would substantially compromise safety on I-25 by creating a substandard geometric configuration.
Double deck I-25	**Screened. Not Reasonable.** This alternative was infeasible for implementation because it would cost four times the cost of other feasible highway alternatives.	**Screened. Not Practicable.** This alternative was not practicable because it would cost four times the cost of other feasible highway alternatives.
Express lanes on I-25: HOV, HOT or toll with a northern terminus near US 34	**Screened. Not Reasonable.** Did not meet purpose and need because alternatives would not provide connectivity to northern communities or replace aging infrastructure north of US 34.	**Screened. Not Practicable.** Did not meet purpose and need because alternatives would not provide connectivity to northern communities or replace aging infrastructure north of US 34.
Express lanes on I-25: HOV or toll with a northern terminus of SH 14	**Screened. Not Reasonable.** Did not meet purpose and need because HOV or Toll alternatives alone diverted less than 20% of the needed 55,000 daily trips from I-25 into the new facility.	**Screened. Not Practicable.** Did not meet purpose and need because these alternatives diverted less than 20% of the needed 55,000 daily trips from I-25 into the new facility.

Table 4-5 Screening Summary of All Alternatives Considered (cont'd)

Alternative Description	NEPA Screening Summary	USACE Practicability Summary
Highway Alternatives along I-25 (cont'd)		
Express lanes on I-25: HOT with a northern terminus of SH 14	**Retained. Reasonable.** Would divert sufficient traffic from I-25 general purpose lanes to be considered for further evaluation.	**Retained. Practicable.** Would divert sufficient traffic from I-25 general purpose lanes to be considered for further evaluation.
Limited access lanes	**Screened. Not Reasonable.** Created more environmental impact while providing essentially the same mobility characteristics as an eight-lane facility. Wider cross section would create a lane balance issue at the southern project limit that would result in operation at or below LOS E. The cost would be nearly two times more than adding two general purpose lanes to I-25.	**Screened. Not Practicable.** Created more environmental impact while providing essentially the same mobility characteristics as an eight-lane facility. Wider cross section would create a lane balance issue at the southern project limit that would result in operation at or below LOS E. The cost would be nearly two times more than adding two general purpose lanes to I-25. Aquatic resource impacts were estimated to be double those anticipated with other I-25 widening options.
Interchanges at new locations	**Screened. Not Reasonable** Did not meet purpose and need because new interchanges reduce effective capacity and safety by introducing additional weaving areas. This could be considered as part of a separate action if there is a need.	**Screened. Not Practicable.** Did not meet purpose and need because new interchanges reduce effective capacity and safety by introducing additional weaving areas. This could be considered as part of a separate action if there is a need.
Additional lanes – 6 lanes and 8 lanes on I-25 from E-470 to SH 14	**Retained. Reasonable.** Six- and eight-lane general purpose cross sections were retained to achieve a level-of-service (LOS) D or better along the corridor.	**Retained. Practicable.** Six- and eight-lane general purpose cross sections were retained to achieve a level-of-service (LOS) D or better along the corridor.
Interchange replacement / upgrade	**Retained. Reasonable.** Included with any alternative that widens I-25 to address capacity needs, safety concerns, and replace aging infrastructure.	**Retained. Practicable.** Included with any alternative that widens I-25 to address capacity needs, safety concerns, and replace aging infrastructure.
Horizontal and vertical alignment improvements	**Retained. Reasonable.** Included with any alternative that widens I-25 to address capacity needs, safety concerns, and replace aging infrastructure.	**Retained. Practicable.** Included with any alternative that widens I-25 to address capacity needs, safety concerns, and replace aging infrastructure.
Frontage road revisions	**Retained. Reasonable.** Included with any alternative that widens I-25 to address capacity needs, safety concerns, and replace aging infrastructure.	**Retained. Practicable.** Included with any alternative that widens I-25 to address capacity needs, safety concerns, and replace aging infrastructure.

Table 4-5 Screening Summary of All Alternatives Considered (cont'd)

Alternative Description	NEPA Screening Summary	USACE Practicability Summary
Highway Alternatives along I-25 (cont'd)		
Climbing lanes	**Screened. Not Reasonable.** Did not meet purpose and need because this alternative diverted less than 45% of the needed 55,000 daily trips from I-25 into the climbing lanes.	**Screened. Not Practicable.** Did not meet purpose and need because this alternative diverted less than 45% of the needed 55,000 daily trips from I-25 into the climbing lanes.
Truck lanes	**Screened. Not Reasonable.** Did not meet purpose and need because this alternative diverted less than 45% of the needed 55,000 daily trips from I-25 into the truck lanes.	**Screened. Not Practicable.** Did not meet purpose and need because this alternative diverted less than 45% of the needed 55,000 daily trips from I-25 into the truck lanes.
Transit Alternatives		
TAFS recommended rail transit elements	**Screened. Not Reasonable.** The rail portion was infeasible due to multiple alignments that would more than double the cost compared to rail on BNSF alignment.	**Screened. Not Practicable.** The rail portion was not practicable due to more than double the cost compared to rail on BNSF alignment.
Automated guideway transit (including monorail) in existing highway corridors, freight rail corridors, and/or a new alignment	**Screened. Not Reasonable.** This alternative was considered infeasible for implementation because its reliability has not been proven in a corridor of this length, and it would cost up to 10 times more compared to commuter rail.	**Screened. Not Practicable.** This alternative was considered infeasible for implementation because its reliability has not been proven in a corridor of this length, and it would cost up to 10 times more compared to commuter rail.
Personal rapid transit along existing highway corridors, freight corridors and/or a new alignment	**Screened. Not Reasonable.** Implementation is infeasible because this type of technology has not been proven in revenue service.	**Screened. Not Practicable.** Implementation is impracticable because this type of technology has not been proven in revenue service.
Rail Transit Alternatives		
Rail transport cars in existing freight corridors	**Screened. Not Reasonable.** Did not meet purpose and need because this type of technology has not been proven to carry sufficient vehicles to reduce congestion in other corridors.	**Screened. Not Practicable.** Did not meet purpose and need because this type of technology has not been proven to carry sufficient vehicles to reduce congestion in other corridors.
Light rail in existing highway corridors, freight rail corridors, and/or a new alignment	**Screened. Not Reasonable.** Does not meet purpose and need because travel time is double and cost would be up to 4 times more compared to commuter rail.	**Screened. Not Practicable.** Does not meet purpose and need because travel time is double and cost would be up to 4 times more compared to commuter rail.
Heavy rail below grade, elevated, along existing highway corridors, in freight rail corridors and/or in a new alignment	**Screened. Not Reasonable.** Implementation is infeasible because the cost that would be up to 17 times greater compared to commuter rail, and land availability does not warrant a fully grade separated alignment.	**Screened. Not Practicable.** Implementation is infeasible because the cost that would be up to 17 times greater compared to commuter rail, and land availability does not warrant a fully grade separated alignment.

Table 4-5 Screening Summary of All Alternatives Considered (cont'd)

Alternative Description	NEPA Screening Summary	USACE Practicability Summary
Rail Transit Alternatives **(cont'd)**		
Super high-speed rail (>125 mph) in freight rail corridors, a new alignment, and/or existing highway corridors	**Screened. Not Reasonable.** Does not meet purpose and need because limited stations and greater station spacing necessary to sustain speed would not allow connectivity to many northern communities.	**Screened. Not Practicable.** Does not meet purpose and need because limited stations and greater station spacing necessary to sustain speed would not allow connectivity to many northern communities.
High-speed rail (79-125 mph) in existing highway corridors, freight rail corridors, and/or along a new alignment	**Screened. Not Reasonable.** Does not meet purpose and need because limited stations and greater station spacing necessary to sustain speed would not allow connectivity to many northern communities.	**Screened. Not Practicable.** Does not meet purpose and need because limited stations and greater station spacing necessary to sustain speed would not allow connectivity to many northern communities.
North Front Range Rail Loop	**Screened. Not Reasonable.** Does not meet purpose and need because it does not serve travel between northern communities and metropolitan Denver.	**Screened. Not Practicable.** Does not meet purpose and need because it does not serve travel between northern communities and metropolitan Denver.
Front Range Rail	**Screened. Not Reasonable.** Does not meet purpose and need because planned station spacing would not allow connectivity to many northern communities.	**Screened. Not Practicable.** Does not meet purpose and need because planned station spacing would not allow connectivity to many northern communities.
Commuter rail – Western along BNSF	**Retained. Reasonable.** This alignment would serve about twice as many people and jobs compared to central rail alignments and cost the least of the rail alignments considered.	**Retained. Practicable.** This alignment would serve about twice as many people and jobs compared to central rail alignments and cost the least of the rail alignments considered.
Commuter rail – Eastern along UPRR	**Screened. Not Reasonable.** Eastern alignments caused out-of-direction travel, had higher potential for environmental impact to natural resources, and would cost more due to 50% more at-grade crossings.	**Screened. Not Practicable.** Eastern alignments did not meet purpose and need because of out of direction travel and had higher potential for environmental impact to natural resources, including aquatic resources, and would cost more due to 50% more at-grade crossings
Commuter rail – Central alignments	**Screened. Not Reasonable.** Infeasible because central alignments would cost up to four times more than alignments along an existing track.	**Screened. Not Practicable.** Central alignments would cost up to four times more than alignments along an existing track and had higher potential for environmental impact to natural resources, including aquatic resources.

Table 4-5 Screening Summary of All Alternatives Considered (cont'd)

Alternative Description	NEPA Screening Summary	USACE Practicability Summary
Rail Transit Alternatives(cont'd)		
Commuter rail in a new alignment (entire corridor)	**Screened. Not Reasonable.** Infeasible because new alignments would cost up to four times more than alignments along an existing track. Segments of commuter rail in a new rail alignment that could be used in conjunction with an improvement in an existing rail corridor were retained for additional evaluation.	**Screened. Not Practicable.** New rail alignments would cost up to four times more than alignments along an existing track and had higher potential for environmental impact to natural resources, including aquatic resources. Segments of commuter rail in a new rail alignment that could be used in conjunction with an improvement in an existing rail corridor were retained for additional evaluation.
Bus Alternatives		
Bus rapid transit in bus-only exclusive lanes	**Screened. Not Reasonable.** Was not considered reasonable because ridership projections did not warrant bus service that would be frequent enough to merit exclusive lanes.	**Screened. Not Practicable.** Was not considered reasonable because ridership projections did not warrant the cost associate with bus service that would be frequent enough to merit exclusive lanes.
Bus rapid transit in semi-exclusive lanes along I-25	**Retained. Reasonable.** Semi-exclusive lanes would provide sufficient capacity for bus and enable fast, reliable travel time to address regional multimodal needs.	**Retained. Practicable.** Semi-exclusive lanes would provide sufficient capacity for bus and enable fast, reliable travel time to address regional multimodal needs.
Demand responsive bus on existing highways	**Screened. Not Reasonable.** Did not meet purpose and need because service is not designed to meet a regional travel need.	**Screened. Not Practicable.** Did not meet purpose and need because service is not designed to meet a regional travel need.
Commuter bus	**Retained. Reasonable.** In conjunction with highway improvements could address regional multimodal needs.	**Retained. Practicable.** In conjunction with highway improvements could address regional multimodal needs.
Other Transit Alternatives		
Jitney service along existing highway corridors	**Screened. Not Reasonable.** This technology is infeasible for implementation because it has not been proven in revenue service.	**Screened. Not Practicable.** This technology is impracticable because it has not been proven in revenue service.
Congestion Management Alternatives		
Bike and pedestrian improvements	**Retained. Reasonable.** Congestion management alternatives alone are not sufficient to meet purpose and need. However, these alternatives are retained to supplement the primary improvements.	**Retained. Practicable.** Congestion management alternatives alone are not sufficient to meet purpose and need. However these alternatives are retained to supplement the primary improvements.
Travel demand management		
Intelligent transportation systems		
Transportation system management		

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5.0 PACKAGE DEVELOPMENT AND REFINEMENT

Alternatives evaluated in the EIS were a culmination of three levels of evaluation and screening. This section describes the packaging of improvements that are evaluated in the EIS.

5.1 PACKAGE DEVELOPMENT

Packages were developed based on the results of the three levels of screening described previously. The assumptions for highway and transit modes and information about how they fit together to create packages is described in this section.

5.1.1 Highway Assumptions

Evaluation of various packaged transit and highway improvements indicated that I-25 would need to be widened to accommodate future development regardless of the transit improvements provided. I-25 could be widened in two basic ways: additional general purpose lanes or with express lanes.

- Using general purpose lanes, a six-lane cross section is sufficient in much of the area while eight lanes and or auxiliary lanes would be required in select locations. Based on travel demand identified in the previous rounds of screening, the EIS alternatives include a combination of six/eight lanes along I-25.
- Of the express-lane alternatives, HOT lanes were found to provide the most reduction in congestion of the general purpose lanes and would have the highest utilization. However, the Executive Oversight Committee recommended that the project not limit the potential management options without additional consideration. Based on this, the EIS alternatives include express lanes that could be managed in three distinct ways. The first is to toll all vehicles. The second is to toll single occupant vehicles and allow high occupancy vehicles to use the lanes for free and the third is to toll single occupant vehicles and allow high occupancy vehicles to use the lanes at a discount.
- Regardless of the tolling mechanism used, an action of the High Performance Transportation Enterprise (formerly the Colorado Tolling Enterprise) changed the nomenclature of the express lanes to “Tolled Express Lanes” (TEL). Therefore, the EIS will refer to TEL rather than to managed or express lanes.

5.1.2 Transit Assumptions

Transit modes were advanced largely based on the number of riders they attracted compared to their costs.

- Commuter rail attracted the highest level of ridership, but bus alternatives were the most cost effective.
- Commuter rail service along the BNSF was less expensive than building commuter rail along I-25. It also provided both benefits and potential impacts to the communities.
- It was also found that transit lines on I-25 competed for riders with proximate transit service along US 287 and US 85. Transit services along US 287 and US 85 do not compete for riders.

- Bus transit service to DIA attracted substantial ridership and appeared to have the potential to improve the cost effectiveness of bus service.

5.1.3 Congestion Management Assumptions

During the EIS development process, several agencies were interviewed to determine how the congestion management elements that were advanced from Level Three Screening would best be applied within the study area. As a result, the congestion management elements were refined, and applied to each Alternative package, as shown in **Table 5-1.**

Table 5-1 Congestion Management Elements Considered in EIS Development

Congestion Management Strategies	Screening Recommendation	EIS Recommendation
Local Transit Service	Re-route local routes to include stops that connect to rail service, commuter bus service and express transit service	INCLUDE in EIS Packages
	Extend Foxtrot service from Loveland to Longmont	INCLUDE in EIS Packages without rail along the BNSF corridor
Express Transit Service	Consider a new route from Greeley to Fort Collins	INCLUDE in EIS Packages Test in Feeder Bus Networks
Carpool and Vanpool	Support NFRMPO ridesharing programs	Include the following in EIS; Initiate discussions regarding cooperative purchasing; Consider providing funds for marketing of vanpooling during construction (e.g. bus passes; satellite parking and transit service)
	Maintain and enhance existing carpool lots along I-25	INCLUDE in EIS Packages Provide equal or greater carpool lot capacity and amenities in addition to station area park-and-ride capacity and amenities
	Consider development of a Transportation Management Organization (TMO)	INCLUDE in EIS Packages Consider providing seed money to support the development of a TMO along the North I-25 project area
Telecommuting	Support NFRMPO program	**DO NOT INCLUDE in EIS**

Table 5-1 Congestion Management Elements Considered in Draft EIS Development (cont'd)

Congestion Management Strategies	Screening Recommendation	EIS Recommendation
Support Land Use Policies	Support local Sustainable Growth policies	Include the following in EIS; Initiate cooperative support of Sustainable Growth Land Use policies; include study of Cumulative Land Use Impacts and Induced Growth in Draft EIS; Consider hosting a two-day conference on land use and transportation
Incident Management Program	Adhere to and update existing Region 4 Incident Management Plan	INCLUDE in EIS Packages Include the capital and operating costs of a courtesy patrol from SH 14 to SH 7
Signal Coordination and Prioritization	US 85 from 8th Ave and 8th St Transit Center to Denver Union Station; Harmony from South Transit Center to I-25	INCLUDE in EIS Packages (US 85 – access management plan implementation and signal coordination) INCLUDE in EIS Package with bus service on Harmony Road (Harmony – signal coordination)
Ramp Metering	Include where warranted by volumes and queue lengths	INCLUDE in EIS Packages Implement as applicable to predicted congestion after build-out
Real Time Transportation Information	Variable messaging signs at all Commuter Rail and BRT stations, plus 8th and 8th, Brighton, 84th Street Regular updates on transit agency website	INCLUDE in EIS Packages Add VMS to all transit stations; Implement Region 4 ITS Plan, and include all improvements north of SH 66 in addition to fiber conduit from 120th Ave to SH 14.
Bicycle/Pedestrian Facilities	Station areas along transit alignments	INCLUDE in EIS Packages Provide links to bicycle and pedestrian facilities surrounding station areas

5.1.4 Packaging

Based on the screening and evaluation, three packages of improvements and the No-Action Alternative were developed for further evaluation in the EIS.

Package A distributed improvements across the project area.

- On I-25, one additional general purpose lane would be added in each direction with additional auxiliary lane from SH 402 to SH 60. As general purpose lanes do not provide an operating environment conducive to high quality transit service, this package included transit service to both sides of I-25.
- As the most successful transit alternative in attracting ridership in the US 287 corridor, commuter rail service along the BNSF was advanced for further analysis in the EIS.
    - Understanding that commuter rail along the BNSF would not serve the eastern project area residents, and that transit service must be carefully spaced to maximize ridership, it was paired with a commuter bus service on US 85. The commuter bus service assumed that vehicles would operate in the general purpose lanes of US 85. (As the eastern side of the study area has the least amount of communities to serve, commuter bus service provides a reliable transit option without providing too much capacity.)
    - Screening results supported including service to DIA due to the additional ridership it attracts. Therefore, the commuter bus service was planned with two alternating destinations from Greeley: downtown Denver and Denver International Airport.

Package B concentrated improvements along I-25.

- TEL provided the most relief to general purpose lanes, and the highest utilization of the managed lane options.
- TEL on I-25 provide a reliable guideway for a BRT system; therefore this is a natural pairing of highway and transit improvements.
    - With focused transit service on I-25 there is no competing service along US 85 or US 287.
    - In order to directly serve the communities which are offset from the interstate, BRT legs to Fort Collins and Greeley, and to both DIA and DUS were provided. This combination of improvements is referred to as EIS Package B.

The Preferred Alternative includes elements of Package A and Package B. It was developed through a collaborative decision making process.

- Commuter Rail service along the BNSF and generally paralleling SH 119.
    - Provides direct service to the largest population centers located along the western side of the study area.
    - Service connects to both FasTracks Northwest Corridor and North Metro Corridor rail lines.

- Tolled Express lanes along I-25 between SH 14 and US 36 provide long-term reliability for buses, HOVs and tolled SOVs.
- General Purpose lanes along I-25 between SH 14 and SH 66 provide necessary congestion relief and improved freight travel.
- Mainline reconstruction (without widening) between SH 1 and SH 14 correct deficient horizontal and vertical alignments issues as well as reconstructing substandard interchanges.
- Express Bus along I-25 connecting Greeley and Fort Collins to downtown Denver can be implemented in the near-term and would complement commuter rail service better than BRT.
- Commuter Bus service along US 85 traveling between Greeley and downtown Denver provide modal options to residents and employees along the eastern side of the corridor.

5.2 PACKAGE REFINEMENT

With the primary mode, facility type, and alignment of the packages determined, details about interchange design, lane configuration, transit station locations, and maintenance facility locations were determined. The next section describes the processes used to determine these secondary elements of the packages.

5.2.1 Interchange Configurations

To complete the interchange screening, seven interchange small groups were established to invite public participation in the interchange alternatives development and analysis process. Initial interchange alternatives were developed based on the initial traffic analysis, initial public input at the first series of small group meetings, as well as environmental and design related factors specific to each of the existing interchange locations. Alternatives considered in the initial analysis included grade changes, access modifications (i.e. half-diamond to full-diamond), configuration types and local access considerations.

The initial interchange alternatives were presented at the interchange small group meetings with a discussion of the merits and impacts of each alternative. Public comments on the alternatives were recorded for each of the small group meetings. Based on the public comments as well as the merits and impacts of each alternative, a revised, refined preferred interchange configuration was established through subsequent meetings with each of the small groups.

The time requirement and complexity of this process varied for each of the interchanges in this EIS. In some cases, only two or three alternatives were analyzed before a preferred interchange configuration was established in a matter of three months. In some cases six or more alternatives were developed and evaluated, and the process of establishing a preferred interchange configuration took up to 12 months. The process was adjusted according to the complexity, concerns and interests for each of the interchanges.

Most I-25 interchanges in the corridor were built in the late 1950s and early 1960s; these are generally considered functionally obsolete and do not meet current design standards. Interchanges identified as functionally obsolete were initially evaluated with a standard diamond configuration because this configuration typically provides the most capacity at the lowest cost with the most compact footprint to minimize impacts to environmental resources.

Interchanges that have recently been rebuilt were evaluated using their current configuration to determine if they would continue to operate acceptably with 2035 traffic volumes or if they too would require modifications.

If LOS D operation was unachievable or impacts to environmental resources were identified, configurations that would provide more capacity or would cost more such as single-point urban, tight diamond, partial cloverleaf, and direct connects were considered. Only in cases where modifying an existing interchange did not result in operation at LOS D or better was a new interchange location considered. Appendix E of the *Alternatives Development and Screening Report* (FHU and Jacobs, 2008a) details the interchange planning methodology.

Example interchange designs considered are pictured in **Figure 5-1**. The cloverleaf configuration was not considered the optimal configuration at any location along the corridor because of well-documented concerns with capacity, weaving and safety. For example, design standards necessary to address these issues would create a cloverleaf much larger than the current US 34 interchange and would result in greater impacts to right-of-way and to local businesses located adjacent to I-25. The partial cloverleaf configuration was still considered a viable option. Detailed traffic analyses of each interchange location are included in the *Transportation Analysis Technical Report,* (FHU and Jacobs, 2008, 2011c).

On a case-by-case basis, consideration also was given to closing an existing interchange. However, in all locations, the existing interchanges were considered necessary to maintain accessibility to the communities in northern Colorado and maintain the economic viability of the businesses located adjacent to the interchanges. There are new interchanges (such as Sheridan Parkway) that are being considered by others. This project does not preclude their eventual construction at some point in the future if there is a need.

Preliminary travel demand forecasting indicated that in most locations interchange traffic could be accommodated by replacing the existing interchanges with a diamond interchange designed to meet current standards. The evaluation of interchange configurations was an iterative process of evaluating various interchange enhancements such as the number of approach lanes and the signal timing to achieve LOS D or better. Input from stakeholders was provided though highway small group meetings held throughout the interchange evaluation process. **Table 5-2** presents a summary of interchange screening. This evaluation was conducted using NEPA screening and USACE practicability criteria consistent with those used during project alternative screening.

- **NEPA Screening –** Responsiveness to criteria that determine how reasonable it is. The definition of reasonable includes whether or not it is practical or feasible from a technical and economic standpoint, whether or not it meets purpose and need, and whether or not it has environmental impacts that are acceptable.
- **USACE Practicability –** Per USACE's 4049b)(1) guidelines, this criterion depends on costs, technical and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall purpose. This column also identifies whether or not an alternative has greater impacts to the aquatic environment.

Figure 5-1 Interchange Configurations Considered

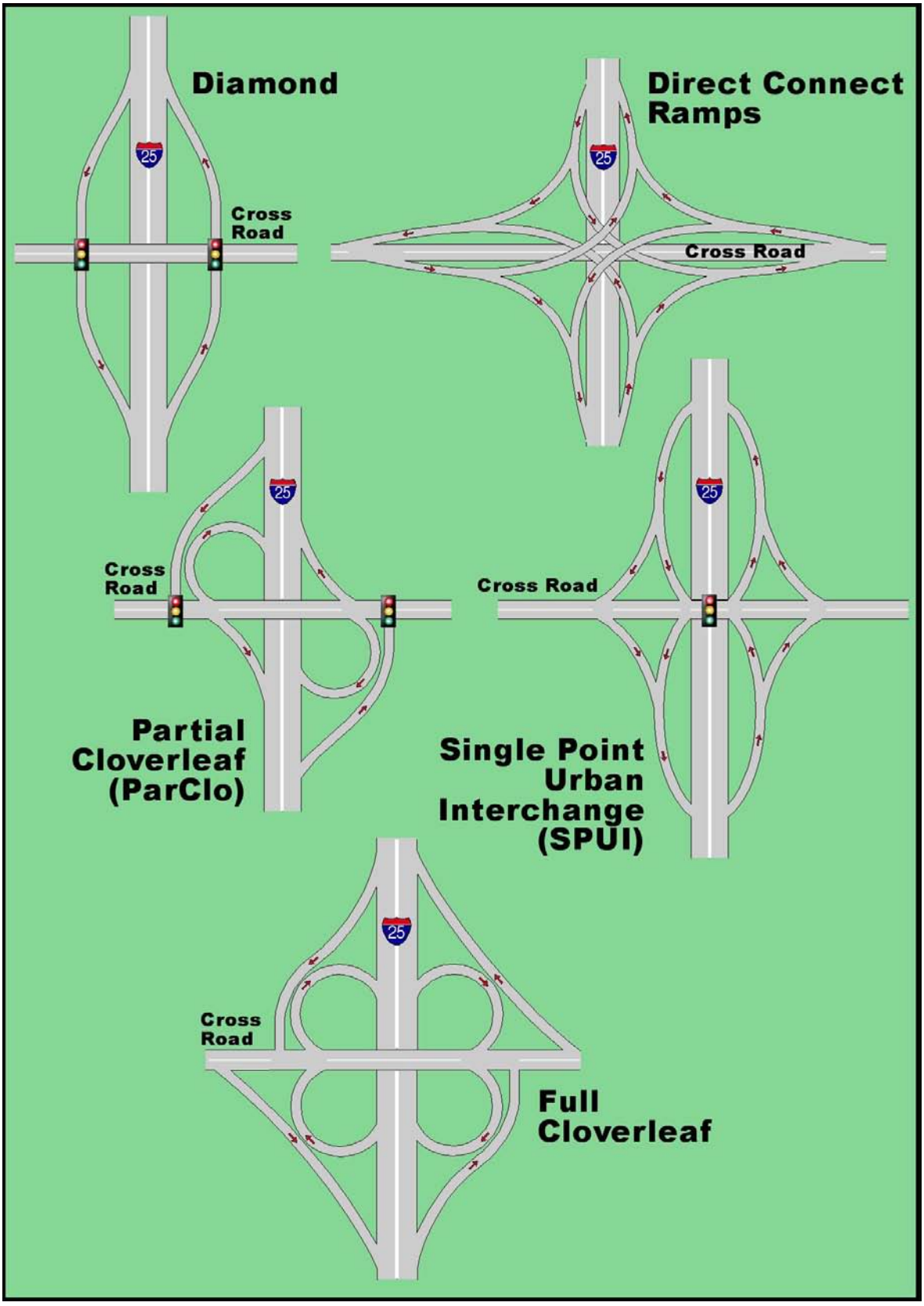


Table 5-2 Interchange Screening

Alternative Location	NEPA Screening Summary	USACE Practicability Summary
SH 1	**No-Action Confirguration – Screened Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.	**Retained.** Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.
Mountain Vista	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.	**Retained.** Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.
SH 14	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond with Northbound to Westbound Flyover –Screened. Not Reasonable. Would not meet purpose and need because it would impede local access thereby reducing accessibility and not addressing economic growth demands.	**Screened. Not Practicable.** Would not meet purpose and need because it would impede local access thereby reducing accessibility and not addressing economic growth demands.
	New Diamond with Local Access Improvements – Retained. Would effectively accommodate anticipated demand, accessibility address safety concerns, and replace aging structure.	**Retained.** Would effectively accommodate anticipated demand, accessibility address safety concerns, and replace aging structure.
Prospect	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.	**Retained.** Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.

Table 5-2 Interchange Screening (cont'd)

Alternative Location	NEPA Screening Summary	USACE Practicability Summary
Harmony Road	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	No-Action Configuration Enhanced – Retained. (Package A only) Would enable interchange to operate at an acceptable level of service with potential to retain the relatively new structure.	**Retained. (Package A only)** Would enable interchange to operate at an acceptable level of service with potential to retain the relatively new structure.
	New Diamond Interchange – Retained. (Package B and Preferred Alternative only) Would accommodate anticipated demand.	**Retained. (Package B and Preferred Alternative only)** Would accommodate anticipated demand.
	No-Action Configuration with Northbound to Westbound Flyover – Screened. Not Reasonable. Would cost 50 to 100% more than other comparable alternatives and would result in similar operation.	**Screened. Not Practicable.** Would cost 50 to 100% more than other comparable alternatives and would result in similar operation.
SH 392	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Screened. Not Reasonable. Environmental constraints (wetlands and bald eagle roosting activity) in the northwest quadrant preclude the ability to provide a standard ramp and intersection spacing at this location.	**Screened. Impacts to Aquatic Resources.** Environmental constraints (wetlands and bald eagle roosting activity) in the northwest quadrant preclude the ability to provide a standard ramp and intersection spacing at this location.
	Single-Point Urban Interchange – Screened. Not Reasonable. Not reasonable because it would cost twice as much as a tight diamond configuration with the same area of impact and 10% greater average delay per vehicle.	**Screened. Not Practicable.** Impracticable because it would cost twice as much as a tight diamond configuration with the same area of impact and 10% greater average delay per vehicle.
	New Tight Diamond Interchange – Retained. Would improve accessibility, accommodate anticipated demand, address safety concerns, and replace aging structure. This configuration would avoid impacting the bald eagle roosting sites and minimize impacts to the wetlands.	**Retained.** Would improve accessibility, accommodate anticipated demand, address safety concerns, and replace aging structure. This configuration would avoid impacting the bald eagle roosting sites and minimize impacts to the wetlands.

Table 5-2 Interchange Screening (cont'd)

Alternative Location	NEPA Screening Summary	USACE Practicability Summary
Crossroads Blvd.	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.	**Retained.** Effectively would accommodate anticipated demand, address safety concerns, and replace aging structure.
US 34	**No-Action Configuration – Screened. Not Reasonable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	Partial Cloverleaf Interchange – Screened. Not Reasonable. Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Screened. Not Reasonable. Would not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Would not meet purpose and need because it would operate at or below LOS E in 2035.
	Direct Connect US 34/I-25 - Screened. Not Reasonable. While this configuration could accommodate projected demand, it would not meet purpose and need because it would impede local access to economic activity centers. This would reduce accessibility and not address economic growth demands.	**Screened. Not Practicable.** While this configuration could accommodate projected demand, it would not meet purpose and need because it would impede local access thereby reducing accessibility and not addressing economic growth demands.
	Direct Connect US 34/I-25 with Diamond – Retained. Would provide adequate capacity to meet demand, retain access to adjacent intersections, and replace the aging structure.	**Retained.** Would provide adequate capacity to meet demand, retain access to adjacent intersections, and replace the aging structure.
SH 402	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.

Table 5-2 Interchange Screening (cont'd)

Alternative Location	NEPA Screening Summary	USACE Practicability Summary
CR 16	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would not address the need for accessibility.	**Screened. Not Practicable.** Does not meet purpose and need because it would not address the need for accessibility.
	New Diamond Interchange – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.
SH 60	**Current Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.
SH 56	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.
CR 34	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	New Diamond Interchange – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.
SH 66	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	No-Action Configuration with Enhancements – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.

Table 5-2 Interchange Screening (cont'd)

Alternative Location	NEPA Screening Summary	USACE Practicability Summary
SH 119	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	No-Action Configuration with Enhancements – Retained. Would enable interchange to operate at an acceptable level of service and retain relatively new I-25 structures over SH 119.	**Retained.** Would enable interchange to operate at an acceptable level of service and retain relatively new I-25 structures over SH 119.
SH 52	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	No-Action Configuration with Enhancements – Retained. Would enable interchange to operate at an acceptable level of service while retaining the relatively new structure.	**Retained.** Would enable interchange to operate at an acceptable level of service while retaining the relatively new structure.
WCR 8	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	No-Action Configuration with Minor Enhancements - Retained. Would enable interchange to operate at an acceptable level of service and retain relatively new structure.	**Retained.** Would enable interchange to operate at an acceptable level of service and retain relatively new structure.
SH 7	**No-Action Configuration – Screened. Not Reasonable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.	**Screened. Not Practicable.** Does not meet purpose and need because it would operate at or below LOS E in 2035.
	New Partial Cloverleaf Interchange – Retained. Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.	**Retained.** Would effectively accommodate anticipated demand, address safety concerns, and replace the aging structure.
	New Diamond Interchange – Screened. Does not meet the purpose and need because it operate at or below LOS E in 2035.	**Screened.** Does not meet the purpose and need because it operate at or below LOS E in 2035.

Table 5-2 Interchange Screening (cont'd)

Alternative Location	NEPA Screening Summary	USACE Practicability Summary
144th Avenue	**No-Action Configuration – Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.	**Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.
136th Avenue	**No-Action Configuration – Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.	**Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.
120th Avenue	**No-Action Configuration – Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.	**Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.
104th Avenue	**No-Action Configuration – Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.	**Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.
Thornton Parkway	**No-Action Configuration – Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.	**Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.
84th Avenue	**No-Action Configuration – Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.	**Retained.** Would require minor modification of ramp terminals at I-25. Would maintain existing structure.

5.2.2 Bus and Rail Transit Station Locations

Station locations were developed using a set of criteria that evaluated:

- Appropriate station spacing
- Future population and activity centers
- East/west (north/south) connectivity
- Existing infrastructure, land use, and environmental constraints
- Public, TAC, and RCC input

After determining the general vicinity of station locations, a more detailed evaluation was conducted for each station location. A range of two to ten sites were evaluated for each station location with the exception of the Fort Collins South Transit Center where one site was evaluated because the City of Fort Collins has an approved plan that identifies this location for a transit center. The South Transit Center is proposed to serve as the end of line for the Mason Street BRT system. In order to maximize ridership and access for the community it is important that the North I-25 BRT station connect to the proposed Mason Street BRT system.

Twenty-two criteria were evaluated for each proposed station location. The primary criteria evaluated were:

- minimal neighborhood and environmental impacts
- impacts to parks
- environmental justice
- historic property
- hazardous materials
- accessibility to vehicles
- pedestrian and bicycle connectivity
- opportunity for joint development and compatibility with adjacent land use and zoning
- compatibility with local plans and ability to provide an opportunity for joint development

Impacts to wetlands and threatened and endangered species were considered to be fatal flaws. In addition, if a new development was planned or under construction or if the station could not meet the engineering requirements this would be considered a fatal flaw. Each criteria was rated with either a +, - or 0. These ratings were provided a numerical value and tallied up at the end. The site with the highest total number was recommended to move forward. In some cases a lower ranking station site was moved forward due to recommendations by the local municipality. During the station screening process the station site analysis was presented at the third transit working group meeting. The group provided input that was incorporated into the evaluation process

Table 5-3 summarizes the station screening process for commuter rail along US 287.This evaluation was conducted using NEPA screening and USACE practicability criteria consistent with those used during project alternative screening.

- **NEPA Screening –** Responsiveness to criteria that determine how reasonable it is. The definition of reasonable includes whether or not it is practical or feasible from a technical and economic standpoint, whether or not it meets purpose and need, and whether or not it has environmental impacts that are acceptable.
- **USACE Practicability –** Per USACE's 4049b)(1) guidelines, this criterion depends on costs, technical and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall purpose. This column also identifies whether or not an alternative has greater impacts to the aquatic environment.

Table 5-3 Package A and the Preferred Alternative - Station Site Evaluation Commuter Rail

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Fort Collins Downtown Transit Center		
BNSF and Maple Ave CR-A East of Mason St. between Maple Ave. and Cherry St.	Retained. However, it is not supported by the City of Fort Collins.	Retained. However, it is not supported by the City of Fort Collins.
BNSF and Maple Ave. CR-B East of Mason St., north of Cherry St.	Retained. However, site impacts parks and has hazardous materials concerns; 5 sites within 100 ft. (VCP, LUST, UST, AST, and coal gas).	Retained. However, site impacts parks and has hazardous materials concerns; 5 sites within 100 ft. (VCP, LUST, UST, AST, and coal gas).
BNSF and Maple Ave CR-C West of Mason St. between Maple Ave. and Laporte Ave.	Retained. Included in Package A and the Preferred Alternative because site does not have park impacts and hazardous material concerns, and is supported by the City, unlike the other sites.	Retained. Included in Package A and the Preferred Alternative because site does not have park impacts and hazardous material concerns, and is supported by the City, unlike the other sites. This site does not contain wetlands.
Fort Collins Colorado State University Transit Center		
US 287 and A St. CR-A On the BNSF corridor between University Ave. and W. Pitkin St.	Retained.	Retained. This site does not contain wetlands.
South Fort Collins South Transit Center		
BNSF and Harmony CR-A Off of US 287 and W. Fairway Ln.	Retained.	Retained. This site does not contain wetlands.
North Loveland-29th and BNSF		
29th St. and BNSF CR-A On the east side of the BNSF and north of 29th St.	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (AST, UST, LUST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (AST, UST, LUST).
29th St.and BNSF CR-B On the east side of the BNSF and north of 29th St.	Retained. However, site has hazardous materials concerns; 5 sites within 100 ft. (AST, UST, LUST).	Retained. However, site has hazardous materials concerns; 5 sites within 100 ft. (AST, UST, LUST).
29th St. and BNSF CR-C On the east side of the BNSF and south of 29th St.	Retained. Included in Package A and the Preferred Alternative because site did not have the hazardous material concerns of the other sites.	Retained. Included in Package A and the Preferred Alternative because site did not have the hazardous material concerns of the other sites. This site does not contain wetlands.
Downtown Loveland-US 34 and BNSF		
BNSF and US 34 CR-A On the east side of the BNSF north of US 34	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).
BNSF and US 34 CR-B On the east side of the BNSF south of US 34	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.

Table 5-3 Package A and the Preferred Alternative – Station Site Evaluation Commuter Rail (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Downtown Loveland-US 34 and BNSF (cont'd)		
BNSF and US 34 CR-C On the east side of the BNSF south of US 34	Retained. However, site has hazardous materials concerns; 10 sites within 100 ft. (UST, RCRA-SQG, LUST).	Retained. However, site has hazardous materials concerns; 10 sites within 100 ft. (UST, RCRA-SQG, LUST).
BNSF and US 34 CR-D On the east side of the BNSF between 8th St. and 7th St.	Retained. However, site has hazardous materials concerns; 1 site within 100 ft. (ERNS, LUST, UST).	Retained. However, site has hazardous materials concerns; 1 site within 100 ft. (ERNS, LUST, UST).
BNSF and US 34 CR-E On the east side of the BNSF between 7th St. and 6th St.	Retained. However, site has hazardous materials concerns; 1 site within 100 ft. (ERNS, LUST, UST).	Retained. However, site has hazardous materials concerns; 1 site within 100 ft. (ERNS, LUST, UST).
BNSF and US 34 CR-F On the east side of the BNSF between 7th St. and 6th St.	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
BNSF and US 34 CR-G On the east side of the BNSF between 6th St. and 5th St.	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
BNSF and US 34 CR-H On the east side of the BNSF between 4th St. and 6th St.	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
BNSF and US 34 CR-I On the west side of the BNSF between 4th St. and 6th St.	Retained. Included in Package A and the Preferred Alternative because the site did not have the hazardous material concerns of the other sites.	Retained. Included in Package A and the Preferred Alternative because the site did not have the hazardous material concerns of the other sites. This site does not contain wetlands.
Berthoud-SH 56 and BNSF		
BNSF and SH 56 CR-A On the east side of the BNSF north of SH 56	Retained. However, site impacts historic property and would require the purchase of 10+ parcels, impacting multiple property owners.	Screened. Not Practicable. Site impacts historic property and would require the purchase of 10+ parcels, impacting multiple property owners.
BNSF and SH 56 CR-B On the east side of the BNSF north of SH 56	Retained. Included in Package A and the Preferred Alternative because this site did not have the hazardous materials or historic and property owner impact concerns of the other sites.	Retained. Included in Package A and the Preferred Alternative because this site did not have the hazardous materials or historic and property owner impact concerns of the other sites. This site does not contain wetlands.

