
TABLE OF CONTENTS

		<u>Page</u>
7.0	PHASED PROJECT IMPLEMENTATION.....	7-1
7.1	<i>Phased Implementation Requirements</i>	<i>7-1</i>
7.2	<i>Identification of Logical Project Phases and Priorities.....</i>	<i>7-4</i>
7.3	<i>Detailed Discussion of Project Phases.....</i>	<i>7-7</i>
7.4	<i>Further Coordination and Decision Making after Final EIS</i>	<i>7-43</i>

LIST OF FIGURES

		<u>Page</u>
Figure 7.1	Phased Implementation Process.....	7-3
Figure 7.2	Phasing Plan	7-6
Figure 7.3	Phase 1 Layout for I-25	7-8
Figure 7.4	Phase 1 Layout for US 6	7-10
Figure 7.5	Phase 1 2025 AM/PM Peak Hour LOS – Logan to Alameda Avenue	7-12
Figure 7.6	Phase 1 2025 AM/PM Peak Hour LOS – US 6	7-13
Figure 7.7	Phase 2 Layout	7-19
Figure 7.8	Phase 3 Layout	7-24
Figure 7.9	Phase 4 Layout	7-29
Figure 7.10	Phase 5 Layout	7-34
Figure 7.11	Phase 6 Layout	7-39

LIST OF TABLES

		<u>Page</u>
Table 7.1	Project Phases and Priorities	7-5
Table 7.2	Project Objectives Addressed by Phase 1	7-9
Table 7.3	Surface Street Levels of Service – Phase 1	7-14
Table 7.4	Phase 1 Environmental Consequences, Mitigation Measures, and Monitoring.....	7-16
Table 7.5	Project Objectives Addressed by Phase 2	7-20
Table 7.6	Phase 2 Environmental Consequences, Mitigation Measures, and Monitoring.....	7-21
Table 7.7	Project Objectives Addressed by Phase 3	7-25
Table 7.8	Phase 3 Environmental Consequences, Mitigation Measures, and Monitoring.....	7-26
Table 7.9	Project Objectives Addressed by Phase 4	7-30
Table 7.10	Phase 4 Environmental Consequences, Mitigation Measures, and Monitoring.....	7-31
Table 7.11	Project Objectives Addressed by Phase 5	7-35
Table 7.12	Phase 5 Environmental Consequences, Mitigation Measures, and Monitoring.....	7-36
Table 7.13	Project Objectives Addressed by Phase 6	7-40
Table 7.14	Phase 6 Environmental Consequences, Mitigation Measures, and Monitoring.....	7-41

7.0 PHASED PROJECT IMPLEMENTATION

This chapter describes the phased implementation of the Preferred Alternative. With a Record of Decision (ROD) to be issued after this Final EIS has been made available and public comment received, FHWA and CDOT plan to select an initial phase (Phase 1) for implementation. The identification of a Preferred Alternative for the entire project in this Final EIS is consistent with the FHWA's objective of analyzing and selecting transportation solutions on a broad enough scale to provide meaningful analysis and avoid segmentation. The selection of an initial phase for implementation is consistent with FHWA requirements to have funding for projects identified before final decisions are made (this is known as "fiscal constraint" for transportation projects). It is the intent of CDOT and FHWA to work toward implementation of the Preferred Alternative in its entirety through this phased approach, as additional funds become available.

This chapter describes a series of six project development phases proposed for implementation of the entire Preferred Alternative. The chapter is organized as follows:

- Section 7.1 describes the requirements for phased project implementation
- Section 7.2 highlights the phases that have been identified and the sequence envisioned to implement these phases
- Section 7.3 provides detail regarding the benefits provided by each phase, as well as the associated environmental consequences and mitigation measures by phase
- Section 7.4 describes the additional coordination and decision making that will take place after publication of this Final EIS

7.1 Phased Implementation Requirements

Major transportation projects are typically implemented in phases. This may be done for a number of reasons, the most obvious of which is the ability to physically construct the project. Another reason is funding limitations that may preclude the ability to implement the entire project at one time. In cases where a project is implemented in more than one phase, care must be taken to ensure that the transportation system operates acceptably at the conclusion of each phase. This is referred to as "independent utility" – the ability of each phase to operate on its own. Additionally, it must be demonstrated that air quality conformity will not be jeopardized. In addition, any mitigation measures needed in response to project impacts must be implemented with the phase in which the impacts occur, rather than deferred to a later phase.

Phased implementation is typically detailed during final design. However, the requirements of fiscal constraint must be satisfied for FHWA to approve a ROD. Because the fiscally-constrained Regional Transportation Plan (RTP) does not contain the entire Preferred Alternative for the Valley Highway project, CDOT and FHWA believe that it is appropriate to identify project phasing within the NEPA process. This will allow consideration of phasing at an earlier time than for many projects, with the goal of better understanding of the impacts of phasing as well as increased opportunity for public involvement. The Metro Vision (unconstrained) plan will contain the entire Preferred Alternative. DRCOG will test air quality conformity for the Preferred Alternative by modeling the Preferred Alternative on the fiscally-

constrained RTP network, in addition to modeling Phase 1 of the project on that same network. DRCOG's modeling will be completed before a ROD is issued.

7.1.1 Need for Phased Implementation

As noted above, the implementation of the Preferred Alternative will need to occur in a number of phases, due to the longer-term nature of funding availability for the entire project. The RTP examines transportation needs and identifies the funding that can reasonably be expected to be available for major transportation projects within the current planning horizon. The RTP is periodically amended and updated. As funds become available for additional project phases, the RTP will be amended accordingly.

The fiscally-constrained element of the 2030 RTP (DRCOG, 2005) establishes reasonably expected funding for the project corridor through the year 2030 to be as follows:

- I-25: Broadway to Alameda - \$84.0 million
- US 6: Bryant – \$15.0 million
- US 6: Federal - \$8.1 million

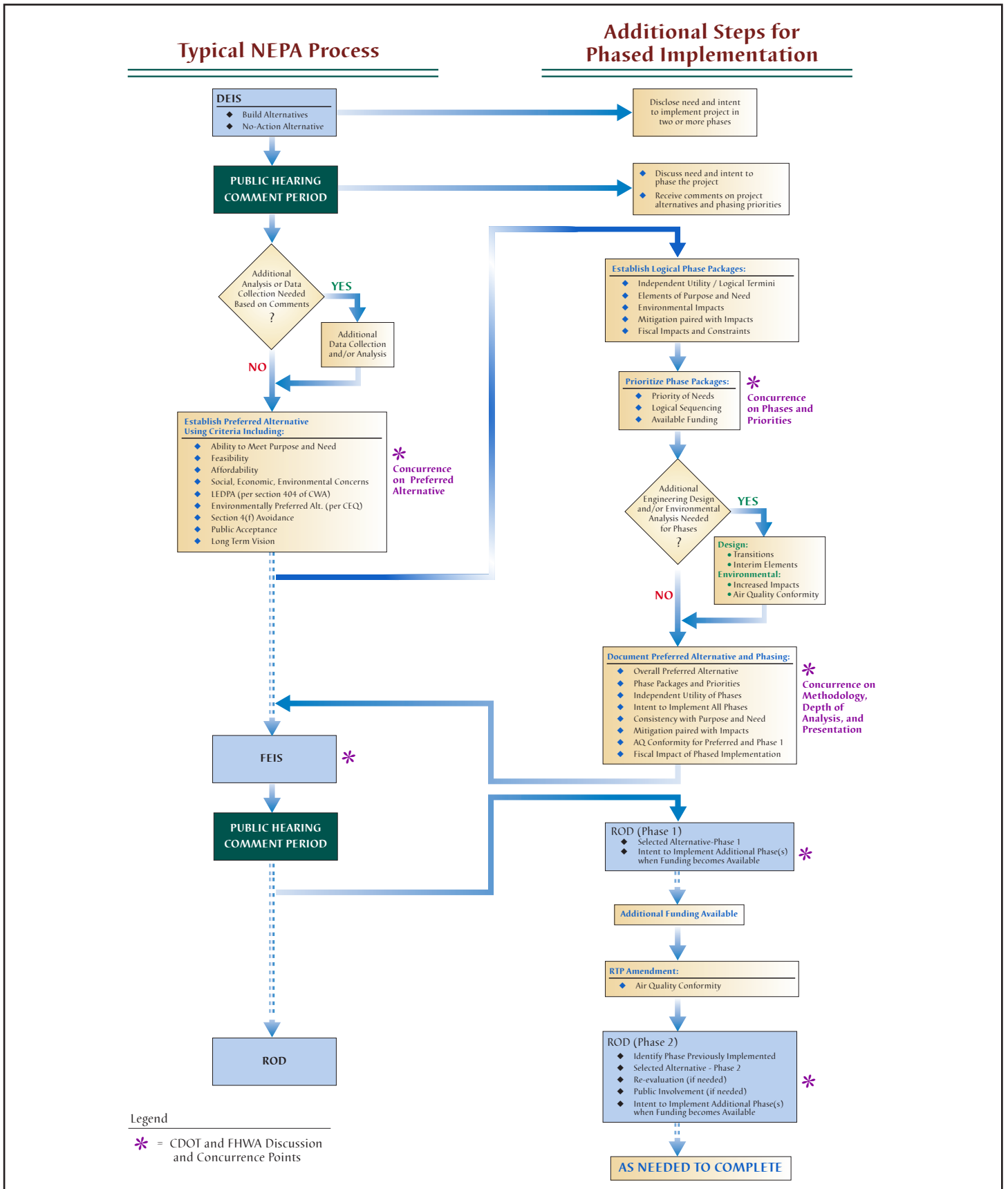
This indicates that \$107.1 million (in 2005 \$s) can reasonably be expected for the project corridor through the year 2030, including \$84 million for I-25 and \$23.1 million for US 6. This compares with estimated costs for the entire Preferred Alternative of \$294 million.

With a ROD to be issued after the FEIS public hearing and comment period, CDOT and FHWA will select an initial phase (Phase 1). The Phase 1 package will be fiscally-constrained (i.e., will have a probable cost equal to or less than the amount in the RTP). As additional funding becomes available, the RTP will be amended and CDOT/FHWA will issue ROD(s) to implement subsequent phases, working toward implementation of the Preferred Alternative in its entirety.

The Clean Air Act requires air quality conformity to be demonstrated for major transportation project in non-attainment areas. Region air quality conformity for Phase 1 will be demonstrated by its inclusion in the fiscally-constrained RTP. For the entire Preferred Alternative, air quality conformity will be established by inclusion in the unconstrained "vision" model prepared by DRCOG as part of the RTP process. As additional funding becomes available, subsequent phases will be included in the fiscally-constrained RTP for purposes of air quality conformity.

7.1.2 Process Requirements and Criteria for Establishing Logical Phase Packages

To provide more information and opportunity for public comment, as well as to satisfy the requirements for fiscal constraint, CDOT and FHWA have developed an approach to be used for this project to support phased implementation. This approach, which is shown in **Figure 7.1**, allows for disclosure and discussion of project phasing during the NEPA process. With this approach, the analysis of alternatives and identification of a Preferred Alternative is fully consistent with the typical NEPA process for transportation projects. However, in this approach additional detail is provided regarding phasing, as an enhancement to the typical NEPA process.



Phased Implementation Process

FHWA and CDOT have identified a set of criteria to be used as guidelines in establishing logical project phases, as presented in **Figure 7.1**. The criteria used to establish logical project phases include:

- Independent utility / logical termini – each phase should have independent utility and logical termini to the extent that the phase provides a functional transportation system even in the absence of other phases
- Elements of purpose and need – each phase should contribute to meeting the purpose and need for the entire project
- Environmental impacts – individual phases should avoid the introduction of substantial additional environmental impacts that cannot be mitigated
- Mitigation paired with impacts – each phase should include appropriate mitigation measures to match the environmental impacts of that phase
- Fiscal constraint – Phase 1 must meet the requirements of fiscal constraint, demonstrated by inclusion in the RTP
- Air quality conformity

Of these criteria, the first two are considered key in establishing meaningful project phases that work toward meeting the overall corridor needs.

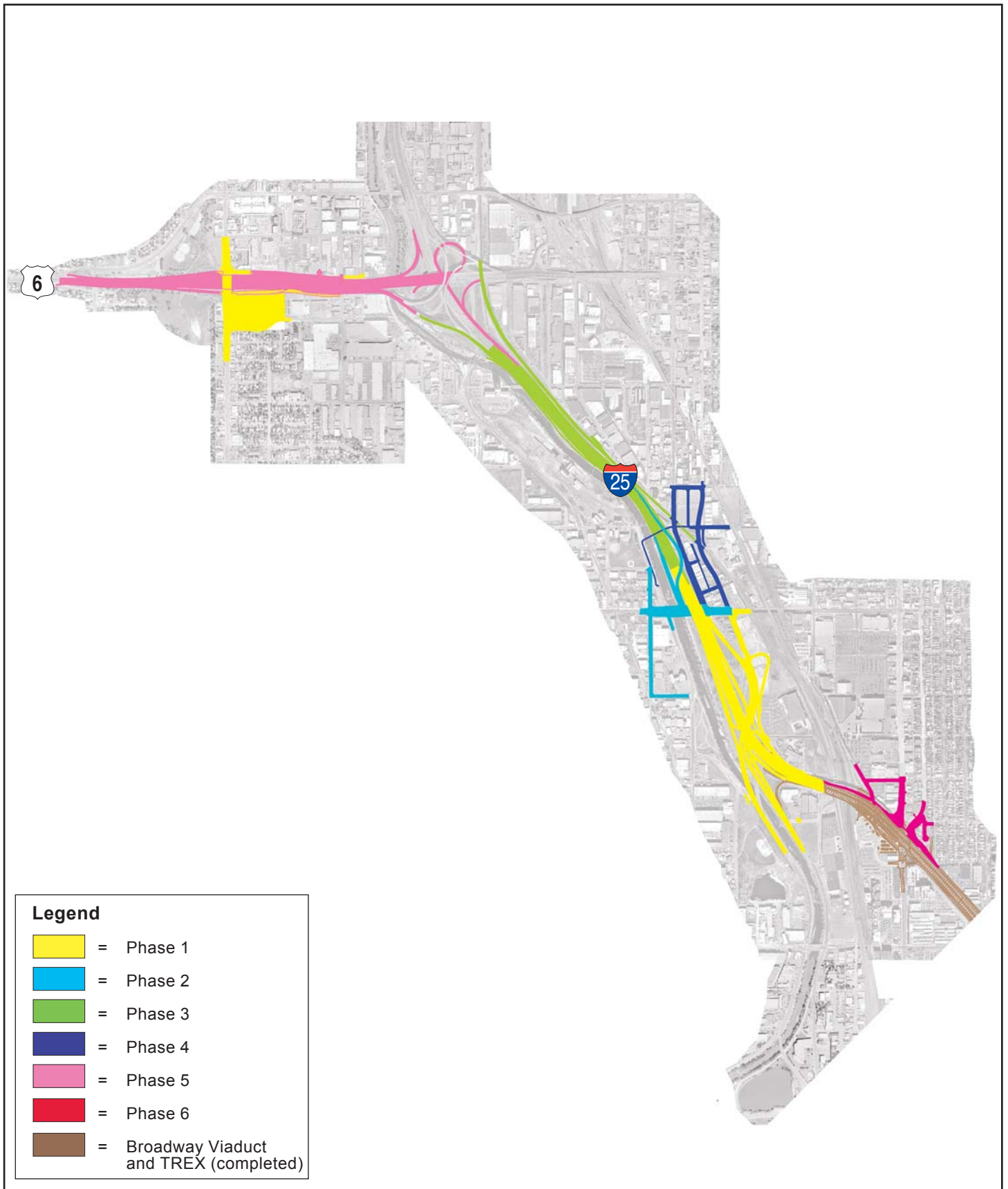
7.2 Identification of Logical Project Phases and Priorities

A series of logical phases has been established by CDOT and FHWA based on a balance of the criteria listed above. In addition to these criteria, logical sequencing of phases in terms of constructability and operation has been considered and a general priority of needs has been applied, with system reliability and safety as the top priority, followed by lane continuity on I-25.