Table 5-3 Package A and the Preferred Alternative – Station Site Evaluation Commuter Rail (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Berthoud-SH 56 and BNSF (cont'd)		
BNSF and SH 56 CR-C On the east side of the BNSF south of SH 56	Retained. However, site has hazardous materials concerns; 4 sites within 100 ft. (RCRA-SQG, LUST).	Retained. However, site has hazardous materials concerns; 4 sites within 100 ft. (RCRA-SQG, LUST).
BNSF and SH 56 CR-D On the east side of the BNSF south of SH 56	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
North Longmont- SH 66 and BNSF		
BNSF and SH 66 CR-A On the east side of the BNSF and north of SH 66	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.
BNSF and SH 66 CR-B On the east side of the BNSF and north of SH 66	Retained.	Retained. This site does not contain wetlands.
Longmont at Sugar Mill		
Sugar Mill CR-A On the BNSF and near Ken Pratt Blvd.	Retained. However, site does not provide close proximity of the platform with parking.	Retained. However, site does not provide close proximity of the platform with parking.
Sugar Mill CR-B On the BNSF and near Ken Pratt Blvd.	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Access to station platform is less efficient than other sites.	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Access to station platform is less efficient than other sites.
Sugar Mill CR-C On the BNSF and near Ken Pratt Blvd.	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Access to station platform is less efficient than other sites.	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Access to station platform is less efficient than other sites.
Sugar Mill CR-D North of SH 119 and east of County Line Rd.	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Bus access requires out-of-direction travel. Has impacts to wetlands.	Retained. However, has impacts to wetlands.
Sugar Mill CR-E North of SH 119 and east of County Line Rd.	Retained. However, site does not provide close proximity of the platform with parking.	Retained. However, site does not provide close proximity of the platform with parking.
Sugar Mill CR-F North of SH 119 east of County Line Rd.	Retained. However, site impacts wetlands.	Retained. However, has impacts to wetlands.

Table 5-3 Package A and Preferred Alternative – Station Site Evaluation Commuter Rail (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Longmont at Sugar Mill (cont'd)		
Sugar Mill CR-G South of Rodgers and near Ken Pratt Blvd.	Retained. Included in Package A and the Preferred Alternative because the site provides close proximity of the platform with the parking, and does not impact wetlands.	Retained. Included Package A and the Preferred Alternative because the site provides close proximity of the platform with the parking. This site does not contain wetlands.
Erie at CR-8		
I-25 and CR 8 CR-A North of CR 8 and west of CR 7	Retained. Site would require the purchase of 10+ parcels; impacting multiple property owners.	Retained. Site would require the purchase of 10+ parcels; impacting multiple property owners.
I-25 and CR 8 CR-B North of CR 8 and east of CR 7	Retained. However, site not compatible with Erie's plans.	Retained. However, site not compatible with Erie's plans.
I-25 and CR 8 CR-C South of CR 10 and east of CR 7	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible, because platform would not be located adjacent to parking.
I-25 and CR 8 CR-D South of CR 10 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible, because platform would not be located adjacent to parking.
I-25 and CR 8 CR-E South of CR 10 and west of I-25	Retained. Included in Package A and the Preferred Alternative because this site does not have the concerns with impacts to multiple property owners, compatibility with plans or zoning of the other sites	Retained. Included in Package A and the Preferred Alternative because this site does not have the concerns with impacts to multiple property owners, compatibility with plans or zoning of the other sites This site does not contain wetlands.
I-25 and CR 8 CR-F South of CR 10 and east of I-25	Screened. Not Reasonable. Not technically feasible because platform location too close to I-25 requiring an elevated platform.	Screened. Not Practicable. Not technically feasible because platform location too close to I-25 requiring an elevated platform.
I-25 and CR 8 CR-G North of CR 8 and east of I-25	Screened. Not Reasonable. Not technically feasible because site has no tangent track for the platform.	Screened. Not Practicable. Not technically feasible because site has no tangent track for the platform.
I-25 and CR 8 CR-H South of CR 8 and east of I-25	Screened. Not Reasonable. Not technically feasible because distance between CR 8 and CR 11 does not allow for a platform.	Screened. Not Practicable. Not technically feasible because distance between CR 8 and CR 11 does not allow for a platform.

Table 5-3 Package A and Preferred Alternative – Station Site Evaluation Commuter Rail (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Erie at CR-8 (cont'd)		
I-25 and CR 8-I North of CR 7 and east of I-25	Retained. However, site not compatible with Erie's plan.	Retained. However, site not compatible with Erie's plan.
I-25 and CR 8-J South of CR 7 and east of I-25	Retained. However, site does not meet zoning.	Retained. However, site does not meet zoning.

RCRA SQG..... Resource Conservation and Recovery Act Small Quantity Generator
LUST..... Leaking Underground Storage Tank
UST..... Underground Storage Tank
AST..... Aboveground Storage Tank
ERNS..... Emergency Response Notification System
VCP……Voluntary Clean-Up

Table 5-4 summarizes the station screening for commuter bus along US 85.

Table 5-4 Package A and Preferred Alternative - Station Site Evaluation Commuter Bus on US 85

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Greeley		
8th Ave. and D CB-A On the west of US 85 and north of D St.	Retained. Included in Package A and the Preferred Alternative because the site does not impact wetlands and does not have the concern with adjacent land use as the other site.	Retained. Included in Package A and the Preferred Alternative because the site does not impact wetlands and does not have the concern with adjacent land use as the other site. This site does not contain wetlands.
8th Avenue and D CB-B East of US 85 and West of 6th Ave.	Retained. However, adjacent industrial land use is not typically supported by transit service. Site has impacts to wetlands.	Retained. However, site has impacts to wetlands.
South Greeley		
US 85 and 19th St. CB-A West of US 85 between 18th St. and 19th St.	Retained. However, site impacts historic property.	Retained. However, site impacts historic property.
US 85 and 19th St. CB-B West of US 85 between 19th St. and 20th St.	Screened. Not Reasonable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.

Table 5-4 Package A and Preferred Alternative – Station Evaluation Commuter Bus on US 85 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
South Greeley (cont'd)		
US 85 and 19th St. CB-C East of US 85 and between 18th St. and 19th St.	Screened. Not Reasonable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.
US 85 and 19th St. CB-D East of US 85 between 19th St. and 20th St.	Screened. Not Reasonable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need site could not accommodate parking; therefore does not promote improved mobility.
US 85 and 19th St. CB-E East of US 85 between 20th St. 21st St.	Screened. Not Reasonable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.
US 85 and 19th St. CB-F East of US 85 between 21 St. and 22nd St.	Screened. Not Reasonable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need because site could not accommodate parking; therefore does not promote improved mobility.
US 85 and 19th St. CB-G West of US 85 and 24th St.	Retained. Included in the alternatives because this site did not have the historic property impacts of the other site.	Retained. Included in the alternatives because this site did not have the historic property impacts of the other site. This site does not contain wetlands.
Evans		
US 85 and 37th St. CB-A West of US 85 and south of 31st. St.	Retained. However, site impacts wetlands.	Screened. Site impacts wetlands.
US 85 and 37th Street CB-B West of US 85 and south of 37th St.	Retained. However, site impacts parks.	Retained. However, site impacts parks.
US 85 and 37th St. CB-C West of US 85 and north of 42nd St.	Screened. Not Reasonable. Does not meet purpose and need because bus access requires out-of-direction travel, therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need because bus access requires out-of-direction travel, therefore does not promote improved mobility.

Table 5-4 Package A and Preferred Alternative – Station Evaluation Commuter Bus on US 85 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Evans (cont'd)		
US 85 and 37th St. CB-D East of US 85 and south of 31st St.	Screened. Not Reasonable. Does not meet purpose and need because bus access requires out-of-direction travel, therefore does not promote improved mobility.	Screened. Not Practicable. Does not meet purpose and need because bus access requires out-of-direction travel, therefore does not promote improved mobility.
US 85 and 37th St. CB-E East of US 85 and north of 37th St.	Retained. However, site has no expansion potential.	Retained. However, site has no expansion potential.
US 85 and 37th St. CB-F East of US 85 and south of 42nd St.	Retained. Included in Package A and the Preferred Alternative because it does not impact wetlands and does not have the concerns with park impacts or lack of expansion potential as the other sites.	Retained. Included in Package A and the Preferred Alternative because it does not impact wetlands and does not have the concerns with park impacts or lack of expansion potential as the other sites. This site does not contain wetlands.
Platteville		
US 85 and Grand Ave. CB-A West of US 85 and north of Grand Ave.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
US 85 and Grand Ave CB-B West of US 85 and north of Grand Ave.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners..
US 85 and Grand Ave CB-C West of US 85 and south of Grand Ave.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.
US 85 and Grand Ave. CB-D East of US 85 and north of Grand Ave.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
US 85 and Grand Ave. CB-E East of US 85 and RR and north of Grand Ave.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.

Table 5-4 Package A and Preferred Alternative – Station Evaluation Commuter Bus on US 85 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Platteville (cont'd)		
US 85 and Grand Ave. CB-F East of US 85 and RR and north of Grand Ave.	Retained. However, access has a railroad crossing in close proximity to major intersection causing traffic impacts.	Retained. However, access has a railroad crossing in close proximity to major intersection causing traffic impacts.
US 85 and Grand Ave. CB-G East of US 85 and RR and south of Grand Ave.	Retained. However, access has a railroad crossing in close proximity to major intersection causing traffic impacts.	Retained. However, access has a railroad crossing in close proximity to major intersection causing traffic impacts.
US 85 and Grand Ave. CB-H East of US 85 and RR and south of Grand Ave.	Retained. However, access has a railroad crossing in close proximity to major intersection causing traffic impacts.	Retained. However, access has a railroad crossing in close proximity to major intersection causing traffic impacts.
US 85 and Grand Ave. CB-I West of US 85 and north of Grand Ave.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
US 85 and Grand Ave. CB-J West of US 85 and north of SH 66	Retained. Included in Package A and the Preferred Alternative because it does not impact wetlands and does not have the concerns with park impacts or lack of expansion potential as the other sites.	Retained. Included in Package A and the Preferred Alternative because it does not impact wetlands and does not have the concerns with park impacts or lack of expansion potential as the other sites. This site does not contain wetlands.
US 85 and Grand Ave. CB-K West of US 85 and south of SH 66	Screened. Not Reasonable. Not technically feasible because it is too small to serve the need.	Screened. Not Practicable. Not technically feasible because it is too small to serve the need.
US 85 and Grand Ave. CB-L East of US 85 and RR and north of SH 66	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.
US 85 and Grand Ave. CB-M East of US 85 and RR and south of SH 66	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.

Table 5-4 Package A and Preferred Alternative – Station Evaluation Commuter Bus on US 85 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Fort Lupton		
US 85 and CR 14.5 CB-A West of US 85 and north of CR 14.5	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.
US 85 and CR 14.5 CB-B West of US 85 and north of CR 14.5	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.
US 85 and CR 14.5 CB-C West of US 85 and south of CR 14.5	Retained. However, site has a visual impact.	Retained. However, site has a visual impact.
US 85 and CR 14.5 CB-D East of US 85 and north of CR 14.5	Retained. Included in the Preferred Alternative because it does not have the visual or wetland impact concerns of the other sites, and is in close proximity to US 85. Screened for Package A as Not Reasonable because site is too small.	Retained. Included in the Preferred Alternative because it does not have visual impacts, and is in close proximity to US 85 compared to other sites. Screened for Package A as Not practicable because it is too small. This site does not contain wetlands.
US 85 and CR 14.5 CB-E East of US 85 and south of CR 14.5	Retained. Included in Package A because it does not have the visual or wetland impact concerns of the other sites. Screened for the Preferred Alternative because is not close proximity to US 85.	Retained. This site does not contain wetlands.

Table 5-5 summarizes the station site evaluation process for BRT stations along I-25.

Table 5-5 Package B - Station Site Evaluation Bus Rapid Transit on I-25

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
South Fort Collins Transit Center		
US 287 and Harmony Rd. BRT-A West of US 287 and south of Harmony Rd.	Retained.	Retained. This site does not contain wetlands.
Harmony Road and Timberline		
Harmony Rd. and Timberline Rd. CB-A North of Harmony Rd. and west of Timberline Rd.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.
Harmony Rd. and Timberline Rd. CB-B South of Harmony Rd. and west of Timberline Rd.	Retained. Included in Package B because this site did not have the multiple property owner impact concerns of the other site.	Retained. Included in Package B because this site did not have the multiple property owner impact concerns of the other site. This site does not contain wetlands.
Harmony Rd. and Timberline Rd. CB-C North of Harmony Rd. and east of Timberline Rd.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.
Harmony Rd. and Timberline Rd. CB-D South of Harmony Rd. and east of Timberline Rd.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.
Harmony Road and Timberline Rd. CB-E South of Harmony Rd. and west of Timberline Rd.	Retained. Included in Package B because this site did not have the multiple property owner impact concerns of the other site.	Retained. Included in Package B because this site did not have the multiple property owner impact concerns of the other site. This site does not contain wetlands.
I-25 and Harmony Road		
I-25 and Harmony Rd BRT-A North of Harmony Rd. and west of I-25	Retained. Included in Package B as it does not have the concerns with hazardous materials of the other site. Site is existing park and ride.	Retained. Included in Package B as it does not have the concerns with hazardous materials of the other site. Site is existing park and ride. This site does not contain wetlands.
I-25 and Harmony Rd BRT-B North of Harmony Rd and west of I-25	Retained. However, site has hazardous materials concerns;1 site within 100 ft. (ERNS).	Retained. However, site has hazardous materials concerns; 1 site within 100 ft. (ERNS).

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
I-25 and Harmony Road (cont'd)		
I-25 and Harmony Rd. BRT-C North of Harmony Rd. and west of I-25	Retained. Included in Package B in conjunction with site A as it does not have concerns with hazardous materials of the other site. Site is adjacent to Site A.	Retained. Included in Package B in conjunction with site A as it does not have concerns with hazardous materials of the other site. Site is adjacent to Site A. This site does not contain wetlands.
I-25 and Harmony Rd. BRT-D North of Harmony Rd and west of I-25	Retained. Included in Package B in conjunction with site A as it does not have concerns with hazardous materials of the other site. Site is adjacent to Site A.	Retained. Included in Package B in conjunction with site A as it does not have concerns with hazardous materials of the other site. Site is adjacent to Site A. This site does not contain wetlands.
Windsor		
I-25 and SH 392 BRT-A North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 BRT-B North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 BRT-C North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 BRT-D North of SH 392 and west of I-25	Screened. Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 BRT-E South of SH 392 and west of I-25	Retained. However, site has threatened and endangered species and impacts wetlands.	Retained. However, site has threatened and endangered species and impacts wetlands.
I-25 and SH 392 BRT-F South of SH 392 and west of I-25	Screened. Not Reasonable. Site does not meet engineering requirements due to proximity to interchange so is not feasible.	Screened. Not Practicable. Site is not logistically possible due to proximity of interchange.
I-25 and SH 392 BRT-G South of SH 392 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 392 BRT-H North of SH 392 and west of I-25	Retained. However, site is not in close proximity to residential areas.	Retained. However, site is not in close proximity to residential areas.
I-25 and SH 392BRT-I North of SH 392 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Windsor (cont'd)		
I-25 and SH 392 BRT-J North of SH 392 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 392 BRT-K South of SH 392 and west of I-25	Retained. However, site would require building relocations.	Retained. However, site would require building relocations.
I-25 and SH 392 BRT-L South of SH 392 and west of I-25	Screened. Not Reasonable. Site does not meet engineering requirements for traffic operations due to proximity to interchange so is not feasible.	Screened. Not Practicable. Not logistically possible for traffic operations due to proximity to interchange.
I-25 and SH 392 BRT-M South of SH 392 and west of I-25	Retained. Included in the Package B because this site does not have the concerns regarding threatened and endangered species, lack of proximity to residential areas, building relocations, or wetlands of the other sites.	Retained. Included in the Package B because this site does not have the concerns regarding threatened and endangered species, lack of proximity to residential areas, building relocations, or wetlands of the other sites. This site does not contain wetlands.
I-25 and SH 392 BRT-N South of SH 392 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
Crossroads Boulevard		
I-25 and Crossroads Blvd. BRT-A North of Crossroads Blvd. and west of I-25	Retained. However, site does not provide opportunity for joint development and is not compatible with plans.	Retained. However, site does not provide opportunity for joint development and is not compatible with plans.
I-25 and Crossroads Blvd. BRT-B North of Crossroads Blvd. and west of I-25	Retained. However, site does not provide opportunity for joint development and is not compatible with plans. Site has visual impacts.	Retained. However, site does not provide opportunity for joint development and is not compatible with plans. Site has visual impacts.
I-25 and Crossroads Blvd. BRT-C North of Crossroads Blvd. and west of I-25	Retained. However, site does not provide opportunity for joint development and is not compatible with plans. Site has visual impacts.	Retained. However, site does not provide opportunity for joint development and is not compatible with plans. Site has visual impacts.
I-25 and Crossroads Blvd. BRT-D North of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Site does not meet engineering requirements for traffic operations due to proximity to interchange so is not feasible.	Screened. Not Practicable. Not logistically possible for traffic operations due to proximity to interchange.
I-25 and Crossroads Blvd. BRT-E North of Crossroads Blvd. and west of I-25	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Crossroads Boulevard (cont'd)		
I-25 and Crossroads Blvd. BRT-F South of Crossroads Blvd. and west of I-25	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).
I-25 and Crossroads Blvd. BRT-G South of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Grade of site exceeds bus operation requirements.	Screened. Not Practicable. Not logistically possible. Grade of site exceeds bus operation requirements.
I-25 and Crossroads Blvd. BRT-H South of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.
I-25 and Crossroads Blvd. BRT-I North of Crossroads Blvd. and east of I-25	Retained. However, site would require acquisition of a commercial building.	Retained. However, site would require acquisition of a commercial building.
I-25 and Crossroads Blvd. BRT-J South of Crossroads Blvd. and east of I-25	Screened. Not Reasonable. Grade of site exceeds bus operation requirements.	Screened. Not Practicable. Site is not logistically possible because grade of site exceeds bus operation requirements.
I-25 and Crossroads Blvd. BRT-K South of Crossroads Blvd. and east of I-25	Screened. Not Reasonable. Grade of site exceeds bus operation requirements.	Screened. Not Practicable. Site is not logistically possible. Grade of site exceeds bus operation requirements.
I-25 and Crossroads Blvd. BRT-L South of Crossroads Blvd. and east of I-25	Retained. However, site access requires new roadway infrastructure. Site not compatible with local plans. Site has visual impacts.	Retained. However, site access requires new roadway infrastructure. Site not compatible with local plans. Site has visual impacts.
I-25 and Crossroads Blvd. BRT-M South of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
I-25 and Crossroads Blvd. BRT-N South of Crossroads Blvd. and west of I-25	Retained. Included in Package B because this site does not have the concerns regarding local plan compatibility, visual impacts, hazardous materials, building acquisitions, or shared parking agreements of the other sites.	Retained. Included in Package B because this site does not have the concerns regarding local plan compatibility, visual impacts, hazardous materials, building acquisitions, or shared parking agreements of the other sites. This site does not contain wetlands.
I-25 and Crossroads Blvd. BRT-O North of Crossroads Blvd. and east of I-25	Retained. However, site requires shared parking agreement.	Retained. However, site requires shared parking agreement.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Berthoud		
I-25 and SH 56/60 BRT-A South of US 60 and west of I-25	Retained. However, site has visual impacts and is not compatible with Berthoud's I-25 Land Use Plan.	Retained. However, site has visual impacts and is not compatible with Berthoud's I-25 Land Use Plan.
I-25 and SH 56/60 BRT-B South of US 60 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be located adjacent to parking.	Screened. Not Practicable. Not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 56/60 BRT-C South of US 60 and west of I-25	Screened. Not Reasonable. Grade of site exceeds bus operation requirements.	Screened. Not Practicable. Not logistically feasible. Grade of site exceeds bus operation requirements.
I-25 and SH 56/60 BRT-D South of US 60 and west of I-25	Screened. Not reasonable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.
I-25 and SH 56/60 BRT-E South of US 60 and west of I-25	Screened. Not Reasonable. Grade of site exceeds bus operation requirements.	Screened. Not Practicable. Not logistically feasible. Grade of site exceeds bus operation requirements.
I-25 and SH 56/60 BRT-F South of US 60 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-G South of US 60 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-H South of US 60 and east of I-25	Screened. Not Reasonable. Grade of site exceeds bus operation requirements.	Screened. Not Practicable. Not logistically possible. Grade of site exceeds bus operation requirements.
I-25 and SH 56/60 BRT-I South of US 60 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-J South of US 60 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-K South of US 60 and west of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Berthoud (cont'd)		
I-25 and SH 56/60 BRT-L North of US 56 and west of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-M North of US 56 and west of I-25	Retained. Included in Package B because this site does not have the concerns regarding visual impacts, local plan compatibility, or wetlands of the other sites.	Retained.Included in Package B because this site does not have the concerns regarding visual impacts, local plan compatibility, or wetlands of the other sites. This site does not contain wetlands.
I-25 and SH 56/60 BRT-N North of US 56 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-O North of US 56 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
I-25 and SH 56/60 BRT-P North of US 56 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Retained. However, site impacts wetlands.
Firestone		
I-25 and SH 119 BRT-A West of I-25 and north of US 119	Retained. However, site has hazardous materials concerns; 5 sites within 100 ft. (LUST, ERNS, RCRA-SQG).	Retained. However, site has hazardous materials concerns; 5 sites within 100 ft. (LUST, ERNS, RCRA-SQG).
I-25 and SH 119 BRT-B West of I-25 and south of US 119	Retained. However, site has hazardous materials concerns; 8 sites within 100 ft. (RCRA-SQG, LUST, ERNS).	Retained. However, site has hazardous materials concerns; 8 sites within 100 ft. (RCRA-SQG, LUST, ERNS).
I-25 and SH 119 BRT-C West of I-25 and south of US 119	Retained. However, site has hazardous materials concerns; 15 sites within 100 ft. (ERNS, RCRA-SQG, UST, LUST, CoTrust).	Retained. However, site has hazardous materials concerns; 15 sites within 100 ft. (ERNS, RCRA-SQG, UST, LUST, CoTrust).
I-25 and SH 119 BRT-D West of I-25 and south of US 119	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.
I-25 and SH 119 BRT-E East of I-25 and north of US 119	Screened. Not Reasonable. Site too close to intersection to accommodate a median platform so not feasible.	Screened. Not Practicable. Site too close to intersection to accommodate a median platform so logistically not possible.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Firestone (cont'd)		
I-25 and SH 119 BRT-F East of I-25 and north of US 119	Screened. Not Reasonable. Site too close to intersection to accommodate a median platform so not feasible.	Screened. Not Practicable. Site too close to intersection to accommodate a median platform so logistically not possible.
I-25 and SH 119 BRT-G East of I-25 and north of US 119	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (UST, LUST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (UST, LUST).
I-25 and SH 119 BRT-H East of I-25 and south of US 119	Screened. Not Reasonable. Interchange improvements do not accommodate a station at this site because of traffic operations.	Screened. Not Practicable. Interchange improvements do not accommodate a station at this site because of traffic operations..
I-25 and SH 119 BRT-I East of I-25 and south of US 119	Retained. However, site would require acquisition of major commercial building.	Retained. However, site would require acquisition of major commercial building.
I-25 and SH 119 BRT-J East of I-25 and south of US 119	Retained. Included in Package B because it this site does not have the concerns regarding hazardous materials, or building acquisition of the other sites.	Retained. Included in Package B because it this site does not have the concerns regarding hazardous materials, or building acquisition of the other sites. This site does not contain wetlands.
Frederick/Dacono		
I-25 and SH 52 BRT-A West of I-25 and north of SH 52	Retained. Included in Package B because this site does not have the concerns regarding acquisition of buildings, conflicts with ditch, and threatened and endangered species of the other sites.	Retained. Included in Package B because this site does not have the concerns regarding acquisition of buildings, conflicts with ditch, and threatened and endangered species of the other sites. This site does not contain wetlands.
I-25 and SH 52 BRT-B West of I-25 and north of SH 52	Retained. However, site would require acquisition of new buildings.	Retained. However, site would require acquisition of new buildings.
I-25 and SH 52 BRT-C West of I-25 and north of SH 52	Screened. Not Reasonable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.	Screened. Not Practicable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.
I-25 and SH 52 BRT-D West of I-25 and north of SH 52	Screened. Not Reasonable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.	Screened. Not Practicable. Site would require rebuilding SH 52 would be more than double the cost of other sites.
I-25 and SH 52 BRT-E West of I-25 and south of SH 52	Screened. Not Reasonable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.	Screened. Not Practicable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Frederick/Dacono (cont'd)		
I-25 and SH 52 BRT-F West of I-25 and South of SH 52	Screened. Not Reasonable. Site requires the acquisition of 10+ parcels, impacting multiple property owners.	Screened. Not Practicable. Site requires the acquisition of 10+ parcels, impacting multiple property owners.
I-25 and SH 52 BRT-G West of I-25 and south of SH 52	Screened. Not Reasonable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.	Screened. Not Practicable. Does not meet the purpose and need for improved mobility. Site access requires new roadway infrastructure and would result in out-of-direction travel.
I-25 and SH 52 BRT-H East of I-25 and north of SH 52	Retained. However, site has conflict with ditch.	Retained. However, site has conflict with ditch.
I-25 and SH 52 BRT-I East of I-25 and north of SH 52	Screened. Not Reasonable. Site does not meet engineering requirements due to proximity to interchange to accommodate a median platform so is not feasible.	Screened. Not Practicable. Site does not meet engineering requirements due to proximity to interchange to accommodate a median platform so logistically is not possible.
I-25 and SH 52 BRT-J East of I-25 and north of SH 52	Screened. Not Reasonable. Site does not meet engineering requirements due to proximity to interchange to accommodate a median platform so is not feasible.	Screened. Not Practicable. Site does not meet engineering requirements due to proximity to interchange to accommodate a median platform so logistically is not possible.
I-25 and SH 52 BRT-K East of I-25 and north of SH 52	Screened. Not Reasonable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.	Screened. Not Practicable. Site would require rebuilding SH 52 which would be more than double the cost of other sites.
I-25 and SH 52 BRT-L East of I-25 south of SH 52	Screened. Not Reasonable. Site would require rebuilding SH 52 would be more than double the cost of other sites. Site has wetlands impacts.	Screened. Not Practicable. Site would require rebuilding SH 52 would be more than double the cost of other sites. Site has wetlands impacts. Site has wetlands impacts.
I-25 and SH 52 BRT-M East of I-25 and south of SH 52	Retained. However, site impacts threatened and endangered species.	Retained. However, site impacts threatened and endangered species.
I-25 and SH 52 BRT-N East of I-25 south of SH 52	Retained. However, site impacts threatened and endangered species.	Retained. However, site impacts threatened and endangered species.
I-25 and State Highway 7		
I-25 and SH 7 BRT-A West of I-25 and north of SH 7	Retained. However, site has conflict with ditch.	Retained. However, site has conflict with ditch.
I-25 and SH 7 BRT-B West of I-25 and north of SH 7	Retained. However, site has conflict with ditch.	Retained. However, site has conflict with ditch.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
I-25 and State Highway 7 (cont'd)		
I-25 and SH 7 BRT-C West of I-25 and south of SH 7	Retained. Included in Package B because this site does not have the concerns regarding ditch conflicts, local plans, or acquisition of buildings of the other sites.	Retained. Included in Package B because this site does not have the concerns regarding ditch conflicts, local plans, or acquisition of buildings of the other sites. This site does not contain wetlands.
I-25 and SH 7 BRT-D West of I-25 and south of SH 7	Screened. Not Reasonable. Site does not meet engineering requirements because platform would not be located adjacent to parking.	Screened. Not Practicable. Site does not meet engineering requirements because platform would not be located adjacent to parking, so it is not logistically possible.
I-25 and SH 7 BRT-E East of I-25 and north of SH 7	Retained. However, site is not compatible with local plans.	Retained. However, site is not compatible with local plans.
I-25 and SH 7 BRT-F East of I-25and north of SH 7	Retained. However, site has conflict with ditch and would require reconstruction of interchange.	Retained. However, site has conflict with ditch and would require reconstruction of interchange.
I-25 and SH 7 BRT-G South of SH 7 between I-25 and Washington St.	Retained. However, site would require acquisition of new buildings.	Retained. However, site would require acquisition of new buildings.
I-25 and SH 7 BRT-H South of SH 7 between I-25 and Washington St.	Screened. Retained. However, site would require acquisition of new buildings.	Retained. However, site would require acquisition of new buildings.
I-25 and SH 7 BRT-I South of SH 7 between I-25 and Washington St.	Retained. However, site require acquisition of new buildings.	Retained. However, site would require acquisition of new buildings.
I-25 and SH 7 BRT-J South of SH 7 between I-25 and Washington St.	Screened. Not Reasonable. Site conflicts with traffic operations of E-470 so is not technically feasible.	Screened. Not Practicable. Not logistically feasible. Site conflicts with traffic operations of E-470, so is not feasible.
West Greeley		
US 34 and 83rd Ave. BRT-A North of US Business 34 and west of 83rd Ave.	Retained. However, site zoning is not compatible.	Retained. However, site zoning is not compatible.
US 34 and 83rd Ave. BRT-B South of US Business 34 and west of 83rd Ave.	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.
US 34 and 83rd Ave. BRT-C North of US Business 34 and east of 83rd Ave.	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.
US 34 and 83rd Ave. BRT-D South of US Business 34 and east of 83rd Ave.	Retained. Included in Package B because this site does not have the concerns with wetlands or local plans of the other sites.	Retained. Included in Package B because this site does not have the concerns with wetlands or local plans of the other sites. This site does not contain wetlands.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
US 34 and SH 257		
US 34 and SH 257 BRT-A South of US 34 and west of SH 257	Retained. Included in Package B because it serves the need as an existing park and ride.	Retained. Included in Package B because it serves the need as an existing park and ride. This site does not contain wetlands.
US 34 and SH 257 BRT-B South of US 34 and east of SH 257	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.
US 34 and SH 257 BRT-C South of US 34 and east of SH 257	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.
Greeley Downtown Transfer Center		
8th Ave. and 8th St. CB-A North of 7th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-B North of 8th Street and west of US 85	Retained.	Retained. This site does not contain wetlands.
8th Ave. and 8th St. CB-C North of 9th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-D North of 10th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-D North of 10th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-E North of 7th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.

Table 5-5 Package B – Station Site Evaluation Bus Rapid Transit on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Greeley Downtown Transfer Center (cont'd)		
8th Ave. and 8th St. CB-F North of 8th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-G North of 9th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-H North of 9th St. and east of US 85	Screened. Not Reasonable Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-I North of 9th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. CB-J North of 10th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Avenue and 8th Street CB-K North of 10th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.

RCRA SQG .....Resource Conservation and Recovery Act Small Quantity Generator
LUST .....Leaking Underground Storage Tank
UST .....Underground Storage Tank
ERNS.....Emergency Response Notification System
Co Trust .....Complaint sites with no known responsible party

Table 5-6 summarizes the station screening evaluation of express bus service on I-25, Harmony Road, and US 34.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
South Fort Collins Transit Center		
US 287 and Harmony Rd BRT-A West of US 287 and south of Harmony Rd.	Retained.	Retained. This site does not contain wetlands.
Harmony Road and Timberline		
Harmony Rd. and Timberline Rd. CB-A North of Harmony Rd. and west of Timberline Rd.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners.	Retained. However, site would require the purchase of 10+ parcels, impacting multiple property owners..
Harmony Rd. and Timberline Rd. CB-B South of Harmony Rd. and west of Timberline Rd.	Retained. Included in the Preferred Alternative because this site does not have the concerns with multiple property owner impacts of the other site.	Retained. Included in the Preferred Alternative because this site does not have the concerns with multiple property owner impacts of the other site. This site does not contain wetlands.
Harmony Road and Timberline CB-C North of Harmony Rd. and east of Timberline Rd.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.
Harmony Rd. and Timberline CB-D South of Harmony Rd. and east of Timberline Rd.	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because site location would require out of direction local bus movement.	Screened. Not Practicable. Does not meet purpose and for improved mobility because site location would require out of direction local bus movement.
Harmony Rd. and Timberline Rd. CB-E South of Harmony Rd. and west of Timberline Road	Retained. Included in the Preferred Alternative because this site does not have the concerns with multiple property owner impacts of the other site.	Retained. Included in the Preferred Alternative because this site does not have the concerns with multiple property owner impacts of the other site. This site does not contain wetlands.
I-25 and Harmony Road		
I-25 and Harmony Rd. Express Bus-A North of Harmony Road and west of I-25	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other site. Site is existing park and ride.	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other site. Site is existing park and ride. This site does not contain wetlands.
I-25 and Harmony Rd. Express Bus-B North of Harmony Road and west of I-25	Retained. However, site has hazardous materials concerns; 1 site within 100 ft. (ERNS).	Retained. However, site hazardous materials concerns; 1 site within 100 ft. (ERNS).

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
I-25 and Harmony Road (cont'd)		
I-25 and Harmony Rd. Express Bus-C North of Harmony Rd. and west of I-25	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other site. Site is adjacent to Site A.	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other site. Site is adjacent to Site A. This site does not contain wetlands.
I-25 and Harmony Rd. Express Bus-D North of Harmony Rd. and west of I-25	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other site. Site is adjacent to Site A.	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other site. Site is adjacent to Site A. This site does not contain wetlands.
Windsor		
I-25 and SH 392 Express Bus A North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 Express Bus-B North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 Express Bus-C North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 Express Bus-D North of SH 392 and west of I-25	Retained. However, site has threatened and endangered species.	Retained. However, site has threatened and endangered species.
I-25 and SH 392 Express Bus–E South of SH 392 and west of I-25	Retained. However, site has threatened and endangered species and impacts wetlands.	Retained. However, site has threatened and endangered species and impacts wetlands.
I-25 and SH 392 Express Bus-F South of SH 392 and west of I-25	Retained. However, site is not in close proximity to residential areas.	Retained. However, site is not in close proximity to residential areas.
I-25 and SH 392 Express Bus-G South of SH 392 and west of I-25	Retained. However, site is not in close proximity to residential areas.	Retained. However, site is not in close proximity to residential areas.
I-25 and SH 392 Express Bus-H North of SH 392 and west of I-25	Retained. However, site is not in close proximity to residential areas.	Retained. However, site is not in close proximity to residential areas.
I-25 and SH 392 Express Bus-I North of SH 392 and west of I-25	Retained. However, site is not in close proximity to residential areas.	Retained. However, site is not in close proximity to residential areas.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Windsor (cont'd)		
I-25 and SH 39 Express Bus-J North of SH 392 and west of I-25	Retained. However, site is not in close proximity to residential areas.	Retained. However, site is not in close proximity to residential areas..
I-25 and SH 392 Express Bus-K South of SH 392 and west of I-25	Retained. However, site would require building relocations.	Retained. However, site would require building relocations.
I-25 and SH 392 Express Bus-L South of SH 392 and west of I-25	Retained. However, site does not allow for potential expansion.	Retained. However, site does not allow for potential expansion.
I-25 and SH 392 Express Bus-M South of SH 392 and west of I-25	Retained. Included in the Preferred Alternative because this site does not have the concerns with distance from residential areas, threatened and endangered species, building relocations, expansion potential, or hazardous materials.	Retained. Included in the Preferred Alternative because this site does not have the concerns with distance from residential areas, threatened and endangered species, building relocations, expansion potential, or hazardous materials. This site does not contain wetlands.
I-25 and SH 392 Express Bus-N South of SH 392 and west of I-25	Retained. However, site has hazardous material concerns; 1 site within 100 ft. (RCRA-SQG).	Retained. However, site has hazardous material concerns; 1 site within 100 ft. (RCRA-SQG).
Crossroads Boulevard		
I-25 and Crossroads Blvd Express Bus-A North of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel. Site not compatible with local plans and has visual impacts.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel. Site not compatible with local plans and has visual impacts.
I-25 and Crossroads Blvd Express Bus-B North of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
I-25 and Crossroads Blvd Express Bus-C North of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
I-25 and Crossroads Blvd Express Bus-D North of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Crossroads Boulevard		
I-25 and Crossroads Blvd Express Bus-E North of Crossroads Blvd. and west of I-25	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).
I-25 and Crossroads Blvd Express Bus–F South of Crossroads Blvd. and west of I-25	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (LUST, UST).
I-25 and Crossroads Blvd Express Bus -H South of Crossroads Blvd. and west of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
I-25 and Crossroads Blvd Express Bus -I North of Crossroads Blvd. and east of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
I-25 and Crossroads Blvd Express Bus-J South of Crossroads Blvd. and east of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
I-25 and Crossroads Blvd Express Bus-K South of Crossroads Blvd. and east of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
I-25 and Crossroads Blvd Express Bus-L South of Crossroads Blvd. and east of I-25	Retained. However, site access requires new roadway infrastructure. Site not compatible with local plans and has visual impacts.	Retained. However, site access requires new roadway infrastructure. Site not compatible with local plans and has visual impacts.
I-25 and Crossroads Blvd Express Bus-M South of Crossroads Blvd. and west of I-25	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials, compatibility with local plans, or visual impacts of the other sites.	Retained. Included in the Preferred Alternative because this site does not have the concerns with hazardous materials, compatibility with local plans, or visual impacts of the other sites. This site does not contain wetlands.
I-25 and Crossroads Blvd Express Bus-N South of Crossroads Blvd. and west of I-25	Retained. However, site access requires new roadway infrastructure. Site has visual impacts.	Retained. However, site access requires new roadway infrastructure. Site has visual impacts.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Crossroads Boulevard (cont'd)		
I-25 and Crossroads Blvd Express Bus-O North of Crossroads Blvd. and east of I-25	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because bus access requires out-of-direction travel.
Berthoud		
I-25 and SH 56/60 Express Bus-A South of US 60 and west of I-25	Retained. However, site has visual impact s and is not compatible with Berthoud's I-25 Land Use Plan.	Retained. However, site has visual impacts and is not compatible with Berthoud's I-25 Land Use Plan.
I-25 and SH 56/60 Express Bus-B South of US 60 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 56/60 Express Bus-C South of US 60 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 56/60 Express Bus-D South of US 60 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 56/60 Express Bus -E South of US 60 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 56/60 Express Bus-F South of US 60 and east of I-25	Retained. However, site impacts wetlands. Site is not compatible Berthoud's I-25 Land Use Plan.	Screened. Site impacts wetlands.
I-25 and SH 56/60 Express Bus-G South of US 60 and east of I-25	Screened. Not Reasonable. Site impacts wetlands. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site impacts wetlands
I-25 and SH 56/60 Express Bus-H South of US 60 and east of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Berthoud (cont'd)		
I-25 and SH 56/60 Express Bus-I South of US 60 and east of I-25	Screened. Not Reasonable. Site impacts wetlands. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site impacts wetlands.
I-25 and SH 56/60 Express Bus-J South of US 60 and east of I-25	Screened. Not Reasonable. Site impacts wetlands. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site impacts wetlands.
I-25 and SH 56/60 Express Bus-K South of US 60 and west of I-25	Screened. Not Reasonable. Site impacts wetlands. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site impacts wetlands
I-25 and SH 56/60 Express Bus-L North of US 56 and west of I-25	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps. Site impacts wetlands.	Screened. Site impacts wetlands
I-25 and SH 56/60 Express Bus-M North of US 56 and west of I-25	Retained. In conjunction with Site P, included in the Preferred Alternative because this site does not have the concerns with	Retained. In conjunction with Site P, included in the Preferred Alternative because this site does not have the concerns with This site does not contain wetlands.
I-25 and SH 56/60 Express Bus-N North of US 56 and east of I-25	Screened. Not Reasonable. Site impacts wetlands. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site impacts wetlands
I-25 and SH 56/60 Express Bus-O North of US 56 and east of I-25	Screened. Not Reasonable. Site impacts wetlands. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Site impacts wetlands.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Berthoud (cont'd)		
I-25 and SH 56/60 Express Bus-P North of US 56 and east of I-25	Retained. In conjunction with Site P, included in the Preferred Alternative because this site does not have the concerns with	Retained. In conjunction with Site P, included in the Preferred Alternative because this site does not have the concerns with This site does not contain wetlands.
Firestone		
I-25 and SH 119 Express Bus -A West of I-25 and north of US 119	Retained. However, site has hazardous materials concerns; 5 sites within 100 ft. (LUST, ERNS, RCRA-SQG).	Retained. However, site has hazardous materials concerns; 5 sites within 100 ft. (LUST, ERNS, RCRA-SQG).
I-25 and SH 119 Express Bus –B West of I-25 and south of US 119	Retained. In conjunction with Site H, included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other sites.	Retained. In conjunction with Site H, included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other sites. This site does not contain wetlands.
I-25 and SH 119 Express Bus -C West of I-25 and south of US 119	Retained. However, site has hazardous materials concerns; 15 sites within 100 ft. (ERNS, RCRA-SQG, UST, LUST, CoTrust).	Retained. However, site has hazardous materials concerns; 15 sites within 100 ft. (ERNS, RCRA-SQG, UST, LUST, CoTrust).
I-25 and SH 119 Express Bus-D West of I-25 and south of US 119	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps. There is no existing roadway to site.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 119 Express Bus-E East of I-25 and north of US 119	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 119 Express Bus-F East of I-25 and north of US 119	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 119 Express Bus-G East of I-25 and north of US 119	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (UST, LUST).	Retained. However, site has hazardous materials concerns; 2 sites within 100 ft. (UST, LUST).