Following the initial identification, testing and refinement of phase packages was conducted and an initial phase (Phase 1) was identified meeting the requirements of fiscal constraint. Additional logical phases (Phases 2 through 6) were identified to be implemented as funding becomes available, and CDOT and FHWA work toward implementation of the entire Preferred Alternative. The resulting identification of phases and priorities is summarized in **Table 7.1**; the phases are shown on **Figure 7.2**.

Table 7.1 Project Phases and Priorities

Phase	Phase Package Description Elements Included	Sequencing Restrictions	Probable Cost	Comments
1 Most critical on I-25	I-25 / Santa Fe Interchange with Lane Continuity through Alameda <ul style="list-style-type: none"> Reconstruction of I-25/ Santa Fe Interchange Construction of flyover ramp from NB Santa Fe to NB I-25 Replacement of Alameda bridge over I-25 Reconstruction of I-25 under Alameda with associated sump and drainage improvements 	None	\$81M <u>\$ 3M ROW</u> \$84M	NB and SB structures at Santa Fe both rated as structurally deficient with sufficiency rating of 20.2 and 22.8, respectively. A sufficiency rating of 50 is considered acceptable. Continuous auxiliary lanes on I-25 (US 85 lane balance) will not be fully addressed until Mainline Widening is completed
1 Most critical on US6	US 6 / Federal Bridge and Ramps, excluding Braided Ramp and West Side US 6 / Federal Ramps <ul style="list-style-type: none"> Closure of Bryant Street Interchange to US 6 Replacement of Federal Blvd. bridge over US 6 Reconfiguration/reconstruction of ramps Reconfiguration of Barnum East Park 	None	\$20M <u>\$ 3M ROW</u> \$23M	
2	I-25/ Alameda Interchange and Alameda Bridge over South Platte <ul style="list-style-type: none"> Alameda widening from Lipan St. to Santa Fe Drive Replacement of Alameda bridge over the S. Platte River Construction of Lipan St. and closure of Platte River Drive north of Alameda Widening of Lipan south of Alameda Replacement of Alameda ramps to I-25 	Must follow or be concurrent with I-25 / Santa Fe Interchange	\$18M <u>\$ 5M ROW</u> \$23M	
3	I-25 Mainline Widening From Alameda to US 6 <ul style="list-style-type: none"> Relocation of CML railroad to allow widening of I-25 Reconstruction of I-25 north of Alameda to full section with shoulders 	Must follow or be concurrent with I-25/ Alameda Interchange	\$28M <u>\$ 8M ROW</u> \$36M	Railroad relocation sequencing and logistics requires further detailed evaluation.
4	Santa Fe/ Kalamath CML Grade Separation <ul style="list-style-type: none"> Construction of road underpasses taking Santa Fe and Kalamath under the CML Construction of pedestrian/ bicycle bridge over Santa Fe, Kalamath, CML, I-25 and South Platte River along Bayaud alignment 	Must follow I-25/ Alameda Interchange Must follow or be concurrent with I-25 Mainline Widening From Alameda to US 6	\$22M \$7M Ped.Br. <u>\$ 7M ROW</u> \$36M	
5	US 6 from Federal to I-25 with Braided Ramp <ul style="list-style-type: none"> Reconstruction of US 6 from Federal to I-25 Replacement of US 6 bridge over S. Platte River Construction of braided ramp from Federal Blvd. to EB US6 Construction of EB US 6 to Federal off ramp Construction of Federal to WB US 6 on ramp 	Must follow US 6 / Federal Bridge and Ramps excl. Braided Ramp	\$75M <u>\$ 2M ROW</u> \$77M	
6	I-25/ Broadway Interchange <ul style="list-style-type: none"> Reconfiguration/reconstruction of I-25/Broadway interchange 	None	\$13M <u>\$ 2M ROW</u> \$15M	



Phased Implementation Plan



Phase 1 was selected to provide improvements aimed at addressing the most critical needs in the I-25 and US 6 corridors. Specifically:

- On I-25, Phase 1 provides for the replacement of structurally-deficient structures at I-25 and Santa Fe Drive
- Also on I-25, Phase 1 provides lane continuity with four through lanes on I-25 to match the sections to the north and south
- On US 6, Phase 1 provides for closure of the Bryant Street interchange with standardization of the Federal interchange. These actions will enhance safety through this high accident area.

It must be noted that these are current priorities. Priorities may change, especially with regard to how phases may fit with future funding amounts. In addition, actions to improve safety (for example, replacement of guard rails, barriers, or repairs on bridges) could occur separately from this effort and will be funded at that time by safety funds and/or other funding sources.

7.3 Detailed Discussion of Project Phases

This section describes the improvements to be made for each project phase and the transportation benefits associated with the improvements. The environmental consequences of each phase are also discussed and mitigation measures to address adverse consequences are presented.

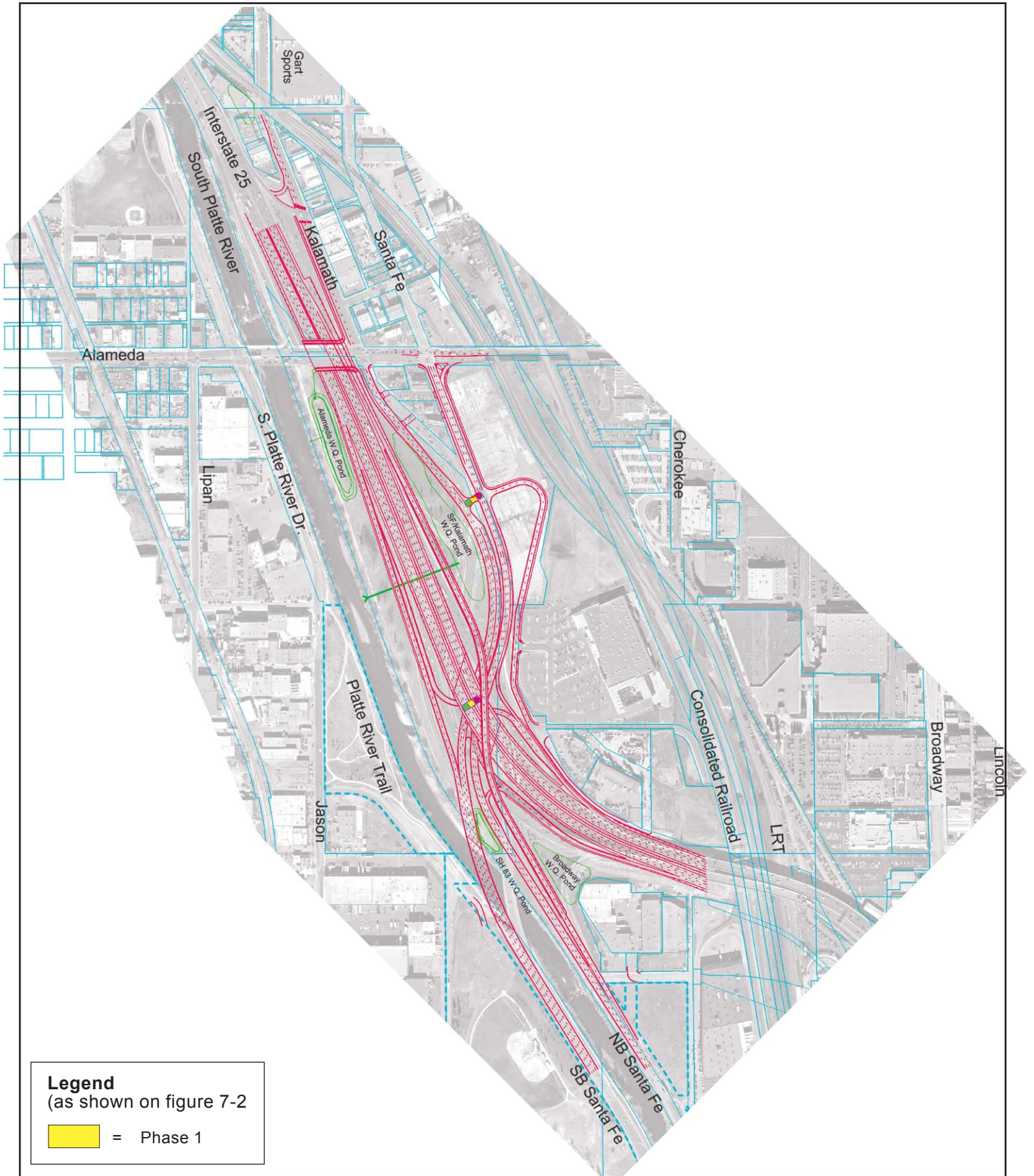
7.3.1 Phase 1 Improvements

7.3.1.1 DESCRIPTION OF PHASE 1 IMPROVEMENTS

Phase 1 includes improvements to both I-25 and US 6. These are described separately below.

For I-25, Phase 1 includes the following improvements, as shown on **Figure 7.3**:

- Reconstruction of the I-25 / Santa Fe Drive interchange. As identified in Chapter 2, the reconstructed interchange will be a single-point urban type, with a flyover ramp carrying traffic exiting northbound Santa Fe Drive bound for northbound I-25
- Replacement of the southbound Santa Fe Drive bridge over the South Platte River
- Reconfiguration of Santa Fe Drive and Kalamath Street between I-25 and Alameda Avenue, along with associated access roads in this area
- Replacement of the Alameda Avenue bridge over I-25
- Reconstruction of the I-25 mainline from the northern end of the I-25 over Broadway viaduct to a point north of Alameda Avenue where the merge of northbound Santa Fe Drive to northbound I-25 will be completed
- Minor additional improvements to nearby roadways as shown on **Figure 7.3**



Legend
 (as shown on figure 7-2)

= Phase 1

Phase 1



Figure 7-3

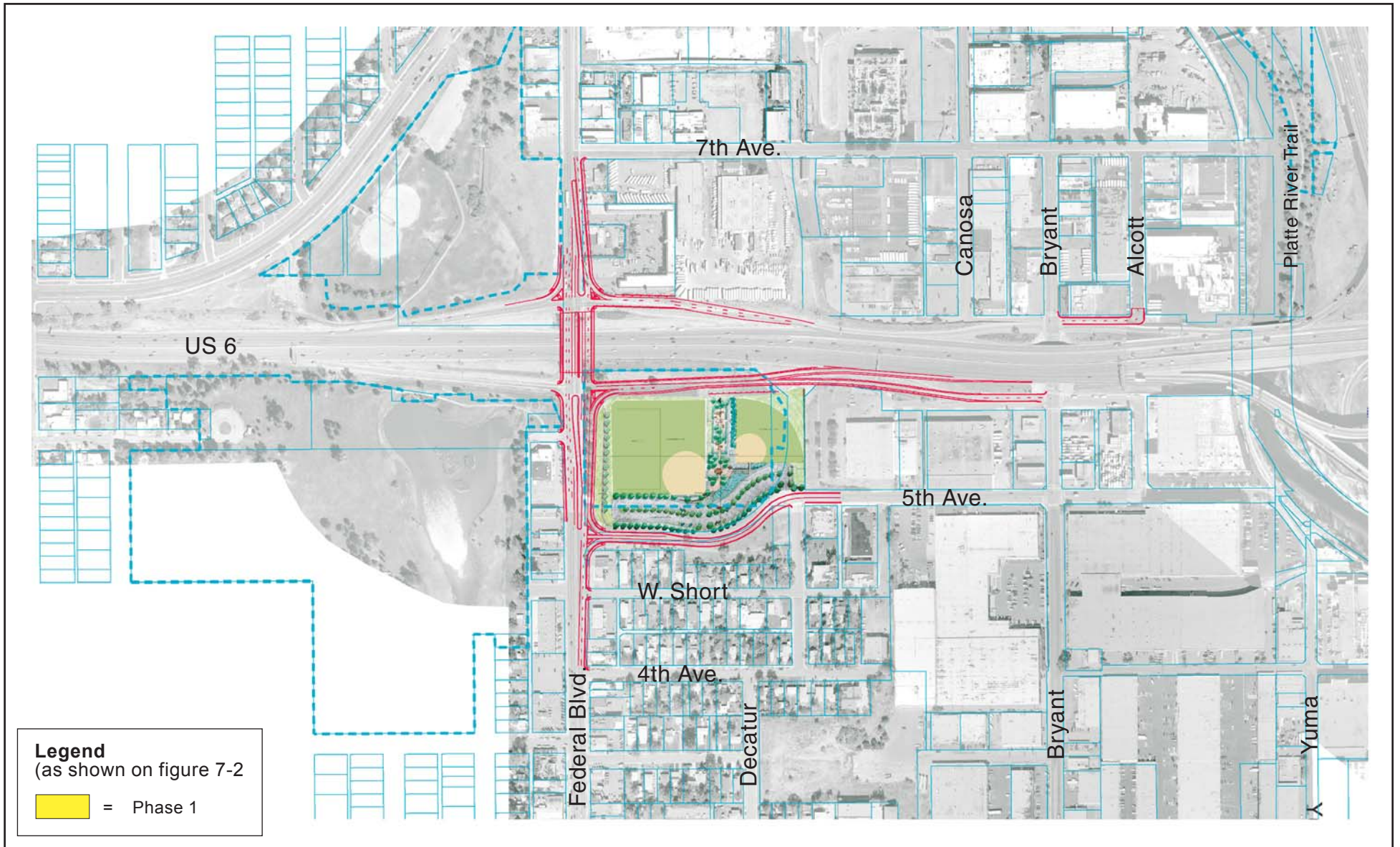
For US 6, Phase 1 includes the following improvements as shown on **Figure 7.4**:

- Relocation of the on-ramp from northbound Federal Boulevard to eastbound US6 from the south and east sides of Barnum East Park to the north side of Barnum East Park. This will result in a more standard diamond configuration for the US 6/Federal Boulevard interchange
- Conversion of 5th Avenue to two-way operation east of Federal Boulevard
- Reconstruction of Barnum East Park
- Construction of a south side slip ramp providing access to Bryant Street via the US 6/ Federal Boulevard interchange
- Closure of the partial interchange at US 6 and Bryant Street, with Bryant Street access to be provided via the slip ramps and collector-distributor system included in the US 6/ Federal Boulevard interchange
- Replacement of the Federal Boulevard bridge over US 6, along with associated improvements

Table 7.2 highlights the overall project objectives, as presented in **Chapter 1 Purpose and Need**, and identifies the benefits that will be provided by Phase 1, relative to the overall project objectives.

Table 7.2 Project Purpose and Need Objectives Addressed by Phase 1

Need Category	Overall Project Objective	Benefits to be Provided by Phase 1
Lane Continuity and Balance	Provide lane continuity and balance on I-25 between the existing and planned roadway sections to the north and south of the project	Provides lane continuity on I-25, creating a continuous 8-lane facility through the study area
Transportation Demand and Operations	Optimize highway system operations as measured in reduced delay of vehicle hours/day, reduced hours of congestion, and/or levels of service	Provides improved highway system operation on I-25, as presented in detail below
Inter-modal Relationships and Bicycle/Pedestrian Mobility	Preserve existing or provide improved facilities for automobile, bus, and pedestrian connections. Upgrade bicycle/pedestrian facilities within and across the project corridor to provide improved access to the Platte River Trail, safer facilities at intersections, complete missing links of bicycle/pedestrian facilities, and provide better linkages between transportation modes	Addition of a sidewalk along a portion of Santa Fe Drive south of Alameda Replacement of the southbound Santa Fe bridge will result in increased clearance for the South Platte Trail under the bridge Improved pedestrian facilities in the vicinity of the US 6 / Federal Boulevard interchange
Safety	Increase safety and decrease the likelihood of accidents within the project corridor by improving the geometric design of the roadway	Decrease in likelihood of accidents on I-25 due to elimination of left-side on ramp onto I-25 from Santa Fe Drive and reduced congestion Decrease in likelihood of accidents on US 6 corridor due to closure of Bryant Street partial interchange and reconfiguration of the US 6 /Federal Boulevard interchange
Roadway Deficiencies	Address existing roadway deficiencies, and replace aging structures to provide for improved operation of and reduced maintenance costs for the roadway facilities	Replacement of structurally deficient bridges at I-25/ Santa Fe Replacement of aging, deficient bridge carrying Alameda over I-25
Consolidated Main Line Crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing	Not addressed in this phase – see Phase 4



Phase 1

Figure 7-4

7.3.1.2 PHASE 1 TRAFFIC OPERATIONS AND SAFETY

Figure 7.5 and **Figure 7.6** depict year 2025 intersection and freeway levels of service associated with Phase 1. These results may be compared with **Figures 3.6 through 3.13** and accompanying text in **Chapter 3 Transportation Analysis** to evaluate the operational performance of Phase 1 relative to the No Action Alternative and the Preferred Alternative. Based on these measures, the operational performance of Phase 1 is described below by freeway and surface street locations.

Freeway Sections

The primary freeway improvement associated with Phase 1 is the completion of eight continuous travel lanes on I-25 through the study area, satisfying one of the fundamental project needs of providing lane continuity through the study area. The following specific operational benefits will result from this addition:

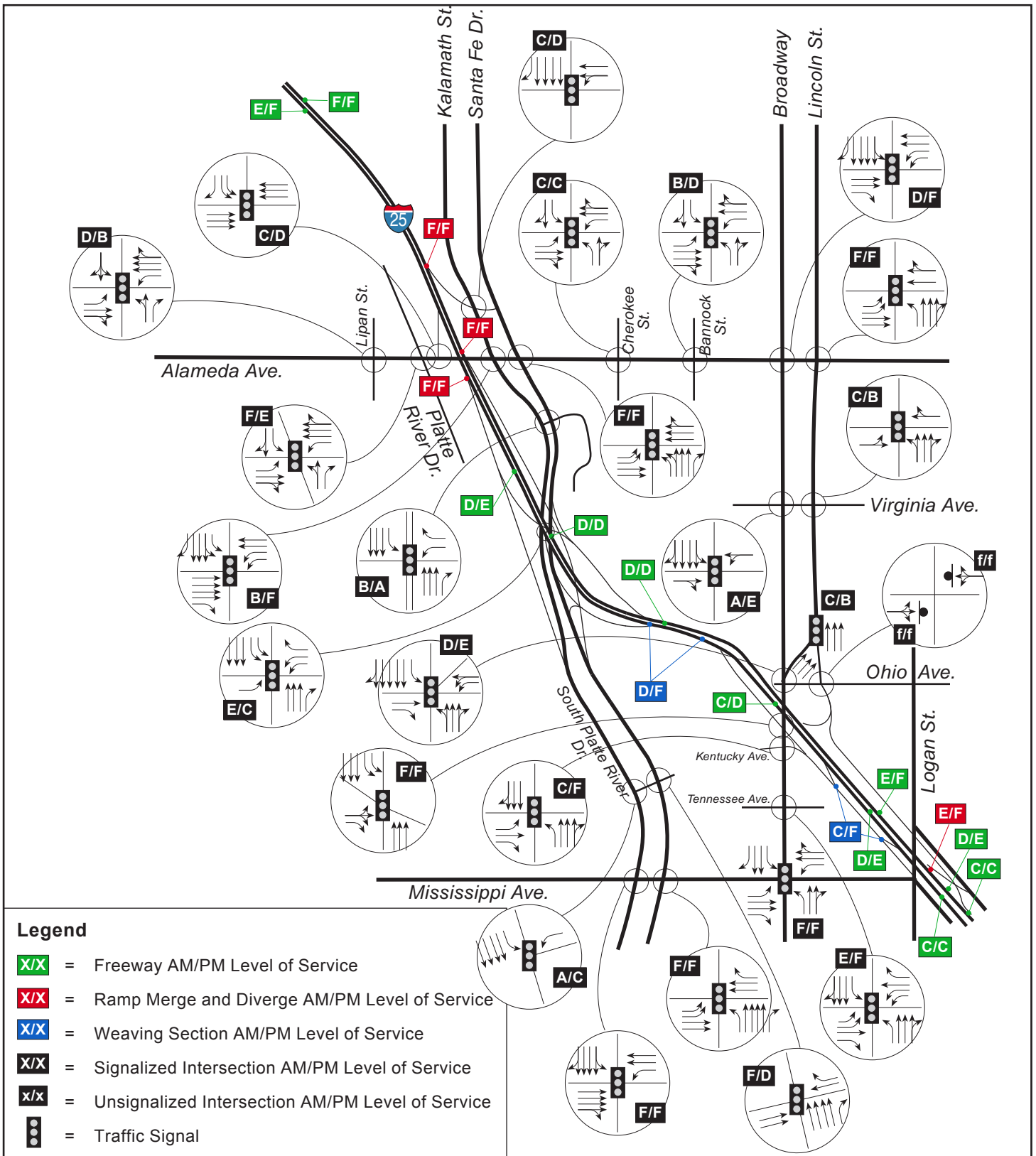
- The additional northbound travel lane between the Broadway and Alameda Avenue interchanges will improve mainline I-25 operations to LOS D, compared to LOS F in the No Action Alternative.
- The additional southbound travel lane between the Alameda Avenue and Santa Fe interchanges will improve the No-Action LOS F condition to LOS D during the AM peak hour and LOS E during the PM peak hour.

With implementation of Phase 1, the approximately 2,600 – 2,800 (peak hour) northbound Santa Fe vehicles bound for northbound I-25 will be accommodated with a two-lane flyover ramp and will enter I-25 at a merge section.

- Based on Highway Capacity Manual guidelines, this enhancement will provide sufficient ramp capacity for this high-demand movement, while the current (and No-Action) single-lane ramp does not provide adequate capacity.
- The northbound Santa Fe on-ramp to I-25 currently feeds a continuous I-25 through lane. With implementation of Phase 1, this lane addition will be replaced with a ramp merge section connecting northbound Santa Fe with northbound I-25. This merge section is anticipated to operate at LOS F during peak hours, primarily due to significant traffic congestion downstream of the ramp merge, where four mainline travel lanes will accommodate flows of up to 2,400 vehicles per hour per lane in 2025. The fifth northbound (auxiliary) lane that is part of Phase 3 will address this congestion, improving peak hour operations from LOS F to LOS E.

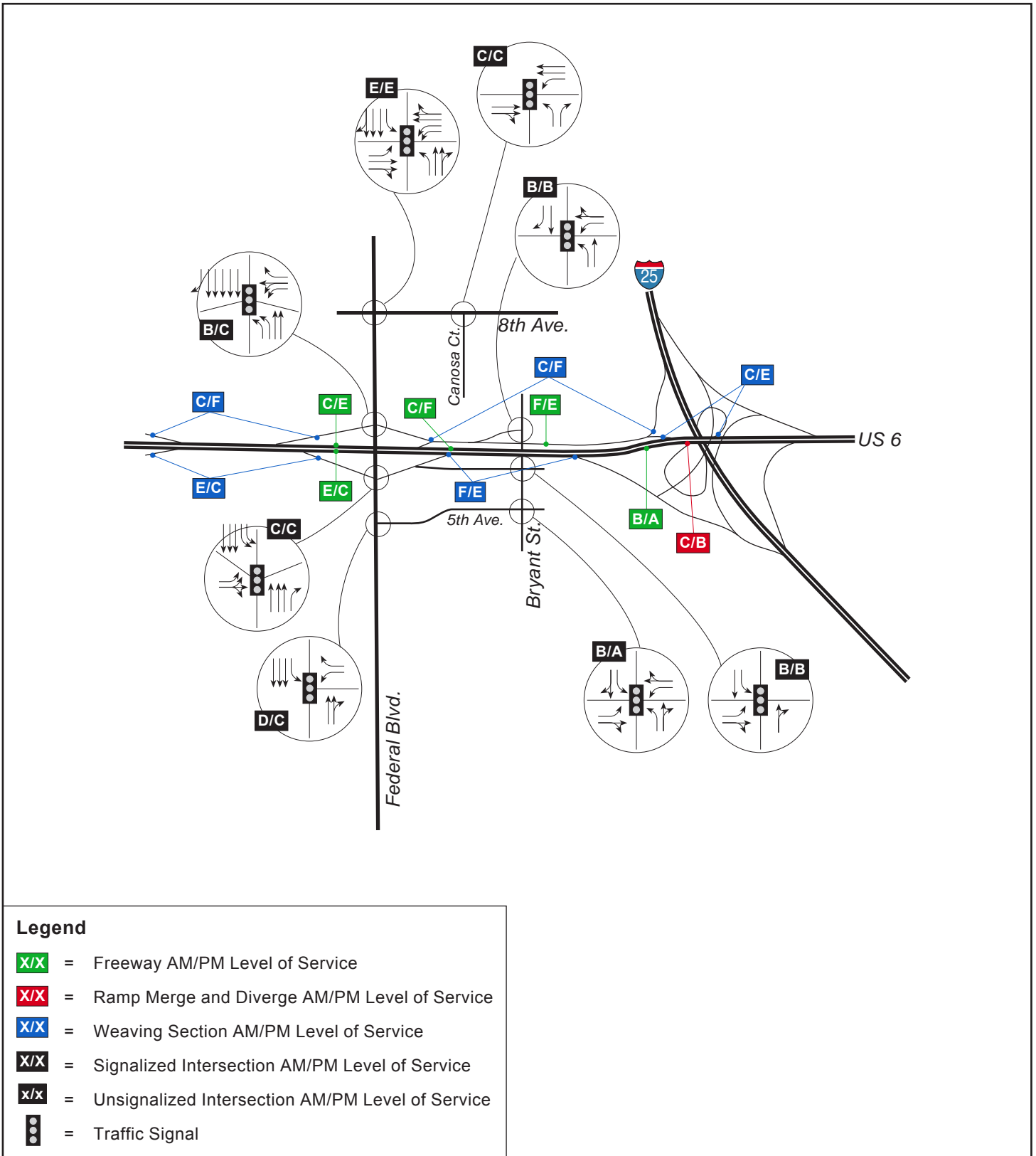
Phase 1 will improve northbound I-25 operations by eliminating the existing access to northbound I-25 at the Santa Fe / Alameda Avenue on-ramp located south of Alameda Avenue. Under the No-Action Alternative, this merge section will operate at LOS F.

In the No Action alternative, the short eastbound US 6 weaving section between the Federal Boulevard / 5th Avenue on ramp and Bryant Street off ramp operates at LOS F during the AM peak hour. Phase 1 will improve freeway operations by removing this weaving section.



Phase I 2025 AM/PM Peak Hour Levels of Service and Lane Geometry Logan Street to Alameda Avenue





Phase I
2025 AM/PM Peak Hour Levels of Service
and Lane Geometry US 6



Figure 7.6

Surface Streets

Phase 1 will eliminate the existing access to northbound I-25 at the Santa Fe / Alameda Avenue on-ramp located south of Alameda Avenue. This closure will increase traffic volumes accessing northbound I-25 at the Maple Street ramp connection and adjust traffic patterns through the Santa Fe / Kalamath Street one-way pair intersections with Alameda Avenue. The operational results of this ramp closure can be illustrated (see **Table 7.3**) by comparing projected Phase 1 intersection operations along Alameda Avenue with the No Action alternative.

Table 7.3 Surface Street Levels of Service – Phase 1

Intersection	AM (PM) Peak Hour Level of Service (Average Delay per Vehicle in Seconds)			
	No-Action		Phase 1	
	AM	PM	AM	PM
Santa Fe / Alameda Avenue	F (97)	F (135)	F (140)	F (162)
Kalamath Street / Alameda Avenue	D (39)	F (154)	B (18)	F (92)
Kalamath Street / Maple Street	C (23)	C (21)	C (25)	D (39)
Santa Fe / Development Access / I-25 ramps	E (55)	F (113)	E (68)	C (33)
			B (12)	A (10)

As shown in the table, the largest increases in delay with Phase 1 will occur at the Santa Fe / Alameda Avenue and Kalamath Street / Maple Street intersections. Traffic delays will decrease with Phase 1 by approximately 40 percent at the Kalamath Street / Alameda Avenue intersection. The existing Santa Fe / Development Access / I-25 ramp intersection located south of Alameda Avenue will be replaced in Phase 1 by two signalized intersections: one provides access to local development and the other accommodates I-25 / Santa Fe interchange movements. The operational level of these two Phase 1 intersections will represent an improvement over the No-Action Alternative LOS F condition.

Traffic operations at the Alameda Avenue / Santa Fe intersection are worsened primarily by a significant increase in the eastbound to northbound left-turn demand. This peak-hour traffic volume is anticipated to increase by approximately 80 percent over No Action levels with implementation of Phase 1. To address this increase, Phase 1 will include a third westbound through lane along Alameda Avenue approaching the intersection.