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Firestone (cont'd)		
I-25 and SH 119 Express Bus-H East of I-25 and south of US 119	Retained. In conjunction with Site B, included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other sites.	Retained. In conjunction with Site B, included in the Preferred Alternative because this site does not have the concerns with hazardous materials of the other sites. This site does not contain wetlands.
I-25 and SH 119 Express Bus-I East of I-25 and south of US 119	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 119 Express Bus-J East of I-25 and south of US 119	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
Frederick/Dacono		
I-25 and SH 52 Express Bus–A West of I-25 and north of SH 52	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 52 Express Bus-B West of I-25 and north of SH 52	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps. Site zoning is not compatible.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 52 Express Bus-C West of I-25 and north of SH 52	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 52 Express Bus-D West of I-25 and north of SH 52	Retained. In conjunction with Site K, included in the Preferred Alternative because this site does not have the concerns	Retained. In conjunction with Site K, included in the Preferred Alternative because this site does not have the concerns This site does not contain wetlands.
I-25 and SH 52 Express Bus-E West of I-25 and south of SH 52	Retained. However, site would require acquisition of numerous commercial buildings.	Retained. However, site would require acquisition of numerous commercial buildings.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Frederick/Dacono (cont'd)		
I-25 and SH 52 Express Bus-F West of I-25and South of SH 52	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 52 Express Bus-G West of I-25 and south of SH 52	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 52 Express Bus-H East of I-25 and north of SH 52	Retained. However, site has conflict with ditch.	Retained. However, site has conflict with ditch.
I-25 and SH 52 Express Bus-I East of I-25 and north of SH 52	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 52 Express Bus-J East of I-25 and north of SH 52	Screened. Not Reasonable. Not technically feasible because frontage road impedes access to slip ramps.	Screened. Not Practicable. Not technically feasible because frontage road impedes access to slip ramps.
I-25 and SH 52 Express Bus-K East of I-25 and north of SH 52	Retained. In conjunction with Site D, included in the Preferred Alternative because this site does not have the concerns with acquisition of buildings, ditch conflicts, wetlands, or threatened and endangered species of the other sites.	Retained. In conjunction with Site D, included in the Preferred Alternative because this site does not have the concerns with acquisition of buildings, ditch conflicts, wetlands, or threatened and endangered species of the other sites. This site does not contain wetlands.
I-25 and SH 52 Express Bus-L East of I-25 south of SH 52	Retained. However, site impacts wetlands.	Retained. However, site impacts wetlands.
I-25 and SH 52 Express Bus-M East of I-25 and south of SH 52	Retained. However, site impacts threatened and endangered species.	Retained. However, site threatened and endangered species.
I-25 and SH 52 Express Bus-N East of I-25 south of SH 52	Retained. However, site impacts threatened and endangered species.	Retained. However, site impacts threatened and endangered species.
I-25 and State Highway 7		
I-25 and SH 7 Express Bus-A West of I-25 and north of SH 7	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
I-25 and State Highway 7 (cont'd)		
I-25 and SH 7 Express Bus-B West of I-25 and north of SH 7	Retained. However, site has conflict with ditch. Site is not compatible with the City and County of Broomfield's 2005 Comprehensive Plan Land Use Map.	Retained. However, site has conflict with ditch. Site is not compatible with local plans.
I-25 and SH 7 Express Bus-C West of I-25 and south of SH 7	Retained. In conjunction with Site G, included in the Preferred Alternative because this site does not have the concerns with	Retained. In conjunction with Site G, included in the Preferred Alternative because this site does not have the concerns with This site does not contain wetlands.
I-25 and SH 7 Express Bus-D West of I-25 and south of SH 7	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 7 Express Bus-E East of I-25 and north of SH 7	Screened. Site is not compatible with the City and County of Broomfield's 2005 Comprehensive Plan Land Use Map.	Screened. Not Practicable. Site not compatible with local plan.
I-25 and SH 7 Express Bus-F East of I-25and north of SH 7	Retained. However, site has conflict with ditch. Site is not compatible with the City and County of Broomfield's 2005 Comprehensive Plan Land Use Map.	Retained. However, site has conflict with ditch. Site is not compatible with local plans.
I-25 and SH 7 Express Bus-G South of SH 7 between I-25 and Washington St.	Retained. In conjunction with Site C, included in the Preferred Alternative because this site does not have the concerns with	Retained. In conjunction with Site C, included in the Preferred Alternative because this site does not have the concerns with This site does not contain wetlands.
I-25 and SH 7 Express Bus-H South of SH 7 between I-25 and Washington St.	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
I-25 and SH 7 Express Bus-I South of SH 7 between I-25 and Washington St.	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps.	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
I-25 and State Highway 7 (cont'd)		
I-25 and SH 7 Express Bus-J South of SH 7 between I-25 and Washington St.	Screened. Not Reasonable. Not technically feasible because platform would not be adjacent to parking due to slip ramps located at interchange on and off- ramps	Screened. Not Practicable. Site is not logistically possible because platform would not be located adjacent to parking.
West Greeley		
US 34 and 83rd Ave Express Bus-A North of US Business 34 and west of 83rd Ave.	Retained. However, site zoning is not compatible.	Retained. However, site does not meet zoning.
US 34 and 83rd Ave Express Bus-B South of US Business 34 and west of 83rd Ave.	Retained. However, site impacts wetlands.	Screened. Site impacts wetlands.
US 34 and 83rd Ave Express Bus-C North of US Business 34 and east of 83rd Ave.	Retained. However, site impacts wetlands.	Screened. Site impacts wetlands.
US 34 and 83rd Ave. Express Bus-D South of US Business 34 and east of 83rd Ave.	Retained. Included in the Preferred Alternative because this site does not have the concerns with zoning compatibility or wetlands of the other sites.	Retained. Included in the Preferred Alternative because this site does not have the concerns with zoning compatibility or wetlands of the other sites. This site does not contain wetlands.
US 34 and SH 257		
US 34 and SH 257 Express Bus-A South of US 34 and west of SH 257	Retained. Included in the Preferred Alternative because as an existing park and ride it serves the need.	Retained. Included in the Preferred Alternative because as an existing park and ride it serves the need. This site does not contain wetlands.
US 34 and SH 257 Express Bus-B South of US 34 and east of SH 257	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.
US 34 and SH 257 Express Bus-C South of US 34 and east of SH 257	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.	Screened. A new site is unnecessary, since Site A, an existing park and ride, serves the need.
Greeley Downtown Transfer Center		
8th Ave. and 8th St. Express Bus-A North of 7th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Greeley Downtown Transfer Center (cont'd)		
8th Ave. and 8th St. Express Bus-B North of 8th St. and west of US 85	Retained.	Retained. This site does not contain wetlands.
8th Ave. and 8th St. Express Bus-C North of 9th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-D North of 10th St. and west of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-E North of 7th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-F North of 8th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-G North of 9th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-H North of 9th St.and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility cause it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-I North of 9th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.
8th Ave. and 8th St. Express Bus-J North of 10th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.

Table 5-6 Preferred Alternative – Station Site Evaluation Express Bus on I-25 (cont'd)

Station/Stop Name and Location	NEPA Screening Summary	USACE Practicability Summary
Greeley Downtown Transfer Center (cont'd)		
8th Ave. and 8th St. Express Bus -K North of 10th St. and east of US 85	Screened. Not Reasonable. Does not meet purpose and need for improved mobility because it does not connect to the Greeley Downtown Transfer Center.	Screened. Not Practicable. Does not meet purpose and for improved mobility because it does not connect to the Greeley Downtown Transfer Center.

RCRA SQG..... Resource Conservation and Recovery Act Small Quantity Generator
LUST..... Leaking Underground Storage Tank
UST..... Underground Storage Tank
ERNS..... Emergency Response Notification System
Co Trust Complaint sites with no known responsible party

5.2.3 Maintenance Facility Sites

Maintenance facility locations for both bus and rail were developed according to the following criteria:

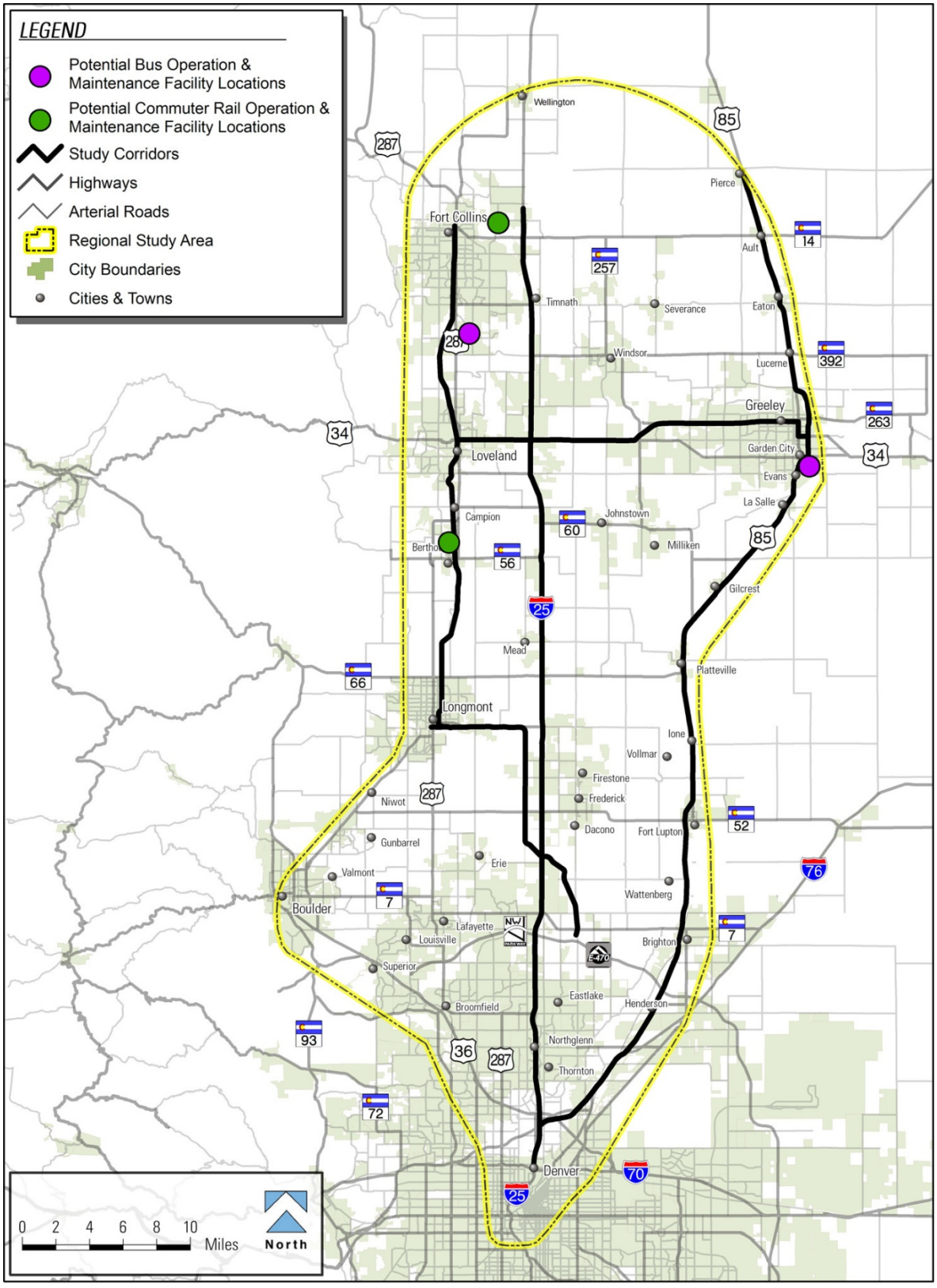
- Location (proximity to service area)
- Configuration (shape)
- Zoning / use
- Availability of utilities
- Size (acres)
- Topography
- Access
- Environmental constraints

After some candidate sites were evaluated, additional screening was conducted to evaluate:

- Does the site limit non-revenue service?
- How well does the site minimize the number of property acquisitions?
- Is there committee and stakeholder support?

As a result of the screening, two rail maintenance facility sites (Vine and Timberline in Fort Collins, US 287 and CR 46 in Berthoud) and two bus facility sites (Portner Road and Trilby in Fort Collins, 31st Street and 1st Avenue in Greeley) were selected for further analysis. **Figure 5-2** depicts potential maintenance facility locations that were evaluated in this EIS.

Figure 5-2 Maintenance Facility Locations Being Evaluated



6.0 ALTERNATIVES EVALUATED IN THE EIS

The following section describes the four packages (No-Action, Package A, Package B, and the Preferred Alternative) that were developed through the screening process. These packages are fully evaluated in the EIS. A detailed description of the screening and evaluation process used to identify these four packages is described in chapters 2 through 5 of this document.

Each of the build alternatives were developed with assumptions about current available technologies. In the future, as projects are implemented, FHWA and CDOT anticipated that newer technologies will be incorporated as appropriate. Examples of assumed technologies that could be upgraded include, by are not limited to, toll collection equipment, transit fare collection systems and tension cable barrier systems.

While interim improvements are not identified or evaluated in the EIS, it is possible for interim improvements to be made to improve traffic operations and/or safety as necessary until funding is available to implement the Preferred Alternative. Interim projects that are consistent with and support the decision could take place under the Final EIS ROD. Other interim projects would require a re-evaluation to revise or issue another ROD under the Final EIS or could be completed through a separate action which would require separate NEPA documentation. CDOT and FHWA will determine which course of action should be undertaken on a case by case basis.

6.1 NO-ACTION ALTERNATIVE

The No-Action Alternative is a conservative estimate of safety and maintenance improvements that will need to be constructed if the build alternatives are not built. It is presented for comparison with the build alternatives in accordance with NEPA requirements. This alternative could have environmental impacts and costs associated with it. It will be evaluated on the same set of criteria as, and compared against, the build alternatives. No-Action Alternative improvements are described below and graphically summarized in **Figure 6-1**. Typical cross sections for the No-Action Alternative are illustrated in **Figure 6-2** through **Figure 6-4**.

6.1.1 Maintenance of Structures

CDOT determines eligibility for bridge replacements or rehabilitations based on the structure's sufficiency rating as prescribed by AASHTO and FHWA. Sufficiency rating is the result of evaluating a bridge's fitness for the duty it performs. A rating of 100 is the maximum sufficiency rating a bridge can achieve. In general, a bridge with a sufficiency rating of 50 or less can be considered for replacement; and a bridge with a sufficiency rating of 51 to 80 can be considered for rehabilitation.

- For the purposes of determining which bridges within the North I-25 Corridor will require replacement or rehabilitation before 2035 the following assumptions were made:
    - Structures will lose one sufficiency rating point every two years due to normal deterioration for a total of twelve points over the next 24 years.
    - Structures with a projected sufficiency rating of 30 or less will be considered as requiring replacement before 2035.
    - Structures with a projected sufficiency rating of 31 to 50 will be considered as requiring major rehabilitation before 2035.
    - Structures with a projected sufficiency rating of 51 to 80 will be considered as requiring minor rehabilitations before 2035.
- Based on the above criteria, from US 36 to SH 1, no structures will require replacement, 4 structures will require major rehabilitation and 64 structures will require minor rehabilitation. These are listed in **Table 6-1.**

Table 6-1 No-Action Structure Replacement/Rehabilitation

Description	Year Built	Sufficiency Rating	Replace	Rehab Major	Rehab Minor
US 36 WB HOV Ramp over I-25 SB	1972	55.60		**	
US 36 WB Ramp over I-25 SB	1998	69.20		**	
US 36 EB over I-25	2009	83.40		**	
US 36 WB over I-25	1998	82.80		**	
84th Avenue over I-25	1959	10.80	*		
Pedestrian Underpass	1955	78.20			yes
88th Avenue over I-25	1972	53.30			yes
Thornton Pkwy over I-25	1985	80.00			
104th Avenue over I-25	2010	80.00			
Pedestrian Overpass	1976	N/A			
I-25 over Farmers Highline Canal	1954	55.00			yes
Community Center Drive over I-25	2004	68.20			yes
Wagon Rd HOV Ramp R	1992	77.80			yes
Pedestrian Underpass	1954	63.40			yes
120th Avenue (SH 128) over I-25	2006	76.80			yes
128th Avenue over I-25	2008	81.00			
I-25 over Big Dry Creek	1956	66.00			yes
136th Avenue over I-25	2004	77.90			yes
I-25 over Bull Canal	1956	74.00			yes
144th Avenue over I-25	2007	82.30			
Ramp F Flyover I-25 SB to E-470 EB	2003	87.20			
I-25 NB over Northwest Parkway (NWP)	2002	82.30			
I-25 SB over Northwest Parkway (NWP)	2003	82.30			
Ramp D Flyover E-470 WB to I-25 SB	2003	87.40			
Ramp H Flyover NWP EB to I-25 NB	2003	86.30			
Ramp B Flyover I-25 NB to NWP WB	2003	85.50			
160th Avenue over I-25	2003	87.40			
SH 7 over I-25	1987	82.10			
I-25 NB over WCR 6	2004	83.40			
I-25 SB over WCR 6	2004	85.40			
I-25 over Bull Canal	2003	80.00			
WCR 8 over I-25	2004	82.30			
Draw	2004	79.70			yes
I-25 NB over WCR 10	2004	74.70			yes
I-25 SB over WCR 10	2004	74.00			yes

* Denotes structures replaced under a separate action.
**Denotes structures studied under a separate action.

Table 6-1 No-Action Structure Replacement/Rehabilitation (cont'd)

Description	Year Built	Sufficiency Rating	Replace	Rehab Major	Rehab Minor
Draw	2004	56.50			yes
SH 52 over I-25	1999	81.40			
Channel MD-B under W Frontage Road Entrance Ramp	2000	85.30			
Channel MD-B under NW @ I-25/SH 52	2000	72.50			yes
Channel MD-B under E Frontage Road	2000	85.30			
Lower Boulder Ditch under I-25 & Frontage Roads	2000	57.50			yes
I-25 NB over WCR 20	2006	80.40			
I-25 SB over WCR 20	2006	80.40			
I-25 NB over SH 119	1998	82.90			
I-25 SB over SH 119	1998	85.50			
I-25 NB over St. Vrain Creek	2008	78.80			yes
I-25 SB over St. Vrain Creek	2008	82.30			
I-25 Service Road over St. Vrain Creek	1999	81.10			
I-25 NB over WCR 28	2008	60.00			yes
I-25 SB over WCR 28	2008	76.00			yes
SH 66 over I-25	2006	85.20			
I-25 NB over WCR 32	1961	77.20			yes
I-25 SB over WCR 32	1961	77.20			yes
WCR 34 over I-25	1961	69.70			yes
Draw	1961	67.00			yes
I-25 NB over GWRR	1961	79.00			yes
I-25 SB over GWRR	1961	67.70			yes
WCR 38 over I-25	1960	61.60			yes
I-25 NB over Access Road (Valley Dirt Riders)	1961	79.20			yes
I-25 SB over Access Road (Valley Dirt Riders)	1961	77.20			yes
I-25 NB over Little Thompson River	1961	80.80			
I-25 SB over Little Thompson River	1961	80.80			
I-25 Service Road over Little Thompson River	1938	N/A (historic)			
SH 56 over I-25	1961	53.30			yes
I-25 NB over WCR 46	1961	79.30			yes
I-25 SB over WCR 46	1962	77.20			yes

* Denotes structures replaced under a separate action.
**Denotes structures studied under a separate action.

Table 6-1 No-Action Structure Replacement/Rehabilitation (cont'd)

Description	Year Built	Sufficiency Rating	Replace	Rehab Major	Rehab Minor
I-25 NB over GWRR	1961	76.80			yes
I-25 SB over GWRR	1962	76.80			yes
SH 60 (East) over I-25	1962	66.70			yes
I-25 NB over LCR 14 (SH 60 West)	1962	81.70			
I-25 SB over LCR 14 (SH 60 West)	1962	79.20			yes
I-25 NB over LCR 16	1962	79.60			yes
I-25 SB over LCR 16	1962	79.60			yes
Draw	1961	33.00		yes	
Draw (Service Rd)	1941	48.50		yes	
I-25 NB over SH 402	1962	84.00			
I-25 SB over SH 402	1962	79.90			yes
LCR Underpass (Hillsboro Ditch Access Road)	1963	53.50			yes
I-25 NB over Big Thompson River	1962	81.30			
I-25 SB over Big Thompson River	1962	81.30			
I-25 Service Road over Big Thompson River	1942	82.40			
LCR 20E over I-25	1962	70.40			yes
GWRR over I-25	1962	N/A			
US 34 EB over I-25	1962	63.10			yes
US 34 WB over I-25	1962	63.10			yes
Greeley-Loveland Ditch	1947	80.10			
I-25 NB over UPRR	1965	78.30			yes
I-25 SB over UPRR	1965	78.30			yes
I-25 NB over Crossroads Blvd. (LCR 26 / Airport Dr)	1965	80.60			
I-25 SB over Crossroads Blvd. (LCR 26 / Airport Dr)	1965	69.60			yes
SH 392 over I-25	1965	59.80	*		
LCR 36 over I-25	1965	61.40			yes
Harmony Road (SH 68) over I-25	1999	81.70			
I-25 NB over Cache la Poudre River	1948	84.20			
I-25 SB over Cache la Poudre River	1965	64.10			yes
I-25 NB over BNSF Spur (CSRR)	1966	64.90			yes
I-25 SB over BNSF Spur (CSRR)	1966	84.20			

* Denotes structures replaced under a separate action.
**Denotes structures studied under a separate action.

Table 6-1 No-Action Structure Replacement/Rehabilitation (cont'd)

Description	Year Built	Sufficiency Rating	Replace	Rehab Major	Rehab Minor
Box Elder Creek I-25 W FR Road AR	2008	68.60			yes
Prospect Road over I-25	1966	52.90			yes
Lake Canal	1966	66.70			yes
Timnath Ditch	1966	66.70			yes
Box Elder Creek	1968	67.70			yes
SH 14 EB over I-25	1966	50.40			yes
SH 14 WB over I-25	1966	48.20		yes	
I-25 NB over BNSF	1966	81.70			
I-25 SB over BNSF	1966	81.70			
LCR 48 over I-25	1966	34.80		yes	
I-25 NB over Windsor Res. Canal Ditch	1950	84.60			
I-25 SB over Windsor Res. Canal Ditch	1966	84.60			
I-25 Service Road over Windsor Res. Canal Ditch	1966	65.40			yes
Brewery Road over Box Elder Creek Overflow	1985	83.70			
Mountain Vista Drive (Brewery Rd) over I-25	1985	87.40			
I-25 NB over Flood Drainage	1950	83.80			
Ramp to I-25 NB over Box Elder Creek Overflow	1985	79.80			yes
I-25 NB over Flood Drainage	1950	69.20			yes
Ramp to I-25 NB over Flood Drainage	1950	69.20			yes
I-25 Service Road over Flood Drainage	1950	84.40			
LCR 52 over I-25	1966	71.80			yes
I-25 NB over Larimer County Canal	1950	84.90			
I-25 SB over Larimer County Canal	1966	83.50			
I-25 Frontage Road over Larimer County Canal	1966	71.80			yes
I-25 Service Road over Larimer County Canal	1966	76.40			yes
LCR 58 over I-25	1966	65.00			yes
I-25 ML & Service Road over Box Elder Creek	1989	59.80			yes
SH 1 over I-25	1966	54.60			yes

* Denotes structures replaced under a separate action.
**Denotes structures studied under a separate action.

6.1.2 Maintenance of Pavement

Pavement north of SH 66 would need to be replaced by 2035. Replacement of the pavement is assumed to include milling and replacing the top 6 inches of pavement. This pavement maintenance/replacement is included and evaluated as part of the No-Action Alternative.

- **Table 6-2** summarizes the current pavement condition and action likely needed by 2035. Pavement north of SH 66 is currently rated as poor and fair; pavement between US 36 and 88th Avenue is currently rated fair. Based on these low ratings, replacement of the pavement is assumed to be needed by 2035 and is included in the No-Action Alternative. Replacement of the pavement is assumed to include milling and replacing the top six (6) inches of pavement.

Table 6-2 No-Action Pavement Replacement/Rehab

I-25 Segment	Length (Miles)	Pavement Condition	Replace/Rehab by 2035
US 36 to 88th Ave.	2	Fair	Yes
88th Ave. to Thornton Pkwy	¾	Good	No
Thornton Pkwy to E-470	8	Good	No
E-470 to SH 66	15	Good	No
SH 66 to US 34	14	Poor	Yes
US 34 to SH 1	14	Fair	Yes

Note: Segments with fair or poor pavement conditions as identified by CDOT are considered sub-standard.

6.1.3 Safety Considerations

Minor improvements would be necessary to address safety concerns along I-25. A small amount of improvement can be realized through the installation of traffic signals at ramp terminals that are currently unsignalized. This improvement is included in the No-Action Alternative at SH 1, Mountain Vista, SH 56, and WCR 34. At Prospect Road, widening the I-25 off-ramps is included to minimize queuing into the I-25 mainline.

A few locations along I-25 are considered to have particularly unsafe traffic operating conditions today or in 2035. Specifically, any location where ramp traffic backs up into the mainline in 2035 is expected to require some modifications in the No-Action Alternative. These locations include interchanges that currently have a single-lane ramp terminal and/or are unsignalized. Improvements would likely include widening the ramp terminal to provide an additional left or right turn lane, modifying the current signal timing or signalizing a stop-sign controlled ramp terminal. **Table 6-3** lists the interchange locations where minor improvements may be necessary to address safety concerns.

The US 34/I-25 interchange has been upgraded to address safety concerns as part of an interim separate action.

Table 6-3 No-Action Safety Upgrades

I-25 Interchange	Single-Lane Ramp Terminal?	Minor Safety Modifications Necessary?
US 36	No	No
84th Avenue	No	No
Thornton Parkway	No	No
104th Avenue	No	No
120th Avenue	No	No
136th Avenue	No	No
144th Avenue	No	No
E-470	No	No
SH 7	No	No
CR 8	No	No
SH 52	No	No
SH 119	No	No
SH 66	No	No
CR 34	Yes	Yes
SH 56	Yes	Yes
SH 60	Yes	No
CR 16	Yes	No
SH 402	No	separate action
US 34	No	separate action
Crossroads	Yes	No
SH 392	Yes	separate action
Harmony Road	No	No
Prospect	No	No
SH 14	No	No
CR 50	No	Yes
SH 1	Yes	Yes

Figure 6-1 No-Action Alternative

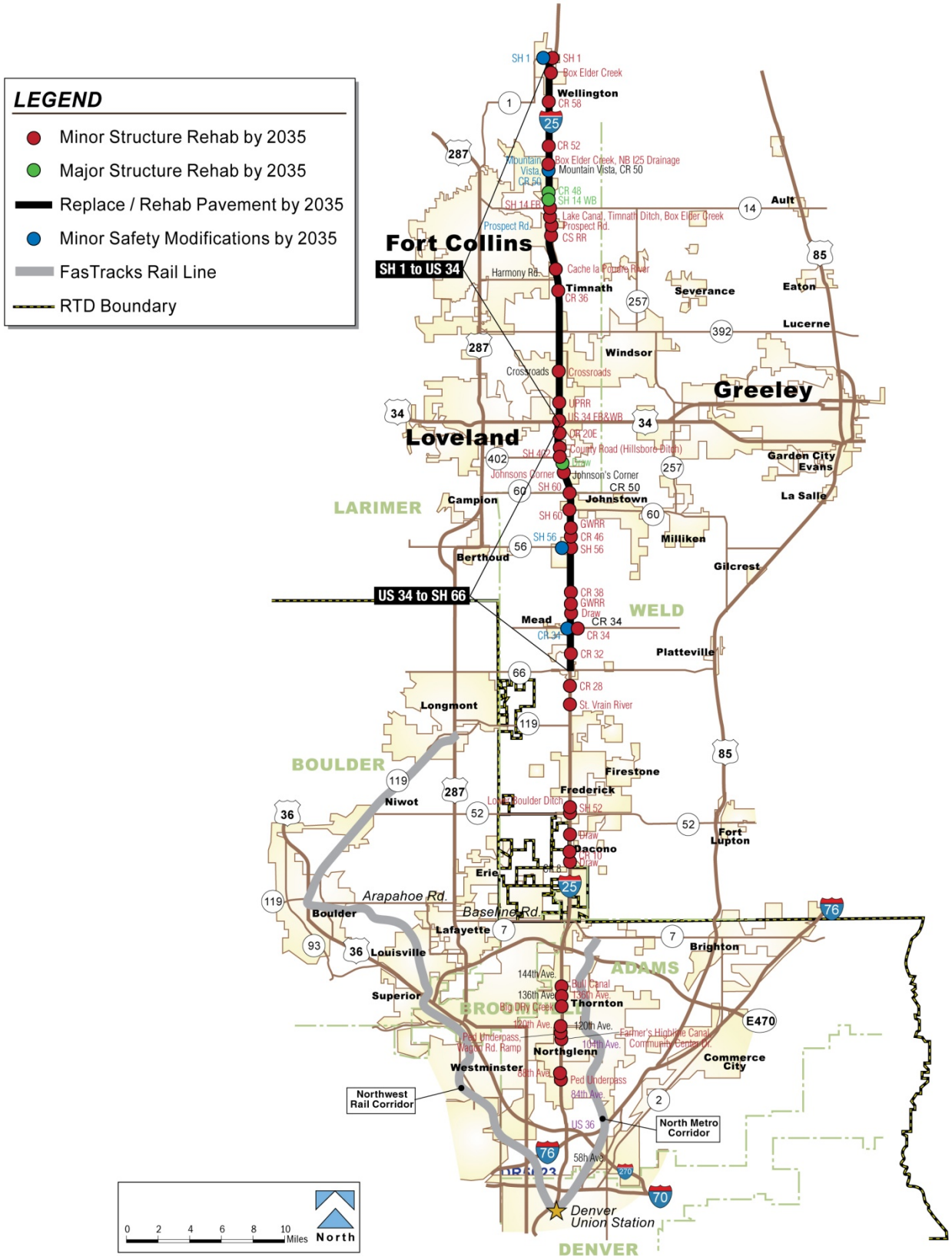


Figure 6-2 No-Action Alternative Typical I-25 Cross Section – SH 1 to SH 66

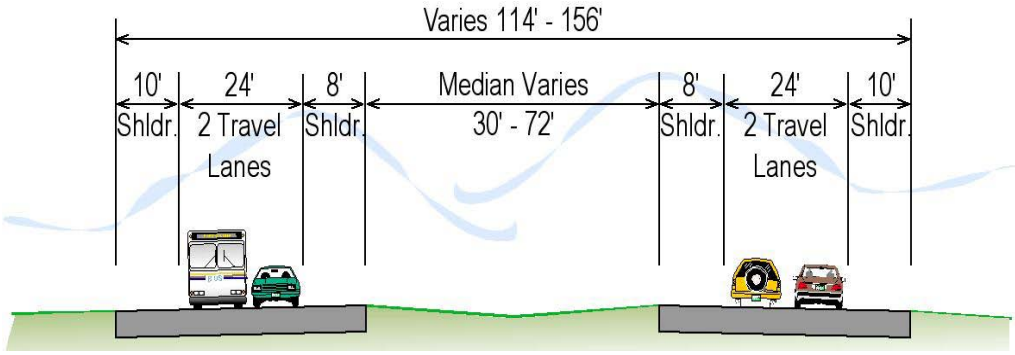


Figure 6-3 No-Action Alternative Typical I-25 Cross Section – SH 66 to SH 7

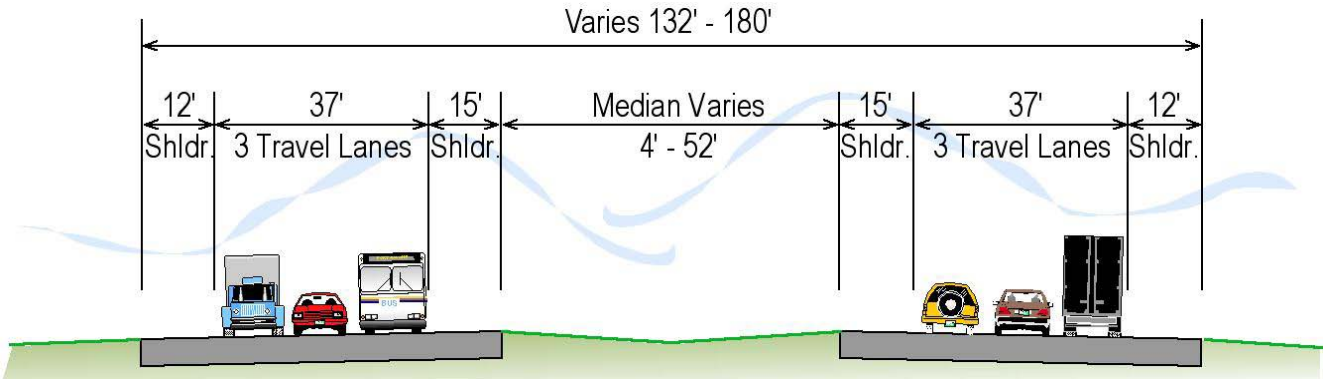
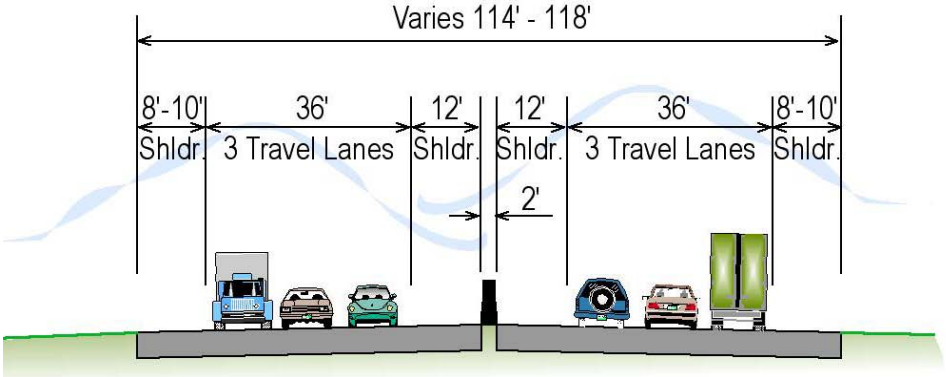


Figure 6-4 No-Action Alternative Typical I-25 Cross Section – South of SH 7



6.2 PACKAGE A

Figure 6-5 illustrates Package A. It includes new general purpose lanes, interchange reconstruction/upgrades, a commuter rail line, commuter bus service, feeder bus service, and congestion management measures. These are described in detail in the following sections. The *Package Concept Plans* (FHU and Jacobs, 2011b) illustrate the layout of Package A in more detail.

6.2.1 Package A New General Purpose Lanes

This package would add one additional general purpose lane from SH 14 to SH 66 for a six-lane cross section and from SH 52 to E-470 for an eight–lane cross section. North of SH 66, widening I-25 would include reconstructing the entire interstate cross section and rebuilding it to today's standards. This includes improving horizontal and vertical alignment, widening both the inside and outside shoulders, and reconstructing aging interchanges and structures. Design criteria were established by CDOT for the highway improvements. Design guidelines recommend avoiding use of median barrier where practical. Consistent with the existing wide median and rural setting, the design criteria for the proposed highway improvements includes a grass median for I-25 north of SH 66. South of SH 52, the interstate cross section has recently been rebuilt; additional widening would generally occur within the median in those locations. **Table 6-4** lists the interchange improvements included in Package A compared to No-Action Alternative.

Frontage roads along I-25 would be rebuilt approximately where they exist today. At the interchanges, frontage roads would be relocated east or west away from the ramp terminals to address storage and safety concerns at the intersections. Along the I-25 mainline, the frontage roads would be offset 40 feet, based on current design standards.

Typical I-25 cross sections are depicted in **Figures 6-6** through **6-12**. To maintain the ability to accommodate future (post 2035) transportation needs, a grass median would be maintained from SH 52 north. South of SH 52, where the densely urbanized areas abut I-25, Package A highway widening would occur toward the center using portions of the median. As a safety measure, a tension cable barrier would be included in all locations with an open median.

Avoidance and Minimization

Minor shifts in I-25 interchange ramp and frontage road horizontal alignments were used in conceptual design to minimize impacts to wetlands at the following locations:

- SH 14
- SH 392
- WCR 34
- Prospect Road
- LCR 16
- Harmony Road
- SH 56

I-25 horizontal alignment modifications were also made at SH 402 and SH 56 to improve safety. Minor modifications to the I-25 vertical alignment were implemented to improve safety at SH 56, SH 402 and LCR 16, and to avoid impacts to a historic ditch north of US 34.