Increased delays at the Kalamath Street / Maple Street intersection will result from an approximate doubling of the No-Action Alternative demand for the westbound through movement onto northbound I-25. To address this demand, Phase 1 will include a fourth southbound through lane along Kalamath Street approaching the intersection.

With improved lane geometry at the Santa Fe / Alameda Avenue and the Kalamath Street / Maple Street intersections, Phase 1 is expected to maintain surface street intersection operations at a level comparable to the No Action Alternative. Surface street operations in the Federal Boulevard / US 6 area will also be approximately equivalent to the No Action Alternative.

Traffic Safety

Implementation of Phase 1 is anticipated to result in accident reductions throughout the study area. Based on information contained in the Traffic Safety Report, traffic safety benefits associated with Phase 1 include:

- Additional mainline I-25 capacity – The completion of a continuous 8-lane section through the study area will address congestion-related safety problems on I-25, as stated in the Traffic Safety Report.
- Relocation of Bryant Street US 6 access – The closure of the direct eastbound US 6 off ramp to Bryant Street will address one of the most significant safety concerns in the US 6 study area. In addition, closure of the westbound collector-distributor road connection to Bryant Street is anticipated to reduce accident frequency.
- 5th Avenue local access – Conversion of the 5th Avenue intersection with Federal Boulevard to local access only is anticipated to decrease accident frequency at this location.
- Elimination of commercial access - Phase 1 will improve traffic safety in the I-25 / Santa Fe Drive interchange area by eliminating commercial access from the NB I-25 off ramp.

In summary, the primary operational and traffic safety improvement associated with Phase 1 is the completion of eight continuous travel lanes along I-25 through the study area. Phase 1 will also improve freeway operations along US 6 by removing a short eastbound weaving section. These improvements, along with the conversion of the 5th Avenue / Federal Boulevard intersection to local access only, are anticipated to decrease accident frequency.

7.3.1.3 PHASE 1 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Chapter 4 Affected Environment, Environmental Consequences, and Mitigation Measures

discussed the impact of the Preferred Alternative on a range of environmental resources, with mitigation measures identified, as appropriate, in response to adverse impacts. The portion of the environmental impacts and associated mitigation measures applicable to Phase 1 have been identified from the Preferred Alternative analysis. In addition, care has been taken to identify any additional incremental impacts that will result from implementing the project in phases.

Table 7.4 presents the environmental consequences and mitigation/monitoring measures associated with the implementation of Phase 1.

Table 7.4 Phase 1 Environmental Consequences, Mitigation Measures, and Monitoring

Resource	Consequences of Phase 1	Mitigation Measures and Monitoring
Socio-Economics and Community	<ul style="list-style-type: none"> Displacement of businesses Improved safety; replacement/improvement of deteriorating facilities Pedestrian and bicycle improvements Reduced cut-through traffic due to reduction in congestion Implementation of the project in phases will introduce uncertainty with regard to timing of property acquisition for future phases 	<ul style="list-style-type: none"> Continue discussions with local communities during design and implementation to minimize disruptions. Continue consideration of environmental justice through final design, and implementation. Continue coordination with City and County of Denver.
Right-of-Way and Displacements	<ul style="list-style-type: none"> Displacement of 1 business; full purchase of 1 property; partial purchase or access modification of 14 properties 	<ul style="list-style-type: none"> Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, which contains specific requirements that govern the manner in which a government entity acquires property for public use. Prepare a relocation analysis and provide relocation advisory service.
Parks and Recreation	<ul style="list-style-type: none"> Requires use of small parts of Barnum (0.01 acres) and Barnum North (0.05 acre) parks, and a substantial portion of Barnum East (1.54 acres) park 	<ul style="list-style-type: none"> Reconstruction/reconfiguration of Barnum East Park, with addition of replacement park land, to maintain park function and provide upgraded facilities.
Aesthetics and Urban Design	<ul style="list-style-type: none"> Improvements to highway landscapes in areas to be reconstructed Increased visibility of northbound I-25 on-ramp from northbound Santa Fe Drive 	<ul style="list-style-type: none"> Use conceptual “kit of parts” in design of aesthetic elements and treatments Continue coordination with other agencies through final design and implementation
Air Quality	<ul style="list-style-type: none"> Improved air quality due to improved traffic flow Meets air quality conformity requirements Temporary increase in air emissions during construction 	<ul style="list-style-type: none"> Maintain construction equipment in good working order by ensuring no excessive idling of inactive equipment or vehicles, and by using higher-grade fuel Implement a dust control plan and locate stationary equipment as far from sensitive receivers as possible
Noise and Vibration	<ul style="list-style-type: none"> Within Phase 1 area, noise abatement criteria exceeded for Vanderbilt Park, Vanderbilt Park East, Habitat Park, and Barnum East Park 6 commercial properties will experience exceedances of the noise abatement criteria 	<ul style="list-style-type: none"> Noise barrier evaluation results show that noise barriers are not feasible/reasonable for noise abatement at these locations. During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
Historic and Archaeological Preservation	<ul style="list-style-type: none"> No impacts are expected 	<ul style="list-style-type: none"> If historic or archaeological materials are encountered or unearthed during construction, work will be halted immediately in the vicinity of the find, and the CDOT archaeologist or cultural resource staff, and the SHPO, will be notified promptly
Paleontology	<ul style="list-style-type: none"> Denver Formation fossils may be encountered during construction 	<ul style="list-style-type: none"> CDOT paleontologist to examine final design plans to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring required

Table 7.4 Phase 1 Environmental Consequences, Mitigation Measures, and Monitoring (continued)

Resource	Consequences of Phase 1	Mitigation Measures and Monitoring
Water Quality and Water Resources	<ul style="list-style-type: none"> • Short-term increase in sediment from construction • Increase in impervious drainage area • Consolidation of stormwater runoff with fewer outfalls to the South Platte River • Improved quality of stormwater discharge due to construction of water quality ponds and BMPs 	<ul style="list-style-type: none"> • Use construction BMPs to reduce temporary impacts • On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River • Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential • Use pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River
Floodplains	<ul style="list-style-type: none"> • Temporary impacts during replacement of southbound Santa Fe Drive bridge over the South Platte River • Encroachment into floodplain from southbound I-25 off-ramp to Santa Fe Drive 	<ul style="list-style-type: none"> • Construct bridges on piers or outside of floodplain to minimize impacts • Restore bridge construction areas • Install storm sewer improvements to reduce flooding on I-25 under Alameda Avenue • Provide additional volume in areas of floodplain encroachment for overall “no rise” in floodplain
Wetlands, Waters of the U.S. and Open Water	<ul style="list-style-type: none"> • 0.204 acre of jurisdictional and 0.010 acre of non-jurisdictional wetlands impacted 	<ul style="list-style-type: none"> • Mitigate jurisdictional and non-jurisdictional wetlands on a 1:1 basis • Minimize culvert lengths and use construction BMPs to reduce impacts • Use construction BMPs to reduce temporary impacts; and use water quality BMPs to minimize indirect impacts
Vegetation and Wildlife	<ul style="list-style-type: none"> • Removal of vegetation during construction • Potential introduction of noxious weeds into areas disturbed by construction • Short-term disturbance of wildlife and aquatic habitat during construction • Improvements to Santa Fe Drive bridge will move traffic away from wildlife habitat along the South Platte and will improve wildlife travel corridor by increased horizontal and vertical clearance of bridges 	<ul style="list-style-type: none"> • Revegetate construction areas using CDOT –approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier • Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage • Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented • Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan and clean construction vehicles entering construction areas to avoid introduction • Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, ect., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present

Table 7.4 Phase 1 Environmental Consequences, Mitigation Measures, and Monitoring (continued)

Resource	Consequences of Phase 1	Mitigation Measures and Monitoring
Hazardous Waste	<ul style="list-style-type: none"> 13 properties identified with potential or recognized environmental conditions to be acquired for right-of-way Excavations may encounter contaminated groundwater, soil, and fill material, and in some locations methane Santa Fe, Alameda Avenue, US 6, and railroad bridges may be coated with lead-based paint. 	<ul style="list-style-type: none"> Conduct individual, site-specific initial site assessments of properties and coordinate with OPS and CDPHE, as necessary, before acquiring right-of-way Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction Conduct an asbestos, heavy metals based paint survey of bridges, and miscellaneous material survey prior to demolition of any structures
Soils and Geology	<ul style="list-style-type: none"> Expansive soils and unsuitable fill material may be encountered 	<ul style="list-style-type: none"> Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion 	<ul style="list-style-type: none"> Consider energy conservation measures during final design
Construction	<ul style="list-style-type: none"> Short-term fugitive dust emissions, construction noise, increase in sediment, traffic delays, visual impacts, and utility impacts during construction 	<ul style="list-style-type: none"> Identify construction mitigation measures during final design and construction planning, with consideration of the possible mitigation measures identified by the Citizens Working Group (See Table 4.18-1 in Chapter 4)

The mitigation and monitoring measures identified above for Phase 1 will be carried forward and refined during final design, construction planning, and implementation.

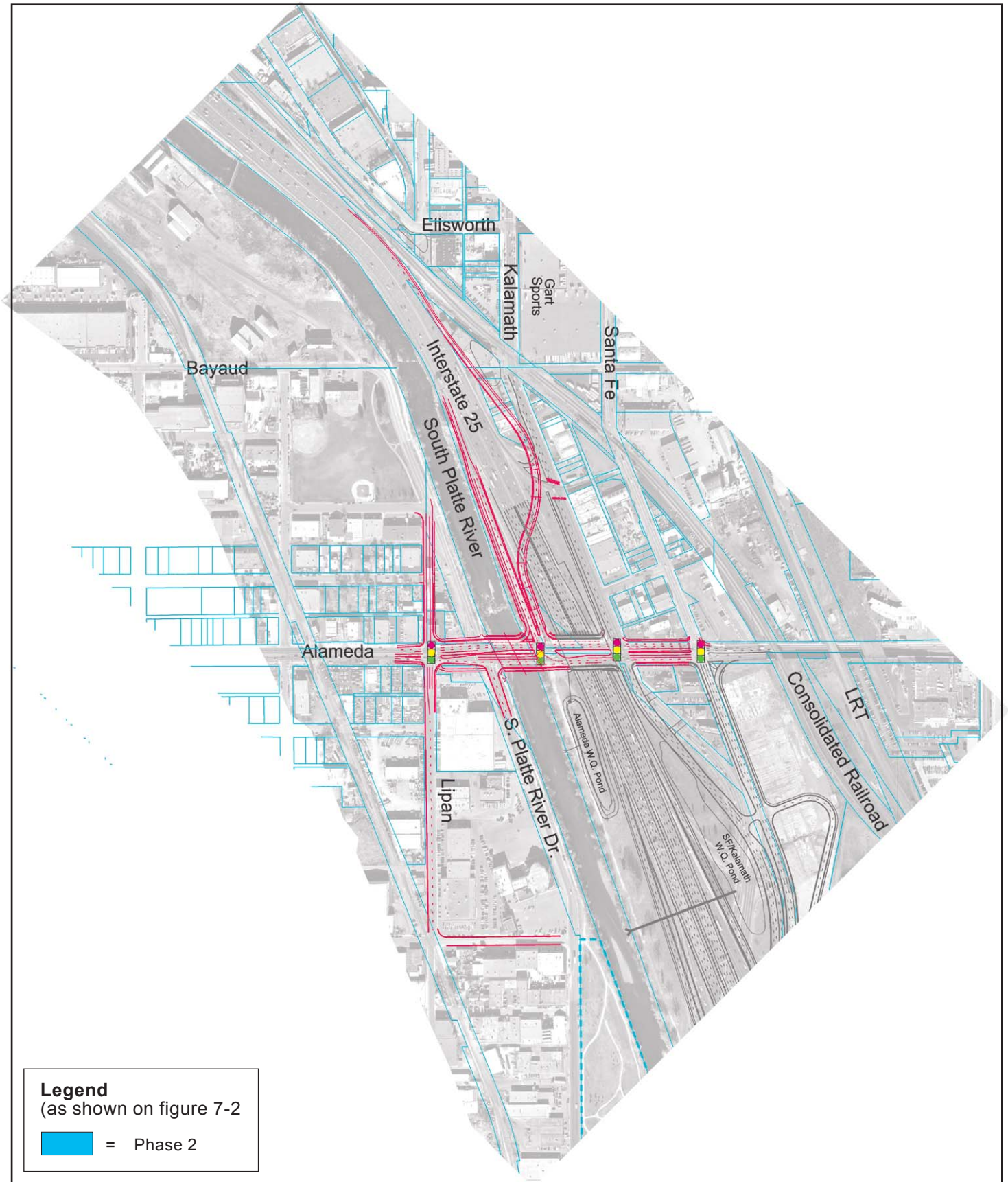
7.3.2 Phase 2 Improvements

7.3.2.1 DESCRIPTION OF PHASE 2 IMPROVEMENTS

Proposed Phase 2 includes improvements to the I-25/Alameda Avenue interchange. Phase 2 includes the following improvements, as shown on **Figure 7.7**:

- Alameda will be widened from Lipan Street to Santa Fe Drive
- Replacement of the Alameda bridge over the South Platte River
- Construction of Lipan Street and closure of Platte River Drive north of Alameda
- Lipan Street will be widened south of Alameda
- Replacement of Alameda ramps to I-25

Table 7.5 highlights the overall project objectives, as presented in **Chapter 1 Purpose and Need**, and identifies the benefits that will be provided by Phase 2, relative to the overall project objectives.



Phase 2

Figure 7-7



North

Table 7.5 Project Purpose and Need Objectives Addressed by Phase 2

Need Category	Overall Project Objective	Benefits Provide by Phase 2
Lane Continuity and Balance	Provide lane continuity and balance on I-25 between the existing and planned roadway sections to the north and south of the project	Not addressed in this phase – see Phases 1 and 3
Transportation Demand and Operations	Optimize highway system operations as measured in reduced delay of vehicle hours/day, reduced hours of congestion, and/or levels of service	Provides improved highway system operation on I-25 in the vicinity of Alameda
Inter-modal Relationships and Bicycle/Pedestrian Mobility	Preserve existing or provide improved facilities for automobile, bus, and pedestrian connections. Upgrade bicycle/pedestrian facilities within and across the project corridor to provide improved access to the Platte River Trail, safer facilities at intersections, complete missing links of bicycle/pedestrian facilities, and provide better linkages between transportation modes	<p>Addition of a sidewalk along portions of Alameda that will enhance pedestrian and bicycle mobility</p> <p>Replacement of bridge structures over the South Platte Trail will result in increased clearance for the trail under the bridge</p> <p>Improved pedestrian facilities in the vicinity of the I-25/Alameda interchange</p>
Safety	Increase safety and decrease the likelihood of accidents within the project corridor by improving the geometric design of the roadway	Decrease in likelihood of accidents with Alameda improvements
Roadway Deficiencies	Address existing roadway deficiencies, and replace aging structures to provide for improved operation of and reduced maintenance costs for the roadway facilities	Replacement of structurally deficient bridges at Alameda over the South Platte River
Consolidated Main Line Crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing	Not addressed in this phase – see Phase 4

7.3.2.2 PHASE 2 TRAFFIC OPERATIONS AND SAFETY

Traffic Operations

Construction of Phase 2 will complete the Preferred Alternative at the I-25 / Alameda Avenue interchange. This construction will affect surface street traffic operations in the Alameda area. The operational effects of Phase 2 relative to Phase 1 will include the following:

- Construction of the direct northbound I-25 on-ramp from Alameda Avenue will reduce eastbound left turn traffic volumes through the Alameda Avenue / Santa Fe Drive intersection, reducing peak hour intersection delay by approximately 36 percent. This ramp will also eliminate the Maple Street on ramp to northbound I-25, significantly reducing delay at the Maple Street intersection with Kalamath Street.
- Closure of Platte River Drive north of Alameda Avenue will eliminate a signalized intersection along Alameda Avenue and reduce delay.
- Additional traffic at the Alameda Avenue / Lipan Street intersection (due to closure of Platte River Drive) will worsen traffic operations at this location. To address this condition, the northbound Lipan Street approach will be widened to accommodate exclusive left turn, through, and right turn lanes.

Traffic Safety

Phase 2 will improve traffic safety along Alameda Avenue primarily through addressing visibility and intersection operational problems that contribute to broadside accidents. The elimination of the traffic signal at Platte River Drive/Alameda Avenue will also improve safety. It is estimated that the 20-year expected accident reduction associated with Phase 2 will be in the range of 60-90 total accidents.

7.3.2.3 PHASE 2 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Table 7.6 presents the environmental consequences and mitigation/monitoring measures associated with the implementation of Phase 2.

Table 7.6 Phase 2 Environmental Consequences, Mitigation Measures, and Monitoring

Resource	Consequences of Phase 2	Mitigation Measures and Monitoring
Socio-Economics and Community	<ul style="list-style-type: none"> • Displacement of businesses • Improved safety; replacement/improvement of deteriorating facilities • Pedestrian and bicycle improvements • Reduced cut-through traffic due to reduction in congestion • Implementation of the project in phases will introduce uncertainty with regard to timing of property acquisition for future phases 	<ul style="list-style-type: none"> • Continue discussions with local communities during design and implementation to minimize disruptions. Continue consideration of environmental justice through final design, and implementation • Continue coordination with City and County of Denver
Right-of-Way and Displacements	<ul style="list-style-type: none"> • Displacement of 10 businesses; full purchase of 7 properties; partial purchase and access modification to 6 properties 	<ul style="list-style-type: none"> • Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, which contains specific requirements that govern the manner in which a government entity acquires property for public use • Prepare a relocation analysis and provide relocation advisory service
Parks and Recreation	<ul style="list-style-type: none"> • No impacts are expected to parks and recreation as a result of Phase 2 	<ul style="list-style-type: none"> • No specific mitigation is warranted at this time
Aesthetics and Urban Design	<ul style="list-style-type: none"> • Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers 	<ul style="list-style-type: none"> • Use conceptual “kit of parts” in design of aesthetic elements and treatments • Continue coordination with other agencies through final design and implementation
Air Quality	<ul style="list-style-type: none"> • Improved air quality due to improved traffic flow • Meets air quality conformity requirements • Temporary increase in air emissions during construction 	<ul style="list-style-type: none"> • Maintain construction equipment in good working order by ensuring no excessive idling of inactive or unnecessary equipment or vehicles, and by using higher-grade fuel • Implement a dust control plan and locate stationary equipment as far from sensitive receivers as possible
Noise and Vibration	<ul style="list-style-type: none"> • Within Phase 2 area, 1 commercial property will exceed the noise abatement criteria 	<ul style="list-style-type: none"> • During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway

Table 7.6 Phase 2 Environmental Consequences, Mitigation Measures, and Monitoring (continued)

Resource	Consequences of Phase 2	Mitigation Measures and Monitoring
Historic and Archaeological Preservation	<ul style="list-style-type: none"> No impacts are expected 	<ul style="list-style-type: none"> If historic or archaeological materials are encountered or unearthed during construction, work will be halted immediately in the vicinity of the find, and the CDOT archaeologist or cultural resource staff, and the SHPO, will be notified promptly
Paleontology	<ul style="list-style-type: none"> Denver Formation fossils may be encountered during construction 	<ul style="list-style-type: none"> CDOT paleontologist to examine final design plans to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring required
Water Quality and Water Resources	<ul style="list-style-type: none"> Short-term increase in sediment from construction Increase in impervious drainage area. Consolidation of stormwater runoff with fewer outfalls to the South Platte River Improved quality of stormwater discharge due to construction of water quality ponds and BMPs 	<ul style="list-style-type: none"> Use construction BMPs to reduce temporary impacts On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential Use pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River
Floodplains	<ul style="list-style-type: none"> Temporary impacts during replacement of Alameda Avenue bridge 	<ul style="list-style-type: none"> Construct bridges on piers or outside of floodplain to minimize impacts Restore bridge construction areas Install storm sewer improvements to reduce flooding on I-25 under Alameda Avenue Provide additional volume in areas of floodplain encroachment for overall “no rise” in floodplain
Wetlands, Waters of the U.S. and Open Water	<ul style="list-style-type: none"> 0.017 acre of jurisdictional and 0.010 non-jurisdictional wetlands impacted 	<ul style="list-style-type: none"> Mitigate jurisdictional and non-jurisdictional wetlands on a 1:1 basis Minimize culvert lengths and use construction BMPs to reduce impacts Use construction BMPs to reduce temporary impacts; and use water quality BMPs to minimize indirect impacts
Vegetation and Wildlife	<ul style="list-style-type: none"> Removal of vegetation during construction Potential introduction of noxious weeds into areas disturbed by construction Short-term disturbance of wildlife and aquatic habitat during construction 	<ul style="list-style-type: none"> Revegetate construction areas using CDOT –approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan and clean construction vehicles entering construction areas to avoid introduction Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, ect., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present

Table 7.6 Phase 2 Environmental Consequences, Mitigation Measures, and Monitoring (continued)

Hazardous Waste	<ul style="list-style-type: none"> Several properties identified with potential or recognized environmental conditions to be acquired for right-of-way Excavations and relocations occurring within the vicinity of the Consolidated Main Line may encounter contaminated groundwater, soil, and fill material, and in some locations methane Santa Fe Drive, Alameda Avenue, and railroad bridges may be coated with lead-based paint 	<ul style="list-style-type: none"> Conduct individual, site-specific initial site assessments of properties and coordinate with OPS and CDPHE, as necessary, before acquiring right-of-way Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction Conduct an asbestos, heavy metals based paint survey of bridges, and miscellaneous material survey prior to demolition of any structures
Soils and Geology	<ul style="list-style-type: none"> Expansive soils and unsuitable fill material may be encountered 	<ul style="list-style-type: none"> Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> Increase in energy use due to construction Decrease in fuel use due to decreased traffic congestion 	<ul style="list-style-type: none"> Consider energy conservation measures during final design
Construction	<ul style="list-style-type: none"> Short-term fugitive dust emissions, construction noise, increase in sediment, traffic delays, visual impacts, and utility impacts during construction 	<ul style="list-style-type: none"> Identify construction mitigation measures during final design and construction planning, with consideration of the possible mitigation measures identified by the Citizens Working Group (See Table 4.18-1 in Chapter 4)

The mitigation and monitoring measures identified above for Phase 2 will be carried forward and refined during final design, construction planning, and implementation for this phase.

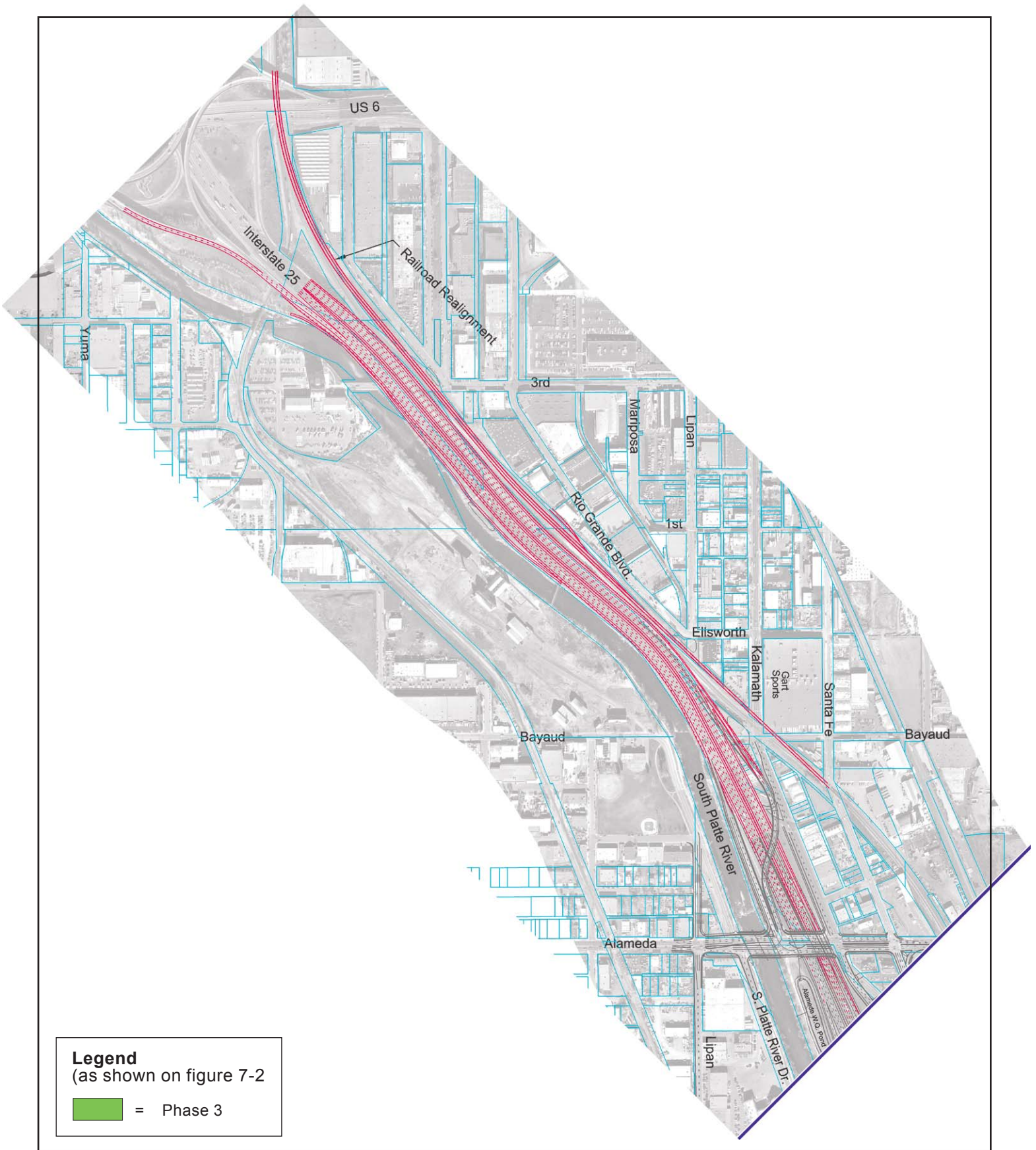
7.3.3 Phase 3 Improvements

7.3.3.1 DESCRIPTION OF PHASE 3 IMPROVEMENTS

Proposed Phase 3 includes improvements to I-25. Phase 3 includes the following improvements, as shown on **Figure 7.8**:

- Widening of I-25 from Alameda to US 6
- Relocation of the CML railroad to allow widening of I-25
- Reconstruction of I-25 north of Alameda to full section with shoulders

Table 7.7 highlights the overall project objectives, as presented in **Chapter 1 Purpose and Need**, and identifies the benefits that will be provided by Phase 3, relative to the overall project objectives.



Phase 3

Figure 7-8



North

Table 7.7 Project Purpose and Need Objectives Addressed by Phase 3

Need Category	Overall Project Objective	Benefits Provide by Phase 3
Lane Continuity and Balance	Provide lane continuity and balance on I-25 between the existing and planned roadway sections to the north and south of the project	Provides lane balance on I-25 by completing auxiliary lanes through the study area
Transportation Demand and Operations	Optimize highway system operations as measured in reduced delay of vehicle hours/day, reduced hours of congestion, and/or levels of service	Reduction in freeway system delay
Inter-modal Relationships and Bicycle/Pedestrian Mobility	Preserve existing or provide improved facilities for automobile, bus, and pedestrian connections. Upgrade bicycle/pedestrian facilities within and across the project corridor to provide improved access to the Platte River Trail, safer facilities at intersections, complete missing links of bicycle/pedestrian facilities, and provide better linkages between transportation modes	Enhancement of the Platte Rive Trail adjacent to I-25. Will provide or upgrade facilities of the trail between Alameda to US 6.
Safety	Increase safety and decrease the likelihood of accidents within the project corridor by improving the geometric design of the roadway	Decrease in likelihood of accidents on I-25 by improving the geometric design of the roadway and increasing mainline capacity
Roadway Deficiencies	Address existing roadway deficiencies, and replace aging structures to provide for improved operation of and reduced maintenance costs for the roadway facilities	Improved surface street operations
Consolidated Main Line Crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing	The CML will be relocated to the north to accommodate the widening of I-25 which will reduce system disruptions

7.3.3.2 PHASE 3 TRAFFIC OPERATIONS AND SAFETY

Freeway Sections

Construction of Phase 3 will Widen I-25 from Alameda to US 6 and reconstruct I-25 north of Alameda to a full section with shoulders. This construction will improve freeway operations along I-25 between Santa Fe Drive and US 6, particularly in the northbound direction. Widening of northbound I-25 will provide a continuous lane addition for the northbound Santa Fe Drive on ramp. Without completion of Phase 3, more than 2,500 vehicles per hour will enter northbound I-25 through a freeway merge section projected to operate at LOS F. Phase 3 will accommodate this heavy demand with a continuous lane.

The addition of a southbound through lane will improve mainline traffic operations between the Alameda Avenue and Santa Fe Drive off ramps from LOS F/F to LOS D/F.

Traffic Safety

Implementation of Phase 3 is anticipated to result in accident reductions throughout the study area. Based on information contained in the Traffic Safety Report, Phase 3 is anticipated to improve traffic safety along mainline I-25 north of the Santa Fe Drive interchange by increasing gap availability for weaving, merging and diverging.

7.3.3.3 PHASE 3 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Table 7.8 presents the environmental consequences and mitigation/monitoring measures associated with the implementation of Phase 3.