Figure 6-5 Package A

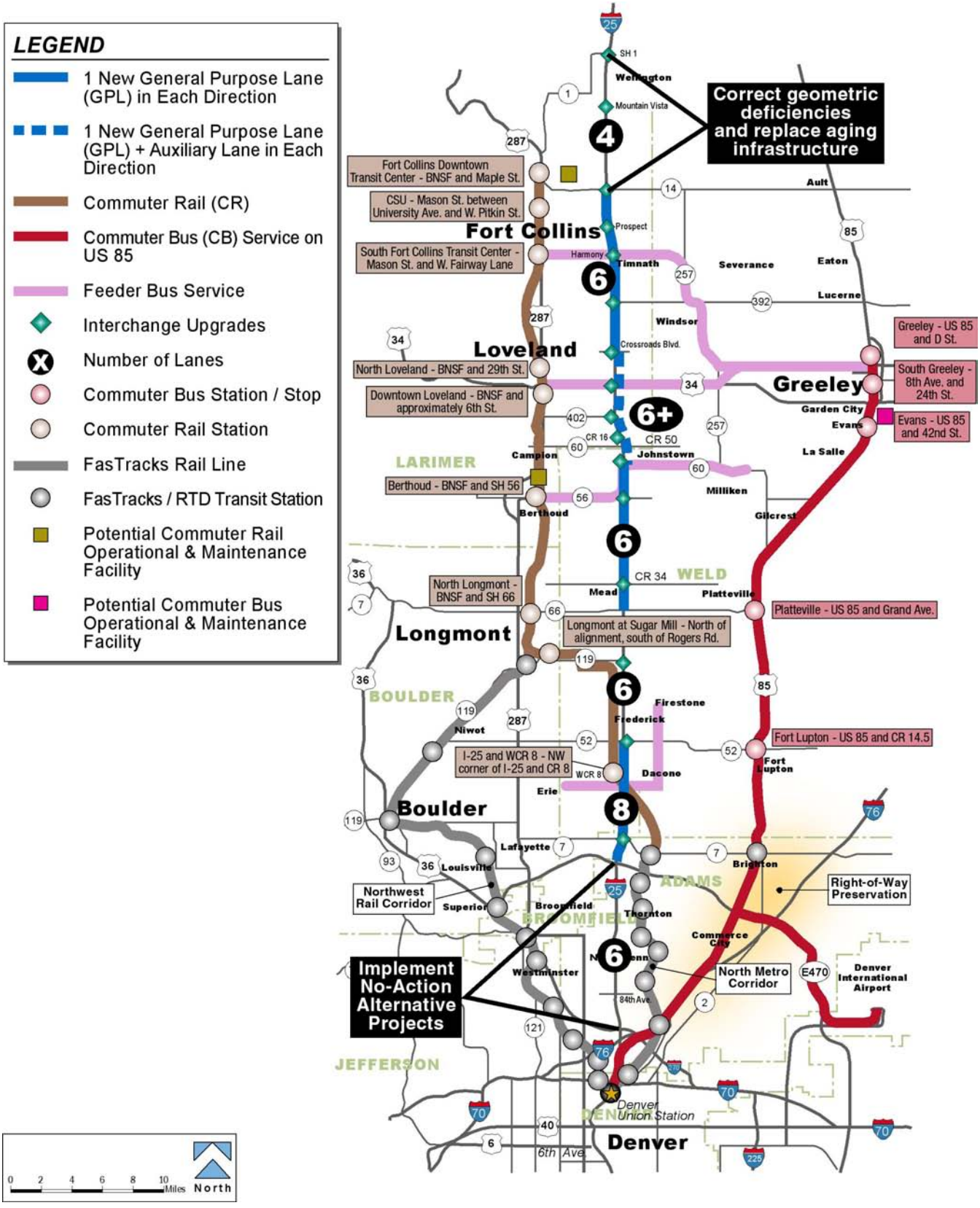


Figure 6-6 Package A Typical I-25 Cross Section – SH 1 to SH 14

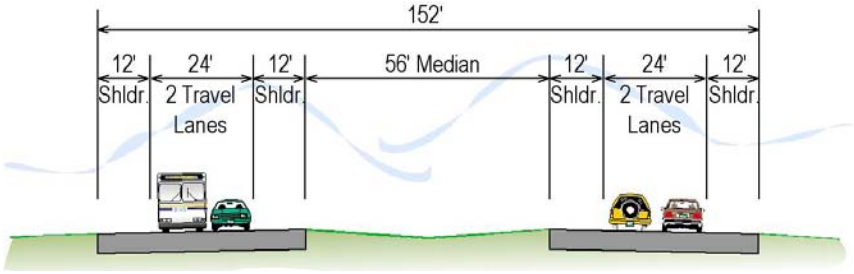


Figure 6-7 Package A Typical I-25 Cross Section – SH 14 to Crossroads Boulevard

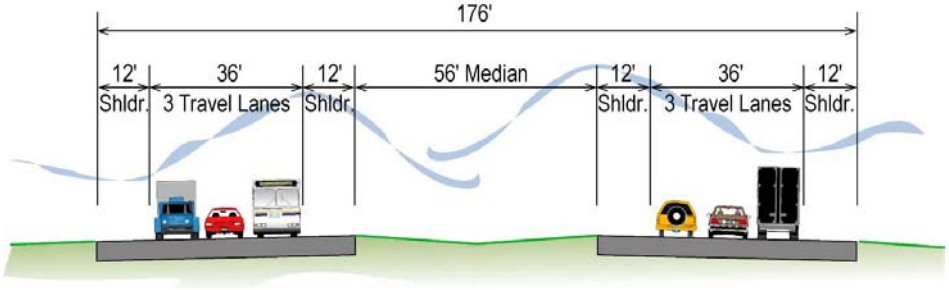


Figure 6-8 Package A Typical I-25 Cross Section – Crossroads Boulevard to SH 60

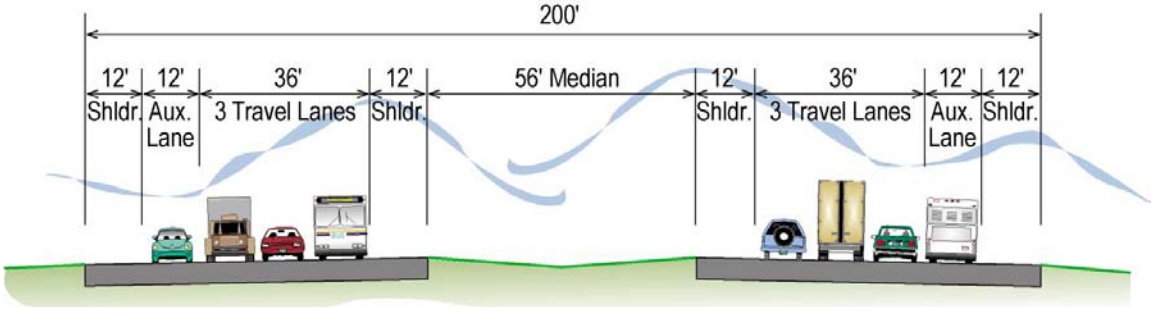


Figure 6-9 Package A Typical I-25 Cross Section – SH 60 to SH 66

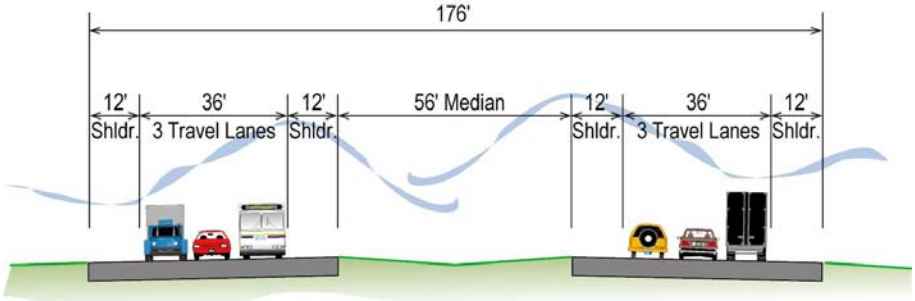


Figure 6-10 Package A Typical I-25 Cross Section (same as No-Action) – SH 66 to SH 52

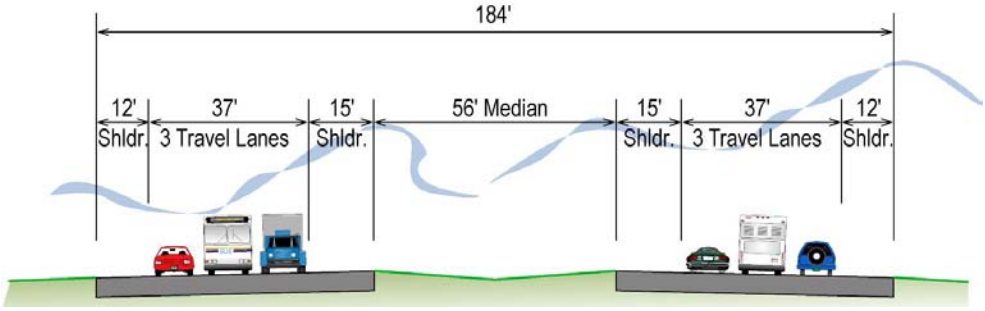


Figure 6-11 Package A Typical I-25 Cross Section – SH 52 to SH 7

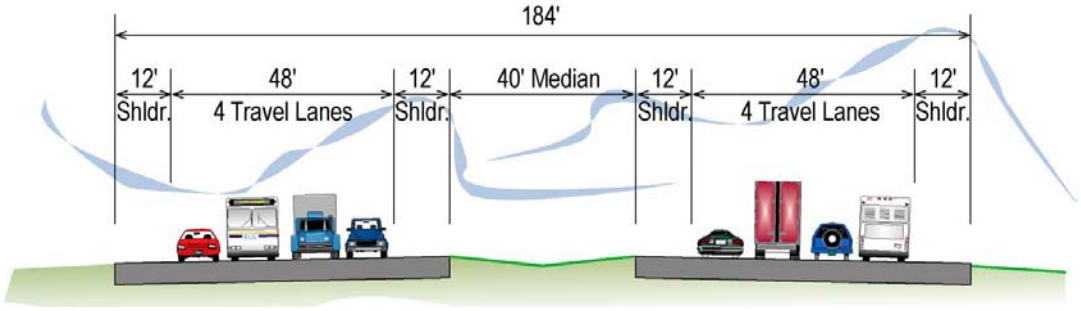
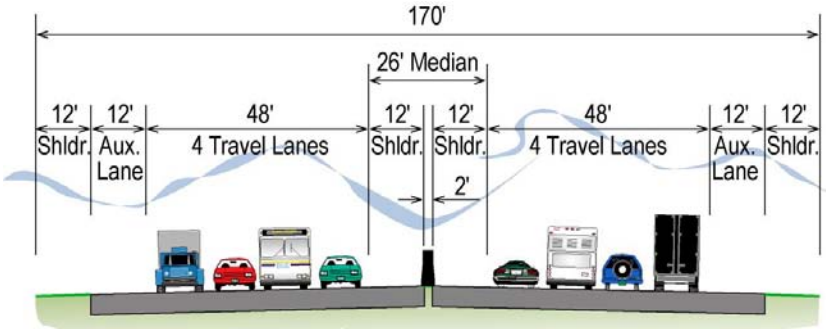


Figure 6-12 Package A Typical I-25 Cross Section –SH 7 to E-470



6.2.2 Package A Interchanges

A reconstructed diamond interchange that increases capacity and meets current design standards could accommodate projected traffic volumes at most existing interchange locations for the lowest cost. At locations where environmental considerations, traffic volumes, or property impacts were unfavorable for a typical diamond configuration, other configurations were identified. These are described below and illustrated in **Figures 6-13** through **6-18. Table 6-4** summarizes the interchange improvements associated with Package A. A more detailed description of the interchange configurations considered and the screening process is included in **Section 5.2.1** of this document. For detailed information about each interchange refer to the *Transportation Analysis Technical Report* (FHU and Jacobs, 2008, 2011c), available on request at CDOT Region 4 in Greeley.

Table 6-4 Package A Interchange Improvements Compared to No-Action

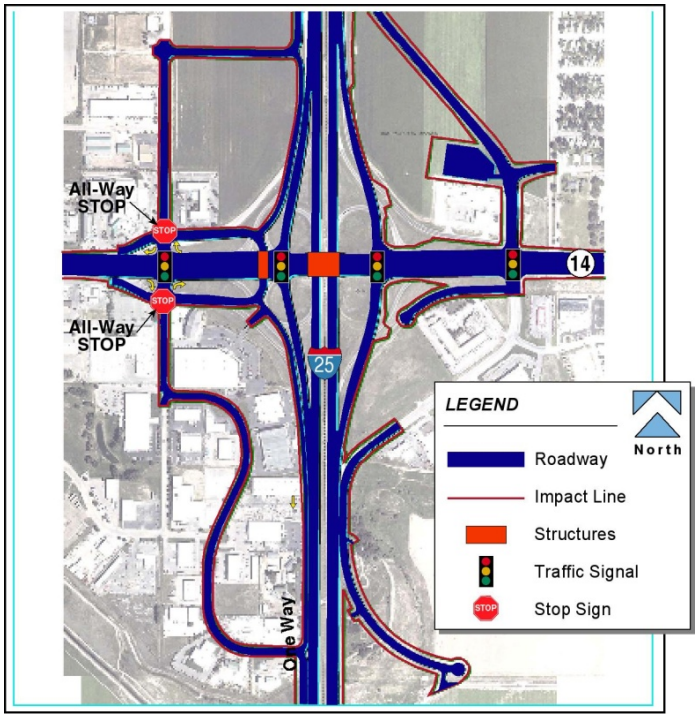
Existing Interchange Location	No-Action Configuration	Package A Improvement
SH 1	substandard diamond	reconstructed diamond
Mountain Vista	substandard diamond	reconstructed diamond
SH 14	substandard partial cloverleaf	reconstructed diamond
Prospect Road	substandard diamond	reconstructed diamond
Harmony Road	standard diamond	reconstructed diamond*
SH 392	reconstructed tight diamond	no improvement
Crossroads Boulevard	substandard diamond	reconstructed diamond
US 34	substandard partial cloverleaf	dual directional/diamond
SH 402	substandard diamond	reconstructed diamond
LCR 16	substandard off ramps	reconstructed diamond
SH 60	substandard diamond	reconstructed diamond
SH 56	substandard diamond	reconstructed diamond
WCR 34	substandard diamond	reconstructed diamond
SH 66	standard diamond	no improvement
SH 119	standard diamond	bridge widening
SH 52	standard diamond	bridge widening
WCR 8	standard diamond	reconstructed diamond
SH 7	standard diamond	reconstructed diamond
E-470	fully directional	no improvement
144th Avenue	standard diamond	no improvement
136th Avenue	standard diamond	no improvement
120th Avenue	standard diamond	no improvement
104th Avenue	standard diamond	no improvement
Thornton Parkway	standard diamond	no improvement
84th Avenue	standard diamond	no improvement

*Existing structure retained.

SH 14

An enhanced new diamond interchange with northbound to westbound triple left-turns would accommodate the projected 2030 traffic volumes. However, to minimize impacts to the properties in the southwest quadrant, special consideration for placement of the frontage roads along I-25 and along SH 14 was required. As shown in **Figure 6-13**, the southwest frontage road would be pulled in close to I-25 and restricted to one-way southbound movement. The SH 14 frontage road/I-25 west frontage road intersection just west of the southbound ramps would be grade-separated at SH 14. Though Stockton Avenue at SH 14 would be signalized, it would be restricted to right-in/right-out movement.

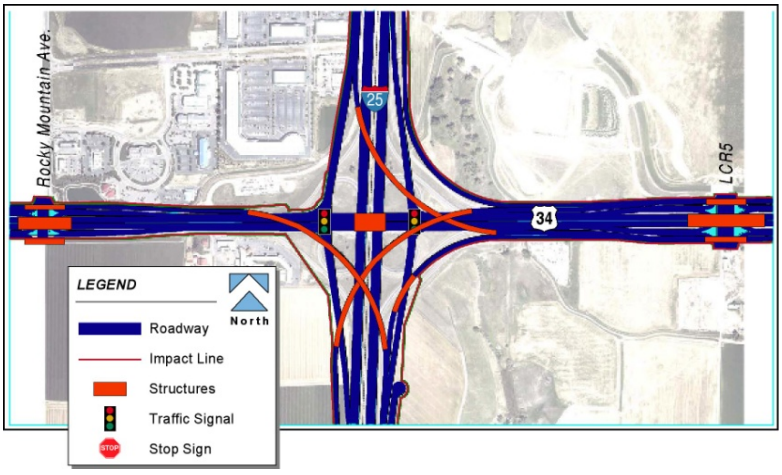
Figure 6-13 SH 14 Interchange



US 34

As the primary interchange access/egress point for Loveland and Greeley, projected volumes at this interchange exceed the volumes that can be handled by a typical diamond interchange. In order to achieve an acceptable level-of-service (LOS) and maintain access to the existing and rapidly growing commercial development centers at this interchange, a new dual directional/diamond interchange with single-point urban interchanges at adjacent intersections is proposed. Direct-connect ramps are planned for southbound-to-eastbound movement, northbound-to-westbound movement, and westbound-to-southbound movement. As shown in **Figure 6-14** these would provide access to trips destined to Loveland and Greeley. The eastbound-to-northbound flyover ramp was eliminated to avoid impacts to a historic property located south of US 34 and west of I-25. The diamond interchange would include dual left-turn lanes and exclusive right-turn lanes and would provide local access to the developments adjacent to the interchange.

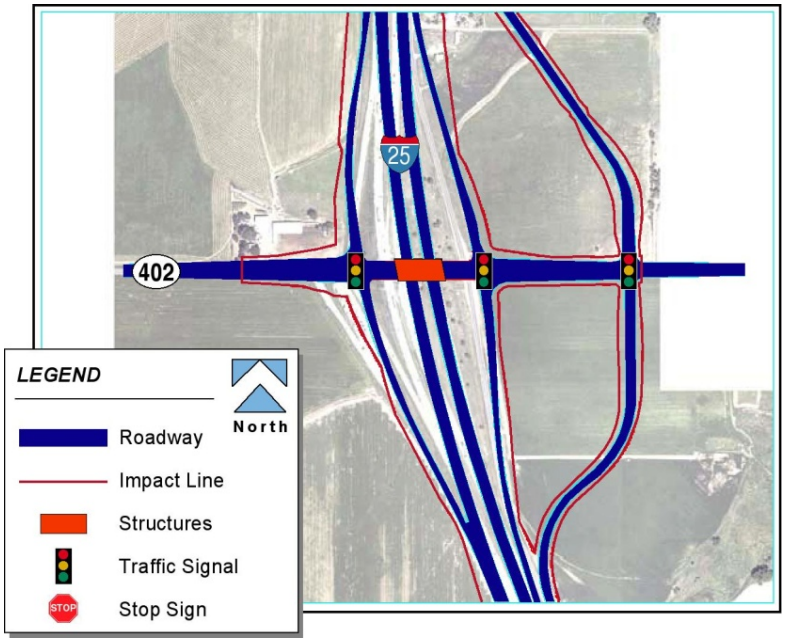
Figure 6-14 US 34 Interchange



SH 402

A new diamond interchange with additional lanes on the ramps at SH 402 would accommodate anticipated demand. This is shown in **Figure 6-15**. The interchange upgrade would also include reversing the grade separation between SH 402 and I-25. Today, I-25 is on a structure and passes over the top of SH 402. The proposed configuration reverses this so that SH 402 would pass over I-25. This reconfiguration would improve the vertical alignment and safety of I-25at this location.

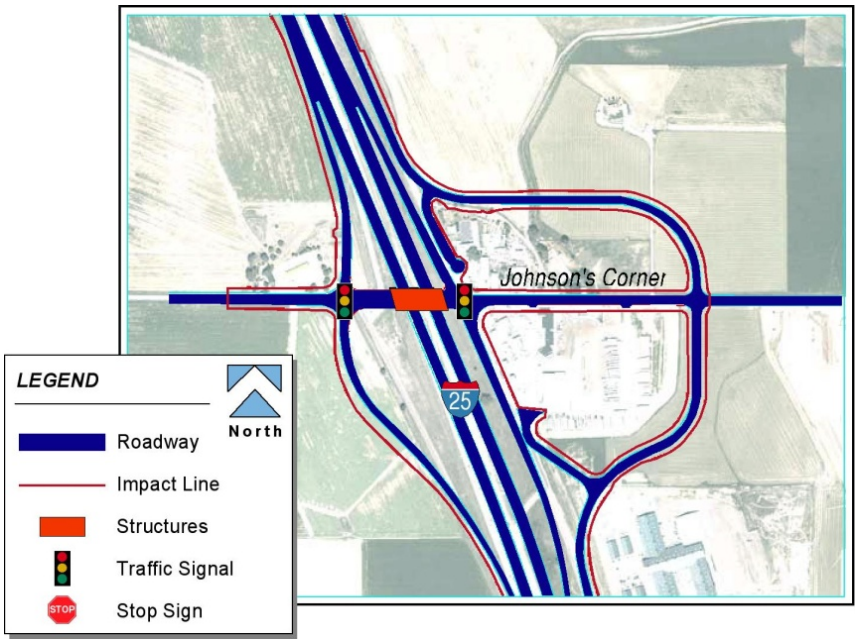
Figure 6-15 SH 402 Interchange



LCR 16

Similar to SH 402, the profile of LCR 16 would be modified to go over I-25, thereby improving the vertical alignment of I-25. In addition, on-ramps that are not included in today's configuration would be added to improve accessibility and operation at this interchange. This is shown in **Figure 6-16**.

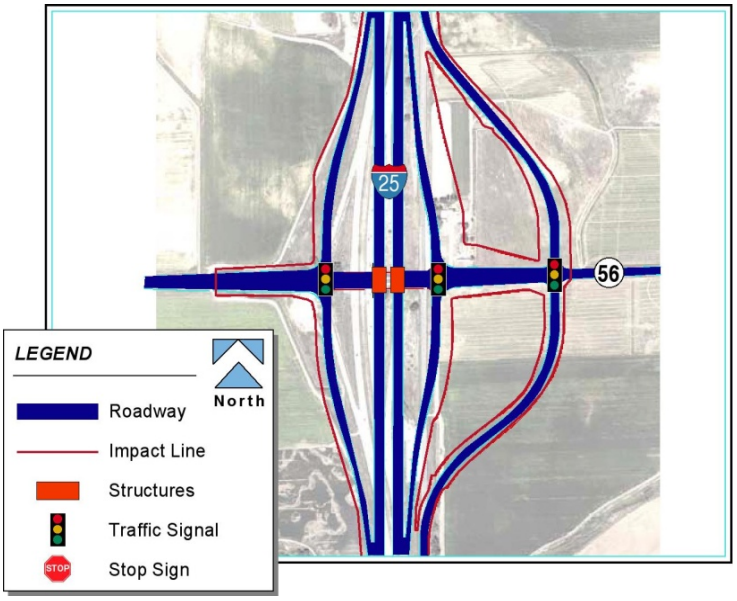
Figure 6-16 LCR 16 Interchange



SH 56

A new diamond interchange with additional lanes on the ramps at SH 56 would accommodate anticipated demand. While the design itself is fairly straightforward, this interchange upgrade also would include reversing the grade separation between SH 56 and I-25. Today, I-25 passes under SH 56. The proposed configuration would reverse this so that I-25 would pass over SH 56, as shown in **Figure 6-17**. This reconfiguration would improve the horizontal and vertical alignment and safety of I-25 at this location.

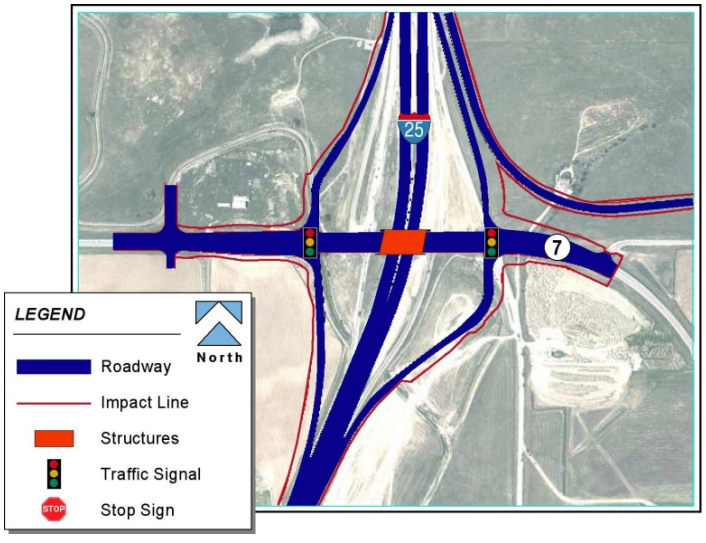
Figure 6-17 SH 56 Interchange



SH 7

The new SH 7 diamond interchange is depicted in **Figure 6-18**. The City and County of Broomfield and the City of Thornton have expressed a desire for a partial cloverleaf configuration (loop ramps for the westbound-to-southbound and eastbound-to-northbound movements) provided at this location. To accommodate this request, without substantially increasing the impacts or expenditure for this project, ramp terminal spacing has been increased to 1,150 feet. This spacing would allow local governments to modify this interchange to a partial cloverleaf design in the future without major reconstruction of the interchange. Evaluation conducted as part of the Final EIS indicated that a partial cloverleaf design would be needed to accommodate 2035 traffic. The partial cloverleaf configuration is included in the Preferred Alternative.

Figure 6-18 SH 7 Interchange



6.2.3 Package A Commuter Rail

Package A track design would be built to specifications for locomotive hauled coaches to be the most flexible in accommodating different rail vehicles. For planning evaluation purposes, diesel multiple units are assumed as a vehicle technology. In recognition that rail vehicle technology is evolving rapidly, vehicle technologies will be reassessed prior to implementation of North I-25 commuter rail. In this way, interoperability with FasTracks system will be maintained.

WHAT IS COMMUTER RAIL?

A passenger rail service that often operates within freight rail right-of-way and serves regional trips. It may use locomotives with passenger cars or self-propelled passenger cars, known as diesel multiple units. Commuter rail trains could be diesel-powered (most common) or electrically-powered.

This package includes a robust double track system for commuter rail to provide an estimate of the ridership potential along the corridor. Because Package A commuter rail includes a double track system, a parallel maintenance road would not be absolutely necessary. Maintenance access would be provided by the second track (see **Section 2.3.4.5** for discussion of the maintenance road included in the Preferred Alternative).

A regional transit operator has not yet been identified to operate the commuter rail service. CDOT has authority to operate commuter rail service. Funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit.

The commuter rail service would run every 30 minutes during the AM and PM peak periods when demand is highest and every hour in the off-peak periods. Hours of operation are assumed to be 4:00 AM to 1:30 AM. Service to Denver would travel through Longmont and along the FasTracks North Metro Corridor; a transfer would not be necessary. Every other North Metro train would operate to/from Fort Collins. To reach Boulder, northern Colorado riders would transfer to the Northwest Rail Corridor at the Sugar Mill station in Longmont.

While specific fares have not yet been identified, the typical national average commuter rail peak period fare is $0.22 per mile. Based on this rate, it would cost a rider about $14.00 one way to travel from the Fort Collins South Transit Center to Denver Union Station.

Fort Collins to Longmont

As part of Package A, a double-tracked commuter rail system would be developed from downtown Fort Collins at University Avenue and Maple Street along the BNSF right-of-way to 3rd Street in downtown Longmont, using the existing BNSF railroad track plus one new track. New commuter rail track would be added to the east of the existing freight track and both sets of tracks would be used by commuter rail and freight rail. On the alignment's northern end in Fort Collins from Mason Street and University Avenue to Mason Street and Maple Street, commuter rail service would be added to the existing single-track BNSF line.

An additional double-track segment would be constructed in Longmont between the Sugar Mill station and the proposed Northwest Rail Corridor end-of-line at 1st and Terry to allow

FasTracks proposed Northwest Rail Corridor service to be extended to the North I-25 rail corridor.

Avoidance and Minimization

Retaining walls were added along the east side of the commuter rail alignment to minimize impacts to wetlands along the corridor and avoid impacts to a historic structure north of Prospect Road in Fort Collins. The new second track was eliminated for a 500-foot segment of the corridor in Loveland to avoid the historic Loveland Depot and in a second location – adjacent to a historic residential property at 122 8th Avenue in Longmont. This results in bi-directional service along the existing single-track BNSF line near the proposed Loveland station and adjacent to the residential property in Longmont.

Longmont to Thornton

In addition, a new double track commuter rail line would be built from 3rd Street south and east to FasTracks North Metro Corridor end-of-line in Thornton. Nineteen alternatives were analyzed for this alignment in order to identify the best rail connection from Longmont to the proposed FasTracks North Metro Corridor end-of-line at 162nd Avenue. The selected alignment follows the BNSF and GWRR tracks from 3rd Street southeast to the Sugar Mill site, then east along the south side of SH 119 to CR 7, where it would turn south along CR 7 to the Union Pacific Railroad (UPRR). Once the alignment meets the railroad, it follows the UPRR corridor east across I-25 and then southeast to the North Metro Corridor end-of-line at 162nd Avenue. This alignment was chosen because relative to other options it:

- Avoided sensitive wildlife and water resources associated with St. Vrain and Left Hand creeks, including two active bald eagle nests.
- Avoided two resources on the north side of SH 119, including a community facility which serves as a home for at-risk youth and an eligible historic property, the Dickens House.
- Minimized out-of-direction travel, utilized more existing rail corridors and avoided more utilities.
- Had 22 fewer residential right-of-way acquisitions and fewer impacts to one existing park, and 2 open space properties and wetlands associated with 5 additional creek crossings.

Appendix F of this *Alternatives Development and Screening Report* provides a detailed, quantitative comparison of the 19 alignments considered between Longmont and Thornton.

Low-Cost Rail Options

Reduced cost options were considered for the entire commuter rail corridor. This includes single tracking, or jointly using the existing freight rail corridor for passenger service as well as reduced service plans with a minimal number of trains per day. A reduced service plan is consistent with some commuter rail projects that have been implemented across the country, such as in Seattle, Albuquerque, San Jose and San Diego. It is also consistent with portions of the approved Denver FasTracks projects, which have been subject to cost-cutting measures such as single tracking. RTD has developed these types of options for cost-cutting (along with other options such as cutting certain corridors back in overall length) to provide more limited rail service in a corridor while saving capital costs of building an entire second track and operating costs of scaling back train operations to

focus on the peak periods of travel only. Such cost-cutting options were considered by RTD on the Northwest Rail commuter rail corridor, the North Metro commuter rail corridor, the I-225 light rail corridor and portions of the Gold Line commuter rail Corridor. RTD is already implementing this cost cutting measure on the West Corridor (light rail) for a short section, from the Denver Federal Center to the Jefferson County Government Center end of line.

The low-cost options that were considered for the North I-25 project are fully documented in **Appendix I** of this report. Two major low-cost options were developed. Both included use of single tracking from the 1st and Terry Station in Longmont to the South Transit Center in Fort Collins. Both assumed fairly limited rail service of three trips per direction in each peak period and no service during the rest of the day. Both assumed a reduced number of stations (four instead of eight.) Both assumed limited passing tracks that would be provided. Both applied only to the Longmont to Fort Collins component of the commuter rail because that is the only component that had operating freight rail service. The difference between the two options was that one option would require a transfer at 1st and Terry to continue into downtown Denver. The second assumed that passengers could get on a train from Fort Collins and continue into Denver via Boulder without needing to transfer to a second train in Longmont.

These options were not advanced to full analysis in this EIS because of the very noticeable reductions in ridership that would result. The reductions in ridership would occur due to:

- The substantial reduction in service provided (a reduction from trains running every thirty minutes during peak periods and every hour during off-peak periods to only three trips every peak period and no trains during off-peak periods. This reduction means rather than a train every thirty minutes during a peak period there would be a train every sixty minutes); and
- The reduction in travel time because the current freight track rail only allows for a maximum speed of 49 mph; and
- The reduction in number of stations.

These reductions in daily ridership (from approximately 5,850 with Package A to around 1,000 with one of the options and around 250 with the other option) made the major low-cost options uncompetitive with the other transit options.

Because these options would not include constructing a new track adjacent to the existing freight rail track, they would result in substantially less construction and thus result in substantially less environmental impacts. Less right of way would be needed from parks and historic properties, which would reduce impacts to resources protected by the National Historic Preservation Act and Section 4(f) of the DOT Act. At river crossings, since there would be no new track, no new bridges or culverts would be needed, so there would be fewer temporary and permanent impacts to wetlands and waters of the US. Noise and vibration impacts would be lessened for residences adjacent to the new track, but about the same as Package A impacts for residences adjacent to the freight rail track. Water quality impacts would not be much different except at station areas, because there would be fewer stations. Wildlife habitat impacts would be lessened with the single track options because substantially less habitat would be permanently removed due to fill for the new track. From a social standpoint, however, these options would not provide as much service to low income and minority populations and to the general population. It would be more

difficult for new riders or transit dependent riders to use the system since stations would be farther apart. The system would also be operating so infrequently that its usefulness as a mode of transportation would be compromised.

These two major low-cost options were evaluated and found to not meet the Purpose and Need. The primary reasons these options were not retained for Package A include:

- The reduced number of stations did not provide adequate accessibility to the rail system for the communities along the corridor.
- The limited number of trains per day did not satisfy the multimodal travel needs of the region.
- Single tracking limited flexibility associated with track maintenance that could result in stranding transit dependent population.
- Single tracking compromised the train schedule reliability. Single tracking also precludes the ability to expand service with more frequent train service.
- Reduced service to downtown Fort Collins, necessitated because of single tracking, did not satisfy the travel demand generated by the area.
- It was found that the major low-cost options attracted less than 1,000 riders per day, substantially less than the full service rail system of Package A.

Another low-cost option was considered with a less severe reduction in capital investment. This option consisted of single tracking (with passing track), but added back in a full station set and an all-day service plan. This was the same commuter rail configuration and service plan ultimately included in the Preferred Alternative. For Package A however, this option was still not found to meet the Purpose and Need. The primary reason this option was not retained for inclusion in Package A include:

- Single tracking limited flexibility associated with track maintenance that could result in stranding transit dependent population. Single tracking compromised the train schedule reliability. This issue does not affect the Preferred Alternative because of the additional Express Bus service along the I-25 corridor.
- Single tracking also precludes the ability to expand service with more frequent train service.
- Reduced rail service to downtown Fort Collins, necessitated because of single tracking, did not satisfy the transit travel demand generated by the area.
- Single tracking does not respond to the projected transit demand from the Fort Collins area for the I-25 and US 287 corridors. The level of service that could be provided would result in unmet transit demand along these two corridors.
- In conclusion, a rail service scenario with only single tracking and no transit service along I-25 would not meet the project Purpose and Need. The element of purpose and need related to mode choice and meeting projected demand for transit service along both the I-25 and the US 287 corridors is not met.

Grade Crossings

The track design includes grade crossing treatments, as described below.

Table 6-5 summarizes the grade crossing improvements included in Package A. The table uses the following terms:

- **Passive:** A crossing with signs and pavement markings as traffic control devices that are not activated by trains.
- **Gates:** A crossing that consists of lights, bells, and moveable barriers on the highway approaches that are activated by trains.
- **Four quadrant gates with medians:** A crossing that includes all elements of the gated crossing plus a raised center divider to further discourage vehicles from entering the crossing.
- **Grade separation:** A crossing that includes constructing a rail overpass or overpass for cars, trucks, bicyclists, and pedestrians, eliminating the need to cross at-grade.

Special consideration has been given to downtown Longmont, where the existing BNSF alignment runs in the median of Atwood Street between 3rd Avenue and 8th Avenue. In this area, minor roadway improvements would be made to enable the installation of the second track, and the grade crossings would be upgraded as shown in the grade crossing table. The existing BNSF tracks run in a dense urban / campus area between Harmony Road and University Avenue in Fort Collins. Similar minor roadway and grade crossing improvements would be made in this area. Between Maple Street and University Avenue, the single BNSF track would be in Mason Street. This area would be maintained as a single track with grade crossing improvements as part of the project.

Table 6-5 Package A Train/Roadway Grade Crossing Treatments

LOCATION	EXISTING	PACKAGE A
BNSF – Maple Street - Fort Collins	Lights	Gates
BNSF – Laporte Avenue - Fort Collins	Lights	Gates
BNSF – Mountain Avenue - Fort Collins	Lights	Gates
BNSF – Oak Street - Fort Collins	Passive	Gates
BNSF – Olive Street - Fort Collins	Lights	Gates
BNSF – Magnolia Street - Fort Collins	Passive	Gates
BNSF – Mulberry Street - Fort Collins	Lights	Gates
BNSF – Myrtle Street - Fort Collins	Passive	Gates
BNSF – Laurel Street - Fort Collins	Lights	Gates
BNSF – Old Main/Plum Street - Fort Collins	Passive	Gates
BNSF – University Avenue - Fort Collins	Passive	Gates
BNSF – Pitkin Street - Fort Collins	Gates	Gates
BNSF – Lake Street - Fort Collins	Passive	Gates
BNSF – Prospect Road - Fort Collins	Gates	4-quadrant gates with medians
BNSF – Drake Road - Fort Collins	Gates	4-quadrant gates with medians
BNSF – Swallow Road - Fort Collins	Gates	Gates
BNSF – Horsetooth Road - Fort Collins	Gates	4-quadrant gates with medians
BNSF – Harmony Road - Fort Collins	Gates	4-quadrant gates with medians
BNSF – Trilby Road – SE Larimer Co.	Gates	Gates
BNSF – West 57th St. - SE Larimer Co.	Gates	4-quadrant gates with medians
BNSF – West 37th Street - Loveland	Gates	Gates
BNSF – West 29th Street - Loveland	Gates	4-quadrant gates with medians
BNSF – Garfield Street - Loveland	Gates	Gates
BNSF – US 34 - Loveland	Grade separation	Grade Separation
BNSF - 10th Street - Loveland	Gates	Gates
BNSF – 7th Street - Loveland	Gates	Gates
BNSF – 6th Street - Loveland	Gates	Gates
BNSF – 4th Street - Loveland	Gates	Gates
BNSF – 1st Street - Loveland	Gates	Gates
BNSF – South Railroad Avenue – SE Larimer Co.	Gates	Gates
BNSF – 14th Street SW – SE Larimer Co.	Gates with barrier curbs	4-quadrant gates with medians
BNSF – 28th Street SW / LCR 16–SE Larimer Co.	Gates	Gates
BNSF – 42nd Street SW – SE Larimer Co.	Gates	Gates
BNSF – US 287 – SE Larimer Co.	Grade separation	Grade separation
BNSF – Berthoud Road / LCR 10E - Berthoud	Gates	Gates
BNSF – Water Ave / LCR 10 - Berthoud	Gates	Gates
BNSF – Bunyan Avenue - Berthoud	Gates	Gates
BNSF – Mountain Avenue/SH 56 - Berthoud	Gates	Gates
BNSF – Welch Avenue – Berthoud	Gates	Gates
BNSF – LCR 15a – NE Boulder Co.	Passive	Gates
BNSF – LCR 15a – NE Boulder Co.	Gates	Gates
BNSF – LCR 2E – NE Boulder Co.	Gates	Gates

Table 6-5 Package A Train/Roadway Grade Crossing Treatments (cont'd)

LOCATION	EXISTING	PACKAGE A
BNSF – North County Line Rd. – NE Boulder Co.	Passive	Gates
BNSF – North 115th St. – NE Boulder Co.	Passive	Gates
BNSF – Vermillion Road – NE Boulder Co.	Passive	Gates
BNSF – Ute Highway / SH 66 - Longmont	Gates	Gates
BNSF – 21st Avenue - Longmont	Gates	Gates
BNSF – 17th Avenue - Longmont	Gates with barrier curbs	4-quadrant gates with medians
BNSF – Mountain View Ave. - Longmont	Passive	Gates
BNSF – 9th Avenue - Longmont	Passive	Gates
BNSF – Longs Peak Avenue - Longmont	Gates	Gates
BNSF – 6th Avenue - Longmont	Passive	Gates
BNSF – 5th Avenue - Longmont	Passive	Gates
BNSF – 4th Avenue - Longmont	Passive	Gates
BNSF – 3rd Avenue - Longmont	Gates	4-quadrant gates with medians
BNSF – Emery Street - Longmont	Passive	Gates
BNSF – Main Street - Longmont	Gates	4-quadrant gates with medians
BNSF – Coffman Street - Longmont	Passive	Gates
BNSF – Terry Street - Longmont	Passive	Gates
BNSF - Martin Street - Longmont	Passive	Gates
GWR – Sugar Mill Road - Longmont	Passive	Gates
GWR – Sugar Mill Road - Longmont	Passive	Gates
SH 119 - Longmont	N/A	Grade separation
East County Line Road – SW Weld Co.	N/A	4-quadrant gates with medians
SH 119 – SW Weld Co.	N/A	Gates
Fairview Street/Sandstone Dr. – SW Weld Co.	N/A	Gates
WCR 3 – SW Weld Co.	N/A	Gates
WCR 5 – SW Weld Co.	N/A	Gates
Harbor Drive – SW Weld Co.	N/A	Gates
Shoreline Drive – SW Weld Co.	N/A	Gates
WCR 20.5 – SW Weld Co.	N/A	Gates
WCR 20 – SW Weld Co.	N/A	Gates
Private Drive – SW Weld Co.	N/A	Gates
Private Drive – SW Weld Co.	N/A	Gates
Private Drive – SW Weld Co.	N/A	Gates
WCR 18 – SW Weld Co.	N/A	Gates
Private Drive – SW Weld Co.	N/A	Gates
Lower Boulder Ditch Road – SW Weld Co.	N/A	Gates
WCR 16 – SW Weld Co.	N/A	Gates
Wyndham Hill Parkway – SW Weld Co.	N/A	Grade separation
SH 52 – SW Weld Co.	N/A	Grade separation
WCR 12 – SW Weld Co.	N/A	Gates
WCR 7 – SW Weld Co.	N/A	Gates
UPRR - WCR 10 – SW Weld Co.	Passive	Gates

Table 6-5 Package A Train/Roadway Grade Crossing Treatments (cont'd)

LOCATION	EXISTING	PACKAGE A
UPRR - I-25 – SW Weld Co.	Grade separation	Grade separation
UPRR - I-25 East Frontage Rd – SW Weld Co.	Grade separation	Grade separation
UPRR - Summit Blvd. / WCR 8 – SW Weld Co.	Passive	Gates
UPRR - York Street / WCR 11 – SW Weld Co.	Passive	Gates
UPRR - WCR 6 – SW Weld Co.	Passive	Gates
UPRR - East 168th Avenue – SW Weld Co.	Passive	Gates

N/A=Not Applicable

6.2.3.1 PACKAGE A COMMUTER RAIL STATIONS

Once the commuter rail alignment was determined, a station site selection process was set in motion. Seventeen potential station locations were identified and evaluated using a set of screening criteria that screened if the potential station location met the following criteria:

- Serves a population center
- Provides east/west access across the regional study area
- Supported by existing transit infrastructure
- Has committee and stakeholder support

A transit working group that consisted of the general public and municipality representatives met three times throughout the station design process. At the first transit working group meeting the potential station locations were presented to this group. Stations were added and screened out per their input. As a result of the station site selection process seventeen potential station locations were screened down to nine new stations.