Table 7.8 Phase 3 Environmental Consequences, Mitigation Measures, and Monitoring

Resource	Consequences of Phase 3	Mitigation Measures and Monitoring
Socio-Economics and Community	<ul style="list-style-type: none"> Displacement of businesses Improved safety; replacement/improvement of deteriorating facilities Pedestrian and bicycle improvements Reduced cut-through traffic due to reduction in congestion Implementation of the project in phases will introduce uncertainty with regard to timing of property acquisition for future phases 	<ul style="list-style-type: none"> Continue discussions with local communities during design and implementation to minimize disruptions Continue consideration of environmental justice through final design, and implementation Continue coordination with City and County of Denver
Right-of-Way and Displacements	<ul style="list-style-type: none"> Displacement of 1 business, full purchase of 12 properties; partial purchase or access modification to 9 properties; and relocation of the Consolidated Main Line railroad 	<ul style="list-style-type: none"> Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, which contains specific requirements that govern the manner in which a government entity acquires property for public use Prepare a relocation analysis and provide relocation advisory service
Parks and Recreation	<ul style="list-style-type: none"> No impacts to parks as a result of Phase 3 	<ul style="list-style-type: none"> No specific mitigation is warranted at this time
Aesthetics and Urban Design	<ul style="list-style-type: none"> Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers 	<ul style="list-style-type: none"> Use conceptual “kit of parts” in design of aesthetic elements and treatments Continue coordination with other agencies through final design and implementation
Air Quality	<ul style="list-style-type: none"> Improved air quality due to improved traffic flow Meets air quality conformity requirements Temporary increase in air emissions during construction 	<ul style="list-style-type: none"> Maintain construction equipment in good working order by ensuring no excessive idling of inactive or unnecessary equipment or vehicles, and by using higher-grade fuel Implement a dust control plan and locate stationary equipment as far from sensitive receivers as possible
Noise and Vibration	<ul style="list-style-type: none"> Within Phase 3 area, noise abatement criteria exceeded along the South Platte River Trail 7 commercial properties will experience exceedances of the noise abatement criteria 	<ul style="list-style-type: none"> Provide noise barrier along a portion of the South Platte River Trail During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
Historic and Archaeological Preservation	<ul style="list-style-type: none"> No impacts are expected 	<ul style="list-style-type: none"> If historic or archaeological materials are encountered or unearthed during construction, work will be halted immediately in the vicinity of the find, and the CDOT archaeologist or cultural resource staff, and the SHPO, will be notified promptly
Paleontology	<ul style="list-style-type: none"> Denver Formation fossils may be encountered during construction 	<ul style="list-style-type: none"> CDOT paleontologist to examine final design plans to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring required

Table 7.8 Phase 3 Environmental Consequences, Mitigation Measures, and Monitoring (continued)

Resource	Consequences of Phase 3	Mitigation Measures and Monitoring
Water Quality and Water Resources	<ul style="list-style-type: none"> Short-term increase in sediment from construction Increase in impervious drainage area Consolidation of stormwater runoff with fewer outfalls to the South Platte River Improved quality of stormwater discharge due to construction of water quality ponds and BMPs 	<ul style="list-style-type: none"> Use construction BMPs to reduce temporary impacts On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential Use pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River
Floodplains	<ul style="list-style-type: none"> Encroachment into floodplain located along the eastern bank of the South Platte River 	<ul style="list-style-type: none"> Restore bridge construction areas Install storm sewer improvements to reduce flooding on I-25 under Alameda Avenue Provide additional volume in areas of floodplain encroachment for overall “no rise” in floodplain
Wetlands, Waters of the U.S. and Open Water	<ul style="list-style-type: none"> 0.043 acre of jurisdictional and wetlands impacted 	<ul style="list-style-type: none"> Mitigate jurisdictional and non-jurisdictional wetlands on a 1:1 basis Minimize culvert lengths and use construction BMPs to reduce impacts Use construction BMPs to reduce temporary impacts; and use water quality BMPs to minimize indirect impacts
Vegetation and Wildlife	<ul style="list-style-type: none"> Removal of vegetation during construction Potential introduction of noxious weeds into areas disturbed by construction Short-term disturbance of wildlife and aquatic habitat during construction 	<ul style="list-style-type: none"> Revegetate construction areas using CDOT –approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan and clean construction vehicles entering construction areas to avoid introduction Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, ect., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present

Table 7.8 Phase 3 Environmental Consequences, Mitigation Measures, and Monitoring (continued)

Resource	Consequences of Phase 3	Mitigation Measures and Monitoring
Hazardous Waste	<ul style="list-style-type: none"> Several properties identified with potential or recognized environmental conditions to be acquired for right-of-way Excavations and relocation occurring within the vicinity of the Consolidated Main Line may encounter contaminated groundwater, soil, and fill material, and in some locations methane 	<ul style="list-style-type: none"> Conduct individual, site-specific initial site assessments of properties and coordinate with OPS and CDPHE, as necessary, before acquiring right-of-way Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction Conduct an asbestos and miscellaneous material survey prior to demolition of any structures
Soils and Geology	<ul style="list-style-type: none"> Expansive soils and unsuitable fill material may be encountered 	<ul style="list-style-type: none"> Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion 	<ul style="list-style-type: none"> Consider energy conservation measures during final design
Construction	<ul style="list-style-type: none"> Short-term fugitive dust emissions, construction noise, increase in sediment, traffic delays, visual impacts, and utility impacts during construction 	<ul style="list-style-type: none"> Identify construction mitigation measures during final design and construction planning, with consideration of the possible mitigation measures identified by the Citizens Working Group (See Table 4.18-1 in Chapter 4)

The mitigation and monitoring measures identified above for Phase 3 will be carried forward and refined during final design, construction planning, and implementation for this phase.

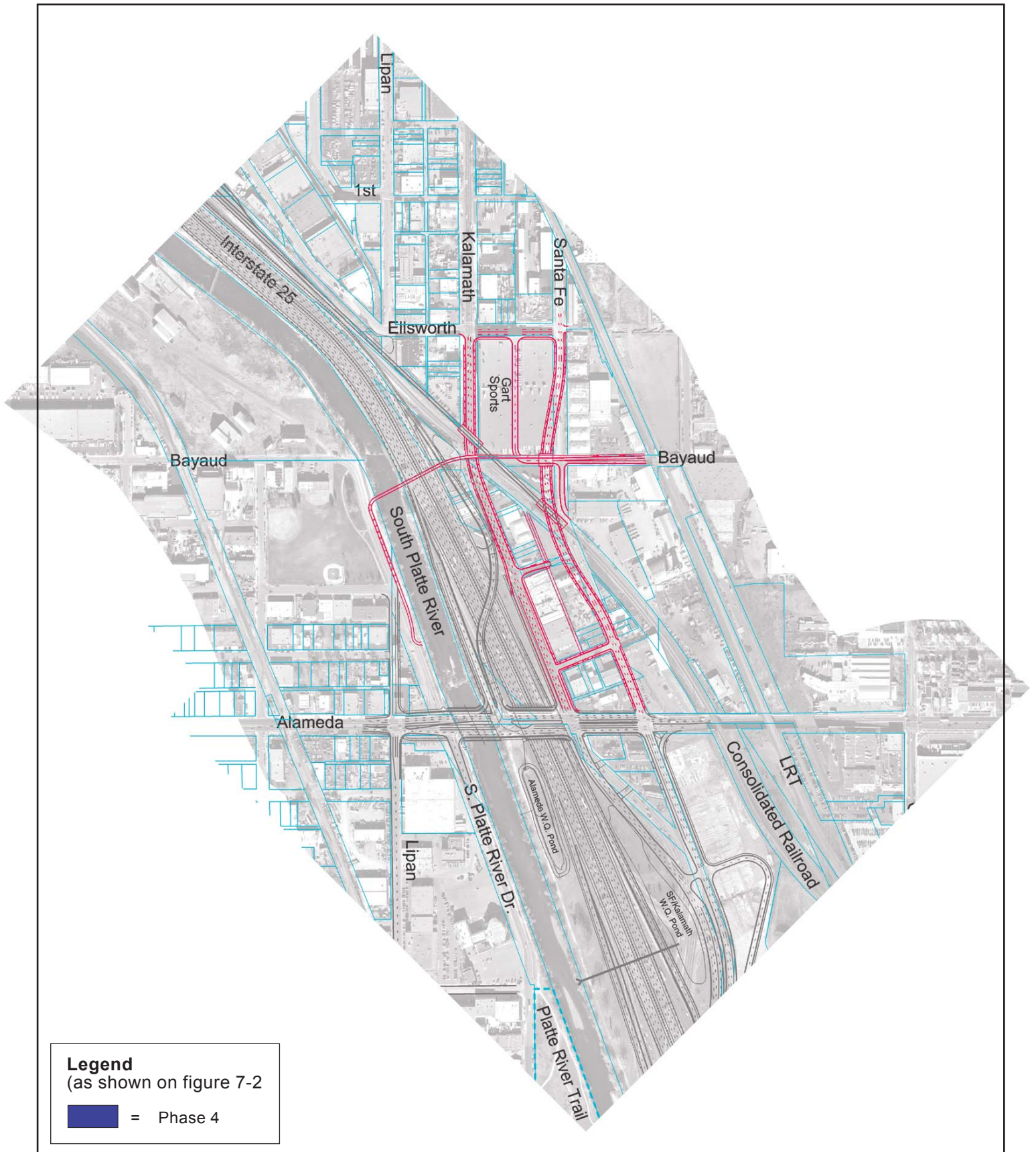
7.3.4 Phase 4 Improvements

7.3.4.1 DESCRIPTION OF PHASE 4 IMPROVEMENTS

Proposed Phase 4 Improvements include the grade separation of Santa Fe/Kalamath from the CML. Phase 4 includes the following Santa Fe/Kalamath / CML improvements, as shown on **Figure 7.9**:

- Improvements will take Santa Fe and Kalamath under the CML
- A pedestrian/bicycle bridge will be constructed beginning along Bayaud, passing over Santa Fe, Kalamath, the CML, I-25 and the South Platte River, and connecting with the South Platte River trail

Table 7.9 highlights the overall project objectives, as presented in **Chapter 1 Purpose and Need**, and identifies the benefits provided by Phase 4, relative to the overall project objectives.



Phase 4

Figure 7-9



North

Table 7.9 Project Purpose and Need Objectives Addressed by Phase 4

Need Category	Overall Project Objective	Benefits Provide by Phase 4
Lane Continuity and Balance	Provide lane continuity and balance on I-25 between the existing and planned roadway sections to the north and south of the project	Not addressed in this phase – see Phases 1 and 3
Transportation Demand and Operations	Optimize highway system operations as measured in reduced delay of vehicle hours/day, reduced hours of congestion, and/or levels of service	Improvement in surface street operations by eliminating at-grade CML crossings
Inter-modal Relationships and Bicycle/Pedestrian Mobility	Preserve existing or provide improved facilities for automobile, bus, and pedestrian connections. Upgrade bicycle/pedestrian facilities within and across the project corridor to provide improved access to the Platte River Trail, safer facilities at intersections, complete missing links of bicycle/pedestrian facilities, and provide better linkages between transportation modes	Improvement in pedestrian/bicycle mobility across corridor and provide improved access connection from Bayaud to South Platte River Trail
Safety	Increase safety and decrease the likelihood of accidents within the project corridor by improving the geometric design of the roadway	Improvement in safety by eliminating the at-grade CML crossings
Roadway Deficiencies	Address existing roadway deficiencies, and replace aging structures to provide for improved operation of and reduced maintenance costs for the roadway facilities	Improvement in system operation due to grade separation
Consolidated Main Line Crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing

7.3.4.2 PHASE 4 TRAFFIC OPERATIONS AND SAFETY

Traffic Operations

Construction of Phase 4 will take Santa Fe Drive and Kalamath Street under the CML. This grade separation will reduce vehicular delay associated with the current at-grade crossing, eliminating an estimated 438 vehicle-hours of delay per day by the year 2025.

Traffic Safety

In addition to reducing delay, the grade separation completed with Phase 4 will improve traffic safety by eliminating the potential for collisions between vehicles and passing trains.

7.3.4.3 PHASE 4 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Table 7.10 presents the environmental consequences and mitigation/monitoring measures associated with the implementation of Phase 4.

Table 7.10 Phase 4 Environmental Consequences, Mitigation Measures, and Monitoring

Resource	Consequences of Phase 4	Mitigation Measures and Monitoring
Socio-Economics and Community	<ul style="list-style-type: none"> Displacement of businesses Improved safety; replacement/improvement of deteriorating facilities Pedestrian and bicycle improvements Reduced cut-through traffic due to reduction in congestion Implementation of the project in phases will introduce uncertainty with regard to timing of property acquisition for future phases 	<ul style="list-style-type: none"> Continue discussions with local communities during design and implementation to minimize disruptions. Continue consideration of environmental justice through final design, and implementation Continue coordination with City and County of Denver
Right-of-Way and Displacements	<ul style="list-style-type: none"> Displacement of 10 businesses; full purchase of 23 properties; partial purchase or access modification to 8 properties; and relocation of the Consolidated Main Line (CML) railroad 	<ul style="list-style-type: none"> Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, which contains specific requirements that govern the manner in which a government entity acquires property for public use Prepare a relocation analysis and provide relocation advisory service
Parks and Recreation	<ul style="list-style-type: none"> Improved east-west connection to South Platte Trail at Bayaud Avenue 	<ul style="list-style-type: none"> Prepare final design to accommodate pedestrian and bicycle traffic, and cooperating with trail users, while meeting operational and safety requirements
Aesthetics and Urban Design	<ul style="list-style-type: none"> Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers Canyon-like effect from grade separation of Santa Fe Drive and Kalamath Street below the CML 	<ul style="list-style-type: none"> Use conceptual “kit of parts” in design of aesthetic elements and treatments Continue coordination with other agencies through final design and implementation
Air Quality	<ul style="list-style-type: none"> Improved air quality due to improved traffic flow Meets air quality conformity requirements Temporary increase in air emissions during construction 	<ul style="list-style-type: none"> Maintain construction equipment in good working order by ensuring no excessive idling of inactive or unnecessary equipment or vehicles, and by using higher-grade fuel Implement a dust control plan and locate stationary equipment as far from sensitive receivers as possible
Noise and Vibration	<ul style="list-style-type: none"> Within Phase 4 area, noise abatement criteria exceeded for approximately 3 residences 42 commercial properties will experience exceedances of the noise abatement criteria 	<ul style="list-style-type: none"> During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
Historic and Archaeological Preservation	<ul style="list-style-type: none"> No impacts are expected 	<ul style="list-style-type: none"> If historic or archaeological materials are encountered or unearthed during construction, work will be halted immediately in the vicinity of the find, and the CDOT archaeologist or cultural resource staff, and the SHPO, will be notified promptly
Paleontology	<ul style="list-style-type: none"> Denver Formation fossils may be encountered during construction 	<ul style="list-style-type: none"> CDOT paleontologist to examine final design plans to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring required

Table 7.10 Phase 4 Environmental Consequences, Mitigation Measures, and Monitoring (Continued)