After determining the general vicinity of station locations, a more detailed evaluation was conducted for each station location. The primary criteria were: minimal neighborhood and environmental impacts, connectivity, opportunity for joint development, and compatibility with adjacent land use. A more detailed description of the station sites considered and the screening process is included in **Section 5.2.2** of this document. As a result, a preferred site(s) was identified at each station to include the platform, park-and-ride and bus activity. **Table 6-6** lists the stations included in Package A along the commuter rail alignment. The connection at the Sugar Mill station in Longmont would allow patrons to transfer to FasTracks proposed Northwest Rail Corridor. Patrons remaining on the train would continue southeast, eventually traveling along the FasTracks North Metro Corridor into downtown Denver. While the Package A commuter rail would serve all of the planned North Metro Corridor stations, it does not include any additional improvements at these stations.

Table 6-6 Package A Commuter Rail Stations

Station Name	Location	Parking Spaces
Fort Collins Downtown Transit Center	BNSF and Maple Street	100
Colorado State University (CSU)	On Mason Street between University Avenue and West Pitkin Street	none
South Fort Collins Transit Center*	Mason Street and West Fairway Lane	110
North Loveland	BNSF and 29th Street	140
Downtown Loveland	BNSF and approximately 6th Street	40
Berthoud	BNSF and SH 56	70
North Longmont	BNSF and SH 66	30
Longmont at Sugar Mill	North of alignment, south of Rogers Road	150
I-25 and WCR 8	NW corner of I-25 and CR 8	210
FasTracks North Metro Corridor	All planned FasTracks North Metro Corridor stations	No new spaces proposed as part of this project

*The Mason BRT Corridor was not funded at the time of the Draft EIS Package A design development; therefore, the South Transit Center was designed for commuter rail and did not accommodate the proposed Mason BRT. After release of the Draft EIS, the Mason project was funded so this station was redesigned to function for both Mason BRT and N I-25 commuter rail.

The typical station layout proposed two side-loaded platforms within the double-tracked alignment, with vertical circulation for pedestrian access across the tracks connecting the platform to the park- and-ride and surrounding community as shown in **Figure 6-19** and **Figure 6-20**.

Figure 6-19 Package A Typical Commuter Rail Station Design

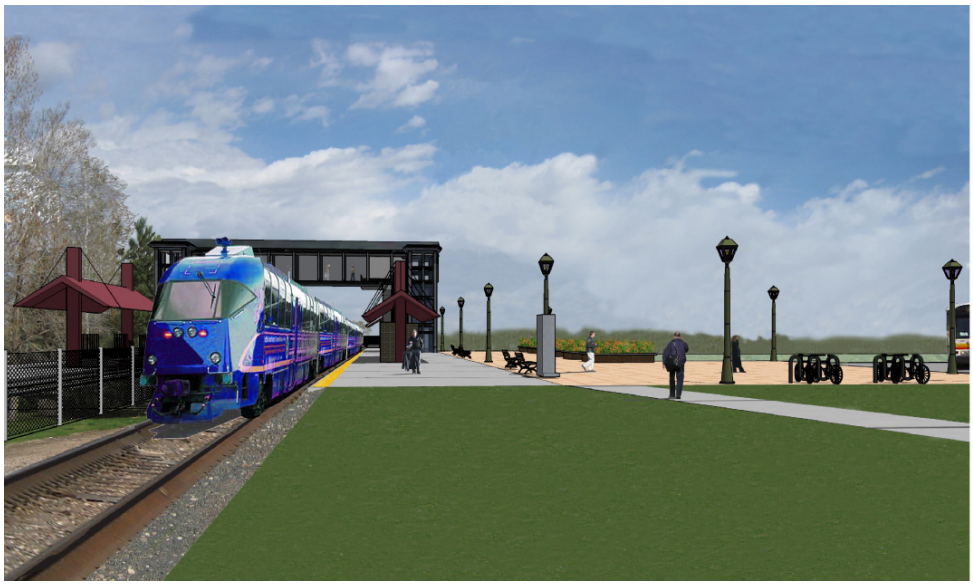
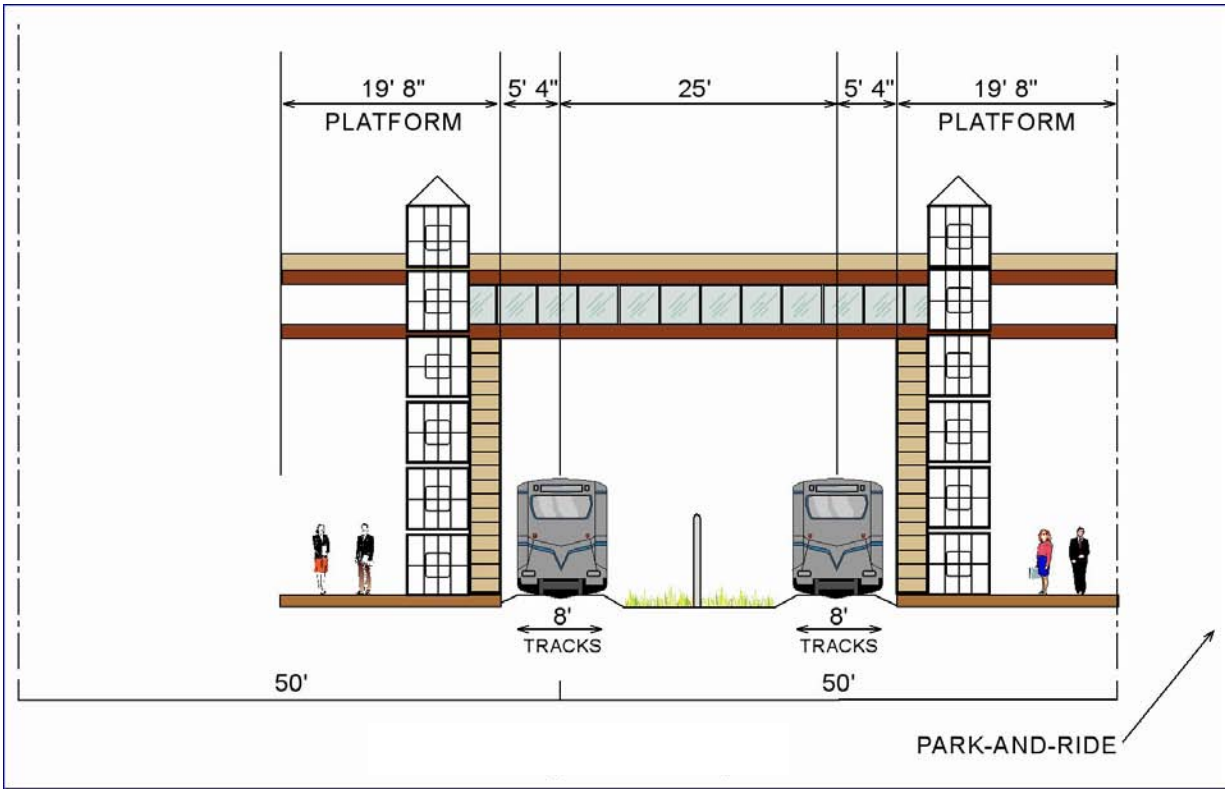


Figure 6-20 Package A Typical Commuter Rail Station Cross Section



6.2.3.2 PACKAGE A COMMUTER RAIL MAINTENANCE FACILITY

The layout of the commuter rail maintenance facility would require a minimum of 30 acres, including facilities for vehicle maintenance, cleaning, fueling and storage; track maintenance; parts storage; and vehicle operator facilities. The commuter rail maintenance facility would accommodate an estimated 90 employees. The potential locations are:

- Vine Drive and Timberline Road in Fort Collins
- LCR 10 and LCR 15 in Berthoud

The site identified in Fort Collins is 76.1 acres, while the site identified in Berthoud is 61.6 acres. Either could accommodate the necessary uses. They are being evaluated as part of Package A to determine the most favorable location based on impacts to environmental resources, community impacts, and costs.

The commuter rail service defined in Package A will serve as an extension of planned RTD services. The RTD commuter rail maintenance facility design process has not proceeded far enough to evaluate the feasibility of using that facility to maintain the additional vehicles required for Package A commuter rail service. In addition, it is probable that an overnight layover facility within the North I-25 regional study area will be required even if trains are maintained within the RTD area. Hence, it has been assumed that a maintenance facility will be required as part of the North I-25 process to ensure the independent utility of Package A.

6.2.4 Package A Commuter Bus

Package A includes a commuter bus service along US 85 connecting Greeley to downtown Denver and DIA. This service would operate every 30 minutes in AM and PM peak hours and every hour during off-peak periods. Queue jumps, allowing buses to bypass queued traffic at some signalized intersections, would be included to help achieve reliable speeds for bus services.

WHAT IS COMMUTER BUS?

Commuter bus service is regional transit service with limited stops in order to operate faster than other bus services. This type of transit service usually operates on roads designated as arterials or higher and has park-and-ride facilities located at its stops.

Queue jumps typically require modifying an intersection to provide a short lane for the bus between the right-turn lane and the through lanes. Signal equipment also would be upgraded to sense the presence of a bus and provide a short signal phase where the bus is able to travel through the intersection first, bypassing the queued traffic. Intersection control, traffic volumes, speed limits, road configuration, and community plans were taken into consideration when recommending locations for queue jumps. Additional information on queue jump location screening is available in *Alternatives Development and Screening Report* (FHU and Jacobs, 2011a).

The following queue jump or transit signal enhancement locations are included in Package A along the US 85 corridor:

• 31st Street – Evans	• CR 34 – Platteville	• 136th Avenue – Brighton
• 37th Street – Evans	• Grand Avenue (CR 32) – Platteville	• 124th Avenue – Brighton
• 42nd Street – Evans	• SH 66 – Platteville	• 120th Avenue – Commerce City
• 1st Avenue – LaSalle	• 168th Avenue – Brighton	• 112th Avenue – Commerce City
• CR 42 – Gilcrest / Weld County	• Bromley Lane – Brighton	• 104th Avenue – Commerce City
• Elm Street – Gilcrest	• 144th Avenue – Brighton	

While specific fares have not been identified, a review of commuter bus systems nationwide indicates that a typical fare would be about $0.12 per mile (2009 dollars). Based on this rate, it would cost a rider traveling from downtown Greeley to downtown Denver approximately $6.60 one-way.

A transit operator has not yet been identified to operate the commuter bus service. However, in the southern Front Range a similar commuter style service is operated by the City of Colorado Springs in partnership with CDOT and the other communities served. This would indicate that one of the local transit providers in the area (Greeley, Loveland and Fort Collins)

could operate this service. CDOT also has authority to operate regional transit services. In either scenario, funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

6.2.4.1 Package A Commuter Bus Stations and Stops

Station design for commuter bus assumed that the passenger would access the bus from the proposed park-and-ride or an on-street bus stop with no formal platform. The station site selection process was similar to those applied to the commuter rail stations. Thirteen potential station locations were screened down to five new stations and connections to four existing RTD stations: Brighton, Commerce City, downtown Denver and DIA. No improvements are proposed at the RTD stations as part of this EIS.

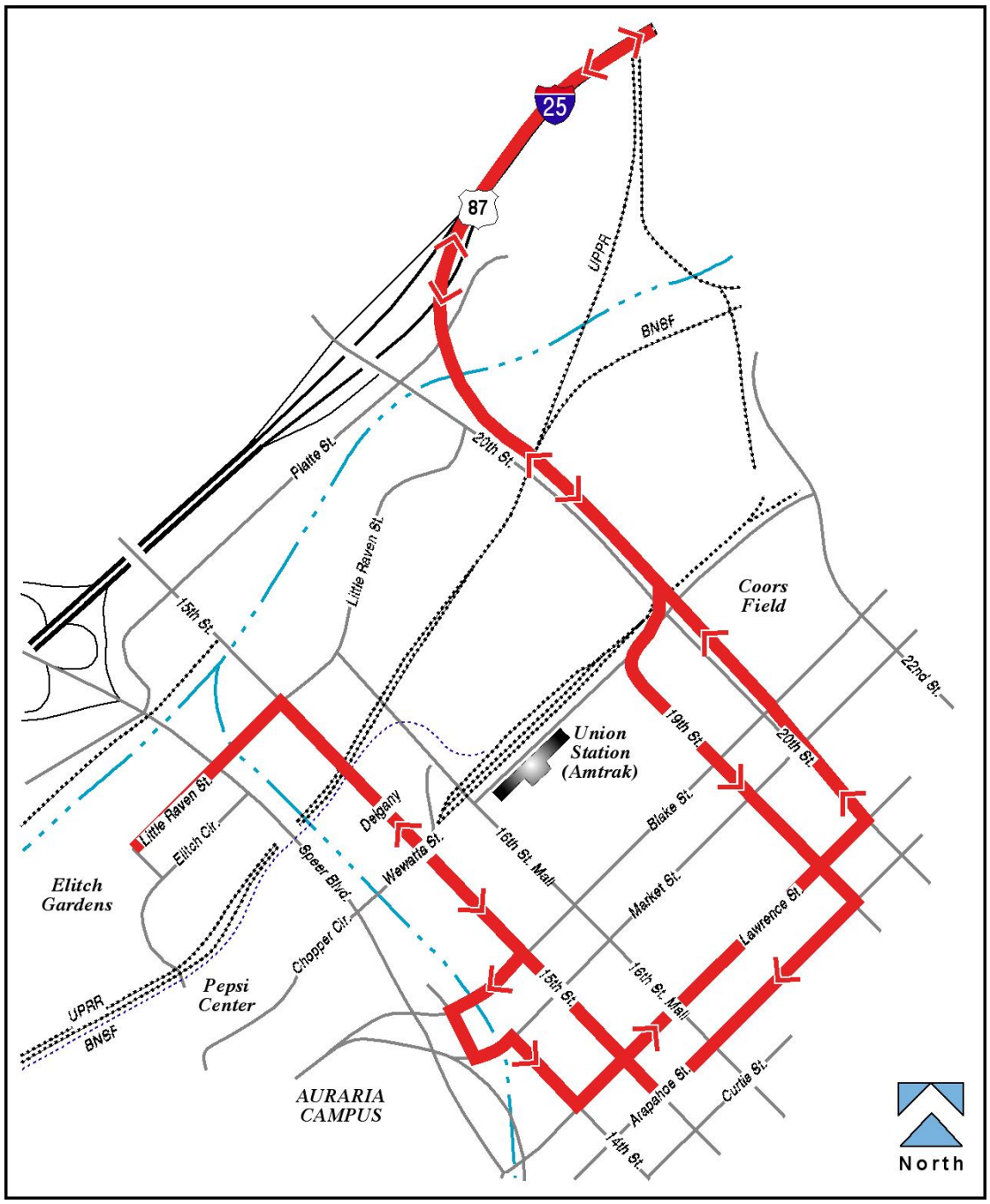
A range of two to thirteen sites were evaluated for each station location. As a result of the station site evaluation, one preferred site was identified at each location to house the park-and-ride and bus activity. A more detailed description of the station sites considered and the screening process is included in **Section 5.2.2**. **Table 6-7** lists the station sites and stops for the commuter bus service.

Table 6-7 Package A Commuter Bus Stations and Stops

Station/Stop Name	Description	Parking Spaces
Greeley	US 85 and D Street	40
South Greeley	8th Avenue and 24th Street	80
Evans	US 85 and 42nd Street	70
Platteville	US 85 and Grand Avenue	60
Fort Lupton	US 85 and 14th Street (CR 14.5)	110
Brighton	US 85 and SH 7	Existing RTD park-n-Ride
Commerce City	Colorado Blvd and 72nd Ave.	Proposed RTD park-n-Ride
Denver	Downtown Denver	0
DIA	Denver International Airport	0

During the AM peak hours, southbound buses would enter downtown Denver via the North I-25 express lanes and go into downtown using 19th Street, turning southwest on Arapahoe and providing stops at 17th and 15th Streets. From there, buses would turn right on 15th Street, left at Little Raven Street, and proceed to Elitch Gardens to layover before making the return trip. Downtown circulation is shown in **Figure 6-21**. This downtown route is similar to the route of the current Front Range Express (FREX) bus from Colorado Springs to Denver. During hours when the reversible express lane flow is headed northbound, southbound buses would enter downtown Denver via the 20th Street interchange, take 20th Street to Arapahoe, and follow the remainder of the route described above.

Figure 6-21 Commuter Bus (and Express Bus) Downtown Denver Circulation



During the PM peak hours, northbound buses would exit downtown Denver by turning right out of Elitch Gardens onto 15th Street, turning right again to access 14th Street and eventually turning left on Lawrence Street, picking up passengers at 15th and 17th Streets, and proceed to the I-25 HOV entrance ramp on 20th Street. During hours when the reversible express lane flow is headed southbound, northbound buses would access I-25 via the 20th Street interchange.

Planned improvements at Denver Union Station may allow these buses to access and egress the HOV lanes from 18th and 19th Streets and serve Denver Union Station via Wewatta Street. In addition, provided there is enough space, the commuter bus service may also be able to layover at Denver Union Station before making the return trip instead of traveling the extra distance to Elitch Gardens. These possible connections could be further evaluated as planning for Denver Union Station moves forward.

6.2.5 Package A Feeder Bus

Four feeder bus routes are proposed to enable riders to access the commuter rail and commuter bus services in Package A. These services would travel:

- Along SH 257, connecting Windsor and Timnath to the commuter rail and the commuter bus.
- Along US 34, connecting Greeley and Loveland to both services.
- Along SH 60 / SH 56, connecting Milliken, Johnstown, and Berthoud to the commuter rail.
- Along WCR 13 / WCR 8, connecting the tri-towns (Frederick, Firestone, and Dacono) and Erie to the commuter rail.

WHAT IS FEEDER BUS?

Feeder bus service connects communities throughout the region to a major transit investment such as passenger rail or bus rapid transit. It provides an alternative to driving alone and improves accessibility to transit-dependent passengers.

These feeder bus services would operate every 30 minutes during AM and PM peak periods and every 60 minutes during off-peak periods. They have been designed to coincide with commuter rail and commuter bus schedules. A transit operator has not yet been identified to operate the feeder bus service. Funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

6.2.6 Package A Bus Maintenance Facility

In Package A, two sites were evaluated for the bus maintenance facility: Portner Road and Trilby Road in Fort Collins, and 31st Street and 1st Avenue in Greeley. The site in Fort Collins is 7.8 acres, while the site in Greeley is 4.6 acres. Both sites meet the size requirements for the layout of the facility. The two sites were evaluated to determine the more favorable site based on impacts to environmental resources, community impacts, and costs. The commuter bus maintenance facility would accommodate an estimated 85 employees, including staff for the maintenance and operation of buses for both the commuter bus and the feeder bus routes.

6.2.7 Package A Congestion Management

Many potential congestion management measures were considered as enhancements to the packages. Detailed documentation of the Congestion Management Alternative development and screening process is provided in **Section 5.1.3** of this report.

Table 6-8 summarizes congestion management measures that were identified for Package A.

Table 6-8 Package A - Congestion Management Measures

Congestion Management Strategy	Description of Application
Local Transit Service	Existing local routes would connect to rail service at the Downtown and South Transit centers in Fort Collins; at US 34 in Loveland; and at Sugar Mill in Longmont. Package A local routes would connect to commuter bus service at 8th Street and D, Greeley South, the Brighton park-n-Ride, and the FasTracks North Metro Corridor rail stations.
Carpool and Vanpool	Carpool/Vanpool lots would replace and be in addition to the existing carpool/vanpool lots. They would be paved, have lighting, and have security cameras. These lots would be provided along I-25 at: • SH 1 — 80 • SH 14 — 150 • Prospect Rd. — 130 • Harmony Rd. — 300 • SH 392 — 90 • SH 402 — 340 • SH 60 — 80 • SH 56 — 30 • SH 66 — 70 • SH 119 — 90 • SH 52 — 80 • SH 7 — 180
Incident Management Program	Courtesy patrols - Tow trucks with fuel, coolant, air, etc. would drive up and down I-25 from SH 14 to SH 7 during peak period travel times (6:15 AM to 8:45 AM and 3:15 PM to 6:45 PM). These vehicles would pick up debris, help stalled motorists, and assist with other incidents as needed.
Signal Coordination and Prioritization	Timing at signals at interchanges along I-25 would be optimized as part of the interchange design process. Queue jumps, including signal treatments, would be incorporated into the commuter bus design along US 85.
Ramp Metering	Based on a CDOT Region 6 precedent and policy along the Transportation Expansion (T-REX) corridor, ramp meters would be installed along the freeway in order to prevent trip detouring. At such time when volumes dictate ramp metering along I-25, ramp meters would be recommended at the following interchanges: • SH 14 • Prospect Rd. • Harmony Rd. • SH 392 • Crossroads Blvd. • US 34 • SH 402 • SH 119 • SH 52 • WCR 8 • SH 7
Real-Time Transportation Information	The CDOT Region 4 intelligent transportation plan would be implemented in its entirety with additional variable message signs northbound and southbound north of SH 14.
Bicycle / Pedestrian Facilities	Station areas would be designed to provide pedestrian links to the nearest local road. A 12-ft. wide multi-use path and 6-ft tree lawn would provide connectivity between the bus drop-off, park-and-ride and connectivity to the closest road. All stations would be designed in accordance with the accessibility standards set forth in the Americans with Disabilities Act (ADA).
Travel Demand Measures	During construction, proactive measures could be taken by the contractor to encourage use of alternative modes.

6.2.8 Other Package A Features

Package A also includes retaining walls, water quality ponds, and drainage features.

Retaining Walls

Retaining walls would be used along highway general purpose lanes and commuter rail lines to minimize impacts to environmentally sensitive areas and existing commercial buildings or other developments.

Water Quality

To conform to CDOT's Municipal Separate Storm Sewer System (MS4) permit, roadway runoff would need to be treated within urbanized areas. Using land use projections from the NFRMPO, urban areas were determined and potential treatment locations have been identified in Package A. These would be located along highways and at transit stations, maintenance facilities, and parking lots. Suggested locations for the water quality features are included in the Package A concept plans. Various methods for treating stormwater runoff, such as ponds, vaults, and infiltration basins would be considered during final design.

Floodplains and Drainage Features

Almost all of the existing drainage structures are undersized; they cannot pass the 100-year storm flows under the rail routes, I-25, or US 85. Final design would include a detailed hydraulic analysis for each crossing. This would include addressing allowable backwater and methods for mitigating impacts to the environment. Additional items that would be considered include costs for construction, maintenance, and operations. Federal Emergency Management Agency floodplain regulations and CDOT drainage criteria would be followed.

6.3 PACKAGE B

Figure 6-22 illustrates Package B. As shown, Package B includes tolled express lanes (TEL), interchange upgrades, bus rapid transit (BRT), feeder bus service, and congestion management measures. Each of these features is described in more detail below. The *Package Concept Plans* (FHU and Jacobs, 2011b) illustrate the layout of Package B in more detail.

6.3.1 Package B New Tolled Express Lanes

Package B consists of adding one buffer-separated tolled express lane in each direction along the entire corridor except between Harmony Road and SH 60 where two barrier-separated lanes would be added in each direction. Lane configuration is depicted in **Figure 6-23** through **Figure 6-28**. Design criteria were established by CDOT for the highway improvements. Design guidelines recommend avoiding use of median barrier where practical. Consistent with the existing wide median and rural setting, the design criteria for the proposed highway improvements includes a grass median for I-25 north of SH 66. The buffer-separated section would consist of a painted 4-foot strip separating the tolled express lanes from the general purpose lanes. The barrier-separated section would consist of a raised concrete barrier separating the tolled express lanes from the general purpose lanes, which would be approximately 4 feet high and 2 feet wide. Where possible, the grass median would be maintained north of SH 66 with the exception of the BRT median stations. The median would be used to accommodate median BRT stations from SH 7 north. South of SH 66, where the more densely urbanized areas abut I-25, highway widening would occur toward the center using portions of the median. As a safety measure, a tension cable barrier would be included in all locations with an open median.

WHAT ARE TOLLED EXPRESS LANES?

Lanes separated from general purpose lanes by a striped buffer or a raised median barrier. Lanes whose demand is managed to maintain reliable, fast operation even during peak periods. The lanes are managed by allowing use only by single-occupant vehicle drivers willing to pay a toll or by high-occupant vehicles. These would be similar to the existing High Occupancy Tolled (HOT) lanes between 84th Avenue and 20th Street in Denver.

Frontage roads along I-25 would be rebuilt approximately where they exist today. At the interchanges, frontage roads would be relocated east or west away from the ramp terminals to address storage and safety concerns at the intersections. Along the I-25 mainline, the frontage roads would be offset 40 feet, based on current design standards.

Figure 6-22 Package B

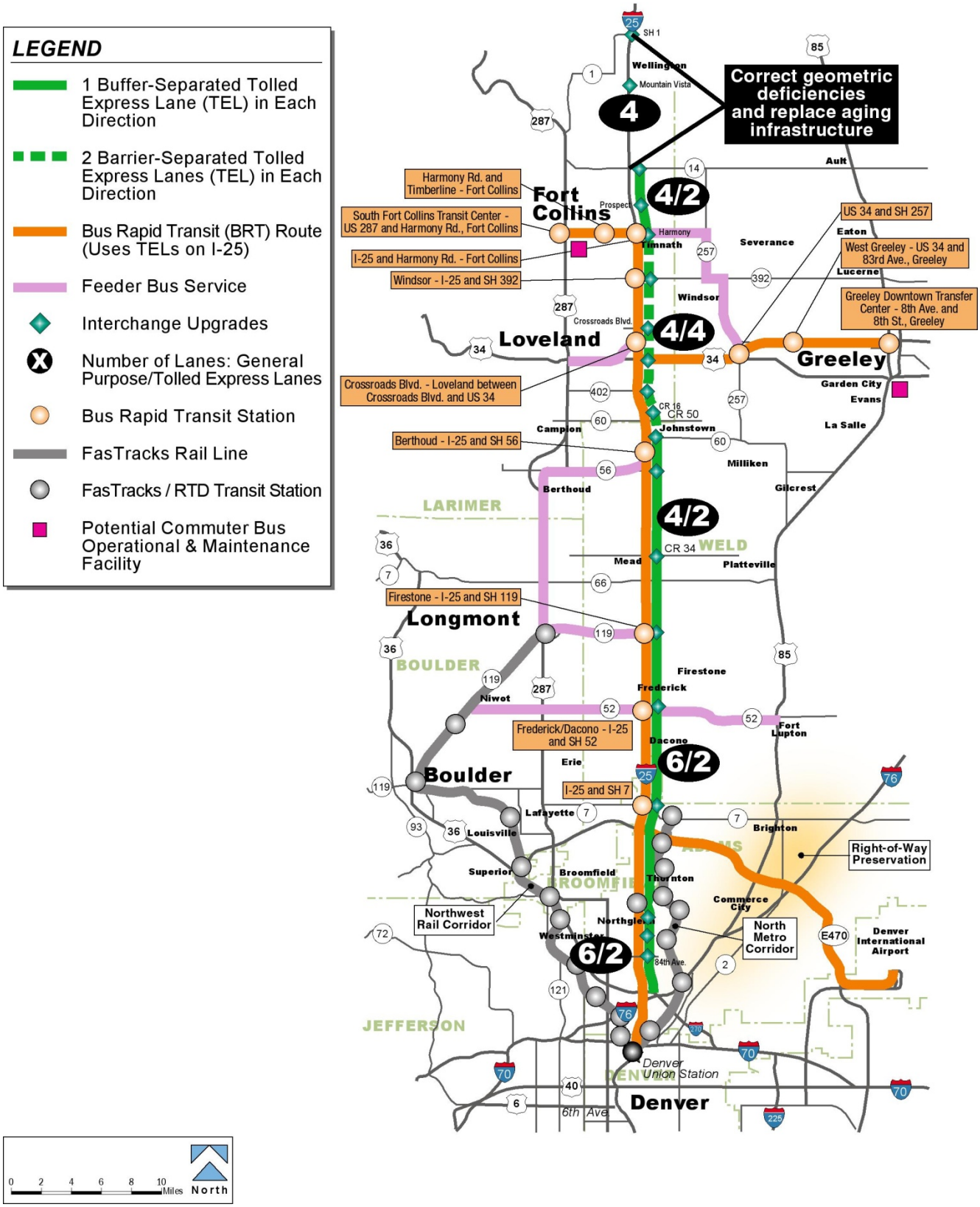


Figure 6-23 Package B Typical I-25 Cross Section – SH 1 to SH 14

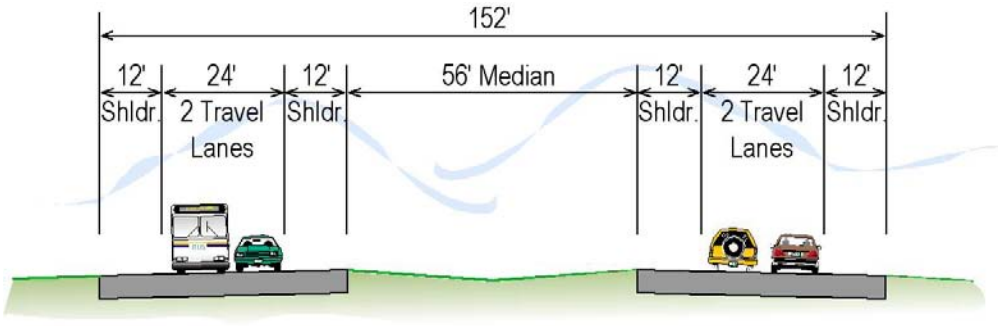


Figure 6-24 Package B Typical I-25 Cross Section – SH 14 to Harmony Rd.

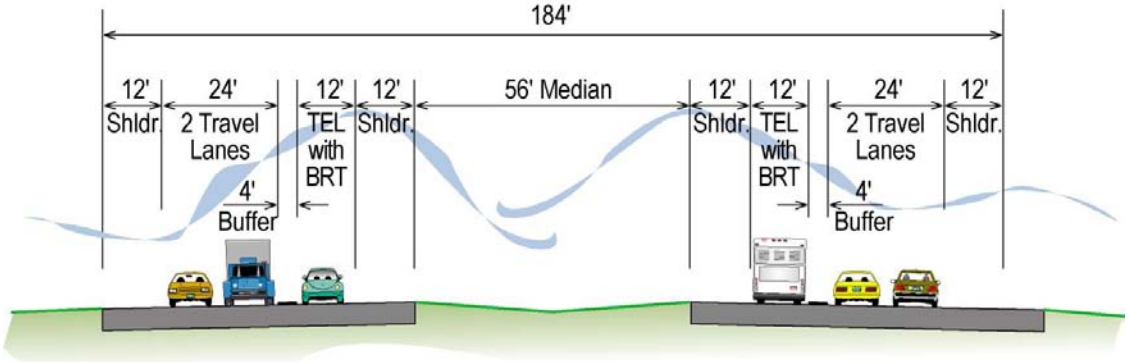


Figure 6-25 Package B Typical I-25 Cross Section – Harmony Rd. to SH 60

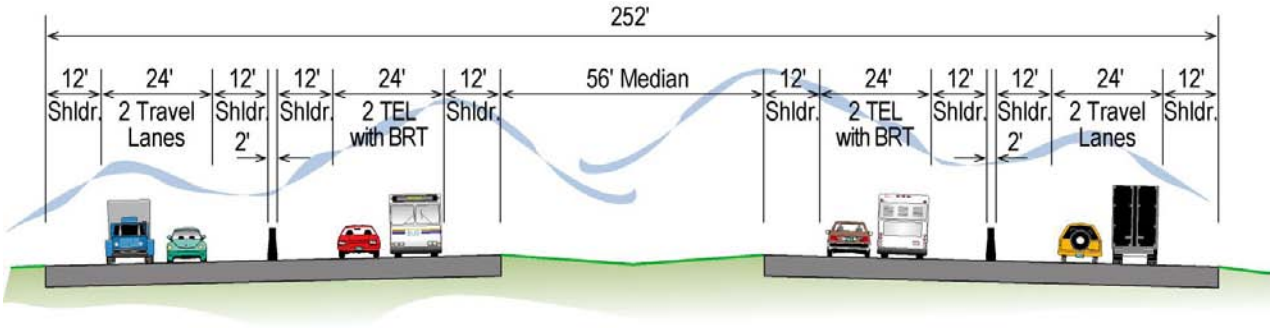


Figure 6-26 Package B Typical I-25 Cross Section – SH 60 to SH 66

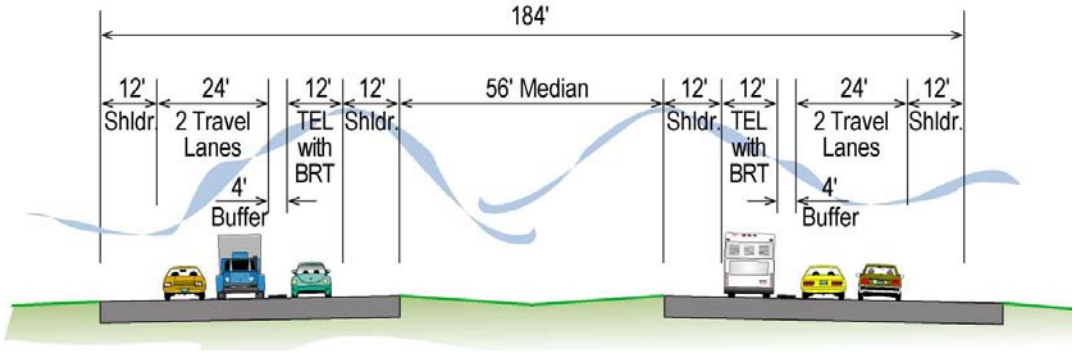


Figure 6-27 Package B Typical I-25 Cross Section – SH 66 to SH 7

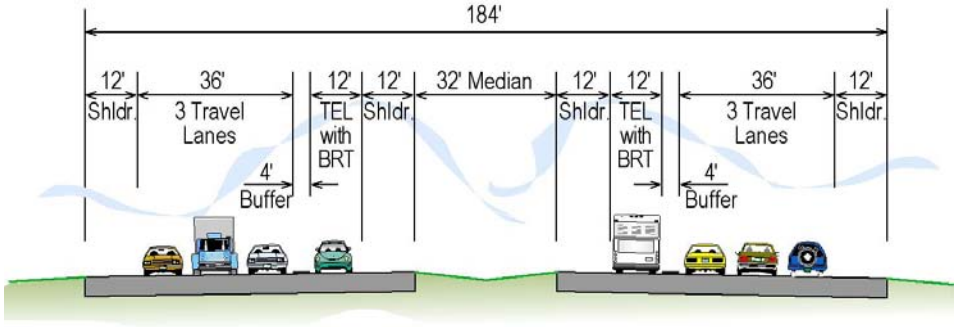
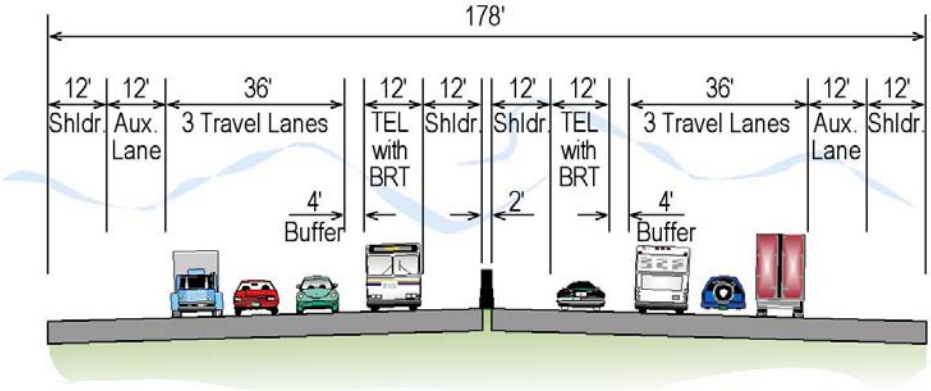


Figure 6-28 Package B Typical I-25 Cross Section – SH 7 to US 36



The tolled express lanes would require a transponder for all vehicles. The transponder would be automatically scanned as the vehicle travels in the lane; for single-occupant vehicles the transponders would collect a toll via the credit card on file for that transponder. Transponders registered to HOVs would not be assessed a toll. In some cases video tolling may be applied. Regardless, there would be no toll booths and no cash would be accepted with this video or transponder-required system. The pricing used for evaluation of the system in 2035 is shown in **Table 6-9.** These tolls would vary by time of day, and will be modified to manage congestion in tolled express lanes and ensure that these lanes would be less congested than the general purpose lanes.

Table 6-9 Initial Tolled Express Lane Peak Direction Single-Occupant Vehicle Toll Rates (2009 dollars)

Location on I-25	AM Peak Hour Southbound	PM Peak Hour Northbound
North of E-470	$0.13/mi	$0.10/mi
South of E-470	$0.75/mi	$0.75/mi

Source: Wilbur Smith Associates, October 2010.

Based on this pricing, it would cost an AM peak-hour traveler $5.33 to use the tolled express lanes from SH 14 to E-470.

Access to the tolled express lanes would be provided via slip ramps connecting the general purpose lanes to the tolled express lanes. **Figure 6-29** illustrates the slip-ramp access and egress locations included in Package B. **Figure 6-31** illustrates the design of the slip ramps in more detail. A 12-foot inside shoulder is included in the design of the tolled express lanes to enable safe and efficient enforcement along the entire corridor.