Resource	Consequences of Phase 4	Mitigation Measures and Monitoring
Water Quality and Water Resources	<ul style="list-style-type: none"> Short-term increase in sediment from construction Increase in impervious drainage area Consolidation of stormwater runoff with fewer outfalls to the South Platte River Improved quality of stormwater discharge due to construction of water quality ponds and BMPs 	<ul style="list-style-type: none"> Use construction BMPs to reduce temporary impacts On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential Use pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River
Floodplains	<ul style="list-style-type: none"> Temporary impacts during replacement of Santa Fe Drive bridges and construction of Bayaud Avenue bicycle/pedestrian bridge 	<ul style="list-style-type: none"> Restore pedestrian bridge construction areas Provide additional volume in areas of floodplain encroachment for overall “no rise” in floodplain??
Wetlands, Waters of the U.S. and Open Water	<ul style="list-style-type: none"> No wetland impacts are expected as a result of Phase 4 	<ul style="list-style-type: none"> No mitigation measures are warranted at this time
Vegetation and Wildlife	<ul style="list-style-type: none"> Removal of vegetation during construction Potential introduction of noxious weeds into areas disturbed by construction Short-term disturbance of wildlife and aquatic habitat during construction 	<ul style="list-style-type: none"> Revegetate construction areas using CDOT –approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan and clean construction vehicles entering construction areas to avoid introduction Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, ect., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present
Hazardous Waste	<ul style="list-style-type: none"> Several properties identified with potential or recognized environmental conditions to be acquired for right-of-way Excavations and relocation of the Consolidated Main Line may encounter contaminated groundwater, soil, and fill material, and in some locations methane Railroad bridges may be coated with lead-based paint 	<ul style="list-style-type: none"> Conduct individual, site-specific initial site assessments of properties and coordinate with OPS and CDPHE, as necessary, before acquiring right-of-way Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction Conduct an asbestos and miscellaneous material survey prior to demolition of any structures

Table 7.10 Phase 4 Environmental Consequences, Mitigation Measures, and Monitoring (Continued)

Resource	Consequences of Phase 4	Mitigation Measures and Monitoring
Soils and Geology	<ul style="list-style-type: none"> Expansive soils and unsuitable fill material may be encountered 	<ul style="list-style-type: none"> Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> Increase in energy use due to construction Decrease in fuel use due to decreased traffic congestion 	<ul style="list-style-type: none"> Consider energy conservation measures during final design
Construction	<ul style="list-style-type: none"> Short-term fugitive dust emissions, construction noise, increase in sediment, traffic delays, visual impacts, and utility impacts during construction 	<ul style="list-style-type: none"> Identify construction mitigation measures during final design and construction planning, with consideration of the possible mitigation measures identified by the Citizens Working Group (See Table 4.18-1 in Chapter 4)

The mitigation and monitoring measures identified above for Phase 4 will be carried forward and refined during final design, construction planning, and implementation for this phase.

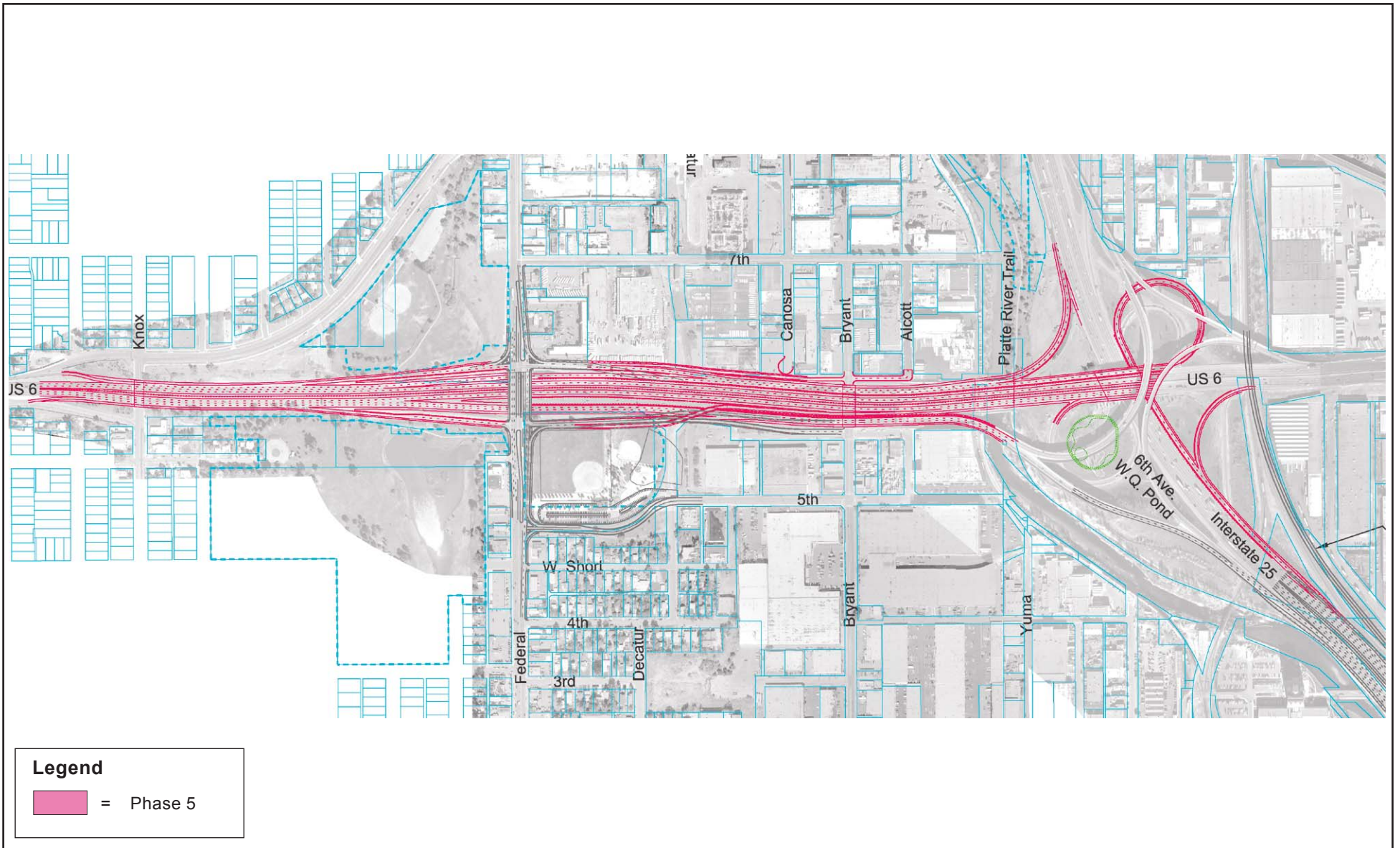
7.3.5 Phase 5 Improvements

7.3.5.1 DESCRIPTION OF PHASE 5 IMPROVEMENTS

Proposed Phase 5 includes improvements to US 6. Phase 5 includes the following improvements, as shown on **Figure 7.10**:

- Reconstruction of US 6 from Federal to I-25
- Replacement of US 6 bridge over South Platte River
- Construction of braided ramp from Federal Boulevard to eastbound US 6
- Construction of eastbound US 6 to Federal off-ramp
- Construction of Federal to westbound US 6 on-ramp

Table 7.11 highlights the overall project objectives, as presented in **Chapter 1 Purpose and Need**, and identifies the benefits provided by Phase 5, relative to the overall project objectives.



North

Phase 5

Figure 7-10

Table 7.11 Project Purpose and Need Objectives Addressed by Phase 5

Need Category	Overall Project Objective	Benefits Provide by Phase 5
Lane Continuity and Balance	Provide lane continuity and balance on I-25 between the existing and planned roadway sections to the north and south of the project	Not addressed by this phase – see Phases 1 and 3
Transportation Demand and Operations	Optimize highway system operations as measured in reduced delay of vehicle hours/day, reduced hours of congestion, and/or levels of service	Reductions in system delay, particularly due to construction of the eastbound braided ramp and collector-distributor road
Inter-modal Relationships and Bicycle/Pedestrian Mobility	Preserve existing or provide improved facilities for automobile, bus, and pedestrian connections. Upgrade bicycle/pedestrian facilities within and across the project corridor to provide improved access to the Platte River Trail, safer facilities at intersections, complete missing links of bicycle/pedestrian facilities, and provide better linkages between transportation modes	Platte River Trail enhancement due to improved clearance under US 6 bridge
Safety	Increase safety and decrease the likelihood of accidents within the project corridor by improving the geometric design of the roadway	Improved safety due to a decrease in likelihood of accidents on US 6
Roadway Deficiencies	Address existing roadway deficiencies, and replace aging structures to provide for improved operation of and reduced maintenance costs for the roadway facilities	Improved highway system operational reliability by raising US 6 bridge above South Platte 100-year floodplain
Consolidated Main Line Crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing	Not addressed in this phase – see Phase 4

7.3.5.2 PHASE 5 TRAFFIC OPERATIONS AND SAFETY

Traffic Operations

Phase 5 will complete construction of the Preferred Alternative in the US 6 area. Based on traffic simulation results, completion of Phase 5 will reduce peak hour vehicle delay by approximately 35-40 percent from the No Action Alternative. Operational benefits related to the Preferred Alternative include the separation of eastbound weaving movements using a C-D road and reconfiguration of US 6 access to and from Bryant Street.

Traffic Safety

Traffic safety benefits associated with Phase 5 include intersection improvements (signal phasing, visibility of signal heads, improved lane geometry) and separation of eastbound weaving movements using a C-D road. It is estimated that the Preferred Alternative in the US 6 area will reduce total accidents by 1,550 – 1,750 accidents relative to the No Action Alternative.

7.3.5.3 PHASE 5 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Table 7.12 presents the environmental consequences and mitigation/monitoring measures associated with the implementation of Phase 5.

Table 7.12 Phase 5 Environmental Consequences, Mitigation Measures, and Monitoring

Resource	Consequences of Phase 5	Mitigation Measures and Monitoring
Socio-Economics and Community	<ul style="list-style-type: none"> Displacement of businesses Improved safety; replacement/improvement of deteriorating facilities Pedestrian and bicycle improvements Reduced cut-through traffic due to reduction in congestion Implementation of the project in phases will introduce uncertainty with regard to timing of property acquisition for future phases 	<ul style="list-style-type: none"> Continue discussions with local communities during design and implementation to minimize disruptions. Continue consideration of environmental justice through final design, and implementation Continue coordination with City and County of Denver
Right-of-Way and Displacements	<ul style="list-style-type: none"> Displacement of 5 businesses; full purchase of 1 property; partial purchase or access modification to 2 properties 	<ul style="list-style-type: none"> Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, which contains specific requirements that govern the manner in which a government entity acquires property for public use Prepare a relocation analysis and provide relocation advisory service
Parks and Recreation	<ul style="list-style-type: none"> Requires use of a small part of Barnum North (0.05 acre) park 	<ul style="list-style-type: none"> Prepare final design to acquire the least possible amount of park land while meeting operational and safety requirements
Aesthetics and Urban Design	<ul style="list-style-type: none"> Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers 	<ul style="list-style-type: none"> Use conceptual “kit of parts” in design of aesthetic elements and treatments Continue coordination with other agencies through final design and implementation
Air Quality	<ul style="list-style-type: none"> Improved air quality due to improved traffic flow Meets air quality conformity requirements Temporary increase in air emissions during construction 	<ul style="list-style-type: none"> Maintain construction equipment in good working order by ensuring no excessive idling of inactive or unnecessary equipment or vehicles, and by using higher-grade fuel Implement a dust control plan and locate stationary equipment as far from sensitive receivers as possible
Noise and Vibration	<ul style="list-style-type: none"> Within the Phase 5 area, noise abatement criteria exceeded for approximately 3 residences and in portions of Barnum Park, Barnum Park North, and Frog Hollow Park 2 commercial properties will experience exceedances of the noise abatement criteria 	<ul style="list-style-type: none"> During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
Historic and Archaeological Preservation	<ul style="list-style-type: none"> No impacts are expected 	<ul style="list-style-type: none"> If historic or archaeological materials are encountered or unearthed during construction, work will be halted immediately in the vicinity of the find, and the CDOT archaeologist or cultural resource staff, and the SHPO, will be notified promptly

Table 7.12 Phase 5 Environmental Consequences, Mitigation Measures, and Monitoring (Continued)

Resource	Consequences of Phase 5	Mitigation Measures and Monitoring
Paleontology	<ul style="list-style-type: none"> Denver Formation fossils may be encountered during construction 	<ul style="list-style-type: none"> CDOT paleontologist to examine final design plans to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring required
Water Quality and Water Resources	<ul style="list-style-type: none"> Short-term increase in sediment from construction Increase in impervious drainage area. Consolidation of stormwater runoff with fewer outfalls to the South Platte River Improved quality of stormwater discharge due to construction of water quality ponds and BMPs 	<ul style="list-style-type: none"> Use construction BMPs to reduce temporary impacts On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential Use pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River
Floodplains	<ul style="list-style-type: none"> Upstream floodplain elevation reduced by raising the US 6 bridge over the river Temporary impacts during replacement of the US 6 bridge 	<ul style="list-style-type: none"> Construct bridges on piers or outside of floodplain to minimize impacts Restore bridge construction areas Provide additional volume in areas of floodplain encroachment for overall “no rise” in floodplain
Wetlands, Waters of the U.S. and Open Water	<ul style="list-style-type: none"> No wetland impacts are expected as a result of Phase 5 	<ul style="list-style-type: none"> No mitigation measures are warranted at this time
Vegetation and Wildlife	<ul style="list-style-type: none"> Removal of vegetation during construction. Potential introduction of noxious weeds into areas disturbed by construction Short-term disturbance of wildlife and aquatic habitat during construction Improvements to US 6 bridge will move traffic away from wildlife habitat along the South Platte and will improve wildlife travel corridor by increased horizontal and vertical clearance of bridges 	<ul style="list-style-type: none"> Revegetate construction areas using CDOT –approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan and clean construction vehicles entering construction areas to avoid introduction Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, ect., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present

Table 7.12 Phase 5 Environmental Consequences, Mitigation Measures, and Monitoring (Continued)

Resource	Consequences of Phase 5	Mitigation Measures and Monitoring
Hazardous Waste	<ul style="list-style-type: none"> Several properties identified with potential or recognized environmental conditions to be acquired for right-of-way Excavations may encounter contaminated groundwater, soil, and fill material, and in some locations methane US 6 bridge may be coated with lead-based paint 	<ul style="list-style-type: none"> Conduct individual, site-specific initial site assessments of properties and coordinate with OPS and CDPHE, as necessary, before acquiring right-of-way Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction Conduct an asbestos, heavy metals based paint survey of bridges, and miscellaneous material survey prior to demolition of any structures
Soils and Geology	<ul style="list-style-type: none"> Expansive soils and unsuitable fill material may be encountered 	<ul style="list-style-type: none"> Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion 	<ul style="list-style-type: none"> Consider energy conservation measures during final design
Construction	<ul style="list-style-type: none"> Short-term fugitive dust emissions, construction noise, increase in sediment, traffic delays, visual impacts, and utility impacts during construction 	<ul style="list-style-type: none"> Identify construction mitigation measures during final design and construction planning, with consideration of the possible mitigation measures identified by the Citizens Working Group (See Table 4.18-1 in Chapter 4)