Avoidance and Minimization

In Package B, minor shifts in I-25, interchange ramps, and frontage road horizontal alignments were included in the conceptual design that would minimize impacts to wetlands at WCR 34, SH 56, LCR 16, SH 392, Prospect Road, Harmony Road, and SH 14. I-25 horizontal alignment modifications also were included at SH 402 and SH 56 that would improve safety.

Minor modifications to the I-25 vertical alignment were included to improve safety at SH 56, SH 402, and LCR 16 and to avoid impacts to a historic ditch north of US 34.

Figure 6-29 Tolled Express Lanes Access and Egress Locations

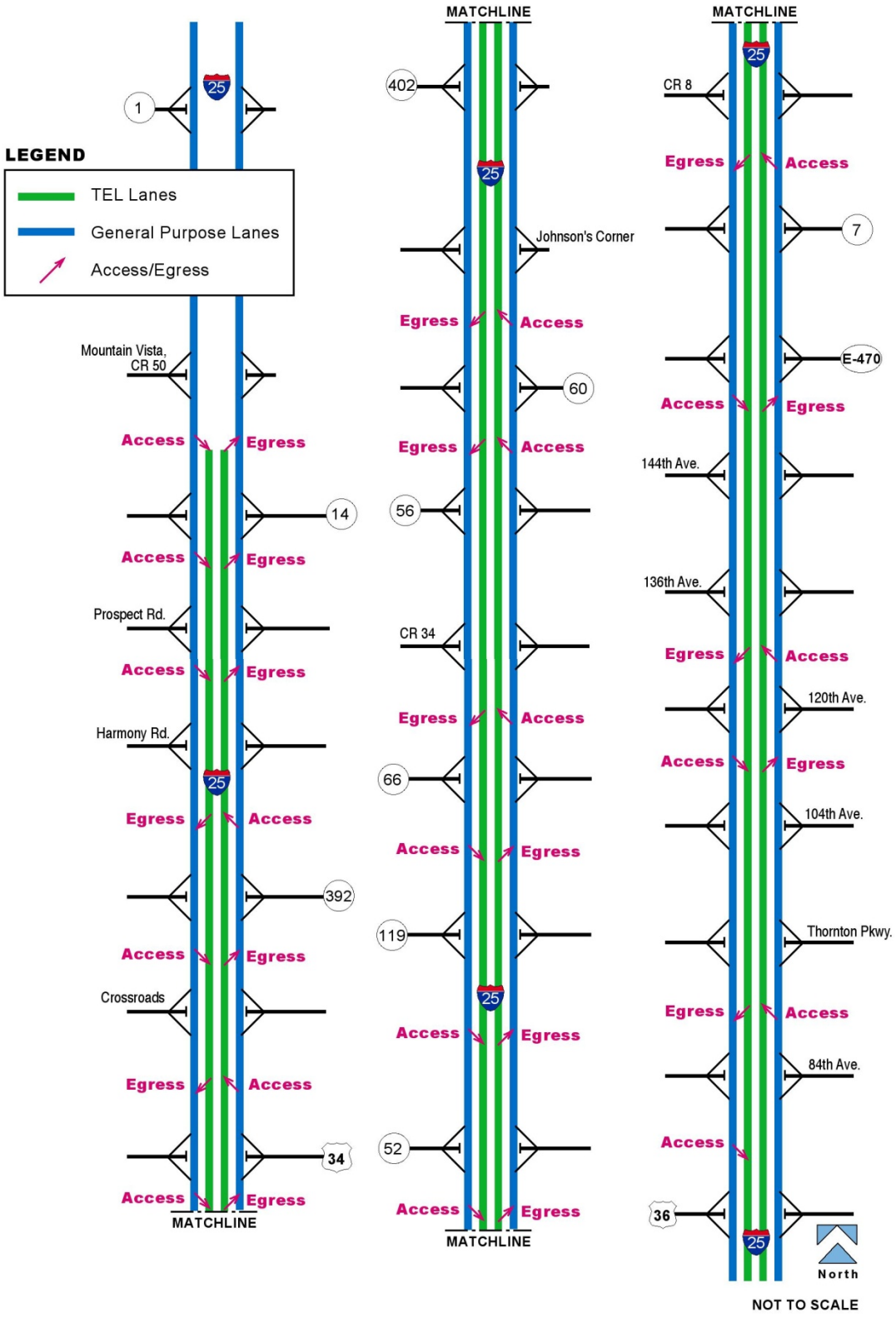
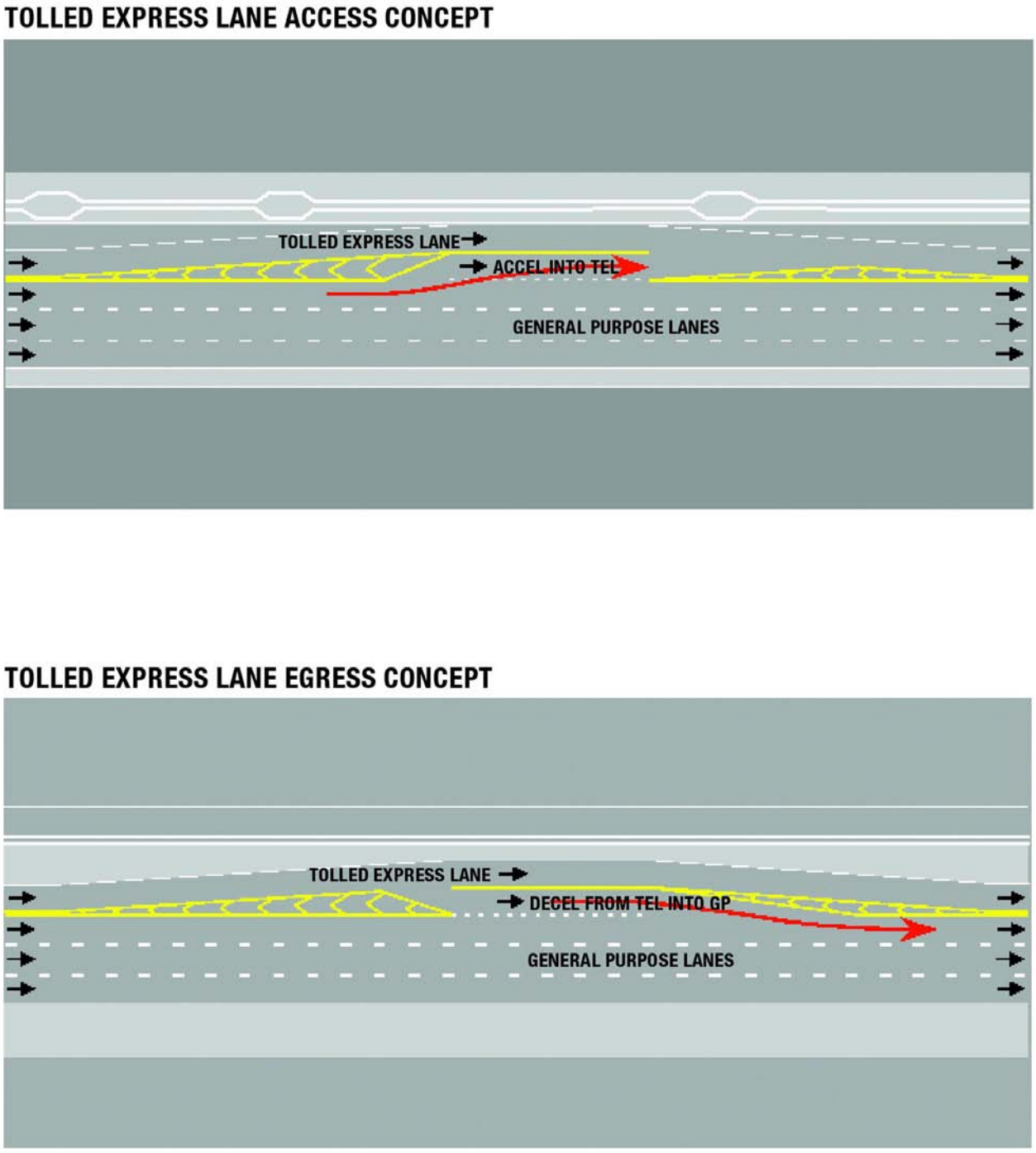


Figure 6-30 Slip-Ramp Design Concept



Source: Wilbur Smith Associates 12-06

6.3.2 Package B Interchanges

Preliminary travel demand forecasts indicate that Packages A and B would have similar travel demand in 2035 north of E-470. Therefore, while the design details would be somewhat different to accommodate mainline I-25, the interchange configurations north of E-470 would be similar between the two packages. **Table 6-10** lists the interchange improvements included in Package B. Unlike Package A, Package B includes a new structure at Harmony Road and upgrades south of E-470. The differences in interchange design between the two packages are described below.

- **Harmony Road.** Unlike Package A, the wider cross section of Package B (and the Preferred Alternative) improvements on I-25 would require replacement of this relatively new structure.

A more detailed description of the interchange configurations considered and the screening process is included in **Section 5.2.1** of this report. Additional information about the traffic operations evaluation of each interchange is included in the *Transportation Analysis Technical Report* (FHU and Jacobs, 2008; 2011c), available on request at CDOT Region 4 in Greeley.

Table 6-10 Package B Interchange Improvements Compared to No-Action

Existing Interchange Location	No-Action Configuration	Package B Improvement
SH 1	substandard diamond	reconstructed diamond
Mountain Vista	substandard diamond	reconstructed diamond
SH 14	substandard partial cloverleaf	reconstructed diamond
Prospect Road	substandard diamond	reconstructed diamond
Harmony Road	standard diamond	reconstructed diamond
SH 392	reconstructed tight diamond	no improvement
Crossroads Boulevard	substandard diamond	reconstructed diamond
US 34	substandard partial cloverleaf	dual directional/diamond
SH 402	substandard diamond	reconstructed diamond
WCR 16	substandard off ramps	reconstructed diamond
SH 60	substandard diamond	reconstructed diamond
SH 56	substandard diamond	reconstructed diamond
WCR 34	substandard diamond	reconstructed diamond
SH 66	standard diamond	no improvement
SH 119	standard diamond	bridge widening
SH 52	standard diamond	bridge widening
WCR 8	standard diamond	reconstructed diamond
SH 7	standard diamond	reconstructed diamond
E-470	fully directional	no improvement
144th Avenue	standard diamond	no improvement
136th Avenue	standard diamond	no improvement
120th Avenue	standard diamond	no improvement
104th Avenue	standard diamond	no improvement
Thornton Parkway	standard diamond	no improvement
84th Avenue	standard diamond	no improvement

6.3.3 Package B Bus Rapid Transit

WHAT IS BUS RAPID TRANSIT?

A transit service that combines features of a passenger rail system with the flexibility of a bus system. It can travel in an exclusive lane along an arterial street, or a managed lane, such as the tolled express lanes.

BRT services would operate from Fort Collins and Greeley to downtown Denver, utilizing the express lanes along I-25. The service from Fort Collins would begin at the South Transit Center and operate along Harmony Road in mixed traffic until accessing I-25 at its interchange with Harmony Road. In addition, BRT service would operate from Fort Collins to DIA, using Harmony Road in shared general purpose lanes to access I-25. During the peak period, there would be three buses per hour, with two going to downtown Denver and one going to DIA. During off-peak hours, buses would depart every 30 minutes with, one going to downtown Denver and one going to DIA.

Service from Greeley would begin at the 8th Street and 8th Avenue Transit Center in downtown Greeley and serve stops along US 34 in mixed traffic. It would access I-25 at US 34 and access the tolled express lanes via a slip ramp south of US 34. It then would serve the same stations along I-25 as the service from Fort Collins to downtown Denver. During peak hours, buses would depart every 20 minutes from Greeley to downtown Denver; during off-peak hours, buses would depart every 30 minutes.

Stations along I-25 would be located in the median. This configuration was chosen to make this BRT service as competitive as possible with commuter rail service. Stops on interchange ramps could instead be considered, which would reduce capital costs. “Queue jumps” (intersection and signal treatments that allow buses to bypass queues) were considered along US 34 and Harmony Road in Package B. Intersection control, traffic volumes, speed limits, road configuration, and community plans for those roads were taken into consideration when recommending locations for queue jumps. No queue jumps were included along Harmony Road because the City of Fort Collins has designated it as an enhanced travel corridor that would include undefined transit amenities. The following US 34 queue jump locations are included in Package B:

- 26th Avenue
- 28th Avenue
- 35th Avenue
- 37th Avenue
- 39th Avenue
- Country Club Access
- 43rd Avenue
- 47th Avenue
- 59th Avenue
- 71st Avenue
- Promontory Parkway
- Promontory Circle

Circulation in downtown Denver would be similar to the commuter bus route shown in **Figure 6-21** and described below. During AM peak hours, southbound buses would enter downtown Denver via the North I-25 express lanes and go into downtown using 19th Street, turning southwest on Arapahoe and providing stops at 17th and 15th Streets. From there, buses would turn right on 15th Street, left at Little Raven and proceed to Elitch Gardens to layover before making the return trip. This downtown route is similar to the route of the current Front Range Express (FREX) bus from Colorado Springs to Denver. During hours when the reversible express lane flow is headed northbound, southbound buses would enter downtown Denver via the 20th Street interchange, take 20th Street to Arapahoe, and follow the remainder of the route described above.

During the PM peak hours, northbound buses would exit downtown Denver by turning right out of Elitch Gardens onto 15th Street, turning right again to access 14th Street and eventually turning left on Lawrence Street, picking up passengers at 15th and 17th Streets, and proceeding to the I-25 HOV entrance ramp on 20th Street. During hours when the reversible express lane flow is headed southbound, northbound buses would access I-25 via the 20th Street interchange.

Planned improvements at Denver Union Station might allow these buses to access and egress the HOV lanes from 18th and 19th Streets and serve Denver Union Station via Wewatta Street. In addition, provided there is enough space, the commuter bus service also might be able to layover at Denver Union Station before making the return trip instead of traveling the extra distance to Elitch Gardens. These possible connections could be further evaluated as planning for Denver Union Station moves forward.

A transit operator has not yet been identified to operate the bus rapid transit service. However, in the southern front range a similar commuter style service is operated by the City of Colorado Springs in partnership with the other communities served. This would indicate that one of the local transit providers in the area (Greeley, Loveland and Fort Collins) could operate this service. CDOT also has authority to operate this regional transit service. In either scenario, funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

While fares have not yet been determined, it is estimated that a BRT fare may be 25 percent higher than a commuter bus fare. This would yield a rate of approximately $0.15 per mile (2009 dollars). Based on this rate, a BRT patron traveling from Fort Collins South Transit Center to downtown Denver would pay $8.70 one-way. A similar fare would be charged for a patron traveling from downtown Greeley to downtown Denver.

6.3.4 Package B Bus Rapid Transit Stations

BRT is proposed to travel on arterial roads and on I-25. When BRT travels on arterial roads, it would function similar to commuter bus. The BRT would load and unload passengers in the park-and-ride or at an on-street bus stop. When BRT travels on I-25, the BRT would stop at a platform located in the median of I-25. A pedestrian overpass would be provided from the median platform over I-25to the proposed park-and-ride with the exception of SH 7 where the grade separated cross street would be utilized for pedestrian connectivity. The proposed overpass would only cross one side of I-25 but would not preclude a municipality or private developer from continuing the connection to the other side of the highway.

The station design at the South Transit Center in Fort Collins was developed before funding was committed for the South Transit Center; therefore does not incorporate the Mason Corridor South Transit Center. As detailed engineering occurs for the South Transit Center, the North I-25 EIS will coordinate with the Mason Corridor to appropriately accommodate both projects.

Conceptual station layouts are shown in **Figure 6-31** and **Figure 6-32**.

Figure 6-31 BRT Station Layout at Windsor (Northbound Lanes with Barrier Separation)

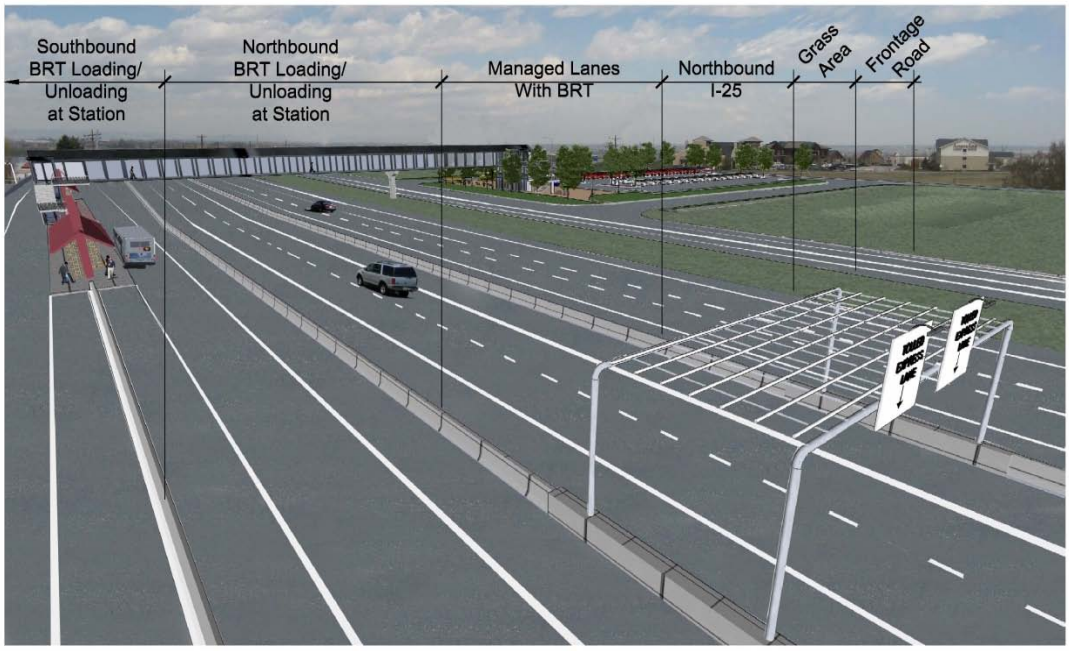
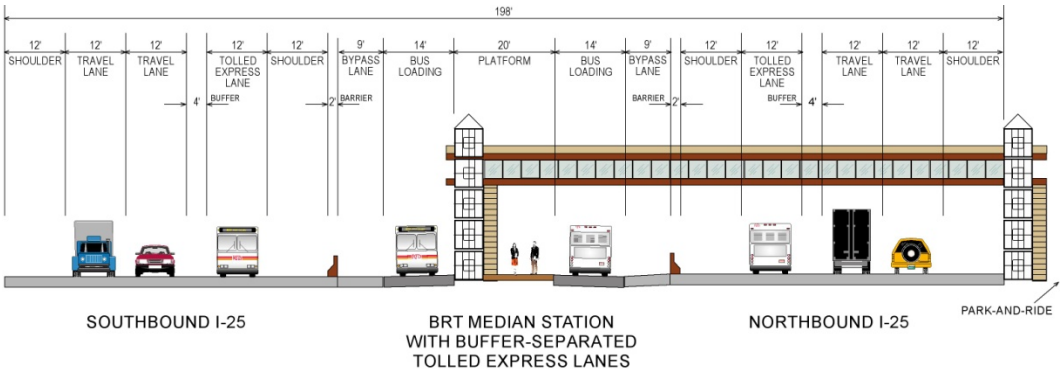
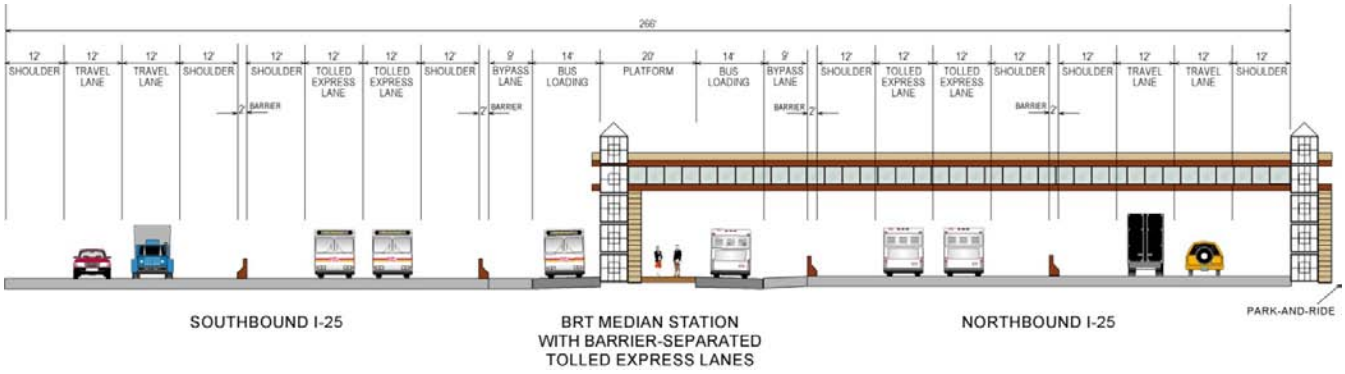


Figure 6-32 Package B Typical BRT Station Cross Sections





Station site selection criteria were similar to those applied to Package A commuter rail and commuter bus stations. Twenty-four potential station locations were screened down to twelve new stations and connections to three existing RTD stations. A range of three to sixteen sites were evaluated for each station location with the exception of the Fort Collins South Transit Center where one site was evaluated because the City of Fort Collins has an approved plan that identifies a location for a transit center. The South Transit Center is proposed to serve as the end of line for the Mason Street BRT system. In order to maximize ridership and access for the community it is important that the North I-25 commuter rail station connect to the proposed Mason Street BRT system. As a result of the station site evaluation, one to three preferred site(s) were identified at each station to house the platform, park-and-ride and bus activity. A more detailed description of the station sites considered and the screening process is included in **Section 5.2.2** of this document. As a result of the screening process, the following station sites were selected, as shown in **Table 2-8**. While bus rapid transit would serve three sites in the RTD district, no improvements or additional parking spaces are proposed as part of this EIS.

Table 6-11 Package B BRT Stations

BRT Station/Stop	Location
South Fort Collins Transit Center*	US 287 and Harmony Road - Fort Collins
Harmony Road and Timberline	Fort Collins
I-25 and Harmony Road	Fort Collins
Windsor	I-25 and SH 392
Crossroads Boulevard	Loveland Between Crossroads Boulevard and US 34
Greeley Downtown Transfer Center	8th Avenue and 8th Street - Greeley
West Greeley	US 34 and 83rd Avenue – Greeley
US 34 and SH 257	US 34 and SH 257 – Greeley
Berthoud	I-25 and SH 56
Firestone	I-25 and SH 119
Frederick/Dacono	I-25 and SH 52
I-25 and SH 7	I-25 at SH 7
Wagon Road	I-25 at 120th Avenue
Denver	Downtown Denver
DIA	Denver International Airport

* Station design will be coordinated with the recently funded Mason Corridor project.

With the exception of the station at CSU, all of the stations assumed parking, walk, and bus access for multi-modal accessibility. The stations were sized to reflect multi-modal access and the probable parking turnover during the day.

6.3.5 Package B Feeder Bus

Package B includes four feeder bus routes that would enable riders to access BRT service from the communities located along US 85 and US 287. These services would travel:

- Along SH 257, connecting Windsor and Timnath to the BRT
- Along US 34, connecting Loveland to the BRT
- Along SH 56, US 287, and SH 119, connecting Berthoud and Longmont to the BRT
- Along SH 52, connecting Fort Lupton, the tri-town area, and Niwot to the BRT

These feeder bus services would operate every 30 minutes during AM and PM peak periods and every 60 minutes during off-peak periods and would be scheduled to coincide with BRT service when possible.

A transit operator has not yet been identified to operate the feeder bus service. Funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

6.3.6 Package B Bus Maintenance Facility

The two potential bus maintenance facility site locations being considered in Package A also are being considered in Package B.

The BRT maintenance facility would accommodate an estimated 90 employees, including staff for the maintenance and operation of buses for both the BRT and the North I-25 feeder bus routes. Approximately 200 daily trips would be generated to and from this facility, including visitor trips. An estimated 150 bus trips, including BRT and feeder bus trips, would occur to and from the site each day. Bus trips also would be spread throughout the day with little to no bus activity during peak hours, as nearly all buses would be in service during those times.

6.3.7 Package B Congestion Management

As with Package A, congestion management measures were developed based on further analysis and coordination with agencies, as well as more specific information about traffic congestion and other conditions associated with Package B. The tolling in the tolled express lanes constitutes the primary method of congestion management with Package B. **Table 6-12** summarizes congestion management measures that were identified for Package B in addition to tolling.

Table 6-12 Package B Congestion Management Measures

Congestion Management Strategy	Description of Application
Local Transit Service	Local routes would connect to BRT at the South Transit Center (Fort Collins), Harmony and Timberline (Fort Collins), the Harmony Transit Center, the Downtown Transfer Center (8th and 8th) in Greeley; Crossroads Boulevard (Jitterbug – Loveland); and SH 7 in Broomfield.
Carpool and Vanpool	Carpool/vanpool lots would be in addition to and replace the existing carpool/vanpool lots. The lots would be paved and have lighting and security cameras. These lots along I-25 would be provided at: • SH 1 • SH 14 • Prospect Rd. • Harmony Rd. • SH 392 • SH 402 • SH 60 • SH 56 • SH 66 • SH 119 • SH 52 • SH 7
Incident Management Program	Courtesy patrols – Tow trucks with fuel, coolant, air, etc. would drive up and down I-25 from SH 14 to SH 7 during peak-period travel times (6:15 AM to 8:45 AM and 3:15 PM to 6:45 PM). These vehicles would pick up debris, help stalled motorists, and assist with other incidents as needed.
Signal Coordination and Prioritization	Timing at signals at interchanges along I-25 would be optimized as part of the interchange design process. Queue jumps, including signal treatments, would be included as part of the BRT design along US 34.
Ramp Metering	Based on a CDOT Region 6 precedent and policy along the T-REX corridor, ramp meters must be installed along continuous sections of a freeway in order to prevent trip detouring. At such time when volumes dictate ramp metering along I-25, they would be recommended at the following interchanges: • SH 14 • Prospect Rd. • Harmony Rd. • SH 392 • Crossroads Blvd. • US 34 • SH 402 • SH 119 • SH 52 • WCR 8 • SH 7
Real-Time Transportation Information	The CDOT Region 4 intelligent transportation plan would be implemented in its entirety with additional variable message signs northbound and southbound north of SH 14.
Bicycle / Pedestrian Facilities	Station areas would be designed to provide pedestrian links to the nearest local road. A 12-ft. wide multi-use path and 6-ft wide tree lawn would provide connectivity between the bus drop-off, park-and-ride and connectivity to the closest road. All stations would be designed in accordance with the accessibility standards set forth in the Americans with Disabilities Act (ADA).
Travel Demand Measures	During construction, proactive measures could be taken by the contractor to encourage use of alternative modes.

6.3.8 Package B Parking

Parking in Package B would be provided for BRT patrons and for carpoolers. **Table 6-13** summarized the number of parking spaces for each travel mode and the total number of spaces at each location that would be included as part of this build package.

Table 6-13 Package B Parking Summary

Parking Location	BRT Station/Stops Spaces	Carpool/Vanpool Spaces	Total Spaces
SH 1 at I-25	N/A	80	80
SH 14 at I-25	N/A	170	170
Prospect at I-25	N/A	140	140
South Fort Collins Transit Center	70	N/A	70
Harmony Road and Timberline	40	N/A	40
I-25 at Harmony	30	320	350
Windsor	40	100	140
Crossroads Boulevard	80	N/A	80
Greeley Downtown Transfer Center	0	N/A	0
West Greeley	100	N/A	100
US 34 and SH 257	40	N/A	40
SH 402 at I-25	N/A	360	360
Berthoud	160	80	240
SH 56 at I-25	N/A	40	40
Firestone	350	100	450
Frederick/Dacono	210	80	290
I-25 and SH 7	280	180	460
Wagon Road	0	0	0
Downtown Denver	0	0	0
Denver International Airport	0	0	0

.N/A=Not Applicable

6.3.9 Other Package B Features

Package B would also include retaining walls, water quality ponds, and drainage structures.

Retaining Walls

Retaining walls were used in the conceptual design along highway general purpose lanes to minimize impacts to environmentally sensitive areas and existing commercial buildings/ developments.

Water Quality

To conform to CDOT's MS4 permit, roadway runoff would need to be treated within urbanized areas. Using land use projections from the NFRMPO, urban areas were determined and potential treatment locations have been identified within Package B. These would be located along highways and at transit stations, maintenance facilities, and parking lots. Suggested locations for the water quality features are included in the Package B concept plans. Various methods for treating stormwater runoff, such as ponds, vaults, and infiltration basins would be considered during final design.

Floodplains and Drainage

Almost all of the existing drainage structures are undersized and cannot pass the 100-year storm flows under I-25. Final design would include a detailed hydraulic analysis for each crossing. This would include addressing allowable backwater and methods for mitigating impacts to the environment.

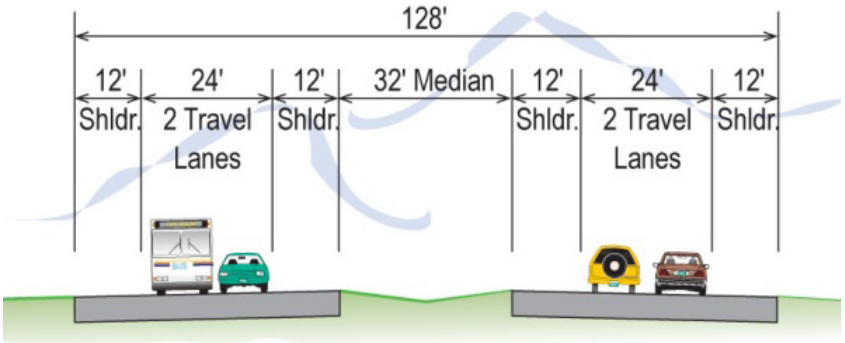
6.4 PREFERRED ALTERNATIVE

The Preferred Alternative was developed based on the evaluation of Packages A and B, public input received during the Draft EIS and through a series of workshops held with the project's advisory committees. It is a combination of elements included and evaluated in Packages A and B. The Preferred Alternative is described below and illustrated in **Figure 6-33**.

6.4.1 Preferred Alternative I-25 Improvements

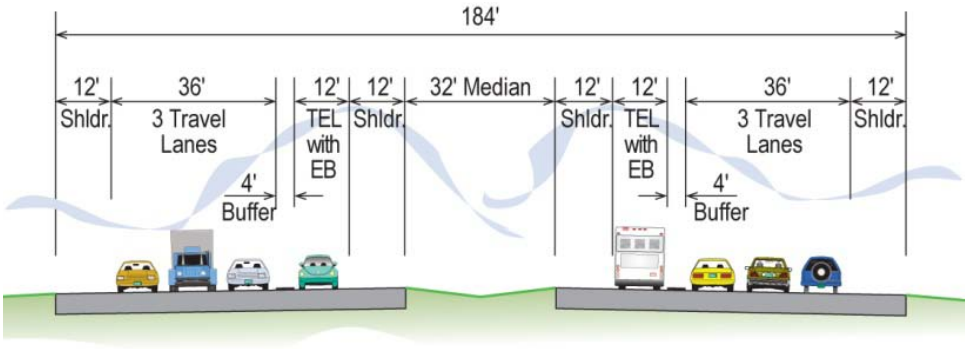
The Preferred Alternative would widen I-25 with general purpose lanes and tolled express lanes (lanes restricted to high-occupant vehicles and tolled single occupant vehicles). Substandard interchanges and frontage roads would be reconstructed or upgraded to accommodate future travel needs. A total of 555 lane miles/61 linear miles of I-25 would be reconstructed and/or widened. This section describes the I-25 improvements.

SH 1 to SH 14



North of SH 14, up to SH 1, the Preferred Alternative would reconstruct I-25 to improve it to today's design standards. This reconstruction would correct the horizontal and vertical alignment, and widen both the inside and outside shoulders. The ultimate cross section would utilize some of the existing grass median but retain 32 feet (similar to the existing section of I-25 between SH 66 and SH 7). As a safety measure, a tension cable barrier would be included in all locations with a grass median.

SH 14 to SH 66

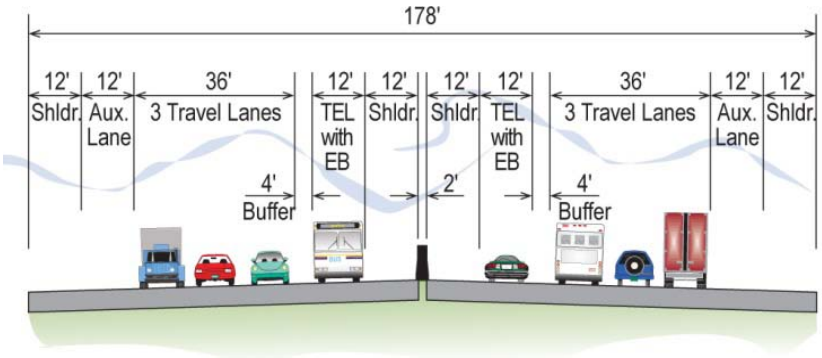


The Preferred Alternative would add one additional general purpose lane and one buffer-separated tolled express lane in each direction of I-25 from SH 14 to SH 66. The buffer-separated lanes would be separated from the general purpose lanes with a painted four-foot strip. This widening would require reconstruction of the entire cross section to correct the horizontal and vertical alignment, and widen both the inside and outside shoulders. The ultimate cross section would retain 32 feet of the existing grass median (similar to the existing section of I-25 between SH 66 and SH 7). As a safety measure, a tension cable barrier would be included in all locations with a grass median. I-25 vertical alignment modifications would be made at SH 402 and LCR 16 interchanges to improve safety. These modifications would result in SH 402 and LCR 16 traveling over the top of I-25 rather than I-25 being bridged over the cross street. At SH 56, this modification would result in I-25 traveling over SH 56.

SH 66 to SH 7

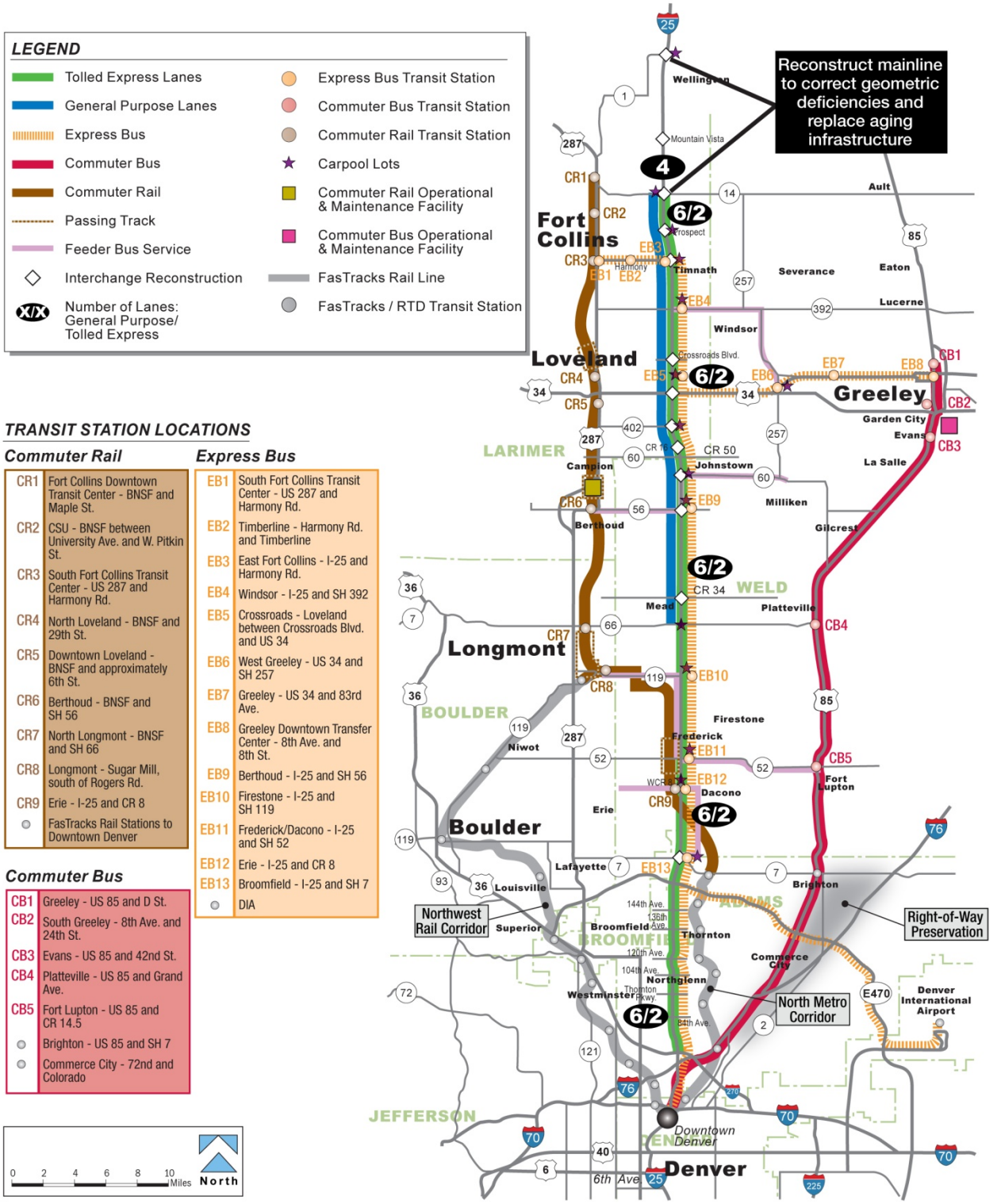
The Preferred Alternative would add one buffer-separated tolled express lane in each direction of I-25 from SH 66 to SH 7. The buffer-separated lanes would be separated from the existing general purpose lanes with a painted 4-foot strip. Because this section of I-25 has recently been upgraded, the widening does not require reconstruction of the entire cross section. The widening would result in the same cross section shown between SH 14 and SH 66. The existing 32-foot grass median would be maintained. As a safety measure, a tension cable barrier would be included in all locations with a grass median.

SH 7 to US 36



The Preferred Alternative would add one buffer-separated tolled express lane in each direction of I-25 from SH 7 to US 36. The buffer-separated lanes would be separated from the existing general purpose lanes with a painted four-foot strip. The new tolled express lanes would tie in to the existing reversible HOT lanes north of US 36. The widening does not require reconstruction of the entire cross section. However, all the widening would occur to the outside in this section because the existing cross section does not include a median. Similar to the existing cross section, northbound and southbound lanes would be separated with a concrete barrier.

Figure 6-33 Preferred Alternative



Frontage Roads

Frontage roads along I-25 would be rebuilt approximately where they exist today. At the interchanges, frontage roads would be relocated east or west away from the ramp terminals to address storage and safety concerns at the intersections. Along the I-25 mainline, the frontage roads would be offset 40 feet, based on current design standards. This is similar to what was included in Packages A and B.

Tolled Express Lane Operation

The tolled express lanes would only allow high occupant vehicles and tolled single occupant vehicles. All vehicles traveling in the tolled express lanes would require a transponder unless newer technology becomes available when this is implemented. The transponder would be automatically scanned as the vehicle travels in the lane; for single-occupant vehicles the transponders would collect a toll via the credit card on file for that transponder. Transponders registered to HOVs would not be assessed a toll. There would be no toll booths and no cash would be accepted with this transponder-required system. These tolls would vary by time of day, and will be modified to manage congestion in tolled express lanes to ensure that these lanes are less congested than the general purpose lanes. **Table 6-14** summarizes the anticipated toll rate by peak direction for traffic volumes anticipated in 2035.

Access to the tolled express lanes would be provided via slip ramps connecting the general purpose lanes to the tolled express lanes. A 12-foot inside shoulder is included in the design of the tolled express lanes to enable safe and efficient enforcement along the entire corridor. Conceptual design of the access and egress to the tolled express lanes and a graphic illustrating where access and egress locations would be provided is included in the description of Package B.

The tolled express lanes would connect directly to the existing HOT lanes on I-25 that end near 84th Avenue. The existing HOT facility is a two-lane, barrier-separated, reversible operation. Both lanes flow toward downtown Denver in the AM peak period and out of downtown (northbound) in the PM peak period. Unlike the existing HOT lanes, the tolled express lanes included in this alternative would be a single, buffer-separated lane in each direction. These lanes would not be reversible in the peak periods. A slip ramp to/from the general purpose lanes is provided for the off-peak direction tolled express lanes traffic to enter or exit the tolled express lanes.

Table 6-14 Tolled Express Lanes Toll Rates, Peak Direction Single-Occupant Vehicle (2009 dollars)

Location on I-25	AM Peak Hour Southbound	PM Peak Hour Northbound
North of E-470	$0.075/mi	$0.10/mi
South of E-470	$0.5/mi	$0.75/mi

Source: Wilbur Smith Associates, October 2010.

Based on this pricing, it would cost an AM peak-hour traveler $8.65 (in 2009 dollars) to use the tolled express lanes from SH 14 to US 36.

Preferred Alternative Interchanges

All substandard interchanges along the corridor would be reconstructed. No new interchange locations have been identified as part of this process. **Table 6-15** lists the interchanges and their configuration included as part of the Preferred Alternative. While much effort was taken to develop interchange configurations consistent with each communities' transportation vision during the EIS process, over time the needs of the communities may change. When necessary, communities can work with CDOT and FHWA, at their own expense, to reevaluate alternative interchange configurations and intersection control options to meet their changing needs.

Table 6-15 Preferred Alternative I-25 Interchange Configuration

Existing I-25 Interchange Location	Preferred Alternative Improvement
SH 1	reconstructed diamond
Mountain Vista	reconstructed diamond
SH 14	reconstructed diamond
Prospect Road	reconstructed diamond
Harmony Road	reconstructed diamond
SH 392	ramp modifications due to I-25 mainline improvements
Crossroads Boulevard	reconstructed diamond
US 34	dual directional/diamond
SH 402	reconstructed diamond
LCR 16	reconstructed diamond
SH 60	reconstructed diamond
SH 56	reconstructed diamond
WCR 34	reconstructed diamond
SH 66	ramp modifications due to I-25 mainline improvements
SH 119	ramp and cross-street modifications due to I-25 mainline improvements and express bus station
SH 52	ramp and cross street modifications due to I-25 mainline improvements and express bus station
WCR 8	no improvements
SH 7	partial cloverleaf
E-470	ramp modifications due to I-25 mainline improvements
144th Avenue	ramp modifications due to I-25 mainline improvements
136th Avenue	ramp modifications due to I-25 mainline improvements
120th Avenue	ramp modifications due to I-25 mainline improvements
104th Avenue	ramp modifications due to I-25 mainline improvements
Thornton Parkway	ramp modifications due to I-25 mainline improvements
84th Avenue	ramp modifications due to I-25 mainline improvements

13 interchanges to be fully reconstructed
11 interchanges to receive ramp and/or cross-street modifications due to I-25 mainline improvements and/or express bus stations
1 interchange requires no improvements (WCR 8)

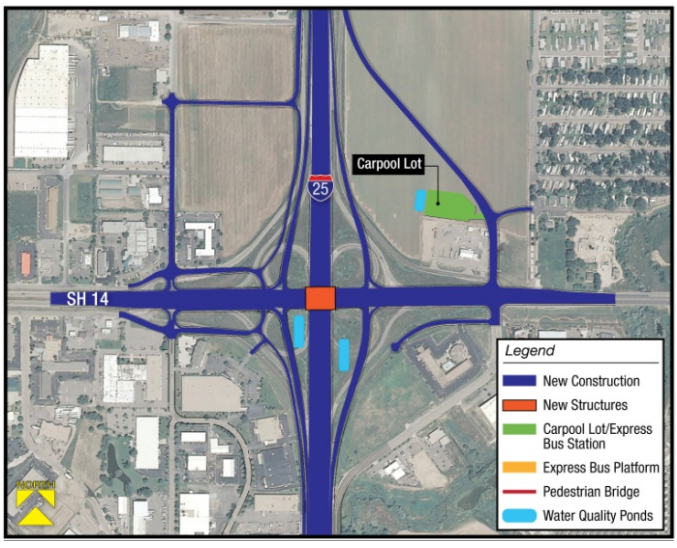
Table 6-16 illustrates the Preferred Alternative interchange configurations and, where applicable, carpool lots, express bus stations, new structures and water quality ponds adjacent to I-25. Additional information on carpool lots and express bus stations not located along I-25 is included in subsequent sections.

Table 6-16 Preferred Alternative Interchange Configurations

SH 1 Interchange

Mountain Vista Interchange

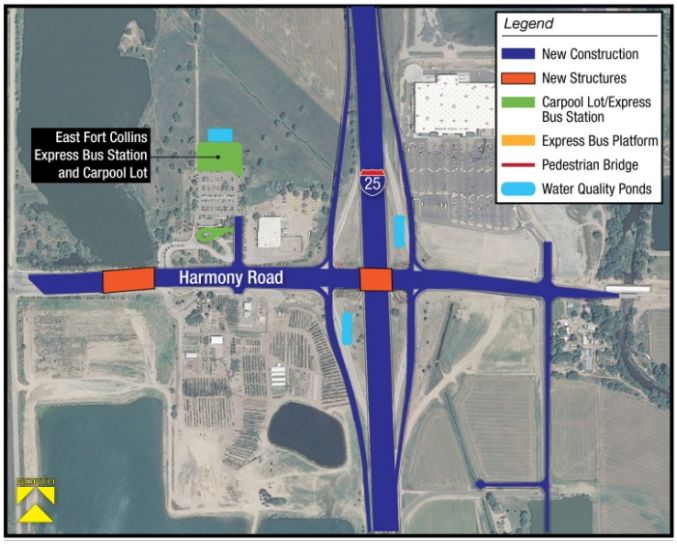
SH 14 Interchange



Prospect Interchange

Table 6-16 Preferred Alternative Interchange Configurations (cont'd)

Harmony Road Interchange



SH 392 Interchange
(No-Action Improvement)

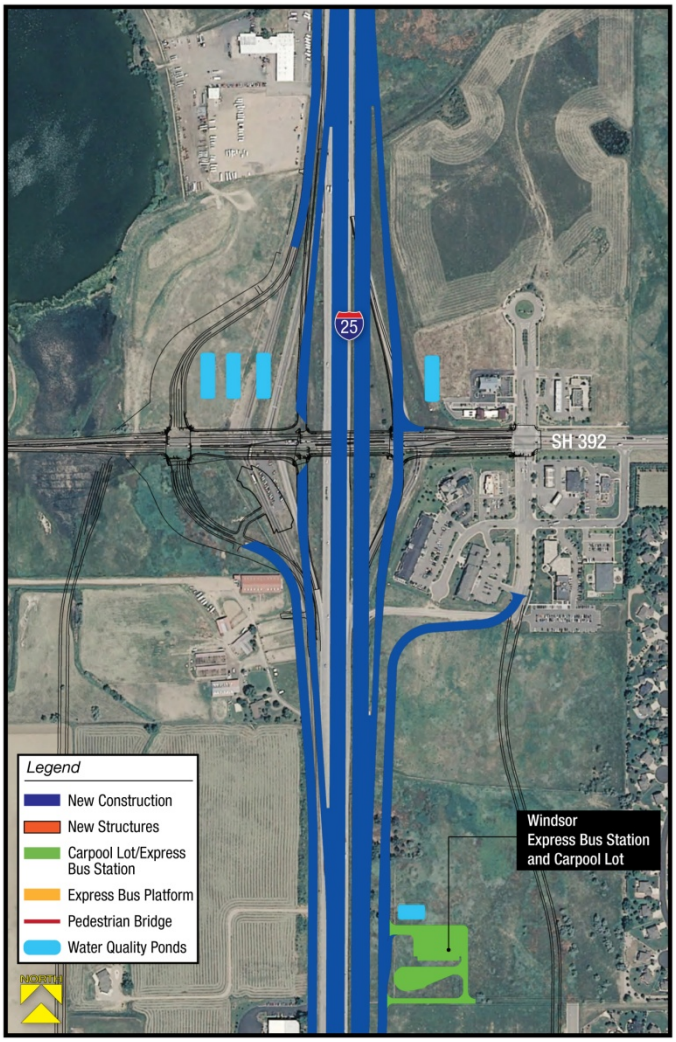
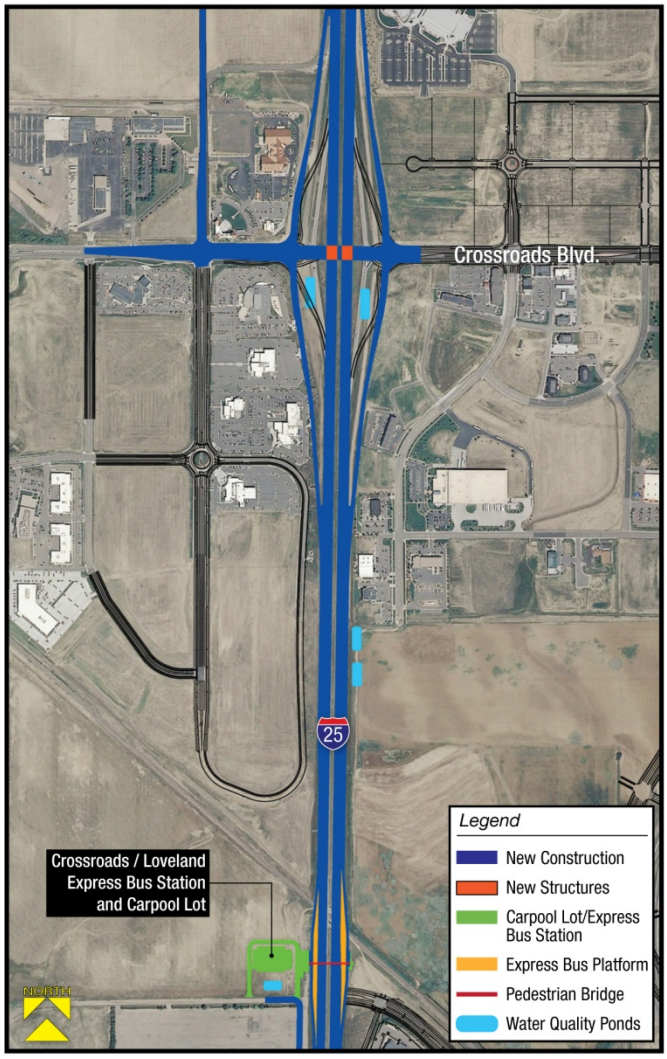
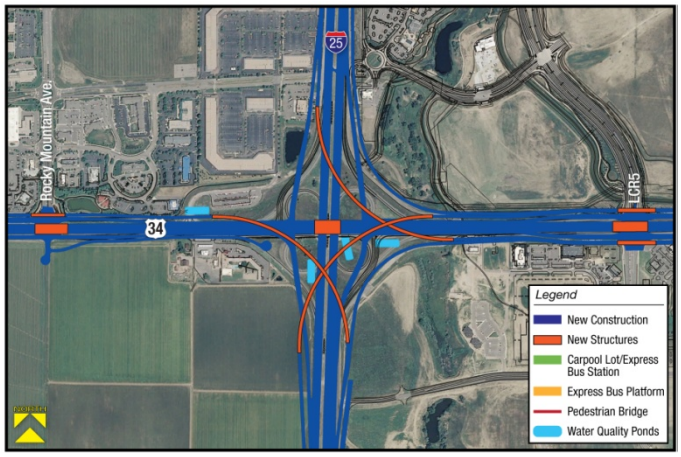


Table 6-16 Preferred Alternative Interchange Configurations (cont'd)

Crossroads Interchange



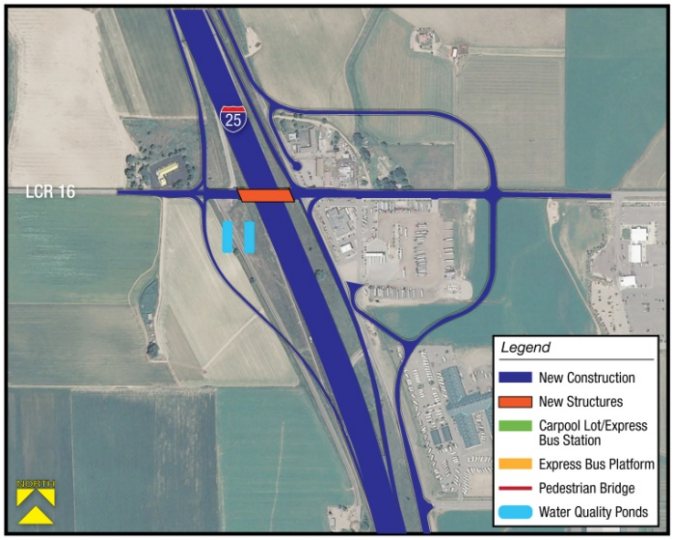
US 34 Interchange



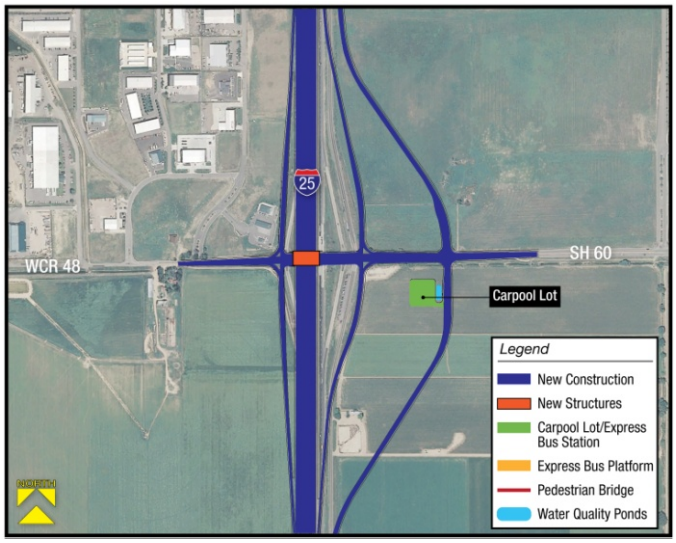
SH 402 Interchange

Table 6-16 Preferred Alternative Interchange Configurations (cont'd)

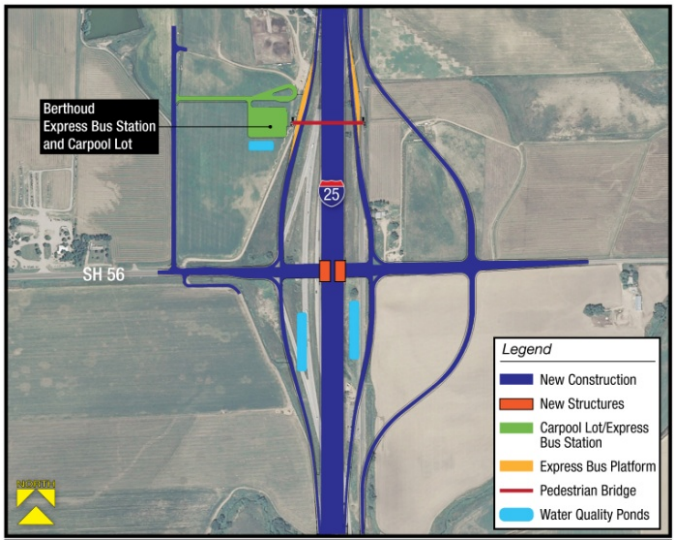
LCR 16 Interchange



SH 60 Interchange



SH 56 Interchange



WCR 34 Interchange

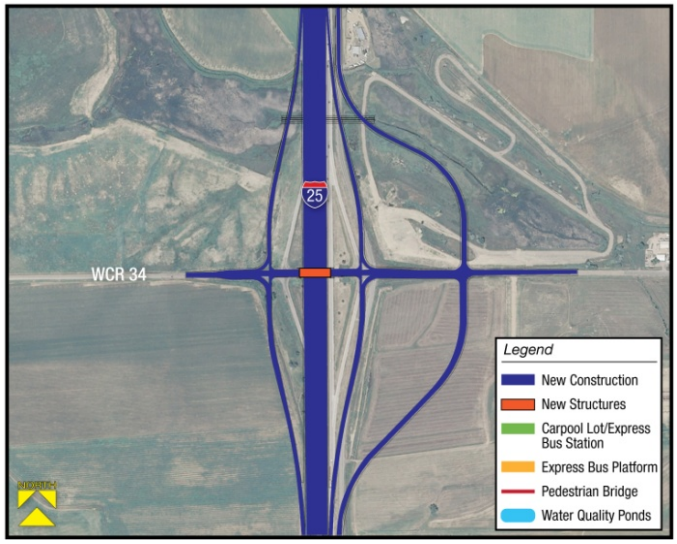
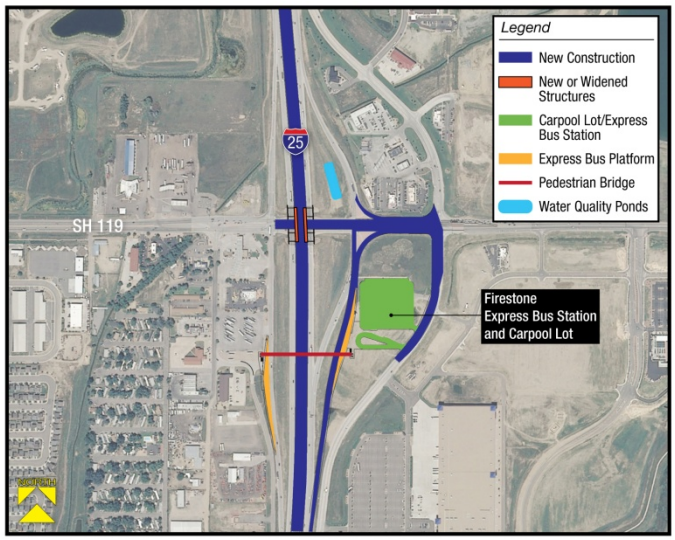


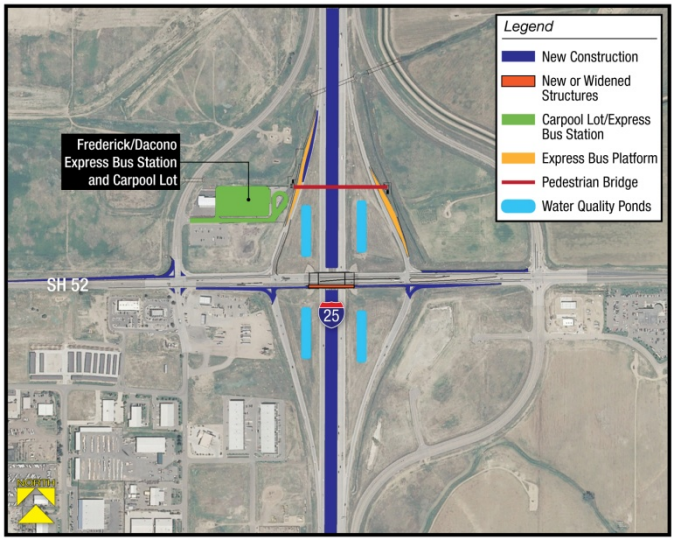
Table 6-16 Preferred Alternative Interchange Configurations (cont'd)

SH 66 Interchange

SH 119 Interchange



SH 52 Interchange



WCR 8 Interchange

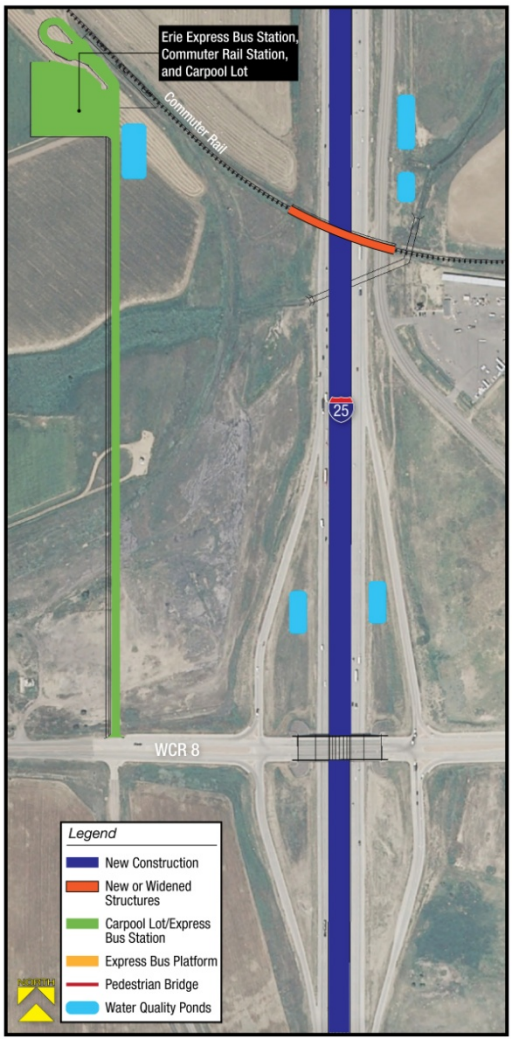
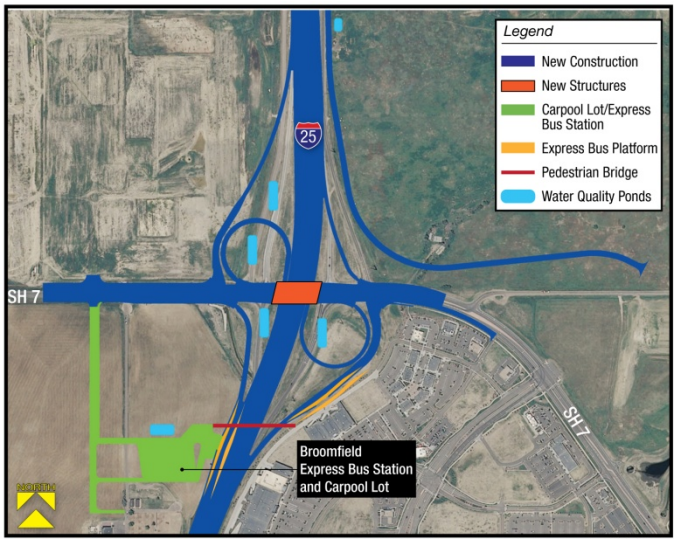
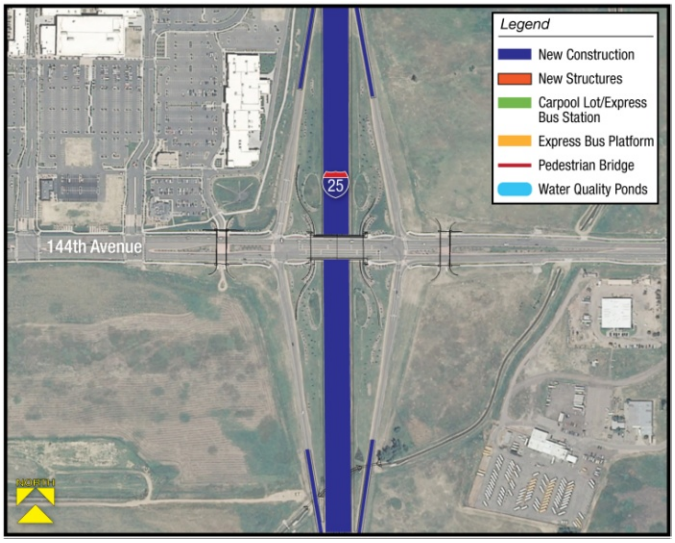


Table 6-16 Preferred Alternative Interchange Configurations (cont'd)

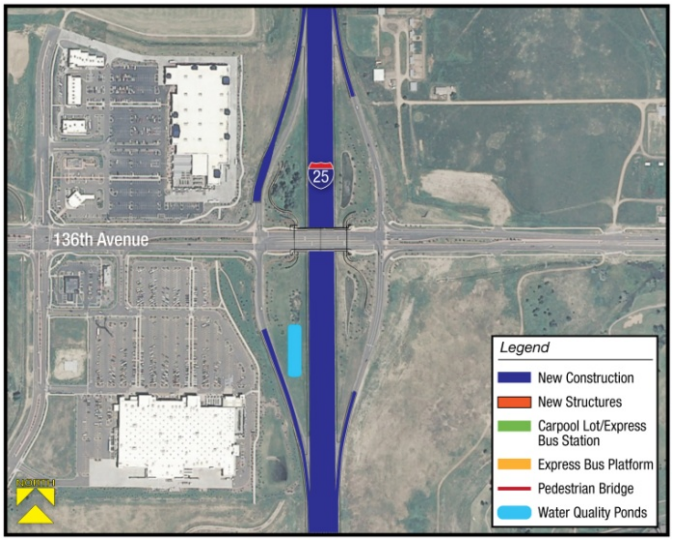
SH 7 Interchange



144th Avenue Interchange



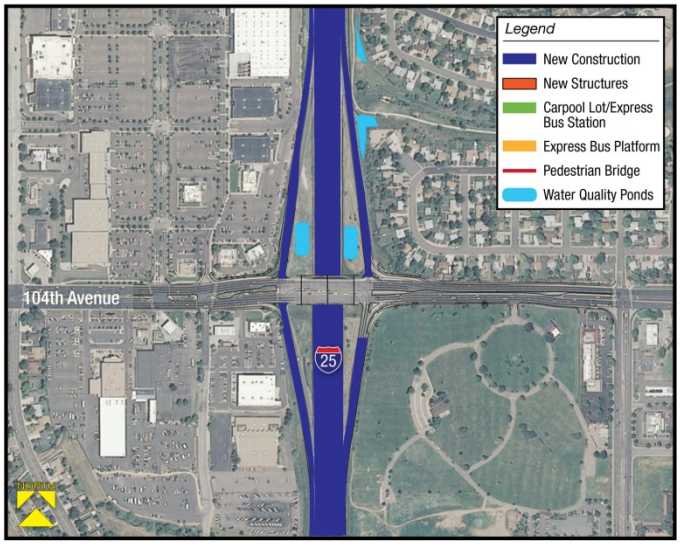
136th Avenue Interchange



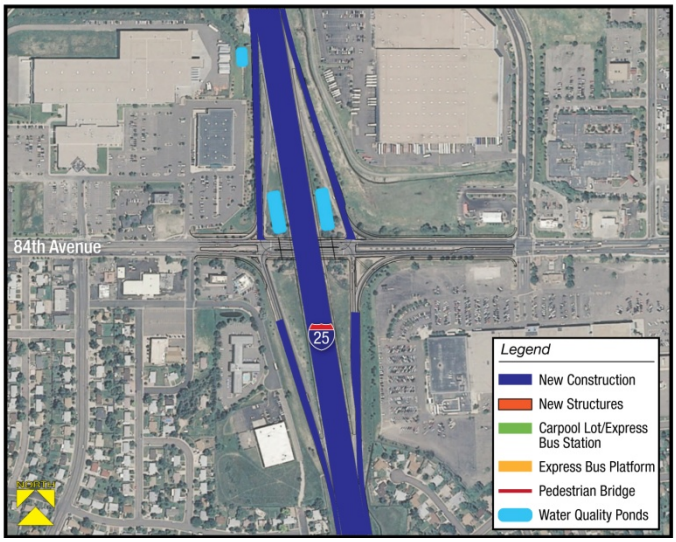
120th Avenue Interchange

Table 6-16 Preferred Alternative Interchange Configurations (cont'd)

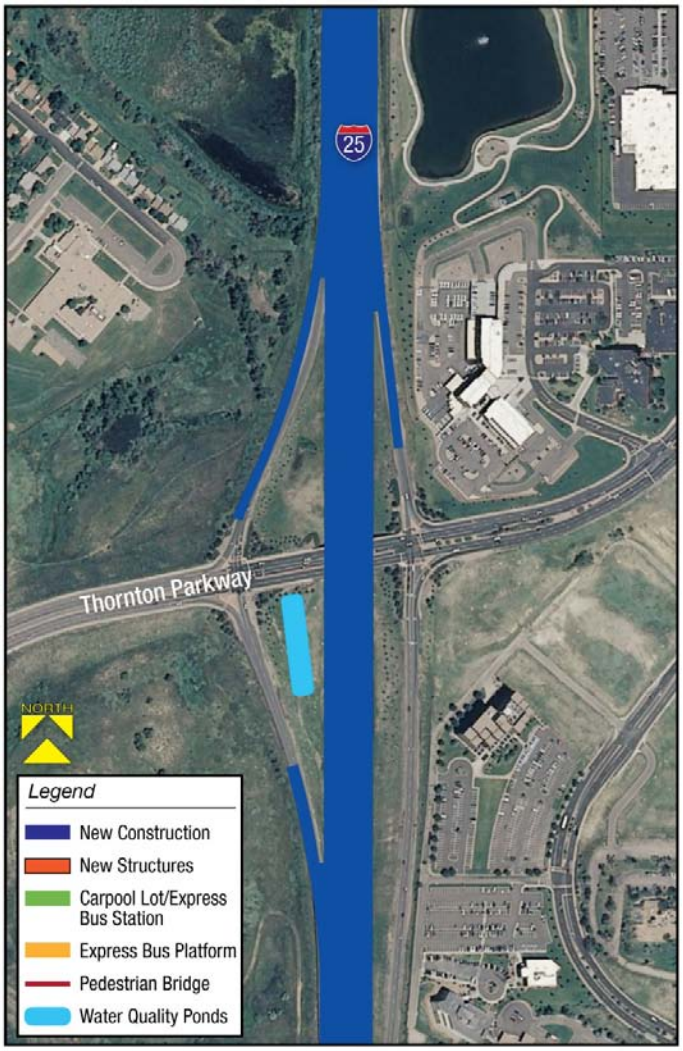
104th Avenue Interchange



84th Avenue Interchange



Thornton Parkway



6.4.2 Preferred Alternative Carpool Lots

Carpool lots would be located near many interchanges along the I-25 corridor to serve HOV users of the TEL. In several locations, the parking facility would be a shared facility with Express Bus stations. The carpool lots are listed in **Table 6-17**.

Table 6-17 Preferred Alternative Carpool Parking

Interchange	New Carpool Parking
SH 1	40 spaces
SH 14	150 spaces
Prospect Road	112 spaces
Harmony Road	Included in 350 express bus parking spaces
SH 392	Included in 95 express bus parking spaces[1]
Crossroads Boulevard	Included in 132 express bus parking spaces
SH 402	290 spaces
SH 60	90 spaces
SH 56	Included in 144 express bus parking spaces
SH 119	Included in 380 express bus parking spaces
SH 52	Included in 114 express bus parking spaces
WCR 8	Included in 185 express bus/commuter rail parking spaces
SH 7	Included in 280 express bus parking spaces

Notes:
New carpool parking is presented. Two existing carpool parking areas at SH 66, and US 34/WCR 257 will be utilized, but no improvements are planned.
[1] When this is implemented, coordination will occur with Fort Collins to determine the exact location of this lot.

6.4.3 Preferred Alternative Express Bus

Express Bus services would connect northern Colorado communities to downtown Denver and to DIA, utilizing the express lanes along I-25.

Service from Fort Collins would begin at the South Transit Center and operate along Harmony Road in mixed traffic until accessing I-25 at its interchange with Harmony Road. On I-25 the bus would utilize the tolled express lanes when possible. Throughout the day, a regional route would operate at 60 minute headways, serving the South Transit Center, the Harmony/Timberline stop, Harmony Road park and ride, SH 392, Crossroads, SH 56, SH 119, SH 52, WCR 8, and SH 7 along the way to downtown Denver. During peak periods, an express route would be initiated at the Harmony Road park and ride and operate on 30-minute headways, stopping only at SH 392, Crossroads, and SH 7 along the way to downtown Denver. No express service would be operated in the off-peak period.

WHAT IS EXPRESS BUS?

Express bus service is regional transit service with limited stops in order to operate faster than other bus services. This type of service typically operates on freeways or expressways. It has park and ride facilities with transit priority amenities such as slip ramps and queue jumps to improve travel time over a traditional regional bus service. When available, the service will utilize the TELs. When adjacent to a freeway, pedestrian structures provide access to park and rides from either direction of bus travel to reduce out of direction travel and improve travel time

Service from Greeley would begin at the 8th Street and 8th Avenue Transit Center in downtown Greeley and serve stops along US 34 in mixed traffic with queue jumps at most intersections. It would access I-25 at US 34 and access the tolled express lane via a slip ramp south of US 34, and stop at SH 56 and SH 7 along the way to downtown Denver. This express route would operate on 20-minute headways during the peak periods. Off peak service would be provided via the US 85 commuter bus service described later.

A third express route pattern would originate at SH 119 and operate on 30-minute headways during the peak hours, stopping at SH 52 along the way to downtown Denver.

A fourth route would connect the commuter rail and express bus station at CR 8 to DIA. This route will operate on 60-minute headways during both the peak and off peak periods.

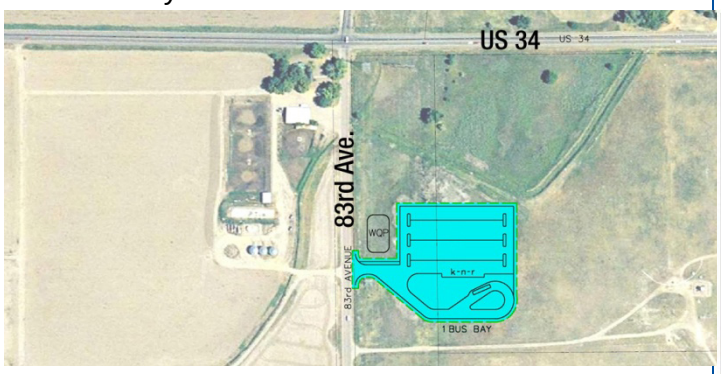
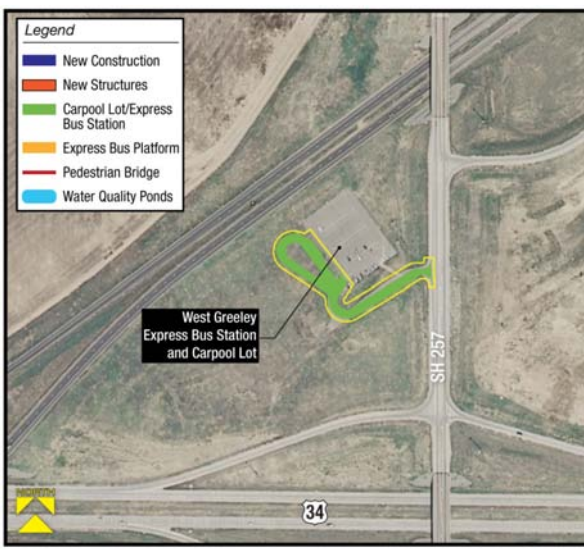
Preferred Alternative Express Bus Stations

For each Express Bus station, the location, number of parking spaces, and accommodation of pedestrian movements with an overpass are described in the **Table 6-18**.

Table 6-18 Preferred Alternative Express Bus Stations

South Transit Center* (Express Bus, Commuter Rail and Mason BRT Station) 130 spaces No Pedestrian Overpass	Harmony Road and Timberline 0 Spaces No Pedestrian Overpass
I-25 and Harmony Road (Expanded Harmony Road Multi-Modal Transfer Center) 350 Spaces No Pedestrian Overpass	Windsor (SH 392)** Southeast quadrant of I-25 and SH 392 95 Spaces No Pedestrian Overpass
Crossroads Boulevard West of I-25 and South of Crossroads Boulevard-Loveland 132 Spaces Pedestrian Overpass	West Greeley (See illustration at end of table) South of US 34 and East of 83rd Avenue 198 Spaces No Pedestrian Overpass
US 34 and SH 257 (See illustration at end of table) (Existing carpool lot improved) 0 New Spaces No Pedestrian Overpass	Berthoud (SH 56) Northwest quadrant of I-25 and SH 56 interchange 52 Spaces Pedestrian Overpass
Firestone (SH 119) Southeast quadrant of I-25 and SH 119 280 Spaces Pedestrian Overpass	Frederick/Dacono (SH 52) Northwest quadrant of I-25 and SH 52 114 Spaces Pedestrian Overpass
I-25 and SH 7 Southwest quadrant of I-25 and SH 7 280 Spaces Pedestrian Overpass	I-25 and Weld County Road 8 * (Express Bus and Commuter Rail Station) Northwest quadrant of I-25 and WCR 8 185 Spaces No Pedestrian Overpass
Downtown Denver 0 Spaces No Pedestrian Overpass	Denver International Airport (DIA) 0 Spaces No Pedestrian Overpass

Table 6-18 Preferred Alternative Express Bus Stations (cont'd)

West Greeley	US 34 and SH 257
	

* See **Table 6-21** Commuter Rail Stations for illustration of this station.
** Will coordinate with Fort Collins new carpool facility at this location

A transit operator has not yet been identified to operate the express bus service. However, in the southern front range a similar commuter style service is operated by the City of Colorado Springs in partnership with the other communities served. This would indicate that one of the local transit providers in the area (Greeley, Loveland and Fort Collins) could operate this service. CDOT also has authority to operate this regional transit service. In either scenario, funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

While fares have not yet been determined, it is estimated that a express bus fare may be 25 percent higher than a commuter bus fare. This would yield a rate of approximately $0.15 per mile (in 2009 dollars). Based on this rate, an express bus patron traveling from Fort Collins South Transit Center to downtown Denver would pay $8.70 one-way. A similar fare would be charged for a patron traveling from downtown Greeley to downtown Denver.

Preferred Alternative Queue Jumps

Queue jumps would be provided for the Express Bus to improve travel time and reliability along US 34. The queue jumps typically include signal priority upgrades and sometimes include modifying an intersection or island to provide a short lane for the buses to bypass the standing queue of through vehicles. The lane is typically shared with an existing right turn lane. **Table 6-19** summarizes the Preferred Alternative queue jump locations and the planned improvement at each location.

Table 6-19 Preferred Alternative Queue Jumps

Queue Jump Summary	US 34 Business Eastbound	US 34 Business Westbound
Promontory Circle	Use existing right turn lane as queue jump with signal priority	Use existing right turn lane as queue jump with signal priority
Promontory Parkway	Use existing right turn lane as queue jump with signal priority	Use existing right turn lane as queue jump with signal priority
71st Avenue	Signal priority only	Signal priority only
59th Avenue	Island modification to create right turn queue jump with signal priority	Island modification to create right turn queue jump with signal priority
47th Avenue	Island modification to create right turn queue jump with signal priority	Use existing right turn lane as queue jump with signal priority
Country Club	Signal priority only	Island modification to create right turn queue jump with signal priority
43th Avenue	Use existing right turn lane as queue jump with signal priority	Island modification to create right turn queue jump with signal priority
39th Avenue	Use existing right turn lane as queue jump with signal priority	Use existing right turn lane as queue jump with signal priority
37th Avenue	Use existing right turn lane as queue jump with signal priority	Use existing right turn lane as queue jump with signal priority
35th Avenue	Island modification to create right turn queue jump	Island modification to create right turn queue jump
28th Avenue	Signal priority only	Signal priority only
26th Avenue	Signal priority only	Use existing right turn lane for queue jump

Downtown Denver Express Bus Circulation

During the AM peak hours, southbound buses would enter downtown Denver via the North I-25 express lanes and enter downtown using 19th Street, turning southwest on Arapahoe and providing stops at 17th and 15th Streets. From there, buses would turn right on 15th Street, left at Little Raven Street, and proceed to Elitch Gardens to layover before making the return trip. Downtown circulation is shown in **Figure 6-21**. This downtown route is similar to the route of the current Front Range Express (FREX) bus from Colorado Springs to Denver. During hours when the reversible express lane flow is headed northbound, southbound buses would enter downtown Denver via the 20th Street interchange, take 20th Street to Arapahoe, and follow the remainder of the route described above.