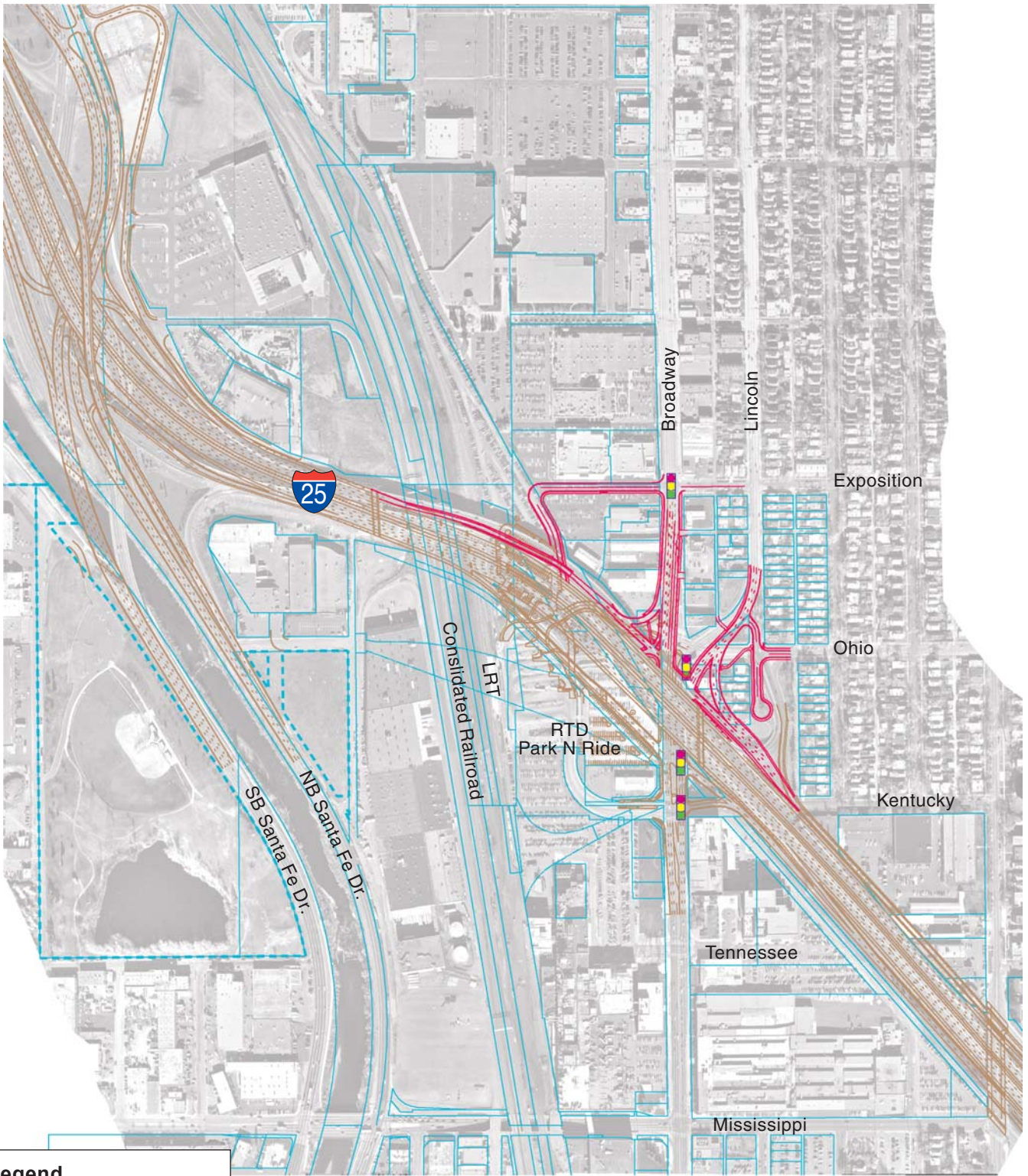
The mitigation and monitoring measures identified above for Phase 5 will be carried forward and refined during final design, construction planning, and implementation for this phase.

7.3.6 Phase 6 Improvements

7.3.6.1 DESCRIPTION OF PHASE 6 IMPROVEMENTS

Proposed Phase 6 includes reconfiguration/reconstruction of I-25/Broadway interchange Improvements, as shown on Figure 7.11.

Table 7.13 highlights the overall project objectives, as presented in **Chapter 1 Purpose and Need**, and identifies the benefits produced by Phase 6, relative to the overall project objectives.



Legend
 (as shown on figure 7-2)

= Phase 6



Phase 6

Figure 7-11

Table 7.13 Project Purpose and Need Objectives Addressed by Phase 6

Need Category	Overall Project Objective	Benefits Provide by Phase 6
Lane Continuity and Balance	Provide lane continuity and balance on I-25 between the existing and planned roadway sections to the north and south of the project	Not addressed in this phase – see Phases 1 and 3
Transportation Demand and Operations	Optimize highway system operations as measured in reduced delay of vehicle hours/day, reduced hours of congestion, and/or levels of service	Reduction in surface street delay
Inter-modal Relationships and Bicycle/Pedestrian Mobility	Preserve existing or provide improved facilities for automobile, bus, and pedestrian connections. Upgrade bicycle/pedestrian facilities within and across the project corridor to provide improved access to the Platte River Trail, safer facilities at intersections, complete missing links of bicycle/pedestrian facilities, and provide better linkages between transportation modes	Pedestrian/bicycle mobility and access improvements relative to the LRT station
Safety	Increase safety and decrease the likelihood of accidents within the project corridor by improving the geometric design of the roadway	Reduction in accident potential due signal and lane geometry improvements
Roadway Deficiencies	Address existing roadway deficiencies, and replace aging structures to provide for improved operation of and reduced maintenance costs for the roadway facilities	Replacement of deficient structures
Consolidated Main Line Crossing	Reduce system disruptions, and improve safety conditions related to the current at-grade crossing	Not addressed in this phase – see Phase 4

7.3.6.2 PHASE 6 TRAFFIC OPERATIONS AND SAFETY

Traffic Operations

Phase 6 will construct the Preferred Alternative at the I-25 / Broadway interchange. Based on traffic simulation results, completion of Phase 6 will reduce peak hour vehicle delay in the I-25 / Broadway interchange area by 175 vehicle-hours per day compared with the No Action Alternative.

Traffic Safety

Traffic safety benefits associated with Phase 6 include implementing revised signal phasing, increasing the visibility of signal heads and improving lane geometry. The 20-year expected accident reduction associated with the Preferred Alternative will be in the range of 330-400 total accidents.

7.3.6.3 PHASE 6 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Table 7.14 presents the environmental consequences and mitigation/monitoring measures associated with the implementation of Phase 6.

Table 7.14 Phase 6 Environmental Consequences, Mitigation Measures, and Monitoring

Resource	Consequences of Phase 6	Mitigation Measures and Monitoring
Socio-Economics and Community	<ul style="list-style-type: none"> Displacement of businesses. Displacement of residences Improved safety; replacement/improvement of deteriorating facilities Pedestrian and bicycle improvements Reduced cut-through traffic due to reduction in congestion Implementation of the project in phases will introduce uncertainty with regard to timing of property acquisition for future phases 	<ul style="list-style-type: none"> Continue discussions with local communities during design and implementation to minimize disruptions. Continue consideration of environmental justice through final design, and implementation Continue coordination with City and County of Denver
Right-of-Way and Displacements	<ul style="list-style-type: none"> Displacement of 3 residences and 3 businesses; full purchase of 6 properties; partial purchase or access modification to 7 properties 	<ul style="list-style-type: none"> Conform to the requirements set forth in the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, which contains specific requirements that govern the manner in which a government entity acquires property for public use Prepare a relocation analysis and provide relocation advisory service
Parks and Recreation	<ul style="list-style-type: none"> No impacts are expected to parks and recreation as a result of Phase 6 	<ul style="list-style-type: none"> No specific mitigation is warranted at this time
Aesthetics and Urban Design	<ul style="list-style-type: none"> Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers. Positive visual effect from movement of northbound I-25 on-ramp from Broadway away from residential area 	<ul style="list-style-type: none"> Use conceptual “kit of parts” in design of aesthetic elements and treatments Continue coordination with other agencies through final design and implementation
Air Quality	<ul style="list-style-type: none"> Improved air quality due to improved traffic flow Meets air quality conformity requirements Temporary increase in air emissions during construction 	<ul style="list-style-type: none"> Maintain construction equipment in good working order by ensuring no excessive idling of inactive or unnecessary equipment or vehicles, and by using higher-grade fuel Implement a dust control plan and locate stationary equipment as far from sensitive receivers as possible
Noise and Vibration	<ul style="list-style-type: none"> Within Phase 6 area, noise abatement criteria exceeded for approximately 51 residences 3 commercial properties will experience exceedances of the noise abatement criteria 	<ul style="list-style-type: none"> Provide noise barrier along I-25 in the vicinity of 800 S. Lincoln St. During preparation of final design, consider elements to reduce “nuisance noise” experienced near the highway
Historic and Archaeological Preservation	<ul style="list-style-type: none"> No replacement of historic structures 	<ul style="list-style-type: none"> If historic or archaeological materials are encountered or unearthed during construction, work will be halted immediately in the vicinity of the find, and the CDOT archaeologist or cultural resource staff, and the SHPO, will be notified promptly

Table 7.14 Phase 6 Environmental Consequences, Mitigation Measures, and Monitoring (Continued)

Resource	Consequences of Phase 6	Mitigation Measures and Monitoring
Paleontology	<ul style="list-style-type: none"> Denver Formation fossils may be encountered during construction 	<ul style="list-style-type: none"> CDOT paleontologist to examine final design plans to determine the extent of impact to the Denver Formation, and the scope, if any, of monitoring required
Water Quality and Water Resources	<ul style="list-style-type: none"> Short-term increase in sediment from construction Increase in impervious drainage area Consolidation of stormwater runoff with fewer outfalls to the South Platte River Improved quality of stormwater discharge due to construction of water quality ponds and BMPs 	<ul style="list-style-type: none"> Use construction BMPs to reduce temporary impacts On-site project area runoff will be controlled through water quality ponds or other BMPs to settle and improve water quality runoff releasing to the South Platte River Reduction of the overall number of outfalls into the South Platte River and installation of energy dissipaters, such as riprap, at outfalls to reduce erosion potential Use pump stations to remove runoff at underpasses on grades separations and water quality ponds to settle sediment and improve water quality releasing into the South Platte River
Floodplains	<ul style="list-style-type: none"> No impacts to floodplains from Phase 6 are expected 	<ul style="list-style-type: none"> No mitigation is warranted at this time
Wetlands, Waters of the U.S. and Open Water	<ul style="list-style-type: none"> No wetland impacts are expected as a result of Phase 6 	<ul style="list-style-type: none"> No mitigation measures are warranted at this time
Vegetation and Wildlife	<ul style="list-style-type: none"> Removal of vegetation during construction Potential introduction of noxious weeds into areas disturbed by construction Short-term disturbance of wildlife and aquatic habitat during construction 	<ul style="list-style-type: none"> Revegetate construction areas using CDOT –approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction will be replaced with native species to their pre-construction aerial coverage Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into final design to ensure the existing landscape does not become fragmented Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan and clean construction vehicles entering construction areas to avoid introduction Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, ect., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present

Table 7.14 Phase 6 Environmental Consequences, Mitigation Measures, and Monitoring (Continued)

Resource	Consequences of Phase 6	Mitigation Measures and Monitoring
Hazardous Waste	<ul style="list-style-type: none"> Several properties identified with potential or recognized environmental conditions to be acquired for right-of-way Excavations in the vicinity of the RTD Park-n-Ride may encounter contaminated groundwater, soil, and fill material, and in some locations methane Santa Fe Drive, Alameda Avenue, US 6, and railroad bridges may be coated with lead-based paint 	<ul style="list-style-type: none"> Conduct individual, site-specific initial site assessments of properties and coordinate with OPS and CDPHE, as necessary, before acquiring right-of-way Conduct a preliminary site investigation before final design to identify soil and groundwater contamination that may affect feasibility evaluation and final design Prepare a materials handling plan and a health and safety plan, which includes asbestos-containing material, as required by Section 250.03 of the CDOT Standard Specifications for Road and Bridge Construction Conduct an asbestos, heavy metals based paint survey of bridges, and miscellaneous material survey prior to demolition of any structures
Soils and Geology	<ul style="list-style-type: none"> Expansive soils and unsuitable fill material may be encountered 	<ul style="list-style-type: none"> Consider potential for expansive soils and unsuitable fill during final design
Energy	<ul style="list-style-type: none"> Increase in energy use due to construction. Decrease in fuel use due to decreased traffic congestion 	<ul style="list-style-type: none"> Consider energy conservation measures during final design
Construction	<ul style="list-style-type: none"> Short-term fugitive dust emissions, construction noise, increase in sediment, traffic delays, visual impacts, and utility impacts during construction 	<ul style="list-style-type: none"> Identify construction mitigation measures during final design and construction planning, with consideration of the possible mitigation measures identified by the Citizens Working Group (See Table 4.18-1 in Chapter 4)

The mitigation and monitoring measures identified for Phase 6 will be carried forward and refined during final design, construction planning, and implementation for this phase.

7.4 Further Coordination and Decision Making after Final EIS

7.4.1 Public Availability of Final EIS and Execution of Initial ROD

After this Final EIS is completed, CDOT and FHWA will:

- Publish notice of availability of the Final EIS in the Federal Register
- Provide copies of the Final EIS for public review at convenient locations
- Hold a public hearing
- Receive public comments at the public hearing and through written submissions
- Review public comments, prepare responses, and refine the Preferred Alternative and/or project phases in response to comments, as appropriate
- Execute a ROD selecting a fiscally-constrained Phase 1 for implementation

Following execution of a ROD, CDOT and FHWA will proceed with final design and implementation of Phase 1.

7.4.2 Implementation of Future Project Phases

With an initial ROD, CDOT and FHWA will select Phase 1 for implementation. Subsequent project phases will be implemented as additional funding become available, and CDOT and FHWA work toward implementation of the entire Preferred Alternative. For each subsequent phase, a ROD will be issued detailing the phase to be implemented. CDOT and FHWA will review the information provided in this Final EIS and the initial ROD in preparing each subsequent ROD.

The following steps are indicative of the process that will be followed to implement each successive phase:

- Identify additional funding available for corridor improvements
- Review remaining phases and current priorities to identify the next phase for implementation
- Confirm the expected benefits and impacts of the phase, as appropriate, based on the Final EIS and current conditions at the time of selection
- Confirm/identify the appropriate mitigation measures to be included in the phase, based on the Final EIS and current conditions at the time of selection
- Confirm air quality conformity through inclusion of the new improvements in the RTP
- Execute a ROD for the phase