During the PM peak hours, northbound buses would exit downtown Denver by turning right out of Elitch Gardens onto 15th Street, turning right again to access 14th Street and eventually turning left on Lawrence Street, picking up passengers at 15th and 17th Streets, and proceeding to the I-25 HOV entrance ramp on 20th Street. During hours when the reversible express lane flow is headed southbound, northbound buses would access I-25 via the 20th Street interchange.

Planned RTD improvements at Denver Union Station might allow these buses to access and egress the HOV lanes from 18th and 19th Streets and serve Denver Union Station via Wewatta Street. In addition, provided there is enough space, the commuter bus service also might be able to layover at Denver Union Station before making the return trip instead of traveling the extra distance to Elitch Gardens. These possible connections could be further evaluated in the future.

6.4.4 Preferred Alternative Commuter Bus

The Preferred Alternative includes commuter bus service along US 85 connecting Greeley to downtown Denver. This service would operate every 60 minutes during both the peak and off peak periods.

Preferred Alternative Commuter Bus Stations

Virtually all Commuter Bus station locations identified in Package A would remain the same in the Preferred Alternative. However, in Fort Lupton, the preferred Commuter Bus station site identified for inclusion in the Preferred Alternative is different than Package A. The Preferred Alternative site was considered too small for Package A and therefore infeasible. The addition of express bus on I-25 reduced parking demand for the Commuter Bus in the Preferred Alternative making this site (Site D) a viable option for the Preferred Alternative. This site was identified as the preferred location because it is compatible with existing zoning and has good accessibility from County Road 14.5. The stations are illustrated in **Table 6-20**.

Table 6-20 Preferred Alternative Commuter Bus Stations and Stops

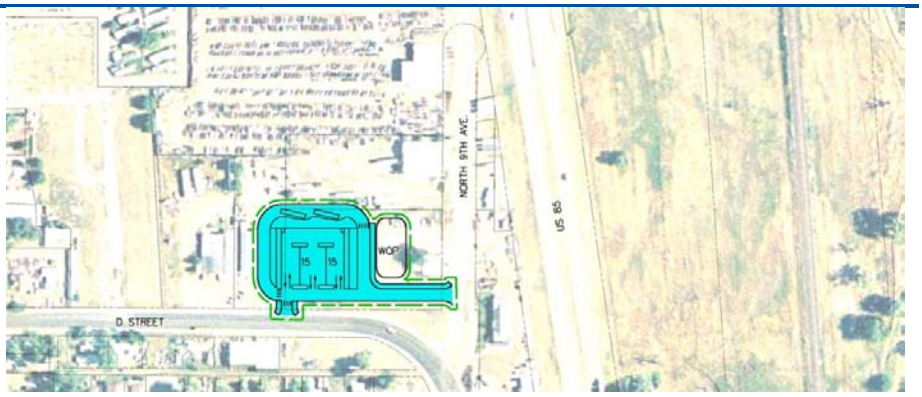
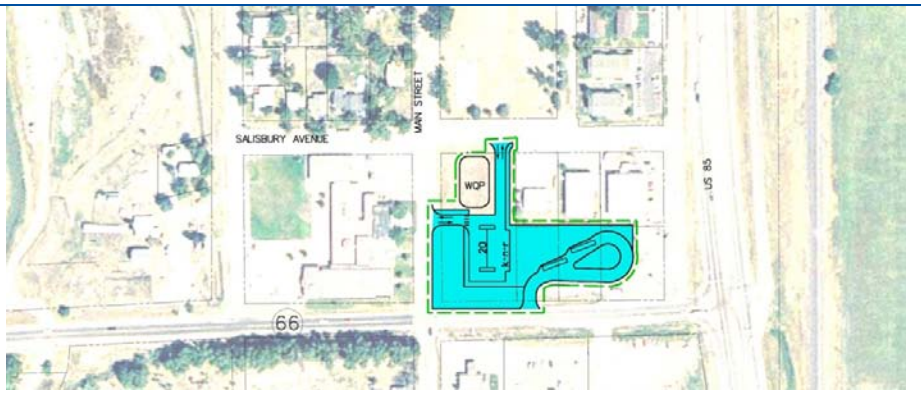
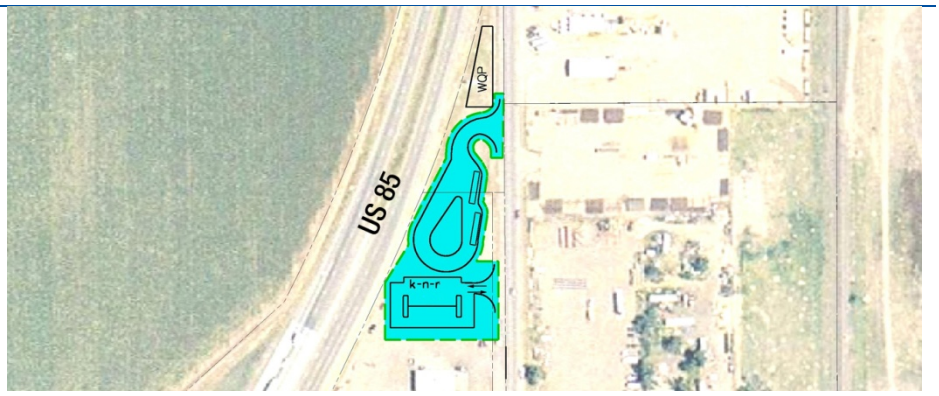
Greeley US 85 and D Street- West of US 85 and north of D Street 20 Spaces	
South Greeley 8th Avenue and 24th Street- West of 8th Avenue and south of 26th Street 30 Spaces	

Table 6-20 Preferred Alternative Commuter Bus Stations and Stops (cont'd)

Evans US 85 and 42nd Street- East of US 85 and south of 42nd Street 30 Spaces	
Platteville US 85 and Grand Avenue- North of Grand Avenue and west of US 85 20 Spaces	
Fort Lupton US 85 and 14th St. (CR 14.5) - East of US 85 and South of 14th St. (CR 14.5) 20 Spaces	
Brighton US 85 and SH 7	No parking added. Commuter Bus would use existing RTD park-n-Ride.
Commerce City Colorado Blvd and 72nd Ave.	No parking added. Commuter Bus would use proposed RTD North Metro park-n-Ride.
Denver	Downtown Denver bus circulation described in Express Bus section.

While specific fares have not been identified, a review of commuter bus systems nationwide indicates that a typical fare would be about $0.12 per mile (in 2009 dollars). Based on this rate, it would cost a rider traveling from downtown Greeley to downtown Denver approximately $6.60 one-way.

A transit operator has not yet been identified to operate the commuter bus service. However, in the southern front range a similar commuter style service is operated by the City of Colorado Springs in partnership with CDOT and the other communities served. This would indicate that one of the local transit providers in the area (Greeley, Loveland and Fort Collins) could operate this service. CDOT also has authority to operate regional transit services. In either scenario, funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

6.4.5 Preferred Alternative Commuter Rail

The Preferred Alternative includes commuter rail transit service from Fort Collins to the planned FasTracks North Metro end-of-line. Service to Denver would travel through Longmont and along the FasTracks North Metro Corridor; a transfer would not be necessary. To reach Boulder, northern Colorado riders would transfer to the Northwest Rail Corridor at the Sugar Mill station in Longmont. For planning evaluation purposes, diesel multiple units are assumed as a vehicle technology. In recognition that rail vehicle technology is evolving rapidly, vehicle technologies will be reassessed prior to implementation of North I-25 commuter rail. In this way, interoperability with FasTracks system will be maintained.

A regional transit operator has not yet been identified to operate the commuter rail service. CDOT has authority to operated rail service. Funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit.

While specific fares have not yet been identified, the typical national average commuter rail peak period fare is $0.22 per mile (2009 dollars). Based on this rate, it would cost a rider about $14.00 one way to travel from the Fort Collins South Transit Center to Denver Union Station

One of the low-cost options examined for Package A, single tracking commuter rail, was also considered for evaluated for the Preferred Alternative. The advantage of single tracking was cost savings and a reduction of resource impacts. Analysis showed that when paired with Express Bus serving Fort Collins and the I-25 corridor, the commuter rail could be single tracked and still meet the Purpose and Need. The primary reasons for this are:

- The addition of bus service on I-25 would provide an alternate form of transportation for transit dependent riders if for some reason one service was not operable (i.e. track maintenance), improving transit service reliability in the region.
- The addition of bus service on I-25 splits travel demand in the region between the rail corridor and the express bus resulting in less demand on the commuter rail system and less long-term expansion need.

- Express Bus service would tie into the planned Fort Collins BRT route providing additional regional transit service to meet the travel demand of Fort Collins.
- There is inter-connectivity between the US 85 Commuter Bus and the I-25 Express Bus improving mobility and accessibility throughout the region.

In conclusion, the use of Express Bus to complement Commuter Rail service in the Preferred Alternative provides reliable, expandable transit service of sufficient capacity in the I-25 corridor and western communities. Together, these two services provide the reliability, expansion benefit, and capacity comparable to the double track commuter rail system evaluated in Package A.

The single tracked line would have passing track in four locations. The length of the passing track is a main factor regarding the ability to accommodate early and late arriving trains. Long passing tracks provide more flexibility. The design of the Preferred Alternative provides the longest passing track possible without impacting sensitive environmental resources.

Passing track would be located at the following four locations:

- North of the North Loveland Station between 3.0 and 5.8 miles long
- North of Berthoud Station between 2.4 and 5.7 miles long
- South of the North Longmont Station between 2.1 and 3.8 miles long
- North of the I-25/CR 8 Station between 4.6 and 7.7 miles long

RTD has recently purchased the rail ROW beginning north of the North Metro Corridor end-of-line and ending at approximately CR 8 at I-25.

Preferred Alternative Commuter Rail Service Plan

North of the South Transit Center in Fort Collins, the commuter rail would operate on 60 minute headways during both the peak and off peak periods. Between the South Transit Center and the FasTracks' North Metro end of line, rail service would be provided every 30 minutes during the peak periods and every 60 minutes during the off peak periods. The FasTracks North Metro rail line will operate on 15-minute peak period headways and 30 minute off peak headways. The North I-25 commuter rail would operate as an extension of the FasTracks North Metro service, with every other North Metro train traveling on to Fort Collins.

Preferred Alternative Commuter Rail Stations

Stations would be at the same locations as the Commuter Rail service included in Package A, but the number of parking spaces provided has changed somewhat. **Table 6-21** specifies the location, number of parking spaces, and the accommodation of pedestrian movements for each commuter rail station.

Table 6-21 Preferred Alternative Commuter Rail Stations

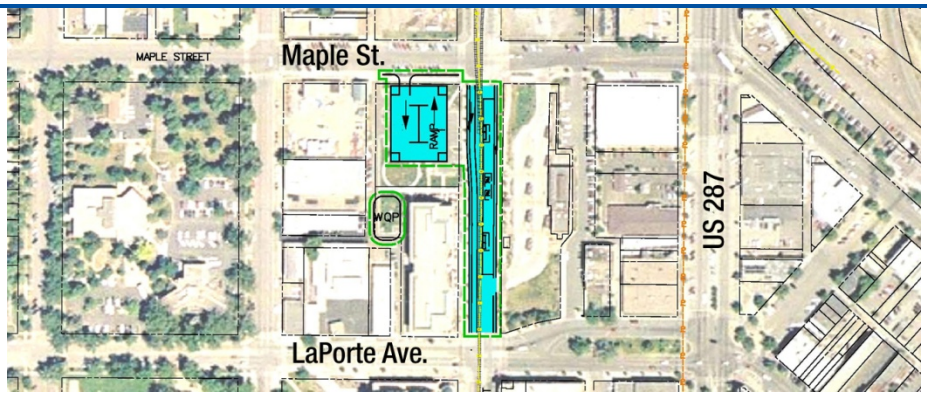
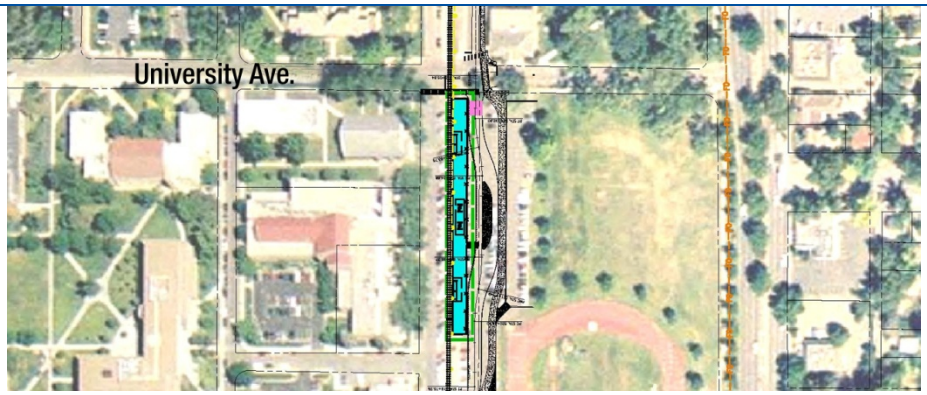
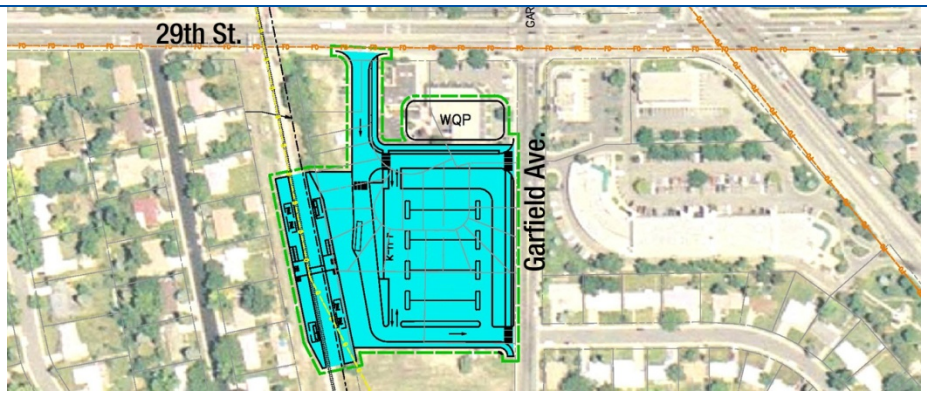
Downtown Transit Center* BNSF and Maple Street - Fort Collins 60 Spaces No Pedestrian Overpass	
Colorado State University* On Mason Street south of University Avenue and West Pitkin Street 0 Spaces No Pedestrian Overpass	
South Transit Center*, ** Mason Street and West Fairway Lane - Fort Collins 130 Spaces No Pedestrian Overpass	
North Loveland BNSF and 29th Street Pedestrian Overpass 120 Spaces	

Table 6-21 Preferred Alternative Commuter Rail Stations (cont'd)

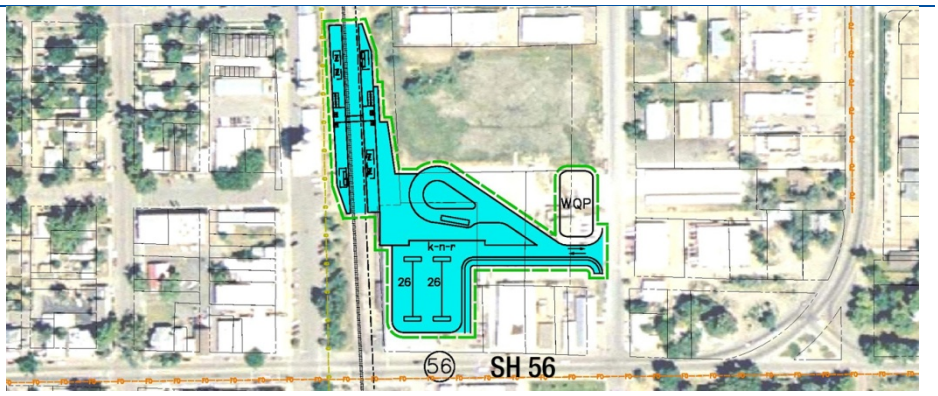
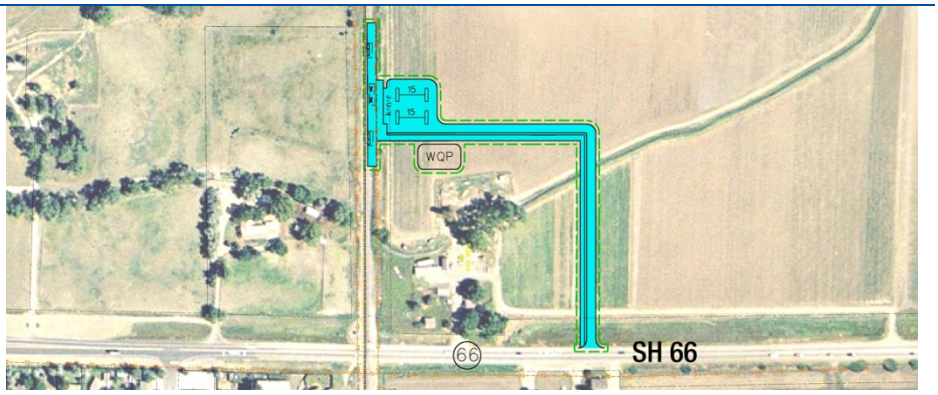
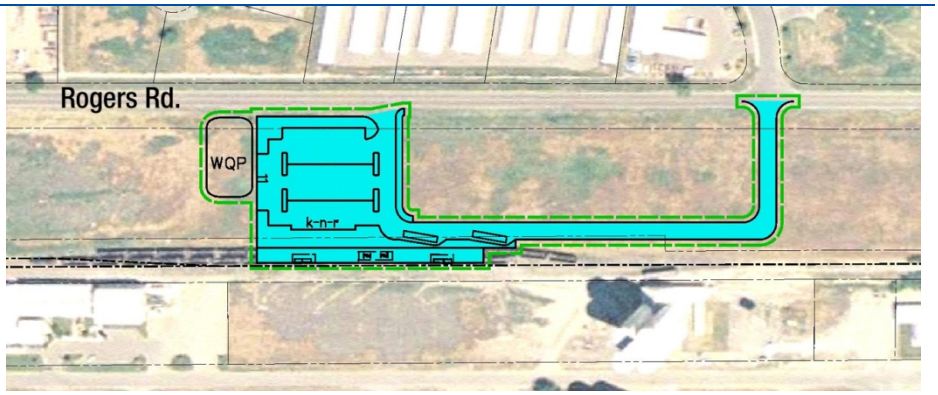
Downtown Loveland BNSF and approximately 6th Street 40 Spaces No Pedestrian Overpass	
Berthoud East of the BNSF and north of SH 56 50 Spaces Pedestrian Overpass	
North Longmont East of BNSF and north of SH 66 30 Spaces No Pedestrian Overpass	
Longmont at Sugar Mill North of alignment, south of Rogers Road 90 Spaces No Pedestrian Overpass	

Table 6-21 Preferred Alternative Commuter Rail Stations (cont'd)

WCR 8** NW corner of I-25 and CR R 8 185 Spaces No Pedestrian Overpass	
FasTracks North Metro Corridor Stations No new spaces proposed as part of this project	

* Station design will be coordinated with the recently funded Mason Corridor project.
**Station will serve both the express bus and commuter rail service.

Preferred Alternative Grade Separated Crossings

Four new grade separated crossings would be provided for the commuter rail service. Other intersection treatments would include gates or four-quadrant gates with a median. The following locations would be provided grade-separated railroad crossings of roadways:

- I-25 south of CR 8 (replaces a previous crossing)
- SH 52 and Wyndham Hill, west of I-25
- SH 119 near 3rd Avenue in Longmont
- US 287 north of Berthoud
- US 34 in Loveland (existing crossing)

A comprehensive list of grade crossings and the treatments recommended as part of the Preferred Alternative is included under the description of Package A and **Table 6-5**.

Preferred Alternative Maintenance Road

The BNSF railroad is requiring that commuter rail facilities utilizing BNSF track upgrade BNSF facilities to include a maintenance road where maintenance access is not available. The Preferred Alternative design includes a maintenance road parallel to the BNSF line between Longmont and Fort Collins. Commuter rail track that is not within the BNSF right of way does not include a maintenance road.

6.4.6 Preferred Alternative Maintenance Facilities

A bus maintenance facility serving both the I-25 express bus and the US 85 commuter bus would be located at 31st Street and 1st Avenue in Greeley. The facility would include staff for the maintenance and operation of buses for the US 85 commuter bus service, I-25 bus service, and the feeder bus routes.

The recommended commuter rail maintenance facility site included in the Preferred Alternative is located at LCR 10 and LCR 15 in Berthoud. The commuter rail maintenance facility would require a minimum of 30 acres, including facilities for vehicle maintenance, cleaning, fueling and storage; track maintenance; parts storage; and vehicle operator facilities. The commuter rail maintenance facility would employ an estimated 90 workers.

6.4.7 Preferred Alternative Feeder Bus

Local bus service would be provided to enable local riders to access the commuter rail and express bus regional services. The feeder services would operate hourly, timed to meet the regional services. Four routes would operate as follows:

- Along SH 257 and SH 392 connecting the Windsor and Timnath communities to I-25 Express Bus
- Along SH 60 and SH 56 connecting the Milliken, Johnstown and Berthoud communities to Express Bus on I-25 and Commuter Rail in Berthoud
- Along SH 52 and SH 119 connecting the Fort Lupton, Dacono, Frederick, Firestone and Longmont communities with Express Bus on I-25 and Commuter Rail in Longmont
- Along CR 8 connecting the Erie and Broomfield communities with Express Bus on I-25 and Commuter Rail in Erie

CDOT has the authority to operate this service, but a transit operator has not been identified to operate the feeder bus service at this time. Funding to operate and maintain the service would need to be identified by the communities or by the State prior to implementation. This could happen through the identification of a service district, and implementation of sales tax, property tax or other allowable funding mechanism. This effort could be initiated by a community, the NFRMPO or by CDOT's Division of Rail and Transit. These entities could also apply for CMAQ funding to initiate service through a three-year demonstration project.

6.4.8 Preferred Alternative Congestion Management

As with Package A and Package B, congestion management measures were developed based on further analysis and coordination with agencies, as well as more specific information about traffic congestion and other conditions associated with the Preferred Alternative. The tolling in the TEL constitutes the primary method of congestion management with the Preferred Alternative. **Table 6-22** summarizes congestion management measures that were identified for the Preferred Alternative in addition to tolling.

Table 6-22 Preferred Alternative Congestion Management Measures

Congestion Management Strategy	Description of Application
Local Transit Service	Local routes would connect to the Express Bus at the South Transit Center (Fort Collins), Harmony and Timberline (Fort Collins), the Harmony Transit Center, the Downtown Transfer Center (8th and 8th) in Greeley; Crossroads Boulevard (Loveland); SH 7 in Broomfield; and Sugar Mill in Longmont.
Carpool and Vanpool	Carpool/vanpool lots would be in addition to and replace the existing carpool/vanpool lots. The lots would be paved and have lighting and security cameras. These lots along I-25 would be provided at: • SH 1 • SH 14 • Prospect Rd. • Harmony Rd.* • SH 392* • Crossroads Blvd.* • US 402 • SH 60 • SH 56* • SH 119* • SH 52* • WCR 8* • SH 7* *Carpool lot combined with express bus station parking.
Incident Management Program	Courtesy patrols – Tow trucks with fuel, coolant, air, etc. would drive up and down I-25 from SH 14 to SH 7 during peak-period travel times (6:15 AM to 8:45 AM and 3:15 PM to 6:45 PM). These vehicles would pick up debris, help stalled motorists, and assist with other incidents as needed.
Signal Coordination and Prioritization	Timing at signals at interchanges along I-25 would be optimized as part of the interchange design process. Queue jumps, including signal treatments, would be included as part of the Express Bus design along US 34.
Ramp Metering	Based on a CDOT Region 6 precedent and policy along the T-REX corridor, ramp meters must be installed along continuous sections of a freeway in order to prevent trip detouring. At such time when volumes dictate ramp metering along I-25, they would be recommended at the following interchanges: • SH 14 • Prospect Rd. • Harmony Rd. • SH 392 • Crossroads Blvd. • US 34 • SH 402 • SH 119 • SH 52 • WCR 8 • SH 7
Real-Time Transportation Information	The CDOT Region 4 intelligent transportation plan would be implemented in its entirety with additional variable message signs northbound and southbound north of SH 14. (Detailed locations to be developed.)
Bicycle / Pedestrian Facilities	Station areas would be designed to provide pedestrian links to the nearest local road. A 12-ft. wide multi-use path and 6-ft. wide tree lawn would provide connectivity between the bus drop-off, park-and-ride and connectivity to the closest road. All stations would be designed in accordance with the accessibility standards set forth in the Americans with Disabilities Act (ADA).
Travel Demand Measures	During construction, proactive measures could be taken by the contractor to encourage use of alternative modes.

6.4.9 Other Preferred Alternative Features

The Preferred Alternative would also include retaining walls, water quality ponds, and drainage structures.

Retaining Walls

Retaining walls were used in the conceptual design along I-25 to minimize impacts to environmentally sensitive areas and existing commercial buildings/ developments.

Water Quality

To conform to CDOT's MS4 permit, roadway runoff would need to be treated within urbanized areas. Using land use projections from the NFRMPO, urban areas were determined and potential treatment locations have been identified within the Preferred Alternative. These would be located along highways and at transit stations, maintenance facilities, and parking lots. Suggested locations for the water quality features are included in the Preferred Alternative concept plans. Various methods for treating stormwater runoff, such as ponds, storm ceptors, and infiltration basins would be considered during final design.

Floodplains and Drainage

Almost all of the existing drainage structures are undersized and cannot pass the 100-year storm flows under I-25. The Preferred Alternative final design will include a detailed hydraulic analysis for each crossing. This would include addressing allowable backwater and methods for mitigating impacts to the environment.

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7.0 IDENTIFICATION OF PREFERRED ALTERNATIVE

A collaborative decision making process was used to develop consensus among the 45 communities and agencies (including CDOT and FHWA) on the elements in the Preferred Alternative. A collaborative decision making process was used because of the need for broad community support and limited financial resources available for transportation improvements in the region. Broad community support sets the stage for local agency participation, partnerships, and commitment to implementation through policies, zoning, adoption of complementary land use and transportation plans. Broad community support is also more likely to attract funding. The collaborative decision making process is the mechanism for achieving broad community support for a Preferred Alternative which addresses Purpose and Need in a manner that FHWA and CDOT can take responsibility for and implement.

The process that led to the Preferred Alternative entailed several steps. First the stakeholders identified the goals and values important to their respective communities or agencies. Next the stakeholders considered these values in relation to the major transportation system components under evaluation in the EIS. In support of this effort, data describing the components was distributed to the stakeholders. For example, the information included safety effectiveness of the components. The next series of meetings formed an iterative discussion process with the stakeholders requesting additional information, and subsequent provision of data as the stakeholders revisited the importance of their respective community values.

In this way the stakeholders developed a recommended Preferred Alternative. The recommended Preferred Alternative was brought to the Executive Oversight Committee for consideration and review. Upon receiving direction from the EOC, the stakeholders finalized the recommended Preferred Alternative and all participants indicated their support for the Preferred Alternative, thus establishing consensus. The Preferred Alternative meets the project purpose and need to a greater extent than the other two build alternatives as described below:

The Preferred Alternative was identified based on the Purpose and Need. In addition to meeting the elements of the Purpose and Need, a number of other factors support identification of the Preferred Alternative. These other supporting factors included land use, system benefits, livability, and cost. Each new or revised element of the Preferred Alternative has been carefully considered and either has the same or reduced impacts compared to the comparable component analyzed in the Draft EIS or creates only minor new impacts. The following discussion characterizes the ability of all the alternatives to meet the Purpose and Need and other factors supporting the identification of the Preferred Alternative.

7.1 PURPOSE AND NEED ELEMENTS

The Preferred Alternative meets the project purpose and need to a greater extent than the other two build alternatives.

7.1.1 Need to Address the Increased Frequency and Severity of Crashes

All three build alternatives have been designed to be safe. All three build alternatives would reduce the frequency and severity of crashes on I-25, when compared to the No-Action Alternative. Considering only I-25 in 2035, Package B would result in fewer crashes (4,061 average per year) than the Preferred Alternative (4,399) and fewer average crashes per vehicle miles traveled (1.32) than the Preferred Alternative (1.37). However when considering the entire regional system, the Preferred Alternative has the greatest reduction of crashes because of the reduced daily VMT on arterials compared to Package A or Package B. This reduced VMT is a result of the higher capacity provided by the Preferred Alternative on I-25 making I-25 a more attractive route than the adjacent arterial network. The crash rate on arterials is higher than the crash rate on access controlled facilities such as I-25. This results in improved safety under the Preferred Alternative for the entire regional transportation system because of the transfer of VMT from arterials to I-25.

The Preferred Alternative would result in only 11 average annual transit injuries compared to Package B, which would have 24 average annual injuries on transit. Package A would result in the fewest transit injuries per 1,000 revenue hours of service at 0.15; the Preferred Alternative is very similar with 0.16 injuries per 1,000 revenue hours of service. Package B would result in the highest transit injury rate at 0.32 injuries per 1,000 revenue hours of service.

7.1.2 Need to Address the Increasing Traffic Congestion on I-25, Leading to Mobility and Accessibility Problems

The Preferred Alternative provides the most efficient operations for I-25 compared to Packages A and B. A comparison of the traffic elements of the mobility portion of the purpose and need demonstrates that the Preferred Alternative provides the highest benefit:

- Its remaining congested miles on I-25 general purpose lanes in the PM peak hour would be noticeably less at 17 miles, compared to 45 miles with Package B and 44 miles with Package A in 2035.
- In the AM peak hour, its remaining congested miles on general purpose lanes are only 11, compared to 30 with Package B and 16 with Package A in 2035.
- In 2035, it has the fewest number of interchange ramp merge/diverge locations operating at LOS E or F. The Preferred Alternative would have 13 of these in the AM peak period and 26 in the PM. Package B would have 34 in the AM and 52 in the PM. Package A would have 30 in the AM and 34 in the PM.
- It has the fastest highway travel time from SH 1 to 20th Street in the general purpose lanes (107 minutes compared to 117 minutes with the other two alternatives in 2035).
- It has the fastest travel time from SH 1 to 20th Street in the tolled express lanes in 2035 (64 minutes compared to 65 minutes with Package B and 102 minutes with Package A (which only uses a short section of existing tolled express lanes in the Denver metro area and the remaining trip is in general purpose lanes).
- It provides the most travel choices on I-25 allowing a motorist to pay a toll or carpool to avoid congestion, or choose to travel toll free in the general purpose lanes, or choose express bus.

- It has the fastest bus transit service from the South Transit Center to 20th Street at 63 minutes for an express bus, compared to 70 minutes for BRT with Package B.
- Similar to Package B the tolled express lanes provide an opportunity to maintain reliable travel time for buses, HOVs and toll paying users in perpetuity.
- Because the Preferred Alternative would have the best level of service in the general purpose lanes, it would have the best overall mobility for freight traffic.
- It would serve the highest number of users on I-25 at over 990,000 users (number of vehicles entering this length of I-25 multiplied by vehicle occupancy. See *Section 4.2.5 Highway Users* for an explanation of the calculation).
- It captures the second highest percentage of transit market share between the northern front range area and the downtown Denver CBD at 50 percent in 2035. Package A captures the highest percentage at 55 percent and Package B captures 45 percent.
- It has the second highest ridership with 6,500 daily riders while Package B captures the highest ridership at 6,800 daily riders as a result of its frequent and robust BRT service. Package A captures the fewest riders with 5,850 daily.
- Regional vehicle hours of travel are the least with the Preferred Alternative at 1.68 million compared to1.69 million with Package B and 1.70 million with Package A in 2035.
- It produces the highest amount of vehicle miles of travel at 52.81 million as a result of its higher capacity than the other two packages. Package B produces the least amount of regional VMT at 52.62 million and Package A produces 52.76 million.
- Its regional average speed (including freeways and other facilities) in 2035 is the highest (31.4 miles per hour) compared to 31.1 with the other two build alternatives – a notable increase considering the magnitude of the number of miles and number of hours in the region used to calculate average miles per hour.

7.1.3 Need to Replace Aging and Functionally Obsolete Infrastructure

The Preferred Alternative and Package B both provide the most new structures which replace aging structures: 94, compared to 87 with Package A. All of the alternatives would replace all of the pavement that has exceeded its useful life.

7.1.4 Need to Provide Modal Alternatives

The Preferred Alternative provides the most opportunity for improved mode choice throughout the regional study area. In addition, it allows the ability to implement transit service with minimal initial infrastructure investment. Overall the Preferred Alternative addresses this element of purpose and need in the following ways:

- The Preferred Alternative would provide the most opportunity to use multiple modes of travel, since two or more modes would be provided along three separate corridors: commuter rail would be provided on the US 287 corridor; express bus and carpooling on TELs on I-25; and commuter bus service would be provided on US 85. Package A would provide multiple modes on only two corridors and Package B would provide multiple modes on only one corridor.
- The express bus service provided as a part of the Preferred Alternative could be fairly easily implemented and implemented in phases, providing near term multimodal options to commuters traveling the North I-25 and US 85 corridors. BRT service provided as a part of

Package B would be harder to implement in phases because stations are located in the median, requiring reconstruction of I-25.

- Given the uncertainty of the schedules for the FasTracks North Metro and Northwest Rail corridors, express bus service provided as a part of the Preferred Alternative could provide an additional mode choice that would first supplement and then complement the FasTracks commuter rail corridors.
- It would attract the highest level of special event ridership (transit trips to sporting events, the theater and other activities in downtown Denver), due to the range of transit options that can accessed for these discretionary trips.

7.2 OTHER SUPPORTING FACTORS

In addition to meeting the elements of the Purpose and Need, a number of other factors support identification of the Preferred Alternative. These other supporting factors included land use, system benefits, livability, and cost. These are described below.

7.2.1 Land Use

The three build alternatives meet the goals of the community land use plans to varying degrees. Western communities generally have a desire to revitalize and concentrate growth in the central core areas of their towns. This goal is reflected in the master plans for Larimer County and the cities of Fort Collins, Loveland, Berthoud and Longmont. Some of these same

communities are also supporting development along the I-25 corridor in addition to within the core areas generally along the US 287 corridor. The eastern communities, although more dispersed, also have goals to revitalize growth along US 85.

The Preferred Alternative provides transit services along all three major corridors. The location of new transit stations, particularly for commuter rail and to a lesser extent for express bus and commuter bus, will focus growth in proximity to the station. This will help communities realize plans for downtown redevelopment or higher density, mixed use development. For this reason it best supports the land use goals of the communities.

While Package A also includes commuter rail along the BNSF corridor thus supporting the western communities land use plans and commuter bus along the US 85 corridor, it does not support goals for higher density, mixed use development along I-25 because it provides no transit service along I-25.

Package B focuses all improvements along I-25 and therefore does not support land use goals of revitalizing downtown areas within the western communities or along US 85. Package B could have a detrimental effect on downtown areas, tending to pull growth away from them and focusing it along I-25.

7.2.2 System Benefits

There are a variety of system benefits: regional connectivity, regional safety, and travel reliability. An assessment of the three build alternatives demonstrates the difference among system benefits.

7.2.3 Regional Connectivity

Regional connectivity to the greater Denver metropolitan transportation system is most improved with the Preferred Alternative. The Preferred Alternative:

- Connects to two planned RTD rail lines serving DUS as a hub for the entire metropolitan area.
- Extends the managed lane facility from US 36 on I-25 to the northern Colorado communities increasing travel options and improving travel reliability.
- Provides commuter bus service on US 85 connecting the eastern communities to the RTD transit system thereby increasing connectivity to employment and activity centers in the Denver metro area.
- Provides reliability through inclusion of multiple transit lines connecting the northern Colorado communities to the Denver metropolitan area.
- Provides multiple avenues to expand transit service as demand warrants.

Package A connects to the two RTD rail lines; but does not extend the managed lane facility north from US 36.

Package B extends the managed lane north from US 36. However, it does not provide any connection to the RTD rail lines nor does it improve the multimodal connections on US 85. Package B focuses all of the improvements along I-25 and therefore has less system wide benefits.

7.2.4 Regional Safety

Regional safety is improved the most with the Preferred Alternative. Accident rates are higher on the arterial street system than on controlled access facilities. Under the Preferred Alternative VMT on the arterial system is less than the other two build alternatives. Therefore, there will be fewer system wide crashes with the Preferred Alternative compared to Package A and Package B. For the same reason, the Preferred Alternative will result in less congestion on the arterial system.

Package A and Package B also reduce travel on the arterial network but to a lesser degree.

7.2.5 Travel Reliability

The Preferred Alternative also provides reliable travel times through 2035 and beyond because of the inclusion of both commuter rail and the managed lanes. The commuter rail is not affected by highway congestion nor inclement weather. Managed lanes can also maintain a high level of service through pricing and vehicle occupancy requirements. In contrast, travel time reliability is not guaranteed on general purpose lanes beyond 2035.

Package A offers travel time reliability through the commuter rail system but not on the highway. In contrast, Package B offers travel time reliability only on the managed lanes.

7.2.6 Livability

Livability concepts refer to the synergy between transportation, land use and the environment. A livability evaluation of the three build alternatives accounts for the mobility issues surrounding

transit dependent populations, the need for sustainable land use patterns, potential higher fuel prices, decreased availability of fossil fuels, and green house gas emissions. The three alternatives address these concepts to varying degrees.

The Preferred Alternative provides the greatest mix of transportation improvements in support of the livability concepts. In addition to traditional highway travel, the Preferred Alternative provides choices including commuter rail, commuter bus, express bus, carpooling, vanpooling, and tolled travel options. The livability concepts are addressed through the depth of alternative modes offered by the Preferred Alternative. In addition, these modal alternatives support the goals of the land use plans across the regional study area.

Package A also provides commuter rail and commuter bus travel options. However, it only provides general purpose lanes on I-25 and therefore does not provide an incentive for carpooling and vanpooling. In addition, it is geographically more limited than the Preferred Alternative for accessibility to transit dependent users.

Package B provides advantages for using express bus service, carpooling, vanpooling via the managed lanes. All of these improvements are focused on I-25 and is therefore far more geographically limited than Package A and the Preferred Alternative. This limits accessibility for

the transit dependent population and requires more supporting transit service be provided by the local communities feeding the BRT on I-25. In addition, it does not support goals for land use plans of the western and eastern communities.

Energy consumption is a key livability concept. Over time (after 2035) it would be expected that the rail components of Package A and the Preferred Alternative would provide more options for lower energy consumption because train capacity could be readily expanded. The transit stations associated with the rail would serve as a stimulus to transit oriented

development. This is also true of the Package B BRT stations along I-25 to a lesser degree. This transit oriented development would potentially reduce energy consumption due to mixed use and higher density development, which would reduce trips.

7.2.7 Cost

A tabulation of costs for the three build alternatives shows that the Preferred Alternative is more than the other two build alternatives. Package A capital cost is $1.96 billion, Package B capital cost is $1.72 billion and the Preferred Alternative is $2.18 billion. However, the Preferred Alternative provides benefits that the other two alternatives do not. The Preferred Alternative:

- Better improves regional safety compared to the other two build alternatives
- Reduces congestion more effectively than Package A or Package B
- Is similar to the other alternatives in replacing aging and obsolete infrastructure
- Is superior to the other alternatives in providing modal options
- Better addresses goals of the land use plans in the northern Colorado communities
- Achieves system wide benefits that Package A and B do not provide such as regional connectivity and travel reliability
- Better supports livability concepts than Package A and Package B by providing a more comprehensive multimodal system of transportation improvements